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CLIMATOLOGICAL STATISTICS FOR HANØYTANGEN AT ASKØY NEAR BERGEN

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SUMMARY

The report uses available data in the area to establish estimates of wind extremes and other relevant climatological statistics valid for Hanøytangen.

The report is based on the work done by K. Harstveit, connected to the Askøy bridge. It is hereby possible to give extreme values of the wind speed for 7 different sectors of the direction as well as give estimates for the summer and the winter season.

Duration statistics is also presented based on data from Flesland Flyplass. The wind speed at Flesland Flyplass is generally lower than what must be expected at Hanøytangen. The duration statistics thus is assumed to be on the non conservative side for Hanøytangen.

The estimates for the wind extremes are used as input when estimates for significant wave heigths Hs and maximum wave heights HM with return periods 10 and 100 years are computed.

SIGNATURE

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SUMMARY

Based on available data relevant for the area, estimates of wind extremes and other climatological statistics valid for Hanøytangen are established. The estimates for the wind extremes are used as input for the wave computations.

Data collected in connection with the Askøy bridge and from the weather station at Hellisøy are the basis for this report resting heavily on the work done by Knut Harstveit (DNMI rapport 13/90 KLIMA).

Wind speed estimates in m/s valid for 10 and 100 years return periods for the durations 10 min (V_{10}), 1 min (V_1) and 3 seconds (V_g).

SUMMER (May - August)

Direction	$V_{10}10$	$V_{10}100$	V_110	V_1100	V_g10	V_g100
030-060	12.3	14.7	14.2	17.1	16.7	20.0
070-100	13.0	15.5	15.1	18.0	17.7	21.1
110-120	15.7	18.8	18.6	22.2	22.4	26.8
130-150	12.6	15.0	15.9	18.9	20.8	24.8
160-220	**19.8**	**23.6**	**24.5**	**29.3**	**29.5**	**35.2**
230-290	17.9	21.4	22.2	26.6	26.8	32.0
300-330	14.7	17.6	19.2	22.9	23.2	27.7
340-020	11.9	14.2	15.1	18.1	18.4	21.9

WINTER (September - April)

Direction	$V_{10}10$	$V_{10}100$	V_110	V_1100	V_g10	V_g100
030-060	19.2	21.7	22.7	25.6	26.1	29.5
070-100	16.6	18.8	19.6	22.2	22.6	25.6
110-120	21.2	24.0	25.4	28.7	30.5	34.5
130-150	17.3	19.7	21.8	24.9	28.3	32.3
160-220	**25.3**	**28.6**	**31.4**	**35.4**	**37.8**	**42.7**
230-290	22.9	25.9	28.4	32.1	34.2	38.7
300-330	20.0	22.6	26.0	29.4	31.5	35.5
340-020	15.6	17.6	19.8	22.4	24.1	27.2

The following tables summerises the estimated waves with return periods 10 and 100 years. The waves are computed in two positions given in figure 2, resulting in four tables. The tables also contains the wind speed estimate forming the input to the computations. The wave computations are done by Magnar Reistad, DNMI/VpV in Bergen.

Estimate of fetch, F (Km), 10 years extremes of wind, $V_{10}10$ (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, $V_{10}100$ (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 1, summer season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.4	12.3	0.25	0.45	14.7	0.35	0.6
050-060	0.8	12.3	0.35	0.6	14.7	0.4	0.7
070-080	1.5	13.0	0.45	0.8	15.5	0.55	1.0
090-100	2.2	13.0	0.5	0.9	15.5	0.65	1.2
110-120	2.5	15.7	0.75	1.4	18.8	0.9	1.6
130-150	2.7	12.6	0.55	1.0	15.0	0.7	1.3
160-170	**2.7**	**19.8**	**0.95**	**1.7**	**23.6**	**1.1**	**2.0**
180-190	**2.4**	**19.8**	**0.9**	**1.6**	**23.6**	**1.1**	**2.0**
200	2.0	19.8	0.85	1.5	23.6	1.0	1.8
210-220	1.5	19.8	0.7	1.3	23.6	0.85	1.5
230-240	1.0	17.9	0.55	1.0	21.4	0.65	1.2
250-290	0.6	17.9	0.45	0.8	21.4	0.55	1.0
300-330	0.4	14.7	0.3	0.5	17.6	0.35	0.6
340-020	0.3	11.9	0.2	0.4	14.2	0.25	0.45

Estimate of fetch, F (Km), 10 years extremes of wind, V10 (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, V100 (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 1, winter season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.4	19.2	0.45	0.8	21.7	0.5	0.9
050-060	0.8	19.2	0.6	1.1	21.7	0.65	1.2
070-080	1.5	16.6	0.6	1.1	18.8	0.7	1.3
090-100	2.2	16.6	0.6	1.1	18.8	0.85	1.5
110-120	2.5	21.2	1.0	1.8	24.0	1.2	2.2
130-150	2.7	17.3	0.8	1.4	19.6	0.95	1.7
160-170	**2.7**	**25.3**	**1.2**	**2.2**	**28.6**	**1.4**	**2.5**
180-190	2.4	25.3	1.2	2.2	28.6	1.3	2.3
200	2.0	25.3	1.1	2.0	28.6	1.2	2.2
210-220	1.5	25.3	0.95	1.6	28.6	1.1	2.0
230-240	1.0	22.9	0.7	1.4	25.9	0.8	1.4
250-290	0.6	22.9	0.6	1.1	25.9	0.65	1.2
300-330	0.4	20.0	0.4	0.7	22.6	0.5	0.9
340-020	0.3	15.6	0.3	0.5	17.6	0.35	0.6

Estimate of fetch, F (Km), 10 years extremes of wind, $V_{10}10$ (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, $V_{10}100$ (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 2, summer season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.5	12.3	0.25	0.45	14.7	0.35	0.6
050-060	0.8	12.3	0.35	0.6	14.7	0.4	0.7
070-080	1.5	13.0	0.45	0.8	15.5	0.55	1.0
090-100	2.1	13.0	0.5	0.9	15.5	0.65	1.2
110-120	2.5	15.7	0.75	1.4	18.8	0.9	1.6
130-150	2.8	12.6	0.55	1.0	15.0	0.7	1.3
160-170	**2.8**	**19.8**	**0.95**	**1.7**	**23.6**	**1.1**	**2.0**
180-190	2.5	19.8	0.9	1.6	23.6	1.0	1.8
200	2.0	19.8	0.85	1.5	23.6	1.0	1.8
210-220	1.6	19.8	0.75	1.4	23.6	0.9	1.6
230-240	1.0	17.9	0.55	1.0	21.4	0.65	1.2
250-260	0.7	17.9	0.45	0.8	21.4	0.55	1.0
270-290	0.4	17.9	0.35	0.6	21.4	0.45	0.8
300-330	0.2	14.7	0.25	0.45	17.6	0.3	0.5
340-020	0.2	11.9	0.2	0.4	14.2	0.25	0.45

Estimate of fetch, F (Km), 10 years extremes of wind, V10 (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, V100 (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 2, winter season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.5	19.2	0.45	0.8	21.7	0.55	1.0
050-060	0.8	19.2	0.6	1.1	21.7	0.65	1.2
070-080	1.5	16.6	0.6	1.1	18.8	0.7	1.3
090-100	2.1	16.6	0.7	1.3	18.8	0.85	1.5
110-120	2.5	21.2	1.0	1.8	24.0	1.2	2.2
130-150	2.8	17.3	0.8	1.4	19.6	0.9	1.6
160-170	**2.8**	**25.3**	**1.2**	**2.1**	**28.6**	**1.4**	**2.5**
180-190	2.5	25.3	1.2	2.1	28.6	1.3	2.3
200	2.0	25.3	1.1	2.0	28.6	1.2	2.2
210-220	1.6	25.3	1.0	1.8	28.6	1.1	2.0
230-240	1.0	22.9	0.7	1.3	25.9	0.8	1.4
250-276	0.7	22.9	0.6	1.1	25.9	0.65	1.2
270-290	0.4	22.9	0.5	0.9	25.9	0.55	1.0
300-330	0.2	20.0	0.35	0.6	22.6	0.4	0.7
340-020	0.2	15.6	0.25	0.45	17.6	0.3	0.5

CLIMATOLOGICAL STATISTICS FOR HANØYTANGEN AT ASKØY NEAR BERGEN

CONTENTS

Introduction

This report is written on behalf of Kværner Concrete Constructions a.s. The objective is to provide necessary wind statistics for the area Hanøytangen at Askøy, ca. 12 km NW of Bergen. At present there are no meteorological observation series from Hanøytangen. Therefore, estimates have to be based on measurements taken at the nearest observation stations and the work done by K.Harstveit connected to the Askøy bridge [1].

Founded on the wind estimates, probable values of extreme wave heights with return periods of 10 and 100 years are computed. These computations are done by Magnar Reistad, The Norwegian Meteorological Institute, Vervarslinga på Vestlandet.

The construction area at Hanøytangen are surrounded by an undulating country. The mountains in the area, raising to about 60 m are very steep on their western side and oriented as ridges in a N - S direction. In the sector SE - SW the terrain is open out to the fjord Hauglandsosen. This sector represents the directions where the fetch can be of any significance for wave generation. The wind in this sector is assumed both to be most frequent and also to be associated with the highest velocities.

1. Available Data Series

As mentioned in the introduction, measurements has to be taken from the nearest observing sites which is :

5050 Flesland Flyplass	(20m)	01.01.1957-31.12.1991	(Airport)
5253 Hellisøy Fyr	(48m)	01.01.1957-31.12.1991	(Lighth.)
Storebuneset		23.10.1987-30.04.1990	

The stations Flesland Flyplass and Hellisøy Fyr are equipped as standard stations in The norwegian meteorological institute's net of meteorological stations. The observing height at Flesland is 11 m and at Hellisøy 22 m.

The measurements at Storebuneset are collected in connection with the construction of the Askøy bridge. The measurements are taken in a mast amounting to 30 m above the ground and in the levels 10 , 18 and 30 m. The height of the ground near the mast is 14 m. Thunder storms may be frequent in the area, especially in the winter season. During the measuring period, damage due to thunder storms resulted in several loss of data at Storebuneset. The total data coverage at Storebuneset are 72 %.

2. The representativity of the stations for Hanøytangen.

The measuring site at Storebuneset are situated nearest to Hanøytangen. For most of the wind directions, the area at Hanøytangen will be exposed in the same way as Storebuneset.

From a study of the map some important exceptions are revealed. At Storebuneset the Byfjord is oriented SW - NE. The terrain on both side will have a steering effect for winds from both south- and northerly directions. At Hanøytangen the terrain is more open and the steering effect for these directions will be absent. Regarding Hellisøy the terrain is open for all directions with a possible exception for the sector NE -E. Compared to Hanøytangen the differences seems to be for easterly winds where Hanøytangen seems to be more sheltered.

With this few reservations we feel that the frequency distribution of the wind direction at Hellisøy is the best estimate for the corresponding at Hanøytangen. This frequency statistics are given for each month in fig.1.

K.Harstveit [1] shows that winds from SW are giving the highest wind speed in the Byfjord south of Askøy while the highest wind speed at Hellisøy are connected to the direction S. As Hellisøy is well exposed for all directions, this shows clearly that the strong southerly wind at the coast is retarded some in the Askøy area near Storebuneset. It is also shown that SW wind along the Byfjord is not especially strong. This is most probably due to the fact that the fjord forms a closed system where the extreme strong winds are not able to penetrate down to the fjord area.

3. Assessment of the period 23.10.1987 - 30.04.1990.

The winter season 1980/89 and 1989/90 contained both a high frequency of wind in the sector SW - W and a high frequency of strong wind in the same sector. The data coverage is very good for these most exposed directions.

The measurements reveals that there are too little data for the wind in the sector NE-E to give precise extreme statistics. The reason for this is that the frequency of off-shore wind was less than normal for the whole measuring period. However, the data collected shows very clearly that the risk of strong wind out the fjord (from NE-E) are less than the risk of having strong wind with direction in the fjord (from SW-W).

This is in agreement with earlier knowledge about the area to the west and north of Bergen. The reason is that the off-shore wind is due to a "downfall" of wind aloft after passing the mountainous areas in the inland. This wind will be strongest in some fjord areas in the inner part of Western Norway. Closer to the coast, the effect of the "downfall" is reduced mostly due to friction.

In appendix 3 is given contingency tables of wind speed against wind directions computed by Harstveit [1] based on the data from Storebuneset 30 m above the ground (44 m above the fjord). Also presented is the monthly contingency tables for the same based on the data from Hellisøy.

