DNMI DET NORSKE METEOROLOGISKE INSTITUTT

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SURFACE REFRACTIVITY AND REFRACTIVE GRADIENTS IN LOWER ATMOSHPHERE OF NORWAY.

Revised version

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RAPPORT NR. 04/94 KLIMA

DNMI-RAPPORT

DET NORSKE METEOROLOGISKE INSTITUTT
POSTBOKS 43 BLINDERN 0313 OSLO 3
TELEFON: **22 96 30 00**

ISBN

RAPPORT NR.
13/93 KLIMA

DATO
20.04.93

TITTEL

SURFACE REFRACTIVITY AND REFRACTIVE GRADIENTS IN LOWER ATMOSPHERE OF NORWAY.

UTARBEIDET AV

SOFUS LINGE LYSTAD

OPPDRAGSGIVER

TELEDIREKTORATETS FORSKNINGSAVDELING

OPPDRAGSNR. 100381

SAMMENDRAG

The report contains:
A survey on the surface refractivity in Norway based on the general meteorological stations with three or four computerized observations pr. day in the period 1982-1991, values for long periodic, means 35 years (1957-1991), are given for selected stations.
Investigations on the fine structure of the refractivity at the surface by means of 15 years of hourly observations from two airports.
Profile studies based on radio soundings up to 2.1 Km from seven norwegian stations with soundings, two from Sweden and one station from Finland.

UNDERSKRIFT

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SAKSBEHANDLER

Bjørn Aune
FAGSJEF

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Acknowledgement

The work presented in this report was done under contract 100318 with the Norwegian Telecom Research and it has been a pleasure to cooperate with mr Terje Tjelta from this research unit.

I also want to thank mrs Rut Arntzen and mr Bjørn Nordin for their preparation of the radio sonde data, ms Anne Eriksen for her preparation of most of the coloured figures, and mr Per Olav Polle for all the tedious work in reproducing the manuscript, all employed at the Norwegian Meteorological Institute.

1. Summary

This report on the refractive index or refractivity is divided in three parts:

1: General introduction to the theory of refractivity and to the various data bases of meteorological information. Discussion of general climatology and of the refractivity climatology.

Values for long periodic means, 35 years (1957-1991),are given for selected stations together with distribution of daily means of the refractivity.

A survey on the surface refractivity in Norway based on the general meteorological stations with three or four computerized observations pr. day in the period 1982-1991.

Mean values of the dry, wet and total component are given together with standard deviation and a distribution of values in the 10 year period 1982-1991.

2: Investigations on the fine structure of the refractivity at the surface by means of 15 years of hourly observations from two airports. Nine years from the airport Fornebu (1976-1981 and 1985-1987) and 6 years (1976-1981) from Flesland airport are used in the investigation.

Monthly means are given together with the variation given by the hourly jumps pr month and persistency represented by the hourly period lengths of constant N-values.

3: Profile studies based on radio soundings up to 2.0 km from seven Norwegian stations with soundings, two from Sweden and one station from Finland.

1.1 The refractivity of the air.

The refractive index n, in a gas or a mixture of gases is given by

$$n^2 = \varepsilon \mu$$

where ε is the permitivity or approximately the dielectric constant and μ the permeability of the medium.

In the troposphere (0-10 km) the most important gases in this case are CO_2, dry air (non-polar gases) and water vapour (a polar gas). Using the principle of partial pressures we obtain

$$(n-1)10^6 = K_1(P_d/T) + K_2(e/T) + K_3(e/T^2) + K_4(P_c/T)$$

where K_1,K_2,K_3,K_4 are constants, P_d the pressure of dry air, e is the partial pressure of water vapour and P_c the partial pressure of CO_2 and T is the temperature in absolute degrees.

Since the value of the refractivity at the surface of the earth is approximately about 1.000320 units it is convenient to introduce the notation

$$N = (n-1)10^6$$

that is we express the refractive index in N-units.

By introducing standard values for the content of CO_2 in the troposphere and empirical values for the constants we obtain

$$N = 77.6 \ (P_d/T) + 72. \ (e/T) + 375000. \ (e/T^2)$$

For practical work in radio-meteorological investigations this can be simplified to the expression

$$N = 77.6 \ (P/T) + 373000. \ (e/T^2)$$

where P is the total air pressure.

This is the notation of the refractive index that is most commonly used in this report, and always for the surface refractivity.

The two terms on the right side of the expression for N are named the "dry" and "wet" component respectively. The dry part contributes most to the total value, about 60 to 80 %.

To describe the refractivity in the upper-air layers it is a lot of modifications of the basic N when presented as a function of height. The purpose is always the principle to remove the systematic decrease of N with height, in an defined "standard atmosphere".

Turning to "ray-theory" it can easily be shown that a type of transformation as:

$$M(h) = N(h) + 10^6 h/R$$

where h is height above ground and R is the radius of the earth, implies a "flat" earth, and accordingly will the derivative

$$d M(h) / dh = 0$$

imply a theoretically infinite range of radio signals.

The trapping or ducting layers in the atmosphere will then be identified by

$$d M(h) / dh \leq 0$$

For the investigations connected with the soundings the refractivity will also be given in M-units.

Rays propagating without obstruction through a transverse refractive index gradient will suffer bending as given by

$$r = -(1/n) \cdot dn/dz$$

$$= 10^{-6} \cdot dN/dz$$

where r is the curvature of the ray in the direction of decreasing z.

We may in this way define an "effective earth-radius" factor given by

$$k = 1 / (1 + a R \, dN/dz)$$

where R is the radius of the earth at the given latitude in km and a is a constant equal to 0.000001. For computation of the radius see appendix 1.

The condition

$$k = 1 \quad \text{or} \quad dN/dz = 0$$

implies a constant refractive index and no ray bending. For a well mixed atmosphere, the mean refractivity gradient is roughly -39 N/Km, or accordingly k = 4/3.

For $k > 4/3$, rays suffer increasing downward deflection, and for $0 < k < 4/3$ horizontally propagating rays would be deflected upward.

We can thus make the following definitions:

Subrefractive	: $0 < k < 1$	$-1/aR < dN/dz < 0$
Normal deflection	: $1 \leq k \leq 4/3$	$0 < dN/dz < 1/aR$
Superrefractive	: $k > 4/3$	$dN/dz > 1/aR$

This is notations that would be used later on.

Identifying ducts we have $N = -1/aR$ and accordingly the refractivity gradient equal approximately to -157 N units (see appendix 1) and thus $k = \infty$

Under these conditions a ray launched horizontally would follow the earth's curvature and effectively be trapped.

We can thus according to the above definition of a duct, i.e. $d\,M(h)/dh \leq 0$ recognise three types of ducts:

1: surface duct $(dM/dz)_{z=0} < 0$

2: elevated surface duct $(dM/dz)_{z=0} > 0$ where $M(z)_{z>0} < M(z)_{z=0}$

3: elevated duct $(dM/dz)_{z>0} < 0$ where $M(z)_{z>0} > M(z)_{z=0}$

Elements of the theory are given in the relevant sections.

1.1.2 On the analytical solution for the ray path.

From differential geometry we have the relation between the radius of curvature and the path of a plane curve as

$$z'' = (-1/r)\,(1 + z'^2)^{3/2}$$

where the vertical coordinate z is a function of the horizontal coordinate x, and the radius of curvature r is a general function of the space coordinates. The ray path is then given in closed form as $H(x,z)=0$.

Accordingly is

$$z' = dz/dx \qquad \text{and} \qquad z'' = d^2z/dx^2$$

From the preceeding paragraphs we know that

$$\begin{aligned} 1/r &= \alpha\, dN(z)/dz \\ &= \beta\, dM(z)/dz \end{aligned}$$

where α and β are appropriate constants.

For a known relationship $M=M(z)$ we can in principle solve the differential equation and get an analytical expression for the ray path. To solve the differential equation we define

$$z' = u \qquad \text{and} \qquad z'' = u\, du/dz$$

that gives an separable equation in $u=u(z)$, say

$$u\, u' = f(z)\,(1 + u^2)^{3/2}$$

where f(z) represents height dependence of M, and is in principle integrable for a defined f(z) as

$$\int^{u} u\, du/\,(1 + u^2)^{3/2} = F(z)$$

$$-(1 + u^2)^{-1/2} = F(z)$$

where

$$F(z) = \int^{z} f(z)\, dz$$

a new integration is then necessary since z' = u, and we finally obtain

$$x = \int dz/g(z)$$

where

$$g(z) = [\ 1/\ F(z)\ ]^2 - 1$$

which give the formal solution for the ray path, say H(x,z)=0.

To simplify the problem we can with little loss of generality assume

$$z' = dz/dx \ll 1$$

that gives

$$z'' = -1/r$$

If we put p = dz/dx and again use the identity

$$z'' = p\ dp/dx$$

Integration gives by introduction of the M-profile for the radius of curvature

$$p = (\ p_0^2 + 2(M(z) - M_0)\ 10^{-6}\ )^{1/2}$$

and for a known profile of M we finally obtain

$$x = \int_{z_0}^{z} dz/(\ p_0^2 + 2(M(z) - M_0)\ 10^{-6}\ )^{1/2}$$

Some general functions for M of z is easily integrable, a linear relationship

$$M(z) = Az + B$$

or a parabolic relationship

$$M(z) - M_m = A(z + z_m)^2$$

The parabolic relationship is most interesting because it may give conditions for ducting in the atmosphere.

The solution for the parabolic M profile consists of two different expressions determined by if $A>0$ or $A<0$:

if $A>0$

$$z= z_m + A_1 \sin[\sqrt{2A}\ 10^{-3}\ x] + B_1 \cos[\sqrt{2A}\ 10^{-3}\ x]$$

if $A<0$

$$z= z_m + A_2 \sinh[\sqrt{2A}\ 10^{-3}\ x] + B_2 \cosh[\sqrt{2A}\ 10^{-3}\ x]$$

The constants is determined by the initial conditions

$$x = 0,\ z = z_0 \quad dz/dx = p_0$$

the $z=z_0$ is the surface of the earth or some other specified reference height.

The constants is thus given as

$$A_1 = A_2 = p_0\ 10^{-3} / \sqrt{2A}$$

$$B_1 = B_2 = z_0 - z_m$$

the meaning of the constant A in the M profile is then

$$A = | M_0 - M_m | / z_m^2$$

thus it is proportional to the difference between the M value at the extreme point of the M profile ($dM/dz = \infty$) and the value at the reference level, say surface.

1.2 The meteorological databases.

1.2.1 Surface data

The refractive index has to be computed from the meteorological data pressure, temperature and humidity. Of these parameters the temperature and humidity are standard observations at all weather stations in Norway. The station network comprises two main types of stations, one type reports several times a day to the weather forecasting centre, the other type reports once a month to the centre. The first type always observes the air pressure as a result of the importance of the parameter in the forecasting proce dure, the second type mostly used for climatological studies and is seldom equipped with pressure recording instruments.

The number of the weather reporting stations is approximately 200, as the climatological stations comprises about 50. The numbers will from various reasons change from time to time.

Standard hours of observation are for all stations 07,13,19 local time. Some stations also make observations at 01 in the night. In addition some stations observe at hours in-between the mandatory main hours. Only observations from the main hours are computerized as routine in the climatological surface data bases.

In addition some of the main airports do make observations on a hourly basis, but only a scarce part of this exist in computerized form.

1.2.2 Upper-air data.

An upper-air observation is a meteorological observation made in the free atmosphere either directly or indirectly. For direct measurements pilot-balloon, radiosonde, radiowind, combined radiosonde and radiowind, or rawinsonde are used.

Of all the upper-air observations which use telemetry signals to collect data, the radiosonde observation is the basic observation. Radiosondes in use today measure the basic parameters of temperature, pressure and relative humidity (or dew point). These measurements are carried out by sensors mounted in an instrument package which also contains a radio-frequency transmitter. The transmitter communicates these data to the ground receiving equipment which may be converted into a strip chart recording or go directly into a computer for further analysis. Regardless of the method employed, data are converted into a form which is easily recognisable and standardised. These forms are called coded messages and their formats have been standardised in accordance with the WMO Technical Regulations.

Probably the most widely used type of upper-air observation made throughout the world today is the rawinsonde observation (which is an abbreviation for radio-sounding wind observation). The rawinsonde observation keeps track of the radiosonde position and uses that information to calculate the winds. It uses the radiosonde as the active target. The methods for collecting the positional data may vary from country to country, but all Scandinavian stations use the NAVAID signals. Two types of NAVAID-based systems are LORAN-C and OMEGA. All land based stations use the OMEGA system whereas the weather ship Polarfront uses LORAN-C and further satellites (IMARSAT, METEOSAT) for communication.

For the measured parameters give the "Guide on the global observing system" WMO[13] the following values

parameter	range	accuracy
air pressure	1060 to 3 hPa	±0.5 to ±1.0 hPa
air temperature	+60. to -90. °C	±0.5 °C
relative humidity	0. to 100 %	±5 %

The observations are done at mandatory levels determined by the pressure (1000,925,850,700....,100 hPa), at significant levels determined by given magnitudes of the height gradient of the temperature and at "pilot-levels" a notion borrowed from the pilot balloon observation. Generally speaking this gives levels for describing changes in the wind and the recorded heights are multiples of 300 m. Combining all these levels we may have well over 100 levels in one ascent depending of the structure of the atmosphere.

The obtained information is then coded according to the format given in "Manual of codes" WMO [12] and distributed on GTS (global telecommunication system).

Running quality check of data is done at the UK-meteorological centre at Bracknell and at the centre in Reading.

Soundings are made from seven Norwegian stations at the hours 01 and 13 local time, from the weather ship Polarfront or station Mike soundings also are done at hours 07 and 19. Four of the stations are situated at the mainland, two are Arctic stations and one a weather ship. Of the neighbouring countries Sweden runs seven stations with soundings and Finland has three of the same kind.

In principle the information from the soundings are recorded as a stream of data, for instance given every 1 to 2 seconds. That will give, with an average speed of ascent, data for roughly every six to ten meters of height above ground. A complete cycle to read of the different sensors have a duration about 1.5 seconds.

The receiving device sorts out a part of this information, data that is defined as necessary for meteorological forecast procedures.

The data base for upper-air information is thus based on the information conveyed in the meteorological codes TEMP and PILOT.

1.2.3 Use of the surface data.

The purpose of the investigations are to describe the variation of the refractivity in Norway as well in the adjacent domains by means of the data from various weather stations.

To make data from the stations comparative, we do have to choose the same observation period in time for chosen set of stations. This will reduce the number of suitable stations from 200 to little less than the half. On the other hand, this subset of stations do not all have the same daily observation procedure so then a further reduction will have to take place.

To avoid this we have chosen the following procedure:

The refractivity is a function of air pressure, temperature and humidity, i.e.

$$N = N(P,T,H)$$

We assume that the pressure is arbitrarily distributed over the day and that the daily mean of the humidity are close to the value reported either at 07 hour or at 19 hour and that the daily mean temperature is well represented by the value recorded at the hour 19.

We decide therefore that the computed refractivity at the hour 19 represent the daily mean value.

To check this assumption we compute the daily mean as the mean of the mean values obtained at hours 01,07,13 and 19 together with the standard deviation for selected stations with a complete data set in the period 1957-1991 for all main hours. We see from the table that the difference between the "mean" value and the computed value for the refractivity at hour 19 is well inside one standard deviation for all stations and conclude therefore that the 19 hour value of the refractivity well represents the daily mean. That will give 82 comparable stations in the ten years period 1982 to 1991.

It also happens that a station lacks data for a limited period within a month in a specified period of n years. To repair such defective data sets we can for the computations of monthly values make use of the concept of a "synthetic year". That implies that we make means of every specified day value through the year, say all first of Januarys, all second of Januarys and so forth. We will then obtain 365 values where each value is the mean over maximum n values.

We can so take the monthly means of this daily values, having a complete year. The daily values obtained in such a way is indeed a set of smoothed values and hence will give smaller standard deviations for the mean value of the month, than if we first compute monthly means and take the standard deviation of these. The advantage is however, that every month consists of a complete set of days.

station	period	mean	sd.	dif	N19
Sola	57-91	319.9	0.3	0.3	319.6
Flesland	57-91	316.2	1.5	0.7	315.5
Røros	57-91	294.4	2.0	1.4	293.0
Ørland	57-91	318.5	1.0	0.5	318.5
Bodø	57-91	314.7	0.6	0.2	314.7
Vardø	57-91	315.1	0.1	0.0	315.1
Jan Mayen	57-91	313.0	0.0	0.0	313.0

Table 1.2.1 Long periodic annual mean for the refractivity as mean of the refractivity at hours 01, 07, 13 and 19 compared to computed refractivity at 19 hour for selected Norwegian stations.

If then a station lacks a full month the monthly value is replaced with the "synthetic" monthly value so that the mean monthly value always is computed over the same yearly period with inter comparable standard deviations.

To get an idea of the refraction climatology of Norway we have chosen 18 stations with observations in the period 1957 to 1991 and computed means for the refractivity. For a record of observation for the full period this will give 51100 values of the refractivity for a station with 4 observations a day. For a station with 3 observations the number of refractivity values will be 38325. This gives a total of about 910000 values for the refractivity.

1.2.4 Use of the radiosonde data.

Depending on how long the balloon carrying the radiosonde lasts before it bursts, it is possible to obtain data for up to about 100 layers in the atmosphere. The possibility to obtain only surface observations exists also so the amount of data from a launch is highly variable. We have therefore decided to interpolate data in strata of one hundred meters from the ground up to 2000 m to get a homogenous and comparable set of data.

Data from all Norwegian stations are used together with two stations from Sweden and one station from Finland.

As the equipment in the sondes has improved as well as the navigating systems, it is also decided that the last ten year period (1982-1991) should be the most suitable for analyzing data for refraction computations. In this period we have pr station 7300 possible launches each with 21 fixed heights, that is 153300 values for the refractivity. Total for the 10 stations remembering that the weather ship has four launches a day, this will give 1686300 possibilities to compute the value of the tropospheric refractivity.

1.3 The general climatology of Norway and the climatology of the refractivity in N-units.

From the formula determining the refractivity i N-units we easily see that the "mean" values of pressure, temperature and humidity and their seasonal variation describe some sort of climatology for the refractivity, i.e. the mean value and seasonal variation over a long period of time.

In pure "meteorological" climatology a climatic zone often is defined by a specified function of chosen meteorological parameters as temperature, precipitation or energy balance and moisture balance etc. The time period should not be less than about 30 year. The reason for this is that the time span necessary to obtain a reasonable mean value, varies for the different climatic parameters. As an example we have for non-tropic regions the necessary number of years given by Landsberg [8]

	islands	coast	inland	mountain
temperature	10	15	15	25
humidity	3	6	5	10
precipitation	25	30	40	50

Table 1.3.1 Necessary number of years to obtain a realistic mean of the given meteorological parameters for given environmental conditions.

Norway, and for that matter the whole of Scandinavia, owes its variable weather and its mild maritime climate to the prevailing warm, moisture-bearing westerlies of the North Atlantic. This zonal airflow, however, is considerably influenced by the topography, the mountain chains going from south to north and the radiation balance of the surface.

All these factors make for a diversity of climate, and even though the macro-climate of the Scandinavian peninsula is mainly maritime, it is far from uniform.

In southern Sweden and the extreme southern Norway there is a temperate rainy climate without dry seasons but with warm summers. North of this zone and south of approximately 60 N there is a narrow zone extending from the east coast of Sweden to the west coast of Norway having a cool forest climate with warm summers. The regions west of the Scandinavian mountain chain, between 60 N and 70 N, also have a temperate, rainy climate, but with cool summers. A tundra or polar climate occurs on the other hand, in the high mountains and in the Arctic regions. The remainder of the Scandinavian peninsula, and by far the largest part, however, belongs to the boreal-forest climatic zone with cool summers.

Because of the large and pronounced differences in topography, exposure, elevation and ground cover, the local climates of a region may differ widely from its type of macro-climate.

In the same way can be defined a "refractive climatology" based on the meteorological parameters pressure, temperature and humidity.

In Bean and Dutton [1] is given a classification based on 6 rather broad zones where Norway should belong to at least two of these.

The fourth zone has the definition:

Semiarid/mountain : In desert and high steppe regions as well as mountainous regions above 3000 ft.

Annual mean of refractivity : 240 - 300 N-units
Annual range of refractivity : 0 - 60 N-units

The fifth zone is described as:

Continental/Polar : In middle latitudes and polar regions. Moderate and low annual temperatures.

Annual mean of refractivity : 300 - 340 N-units
Annual range of refractivity : 0 - 30 N-units

To examine if Norwegian conditions fits into this scheme we compute long periodic values of the refractivity for selected Norwegian meteorological stations with long periodic homogeneous observations and obtain values as shown in the table below where the periods are given on and after first year including the last year.

In table 1.3.2 is shown observation period, latitude and longitude together with height above sea level for the 20 stations selected. Stations are chosen to show representative inland and coastal conditions as well as the possible variations from south to the far north.

We also include a extreme maritime station, the weather ship Mike or station M. This is done also because this station also do observations with radiosondes and is included in the investigations on troposheric refraction later in this report.

It is to be mentioned that the "ident" numbers are given in different identification-number systems although the station is the same. The cause of this is that selected stations in each country take part in an international network with an international number identification, while each country has its ownnational identification system to cover all stations in the country. We use the national system for all surface climate stations, but the international system for the radio sonde stations. The names will thus indicate the "same" station.

station	period	lat.	lon.	masl.	ident
Kjevik	57-91	58 °12'	8 ° 05'	12	3904
Sola	57-91	58 ° 53'	5 ° 38'	8	4456
Rygge	57-91	59 ° 23'	10 ° 47'	40	1715
Fornebu	57-91	59 ° 53'	10 ° 37'	10	1940
Gardermoen	57-91	60 ° 12'	11 ° 05'	202	0478
Flesland	57-91	60 ° 17'	5 ° 13'	48	5050
Flisa	57-91	60 ° 37'	12 ° 01'	184	0604
Røros	57-91	62 ° 34'	11 ° 23'	628	1040
Værnes	57-91	63 ° 28'	10 ° 56'	12	6910
Ørland	57-91	63 ° 42'	9 ° 37'	9	7155
Mike	57-91	66 ° 00'	2 ° 00'	6	7670
Bodø	57-91	67 ° 17'	14 ° 25'	11	8229
Karasjok	57-91	69 ° 28'	25 ° 31'	129	9725
Tromsø	57-91	69 ° 39'	18 ° 57'	100	9045
Tromsø -L	65-91	69 ° 39'	18 ° 57'	8	9049
Alta	63-91	69 ° 59'	23 ° 15'	3	9314
Vardø	57-91	70 ° 22'	31 ° 06'	14	9855
Jan Mayen	57-91	70 ° 56'	8 ° 40'*	10	9995
Bjørnøya	57-91	74 ° 31'	19 ° 01'	16	9971
Isfjord	57-75	78 ° 04'	13 ° 38'	7	9979

Table 1.3.2 Long periodic stations used in the report with geographical co-ordinates and height above sea level. Ident is national identification number.
* western longitude.

It is interesting to observe that the "driest" station or area represented by Røros belongs to classification four and all other stations belongs to type five. The classification scheme of Bean and Dutton thus reflects the well the aridity in the general climate. This will for Norwegian conditions also represent the most stable climatic type, reflected in the areas sheltered from the westerlies, and so far from the south coast that the effect of the wandering lows coming from south or south-east greatly has been diminished.

This is reflected in the small values for the variations in the monthly means for the refractivity. Røros and Karasjok represent well such general climatic conditions.

The low values for Jan Mayen and Bjørnøya, being islands, is a result of extreme maritime influence and positions mainly north of the tracks of the wandering lows thus having a more stable climate.

station	period	lat.	lon.	annual mean		range monthly means
				value	range	
Kjevik	57-91	58 ° 12'	8 ° 05'	317.9	7.9	31.0
Sola	57-91	58 ° 53'	5 ° 38'	320.1	8.6	33.2
Rygge	57-91	59 ° 23'	10 ° 47'	317.6	11.2	38.2
Fornebu	57-91	59 ° 53'	10 ° 37'	316.6	10.4	33.5
Gardermoen	57-91	60 ° 12'	11 ° 05'	309.9	10.7	35.5
Flesland	57-91	60 ° 17'	5 ° 13'	316.2	7.8	32.3
Flisa	57-91	60 ° 37'	12 ° 01'	310.2	5.3	30.5
Røros	57-91	62 ° 34'	11 ° 23'	294.3	5.0	27.6
Værnes	57-91	63 ° 28'	10 ° 56'	316.9	7.0	32.8
Ørland	57-91	63 ° 42'	9 ° 37'	318.4	6.5	34.8
Mike	57-91	66 ° 00'	2 ° 00'	317.5	4.9	33.1
Bodø	57-91	67 ° 17'	14 ° 25'	314.7	4.6	30.6
Karasjok	57-91	69 ° 28'	25 ° 31'	311.2	5.8	26.1
Tromsø	57-91	69 ° 39'	18 ° 57'	309.6	9.3	39.0
Tromsø -L	65-91	69 ° 39'	18 ° 57'	313.1	5.6	30.1
Alta	63-91	69 ° 59'	23 ° 15'	312.2	8.0	30.1
Vardø	57-91	70 ° 22'	31 ° 06'	315.1	8.0	31.6
Jan Mayen	57-91	70 ° 56'	8 ° 40'*	313.0	6.9	21.9
Bjørnøya	57-91	74 ° 31'	19 ° 01'	313.9	5.3	19.2
Isfjord	57-75	78 ° 4'	13 ° 38'	313.0	5.2	19.7

Table 1.3.3 Long periodic annual means with absolute and mean variation within the year i N-units for the total refractivity for selected Norwegian stations.
* western longitude.

A classification of such a climate in a general system, for instance the system of Köppen [7], is EM or maritime polar, different from the pure polar climate.

This is also evident for the station chosen at Spitzbergen, Isfjord, the northernmost station chosen. Here we have the lowest value of the variation of the annual means and also the lowest difference between monthly means due to the rather limited variation of the climatic parameters in an Arctic environment. Recalling the values in table 1.2.1 for the yearly standard deviation we remember falling values with increasing latitude which also support this fact.

The variability in the climatic conditions at the west coast due to the wandering lows is well reflected in the high values for the range of monthly means in refractivity values. This is also the fact for the south east situated stations having stable "dry" inland conditions when the cyclones are coming from west. But in autumn and winter it often happens that the Atlantic polar fronts are displaced far to the south. In such situations the southern Sweden and the south east of Norway will be invaded by warm, moist Atlantic air masses from south and south east. On crossing the Baltic Sea the airmass will receive additional moisture. The air mass will over land be exposed to orographic lifting and thus give raise to heavy frontal precipitation in the south east of Norway.

To quantify the range of the monthly mean refractivity in the year we construct table 1.3.4. We here notify that monthly minimum values less than 300 N-units exist for the inland stations in south east, i.e. stations that temporarily can have a refractivity climate belonging to zone four in Bean and Duttons classification.

		monthly min. value		monthly max. value	
station	period	month	value	month	value
Kjevik	57-91	mar	306.0	aug	337.0
Sola	57-91	mar	306.9	jul	340.1
Rygge	57-91	apr	305.6	jul	344.2
Fornebu	57-91	dec	304.2	aug	337.7
Gardermoen	57-91	apr	296.5	jul	332.0
Flesland	57-91	jan	303.7	aug	336.0
Flisa	57-91	may	299.4	jul	329.9
Røros	57-91	feb	283.1	jul	310.8
Værnes	57-91	mar	302.9	jul	335.7
Ørland	57-91	dec	304.9	aug	339.7
Mike	57-91	jan	303.9	aug	337.0
Bodø	57-91	jan	304.0	jul	334.6
Karasjok	57-91	apr	301.8	jul	327.9
Tromsø	57-91	mar	297.6	jul	336.6
Tromsø -L	65-91	jan	302.5	aug	322.5
Alta	63-91	apr	300.6	aug	330.7
Vardø	57-91	jan	303.4	jul	334.9
Jan Mayen	57-91	jan	303.0	jul	324.9
Bjørnøya	57-91	dec	305.1	jul	324.2
Isfjord	57-75	dec	304.7	jul	324.5

Table 1.3.4 Values for the monthly maximum and minimum of the refractivity in N-units together with the actual month for selected Norwegian stations.

In tables 1.3.5 and 1.3.6 is shown the corresponding values for the dry and wet component of surface refractivity. We find, not surprisingly, that for the dry component the most maritime station, Mike has the smallest amplitude in the monthly values, say 14.7 N-units and the coldest inland station Karasjok has the greatest of 51.0 N-units.

	dry comp.	monthly min. value		monthly max. value	
station	annual mean	month	value	month	value
Kjevik	279.2	jul.	267.2	jan.	298.3
Sola	279.3	aug.	269.8	jan.	296.5
Rygge	278.9	jul.	265.7	jan.	301.2
Fornebu	279.4	jul.	265.2	jan.	302.7
Gardermoen	275.2	jul.	260.7	jan.	299.4
Flesland	278.0	aug.	268.5	jan.	293.6
Flisa	276.6	jul.	261.1	jan.	305.7
Røros	264.7	aug.	250.7	jan.	289.0
Værnes	280.2	jul.	267.6	jan.	299.8
Ørland	280.1	jul.	268.8	jan.	294.2
Mike	280.0	feb.	273.5	jan.	288.2
Bodø	281.3	jul.	270.4	feb.	296.0
Karasjok	284.6	jul.	265.0	feb.	316.0
Tromsø	279.8	jul.	267.4	feb.	293.4
Tromsø -L	283.0	jul.	270.6	feb.	298.0
Alta	284.8	jul.	269.1	feb.	306.1
Vardø°	284.8	jul.	273.4	feb.	299.1
Jan Mayen	287.3	aug.	277.8	feb.	302.3
Bjørnøya	288.4	aug.	278.6	mar.	307.2
Isfjord	291.9	jul.	280.1	mar.	310.9

Table 1.3.5 Long periodic annual means for the dry component of annual means of the yearly refractivity in N-units for selected Norwegian stations.

The monthly maximum values occur all in the cold period of the year, January, February or march due to low temperatures. The smallest values occur accordingly in the warm season with an exception for Mike with the lowest monthly value in February. The maritimity again plays a part in this, the second lowest value occur in august with a value only 0.3 N-units higher. This is a result of the immense thermal buffer capacity of the ocean. The mean amplitude for the 20 stations is 31.3 N-units with a standard deviation of 8.24 N-units.

For the occurrences of the wet component of the surface refractivity we have a contrary situation, the highest values occur in the warm season (warmer air can contain more humidity) and the smallest values show up in the winter months. For the dry component we found the magnitude of the amplitude roughly as about 10 to 20 percent of the value of the annual means, but for the wet component the magnitude of the amplitudes is of the same order as the annual means. We find a maximum monthly value of 66.4 N-units at Rygge with an annual mean of 37.5 N- units. The smallest amplitudes we find not unexpectedly at the northernmost stations

	wet comp.	monthly min. value		monthly max. value	
station	annual mean	month	value	month	value
Kjevik	38.2	feb.	14.2	aug.	66.3
Sola	40.3	feb.	17.5	jul.	67.8
Rygge	37.5	jan.	12.8	jul.	79.2
Fornebu	35.5	jan.	11.2	aug.	67.9
Gardermoen	33.3	jan.	9.1	jul.	68.8
Flesland	37.4	dec.	17.0	aug.	62.9
Flisa	32.7	jan.	7.7	jul.	66.1
Røros	28.3	jan.	8.2	jul.	56.4
Værnes	35.8	feb.	14.0	jul.	66.6
Ørland	37.9	feb.	16.9	jul.	66.7
Mike	37.6	mar.	22.3	aug.	61.1
Bodø	33.2	feb.	13.5	jul.	62.8
Karasjok	25.9	feb.	4.1	jul.	63.4
Tromsø	29.8	dec.	13.3	jul.	66.5
Tromsø -L	29.7	feb.	13.8	aug.	57.2
Alta	27.4	feb.	8.8	jul.	59.2
Vardø	30.1	feb.	14.6	jul.	60.9
Jan Mayen	25.6	mar.	10.9	sep.	44.3
Bjørnøya	25.4	mar.	8.6	jul.	42.7
Isfjord	21.0	feb.	6.5	jul.	43.4

Table 1.3.6 Long periodic annual means for the wet component of the yearly refractivity in N-units for selected Norwegian stations.

with 34.1 N-units at Bjørnøya. The mean for the amplitudes of the wet component is 49.3 N-units with a standard deviation of 8.7 N-units

The lowest monthly values occur at the inland stations when the temperature is low and the air is dry. At Karasjok in the month of February we find a monthly minimum value of 4.1 N-units, the Arctic stations also have low values when the sea is covered with ice and the air dries out as the temperature descends.

Use of the single hours of observation can give an idea of the mean variation over the day. Assuming the air pressure to be arbitrarily distributed over the day it should be expected to have the lowest values of the refractivity in the middle of the day. The daily variation of the air temperature depends mainly on the relation between the insolation intensity and outgoing long wave radiation. Thus we find the highest values in connection with solar height maximum i.e. in the middle of the day, and often the lowest value at the time of sunrise or just before this time.

The air humidity shows a more complex picture. Here are the local sources of humidity of vital importance. A general classification of the humidity regime can thus be stated as

1. oceanic type — the sources for humidity are always ample and the daily course of the vapour pressure will more or less be parallel to the course of the temperature with a minimum in early morning and a maximum in the middle of the day.

2. continental type — type with a double oscillation, has as in type one the minimum in early morning, but this is again followed by a secondary minimum about midday as a result of insufficient supply of moisture from the ground.

3. semi-arid type — as a result of substantial variation of the hourly temperatures, intense turbulence in the day and a rather dry surface we obtain the curve of the daily course of the vapour pressure as the inverse of the curve for the oceanic type.

Norwegian conditions caused by its prevailing maritimity should be either type 1 or type 2 or a combination, i.e. a smoothed curve with not so pronounced minima or maxima. We could

	hour 01			hour 07			hour 13			hour 19		
station	dry	wet	tot	dry	wet	tot	dry	wet	tot	dry	wet	tot
Kjevik	nil			282.0	37.9	319.9	278.3	38.2	316.5	279.2	38.2	317.4
Sola	281.2	39.7	320.9	280.8	40.5	321.3	277.9	40.8	318.7	279.3	40.3	319.6
Rygge	281.8	36.8	318.6	281.7	37.4	314.1	277.7	37.1	314.8	278.9	37.5	316.4
Fornebu	282.4	36.1	318.6	282.8	35.8	318.6	278.7	35.6	314.3	279.4	35.6	315.0
Gardermoen	278.6	32.8	311.4	278.6	33.4	312.0	274.2	33.5	307.7	275.2	33.3	308.5
Flesland	279.8	37.8	317.6	279.6	37.8	317.4	277.0	37.4	314.4	278.1	37.4	315.5
Flisa	nil			279.9	33.2	313.1	275.3	33.1	308.4	276.6	32.7	309.3
Røros	267.6	28.3	295.9	268.0	28.2	296.2	263.7	28.7	292.3	264.7	28.3	293.0
Værnes	282.5	35.3	317.8	282.5	35.6	318.1	279.6	36.1	315.7	280.3	35.8	316.1
Ørland	281.6	37.6	319.2	281.4	37.9	319.3	279.5	37.8	317.3	280.1	37.9	318.0
Mike	282.4	32.9	315.3	282.0	33.1	315.1	280.7	33.2	313.9	281.3	33.2	314.5
Bodø	282.2	32.9	315.3	282.0	33.1	315.1	280.7	33.2	313.9	281.3	33.2	314.5
Karasjok *	287.2	25.5	312.7	286.3	25.9	312.2	283.0	26.5	309.6	284.6	25.9	310.5
Tromsø	nil			280.3	30.4	310.7	279.0	29.9	308.9	279.8	29.8	309.6
Tromsø - L	284.4	29.4	313.9	283.8	30.1	313.9	282.2	29.6	311.8	283.0	29.7	312.7
Vardø	285.0	30.2	315.2	284.6	30.5	315.1	284.2	30.7	314.9	284.6	30.5	315.1
Jan Mayen	287.6	25.5	313.1	287.5	25.5	313.0	287.1	25.9	313.0	287.1	25.9	313.0
Bjørnøya	288.6	25.4	314.0	288.4	25.5	313.9	288.0	25.9	313.9	288.3	25.6	313.9
Isfjord	292.3	20.9	313.1	292.2	20.8	313.0	291.9	21.0	312.9	291.9	21.0	312.9

Table 1.3.7 Long periodic annual means for the dry and wet component and total annual means of the yearly refractivity in N-units for selected Norwegian stations the hour of observation.
* Karasjok has 01 hour values on and after 1970

therefore expect lower values at hour 13 but a rather even curve for the rest of the day with respect to the mean values of the surface refractivity. Table 1.3.7 shows these features.

Table 1.3.8 shows the mean monthly values of the dry and wet component together with the total surface refractivity for the long periodic stations. This data is also shown in the figures 1.3.1 to 1.3.61. In the figures are given the mean values together with plus/minus two standard deviations and the absolute maximum and minimum value for each month and for each observation hour.

Kjevik	dry mid	287.0	288.0	283.9	280.6	274.9	271.0	268.9	269.8	273.8	277.9	282.7	284.9	278.6
	sd	6.5	6.5	3.3	1.8	1.1	1.3	0.7	1.1	1.2	1.5	2.5	1.3	1.5
	wet mid	25.5	24.7	27.5	28.9	37.6	48.4	53.6	55.7	46.4	42.7	32.5	28.4	37.7
	sd	7.7	6.7	4.4	3.7	3.8	4.9	5.9	5.3	6.0	2.0	4.2	2.5	3.0
	tot mid	312.5	312.7	311.5	309.5	312.5	319.4	322.4	325.5	320.2	320.5	315.2	313.3	316.3
	sd	2.5	2.4	2.0	3.2	3.4	4.1	5.7	4.9	5.1	2.1	2.3	2.2	1.8
Sola	dry mid	285.1	286.3	282.8	280.7	277.0	274.0	272.3	272.1	275.1	277.4	281.3	283.0	278.9
	sd	5.3	5.8	2.5	1.4	1.5	0.7	1.0	1.2	1.5	1.5	2.7	1.2	1.1
	wet mid	28.7	27.1	30.7	33.6	42.6	49.5	57.9	59.5	50.7	45.2	35.7	32.8	41.2
	sd	6.9	5.9	5.6	3.6	3.3	3.9	4.6	4.2	3.7	4.1	4.4	1.3	2.4
	tot mid	313.8	313.4	313.5	314.3	319.6	323.5	330.3	331.6	325.8	322.6	317.0	315.8	320.1
	sd	4.1	2.0	3.8	3.0	2.9	3.7	4.5	4.4	3.7	4.2	2.9	1.6	1.7
Rygge	dry mid	288.7	289.3	284.1	279.7	273.5	269.7	267.8	268.9	273.3	278.1	283.6	286.3	278.6
	sd	7.4	7.3	3.8	1.8	1.1	1.5	0.9	1.6	1.5	2.0	3.1	2.3	1.8
	wet mid	22.9	22.8	26.4	28.4	37.7	48.9	56.9	58.6	48.0	42.2	30.8	26.0	37.5
	sd	7.5	6.5	4.4	3.9	3.6	2.9	5.1	3.8	5.0	2.4	4.8	2.9	2.0
	tot mid	311.6	312.1	310.6	308.1	311.2	318.5	324.7	327.5	321.4	320.3	314.4	312.3	316.1
	sd	2.6	1.7	2.5	2.6	3.7	3.2	4.9	3.8	4.3	2.9	2.5	2.2	1.0
Fornebu	dry mid	290.1	290.4	284.6	279.8	273.1	269.2	267.0	268.7	273.2	278.8	284.7	288.3	279.0
	sd	7.3	7.6	3.8	1.6	1.0	1.7	0.6	1.6	1.4	1.8	2.7	2.2	1.8
	wet mid	21.6	22.2	26.0	28.2	38.1	48.9	56.4	55.5	44.2	38.9	28.6	23.8	36.0
	sd	7.0	6.2	3.4	4.0	4.1	3.5	5.7	3.9	5.3	2.7	4.2	2.7	2.4
	tot mid	311.7	312.6	310.6	308.0	311.2	318.1	323.5	324.1	317.4	317.6	313.3	312.1	315.0
	sd	2.5	2.7	2.1	2.8	3.9	3.1	5.6	3.7	4.5	3.4	2.5	1.8	1.1
Gardermoen	dry mid	286.1	286.4	279.6	275.0	268.0	264.1	262.1	263.9	268.8	274.4	280.2	284.1	274.4
	sd	7.5	7.8	3.8	1.4	1.0	1.7	0.7	1.6	1.2	1.9	2.9	2.6	1.7
	wet mid	18.8	19.5	24.0	26.0	34.1	43.5	51.1	51.0	42.2	36.6	26.6	20.8	32.9
	sd	6.6	6.0	3.6	3.1	3.4	3.6	5.8	5.0	4.4	2.4	3.9	2.9	1.7
	tot mid	304.9	306.0	303.6	301.0	302.1	307.6	313.1	314.9	311.0	311.0	306.8	304.9	307.2
	sd	2.4	2.5	1.8	2.1	3.0	3.7	6.0	5.5	3.7	2.9	2.0	1.9	1.0
Flesland	dry mid	283.6	284.4	281.6	279.7	276.2	273.0	271.6	271.7	274.5	276.4	280.2	281.8	277.9
	sd	4.7	5.6	2.4	1.5	1.4	1.1	1.4	1.3	1.4	1.3	2.5	1.0	1.0
	wet mid	28.1	26.3	29.9	31.1	39.4	46.4	53.7	56.0	48.2	42.8	34.4	32.1	39.0
	sd	6.8	6.0	5.3	3.0	2.5	4.1	4.5	4.1	3.6	2.8	3.9	2.4	2.5
	tot mid	311.7	310.8	311.5	310.8	315.6	319.4	325.2	327.8	322.7	319.2	314.6	313.9	316.9
	sd	4.6	1.8	3.5	2.8	2.5	4.0	3.7	4.1	3.2	3.6	2.9	2.7	1.8
Flisa	dry mid	289.1	288.3	280.9	276.2	268.8	264.8	263.0	265.3	270.7	275.9	282.0	286.4	275.9
	sd	9.0	8.8	4.2	1.6	1.1	1.7	0.8	1.7	1.5	2.0	3.7	3.3	2.0
	wet mid	17.5	18.3	23.0	25.5	33.6	44.4	53.2	53.0	41.3	35.6	25.9	19.8	32.6
	sd	7.0	6.4	3.9	3.5	4.3	5.3	3.5	2.6	3.4	2.6	4.5	3.1	1.3
	tot mid	306.6	306.6	303.8	301.7	302.4	309.2	316.2	318.2	312.1	311.5	308.0	306.2	308.5
	sd	3.1	3.0	2.8	2.7	4.4	5.1	3.4	3.2	2.8	2.8	2.0	2.1	1.6
Røros	dry mid	275.8	274.2	267.9	264.3	259.0	255.2	253.2	254.2	258.7	263.2	269.2	272.5	264.0
	sd	7.2	7.1	3.7	1.4	1.9	1.5	1.2	1.5	1.3	1.8	3.1	3.0	1.5
	wet mid	15.2	15.9	19.9	23.5	31.5	40.1	46.7	45.8	36.0	30.2	21.9	18.0	28.7
	sd	3.9	3.1	3.6	2.9	4.9	4.7	4.4	3.8	2.5	2.2	2.6	2.6	1.5
	tot mid	291.1	290.1	287.8	287.9	290.6	295.2	299.9	300.0	294.7	293.4	291.0	290.5	292.7
	sd	3.8	4.3	1.7	2.6	3.8	4.2	4.0	3.5	2.1	2.0	1.3	1.6	2.0

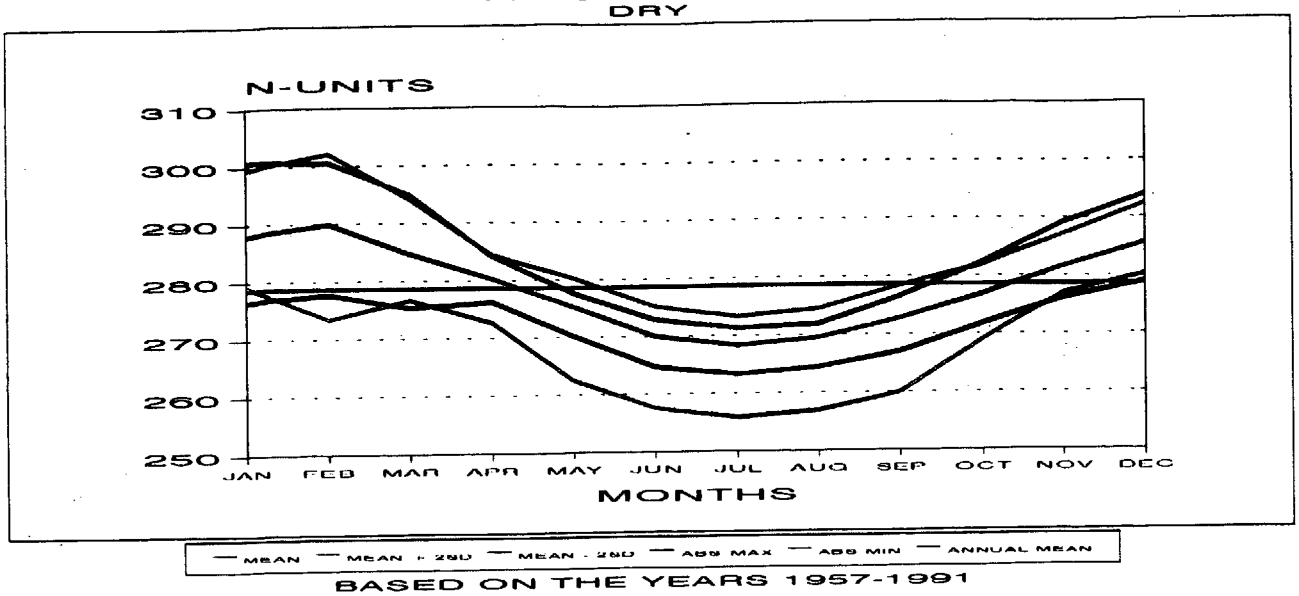
Table 1.3.8 Mean values of dry, wet and total surface refractivity with standard deviation for selected long periodic norwegian stations.

Værnes	dry mid	288.3	287.7	283.4	280.7	276.1	272.8	270.9	271.4	275.1	278.5	283.3	285.4	279.5
	sd	6.4	6.5	3.2	1.7	2.4	1.3	1.6	2.0	1.4	1.6	2.7	2.1	1.3
	wet mid	22.6	22.6	25.3	29.5	39.9	49.8	58.7	57.2	46.3	37.8	29.3	26.3	37.1
	sd	5.7	3.6	4.1	2.7	2.4	5.0	3.7	3.0	3.2	2.8	2.6	3.4	1.8
	tot mid	310.8	310.2	308.7	310.2	315.9	322.6	329.6	328.6	321.4	316.3	312.6	311.6	316.6
	sd	3.6	3.3	2.2	2.3	2.7	4.6	3.2	3.1	2.6	3.0	2.8	2.5	0.9
Ørland II	dry mid	285.7	286.1	283.3	281.4	277.9	275.3	273.1	272.7	275.8	278.3	282.1	283.9	279.6
	sd	4.9	5.6	2.8	1.7	2.2	1.4	1.8	2.0	1.2	1.5	2.4	1.7	1.0
	wet mid	25.7	25.5	27.2	31.9	41.8	50.5	58.8	57.7	47.4	40.5	31.6	28.3	38.9
	sd	6.1	3.6	4.2	3.5	3.4	5.2	4.2	5.3	4.2	2.8	3.1	3.4	2.9
	tot mid	311.4	311.5	310.5	313.3	319.7	325.8	331.9	330.4	323.2	318.8	313.7	312.2	318.5
	sd	4.1	2.3	2.8	2.8	3.5	4.5	3.7	4.5	3.8	3.0	3.1	2.8	2.1
Bodø VI	dry mid	287.0	287.4	285.4	283.1	279.8	276.2	274.2	273.6	276.2	279.3	283.2	285.3	280.9
	sd	4.5	5.7	3.2	1.8	2.1	1.8	1.6	1.8	1.2	1.5	2.4	3.2	1.1
	wet mid	21.6	22.4	22.5	27.2	35.7	44.4	54.6	52.3	41.6	34.7	26.5	23.6	33.9
	sd	4.4	4.9	3.5	3.5	4.0	4.6	4.9	4.8	4.1	2.2	3.3	3.8	2.3
	tot mid	308.6	309.7	307.9	310.3	315.4	320.6	328.8	326.0	317.8	314.0	309.7	308.9	314.8
	sd	3.1	2.9	2.3	2.7	3.2	4.0	4.3	3.9	3.5	2.9	2.4	1.7	1.4
Karasjok	dry mid	300.3	297.2	290.9	283.7	278.2	271.4	268.5	271.0	275.9	281.7	292.2	297.9	284.1
	sd	6.8	9.8	4.9	2.1	2.3	2.2	1.2	1.7	1.7	2.4	4.9	8.0	2.2
	wet mid	10.4	12.6	15.9	21.2	27.8	36.8	47.1	45.6	36.5	27.2	16.1	12.0	25.8
	sd	3.0	4.7	2.8	3.3	2.2	4.7	5.9	5.8	3.6	2.9	3.9	4.9	2.3
	tot mid	310.7	309.8	306.8	304.9	306.0	308.2	315.6	316.7	312.4	308.9	308.3	309.9	309.9
	sd	4.3	5.5	2.8	2.5	0.9	3.1	5.5	4.6	2.4	2.6	1.8	3.5	1.5
Tromsø	dry mid	285.0	285.8	284.0	281.8	278.3	273.8	271.2	271.6	275.0	278.2	282.2	283.6	279.2
	sd	4.0	5.0	3.2	1.9	2.4	2.0	1.9	1.6	1.2	1.8	2.4	3.2	1.2
	wet mid	18.7	19.1	18.7	22.7	28.2	35.9	46.6	44.2	36.0	29.3	23.2	20.1	28.6
	sd	2.3	3.9	1.9	2.7	3.7	2.7	3.5	4.4	3.1	1.0	2.5	3.3	1.7
	tot mid	303.7	304.9	302.6	304.5	306.5	309.7	317.9	315.8	311.0	307.4	305.4	303.6	307.8
	sd	2.4	3.4	2.3	2.1	2.7	3.1	3.3	3.6	2.5	2.0	1.7	1.6	1.2
Tromsø Langnes	dry mid	288.4	289.4	287.4	285.0	281.7	277.4	274.8	275.1	278.5	281.6	285.7	287.0	282.6
	sd	4.2	5.3	3.3	2.1	2.3	2.1	1.7	1.7	1.3	1.7	2.7	3.5	1.4
	wet mid	19.3	19.7	19.8	24.3	30.1	38.3	49.1	47.0	38.5	31.0	24.1	21.0	30.2
	sd	2.7	3.9	1.9	2.9	2.9	4.1	4.8	5.9	3.4	2.3	3.0	3.9	2.3
	tot mid	307.7	309.0	307.2	309.3	311.8	315.7	323.9	322.1	317.0	312.6	309.8	307.9	312.8
	sd	2.8	3.0	2.2	2.0	1.8	2.8	4.2	4.7	2.4	2.6	2.2	1.9	1.4
Alta lufthavn	dry mid	293.1	292.9	290.5	286.0	282.5	275.9	273.6	274.2	278.0	282.3	288.9	291.5	284.1
	sd	6.4	7.4	4.3	2.2	1.8	1.3	1.9	1.6	1.5	1.8	3.9	5.9	2.0
	wet mid	16.0	17.1	18.5	22.9	29.5	41.6	49.3	45.9	37.8	29.1	20.1	17.1	28.7
	sd	5.6	5.9	3.5	3.7	3.6	5.1	5.1	6.1	3.5	4.1	4.3	5.6	3.5
	tot mid	309.1	310.0	309.0	308.9	312.0	317.5	322.9	320.1	315.8	311.4	309.0	308.6	312.9
	sd	3.2	4.8	3.6	2.4	3.3	4.6	5.6	5.6	2.7	3.4	1.4	2.1	2.5
Vardø	dry mid	289.6	290.3	289.0	286.9	284.5	280.5	277.6	277.4	278.6	282.0	286.0	287.4	284.2
	sd	3.5	5.2	3.6	1.9	1.8	1.4	0.9	1.4	1.3	1.9	2.4	2.9	1.4
	wet mid	19.6	20.9	23.0	26.0	31.4	40.1	48.3	46.9	40.9	32.0	24.8	21.8	31.3
	sd	2.2	3.5	2.9	3.1	2.3	4.3	4.5	5.3	3.5	3.1	2.7	3.8	2.3
	tot mid	309.2	311.2	312.0	312.8	315.9	320.6	325.9	324.3	319.4	314.0	310.8	309.2	315.4
	sd	2.7	3.4	2.6	2.3	2.0	3.6	4.6	4.8	3.2	2.9	2.5	3.3	2.2
Jan Mayen	dry mid	289.1	289.8	290.2	290.2	288.5	285.0	281.4	280.5	282.5	284.5	287.9	289.7	286.6
	sd	5.3	5.2	2.4	3.3	1.1	1.5	0.5	1.7	1.4	1.8	2.7	5.0	1.6
	wet mid	20.2	20.6	20.2	21.6	26.0	31.5	38.1	38.6	31.7	27.6	22.0	19.9	26.5
	sd	4.4	3.5	2.9	3.7	2.5	3.0	3.0	4.3	3.8	1.8	3.3	4.3	2.3
	tot mid	309.4	310.4	310.4	311.8	314.5	316.5	319.5	319.0	314.2	312.1	309.9	309.6	313.1
	sd	3.2	3.4	3.0	1.8	2.2	2.6	2.9	3.1	2.8	1.6	2.0	1.9	1.7
Bjørnøya	dry mid	290.9	292.1	291.3	291.0	288.5	285.1	281.8	281.6	282.4	284.9	288.9	291.7	287.5
	sd	4.2	5.3	3.6	3.1	1.6	2.0	1.0	1.8	1.3	2.2	3.3	5.2	1.6
	wet mid	19.3	19.6	20.9	21.9	26.8	32.3	39.3	38.0	34.0	27.3	21.5	18.2	26.6
	sd	3.4	4.3	2.2	3.8	1.4	2.7	2.2	2.9	4.1	3.0	4.0	4.9	1.6
	tot mid	310.3	311.7	312.2	312.9	315.3	317.5	321.1	319.6	316.4	312.1	310.5	309.8	314.1
	sd	1.7	2.6	2.7	1.8	1.2	1.4	1.6	2.4	3.1	2.1	1.8	1.9	0.6

Table 1.3.8 Mean values of dry,wet and total surface refractivity with standard deviation for selected long periodic norwegian stations.

0478 GARDERMOEN

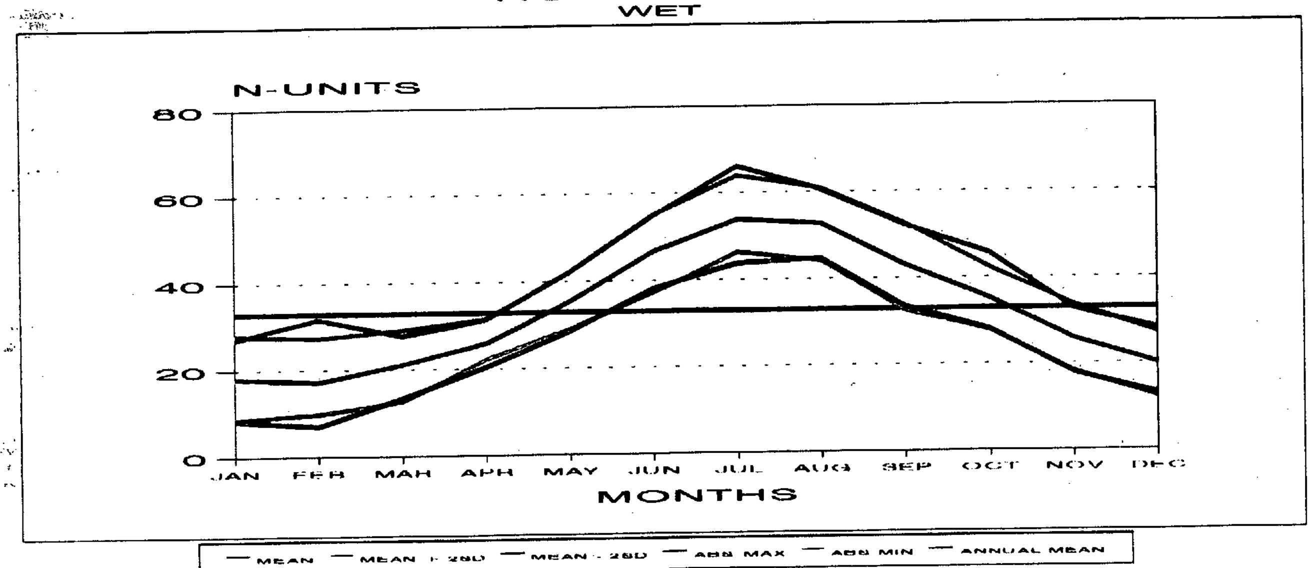
HOURS 0100
DRY



BASED ON THE YEARS 1957-1991

0478 GARDERMOEN

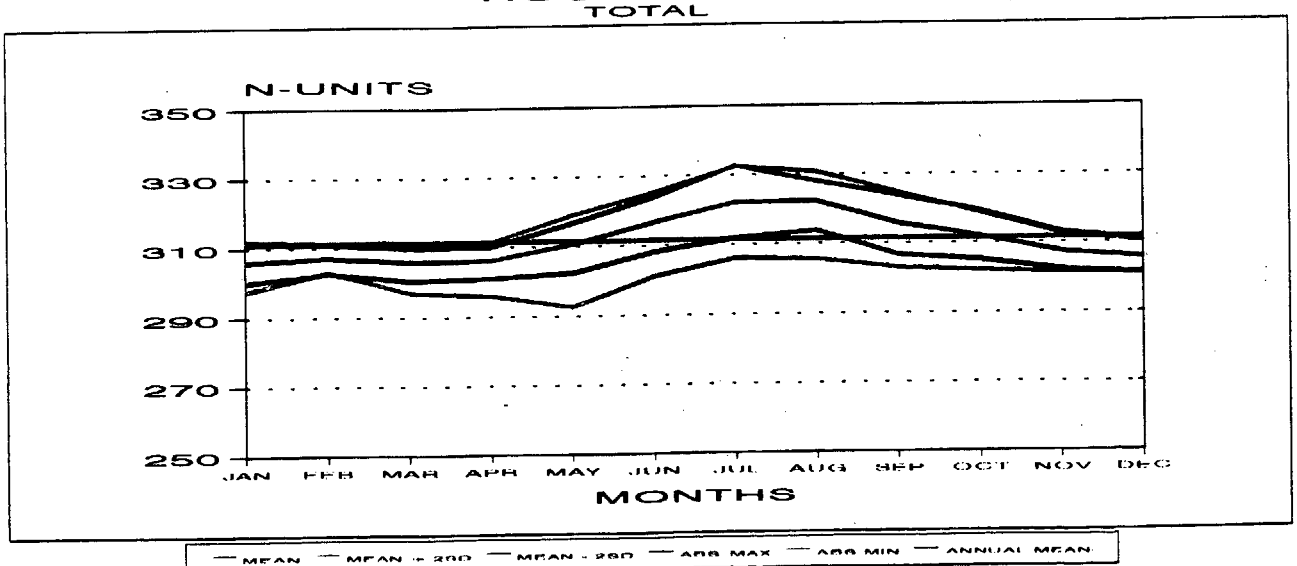
HOURS 0100
WET



BASED ON THE YEARS 1957-1991

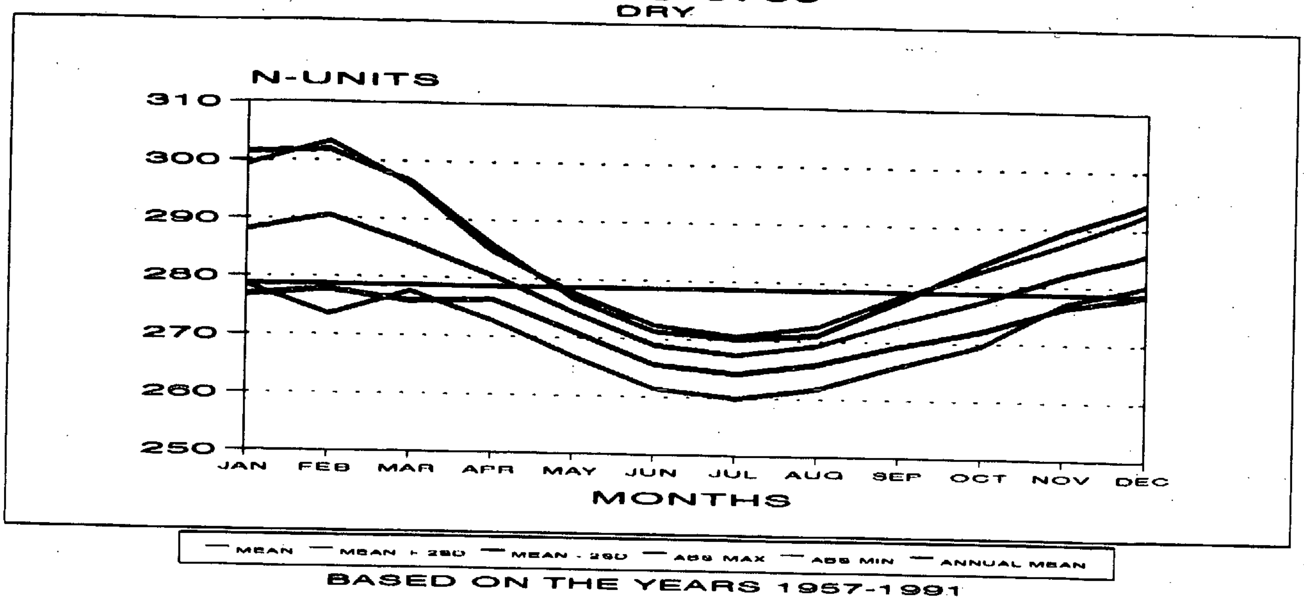
0478 GARDERMOEN

HOURS 0100
TOTAL



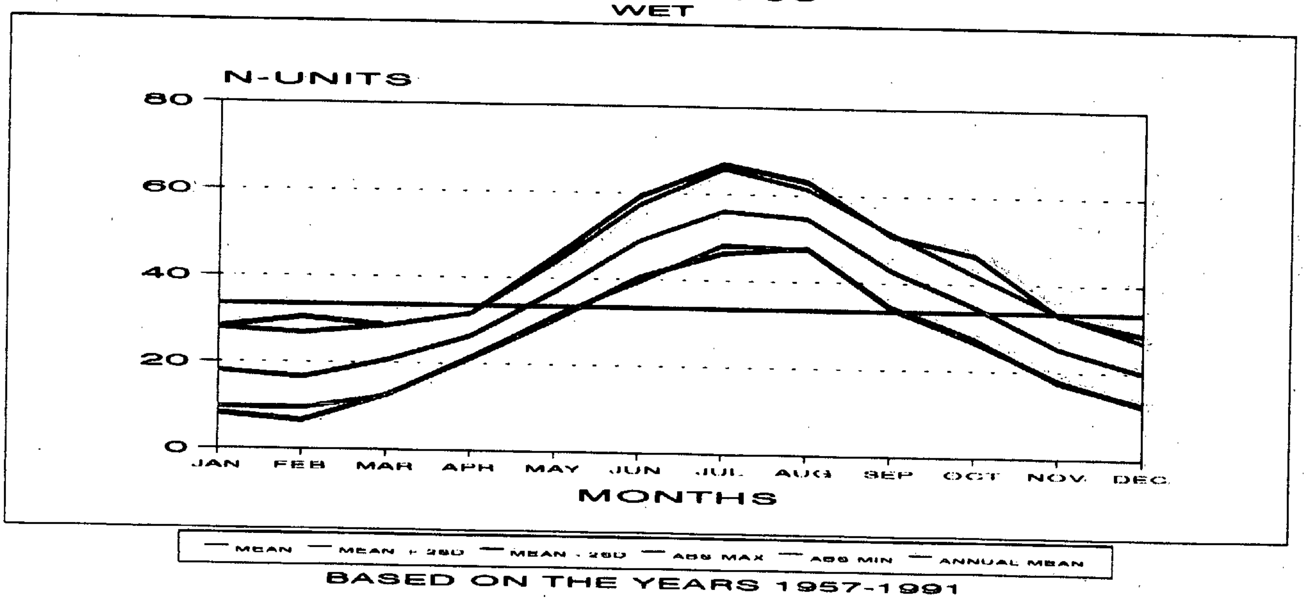
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 0700
DRY



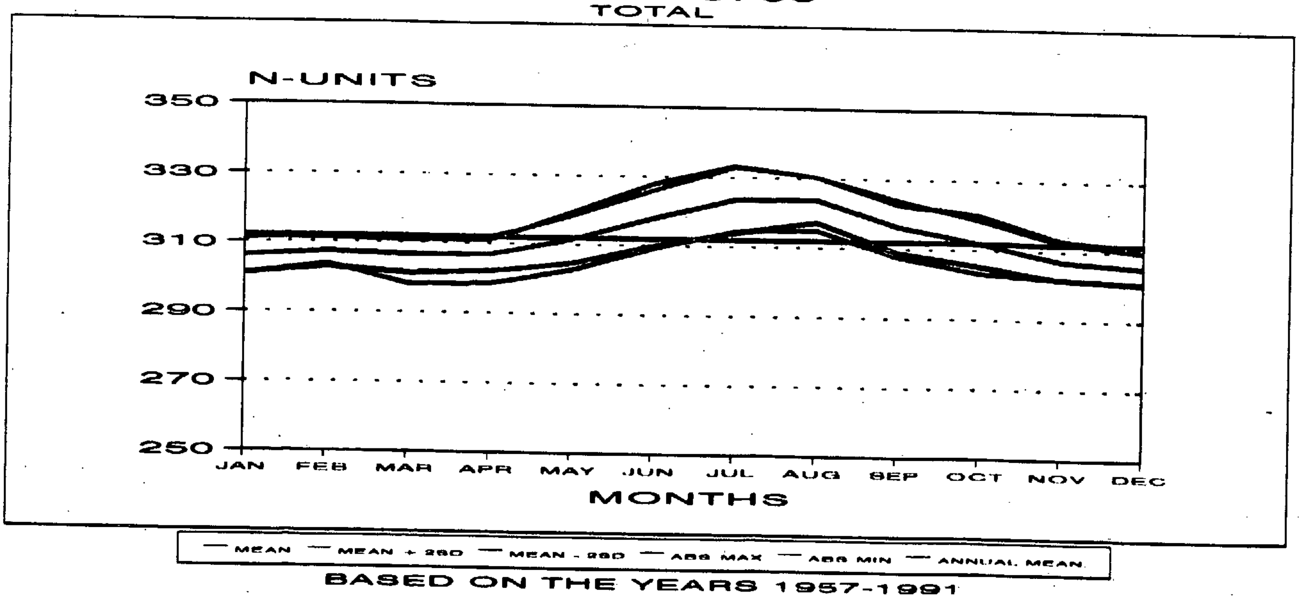
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 0700
WET



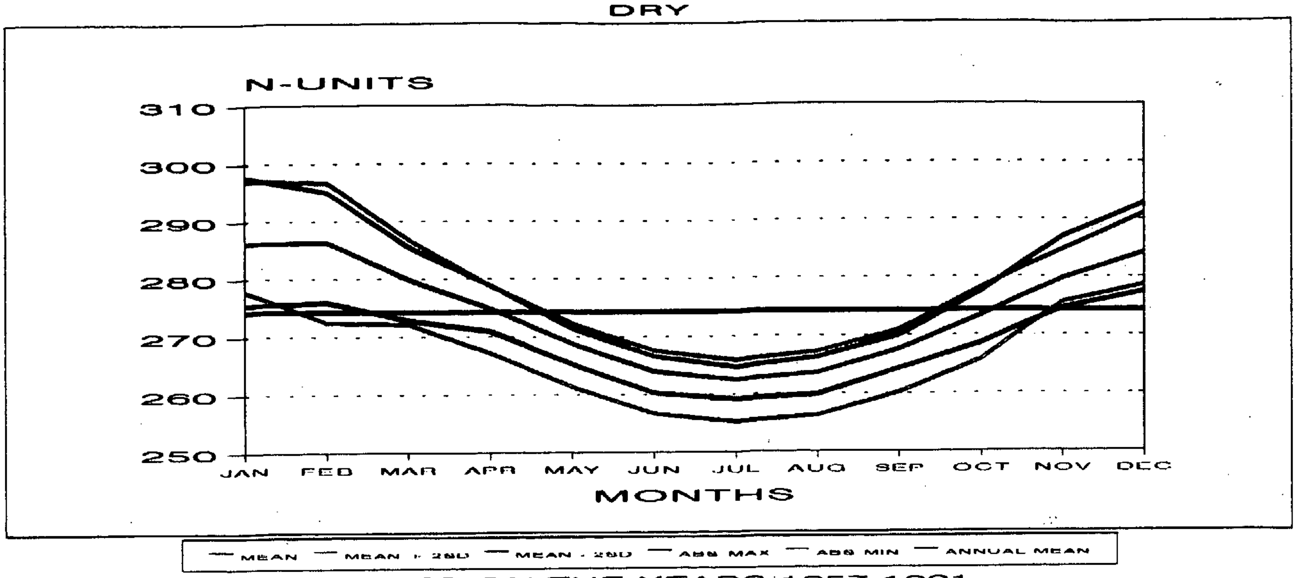
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 0700
TOTAL



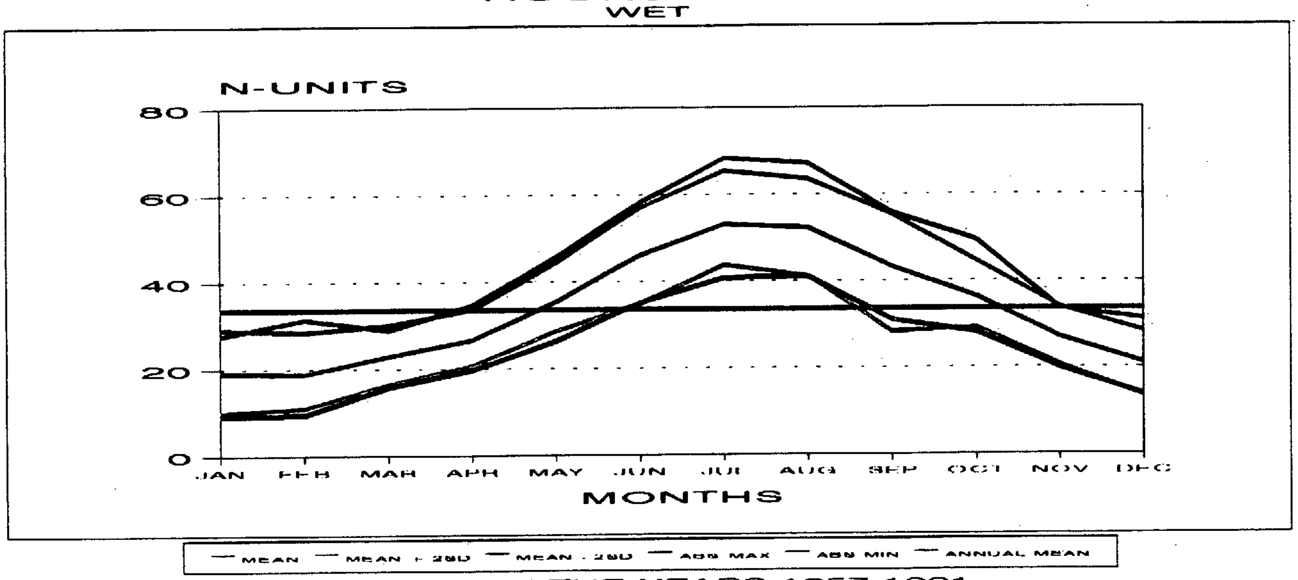
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 1300
DRY



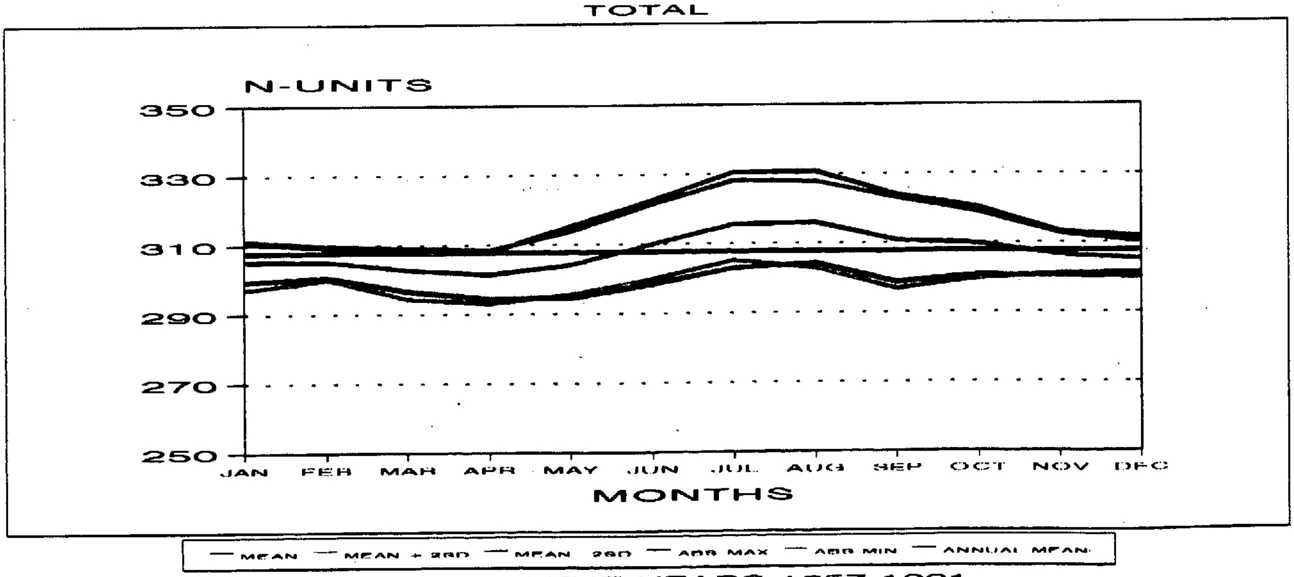
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 1300
WET



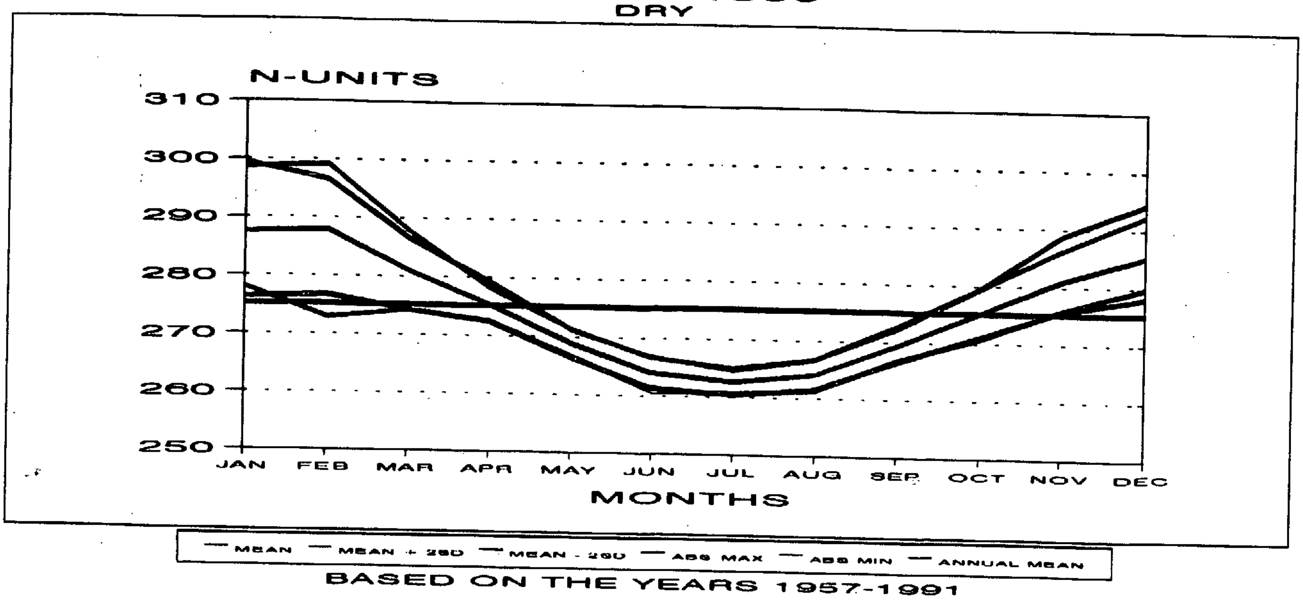
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 1300
TOTAL



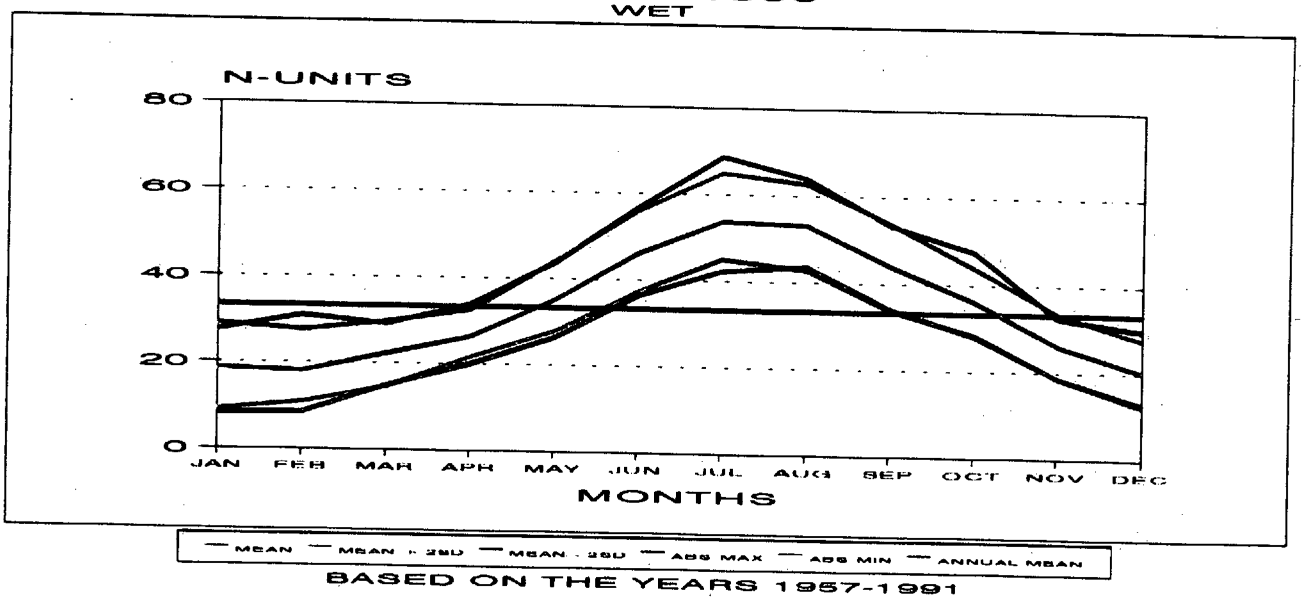
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 1900
DRY



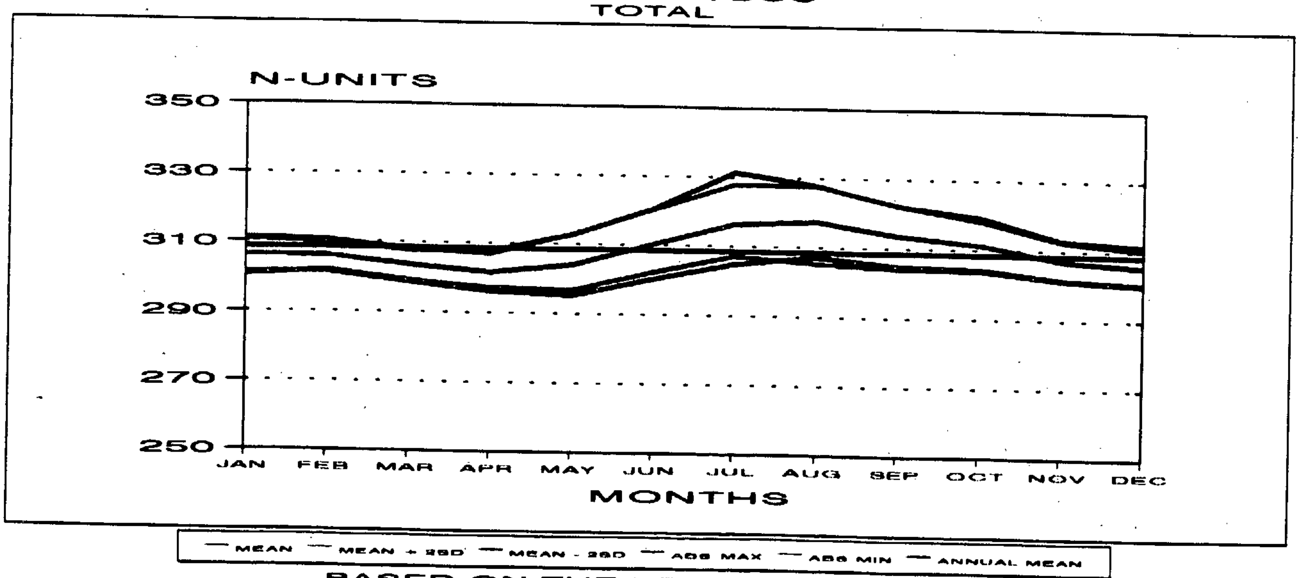
BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 1900
WET



BASED ON THE YEARS 1957-1991

0478 GARDERMOEN
HOURS 1900
TOTAL

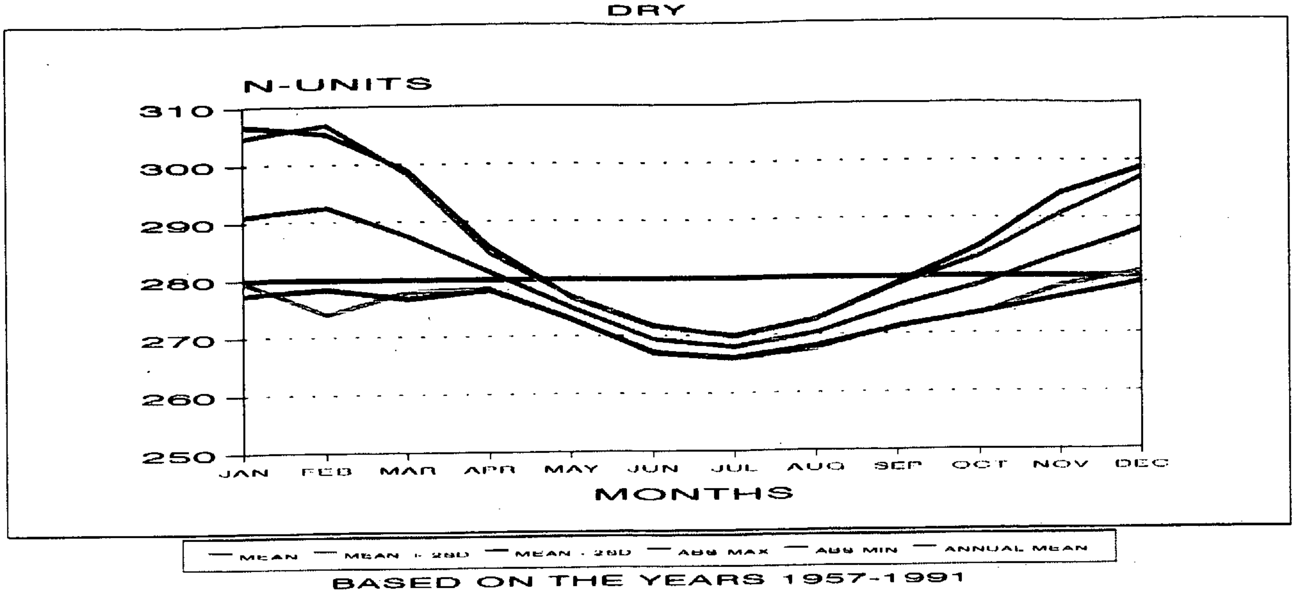


BASED ON THE YEARS 1957-1991

0604 FLISA

HOURS 0700

DRY

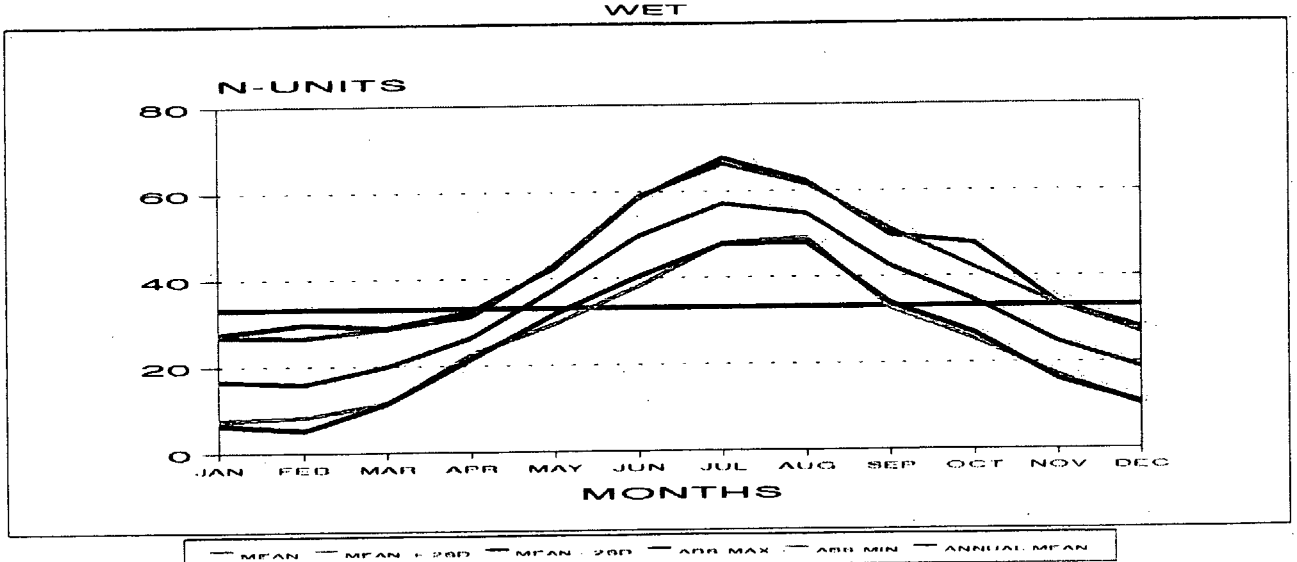


BASED ON THE YEARS 1957-1991

0604 FLISA

HOURS 0700

WET

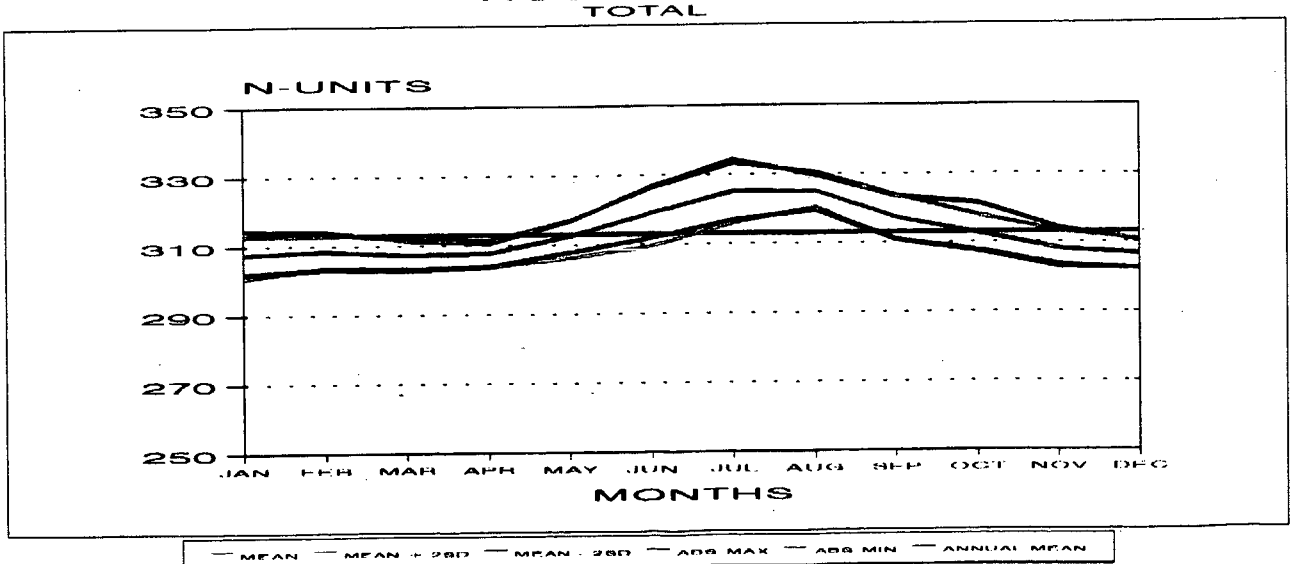


BASED ON THE YEARS 1957-1991

0604 FLISA

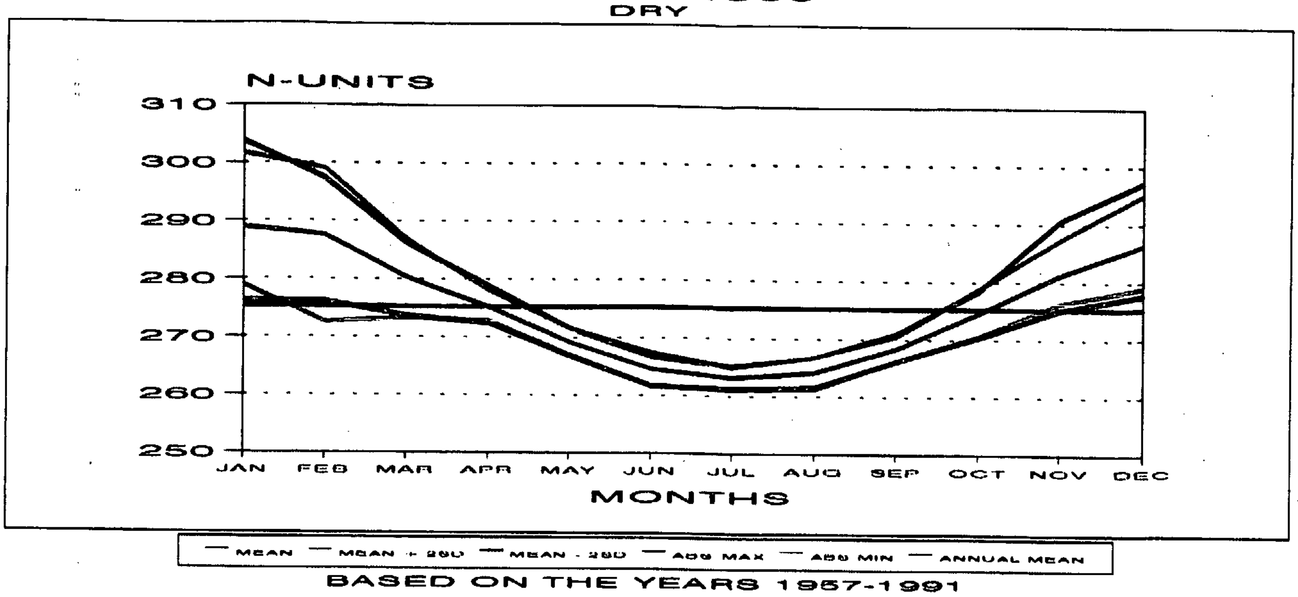
HOURS 0700

TOTAL



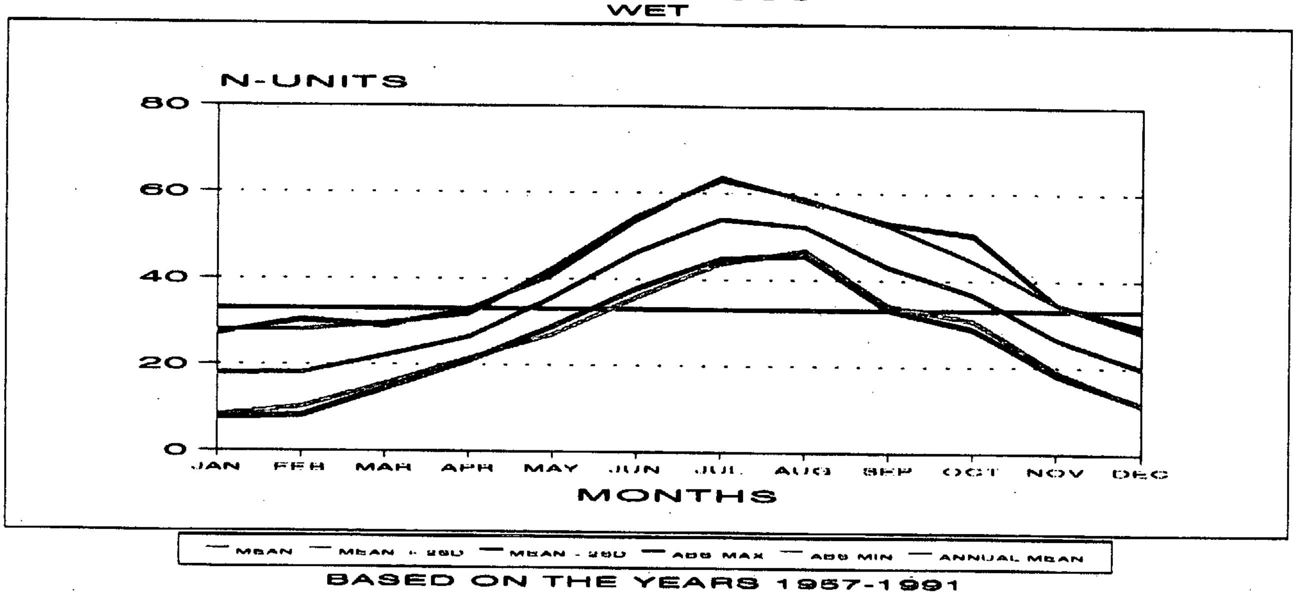
BASED ON THE YEARS 1957-1991

0604 FLISA
HOURS 1300
DRY



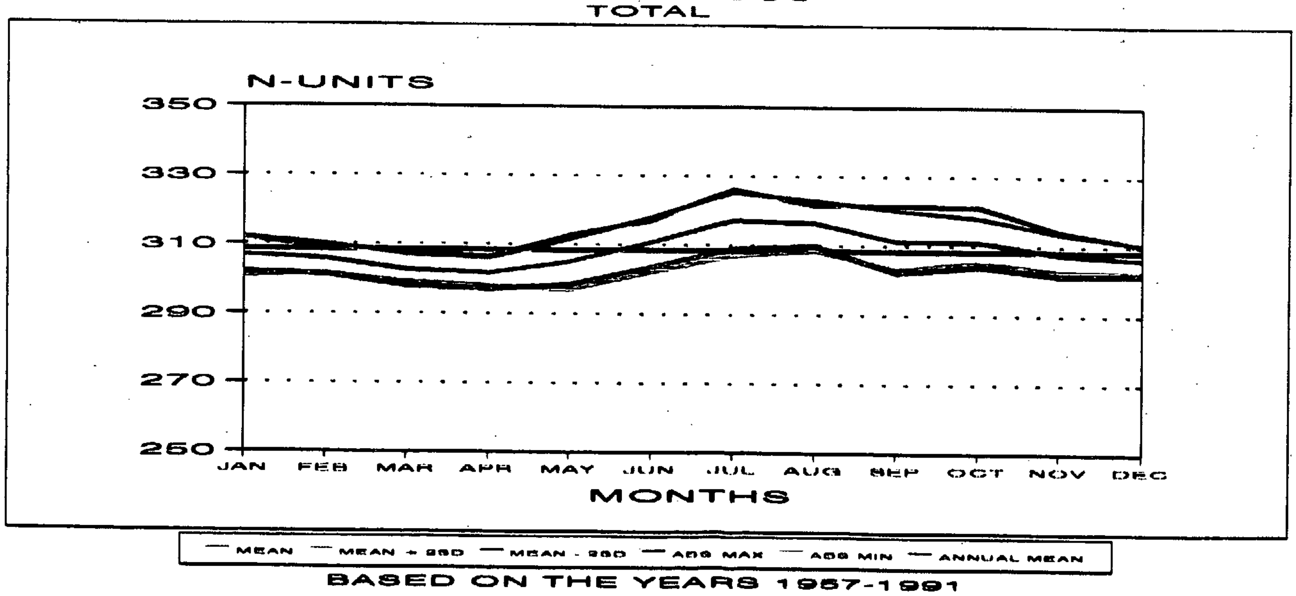
BASED ON THE YEARS 1957-1991

0604 FLISA
HOURS 1300
WET



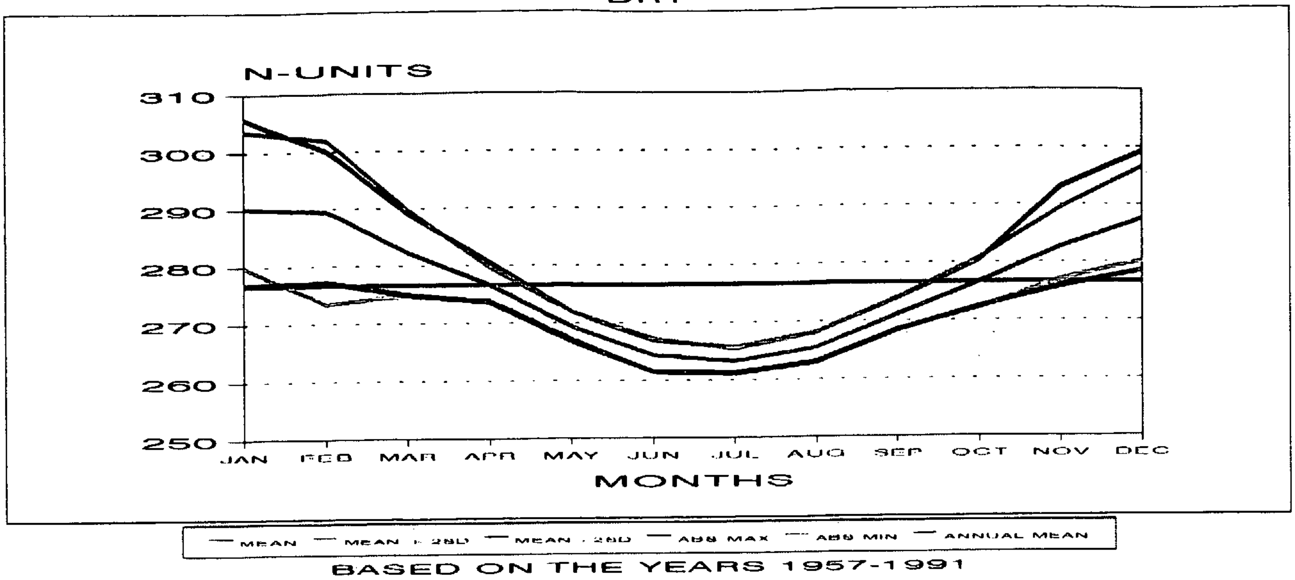
BASED ON THE YEARS 1957-1991

0604 FLISA
HOURS 1300
TOTAL



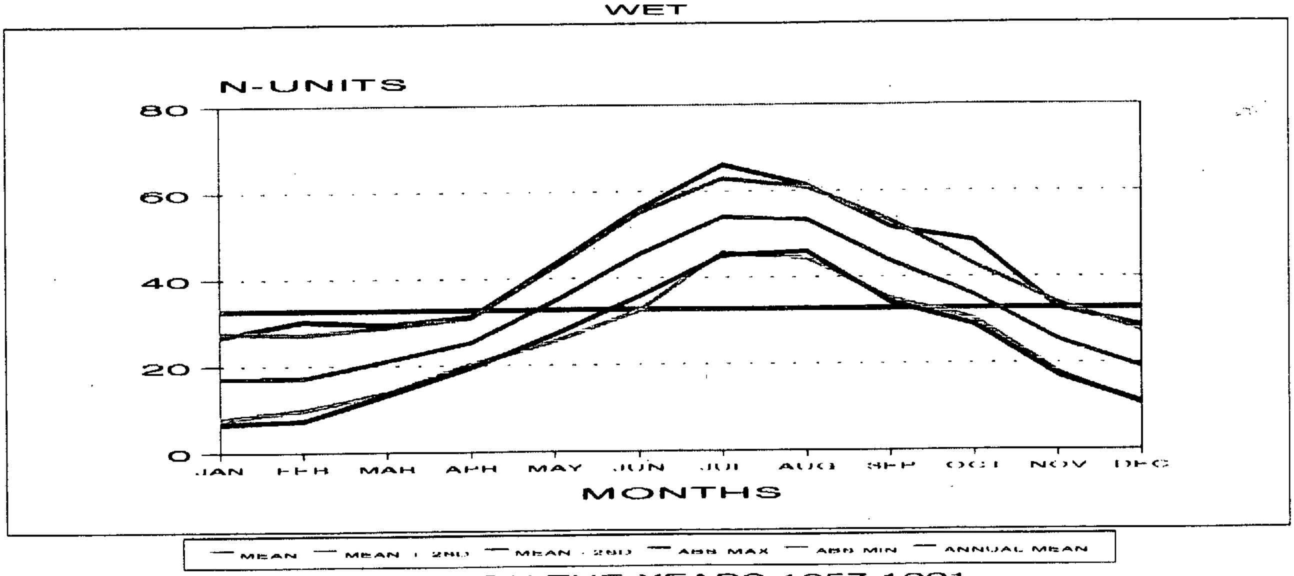
BASED ON THE YEARS 1957-1991

0604 FLISA
HOURS 1900
DRY



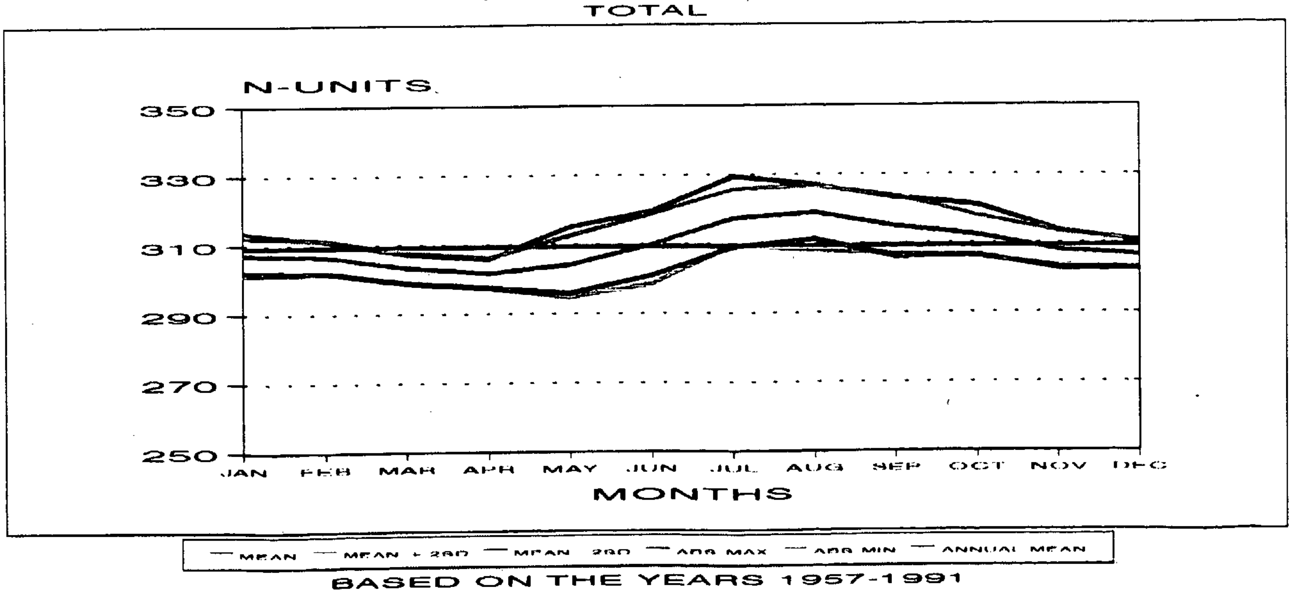
BASED ON THE YEARS 1957-1991

0604 FLISA
HOURS 1900
WET



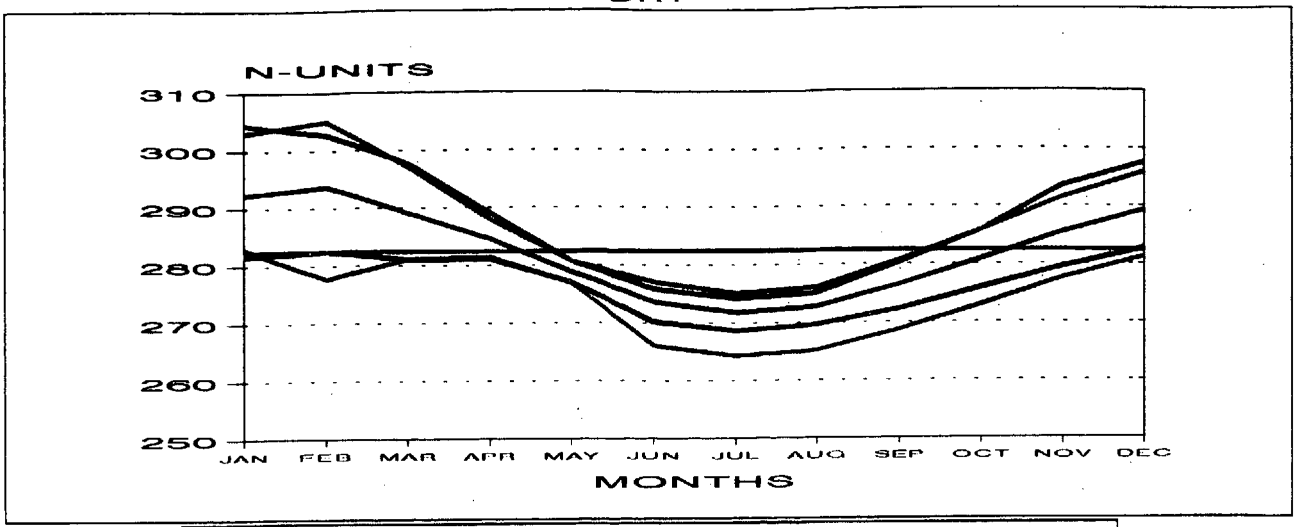
BASED ON THE YEARS 1957-1991

0604 FLISA
HOURS 1900
TOTAL



BASED ON THE YEARS 1957-1991

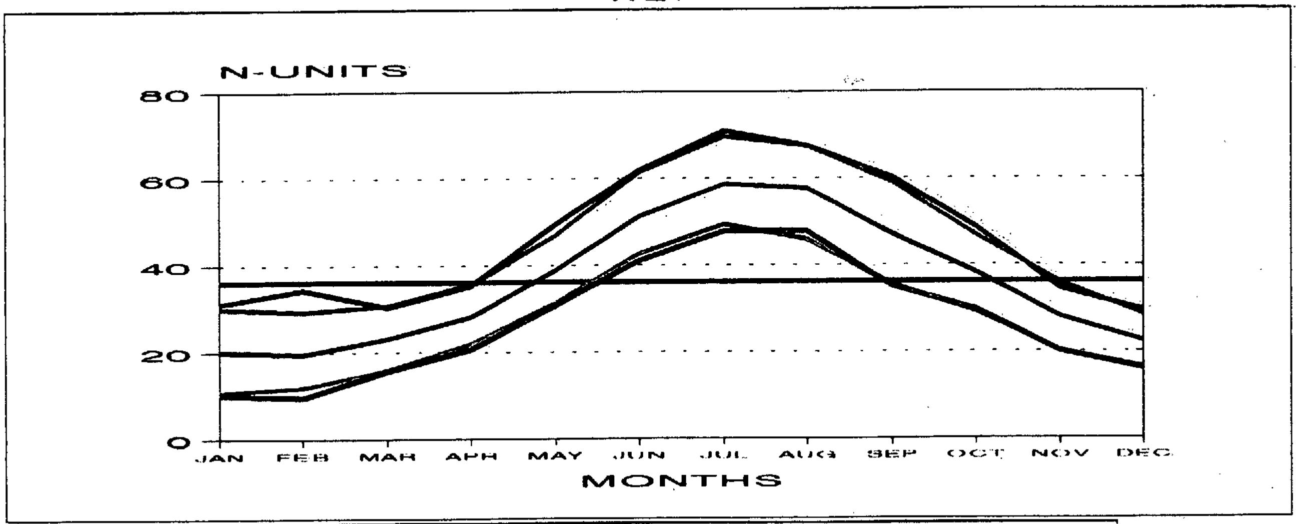
1940 FORNEBU
HOURS 0100
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

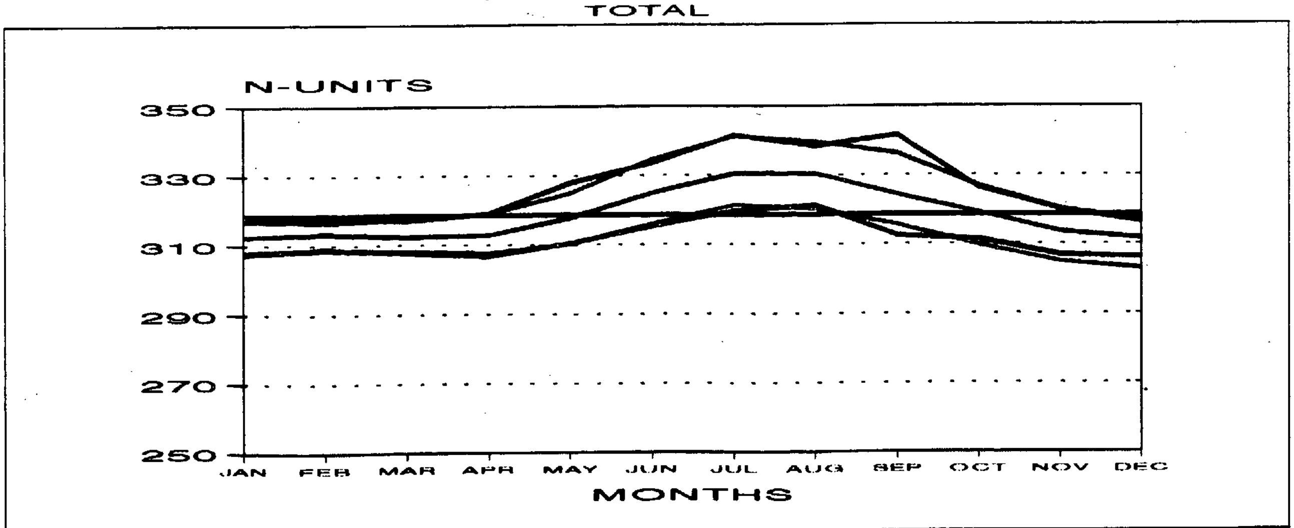
1940 FORNEBU
HOURS 0100
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

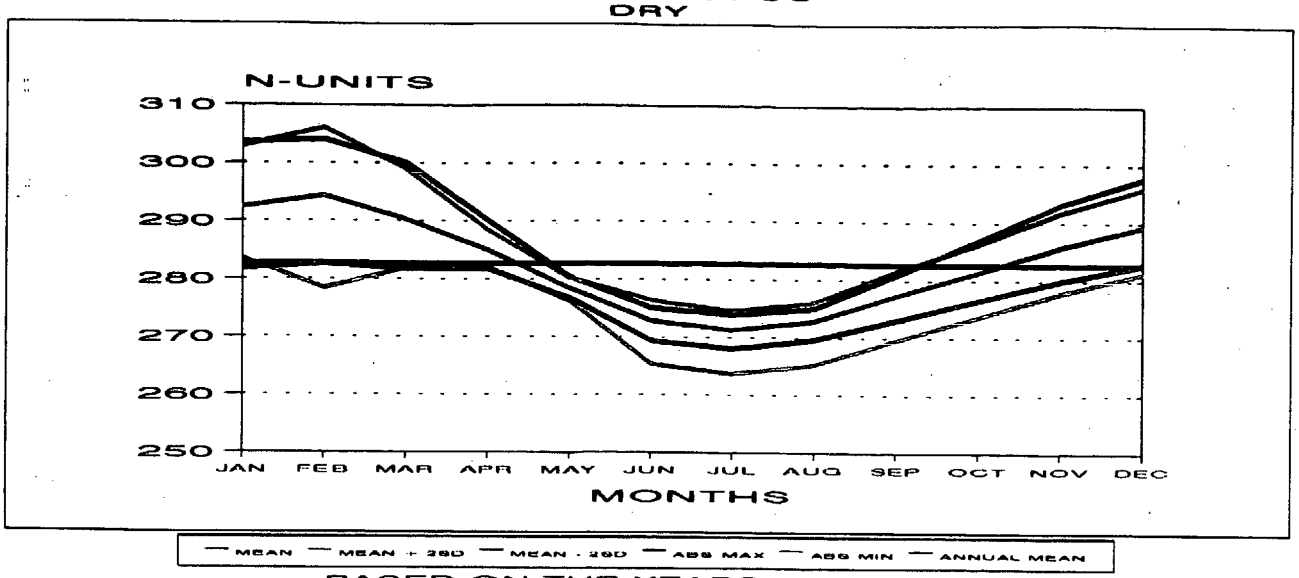
1940 FORNEBU
HOURS 0100
TOTAL



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

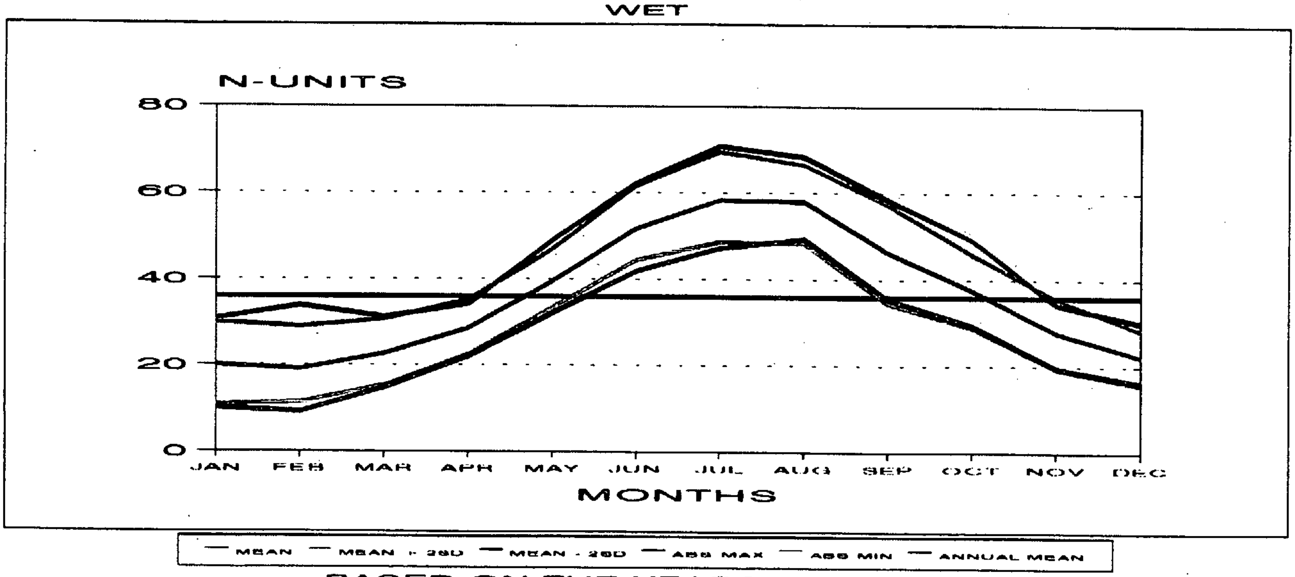
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 0700
DRY



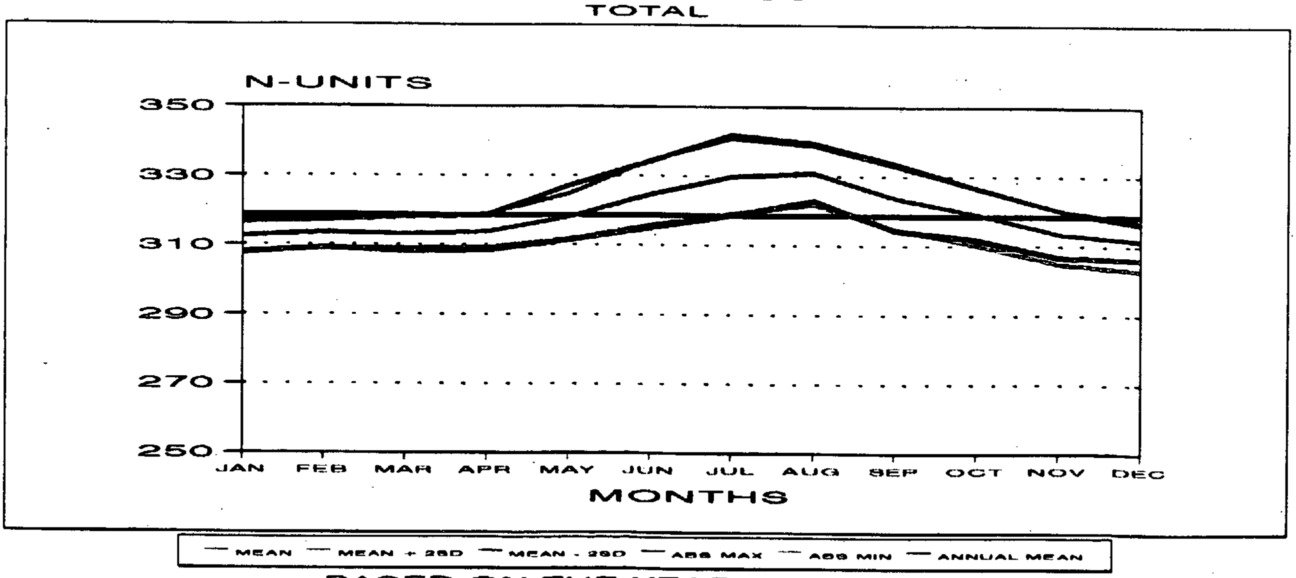
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 0700
WET



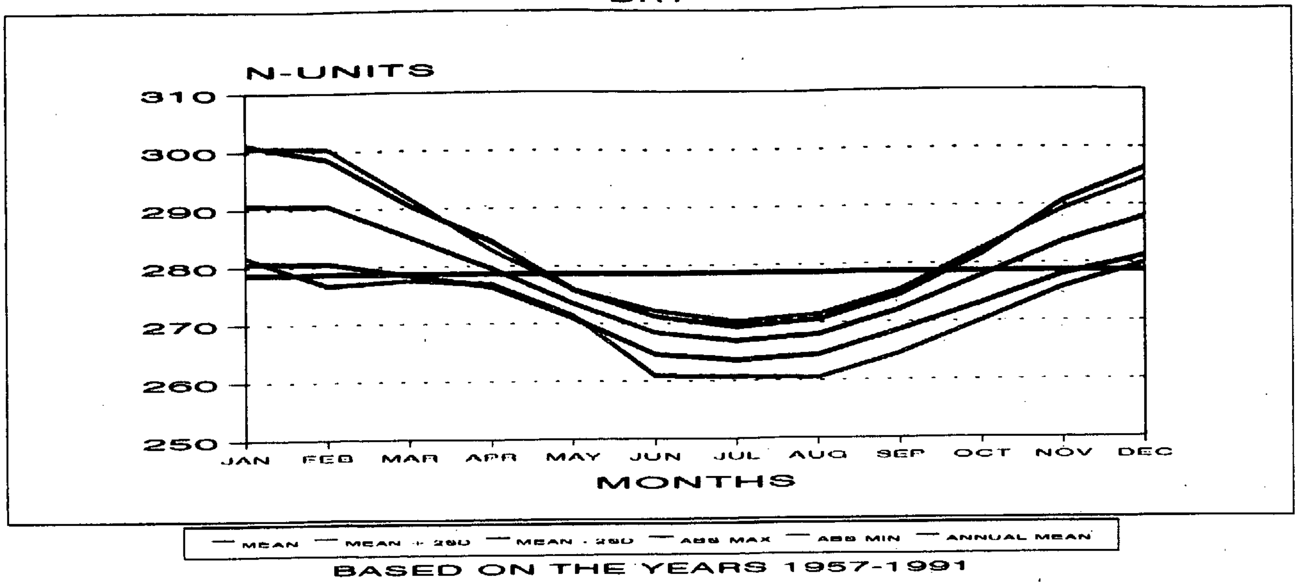
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 0700
TOTAL



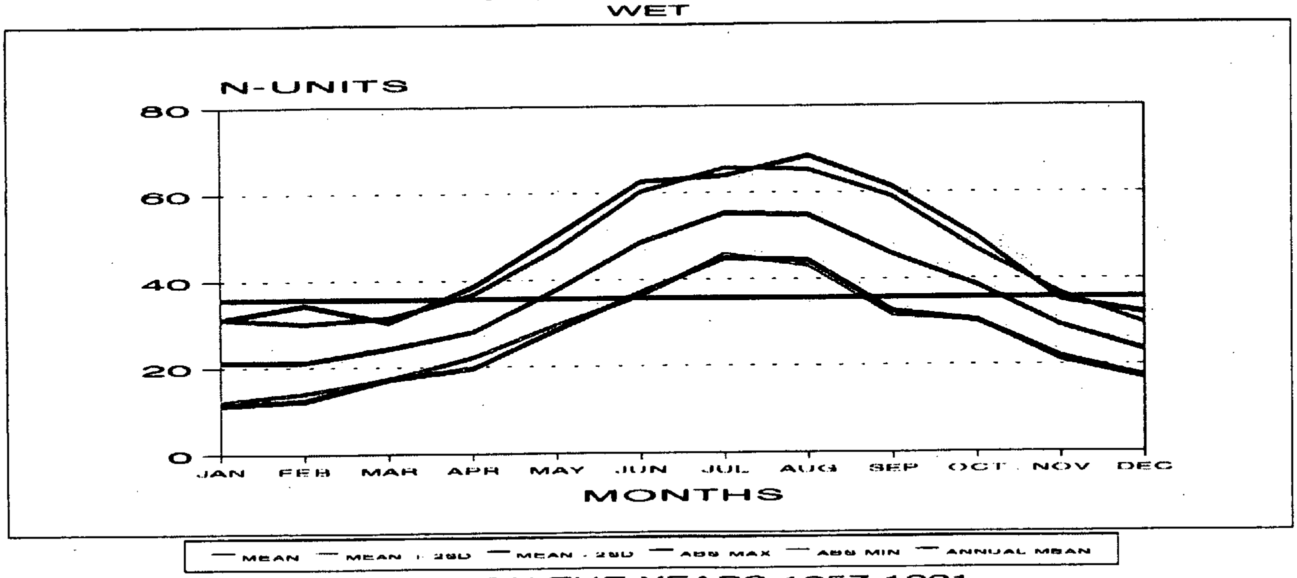
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 1300
DRY



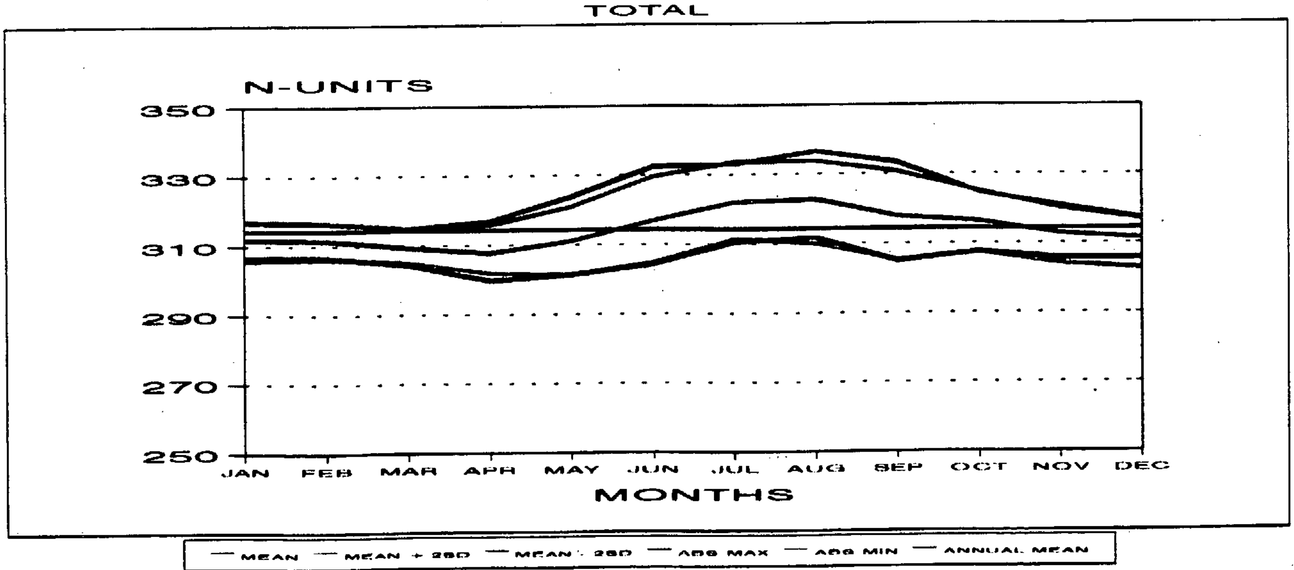
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 1300
WET



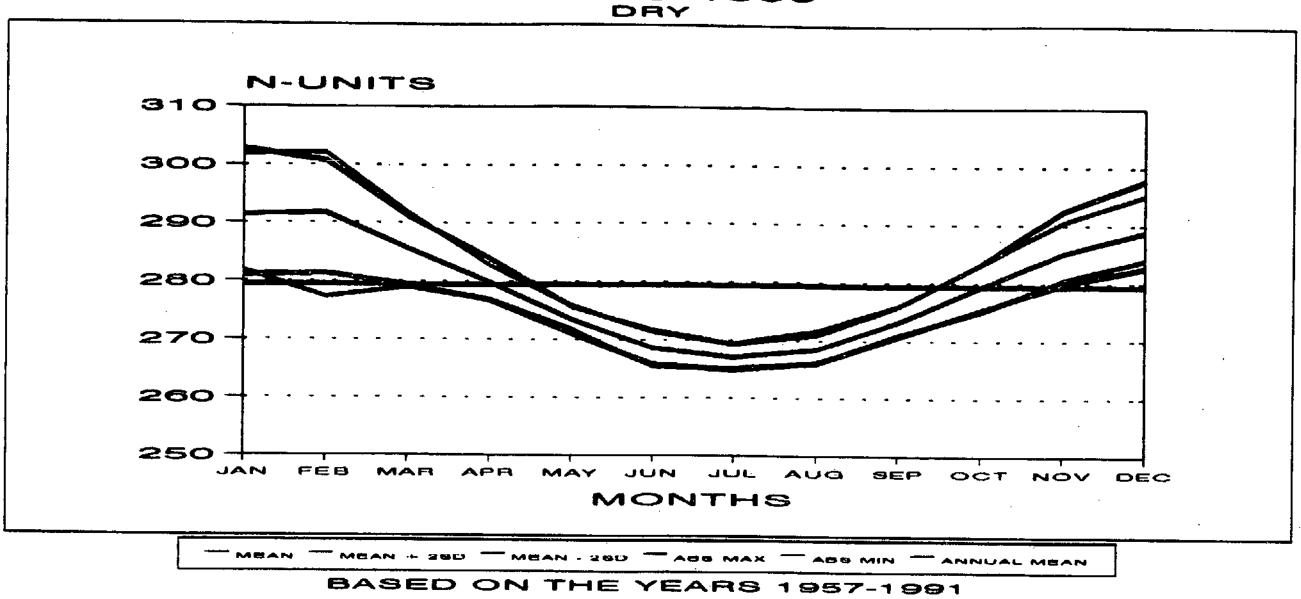
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 1300
TOTAL



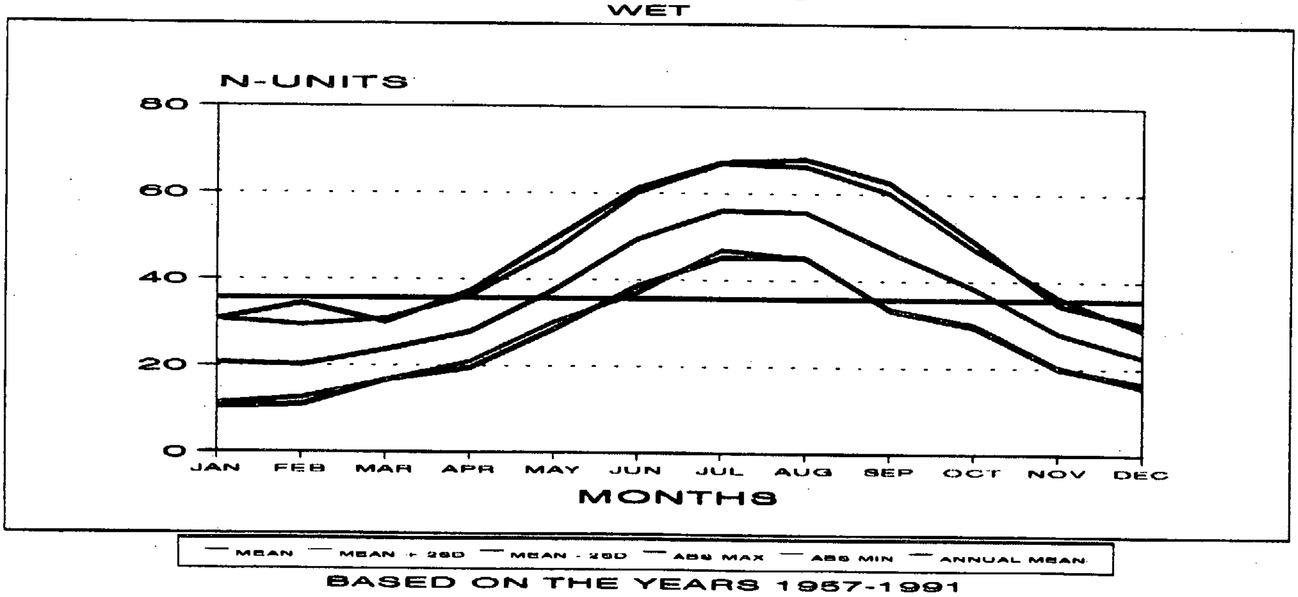
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 1900
DRY



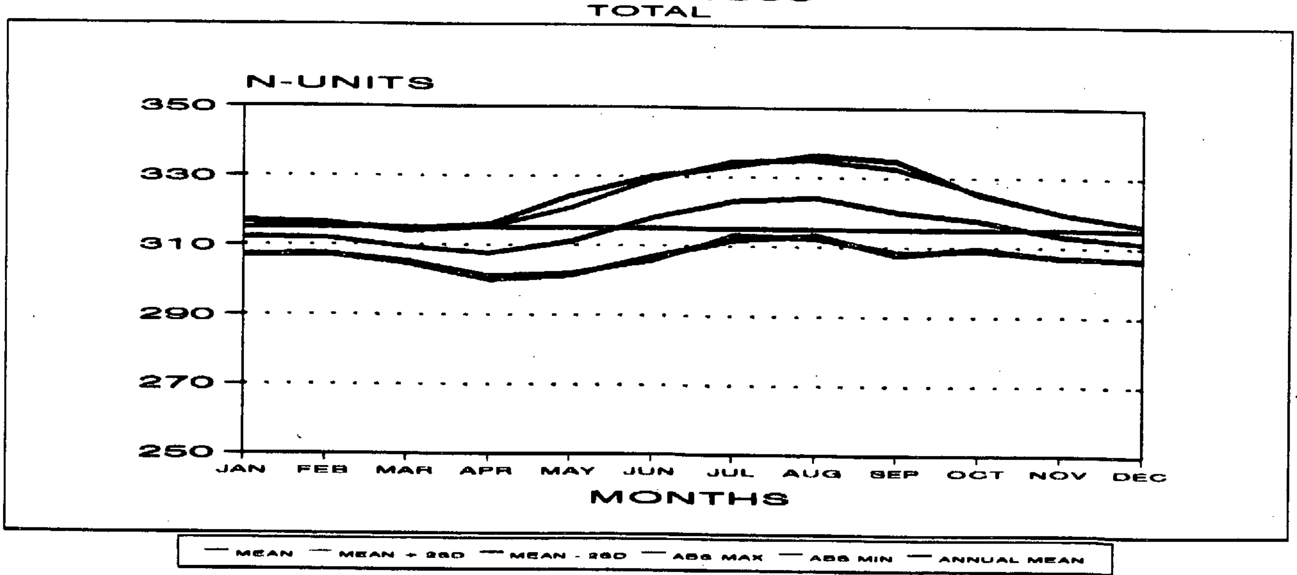
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 1900
WET



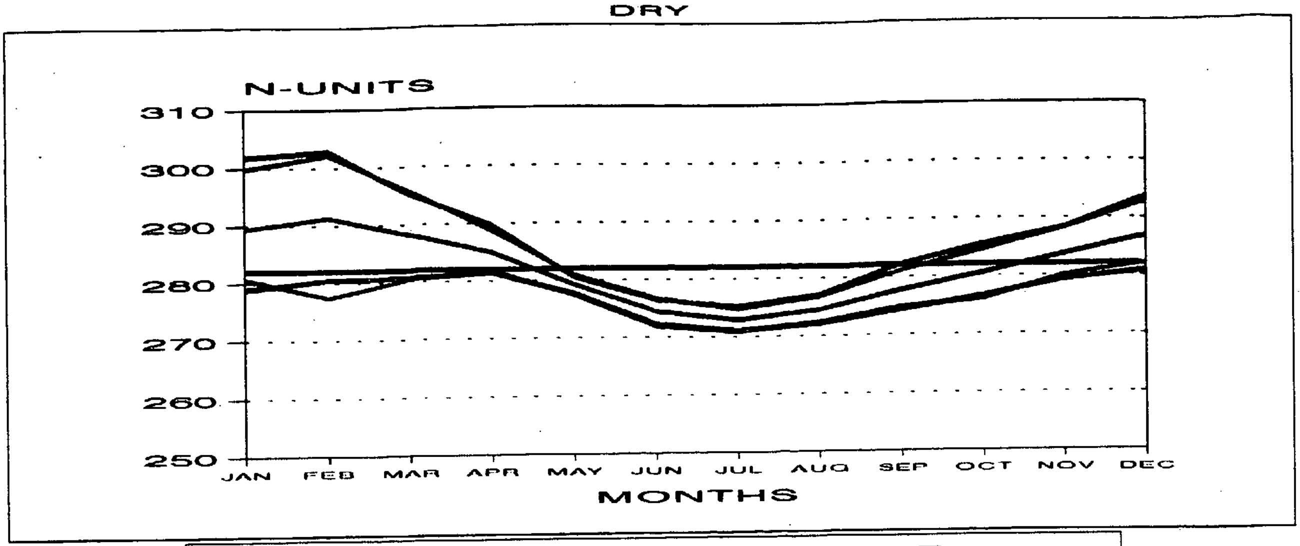
BASED ON THE YEARS 1957-1991

1940 FORNEBU
HOURS 1900
TOTAL



BASED ON THE YEARS 1957-1991

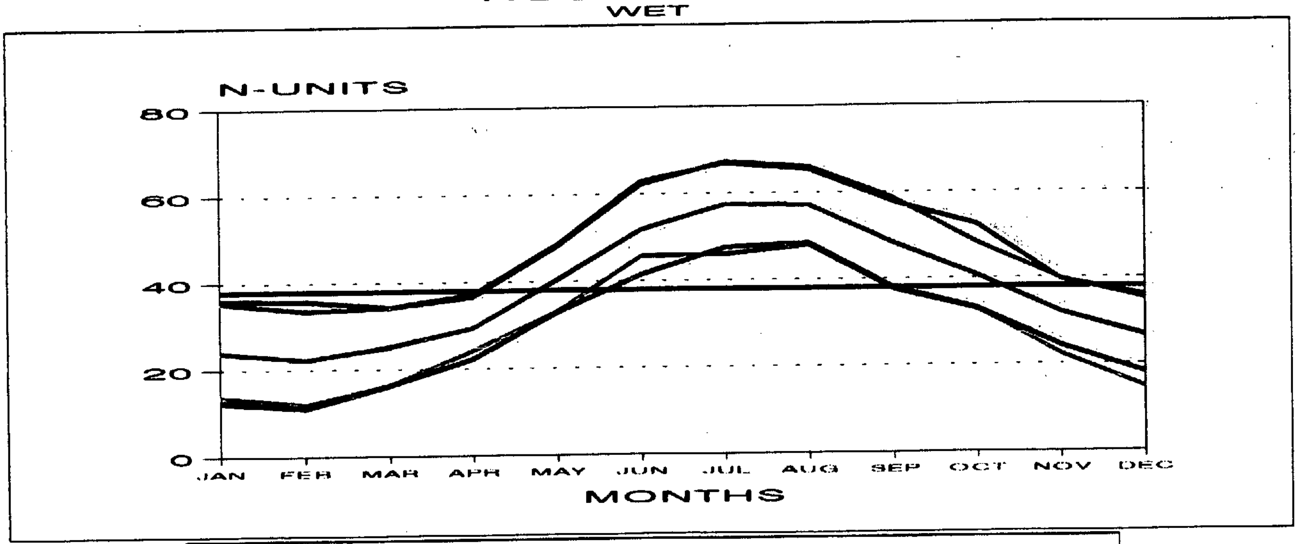
3904 KJEVIK
HOURS 0700
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

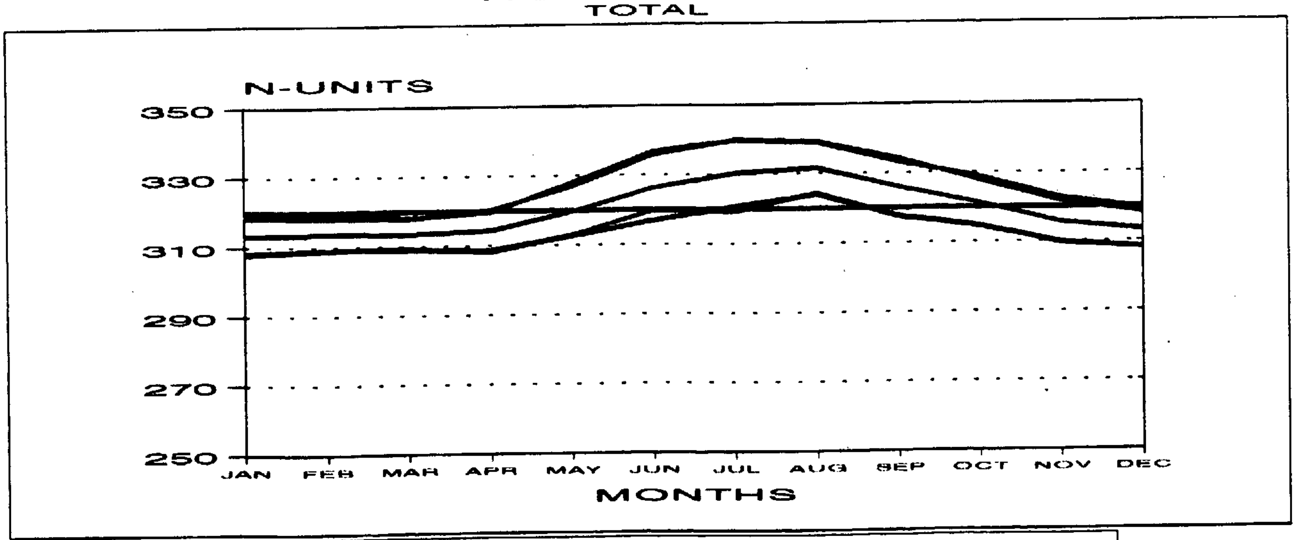
3904 KJEVIK
HOURS 0700
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

3904 KJEVIK
HOURS 0700
TOTAL

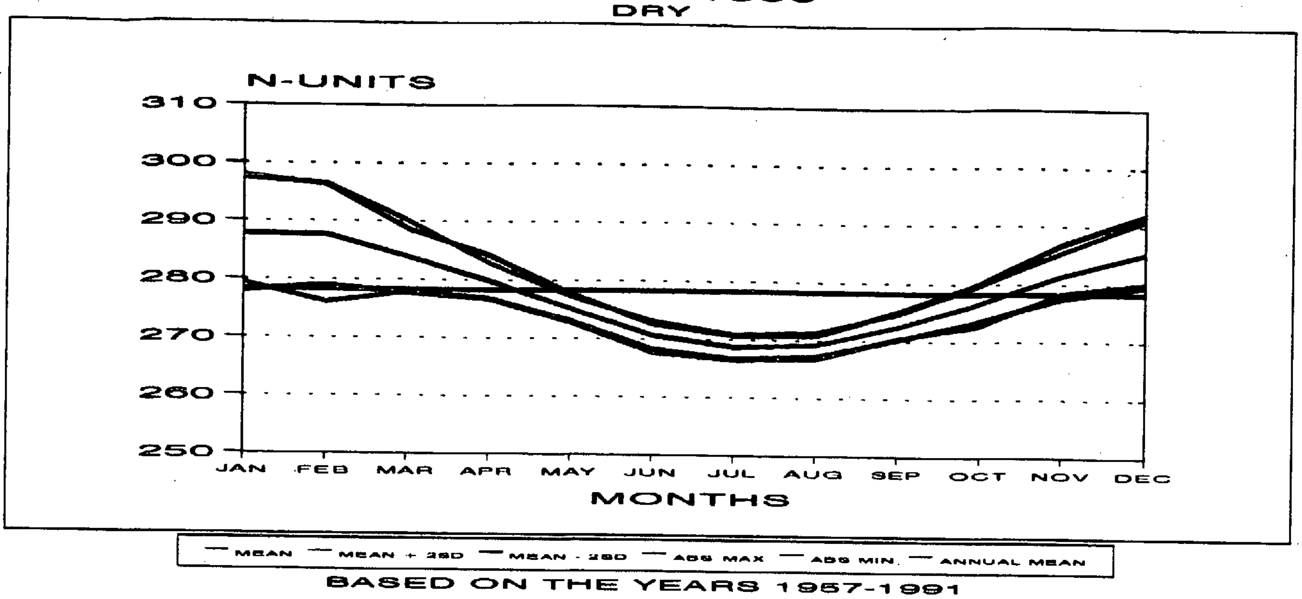


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

3904 KJEVIK

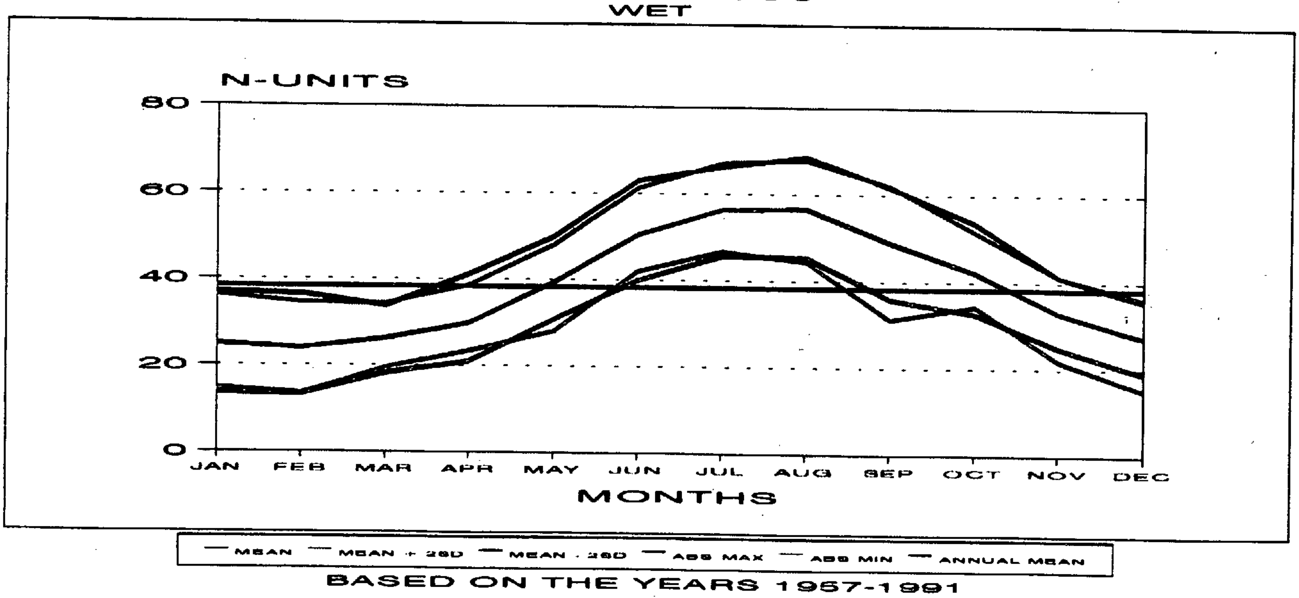
HOURS 1300
DRY



BASED ON THE YEARS 1957-1991

3904 KJEVIK

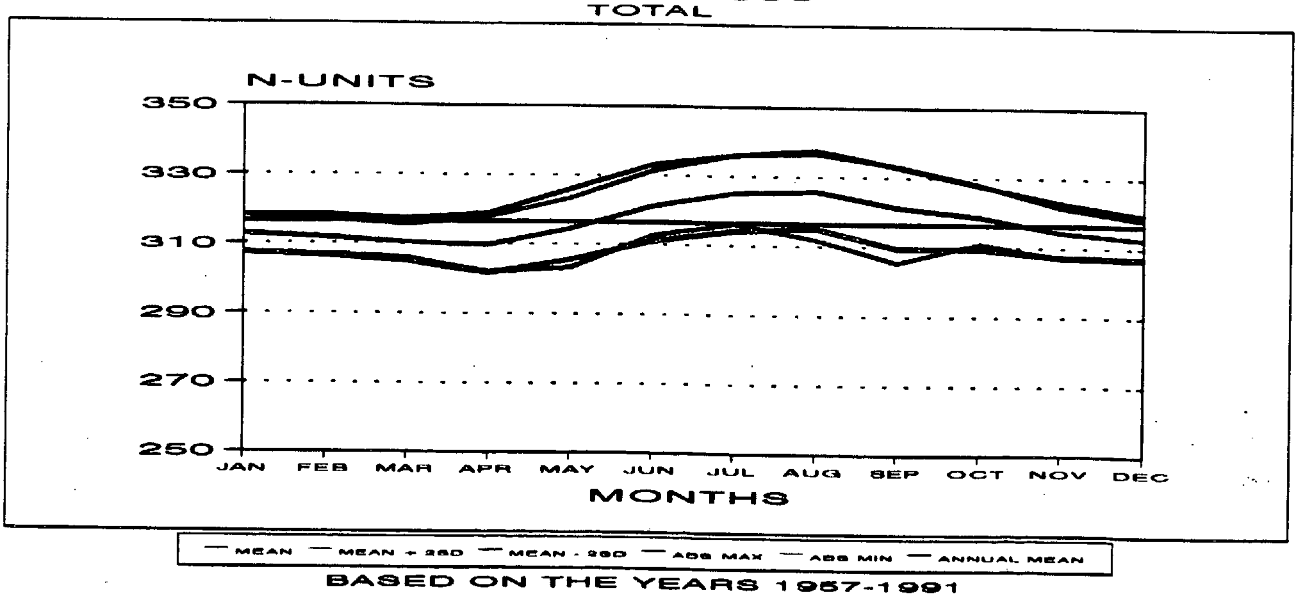
HOURS 1300
WET



BASED ON THE YEARS 1957-1991

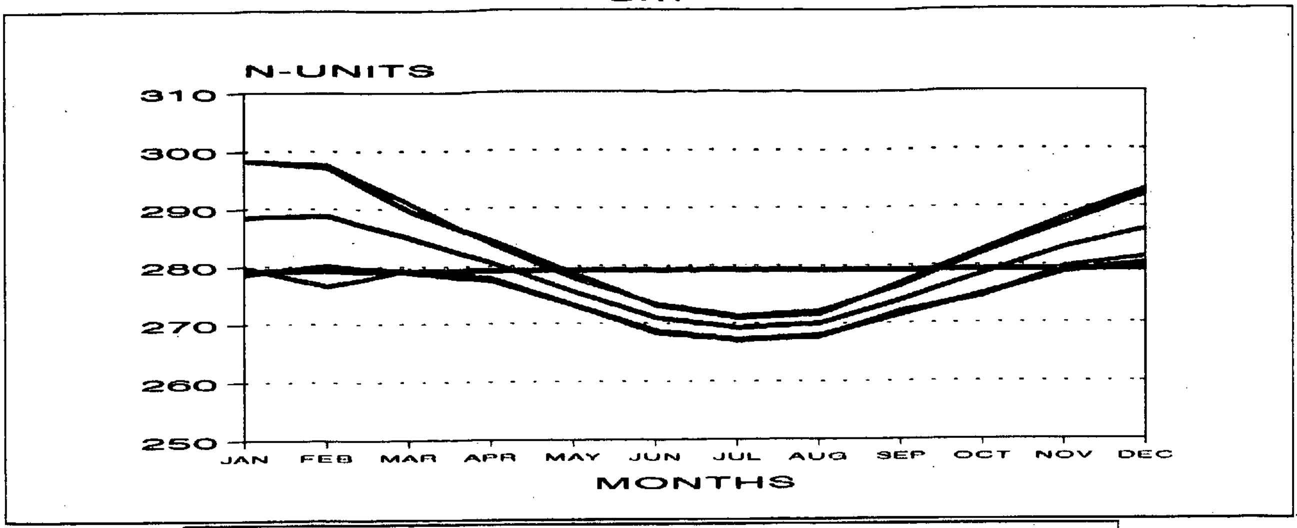
3904 KJEVIK

HOURS 1300
TOTAL



BASED ON THE YEARS 1957-1991

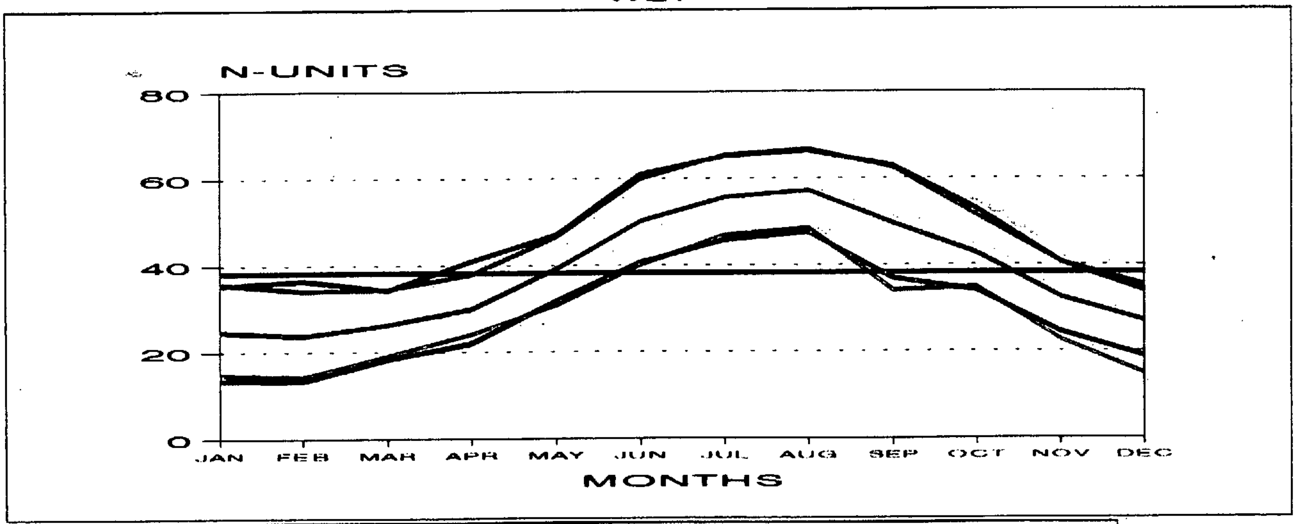
3904 KJEVIK
HOURS 1900
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

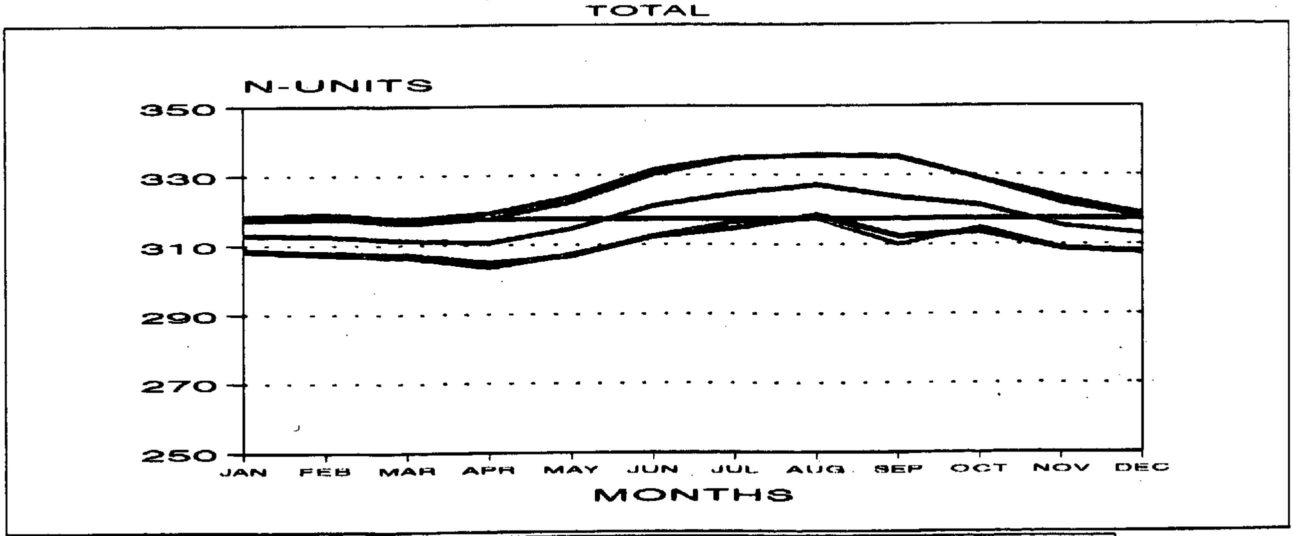
3904 KJEVIK
HOURS 1900
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

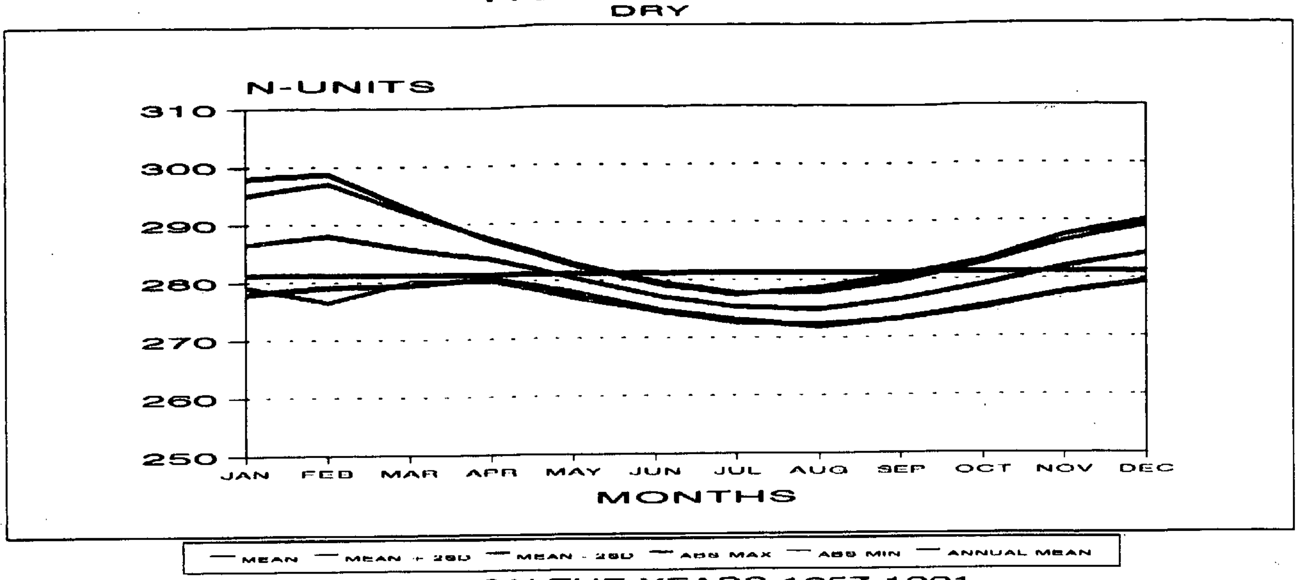
3904 KJEVIK
HOURS 1900
TOTAL



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

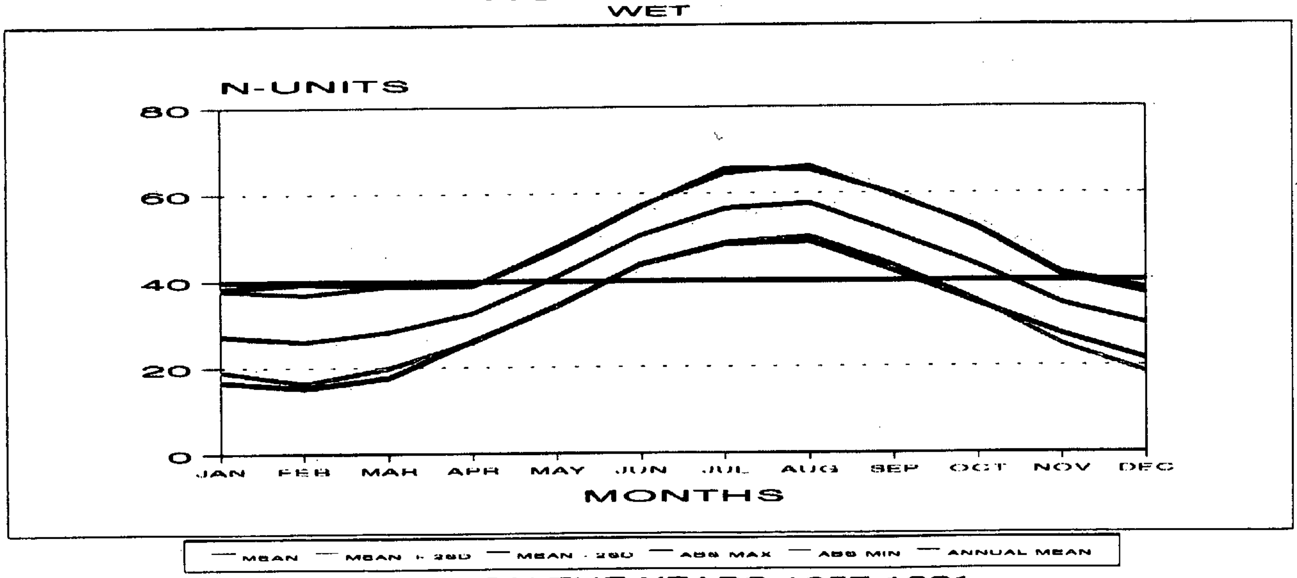
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 0100
DRY



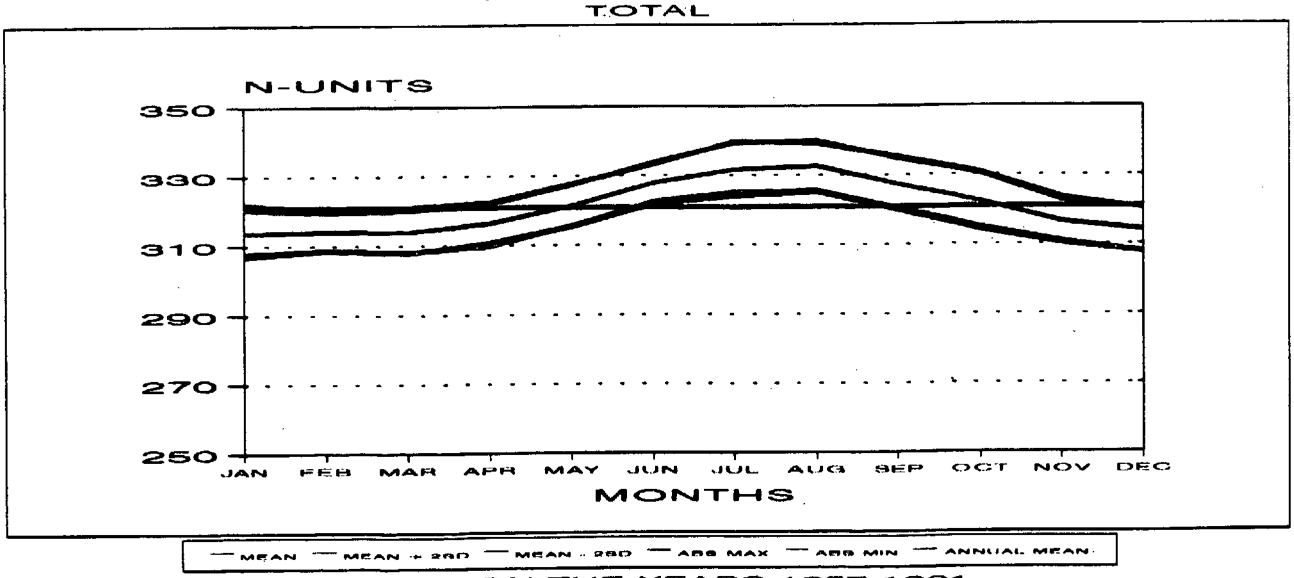
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 0100
WET



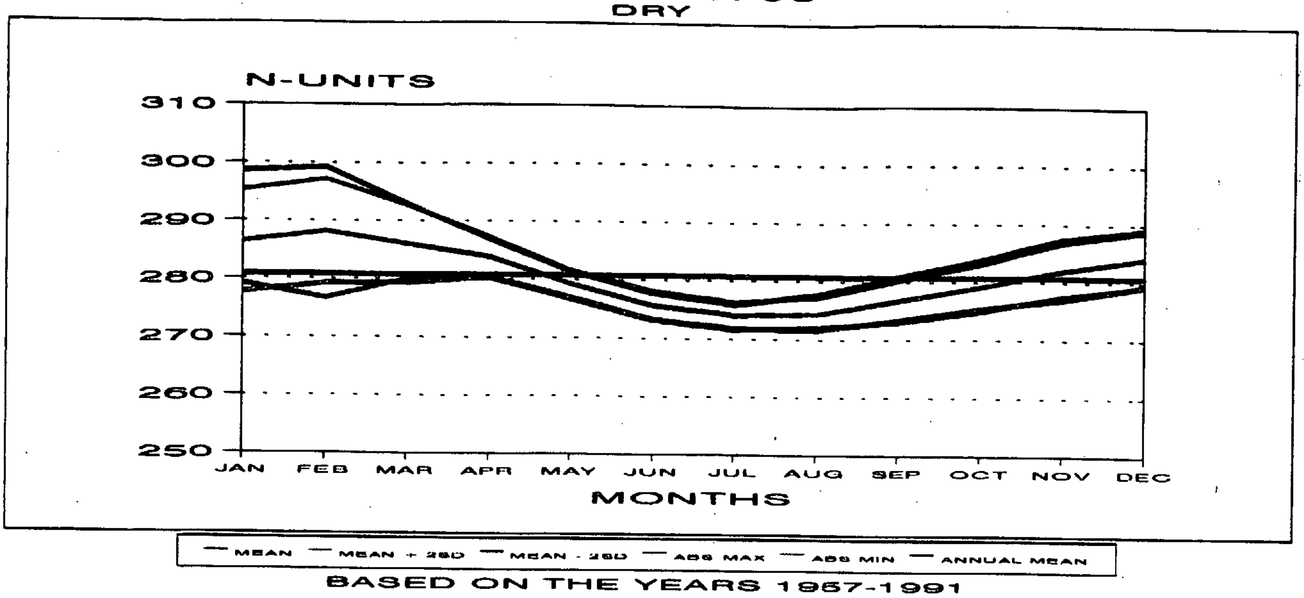
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 0100
TOTAL



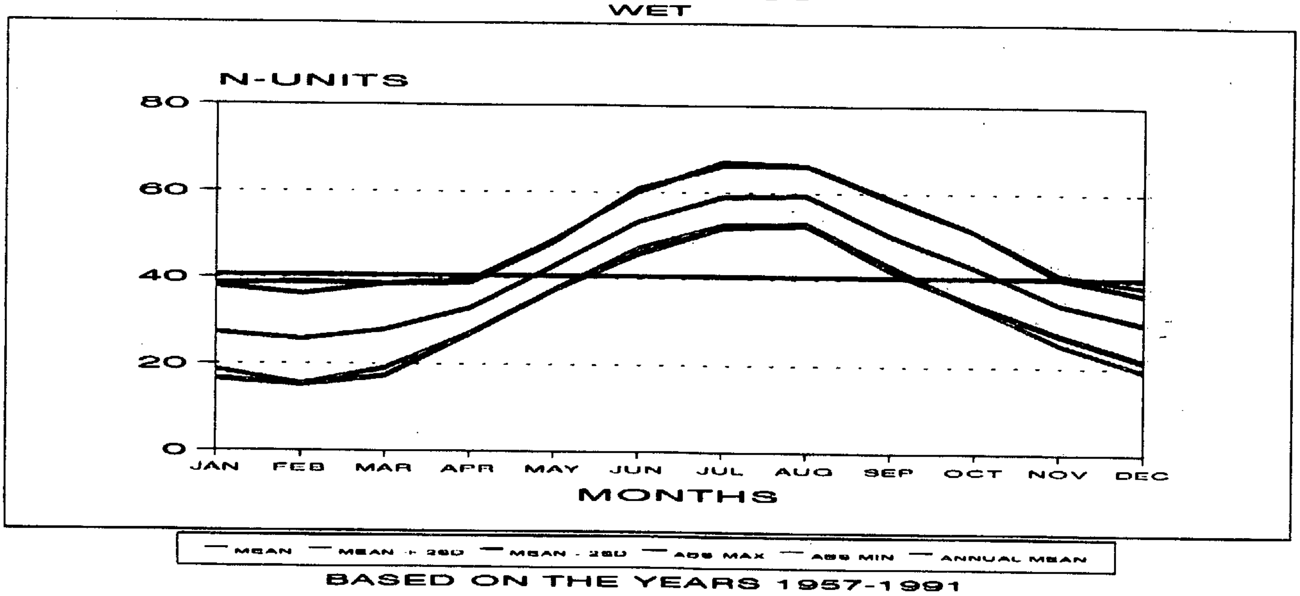
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 0700
DRY



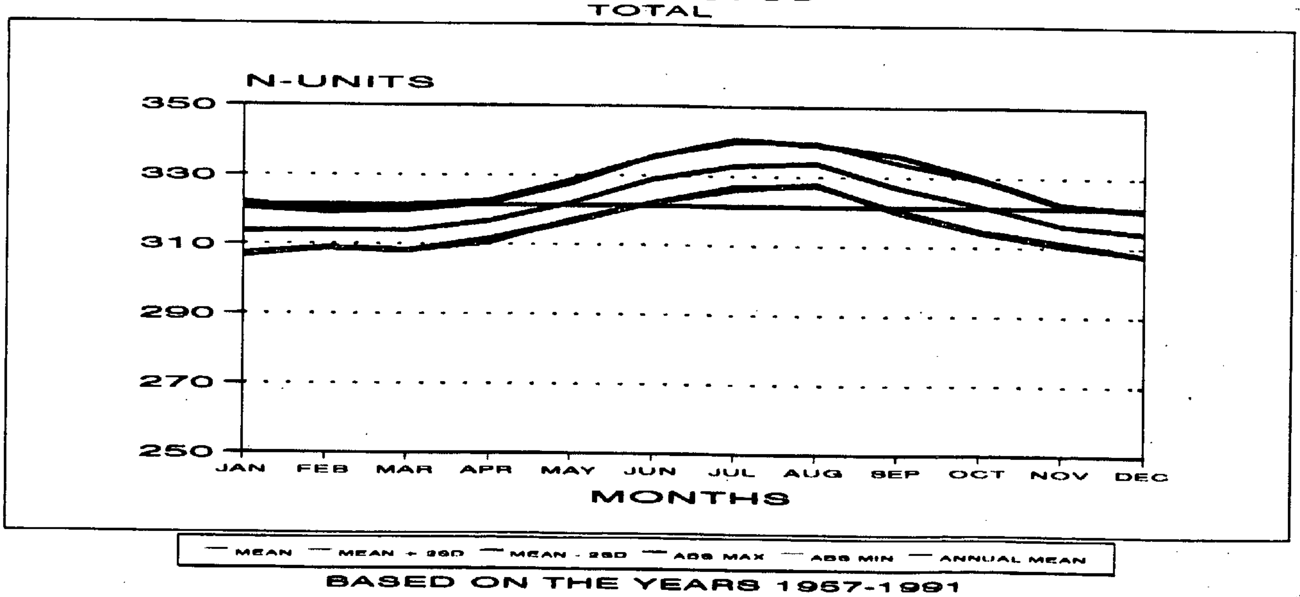
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 0700
WET



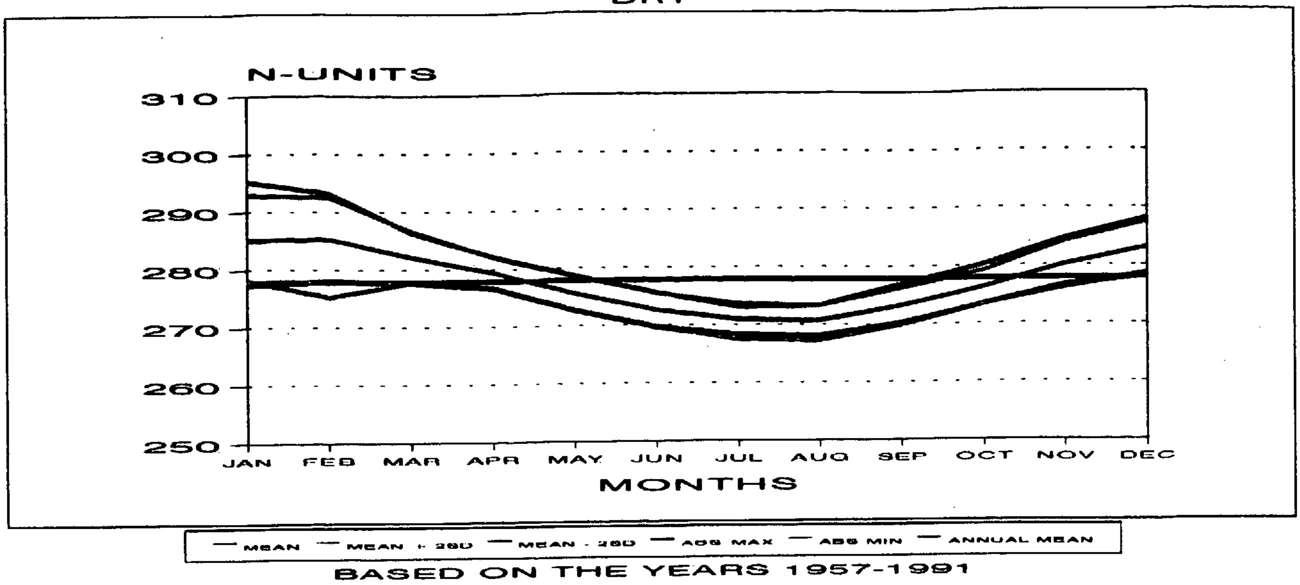
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 0700
TOTAL



