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ENVIRONMENTAL DATA HEIDRUN TLP. ANNUAL SYNTHESIS/ANALYSIS 1997

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REPORT NO. 12/98 KLIMA

DNMI - REPORT

ISSN 0805-9918

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REPORT NO.
12/98 KLIMA

DATE
25.03.98

TITLE

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PROJECT CONTRACTOR

STATOIL A/S , Contract No.34971

SUMMARY

The environmental data system at HeidrunTLP is presented very shortly and the performance in 1996 and 1997 for the main parameters (Wind speed and Wave height) are given in some detail.The results of the measurements in 1997 are summarised. Frequency tables for wind speed /wind direction and significant wave height /wave period(Tz) are computed both for 1997 and for the complete period 1996-1997. Probability values for different return periods are computed for wind speed and significant wave height based on the complete series. A short comparison of wave parameters measured by the MIROS radar and the Seatex buoy is given as an Appendix.

SIGNATURE

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HEIDRUN

ANNUAL SYNTHESIS/ANALYSIS 1997

1. Introduction

This report is a summary of the environmental conditions recorded at the Heidrun platform during 1997. The data has been recorded by Statoil a/s , the operator of the Heidrun field.

Oceanographic and meteorological data has been measured since November 1995 at Heidrun giving information of the environmental conditions the platform are influenced by.

The storing system for the instrumental data was operational in November 1995 but January 1996 is the first one with data that at present have been quality qontrolled and delivered to DNMI. This report is primarily a reporting of the 1997 data but the 1996 data is also used and reported where approriate.

The collection of environmental data related to the oil activity is specified in the "Acts, regulations and provisions for the petroleum activities" issued by the Norwegian Petroleum Directorate.

The environmental data are collected in order to :

- Judge the safety of the installations
- Determine the long-term effects of the environment on the structures
- Improve construction requirements
- Help to plan field operations.

It is an established practice that the first permanent platform in a new area is instrumented to record the environmental conditions. In the Haltenbank region this responsibility are given both to Draugen and Heidrun.

Three hourly weather reports are produced routinely and submitted to DNMI in the form of a coded message (SYNOP/SHIP message). The SHIP messages are important for the weather

forecasting system. The three hourly weather reports are also stored at DNMI in the general archive serving Climatological purposes.

At Heidrun the complete set of parameters available in the EMS are stored each 10 minute. Each month these data are retrieved from the system and copied to a streamer tape. The streamer tape is sent to MIROS a/s where the data are checked. Quality controlled data are sent to DNMI on a monthly basis together with a quality report. The parameters available in the complete DF022 format is given in Appendix A.

The data controlled by MIROS a/s are the basis for this annual synthesis report.

2. The data collecting system (HEIDRUN-EMS)

2.1 Instrumentation

The EMS is delivered by MIROS A/S and all parameters regarding waves are measured by a MIROS wave radar. The meteorological parameters are measured by instruments from other providers. The different instruments are interfaced to the EMS with an exception for the sea temperature sensor. This parameter is measured by a seatex buoy and transmitted to the platform and reported to DNMI in the SYNOP/SHIP each 3 hour.

The main environmental parameters are measured with the following sensors :

WIND SENSORS

Manufacturer	Obsermet
Type	Wind speed and wind direction sensors
Model	OMC 150
Range	0-75 m/s 0-360 °
Location B	Top of derrick 131.3 m above sea l. (SHIP message)
Location A	Top of antenna tower 86.8 m above sea l. (METAR)
	(The parallell series show that location A is influenced by the platform and the data is not recommended for reporting to DNMI.)

AIR TEMPERATURE SENSOR

Manufacturer	Vaisala
Type	Platinum Resistance Element
Model	HMD 200B
Range	-100 - +100 °C
Location	Top of the stair module, NE corner of roof L10 69 m a.s.l. (Until 19 November 1995)
	North side of helideck, 67 m a.s.l. (From 20 November 1995).

AIR HUMIDITY SENSOR

Manufacturer	Vaisala
Type	Humicap
Model	HMD 20UB (Modified)
Range	0 - 100 % RH
Location	Top of the stair module, NE corner of roof L10 69 m a.s.l. (Until 19 November 1995)
	North side of helideck, 67 m a.s.l. (From 20 November 1995).

AIR PRESSURE SENSOR

Manufacturer	Vaisala
Type	Vaisala aneroid
Model	DPA 21 sw.v.5.2
Range	500 - 1050 hPa
Location	In the Telecom Equipment Room 56.2 m a.s.l.

WAVE SENSOR I

Manufacturer	MIROS a/s	
Type	MIROS Wave Radar	
Model	SH-001/03, CP-6506 (From 18.12.96 MIROS Mk.2 type no. SM-001)	
Location	SE corner of the platform 69. m a.s.l.	
Range	Max. wave height	0-40 m
	Signif. wave height	0-20 m
	Period, mean and peak	3-30 s
	Direction, mean	0-360 °
	Direction, spread	15-90 °

WAVE SENSOR II

Manufacturer	SEATEX	
Type	Wavescan buoy	
Model		
Location	North of the platform	
Range	Max. wave height	? 0-40 m
	Signif. wave height	? 0-20 m
	Period, mean and peak	? 3-30 s

2.2 Performance and data coverage

DNMI has not visited Heidrun on behalf of The Norwegian Petroleum Directorate (NPD) in 1997.

The data coverage in 1997 for the main parameters are given in table 2.1. As mentioned above, the sea temperature (Tw) is measured by the Seatex buoy and reported from Heidrun to DNMI on a 3 hourly basis in the SYNOP/SHIP message. The data coverage for this parameter varies very much throughout the year. All the other parameters are logged in the HEIDRUN-EMS system each 10 minute. The wind parameters have a coverage near 100 % while the wave parameters have a more varying coverage.

The measuring of wave heights with the MIROS wave radar is dependent on the capillary waves on the sea surface to have satisfactory echo. In periods with to small capillary waves, the echo will be to weak and the radar measures noise produced by the radar itself. Such values are removed by a visual quality control performed by MIROS. The removal of values in periods when the wind is to low to produce capillary waves is thus one of the reasons for the low data coverage in the months of June, July and August. Another is that the wave registrations stopped on several occasions in these months. This information is given in the monthly quality report produced by MIROS a/s.

Table 2.1 Data coverage in percent for the main parameters at Heidrun in 1997.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
T	97	99.1	96.5	99.0	99.9	96.4	100	96.6	99.8	98.3	99.2	99.7	98.7
Tw	50.4	24.8	27.0	1.2	3.2	20.4	21.4	66.1	88.8	40.3	72.9	92.3	42.5
Hm0	88.8	97.9	94.5	96.0	92.5	78.1	64.8	68.5	88.7	95.5	87.9	94.5	87.2
Hmax	88.8	97.9	94.5	96.0	92.5	78.1	64.8	68.5	88.7	95.5	87.9	94.5	87.2
FF	97.0	99.1	96.8	85.2	99.2	98.5	99.4	97.4	99.8	98.9	99.2	99.7	97.5
FG	85.9	96.5	96.2	96.1	98.4	98.1	99.1	95.1	98.8	97.9	99.1	99.5	96.7

3. Special weather events in 1997

The criterion "significant wave height ≥ 10 m" has been applied to determine weather events for a closer description. There are two such situations in 1997. The first occurring on the 4 of February and the second on the 7 of March. The weather map valid for 00 UTC on the 3 and 4 of February are given in Figure 3.1 and 3.2. The period is dominated by a sequence of low pressure systems passing the Haltenbank area from West. At 00 UTC on February 3 a SW wind field is dominating the weather conditions in the area and a strong low pressure system is approaching from West. On the map for 00 UTC February 4, the low pressure centre is located North of the Haltenbank area and when passing, the wind direction turned from SW to NW. At Heidrun the wind turned gradually from 210° to 270° during the first hours of February.

Wind speed and significant wave heights for the period 3-6 February 1997 are given in Figure 3.3 and 3.4. The maximum significant wave height (10.5 m) occurred about 0130 UTC on the 4. At that time, the wind speed had dropped to 20 m/s from a maximum of 28 m/s observed at 22 UTC on the 3.

Worth mentioning is that almost the same weather conditions prevailed in the period 7 to 9 of February with significant wave heights close to 10 m in a period of approximately 12 hours. The measurements at both Draugen and Mike (66°N, 2°E) show monthly maxima in the evening of the 7. At Draugen the maximum was 11.6 m and at Mike 12.2 m.

The wave data from the Seatex buoy is not contained in the quality controlled data delivered to DNMI by MIROS. These data are however sent to DNMI and are used operational in wave forecasting. The data are also stored to make a comparison between the two wave measuring systems possible. Some details of this comparison are presented in Appendix B. Worth mentioning here is that the wave heights from the Seatex buoy generally are lower than the wave heights measured by the MIROS radar. In the data series from the Seatex buoy the significant wave heights had a monthly maximum of 10.8 m on the 7 of February in good agreement with Draugen and Mike and slightly different from the MIROS series where the maximum occurred on the 4. However, the wave heights are high on both days measured both by the MIROS radar and the Seatex buoy.

The second weather situation when significant wave heights exceeded 10 m in 1997 was on the 7 of March. Weather maps valid for 00 UTC on the 7 and 8 of March are given in Figure 3.5 and 3.6. A strong low pressure system passing the area from W is dominating the maps. The wind direction varied about SW in the period when wave heights were highest.

The wind speed and significant wave heights are given in Figure 3.7 and 3.8. They show a maximum in wind speed of 31.2 m/s appearing about 7 UTC on the 7 of March and maximum in significant wave heights of 10.3 m appearing about 11 UTC the same day. The Seatex buoy measured 8.8 m and Mike observed a monthly maximum of 14.4 m on the same day. At Draugen significant wave heights exceeded 10 m both on the 7 and the 9 of March.

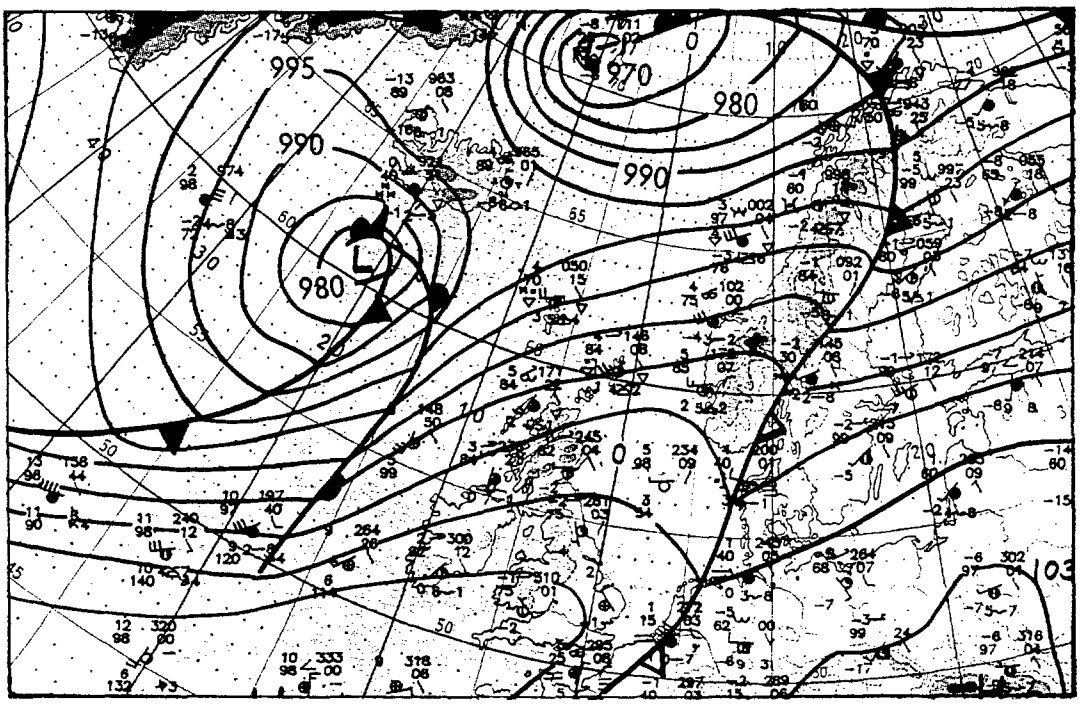


Figure 3.1 Weather map valid for 00 UTC February 3, 1997.