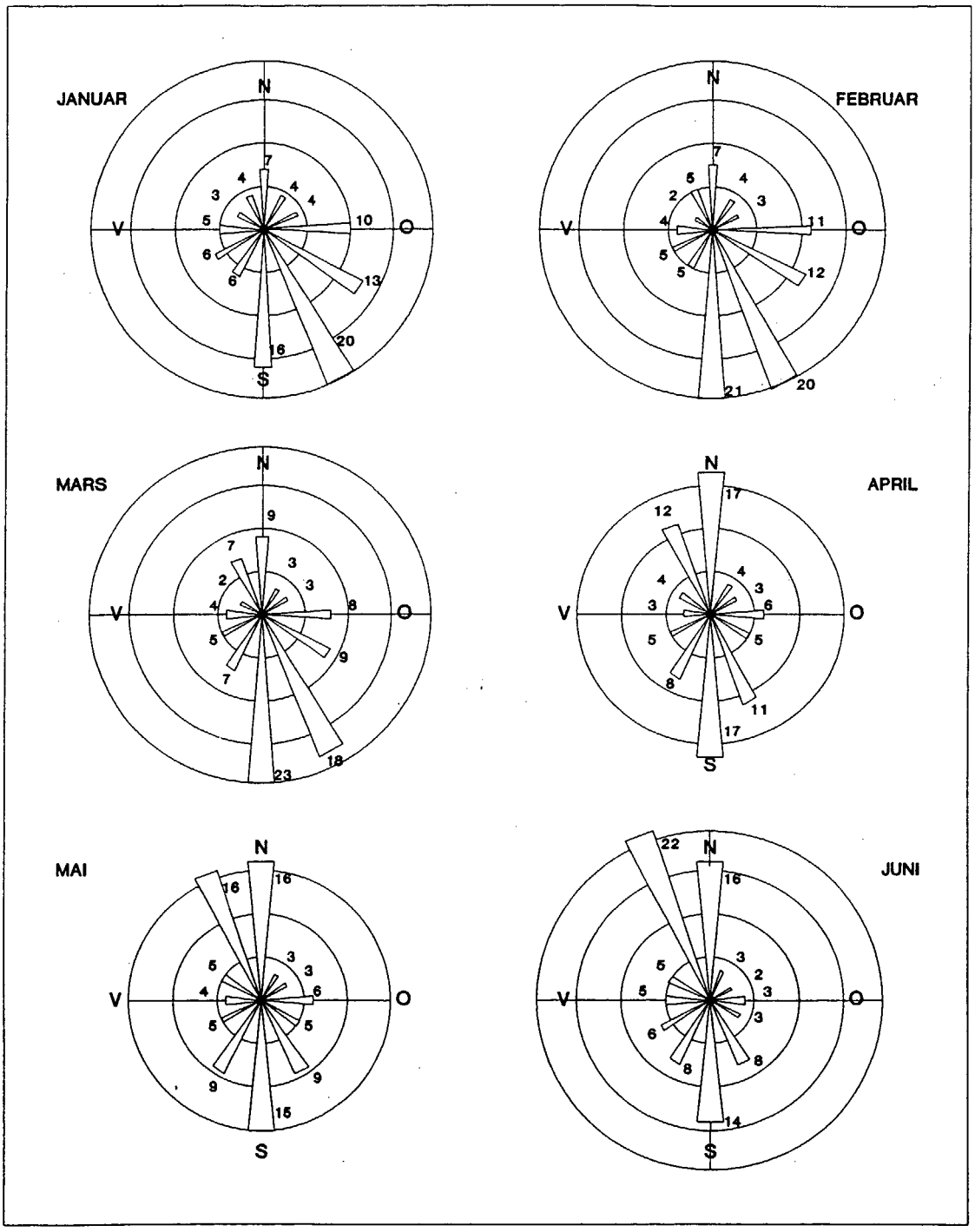

Figure 1. Distribution of the wind directions in percent
January - June

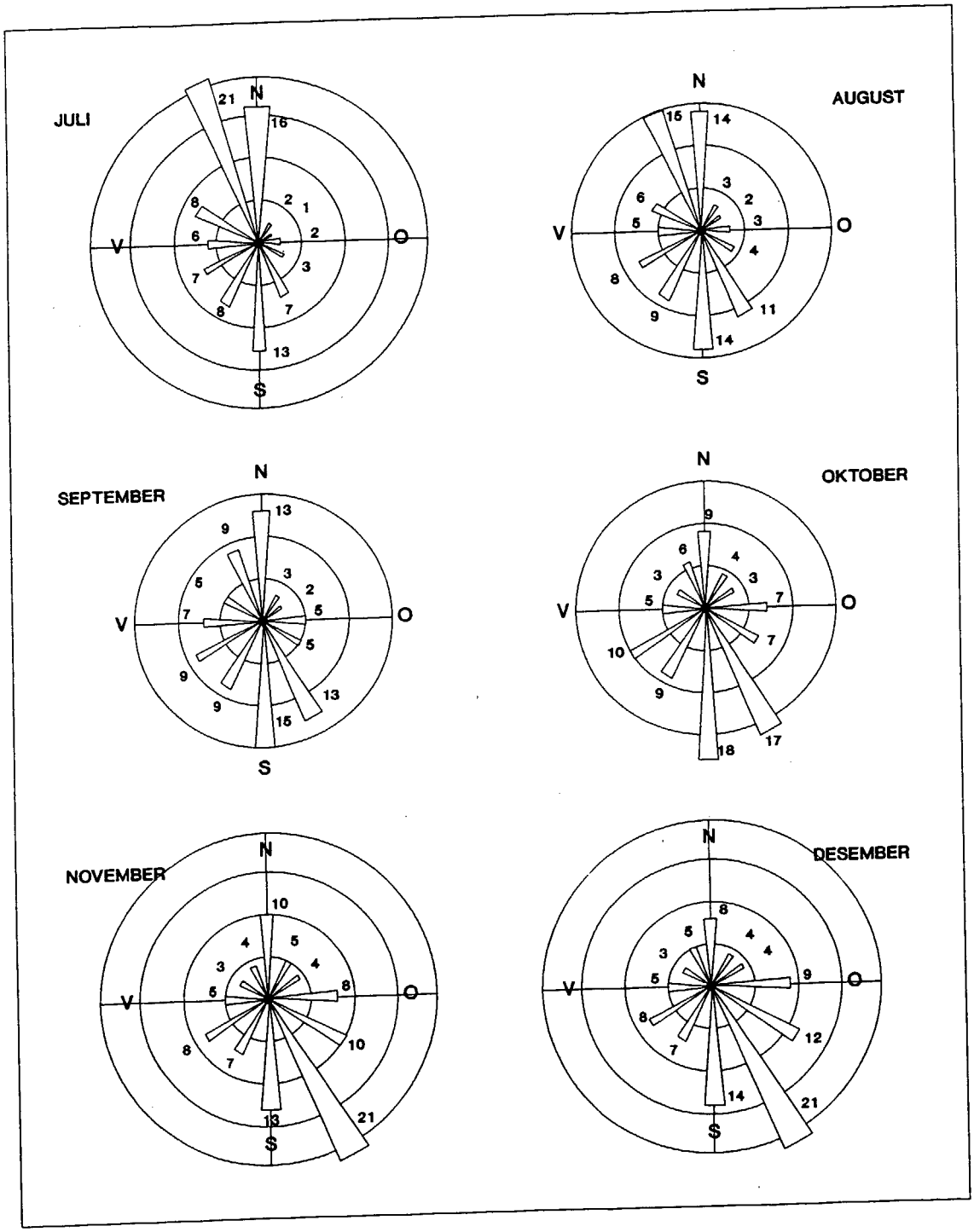

Figure 1. (Contin.) Distribution of the wind directions in percent July - December

4 Methodology leading to transfer coefficients between Hellisøy (10 min mean wind speed) and Askøy (10 min mean wind speed, 1 min mean wind speed, and gust 3 sec.) in 7 different sectors.

In K.Harstveit [1] the methodology described below is applied to compute transfer coefficients between the observations at Hellisøy and Storebuneset based on the simultaneous observations at the two locations for 7 sectors. The 10 strongest "storms" in the measuring periods are sorted out for Askøy and Hellisøy in 7 different sectors after the following rules :

a. The boundaries of the sectors are chosen so as the physical conditions within the sectors are rather homogenous.

   The wind direction at Hellisøy is chosen as discriminant function for the sectors. The wind direction at Askøy is saved in each case showing no systematic directional differences with an exception for northerly and northeaster - easterly sector (340° - 120°).

   In cases with strong northerly wind at Hellisøy (340° - 020°) the direction at Askøy most frequently is north - northwest (340°).

   The sector 030° - 120° is extraordinary. In occurrences of this wind direction at Hellisøy the wind direction at Askøy can be in the sector 040° - 100° (out the Byfjord) or in the sector 100° - 130° (over the mountains Løvstakken - Damsgårdsfjell - Lyderhorn). It should be noted that the measuring period contains rather few cases with strong wind in this sector compared to what must be expected for a longer period.

b. Two cases shall be differentiated by a fall in the wind speed to under the lowest maximum of the two cases. Alternatively a shift in wind direction can give two different cases without a drop in the wind speed.

c. Only those cases where measurements exist on both stations are chosen.

d. Maximum 10 min. mean wind for each of the storms fulfilling the criterions, are sorted in descending order for each of the two stations and for each of the 7 directions. In the same cases the maximum 1 min and 3 sec gust for Askøy are sorted.

Table 1 gives the result of the described procedure for the sector 160° - 190° as an example.

Table 1.
The strongest cases of wind speed with wind direction at Hellisøy within the sector 160° - 190° and fulfilling the criterions a-d given in the text.

HELLISØY 160 - 190°

	HELLISØY	ASKØY (STOREBUNESET, 44 m o.h.)							
	DATO	U_{10min}	DATO	U_{10min}	VR	DATO	U_{1min}	DATO	U_{3sek}
1	14/02-89	27.2	19/02-90	16.16	180°	19/02-90	19.40	24/12-89	24.91
2	19/02-90	27.2	27/01-89	15.22	190°	18/03-89	18.86	27/01-89	23.20
3	24/12-89	25.7	14/02-89	15.17	170°	12/04-89	18.65	19/02-90	23.10
4	03/01-90	25.7	18/03-89	15.08	190°	27/01-89	18.29	01/01-88	22.56
5	09/01-88	25.2	12/04-89	15.04	200°	14/02-89	17.75	05/02-88	22.54
6	14/01-89	24.2	24/12-89	14.89	180°	19/03-88	17.63	14/02-89	22.45
7	12/04-89	24.2	25/07-88	14.31	200°	18/02-89	17.29	12/04-89	22.26
8	18/03-89	23.6	03/01-90	14.12	190°	01/01-88	17.21	14/01-89	21.87
9	23/01-90	23.6	25/01-89	13.86	170°	24/12-89	16.92	18/02-89	21.62
10	31/01-90	23.1	14/01-89	13.68	170°	16/02-88	16.92	18/03-89	21.61
11	27/01-89	22.6	19/03-88	13.56	160°	03/01-90	16.80	11/01-89	21.48
12	13/02-89	22.6	16/02-88	13.54	170°	14/01-89	16.76	09/01-88	21.19
13	19/03-88	22.1	01/01-88	13.51	180°	25/07-88	16.58	19/03-88	21.06
14	25/07-88	22.1	11/01-89	13.24	180°	05/02-88	16.52	03/01-90	20.46
15	21/01-89	22.1	05/02-88	12.92	180°	11/01-89	16.34	25/07-88	20.04
16	26/01-89	21.6	21/01-89	12.89	180°	25/01-89	16.22	13/02-89	19.88
17	01/01-88	21.1	11/02-89	12.89	200°	23/01-90	16.08	16/02-88	19.77
18	30/01-90	21.1	10/03-89	12.70	200°	11/02-89	15.67	23/01-90	19.59
19	11/01-89	20.6	26/01-89	12.59	180°	09/01-88	15.04	25/01-89	19.54
20	25/01-89	20.6	13/02-89	12.58	180°	10/02-90	14.68	25/02-90	19.51
21	10/02-89	20.6	09/01-88	12.35	170°	15/04-88	14.57	10/03-90	19.49
22	10/03-89	20.6	23/01-90	12.09	160°	21/01-89	14.57	11/02-89	19.14
23	06/01-90	20.6	18/02-89	12.01	170°	13/02-89	14.33	06/01-90	19.14
24	25/02-90	20.6	30/01-90	11.37	160°	10/03-89	14.19	21/01-89	18.95
25	15/04-88	20.1	06/01-90	11.34	180°	30/01-90	13.64	26/01-89	18.42
26	18/02-89	20.1	10/02-89	11.12	190°	06/01-90	13.46	30/01-90	18.40
27	10/04-89	20.1	15/04-88	11.06	180°	10/04-89	13.43	15/04-88	17.82

Table 2.
Transfer coefficients between Hellisøy (10 min. mean wind speed) and Askøy (10 min mean wind speed, 1 min mean wind speed and 3 sec. gust) in 7 different sectors. Mean transfer coefficients are given for 1, 2, 5, 10 and N cases. N is the number of cases read in each sector.

	U(Ask,10min) / U(He,10min) U(Ask,1min) / U(He,10min) U(Ask,3sek) / U(He,10min)						
	030-120° N=12	130-150° N=11	160-190° N=27	200-220° N=18	230-290° N=20	300-330° N=18	340-020° N=10
1	0.84 1.00 1.22	0.58 0.71 0.96	0.59 0.71 0.91	0.64 0.77 0.98	0.83 1.08 1.24	0.62 0.82 0.99	0.57 0.75 0.94
2	0.84 1.02 1.26	0.59 0.73 0.98	0.58 0.70 0.88	0.68 0.81 1.00	0.83 1.07 1.23	0.68 0.90 1.10	0.56 0.74 0.92
5	0.87 1.00 1.23	0.60 0.75 0.98	0.58 0.71 0.89	0.72 0.88 1.05	0.84 1.05 1.24	0.70 0.94 1.14	0.57 0.73 0.90
10	0.87 1.04 1.25	0.61 0.77 1.00	0.59 0.72 0.91	0.73 0.90 1.07	0.85 1.06 1.25	0.69 0.92 1.10	0.55 0.70 0.85
N	0.87 1.03 1.24	0.61 0.77 1.01	0.59 0.72 0.92	0.72 0.88 1.06	0.83 1.03 1.24	0.70 0.91 1.10	0.55 0.70 0.85

Table 2 shows that the mean transfer coefficients computed with this method rapidly converges. After 2-5 of the strongest cases coefficients are established which are altered very little even if the number of cases pass 20. This indicates that the errors connected to the method are small.

As mentioned earlier, the sector E-NE (Hellisøy) is an exception due to very few cases with strong wind in this sector and because of the variable wind direction at Askøy (Storebuneset) in these cases. When coefficients for this sector is used, a method assumed to be conservative is applied, using a E-SE wind speed at Hellisøy and adapt a extreme value for this which is weighted 2 towards SE and 1 towards E.

For wind direction E or NE at Hellisøy, the transfer coefficient 1.00 is used, with gust factors 1.18 and 1.36 respectively (DNMI rapport KLIMA 12/88).

Table 3 summarises the results valid for Storebuneset at Askøy 44 m above the fjord. Reduction to a lower height may be done by the exponential wind law :

$$\frac{u_2}{u_1} = \left(\frac{z_2}{z_1}\right)^n$$

where u_2 and u_1 are the wind speed in the two heights z_1 and z_2 and n = 0.10 - 0.12 over open sea . In a fjord with turbulens, n is expected to be higher ,0.12 - 0.14 for wind directions along the fjord. When exponential wind law is applied for Hanøytangen (z_2 = 44 m and z_1 = 10 m) with n in the intervall .10 - .12 the result is :

$$u_1 = u_2 * 1/1.16 \quad \text{or} \quad u_1 = u_2 * 1/ 1.20$$

In table 3 the results computed by Harstveit, valid for 44 m at Askøy - Storebuneset are given.

Table 3
Computed extremes of the wind speed (m/s) with return periods of 10 and 100 years at Storebuneset,Askøy; 30 m above the ground (44 m above the level of the fjord). The wind directions are given both for Hellisøy and Askøy. For sector 110 - 020° the transfer coefficients given in table 2 are applied. For the sector 030 - 100° the transfer coefficients 1.00, 1.18 and 1.36 are applied

VINDRETN. (HELLISØY)	030-060°	070-100°	110-120°	130-150°	160-190°	200-220°	230-290°	300-330°	340-020°
VINDRETN. (ASKØY)	030-070°	040-070°	040-100°	110-150°	160-190°	200-220°	230-290°	300-330°	340-020°
HELLISØY									
10min 10år	19.2	16.6	24.4	28.3	30.5	30.5	27.6	28.6	28.3
100år	21.7	18.8	27.6	32.0	34.4	34.4	31.2	32.3	32.0
ASKØY									
10min 10år	19.2	16.6	21.2	17.3	18.0	22.3	23.4	19.7	15.6
100år	21.7	18.8	24.0	19.7	20.3	25.1	26.5	22.3	17.6
1min 10år	22.7	19.6	25.4	21.8	22.0	27.4	29.3	26.3	19.8
100år	25.6	22.2	28.7	24.9	24.8	31.0	33.1	29.7	22.4
3sek 10år	26.1	22.6	30.5	28.3	27.8	32.6	34.5	31.4	24.1

5. Estimates of extreme wind speed valid for different wind directions with return periods 10 and 100 years at Hanøytangen.

It is assumed that the values computed for Storebuneset are the best estimates for the same height above the fjord at Hanøytangen, with an exception for the sectors 160 - 290° in which Hanøytangen will be exposed in the same way as Hellisøy. For this sector we will apply the same transfer coefficients as found for the sector 230 - 290° in which Storebuneset is exposed freely like Hellisøy, giving a minimum in the reduction. The resulting numbers valid for 44 m above the fjord at Hanøytangen are given in table 4.

Table 4.
Estimates of extreme wind speed for different wind directions with return periods 10 and 100 years at Hanøytangen, valid for 44 m above the fjord. The estimates should be used unreduced for 10 m until more data are available at Hanøytangen.

SUMMER (May - August)

Direction-Hellisøy		030-060	070-100	110-120	130-150	160-190	200-220	230-290	300-330	340-020
Hellisøy										
10 min	10yr.	12.3	13.0	18.1	20.6	23.8	23.8	21.6	21.1	21.6
	100yr.	14.7	15.5	21.6	24.6	28.4	28.4	25.8	25.2	25.8
Hanøytangen										
10 min	10yr.	12.3	13.0	15.7	12.6	19.8	19.8	17.9	14.7	11.9
	100yr.	14.7	15.5	18.8	15.0	23.6	23.6	21.4	17.6	14.2
1 min	10yr.	14.2	15.1	18.6	15.9	24.5	24.5	22.2	19.2	15.1
	100yr.	17.1	18.0	22.2	18.9	29.3	29.3	26.6	22.9	18.1
3 sec	10yr.	16.7	17.7	22.4	20.8	29.5	29.5	26.8	23.2	18.4
	100yr.	20.0	21.1	26.8	24.8	35.2	35.2	32.0	27.7	21.9

WINTER (Sept. - April)

Direction-Hellisøy		030-060	070-100	110-120	130-150	160-190	200-220	230-290	300-330	340-020
Hellisøy										
10 min	10yr.	19.2	16.6	24.4	28.3	30.5	30.5	27.6	28.6	28.3
	100yr.	21.7	18.8	27.6	32.0	34.4	34.4	31.2	32.3	32.3
Hanøytangen										
10 min	10yr.	19.2	16.6	21.2	17.3	25.3	25.3	22.9	20.0	15.6
	100yr.	21.7	18.8	24.0	19.7	28.6	28.6	25.9	22.6	17.6
1 min	10yr.	22.7	19.6	25.4	21.8	31.4	31.4	28.4	26.0	19.8
	100yr.	25.6	22.2	28.7	24.9	35.4	35.4	32.1	29.4	22.4
3 sec	10yr.	26.1	22.6	30.5	28.3	37.8	37.8	34.2	31.5	24.1
	100yr.	29.5	25.6	34.5	32.3	42.7	42.7	38.7	35.5	27.2

Extreme wind computations based on the data from Flesland Flyplass gives a 100 years value about 26 m/s. The location at Flesland is assumed to be more sheltered than the location at Hanøytangen. A reduction of the estimates from 44 m to 10 m above sea level at Hanøytangen will lead to values of the same quantity as for Flesland.

We are not comfortable with this result and suspects that there in 44 m above sea level at Storebuneset still might be a sheltering effect from the terrain which is not present at Hanøytangen. Until actual measurements are available from Hanøytangen, we therefore recommend that the estimates given in table 4 are applied for 10 m above sea level without reduction.