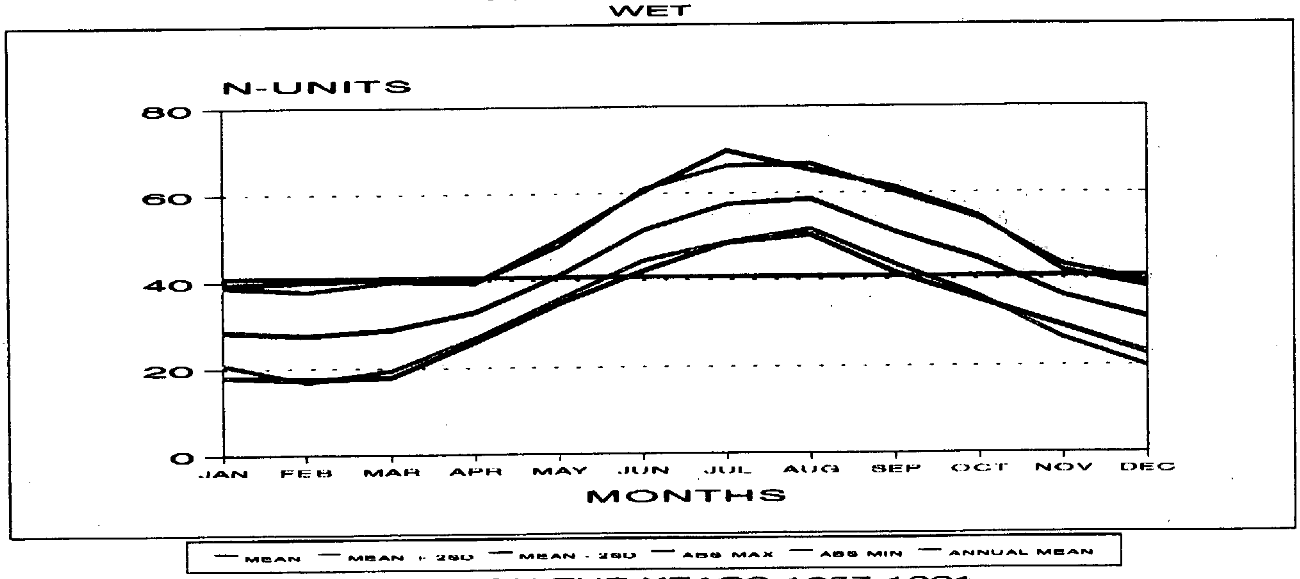
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 1300
DRY



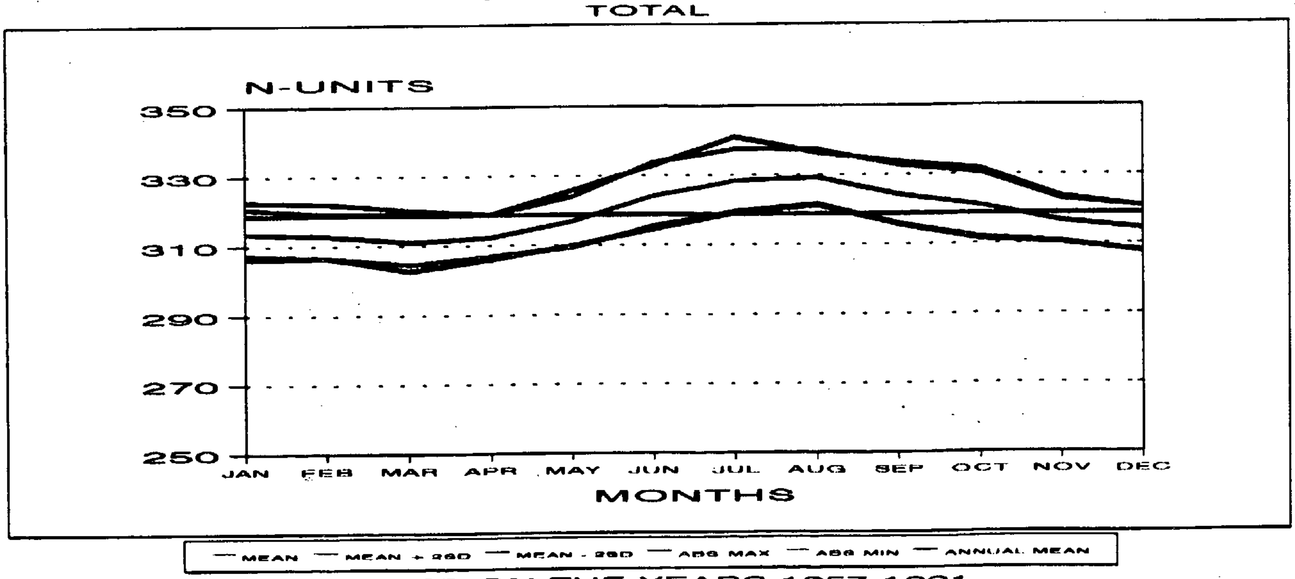
BASED ON THE YEARS 1957-1991

4456 SOLA
HOURS 1300
WET



BASED ON THE YEARS 1957-1991

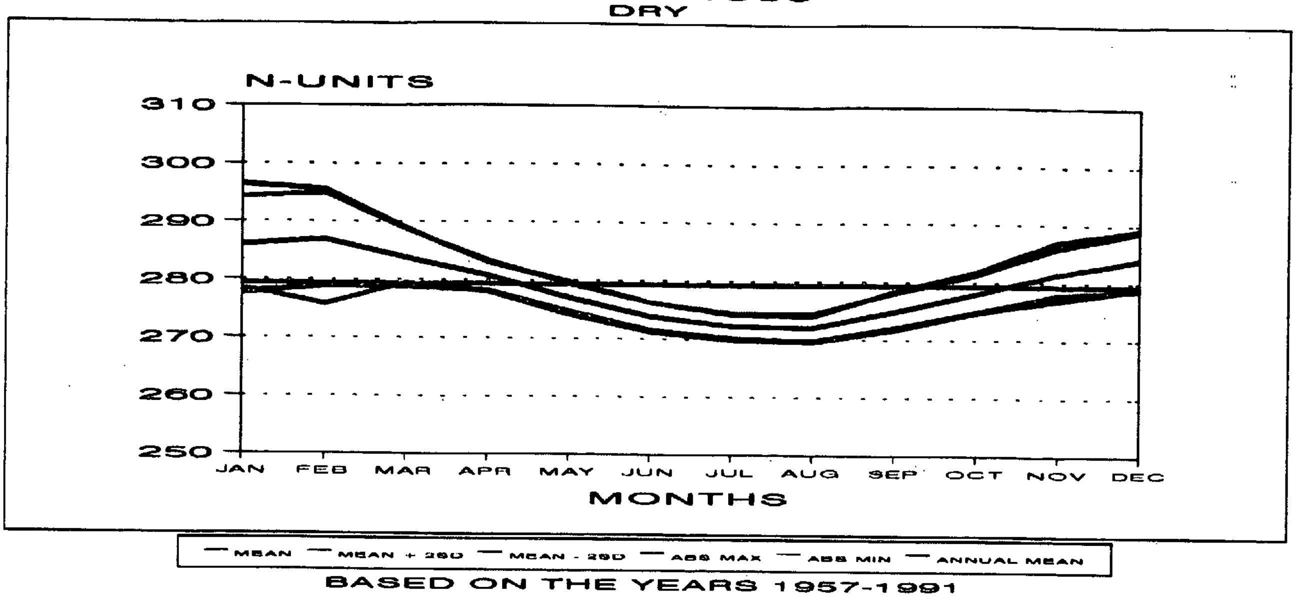
4456 SOLA
HOURS 1300
TOTAL



BASED ON THE YEARS 1957-1991

4456 SOLA

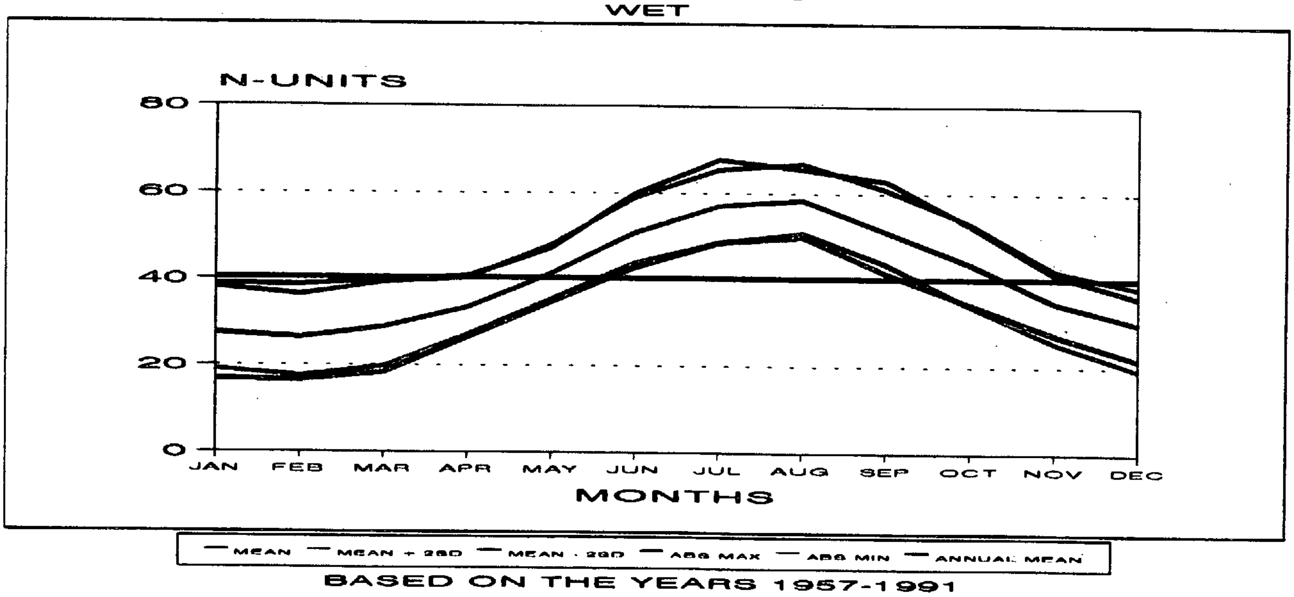
HOURS 1900
DRY



BASED ON THE YEARS 1957-1991

4456 SOLA

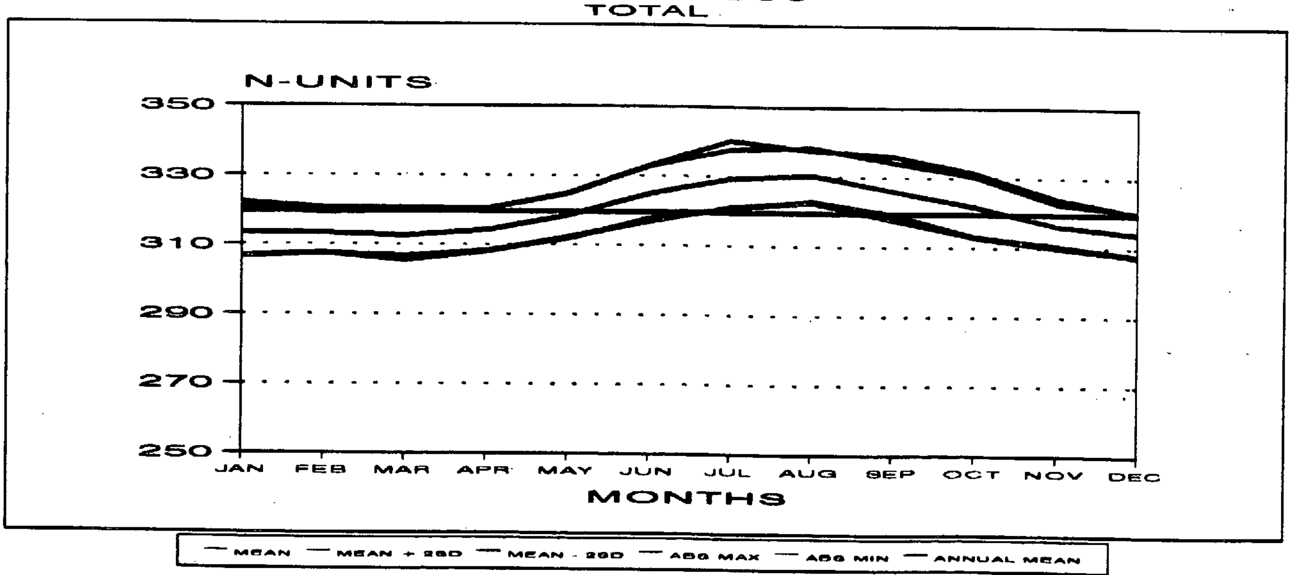
HOURS 1900
WET



BASED ON THE YEARS 1957-1991

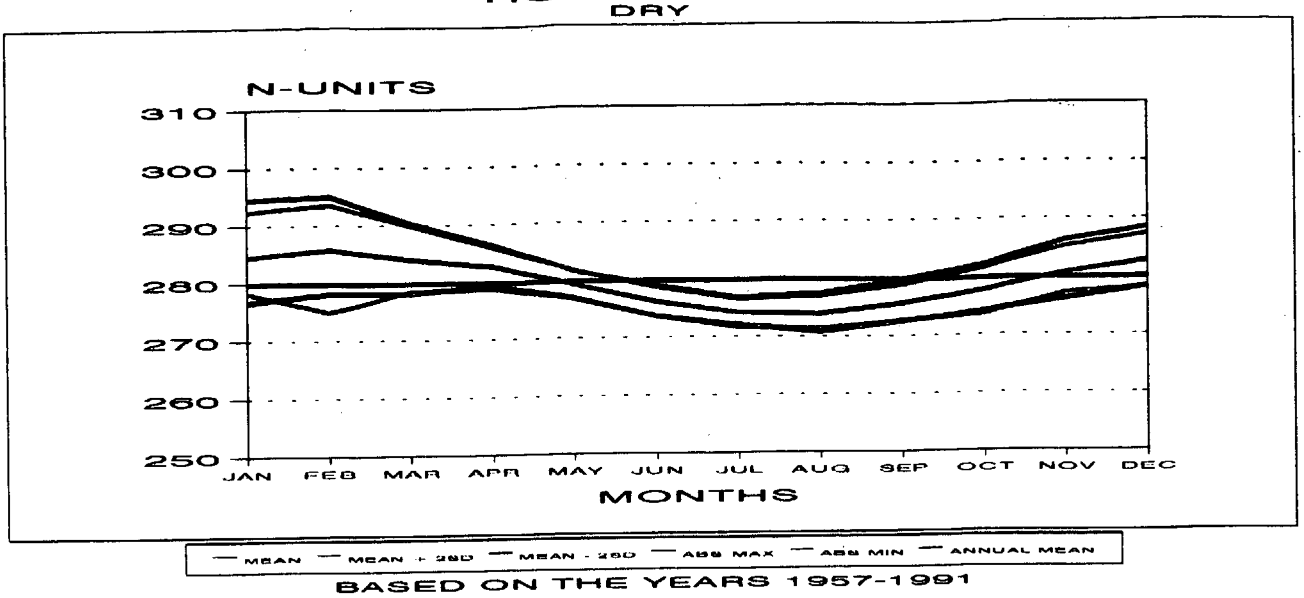
4456 SOLA

HOURS 1900
TOTAL



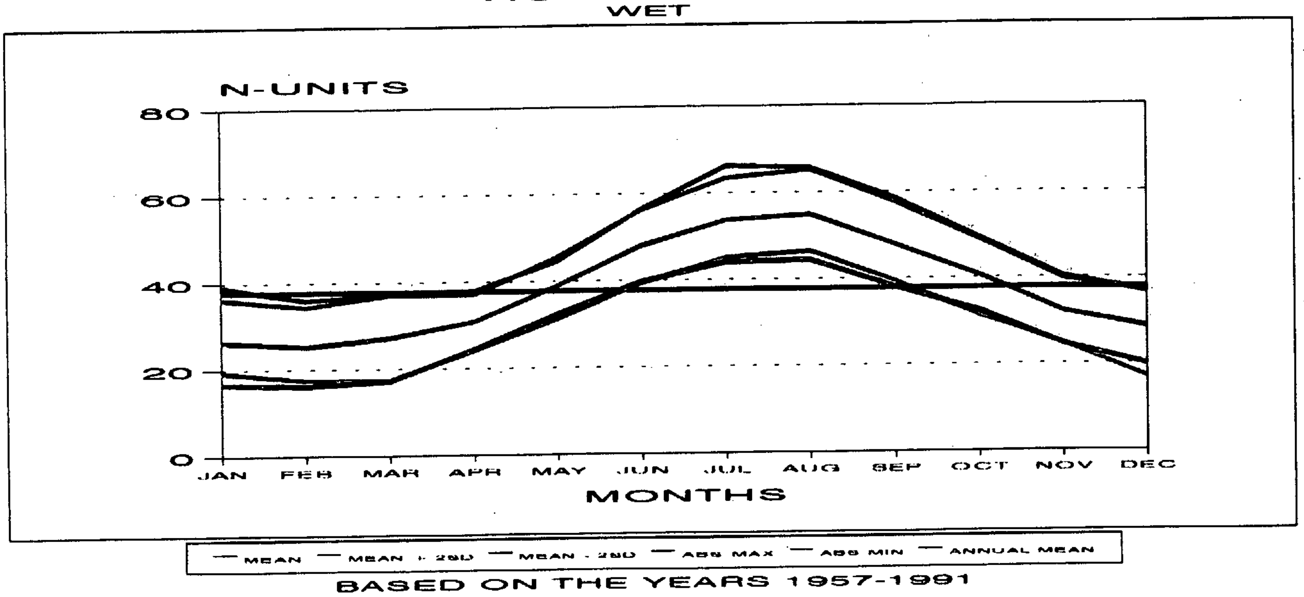
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 0100
DRY



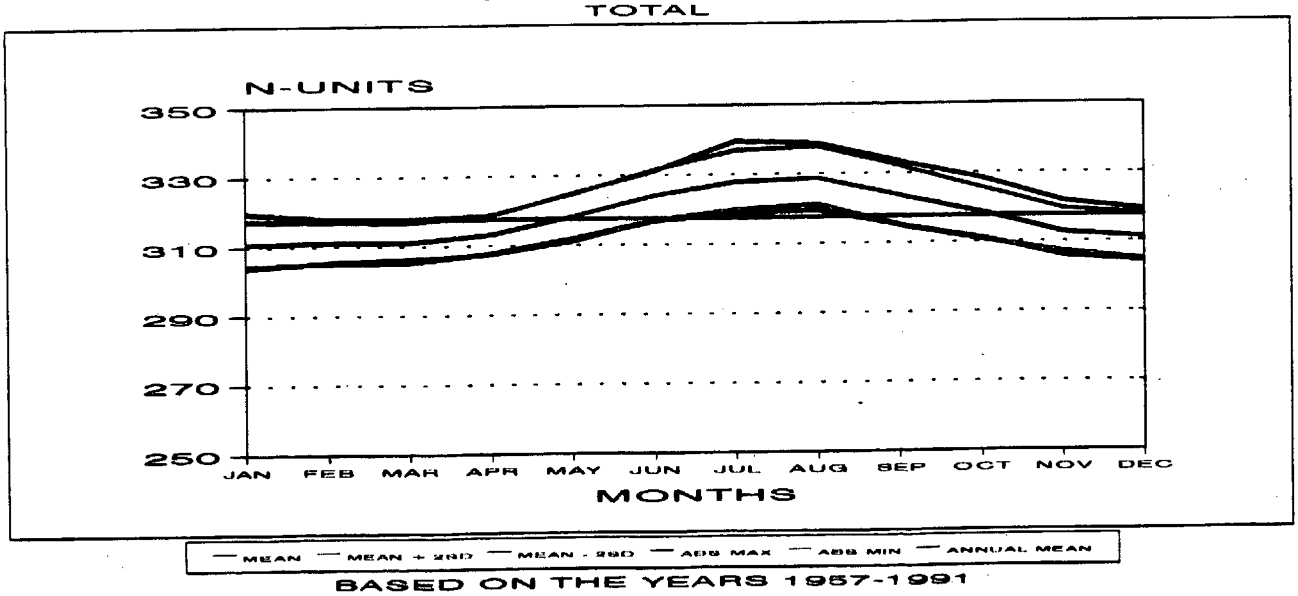
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 0100
WET



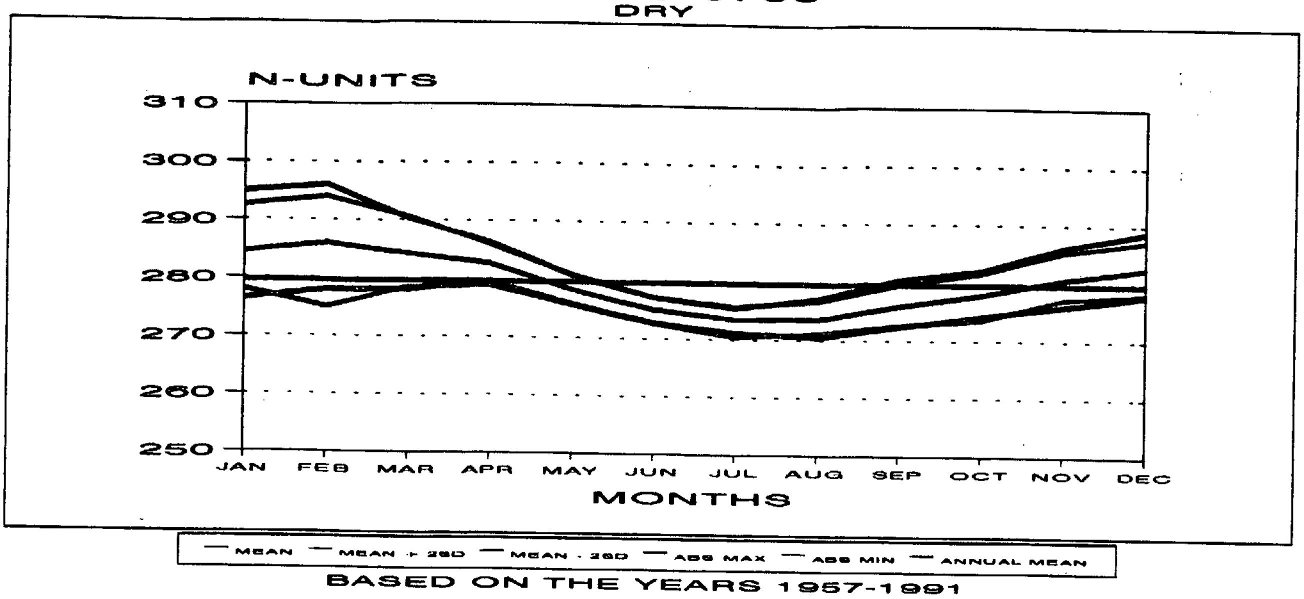
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 0100
TOTAL



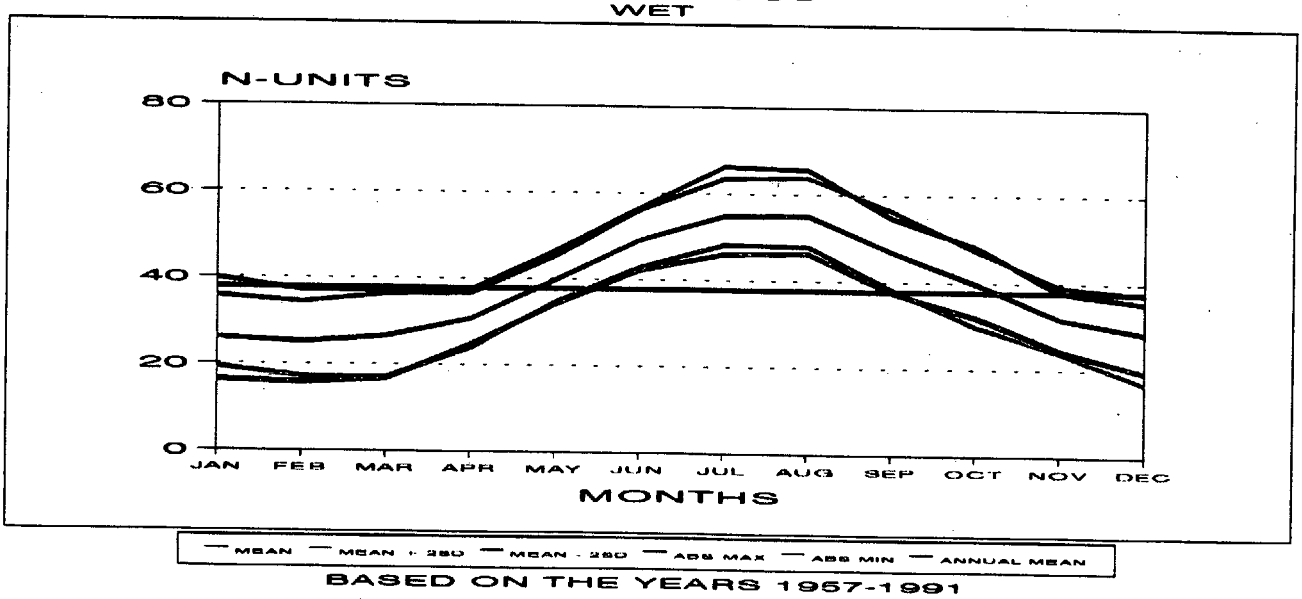
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 0700
DRY



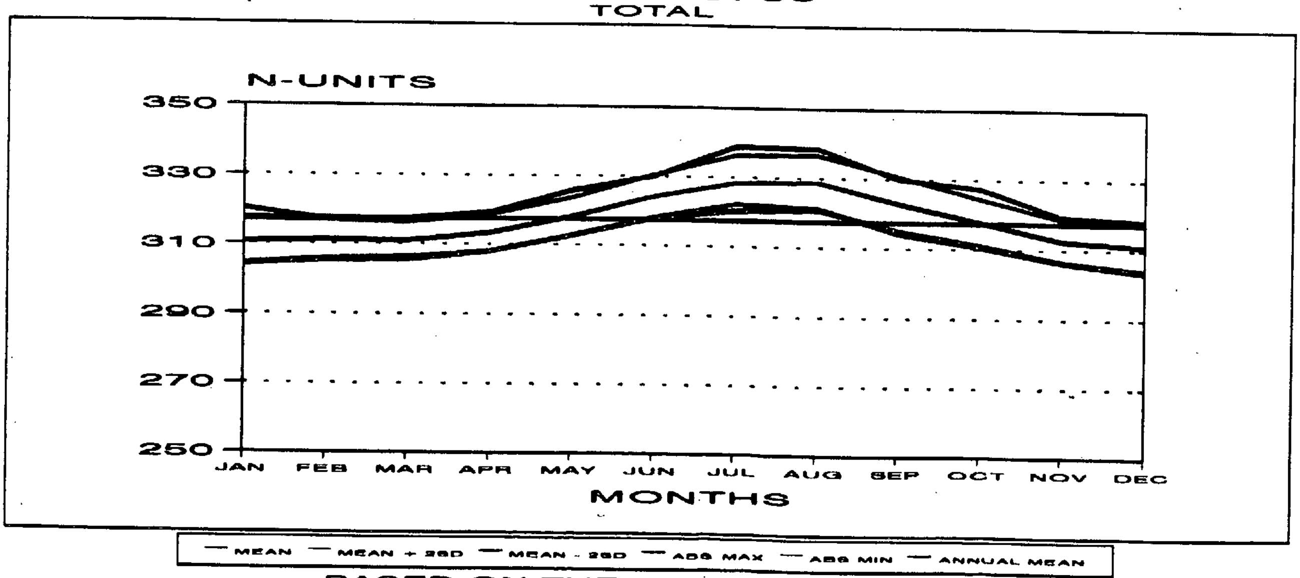
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 0700
WET



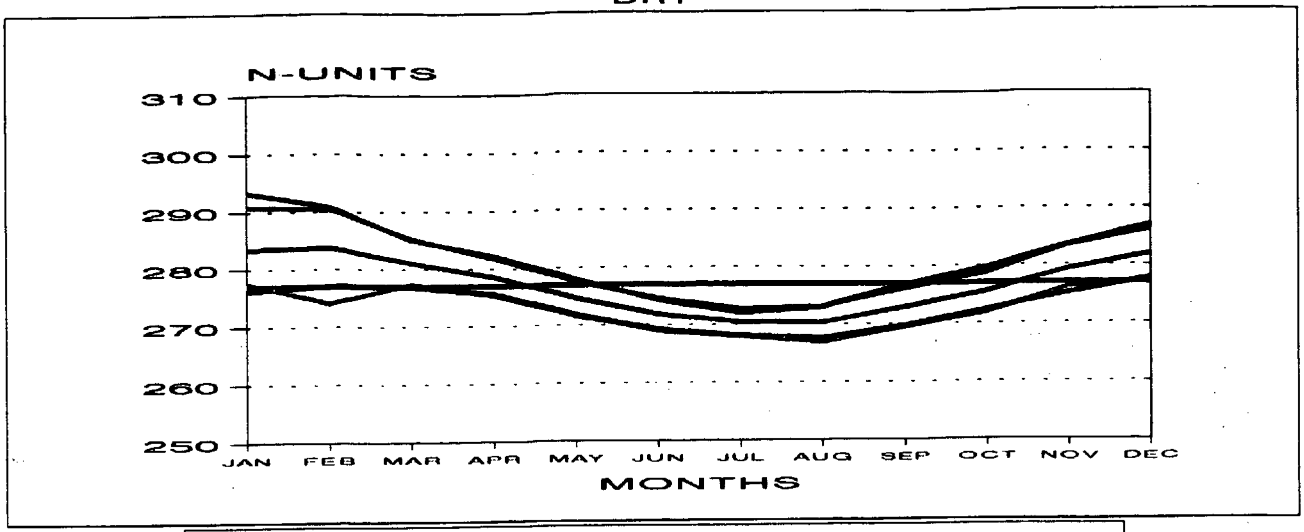
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 0700
TOTAL



BASED ON THE YEARS 1957-1991

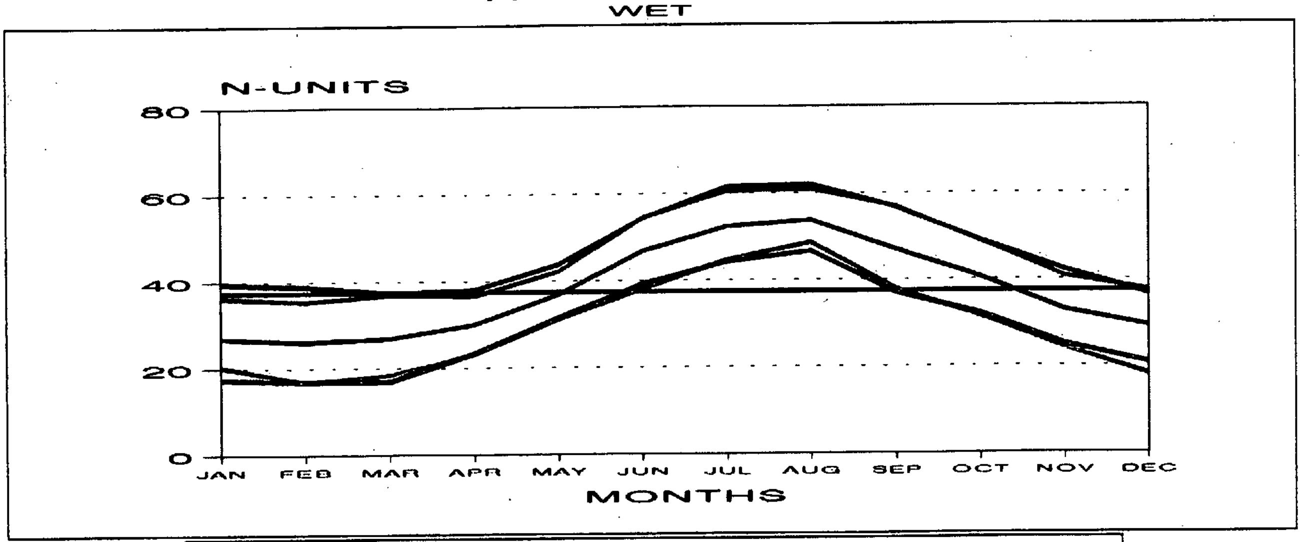
5050 FLESLAND
HOURS 1300
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

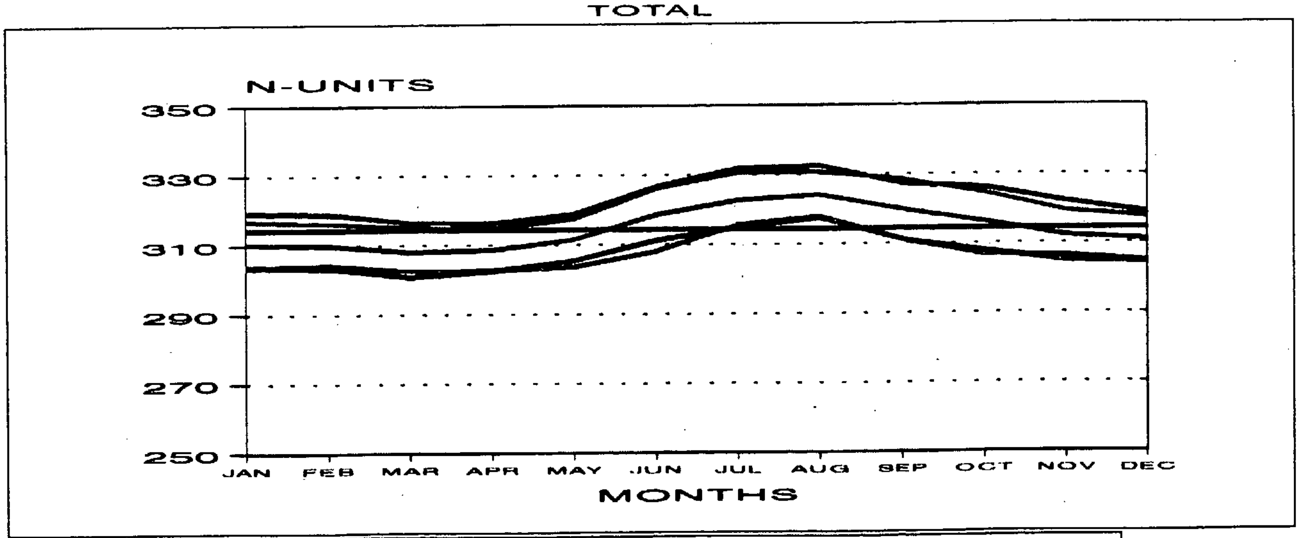
5050 FLESLAND
HOURS 1300
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

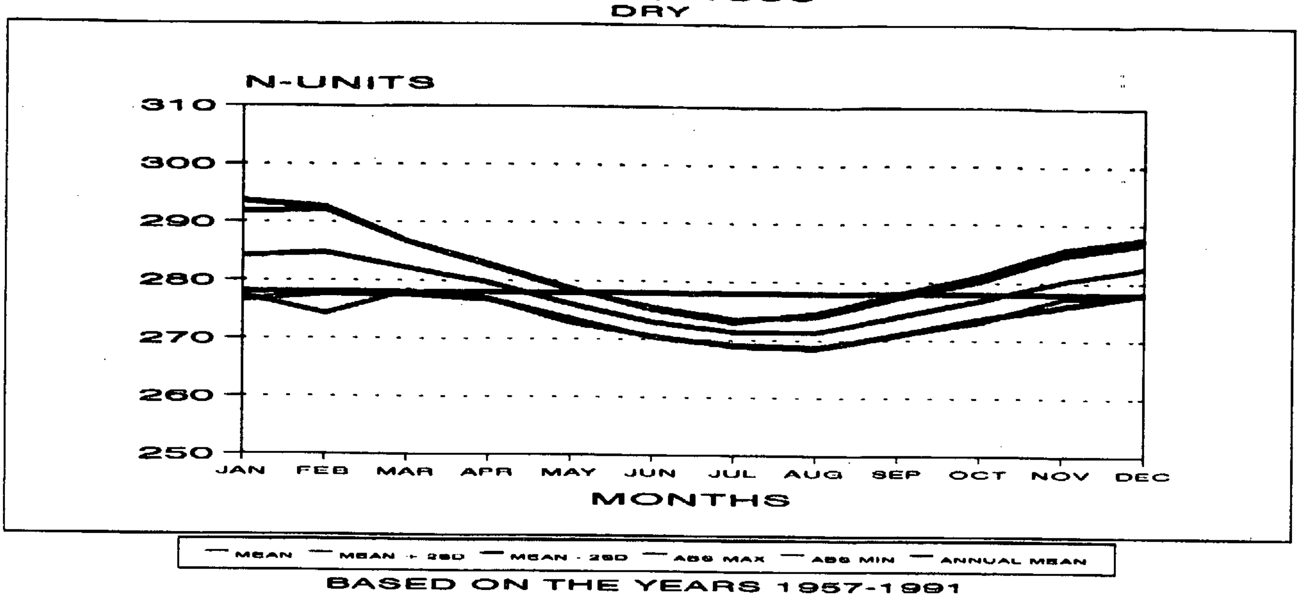
5050 FLESLAND
HOURS 1300
TOTAL



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

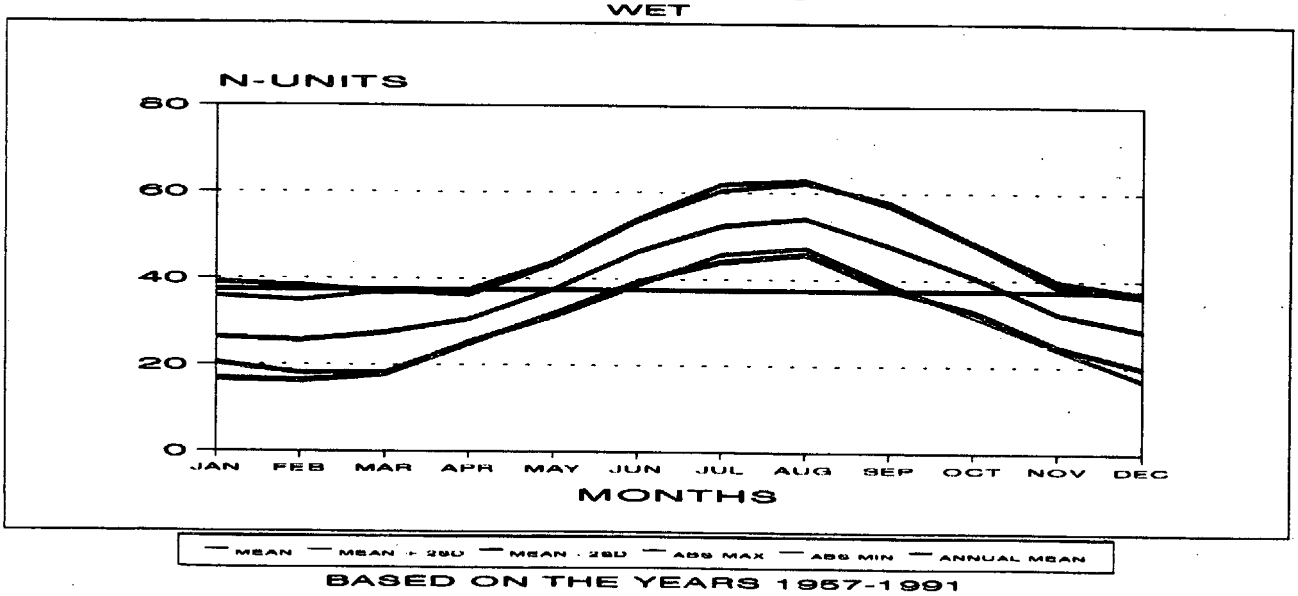
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 1900
DRY



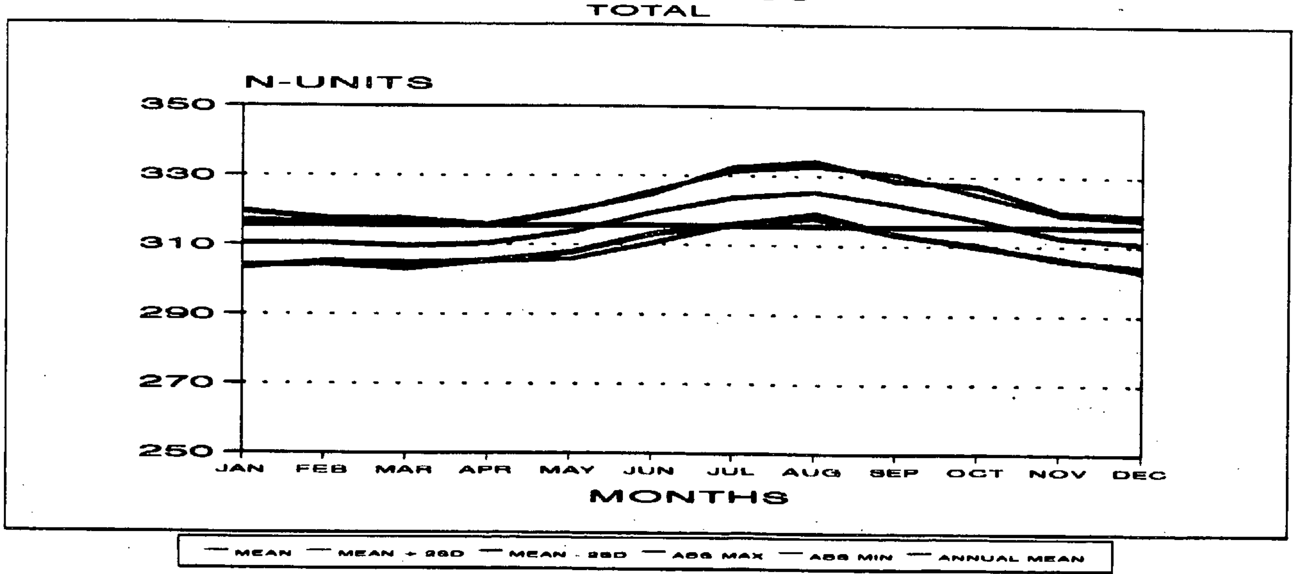
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 1900
WET



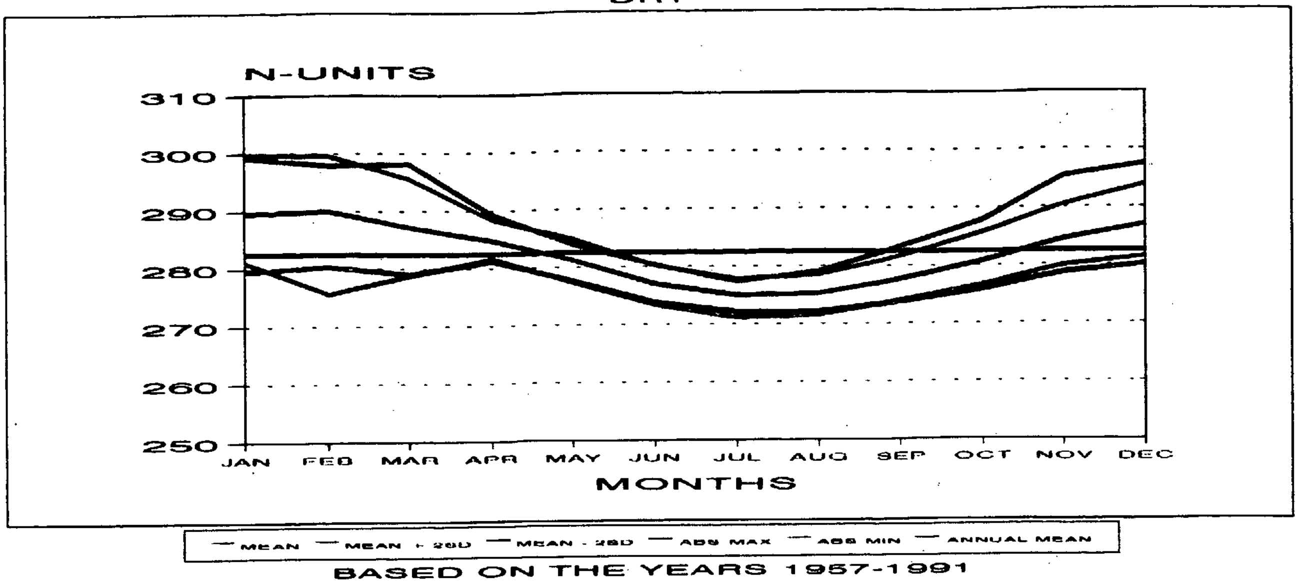
BASED ON THE YEARS 1957-1991

5050 FLESLAND
HOURS 1900
TOTAL



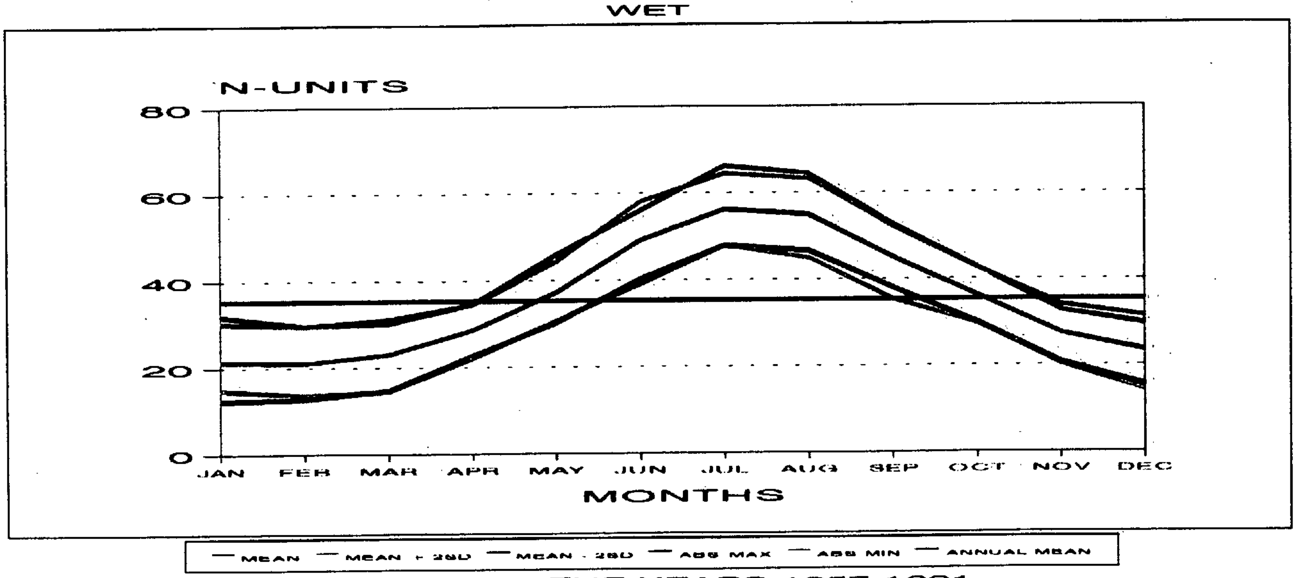
BASED ON THE YEARS 1957-1991

6910 VÆRNES
HOURS 0100
DRY



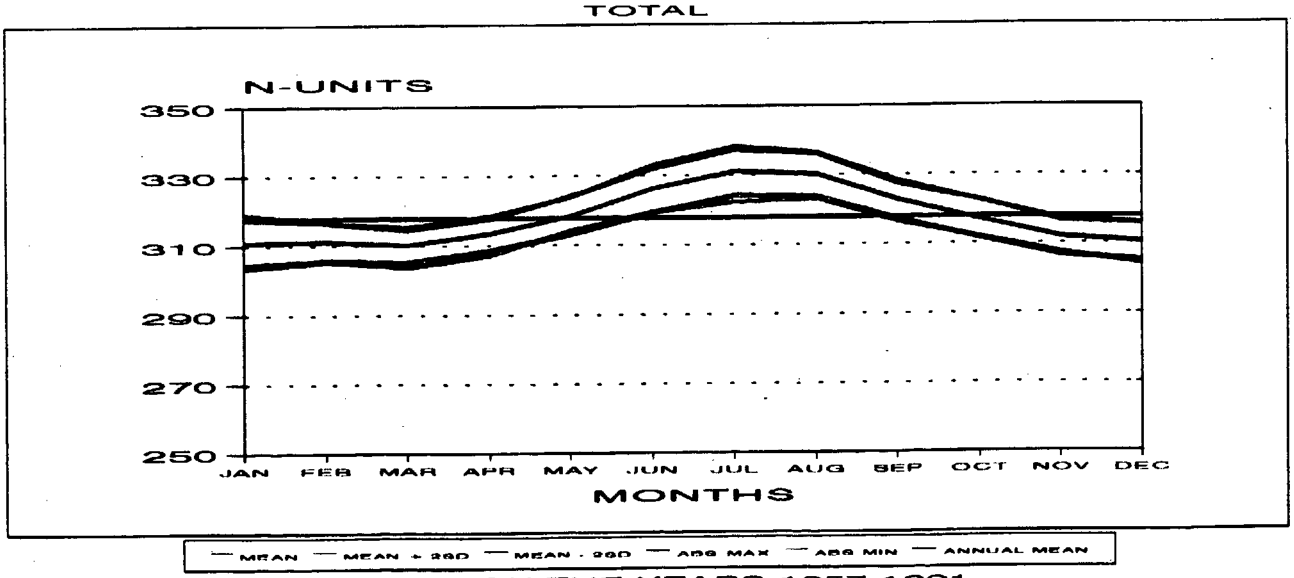
BASED ON THE YEARS 1957-1991

6910 VÆRNES
HOURS 0100
WET



BASED ON THE YEARS 1957-1991

6910 VÆRNES
HOURS 0100
TOTAL

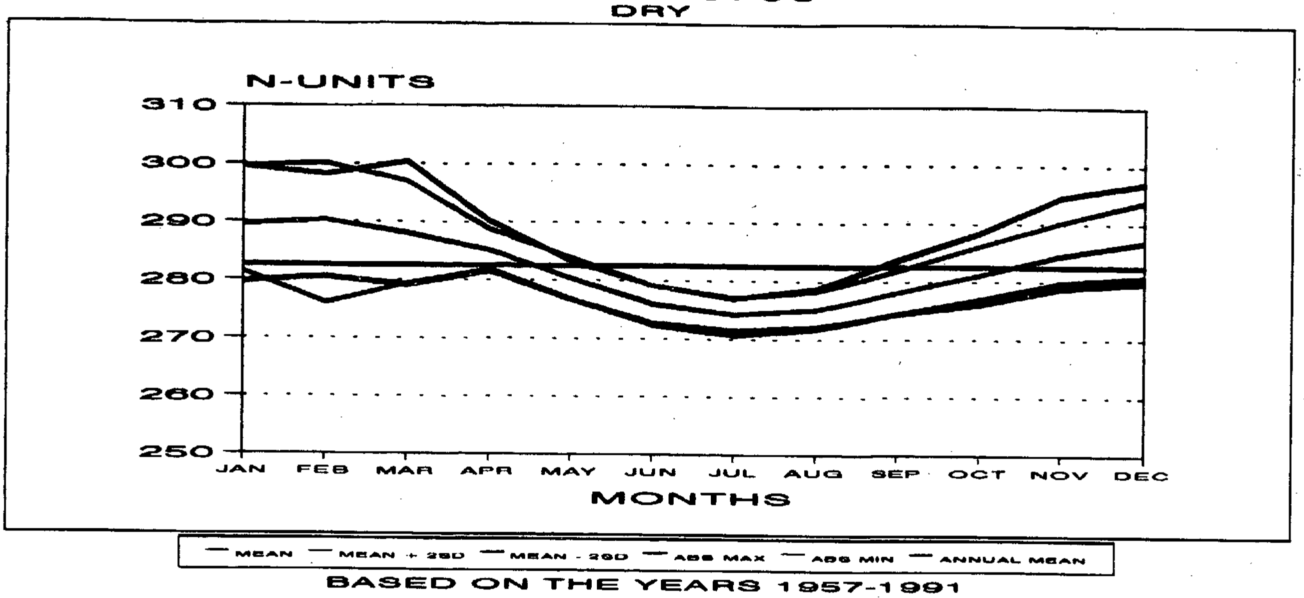


BASED ON THE YEARS 1957-1991

6910 VÆRNES

HOURS 0700

DRY

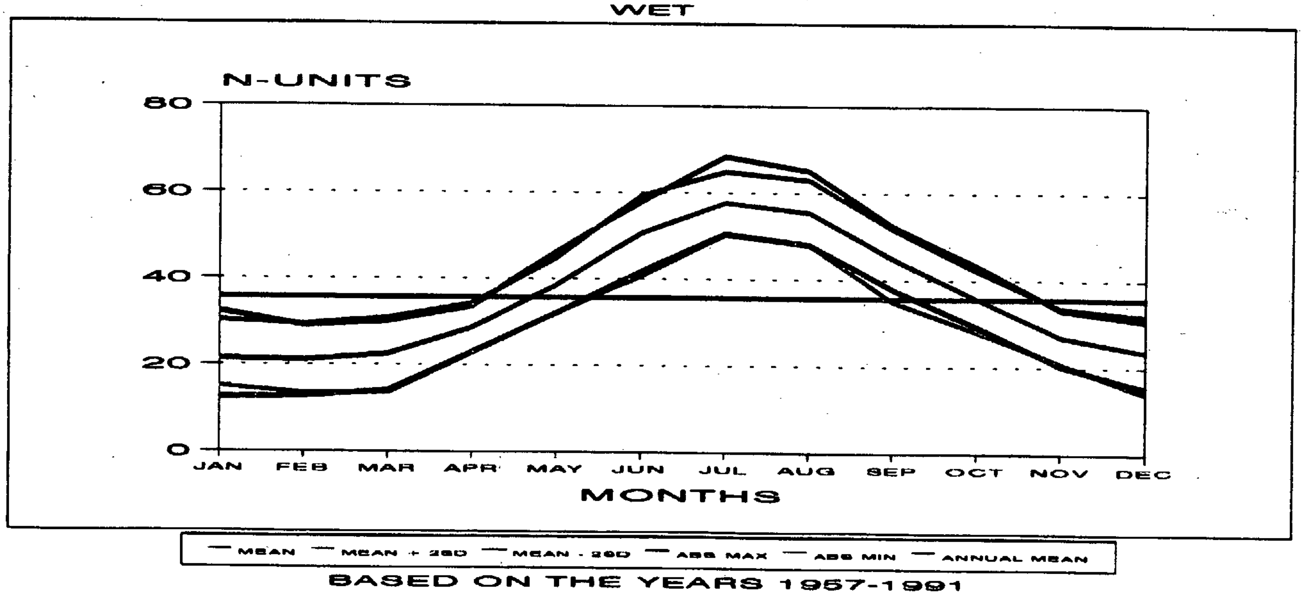


BASED ON THE YEARS 1957-1991

6910 VÆRNES

HOURS 0700

WET

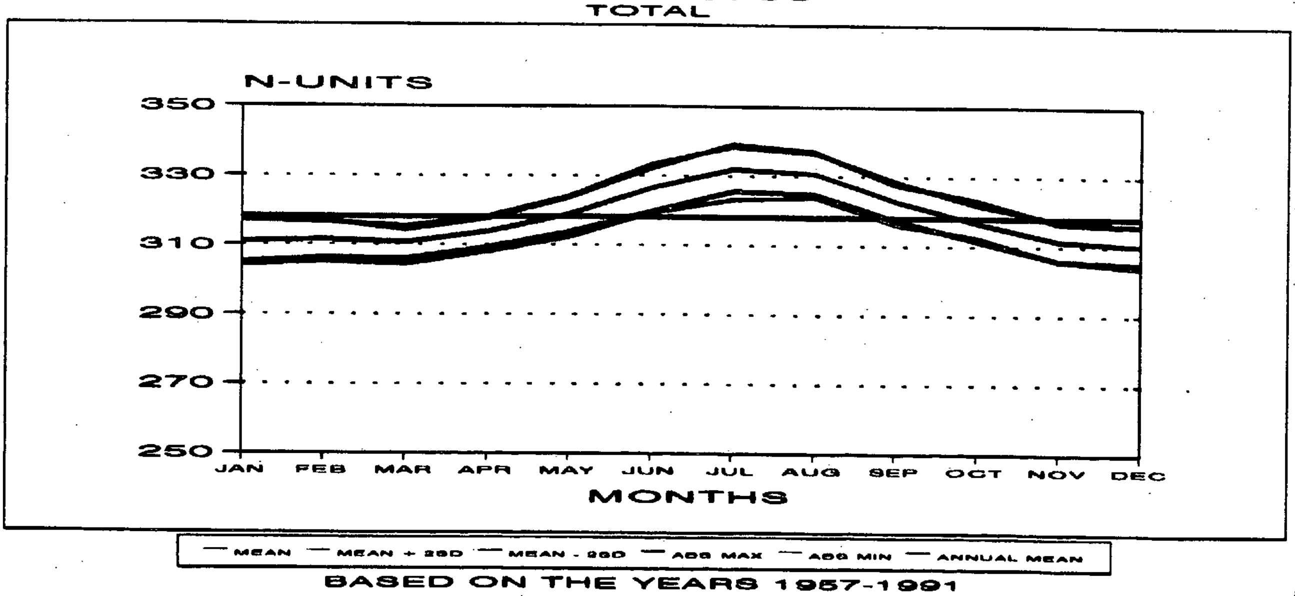


BASED ON THE YEARS 1957-1991

6910 VÆRNES

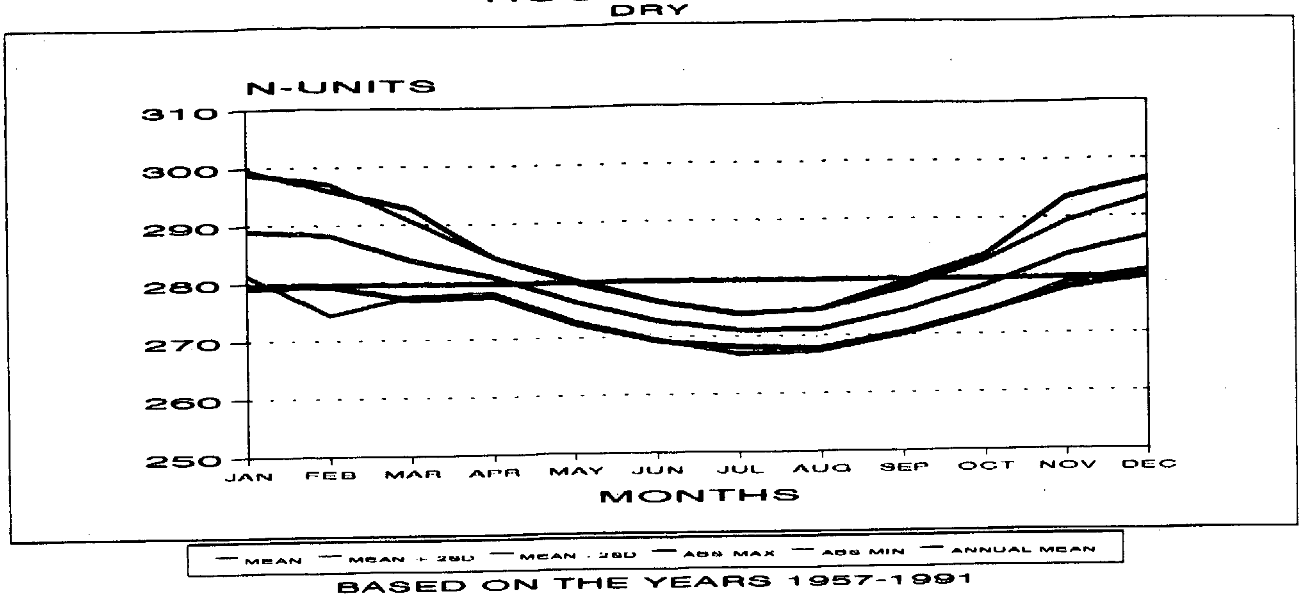
HOURS 0700

TOTAL



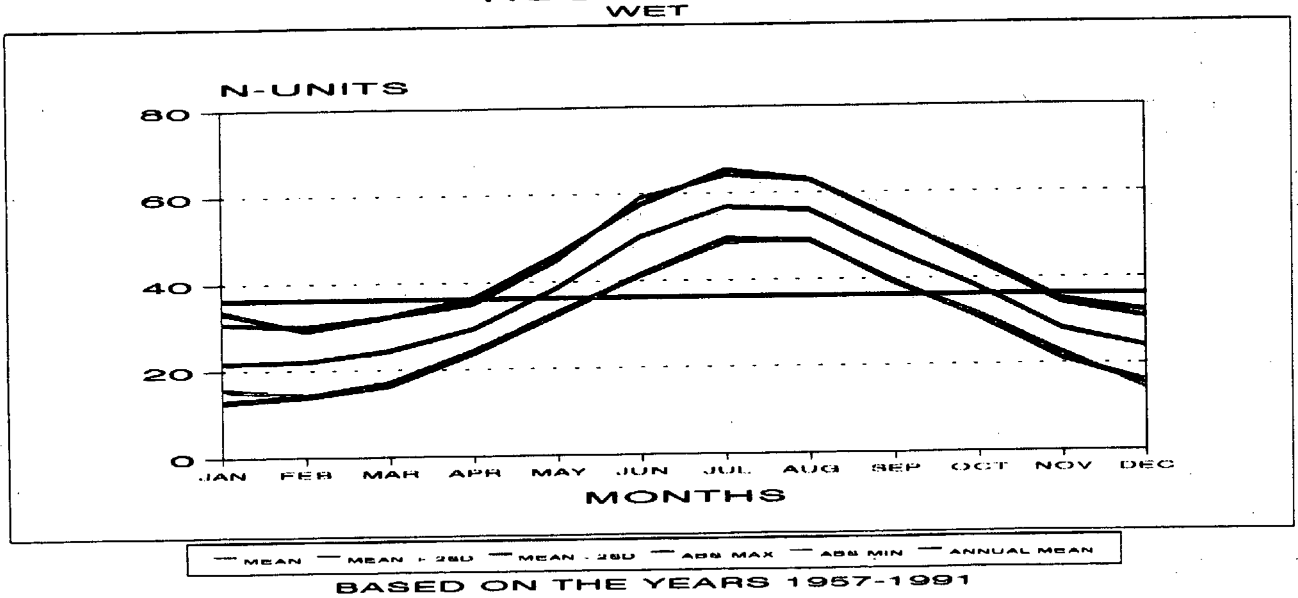
BASED ON THE YEARS 1957-1991

6910 VÆRNES
HOURS 1300
DRY



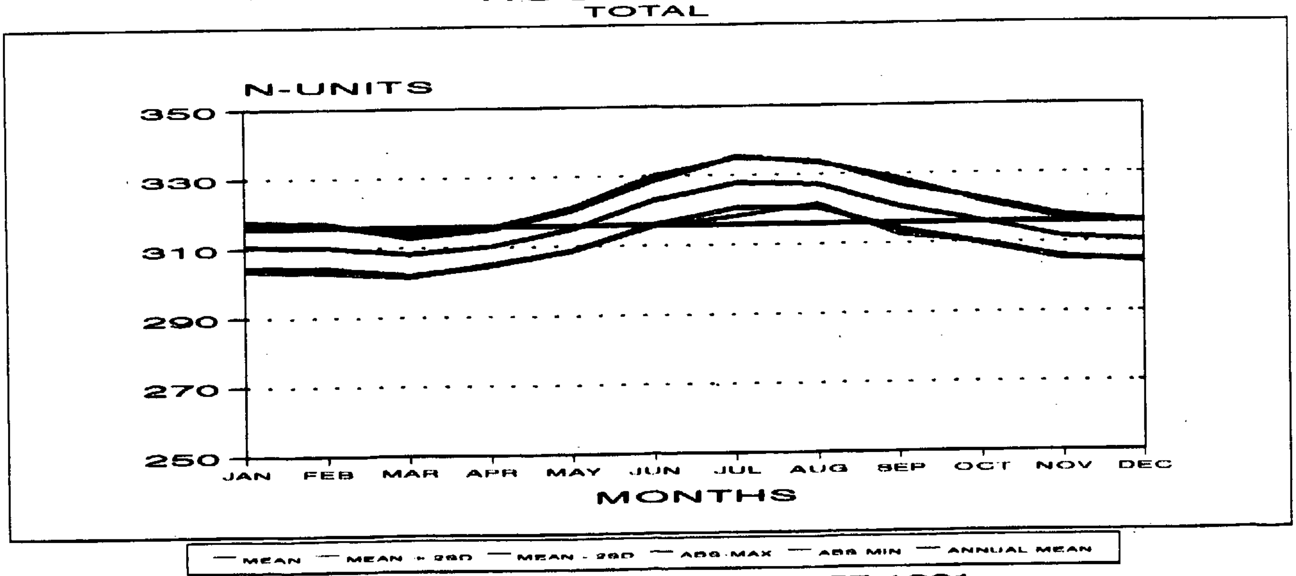
BASED ON THE YEARS 1957-1991

6910 VÆRNES
HOURS 1300
WET



BASED ON THE YEARS 1957-1991

6910 VÆRNES
HOURS 1300
TOTAL

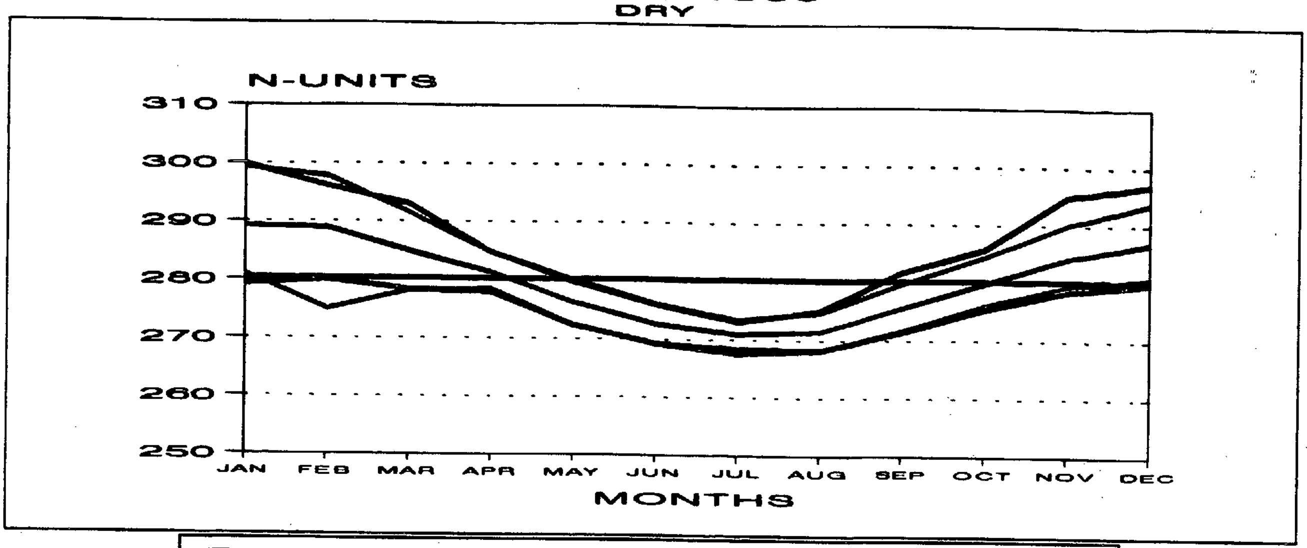


BASED ON THE YEARS 1957-1991

6910 VÆRNES

HOURS 1900

DRY



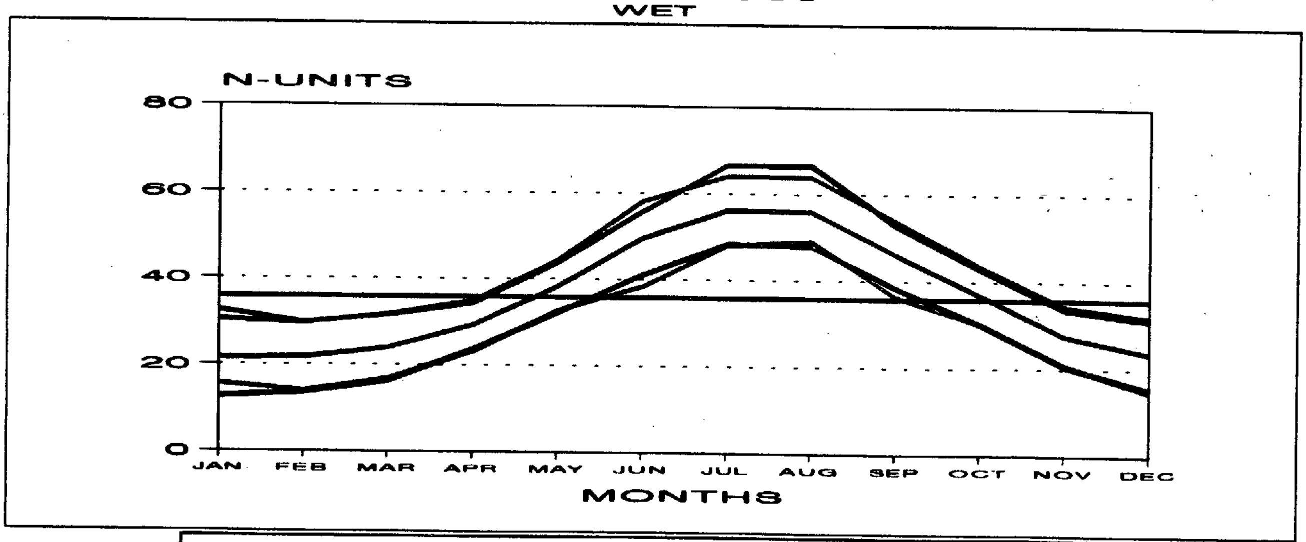
— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

6910 VÆRNES

HOURS 1900

WET



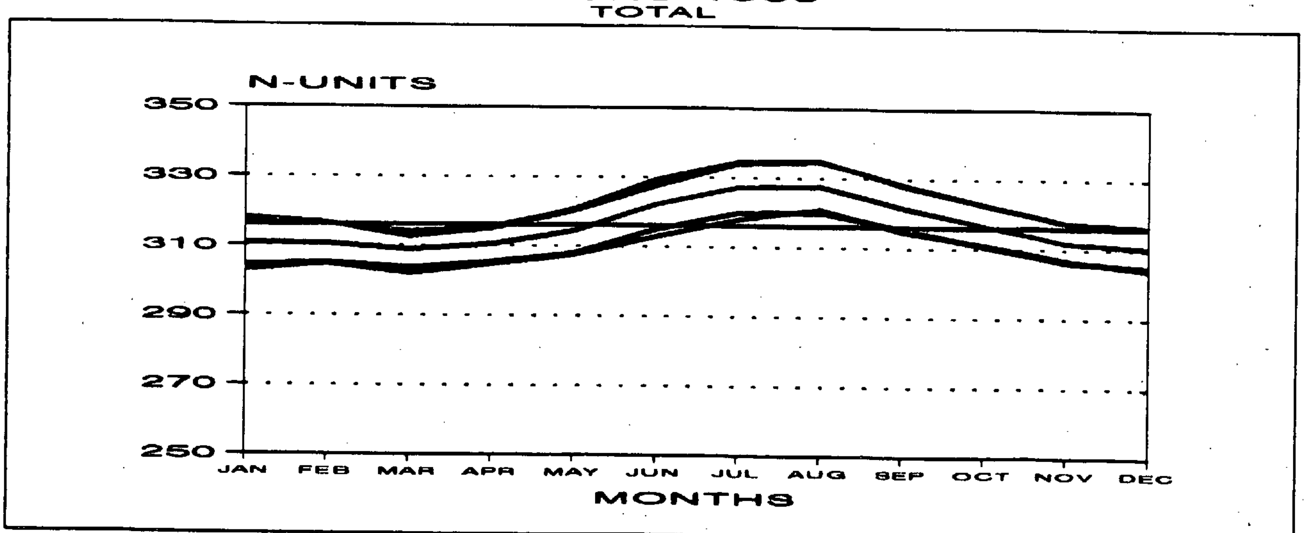
— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

6910 VÆRNES

HOURS 1900

TOTAL

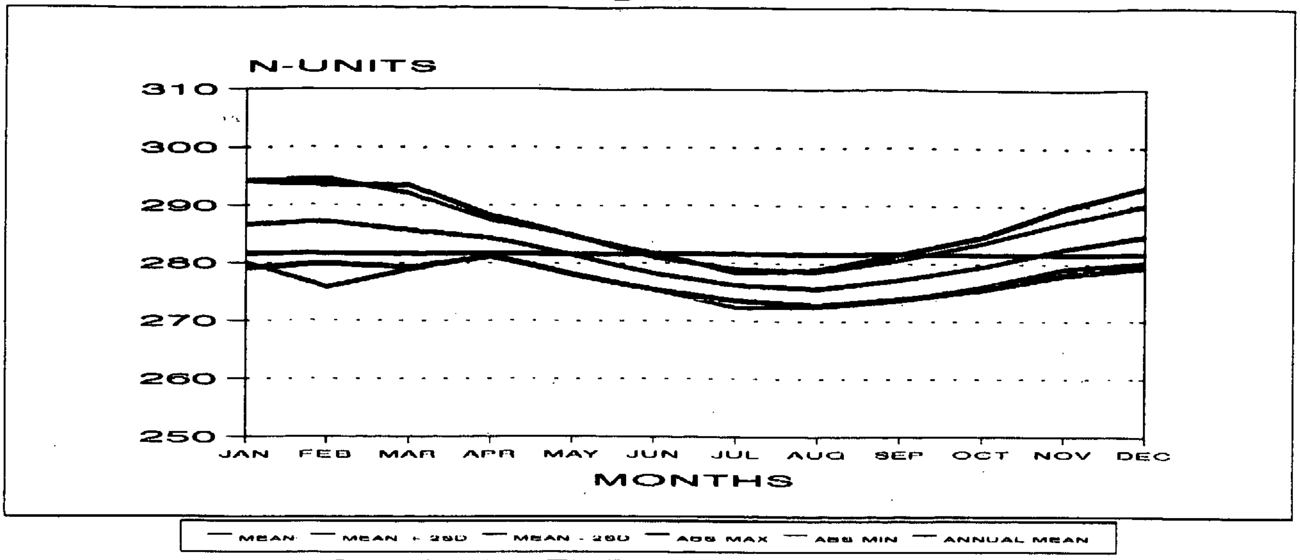


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

7155 ØRLANDET

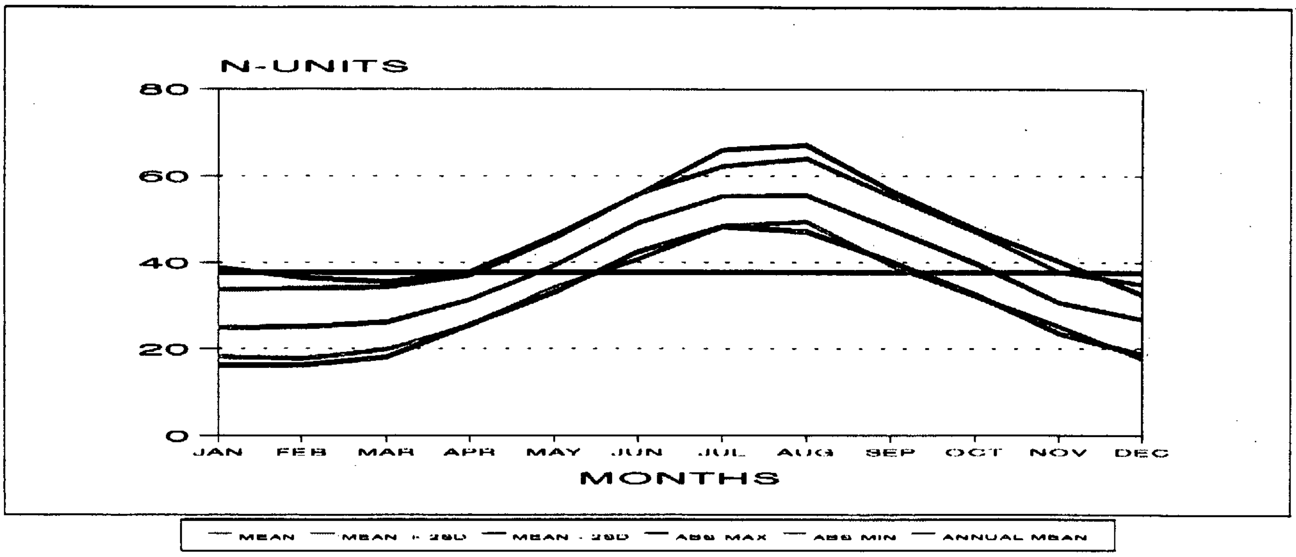
HOURS 0100
DRY



BASED ON THE YEARS 1957-1991

7155 ØRLANDET

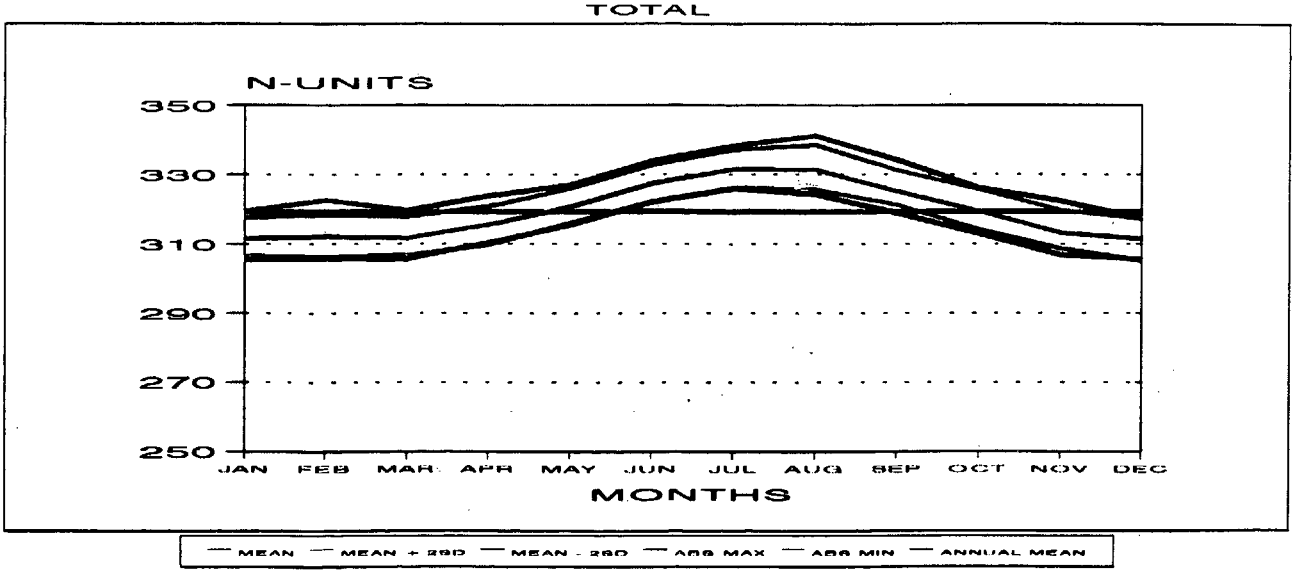
HOURS 0100
WET



BASED ON THE YEARS 1957-1991

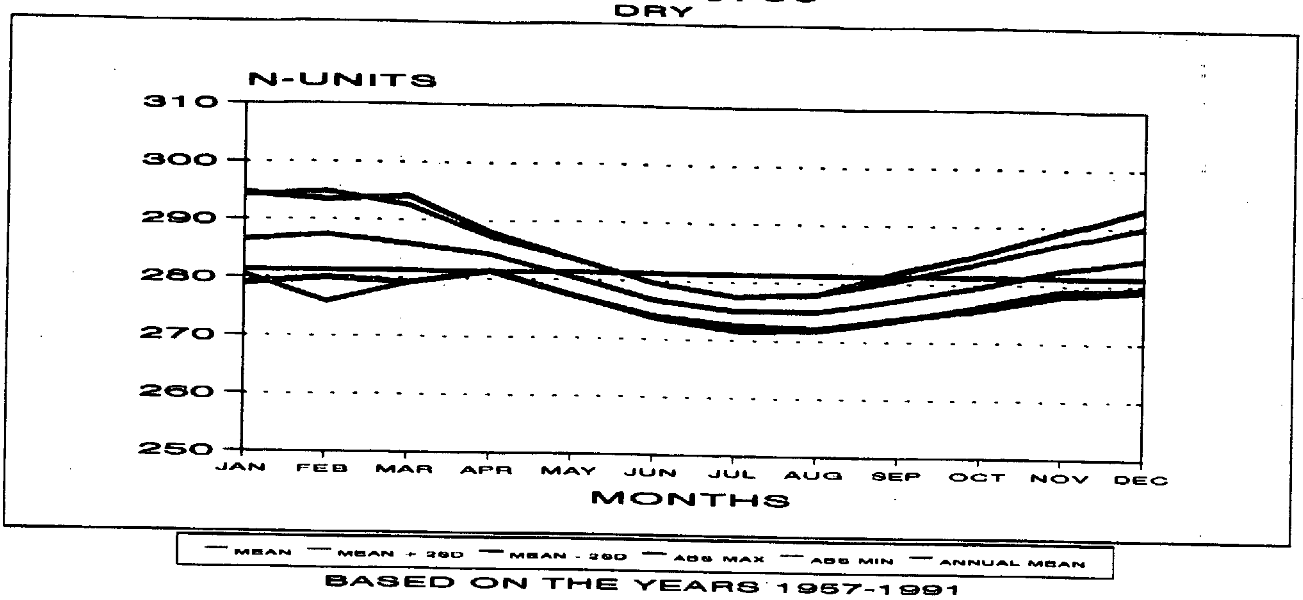
7155 ØRLANDET

HOURS 0100
TOTAL



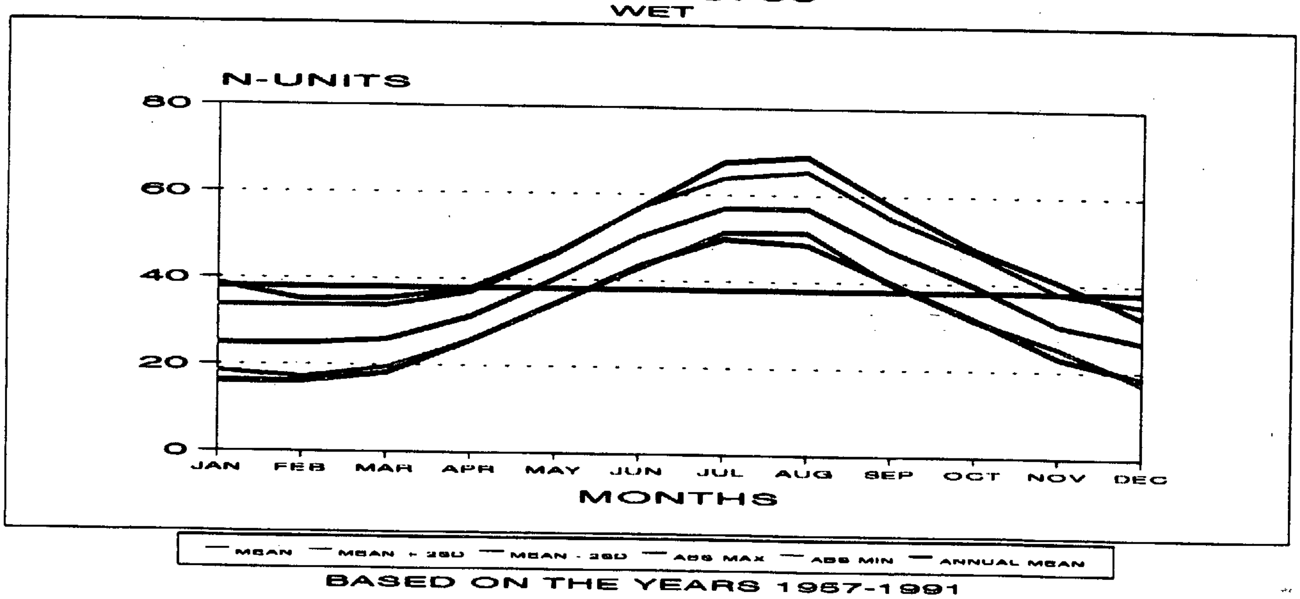
BASED ON THE YEARS 1957-1991

7155 ØRLANDET
HOURS 0700
DRY



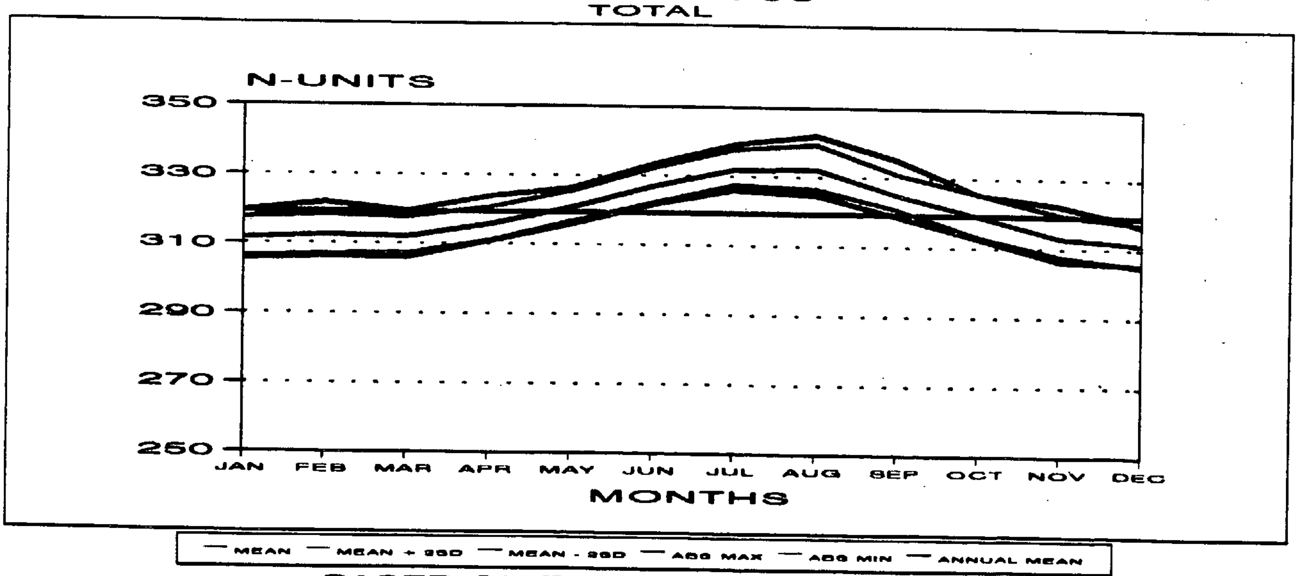
BASED ON THE YEARS 1957-1991

7155 ØRLANDET
HOURS 0700
WET



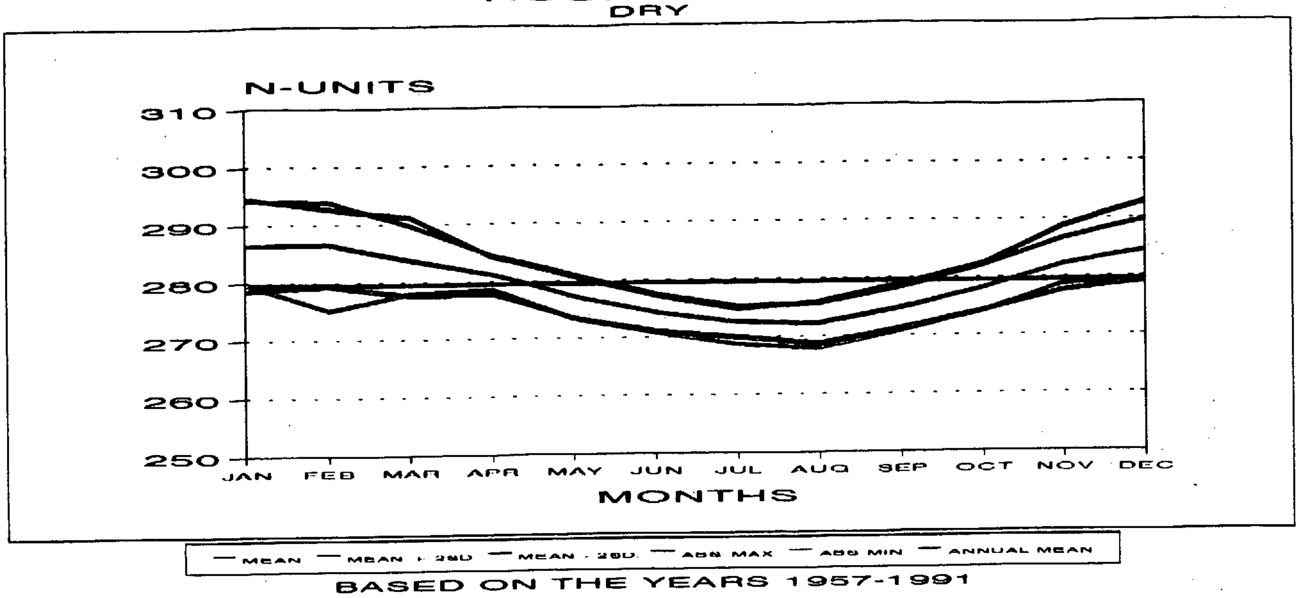
BASED ON THE YEARS 1957-1991

7155 ØRLANDET
HOURS 0700
TOTAL



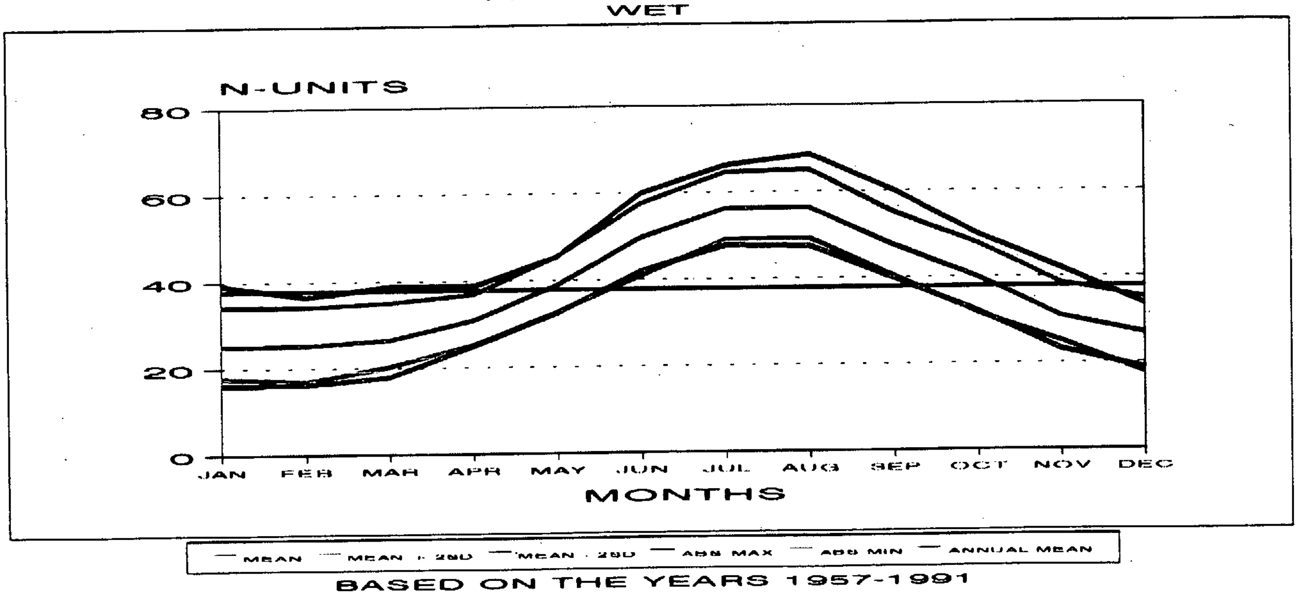
BASED ON THE YEARS 1957-1991

7155 ØRLANDET
HOURS 1300
DRY



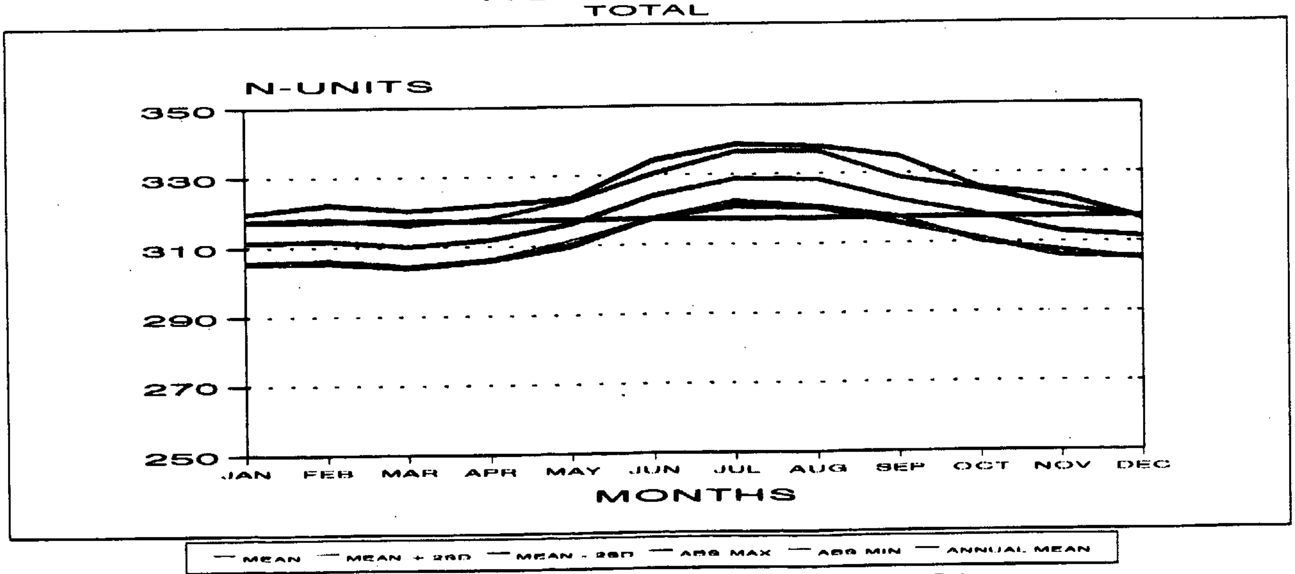
BASED ON THE YEARS 1957-1991

7155 ØRLANDET
HOURS 1300
WET



BASED ON THE YEARS 1957-1991

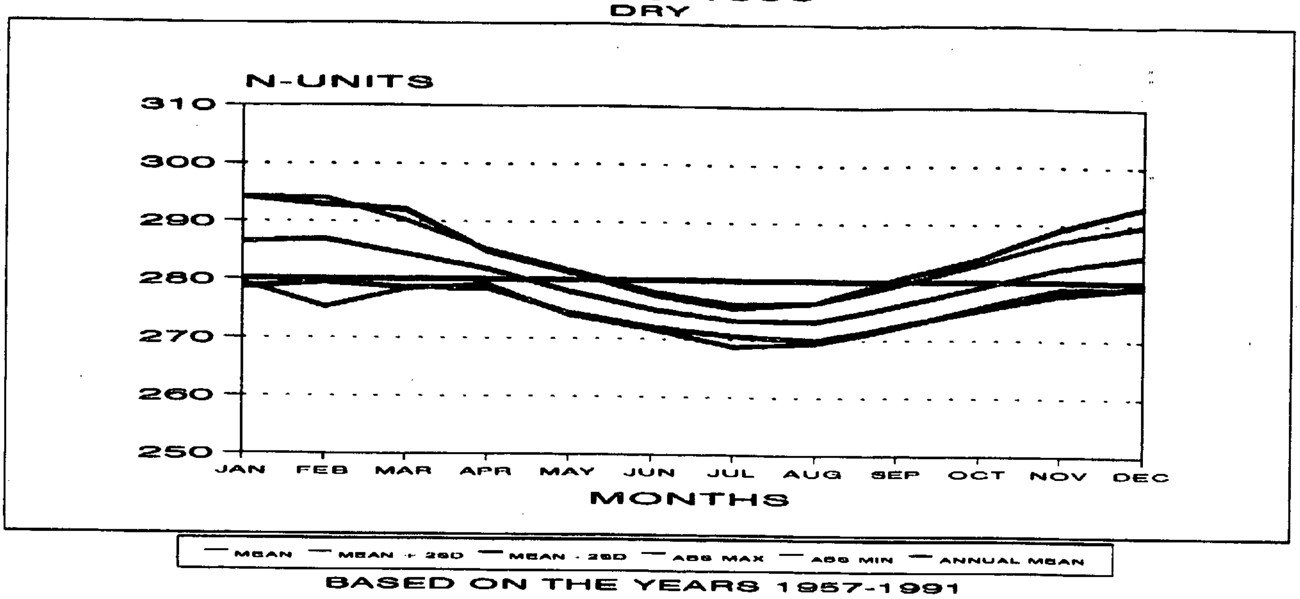
7155 ØRLANDET
HOURS 1300
TOTAL



BASED ON THE YEARS 1957-1991

7155 ØRLANDET

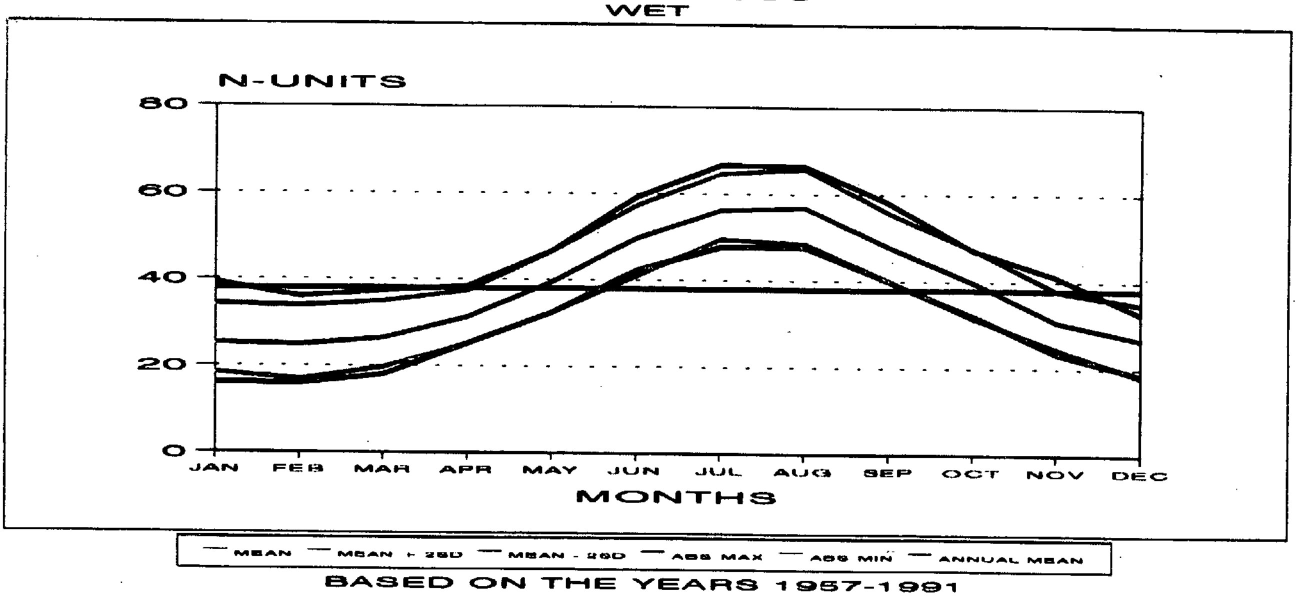
HOURS 1900
DRY



BASED ON THE YEARS 1957-1991

7155 ØRLANDET

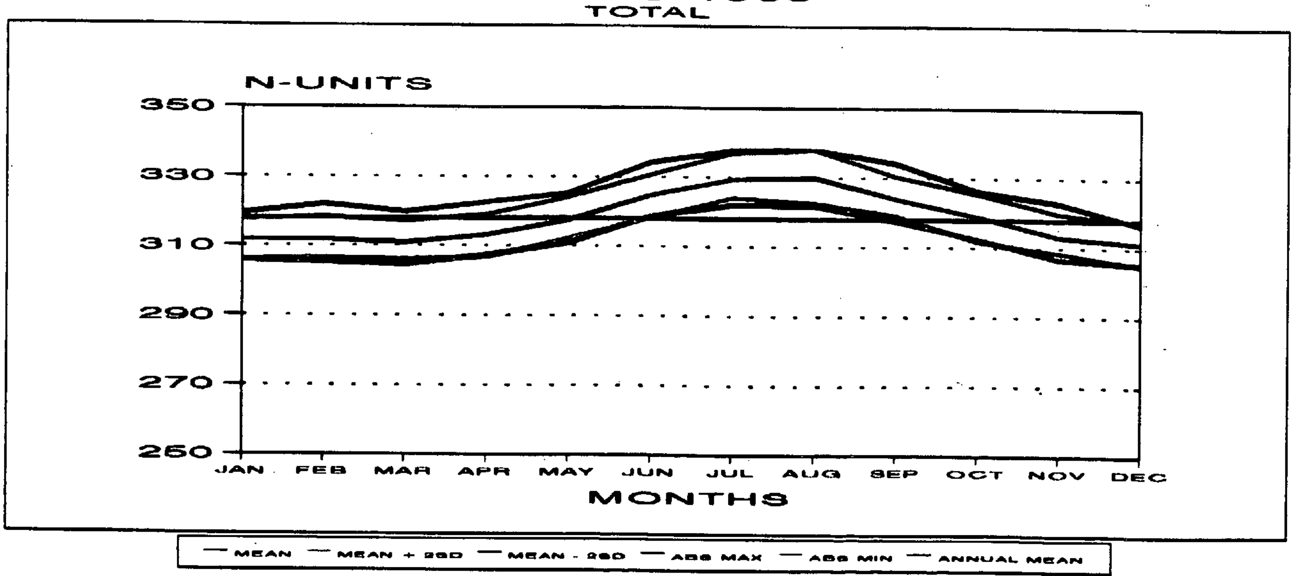
HOURS 1900
WET



BASED ON THE YEARS 1957-1991

7155 ØRLANDET

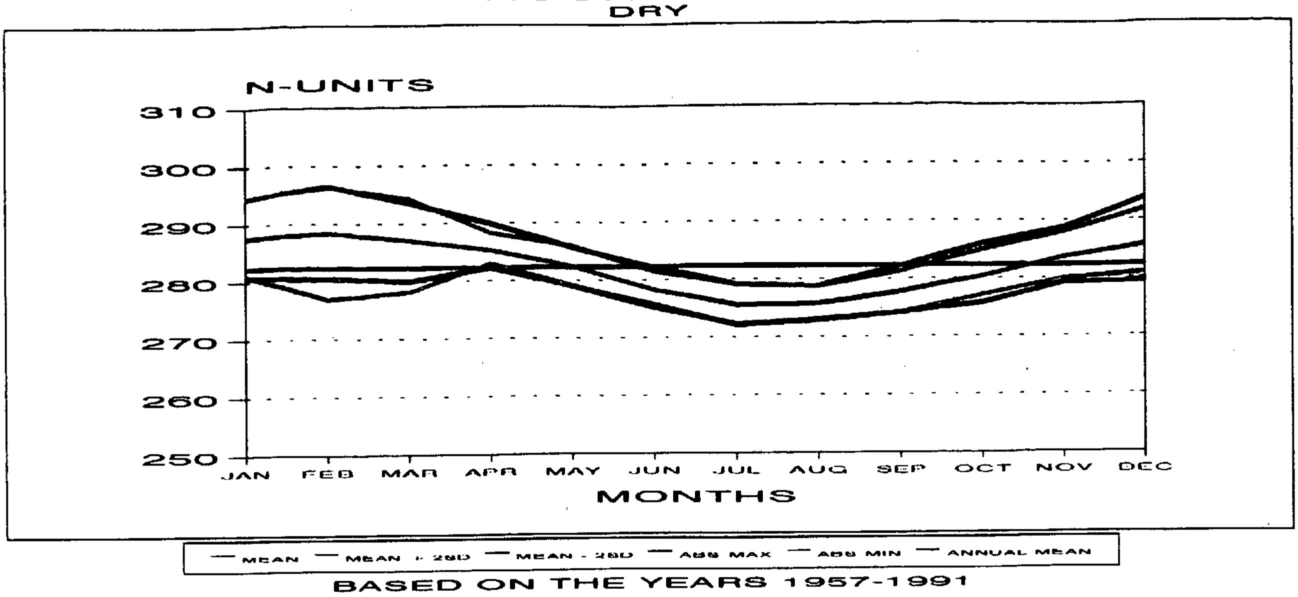
HOURS 1900
TOTAL



BASED ON THE YEARS 1957-1991

8229 BODØ

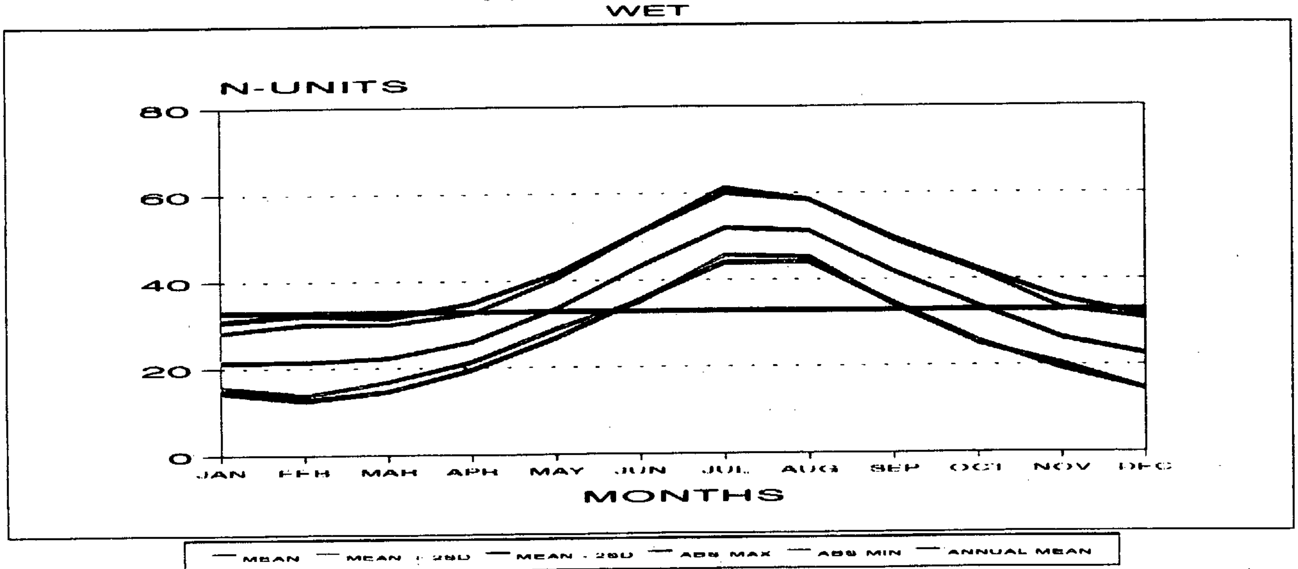
HOURS 0100
DRY



BASED ON THE YEARS 1957-1991

8229 BODØ

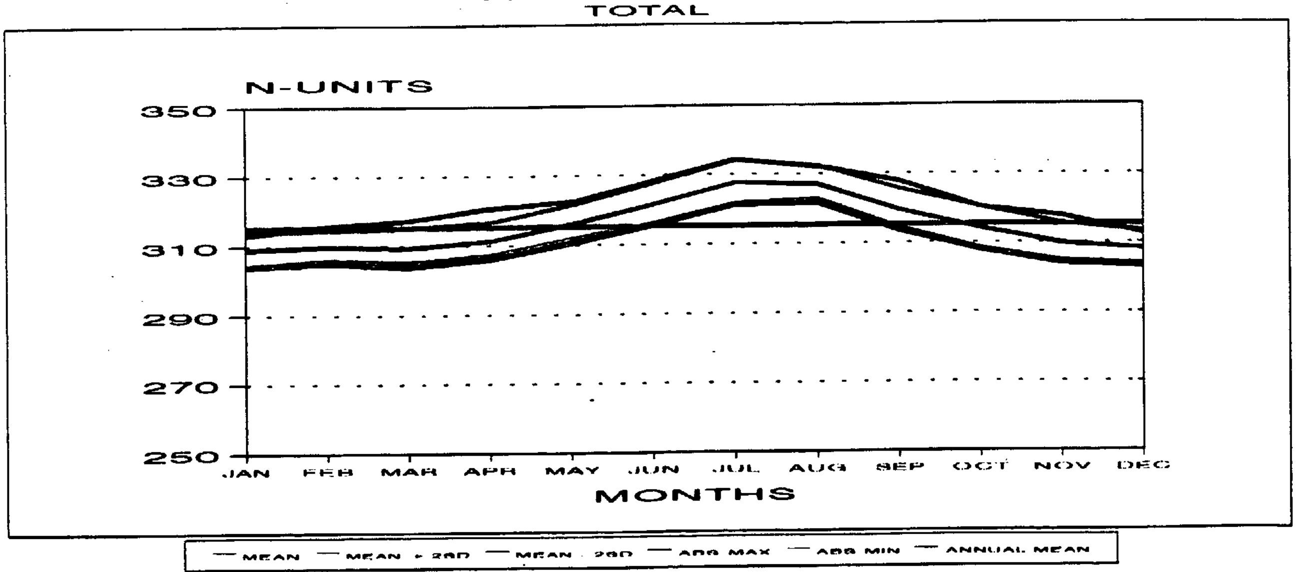
HOURS 0100
WET



BASED ON THE YEARS 1957-1991

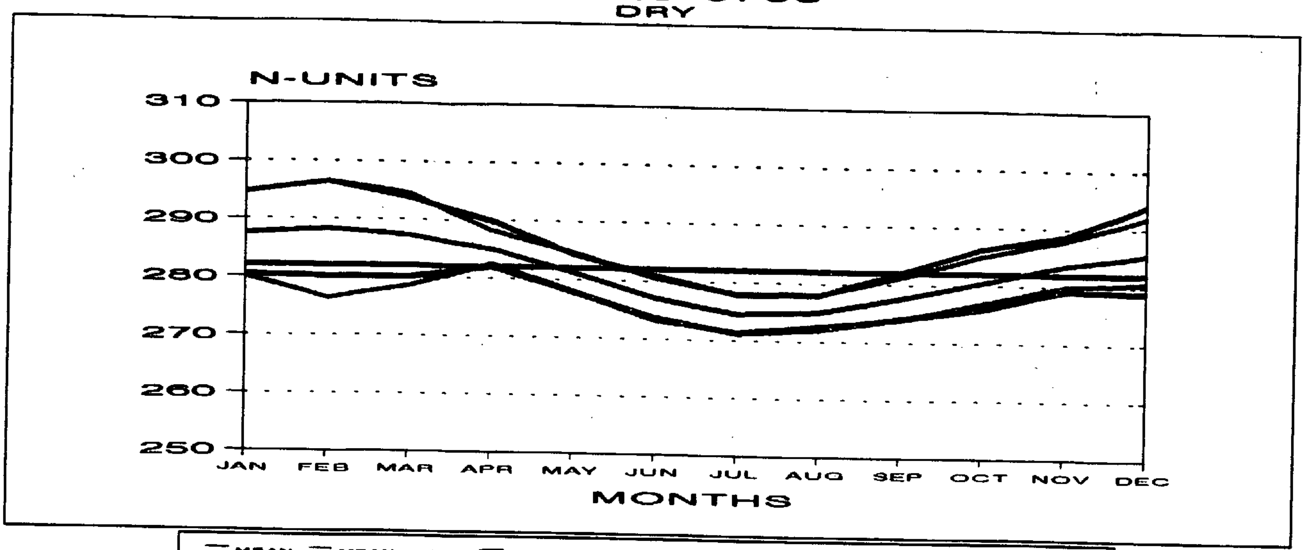
8229 BODØ

HOURS 0100
TOTAL



BASED ON THE YEARS 1957-1991

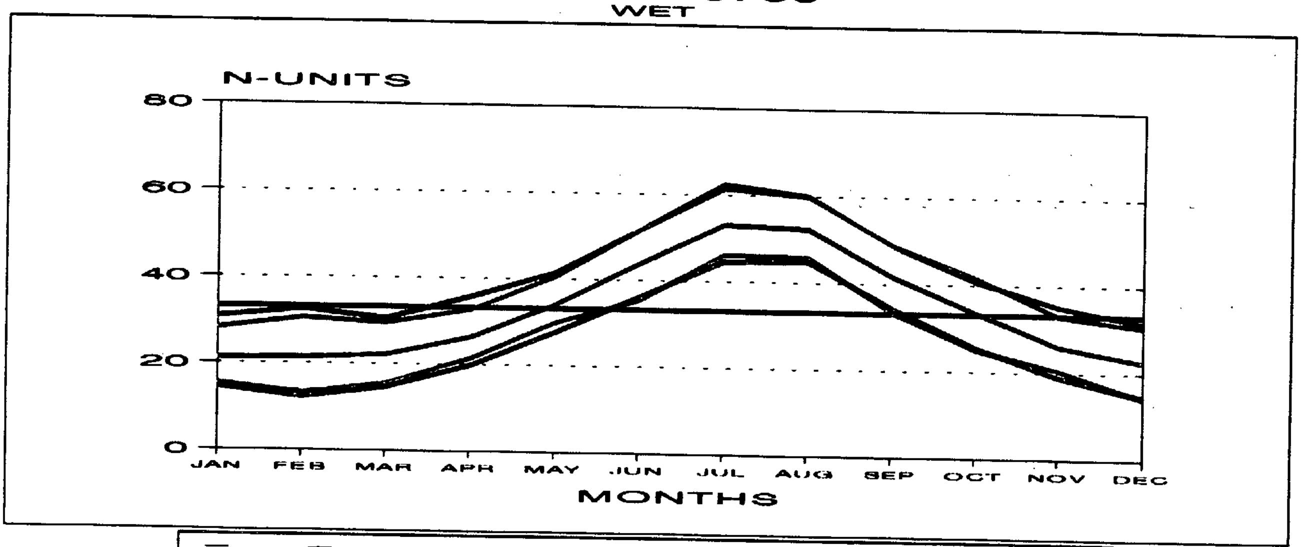
8229 BODØ
HOURS 0700
DRY



MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

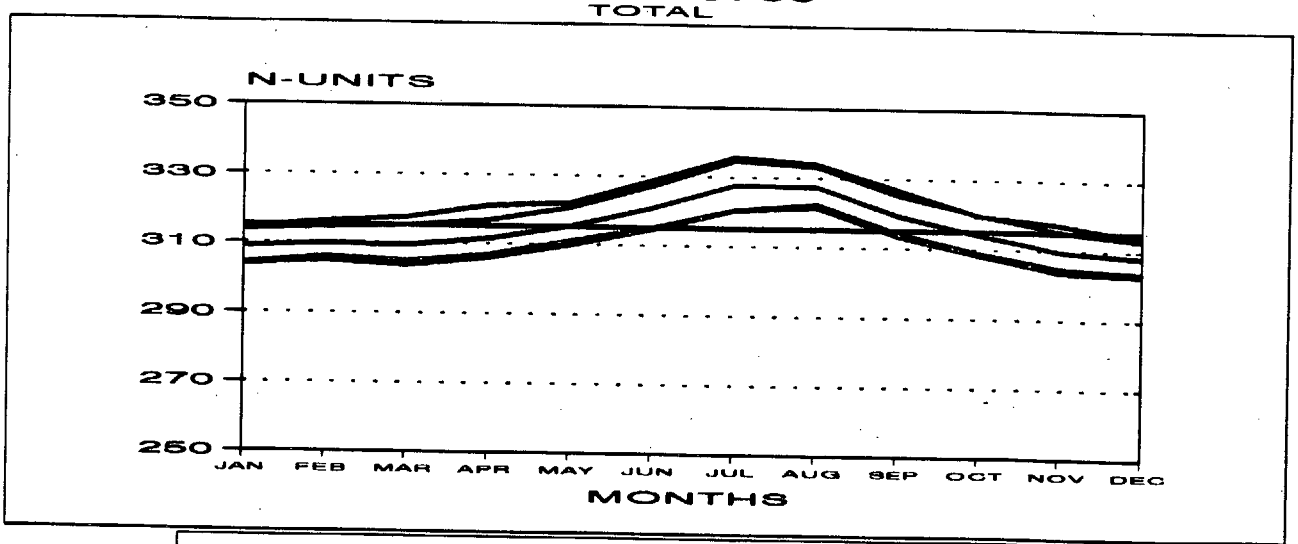
8229 BODØ
HOURS 0700
WET



MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

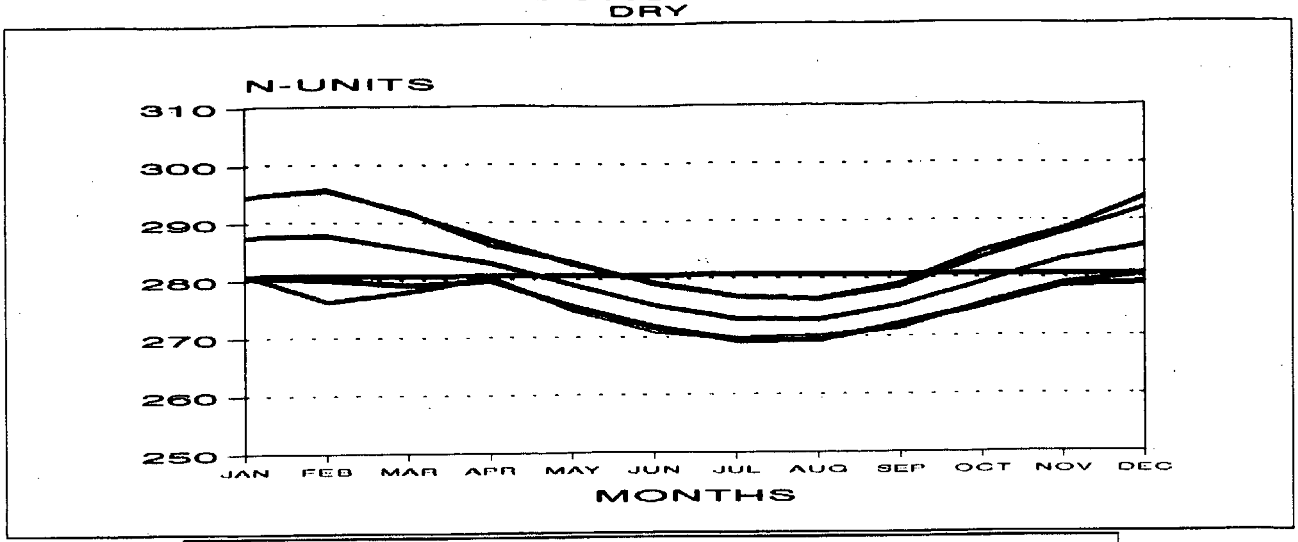
8229 BODØ
HOURS 0700
TOTAL



MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

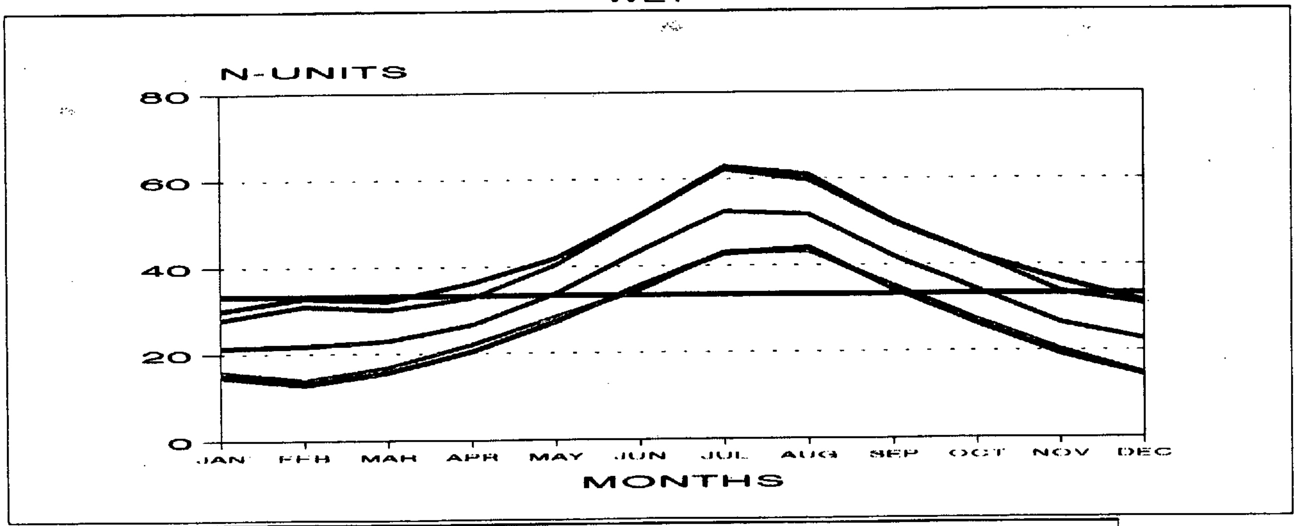
8229 BODØ
HOURS 1300
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

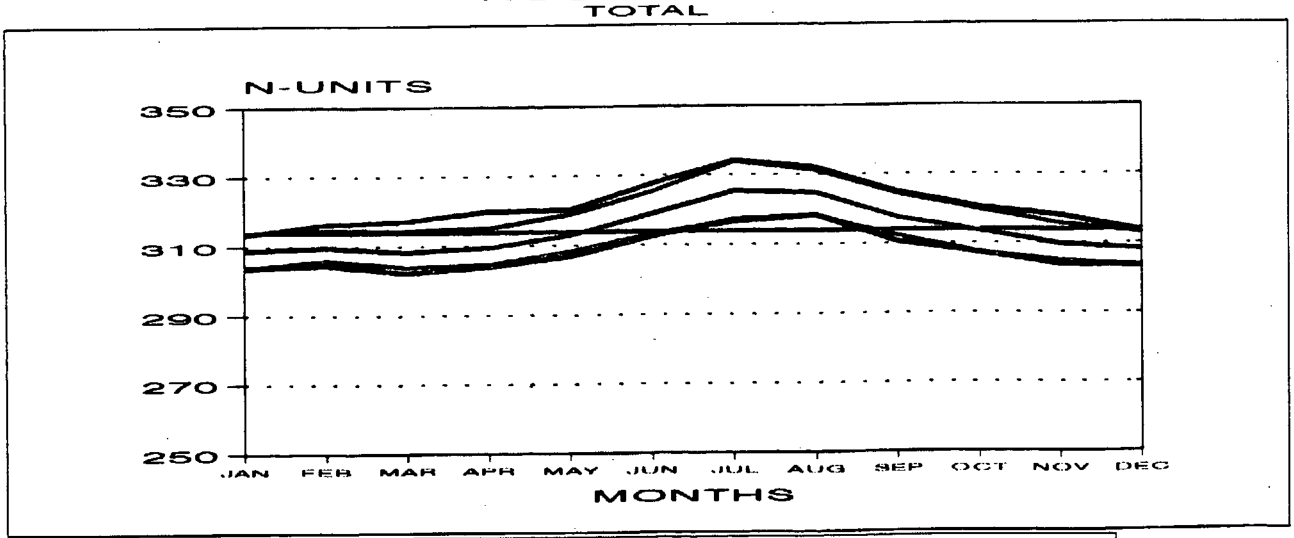
8229 BODØ
HOURS 1300
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

8229 BODØ
HOURS 1300
TOTAL

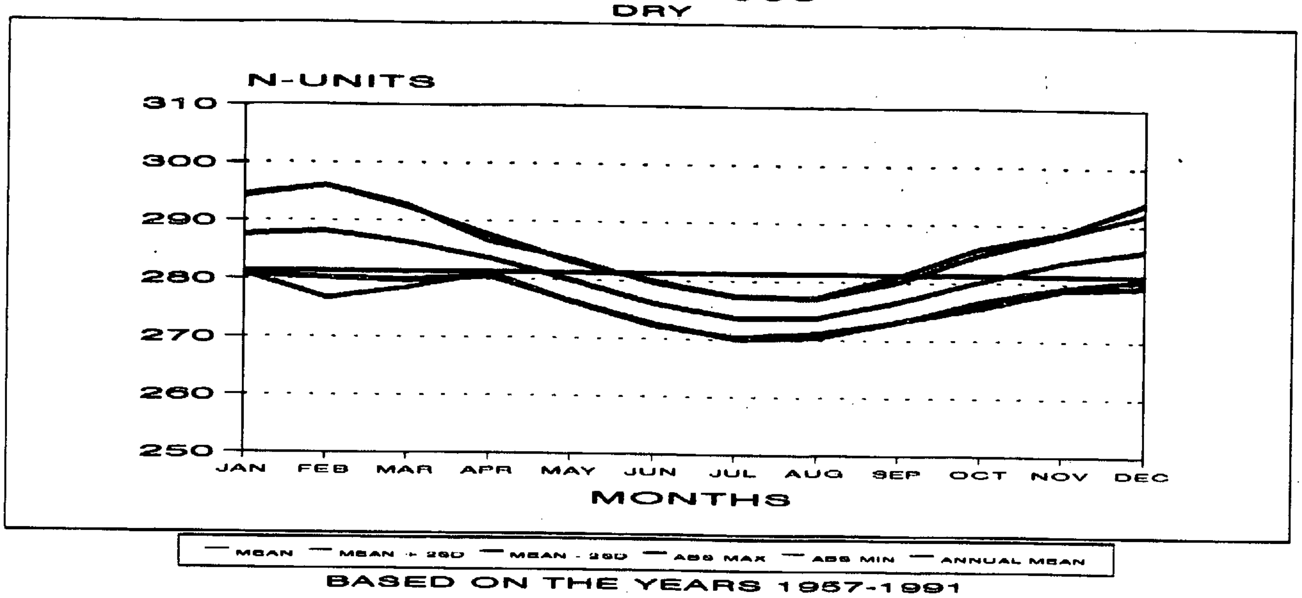


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

8229 BODØ

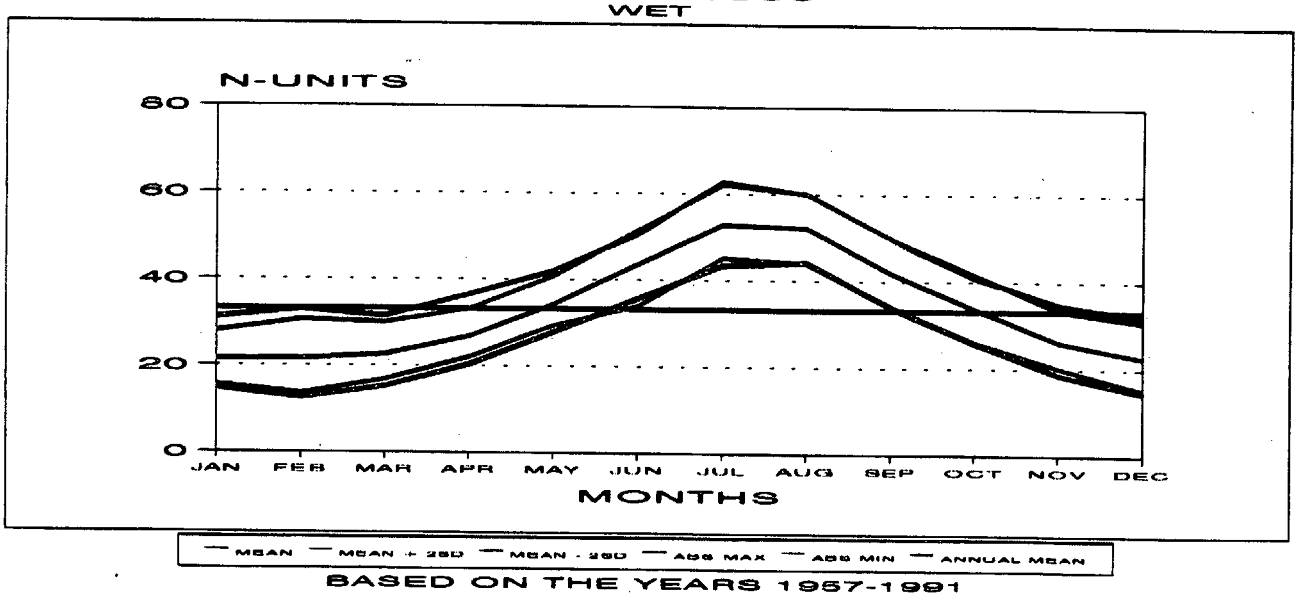
HOURS 1900
DRY



BASED ON THE YEARS 1957-1991

8229 BODØ

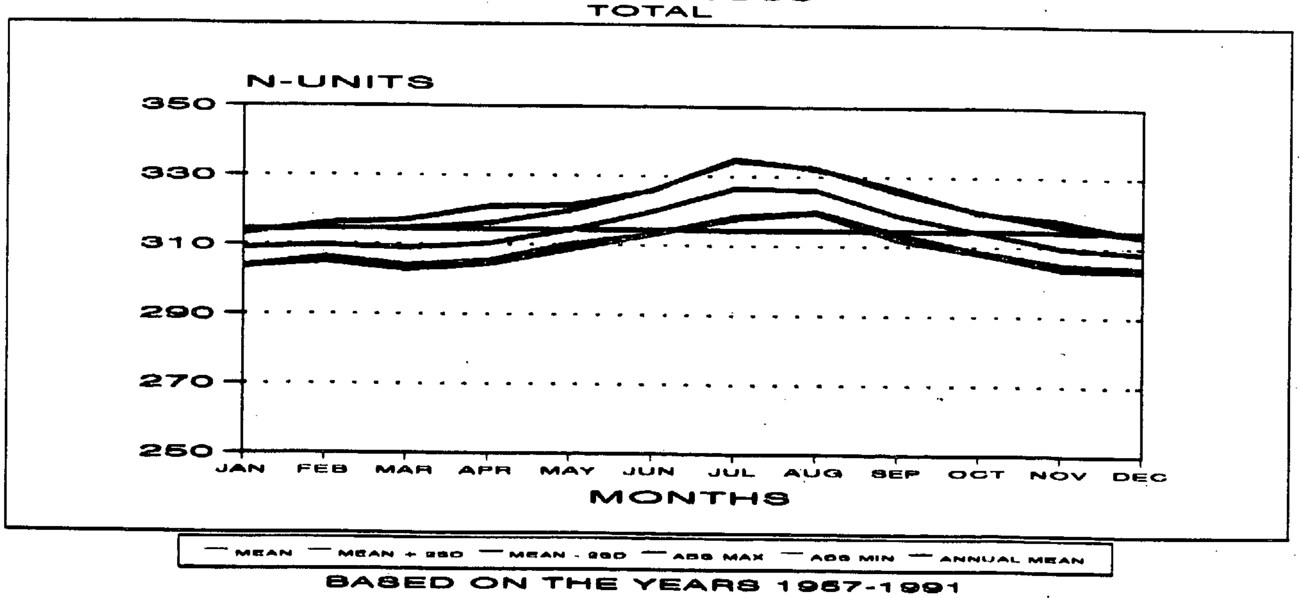
HOURS 1900
WET



BASED ON THE YEARS 1957-1991

8229 BODØ

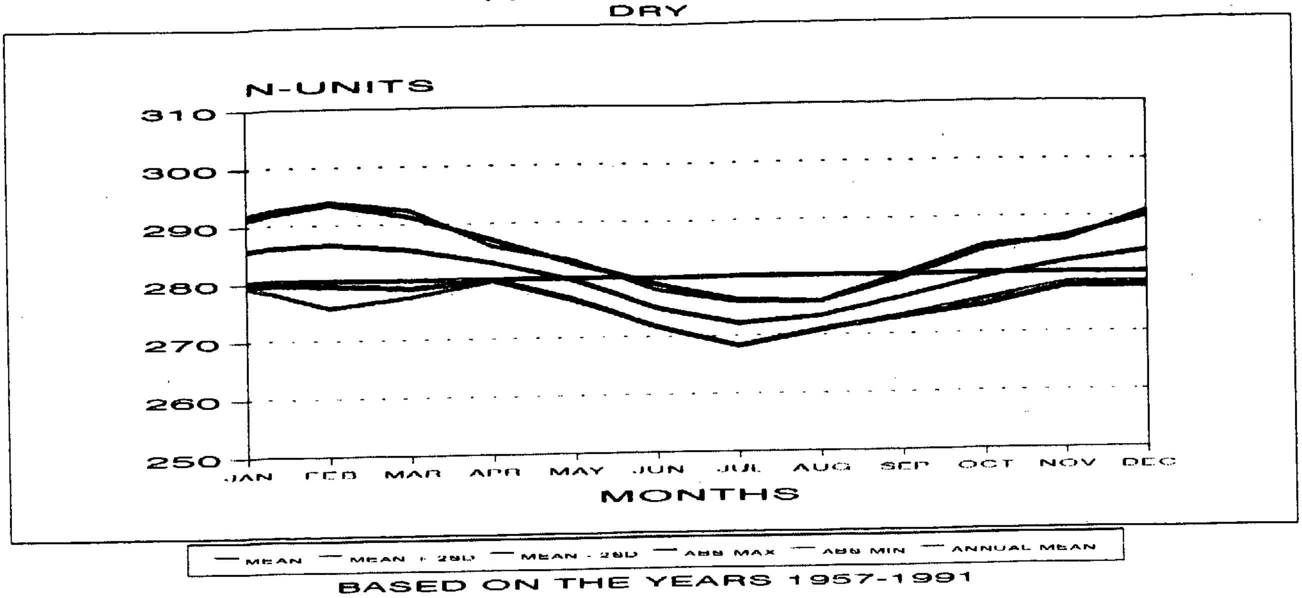
HOURS 1900
TOTAL



BASED ON THE YEARS 1957-1991

9045 TROMSØ

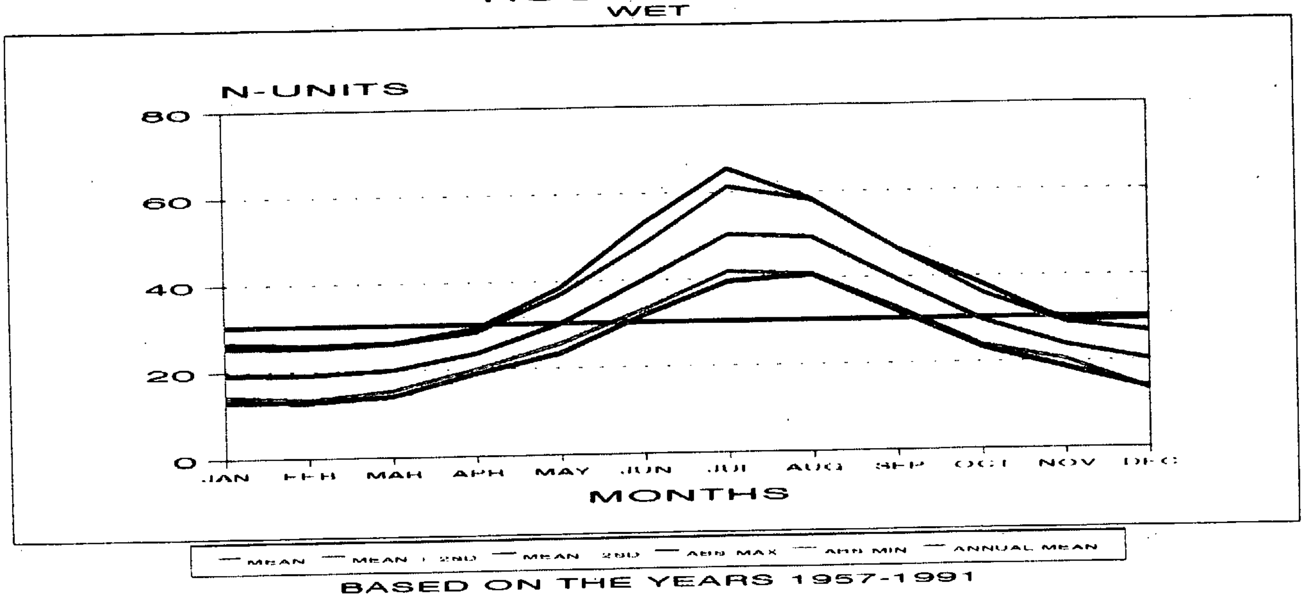
HOURS 0700
DRY



BASED ON THE YEARS 1957-1991

9045 TROMSØ

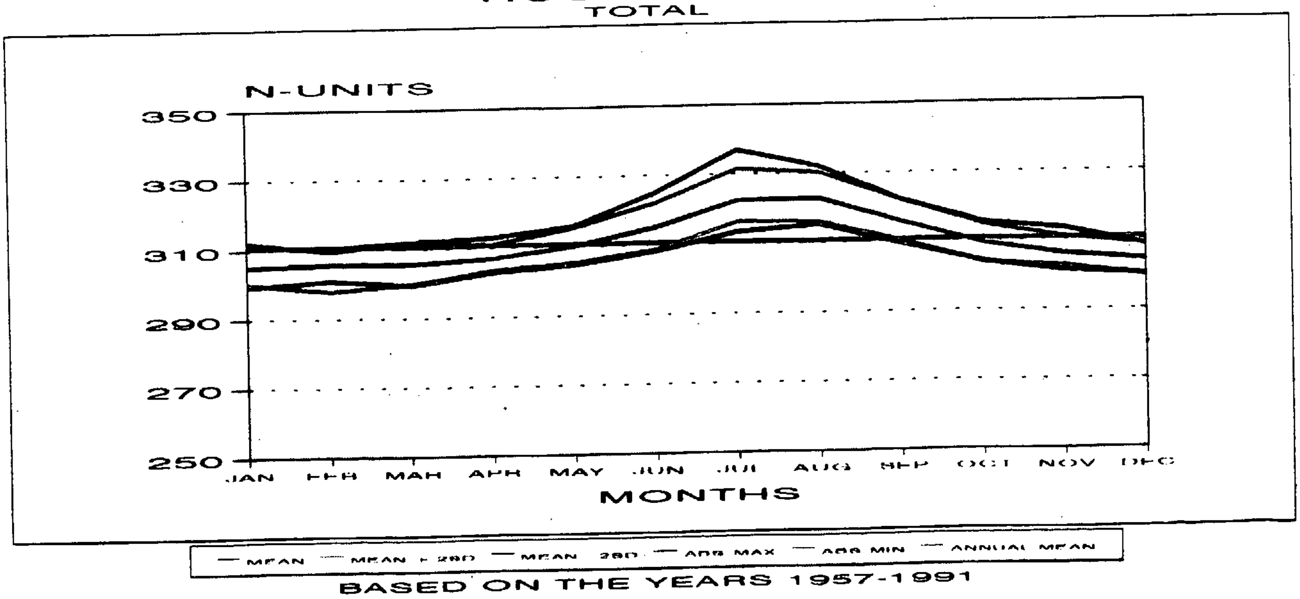
HOURS 0700
WET



BASED ON THE YEARS 1957-1991

9045 TROMSØ

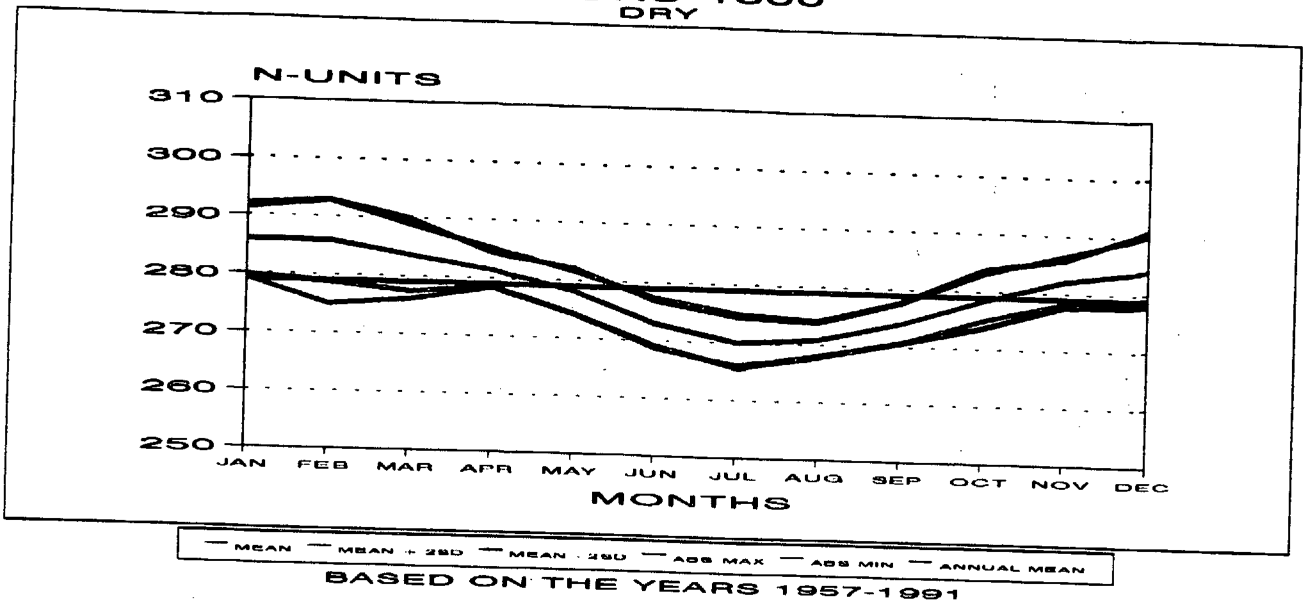
HOURS 0700
TOTAL



BASED ON THE YEARS 1957-1991

9045 TROMSØ

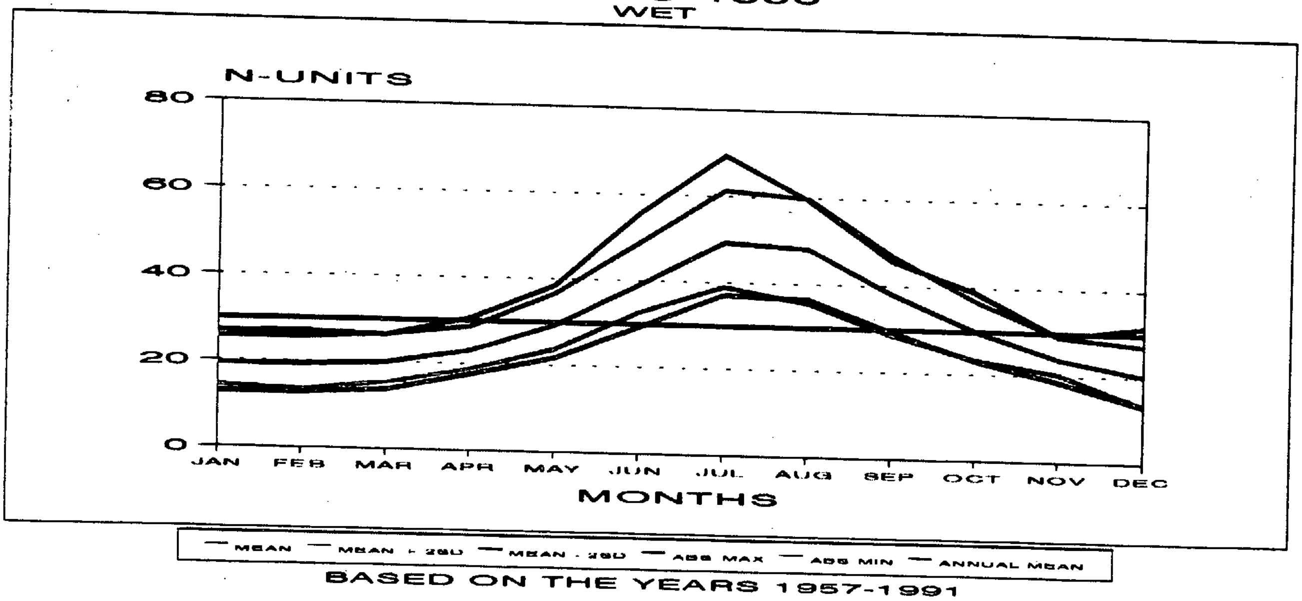
HOURS 1300
DRY



BASED ON THE YEARS 1957-1991

9045 TROMSØ

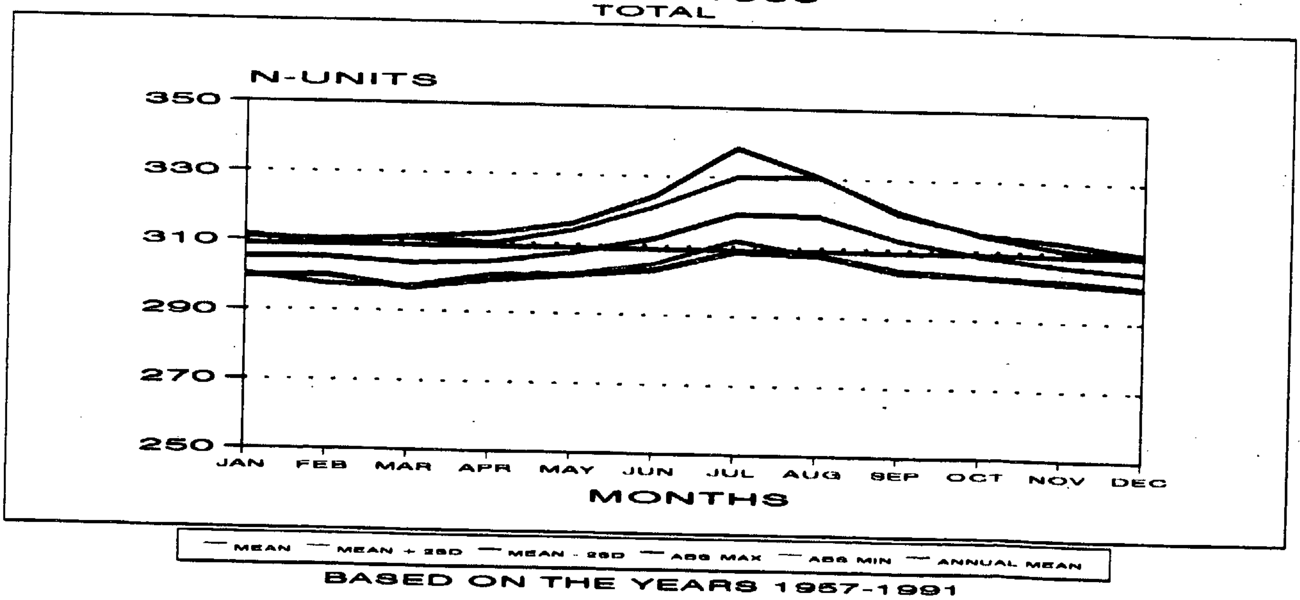
HOURS 1300
WET



BASED ON THE YEARS 1957-1991

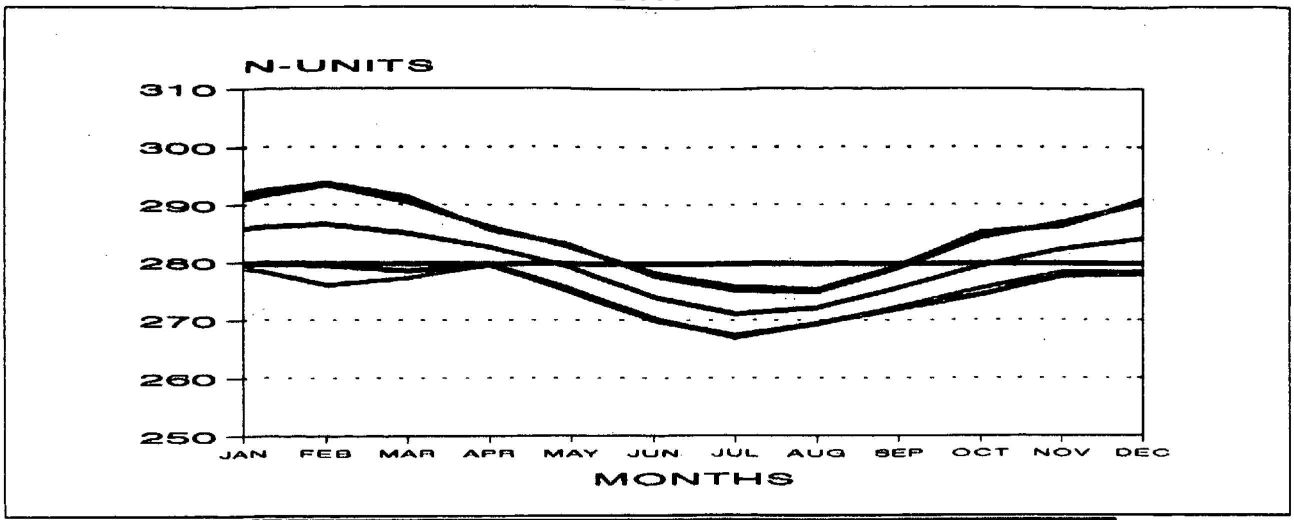
9045 TROMSØ

HOURS 1300
TOTAL



BASED ON THE YEARS 1957-1991

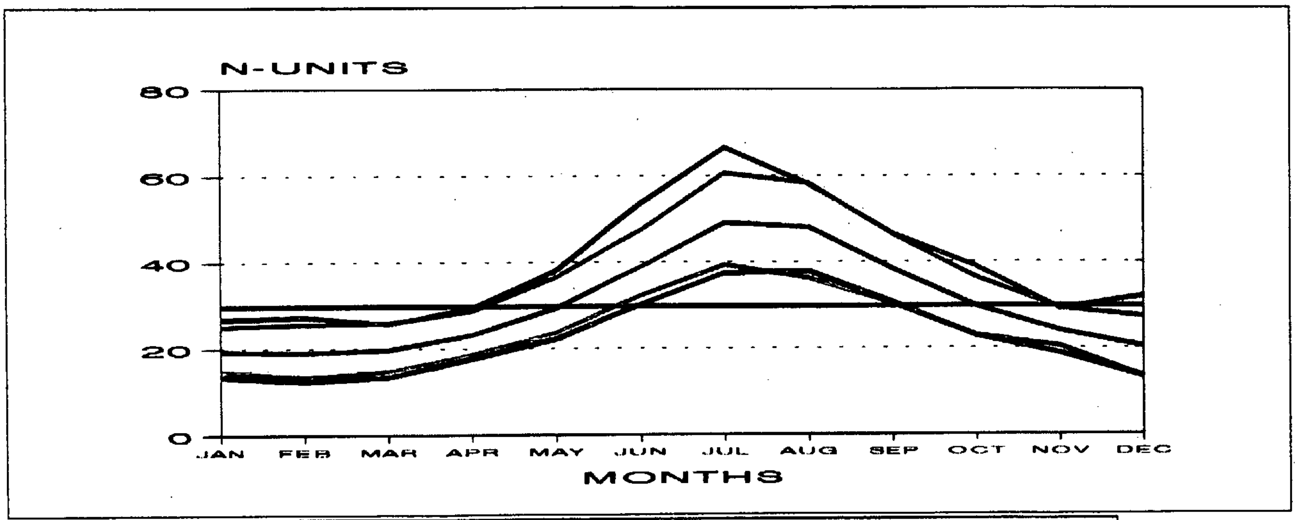
9045 TROMSØ
HOURS 1900
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

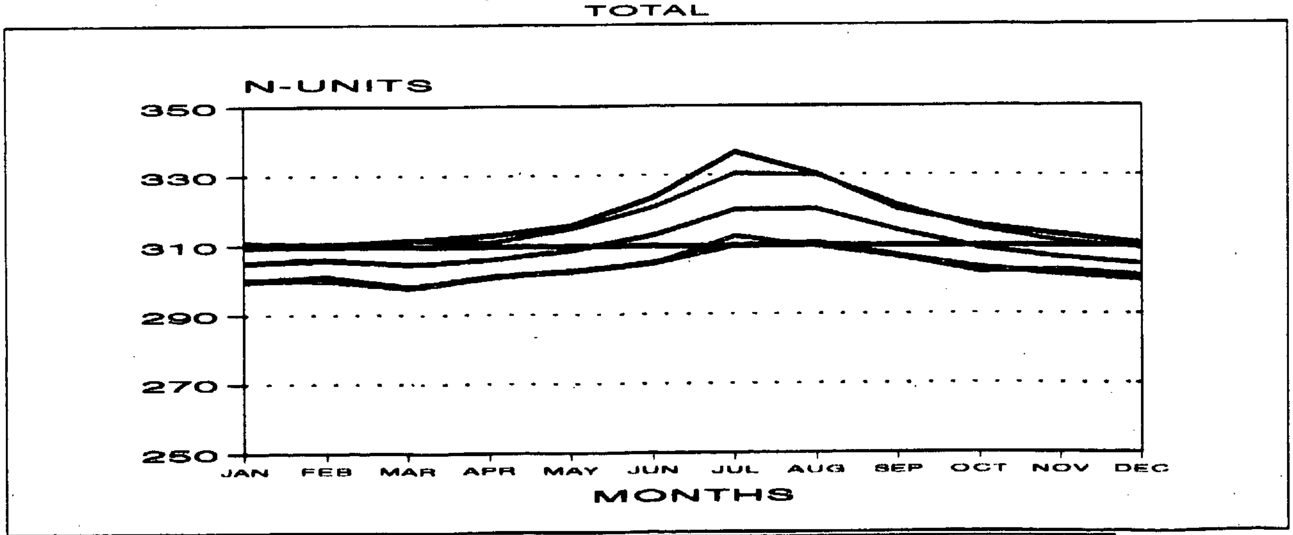
9045 TROMSØ
HOURS 1900
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9045 TROMSØ
HOURS 1900
TOTAL

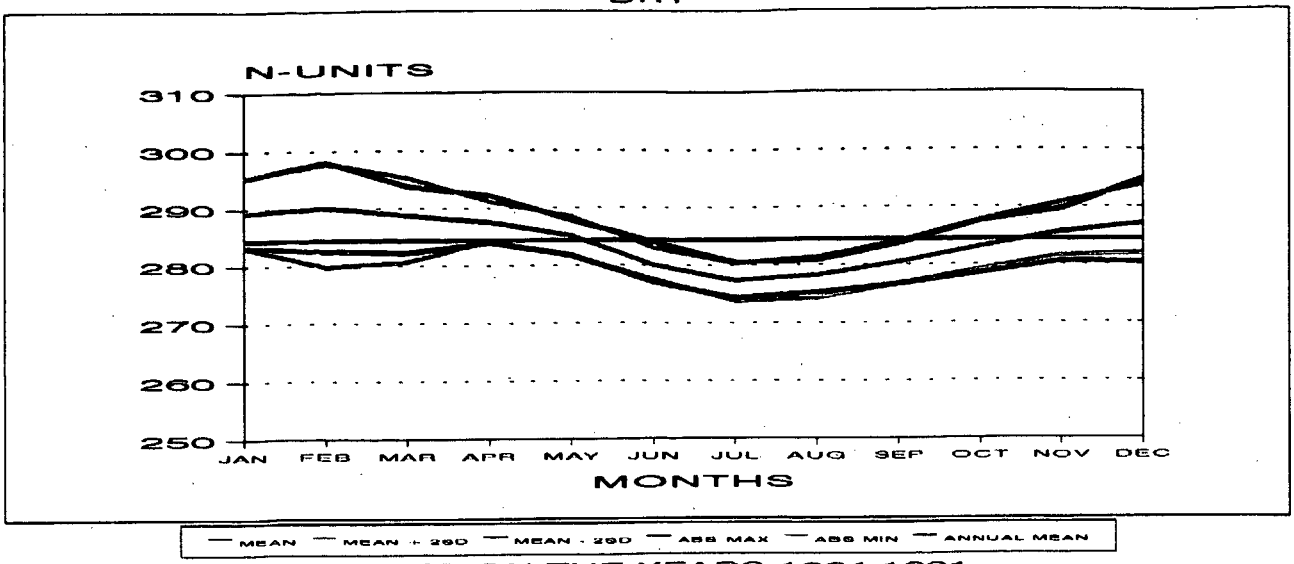


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9049 TROMSØ LANGNES

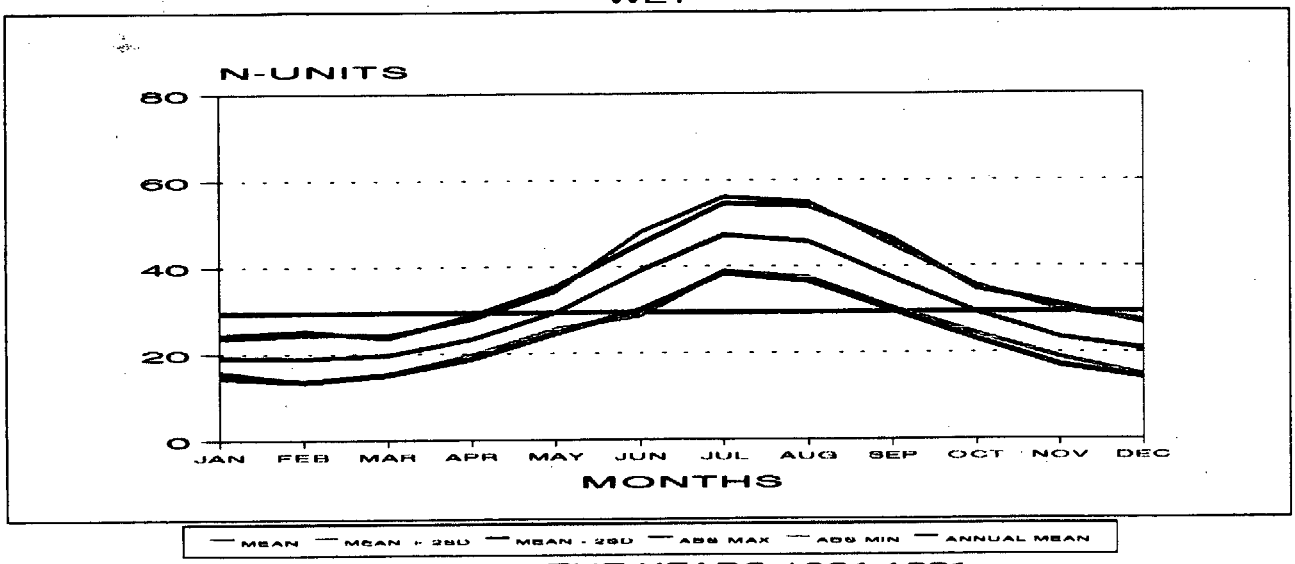
HOURS 0100
DRY



BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES

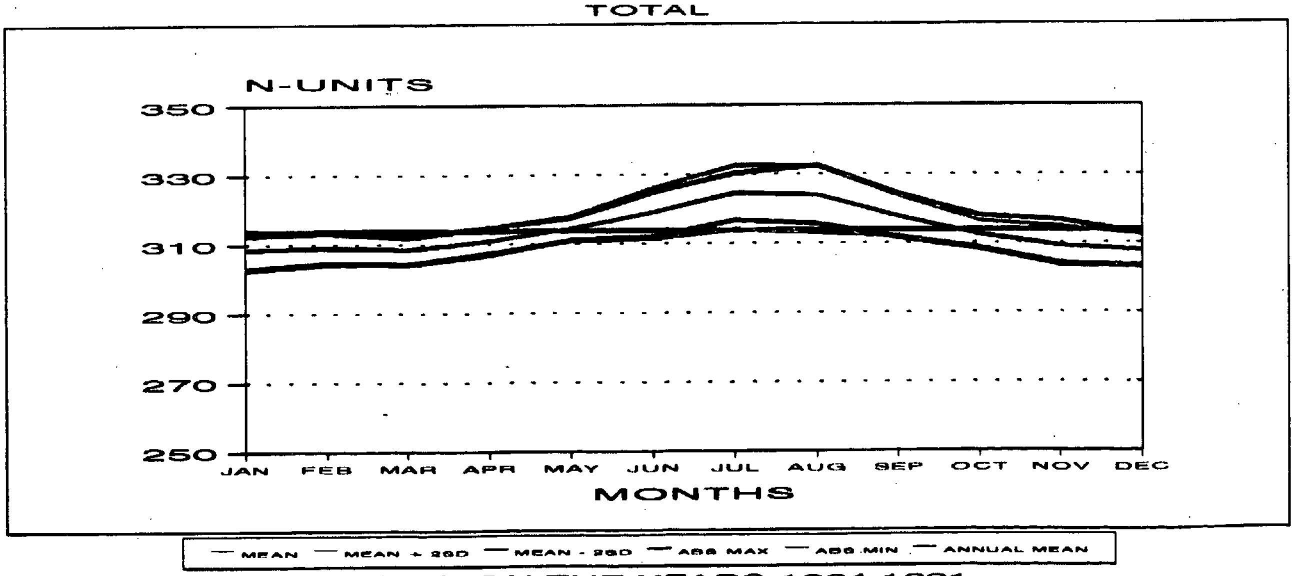
HOURS 0100
WET



BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES

HOURS 0100
TOTAL

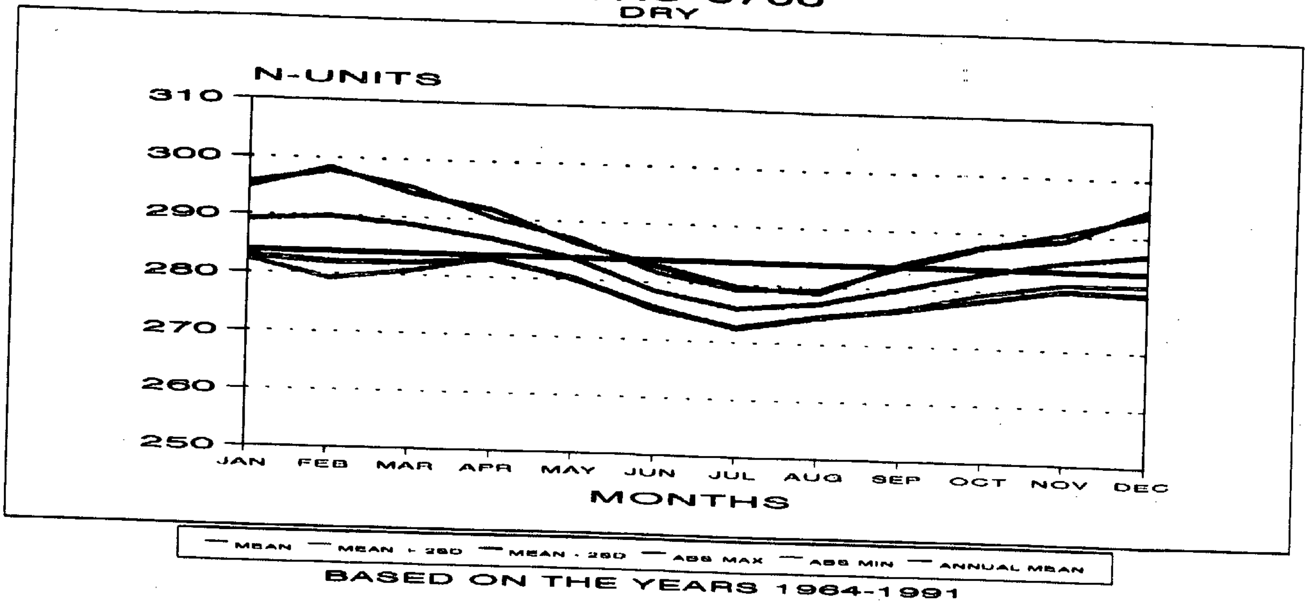


BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES

HOURS 0700

DRY

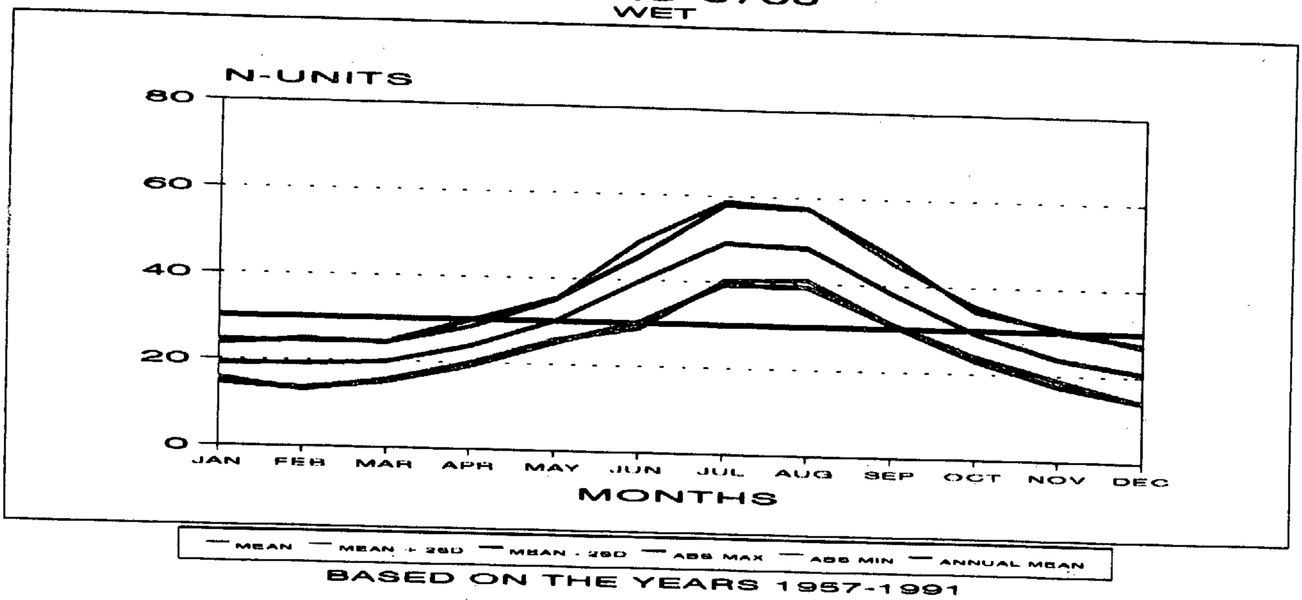


BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES

HOURS 0700

WET

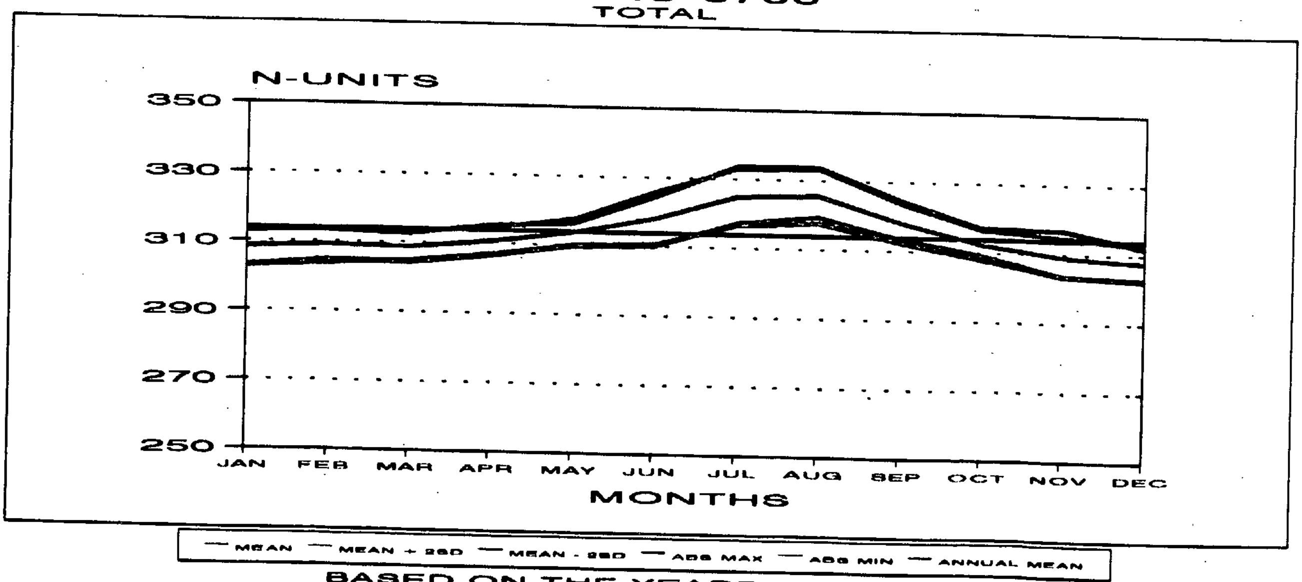


BASED ON THE YEARS 1957-1991

9049 TROMSØ LANGNES

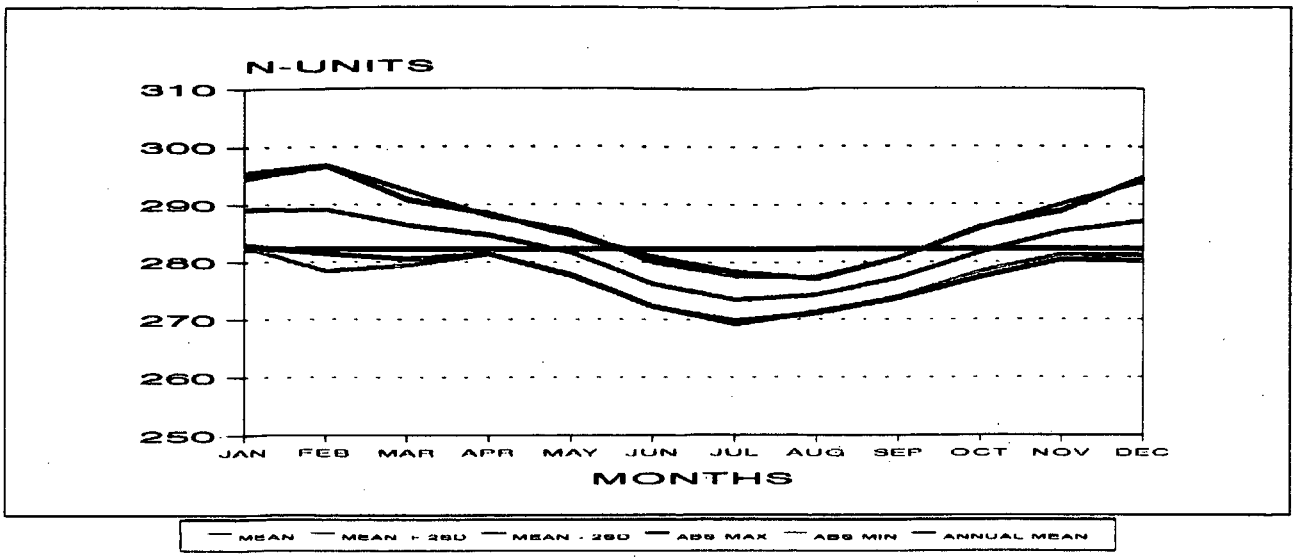
HOURS 0700

TOTAL



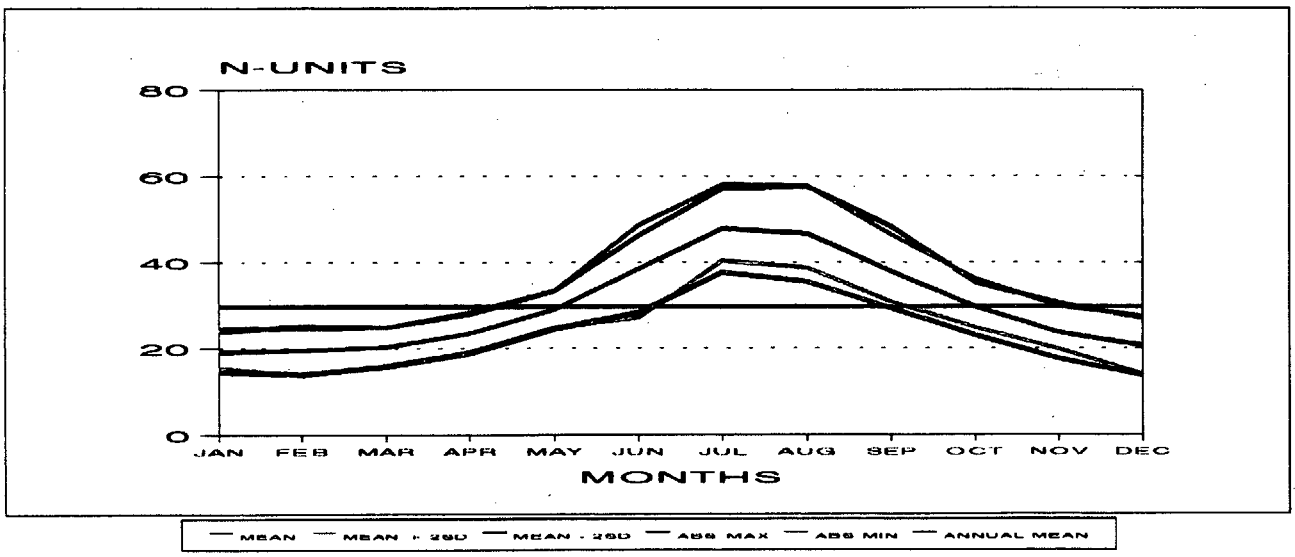
BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES
HOURS 1300
DRY