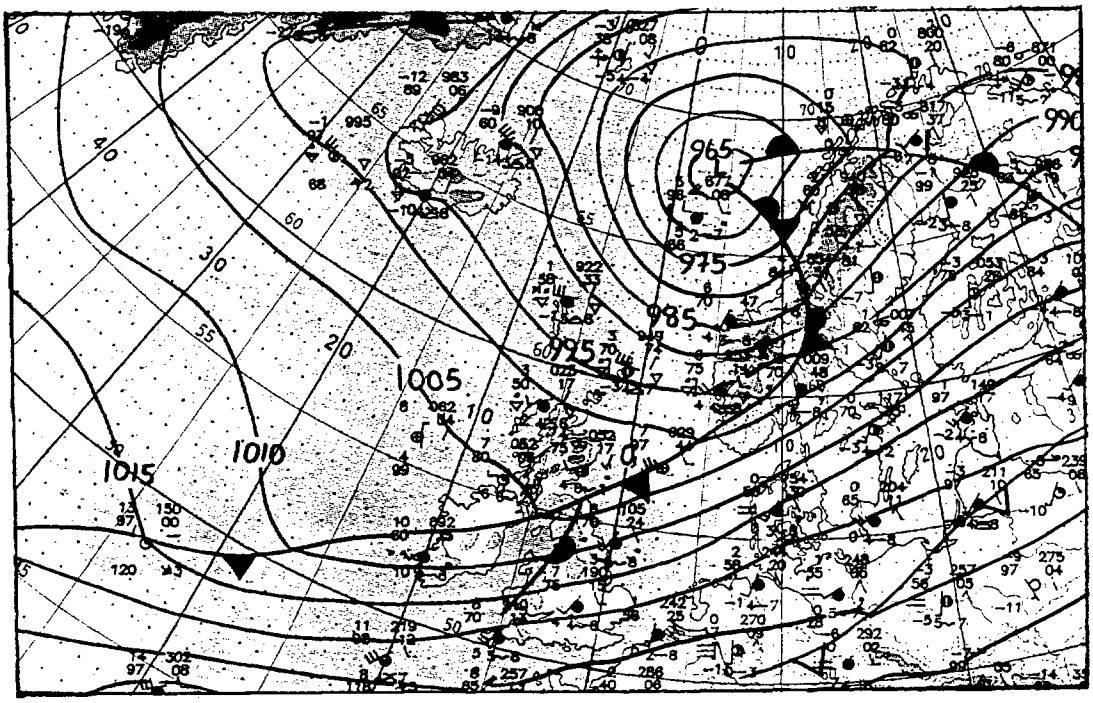


Figure 3.2 Weather map valid for 00 UTC February 4, 1997.

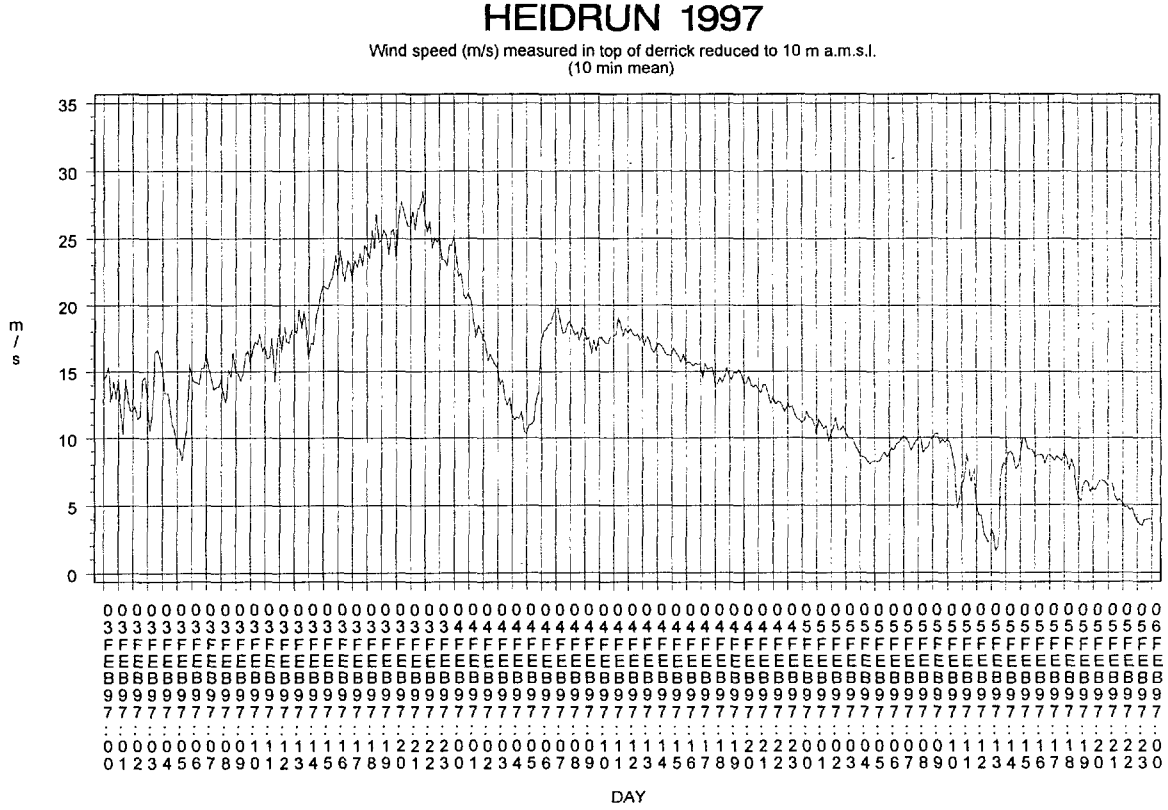


Figure 3.3 Wind speed 03-06.2.1997.

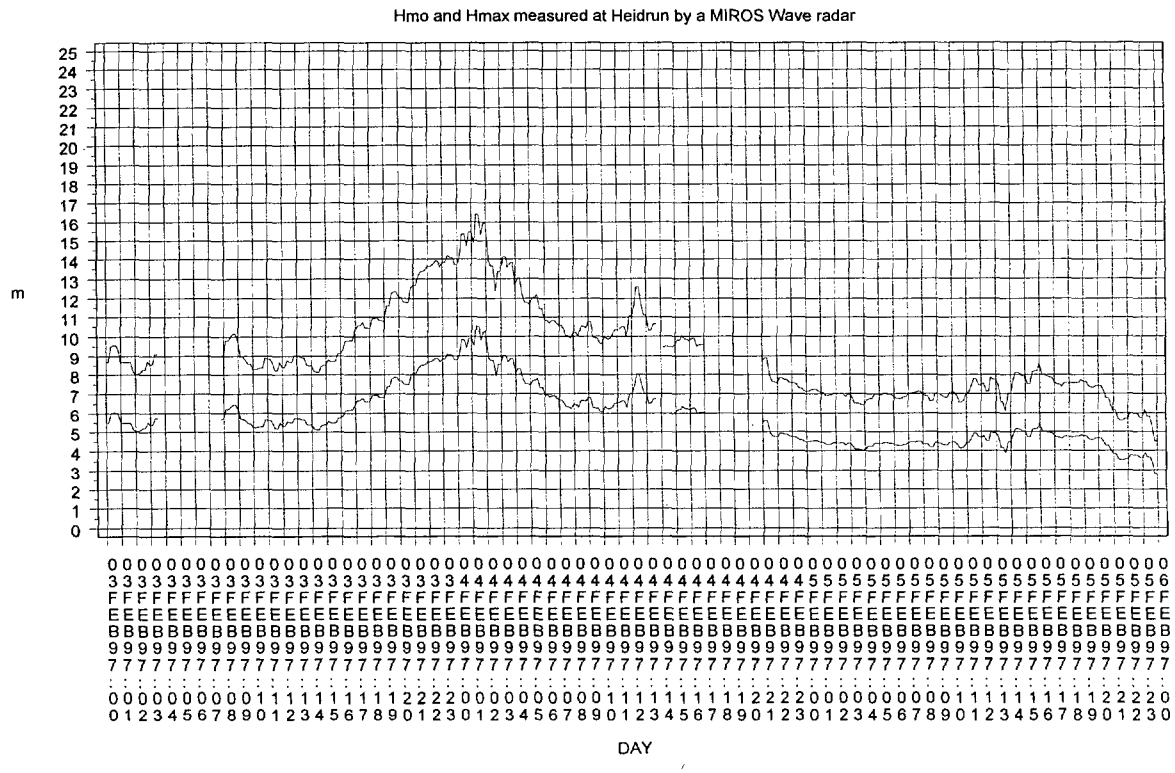


Figure 3.4 Wave height (Hm0 and Hmax) 03-06.2.1997.

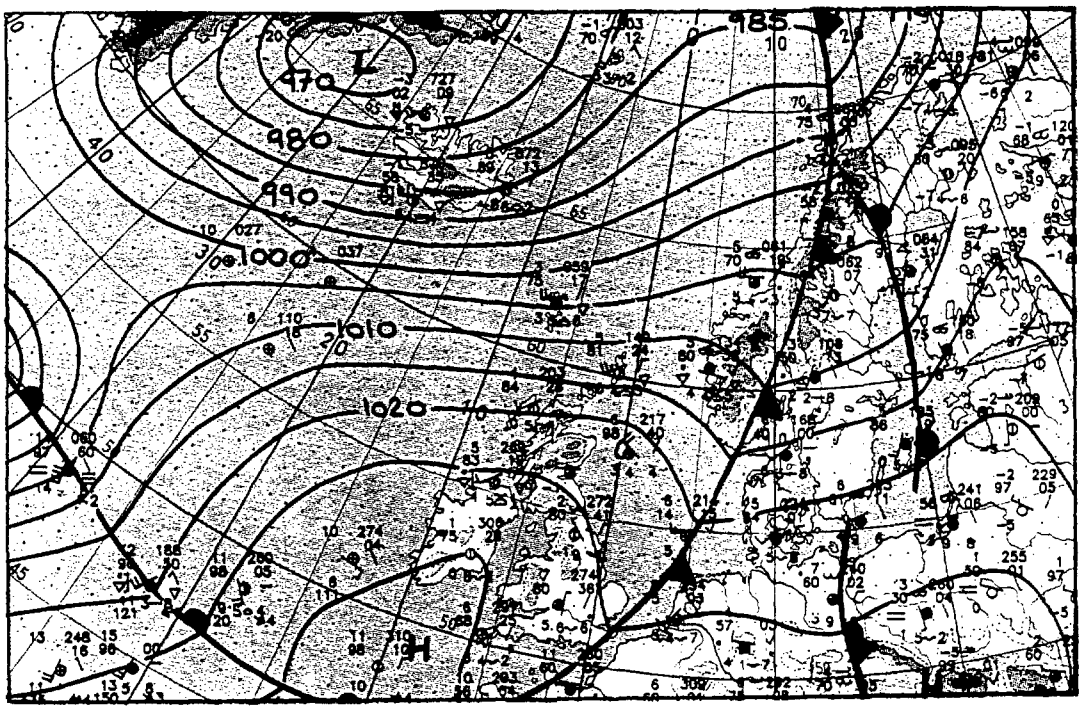


Figure 3.5 Weather map valid for 00 UTC March 6, 1997.