6. Duration statistics

To compute reliable duration statistics, complete data series of some length is a necessity. At Hellisøy the data series for June and July are not complete. Flesland Flyplass is the nearest station with a complete data series through the year. The wind speed data at Hellisøy and Flesland for the years 1981 - 1991 have been analyzed. When all the data are applied,and the wind is specified in knots, the regression equation :

$$U_{Fles.} = 0.53 * U_{Hell.} - 0.39$$

results. With the transfer coefficients in table 2 in mind, the wind speed at Flesland seems to be an estimate of the wind speed at Hanøytangen which must be considered as a lower bound. The statistics are produced for 5 wind forces (5 - 9) defined in the Beaufort scale of the wind given below.

Beaufort scale of the wind

BEAUFORT NUMBER	DESCRIPTIVE TERM	VELOCITY EQUIVALENT AT A STANDARD HEIGHT OF 10 METRES ABOVE OPEN FLAT GROUND			
		Mean velocity in knots	$m\,s^{-1}$	$km\,h^{-1}$	m.p.h.
0	Calm	<1	0-0.2	<1	<1
1	Light air	1-3	0.3-1.5	1-5	1-3
2	Light breeze	4-6	1.6-3.3	6-11	4-7
3	Gentle breeze	7-10	3.4-5.4	12-19	8-12
4	Moderate breeze	11-16	5.5-7.9	20-28	13-18
5	Fresh breeze	17-21	8.0-10.7	29-38	19-24
6	Strong breeze	22-27	10.8-13.8	39-49	25-31
7	Near gale	28-33	13.9-17.1	50-61	32-38
8	Gale	34-40	17.2-20.7	62-74	39-46
9	Strong gale	41-47	20.8-24.4	75-88	47-54
10	Storm	48-55	24.5-28.4	89-102	55-63
11	Violent storm	56-63	28.5-32.6	103-117	64-72
12	Hurricane	64 and over	32.7 and over	118 and over	73 and over

The limits chosen are 5, 6, 7, 8 and 9 Beaufort. Both the duration of periods with wind force > the limits and the duration of periods with wind force <= the limits are determined. When a period satisfying the criterion lasts into the next month, or even longer, it is the starting point that determines the month where the period is counted. The resulting duration statistics are presented for each month in Appendix 2.

The duration statistics produced, are not exactly the form specified in your telefax (Appendix 1). This kind of statistics will need some software development together with specification of relevant criterions. To give a draft version of this report within the available time, this had to be postponed to a later revision of the report.

7. Estimates of significant wave heights Hs and maximum wave heights HM with return periods 10 and 100 year at Hanøytangen.

In this chapter the estimates of extreme wind speeds computed in chapter 5 are used to estimate the 10 and 100 years extreme wave heights in two positions near Hanøytangen. The two positions are given in fig. 2.

We assume that no ocean swell propagates into the area. Therefore the waves are assumed to be generated locally, and the wave growth depends on the local wind speed, the duration of the wind, and the fetch. We have estimated the effective fetch for the wave growth in each direction. The longest effective fetch (2.7 - 2.8 km) is found in the sector 130 - 170 degrees.

The 10 and 100 years extreme significant wave heights are calculated for each direction based on the extreme 10 minutes wind speed and the effective fetch. The significant wave height is defined as the average height of the 1/3 highest waves. The maximum wave height over a given time period is found from statistical distributions. The maximum wave height over approximately 1 hour is found by multiplying the significant wave height by 1.8.

The expected extreme wave heights (significant and maximum) in 10 and 100 years periods from each direction are given in the tables 5 - 8. The extreme wave heights are estimated for the summer season (May - August) and for the winter season (September - April).

The highest waves are coming from the sector 160 - 170 degrees. In the summer season the 10 years extreme significant wave height is estimated to be 0.95 m with maximum wave height 1.7 m. The 100 years extreme values for the summer season are 1.1 m and 2.0 m. The 10 years extremes for the winter season are 1.2 m and 2.2 m and the 100 years winter extremes are 1.4 m and 2.5 m.

Table 5.
Estimate of fetch, F (Km), 10 years extremes of wind, $V_{10}10$ (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, $V_{10}100$ (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 1, summer season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.4	12.3	0.25	0.45	14.7	0.35	0.6
050-060	0.8	12.3	0.35	0.6	14.7	0.4	0.7
070-080	1.5	13.0	0.45	0.8	15.5	0.55	1.0
090-100	2.2	13.0	0.5	0.9	15.5	0.65	1.2
110-120	2.5	15.7	0.75	1.4	18.8	0.9	1.6
130-150	2.7	12.6	0.55	1.0	15.0	0.7	1.3
160-170	**2.7**	**19.8**	**0.95**	**1.7**	**23.6**	**1.1**	**2.0**
180-190	**2.4**	**19.8**	**0.9**	**1.6**	**23.6**	**1.1**	**2.0**
200	2.0	19.8	0.85	1.5	23.6	1.0	1.8
210-220	1.5	19.8	0.7	1.3	23.6	0.85	1.5
230-240	1.0	17.9	0.55	1.0	21.4	0.65	1.2
250-290	0.6	17.9	0.45	0.8	21.4	0.55	1.0
300-330	0.4	14.7	0.3	0.5	17.6	0.35	0.6
340-020	0.3	11.9	0.2	0.4	14.2	0.25	0.45

Table 6.
Estimate of fetch, F (Km), 10 years extremes of wind, V10 (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, V100 (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 1, winter season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.4	19.2	0.45	0.8	21.7	0.5	0.9
050-060	0.8	19.2	0.6	1.1	21.7	0.65	1.2
070-080	1.5	16.6	0.6	1.1	18.8	0.7	1.3
090-100	2.2	16.6	0.6	1.1	18.8	0.85	1.5
110-120	2.5	21.2	1.0	1.8	24.0	1.2	2.2
130-150	2.7	17.3	0.8	1.4	19.6	0.95	1.7
160-170	**2.7**	**25.3**	**1.2**	**2.2**	**28.6**	**1.4**	**2.5**
180-190	2.4	25.3	1.2	2.2	28.6	1.3	2.3
200	2.0	25.3	1.1	2.0	28.6	1.2	2.2
210-220	1.5	25.3	0.95	1.6	28.6	1.1	2.0
230-240	1.0	22.9	0.7	1.4	25.9	0.8	1.4
250-290	0.6	22.9	0.6	1.1	25.9	0.65	1.2
300-330	0.4	20.0	0.4	0.7	22.6	0.5	0.9
340-020	0.3	15.6	0.3	0.5	17.6	0.35	0.6

Table 7.
Estimate of fetch, F (Km), 10 years extremes of wind, $V_{10}10$ (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, $V_{10}100$ (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 2, summer season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.5	12.3	0.25	0.45	14.7	0.35	0.6
050-060	0.8	12.3	0.35	0.6	14.7	0.4	0.7
070-080	1.5	13.0	0.45	0.8	15.5	0.55	1.0
090-100	2.1	13.0	0.5	0.9	15.5	0.65	1.2
110-120	2.5	15.7	0.75	1.4	18.8	0.9	1.6
130-150	2.8	12.6	0.55	1.0	15.0	0.7	1.3
160-170	**2.8**	**19.8**	**0.95**	**1.7**	**23.6**	**1.1**	**2.0**
180-190	2.5	19.8	0.9	1.6	23.6	1.0	1.8
200	2.0	19.8	0.85	1.5	23.6	1.0	1.8
210-220	1.6	19.8	0.75	1.4	23.6	0.9	1.6
230-240	1.0	17.9	0.55	1.0	21.4	0.65	1.2
250-260	0.7	17.9	0.45	0.8	21.4	0.55	1.0
270-290	0.4	17.9	0.35	0.6	21.4	0.45	0.8
300-330	0.2	14.7	0.25	0.45	17.6	0.3	0.5
340-020	0.2	11.9	0.2	0.4	14.2	0.25	0.45

Table 8.
Estimate of fetch, F (Km), 10 years extremes of wind, V10 (m/s), significant wave height, HS10 (m), and maximum wave height, HM10 (m), and 100 years extremes of wind, V100 (m/s), significant wave height, HS100 (m), and maximum wave height, HM100 (m). Position 2, winter season.

Direction	F	$V_{10}10$	HS10	HM10	$V_{10}100$	HS100	HM100
030-040	0.5	19.2	0.45	0.8	21.7	0.55	1.0
050-060	0.8	19.2	0.6	1.1	21.7	0.65	1.2
070-080	1.5	16.6	0.6	1.1	18.8	0.7	1.3
090-100	2.1	16.6	0.7	1.3	18.8	0.85	1.5
110-120	2.5	21.2	1.0	1.8	24.0	1.2	2.2
130-150	2.8	17.3	0.8	1.4	19.6	0.9	1.6
160-170	**2.8**	**25.3**	**1.2**	**2.1**	**28.6**	**1.4**	**2.5**
180-190	2.5	25.3	1.2	2.1	28.6	1.3	2.3
200	2.0	25.3	1.1	2.0	28.6	1.2	2.2
210-220	1.6	25.3	1.0	1.8	28.6	1.1	2.0
230-240	1.0	22.9	0.7	1.3	25.9	0.8	1.4
250-270	0.7	22.9	0.6	1.1	25.9	0.65	1.2
270-290	0.4	22.9	0.5	0.9	25.9	0.55	1.0
300-330	0.2	20.0	0.35	0.6	22.6	0.4	0.7
340-020	0.2	15.6	0.25	0.45	17.6	0.3	0.5

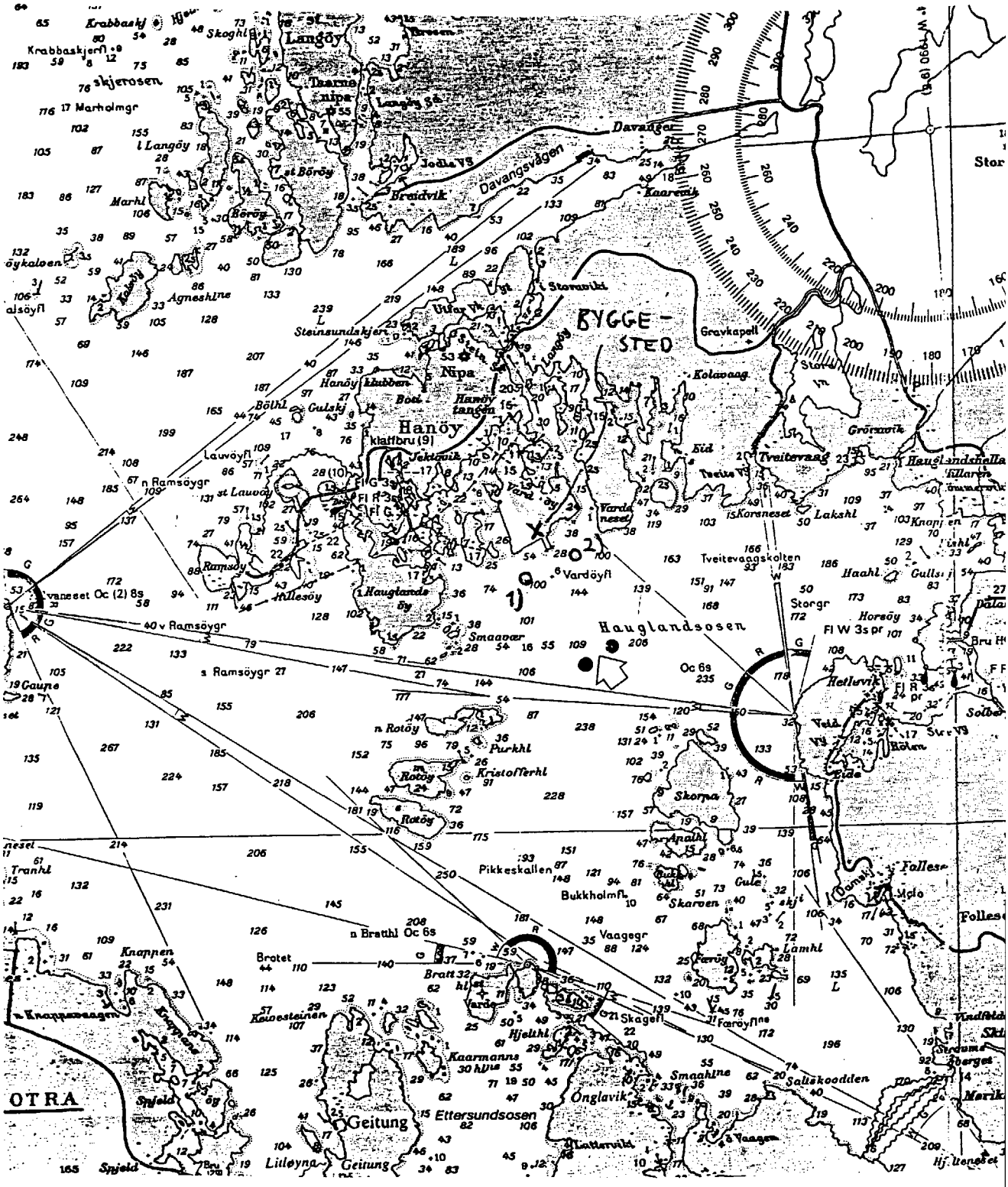

Figure 2. The two points where extreme wave heights are computed are indicated with the numbers 1 and 2.

8. References

[1] Harstveit,K.,1990 : Askøy Bro. Sluttrapport for vindmålinger på Storebuneset 23.10.87 - 30.04.90. DNMI rapport nr. 23/90 KLIMA.

[2] Hanssen-Bauer,I.,1991 : Klimatiske forhold ved Kollsnes i Øygarden. DNMI rapport nr. 23/91 KLIMA.

APPENDIX 1

Kværner Concrete Construction a.s

2744

METEOROLOGISK INSTITUTT
Saksnr.: 2744 Dok.nr.: 2
Saksb. KL/KAJ A 343.2
Innk.: 22/10-92 Eksp.:

TELEFA

To Company	Det Norske Meteorologiske Institutt
Attention	[redacted]
Telefax No.	02 96 30 50
From Company	Kværner Doris Offshore Concrete a.s
Name	Lars Friisk
Date	21.10.1992
Telefax No.	47 2 59 52 10
Subject	Klimastatistikk og bølgeberegninger for Hanøytangen
Approval	
Project No.	No. of Pages + this page
To be filled in by Operator Log No.: 1630	Sent by FLH Time
Our ref:	Your ref.:

Viser til tidligere forespørsel, samt Deres tilbud, vedrørende klimastatistikk og bølgeberegninger for Hanøytangen.

Vi bestiller herved :

1) **Klimastatistikk for Hanøytangen.**

- Statistikken skal baseres på målinger/statistikk fra omliggende målestasjoner korrigert for lokale effekter, som påvist under befaring 20.10.92 og kartmateriale overlevert under samme befaring.
  Statistikken skal inneholde, som et minimum:

-- Frekvensstatistikk, vind, fordelt pr. måned og retning.
-- Varighetsstatistikk, vind, fordelt pr. måned og retning.
-- Ekstremverdier, vind, fordelt pr. måned og retning.
-- Middelvind verdier: 10 min. og 3 sek. gust

TELEFAX

Leveringstid:	Draft rapport; 3 uker fra bestilling. Endelig rapport; efter nærmere avtale.
Pris:	nok 15.000.-

2) **Bølgeberegninger for Hanøytangen.**

	Bølgebergninger i.h.t. tilbud datert 21.08.92.
	Kartmateriale vil bli eftersendt snarest.
Leveringstid:	DNMI må spesifisere, men snarest mulig.
Pris:	nok 15.000.-

Da de bestilte rapporter vil danne grunnlag for dokumentasjon av våre arbeider på Hanøytangen, må vi av hensyn til våre kunder, be om at engelsk brukes som rapportsprog.

Deres bekreftelse imøteses.

Dersom ytterligere informasjoner er ønskelig, står vi gjerne til tjeneste med dette.

Med vennlig hilsen
Kværner Concrete Construction a.s.