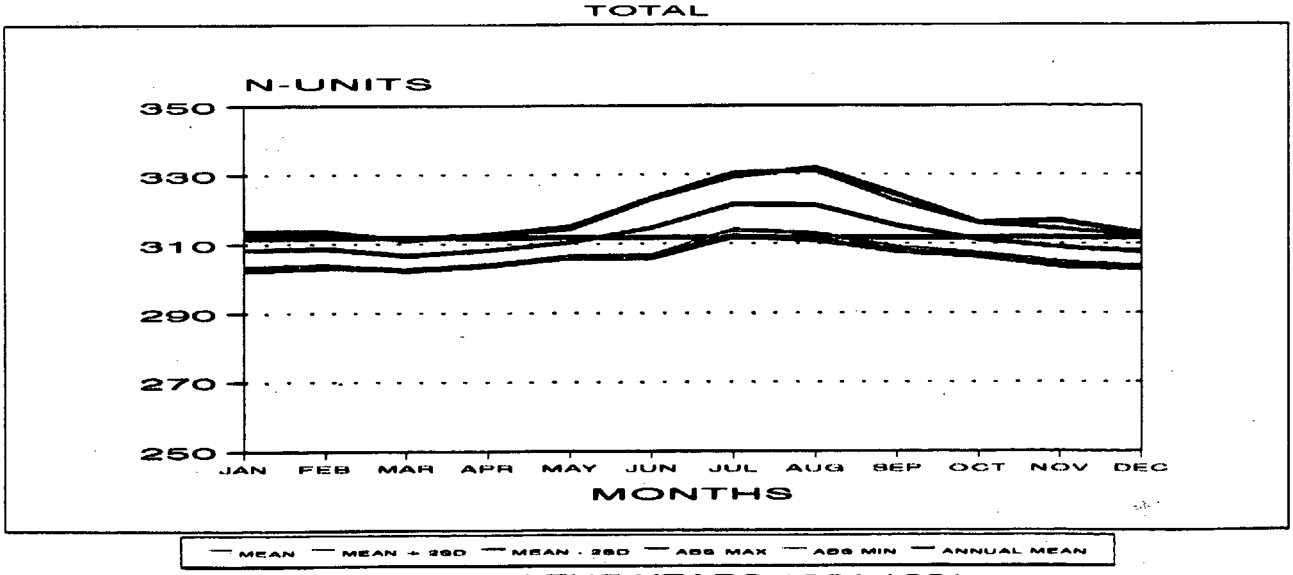
BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES
HOURS 1300
WET



BASED ON THE YEARS 1964-1991

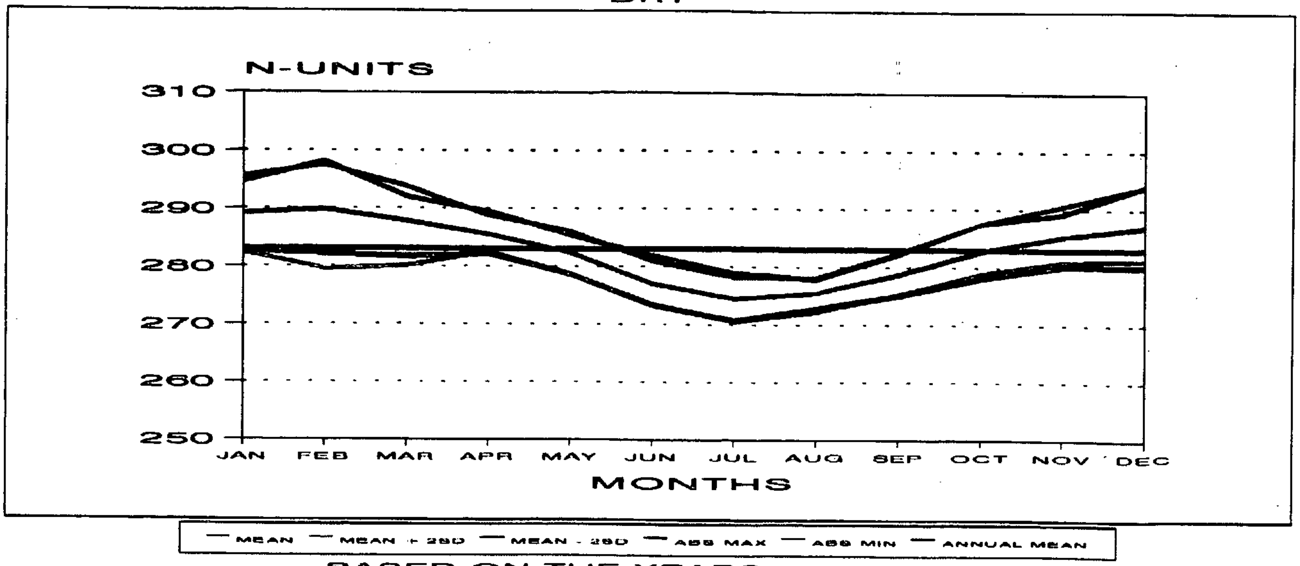
9049 TROMSØ LANGNES
HOURS 1300
TOTAL



BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES

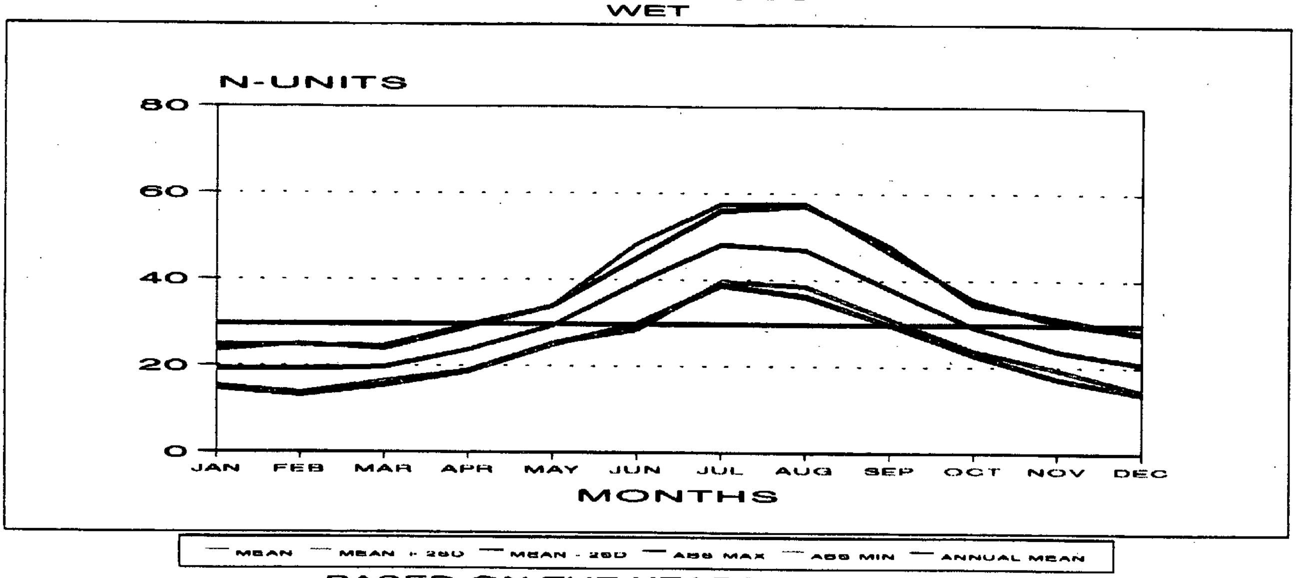
HOURS 1900
DRY



BASED ON THE YEARS 1964-1991

9049 TROMSØ LANGNES

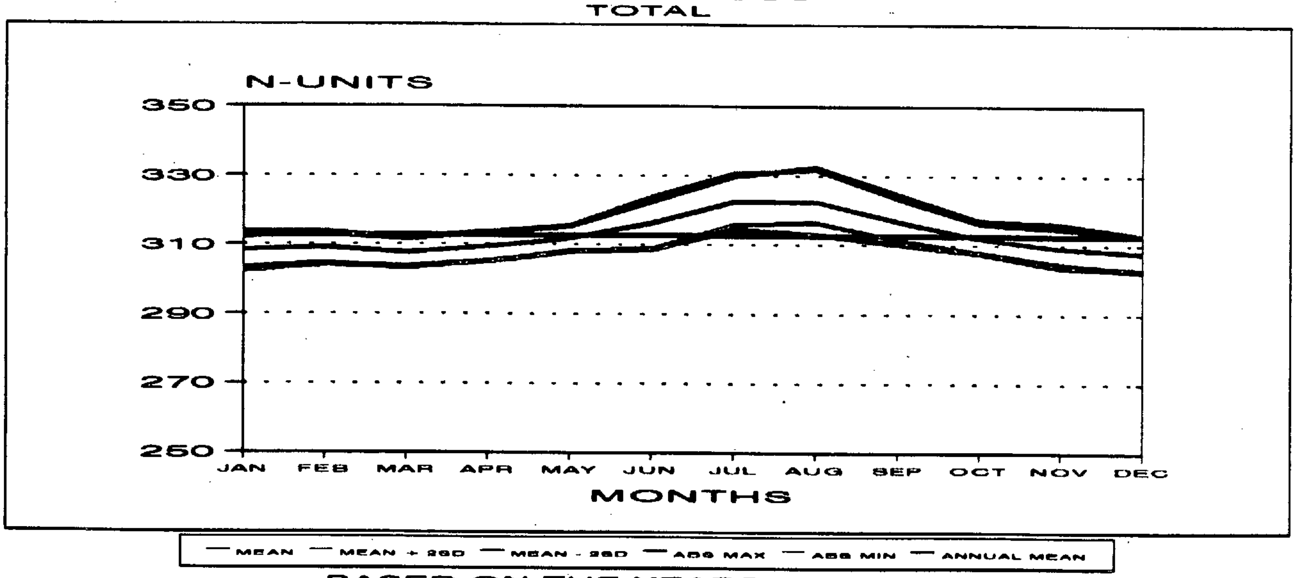
HOURS 1900
WET



BASED ON THE YEARS 1964-1991

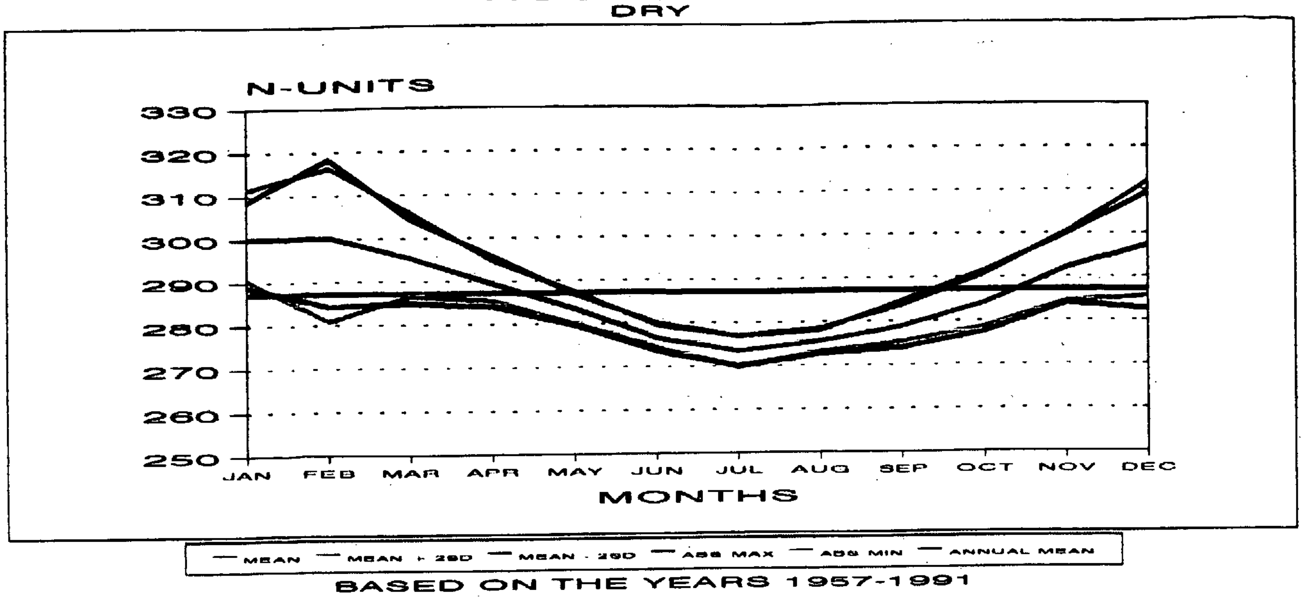
9049 TROMSØ LANGNES

HOURS 1900
TOTAL



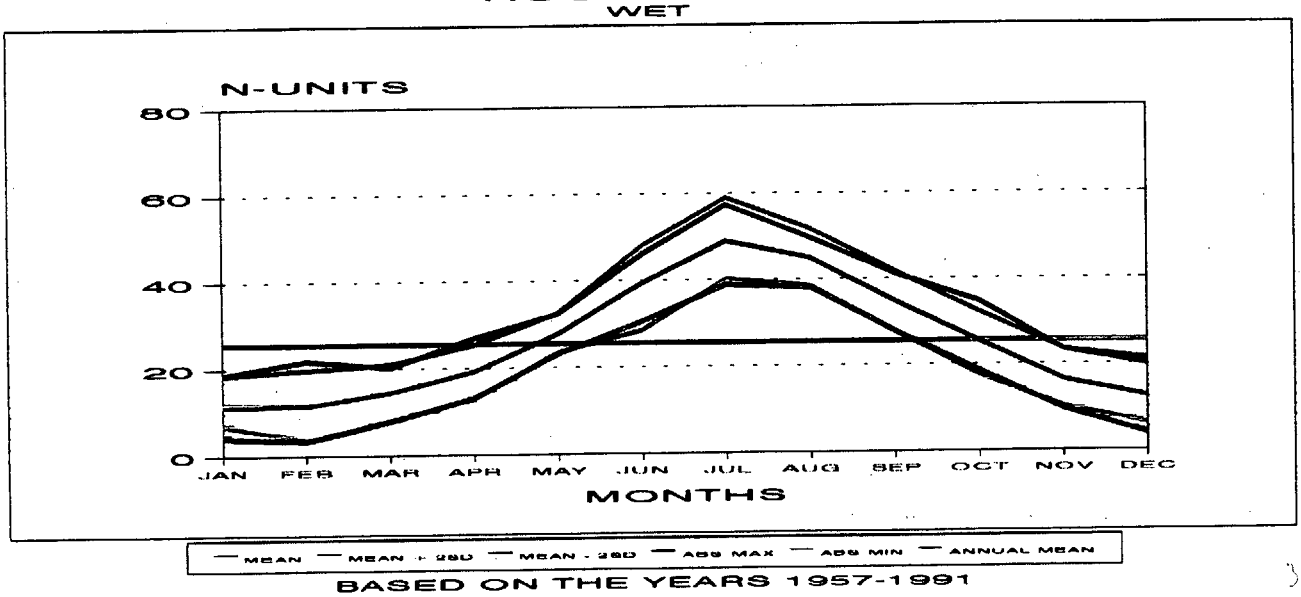
BASED ON THE YEARS 1964-1991

9725 KARASJOK
HOURS 0100
DRY



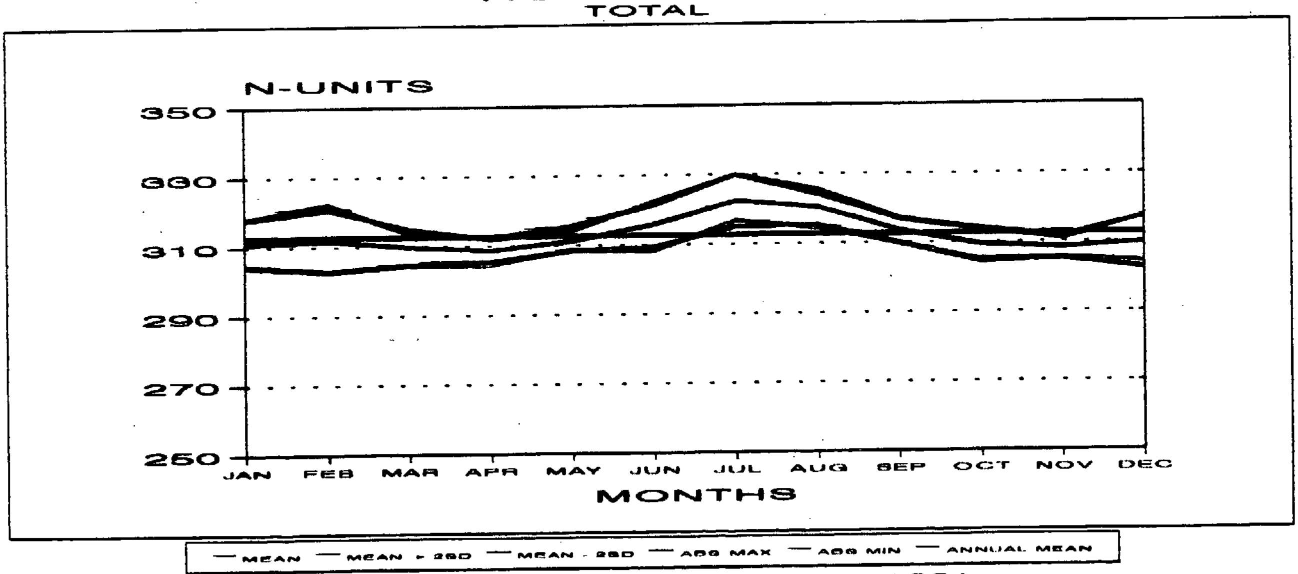
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 0100
WET



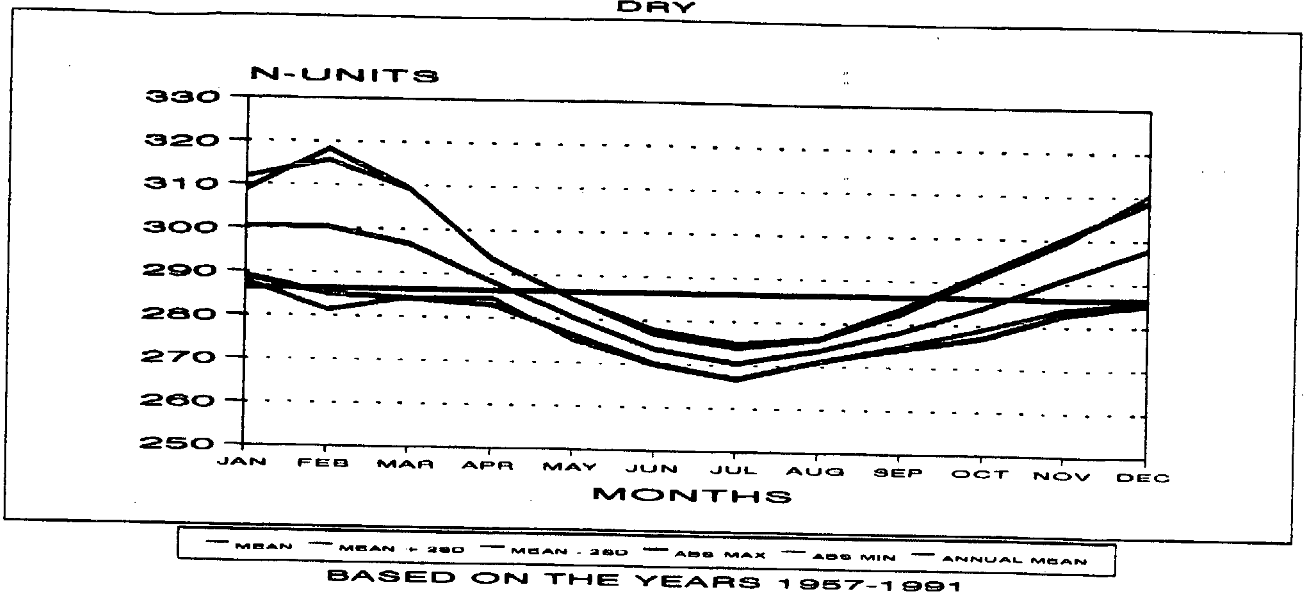
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 0100
TOTAL



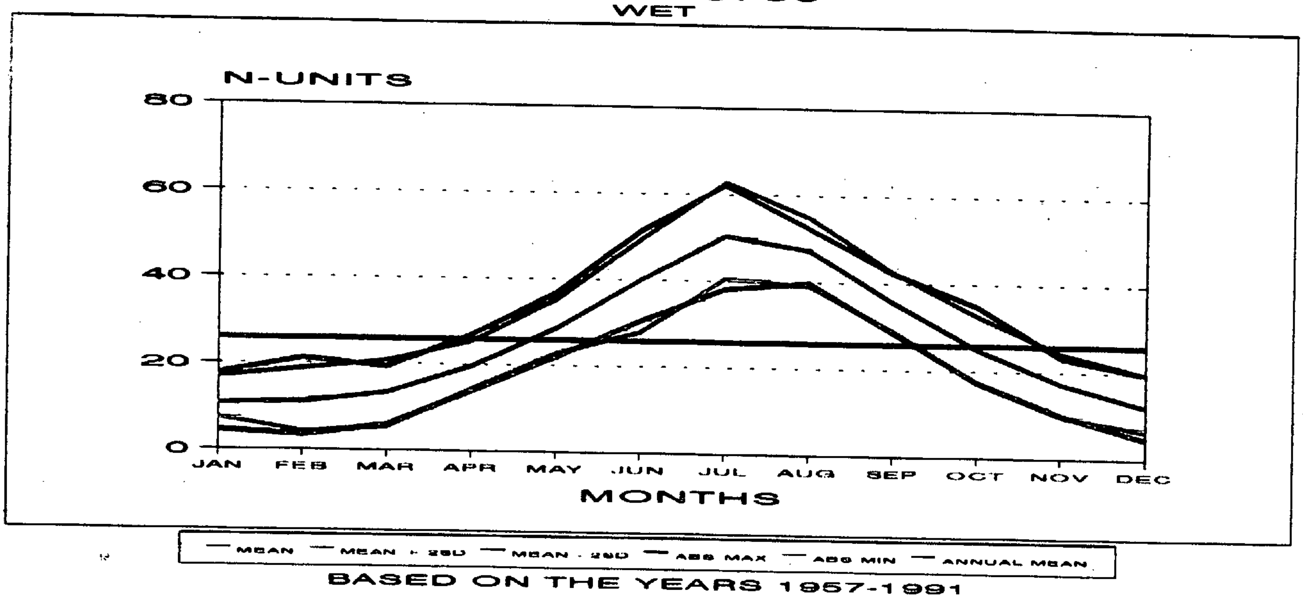
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 0700
DRY



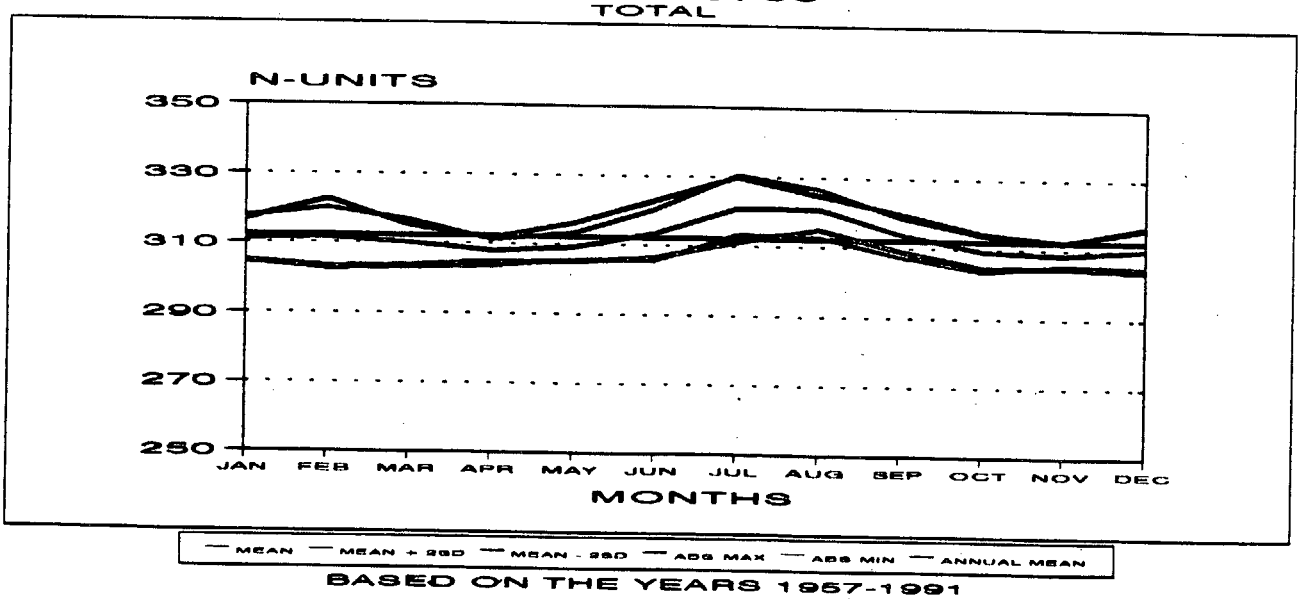
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 0700
WET



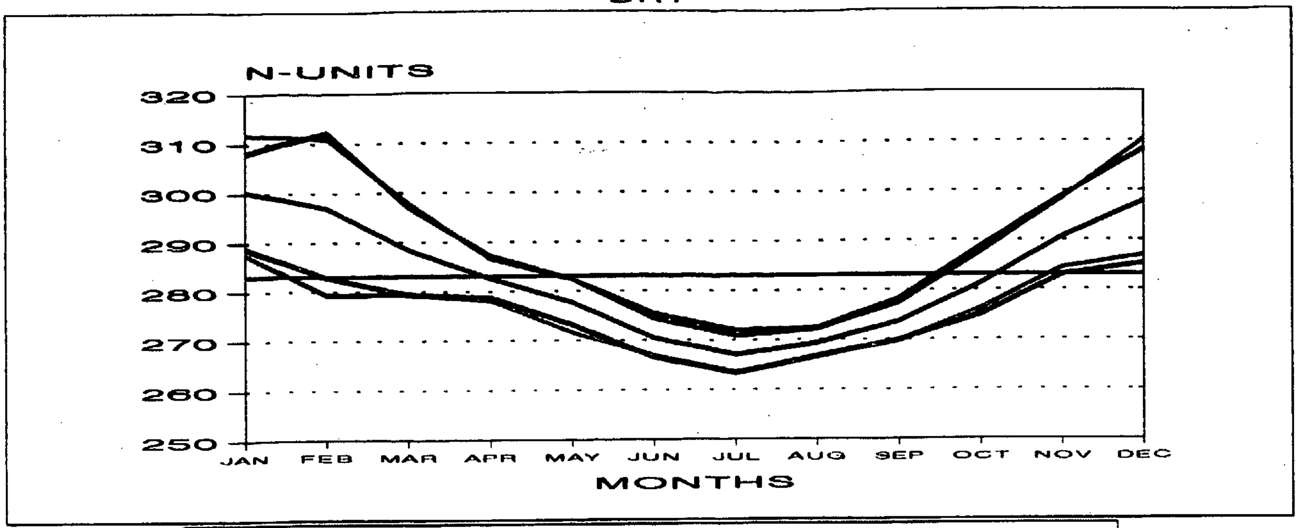
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 0700
TOTAL



BASED ON THE YEARS 1957-1991

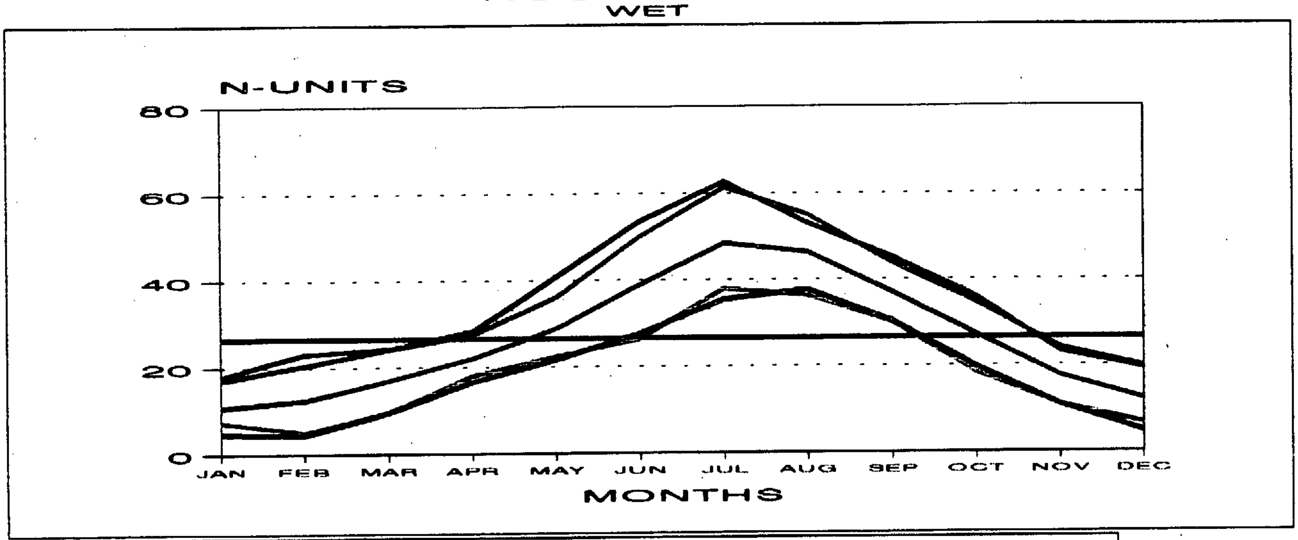
9725 KARASJOK
HOURS 1300
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

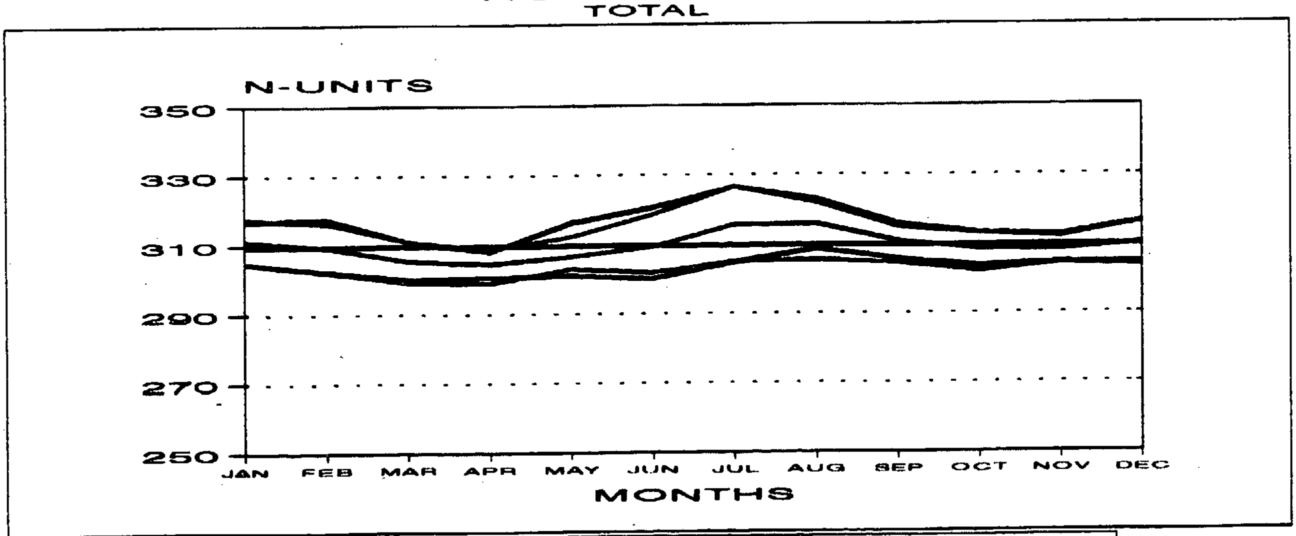
9725 KARASJOK
HOURS 1300
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

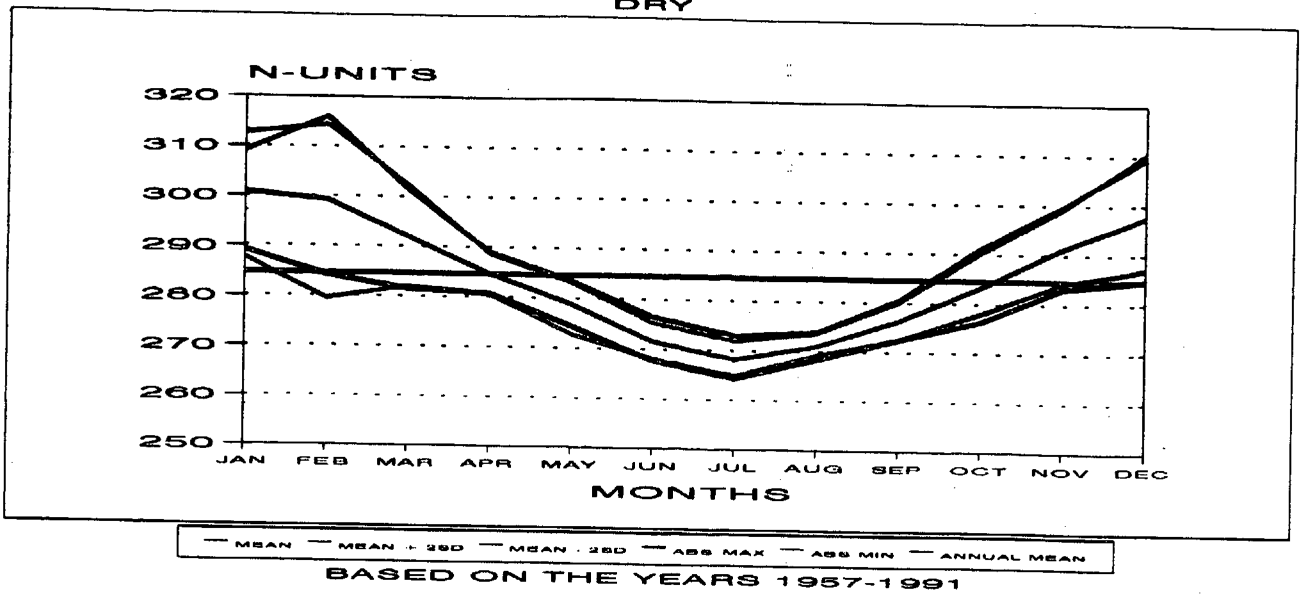
9725 KARASJOK
HOURS 1300
TOTAL



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

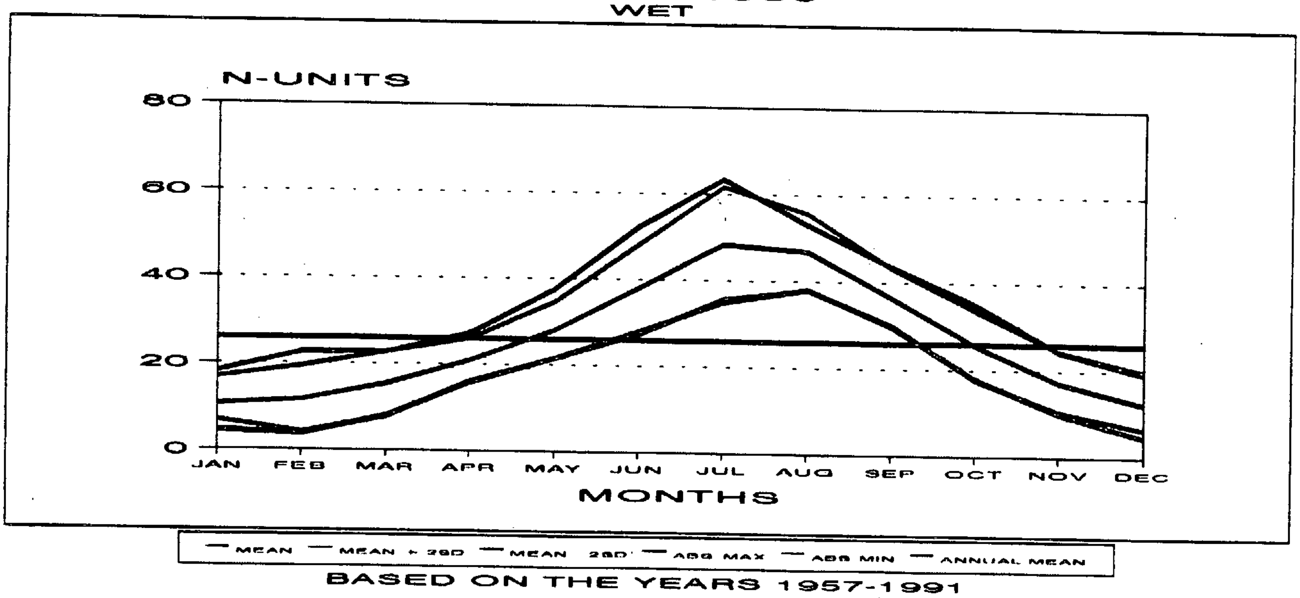
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 1900
DRY



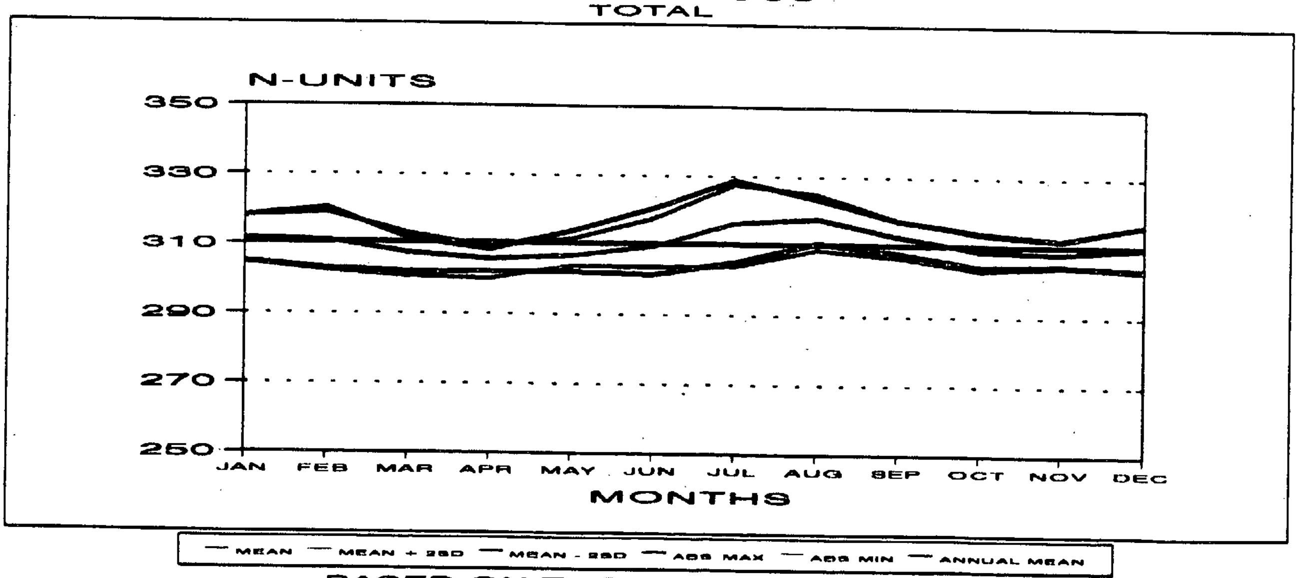
BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 1900
WET



BASED ON THE YEARS 1957-1991

9725 KARASJOK
HOURS 1900
TOTAL

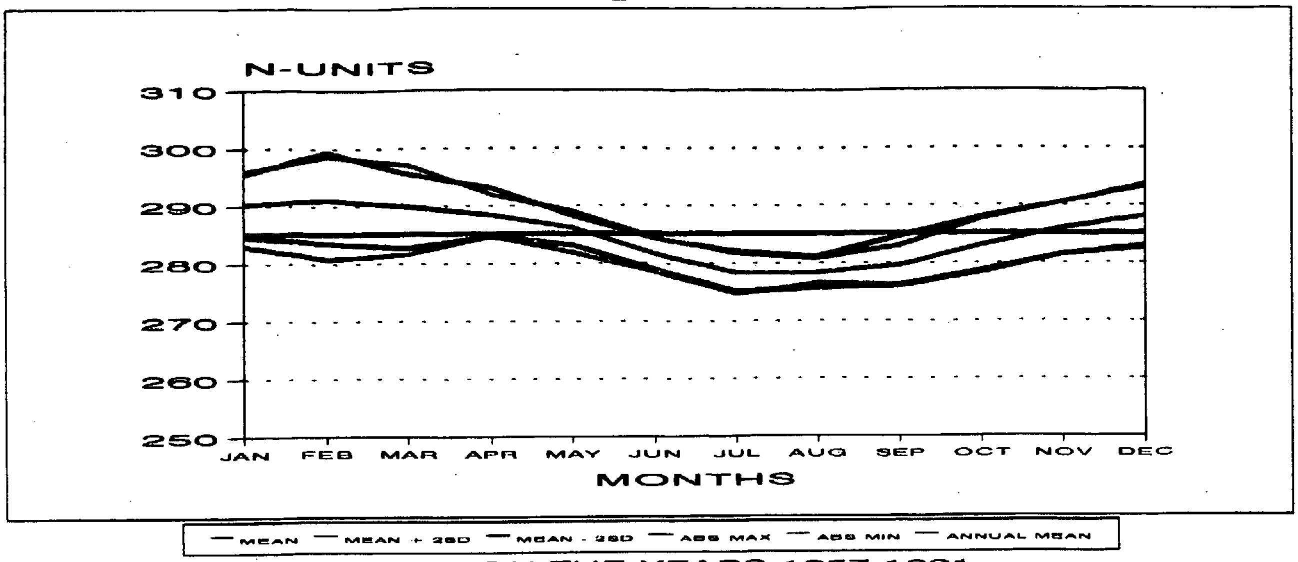


BASED ON THE YEARS 1957-1991

9855 VARDØ

HOURS 0100

DRY

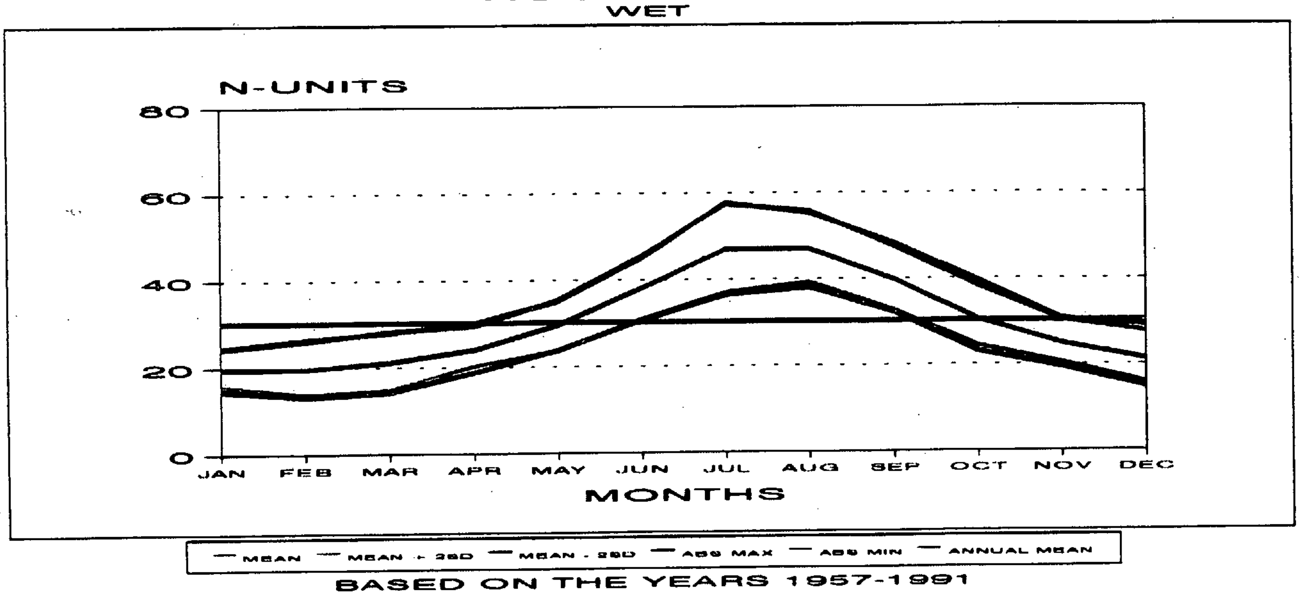


BASED ON THE YEARS 1957-1991

9855 VARDØ

HOURS 0100

WET

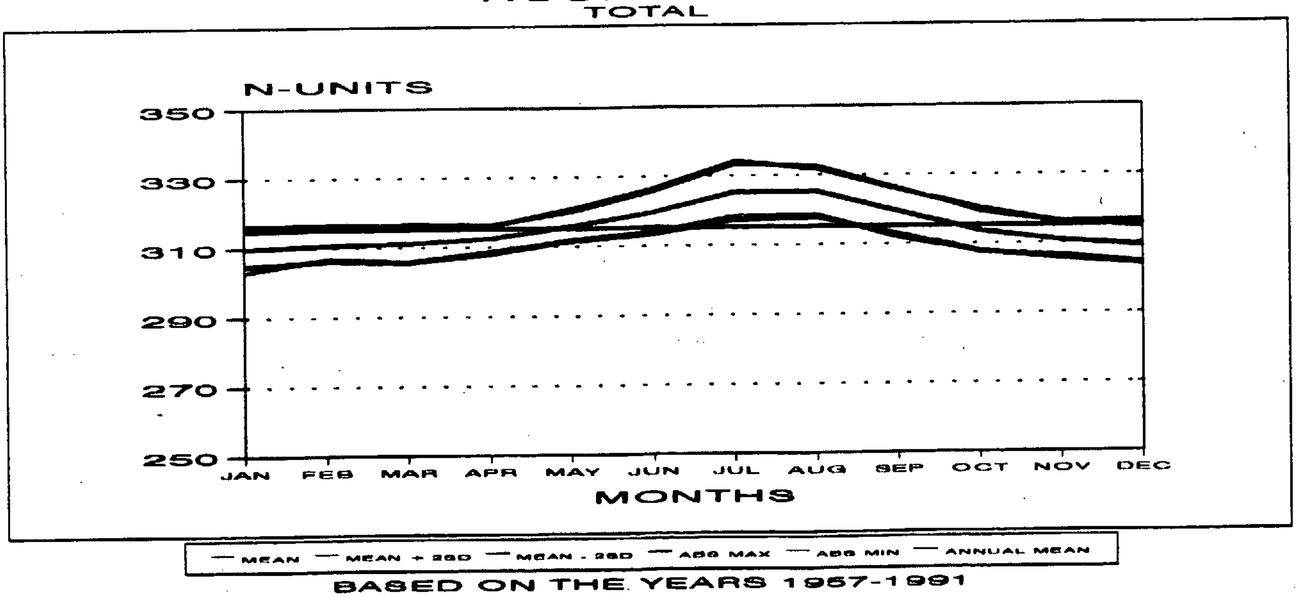


BASED ON THE YEARS 1957-1991

9855 VARDØ

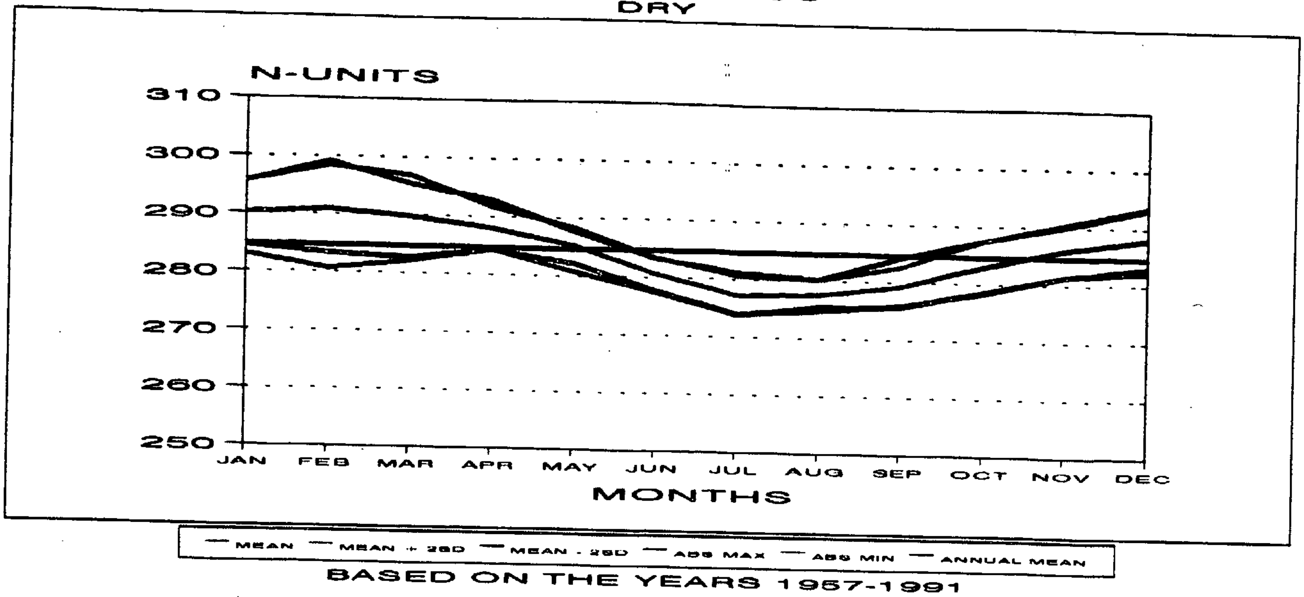
HOURS 0100

TOTAL



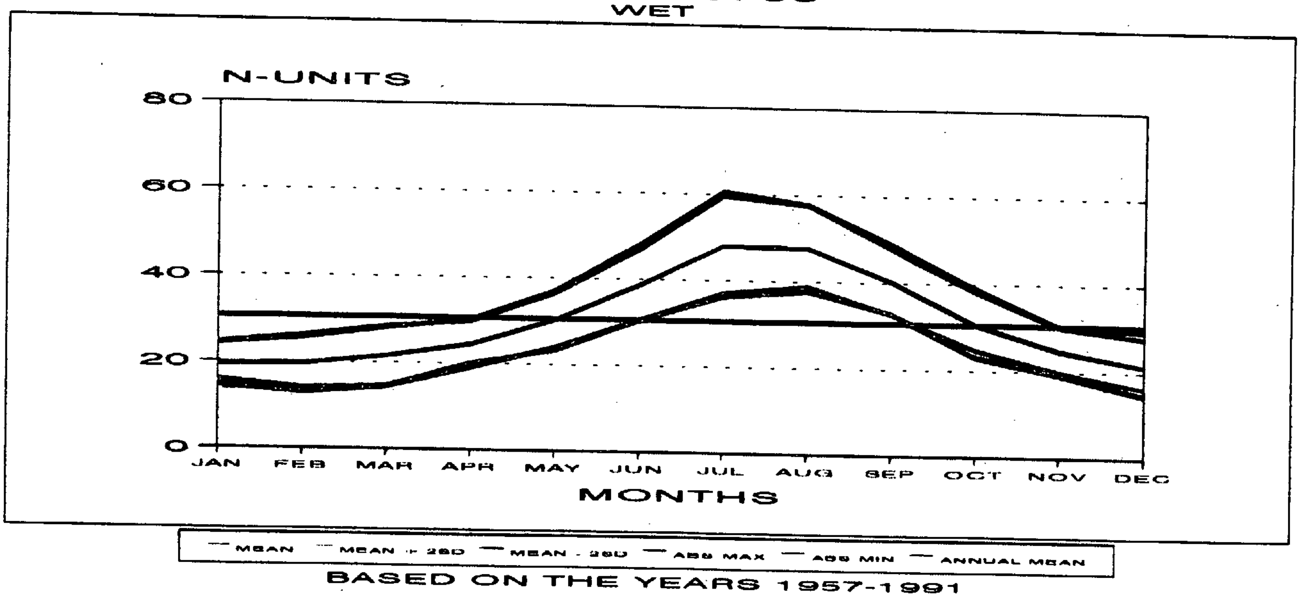
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 0700
DRY



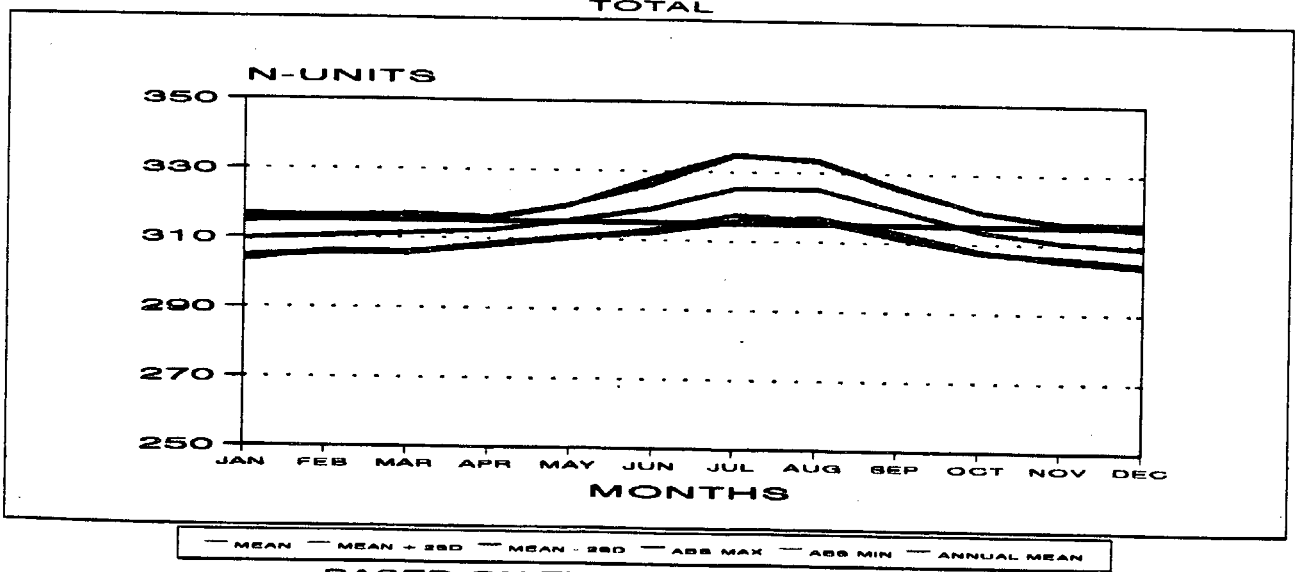
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 0700
WET



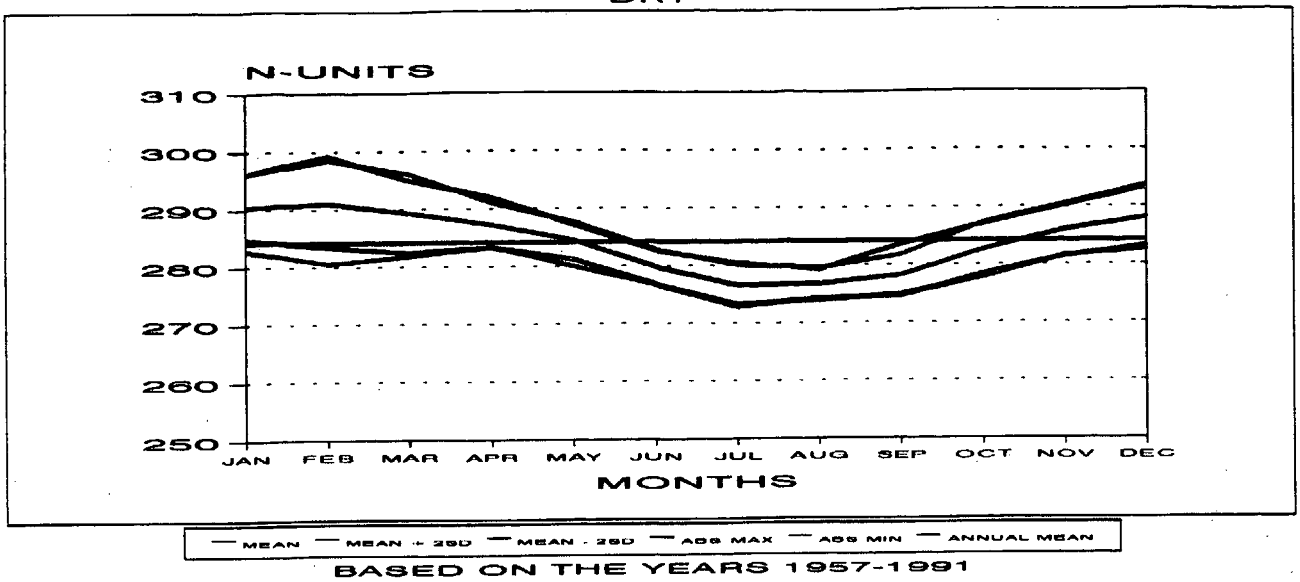
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 0700
TOTAL



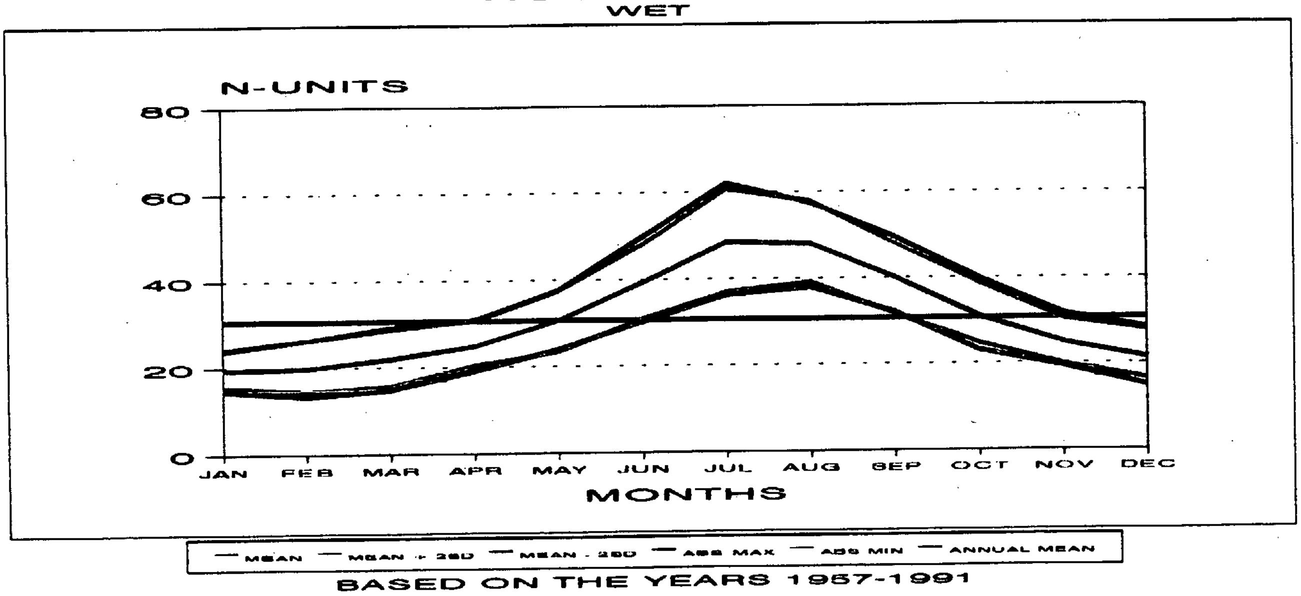
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 1300
DRY



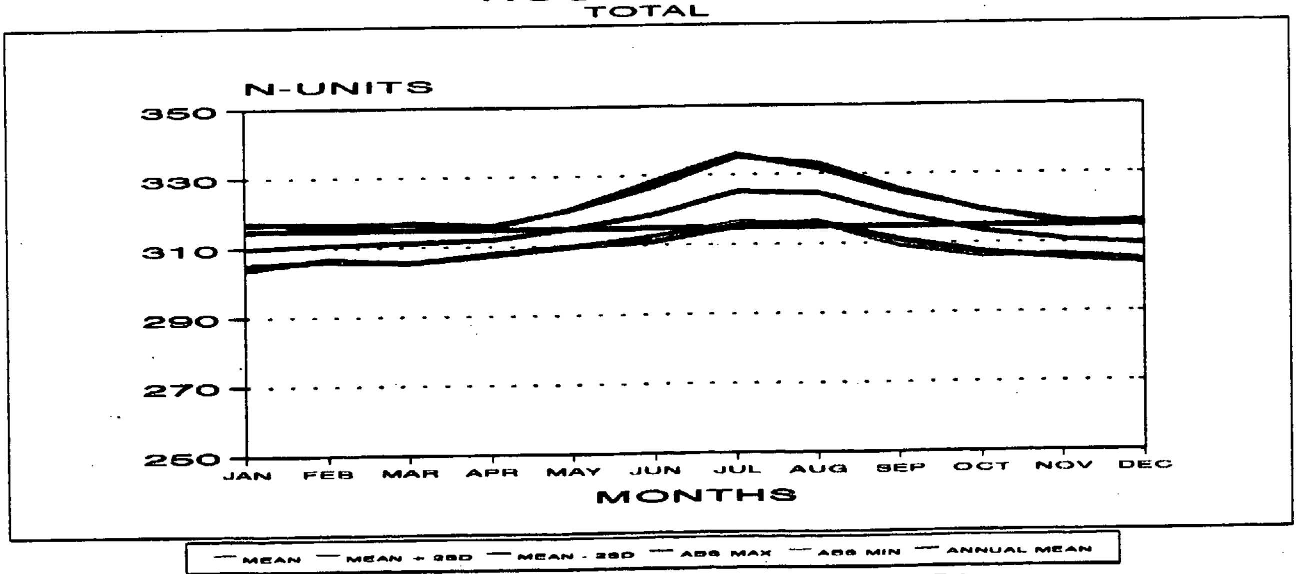
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 1300
WET



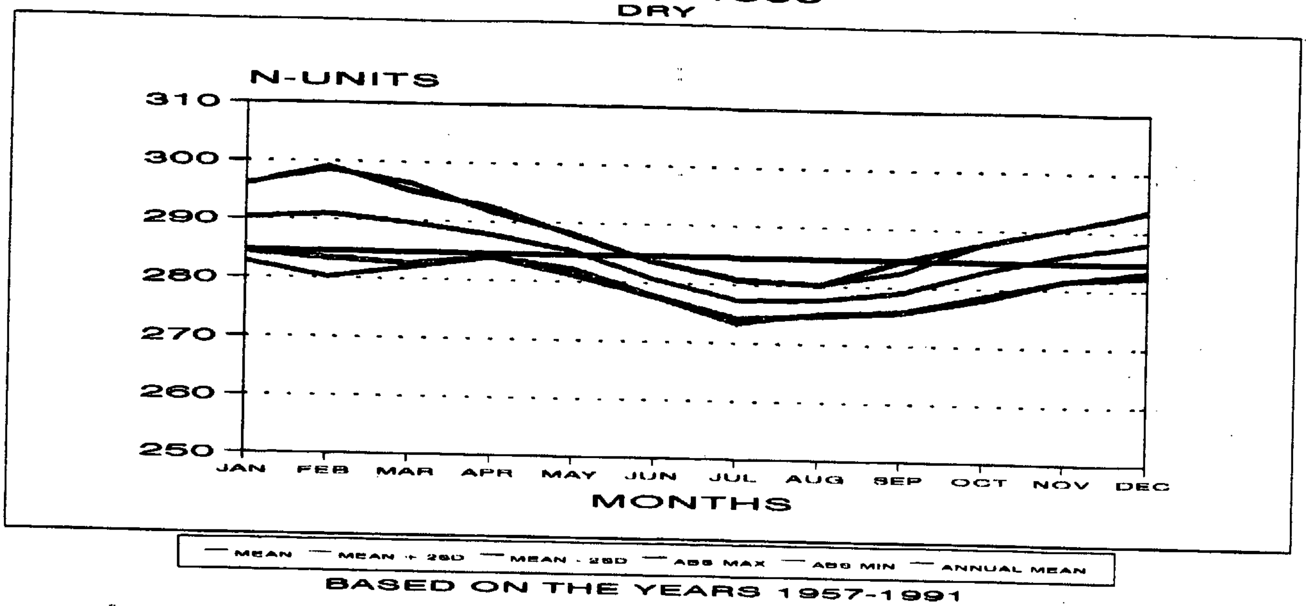
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 1300
TOTAL



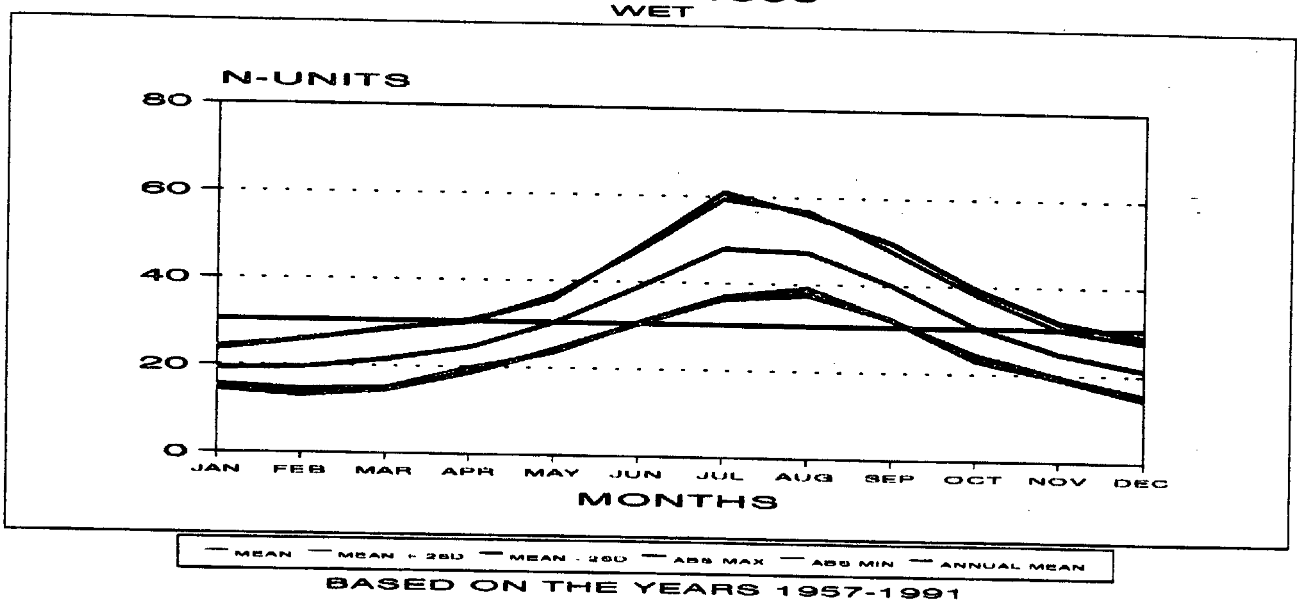
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 1900
DRY



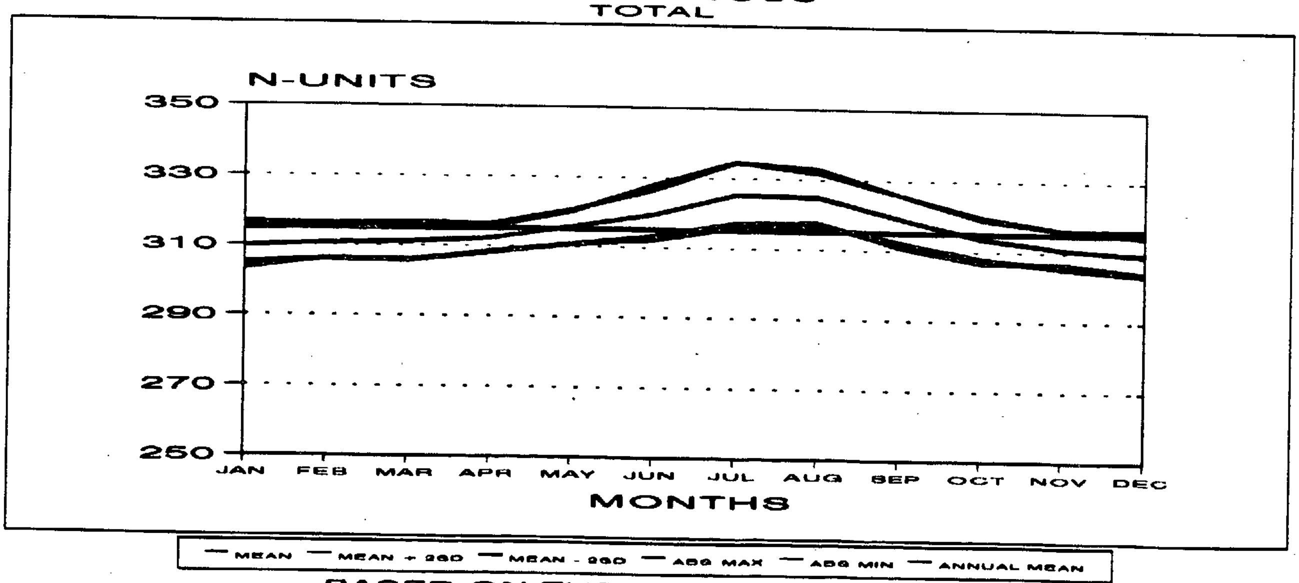
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 1900
WET



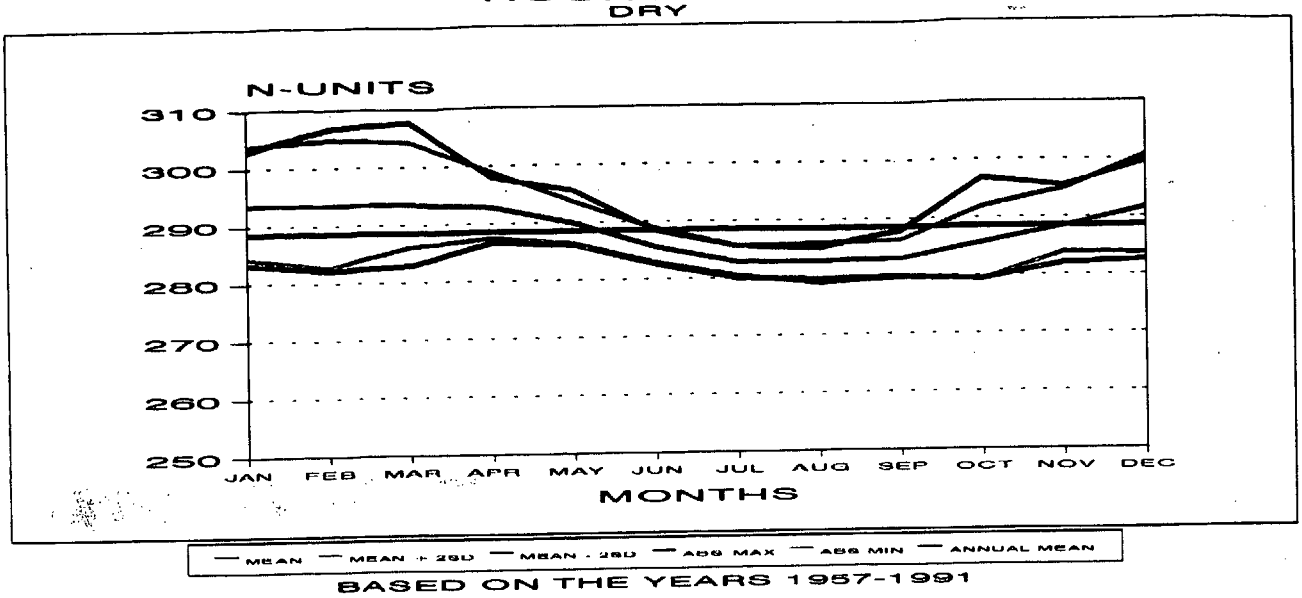
BASED ON THE YEARS 1957-1991

9855 VARDØ
HOURS 1900
TOTAL



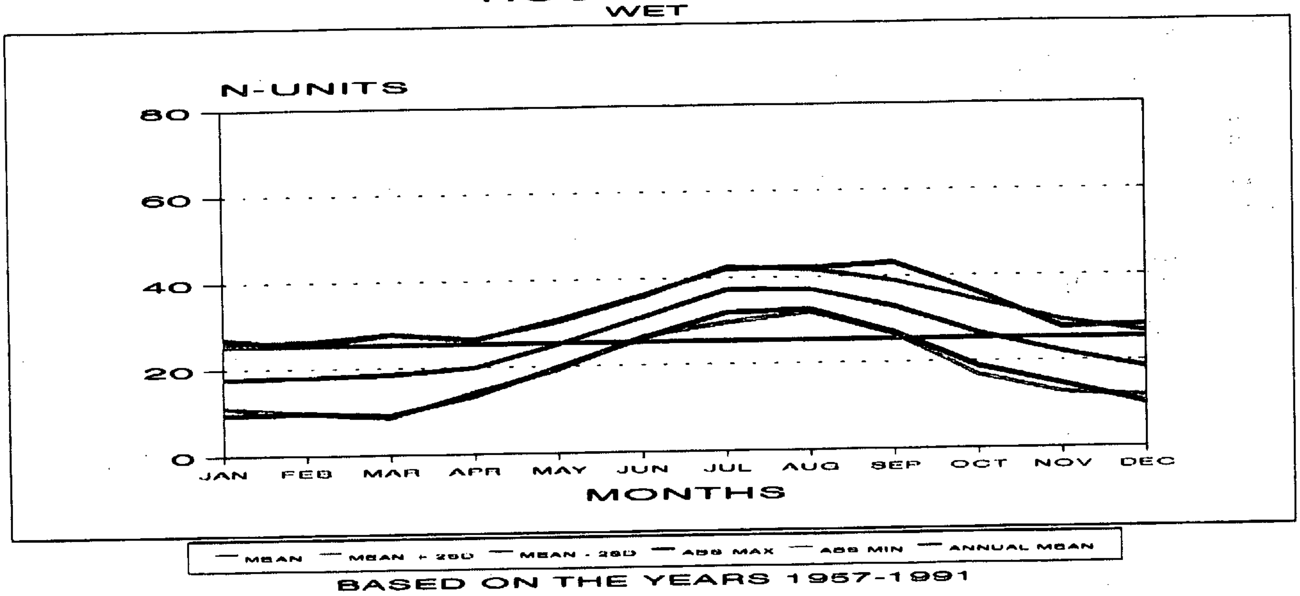
BASED ON THE YEARS 1957-1991

9971 BJØRNØYA
HOURS 0100
DRY



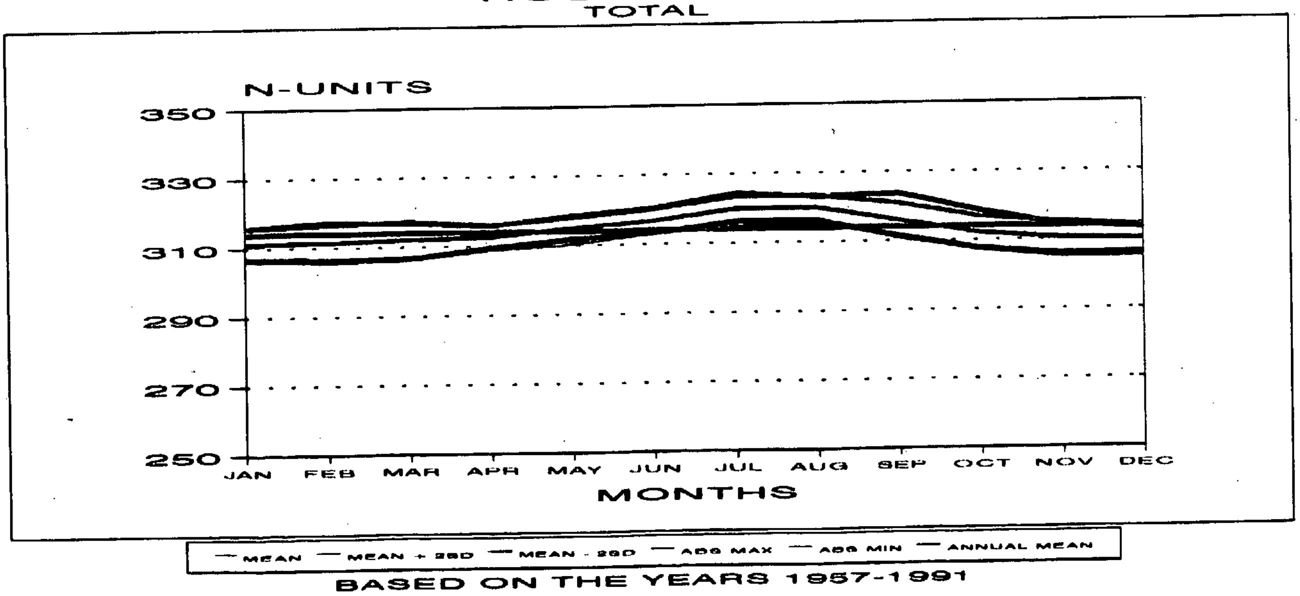
BASED ON THE YEARS 1957-1991

9971 BJØRNØYA
HOURS 0100
WET



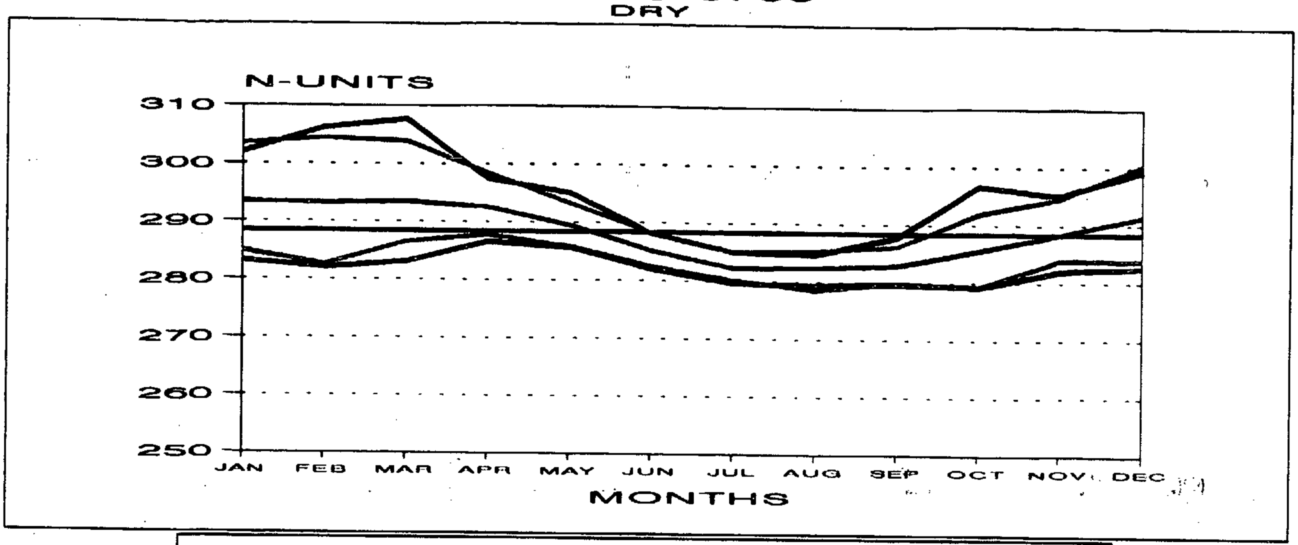
BASED ON THE YEARS 1957-1991

9971 BJØRNØYA
HOURS 0100
TOTAL



BASED ON THE YEARS 1957-1991

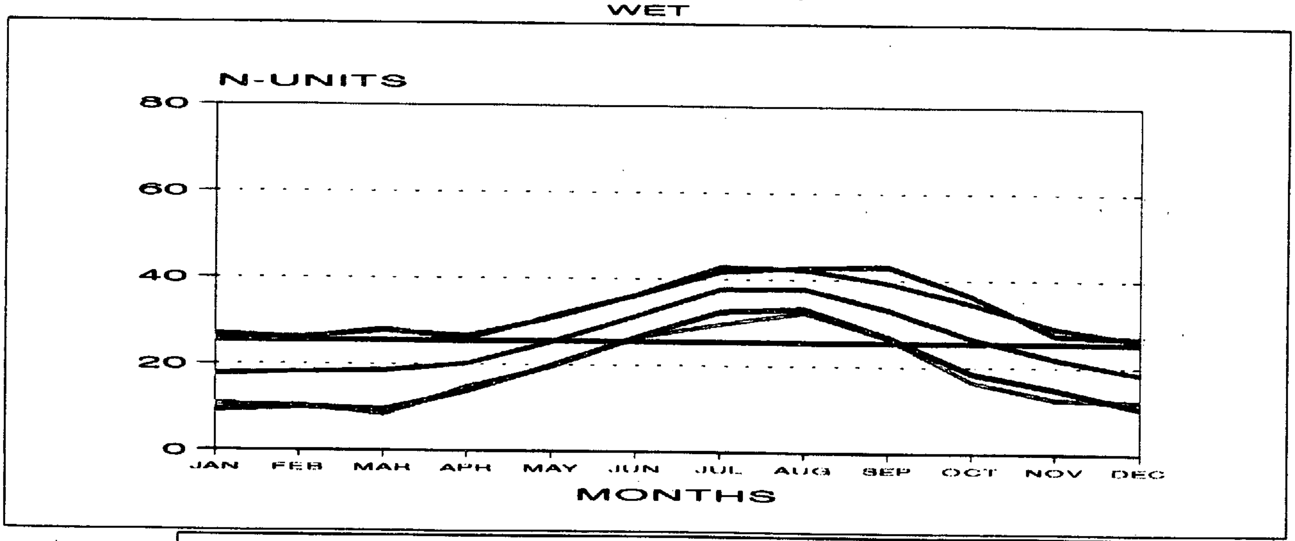
9971 BJØRNØYA
HOURS 0700
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

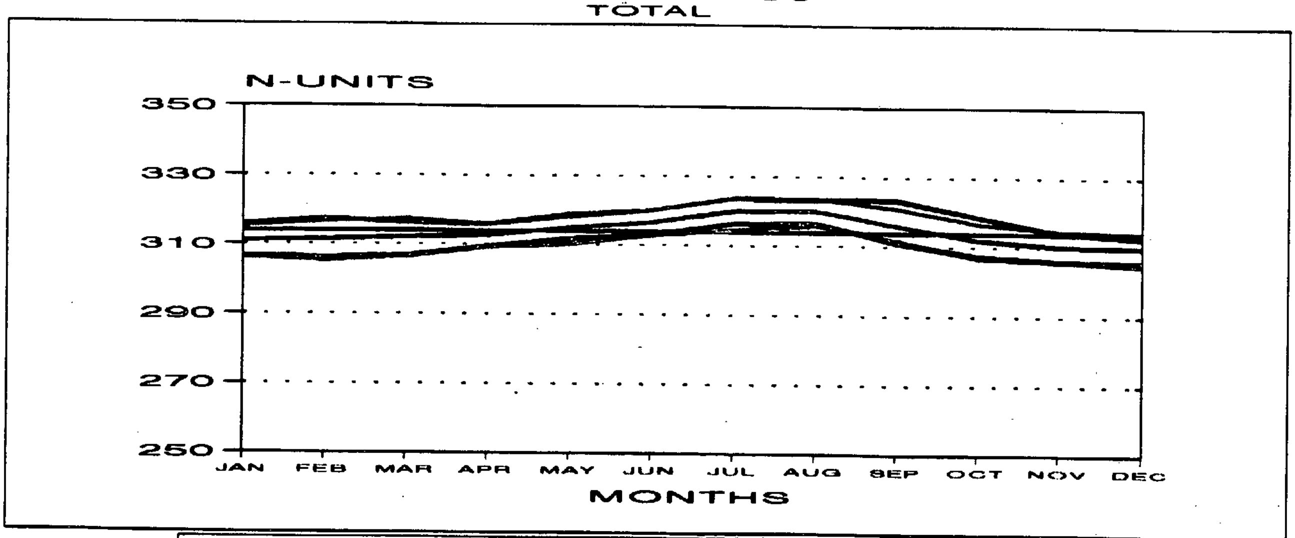
9971 BJØRNØYA
HOURS 0700
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

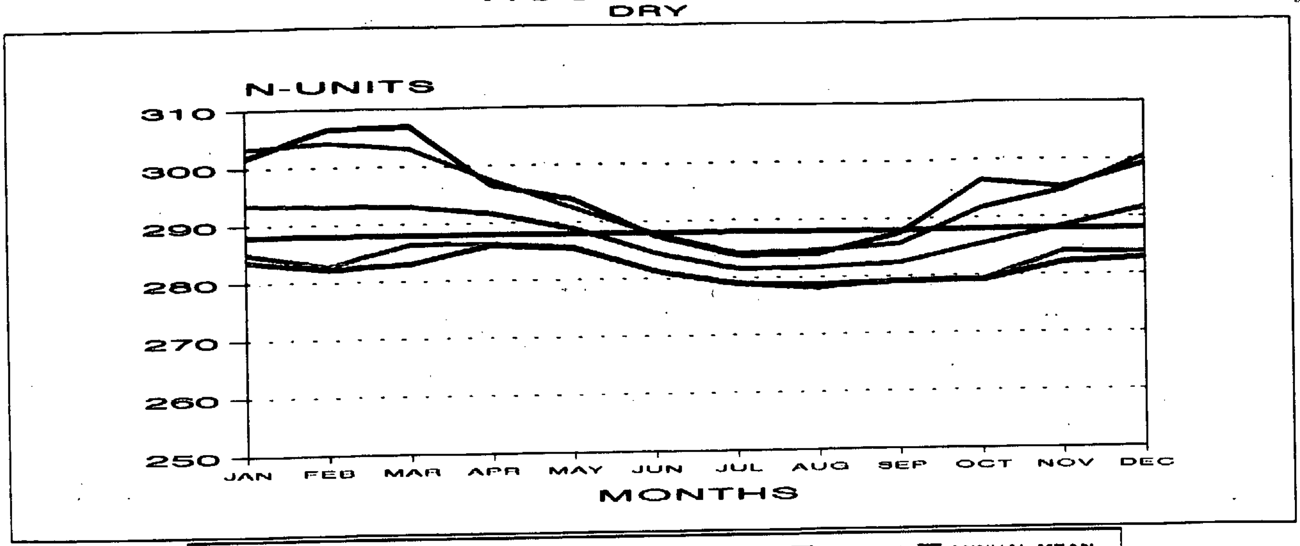
9971 BJØRNØYA
HOURS 0700
TOTAL



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

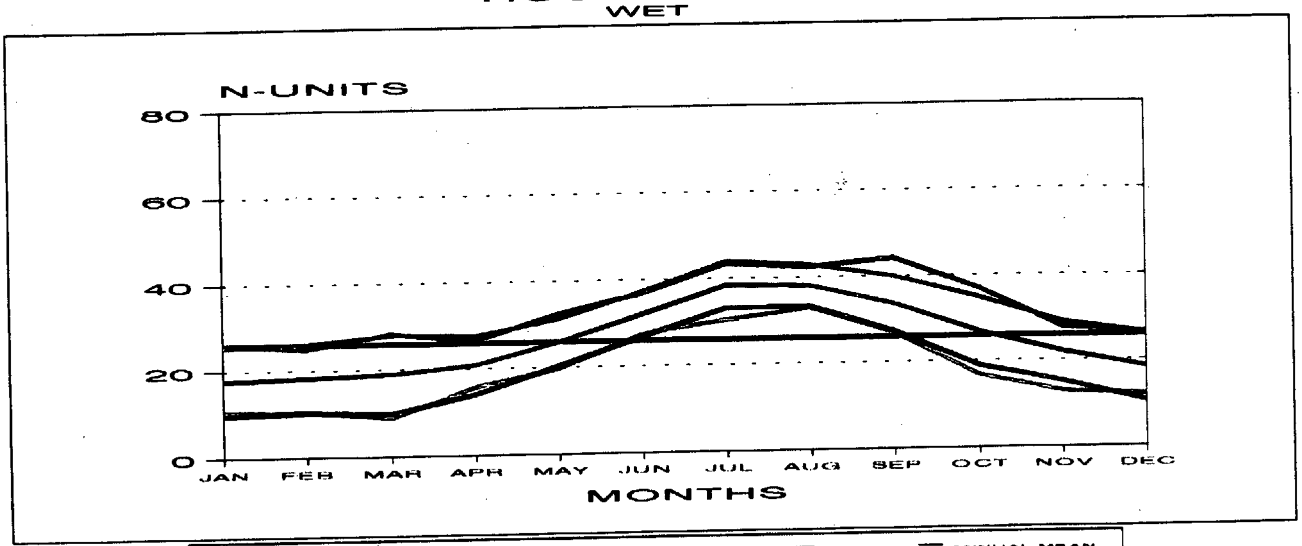
9971 BJØRNØYA
HOURS 1300
DRY



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

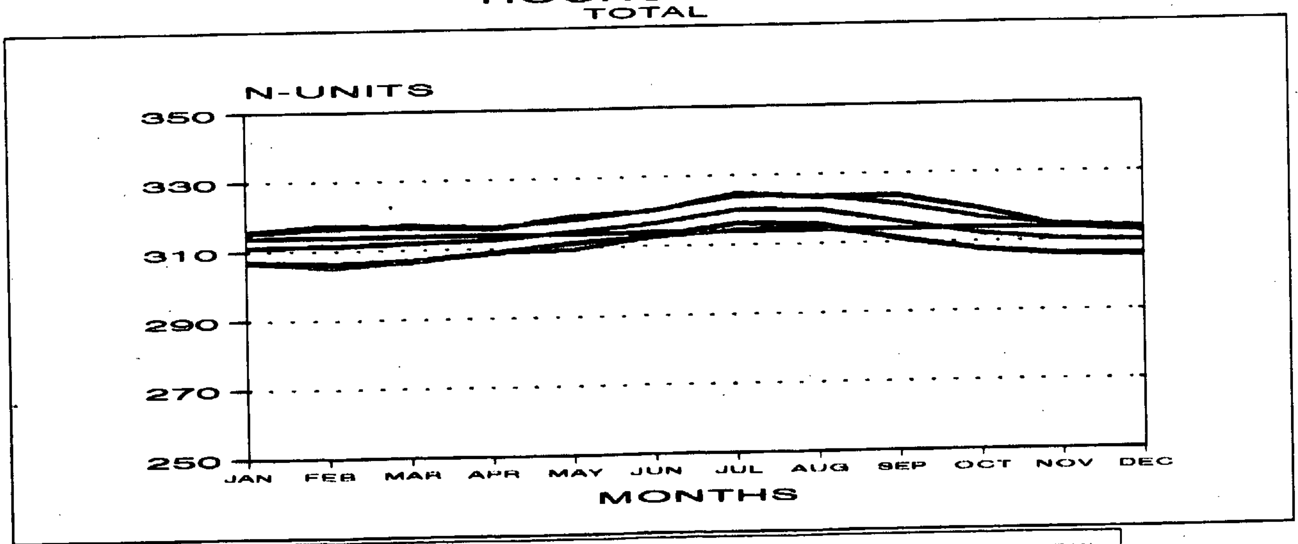
9971 BJØRNØYA
HOURS 1300
WET



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9971 BJØRNØYA
HOURS 1300
TOTAL



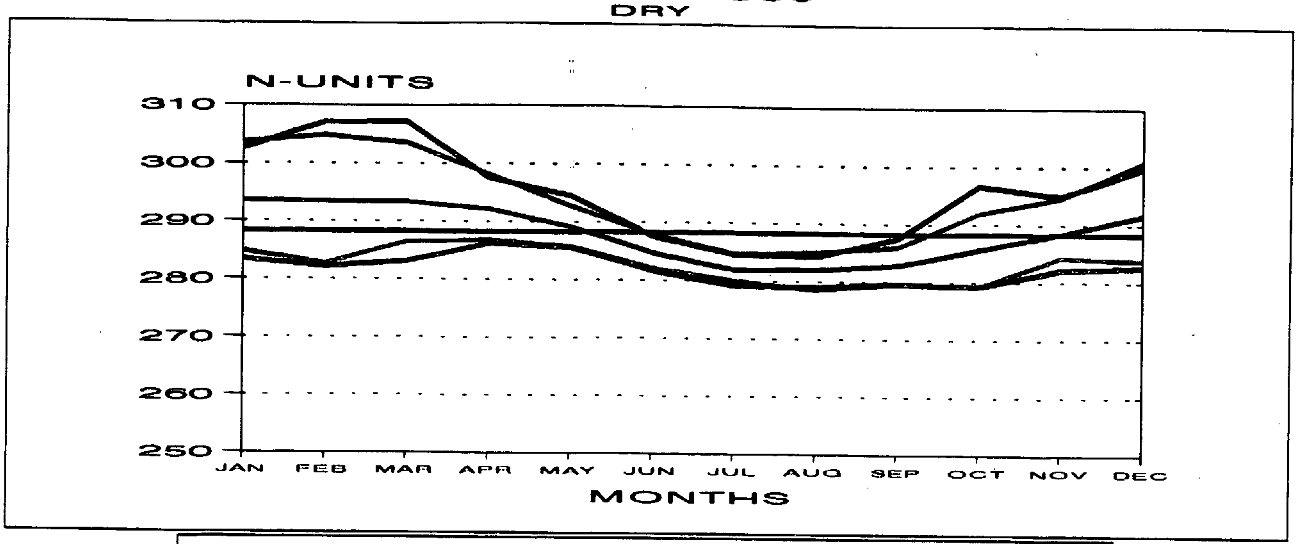
— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9971 BJØRNØYA

HOURS 1900

DRY



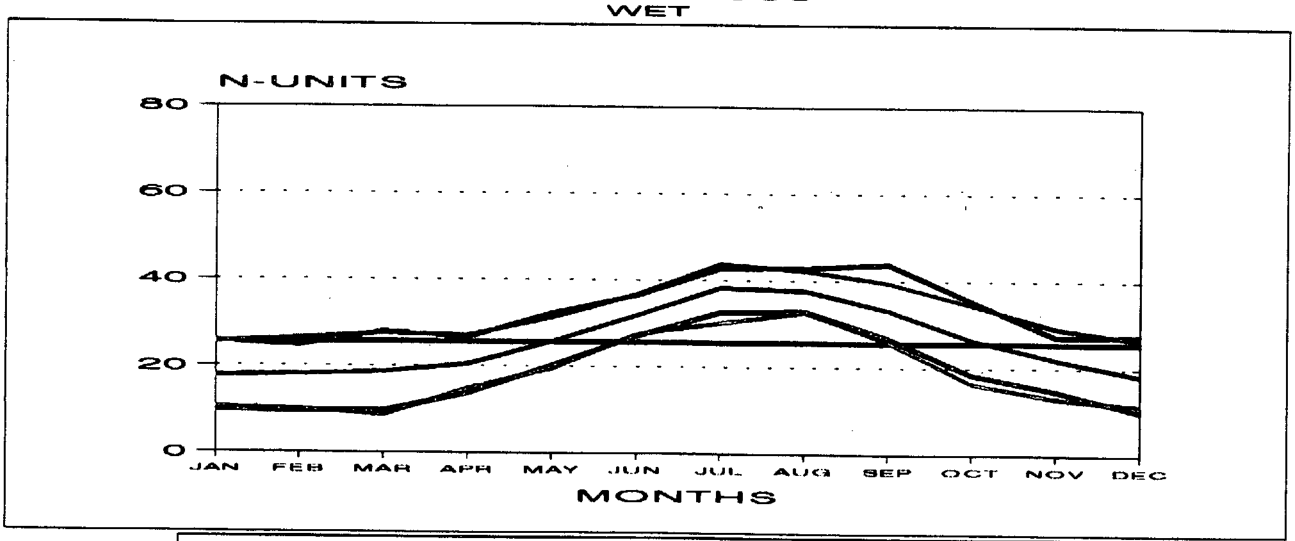
MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9971 BJØRNØYA

HOURS 1900

WET



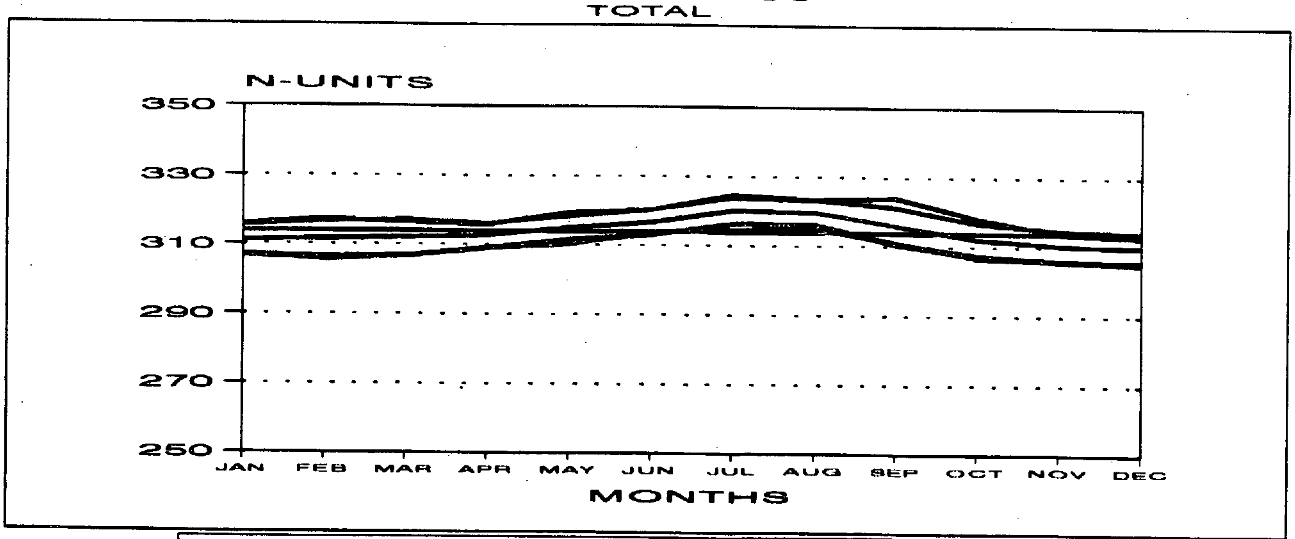
MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9971 BJØRNØYA

HOURS 1900

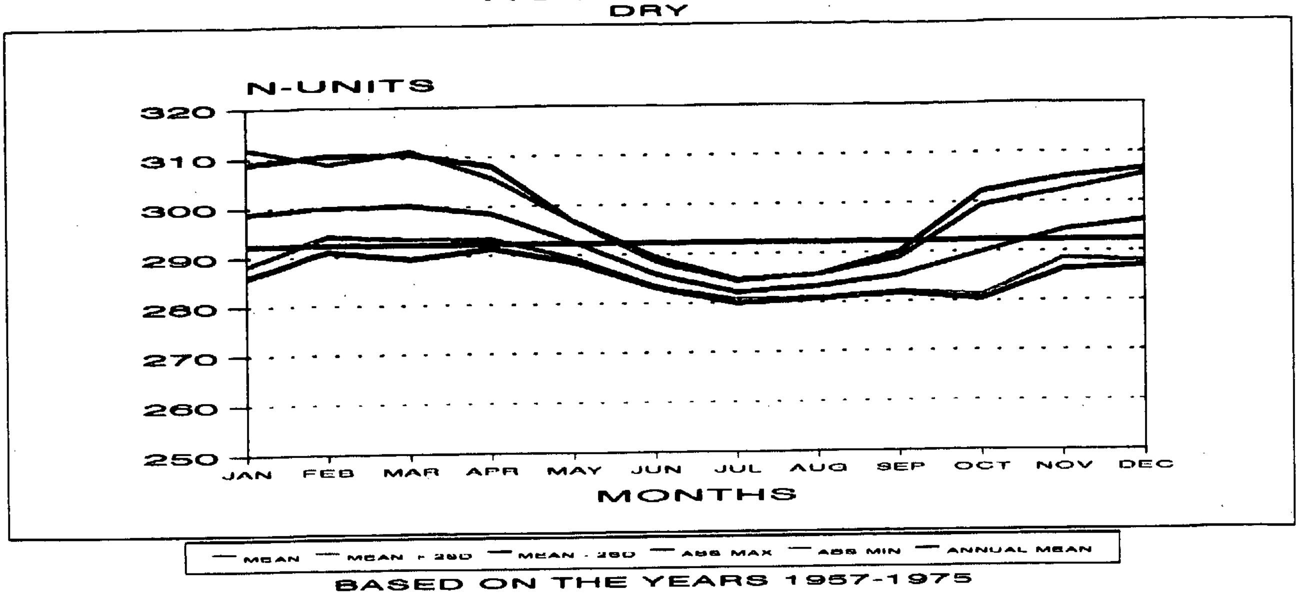
TOTAL



MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

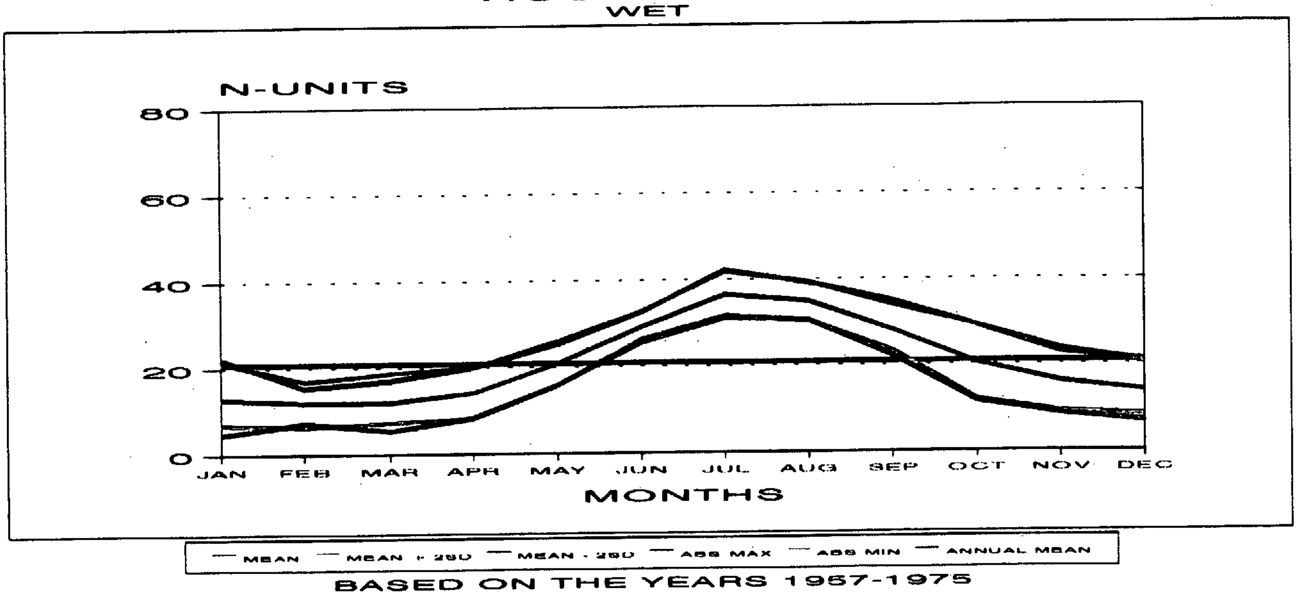
BASED ON THE YEARS 1957-1991

9979 ISFJORD RADIO
HOURS 0100
DRY



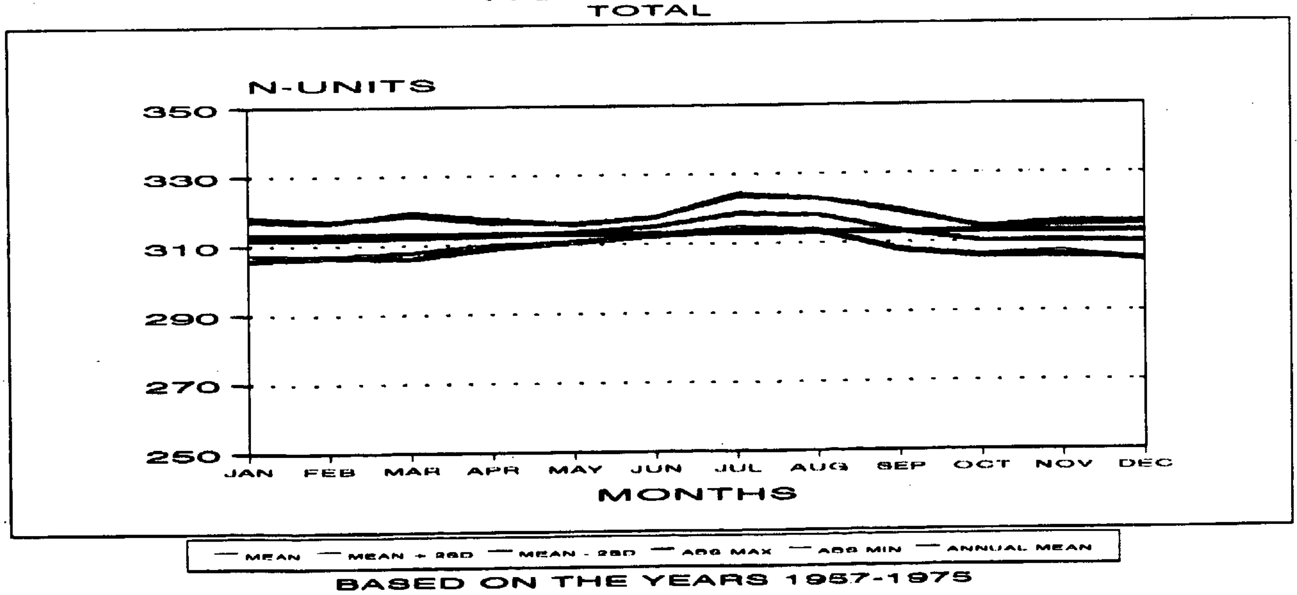
BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO
HOURS 0100
WET



BASED ON THE YEARS 1957-1975

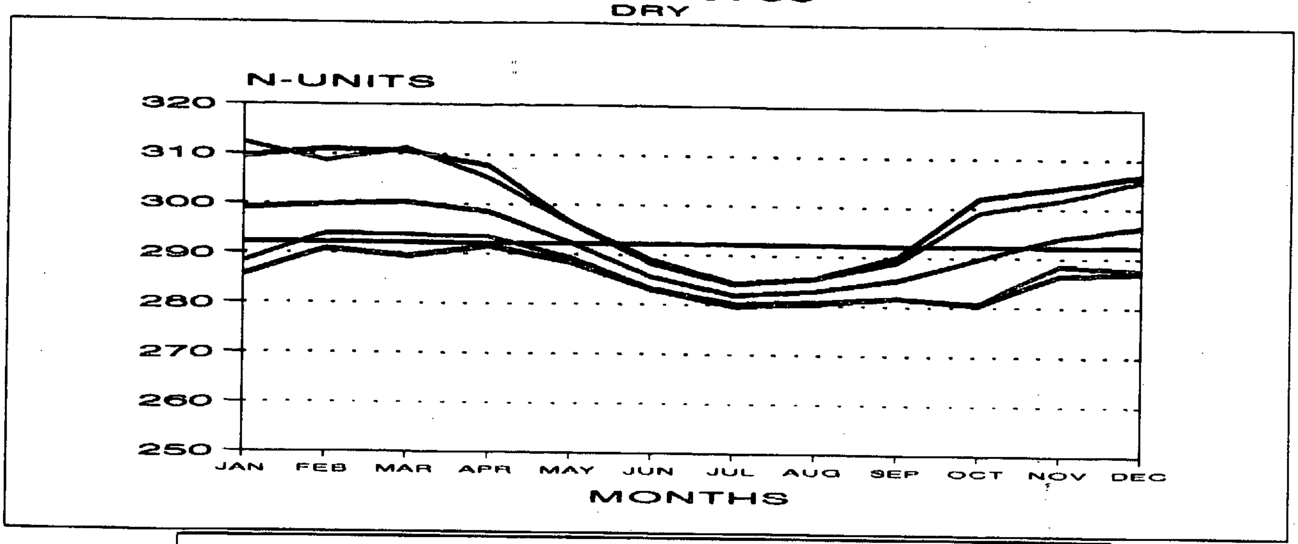
9979 ISFJORD RADIO
HOURS 0100
TOTAL



BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 0700
DRY

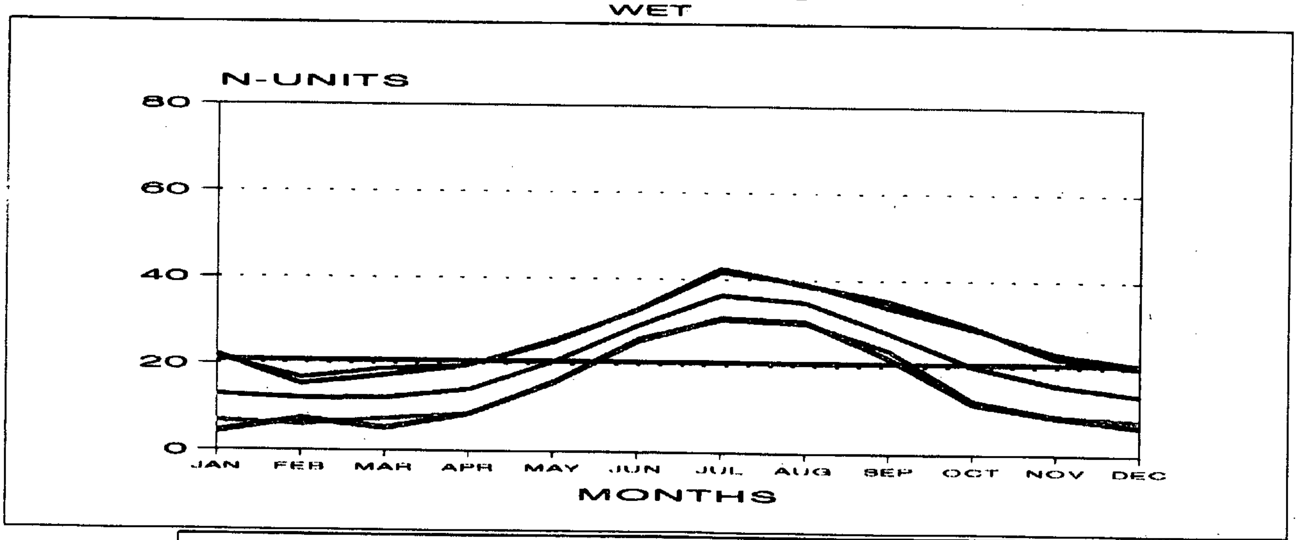


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 0700
WET

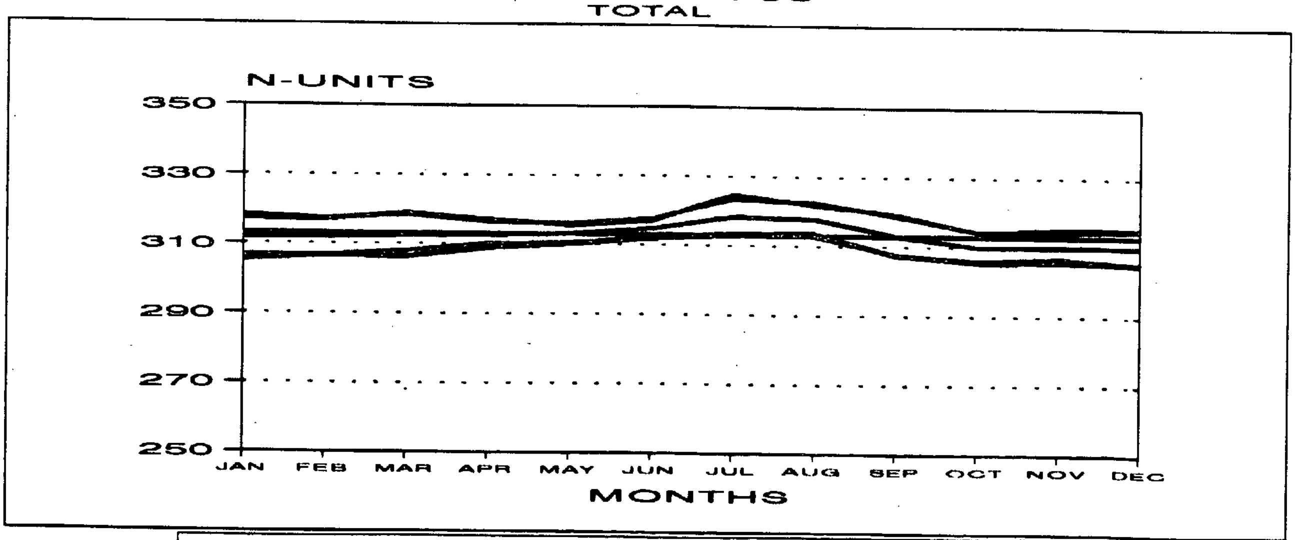


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 0700
TOTAL



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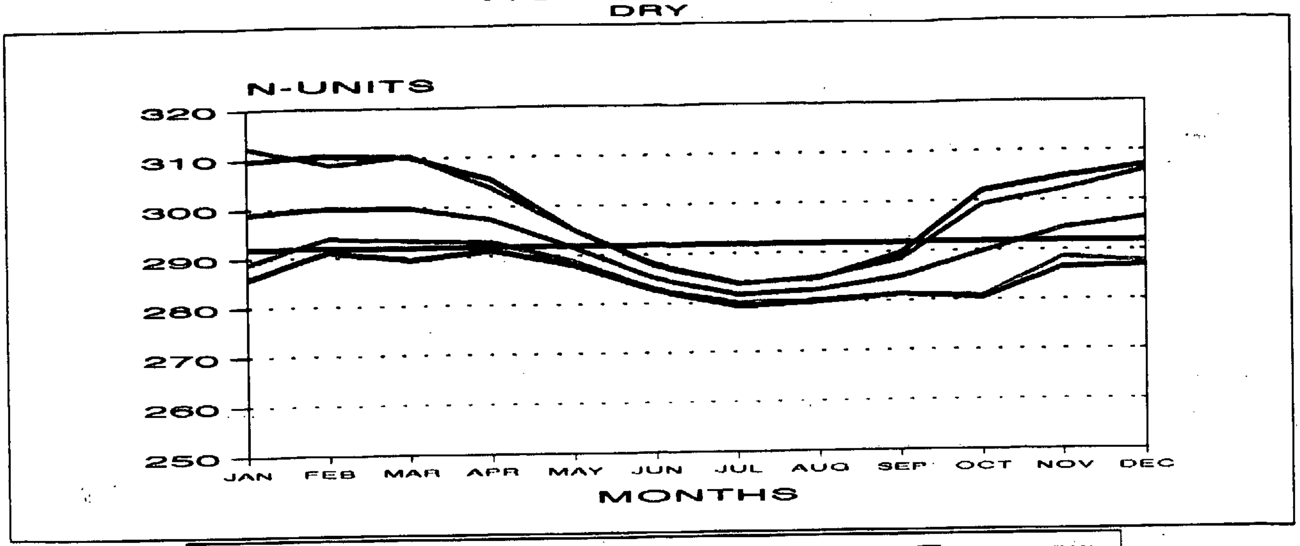
BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 1300
DRY

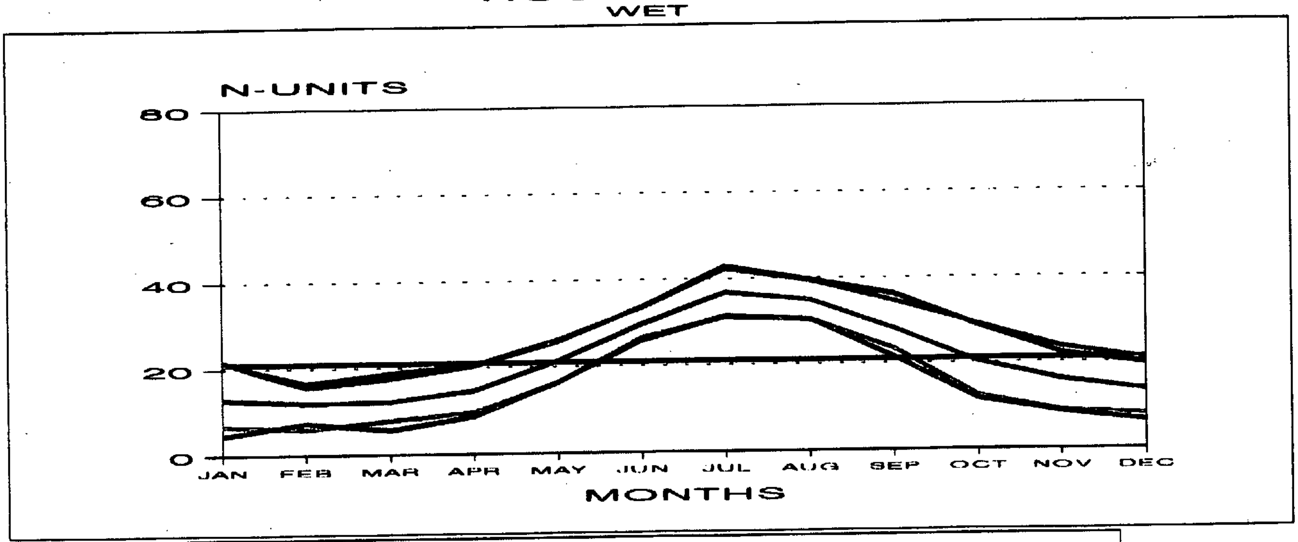


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 1300
WET

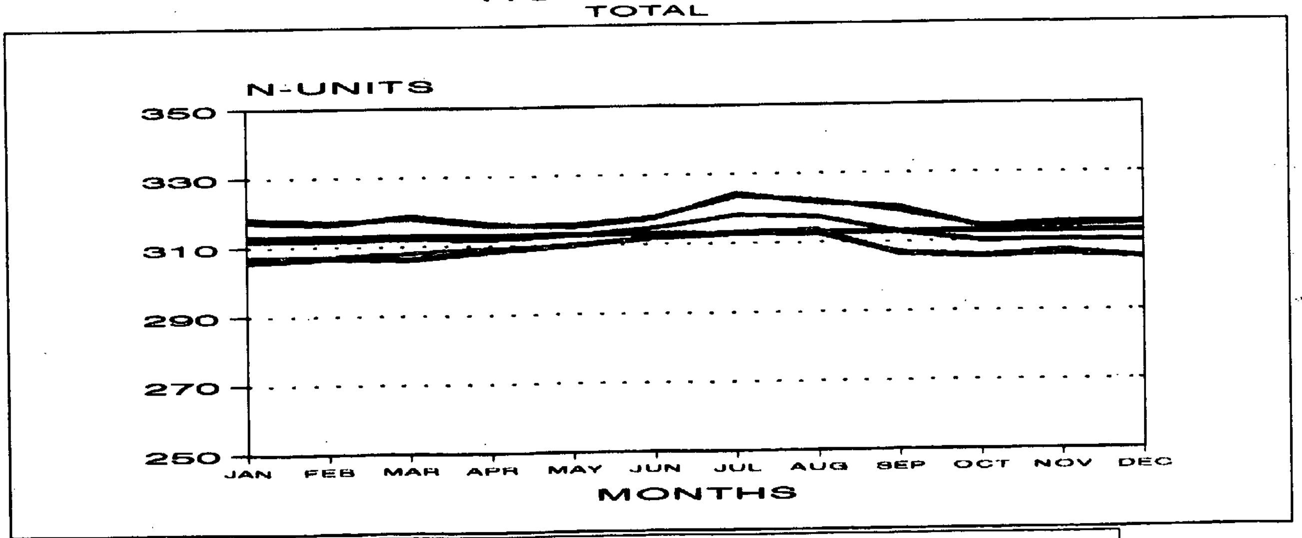


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 1300
TOTAL

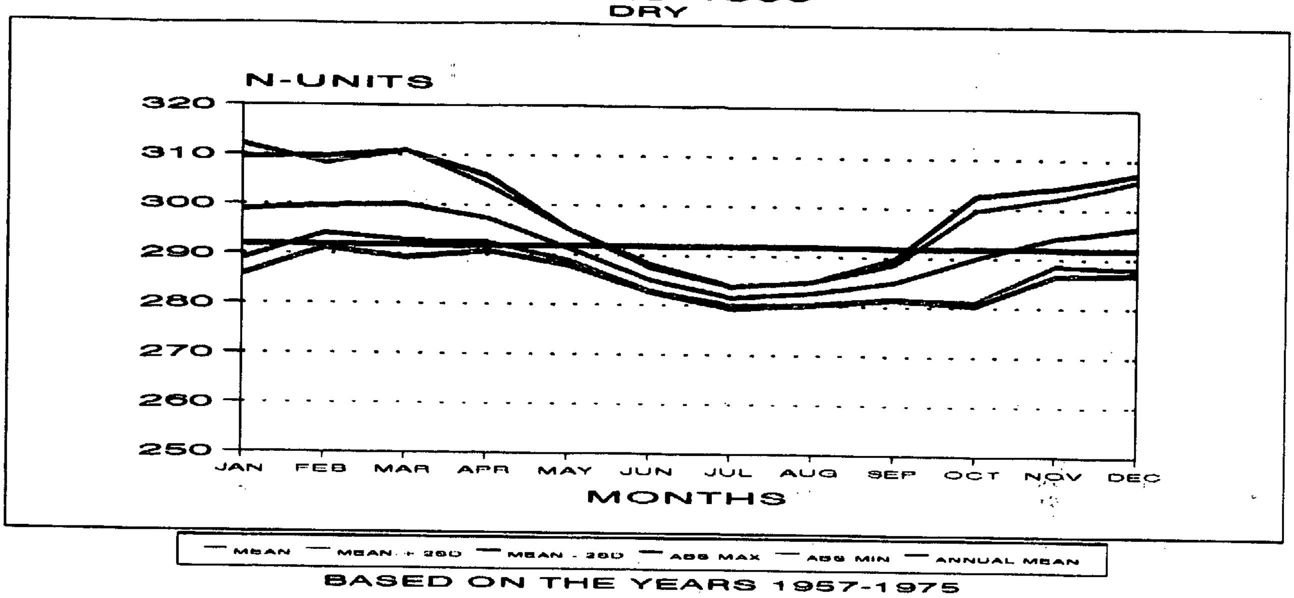


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

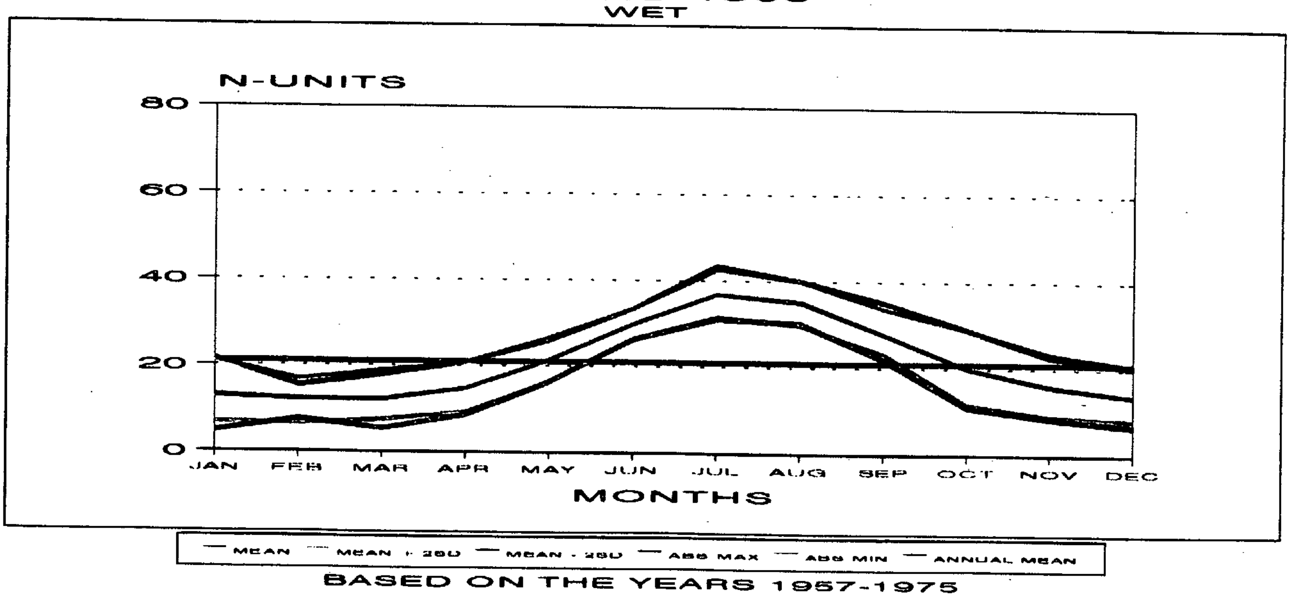
HOURS 1900
DRY



BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

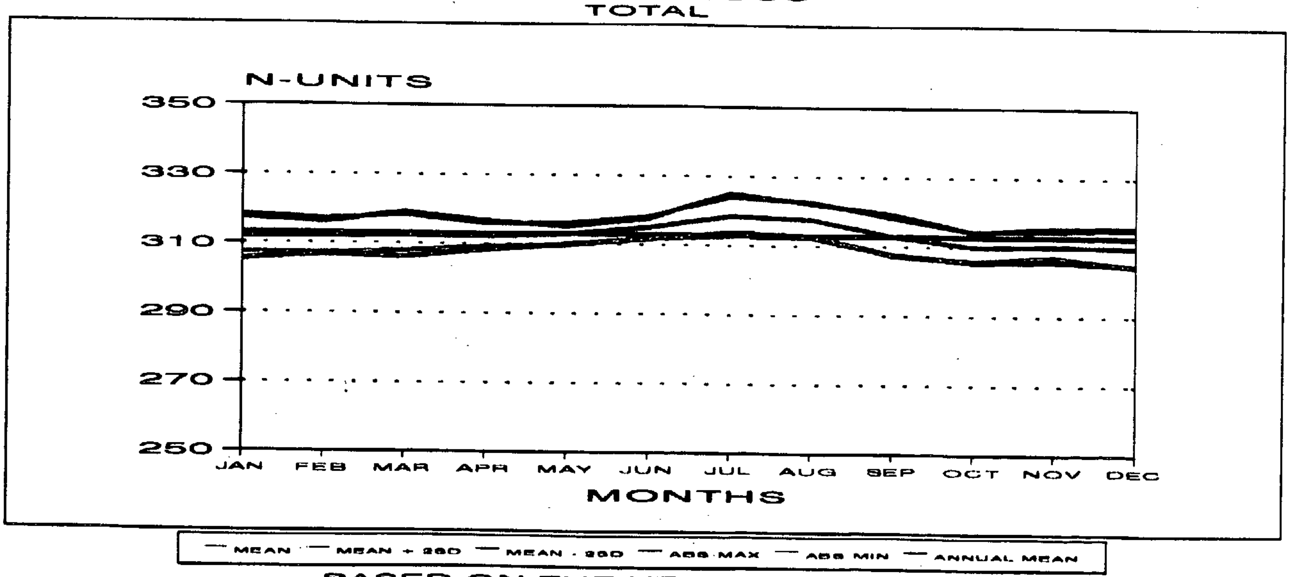
HOURS 1900
WET



BASED ON THE YEARS 1957-1975

9979 ISFJORD RADIO

HOURS 1900
TOTAL

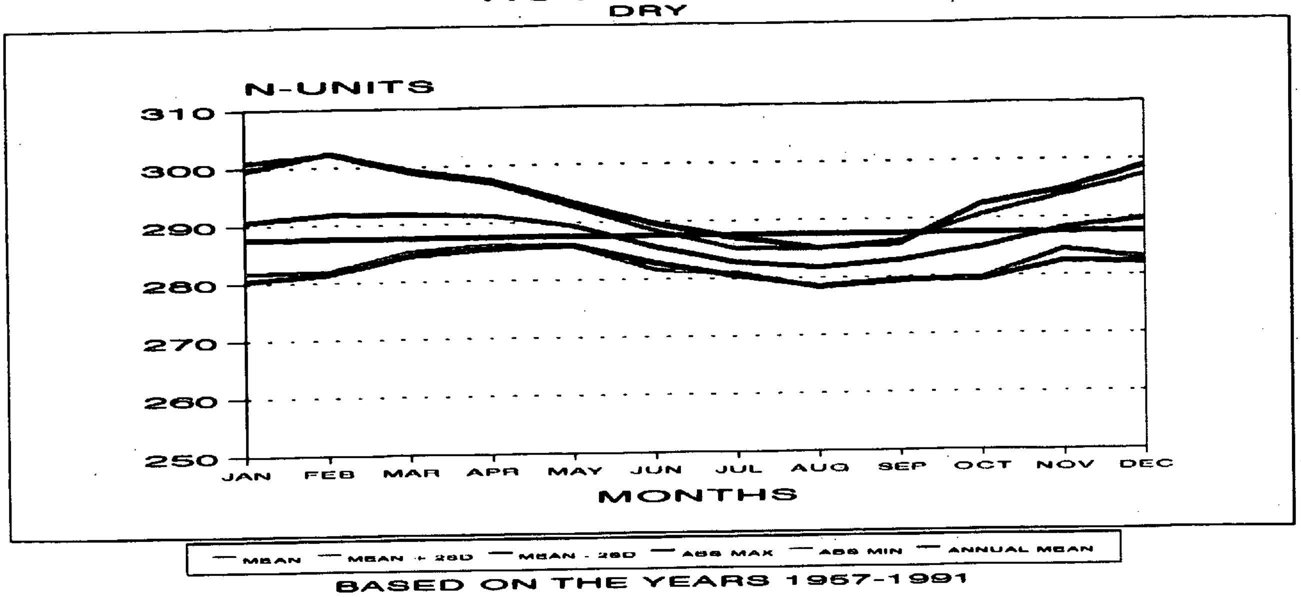


BASED ON THE YEARS 1957-1975

9995 JAN MAYEN

HOURS 0100

DRY

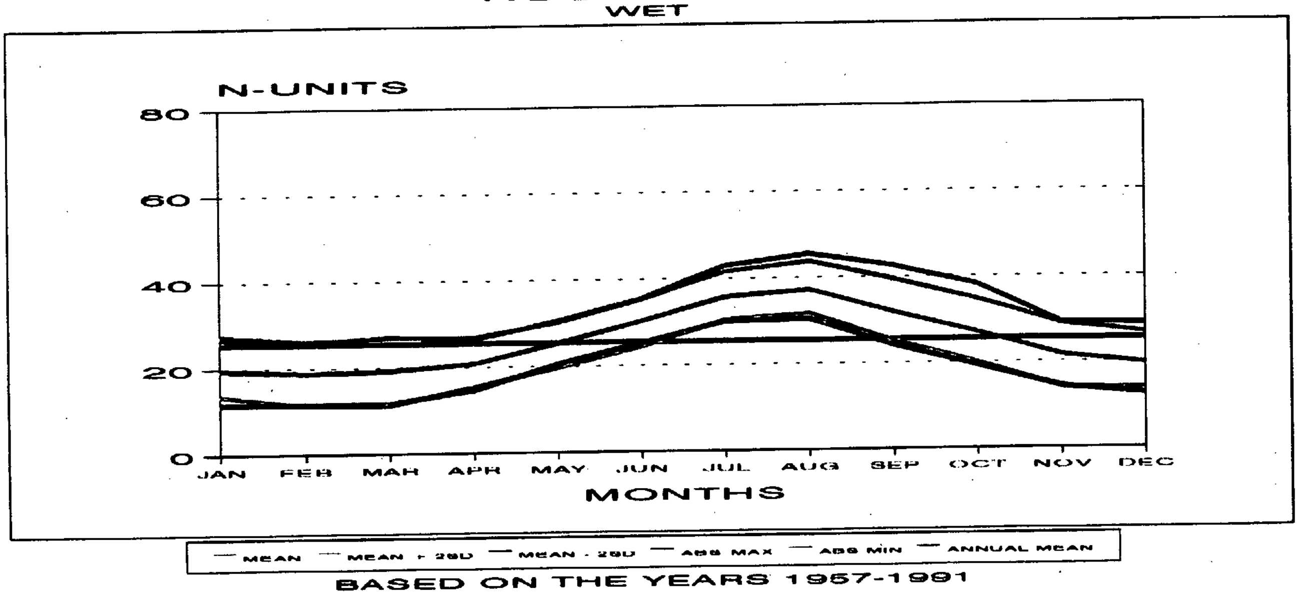


BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

HOURS 0100

WET

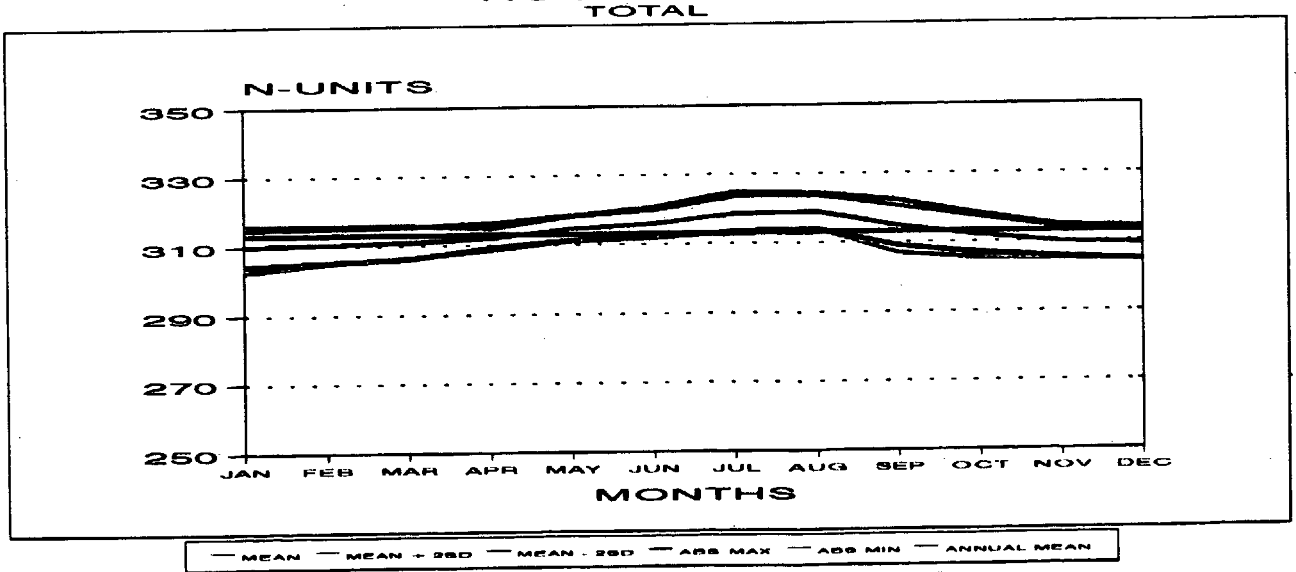


BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

HOURS 0100

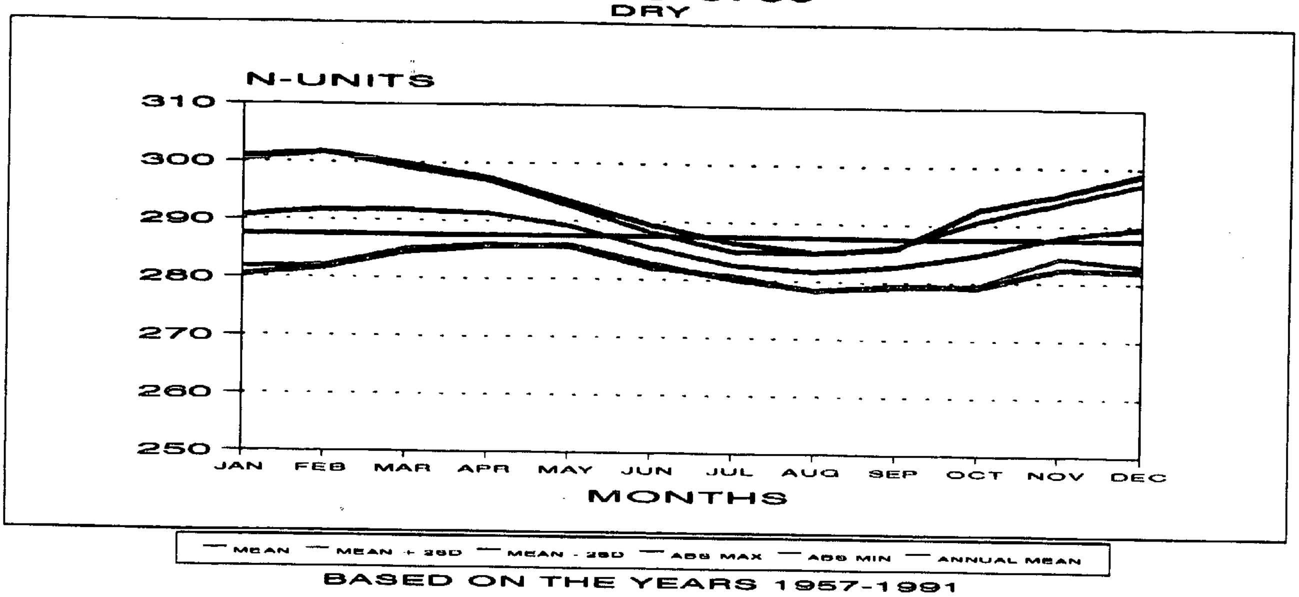
TOTAL



BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

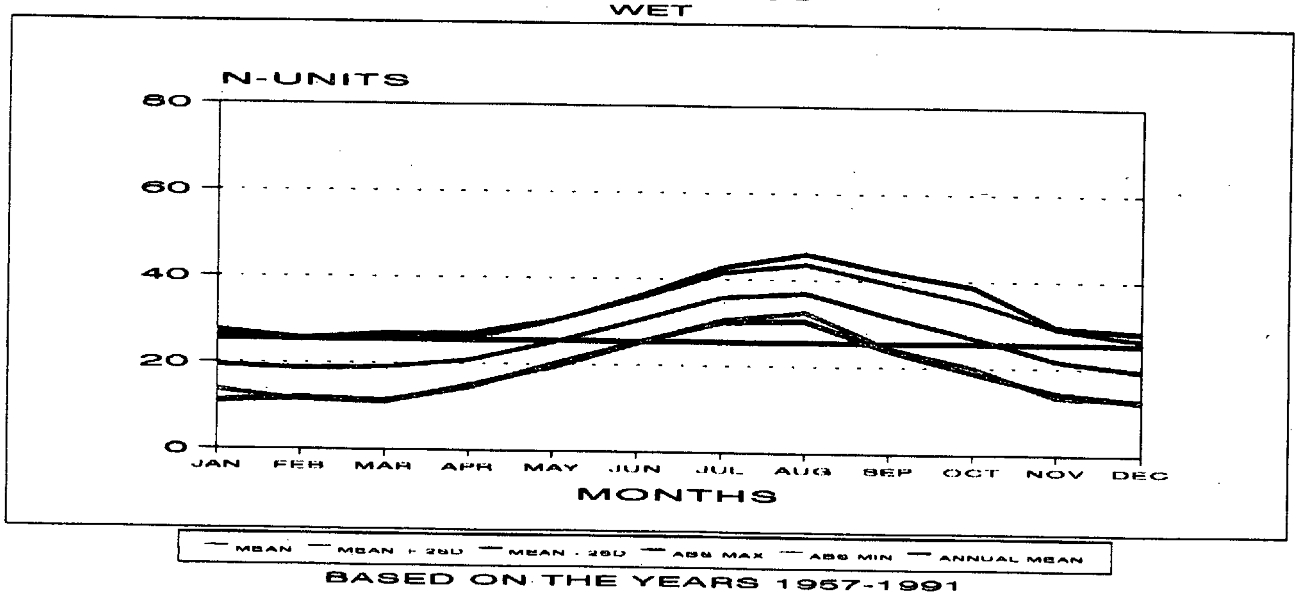
HOURS 0700
DRY



BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

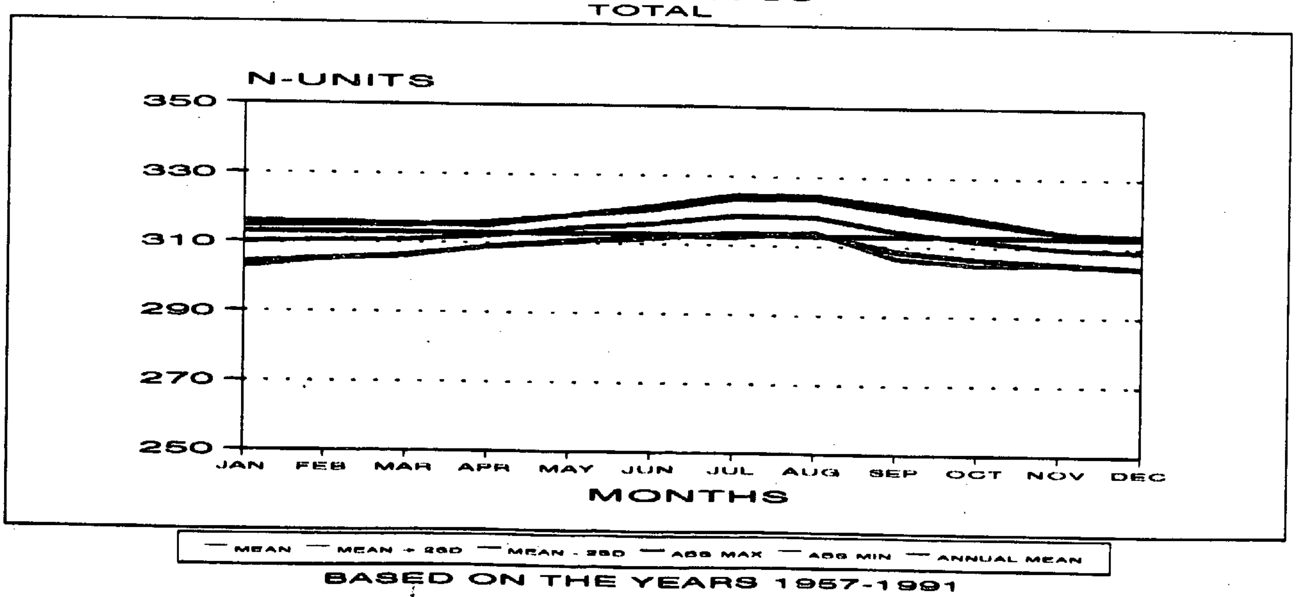
HOURS 0700
WET



BASED ON THE YEARS 1957-1991

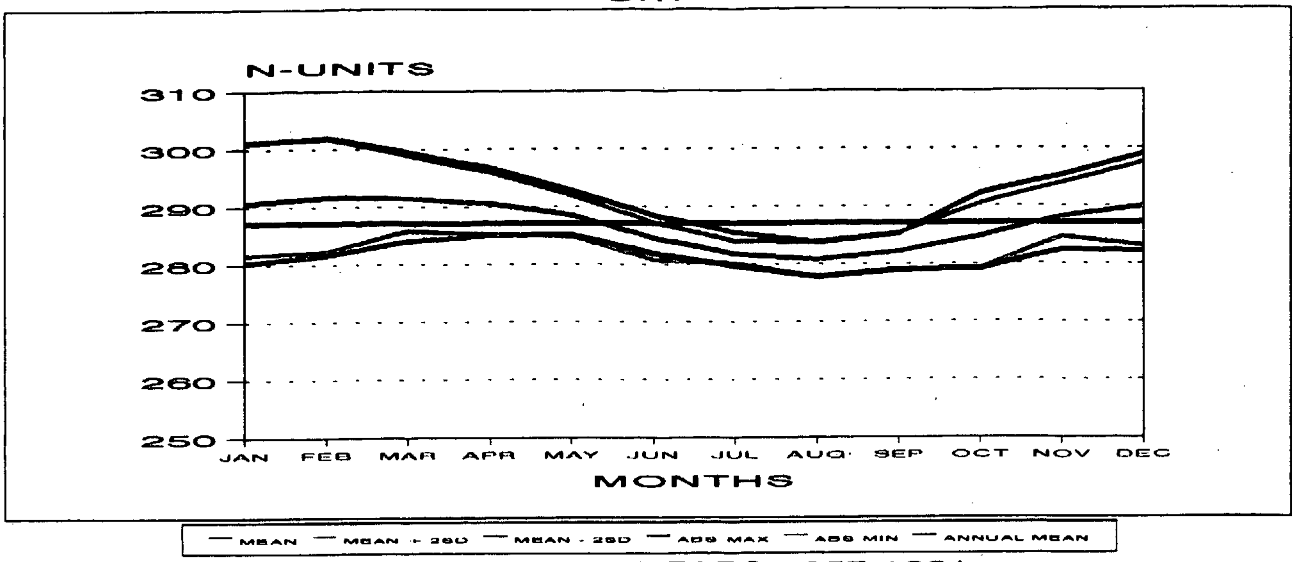
9995 JAN MAYEN

HOURS 0700
TOTAL



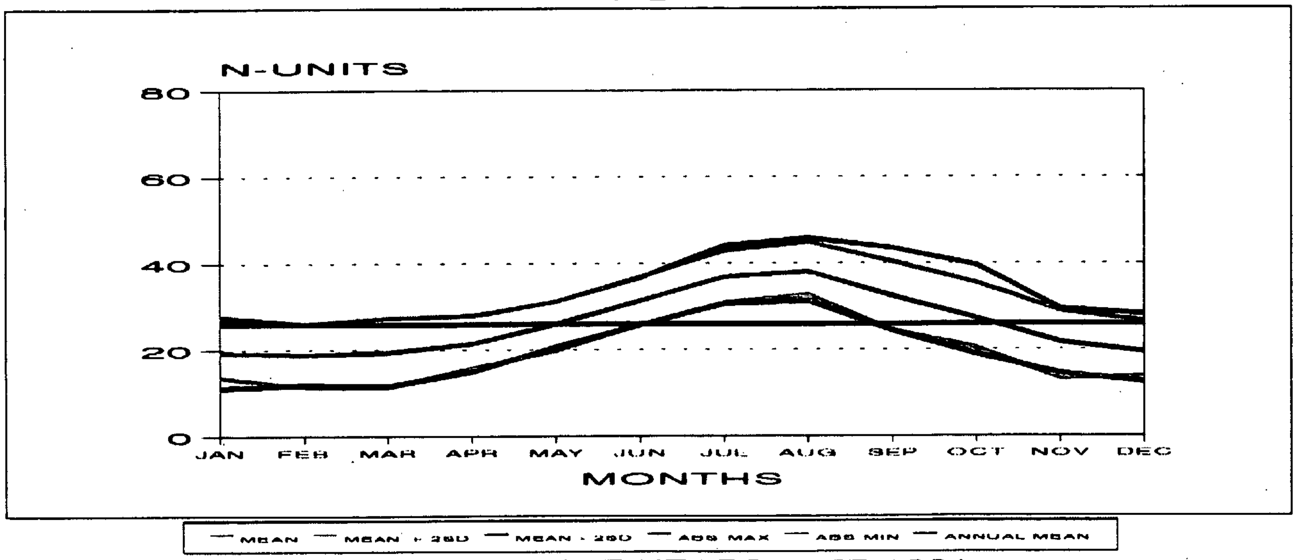
BASED ON THE YEARS 1957-1991

9995 JAN MAYEN
HOURS 1300
DRY



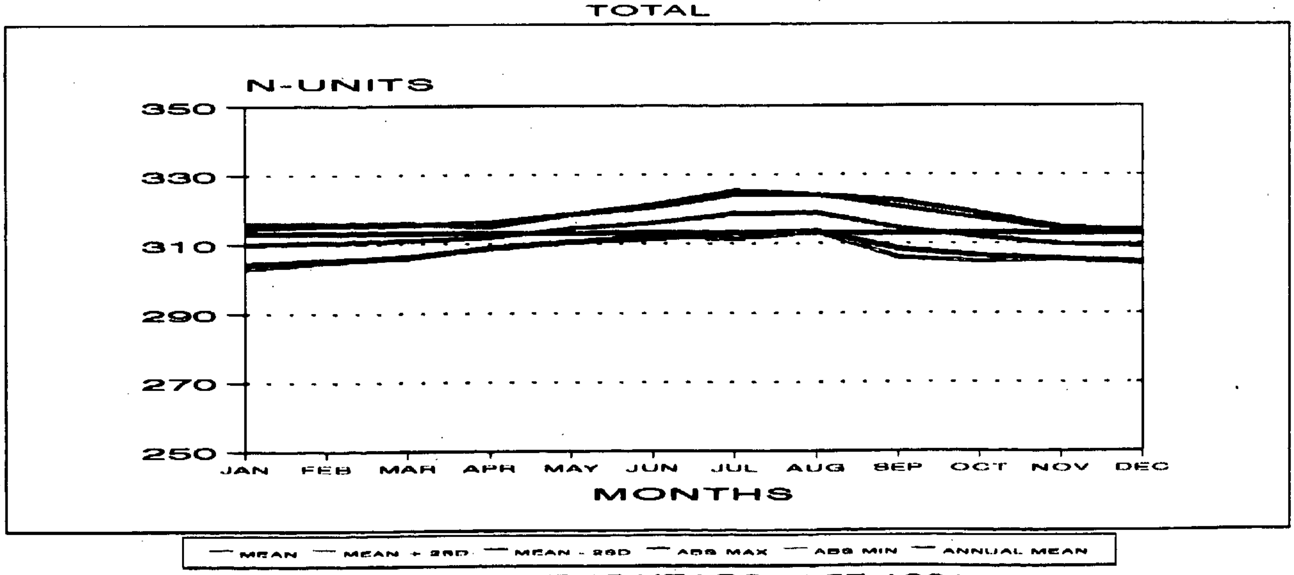
BASED ON THE YEARS 1957-1991

9995 JAN MAYEN
HOURS 1300
WET



BASED ON THE YEARS 1957-1991

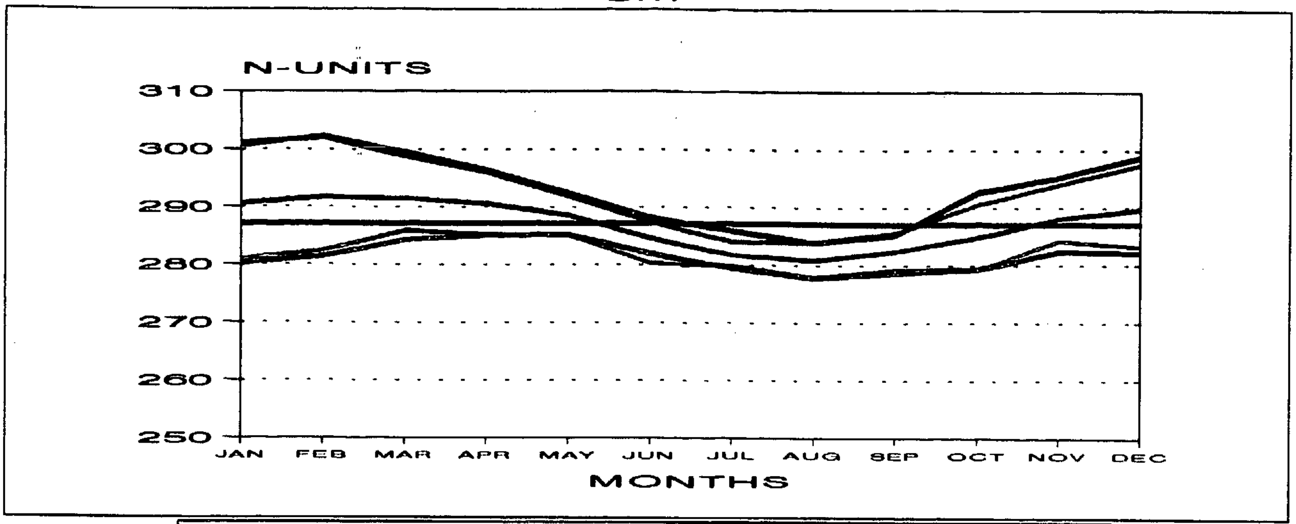
9995 JAN MAYEN
HOURS 1300
TOTAL



BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

HOURS 1900
DRY

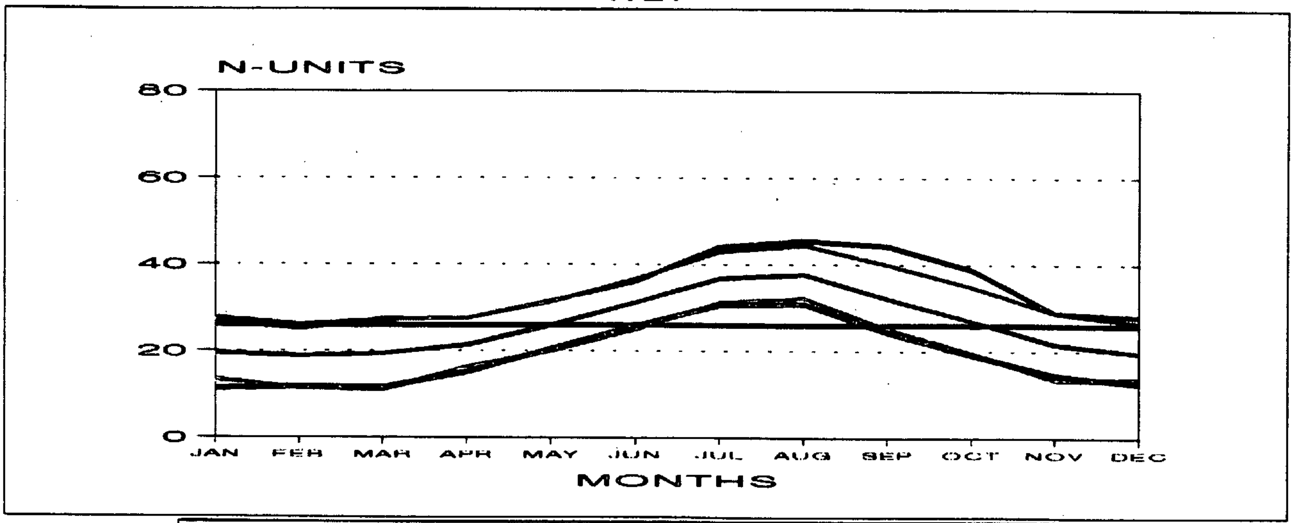


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

HOURS 1900
WET

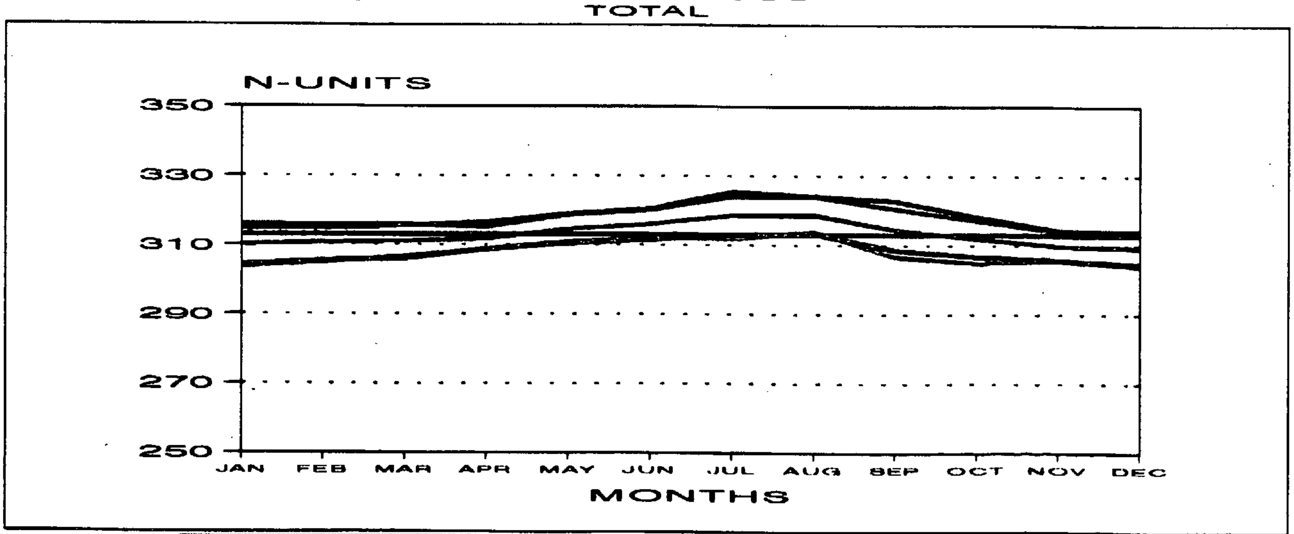


— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

9995 JAN MAYEN

HOURS 1900
TOTAL



— MEAN — MEAN + 2SD — MEAN - 2SD — ABS MAX — ABS MIN — ANNUAL MEAN

BASED ON THE YEARS 1957-1991

1.4 The variation of the refractivity caused by meteorological conditions.

The refractivity is as mentioned a function of air pressure, air temperature and air humidity. A change in one of this parameters will inevitably give a change in the refractivity.

The formula for the refractivity is

$$N = 77.6\ (P/T) + 373000.\ (e/T^2)$$

or

$$N = N_d + N_w$$

The refractivity has thus obviously a linear dependence of the air pressure and the air humidity but the dependence of the temperature is more complicated since the vapour pressure also is dependent of temperature (see appendix 2). The value of N varies in time and space through the variation of the meteorological variables pressure, vapour pressure and temperature not only in time in a constant spheroid surface, but also by their natural variation with the height.

If we differentiate by h, h is the height co-ordinate, the formal equation

$$N = N[p(h),T(h),e(h)]$$

we obtain

$$\delta N = N_d\ [\ (1/p)\ dp/dh - (1/T)\ dT/dh\ ]\ \delta h$$

$$+\ N_w\ [\ (1/e)\ de/dh - (2/T)\ dT/dh\ ]\ \delta h$$

Making use of the mean height variation in the lower 1000 m given by

$$p = p_o\ e^{-h/8000}$$

$$T = T_o - 6.5\ h$$

$$e = e_o\ e^{-h/2740}$$

where the dimension of p is mb or hPa, the same as for e and the dimension of T is degrees Celsius or Kelvin and h is given in km. Together with appropriate surface values for p, e, T, say p = 1000. mb , T = 290 degrees Kelvin (about 17 °C) and e = 12 mb (i.e. an assumed relative humidity of 60%) we obtain for the variation caused by the height alone

$$\delta N = -45\ \delta h$$

and for the variation caused by the parameters p,e,T with h assumed constant

$$\delta N = 0.27\ \delta p + 4.4\ \delta e - 1.28\ \delta T$$

From the last relation we see that pr unit variation in the parameters it is the variation in the humidity that gives the greatest effect on N, Then comes variations in the temperature and at last the pressure variations. Also knowing that both temperature an pressure very often have a rather smooth variation, it is evident that it is the variation in the humidity given as vapour pressure that is the cause that can give the greatest variation in the refractivity values for a defined, constant spherical surface, say the surface of the earth.

The meteorological variables constituting the refractivity value are in a way also interrelated. High pressure situations in summer will often cause high temperature and low humidity in the day. In the winter can a high pressure give extreme low temperatures and in an arid area also low humidity. Low pressure situations will in winter raise both humidity and temperature, whereas in summer it will lower temperature but raise the humidity.

The N-value will react in mean summer conditions by diminish the dry part and rise the wet part. In winter the wet part is relatively small with a raised dry part caused by lower temperatures.

From table 1.3.7 we see that the lowest monthly total N values occur in the months from December to April and the highest values in July and august.

To give an example of a rather extreme situation let us look at the station Karasjok in February 1985. In this month it was an extreme cold period giving a monthly mean temperature of -25.3 degrees Celsius or 10.7 degrees below the normal temperature for the month. This resulted in a monthly mean value of the refractivity of 320.1 N-units whence the long periodic mean for the month is 310.9 N-units. The dry and wet component was respectively 315.1 and 4.9 N-units, the dry component alone being higher than the long periodic mean for the total refractivity.

From the variability of the weather we can expect the highest standard deviation in the total refractivity in the summer months and smallest in late winter and early spring.

For the dry and wet components we have a contrary situation, highest variation in winter and lesser in the warm season, the effects cancelling and giving the above mentioned result for the total value of the refractivity.

To get an idea of the variation we have table 1.4.1 where max and min depicts the maximum and minimum within month standard deviation and mean is the standard deviation for the mean of the monthly means.

We clearly see the difference in impact from the humidity and temperature. For the inland stations the maximum standard deviation for the dry component occur in the winter months. The value is even greater than the maximum standard deviation for the wet component, for instance for Røros is the maximum standard deviations for dry and wet components 17.0 N-units and 14.2 N-units respectively. The dry has its maximum value in January, the maximum standard deviation for the wet occur in July. The explanation is that the variation in temperature in cold spells and "normal" winter conditions is so great. The above mentioned example from Karasjok describes well this condition. Here the maximum standard deviation for January dry component is more than twice the corresponding value for the wet component.

In the warm season the humidity content of the air is greater the in the cold period and thus the possibility of variation is greater. We find the greatest values of standard deviation for the wet component in the summer with values three times the value for the dry component in the inland to about twice the values for the coastal areas.

Values for the standard deviation of the total refractivity will generally be less than corresponding values for the two components since the effects of these as a rule is more or less contrary, the variation is thus smoothed in the cold season, but in the warm season combination of high temperature with heavy showers give maximum standard deviations for the total refractivity of the same magnitude as for the wet component.

The values given as "mean" are obviously smaller since they describe the variation of monthly values while the max/min values give the variation within months. They follow the same pattern as the max/min standard deviations, greatest values in the winter for the dry component and smallest in the summer. For the standard deviation of the wet component we have the converse situation.