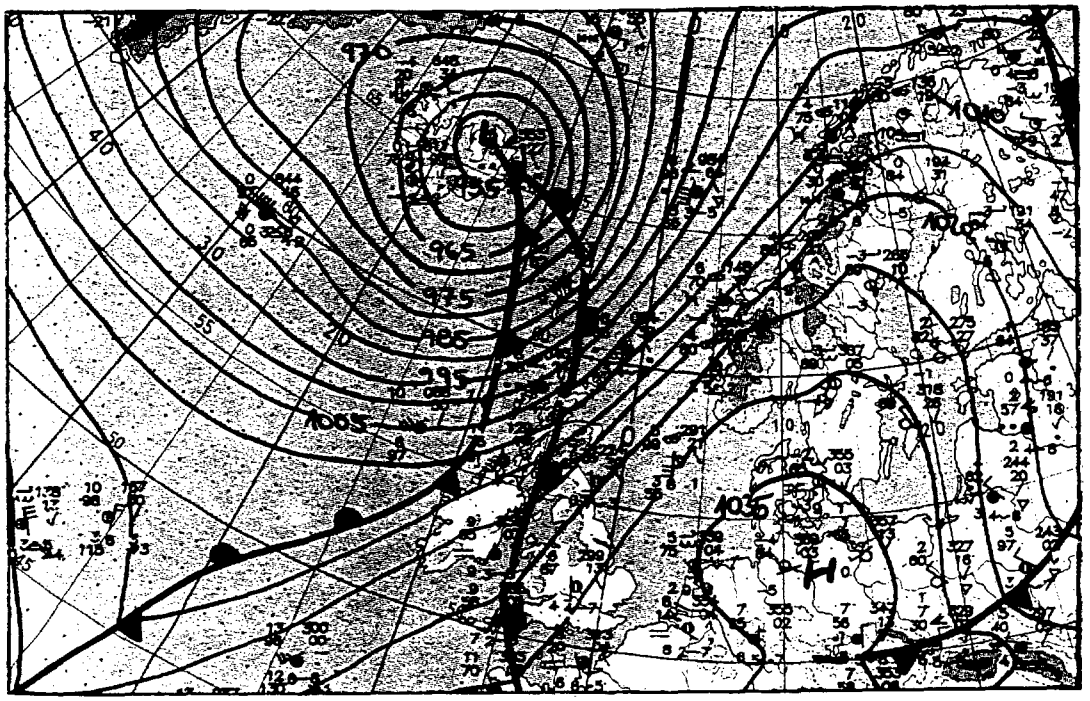


Figure 3.6 Weather map valid for 00 UTC March 7, 1997.

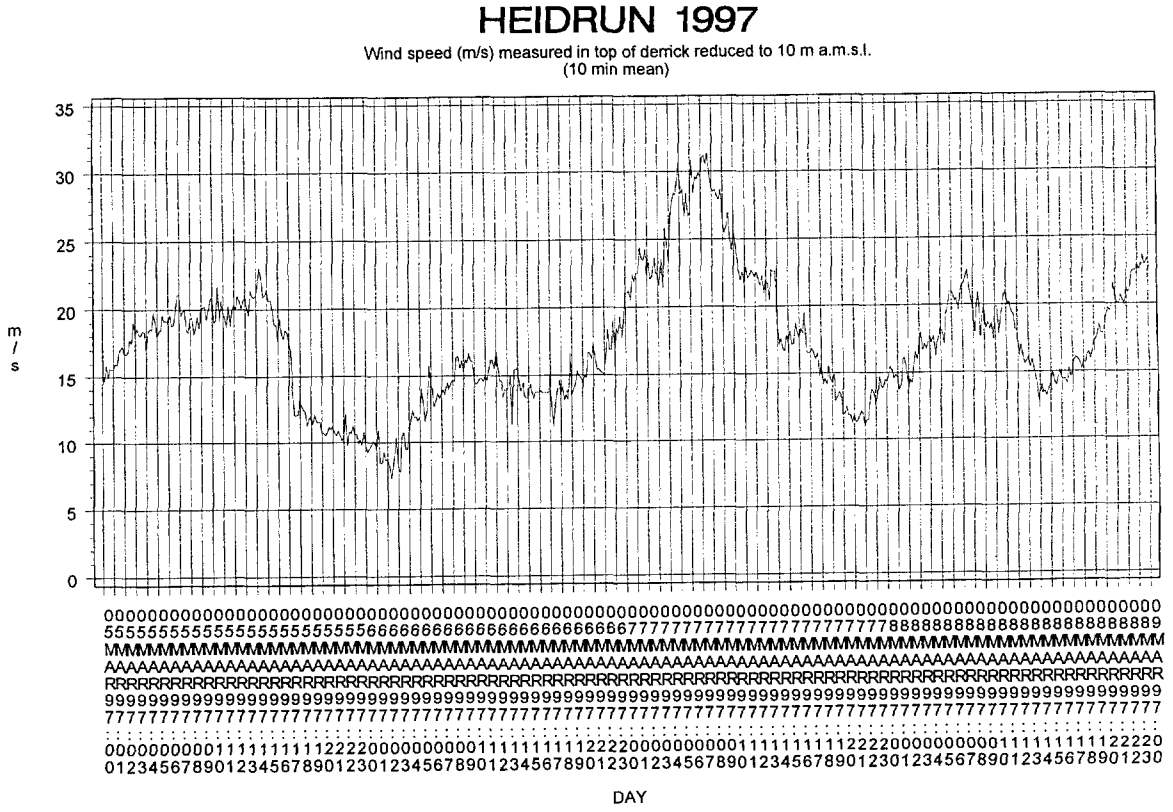


Figure 3.7 Wind speed 05-09.03.1997.

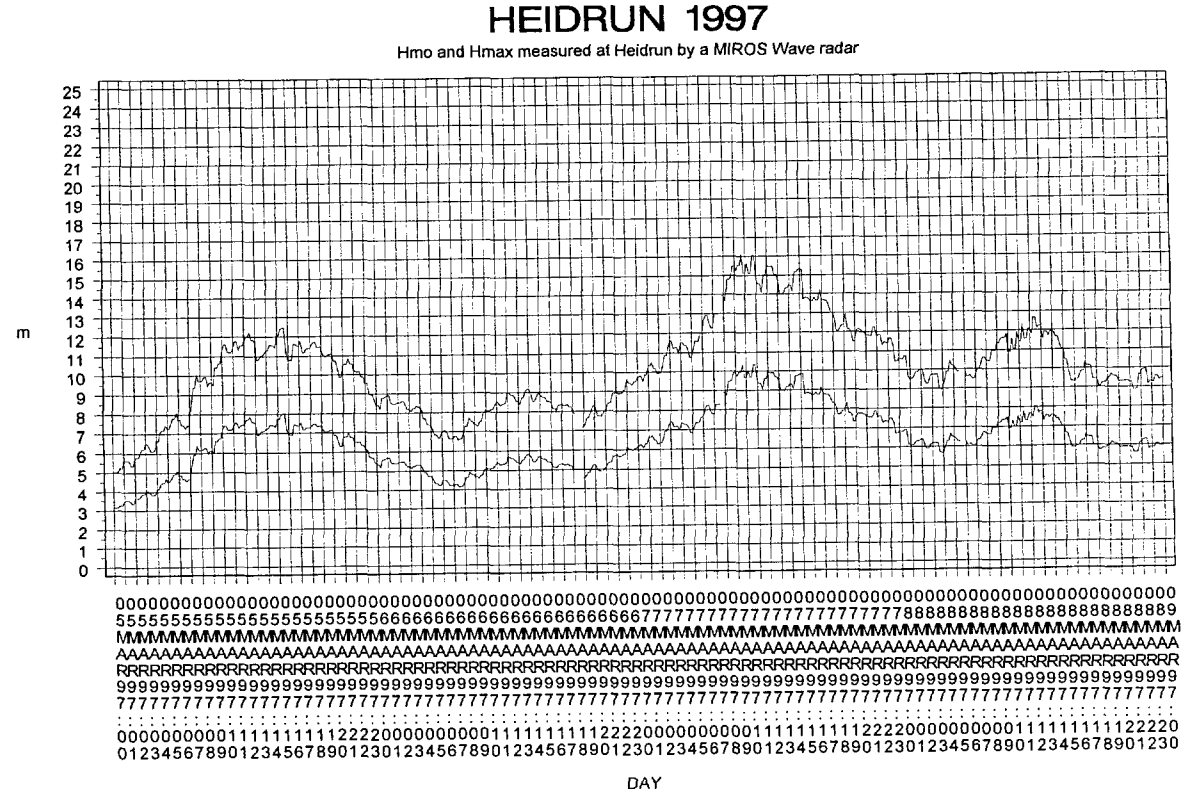


Figure 3.8 Wave height (Hmo and Hmax) 05-09.03.1997.

4. Results

4.1 Climatological summary Heidrun 1997

A short summary of the main parameters measured at Heidrun is presented in table 4.1. The parameters presented are listed below.

T = Air temperature measured 67 m a.s.level
Tw = Sea temperature measured by the Seatex buoy N of platform
U = Air humidity in % measured 67m a.s.level
QFF = Air pressure measured 56.2 m a.s.l. reduced to m.s.l.
Hm0 = Estimate of significant wave height
Hmax = Estimate of maximum wave height
FF = Wind speed (10 min mean) measured in top of derrick (131.3 m) and reduced to reference level 10 m a.m.s.level
FX = Maximum wind speed (10 min mean) ...
FG = Gust wind speed (3 sec mean) measured in top of derrick (131.3 m) and reduced to reference level 10 m a.m.s.lev

The reduction coefficient applied both for FF, FX and FG in the Heidrun-EMS is : x=(10/131.1)**0.13=.716

The reduction coefficient for the gust wind speed (FG) taken equal to the reduction to the 10 min mean wind speed (FF) is not correct. In most cases this will give a to high reduction. However, it is easy to reconstruct the measured value in the derrick 131.3 m a.s.l. and give it a more correct treatment when needed.

The parameters are stored each 10 minute in the existing system at Heidrun. The maximum 10 min mean of the wind speed (FX) is recorded independently and updated each 3 hour. As can be seen in table 4.1 the maximum of FX is thus ≥ the maximum of FF. Until the 2 of February Fx and FG was not reduced to the 10 m level in the EMS. This is adjusted in table 4.1.