Lars Friisk

APPENDIX 2

DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: JAN 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	29	173	2	66	0	11	0	1	0	0
12	15	158	3	63	0	11	0	1	0	0
18	16	142	3	60	0	11	0	1	0	0
24	14	128	4	56	0	11	0	1	0	0
30	6	122	0	56	0	11	0	1	0	0
36	15	107	3	53	0	11	0	1	0	0
42	5	102	3	50	0	11	0	1	0	0
48	2	100	3	47	0	11	0	1	0	0
54	10	90	0	47	0	11	0	1	0	0
60	7	83	0	47	0	11	0	1	0	0
66	1	82	1	46	0	11	0	1	0	0
72	5	77	1	45	0	11	0	1	0	0
78	6	71	0	45	0	11	0	1	0	0
84	0	71	1	44	2	9	0	1	0	0
90	5	66	1	43	0	9	0	1	0	0
96	2	64	0	43	0	9	0	1	0	0
102	3	61	2	41	0	9	0	1	0	0
108	2	59	0	41	0	9	0	1	0	0
114	1	58	0	41	0	9	0	1	0	0
120	0	58	1	40	1	8	0	1	0	0
126	0	58	0	40	0	8	0	1	0	0
132	1	57	0	40	0	8	0	1	0	0
138	3	54	1	39	0	8	0	1	0	0
144	2	52	0	39	0	8	0	1	0	0
150	1	51	0	39	0	8	0	1	0	0
156	2	49	1	38	0	8	0	1	0	0
162	4	45	0	38	0	8	0	1	0	0
168	0	45	1	37	0	8	0	1	0	0
174	0	45	0	37	0	8	0	1	0	0
180	1	44	1	36	0	8	0	1	0	0
186	3	41	1	35	0	8	0	1	0	0
192	1	40	0	35	0	8	0	1	0	0
198	1	39	0	35	0	8	0	1	0	0
204	1	38	1	34	0	8	0	1	0	0
210	2	36	0	34	0	8	0	1	0	0
216	2	34	2	32	0	8	0	1	0	0
222	0	34	0	32	0	8	0	1	0	0
228	0	34	0	32	0	8	0	1	0	0
234	0	34	1	31	0	8	0	1	0	0
240	2	32	1	30	0	8	0	1	0	0
246	0	32	1	29	0	8	0	1	0	0
252	1	31	0	29	0	8	0	1	0	0
258	2	29	1	28	0	8	0	1	0	0
264	2	27	0	28	0	8	0	1	0	0
270	0	27	0	28	0	8	0	1	0	0
276	0	27	1	27	0	8	0	1	0	0
282	1	26	1	26	0	8	0	1	0	0
288	0	26	0	26	0	8	0	1	0	0
294	1	25	1	25	0	8	0	1	0	0
300	0	25	0	25	0	8	0	1	0	0
=>306	25		25		8		1		0	
SUM	202		68		11		1		0	
MEAN(HRS)	127.9		824.4		5830.4		744.0		.0	
ST.DEV(HRS)	195.4		1709.8		6076.8		.0		.0	

THE NORWEGIAN METEOROLOGICAL INSTITUTE,
THE ENVIRONMENTAL DATA CENTER, P.O. BOX 43 BLINDERN,
0313 OSLO 3, NORWAY.

RATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: JAN 1957 - 1991
IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

SES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5		6		7		8		9	
	N	P	N	P	N	P	N	P	N	P
6	70	132	37	30	7	4	0	0	0	0
12	57	75	22	8	3	1	0	0	0	0
18	41	34	6	2	1	0	0	0	0	0
24	19	15	1	1	0	0	0	0	0	0
30	9	6	0	1	0	0	0	0	0	0
36	4	2	0	1	0	0	0	0	0	0
42	1	1	1	0	0	0	0	0	0	0
48	1	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	202		67		11		0		0	
AN(HRS)	13.9		9.9		8.7		.0		.0	
DEV(HRS)	8.2		5.9		4.1		.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: FEB 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	19	118	3	41	0	12	0	1	0	0
12	13	105	4	37	0	12	0	1	0	0
18	12	93	2	35	0	12	0	1	0	0
24	6	87	2	33	1	11	0	1	0	0
30	9	78	0	33	0	11	0	1	0	0
36	7	71	0	33	0	11	0	1	0	0
42	2	69	0	33	0	11	0	1	0	0
48	3	66	0	33	1	10	0	1	0	0
54	0	66	0	33	0	10	0	1	0	0
60	5	61	1	32	0	10	0	1	0	0
66	0	61	0	32	0	10	0	1	0	0
72	1	60	0	32	0	10	0	1	0	0
78	0	60	1	31	0	10	0	1	0	0
84	5	55	1	30	0	10	0	1	0	0
90	3	52	0	30	0	10	0	1	0	0
96	2	50	1	29	1	9	0	1	0	0
102	1	49	0	29	0	9	0	1	0	0
108	2	47	0	29	0	9	0	1	0	0
114	3	44	1	28	0	9	0	1	0	0
120	1	43	0	28	0	9	0	1	0	0
126	0	43	0	28	0	9	0	1	0	0
132	1	42	0	28	0	9	0	1	0	0
138	3	39	0	28	0	9	0	1	0	0
144	1	38	0	28	0	9	0	1	0	0
150	0	38	0	28	0	9	0	1	0	0
156	0	38	1	27	0	9	0	1	0	0
162	0	38	0	27	0	9	0	1	0	0
168	1	37	0	27	0	9	0	1	0	0
174	0	37	0	27	0	9	0	1	0	0
180	0	37	0	27	0	9	0	1	0	0
186	1	36	0	27	0	9	0	1	0	0
192	0	36	0	27	0	9	0	1	0	0
198	0	36	0	27	0	9	0	1	0	0
204	1	35	0	27	0	9	0	1	0	0
210	1	34	0	27	0	9	0	1	0	0
216	1	33	0	27	0	9	0	1	0	0
222	0	33	0	27	0	9	0	1	0	0
228	0	33	0	27	0	9	0	1	0	0
234	1	32	0	27	0	9	0	1	0	0
240	0	32	2	25	0	9	0	1	0	0
246	0	32	0	25	0	9	0	1	0	0
252	1	31	0	25	0	9	0	1	0	0
258	0	31	0	25	0	9	0	1	0	0
264	2	29	0	25	0	9	0	1	0	0
270	2	27	0	25	0	9	0	1	0	0
276	1	26	0	25	0	9	0	1	0	0
282	1	25	0	25	0	9	0	1	0	0
288	1	24	0	25	0	9	0	1	0	0
294	0	24	0	25	0	9	0	1	0	0
300	1	23	1	24	0	9	0	1	0	
=>306	23		24		9		1		0	
SUM	137		44		12		1		0	
MEAN(HRS)	158.7		931.0		5106.0		42408.0		.0	
ST.DEV(HRS)	266.3		1689.7		4771.5		.0		.0	

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URATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: FEB 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

ASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	55	77	19	24	8	4	1	0	0	0
12	37	40	19	5	4	0	0	0	0	0
18	25	15	4	1	0	0	0	0	0	0
24	7	8	1	0	0	0	0	0	0	0
30	3	5	0	0	0	0	0	0	0	0
36	2	3	0	0	0	0	0	0	0	0
42	2	1	0	0	0	0	0	0	0	0
48	1	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	132		43		12		1		0	
EAN(HRS)	12.8		10.2		8.0		6.0		.0	
.DEV(HRS)	8.3		4.4		3.0		36.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: MARCH 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	14	125	2	25	0	6	0	0	0	0
12	9	116	1	24	0	6	0	0	0	0
18	5	111	0	24	0	6	0	0	0	0
24	4	107	2	22	1	5	0	0	0	0
30	4	103	0	22	0	5	0	0	0	0
36	6	97	0	22	0	5	0	0	0	0
42	10	87	1	21	0	5	0	0	0	0
48	7	80	0	21	0	5	0	0	0	0
54	5	75	0	21	0	5	0	0	0	0
60	3	72	0	21	0	5	0	0	0	0
66	1	71	2	19	0	5	0	0	0	0
72	2	69	0	19	0	5	0	0	0	0
78	2	67	0	19	0	5	0	0	0	0
84	1	66	0	19	0	5	0	0	0	0
90	1	65	0	19	0	5	0	0	0	0
96	3	62	0	19	0	5	0	0	0	0
102	2	60	0	19	0	5	0	0	0	0
108	0	60	0	19	0	5	0	0	0	0
114	3	57	0	19	0	5	0	0	0	0
120	2	55	0	19	0	5	0	0	0	0
126	2	53	0	19	0	5	0	0	0	0
132	2	51	0	19	0	5	0	0	0	0
138	2	49	0	19	0	5	0	0	0	0
144	2	47	0	19	0	5	0	0	0	0
150	1	46	0	19	0	5	0	0	0	0
156	2	44	0	19	0	5	0	0	0	0
162	1	43	0	19	0	5	0	0	0	0
168	0	43	0	19	0	5	0	0	0	0
174	0	43	0	19	0	5	0	0	0	0
180	1	42	0	19	0	5	0	0	0	0
186	0	42	0	19	0	5	0	0	0	0
192	1	41	0	19	0	5	0	0	0	0
198	0	41	0	19	0	5	0	0	0	0
204	3	38	0	19	0	5	0	0	0	0
210	0	38	0	19	0	5	0	0	0	0
216	0	38	0	19	0	5	0	0	0	0
222	1	37	0	19	0	5	0	0	0	0
228	0	37	0	19	0	5	0	0	0	0
234	1	36	0	19	0	5	0	0	0	0
240	1	35	0	19	0	5	0	0	0	0
246	0	35	0	19	0	5	0	0	0	0
252	0	35	0	19	0	5	0	0	0	0
258	1	34	0	19	0	5	0	0	0	0
264	1	33	0	19	0	5	0	0	0	0
270	0	33	0	19	0	5	0	0	0	0
276	1	32	0	19	0	5	0	0	0	0
282	0	32	0	19	0	5	0	0	0	0
288	0	32	0	19	0	5	0	0	0	0
294	1	31	0	19	0	5	0	0	0	0
300	0	31	0	19	0	5	0	0	0	0
=>306	31		19		5		0		0	
SUM	139		27		6		0		0	
MEAN(HRS)	253.6		1711.1		5936.0		.0		.0	
ST.DEV(HRS)	563.3		2072.9		5367.8		.0		.0	

THE NORWEGIAN METEOROLOGICAL INSTITUTE,
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ATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: MARCH 1957 - 1991

S THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

ES WITH PARAMETER > LIMITS

URATION	LIMITS(BEAUFORT)																	
(HOURS)	5			6			7			8			9					
	N		P	N		P	N		P	N		P	N		P			
6	71		71	18		9	5		1	0		0	0		0			
12	35		36	6		3	1		0	0		0	0		0			
18	18		18	0		3	0		0	0		0	0		0			
24	11		7	3		0	0		0	0		0	0		0			
30	4		3	0		0	0		0	0		0	0		0			
36	1		2	0		0	0		0	0		0	0		0			
42	1		1	0		0	0		0	0		0	0		0			
48	0		1	0		0	0		0	0		0	0		0			
54	1		0	0		0	0		0	0		0	0		0			
60	0		0	0		0	0		0	0		0	0		0			
66	0		0	0		0	0		0	0		0	0		0			
72	0		0	0		0	0		0	0		0	0		0			
78	0		0	0		0	0		0	0		0	0		0			
84	0		0	0		0	0		0	0		0	0		0			
90	0		0	0		0	0		0	0		0	0		0			
96	0		0	0		0	0		0	0		0	0		0			
102	0		0	0		0	0		0	0		0	0		0			
108	0		0	0		0	0		0	0		0	0		0			
114	0		0	0		0	0		0	0		0	0		0			
120	0		0	0		0	0		0	0		0	0		0			
126	0		0	0		0	0		0	0		0	0		0			
132	0		0	0		0	0		0	0		0	0		0			
138	0		0	0		0	0		0	0		0	0		0			
144	0		0	0		0	0		0	0		0	0		0			
150	0		0	0		0	0		0	0		0	0		0			
156	0		0	0		0	0		0	0		0	0		0			
162	0		0	0		0	0		0	0		0	0		0			
168	0		0	0		0	0		0	0		0	0		0			
174	0		0	0		0	0		0	0		0	0		0			
180	0		0	0		0	0		0	0		0	0		0			
186	0		0	0		0	0		0	0		0	0		0			
192	0		0	0		0	0		0	0		0	0		0			
198	0		0	0		0	0		0	0		0	0		0			
204	0		0	0		0	0		0	0		0	0		0			
210	0		0	0		0	0		0	0		0	0		0			
216	0		0	0		0	0		0	0		0	0		0			
222	0		0	0		0	0		0	0		0	0		0			
228	0		0	0		0	0		0	0		0	0		0			
234	0		0	0		0	0		0	0		0	0		0			
240	0		0	0		0	0		0	0		0	0		0			
246	0		0	0		0	0		0	0		0	0		0			
252	0		0	0		0	0		0	0		0	0		0			
258	0		0	0		0	0		0	0		0	0		0			
264	0		0	0		0	0		0	0		0	0		0			
270	0		0	0		0	0		0	0		0	0		0			
276	0		0	0		0	0		0	0		0	0		0			
282	0		0	0		0	0		0	0		0	0		0			
288	0		0	0		0	0		0	0		0	0		0			
294	0		0	0		0	0		0	0		0	0		0			
300	0		0	0		0	0		0	0		0	0		0			
=>306	0			0			0			0			0					
SUM	142			27			6			0			0					
EAN(HRS)	11.9			9.3			7.0			.0			.0					
.DEV(HRS)	8.1			5.8			2.4			.0			.0					

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: APRIL 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5		6		7		8		9	
	N	P	N	P	N	P	N	P	N	P
6	2	77	3	15	0	1	0	0	0	0
12	3	74	0	15	0	1	0	0	0	0
18	2	72	0	15	0	1	0	0	0	0
24	3	69	0	15	0	1	0	0	0	0
30	4	65	0	15	0	1	0	0	0	0
36	4	61	0	15	0	1	0	0	0	0
42	3	58	0	15	0	1	0	0	0	0
48	1	57	0	15	0	1	0	0	0	0
54	1	56	0	15	0	1	0	0	0	0
60	3	53	0	15	0	1	0	0	0	0
66	2	51	0	15	0	1	0	0	0	0
72	1	50	0	15	0	1	0	0	0	0
78	0	50	0	15	0	1	0	0	0	0
84	2	48	0	15	0	1	0	0	0	0
90	0	48	0	15	0	1	0	0	0	0
96	2	46	0	15	0	1	0	0	0	0
102	0	46	0	15	0	1	0	0	0	0
108	1	45	0	15	0	1	0	0	0	0
114	1	44	0	15	0	1	0	0	0	0
120	1	43	0	15	0	1	0	0	0	0
126	0	43	0	15	0	1	0	0	0	0
132	0	43	0	15	0	1	0	0	0	0
138	1	42	0	15	0	1	0	0	0	0
144	0	42	0	15	0	1	0	0	0	0
150	0	42	0	15	0	1	0	0	0	0
156	2	40	0	15	0	1	0	0	0	0
162	1	39	0	15	0	1	0	0	0	0
168	0	39	1	14	0	1	0	0	0	0
174	0	39	0	14	0	1	0	0	0	0
180	0	39	1	13	0	1	0	0	0	0
186	0	39	0	13	0	1	0	0	0	0
192	1	38	0	13	0	1	0	0	0	0
198	0	38	0	13	0	1	0	0	0	0
204	0	38	0	13	0	1	0	0	0	0
210	0	38	0	13	0	1	0	0	0	0
216	2	36	0	13	0	1	0	0	0	0
222	1	35	0	13	0	1	0	0	0	0
228	2	33	0	13	0	1	0	0	0	0
234	0	33	0	13	0	1	0	0	0	0
240	0	33	0	13	0	1	0	0	0	0
246	0	33	0	13	0	1	0	0	0	0
252	0	33	0	13	0	1	0	0	0	0
258	1	32	0	13	0	1	0	0	0	0
264	1	31	0	13	0	1	0	0	0	0
270	0	31	0	13	0	1	0	0	0	0
276	0	31	0	13	0	1	0	0	0	0
282	0	31	0	13	0	1	0	0	0	0
288	1	30	0	13	0	1	0	0	0	0
294	0	30	0	13	0	1	0	0	0	0
300	0	30	0	13	0	1	0	0	0	0
=>306	30		13		1		0		0	
SUM	79		18		1		0		0	
MEAN(HRS)	508.9		2975.7		7122.0		.0		.0	
ST.DEV(HRS)	852.3		2368.0		.0		.0		.0	

THE NORWEGIAN METEOROLOGICAL INSTITUTE,
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URATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: APRIL 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

ASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	39	38	15	4	1	0	0	0	0	0
12	25	13	3	1	0	0	0	0	0	0
18	5	8	0	1	0	0	0	0	0	0
24	3	5	0	1	0	0	0	0	0	0
30	3	2	1	0	0	0	0	0	0	0
36	1	1	0	0	0	0	0	0	0	0
42	0	1	0	0	0	0	0	0	0	0
48	1	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	77		19		1		0		0	
MEAN(HRS)	11.3		8.2		6.0		.0		.0	
STDEV(HRS)	8.0		5.7		36.0		.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: MAY 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	3	40	0	7	0	0	0	0	0	0
12	4	36	1	6	0	0	0	0	0	0
18	0	36	0	6	0	0	0	0	0	0
24	1	35	0	6	0	0	0	0	0	0
30	0	35	0	6	0	0	0	0	0	0
36	0	35	0	6	0	0	0	0	0	0
42	0	35	0	6	0	0	0	0	0	0
48	0	35	0	6	0	0	0	0	0	0
54	0	35	0	6	0	0	0	0	0	0
60	0	35	0	6	0	0	0	0	0	0
66	1	34	0	6	0	0	0	0	0	0
72	1	33	0	6	0	0	0	0	0	0
78	0	33	0	6	0	0	0	0	0	0
84	1	32	0	6	0	0	0	0	0	0
90	1	31	0	6	0	0	0	0	0	0
96	1	30	0	6	0	0	0	0	0	0
102	0	30	0	6	0	0	0	0	0	0
108	0	30	0	6	0	0	0	0	0	0
114	0	30	0	6	0	0	0	0	0	0
120	0	30	0	6	0	0	0	0	0	0
126	0	30	0	6	0	0	0	0	0	0
132	0	30	0	6	0	0	0	0	0	0
138	1	29	0	6	0	0	0	0	0	0
144	0	29	0	6	0	0	0	0	0	0
150	0	29	0	6	0	0	0	0	0	0
156	2	27	0	6	0	0	0	0	0	0
162	0	27	0	6	0	0	0	0	0	0
168	0	27	0	6	0	0	0	0	0	0
174	0	27	0	6	0	0	0	0	0	0
180	0	27	0	6	0	0	0	0	0	0
186	1	26	0	6	0	0	0	0	0	0
192	0	26	0	6	0	0	0	0	0	0
198	0	26	0	6	0	0	0	0	0	0
204	0	26	0	6	0	0	0	0	0	0
210	0	26	0	6	0	0	0	0	0	0
216	0	26	0	6	0	0	0	0	0	0
222	0	26	0	6	0	0	0	0	0	0
228	0	26	0	6	0	0	0	0	0	0
234	0	26	0	6	0	0	0	0	0	0
240	0	26	0	6	0	0	0	0	0	0
246	0	26	0	6	0	0	0	0	0	0
252	0	26	0	6	0	0	0	0	0	0
258	1	25	0	6	0	0	0	0	0	0
264	0	25	0	6	0	0	0	0	0	0
270	0	25	0	6	0	0	0	0	0	0
276	0	25	0	6	0	0	0	0	0	0
282	0	25	0	6	0	0	0	0	0	0
288	0	25	0	6	0	0	0	0	0	0
294	0	25	0	6	0	0	0	0	0	0
300	0	25	0	6	0	0	0	0	0	0
=>306	25		6		0		0		0	
SUM	43		7		0		0		0	
MEAN(HRS)	820.5		3222.0		.0		.0		.0	
ST.DEV(HRS)	924.2		1542.8		.0		.0		.0	

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RATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: MAY 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

SES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5		6		7		8		9	
	N	P	N	P	N	P	N	P	N	P
6	22	21	3	3	0	0	0	0	0	0
12	12	9	2	1	0	0	0	0	0	0
18	6	3	1	0	0	0	0	0	0	0
24	2	1	0	0	0	0	0	0	0	0
30	0	1	0	0	0	0	0	0	0	0
36	1	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	43		6		0		0		0	
AN(HRS)	10.9		10.0		.0		.0		.0	
DEV(HRS)	6.6		4.9		.0		.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: JUNE 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	14	6	3	0	0	0	0	0	0	0
12	5	1	0	0	0	0	0	0	0	0
18	1	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	20		3		0		0		0	
MEAN(HRS)	8.1		6.0		.0		.0		.0	
ST.DEV(HRS)	3.5		.0		.0		.0		.0	

THE NORWEGIAN METEOROLOGICAL INSTITUTE,
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RATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: JUNE 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

SES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	0	21	0	3	0	0	0	0	0	0
12	0	21	0	3	0	0	0	0	0	0
18	0	21	0	3	0	0	0	0	0	0
24	0	21	0	3	0	0	0	0	0	0
30	0	21	0	3	0	0	0	0	0	0
36	1	20	0	3	0	0	0	0	0	0
42	0	20	0	3	0	0	0	0	0	0
48	0	20	0	3	0	0	0	0	0	0
54	0	20	0	3	0	0	0	0	0	0
60	0	20	0	3	0	0	0	0	0	0
66	1	19	0	3	0	0	0	0	0	0
72	0	19	0	3	0	0	0	0	0	0
78	0	19	0	3	0	0	0	0	0	0
84	0	19	0	3	0	0	0	0	0	0
90	0	19	0	3	0	0	0	0	0	0
96	0	19	0	3	0	0	0	0	0	0
102	0	19	0	3	0	0	0	0	0	0
108	0	19	0	3	0	0	0	0	0	0
114	0	19	0	3	0	0	0	0	0	0
120	0	19	0	3	0	0	0	0	0	0
126	0	19	0	3	0	0	0	0	0	0
132	0	19	0	3	0	0	0	0	0	0
138	0	19	0	3	0	0	0	0	0	0
144	0	19	0	3	0	0	0	0	0	0
150	2	17	0	3	0	0	0	0	0	0
156	0	17	0	3	0	0	0	0	0	0
162	1	16	0	3	0	0	0	0	0	0
168	0	16	0	3	0	0	0	0	0	0
174	0	16	0	3	0	0	0	0	0	0
180	0	16	0	3	0	0	0	0	0	0
186	0	16	0	3	0	0	0	0	0	0
192	0	16	0	3	0	0	0	0	0	0
198	0	16	0	3	0	0	0	0	0	0
204	0	16	0	3	0	0	0	0	0	0
210	0	16	0	3	0	0	0	0	0	0
216	0	16	0	3	0	0	0	0	0	0
222	0	16	0	3	0	0	0	0	0	0
228	0	16	0	3	0	0	0	0	0	0
234	0	16	0	3	0	0	0	0	0	0
240	0	16	0	3	0	0	0	0	0	0
246	0	16	0	3	0	0	0	0	0	0
252	0	16	0	3	0	0	0	0	0	0
258	0	16	0	3	0	0	0	0	0	0
264	2	14	0	3	0	0	0	0	0	0
270	0	14	0	3	0	0	0	0	0	0
276	0	14	0	3	0	0	0	0	0	0
282	0	14	0	3	0	0	0	0	0	0
288	0	14	0	3	0	0	0	0	0	0
294	0	14	0	3	0	0	0	0	0	0
300	0	14	0	3	0	0	0	0	0	0
=>306	14									
SUM	21		3		0		0		0	
EAN(HRS)	821.7		3000.0		.0		.0		.0	
.DEV(HRS)	740.6		784.9		.0		.0		.0	

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313 OSLO 3, NORWAY.

DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: JULY 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	1	20	0	0	0	0	0	0	0	0
12	0	20	0	0	0	0	0	0	0	0
18	0	20	0	0	0	0	0	0	0	0
24	0	20	0	0	0	0	0	0	0	0
30	0	20	0	0	0	0	0	0	0	0
36	0	20	0	0	0	0	0	0	0	0
42	0	20	0	0	0	0	0	0	0	0
48	0	20	0	0	0	0	0	0	0	0
54	0	20	0	0	0	0	0	0	0	0
60	1	19	0	0	0	0	0	0	0	0
66	0	19	0	0	0	0	0	0	0	0
72	0	19	0	0	0	0	0	0	0	0
78	0	19	0	0	0	0	0	0	0	0
84	0	19	0	0	0	0	0	0	0	0
90	0	19	0	0	0	0	0	0	0	0
96	0	19	0	0	0	0	0	0	0	0
102	0	19	0	0	0	0	0	0	0	0
108	0	19	0	0	0	0	0	0	0	0
114	0	19	0	0	0	0	0	0	0	0
120	0	19	0	0	0	0	0	0	0	0
126	0	19	0	0	0	0	0	0	0	0
132	0	19	0	0	0	0	0	0	0	0
138	0	19	0	0	0	0	0	0	0	0
144	0	19	0	0	0	0	0	0	0	0
150	0	19	0	0	0	0	0	0	0	0
156	1	18	0	0	0	0	0	0	0	0
162	1	17	0	0	0	0	0	0	0	0
168	0	17	0	0	0	0	0	0	0	0
174	0	17	0	0	0	0	0	0	0	0
180	0	17	0	0	0	0	0	0	0	0
186	0	17	0	0	0	0	0	0	0	0
192	0	17	0	0	0	0	0	0	0	0
198	0	17	0	0	0	0	0	0	0	0
204	0	17	0	0	0	0	0	0	0	0
210	0	17	0	0	0	0	0	0	0	0
216	0	17	0	0	0	0	0	0	0	0
222	0	17	0	0	0	0	0	0	0	0
228	0	17	0	0	0	0	0	0	0	0
234	0	17	0	0	0	0	0	0	0	0
240	0	17	0	0	0	0	0	0	0	0
246	0	17	0	0	0	0	0	0	0	0
252	0	17	0	0	0	0	0	0	0	0
258	0	17	0	0	0	0	0	0	0	0
264	0	17	0	0	0	0	0	0	0	0
270	0	17	0	0	0	0	0	0	0	0
276	0	17	0	0	0	0	0	0	0	0
282	0	17	0	0	0	0	0	0	0	0
288	0	17	0	0	0	0	0	0	0	0
294	0	17	0	0	0	0	0	0	0	0
300	0	17	0	0	0	0	0	0	0	0
=>306	17		0		0		0		0	
SUM	21		0		0		0		0	
MEAN(HRS)	891.7		.0		.0		.0		.0	
ST.DEV(HRS)	607.1		.0		.0		.0		.0	

THE NORWEGIAN METEOROLOGICAL INSTITUTE,
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RATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: JULY 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

SES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	14	7	0	0	0	0	0	0	0	0
12	4	3	0	0	0	0	0	0	0	0
18	2	1	0	0	0	0	0	0	0	0
24	0	1	0	0	0	0	0	0	0	0
30	1	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	21		0		0		0		0	
N(HRS)	9.4		.0		.0		.0		.0	
EV(HRS)	6.2		.0		.0		.0		.0	

NORWEGIAN METEOROLOGICAL INSTITUTE,
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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: AUG 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	12	10	1	0	0	0	0	0	0	0
12	8	2	0	0	0	0	0	0	0	0
18	2	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	22		1		0		0		0	
MEAN(HRS)	9.3		6.0		.0		.0		.0	
ST.DEV(HRS)	4.0		36.0		.0		.0		.0	

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RATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: AUG 1957 - 1991
IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

SES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	0	22	0	1	0	0	0	0	0	0
12	1	21	0	1	0	0	0	0	0	0
18	1	20	0	1	0	0	0	0	0	0
24	0	20	0	1	0	0	0	0	0	0
30	0	20	0	1	0	0	0	0	0	0
36	0	20	0	1	0	0	0	0	0	0
42	0	20	0	1	0	0	0	0	0	0
48	0	20	0	1	0	0	0	0	0	0
54	0	20	0	1	0	0	0	0	0	0
60	0	20	0	1	0	0	0	0	0	0
66	0	20	0	1	0	0	0	0	0	0
72	0	20	0	1	0	0	0	0	0	0
78	0	20	0	1	0	0	0	0	0	0
84	0	20	0	1	0	0	0	0	0	0
90	0	20	0	1	0	0	0	0	0	0
96	1	19	0	1	0	0	0	0	0	0
102	1	18	0	1	0	0	0	0	0	0
108	0	18	0	1	0	0	0	0	0	0
114	0	18	0	1	0	0	0	0	0	0
120	0	18	0	1	0	0	0	0	0	0
126	0	18	0	1	0	0	0	0	0	0
132	0	18	0	1	0	0	0	0	0	0
138	0	18	0	1	0	0	0	0	0	0
144	0	18	0	1	0	0	0	0	0	0
150	0	18	0	1	0	0	0	0	0	0
156	0	18	0	1	0	0	0	0	0	0
162	1	17	0	1	0	0	0	0	0	0
168	0	17	0	1	0	0	0	0	0	0
174	0	17	0	1	0	0	0	0	0	0
180	0	17	0	1	0	0	0	0	0	0
186	0	17	0	1	0	0	0	0	0	0
192	0	17	0	1	0	0	0	0	0	0
198	0	17	0	1	0	0	0	0	0	0
204	0	17	0	1	0	0	0	0	0	0
210	0	17	0	1	0	0	0	0	0	0
216	1	16	0	1	0	0	0	0	0	0
222	1	15	0	1	0	0	0	0	0	0
228	0	15	0	1	0	0	0	0	0	0
234	0	15	0	1	0	0	0	0	0	0
240	0	15	0	1	0	0	0	0	0	0
246	1	14	0	1	0	0	0	0	0	0
252	0	14	0	1	0	0	0	0	0	0
258	0	14	0	1	0	0	0	0	0	0
264	0	14	0	1	0	0	0	0	0	0
270	1	13	0	1	0	0	0	0	0	0
276	0	13	0	1	0	0	0	0	0	0
282	0	13	0	1	0	0	0	0	0	0
288	0	13	0	1	0	0	0	0	0	0
294	0	13	0	1	0	0	0	0	0	0
300	0	13	0	1	0	0	0	0	0	0
=>306	13		1		0		0		0	
SUM	22		1		0		0		0	
MEAN(HRS)	597.5		840.0		.0		.0		.0	
ST.DEV(HRS)	528.4		.0		.0		.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: SEPT 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION. P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	25	49	4	12	2	2	1	0	0	0
12	24	25	7	5	2	0	0	0	0	0
18	12	13	2	3	0	0	0	0	0	0
24	7	6	2	1	0	0	0	0	0	0
30	3	3	1	0	0	0	0	0	0	0
36	3	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	74		16		4		1		0	
MEAN(HRS)	13.8		13.9		9.0		6.0		.0	
ST.DEV(HRS)	8.1		7.2		3.5		36.0		.0	

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URATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: SEPT 1957 - 1991
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ASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5		6		7		8		9	
	N	P	N	P	N	P	N	P	N	P
6	5	66	0	16	0	4	0	1	0	0
12	4	62	0	16	0	4	0	1	0	0
18	4	58	0	16	0	4	0	1	0	0
24	6	52	0	16	0	4	0	1	0	0
30	1	51	0	16	0	4	0	1	0	0
36	1	50	0	16	0	4	0	1	0	0
42	1	49	0	16	0	4	0	1	0	0
48	3	46	0	16	0	4	0	1	0	0
54	1	45	1	15	0	4	0	1	0	0
60	0	45	0	15	0	4	0	1	0	0
66	0	45	0	15	0	4	0	1	0	0
72	0	45	0	15	0	4	0	1	0	0
78	0	45	0	15	0	4	0	1	0	0
84	0	45	1	14	0	4	0	1	0	0
90	0	45	0	14	0	4	0	1	0	0
96	3	42	0	14	0	4	0	1	0	0
102	0	42	0	14	0	4	0	1	0	0
108	1	41	0	14	0	4	0	1	0	0
114	0	41	0	14	0	4	0	1	0	0
120	0	41	0	14	0	4	0	1	0	0
126	2	39	0	14	0	4	0	1	0	0
132	2	37	0	14	0	4	0	1	0	0
138	2	35	0	14	0	4	0	1	0	0
144	0	35	0	14	0	4	0	1	0	0
150	2	33	0	14	0	4	0	1	0	0
156	0	33	0	14	0	4	0	1	0	0
162	1	32	0	14	0	4	0	1	0	0
168	0	32	0	14	0	4	0	1	0	0
174	1	31	0	14	0	4	0	1	0	0
180	0	31	0	14	0	4	0	1	0	0
186	1	30	0	14	0	4	0	1	0	0
192	0	30	0	14	0	4	0	1	0	0
198	0	30	0	14	0	4	0	1	0	0
204	0	30	0	14	0	4	0	1	0	0
210	1	29	0	14	0	4	0	1	0	0
216	1	28	0	14	0	4	0	1	0	0
222	0	28	0	14	0	4	0	1	0	0
228	1	27	0	14	0	4	0	1	0	0
234	3	24	0	14	0	4	0	1	0	0
240	0	24	0	14	0	4	0	1	0	0
246	0	24	0	14	0	4	0	1	0	0
252	1	23	0	14	0	4	0	1	0	0
258	0	23	0	14	0	4	0	1	0	0
264	0	23	0	14	0	4	0	1	0	0
270	0	23	0	14	0	4	0	1	0	0
276	2	21	1	13	0	4	0	1	0	0
282	0	21	0	13	0	4	0	1	0	0
288	1	20	0	13	0	4	0	1	0	0
294	0	20	1	12	0	4	0	1	0	0
300	1	19	0	12	0	4	0	1	0	0
=>306	19		12		4		1		0	
SUM	71		16		4		1		0	
MEAN(HRS)	230.2		761.6		1633.5		*158184.0		.0	
ST.DEV(HRS)	251.3		535.8		890.1		.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: OKT 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	14	125	2	22	0	5	0	0	0	0
12	9	116	1	21	0	5	0	0	0	0
18	9	107	0	21	0	5	0	0	0	0
24	9	98	2	19	0	5	0	0	0	0
30	5	93	0	19	0	5	0	0	0	0
36	8	85	0	19	0	5	0	0	0	0
42	2	83	2	17	0	5	0	0	0	0
48	4	79	0	17	0	5	0	0	0	0
54	3	76	0	17	0	5	0	0	0	0
60	2	74	1	16	0	5	0	0	0	0
66	2	72	0	16	0	5	0	0	0	0
72	1	71	0	16	0	5	0	0	0	0
78	1	70	0	16	0	5	0	0	0	0
84	4	66	0	16	0	5	0	0	0	0
90	3	63	0	16	0	5	0	0	0	0
96	3	60	0	16	0	5	0	0	0	0
102	3	57	0	16	0	5	0	0	0	0
108	0	57	0	16	0	5	0	0	0	0
114	2	55	1	15	1	4	0	0	0	0
120	1	54	0	15	0	4	0	0	0	0
126	1	53	0	15	0	4	0	0	0	0
132	2	51	1	14	0	4	0	0	0	0
138	1	50	0	14	0	4	0	0	0	0
144	2	48	0	14	0	4	0	0	0	0
150	1	47	0	14	0	4	0	0	0	0
156	0	47	0	14	0	4	0	0	0	0
162	0	47	0	14	0	4	0	0	0	0
168	1	46	0	14	0	4	0	0	0	0
174	0	46	0	14	0	4	0	0	0	0
180	1	45	0	14	0	4	0	0	0	0
186	4	41	0	14	0	4	0	0	0	0
192	2	39	0	14	0	4	0	0	0	0
198	1	38	0	14	0	4	0	0	0	0
204	3	35	0	14	0	4	0	0	0	0
210	4	31	0	14	0	4	0	0	0	0
216	0	31	0	14	0	4	0	0	0	0
222	1	30	0	14	0	4	0	0	0	0
228	0	30	0	14	0	4	0	0	0	0
234	1	29	0	14	0	4	0	0	0	0
240	0	29	0	14	0	4	0	0	0	0
246	2	27	0	14	0	4	0	0	0	0
252	0	27	0	14	0	4	0	0	0	0
258	1	26	0	14	0	4	0	0	0	0
264	0	26	1	13	0	4	0	0	0	0
270	0	26	1	12	0	4	0	0	0	0
276	0	26	0	12	0	4	0	0	0	0
282	0	26	0	12	0	4	0	0	0	0
288	0	26	0	12	0	4	0	0	0	0
294	2	24	0	12	0	4	0	0	0	0
300	1	23	0	12	0	4	0	0	0	0
=>306	23		12		4		0		0	
SUM	139		24		5		0		0	
MEAN(HRS)	160.7		486.0		3732.0		.0		.0	
ST.DEV(HRS)	225.2		574.5		4178.0		.0		.0	