For the values describing the year the magnitude of the standard deviation of the wet component is the greatest and is about twice as great as the values of the dry component. The values for the variation of the total refractivity are of the same magnitude as for the wet component.

			jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
Kjevik	dry	max	10.4	9.2	8.9	4.8	5.3	4.2	3.3	3.1	4.8	6.6	10.2	9.6	5.1
		mean	6.9	5.8	4.5	3.3	3.2	2.8	2.3	2.2	3.2	4.4	6.0	6.6	4.3
		min	3.6	3.8	2.5	2.1	1.3	1.7	1.4	1.5	2.0	2.2	4.1	3.9	3.8
	wet	max	12.2	9.6	9.2	11.7	15.5	15.0	14.3	17.7	17.9	12.4	12.1	10.6	10.7
		mean	7.2	6.5	6.4	7.7	10.1	11.0	11.4	11.1	10.6	9.5	8.5	8.0	9.0
		min	4.3	4.1	4.6	5.0	6.7	7.1	7.8	6.8	5.2	6.2	6.6	5.5	7.6
	tot	max	9.0	9.4	9.5	10.9	14.1	14.3	15.0	17.9	16.8	10.2	9.4	8.3	9.7
		mean	5.1	5.2	6.1	7.7	10.1	10.9	11.7	11.2	10.0	8.0	6.2	5.8	8.2
		min	2.5	2.3	3.5	4.9	7.3	7.6	7.7	7.1	5.3	5.1	3.6	3.0	6.8
Sola	dry	max	8.8	7.8	7.8	4.4	5.3	4.5	3.9	3.7	5.0	6.3	9.5	7.8	5.0
		mean	6.1	5.5	4.4	3.3	3.2	2.9	2.7	2.5	3.2	4.3	5.8	6.1	4.5
		min	2.9	2.5	2.5	2.1	1.7	1.9	1.6	1.3	1.9	2.7	3.6	3.6	3.8
	wet	max	13.2	10.2	9.1	10.9	13.1	12.2	12.4	13.2	12.6	12.6	12.3	10.8	10.3
		mean	8.1	7.7	7.3	7.4	8.1	8.6	9.0	9.1	9.2	9.2	9.2	8.7	9.2
		min	5.8	5.0	5.1	4.1	5.6	4.4	5.5	4.6	6.4	6.6	5.3	5.6	7.6
	tot	max	9.7	8.4	8.9	11.1	11.0	10.3	11.7	11.4	11.7	11.5	10.3	8.9	9.1
		mean	6.3	6.2	6.4	7.2	8.0	7.8	8.5	8.4	8.1	7.7	7.0	6.9	8.1
		min	4.0	3.2	3.8	4.7	5.2	4.5	5.2	4.2	5.3	5.7	4.2	5.2	6.6
Rygge	dry	max	11.2	10.3	9.8	5.0	5.1	4.0	3.7	3.5	5.4	7.5	11.1	9.4	5.8
		mean	7.6	6.5	4.9	3.6	3.5	3.0	2.4	2.4	3.7	5.0	6.8	7.6	5.1
		min	3.7	4.2	2.7	2.5	1.8	2.0	1.6	1.6	2.1	2.4	4.2	5.1	4.3
	wet	max	12.0	9.0	9.5	12.3	19.2	16.9	18.3	16.6	16.6	13.2	13.2	11.6	11.9
		mean	7.1	6.6	6.7	8.5	10.9	11.7	11.5	11.3	11.6	10.4	8.9	8.0	10.2
		min	3.9	3.5	3.8	5.4	5.9	5.5	6.0	5.8	7.3	6.0	5.4	5.4	7.5
	tot	max	7.5	7.6	10.5	12.4	17.7	16.5	19.2	16.3	14.5	12.0	8.4	8.5	11.2
		mean	5.0	5.0	6.1	8.4	11.1	11.8	11.7	11.3	10.6	8.3	6.0	5.4	9.1
		min	2.7	2.0	2.9	4.8	6.8	4.9	6.4	6.0	6.7	4.3	3.5	2.6	7.1
Fornebu	dry	max	10.9	10.3	9.4	5.2	4.9	4.7	3.5	3.9	4.9	7.7	10.8	9.0	5.9
		mean	7.3	6.6	4.9	3.7	3.6	3.2	2.5	2.5	3.6	4.9	6.6	7.2	5.2
		min	4.0	4.3	2.5	2.8	1.9	2.3	1.7	1.5	2.2	2.6	4.3	4.5	4.4
	wet	max	11.6	8.6	8.9	11.2	17.0	15.9	16.6	21.1	16.8	12.2	11.3	10.8	11.3
		mean	6.3	6.1	6.5	8.4	10.7	11.8	12.0	11.6	11.8	9.9	8.1	6.9	10.0
		min	4.4	4.0	3.9	5.9	6.4	7.6	7.4	7.1	6.1	6.3	4.5	4.9	8.4
	tot	max	7.5	8.1	10.1	11.0	15.2	15.5	16.5	21.0	14.4	11.3	8.7	7.4	10.7
		mean	5.1	5.3	6.4	8.5	10.7	12.0	12.3	11.8	11.2	8.3	6.0	5.4	9.3
		min	2.5	2.3	3.0	5.4	6.3	7.3	8.3	7.2	6.2	4.7	3.9	3.2	7.4
Gardermoen	dry	max	11.5	11.0	10.7	5.5	5.5	5.0	3.5	4.2	5.5	7.9	10.7	10.5	6.1
		mean	8.2	7.5	5.2	3.6	3.8	3.3	2.6	2.6	3.7	5.1	6.8	8.0	5.5
		min	4.5	4.4	3.0	2.4	2.0	2.3	1.5	1.6	2.3	2.7	4.4	5.3	4.6
	wet	max	10.1	8.6	8.9	11.1	16.3	16.6	15.6	16.4	16.6	11.7	10.4	9.8	10.9
		mean	6.6	6.4	6.4	7.6	10.5	11.6	11.5	11.2	11.2	9.7	7.8	7.0	9.8
		min	3.9	3.9	3.7	4.5	7.6	7.5	6.0	7.9	6.3	5.5	4.7	4.8	7.7
	tot	max	7.6	7.4	9.2	10.1	15.1	15.4	15.7	15.5	13.7	10.5	7.9	6.9	10.2
		mean	5.0	4.9	5.9	7.6	10.5	11.7	11.8	11.3	10.2	7.6	5.4	4.9	8.8
		min	2.7	2.2	3.0	5.2	7.3	7.8	7.3	7.4	5.6	4.3	3.0	2.9	6.8
Flesland	dry	max	8.3	6.7	7.2	4.7	5.0	4.7	4.2	4.1	5.4	5.9	8.7	7.9	5.0
		mean	5.8	5.1	4.2	3.3	3.3	3.0	2.9	2.7	3.3	4.3	5.6	5.8	4.6
		min	3.1	1.9	2.6	2.1	1.9	1.9	1.6	1.7	1.9	2.7	4.0	3.5	4.0
	wet	max	11.6	10.1	8.6	10.5	13.8	11.4	11.1	12.4	12.5	13.4	11.6	11.9	10.3
		mean	7.7	7.2	6.9	7.7	8.1	8.4	8.5	8.4	8.6	9.0	8.4	8.4	8.9
		min	4.8	4.4	4.5	4.7	5.1	5.4	4.8	5.1	5.6	6.0	4.9	5.3	6.8
	tot	max	9.6	9.2	9.5	10.0	12.9	10.9	12.0	10.9	12.4	11.4	10.6	9.1	9.9
		mean	6.5	6.3	6.8	7.8	8.2	8.1	8.1	7.7	7.8	7.9	6.8	6.8	8.1
		min	4.4	3.7	3.9	4.9	5.3	5.5	4.2	4.6	4.9	5.1	3.8	4.9	6.5
Flisa	dry	max	14.5	12.2	12.5	6.0	6.0	4.9	3.6	3.9	5.6	8.5	11.6	13.8	6.8
		mean	9.5	8.2	5.5	3.8	3.9	3.4	2.7	2.7	4.2	5.5	7.9	9.5	5.9
		min	4.9	4.4	3.4	2.2	1.7	2.3	1.6	1.6	2.3	2.9	4.6	5.5	4.8
	wet	max	10.9	9.1	8.8	11.4	17.6	15.6	15.6	15.0	17.1	11.9	11.5	11.3	10.6
		mean	7.2	6.7	6.7	8.0	10.3	11.4	12.0	11.5	11.2	9.6	8.5	8.1	10.0
		min	5.1	3.9	4.3	4.6	6.1	6.9	8.0	6.8	6.9	6.2	5.3	6.1	8.4
	tot	max	9.1	7.6	8.7	10.1	16.1	17.0	16.3	14.8	13.5	10.3	7.6	6.5	9.6
		mean	5.3	5.0	5.7	7.4	10.1	11.5	12.1	11.1	9.7	7.2	5.0	5.0	8.6
		min	2.9	2.5	3.5	4.9	5.9	7.1	6.9	6.9	5.9	3.9	2.9	2.5	7.1

			jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
Røros	dry	max	17.0	13.3	10.2	5.2	6.0	6.3	4.4	4.9	5.5	9.4	14.0	13.1	6.8
		mean	10.6	8.7	5.5	3.8	3.8	4.0	3.6	3.2	3.8	4.9	8.1	9.4	6.3
		min	4.4	4.8	3.2	2.4	1.8	1.9	2.1	2.0	2.2	2.7	4.3	5.3	5.2
	wet	max	10.6	8.4	7.4	8.1	13.6	13.1	14.2	12.9	12.7	9.7	9.6	9.1	9.6
		mean	6.9	6.3	5.7	5.7	7.8	9.1	9.2	9.0	8.4	7.4	7.2	7.1	8.3
		min	4.6	4.5	3.5	3.9	4.2	5.3	5.6	6.0	5.0	5.2	4.4	4.1	7.1
	tot	max	10.6	7.4	5.8	6.7	12.8	15.2	14.3	12.0	10.5	7.6	6.8	7.2	8.4
		mean	6.1	5.0	4.2	4.9	7.1	8.9	9.0	8.6	7.1	5.6	4.4	5.2	7.1
		min	2.8	2.6	2.8	2.7	3.9	5.2	5.1	6.0	4.1	3.2	2.3	3.0	6.0
Værnes	dry	max	11.6	10.0	8.7	5.5	6.8	6.8	4.9	4.9	6.6	7.9	10.1	10.6	6.3
		mean	8.2	7.0	4.9	4.0	4.2	4.4	4.0	3.6	4.3	5.1	6.8	7.2	5.8
		min	4.2	4.0	2.9	2.5	2.9	2.5	2.3	2.1	2.4	3.1	3.8	4.7	4.8
	wet	max	10.0	9.8	8.5	11.8	15.9	15.4	15.5	13.2	12.4	10.3	9.7	11.3	10.1
		mean	7.5	7.3	6.5	7.5	9.2	10.4	10.2	10.2	8.7	8.0	7.3	7.3	9.0
		min	4.9	5.4	3.9	5.4	5.8	7.2	6.2	6.5	5.5	4.6	4.5	4.5	7.3
	tot	max	8.9	10.1	8.8	11.6	14.0	13.9	16.3	13.0	11.0	10.7	9.5	9.8	10.5
		mean	6.4	6.3	6.2	7.6	9.3	9.9	9.9	9.8	8.2	7.6	6.5	6.4	8.4
		min	4.0	4.0	4.0	5.2	6.0	7.0	7.2	6.4	5.2	4.0	3.9	2.9	6.9
Ørland	dry	max	9.5	8.9	7.0	5.2	5.8	7.2	4.8	4.8	5.8	7.1	8.4	8.0	5.4
		mean	6.2	5.6	4.4	3.9	3.9	4.1	3.6	3.3	3.9	4.4	5.4	5.6	5.0
		min	3.4	3.0	2.7	2.1	2.3	2.0	1.6	1.6	2.3	2.5	3.0	4.0	4.1
	wet	max	10.0	10.1	9.8	9.8	12.5	13.7	10.8	13.5	11.5	10.7	9.3	11.7	9.2
		mean	7.4	7.2	6.9	7.5	8.7	8.9	8.6	8.7	8.4	7.9	7.5	7.5	8.7
		min	5.1	4.6	4.2	5.5	6.2	6.0	4.2	5.8	5.7	4.8	4.4	5.4	7.5
	tot	max	10.1	9.0	9.7	9.6	11.4	11.8	10.7	11.4	10.3	11.0	8.6	10.7	9.1
		mean	6.2	6.3	6.5	7.5	8.6	8.2	7.8	8.1	7.7	7.3	6.8	6.6	8.0
		min	4.2	3.5	4.3	5.6	5.4	5.7	4.4	5.7	5.4	4.4	4.5	3.9	6.9
Bodø	dry	max	9.2	8.8	7.0	5.7	6.1	6.0	5.1	4.3	5.8	7.0	8.1	8.2	5.6
		mean	6.3	5.8	4.6	3.8	3.8	4.4	3.7	3.3	3.9	4.5	5.5	5.9	5.1
		min	4.0	3.5	2.6	2.2	2.3	2.7	1.9	2.0	2.4	2.7	3.6	3.9	4.0
	wet	max	9.6	10.4	11.1	10.0	10.5	10.9	12.1	11.4	14.3	12.7	9.9	10.7	9.7
		mean	7.4	7.2	6.9	7.0	7.6	8.1	7.9	8.4	8.4	8.7	7.7	7.6	8.5
		min	4.3	3.3	3.8	3.9	5.1	5.2	5.1	5.5	5.3	4.8	4.3	3.7	7.0
	tot	max	8.3	9.4	7.6	8.3	10.0	10.6	9.8	10.1	11.9	12.4	8.1	9.4	8.6
		mean	5.8	5.7	5.9	6.3	7.4	7.6	7.3	7.7	7.3	7.4	6.2	5.9	7.4
		min	3.2	2.9	3.8	4.0	4.5	4.9	5.0	5.4	3.7	4.5	3.8	2.8	5.9
Karasjok	dry	max	19.8	18.5	13.5	7.1	7.0	6.6	6.1	5.9	6.0	11.0	17.2	18.2	9.3
		mean	14.4	13.1	8.9	5.1	4.3	5.1	4.1	3.9	4.7	6.9	11.4	13.7	8.4
		min	9.6	5.7	4.5	2.9	2.5	3.2	2.2	2.3	3.0	3.4	6.4	7.9	6.6
	wet	max	9.4	10.2	9.0	8.2	9.6	14.3	17.6	15.7	13.8	12.8	10.8	10.0	10.0
		mean	7.2	6.8	6.5	6.3	6.5	10.1	11.1	10.8	8.9	7.8	8.3	7.6	8.9
		min	4.8	3.1	3.7	3.8	3.5	6.4	5.4	7.4	5.6	4.9	5.2	5.3	7.3
	tot	max	13.6	11.7	8.1	5.3	9.7	11.6	16.3	12.5	10.4	7.4	9.5	11.5	8.4
		mean	8.7	7.7	4.7	3.7	5.2	8.4	10.0	8.9	6.2	4.3	5.4	7.7	7.4
		min	4.7	3.3	2.7	2.0	3.3	4.4	5.3	6.3	3.8	2.5	2.4	3.2	5.8
Tromsø	dry	max	8.5	8.5	7.2	6.4	5.6	7.0	6.0	5.1	5.7	6.5	7.1	7.3	5.9
		mean	6.3	6.0	4.8	4.1	3.9	4.7	4.1	3.7	4.2	4.8	5.3	5.7	5.5
		min	3.5	2.9	2.9	2.7	2.4	2.3	1.6	2.2	2.6	2.9	3.0	3.5	4.2
	wet	max	8.2	8.2	7.5	9.1	9.3	11.7	17.8	10.5	16.5	10.9	8.3	7.8	8.7
		mean	6.2	6.2	6.0	6.2	6.7	8.4	8.9	8.4	7.9	7.7	6.4	6.2	7.9
		min	4.2	3.3	3.5	4.3	3.8	4.7	5.5	6.0	5.0	4.4	3.5	3.6	6.7
	tot	max	7.6	7.9	7.4	7.3	10.1	10.5	12.3	9.8	13.3	9.5	7.1	7.6	7.8
		mean	5.5	5.3	5.0	5.5	6.6	7.6	8.4	7.3	6.7	6.5	5.5	5.3	6.9
		min	3.5	2.7	3.0	3.5	3.8	4.5	5.5	4.6	4.2	3.2	3.2	3.3	5.8
Tromsø-l	dry	max	8.9	8.4	7.6	6.2	5.2	6.4	5.3	4.8	5.4	6.8	7.5	7.0	5.6
		mean	6.4	6.1	5.0	4.1	3.8	4.5	3.7	3.6	4.3	5.2	5.5	5.7	5.3
		min	4.6	3.7	3.1	2.8	2.2	2.0	1.4	2.1	2.5	3.7	3.5	3.8	4.3
	wet	max	8.4	7.6	7.0	8.1	7.8	11.1	11.4	11.2	12.5	9.7	7.5	8.2	7.8
		mean	5.9	5.9	5.8	5.9	6.3	7.8	7.6	7.7	7.4	7.4	6.1	5.9	7.3
		min	4.0	3.2	3.8	3.5	3.1	4.2	4.4	4.6	4.8	4.3	4.2	3.6	5.5
	tot	max	7.5	7.8	6.9	6.5	9.2	10.5	10.2	8.7	10.1	7.6	7.0	7.5	7.0
		mean	5.4	5.1	4.9	5.2	6.0	6.7	6.9	6.4	5.9	5.8	5.0	5.1	6.3
		min	3.7	2.4	3.1	3.4	3.3	3.9	3.8	4.0	3.7	3.3	3.3	3.3	4.9

			jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
Alta	dry	max	14.0	11.9	8.6	6.5	5.5	6.2	6.4	5.5	5.6	7.6	10.3	9.7	6.8
		mean	8.6	8.6	6.3	4.6	3.8	4.9	4.3	3.8	4.3	5.7	7.6	7.8	6.3
		min	4.8	5.2	2.9	3.0	2.3	2.9	1.9	2.3	2.2	3.9	3.8	5.1	4.9
	wet	max	8.9	7.5	6.7	7.5	9.8	11.4	12.6	12.8	13.0	10.9	8.8	7.9	8.8
		mean	6.1	6.2	5.4	5.6	6.1	9.5	9.4	9.4	7.9	6.8	6.6	6.0	7.7
		min	4.0	3.5	2.9	3.0	4.0	5.0	6.3	5.8	4.5	4.4	5.0	3.1	5.9
	tot	max	8.1	6.1	6.0	6.4	8.7	10.5	12.9	12.2	10.6	7.4	6.3	6.6	7.3
		mean	5.3	5.0	4.3	4.4	5.2	7.8	9.0	8.1	6.5	4.7	4.6	4.7	6.3
		min	3.6	2.5	2.6	2.8	3.7	4.4	4.7	5.8	4.0	3.1	2.8	3.4	4.9
Vardø	dry	max	8.2	8.7	8.2	5.4	5.1	5.5	4.5	4.6	4.9	6.1	7.2	8.3	5.5
		mean	5.9	5.6	4.9	4.2	3.5	3.5	3.3	3.1	3.6	4.3	5.0	5.4	4.9
		min	3.6	3.0	2.8	2.6	2.2	2.2	1.8	2.1	1.7	2.8	2.9	3.3	4.1
	wet	max	8.3	6.7	7.3	7.5	7.8	10.4	11.2	11.2	11.6	9.8	8.6	6.8	7.6
		mean	5.3	4.9	5.2	5.7	5.9	6.9	7.3	7.9	7.8	6.9	6.0	5.1	6.9
		min	3.2	3.3	2.8	3.7	3.9	3.6	4.7	5.2	4.9	4.9	4.2	2.9	5.8
	tot	max	5.9	5.6	5.3	6.2	7.8	6.9	9.4	9.8	10.5	8.1	6.3	6.2	6.3
		mean	4.4	4.2	4.0	3.8	4.6	5.2	5.9	6.5	6.2	5.0	4.4	4.2	5.4
		min	2.7	2.5	2.6	2.4	2.5	3.0	3.3	4.2	3.2	3.5	2.5	2.6	4.3
Jan mayen	dry	max	12.1	11.0	11.7	6.8	4.7	5.2	3.5	3.6	5.0	6.6	8.9	11.6	6.6
		mean	7.2	7.7	6.8	5.6	3.5	3.1	2.6	2.7	3.8	5.1	6.3	7.2	5.5
		min	4.2	4.7	4.0	4.1	2.1	2.1	1.5	1.9	1.8	3.3	4.0	3.6	4.5
	wet	max	10.1	9.5	9.0	8.6	7.0	6.3	7.2	7.3	10.2	10.8	9.8	10.0	7.6
		mean	6.8	7.2	6.6	6.3	5.6	4.9	4.7	5.4	7.0	7.4	7.2	7.3	7.0
		min	4.6	4.8	3.3	4.4	3.6	3.4	3.0	3.8	4.5	5.3	3.4	4.5	5.7
	tot	max	6.1	6.8	5.6	5.8	4.9	5.1	6.1	6.6	8.1	6.9	5.9	6.3	5.5
		mean	4.5	4.4	3.7	3.7	3.8	3.8	3.9	4.7	5.2	4.5	4.3	4.2	4.7
		min	2.5	2.6	2.2	2.3	2.4	2.0	2.4	2.9	2.6	2.7	2.4	2.6	3.8
Bjørnøya	dry	max	12.1	12.0	10.7	8.3	5.5	5.9	4.3	4.1	5.2	7.1	8.6	10.7	7.0
		mean	8.4	7.8	7.5	6.2	3.7	3.2	2.9	2.9	3.8	4.8	5.9	7.6	5.9
		min	4.1	3.2	3.2	4.1	2.4	2.2	2.0	2.0	2.0	3.0	3.6	4.5	4.5
	wet	max	10.4	9.1	9.2	8.8	7.8	8.2	7.4	10.3	10.3	8.9	8.7	8.6	7.8
		mean	7.1	7.0	7.1	6.7	5.8	5.4	5.5	5.6	6.5	6.8	6.8	6.9	7.0
		min	4.3	4.5	2.7	4.0	3.7	3.5	3.2	3.0	3.9	4.7	4.2	4.9	6.0
	tot	max	5.6	6.1	5.4	5.5	6.1	5.5	6.2	7.3	8.2	6.2	5.9	5.6	5.1
		mean	4.4	4.2	4.0	3.3	3.7	3.7	4.1	4.3	4.8	4.4	4.1	4.2	4.5
		min	2.6	2.1	2.2	2.0	1.5	2.2	2.5	2.1	2.5	2.5	2.1	2.8	3.7
Isfjord	dry	max	11.7	11.4	11.1	10.8	5.9	4.3	3.7	3.0	4.7	8.3	9.5	10.4	6.8
		mean	8.5	9.1	7.9	6.8	4.0	3.0	2.5	2.6	3.9	5.6	7.3	8.0	6.3
		min	5.2	5.4	3.2	3.7	2.4	1.6	1.5	1.7	2.6	4.2	4.1	5.5	5.0
	wet	max	8.3	8.0	8.7	9.2	8.0	6.1	5.3	7.9	8.1	8.6	9.0	8.5	6.8
		mean	6.3	6.1	5.9	6.2	6.0	5.2	4.0	4.8	6.0	6.3	6.4	6.2	6.4
		min	3.2	2.6	1.5	2.8	3.0	3.5	2.6	3.3	3.8	4.2	2.7	4.2	5.4
	tot	max	6.2	6.2	6.0	3.8	5.7	5.1	5.8	6.5	5.7	4.8	5.1	5.7	4.8
		mean	4.9	4.8	4.0	3.1	3.7	4.0	4.0	4.6	4.7	4.1	4.0	4.4	4.6
		min	3.1	3.3	2.2	1.7	2.0	2.6	2.2	3.1	3.2	2.8	2.0	2.6	3.8

Table 1.4.1 Standard deviation for the month and year, maximum, minimum and mean value for,dry, wet and,total surface refractivity.

1.5 The long periodic variation of surface refractivity.

To detect possible trends in the surface refractivity is for the long periodic stations computed yearly mean values of the surface refractivity in N-values together with a total mean for the whole period for total refractivity in addition to dry and wet components.

This gives 17 stations with 35 yearly values, and 3 stations with respectively 29, 27 and 19 yearly values. The results are shown in figures 1.5.1 to 1.5.10. Note the different scale in N-units for the station 1040 Røros. The stations are presented in ascending latitude regardless of degree of maritimity. The extreme maritime station Mike is however presented as the last one. The individual curves varies a lot but we can observe that extreme maritime stations have less variation from year to year than stations of a other type of more mixed climate.

We also can make a mean of the 17 stations with 35 years of observation period for the each individual year and thus get some sort of mean variation in time for the whole country. This is surely a rather uncertain set of values since we mix the stations of maritime character with inland stations and also mix southern latitudes with the more Arctic stations. The advantage of this is to smooth the variation of the individual station so if it exist a common variation through the years it should reveal in this data set.

We would be inclined to suppose that the station 9661 Mike should give a bias to the data towards increasing the refractivity values being so extreme maritime. We therefore in the following construct two set of values, one for all the stations and one set without the station 9661 Mike. In doing so we find that the grand mean of the values increases with 0.3 N-units, about 1 %, and the standard deviation decreases about 0.1 N-unit or about 1.6 %, the increase is only due to the wet component.

surface refractivity	Mike included		Mike excluded	
	N-value	std.	N-value	std.
dry component	279.8	5.3	279.8	5.4
wet component	33.3	5.8	33.0	4.8
total value	313.1	6.1	312.8	6.2

Table 1.5.1 Mean values for dry and wet component and total refractivity for the long periodic stations.

In figure 1.5.11 is shown the mean fluctuating yearly values for both dry and wet components together with the total value of the refractivity included the station 9661 Mike. In addition is given curves for plus/minus one standard deviation for each year in the same N-scale as above. The three straight lines in the figure represents the grand mean for the stations (313.1 N-units / 312.8 N-units) together with plus/minus one standard deviation (6.1 N-units / 6.2 N-units).

The curves for the mean values are also given in figure 1.5.12 in an enlarged N-scale together with a three-year moving average.

This shows clearly that in the years 1957 to 1979 it is a overall decreasing tendency in the values of the total surface refractivity, but from 1980 of the surface refractivity has an ascending tendency.

The maximum positive deviation from the mean we find in the year 1960 as 2.0 N-units, with a refractivity value of 314.8 N-units. The maximum negative deviation we find in the year 1979 as 2.8 N-units with a corresponding refractivity value of 311.0 N-units.

We also note a local minimum for the year 1962 and local maxima for the years 1972 and 1984.

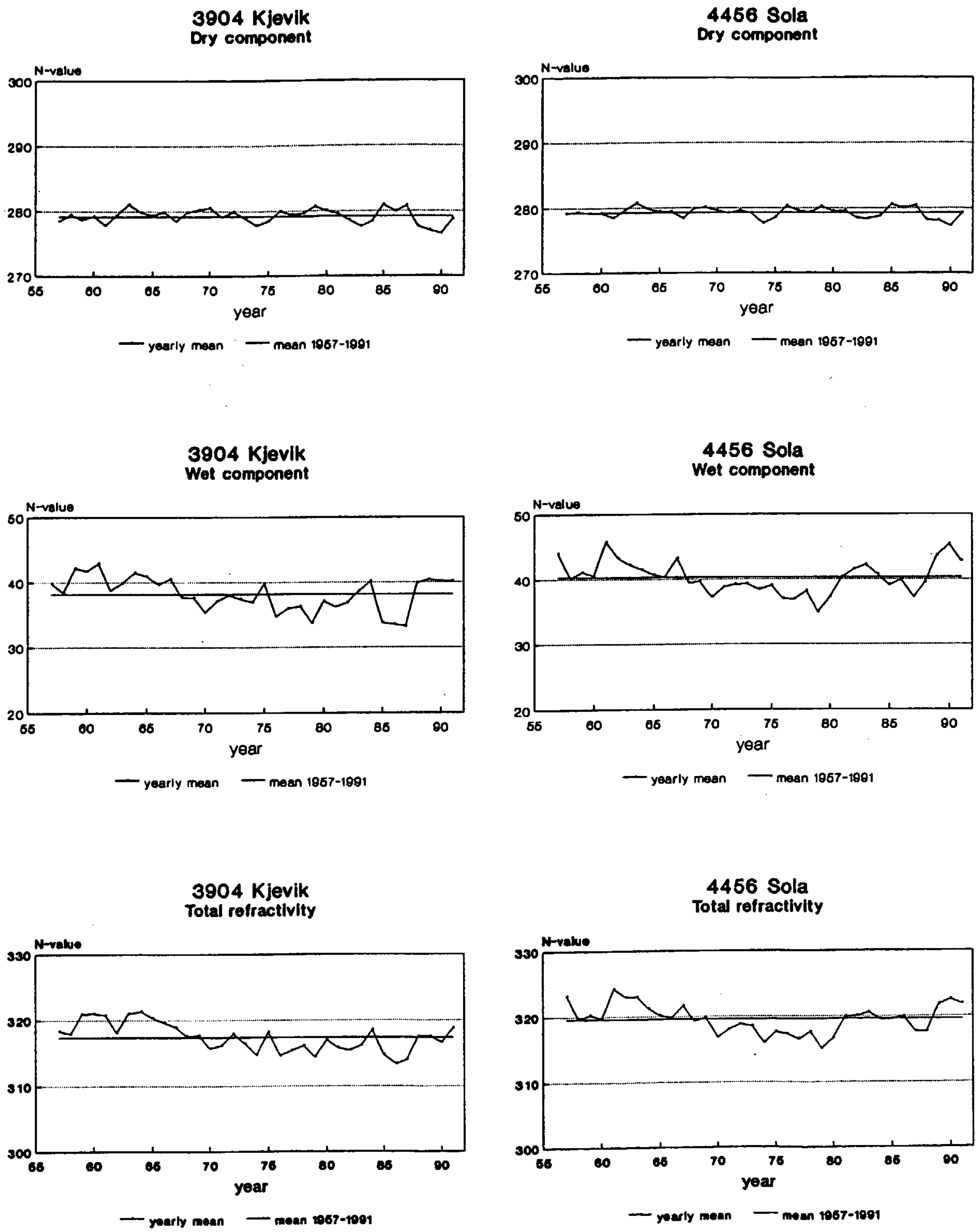


Fig 1.5.1 Long periodic variation of the surface refractivity at Kjevik and Sola

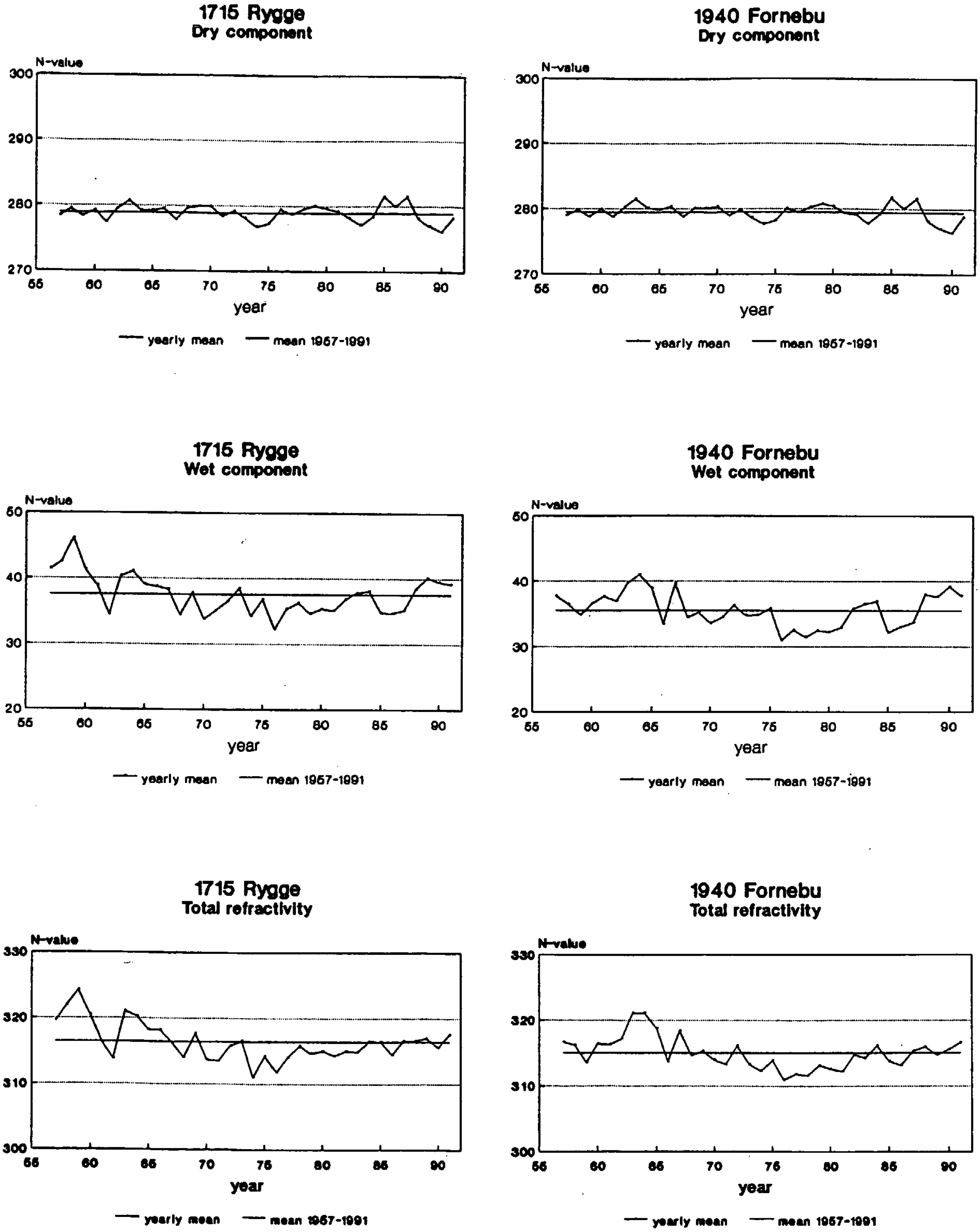


Fig 1.5.2 Long periodic variation of the surface refractivity at Rygge and Fornebu

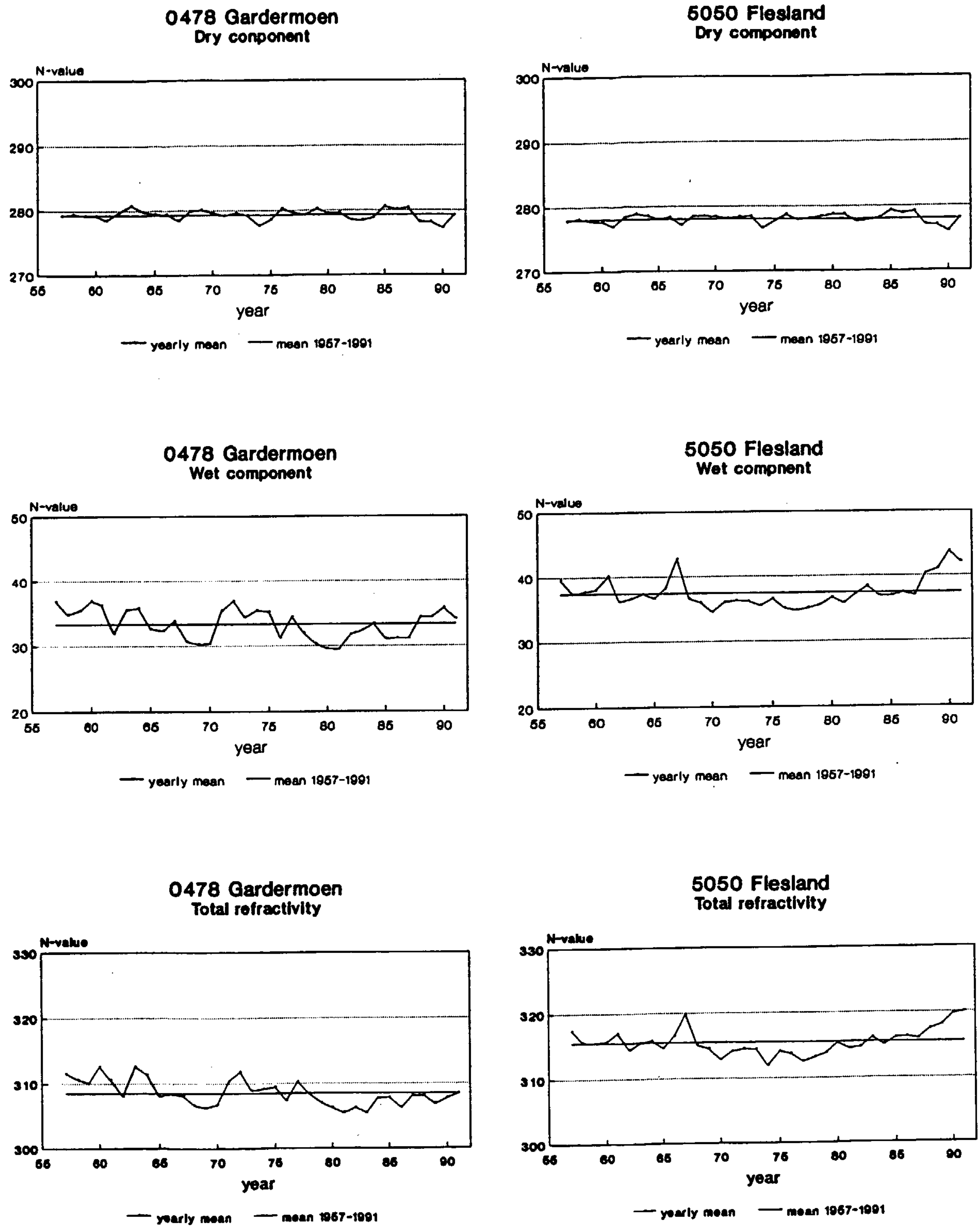


Fig 1.5.3 Long periodic variation of the surface refractivity at Gardermoen and Flesland

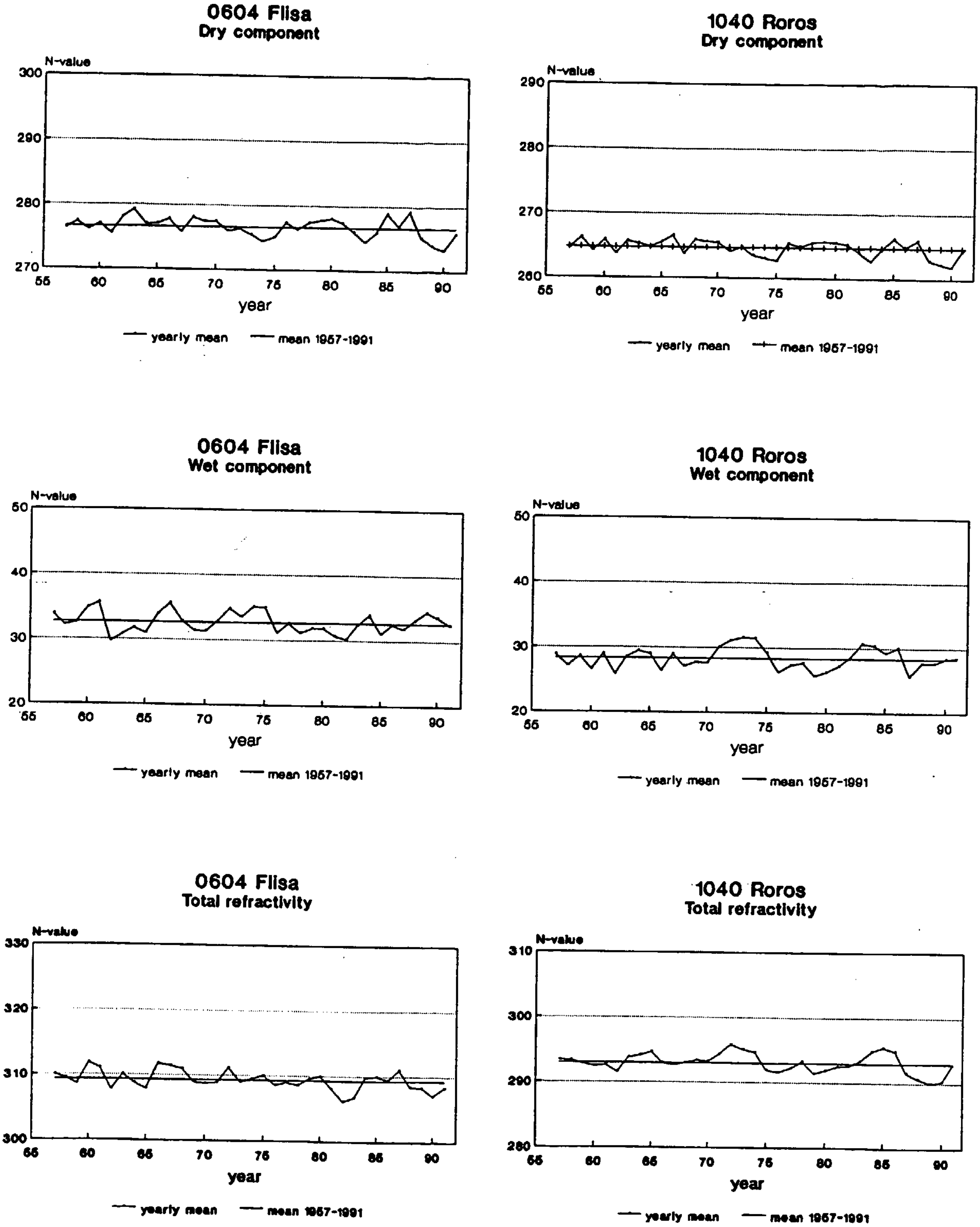


Fig 1.5.4 Long periodic variation of the surface refractivity at Flisa and Røros

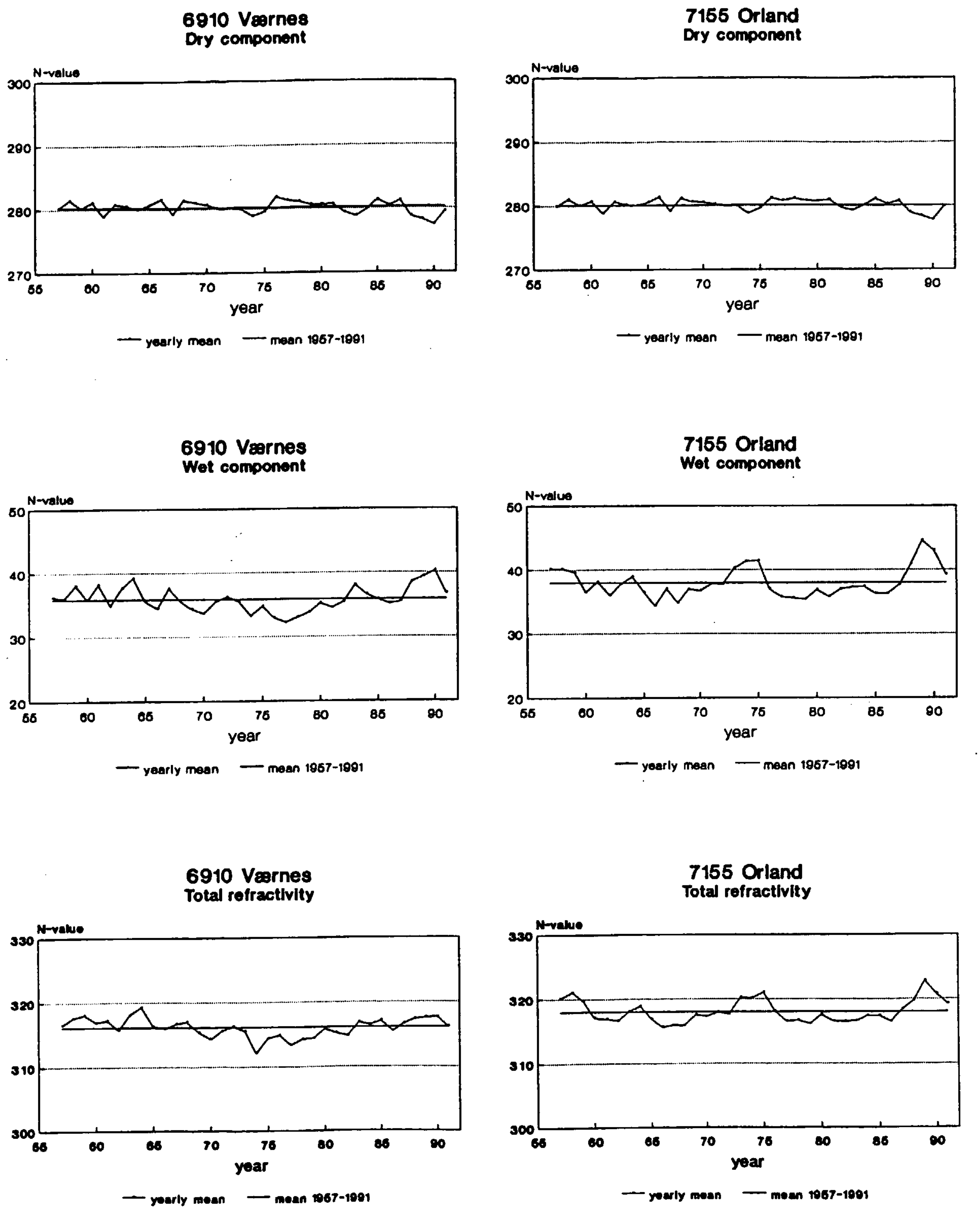


Fig 1.5.5 Long periodic variation of the surface refractivity at Værnes and Ørland

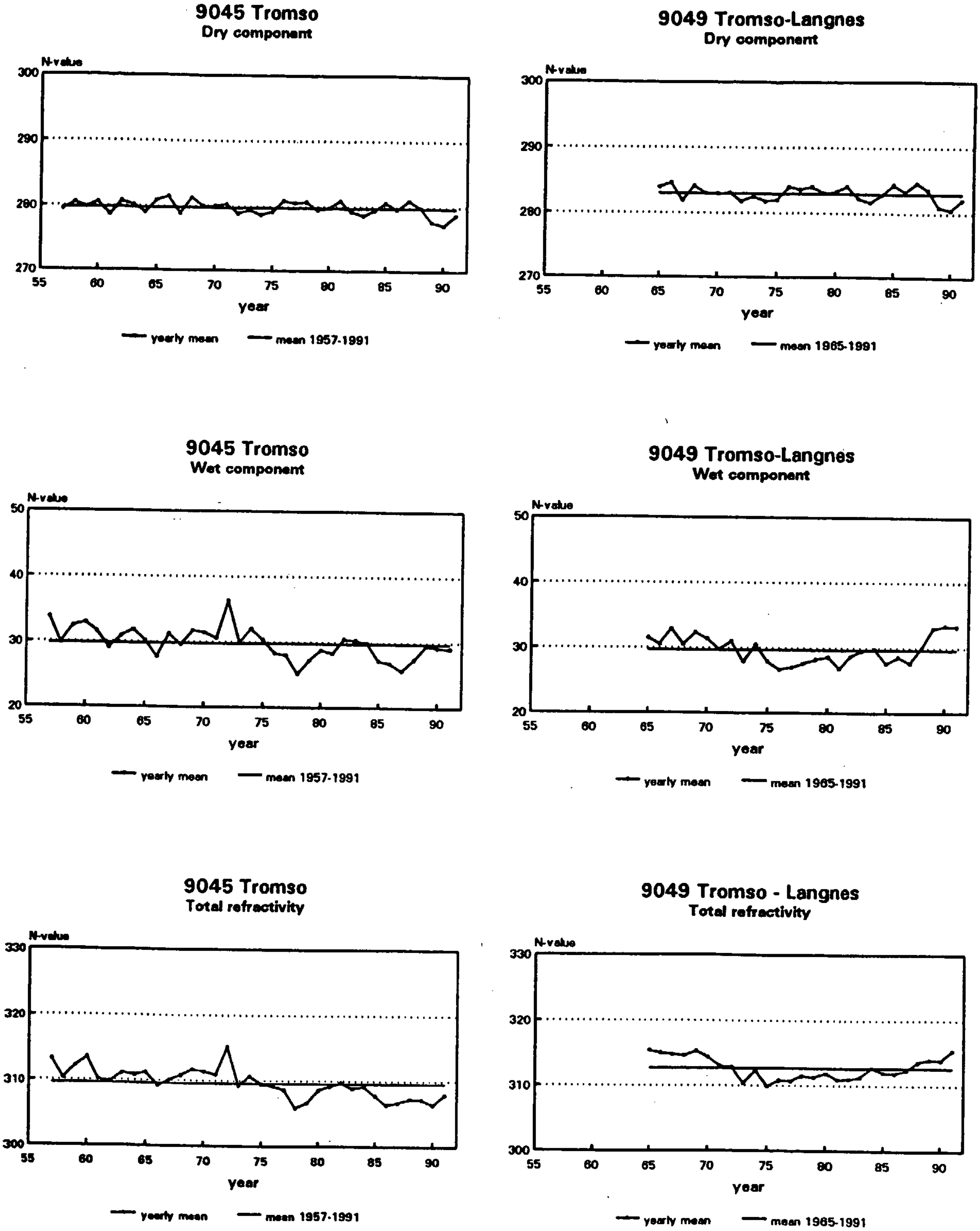


Fig 1.5.6 Long periodic variation of the surface refractivity at Tromsø and Tromsø-Langnes

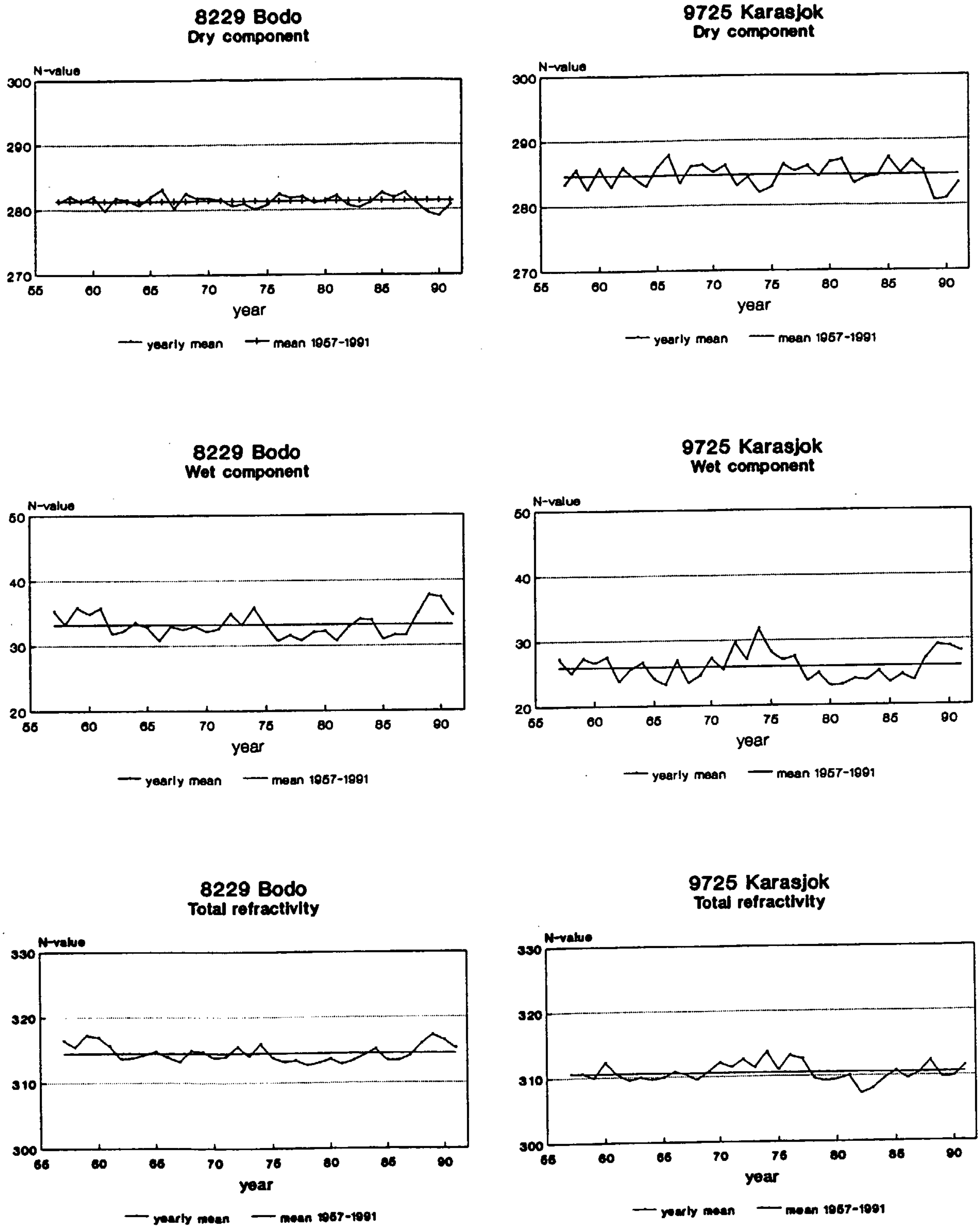


Fig 1.5.7 Long periodic variation of the surface refractivity at Bodø and Karasjok

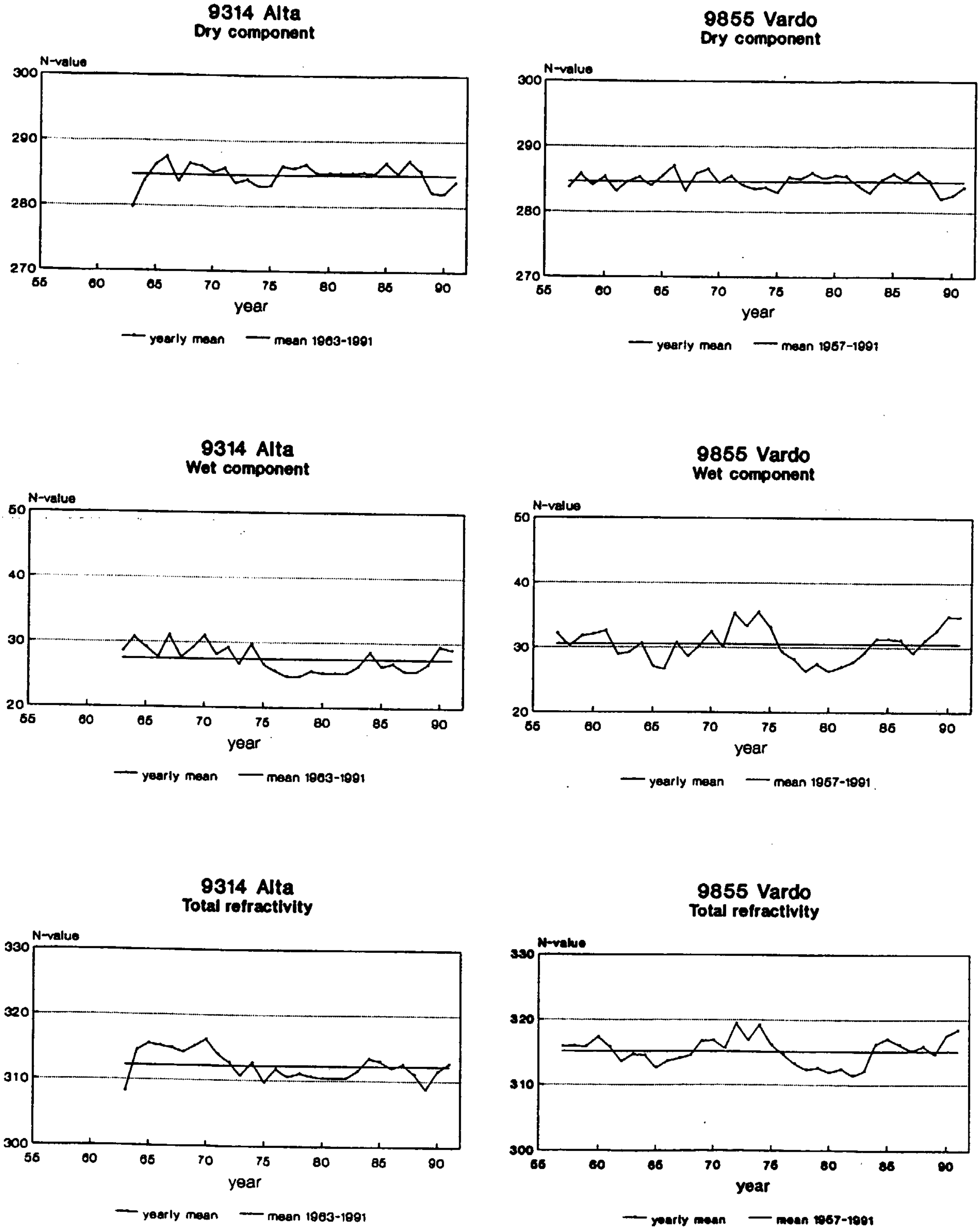


Fig 1.5.8 Long periodic variation of the surface refractivity at Alta and Vardø

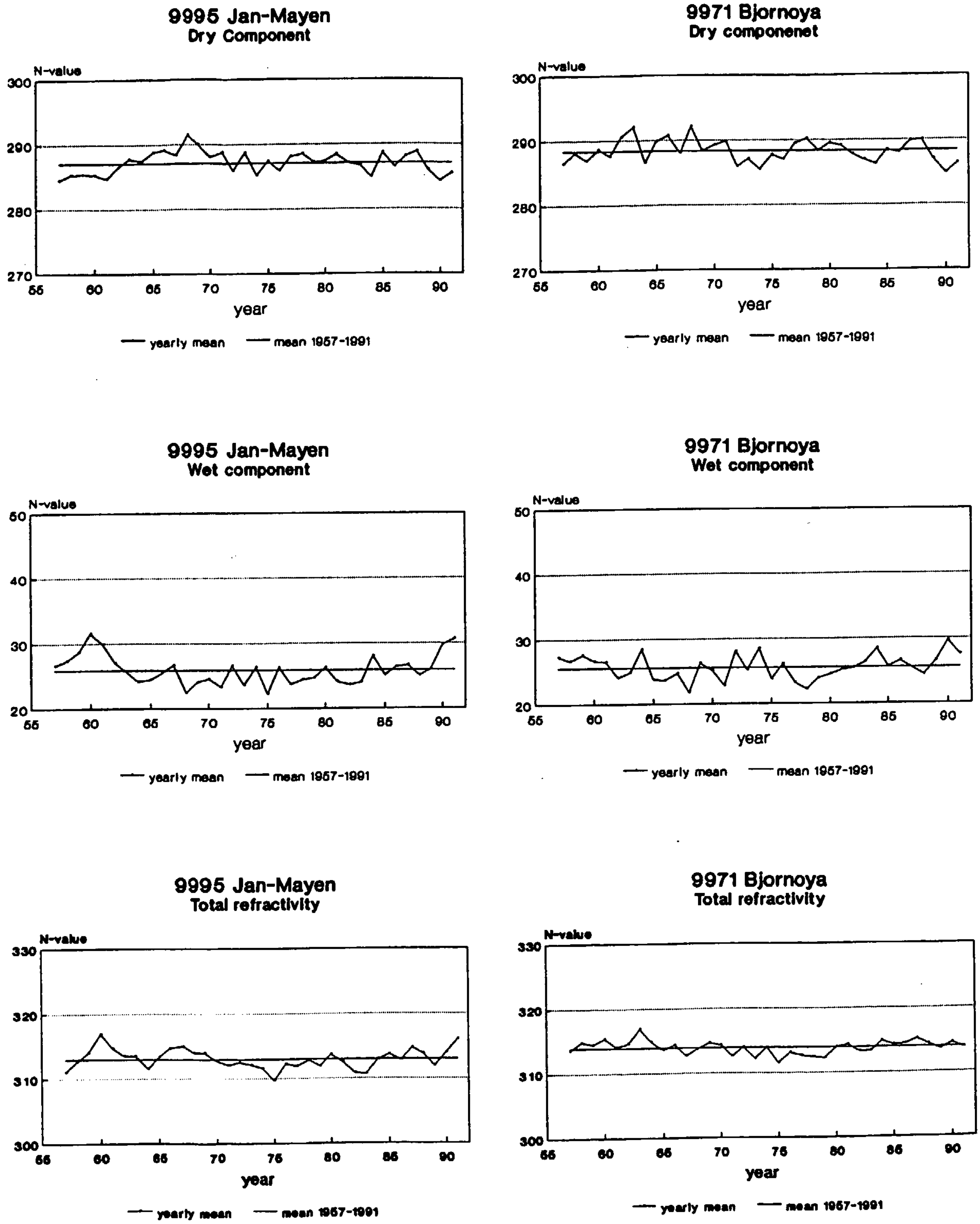


Fig 1.5.9 Long periodic variation of the surface refractivity at Jan-Mayen and Bjørnøya

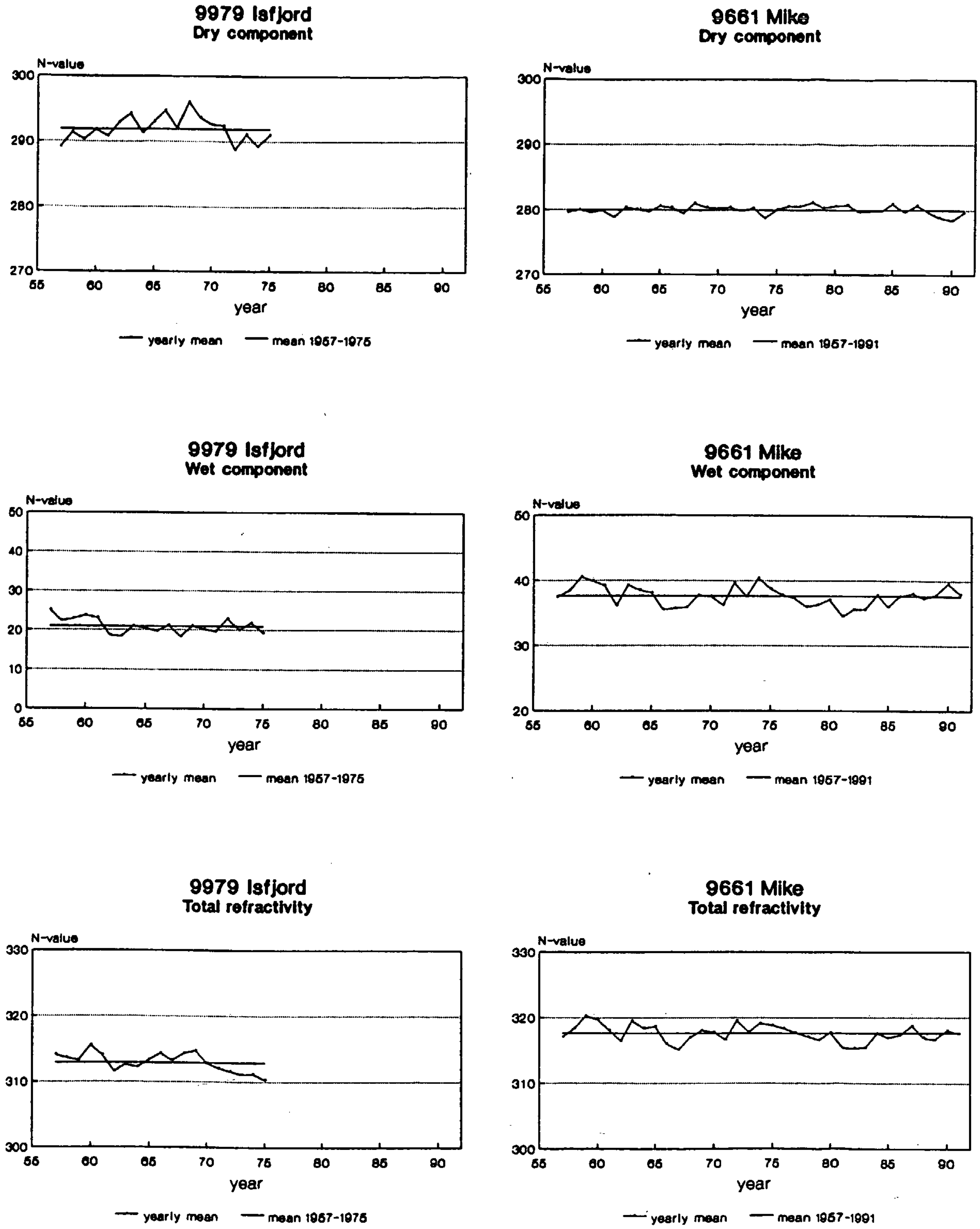


Fig 1.5.10 Long periodic variation of the surface refractivity at Isfjord and Mike

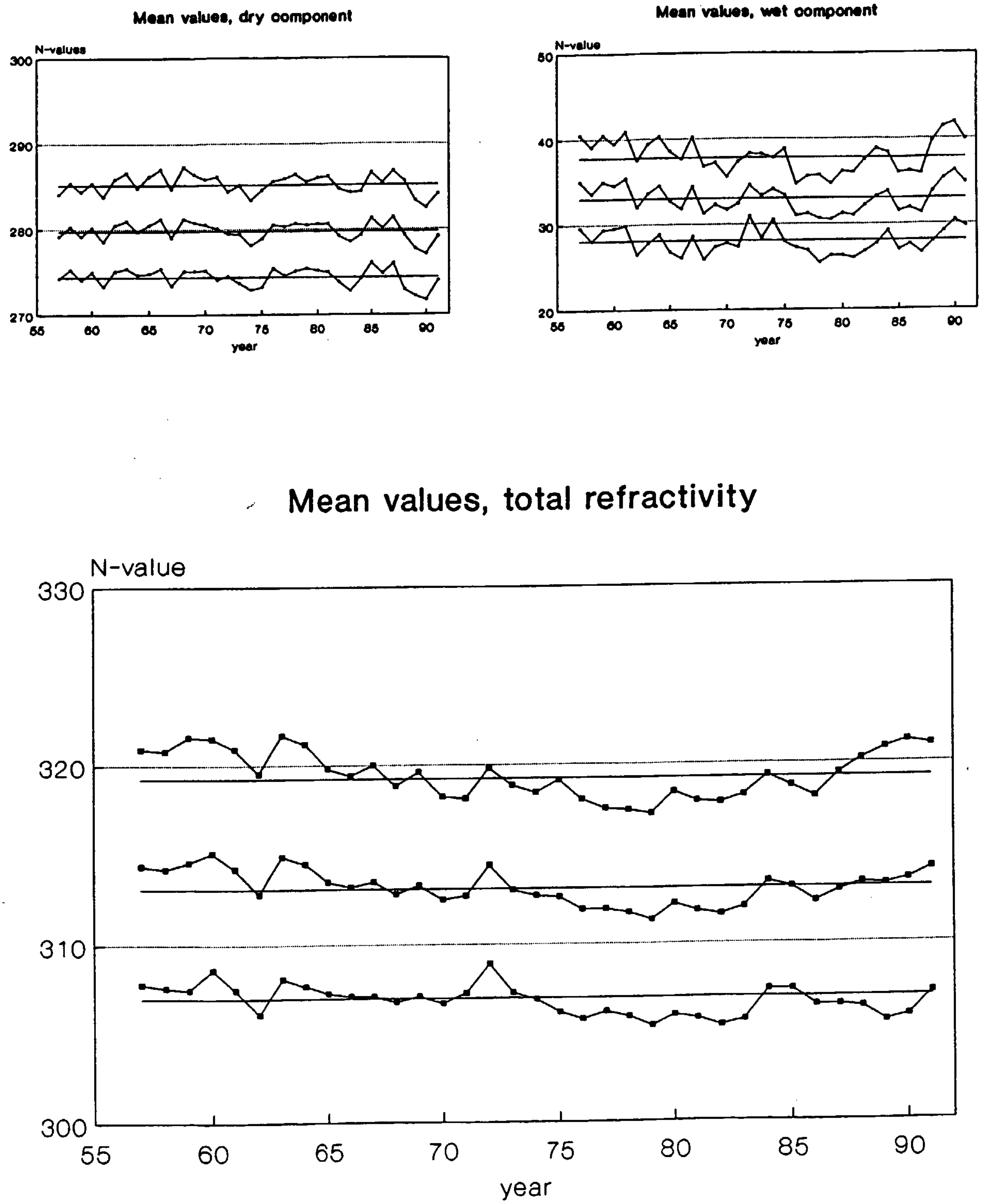
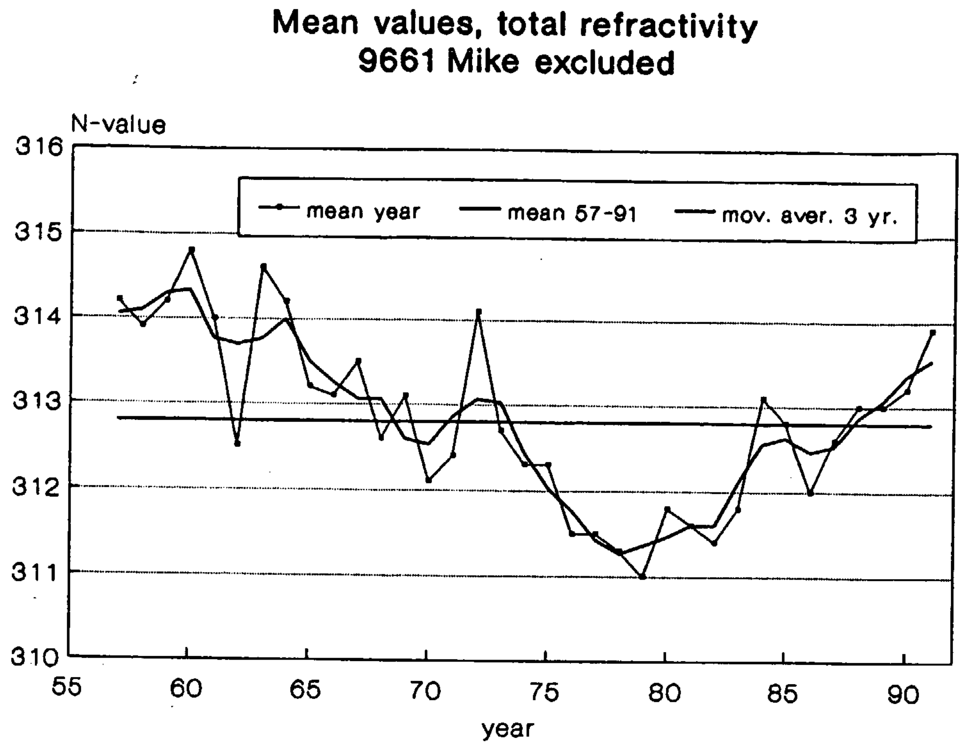


Fig 1.5.11 Long periodic variation of the surface refractivity for mean Nordic conditions



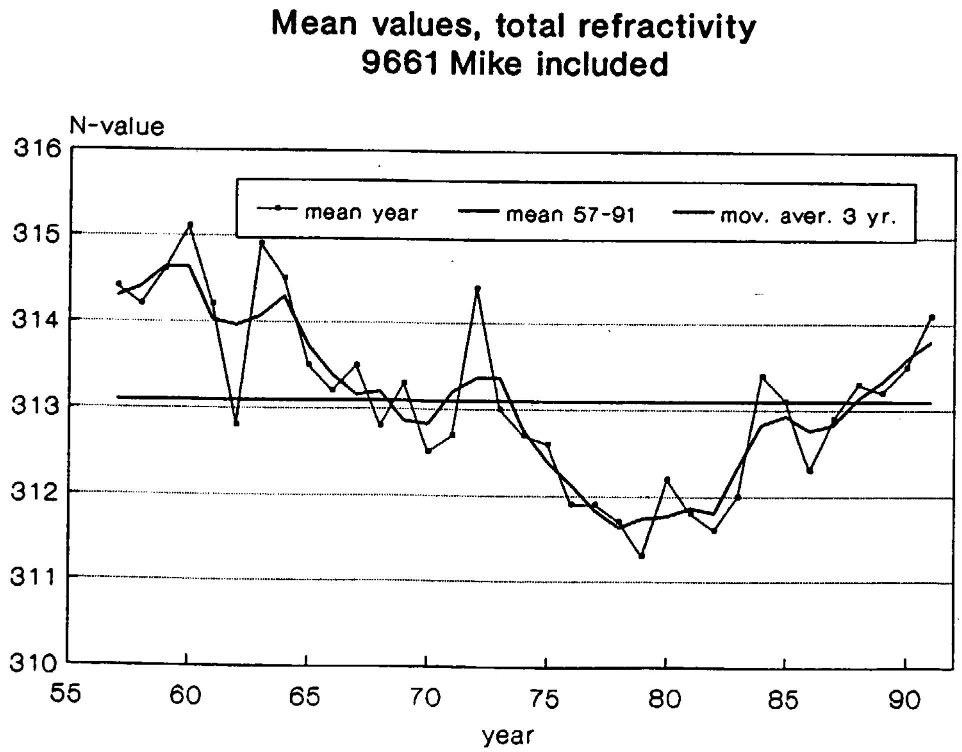


Fig 1.5.12 Long periodic variation of the surface refractivity for mean Nordic conditions

1.6 Comparison of refractivity in the period 1957-1991 with the values in the period 1982-1991

To make the comparison we use the following procedure; since the 10 year period, from now on called the short period, is contained in the 35 year period, called the long period, and thus the samples are related we make the means for the long period together with the standard deviation. We can then compute the confidence interval for the "true" mean of the long period supposing the existence of a known distribution, say a t-distribution. We thus get a lower and a higher limit for the "true" mean for the long period, say M_o, and we have

$$M_{low} < M_o < M_{high}$$

If then $M_{1982\text{-}1991}$ is the computed mean of the short period and in addition

$$M_{low} < M_{1982\text{-}1991} < M_{high}$$

we conclude that the short period approximate the longer period within the given level of confidence.

If we choose a 95% level of confidence we obtain table 1.6.1 for the total refractivity values where the + sign means that the short period mean is inside the given limits for the long-periodic mean, the - sign represents that the short periodic mean lies outside. To see if one of the components, dry and wet, is the cause for a significant deviation if any, we can repeat the same procedure for this two datasets. The result for the dry and wet components are given in tables 1.6.2 and 1.6.3, respectively.

	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
3904	+	+	+	+	-	-	-	-	-	+	+	+	-
4456	+	+	+	+	-	+	+	+	+	+	+	-	+
1715	+	+	-	+	-	-	+	+	+	+	+	+	+
1940	+	+	-	+	+	+	+	+	-	+	+	+	+
0478	-	+	+	+	-	-	-	-	-	+	+	+	+
5050	-	+	-	+	+	+	-	-	+	-	-	-	-
0604	+	+	+	+	-	+	+	+	+	+	+	+	-
1040	+	+	-	-	+	+	+	+	-	+	+	+	+
6910	+	+	+	+	-	+	+	+	+	+	+	-	+
7155	+	+	+	+	+	+	+	+	+	+	+	+	+
8229	+	+	+	+	-	+	-	+	+	+	+	+	+
9725	+	+	+	-	-	+	+	+	+	+	+	+	-
9045	-	+	-	-	-	-	-	-	-	-	+	+	+
9855	+	+	+	+	+	+	+	+	+	+	+	+	+
9995	+	+	+	+	+	+	-	+	+	+	+	+	+
9971	-	+	+	+	+	-	-	+	+	+	+	+	+

Table 1.6.1 Comparison of the periods 1957-1991 and 1982-1991 for the total refractivity.

	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
3904	+	+	-	+	-	+	+	+	+	-	+	-	-
4456	+	+	-	+	+	+	+	+	+	-	+	-	-
1715	+	+	+	+	+	-	+	+	+	+	+	+	+
1940	+	+	+	+	+	-	+	+	+	+	+	+	-
0478	+	+	-	+	+	+	-	+	-	-	+	+	+
5050	+	+	+	+	+	+	+	+	+	+	+	+	+
0604	+	+	-	+	-	+	+	+	+	+	+	+	-
1040	+	+	-	-	-	+	+	+	+	-	+	+	-
6910	+	+	-	-	+	+	+	+	+	+	-	-	-
7155	+	+	-	+	+	+	+	+	+	-	+	+	-
8229	+	+	+	+	+	+	+	+	+	-	+	+	-
9725	+	+	+	-	+	+	+	+	+	-	+	+	+
9045	+	+	+	-	-	+	+	-	+	-	+	+	-
9855	+	+	+	-	-	+	+	+	+	-	+	+	-
9995	+	-	-	+	+	+	+	+	+	+	+	+	+
9971	-	+	-	-	-	+	+	+	+	+	+	+	-

Table 1.6.2 Comparison of the periods 1957-1991 and 1982-1991 for the dry component of the refractivity.

	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
3904	+	+	+	+	-	-	-	+	-	+	+	-	+
4456	+	+	-	+	-	-	+	+	+	+	+	+	-
1715	+	+	-	+	+	-	+	+	+	+	+	-	+
1940	+	-	-	+	+	+	+	+	-	+	+	-	+
0478	+	+	-	+	+	-	-	-	-	+	+	+	+
5050	-	+	-	+	+	+	+	-	+	-	-	-	-
0604	+	+	-	+	+	+	+	+	-	+	+	+	+
1040	+	+	+	+	+	+	+	+	+	+	+	-	+
6910	+	+	-	+	-	+	+	+	+	+	-	-	-
7155	+	+	+	+	+	+	-	+	+	+	+	-	-
8229	+	+	+	+	-	+	-	+	+	+	+	+	-
9725	+	+	+	+	+	+	+	+	+	-	+	+	+
9045	+	+	+	+	+	+	-	-	-	+	+	+	-
9855	+	-	-	-	+	+	+	+	+	-	+	+	+
9995	+	-	+	+	+	+	-	+	+	+	+	+	+
9971	-	-	-	-	-	+	-	+	+	+	+	+	-

Table 1.6.3 Comparison of the periods 1957-1991 and 1982-1991 for the wet component of the refractivity.

Concerning the total value for the refractivity we observe that 4 stations have yearly means outside the computed limits. Of the months it is may that is most frequent outside the limits, say for 9 stations, but all the February means are inside the given limits. A meteorological explanation of this is that the values of refractivity in may depends heavily on if the summer starts early (high may temperatures) or if the heath of summer is delayed in time. May has been a month with sparse precipitation so humidity is hardly the critical factor.

February, in contrast to may, is the month where the accumulated cold of the winter has its peak, before the sun has gained enough height to furnish the high latitudes with energy enough to rise the temperature. Because of the low temperatures the humidity content of the air is small and accordingly variations in humidity are more or less negligible. As a total result the month is most favourable for stable conditions in the refractivity. This stable winter conditions show also up in the table for the dry component, only two stations fall outside the limits for the months January and February. They are both Arctic stations and their temperature regime depends much of the extent of the sea ice cover which is a macro scaled event. We also observe that the most "unstable" months occur when the atmosphere is in transition from either a cold state towards a warmer state or vice versa.

For the wet component it is not so easy to make a obvious deduction all tough the winter again seem to be the most stable season together with early spring (April). Since humidity and temperature have a mutual dependence, this is not unexpected.

1.7 Mean values for the period 1982-1991

82 stations were chosen as suitable for the investigation of the ten year period 1982-1991. Their co-ordinates together with height above mean sea level and national identification number are given in table 1.7.1

The stations cover a span in latitude from 50.07 degrees north to 78.92 degrees north with a mean value of 64.14 and a standard deviation of 5.29. The span in longitude is from 8.67 western longitude to 31.10 eastern longitude with a mean of 12.10 and a value for the standard deviation of 6.91. The height of the stations extend from 1 m above mean sea level up to 972 m, the mean height is 122.5 m with a standard deviation of 202.8 m.

Of the stations were nine deficient to some degree and if possible the defective data were replaced as indicated in paragraph 1.2.3 or else a slightly shorter computation period was used. This refer to the stations with the numbers of identification as 0295, 1268, 2342, 3210, 4721, 6371, 7185, 7940 and 9450.

In table 1.7.2 are given mean values with standard deviation for each month and for the year for the dry and wet component together with the total surface refractivity. The dry inner parts of the east of Norway points out by refractivity values less than 300 N-units and so does also the stations in high mountainous plain of the middle of the southern parts. Far up north at Finmarksvidda dry spells in the late winter and in the spring can create monthly mean refractivity values below 300 N-units. The main feature is however the prevailing maritimity of the country giving refractivity values in the range of 300 to about 320 N-units.

In table 1.7.3 is given an extract of table 1.7.2 consisting of monthly mean total rafractivity values alone. This is done because we want to reduce the N values to eliminate the effect of station altitude. From this table we find that the greatest variation is in the summer of 55.2 N-units while the variation of the yearly values in the whole area is 45.3. smallest monthly values we find in march and April, the greatest in July and august. The immediate explanation is the yearly course of the temperature combined with frequent dry spells in late winter and early spring.

The most stable month is January with a mean value of 307.3 N-units and a standard deviation of 7.4 N-units. In spite of frequent winter storms at the west coast creating variable temperature conditions, the weather over all is dominated by polar stable and cool (cold) air masses giving rather stable weather conditions and thus refractivity values.

station	lat.	lon.	masl.	ident	station	lat.	lon.	masl.	ident
Drevsjø	61°53'	12°03'	672	0070	Tafjord	62°14'	07°25'	15	6050
Magnor	59°58'	12°13'	154	0295	Vigra	62°34'	06°07'	22	6099
Gardermoen	60°12'	11°05'	202	0478	Ona II	62°52'	06°32'	13	6248
Flisa	60°37'	12°01'	184	0604	Oppdal-Bjørke	62°36'	09°41'	625	6371
Røros	62°34'	11°23'	628	1040	Tingvoll-Hanem	62°51'	08°18'	69	6455
Lillehammer-Sætherengen	61°06'	10°29'	241	1268	Sula	63°51'	08°28'	4	6594
Bråtå	61°54'	07°52'	712	1572	Værnes	63°28'	10°56'	12	6910
Fokstua II	62°07'	09°17'	972	1661	Meråker-Krogstad	63°27'	11°42'	145	6933
Rygge	59°23'	10°47'	40	1715	Ørland III	63°42'	09°36'	9	7155
Oslo-Blindern	59°57'	10°43'	94	1870	Halten fyr	64°10'	09°25'	16	7185
Tryvasshøgda II	59°59'	10°41'	528	1896	Buholmråsa fyr	64°24'	10°27'	18	7199
Fornebu	59°54'	10°38'	10	1940	Namdalseid	64°15'	11°12'	86	7210
Fagernes	60°59'	09°14'	365	2342	Harran	64°35'	12°32'	118	7362
Nesbyen-Skoglund	60°34'	09°08'	167	2488	Sklinna fyr	65°12'	11°00'	23	7555
Ferder fyr	59°02'	10°32'	6	2750	Majavatn III	65°11'	13°25'	339	7742
Kongsberg IV	59°40'	09°39'	168	2837	Nerdal i Rana	66°16'	13°59'	31	7940
Lyngdal i Numedal	59°54'	09°32'	288	2880	Bodø VI	67°16'	14°22'	11	8229
Gvarv	59°23'	09°11'	26	3210	Narvik III	68°28'	17°30'	34	8480
Øyfjell i Telemark	59°38'	08°16'	803	3293	Røst II	67°30'	12°05'	10	8591
Lyngør fyr	58°38'	09°09'	4	3586	Bø i Vesterålen II	68°38'	14°28'	12	8676
Torungen fyr	58°24'	08°48'	12	3620	Andøya	69°18'	16°09'	10	8711
Tveitsund	59°02'	08°31'	252	3723	Bardufoss	69°03'	18°33'	76	8935
Kjevik	58°12'	08°05'	12	3904	Tromsø	69°39'	18°56'	100	9045
Oksøy fyr	58°04'	08°03'	9	3910	Tromsø-Langnes	69°41'	18°55'	8	9049
Byglandsfjord-Solbakken	58°40'	07°48'	212	3969	Torsvåg fyr	70°15'	19°30'	21	9080
Lista fyr	58°07'	06°34'	14	4216	Loppa	70°20'	21°28'	10	9270
Ualand-Bjuland	58°33'	06°21'	196	4350	Alta lufthavn	69°59'	23°22'	3	9314
Sola	58°53'	05°38'	7	4456	Kautokeino II	69°01'	23°04'	330	9371
Sauda	59°39'	06°22'	5	4661	Fruholmen fyr	71°06'	24°00'	13	9450
Nedre Vats	59°29'	05°45'	64	4691	Banak	70°04'	24°59'	5	9535
Skudenes III	59°09'	05°15'	10	4721	Sletnes fyr	71°05'	28°14'	8	9640
Utsira fyr	59°18'	04°53'	55	4730	Rustefjelbma	70°24'	28°12'	9	9680
Slåtterøy fyr	59°55'	05°04'	15	4833	Karasjok	69°28'	25°30'	129	9725
Eidfjord-Bu	60°28'	06°52'	117	4958	Vardø	70°22'	31°06'	14	9855
Omastrand	60°13'	05°59'	1	5013	Kirkenes lufthavn	69°44'	29°54'	89	9937
Flesland	60°18'	05°13'	48	5050	Bjørnøya	74°31'	19°01'	16	9971
Bergen-Florida	60°23'	05°20'	12	5054	Hopen	76°30'	25°04'	6	9972
Voss-Bø	60°39'	06°30'	125	5159	Svea gruber	77°53'	16°43'	9	9976
Lærdal-Tønjum	61°04'	07°31'	36	5413	Svalbard lufthavn	78°15'	15°28'	28	9984
Fortun	61°30'	07°42'	27	5516	Ny-Ålesund II	78°55'	11°56'	8	9991
Svinøy fyr	62°20'	05°16'	38	5980	Jan Mayen	70°56'	08°40'	10	9995

Table 1.7.1 Meteorological observation stations used in the analysis of the period 1982-1991 with latitude, longitude, height above sea level and national identification number.

As mentioned above the influence of the level of the station above mean sea level can alone modify the surface refractivity considerably. We can try to eliminate this effect by reducing the refractivity values at station level down to mean sea level. In figures 1.7.1 a and b is shown isolines for the yearly means of the refractivity at station level, N_s and mean sea level N_o in N-units. If we denote N_s and N_o as the refractivity at the station level and at the mean sea level respectively, we have

$$N_s = N_o e^B$$

where B is a constant with the value -0.136. Knowing N_s, we can invert the equation and obtain a value for N_o. Table 1.7.4 is identical to table 1.7.3 but gives the reduced values N_o. We clearly see the reduction of the variation, the values are now only subject to respond to the variation in climate. The standard deviation is only about the half of the values in table 1.7.3 and the yearly variation is reduced to 13.7 units.

What is of special interest in this table is to compare the overall mean of the yearly value to a similar value computed in paragraph 3.3 on the basis of the radiosonde stations. It is to be emphasised that these two data sets emerge from two different types of observation stations and such are unrelated. The yearly area mean from the surface climatic stations from table 1.7.4 is 316.6 N-units with a standard deviation of 3.0 units. From paragraph 3.3 we find a area mean for the radio sonde stations of 316.8 and using values from the t-test in this paragraph we find a most satisfying similarity.

From the values of N_o we can suspect a geographical variation caused by the climate variation alone. We can thus assume a latitude dependence as well as a longitude relation. Looking at the values we do not expect strong variations and we therefore assume some sort of a linear relationship. First using the yearly values of N_o we can by a linear regression establish the following relations for a single parameter relationship

$$N_o = 337.5844 - 0.3277 \cdot LAT \qquad cr = -0.58$$

$$N_o = 318.7830 - 0.1833 \cdot LON \qquad cr = -0.43$$

where LAT and LON is latitude and longitude respectively and cr is the correlation coefficient.

For the combined effect of both latitude and longitude we obtain

$$N_o = 336.2196 - 0.3004 \cdot LAT - 0.0316 \cdot LON \quad cr = 0.59$$

The correlation is not very high and from figures 1.7.2 and 1.7.3 we se a considerable scatter in the values. This is not unexpected as we mix inland stations with coastal stations at the same latitude.

To investigate a possible yearly variation in the above relationships we can do the same exercise for each month and thus obtain table 1.7.5. The general relations are

$$N_o = A - B \cdot VAR \qquad VAR = LON \text{ or } LAT$$

and

$$N_o = A - B \cdot LAT - C \cdot LON$$

and the values of A,B and C are given for each month with the coefficient of correlation.

We see also here a considerable scatter in the values of the regression coefficients and also some very low values for the correlation. It is, however interesting to note that the lowest values of the correlation coefficient appears in late winter and spring. The obvious explanation for this is the advancing warm season, coming from south and thus giving rise to pronounced different climates in both longitude and latitude zones in Norway. The lowest value of the correlation coefficient we have in April, the only month where correlation coefficient for the latitude is lower than the correlation of the longitude. This is also the month where the correlation for the longitude dependence is greater than the correlation with the longitude.

It is interesting to note that a situation in the same manner does not take place in the autumn where the cold season comes from the north. We note in this season correlation values of the longitude more like the values for the latitude.

To picture the dependence of station level or with height above mean sea level we have figure 1.7.4. Not unexpectedly, remembering the more or less linear relationship of the standard or normal atmospheres we find a good fit to a linear function.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0070	dry	275.0	274.0	267.7	263.7	257.9	253.8	252.2	253.6	258.5	262.3	268.1	272.3	263.3
	sd	7.2	7.3	4.3	1.4	1.6	1.5	0.8	1.6	1.7	1.8	3.2	3.1	8.2
	wet	14.6	15.2	18.5	21.8	28.4	36.2	43.2	43.3	34.3	29.1	21.5	16.7	26.9
	sd	4.5	4.2	3.2	2.7	3.4	3.3	3.0	2.0	3.8	1.5	2.9	2.6	10.4
	tot	289.5	289.2	286.3	285.5	286.3	290.0	295.4	296.9	292.8	291.4	289.7	288.9	290.2
	sd	3.2	3.4	1.9	2.1	2.9	3.0	2.7	2.3	2.7	2.0	1.6	1.5	3.5
0295	dry	286.4	286.7	280.7	276.0	269.1	265.4	263.5	265.5	270.3	275.4	281.9	285.7	275.5
	sd	7.9	8.1	3.6	1.6	0.9	1.7	0.8	1.4	1.3	1.9	3.0	2.4	8.7
	wet	21.6	22.2	25.9	28.3	37.2	48.3	55.6	55.1	45.9	40.6	29.9	23.7	36.2
	sd	7.6	6.5	4.7	4.4	5.1	3.6	5.2	4.9	4.4	3.6	5.1	3.4	12.7
	tot	308.9	308.7	306.1	304.2	306.0	314.1	319.0	320.8	315.4	315.9	311.3	309.2	311.7
	sd	2.1	2.3	2.8	3.7	5.5	4.6	5.5	5.7	3.6	3.7	2.6	2.2	5.4
0478	dry	286.1	286.4	279.6	275.0	268.0	264.1	262.1	263.9	268.8	274.4	280.2	284.1	274.4
	sd	7.5	7.8	3.8	1.4	1.0	1.7	0.7	1.6	1.2	1.9	2.9	2.6	8.9
	wet	18.8	19.5	24.0	26.0	34.1	43.5	51.1	51.0	42.2	36.6	26.6	20.8	32.9
	sd	6.6	6.0	3.6	3.1	3.4	3.6	5.8	5.0	4.4	2.4	3.9	2.9	11.9
	tot	304.9	306.0	303.6	301.0	302.1	307.6	313.1	314.9	311.0	311.0	306.8	304.9	307.2
	sd	2.4	2.5	1.8	2.1	3.0	3.7	6.0	5.5	3.7	2.9	2.0	1.9	4.4
0604	dry	289.1	288.3	280.9	276.2	268.8	264.8	263.0	265.3	270.7	275.9	282.0	286.4	275.9
	sd	9.0	8.8	4.2	1.6	1.1	1.7	0.8	1.7	1.5	2.0	3.7	3.3	9.4
	wet	17.5	18.3	23.0	25.5	33.6	44.4	53.2	53.0	41.3	35.6	25.9	19.8	32.6
	sd	7.0	6.4	3.9	3.5	4.3	5.3	3.5	2.6	3.4	2.6	4.5	3.1	13.0
	tot	306.6	306.6	303.8	301.7	302.4	309.2	316.2	318.2	312.1	311.5	308.0	306.2	308.5
	sd	3.1	3.0	2.8	2.7	4.4	5.1	3.4	3.2	2.8	2.8	2.0	2.1	5.2
1040	dry	275.8	274.2	267.9	264.3	259.0	255.2	253.2	254.2	258.7	263.2	269.2	272.5	263.9
	sd	7.2	7.1	3.7	1.4	1.9	1.5	1.2	1.5	1.3	1.8	3.1	3.0	8.0
	wet	15.2	15.9	19.9	23.5	31.5	40.1	46.7	45.8	36.0	30.2	21.9	18.0	28.7
	sd	3.9	3.1	3.6	2.9	4.9	4.7	4.4	3.8	2.5	2.2	2.6	2.6	11.4
	tot	291.1	290.1	287.8	287.9	290.6	295.2	299.9	300.0	294.7	293.4	291.0	290.5	292.7
	sd	3.8	4.3	1.7	2.6	3.8	4.2	4.0	3.5	2.1	2.0	1.3	1.6	4.1
1268	dry	285.9	285.4	278.8	273.8	266.9	262.8	261.0	263.0	268.3	273.7	280.2	284.2	273.7
	sd	7.1	8.0	4.2	1.5	1.1	1.9	0.7	1.4	1.5	2.1	2.7	2.4	9.2
	wet	18.2	18.8	23.2	27.2	36.3	48.2	55.4	55.9	43.1	35.9	25.7	20.3	34.0
	sd	5.8	6.3	4.0	4.3	3.8	2.9	7.3	4.0	4.3	2.2	4.0	3.1	13.9
	tot	304.1	304.2	302.0	301.0	303.2	311.1	316.4	318.9	311.4	309.6	305.9	304.5	307.7
	sd	2.9	2.5	2.6	3.1	3.6	3.4	7.1	3.7	3.2	3.2	2.0	2.1	5.8
1572	dry	270.2	269.9	265.7	262.4	257.5	253.0	251.5	252.7	257.1	260.7	265.5	267.5	261.1
	sd	6.0	6.6	3.9	1.4	1.2	1.5	1.0	1.2	1.3	1.7	3.0	2.3	6.7
	wet	16.1	16.1	18.0	21.5	29.1	36.4	42.0	42.1	34.0	28.6	21.1	18.1	26.9
	sd	4.6	3.8	3.4	4.0	5.3	4.3	6.0	4.6	4.9	2.4	2.9	2.2	9.8
	tot	286.3	286.0	283.8	283.9	286.5	289.4	293.5	294.8	291.1	289.3	286.7	285.6	288.1
	sd	2.1	3.5	2.1	3.4	4.6	4.6	6.3	4.6	4.1	1.8	1.9	1.2	3.6
1661	dry	261.2	261.7	258.5	255.9	250.7	246.7	244.9	246.1	250.3	253.5	257.8	259.4	253.9
	sd	4.8	5.6	3.2	1.3	1.3	1.4	1.0	1.2	1.2	1.4	2.5	1.7	6.0
	wet	14.9	14.8	16.8	19.9	26.0	32.6	38.3	38.4	30.6	25.5	19.4	17.2	24.5
	sd	3.7	3.3	3.3	2.5	3.0	3.5	3.3	3.1	3.0	1.6	2.3	2.5	8.7
	tot	276.1	276.5	275.3	275.8	276.7	279.3	283.1	284.5	280.9	279.0	277.3	276.6	278.4
	sd	2.3	2.6	1.8	1.5	2.3	3.0	2.8	2.7	2.0	2.0	1.3	1.9	3.0
1715	dry	288.7	289.3	284.1	279.7	273.5	269.7	267.8	268.9	273.3	278.1	283.6	286.3	278.6
	sd	7.4	7.3	3.8	1.8	1.1	1.5	0.9	1.6	1.5	2.0	3.1	2.3	7.8
	wet	22.9	22.8	26.4	28.4	37.7	48.9	56.9	58.6	48.0	42.2	30.8	26.0	37.5
	sd	7.5	6.5	4.4	3.9	3.6	2.9	5.1	3.8	5.0	2.4	4.8	2.9	13.1
	tot	311.6	312.1	310.6	308.1	311.2	318.5	324.7	327.5	321.4	320.3	314.4	312.3	316.1
	sd	2.6	1.7	2.5	2.6	3.7	3.2	4.9	3.8	4.3	2.9	2.5	2.2	6.2
1870	dry	287.1	287.4	282.0	277.5	271.1	267.2	265.2	266.9	271.5	276.7	282.1	285.5	276.7
	sd	6.7	6.9	3.5	1.5	0.9	1.6	0.6	1.4	1.3	1.9	2.8	2.1	8.2
	wet	20.3	20.6	23.3	24.8	33.3	43.1	49.9	50.9	41.2	36.0	27.3	22.5	32.8
	sd	6.3	5.2	4.2	3.6	5.5	3.2	6.7	3.7	4.7	2.8	5.0	3.2	11.3
	tot	307.5	308.0	305.3	302.3	304.3	310.3	315.2	317.8	312.7	312.7	309.4	308.0	309.5
	sd	2.5	3.1	3.2	2.9	5.3	4.3	6.4	3.0	4.0	2.8	2.8	2.3	4.5

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	dry	273.1	274.1	270.3	266.8	260.5	256.8	254.8	256.6	260.7	264.9	269.2	271.2	264.9
	sd	5.4	5.7	3.2	1.4	0.9	1.6	0.6	1.4	1.1	1.6	2.1	1.3	6.9
1896	wet	20.0	19.9	23.0	25.4	34.0	45.3	52.8	52.2	40.9	35.6	26.2	22.1	33.1
	sd	5.4	5.0	3.7	2.8	3.6	4.2	5.6	5.2	3.4	2.8	4.0	2.1	12.2
	tot	293.2	294.0	293.3	292.1	294.5	302.1	307.6	308.8	301.6	300.5	295.4	293.3	298.0
	sd	2.5	2.2	1.9	2.2	3.6	3.5	5.7	5.6	2.9	3.4	2.5	2.3	5.9
	dry	290.1	290.4	284.6	279.8	273.1	269.2	267.0	268.7	273.2	278.8	284.7	288.3	279.0
	sd	7.3	7.6	3.8	1.6	1.0	1.7	0.6	1.6	1.4	1.8	2.7	2.2	8.6
1940	wet	21.6	22.2	26.0	28.2	38.1	48.9	56.4	55.5	44.2	38.9	28.6	23.8	36.0
	sd	7.0	6.2	3.4	4.0	4.1	3.5	5.7	3.9	5.3	2.7	4.2	2.7	12.8
	tot	311.7	312.6	310.6	308.0	311.2	318.1	323.5	324.1	317.4	317.6	313.3	312.1	315.0
	sd	2.5	2.7	2.1	2.8	3.9	3.1	5.6	3.7	4.5	3.4	2.5	1.8	5.1
	dry	283.3	282.3	275.8	271.2	264.7	260.2	258.0	260.5	265.6	270.7	277.2	281.0	270.9
	sd	8.0	8.0	4.0	1.4	0.8	1.7	0.8	1.1	1.0	2.1	2.9	2.9	9.1
2342	wet	15.5	16.3	20.1	22.2	27.3	36.2	39.6	42.4	34.5	30.9	22.2	17.3	27.0
	sd	5.5	4.6	2.8	3.2	5.8	3.2	5.1	2.5	4.5	2.2	3.1	2.7	9.5
	tot	298.8	298.7	295.8	293.4	292.1	296.5	297.2	303.0	299.9	301.4	299.4	298.3	297.9
	sd	2.9	3.7	2.6	2.6	5.6	2.8	5.3	2.6	4.3	2.3	1.5	1.4	3.1
	dry	290.6	289.0	280.2	274.8	268.2	263.8	261.7	264.1	269.9	276.4	284.4	288.4	276.0
	sd	8.6	8.5	4.1	1.3	1.1	1.8	1.0	1.7	1.4	2.2	3.3	3.0	10.5
2488	wet	16.3	17.6	22.1	24.9	33.0	44.6	50.4	49.7	38.2	32.7	23.0	18.0	30.9
	sd	5.6	4.6	3.2	3.5	7.1	4.8	6.4	3.0	4.2	2.3	3.5	3.3	12.5
	tot	306.9	306.6	302.3	299.7	301.2	308.5	312.0	313.8	308.0	309.1	307.4	306.3	306.8
	sd	3.5	4.4	3.1	3.2	7.4	4.9	6.4	3.8	3.6	3.1	1.8	1.8	4.1
	dry	286.6	287.9	284.7	281.6	276.1	271.4	269.5	269.9	272.7	276.7	281.3	283.7	278.5
	sd	6.2	6.4	3.5	1.8	1.0	1.4	0.5	1.1	1.0	1.7	2.3	1.7	6.6
2750	wet	28.3	27.5	29.8	34.0	46.6	58.9	68.9	68.6	54.9	48.1	36.9	32.0	44.5
	sd	7.9	6.9	4.7	4.0	3.5	7.1	5.7	6.2	6.0	2.3	4.5	2.8	15.4
	tot	314.9	315.4	314.6	315.5	322.7	330.3	338.3	338.5	327.6	324.8	318.2	315.8	323.1
	sd	3.5	1.9	2.4	3.5	3.0	6.4	5.6	5.7	5.4	2.3	2.9	2.8	8.9
	dry	286.6	286.2	279.8	275.2	268.7	264.9	262.7	264.5	269.3	275.2	281.3	284.9	274.9
	sd	7.5	7.1	3.7	1.5	1.1	1.6	0.9	1.6	1.2	2.0	2.6	2.3	8.8
2837	wet	19.1	19.6	23.2	25.1	33.3	44.0	49.1	49.4	39.1	35.4	26.0	20.9	32.0
	sd	6.1	4.9	3.2	3.0	4.8	2.0	5.5	2.6	4.9	2.3	3.6	2.8	11.3
	tot	305.7	305.8	303.0	300.3	302.0	308.9	311.8	313.8	308.5	310.6	307.4	305.9	307.0
	sd	2.3	3.0	2.7	2.4	5.0	2.0	5.5	3.0	4.4	3.3	1.9	1.9	4.0
	dry	283.4	282.9	276.7	272.1	265.5	261.7	259.6	261.5	266.8	272.2	278.4	281.5	271.9
	sd	7.7	7.0	3.7	1.4	1.0	1.6	0.9	1.7	1.3	2.1	2.8	2.1	8.7
2880	wet	17.7	18.3	21.9	24.3	32.7	42.8	48.8	48.2	38.3	33.1	24.1	19.8	30.8
	sd	5.6	4.6	2.9	2.7	3.9	2.9	4.6	3.6	4.1	2.5	3.6	2.9	11.5
	tot	301.2	301.2	298.6	296.4	298.2	304.5	308.5	309.8	305.1	305.3	302.6	301.3	302.7
	sd	2.9	3.1	2.6	2.1	4.1	2.2	4.7	4.0	3.2	3.3	1.8	2.1	4.1
	dry	292.8	292.7	285.0	279.6	273.1	268.7	266.7	268.8	273.9	279.6	286.0	290.5	279.8
	sd	8.4	6.8	3.5	1.4	0.9	1.5	0.8	1.7	1.5	2.1	3.0	2.7	9.6
3210	wet	18.6	19.2	22.8	24.4	33.1	44.2	49.6	51.0	42.0	37.5	27.3	21.6	32.6
	sd	7.4	5.0	4.1	3.8	4.9	3.2	4.4	4.1	3.8	3.3	4.7	3.4	11.9
	tot	311.4	311.9	307.9	304.0	306.3	312.9	316.3	319.9	315.9	317.1	313.4	312.0	312.4
	sd	2.6	3.1	1.8	3.4	5.0	3.4	4.9	5.3	2.8	3.9	2.3	2.5	4.6
	dry	265.6	266.1	262.3	259.1	254.0	249.4	247.7	249.3	253.7	257.5	261.8	263.6	257.5
	sd	5.2	5.6	3.1	1.2	0.8	1.4	0.9	1.2	1.1	1.4	2.2	1.3	6.6
3293	wet	18.2	17.8	20.3	22.3	26.6	35.3	39.5	41.9	34.7	31.3	23.7	20.4	27.7
	sd	5.2	4.6	3.5	2.2	4.5	2.4	4.1	1.9	3.5	1.8	3.4	1.7	8.5
	tot	283.9	283.9	282.6	281.4	280.6	284.7	287.2	291.2	288.5	288.8	285.5	284.0	285.2
	sd	2.0	1.8	1.4	1.5	4.7	2.0	4.4	2.2	2.8	2.2	1.7	1.6	3.2
	dry	286.7	287.9	284.4	281.1	275.9	271.6	269.5	269.9	273.0	277.1	281.7	284.2	278.6
	sd	6.3	6.4	3.5	1.7	0.9	1.4	0.5	1.1	1.1	1.5	2.2	1.5	6.6
3586	wet	26.1	25.7	28.2	30.8	41.9	53.5	61.4	61.1	47.3	43.4	33.1	28.6	40.1
	sd	8.2	7.0	4.9	4.5	5.0	5.0	5.6	5.3	6.2	3.5	4.7	2.5	13.3
	tot	312.8	313.6	312.6	311.9	317.8	325.1	330.9	331.0	320.2	320.4	314.8	312.8	318.7
	sd	3.4	2.4	2.6	3.7	4.8	5.0	5.6	4.9	6.0	3.8	3.0	2.0	7.0

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	dry	286.0	287.1	284.2	281.4	276.5	272.2	270.0	270.2	273.1	276.8	281.1	283.5	278.5
	sd	5.9	6.0	3.3	1.7	0.8	1.2	0.5	1.0	1.1	1.3	2.1	1.3	6.2
3620	wet	28.0	27.4	29.4	32.7	44.5	55.8	63.7	63.7	50.0	46.8	35.5	31.3	42.4
	sd	8.1	6.6	4.9	4.6	4.3	4.7	6.9	7.5	6.4	4.4	5.7	3.1	13.6
	tot	314.0	314.5	313.6	314.1	320.9	327.9	333.7	333.9	323.1	323.5	316.6	314.8	320.9
	sd	3.8	2.4	2.8	3.7	4.0	4.3	6.8	7.3	6.0	4.5	4.0	2.9	7.6
	dry	282.9	283.7	279.1	274.2	268.0	263.8	261.7	263.3	267.6	272.4	277.1	279.4	272.8
	sd	6.5	7.9	4.5	2.9	3.5	3.5	3.1	2.6	1.8	2.5	2.3	1.9	7.8
3723	wet	21.1	22.9	26.7	28.3	35.6	45.9	53.6	56.2	44.0	39.8	30.4	26.5	35.9
	sd	7.2	6.6	5.4	4.3	4.2	5.7	11.3	8.2	6.1	4.0	5.5	4.0	11.9
	tot	304.0	306.6	305.7	302.5	303.6	309.7	315.3	319.4	311.6	312.2	307.6	305.9	308.7
	sd	2.1	5.2	7.0	5.8	7.0	8.4	13.8	10.1	6.7	6.0	5.1	5.2	5.1
	dry	287.0	288.0	283.9	280.6	274.9	271.0	268.9	269.8	273.8	277.9	282.7	284.9	278.6
	sd	6.5	6.5	3.3	1.8	1.1	1.3	0.7	1.1	1.2	1.5	2.5	1.3	6.8
3904	wet	25.5	24.7	27.5	28.9	37.6	48.4	53.6	55.7	46.4	42.7	32.5	28.4	37.7
	sd	7.7	6.7	4.4	3.7	3.8	4.9	5.9	5.3	6.0	2.0	4.2	2.5	11.3
	tot	312.5	312.7	311.5	309.5	312.5	319.4	322.4	325.5	320.2	320.5	315.2	313.3	316.3
	sd	2.5	2.4	2.0	3.2	3.4	4.1	5.7	4.9	5.1	2.1	2.3	2.2	5.1
	dry	285.7	287.1	284.4	281.7	277.0	272.8	270.7	270.7	273.7	276.9	281.1	283.3	278.8
	sd	5.7	5.9	3.0	1.7	1.1	1.2	0.6	0.8	1.1	1.2	2.2	1.2	5.9
3910	wet	29.9	28.7	31.6	34.0	45.5	57.6	64.5	64.5	52.0	48.2	37.5	33.3	43.9
	sd	8.1	6.2	5.0	3.3	4.0	4.7	4.8	2.8	4.8	4.0	5.2	2.6	13.3
	tot	315.6	315.9	316.0	315.7	322.4	330.4	335.3	335.2	325.7	325.2	318.6	316.6	322.7
	sd	3.9	1.8	2.7	2.5	3.9	4.2	4.8	2.5	4.7	4.2	3.2	2.4	7.6
	dry	282.2	283.4	278.5	274.6	268.8	264.4	262.5	264.1	268.9	273.1	277.6	279.8	273.2
	sd	6.1	6.6	2.9	1.4	1.0	1.4	0.9	1.3	1.1	1.4	2.2	1.2	7.3
3969	wet	24.2	22.9	26.6	28.8	37.6	48.7	54.0	55.0	45.3	40.8	31.2	27.1	36.8
	sd	7.2	6.4	3.9	2.9	5.6	3.4	4.9	3.4	4.0	3.2	4.1	1.9	11.7
	tot	306.4	306.3	305.1	303.4	306.4	313.1	316.5	319.2	314.2	313.9	308.8	306.9	310.0
	sd	2.6	1.8	1.9	2.2	5.8	2.4	5.2	3.7	3.5	3.0	2.4	1.8	5.1
	dry	284.7	286.2	283.6	281.5	277.4	274.1	272.4	271.7	274.2	276.6	280.5	282.4	278.8
	sd	5.4	5.7	2.7	1.6	1.4	0.9	1.0	1.1	1.2	1.4	2.3	1.3	5.0
4216	wet	29.4	27.6	30.8	33.7	44.5	52.8	60.7	61.8	51.9	47.3	37.2	33.6	42.6
	sd	8.5	6.6	5.6	3.7	3.7	4.1	5.2	5.3	4.7	2.7	4.6	2.5	12.2
	tot	314.1	313.8	314.3	315.2	321.9	326.9	333.1	333.5	326.1	323.9	317.7	316.0	321.4
	sd	4.7	2.5	3.7	2.9	3.3	3.4	4.8	5.2	4.2	2.3	2.9	2.4	7.3
	dry	280.0	281.1	277.7	274.7	269.9	266.3	265.0	265.9	269.7	272.4	276.3	278.1	273.1
	sd	5.1	5.4	2.5	1.1	1.3	1.7	0.7	0.9	1.2	1.2	2.3	1.0	5.7
4350	wet	25.4	23.2	26.0	27.7	36.2	44.2	51.4	53.2	45.1	41.0	32.1	29.4	36.2
	sd	7.7	6.1	5.1	3.4	3.2	4.2	5.5	4.4	3.5	2.4	4.7	2.2	10.5
	tot	305.4	304.3	303.7	302.4	306.0	310.5	316.4	319.0	314.9	313.4	308.4	307.5	309.3
	sd	4.3	1.7	3.2	2.8	3.0	4.3	5.2	4.4	3.1	2.1	2.8	2.4	5.5
	dry	285.1	286.3	282.8	280.7	277.0	274.0	272.3	272.1	275.1	277.4	281.3	283.0	278.9
	sd	5.3	5.8	2.5	1.4	1.5	0.7	1.0	1.2	1.5	1.5	2.7	1.2	4.9
4456	wet	28.7	27.1	30.7	33.6	42.6	49.5	57.9	59.5	50.7	45.2	35.7	32.8	41.2
	sd	6.9	5.9	5.6	3.6	3.3	3.9	4.6	4.2	3.7	4.1	4.4	1.3	11.3
	tot	313.8	313.4	313.5	314.3	319.6	323.5	330.3	331.6	325.8	322.6	317.0	315.8	320.1
	sd	4.1	2.0	3.8	3.0	2.9	3.7	4.5	4.4	3.7	4.2	2.9	1.6	6.6
	dry	288.0	288.1	283.3	279.9	274.9	270.7	269.6	270.8	275.2	278.8	283.7	286.0	279.1
	sd	6.0	6.2	2.3	1.5	1.4	1.5	1.0	0.8	1.5	1.6	2.9	1.4	6.8
4661	wet	25.4	24.3	27.4	30.1	38.3	48.3	55.3	56.7	47.3	41.2	31.7	28.2	37.9
	sd	6.5	5.4	4.0	2.5	4.3	4.7	3.2	3.0	2.7	2.9	3.7	2.2	11.7
	tot	313.4	312.4	310.7	310.0	313.3	319.0	324.9	327.4	322.5	319.9	315.4	314.2	316.9
	sd	3.6	2.0	2.2	2.9	3.9	4.1	3.1	3.2	2.0	3.4	2.1	2.7	5.7
	dry	283.6	284.4	280.8	278.1	273.8	270.2	269.1	269.7	273.4	275.9	279.9	281.6	276.7
	sd	5.2	5.7	2.5	1.2	1.6	1.3	0.9	0.9	1.5	1.4	2.7	1.2	5.5
4691	wet	26.5	24.5	26.9	29.3	38.3	47.3	54.0	55.9	47.1	41.3	32.7	30.5	37.9
	sd	7.2	6.4	5.7	3.1	2.8	3.9	4.1	3.8	3.4	2.8	4.1	2.4	11.1
	tot	310.1	308.9	307.7	307.4	312.0	317.4	323.1	325.6	320.5	317.2	312.6	312.1	314.6
	sd	4.6	1.7	3.6	3.0	2.4	3.5	3.8	3.8	3.2	3.4	3.4	3.0	6.1

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
4721	dry	283.1	284.0	282.6	280.9	277.5	274.3	272.5	271.9	274.6	276.3	279.8	281.2	278.2
	sd	4.8	4.9	2.6	1.6	1.3	0.9	1.4	1.5	1.4	1.4	2.5	1.1	4.3
	wet	30.0	28.0	30.6	33.3	41.8	50.2	57.1	58.4	50.0	45.1	36.7	34.0	41.3
	sd	7.2	6.2	5.8	3.4	2.7	3.8	4.0	3.2	3.6	2.4	4.5	2.1	10.7
	tot	313.7	313.0	313.1	314.8	319.0	323.9	329.6	330.7	324.5	321.4	316.4	315.1	319.6
	sd	5.0	1.9	4.0	2.6	3.0	3.2	3.4	3.2	3.3	3.0	3.6	2.4	6.4
4730	dry	281.6	283.4	281.4	280.6	277.3	274.0	272.2	271.5	273.6	275.1	278.2	279.6	277.4
	sd	4.2	5.1	2.4	1.6	1.1	0.9	1.3	1.4	1.3	1.3	2.1	1.1	4.0
	wet	32.3	30.3	32.7	35.3	44.1	51.5	59.5	60.5	51.4	47.2	39.1	36.6	43.4
	sd	7.0	6.7	5.5	2.4	1.7	4.3	4.1	4.4	4.0	4.0	4.7	2.8	10.6
	tot	313.9	313.7	314.1	315.8	321.4	325.6	331.7	332.1	325.1	322.4	317.3	316.2	320.8
	sd	5.3	2.2	3.5	2.3	1.8	4.6	3.1	4.0	4.1	4.5	4.1	3.4	6.7
4833	dry	282.6	284.1	282.0	281.1	278.3	275.0	273.2	272.4	274.4	276.0	279.3	280.8	278.3
	sd	4.2	5.0	2.3	1.5	1.1	0.9	1.4	1.4	1.3	1.4	2.2	1.2	4.0
	wet	34.1	32.0	34.6	37.9	46.6	54.3	62.0	63.1	54.0	48.8	40.5	37.4	45.4
	sd	7.1	5.7	5.6	2.2	3.0	4.9	5.3	5.0	4.9	4.1	2.5	2.3	11.0
	tot	316.7	316.2	316.7	319.0	324.9	329.3	335.2	335.4	328.4	324.8	319.9	318.2	323.7
	sd	4.7	2.0	3.9	1.9	2.4	4.8	5.0	4.6	4.3	4.5	2.7	2.8	7.0
4958	dry	283.2	284.4	280.4	277.2	271.9	267.2	267.3	269.0	272.6	275.7	279.7	281.6	275.9
	sd	4.8	5.9	2.5	1.3	1.5	1.7	2.1	1.4	1.5	1.4	2.6	1.3	6.2
	wet	22.9	21.1	22.7	24.4	31.6	42.0	49.4	52.6	43.3	35.6	27.4	25.0	33.2
	sd	5.8	5.2	5.1	3.5	3.8	2.9	6.0	3.8	2.3	3.3	3.4	2.0	11.2
	tot	306.1	305.5	303.1	301.6	303.6	309.2	316.7	321.6	315.9	311.3	307.1	306.6	309.0
	sd	3.7	2.4	3.0	3.1	4.0	2.9	7.2	4.8	1.9	3.7	2.3	2.6	6.2
5013	dry	285.4	286.4	283.2	280.6	276.0	271.5	270.7	272.1	275.9	278.3	282.1	283.8	278.8
	sd	4.8	5.7	2.4	1.5	1.3	1.3	1.2	0.8	1.6	1.5	2.6	1.2	5.6
	wet	27.2	25.2	27.9	30.8	41.5	51.8	60.1	60.4	49.5	41.3	33.0	30.2	39.9
	sd	6.5	6.0	5.1	3.3	3.8	5.1	4.1	3.8	3.1	3.8	4.0	1.6	12.8
	tot	312.6	311.6	311.1	311.4	317.5	323.3	330.8	332.5	325.4	319.5	315.1	313.9	318.7
	sd	4.1	2.5	3.1	3.3	3.1	4.6	4.1	3.9	2.5	3.9	2.9	2.0	7.6
5050	dry	283.6	284.4	281.6	279.7	276.2	273.0	271.6	271.7	274.5	276.4	280.2	281.8	277.9
	sd	4.7	5.6	2.4	1.5	1.4	1.1	1.4	1.3	1.4	1.3	2.5	1.0	4.6
	wet	28.1	26.3	29.9	31.1	39.4	46.4	53.7	56.0	48.2	42.8	34.4	32.1	39.0
	sd	6.8	6.0	5.3	3.0	2.5	4.1	4.5	4.1	3.6	2.8	3.9	2.4	10.2
	tot	311.7	310.8	311.5	310.8	315.6	319.4	325.2	327.8	322.7	319.2	314.6	313.9	316.9
	sd	4.6	1.8	3.5	2.8	2.5	4.0	3.7	4.1	3.2	3.6	2.9	2.7	5.9
5054	dry	283.1	284.0	281.0	279.0	275.2	271.9	270.7	270.9	274.1	276.2	280.0	281.4	277.3
	sd	4.5	5.3	2.2	1.4	1.5	1.2	1.2	1.1	1.4	1.5	2.6	1.2	4.8
	wet	28.4	26.4	29.3	30.8	39.7	47.7	54.8	56.5	47.9	42.6	34.4	32.3	39.2
	sd	6.5	5.7	5.7	3.1	2.7	3.1	4.9	4.4	4.1	2.4	4.1	2.3	10.5
	tot	311.6	310.4	310.4	309.8	314.9	319.5	325.6	327.4	322.1	318.8	314.4	313.7	316.5
	sd	4.7	2.1	4.1	3.1	2.5	2.6	4.5	4.3	4.0	3.2	3.1	2.6	6.1
5159	dry	286.6	285.7	280.0	276.8	271.6	267.1	266.3	267.9	272.4	276.0	281.4	283.6	276.3
	sd	7.6	7.3	2.7	1.4	1.5	1.7	1.1	0.9	1.4	1.7	3.6	1.7	7.3
	wet	22.7	22.1	24.6	27.3	34.4	43.4	52.3	53.2	44.4	37.8	29.1	26.2	34.8
	sd	6.7	6.0	4.8	2.5	2.6	4.3	3.6	3.0	3.1	3.1	3.7	2.1	11.3
	tot	309.3	307.8	304.7	304.0	305.9	310.5	318.6	321.1	316.8	313.8	310.5	309.8	311.1
	sd	3.2	2.3	2.8	2.0	2.7	4.0	3.3	3.1	2.6	3.5	2.5	2.2	5.5
5413	dry	287.4	287.7	282.4	278.9	274.0	269.8	268.7	270.4	275.1	278.8	283.4	285.2	278.5
	sd	6.4	7.5	3.2	1.4	1.4	1.4	1.0	1.3	1.6	1.9	3.5	1.6	6.9
	wet	21.5	20.4	22.2	25.0	33.5	41.9	48.5	51.3	42.6	34.8	26.7	23.7	32.7
	sd	5.4	4.2	4.3	3.0	2.6	4.2	4.9	2.7	3.5	2.4	2.8	2.5	11.1
	tot	308.8	308.1	304.6	303.9	307.5	311.7	317.2	321.7	317.6	313.7	310.1	308.8	311.1
	sd	2.9	4.0	2.3	2.8	2.0	3.5	4.7	3.0	2.6	3.0	2.3	2.6	5.4
5516	dry	290.4	290.4	284.8	280.4	274.8	270.3	269.5	271.6	276.6	280.6	285.8	287.7	280.2
	sd	6.7	7.9	3.2	1.7	1.1	1.5	0.9	1.3	1.3	1.9	3.3	1.9	7.7
	wet	22.3	21.9	24.2	25.5	32.9	41.8	52.8	57.8	46.5	37.2	28.8	25.1	34.7
	sd	6.2	5.3	4.7	3.2	4.3	6.3	5.1	4.1	3.3	2.0	3.5	2.1	12.4
	tot	312.7	312.3	309.0	305.9	307.7	312.1	322.3	329.4	323.1	317.8	314.6	312.8	315.0
	sd	2.7	3.1	2.7	3.5	4.2	5.7	4.7	4.8	2.6	2.4	1.5	2.2	7.0

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	dry	280.8	282.0	280.7	281.0	278.9	276.1	273.6	272.5	274.1	275.2	278.3	279.5	277.7
	sd	3.8	5.0	2.5	1.5	1.3	1.0	1.1	1.7	1.2	1.4	2.3	1.3	3.3
5980	wet	30.7	30.6	31.3	34.5	41.9	48.2	56.5	57.2	47.9	43.8	36.5	34.3	41.1
	sd	5.4	4.3	4.7	2.9	2.0	3.0	4.0	3.9	4.5	3.4	3.8	3.5	9.7
	tot	311.5	312.5	312.0	315.5	320.7	324.3	330.1	329.7	321.9	319.0	314.8	313.8	318.8
	sd	3.3	2.2	3.4	2.1	1.8	2.5	4.0	3.0	4.1	3.7	3.1	3.5	6.6
	dry	284.7	284.9	281.6	279.8	275.6	272.4	270.8	271.3	275.0	277.2	281.4	283.2	278.2
	sd	5.1	6.3	3.3	1.8	1.9	1.2	1.4	1.7	1.6	1.9	3.3	1.5	5.1
6050	wet	21.5	20.9	22.4	26.1	35.9	46.4	55.3	55.6	45.4	34.6	27.1	24.3	34.6
	sd	4.4	3.2	4.1	3.1	2.5	4.2	3.4	2.9	3.0	3.1	2.6	2.7	13.0
	tot	306.1	305.8	304.0	305.9	311.5	318.8	326.1	326.9	320.5	311.8	308.5	307.5	312.8
	sd	3.8	4.0	3.4	3.3	2.6	4.2	3.0	3.4	2.1	4.4	3.7	2.9	8.2
	dry	282.7	283.9	281.8	280.9	279.0	275.9	273.6	272.0	275.1	276.8	279.6	280.7	278.5
	sd	4.1	5.3	2.5	1.6	1.2	1.0	1.1	1.2	1.4	1.4	2.6	1.7	3.8
6099	wet	25.7	25.6	27.3	30.5	37.2	44.7	52.8	54.9	45.0	38.9	31.3	29.2	36.9
	sd	4.0	2.9	3.5	2.3	1.7	4.3	4.3	2.8	2.4	2.3	2.7	2.3	10.4
	tot	308.4	309.5	309.0	311.5	316.2	320.6	326.4	326.9	320.1	315.6	310.9	309.9	315.4
	sd	2.8	3.3	2.3	1.5	1.5	3.9	3.7	2.1	1.4	3.2	2.1	2.5	6.7
	dry	281.6	283.8	281.2	281.8	279.1	276.8	274.2	272.6	274.5	276.5	280.1	281.0	278.6
	sd	3.2	5.6	2.3	1.7	1.3	1.2	1.2	1.7	0.6	1.6	2.4	1.5	3.6
6248	wet	29.2	28.6	30.3	32.8	42.2	49.0	58.1	59.0	49.0	43.0	34.4	32.7	40.7
	sd	6.3	5.8	4.2	4.2	2.1	3.7	1.9	2.1	3.2	2.2	4.5	3.5	11.0
	tot	310.8	312.4	311.5	314.6	321.4	325.7	332.4	331.6	323.5	319.5	314.4	313.7	319.3
	sd	4.2	2.0	3.4	3.2	2.3	3.3	1.5	1.8	3.2	2.9	3.8	3.1	7.7
	dry	267.5	265.9	265.6	263.5	260.1	255.4	253.8	254.7	257.9	261.2	265.0	267.2	261.5
	sd	5.5	5.4	3.2	1.7	1.6	1.2	1.7	1.1	0.7	1.5	2.5	1.1	5.0
6371	wet	16.6	16.5	18.6	21.8	29.5	39.0	45.7	44.8	34.5	27.8	21.5	19.4	28.0
	sd	3.8	2.5	3.7	2.0	2.9	3.8	3.1	3.5	2.4	2.4	2.3	2.5	10.7
	tot	286.1	283.5	284.9	285.2	288.3	295.3	300.1	300.0	293.6	288.9	287.7	287.5	290.1
	sd	2.7	2.6	2.8	0.9	2.4	2.4	2.6	4.4	1.9	2.4	1.9	2.1	5.8
	dry	284.9	284.7	281.2	278.8	274.7	271.7	269.9	269.5	274.1	277.0	281.3	283.2	277.6
	sd	5.2	6.3	3.0	2.0	2.1	1.4	1.6	1.6	1.5	1.9	3.0	1.4	5.6
6455	wet	22.6	21.9	23.0	26.1	35.9	45.0	54.3	53.9	44.1	35.2	27.8	25.5	34.6
	sd	4.2	2.5	4.1	3.2	2.9	3.9	2.7	3.0	2.8	3.7	2.2	2.5	12.1
	tot	307.5	306.7	304.2	304.9	310.6	316.7	324.2	323.3	318.2	312.1	309.1	308.7	312.2
	sd	3.5	4.7	3.2	3.5	2.9	3.4	2.1	3.2	2.5	5.0	3.4	2.5	6.9
	dry	282.7	283.6	281.6	281.0	278.7	275.8	273.1	272.8	274.8	276.8	279.9	281.3	278.5
	sd	4.3	4.8	2.7	1.5	1.7	1.3	2.2	1.7	1.0	1.5	2.2	1.6	3.8
6594	wet	27.9	28.0	28.5	32.0	39.6	47.3	55.3	55.2	45.8	40.7	33.0	29.8	38.6
	sd	4.9	3.4	4.0	3.8	2.8	2.5	3.4	4.4	3.3	2.0	2.7	3.4	10.3
	tot	310.6	311.5	310.1	313.0	318.3	323.1	328.4	328.0	320.6	317.5	312.9	311.1	317.1
	sd	3.2	3.1	2.5	3.1	2.3	1.9	2.9	3.6	2.9	2.8	1.9	2.8	6.7
	dry	288.3	287.7	283.4	280.7	276.1	272.8	270.9	271.4	275.1	278.5	283.3	285.4	279.5
	sd	6.4	6.5	3.2	1.7	2.4	1.3	1.6	2.0	1.4	1.6	2.7	2.1	6.2
6910	wet	22.6	22.6	25.3	29.5	39.9	49.8	58.7	57.2	46.3	37.8	29.3	26.3	37.1
	sd	5.7	3.6	4.1	2.7	2.4	5.0	3.7	3.0	3.2	2.8	2.6	3.4	13.2
	tot	310.8	310.2	308.7	310.2	315.9	322.6	329.6	328.6	321.4	316.3	312.6	311.6	316.5
	sd	3.6	3.3	2.2	2.3	2.7	4.6	3.2	3.1	2.6	3.0	2.8	2.5	7.3
	dry	286.7	285.7	281.0	277.6	272.5	268.7	266.8	267.8	272.2	275.7	281.1	283.5	276.6
	sd	7.0	6.8	3.3	1.8	2.4	1.6	1.7	2.0	1.3	1.6	3.0	2.4	7.0
6933	wet	19.1	19.5	22.6	24.6	33.4	42.5	51.1	51.9	42.4	34.2	25.8	22.5	32.5
	sd	5.2	3.5	4.2	2.2	2.7	5.5	4.4	4.8	2.8	3.1	2.8	3.5	12.0
	tot	305.7	305.2	303.5	302.3	306.0	311.3	317.9	319.6	314.6	309.9	306.9	306.0	309.1
	sd	3.8	3.4	3.6	2.2	3.0	4.3	3.4	5.2	2.2	3.4	2.7	2.6	5.7
	dry	285.7	286.1	283.3	281.4	277.9	275.3	273.1	272.7	275.8	278.3	282.1	283.9	279.6
	sd	4.9	5.6	2.8	1.7	2.2	1.4	1.8	2.0	1.2	1.5	2.4	1.7	4.8
7155	wet	25.7	25.5	27.2	31.9	41.8	50.5	58.8	57.7	47.4	40.5	31.6	28.3	38.9
	sd	6.1	3.6	4.2	3.5	3.4	5.2	4.2	5.3	4.2	2.8	3.1	3.4	12.3
	tot	311.4	311.5	310.5	313.3	319.7	325.8	331.9	330.4	323.2	318.8	313.7	312.2	318.5
	sd	4.1	2.3	2.8	2.8	3.5	4.5	3.7	4.5	3.8	3.0	3.1	2.8	7.7

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	dry	279.5	279.8	280.5	281.1	280.3	275.7	274.1	272.7	274.4	276.9	279.9	280.8	278.0
	sd	1.6	5.6	2.0	2.0	1.1	1.5	1.6	1.5	1.1	1.5	2.0	0.8	3.0
7185	wet	29.6	29.8	30.7	34.4	43.0	52.2	59.2	58.8	48.3	43.4	35.1	32.0	41.4
	sd	4.7	3.7	3.9	3.8	3.3	1.6	4.5	5.7	2.8	1.9	2.9	3.3	11.1
	tot	313.0	310.4	313.2	315.8	322.8	328.2	333.1	331.4	323.8	320.2	315.6	314.6	320.2
	sd	2.6	1.0	3.0	1.6	1.1	0.9	4.7	5.6	2.0	2.4	2.2	1.9	7.6
	dry	284.1	284.6	282.3	281.4	278.7	276.1	273.6	272.6	274.5	276.7	280.2	282.1	278.9
	sd	5.0	5.3	3.0	1.7	2.1	1.5	1.4	1.9	1.2	1.4	2.3	2.2	4.1
7199	wet	27.4	27.8	29.2	33.5	42.8	50.3	58.3	57.0	47.1	41.5	33.4	30.4	39.9
	sd	5.2	3.8	3.8	3.1	3.7	4.1	4.9	4.9	4.0	3.4	3.1	4.0	11.3
	tot	311.5	312.3	311.5	314.9	321.5	326.4	331.9	329.6	321.6	318.2	313.6	312.5	318.8
	sd	2.9	2.9	2.3	2.4	2.6	4.0	4.1	4.5	3.2	4.2	2.6	2.8	7.3
	dry	287.5	287.5	282.9	280.0	275.8	271.8	270.1	270.2	274.1	277.8	283.3	285.6	278.9
	sd	6.7	6.6	3.2	1.8	3.0	1.5	2.0	2.1	1.3	1.5	2.4	3.1	6.5
7210	wet	21.4	21.0	22.8	25.2	33.5	43.2	51.0	48.7	41.0	35.3	26.6	23.2	32.7
	sd	6.1	3.6	5.1	4.2	4.3	4.2	6.6	5.8	3.3	2.1	2.8	4.2	11.0
	tot	308.9	308.5	305.8	305.2	309.3	315.0	321.2	318.9	315.0	313.2	309.9	308.8	311.6
	sd	3.3	3.7	4.1	4.0	6.0	4.8	7.3	5.5	2.6	2.7	1.8	2.1	5.0
	dry	289.5	288.5	283.5	279.9	274.7	270.2	268.3	269.2	273.8	277.8	283.8	286.2	278.8
	sd	7.3	7.1	3.5	1.5	2.1	1.6	1.7	2.1	1.2	1.6	2.7	3.9	7.6
7362	wet	17.9	19.3	21.0	24.5	32.3	39.7	48.8	48.5	40.3	34.0	24.8	21.3	31.0
	sd	5.7	4.4	3.9	2.9	3.2	4.1	4.3	6.4	2.9	2.2	3.0	4.7	11.2
	tot	307.5	307.7	304.5	304.4	307.1	309.9	317.1	317.7	314.2	311.7	308.5	307.5	309.8
	sd	3.3	3.5	2.1	2.0	3.0	3.1	3.7	6.0	2.3	2.7	1.9	1.9	4.5
	dry	284.0	284.8	283.0	282.2	279.7	276.9	274.4	273.4	275.4	277.5	280.6	282.3	279.5
	sd	4.5	5.2	2.9	1.6	1.6	1.5	1.3	1.9	1.0	1.2	2.2	2.2	3.9
7555	wet	27.3	27.6	28.3	32.6	40.7	48.2	56.0	55.5	46.8	41.1	32.6	29.6	38.9
	sd	4.3	4.1	4.0	3.5	3.6	4.8	3.8	4.1	3.8	1.4	2.8	3.9	10.7
	tot	311.3	312.4	311.4	314.9	320.5	325.0	330.4	329.0	322.2	318.5	313.2	311.9	318.4
	sd	2.7	3.2	2.4	2.6	2.4	4.1	3.1	3.0	3.1	1.9	1.9	2.4	7.0
	dry	282.8	282.3	277.8	274.5	270.0	264.7	262.7	263.4	267.5	271.4	276.9	279.6	272.8
	sd	6.8	7.1	3.8	1.4	1.7	1.6	1.8	1.8	1.1	1.5	2.9	4.2	7.2
7742	wet	17.2	18.5	20.1	23.9	30.7	39.2	48.5	46.6	38.1	32.1	23.4	20.3	29.9
	sd	4.8	4.2	3.7	2.5	2.9	3.4	5.4	6.8	2.7	2.5	3.0	4.6	11.0
	tot	300.0	300.7	297.9	298.4	300.7	303.9	311.3	310.1	305.6	303.5	300.3	299.9	302.7
	sd	3.4	3.7	2.3	1.8	2.0	2.3	4.6	6.4	2.2	2.8	1.5	1.9	4.4
	dry	290.1	289.8	285.5	282.1	276.4	273.8	270.0	271.6	275.5	279.5	285.5	288.0	280.6
	sd	6.2	5.7	3.5	1.5	1.9	1.1	2.4	2.1	1.2	1.5	2.5	3.6	7.2
7940	wet	19.0	20.2	20.1	25.1	33.7	43.7	55.3	50.7	42.6	34.1	24.9	21.2	32.6
	sd	4.5	4.0	3.0	2.7	3.8	4.5	2.9	4.9	3.2	2.7	1.6	4.2	12.8
	tot	309.1	310.1	305.7	307.1	310.7	317.6	325.3	322.4	318.1	313.6	310.4	309.3	313.3
	sd	3.3	3.7	1.6	1.9	2.4	4.3	2.5	4.7	2.4	2.9	1.0	2.7	6.2
	dry	287.0	287.4	285.4	283.1	279.8	276.2	274.2	273.6	276.2	279.3	283.2	285.3	280.9
	sd	4.5	5.7	3.2	1.8	2.1	1.8	1.6	1.8	1.2	1.5	2.4	3.2	5.0
8229	wet	21.6	22.4	22.5	27.2	35.7	44.4	54.6	52.3	41.6	34.7	26.5	23.6	33.9
	sd	4.4	4.9	3.5	3.5	4.0	4.6	4.9	4.8	4.1	2.2	3.3	3.8	11.9
	tot	308.6	309.7	307.9	310.3	315.4	320.6	328.8	326.0	317.8	314.0	309.7	308.9	314.8
	sd	3.1	2.9	2.3	2.7	3.2	4.0	4.3	3.9	3.5	2.9	2.4	1.7	7.1
	dry	288.4	289.2	286.7	283.8	279.6	274.8	272.7	273.2	276.5	280.0	284.7	286.7	281.4
	sd	4.5	5.8	3.6	2.0	2.1	1.9	1.7	2.0	1.3	1.8	2.5	3.7	6.0
8480	wet	18.6	19.6	19.5	24.6	32.5	42.1	54.1	50.4	41.2	31.4	23.4	20.4	31.5
	sd	2.6	4.7	2.2	3.3	4.3	3.4	4.1	4.9	4.2	2.0	2.2	3.8	12.7
	tot	307.1	308.8	306.3	308.4	312.1	316.9	326.9	323.7	317.7	311.4	308.0	307.1	312.9
	sd	3.0	3.8	2.4	2.7	2.6	3.7	3.3	4.2	3.3	2.6	1.5	1.4	6.9
	dry	282.8	284.1	283.2	282.7	280.8	278.2	275.6	274.6	275.9	277.9	280.4	281.9	279.8
	sd	3.9	4.6	2.9	1.6	1.5	1.5	1.3	1.7	0.9	1.3	2.1	2.1	3.3
8591	wet	28.7	29.3	29.7	33.4	38.8	46.5	55.0	54.3	45.6	40.3	32.9	29.5	38.7
	sd	3.7	3.4	3.4	2.9	4.2	3.7	4.7	5.5	2.8	4.2	2.9	3.2	9.7
	tot	311.4	313.4	312.9	316.1	319.6	324.7	330.6	328.8	321.5	318.1	313.4	311.5	318.5
	sd	3.4	3.0	2.5	2.1	3.8	3.2	3.7	3.9	2.5	4.3	2.3	2.4	6.7

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	dry	285.4	286.6	285.2	283.4	280.0	276.4	274.0	273.4	276.7	279.7	282.9	284.6	280.7
	sd	4.1	5.1	3.1	2.0	2.1	2.0	1.9	2.0	1.2	1.7	2.3	3.0	4.7
8676	wet	22.4	22.7	22.3	26.2	32.7	40.0	50.1	47.8	39.5	33.5	26.5	23.3	32.2
	sd	3.3	4.0	2.7	3.9	4.7	3.5	3.5	4.8	3.5	2.0	2.7	4.2	10.1
	tot	307.7	309.3	307.5	309.6	312.7	316.4	324.2	321.2	316.3	313.2	309.3	307.9	312.9
	sd	2.7	4.4	2.4	3.0	3.1	3.9	2.9	3.9	2.7	2.1	1.1	1.9	5.5
	dry	285.5	287.6	286.5	284.7	281.7	278.6	275.7	275.1	277.8	280.2	283.7	284.9	281.8
	sd	3.8	4.8	3.0	1.9	1.9	1.6	1.4	1.7	1.0	1.6	2.2	2.9	4.3
8711	wet	23.0	22.2	22.9	27.3	34.6	43.0	52.0	50.9	40.9	33.8	26.6	23.3	33.4
	sd	2.9	2.6	1.7	3.2	4.1	4.0	4.2	4.3	2.7	2.9	2.6	3.3	11.0
	tot	308.5	309.8	309.3	312.0	316.3	321.6	327.7	326.0	318.6	314.0	310.4	308.2	315.2
	sd	2.4	3.6	2.6	3.1	2.7	2.8	3.0	3.4	2.0	2.7	2.0	1.7	6.9
	dry	293.3	292.3	287.3	282.7	278.3	273.2	270.6	271.6	276.3	280.9	288.4	290.9	282.1
	sd	5.8	7.3	3.8	2.1	2.6	2.0	1.7	1.8	1.4	1.8	3.3	5.7	8.2
8935	wet	14.7	16.1	17.4	22.0	28.7	37.7	50.0	47.3	37.9	28.9	20.2	17.0	28.2
	sd	3.3	4.1	2.4	2.2	3.2	3.5	5.8	6.4	3.4	2.0	2.7	4.7	12.4
	tot	307.9	308.4	304.8	304.7	307.0	311.0	320.7	318.9	314.2	309.9	308.5	307.9	310.3
	sd	3.8	4.3	2.3	1.8	1.8	2.3	5.5	5.5	2.4	2.0	1.8	2.0	5.1
	dry	285.0	285.8	284.0	281.8	278.3	273.8	271.2	271.6	275.0	278.2	282.2	283.6	279.2
	sd	4.0	5.0	3.2	1.9	2.4	2.0	1.9	1.6	1.2	1.8	2.4	3.2	5.3
9045	wet	18.7	19.1	18.7	22.7	28.2	35.9	46.6	44.2	36.0	29.3	23.2	20.1	28.6
	sd	2.3	3.9	1.9	2.7	3.7	2.7	3.5	4.4	3.1	1.0	2.5	3.3	10.0
	tot	303.7	304.9	302.6	304.5	306.5	309.7	317.9	315.8	311.0	307.4	305.4	303.6	307.7
	sd	2.4	3.4	2.3	2.1	2.7	3.1	3.3	3.6	2.5	2.0	1.7	1.6	4.9
	dry	288.4	289.4	287.4	285.0	281.7	277.4	274.8	275.1	278.5	281.6	285.7	287.0	282.7
	sd	4.2	5.3	3.3	2.1	2.3	2.1	1.7	1.7	1.3	1.7	2.7	3.5	5.2
9049	wet	19.3	19.7	19.8	24.3	30.1	38.3	49.1	47.0	38.5	31.0	24.1	21.0	30.2
	sd	2.7	3.9	1.9	2.9	2.9	4.1	4.8	5.9	3.4	2.3	3.0	3.9	10.7
	tot	307.7	309.0	307.2	309.3	311.8	315.7	323.9	322.1	317.0	312.6	309.8	307.9	312.8
	sd	2.8	3.0	2.2	2.0	1.8	2.8	4.2	4.7	2.4	2.6	2.2	1.9	5.7
	dry	284.6	285.7	284.7	283.9	281.7	278.3	275.3	274.8	276.8	279.0	282.5	283.7	280.9
	sd	3.6	4.7	3.0	2.0	2.1	1.9	1.5	1.7	1.2	1.9	2.1	2.8	3.9
9080	wet	22.2	22.9	23.3	27.1	33.5	41.7	50.5	48.2	40.1	33.1	26.4	23.5	32.7
	sd	2.7	3.7	2.5	3.6	3.1	4.2	3.9	4.6	2.1	3.6	2.6	3.3	10.2
	tot	306.8	308.6	308.0	311.0	315.1	320.0	325.8	323.0	316.9	312.1	308.9	307.2	313.6
	sd	2.8	3.5	2.2	2.7	1.7	2.9	3.2	3.5	1.3	3.6	2.1	1.6	6.5
	dry	286.1	287.0	286.1	285.0	282.3	278.3	275.2	275.2	277.5	280.2	283.6	285.0	281.8
	sd	3.6	4.9	3.2	2.1	2.1	2.1	1.6	1.9	1.2	1.7	2.2	3.0	4.4
9270	wet	20.6	21.8	22.3	26.1	32.8	41.9	51.6	48.9	39.8	32.3	25.2	22.1	32.1
	sd	2.7	3.7	1.7	3.6	3.5	3.6	4.3	5.1	3.0	2.5	2.7	4.5	11.0
	tot	306.7	308.8	308.5	311.1	315.1	320.3	326.8	324.1	317.3	312.5	308.8	307.1	313.9
	sd	2.4	3.8	2.6	2.3	1.8	2.1	3.5	4.1	2.1	2.5	1.6	2.4	6.8
	dry	293.1	292.9	290.5	286.0	282.5	275.9	273.6	274.2	278.0	282.3	288.9	291.5	284.1
	sd	6.4	7.4	4.3	2.2	1.8	1.3	1.9	1.6	1.5	1.8	3.9	5.9	7.4
9314	wet	16.0	17.1	18.5	22.9	29.5	41.6	49.3	45.9	37.8	29.1	20.1	17.1	28.7
	sd	5.6	5.9	3.5	3.7	3.6	5.1	5.1	6.1	3.5	4.1	4.3	5.6	12.1
	tot	309.1	310.0	309.0	308.9	312.0	317.5	322.9	320.1	315.8	311.4	309.0	308.6	312.9
	sd	3.2	4.8	3.6	2.4	3.3	4.6	5.6	5.6	2.7	3.4	1.4	2.1	5.0
	dry	291.2	289.1	284.1	277.7	272.0	265.3	264.8	264.7	269.9	275.1	284.3	288.7	277.2
	sd	6.8	8.3	4.3	1.8	2.2	2.1	4.7	1.5	1.2	2.1	3.2	6.8	10.0
9371	wet	9.9	11.6	14.1	18.9	25.2	33.8	46.5	41.7	31.9	25.0	14.9	11.5	23.7
	sd	2.5	4.1	2.1	2.8	2.0	4.3	4.1	5.5	3.0	3.0	2.9	4.4	12.4
	tot	301.1	300.7	298.2	296.5	297.2	299.1	311.3	306.5	301.7	300.1	299.1	300.2	301.0
	sd	4.6	4.7	2.7	1.9	0.8	3.2	7.2	4.3	2.4	2.9	1.6	3.0	4.1
	dry	287.3	286.9	286.5	285.1	283.4	280.0	276.9	276.3	277.6	280.1	284.0	282.3	282.2
	sd	2.5	4.7	3.1	2.3	1.8	1.6	1.0	1.5	1.2	1.4	2.0	10.1	4.0
9450	wet	21.9	24.1	24.5	27.4	32.6	40.4	48.2	47.7	40.9	33.9	26.9	23.7	32.7
	sd	2.3	4.7	1.8	4.0	2.9	4.4	4.3	5.9	4.3	2.4	3.6	4.2	9.5
	tot	309.2	311.0	311.0	312.5	316.0	320.4	325.0	324.0	318.5	314.0	310.9	305.1	314.8
	sd	2.3	3.5	2.5	2.9	2.0	3.2	4.0	4.5	3.6	2.3	2.9	12.8	6.1

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	dry	296.2	294.5	291.7	287.1	283.2	277.4	274.0	275.5	279.1	283.3	290.0	293.0	285.4
	sd	5.2	7.5	4.5	2.2	1.9	2.2	1.2	1.6	1.6	2.2	3.1	5.4	7.8
9535	wet	12.9	14.6	16.3	20.3	25.3	33.8	42.1	41.6	34.7	26.3	18.0	14.5	25.0
	sd	2.2	4.0	2.1	2.7	2.3	2.4	4.2	3.7	3.4	1.9	2.7	3.6	10.7
	tot	309.1	309.2	307.9	307.4	308.5	311.3	316.1	317.1	313.8	309.6	308.0	307.5	310.5
	sd	3.3	4.0	3.1	2.3	1.7	2.2	3.7	3.1	2.3	2.1	1.4	2.5	3.4
	dry	288.8	289.3	288.7	286.8	284.4	280.5	277.4	277.3	278.5	281.8	285.4	286.9	283.8
	sd	3.4	5.1	3.5	2.0	1.8	1.6	0.9	1.5	1.3	1.9	2.3	3.1	4.5
9640	wet	21.2	22.3	23.5	27.5	33.2	41.6	50.2	47.8	41.3	32.7	25.5	22.2	32.4
	sd	2.5	4.1	2.2	3.3	2.3	3.0	4.1	2.6	4.3	2.5	2.2	2.9	10.4
	tot	310.0	311.6	312.2	314.3	317.5	322.0	327.6	325.2	319.8	314.5	310.9	309.1	316.2
	sd	1.4	3.1	1.9	2.3	1.8	1.9	3.4	1.8	3.2	2.0	1.4	1.1	6.2
	dry	298.9	296.7	293.3	287.5	283.6	277.6	274.0	275.7	279.5	284.2	291.4	296.0	286.5
	sd	5.3	8.0	5.2	2.1	2.0	2.0	0.9	1.5	1.6	2.5	3.1	6.4	8.7
9680	wet	13.2	16.0	17.7	23.0	29.4	38.8	49.0	46.8	38.3	28.4	19.0	15.1	27.9
	sd	2.4	4.8	2.8	3.2	2.5	3.8	4.4	4.1	3.5	2.4	2.8	4.8	12.7
	tot	312.2	312.7	311.0	310.5	313.0	316.4	323.1	322.5	317.8	312.6	310.4	311.1	314.4
	sd	3.2	4.1	2.9	2.3	1.9	2.9	3.9	3.0	2.4	1.8	1.8	2.3	4.5
	dry	300.3	297.2	290.9	283.7	278.2	271.4	268.5	271.0	275.9	281.7	292.2	297.9	284.1
	sd	6.8	9.8	4.9	2.1	2.3	2.2	1.2	1.7	1.7	2.4	4.9	8.0	11.4
9725	wet	10.4	12.6	15.9	21.2	27.8	36.8	47.1	45.6	36.5	27.2	16.1	12.0	25.8
	sd	3.0	4.7	2.8	3.3	2.2	4.7	5.9	5.8	3.6	2.9	3.9	4.9	13.2
	tot	310.7	309.8	306.8	304.9	306.0	308.2	315.6	316.7	312.4	308.9	308.3	309.9	309.8
	sd	4.3	5.5	2.8	2.5	0.9	3.1	5.5	4.6	2.4	2.6	1.8	3.5	3.6
	dry	289.6	290.3	289.0	286.9	284.5	280.5	277.6	277.4	278.6	282.0	286.0	287.4	284.1
	sd	3.5	5.2	3.6	1.9	1.8	1.4	0.9	1.4	1.3	1.9	2.4	2.9	4.8
9855	wet	19.6	20.9	23.0	26.0	31.4	40.1	48.3	46.9	40.9	32.0	24.8	21.8	31.3
	sd	2.2	3.5	2.9	3.1	2.3	4.3	4.5	5.3	3.5	3.1	2.7	3.8	10.3
	tot	309.2	311.2	312.0	312.8	315.9	320.6	325.9	324.3	319.4	314.0	310.8	309.2	315.4
	sd	2.7	3.4	2.6	2.3	2.0	3.6	4.6	4.8	3.2	2.9	2.5	3.3	5.8
	dry	295.2	293.5	290.0	285.1	280.7	275.4	272.0	273.1	276.4	281.3	287.8	292.5	283.6
	sd	5.4	7.1	4.4	2.1	1.9	2.0	0.9	1.6	1.5	2.0	3.1	5.3	8.3
9937	wet	13.2	15.2	17.7	22.1	27.3	34.8	44.0	43.1	37.1	28.8	19.8	14.9	26.5
	sd	2.4	4.1	2.6	2.9	2.3	3.7	3.9	4.7	3.1	2.4	2.9	3.9	11.1
	tot	308.4	308.6	307.7	307.2	308.0	310.2	316.0	316.2	313.5	310.1	307.6	307.4	310.1
	sd	3.4	3.5	2.7	2.3	1.8	3.0	4.1	4.3	2.6	1.8	1.7	2.5	3.3
	dry	290.9	292.1	291.3	291.0	288.5	285.1	281.8	281.6	282.4	284.9	288.9	291.7	287.5
	sd	4.2	5.3	3.6	3.1	1.6	2.0	1.0	1.8	1.3	2.2	3.3	5.2	4.1
9971	wet	19.3	19.6	20.9	21.9	26.8	32.3	39.3	38.0	34.0	27.3	21.5	18.2	26.6
	sd	3.4	4.3	2.2	3.8	1.4	2.7	2.2	2.9	4.1	3.0	4.0	4.9	7.6
	tot	310.3	311.7	312.2	312.9	315.3	317.5	321.1	319.6	316.4	312.1	310.5	309.8	314.1
	sd	1.7	2.6	2.7	1.8	1.2	1.4	1.6	2.4	3.1	2.1	1.8	1.9	3.8
	dry	298.5	299.9	298.6	298.5	292.5	287.6	284.6	283.9	284.9	288.5	295.8	298.7	292.7
	sd	6.5	7.1	5.1	4.3	2.0	1.4	1.1	1.7	1.4	3.1	4.9	6.5	6.4
9972	wet	14.0	13.9	14.8	15.0	20.8	27.7	33.3	33.5	29.3	23.3	16.1	13.4	21.3
	sd	4.3	5.0	2.9	3.3	1.8	1.2	1.6	2.6	3.8	2.9	4.3	5.3	7.9
	tot	312.5	313.8	313.5	313.5	313.3	315.2	317.9	317.4	314.2	311.8	311.9	312.1	313.9
	sd	2.7	3.0	3.4	1.8	1.9	1.1	1.7	1.7	2.8	2.0	1.7	2.3	2.0
	dry	299.7	302.2	301.5	299.6	291.1	284.4	280.1	280.7	284.8	291.4	299.1	301.8	293.0
	sd	5.0	7.0	3.9	3.8	1.8	1.7	1.4	1.4	1.8	3.4	4.5	6.3	8.7
9976	wet	12.4	11.8	12.2	13.2	21.5	29.5	36.5	35.5	28.4	19.2	12.2	10.4	20.2
	sd	3.4	4.4	3.0	3.2	1.6	2.2	2.0	2.4	3.7	3.8	3.6	4.7	9.8
	tot	312.0	314.1	313.8	312.8	312.6	313.9	316.6	316.2	313.2	310.6	311.3	312.3	313.3
	sd	2.3	3.5	3.0	1.3	1.9	2.2	2.2	2.6	2.5	1.5	1.7	2.6	1.8
	dry	299.2	301.2	300.1	297.7	290.2	283.7	279.5	280.4	284.9	290.8	296.7	299.1	292.0
	sd	5.4	6.9	4.6	4.3	1.7	1.5	0.5	1.4	2.3	2.8	3.9	6.5	8.1
9984	wet	10.5	10.2	11.0	12.1	19.1	26.4	33.7	31.6	24.1	16.5	11.7	10.0	18.1
	sd	2.8	3.1	2.3	2.9	1.6	2.2	1.8	2.6	4.3	2.4	2.7	4.0	8.8
	tot	309.7	311.4	311.0	309.7	309.3	310.1	313.2	312.0	309.0	307.3	308.4	309.1	310.0
	sd	3.0	4.4	3.5	2.5	1.7	1.9	1.9	2.2	2.6	1.6	2.0	3.1	1.6

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
9991	dry	298.6	301.1	300.0	298.0	290.9	285.2	281.5	282.4	286.5	291.9	296.7	298.8	292.6
	sd	4.7	5.9	4.0	4.6	1.4	1.3	0.8	1.5	2.6	2.7	3.4	6.1	7.2
	wet	11.0	10.8	11.8	12.8	20.0	28.1	35.5	32.5	24.3	16.5	11.8	10.3	18.8
	sd	2.5	2.8	2.6	3.1	1.9	2.5	2.1	1.8	4.8	2.9	2.7	4.2	9.2
	tot	309.6	311.9	311.8	310.9	310.9	313.3	317.0	314.9	310.8	308.5	308.5	309.1	311.4
	sd	2.7	3.9	2.8	2.5	1.4	2.2	2.3	1.7	2.5	2.0	1.7	2.7	2.6
9995	dry	289.1	289.8	290.2	290.2	288.5	285.0	281.4	280.5	282.5	284.5	287.9	289.7	286.6
	sd	5.3	5.2	2.4	3.3	1.1	1.5	0.5	1.7	1.4	1.8	2.7	5.0	3.6
	wet	20.2	20.6	20.2	21.6	26.0	31.5	38.1	38.6	31.7	27.6	22.0	19.9	26.5
	sd	4.4	3.5	2.9	3.7	2.5	3.0	3.0	4.3	3.8	1.8	3.3	4.3	7.0
	tot	309.4	310.4	310.4	311.8	314.5	316.5	319.5	319.0	314.2	312.1	309.9	309.6	313.1
	sd	3.2	3.4	3.0	1.8	2.2	2.6	2.9	3.1	2.8	1.6	2.0	1.9	3.6

Table 1.7.2 Values of surface refractivity for dry and wet component and total value with standard deviation for selected Norwegian stations in the period 1981-1992.

ident	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	des	year
70	289.5	289.2	286.3	285.5	286.3	290.0	295.4	296.9	292.8	291.4	289.7	288.9	290.2
295	308.9	308.7	306.1	304.2	306.0	314.1	319.0	320.8	315.4	315.9	311.3	309.2	311.7
478	304.9	306.0	303.6	301.0	302.1	307.6	313.1	314.9	311.0	311.0	306.8	304.9	307.2
604	306.6	306.6	303.8	301.7	302.4	309.2	316.2	318.2	312.1	311.5	308.0	306.2	308.5
1040	291.1	290.1	287.8	287.9	290.6	295.2	299.9	300.0	294.7	293.4	291.0	290.5	292.7
1268	304.1	304.2	302.0	301.0	303.2	311.1	316.4	318.9	311.4	309.6	305.9	304.5	307.7
1572	286.3	286.0	283.8	283.9	286.5	289.4	293.5	294.8	291.1	289.3	286.7	285.6	288.1
1661	276.1	276.5	275.3	275.8	276.7	279.3	283.1	284.5	280.9	279.0	277.3	276.6	278.4
1715	311.6	312.1	310.6	308.1	311.2	318.5	324.7	327.5	321.4	320.3	314.4	312.3	316.1
1870	307.5	308.0	305.3	302.3	304.3	310.3	315.2	317.8	312.7	312.7	309.4	308.0	309.5
1896	293.2	294.0	293.3	292.1	294.5	302.1	307.6	308.8	301.6	300.5	295.4	293.3	298.0
1940	311.7	312.6	310.6	308.0	311.2	318.1	323.5	324.1	317.4	317.6	313.3	312.1	315.0
2342	298.8	298.7	295.8	293.4	292.1	296.5	297.2	303.0	299.9	301.4	299.4	298.3	297.9
2488	306.9	306.6	302.3	299.7	301.2	308.5	312.0	313.8	308.0	309.1	307.4	306.3	306.8
2750	314.9	315.4	314.6	315.5	322.7	330.3	338.3	338.5	327.6	324.8	318.2	315.8	323.1
2837	305.7	305.8	303.0	300.3	302.0	308.9	311.8	313.8	308.5	310.6	307.4	305.9	307.0
2880	301.2	301.2	298.6	296.4	298.2	304.5	308.5	309.8	305.1	305.3	302.6	301.3	302.7
3210	311.4	311.9	307.9	304.0	306.3	312.9	316.3	319.9	315.9	317.1	313.4	312.0	312.4
3293	283.9	283.9	282.6	281.4	280.6	284.7	287.2	291.2	288.5	288.8	285.5	284.0	285.2
3586	312.8	313.6	312.6	311.9	317.8	325.1	330.9	331.0	320.2	320.4	314.8	312.8	318.7
3620	314.0	314.5	313.6	314.1	320.9	327.9	333.7	333.9	323.1	323.5	316.6	314.8	320.9
3723	304.0	306.6	305.7	302.5	303.6	309.7	315.3	319.4	311.6	312.2	307.6	305.9	308.7
3904	312.5	312.7	311.5	309.5	312.5	319.4	322.4	325.5	320.2	320.5	315.2	313.3	316.3
3910	315.6	315.9	316.0	315.7	322.4	330.4	335.3	335.2	325.7	325.2	318.6	316.6	322.7
3969	306.4	306.3	305.1	303.4	306.4	313.1	316.5	319.2	314.2	313.9	308.8	306.9	310.0
4216	314.1	313.8	314.3	315.2	321.9	326.9	333.1	333.5	326.1	323.9	317.7	316.0	321.4
4350	305.4	304.3	303.7	302.4	306.0	310.5	316.4	319.0	314.9	313.4	308.4	307.5	309.3
4456	313.8	313.4	313.5	314.3	319.6	323.5	330.3	331.6	325.8	322.6	317.0	315.8	320.1
4661	313.4	312.4	310.7	310.0	313.3	319.0	324.9	327.4	322.5	319.9	315.4	314.2	316.9
4691	310.1	308.9	307.7	307.4	312.0	317.4	323.1	325.6	320.5	317.2	312.6	312.1	314.6
4721	313.7	313.0	313.1	314.8	319.0	323.9	329.6	330.7	324.5	321.4	316.4	315.1	319.6
4730	313.9	313.7	314.1	315.8	321.4	325.6	331.7	332.1	325.1	322.4	317.3	316.2	320.8
4833	316.7	316.2	316.7	319.0	324.9	329.3	335.2	335.4	328.4	324.8	319.9	318.2	323.7
4958	306.1	305.5	303.1	301.6	303.6	309.2	316.7	321.6	315.9	311.3	307.1	306.6	309.0
5013	312.6	311.6	311.1	311.4	317.5	323.3	330.8	332.5	325.4	319.5	315.1	313.9	318.7
5050	311.7	310.8	311.5	310.8	315.6	319.4	325.2	327.8	322.7	319.2	314.6	313.9	316.9
5054	311.6	310.4	310.4	309.8	314.9	319.5	325.6	327.4	322.1	318.8	314.4	313.7	316.5
5159	309.3	307.8	304.7	304.0	305.9	310.5	318.6	321.1	316.8	313.8	310.5	309.8	311.1
5413	308.8	308.1	304.6	303.9	307.5	311.7	317.2	321.7	317.6	313.7	310.1	308.8	311.1
5516	312.7	312.3	309.0	305.9	307.7	312.1	322.3	329.4	323.1	317.8	314.6	312.8	315.0
5980	311.5	312.5	312.0	315.5	320.7	324.3	330.1	329.7	321.9	319.0	314.8	313.8	318.8
6050	306.1	305.8	304.0	305.9	311.5	318.8	326.1	326.9	320.5	311.8	308.5	307.5	312.8
6099	308.4	309.5	309.0	311.5	316.2	320.6	326.4	326.9	320.1	315.6	310.9	309.9	315.4
6248	310.8	312.4	311.5	314.6	321.4	325.7	332.4	331.6	323.5	319.5	314.4	313.7	319.3
6371	286.1	283.5	284.9	285.2	288.3	295.3	300.1	300.0	293.6	288.9	287.7	287.5	290.1
6455	307.5	306.7	304.2	304.9	310.6	316.7	324.2	323.3	318.2	312.1	309.1	308.7	312.2
6594	310.6	311.5	310.1	313.0	318.3	323.1	328.4	328.0	320.6	317.5	312.9	311.1	317.1
6910	310.8	310.2	308.7	310.2	315.9	322.6	329.6	328.6	321.4	316.3	312.6	311.6	316.5
6933	305.7	305.2	303.5	302.3	306.0	311.3	317.9	319.6	314.6	309.9	306.9	306.0	309.1

Table 1.7.3 Monthly means of refractivity values at station level (N_S) in N-units
ident. is identification number, see table 1.7.1

ident	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	des	year
7155	311.4	311.5	310.5	313.3	319.7	325.8	331.9	330.4	323.2	318.8	313.7	312.2	318.5
7185	313.0	310.4	313.2	315.8	322.8	328.2	333.1	331.4	323.8	320.2	315.6	314.6	320.2
7199	311.5	312.3	311.5	314.9	321.5	326.4	331.9	329.6	321.6	318.2	313.6	312.5	318.8
7210	308.9	308.5	305.8	305.2	309.3	315.0	321.2	318.9	315.0	313.2	309.9	308.8	311.6
7362	307.5	307.7	304.5	304.4	307.1	309.9	317.1	317.7	314.2	311.7	308.5	307.5	309.8
7555	311.3	312.4	311.4	314.9	320.5	325.0	330.4	329.0	322.2	318.5	313.2	311.9	318.4
7742	300.0	300.7	297.9	298.4	300.7	303.9	311.3	310.1	305.6	303.5	300.3	299.9	302.7
7940	309.1	310.1	305.7	307.1	310.7	317.6	325.3	322.4	318.1	313.6	310.4	309.3	313.3
8229	308.6	309.7	307.9	310.3	315.4	320.6	328.8	326.0	317.8	314.0	309.7	308.9	314.8
8480	307.1	308.8	306.3	308.4	312.1	316.9	326.9	323.7	317.7	311.4	308.0	307.1	312.9
8591	311.4	313.4	312.9	316.1	319.6	324.7	330.6	328.8	321.5	318.1	313.4	311.5	318.5
8676	307.7	309.3	307.5	309.6	312.7	316.4	324.2	321.2	316.3	313.2	309.3	307.9	312.9
8711	308.5	309.8	309.3	312.0	316.3	321.6	327.7	326.0	318.6	314.0	310.4	308.2	315.2
8935	307.9	308.4	304.8	304.7	307.0	311.0	320.7	318.9	314.2	309.9	308.5	307.9	310.3
9045	303.7	304.9	302.6	304.5	306.5	309.7	317.9	315.8	311.0	307.4	305.4	303.6	307.7
9049	307.7	309.0	307.2	309.3	311.8	315.7	323.9	322.1	317.0	312.6	309.8	307.9	312.8
9080	306.8	308.6	308.0	311.0	315.1	320.0	325.8	323.0	316.9	312.1	308.9	307.2	313.6
9270	306.7	308.8	308.5	311.1	315.1	320.3	326.8	324.1	317.3	312.5	308.8	307.1	313.9
9314	309.1	310.0	309.0	308.9	312.0	317.5	322.9	320.1	315.8	311.4	309.0	308.6	312.9
9371	301.1	300.7	298.2	296.5	297.2	299.1	311.3	306.5	301.7	300.1	299.1	300.2	301.0
9450	309.2	311.0	311.0	312.5	316.0	320.4	325.0	324.0	318.5	314.0	310.9	305.1	314.8
9535	309.1	309.2	307.9	307.4	308.5	311.3	316.1	317.1	313.8	309.6	308.0	307.5	310.5
9640	310.0	311.6	312.2	314.3	317.5	322.0	327.6	325.2	319.8	314.5	310.9	309.1	316.2
9680	312.2	312.7	311.0	310.5	313.0	316.4	323.1	322.5	317.8	312.6	310.4	311.1	314.4
9725	310.7	309.8	306.8	304.9	306.0	308.2	315.6	316.7	312.4	308.9	308.3	309.9	309.8
9855	309.2	311.2	312.0	312.8	315.9	320.6	325.9	324.3	319.4	314.0	310.8	309.2	315.4
9937	308.4	308.6	307.7	307.2	308.0	310.2	316.0	316.2	313.5	310.1	307.6	307.4	310.1
9971	310.3	311.7	312.2	312.9	315.3	317.5	321.1	319.6	316.4	312.1	310.5	309.8	314.1
9972	312.5	313.8	313.5	313.5	313.3	315.2	317.9	317.4	314.2	311.8	311.9	312.1	313.9
9976	312.0	314.1	313.8	312.8	312.6	313.9	316.6	316.2	313.2	310.6	311.3	312.3	313.3
9984	309.7	311.4	311.0	309.7	309.3	310.1	313.2	312.0	309.0	307.3	308.4	309.1	310.0
9991	309.6	311.9	311.8	310.9	310.9	313.3	317.0	314.9	310.8	308.5	308.5	309.1	311.4
9995	309.4	310.4	310.4	311.8	314.5	316.5	319.5	319.0	314.2	312.1	309.9	309.6	313.1

mean	307.3	307.7	306.3	306.4	309.7	314.6	320.4	320.8	315.1	312.4	308.9	307.7	311.4
sd	7.4	7.6	8.0	8.7	10.0	10.3	10.8	10.2	9.2	8.7	7.8	7.7	8.6
max	316.7	316.2	316.7	319.0	324.9	330.4	338.3	338.5	328.4	325.2	319.9	318.2	323.7
min	276.1	276.5	275.3	275.8	276.7	279.3	283.1	284.5	280.9	279.0	277.3	276.6	278.4

Table 1.7.3 Monthly means of refractivity values at station level (N_S) in N-units
ident. is identification number, see table 1.7.1

ident	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	des	year
70	317.2	316.9	313.7	312.8	313.7	317.8	323.7	325.3	320.8	319.3	317.4	316.5	318.0
295	315.4	315.2	312.6	310.6	312.5	320.7	325.8	327.6	322.1	322.6	317.9	315.7	318.3
478	313.4	314.5	312.1	309.4	310.5	316.2	321.8	323.7	319.7	319.7	315.3	313.4	315.8
604	314.4	314.4	311.5	309.3	310.1	317.0	324.2	326.3	320.0	319.4	315.8	314.0	316.3
1040	317.1	316.0	313.5	313.6	316.5	321.5	326.6	326.7	321.0	319.6	316.9	316.4	318.8
1268	314.2	314.3	312.1	311.0	313.3	321.5	326.9	329.5	321.8	319.9	316.1	314.6	318.0
1572	315.4	315.1	312.7	312.8	315.6	318.8	323.3	324.8	320.7	318.7	315.9	314.6	317.4
1661	315.1	315.6	314.2	314.8	315.8	318.8	323.1	324.7	320.6	318.4	316.5	315.7	317.7
1715	313.3	313.8	312.3	309.8	312.9	320.2	326.5	329.3	323.2	322.0	316.1	314.0	317.8
1870	311.5	312.0	309.2	306.2	308.2	314.3	319.3	321.9	316.7	316.7	313.4	312.0	313.5
1896	315.0	315.9	315.1	313.8	316.4	324.6	330.5	331.8	324.1	322.9	317.4	315.1	320.2
1940	312.1	313.0	311.0	308.4	311.6	318.5	323.9	324.5	317.8	318.0	313.7	312.5	315.4
2342	314.0	313.9	310.9	308.3	307.0	311.6	312.3	318.4	315.2	316.7	314.6	313.5	313.1
2488	314.0	313.6	309.2	306.6	308.1	315.6	319.2	321.0	315.1	316.2	314.5	313.3	313.8
2750	315.2	315.7	314.9	315.8	323.0	330.6	338.6	338.8	327.9	325.1	318.5	316.1	323.4
2837	312.8	312.9	310.0	307.2	309.0	316.0	319.0	321.1	315.6	317.8	314.5	313.0	314.1
2880	313.2	313.2	310.5	308.2	310.1	316.7	320.8	322.2	317.3	317.5	314.7	313.3	314.8
3210	312.5	313.0	309.0	305.1	307.4	314.0	317.4	321.0	317.0	318.2	314.5	313.1	313.5
3293	316.7	316.7	315.2	313.9	313.0	317.6	320.3	324.8	321.8	322.1	318.4	316.8	318.1
3586	313.0	313.8	312.8	312.1	318.0	325.3	331.1	331.2	320.4	320.6	315.0	313.0	318.9
3620	314.5	315.0	314.1	314.6	321.4	328.4	334.2	334.4	323.6	324.0	317.1	315.3	321.4
3723	314.6	317.3	316.4	313.0	314.2	320.5	326.3	330.5	322.5	323.1	318.3	316.6	319.5
3904	313.0	313.2	312.0	310.0	313.0	319.9	322.9	326.0	320.7	321.0	315.7	313.8	316.8
3910	316.0	316.3	316.4	316.1	322.8	330.8	335.7	335.6	326.1	325.6	319.0	317.0	323.1
3969	315.4	315.3	314.0	312.3	315.4	322.3	325.8	328.5	323.4	323.1	317.8	315.9	319.1
4216	314.7	314.4	314.9	315.8	322.5	327.5	333.7	334.1	326.7	324.5	318.3	316.6	322.0
4350	313.7	312.5	311.9	310.6	314.3	318.9	324.9	327.6	323.4	321.9	316.7	315.8	317.7
4456	314.1	313.7	313.8	314.6	319.9	323.8	330.6	331.9	326.1	322.9	317.3	316.1	320.4
4661	313.6	312.6	310.9	310.2	313.5	319.2	325.1	327.6	322.7	320.1	315.6	314.4	317.1
4691	312.8	311.6	310.4	310.1	314.7	320.2	325.9	328.4	323.3	320.0	315.3	314.8	317.4
4721	314.1	313.4	313.5	315.2	319.4	324.3	330.0	331.2	324.9	321.8	316.8	315.5	320.0
4730	316.3	316.1	316.5	318.2	323.8	328.0	334.2	334.6	327.5	324.8	319.7	318.6	323.2
4833	317.3	316.8	317.3	319.7	325.6	330.0	335.9	336.1	329.1	325.5	320.6	318.8	324.4
4958	311.0	310.4	308.0	306.4	308.5	314.2	321.8	326.8	321.0	316.3	312.0	311.5	314.0
5013	312.6	311.6	311.1	311.4	317.5	323.3	330.8	332.5	325.4	319.5	315.1	313.9	318.7
5050	313.7	312.8	313.5	312.8	317.7	321.5	327.3	329.9	324.8	321.3	316.7	316.0	319.0
5054	312.1	310.9	310.9	310.3	315.4	320.0	326.1	327.9	322.6	319.3	314.9	314.2	317.0
5159	314.6	313.1	309.9	309.2	311.1	315.8	324.1	326.6	322.2	319.2	315.8	315.1	316.4
5413	310.3	309.6	306.1	305.4	309.0	313.2	318.8	323.3	319.2	315.2	311.6	310.3	312.6
5516	313.9	313.4	310.1	307.0	308.8	313.2	323.5	330.6	324.3	319.0	315.8	314.0	316.2
5980	313.1	314.1	313.6	317.1	322.4	326.0	331.8	331.4	323.6	320.7	316.4	315.4	320.5
6050	306.7	306.4	304.6	306.5	312.1	319.5	326.8	327.6	321.2	312.4	309.1	308.1	313.4
6099	309.3	310.4	309.9	312.4	317.1	321.6	327.4	327.9	321.1	316.5	311.8	310.8	316.3
6248	311.3	313.0	312.1	315.2	322.0	326.3	333.0	332.2	324.1	320.1	315.0	314.3	319.9
6371	311.5	308.7	310.2	310.5	313.9	321.5	326.7	326.6	319.6	314.5	313.2	313.0	315.8
6455	310.4	309.6	307.1	307.8	313.5	319.7	327.3	326.3	321.2	315.0	312.0	311.6	315.1
6594	310.8	311.7	310.3	313.2	318.5	323.3	328.6	328.2	320.8	317.7	313.1	311.3	317.3
6910	311.3	310.7	309.2	310.7	316.4	323.1	330.1	329.1	321.9	316.8	313.1	312.1	317.0
6933	311.8	311.3	309.5	308.3	312.1	317.5	324.2	326.0	320.9	316.1	313.0	312.1	315.3

Table 1.7.4 Monthly means of refractivity values reduced to mean sea level (N_0) in N-units. ident. is identification number, see table 1.7.1

ident	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	des	year
7155	311.8	311.9	310.9	313.7	320.1	326.2	332.3	330.8	323.6	319.2	314.1	312.6	318.9
7185	313.7	311.1	313.9	316.5	323.5	328.9	333.8	332.1	324.5	320.9	316.3	315.3	320.9
7199	312.3	313.1	312.3	315.7	322.3	327.2	332.7	330.4	322.4	319.0	314.4	313.3	319.6
7210	312.5	312.1	309.4	308.8	312.9	318.7	325.0	322.7	318.7	316.9	313.5	312.4	315.3
7362	312.5	312.7	309.4	309.3	312.1	314.9	322.2	322.8	319.3	316.7	313.5	312.5	314.8
7555	312.3	313.4	312.4	315.9	321.5	326.0	331.4	330.0	323.2	319.5	314.2	312.9	319.4
7742	314.2	314.9	312.0	312.5	314.9	318.2	326.0	324.7	320.0	317.8	314.5	314.1	317.0
7940	310.4	311.4	307.0	308.4	312.0	318.9	326.7	323.8	319.4	314.9	311.7	310.6	314.6
8229	309.1	310.2	308.4	310.8	315.9	321.1	329.3	326.5	318.3	314.5	310.2	309.4	315.3
8480	308.5	310.2	307.7	309.8	313.5	318.4	328.4	325.2	319.2	312.8	309.4	308.5	314.4
8591	311.8	313.8	313.3	316.5	320.0	325.1	331.0	329.2	321.9	318.5	313.8	311.9	318.9
8676	308.2	309.8	308.0	310.1	313.2	316.9	324.7	321.7	316.8	313.7	309.8	308.4	313.4
8711	308.9	310.2	309.7	312.4	316.7	322.0	328.1	326.4	319.0	314.4	310.8	308.6	315.6
8935	311.1	311.6	308.0	307.9	310.2	314.2	324.0	322.2	317.5	313.1	311.7	311.1	313.5
9045	307.9	309.1	306.7	308.7	310.7	313.9	322.3	320.1	315.3	311.6	309.6	307.8	311.9
9049	308.0	309.3	307.5	309.6	312.1	316.0	324.3	322.5	317.3	312.9	310.1	308.2	313.1
9080	307.7	309.5	308.9	311.9	316.0	320.9	326.7	323.9	317.8	313.0	309.8	308.1	314.5
9270	307.1	309.2	308.9	311.5	315.5	320.7	327.2	324.5	317.7	312.9	309.2	307.5	314.3
9314	309.2	310.1	309.1	309.0	312.1	317.6	323.0	320.2	315.9	311.5	309.1	308.7	313.0
9371	314.9	314.5	311.9	310.1	310.8	312.8	325.6	320.6	315.5	313.9	312.8	314.0	314.8
9450	309.7	311.6	311.6	313.1	316.6	321.0	325.6	324.6	319.1	314.6	311.5	305.6	315.4
9535	309.3	309.4	308.1	307.6	308.7	311.5	316.3	317.3	314.0	309.8	308.2	307.7	310.7
9640	310.3	311.9	312.5	314.6	317.8	322.4	328.0	325.6	320.1	314.8	311.2	309.4	316.5
9680	312.6	313.1	311.4	310.9	313.4	316.8	323.5	322.9	318.2	313.0	310.8	311.5	314.8
9725	316.2	315.3	312.2	310.3	311.4	313.7	321.2	322.3	317.9	314.4	313.8	315.4	315.3
9855	309.8	311.8	312.6	313.4	316.5	321.2	326.5	324.9	320.0	314.6	311.4	309.8	316.0
9937	312.2	312.4	311.4	310.9	311.8	314.0	319.8	320.1	317.3	313.9	311.3	311.1	313.9
9971	311.0	312.4	312.9	313.6	316.0	318.2	321.8	320.3	317.1	312.8	311.2	310.5	314.8
9972	312.8	314.1	313.8	313.8	313.6	315.5	318.2	317.7	314.5	312.1	312.2	312.4	314.2
9976	312.4	314.5	314.2	313.2	313.0	314.3	317.0	316.6	313.6	311.0	311.7	312.7	313.7
9984	310.9	312.6	312.2	310.9	310.5	311.3	314.4	313.2	310.2	308.5	309.6	310.3	311.2
9991	309.9	312.2	312.1	311.2	311.2	313.6	317.3	315.2	311.1	308.8	308.8	309.4	311.7
9995	309.8	310.8	310.8	312.2	314.9	316.9	319.9	319.4	314.6	312.5	310.3	310.0	313.5

mean	312.4	312.7	311.4	311.5	314.8	319.8	325.6	326.0	320.3	317.5	314.0	312.8	316.6
sd	2.5	2.2	2.6	3.1	4.4	4.8	5.2	5.0	3.8	4.1	3.0	2.9	3.0
max	317.3	317.3	317.3	319.7	325.6	330.8	338.6	338.8	329.1	325.6	320.6	318.8	324.4
min	306.7	306.4	304.6	305.1	307.0	311.3	312.3	313.2	310.2	308.5	308.2	305.6	310.7

Table 1.7.4 Monthly means of refractivity values reduced to mean sea level (N_0) in N-units. ident. is identification number, see table 1.7.1

figure 1.7.1.a Isolines of N_s, surface refractivity at station level. Yearly mean values.

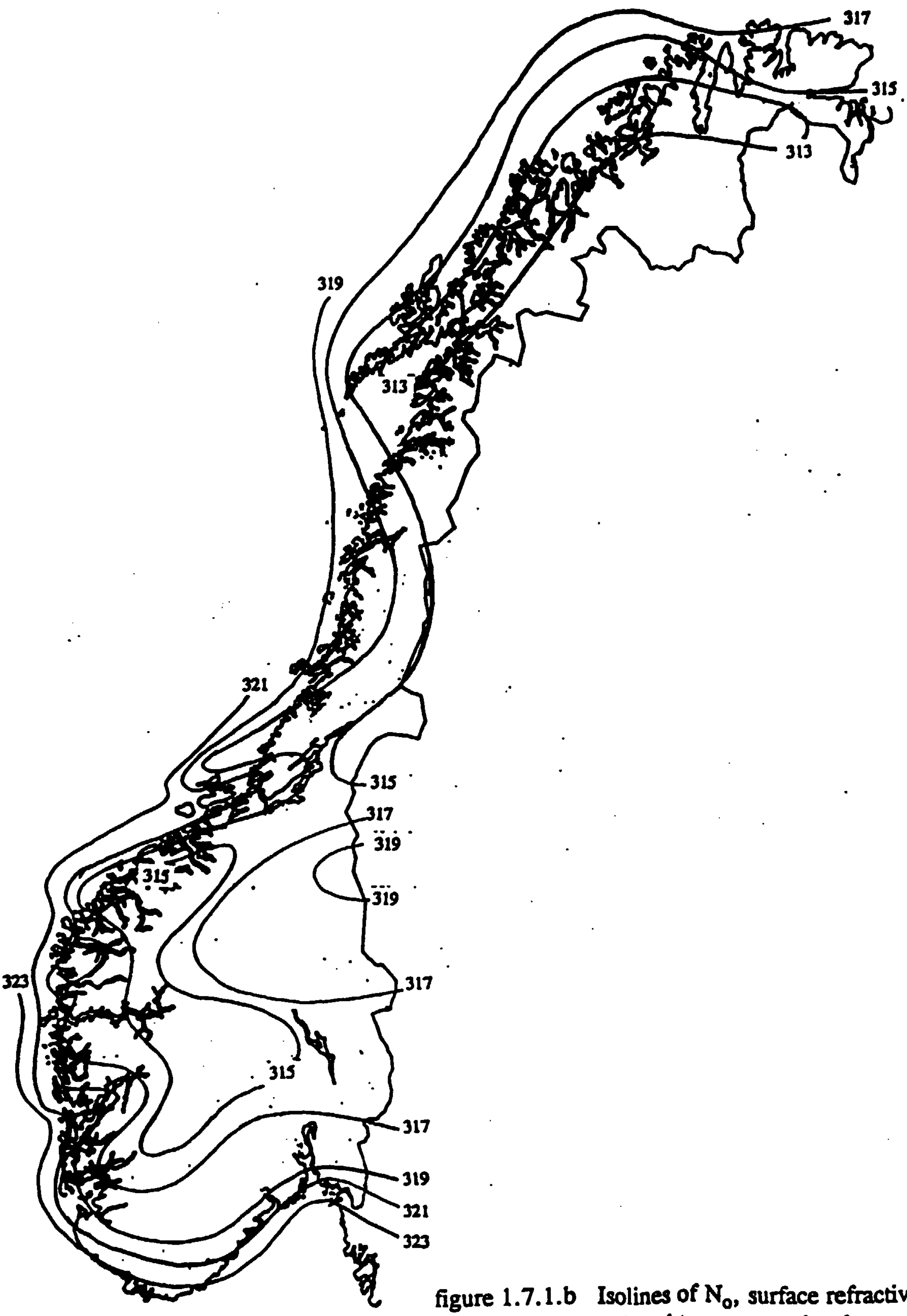


figure 1.7.1.b Isolines of N_0, surface refractivity reduced to mean sea level. Yearly mean values.

	A	B	C	cr	var
jan	328.8651	-0.2563		-0.5426	LAT
	313.8326	-0.1162		-0.3214	LON
	329.8713	-0.2764	0.0233	0.5450	LAT,LON
feb	322.1077	-0.1459		-0.3453	LAT
	313.4319	-0.0563		-0.1740	LON
	323.4354	-0.1724	0.0307	0.3527	LAT,LON
mar	317.8102	-0.1005		-0.2057	LAT
	312.0772	-0.0589		-0.1575	LON
	317.1849	-0.0880	-0.0145	0.2078	LAT,LON
apr	311.1975	0.0040		0.0067	LAT
	311.9879	-0.0443		-0.0981	LON
	307.6613	0.0745	-0.0819	0.1366	LAT,LON
may	323.3072	-0.1332		-0.1607	LAT
	316.5010	-0.1436		-0.2264	LON
	317.4677	-0.0167	-0.1352	0.2269	LAT,LON
jun	342.3765	-0.3527		-0.3881	LAT
	322.4339	-0.2216		-0.3186	LON
	339.0506	-0.2863	-0.0770	0.3969	LAT,LON
jul	348.7929	-0.3611		-0.3666	LAT
	327.8164	-0.1804		-0.2393	LON
	348.9360	-0.3639	0.0033	0.3665	LAT,LON
aug	366.5700	-0.6320		-0.6653	LAT
	330.0578	-0.3330		-0.4580	LON
	365.5033	-0.6108	-0.0247	0.6658	LAT,LON
sep	351.9460	-0.4935		-0.6930	LAT
	323.3768	-0.2553		-0.4683	LON
	351.4798	-0.4842	-0.0108	0.6929	LAT,LON
oct	359.3263	-0.6516		-0.8406	LAT
	321.6283	-0.3384		-0.5704	LON
	358.5990	-0.6370	-0.0168	0.8410	LAT,LON
nov	341.3438	-0.4270		-0.7650	LAT
	316.7383	-0.2300		-0.5383	LON
	340.2401	-0.4050	-0.0256	0.7662	LAT,LON
dec	335.9120	-0.3600		-0.6650	LAT
	315.3954	-0.2129		-0.5138	LON
	333.5279	-0.3124	-0.0552	0.6725	LAT,LON
year	337.5844	-0.3277		-0.5833	LAT
	318.7830	-0.1833		-0.4262	LON
	336.2196	-0.3004	-0.0316	0.5860	LAT,LON

Table 1.7.5 Regresion coefficients and correlation for the relation N_o = f(LATITUDE,LONGITUDE).