The monthly quality reports mention that the air temperature in certain situations may be to high due to artificial heating of the air near the sensor. There can be many reasons for such heating. On a platform the sensor location seldom is ideal for measuring the temperature and humidity of undisturbed air. In the quality controlled data delivered to DNMI there still are situations where the air temperature seem to be to high. During the 14 of July, the air temperature at Heidrun rose from 11° around midnight to 25.6° at 1020 UTC. The weather map show a high pressure centre over N. Finland. The Haltenbank area is dominated by a SE

wind field bringing air from land to sea. At the coastal station Halten Fyr the air temperature was 14.2 ° in the morning of the 14 of July rising to a maximum of 19.7° during the day. The air temperature measured at Heidrun during the 14 of July is thus most probably erroneous and are skipped in the the statistical treatment presented in table 4.1

Table 4.1 Summary of the main parameters measured at Heidrun in 1997.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
T													
Max	8.5	8.2	9.0	8.3	12.3	20.4	19.9	21.0	18.7	11.3	10.4	9.4	21.0
Mean	3.4	3.0	2.9	2.2	5.7	9.2	12.0	13.7	10.5	6.1	5.6	5.1	6.6
Min	-6.5	-4.4	-5.2	-3.7	-1.3	5.1	7.6	9.7	5.3	-2.1	-2.5	-0.2	-6.5
Cover.	97.0	99.1	96.5	99.0	99.9	96.4	99.7	96.6	99.8	98.3	99.2	99.7	98.6
Tw													
Max	7.8	7.7	7.6	7.2	8.4	10.8	15.5	14.9	14.4	10.6	8.6	8.6	15.5
Mean	7.4	7.5	7.3	7.2	7.9	9.4	13.4	13.9	12.2	10.3	7.6	8.4	9.9
Min	7.6	7.3	7.1	7.2	7.4	7.7	9.8	13.4	10.2	10.0	4.7	8.0	4.7
Cover.	50.4	24.6	27.0	1.2	3.2	20.4	21.4	66.1	88.8	40.3	72.9	92.3	42.5
U													
Max	96	94	96	95	96	96	97	97	99	99	97	98	99
Mean	73	72	72	72	77	82	88	82	83	77	76	77	78
Min	39	37	39	43	46	34	53	51	52	41	40	48	34
Cover.	97.0	99.1	96.8	99.0	99.9	96.4	100	96.6	98.8	98.3	99.2	99.7	98.7
QFF													
Max	1032.0	1030.2	1028.1	1030.0	1035.5	1035.5	1031.2	1031.6	1025.3	1028.0	1025.2	1040.8	1040.8
Mean	1010.9	990.4	1004.7	1009.3	1014.4	1013.6	1017.6	1015.2	1005.9	1006.1	1009.5	1007.4	1008.9
Min	979.5	956.5	963.9	981.8	983.9	999.6	1005.1	1001.7	979.4	983.7	987.3	983.1	956.5
Cover.	97.0	99.1	96.8	99.0	99.9	96.4	100	96.6	99.8	98.3	99.2	99.7	98.7
Hm0													
Max	8.6	10.5	10.3	9.4	7.2	3.8	4.9	3.7	7.8	7.9	5.9	5.3	10.5
Mean	4.0	4.3	4.0	3.3	2.0	1.7	1.4	1.6	2.9	3.0	2.5	2.4	2.8
Min	5.5	1.3	0.7	0.9	0.5	0.6	0.2	0.3	0.7	0.7	1.0	1.0	0.2
Cover.	88.8	97.9	94.5	96.0	92.5	78.1	64.8	68.5	88.7	95.5	87.9	94.5	87.2
Hmax													
Max	13.6	16.4	16.1	14.7	11.3	6.1	7.8	6.0	12.2	12.4	9.2	8.6	16.4
Mean	6.4	6.8	6.3	5.3	3.3	2.8	2.3	2.6	4.7	4.8	4.0	3.9	4.6
Min	0.8	2.2	1.2	1.4	0.9	1.0	0.3	0.5	1.1	1.1	1.6	0.7	0.3
Cover.	88.8	97.9	94.5	96.0	92.5	78.1	64.8	68.5	88.7	95.5	87.9	94.5	87.2
FF													
Max	23.9	28.5	31.4	26.0	17.3	15.4	13.4	18.5	21.1	19.6	18.3	18.4	31.4
Mean	10.8	11.6	10.2	8.8	6.7	5.9	4.8	7.0	8.6	7.9	6.6	7.4	8.0
Min	0.9	0.4	0.1	0.4	0.4	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0
Cover.	97.0	99.1	96.8	85.2	99.2	98.5	99.4	97.4	99.8	98.9	99.2	99.7	97.5
FX													
Max	25.1	30.4	33.2	27.5	18.6	16.8	13.4	20.8	22.5	20.7	18.4	19.5	33.2
Cover.	85.9	96.5	96.2	96.1	98.4	98.1	99.4	95.1	98.8	97.8	99.1	99.5	96.7
FG													
Max	29.6	35.9	40.8	31.0	23.0	19.8	15.8	22.8	25.4	23.9	23.7	22.2	40.8
Mean	14.5	16.9	15.3	12.8	9.6	8.2	6.9	9.9	12.0	11.7	9.7	10.8	11.5
Min	4.0	4.0	4.0	4.2	2.7	2.1	1.6	1.9	2.6	1.7	2.0	2.9	1.6
Cover.	85.9	96.5	96.2	96.1	98.4	98.1	99.1	95.1	98.8	97.9	99.1	99.5	96.7

4.2 Frequency tables wind speed/wind direction

Environmental data has been measured at the Heidrun platform since November 1995. The environmental data logged at the platform has been quality controlled by MIROS a/s since January 1996. Below are given frequency statistics based on the single year 1997 and a summary based on the complete period with data.

The data coverage varies through the period analysed. The month to month variations are presented i figure 4.1. The data coverage is generaly very good in 1997 with an exception for April when data are removed in the period 15 -19. This is noted in the monthly quality report. In June 1996 the number of observations is low compared to the other months. The reason for the low number is that values are given each 20 min this month.

Statistical parameters of the frequency distributions are given in figure 4.2 on monthly basis.

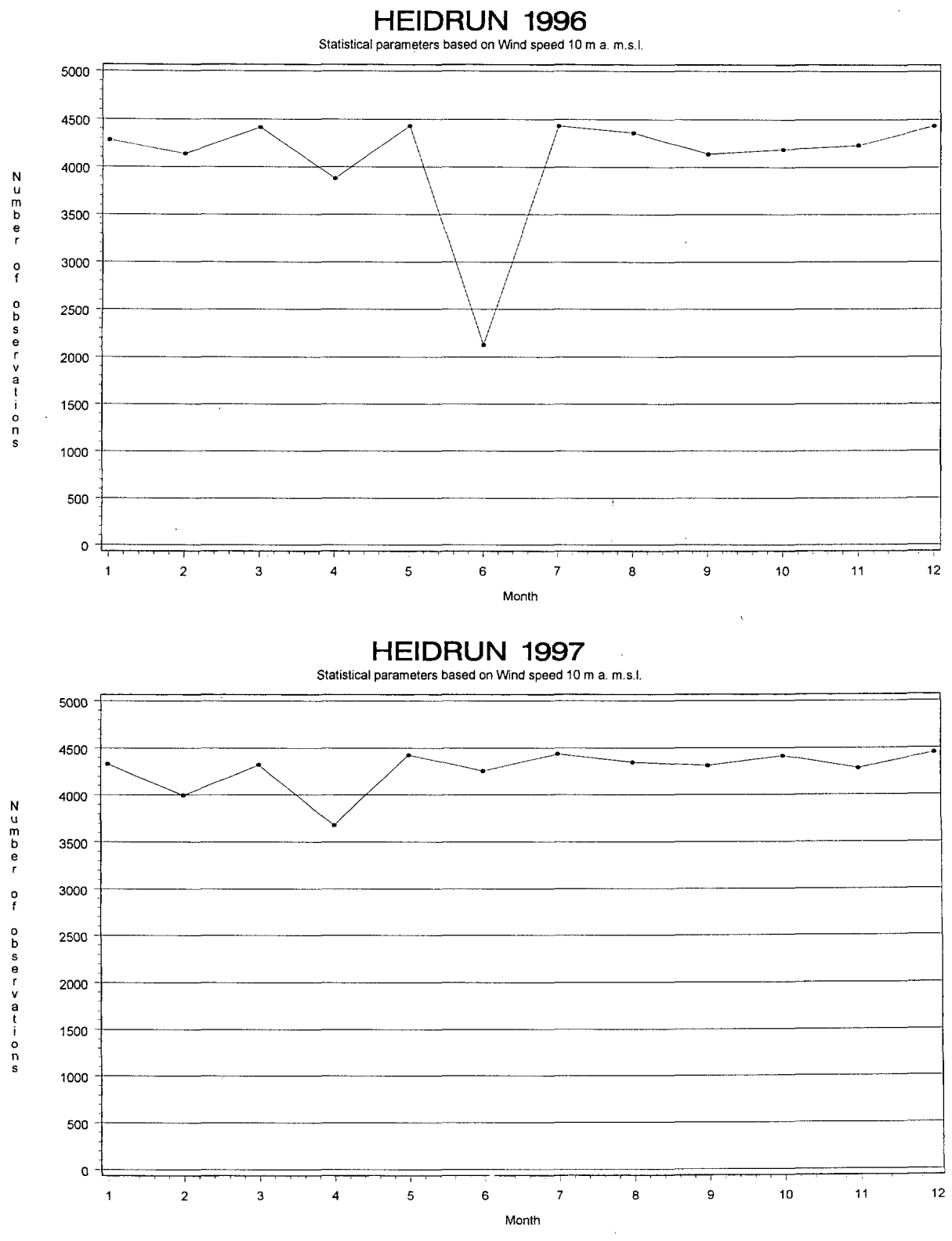
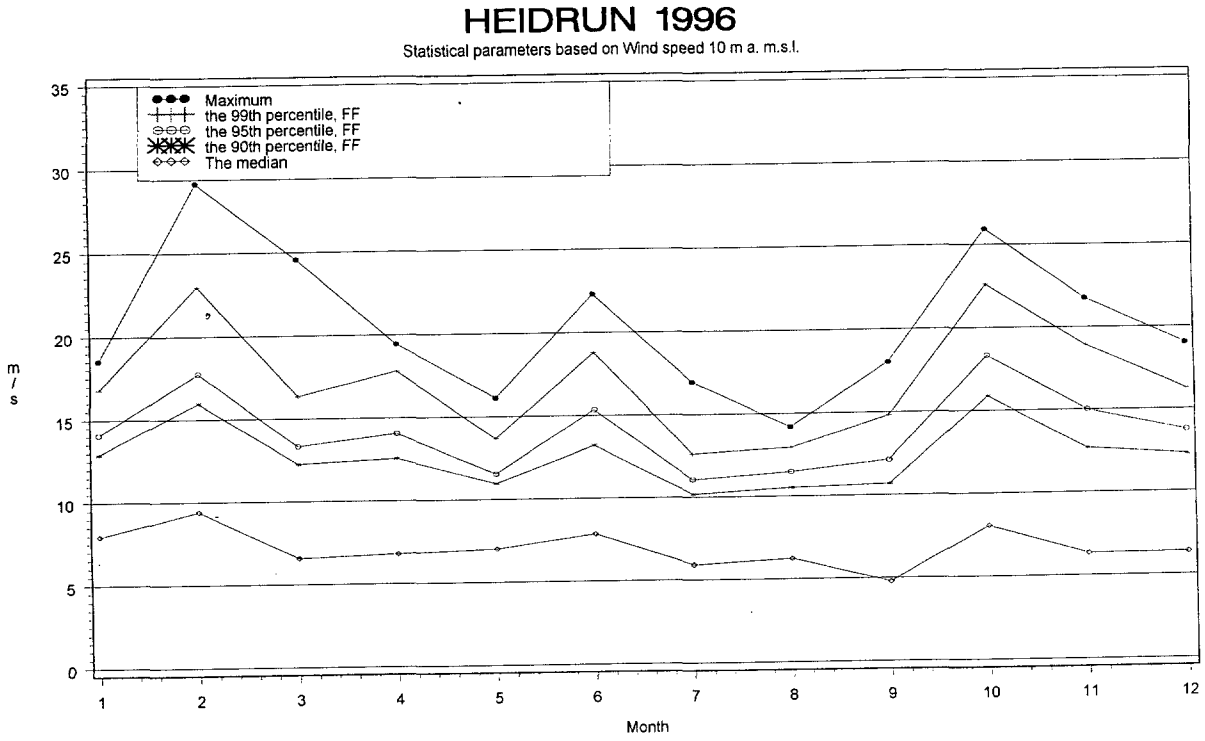