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URATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: OKT 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

ASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	64	74	14	11	4	1	1	0	0	0
12	39	35	8	3	1	0	0	0	0	0
18	19	16	3	0	0	0	0	0	0	0
24	5	11	0	0	0	0	0	0	0	0
30	5	6	0	0	0	0	0	0	0	0
36	4	2	0	0	0	0	0	0	0	0
42	2	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	138		25		5		1		0	
MEAN(HRS)	12.3		9.4		7.2		6.0		.0	
DEV(HRS)	8.3		4.3		2.7		36.0		.0	

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N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	20	151	1	47	1	9	0	0	0	0
12	11	140	3	44	0	9	0	0	0	0
18	17	123	2	42	0	9	0	0	0	0
24	4	119	1	41	1	8	0	0	0	0
30	6	113	1	40	0	8	0	0	0	0
36	8	105	0	40	0	8	0	0	0	0
42	6	99	0	40	0	8	0	0	0	0
48	3	96	1	39	0	8	0	0	0	0
54	4	92	0	39	0	8	0	0	0	0
60	3	89	1	38	0	8	0	0	0	0
66	3	86	0	38	0	8	0	0	0	0
72	6	80	1	37	0	8	0	0	0	0
78	3	77	2	35	0	8	0	0	0	0
84	1	76	0	35	0	8	0	0	0	0
90	2	74	0	35	0	8	0	0	0	0
96	4	70	1	34	0	8	0	0	0	0
102	7	63	1	33	0	8	0	0	0	0
108	5	58	1	32	0	8	0	0	0	0
114	4	54	1	31	0	8	0	0	0	0
120	0	54	0	31	0	8	0	0	0	0
126	2	52	0	31	0	8	0	0	0	0
132	1	51	1	30	0	8	0	0	0	0
138	0	51	3	27	0	8	0	0	0	0
144	0	51	0	27	0	8	0	0	0	0
150	0	51	0	27	0	8	0	0	0	0
156	1	50	1	26	0	8	0	0	0	0
162	2	48	0	26	0	8	0	0	0	0
168	2	46	0	26	0	8	0	0	0	0
174	2	44	2	24	0	8	0	0	0	0
180	1	43	0	24	0	8	0	0	0	0
186	4	39	0	24	0	8	0	0	0	0
192	2	37	0	24	1	7	0	0	0	0
198	2	35	1	23	0	7	0	0	0	0
204	2	33	0	23	0	7	0	0	0	0
210	0	33	0	23	0	7	0	0	0	0
216	0	33	0	23	0	7	0	0	0	0
222	1	32	0	23	0	7	0	0	0	0
228	0	32	0	23	0	7	0	0	0	0
234	1	31	0	23	0	7	0	0	0	0
240	0	31	1	22	0	7	0	0	0	0
246	2	29	0	22	0	7	0	0	0	0
252	1	28	0	22	0	7	0	0	0	0
258	1	27	0	22	0	7	0	0	0	0
264	0	27	0	22	0	7	0	0	0	0
270	1	26	0	22	0	7	0	0	0	0
276	2	24	0	22	0	7	0	0	0	0
282	3	21	0	22	0	7	0	0	0	0
288	2	19	0	22	0	7	0	0	0	0
294	0	19	0	22	0	7	0	0	0	0
300	0	19	0	22	0	7	0	0	0	0
=>306	19		22		7		0		0	
SUM	171		48		10		0		0	
MEAN(HRS)	133.6		389.0		4019.4		.0		.0	
ST.DEV(HRS)	173.5		391.1		6128.4		.0		.0	

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SES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	61	108	26	21	8	2	0	0	0	0
12	54	54	15	6	1	1	0	0	0	0
18	29	25	5	1	1	0	0	0	0	0
24	11	14	1	0	0	0	0	0	0	0
30	9	5	0	0	0	0	0	0	0	0
36	4	1	0	0	0	0	0	0	0	0
42	1	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0	0	0
54	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	169		47		10		0		0	
AN(HRS)	13.3		9.6		7.8		.0		.0	
DEV(HRS)	8.0		4.6		4.0		.0		.0	

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CASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	64	139	34	35	12	4	1	0	0	0
12	63	76	23	12	3	1	0	0	0	0
18	29	47	8	4	1	0	0	0	0	0
24	24	23	2	2	0	0	0	0	0	0
30	10	13	2	0	0	0	0	0	0	0
36	4	9	0	0	0	0	0	0	0	0
42	6	3	0	0	0	0	0	0	0	0
48	2	1	0	0	0	0	0	0	0	0
54	0	1	0	0	0	0	0	0	0	0
60	1	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	203		69		16		1		0	
MEAN(HRS)	15.2		10.6		7.9		6.0		.0	
ST.DEV(HRS)	10.1		5.8		3.6		36.0		.0	

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ASES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS (BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	19	180	4	63	1	15	0	1	0	0
12	17	163	1	62	0	15	0	1	0	0
18	19	144	4	58	0	15	0	1	0	0
24	11	133	2	56	0	15	0	1	0	0
30	7	126	0	56	0	15	0	1	0	0
36	15	111	2	54	1	14	0	1	0	0
42	7	104	0	54	0	14	0	1	0	0
48	3	101	3	51	0	14	0	1	0	0
54	3	98	0	51	0	14	0	1	0	0
60	5	93	1	50	0	14	0	1	0	0
66	5	88	2	48	0	14	0	1	0	0
72	2	86	0	48	0	14	0	1	0	0
78	4	82	0	48	0	14	0	1	0	0
84	8	74	0	48	0	14	0	1	0	0
90	5	69	1	47	0	14	0	1	0	0
96	4	65	1	46	0	14	0	1	0	0
102	2	63	3	43	0	14	0	1	0	0
108	0	63	1	42	0	14	0	1	0	0
114	3	60	1	41	0	14	0	1	0	0
120	4	56	0	41	0	14	0	1	0	0
126	0	56	0	41	0	14	0	1	0	0
132	2	54	1	40	0	14	0	1	0	0
138	3	51	2	38	0	14	0	1	0	0
144	1	50	1	37	0	14	0	1	0	0
150	0	50	0	37	0	14	0	1	0	0
156	2	48	0	37	0	14	0	1	0	0
162	0	48	0	37	0	14	0	1	0	0
168	2	46	0	37	0	14	0	1	0	0
174	5	41	0	37	0	14	0	1	0	0
180	1	40	0	37	0	14	0	1	0	0
186	2	38	1	36	0	14	0	1	0	0
192	2	36	0	36	0	14	0	1	0	0
198	1	35	0	36	0	14	0	1	0	0
204	4	31	0	36	0	14	0	1	0	0
210	1	30	1	35	0	14	0	1	0	0
216	1	29	0	35	0	14	0	1	0	0
222	0	29	1	34	0	14	0	1	0	0
228	3	26	0	34	0	14	0	1	0	0
234	1	25	1	33	0	14	0	1	0	0
240	0	25	0	33	0	14	0	1	0	0
246	1	24	1	32	0	14	0	1	0	0
252	0	24	1	31	0	14	0	1	0	0
258	0	24	1	30	0	14	0	1	0	0
264	1	23	1	29	0	14	0	1	0	0
270	2	21	0	29	0	14	0	1	0	0
276	1	20	1	28	0	14	0	1	0	0
282	1	19	0	28	1	13	0	1	0	0
288	2	17	0	28	0	13	0	1	0	0
294	1	16	0	28	0	13	0	1	0	0
300	0	16	1	27	0	13	0	1	0	0
=>306	16		27		13		1		0	
SUM	199		67		16		1		0	
AN(HRS)	108.9		471.9		3526.5		68544.0		.0	
DEV(HRS)	135.6		873.3		3685.6		.0		.0	

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DURATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: YEAR 1957 - 1991

N IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

CASES WITH PARAMETER > LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	511	732	174	149	47	18	4	0	0	0
12	363	369	105	44	15	3	0	0	0	0
18	189	180	29	15	3	0	0	0	0	0
24	89	91	10	5	0	0	0	0	0	0
30	47	44	4	1	0	0	0	0	0	0
36	24	20	0	1	0	0	0	0	0	0
42	13	7	1	0	0	0	0	0	0	0
48	5	2	0	0	0	0	0	0	0	0
54	1	1	0	0	0	0	0	0	0	0
60	1	0	0	0	0	0	0	0	0	0
66	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
78	0	0	0	0	0	0	0	0	0	0
84	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0
96	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0
126	0	0	0	0	0	0	0	0	0	0
132	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0
186	0	0	0	0	0	0	0	0	0	0
192	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	0	0
204	0	0	0	0	0	0	0	0	0	0
210	0	0	0	0	0	0	0	0	0	0
216	0	0	0	0	0	0	0	0	0	0
222	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0
252	0	0	0	0	0	0	0	0	0	0
258	0	0	0	0	0	0	0	0	0	0
264	0	0	0	0	0	0	0	0	0	0
270	0	0	0	0	0	0	0	0	0	0
276	0	0	0	0	0	0	0	0	0	0
282	0	0	0	0	0	0	0	0	0	0
288	0	0	0	0	0	0	0	0	0	0
294	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0
=>306	0		0		0		0		0	
SUM	1243		323		65		4		0	
MEAN(HRS)	13.0		10.0		7.9		6.0		.0	
ST.DEV(HRS)	8.4		5.5		3.3		.0		.0	

THE NORWEGIAN METEOROLOGICAL INSTITUTE,
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RATION STATISTICS FOR WINDSPEED FLESLAND PERIOD: YEAR 1957 - 1991

IS THE NUMBER OF EVENTS OF EXACTLY THAT DURATION, P IS THE NUMBER OF EVENTS WITH DURATION > THE VALUE

SES WITH PARAMETER <= LIMITS

DURATION (HOURS)	LIMITS(BEAUFORT) 5 N	5 P	6 N	6 P	7 N	7 P	8 N	8 P	9 N	9 P
6	126	1118	17	306	2	63	0	4	0	0
12	86	1032	14	292	0	63	0	4	0	0
18	85	947	11	281	0	63	0	4	0	0
24	58	889	13	268	3	60	0	4	0	0
30	42	847	1	267	0	60	0	4	0	0
36	65	782	5	262	1	59	0	4	0	0
42	36	746	6	256	0	59	0	4	0	0
48	26	720	7	249	1	58	0	4	0	0
54	27	693	1	248	0	58	0	4	0	0
60	29	664	4	244	0	58	0	4	0	0
66	16	648	5	239	0	58	0	4	0	0
72	19	629	2	237	0	58	0	4	0	0
78	16	613	3	234	0	58	0	4	0	0
84	22	591	3	231	2	56	0	4	0	0
90	20	571	2	229	0	56	0	4	0	0
96	25	546	3	226	1	55	0	4	0	0
102	19	527	6	220	0	55	0	4	0	0
108	11	516	2	218	0	55	0	4	0	0
114	17	499	4	214	1	54	0	4	0	0
120	9	490	1	213	1	53	0	4	0	0
126	7	483	0	213	0	53	0	4	0	0
132	11	472	3	210	0	53	0	4	0	0
138	16	456	6	204	0	53	0	4	0	0
144	8	448	1	203	0	53	0	4	0	0
150	7	441	0	203	0	53	0	4	0	0
156	12	429	3	200	0	53	0	4	0	0
162	12	417	0	200	0	53	0	4	0	0
168	6	411	2	198	0	53	0	4	0	0
174	8	403	2	196	0	53	0	4	0	0
180	5	398	2	194	0	53	0	4	0	0
186	16	382	2	192	0	53	0	4	0	0
192	9	373	0	192	1	52	0	4	0	0
198	5	368	1	191	0	52	0	4	0	0
204	14	354	1	190	0	52	0	4	0	0
210	9	345	1	189	0	52	0	4	0	0
216	8	337	2	187	0	52	0	4	0	0
222	5	332	1	186	0	52	0	4	0	0
228	6	326	0	186	0	52	0	4	0	0
234	8	318	2	184	0	52	0	4	0	0
240	3	315	4	180	0	52	0	4	0	0
246	6	309	2	178	0	52	0	4	0	0
252	4	305	1	177	0	52	0	4	0	0
258	7	298	2	175	0	52	0	4	0	0
264	9	289	2	173	0	52	0	4	0	0
270	6	283	1	172	0	52	0	4	0	0
276	7	276	3	169	0	52	0	4	0	0
282	6	270	1	168	1	51	0	4	0	0
288	7	263	0	168	0	51	0	4	0	0
294	5	258	2	166	0	51	0	4	0	0
300	3	255	2	164	0	51	0	4	0	0
=>306	255		164		51		4		0	
SUM	1244		323		65		4		0	
EAN(HRS)	233.6		939.0		4460.9		67470.0		.0	
DEV(HRS)	448.4		1580.0		5010.7		57685.9		.0	

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APPENDIX 3

Tabell 4.15.
Prosentvis frekvensfordeling av vind på Askøy, Storebuneset, 21.10.87 - 30.04.90. Totalfrekvenser for perioden.

Nivå nr. 1 (30m) DD	0-3m/s	3-6m/s	6-9m/s	9-12m/s	12-15m/s	15-18m/s	>18m/s	SUM
360	6.7	1.3	.09					8.1
30	1.5	.8	.2	.00				2.5
60	4.9	1.5	.3	.07	.01			6.8
90	3.4	.7	.3	.05	.00			4.5
120	1.2	1.0	.5	.1	.02			2.9
150	1.8	5.8	3.2	.7	.05			11.4
180	3.1	7.0	6.0	2.3	.3	.03	.00	18.6
210	2.3	2.7	2.1	1.3	.4	.1	.01	9.0
240	1.7	1.7	1.5	.7	.2	.1	.04	6.1
270	2.1	1.4	1.0	.4	.1	.02		4.9
300	1.9	1.6	.5	.3	.05	.01	.00	4.3
330	5.7	7.6	3.9	.7	.05	.01		17.9
STILLE	2.9							2.9
SUM	39.2	33.1	19.6	6.6	1.2	.3	.05	

Tabell 4.16.
Prosentvis frekvensfordeling av vind på Askøy, Storebuneset, i høstmånedene september - november, 21.10.87 - 30.04.90.