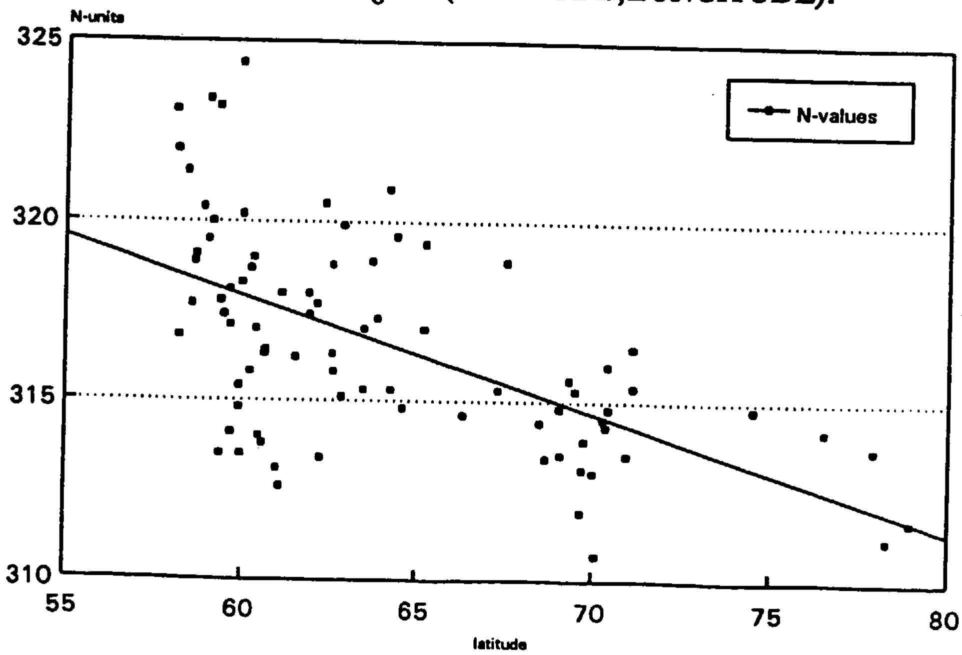


figure 1.7.2 Refractive index reduced to mean sea level, N_o latitude dependence, yearly values.

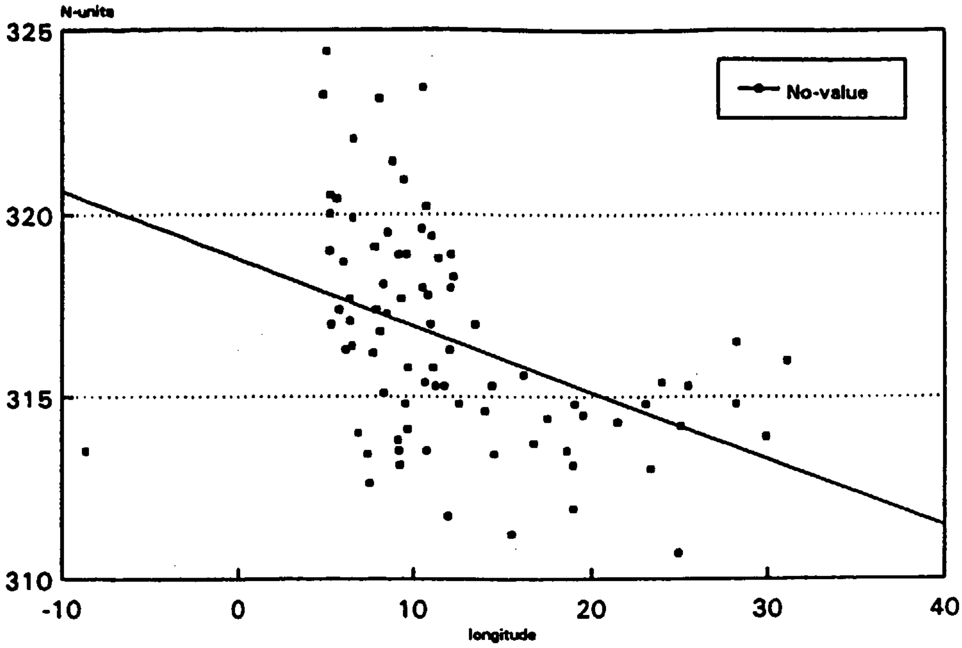


figure 1.7.3 Refractive index reduced to mean sea level, N_0 longitude dependence, yearly values.

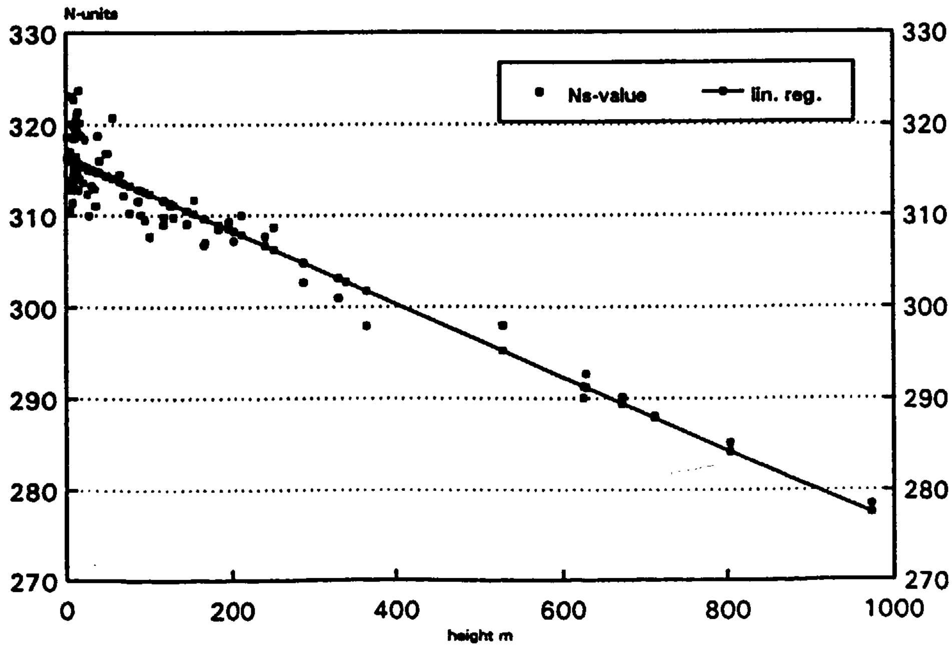


figure 1.7.4 Refractive index at station level, N_s dependence of height, yearly values.

2. Investigation of the fine structure of surface refractivity.

To investigate the fine structure of surface refractivity we have to look for meteorological observations with high resolution in time. Our main airports do make observations every hour, but unfortunately this observations are not routinely put into computerized form.

However, two periods from the airport Fornebu, 1976-1981 and 1985-1987 and one period from the airport Flesland, 1976-1981 of hourly meteorological data can form the basis for computing hourly values of the refractive index in N-units.

The data set for the six year period consists of 52560 values of the refractive index for each station and together with the three year period from Fornebu the total data set contains 131400 hourly values of the surface refractive index.

To have the possibility of direct comparison between the two stations Fornebu in the eastern part of Norway and Flesland situated on the west coast, we analyse first the period 1976-1981 for each station (105120 hourly values) and then give a summary for the two periods for Fornebu, a total of nine years with 78840 hourly values.

As previously said the choice of the specific three year period is mainly done by which data periods that are computerized within the ten year period 1982 to 1991, and not as the "most suitable" three year period within the ten year period.

2.1 Summary of the hourly values of surface refractivity

To give a first survey of the hourly values of surface refractivity we compile monthly means with standard deviation and hourly maximum and minimum values for each station in tables 2.1.1, 2.1.2 and 2.1.3, the two periods for Fornebu is given separately.

A resume of the whole period 1976-1981 for the dry and wet component together with the total refractivity for the two stations are shown in table 2.1.4. In table 2.1.5 is the last period for Fornebu included.

Fornebu		1976	1977	1978	1979	1980	1981
january	mean	306.6	310.6	310.1	311.3	311.9	307.7
	sd	6.0	5.0	4.2	5.1	3.8	7.8
	max	318.0	321.8	317.6	323.4	320.4	320.3
	min	290.2	297.2	293.3	299.5	300.4	286.9
february	mean	314.0	309.0	312.1	310.1	314.6	310.6
	sd	4.8	3.1	3.5	6.3	3.0	6.1
	max	322.4	315.9	319.4	326.7	322.2	322.3
	min	294.8	300.3	301.4	293.3	302.5	290.4
march	mean	308.3	312.4	308.8	307.4	308.9	307.3
	sd	6.6	5.1	4.8	3.2	5.1	3.9
	max	322.3	322.6	318.5	315.1	321.2	317.8
	min	288.5	298.6	297.2	294.7	291.5	293.4
april	mean	306.7	306.0	306.0	310.8	308.0	306.2
	sd	7.8	6.0	7.0	5.9	8.1	8.7
	max	320.9	322.1	320.1	322.9	321.7	323.9
	min	287.4	289.3	288.7	285.0	285.2	285.1
may	mean	311.2	308.7	309.9	315.7	308.8	314.0
	sd	7.7	8.3	9.0	10.6	10.4	9.9
	max	331.2	326.8	332.8	342.9	331.4	341.0
	min	289.9	287.6	286.8	286.7	285.9	290.7
june	mean	314.3	317.5	312.9	320.7	324.0	316.6
	sd	12.6	12.5	10.2	10.6	8.8	8.1
	max	344.3	349.3	340.3	348.4	347.4	352.5
	min	284.9	284.7	285.2	295.9	295.8	297.0
july	mean	317.0	316.8	321.0	320.9	323.7	324.1
	sd	13.9	10.2	11.6	9.8	6.7	8.9
	max	353.5	344.5	350.8	340.8	349.6	348.9
	min	287.5	292.2	297.1	291.6	294.0	296.5
august	mean	316.2	320.9	322.7	323.2	321.7	318.5
	sd	9.9	9.8	12.7	9.4	11.2	12.9
	max	344.2	341.7	353.8	346.7	348.6	349.2
	min	287.7	290.0	292.9	296.8	298.2	292.4
september	mean	314.1	315.6	314.1	316.9	321.8	319.9
	sd	10.8	10.6	9.1	12.7	8.4	7.1
	max	334.4	342.0	336.5	348.6	346.4	341.0
	min	282.7	288.8	288.2	292.0	294.7	295.5
october	mean	318.0	319.8	315.7	317.7	309.4	313.3
	sd	4.5	7.5	9.5	5.9	5.5	6.4
	max	327.8	333.1	333.9	332.7	325.0	329.5
	min	304.4	298.8	290.5	298.2	291.6	296.6
november	mean	313.7	308.9	312.1	310.6	309.4	311.1
	sd	5.1	6.2	7.6	4.6	5.5	6.0
	max	321.9	326.9	328.1	322.6	323.1	324.8
	min	296.5	292.9	292.6	296.7	296.6	296.1
december	mean	309.4	313.3	312.4	309.6	307.8	308.2
	sd	4.9	4.8	4.2	5.0	4.6	3.9
	max	316.8	321.6	321.0	319.6	316.0	319.0
	min	294.4	299.1	301.6	294.0	291.2	296.2

Table 2.1.1 Monthly mean, standard deviation for the month given together with maximum and minimum hourly value for Fornebu in the period 1976-1981.

Fornebu		1985	1986	1987
january	mean	310.5	307.4	313.1
	sd	5.2	4.9	7.1
	max	321.8	322.5	327.4
	min	297.0	292.1	291.1
february	mean	314.9	313.4	309.8
	sd	5.1	3.8	5.1
	max	327.1	320.0	323.9
	min	302.5	298.2	292.1
march	mean	310.8	313.1	312.5
	sd	7.7	6.7	5.1
	max	323.4	324.3	323.2
	min	290.0	287.2	293.9
april	mean	307.0	308.6	312.4
	sd	7.9	8.1	8.2
	max	322.7	327.5	326.8
	min	282.6	286.4	286.3
may	mean	314.1	316.1	311.5
	sd	11.4	9.2	10.0
	max	345.2	335.6	330.1
	min	283.2	284.7	283.8
june	mean	321.5	320.5	324.7
	sd	11.9	12.4	7.2
	max	344.6	351.9	345.6
	min	288.3	283.5	297.3
july	mean	327.6	323.3	322.3
	sd	10.7	15.0	13.3
	max	348.7	355.0	353.9
	min	295.2	282.3	287.6
august	mean	326.8	323.5	324.7
	sd	9.6	10.2	10.7
	max	347.9	346.0	347.4
	min	295.0	293.4	291.6
september	mean	315.1	310.9	319.6
	sd	10.4	9.3	11.5
	max	337.1	330.9	344.2
	min	287.4	286.4	286.6
october	mean	319.4	316.2	324.1
	sd	9.4	10.0	5.9
	max	338.3	334.8	336.4
	min	286.5	284.0	297.1
november	mean	308.1	313.3	315.6
	sd	8.8	7.0	4.8
	max	325.0	327.9	326.6
	min	284.2	289.8	286.9
december	mean	310.6	309.7	312.4
	sd	3.6	7.1	5.5
	max	322.5	325.3	321.4
	min	298.9	289.2	286.3

Table 2.1.2 Monthly mean, standard deviation for the month given together with maximum and minimum hourly value for Fornebu in the period 1985-1987.

Flesland		1976	1977	1978	1979	1980	1981
january	mean	307.5	307.3	308.6	307.3	308.3	311.3
	sd	5.1	5.5	6.4	5.8	7.6	9.0
	max	322.0	322.0	325.4	322.6	326.8	327.5
	min	291.8	294.1	285.6	294.4	292.2	286.0
february	mean	311.4	305.0	306.8	309.3	312.3	310.1
	sd	4.9	4.7	4.1	4.8	6.2	6.6
	max	321.5	317.9	317.8	320.6	323.3	325.5
	min	300.8	293.9	297.3	291.2	289.4	292.1
march	mean	306.2	310.1	308.0	305.5	307.3	307.3
	sd	4.6	5.2	6.7	4.9	6.5	6.7
	max	318.0	322.3	323.4	318.0	318.5	319.9
	min	295.2	291.7	282.6	287.2	289.6	285.8
april	mean	311.6	306.3	309.2	308.6	313.7	313.0
	sd	6.3	5.2	6.5	7.4	7.5	7.6
	max	342.1	319.4	327.8	320.4	326.4	327.5
	min	295.0	288.9	283.2	284.0	293.6	288.8
may	mean	312.9	313.1	314.1	312.9	315.3	314.4
	sd	7.0	5.7	7.3	7.3	8.7	11.6
	max	343.0	337.6	335.3	332.0	330.1	339.5
	min	290.0	299.4	296.4	282.8	285.3	286.1
june	mean	321.1	316.5	321.1	321.8	325.6	321.3
	sd	8.4	5.8	6.1	5.8	8.5	7.1
	max	343.8	342.9	354.1	341.5	346.0	339.8
	min	296.9	299.1	281.2	304.5	277.0	287.0
july	mean	327.8	319.4	321.4	321.2	325.2	324.9
	sd	8.4	6.1	7.4	5.2	9.0	7.8
	max	350.3	346.4	351.0	334.6	353.1	343.1
	min	282.6	301.3	291.7	280.8	285.4	305.9
august	mean	326.8	321.4	323.0	321.1	327.7	327.3
	sd	7.3	6.6	6.2	6.2	9.0	8.3
	max	347.8	341.3	335.7	335.5	348.5	346.6
	min	302.3	305.3	289.8	288.6	303.2	279.5
september	mean	316.7	315.7	313.9	322.3	326.9	321.7
	sd	6.3	5.9	5.8	7.3	9.0	8.4
	max	336.2	335.0	324.6	344.9	341.6	340.7
	min	299.4	299.3	285.1	296.5	275.8	289.8
october	mean	310.6	319.7	316.3	316.4	311.3	311.9
	sd	6.0	7.2	5.9	9.8	8.2	6.8
	max	323.2	337.5	336.7	337.6	332.1	334.8
	min	283.9	298.3	290.8	280.7	277.1	292.1
november	mean	312.4	309.0	312.5	311.8	310.4	311.9
	sd	6.3	6.1	6.1	5.8	6.3	5.8
	max	329.3	324.2	326.8	328.1	323.6	327.2
	min	294.8	287.6	289.3	298.4	294.5	293.7
december	mean	306.3	312.3	306.6	307.8	310.3	304.5
	sd	6.4	7.0	5.2	8.0	7.4	5.6
	max	319.0	326.5	319.8	323.1	324.1	327.6
	min	290.4	294.0	292.1	286.8	286.5	292.7

Table 2.1.3 Monthly mean, standard deviation for the month given together with maximum and minimum hourly value for Flesland in the period 1976-1981.

period		wet component		dry componentr		total refractivity	
1976-1981		5050	1940	5050	1940	5050	1940
january	mean	23.4	17.3	285.0	292.4	308.4	309.7
	sd	8.0	6.4	5.7	7.9	6.8	5.8
	max	46.7	36.8	304.9	320.1	327.5	323.4
	min	3.6	3.3	265.5	266.9	285.6	286.9
february	mean	22.3	16.5	286.8	295.3	309.1	311.8
	sd	7.8	6.7	5.9	8.2	5.9	5.1
	max	45.1	34.8	305.4	321.3	325.5	326.7
	min	2.7	3.2	267.4	272.1	289.4	290.4
march	mean	24.8	21.0	282.6	287.8	307.4	308.9
	sd	7.3	6.9	5.4	6.5	6.0	5.2
	max	43.5	39.5	300.8	313.7	323.4	322.6
	min	1.9	4.9	269.8	269.9	282.6	288.5
april	mean	28.7	24.5	281.7	282.8	310.4	307.3
	sd	6.5	7.0	4.3	5.0	7.3	7.5
	max	65.3	40.9	294.0	297.9	342.1	323.9
	min	3.7	9.3	268.5	267.2	283.2	285.0
may	mean	36.7	35.3	277.1	276.1	313.8	311.4
	sd	8.4	10.4	4.6	5.1	8.2	9.7
	max	65.7	70.4	290.4	293.6	343.0	342.9
	min	3.7	11.2	263.3	262.0	282.8	285.9
june	mean	47.6	47.0	273.7	270.7	321.2	317.7
	sd	8.3	11.4	3.6	4.0	7.5	11.3
	max	86.2	87.3	286.3	284.4	354.1	352.5
	min	10.7	16.8	261.6	258.0	277.0	284.7
july	mean	51.2	51.2	272.1	269.3	323.3	320.6
	sd	8.4	10.5	3.3	3.6	8.0	10.8
	max	82.0	86.4	282.9	281.1	353.1	353.5
	min	7.3	22.4	260.8	258.4	280.8	287.5
august	mean	51.5	49.3	273.1	271.2	324.6	320.5
	sd	8.6	11.4	3.5	4.0	7.9	11.3
	max	80.6	85.9	283.6	283.0	348.5	353.8
	min	5.5	21.6	260.8	259.0	279.5	287.7
september	mean	44.4	41.6	275.1	275.5	319.5	317.1
	sd	9.6	10.9	4.0	4.9	8.5	10.4
	max	75.5	80.8	290.7	292.5	344.9	348.6
	min	4.0	16.4	263.1	260.1	275.8	282.7
october	mean	37.2	35.1	277.2	280.6	314.4	315.7
	sd	10.1	9.5	5.0	6.1	8.1	7.6
	max	67.1	59.7	294.0	301.4	337.6	333.9
	min	3.5	13.4	262.2	263.7	277.1	290.5
november	mean	31.1	26.0	280.2	284.9	311.3	311.0
	sd	8.5	8.3	6.1	7.4	6.2	6.1
	max	54.1	53.4	301.7	306.5	329.3	328.1
	min	1.7	8.1	265.9	265.4	287.6	292.6
december	mean	23.8	18.7	284.2	291.4	308.0	310.1
	sd	9.8	7.4	6.5	8.1	7.2	5.0
	max	50.4	42.0	303.9	315.3	327.6	321.6
	min	1.9	4.4	267.5	271.0	286.5	291.2

Table 2.1.4 Mean values for the period 1976-1981 of hourly values with standard deviation and hourly maximum and minimum values of wet and dry component of the refractivity together with total refractivity for 1940 Fornebu and 5050 Flesland.

		Flesland 1976-81	Fornebu 1976-81	Fornebu 1985-87
january	mean	308.4	309.7	310.3
	sd	6.8	5.8	6.3
	max	327.5	323.4	327.4
	min	285.6	286.9	291.1
february	mean	309.1	311.8	312.7
	sd	5.9	5.1	5.2
	max	325.5	326.7	327.1
	min	289.4	290.4	292.1
march	mean	307.4	308.9	312.1
	sd	6.0	5.2	6.7
	max	323.4	322.6	324.3
	min	282.6	288.5	287.2
april	mean	310.4	307.3	309.3
	sd	7.3	7.5	8.4
	max	342.1	323.9	327.5
	min	283.2	285.0	282.6
may	mean	313.8	311.4	313.9
	sd	8.2	9.7	10.4
	max	343.0	342.9	345.2
	min	282.8	285.9	283.2
june	mean	321.2	317.7	322.3
	sd	7.5	11.3	10.9
	max	354.1	352.5	351.9
	min	277.0	284.7	283.5
july	mean	323.3	320.6	324.4
	sd	8.0	10.8	13.3
	max	353.1	353.5	355.0
	min	280.8	287.5	282.3
august	mean	324.6	320.5	325.0
	sd	7.9	11.3	10.3
	max	348.5	353.8	347.9
	min	279.5	287.7	291.6
september	mean	319.5	317.1	315.2
	sd	8.5	10.4	11.0
	max	344.9	348.6	344.2
	min	275.8	282.7	286.4
october	mean	314.4	315.7	319.9
	sd	8.1	7.6	9.2
	max	337.6	333.9	338.3
	min	277.1	290.5	284.0
november	mean	311.3	311.0	312.4
	sd	6.2	6.1	7.7
	max	329.3	328.1	327.9
	min	287.6	292.6	284.2
december	mean	308.0	310.1	310.9
	sd	7.2	5.0	5.7
	max	327.6	321.6	325.3
	min	286.5	291.2	286.3

Table 2.1.5 Monthly means with standard deviation and maximum and minimum hourly value within the month for Fornebu and Flesland in the periods 76/81 , 85/87.

To investigate the possible difference between the two different periods from Fornebu, we apply a method designed by Welch [12]. Since the group samples are quite small, respectively 6 years and 3 years the computed standard deviations are quite uncertain as "grand" values and a normal t-test probably will fail. We therefore compute the degrees of freedom as

$$d = (1+w)^2 /[(w^2/n_1-1) + (1/n_2-1)]$$

where n_1 and n_2 are total numbers of data in group 1 and 2.

The value of w is given as $w = [var_1/n_1] / [var_2/n_2]$ and the var_n the variances for the two groups.d will thus be the modified degrees of freedom to determine the critical t-value in a t-distribution. The test variable t for the difference in the means is computed as usual.

This procedure give the following results:

month	t-value	deg. of freedom	critical t-value 90% 80%
1	-0.13824	3.78259	
2	-0.24634	4.01496	
3	-0.72522	3.26758	
4	-0.34871	3.67838	
5	-0.34757	3.82848	
6	-0.58952	4.23755	>2. >1.4
7	-0.42916	3.38884	
8	-0.59790	4.48221	
9	0.24871	3.87746	
10	-0.68277	3.43760	
11	-0.27475	3.32131	
12	-0.20658	3.62061	

Table 2.1.6 t-values for the difference in the monthly means for the periods 1976-1981 and 1985-1987 together with degrees of freedom and corresponding critical t-value for 90% and 80% level.

We thus find no significant difference with given level of confidence for the means of the monthly values for the two periods 1976-1981 and 1985-1987 with hourly values.

In figure 2.1.1 is given an example of the hourly distribution of the refractivity values. Remembering the magnitude of the monthly standard deviations in tables 2.1.1 to 2.1.3 we can expect steep distributions in winter time and rather flat distributions in the warmer season. This should be more pronounced for the "inland" station Fornebu than for the more maritime influenced station Flesland.

From the figure this shows up clearly.

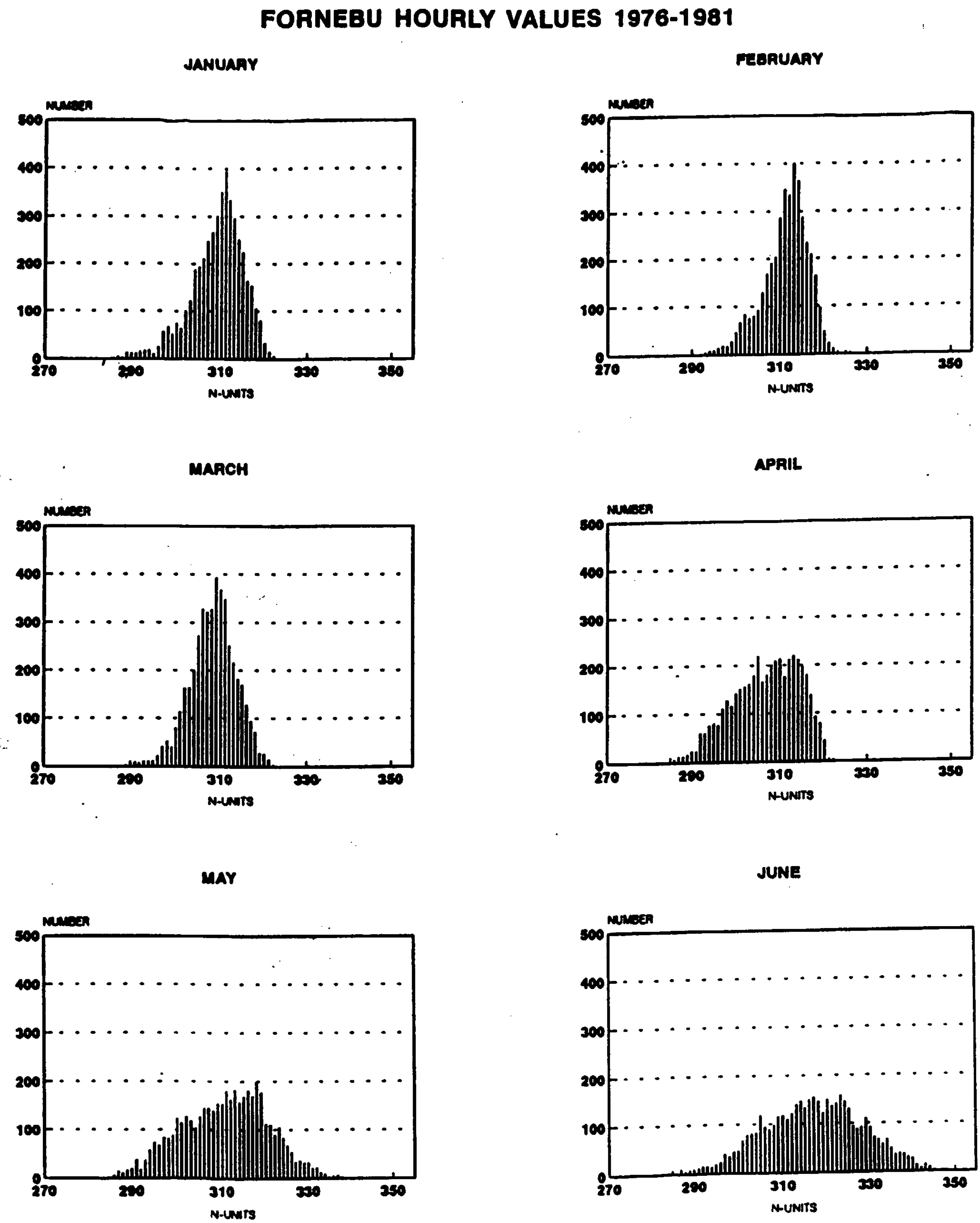


figure 2.1.1 Hourly distribution of refractivity values.

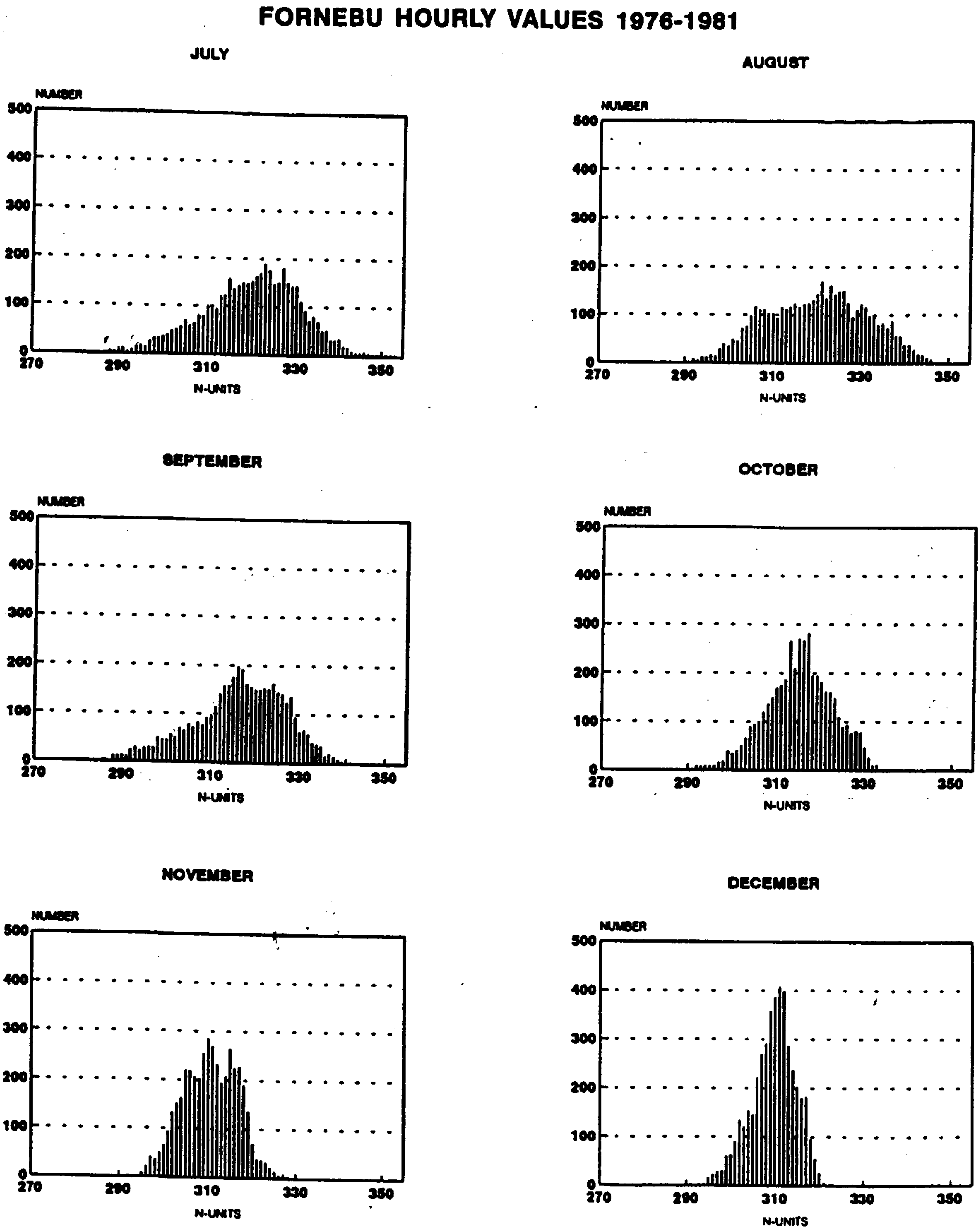


figure 2.1.1 Hourly distribution of refractivity values.

2.2 Persistence of the surface refractivity

To investigate the stability in time of the values of surface refractivity, we can, from the computed N-values, count the number of one-hour periods consecutively where the N-values are in the range N to N+0.99.

We thus obtain a distribution of period length in hours i.e. 1 hour, 2 hours etc., for each interval of the refractivity in N-values where N is seen as constant in the interval N to N+0.99.

From the look at the monthly distribution of the N-values at the surface it could be expected that the longest stable periods in N occur in the winter months. We have at this time a rather "steep" distribution with narrow limits of N-values.

Accordingly the "flat" distribution of the refractivity in the summer months should give shorter periods of stable N, but with N-values in a broader scale.

In both cases we should expect most cases in the shorter periods (1 to 3 hours) where the refractivity is in transition from one level of N-values to another.

It could also be argued from a purely meteorological point of view that stable N-values depends on stable meteorological conditions, often in connection with stable high pressure situations.

In such situations will, in the summer, the temperature often have a marked daily course with high maximum values and relatively low minimum values depending on the high solar radiation influx in the day (no clouds) and accordingly a high nightly radiation loss. This will cause a broad variation in the N-values.

In the winter time such a situation will not give cause to such a broad range of temperatures due to lower values of the insolation. In addition the humidity of the air will be more stable due to solid precipitation and negligible evaporation. This implies a more constant N-value in time.

This should be more marked in the data from Fornebu rather than for Flesland. Flesland is situated in a more maritime environment with more frequent advectively caused changes in the air masses.

The tables should also reflect the fact that in summer the eastern part represented by Fornebu, should have slightly shorter periods in summer due to more convective weather situations than the western part.

An investigation of the 105120 values of the surface refractivity for the stations Fornebu and Flesland in the periods 1976-1981 and 1985-1987 show these features.

A synopsis of the refractivity pr month and the maximum period in hours with the corresponding refractivity in whole N-units is given in the tables below.

month	monthly refractivity range of N-values		maximum period hours	corresponding refractivity N-value(s)
1	287	324	17	310
2	291	327	15	321/314
3	289	323	14	319
4	286	324	13	313
5	286	342	10	317
6	285	353	7	326/324/314
7	288	354	7	323/315
8	288	354	6	326
9	283	349	9	329
10	291	333	18	314
11	293	329	15	319
12	294	322	18	310

Table 2.2.1 Maximum period length in hours with corresponding refractivity in N-values for Fornebu in the period 1976-1981

month	monthly refractivity range of N-values		maximum period hours	corresponding refractivity N-value(s)
1	291	328	17	320
2	292	327	17	321
3	287	324	15	317
4	283	327	15	321
5	283	345	8	302
6	284	352	8	336/332
7	282	355	6	330
8	292	348	7	331
9	285	344	10	324
10	284	338	10	327/325
11	284	328	18	322
12	286	325	16	314

Table 2.2.2 Maximum period length in hours with corresponding refractivity in N-values for Fornebu in the period 1985-1987

month	monthly refractivity range of N-values		maximum period hours	corresponding refractivity N-value(s)
1	286	327	13	310
2	290	326	13	321
3	283	324	14	313
4	284	343	10	321
5	283	343	9	315
6	278	355	9	329
7	281	354	8	311
8	280	349	7	338/329/319
9	276	345	9	340
10	278	337	12	324
11	288	330	10	318/308
12	287	327	15	303

Table 2.2.3 Maximum period length in hours with corresponding refractivity in N-values for Flesland in the period 1976-1981

We note for the two periods from Fornebu that even if the values of the monthly refractive range is approximately the same, the refractivity values corresponding to the longest continuos periods in hours are in cases considerably greater in the latter period, about 10 N-units. This is in accordance with the results from paragraph 1.5 concerning yearly trends in the refractivity. Here it was established that from 1980 of the yearly value of the refractivity had an ascending tendency, this should also reflect in the distribution.

To get an idea of the probability of stable periods we have made figures 2.2.1 to 2.2.3. It is to be expected that the distribution of rare events, say the longest periods follows some kind of an exponential distribution, the Gumbel distribution is an example of this. We have therefore given the observed frequencies together with a fitted exponential. To emphasise the rare events the figures are given in a logarithmic scale. The above mentioned features show clearly the seasonal variability in the distribution of the longest periods.

The best known measure of persistence for a continuos variable (i.e. a variable which can assume any value within its range) is the coefficient of "auto correlation". If $x_1, x_2, x_3, ..x_n$ are the deviations on N successive observations from the mean over the whole period, the coefficient of the auto correlation when N is large is given by

$$r_k = \Sigma(xi\ x_{i+k})/[(N-k)\ sd^2]$$

where the sum is taken from i=1 to N-k and sd is the standard deviation of the whole series and N the total number of data. k is the "lag", or the difference between the correlated observations, k=1,2,3....n.

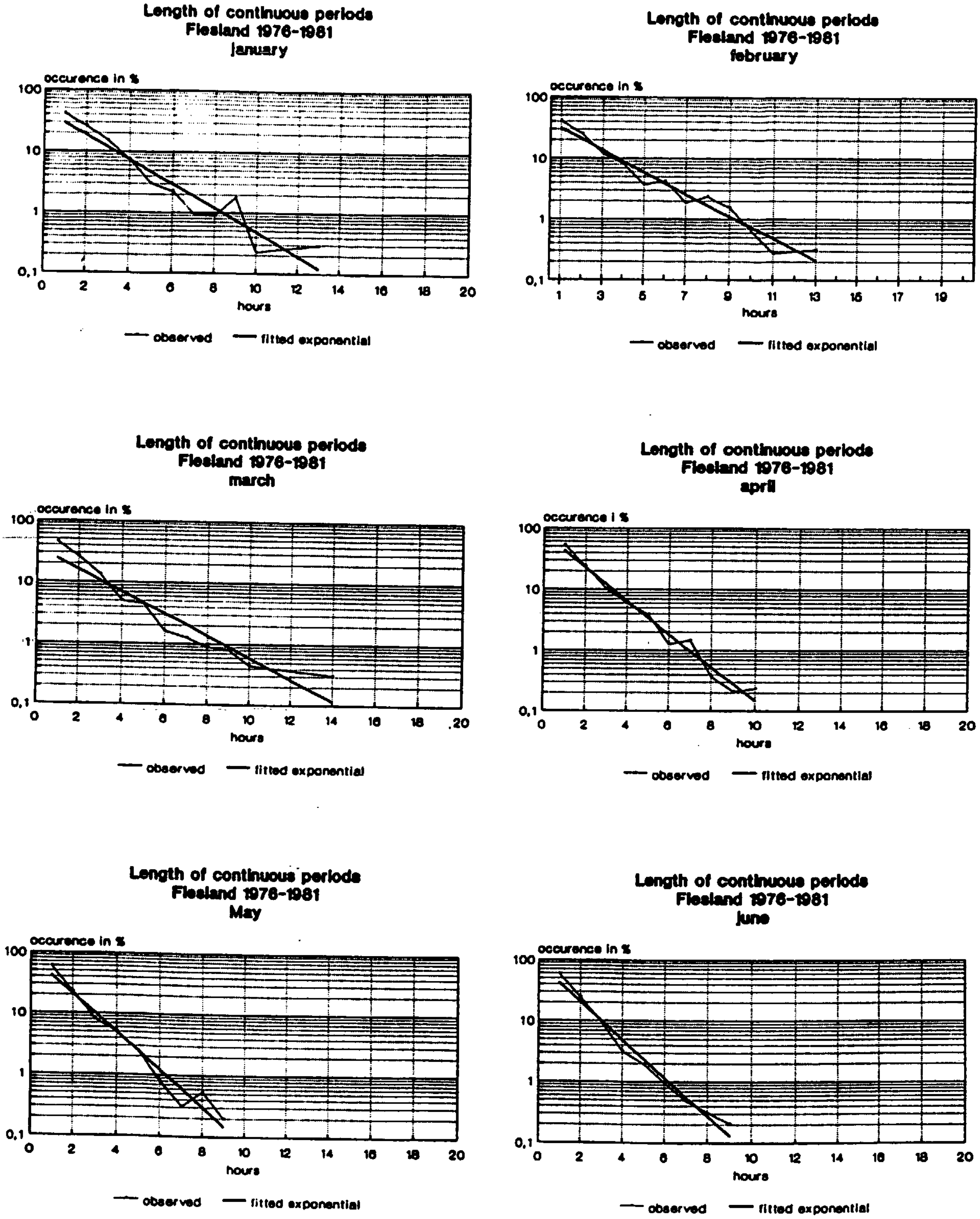


Figure 2.2.1 Length of continous periods with stable N-values, Flesland (1976-1981)

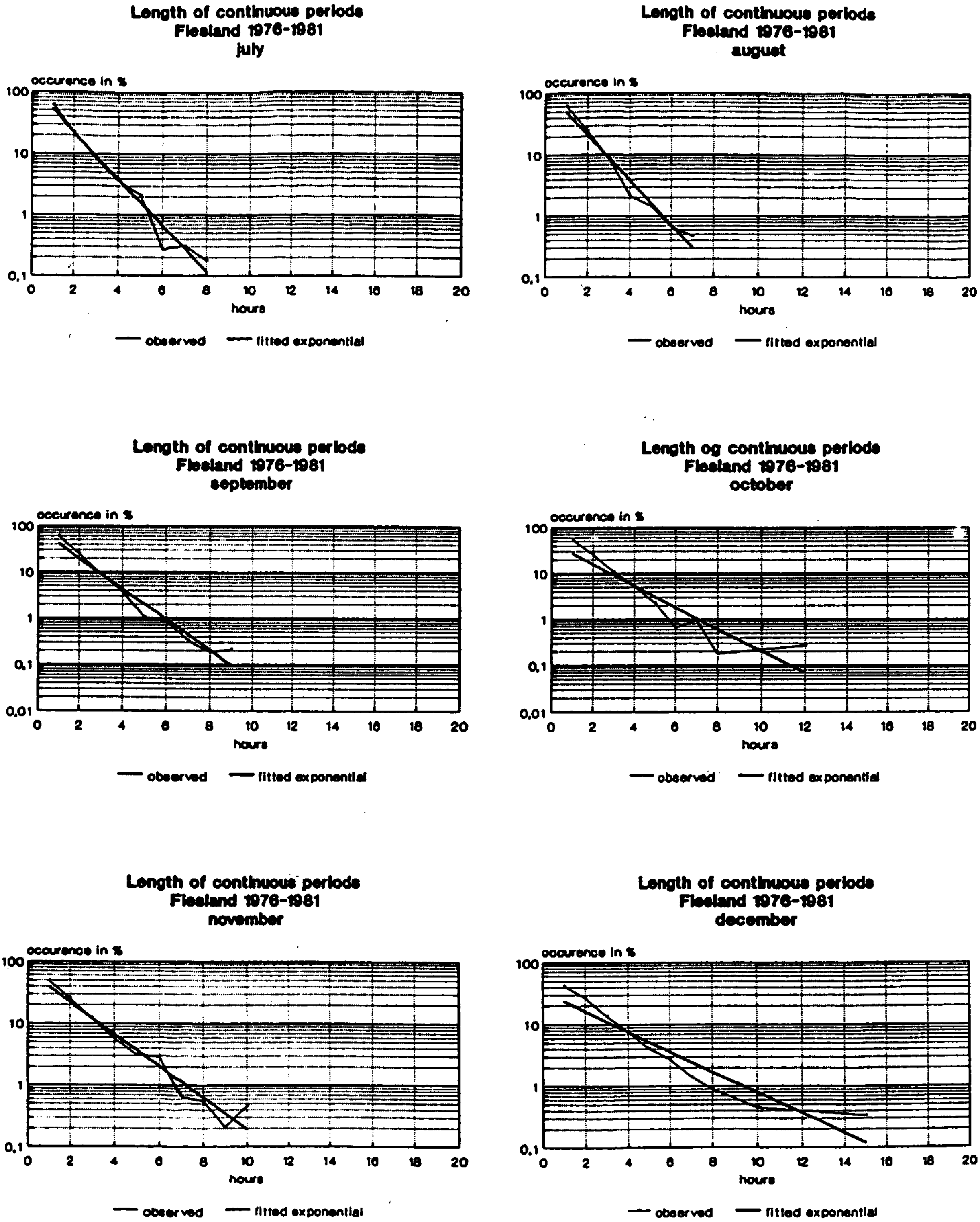


Figure 2.2.1 Length of continous periods with stable N-values, Flesland (1976-1981)

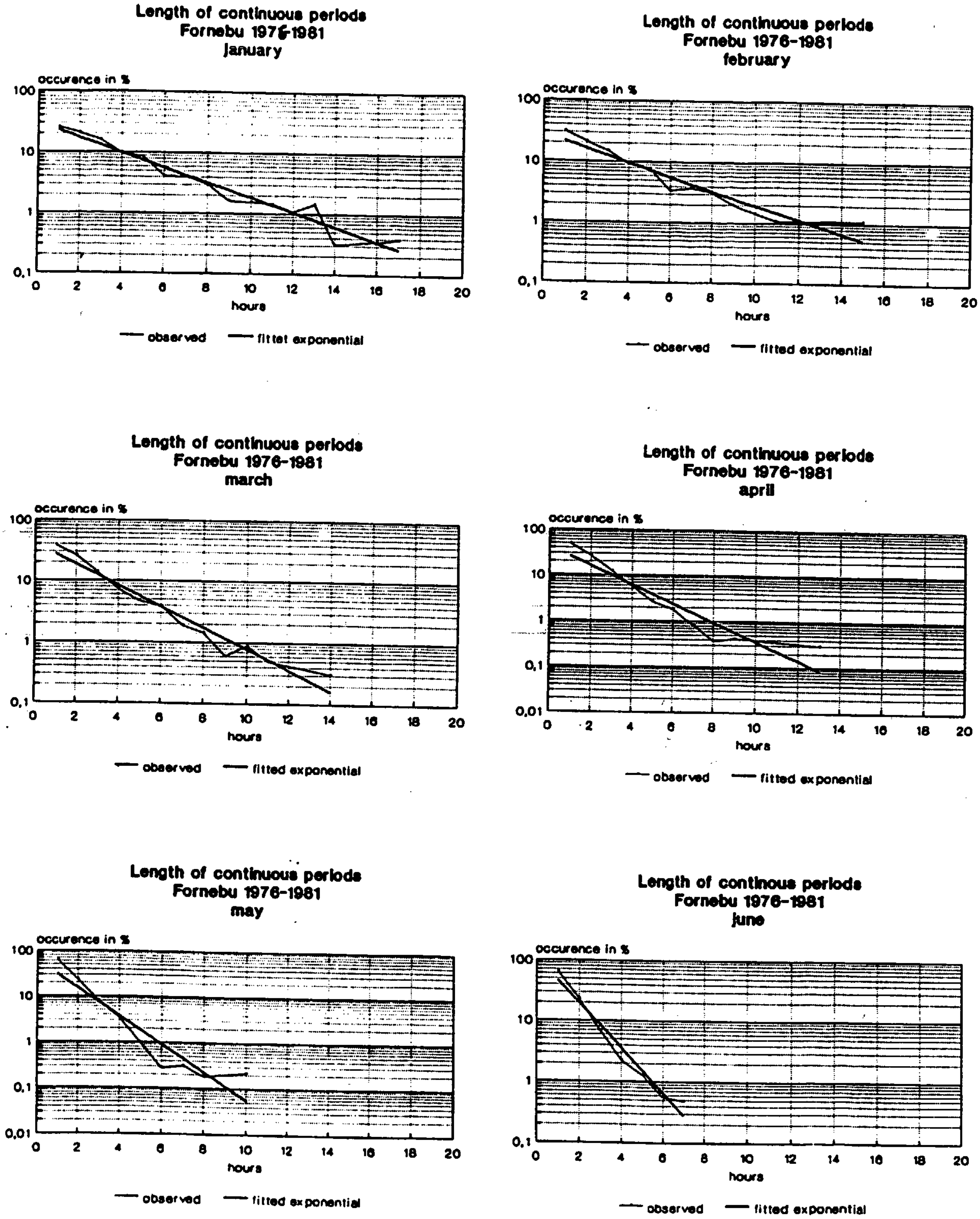


Figure 2.2.2 Length of continous periods with stable N-values, Fornebu (1976-1981)

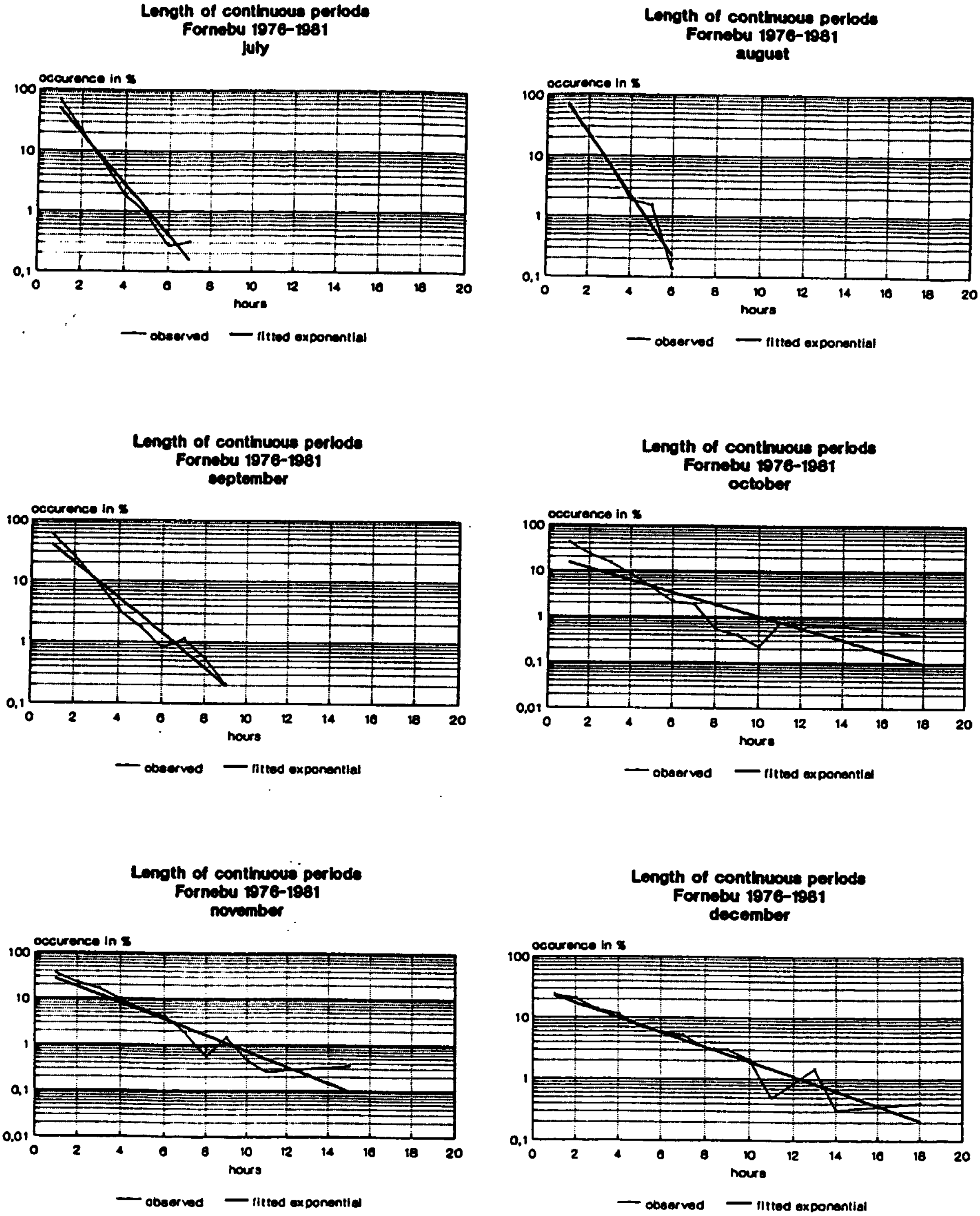


Figure 2.2.2 Length of continous periods with stable N-values, Fornebu (1976-1981)

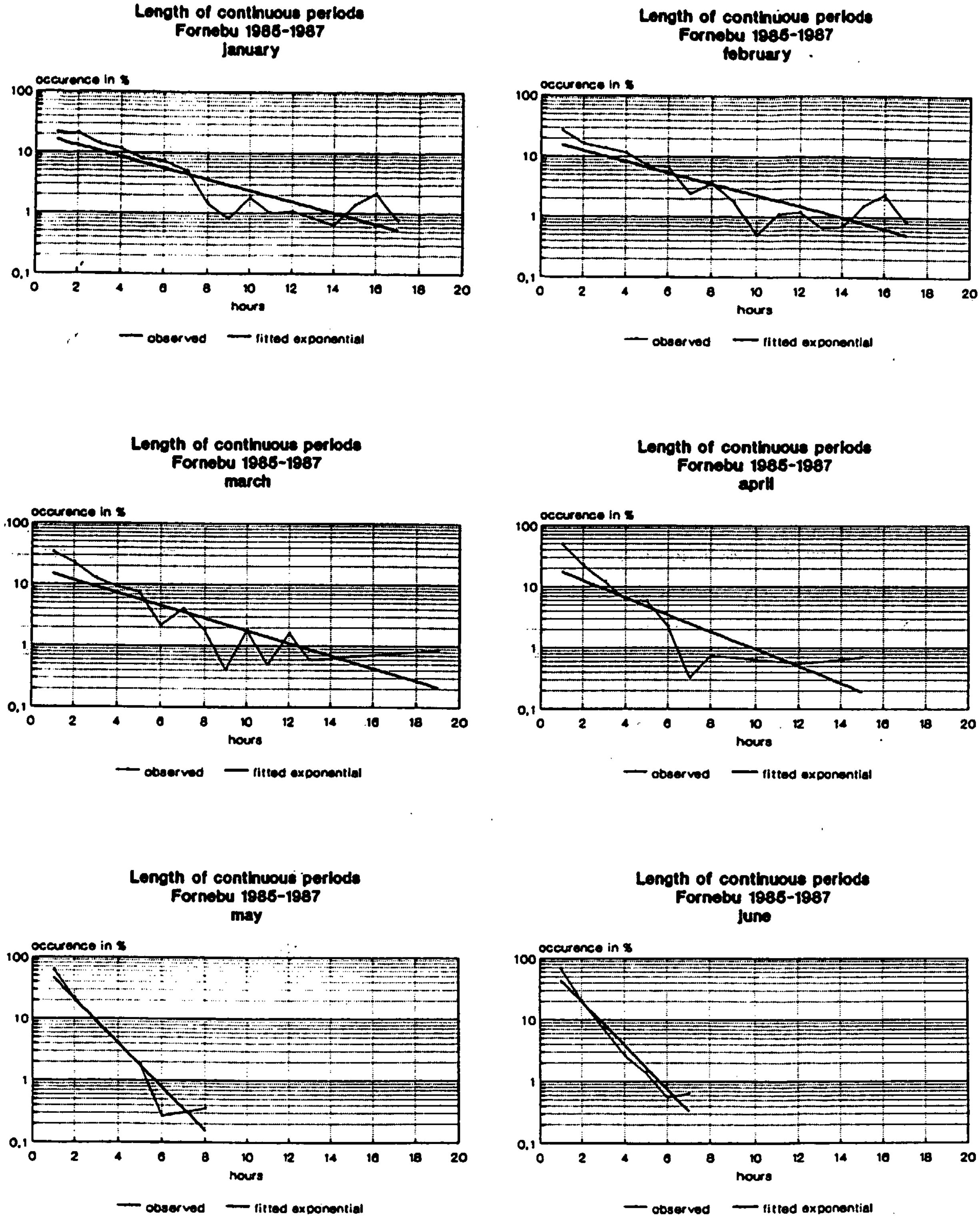


Figure 2.2.3 Length of continous periods with stable N-values, Fornebu (1985-1987)

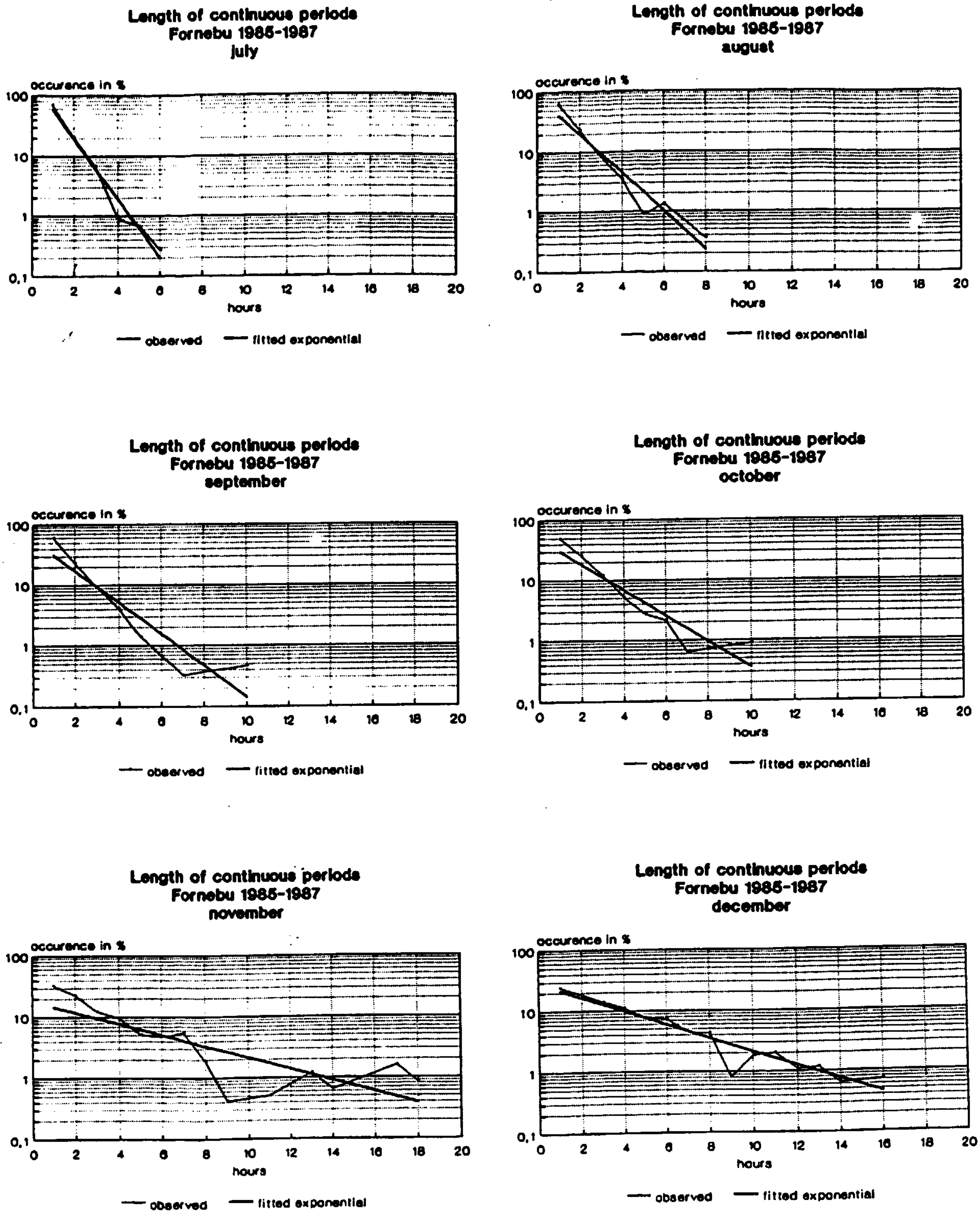


Figure 2.2.3 Length of continous periods with stable N-values, Fornebu (1985-1987)

Assuming it is a daily variation of the refractivity caused mainly by the daily variation of temperature and humidity it is reasonably to compute all of the r_k , k= n times 24.

We can then define an analogous persistence factor s of the values of a continuos variable. We will define s as roughly the length of period over which, on the average, a single observation can be regarded as representative.

We get an expression of s when the auto correlation of the series is r_k as

$$s = 1/(1-r_k)$$

assuming the variable is purely random apart from a defined persistency. Otherwise s can be defined as a sum given by

$$s = \Sigma r_i$$

where $r_i > 0$.

We know from the experienced distributions of the relevant meteorological variables the following values of s

parameter	s
temperature	2.5
humidity	about 2
pressure	2-3

and thus for the refractivity a persistence factor about 2 to 3 period units.

In figures 2.3.4 to 2.3.6 we show auto correlation functions and graphs of the persistence for the hourly values with lags up to 96 hours or 4 days. We clearly see the daily cycles inthe auto correlation with pronounced maxima every 24 hours and accordingly a minimum at every 12 hours.

It is also interesting to note that this daily cycle is not so marked in the graphs for Flesland, the maritimity of the climate will smoothen out the variations in the climatic variables.

For the graphs of the hourly values we find rapid decrease in the persistence function tending to a nearly constant value for a lag of about 12 hours. A variation caused by the daily cycle is present also in this parameter.

From the 24 hourly values are made daily values and the same auto correlation analysis is applied to the daily values and the results are shown in figure 2.3.10. We again find rapid decrease in both auto correlation and the persistence factor, day to day auto correlation is about 0.8 for both stations. For Fornebu the value drops to 0.5 for a lag of 3 days, for Flesland the lag is about 10 days to obtain the same value thus again demonstrating greater persistence in a maritime environment.

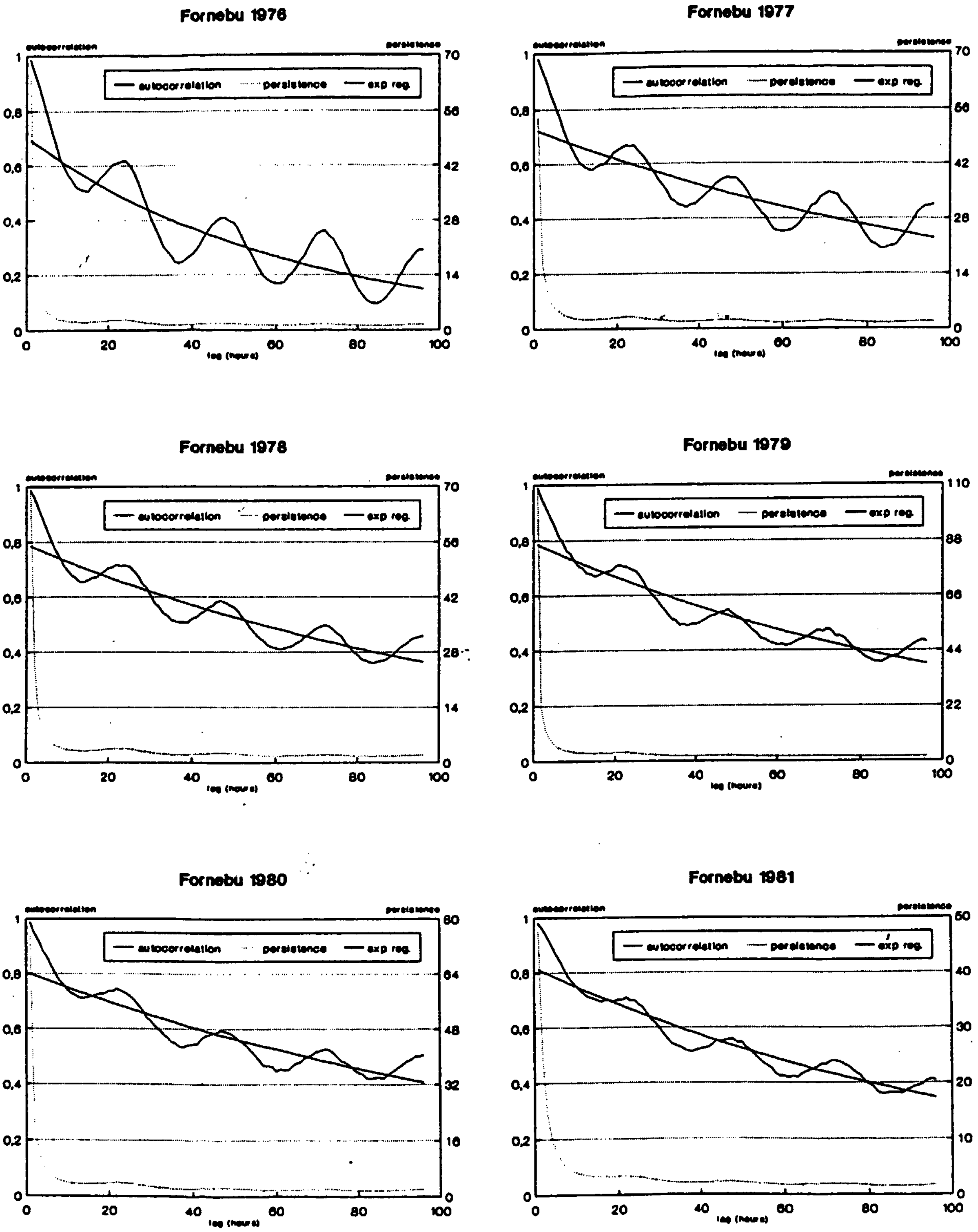


figure 2.3.4 Auto correlation, hourly values, Fornebu (1976-1981)

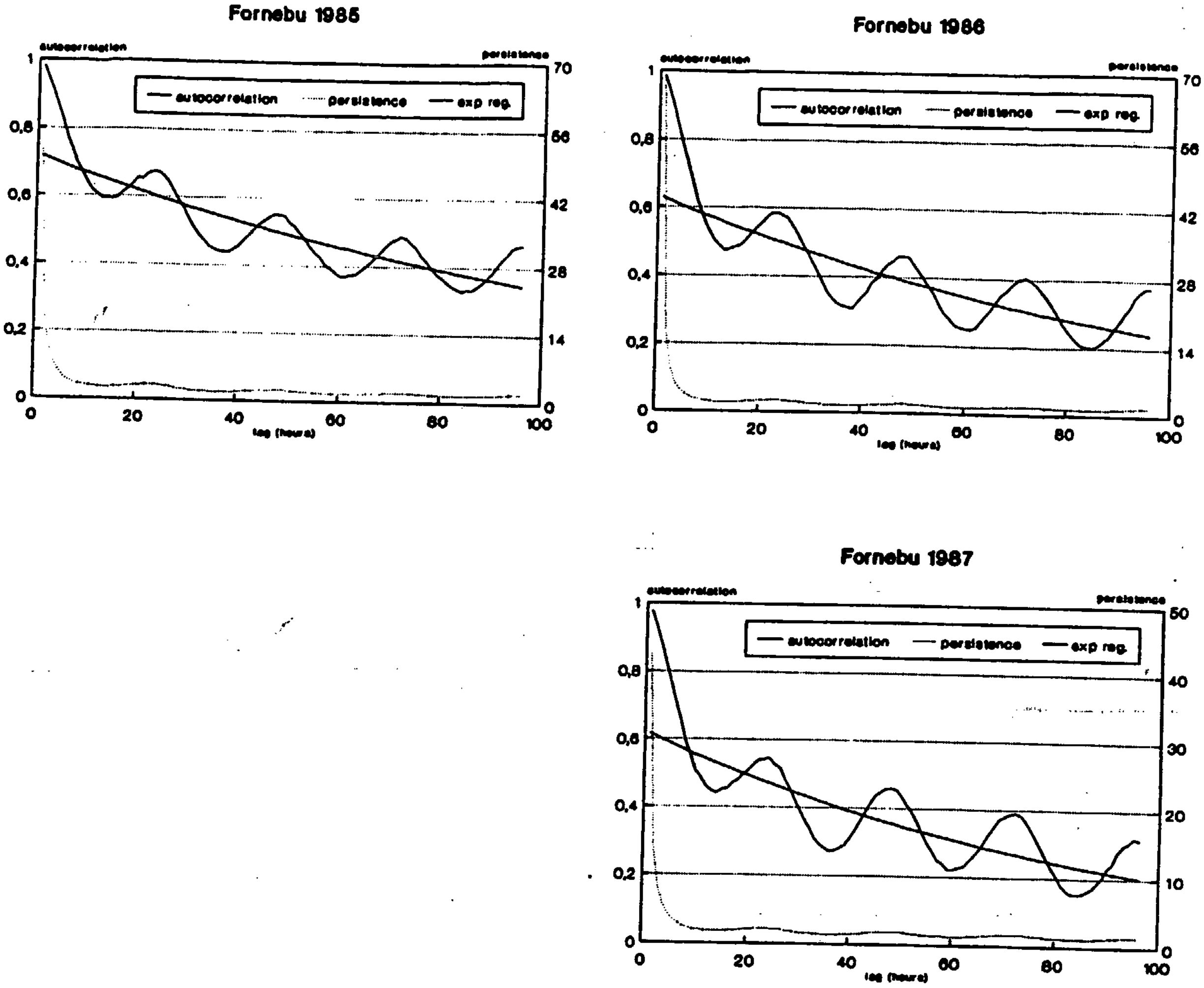


figure 2.3.5 Auto correlation, hourly values, Fornebu (1985-1987)

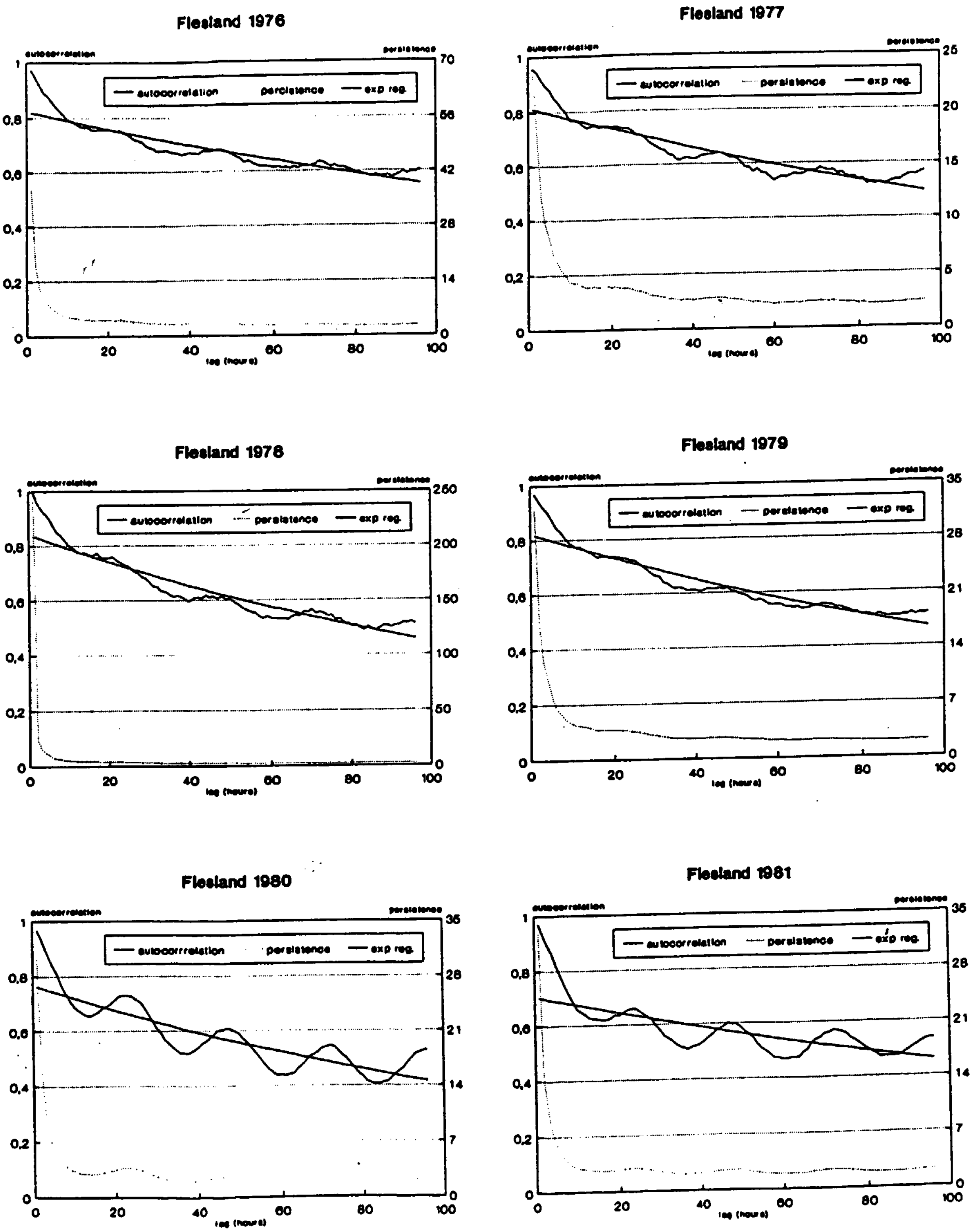
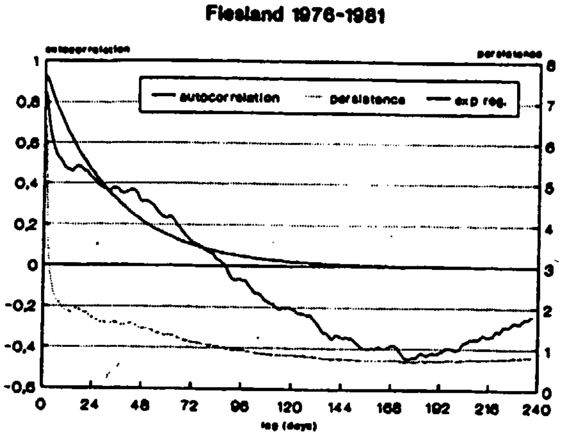
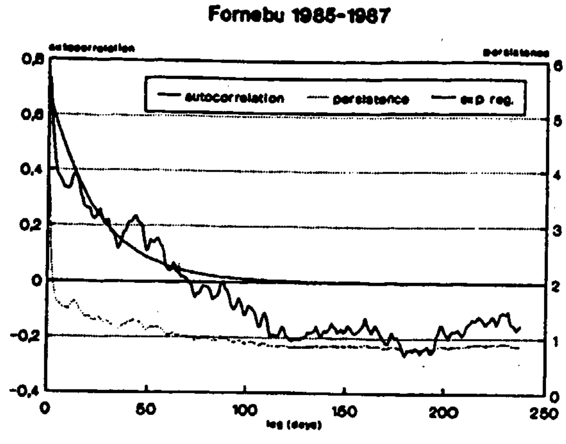


figure 2.3.6 Auto correlation, hourly values, Flesland (1976-1981)





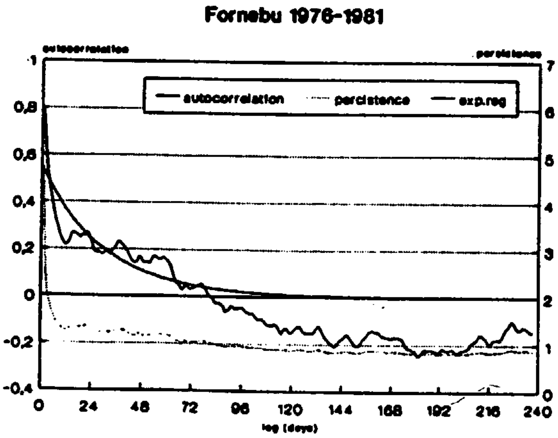


Figure 2.3.7 Auto correlation, daily means, Fornebu and Flesland in periods given

2.3 Variability of the surface refractivity

Counting up the difference of the hourly values of N(t)-N(t+1) we can get an idea of the distribution of the variability of the surface refractivity from hour to hour in the given time span.

Remembering what meteorological conditions that can cause a jump in the refractivity values we should expect extreme values in winter time in connection with fohen conditions that rapidly rise the temperature and lower the air humidity or in the summer time in

		1976	1977	1978	1979	1980	1981
january	max pos	13.8	6.3	5.0	9.5	6.1	8.3
	neg	-8.9	-5.5	-4.2	-4.3	-4.7	-5.9
february	max pos	7.7	6.0	5.4	7.3	6.3	10.5
	neg	-4.7	-4.1	-3.9	-4.0	-4.3	-6.3
march	max pos	10.4	5.7	6.3	15.5	7.3	7.6
	neg	-6.8	-5.1	-5.0	-4.7	-5.4	-6.6
april	max pos	11.5	8.4	7.1	10.2	14.5	18.7
	neg	-11.0	-12.6	-6.6	-7.6	-15.3	-10.0
may	max pos	15.4	14.1	13.2	11.1	19.7	9.3
	neg	-13.2	-14.2	-14.3	-11.1	-11.5	-15.9
june	max pos	29.2	29.4	14.8	19.2	14.3	24.6
	neg	-16.1	-18.1	-21.4	-13.7	-18.6	-45.0
july	max pos	19.5	20.1	14.6	16.7	26.3	15.3
	neg	-15.4	-18.0	-11.9	-15.9	-18.9	-14.9
august	max pos	18.7	24.3	17.6	13.4	20.2	20.8
	neg	-21.0	-15.3	-15.6	-12.7	-11.6	-14.8
september	max pos	18.1	26.4	12.5	38.4	21.1	13.0
	neg	-14.8	-12.8	-8.8	-13.9	-12.2	-10.0
october	max pos	5.0	15.3	12.9	8.4	7.3	13.9
	neg	-4.2	-7.0	-5.1	-5.9	-6.5	-6.6
november	max pos	9.1	5.6	16.1	10.3	5.4	10.0
	neg	-4.4	-5.0	-6.6	-5.1	-4.4	-4.1
december	max pos	5.9	8.1	2.7	7.5	8.2	8.9
	neg	-5.1	-10.5	-2.5	-3.5	-4.7	-5.0

Table 2.3.1 Extreme hourly differences in the surface refractivity in N-units for Fornebu.

connection with heavy showers rising the air humidity but do not in the same effect lower the temperature.

In table 2.3.1 is given the maximum positive and negative jumps in the surface refractivity values in N-units for the station Fornebu for the years 1976 to 1981. From the table we observe that the extreme maximum difference as positive value occur in september 1979 as 38.4 N-units and the corresponding negative value as 45.0 N-units in 1981 in the month of june. Let us in detail examine what meteorological conditions that can give rise to such extreme hourly variations.

The meteorological parameters involved in the computation of the refractivity is pressure, temperature and humidity. The extreme negative jump happens on 16'th of june 1981 and the relevant parameters pr hour is given in the table below, the precipitation observed as the sum from hour 13 to 19.

hour	press. hPa	temp. deg C	hum. %	precip. mm	refractivity N-units		
					dry	wet	total
13	1002.0	18.8	47.0		265.8	44.7	310.5
14	1001.4	20.4	44.0		264.2	45.7	309.9
15	1000.7	20.6	42.0		263.9	44.0	307.9
16	999.9	21.2	41.0		263.1	44.4	307.5
17	999.5	18.8	92.0		265.2	87.3	352.5
18	999.3	17.8	69.0		266.0	61.9	327.9
19	999.0	18.1	56.0	4.3	265.7	51.1	316.8
20	998.2	17.1	56.0		266.4	48.3	314.7

Table 2.3.2 Extreme hourly negative difference in the surface refractivity for Fornebu at 16/6 1981 together with relevant meteorological parameters.

We notice the rise in the wet component at the hour 17 caused, probably, by all precipitation recorded released about that hour by a rather heavy shower rising the relative humidity 51 % i.e. a rise in the vapour pressure from 10.32 hPa to 19.96 hPa.

The positive extreme occurred at the fourth of september 1979 at 16 hour. Relevant hourly data are shown in table 2.3.3. The causes for the jump in this case is not so obvious as in the former case. But looking at the course of the pressure we can identify a passing front or low between hours 15 and 16. It is followed by clear weather in the warm sector and thus rising the temperature and considerably lowering the humidity. The precipitation recorded, falls prior to hour 16.

hour	press. hPa	temp. deg C	hum. %	precip. mm	refractivity N-units		
					dry	wet	total
12	1006.6	15.6	71.0		270.5	56.3	326.8
13	1006.6	15.4	73.0		270.7	57.2	327.9
14	1005.9	17.6	67.0		268.4	59.5	327.9
15	1005.7	15.9	87.0		270.0	70.1	340.1
16	1005.7	19.0	36.0		267.1	34.6	301.7
17	1006.7	17.2	37.0		269.1	32.1	301.2
18	1007.4	16.9	37.0		269.5	31.6	301.1
19	1008.1	15.6	39.0	3.0	270.9	30.9	301.8

Table 2.3.3 Extreme hourly positive difference in the surface refractivity for Fornebu at 4/9 1979 together with relevant meteorological parameters.

The two extreme values thus emerge from two quite different situations from a meteorological point of view, one involving the macro weather with a frontal passage followed by fair weather, the other is a local phenomena, strong heating in the day produces convective currents in the air followed by the creation of cumulus clouds. The stronger the convectivity is, the higher rises the clouds and the more sudden and intense will be the showers of rain. In both cases however, is the change in humidity the main cause for the variation of the refractivity.

This is in accordance with the results from paragraph 1.4 where the refractivity had its greatest variation with the humidity.

The second investigated period for Fornebu exhibits similar features as shown in the following table.

		1985	1986	1987
january	max pos	5.9	8.6	13.5
	neg	-2.8	-6.1	-12.4
february	max pos	4.4	10.4	22.3
	neg	-5.2	-3.7	-8.1
march	max pos	7.2	7.6	5.4
	neg	-6.6	-7.6	-7.6
april	max pos	20.9	19.9	21.4
	neg	-17.7	-7.9	-9.3
may	max pos	14.3	26.1	15.9
	neg	-14.6	-17.7	-13.8
june	max pos	24.8	26.4	26.4
	neg	-14.2	-24.7	-16.9
july	max pos	20.4	22.6	46.6
	neg	-23.8	-16.1	-40.7
august	max pos	14.9	18.5	12.2
	neg	-12.9	-18.6	-16.4
september	max pos	12.1	26.8	25.0
	neg	-16.4	-14.6	-21.2
october	max pos	12.6	16.4	17.1
	neg	-12.2	-7.5	-7.7
november	max pos	6.9	15.7	13.5
	neg	-7.9	-7.1	-5.7
december	max pos	5.2	12.4	7.5
	neg	-4.0	-6.8	-4.5

Table 2.3.4 Extreme hourly differences in the surface refractivity in N-units for Fornebu.

We have the largest jumps in the summertime due mainly to solar heating of the surface with convective currents as the result. However, from the table for Fornebu for the three last years the positive value for the month of february points out. It shows the effects of a fohen situation, a weather situation belonging to the inland or easterly parts of Norway.

hour	press. hPa	temp. deg C	hum. %	wind		refractivity N-units		
				dd	kn	dry	wet	total
08	1010.8	-5.1	100.0	00	00	292.6	20.7	313.3
09	1010.1	-4.6	100.0	11	01	291.9	21.5	313.4
10	1009.5	-4.8	100.0	09	02	291.9	21.2	313.1
11	1009.2	-4.8	100.0	09	03	291.8	21.2	313.0
12	1008.7	-4.2	100.0	36	01	291.0	22.2	313.2
13	1008.2	-3.5	100.0	36	02	290.1	23.4	313.5
14	1007.3	-1.4	100.0	05	04	287.6	27,5	315.1
15	1006.3	-0.8	100.0	16	04	285.7	28.7	315.4
16	1005.9	-0.5	100.0	29	02	286.3	29.6	315.9
17	1004.7	6.2	99.0	26	12	279.1	44.8	323.9
18	1003.7	6.6	50.0	27	11	278.4	23.2	301.6
19	1003.8	5.2	56.0	26	18	279.8	23.8	303.6
20	1003.4	4.8	59.0	26	14	280.1	24.5	304.6
21	1002.6	5.8	55.0	23	07	278.9	24.3	303.2
22	1002.1	5.0	59.0	25	06	279.6	24.8	304.4
23	1001.5	2.0	67.0	05	04	282.4	23.3	305.7
24	1000.9	0.2	77.0	35	02	284.1	23.8	307.9
01	1000.3	-1.1	89.0	35	01	285.3	25.0	310.3
02	1000.1	-2.6	94.0	21	01	286.8	23.6	310.4
03	1000.4	-1.9	93.0	09	04	286.2	24.6	310.8
04	1000.9	0.4	64.0	34	06	283.9	20.1	304.0
05	1001.7	0.1	56.0	33	06	284.5	17.2	301.7
06	1002.4	-0.2	47.0	33	06	285.0	14.2	299.2
07	1003.6	-1.0	49.0	02	08	286.2	13.9	300.1
08	1004.8	-2.1	49.0	36	07	287.7	12.8	300.5

Table 2.3.5 Values from a fohen situation 21-22 february 1987 for the refractivity for Fornebu together with relevant meteorological parameters.

In table 2.3.5 we have for clarity added the parameters wind direction (dd) in deca-degrees and wind speed (kn) in knots.

We start in the morning with a rather stable situation with low temperature and maximum humidity. The wind is negligible in speed, as also shows the varying direction. In the evening at about 17 hours the wind turns westerly and rapidly gains speed. An adiabatic heated air mass falls down in the area and rises the temperature 6 deg. C in about a hour and reduces the relative humidity about 50 % in nearly the same time, the vapour pressure changes from 9.38 hPa to 4.87 hPa and this will inevitably have a great effect on the surface refractivity as shown in the table.

The first wave of the fohen lasts for about 7 hours and then the cold local air starts to refill the area. However, about 3 o'clock we get the second wave of the fohen, again rising the temperature above zero and accordingly the relative humidity decreases.

This is a very good example how a stormy weather at the west coast can send a dry and warm air mass down into the inland and thus create quite great variations in the refractivity values. This effect will not only show in the surface values but surely also in the higher levels of the air space.

Strong convective situations as described and the fohen situations are a feature of the eastern or northern inland and the south eastern coastal part of Norway or generally speaking a more or less continental phenomena. We should thus not expect such causes for changes in the surface refractivity at the other station Flesland, which is situated at the west coast under a heavy maritime influence.

		1976	1977	1978	1979	1980	1981
january	max pos	7.6	7.3	5.8	7.4	6.0	7.1
	neg	-8.4	-8.0	-7.8	-6.4	-7.1	-11.3
february	max pos	8.7	9.6	7.1	15.8	7.8	14.2
	neg	-11.0	-13.6	-6.8	-14.7	-6.8	-8.2
march	max pos	9.8	9.8	10.5	9.4	9.5	10.7
	neg	-7.4	-7.9	-9.8	-11.0	-13.1	-12.6
april	max pos	12.0	11.6	11.6	11.9	13.2	17.6
	neg	-14.3	-12.4	-16.3	-13.3	-7.5	-16.0
may	max pos	23.4	12.9	14.6	13.6	21.1	18.2
	neg	-18.5	-14.9	-15.1	-12.0	-15.4	-16.9
june	max pos	11.8	17.9	17.8	14.8	12.8	13.1
	neg	-28.3	-9.2	-12.9	-11.1	-13.9	-12.2
july	max pos	14.8	16.6	15.4	12.4	17.9	16.6
	neg	-17.7	-21.0	-12.4	-11.6	-20.2	-18.2
august	max pos	15.5	10.9	11.2	17.4	15.6	14.5
	neg	-17.6	-10.1	-14.9	-14.8	-14.5	-11.9
september	max pos	14.0	14.1	11.1	13.1	16.1	18.0
	neg	-10.1	-9.1	-6.7	-12.1	-13.7	-18.3
october	max pos	10.1	8.7	14.0	13.7	8.2	11.2
	neg	-16.1	-8.6	-12.1	-14.5	-8.6	-14.7
november	max pos	11.1	6.9	8.1	8.7	7.5	8.1
	neg	-11.3	-8.3	-6.8	-8.1	-6.6	-11.8
december	max pos	5.5	8.9	6.9	9.0	7.1	8.5
	neg	-7.6	-8.1	-6.6	-9.4	-9.1	-8.9

Table 2.3.6 Extreme hourly differences in the surface refractivity in N-units for Flesland.

In table 2.3.6 is given the maximum positive and negative jumps in the surface refractivity values in N-units for the station Flesland for the years 1976 to 1981.

From the values i table 2.3.6 we find, as expected the magnitude of the jumps much smaller than for Fornebu. The two extremes is described in the tables 2.3.7 and 2.3.8 .

Both situations are caused by a shift in the air mass over the station. The first one shown in table 2.3.5 is case of nocturnal cooling and creation of a cloud cover. This cloud cover breaks up about 7 o'clock with a shift in the wind direction from north to east followed by a rise in temperature due to combined solar heating and a drier air mass over the station.

hour	press. hPa.	temp. deg C	hum. %	pre. mm	refractivity N-units		
					dry	wet	total
04	1006.2	10.2	82.0		275.5	47.4	322.9
05	1006.5	10.6	81.0		275.3	47.9	323.2
06	1006.7	10.6	85.0		275.3	50.3	325.6
07	1007.2	14.3	75.0	0.2	271.9	55.2	327.1
08	1007.6	14.3	43.0		272.0	31.6	303.6
09	1008.2	13.9	35.0		272.5	25.2	297.7
10	1008.3	14.6	36.0		271.9	26.6	298.8

Table 2.3.7 Extreme hourly negative difference in the surface refractivity for Flesland at 27/5 1976 together with relevant meteorological parameters.

The other is caused by a more large scaled phenomenon, a high pressure situation rapidly replace a vanishing low pressure.

From the observations of wind direction we find that the wind had been from south east to south southeast in the hours prior to eleven o'clock. Then the wind turns over to south to south west indicating an approach of a different air mass that releases precipitation about noon.

This shows also clearly in the values for the temperature decreasing about 7.1 deg C in a hour, accordingly followed by a rise in the relative humidity of about 46 % in the same time.

hour	press. hPa.	temp. deg C	hum. %	pre. mm	refractivity N-units		
					dry	wet	total
08	1006.5	20.6	39.0		265.9	40.9	306.8
09	1006.2	20.8	30.0		265.6	31.8	297.4
10	1006.1	20.2	30.0		266.1	30.8	296.9
11	1007.2	13.1	76.0		273.1	52.1	325.2
12	1008.4	12.6	82.0		273.8	54.6	328.4
13	1009.1	12.4	82.0		274.2	54.0	328.0
14	1009.6	12.8	80.0		274.0	53.9	327.9
15	1010.5	12.9	78.0		274.1	52.9	327.0
16	1011.3	13.4	70.0		273.9	48.8	322.7
17	1011.9	13.4	69.0		274.0	48.2	322.2
18	1012.3	12.5	69.0		275.0	45.7	320.7
19	1012.5	12.4	69.0	4.0	275.2	45.4	320.6

Table 2.3.8 Extreme hourly positive difference in the surface refractivity for Flesland at 10/6 1976 together with relevant meteorological parameters.

We thus see that jumps at the "more" maritime station is a result of more large scaled changes in air masses than for the "inland" station represented by Fornebu. If we could have access to data from a real continental station this should have been much more marked.

2.4 Daily course of the surface refractivity

To compute the mean daily course of the hourly values of the refractivity we apply concept of a mean "synthetic" day for the month. That is, we accumulate the values of all similar hours i.e., hour 1 day 1, hour 1 day 2, hour 1 day n and so on. We can thus obtain a mean value for hour 1, hour 2 etc. with standard deviation and maximum and minimum for the specific hour in a given month.

In figures 2.4.1 are shown the results for Fornebu for the period 1976-1981. In figure 2.4.2 are the same values for Flesland in the period 1976-1981.

We observe the even course in the winter months with a narrow spreading of the values. The general course the curves are more or less contrary to the daily course of the temperature. The maximum values occur approximately at or a little before sunrise and the minimum values of the mean curve occur a little later than the solar maximum when maximum heath is accumulated at the ground.

The extreme values will inevitably vary much more as a result of short periodic events as heavy showers or fohen situations.

The dispersion of the values in the warm season is much greater and the daily course is also more marked as a result of the greater amplitude in the temperature.

FORNEBU 1976-1981

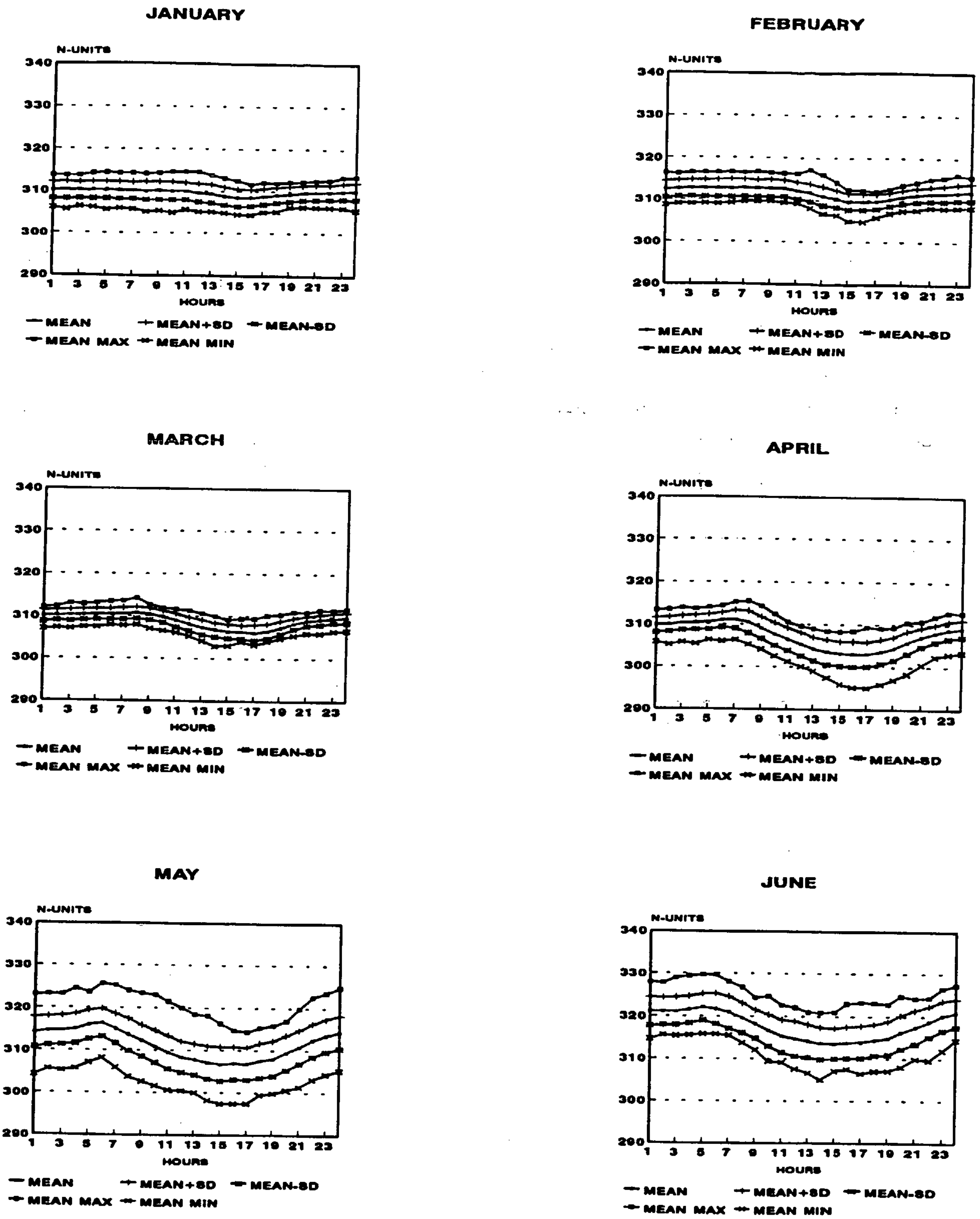


figure 2.4.1 Hourly course of the surface refractivity at Fornebu (1976-1981)

FORNEBU 1976-1981

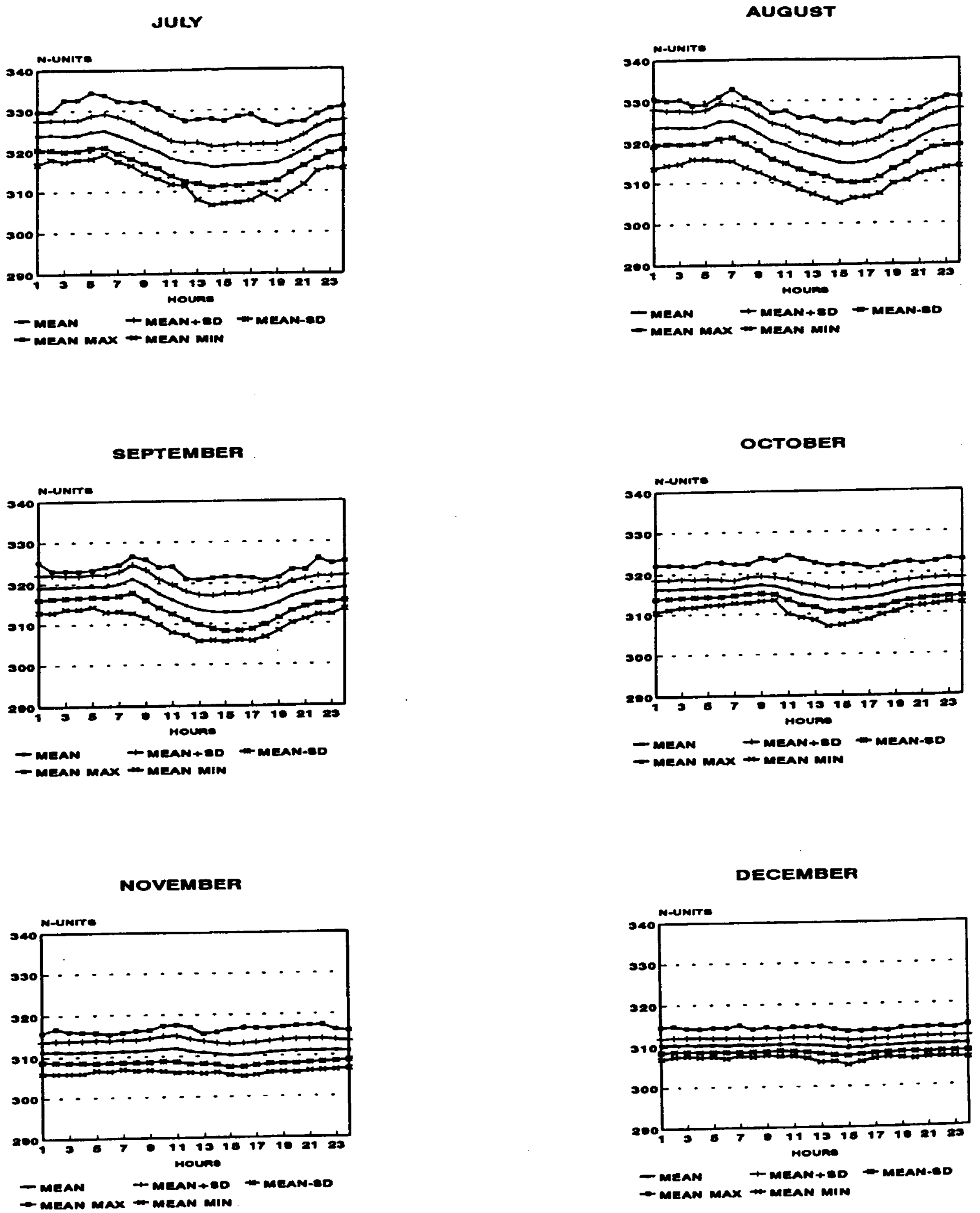


figure 2.4.1 Hourly course of the surface refractivity at Fornebu (1976-1981)

FLESLAND 1976-1981

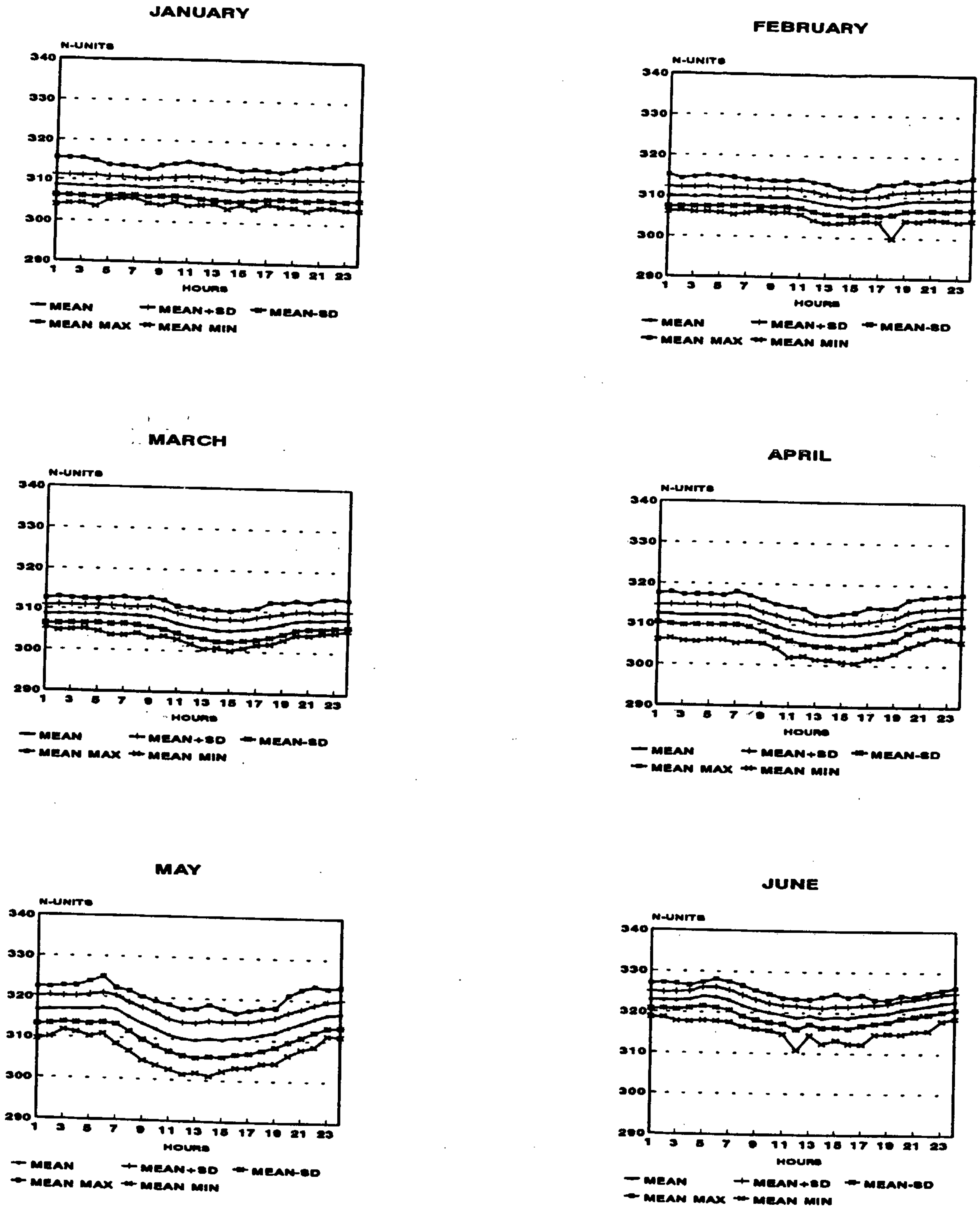


figure 2.4.2 Hourly course of the surface refractivity at Flesland (1976-1981)

FLESLAND 1976-1981

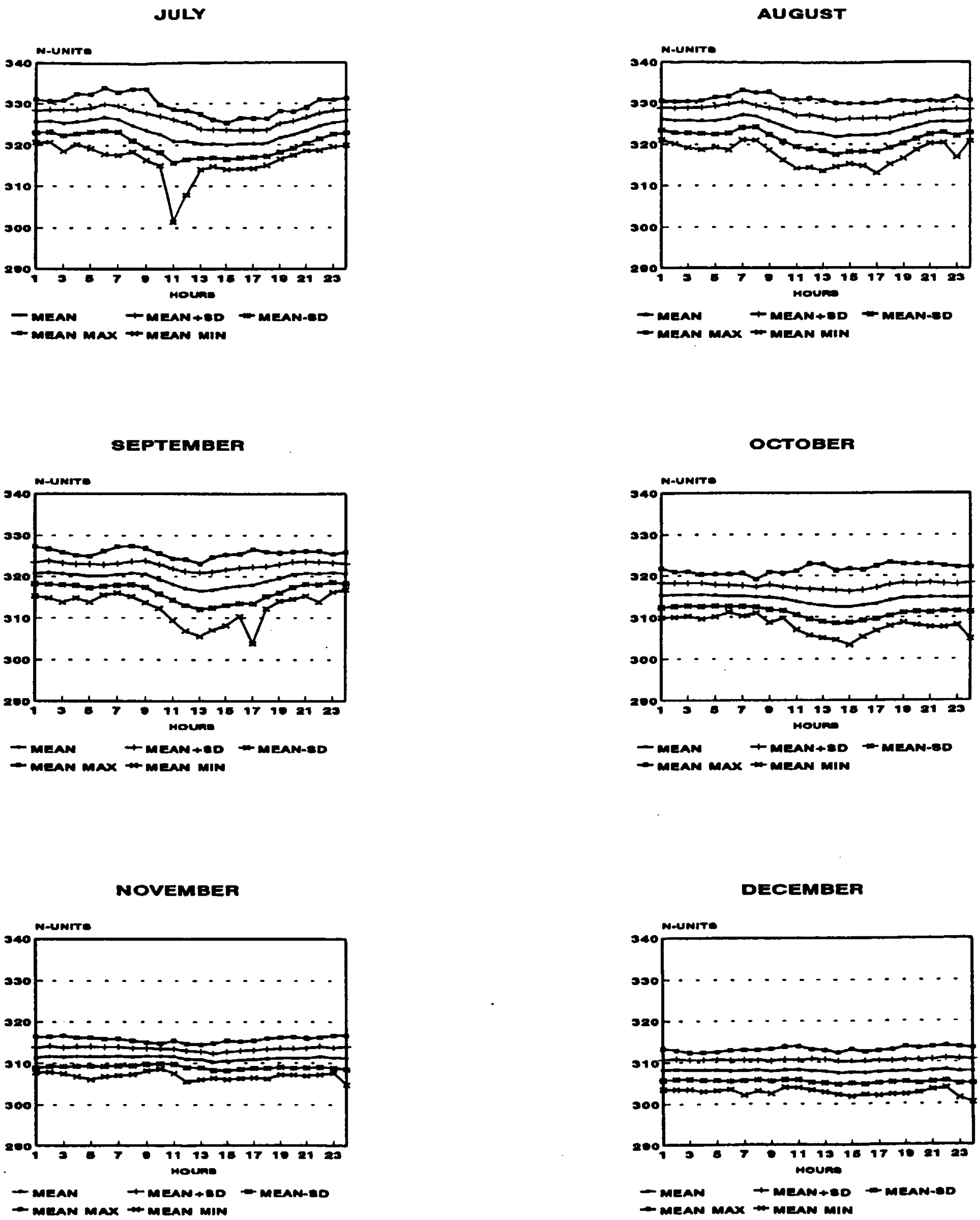


figure 2.4.2 Hourly course of the surface refractivity at Flesland (1976-1981)

3. Upper-air values of the refractivity

3.1 The radiosonde stations.

Examination of the refractivity in the upper-air is based on data from stations with observations with radiosondes. The number of such stations is small compared to other types of stations mainly due to the cost of the observations.

Soundings are made from seven Norwegian stations at the hours 01 and 13 local time (00 and 12 hours GMT) in addition from the weather ship also at the hours 07 and 19 local time. In addition to the Norwegian stations are chosen two stations from Sweden and one station from Finland.

The selected Nordic stations used in this report are shown in table 3.1.1

station	lat.	lon.	masl.	ident.
Landvetter	57.67	12.30	155.	02527
Sola	58.93	05.67	33.	01415
Gardermoen	60.20	11.10	201.	01384
Frøsøn	63.18	14.50	370.	02225
Ørland	63.70	09.40	10.	01241
Mike	66.00	02.00	6.	09661
Bodø	67.25	14.40	8.	01152
Sodankyle	67.36	26.65	179.	03836
Jan-Mayen *	70.93	08.68	9.	01001
Bjørnøya	74.52	19.02	18.	01028

Table 3.1.1 The meteorological stations with radiosonde observations used in this report.
*Note the westerly longitude for Jan-Mayen.

"Ident." is the international code for the station starting with a two digit "country code", the code 01xxx is for Norway 02xxx for Sweden and Finland and the code 09xxx for Mike or station "M" indicates a ship, the weather ship "Polarfront". The xxx is the international "station number". Referring to this code later on the leading zero is stripped of.

"masl." is the station height or strictly speaking the height above sea level from which the sonde is launched.

For the sonde stations is used time in GMT, i.e. local time at 01 and 13 is given as 00 and 12 GMT. For the station 9661 Mike is always given if the observations are taken at 0/12 GMT or 6/18 GMT. The set 0/12 is most frequently used because this is common for all the other stations.

The general character of the stations can briefly be summarised as follows, one station Mike has an extreme maritime character, being a stationary weather ship far from any coast. The only station with a true continental character is the station from Finland, Sodankyle. The stations Frøsøn from Sweden and from Norway, Gardermoen can more or less be looked upon as having a continental character, but not in the true sense. The rest of the stations have a strong maritime influence as they all are situated along and nearby the western coast of either Norway or Sweden. Another feature is the Arctic or polar influence for the stations Bjørnøya and Jan-Mayen.

Remembering the remarks made about the general climatology and the related refractivity climatology for the area under consideration, we must look at the following results as we bear these in mind. The maritime influence is so strong that the mountains in the high plains of Norway often experience a pure maritime atmosphere, the air masses coming from west is so strong that modifications from the underlying land have little or none effect at all. Another feature in this picture is heating and drying out of the air masses approaching the eastern side of these high plains. In this so called "fohen situations", can occur sharp gradients in both temperature and humidity, both in space (vertical) and time. Ray bending and ducting conditions will be strongly influenced of these meteorological conditions.

At the coastal stations far up north we can experience the phenomena of "catabatic winds", cold air production in the highland can make a cold and dry air mass move down to a nearby fjord creating three main strata of air. In the bottom we have relatively warm and moist air (influenced by the heat storage in the sea and the unlimited moisture supply), above we find the cold and dry air from the inland, and again above this we have the maritime air mass supplied by the westerlies.

The mixing of the different air masses thus give a rather complicated picture often determined of local factors. It is thus very difficult to give an adequate detailed picture in time and space of the variations of the refractive index for the Nordic countries.

3.2 Governing factors for radio wave propagation.

We divide the atmosphere near by earth in the so called troposphere with the earth's surface as the lower boundary and the tropopause as the upper boundary. The tropopause is then the mutual interface between the troposphere and the overlying stratosphere.

The tropopause has in the polar regions a height above the surface of the earth of approximately 6 km, in the middle latitudes about 11 km and has in the equatorial regions a height about 18 km.

In the troposphere we have a decrease of the temperature of about 0.65 degrees per 100 m in the mean, while in the stratosphere the temperature is approximately constant. The air layer with a linear decrease of the temperature is often the property that defines the troposphere.

The distribution of the refractive index in space and time is determined by the distribution of pressure, temperature and humidity in the airspace. The distribution is thus governed by gravitation, the equation of state or the equations of thermodynamics. The main principle here is the energetic conditions of the different parts of the airspace, the interaction between potential and kinetic energy and dry and wet enthalphy at each part of the airspace.

For mean conditions in the troposphere pressure, temperature and humidity decreases more or less regularly with increasing altitude as:

pressure by about 1.3 hPa per 11 m,
temperature by about 1.0 degree C per 200 m,
humidity by about 1.0 hPa per 300 m,

This linear variation characterizes the so-called "standard" or "normal" atmosphere.

An general idea of mean pressure-, temperature- and humidity distributions (a relative humidity of 60 % is assumed) as a function of height together with the index of refractivity as total and dry and wet components given in table 3.2.1.

height m	pres. hPa	temp. deg C	hum. hPa	refractivity N value		
				dry	wet	total
0	1015	15.0	10.2	272.8	45.9	318.7
150	995	14.0	9.6	268.9	43.3	312.2
300	977	13.0	9.0	264.9	41.0	305.9
500	955	11.7	8.3	260.2	37.9	298.1
1000	894	8.5	6.7	246.3	31.3	277.6
1500	845	5.2	5.3	235.6	25.5	261.1

Table 3.2.1 NACA (National Advisory Committee on Aeronautics) standard atmosphere, values of pressure, temperature, humidity and the dry, wet and total value of the refractivity in N-units.

The "normal" atmosphere thus corresponds to the average atmosphere for various seasonal and geographical conditions in the temperate latitudes and is defined by a linear decrease in the refractivity index with altitude, with a gradient of approximately:

$$dN/dh = -0.041 \text{ per metre}$$

We also have the recommendation from CCIR [3] in 1990 that recommends a "reference atmosphere" as

$$N = N_0 e^{bh}$$

where N_0 = 315 and b = -0.136. This gives a mean gradient of the refractivity as

$$dN/dh = -0.04284 \text{ per metre}$$

also quite close to the value from the "standard" atmosphere.

The often used value for the gradient of -0.039 pr metre is the result of one of the first recommendations of CCIR with a value of N_0 of 289 N-units.

This value is by chance nearly equal to 1/4R where R is the mean earth radius.

In figure 3.2.1 is shown the refractivity according to the atmospheres defined by NACA and by CCIR.

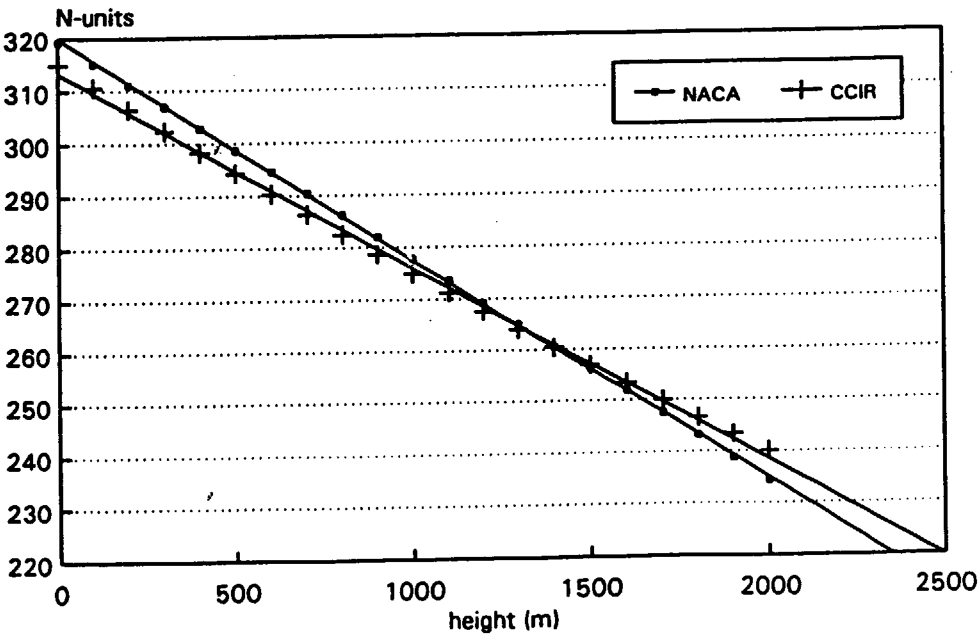


Figure 3.2.1 Refractivity in standard atmospheres, NACA, CCIR.

This even decrease of N is often disturbed by jumps in the profiles of the temperature or the humidity caused by phenomena of so different space scales as local turbulence or convectivity to large scale movement of air masses that gives a anomalous stratification of air layers.

This phenomenon gives rise to what we call "inversions" or special stratification in the troposphere. Instead of a decrease with height the temperature can rise in a given height range, giving rise to great gradients in both humidity and temperature.

Of the various types of inversions we can define:

The advection inversion: This happens when horizontal moving warmer air moves over a cold air layer, or when warm dry air moves over a cold sea surface. This gives rise to a temperature inversion and at the same time a strong negative humidity gradient.

The depression inversion: An inversion occurring in high pressure situations caused by adiabatic heating of a rising air mass. Accordingly we get an accumulating cool air mass at the ground. This will often cause a great jump in the profile of the humidity.

The radiation inversion: An inversion caused by nightly cooling of the earth surface which is heated through the day. (Out-going radiation loss is defined by the Stefan-Boltzman equation). This leads to a anomalous temperature profile giving a surface inversion. Such an inversion can also exist at the top of a cloud layer.

The turbulence inversion: By total mixing of different air masses caused by rising wind in connection with an air space with negligible wind.

Which type of a possible inversion occurring is greatly dependent of the type of climate or the immediate surroundings for the selected stations. A maritime environment will have an energetic buffer in the stored thermal energy in the water masses. A station in such an environment will thus behave different from a more continental situated station, the latter having greater differences in temperature through the course of the day. A continental station will thus have more occurrences of turbulence and radiation inversions than a station of a maritime character. As previous mentioned, Norway being utterly influenced by the westerlies, an advection inversion is more often affecting the stations of the west coast and stormy weather here can give rise to depression inversions at the eastern parts of the country.

In addition we have the Arctic influence with more or less stable weather conditions, but also the possibility of local phenomena as strong chatabatic winds mixing and changing air masses over short time intervals.

A "standard atmosphere" is thus a statistical mean over time and space, and not necessarily describing an actual situation at a given instant.

3.3 The fundamental reference atmosphere.

In 1959 the CCIR proposed for work which involved a more extensive region of propagation, a "fundamental reference atmosphere", defined, "on the basis of the most recent experimental data", by the general relationship:

$$n(h) = 1 + 289.\ 10^{-6}\ e^{-0.136\ h}$$

or

$$N(h) = 289.\ e^{-0.136\ h}$$

h denoting the height in kilometres above sea level. In the first kilometre, this reference atmosphere is seen as almost exactly equivalent to a "standard" atmosphere. This proposal was adopted by CCIR in Geneva in 1963.

The general expression of this reference value is of the type

$$N(h) = N(0)\ e^{B\ h}$$

where N(0) is the N-value at the sea level and B is a constant most easily determined as

$$B = \ln[N(1)] - \ln[N(0)]$$

if the station is situated near by sea-level, i.e. N(s)=N(0), N(1) and N(0) are the N-values at 1 kilometre and at sea level respectively and N(s) is the refractivity value at the height of the station.

The proposed exponential relationship is however also convenient to use as a linear relation if we use natural logarithms. We thus obtain

$$\ln[N(h)] = \ln[N(0)] + B\ h$$

and knowing N(h) for given heights we can determine the values of N(0) and B by linear regression.

For limited area the values of N(0) and B will vary in the space from the proposed standard, and particularly in time. As an example is given a more suitable relationship for the West Germany [5] as

$$N(h) = 325.\ e^{-0.136\ h}$$

based on measurements in Stuttgart, Hanover and Brussels. This value is also more in accordance with the surface value of the standard atmosphere given in table 3.1.1 (the value of N(0) is 318.7) and it was therefore in a proposal to CCIR in Oslo 1966 to give a value for the surface refractivity of 325 N units.

As mentioned previously the last recommendation from CCIR gives the value of 315 N-units for the mean sea level value of the refractivity in N-units.

To examine how the chosen Nordic stations behave towards the proposed standards is evaluated values for N(0) and B for the stations by the following procedure; first is made monthly means from all observations available for each station. From these means is evaluated yearly means for the refractive index in N-values. The values of N(0) and B are then evaluated by means of a linear regression by the formula indicated above. The results are given in the table below, and it must be emphasised that the results is valid only up to 2 km.

station	N(0)	B
Landvetter	321.16516	-0.13762
Sola	320.02658	-0.13468
Gardermoen	316.71033	-0.12972
Frøsøn	316.21219	-0.12856
Ørland	315.67642	-0.12784
Mike (0/12)	317.87933	-0.13513
Bodø	313.64447	-0.12563
Sodankyle	315.06543	-0.12768
Jan-Mayen	313.79980	-0.13326
Bjørnøya	313.76617	-0.13200

Table 3.3.1 Values of N(0) and B for the selected stations.

We can also try to define an integrated set of values for N(0) and B valid for the area under consideration. The following procedure is applied; we take the yearly means for the 20 defined heights for the 10 stations in the 10 years used and make a grand mean of these 200 values. This values will "apply" to a fictitious station situated 107.9 m above sea level at a "mean latitude" of 64.97. Using the same correlation method as before we finally obtain the values in table 3.3.2.

	N(0)	B
Nordic conditions	316.82095	-0.13122

Table 3.3.2 Values of N(0) and B for Nordic conditions.

We can also check the mean values of N(0) and B assuming they have a t-distribution. Using confidence limits of 99% we obtain upper and lower limits as given in table 3.3.3.

	N(0)	B
Upper lim t(.005)	319.08704	-0.12719
Means of N(0), B	316.39459	-0.13121
Lower lim t(.005)	313.70215	-0.13523

Table 3.3.3 Means of N(0), B is values as arithmetic means of the values for each station given in table 3.3.1. together with confidence limits for a t-distribution with 99% level.

We observe that the mean value for N(0) is far away from both the 1963 and 1966 proposals of CCIR. but quite near to the value of the last recommendation of 1990. The value for B is also outside the proposed value (-0.136) but the lower limit is not far away the proposed mean value.

We thus can conclude that the 1990 proposal, for practical purposes fits better to the "Nordic stations" than the early proposed values.

In figure 3.3.1 is shown the above calculated mean value for "Nordic conditions" together with the maximum and minimum calculated value for each given height. In addition is given curves for the CCIR proposals of 1959 (1963) and 1966.

Bearing in mind the value of N(0) given for the area of West Germany and looking at the above table it is obvious to look for a latitude dependence of the value of N(0). Due to a decreasing yearly mean temperature as we go up north this should be rather obvious. Modifications of the humidity of the air points in a similar direction.

In figure 3.3.2 is shown a relationship together with a linear correlation. The first "calculated" point of the set of points is the mean value for "Western Germany", a fictitious point with a latitude of 50.77 (a rather coarse mean of Hanover, Brussels and Stuttgart).

The linear relation is given by

$$N(0) = 348.568 - 0.4929\ LAT$$

An exponential relation is accordingly given by

$$N(0) = 350.016\ e^{-0.00155\ LAT}$$

the latitude LAT is valid between 50. to about 75. north.

We observe from the picture the extreme maritime influence of the station Mike (latitude 66.0) and the non normal behaviour of Bodø (latitude 67.25), the reason why is explained later on.

The coefficient B shows no similar dependence and can according to table 3.3.3 be looked upon as constant with a value near by the proposed, the variation may be pure statistical noise.

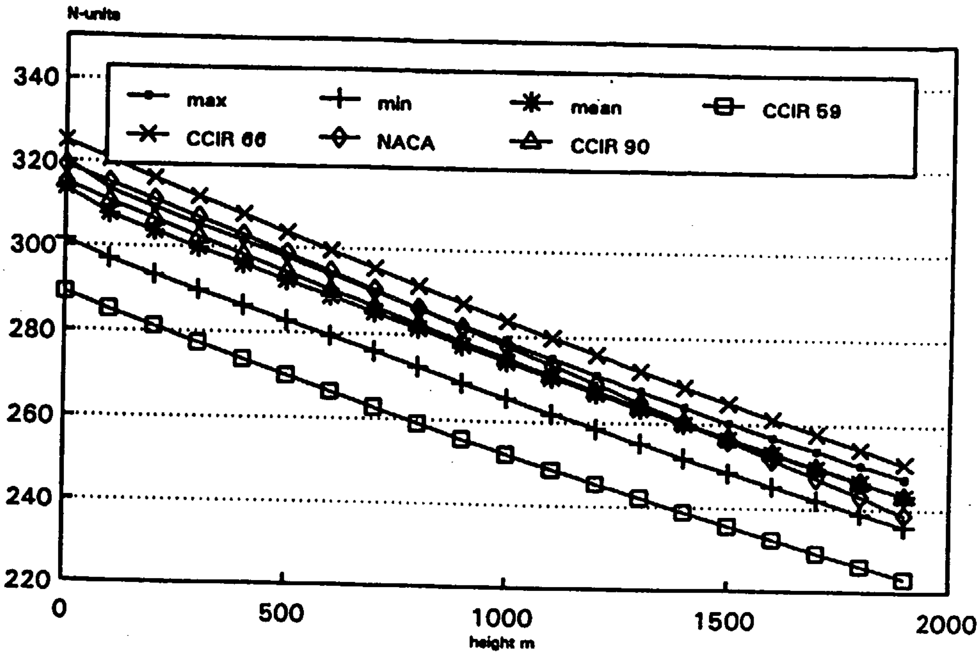


Figure 3.3.1 Profiles of tropospheric refractivity

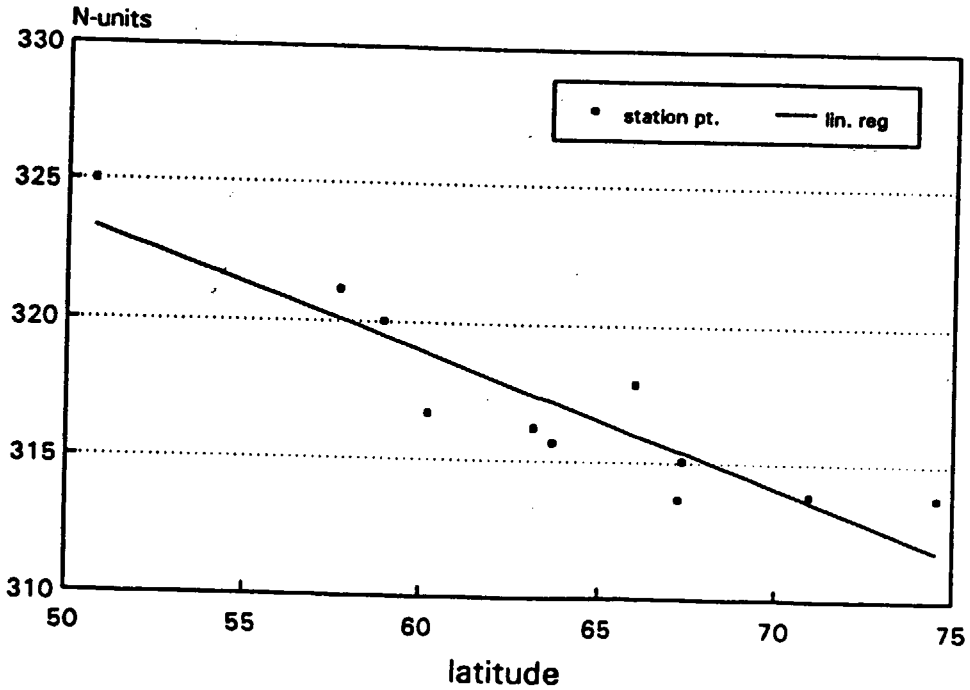


Figure 3.3.2 N_0 as a function of latitude.

3.4 Statistics of reported heights.

Since the routine observational programme for the radiosonde includes the significant levels together with the mandatory levels demanded for the TEMP- and PILOT-codes it is evident that the number of heights reported, reflects the immediate structure of the atmosphere. Few heights reported involve a regular structured atmosphere with the number of heights roughly corresponding to only the mandatory heights, while many heights reported will correspond to a multilayered atmosphere with the possibility of non normal refraction.

Of the mandatory levels we would expect the 1000 hPa level to be about the height of the station level (provided that the station is not situated at high altitude), the 925 hPa level at somewhat between 600 m. and 1000 m., the 850 hPa level between 1400 m. and 1600 m. and the 700 hPa level well above the height interval in concern i.e. > 2000 m. We should thus get two or three levels as the contribution from the pressure determined mandatory levels in one sounding.

The PILOT-levels are as mentioned multiples of 300 m. and as such we would expect at most eight levels given by this pr. ascent in the height interval of concern.

All other reported levels are then either significant levels (from the sondes point of view), freezing levels or reported tropopauses and can as such give rise to a possibility of an inversion or thus some sort of anomalous refractivity.

In table 3.4.1 we show the data recovery for heights pr 100 m. for each station. Data recovery is defined as the number of heights computed divided by the total possible number of heights (remember here our division of the atmosphere in layers of one hundred meters, total number of heights should therefore be 20). The difference from 100 % is caused either by values discarded by various reasons or by missing ascents.

We observe a rather poor data recovery for the station 2225 Frøsøn caused by many missing ascents.

In table 3.4.2 we show the number of reported heights for each station divided in the observation taken at night and at the day, 0 hour and 12 hour GMT respectively. In addition we give values for 6 hour and 18 hour GMT for the station Mike.

The figures given are not immediately comparable since it is not to be expected that each station has the same number of reported heights (not the same atmosphere) neither have they the same degree of data recovery (the same number of ascents).

From the Norwegian radiosonde stations we clearly recognize the PILOT-levels, while the Swedish and the finish station-data do not contain information from the PILOT-code.

We also note the existence of the mandatory levels as small clusters in the frequency distribution near by station level, at about 700 m. and finally at around 1500 m.

From the distributions it is evident that most of the heights reported except for the mandatory levels is in the lower two hundred meters of the troposphere. Some of these is due to the existence of the 1000 hPa level, but this is pr hour of observation maximum 310, 300 or 280 depending on the number of days in the month.

We will interpret this as a higher probability for a layered atmosphere in the lowest part of the troposphere than for the higher parts that seems more homogenous.

We also find the highest number of reported heights for the two lowest layers in the summer months and here we also find a significant difference between night- and daytime numbers. This is probably caused by nocturnal cooling and creation of local inversion layers in the lower troposphere.

An exception is the maritime station 9661 Mike where we have a contrary situation. This is the result of the heat capacity of the surrounding sea and the creation of sea fogs.

We also note the high numbers at the near coast situated stations. We are here faced with mesoscale weather situations as cold air drainage and the effects of land and sea breeze as well as the macro weather with the wandering lows.

The breeze owes its origin to the difference between land and sea temperatures. Observations show that breezes extend horizontally over 100 km and vertically over 1-2 km.

2527 Landvetter

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	99.4	98.8	99.4	99.0	98.9	99.5	98.9	97.6	99.5	98.7	99.2	95.2	98.6
0.1	99.0	98.8	99.4	99.0	98.5	99.0	98.4	97.1	99.5	98.4	99.2	94.8	98.4
0.5	99.2	98.6	99.4	99.0	98.4	99.0	98.4	96.9	99.5	98.4	99.2	94.7	98.4
1.0	99.2	98.4	99.4	98.8	98.4	99.0	98.5	97.1	99.3	98.4	99.2	94.8	98.4
1.5	99.4	98.4	99.4	98.8	98.9	99.0	98.9	97.3	99.5	98.5	99.2	94.8	98.5
2.0	99.4	98.4	99.5	98.8	98.9	99.0	98.7	97.1	99.5	98.5	99.2	94.8	98.5

1415 Sola

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	99.8	99.5	99.7	99.7	99.8	98.5	88.5	96.3	94.3	98.9	100.0	98.5	97.8
0.1	99.7	98.8	98.7	99.3	99.7	98.2	87.3	95.6	93.3	96.1	99.2	97.9	97.0
0.5	99.5	98.6	99.0	99.3	99.7	98.0	87.3	95.6	93.3	96.0	99.2	97.9	96.9
1.0	99.5	98.6	98.9	99.3	99.5	98.0	87.1	95.6	93.0	96.1	99.2	97.7	96.9
1.5	99.4	98.4	98.9	99.0	99.5	98.0	87.1	95.5	93.2	96.0	99.2	97.9	96.8
2.0	99.2	98.4	98.9	99.0	99.5	98.0	87.1	95.6	93.2	96.0	99.0	97.6	96.8

Table 3.4.1 Data recovery in percent, defined as recorded values/total values.

1384 Gardermoen

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	98.5	99.3	99.5	99.2	99.4	98.7	94.8	91.1	99.3	98.5	97.5	98.4	97.8
0.1	95.5	98.8	99.7	99.2	99.2	98.5	94.4	91.1	99.2	98.1	97.2	98.1	97.4
0.5	95.3	99.1	99.5	99.2	99.2	98.5	94.4	91.0	99.2	97.7	97.3	98.1	97.3
1.0	95.2	99.1	99.4	99.2	99.2	98.5	94.4	91.0	99.2	97.7	97.0	98.1	97.3
1.5	94.8	99.1	99.2	99.2	99.2	98.5	94.4	91.0	99.2	97.7	97.0	98.1	97.2
2.0	94.8	99.1	99.4	99.0	99.2	98.5	94.4	91.0	99.2	97.7	97.2	97.9	97.2

2225 Frøsøn

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	33.5	50.4	49.2	42.2	38.4	39.5	21.1	34.7	45.0	38.9	36.7	26.9	37.9
0.1	33.4	45.2	49.2	42.2	38.2	39.5	21.3	34.7	44.8	38.7	36.7	26.9	37.5
0.5	33.4	45.2	49.2	42.0	38.2	39.5	21.3	34.7	44.8	38.9	36.7	26.9	37.5
1.0	33.4	45.2	49.2	42.0	38.2	39.5	21.3	34.7	44.7	38.9	36.7	26.9	37.5
1.5	33.4	45.2	49.2	42.0	38.2	39.5	21.3	34.5	44.7	38.7	36.7	26.9	37.4
2.0	33.2	45.0	49.2	42.0	38.1	39.5	21.3	34.5	44.7	38.5	36.7	26.9	37.4

1241 Ørland

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	98.7	95.9	95.5	97.2	98.5	95.2	87.6	95.2	96.0	96.9	97.0	94.7	95.7
0.1	94.7	95.0	95.0	97.2	97.9	94.5	87.7	95.2	95.5	96.3	97.0	94.0	95.0
0.5	94.8	95.0	95.0	97.2	97.7	94.8	87.7	95.0	95.5	96.3	97.0	93.9	95.0
1.0	94.7	95.0	95.0	97.2	97.7	94.7	87.6	94.8	95.5	96.3	97.0	93.7	94.9
1.5	94.4	94.9	95.0	96.8	97.6	94.8	87.7	95.3	95.3	96.1	97.0	93.7	94.9
2.0	94.2	95.0	94.7	97.2	97.7	94.8	87.4	95.3	95.3	96.1	97.0	93.7	94.9

9661 Mike 0/12

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	95.5	95.7	96.0	93.8	96.8	97.7	97.3	96.8	91.8	86.0	97.2	94.0	94.9
0.1	95.5	95.6	95.5	93.8	96.5	97.7	96.6	96.6	91.8	86.1	96.8	93.9	94.7
0.5	95.5	95.6	95.2	93.8	96.8	97.8	96.5	96.1	91.7	86.0	97.0	93.9	94.6
1.0	95.5	95.4	95.2	94.0	96.1	97.3	96.6	96.3	91.8	86.1	96.8	93.9	94.6
1.5	95.2	95.4	95.6	93.7	96.6	97.0	96.9	96.8	91.7	86.1	96.8	93.9	94.6
2.0	94.8	95.2	95.3	93.7	96.5	97.0	96.9	96.8	91.8	85.8	96.8	93.9	94.5

9661 Mike 6/18

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	93.7	93.6	92.9	90.3	95.3	95.3	95.8	95.0	90.5	84.7	94.8	92.1	92.8
0.1	93.9	93.6	92.7	90.2	94.8	95.8	95.6	94.5	90.3	84.7	94.5	91.9	92.7
0.5	93.9	93.4	92.9	90.0	94.8	95.7	95.6	95.2	90.3	84.7	94.5	91.9	92.7
1.0	93.9	93.6	93.2	90.2	94.4	95.5	95.8	95.0	90.3	84.7	94.5	91.9	92.7
1.5	93.9	93.6	93.1	90.0	94.7	95.2	96.1	94.7	90.2	84.5	94.7	91.9	92.7
2.0	93.7	93.1	93.1	89.8	94.2	95.0	96.0	94.8	90.5	84.4	94.7	91.6	92.6

Table 3.4.1 Data recovery in percent, defined as recorded values/total values.

1152 Bodø

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	96.6	98.2	98.4	98.3	98.2	96.5	80.8	92.7	95.2	96.6	97.5	94.8	95.3
0.1	96.6	98.0	98.4	97.8	98.2	96.5	80.8	92.7	95.2	96.3	97.3	94.8	95.2
0.5	96.6	98.0	98.4	98.0	98.2	96.5	80.6	92.7	95.2	96.3	97.3	94.8	95.2
1.0	96.6	98.0	98.4	98.0	98.2	96.2	80.5	92.6	95.0	96.3	97.3	94.8	95.1
1.5	96.5	98.0	98.4	98.0	98.2	96.3	80.8	92.6	95.2	96.0	97.2	94.5	95.1
2.0	96.5	98.0	98.2	98.0	98.2	96.5	80.8	92.4	95.0	96.0	97.2	94.5	95.1

3836 Sodankyle

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	97.3	99.3	99.5	97.8	100.0	99.8	100.0	100.0	100.0	100.0	99.8	99.7	99.4
0.1	99.4	99.8	99.5	98.0	99.8	99.8	100.0	99.7	100.0	99.8	99.8	99.7	99.6
0.5	99.0	99.5	99.5	98.0	99.5	99.7	99.8	99.7	100.0	99.7	100.0	99.7	99.5
1.0	98.9	99.6	99.5	98.0	99.4	99.8	100.0	99.7	100.0	99.8	100.0	99.7	99.5
1.5	99.0	99.8	99.4	98.0	99.5	99.8	99.8	99.7	100.0	99.8	100.0	99.7	99.5
2.0	99.0	99.8	99.4	98.0	99.4	99.8	99.7	99.5	100.0	99.7	99.8	99.4	99.5

1001 Jan-Mayen

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	96.8	98.6	98.2	98.5	88.4	88.3	88.1	87.9	87.8	87.7	88.2	85.3	91.1
0.1	76.9	79.1	78.5	78.7	79.5	79.5	79.0	78.9	78.7	78.7	79.2	75.8	78.5
0.5	76.9	79.1	78.5	78.7	79.5	79.5	78.5	78.7	78.5	78.5	79.2	75.8	78.5
1.0	76.9	79.1	78.5	78.7	79.2	79.7	78.5	78.7	78.5	78.4	78.8	75.8	78.4
1.5	76.9	79.1	78.4	78.7	79.2	79.5	78.4	78.7	78.5	78.5	78.5	75.8	78.3
2.0	76.9	78.7	78.5	78.7	79.2	79.3	78.4	78.7	78.5	78.5	78.5	75.5	78.3

1028 Bjørnøya

H(km)	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	98.9	99.3	99.5	96.8	100.0	99.2	98.9	88.9	88.0	88.4	88.2	88.1	94.5
0.1	69.4	69.3	70.0	67.5	69.8	68.8	69.7	69.8	69.3	69.5	69.3	69.2	69.3
0.5	69.4	69.3	70.0	67.5	69.5	69.2	69.5	69.8	69.0	69.4	69.2	69.2	69.2
1.0	69.4	69.3	70.0	67.5	69.5	68.8	69.4	69.8	69.0	69.5	69.0	69.2	69.2
1.5	69.4	69.3	70.0	67.5	69.2	68.8	69.4	69.8	69.2	69.5	68.8	69.0	69.2
2.0	69.2	69.3	70.0	67.5	69.4	68.7	69.4	69.8	69.2	69.5	68.8	69.2	69.2

Table 3.4.1; : Data recovery in percent, defined as recorded values/total values.

2527 Landvetter

height interval km	jan		feb		mar		apr		may		jun	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	451	478	968	688	497	448	604	524	625	502	445	527
0.10-0.19	110	84	114	90	105	65	97	62	119	72	116	64
0.20-0.29	85	73	78	71	77	66	82	43	77	53	71	32
0.30-0.39	89	73	61	66	78	71	76	54	68	50	55	38
0.40-0.49	77	65	60	79	60	58	53	57	61	35	50	41
0.50-0.59	86	75	72	78	66	69	65	48	57	24	64	38
0.60-0.69	75	74	57	65	60	66	36	57	40	48	37	53
0.70-0.79	67	54	67	57	58	71	62	69	60	49	42	44
0.80-0.89	54	65	56	68	57	73	45	49	46	56	47	53
0.90-0.99	69	64	62	66	61	59	42	61	51	50	45	49
1.00-1.09	122	98	74	70	101	86	58	63	41	59	46	48
1.10-1.19	136	122	90	99	132	143	88	110	66	81	61	80
1.20-1.29	143	127	151	139	153	167	175	178	164	186	179	189
1.30-1.39	138	134	118	136	126	123	140	150	179	174	150	159
1.40-1.49	70	69	93	91	68	80	57	58	71	97	86	72
1.50-1.59	58	53	54	54	60	53	31	53	50	51	47	51
1.60-1.69	52	60	42	39	54	53	48	51	45	71	40	62
1.70-1.79	58	47	46	43	56	53	48	44	43	56	57	44
1.80-1.89	53	43	36	46	50	45	46	51	64	65	46	49
1.90-1.99	61	45	53	41	53	54	51	41	51	52	48	46
2.00-2.09	51	54	33	47	50	38	46	46	41	50	45	38
2.10-2.19	45	51	44	39	53	51	41	54	53	43	44	56
2.20-2.29	46	32	47	51	50	51	48	56	37	62	44	38
2.30-2.39	49	51	35	41	48	51	45	48	57	39	53	49
2.40-2.49	22	24	18	16	22	21	15	22	19	18	28	20
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

height interval km	jul		aug		sep		oct		nov		dec	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	638	486	722	724	461	439	487	691	538	469	840	1123
0.10-0.19	110	55	102	57	90	55	99	66	91	61	110	100
0.20-0.29	69	46	65	45	75	46	56	61	75	70	79	61
0.30-0.39	63	33	60	45	54	36	69	56	55	60	85	67
0.40-0.49	66	46	48	45	42	50	65	68	58	69	69	71
0.50-0.59	47	44	51	38	38	40	55	50	47	58	58	70
0.60-0.69	49	49	41	44	62	56	59	72	69	58	66	58
0.70-0.79	31	58	35	52	56	50	61	76	59	56	45	54
0.80-0.89	47	51	48	75	47	61	58	46	51	62	50	53
0.90-0.99	36	41	42	47	36	65	51	59	65	62	64	68
1.00-1.09	51	55	37	54	55	58	83	78	87	75	80	76
1.10-1.19	46	68	74	85	95	107	103	97	119	120	136	114
1.20-1.29	157	155	160	173	175	154	161	161	158	147	156	156
1.30-1.39	198	204	188	199	174	175	176	164	140	153	115	113
1.40-1.49	77	98	70	78	63	69	114	107	54	66	77	73
1.50-1.59	57	51	48	44	58	45	54	57	56	49	56	56
1.60-1.69	45	45	44	35	48	70	49	44	45	52	53	61
1.70-1.79	50	54	47	44	51	42	56	44	54	36	54	58
1.80-1.89	51	64	46	51	55	50	44	59	48	49	45	53
1.90-1.99	49	45	40	50	42	50	60	50	46	36	50	34
2.00-2.09	44	56	42	44	52	56	63	47	51	43	49	29
2.10-2.19	49	47	48	44	46	41	50	46	47	55	46	43
2.20-2.29	37	47	46	45	42	46	47	53	44	37	49	42
2.30-2.39	52	44	39	43	53	47	51	43	45	36	60	43
2.40-2.49	19	15	15	26	26	19	28	22	19	17	19	24
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

1415 Sola

height interval km	jan 0	jan 12	feb 0	feb 12	mar 0	mar 12	apr 0	apr 12	may 0	may 12	jun 0	jun 12
0.00-0.09	473	485	788	785	465	478	561	455	530	473	758	625
0.10-0.19	131	132	140	128	140	117	169	142	174	164	127	123
0.20-0.29	394	414	385	368	389	368	365	348	397	378	368	362
0.30-0.39	75	77	77	78	73	49	76	55	87	50	81	68
0.40-0.49	71	74	80	74	70	82	66	62	70	70	59	67
0.50-0.59	391	386	360	355	389	393	355	365	372	378	365	369
0.60-0.69	105	109	73	79	101	109	106	100	102	103	108	113
0.70-0.79	98	101	108	107	97	85	100	110	112	118	114	111
0.80-0.89	392	393	365	380	381	387	362	364	393	396	370	374
0.90-0.99	76	66	65	59	67	85	59	60	58	59	75	64
1.00-1.09	79	80	72	79	76	81	61	78	63	63	67	64
1.10-1.19	410	405	354	358	379	385	365	359	371	368	369	367
1.20-1.29	105	108	103	87	133	134	97	87	65	87	72	62
1.30-1.39	123	118	101	120	127	135	141	152	124	130	156	156
1.40-1.49	123	107	119	115	132	128	138	156	169	181	136	137
1.50-1.59	92	83	94	92	82	97	60	89	84	93	72	80
1.60-1.69	70	72	60	66	69	63	64	64	61	60	69	39
1.70-1.79	388	383	353	344	373	374	361	355	370	377	350	364
1.80-1.89	73	72	75	76	59	66	78	71	76	79	65	70
1.90-1.99	64	69	60	60	78	72	72	58	62	67	59	71
2.00-2.09	370	373	353	350	367	375	354	372	386	384	361	355
2.10-2.19	64	68	62	71	67	53	63	65	62	70	76	54
2.20-2.29	54	66	71	77	79	78	55	76	76	61	62	68
2.30-2.39	359	373	338	336	370	366	356	346	378	380	350	373
2.40-2.49	73	61	65	60	54	58	59	62	80	77	57	50
2.50-2.59	49	38	32	31	40	49	37	48	38	38	42	30

height interval km	jul 0	jul 12	aug 0	aug 12	sep 0	sep 12	oct 0	oct 12	nov 0	nov 12	dec 0	dec 12
0.00-0.09	2041	1689	1095	809	1251	946	657	554	491	446	703	634
0.10-0.19	138	143	147	134	146	107	150	123	129	129	139	127
0.20-0.29	325	319	349	336	319	328	369	366	356	343	385	400
0.30-0.39	65	61	60	71	60	44	38	42	50	49	55	43
0.40-0.49	98	79	63	66	37	40	42	48	62	70	53	64
0.50-0.59	333	340	374	380	340	350	371	365	354	351	383	392
0.60-0.69	93	108	115	126	97	97	63	79	91	111	109	120
0.70-0.79	137	128	106	119	89	95	93	89	114	112	100	96
0.80-0.89	327	344	354	363	336	342	373	384	354	355	374	378
0.90-0.99	43	47	57	69	47	51	70	54	66	62	79	76
1.00-1.09	60	50	65	79	55	60	83	75	60	73	68	76
1.10-1.19	315	341	364	353	335	343	389	397	364	358	407	388
1.20-1.29	55	47	76	63	82	100	123	92	116	110	100	111
1.30-1.39	103	112	126	141	139	133	146	143	147	137	149	139
1.40-1.49	157	157	163	158	152	152	151	148	123	141	118	123
1.50-1.59	78	84	85	94	57	74	110	103	74	84	87	80
1.60-1.69	62	45	61	51	45	59	72	69	66	60	68	65
1.70-1.79	326	347	354	384	356	357	385	375	360	351	386	381
1.80-1.89	61	55	74	75	72	65	71	68	66	69	68	81
1.90-1.99	44	64	75	78	83	68	95	92	62	67	74	68
2.00-2.09	330	336	360	372	352	365	363	389	360	355	379	381
2.10-2.19	54	56	81	78	71	74	77	80	64	63	72	73
2.20-2.29	61	63	74	55	68	59	62	78	63	68	65	49
2.30-2.39	331	340	364	375	345	356	386	370	347	365	365	383
2.40-2.49	52	61	68	70	59	59	65	69	58	60	76	67
2.50-2.59	41	42	47	54	36	47	46	42	44	46	41	43

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

1384 Gardermoen

height interval km	jan		feb		mar		apr		may		jun	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	869	899	1149	998	777	736	909	749	856	747	1009	709
0.10-0.19	106	118	93	90	115	70	118	63	111	59	118	67
0.20-0.29	98	105	74	79	84	69	78	58	70	36	49	47
0.30-0.39	377	379	357	351	386	381	361	353	363	343	335	328
0.40-0.49	127	117	83	96	81	90	90	77	84	37	78	47
0.50-0.59	103	101	101	97	85	84	92	83	99	68	80	56
0.60-0.69	390	384	371	397	392	400	364	377	380	375	349	348
0.70-0.79	70	95	67	74	62	76	53	68	43	47	41	44
0.80-0.89	93	69	60	73	66	79	66	63	47	49	44	40
0.90-0.99	380	373	344	342	385	391	341	365	357	370	320	328
1.00-1.09	109	102	98	98	117	125	81	79	63	75	37	42
1.10-1.19	136	138	107	117	128	121	145	130	113	114	104	125
1.20-1.29	117	108	126	118	133	140	156	173	168	182	160	179
1.30-1.39	86	94	104	103	108	93	93	103	127	151	79	99
1.40-1.49	81	79	68	65	63	79	60	74	56	86	54	66
1.50-1.59	345	342	325	343	383	375	360	370	363	368	344	389
1.60-1.69	65	77	53	57	78	52	78	83	69	84	54	72
1.70-1.79	75	71	71	80	67	82	72	68	75	65	61	74
1.80-1.89	363	342	336	346	365	378	359	380	384	382	344	371
1.90-1.99	63	61	53	55	61	62	59	60	58	77	59	65
2.00-2.09	54	61	46	50	66	58	73	62	65	68	51	81
2.10-2.19	357	339	333	331	376	379	358	371	364	385	359	370
2.20-2.29	54	60	69	66	61	56	64	57	64	71	72	53
2.30-2.39	49	57	69	56	67	68	59	65	73	67	66	61
2.40-2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

height interval km	jul		aug		sep		oct		nov		dec	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	1459	1222	1951	1546	919	648	989	795	1045	925	1059	881
0.10-0.19	111	63	113	52	101	38	88	44	106	74	113	121
0.20-0.29	58	32	56	42	58	42	72	57	79	86	95	98
0.30-0.39	344	319	324	319	342	332	366	371	349	362	385	405
0.40-0.49	67	40	78	47	87	77	102	87	101	101	128	127
0.50-0.59	115	94	88	78	83	75	95	94	116	103	100	103
0.60-0.69	346	345	355	354	343	343	369	388	357	363	382	391
0.70-0.79	45	31	44	32	47	63	64	91	76	74	72	68
0.80-0.89	52	61	64	71	47	53	73	77	72	61	80	68
0.90-0.99	317	342	314	343	344	349	379	393	345	358	368	374
1.00-1.09	44	43	26	49	52	74	90	98	103	103	103	116
1.10-1.19	75	82	80	108	131	128	148	133	141	134	136	138
1.20-1.29	170	179	164	176	159	187	141	158	144	138	132	137
1.30-1.39	102	112	85	98	83	116	141	133	82	86	100	102
1.40-1.49	34	60	40	65	61	68	65	74	59	62	68	73
1.50-1.59	339	355	332	333	366	377	381	380	344	340	356	361
1.60-1.69	58	56	59	58	64	84	77	77	71	69	71	78
1.70-1.79	64	68	78	65	93	73	74	78	56	61	65	68
1.80-1.89	376	372	331	363	381	384	375	387	344	328	358	357
1.90-1.99	56	59	61	58	80	72	62	70	61	67	66	63
2.00-2.09	64	67	42	64	71	75	77	66	67	59	60	72
2.10-2.19	346	358	349	356	373	383	374	380	337	350	363	350
2.20-2.29	70	77	72	78	59	62	55	65	62	59	69	89
2.30-2.39	78	68	59	66	73	61	60	58	60	55	66	51
2.40-2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

2225 Frøsøn

height interval km	jan 0	jan 12	feb 0	feb 12	mar 0	mar 12	apr 0	apr 12	may 0	may 12	jun 0	jun 12
0.00-0.09	329	322	323	307	342	324	330	320	333	325	328	322
0.10-0.19	36	20	44	23	43	17	34	17	30	8	28	9
0.20-0.29	27	29	32	23	32	16	24	6	23	11	23	9
0.30-0.39	15	19	39	29	28	20	20	12	13	5	17	6
0.40-0.49	24	16	26	27	25	23	18	7	16	6	18	6
0.50-0.59	12	18	36	25	31	28	22	8	14	7	18	8
0.60-0.69	15	19	16	31	29	25	9	27	21	9	18	14
0.70-0.79	47	25	48	40	51	47	22	16	19	12	12	14
0.80-0.89	49	50	68	65	97	72	41	28	16	15	15	18
0.90-0.99	66	51	75	68	86	83	83	58	45	35	38	31
1.00-1.09	54	41	69	72	113	87	98	77	111	85	102	84
1.10-1.19	44	42	63	56	61	66	67	75	62	74	66	51
1.20-1.29	24	23	36	46	36	43	29	24	31	25	27	29
1.30-1.39	9	12	28	23	28	20	15	19	18	21	19	19
1.40-1.49	18	14	30	18	24	19	19	26	23	20	27	20
1.50-1.59	21	18	17	30	28	27	27	14	15	12	15	18
1.60-1.69	11	13	27	19	19	24	21	19	23	25	19	19
1.70-1.79	10	13	20	17	30	23	23	17	14	25	18	15
1.80-1.89	8	14	17	18	32	25	22	18	21	25	15	13
1.90-1.99	13	19	22	26	20	20	24	12	20	16	19	13
2.00-2.09	21	14	20	18	26	16	22	22	14	19	12	13
2.10-2.19	14	13	13	19	34	13	19	19	27	13	18	11
2.20-2.29	4	6	9	9	14	5	10	7	8	3	3	4
2.30-2.39	0	0	0	0	0	0	0	0	0	0	0	0
2.40-2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

height interval km	jul 0	jul 12	aug 0	aug 12	sep 0	sep 12	oct 0	oct 12	nov 0	nov 12	dec 0	dec 12
0.00-0.09	320	321	330	323	314	308	331	315	311	308	316	316
0.10-0.19	10	7	17	14	21	7	26	5	14	6	15	12
0.20-0.29	11	5	14	8	18	12	28	18	21	14	17	12
0.30-0.39	11	2	17	10	11	12	21	9	17	17	22	13
0.40-0.49	6	6	10	5	15	15	18	17	19	12	17	10
0.50-0.59	11	9	15	14	18	19	26	21	18	23	17	9
0.60-0.69	8	5	9	14	16	15	21	20	17	22	13	12
0.70-0.79	11	9	16	15	17	18	22	20	28	19	13	13
0.80-0.89	7	6	13	14	23	27	45	40	47	43	43	35
0.90-0.99	22	16	23	29	59	54	68	55	60	62	54	46
1.00-1.09	54	38	102	88	111	90	75	63	76	64	48	40
1.10-1.19	38	34	56	57	53	48	55	43	41	39	31	20
1.20-1.29	21	19	16	26	17	11	32	22	21	20	19	19
1.30-1.39	8	10	10	10	14	13	21	13	16	22	8	15
1.40-1.49	13	9	15	25	20	13	22	22	16	12	8	12
1.50-1.59	14	7	13	15	17	12	19	17	16	13	16	7
1.60-1.69	7	10	11	13	15	20	17	8	19	11	16	8
1.70-1.79	5	8	13	17	19	19	13	21	16	15	18	6
1.80-1.89	5	8	11	18	17	14	20	10	10	7	19	7
1.90-1.99	6	10	13	20	22	10	13	15	12	10	19	7
2.00-2.09	11	9	14	19	13	17	21	10	15	17	15	10
2.10-2.19	10	11	14	22	18	18	18	10	21	13	12	9
2.20-2.29	4	2	5	4	10	6	6	10	2	4	3	2
2.30-2.39	0	0	0	0	0	0	0	0	0	0	0	0
2.40-2.49	0	0	0	0	0	0	0	0	0	0	0	0
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

1241 Ørland

height interval km	jan		feb		mar		apr		may		jun	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	649	595	1125	1208	1049	1022	816	773	630	640	1115	969
0.10-0.19	123	131	115	93	122	103	140	125	167	146	126	120
0.20-0.29	395	385	366	363	364	353	360	341	372	347	308	298
0.30-0.39	84	73	65	65	66	64	41	22	43	40	51	27
0.40-0.49	96	80	64	74	80	68	47	37	43	41	48	26
0.50-0.59	389	389	352	346	384	371	355	327	345	333	299	289
0.60-0.69	92	110	88	85	83	98	81	72	102	73	81	76
0.70-0.79	89	78	87	90	79	91	82	79	114	107	90	101
0.80-0.89	371	368	351	346	367	368	345	362	385	368	316	315
0.90-0.99	57	56	38	51	54	57	38	71	65	64	54	42
1.00-1.09	48	74	48	38	49	54	51	54	48	55	63	62
1.10-1.19	391	390	336	322	356	370	328	338	353	342	300	291
1.20-1.29	89	103	71	79	105	110	79	81	52	63	48	53
1.30-1.39	114	108	85	88	119	128	133	146	117	122	119	116
1.40-1.49	92	94	91	95	104	91	131	138	171	175	155	174
1.50-1.59	61	77	78	72	63	59	75	60	90	101	93	94
1.60-1.69	40	38	49	38	39	34	56	65	55	47	51	42
1.70-1.79	358	342	319	321	341	332	341	326	352	362	298	310
1.80-1.89	46	47	37	53	57	57	47	51	55	62	58	57
1.90-1.99	51	44	49	42	55	47	47	51	60	58	61	66
2.00-2.09	371	350	312	325	358	346	335	343	359	351	311	300
2.10-2.19	50	52	41	43	48	41	61	58	63	62	64	53
2.20-2.29	35	49	39	34	49	51	50	51	57	60	60	45
2.30-2.39	350	341	311	296	345	343	348	337	344	353	296	305
2.40-2.49	37	40	43	41	40	40	49	51	57	50	53	45
2.50-2.59	38	34	30	37	49	49	48	40	39	54	49	59

height interval km	jul		aug		sep		oct		nov		dec	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	2285	1602	1379	717	1020	876	952	755	938	686	1195	1063
0.10-0.19	159	145	158	131	120	93	126	112	105	108	108	125
0.20-0.29	285	295	304	307	332	314	370	362	354	354	381	370
0.30-0.39	45	39	44	33	38	27	45	44	51	51	66	69
0.40-0.49	45	39	40	32	26	26	56	67	63	64	56	63
0.50-0.59	271	294	303	319	339	332	371	366	372	370	364	371
0.60-0.69	75	74	58	63	81	91	78	90	100	100	101	106
0.70-0.79	117	104	115	114	85	88	79	69	91	77	73	71
0.80-0.89	291	319	297	327	321	337	353	368	340	348	364	336
0.90-0.99	50	47	33	53	48	39	42	46	47	46	50	42
1.00-1.09	41	37	24	41	32	38	50	45	32	38	58	44
1.10-1.19	288	293	291	313	342	332	347	362	358	363	343	355
1.20-1.29	43	41	38	38	79	67	99	88	92	86	104	115
1.30-1.39	99	98	119	130	136	144	118	125	127	138	119	110
1.40-1.49	174	177	166	190	145	148	122	126	104	92	93	89
1.50-1.59	85	106	74	78	50	51	74	86	57	71	66	59
1.60-1.69	32	31	37	46	45	46	57	48	43	40	45	39
1.70-1.79	286	309	305	319	340	337	346	350	330	339	344	342
1.80-1.89	35	53	36	42	47	49	43	58	54	50	62	49
1.90-1.99	50	45	54	55	51	54	67	65	53	41	44	52
2.00-2.09	278	300	307	333	341	352	340	349	338	339	349	344
2.10-2.19	49	53	45	65	45	74	54	60	64	61	47	57
2.20-2.29	53	56	59	45	54	45	50	57	46	60	50	36
2.30-2.39	284	308	309	340	341	344	363	355	330	362	348	332
2.40-2.49	43	66	53	66	50	60	58	48	50	48	44	52
2.50-2.59	49	56	60	46	55	59	45	38	35	44	48	47

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

9661 Mike

height interval km	jan 0	jan 12	feb 0	feb 12	mar 0	mar 12	apr 0	apr 12	may 0	may 12	jun 0	jun 12
0.00-0.09	702	1029	1130	1350	884	1002	1080	1316	705	949	485	855
0.10-0.19	93	77	96	109	78	89	109	116	139	141	178	164
0.20-0.29	309	319	265	268	300	284	304	308	333	320	257	256
0.30-0.39	45	55	51	46	46	46	53	49	71	62	46	48
0.40-0.49	67	54	58	52	59	62	56	59	77	74	71	63
0.50-0.59	328	336	278	270	315	308	301	306	334	318	303	279
0.60-0.69	92	73	69	71	94	83	90	78	99	103	64	85
0.70-0.79	80	73	110	89	97	92	98	88	105	116	120	136
0.80-0.89	335	323	269	277	297	299	303	306	318	348	301	286
0.90-0.99	69	77	55	52	63	58	73	60	61	58	79	86
1.00-1.09	68	75	86	75	72	70	58	65	96	66	83	91
1.10-1.19	373	363	292	289	311	311	306	296	312	310	303	288
1.20-1.29	118	121	92	82	126	119	96	86	97	86	88	83
1.30-1.39	109	114	91	88	136	139	145	138	157	153	126	134
1.40-1.49	103	88	102	111	89	84	107	107	172	165	197	186
1.50-1.59	78	72	58	62	56	70	84	78	99	90	94	93
1.60-1.69	76	71	62	64	72	64	57	70	64	62	73	69
1.70-1.79	345	322	277	259	310	294	306	309	308	314	296	298
1.80-1.89	78	78	61	68	65	76	83	59	80	61	88	87
1.90-1.99	68	58	65	80	72	58	64	68	76	62	70	84
2.00-2.09	330	332	258	265	314	310	303	281	309	304	292	276
2.10-2.19	68	64	62	67	67	73	58	64	75	62	78	65
2.20-2.29	67	65	66	61	56	60	68	58	77	63	74	83
2.30-2.39	332	310	253	265	295	296	294	293	306	293	285	272
2.40-2.49	51	65	67	69	63	54	52	62	79	69	68	70
2.50-2.59	64	59	58	47	64	41	55	47	57	55	69	52

height interval km	jul 0	jul 12	aug 0	aug 12	sep 0	sep 12	oct 0	oct 12	nov 0	nov 12	dec 0	dec 12
0.00-0.09	647	917	639	949	1286	1403	2103	2105	528	958	1006	1312
0.10-0.19	143	146	139	136	86	90	107	92	92	93	74	85
0.20-0.29	294	281	280	278	290	282	275	252	328	315	312	302
0.30-0.39	60	61	47	59	39	33	44	34	39	37	35	41
0.40-0.49	54	82	57	55	41	41	53	60	58	51	53	50
0.50-0.59	302	316	299	278	307	313	296	272	341	329	327	324
0.60-0.69	100	94	78	84	79	81	97	82	83	79	110	99
0.70-0.79	126	122	130	116	83	95	70	80	80	76	56	70
0.80-0.89	317	320	293	289	308	311	281	264	327	317	321	296
0.90-0.99	64	76	66	59	65	57	52	65	54	59	66	61
1.00-1.09	80	76	74	71	58	70	73	71	65	59	67	60
1.10-1.19	317	302	317	308	332	318	306	274	362	360	332	322
1.20-1.29	69	65	84	82	101	100	91	101	110	113	131	112
1.30-1.39	151	138	172	162	159	140	148	142	134	124	114	133
1.40-1.49	182	176	184	173	129	136	106	99	103	110	94	93
1.50-1.59	100	87	63	83	71	74	89	77	77	75	85	74
1.60-1.69	68	69	84	69	65	68	65	59	72	57	65	80
1.70-1.79	312	321	310	309	312	307	296	252	336	314	323	315
1.80-1.89	65	71	79	87	65	52	64	78	67	77	85	61
1.90-1.99	79	55	71	68	62	77	60	65	73	64	71	77
2.00-2.09	307	305	311	304	326	300	274	263	326	302	318	314
2.10-2.19	68	72	79	68	74	58	59	64	69	66	67	71
2.20-2.29	79	78	80	67	55	75	61	62	56	67	60	56
2.30-2.39	309	290	296	302	319	304	274	264	317	313	312	309
2.40-2.49	55	59	71	72	55	73	50	40	46	51	60	60
2.50-2.59	74	66	70	52	50	50	40	56	56	40	48	52

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

9661 Mike

height interval km	jan		feb		mar		apr		may		jun	
	6	18	6	18	6	18	6	18	6	18	6	18
0.00-0.09	1148	1101	1440	1426	1228	1256	1576	1627	1047	955	880	885
0.10-0.19	73	83	99	113	84	86	109	105	141	137	166	166
0.20-0.29	314	300	263	264	287	278	290	300	320	320	255	260
0.30-0.39	47	50	59	44	46	44	40	56	55	60	49	49
0.40-0.49	64	64	42	52	43	64	55	47	80	75	69	47
0.50-0.59	322	329	268	273	306	305	290	295	323	321	272	295
0.60-0.69	89	84	72	64	96	91	87	91	85	103	81	86
0.70-0.79	72	94	88	96	75	87	83	84	110	117	125	122
0.80-0.89	323	328	278	265	306	302	285	297	316	318	289	278
0.90-0.99	72	76	49	58	54	57	55	45	71	77	58	73
1.00-1.09	64	80	66	74	66	69	60	72	78	77	81	82
1.10-1.19	364	359	284	288	322	322	279	284	296	304	293	302
1.20-1.29	106	116	79	85	123	127	103	81	79	92	88	86
1.30-1.39	110	119	91	87	141	131	149	143	155	147	138	128
1.40-1.49	91	90	104	104	75	77	111	111	153	176	203	191
1.50-1.59	60	73	62	69	74	69	63	85	88	101	93	89
1.60-1.69	63	64	54	64	56	53	66	66	74	66	72	59
1.70-1.79	340	335	265	261	307	299	304	288	314	313	285	283
1.80-1.89	73	72	55	74	73	70	67	65	88	51	77	90
1.90-1.99	57	83	67	55	56	70	61	54	64	70	75	55
2.00-2.09	324	316	267	265	307	307	291	281	301	308	302	278
2.10-2.19	74	66	64	59	58	72	62	56	59	70	55	87
2.20-2.29	77	64	58	62	67	57	56	61	65	60	77	58
2.30-2.39	311	315	257	262	300	308	287	267	301	311	283	279
2.40-2.49	60	47	60	59	58	54	54	61	67	55	58	59
2.50-2.59	48	58	52	59	44	52	44	46	51	60	52	56

height interval km	jul		aug		sep		oct		nov		dec	
	6	18	6	18	6	18	6	18	6	18	6	18
0.00-0.09	922	882	994	1026	1511	1568	2320	2189	994	1006	1411	1374
0.10-0.19	139	147	120	131	87	87	107	98	98	102	73	91
0.20-0.29	275	291	275	270	282	281	275	251	317	309	312	312
0.30-0.39	43	69	52	69	38	32	38	53	41	43	46	50
0.40-0.49	63	63	57	52	39	46	56	42	63	54	44	47
0.50-0.59	289	308	284	290	290	298	292	270	325	323	311	326
0.60-0.69	101	103	81	79	80	79	94	87	76	85	114	107
0.70-0.79	135	131	132	132	93	92	80	80	71	84	64	70
0.80-0.89	300	303	285	286	291	301	280	255	333	309	301	326
0.90-0.99	74	75	69	61	76	56	64	68	50	57	79	67
1.00-1.09	70	75	64	74	60	75	51	69	71	66	68	68
1.10-1.19	308	319	290	295	313	322	294	286	338	334	319	341
1.20-1.29	69	77	83	78	113	103	110	97	104	124	133	110
1.30-1.39	137	147	161	160	142	148	120	134	140	136	136	130
1.40-1.49	178	177	168	177	133	130	97	108	103	115	97	81
1.50-1.59	74	83	84	78	66	71	89	75	74	62	86	61
1.60-1.69	66	67	76	76	73	84	63	63	73	71	72	63
1.70-1.79	309	299	313	314	306	300	280	262	320	317	311	330
1.80-1.89	68	79	72	75	65	62	64	63	59	61	77	67
1.90-1.99	74	78	86	85	71	77	63	65	69	71	60	66
2.00-2.09	302	315	303	300	311	308	276	267	316	310	313	329
2.10-2.19	73	69	76	72	59	66	46	74	65	72	60	70
2.20-2.29	65	67	70	75	61	55	48	59	64	57	61	68
2.30-2.39	316	310	306	296	298	294	282	263	312	302	315	314
2.40-2.49	74	68	75	68	53	67	52	54	57	55	49	64
2.50-2.59	56	65	49	71	58	53	44	59	53	43	56	48

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

1152 Bodø

height interval (km)	jan		feb		mar		apr		may		jun	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	1306	968	1000	782	815	416	829	458	796	538	1271	457
0.10-0.19	124	128	131	115	114	119	140	129	175	158	151	170
0.20-0.29	398	384	364	376	397	397	363	372	372	385	341	357
0.30-0.39	105	98	75	82	77	71	61	65	71	50	53	61
0.40-0.49	71	102	90	85	83	72	63	61	75	60	69	65
0.50-0.59	393	396	375	375	392	413	347	352	354	351	323	349
0.60-0.69	92	104	73	79	91	92	100	92	83	86	69	78
0.70-0.79	78	90	86	90	87	83	104	120	124	126	130	140
0.80-0.89	354	356	348	364	374	386	355	365	385	397	332	359
0.90-0.99	68	68	62	46	68	66	55	66	31	54	46	47
1.00-1.09	63	71	58	49	56	59	50	60	57	61	62	51
1.10-1.19	373	386	340	367	394	401	358	352	351	358	325	359
1.20-1.29	92	98	90	80	120	117	81	84	69	52	56	52
1.30-1.39	109	101	86	99	114	126	145	152	124	120	117	109
1.40-1.49	82	72	93	89	91	92	112	106	155	172	164	182
1.50-1.59	58	75	67	73	79	74	58	70	68	69	55	63
1.60-1.69	55	64	55	61	76	59	64	54	55	56	43	56
1.70-1.79	351	356	338	331	362	380	351	361	361	371	351	364
1.80-1.89	67	68	50	63	64	62	71	66	59	76	54	66
1.90-1.99	75	64	67	54	68	85	64	70	64	78	63	72
2.00-2.09	352	359	335	354	374	378	350	368	372	382	329	373
2.10-2.19	49	55	71	55	60	58	65	76	81	70	56	59
2.20-2.29	70	64	58	49	70	64	52	67	63	74	73	65
2.30-2.39	343	352	326	348	363	369	344	365	358	367	328	370
2.40-2.49	53	54	45	42	45	56	52	60	54	61	54	59
2.50-2.59	56	56	46	38	44	52	47	50	61	59	45	59

height interval (km)	jul		aug		sep		oct		nov		dec	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	3185	2251	1940	811	1409	636	1143	628	934	534	1238	908
0.10-0.19	129	142	137	143	125	116	114	132	113	114	118	125
0.20-0.29	291	322	341	379	337	357	355	358	359	378	386	401
0.30-0.39	51	53	74	68	44	53	51	58	69	79	67	92
0.40-0.49	50	44	44	53	40	35	68	61	69	74	67	67
0.50-0.59	280	300	319	342	330	341	369	381	369	379	393	405
0.60-0.69	68	94	88	82	93	104	100	95	101	101	112	113
0.70-0.79	134	137	127	130	99	97	81	93	87	97	69	63
0.80-0.89	289	316	316	347	317	335	351	366	351	362	354	353
0.90-0.99	23	25	30	36	43	54	59	55	50	59	62	68
1.00-1.09	47	61	59	51	54	67	59	64	72	63	72	58
1.10-1.19	284	312	323	345	339	352	366	374	353	379	358	378
1.20-1.29	56	55	52	54	80	74	100	100	116	114	125	141
1.30-1.39	111	114	116	130	142	154	137	131	122	138	108	108
1.40-1.49	141	143	165	188	127	128	112	124	88	85	72	83
1.50-1.59	67	67	64	70	40	61	64	62	50	73	71	64
1.60-1.69	44	48	45	60	59	52	53	50	66	62	54	48
1.70-1.79	285	319	321	365	334	361	348	366	361	360	354	356
1.80-1.89	53	55	59	64	64	48	66	74	73	53	60	68
1.90-1.99	49	52	50	79	69	73	65	66	54	53	77	52
2.00-2.09	302	321	342	376	332	355	353	375	351	369	357	353
2.10-2.19	61	56	78	65	68	65	62	72	59	70	74	57
2.20-2.29	39	59	50	75	63	70	69	54	66	59	57	48
2.30-2.39	285	326	349	355	327	355	346	374	340	355	351	350
2.40-2.49	53	56	53	68	54	57	50	47	54	47	54	61
2.50-2.59	50	45	56	67	60	49	54	52	47	45	48	53

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

3836 Sodankyle

height interval km	jan		feb		mar		apr		may		jun	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	526	546	502	471	545	479	621	516	670	567	640	538
0.10-0.19	146	163	167	144	149	101	165	40	114	28	123	34
0.20-0.29	450	434	367	351	380	287	356	191	301	139	286	153
0.30-0.39	300	278	268	270	257	257	255	217	304	245	320	263
0.40-0.49	206	197	191	193	184	212	128	120	143	128	107	81
0.50-0.59	215	221	183	205	202	223	129	120	107	80	92	56
0.60-0.69	206	199	173	176	208	202	133	148	104	104	98	79
0.70-0.79	171	176	158	173	169	176	169	205	189	198	191	191
0.80-0.89	152	148	159	145	160	185	160	206	194	206	188	196
0.90-0.99	118	134	117	141	112	118	94	128	74	82	70	80
1.00-1.09	176	142	127	139	166	154	107	138	74	81	56	70
1.10-1.19	203	198	177	179	190	181	191	188	154	148	115	126
1.20-1.29	181	179	153	152	188	184	227	231	262	267	240	253
1.30-1.39	111	127	124	127	146	129	137	140	136	171	146	160
1.40-1.49	148	157	143	138	139	159	121	120	90	96	77	89
1.50-1.59	172	168	141	162	184	169	151	146	96	102	71	80
1.60-1.69	176	189	165	153	175	174	168	193	194	188	138	142
1.70-1.79	147	147	143	131	166	167	180	185	237	224	247	258
1.80-1.89	103	107	119	103	121	100	127	124	130	146	128	145
1.90-1.99	74	89	92	84	96	88	76	73	89	83	88	96
2.00-2.09	88	67	81	76	99	81	86	90	109	92	77	80
2.10-2.19	77	72	66	72	80	79	89	77	106	92	79	100
2.20-2.29	74	84	70	78	72	82	95	71	89	90	86	101
2.30-2.39	102	94	85	66	71	86	77	84	103	91	82	88
2.40-2.49	26	24	20	18	20	9	14	21	17	16	18	15
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

height interval km	jul		aug		sep		oct		nov		dec	
	0	12	0	12	0	12	0	12	0	12	0	12
0.00-0.09	625	545	608	539	529	451	505	480	467	459	435	426
0.10-0.19	114	34	147	34	136	37	114	73	129	122	171	163
0.20-0.29	326	154	338	166	363	228	347	279	404	383	415	396
0.30-0.39	307	255	304	246	266	209	287	270	257	249	248	277
0.40-0.49	135	119	124	87	101	93	139	139	151	129	174	140
0.50-0.59	97	84	98	61	98	99	168	167	203	188	185	202
0.60-0.69	83	78	100	111	153	160	169	180	192	205	215	209
0.70-0.79	205	192	175	202	202	220	196	213	189	184	151	143
0.80-0.89	227	220	175	204	127	156	139	168	127	129	117	124
0.90-0.99	64	74	52	93	68	80	112	119	116	124	115	109
1.00-1.09	60	82	56	71	99	117	117	148	135	151	157	177
1.10-1.19	119	111	134	157	178	200	193	181	194	207	182	176
1.20-1.29	236	257	266	277	233	213	205	206	152	159	146	131
1.30-1.39	174	211	127	186	143	127	123	140	82	102	88	92
1.40-1.49	93	91	87	94	88	104	126	116	128	109	142	127
1.50-1.59	94	104	105	107	144	128	169	159	171	152	195	183
1.60-1.69	131	137	171	148	212	222	202	197	167	150	141	137
1.70-1.79	247	241	272	269	171	177	187	177	137	97	115	108
1.80-1.89	168	193	148	146	136	118	129	117	101	90	90	78
1.90-1.99	87	86	97	81	95	74	87	83	60	86	78	85
2.00-2.09	80	90	79	90	84	79	101	76	68	65	78	76
2.10-2.19	91	77	94	83	106	117	92	111	80	100	83	84
2.20-2.29	100	98	82	91	80	80	78	84	69	68	74	66
2.30-2.39	94	111	92	97	78	81	101	75	72	76	80	83
2.40-2.49	13	19	14	17	21	17	18	16	16	18	24	21
2.50-2.59	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

1001 Jan-Mayen

height interval km	jan 0	jan 12	feb 0	feb 12	mar 0	mar 12	apr 0	apr 12	may 0	may 12	jun 0	jun 12
0.00-0.09	804	625	697	733	558	639	515	588	433	554	411	429
0.10-0.19	91	88	94	102	104	95	124	135	161	166	170	167
0.20-0.29	405	407	388	390	421	415	415	412	462	450	434	444
0.30-0.39	51	57	49	40	47	44	51	48	58	65	86	83
0.40-0.49	55	61	52	66	47	58	50	46	73	73	83	90
0.50-0.59	395	422	413	390	425	425	413	409	434	426	433	442
0.60-0.69	61	68	63	64	78	65	70	58	88	74	96	102
0.70-0.79	62	64	72	70	74	78	79	65	70	74	79	95
0.80-0.89	417	429	406	393	431	420	419	418	444	439	427	443
0.90-0.99	84	75	55	59	72	81	70	51	84	109	77	83
1.00-1.09	75	80	72	72	71	91	69	79	96	83	83	61
1.10-1.19	463	480	431	433	453	449	413	430	433	450	409	428
1.20-1.29	151	137	102	102	140	140	107	108	96	82	94	84
1.30-1.39	109	130	113	113	133	133	153	161	187	182	171	162
1.40-1.49	81	85	96	89	94	97	129	122	175	171	172	175
1.50-1.59	59	61	53	56	69	54	56	58	79	75	88	77
1.60-1.69	54	62	50	49	48	68	53	57	60	64	67	55
1.70-1.79	399	401	385	377	422	408	396	397	425	425	402	426
1.80-1.89	51	61	46	34	57	49	53	47	51	44	59	61
1.90-1.99	57	56	38	40	49	44	52	51	54	63	68	65
2.00-2.09	395	403	373	371	411	407	388	394	416	411	404	403
2.10-2.19	52	48	47	46	43	53	54	43	55	43	52	65
2.20-2.29	46	43	35	40	37	41	42	37	67	53	61	61
2.30-2.39	361	362	354	339	382	387	368	365	357	370	343	349
2.40-2.49	43	39	41	39	35	41	43	31	52	50	53	45
2.50-2.59	34	48	44	45	54	37	43	50	29	33	30	33

height interval km	jul 0	jul 12	aug 0	aug 12	sep 0	sep 12	oct 0	oct 12	nov 0	nov 12	dec 0	dec 12
0.00-0.09	531	534	487	469	624	450	593	456	519	486	916	741
0.10-0.19	154	149	119	115	97	105	83	94	87	103	82	90
0.20-0.29	427	437	408	403	413	412	403	411	372	363	369	385
0.30-0.39	65	78	50	56	47	40	33	42	44	44	52	42
0.40-0.49	87	72	64	66	52	55	50	54	42	54	56	49
0.50-0.59	433	440	434	439	412	407	432	422	381	375	383	394
0.60-0.69	71	78	76	81	54	79	62	62	64	57	58	55
0.70-0.79	82	85	82	70	73	64	73	69	69	75	68	85
0.80-0.89	441	452	446	440	409	432	436	438	391	387	405	391
0.90-0.99	82	73	66	86	72	79	63	98	78	60	77	73
1.00-1.09	75	67	87	82	79	63	67	68	69	66	69	83
1.10-1.19	434	438	425	435	422	417	451	457	409	401	411	430
1.20-1.29	85	75	98	99	124	122	148	148	148	147	158	161
1.30-1.39	155	168	186	178	164	194	177	173	148	134	137	138
1.40-1.49	205	194	172	158	112	123	93	101	124	105	85	98
1.50-1.59	73	62	81	84	61	55	75	73	66	63	59	66
1.60-1.69	68	69	65	62	50	63	69	59	46	63	53	60
1.70-1.79	416	427	426	423	401	409	414	411	368	378	381	380
1.80-1.89	64	61	65	52	59	55	51	51	56	57	45	41
1.90-1.99	67	65	72	64	54	37	49	55	58	49	46	56
2.00-2.09	419	419	420	426	403	403	407	421	366	378	369	370
2.10-2.19	49	72	61	64	50	50	46	55	43	53	38	63
2.20-2.29	59	46	68	53	58	46	39	54	51	51	42	55
2.30-2.39	361	373	366	357	364	372	381	390	346	354	356	364
2.40-2.49	51	58	47	49	40	44	45	46	39	29	36	52
2.50-2.59	42	45	47	43	40	42	32	39	29	49	52	52

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

1028 Bjørnøya

height interval (km)	jan 0	jan 12	feb 0	feb 12	mar 0	mar 12	apr 0	apr 12	may 0	may 12	jun 0	jun 12
0.00-0.09	495	464	680	601	427	414	801	564	409	422	419	418
0.10-0.19	85	84	105	108	106	107	109	97	134	131	139	156
0.20-0.29	339	341	325	335	382	360	325	329	367	352	353	340
0.30-0.39	38	42	46	48	60	57	40	54	36	47	57	65
0.40-0.49	45	44	47	43	45	62	58	58	41	57	82	80
0.50-0.59	360	351	322	306	345	363	326	345	346	354	364	361
0.60-0.69	51	46	36	47	47	45	52	39	39	50	57	65
0.70-0.79	64	56	48	46	41	62	50	50	49	54	64	82
0.80-0.89	373	359	322	313	353	348	338	352	353	361	371	374
0.90-0.99	53	71	45	36	48	50	40	54	36	49	63	74
1.00-1.09	61	66	61	55	67	66	43	61	56	49	63	65
1.10-1.19	394	396	355	352	393	386	337	363	369	361	360	355
1.20-1.29	142	132	110	100	111	125	95	104	82	76	72	84
1.30-1.39	120	127	97	111	115	106	140	147	180	178	146	141
1.40-1.49	74	84	87	82	74	80	75	79	118	114	168	158
1.50-1.59	56	50	40	62	47	50	55	53	57	71	58	67
1.60-1.69	51	55	33	42	61	49	57	51	62	51	68	58
1.70-1.79	341	352	320	316	345	353	324	335	352	361	351	361
1.80-1.89	40	51	40	41	43	39	45	39	52	44	57	54
1.90-1.99	35	49	46	41	29	38	53	48	56	53	58	47
2.00-2.09	342	347	322	309	348	351	313	331	351	377	343	339
2.10-2.19	47	45	34	31	45	38	33	48	49	57	55	51
2.20-2.29	34	45	36	44	36	53	48	35	37	49	40	44
2.30-2.39	321	317	300	300	324	316	297	307	346	325	298	288
2.40-2.49	35	39	34	34	42	40	40	36	41	30	43	47
2.50-2.59	39	34	45	40	37	35	24	19	36	34	38	32

height interval (km)	jul 0	jul 12	aug 0	aug 12	sep 0	sep 12	oct 0	oct 12	nov 0	nov 12	dec 0	dec 12
0.00-0.09	377	381	377	409	529	354	538	411	449	443	483	464
0.10-0.19	142	124	128	107	104	100	69	66	51	59	55	73
0.20-0.29	349	359	352	358	342	338	344	343	318	322	320	325
0.30-0.39	69	74	46	53	48	55	36	33	25	34	57	56
0.40-0.49	71	78	67	68	40	43	35	31	33	41	44	56
0.50-0.59	378	397	360	359	336	341	335	330	339	330	334	328
0.60-0.69	81	86	63	80	45	48	45	34	50	44	51	51
0.70-0.79	82	79	66	57	46	46	40	42	60	62	52	49
0.80-0.89	382	374	365	360	331	349	340	358	353	357	325	336
0.90-0.99	65	67	71	67	40	39	62	62	56	50	46	51
1.00-1.09	71	74	63	70	47	44	58	58	39	47	66	60
1.10-1.19	367	371	357	368	339	359	381	388	370	373	366	375
1.20-1.29	79	66	82	74	109	110	131	128	147	128	142	145
1.30-1.39	158	144	146	150	145	147	153	138	130	123	77	84
1.40-1.49	150	162	161	156	112	97	51	62	69	72	47	57
1.50-1.59	82	70	64	72	54	50	56	61	53	57	45	48
1.60-1.69	53	55	59	64	66	59	53	52	40	47	47	43
1.70-1.79	367	365	363	343	350	335	352	352	343	349	308	322
1.80-1.89	53	58	40	45	44	42	45	65	47	35	42	50
1.90-1.99	70	59	68	48	50	43	49	51	44	40	43	41
2.00-2.09	356	360	354	351	344	337	335	352	333	341	305	320
2.10-2.19	68	61	51	69	43	42	45	38	44	39	38	35
2.20-2.29	68	48	55	57	42	42	42	49	30	50	40	27
2.30-2.39	315	322	348	343	321	327	342	350	320	320	296	305
2.40-2.49	40	47	55	48	38	52	40	45	27	28	34	38
2.50-2.59	35	34	39	37	29	23	35	29	23	30	52	52

Table 3.4.2 Reported heights pr 100 m. in the lower atmosphere (h < 2600 m.)