Figure 4.1 Data coverage for wind speed given as number of observations each month. 4464/4320 or 4032 (February) observations /month represents 100 % coverage



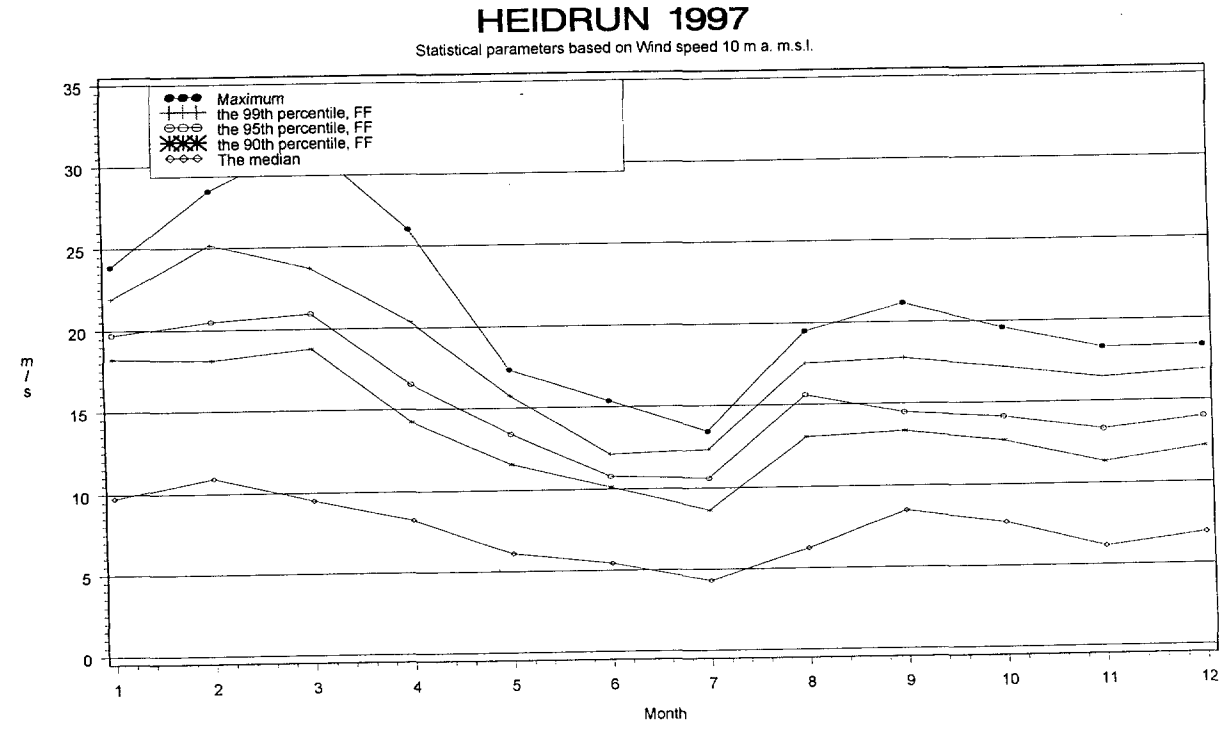


Figure 4.2 Statistical parameters based on the Yearly frequency distributions of wind speed. Valid for 10 m. a.s.l.

4.2.1 Frequency tables wind speed / wind direction for 1997

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
January 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	1	.	2	1	.	.	.	.	2	.	3	.	9	1.24	1.24
2.0- 3.9	10	3	.	.	1	.	1	1	3	4	4	7	34	4.69	5.93
4.0- 5.9	17	2	.	2	2	1	2	.	3	13	13	17	72	9.93	15.86
6.0- 7.9	24	.	1	2	2	1	3	5	9	27	15	22	111	15.31	31.17
8.0- 9.9	18	3	1	4	.	3	13	2	13	32	31	33	153	21.10	52.28
10.0- 11.9	14	.	.	.	5	5	3	1	15	15	22	17	97	13.38	65.66
12.0- 13.9	1	.	.	.	3	2	.	4	11	23	1	7	52	7.17	72.83
14.0- 15.9	.	.	.	.	.	2	3	5	10	21	8	7	56	7.72	80.55
16.0- 17.9	.	.	.	.	.	.	1	8	25	9	16	3	62	8.55	89.10
18.0- 19.9	.	.	.	.	.	.	2	15	15	11	1	.	44	6.07	95.17
20.0- 21.9	.	.	.	.	.	.	.	6	17	3	3	.	29	4.00	99.17
22.0- 23.9	.	.	.	.	.	.	.	1	5	.	.	.	6	0.83	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	85	8	4	9	13	14	28	48	128	158	117	113	725		
Rel.fr.	11.7	1.1	0.6	1.2	1.8	1.9	3.9	6.6	17.7	21.8	16.1	15.6			
Cum.fr.	11.7	12.8	13.4	14.6	16.4	18.3	22.2	28.8	46.5	68.3	84.4	100.0			
Max. FF	12.4	9.7	8.0	9.9	12.3	15.8	18.3	22.0	23.5	21.6	20.8	16.5			
Mean FF	7.1	5.8	4.8	6.9	9.1	10.7	9.8	15.8	14.4	11.0	10.2	8.8			
St.dev. FF	2.5	3.0	3.6	2.5	3.5	2.9	3.9	4.8	5.3	4.4	4.6	3.2			

DATA COVERAGE: 97.4%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
February 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	0	0.00	
<= 1.9	.	.	.	1	2	.	1	1	.	1	.	.	6	0.90	0.90
2.0- 3.9	1	2	2	1	3	.	.	1	2	2	.	1	15	2.25	3.15
4.0- 5.9	8	5	4	12	6	4	7	6	5	2	1	2	62	9.31	12.46
6.0- 7.9	13	1	8	5	14	11	13	5	3	2	2	1	78	11.71	24.17
8.0- 9.9	5	11	7	21	12	9	9	8	14	12	1	2	111	16.67	40.84
10.0- 11.9	1	6	7	2	18	27	8	16	7	14	6	2	114	17.12	57.96
12.0- 13.9	3	3	.	2	10	14	4	23	14	9	2	3	87	13.06	71.02
14.0- 15.9	3	.	.	1	4	8	2	16	10	9	6	4	63	9.46	80.48
16.0- 17.9	.	.	.	.	4	12	8	11	12	11	1	.	59	8.86	89.34
18.0- 19.9	.	.	.	.	.	6	2	6	13	4	.	.	31	4.65	93.99
20.0- 21.9	.	.	.	.	.	3	.	5	8	.	.	.	16	2.40	96.40
22.0- 23.9	.	.	.	.	.	.	.	5	5	1	1	.	12	1.80	98.20
24.0- 25.9	.	.	.	.	.	1	.	7	1	.	1	.	10	1.50	99.70
26.0- 27.9	.	.	.	.	.	.	.	1	1	.	.	.	2	0.30	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	34	28	28	45	73	95	54	111	95	67	21	15	666		
Rel.fr.	5.1	4.2	4.2	6.8	11.0	14.3	8.1	16.7	14.3	10.1	3.2	2.3			
Cum.fr.	5.1	9.3	13.5	20.3	31.2	45.5	53.6	70.3	84.5	94.6	97.7	100.0			
Max. FF	15.5	13.9	11.6	15.5	17.5	24.9	18.7	26.7	26.6	23.6	24.0	15.4			
Mean FF	7.9	8.7	7.9	7.7	9.5	12.4	10.1	14.3	14.3	12.3	12.9	10.5			
St.dev. FF	3.3	2.8	2.4	2.8	3.7	4.2	4.3	5.4	5.4	4.3	4.7	3.9			

DATA COVERAGE: 99.1%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
March 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
									Number of calms				0	0.00	
<= 1.9	2	4	6	5	.	.	.	2	2	2	3	5	31	4.31	4.31
2.0- 3.9	9	14	3	6	6	1	1	4	11	3	3	14	75	10.42	14.72
4.0- 5.9	26	8	16	25	4	.	1	2	5	7	5	15	114	15.83	30.56
6.0- 7.9	10	1	2	14	14	5	4	1	5	9	10	11	86	11.94	42.50
8.0- 9.9	3	2	1	10	2	2	3	4	9	7	12	11	66	9.17	51.67
10.0- 11.9	2	.	.	2	.	1	2	4	15	7	25	25	83	11.53	63.19
12.0- 13.9	1	.	.	.	3	4	.	1	27	5	20	11	72	10.00	73.19
14.0- 15.9	.	.	.	.	3	5	1	7	27	12	6	2	63	8.75	81.94
16.0- 17.9	.	.	.	.	1	2	1	9	25	8	.	1	47	6.53	88.47
18.0- 19.9	.	.	.	.	.	3	.	8	9	13	.	.	33	4.58	93.06
20.0- 21.9	.	.	.	.	.	.	.	10	9	5	.	.	24	3.33	96.39
22.0- 23.9	.	.	.	.	.	.	1	4	15	.	.	.	20	2.78	99.17
24.0- 25.9	.	.	.	.	.	.	.	1	.	.	.	.	1	0.14	99.31
26.0- 27.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.28	99.58
28.0- 29.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.28	99.86
>=30.0	.	.	.	.	.	.	.	1	.	.	.	.	1	0.14	100.00
Sum	53	29	28	62	33	23	14	62	159	78	84	95	720		
Rel.fr.	7.4	4.0	3.9	8.6	4.6	3.2	1.9	8.6	22.1	10.8	11.7	13.2			
Cum.fr.	7.4	11.4	15.3	23.9	28.5	31.7	33.6	42.2	64.3	75.1	86.8	100.0			
Max. FF	12.5	9.7	8.4	10.1	16.0	19.5	22.4	30.6	23.4	21.4	15.0	16.1			
Mean FF	5.4	3.9	4.3	5.8	7.6	12.4	9.8	16.3	14.0	12.5	9.8	8.0			
St.dev. FF	2.2	2.0	1.9	2.4	3.9	4.6	5.2	7.1	5.5	5.7	3.4	3.9			