Nivå nr. 1 (30m) DD	0-3m/s	3-6m/s	6-9m/s	9-12m/s	12-15m/s	15-18m/s	>18m/s	SUM
360	10.1	1.6	.16					11.8
30	2.0	.5	.14					2.6
60	7.0	.9	.06					8.0
90	4.9	.6	.10	.01				5.6
120	1.6	1.2	.7	.15				3.7
150	2.6	9.5	3.2	.2	.01			15.4
180	3.7	7.0	4.7	.8	.12	.02		16.4
210	2.3	2.5	2.1	1.0	.14	.08	.01	8.1
240	1.5	1.3	1.6	.5	.09			4.9
270	1.6	1.6	1.1	.2	.03			4.6
300	1.5	1.1	.4	.14	.02			3.2
330	5.6	7.2	2.0	.2	.01			15.0
STILLE	.6							.6
SUM	44.9	35.0	16.3	3.2	.4	.1	.01	

Tabell 4.17.
Prosentvis frekvensfordeling av vind på Askøy, Storebuneset,
i vintermånedene desember - februar, 21.10.87 - 30.04.90.

Nivå nr. 1 (30m)

DD	0-3m/s	3-6m/s	6-9m/s	9-12m/s	12-15m/s	15-18m/s	>18m/s	SUM
360	5.6	1.5	.13					7.3
30	1.4	1.1	.3	.00				2.8
60	4.9	1.9	.6	.2	.04			7.8
90	2.7	.7	.8	.15	.01			4.3
120	.9	1.0	.9	.2	.03			3.1
150	1.4	7.0	5.8	1.7	.14			15.9
180	3.0	7.9	7.7	5.0	.9	.09		24.7
210	1.9	2.1	2.6	2.2	1.0	.4	.02	10.3
240	1.2	1.5	2.2	1.5	.4	.2	.13	7.1
270	1.0	1.1	1.6	.8	.3	.04		4.8
300	1.0	.8	.7	.7	.17	.00	.00	3.2
330	2.4	2.4	1.9	.9	.14	.04		7.8
TILLE	.9							.9
SUM	28.3	29.1	25.1	13.4	3.1	.8	.2	

Tabell 4.18.
Prosentvis frekvensfordeling av vind på Askøy, Storebuneset,
i vårmånedene, mars - mai, 21.10.87 - 30.04.90.

Nivå nr. 1 (30m)

DD	0-3m/s	3-6m/s	6-9m/s	9-12m/s	12-15m/s	15-18m/s	>18m/s	SUM
360	4.9	1.6	.16					6.7
30	1.6	1.0	.16	.00				2.8
60	4.3	2.0	.4	.01				6.6
90	3.6	1.2	.2	.01				5.0
120	1.3	1.1	.5	.12	.04			3.0
150	1.7	3.6	2.7	.6	.02			8.6
180	2.7	7.3	6.9	2.3	.2	.01	.00	19.5
210	2.4	2.8	1.6	.8	.3	.04		8.0
240	1.9	1.7	1.5	.7	.4	.2	.01	6.4
270	2.2	1.1	.8	.4	.2	.02		4.7
300	2.1	1.7	.6	.2	.09	.02	.00	4.8
330	5.0	6.7	4.2	.7	.02			16.7
TILLE	7.2							7.2
SUM	40.9	32.0	19.7	5.8	1.3	.3	.01	

Tabell 4.19.
Prosentvis frekvensfordeling av vind på Askøy, Storebuneset, i sommermånedene, juni - august, 21.10.87 - 30.04.90.

Nivå nr. 1 (30m)

DD	0-3m/s	3-6m/s	6-9m/s	9-12m/s	12-15m/s	15-18m/s	>18m/s	SUM
360	7.5	.5	.03					8.0
30	1.3	.6	.07					2.0
60	4.2	1.0	.08					5.3
90	3.0	.2	.15	.07				3.4
120	1.1	.6	.15	.06				1.9
150	1.7	4.5	1.4	.15	.00			7.7
180	3.1	5.5	4.0	.7	.00			13.3
210	2.7	3.2	2.3	1.2	.2			9.7
240	2.3	2.2	.9	.12	.01			5.5
270	3.4	1.8	.4	.04	.01			5.6
300	2.7	2.7	.3	.02				5.7
330	9.6	14.1	6.7	.8	.05			31.4
STILLE	.5							.5
SUM	43.1	36.9	16.5	3.2	.3			

Explanation of symbols.

HRS	hours of observation in GMT
N	total number of observations
C	frequency of calm
VM	mean wind velocity in m/sec
FM	mean wind force in Beaufort
DD	wind direction in dekadegrees, rounded off to the nearest of 12 main directions: 35-01, 02-24 etc.
F	wind force in Beaufort
ND	frequency of each wind direction DD
FDM	mean wind force in Beaufort for each wind direction DD
NF	frequency of each wind force F

The formulas.

n_F	Number of observations with force F
n_D	- " - " - " - " - direction DD
$n_{F,D}$	- " - " - " - " - direction DD and force F
FDFREK	frequency of wind force F from direction DD
v'	central value in m/sec in each Beaufort interval (see below)

F	1	2	3	4	5	6	7	8	9	10	11	12
v'	0.90	2.44	4.41	6.72	9.30	12.30	15.47	18.96	22.59	26.40	30.58	35.04

$$N = \sum_{F=0}^{12} n_F$$

$$C = n_{F=0}/N$$

$$VM = 1/N \cdot \sum_{F=1}^{12} (n_F \cdot v')$$

$$FM = 1/N \cdot \sum_{F=1}^{12} (n_F \cdot F)$$

$$FDFREK = n_{F,D}/N$$

$$ND = n_D/N$$

$$FDM = 1/n_D \cdot \sum_{F_D=1}^{12} (n_{F,D} \cdot F)$$

$$NF = n_F/N$$

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

JANUARY 1957-1991

HRS. 00,06,12,18 GMT N= 4309 C= 2.7 % VM= 7.9 M/S FM=4.2 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.5	0.9	1.1	1.8	1.2	1.0	0.4	0.2					7.2	4.1
03	0.5	0.9	0.9	1.1	0.3	0.2	0.0						3.9	3.2
06	1.1	1.3	0.9	0.5	0.1								3.9	2.3
09E	1.6	2.7	3.0	1.6	0.5	0.2							9.5	2.7
12	0.4	1.8	3.1	3.9	2.2	0.9	0.2	0.1	0.0	0.0			12.6	3.8
15	0.6	1.3	3.0	5.1	3.3	3.8	2.1	0.9	0.1				20.3	4.7
18S	0.4	0.6	1.2	2.7	3.2	3.5	2.4	1.7	0.4	0.0			16.1	5.4
21	0.0	0.2	0.5	1.3	0.9	1.3	1.0	0.4	0.1				5.7	5.3
24	0.1	0.4	0.6	1.9	1.3	1.1	0.6	0.1	0.1				6.3	4.7
27W	0.1	0.6	0.7	1.0	1.1	0.7	0.6	0.2	0.0				5.0	4.7
30	0.1	0.2	0.3	0.5	0.4	0.5	0.3	0.2	0.1				2.6	4.9
33	0.2	0.4	0.4	0.9	0.7	0.9	0.3	0.3	0.1				4.2	4.8
NF	5.7	11.2	15.7	22.1	15.4	14.1	7.9	4.1	1.0	0.1				

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

													C
19-01	2.1	4.7	12.0	19.4	17.6	17.6	13.4	8.3	3.3	1.1			0.5
01-07	2.5	4.9	12.8	18.4	17.6	17.1	13.5	8.4	3.8	0.6			0.4
07-13	1.8	6.3	10.0	21.9	15.5	17.9	14.6	8.3	2.6	0.7	0.3		0.1
13-19	1.9	5.2	12.4	19.4	16.6	18.2	14.1	8.4	2.9	0.8			0.1

5253 HELLISØY FYR

FEBRUARY 1957-1991

HRS. 00,06,12,18 GMT N= 3924 C= 2.9 % VM= 7.0 M/S FM=3.9 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.4	0.9	1.5	1.9	1.1	0.7	0.4	0.4	0.0	0.0			7.3	4.1
03	0.6	0.7	0.8	0.9	0.4	0.2	0.1						3.5	3.2
06	0.8	1.0	0.9	0.1	0.1								2.9	2.2
09E	1.9	2.8	3.2	2.5	0.6	0.1							11.1	2.8
12	0.9	2.5	3.3	3.3	1.2	0.6	0.1						12.0	3.3
15	1.3	2.0	3.0	5.3	3.7	2.4	1.4	0.5	0.1	0.0	0.0		19.7	4.2
18S	0.5	0.9	2.3	5.3	4.0	3.9	2.4	1.3	0.1	0.1			20.6	4.9
21	0.3	0.3	1.0	1.1	1.0	0.7	0.6	0.4	0.0				5.4	4.7
24	0.2	0.5	0.9	1.0	1.0	0.6	0.2	0.1					4.5	4.1
27W	0.2	0.4	0.8	1.0	0.5	0.5	0.3	0.1	0.0				3.8	4.2
30	0.2	0.2	0.4	0.6	0.3	0.2	0.1	0.0	0.0				2.0	3.9
33	0.2	0.6	0.5	1.1	0.7	1.0	0.2	0.1	0.0				4.4	4.4
NF	7.5	12.7	18.4	24.2	14.6	10.8	5.8	2.8	0.3	0.1	0.0			

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

													C
19-01	2.8	6.8	13.9	23.8	17.5	15.1	10.7	6.8	1.9	0.5	0.1		0.2
01-07	3.1	4.7	15.7	24.4	17.2	16.6	11.1	5.0	1.2	0.8	0.1		0.1
07-13	2.1	5.7	15.1	24.5	17.7	17.0	10.5	5.0	1.9	0.3	0.1		0.1
13-19	3.0	7.6	14.9	20.3	19.7	15.6	9.8	6.2	2.2	0.2	0.2		0.2

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

MARCH 1957-1991

HRS. 00,06,12,18 GMT N= 4309 C= 3.7 % VM= 6.8 M/S FM=3.8 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.8	1.5	1.8	2.3	1.0	1.2	0.4	0.2	0.0				9.3	3.8
03	0.4	0.7	0.7	0.3	0.2	0.1							2.5	2.8
06	0.7	0.9	0.6	0.3		0.0							2.5	2.2
09E	1.9	2.4	2.0	1.0	0.3	0.1							7.6	2.4
12	1.0	1.8	2.4	1.9	1.2	0.4	0.1	0.0					8.9	3.3
15	1.1	2.2	3.3	4.1	2.8	2.5	1.3	0.4	0.0				17.7	4.1
18S	1.0	1.7	2.8	4.9	4.5	4.0	2.3	1.1	0.3	0.1			22.8	4.8
21	0.5	0.7	0.9	1.4	1.5	0.9	0.4	0.3					6.7	4.3
24	0.5	0.7	0.6	1.4	0.7	0.6	0.4	0.1					5.0	4.0
27W	0.6	0.7	0.6	0.8	0.5	0.4	0.3	0.1	0.0	0.0			4.0	3.8
30	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.1					2.4	4.1
33	0.8	0.8	1.1	1.3	1.3	1.1	0.4	0.1					6.9	4.0
NF	9.6	14.4	17.3	20.1	14.5	11.6	5.8	2.5	0.4	0.2				

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

											C
19-01	3.1	9.1	16.8	20.0	15.5	16.8	11.0	5.6	1.5	0.2	0.4
01-07	3.7	8.1	16.2	20.9	16.4	16.6	11.0	5.0	1.8	0.3	0.1
07-13	3.5	7.6	15.9	20.7	17.6	16.6	10.3	5.8	1.7	0.3	0.1
13-19	4.3	9.0	13.8	20.8	17.6	15.4	10.4	5.3	2.0	0.5	0.1	0.6

5253 HELLISØY FYR

APRIL 1957-1991

HRS. 00,06,12,18 GMT N= 4170 C= 4.3 % VM= 6.1 M/S FM=3.5 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.9	2.0	3.7	4.4	2.9	2.0	0.8	0.2	0.1				16.9	4.0
03	0.4	0.7	1.4	1.0	0.3	0.1	0.0	0.0					4.0	3.2
06	0.9	0.9	1.1	0.3	0.0	0.0							3.3	2.3
09E	1.1	2.1	1.8	0.6	0.1								5.7	2.4
12	0.7	1.0	1.4	1.2	0.2	0.2	0.0						4.8	3.0
15	0.9	1.6	1.8	3.1	1.7	1.4	0.6	0.1					11.1	3.9
18S	0.8	1.7	2.6	5.0	3.1	2.4	1.3	0.5	0.0				17.5	4.3
21	0.7	0.9	1.7	2.1	1.6	1.2	0.2	0.1					8.5	3.9
24	0.8	0.9	1.0	1.3	0.5	0.3	0.1	0.0					4.9	3.2
27W	0.8	0.8	0.6	0.7	0.2	0.1	0.0						3.3	2.7
30	0.5	1.1	0.9	0.5	0.2	0.2	0.1	0.0					3.6	3.0
33	1.0	1.7	2.3	3.2	2.0	1.2	0.5	0.1	0.0				12.0	3.9
NF	9.6	15.4	20.4	23.4	12.9	9.0	3.7	1.1	0.2					

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

											C
19-01	3.6	8.5	16.4	28.7	16.9	14.8	6.8	2.8	0.7	0.2	0.6
01-07	4.6	9.5	21.1	22.6	18.6	12.6	7.3	2.8	0.4	0.1	0.5
07-13	3.3	9.8	17.8	23.3	18.8	15.2	7.1	3.7	0.4	0.1	0.4
13-19	3.4	6.3	15.7	27.9	17.9	15.7	8.3	3.9	0.8	0.2	

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

MAY 1957-1991

HRS. 00,06,12,18 GMT N= 4309 C= 4.6 % VM= 5.4 M/S FM=3.2 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	1.0	1.9	3.3	5.0	2.9	2.2	0.6	0.1					17.1	3.9
03	0.5	0.6	0.9	1.0	0.3	0.1	0.0						3.4	3.2
06	0.9	1.0	1.1	0.2	0.0								3.3	2.2
09E	0.9	1.9	2.2	0.9	0.1								6.0	2.6
12	0.9	1.1	1.2	0.9	0.4	0.1	0.0						4.7	2.8
15	0.9	1.5	2.0	1.9	1.1	0.6	0.2						8.2	3.4
18S	1.3	1.6	3.2	3.9	2.4	1.8	0.7	0.1	0.0	0.0			15.0	3.9
21	0.8	1.1	1.5	2.4	1.7	0.9	0.2	0.0					8.7	3.8
24	1.0	1.5	1.3	0.5	0.6	0.1	0.0						5.0	2.7
27W	1.1	1.3	0.7	0.5	0.1	0.2		0.0					3.9	2.5
30	0.8	1.5	1.3	0.5	0.3	0.1	0.1	0.0					4.6	2.8
33	1.6	2.9	3.6	3.5	2.1	1.0	0.4	0.1	0.0				15.4	3.5
NF	11.8	18.0	22.4	21.2	12.1	7.1	2.3	0.4	0.1	0.0				

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

											C
19-01	3.5	9.7	22.4	27.2	16.3	12.8	5.4	1.9	0.2	0.1	0.5
01-07	4.3	11.9	24.0	27.8	14.7	10.1	5.4	0.9	0.2		-0.6
07-13	2.9	13.3	20.2	26.9	15.8	13.2	5.6	1.5	0.3		0.4
13-19	2.1	8.4	19.6	28.8	17.8	14.9	5.9	1.9	0.1	0.2	0.2

5253 HELLISØY FYR

JUNE 1957-1991

HRS. 00,06,12,18 GMT N= 1080 C= 5.8 % VM= 4.3 M/S FM=2.7 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	1.8	2.4	2.9	5.2	5.6	3.1	0.5	0.1					21.5	4.0
03	0.5	0.1	0.6	1.3	0.6	0.1							3.1	3.5
06	0.8	0.6	0.5										1.9	1.8
09E	1.3	0.7	0.5										2.5	1.7
12	0.9	0.6	0.6	0.6									2.8	2.4
15	1.9	2.2	2.8	1.7	0.5	0.3	0.1						9.4	2.8
18S	2.8	3.9	2.6	3.1	0.9	0.4		0.1					13.8	2.8
21	1.3	1.5	1.6	2.4	0.7	0.2							7.7	3.0
24	2.5	1.9	1.3	1.4	0.5	0.4							8.0	2.6
27W	2.3	0.6	0.8	0.3		0.1							4.2	1.9
30	2.5	1.7	1.0	0.3									5.5	1.8
33	3.2	4.4	3.1	2.5	0.4	0.2	0.1						13.9	2.5
NF	21.8	20.6	18.3	18.8	9.2	4.6	0.6	0.2						