3.5 Statistics of the refractivity in N- and M-units.

The reported values of pressure, temperature and humidity from the soundings give rise to computation of refractivity at the given heights. From these values of the refractivity is assumed a linear dependence with height and consequently it is made a linear interpolation pr 100 m. of the values of the refractivity in N-units. Using a linear relationship with the height should be well justified by the recommended normal or standard atmosphere. We can also argue that if the atmosphere departs from the normal the radiosonde will detect this as a significant level and thus record the relevant data. We will thus have a set of number of heights roughly proportional to the departures from the normal atmosphere and can as such, use this for a relatively safe linear interpolation.

After the interpolation procedure the computed values of the refractivity was checked for unrealistic values. The original values from the radiosonde should in principle be correct, but since we in some cases could have had only a few reported levels for one ascent (in the worst case only the surface and some of the mandatory levels) the interpolation procedure itself could produce unrealistic values. The recorder humidity values also could be unrealistic and as such influence strongly in the linear interpolation proce- dure. We put rather wide limits for rejection; at the ground, values outside the range 220 to 380 N-values, rejection values for the upper heights determined by the formula from the CCIR recommended atmosphere with N_0 taken as 220 and 380 respectively.

Table 3.5.1 show monthly mean values of the refractivity in N-units with standard deviation and extreme values. The same set of data is also given for the year. We note a natural decrease of the standard deviation with height consistent with the information from the recorded heights.

The range of the mean monthly N-values is from about 300/320 in the lowest layer to about 240/290 in the 2 km level.

The variation in values is greatest in the warm season for all heights but for the maritime station 9661 Mike. Here will the maritimity smoothen the variation in the lowest layers and we find no pronounced variation neither yearly nor with the lower heights. We also note the damping effect of the climate at the Arctic stations with the smallest standard deviations in the lowest layers. In the second kilometre the standard deviations are of the same magnitude as for the rest of the stations presumably due to the fact that the air in this height is not very much affected by the energetic conditions of the underlying surface.

In figures 3.5.1 are shown the cumulative distribution of the N-values for some selected heights, say, surface, 100 m, 200 m, 500 m, 1 km, 1.5 km and 1.9 km.

In the steepness of the curves we again find evidence for multilayering in the lowest part of the troposphere for the coastal stations, 1152 Bodø serves as a good example.

The computed values of the refractivity in N-units pr 100 m. give rise to a computation of the modified refractivity in M-units.

As previous mentioned it is a lot of modifications of the basic N value of the refractivity to describe refractivity in the upper air layers of the atmosphere. The purpose is always the principle to remove the systematic decrease of N with height, in an defined "standard atmosphere".

The transformation :

$$M(h) = N(h) + 10^6 \; h/R$$

where h is height above ground and R is the radius of the earth, gives the so called modified refractivity. As the N-values decrease with height, the refractivity given by this transformation in M-values will increase with height. The transformation is done by means of the R-values given in table 2 in appendix 1, i.e. for each station is used the relevant radius.

In table 3.5.2 is given mean monthly values of the modified refractivity with extreme values. Values for standard deviation and number of observations are omitted since they can be found in table 3.5.1.

Since the M-values are pure transformations of the N-values, the remarks for the variation of the N-values will also be valid for the M-values. Range of the mean monthly M-values is from about 300/320 in the lowest layer to 560/580 in the 2 km level.

2527 Landvetter

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	309.5	308.9	307.8	307.6	312.2	319.2	324.8	325.3	318.9	316.9	311.5	310.0	314.4
	sd	5.7	5.5	6.2	8.0	9.2	10.2	10.1	10.1	10.2	8.5	6.9	6.0	10.3
0.0	max	325.4	324.5	322.6	327.8	335.9	350.4	354.1	359.7	347.7	340.5	329.6	323.7	359.7
	min	294.0	289.3	288.2	286.9	283.6	288.1	298.0	294.3	291.6	293.0	292.9	289.6	283.6
	no	616	557	616	594	613	597	613	605	597	612	595	590	7205
	mean	305.6	305.1	304.0	303.0	306.3	313.5	318.7	320.0	314.2	312.8	307.6	306.1	309.8
	sd	5.8	5.5	6.1	8.1	9.3	10.3	10.7	9.9	10.2	8.8	7.2	6.3	10.1
0.1	max	321.6	320.4	320.7	323.5	327.6	349.6	350.0	347.0	341.4	334.2	325.9	320.9	350.0
	min	290.8	286.6	285.6	284.5	275.9	283.1	285.9	291.9	285.2	285.3	287.9	286.0	275.9
	no	614	557	616	594	611	594	610	602	597	610	595	588	7188
	mean	301.6	301.2	300.4	299.1	301.9	308.9	313.9	315.3	309.9	308.7	303.6	302.1	305.6
	sd	6.0	5.5	6.1	8.0	9.1	10.1	10.7	9.8	9.9	8.9	7.4	6.5	9.9
0.2	max	317.9	316.3	316.9	319.8	321.3	336.4	345.8	345.2	336.8	330.2	322.0	317.2	345.8
	min	284.5	283.7	281.8	276.5	272.4	278.7	276.1	286.7	279.2	273.5	285.0	281.3	272.4
	no	615	557	616	594	611	594	610	602	597	610	595	588	7189
	mean	297.5	297.2	296.8	295.4	298.2	305.0	309.6	311.0	305.8	304.4	299.5	298.1	301.6
	sd	6.1	5.8	6.0	7.9	8.8	9.8	10.6	9.5	9.6	8.7	7.5	6.6	9.7
0.3	max	314.2	312.3	313.7	316.1	318.1	333.4	341.6	338.1	332.2	330.0	318.0	314.5	341.6
	min	275.6	278.5	275.1	273.4	269.6	275.3	268.4	280.8	273.5	270.3	274.2	278.0	268.4
	no	614	557	616	594	611	594	610	602	597	610	595	587	7187
	mean	293.3	293.1	293.1	292.0	294.7	301.1	305.6	306.9	301.9	300.0	295.4	294.1	297.6
	sd	6.2	6.0	6.0	7.6	8.5	9.5	10.2	9.2	9.3	8.7	7.6	6.8	9.5
0.4	max	309.5	308.2	310.5	312.3	315.1	330.4	337.4	334.3	331.1	324.7	315.1	312.0	337.4
	min	270.5	270.2	272.9	271.9	266.9	268.9	275.3	276.1	268.2	267.1	270.4	272.8	266.9
	no	615	556	616	594	611	594	610	602	597	610	595	588	7188
	mean	289.3	288.9	289.3	288.4	291.4	297.4	301.5	302.8	297.9	295.7	291.3	290.0	293.7
	sd	6.3	6.3	6.0	7.3	8.2	9.3	9.9	9.1	9.1	8.8	7.7	7.0	9.4
0.5	max	306.6	305.2	307.2	308.6	311.5	328.7	333.3	327.1	326.0	318.6	313.1	308.8	333.3
	min	266.2	267.3	267.3	268.6	264.7	265.0	272.7	265.5	263.0	262.4	265.3	266.1	262.4
	no	615	556	616	594	610	594	610	601	597	610	595	587	7185
	mean	285.2	284.8	285.4	285.0	288.1	293.7	297.5	298.8	293.9	291.2	287.2	286.0	289.8
	sd	6.4	6.6	6.1	7.0	8.1	9.0	10.0	9.0	9.0	8.7	7.5	7.0	9.3
0.6	max	304.1	302.7	303.9	304.8	313.3	324.9	329.1	322.0	320.7	314.3	310.8	305.3	329.1
	min	263.6	262.2	263.5	264.6	261.0	265.4	266.5	260.3	258.1	258.1	259.7	262.6	258.1
	no	615	556	616	593	610	594	610	602	597	610	595	587	7185
	mean	281.3	280.7	281.6	281.4	284.7	289.8	293.5	294.8	289.8	286.7	283.2	282.0	285.8
	sd	6.4	6.7	6.2	7.0	7.9	8.9	9.8	9.0	9.0	8.9	7.6	7.1	9.3
0.7	max	301.5	298.8	300.7	300.5	323.7	320.3	325.0	318.0	316.2	308.5	305.8	301.5	325.0
	min	260.9	258.8	259.4	249.7	260.3	261.1	261.3	255.1	253.5	255.3	254.1	259.7	249.7
	no	615	556	616	593	610	594	609	602	596	609	595	588	7183
	mean	277.4	276.7	277.8	277.9	281.4	286.0	289.6	290.8	285.6	282.4	279.1	278.1	281.9
	sd	6.4	6.7	6.3	6.7	7.9	8.9	9.7	9.0	8.9	9.0	7.6	7.1	9.3
0.8	max	298.3	293.9	297.4	296.1	335.4	315.8	320.9	316.2	311.8	306.3	300.9	297.8	335.4
	min	258.1	256.2	255.7	258.2	257.5	256.7	259.5	250.1	249.7	253.0	251.6	256.7	249.7
	no	615	556	616	593	609	593	610	602	596	610	595	588	7183
	mean	273.5	272.8	274.1	274.4	277.9	282.1	285.6	286.7	281.4	278.2	275.0	274.1	278.0
	sd	6.4	6.7	6.3	6.7	7.8	9.0	10.2	9.1	8.9	9.1	7.7	7.1	9.3
0.9	max	294.4	292.3	294.1	292.3	324.8	311.4	316.8	313.4	307.3	299.9	296.7	294.1	324.8
	min	254.3	252.0	252.5	255.6	255.3	250.8	197.9	247.6	246.8	249.5	249.2	253.8	197.9
	no	615	556	616	591	610	594	611	601	596	610	595	588	7183

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

2527 Landvetter

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	269.6	269.0	270.3	270.9	274.4	278.3	281.7	282.4	277.1	273.9	271.0	270.2	274.1
	sd	6.4	6.7	6.4	6.6	7.8	9.0	9.9	9.1	8.9	9.3	7.7	7.1	9.2
1.0	max	290.6	288.5	289.4	288.5	317.6	307.0	312.8	308.2	302.9	296.5	292.9	290.4	317.6
	min	250.4	248.5	249.6	251.2	253.1	248.0	216.9	245.1	243.9	248.3	246.8	251.4	216.9
	no	615	555	616	593	610	594	611	602	596	610	595	588	7185
	mean	265.8	265.4	266.6	267.3	270.8	274.7	277.9	278.0	272.8	269.8	267.1	266.4	270.2
	sd	6.4	6.6	6.3	6.7	7.8	9.0	9.9	9.6	9.1	9.4	7.8	7.2	9.2
1.1	max	286.7	284.7	285.1	284.9	316.2	302.6	308.7	303.5	298.6	293.1	289.1	286.7	316.2
	min	247.3	245.5	246.8	246.7	248.5	245.0	236.2	242.6	241.0	245.9	242.4	247.3	236.2
	no	615	555	616	593	610	593	611	602	596	610	595	588	7184
	mean	262.2	261.8	263.0	263.7	267.2	271.0	274.1	273.6	268.7	265.8	263.3	262.6	266.4
	sd	6.3	6.5	6.3	6.7	7.7	9.0	9.9	10.1	9.3	9.5	7.7	7.1	9.2
1.2	max	282.9	280.9	281.3	281.7	294.0	299.3	304.7	300.0	294.5	289.7	285.3	283.0	304.7
	min	244.0	242.4	243.9	244.0	245.6	243.4	237.9	240.0	238.1	243.2	239.7	243.5	237.9
	no	615	556	616	593	610	592	611	602	596	610	595	588	7184
	mean	258.6	258.3	259.4	260.3	263.7	267.4	270.2	269.5	264.7	261.8	259.7	259.0	262.7
	sd	6.3	6.4	6.3	6.8	7.6	8.9	9.8	10.2	9.6	9.7	7.7	7.0	9.2
1.3	max	279.1	277.1	277.5	278.1	286.4	298.1	303.0	295.2	290.5	286.3	281.5	280.4	303.0
	min	242.0	239.2	241.1	239.4	241.7	240.6	237.6	237.5	235.0	237.8	236.8	240.4	235.0
	no	616	556	617	593	610	593	611	602	596	610	595	588	7187
	mean	255.3	255.0	256.0	257.0	260.2	263.7	266.3	265.5	260.8	257.9	256.2	255.6	259.2
	sd	6.1	6.3	6.1	6.7	7.5	8.8	9.7	10.1	9.7	9.7	7.6	6.9	9.0
1.4	max	275.4	273.3	272.7	274.1	280.0	297.0	302.2	289.5	286.1	282.6	278.0	277.4	302.2
	min	239.4	235.9	238.3	235.3	237.3	238.7	235.0	233.2	232.3	234.2	233.6	238.0	232.3
	no	616	555	617	593	613	592	613	603	597	611	595	588	7193
	mean	251.9	251.7	252.8	253.9	256.7	260.1	262.5	261.7	257.1	254.2	252.9	252.2	255.7
	sd	6.0	6.1	6.0	6.7	7.5	8.7	9.8	9.9	9.6	9.5	7.5	6.9	8.8
1.5	max	271.7	269.9	267.9	270.1	276.5	295.9	301.4	285.3	281.7	278.4	274.3	273.9	301.4
	min	236.7	233.3	235.5	233.1	235.1	234.6	231.6	231.0	229.5	232.9	231.5	233.4	229.5
	no	616	555	616	593	613	594	613	603	597	611	595	588	7194
	mean	248.6	248.5	249.5	250.7	253.2	256.5	258.8	257.9	253.4	250.7	249.5	248.8	252.2
	sd	6.0	6.0	5.9	6.6	7.6	8.6	9.8	9.8	9.5	9.3	7.4	6.7	8.7
1.6	max	268.0	266.5	264.4	266.2	273.1	294.9	300.6	281.2	277.8	274.3	270.5	270.4	300.6
	min	233.0	228.4	232.7	230.9	232.8	232.3	229.3	228.7	226.6	230.5	229.4	229.1	226.6
	no	616	555	617	593	613	593	613	603	597	611	595	588	7194
	mean	245.4	245.3	246.2	247.4	249.7	253.0	255.1	254.2	249.8	247.4	246.2	245.6	248.8
	sd	5.9	5.9	5.8	6.5	7.7	8.5	9.9	9.8	9.4	9.1	7.2	6.6	8.6
1.7	max	264.4	263.2	262.5	262.4	270.4	293.9	299.8	277.2	273.9	270.2	266.7	266.9	299.8
	min	227.4	226.1	229.9	226.7	226.9	228.8	227.0	224.0	223.7	227.6	227.3	225.6	223.7
	no	614	555	617	591	613	594	613	603	597	611	595	588	7191
	mean	242.2	242.3	242.9	244.2	246.2	249.5	251.3	250.6	246.2	244.1	243.0	242.4	245.4
	sd	5.8	5.7	5.6	6.5	7.7	8.5	9.8	9.6	9.3	8.9	7.1	6.4	8.4
1.8	max	260.8	259.9	260.7	258.8	267.6	293.0	299.1	273.2	270.0	266.2	263.0	263.4	299.1
	min	225.9	224.3	227.2	222.7	224.4	224.9	224.7	220.2	220.9	224.0	225.1	222.2	220.2
	no	616	555	617	593	613	594	613	603	597	611	595	588	7195
	mean	239.1	239.2	239.7	241.0	242.8	246.0	247.7	247.0	242.8	240.9	239.8	239.3	242.1
	sd	5.7	5.6	5.5	6.4	7.7	8.5	9.7	9.5	9.1	8.7	6.9	6.3	8.2
1.9	max	257.2	256.6	258.3	255.3	264.9	292.1	298.3	269.2	266.2	262.3	259.3	259.9	298.3
	min	224.3	222.0	224.4	220.5	221.3	222.7	221.9	217.5	218.1	220.7	222.6	219.0	217.5
	no	616	554	617	593	613	594	613	602	597	611	595	588	7193
	mean	236.1	236.3	236.7	237.9	239.5	242.5	244.2	243.6	239.5	237.6	236.7	236.3	238.9
	sd	5.5	5.5	5.4	6.2	7.6	8.6	9.6	9.4	8.9	8.6	6.7	6.1	8.0
2.0	max	253.7	253.2	254.5	251.8	261.4	291.3	297.5	265.3	262.5	258.4	256.9	256.4	297.5
	min	222.6	219.6	221.7	218.5	219.2	219.8	219.3	214.9	215.4	218.4	220.3	217.2	214.9
	no	616	555	617	593	613	594	612	602	597	611	595	588	7193

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year.

1415 Sola

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	313.2	312.6	312.1	314.6	320.1	326.3	332.4	332.8	326.0	322.3	316.3	315.4	320.2
	sd	7.4	6.7	7.6	8.0	8.7	8.1	8.3	8.5	8.2	8.1	8.3	7.6	10.7
0.0	max	332.2	330.1	330.5	338.1	342.5	347.9	358.6	362.4	347.5	342.8	336.3	331.4	362.4
	min	288.8	282.1	282.6	284.1	291.9	293.6	303.0	292.7	295.6	289.2	282.9	282.1	282.1
	no	619	561	618	598	619	591	549	597	566	613	600	611	7142
	mean	307.5	306.8	307.1	308.4	313.2	318.5	323.9	324.4	318.1	315.0	309.7	309.3	313.4
	sd	7.8	7.4	7.2	8.2	9.1	8.7	9.2	9.5	8.9	9.5	8.6	7.9	10.5
0.1	max	327.6	326.0	325.8	325.8	337.3	344.4	350.6	349.5	342.8	336.9	331.0	327.7	350.6
	min	287.6	276.2	289.2	284.5	287.5	289.2	294.0	293.9	288.0	236.7	284.1	289.6	236.7
	no	618	557	612	596	618	589	541	593	560	596	595	607	7082
	mean	303.4	303.0	303.3	304.3	308.6	313.9	319.3	320.1	313.6	310.6	305.5	305.3	309.1
	sd	7.8	7.2	7.1	7.9	9.2	8.9	9.2	9.0	8.9	8.9	8.7	8.0	10.3
0.2	max	323.8	321.9	322.1	323.2	329.7	341.3	352.8	344.9	339.2	333.1	327.5	323.4	352.8
	min	282.7	284.0	285.5	282.3	283.6	283.9	291.1	291.3	279.4	274.4	281.1	286.0	274.4
	no	618	556	613	596	618	589	541	592	559	594	593	607	7076
	mean	299.7	299.3	299.8	300.7	304.6	309.6	315.1	315.9	309.9	306.8	301.9	301.8	305.3
	sd	7.7	7.1	7.0	7.6	9.0	8.7	9.1	8.8	8.7	8.7	8.6	7.9	10.0
0.3	max	319.9	315.9	318.8	319.2	325.2	338.0	346.7	340.8	334.6	332.4	323.8	319.9	346.7
	min	278.6	280.8	282.7	279.6	280.6	277.1	284.9	287.4	272.6	271.6	278.1	282.4	271.6
	no	618	556	614	596	618	588	541	593	560	595	595	607	7081
	mean	296.1	295.9	296.4	297.1	300.6	305.2	310.7	311.7	306.3	303.1	298.3	298.3	301.5
	sd	7.6	6.9	6.8	7.4	8.8	8.6	9.3	8.7	8.5	8.4	8.4	7.7	9.7
0.4	max	316.1	311.0	315.7	315.7	320.8	334.1	340.3	336.8	329.6	328.1	320.5	316.5	340.3
	min	276.0	277.6	279.2	276.6	277.0	279.0	278.4	266.4	265.8	268.1	274.9	279.1	265.8
	no	617	556	614	596	618	588	541	593	560	595	595	607	7080
	mean	292.6	292.4	292.9	293.6	296.7	300.8	306.1	307.2	302.6	299.4	294.7	294.7	297.7
	sd	7.5	6.8	6.6	7.1	8.6	8.7	9.6	8.9	8.3	8.2	8.3	7.6	9.5
0.5	max	312.3	306.9	312.2	312.1	316.3	330.2	327.3	332.7	325.4	322.8	317.0	313.2	332.7
	min	273.3	274.4	273.9	273.6	271.4	276.3	272.2	261.8	259.2	262.8	271.7	275.8	259.2
	no	617	556	614	596	618	588	541	593	560	595	595	607	7080
	mean	289.0	288.9	289.4	290.0	292.7	296.4	301.3	302.9	298.8	295.6	291.1	291.2	293.8
	sd	7.3	6.6	6.5	7.0	8.5	9.0	9.6	8.9	8.0	8.1	8.3	7.4	9.3
0.6	max	308.6	303.3	308.5	308.6	313.2	325.6	322.4	327.7	323.1	317.5	317.1	309.8	327.7
	min	269.7	271.2	270.3	269.2	268.5	268.5	270.8	259.2	278.1	258.8	265.2	272.5	258.8
	no	617	556	613	596	618	588	541	593	560	595	595	607	7079
	mean	285.6	285.3	285.9	286.5	288.8	292.1	296.5	298.5	294.6	291.8	287.5	287.6	290.0
	sd	7.1	6.5	6.4	6.9	8.4	9.1	10.0	9.0	8.2	8.0	8.3	7.3	9.1
0.7	max	304.7	299.4	304.5	304.9	309.9	320.0	318.1	320.9	319.3	312.2	315.5	306.4	320.9
	min	267.4	267.9	269.2	265.4	265.5	264.3	265.9	255.6	266.2	257.5	260.4	268.2	255.6
	no	617	556	612	596	618	588	541	593	559	595	595	607	7077
	mean	282.0	281.7	282.4	283.0	285.1	287.8	292.0	294.2	290.5	287.8	283.7	284.0	286.1
	sd	6.9	6.5	6.3	6.7	8.2	9.5	10.4	9.0	8.5	8.0	8.1	7.2	9.0
0.8	max	301.0	296.3	300.5	301.9	306.0	316.4	317.1	316.6	314.9	309.0	309.9	301.9	317.1
	min	262.3	264.9	266.1	261.4	263.6	261.4	260.9	252.0	262.3	253.7	257.9	263.6	252.0
	no	617	555	612	596	618	588	541	593	559	595	595	607	7076
	mean	278.4	278.2	278.8	279.7	281.5	283.7	287.8	290.0	286.7	283.8	280.1	280.4	282.4
	sd	6.8	6.5	6.4	6.7	8.2	9.8	10.7	9.1	8.3	9.0	8.0	7.2	9.0
0.9	max	297.1	292.9	297.1	299.4	303.2	312.8	313.2	313.7	310.5	306.7	304.4	297.4	313.7
	min	257.7	261.9	260.9	258.0	261.5	251.3	257.3	248.5	259.2	192.3	256.0	258.8	192.3
	no	617	556	613	596	618	588	540	593	559	596	595	607	7078

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

1415 Sola

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	274.8	274.7	275.2	276.2	277.9	279.7	283.9	286.0	282.9	279.9	276.5	276.7	278.6
	sd	6.7	6.4	6.4	6.7	8.1	9.9	10.8	9.2	8.2	8.7	7.8	7.2	8.9
1.0	max	293.3	289.3	294.1	295.6	297.2	309.5	309.0	310.4	306.3	302.6	299.1	293.0	310.4
	min	254.7	256.2	256.8	255.2	257.1	249.8	254.5	256.2	259.0	210.5	253.7	253.9	210.5
	no	617	556	613	596	617	588	540	593	558	596	595	606	7075
	mean	271.2	271.1	271.7	272.6	274.3	275.8	279.9	282.1	279.0	276.2	272.9	273.0	274.9
	sd	6.7	6.4	6.4	6.6	8.0	10.0	10.8	9.2	8.3	8.2	7.6	7.3	8.8
1.1	max	289.5	286.0	290.8	291.7	292.2	304.7	304.3	314.2	303.3	298.6	293.9	290.7	314.2
	min	251.8	255.1	253.7	252.3	253.0	248.3	251.7	254.1	254.5	247.7	249.9	248.5	247.7
	no	617	555	613	596	618	588	540	593	559	595	595	607	7076
	mean	267.7	267.6	268.2	269.1	270.8	272.1	276.1	278.1	275.0	272.4	269.3	269.3	271.2
	sd	6.7	6.4	6.4	6.5	8.0	9.9	10.8	9.2	8.6	8.2	7.5	7.2	8.7
1.2	max	285.7	282.7	287.1	288.2	288.7	300.1	299.7	304.8	299.5	294.7	288.8	288.0	304.8
	min	246.5	252.4	250.6	249.5	246.3	246.9	246.8	246.6	248.2	243.9	246.8	246.0	243.9
	no	617	555	613	596	618	588	540	592	559	595	595	607	7075
	mean	264.3	264.0	264.6	265.6	267.3	268.4	272.2	274.2	271.1	268.6	265.7	265.6	267.6
	sd	6.6	6.3	6.4	6.6	8.0	9.7	10.7	9.3	8.7	8.3	7.4	7.2	8.6
1.3	max	282.0	279.3	283.5	285.3	286.4	297.3	295.2	303.0	296.5	290.7	283.8	283.8	303.0
	min	243.1	247.8	247.5	246.7	244.5	245.0	246.8	243.5	245.4	240.7	244.9	243.7	240.7
	no	616	555	613	596	618	588	540	592	559	595	595	607	7074
	mean	260.9	260.4	261.1	262.1	263.7	264.7	268.3	270.3	267.2	264.6	262.1	262.0	263.9
	sd	6.6	6.3	6.3	6.7	8.0	9.7	10.7	9.4	8.8	8.5	7.4	7.1	8.6
1.4	max	278.2	275.6	279.9	282.1	283.7	294.4	290.8	300.8	292.8	286.8	280.4	279.6	300.8
	min	240.5	242.4	244.3	244.0	242.7	243.5	243.4	241.7	242.8	238.2	243.2	241.8	238.2
	no	616	555	613	594	618	588	540	592	559	595	595	607	7072
	mean	257.5	256.9	257.5	258.6	260.2	261.1	264.4	266.7	263.4	260.7	258.5	258.4	260.3
	sd	6.5	6.2	6.1	6.7	8.0	9.6	10.7	9.3	9.2	8.6	7.2	7.0	8.5
1.5	max	274.5	271.9	276.3	278.2	280.9	290.8	286.6	298.5	288.8	282.9	276.4	275.5	298.5
	min	238.0	237.3	241.8	241.5	240.2	239.9	239.5	239.2	239.3	236.8	240.5	239.9	236.8
	no	616	555	613	594	617	588	540	592	559	595	595	607	7071
	mean	254.0	253.6	254.2	255.1	256.7	257.6	260.6	262.9	259.8	257.1	255.0	255.1	256.8
	sd	6.4	6.0	6.0	6.6	8.0	9.5	10.6	9.3	9.2	8.6	7.1	7.0	8.4
1.6	max	271.3	268.6	272.2	274.3	277.9	287.1	285.4	289.8	295.5	279.1	272.8	272.0	295.5
	min	235.6	237.6	239.0	238.9	237.5	237.1	235.8	236.1	237.6	235.4	237.7	238.0	235.4
	no	616	555	613	594	618	588	540	592	559	595	595	605	7070
	mean	250.6	250.2	250.9	251.7	253.2	254.2	256.9	259.2	256.1	253.4	251.5	251.6	253.2
	sd	6.4	5.8	6.0	6.6	7.9	9.3	10.5	9.4	9.1	8.6	7.0	6.9	8.3
1.7	max	268.1	265.3	268.2	270.4	275.0	282.3	281.1	281.4	284.3	275.8	271.1	269.0	284.3
	min	232.8	235.6	236.3	236.3	234.2	234.7	233.2	233.1	235.1	233.2	234.9	235.0	232.8
	no	616	555	613	594	618	588	540	592	560	595	594	606	7071
	mean	247.3	246.9	247.7	248.4	249.9	250.7	253.5	255.4	252.4	249.8	248.1	248.1	249.8
	sd	6.3	5.7	5.9	6.5	7.8	9.1	10.3	9.3	9.0	8.5	7.0	6.8	8.2
1.8	max	264.6	262.0	264.1	266.6	271.6	283.0	278.5	276.7	274.8	273.0	267.3	265.2	283.0
	min	230.3	232.7	233.9	233.8	230.9	231.9	229.3	230.3	232.3	230.9	232.4	230.8	229.3
	no	616	555	613	594	617	588	540	592	560	595	594	606	7070
	mean	244.1	243.6	244.5	245.1	246.7	247.3	249.9	251.7	248.6	246.3	244.7	244.8	246.4
	sd	6.2	5.6	5.8	6.4	7.7	8.9	10.0	9.4	8.8	8.4	6.9	6.8	8.0
1.9	max	261.0	258.7	260.7	262.8	267.9	278.5	274.5	273.7	271.1	270.2	263.6	261.5	278.5
	min	227.8	229.8	230.2	230.9	227.9	229.1	226.4	227.7	229.4	226.2	229.0	227.8	226.2
	no	615	555	613	594	617	588	540	592	560	595	594	605	7068
	mean	240.9	240.4	241.3	241.9	243.4	243.9	246.5	248.1	245.0	242.8	241.4	241.5	243.1
	sd	6.1	5.5	5.8	6.3	7.5	8.7	9.8	9.4	8.9	8.3	6.8	6.8	7.9
2.0	max	257.6	255.4	257.6	259.2	264.3	274.0	270.4	269.8	268.4	267.3	259.9	257.8	274.0
	min	225.2	225.9	228.2	227.9	224.9	225.2	223.5	221.7	226.5	222.3	225.3	225.3	221.7
	no	615	555	613	594	617	588	540	593	559	595	594	605	7068

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

1384 Gardermoen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	305.4	306.3	304.8	304.4	308.2	316.0	321.3	322.0	313.9	312.0	307.3	305.6	310.5
	sd	6.0	5.7	6.5	7.7	10.5	10.9	11.2	11.0	10.5	8.6	6.3	5.9	10.6
0.0	max	324.1	326.8	321.0	333.5	345.2	347.4	352.7	365.3	342.1	333.8	325.8	320.2	365.3
	min	288.7	286.9	282.3	275.1	273.6	281.4	290.1	281.4	282.8	286.5	286.7	284.8	273.6
	no	611	560	617	595	616	592	588	565	596	611	585	610	7146
	mean	300.3	301.4	299.8	299.2	301.8	307.9	312.6	314.2	307.0	306.6	302.1	300.6	304.4
	sd	6.1	5.7	6.7	7.4	9.8	10.6	11.8	11.1	10.5	8.9	6.8	6.2	10.0
0.1	max	313.9	313.0	315.0	318.1	330.5	339.2	354.5	345.9	335.7	329.6	321.6	316.4	354.5
	min	281.2	281.2	278.4	278.0	277.9	278.6	284.6	286.0	284.5	283.2	282.3	283.3	277.9
	no	592	557	618	595	615	591	585	565	595	608	583	608	7112
	mean	296.2	297.3	296.0	295.6	297.8	303.3	307.6	309.3	302.6	302.5	298.0	296.4	300.2
	sd	6.1	5.7	6.6	7.3	9.3	10.0	11.3	10.8	10.3	8.9	6.9	6.2	9.6
0.2	max	309.3	309.6	311.3	313.9	324.0	331.1	349.1	340.1	330.8	325.4	317.5	312.0	349.1
	min	279.5	278.5	276.0	273.2	275.6	275.8	281.9	282.2	281.8	280.7	277.6	277.8	273.2
	no	592	558	617	595	615	591	585	564	595	607	583	608	7110
	mean	292.2	293.4	292.3	292.1	294.3	299.4	303.5	305.1	298.6	298.5	294.1	292.3	296.3
	sd	6.0	5.6	6.6	7.0	8.9	9.5	10.8	10.3	10.0	8.9	6.9	6.3	9.3
0.3	max	305.7	305.7	306.5	309.7	318.3	326.2	343.6	335.8	327.4	321.2	313.3	308.0	343.6
	min	275.4	275.1	273.4	264.7	273.2	272.8	276.3	278.6	279.2	278.1	273.9	273.8	264.7
	no	592	558	618	595	615	591	585	564	595	607	584	608	7112
	mean	288.3	289.5	288.6	288.7	290.8	295.6	299.4	301.0	294.7	294.5	290.2	288.5	292.4
	sd	6.0	5.9	6.4	6.6	8.6	9.2	10.5	9.9	9.6	8.9	6.9	6.4	9.1
0.4	max	302.2	325.6	303.3	306.0	314.5	323.4	338.3	331.6	325.5	317.1	309.1	305.0	338.3
	min	272.4	271.5	270.7	269.6	261.8	269.8	273.8	276.9	276.8	267.6	270.3	269.8	261.8
	no	592	557	618	595	615	591	585	564	594	607	584	608	7110
	mean	284.5	285.7	285.0	285.3	287.4	292.0	295.6	296.9	290.8	290.5	286.5	284.7	288.7
	sd	6.0	5.8	6.2	6.3	8.2	8.8	9.9	9.3	9.2	8.7	6.7	6.3	8.8
0.5	max	302.8	311.0	298.3	301.8	310.3	320.5	334.0	327.3	321.0	312.9	305.0	301.8	334.0
	min	269.0	268.7	268.2	267.9	262.8	266.6	274.1	272.5	270.2	266.7	266.9	266.2	262.8
	no	591	559	617	595	615	591	585	564	595	606	584	608	7110
	mean	280.7	281.8	281.4	282.0	284.1	288.5	291.8	293.0	287.1	286.5	282.8	281.1	285.0
	sd	6.0	5.8	6.1	6.0	7.7	8.4	9.3	8.8	8.9	8.6	6.6	6.2	8.5
0.6	max	299.5	300.8	294.9	298.0	306.6	316.8	327.8	323.1	316.2	310.0	301.0	298.7	327.8
	min	264.3	265.8	265.6	265.9	264.6	263.0	266.7	268.1	264.4	263.0	263.2	262.6	262.6
	no	591	559	615	595	615	591	585	564	595	606	584	607	7107
	mean	276.9	278.0	277.9	278.7	280.9	285.0	288.2	289.2	283.4	282.6	279.0	277.4	281.4
	sd	5.9	5.8	5.9	5.7	7.4	8.1	8.9	8.5	8.6	8.5	6.4	6.0	8.3
0.7	max	296.0	296.9	292.2	294.2	301.5	312.2	322.6	318.6	311.4	305.9	297.0	295.5	322.6
	min	260.6	262.9	263.0	263.7	260.3	260.0	259.8	263.8	261.4	259.5	259.2	259.8	259.2
	no	589	559	616	595	615	591	584	564	595	606	583	608	7105
	mean	273.5	274.4	274.5	275.5	277.8	281.8	284.8	285.6	279.9	278.7	275.3	273.9	277.9
	sd	5.8	5.7	5.8	5.4	7.0	7.8	8.5	8.1	8.2	8.3	6.4	5.9	8.1
0.8	max	292.3	292.3	287.9	290.3	296.8	307.6	317.6	314.3	308.0	302.4	293.0	292.4	317.6
	min	256.7	260.1	257.9	261.6	256.9	256.8	256.8	261.2	258.8	254.1	255.3	256.9	254.1
	no	590	559	617	595	615	591	585	564	595	606	583	608	7108
	mean	270.1	270.9	271.2	272.2	274.6	278.5	281.4	281.9	276.4	274.9	271.8	270.4	274.5
	sd	5.7	5.7	5.7	5.4	6.8	7.5	8.1	8.0	8.0	8.2	6.3	5.9	7.9
0.9	max	288.0	287.6	285.7	286.6	293.9	303.2	312.6	309.9	304.5	298.9	289.1	289.3	312.6
	min	253.4	255.2	254.2	257.6	253.5	253.7	254.0	255.7	256.6	250.9	251.4	253.2	250.9
	no	589	558	617	594	615	591	585	564	594	606	582	608	7103

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

1384 Gardermoen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	266.6	267.4	267.8	269.0	271.5	275.2	278.0	278.3	272.9	271.0	268.3	267.0	271.1
	sd	5.6	5.7	5.6	5.4	6.7	7.3	7.8	7.8	7.8	8.2	6.2	6.0	7.8
1.0	max	281.7	283.1	282.2	283.5	290.4	298.7	307.7	305.6	301.1	295.2	285.2	285.6	307.7
	min	249.7	251.9	250.5	252.5	250.2	250.6	251.2	250.8	253.1	245.1	248.5	249.6	245.1
	no	590	559	616	595	615	591	585	564	595	606	582	608	7106
	mean	263.2	264.0	264.5	265.8	268.4	271.9	274.4	274.6	269.3	267.2	264.8	263.5	267.6
	sd	5.5	5.7	5.4	5.6	6.5	7.1	7.6	7.6	7.7	8.2	6.2	6.0	7.7
1.1	max	277.4	279.7	278.4	280.4	288.1	294.3	303.2	301.4	293.6	290.7	281.1	281.9	303.2
	min	246.6	248.1	246.8	247.8	245.4	247.5	248.4	244.5	246.3	242.7	245.7	245.8	242.7
	no	590	559	616	595	615	591	585	564	595	606	583	608	7107
	mean	259.8	260.6	261.2	262.6	265.2	268.6	270.9	270.8	265.7	263.6	261.3	260.2	264.2
	sd	5.5	5.7	5.4	5.7	6.3	7.1	7.4	7.4	7.6	8.2	6.3	6.0	7.6
1.2	max	274.4	276.9	274.7	276.9	285.5	292.0	300.9	297.1	289.2	286.4	278.1	278.2	300.9
	min	243.5	243.1	243.1	244.9	239.9	243.6	245.6	240.6	240.3	240.6	242.8	241.9	239.9
	no	587	559	615	595	615	591	585	564	594	606	583	608	7102
	mean	256.5	257.2	257.9	259.4	262.1	265.3	267.5	267.2	262.2	260.0	257.9	256.8	260.8
	sd	5.6	5.6	5.3	5.7	6.2	7.0	7.4	7.5	7.5	8.1	6.3	6.1	7.6
1.3	max	271.0	273.4	271.2	273.9	282.9	287.9	297.6	292.9	284.9	282.2	275.4	274.6	297.6
	min	239.6	240.1	240.2	242.3	237.0	240.6	242.4	237.3	236.6	237.5	240.0	237.6	236.6
	no	587	558	616	594	615	591	585	564	595	606	583	608	7102
	mean	253.2	253.8	254.6	256.1	258.8	261.9	264.1	263.6	258.9	256.4	254.5	253.6	257.4
	sd	5.6	5.5	5.3	5.8	6.0	6.8	7.3	7.5	7.5	8.0	6.2	6.1	7.5
1.4	max	267.4	269.7	267.5	269.4	276.3	283.1	293.3	289.0	281.3	278.3	273.3	271.8	293.3
	min	237.2	234.0	238.3	239.7	234.5	238.3	241.0	234.4	233.2	234.3	237.5	234.6	233.2
	no	588	557	615	594	615	591	585	564	594	605	583	608	7099
	mean	250.0	250.5	251.3	252.9	255.5	258.5	260.8	260.1	255.6	253.0	251.2	250.4	254.1
	sd	5.6	5.4	5.2	5.8	6.2	6.8	7.4	7.6	7.5	7.9	6.2	6.0	7.5
1.5	max	263.8	266.1	263.9	266.2	273.1	278.4	288.8	285.3	277.7	274.5	271.1	269.3	288.8
	min	233.7	232.1	236.4	236.7	232.2	235.9	238.7	233.2	232.2	231.1	234.5	231.7	231.1
	no	588	559	615	595	615	591	585	564	595	606	582	608	7103
	mean	246.8	247.4	248.1	249.6	252.1	255.2	257.5	256.7	252.3	249.6	247.9	247.2	250.8
	sd	5.6	5.4	5.2	5.9	6.3	6.7	7.3	7.6	7.6	7.9	6.2	6.0	7.5
1.6	max	260.2	262.6	260.5	263.4	269.7	275.3	284.4	281.6	274.4	270.6	266.4	265.6	284.4
	min	231.1	230.5	234.5	232.8	229.8	233.6	235.3	232.0	229.7	227.9	229.8	228.7	227.9
	no	588	559	616	595	615	590	583	564	595	606	583	608	7102
	mean	243.6	244.2	244.9	246.5	248.8	252.0	254.0	253.3	248.9	246.1	244.7	244.0	247.6
	sd	5.5	5.3	5.2	5.9	6.4	6.7	7.3	7.6	7.6	7.8	6.1	6.0	7.4
1.7	max	257.1	259.1	257.5	260.5	267.8	272.9	280.1	277.5	270.7	266.3	261.1	262.0	280.1
	min	228.6	228.7	230.5	230.4	227.5	230.8	232.6	227.8	227.1	225.4	227.1	225.9	225.4
	no	588	558	615	595	615	590	585	564	595	606	583	607	7101
	mean	240.4	241.1	241.8	243.3	245.6	248.7	250.4	249.9	245.4	242.7	241.5	240.9	244.3
	sd	5.5	5.2	5.2	5.8	6.5	6.7	7.5	7.7	7.7	7.6	6.1	5.8	7.4
1.8	max	254.0	255.6	254.4	257.3	265.8	268.8	275.8	273.2	267.0	263.5	257.4	258.4	275.8
	min	226.0	226.1	227.2	228.0	225.3	228.0	229.2	224.9	224.3	222.9	221.6	223.0	221.6
	no	588	558	615	595	614	591	585	564	595	605	583	607	7100
	mean	237.4	237.9	238.7	240.1	242.3	245.4	247.0	246.5	241.9	239.4	238.4	237.9	241.1
	sd	5.4	5.1	5.1	5.8	6.5	6.6	7.5	7.5	7.7	7.5	6.0	5.7	7.2
1.9	max	250.9	252.2	251.1	253.9	263.7	264.7	271.6	269.0	264.2	260.9	254.2	254.9	271.6
	min	223.0	223.6	224.8	225.1	221.7	225.2	225.9	220.4	219.4	220.4	221.1	220.2	219.4
	no	588	558	616	595	615	591	585	564	595	606	583	607	7103
	mean	234.4	235.0	235.6	237.0	239.1	242.1	243.6	243.1	238.4	236.2	235.4	234.8	237.9
	sd	5.2	4.9	4.9	5.7	6.5	6.5	7.4	7.5	7.6	7.4	5.8	5.6	7.1
2.0	max	248.8	248.9	248.0	250.5	260.6	259.7	267.5	264.8	260.3	256.6	251.0	251.3	267.5
	min	221.0	221.2	223.2	222.5	219.0	222.7	223.6	217.7	217.7	218.6	219.0	216.0	216.0
	no	588	559	616	594	615	591	585	564	595	606	583	607	7103

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

2225 Frøsøn

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	298.5	298.3	296.7	297.7	300.4	304.8	309.0	309.5	304.8	301.2	297.7	298.5	301.0
	sd	6.2	5.7	5.3	7.1	7.0	8.1	9.5	7.9	6.8	6.1	5.1	5.2	7.8
0.0	max	319.8	312.0	310.2	338.4	317.7	326.1	329.8	336.8	325.8	317.2	311.0	310.0	338.4
	min	286.9	280.8	279.5	273.4	283.1	279.4	270.3	290.5	287.9	285.1	270.0	275.2	270.0
	no	208	284	305	253	238	237	131	215	270	241	220	167	2769
	mean	293.8	293.4	292.6	294.1	295.9	299.5	304.3	304.9	300.6	297.3	293.8	294.3	296.7
	sd	5.6	5.5	5.1	6.8	7.3	8.1	8.7	8.1	6.7	5.9	5.1	5.0	7.6
0.1	max	314.6	311.0	305.7	331.3	316.1	321.0	324.9	333.1	321.8	313.8	307.1	306.4	333.1
	min	280.8	274.6	275.7	274.4	278.8	273.2	270.5	270.6	284.5	282.7	271.0	275.3	270.5
	no	207	255	305	253	237	237	132	215	269	240	220	167	2737
	mean	289.8	289.5	289.1	290.8	292.4	295.8	300.3	300.9	296.9	293.5	290.2	290.6	293.0
	sd	5.6	5.5	5.1	6.6	7.4	7.9	8.3	8.2	6.8	6.1	5.1	5.2	7.5
0.2	max	310.0	305.1	302.4	325.0	314.5	317.1	320.9	326.2	318.1	310.3	303.6	302.7	326.2
	min	274.4	270.6	272.4	272.2	275.1	268.6	270.5	258.3	277.3	276.2	272.2	275.0	258.3
	no	207	255	305	253	237	237	132	215	269	240	220	167	2737
	mean	286.1	285.9	285.7	287.6	289.1	292.2	296.5	297.1	293.3	289.9	286.7	287.0	289.5
	sd	5.7	5.6	5.2	6.5	7.4	7.9	8.1	8.0	6.9	6.3	5.3	5.3	7.5
0.3	max	305.4	299.4	299.2	318.6	311.9	313.2	316.8	319.1	314.3	306.8	299.9	299.1	319.1
	min	266.0	268.0	269.1	269.9	271.5	264.0	270.3	258.0	271.5	266.0	267.8	270.9	258.0
	no	207	255	305	253	237	237	132	215	269	241	220	167	2738
	mean	282.5	282.3	282.3	284.4	285.8	288.8	293.1	293.5	289.8	286.2	283.2	283.5	286.0
	sd	5.7	5.7	5.3	6.3	7.4	7.8	7.8	7.9	6.8	6.8	5.7	5.4	7.5
0.4	max	300.9	294.5	296.1	312.2	307.7	309.4	312.8	315.4	310.4	303.3	296.2	295.8	315.4
	min	262.2	263.6	265.8	267.5	268.0	259.5	270.0	257.4	268.9	263.3	258.1	265.6	257.4
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737
	mean	278.9	278.8	278.9	281.2	282.6	285.4	289.8	289.9	286.3	282.5	279.6	280.1	282.5
	sd	5.8	5.8	5.4	6.2	7.4	7.7	7.5	7.7	6.7	7.1	5.9	5.4	7.5
0.5	max	296.4	290.2	293.0	305.8	303.8	305.5	308.7	311.7	306.5	301.5	292.6	292.4	311.7
	min	257.3	259.2	261.5	265.0	263.2	255.0	269.4	256.7	266.3	259.0	259.7	262.6	255.0
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737
	mean	275.4	275.3	275.4	278.0	279.4	282.1	286.5	286.4	282.8	279.0	276.2	276.7	279.1
	sd	5.8	5.8	5.4	6.0	7.2	7.6	7.3	7.6	6.5	7.3	6.0	5.5	7.5
0.6	max	291.9	287.0	290.0	299.4	303.0	301.7	305.1	308.6	302.6	298.8	290.2	289.0	308.6
	min	252.3	255.9	256.4	262.3	260.8	250.5	268.7	255.7	263.7	255.5	254.7	259.8	250.5
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737
	mean	271.9	272.0	271.9	274.6	276.3	278.7	283.3	282.8	279.2	275.4	272.7	273.3	275.7
	sd	5.9	5.7	5.5	6.0	7.0	7.5	7.1	7.6	6.4	7.3	6.2	5.6	7.5
0.7	max	287.5	283.9	286.9	293.0	299.6	298.9	301.5	305.0	298.6	292.8	287.7	285.5	305.0
	min	248.0	252.8	253.3	260.0	257.5	247.8	266.4	253.4	259.1	250.3	249.9	257.0	247.8
	no	206	255	305	252	237	237	132	215	269	241	220	167	2736
	mean	268.5	268.6	268.4	271.2	273.0	275.4	279.8	279.2	275.5	271.7	269.2	269.8	272.2
	sd	5.9	5.6	5.6	6.1	6.9	7.4	7.4	7.6	6.3	7.3	6.1	5.7	7.5
0.8	max	283.1	280.7	283.8	286.5	293.7	296.4	298.8	300.8	291.3	289.3	281.4	282.8	300.8
	min	245.1	249.6	250.2	253.2	251.7	246.3	260.7	251.0	250.0	247.7	246.4	254.2	245.1
	no	206	255	305	252	237	237	132	215	269	241	220	167	2736
	mean	264.9	265.1	264.9	267.8	269.8	272.1	276.2	275.6	271.8	268.2	265.8	266.3	268.7
	sd	5.8	5.7	5.7	6.1	6.7	7.2	7.7	7.8	6.3	7.2	6.0	5.7	7.4
0.9	max	278.8	277.5	280.6	281.2	287.9	293.9	297.8	296.9	288.0	285.0	278.1	280.2	297.8
	min	242.4	246.6	247.5	245.7	247.5	244.6	248.3	246.3	244.8	243.0	243.0	249.3	242.4
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

2225 Frøsøn

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	261.5	261.5	261.3	264.4	266.6	268.8	272.8	272.1	268.0	264.6	262.3	262.7	265.2
	sd	5.9	5.7	5.7	6.1	6.6	7.0	7.8	7.6	6.4	7.3	5.8	5.9	7.4
1.0	max	274.5	274.3	277.6	277.5	283.6	290.8	296.0	293.2	284.7	282.2	275.1	275.5	296.0
	min	239.7	242.4	244.6	241.4	244.7	242.8	246.1	244.0	243.2	238.8	239.6	245.4	238.8
	no	207	255	305	252	237	237	132	215	268	241	220	167	2736
	mean	258.1	258.0	257.9	261.0	263.4	265.4	269.4	268.5	264.4	261.2	258.9	259.2	261.8
	sd	6.0	5.5	5.7	6.2	6.4	6.8	8.1	7.5	6.6	7.3	5.8	5.9	7.4
1.1	max	271.6	270.9	274.6	274.5	282.6	286.4	291.8	289.3	284.0	278.8	271.4	272.6	291.8
	min	237.0	239.6	240.5	237.9	242.2	240.7	244.0	245.9	238.5	236.0	236.3	242.9	236.0
	no	207	255	305	252	237	237	132	214	268	241	220	167	2735
	mean	254.6	254.7	254.5	257.6	260.1	261.9	265.9	264.9	260.8	257.7	255.6	255.8	258.4
	sd	6.0	5.5	5.6	6.2	6.2	6.8	8.5	7.5	6.8	7.3	5.7	5.9	7.4
1.2	max	268.4	268.3	271.1	270.7	280.5	281.9	287.7	285.3	278.9	277.9	267.5	269.7	287.7
	min	234.5	236.1	238.7	234.9	241.7	238.6	239.3	243.3	234.7	233.5	232.9	239.8	232.9
	no	207	255	305	252	237	237	132	215	268	241	220	167	2736
	mean	251.4	251.4	251.2	254.4	256.7	258.3	262.5	261.4	257.3	254.1	252.1	252.4	255.0
	sd	5.9	5.5	5.5	6.2	6.0	7.1	8.5	7.6	6.9	7.4	5.6	5.9	7.4
1.3	max	265.0	265.7	267.8	268.4	274.1	277.5	285.6	281.4	274.1	277.2	263.6	266.3	285.6
	min	231.8	233.9	237.2	232.4	240.0	236.5	234.0	237.6	231.1	228.5	227.4	236.8	227.4
	no	207	255	305	252	236	237	132	215	268	241	220	167	2735
	mean	248.2	248.1	248.1	251.2	253.2	254.8	258.9	257.7	253.8	250.6	248.8	249.2	251.6
	sd	5.7	5.4	5.3	6.1	6.0	7.3	8.5	7.8	7.1	7.4	5.6	5.8	7.3
1.4	max	261.7	262.7	264.6	266.2	270.0	273.2	286.6	277.5	271.4	275.0	260.1	263.0	286.6
	min	229.2	230.4	234.8	230.1	237.1	234.0	232.2	232.2	227.5	228.2	224.9	233.4	224.9
	no	207	255	305	252	237	237	132	214	268	241	220	167	2735
	mean	245.1	244.9	245.0	247.9	249.8	251.3	255.4	254.1	250.4	247.2	245.6	246.0	248.3
	sd	5.6	5.3	5.2	6.0	5.8	7.5	8.4	8.0	7.2	7.3	5.4	5.7	7.2
1.5	max	258.3	259.4	261.5	262.2	266.7	268.9	282.1	274.4	272.4	264.0	256.8	260.3	282.1
	min	227.1	227.7	232.7	227.9	233.6	229.4	231.7	229.8	223.9	226.7	222.8	230.8	222.8
	no	207	255	305	252	237	237	132	214	268	240	220	167	2734
	mean	242.0	241.8	241.9	244.7	246.4	247.8	252.0	250.7	247.1	243.8	242.4	242.9	245.0
	sd	5.5	5.1	5.1	6.0	5.8	7.7	8.2	8.0	7.1	7.1	5.3	5.6	7.1
1.6	max	255.0	254.5	258.4	258.4	263.5	264.7	276.7	272.6	268.4	259.0	253.3	256.2	276.7
	min	225.0	225.8	229.9	225.6	230.6	225.4	227.6	225.9	220.5	224.3	220.6	229.6	220.5
	no	207	255	305	252	237	237	132	214	268	240	220	167	2734
	mean	239.1	238.7	238.8	241.4	243.1	244.6	248.7	247.2	243.9	240.4	239.3	239.9	241.8
	sd	5.3	4.9	5.0	6.0	5.9	7.7	8.0	7.9	6.9	7.0	5.2	5.5	7.0
1.7	max	251.7	249.3	255.3	254.6	260.2	260.6	271.4	270.7	264.5	255.9	250.3	252.8	271.4
	min	222.9	223.9	227.0	223.3	227.7	225.0	224.5	222.6	220.7	221.6	218.4	227.6	218.4
	no	207	255	305	252	237	237	132	214	268	240	220	167	2734
	mean	236.1	235.6	235.7	238.3	239.8	241.4	245.3	243.9	240.6	237.2	236.3	236.7	238.6
	sd	5.2	4.8	5.0	5.9	5.8	7.6	8.0	8.0	6.8	6.8	5.1	5.4	6.9
1.8	max	248.7	246.7	252.1	250.9	255.4	256.5	267.5	268.9	260.6	252.7	247.3	249.8	268.9
	min	220.8	221.9	223.6	221.0	224.6	221.6	222.8	219.4	221.0	219.4	216.3	224.5	216.3
	no	207	255	305	252	237	237	132	214	268	239	220	167	2733
	mean	233.2	232.6	232.7	235.2	236.5	238.3	242.1	240.4	237.4	234.1	233.3	233.6	235.5
	sd	5.1	4.8	4.8	5.7	5.7	7.6	8.0	8.0	6.8	6.6	5.0	5.4	6.8
1.9	max	245.1	244.0	249.0	247.2	252.0	254.0	263.0	267.1	256.8	249.6	244.4	246.7	267.1
	min	218.6	219.9	220.6	218.7	222.1	218.2	221.1	215.2	219.9	217.3	214.1	221.3	214.1
	no	206	255	305	252	237	237	132	214	268	239	220	166	2731
	mean	230.2	229.6	229.8	232.1	233.3	235.2	238.7	237.0	234.2	231.1	230.4	230.6	232.4
	sd	5.0	4.8	4.7	5.5	5.6	7.6	8.0	8.0	6.7	6.5	4.8	5.3	6.6
2.0	max	241.8	240.3	245.9	243.7	248.6	253.0	258.6	265.3	253.0	246.7	241.5	243.6	265.3
	min	216.5	216.2	217.5	216.4	219.2	214.7	219.3	213.5	216.8	215.2	211.9	218.3	211.9
	no	206	254	305	252	236	237	132	214	268	239	220	167	2730

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

1241 Ørland

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	311.1	311.9	310.6	314.0	320.1	326.6	332.6	330.3	322.6	318.5	313.3	312.3	318.6
	sd	8.3	7.5	7.1	7.7	8.7	8.2	7.8	8.5	8.1	8.1	7.9	7.8	10.9
0.0	max	332.9	332.6	333.5	330.7	342.1	366.8	359.0	358.3	358.3	341.0	335.6	334.0	366.8
	min	282.8	280.8	285.9	283.5	277.4	304.4	308.9	302.4	296.3	287.9	287.9	283.5	277.4
	no	612	541	592	583	611	571	543	590	576	601	582	587	6989
	mean	305.0	305.6	304.0	307.2	311.6	317.3	323.2	321.3	314.1	310.8	306.5	306.2	311.0
	sd	7.1	7.7	6.9	8.0	8.1	8.2	8.6	9.3	7.5	7.8	7.2	7.8	10.0
0.1	max	324.8	324.0	326.0	325.5	337.4	340.2	353.1	347.2	345.9	334.6	328.7	340.0	353.1
	min	285.9	274.4	287.4	287.2	287.0	288.6	296.2	293.1	286.0	285.9	286.9	283.0	274.4
	no	587	536	589	583	607	567	544	590	573	597	582	583	6938
	mean	300.8	301.4	299.9	303.2	307.2	312.5	318.5	316.4	309.7	306.2	302.2	302.1	306.6
	sd	7.1	7.7	6.8	7.8	8.0	8.2	8.9	9.8	7.5	7.9	7.3	7.7	9.9
0.2	max	320.6	320.9	321.6	322.1	333.6	334.1	351.5	345.1	333.6	329.7	324.1	335.5	351.5
	min	281.8	284.1	283.1	283.9	284.3	284.9	291.9	257.4	285.6	283.2	282.6	280.5	257.4
	no	587	535	589	583	607	568	544	591	573	597	582	582	6938
	mean	296.9	297.6	296.2	299.5	303.4	308.4	314.3	311.8	305.7	302.1	298.3	298.3	302.7
	sd	7.4	7.9	6.9	7.8	7.9	8.2	8.8	10.4	7.6	8.1	7.5	7.7	9.9
0.3	max	318.1	317.9	317.5	317.7	329.6	330.7	345.2	339.5	330.6	324.8	319.4	331.0	345.2
	min	277.2	279.7	278.8	281.0	280.7	279.1	278.1	222.4	282.6	276.3	277.4	276.8	222.4
	no	588	536	588	583	606	568	544	591	573	597	582	582	6938
	mean	293.1	293.9	292.6	296.0	299.7	304.5	310.0	307.9	301.9	298.2	294.6	294.7	298.9
	sd	7.6	7.9	7.0	7.6	7.8	8.3	8.9	9.0	7.6	8.3	7.7	7.7	9.8
0.4	max	314.9	313.6	313.5	313.8	325.5	330.7	338.1	340.4	328.4	320.1	314.9	326.5	340.4
	min	272.7	274.3	273.4	277.1	277.5	276.6	271.8	277.9	277.5	273.0	274.2	272.0	271.8
	no	588	536	589	582	606	569	544	589	573	597	582	582	6937
	mean	289.5	290.2	289.1	292.4	296.1	300.5	305.9	303.8	298.1	294.4	290.9	291.1	295.1
	sd	7.7	8.1	7.0	7.5	7.8	8.2	8.9	8.9	7.7	8.5	7.9	7.8	9.7
0.5	max	311.5	309.4	309.5	309.4	321.5	321.1	340.1	338.8	325.7	316.0	310.5	322.0	340.1
	min	268.3	269.1	269.8	272.9	273.5	271.7	265.5	274.9	273.8	267.5	270.9	267.1	265.5
	no	588	536	589	583	606	569	544	589	573	597	582	582	6938
	mean	286.0	286.6	285.5	288.9	292.6	296.7	301.8	299.8	294.4	290.7	287.3	287.6	291.5
	sd	7.9	8.1	7.0	7.4	7.7	8.0	8.8	8.9	7.7	8.6	8.0	7.9	9.6
0.6	max	324.5	305.2	305.5	305.1	318.3	320.2	342.1	332.2	320.4	312.7	307.1	317.6	342.1
	min	263.9	264.2	266.7	270.0	270.5	270.9	260.7	263.6	268.0	262.6	267.7	263.0	260.7
	no	589	536	589	583	606	569	544	588	573	596	582	582	6937
	mean	282.4	283.1	282.1	285.5	289.0	292.7	297.9	295.8	290.7	287.1	283.8	284.2	287.8
	sd	7.7	7.9	6.9	7.2	7.6	8.0	8.5	8.7	7.6	8.5	7.9	7.8	9.4
0.7	max	304.6	302.0	301.5	301.3	314.5	316.3	338.6	325.7	315.1	309.7	304.6	303.5	338.6
	min	259.1	261.4	262.9	267.2	262.8	267.5	256.6	268.6	264.0	260.1	264.5	259.6	256.6
	no	587	535	589	583	605	569	544	589	573	596	582	581	6933
	mean	279.0	279.6	278.7	282.0	285.6	288.9	294.0	292.0	287.2	283.7	280.4	280.8	284.3
	sd	7.6	7.7	6.9	7.1	7.5	8.2	8.2	8.6	7.3	8.5	7.8	7.7	9.2
0.8	max	301.2	299.2	297.6	297.5	311.9	312.6	335.0	319.4	310.2	306.8	302.2	299.6	335.0
	min	255.4	258.6	259.1	264.3	261.1	256.0	266.0	247.5	260.4	256.4	261.3	257.2	247.5
	no	587	536	589	583	606	568	544	589	573	597	582	581	6935
	mean	275.7	276.2	275.4	278.6	281.9	285.1	290.0	288.2	283.5	280.3	277.2	277.5	280.8
	sd	7.4	7.6	6.7	7.1	7.4	8.0	8.2	8.2	7.1	8.3	7.7	7.6	9.0
0.9	max	297.8	296.4	293.7	293.7	309.1	308.4	331.4	313.8	307.0	303.2	299.8	295.9	331.4
	min	252.5	255.8	255.6	261.0	258.7	257.1	262.6	259.9	256.6	253.2	258.1	254.7	252.5
	no	584	536	589	583	606	568	542	588	573	597	582	581	6929

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

1241 Ørland

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	272.4	272.8	272.2	275.2	278.4	281.5	286.1	284.5	280.0	277.0	273.9	274.2	277.3
	sd	7.2	7.3	6.5	7.0	7.2	7.8	8.4	8.1	7.1	8.1	7.5	7.5	8.8
1.0	max	294.0	293.2	289.8	290.0	306.2	305.3	327.1	314.0	303.8	299.1	298.6	293.0	327.1
	min	249.7	253.6	252.0	256.7	259.3	253.6	258.6	256.5	252.3	250.8	254.8	252.2	249.7
	no	587	536	589	583	606	568	543	588	573	597	582	581	6933
	mean	269.1	269.5	268.9	271.8	275.0	277.8	282.4	280.9	276.6	273.7	270.6	270.9	273.9
	sd	7.1	7.2	6.4	6.9	7.0	8.1	8.3	8.0	7.1	7.9	7.4	7.4	8.6
1.1	max	290.3	290.0	285.9	286.1	303.1	302.2	322.8	317.0	304.9	295.2	297.5	290.3	322.8
	min	246.9	251.3	249.1	253.0	255.6	226.3	255.8	253.6	248.3	247.7	251.6	250.4	226.3
	no	587	536	589	582	606	569	542	588	573	597	582	581	6932
	mean	265.8	266.3	265.6	268.4	271.5	274.4	278.7	277.2	273.2	270.3	267.3	267.6	270.5
	sd	7.0	7.1	6.2	6.8	6.9	7.7	8.3	8.0	7.2	7.7	7.3	7.3	8.5
1.2	max	286.5	286.2	282.1	282.4	299.0	299.1	318.5	317.4	307.0	292.0	296.3	287.4	318.5
	min	244.2	245.6	247.3	249.2	252.9	245.8	252.2	250.7	244.2	245.9	248.4	248.6	244.2
	no	587	536	589	583	606	569	544	589	573	597	582	581	6936
	mean	262.6	263.1	262.4	265.1	268.1	270.8	275.0	273.5	269.8	267.0	264.1	264.3	267.1
	sd	6.8	6.9	6.1	6.7	6.8	7.6	8.2	8.0	7.2	7.5	7.1	7.1	8.3
1.3	max	282.7	282.6	278.7	280.5	293.9	295.2	313.3	315.9	310.1	287.8	294.5	283.7	315.9
	min	241.9	243.0	245.0	246.4	250.1	241.6	247.4	247.6	240.1	243.6	245.2	246.6	240.1
	no	586	536	589	583	606	569	544	591	572	597	582	580	6935
	mean	259.4	260.0	259.2	261.9	264.6	267.3	271.3	269.7	266.3	263.5	260.8	261.1	263.7
	sd	6.7	6.7	6.0	6.6	6.8	7.7	8.3	8.1	7.2	7.4	6.9	7.0	8.1
1.4	max	278.8	278.7	275.2	276.4	289.0	289.1	308.1	314.0	310.0	283.3	292.9	281.7	314.0
	min	239.6	240.5	241.3	243.6	246.5	240.7	245.4	244.5	237.9	239.8	242.6	243.6	237.9
	no	586	536	589	582	606	569	544	591	572	596	582	581	6934
	mean	256.2	256.8	256.1	258.6	261.2	263.8	267.7	266.1	263.0	260.1	257.6	257.8	260.4
	sd	6.6	6.5	5.9	6.4	6.8	7.5	8.3	8.3	7.0	7.4	6.7	6.8	8.0
1.5	max	275.0	274.8	271.8	272.4	284.2	286.7	303.0	312.1	303.2	279.8	291.4	278.3	312.1
	min	237.5	237.9	238.3	240.4	243.9	238.5	242.3	239.8	235.9	235.7	239.6	240.7	235.7
	no	585	535	589	581	605	569	544	591	572	596	582	581	6930
	mean	253.1	253.7	253.0	255.4	258.0	260.3	264.1	262.6	259.6	256.9	254.4	254.6	257.1
	sd	6.5	6.3	5.8	6.4	6.8	7.4	8.3	8.4	6.8	7.3	6.5	6.6	7.8
1.6	max	271.3	271.0	268.3	268.8	280.5	283.8	298.5	310.3	293.2	276.1	289.9	273.1	310.3
	min	235.5	235.3	235.3	237.2	239.4	235.2	238.8	236.5	233.8	233.1	237.5	237.9	233.1
	no	584	536	589	582	605	569	544	591	572	596	582	581	6931
	mean	250.0	250.6	250.0	252.3	254.8	256.7	260.4	259.1	256.3	253.7	251.2	251.5	253.9
	sd	6.5	6.1	5.7	6.3	6.8	7.3	8.3	8.4	6.8	7.2	6.3	6.5	7.7
1.7	max	267.5	267.7	264.8	265.2	276.7	280.3	294.0	301.9	284.5	273.0	288.4	268.8	301.9
	min	233.5	232.8	232.6	234.8	237.1	232.2	235.3	233.2	231.7	230.8	234.9	235.1	230.8
	no	584	536	589	583	606	569	543	591	572	596	582	581	6932
	mean	246.9	247.4	246.9	249.1	251.4	253.2	256.8	255.6	252.9	250.4	248.1	248.3	250.6
	sd	6.4	5.9	5.7	6.2	6.8	7.4	8.3	8.4	6.9	7.1	6.1	6.4	7.6
1.8	max	267.3	264.5	262.4	261.5	273.0	276.8	289.0	294.1	280.9	270.0	282.8	265.6	294.1
	min	231.5	230.5	230.2	231.7	230.4	229.2	233.1	230.0	227.8	228.4	232.0	232.4	227.8
	no	584	536	589	582	606	569	543	591	572	596	582	581	6931
	mean	243.9	244.4	243.9	246.0	248.2	249.8	253.4	252.3	249.5	247.2	244.9	245.1	247.4
	sd	6.3	5.8	5.5	6.0	6.7	7.4	8.0	8.3	6.9	7.0	6.0	6.2	7.4
1.9	max	278.3	261.2	260.9	258.0	269.3	273.3	280.5	288.4	279.2	267.0	276.7	262.5	288.4
	min	229.3	227.9	227.5	228.9	227.9	226.2	232.1	227.2	226.8	226.0	229.3	229.0	226.0
	no	584	536	586	583	606	569	542	591	572	596	582	581	6928
	mean	240.9	241.4	240.8	242.9	245.0	246.4	250.0	248.9	246.3	243.9	241.8	241.9	244.2
	sd	6.2	5.7	5.4	5.9	6.6	7.4	8.0	8.4	6.9	6.9	5.8	6.0	7.3
2.0	max	281.5	258.0	258.9	254.8	265.7	269.8	278.6	285.3	278.1	264.5	270.7	259.5	285.3
	min	225.9	225.4	224.6	225.6	224.4	223.7	229.4	226.2	226.0	223.6	226.6	226.8	223.6
	no	584	536	587	583	606	569	542	591	572	596	582	581	6929

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

9661 Mike 0/12

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	309.7	311.9	311.6	313.8	318.7	321.9	327.2	326.1	319.9	317.0	313.1	310.8	316.9
	sd	8.1	7.0	6.8	6.9	6.5	7.5	6.6	7.4	7.7	8.3	7.4	7.9	9.4
0.0	max	330.7	328.5	330.9	330.9	334.2	356.6	341.7	343.4	341.7	334.1	335.4	331.8	356.6
	min	280.5	282.6	281.8	286.2	301.0	304.3	299.0	289.6	288.7	284.9	284.9	285.4	280.5
	no	592	540	595	563	600	586	603	600	551	533	583	583	6929
	mean	305.1	307.2	306.3	308.8	314.5	317.5	323.0	321.8	315.5	312.2	308.1	305.6	312.2
	sd	7.7	7.6	7.1	6.8	6.6	7.6	6.6	7.3	7.7	7.7	7.1	7.8	9.5
0.1	max	325.6	324.2	327.8	325.6	329.8	352.8	336.5	337.6	340.5	329.7	330.3	326.3	352.8
	min	288.5	287.0	261.0	293.0	293.3	281.3	303.6	303.3	297.9	292.2	289.6	270.3	261.0
	no	592	539	592	563	598	586	599	599	551	534	581	582	6916
	mean	301.4	303.6	302.8	305.1	310.7	313.8	318.9	317.9	311.7	308.4	304.3	302.1	308.5
	sd	7.3	7.5	6.9	6.4	6.5	7.1	6.7	7.1	7.3	7.5	6.8	7.7	9.2
0.2	max	321.8	321.5	323.4	321.8	328.4	346.6	336.8	335.1	334.8	337.6	325.3	321.2	346.6
	min	282.8	283.5	255.4	290.0	290.0	294.4	292.5	301.3	293.8	262.9	282.8	239.8	239.8
	no	591	538	591	562	600	587	599	599	551	534	581	582	6915
	mean	298.1	300.2	299.4	301.6	306.8	309.8	314.7	313.9	307.9	304.7	300.7	298.6	304.8
	sd	7.0	7.1	7.2	6.2	6.3	6.9	6.8	7.0	7.2	7.7	6.7	7.9	9.0
0.3	max	317.4	317.1	318.3	317.5	327.4	339.3	342.6	339.5	331.8	322.5	319.7	316.8	342.6
	min	280.6	281.3	218.7	284.1	287.3	282.9	286.9	293.6	281.4	234.2	280.0	209.3	209.3
	no	592	537	591	564	600	586	600	598	552	534	580	583	6917
	mean	294.8	296.8	296.2	298.0	302.9	305.9	310.5	309.6	304.2	300.9	297.3	295.5	301.1
	sd	6.7	6.8	6.2	5.8	6.6	6.6	7.0	7.1	7.0	8.1	6.7	6.8	8.6
0.4	max	313.0	312.8	314.2	313.6	328.3	332.3	338.6	338.6	348.3	318.2	314.1	312.4	348.3
	min	277.7	278.6	278.2	280.9	240.6	281.0	282.4	276.2	268.9	206.5	252.5	277.0	206.5
	no	592	539	590	563	600	587	599	597	552	534	582	581	6916
	mean	291.5	293.4	292.7	294.3	298.9	301.8	306.0	305.4	300.2	297.3	294.0	292.1	297.3
	sd	6.5	6.7	6.0	5.5	7.4	6.6	7.7	7.1	6.7	6.9	6.2	6.5	8.3
0.5	max	308.7	308.5	309.8	310.9	324.8	325.6	331.5	331.9	325.2	314.3	310.1	308.4	331.9
	min	274.8	273.3	274.4	274.3	197.2	275.2	260.1	273.2	256.3	251.6	274.7	273.1	197.2
	no	592	539	590	563	600	587	598	596	550	533	582	582	6912
	mean	288.2	289.9	289.1	290.6	295.2	297.5	301.5	301.0	296.4	293.4	290.5	288.7	293.5
	sd	6.3	6.5	6.4	5.5	6.4	6.9	8.0	7.8	6.8	6.9	6.0	6.2	8.1
0.6	max	306.7	304.8	304.4	308.2	321.0	322.8	325.4	330.2	330.2	312.2	308.7	305.6	330.2
	min	271.9	269.8	221.7	269.3	269.7	271.4	261.3	228.0	243.7	247.7	271.9	270.4	221.7
	no	592	539	591	564	599	587	598	598	550	533	582	582	6915
	mean	284.8	286.3	285.5	286.9	291.2	293.4	296.9	296.7	292.6	289.4	286.9	285.3	289.7
	sd	6.1	6.3	5.7	5.4	6.5	7.0	8.4	7.9	6.8	6.8	5.8	6.0	7.9
0.7	max	302.8	302.3	301.3	304.7	317.2	321.9	322.6	324.1	332.4	309.8	305.5	300.3	332.4
	min	269.0	266.0	259.7	266.3	264.9	265.5	262.3	226.7	231.0	243.8	269.0	268.0	226.7
	no	592	539	591	564	599	587	599	597	551	533	580	582	6914
	mean	281.4	282.7	282.0	283.2	287.2	289.0	292.4	292.4	288.9	285.4	283.2	281.8	285.8
	sd	6.0	6.2	5.4	5.4	6.6	7.7	8.9	7.9	6.4	8.0	5.8	5.8	7.8
0.8	max	298.8	299.1	296.8	301.0	313.5	318.3	320.3	317.2	335.0	306.4	302.4	295.8	335.0
	min	264.2	263.1	264.5	263.2	261.9	256.5	262.2	250.0	258.0	188.9	265.1	249.5	188.9
	no	592	538	591	564	599	584	599	597	550	533	581	582	6910
	mean	277.9	279.0	278.2	279.5	283.3	285.0	288.1	288.2	285.1	281.5	279.6	278.4	282.0
	sd	6.0	6.1	6.5	5.5	6.8	8.0	9.2	7.9	6.4	7.7	5.8	5.6	7.8
0.9	max	294.9	294.3	292.4	298.4	308.4	312.5	317.8	311.1	336.2	302.8	299.3	293.0	336.2
	min	258.9	260.3	192.0	259.5	256.2	254.7	255.0	261.0	255.2	203.4	262.0	263.0	192.0
	no	591	538	591	563	599	585	599	597	549	534	581	582	6909

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

9661 Mike 0/12

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	274.4	275.3	274.7	275.9	279.4	280.9	283.8	284.2	281.2	277.6	276.0	274.9	278.2
	sd	6.0	6.1	6.0	5.6	6.9	8.0	9.5	8.1	6.6	7.5	5.9	5.5	7.7
1.0	max	291.2	289.5	289.6	293.3	301.7	305.5	316.0	308.5	337.4	298.9	296.3	290.8	337.4
	min	254.0	257.4	210.4	255.9	252.8	251.9	252.6	258.0	252.4	218.0	257.9	256.1	210.4
	no	592	538	590	564	596	584	599	597	551	534	581	582	6908
	mean	270.8	271.6	271.1	272.2	275.4	276.7	279.6	280.1	277.3	273.7	272.3	271.3	274.4
	sd	6.1	6.3	5.6	5.8	6.9	8.2	9.7	8.5	6.8	7.5	6.0	5.6	7.8
1.1	max	287.3	285.7	286.6	289.4	297.0	301.8	308.3	305.8	338.8	295.0	292.3	288.4	338.8
	min	250.8	253.7	229.0	251.7	251.3	248.1	214.8	253.9	249.6	228.9	251.1	252.3	214.8
	no	591	538	593	564	599	583	601	597	551	534	581	581	6913
	mean	267.0	267.9	267.5	268.5	271.3	272.6	275.6	275.8	273.4	269.7	268.5	267.8	270.5
	sd	6.2	6.4	5.4	6.0	7.1	8.3	9.5	8.9	7.1	7.5	6.0	5.6	7.8
1.2	max	283.4	282.0	283.7	286.0	292.9	298.1	304.4	303.1	340.4	291.1	288.2	284.6	340.4
	min	248.3	249.3	247.8	248.2	248.4	246.0	229.3	248.0	246.8	226.2	247.3	249.8	226.2
	no	592	538	591	564	599	583	601	596	551	534	581	582	6912
	mean	263.3	264.3	264.0	264.8	267.4	268.7	271.6	271.3	269.4	265.9	264.7	264.2	266.7
	sd	6.2	6.5	5.4	6.1	7.2	8.5	9.5	9.3	6.6	7.4	6.1	5.7	7.7
1.3	max	279.5	278.4	280.2	286.5	288.8	296.1	300.4	302.7	296.0	287.2	284.0	280.9	302.7
	min	243.6	246.0	249.5	245.5	246.5	243.8	238.2	231.2	243.9	223.5	244.4	247.3	223.5
	no	590	538	593	562	599	582	601	600	550	534	581	582	6912
	mean	259.6	260.8	260.5	261.2	263.5	264.7	267.6	267.3	265.4	262.3	261.0	260.7	262.9
	sd	6.3	6.5	5.4	6.2	7.6	8.7	9.6	9.4	6.9	7.2	6.2	5.8	7.8
1.4	max	275.8	274.7	273.9	287.1	284.7	294.1	296.4	304.8	292.9	283.4	280.0	277.2	304.8
	min	240.3	241.5	245.8	242.5	224.7	241.0	223.9	240.0	241.5	236.6	242.0	244.2	223.9
	no	590	538	593	562	600	581	601	600	550	534	581	580	6910
	mean	256.0	257.1	257.0	257.6	259.9	261.0	263.8	263.3	261.4	258.6	257.3	257.1	259.2
	sd	6.3	6.4	5.3	6.2	7.4	8.8	9.7	9.5	7.1	7.2	6.2	5.8	7.7
1.5	max	272.3	271.1	270.9	289.0	280.8	291.9	292.4	306.9	289.5	279.6	276.0	273.5	306.9
	min	237.7	236.9	243.6	239.7	238.5	237.4	225.7	237.2	238.5	233.7	238.0	241.1	225.7
	no	590	538	593	562	599	582	601	600	550	534	581	582	6912
	mean	252.5	253.6	253.6	254.1	256.4	257.3	260.2	259.5	257.8	255.0	253.7	253.4	255.6
	sd	6.3	6.3	5.3	6.1	7.3	8.7	9.6	9.6	8.5	7.4	6.2	5.8	7.8
1.6	max	269.1	267.4	267.8	271.5	277.0	288.8	287.4	302.6	328.9	287.6	272.4	269.8	328.9
	min	235.1	233.7	238.3	237.1	235.5	234.5	236.9	234.4	235.7	230.9	234.9	233.9	230.9
	no	590	536	592	563	599	582	600	600	552	533	581	581	6909
	mean	249.1	250.1	250.2	250.6	253.0	253.6	256.6	255.6	254.0	251.5	250.1	249.8	252.0
	sd	6.2	6.3	5.3	6.0	7.2	8.7	9.6	9.8	8.6	7.3	6.1	5.8	7.8
1.7	max	265.9	263.9	264.7	267.5	273.3	284.9	283.6	295.2	320.1	273.3	268.8	266.1	320.1
	min	232.6	229.7	234.7	234.3	233.0	231.5	232.5	216.1	232.8	231.8	232.2	225.3	216.1
	no	590	537	592	563	599	581	601	600	552	533	581	582	6911
	mean	245.6	246.6	246.8	247.1	249.5	249.9	253.1	251.8	250.4	248.0	246.6	246.2	248.5
	sd	6.0	6.1	5.4	5.9	7.1	8.8	9.5	9.8	8.5	7.3	6.1	5.9	7.7
1.8	max	262.7	260.6	261.6	264.2	269.6	281.1	279.8	288.3	311.8	270.1	265.2	262.5	311.8
	min	229.6	226.1	232.2	231.6	230.4	225.5	228.9	213.6	227.9	229.9	229.5	217.1	213.6
	no	589	538	592	563	599	582	600	600	552	532	581	582	6910
	mean	242.3	243.2	243.4	243.8	246.1	246.4	249.6	248.1	246.9	244.6	243.3	242.8	245.1
	sd	5.9	6.0	5.3	5.8	7.0	8.6	9.4	9.7	8.3	7.1	6.0	5.9	7.6
1.9	max	259.3	257.4	258.4	260.9	265.9	277.3	276.0	282.0	307.1	266.7	261.7	259.1	307.1
	min	226.5	223.5	229.7	228.8	227.9	221.2	226.4	212.4	227.2	225.9	227.6	215.3	212.4
	no	589	538	592	563	599	582	600	600	552	533	581	581	6910
	mean	239.1	239.9	240.1	240.6	243.0	243.0	246.2	244.7	243.5	241.2	240.1	239.4	241.8
	sd	5.7	5.9	5.3	5.6	6.9	8.5	9.2	9.5	8.2	7.0	5.9	6.1	7.5
2.0	max	255.8	254.6	255.3	257.7	262.3	273.4	271.9	276.0	306.8	263.4	258.1	255.7	306.8
	min	224.1	220.9	226.7	226.3	225.3	219.2	224.0	211.1	224.6	222.0	222.8	190.7	190.7
	no	588	537	591	562	598	582	601	600	551	532	581	582	6905

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	309.7	311.9	311.6	313.8	318.7	321.9	327.2	326.1	319.9	317.0	313.1	310.8	316.9
	sd	8.1	7.0	6.8	6.9	6.5	7.5	6.6	7.4	7.7	8.3	7.4	7.9	9.4
0.0	max	330.7	328.5	330.9	330.9	334.2	356.6	341.7	343.4	341.7	334.1	335.4	331.8	356.6
	min	280.5	282.6	281.8	286.2	301.0	304.3	299.0	289.6	288.7	284.9	284.9	285.4	280.5
	no	592	540	595	563	600	586	603	600	551	533	583	583	6929
	mean	305.1	307.2	306.3	308.8	314.5	317.5	323.0	321.8	315.5	312.2	308.1	305.6	312.2
	sd	7.7	7.6	7.1	6.8	6.6	7.6	6.6	7.3	7.7	7.7	7.1	7.8	9.5
0.1	max	325.6	324.2	327.8	325.6	329.8	352.8	336.5	337.6	340.5	329.7	330.3	326.3	352.8
	min	288.5	287.0	261.0	293.0	293.3	281.3	303.6	303.3	297.9	292.2	289.6	270.3	261.0
	no	592	539	592	563	598	586	599	599	551	534	581	582	6916
	mean	301.4	303.6	302.8	305.1	310.7	313.8	318.9	317.9	311.7	308.4	304.3	302.1	308.5
	sd	7.3	7.5	6.9	6.4	6.5	7.1	6.7	7.1	7.3	7.5	6.8	7.7	9.2
0.2	max	321.8	321.5	323.4	321.8	328.4	346.6	336.8	335.1	334.8	337.6	325.3	321.2	346.6
	min	282.8	283.5	255.4	290.0	290.0	294.4	292.5	301.3	293.8	262.9	282.8	239.8	239.8
	no	591	538	591	562	600	587	599	599	551	534	581	582	6915
	mean	298.1	300.2	299.4	301.6	306.8	309.8	314.7	313.9	307.9	304.7	300.7	298.6	304.8
	sd	7.0	7.1	7.2	6.2	6.3	6.9	6.8	7.0	7.2	7.7	6.7	7.9	9.0
0.3	max	317.4	317.1	318.3	317.5	327.4	339.3	342.6	339.5	331.8	322.5	319.7	316.8	342.6
	min	280.6	281.3	218.7	284.1	287.3	282.9	286.9	293.6	281.4	234.2	280.0	209.3	209.3
	no	592	537	591	564	600	586	600	598	552	534	580	583	6917
	mean	294.8	296.8	296.2	298.0	302.9	305.9	310.5	309.6	304.2	300.9	297.3	295.5	301.1
	sd	6.7	6.8	6.2	5.8	6.6	6.6	7.0	7.1	7.0	8.1	6.7	6.8	8.6
0.4	max	313.0	312.8	314.2	313.6	328.3	332.3	338.6	338.6	348.3	318.2	314.1	312.4	348.3
	min	277.7	278.6	278.2	280.9	240.6	281.0	282.4	276.2	268.9	206.5	252.5	277.0	206.5
	no	592	539	590	563	600	587	599	597	552	534	582	581	6916
	mean	291.5	293.4	292.7	294.3	298.9	301.8	306.0	305.4	300.2	297.3	294.0	292.1	297.3
	sd	6.5	6.7	6.0	5.5	7.4	6.6	7.7	7.1	6.7	6.9	6.2	6.5	8.3
0.5	max	308.7	308.5	309.8	310.9	324.8	325.6	331.5	331.9	325.2	314.3	310.1	308.4	331.9
	min	274.8	273.3	274.4	274.3	197.2	275.2	260.1	273.2	256.3	251.6	274.7	273.1	197.2
	no	592	539	590	563	600	587	598	596	550	533	582	582	6912
	mean	288.2	289.9	289.1	290.6	295.2	297.5	301.5	301.0	296.4	293.4	290.5	288.7	293.5
	sd	6.3	6.5	6.4	5.5	6.4	6.9	8.0	7.8	6.8	6.9	6.0	6.2	8.1
0.6	max	306.7	304.8	304.4	308.2	321.0	322.8	325.4	330.2	330.2	312.2	308.7	305.6	330.2
	min	271.9	269.8	221.7	269.3	269.7	271.4	261.3	228.0	243.7	247.7	271.9	270.4	221.7
	no	592	539	591	564	599	587	598	598	550	533	582	582	6915
	mean	284.8	286.3	285.5	286.9	291.2	293.4	296.9	296.7	292.6	289.4	286.9	285.3	289.7
	sd	6.1	6.3	5.7	5.4	6.5	7.0	8.4	7.9	6.8	6.8	5.8	6.0	7.9
0.7	max	302.8	302.3	301.3	304.7	317.2	321.9	322.6	324.1	332.4	309.8	305.5	300.3	332.4
	min	269.0	266.0	259.7	266.3	264.9	265.5	262.3	226.7	231.0	243.8	269.0	268.0	226.7
	no	592	539	591	564	599	587	599	597	551	533	580	582	6914
	mean	281.4	282.7	282.0	283.2	287.2	289.0	292.4	292.4	288.9	285.4	283.2	281.8	285.8
	sd	6.0	6.2	5.4	5.4	6.6	7.7	8.9	7.9	6.4	8.0	5.8	5.8	7.8
0.8	max	298.8	299.1	296.8	301.0	313.5	318.3	320.3	317.2	335.0	306.4	302.4	295.8	335.0
	min	264.2	263.1	264.5	263.2	261.9	256.5	262.2	250.0	258.0	188.9	265.1	249.5	188.9
	no	592	538	591	564	599	584	599	597	550	533	581	582	6910
	mean	277.9	279.0	278.2	279.5	283.3	285.0	288.1	288.2	285.1	281.5	279.6	278.4	282.0
	sd	6.0	6.1	6.5	5.5	6.8	8.0	9.2	7.9	6.4	7.7	5.8	5.6	7.8
0.9	max	294.9	294.3	292.4	298.4	308.4	312.5	317.8	311.1	336.2	302.8	299.3	293.0	336.2
	min	258.9	260.3	192.0	259.5	256.2	254.7	255.0	261.0	255.2	203.4	262.0	263.0	192.0
	no	591	538	591	563	599	585	599	597	549	534	581	582	6909

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

9661 Mike 6/18

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	mean	274.4	275.3	274.7	275.9	279.4	280.9	283.8	284.2	281.2	277.6	276.0	274.9	278.2
	sd	6.0	6.1	6.0	5.6	6.9	8.0	9.5	8.1	6.6	7.5	5.9	5.5	7.7
	max	291.2	289.5	289.6	293.3	301.7	305.5	316.0	308.5	337.4	298.9	296.3	290.8	337.4
	min	254.0	257.4	210.4	255.9	252.8	251.9	252.6	258.0	252.4	218.0	257.9	256.1	210.4
	no	592	538	590	564	596	584	599	597	551	534	581	582	6908
1.1	mean	270.8	271.6	271.1	272.2	275.4	276.7	279.6	280.1	277.3	273.7	272.3	271.3	274.4
	sd	6.1	6.3	5.6	5.8	6.9	8.2	9.7	8.5	6.8	7.5	6.0	5.6	7.8
	max	287.3	285.7	286.6	289.4	297.0	301.8	308.3	305.8	338.8	295.0	292.3	288.4	338.8
	min	250.8	253.7	229.0	251.7	251.3	248.1	214.8	253.9	249.6	228.9	251.1	252.3	214.8
	no	591	538	593	564	599	583	601	597	551	534	581	581	6913
1.2	mean	267.0	267.9	267.5	268.5	271.3	272.6	275.6	275.8	273.4	269.7	268.5	267.8	270.5
	sd	6.2	6.4	5.4	6.0	7.1	8.3	9.5	8.9	7.1	7.5	6.0	5.6	7.8
	max	283.4	282.0	283.7	286.0	292.9	298.1	304.4	303.1	340.4	291.1	288.2	284.6	340.4
	min	248.3	249.3	247.8	248.2	248.4	246.0	229.3	248.0	246.8	226.2	247.3	249.8	226.2
	no	592	538	591	564	599	583	601	596	551	534	581	582	6912
1.3	mean	263.3	264.3	264.0	264.8	267.4	268.7	271.6	271.3	269.4	265.9	264.7	264.2	266.7
	sd	6.2	6.5	5.4	6.1	7.2	8.5	9.5	9.3	6.6	7.4	6.1	5.7	7.7
	max	279.5	278.4	280.2	286.5	288.8	296.1	300.4	302.7	296.0	287.2	284.0	280.9	302.7
	min	243.6	246.0	249.5	245.5	246.5	243.8	238.2	231.2	243.9	223.5	244.4	247.3	223.5
	no	590	538	593	562	599	582	601	600	550	534	581	582	6912
1.4	mean	259.6	260.8	260.5	261.2	263.5	264.7	267.6	267.3	265.4	262.3	261.0	260.7	262.9
	sd	6.3	6.5	5.4	6.2	7.6	8.7	9.6	9.4	6.9	7.2	6.2	5.8	7.8
	max	275.8	274.7	273.9	287.1	284.7	294.1	296.4	304.8	292.9	283.4	280.0	277.2	304.8
	min	240.3	241.5	245.8	242.5	224.7	241.0	223.9	240.0	241.5	236.6	242.0	244.2	223.9
	no	590	538	593	562	600	581	601	600	550	534	581	580	6910
1.5	mean	256.0	257.1	257.0	257.6	259.9	261.0	263.8	263.3	261.4	258.6	257.3	257.1	259.2
	sd	6.3	6.4	5.3	6.2	7.4	8.8	9.7	9.5	7.1	7.2	6.2	5.8	7.7
	max	272.3	271.1	270.9	289.0	280.8	291.9	292.4	306.9	289.5	279.6	276.0	273.5	306.9
	min	237.7	236.9	243.6	239.7	238.5	237.4	225.7	237.2	238.5	233.7	238.0	241.1	225.7
	no	590	538	593	562	599	582	601	600	550	534	581	582	6912
1.6	mean	252.5	253.6	253.6	254.1	256.4	257.3	260.2	259.5	257.8	255.0	253.7	253.4	255.6
	sd	6.3	6.3	5.3	6.1	7.3	8.7	9.6	9.6	8.5	7.4	6.2	5.8	7.8
	max	269.1	267.4	267.8	271.5	277.0	288.8	287.4	302.6	328.9	287.6	272.4	269.8	328.9
	min	235.1	233.7	238.3	237.1	235.5	234.5	236.9	234.4	235.7	230.9	234.9	233.9	230.9
	no	590	536	592	563	599	582	600	600	552	533	581	581	6909
1.7	mean	249.1	250.1	250.2	250.6	253.0	253.6	256.6	255.6	254.0	251.5	250.1	249.8	252.0
	sd	6.2	6.3	5.3	6.0	7.2	8.7	9.6	9.8	8.6	7.3	6.1	5.8	7.8
	max	265.9	263.9	264.7	267.5	273.3	284.9	283.6	295.2	320.1	273.3	268.8	266.1	320.1
	min	232.6	229.7	234.7	234.3	233.0	231.5	232.5	216.1	232.8	231.8	232.2	225.3	216.1
	no	590	537	592	563	599	581	601	600	552	533	581	582	6911
1.8	mean	245.6	246.6	246.8	247.1	249.5	249.9	253.1	251.8	250.4	248.0	246.6	246.2	248.5
	sd	6.0	6.1	5.4	5.9	7.1	8.8	9.5	9.8	8.5	7.3	6.1	5.9	7.7
	max	262.7	260.6	261.6	264.2	269.6	281.1	279.8	288.3	311.8	270.1	265.2	262.5	311.8
	min	229.6	226.1	232.2	231.6	230.4	225.5	228.9	213.6	227.9	229.9	229.5	217.1	213.6
	no	589	538	592	563	599	582	600	600	552	532	581	582	6910
1.9	mean	242.3	243.2	243.4	243.8	246.1	246.4	249.6	248.1	246.9	244.6	243.3	242.8	245.1
	sd	5.9	6.0	5.3	5.8	7.0	8.6	9.4	9.7	8.3	7.1	6.0	5.9	7.6
	max	259.3	257.4	258.4	260.9	265.9	277.3	276.0	282.0	307.1	266.7	261.7	259.1	307.1
	min	226.5	223.5	229.7	228.8	227.9	221.2	226.4	212.4	227.2	225.9	227.6	215.3	212.4
	no	589	538	592	563	599	582	600	600	552	533	581	581	6910
2.0	mean	239.1	239.9	240.1	240.6	243.0	243.0	246.2	244.7	243.5	241.2	240.1	239.4	241.8
	sd	5.7	5.9	5.3	5.6	6.9	8.5	9.2	9.5	8.2	7.0	5.9	6.1	7.5
	max	255.8	254.6	255.3	257.7	262.3	273.4	271.9	276.0	306.8	263.4	258.1	255.7	306.8
	min	224.1	220.9	226.7	226.3	225.3	219.2	224.0	211.1	224.6	222.0	222.8	190.7	190.7
	no	588	537	591	562	598	582	601	600	551	532	581	582	6905

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	310.3	311.9	310.5	314.4	320.1	326.1	331.7	330.8	323.3	318.2	313.2	311.0	318.2
	sd	6.7	6.1	6.6	7.1	6.9	7.6	7.0	8.0	8.3	7.9	6.5	7.0	10.3
	max	329.8	332.7	329.7	332.3	342.4	349.2	355.9	350.7	351.8	336.1	333.0	328.9	355.9
	min	287.1	287.5	276.5	280.3	282.1	283.5	305.7	290.9	278.3	284.1	280.9	287.0	276.5
	no	599	554	610	590	609	579	501	575	571	599	585	588	6960
0.1	mean	304.0	305.5	303.6	305.2	309.6	313.2	319.0	317.3	310.5	308.0	304.9	303.9	308.6
	sd	6.6	6.7	6.0	6.4	7.4	8.2	8.8	8.9	7.4	7.9	6.2	6.6	8.8
	max	325.0	323.5	326.2	322.8	333.0	345.4	343.9	340.5	332.8	333.6	328.5	325.6	345.4
	min	286.5	290.0	283.4	289.9	285.5	289.3	291.9	285.9	287.8	281.8	287.4	285.0	281.8
	no	599	553	610	587	609	579	501	575	571	597	584	588	6953
0.2	mean	299.6	301.0	298.9	300.6	304.6	308.1	313.8	312.1	305.5	303.3	300.5	299.6	303.8
	sd	6.5	6.9	6.0	6.1	7.3	8.1	9.0	8.9	6.9	7.7	6.2	6.5	8.6
	max	320.2	319.6	322.7	319.1	329.7	333.6	343.2	338.7	326.3	330.9	324.2	322.2	343.2
	min	282.7	282.9	280.3	285.2	283.5	282.9	289.0	282.0	284.5	279.5	284.8	280.9	279.5
	no	599	552	610	588	609	579	501	575	571	597	584	588	6953
0.3	mean	295.7	297.0	295.2	297.1	301.1	304.4	309.9	308.1	301.8	299.7	296.6	295.9	300.1
	sd	6.6	7.0	6.0	6.0	7.0	7.9	8.9	8.7	6.7	7.7	6.3	6.5	8.5
	max	315.5	315.6	319.2	315.2	324.9	341.8	339.6	335.8	321.1	326.9	320.1	317.3	341.8
	min	276.5	277.6	277.2	281.3	281.4	283.3	283.0	278.9	281.3	274.7	281.4	276.6	274.7
	no	599	553	610	588	609	579	501	575	571	597	584	588	6954
0.4	mean	292.2	293.4	291.6	293.8	297.7	300.9	306.1	304.4	298.5	296.3	293.1	292.4	296.6
	sd	6.6	7.1	6.1	6.0	6.8	7.7	8.8	8.5	6.6	7.6	6.3	6.5	8.4
	max	311.3	311.5	315.5	311.3	320.2	330.8	336.0	332.3	317.3	321.8	316.0	312.9	336.0
	min	273.6	274.3	274.5	277.6	279.2	280.5	277.5	276.2	278.1	271.3	275.3	274.4	271.3
	no	598	553	610	588	609	579	500	575	570	597	584	588	6951
0.5	mean	288.7	290.0	288.2	290.5	294.4	297.5	302.5	300.8	295.1	292.9	289.7	289.0	293.1
	sd	6.6	7.1	6.1	5.9	6.6	7.4	8.6	8.2	6.4	7.5	6.3	6.5	8.3
	max	307.2	307.5	312.9	307.4	315.5	324.6	335.2	328.0	313.4	316.8	311.9	309.1	335.2
	min	270.6	271.0	272.4	274.2	275.3	277.6	274.4	273.2	275.0	266.5	271.0	270.9	266.5
	no	599	553	610	588	609	579	500	575	571	597	584	588	6953
0.6	mean	285.4	286.6	285.0	287.3	291.1	294.1	298.9	297.2	291.8	289.6	286.3	285.7	289.8
	sd	6.5	7.0	6.1	5.9	6.4	7.2	8.5	7.9	6.3	7.4	6.3	6.4	8.2
	max	303.1	304.9	310.4	306.0	310.9	318.7	343.9	323.6	310.6	312.3	307.8	305.2	343.9
	min	267.7	267.8	270.1	270.8	269.7	274.1	271.3	271.6	271.9	261.2	266.8	268.5	261.2
	no	598	553	609	587	609	579	501	574	571	597	584	588	6950
0.7	mean	282.1	283.3	281.8	284.1	287.8	290.6	295.4	293.6	288.6	286.4	283.1	282.4	286.5
	sd	6.4	6.9	6.1	5.8	6.2	7.0	8.5	7.8	6.2	7.3	6.2	6.3	8.0
	max	299.1	300.9	307.2	301.4	309.4	313.0	355.5	319.3	307.7	307.9	303.8	300.9	355.5
	min	263.7	264.6	267.0	267.5	266.6	269.4	268.2	269.2	267.8	258.0	264.3	265.9	258.0
	no	599	552	609	587	609	579	501	575	571	597	584	588	6951
0.8	mean	278.8	280.1	278.6	280.9	284.5	287.2	291.6	290.1	285.3	283.1	279.9	279.2	283.1
	sd	6.3	6.8	6.0	5.6	6.1	6.8	7.9	7.6	6.1	7.2	6.1	6.2	7.8
	max	295.7	296.9	303.2	297.0	308.9	306.4	323.3	315.0	304.8	303.7	299.8	297.4	323.3
	min	259.7	262.0	263.2	264.6	263.6	266.0	265.2	266.4	263.7	255.2	257.9	263.4	255.2
	no	599	553	610	587	609	578	499	575	570	597	584	587	6948
0.9	mean	275.5	276.8	275.4	277.6	281.3	283.8	288.2	286.6	282.0	279.8	276.6	275.9	279.8
	sd	6.2	6.7	5.9	5.5	6.0	6.6	7.8	7.5	6.1	7.1	6.1	6.1	7.7
	max	293.1	293.0	299.3	292.8	305.6	303.3	323.4	313.8	301.7	299.6	295.9	293.7	323.4
	min	256.2	259.3	260.0	260.6	260.7	262.9	262.2	262.6	260.8	252.6	254.3	260.5	252.6
	no	598	553	610	588	609	579	499	575	571	597	584	588	6951

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	272.2	273.5	272.2	274.4	278.1	280.3	284.6	283.2	278.7	276.4	273.4	272.6	276.5
	sd	6.1	6.5	5.8	5.4	5.9	6.6	7.7	7.3	6.0	7.0	6.0	6.1	7.6
1.0	max	290.4	289.1	294.9	288.1	301.0	300.2	322.2	311.4	298.6	296.1	291.9	289.5	322.2
	min	253.2	256.3	256.0	256.8	257.8	259.3	259.3	258.0	257.5	250.2	251.6	257.0	250.2
	no	599	553	610	588	609	577	499	574	570	597	584	588	6948
	mean	269.0	270.2	269.0	271.2	274.8	276.7	281.0	279.8	275.4	273.1	270.2	269.4	273.2
	sd	6.1	6.4	5.8	5.3	5.8	6.7	7.8	7.3	5.9	7.0	5.8	6.0	7.5
1.1	max	286.6	285.4	290.5	285.5	296.5	297.7	319.9	308.9	295.5	292.7	288.0	285.4	319.9
	min	249.7	253.3	252.7	254.0	255.1	255.7	256.4	253.8	254.6	247.8	248.6	252.4	247.8
	no	599	553	610	587	609	578	500	574	570	597	584	588	6949
	mean	265.7	266.9	265.8	267.9	271.4	273.0	277.4	276.3	272.0	269.7	266.9	266.1	269.8
	sd	6.0	6.2	5.7	5.3	5.8	6.9	7.8	7.3	5.9	7.0	5.7	5.9	7.4
1.2	max	282.6	281.5	286.3	287.4	292.5	295.2	318.5	306.4	292.5	289.7	284.1	281.4	318.5
	min	246.3	250.3	249.4	251.2	252.3	251.0	251.9	251.1	251.1	245.4	245.4	248.3	245.4
	no	599	553	610	587	609	578	499	575	571	596	584	587	6948
	mean	262.5	263.6	262.5	264.6	268.0	269.3	274.0	272.7	268.5	266.4	263.6	262.9	266.4
	sd	5.9	6.1	5.7	5.2	5.9	7.1	8.4	7.4	6.1	6.9	5.7	5.8	7.4
1.3	max	278.6	278.8	284.6	284.2	288.3	292.6	340.6	304.6	288.3	287.1	280.3	277.6	340.6
	min	242.9	247.5	247.2	248.3	249.6	248.2	248.9	248.4	247.6	242.9	242.4	244.9	242.4
	no	599	553	610	588	609	579	501	575	571	597	584	588	6954
	mean	259.3	260.4	259.3	261.3	264.5	265.7	270.4	269.1	265.0	263.1	260.4	259.7	263.1
	sd	5.8	6.0	5.6	5.3	6.0	7.2	8.5	7.5	6.3	6.8	5.6	5.6	7.3
1.4	max	274.7	275.7	282.4	282.0	283.2	292.1	334.0	299.7	283.8	285.3	276.4	273.9	334.0
	min	239.7	244.3	244.7	245.6	244.6	244.9	247.0	245.6	244.3	239.4	240.0	241.9	239.4
	no	599	553	610	588	609	579	501	574	571	595	584	587	6950
	mean	256.1	257.1	256.1	258.0	261.0	262.3	266.5	265.5	261.5	259.7	257.1	256.5	259.7
	sd	5.7	5.8	5.6	5.3	6.1	7.3	8.5	7.4	6.3	6.7	5.5	5.5	7.2
1.5	max	270.4	272.3	277.2	274.8	278.4	294.0	327.5	294.0	279.6	283.4	272.6	270.3	327.5
	min	236.8	242.0	241.7	242.9	241.8	242.2	244.3	243.0	241.0	237.1	237.5	238.5	236.8
	no	598	553	610	588	609	578	501	574	571	595	583	586	6946
	mean	252.9	253.9	252.9	254.7	257.6	258.8	262.9	261.8	258.0	256.3	253.9	253.3	256.3
	sd	5.5	5.6	5.5	5.3	6.1	7.2	8.4	7.4	6.3	6.6	5.4	5.5	7.1
1.6	max	266.3	268.9	272.1	271.0	275.3	296.5	321.2	288.0	275.6	280.2	268.9	267.7	321.2
	min	234.1	239.0	238.7	240.0	238.8	239.5	240.4	240.3	237.7	234.8	235.1	235.7	234.1
	no	597	553	610	588	608	579	501	574	571	595	583	586	6945
	mean	249.7	250.6	249.8	251.5	254.2	255.3	259.4	258.2	254.5	253.0	250.6	250.1	253.0
	sd	5.4	5.5	5.4	5.2	6.1	7.1	8.4	7.4	6.4	6.6	5.3	5.4	7.0
1.7	max	263.2	265.4	267.7	267.9	272.5	299.5	315.7	282.3	272.4	276.1	266.5	264.5	315.7
	min	231.5	235.6	235.6	237.2	236.1	236.8	235.4	237.5	234.5	232.5	232.7	232.8	231.5
	no	598	553	610	587	608	579	501	574	571	595	583	586	6945
	mean	246.5	247.5	246.7	248.2	250.8	252.0	256.1	254.7	251.0	249.7	247.4	246.9	249.7
	sd	5.3	5.5	5.2	5.1	6.0	7.1	8.3	7.4	6.3	6.6	5.3	5.2	6.8
1.8	max	260.1	261.9	263.9	264.8	270.0	297.1	310.3	279.2	270.2	271.9	263.9	260.6	310.3
	min	228.8	232.1	232.8	234.5	233.4	234.1	232.0	234.3	231.3	230.0	230.2	230.1	228.8
	no	598	553	610	588	609	579	501	573	571	595	582	585	6944
	mean	243.4	244.3	243.5	245.0	247.5	248.6	252.7	251.1	247.6	246.4	244.3	243.7	246.4
	sd	5.2	5.3	5.1	5.0	6.0	7.1	8.2	7.5	6.3	6.5	5.2	5.1	6.7
1.9	max	257.0	258.4	257.7	261.6	267.5	292.2	304.3	275.8	266.6	266.9	261.2	256.1	304.3
	min	226.1	228.7	230.4	231.9	231.0	231.2	231.6	230.6	228.1	227.8	227.8	227.4	226.1
	no	598	553	610	588	608	579	501	574	571	595	583	586	6946
	mean	240.3	241.2	240.5	241.9	244.2	245.3	249.3	247.7	244.3	243.2	241.1	240.6	243.2
	sd	5.0	5.2	4.9	4.9	5.9	7.2	8.2	7.5	6.3	6.4	5.0	5.0	6.6
2.0	max	253.5	255.0	253.1	258.4	263.6	287.4	298.4	272.7	261.2	262.1	258.5	253.0	298.4
	min	223.8	225.4	228.1	228.7	228.6	228.1	230.1	226.8	224.8	225.6	225.2	224.7	223.8
	no	598	553	609	588	609	579	501	573	570	595	583	586	6944

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

3836 Sodankyle

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	307.4	307.7	304.9	303.3	305.9	310.2	317.4	316.2	311.1	308.0	306.2	306.7	308.8
	sd	7.8	7.4	6.1	6.4	7.6	10.7	10.5	10.2	8.2	6.2	4.8	6.4	8.9
	max	331.4	330.4	329.3	317.5	323.0	338.8	344.2	343.3	336.5	328.6	327.1	327.1	344.2
	min	288.9	289.0	286.8	287.9	286.5	280.7	282.6	292.3	292.1	287.2	291.3	287.8	280.7
	no	603	560	617	587	620	599	620	620	600	620	599	618	7263
0.1	mean	302.4	303.0	300.9	298.9	301.0	304.7	312.0	311.4	307.0	304.0	301.6	301.2	304.0
	sd	6.7	5.9	5.3	5.7	7.1	10.4	10.4	9.7	8.1	6.1	4.2	4.9	8.4
	max	326.4	324.0	319.5	313.4	322.0	334.0	338.9	337.6	330.6	325.0	316.4	316.9	338.9
	min	285.3	285.9	283.4	282.8	284.4	218.0	276.5	287.6	288.4	284.6	286.9	285.0	218.0
	no	616	563	617	588	619	599	620	618	600	619	599	618	7276
0.2	mean	297.2	298.4	297.2	295.3	297.3	300.7	307.7	307.0	302.9	300.1	297.3	296.1	299.8
	sd	5.3	5.0	5.0	5.5	6.8	9.2	9.9	9.2	7.8	6.1	4.2	4.4	7.9
	max	316.1	314.4	310.4	309.3	317.5	329.9	334.3	331.9	329.3	321.3	309.0	309.1	334.3
	min	282.1	282.2	280.2	279.4	281.7	276.4	278.5	285.0	284.6	282.1	284.2	282.1	276.4
	no	616	563	617	588	618	598	620	618	600	619	599	618	7274
0.3	mean	292.7	294.0	293.5	291.9	293.8	297.0	303.8	302.9	299.1	296.2	293.2	291.6	295.8
	sd	4.8	4.8	4.9	5.4	6.6	8.8	9.7	8.8	7.6	6.1	4.4	4.5	7.7
	max	306.5	305.9	305.9	306.3	313.8	325.8	329.3	326.8	330.4	317.5	304.9	303.5	330.4
	min	279.0	278.6	277.6	276.8	273.7	274.1	276.3	282.5	281.1	279.5	281.6	278.7	273.7
	no	615	563	617	588	618	598	620	616	600	619	600	618	7272
0.4	mean	288.6	289.9	289.9	288.7	290.5	293.7	300.2	299.3	295.5	292.4	289.3	287.6	292.2
	sd	4.6	4.7	4.9	5.3	6.3	8.5	9.4	8.4	7.3	6.1	4.5	4.6	7.6
	max	300.7	302.1	301.7	303.8	310.4	332.8	325.8	322.2	326.7	313.1	300.9	299.8	332.8
	min	275.5	271.9	273.5	274.7	270.0	272.0	274.3	280.2	279.0	276.9	277.1	274.7	270.0
	no	615	563	617	588	618	598	620	618	599	619	600	618	7273
0.5	mean	284.7	286.0	286.2	285.5	287.4	290.6	297.0	295.9	291.9	288.6	285.5	283.8	288.6
	sd	4.7	4.7	4.8	5.1	6.1	8.2	9.0	8.0	7.0	6.1	4.5	4.7	7.6
	max	297.2	299.4	298.5	302.9	306.8	342.8	325.4	319.0	320.1	309.3	297.0	296.5	342.8
	min	271.2	265.8	270.1	269.1	267.5	269.9	269.9	275.4	276.1	268.7	269.5	265.8	265.8
	no	614	561	617	588	617	598	619	618	600	618	600	618	7268
0.6	mean	281.0	282.3	282.5	282.3	284.4	287.5	293.8	292.6	288.3	284.9	281.8	280.1	285.2
	sd	4.7	4.7	4.8	5.0	5.9	8.1	8.7	7.7	6.9	6.1	4.5	4.7	7.5
	max	294.8	296.6	295.1	300.3	304.8	349.4	324.4	316.0	316.3	306.9	293.2	293.1	349.4
	min	267.1	261.4	266.9	266.2	265.1	267.6	263.4	267.5	266.3	264.6	263.6	261.8	261.4
	no	614	563	616	588	617	598	620	618	600	619	600	617	7270
0.7	mean	277.4	278.7	278.8	279.1	281.3	284.4	290.6	289.2	284.7	281.2	278.2	276.5	281.7
	sd	4.7	4.8	4.9	5.0	5.7	8.1	8.4	7.5	6.7	6.1	4.6	4.7	7.5
	max	291.8	294.0	291.6	296.1	302.2	344.1	318.0	313.5	313.0	306.7	289.9	288.4	344.1
	min	262.7	258.5	263.4	263.3	262.8	247.0	260.3	260.0	261.0	260.9	261.0	261.0	247.0
	no	613	563	617	588	617	599	620	618	600	619	600	618	7272
0.8	mean	273.9	275.1	275.1	275.8	278.2	281.3	287.2	285.8	281.0	277.5	274.5	273.0	278.2
	sd	4.6	4.8	5.0	5.0	5.5	7.7	8.1	7.3	6.6	6.2	4.7	4.7	7.5
	max	288.7	290.4	288.1	293.2	298.6	332.9	312.7	312.1	309.0	307.6	288.9	284.9	332.9
	min	258.1	255.6	258.2	260.4	260.0	261.9	256.3	257.4	257.2	258.2	253.3	259.6	253.3
	no	614	563	617	588	617	599	620	618	600	619	600	618	7273
0.9	mean	270.5	271.6	271.6	272.5	275.1	278.2	283.8	282.4	277.3	273.8	271.0	269.6	274.8
	sd	4.6	4.8	5.0	5.0	5.3	7.4	7.8	7.0	6.5	6.2	4.7	4.7	7.4
	max	285.3	286.8	284.7	290.3	294.6	322.9	308.1	310.6	304.3	304.7	287.8	281.3	322.9
	min	254.0	252.8	255.0	256.8	256.1	254.6	253.0	255.7	253.4	255.1	249.4	253.8	249.4
	no	614	562	616	587	617	599	620	618	600	619	600	618	7270

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

3936 Sodankyle

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	267.1	268.2	268.1	269.1	272.0	275.0	280.5	278.9	273.6	270.2	267.5	266.2	271.4
	sd	4.7	4.7	4.9	5.0	5.1	7.1	7.5	6.9	6.6	6.2	4.7	4.6	7.3
1.0	max	281.9	283.3	281.3	286.9	292.8	313.5	304.2	307.7	300.1	298.0	285.4	278.2	313.5
	min	250.9	250.4	251.9	253.9	253.2	246.6	248.6	254.0	250.1	251.6	245.2	249.3	245.2
	no	613	562	617	588	616	599	620	618	600	619	600	618	7270
	mean	263.8	264.7	264.6	265.7	268.8	271.7	277.1	275.2	269.9	266.5	264.1	262.9	268.0
	sd	4.7	4.7	4.9	5.0	5.0	7.1	7.2	6.8	6.7	6.1	4.7	4.5	7.3
1.1	max	278.4	279.7	277.9	283.6	289.8	304.9	301.3	303.9	294.9	292.4	283.0	275.5	304.9
	min	247.5	248.0	248.8	250.2	250.6	241.7	248.6	251.8	247.0	246.6	242.3	246.1	241.7
	no	614	562	616	588	615	598	620	618	600	619	599	617	7266
	mean	260.4	261.4	261.2	262.3	265.5	268.3	273.6	271.7	266.1	263.0	260.8	259.6	264.5
	sd	4.7	4.7	4.9	5.1	5.1	7.1	7.0	6.7	6.8	6.1	4.7	4.5	7.2
1.2	max	274.9	276.2	274.4	279.8	286.5	298.3	298.4	298.5	289.0	289.0	279.8	274.4	298.5
	min	244.1	245.5	245.7	246.6	247.1	239.1	247.2	248.9	243.6	240.8	240.2	243.3	239.1
	no	613	562	616	588	617	599	620	618	600	619	600	617	7269
	mean	257.2	258.0	257.8	258.8	262.2	265.0	270.0	268.0	262.4	259.5	257.4	256.3	261.1
	sd	4.7	4.7	5.0	5.2	5.2	7.1	6.9	6.8	6.9	6.0	4.6	4.4	7.2
1.3	max	271.5	272.8	271.0	276.4	282.7	292.4	295.3	292.5	283.7	285.6	275.9	270.6	295.3
	min	240.9	243.2	242.1	243.0	243.7	238.1	238.3	244.8	240.6	236.5	236.4	240.6	236.4
	no	614	562	615	588	617	599	618	618	600	618	600	617	7266
	mean	253.9	254.8	254.4	255.4	258.9	261.8	266.4	264.3	258.8	255.9	254.2	253.1	257.7
	sd	4.7	4.6	5.0	5.2	5.2	7.0	7.1	6.9	6.9	6.0	4.6	4.5	7.1
1.4	max	268.0	269.4	267.2	272.4	278.9	287.5	290.3	287.6	278.8	282.0	271.8	266.8	290.3
	min	238.9	241.0	237.8	239.4	240.2	236.0	232.6	235.0	237.9	233.0	232.6	238.3	232.6
	no	614	563	616	587	616	599	619	617	600	618	600	614	7263
	mean	250.7	251.5	251.1	252.1	255.6	258.5	262.6	260.7	255.3	252.6	250.9	250.0	254.3
	sd	4.7	4.6	5.0	5.2	5.1	7.0	7.4	7.0	6.8	6.0	4.6	4.4	7.1
1.5	max	264.5	266.2	263.9	268.5	275.0	282.7	285.3	283.6	273.9	278.1	266.2	263.0	285.3
	min	236.4	237.5	235.2	235.8	237.3	233.1	229.8	232.3	234.9	231.0	230.3	235.2	229.8
	no	614	563	616	588	617	599	619	618	600	619	600	618	7271
	mean	247.5	248.4	247.9	248.9	252.4	255.1	258.9	257.0	251.9	249.3	247.8	246.9	251.0
	sd	4.6	4.6	4.9	5.1	5.1	7.0	7.6	7.1	6.6	6.2	4.4	4.3	6.9
1.6	max	261.1	263.0	260.5	264.7	271.2	277.9	280.7	279.7	270.0	273.6	259.1	259.4	280.7
	min	233.6	232.8	232.6	232.4	234.8	230.9	227.6	229.6	232.4	226.0	228.0	231.7	226.0
	no	614	562	616	588	617	599	619	618	600	619	600	618	7270
	mean	244.4	245.3	244.7	245.8	249.1	251.8	255.3	253.3	248.6	246.0	244.7	243.9	247.8
	sd	4.5	4.6	4.9	4.9	5.1	7.0	7.5	7.2	6.6	6.1	4.3	4.2	6.8
1.7	max	257.8	259.9	257.3	261.2	267.5	273.8	276.4	275.8	266.3	269.2	258.4	256.1	276.4
	min	230.4	229.6	228.2	229.5	232.3	228.8	229.8	226.9	229.8	223.7	225.6	228.8	223.7
	no	614	562	615	588	615	599	619	618	600	619	600	616	7265
	mean	241.3	242.3	241.6	242.7	245.8	248.5	251.7	249.7	245.2	242.8	241.6	240.9	244.5
	sd	4.5	4.5	4.8	4.8	5.1	6.8	7.6	7.1	6.6	6.1	4.3	4.2	6.7
1.8	max	254.5	256.7	254.0	257.7	263.7	270.2	272.5	271.8	262.6	264.9	253.2	252.9	272.5
	min	227.1	227.2	225.9	226.9	229.9	225.2	226.6	224.2	226.0	221.9	223.2	226.4	221.9
	no	614	563	616	588	616	599	619	618	600	619	600	617	7269
	mean	238.2	239.3	238.5	239.7	242.6	245.2	248.1	246.3	242.0	239.7	238.7	237.9	241.4
	sd	4.5	4.4	4.7	4.7	5.1	6.8	7.7	7.1	6.6	6.1	4.2	4.1	6.6
1.9	max	251.2	253.3	250.7	254.3	260.1	266.5	268.8	266.5	258.9	261.3	250.3	249.7	268.8
	min	225.4	224.5	224.9	224.2	223.8	221.3	223.8	222.1	221.7	220.6	220.8	223.8	220.6
	no	614	563	616	588	616	599	618	618	600	619	600	616	7267
	mean	235.3	236.3	235.6	236.7	239.3	241.9	244.7	242.8	238.8	236.6	235.7	235.0	238.2
	sd	4.4	4.3	4.6	4.6	5.2	6.8	7.7	7.1	6.6	6.1	4.2	4.0	6.4
2.0	max	247.2	249.7	247.6	250.9	256.5	263.0	265.1	261.5	255.4	257.8	247.6	246.6	265.1
	min	221.0	220.3	222.4	221.7	220.9	217.7	221.3	220.0	218.4	219.0	218.4	221.6	217.7
	no	614	563	616	588	616	599	618	617	600	618	599	616	7264

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

1001 Jan-Mayen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	309.4	310.4	310.3	311.8	314.8	317.1	320.0	319.9	314.5	312.1	309.9	309.7	313.3
	sd	5.4	5.5	5.2	4.7	4.0	5.0	4.9	5.7	6.3	5.3	5.0	4.7	6.4
0.0	max	322.7	323.3	323.3	322.0	325.4	328.0	332.0	331.3	328.1	326.2	323.9	326.7	332.0
	min	292.2	293.5	284.3	287.2	290.1	251.4	300.8	293.5	294.0	294.9	288.6	294.0	251.4
	no	600	556	609	591	548	530	546	545	527	544	529	529	6654
	mean	304.5	305.0	305.2	306.3	309.1	311.7	314.9	315.0	309.5	306.9	305.5	305.0	308.3
	sd	5.9	5.7	5.1	4.6	4.0	4.2	5.3	6.3	5.9	5.2	4.8	4.8	6.4
0.1	max	362.1	318.6	317.4	318.3	319.2	323.0	326.2	359.6	324.7	322.9	319.2	316.9	362.1
	min	287.1	286.7	291.4	290.8	287.4	296.0	296.7	281.4	294.3	293.3	287.1	287.3	281.4
	no	477	446	487	472	493	477	490	489	472	488	475	470	5736
	mean	300.8	301.4	301.7	302.8	305.4	307.9	311.1	311.2	305.9	303.4	302.0	301.5	304.6
	sd	5.6	5.5	5.0	4.4	3.9	4.4	5.7	6.4	5.7	5.1	4.8	4.7	6.3
0.2	max	349.4	313.9	314.0	315.3	315.1	321.5	324.3	348.8	321.9	322.8	318.6	313.9	349.4
	min	285.0	284.2	286.2	287.7	284.7	291.2	286.3	278.1	287.0	290.4	282.8	284.0	278.1
	no	477	446	487	473	493	479	490	489	471	488	475	470	5738
	mean	297.2	297.9	298.3	299.3	301.7	304.2	307.3	307.5	302.5	300.0	298.5	298.0	301.1
	sd	5.6	5.4	5.0	4.5	4.0	4.8	6.3	6.4	5.6	5.1	4.8	4.6	6.3
0.3	max	337.8	309.6	311.3	312.7	312.5	320.1	324.0	338.8	319.0	326.3	312.5	311.3	338.8
	min	282.0	281.7	280.8	283.6	281.9	287.1	281.1	274.8	284.0	287.4	278.3	278.6	274.8
	no	477	446	487	473	493	480	489	488	471	488	475	470	5737
	mean	293.7	294.4	294.9	295.8	297.9	300.2	303.5	303.7	299.0	296.7	295.1	294.4	297.5
	sd	5.6	5.2	4.9	4.5	4.2	5.5	6.9	6.7	5.4	5.3	5.0	4.5	6.3
0.4	max	337.2	306.4	307.4	312.9	307.4	318.4	326.3	329.4	316.1	333.7	311.1	307.3	337.2
	min	278.4	279.1	277.9	278.3	276.0	272.3	277.2	271.6	281.8	282.8	275.6	273.3	271.6
	no	477	446	487	473	493	478	486	488	471	487	475	470	5731
	mean	290.2	290.7	291.4	292.3	294.1	296.0	299.4	299.9	295.4	293.2	291.6	290.9	293.8
	sd	5.9	5.1	4.9	4.6	4.4	6.1	7.6	7.0	5.3	5.7	5.3	4.6	6.5
0.5	max	350.5	303.2	303.8	313.9	305.3	314.6	329.5	324.9	312.6	343.5	304.8	306.8	350.5
	min	266.7	276.4	275.4	273.1	272.9	275.9	271.0	268.7	279.3	277.9	268.8	270.0	266.7
	no	477	446	487	472	493	477	487	488	471	487	475	470	5730
	mean	286.4	287.1	287.8	288.8	290.1	291.8	295.5	295.9	291.7	289.6	288.2	287.2	290.0
	sd	5.2	5.1	5.0	4.8	4.8	6.7	8.3	7.5	5.3	6.0	5.4	4.8	6.6
0.6	max	308.8	300.1	300.5	313.2	303.6	311.2	333.6	321.8	308.8	340.8	299.6	308.7	340.8
	min	260.8	273.2	272.9	268.6	269.5	267.5	268.3	265.9	275.4	271.9	267.3	266.6	260.8
	no	476	446	487	473	492	478	486	488	470	487	474	470	5727
	mean	282.8	283.2	284.1	285.0	286.2	287.4	291.6	291.8	287.7	285.9	284.7	283.6	286.2
	sd	6.2	5.0	5.0	4.9	5.2	7.3	8.6	7.9	5.8	6.1	5.5	5.0	6.8
0.7	max	352.3	297.1	297.5	306.9	301.6	308.8	338.7	324.8	305.1	335.2	295.8	311.6	352.3
	min	259.0	265.8	268.8	265.8	266.3	252.8	264.4	262.0	241.5	268.3	265.5	263.2	241.5
	no	477	446	487	473	492	478	487	488	470	485	474	470	5727
	mean	279.0	279.5	280.3	281.3	282.2	283.1	287.4	287.6	283.8	282.2	281.1	279.9	282.3
	sd	6.1	4.9	5.2	5.0	5.5	7.5	9.0	8.4	5.7	6.2	5.4	5.2	6.9
0.8	max	340.6	294.0	295.7	301.8	299.7	306.2	335.1	328.6	301.3	340.1	293.1	308.3	340.6
	min	257.2	264.6	263.1	261.6	262.0	255.4	260.0	257.1	261.3	265.5	262.8	259.4	255.4
	no	477	446	487	473	492	478	487	488	471	487	474	470	5730
	mean	275.1	275.8	276.5	277.5	278.3	278.7	283.3	283.4	279.9	278.5	277.4	276.1	278.4
	sd	5.9	4.9	5.3	5.1	5.8	7.8	9.2	8.7	5.8	6.5	5.5	5.3	7.0
0.9	max	324.8	291.0	292.7	289.8	297.0	304.3	326.9	324.4	297.6	345.9	308.0	305.6	345.9
	min	255.4	261.9	260.1	259.3	256.3	249.9	255.9	255.3	262.8	260.7	260.1	256.2	249.9
	no	476	446	487	473	491	478	487	488	471	487	474	470	5728

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

1001 Jan-Mayen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	mean	271.4	272.1	272.8	273.8	274.3	274.7	279.1	279.4	276.1	274.5	273.6	272.3	274.5
	sd	5.7	4.9	5.4	5.1	6.0	8.0	9.3	8.8	6.0	5.9	5.5	5.5	7.0
	max	308.7	287.9	288.2	287.1	293.4	301.3	319.0	322.5	293.9	308.5	297.9	303.5	322.5
	min	253.4	257.1	255.9	257.1	253.6	245.7	254.3	252.4	258.0	252.3	256.7	252.8	245.7
	no	477	446	487	472	491	478	487	488	471	486	473	470	5726
1.1	mean	267.6	268.5	269.1	270.0	270.4	270.7	275.3	275.3	272.3	270.8	269.8	268.6	270.7
	sd	5.9	4.9	5.3	5.2	6.0	7.9	9.3	9.0	6.1	6.8	5.5	5.6	7.0
	max	310.0	281.8	283.8	283.9	289.9	297.1	320.6	328.7	290.1	337.7	286.9	306.2	337.7
	min	251.4	253.7	253.0	251.6	250.9	243.0	250.6	248.4	255.2	247.8	252.4	249.4	243.0
	no	477	446	487	472	491	478	487	488	471	487	472	470	5726
1.2	mean	264.0	264.8	265.4	266.3	266.6	266.6	271.7	271.0	268.5	267.1	266.1	265.0	267.0
	sd	5.9	4.9	5.3	5.2	6.0	8.0	9.3	8.8	6.3	6.7	5.6	5.7	7.0
	max	302.3	278.2	279.6	282.1	286.3	293.0	327.9	311.8	288.1	327.1	283.2	309.5	327.9
	min	248.6	250.5	251.1	247.2	249.0	240.4	246.5	244.8	250.5	245.2	247.9	246.3	240.4
	no	476	446	487	472	491	478	487	487	471	487	472	470	5724
1.3	mean	260.5	261.3	261.9	262.8	262.9	262.9	267.9	267.2	264.8	263.3	262.5	261.5	263.3
	sd	5.8	4.9	5.3	5.2	5.8	7.8	8.8	9.2	6.3	6.7	5.5	5.9	6.9
	max	296.9	274.7	277.5	279.6	282.6	289.0	306.4	325.4	286.6	319.0	280.3	313.4	325.4
	min	244.6	247.3	246.3	244.3	245.8	238.0	242.4	242.3	246.8	243.5	244.1	243.9	238.0
	no	477	446	487	471	491	477	486	488	471	487	472	470	5723
1.4	mean	257.2	257.9	258.5	259.4	259.3	259.4	264.4	263.5	261.1	259.6	258.9	258.0	259.8
	sd	5.7	4.9	5.2	5.1	5.7	7.5	8.7	9.2	6.4	6.6	5.5	6.0	6.9
	max	291.6	271.1	274.0	275.5	279.2	285.0	300.2	316.8	283.8	312.6	273.9	316.6	316.8
	min	240.9	243.1	243.1	241.4	242.8	237.7	238.2	239.2	243.1	240.5	240.6	240.9	237.7
	no	477	446	487	472	491	477	486	488	470	487	472	470	5723
1.5	mean	253.9	254.6	255.2	256.0	256.0	256.1	261.0	260.0	257.8	255.9	255.4	254.6	256.4
	sd	5.6	5.0	5.1	5.0	5.7	7.2	8.7	9.1	6.4	6.6	5.4	6.0	6.8
	max	286.4	267.6	270.1	270.9	276.2	280.8	300.3	310.6	280.5	306.4	269.0	318.8	318.8
	min	238.7	239.7	240.4	238.6	240.2	235.9	234.5	234.6	238.5	237.2	237.8	237.9	234.5
	no	477	446	486	472	491	477	486	488	471	487	471	470	5722
1.6	mean	250.5	251.4	251.9	252.7	252.7	252.8	257.6	256.6	254.5	252.4	252.1	251.3	253.1
	sd	5.5	4.9	5.0	5.0	5.5	7.1	8.7	8.9	6.4	6.5	5.3	6.2	6.7
	max	281.3	264.2	266.9	268.2	273.2	276.5	301.2	306.6	277.4	298.9	265.5	321.4	321.4
	min	236.4	235.7	237.7	235.8	236.4	234.1	232.0	231.2	235.2	234.5	232.6	233.1	231.2
	no	477	446	486	472	491	477	486	488	471	487	471	470	5722
1.7	mean	247.3	248.3	248.7	249.4	249.5	249.6	254.2	253.1	251.2	249.0	248.8	248.1	249.8
	sd	5.4	4.9	4.9	5.0	5.5	7.0	9.1	8.9	6.3	6.3	5.1	6.1	6.7
	max	275.7	260.9	263.7	264.5	268.8	272.2	302.1	301.2	274.3	290.9	262.0	319.0	319.0
	min	232.9	231.9	234.0	233.0	232.7	229.7	229.5	228.0	231.9	231.8	229.8	232.1	228.0
	no	477	446	487	472	491	477	486	488	471	487	471	470	5723
1.8	mean	244.2	245.2	245.5	246.3	246.3	246.4	250.9	249.7	247.9	245.7	245.5	245.0	246.6
	sd	5.3	4.8	4.8	4.9	5.4	6.9	9.2	8.8	6.2	6.2	5.0	6.0	6.6
	max	269.9	257.6	260.4	260.8	265.2	268.2	305.1	297.1	271.2	283.5	258.5	315.4	315.4
	min	230.4	228.5	230.3	231.6	229.2	226.6	227.1	224.8	229.7	229.1	227.1	229.3	224.8
	no	477	444	487	472	491	477	486	488	471	487	471	469	5720
1.9	mean	241.1	242.1	242.4	243.3	243.2	243.3	247.8	246.3	244.6	242.5	242.3	242.0	243.4
	sd	5.2	4.7	4.7	4.8	5.4	6.9	9.1	8.6	6.1	6.1	5.0	5.9	6.5
	max	261.6	254.3	256.9	258.1	265.1	265.1	304.7	298.3	268.5	276.6	256.4	311.9	311.9
	min	227.6	226.2	226.6	228.4	228.8	221.9	224.7	222.6	227.4	226.9	224.8	226.4	221.9
	no	477	444	487	472	491	477	486	488	471	487	470	470	5720
2.0	mean	238.1	239.1	239.4	240.2	240.3	240.2	244.7	242.9	241.5	239.5	239.2	239.0	240.4
	sd	5.0	4.7	4.6	4.7	5.5	6.7	9.1	8.6	6.0	5.9	4.9	5.7	6.4
	max	253.6	251.0	253.3	254.0	271.4	263.0	306.3	299.7	266.4	270.1	253.9	308.3	308.3
	min	224.1	223.9	222.9	225.2	226.9	220.5	222.4	220.5	224.6	224.5	222.4	223.6	220.5
	no	477	444	487	472	491	476	486	488	471	487	471	468	5718

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

1028 Bjørnøya

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	310.1	311.4	312.1	312.7	314.9	317.2	320.8	319.6	315.8	311.7	309.9	309.2	313.8
	sd	4.5	5.3	4.7	4.1	3.9	4.0	4.6	5.3	6.5	6.1	4.5	4.5	6.1
0.0	max	321.0	324.2	325.2	323.9	324.7	329.2	334.4	353.0	334.8	359.6	323.5	321.6	359.6
	min	297.4	279.3	299.7	297.6	301.0	294.9	296.6	303.2	286.3	275.1	282.8	285.9	275.1
	no	613	560	617	581	620	595	613	551	528	548	529	546	6901
	mean	304.4	305.6	305.9	306.3	308.4	311.6	314.6	314.5	309.9	305.6	304.5	304.0	308.0
	sd	4.3	5.3	5.2	4.2	4.0	4.1	5.3	5.1	6.2	5.2	4.2	4.6	6.1
0.1	max	318.1	317.7	319.8	319.0	320.7	324.2	329.0	330.0	326.9	328.1	323.0	314.2	330.0
	min	290.3	288.9	292.6	291.4	294.4	301.0	300.7	298.8	291.3	271.3	292.2	287.4	271.3
	no	430	391	434	405	433	413	432	433	416	431	416	429	5063
	mean	300.8	301.9	302.2	302.7	304.6	307.8	310.5	310.5	306.0	301.9	300.9	300.4	304.2
	sd	4.2	5.2	5.0	4.1	3.7	4.1	5.6	5.3	5.7	4.9	3.9	4.5	5.9
0.2	max	314.5	313.7	316.0	315.5	317.5	321.9	327.8	327.2	323.3	325.3	317.4	310.3	327.8
	min	287.9	285.1	289.9	288.9	292.1	296.9	284.3	291.4	289.5	267.7	290.2	284.9	267.7
	no	430	391	434	405	432	415	431	433	416	431	416	429	5063
	mean	297.4	298.4	298.6	299.1	301.1	304.0	306.4	306.6	302.1	298.3	297.4	296.8	300.5
	sd	4.1	5.2	4.9	4.1	3.8	4.3	6.0	5.5	5.3	4.7	3.8	4.2	5.8
0.3	max	310.2	310.6	312.2	312.0	322.0	319.8	323.4	327.2	319.2	322.3	310.8	306.3	327.2
	min	285.4	281.4	287.0	286.3	287.7	286.1	278.0	288.5	286.5	263.9	288.0	282.3	263.9
	no	430	391	433	405	429	415	430	432	416	431	415	429	5056
	mean	293.9	294.8	295.0	295.5	297.6	300.1	302.4	302.6	298.4	295.0	294.1	293.2	296.9
	sd	4.0	5.2	4.8	4.0	3.6	4.6	6.7	5.9	5.0	4.5	3.6	4.1	5.7
0.4	max	306.0	306.9	308.2	308.6	310.0	322.5	321.3	323.1	315.1	318.9	305.6	303.1	323.1
	min	282.9	277.8	279.8	280.7	284.1	282.5	273.4	281.9	283.6	260.1	282.8	279.6	260.1
	no	429	390	434	405	431	415	431	433	414	431	415	429	5057
	mean	290.3	291.2	291.4	291.9	294.1	296.1	298.5	298.7	294.6	291.6	290.7	289.5	293.2
	sd	4.0	5.1	4.6	4.0	3.4	5.2	7.1	6.2	4.8	4.4	3.5	3.9	5.7
0.5	max	301.7	303.3	304.1	305.1	305.8	327.5	317.6	321.0	311.0	315.3	301.6	299.1	327.5
	min	273.0	274.2	279.8	275.1	280.6	277.7	268.8	278.1	281.1	257.2	279.4	276.9	257.2
	no	430	391	434	405	431	415	431	433	414	430	415	429	5058
	mean	286.6	287.6	287.7	288.2	290.5	292.2	294.3	294.7	291.0	288.2	287.3	286.0	289.5
	sd	4.2	5.2	4.6	4.0	3.5	5.6	7.5	6.6	4.7	4.3	3.5	3.8	5.7
0.6	max	297.7	299.6	300.4	301.5	302.2	331.6	313.4	319.8	307.3	311.4	297.8	295.3	331.6
	min	266.8	270.6	271.0	272.2	273.4	275.7	265.5	274.3	274.7	254.3	276.8	272.5	254.3
	no	430	391	434	405	431	414	431	433	415	430	414	429	5057
	mean	282.9	284.0	284.1	284.6	286.8	288.3	290.1	290.7	287.4	284.8	283.8	282.4	285.8
	sd	4.4	5.2	4.5	4.0	3.6	5.8	8.1	6.9	4.6	4.2	3.5	3.7	5.7
0.7	max	296.0	295.2	296.7	297.8	298.6	321.2	310.6	316.7	306.0	307.5	295.2	291.8	321.2
	min	264.3	262.4	267.9	269.5	267.9	265.0	258.9	259.3	270.7	251.6	265.6	266.1	251.6
	no	429	391	433	405	431	413	430	433	415	431	414	429	5054
	mean	279.2	280.5	280.3	281.0	283.2	284.3	286.1	286.5	283.8	281.2	280.2	278.8	282.1
	sd	4.6	5.2	4.4	4.1	3.7	5.9	8.4	7.2	4.6	4.2	3.7	3.8	5.8
0.8	max	294.9	290.9	293.0	294.1	301.2	307.1	310.0	313.3	304.8	301.6	292.0	288.7	313.3
	min	261.1	258.9	264.8	263.6	264.2	264.2	255.3	254.8	269.2	248.9	259.2	261.7	248.9
	no	430	391	433	405	431	414	430	432	415	431	414	429	5055
	mean	275.5	276.9	276.6	277.4	279.5	280.3	282.0	282.4	280.1	277.5	276.6	275.2	278.3
	sd	4.8	5.2	4.6	4.0	3.9	6.0	8.8	7.4	4.7	4.4	3.9	3.8	5.8
0.9	max	291.0	288.2	289.2	290.4	306.6	301.5	309.2	309.6	299.1	295.4	288.5	285.7	309.6
	min	257.9	256.1	261.6	260.6	260.6	259.7	252.1	253.3	263.8	241.5	256.7	257.3	241.5
	no	430	391	434	405	431	413	430	433	415	431	413	428	5054

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year. no is number of observations.