DATA COVERAGE: 96.8%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
April 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			1	0.17	
<= 1.9	.	1	1	2	1	1	2	3	1	1	1	.	14	2.31	2.48
2.0- 3.9	3	9	3	1	2	2	3	1	3	3	14	15	59	9.74	12.21
4.0- 5.9	13	5	10	8	4	5	3	.	7	12	9	17	93	15.35	27.56
6.0- 7.9	15	9	19	12	5	.	2	1	5	9	21	21	119	19.64	47.19
8.0- 9.9	12	13	3	1	7	6	.	4	8	12	16	14	96	15.84	63.04
10.0- 11.9	17	6	3	.	2	1	.	1	12	16	16	12	86	14.19	77.23
12.0- 13.9	10	6	.	.	.	.	.	2	12	25	11	10	76	12.54	89.77
14.0- 15.9	3	2	.	.	.	.	.	3	1	8	3	6	26	4.29	94.06
16.0- 17.9	.	.	.	.	.	.	.	2	.	2	7	8	19	3.14	97.19
18.0- 19.9	1	.	.	.	.	.	.	.	.	.	1	5	7	1.16	98.35
20.0- 21.9	1	.	.	.	.	.	.	.	.	.	2	6	9	1.49	99.83
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	1	1	0.17	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	75	51	39	24	21	15	10	17	49	88	101	115	606		
Rel.fr.	12.4	8.4	6.4	4.0	3.5	2.5	1.7	2.8	8.1	14.5	16.7	19.0			
Cum.fr.	12.4	20.8	27.2	31.2	34.7	37.1	38.8	41.6	49.7	64.2	80.9	99.8			
Max. FF	20.7	14.7	11.9	8.2	10.2	10.2	6.6	16.2	14.3	16.6	20.2	22.6			
Mean FF	9.2	8.0	6.5	5.7	7.0	6.3	4.3	9.7	9.1	10.1	9.1	9.8			
St.dev. FF	3.5	3.5	2.2	1.6	2.6	2.7	1.7	5.3	3.3	3.6	4.4	5.3			

DATA COVERAGE: 84.2%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
May 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	1	2	3	5	2	1	.	.	.	2	2	11	29	3.92	3.92
2.0- 3.9	4	11	11	14	10	5	12	4	6	12	6	8	103	13.94	17.86
4.0- 5.9	39	43	21	32	16	9	7	5	25	26	3	.	226	30.58	48.44
6.0- 7.9	16	56	4	23	14	4	9	9	24	17	.	4	180	24.36	72.80
8.0- 9.9	3	10	11	26	4	7	6	10	6	.	.	4	87	11.77	84.57
10.0- 11.9	7	.	7	6	1	.	.	12	11	.	.	6	50	6.77	91.34
12.0- 13.9	3	.	.	5	9	.	.	2	6	2	6	3	36	4.87	96.21
14.0- 15.9	1	.	.	3	3	.	.	.	1	.	5	7	20	2.71	98.92
16.0- 17.9	.	.	.	1	.	.	.	.	.	.	5	2	8	1.08	100.00
18.0- 19.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	74	122	57	115	59	26	34	42	79	59	27	45	739		
Rel.fr.	10.0	16.5	7.7	15.6	8.0	3.5	4.6	5.7	10.7	8.0	3.7	6.1			
Cum.fr.	10.0	26.5	34.2	49.8	57.8	61.3	65.9	71.6	82.3	90.3	93.9	100.0			
Max. FF	14.1	9.1	11.2	16.0	15.7	9.9	9.4	12.9	14.7	13.7	16.7	16.8			
Mean FF	6.5	6.0	5.9	6.9	7.0	5.9	5.4	8.1	7.3	5.2	10.0	7.6			
St.dev. FF	2.7	1.6	2.9	3.1	3.8	2.3	2.3	2.7	2.9	2.1	6.0	5.5			

DATA COVERAGE: 99.3%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
June 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	3	2	3	.	2	.	1	1	1	3	5	4	25	3.53	3.53
2.0- 3.9	13	30	32	3	1	9	14	19	13	8	19	7	168	23.73	27.26
4.0- 5.9	23	26	81	11	3	14	3	15	13	13	11	11	224	31.64	58.90
6.0- 7.9	20	27	27	2	4	4	1	4	6	13	10	6	124	17.51	76.41
8.0- 9.9	12	21	20	.	4	1	.	3	5	10	7	8	91	12.85	89.27
10.0- 11.9	1	8	8	.	.	4	4	10	9	.	2	22	68	9.60	98.87
12.0- 13.9	.	.	.	.	.	.	4	3	.	.	.	.	7	0.99	99.86
14.0- 15.9	.	.	.	.	.	.	1	.	.	.	.	.	1	0.14	100.00
16.0- 17.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
18.0- 19.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	72	114	171	16	14	32	28	55	47	47	54	58	708		
Rel.fr.	10.2	16.1	24.2	2.3	2.0	4.5	4.0	7.8	6.6	6.6	7.6	8.2			
Cum.fr.	10.2	26.3	50.4	52.7	54.7	59.2	63.1	70.9	77.5	84.2	91.8	100.0			
Max. FF	10.1	11.0	10.7	6.9	9.9	11.9	14.8	12.6	11.5	9.2	10.0	11.5			
Mean FF	5.8	5.9	5.7	4.9	5.9	5.8	6.4	6.1	6.1	5.8	5.1	7.4			
St.dev. FF	2.1	2.6	2.1	1.0	2.6	2.7	4.4	3.4	2.9	2.2	2.6	3.4			

DATA COVERAGE: 98.3%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
July 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
									Number of calms				0	0.00	
<= 1.9	1	2	16	15	11	2	1	6	19	21	9	4	107	14.46	14.46
2.0- 3.9	3	19	46	36	19	7	6	6	11	40	26	11	230	31.08	45.54
4.0- 5.9	8	7	57	57	3	3	5	2	27	12	2	1	184	24.86	70.41
6.0- 7.9	.	.	59	8	.	.	12	7	23	2	.	.	111	15.00	85.41
8.0- 9.9	.	4	35	.	.	.	4	13	7	.	.	.	63	8.51	93.92
10.0- 11.9	.	7	18	.	.	.	1	8	.	.	.	.	34	4.59	98.51
12.0- 13.9	.	1	10	.	.	.	.	.	.	.	.	.	11	1.49	100.00
14.0- 15.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
16.0- 17.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
18.0- 19.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	12	40	241	116	33	12	29	42	87	75	37	16	740		
Rel.fr.	1.6	5.4	32.6	15.7	4.5	1.6	3.9	5.7	11.8	10.1	5.0	2.2			
Cum.fr.	1.6	7.0	39.6	55.3	59.7	61.4	65.3	70.9	82.7	92.8	97.8	100.0			
Max. FF	5.1	12.5	12.9	7.1	5.7	5.3	9.9	11.6	8.7	6.4	4.0	5.4			
Mean FF	4.1	5.5	6.1	4.0	2.4	3.1	6.0	6.7	4.7	2.8	2.7	2.4			
St.dev. FF	1.1	3.5	2.9	1.6	1.3	1.4	2.2	3.5	2.5	1.3	1.0	1.4			

DATA COVERAGE: 99.5%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
August 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	0	0.00	
<= 1.9	1	2	5	10	8	.	2	3	7	8	4	5	55	7.60	7.60
2.0- 3.9	6	10	11	14	5	4	19	9	19	31	7	7	142	19.61	27.21
4.0- 5.9	11	2	7	10	1	5	13	28	41	24	1	3	146	20.17	47.38
6.0- 7.9	4	1	4	14	.	7	7	15	57	19	18	4	150	20.72	68.09
8.0- 9.9	.	5	4	.	.	1	8	6	18	9	2	1	54	7.46	75.55
10.0- 11.9	.	.	.	11	2	5	6	14	31	10	.	.	79	10.91	86.46
12.0- 13.9	.	.	.	.	3	3	2	10	18	.	.	.	36	4.97	91.44
14.0- 15.9	.	.	.	.	1	6	2	19	2	.	.	.	30	4.14	95.58
16.0- 17.9	.	.	.	.	.	13	1	14	.	.	.	.	28	3.87	99.45
18.0- 19.9	.	.	.	.	.	1	.	3	.	.	.	.	4	0.55	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	22	20	31	59	20	45	60	121	193	101	32	20	724		
Rel.fr.	3.0	2.8	4.3	8.1	2.8	6.2	8.3	16.7	26.7	14.0	4.4	2.8			
Cum.fr.	3.0	5.8	10.1	18.2	21.0	27.2	35.5	52.2	78.9	92.8	97.2	100.0			
Max. FF	7.6	9.6	9.4	11.9	14.0	18.5	16.2	19.5	15.1	11.3	9.5	9.7			
Mean FF	4.7	4.7	4.5	5.5	5.2	11.5	6.3	9.9	7.5	5.3	5.3	3.8			
St.dev. FF	1.5	2.9	2.4	3.3	4.9	5.1	3.8	5.0	3.1	2.8	2.4	2.6			

DATA COVERAGE: 97.3%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
September 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	0	0.00	
<= 1.9	.	1	1	4	3	1	6	3	2	3	.	2	26	3.62	3.62
2.0- 3.9	2	1	7	2	7	5	5	6	7	3	2	5	52	7.24	10.86
4.0- 5.9	10	3	2	4	3	7	12	19	14	17	7	6	104	14.48	25.35
6.0- 7.9	6	3	1	5	3	8	6	24	25	30	12	9	132	18.38	43.73
8.0- 9.9	7	.	.	10	3	5	4	16	29	35	27	15	151	21.03	64.76
10.0- 11.9	4	.	.	6	1	.	4	4	31	29	20	27	126	17.55	82.31
12.0- 13.9	.	.	.	.	.	1	7	17	15	14	10	16	80	11.14	93.45
14.0- 15.9	.	.	.	.	.	4	.	10	4	6	4	3	31	4.32	97.77
16.0- 17.9	.	.	.	.	.	.	.	4	4	.	1	.	9	1.25	99.03
18.0- 19.9	.	.	.	.	.	.	.	2	3	.	1	.	6	0.84	99.86
20.0- 21.9	.	.	.	.	.	.	.	1	.	.	.	.	1	0.14	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	29	8	11	31	20	31	44	106	134	137	84	83	718		
Rel.fr.	4.0	1.1	1.5	4.3	2.8	4.3	6.1	14.8	18.7	19.1	11.7	11.6			
Cum.fr.	4.0	5.2	6.7	11.0	13.8	18.1	24.2	39.0	57.7	76.7	88.4	100.0			
Max. FF	11.8	7.5	6.0	10.3	10.2	15.1	13.7	21.1	19.3	14.8	18.2	14.6			
Mean FF	7.2	4.8	3.3	7.1	4.9	7.4	6.5	9.1	9.3	8.9	9.6	9.6			
St.dev. FF	2.5	2.5	1.2	3.2	2.6	3.7	3.9	4.4	3.5	2.9	2.9	3.2			