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

									C
19-01	12.2	19.3	20.4	18.9	13.0	11.9	1.9	0.7	1.9
01-07	13.0	22.6	20.4	21.1	13.0	5.9	1.9	0.4	1.9
07-13	10.0	19.3	21.1	25.9	13.7	7.0	2.6	0.4	
13-19	10.0	14.4	22.2	23.0	14.4	11.5	3.3	0.7	0.4

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

JULY 1957-1991

HRS. 00,06,12,18 GMT N= 4154 C= 5.7 % VM= 5.3 M/S FM=3.2 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	1.1	2.2	2.8	4.1	3.3	2.5	0.7	0.1					16.8	4.0
03	0.4	0.6	0.5	0.6	0.2	0.1	0.0						2.4	3.1
06	0.5	0.5	0.3	0.0									1.3	1.9
09E	0.7	0.6	0.4	0.1									1.8	1.9
12	0.7	0.8	0.5	0.6	0.2	0.0							2.8	2.5
15	0.9	0.9	1.3	2.1	0.8	0.7	0.1						6.7	3.5
18S	1.1	2.0	2.8	3.3	2.1	1.4	0.4	0.1					13.0	3.7
21	0.8	1.5	1.3	2.2	1.2	0.7	0.2	0.0					8.0	3.6
24	1.2	1.7	1.5	1.5	0.6	0.2	0.0	0.0					6.7	2.9
27W	1.6	1.7	1.6	0.9	0.2	0.1	0.0						6.2	2.5
30	1.1	2.2	1.6	1.5	0.6	0.2	0.1						7.3	2.9
33	2.2	4.1	4.3	5.5	2.6	1.9	0.6	0.1					21.3	3.5
NF	12.3	18.9	18.9	22.3	11.8	7.9	2.1	0.3						

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

										C
19-01	3.4	12.0	17.4	28.7	16.3	14.6	5.0	1.5		0.9
01-07	4.8	14.2	22.0	25.3	16.1	11.9	3.5	1.2		0.9
07-13	4.3	14.1	19.1	26.1	17.0	12.5	5.6	0.9		0.4
13-19	3.2	8.9	20.9	26.7	17.8	14.3	6.6	1.4	0.1	

5253 HELLISØY FYR

AUGUST 1957-1991

HRS. 00,06,12,18 GMT N= 4309 C= 5.1 % VM= 5.4 M/S FM=3.2 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.9	2.3	3.2	3.4	2.3	1.5	0.5	0.0					14.1	3.8
03	0.6	0.6	0.6	0.4	0.2	0.1	0.0						2.6	2.8
06	0.8	0.9	0.5	0.2	0.0								2.3	2.1
09E	1.1	1.1	0.8	0.3	0.1								3.3	2.1
12	0.7	1.3	1.0	0.7	0.3	0.1							4.1	2.7
15	1.3	1.9	2.1	2.7	1.8	1.2	0.3						11.2	3.6
18S	1.0	1.7	2.6	3.4	2.6	1.9	0.7	0.1					14.0	4.0
21	0.8	1.7	1.8	2.2	1.2	1.0	0.2	0.1					8.9	3.6
24	1.2	1.9	2.0	1.7	1.1	0.4	0.2	0.0					8.5	3.2
27W	1.2	1.4	1.2	0.9	0.6	0.2							5.5	2.8
30	1.0	1.6	1.3	1.1	0.3	0.1	0.0	0.0					5.5	2.8
33	1.0	2.5	3.7	4.5	1.8	1.2	0.2	0.0					14.9	3.5
NF	11.6	18.7	20.7	21.4	12.3	7.6	2.2	0.3						

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

										C
19-01	4.0	10.1	19.9	27.3	17.5	13.1	5.8	2.0		0.4
01-07	3.1	12.7	23.0	24.5	17.3	12.6	4.9	0.9	0.2	0.6
07-13	3.9	13.3	20.6	24.8	16.7	13.6	5.6	1.1	0.1	0.4
13-19	2.5	9.9	18.8	30.0	16.8	12.1	7.6	2.0	0.3	0.1

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

SEPTEMBER 1957-1991

HRS. 00,06,12,18 GMT N= 4200 C= 4.0 % VM= 6.7 M/S FM=3.8 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	1.0	1.7	2.6	3.5	2.4	1.5	0.5	0.0					13.3	3.8
03	0.4	1.1	1.0	0.5	0.1	0.1							3.2	2.7
06	0.4	0.9	0.5	0.2									1.9	2.3
09E	1.2	2.0	1.1	0.6	0.1	0.1		0.0					5.2	2.4
12	0.5	1.5	1.2	0.9	0.4	0.1	0.0						4.7	2.9
15	0.8	1.5	2.5	3.0	2.1	1.8	0.9	0.3	0.0				12.8	4.1
18S	0.5	1.0	1.6	3.5	2.9	3.1	1.8	0.5	0.1				15.2	4.8
21	0.6	0.8	1.2	2.2	1.8	1.6	0.6	0.2	0.1	0.0			9.1	4.4
24	0.9	0.8	1.2	2.3	2.1	1.5	0.5	0.1	0.0				9.4	4.2
27W	0.9	1.0	1.0	2.0	1.1	0.7	0.1	0.0	0.0				7.0	3.7
30	0.5	0.8	0.8	1.3	0.8	0.4	0.2	0.0	0.0				5.0	3.8
33	0.7	1.5	1.8	2.2	1.5	1.1	0.5	0.1	0.0	0.0			9.5	3.9
NF	8.5	14.6	16.6	22.2	15.3	12.1	5.1	1.3	0.4	0.0				

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

											C
19-01	2.9	8.5	15.7	20.9	19.6	17.0	10.6	3.7	1.0	0.3	
01-07	2.5	9.0	15.9	21.3	19.3	17.4	10.0	3.2	1.0	0.1	0.2
07-13	1.9	9.8	14.2	21.8	16.7	17.4	12.7	3.6	1.2	0.6	0.1
13-19	2.6	7.6	12.6	23.2	17.0	19.0	11.0	5.0	1.2	0.4	0.4

5253 HELLISØY FYR

OCTOBER 1957-1991

HRS. 00,06,12,18 GMT N= 4340 C= 2.6 % VM= 7.5 M/S FM=4.1 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.9	1.1	2.0	2.4	1.3	0.8	0.5	0.3					9.4	3.9
03	0.5	0.8	1.1	0.8	0.2	0.1	0.0	0.0					3.5	3.1
06	0.9	1.0	0.6	0.3	0.0	0.0							2.9	2.1
09E	1.7	1.8	2.1	0.9	0.2	0.1	0.0						6.9	2.5
12	0.8	1.3	2.1	1.9	0.7	0.4	0.1	0.0					7.4	3.3
15	0.9	1.4	2.7	4.9	3.1	2.4	1.2	0.4	0.0	0.0			17.2	4.3
18S	0.3	0.9	1.5	3.2	4.0	4.3	2.3	1.0	0.2	0.0			17.7	5.2
21	0.2	0.5	0.7	1.8	2.2	2.0	0.8	0.4	0.0				8.5	4.9
24	0.2	0.8	1.6	2.2	1.8	2.0	0.7	0.2	0.0				9.4	4.5
27W	0.3	0.6	1.0	1.2	0.8	0.6	0.4	0.2					5.2	4.2
30	0.1	0.4	0.5	0.7	0.6	0.3	0.3	0.1	0.0				3.3	4.4
33	0.3	0.8	0.8	1.1	1.0	0.9	0.7	0.3	0.1				5.9	4.5
NF	7.2	11.3	16.8	21.4	16.0	14.0	7.3	3.0	0.4	0.1				

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

											C
19-01	2.2	6.3	13.1	20.7	18.0	18.2	12.0	7.4	1.6	0.2	0.1	0.3
01-07	2.8	5.3	12.6	20.6	16.5	20.9	12.2	7.0	1.4	0.5	0.1	0.1
07-13	2.7	5.8	11.7	21.8	16.3	18.7	12.5	8.0	1.9	0.3	0.1	0.2
13-19	2.6	6.0	12.0	22.0	17.1	18.8	10.5	8.8	1.3	0.6		0.4

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

NOVEMBER 1957-1991

HRS. 00,06,12,18 GMT N= 4200 C= 2.1 % VM= 7.9 M/S FM=4.2 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.5	0.7	1.2	2.1	1.9	1.6	0.9	0.5	0.0	0.1			9.5	4.6
03	0.4	0.9	1.3	1.2	0.5	0.3	0.0	0.0					4.7	3.3
06	1.0	1.4	1.2	0.5	0.0								4.1	2.4
09E	1.4	2.4	2.6	1.3	0.2	0.1	0.0						8.0	2.6
12	0.7	2.0	2.7	3.2	0.9	0.5	0.2	0.0					10.1	3.4
15	0.5	1.6	3.0	6.1	4.2	2.7	1.9	0.7	0.1	0.0			20.8	4.5
18S	0.1	0.4	0.8	2.1	2.9	2.8	2.4	1.1	0.3	0.1	0.0		12.9	5.6
21	0.1	0.2	0.7	1.1	1.6	2.0	1.0	0.5	0.1				7.2	5.3
24	0.1	0.5	1.0	1.9	1.5	1.6	1.0	0.3	0.0	0.0			7.9	4.8
27W	0.3	0.5	0.7	1.7	0.9	0.8	0.4	0.1	0.0				5.4	4.2
30	0.2	0.2	0.3	0.7	0.6	0.5	0.3	0.2		0.0			3.0	4.6
33	0.2	0.3	0.4	0.8	0.8	0.9	0.3	0.3	0.2	0.0			4.2	5.0
NF	5.5	11.1	15.9	22.7	15.9	13.6	8.3	3.7	0.7	0.3	0.0			

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

													C
19-01	1.5	5.0	10.9	20.1	17.7	18.4	14.1	8.6	2.2	0.9	0.3		0.5
01-07	1.7	4.8	11.3	21.5	17.4	17.2	13.8	8.0	2.9	1.0			0.3
07-13	1.9	4.6	11.2	20.9	17.2	17.7	14.1	9.2	2.5	0.6	0.1		
13-19	1.7	5.0	10.7	20.2	18.1	17.0	15.3	8.0	3.0	0.6	0.1	0.1	0.1

5253 HELLISØY FYR

DECEMBER 1957-1991

HRS. 00,06,12,18 GMT N= 4340 C= 1.5 % VM= 8.5 M/S FM=4.5 B

DD	F: 1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N	0.5	0.6	1.1	1.7	1.3	1.4	0.5	0.4	0.1				7.6	4.5
03	0.3	0.5	1.2	1.2	0.6	0.2	0.1	0.0					4.1	3.6
06	0.8	1.1	1.2	0.4	0.1	0.0	0.0						3.5	2.5
09E	1.2	3.0	2.3	1.8	0.6	0.1	0.0						9.0	2.8
12	0.5	1.6	3.3	3.5	1.7	0.8	0.1	0.1		0.0			11.5	3.7
15	0.5	1.3	3.4	5.1	3.5	3.1	2.0	0.8	0.2	0.1			20.0	4.6
18S	0.1	0.4	1.1	1.9	2.6	3.7	2.4	1.0	0.6	0.1			13.9	5.6
21	0.1	0.2	0.4	1.0	1.4	1.9	1.0	0.5	0.1				6.7	5.5
24	0.0	0.4	0.8	1.7	1.9	1.7	0.7	0.4	0.1				7.7	5.0
27W	0.1	0.3	0.5	1.2	1.2	1.4	0.7	0.2					5.6	5.0
30	0.1	0.2	0.3	0.6	0.7	0.6	0.7	0.2	0.1	0.0			3.4	5.4
33	0.1	0.3	0.5	0.9	1.1	1.2	0.9	0.4	0.1				5.5	5.2
NF	4.4	9.8	15.9	20.9	16.8	16.0	9.2	4.0	1.3	0.3				

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

													C
19-01	0.8	4.2	10.3	18.3	17.1	19.9	16.0	8.8	3.3	1.1			0.1
01-07	0.6	4.2	11.2	17.7	17.0	18.6	17.1	8.9	3.5	0.9	0.1		0.2
07-13	1.0	4.0	10.5	19.6	15.7	17.4	16.6	10.6	3.6	0.8	0.1		0.1
13-19	1.2	3.4	11.9	16.8	16.3	21.6	13.9	9.7	3.5	1.4			0.4

DET NORSKE METEOROLOGISKE INSTITUTT - KLIMAAVDELINGEN

5253 HELLISØY FYR

YEAR 1957-1991

HRS. 00,06,12,18 GMT N=47644 C= 3.6 % VM= 6.7 M/S FM=3.8 B

DD	F:	1	2	3	4	5	6	7	8	9	10	11	12	ND	FDM
36N		0.8	1.5	2.2	3.0	2.0	1.5	0.6	0.2	0.0	0.0			11.9	4.0
03		0.5	0.7	0.9	0.8	0.3	0.1	0.0	0.0					3.4	3.1
06		0.8	1.0	0.8	0.3	0.0	0.0	0.0						2.9	2.2
09E		1.3	2.0	1.9	1.0	0.3	0.1	0.0	0.0					6.6	2.6
12		0.7	1.5	2.0	2.0	0.8	0.4	0.1	0.0	0.0	0.0			7.5	3.3
15		0.9	1.6	2.6	3.9	2.5	2.0	1.1	0.4	0.1	0.0	0.0		14.9	4.2
18S		0.7	1.2	2.1	3.5	3.1	2.9	1.7	0.7	0.2	0.0	0.0		16.2	4.7
21		0.5	0.8	1.1	1.7	1.5	1.3	0.5	0.3	0.0	0.0			7.6	4.4
24		0.6	0.9	1.1	1.6	1.2	0.9	0.4	0.1	0.0	0.0			6.9	4.0
27W		0.7	0.8	0.9	1.1	0.7	0.5	0.3	0.1	0.0	0.0			5.0	3.7
30		0.5	0.8	0.7	0.8	0.5	0.3	0.2	0.1	0.0	0.0			3.9	3.6
33		0.8	1.5	1.8	2.3	1.4	1.1	0.4	0.2	0.1	0.0			9.6	3.9
NF		9.8	14.3	18.1	21.9	14.2	11.1	5.3	2.1	0.4	0.1	0.0			

FREQUENCY OF MAX WIND FORCE BETWEEN THE HOURS OF OBSERVATION

													C
19-01	2.9	7.9	15.4	23.0	17.2	16.1	9.9	5.1	1.4	0.4	0.0		0.4
01-07	3.3	8.5	17.0	22.2	17.0	15.4	9.8	4.6	1.4	0.4	0.0		0.4
07-13	2.8	8.8	15.2	23.0	16.7	15.9	10.3	5.2	1.4	0.3	0.1		0.2
13-19	2.8	7.2	15.0	23.3	17.4	16.5	10.2	5.4	1.6	0.4	0.0	0.0	0.2

CUMULATIVE DISTRIBUTION OF CASES WITHIN A PERIOD OF CONSECUTIVE DAYS
WHEN MAX.WIND FORCE OF THE DAY IS LESS THAN OR EQUAL TO 3 B
FOR THE PERIOD 1957-1991

DAYS	1	2	3	4	5	6	7	8	9	10	11	12	13
WINTER	277	87	38	21	10	8	5	1	1	1	1	1	1
SPRING	449	140	57	32	22	13	9	6	4	3	3	2	2
SUMMER	443	153	75	37	28	20	13	10	8	7	4	2	2
AUTUMN	295	92	44	22	11	10	8	5	1	1	1	1	1
TOTAL	1464	472	214	112	71	51	35	22	14	12	9	6	6

CUMULATIVE DISTRIBUTION OF CASES WITHIN A PERIOD OF CONSECUTIVE DAYS
WHEN MAX.WIND FORCE OF THE DAY IS GREATER THAN OR EQUAL TO 6 B
FOR THE PERIOD 1957-1991

DAYS	1	2	3	4	5	6	7	8	9	10	11	12	13
WINTER	1862	812	487	307	218	167	127	95	78	64	52	40	33
SPRING	1396	581	300	195	125	77	62	46	34	27	20	11	10
SUMMER	858	341	158	89	59	35	23	14	10	6	4	2	2
AUTUMN	1854	818	470	313	224	161	116	92	71	56	46	34	30
TOTAL	5970	2552	1415	904	626	440	328	247	193	153	122	87	75

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
NO. OF YEARS	35	35	35	35	35	9	34	35	35	35	35	35