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	mean	271.9	273.2	272.9	273.6	275.8	276.3	277.8	278.4	276.5	273.8	273.0	271.7	274.6
	sd	4.8	5.3	4.7	4.1	4.2	6.1	9.0	7.5	4.7	4.5	3.9	3.9	5.9
	max	284.0	284.6	286.0	286.1	301.2	297.9	303.8	304.5	295.6	287.9	283.4	282.3	304.5
	min	254.8	253.2	256.7	256.8	257.0	258.4	249.1	252.6	262.0	237.7	254.2	253.4	237.7
	no	430	391	434	405	431	413	430	433	414	431	414	429	5055
1.1	mean	268.3	269.6	269.3	270.0	272.0	272.3	273.8	274.3	272.8	270.1	269.4	268.2	270.9
	sd	4.9	5.4	4.6	4.2	4.4	6.7	9.4	7.7	4.8	4.6	4.0	4.0	6.0
	max	277.6	280.9	281.6	282.7	295.5	294.1	300.4	298.2	294.0	282.1	280.5	278.9	300.4
	min	249.8	247.6	252.9	253.3	249.7	251.7	245.4	248.6	256.3	235.2	251.7	250.4	235.2
	no	430	391	434	405	431	413	430	433	415	431	414	429	5056
1.2	mean	264.8	265.9	265.7	266.4	268.3	268.3	269.9	270.5	269.1	266.3	265.9	264.7	267.2
	sd	4.9	5.5	4.6	4.3	4.6	6.9	9.4	7.8	5.0	4.8	4.1	4.1	6.0
	max	274.1	277.2	278.0	279.2	290.0	290.4	294.7	292.0	288.4	278.4	277.1	275.3	294.7
	min	245.1	244.5	249.7	250.5	251.6	249.0	243.1	247.1	253.0	232.3	248.5	247.7	232.3
	no	430	390	434	405	428	413	430	433	415	431	413	429	5051
1.3	mean	261.4	262.3	262.2	263.0	264.7	264.6	266.2	266.8	265.4	262.7	262.5	261.4	263.6
	sd	4.9	5.5	4.6	4.3	4.6	7.0	9.4	7.9	5.0	5.0	4.1	4.1	6.0
	max	272.0	273.5	276.0	275.8	284.7	287.6	289.4	289.3	283.0	274.6	272.8	271.8	289.4
	min	241.8	242.4	245.6	248.3	249.6	246.1	238.9	244.0	249.8	228.0	246.3	243.4	228.0
	no	430	391	434	405	430	413	430	433	415	430	414	429	5054
1.4	mean	258.0	258.7	258.8	259.6	261.2	260.9	262.7	263.2	261.7	259.3	259.1	258.1	260.1
	sd	4.9	5.6	4.5	4.3	4.6	7.1	9.3	7.9	5.0	5.0	4.1	4.0	6.0
	max	268.9	271.4	272.9	272.4	279.5	284.1	286.8	286.8	277.2	270.9	269.3	267.7	286.8
	min	239.2	240.2	242.7	245.1	245.7	242.4	236.9	240.6	245.8	224.2	242.9	241.3	224.2
	no	430	391	434	405	429	413	429	432	415	430	414	428	5050
1.5	mean	254.8	255.2	255.4	256.3	257.7	257.5	259.2	259.6	258.1	255.8	255.7	254.9	256.7
	sd	4.8	5.7	4.5	4.3	4.6	7.0	9.2	7.8	5.1	5.0	4.1	4.0	6.0
	max	265.6	268.1	269.3	268.9	275.1	282.8	281.4	282.8	273.6	267.6	265.6	264.0	282.8
	min	236.7	236.6	239.7	241.8	240.6	240.3	235.8	237.4	242.2	223.2	239.5	239.2	223.2
	no	430	391	434	405	429	413	430	433	415	431	413	428	5052
1.6	mean	251.4	251.9	252.1	252.9	254.3	254.1	255.6	256.0	254.5	252.4	252.3	251.6	253.3
	sd	4.7	5.6	4.5	4.3	4.6	7.0	9.1	8.0	5.3	5.0	4.1	4.0	5.9
	max	261.8	264.8	265.7	266.2	271.3	279.8	277.3	278.2	270.1	264.3	262.0	260.6	279.8
	min	234.0	234.4	237.0	238.7	237.7	236.8	233.1	233.6	236.7	222.0	235.4	236.9	222.0
	no	429	391	434	404	430	413	430	433	415	431	413	429	5052
1.7	mean	248.2	248.8	248.9	249.7	250.9	250.8	252.4	252.7	250.9	248.9	249.0	248.4	250.0
	sd	4.6	5.5	4.4	4.3	4.6	6.9	9.0	7.9	5.3	5.1	4.1	4.0	5.9
	max	258.3	261.5	262.2	262.7	265.9	276.3	274.4	273.7	266.7	261.0	258.4	257.4	276.3
	min	231.4	231.8	234.3	235.5	236.1	233.4	230.5	230.5	233.7	220.1	232.8	233.9	220.1
	no	430	391	433	405	430	413	430	433	415	431	413	429	5053
1.8	mean	245.1	245.7	245.6	246.5	247.6	247.4	249.2	249.4	247.6	245.6	245.7	245.2	246.7
	sd	4.5	5.4	4.4	4.3	4.6	6.8	8.8	7.7	5.4	5.1	4.0	3.9	5.8
	max	255.4	258.2	258.7	257.9	260.5	272.6	270.3	269.3	263.8	257.8	254.8	254.2	272.6
	min	228.8	229.2	231.6	231.8	233.2	229.9	227.9	228.0	232.0	217.6	230.6	230.9	217.6
	no	430	391	434	405	430	412	429	433	415	431	413	429	5052
1.9	mean	242.1	242.6	242.5	243.4	244.3	244.0	246.0	246.0	244.3	242.4	242.6	242.1	243.5
	sd	4.4	5.3	4.4	4.2	4.5	6.9	8.7	7.8	5.3	5.0	3.9	3.9	5.7
	max	251.8	255.0	255.3	254.9	256.5	268.9	266.8	265.0	262.0	254.5	251.8	251.2	268.9
	min	226.2	226.3	229.2	230.0	230.5	226.8	225.5	225.6	230.0	215.3	228.5	227.5	215.3
	no	429	390	434	404	430	412	430	433	415	431	413	429	5050
2.0	mean	239.1	239.6	239.4	240.4	241.2	240.8	242.7	242.8	241.1	239.2	239.5	239.1	240.4
	sd	4.3	5.2	4.4	4.2	4.4	6.8	8.4	7.6	5.1	4.8	3.9	3.9	5.6
	max	249.0	251.9	251.8	252.0	253.2	265.2	263.3	260.8	259.3	251.3	248.7	248.3	265.2
	min	224.0	223.6	226.8	227.5	227.7	223.6	223.0	223.1	227.5	213.1	226.4	224.0	213.1
	no	429	391	434	405	430	412	430	433	415	431	413	429	5052

Table 3.5.1 Values of the refractiviy given pr 100 m, units N/km. mean values with with standard deviation and extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	309.5	308.9	307.8	307.6	312.2	319.2	324.8	325.3	318.9	316.9	311.5	310.0	314.4
	max	325.4	324.5	322.6	327.8	335.9	350.4	354.1	359.7	347.7	340.5	329.6	323.7	359.7
	min	294.0	289.3	288.2	286.9	283.6	288.1	298.0	294.3	291.6	293.0	292.9	289.6	283.6
0.1	mean	321.3	320.8	319.7	318.7	322.0	329.2	334.4	335.7	330.0	328.5	323.3	321.8	325.5
	max	337.3	336.1	336.4	339.2	343.3	365.3	365.7	362.7	357.1	349.9	341.6	336.6	365.7
	min	306.5	302.3	301.3	300.2	291.6	298.8	301.6	307.6	300.9	301.0	303.6	301.7	291.6
0.2	mean	333.0	332.6	331.8	330.5	333.4	340.4	345.3	346.8	341.3	340.1	335.1	333.5	337.0
	max	349.3	347.7	348.3	351.2	352.7	367.8	377.2	376.6	368.2	361.6	353.4	348.6	377.2
	min	315.9	315.1	313.2	307.9	303.8	310.1	307.5	318.1	310.6	304.9	316.4	312.7	303.8
0.3	mean	344.6	344.3	343.9	342.6	345.3	352.1	356.8	358.2	353.0	351.6	346.6	345.2	348.7
	max	361.3	359.4	360.8	363.2	365.2	380.5	388.7	385.2	379.3	377.1	365.1	361.6	388.7
	min	322.7	325.6	322.2	320.5	316.7	322.4	315.5	327.9	320.6	317.4	321.3	325.1	315.5
0.4	mean	356.2	356.0	355.9	354.8	357.6	364.0	368.4	369.7	364.7	362.9	358.2	356.9	360.5
	max	372.4	371.1	373.4	375.2	378.0	393.3	400.3	397.2	394.0	387.6	378.0	374.9	400.3
	min	333.4	333.1	335.8	334.8	329.8	331.8	338.2	339.0	331.1	330.0	333.3	335.7	329.8
0.5	mean	367.8	367.5	367.8	367.0	370.0	376.0	380.1	381.4	376.5	374.3	369.8	368.6	372.3
	max	385.2	383.8	385.8	387.2	390.1	407.3	411.9	405.7	404.6	397.2	391.7	387.4	411.9
	min	344.8	345.9	345.9	347.2	343.3	343.6	351.3	344.1	341.6	341.0	343.9	344.7	341.0
0.6	mean	379.5	379.1	379.7	379.3	382.3	388.0	391.8	393.1	388.2	385.5	381.5	380.3	384.1
	max	398.4	397.0	398.2	399.1	407.6	419.2	423.4	416.3	415.0	408.6	405.1	399.6	423.4
	min	357.9	356.5	357.8	358.9	355.3	359.7	360.8	354.6	352.4	352.4	354.0	356.9	352.4
0.7	mean	391.3	390.7	391.6	391.4	394.8	399.9	403.5	404.8	399.8	396.7	393.2	392.1	395.8
	max	411.5	408.8	410.7	410.5	433.7	430.3	435.0	428.0	426.2	418.5	415.8	411.5	435.0
	min	370.9	368.8	369.4	359.7	370.3	371.1	371.3	365.1	363.5	365.3	364.1	369.7	359.7
0.8	mean	403.1	402.4	403.5	403.6	407.2	411.7	415.4	416.5	411.3	408.1	404.8	403.8	407.6
	max	424.0	419.6	423.1	421.8	461.1	441.5	446.6	441.9	437.5	432.0	426.6	423.5	461.1
	min	383.8	381.9	381.4	383.9	383.2	382.4	385.2	375.8	375.4	378.7	377.3	382.4	375.4
0.9	mean	414.9	414.2	415.5	415.8	419.4	423.5	427.1	428.1	422.8	419.6	416.5	415.6	419.5
	max	435.8	433.7	435.5	433.7	466.2	452.8	458.2	454.8	448.7	441.3	438.1	435.5	466.2
	min	395.7	393.4	393.9	397.0	396.7	392.2	339.3	389.0	388.2	390.9	390.6	395.2	339.3
1.0	mean	426.8	426.2	427.5	428.0	431.5	435.5	438.9	439.6	434.3	431.1	428.2	427.3	431.3
	max	447.8	445.7	446.6	445.7	474.8	464.2	470.0	465.4	460.1	453.7	450.1	447.6	474.8
	min	407.6	405.7	406.8	408.4	410.3	405.2	374.1	402.3	401.1	405.5	404.0	408.6	374.1
1.1	mean	438.7	438.3	439.5	440.2	443.7	447.5	450.8	450.9	445.7	442.7	440.0	439.2	443.1
	max	459.6	457.6	458.0	457.8	489.1	475.5	481.6	476.4	471.5	466.0	462.0	459.6	489.1
	min	420.2	418.4	419.7	419.6	421.4	417.9	409.1	415.5	413.9	418.8	415.3	420.2	409.1
1.2	mean	450.8	450.4	451.5	452.3	455.8	459.6	462.7	462.2	457.3	454.3	451.9	451.2	455.0
	max	471.5	469.5	469.9	470.3	482.6	487.9	493.3	488.6	483.1	478.3	473.9	471.6	493.3
	min	432.6	431.0	432.5	432.6	434.2	432.0	426.5	428.6	426.7	431.8	428.3	432.1	426.5
1.3	mean	463.0	462.6	463.7	464.6	468.0	471.7	474.5	473.8	469.0	466.1	464.0	463.3	467.1
	max	483.4	481.4	481.8	482.4	490.7	502.4	507.3	499.5	494.8	490.6	485.8	484.7	507.3
	min	446.3	443.5	445.4	443.7	446.0	444.9	441.9	441.8	439.3	442.1	441.1	444.7	439.3
1.4	mean	475.3	475.0	476.0	477.1	480.2	483.7	486.4	485.6	480.8	478.0	476.2	475.6	479.2
	max	495.4	493.3	492.7	494.1	500.0	517.0	522.2	509.5	506.1	502.6	498.0	497.4	522.2
	min	459.4	455.9	458.3	455.3	457.3	458.7	455.0	453.2	452.3	454.2	453.6	458.0	452.3
1.5	mean	487.7	487.5	488.5	489.6	492.4	495.9	498.3	497.4	492.8	490.0	488.6	487.9	491.4
	max	507.4	505.6	503.6	505.8	512.2	531.6	537.1	521.0	517.4	514.1	510.0	509.6	537.1
	min	472.4	469.0	471.2	468.8	470.8	470.3	467.3	466.7	465.2	468.6	467.2	469.1	465.2
1.6	mean	500.1	499.9	500.9	502.2	504.7	508.0	510.3	509.3	504.9	502.2	501.0	500.3	503.7
	max	519.5	518.0	515.9	517.7	524.6	546.4	552.1	532.7	529.3	525.8	522.0	521.9	552.1
	min	484.5	479.9	484.2	482.4	484.3	483.8	480.8	480.2	478.1	482.0	480.9	480.6	478.1
1.7	mean	512.6	512.5	513.4	514.6	516.9	520.1	522.3	521.3	517.0	514.5	513.4	512.7	516.0
	max	531.6	530.4	529.7	529.6	537.6	561.1	567.0	544.4	541.1	537.4	533.9	534.1	567.0
	min	494.6	493.3	497.1	493.9	494.1	496.0	494.2	491.2	490.9	494.8	494.5	492.8	490.9
1.8	mean	525.1	525.2	525.8	527.1	529.1	532.4	534.2	533.5	529.1	527.0	525.9	525.3	528.3
	max	543.7	542.8	543.6	541.7	550.5	575.9	582.0	556.1	552.9	549.1	545.9	546.3	582.0
	min	508.8	507.2	510.1	505.6	507.3	507.8	507.6	503.1	503.8	506.9	508.0	505.1	503.1
1.9	mean	537.7	537.8	538.3	539.6	541.4	544.6	546.3	545.6	541.4	539.5	538.4	538.0	540.7
	max	555.8	555.2	556.9	553.9	563.5	590.7	596.9	567.8	564.8	560.9	557.9	558.5	596.9
	min	522.9	520.6	523.0	519.1	519.9	521.3	520.5	516.1	516.7	519.3	521.2	517.6	516.1
2.0	mean	550.4	550.6	551.0	552.2	553.8	556.8	558.5	557.9	553.8	552.0	551.0	550.7	553.2
	max	568.0	567.5	568.8	566.1	575.7	605.6	611.8	579.6	576.8	572.7	571.2	570.7	611.8
	min	536.9	533.9	536.0	532.8	533.5	534.1	533.6	529.2	529.7	532.7	534.6	531.5	529.2

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

1415 Sola

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	313.2	312.6	312.1	314.6	320.1	326.3	332.4	332.8	326.0	322.3	316.3	315.4	320.2
	max	332.2	330.1	330.5	338.1	342.5	347.9	358.6	362.4	347.5	342.8	336.3	331.4	362.4
	min	288.8	282.1	282.6	284.1	291.9	293.6	303.0	292.7	295.6	289.2	282.9	282.1	282.1
0.1	mean	323.2	322.6	322.8	324.1	329.0	334.3	339.6	340.2	333.8	330.7	325.5	325.1	329.1
	max	343.3	341.7	341.5	341.5	353.0	360.1	366.3	365.2	358.5	352.6	346.7	343.4	366.3
	min	303.3	291.9	304.9	300.2	303.2	304.9	309.7	309.6	303.7	252.4	299.8	305.3	252.4
0.2	mean	334.9	334.4	334.8	335.8	340.1	345.3	350.8	351.5	345.1	342.1	337.0	336.7	340.6
	max	355.2	353.3	353.5	354.6	361.1	372.7	384.2	376.3	370.6	364.5	358.9	354.8	384.2
	min	314.1	315.4	316.9	313.7	315.0	315.3	322.5	322.7	310.8	305.8	312.5	317.4	305.8
0.3	mean	346.9	346.5	347.0	347.8	351.8	356.7	362.3	363.1	357.0	353.9	349.0	348.9	352.5
	max	367.1	363.1	366.0	366.4	372.4	385.2	393.9	388.0	381.8	379.6	371.0	367.1	393.9
	min	325.8	328.0	329.9	326.8	327.8	324.3	332.1	334.6	319.8	318.8	325.3	329.6	318.8
0.4	mean	359.0	358.7	359.3	360.0	363.5	368.0	373.6	374.5	369.1	366.0	361.2	361.2	364.4
	max	379.0	373.9	378.6	378.6	383.7	397.0	403.2	399.7	392.5	391.0	383.4	379.4	403.2
	min	338.9	340.5	342.1	339.5	339.9	341.9	341.3	329.3	328.7	331.0	337.8	342.0	328.7
0.5	mean	371.2	371.0	371.5	372.2	375.3	379.4	384.7	385.8	381.2	378.0	373.3	373.3	376.3
	max	390.9	385.5	390.8	390.7	394.9	408.8	405.9	411.3	404.0	401.4	395.6	391.8	411.3
	min	351.9	353.0	352.5	352.2	350.0	354.9	350.8	340.4	337.8	341.4	350.3	354.4	337.8
0.6	mean	383.4	383.2	383.7	384.3	387.0	390.7	395.6	397.2	393.1	389.9	385.4	385.5	388.2
	max	402.9	397.6	402.8	402.9	407.5	419.9	416.7	422.0	417.4	411.8	411.4	404.1	422.0
	min	364.0	365.5	364.6	363.5	362.8	362.8	365.1	353.5	372.4	353.1	359.5	366.8	353.1
0.7	mean	395.6	395.3	395.9	396.5	398.8	402.1	406.5	408.5	404.6	401.8	397.5	397.6	400.0
	max	414.7	409.4	414.5	414.9	419.9	430.0	428.1	430.9	429.3	422.2	425.5	416.4	430.9
	min	377.4	377.9	379.2	375.4	375.5	374.3	375.9	365.6	376.2	367.5	370.4	378.2	365.6
0.8	mean	407.8	407.4	408.1	408.8	410.8	413.6	417.7	420.0	416.3	413.6	409.5	409.7	411.9
	max	426.7	422.0	426.2	427.6	431.7	442.1	442.8	442.3	440.6	434.7	435.6	427.6	442.8
	min	388.0	390.6	391.8	387.1	389.3	387.1	386.6	377.7	388.0	379.4	383.6	389.3	377.7
0.9	mean	419.9	419.6	420.2	421.1	422.9	425.2	429.3	431.5	428.2	425.2	421.5	421.9	423.8
	max	438.6	434.4	438.6	440.9	444.7	454.3	454.7	455.2	452.0	448.2	445.9	438.9	455.2
	min	399.2	403.4	402.4	399.5	403.0	392.8	398.8	390.0	400.7	333.8	397.5	400.3	333.8
1.0	mean	432.0	431.8	432.4	433.3	435.0	436.9	441.1	443.1	440.1	437.1	433.7	433.8	435.8
	max	450.5	446.5	451.3	452.8	454.4	466.7	466.2	467.6	463.5	459.8	456.3	450.2	467.6
	min	411.9	413.4	414.0	412.4	414.3	407.0	411.7	413.4	416.2	367.7	410.9	411.1	367.7
1.1	mean	444.1	444.0	444.6	445.5	447.2	448.7	452.8	454.9	451.9	449.1	445.8	445.8	447.8
	max	462.4	458.9	463.7	464.6	465.1	477.6	477.2	487.1	476.2	471.5	466.8	463.6	487.1
	min	424.7	428.0	426.6	425.2	425.9	421.2	424.6	427.0	427.4	420.6	422.8	421.4	420.6
1.2	mean	456.3	456.2	456.8	457.7	459.4	460.7	464.7	466.7	463.6	461.0	457.9	457.9	459.8
	max	474.3	471.3	475.7	476.8	477.3	488.7	488.3	493.4	488.1	483.3	477.4	476.6	493.4
	min	435.1	441.0	439.2	438.1	434.9	435.5	435.4	435.2	436.8	432.5	435.4	434.6	432.5
1.3	mean	468.6	468.3	468.9	469.9	471.6	472.7	476.5	478.5	475.4	472.9	470.0	469.9	471.9
	max	486.3	483.6	487.8	489.6	490.7	501.6	499.5	507.3	500.8	495.0	488.1	488.1	507.3
	min	447.4	452.1	451.8	451.0	448.8	449.3	451.1	447.8	449.7	445.0	449.2	448.0	445.0
1.4	mean	480.9	480.4	481.1	482.2	483.8	484.7	488.3	490.4	487.2	484.6	482.2	482.0	483.9
	max	498.2	495.6	499.9	502.1	503.7	514.4	510.8	520.8	512.8	506.8	500.4	499.6	520.8
	min	460.5	462.4	464.3	464.0	462.7	463.5	463.4	461.7	462.8	458.2	463.2	461.8	458.2
1.5	mean	493.2	492.7	493.3	494.4	495.9	496.8	500.2	502.5	499.2	496.5	494.3	494.2	496.0
	max	510.3	507.7	512.1	514.0	516.7	526.6	522.4	534.3	524.6	518.7	512.2	511.3	534.3
	min	473.8	473.1	477.6	477.3	476.0	475.7	475.3	475.0	475.1	472.6	476.3	475.7	472.6
1.6	mean	505.5	505.0	505.6	506.5	508.2	509.1	512.1	514.4	511.3	508.6	506.5	506.5	508.2
	max	522.8	520.1	523.7	525.8	529.4	538.6	536.9	541.3	547.0	530.6	524.3	523.5	547.0
	min	487.1	489.1	490.5	490.4	489.0	488.6	487.3	487.6	489.1	486.9	489.2	489.5	486.9
1.7	mean	517.8	517.4	518.1	518.9	520.4	521.4	524.1	526.4	523.3	520.6	518.7	518.8	520.4
	max	535.3	532.5	535.4	537.6	542.2	549.5	548.3	548.6	551.5	543.0	538.3	536.2	551.5
	min	500.0	502.8	503.5	503.5	501.4	501.9	500.4	500.3	502.3	500.4	502.1	502.2	500.0
1.8	mean	530.2	529.8	530.6	531.3	532.8	533.7	536.4	538.3	535.3	532.8	531.0	531.0	532.7
	max	547.5	544.9	547.0	549.5	554.5	565.9	561.4	559.6	557.7	555.9	550.2	548.1	565.9
	min	513.2	515.6	516.8	516.7	513.8	514.8	512.2	513.2	515.2	513.8	515.3	513.7	512.2
1.9	mean	542.7	542.2	543.1	543.7	545.3	545.9	548.6	550.3	547.3	544.9	543.3	543.4	545.0
	max	559.6	557.3	559.3	561.4	566.5	577.1	573.1	572.3	569.7	568.8	562.2	560.1	577.1
	min	526.4	528.4	528.8	529.5	526.5	527.7	525.0	526.3	528.0	524.8	527.6	526.4	524.8
2.0	mean	555.2	554.7	555.7	556.2	557.8	558.3	560.8	562.4	559.3	557.2	555.8	555.9	557.4
	max	571.9	569.7	571.9	573.5	578.6	588.3	584.7	584.1	582.7	581.6	574.2	572.1	588.3
	min	539.5	540.2	542.5	542.2	539.2	539.5	537.8	536.0	540.8	536.6	539.6	539.6	536.0

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	305.4	306.3	304.8	304.4	308.2	316.0	321.3	322.0	313.9	312.0	307.3	305.6	310.5
	max	324.1	326.8	321.0	333.5	345.2	347.4	352.7	365.3	342.1	333.8	325.8	320.2	365.3
	min	288.7	286.9	282.3	275.1	273.6	281.4	290.1	281.4	282.8	286.5	286.7	284.8	273.6
0.1	mean	316.0	317.1	315.5	315.0	317.6	323.7	328.3	329.9	322.8	322.4	317.8	316.3	320.1
	max	329.6	328.7	330.7	333.8	346.2	354.9	370.2	361.6	351.4	345.3	337.3	332.1	370.2
	min	296.9	296.9	294.1	293.7	293.6	294.3	300.3	301.7	300.2	298.9	298.0	299.0	293.6
0.2	mean	327.6	328.8	327.4	327.0	329.3	334.7	339.1	340.7	334.1	334.0	329.5	327.9	331.6
	max	340.7	341.0	342.7	345.3	355.4	362.5	380.5	371.5	362.2	356.8	348.9	343.4	380.5
	min	310.9	309.9	307.4	304.6	307.0	307.2	313.3	313.6	313.2	312.1	309.0	309.2	304.6
0.3	mean	339.3	340.6	339.4	339.3	341.5	346.6	350.6	352.2	345.8	345.6	341.3	339.5	343.4
	max	352.9	352.9	353.7	356.9	365.5	373.4	390.8	383.0	374.6	368.4	360.5	355.2	390.8
	min	322.6	322.3	320.6	311.9	320.4	320.0	323.5	325.8	326.4	325.3	321.1	321.0	311.9
0.4	mean	351.1	352.4	351.5	351.6	353.7	358.5	362.3	363.8	357.6	357.4	353.1	351.3	355.3
	max	365.1	388.5	366.2	368.9	377.4	386.3	401.2	394.5	388.4	380.0	372.0	367.9	401.2
	min	335.3	334.4	333.6	332.5	324.7	332.7	336.7	339.8	339.7	330.5	333.2	332.7	324.7
0.5	mean	363.1	364.3	363.6	363.9	366.0	370.6	374.2	375.5	369.4	369.1	365.1	363.3	367.3
	max	381.4	389.6	376.9	380.4	388.9	399.1	412.6	405.9	399.6	391.5	383.6	380.4	412.6
	min	347.6	347.3	346.8	346.5	341.4	345.2	352.7	351.1	348.8	345.3	345.5	344.8	341.4
0.6	mean	375.1	376.1	375.8	376.3	378.4	382.8	386.1	387.3	381.4	380.8	377.1	375.4	379.3
	max	393.8	395.1	389.2	392.3	400.9	411.1	422.1	417.4	410.5	404.3	395.3	393.0	422.1
	min	358.6	360.1	359.9	360.2	358.9	357.3	361.0	362.4	358.7	357.3	357.5	356.9	356.9
0.7	mean	387.0	388.0	388.0	388.7	390.9	395.1	398.3	399.2	393.4	392.6	389.1	387.5	391.4
	max	406.0	406.9	402.2	404.2	411.5	422.2	432.6	428.6	421.4	415.9	407.0	405.5	432.6
	min	370.6	372.9	373.0	373.7	370.3	370.0	369.8	373.8	371.4	369.5	369.2	369.8	369.2
0.8	mean	399.2	400.2	400.3	401.2	403.5	407.5	410.6	411.3	405.6	404.5	401.1	399.7	403.7
	max	418.0	418.0	413.6	416.0	422.5	433.3	443.3	440.0	433.7	428.1	418.7	418.1	443.3
	min	382.4	385.8	383.6	387.3	382.6	382.5	382.5	386.9	384.5	379.8	381.0	382.6	379.8
0.9	mean	411.5	412.4	412.7	413.7	416.1	420.0	422.9	423.4	417.9	416.4	413.2	411.9	416.0
	max	429.5	429.1	427.2	428.1	435.4	444.7	454.1	451.4	446.0	440.4	430.6	430.8	454.1
	min	394.9	396.7	395.7	399.1	395.0	395.2	395.5	397.2	398.1	392.4	392.9	394.7	392.4
1.0	mean	423.8	424.6	425.0	426.2	428.7	432.4	435.2	435.5	430.1	428.2	425.5	424.2	428.3
	max	438.9	440.3	439.4	440.7	447.6	455.9	464.9	462.8	458.3	452.4	442.4	442.8	464.9
	min	406.9	409.1	407.7	409.7	407.4	407.8	408.4	408.0	410.3	402.3	405.7	406.8	402.3
1.1	mean	436.1	436.9	437.4	438.7	441.3	444.8	447.3	447.5	442.2	440.1	437.7	436.4	440.5
	max	450.3	452.6	451.3	453.3	461.0	467.2	476.1	474.3	466.5	463.6	454.0	454.8	476.1
	min	419.5	421.0	419.7	420.7	418.3	420.4	421.3	417.4	419.2	415.6	418.6	418.7	415.6
1.2	mean	448.4	449.2	449.8	451.2	453.9	457.2	459.5	459.5	454.3	452.3	449.9	448.8	452.8
	max	463.0	465.5	463.3	465.5	474.1	480.6	489.5	485.7	477.8	475.0	466.7	466.8	489.5
	min	432.1	431.7	431.7	433.5	428.5	432.2	434.2	429.2	428.9	429.2	431.4	430.5	428.5
1.3	mean	460.8	461.5	462.3	463.7	466.4	469.6	471.8	471.5	466.6	464.3	462.2	461.2	465.1
	max	475.3	477.7	475.5	478.2	487.2	492.2	501.9	497.2	489.2	486.5	479.7	478.9	501.9
	min	443.9	444.4	444.5	446.6	441.3	444.9	446.7	441.6	440.9	441.8	444.3	441.9	440.9
1.4	mean	473.3	473.9	474.7	476.2	478.9	482.0	484.2	483.7	479.0	476.5	474.6	473.6	477.5
	max	487.5	489.8	487.6	489.5	496.4	503.2	513.4	509.1	501.4	498.4	493.4	491.9	513.4
	min	457.3	454.1	458.4	459.8	454.6	458.4	461.1	454.5	453.3	454.4	457.6	454.7	453.3
1.5	mean	485.8	486.3	487.1	488.7	491.2	494.3	496.6	495.9	491.4	488.7	487.0	486.2	489.9
	max	499.6	501.9	499.7	502.0	508.9	514.2	524.6	521.1	513.5	510.3	506.9	505.1	524.6
	min	469.5	467.9	472.2	472.5	468.0	471.7	474.5	469.0	468.0	466.9	470.3	467.5	466.9
1.6	mean	498.3	498.9	499.6	501.1	503.6	506.7	509.0	508.2	503.8	501.1	499.4	498.7	502.3
	max	511.7	514.1	512.0	514.9	521.2	526.8	535.9	533.1	525.9	522.1	517.9	517.1	535.9
	min	482.6	482.0	486.0	484.3	481.3	485.1	486.8	483.5	481.2	479.4	481.3	480.2	479.4
1.7	mean	510.8	511.4	512.1	513.7	516.0	519.2	521.2	520.5	516.1	513.4	511.9	511.2	514.8
	max	524.3	526.3	524.7	527.7	535.0	540.1	547.3	544.7	537.9	533.5	528.3	529.2	547.3
	min	495.8	495.9	497.7	497.6	494.7	498.0	499.8	495.0	494.3	492.6	494.3	493.1	492.6
1.8	mean	523.4	524.0	524.7	526.2	528.5	531.6	533.4	532.8	528.3	525.6	524.4	523.8	527.2
	max	536.9	538.5	537.3	540.2	548.7	551.7	558.7	556.1	549.9	546.4	540.3	541.3	558.7
	min	508.9	509.0	510.1	510.9	508.2	510.9	512.1	507.8	507.2	505.8	504.5	505.9	504.5
1.9	mean	536.0	536.6	537.3	538.8	541.0	544.0	545.7	545.2	540.5	538.1	537.0	536.5	539.7
	max	549.5	550.8	549.7	552.5	562.3	563.3	570.2	567.6	562.8	559.5	552.8	553.5	570.2
	min	521.6	522.2	523.4	523.7	520.3	523.8	524.5	519.0	518.0	519.0	519.7	518.8	518.0
2.0	mean	548.8	549.3	550.0	551.3	553.5	556.4	558.0	557.5	552.8	550.6	549.8	549.2	552.2
	max	563.2	563.3	562.4	564.9	575.0	574.1	581.9	579.2	574.7	571.0	565.4	565.7	581.9
	min	535.4	535.6	537.6	536.9	533.4	537.1	538.0	532.1	532.1	533.0	533.4	530.4	530.4

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

1415 Frøsøn

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	298.5	298.3	296.7	297.7	300.4	304.8	309.0	309.5	304.8	301.2	297.7	298.5	301.0
	max	319.8	312.0	310.2	338.4	317.7	326.1	329.8	336.8	325.8	317.2	311.0	310.0	338.4
	min	286.9	280.8	279.5	273.4	283.1	279.4	270.3	290.5	287.9	285.1	270.0	275.2	270.0
0.1	mean	309.5	309.1	308.3	309.8	311.7	315.3	320.0	320.6	316.3	313.0	309.5	310.0	312.4
	max	330.3	326.7	321.4	347.0	331.8	336.7	340.6	348.8	337.5	329.5	322.8	322.1	348.8
	min	296.5	290.3	291.4	290.1	294.5	288.9	286.2	286.3	300.2	298.4	286.7	291.0	286.2
0.2	mean	321.3	321.0	320.5	322.2	323.9	327.2	331.7	332.4	328.3	325.0	321.7	322.0	324.5
	max	341.4	336.5	333.8	356.4	345.9	348.5	352.3	357.6	349.5	341.7	335.0	334.1	357.6
	min	305.8	302.0	303.8	303.6	306.5	300.0	301.9	289.7	308.7	307.6	303.6	306.4	289.7
0.3	mean	333.3	333.0	332.8	334.8	336.2	339.4	343.7	344.3	340.5	337.0	333.9	334.1	336.6
	max	352.6	346.6	346.4	365.8	359.1	360.4	364.0	366.3	361.5	354.0	347.1	346.3	366.3
	min	313.2	315.2	316.3	317.1	318.7	311.2	317.5	305.2	318.7	313.2	315.0	318.1	305.2
0.4	mean	345.3	345.2	345.2	347.3	348.7	351.7	355.9	356.4	352.7	349.1	346.0	346.4	348.9
	max	363.8	357.4	359.0	375.1	370.6	372.3	375.7	378.3	373.3	366.2	359.1	358.7	378.3
	min	325.1	326.5	328.7	330.4	330.9	322.4	332.9	320.3	331.8	326.2	321.0	328.5	320.3
0.5	mean	357.5	357.4	357.5	359.8	361.2	364.0	368.4	368.5	364.9	361.1	358.2	358.7	361.1
	max	375.0	368.8	371.6	384.4	382.4	384.1	387.3	390.3	385.1	380.1	371.2	371.0	390.3
	min	335.9	337.8	340.1	343.6	341.8	333.6	348.0	335.3	344.9	337.6	338.3	341.2	333.6
0.6	mean	369.7	369.6	369.7	372.3	373.8	376.4	380.9	380.7	377.1	373.3	370.5	371.0	373.5
	max	386.2	381.3	384.3	393.7	397.3	396.0	399.4	402.9	396.9	393.1	384.5	383.3	402.9
	min	346.6	350.2	350.7	356.6	355.1	344.8	363.0	350.0	358.0	349.8	349.0	354.1	344.8
0.7	mean	381.9	382.0	381.9	384.7	386.3	388.8	393.3	392.9	389.2	385.4	382.7	383.4	385.7
	max	397.5	393.9	396.9	403.0	409.6	408.9	411.5	415.0	408.6	402.8	397.7	395.5	415.0
	min	358.0	362.8	363.3	370.0	367.5	357.8	376.4	363.4	369.1	360.3	359.9	367.0	357.8
0.8	mean	394.2	394.3	394.2	397.0	398.8	401.2	405.6	405.0	401.3	397.5	395.0	395.6	398.0
	max	408.9	406.5	409.6	412.3	419.5	422.2	424.6	426.6	417.1	415.1	407.2	408.6	426.6
	min	370.9	375.4	376.0	379.0	377.5	372.1	386.5	376.8	375.8	373.5	372.2	380.0	370.9
0.9	mean	406.4	406.5	406.3	409.3	411.3	413.6	417.7	417.1	413.2	409.7	407.3	407.8	410.2
	max	420.3	419.0	422.1	422.7	429.4	435.4	439.3	438.4	429.5	426.5	419.6	421.7	439.3
	min	383.9	388.1	389.0	387.2	389.0	386.1	389.8	387.8	386.3	384.5	384.5	390.8	383.9
1.0	mean	418.7	418.7	418.5	421.6	423.8	426.0	430.0	429.3	425.2	421.9	419.5	419.9	422.5
	max	431.7	431.5	434.8	434.7	440.8	448.0	453.2	450.4	441.9	439.4	432.3	432.7	453.2
	min	396.9	399.6	401.8	398.6	401.9	400.0	403.3	401.2	400.4	396.0	396.8	402.6	396.0
1.1	mean	431.0	431.0	430.8	433.9	436.3	438.3	442.3	441.4	437.3	434.1	431.8	432.1	434.7
	max	444.5	443.8	447.5	447.4	455.5	459.3	464.7	462.2	456.9	451.7	444.3	445.5	464.7
	min	409.9	412.5	413.4	410.8	415.1	413.6	416.9	418.8	411.4	408.9	409.2	415.8	408.9
1.2	mean	443.3	443.3	443.1	446.3	448.8	450.5	454.5	453.6	449.4	446.3	444.2	444.4	447.0
	max	457.0	456.9	459.7	459.3	469.1	470.5	476.3	473.9	467.5	466.5	456.1	458.3	476.3
	min	423.1	424.7	427.3	423.5	430.3	427.2	427.9	431.9	423.3	422.1	421.5	428.4	421.5
1.3	mean	455.7	455.8	455.6	458.8	461.1	462.7	466.9	465.7	461.6	458.5	456.5	456.8	459.3
	max	469.4	470.1	472.2	472.8	478.5	481.9	490.0	485.8	478.5	481.6	468.0	470.7	490.0
	min	436.2	438.3	441.6	436.8	444.4	440.9	438.4	442.0	435.5	432.9	431.8	441.2	431.8
1.4	mean	468.3	468.2	468.1	471.3	473.3	474.9	479.0	477.8	473.9	470.7	468.9	469.3	471.7
	max	481.8	482.8	484.7	486.3	490.1	493.3	506.7	497.6	491.5	495.1	480.2	483.1	506.7
	min	449.3	450.5	454.9	450.2	457.2	454.1	452.3	452.3	447.6	448.3	445.0	453.5	445.0
1.5	mean	480.9	480.7	480.8	483.7	485.7	487.1	491.2	489.9	486.2	483.0	481.4	481.8	484.1
	max	494.1	495.2	497.3	498.0	502.5	504.7	517.9	510.2	508.2	499.8	492.6	496.1	517.9
	min	462.9	463.5	468.5	463.7	469.4	465.2	467.5	465.6	459.7	462.5	458.6	466.6	458.6
1.6	mean	493.6	493.3	493.4	496.2	497.9	499.3	503.5	502.2	498.6	495.3	493.9	494.4	496.5
	max	506.5	506.0	509.9	509.9	515.0	516.2	528.2	524.1	519.9	510.5	504.8	507.7	528.2
	min	476.5	477.3	481.4	477.1	482.1	476.9	479.1	477.4	472.0	475.8	472.1	481.1	472.0
1.7	mean	506.3	505.9	506.0	508.7	510.3	511.8	515.9	514.5	511.1	507.7	506.6	507.1	509.0
	max	518.9	516.5	522.5	521.8	527.4	527.8	538.6	537.9	531.7	523.1	517.5	520.0	538.6
	min	490.1	491.1	494.2	490.5	494.9	492.2	491.7	489.8	487.9	488.8	485.6	494.8	485.6
1.8	mean	519.1	518.6	518.7	521.2	522.7	524.4	528.3	526.8	523.6	520.2	519.3	519.6	521.6
	max	531.7	529.7	535.1	533.9	538.4	539.5	550.5	551.9	543.6	535.7	530.3	532.8	551.9
	min	503.8	504.9	506.6	504.0	507.6	504.6	505.8	502.4	504.0	502.4	499.3	507.5	499.3
1.9	mean	531.9	531.3	531.4	533.9	535.2	537.0	540.8	539.1	536.1	532.8	532.0	532.3	534.2
	max	543.8	542.7	547.7	545.9	550.7	552.7	561.7	565.8	555.5	548.3	543.1	545.4	565.8
	min	517.3	518.6	519.3	517.4	520.8	516.9	519.8	513.9	518.6	516.0	512.8	520.0	512.8
2.0	mean	544.6	544.0	544.2	546.5	547.7	549.7	553.1	551.4	548.6	545.5	544.8	545.0	546.8
	max	556.2	554.7	560.3	558.1	563.0	567.4	573.0	579.7	567.4	561.1	555.9	558.0	579.7
	min	530.9	530.6	531.9	530.8	533.6	529.1	533.7	527.9	531.2	529.6	526.3	532.7	526.3

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km.
mean values with extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	311.1	311.9	310.6	314.0	320.1	326.6	332.6	330.3	322.6	318.5	313.3	312.3	318.6
0.0	max	332.9	332.6	333.5	330.7	342.1	366.8	359.0	358.3	358.3	341.0	335.6	334.0	366.8
	min	282.8	280.8	285.9	283.5	277.4	304.4	308.9	302.4	296.3	287.9	287.9	283.5	277.4
	mean	320.7	321.3	319.7	322.9	327.4	333.0	339.0	337.0	329.8	326.6	322.2	321.9	326.7
0.1	max	340.5	339.7	341.7	341.2	353.1	355.9	368.8	362.9	361.6	350.3	344.4	355.7	368.8
	min	301.6	290.1	303.1	302.9	302.7	304.3	311.9	308.8	301.7	301.6	302.6	298.7	290.1
	mean	332.2	332.9	331.3	334.6	338.6	344.0	350.0	347.8	341.1	337.7	333.6	333.5	338.1
0.2	max	352.0	352.3	353.0	353.5	365.0	365.5	382.9	376.5	365.0	361.1	355.5	366.9	382.9
	min	313.2	315.5	314.5	315.3	315.7	316.3	323.3	288.8	317.0	314.6	314.0	311.9	288.8
	mean	344.0	344.7	343.3	346.7	350.5	355.6	361.5	359.0	352.8	349.2	345.4	345.5	349.8
0.3	max	365.3	365.1	364.7	364.9	376.8	377.9	392.4	386.7	377.8	372.0	366.6	378.2	392.4
	min	324.4	326.9	326.0	328.2	327.9	326.3	325.3	269.6	329.8	323.5	324.6	324.0	269.6
	mean	356.0	356.7	355.5	358.9	362.5	367.4	372.9	370.8	364.8	361.1	357.4	357.6	361.8
0.4	max	377.8	376.5	376.4	376.7	388.4	393.6	401.0	403.3	391.3	383.0	377.8	389.4	403.3
	min	335.6	337.2	336.3	340.0	340.4	339.5	334.7	340.8	340.4	335.9	337.1	334.9	334.7
	mean	368.1	368.8	367.7	371.1	374.7	379.1	384.5	382.4	376.7	373.0	369.5	369.7	373.7
0.5	max	390.1	388.0	388.1	388.0	400.1	399.7	418.7	417.4	404.3	394.6	389.1	400.6	418.7
	min	346.9	347.7	348.4	351.5	352.1	350.3	344.1	353.5	352.4	346.1	349.5	345.7	344.1
	mean	380.3	380.9	379.9	383.3	386.9	391.0	396.1	394.1	388.7	385.0	381.6	382.0	385.8
0.6	max	418.8	399.5	399.8	399.4	412.6	414.5	436.4	426.5	414.7	407.0	401.4	411.9	436.4
	min	358.2	358.5	361.0	364.3	364.8	365.2	355.0	357.9	362.3	356.9	362.0	357.3	355.0
	mean	392.5	393.1	392.1	395.5	399.1	402.8	408.0	405.9	400.8	397.2	393.8	394.2	397.9
0.7	max	414.6	412.0	411.5	411.3	424.5	426.3	448.6	435.7	425.1	419.7	414.6	413.5	448.6
	min	369.1	371.4	372.9	377.2	372.8	377.5	366.6	378.6	374.0	370.1	374.5	369.6	366.6
	mean	404.8	405.4	404.5	407.8	411.3	414.7	419.8	417.7	413.0	409.4	406.2	406.6	410.1
0.8	max	427.0	425.0	423.4	423.3	437.7	438.4	460.8	445.2	436.0	432.6	428.0	425.4	460.8
	min	381.2	384.4	384.9	390.1	386.9	381.8	391.8	373.3	386.2	382.2	387.1	383.0	373.3
	mean	417.2	417.7	416.9	420.1	423.4	426.6	431.5	429.7	425.0	421.8	418.6	419.0	422.3
0.9	max	439.3	437.9	435.2	435.2	450.6	449.9	472.9	455.3	448.5	444.7	441.3	437.4	472.9
	min	394.0	397.3	397.1	402.5	400.2	398.6	404.1	401.4	398.1	394.7	399.6	396.2	394.0
	mean	429.6	430.1	429.4	432.4	435.6	438.7	443.3	441.7	437.2	434.3	431.1	431.4	434.5
1.0	max	451.2	450.4	447.0	447.2	463.4	462.5	484.3	471.2	461.0	456.3	455.8	450.2	484.3
	min	406.9	410.8	409.2	413.9	416.5	410.8	415.8	413.7	409.5	408.0	412.0	409.4	406.9
	mean	442.0	442.5	441.8	444.7	447.9	450.8	455.3	453.8	449.5	446.6	443.5	443.9	446.8
1.1	max	463.2	462.9	458.8	459.0	476.0	475.1	495.7	489.9	477.8	468.1	470.4	463.2	495.7
	min	419.8	424.2	422.0	425.9	428.5	399.2	428.7	426.5	421.2	420.6	424.5	423.3	399.2
	mean	454.5	454.9	454.3	457.1	460.2	463.0	467.3	465.8	461.8	459.0	456.0	456.3	459.2
1.2	max	475.1	474.8	470.7	471.0	487.6	487.7	507.1	506.0	495.6	480.6	484.9	476.0	507.1
	min	432.8	434.2	435.9	437.8	441.5	434.4	440.8	439.3	432.8	434.5	437.0	437.2	432.8
	mean	466.9	467.5	466.8	469.5	472.4	475.2	479.4	477.8	474.2	471.3	468.5	468.7	471.5
1.3	max	487.1	487.0	483.1	484.9	498.3	499.6	517.7	520.3	514.5	492.2	498.9	488.1	520.3
	min	446.3	447.4	449.4	450.8	454.5	446.0	451.8	452.0	444.5	448.0	449.6	451.0	444.5
	mean	479.4	480.0	479.3	481.9	484.7	487.4	491.4	489.8	486.4	483.6	480.9	481.2	483.8
1.4	max	498.9	498.8	495.3	496.5	509.1	509.2	528.2	534.1	530.1	503.4	513.0	501.8	534.1
	min	459.7	460.6	461.4	463.7	466.6	460.8	465.5	464.6	458.0	459.9	462.7	463.7	458.0
	mean	492.0	492.7	491.9	494.5	497.0	499.7	503.6	501.9	498.8	496.0	493.4	493.6	496.2
1.5	max	510.8	510.6	507.6	508.2	520.0	522.5	538.8	547.9	539.0	515.6	527.2	514.1	547.9
	min	473.3	473.7	474.1	476.2	479.7	474.3	478.1	475.6	471.7	471.5	475.4	476.5	471.5
	mean	504.6	505.2	504.6	507.0	509.5	511.9	515.6	514.1	511.2	508.5	505.9	506.2	508.7
1.6	max	522.8	522.5	519.8	520.3	532.0	535.3	550.0	561.8	544.7	527.6	541.4	524.6	561.8
	min	487.0	486.8	486.8	488.7	490.9	486.7	490.3	488.0	485.3	484.6	489.0	489.4	484.6
	mean	517.3	517.8	517.2	519.5	522.0	524.0	527.7	526.3	523.5	521.0	518.5	518.7	521.1
1.7	max	534.8	535.0	532.1	532.5	544.0	547.6	561.3	569.2	551.8	540.3	555.7	536.1	569.2
	min	500.8	500.1	499.9	502.1	504.4	499.5	502.6	500.5	499.0	498.1	502.2	502.4	498.1
	mean	529.9	530.4	529.9	532.1	534.4	536.2	539.8	538.6	535.9	533.4	531.1	531.3	533.6
1.8	max	550.3	547.5	545.4	544.5	556.0	559.8	572.0	577.1	563.9	553.0	565.8	548.6	577.1
	min	514.5	513.5	513.2	514.7	513.4	512.2	516.1	513.0	510.8	511.4	515.0	515.4	510.8
	mean	542.6	543.1	542.6	544.7	546.9	548.5	552.1	551.0	548.2	545.9	543.6	543.8	546.1
1.9	max	577.0	559.9	559.6	556.7	568.0	572.0	579.2	587.1	577.9	565.7	575.4	561.2	587.1
	min	528.0	526.6	526.2	527.6	526.6	524.9	530.8	525.9	525.5	524.7	528.0	527.7	524.7
	mean	555.3	555.8	555.3	557.4	559.4	560.8	564.5	563.4	560.7	558.3	556.2	556.3	558.6
2.0	max	595.9	572.4	573.3	569.2	580.1	584.2	593.0	599.7	592.5	578.9	585.1	573.9	599.7
	min	540.3	539.8	539.0	540.0	538.8	538.1	543.8	540.6	540.4	538.0	541.0	541.2	538.0

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	309.7	311.9	311.6	313.8	318.7	321.9	327.2	326.1	319.9	317.0	313.1	310.8	316.9
0.0	max	330.7	328.5	330.9	330.9	334.2	356.6	341.7	343.4	341.7	334.1	335.4	331.8	356.6
	min	280.5	282.6	281.8	286.2	301.0	304.3	299.0	289.6	288.7	284.9	284.9	285.4	280.5
	mean	320.8	322.9	322.0	324.6	330.3	333.2	338.7	337.5	331.2	328.0	323.8	321.3	327.9
0.1	max	341.3	339.9	343.5	341.3	345.5	368.5	352.2	353.3	356.2	345.4	346.0	342.0	368.5
	min	304.2	302.7	276.7	308.7	309.0	297.0	319.3	319.0	313.6	307.9	305.3	286.0	276.7
	mean	332.9	335.1	334.2	336.6	342.1	345.2	350.3	349.4	343.1	339.9	335.7	333.5	339.9
0.2	max	353.2	352.9	354.8	353.2	359.8	378.0	368.2	366.5	366.2	369.0	356.7	352.6	378.0
	min	314.2	314.9	286.8	321.4	321.4	325.8	323.9	332.7	325.2	294.3	314.2	271.2	271.2
	mean	345.3	347.4	346.6	348.8	354.0	357.0	361.9	361.1	355.0	351.9	347.9	345.8	352.0
0.3	max	364.6	364.3	365.5	364.7	374.6	386.5	389.8	386.7	379.0	369.7	366.9	364.0	389.8
	min	327.8	328.5	265.9	331.3	334.5	330.1	334.1	340.8	328.6	281.4	327.2	256.5	256.5
	mean	357.7	359.7	359.1	360.9	365.8	368.8	373.4	372.5	367.1	363.8	360.2	358.4	364.0
0.4	max	375.9	375.7	377.1	376.5	391.2	395.2	401.5	401.5	411.2	381.1	377.0	375.3	411.2
	min	340.6	341.5	341.1	343.8	303.5	343.9	345.3	339.1	331.8	269.4	315.4	339.9	269.4
	mean	370.2	372.0	371.3	372.9	377.6	380.4	384.6	384.0	378.8	375.9	372.6	370.7	376.0
0.5	max	387.3	387.1	388.4	389.5	403.4	404.2	410.1	410.5	403.8	392.9	388.7	387.0	410.5
	min	353.4	351.9	353.0	352.9	275.8	353.8	338.7	351.8	334.9	330.2	353.3	351.7	275.8
	mean	382.6	384.2	383.4	385.0	389.5	391.9	395.9	395.4	390.7	387.7	384.8	383.0	387.9
0.6	max	401.0	399.1	398.7	402.5	415.3	417.1	419.7	424.5	424.5	406.5	403.0	399.9	424.5
	min	366.2	364.1	316.0	363.6	364.0	365.7	355.6	322.3	338.0	342.0	366.2	364.7	316.0
	mean	394.9	396.3	395.6	397.0	401.2	403.5	407.0	406.7	402.6	399.5	396.9	395.3	399.8
0.7	max	412.9	412.4	411.4	414.8	427.3	432.0	432.7	434.2	442.5	419.9	415.6	410.4	442.5
	min	379.1	376.1	369.8	376.4	375.0	375.6	372.4	336.8	341.1	353.9	379.1	378.1	336.8
	mean	407.2	408.4	407.7	408.9	413.0	414.8	418.2	418.1	414.7	411.1	409.0	407.6	411.6
0.8	max	424.6	424.9	422.6	426.8	439.3	444.1	446.1	443.0	460.8	432.2	428.2	421.6	460.8
	min	390.0	388.9	390.3	389.0	387.7	382.3	388.0	375.8	383.8	314.7	390.9	375.3	314.7
	mean	419.4	420.5	419.7	421.0	424.8	426.5	429.6	429.7	426.6	423.0	421.1	419.9	423.5
0.9	max	436.4	435.8	433.9	439.9	449.9	454.0	459.3	452.6	477.7	444.3	440.8	434.5	477.7
	min	400.4	401.8	333.5	401.0	397.7	396.2	396.5	402.5	396.7	344.9	403.5	404.5	333.5
	mean	431.6	432.5	431.9	433.1	436.6	438.1	441.0	441.4	438.4	434.9	433.2	432.1	435.4
1.0	max	448.4	446.7	446.8	450.5	458.9	462.7	473.2	465.7	494.6	456.1	453.5	448.0	494.6
	min	411.2	414.6	367.6	413.1	410.0	409.1	409.8	415.2	409.6	375.2	415.1	413.3	367.6
	mean	443.7	444.5	444.0	445.2	448.3	449.6	452.6	453.0	450.3	446.6	445.2	444.2	447.3
1.1	max	460.2	458.6	459.5	462.3	469.9	474.7	481.2	478.7	511.7	467.9	465.2	461.3	511.7
	min	423.7	426.6	401.9	424.6	424.2	421.0	387.7	426.8	422.5	401.8	424.0	425.2	387.7
	mean	455.7	456.6	456.2	457.2	460.0	461.3	464.3	464.4	462.1	458.4	457.1	456.4	459.2
1.2	max	472.1	470.7	472.4	474.7	481.6	486.8	493.1	491.8	529.1	479.8	476.9	473.3	529.1
	min	437.0	438.0	436.5	436.9	437.1	434.7	418.0	436.7	435.5	414.9	436.0	438.5	414.9
	mean	467.7	468.7	468.4	469.2	471.8	473.1	476.0	475.7	473.8	470.3	469.1	468.6	471.1
1.3	max	483.9	482.8	484.6	490.9	493.2	500.5	504.8	507.1	500.4	491.6	488.4	485.3	507.1
	min	448.0	450.4	453.9	449.9	450.9	448.2	442.6	435.6	448.3	427.9	448.8	451.7	427.9
	mean	479.7	480.9	480.6	481.3	483.6	484.8	487.7	487.4	485.5	482.4	481.1	480.8	483.0
1.4	max	495.9	494.8	494.0	507.2	504.8	514.2	516.5	524.9	513.0	503.5	500.1	497.3	524.9
	min	460.4	461.6	465.9	462.6	444.8	461.1	444.0	460.1	461.6	456.7	462.1	464.3	444.0
	mean	491.9	493.0	492.8	493.5	495.7	496.8	499.7	499.1	497.2	494.5	493.2	492.9	495.1
1.5	max	508.1	506.9	506.7	524.8	516.6	527.7	528.2	542.7	525.3	515.4	511.8	509.3	542.7
	min	473.5	472.7	479.4	475.5	474.3	473.2	461.5	473.0	474.3	469.5	473.8	476.9	461.5
	mean	504.1	505.2	505.1	505.7	508.0	508.9	511.8	511.0	509.3	506.6	505.2	505.0	507.2
1.6	max	520.7	519.0	519.4	523.1	528.6	540.4	539.0	554.2	580.5	539.2	524.0	521.4	580.5
	min	486.7	485.3	489.9	488.7	487.1	486.1	488.5	486.0	487.3	482.5	486.5	485.5	482.5
	mean	516.4	517.4	517.5	517.9	520.2	520.9	523.9	522.9	521.3	518.7	517.4	517.1	519.3
1.7	max	533.2	531.2	532.0	534.8	540.6	552.2	550.9	562.5	587.4	540.6	536.1	533.4	587.4
	min	499.9	497.0	502.0	501.6	500.3	498.8	499.8	483.4	500.1	499.1	499.5	492.6	483.4
	mean	528.6	529.6	529.8	530.1	532.5	532.9	536.1	534.8	533.4	531.0	529.6	529.2	531.5
1.8	max	545.7	543.6	544.6	547.2	552.6	564.1	562.8	571.3	594.8	553.1	548.2	545.5	594.8
	min	512.6	509.1	515.2	514.6	513.4	508.5	511.9	496.6	510.9	512.9	512.5	500.1	496.6
	mean	541.0	541.9	542.1	542.5	544.8	545.1	548.3	546.9	545.6	543.4	542.1	541.5	543.8
1.9	max	558.0	556.1	557.1	559.6	564.6	576.0	574.7	580.7	605.8	565.4	560.4	557.8	605.8
	min	525.2	522.2	528.4	527.5	526.6	519.9	525.1	511.1	525.9	524.6	526.3	514.0	511.1
	mean	553.6	554.3	554.5	555.0	557.4	557.5	560.6	559.2	557.9	555.6	554.6	553.8	556.2
2.0	max	570.2	569.0	569.7	572.1	576.7	587.8	586.3	590.4	621.2	577.8	572.5	570.1	621.2
	min	538.5	535.3	541.1	540.7	539.7	533.6	538.4	525.5	539.0	536.4	537.2	505.1	505.1

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	310.0	311.9	311.4	313.7	318.8	321.6	327.0	326.0	319.7	317.1	312.9	310.7	316.8
0.0	max	328.8	329.8	332.0	332.6	331.8	365.3	344.0	342.8	338.3	334.3	335.4	332.3	365.3
	min	280.9	290.5	282.8	279.4	289.6	280.4	283.4	296.1	275.5	288.3	286.6	284.2	275.5
	mean	321.0	322.7	322.2	324.5	330.3	333.4	338.8	337.6	330.9	328.0	323.6	321.5	328.0
0.1	max	340.2	339.5	349.4	343.1	345.2	377.4	352.1	354.6	348.7	345.7	340.7	342.5	377.4
	min	301.6	258.9	302.7	308.6	313.5	317.2	307.1	317.9	310.9	308.6	299.3	300.8	258.9
	mean	333.0	335.0	334.5	336.5	342.2	345.4	350.5	349.4	342.7	339.9	335.5	333.6	339.9
0.2	max	351.6	351.7	366.7	352.5	359.5	388.7	365.6	387.6	361.3	357.1	353.3	352.8	388.7
	min	314.0	314.6	315.5	314.2	314.1	317.8	326.8	316.0	290.5	319.1	279.1	313.8	279.1
	mean	345.3	347.4	346.9	348.7	354.1	357.3	362.0	360.9	354.5	351.8	347.4	345.9	351.9
0.3	max	363.0	363.4	383.9	363.9	372.7	396.8	378.8	380.9	375.4	371.4	364.9	364.8	396.8
	min	326.5	327.5	328.1	318.8	315.5	326.7	336.6	321.1	270.5	324.0	259.4	325.2	259.4
	mean	357.8	359.7	359.3	360.9	366.1	369.1	373.4	372.3	366.6	363.9	360.0	358.4	364.0
0.4	max	374.4	375.0	400.9	378.8	385.8	405.2	392.0	394.1	390.8	387.5	376.6	376.2	405.2
	min	338.9	340.2	340.2	331.4	319.4	346.3	336.1	330.5	349.5	337.2	289.2	336.7	289.2
	mean	370.2	372.0	371.5	373.1	377.9	380.5	384.5	383.7	378.7	375.8	372.3	370.7	376.0
0.5	max	385.8	387.3	414.0	394.0	397.4	413.8	412.2	406.2	406.5	400.7	389.5	388.1	414.0
	min	351.3	352.3	352.1	348.1	332.2	307.1	306.5	340.1	362.4	348.9	314.6	349.4	306.5
	mean	382.5	384.1	383.6	385.2	389.7	391.9	395.7	395.0	390.7	387.7	384.5	383.0	387.9
0.6	max	397.6	399.7	427.0	399.6	409.5	422.7	428.0	417.1	419.6	410.1	400.6	399.9	428.0
	min	364.6	334.8	316.3	362.6	344.9	363.4	354.4	346.5	371.0	361.2	340.4	362.7	316.3
	mean	394.8	396.3	395.7	397.4	401.3	403.5	406.7	406.7	402.5	399.6	396.7	395.2	399.8
0.7	max	410.2	413.3	441.0	414.8	421.2	431.9	439.2	434.3	436.3	420.9	413.0	412.1	441.0
	min	378.1	375.1	365.1	374.6	357.7	376.2	339.7	375.3	377.5	371.1	366.6	375.4	339.7
	mean	407.0	408.4	407.7	409.4	413.1	415.0	418.0	418.1	414.4	411.4	408.9	407.3	411.6
0.8	max	422.7	426.5	454.9	427.3	432.8	444.0	447.7	452.7	453.8	431.6	424.9	425.0	454.9
	min	387.3	387.3	336.8	387.0	370.6	384.1	376.8	390.6	389.9	383.5	388.1	387.5	336.8
	mean	419.1	420.6	419.8	421.4	424.9	426.7	429.5	429.6	426.2	423.2	421.1	419.5	423.5
0.9	max	435.2	438.2	467.1	436.4	445.8	453.7	458.2	470.0	462.9	442.3	437.3	435.6	470.0
	min	398.7	400.0	373.9	399.4	383.4	397.1	343.3	403.5	402.6	396.0	395.4	399.4	343.3
	mean	431.3	432.7	431.9	433.5	436.6	438.3	441.3	441.1	438.1	435.1	433.2	431.6	435.4
1.0	max	446.9	450.0	450.8	451.8	457.2	463.0	467.1	485.8	468.0	453.2	450.8	447.9	485.8
	min	410.9	410.1	411.2	411.9	396.3	410.0	383.7	413.0	416.0	408.6	408.9	411.2	383.7
	mean	443.4	444.7	444.1	445.4	448.3	449.8	453.0	452.8	449.8	446.8	445.3	443.8	447.3
1.1	max	458.7	461.8	462.5	464.7	468.6	478.6	476.2	501.8	478.3	464.6	463.2	459.7	501.8
	min	423.3	421.3	424.5	425.0	409.1	423.0	422.3	422.4	429.6	422.1	422.5	424.4	409.1
	mean	455.6	456.7	456.2	457.4	460.0	461.4	464.5	464.6	461.5	458.4	457.1	455.9	459.2
1.2	max	470.7	473.8	474.3	476.1	481.2	495.3	487.5	518.1	489.8	477.1	474.8	471.3	518.1
	min	436.1	434.5	439.5	438.2	422.1	434.4	435.9	441.4	436.4	430.5	391.6	436.3	391.6
	mean	467.7	468.9	468.3	469.5	471.8	473.0	476.2	476.1	473.3	470.2	469.2	468.0	471.1
1.3	max	483.0	486.7	486.2	487.4	493.7	508.3	499.5	535.5	501.3	490.2	486.4	482.9	535.5
	min	449.2	448.0	451.0	450.3	435.0	445.7	449.5	450.7	453.7	443.4	450.8	447.7	435.0
	mean	479.9	481.0	480.5	481.6	483.8	484.4	487.9	487.5	485.0	482.1	481.2	480.0	482.9
1.4	max	495.2	499.7	498.2	494.0	506.2	511.5	512.5	532.0	512.8	502.3	498.0	494.9	532.0
	min	462.2	461.5	462.5	463.0	451.0	458.8	462.6	464.3	465.8	456.4	465.1	461.3	451.0
	mean	492.0	493.2	492.7	493.8	495.8	496.3	499.8	499.1	496.8	494.0	493.1	492.2	494.9
1.5	max	507.5	512.4	522.7	505.4	517.5	522.8	522.7	552.9	524.4	513.8	509.6	507.5	552.9
	min	475.3	473.9	475.5	475.7	474.4	471.9	474.4	477.0	476.0	469.6	476.1	474.7	469.6
	mean	504.2	505.4	505.0	506.0	507.9	508.4	511.9	510.9	508.6	506.1	505.1	504.3	507.0
1.6	max	519.8	524.7	548.7	517.1	528.4	535.4	535.1	559.8	536.1	525.2	521.7	520.5	559.8
	min	488.7	487.0	489.0	488.7	485.6	471.1	486.6	486.1	488.2	482.9	488.8	486.0	471.1
	mean	516.5	517.6	517.3	518.1	520.1	520.6	523.9	522.9	520.5	518.4	517.2	516.5	519.2
1.7	max	531.7	537.0	567.7	529.5	542.7	547.1	547.0	567.0	547.9	537.7	533.9	532.9	567.7
	min	501.4	500.5	501.3	502.0	498.8	468.3	499.8	500.3	500.9	496.1	502.0	498.3	468.3
	mean	528.9	529.9	529.7	530.3	532.4	532.9	536.0	534.8	532.5	530.7	529.5	528.8	531.4
1.8	max	568.4	549.3	590.5	542.5	550.9	558.8	558.1	576.0	559.6	550.3	546.0	545.5	590.5
	min	512.8	513.0	512.2	515.2	512.3	510.8	512.9	507.8	513.3	508.8	515.0	511.2	507.8
	mean	541.2	542.2	542.2	542.7	544.8	545.2	548.0	546.9	544.7	543.0	541.9	541.1	543.7
1.9	max	585.5	561.3	558.0	555.9	563.0	570.9	570.0	615.2	571.4	563.1	558.3	557.7	615.2
	min	526.1	526.0	523.9	528.3	526.2	522.6	526.1	512.1	525.7	521.0	527.3	524.4	512.1
	mean	553.6	554.7	554.7	555.1	557.2	557.5	560.1	559.1	556.9	555.3	554.3	553.6	556.0
2.0	max	575.2	573.3	570.4	569.2	575.0	582.9	581.9	623.9	583.3	574.3	570.5	570.0	623.9
	min	539.1	538.9	534.6	541.6	539.6	534.4	537.6	516.9	535.8	534.5	539.4	537.8	516.9

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	310.3	311.9	310.5	314.4	320.1	326.1	331.7	330.8	323.3	318.2	313.2	311.0	318.2
0.0	max	329.8	332.7	329.7	332.3	342.4	349.2	355.9	350.7	351.8	336.1	333.0	328.9	355.9
	min	287.1	287.5	276.5	280.3	282.1	283.5	305.7	290.9	278.3	284.1	280.9	287.0	276.5
	mean	319.7	321.2	319.3	320.9	325.4	329.0	334.7	333.0	326.2	323.8	320.6	319.7	324.3
0.1	max	340.7	339.2	341.9	338.5	348.7	361.1	359.6	356.2	348.5	349.3	344.2	341.3	361.1
	min	302.2	305.7	299.1	305.6	301.2	305.0	307.6	301.6	303.5	297.5	303.1	300.7	297.5
	mean	331.1	332.4	330.4	332.0	336.1	339.6	345.2	343.6	337.0	334.8	331.9	331.1	335.3
0.2	max	351.6	351.0	354.1	350.5	361.1	365.0	374.6	370.1	357.7	362.3	355.6	353.6	374.6
	min	314.1	314.3	311.7	316.6	314.9	314.3	320.4	313.4	315.9	310.9	316.2	312.3	310.9
	mean	342.9	344.2	342.3	344.3	348.3	351.6	357.0	355.2	349.0	346.8	343.8	343.1	347.2
0.3	max	362.7	362.8	366.4	362.4	372.1	389.0	386.8	383.0	368.3	374.1	367.3	364.5	389.0
	min	323.7	324.8	324.4	328.5	328.6	330.5	330.2	326.1	328.5	321.9	328.6	323.8	321.9
	mean	355.1	356.3	354.5	356.7	360.6	363.8	369.0	367.3	361.4	359.1	356.0	355.3	359.4
0.4	max	374.2	374.4	378.4	374.2	383.1	393.7	398.9	395.2	380.2	384.7	378.9	375.8	398.9
	min	336.5	337.2	337.4	340.5	342.1	343.4	340.4	339.1	341.0	334.2	338.2	337.3	334.2
	mean	367.3	368.6	366.9	369.1	373.0	376.2	381.1	379.4	373.7	371.5	368.3	367.6	371.7
0.5	max	385.8	386.1	391.5	386.0	394.1	403.2	413.8	406.6	392.0	395.4	390.5	387.7	413.8
	min	349.2	349.6	351.0	352.8	353.9	356.2	353.0	351.8	353.6	345.1	349.6	349.5	345.1
	mean	379.7	381.0	379.3	381.6	385.5	388.5	393.2	391.5	386.2	383.9	380.7	380.0	384.1
0.6	max	397.4	399.2	404.7	400.3	405.2	413.0	438.2	417.9	404.9	406.6	402.1	399.5	438.2
	min	362.0	362.1	364.4	365.1	364.0	368.4	365.6	365.9	366.2	355.5	361.1	362.8	355.5
	mean	392.1	393.4	391.8	394.2	397.9	400.7	405.4	403.6	398.6	396.4	393.2	392.5	396.5
0.7	max	409.2	411.0	417.3	411.5	419.5	423.1	465.6	429.4	417.8	418.0	413.9	411.0	465.6
	min	373.8	374.7	377.1	377.6	376.7	379.5	378.3	379.3	377.9	368.1	374.4	376.0	368.1
	mean	404.6	405.8	404.4	406.7	410.3	413.0	417.4	415.8	411.1	408.9	405.7	404.9	408.9
0.8	max	421.5	422.7	429.0	422.8	434.7	432.2	449.1	440.8	430.6	429.5	425.6	423.2	449.1
	min	385.5	387.8	389.0	390.4	389.4	391.8	391.0	392.2	389.5	381.0	383.7	389.2	381.0
	mean	417.0	418.3	416.9	419.1	422.8	425.3	429.7	428.1	423.5	421.3	418.1	417.4	421.3
0.9	max	434.6	434.5	440.8	434.3	447.1	444.8	464.9	455.3	443.2	441.1	437.4	435.2	464.9
	min	397.7	400.8	401.5	402.1	402.2	404.4	403.7	404.1	402.3	394.1	395.8	402.0	394.1
	mean	429.4	430.7	429.5	431.6	435.3	437.5	441.8	440.5	436.0	433.7	430.6	429.9	433.7
1.0	max	447.6	446.3	452.1	445.3	458.2	457.4	479.4	468.6	455.8	453.3	449.1	446.7	479.4
	min	410.4	413.5	413.2	414.0	415.0	416.5	416.5	415.2	414.7	407.4	408.8	414.2	407.4
	mean	441.9	443.2	442.0	444.1	447.7	449.6	454.0	452.7	448.3	446.1	443.1	442.3	446.1
1.1	max	459.6	458.4	463.5	458.5	469.5	470.7	492.9	481.9	468.5	465.7	461.0	458.4	492.9
	min	422.7	426.3	425.7	427.0	428.1	428.7	429.4	426.8	427.6	420.8	421.6	425.4	420.8
	mean	454.4	455.6	454.5	456.6	460.1	461.6	466.1	464.9	460.7	458.4	455.6	454.8	458.5
1.2	max	471.3	470.2	475.0	476.1	481.2	483.9	507.2	495.1	481.2	478.4	472.8	470.1	507.2
	min	435.0	439.0	438.1	439.9	441.0	439.7	440.6	439.8	439.8	434.1	434.1	437.0	434.1
	mean	466.9	468.0	466.9	469.0	472.4	473.7	478.4	477.1	472.9	470.8	468.0	467.3	470.8
1.3	max	483.0	483.2	489.0	488.6	492.7	497.0	545.0	509.0	492.7	491.5	484.7	482.0	545.0
	min	447.3	451.9	451.6	452.7	454.0	452.6	453.3	452.8	452.0	447.3	446.8	449.3	446.8
	mean	479.4	480.5	479.4	481.4	484.6	485.9	490.5	489.2	485.1	483.2	480.5	479.8	483.2
1.4	max	494.8	495.8	502.5	502.1	503.3	512.2	554.1	519.8	503.9	505.4	496.5	494.0	554.1
	min	459.8	464.4	464.8	465.7	464.7	465.0	467.1	465.7	464.4	459.5	460.1	462.0	459.5
	mean	491.9	493.0	492.0	493.8	496.9	498.1	502.4	501.4	497.4	495.5	493.0	492.3	495.5
1.5	max	506.2	508.1	513.0	510.6	514.2	529.8	563.3	529.8	515.4	519.2	508.4	506.1	563.3
	min	472.6	477.8	477.5	478.7	477.6	478.0	480.1	478.8	476.8	472.9	473.3	474.3	472.6
	mean	504.5	505.4	504.5	506.3	509.2	510.4	514.5	513.4	509.5	507.9	505.5	504.8	507.9
1.6	max	517.9	520.5	523.7	522.6	526.9	548.1	572.8	539.6	527.2	531.8	520.5	519.3	572.8
	min	485.7	490.6	490.3	491.6	490.4	491.1	492.0	491.9	489.3	486.4	486.7	487.3	485.7
	mean	517.0	517.9	517.1	518.8	521.5	522.6	526.7	525.5	521.8	520.3	517.9	517.4	520.3
1.7	max	530.5	532.7	535.0	535.2	539.8	566.8	583.0	549.6	539.7	543.4	533.8	531.8	583.0
	min	498.8	502.9	502.9	504.5	503.4	504.1	502.7	504.8	501.8	499.8	500.0	500.1	498.8
	mean	529.5	530.5	529.7	531.3	533.8	535.0	539.1	537.7	534.1	532.7	530.4	529.9	532.7
1.8	max	543.1	544.9	546.9	547.8	553.0	580.1	593.3	562.2	553.2	554.9	546.9	543.6	593.3
	min	511.8	515.1	515.8	517.5	516.4	517.1	515.0	517.3	514.3	513.0	513.2	513.1	511.8
	mean	542.1	543.0	542.3	543.8	546.2	547.4	551.4	549.9	546.4	545.2	543.0	542.5	545.2
1.9	max	555.7	557.1	556.4	560.3	566.2	590.9	603.0	574.5	565.3	565.6	559.9	554.8	603.0
	min	524.8	527.4	529.1	530.6	529.7	529.9	530.3	529.3	526.8	526.5	526.5	526.1	524.8
	mean	554.8	555.6	554.9	556.4	558.7	559.8	563.8	562.1	558.7	557.6	555.6	555.1	557.7
2.0	max	568.0	569.5	567.6	572.9	578.1	601.9	612.9	587.2	575.7	576.6	573.0	567.5	612.9
	min	538.3	539.9	542.6	543.2	543.1	542.6	544.6	541.3	539.3	540.1	539.7	539.2	538.3

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	307.4	307.7	304.9	303.3	305.9	310.2	317.4	316.2	311.1	308.0	306.2	306.7	308.8
0.0	max	331.4	330.4	329.3	317.5	323.0	338.8	344.2	343.3	336.5	328.6	327.1	327.1	344.2
	min	288.9	289.0	286.8	287.9	286.5	280.7	282.6	292.3	292.1	287.2	291.3	287.8	280.7
	mean	318.1	318.7	316.6	314.6	316.8	320.4	327.8	327.1	322.7	319.7	317.3	316.9	319.8
0.1	max	342.1	339.7	335.2	329.1	337.7	349.7	354.6	353.3	346.3	340.7	332.1	332.6	354.6
	min	301.0	301.6	299.1	298.5	300.1	233.7	292.2	303.3	304.1	300.3	302.6	300.7	233.7
	mean	328.7	329.8	328.6	326.7	328.7	332.1	339.2	338.4	334.4	331.5	328.8	327.6	331.2
0.2	max	347.5	345.8	341.8	340.7	348.9	361.3	365.7	363.3	360.7	352.7	340.4	340.5	365.7
	min	313.5	313.6	311.6	310.8	313.1	307.8	309.9	316.4	316.0	313.5	315.6	313.5	307.8
	mean	339.8	341.2	340.7	339.1	340.9	344.2	350.9	350.1	346.3	343.4	340.4	338.8	343.0
0.3	max	353.7	353.1	353.1	353.5	361.0	373.0	376.5	374.0	377.6	364.7	352.1	350.7	377.6
	min	326.2	325.8	324.8	324.0	320.9	321.3	323.5	329.7	328.3	326.7	328.8	325.9	320.9
	mean	351.5	352.8	352.8	351.6	353.4	356.6	363.1	362.2	358.4	355.2	352.2	350.5	355.1
0.4	max	363.6	365.0	364.6	366.7	373.3	395.7	388.7	385.1	389.6	376.0	363.8	362.7	395.7
	min	338.4	334.8	336.4	337.6	332.9	334.9	337.2	343.1	341.9	339.8	340.0	337.6	332.9
	mean	363.3	364.6	364.8	364.1	366.0	369.2	375.6	374.6	370.6	367.2	364.1	362.4	367.2
0.5	max	375.8	378.0	377.1	381.5	385.4	421.4	404.0	397.6	398.7	387.9	375.6	375.1	421.4
	min	349.8	344.4	348.7	347.7	346.1	348.5	348.5	354.0	354.7	347.3	348.1	344.4	344.4
	mean	375.3	376.6	376.8	376.6	378.7	381.9	388.2	386.9	382.7	379.2	376.2	374.5	379.5
0.6	max	389.1	390.9	389.4	394.6	399.1	443.7	418.7	410.3	410.6	401.2	387.5	387.4	443.7
	min	361.4	355.7	361.2	360.5	359.4	361.9	357.7	361.8	360.6	358.9	357.9	356.1	355.7
	mean	387.5	388.8	388.8	389.1	391.4	394.4	400.6	399.3	394.8	391.3	388.2	386.6	391.8
0.7	max	401.9	404.1	401.7	406.2	412.3	454.2	428.1	423.6	423.1	416.8	400.0	398.5	454.2
	min	372.8	368.6	373.5	373.4	372.9	357.1	370.4	370.1	371.1	371.0	371.1	371.1	357.1
	mean	399.7	400.9	400.9	401.6	404.0	407.1	413.0	411.6	406.8	403.3	400.3	398.8	404.0
0.8	max	414.5	416.2	413.9	419.0	424.4	458.7	438.5	437.9	434.8	433.4	414.7	410.7	458.7
	min	383.9	381.4	384.0	386.2	385.8	387.7	382.1	383.2	383.0	384.0	379.1	385.4	379.1
	mean	412.0	413.1	413.1	414.0	416.6	419.7	425.3	423.9	418.8	415.3	412.5	411.1	416.3
0.9	max	426.8	428.3	426.2	431.8	436.1	464.4	449.6	452.1	445.8	446.2	429.3	422.8	464.4
	min	395.5	394.3	396.5	398.3	397.6	396.1	394.5	397.2	394.9	396.6	390.9	395.3	390.9
	mean	424.4	425.4	425.3	426.3	429.2	432.2	437.7	436.1	430.8	427.4	424.8	423.5	428.6
1.0	max	439.1	440.5	438.5	444.1	450.0	470.7	461.4	464.9	457.3	455.2	442.6	435.4	470.7
	min	408.1	407.6	409.1	411.1	410.4	403.8	405.8	411.2	407.3	408.8	402.4	406.5	402.4
	mean	436.7	437.7	437.6	438.7	441.7	444.6	450.1	448.2	442.9	439.5	437.1	435.8	440.9
1.1	max	451.4	452.7	450.9	456.6	462.8	477.9	474.3	476.9	467.9	465.4	456.0	448.5	477.9
	min	420.5	421.0	421.8	423.2	423.6	414.7	421.6	424.8	420.0	419.6	415.3	419.1	414.7
	mean	449.1	450.0	449.9	450.9	454.1	457.0	462.3	460.3	454.8	451.7	449.5	448.2	453.2
1.2	max	463.6	464.9	463.1	468.5	475.2	487.0	487.1	487.2	477.7	477.7	468.5	463.1	487.2
	min	432.8	434.2	434.4	435.3	435.8	427.8	435.9	437.6	432.3	429.5	428.9	432.0	427.8
	mean	461.6	462.4	462.2	463.2	466.6	469.5	474.4	472.4	466.8	463.9	461.8	460.7	465.5
1.3	max	475.9	477.2	475.4	480.8	487.1	496.8	499.7	496.9	488.1	490.0	480.3	475.0	499.7
	min	445.3	447.6	446.5	447.4	448.1	442.5	442.7	449.2	445.0	440.9	440.8	445.0	440.8
	mean	474.1	474.9	474.5	475.6	479.0	481.9	486.5	484.4	478.9	476.1	474.3	473.2	477.8
1.4	max	488.1	489.5	487.3	492.5	499.0	507.6	510.4	507.7	498.9	502.1	491.9	486.9	510.4
	min	459.0	461.1	457.9	459.5	460.3	456.1	452.7	455.1	458.0	453.1	452.7	458.4	452.7
	mean	486.6	487.4	486.9	488.0	491.5	494.3	498.5	496.5	491.1	488.5	486.8	485.8	490.2
1.5	max	500.4	502.1	499.8	504.4	510.9	518.6	521.2	519.5	509.8	514.0	502.1	498.9	521.2
	min	472.3	473.4	471.1	471.7	473.2	469.0	465.7	468.2	470.8	466.9	466.2	471.1	465.7
	mean	499.1	500.0	499.5	500.5	504.0	506.7	510.5	508.6	503.5	500.9	499.4	498.5	502.6
1.6	max	512.7	514.6	512.1	516.3	522.8	529.5	532.3	531.3	521.6	525.2	510.7	511.0	532.3
	min	485.2	484.4	484.2	484.0	486.4	482.5	479.2	481.2	484.0	477.6	479.6	483.3	477.6
	mean	511.7	512.6	512.0	513.1	516.4	519.1	522.6	520.6	515.9	513.3	512.0	511.2	515.1
1.7	max	525.1	527.2	524.6	528.5	534.8	541.1	543.7	543.1	533.6	536.5	525.7	523.4	543.7
	min	497.7	496.9	495.5	496.8	499.6	496.1	497.1	494.2	497.1	491.0	492.9	496.1	491.0
	mean	524.3	525.3	524.6	525.8	528.8	531.5	534.7	532.7	528.3	525.9	524.7	523.9	527.6
1.8	max	537.5	539.7	537.0	540.7	546.7	553.2	555.5	554.8	545.6	547.9	536.2	535.9	555.5
	min	510.1	510.2	508.9	509.9	512.9	508.2	509.6	507.2	509.0	504.9	506.2	509.4	504.9
	mean	537.0	538.0	537.3	538.5	541.3	543.9	546.8	545.0	540.8	538.5	537.4	536.7	540.1
1.9	max	549.9	552.0	549.4	553.0	558.8	565.2	567.5	565.2	557.6	560.0	549.0	548.4	567.5
	min	524.1	523.2	523.6	522.9	522.5	520.0	522.5	520.8	520.4	519.3	519.5	522.5	519.3
	mean	549.8	550.7	550.0	551.1	553.8	556.4	559.1	557.3	553.3	551.1	550.1	549.5	552.7
2.0	max	561.7	564.2	562.1	565.4	571.0	577.5	579.6	576.0	569.9	572.3	562.1	561.1	579.6
	min	535.5	534.8	536.9	536.2	535.4	532.2	535.8	534.5	532.9	533.5	532.9	536.1	532.2

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

1001 Jan-Mayen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	309.4	310.4	310.3	311.8	314.8	317.1	320.0	319.9	314.5	312.1	309.9	309.7	313.3
	max	322.7	323.3	323.3	322.0	325.4	328.0	332.0	331.3	328.1	326.2	323.9	326.7	332.0
	min	292.2	293.5	284.3	287.2	290.1	251.4	300.8	293.5	294.0	294.9	288.6	294.0	251.4
0.1	mean	320.2	320.8	321.0	322.1	324.8	327.4	330.6	330.8	325.3	322.6	321.2	320.7	324.0
	max	377.8	334.3	333.1	334.0	334.9	338.7	341.9	375.3	340.4	338.6	334.9	332.6	377.8
	min	302.8	302.4	307.1	306.5	303.1	311.7	312.4	297.1	310.0	309.0	302.8	303.0	297.1
0.2	mean	332.3	332.8	333.2	334.2	336.8	339.3	342.5	342.6	337.4	334.8	333.4	332.9	336.1
	max	380.9	345.4	345.5	346.8	346.6	353.0	355.8	380.3	353.4	354.3	350.1	345.4	380.9
	min	316.5	315.7	317.7	319.2	316.2	322.7	317.8	309.6	318.5	321.9	314.3	315.5	309.6
0.3	mean	344.4	345.1	345.5	346.5	348.9	351.3	354.5	354.7	349.6	347.2	345.7	345.2	348.3
	max	385.0	356.8	358.5	359.9	359.7	367.3	371.2	386.0	366.2	373.5	359.7	358.5	386.0
	min	329.2	328.9	328.0	330.8	329.1	334.3	328.3	322.0	331.2	334.6	325.5	325.8	322.0
0.4	mean	356.6	357.3	357.8	358.7	360.8	363.1	366.4	366.6	361.9	359.6	358.0	357.3	360.4
	max	400.1	369.3	370.3	375.8	370.3	381.3	389.2	392.3	379.0	396.6	374.0	370.2	400.1
	min	341.3	342.0	340.8	341.2	338.9	335.2	340.1	334.5	344.7	345.7	338.5	336.2	334.5
0.5	mean	368.8	369.4	370.0	371.0	372.7	374.6	378.0	378.5	374.1	371.9	370.2	369.5	372.4
	max	429.1	381.8	382.4	392.5	383.9	393.2	408.1	403.5	391.2	422.1	383.4	385.4	429.1
	min	345.3	355.0	354.0	351.7	351.5	354.5	349.6	347.3	357.9	356.5	347.4	348.6	345.3
0.6	mean	380.8	381.4	382.2	383.1	384.5	386.2	389.8	390.2	386.0	383.9	382.5	381.6	384.4
	max	403.2	394.5	394.9	407.6	398.0	405.6	428.0	416.2	403.2	435.2	394.0	403.1	435.2
	min	355.2	367.6	367.3	363.0	363.9	361.9	362.7	360.3	369.8	366.3	361.7	361.0	355.2
0.7	mean	392.9	393.3	394.2	395.1	396.2	397.5	401.7	401.8	397.8	395.9	394.8	393.7	396.3
	max	462.4	407.2	407.6	417.0	411.7	418.9	448.8	434.9	415.2	445.3	405.9	421.7	462.4
	min	369.1	375.9	378.9	375.9	376.4	362.9	374.5	372.1	351.6	378.4	375.6	373.3	351.6
0.8	mean	404.8	405.3	406.1	407.1	408.0	408.9	413.2	413.4	409.6	408.0	406.9	405.7	408.1
	max	466.4	419.8	421.5	427.6	425.5	432.0	460.9	454.4	427.1	465.9	418.9	434.1	466.4
	min	383.0	390.4	388.9	387.4	387.8	381.2	385.8	382.9	387.1	391.3	388.6	385.2	381.2
0.9	mean	416.7	417.3	418.1	419.0	419.8	420.3	424.8	425.0	421.5	420.0	419.0	417.7	420.0
	max	466.3	432.5	434.2	431.3	438.5	445.8	468.4	465.9	439.1	487.4	449.5	447.1	487.4
	min	396.9	403.4	401.6	400.8	397.8	391.4	397.4	396.8	404.3	402.2	401.6	397.7	391.4
1.0	mean	428.6	429.3	430.0	431.0	431.6	432.0	436.4	436.7	433.4	431.7	430.9	429.6	431.8
	max	466.0	445.2	445.5	444.4	450.7	458.6	476.3	479.8	451.2	465.8	455.2	460.8	479.8
	min	410.7	414.4	413.2	414.4	410.9	403.0	411.6	409.7	415.3	409.6	414.0	410.1	403.0
1.1	mean	440.6	441.5	442.1	443.0	443.4	443.7	448.3	448.2	445.3	443.8	442.8	441.6	443.7
	max	483.0	454.8	456.8	456.9	462.9	470.1	493.6	501.7	463.1	510.7	459.9	479.2	510.7
	min	424.4	426.7	426.0	424.6	423.9	416.0	423.6	421.4	428.2	420.8	425.4	422.4	416.0
1.2	mean	452.7	453.5	454.1	455.0	455.3	455.3	460.4	459.7	457.2	455.8	454.8	453.7	455.7
	max	491.0	466.9	468.3	470.8	475.0	481.7	516.6	500.5	476.8	515.8	471.9	498.2	516.6
	min	437.3	439.2	439.8	435.9	437.7	429.1	435.2	433.5	439.2	433.9	436.6	435.0	429.1
1.3	mean	464.9	465.7	466.3	467.3	467.3	467.3	472.4	471.6	469.3	467.7	466.9	466.0	467.7
	max	501.3	479.1	481.9	484.0	487.0	493.4	510.8	529.8	491.0	523.4	484.7	517.8	529.8
	min	449.0	451.7	450.7	448.7	450.2	442.4	446.8	446.7	451.2	447.9	448.5	448.3	442.4
1.4	mean	477.3	478.1	478.7	479.5	479.5	479.5	484.5	483.6	481.3	479.8	479.0	478.2	479.9
	max	511.8	491.3	494.2	495.7	499.4	505.2	520.4	537.0	504.0	532.8	494.1	536.8	537.0
	min	461.1	463.3	463.3	461.6	463.0	457.9	458.4	459.4	463.3	460.7	460.8	461.1	457.9
1.5	mean	489.7	490.5	491.1	491.9	491.9	492.0	496.9	495.9	493.7	491.8	491.3	490.5	492.3
	max	522.3	503.5	506.0	506.8	512.1	516.7	536.2	546.5	516.4	542.3	504.9	554.7	554.7
	min	474.6	475.6	476.3	474.5	476.1	471.8	470.4	470.5	474.4	473.1	473.7	473.8	470.4
1.6	mean	502.1	503.0	503.5	504.3	504.3	504.4	509.2	508.2	506.1	504.0	503.7	503.0	504.7
	max	532.9	515.8	518.5	519.8	524.8	528.1	552.8	558.2	529.0	550.5	517.1	573.0	573.0
	min	488.0	487.3	489.3	487.4	488.0	485.7	483.6	482.8	486.8	486.1	484.2	484.7	482.8
1.7	mean	514.7	515.6	516.0	516.8	516.8	516.9	521.5	520.5	518.5	516.3	516.1	515.5	517.1
	max	543.0	528.2	531.0	531.8	536.1	539.5	569.4	568.5	541.6	558.2	529.3	586.3	586.3
	min	500.2	499.2	501.3	500.3	500.0	497.0	496.8	495.3	499.2	499.1	497.1	499.4	495.3
1.8	mean	527.3	528.2	528.6	529.4	529.4	529.5	534.0	532.8	530.9	528.7	528.6	528.1	529.6
	max	553.0	540.7	543.5	543.9	548.3	551.3	588.2	580.2	554.3	566.6	541.6	598.5	598.5
	min	513.5	511.6	513.4	514.7	512.3	509.7	510.2	507.9	512.8	512.2	510.2	512.4	507.9
1.9	mean	539.9	540.9	541.2	542.0	542.0	542.1	546.6	545.1	543.4	541.3	541.1	540.8	542.2
	max	560.4	553.1	555.7	556.9	563.9	563.9	603.5	597.1	567.3	575.4	555.2	610.7	610.7
	min	526.4	525.0	525.4	527.2	527.6	520.7	523.5	521.4	526.2	525.7	523.6	525.2	520.7
2.0	mean	552.6	553.7	553.9	554.7	554.8	554.7	559.2	557.4	556.0	554.0	553.7	553.5	554.9
	max	568.1	565.5	567.8	568.5	585.9	577.5	620.8	614.2	580.9	584.6	568.4	622.8	622.8
	min	538.6	538.4	537.4	539.7	541.4	535.0	536.9	535.0	539.1	539.0	536.9	538.1	535.0

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

1028 Bjørnøya

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	310.1	311.4	312.1	312.7	314.9	317.2	320.8	319.6	315.8	311.7	309.9	309.2	313.8
0.0	max	321.0	324.2	325.2	323.9	324.7	329.2	334.4	353.0	334.8	359.6	323.5	321.6	359.6
	min	297.4	279.3	299.7	297.6	301.0	294.9	296.6	303.2	286.3	275.1	282.8	285.9	275.1
	mean	320.2	321.3	321.6	322.0	324.2	327.3	330.3	330.2	325.7	321.3	320.2	319.8	323.7
0.1	max	333.8	333.4	335.5	334.7	336.4	339.9	344.7	345.7	342.6	343.8	338.7	329.9	345.7
	min	306.0	304.6	308.3	307.1	310.1	316.7	316.4	314.5	307.0	287.0	307.9	303.1	287.0
	mean	332.3	333.4	333.7	334.1	336.1	339.2	341.9	341.9	337.4	333.3	332.3	331.9	335.6
0.2	max	346.0	345.2	347.5	347.0	349.0	353.4	359.3	358.7	354.8	356.8	348.9	341.8	359.3
	min	319.4	316.6	321.4	320.4	323.6	328.4	315.8	322.9	321.0	299.2	321.7	316.4	299.2
	mean	344.6	345.5	345.8	346.3	348.3	351.2	353.6	353.8	349.3	345.5	344.6	344.0	347.7
0.3	max	357.4	357.8	359.4	359.2	369.2	367.0	370.6	374.4	366.4	369.5	358.0	353.5	374.4
	min	332.6	328.6	334.2	333.5	334.9	333.3	325.2	335.7	333.7	311.1	335.2	329.5	311.1
	mean	356.8	357.7	357.9	358.5	360.5	363.0	365.3	365.5	361.3	357.9	357.0	356.1	359.8
0.4	max	368.9	369.8	371.1	371.5	372.9	385.4	384.2	386.0	378.0	381.8	368.5	366.0	386.0
	min	345.8	340.7	342.7	343.6	347.0	345.4	336.3	344.8	346.5	323.0	345.7	342.5	323.0
	mean	368.9	369.8	370.0	370.5	372.7	374.7	377.1	377.3	373.3	370.2	369.4	368.2	371.9
0.5	max	380.3	381.9	382.7	383.7	384.4	406.1	396.2	399.6	389.6	393.9	380.2	377.7	406.1
	min	351.6	352.8	358.4	353.7	359.2	356.3	347.4	356.7	359.7	335.8	358.0	355.5	335.8
	mean	381.0	382.0	382.1	382.6	384.9	386.6	388.7	389.0	385.4	382.6	381.6	380.3	383.9
0.6	max	392.1	394.0	394.8	395.9	396.6	426.0	407.8	414.2	401.7	405.8	392.2	389.7	426.0
	min	361.2	365.0	365.4	366.6	367.8	370.1	359.9	368.7	369.1	348.7	371.2	366.9	348.7
	mean	393.0	394.1	394.2	394.7	396.9	398.3	400.2	400.8	397.5	394.8	393.9	392.5	395.9
0.7	max	406.1	405.3	406.8	407.9	408.7	431.3	420.7	426.8	416.1	417.6	405.3	401.9	431.3
	min	374.4	372.5	378.0	379.6	378.0	375.1	369.0	369.4	380.8	361.7	375.7	376.2	361.7
	mean	405.0	406.3	406.2	406.8	409.0	410.2	411.9	412.4	409.6	407.0	406.0	404.6	407.9
0.8	max	420.7	416.7	418.8	419.9	427.0	432.9	435.8	439.1	430.6	427.4	417.8	414.5	439.1
	min	386.9	384.7	390.6	389.4	390.0	390.0	381.1	380.6	395.0	374.7	385.0	387.5	374.7
	mean	417.0	418.4	418.1	418.9	421.1	421.8	423.5	424.0	421.6	419.0	418.1	416.8	419.9
0.9	max	432.5	429.7	430.7	431.9	448.1	443.0	450.7	451.1	440.6	436.9	430.0	427.2	451.1
	min	399.4	397.6	403.1	402.1	402.1	401.2	393.6	394.8	405.3	383.0	398.2	398.8	383.0
	mean	429.2	430.5	430.2	430.9	433.0	433.6	435.1	435.6	433.7	431.1	430.3	429.0	431.9
1.0	max	441.3	441.9	443.3	443.4	458.5	455.2	461.1	461.8	452.9	445.2	440.7	439.6	461.8
	min	412.1	410.5	414.0	414.1	414.3	415.7	406.4	409.9	419.3	395.0	411.5	410.7	395.0
	mean	441.3	442.6	442.3	443.0	445.0	445.3	446.8	447.3	445.8	443.1	442.4	441.2	443.9
1.1	max	450.6	453.9	454.6	455.7	468.5	467.1	473.4	471.2	467.0	455.1	453.5	451.9	473.4
	min	422.8	420.6	425.9	426.3	422.7	424.7	418.4	421.6	429.3	408.2	424.7	423.4	408.2
	mean	453.5	454.7	454.4	455.2	457.0	457.0	458.7	459.2	457.8	455.1	454.6	453.4	455.9
1.2	max	462.8	465.9	466.7	467.9	478.7	479.1	483.4	480.7	477.1	467.1	465.8	464.0	483.4
	min	433.8	433.2	438.4	439.2	440.3	437.7	431.8	435.8	441.7	421.0	437.2	436.4	421.0
	mean	465.8	466.8	466.7	467.5	469.2	469.0	470.7	471.3	469.9	467.2	467.0	465.8	468.1
1.3	max	476.5	478.0	480.5	480.3	489.2	492.1	493.9	493.8	487.5	479.1	477.3	476.3	493.9
	min	446.3	446.9	450.1	452.8	454.1	450.6	443.4	448.5	454.3	432.5	450.8	447.9	432.5
	mean	478.2	478.9	479.0	479.8	481.3	481.1	482.8	483.4	481.9	479.4	479.3	478.3	480.3
1.4	max	489.1	491.6	493.1	492.6	499.7	504.3	507.0	507.0	497.4	491.1	489.5	487.9	507.0
	min	459.4	460.4	462.9	465.3	465.9	462.6	457.1	460.8	466.0	444.4	463.1	461.5	444.4
	mean	490.7	491.1	491.3	492.2	493.6	493.4	495.1	495.5	494.0	491.7	491.6	490.8	492.6
1.5	max	501.5	504.0	505.2	504.8	511.0	518.7	517.3	518.7	509.5	503.5	501.5	499.9	518.7
	min	472.6	472.5	475.6	477.7	476.5	476.2	471.7	473.3	478.1	459.1	475.4	475.1	459.1
	mean	503.1	503.6	503.7	504.6	505.9	505.7	507.3	507.6	506.1	504.0	503.9	503.2	504.9
1.6	max	513.4	516.4	517.3	517.8	522.9	531.4	528.9	529.8	521.7	515.9	513.6	512.2	531.4
	min	485.6	486.0	488.6	490.3	489.3	488.4	484.7	485.2	488.3	473.6	487.0	488.5	473.6
	mean	515.6	516.1	516.2	517.1	518.2	518.1	519.8	520.0	518.3	516.3	516.3	515.7	517.3
1.7	max	525.7	528.9	529.6	530.1	533.3	543.7	541.8	541.1	534.1	528.4	525.8	524.8	543.7
	min	498.8	499.2	501.7	502.9	503.5	500.8	497.9	497.9	501.1	487.5	500.2	501.3	487.5
	mean	528.2	528.8	528.7	529.6	530.7	530.5	532.3	532.5	530.6	528.7	528.8	528.3	529.8
1.8	max	538.5	541.3	541.8	541.0	543.6	555.7	553.4	552.4	546.9	540.9	537.9	537.3	555.7
	min	511.9	512.3	514.7	514.9	516.3	513.0	511.0	511.1	515.1	500.7	513.7	514.0	500.7
	mean	541.0	541.4	541.3	542.3	543.1	542.8	544.8	544.8	543.1	541.2	541.4	540.9	542.3
1.9	max	550.6	553.8	554.1	553.7	555.3	567.7	565.6	563.8	560.8	553.3	550.6	550.0	567.7
	min	525.0	525.1	528.0	528.8	529.3	525.6	524.3	524.4	528.8	514.1	527.3	526.3	514.1
	mean	553.7	554.1	554.0	554.9	555.7	555.4	557.3	557.3	555.6	553.7	554.0	553.6	554.9
2.0	max	563.5	566.4	566.3	566.5	567.7	579.7	577.8	575.3	573.8	565.8	563.2	562.8	579.7
	min	538.5	538.1	541.3	542.0	542.2	538.1	537.5	537.6	542.0	527.6	540.9	538.5	527.6

Table 3.5.2 Values of the modified refractiviy given pr. 100 m, units M/km. mean values with extreme values for each month and the year.

3.6 Refractivity gradient statistics in the lower atmosphere

The procedure for examining the refractivity gradients in the lower troposphere is to use the computed refractivity values pr 100 m and compute the gradient as the difference of N-values between adjacent levels divided by 100.

The number of gradient values will be somewhat less than the number of refractivity values caused by the necessity to have two adjacent levels of valid refractivity values.

In table 3.6.1 we show mean monthly values of refractivity gradients in N-units pr km together with standard deviation and extreme values. We have given the height of the gradient values at the bottom of the 100 m layer in concern, i.e. the value given for 0 m should strictly speaking be valid for the height of 50 m and so for all other layers.

If we make a comparison of the computed gradients with the gradients emerging from the standard or normal atmosphere we find a considerable spread. As the "normal" value should be about -40 N-units pr km we find for instance at 1152 Bodø values of three times this value in the lowest 100 m. We note, however, that the gradient values in the higher levels is more normal. If we look at the minimum values we find values less than -157 N-units in nearly all months for all stations investigated. This low values give all rise to a possibility of ducting situations and the extreme low values for the monthly means for the coastal stations again give evidence for the rather special propagation conditions as previous mentioned for these areas.

We find the lowest values in the warm season thus giving the possibility to anomalous propagation greatest in this season. The variation or the standard deviation have also the greatest values in this months.

We also mention the maritime station 9661 Mike with more normal gradient values from the bottom of the troposphere and through all the investigated heights.

In figure 3.6.1 we show the percentage of time dN/dz is less than given values in the lower 100 m of the atmosphere.

In table 3.6.2 are given values for the gradient defined as [N(h) - N(0)]/h for heights h up to 2 km. We find more stable values as the height increases, as a consequence of more even meteorological conditions in this areas.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-39.2	-38.2	-37.6	-45.9	-58.3	-57.4	-61.6	-53.3	-47.0	-40.6	-39.1	-39.1	-46.5
	sd	13.9	13.6	16.3	27.0	42.2	45.2	49.7	39.9	31.7	24.3	18.6	15.8	32.1
0.0	max	-2.0	1.0	-6.0	32.0	31.0	71.0	50.0	127.0	71.0	33.0	39.0	17.0	127.0
	min	-147.0	-137.0	-143.0	-214.0	-380.0	-282.0	-300.0	-227.0	-253.0	-209.0	-157.0	-118.0	-380.0
	no	613	557	615	594	611	594	610	602	597	610	595	588	7186
	mean	-40.0	-38.7	-36.0	-39.0	-43.5	-45.9	-48.3	-46.7	-43.7	-41.1	-39.9	-39.8	-41.9
	sd	13.4	14.2	11.1	17.3	24.6	28.1	31.3	26.3	20.7	17.6	13.9	14.3	20.8
0.1	max	-20.0	-17.0	-12.0	-4.0	-10.0	52.0	9.0	18.0	5.0	7.0	-4.0	0.0	52.0
	min	-209.0	-159.0	-130.0	-176.0	-283.0	-222.0	-230.0	-206.0	-165.0	-159.0	-150.0	-173.0	-283.0
	no	614	557	616	594	611	594	610	602	597	610	595	588	7188
	mean	-41.0	-40.2	-36.4	-36.5	-37.2	-39.5	-42.2	-43.1	-40.7	-42.8	-41.3	-40.1	-40.1
	sd	14.4	17.7	12.5	17.1	19.8	22.2	29.0	27.1	20.0	24.3	16.8	17.2	20.5
0.2	max	-21.0	-19.0	-8.0	107.0	28.0	49.0	58.0	9.0	-2.0	64.0	-13.0	24.0	107.0
	min	-140.0	-219.0	-129.0	-185.0	-169.0	-172.0	-341.0	-281.0	-219.0	-352.0	-160.0	-203.0	-352.0
	no	614	557	616	594	611	594	610	602	597	610	595	587	7187
	mean	-41.7	-40.8	-37.0	-34.7	-35.0	-38.7	-40.7	-41.4	-39.3	-43.9	-41.4	-40.4	-39.6
	sd	15.9	19.3	13.4	16.6	18.2	25.1	30.6	24.7	16.8	25.3	16.9	16.4	20.7
0.3	max	0.0	20.0	6.0	198.0	55.0	44.0	124.0	1.0	-4.0	52.0	12.0	0.0	198.0
	min	-165.0	-213.0	-136.0	-106.0	-170.0	-331.0	-337.0	-299.0	-166.0	-284.0	-167.0	-204.0	-337.0
	no	614	556	616	594	611	594	610	602	597	610	595	587	7186
	mean	-40.8	-41.6	-37.9	-35.2	-33.6	-37.2	-40.6	-40.7	-39.7	-43.7	-41.0	-40.4	-39.4
	sd	16.8	18.3	14.2	15.0	15.0	23.1	28.4	22.6	18.8	21.6	18.6	16.0	19.6
0.4	max	1.0	-14.0	-5.0	22.0	50.0	40.0	39.0	30.0	10.0	11.0	9.0	-10.0	50.0
	min	-287.0	-158.0	-135.0	-137.0	-125.0	-240.0	-268.0	-199.0	-224.0	-219.0	-167.0	-164.0	-287.0
	no	615	556	616	594	610	594	610	601	597	610	595	587	7185
	mean	-40.2	-41.2	-38.2	-34.6	-33.2	-37.2	-40.4	-40.4	-40.5	-44.4	-40.4	-39.7	-39.2
	sd	16.0	15.7	12.9	14.3	15.3	19.8	30.1	22.6	20.2	24.0	18.0	14.1	19.4
0.5	max	26.0	-14.0	-4.0	25.0	49.0	36.0	31.0	31.0	26.0	23.0	90.0	38.0	90.0
	min	-232.0	-132.0	-138.0	-140.0	-153.0	-163.0	-323.0	-253.0	-234.0	-232.0	-166.0	-156.0	-323.0
	no	615	556	616	593	610	594	610	601	597	610	595	586	7183
	mean	-39.7	-41.0	-38.3	-36.1	-33.1	-38.4	-39.6	-39.9	-40.5	-45.3	-40.7	-40.0	-39.4
	sd	15.6	15.5	13.0	23.3	18.1	20.8	25.3	22.2	26.1	26.5	18.8	16.3	20.8
0.6	max	84.0	-16.0	31.0	46.0	104.0	32.0	66.0	94.0	238.0	75.0	71.0	3.0	238.0
	min	-147.0	-142.0	-112.0	-448.0	-179.0	-173.0	-297.0	-283.0	-283.0	-339.0	-180.0	-159.0	-448.0
	no	615	556	616	593	610	594	609	602	596	609	595	587	7182
	mean	-39.0	-40.3	-38.0	-34.8	-33.0	-38.7	-38.9	-40.1	-41.7	-42.8	-40.7	-39.7	-39.0
	sd	12.7	16.8	13.2	16.5	20.3	22.6	24.9	21.8	21.0	20.5	19.7	17.1	19.4
0.7	max	30.0	58.0	23.0	227.0	172.0	29.0	99.0	83.0	12.0	55.0	91.0	5.0	227.0
	min	-113.0	-144.0	-168.0	-120.0	-224.0	-276.0	-299.0	-221.0	-239.0	-204.0	-219.0	-263.0	-299.0
	no	615	556	616	593	609	593	609	602	596	609	595	588	7181
	mean	-38.8	-39.1	-37.4	-34.9	-35.2	-38.8	-38.7	-40.9	-42.5	-42.7	-40.6	-39.6	-39.1
	sd	12.2	15.3	12.9	12.7	18.4	21.9	21.7	22.9	22.7	20.8	17.2	15.5	18.4
0.8	max	-2.0	60.0	14.0	23.0	56.0	23.0	35.0	59.0	27.0	6.0	17.0	9.0	60.0
	min	-140.0	-176.0	-163.0	-113.0	-235.0	-190.0	-238.0	-291.0	-251.0	-216.0	-178.0	-202.0	-291.0
	no	615	556	616	591	609	593	610	601	596	610	595	588	7180
	mean	-38.7	-37.7	-37.6	-35.3	-35.6	-37.5	-38.8	-42.6	-42.7	-42.3	-40.3	-39.3	-39.0
	sd	14.4	13.8	12.4	12.9	17.3	20.2	26.2	24.0	20.2	22.4	17.4	14.7	18.7
0.9	max	13.0	-2.0	0.0	7.0	56.0	20.0	190.0	105.0	34.0	59.0	17.0	5.0	190.0
	min	-160.0	-202.0	-138.0	-120.0	-216.0	-253.0	-253.0	-213.0	-199.0	-237.0	-186.0	-154.0	-253.0
	no	615	555	616	591	610	594	611	601	596	610	595	588	7182

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-37.8	-36.2	-37.0	-35.9	-35.5	-36.8	-38.5	-43.8	-42.9	-40.9	-39.2	-38.3	-38.6
	sd	13.5	10.7	11.8	15.3	16.5	18.4	25.6	24.0	23.0	18.7	16.3	13.3	18.1
1.0	max	5.0	10.0	56.0	25.0	57.0	30.0	193.0	65.0	66.0	49.0	21.0	-3.0	193.0
	min	-155.0	-107.0	-107.0	-164.0	-132.0	-205.0	-260.0	-192.0	-247.0	-151.0	-181.0	-141.0	-260.0
	no	615	554	616	593	610	593	611	602	596	610	595	588	7183
	mean	-36.5	-35.6	-36.7	-35.3	-35.5	-36.3	-38.0	-43.8	-40.9	-40.8	-37.7	-37.3	-37.9
	sd	12.8	11.7	13.9	12.0	19.0	17.1	28.1	24.2	23.1	20.6	16.5	13.1	18.6
1.1	max	12.0	10.0	31.0	15.0	44.0	91.0	271.0	33.0	176.0	25.0	33.0	5.0	271.0
	min	-170.0	-124.0	-143.0	-122.0	-229.0	-134.0	-183.0	-277.0	-177.0	-242.0	-190.0	-164.0	-277.0
	no	615	555	616	593	610	592	611	602	596	610	595	588	7183
	mean	-35.3	-35.0	-35.6	-34.5	-35.4	-36.5	-38.7	-41.5	-40.0	-39.9	-36.4	-36.0	-37.1
	sd	14.5	12.9	14.4	13.2	17.0	19.2	22.5	24.5	21.6	21.4	16.8	16.0	18.4
1.2	max	11.0	81.0	78.0	4.0	11.0	83.0	147.0	146.0	101.0	59.0	33.0	75.0	147.0
	min	-183.0	-133.0	-132.0	-175.0	-195.0	-149.0	-175.0	-214.0	-190.0	-194.0	-223.0	-180.0	-223.0
	no	615	556	616	593	610	592	611	602	596	610	595	587	7183
	mean	-33.7	-33.7	-33.8	-32.5	-34.9	-37.0	-38.6	-39.0	-38.9	-38.5	-34.6	-34.1	-35.8
	sd	11.3	13.0	12.9	12.7	17.9	23.0	22.8	25.3	20.1	21.3	15.2	13.7	18.2
1.3	max	29.0	67.0	52.0	60.0	31.0	53.0	54.0	146.0	35.0	95.0	56.0	33.0	146.0
	min	-104.0	-135.0	-143.0	-114.0	-180.0	-225.0	-234.0	-186.0	-172.0	-181.0	-180.0	-140.0	-234.0
	no	616	555	617	593	610	591	611	602	596	610	595	588	7184
	mean	-33.6	-32.5	-32.6	-31.9	-35.1	-35.8	-38.1	-38.6	-37.4	-36.9	-33.5	-34.2	-35.0
	sd	14.0	12.7	11.4	11.8	18.5	18.4	23.1	27.6	22.0	20.2	12.5	14.0	18.1
1.4	max	29.0	41.0	39.0	57.0	32.0	64.0	48.0	96.0	26.0	55.0	66.0	18.0	96.0
	min	-172.0	-178.0	-120.0	-98.0	-214.0	-171.0	-188.0	-261.0	-254.0	-244.0	-103.0	-159.0	-261.0
	no	616	554	616	593	613	592	613	603	597	611	595	588	7191
	mean	-33.1	-32.5	-32.7	-31.6	-35.1	-35.9	-37.2	-38.1	-36.5	-35.3	-33.5	-33.2	-34.6
	sd	11.6	11.7	10.5	11.8	20.5	18.6	21.2	23.0	19.9	17.1	12.8	11.7	16.6
1.5	max	25.0	5.0	19.0	59.0	63.0	15.0	73.0	87.0	66.0	51.0	22.0	8.0	87.0
	min	-129.0	-146.0	-82.0	-116.0	-204.0	-178.0	-202.0	-202.0	-201.0	-128.0	-200.0	-109.0	-204.0
	no	616	555	616	593	613	593	613	603	597	611	595	588	7193
	mean	-32.0	-31.3	-33.0	-32.6	-34.7	-35.7	-37.0	-37.2	-36.4	-33.4	-32.6	-32.9	-34.1
	sd	10.3	9.5	12.3	12.8	16.8	19.8	21.7	21.2	22.9	17.7	10.9	12.8	16.5
1.6	max	82.0	18.0	36.0	32.0	39.0	45.0	70.0	77.0	81.0	83.0	57.0	29.0	83.0
	min	-97.0	-95.0	-119.0	-126.0	-133.0	-172.0	-209.0	-189.0	-374.0	-233.0	-94.0	-135.0	-374.0
	no	614	555	617	591	613	593	613	603	597	611	595	588	7190
	mean	-31.7	-30.7	-32.9	-32.2	-35.1	-35.0	-37.7	-36.0	-35.5	-32.2	-32.5	-31.6	-33.6
	sd	9.9	9.6	11.0	11.9	17.5	20.6	21.3	21.4	19.7	17.3	11.9	10.9	16.1
1.7	max	35.0	30.0	11.0	0.0	40.0	115.0	38.0	73.0	123.0	131.0	33.0	26.0	131.0
	min	-139.0	-96.0	-113.0	-141.0	-177.0	-196.0	-184.0	-159.0	-192.0	-151.0	-149.0	-98.0	-196.0
	no	614	555	617	591	613	594	613	603	597	611	595	588	7191
	mean	-31.0	-30.5	-31.8	-31.8	-34.0	-34.8	-36.7	-35.7	-34.5	-32.6	-32.0	-30.6	-33.0
	sd	8.7	10.3	10.5	11.8	15.4	19.2	21.4	22.1	17.4	15.3	11.2	10.9	15.3
1.8	max	42.0	26.0	10.0	9.0	50.0	62.0	30.0	87.0	59.0	66.0	15.0	39.0	87.0
	min	-92.0	-116.0	-127.0	-162.0	-145.0	-205.0	-201.0	-228.0	-175.0	-147.0	-104.0	-110.0	-228.0
	no	616	554	617	593	613	594	613	602	597	611	595	588	7193
	mean	-30.7	-29.7	-30.5	-31.6	-33.3	-34.8	-34.6	-33.9	-33.2	-32.4	-31.2	-30.0	-32.2
	sd	10.3	8.3	10.0	11.1	15.3	16.5	20.9	18.6	17.9	15.9	9.9	10.0	14.4
1.9	max	6.0	21.0	62.0	31.0	62.0	30.0	101.0	76.0	175.0	73.0	13.0	39.0	175.0
	min	-169.0	-97.0	-109.0	-118.0	-117.0	-128.0	-176.0	-178.0	-185.0	-166.0	-104.0	-106.0	-185.0
	no	616	554	617	593	613	594	612	601	597	611	595	588	7191

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1415 Sola

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	-57.8	-57.1	-49.7	-62.7	-68.6	-77.6	-85.1	-83.5	-79.3	-71.8	-65.0	-60.5	-68.0
	sd	34.4	37.7	34.5	47.3	51.0	54.1	60.2	56.0	53.2	55.4	36.4	38.0	48.4
	max	191.0	157.0	170.0	184.0	177.0	266.0	205.0	190.0	200.0	175.0	142.0	157.0	266.0
	min	-234.0	-375.0	-210.0	-432.0	-279.0	-291.0	-421.0	-389.0	-403.0	-854.0	-205.0	-221.0	-854.0
	no	618	557	611	596	618	589	541	593	560	596	595	607	7081
0.1	mean	-40.2	-39.8	-37.4	-40.4	-46.0	-46.3	-45.5	-43.4	-44.5	-45.2	-41.9	-40.6	-42.6
	sd	13.4	15.9	13.6	20.5	28.1	27.3	27.8	20.5	20.6	16.1	17.7	13.8	20.4
	max	9.0	40.0	-7.0	56.0	43.0	29.0	23.0	30.0	9.0	5.0	20.0	1.0	56.0
	min	-127.0	-115.0	-131.0	-201.0	-235.0	-212.0	-192.0	-170.0	-218.0	-105.0	-149.0	-126.0	-235.0
	no	618	555	612	596	618	589	541	591	559	594	593	606	7072
0.2	mean	-37.2	-36.5	-34.9	-36.7	-40.0	-43.7	-41.9	-41.7	-37.1	-38.8	-37.0	-35.4	-38.4
	sd	12.1	13.2	11.3	16.7	20.0	26.4	26.0	24.4	14.5	14.4	15.2	10.6	18.0
	max	0.0	0.0	-3.0	64.0	-5.0	45.0	40.0	25.0	-1.0	17.0	26.0	-2.0	64.0
	min	-119.0	-132.0	-148.0	-178.0	-161.0	-191.0	-202.0	-339.0	-116.0	-146.0	-207.0	-86.0	-339.0
	no	618	556	613	596	618	588	541	592	559	594	593	607	7075
0.3	mean	-36.0	-34.8	-34.5	-35.5	-40.0	-43.8	-44.6	-42.5	-36.2	-36.3	-35.6	-34.8	-37.8
	sd	12.1	12.5	9.9	15.8	22.1	29.8	29.0	29.3	14.8	14.0	15.1	10.8	19.6
	max	7.0	24.0	-4.0	40.0	19.0	40.0	41.0	88.0	29.0	24.0	72.0	6.0	88.0
	min	-128.0	-118.0	-97.0	-164.0	-217.0	-238.0	-241.0	-391.0	-140.0	-110.0	-170.0	-95.0	-391.0
	no	617	556	614	596	618	588	541	593	560	595	595	607	7080
0.4	mean	-35.5	-34.6	-34.8	-35.3	-39.7	-43.8	-45.7	-44.4	-36.9	-37.1	-35.6	-35.5	-38.2
	sd	12.4	11.5	10.1	13.6	21.6	31.4	35.7	31.4	16.4	15.8	14.9	11.8	20.9
	max	-2.0	-4.0	5.0	34.0	10.0	105.0	281.0	41.0	50.0	-7.0	62.0	2.0	281.0
	min	-184.0	-117.0	-100.0	-122.0	-199.0	-316.0	-330.0	-333.0	-142.0	-168.0	-188.0	-146.0	-333.0
	no	616	556	614	596	618	588	541	593	560	595	595	607	7079
0.5	mean	-35.2	-35.1	-35.3	-35.5	-40.0	-43.8	-48.0	-43.6	-37.9	-37.8	-36.0	-35.8	-38.6
	sd	14.3	13.0	13.5	16.9	19.8	28.2	35.8	24.8	22.4	16.6	13.7	12.8	20.7
	max	131.0	13.0	4.0	91.0	44.0	30.0	145.0	114.0	345.0	7.0	42.0	4.0	345.0
	min	-165.0	-176.0	-233.0	-265.0	-176.0	-312.0	-253.0	-236.0	-166.0	-187.0	-139.0	-142.0	-312.0
	no	617	556	613	596	618	588	541	593	560	595	595	607	7079
0.6	mean	-34.7	-35.7	-35.0	-35.8	-38.7	-43.7	-48.3	-43.4	-41.9	-38.1	-36.8	-35.5	-38.9
	sd	12.9	14.6	12.5	16.9	18.6	33.6	36.8	26.5	24.8	16.1	13.9	12.3	21.7
	max	113.0	81.0	26.0	27.0	19.0	93.0	74.0	168.0	34.0	9.0	6.0	16.0	168.0
	min	-135.0	-145.0	-143.0	-231.0	-194.0	-380.0	-353.0	-212.0	-360.0	-146.0	-147.0	-134.0	-380.0
	no	617	556	612	596	618	588	541	593	559	595	595	607	7077
0.7	mean	-35.7	-36.1	-35.1	-34.1	-37.0	-42.3	-45.2	-43.0	-40.8	-39.9	-37.3	-36.0	-38.5
	sd	10.9	14.1	11.6	14.1	22.0	31.1	36.7	28.1	24.2	23.2	15.2	12.2	21.9
	max	14.0	-7.0	21.0	56.0	86.0	116.0	138.0	127.0	140.0	70.0	14.0	-3.0	140.0
	min	-127.0	-191.0	-116.0	-134.0	-273.0	-235.0	-347.0	-279.0	-227.0	-275.0	-189.0	-140.0	-347.0
	no	617	555	611	596	618	588	541	593	559	595	595	607	7075
0.8	mean	-36.0	-35.6	-35.8	-33.9	-36.3	-41.2	-41.6	-41.9	-37.9	-39.3	-36.6	-36.1	-37.6
	sd	14.5	13.9	14.7	13.3	19.7	30.2	29.8	25.8	17.6	22.7	13.3	10.8	20.0
	max	59.0	37.0	9.0	79.0	90.0	125.0	94.0	109.0	68.0	102.0	2.0	15.0	125.0
	min	-221.0	-172.0	-196.0	-120.0	-175.0	-267.0	-304.0	-277.0	-205.0	-322.0	-149.0	-112.0	-322.0
	no	617	555	612	596	618	588	540	593	559	595	595	607	7075
0.9	mean	-35.7	-34.8	-35.6	-34.8	-35.8	-40.1	-39.5	-40.8	-38.1	-38.5	-35.6	-37.2	-37.2
	sd	14.3	13.0	12.0	14.1	17.6	26.4	26.2	25.7	19.0	22.6	14.0	14.9	19.1
	max	69.0	58.0	18.0	16.0	55.0	71.0	144.0	85.0	78.0	182.0	56.0	9.0	182.0
	min	-167.0	-147.0	-107.0	-161.0	-183.0	-260.0	-170.0	-317.0	-190.0	-226.0	-117.0	-186.0	-317.0
	no	617	556	613	596	617	588	540	593	558	596	595	606	7075

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1415 Sola

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-36.4	-35.3	-35.2	-35.4	-35.4	-38.6	-39.4	-39.0	-39.1	-37.9	-35.9	-37.2	-37.0
	sd	15.3	14.1	10.8	13.3	18.0	25.2	27.3	36.7	20.8	19.6	19.2	18.1	21.0
1.0	max	54.0	17.0	-5.0	36.0	82.0	67.0	99.0	579.0	24.0	55.0	103.0	19.0	579.0
	min	-148.0	-168.0	-127.0	-116.0	-189.0	-243.0	-255.0	-293.0	-207.0	-256.0	-230.0	-223.0	-293.0
	no	617	555	613	596	617	588	540	593	558	595	595	606	7073
	mean	-34.9	-35.6	-35.4	-35.4	-35.0	-37.7	-38.7	-38.7	-40.4	-38.2	-35.9	-36.2	-36.8
	sd	12.5	14.0	10.5	16.8	16.1	25.1	23.0	23.0	25.2	21.4	19.6	14.3	19.1
1.1	max	3.0	22.0	36.0	91.0	66.0	116.0	52.0	90.0	21.0	82.0	65.0	55.0	116.0
	min	-131.0	-173.0	-93.0	-204.0	-128.0	-268.0	-191.0	-209.0	-231.0	-225.0	-269.0	-140.0	-269.0
	no	617	555	613	596	618	588	540	592	559	595	595	607	7075
	mean	-34.3	-36.0	-35.5	-35.0	-35.6	-37.0	-38.8	-39.3	-38.8	-38.4	-36.0	-37.3	-36.8
	sd	12.9	15.4	15.9	16.2	18.6	28.6	27.5	24.5	22.1	22.2	18.1	20.6	20.7
1.2	max	4.0	26.0	149.0	33.0	56.0	329.0	56.0	81.0	74.0	79.0	54.0	38.0	329.0
	min	-168.0	-191.0	-164.0	-211.0	-188.0	-252.0	-368.0	-264.0	-177.0	-189.0	-194.0	-236.0	-368.0
	no	616	555	613	596	618	588	540	592	559	595	595	607	7074
	mean	-34.2	-35.8	-35.3	-34.9	-35.5	-36.7	-39.4	-38.5	-39.1	-40.0	-36.0	-36.2	-36.8
	sd	13.0	15.9	15.1	17.0	18.6	22.4	29.3	24.4	30.9	23.7	17.7	18.4	21.1
1.3	max	-2.0	20.0	81.0	88.0	29.0	83.0	69.0	69.0	112.0	38.0	77.0	64.0	112.0
	min	-143.0	-214.0	-147.0	-209.0	-201.0	-178.0	-288.0	-214.0	-318.0	-207.0	-156.0	-188.0	-318.0
	no	616	555	613	594	618	588	540	592	559	595	595	607	7072
	mean	-33.7	-34.7	-35.5	-35.5	-35.3	-36.0	-38.2	-36.2	-37.9	-38.4	-36.1	-35.5	-36.1
	sd	11.1	14.0	18.2	19.3	17.7	23.5	28.1	20.9	28.5	21.3	20.3	16.1	20.4
1.4	max	0.0	43.0	36.0	107.0	20.0	46.0	142.0	132.0	143.0	32.0	95.0	33.0	143.0
	min	-127.0	-123.0	-228.0	-167.0	-188.0	-326.0	-254.0	-170.0	-337.0	-186.0	-218.0	-180.0	-337.0
	no	616	555	613	594	617	588	540	592	559	595	595	607	7071
	mean	-34.5	-33.5	-33.5	-35.2	-34.9	-34.8	-38.1	-38.0	-36.7	-36.5	-35.3	-33.9	-35.4
	sd	14.9	15.2	12.5	17.3	17.9	19.0	27.6	26.8	19.8	19.1	16.7	15.8	19.0
1.5	max	7.0	143.0	33.0	51.0	53.0	119.0	67.0	47.0	94.0	71.0	30.0	115.0	143.0
	min	-158.0	-176.0	-126.0	-170.0	-232.0	-139.0	-262.0	-316.0	-183.0	-170.0	-190.0	-161.0	-316.0
	no	616	555	613	594	617	588	540	592	558	595	595	605	7068
	mean	-33.9	-33.5	-32.3	-33.5	-34.7	-34.3	-36.9	-37.6	-37.1	-36.4	-35.1	-34.6	-35.0
	sd	12.8	13.9	10.1	13.8	17.4	17.4	24.8	24.2	22.0	22.2	16.6	14.2	18.0
1.6	max	6.0	98.0	23.0	38.0	16.0	38.0	88.0	93.0	76.0	177.0	33.0	27.0	177.0
	min	-143.0	-147.0	-110.0	-153.0	-232.0	-161.0	-207.0	-245.0	-211.0	-204.0	-155.0	-148.0	-245.0
	no	616	555	613	594	618	588	540	592	559	595	594	605	7069
	mean	-33.4	-33.5	-32.5	-33.6	-33.4	-34.3	-34.6	-37.6	-37.2	-36.0	-34.2	-34.9	-34.6
	sd	11.9	13.2	12.2	14.1	15.7	18.6	19.0	23.7	24.0	20.2	16.4	15.4	17.5
1.7	max	37.0	26.0	17.0	32.0	91.0	89.0	77.0	231.0	101.0	128.0	89.0	34.0	231.0
	min	-122.0	-129.0	-150.0	-140.0	-144.0	-165.0	-120.0	-150.0	-310.0	-196.0	-165.0	-132.0	-310.0
	no	616	555	613	594	617	588	540	592	560	595	593	606	7069
	mean	-32.5	-32.8	-32.0	-32.8	-32.7	-34.9	-35.3	-36.8	-37.4	-35.6	-33.6	-33.6	-34.1
	sd	10.8	12.4	12.3	14.6	15.6	18.3	19.7	25.5	22.2	20.1	16.9	18.8	17.8
1.8	max	8.0	-6.0	37.0	51.0	65.0	39.0	54.0	177.0	57.0	81.0	126.0	122.0	177.0
	min	-98.0	-128.0	-120.0	-104.0	-157.0	-153.0	-191.0	-193.0	-189.0	-179.0	-178.0	-161.0	-193.0
	no	615	555	613	594	617	588	540	592	560	595	594	605	7068
	mean	-31.9	-32.2	-31.8	-32.0	-32.4	-33.4	-34.5	-36.9	-36.6	-34.5	-32.8	-32.4	-33.4
	sd	12.6	11.9	12.3	14.8	16.1	15.6	18.8	21.7	24.8	18.5	16.0	13.1	16.8
1.9	max	85.0	28.0	32.0	53.0	62.0	34.0	77.0	24.0	118.0	149.0	73.0	24.0	149.0
	min	-114.0	-126.0	-146.0	-193.0	-166.0	-125.0	-151.0	-216.0	-210.0	-131.0	-158.0	-147.0	-216.0
	no	615	555	613	594	617	588	540	592	559	595	594	605	7067

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year.
no is number of observations.

1384 Gardermoen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-50.4	-49.5	-50.4	-51.8	-63.6	-80.9	-87.0	-77.8	-69.2	-53.3	-51.6	-49.8	-61.2
	sd	26.9	26.3	28.3	36.0	48.2	56.1	59.1	51.3	43.4	30.9	28.5	27.6	42.4
0.0	max	180.0	65.0	129.0	161.0	161.0	121.0	93.0	140.0	196.0	165.0	121.0	145.0	196.0
	min	-168.0	-172.0	-148.0	-409.0	-346.0	-315.0	-433.0	-324.0	-227.0	-328.0	-180.0	-155.0	-433.0
	no	591	557	617	595	615	591	585	565	595	608	582	608	7109
	mean	-41.4	-40.6	-38.2	-36.7	-40.0	-46.3	-49.4	-49.0	-44.1	-41.4	-40.6	-41.6	-42.4
	sd	12.5	14.0	10.9	11.5	19.5	23.0	28.9	24.4	17.6	14.2	14.5	14.3	18.3
0.1	max	-10.0	-7.0	-9.0	-4.0	-3.0	-1.0	10.0	46.0	11.0	-7.0	-1.0	-10.0	46.0
	min	-120.0	-130.0	-93.0	-114.0	-241.0	-189.0	-253.0	-238.0	-142.0	-111.0	-124.0	-118.0	-253.0
	no	592	557	617	595	615	591	585	564	595	607	582	608	7108
	mean	-40.3	-39.5	-36.8	-34.6	-35.4	-39.0	-41.9	-42.3	-40.0	-40.6	-39.2	-40.8	-39.2
	sd	12.4	12.3	10.6	9.3	13.4	16.1	20.8	18.5	13.6	14.4	11.9	13.2	14.4
0.2	max	-14.0	-14.0	-15.0	12.0	1.0	-8.0	6.0	65.0	19.0	-11.0	13.0	-13.0	65.0
	min	-138.0	-120.0	-173.0	-106.0	-121.0	-146.0	-151.0	-160.0	-97.0	-139.0	-114.0	-115.0	-173.0
	no	592	558	617	595	615	591	585	564	595	607	583	608	7110
	mean	-38.8	-39.1	-36.4	-33.9	-34.7	-37.8	-40.1	-41.1	-39.1	-39.8	-38.9	-38.9	-38.2
	sd	11.2	12.8	10.5	13.6	13.8	16.1	19.5	18.9	14.4	15.5	11.8	11.4	14.5
0.3	max	1.0	12.0	-17.0	193.0	-2.0	-10.0	12.0	55.0	19.0	7.0	-18.0	-3.0	193.0
	min	-139.0	-134.0	-141.0	-93.0	-152.0	-199.0	-175.0	-191.0	-139.0	-193.0	-131.0	-90.0	-199.0
	no	592	556	618	595	615	591	585	564	594	607	584	608	7109
	mean	-37.8	-38.8	-35.9	-34.0	-34.3	-36.1	-38.8	-40.4	-38.7	-40.0	-37.3	-37.2	-37.4
	sd	11.2	12.8	10.5	12.4	16.2	14.9	21.1	19.1	16.1	16.6	11.5	10.4	14.9
0.4	max	44.0	3.0	-11.0	3.0	10.0	28.0	101.0	47.0	24.0	10.0	18.0	23.0	101.0
	min	-106.0	-146.0	-147.0	-205.0	-248.0	-120.0	-183.0	-180.0	-149.0	-176.0	-108.0	-123.0	-248.0
	no	591	557	617	595	615	591	585	564	594	606	584	608	7107
	mean	-37.5	-39.1	-35.6	-33.0	-32.7	-34.9	-37.7	-39.1	-37.1	-39.8	-37.6	-36.5	-36.7
	sd	12.8	15.3	10.0	9.5	12.7	16.1	24.7	20.8	14.3	18.5	13.8	10.4	15.6
0.5	max	-9.0	-11.0	7.0	-10.0	19.0	101.0	90.0	93.0	18.0	33.0	37.0	-4.0	101.0
	min	-150.0	-183.0	-115.0	-94.0	-139.0	-135.0	-282.0	-197.0	-162.0	-207.0	-182.0	-125.0	-282.0
	no	591	559	614	595	615	591	585	564	595	606	584	607	7106
	mean	-38.0	-37.7	-35.3	-32.9	-32.1	-34.8	-35.6	-38.2	-37.0	-39.2	-37.1	-36.4	-36.2
	sd	16.3	13.5	9.2	9.7	12.7	15.8	20.6	20.8	12.9	14.8	12.8	11.5	14.7
0.6	max	14.0	21.0	-10.0	2.0	27.0	19.0	38.0	11.0	-8.0	-11.0	49.0	-5.0	49.0
	min	-173.0	-142.0	-119.0	-132.0	-193.0	-180.0	-223.0	-209.0	-122.0	-167.0	-103.0	-157.0	-223.0
	no	589	559	614	595	615	591	584	564	595	606	583	607	7102
	mean	-34.9	-35.6	-34.0	-32.2	-31.3	-32.6	-34.0	-36.3	-35.4	-38.4	-37.1	-35.2	-34.7
	sd	11.1	12.4	9.1	11.6	10.2	12.4	17.3	18.1	12.4	17.4	15.5	10.7	13.6
0.7	max	27.0	25.0	11.0	0.0	4.0	33.0	59.0	4.0	-4.0	26.0	38.0	19.0	59.0
	min	-147.0	-177.0	-91.0	-179.0	-79.0	-110.0	-180.0	-192.0	-143.0	-240.0	-150.0	-107.0	-240.0
	no	589	559	616	595	615	591	584	564	595	606	582	608	7104
	mean	-34.2	-35.4	-33.5	-32.4	-31.7	-32.7	-34.2	-36.2	-34.7	-37.9	-35.5	-34.8	-34.4
	sd	8.9	12.4	9.3	11.0	10.5	11.3	19.8	16.8	11.8	17.6	13.7	10.4	13.3
0.8	max	25.0	-2.0	15.0	-3.0	2.0	26.0	89.0	10.0	27.0	46.0	70.0	17.0	89.0
	min	-81.0	-174.0	-125.0	-122.0	-113.0	-98.0	-234.0	-240.0	-148.0	-184.0	-139.0	-91.0	-240.0
	no	589	558	617	594	615	591	585	564	594	606	582	608	7103
	mean	-34.4	-35.1	-33.6	-32.4	-31.4	-33.2	-34.3	-36.6	-35.3	-39.1	-35.2	-34.7	-34.6
	sd	10.6	13.3	10.6	11.6	9.8	11.9	18.1	18.3	14.6	23.2	13.1	10.0	14.4
0.9	max	10.0	96.0	5.0	13.0	7.0	21.0	55.0	5.0	15.0	109.0	44.0	-1.0	109.0
	min	-153.0	-125.0	-151.0	-144.0	-92.0	-108.0	-166.0	-249.0	-212.0	-249.0	-120.0	-106.0	-249.0
	no	589	558	616	594	615	591	585	564	594	606	581	608	7101

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1384 Gardermoen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-33.7	-34.2	-33.0	-32.0	-31.2	-32.6	-35.8	-37.2	-36.0	-38.1	-35.0	-34.5	-34.4
	sd	10.3	10.7	9.2	10.7	11.7	12.3	23.8	19.2	14.8	23.0	13.1	12.4	15.1
1.0	max	22.0	37.0	5.0	4.0	40.0	7.0	39.0	52.0	1.0	16.0	37.0	9.0	52.0
	min	-96.0	-118.0	-102.0	-127.0	-113.0	-131.0	-342.0	-220.0	-127.0	-333.0	-173.0	-151.0	-342.0
	no	590	559	616	595	615	591	585	564	595	606	582	608	7106
	mean	-34.0	-33.9	-33.1	-32.2	-31.2	-33.3	-34.9	-37.1	-35.8	-35.8	-35.1	-33.7	-34.2
	sd	11.1	11.8	9.1	11.6	11.8	12.8	17.7	19.5	15.2	16.7	13.1	11.1	13.8
1.1	max	24.0	62.0	10.0	4.0	34.0	48.0	51.0	48.0	23.0	65.0	20.0	34.0	65.0
	min	-116.0	-142.0	-91.0	-162.0	-113.0	-119.0	-162.0	-216.0	-165.0	-203.0	-145.0	-117.0	-216.0
	no	587	559	615	595	615	591	585	564	594	606	583	608	7102
	mean	-33.5	-33.8	-33.0	-32.3	-31.7	-33.2	-34.5	-36.4	-34.9	-36.6	-34.0	-33.2	-33.9
	sd	12.5	11.9	9.5	13.0	11.4	12.4	18.6	22.1	15.4	19.8	12.6	11.9	14.7
1.2	max	20.0	41.0	11.0	43.0	3.0	22.0	69.0	179.0	37.0	32.0	3.0	5.0	179.0
	min	-196.0	-124.0	-110.0	-194.0	-135.0	-172.0	-221.0	-235.0	-175.0	-240.0	-149.0	-114.0	-240.0
	no	586	558	615	594	615	591	585	564	594	606	583	608	7099
	mean	-32.7	-33.9	-32.9	-32.5	-32.6	-33.3	-33.4	-35.7	-33.1	-35.9	-33.3	-32.5	-33.5
	sd	9.7	12.7	10.3	12.1	16.9	12.3	18.6	20.3	15.4	19.2	12.9	10.1	14.7
1.3	max	5.0	-3.0	7.0	16.0	47.0	8.0	105.0	28.0	99.0	45.0	30.0	6.0	105.0
	min	-118.0	-124.0	-116.0	-110.0	-245.0	-122.0	-158.0	-278.0	-155.0	-187.0	-167.0	-99.0	-278.0
	no	587	556	615	593	615	591	585	564	594	605	583	608	7096
	mean	-32.1	-32.5	-32.9	-32.3	-33.5	-34.0	-33.0	-35.0	-33.1	-34.2	-33.5	-31.9	-33.2
	sd	9.2	10.0	10.7	11.5	16.7	16.0	17.8	17.6	15.5	18.6	12.2	11.2	14.3
1.4	max	11.0	3.0	16.0	5.0	20.0	7.0	61.0	89.0	30.0	127.0	22.0	49.0	127.0
	min	-108.0	-113.0	-91.0	-113.0	-224.0	-204.0	-168.0	-209.0	-168.0	-171.0	-135.0	-137.0	-224.0
	no	588	557	614	594	615	591	585	564	594	605	582	608	7097
	mean	-32.1	-31.7	-32.5	-32.7	-33.8	-33.4	-33.2	-34.5	-33.3	-34.0	-33.1	-32.1	-33.0
	sd	9.8	8.8	10.0	13.1	14.2	15.6	15.5	17.2	15.6	15.4	14.7	10.6	13.7
1.5	max	18.0	9.0	16.0	38.0	0.0	66.0	51.0	41.0	61.0	43.0	46.0	15.0	66.0
	min	-115.0	-101.0	-102.0	-107.0	-129.0	-152.0	-143.0	-207.0	-160.0	-114.0	-214.0	-104.0	-214.0
	no	588	559	615	595	615	590	583	564	595	606	582	608	7100
	mean	-31.9	-31.5	-31.7	-31.3	-33.0	-32.4	-35.7	-33.9	-34.0	-34.2	-31.9	-32.0	-32.8
	sd	10.2	10.4	9.8	11.7	15.4	14.4	21.1	19.1	17.2	14.8	13.6	10.8	14.5
1.6	max	18.0	20.0	44.0	40.0	11.0	57.0	37.0	74.0	28.0	59.0	30.0	9.0	74.0
	min	-120.0	-107.0	-101.0	-122.0	-194.0	-112.0	-206.0	-159.0	-196.0	-146.0	-167.0	-123.0	-206.0
	no	588	558	615	595	615	589	583	564	595	606	583	607	7098
	mean	-31.7	-31.8	-31.4	-31.7	-32.0	-33.0	-35.2	-34.1	-34.9	-34.2	-31.9	-30.9	-32.7
	sd	9.6	10.3	8.7	12.0	13.9	14.4	20.2	19.2	18.1	17.1	11.5	9.3	14.3
1.7	max	7.0	17.0	1.0	39.0	34.0	16.0	50.0	41.0	52.0	28.0	11.0	13.0	52.0
	min	-99.0	-107.0	-114.0	-110.0	-179.0	-174.0	-199.0	-169.0	-267.0	-179.0	-109.0	-80.0	-267.0
	no	588	557	614	595	614	590	585	564	595	605	583	607	7097
	mean	-30.5	-31.1	-31.0	-32.0	-32.6	-32.9	-34.2	-33.4	-35.0	-32.9	-31.0	-30.4	-32.2
	sd	7.7	9.9	9.2	12.5	15.3	16.1	16.5	17.8	17.1	19.1	11.1	10.0	14.1
1.8	max	4.0	13.0	20.0	22.0	43.0	101.0	21.0	119.0	30.0	132.0	38.0	33.0	132.0
	min	-71.0	-92.0	-98.0	-129.0	-152.0	-158.0	-162.0	-130.0	-210.0	-136.0	-106.0	-104.0	-210.0
	no	588	557	615	595	614	591	585	564	595	605	583	607	7099
	mean	-29.4	-29.7	-30.3	-31.2	-32.0	-32.8	-33.8	-34.0	-34.3	-32.3	-30.1	-30.3	-31.7
	sd	7.8	8.1	9.1	12.2	12.7	14.5	19.0	17.0	21.4	16.2	11.8	9.6	14.0
1.9	max	10.0	3.0	-7.0	13.0	27.0	31.0	56.0	49.0	137.0	29.0	65.0	16.0	137.0
	min	-90.0	-104.0	-98.0	-126.0	-116.0	-159.0	-214.0	-157.0	-206.0	-134.0	-125.0	-91.0	-214.0
	no	588	558	616	594	615	591	585	564	595	606	583	607	7102

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

2225 Frøsøn

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-46.1	-45.3	-40.6	-36.7	-44.2	-52.8	-47.4	-46.1	-43.0	-38.4	-39.6	-41.3	-43.2
	sd	21.0	20.4	15.2	23.5	22.3	36.6	31.8	27.5	20.2	19.4	14.6	13.5	23.1
0.0	max	10.0	53.0	16.0	173.0	9.0	40.0	32.0	36.0	-2.0	78.0	10.0	1.0	173.0
	min	-174.0	-160.0	-120.0	-103.0	-138.0	-352.0	-215.0	-210.0	-142.0	-123.0	-131.0	-118.0	-352.0
	no	207	255	305	253	237	237	131	215	269	240	220	167	2736
	mean	-39.2	-38.7	-35.4	-32.7	-35.2	-37.3	-39.9	-39.8	-36.8	-37.8	-35.3	-37.7	-36.9
	sd	13.6	14.0	10.9	12.1	12.5	15.7	18.2	17.0	13.0	20.3	10.6	14.4	14.5
0.1	max	-12.0	5.0	15.0	77.0	-4.0	23.0	0.0	-2.0	1.0	3.0	12.0	-3.0	77.0
	min	-132.0	-125.0	-101.0	-90.0	-95.0	-101.0	-118.0	-123.0	-109.0	-206.0	-88.0	-143.0	-206.0
	no	207	255	305	253	237	237	132	215	269	240	220	167	2737
	mean	-37.3	-36.6	-34.0	-31.9	-33.3	-35.7	-37.2	-37.9	-35.7	-37.0	-35.3	-35.8	-35.5
	sd	12.7	11.8	8.5	7.6	9.4	14.4	14.6	15.4	11.2	16.2	11.0	10.8	12.2
0.2	max	-15.0	2.0	13.0	-19.0	-13.0	0.0	-2.0	-3.0	6.0	12.0	14.0	-6.0	14.0
	min	-134.0	-105.0	-79.0	-77.0	-81.0	-152.0	-95.0	-105.0	-107.0	-159.0	-100.0	-122.0	-159.0
	no	207	255	305	253	237	237	132	215	269	240	220	167	2737
	mean	-36.5	-35.6	-34.0	-31.5	-33.0	-34.4	-34.7	-36.7	-34.9	-37.0	-35.7	-34.4	-34.8
	sd	11.3	10.8	8.8	7.4	9.3	12.6	11.0	14.6	8.8	15.8	11.7	8.0	11.2
0.3	max	-14.0	-16.0	12.0	10.0	-12.0	-5.0	-3.0	8.0	-1.0	-3.0	15.0	-9.0	15.0
	min	-124.0	-120.0	-91.0	-65.0	-74.0	-143.0	-72.0	-126.0	-71.0	-140.0	-97.0	-85.0	-143.0
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737
	mean	-35.9	-35.5	-34.3	-31.3	-32.2	-33.4	-32.4	-35.3	-35.2	-36.3	-35.2	-34.0	-34.3
	sd	10.5	14.9	10.6	7.8	8.1	8.7	13.7	14.9	10.6	13.1	11.1	7.1	11.3
0.4	max	-13.0	-16.0	18.0	-3.0	-6.0	-9.0	75.0	46.0	-3.0	-10.0	16.0	-18.0	75.0
	min	-102.0	-199.0	-136.0	-90.0	-65.0	-76.0	-65.0	-139.0	-111.0	-117.0	-102.0	-73.0	-199.0
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737
	mean	-35.2	-34.5	-34.8	-32.7	-31.4	-33.5	-32.8	-35.3	-35.3	-35.5	-34.7	-34.1	-34.2
	sd	9.5	10.3	10.7	11.7	9.5	8.5	10.3	12.1	10.9	10.1	10.8	7.6	10.4
0.5	max	-14.0	-3.0	-4.0	-6.0	56.0	-10.0	-3.0	11.0	-4.0	-10.0	24.0	-20.0	56.0
	min	-75.0	-119.0	-102.0	-132.0	-66.0	-76.0	-76.0	-96.0	-117.0	-92.0	-103.0	-86.0	-132.0
	no	207	255	305	252	237	237	132	215	269	241	220	167	2737
	mean	-34.7	-33.5	-34.7	-33.3	-31.7	-33.6	-32.8	-35.7	-36.1	-36.0	-35.0	-33.9	-34.3
	sd	9.0	13.0	10.1	12.3	8.2	9.4	16.1	12.6	11.7	11.8	11.5	6.4	11.2
0.6	max	-15.0	110.0	-4.0	-7.0	11.0	-12.0	91.0	8.0	5.0	-13.0	18.0	-21.0	110.0
	min	-70.0	-82.0	-94.0	-135.0	-79.0	-86.0	-88.0	-92.0	-96.0	-119.0	-134.0	-60.0	-135.0
	no	206	255	305	252	237	237	132	215	269	241	220	167	2736
	mean	-34.3	-34.0	-35.1	-34.3	-32.5	-32.9	-34.5	-35.9	-36.7	-36.3	-34.5	-35.0	-34.7
	sd	9.5	9.3	11.4	14.0	9.8	9.5	23.3	14.0	13.3	12.2	17.3	7.5	12.8
0.7	max	13.0	25.0	-18.0	-9.0	-7.0	3.0	110.0	16.0	7.0	-6.0	123.0	-23.0	123.0
	min	-88.0	-95.0	-153.0	-135.0	-88.0	-88.0	-165.0	-99.0	-108.0	-103.0	-180.0	-67.0	-180.0
	no	205	255	305	252	237	237	132	215	269	241	220	167	2735
	mean	-35.1	-35.1	-35.3	-34.1	-32.1	-33.0	-35.9	-36.0	-37.4	-35.7	-34.2	-35.4	-34.9
	sd	8.5	11.9	11.9	11.6	11.7	10.7	17.6	14.6	15.4	12.5	10.1	8.9	12.3
0.8	max	-16.0	21.0	-9.0	-5.0	36.0	1.0	33.0	12.0	11.0	6.0	9.0	-22.0	36.0
	min	-86.0	-124.0	-160.0	-114.0	-99.0	-112.0	-138.0	-114.0	-165.0	-123.0	-101.0	-73.0	-165.0
	no	206	255	305	252	237	237	132	215	269	241	220	167	2736
	mean	-34.9	-35.3	-35.3	-33.8	-31.9	-33.2	-33.9	-35.2	-37.0	-35.3	-34.5	-36.2	-34.7
	sd	13.3	11.3	11.3	10.8	10.9	10.9	13.7	13.1	13.0	13.7	12.0	12.0	12.2
0.9	max	4.0	-7.0	2.0	-13.0	11.0	-2.0	28.0	7.0	7.0	12.0	11.0	-21.0	28.0
	min	-173.0	-117.0	-90.0	-131.0	-87.0	-80.0	-126.0	-91.0	-101.0	-151.0	-111.0	-106.0	-173.0
	no	207	255	305	252	237	237	132	215	268	241	220	167	2736

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

2225 Frøsøn

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-33.8	-34.9	-34.9	-34.3	-32.2	-33.9	-34.3	-36.0	-36.8	-34.8	-34.2	-35.1	-34.6
	sd	8.3	12.3	12.0	16.8	11.2	12.0	17.2	16.6	16.6	12.5	11.8	10.0	13.4
1.0	max	-19.0	16.0	5.0	50.0	11.0	-6.0	61.0	29.0	27.0	2.0	9.0	-22.0	61.0
	min	-73.0	-108.0	-108.0	-171.0	-110.0	-97.0	-132.0	-126.0	-172.0	-119.0	-112.0	-98.0	-172.0
	no	207	255	305	252	237	237	132	214	268	241	220	167	2735
	mean	-34.6	-33.8	-33.6	-33.6	-32.7	-35.4	-35.4	-36.1	-35.8	-35.0	-33.7	-34.0	-34.4
	sd	16.3	12.6	10.1	12.6	12.0	17.9	20.4	16.2	13.9	13.2	16.5	10.7	14.3
1.1	max	-12.0	6.0	2.0	-14.0	-5.0	-8.0	39.0	16.0	26.0	-8.0	93.0	-20.0	93.0
	min	-170.0	-136.0	-87.0	-123.0	-92.0	-191.0	-148.0	-130.0	-133.0	-123.0	-167.0	-113.0	-191.0
	no	207	255	305	252	237	237	132	214	268	241	220	167	2735
	mean	-32.6	-32.6	-32.5	-31.9	-34.1	-35.5	-33.7	-35.5	-35.1	-35.5	-34.5	-33.2	-33.9
	sd	12.2	10.4	10.6	8.9	14.1	18.2	15.3	14.2	12.9	13.5	12.8	8.9	12.9
1.2	max	-16.0	37.0	14.0	3.0	-4.0	3.0	24.0	14.0	26.0	-7.0	4.0	-20.0	37.0
	min	-148.0	-75.0	-91.0	-88.0	-132.0	-154.0	-126.0	-108.0	-104.0	-122.0	-111.0	-80.0	-154.0
	no	207	255	305	252	236	237	132	215	268	241	220	167	2735
	mean	-31.1	-32.7	-31.9	-32.5	-34.7	-35.3	-35.7	-36.4	-34.6	-35.5	-33.3	-32.8	-33.8
	sd	9.9	10.4	10.0	9.6	13.5	17.1	20.0	18.7	11.9	15.8	10.3	9.2	13.3
1.3	max	24.0	-3.0	8.0	0.0	-6.0	28.0	31.0	28.0	26.0	3.0	-14.0	-20.0	31.0
	min	-112.0	-115.0	-131.0	-83.0	-101.0	-135.0	-150.0	-168.0	-89.0	-167.0	-79.0	-104.0	-168.0
	no	207	255	305	252	236	237	132	214	268	241	220	167	2734
	mean	-31.5	-32.6	-31.0	-32.7	-33.9	-35.5	-35.1	-35.9	-33.9	-34.4	-32.1	-31.7	-33.3
	sd	10.8	10.1	8.0	9.5	12.9	17.6	18.3	17.8	10.7	13.4	8.3	6.6	12.4
1.4	max	-9.0	-15.0	5.0	-2.0	11.0	39.0	26.0	19.0	10.0	1.0	-16.0	-14.0	39.0
	min	-134.0	-110.0	-78.0	-81.0	-143.0	-131.0	-180.0	-155.0	-113.0	-138.0	-69.0	-66.0	-180.0
	no	207	255	305	252	237	237	132	214	268	240	220	167	2734
	mean	-30.6	-31.3	-30.6	-32.5	-34.3	-34.6	-33.9	-34.3	-33.1	-33.9	-31.7	-30.8	-32.6
	sd	7.6	13.0	7.3	10.6	15.6	17.5	16.5	14.2	9.5	13.2	8.1	6.8	12.1
1.5	max	-4.0	70.0	-3.0	-4.0	10.0	36.0	43.0	28.0	-6.0	-2.0	-16.0	4.0	70.0
	min	-77.0	-145.0	-85.0	-98.0	-137.0	-136.0	-133.0	-121.0	-88.0	-113.0	-80.0	-58.0	-145.0
	no	207	255	305	252	237	237	132	214	268	240	220	167	2734
	mean	-29.8	-30.7	-30.9	-32.1	-33.1	-32.1	-33.4	-34.2	-32.3	-33.3	-30.9	-30.7	-31.9
	sd	7.0	10.0	8.3	9.0	9.6	13.4	14.4	15.1	10.1	16.7	7.3	8.0	11.1
1.6	max	4.0	37.0	-5.0	-5.0	1.0	32.0	16.0	37.0	2.0	10.0	-17.0	12.0	37.0
	min	-78.0	-96.0	-93.0	-82.0	-76.0	-84.0	-135.0	-173.0	-95.0	-219.0	-79.0	-86.0	-219.0
	no	207	255	305	252	237	237	132	214	268	240	220	167	2734
	mean	-29.4	-30.7	-30.7	-31.7	-33.3	-31.6	-33.6	-33.9	-32.5	-31.9	-30.0	-31.8	-31.7
	sd	6.3	8.4	7.5	9.3	11.4	12.3	16.1	14.1	13.0	10.7	7.3	14.0	11.0
1.7	max	1.0	-6.0	-9.0	-6.0	-13.0	51.0	13.0	95.0	5.0	22.0	-11.0	10.0	95.0
	min	-58.0	-92.0	-71.0	-95.0	-127.0	-100.0	-136.0	-86.0	-169.0	-96.0	-84.0	-144.0	-169.0
	no	207	255	305	252	237	237	132	214	268	239	220	167	2733
	mean	-29.0	-30.0	-30.2	-30.9	-32.7	-31.4	-32.5	-34.5	-32.2	-31.1	-30.0	-31.0	-31.2
	sd	8.9	7.2	7.8	9.2	12.5	13.5	11.6	14.4	10.7	9.9	7.3	9.1	10.4
1.8	max	62.0	-7.0	-13.0	16.0	20.0	34.0	8.0	5.0	2.0	-3.0	5.0	-14.0	62.0
	min	-75.0	-67.0	-95.0	-78.0	-129.0	-126.0	-84.0	-117.0	-77.0	-93.0	-62.0	-96.0	-129.0
	no	206	255	305	252	237	237	132	214	268	239	220	166	2731
	mean	-29.9	-30.2	-29.0	-30.9	-32.5	-30.3	-33.5	-34.4	-32.2	-29.8	-29.4	-30.1	-30.9
	sd	6.8	8.1	7.9	9.6	12.9	10.1	12.7	14.7	10.2	16.7	5.8	6.9	10.7
1.9	max	-6.0	-15.0	6.0	13.0	17.0	14.0	0.0	-2.0	12.0	174.0	-14.0	-16.0	174.0
	min	-63.0	-91.0	-114.0	-96.0	-103.0	-111.0	-108.0	-124.0	-79.0	-104.0	-51.0	-79.0	-124.0
	no	206	254	305	252	236	237	132	214	268	239	220	166	2729

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year.
no is number of observations.

1241 Ørland

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-61.7	-62.5	-65.0	-68.1	-85.2	-92.8	-93.9	-90.6	-85.3	-75.6	-68.3	-61.7	-75.8
	sd	47.0	43.6	40.5	41.7	58.5	66.2	65.8	66.0	57.7	51.1	39.1	41.9	53.9
0.0	max	205.0	175.0	186.0	147.0	200.0	97.0	105.0	108.0	193.0	199.0	190.0	273.0	273.0
	min	-270.0	-399.0	-228.0	-246.0	-347.0	-589.0	-398.0	-341.0	-369.0	-257.0	-199.0	-292.0	-589.0
	no	587	535	589	583	606	567	542	588	573	597	582	583	6932
	mean	-42.3	-42.6	-41.6	-40.1	-44.3	-47.8	-47.2	-49.0	-44.5	-46.2	-43.3	-41.1	-44.2
	sd	17.6	16.4	14.3	15.2	22.7	28.9	25.0	30.0	18.2	19.5	15.2	14.4	20.6
0.1	max	0.0	89.0	-14.0	-5.0	45.0	-4.0	56.0	29.0	1.0	31.0	33.0	48.0	89.0
	min	-154.0	-117.0	-129.0	-124.0	-186.0	-251.0	-247.0	-357.0	-123.0	-136.0	-107.0	-105.0	-357.0
	no	587	534	589	583	607	567	544	590	573	597	582	582	6935
	mean	-39.0	-38.7	-36.9	-36.6	-38.5	-41.2	-42.3	-45.8	-39.9	-41.6	-39.2	-37.9	-39.8
	sd	14.3	14.6	11.5	12.0	17.4	22.0	21.0	27.4	15.2	16.6	13.2	12.3	17.3
0.2	max	18.0	71.0	55.0	12.0	34.0	40.0	100.0	14.0	-1.0	5.0	0.0	16.0	100.0
	min	-124.0	-126.0	-84.0	-126.0	-151.0	-242.0	-239.0	-350.0	-171.0	-169.0	-116.0	-102.0	-350.0
	no	587	535	588	583	606	568	544	591	573	597	582	582	6936
	mean	-37.5	-37.1	-35.7	-35.6	-37.0	-39.7	-42.9	-42.1	-37.8	-38.7	-37.1	-36.2	-38.1
	sd	13.4	13.9	10.9	10.1	16.5	19.7	27.8	16.3	12.3	13.7	12.6	11.4	15.7
0.3	max	-5.0	32.0	35.0	-5.0	27.0	45.0	43.0	10.0	-1.0	2.0	-6.0	-7.0	45.0
	min	-129.0	-145.0	-95.0	-95.0	-152.0	-209.0	-417.0	-164.0	-128.0	-112.0	-119.0	-107.0	-417.0
	no	588	536	588	582	606	568	544	589	573	597	582	582	6935
	mean	-35.9	-36.9	-35.4	-35.3	-35.6	-39.5	-41.4	-40.9	-37.6	-37.9	-36.8	-35.7	-37.4
	sd	10.8	13.7	10.8	9.8	16.3	20.3	20.6	14.4	11.9	13.4	12.0	11.3	14.3
0.4	max	17.0	11.0	34.0	-10.0	79.0	107.0	115.0	27.0	5.0	2.0	41.0	-8.0	115.0
	min	-96.0	-134.0	-93.0	-165.0	-191.0	-209.0	-222.0	-172.0	-113.0	-132.0	-94.0	-142.0	-222.0
	no	588	536	589	582	606	569	544	589	573	597	582	582	6937
	mean	-36.1	-35.9	-35.2	-35.1	-35.1	-38.8	-40.7	-40.6	-37.7	-37.0	-36.1	-34.8	-36.9
	sd	11.2	11.6	10.3	9.0	15.1	21.8	21.4	18.1	11.9	15.4	13.4	9.1	14.7
0.5	max	1.0	8.0	-3.0	-2.0	21.0	156.0	51.0	20.0	9.0	10.0	35.0	1.0	156.0
	min	-110.0	-100.0	-118.0	-107.0	-265.0	-194.0	-357.0	-351.0	-138.0	-197.0	-187.0	-82.0	-357.0
	no	588	536	589	583	606	569	544	588	573	596	582	582	6936
	mean	-34.8	-34.9	-34.6	-34.6	-35.2	-39.4	-38.7	-39.3	-36.1	-35.7	-35.1	-34.2	-36.0
	sd	9.6	11.4	10.2	9.9	17.7	25.3	19.7	17.1	11.2	15.3	12.3	9.9	15.0
0.6	max	11.0	-2.0	-4.0	-6.0	66.0	67.0	198.0	74.0	1.0	33.0	20.0	2.0	198.0
	min	-84.0	-112.0	-113.0	-106.0	-263.0	-356.0	-141.0	-245.0	-157.0	-164.0	-152.0	-92.0	-356.0
	no	587	535	589	583	605	569	544	588	573	596	582	581	6932
	mean	-34.0	-35.0	-33.8	-34.7	-35.0	-38.4	-38.8	-38.8	-35.5	-34.7	-33.4	-33.4	-35.4
	sd	8.8	12.7	9.3	10.7	20.1	22.0	19.4	25.3	10.5	13.3	10.4	8.3	15.4
0.7	max	7.0	0.0	-9.0	-5.0	96.0	56.0	148.0	172.0	13.0	103.0	17.0	-3.0	172.0
	min	-81.0	-136.0	-115.0	-121.0	-280.0	-214.0	-202.0	-498.0	-105.0	-141.0	-106.0	-88.0	-498.0
	no	587	535	589	583	605	568	544	589	573	596	582	581	6932
	mean	-33.4	-34.1	-32.8	-34.4	-36.3	-37.4	-40.1	-37.9	-36.5	-33.8	-32.6	-33.2	-35.2
	sd	8.9	10.6	9.1	11.5	17.9	18.5	25.2	16.8	15.1	9.3	12.4	7.9	14.6
0.8	max	-1.0	-4.0	12.0	20.0	97.0	75.0	92.0	18.0	21.0	4.0	32.0	-2.0	97.0
	min	-99.0	-124.0	-112.0	-157.0	-205.0	-220.0	-284.0	-182.0	-276.0	-79.0	-217.0	-91.0	-284.0
	no	584	536	589	583	606	568	542	588	573	597	582	581	6929
	mean	-33.2	-33.4	-32.5	-34.1	-35.1	-36.6	-39.6	-36.9	-35.1	-32.6	-32.8	-32.9	-34.5
	sd	9.6	12.2	8.8	12.1	20.8	20.5	27.3	19.0	10.9	9.4	11.8	8.8	15.5
0.9	max	-4.0	13.0	7.0	-2.0	131.0	53.0	161.0	23.0	46.0	1.0	10.0	1.0	161.0
	min	-120.0	-178.0	-85.0	-181.0	-287.0	-236.0	-295.0	-305.0	-125.0	-90.0	-168.0	-129.0	-305.0
	no	584	536	589	583	606	568	542	588	573	597	582	581	6929

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1241 Ørland

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-33.0	-33.2	-32.7	-33.4	-34.6	-35.6	-37.3	-36.6	-34.4	-33.4	-32.9	-33.0	-34.2
	sd	9.0	10.7	8.5	9.6	15.1	21.6	20.4	16.8	9.9	10.7	10.8	9.3	13.5
1.0	max	-6.0	9.0	17.0	13.0	58.0	106.0	194.0	30.0	27.0	0.0	-2.0	-6.0	194.0
	min	-100.0	-141.0	-94.0	-109.0	-143.0	-234.0	-172.0	-219.0	-80.0	-135.0	-154.0	-152.0	-234.0
	no	587	536	589	582	606	568	542	588	573	597	582	581	6931
	mean	-32.7	-32.4	-32.9	-33.8	-34.5	-34.8	-36.7	-37.3	-34.0	-33.7	-32.6	-32.9	-34.0
	sd	9.1	8.6	8.5	10.3	13.6	30.3	19.8	19.2	13.2	11.1	10.6	8.4	15.0
1.1	max	29.0	3.0	-3.0	14.0	67.0	388.0	115.0	15.0	151.0	-8.0	2.0	-14.0	388.0
	min	-91.0	-113.0	-92.0	-109.0	-125.0	-314.0	-206.0	-294.0	-130.0	-154.0	-132.0	-120.0	-314.0
	no	587	536	589	582	606	569	542	588	573	597	582	581	6932
	mean	-32.5	-31.6	-32.2	-33.4	-34.6	-35.5	-36.4	-36.7	-34.0	-33.6	-32.4	-33.1	-33.8
	sd	9.4	7.7	8.5	11.5	16.3	22.0	17.0	18.4	10.9	11.6	11.1	9.5	13.6
1.2	max	1.0	3.0	-6.0	7.0	33.0	97.0	99.0	34.0	31.0	10.0	17.0	-11.0	99.0
	min	-135.0	-81.0	-91.0	-177.0	-180.0	-279.0	-137.0	-167.0	-144.0	-106.0	-118.0	-145.0	-279.0
	no	586	536	589	583	606	569	544	589	572	597	582	580	6933
	mean	-32.2	-31.7	-31.5	-32.4	-34.5	-35.1	-36.9	-37.4	-34.5	-34.4	-33.2	-32.6	-33.9
	sd	10.0	9.3	6.7	10.0	16.2	25.2	20.2	24.9	16.3	15.5	15.5	10.1	16.2
1.3	max	-3.0	0.0	-6.0	-3.0	68.0	250.0	85.0	224.0	10.0	11.0	3.0	32.0	250.0
	min	-129.0	-128.0	-71.0	-155.0	-122.0	-190.0	-226.0	-230.0	-254.0	-171.0	-207.0	-101.0	-254.0
	no	586	536	589	582	606	569	544	591	572	596	582	580	6933
	mean	-31.5	-31.1	-31.1	-32.4	-33.9	-34.6	-35.9	-36.0	-33.4	-33.6	-31.9	-32.4	-33.2
	sd	9.3	7.9	7.6	13.0	19.1	19.9	19.8	18.2	11.7	14.6	11.6	11.0	14.4
1.4	max	12.0	-1.0	-4.0	47.0	177.0	96.0	97.0	58.0	7.0	31.0	74.0	13.0	177.0
	min	-105.0	-85.0	-93.0	-199.0	-192.0	-191.0	-184.0	-176.0	-117.0	-186.0	-147.0	-170.0	-199.0
	no	585	535	589	581	605	569	544	591	572	596	582	581	6930
	mean	-31.4	-31.4	-30.9	-32.2	-32.3	-35.1	-36.6	-35.6	-33.5	-32.3	-31.9	-31.9	-32.9
	sd	9.9	9.1	8.1	13.7	16.0	18.5	24.0	19.7	13.1	13.3	13.5	9.8	14.8
1.5	max	41.0	-4.0	16.0	55.0	79.0	65.0	140.0	70.0	15.0	23.0	37.0	9.0	140.0
	min	-123.0	-143.0	-85.0	-154.0	-155.0	-177.0	-196.0	-240.0	-136.0	-164.0	-173.0	-133.0	-240.0
	no	584	535	589	580	604	569	544	591	572	596	582	581	6927
	mean	-30.9	-31.4	-30.6	-31.2	-32.4	-35.9	-36.3	-34.9	-33.8	-32.2	-31.3	-31.5	-32.7
	sd	8.6	8.8	7.5	10.1	14.5	20.2	20.0	16.3	13.3	12.7	10.6	9.3	13.4
1.6	max	24.0	6.0	25.0	66.0	54.0	109.0	83.0	44.0	22.0	33.0	49.0	61.0	109.0
	min	-107.0	-89.0	-72.0	-88.0	-102.0	-230.0	-197.0	-136.0	-164.0	-111.0	-107.0	-99.0	-230.0
	no	584	536	589	582	605	569	543	591	572	596	582	581	6930
	mean	-30.5	-31.8	-30.7	-31.9	-33.4	-35.6	-36.0	-34.8	-33.9	-32.8	-31.7	-31.8	-32.9
	sd	8.3	11.3	7.5	11.0	15.4	19.0	21.5	17.2	14.2	14.4	11.2	9.2	14.0
1.7	max	62.0	26.0	-6.0	24.0	37.0	92.0	69.0	51.0	46.0	28.0	18.0	2.0	92.0
	min	-87.0	-145.0	-90.0	-138.0	-153.0	-184.0	-207.0	-185.0	-146.0	-154.0	-154.0	-102.0	-207.0
	no	584	536	589	582	606	569	543	591	572	596	582	581	6931
	mean	-30.5	-30.2	-30.4	-30.7	-32.1	-34.2	-34.1	-33.2	-33.6	-32.4	-31.4	-32.3	-32.1
	sd	12.0	10.5	7.7	9.5	15.9	21.3	18.9	16.6	14.2	14.4	11.9	13.1	14.4
1.8	max	110.0	62.0	3.0	2.0	72.0	116.0	58.0	78.0	48.0	9.0	115.0	17.0	116.0
	min	-142.0	-103.0	-106.0	-109.0	-183.0	-209.0	-157.0	-206.0	-142.0	-244.0	-106.0	-190.0	-244.0
	no	584	536	586	582	606	569	542	591	572	596	582	581	6927
	mean	-30.2	-30.2	-30.4	-30.9	-32.1	-33.7	-34.1	-33.3	-32.7	-33.0	-31.6	-32.2	-32.0
	sd	10.6	11.0	8.6	9.7	17.2	17.9	19.9	17.9	16.4	13.6	11.9	10.0	14.3
1.9	max	71.0	64.0	-1.0	1.0	67.0	93.0	141.0	83.0	187.0	48.0	72.0	14.0	187.0
	min	-98.0	-169.0	-110.0	-98.0	-166.0	-192.0	-208.0	-199.0	-171.0	-119.0	-126.0	-88.0	-208.0
	no	584	536	585	583	606	569	542	591	572	596	582	581	6927

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year.
no is number of observations.

9661 Mike 0/12

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-46.2	-48.0	-53.1	-49.9	-41.6	-44.1	-42.5	-43.2	-44.4	-47.7	-50.5	-51.8	-46.9
	sd	29.9	34.3	37.5	33.5	28.7	36.4	40.8	35.0	34.2	33.6	31.5	31.2	34.2
0.0	max	181.0	171.0	164.0	169.0	49.0	41.0	188.0	150.0	200.0	137.0	189.0	164.0	200.0
	min	-135.0	-178.0	-423.0	-177.0	-295.0	-420.0	-294.0	-224.0	-197.0	-261.0	-274.0	-306.0	-423.0
	no	590	539	592	563	598	586	599	598	549	533	581	581	6909
	mean	-36.6	-35.5	-35.6	-37.1	-38.9	-37.1	-41.2	-38.8	-38.0	-38.3	-38.3	-35.8	-37.6
	sd	11.2	10.3	17.8	15.4	18.3	24.6	24.5	20.6	19.0	21.2	16.4	15.2	18.5
0.1	max	-12.0	16.0	20.0	30.0	15.0	259.0	234.0	14.0	6.0	127.0	25.0	-14.0	259.0
	min	-107.0	-78.0	-365.0	-143.0	-190.0	-187.0	-184.0	-177.0	-203.0	-304.0	-187.0	-305.0	-365.0
	no	591	538	591	561	598	586	598	599	551	534	581	581	6909
	mean	-33.6	-33.9	-33.9	-35.4	-38.5	-39.4	-41.4	-40.2	-37.7	-36.9	-35.3	-34.3	-36.7
	sd	9.8	9.4	16.9	14.6	24.8	24.4	21.3	24.0	21.4	20.3	12.8	14.5	18.9
0.2	max	-11.0	-16.0	14.0	-5.0	46.0	83.0	115.0	107.0	8.0	-11.0	-5.0	-16.0	115.0
	min	-96.0	-82.0	-367.0	-161.0	-397.0	-284.0	-202.0	-271.0	-267.0	-287.0	-151.0	-305.0	-397.0
	no	591	536	591	562	600	586	599	598	551	534	580	582	6910
	mean	-32.8	-34.0	-33.5	-35.4	-39.5	-39.1	-42.0	-42.1	-37.1	-38.3	-33.8	-33.0	-36.7
	sd	10.1	11.1	10.5	15.1	26.5	19.6	21.7	26.0	23.6	34.3	10.5	9.0	20.0
0.3	max	-12.0	-17.0	8.0	19.0	43.0	7.0	30.0	105.0	269.0	-13.0	-14.0	-14.0	269.0
	min	-114.0	-169.0	-120.0	-150.0	-481.0	-200.0	-328.0	-277.0	-222.0	-669.0	-123.0	-120.0	-669.0
	no	592	537	590	563	600	586	599	596	552	534	580	581	6910
	mean	-32.8	-34.3	-34.4	-37.1	-39.4	-41.4	-45.8	-42.2	-38.4	-37.9	-33.3	-33.5	-37.6
	sd	9.3	10.1	10.6	17.3	25.1	26.8	34.6	21.8	19.5	16.3	24.1	8.6	20.8
0.4	max	39.0	-7.0	-2.0	11.0	18.0	67.0	19.0	24.0	131.0	-7.0	493.0	-17.0	493.0
	min	-89.0	-131.0	-137.0	-235.0	-434.0	-293.0	-431.0	-278.0	-266.0	-201.0	-127.0	-90.0	-434.0
	no	592	539	590	562	600	587	597	596	550	533	582	581	6909
	mean	-33.2	-35.1	-35.6	-37.2	-39.4	-42.5	-44.9	-43.9	-38.4	-39.2	-35.0	-34.1	-38.2
	sd	8.3	10.4	12.0	15.3	19.2	27.9	27.5	32.7	19.5	17.9	11.6	10.3	19.8
0.5	max	-13.0	-6.0	25.0	-9.0	15.0	59.0	155.0	61.0	99.0	13.0	20.0	-14.0	155.0
	min	-76.0	-115.0	-117.0	-163.0	-234.0	-294.0	-303.0	-631.0	-218.0	-212.0	-170.0	-163.0	-631.0
	no	592	539	590	563	599	587	597	596	550	533	582	582	6910
	mean	-33.9	-36.3	-35.1	-37.3	-39.8	-40.8	-46.2	-44.0	-38.2	-39.1	-36.2	-34.2	-38.5
	sd	10.0	15.6	20.6	15.8	21.5	24.1	31.1	29.1	18.4	18.3	15.8	11.3	20.7
0.6	max	-18.0	25.0	380.0	37.0	81.0	90.0	63.0	142.0	136.0	46.0	109.0	-14.0	380.0
	min	-170.0	-235.0	-128.0	-191.0	-248.0	-201.0	-353.0	-270.0	-193.0	-185.0	-184.0	-174.0	-353.0
	no	592	539	591	564	599	587	598	596	550	533	580	582	6911
	mean	-34.5	-35.9	-35.8	-37.3	-39.8	-44.2	-44.9	-43.1	-37.8	-39.1	-36.2	-34.5	-38.6
	sd	10.0	13.0	15.7	15.7	24.1	36.4	31.3	29.7	15.8	17.2	13.7	13.0	21.7
0.7	max	-15.0	85.0	222.0	46.0	185.0	93.0	113.0	233.0	97.0	8.0	69.0	-14.0	233.0
	min	-111.0	-157.0	-137.0	-193.0	-258.0	-284.0	-259.0	-275.0	-195.0	-197.0	-176.0	-188.0	-284.0
	no	592	538	591	564	599	584	599	597	550	532	580	582	6908
	mean	-34.7	-37.0	-36.4	-36.3	-38.8	-40.6	-43.3	-41.5	-37.9	-38.3	-36.1	-34.2	-38.0
	sd	9.5	13.4	11.4	14.6	20.9	23.8	29.8	31.5	15.3	17.4	13.3	17.8	19.7
0.8	max	-1.0	-6.0	-12.0	56.0	94.0	90.0	115.0	235.0	68.0	145.0	35.0	298.0	298.0
	min	-109.0	-151.0	-121.0	-164.0	-162.0	-196.0	-302.0	-303.0	-155.0	-142.0	-175.0	-141.0	-303.0
	no	591	538	590	563	599	584	599	597	549	533	581	582	6906
	mean	-35.1	-37.0	-35.0	-36.4	-39.2	-40.8	-42.7	-40.5	-39.3	-38.9	-36.1	-35.2	-38.0
	sd	12.2	15.6	14.1	14.6	19.7	25.8	27.0	24.2	21.0	18.4	13.7	11.2	19.1
0.9	max	39.0	-3.0	184.0	7.0	83.0	152.0	40.0	154.0	19.0	146.0	-12.0	-12.0	184.0
	min	-161.0	-176.0	-123.0	-174.0	-159.0	-181.0	-253.0	-172.0	-301.0	-157.0	-199.0	-110.0	-301.0
	no	591	538	589	563	596	584	598	597	549	534	581	582	6902

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

9661 Mike 0/12

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	mean	-36.5	-36.9	-35.8	-36.7	-40.3	-41.9	-40.5	-40.9	-38.4	-39.4	-37.3	-36.0	-38.4
	sd	15.1	15.6	15.6	14.9	22.2	29.1	28.9	26.8	15.0	20.3	16.3	15.2	20.5
	max	22.0	5.0	186.0	27.0	124.0	190.0	183.0	189.0	14.0	149.0	-7.0	52.0	190.0
	min	-184.0	-186.0	-167.0	-166.0	-181.0	-286.0	-284.0	-240.0	-178.0	-200.0	-258.0	-180.0	-286.0
	no	591	538	590	564	596	583	599	597	551	534	581	581	6905
1.1	mean	-37.2	-36.7	-35.6	-37.0	-40.8	-40.6	-40.2	-43.1	-39.3	-39.8	-38.0	-35.2	-38.6
	sd	14.8	14.9	17.8	16.8	28.8	26.1	26.8	24.7	18.9	25.5	17.7	11.0	21.2
	max	11.0	6.0	188.0	25.0	197.0	147.0	145.0	32.0	21.0	153.0	14.0	9.0	197.0
	min	-146.0	-167.0	-155.0	-188.0	-232.0	-169.0	-199.0	-184.0	-195.0	-240.0	-197.0	-122.0	-240.0
	no	591	538	591	564	599	582	601	596	551	534	581	581	6909
1.2	mean	-37.4	-35.8	-35.5	-37.0	-38.9	-39.1	-40.5	-43.5	-39.2	-38.1	-37.8	-35.8	-38.2
	sd	17.1	13.3	15.3	16.8	21.5	26.6	28.1	29.2	19.8	23.7	17.8	15.3	21.2
	max	13.0	4.0	125.0	22.0	94.0	169.0	147.0	63.0	113.0	158.0	12.0	16.0	169.0
	min	-175.0	-159.0	-120.0	-168.0	-211.0	-175.0	-195.0	-278.0	-202.0	-216.0	-194.0	-175.0	-278.0
	no	590	538	591	562	599	582	601	596	550	534	581	581	6905
1.3	mean	-36.9	-35.3	-34.6	-36.6	-38.4	-39.7	-39.7	-39.5	-40.1	-36.6	-37.1	-34.9	-37.5
	sd	15.7	15.4	11.9	17.8	20.8	27.4	31.0	38.7	21.7	22.7	13.5	14.9	22.5
	max	59.0	22.0	21.0	29.0	58.0	159.0	210.0	327.0	16.0	199.0	6.0	148.0	327.0
	min	-137.0	-144.0	-127.0	-211.0	-138.0	-208.0	-229.0	-229.0	-212.0	-174.0	-108.0	-148.0	-229.0
	no	588	538	593	561	599	581	601	600	550	534	581	580	6906
1.4	mean	-35.9	-36.5	-35.0	-35.4	-35.9	-37.2	-37.6	-40.2	-39.9	-36.3	-36.7	-36.3	-36.9
	sd	14.2	17.7	15.1	20.3	25.3	26.2	23.0	25.8	21.5	21.9	14.9	16.5	20.7
	max	29.0	4.0	16.0	188.0	378.0	195.0	88.0	66.0	62.0	224.0	85.0	57.0	378.0
	min	-146.0	-183.0	-198.0	-289.0	-153.0	-210.0	-183.0	-222.0	-215.0	-187.0	-152.0	-184.0	-289.0
	no	590	538	593	561	599	581	601	600	550	534	581	580	6908
1.5	mean	-34.8	-35.3	-34.4	-34.7	-35.1	-37.0	-36.0	-38.4	-38.4	-36.0	-36.3	-36.4	-36.1
	sd	11.6	16.3	13.7	15.5	18.1	24.1	24.0	27.2	17.8	22.2	14.7	15.3	19.0
	max	-4.0	14.0	23.0	63.0	106.0	117.0	224.0	97.0	24.0	218.0	19.0	42.0	224.0
	min	-124.0	-164.0	-188.0	-176.0	-130.0	-193.0	-227.0	-277.0	-178.0	-164.0	-129.0	-169.0	-277.0
	no	590	536	592	562	598	582	600	600	550	533	581	581	6905
1.6	mean	-34.6	-34.8	-33.9	-35.5	-34.6	-37.4	-36.3	-38.8	-37.8	-35.1	-35.5	-36.0	-35.9
	sd	12.8	13.7	11.8	16.4	17.8	26.9	19.9	24.0	16.6	16.5	13.6	13.5	17.6
	max	4.0	2.0	28.0	33.0	23.0	223.0	106.0	72.0	29.0	28.0	15.0	27.0	223.0
	min	-143.0	-158.0	-133.0	-170.0	-234.0	-300.0	-152.0	-229.0	-209.0	-150.0	-138.0	-141.0	-300.0
	no	590	535	592	563	598	581	600	600	552	532	581	581	6905
1.7	mean	-34.6	-35.2	-33.8	-35.3	-34.4	-36.6	-34.9	-38.1	-36.2	-34.3	-34.9	-36.0	-35.4
	sd	15.0	15.1	11.3	15.7	16.6	19.4	20.2	22.0	15.9	18.0	13.7	13.8	16.7
	max	15.0	5.0	10.0	31.0	47.0	45.0	127.0	45.0	56.0	26.0	11.0	-4.0	127.0
	min	-207.0	-157.0	-121.0	-172.0	-181.0	-136.0	-150.0	-173.0	-180.0	-238.0	-133.0	-146.0	-238.0
	no	589	537	592	563	598	581	600	600	552	532	581	582	6907
1.8	mean	-33.0	-34.2	-33.8	-33.0	-33.7	-34.9	-35.1	-36.2	-35.1	-34.0	-33.2	-34.8	-34.3
	sd	12.3	14.1	13.0	13.9	15.3	20.9	20.5	27.7	15.9	15.4	13.0	14.5	17.0
	max	55.0	17.0	5.0	40.0	36.0	134.0	51.0	99.0	52.0	33.0	22.0	15.0	134.0
	min	-125.0	-133.0	-182.0	-127.0	-121.0	-165.0	-232.0	-375.0	-129.0	-135.0	-166.0	-187.0	-375.0
	no	589	538	592	563	598	582	599	600	552	532	581	581	6907
1.9	mean	-31.8	-32.8	-33.3	-31.7	-31.9	-34.1	-34.1	-34.2	-33.9	-34.4	-32.1	-33.9	-33.2
	sd	11.0	12.6	10.8	11.6	14.6	19.3	19.6	21.0	16.3	16.6	10.4	18.8	15.7
	max	20.0	15.0	8.0	7.0	61.0	47.0	63.0	79.0	134.0	41.0	1.0	91.0	134.0
	min	-180.0	-161.0	-114.0	-125.0	-123.0	-174.0	-159.0	-222.0	-147.0	-160.0	-119.0	-331.0	-331.0
	no	588	537	591	562	598	582	600	600	551	532	581	581	6903

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

9661 Mike 6/18

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
0.0	mean	-47.0	-49.1	-49.0	-49.6	-41.5	-40.1	-39.5	-42.3	-45.2	-47.1	-50.5	-49.6	-45.8
	sd	29.0	39.7	36.1	38.6	34.4	39.0	45.1	42.4	45.5	34.5	34.3	32.3	38.0
	max	205.0	58.0	240.0	258.0	210.0	402.0	468.0	268.0	300.0	187.0	200.0	213.0	468.0
	min	-141.0	-686.0	-226.0	-187.0	-252.0	-245.0	-348.0	-303.0	-363.0	-238.0	-365.0	-254.0	-686.0
	no	580	527	574	540	587	571	591	584	542	524	566	570	6756
0.1	mean	-36.9	-35.3	-34.6	-37.1	-38.9	-37.4	-40.4	-38.7	-39.9	-38.6	-38.4	-36.1	-37.7
	sd	10.7	9.9	11.0	15.2	17.7	23.4	19.4	23.2	21.9	19.2	19.5	12.5	17.7
	max	-9.0	2.0	16.0	-5.0	9.0	120.0	116.0	250.0	37.0	11.0	1.0	-1.0	250.0
	min	-95.0	-79.0	-106.0	-189.0	-151.0	-360.0	-157.0	-200.0	-361.0	-259.0	-359.0	-208.0	-361.0
	no	582	526	575	541	588	575	592	586	542	525	566	570	6768
0.2	mean	-34.2	-33.7	-33.4	-35.0	-37.4	-38.2	-41.5	-40.8	-39.2	-37.7	-37.6	-33.8	-36.9
	sd	9.5	9.6	10.7	14.1	17.3	18.1	21.2	18.4	22.1	21.2	40.6	8.8	19.7
	max	-11.0	-8.0	14.0	-4.0	37.0	38.0	34.0	15.0	-4.0	16.0	-7.0	16.0	38.0
	min	-104.0	-96.0	-167.0	-178.0	-181.0	-186.0	-214.0	-200.0	-358.0	-309.0	-876.0	-83.0	-876.0
	no	582	526	576	541	589	575	590	588	543	525	567	570	6772
0.3	mean	-33.0	-34.1	-33.3	-35.2	-37.6	-38.8	-43.8	-42.8	-37.2	-37.0	-33.8	-33.0	-36.7
	sd	8.5	10.3	9.4	17.0	17.3	18.8	26.6	30.1	15.1	14.5	12.4	8.8	17.5
	max	-11.0	-10.0	13.0	-3.0	95.0	47.0	55.0	361.0	-3.0	18.0	96.0	12.0	361.0
	min	-84.0	-143.0	-99.0	-192.0	-155.0	-175.0	-371.0	-308.0	-133.0	-156.0	-171.0	-90.0	-371.0
	no	582	527	576	541	589	575	590	589	542	525	566	570	6772
0.4	mean	-33.3	-34.7	-34.9	-35.7	-39.2	-42.8	-46.1	-43.9	-36.9	-37.6	-34.2	-33.6	-37.8
	sd	9.7	9.4	12.1	17.1	21.3	28.7	30.4	30.1	13.8	14.7	11.1	10.5	19.7
	max	-8.0	-14.0	26.0	10.0	29.0	48.0	45.0	60.0	41.0	6.0	97.0	32.0	97.0
	min	-128.0	-111.0	-160.0	-235.0	-237.0	-277.0	-453.0	-397.0	-133.0	-156.0	-134.0	-110.0	-453.0
	no	582	527	576	540	588	573	591	590	542	525	566	570	6770
0.5	mean	-33.7	-35.4	-35.4	-35.7	-39.1	-42.3	-46.4	-42.8	-37.1	-38.6	-34.9	-34.2	-38.0
	sd	10.6	11.1	11.2	13.7	19.5	35.4	30.0	27.7	14.1	15.6	12.9	10.1	20.0
	max	0.0	-8.0	19.0	44.0	155.0	482.0	51.0	185.0	59.0	1.0	101.0	5.0	482.0
	min	-137.0	-153.0	-136.0	-169.0	-179.0	-275.0	-367.0	-310.0	-178.0	-165.0	-157.0	-110.0	-367.0
	no	582	527	576	540	588	574	591	590	541	525	567	570	6771
0.6	mean	-34.4	-35.2	-35.8	-35.8	-41.3	-41.9	-46.8	-40.8	-38.7	-38.1	-34.8	-35.4	-38.3
	sd	12.7	19.5	20.2	12.9	24.3	29.4	30.6	33.3	15.9	14.5	13.5	15.4	21.9
	max	0.0	338.0	330.0	37.0	108.0	127.0	51.0	308.0	17.0	8.0	104.0	1.0	338.0
	min	-160.0	-138.0	-194.0	-170.0	-254.0	-267.0	-323.0	-360.0	-182.0	-130.0	-162.0	-265.0	-360.0
	no	581	528	576	541	587	575	592	591	541	524	567	570	6773
0.7	mean	-35.3	-35.5	-35.7	-36.6	-39.7	-42.1	-44.1	-42.6	-38.8	-38.9	-35.9	-35.7	-38.5
	sd	14.0	8.8	15.4	13.4	20.9	29.8	32.1	32.9	15.3	19.4	17.3	13.2	21.2
	max	-16.0	9.0	184.0	13.0	47.0	111.0	214.0	148.0	18.0	53.0	108.0	-1.0	214.0
	min	-199.0	-107.0	-138.0	-157.0	-262.0	-277.0	-289.0	-346.0	-178.0	-219.0	-254.0	-144.0	-346.0
	no	581	527	576	539	587	572	594	589	542	524	567	570	6768
0.8	mean	-35.8	-36.1	-36.1	-37.1	-38.9	-40.5	-40.7	-42.4	-38.7	-39.0	-35.2	-35.6	-38.0
	sd	14.0	13.5	17.3	15.2	21.3	23.7	41.3	28.3	15.0	18.6	12.9	12.5	21.4
	max	-12.0	-12.0	214.0	14.0	103.0	85.0	246.0	189.0	59.0	27.0	113.0	-5.0	246.0
	min	-189.0	-251.0	-171.0	-180.0	-185.0	-211.0	-683.0	-237.0	-173.0	-240.0	-168.0	-140.0	-683.0
	no	582	527	576	539	588	571	594	588	541	524	567	570	6767
0.9	mean	-35.6	-35.9	-36.6	-37.1	-39.8	-41.1	-39.6	-42.6	-38.7	-38.9	-36.1	-35.8	-38.2
	sd	12.7	12.8	26.8	16.3	22.4	23.8	47.1	27.2	15.6	17.7	14.2	19.7	23.6
	max	-2.0	-4.0	216.0	15.0	43.0	120.0	821.0	95.0	53.0	18.0	24.0	216.0	821.0
	min	-143.0	-141.0	-559.0	-172.0	-201.0	-192.0	-285.0	-384.0	-150.0	-190.0	-167.0	-190.0	-559.0
	no	582	528	576	540	585	572	594	589	541	525	567	570	6769

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

9661 Mike 6/18

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-35.9	-37.2	-35.1	-37.7	-39.6	-42.1	-40.6	-40.4	-39.8	-39.8	-36.4	-36.0	-38.4
	sd	13.1	17.7	12.8	17.1	22.3	23.7	39.9	25.4	17.6	21.1	13.4	13.2	21.3
1.0	max	-4.0	-8.0	128.0	-3.0	160.0	45.0	504.0	63.0	47.0	109.0	45.0	12.0	504.0
	min	-171.0	-266.0	-120.0	-205.0	-212.0	-222.0	-401.0	-252.0	-201.0	-238.0	-193.0	-123.0	-401.0
	no	582	528	577	541	584	572	594	589	541	525	567	570	6770
	mean	-35.7	-36.8	-36.4	-37.7	-40.2	-41.4	-41.8	-39.8	-39.4	-40.9	-38.0	-36.1	-38.7
	sd	13.5	15.1	16.0	17.3	20.9	26.2	25.1	27.8	16.7	23.4	17.5	14.4	20.2
1.1	max	10.0	-6.0	59.0	5.0	84.0	158.0	70.0	146.0	37.0	86.0	51.0	20.0	158.0
	min	-164.0	-174.0	-175.0	-148.0	-177.0	-177.0	-204.0	-196.0	-141.0	-282.0	-171.0	-154.0	-282.0
	no	582	528	577	541	587	572	596	588	541	525	566	570	6773
	mean	-35.5	-35.9	-36.0	-35.9	-39.2	-41.2	-40.3	-41.6	-39.7	-39.3	-36.2	-36.4	-38.1
	sd	14.5	13.4	15.6	15.3	20.3	24.3	28.7	31.7	25.3	22.0	33.7	14.0	22.8
1.2	max	9.0	48.0	62.0	35.0	52.0	132.0	177.0	162.0	300.0	79.0	633.0	18.0	633.0
	min	-176.0	-152.0	-133.0	-137.0	-172.0	-227.0	-222.0	-251.0	-199.0	-210.0	-234.0	-168.0	-251.0
	no	582	528	578	540	587	572	596	588	543	525	567	570	6776
	mean	-36.0	-35.5	-35.7	-36.0	-38.3	-43.0	-40.7	-42.2	-40.2	-38.4	-37.3	-36.6	-38.4
	sd	13.7	13.5	15.6	14.6	22.2	28.9	30.2	30.2	24.1	20.4	15.1	16.5	21.6
1.3	max	22.0	16.0	110.0	26.0	77.0	63.0	202.0	78.0	70.0	102.0	16.0	-3.0	202.0
	min	-178.0	-156.0	-147.0	-134.0	-189.0	-218.0	-347.0	-275.0	-255.0	-200.0	-174.0	-221.0	-347.0
	no	582	527	578	539	586	571	594	587	543	525	568	570	6770
	mean	-36.0	-35.8	-34.7	-35.4	-36.8	-38.4	-38.0	-40.9	-38.8	-38.3	-37.5	-35.5	-37.2
	sd	14.4	16.1	12.1	14.6	20.5	23.2	21.7	28.2	18.3	19.3	16.8	14.6	19.0
1.4	max	19.0	61.0	114.0	5.0	168.0	75.0	81.0	155.0	50.0	17.0	-1.0	40.0	168.0
	min	-194.0	-181.0	-97.0	-168.0	-148.0	-223.0	-190.0	-234.0	-177.0	-167.0	-147.0	-159.0	-234.0
	no	582	527	577	539	586	570	594	586	541	524	568	570	6764
	mean	-34.7	-35.3	-34.2	-35.3	-36.1	-36.1	-36.1	-39.3	-39.3	-36.0	-37.4	-36.0	-36.3
	sd	11.1	13.5	12.2	16.5	18.8	23.3	19.9	28.1	21.1	15.5	16.7	16.2	18.5
1.5	max	-4.0	15.0	102.0	105.0	94.0	183.0	84.0	108.0	22.0	23.0	-4.0	24.0	183.0
	min	-155.0	-132.0	-116.0	-153.0	-134.0	-201.0	-205.0	-272.0	-175.0	-125.0	-160.0	-200.0	-272.0
	no	582	528	577	539	587	571	596	587	541	524	568	569	6769
	mean	-34.3	-35.1	-34.2	-35.8	-35.1	-34.8	-36.7	-37.2	-38.2	-34.8	-36.0	-35.2	-35.6
	sd	12.5	12.2	11.4	15.3	21.3	22.6	20.0	26.6	17.8	15.9	14.7	14.7	17.8
1.6	max	64.0	-2.0	33.0	40.0	256.0	195.0	56.0	257.0	73.0	78.0	-5.0	9.0	257.0
	min	-122.0	-105.0	-102.0	-147.0	-164.0	-185.0	-157.0	-206.0	-135.0	-168.0	-202.0	-136.0	-206.0
	no	582	528	577	538	587	572	596	586	542	524	568	569	6769
	mean	-34.1	-34.4	-33.1	-35.4	-33.7	-34.9	-37.0	-38.6	-38.0	-34.1	-34.5	-34.3	-35.2
	sd	23.3	13.1	10.7	13.9	17.3	18.4	22.4	23.3	20.5	15.5	11.2	12.8	17.6
1.7	max	437.0	26.0	71.0	2.0	131.0	88.0	58.0	45.0	34.0	66.0	10.0	6.0	437.0
	min	-133.0	-106.0	-94.0	-110.0	-129.0	-143.0	-201.0	-238.0	-192.0	-125.0	-104.0	-122.0	-238.0
	no	582	528	576	539	584	571	596	585	542	524	568	568	6763
	mean	-33.7	-34.0	-31.9	-33.9	-33.3	-35.1	-36.5	-37.5	-35.0	-33.8	-33.6	-34.0	-34.4
	sd	13.5	13.1	9.1	12.7	17.5	20.2	25.9	24.2	17.2	15.6	12.6	16.2	17.3
1.8	max	14.0	7.0	34.0	7.0	92.0	108.0	139.0	89.0	60.0	47.0	4.0	23.0	139.0
	min	-147.0	-126.0	-87.0	-118.0	-135.0	-161.0	-169.0	-247.0	-144.0	-145.0	-181.0	-165.0	-247.0
	no	581	527	576	538	583	570	596	586	543	524	567	568	6759
	mean	-32.9	-32.6	-31.8	-32.6	-33.2	-33.9	-35.9	-35.3	-34.8	-34.1	-33.0	-32.6	-33.6
	sd	13.9	11.0	10.1	12.9	15.5	18.8	26.8	23.1	19.6	15.5	12.5	12.8	16.9
1.9	max	15.0	7.0	40.0	84.0	53.0	58.0	130.0	218.0	135.0	48.0	12.0	33.0	218.0
	min	-260.0	-114.0	-84.0	-122.0	-148.0	-196.0	-205.0	-160.0	-259.0	-165.0	-146.0	-123.0	-260.0
	no	580	524	577	538	583	569	595	588	543	523	567	568	6755

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year.
no is number of observations.