DATA COVERAGE: 99.7%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
October 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
											Number of calms		0	0.00	
<= 1.9	1	1	3	3	4	.	.	1	1	4	5	5	28	3.80	3.80
2.0- 3.9	9	5	7	10	14	7	4	7	7	4	4	8	86	11.68	15.49
4.0- 5.9	14	28	4	12	16	2	9	2	5	10	9	24	135	18.34	33.83
6.0- 7.9	16	9	2	7	5	.	11	4	6	30	22	29	141	19.16	52.99
8.0- 9.9	14	1	.	6	2	4	8	.	22	19	13	33	122	16.58	69.57
10.0- 11.9	14	2	.	15	3	4	6	2	16	14	2	38	116	15.76	85.33
12.0- 13.9	10	2	.	3	13	2	.	4	4	3	1	24	66	8.97	94.29
14.0- 15.9	1	.	.	.	1	4	2	2	7	.	.	7	24	3.26	97.55
16.0- 17.9	1	.	.	.	.	.	2	4	4	.	.	4	15	2.04	99.59
18.0- 19.9	.	.	.	.	.	.	.	.	2	.	.	1	3	0.41	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	80	48	16	56	58	23	42	26	74	84	56	173	736		
Rel.fr.	10.9	6.5	2.2	7.6	7.9	3.1	5.7	3.5	10.1	11.4	7.6	23.5			
Cum.fr.	10.9	17.4	19.6	27.2	35.1	38.2	43.9	47.4	57.5	68.9	76.5	100.0			
Max. FF	17.0	12.7	6.7	12.5	14.6	15.3	16.3	17.5	18.1	13.8	12.6	18.8			
Mean FF	8.1	5.7	3.8	7.1	6.8	8.5	7.9	8.8	9.7	7.5	6.5	9.0			
St.dev. FF	3.3	2.3	1.6	3.5	4.2	4.5	3.3	5.4	3.9	2.8	2.6	3.6			

DATA COVERAGE: 98.9%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
November 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	1	.	4	7	12	2	5	6	2	2	.	1	42	5.89	5.89
2.0- 3.9	18	14	15	23	16	14	14	6	9	8	10	16	163	22.86	28.75
4.0- 5.9	10	4	1	17	21	21	10	10	15	6	4	14	133	18.65	47.41
6.0- 7.9	20	3	4	29	13	33	15	8	4	.	2	17	148	20.76	68.16
8.0- 9.9	5	.	.	19	3	38	27	9	3	.	.	3	107	15.01	83.17
10.0- 11.9	7	.	.	3	13	15	21	5	.	.	.	1	65	9.12	92.29
12.0- 13.9	1	.	.	3	11	.	3	7	2	.	.	.	27	3.79	96.07
14.0- 15.9	.	.	.	.	10	.	2	6	.	.	.	.	18	2.52	98.60
16.0- 17.9	.	.	.	.	.	.	.	10	.	.	.	.	10	1.40	100.00
18.0- 19.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	62	21	24	101	99	123	97	67	35	16	16	52	713		
Rel.fr.	8.7	2.9	3.4	14.2	13.9	17.3	13.6	9.4	4.9	2.2	2.2	7.3			
Cum.fr.	8.7	11.6	15.0	29.2	43.1	60.3	73.9	83.3	88.2	90.5	92.7	100.0			
Max. FF	13.3	7.2	7.4	13.0	15.7	11.5	14.9	17.8	12.7	5.3	6.9	10.6			
Mean FF	6.2	3.9	3.6	5.9	7.3	7.1	7.7	9.1	5.1	3.4	4.3	5.2			
St.dev. FF	2.8	1.6	1.9	2.8	4.5	2.4	3.3	5.1	2.6	1.1	1.0	2.1			

DATA COVERAGE: 99.0%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
December 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	.	2	3	5	4	1	3	.	1	2	2	.	23	3.10	3.10
2.0- 3.9	3	12	31	10	3	10	8	9	7	10	3	1	107	14.42	17.52
4.0- 5.9	4	.	21	11	10	24	19	12	25	12	9	4	151	20.35	37.87
6.0- 7.9	4	.	3	23	23	27	26	11	8	18	10	9	162	21.83	59.70
8.0- 9.9	1	.	4	32	12	11	17	18	6	29	1	3	134	18.06	77.76
10.0- 11.9	.	.	.	18	9	2	3	20	3	24	1	4	84	11.32	89.08
12.0- 13.9	.	.	.	.	13	5	1	12	4	11	.	.	46	6.20	95.28
14.0- 15.9	.	.	.	.	1	3	.	1	15	3	.	.	23	3.10	98.38
16.0- 17.9	.	.	.	.	.	.	2	4	4	.	.	.	10	1.35	99.73
18.0- 19.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.27	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	12	14	62	99	75	83	79	89	73	109	26	21	742		
Rel.fr.	1.6	1.9	8.4	13.3	10.1	11.2	10.6	12.0	9.8	14.7	3.5	2.8			
Cum.fr.	1.6	3.5	11.9	25.2	35.3	46.5	57.1	69.1	79.0	93.7	97.2	100.0			
Max. FF	8.3	3.7	8.8	11.5	14.3	15.8	16.9	18.1	17.5	15.4	10.5	11.1			
Mean FF	5.4	2.7	4.2	7.4	8.0	6.8	6.8	9.2	8.7	8.5	5.6	7.4			
St.dev. FF	1.8	0.7	1.8	2.7	3.3	3.1	2.8	3.9	4.6	3.1	2.0	2.2			

DATA COVERAGE: 99.7%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
Jan.-Dec. 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	1	0.01	
<= 1.9	11	17	47	58	49	8	21	26	38	49	34	37	395	4.63	4.64
2.0- 3.9	81	130	168	120	87	64	87	73	98	128	98	100	1234	14.45	19.09
4.0- 5.9	183	133	224	201	89	95	91	101	185	154	74	114	1644	19.26	38.35
6.0- 7.9	148	110	134	144	97	100	109	94	175	176	122	133	1542	18.06	56.41
8.0- 9.9	80	70	86	129	49	87	99	93	140	165	110	127	1235	14.47	70.88
10.0- 11.9	67	29	43	63	54	64	58	97	150	129	94	154	1002	11.74	82.62
12.0- 13.9	29	12	10	13	65	31	21	85	113	92	51	74	596	6.98	89.60
14.0- 15.9	8	2	.	4	23	32	13	69	77	59	32	36	355	4.16	93.76
16.0- 17.9	1	.	.	1	5	27	15	66	74	30	30	18	267	3.13	96.88
18.0- 19.9	1	.	.	.	.	10	4	36	42	28	3	6	130	1.52	98.41
20.0- 21.9	1	.	.	.	.	3	.	22	34	8	5	6	79	0.93	99.33
22.0- 23.9	.	.	.	.	.	.	1	10	25	1	1	1	39	0.46	99.79
24.0- 25.9	.	.	.	.	.	1	.	8	1	.	1	.	11	0.13	99.92
26.0- 27.9	.	.	.	.	.	.	.	3	1	.	.	.	4	0.05	99.96
28.0- 29.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.02	99.99
>=30.0	.	.	.	.	.	.	.	1	.	.	.	.	1	0.01	100.00
Sum	610	503	712	733	518	522	519	786	1153	1019	655	806	8537		
Rel.fr.	7.1	5.9	8.3	8.6	6.1	6.1	6.1	9.2	13.5	11.9	7.7	9.4			
Cum.fr.	7.1	13.0	21.4	30.0	36.0	42.1	48.2	57.4	70.9	82.9	90.5	100.0			
Max. FF	20.7	14.7	12.9	16.0	17.5	24.9	22.4	30.6	26.6	23.6	24.0	22.6			
Mean FF	6.9	5.9	5.6	6.2	7.1	8.6	7.4	10.5	9.9	8.4	8.3	8.3			
St.dev. FF	3.0	2.8	2.6	3.0	4.1	4.3	3.8	5.7	5.3	4.5	4.4	4.1			

DATA COVERAGE: 97.5%

STATISTICS

	Mean FF m/s	St.dev. FF m/s	Maximum FF m/s	DD degrees	date
January	10.8	4.9	23.5	244.5	21.01.1997 03 UT
February	11.6	5.0	26.7	203.4	03.02.1997 22 UT
March	10.2	5.9	30.6	201.5	07.03.1997 05 UT
April	8.8	4.2	22.6	321.5	14.04.1997 07 UT
May	6.7	3.3	16.8	316.3	02.05.1997 20 UT
June	5.9	2.7	14.8	190.9	07.06.1997 14 UT
July	4.8	2.8	12.9	46.6	01.07.1997 20 UT
August	7.0	4.2	19.5	206.7	08.08.1997 14 UT
September	8.6	3.6	21.1	204.3	16.09.1997 04 UT
October	7.9	3.7	18.8	342.9	23.10.1997 12 UT
November	6.6	3.5	17.8	216.0	17.11.1997 11 UT
December	7.4	3.5	18.1	217.3	07.12.1997 09 UT

4.2.2 Frequency tables wind speed and wind direction for the period 1996-1997

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
January 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	0	0.00	
<= 1.9	1	1	3	3	12	6	7	7	5	3	6	3	57	3.96	3.96
2.0- 3.9	11	3	4	3	8	16	16	18	19	9	7	10	124	8.62	12.59
4.0- 5.9	17	2	.	7	13	14	22	23	22	19	23	26	188	13.07	25.66
6.0- 7.9	27	.	1	5	13	19	14	17	25	42	25	26	214	14.88	40.54
8.0- 9.9	20	3	1	5	2	26	42	22	29	52	49	43	294	20.45	60.99
10.0- 11.9	15	.	.	.	6	16	23	30	26	22	31	20	189	13.14	74.13
12.0- 13.9	2	.	.	.	3	6	14	45	17	32	10	7	136	9.46	83.59
14.0- 15.9	.	.	.	.	.	4	5	10	22	21	11	7	80	5.56	89.15
16.0- 17.9	.	.	.	.	1	3	1	16	28	9	16	3	77	5.35	94.51
18.0- 19.9	.	.	.	.	.	.	2	15	15	11	1	.	44	3.06	97.57
20.0- 21.9	.	.	.	.	.	.	.	6	17	3	3	.	29	2.02	99.58
22.0- 23.9	.	.	.	.	.	.	.	1	5	.	.	.	6	0.42	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	93	9	9	23	58	110	146	210	230	223	182	145	1438		
Rel.fr.	6.5	0.6	0.6	1.6	4.0	7.6	10.2	14.6	16.0	15.5	12.7	10.1			
Cum.fr.	6.5	7.1	7.7	9.3	13.4	21.0	31.2	45.8	61.8	77.3	89.9	100.0			
Max. FF	12.4	9.7	8.0	9.9	16.7	17.4	18.3	22.0	23.5	21.6	20.8	16.5			
Mean FF	7.2	5.2	3.5	5.5	5.6	7.8	8.1	10.7	11.6	10.2	9.5	8.2			
St.dev. FF	2.5	3.3	2.6	2.7	3.9	3.8	3.8	5.2	5.7	4.3	4.3	3.3			