1152 Bodø

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-63.2	-64.4	-69.2	-91.5	-104.7	-128.1	-127.0	-134.7	-128.3	-102.4	-83.5	-70.9	-96.8
	sd	38.3	34.4	45.3	60.7	69.0	91.2	87.8	92.2	81.3	62.9	54.5	45.3	71.1
0.0	max	209.0	141.0	210.0	219.0	218.0	281.0	180.0	268.0	263.0	246.0	243.0	240.0	281.0
	min	-176.0	-227.0	-215.0	-322.0	-467.0	-506.0	-517.0	-449.0	-479.0	-314.0	-246.0	-246.0	-517.0
	no	599	553	610	587	609	579	499	575	571	597	583	588	6950
	mean	-43.7	-44.9	-46.2	-46.3	-50.0	-51.1	-52.2	-51.5	-49.6	-47.2	-44.3	-43.2	-47.5
	sd	13.4	15.3	16.2	21.6	26.2	29.9	31.1	26.8	25.6	21.1	18.3	13.5	22.5
0.1	max	7.0	-5.0	-11.0	-9.0	45.0	213.0	13.0	-6.0	-4.0	-12.0	17.0	-11.0	213.0
	min	-126.0	-109.0	-118.0	-163.0	-166.0	-204.0	-240.0	-206.0	-186.0	-152.0	-145.0	-100.0	-240.0
	no	599	552	610	587	609	579	501	575	571	597	584	588	6952
	mean	-39.0	-39.2	-37.9	-35.0	-35.5	-37.2	-39.4	-40.8	-36.9	-36.5	-38.2	-37.4	-37.7
	sd	11.6	11.5	10.2	9.1	12.0	19.6	16.6	18.6	12.7	12.1	12.2	9.9	13.4
0.2	max	4.0	-16.0	-9.0	-7.0	11.0	205.0	23.0	-3.0	20.0	26.0	-10.0	-10.0	205.0
	min	-114.0	-101.0	-87.0	-75.0	-118.0	-177.0	-215.0	-244.0	-93.0	-130.0	-101.0	-85.0	-244.0
	no	599	552	610	588	609	579	501	575	571	597	584	588	6953
	mean	-35.8	-36.1	-35.3	-33.1	-33.5	-34.8	-37.4	-36.5	-33.8	-34.2	-35.5	-35.2	-35.1
	sd	9.3	9.4	9.2	8.2	10.4	13.4	12.7	15.0	9.8	9.6	9.7	10.0	10.8
0.3	max	-13.0	-12.0	-6.0	-5.0	-10.0	37.0	13.0	22.0	1.0	5.0	-14.0	32.0	37.0
	min	-87.0	-80.0	-70.0	-118.0	-112.0	-119.0	-111.0	-218.0	-88.0	-132.0	-82.0	-90.0	-218.0
	no	598	553	610	588	609	579	500	575	570	597	584	588	6951
	mean	-34.5	-34.6	-33.8	-32.7	-33.2	-34.0	-36.2	-36.1	-33.4	-33.5	-34.3	-33.6	-34.1
	sd	8.1	7.8	8.7	7.5	9.5	12.7	12.8	13.6	8.1	9.3	8.0	7.6	9.7
0.4	max	-13.0	-10.0	0.0	-8.0	-12.0	30.0	66.0	18.0	-1.0	-4.0	-14.0	2.0	66.0
	min	-85.0	-65.0	-72.0	-83.0	-105.0	-151.0	-116.0	-151.0	-71.0	-144.0	-70.0	-69.0	-151.0
	no	598	553	610	588	609	579	499	575	570	597	584	588	6950
	mean	-33.6	-33.5	-32.6	-32.1	-33.0	-34.3	-35.9	-36.5	-32.9	-33.0	-33.4	-33.1	-33.6
	sd	7.5	7.3	7.7	7.4	9.1	12.3	13.7	13.6	7.6	8.3	7.3	7.9	9.5
0.5	max	6.0	-6.0	3.0	19.0	-10.0	44.0	87.0	12.0	-5.0	1.0	1.0	4.0	87.0
	min	-81.0	-72.0	-80.0	-79.0	-100.0	-141.0	-131.0	-198.0	-85.0	-79.0	-70.0	-113.0	-198.0
	no	598	553	609	587	609	579	500	574	571	597	584	588	6949
	mean	-32.8	-32.8	-32.0	-32.0	-33.2	-34.7	-35.5	-35.8	-32.5	-32.2	-32.3	-32.6	-33.2
	sd	7.2	7.3	6.9	6.8	10.0	13.7	14.4	12.6	7.7	8.0	7.6	7.4	9.5
0.6	max	-2.0	10.0	-1.0	9.0	-8.0	35.0	116.0	19.0	-1.0	26.0	11.0	11.0	116.0
	min	-67.0	-68.0	-62.0	-64.0	-123.0	-142.0	-131.0	-121.0	-82.0	-75.0	-83.0	-85.0	-142.0
	no	598	552	608	586	609	579	501	574	571	597	584	588	6947
	mean	-32.8	-33.0	-31.7	-32.3	-33.0	-34.4	-35.9	-35.1	-32.7	-32.7	-32.1	-32.6	-33.1
	sd	6.7	7.2	6.7	7.8	10.5	12.6	14.3	14.8	7.6	8.0	7.1	6.8	9.6
0.7	max	-3.0	5.0	-5.0	33.0	-5.0	46.0	30.0	31.0	-5.0	22.0	7.0	11.0	46.0
	min	-86.0	-87.0	-61.0	-91.0	-168.0	-105.0	-185.0	-277.0	-84.0	-75.0	-79.0	-80.0	-277.0
	no	599	552	609	586	609	578	499	575	570	597	584	587	6945
	mean	-32.9	-32.7	-31.9	-32.4	-32.1	-34.5	-34.9	-34.2	-32.8	-32.9	-32.4	-32.8	-33.0
	sd	8.0	6.1	7.0	8.1	8.3	12.2	12.0	11.0	9.6	9.3	6.5	6.1	8.9
0.8	max	-7.0	-8.0	-8.0	0.0	-2.0	9.0	13.0	34.0	8.0	57.0	-9.0	-15.0	57.0
	min	-105.0	-66.0	-114.0	-104.0	-91.0	-100.0	-106.0	-111.0	-154.0	-121.0	-68.0	-92.0	-154.0
	no	598	553	610	587	609	578	498	575	570	597	584	587	6946
	mean	-32.8	-32.7	-31.8	-32.4	-32.2	-34.9	-35.5	-34.0	-32.9	-33.6	-32.4	-32.5	-33.1
	sd	7.8	6.8	6.5	7.7	8.1	14.9	13.5	10.6	7.6	12.1	6.3	5.4	9.4
0.9	max	-7.0	-3.0	-1.0	6.0	-8.0	-3.0	20.0	38.0	-12.0	-7.0	-9.0	-11.0	38.0
	min	-111.0	-90.0	-86.0	-114.0	-90.0	-229.0	-190.0	-124.0	-93.0	-193.0	-68.0	-55.0	-229.0
	no	598	553	610	588	609	577	498	574	570	597	584	588	6946

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1152 Bodø

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-32.5	-33.0	-32.0	-32.2	-33.0	-36.1	-35.9	-34.5	-33.3	-33.4	-32.4	-32.4	-33.3
	sd	6.0	7.1	6.2	8.6	10.2	17.5	14.1	11.9	7.8	8.2	6.2	5.8	9.8
1.0	max	-12.0	-10.0	-4.0	32.0	-4.0	18.0	16.0	46.0	42.0	-9.0	-9.0	-9.0	46.0
	min	-59.0	-88.0	-64.0	-102.0	-146.0	-236.0	-181.0	-137.0	-78.0	-110.0	-71.0	-79.0	-236.0
	no	599	553	610	587	609	577	499	573	569	597	584	588	6945
	mean	-32.6	-33.0	-32.3	-32.8	-33.7	-36.9	-35.9	-35.3	-34.2	-33.6	-32.6	-32.6	-33.8
	sd	6.6	7.5	6.8	9.1	11.4	19.4	17.0	14.1	9.3	9.2	6.9	6.9	11.1
1.1	max	-13.0	-6.0	-5.0	28.0	-7.0	54.0	98.0	40.0	37.0	-5.0	35.0	10.0	98.0
	min	-117.0	-95.0	-86.0	-95.0	-115.0	-197.0	-168.0	-170.0	-88.0	-157.0	-63.0	-93.0	-197.0
	no	599	553	610	586	609	577	499	574	570	596	584	587	6944
	mean	-32.4	-32.6	-32.6	-33.4	-33.7	-36.3	-35.5	-35.8	-35.0	-33.6	-32.9	-32.6	-33.8
	sd	6.4	8.0	8.5	13.6	12.2	16.4	26.0	17.7	11.3	10.9	7.7	8.9	13.2
1.2	max	13.0	24.0	-11.0	72.0	79.0	22.0	220.0	62.0	33.0	31.0	57.0	10.0	220.0
	min	-73.0	-117.0	-97.0	-197.0	-148.0	-173.0	-301.0	-247.0	-145.0	-144.0	-65.0	-123.0	-301.0
	no	599	553	610	587	609	578	499	575	571	596	584	587	6948
	mean	-32.1	-32.7	-32.4	-32.8	-35.0	-36.1	-36.4	-35.6	-34.9	-33.4	-32.6	-32.2	-33.8
	sd	7.1	8.1	8.9	10.7	14.1	17.3	18.8	14.7	10.0	9.6	7.1	8.4	11.8
1.3	max	28.0	18.0	0.0	72.0	49.0	44.0	49.0	60.0	-3.0	25.0	14.0	25.0	72.0
	min	-102.0	-98.0	-134.0	-106.0	-159.0	-183.0	-164.0	-144.0	-102.0	-106.0	-87.0	-121.0	-183.0
	no	599	553	610	588	609	579	501	574	571	595	584	587	6950
	mean	-31.9	-32.6	-32.0	-32.8	-35.0	-34.8	-38.2	-36.1	-34.8	-33.9	-32.4	-32.1	-33.8
	sd	7.7	8.1	8.7	9.4	14.3	18.3	25.2	13.2	11.1	11.5	7.9	7.5	12.8
1.4	max	20.0	12.0	14.0	3.0	47.0	168.0	101.0	25.0	56.0	33.0	5.0	-3.0	168.0
	min	-109.0	-110.0	-146.0	-115.0	-133.0	-177.0	-289.0	-152.0	-122.0	-175.0	-118.0	-99.0	-289.0
	no	598	553	610	588	609	578	501	574	571	595	583	586	6946
	mean	-32.0	-32.6	-31.8	-32.6	-34.3	-34.7	-36.3	-36.9	-35.5	-33.5	-32.5	-32.1	-33.7
	sd	9.3	10.1	7.3	8.9	13.2	15.5	21.8	19.4	14.5	9.6	9.3	8.1	13.0
1.5	max	22.0	16.0	10.0	-13.0	28.0	25.0	56.0	53.0	-6.0	-1.0	38.0	6.0	56.0
	min	-135.0	-152.0	-98.0	-118.0	-135.0	-152.0	-275.0	-349.0	-196.0	-153.0	-126.0	-101.0	-349.0
	no	596	553	610	588	608	578	501	574	571	595	582	586	6942
	mean	-31.9	-32.0	-31.5	-32.6	-34.3	-34.3	-34.8	-35.9	-35.0	-33.5	-32.7	-32.0	-33.3
	sd	9.0	8.7	6.7	9.8	13.2	15.5	14.0	14.6	14.6	10.1	11.8	8.7	11.8
1.6	max	24.0	10.0	-9.0	-5.0	15.0	68.0	39.0	47.0	23.0	-2.0	20.0	7.0	68.0
	min	-128.0	-100.0	-82.0	-117.0	-142.0	-140.0	-127.0	-163.0	-226.0	-153.0	-188.0	-137.0	-226.0
	no	596	553	610	587	607	579	501	574	571	595	583	586	6942
	mean	-31.7	-31.9	-31.2	-32.3	-33.7	-33.8	-33.5	-35.5	-34.2	-33.2	-32.0	-31.6	-32.9
	sd	9.1	8.4	7.1	10.1	11.7	14.5	13.8	14.5	10.8	11.2	7.4	7.1	10.8
1.7	max	15.0	-10.0	24.0	0.0	58.0	60.0	81.0	42.0	28.0	26.0	-5.0	3.0	81.0
	min	-108.0	-116.0	-85.0	-120.0	-99.0	-168.0	-98.0	-167.0	-169.0	-125.0	-83.0	-108.0	-169.0
	no	598	553	610	587	608	579	501	573	571	595	582	585	6942
	mean	-31.2	-31.7	-31.1	-31.9	-32.9	-33.4	-34.0	-35.5	-34.1	-32.4	-31.6	-31.6	-32.6
	sd	7.4	7.9	8.2	10.0	11.2	14.2	19.8	16.1	13.7	11.5	7.6	8.1	11.8
1.8	max	3.0	-11.0	18.0	-3.0	51.0	64.0	163.0	50.0	28.0	60.0	-3.0	0.0	163.0
	min	-102.0	-100.0	-132.0	-144.0	-93.0	-143.0	-208.0	-168.0	-200.0	-142.0	-117.0	-97.0	-208.0
	no	598	553	610	588	608	579	501	573	571	595	582	585	6943
	mean	-30.9	-31.4	-30.9	-31.2	-32.8	-33.1	-33.8	-34.7	-33.5	-32.4	-31.4	-31.6	-32.3
	sd	8.9	8.0	8.5	8.3	12.7	14.5	17.4	16.1	13.2	11.2	7.8	8.7	11.7
1.9	max	-3.0	-3.0	30.0	7.0	110.0	105.0	60.0	78.0	44.0	54.0	-5.0	-3.0	110.0
	min	-116.0	-92.0	-141.0	-81.0	-143.0	-146.0	-176.0	-182.0	-205.0	-141.0	-99.0	-100.0	-205.0
	no	598	553	609	588	608	579	501	573	570	595	583	586	6943

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

3836 Sodankyle

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-55.4	-48.3	-40.1	-44.1	-48.6	-54.9	-53.5	-47.3	-41.1	-39.7	-45.7	-55.9	-47.9
	sd	29.1	26.8	21.1	28.4	35.0	51.5	43.6	32.6	19.8	10.4	18.9	28.2	31.2
0.0	max	-22.0	-10.0	65.0	8.0	71.0	44.0	66.0	48.0	50.0	13.0	-9.0	-18.0	71.0
	min	-173.0	-203.0	-145.0	-181.0	-251.0	-756.0	-349.0	-236.0	-132.0	-95.0	-150.0	-182.0	-756.0
	no	599	560	617	587	619	599	620	618	600	619	598	618	7254
	mean	-51.6	-45.9	-36.9	-36.0	-37.6	-41.3	-43.3	-44.5	-40.4	-39.0	-42.6	-50.1	-42.4
	sd	23.4	20.3	12.5	11.5	12.6	18.6	24.8	18.5	12.8	9.0	14.1	21.2	18.0
0.1	max	-19.0	-20.0	-12.0	-13.0	38.0	18.0	284.0	5.0	8.0	6.0	-10.0	-20.0	284.0
	min	-139.0	-150.0	-109.0	-92.0	-90.0	-225.0	-162.0	-128.0	-105.0	-87.0	-118.0	-125.0	-225.0
	no	616	563	617	588	618	598	620	618	600	619	598	618	7273
	mean	-45.5	-43.5	-36.2	-33.8	-35.2	-37.1	-39.4	-40.7	-38.2	-38.9	-40.9	-45.0	-39.5
	sd	15.4	15.3	9.8	8.9	10.0	14.1	15.3	14.1	11.5	9.7	11.0	14.8	13.2
0.2	max	4.0	-14.0	-19.0	-14.0	3.0	62.0	11.0	-5.0	11.0	-18.0	-18.0	-13.0	62.0
	min	-103.0	-136.0	-92.0	-95.0	-93.0	-121.0	-140.0	-116.0	-121.0	-96.0	-105.0	-120.0	-140.0
	no	615	563	617	588	618	598	620	616	600	619	599	618	7271
	mean	-41.0	-41.0	-36.7	-32.5	-32.2	-33.0	-35.3	-36.0	-36.3	-38.4	-39.4	-40.6	-36.9
	sd	12.4	11.7	10.0	9.5	9.4	11.9	14.4	14.2	11.5	11.6	10.9	11.0	12.0
0.3	max	-14.0	-16.0	-12.0	-4.0	1.0	76.0	53.0	31.0	-2.0	-16.0	7.0	-13.0	76.0
	min	-187.0	-121.0	-96.0	-108.0	-105.0	-101.0	-110.0	-126.0	-135.0	-139.0	-116.0	-96.0	-187.0
	no	615	563	617	588	618	598	620	616	599	619	600	618	7271
	mean	-38.8	-39.2	-36.9	-31.8	-30.8	-30.7	-32.2	-33.4	-35.7	-37.7	-37.7	-38.0	-35.2
	sd	10.5	12.1	11.3	9.9	9.1	12.7	15.3	14.1	12.2	12.8	10.4	9.5	12.2
0.4	max	-7.0	-10.0	34.0	23.0	17.0	100.0	96.0	89.0	-14.0	5.0	9.0	-14.0	100.0
	min	-140.0	-122.0	-112.0	-112.0	-92.0	-129.0	-141.0	-163.0	-154.0	-138.0	-112.0	-95.0	-163.0
	no	614	561	617	588	617	598	619	618	599	618	600	618	7267
	mean	-37.2	-37.3	-36.9	-32.1	-30.5	-31.0	-32.0	-33.4	-36.2	-37.1	-36.9	-36.7	-34.8
	sd	8.2	11.2	12.1	12.9	9.1	13.3	13.4	12.3	13.8	13.3	10.4	9.2	12.0
0.5	max	-8.0	23.0	27.0	47.0	6.0	66.0	40.0	39.0	6.0	7.0	3.0	-10.0	66.0
	min	-102.0	-130.0	-133.0	-170.0	-144.0	-136.0	-181.0	-120.0	-145.0	-130.0	-116.0	-97.0	-181.0
	no	614	561	616	588	617	598	619	618	600	618	600	617	7266
	mean	-35.6	-36.0	-37.4	-32.1	-30.8	-30.9	-32.5	-34.0	-36.3	-36.8	-36.7	-35.9	-34.6
	sd	7.7	9.6	13.2	11.2	8.7	12.4	12.5	14.1	14.2	11.4	11.8	9.1	11.7
0.6	max	22.0	8.0	-5.0	21.0	10.0	29.0	50.0	1.0	10.0	8.0	-10.0	3.0	50.0
	min	-85.0	-110.0	-156.0	-112.0	-121.0	-189.0	-132.0	-215.0	-140.0	-128.0	-166.0	-97.0	-215.0
	no	613	563	616	588	617	598	620	618	600	619	600	617	7269
	mean	-34.6	-35.7	-36.2	-32.9	-30.9	-30.3	-33.9	-33.9	-36.9	-36.9	-36.1	-34.9	-34.4
	sd	7.2	9.0	9.4	12.9	8.1	16.4	15.1	12.0	14.7	12.6	11.5	9.4	12.0
0.7	max	27.0	-10.0	-7.0	18.0	2.0	278.0	13.0	11.0	6.0	9.0	2.0	28.0	278.0
	min	-85.0	-102.0	-99.0	-147.0	-88.0	-112.0	-199.0	-143.0	-146.0	-135.0	-152.0	-122.0	-199.0
	no	613	563	617	588	617	599	620	618	600	619	600	618	7272
	mean	-34.0	-35.1	-35.4	-33.1	-30.9	-31.4	-33.9	-34.4	-37.1	-37.1	-35.5	-34.2	-34.3
	sd	6.4	9.4	10.8	11.6	8.1	10.9	16.0	12.0	14.9	14.3	9.7	8.7	11.6
0.8	max	-9.0	15.0	39.0	8.0	5.0	18.0	42.0	5.0	21.0	11.0	-8.0	25.0	42.0
	min	-74.0	-117.0	-108.0	-127.0	-79.0	-100.0	-201.0	-112.0	-156.0	-167.0	-107.0	-109.0	-201.0
	no	614	562	616	587	617	599	620	618	600	619	600	618	7270
	mean	-33.9	-34.6	-35.2	-33.6	-31.2	-32.2	-33.2	-35.1	-36.9	-36.4	-34.7	-34.0	-34.2
	sd	7.3	9.1	10.4	11.2	10.3	12.8	15.4	13.0	14.8	12.8	9.3	9.6	11.7
0.9	max	-7.0	-5.0	-9.0	30.0	7.0	41.0	43.0	39.0	43.0	37.0	5.0	-1.0	43.0
	min	-104.0	-121.0	-100.0	-102.0	-119.0	-134.0	-184.0	-126.0	-155.0	-151.0	-133.0	-134.0	-184.0
	no	613	561	616	587	616	599	620	618	600	619	600	618	7267

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

3836 Sodankyle

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-33.6	-34.2	-34.4	-34.2	-32.2	-33.0	-33.6	-36.4	-36.9	-36.3	-34.3	-33.4	-34.4
	sd	6.8	9.8	8.6	11.0	11.5	14.7	14.5	15.6	13.6	15.3	9.2	9.5	12.1
1.0	max	-6.0	5.0	6.0	12.0	15.0	71.0	86.0	18.0	5.0	67.0	16.0	21.0	86.0
	min	-79.0	-107.0	-75.0	-103.0	-148.0	-154.0	-129.0	-169.0	-135.0	-169.0	-86.0	-101.0	-169.0
	no	613	562	616	588	615	598	620	618	600	619	599	617	7265
	mean	-33.4	-33.9	-34.3	-34.4	-33.3	-33.4	-34.7	-35.7	-37.7	-35.3	-33.3	-33.0	-34.4
	sd	7.6	9.9	10.5	11.9	11.2	13.2	17.2	15.4	17.7	13.4	10.1	9.2	12.7
1.1	max	-6.0	2.0	23.0	17.0	-1.0	8.0	30.0	103.0	32.0	40.0	45.0	-4.0	103.0
	min	-97.0	-130.0	-97.0	-113.0	-96.0	-128.0	-255.0	-136.0	-192.0	-165.0	-91.0	-149.0	-255.0
	no	613	561	616	588	615	598	620	618	600	619	599	616	7263
	mean	-32.9	-33.3	-33.9	-34.3	-33.1	-32.8	-35.9	-36.3	-37.2	-35.4	-33.4	-32.4	-34.2
	sd	8.3	10.3	10.6	12.9	11.2	13.9	17.0	18.9	17.7	15.1	12.0	8.8	13.6
1.2	max	16.0	6.0	54.0	16.0	10.0	101.0	73.0	71.0	52.0	27.0	27.0	-6.0	101.0
	min	-91.0	-174.0	-113.0	-116.0	-102.0	-151.0	-131.0	-231.0	-212.0	-153.0	-173.0	-97.0	-231.0
	no	613	561	615	588	617	599	618	618	600	618	600	616	7263
	mean	-32.1	-32.7	-34.2	-33.9	-32.7	-32.4	-37.0	-37.2	-36.1	-35.0	-32.8	-32.2	-34.0
	sd	7.1	9.5	11.8	14.6	11.5	14.0	19.9	18.7	15.3	16.3	10.4	9.2	13.9
1.3	max	26.0	26.0	3.0	74.0	30.0	106.0	90.0	19.0	44.0	72.0	34.0	1.0	106.0
	min	-86.0	-91.0	-163.0	-125.0	-122.0	-142.0	-181.0	-164.0	-138.0	-146.0	-136.0	-117.0	-181.0
	no	614	562	615	587	616	599	618	617	600	617	600	613	7258
	mean	-32.2	-32.3	-33.2	-32.9	-32.7	-33.2	-37.3	-36.3	-35.4	-33.2	-32.1	-31.4	-33.5
	sd	7.8	10.0	9.8	12.4	13.1	13.9	19.0	16.7	17.6	14.9	9.7	8.2	13.4
1.4	max	18.0	27.0	33.0	49.0	44.0	10.0	28.0	75.0	108.0	61.0	21.0	35.0	108.0
	min	-106.0	-132.0	-102.0	-120.0	-188.0	-176.0	-171.0	-132.0	-139.0	-175.0	-129.0	-96.0	-188.0
	no	614	563	616	587	616	599	619	617	600	618	600	614	7263
	mean	-31.8	-31.3	-32.0	-32.1	-32.4	-33.5	-37.0	-36.4	-33.7	-33.4	-31.3	-30.8	-33.0
	sd	7.9	7.9	10.0	11.5	11.7	13.6	20.2	17.4	18.3	13.6	8.4	7.3	13.2
1.5	max	6.0	2.0	42.0	19.0	35.0	31.0	141.0	127.0	107.0	39.0	3.0	16.0	141.0
	min	-98.0	-91.0	-96.0	-139.0	-125.0	-143.0	-184.0	-171.0	-145.0	-145.0	-109.0	-85.0	-184.0
	no	614	562	616	588	617	599	619	618	600	619	600	618	7270
	mean	-31.5	-30.8	-31.8	-31.2	-32.8	-33.8	-36.3	-37.5	-32.9	-32.5	-30.9	-30.1	-32.7
	sd	9.1	7.2	9.2	11.4	14.1	15.3	20.6	17.8	17.8	13.2	9.0	8.4	13.6
1.6	max	22.0	5.0	11.0	58.0	50.0	52.0	148.0	23.0	132.0	69.0	12.0	30.0	148.0
	min	-109.0	-78.0	-113.0	-111.0	-218.0	-152.0	-160.0	-165.0	-168.0	-111.0	-99.0	-78.0	-218.0
	no	614	561	615	588	615	599	619	618	600	619	600	616	7264
	mean	-31.2	-30.5	-31.4	-30.8	-33.2	-32.8	-36.2	-35.9	-33.6	-32.0	-30.9	-29.9	-32.4
	sd	8.4	7.6	9.8	11.2	13.5	14.5	19.4	17.0	15.9	13.1	9.5	7.7	13.0
1.7	max	3.0	4.0	17.0	36.0	29.0	82.0	146.0	74.0	41.0	76.0	15.0	26.0	146.0
	min	-90.0	-89.0	-92.0	-102.0	-214.0	-134.0	-164.0	-141.0	-119.0	-139.0	-124.0	-88.0	-214.0
	no	614	562	615	588	615	599	619	618	600	619	600	616	7265
	mean	-30.3	-30.1	-30.5	-30.2	-32.3	-33.1	-35.6	-34.4	-32.1	-31.2	-29.7	-29.8	-31.6
	sd	7.2	6.7	8.6	9.3	11.2	15.5	19.7	17.4	15.8	11.5	7.0	6.7	12.4
1.8	max	27.0	8.0	16.0	5.0	62.0	26.0	67.0	93.0	103.0	50.0	4.0	0.0	103.0
	min	-75.0	-70.0	-96.0	-89.0	-103.0	-146.0	-159.0	-166.0	-129.0	-116.0	-77.0	-74.0	-166.0
	no	614	563	616	588	616	599	618	618	600	619	600	616	7267
	mean	-29.3	-29.9	-29.6	-30.4	-32.2	-32.5	-34.1	-34.7	-32.4	-30.8	-29.8	-29.3	-31.3
	sd	7.0	8.4	7.9	11.2	12.0	15.3	17.0	17.2	12.8	10.6	9.0	6.7	12.0
1.9	max	29.0	12.0	36.0	28.0	40.0	79.0	65.0	35.0	36.0	52.0	37.0	9.0	79.0
	min	-63.0	-114.0	-68.0	-102.0	-168.0	-144.0	-142.0	-213.0	-129.0	-88.0	-98.0	-70.0	-213.0
	no	614	563	616	588	616	599	617	617	600	618	599	616	7263

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year.
no is number of observations.

1001 Jan-Mayen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-56.0	-55.8	-54.9	-59.6	-60.8	-56.9	-53.3	-51.5	-54.6	-50.7	-49.4	-51.4	-54.6
	sd	21.3	25.0	30.9	31.2	31.2	31.2	31.8	42.1	35.0	26.6	28.4	24.3	30.6
0.0	max	64.0	77.0	191.0	177.0	173.0	97.0	129.0	368.0	122.0	80.0	156.0	101.0	368.0
	min	-116.0	-178.0	-171.0	-199.0	-286.0	-190.0	-246.0	-393.0	-153.0	-148.0	-135.0	-140.0	-393.0
	no	476	446	487	472	492	476	490	488	472	486	475	470	5730
	mean	-37.1	-36.4	-35.3	-35.6	-37.2	-38.5	-38.4	-38.7	-35.7	-34.7	-34.8	-35.4	-36.5
	sd	11.5	9.7	8.4	8.3	13.3	15.6	14.3	12.7	11.2	9.9	11.1	8.9	11.6
0.1	max	33.0	-12.0	-11.0	-11.0	-10.0	11.0	9.0	11.0	7.0	33.0	88.0	-15.0	88.0
	min	-127.0	-77.0	-75.0	-72.0	-132.0	-192.0	-128.0	-118.0	-140.0	-104.0	-85.0	-90.0	-192.0
	no	477	446	487	472	493	476	490	489	471	488	475	470	5734
	mean	-35.8	-35.0	-34.2	-35.0	-36.2	-37.0	-37.6	-36.5	-34.7	-33.8	-34.5	-35.0	-35.4
	sd	11.6	8.9	7.0	9.6	13.7	15.8	16.6	12.4	10.7	9.2	12.1	8.4	11.8
0.2	max	86.0	6.0	-13.0	-5.0	24.0	8.0	16.0	-5.0	28.0	53.0	-3.0	-19.0	86.0
	min	-120.0	-92.0	-76.0	-131.0	-145.0	-160.0	-177.0	-165.0	-167.0	-108.0	-127.0	-115.0	-177.0
	no	477	446	487	473	493	479	489	488	471	488	475	470	5736
	mean	-35.0	-35.2	-34.0	-34.6	-38.1	-39.7	-38.5	-38.0	-34.5	-33.3	-33.9	-35.4	-35.9
	sd	12.8	10.9	8.9	10.1	17.0	21.9	21.8	17.7	10.0	10.3	12.0	11.0	14.6
0.3	max	94.0	22.0	-16.0	2.0	-14.0	16.0	92.0	3.0	10.0	74.0	52.0	1.0	94.0
	min	-129.0	-110.0	-165.0	-116.0	-158.0	-295.0	-246.0	-168.0	-136.0	-87.0	-136.0	-124.0	-295.0
	no	477	446	487	473	493	478	486	488	471	487	475	470	5731
	mean	-35.4	-36.5	-34.7	-34.8	-38.3	-41.6	-40.5	-38.7	-35.8	-34.3	-35.2	-35.9	-36.8
	sd	14.8	11.9	9.2	10.4	17.7	21.5	24.5	16.0	11.3	12.6	13.3	10.7	15.4
0.4	max	133.0	-15.0	28.0	10.0	84.0	79.0	32.0	6.0	-18.0	98.0	27.0	10.0	133.0
	min	-199.0	-128.0	-111.0	-108.0	-177.0	-158.0	-239.0	-161.0	-126.0	-120.0	-144.0	-109.0	-239.0
	no	477	446	487	472	493	477	486	488	471	487	475	470	5729
	mean	-36.4	-36.7	-36.0	-35.6	-39.4	-41.8	-39.3	-39.7	-37.4	-36.4	-34.6	-36.1	-37.5
	sd	12.2	11.4	10.5	10.9	18.8	20.5	24.8	18.1	14.3	13.4	10.2	11.4	15.6
0.5	max	-18.0	-15.0	2.0	6.0	63.0	13.0	188.0	15.0	-7.0	33.0	4.0	19.0	188.0
	min	-140.0	-134.0	-104.0	-113.0	-161.0	-158.0	-243.0	-219.0	-197.0	-117.0	-110.0	-124.0	-243.0
	no	476	446	487	472	492	477	486	488	470	487	474	470	5725
	mean	-37.7	-38.4	-36.8	-37.3	-39.8	-44.6	-39.0	-41.3	-40.2	-37.1	-34.9	-36.6	-38.7
	sd	15.9	17.1	11.4	12.4	17.4	29.0	26.0	19.9	23.7	14.8	11.9	11.9	18.7
0.6	max	-7.0	-2.0	-14.0	-16.0	33.0	10.0	190.0	30.0	-18.0	40.0	59.0	29.0	190.0
	min	-219.0	-194.0	-116.0	-120.0	-206.0	-435.0	-174.0	-165.0	-410.0	-181.0	-163.0	-121.0	-435.0
	no	476	446	487	473	492	478	486	488	469	485	474	470	5724
	mean	-38.1	-37.3	-38.2	-37.4	-39.6	-42.7	-42.1	-41.5	-38.8	-36.5	-35.6	-36.6	-38.7
	sd	14.5	13.0	14.6	12.7	17.0	31.5	27.5	21.0	22.2	13.7	12.9	11.7	18.9
0.7	max	-13.0	81.0	-15.0	4.0	51.0	430.0	138.0	38.0	198.0	49.0	69.0	35.0	430.0
	min	-178.0	-99.0	-180.0	-129.0	-135.0	-194.0	-300.0	-183.0	-138.0	-150.0	-98.0	-127.0	-300.0
	no	477	446	487	473	492	478	487	488	470	485	474	470	5727
	mean	-38.5	-37.0	-37.9	-38.1	-39.3	-43.8	-41.1	-41.6	-38.6	-37.3	-36.7	-37.7	-39.0
	sd	14.8	12.5	13.1	15.0	18.9	26.0	27.2	24.8	18.7	17.6	15.0	11.6	18.8
0.8	max	17.0	64.0	2.0	-18.0	62.0	43.0	240.0	46.0	190.0	99.0	157.0	-17.0	240.0
	min	-158.0	-118.0	-152.0	-189.0	-187.0	-187.0	-174.0	-332.0	-125.0	-147.0	-118.0	-115.0	-332.0
	no	476	446	487	473	491	478	487	488	471	487	474	470	5728
	mean	-37.5	-37.0	-37.4	-37.1	-39.6	-40.1	-41.1	-40.0	-38.3	-38.6	-38.3	-38.3	-38.6
	sd	14.5	13.2	11.6	13.3	17.9	21.3	26.8	22.9	15.5	18.6	15.0	15.9	17.8
0.9	max	24.0	32.0	13.0	9.0	10.0	48.0	74.0	116.0	5.0	24.0	-6.0	-6.0	116.0
	min	-161.0	-140.0	-134.0	-142.0	-202.0	-173.0	-216.0	-186.0	-122.0	-185.0	-131.0	-170.0	-216.0
	no	476	446	487	472	491	478	487	488	471	486	473	470	5725

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1001 Jan-Mayen

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	mean	-37.4	-36.1	-36.9	-37.4	-38.8	-40.4	-38.0	-42.0	-37.6	-37.9	-38.2	-36.7	-38.1
	sd	12.8	11.6	12.5	15.3	15.7	17.6	22.4	23.7	12.9	15.5	15.5	13.1	16.3
	max	13.0	38.0	116.0	21.0	28.0	12.0	111.0	62.0	6.0	33.0	-11.0	27.0	116.0
	min	-127.0	-108.0	-104.0	-174.0	-129.0	-134.0	-231.0	-202.0	-109.0	-129.0	-127.0	-143.0	-231.0
	no	477	446	487	472	491	478	487	488	471	486	472	470	5725
1.1	mean	-36.5	-36.3	-37.2	-37.0	-38.2	-40.6	-36.6	-41.6	-38.5	-37.7	-37.2	-36.1	-37.8
	sd	11.7	11.2	11.2	13.4	15.7	18.8	21.8	25.6	16.2	14.9	16.7	12.5	16.5
	max	-2.0	-14.0	-8.0	17.0	26.0	10.0	78.0	185.0	5.0	25.0	48.0	33.0	185.0
	min	-106.0	-132.0	-122.0	-139.0	-139.0	-148.0	-171.0	-304.0	-179.0	-123.0	-266.0	-113.0	-304.0
	no	476	446	487	472	491	478	487	487	471	487	472	470	5724
1.2	mean	-34.9	-35.3	-35.1	-35.1	-36.9	-37.9	-36.5	-38.9	-36.8	-37.9	-36.0	-35.0	-36.4
	sd	11.8	12.9	9.6	14.6	16.2	19.1	22.2	19.6	12.9	14.4	12.7	12.0	15.3
	max	18.0	-8.0	-7.0	140.0	63.0	68.0	53.0	33.0	3.0	15.0	25.0	39.0	140.0
	min	-88.0	-172.0	-96.0	-126.0	-121.0	-157.0	-237.0	-200.0	-130.0	-134.0	-109.0	-124.0	-237.0
	no	476	446	487	471	491	477	486	487	471	487	472	470	5721
1.3	mean	-33.4	-34.1	-33.4	-34.7	-35.8	-34.7	-35.7	-37.5	-37.0	-36.6	-36.0	-35.2	-35.4
	sd	11.6	10.8	9.9	10.1	14.6	18.8	19.0	18.7	16.9	13.7	14.1	12.6	14.7
	max	35.0	0.0	21.0	10.0	54.0	108.0	82.0	31.0	41.0	23.0	4.0	32.0	108.0
	min	-138.0	-113.0	-109.0	-97.0	-109.0	-132.0	-152.0	-151.0	-163.0	-141.0	-150.0	-140.0	-163.0
	no	477	446	487	471	491	476	486	488	470	487	472	470	5721
1.4	mean	-33.1	-33.0	-33.4	-33.9	-33.2	-32.7	-33.8	-34.6	-33.4	-36.9	-34.2	-34.1	-33.9
	sd	10.6	10.2	10.6	11.7	12.1	17.6	20.6	18.6	12.8	15.7	12.2	11.4	14.2
	max	17.0	6.0	5.0	36.0	34.0	60.0	124.0	104.0	52.0	25.0	24.0	22.0	124.0
	min	-103.0	-133.0	-125.0	-91.0	-106.0	-113.0	-144.0	-162.0	-95.0	-137.0	-115.0	-116.0	-162.0
	no	477	446	486	472	491	477	486	488	470	487	471	470	5721
1.5	mean	-33.3	-31.6	-32.8	-33.0	-33.2	-32.6	-33.7	-34.2	-32.8	-35.3	-33.1	-32.7	-33.2
	sd	12.2	8.0	9.5	9.6	13.9	17.1	21.5	18.8	11.1	13.5	10.7	11.2	13.7
	max	38.0	16.0	0.0	14.0	41.0	109.0	169.0	116.0	28.0	14.0	0.0	26.0	169.0
	min	-144.0	-75.0	-108.0	-88.0	-161.0	-119.0	-135.0	-132.0	-107.0	-141.0	-132.0	-108.0	-161.0
	no	477	446	485	472	491	477	486	488	471	487	471	470	5721
1.6	mean	-32.0	-31.4	-32.2	-32.2	-31.9	-32.4	-33.9	-34.6	-33.3	-34.0	-33.1	-32.1	-32.8
	sd	10.9	8.0	9.1	8.3	10.7	14.6	19.4	17.5	13.3	11.4	9.5	8.7	12.4
	max	59.0	20.0	-8.0	-3.0	25.0	39.0	190.0	48.0	26.0	15.0	-13.0	-1.0	190.0
	min	-94.0	-85.0	-127.0	-94.0	-91.0	-114.0	-130.0	-145.0	-144.0	-106.0	-102.0	-83.0	-145.0
	no	477	446	486	472	491	477	486	488	471	487	471	470	5722
1.7	mean	-31.3	-31.5	-31.6	-31.4	-31.8	-31.5	-33.1	-34.3	-33.1	-33.3	-33.1	-30.9	-32.3
	sd	8.2	7.5	10.0	8.0	11.0	15.2	16.5	16.4	12.9	11.6	10.3	7.1	11.8
	max	7.0	-7.0	12.0	10.0	54.0	33.0	64.0	57.0	51.0	17.0	17.0	2.0	64.0
	min	-82.0	-82.0	-174.0	-75.0	-111.0	-117.0	-134.0	-199.0	-114.0	-108.0	-107.0	-69.0	-199.0
	no	477	444	487	472	491	477	486	488	471	487	471	469	5720
1.8	mean	-30.8	-30.2	-30.9	-30.5	-30.7	-31.5	-30.8	-34.0	-32.5	-31.7	-31.8	-30.3	-31.3
	sd	9.6	6.5	8.4	9.4	13.3	16.2	20.9	16.5	11.6	10.6	10.5	6.9	12.5
	max	32.0	-12.0	7.0	13.0	70.0	37.0	114.0	63.0	22.0	19.0	43.0	0.0	114.0
	min	-102.0	-78.0	-75.0	-116.0	-117.0	-136.0	-184.0	-176.0	-120.0	-103.0	-105.0	-71.0	-184.0
	no	477	444	487	472	491	477	486	488	471	487	470	469	5719
1.9	mean	-30.7	-29.9	-30.3	-30.5	-29.5	-30.8	-31.0	-33.8	-31.5	-30.2	-31.5	-29.9	-30.8
	sd	9.7	6.9	7.2	8.2	11.7	15.5	15.9	15.4	10.2	8.6	11.0	8.2	11.2
	max	-4.0	-4.0	-4.0	25.0	63.0	72.0	61.0	29.0	24.0	29.0	9.0	19.0	72.0
	min	-96.0	-75.0	-71.0	-77.0	-91.0	-132.0	-110.0	-130.0	-124.0	-65.0	-113.0	-81.0	-132.0
	no	477	444	487	472	491	476	486	488	471	487	470	468	5717

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

1028 Bjørnøya

H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-60.3	-59.3	-60.6	-61.7	-63.8	-60.9	-62.4	-61.3	-62.4	-62.1	-57.7	-53.0	-60.5
	sd	27.0	25.6	25.4	27.4	27.6	26.1	36.9	29.8	38.3	33.8	28.5	25.6	29.8
0.0	max	96.0	91.0	62.0	83.0	83.0	137.0	184.0	66.0	167.0	194.0	189.0	200.0	200.0
	min	-140.0	-133.0	-164.0	-174.0	-222.0	-145.0	-201.0	-211.0	-283.0	-315.0	-135.0	-153.0	-315.0
	no	430	389	433	405	433	413	432	433	416	430	416	429	5059
	mean	-35.8	-36.8	-36.6	-36.2	-37.7	-38.2	-41.5	-39.7	-39.7	-36.8	-35.8	-36.2	-37.6
	sd	8.8	8.4	8.8	9.7	13.9	13.1	23.0	18.0	14.1	10.8	9.5	8.6	13.1
0.1	max	-18.0	-22.0	-19.0	-11.0	142.0	0.0	17.0	8.0	15.0	-7.0	-10.0	-21.0	142.0
	min	-101.0	-71.0	-98.0	-100.0	-97.0	-106.0	-196.0	-177.0	-112.0	-76.0	-73.0	-82.0	-196.0
	no	430	391	434	405	432	413	431	433	416	431	416	429	5061
	mean	-34.6	-35.6	-36.1	-35.8	-35.0	-37.6	-41.0	-39.2	-38.4	-35.5	-34.5	-36.1	-36.6
	sd	7.9	8.6	10.1	11.3	10.6	14.4	24.3	17.9	16.2	10.3	8.4	9.1	13.5
0.2	max	-21.0	-23.0	-22.0	-23.0	88.0	19.0	49.0	9.0	127.0	-11.0	-20.0	-17.0	127.0
	min	-81.0	-84.0	-140.0	-173.0	-90.0	-152.0	-175.0	-198.0	-146.0	-144.0	-104.0	-107.0	-198.0
	no	430	391	433	405	429	415	430	432	416	431	415	429	5056
	mean	-34.9	-35.9	-35.8	-35.5	-35.2	-39.2	-39.5	-40.0	-37.6	-33.6	-33.2	-36.3	-36.4
	sd	9.4	8.9	8.9	10.8	9.9	18.4	21.7	20.9	12.9	9.9	7.3	9.5	13.5
0.3	max	-16.0	-22.0	-20.0	-16.0	-17.0	34.0	44.0	72.0	-3.0	25.0	-21.0	-20.0	72.0
	min	-102.0	-86.0	-113.0	-155.0	-120.0	-138.0	-201.0	-193.0	-158.0	-153.0	-87.0	-82.0	-201.0
	no	429	390	433	405	429	415	430	432	414	431	415	429	5052
	mean	-36.2	-35.7	-36.2	-36.4	-35.2	-39.9	-39.7	-39.2	-37.3	-33.7	-33.9	-36.5	-36.7
	sd	13.1	7.8	9.3	12.2	9.9	20.4	20.6	16.0	13.4	9.0	9.8	9.4	13.4
0.4	max	-17.0	-23.0	7.0	-14.0	14.0	50.0	29.0	8.0	-19.0	36.0	4.0	-20.0	50.0
	min	-179.0	-79.0	-107.0	-118.0	-110.0	-190.0	-206.0	-132.0	-162.0	-108.0	-132.0	-86.0	-206.0
	no	429	390	434	405	431	415	431	433	413	430	415	429	5055
	mean	-36.8	-35.9	-36.6	-36.6	-35.8	-38.9	-41.6	-40.1	-36.2	-33.9	-34.9	-35.8	-36.9
	sd	12.6	9.1	11.0	12.9	11.3	19.6	28.0	20.5	14.6	8.4	11.5	8.0	15.2
0.5	max	-21.0	-7.0	65.0	33.0	-5.0	59.0	142.0	10.0	138.0	29.0	-21.0	-20.0	142.0
	min	-128.0	-99.0	-119.0	-132.0	-146.0	-163.0	-241.0	-214.0	-145.0	-102.0	-142.0	-80.0	-241.0
	no	430	391	434	405	431	414	431	433	414	429	414	429	5055
	mean	-37.2	-35.7	-36.1	-36.2	-36.4	-39.4	-41.7	-39.8	-36.1	-34.4	-34.7	-35.6	-37.0
	sd	14.5	9.8	8.0	11.3	12.7	22.0	24.9	19.5	13.7	10.4	10.0	9.4	15.0
0.6	max	-13.0	-13.0	12.0	14.0	15.0	37.0	44.0	11.0	86.0	0.0	24.0	-13.0	86.0
	min	-150.0	-109.0	-79.0	-106.0	-120.0	-258.0	-154.0	-251.0	-160.0	-186.0	-135.0	-94.0	-258.0
	no	429	391	[illegible]	405	[illegible]	413	430	433	415	430	414	429	5053
	mean	-37.1	-35.8	-37.4	-36.0	-36.6	-39.3	-40.4	-41.3	-36.4	-35.6	-35.8	-35.7	-37.3
	sd	11.9	8.7	10.8	11.6	12.3	26.3	28.3	20.0	12.4	11.5	10.3	8.8	15.9
0.7	max	11.0	-10.0	-14.0	16.0	35.0	222.0	204.0	58.0	6.0	-7.0	-8.0	-6.0	222.0
	min	-102.0	-100.0	-130.0	-119.0	-108.0	-180.0	-173.0	-153.0	-162.0	-132.0	-122.0	-92.0	-180.0
	no	429	391	432	405	431	413	430	432	415	431	414	429	5052
	mean	-36.8	-35.7	-38.0	-36.5	-36.5	-40.5	-41.0	-41.1	-36.8	-37.1	-36.3	-35.8	-37.7
	sd	14.6	9.5	13.1	11.5	12.8	22.1	29.1	20.1	12.4	13.6	10.5	8.8	16.1
0.8	max	49.0	-14.0	30.0	11.0	54.0	45.0	98.0	97.0	4.0	-10.0	-17.0	-17.0	98.0
	min	-141.0	-98.0	-128.0	-113.0	-114.0	-130.0	-184.0	-181.0	-167.0	-132.0	-110.0	-104.0	-184.0
	no	430	391	433	405	431	413	430	432	415	431	413	428	5052
	mean	-35.9	-36.4	-36.7	-37.4	-37.7	-39.2	-41.9	-40.8	-36.2	-37.0	-36.1	-35.5	-37.6
	sd	12.9	13.1	10.8	14.4	14.5	23.6	29.1	20.5	10.9	15.0	10.6	9.6	16.6
0.9	max	14.0	7.0	-10.0	8.0	-5.0	94.0	237.0	38.0	10.0	21.0	-8.0	2.0	237.0
	min	-120.0	-149.0	-98.0	-151.0	-137.0	-153.0	-184.0	-175.0	-100.0	-150.0	-135.0	-93.0	-184.0
	no	430	391	434	405	431	413	430	433	414	431	413	428	5053

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

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H(km)		jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
	mean	-35.8	-36.8	-36.1	-36.2	-37.5	-40.7	-39.9	-40.6	-36.6	-37.3	-35.6	-35.3	-37.4
	sd	12.5	12.8	10.0	14.6	15.9	23.2	26.0	22.6	12.8	15.7	10.9	8.8	16.5
1.0	max	23.0	-4.0	2.0	103.0	24.0	51.0	141.0	82.0	26.0	62.0	25.0	-21.0	141.0
	min	-134.0	-124.0	-101.0	-114.0	-166.0	-150.0	-207.0	-224.0	-113.0	-181.0	-142.0	-91.0	-224.0
	no	430	391	434	405	431	413	430	433	414	431	414	429	5055
	mean	-34.9	-36.2	-35.8	-35.6	-37.2	-39.8	-38.8	-37.9	-36.9	-37.2	-35.0	-35.0	-36.7
	sd	11.7	12.3	10.8	12.9	13.0	21.2	27.3	20.2	13.8	12.9	10.6	10.8	15.7
1.1	max	44.0	3.0	-13.0	39.0	25.0	43.0	178.0	60.0	49.0	12.0	2.0	-16.0	178.0
	min	-100.0	-132.0	-121.0	-117.0	-103.0	-167.0	-196.0	-134.0	-130.0	-102.0	-126.0	-129.0	-196.0
	no	430	390	434	405	428	413	430	433	415	431	413	429	5051
	mean	-34.4	-36.1	-34.8	-34.4	-36.1	-37.5	-37.0	-37.0	-37.0	-36.1	-33.9	-33.0	-35.6
	sd	12.6	13.6	10.1	10.7	13.3	20.4	24.9	18.6	12.6	13.1	8.9	8.0	14.8
1.2	max	24.0	21.0	-7.0	-3.0	75.0	76.0	82.0	82.0	-6.0	18.0	13.0	-8.0	82.0
	min	-106.0	-145.0	-102.0	-100.0	-134.0	-136.0	-203.0	-135.0	-106.0	-123.0	-80.0	-91.0	-203.0
	no	430	390	434	405	428	413	430	433	415	430	413	429	5050
	mean	-33.4	-36.1	-34.4	-34.0	-35.4	-36.2	-35.6	-35.6	-36.7	-34.6	-34.2	-32.3	-34.9
	sd	12.4	12.8	11.1	9.9	11.6	16.5	24.5	21.0	14.8	11.2	10.5	8.0	14.5
1.3	max	28.0	-10.0	1.0	-8.0	16.0	40.0	80.0	118.0	43.0	2.0	2.0	-11.0	118.0
	min	-107.0	-111.0	-143.0	-118.0	-112.0	-136.0	-190.0	-197.0	-135.0	-102.0	-105.0	-84.0	-197.0
	no	430	391	434	405	429	413	429	432	415	429	414	428	5049
	mean	-32.9	-34.9	-33.9	-33.4	-34.9	-34.5	-34.8	-36.4	-36.7	-34.4	-34.3	-32.8	-34.5
	sd	13.9	11.7	12.1	9.7	13.7	18.6	24.8	20.1	16.3	12.2	11.6	9.8	15.3
1.4	max	2.0	-2.0	7.0	-6.0	35.0	75.0	84.0	56.0	38.0	7.0	23.0	-11.0	84.0
	min	-210.0	-124.0	-128.0	-99.0	-139.0	-106.0	-273.0	-190.0	-170.0	-110.0	-100.0	-100.0	-273.0
	no	430	391	434	405	428	413	429	432	415	430	413	427	5047
	mean	-33.3	-32.9	-33.0	-33.2	-34.1	-33.9	-35.5	-35.9	-35.8	-34.7	-33.9	-32.6	-34.1
	sd	11.9	9.6	10.6	11.2	12.5	19.5	22.6	21.1	14.4	13.0	10.4	8.7	14.6
1.5	max	-1.0	0.0	16.0	46.0	39.0	65.0	57.0	99.0	51.0	13.0	20.0	-10.0	99.0
	min	-129.0	-98.0	-115.0	-92.0	-133.0	-160.0	-155.0	-188.0	-119.0	-110.0	-108.0	-92.0	-188.0
	no	429	391	434	404	429	413	430	433	415	431	413	428	5050
	mean	-31.8	-31.7	-32.3	-32.5	-34.2	-33.3	-32.5	-33.4	-35.3	-34.1	-33.3	-32.3	-33.1
	sd	9.7	8.6	8.9	10.2	13.7	18.6	23.3	17.2	16.8	10.6	10.8	8.5	13.9
1.6	max	41.0	1.0	18.0	20.0	19.0	31.0	168.0	66.0	55.0	-5.0	20.0	-13.0	168.0
	min	-88.0	-105.0	-109.0	-115.0	-149.0	-168.0	-174.0	-118.0	-165.0	-101.0	-106.0	-101.0	-174.0
	no	429	391	433	404	430	413	430	433	415	431	413	429	5051
	mean	-31.0	-31.1	-32.4	-31.7	-33.0	-33.5	-31.5	-32.8	-34.0	-33.0	-32.6	-31.7	-32.4
	sd	9.8	6.8	8.9	8.8	10.6	20.7	26.9	17.1	14.5	9.2	8.8	7.1	13.8
1.7	max	64.0	-7.0	13.0	30.0	14.0	115.0	141.0	77.0	54.0	-2.0	23.0	-5.0	141.0
	min	-104.0	-66.0	-83.0	-80.0	-83.0	-205.0	-205.0	-130.0	-143.0	-98.0	-82.0	-77.0	-205.0
	no	430	391	433	405	430	412	429	433	415	431	413	429	5051
	mean	-30.1	-30.6	-31.3	-30.9	-32.3	-33.7	-32.1	-33.8	-32.6	-32.6	-31.4	-30.9	-31.9
	sd	7.5	8.4	8.9	8.1	9.4	15.1	23.1	21.2	11.9	9.5	7.8	7.4	12.7
1.8	max	7.0	35.0	20.0	9.0	11.0	30.0	93.0	53.0	25.0	-13.0	-4.0	21.0	93.0
	min	-78.0	-71.0	-88.0	-69.0	-75.0	-132.0	-136.0	-205.0	-103.0	-90.0	-86.0	-96.0	-205.0
	no	429	390	434	404	430	412	429	433	415	431	413	429	5049
	mean	-30.1	-30.4	-30.4	-30.7	-31.5	-31.4	-32.8	-32.2	-32.1	-31.9	-30.8	-30.1	-31.2
	sd	7.5	6.9	6.8	7.8	9.1	15.1	22.1	18.1	13.1	9.7	7.1	6.0	11.9
1.9	max	15.0	-4.0	4.0	23.0	8.0	84.0	181.0	101.0	75.0	12.0	4.0	-12.0	181.0
	min	-76.0	-76.0	-85.0	-68.0	-87.0	-96.0	-143.0	-161.0	-111.0	-94.0	-79.0	-72.0	-161.0
	no	429	390	434	404	430	412	430	433	415	431	413	429	5050

Table 3.6.1 Gradients of the refractiviy given pr 100 m, units N/km. mean values with standard deviation and extreme values for each month and the year. no is number of observations.

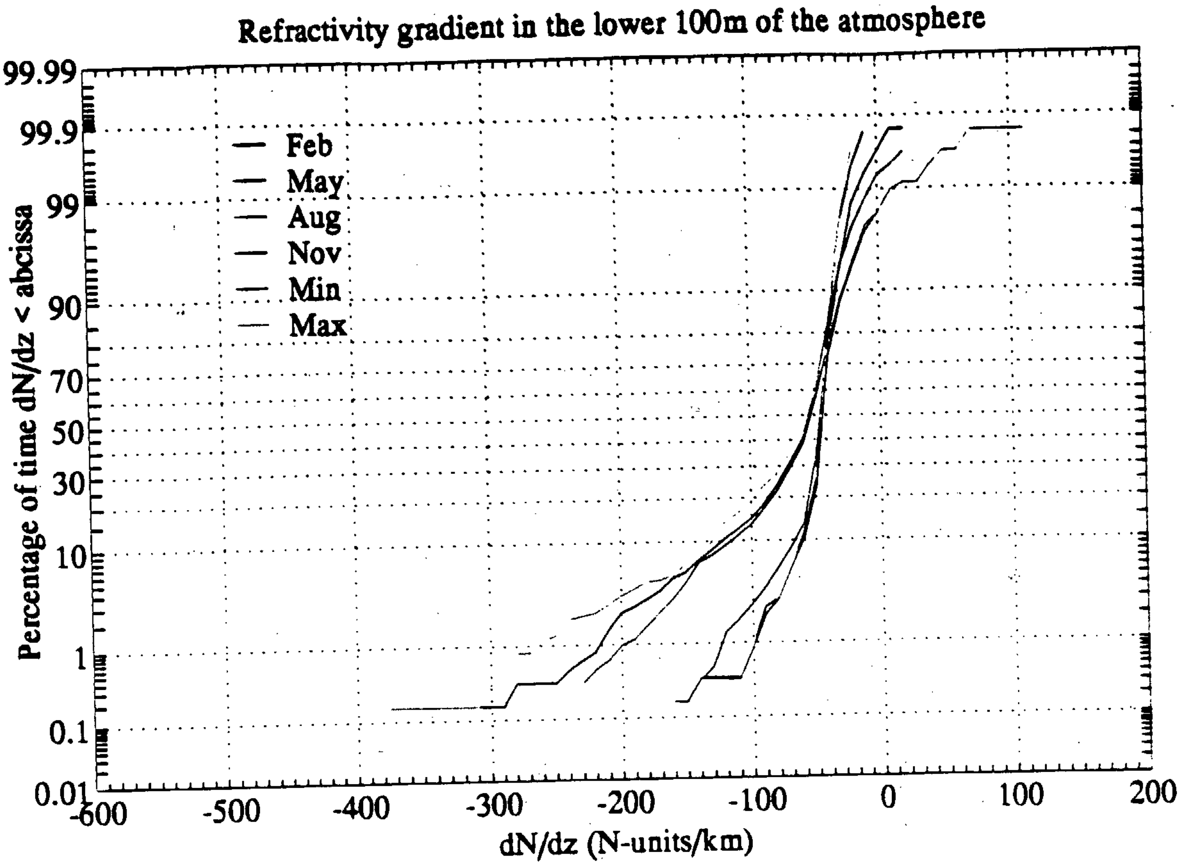

Fig. 3.6.1 Landvetter

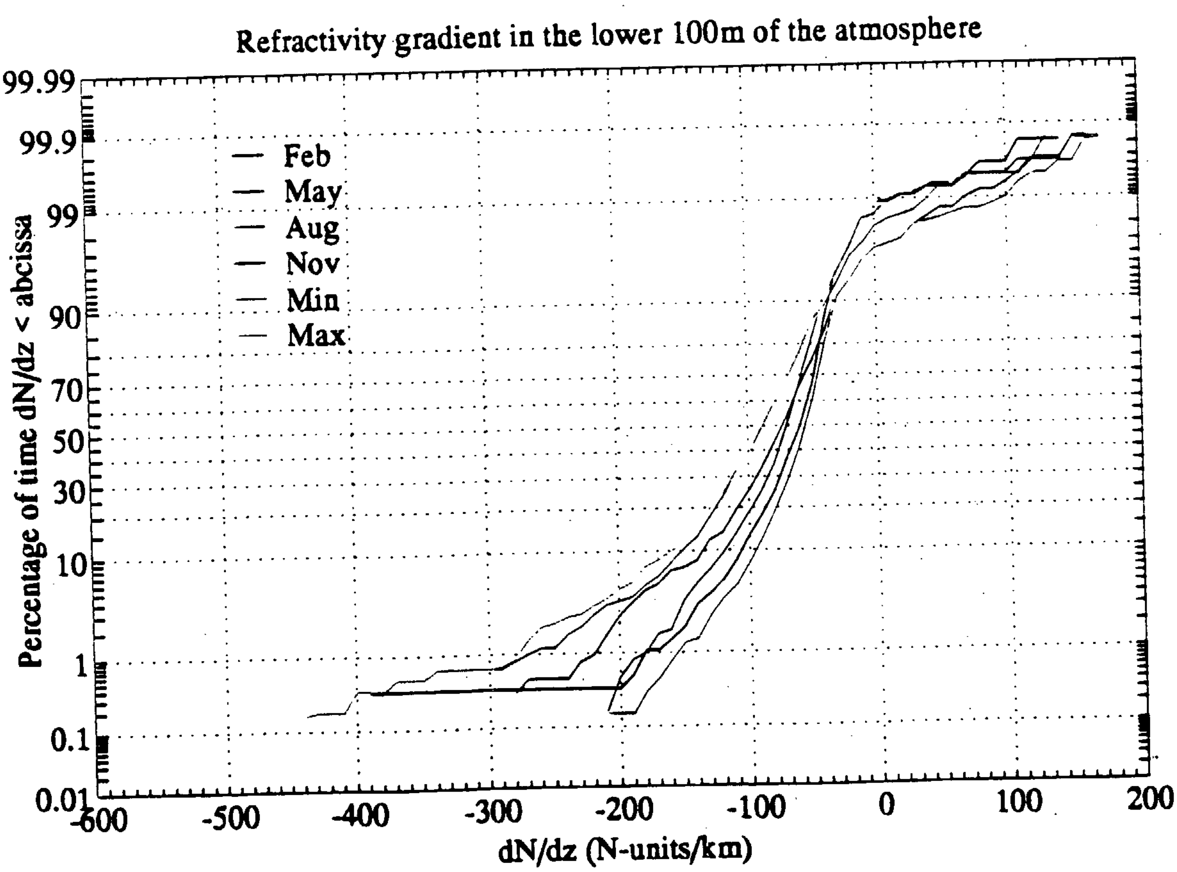

Fig. 3.6.1 Sola

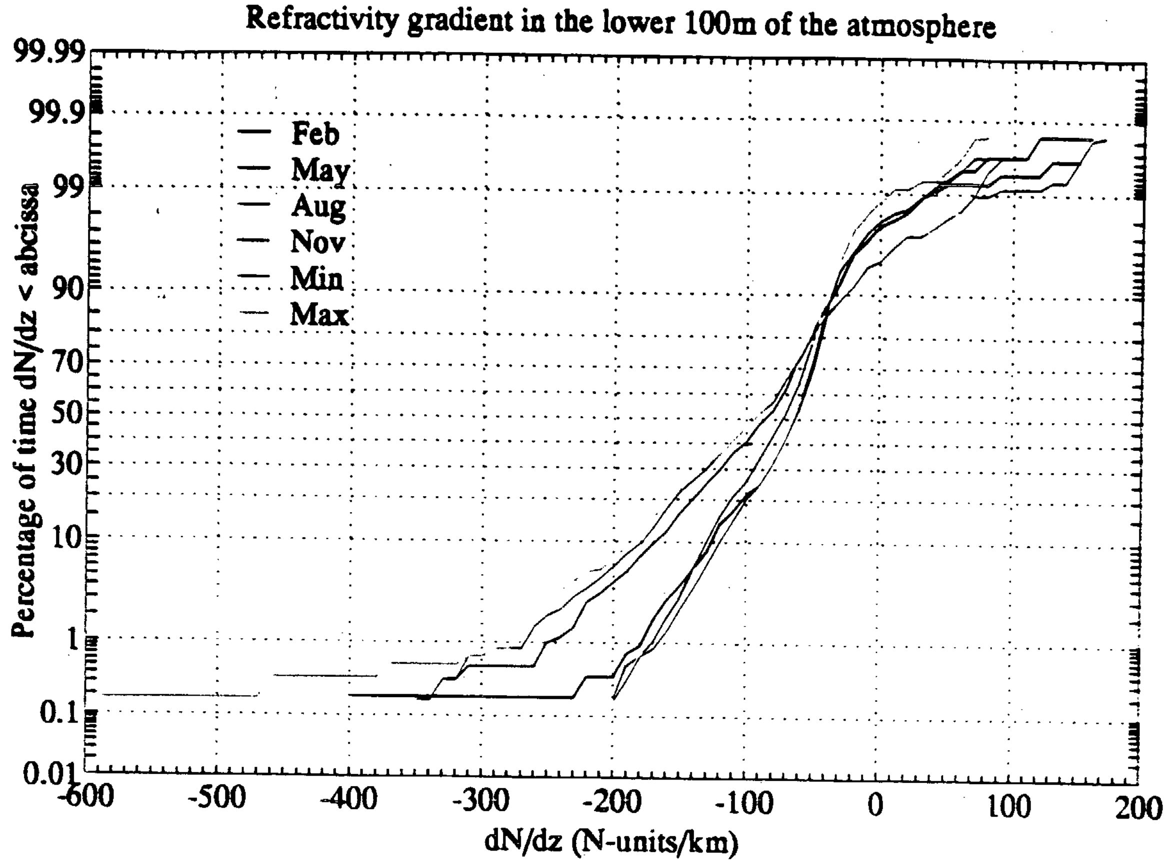

Fig. 3.6.1 Ørland

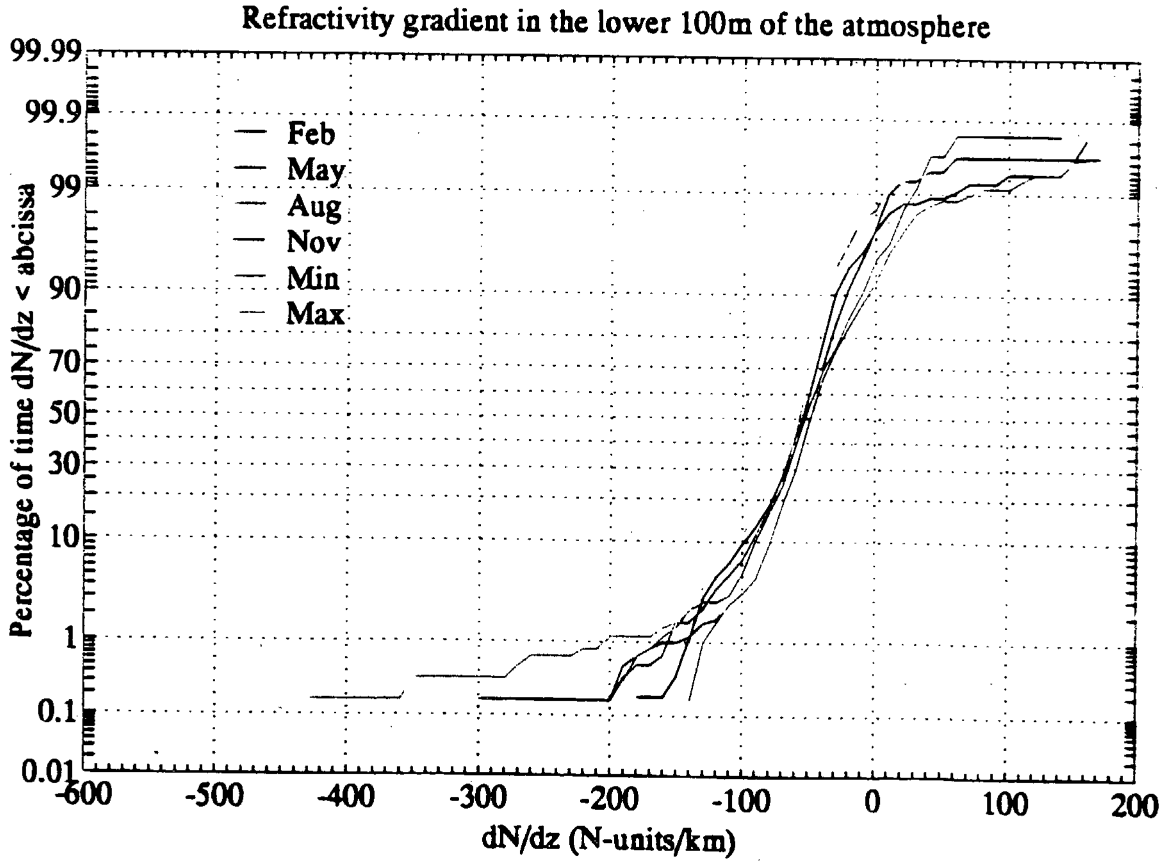

Fig. 3.6.1 Mike

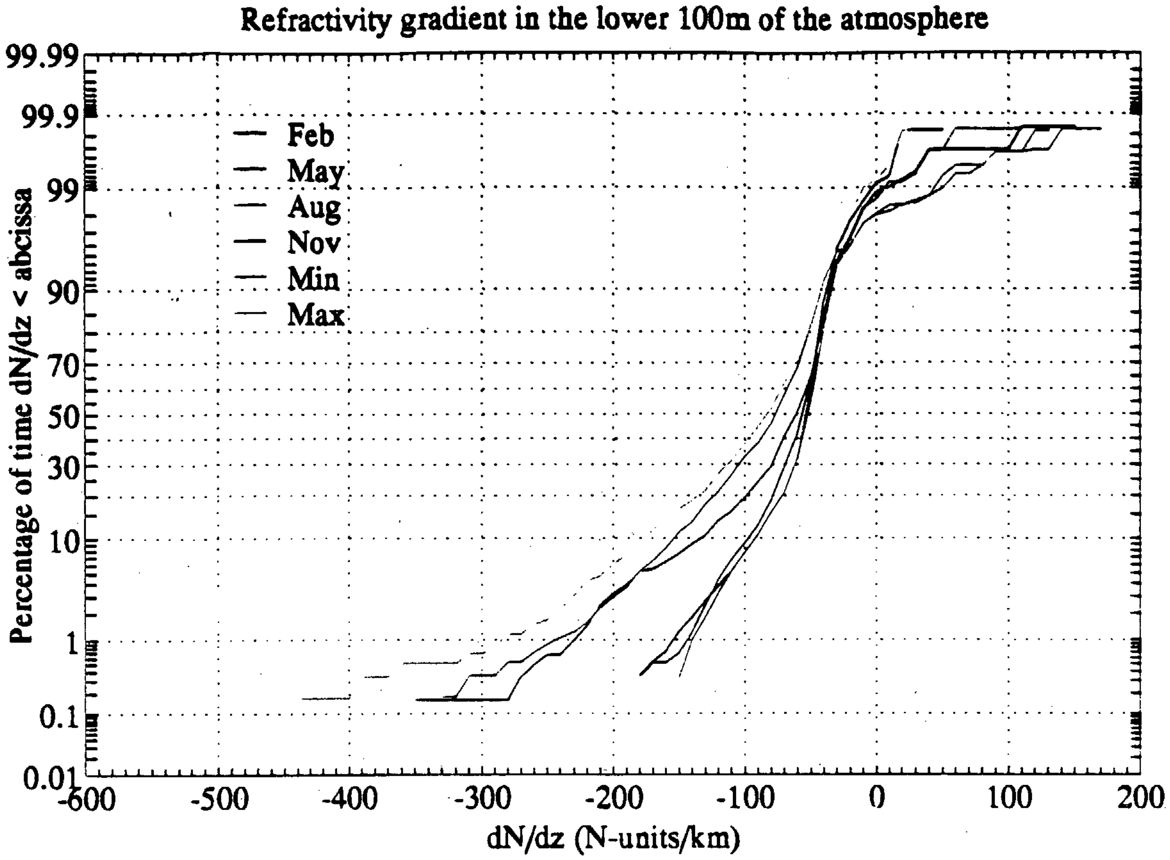

Fig. 3.6.1 Gardermoen

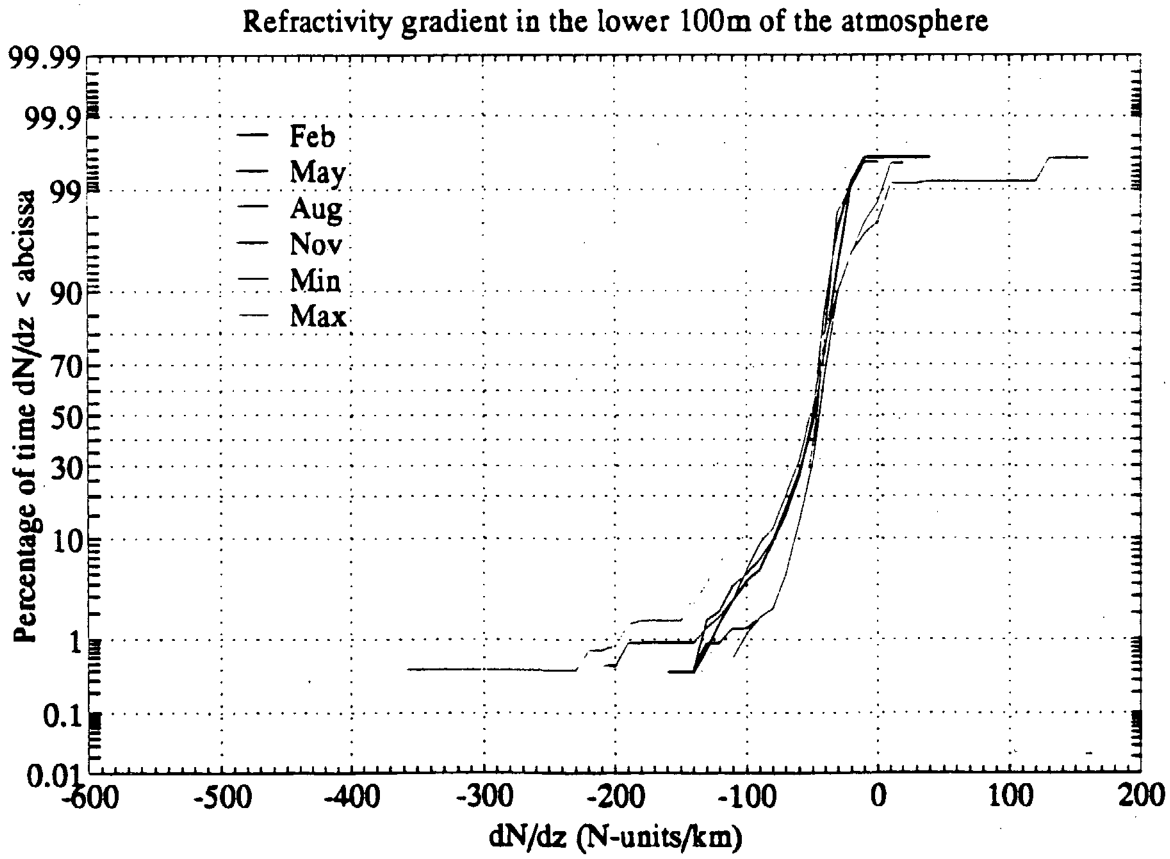

Fig. 3.6.1 Frøsøn

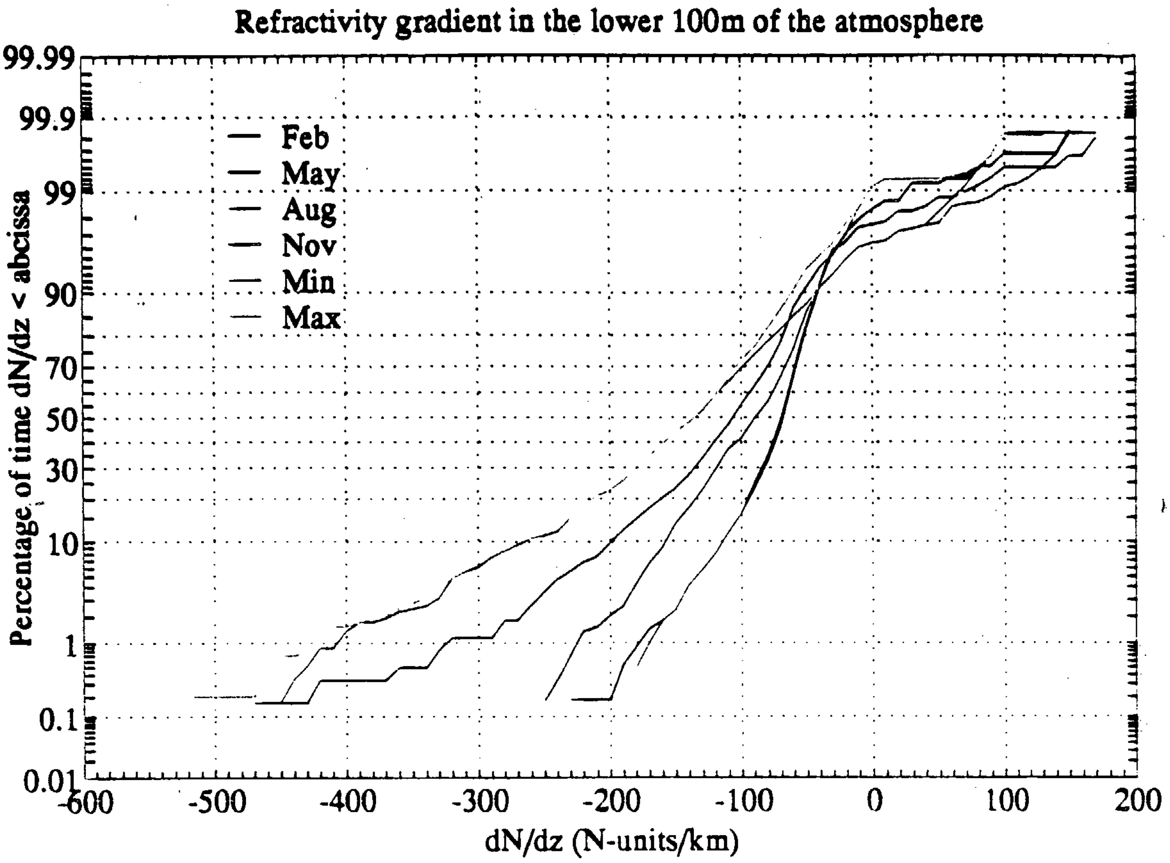

Fig. 3.6.1 Bodø

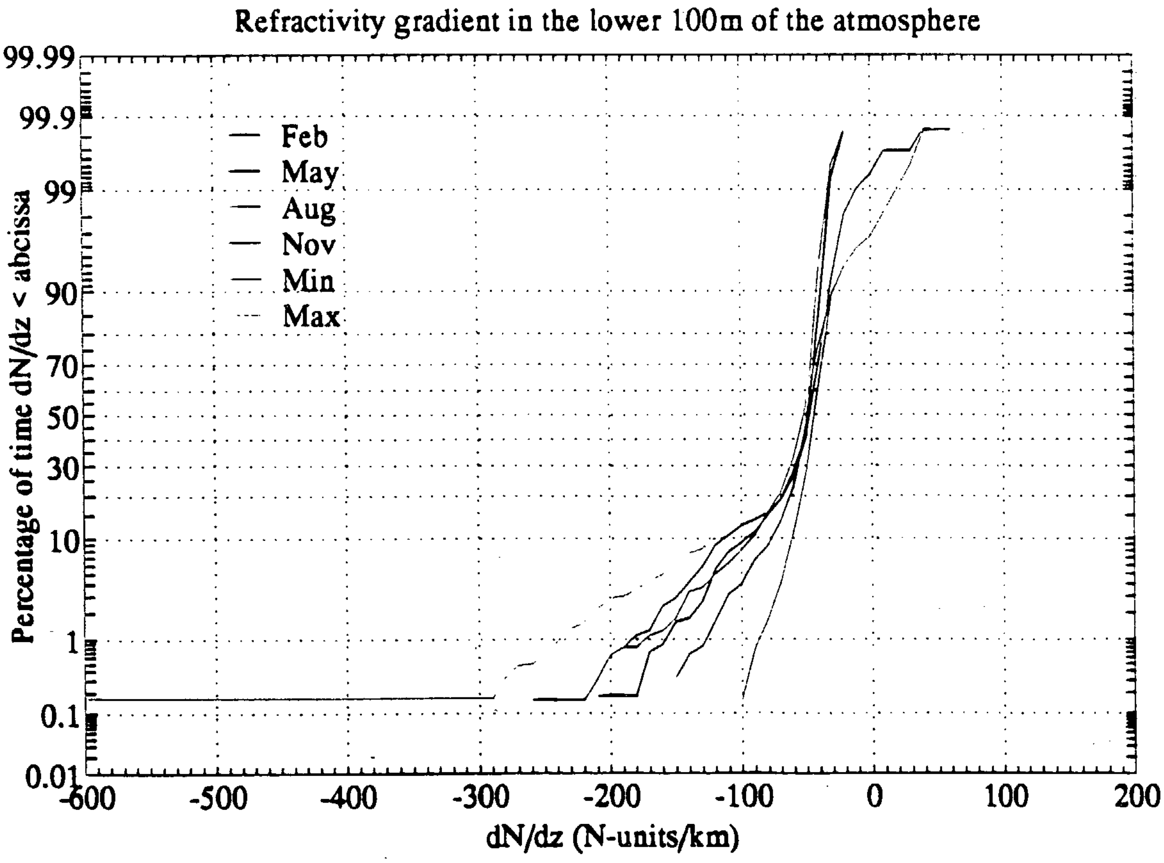

Fig. 3.6.1 Sodankyle

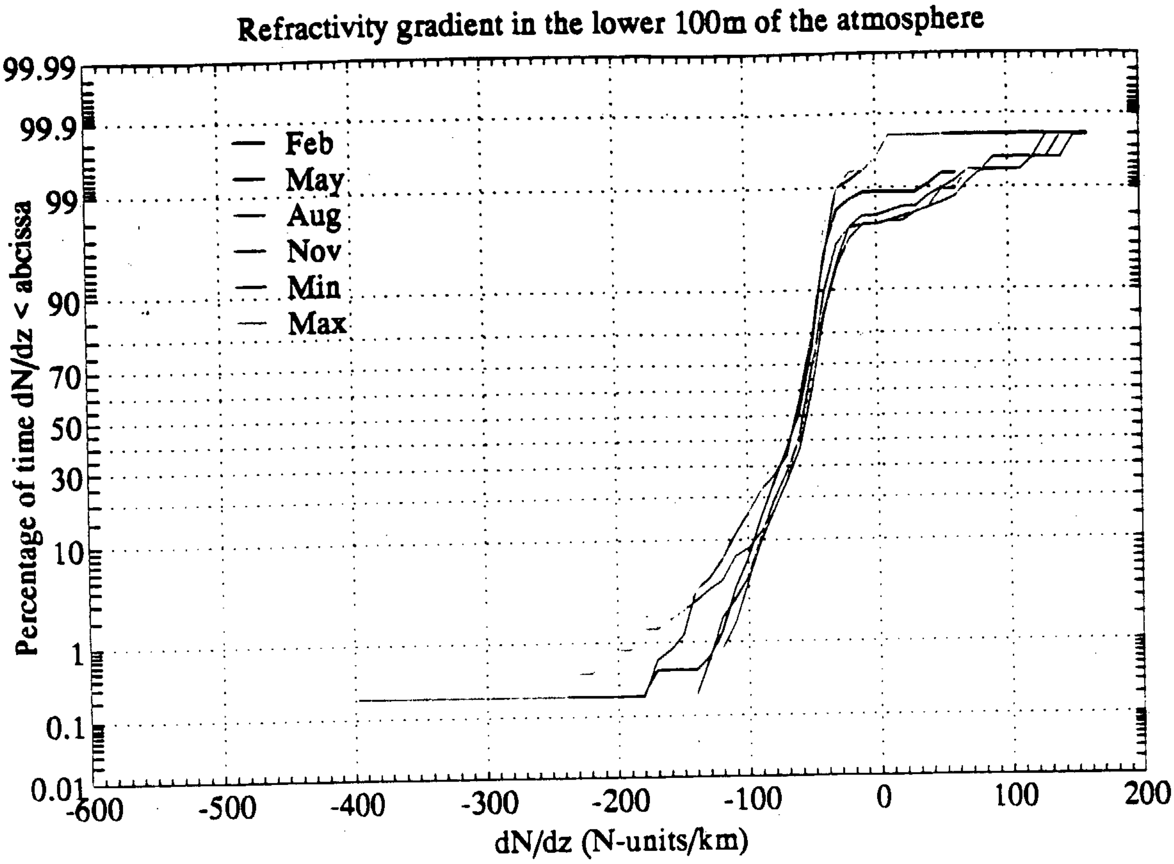

Fig. 3.6.1 Jan Mayen

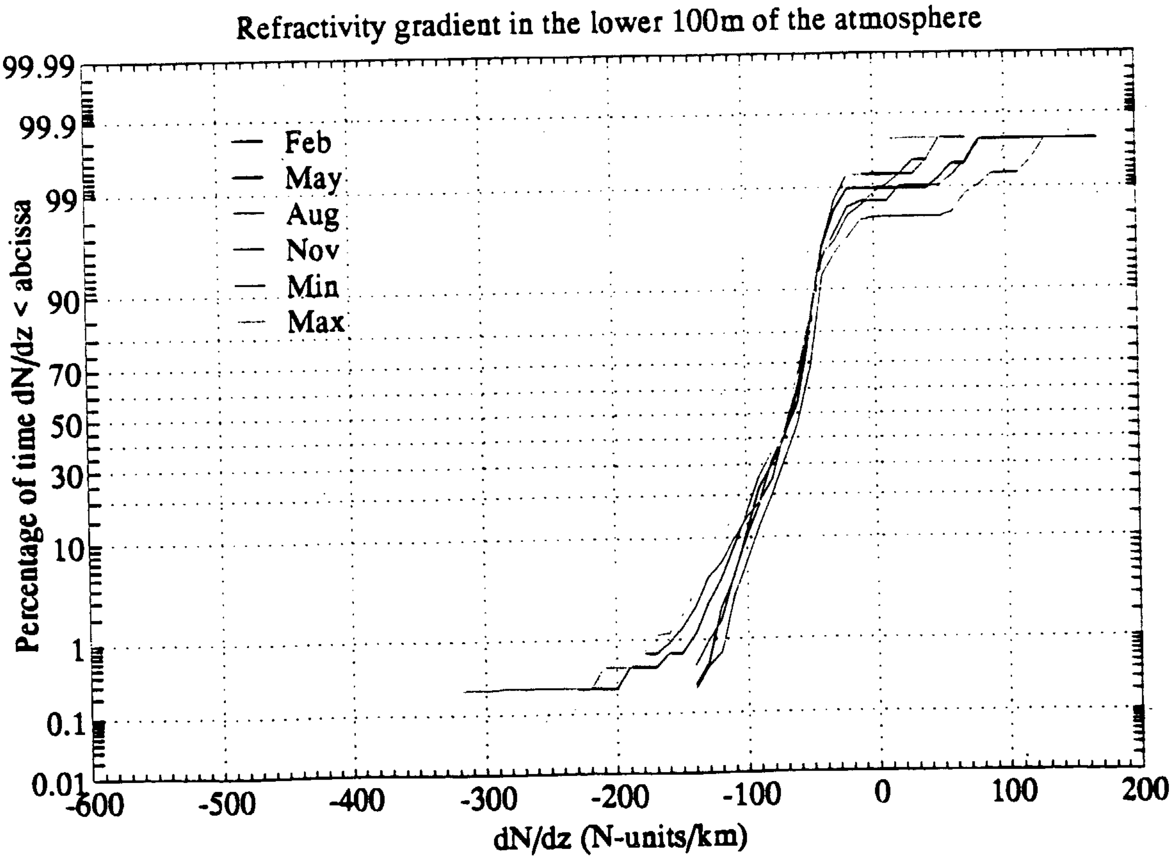

Fig. 3.6.1 Bjørnøya

3.7 Atmospheric bending.

The path followed by a ray in the atmosphere is dependent on the gradient of the refractive index along that path. The gradient of the refractivity is obviously composed of a vertical and horizontal components. Of these the horizontal components normally are negligibly small so we consider the atmosphere as horizontally homogenous. The refractivity thus is a function of the vertical co-ordinate only.

The bending of a ray is given by Snell's law and can be written for a "flat earth" as

$$n \cos \theta = \text{constant}$$

For a spherical earth with spherical variation of the refractive index n it is given by

$$r\, n \cos \theta = \text{constant}$$

where r is the radius of the spherical shell considered.

The bending of a ray in a vertical layered atmosphere is then given by differentiating the above equation, i.e.

$$r \cos \theta\, dn + n \cos \theta\, dr - r\, n \sin \theta\, d\theta = 0$$

Introducing the curvature of the ray as r'' we obtain

$$1/r'' = -\cos \theta / n \;\; dn/dz$$

and since θ in the troposphere is small this can be written in differential form as

$$1/r'' = -(1/n)(dn/dz)$$

where r'' is the curvature of the ray, n the refractivty and z the vertical co-ordinate (along the radius).

This expression can further be approximated by introducing the N-values as

$$1/r'' = 10^{-6}\,(dN/dz)$$

This will so give rise to the concept of an "effective earth-radius" factor k, defined as

$$k = (\, 1 + 10^{-6}\, R\, (dN/dz)\,)^{-1}$$

where R is the radius of the earth at the given latitude in km. For computation of the radius see appendix 1.

The condition

$$k = 1 \quad \text{or} \quad dN/dz = 0$$

implies a constant refractive index and no ray bending. For a well mixed atmosphere, the mean refractivity gradient is roughly -39 N/Km, or accordingly $k = 4/3$.

For $k > 4/3$, rays suffer increasing downward deflection, and for $0 < k < 4/3$ horizontally propagating rays would be deflected upward.

We can thus make the following definitions:

Subrefractive :	$0 < k < 1$	$-1/aR < dN/dz < 0$
Normal deflection:	$1 \leq k \leq 4/3$	$0 < dN/dz < 1/aR$
Superrefractive :	$k > 4/3$	$dN/dz > 1/aR$

where we have used $a=10^{-6}$

In table 3.7.1 we show the numbers of cases where we have the different bending conditions given pr height interval and month.

Identifying ducts we have $N = -1/aR$ or approximately the refractivity gradient equal approximately to -157 N units (see appendix 1) and thus $k = \infty$.

Table 3.7.2 show the numbers of cases with the possibility of ducts ($N<-157$) pr month and heigth intervall ($dh=100m$).

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	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	195	225	242	254	251	240	228	216	203	185	180	159	124	108	85	85	70	62	57	43
jan	norm	383	374	364	356	359	370	381	395	411	427	432	451	483	505	525	529	540	549	557	569
	sub.	0	0	0	0	1	1	4	3	0	1	2	3	5	2	3	1	3	2	1	2
	sup.	155	162	178	187	194	202	203	180	169	146	130	124	120	92	74	68	54	46	45	34
feb	norm	382	392	377	364	360	354	353	374	385	408	423	429	434	461	473	485	497	505	505	516
	sub.	1	0	0	1	0	0	0	2	1	0	1	2	2	2	6	2	4	4	4	4
	sup.	170	153	150	158	180	197	199	189	185	182	166	154	139	106	92	93	89	88	76	61
mar	norm	419	455	459	455	436	419	416	425	429	433	448	460	473	505	516	518	524	528	537	551
	sub.	0	0	0	1	0	0	1	1	1	1	2	2	4	6	8	5	4	1	4	5
	sup.	270	216	183	164	150	153	154	156	143	144	148	143	134	100	95	78	89	84	70	69
apr	norm	301	369	406	424	441	437	434	436	447	445	439	447	455	486	493	511	499	507	521	522
	sub.	1	0	1	3	2	3	2	1	1	2	4	3	3	7	5	4	3	0	1	2
	sup.	356	299	227	194	184	171	158	163	167	179	172	160	154	152	151	151	149	148	133	128
may	norm	209	301	377	408	420	433	440	435	434	428	433	442	450	451	453	453	456	457	475	476
	sub.	3	0	3	7	6	6	10	10	5	2	5	6	4	6	5	6	8	7	5	9
	sup.	339	316	267	253	223	222	232	233	230	216	204	208	187	160	171	159	155	150	135	131
jun	norm	199	266	315	329	353	364	356	351	353	370	381	374	392	419	413	424	429	433	450	458
	sub.	14	2	6	6	12	7	4	6	7	6	6	10	13	8	7	8	7	9	8	5
	sup.	360	328	280	259	257	252	259	260	263	253	245	238	239	237	224	224	207	207	183	163
jul	norm	190	265	320	338	338	343	337	334	333	340	351	359	362	361	375	379	394	393	418	432
	sub.	15	4	4	5	7	8	7	12	13	14	12	10	7	11	11	9	10	10	9	15
	sup.	345	333	300	289	288	287	288	295	303	313	317	324	287	244	209	197	200	171	157	137
aug	norm	215	258	295	309	306	305	306	297	285	276	273	267	301	339	372	393	386	415	431	451
	sub.	15	2	2	1	3	4	5	6	10	7	7	9	12	18	15	9	16	15	12	10
	sup.	322	320	284	270	273	281	290	281	295	313	304	272	243	215	185	186	169	162	144	137
sep	norm	238	268	308	325	318	309	298	309	294	276	282	312	342	374	396	399	417	426	442	445
	sub.	12	1	0	0	2	2	3	2	2	3	6	9	9	6	12	10	9	7	10	14
	sup.	271	286	287	300	312	319	327	312	294	278	273	257	234	207	178	169	146	135	127	112
oct	norm	301	313	314	300	291	280	276	291	308	325	334	347	369	394	420	434	449	464	479	491
	sub.	15	2	1	2	2	4	2	4	4	3	3	3	6	7	11	8	15	12	5	6
	sup.	211	226	250	259	249	250	244	243	236	215	186	166	161	127	115	111	94	91	77	67
nov	norm	351	359	339	331	341	340	346	345	356	376	405	421	427	458	474	478	497	501	513	522
	sub.	6	0	0	1	1	2	3	2	1	1	2	5	6	8	6	5	4	3	5	6
	sup.	196	205	199	223	204	220	208	209	212	201	184	171	135	110	104	100	84	74	60	49
dec	norm	366	370	377	360	381	365	377	376	373	386	404	415	448	474	479	483	498	508	518	531
	sub.	3	0	3	0	0	1	1	1	2	1	0	1	3	4	4	5	6	6	10	8

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	0	1	0	1	2	2	0	0	0	1	0	1	2	0	2	0	0	0	0	1
feb	0	1	1	4	2	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0
mar	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
apr	2	2	1	0	0	0	3	0	0	0	2	0	1	0	0	0	0	0	1	0
may	25	4	2	2	0	0	2	1	3	1	0	2	2	1	2	3	0	1	0	0
jun	25	4	3	3	4	1	2	3	3	2	2	0	0	4	1	2	2	2	1	0
jul	31	5	4	6	7	6	5	3	1	4	3	4	3	2	3	1	2	3	3	2
aug	16	4	4	3	4	5	3	4	3	5	5	2	2	1	7	4	1	2	2	3
sep	6	1	2	1	3	4	4	3	5	4	4	3	2	1	4	2	2	2	1	1
oct	2	1	3	5	3	6	4	2	4	4	0	3	1	2	2	0	1	0	0	2
nov	1	0	1	1	3	2	1	4	1	2	1	2	1	2	0	1	0	0	0	0
dec	0	1	1	1	1	0	1	2	1	0	0	1	1	0	1	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

1415 Sola

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	sup	453	315	220	173	165	158	158	164	157	139	128	110	93	90	90	105	98	94	77	72
	norm	137	295	396	441	449	454	453	450	454	470	486	505	525	527	526	506	513	518	536	538
	sub	14	4	0	1	0	3	5	2	4	6	2	1	2	0	0	3	4	3	1	4
feb	sup	381	262	192	144	128	132	139	135	109	109	113	109	116	115	106	104	98	88	85	80
	norm	151	285	363	410	427	419	413	419	443	442	438	442	436	437	447	446	453	466	470	472
	sub	8	6	0	1	0	3	3	0	2	5	3	2	2	1	2	4	4	1	0	3
mar	sup	393	231	169	152	150	148	141	148	147	139	130	132	136	127	116	102	79	68	71	73
	norm	192	380	443	461	463	460	469	462	461	471	483	479	474	480	492	509	531	541	540	538
	sub	14	0	0	0	1	4	2	1	2	3	0	2	5	6	3	2	3	4	2	2
apr	sup	426	276	209	188	193	175	171	160	143	138	152	137	137	120	121	107	100	101	97	88
	norm	130	313	383	403	399	416	418	430	447	452	441	453	457	468	470	483	491	486	488	497
	sub	16	5	2	3	3	4	5	6	6	5	3	5	4	6	3	2	3	7	9	8
may	sup	435	319	259	257	253	269	264	233	213	193	186	190	186	167	159	145	135	119	113	110
	norm	111	280	356	355	358	345	345	375	399	418	422	416	427	443	445	465	476	493	494	497
	sub	27	8	0	3	2	3	7	8	4	5	7	12	8	8	12	5	6	5	9	9
jun	sup	449	330	290	266	271	287	280	262	250	233	207	196	195	182	155	139	134	137	139	121
	norm	70	251	290	308	301	288	285	300	316	341	367	374	380	391	414	437	442	436	438	458
	sub	24	4	4	6	11	10	14	16	14	11	9	14	17	16	16	12	11	14	11	9
jul	sup	405	281	247	263	278	293	300	270	237	236	227	225	221	209	178	164	160	144	135	129
	norm	61	246	284	267	249	226	214	238	282	284	296	298	300	309	339	357	364	382	392	403
	sub	21	10	7	4	6	8	16	23	14	17	13	16	22	20	19	14	12	14	11	8
aug	sup	470	340	282	268	280	319	321	327	317	299	277	261	263	223	197	182	171	188	161	162
	norm	59	241	304	315	299	264	255	250	264	279	296	313	331	358	383	397	399	393	413	414
	sub	20	5	1	4	5	7	10	12	8	12	17	17	10	11	14	12	17	11	17	14
sep	sup	448	331	230	207	216	224	257	250	236	239	222	219	204	163	166	162	144	134	139	129
	norm	55	221	327	350	337	332	295	299	314	309	325	325	342	374	374	383	402	415	410	411
	sub	18	5	2	3	7	3	3	3	8	8	7	6	9	15	15	10	10	8	8	15
oct	sup	484	385	268	219	212	216	226	229	238	238	231	215	203	190	165	159	164	158	144	141
	norm	70	203	324	374	382	377	367	357	351	347	351	369	380	392	418	426	416	420	434	442
	sub	11	2	2	2	0	1	2	4	3	7	11	8	11	9	9	8	12	16	16	12
nov	sup	486	318	236	201	201	200	204	208	183	158	155	141	139	141	124	119	121	106	113	96
	norm	81	266	351	387	388	390	388	383	411	432	429	441	445	447	460	467	465	481	471	489
	sub	10	5	4	6	5	5	3	3	1	5	9	10	9	7	8	7	8	5	9	8
dec	sup	465	321	214	186	196	193	175	171	161	159	139	136	129	116	113	104	111	111	91	82
	norm	102	280	390	417	410	410	428	436	445	445	461	467	470	484	489	491	490	492	503	517
	sub	17	1	0	1	1	4	4	0	1	1	3	4	4	5	4	9	4	3	9	6

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	6	1	0	0	1	1	0	0	1	1	0	0	2	0	0	1	0	0	0	0
feb	6	0	0	0	0	1	0	1	1	0	1	2	2	2	0	1	0	0	0	0
mar	3	0	0	0	0	1	0	0	2	0	0	0	1	0	2	0	0	0	0	0
apr	17	1	1	1	0	1	2	0	0	1	0	1	2	1	1	2	0	0	0	1
may	38	9	2	3	5	1	2	2	2	1	2	0	2	1	1	2	1	0	1	1
jun	45	4	4	8	5	3	9	10	8	3	5	4	4	3	3	0	1	1	0	0
jul	51	4	3	7	8	14	11	10	7	3	4	1	4	6	5	5	4	0	2	0
aug	40	4	4	6	9	3	7	4	4	3	3	1	4	4	1	4	5	0	1	2
sep	34	1	0	0	0	1	4	7	1	2	4	9	11	9	5	4	3	3	3	4
oct	23	0	0	0	1	1	0	5	3	4	2	3	12	6	4	3	4	2	2	0
nov	11	0	1	1	1	0	0	1	0	0	2	3	11	1	4	3	0	1	1	1
dec	7	0	0	0	0	0	0	0	0	1	3	0	11	3	2	2	1	0	2	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

1384 Gardermoen

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	sup	357	258	217	190	169	146	140	107	97	92	88	94	87	78	75	70	69	76	51	37
	norm	205	327	371	398	429	448	448	481	490	493	497	489	494	506	508	515	516	510	535	547
	sub	9	0	0	1	2	0	1	1	2	3	4	3	3	2	4	2	2	1	1	3
feb	sup	341	208	175	161	171	168	148	101	86	79	86	86	86	87	78	68	71	74	53	40
	norm	181	344	380	392	389	392	409	455	471	477	471	471	469	469	478	489	483	482	502	516
	sub	9	1	0	1	1	0	2	2	0	2	2	2	3	0	1	2	4	1	2	2
mar	sup	397	222	166	137	118	112	105	85	70	75	75	83	87	87	85	79	74	69	60	51
	norm	189	390	448	480	507	506	510	529	545	540	540	530	526	525	526	532	538	544	553	565
	sub.	9	0	0	0	0	1	0	2	2	1	1	2	2	3	3	4	3	1	2	0
apr	sup	357	209	156	138	116	95	82	71	75	72	77	82	78	88	85	86	75	83	78	72
	norm	203	379	434	454	482	503	512	523	519	521	517	510	511	504	507	504	515	507	512	518
	sub	13	1	1	2	2	0	1	0	0	1	1	2	4	1	2	5	5	5	5	4
may	sup	377	257	183	165	155	138	113	109	98	90	92	89	93	118	124	118	107	107	111	105
	norm	180	351	429	449	463	477	504	507	516	524	519	523	520	489	485	497	503	501	497	505
	sub	12	0	1	0	3	5	2	1	1	1	4	3	2	5	4	0	3	5	6	5
jun	sup	437	341	265	229	210	170	159	141	138	135	117	126	117	127	129	112	97	104	106	109
	norm	74	244	325	361	393	424	434	448	451	454	472	462	469	462	458	471	485	482	479	476
	sub	13	0	0	0	2	1	1	3	2	2	2	3	4	2	3	7	7	3	5	5
jul	sup	409	339	282	261	245	212	190	171	156	159	162	172	149	130	129	126	148	136	131	131
	norm	80	228	294	321	345	363	383	406	421	419	414	404	424	442	443	448	424	438	444	440
	sub	10	6	8	2	5	9	10	6	6	6	6	8	10	11	11	9	9	7	9	12
aug	sup	432	357	308	278	268	242	208	189	196	194	193	183	173	166	168	152	132	130	132	132
	norm	71	196	253	282	315	320	352	371	366	368	367	373	382	385	386	397	414	416	423	423
	sub.	15	5	2	3	3	6	4	3	2	1	2	6	7	11	9	14	17	17	9	8
sep	sup.	443	329	282	258	256	217	203	184	173	170	172	162	149	124	113	119	109	123	132	107
	norm	108	259	307	332	355	382	395	413	419	421	422	429	442	460	472	467	476	466	456	478
	sub.	15	1	1	2	1	1	0	0	2	2	1	1	2	10	8	7	8	5	6	8
oct	sup.	427	311	285	257	272	237	239	225	203	187	165	160	148	146	130	130	134	126	126	102
	norm	151	291	318	347	352	367	369	378	399	410	432	436	447	449	461	468	466	470	465	494
	sub.	13	1	0	1	4	3	0	2	4	4	4	9	9	8	13	8	6	8	14	10
nov	sup.	376	251	227	216	209	183	167	152	137	124	108	109	96	93	96	90	76	74	63	64
	norm	182	327	354	368	395	404	416	428	442	451	469	472	484	484	481	486	501	508	515	513
	sub.	10	1	2	0	2	1	2	3	4	6	4	2	3	5	5	5	5	1	5	6
dec	sup.	377	269	235	206	191	152	142	126	114	101	106	103	95	88	78	83	76	65	65	70
	norm	202	334	369	400	428	461	468	482	491	507	499	502	511	518	527	521	530	541	540	535
	sub.	6	0	0	0	2	0	0	1	3	0	3	3	2	2	3	4	1	1	2	2

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
feb	3	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0
mar	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
apr	8	0	0	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0
may	36	3	0	0	1	0	1	0	0	0	0	0	0	3	2	0	2	1	0	0
jun	61	4	1	1	0	0	1	0	0	0	0	0	1	0	1	0	0	1	1	1
jul	77	7	0	1	1	4	1	1	2	1	3	1	2	2	2	0	2	4	1	2
aug	41	3	1	1	1	1	4	3	1	1	2	2	2	2	1	1	1	1	0	1
sep	21	1	0	0	0	1	0	0	0	1	0	2	1	0	1	2	2	1	1	2
oct	3	0	0	1	1	3	1	3	2	5	5	1	2	2	1	0	0	1	0	0
nov	3	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	1	0	0	0
dec	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

2225 Frøsøn

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	107	77	64	55	49	44	42	34	39	35	29	27	16	15	16	11	9	10	9	17
jan	norm	90	129	142	151	157	162	163	169	166	170	178	178	191	191	191	196	197	196	196	189
	sub.	1	0	0	0	0	0	0	2	1	1	0	0	0	1	0	0	1	1	1	0
	sup.	138	86	70	55	44	40	45	47	49	57	57	49	39	34	31	24	22	17	18	19
feb	norm	108	166	183	200	210	215	208	207	205	198	197	205	215	221	224	230	232	238	237	235
	sub.	1	1	1	0	0	0	2	1	1	0	1	1	1	0	0	1	1	0	0	0
	sup.	123	69	51	49	49	52	49	48	58	70	63	54	48	37	27	17	23	27	21	14
mar	norm	173	234	253	255	254	253	256	257	246	234	240	250	253	267	277	288	282	278	284	290
	sub.	1	1	1	1	2	0	0	0	0	1	2	1	4	1	1	0	0	0	0	1
	sup.	88	45	33	27	21	25	28	34	38	39	38	36	31	38	38	36	33	33	23	22
apr	norm	157	206	220	224	231	227	224	218	214	213	211	216	220	213	214	216	219	219	227	229
	sub.	3	1	0	1	0	0	0	0	0	0	1	0	1	1	0	0	0	0	2	1
	sup.	116	68	46	39	33	29	32	29	27	29	35	40	51	53	45	43	44	45	42	38
may	norm	116	169	191	198	204	207	204	208	209	207	201	197	185	183	191	192	192	192	194	196
	sub.	1	0	0	0	0	1	1	0	1	1	1	0	0	0	1	2	1	0	1	2
	sup.	132	84	64	54	48	49	48	44	44	47	48	49	50	53	52	49	37	33	29	27
jun	norm	96	151	173	183	189	188	189	192	192	190	189	187	186	183	184	185	196	202	207	209
	sub.	2	2	0	0	0	0	0	1	1	0	0	0	1	1	1	3	4	2	1	1
	sup.	71	58	49	43	33	29	30	29	34	30	28	33	31	33	34	30	26	22	24	25
jul	norm	51	73	83	89	98	103	100	99	97	100	102	97	98	96	95	99	103	108	106	106
	sub.	4	1	0	0	1	0	2	2	1	2	2	2	3	3	2	3	3	2	2	1
	sup.	119	96	87	78	70	65	66	67	61	61	64	57	53	52	51	46	41	43	38	36
aug	norm	82	118	128	136	143	149	147	146	153	153	148	156	161	159	161	166	170	170	175	178
	sub.	4	0	0	1	2	1	2	2	1	1	2	1	1	2	2	2	2	1	1	0
	sup.	127	92	80	68	67	67	73	70	69	68	64	65	58	50	47	44	39	45	42	42
sep	norm	133	175	187	201	202	202	195	197	197	199	201	202	209	217	220	224	228	220	224	225
	sub.	0	1	1	0	0	0	1	2	2	1	2	1	1	1	1	0	1	2	2	1
	sup.	93	73	71	69	69	65	58	58	61	54	50	50	55	48	45	46	40	38	33	27
oct	norm	135	163	167	172	172	176	183	183	179	185	189	191	186	191	193	194	198	200	206	210
	sub.	3	1	1	0	0	0	0	0	1	2	2	0	0	1	1	0	1	1	0	2
	sup.	85	54	51	49	42	46	51	45	42	42	45	39	41	34	32	29	24	21	20	14
nov	norm	122	165	168	170	177	172	167	170	176	176	173	177	177	185	188	191	196	199	199	206
	sub.	1	1	1	1	1	2	2	4	2	2	2	3	2	1	0	0	0	0	1	0
	sup.	65	38	31	19	14	19	21	28	28	32	31	27	25	24	19	18	15	17	16	11
dec	norm	89	129	136	148	153	148	146	139	139	135	136	140	142	143	148	148	151	149	150	155
	sub.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	1	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0
feb	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mar	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
apr	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
may	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
jun	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
jul	2	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0
aug	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
sep	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0
oct	0	2	1	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
nov	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

1241 Ørland

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	407	275	216	193	173	162	143	121	93	81	65	69	58	60	51	52	43	42	39	44
jan	norm	134	306	366	393	413	423	442	464	490	502	521	514	526	525	532	530	538	539	542	534
	sub.	22	2	3	1	1	2	1	1	0	0	0	3	1	0	1	1	2	2	2	5
	sup.	386	278	222	173	170	158	133	114	98	75	65	57	40	47	42	47	51	53	46	37
feb	norm	114	253	311	362	365	377	402	421	438	457	470	477	495	489	493	488	484	482	488	495
	sub.	16	1	2	1	1	1	0	0	0	3	1	2	1	0	0	0	1	1	2	3
	sup.	442	304	224	187	173	163	136	116	90	77	81	71	63	51	54	49	44	36	36	41
mar	norm	107	282	361	397	413	426	453	473	497	511	507	518	526	538	535	539	544	553	549	544
	sub.	18	0	2	4	3	0	0	0	2	1	1	0	0	0	0	1	1	0	1	0
	sup.	427	269	204	180	168	166	146	129	109	96	97	82	77	63	64	66	58	61	58	56
apr	norm	111	311	378	402	413	417	437	454	472	486	484	499	504	519	515	512	522	519	522	526
	sub.	20	0	1	0	0	0	0	0	1	0	1	1	1	0	1	2	2	2	2	1
	sup.	439	311	226	191	174	170	166	155	170	154	145	141	134	137	115	101	108	91	81	82
may	norm	74	287	377	411	424	430	431	436	431	442	453	461	461	460	479	487	487	510	514	513
	sub.	23	3	3	4	6	5	7	11	4	7	8	4	9	9	10	16	10	5	10	10
	sup.	378	309	259	240	231	235	218	207	207	187	177	170	165	146	127	133	140	138	124	113
jun	norm	70	250	300	323	333	327	340	350	354	366	374	378	390	409	426	427	420	424	430	444
	sub.	26	0	4	2	1	6	5	6	5	12	14	17	12	12	13	8	8	6	12	11
	sup.	358	357	298	281	283	286	266	250	246	231	219	210	208	180	155	133	134	121	102	97
jul	norm	53	175	235	253	256	251	267	283	281	294	307	318	328	354	376	397	400	412	427	432
	sub.	36	8	8	7	2	6	11	10	9	11	14	12	8	8	12	10	6	8	12	11
	sup.	390	361	340	310	305	286	271	255	241	214	203	201	203	181	142	132	125	110	93	94
aug	norm	70	215	242	276	282	298	311	329	342	368	381	383	378	398	445	450	457	472	489	484
	sub.	37	6	3	1	1	3	5	4	3	4	2	3	7	9	3	7	9	7	8	11
	sup.	403	327	255	227	220	222	180	170	169	162	154	128	110	90	88	85	87	91	84	86
sep	norm	72	238	315	346	352	350	391	400	400	407	413	439	457	478	480	484	478	478	482	477
	sub.	28	1	0	0	1	1	1	3	3	4	6	6	5	2	4	3	6	3	6	8
	sup.	444	349	293	237	214	188	171	161	139	108	106	101	104	87	87	72	78	76	82	90
oct	norm	89	245	301	358	381	404	420	433	457	487	490	496	492	506	507	518	514	515	508	501
	sub.	26	3	2	2	2	3	3	2	1	2	1	0	1	1	1	5	4	5	5	5
	sup.	459	329	255	201	192	170	150	112	88	75	73	61	60	64	56	55	57	56	68	57
nov	norm	93	249	325	380	389	409	430	467	489	504	509	520	521	515	524	522	522	525	513	522
	sub.	12	2	1	0	1	2	2	3	4	2	0	1	1	1	2	4	3	1	1	3
	sup.	442	295	232	181	164	145	116	94	89	74	66	62	65	61	60	51	50	54	65	73
dec	norm	108	283	346	401	418	436	463	487	492	506	515	519	515	517	519	529	529	526	512	506
	sub.	16	1	2	0	0	1	2	0	0	1	0	0	0	2	1	1	2	1	2	2

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
feb	14	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
mar	12	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
apr	15	0	0	0	1	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0
may	62	5	0	0	2	1	1	3	1	3	0	0	2	0	1	0	0	0	1	1
jun	87	6	4	2	3	1	6	5	2	3	3	4	2	2	3	1	1	1	3	1
jul	93	4	3	3	3	1	0	1	6	6	2	2	0	2	1	4	3	2	1	2
aug	88	8	6	2	1	1	1	1	2	2	2	1	1	3	1	2	0	2	1	2
sep	66	6	3	0	0	0	1	0	1	0	0	0	0	2	0	0	1	0	0	1
oct	30	0	1	0	0	1	2	0	0	0	0	0	0	2	1	1	0	0	1	0
nov	8	0	0	0	0	1	0	0	1	1	0	0	0	2	0	1	0	0	0	0
dec	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

1152 Bodø

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	487	355	249	165	119	103	79	69	61	55	49	53	53	40	43	46	46	45	48	41
jan	norm	83	237	346	432	478	493	518	529	536	542	549	545	544	557	553	548	548	550	548	556
	sub.	13	1	1	0	0	1	0	0	0	0	0	0	1	1	1	1	1	2	1	0
	sup.	457	333	246	175	140	97	93	74	62	57	52	47	49	52	49	53	49	54	56	49
feb	norm	71	217	306	378	413	456	457	476	491	496	501	506	503	499	503	499	503	499	497	504
	sub.	9	0	0	0	0	0	2	2	0	0	0	0	1	2	1	1	1	0	0	0
	sup.	516	387	241	184	148	103	80	71	66	53	59	65	65	63	59	59	49	47	47	47
mar	norm	49	222	369	426	462	504	528	538	544	557	551	545	545	547	549	549	561	562	561	561
	sub.	21	0	0	0	0	2	0	0	0	0	0	0	0	0	2	2	0	1	2	1
	sup.	442	312	165	104	92	86	78	73	69	55	54	58	63	70	67	60	63	62	58	54
apr	norm	55	273	422	484	496	499	507	511	517	532	530	526	519	515	520	528	524	525	530	533
	sub.	13	0	0	0	0	2	1	2	1	1	3	2	4	3	1	0	0	0	0	1
	sup.	440	358	186	127	122	116	107	95	79	80	86	84	95	97	103	117	113	109	99	95
may	norm	35	241	422	482	487	493	502	513	530	529	523	525	513	510	503	486	492	494	505	510
	sub.	16	1	1	0	0	0	0	0	0	0	0	0	1	1	3	5	2	5	4	3
	sup.	358	348	206	143	141	156	146	138	127	123	126	129	130	119	112	109	116	107	100	100
jun	norm	36	217	367	434	434	421	430	437	450	453	449	442	444	454	459	461	456	466	473	474
	sub.	14	4	3	2	4	2	3	3	1	0	1	4	3	4	6	8	7	5	6	5
	sup.	299	293	214	198	185	180	170	158	150	149	147	144	142	129	134	120	108	101	98	89
jul	norm	35	193	283	301	311	317	325	337	345	344	347	349	342	360	357	374	388	392	394	401
	sub.	18	3	2	1	3	3	6	3	3	4	4	4	11	10	6	4	5	8	7	9
	sup.	303	354	260	196	187	194	190	170	155	156	152	144	152	132	149	138	134	115	109	105
aug	norm	44	214	312	373	384	375	381	403	418	417	420	428	419	440	422	431	434	451	456	462
	sub.	24	1	1	5	4	4	3	1	2	1	1	1	2	2	3	3	5	5	6	5
	sup.	352	299	183	118	117	100	96	84	81	86	85	99	115	100	92	91	79	90	83	78
sep	norm	15	265	386	451	453	471	475	486	488	484	483	469	455	471	477	478	489	479	485	485
	sub.	22	1	2	1	0	0	0	0	1	0	1	2	1	0	2	0	1	1	2	5
	sup.	455	329	186	138	114	104	85	91	87	81	73	75	84	82	77	78	78	74	70	69
oct	norm	23	267	410	458	483	492	511	505	508	514	524	520	510	510	512	517	517	517	521	523
	sub.	17	0	1	1	0	1	1	1	2	0	0	0	2	3	5	0	0	4	4	3
	sup.	459	314	233	177	146	113	70	67	66	63	51	52	57	54	52	53	53	52	51	53
nov	norm	57	265	350	406	438	470	512	516	518	521	533	531	525	528	530	528	528	530	531	530
	sub.	17	1	0	0	0	1	2	1	0	0	0	1	2	2	1	1	1	0	0	0
	sup.	506	346	229	160	118	93	78	76	69	52	50	57	50	43	43	45	48	43	50	61
dec	norm	44	238	359	425	469	494	509	509	518	536	538	528	534	542	543	540	536	541	534	525
	sub.	20	2	0	3	1	1	1	2	0	0	0	2	3	2	0	1	2	1	1	0

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
feb	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mar	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
apr	77	2	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
may	113	7	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
jun	168	9	2	0	0	0	0	0	0	1	1	2	1	2	1	0	0	1	0	0
jul	144	12	2	0	0	0	0	1	0	1	1	2	4	2	4	3	0	0	2	2
aug	204	6	2	1	0	1	0	1	0	0	0	1	2	0	0	2	1	2	2	1
sep	182	6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2
oct	101	1	0	0	0	0	0	0	0	2	0	1	0	0	1	0	0	0	0	0
nov	47	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
dec	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

3836 Sodankyle

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	347	356	323	279	210	163	129	93	84	66	68	73	66	58	60	55	62	59	46	38
jan	norm	219	254	289	334	403	450	481	517	529	546	544	539	545	554	552	557	548	553	566	572
	sub.	0	0	1	0	0	0	2	2	0	0	0	0	1	1	1	1	3	1	1	3
	sup.	244	267	265	244	183	141	126	104	94	90	78	76	69	69	62	50	51	44	44	40
feb	norm	288	292	298	319	378	419	435	459	466	471	483	484	490	492	499	511	509	517	518	521
	sub.	0	0	0	0	0	1	2	0	2	0	1	1	1	1	2	1	1	1	1	2
	sup.	191	152	142	138	132	124	118	108	97	88	96	87	88	91	87	62	62	62	49	39
mar	norm	410	461	473	479	483	489	498	509	516	528	519	526	523	522	527	548	547	549	563	572
	sub.	1	0	0	0	2	3	0	0	3	0	1	3	4	1	2	6	6	4	4	5
	sup.	216	190	112	83	63	68	68	84	87	104	109	111	114	104	95	80	74	67	55	52
apr	norm	354	396	475	505	524	517	516	501	499	479	476	473	472	478	486	504	507	515	531	533
	sub.	2	0	0	0	1	2	4	3	1	4	3	4	2	5	6	4	7	6	2	3
	sup.	270	243	181	96	69	61	59	66	70	68	76	90	99	76	81	85	75	90	84	77
may	norm	317	369	436	520	547	553	557	550	545	546	537	525	516	539	531	525	536	521	530	535
	sub.	5	1	1	2	1	3	1	1	2	2	2	0	2	1	3	7	3	3	2	3
	sup.	287	281	225	136	92	95	91	92	100	118	120	121	113	93	91	101	109	104	102	100
jun	norm	261	306	369	460	503	500	502	500	496	478	476	475	483	501	504	496	486	488	489	488
	sub.	9	2	1	2	3	3	4	7	3	3	2	2	3	5	3	2	4	7	8	11
	sup.	338	335	293	196	152	140	143	152	165	167	173	187	181	178	179	176	172	154	148	138
jul	norm	228	276	325	423	462	472	473	464	450	447	443	425	431	435	437	435	436	455	460	470
	sub.	11	3	2	1	5	6	4	3	4	5	4	6	6	3	2	6	10	8	8	9
	sup.	346	346	299	197	151	137	143	153	160	165	183	168	160	167	169	165	170	151	117	120
aug	norm	225	264	317	417	463	480	473	463	456	452	433	446	450	445	445	446	442	461	495	491
	sub.	26	3	0	2	3	1	1	2	2	1	1	4	6	4	3	6	4	6	5	4
	sup.	292	299	242	197	186	179	173	175	187	182	171	171	160	137	132	106	99	102	94	95
sep	norm	269	286	350	402	413	419	425	423	411	415	427	422	436	458	457	479	485	492	494	497
	sub.	12	2	3	0	0	2	2	2	2	3	2	5	3	5	11	15	15	6	12	8
	sup.	279	258	231	208	173	148	150	142	136	130	118	114	103	106	91	97	95	91	73	67
oct	norm	313	348	381	409	442	464	464	475	481	487	497	499	510	506	514	514	516	523	539	546
	sub.	1	1	0	0	1	4	4	2	1	2	3	5	5	5	12	8	8	5	7	5
	sup.	299	268	240	202	169	141	121	111	111	100	93	77	81	70	56	51	43	47	36	41
nov	norm	269	319	354	397	430	458	478	488	489	497	503	516	513	527	541	546	556	552	563	555
	sub.	0	0	0	1	1	1	0	1	0	3	3	6	5	3	3	3	1	1	1	3
	sup.	385	360	328	256	178	141	114	98	84	78	75	71	67	57	47	43	44	43	39	37
dec	norm	203	255	289	361	440	476	502	519	533	540	540	545	549	555	565	573	568	571	577	578
	sub.	0	0	0	0	0	0	1	1	1	0	2	0	0	1	2	2	4	2	0	1

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
feb	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
mar	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
apr	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
may	9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
jun	27	2	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
jul	25	1	0	0	0	1	0	1	1	1	0	2	0	2	1	2	1	2	2	0
aug	7	0	0	0	1	0	1	0	0	0	1	0	2	1	0	1	2	0	1	2
sep	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	1	0	0	0
oct	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	0
nov	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
dec	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

1001 Jan-Mayen

	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	377	167	135	93	81	82	101	112	132	130	134	113	98	79	70	73	56	51	51	49
jan	norm	83	302	339	382	394	394	374	364	342	344	342	363	374	397	406	403	418	425	425	428
	sub.	4	2	1	1	1	0	0	0	1	1	1	0	4	1	1	1	3	1	1	0
	sup.	344	148	109	80	93	94	107	115	106	110	106	106	83	76	60	48	45	40	30	27
feb	norm	81	291	333	363	353	352	337	329	339	335	337	340	362	370	385	396	400	404	414	417
	sub.	6	0	1	1	0	0	0	2	1	1	3	0	0	0	1	2	1	0	0	0
	sup.	374	141	95	68	75	83	100	122	125	134	135	133	112	79	71	67	57	52	45	39
mar	norm	88	345	391	418	411	403	387	364	361	352	350	354	375	404	414	418	429	432	440	448
	sub.	10	0	0	0	1	1	0	0	1	1	2	0	0	4	1	0	0	2	2	0
	sup.	393	150	102	75	73	83	106	112	122	116	116	116	100	90	82	75	61	43	39	44
apr	norm	64	320	371	397	398	388	367	360	349	355	352	353	367	380	387	395	411	428	432	427
	sub.	7	0	0	1	1	1	0	1	0	1	3	3	4	1	3	2	0	1	1	1
	sup.	399	180	124	125	135	133	148	151	154	160	155	156	143	125	96	94	78	69	64	44
may	norm	78	313	368	367	356	357	341	339	332	327	332	332	343	361	392	391	408	418	418	439
	sub.	3	0	1	0	1	1	2	2	3	3	4	3	5	5	3	5	5	4	9	8
	sup.	370	212	148	147	164	183	199	208	186	176	178	175	144	118	103	97	98	90	83	62
jun	norm	85	261	328	326	310	289	273	264	281	292	298	301	327	347	360	372	373	376	379	402
	sub.	7	2	2	3	2	4	3	5	5	6	2	2	5	11	14	8	6	11	15	12
	sup.	357	229	172	158	172	178	189	209	202	193	181	165	151	138	131	123	116	109	88	80
jul	norm	106	255	310	318	302	298	284	268	271	280	294	308	320	335	337	350	360	367	379	391
	sub.	12	5	5	7	7	9	12	8	9	7	9	12	13	13	18	13	10	10	18	15
	sup.	341	216	160	161	189	189	208	216	206	201	209	197	182	159	127	128	122	122	112	99
aug	norm	114	267	324	323	296	293	270	263	275	275	268	283	298	319	351	349	355	360	369	381
	sub.	15	3	2	2	2	4	8	8	5	9	9	5	6	10	9	11	11	5	6	8
	sup.	318	156	131	110	117	130	147	156	152	134	130	128	127	113	87	85	87	76	66	46
sep	norm	122	311	336	359	353	339	320	311	316	336	340	340	343	353	377	380	379	389	402	423
	sub.	15	1	1	1	0	0	0	3	3	1	1	1	1	3	6	6	5	6	3	2
	sup.	312	147	111	88	93	101	110	109	108	125	120	124	132	124	125	109	89	80	61	43
oct	norm	148	335	373	396	391	384	373	375	376	356	364	361	354	362	361	377	396	404	423	441
	sub.	8	2	3	3	3	2	1	1	3	3	2	2	1	1	1	1	2	3	3	3
	sup.	328	142	102	93	96	83	79	86	104	107	102	113	106	100	83	66	73	75	61	56
nov	norm	115	327	372	381	378	390	393	386	369	366	370	354	363	371	386	405	398	394	408	412
	sub.	16	4	1	1	1	1	1	2	1	0	0	4	3	1	2	0	0	2	1	2
	sup.	350	124	112	105	111	110	109	114	125	114	115	102	102	99	81	68	56	42	32	28
dec	norm	99	342	355	364	358	358	360	354	344	355	352	366	365	369	387	399	414	426	436	439
	sub.	8	0	0	1	1	2	1	2	1	0	3	2	3	2	2	3	0	1	1	1

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
feb	2	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0
mar	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0
apr	1	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0
may	4	0	0	1	1	1	1	0	2	1	0	0	0	0	0	1	0	0	0	0
jun	4	1	1	2	1	1	3	1	6	4	0	0	1	0	0	0	0	0	0	0
jul	5	0	1	3	5	1	1	2	5	7	3	2	2	0	0	0	0	0	1	0
aug	8	2	1	2	1	2	2	1	2	3	2	2	1	0	1	0	0	1	1	0
sep	0	0	1	0	0	1	2	0	0	0	0	2	0	1	0	0	0	0	0	0
oct	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0
nov	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
dec	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

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	height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
	sup.	339	102	72	81	86	94	91	96	90	76	76	75	75	60	54	56	45	39	30	30
jan	norm	69	324	355	348	342	336	338	332	337	352	353	352	352	367	374	373	381	389	397	398
	sub.	6	0	0	0	0	0	0	1	3	2	1	3	3	3	1	0	3	2	2	1
	sup.	326	122	91	91	82	75	67	74	67	65	75	70	71	69	66	47	34	29	32	29
feb	norm	47	261	297	299	308	316	324	317	324	325	316	319	318	322	325	344	356	362	356	361
	sub.	4	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	2	0
	sup.	350	127	107	104	111	111	103	108	106	85	79	72	65	64	57	52	49	49	40	30
mar	norm	73	304	324	328	321	322	328	324	326	349	354	362	369	369	375	380	383	382	392	403
	sub.	3	1	1	1	2	1	2	0	1	0	1	0	0	1	2	2	1	2	2	1
	sup.	335	115	92	83	82	82	80	76	76	80	78	61	47	56	59	60	48	48	42	33
apr	norm	59	290	312	322	323	322	324	327	328	324	325	341	358	349	346	343	355	355	360	370
	sub.	5	0	0	0	0	1	1	2	1	1	2	3	0	0	0	1	1	2	2	1
	sup.	365	174	101	83	83	80	79	79	75	86	77	86	91	90	86	83	73	63	60	55
may	norm	55	257	327	346	347	351	351	351	354	345	351	340	335	336	337	342	353	364	368	372
	sub.	5	1	1	0	1	0	1	1	2	0	1	2	2	3	5	4	4	3	2	3
	sup.	358	191	136	135	133	142	129	135	157	155	156	140	133	137	111	97	90	89	88	71
jun	norm	47	222	277	278	279	264	278	263	249	245	246	266	273	266	289	299	306	310	318	330
	sub.	4	0	2	2	1	7	5	13	7	13	11	6	7	10	13	16	16	12	6	11
	sup.	356	220	179	162	152	162	174	172	164	174	168	163	142	113	114	111	105	94	101	99
jul	norm	54	201	242	260	276	259	248	246	248	243	246	249	272	297	297	307	308	314	307	320
	sub.	10	6	6	7	2	8	8	11	13	10	14	15	14	16	17	12	16	19	21	11
	sup.	359	215	173	154	153	154	150	174	176	167	160	150	144	125	129	113	89	81	84	75
aug	norm	56	204	252	274	279	275	280	254	249	257	265	271	281	295	292	310	333	341	335	347
	sub.	8	12	5	2	1	2	2	4	6	7	6	12	8	10	10	8	11	11	12	10
	sup.	351	202	170	146	133	126	106	98	95	93	101	103	97	104	96	98	93	82	64	51
sep	norm	45	210	244	267	279	287	307	315	318	320	310	310	318	309	315	314	314	324	345	358
	sub.	13	3	1	0	0	1	1	1	1	1	3	2	0	2	3	3	7	8	6	6
	sup.	356	170	129	84	77	66	63	73	81	80	88	81	80	77	76	79	63	54	53	53
oct	norm	56	257	301	345	352	362	366	358	350	349	339	349	349	350	353	350	367	377	378	377
	sub.	9	0	0	1	1	1	0	0	0	2	3	1	1	2	1	2	1	0	0	1
	sup.	336	137	96	57	60	54	61	72	79	74	73	59	62	70	70	62	51	49	41	30
nov	norm	61	276	319	358	354	360	352	342	334	339	340	353	350	343	341	350	361	363	372	382
	sub.	8	1	0	0	1	0	1	0	0	0	1	1	1	1	2	1	1	1	0	1
	sup.	309	121	108	101	102	89	79	80	75	64	63	62	50	46	46	50	45	45	30	25
dec	norm	94	304	319	328	327	340	350	349	353	363	366	367	379	382	381	378	384	384	398	404
	sub.	7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0

Table 3.7.1 Number of cases with superrefactive conditions (sup.), normal deflection (norm) and subrefactive conditions (sub.). Height given in km.

height	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.0	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
jan	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
feb	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mar	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
apr	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
may	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
jun	0	0	0	0	2	1	1	2	0	0	0	1	0	0	0	1	1	1	0	0
jul	5	4	3	1	1	2	0	1	5	3	2	3	2	3	1	0	1	2	0	0
aug	4	1	1	2	0	2	1	0	1	2	2	0	0	2	1	2	0	0	2	1
sep	3	0	0	1	1	0	1	1	1	0	0	0	0	0	1	0	1	1	0	0
oct	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
nov	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
dec	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3.7.2 Number of cases with possibility of ducts, ie. N<-157 N-units pr month and height (km).

3.8 Atmospheric ducting.

Atmospheric ducting occurs when a wave is trapped in a layer in the propagating medium called a duct or a wave channel. This phenomenon appears for sound and gravitational waves as well as for electromagnetic waves. The condition for the occurrence of such a phenomenon is that a "characteristic velocity" or a "refractive index" for the medium has some specified value.

A rigorous treatment of ducting involves solution of the complete wave equation for an inhomogenous medium in three dimensions, a rather difficult problem. Practical results can however be obtained from a much more simple treatment, ray-theory or the principles of geometrical optics.

We then define ducting as occurring when a radio ray coming from the earth's surface is sufficiently refracted so that it either is bent back towards the surface of the earth or travels in a path parallel to the surface.

The trapping or ducting layers can occur at every height in the atmosphere, a necessary condition is that in a specified height interval the refractivity gradient is less than -157 N/km.

It is therefore convenient to compute the refractivity in M-units instead of N-units where the modified refractivity is as before defined as

$$M = N + 1000000.\ z/R$$

where R is the radius of the earth (see appendix 1) and z is the height above the earth's surface. Utilising the concept of "mean radius" i.e. the radius of a sphere of equal volume, R=6371.21 km we obtain

$$M = N + 156.9561\ z$$

or approximately

$$M = N + 157\ z$$

A duct can then be defined in a region where $dM/dz < 0$. As mentioned ducts can occur at every height interval in the atmosphere. We therefore define the necessary conditions for ducts as mentioned before:

1: surface duct $(dM/dz)_{z=0} < 0$

2: elevated surface duct $(dM/dz)_{z=0} > 0$ where $M(z)_{z>0} < M(z)_{z=0}$

3: elevated duct $(dM/dz)_{z>0} < 0$ where $M(z)_{z>0} > M(z)_{z=0}$

Using this conditions a counting up of the different types of ducts leads to the following table 3.8.1

station	ducts	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	tot
	surf	0	0	0	2	25	25	30	14	6	2	0	0	104
Landvetter	e.surf	0	0	0	0	1	1	1	2	0	0	0	0	5
	elev	13	9	2	10	23	37	63	62	46	40	21	11	337
	surf	6	6	3	16	38	43	50	39	33	23	11	7	275
Sola	e.surf	0	0	0	0	1	0	1	0	0	0	0	0	2
	elev	7	11	6	15	32	69	92	63	56	33	18	14	416
	surf	1	3	0	8	36	60	77	40	19	2	3	0	249
Gardermoen	e.surf	0	0	0	0	0	0	1	0	0	0	0	0	1
	elev	2	3	1	4	10	8	31	25	13	28	5	0	130
	surf	1	1	0	0	0	4	2	2	0	0	0	0	10
Frøsøn	e.surf	0	0	0	0	0	0	0	0	0	0	0	0	0
	elev	3	1	1	2	0	1	3	2	3	5	2	0	23
	surf	14	13	12	13	61	85	92	84	64	30	8	5	481
Ørland	e.surf	0	0	0	0	0	0	0	1	0	0	0	0	1
	elev	0	2	0	4	17	48	36	28	6	8	6	2	157
	surf	0	1	2	4	5	5	9	6	3	3	3	3	44
Mike (0/12)	e.surf	0	0	0	0	0	1	0	1	0	0	0	0	2
	elev	9	12	6	22	44	74	79	78	29	34	12	14	413
	surf	0	1	2	4	4	3	9	11	2	3	3	1	43
Mike (6/18)	e.surf	0	0	0	0	0	2	1	0	0	1	3	0	7
	elev	13	5	9	13	32	70	85	91	21	22	16	7	384
	surf	7	9	20	75	112	167	142	201	180	98	43	11	1065
Bodø	e.surf	0	0	0	0	0	0	4	0	0	0	0	0	4
	elev	0	0	0	1	4	11	26	15	8	3	1	0	69
	surf	3	4	0	3	9	26	25	7	0	0	0	2	79
Sodankyle	e.surf	0	0	0	0	0	0	0	0	0	0	0	0	0
	elev	1	1	1	1	4	2	17	12	4	4	2	0	49
	surf	0	2	1	1	4	4	5	8	0	0	0	0	25
Jan-Mayen	e.surf	0	0	0	0	0	0	0	0	0	0	0	0	0
	elev	5	3	3	3	7	20	30	22	7	3	2	1	106
	surf	0	0	1	2	2	0	5	4	3	2	0	0	19
Bjørnøya	e.surf	0	0	0	0	0	0	0	0	0	0	0	0	0
	elev	2	0	0	1	2	9	33	20	7	2	0	0	76

Table 3.8.1 Total number of occurrences of surface-based ducts (surf), elevated surface-based ducts (e.surf) and elevated ducts (elev) in the period 1982-1991.

To divide this table in both surface ducts and elevated surface can be a little bit misleading. We see from the table that the number of elevated surface ducts is quite small.

The main explanation is perhaps our division of the atmosphere in fixed layers of 100 m. Since a characteristic height of a surface based duct often is less than this, surely many of the elevated surface ducts will be included in our counting up the surface ducts.

This need not be serious following the reasoning in [11] recognizing that "for both surface and elevated-surface ducts ground reflection of a trapped wave is possible; whereas, in the case of elevated ducts, this cannot occur. Thus, as far as communications are concerned, there is a fundamental difference between the possible effects resulting from elevated ducts and those from the two other types. Conversely, there is little difference between the effects of surface, and elevated-surface ducts in spite of the rather different refractivity profiles involved."

We therefore keep the notation in the table bearing in mind that the number of pure surface ducts probably is too great at the expense of the number of elevated surface ducts, their sum however, should reflect the true number of occurrences.

From the table the number of surface ducts for Bodø strikes out as a number significantly greater than every one else in the table. This has an explanation in the surroundings of the station. The station is situated on a flat peninsula by the outlet of the Salten-fjord. Due to the high mountains on both sides of the fjord the prevailing wind direction are in and out of the fjord.

High pressure situations over land, especially in winter, promote cold air production in the inland and the cold air drains down to the fjord and proceeds outward to the sea. It is thus created a cold, fairly dry layer of a characteristic height about 200 to 300 metres drifting westwards over a humid very thin moist and temperate surface layer created by the open waters. Above this cold layer we find a moist maritime air mass moving eastwards due to the macro weather system. At the interface is a wind shear and often production of a thin cloud layer.

The situation as described can be persistent for long periods, but breaks down if the area is approached of fronts connected to low pressure situations.

In table 3.8.2 we give the number of cases within each height interval where $dM/dz < 0$ or accordingly $dN/dz < -157$. In an earlier work [10] on the problem of ducting we find maps of the occurrence of ducting situations in Scandinavia. Gradient statistics in the 850 hPa level was the basis for this work.

We can, from tables 3.8.2, in a way compare our results from the height levels 1.3 to 1.6 km (roughly giving the height of the 850 hPa level) to the results from [10]. In doing so, we find a rather good agreement between the numbers.

For instance we have from [10] a value of 6 cases (normal number of days) favourable for ducting in the Sola area. Our table gives the numbers of 5 to 6. The same month in the Bodø area gives from [10] the number 3 we get the same number as a mean for the height levels.

We are therefore inclined to say that the great number of ducting possibilities found in our work is a result of better instrumentation in the modern sondes as well as the use of the significant levels near by the surface.

Besides the more special climate conditions at the west coast this is perhaps also an explanation for the differences from the results given in [2].

3.9 k-values.

The factor k in equivalent radius of the earth is a function of the vertical gradient of refractivity dn/dz. It is usual in the radio meteorology to approximate this vertical gradient with the difference of the refractivity at 1 km and the value at the surface, i.e.

$$\delta N_s = N_{1000} - N_s$$

We thus obtain for the approximate expression of k

$$k = [1 - R\ 10^{-6}\ \delta N_s]^{-1}$$

where R again is the radius of the earth.

From the data for the distribution of δN it is easily done to make tables for k and accordingly a distribution. From the values of k we can further determine the radio horizon or the range of the signals by the formula

$$d^2 = 12.2449\ k\ h$$

where d is the horizon in km and h, the height of the transmitter or receiver, is given in m.

In table 3.9.1 is given monthly means of the value of k with standard deviation and maximum and minimum value for the given month at given hour and station together with the distribution for the month. The distribution tables are made such as if k is given a value, say 2.0, it covers the span of values from 1.91 to 2.00.

We find an overall variation between 1.0 and about 2.5 with monthly mean values between 1.3 and 1.5. The greatest monthly mean value we obtain at the two southernmost stations Sola and Landvetter in July as 1.5.

The distributions show a substantial greater spread in the warm season than in the cold season with occurrences of values greater than 2.0, in the winter the k-value never exceeds this value.

2527 Landvetter hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	.	2	.	.	.	.	.	.	.	2
1.2	.	1	1	3	3	3	1	2	1	.	2	1	18
1.3	67	70	98	67	38	17	13	17	28	35	59	91	600
1.4	180	134	161	165	156	120	72	100	119	142	161	148	1658
1.5	43	49	36	51	73	86	116	109	96	60	52	45	816
1.6	13	17	6	9	23	40	58	47	31	36	17	9	306
1.7	5	.	4	.	4	18	22	13	14	18	5	3	106
1.8	.	1	2	.	3	10	13	7	2	9	1	1	49
1.9	.	1	.	.	2	4	6	2	3	7	.	.	25
1.0	.	.	.	.	1	.	1	3	.	.	.	.	5
2.1	.	.	.	.	.	.	.	.	2	.	.	.	2
2.2	.	.	.	.	.	.	1	.	2	.	.	.	3
2.3	.	.	.	.	.	.	.	1	.	.	.	.	1
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	1	.	.	.	.	1
2.7	.	.	.	.	.	.	.	.	.	.	.	.	.
2.8	.	.	.	.	.	.	.	.	.	.	.	.	.
2.9	.	.	.	.	.	.	.	.	.	.	.	.	.
3.0	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.4	1.4	1.3	1.3	1.4	1.4	1.5	1.4	1.4	1.4	1.4	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.8	1.7	1.6	1.9	1.9	2.1	2.5	2.2	1.9	1.7	1.7	
min	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	
no	308	273	308	295	305	298	303	302	298	307	297	298	

2527 Landvetter hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	.	3	1	1	.	.	.	.	.	5
1.2	.	.	13	33	49	34	30	28	33	10	5	.	235
1.3	93	107	163	175	162	137	132	116	104	97	86	98	1470
1.4	168	128	115	69	75	88	97	92	100	118	149	142	1341
1.5	36	34	13	17	12	24	28	37	43	43	41	34	362
1.6	4	11	3	3	4	11	9	14	12	23	12	10	116
1.7	5	2	.	1	.	1	5	6	2	7	4	5	38
1.8	.	.	.	.	.	.	2	4	3	3	.	1	13
1.9	.	.	.	.	.	.	2	1	1	1	1	.	6
2.0	.	.	.	.	.	.	1	2	.	1	.	.	4
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.7	1.6	1.6	1.6	1.6	1.9	2.0	1.8	1.9	1.8	1.8	
min	1.2	1.2	1.2	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	
no	306	282	307	298	305	296	307	300	298	303	298	290	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

1415 Sola hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	2	1	.	2	1	.	3	.	1	3	13
1.2	2	5	3	7	7	2	.	2	2	4	4	1	39
1.3	95	97	123	72	32	18	20	10	28	38	77	79	689
1.4	185	144	148	163	154	116	88	106	136	168	168	190	1766
1.5	23	27	26	41	66	79	85	111	70	61	36	25	650
1.6	3	4	1	8	28	30	28	38	26	15	7	4	192
1.7	.	.	2	4	16	17	16	8	8	13	4	1	89
1.8	1	1	1	1	6	19	6	8	1	4	.	.	48
1.9	.	.	.	.	.	6	13	4	1	.	.	.	24
2.0	.	.	.	.	.	4	8	2	.	.	.	.	14
2.1	.	.	.	.	.	.	.	1	.	.	.	.	1
2.2	.	.	.	.	.	.	1	1	.	.	.	.	2
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.4	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	
max	1.7	1.7	1.7	1.7	1.8	2.0	2.1	2.1	1.9	3.5	1.7	1.6	
min	1.2	1.1	1.1	1.1	1.2	1.1	1.0	1.1	1.1	1.2	1.1	1.1	
no	309	278	306	297	309	293	266	291	275	304	297	303	

1415 Sola hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	1	1	3	1	1	1	1	.	3	2	.	1	15
1.2	6	2	14	14	8	5	2	5	4	4	3	3	70
1.3	93	111	139	116	84	37	28	27	54	50	78	81	898
1.4	175	140	125	133	136	125	94	122	133	158	164	177	1682
1.5	23	20	18	25	53	66	78	87	67	52	39	32	560
1.6	8	4	4	8	10	24	19	28	12	16	10	7	150
1.7	2	.	3	1	8	14	18	15	7	6	4	2	80
1.8	.	.	.	.	6	15	15	10	2	3	.	.	51
1.9	.	.	.	1	1	4	7	4	.	1	.	.	18
2.0	.	.	.	.	1	1	3	2	.	.	.	.	7
2.1	.	.	.	.	.	1	5	1	1	.	.	.	8
2.2	.	.	.	.	.	2	1	.	.	.	.	.	3
2.3	.	.	.	.	.	.	1	.	.	.	.	.	1
2.4	.	.	.	.	.	.	1	1	.	.	.	.	2
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
2.6	.	.	.	.	.	.	.	.	.	.	.	.	.
2.7	.	.	.	.	.	.	1	.	.	.	.	.	1
2.8	.	.	.	.	.	.	.	.	.	.	.	.	.
2.9	.	.	.	.	.	.	.	.	.	.	.	.	.
3.0	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.4	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.6	1.7	1.8	2.0	2.1	2.6	2.3	2.1	1.8	1.6	1.6	
min	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.1	1.1	
no	308	278	306	299	308	295	274	302	283	292	298	303	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

1384 Gardermoen hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	1	.	.	.	.	.	.	.	.	.	.	.	1
1.2	.	.	3	3	2	2	1	2	1	2	.	2	18
1.3	104	91	106	110	61	28	20	16	24	47	83	111	801
1.4	150	143	174	169	159	128	76	96	162	190	176	151	1774
1.5	31	34	18	14	74	89	139	116	88	39	22	31	695
1.6	5	10	5	1	7	28	34	34	16	13	8	6	167
1.7	4	1	1	.	2	14	14	4	2	9	.	2	53
1.8	.	.	.	.	1	1	4	7	3	1	.	.	17
1.9	.	.	.	.	.	1	3	1	.	.	.	.	5
2.0	.	.	.	.	.	1	.	1	.	.	.	.	2
2.1	.	.	.	.	.	.	.	1	.	.	.	.	1
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.7	1.7	1.6	1.7	1.9	1.9	2.0	1.8	1.7	1.6	1.6	
min	1.1	1.2	1.2	1.1	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.2	
no	295	279	307	297	306	292	291	278	296	301	289	303	

1384 Gardermoen hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	1	.	.	.	.	1
1.1	.	.	.	2	1	.	1	.	.	1	.	1	6
1.2	2	.	8	36	67	20	16	13	20	9	2	1	194
1.3	106	116	150	155	149	132	114	79	100	78	88	109	1376
1.4	150	125	137	92	69	103	82	92	107	146	162	154	1419
1.5	29	29	10	10	18	34	50	68	52	46	31	33	410
1.6	5	8	3	2	3	8	22	23	16	14	7	4	115
1.7	2	1	.	1	1	1	6	6	4	9	2	3	36
1.8	.	.	.	.	1	1	2	4	.	2	.	.	10
1.9	.	.	.	.	.	.	.	.	.	.	.	.	.
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	1	.	.	.	.	.	1
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.6	1.6	1.7	1.7	1.7	2.0	1.8	1.7	1.7	1.7	1.6	
min	1.2	1.2	1.1	1.0	1.1	1.1	1.1	0.9	1.1	1.1	1.2	1.1	
no	294	279	308	298	309	299	294	286	299	305	292	305	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

2225 Frøsøn hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	1	.	.	1	.	.	.	1	.	3
1.2	.	1	.	2	.	2	2	3	1	4	4	1	20
1.3	65	67	91	87	69	45	27	27	51	63	64	58	714
1.4	29	45	55	36	50	64	28	55	72	43	47	26	550
1.5	13	10	13	4	4	11	11	20	12	13	5	6	122
1.6	1	2	2	2	1	2	2	1	5	6	.	2	26
1.7	.	1	.	1	.	.	1	.	.	.	.	.	3
1.8	1	.	.	1	.	2	.	.	.	1	.	.	5
1.9	.	.	.	.	.	.	.	1	.	.	.	.	1
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.6	1.6	1.7	1.5	1.7	1.7	1.9	1.6	1.8	1.5	1.6	
min	1.2	1.2	1.2	1.0	1.2	1.2	1.1	1.2	1.1	1.2	1.1	1.2	
no	109	126	161	134	124	126	72	107	141	130	121	93	

2225 Frøsøn hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	1	.	.	.	.	.	1
1.1	.	.	1	.	.	.	.	.	.	.	.	.	1
1.2	1	.	6	22	23	16	8	8	4	1	1	.	90
1.3	58	81	98	77	72	67	30	53	74	70	63	51	794
1.4	28	40	33	17	17	26	14	36	38	28	28	20	325
1.5	6	4	5	1	1	2	5	10	7	7	7	2	57
1.6	4	4	1	1	.	.	1	1	3	3	.	.	18
1.7	.	.	.	.	.	.	.	.	1	.	.	1	2
1.8	1	.	.	.	.	.	.	.	.	1	.	.	2
1.9	.	.	.	.	.	.	.	.	.	.	.	.	.
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.6	1.5	1.6	1.5	1.4	1.5	1.5	1.7	1.7	1.5	1.6	
min	1.2	1.2	1.0	1.1	1.1	1.1	0.9	1.2	1.2	1.2	1.2	1.2	
no	98	129	144	118	113	111	59	108	127	110	99	74	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

1241 Ørland hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	1	.	.	.	.	.	.	.	.	1
1.1	2	3	1	.	.	2	2	1	3	.	2	3	19
1.2	5	1	4	1	2	2	.	1	2	6	4	3	31
1.3	84	76	79	64	35	23	11	14	29	62	68	107	652
1.4	173	153	173	166	165	117	92	98	149	148	173	154	1761
1.5	30	25	34	45	64	81	103	109	78	58	32	24	683
1.6	6	9	3	12	27	35	31	46	17	12	6	1	205
1.7	.	1	.	2	7	10	11	12	6	6	2	.	57
1.8	.	.	.	.	3	6	7	2	2	4	.	.	24
1.9	.	.	.	.	.	3	4	2	.	.	.	.	9
2.0	.	.	.	.	.	4	.	1	.	.	.	.	5
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.6	1.5	1.6	1.8	2.0	1.9	1.9	1.7	1.8	1.7	1.6	
min	1.1	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
no	300	268	294	291	303	283	261	286	286	296	287	292	

1241 Ørland hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	1	.	.	.	.	.	.	.	1
1.1	2	2	1	3	2	1	4	2	2	2	1	1	23
1.2	4	1	2	4	12	4	1	2	9	7	4	1	51
1.3	83	79	110	120	82	49	30	46	45	64	71	87	866
1.4	158	149	159	140	122	116	97	106	141	135	182	181	1686
1.5	34	23	20	23	61	69	92	88	65	76	33	17	601
1.6	5	13	2	2	17	19	31	40	17	13	3	2	164
1.7	1	.	1	.	4	14	13	9	7	1	.	.	50
1.8	.	.	.	.	.	7	7	5	.	3	1	.	23
1.9	.	.	.	.	1	2	3	1	.	.	.	.	7
2.0	.	.	.	.	.	1	2	1	.	.	.	.	4
2.1	.	.	.	.	.	1	.	.	1	.	.	.	2
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	2	.	.	.	.	.	.	2
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.6	1.7	1.5	1.9	2.4	2.0	1.9	2.1	1.8	1.7	1.6	
min	1.1	1.0	1.1	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.1	1.1	
no	287	267	295	292	302	285	280	300	287	301	295	289	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

9661 Mike hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	1	1
1.1	4	1	2	4	.	.	1	.	1	.	1	1	15
1.2	4	3	2	4	1	1	.	1	3	5	2	3	29
1.3	156	133	139	131	116	94	57	78	104	97	131	154	1390
1.4	124	118	132	104	134	122	150	138	118	110	129	114	1493
1.5	11	14	14	27	29	39	51	44	37	33	26	14	339
1.6	.	3	3	12	14	25	24	19	8	17	5	5	135
1.7	.	.	2	2	4	8	7	11	3	3	1	2	43
1.8	.	.	.	.	2	6	10	6	1	1	1	.	27
1.9	.	.	.	.	.	1	2	2	1	.	.	.	6
2.0	.	.	.	.	.	.	2	1	.	.	.	.	3
2.1	.	.	.	.	.	.	.	1	.	.	.	.	1
2.2	.	.	.	.	.	.	.	.	.	1	.	.	1
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.5	1.6	2.8	1.7	1.8	1.9	2.0	2.1	1.9	2.1	1.8	1.7	
min	1.0	1.1	1.1	1.0	1.2	1.2	1.1	1.2	1.0	1.2	1.1	0.9	
no	299	272	295	284	300	296	304	301	276	267	296	294	

9661 Mike hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	1	.	1	.	.	.	.	1	.	.	.	.	3
1.1	2	2	.	.	1	1	1	1	2	2	1	.	13
1.2	5	2	1	2	1	1	.	4	4	6	.	3	29
1.3	156	120	135	111	102	86	61	69	105	100	127	149	1321
1.4	116	126	140	123	134	116	119	134	117	102	136	125	1488
1.5	9	12	16	30	37	49	60	50	30	34	17	9	353
1.6	2	3	1	11	12	16	30	21	8	12	3	1	120
1.7	.	1	.	2	7	12	13	11	6	5	.	.	57
1.8	.	.	1	.	2	3	8	2	1	1	1	.	19
1.9	.	.	.	.	.	2	2	2	.	.	.	.	6
2.0	.	.	.	.	.	.	1	.	.	.	.	.	1
2.1	.	.	.	.	.	.	.	.	.	3	.	.	3
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
2.6	.	.	.	.	.	.	.	.	.	.	.	.	.
2.7	.	.	.	.	.	.	.	.	.	.	.	.	.
2.8	.	.	.	.	.	.	.	.	.	.	.	.	.
2.9	.	.	.	.	.	.	.	.	.	1	.	.	1
3.0	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	
max	1.6	1.6	1.7	1.6	1.7	1.9	1.9	1.9	1.7	2.8	1.7	1.6	
min	0.8	1.1	0.9	1.2	1.1	1.0	1.1	1.0	1.0	1.0	1.0	1.2	
no	291	266	295	279	296	286	295	295	273	266	285	287	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

9661 Mike hour 06

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	2	1	.	.	.	.	.	3
1.1	2	.	.	2	1	.	.	1	2	.	2	.	10
1.2	.	1	6	3	4	1	1	7	4	2	5	3	37
1.3	142	121	135	122	98	90	69	63	94	103	125	142	1304
1.4	127	126	125	117	133	123	144	126	122	103	132	126	1504
1.5	11	13	16	17	33	33	43	68	34	35	10	11	324
1.6	6	1	4	9	13	25	18	15	10	10	5	2	118
1.7	2	.	.	1	5	7	15	6	2	5	2	.	45
1.8	.	.	.	.	3	6	4	5	2	1	.	1	22
1.9	.	.	.	.	1	.	.	2	1	.	1	.	5
2.0	.	.	.	.	.	.	2	1	.	.	.	.	3
2.1	.	.	.	.	1	.	.	.	.	1	.	.	2
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.5	1.6	1.6	2.0	1.8	2.0	2.0	1.9	2.1	1.9	1.7	
min	1.1	1.2	1.2	1.0	1.1	0.9	0.9	1.1	1.1	1.1	1.1	1.1	
no	290	262	286	271	292	287	297	294	271	260	282	285	

9661 Mike hour 18

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	2	.	1	1	.	1	.	1	2	2	.	4	14
1.2	2	3	3	3	2	3	3	2	7	4	3	2	37
1.3	160	123	134	114	97	84	53	64	81	91	129	126	1256
1.4	111	131	127	116	144	123	136	128	124	119	126	130	1515
1.5	10	7	20	24	33	35	52	65	47	30	23	20	366
1.5	4	1	2	9	11	22	24	23	9	11	1	3	120
1.7	1	.	2	1	3	10	9	6	1	4	1	.	38
1.8	.	.	.	1	.	3	11	1	.	2	1	.	19
1.9	.	.	.	.	2	1	5	1	.	.	.	.	9
2.0	.	.	.	.	.	.	1	2	.	.	.	.	3
2.1	.	.	.	.	.	.	.	.	.	1	.	.	1
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
2.6	.	.	.	.	.	.	.	.	.	.	.	.	.
2.7	.	.	.	.	.	.	.	.	.	.	.	.	.
2.8	.	.	.	.	.	.	.	.	.	.	.	.	.
2.9	.	.	.	.	.	.	.	.	.	.	.	.	.
3.0	.	.	.	.	.	.	1	.	.	.	.	.	1
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	
max	1.7	1.5	1.7	1.7	1.9	1.9	3.0	2.0	1.6	2.1	1.8	1.5	
min	1.1	1.2	1.1	1.1	1.2	1.1	1.1	1.0	1.0	1.1	1.2	1.1	
no	290	265	289	269	292	282	295	293	271	264	284	285	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

1152 Bodø hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	1	.	1	.	.	.	1	2	2	.	7
1.2	4	2	5	3	3	3	1	4	3	5	2	7	42
1.3	85	82	79	70	40	22	8	8	22	26	47	66	555
1.4	182	170	192	168	201	141	111	117	141	183	198	199	2003
1.5	23	14	23	39	42	69	78	98	83	62	32	17	580
1.6	.	5	.	7	11	25	25	28	21	8	4	1	135
1.7	1	.	.	1	3	12	10	12	3	6	1	.	49
1.8	.	.	.	.	.	5	2	5	1	.	.	.	13
1.9	.	.	.	.	.	.	2	.	.	.	.	.	2
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.6	1.5	1.7	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.6	
min	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.1	
no	295	273	300	288	301	277	237	272	275	292	286	290	

1152 Bodø hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	1	.	1	3	1	1	1	1	2	.	2	1	14
1.2	2	2	10	7	5	4	2	7	8	8	5	7	67
1.3	88	75	86	63	37	38	16	12	21	31	45	56	568
1.4	192	182	185	162	156	85	83	79	98	192	213	220	1847
1.5	20	20	20	49	81	87	85	103	117	55	27	12	676
1.6	1	1	7	14	19	46	40	56	39	13	4	2	242
1.7	.	.	1	1	5	26	19	27	5	4	1	.	89
1.8	.	.	.	1	4	6	6	11	3	2	.	.	33
1.9	.	.	.	.	.	5	2	5	2	.	.	.	14
2.0	.	.	.	.	.	1	5	.	.	.	.	.	6
2.1	.	.	.	.	.	.	.	1	.	.	.	.	1
2.2	.	.	.	.	.	1	1	.	.	.	.	.	2
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.4	1.4	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.5	1.6	1.7	1.8	2.1	2.1	2.0	1.9	1.7	1.6	1.6	
min	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.1	
no	304	280	310	300	308	300	260	302	295	305	297	298	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

3836 Sodankyle hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	.	.	1	1	.	.	.	.	.	2
1.2	.	.	.	2	3	5	2	2	3	1	.	.	18
1.3	96	96	130	110	105	70	57	43	57	90	113	98	1065
1.4	122	113	136	152	177	156	149	199	199	188	144	136	1871
1.5	47	38	32	17	19	54	80	57	33	20	32	51	480
1.6	30	21	11	6	1	10	13	6	5	8	11	21	143
1.7	2	8	.	.	1	2	6	1	3	2	.	3	28
1.8	.	2	.	.	.	.	2	1	.	.	.	1	6
1.9	.	.	.	.	.	1	.	.	.	.	.	.	1
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.4	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.8	1.6	1.6	1.6	1.9	1.7	1.7	1.6	1.7	1.6	1.7	
min	1.2	1.2	1.2	1.2	1.2	1.0	1.1	1.1	1.2	1.2	1.2	1.2	
no	297	278	309	287	306	299	310	309	300	309	300	310	

3836 Sodankyle hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	.	.	.	.	.	.	.	.	.	.
1.2	.	.	3	38	78	88	69	53	23	3	.	.	355
1.3	97	120	204	226	178	155	151	147	148	140	118	100	1784
1.4	144	130	88	35	51	46	76	87	103	145	151	144	1200
1.5	41	22	12	1	3	11	11	15	22	19	20	42	219
1.6	17	7	1	.	.	.	2	6	4	2	9	17	65
1.7	1	1	.	.	.	.	1	1	.	1	.	3	8
1.8	.	1	.	.	.	.	.	.	.	.	1	2	4
1.9	.	.	.	.	.	.	.	.	.	.	.	.	.
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.7	1.5	1.5	1.4	1.5	1.6	1.6	1.6	1.6	1.7	1.7	
min	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	
no	300	281	308	300	310	300	310	309	300	310	299	308	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

1001 Jan-Mayen hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	1	.	.	.	.	1	.	.	1	.	.	1	4
1.1	1	.	1	1	.	.	3	3	.	.	3	.	12
1.2	1	1	3	2	1	3	7	3	5	1	2	1	30
1.3	63	59	79	61	60	42	52	52	66	99	104	66	803
1.4	143	141	147	149	132	116	114	135	136	118	114	147	1592
1.5	23	22	13	19	33	48	40	34	20	20	12	17	301
1.6	3	1	2	3	16	21	19	12	5	2	1	2	87
1.7	.	.	.	1	2	5	7	.	1	.	.	.	16
1.8	.	.	.	.	1	2	2	3	.	.	.	.	8
1.9	.	.	.	.	.	.	.	1	.	.	.	.	1
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.5	1.6	1.5	1.6	1.7	1.7	1.8	1.9	1.7	1.5	1.5	1.5	
min	1.0	1.2	1.1	1.0	1.2	0.9	1.0	1.0	1.0	1.2	1.0	1.0	
no	235	224	245	236	245	238	244	243	234	240	236	234	

1001 Jan-Mayen hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	.	.	1	.	1	1	1	.	.	4
1.2	1	2	2	2	1	2	4	4	1	3	5	4	31
1.3	68	68	78	65	52	40	53	41	73	90	109	84	821
1.4	149	125	139	148	133	103	123	139	134	126	108	130	1557
1.5	16	26	19	18	34	56	42	39	23	21	12	15	321
1.6	6	1	4	3	18	24	9	16	5	2	3	2	93
1.7	1	.	.	.	6	9	11	2	.	2	.	1	32
1.8	.	.	.	.	1	2	.	1	.	.	.	.	4
1.9	.	.	.	.	.	1	.	1	.	.	.	.	2
2.0	.	.	.	.	.	.	1	.	.	.	.	.	1
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.5	1.6	1.5	1.7	1.9	1.9	1.8	1.6	1.6	1.5	1.6	
min	1.2	1.2	1.1	1.1	1.2	1.0	1.1	1.1	1.1	1.0	1.2	1.1	
no	241	222	242	236	245	238	243	244	237	245	237	236	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

1028 Bjørnøya hour 00

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	.	.	.
1.1	.	.	.	.	2	.	.	.	1	2	.	1	6
1.2	.	3	.	2	1	1	7	.	3	2	1	1	21
1.3	60	47	50	62	51	37	41	38	48	73	82	67	656
1.4	137	131	151	116	147	120	89	121	127	119	114	138	1510
1.5	13	12	15	16	8	39	47	37	20	12	7	8	234
1.6	5	.	.	2	5	6	23	16	5	4	2	.	68
1.7	.	.	.	1	1	1	7	4	.	.	1	.	15
1.8	.	.	.	.	.	.	2	.	1	.	.	.	3
1.9	.	.	.	.	.	.	.	1	.	1	.	.	2
2.0	.	.	.	.	.	.	1	.	.	.	.	.	1
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	
max	1.6	1.5	1.5	1.6	1.6	1.6	2.0	1.9	1.7	1.8	1.6	1.5	
min	1.2	1.2	1.2	1.1	1.0	1.1	1.1	1.2	1.1	1.0	1.2	1.1	
no	215	193	216	199	215	204	217	217	205	213	207	215	

1028 Bjørnøya hour 12

k	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
1.0	.	.	.	.	.	.	.	.	.	.	1	1	2
1.1	.	.	.	.	1	.	.	1	3	2	1	1	9
1.2	1	.	.	1	1	1	3	1	2	2	3	.	15
1.3	59	52	40	45	58	35	36	35	41	77	85	71	634
1.4	134	136	154	146	128	106	89	120	122	119	108	127	1489
1.5	18	6	21	8	19	51	51	40	35	15	6	13	283
1.6	3	2	2	6	8	14	23	11	4	2	3	1	79
1.7	.	.	.	.	1	.	8	4	2	.	.	.	15
1.8	.	.	.	.	.	.	3	4	.	.	.	.	7
1.9	.	.	.	.	.	.	.	.	.	.	.	.	.
2.0	.	.	.	.	.	.	.	.	.	.	.	.	.
2.1	.	.	.	.	.	.	.	.	.	.	.	.	.
2.2	.	.	.	.	.	.	.	.	.	.	.	.	.
2.3	.	.	.	.	.	.	.	.	.	.	.	.	.
2.4	.	.	.	.	.	.	.	.	.	.	.	.	.
2.5	.	.	.	.	.	.	.	.	.	.	.	.	.
mean	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	
sd	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
max	1.6	1.6	1.5	1.6	1.6	1.6	1.7	1.8	1.7	1.6	1.6	1.6	
min	1.2	1.2	1.2	1.2	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.0	
no	215	196	217	206	216	207	213	216	209	217	207	214	

Table 3.9.1 Distribution pr month and mean values with standard deviation and extreme values for the k parameter. no is number of observations.

Appendix 1

Computation of the apparent radius of the earth.

In the formula for the refractive index expressed in M-units appear the radius of the earth R, viz.

$$M(z) = N(z) + 10^6 z/R$$

z beeing the height above ground.

As the earth is not a perfect sphere, the International Astronomical Union (IAU) [6] adopted the following standards for a standard spheroid in 1976 as :

equatorial radius	= 6378.140 km
polar radius	= 6356.755308 km
flattening	= 0.00335281

From these values the radius in km can be expressed in numerical form as a function of latitude LAT :

$$R = 6367.470098 + 10.892297 \cos(\ LAT) - 0.022443 \cos(4 \cdot LAT) + 0.000049 \cos(6 \cdot LAT)$$

where terms of the fourth order of the flattening have been neglected.

Values of radius and corresponding critical refractivity in N-units for the latitudes in concern are given below in table 1.

The mean value of the radius between latitudes 57 to 75 is 6360.457030 km corresponding to a critical value for the refractivity of 157.221405.

On the other hand introducing the concept of "mean radius" ie. the radius of a perfect sphere having the same volume as the standard spheroid we obtain for the radius 6371.005370 km and a corresponding value of the critical refractivity in N-values of 156.9610900.

In table 2 is given the stations with soundings used in the report with computed radius of the earth together with the value of the critical refractivity. For the stations we find a mean value for the radius of 6360.726070 km and a matching value of the critical value of the refractivity of 157.214752 given in N-values.

LAT	earth radius km	critical refractivity N-units
57.0	6363.146000	157.154968
58.0	6362.806640	157.163345
59.0	6362.473140	157.171585
60.0	6362.145020	157.179687
61.0	6361.823730	157.187637
62.0	6361.509280	157.195404
63.0	6361.202150	157.202988
64.0	6360.902340	157.210403
65.0	6360.610840	157.217606
66.0	6360.327640	157.224609
67.0	6360.052730	157.231400
68.0	6359.787110	157.237961
69.0	6359.530760	157.244308
70.0	6359.284180	157.250397
71.0	6359.047360	157.256256
72.0	6358.821290	157.261856
73.0	6358.605470	157.267181
74.0	6358.400390	157.272263
75.0	6358.206540	157.277054
76.0	6358.023930	157.281570
77.0	6357.852540	157.285812
78.0	6357.693360	157.289749
79.0	6357.545900	157.293396
80.0	6357.410640	157.296738

Table 1. Values of radius and corresponding critical refractivity in N-units.

station	lat.	earth radius	critical N-value
Landvetter	57.67	6362.917970	157.160599
Sola	58.93	6362.496090	157.171021
Gardermoen	60.20	6362.080570	157.181290
Frøsøn	63.18	6361.147460	157.204346
Ørland	63.70	6360.991700	157.208191
Mike	66.00	6360.327640	157.224609
Bodø	67.25	6359.985350	157.233063
Sodankyle	67.36	6359.956050	157.233795
Jan-Mayen	70.93	6359.063960	157.255844
Bjørnøya	74.52	6358.297850	157.274796
mean value		6360.726070	157.214752
standard deviation		2.306413	0.050975

Table 2. The radiosonde stations with earth radius at sea level and corresponding critical value in N-units for the refractivity.

Appendix 2.

Computation of the vapour pressure.

In the formula for the refractive index expressed in N-units appear the partial pressure of the water vapour. The actual vapour pressure of water is a function of relative humidity and temperature, the saturation vapour pressure is a function of temperature alone.

The relation between actual vapour pressure AVP, saturation vapour pressure SVP and relative humidity RH is given as:

$$AVP = RH*SVP$$

i.e. if RH is given as 100.% or 1.0 then AVP = SVP

To compute SVP several formulas is available, the most accurate looked upon is the Goff-Gratch formula used in the Smithsonian tables [9], a most elaborate and computer consuming formula.

We have, however chosen a formula adopted by "Die Deutschen Wetterdienst" attributed to Magnus-Tetens given in "Die Aspirations Psychrometer Tafelen" [4].

The reason why is that our observation stations use this formula and the main part of our observation stations report the humidity of the air as relative humidity (RH).

The formula is as follows

$$SVP = C_1 * \exp(arg)$$

$$arg = (C_2 * T)/(C_3 + T)$$

where SVP is the saturation vapour pressure in hPa and T is the temperature i Celsius degrees and the constants C_1, C_2, C_3 are as given below:

phase	range of T C°	C_1 (hPa)	C_2	C_3
ice	-50.9 - 0.0	6.10714	22.44294	272.440
water	-50.9 - 0.0	6.10780	17.84362	245.425
water	0.0 - 100.9	6.10780	17.08085	234.175

Table 1 Constants in the modified Magnus-Tetens formula for computation of vapour pressure.

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