DATA COVERAGE: 96.6%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
February 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
Number of calms													0	0.00	
<= 1.9	.	1	.	4	2	.	1	1	3	1	3	2	18	1.33	1.33
2.0- 3.9	5	6	5	3	6	4	7	4	3	4	1	3	51	3.77	5.10
4.0- 5.9	14	8	11	23	26	11	9	7	6	7	12	17	151	11.15	16.25
6.0- 7.9	23	4	12	15	36	22	13	7	14	16	10	15	187	13.81	30.06
8.0- 9.9	30	19	14	33	29	33	15	11	20	17	9	16	246	18.17	48.23
10.0- 11.9	11	11	13	3	25	42	18	20	25	15	17	25	225	16.62	64.84
12.0- 13.9	5	5	11	3	10	20	12	25	28	20	10	16	165	12.19	77.03
14.0- 15.9	3	.	.	1	4	8	9	36	13	19	11	11	115	8.49	85.52
16.0- 17.9	1	.	.	.	4	12	10	29	14	13	3	11	97	7.16	92.69
18.0- 19.9	.	.	.	.	.	6	2	8	14	5	.	4	39	2.88	95.57
20.0- 21.9	.	.	.	.	.	3	.	9	9	4	.	1	26	1.92	97.49
22.0- 23.9	.	.	.	.	.	.	.	9	5	2	1	.	17	1.26	98.74
24.0- 25.9	.	.	.	.	.	1	.	9	1	1	1	1	14	1.03	99.78
26.0- 27.9	.	.	.	.	.	.	.	1	1	.	.	1	3	0.22	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	92	54	66	85	142	162	96	176	156	124	78	123	1354		
Rel.fr.	6.8	4.0	4.9	6.3	10.5	12.0	7.1	13.0	11.5	9.2	5.8	9.1			
Cum.fr.	6.8	10.8	15.7	21.9	32.4	44.4	51.5	64.5	76.0	85.2	90.9	100.0			
Max. FF	16.7	13.9	13.9	15.5	17.5	24.9	18.7	26.7	26.6	24.0	24.0	27.8			
Mean FF	8.2	8.3	8.6	7.1	8.3	10.8	10.3	14.6	12.8	12.0	10.1	10.8			
St.dev. FF	2.9	3.1	3.2	2.8	3.3	4.1	4.2	5.2	5.2	4.9	4.6	4.8			

DATA COVERAGE: 99.0%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
March 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			1	0.07	
<= 1.9	2	4	15	9	5	3	5	5	7	9	7	9	80	5.50	5.57
2.0- 3.9	15	18	24	30	13	14	16	7	18	7	7	25	194	13.33	18.90
4.0- 5.9	38	18	41	47	25	4	10	12	13	24	14	27	273	18.76	37.66
6.0- 7.9	27	2	10	23	15	22	24	10	23	21	22	17	216	14.85	52.51
8.0- 9.9	22	2	1	10	3	14	14	18	22	16	23	25	170	11.68	64.19
10.0- 11.9	10	.	.	2	13	19	9	14	23	15	36	31	172	11.82	76.01
12.0- 13.9	8	.	.	.	6	19	7	8	29	7	23	25	132	9.07	85.09
14.0- 15.9	6	.	.	.	3	7	2	9	27	13	6	6	79	5.43	90.52
16.0- 17.9	1	.	.	.	1	2	3	10	25	8	.	1	51	3.51	94.02
18.0- 19.9	2	.	.	.	.	3	1	8	9	13	.	.	36	2.47	96.49
20.0- 21.9	.	.	.	.	.	.	.	10	9	5	.	.	24	1.65	98.14
22.0- 23.9	.	.	.	.	.	.	1	4	15	.	.	.	20	1.37	99.52
24.0- 25.9	.	.	.	.	.	.	.	1	.	.	.	1	2	0.14	99.66
26.0- 27.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.14	99.79
28.0- 29.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.14	99.93
>=30.0	.	.	.	.	.	.	.	1	.	.	.	.	1	0.07	100.00
Sum	131	44	91	121	84	107	92	121	220	138	138	167	1455		
Rel.fr.	9.0	3.0	6.3	8.3	5.8	7.4	6.3	8.3	15.1	9.5	9.5	11.5			
Cum.fr.	9.0	12.0	18.3	26.6	32.4	39.7	46.0	54.4	69.5	79.0	88.5	99.9			
Max. FF	19.3	9.7	8.4	10.1	16.0	19.5	22.4	30.6	23.4	21.4	15.0	24.6			
Mean FF	7.4	4.2	4.1	5.1	6.9	9.3	7.6	12.5	12.0	9.9	8.8	8.1			
St.dev. FF	3.6	1.8	1.7	2.1	3.7	4.2	4.2	6.9	5.9	5.7	3.6	4.2			

DATA COVERAGE: 97.8%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
April 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			1	0.08	
<= 1.9	.	1	2	9	8	2	3	5	1	2	4	1	38	3.04	3.12
2.0- 3.9	3	27	25	20	17	4	6	4	4	5	18	21	154	12.31	15.43
4.0- 5.9	17	16	34	38	16	20	18	5	11	12	19	35	241	19.26	34.69
6.0- 7.9	20	14	47	21	12	3	12	12	29	12	28	32	242	19.34	54.04
8.0- 9.9	18	15	10	12	18	6	9	13	49	12	16	23	201	16.07	70.10
10.0- 11.9	24	6	11	4	13	1	.	8	38	18	18	14	155	12.39	82.49
12.0- 13.9	12	6	4	5	9	.	.	7	35	26	11	10	125	9.99	92.49
14.0- 15.9	3	2	3	1	.	.	.	5	12	8	3	6	43	3.44	95.92
16.0- 17.9	.	.	.	.	.	.	.	9	3	2	7	8	29	2.32	98.24
18.0- 19.9	1	.	.	.	.	.	.	5	.	.	1	5	12	0.96	99.20
20.0- 21.9	1	.	.	.	.	.	.	.	.	.	2	6	9	0.72	99.92
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	1	1	0.08	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	99	87	136	110	93	36	48	73	182	97	127	162	1251		
Rel.fr.	7.9	7.0	10.9	8.8	7.4	2.9	3.8	5.8	14.5	7.8	10.2	12.9			
Cum.fr.	7.9	14.9	25.7	34.5	42.0	44.8	48.7	54.5	69.1	76.8	87.0	99.9			
Max. FF	20.7	14.7	14.3	14.3	12.9	10.2	9.7	19.0	17.9	16.6	20.2	22.6			
Mean FF	9.1	6.6	6.4	5.7	6.9	5.5	5.7	10.1	9.9	9.8	8.3	8.8			
St.dev. FF	3.3	3.3	2.8	2.9	3.5	2.0	2.1	5.0	3.0	3.8	4.4	4.9			

DATA COVERAGE: 86.9%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
May 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	1	0.07	
<= 1.9	1	5	5	13	5	2	1	3	4	10	12	19	80	5.40	5.47
2.0- 3.9	17	29	25	28	16	7	12	4	10	19	10	16	193	13.03	18.50
4.0- 5.9	57	66	44	56	28	10	12	7	29	29	14	20	372	25.12	43.62
6.0- 7.9	33	89	37	48	35	7	9	9	27	22	24	10	350	23.63	67.25
8.0- 9.9	8	43	51	50	17	7	6	14	16	1	7	6	226	15.26	82.51
10.0- 11.9	13	46	41	26	2	.	2	16	12	1	.	6	165	11.14	93.65
12.0- 13.9	6	11	1	5	13	1	.	4	7	2	6	3	59	3.98	97.64
14.0- 15.9	1	.	.	3	4	1	.	1	4	1	5	7	27	1.82	99.46
16.0- 17.9	.	.	.	1	.	.	.	.	.	.	5	2	8	0.54	100.00
18.0- 19.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	136	289	204	230	120	35	42	58	109	85	83	89	1481		
Rel.fr.	9.2	19.5	13.8	15.5	8.1	2.4	2.8	3.9	7.4	5.7	5.6	6.0			
Cum.fr.	9.2	28.7	42.5	58.0	66.1	68.5	71.3	75.2	82.6	88.3	93.9	99.9			
Max. FF	14.1	13.6	12.0	16.0	15.7	14.0	11.4	15.6	15.6	14.0	16.7	16.8			
Mean FF	6.5	7.2	7.2	6.9	7.0	6.1	5.5	8.2	7.2	5.0	7.0	6.0			
St.dev. FF	2.7	2.7	2.8	3.0	3.4	2.9	2.6	3.3	3.3	2.6	4.4	4.5			

DATA COVERAGE: 99.5%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
June 1996- 1997

FF	DD														
	345.0	15.0	45.0	75.0	105.0	135.0	165.0	195.0	225.0	255.0	285.0	315.0	Sum	Rel.	Cum.
	15.0	45.0	75.0	105.0	135.0	165.0	195.0	225.0	255.0	285.0	315.0	345.0		fr.	fr.
												Number of calms	0	0.00	
<= 1.9	3	3	3	1	3	.	3	5	4	5	6	7	43	3.02	3.02
2.0- 3.9	23	44	33	5	4	15	18	22	15	13	29	11	232	16.29	19.31
4.0- 5.9	38	49	90	13	8	26	15	22	24	33	25	25	368	25.84	45.15
6.0- 7.9	29	35	42	2	7	12	18	22	43	28	16	6	260	18.26	63.41
8.0- 9.9	21	60	25	.	4	7	12	24	31	18	15	8	225	15.80	79.21
10.0- 11.9	13	22	8	.	.	6	15	40	33	3	16	23	179	12.57	91.78
12.0- 13.9	7	7	.	.	.	.	9	20	13	4	.	.	60	4.21	96.00
14.0- 15.9	.	.	.	.	.	2	6	16	4	.	.	.	28	1.97	97.96
16.0- 17.9	.	.	.	.	.	.	2	8	7	.	.	.	17	1.19	99.16
18.0- 19.9	.	.	.	.	.	.	2	8	1	.	.	.	11	0.77	99.93
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	99.93
22.0- 23.9	.	.	.	.	.	.	1	.	.	.	.	.	1	0.07	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	134	220	201	21	26	68	101	187	175	104	107	80	1424		
Rel.fr.	9.4	15.4	14.1	1.5	1.8	4.8	7.1	13.1	12.3	7.3	7.5	5.6			
Cum.fr.	9.4	24.9	39.0	40.4	42.3	47.1	54.1	67.3	79.6	86.9	94.4	100.0			
Max. FF	13.6	13.5	10.7	6.9	9.9	15.9	22.3	19.6	18.7	13.4	11.6	11.5			
Mean FF	6.6	6.7	5.8	4.6	5.4	6.2	8.3	9.5	8.4	6.2	6.0	6.5			
St.dev. FF	2.9	2.9	2.0	1.1	2.4	2.9	4.4	4.5	3.6	2.6	3.0	3.4			

DATA COVERAGE: 98.9%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
July 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	0	0.00	
<= 1.9	1	3	24	17	14	2	9	9	25	31	14	11	160	10.78	10.78
2.0- 3.9	13	36	51	55	27	19	14	16	20	44	33	30	358	24.12	34.91
4.0- 5.9	19	23	64	87	14	12	26	37	42	20	6	28	378	25.47	60.38
6.0- 7.9	4	15	66	26	1	7	20	42	45	5	8	12	251	16.91	77.29
8.0- 9.9	.	27	37	5	1	4	17	65	20	14	12	3	205	13.81	91.11
10.0- 11.9	1	8	21	7	2	5	6	21	9	11	8	6	105	7.08	98.18
12.0- 13.9	.	1	10	1	.	.	7	4	.	.	.	1	24	1.62	99.80
14.0- 15.9	.	.	.	.	.	.	.	3	.	.	.	.	3	0.20	100.00
16.0- 17.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
18.0- 19.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	38	113	273	198	59	49	99	197	161	125	81	91	1484		
Rel.fr.	2.6	7.6	18.4	13.3	4.0	3.3	6.7	13.3	10.8	8.4	5.5	6.1			
Cum.fr.	2.6	10.2	28.6	41.9	45.9	49.2	55.9	69.1	80.0	88.4	93.9	100.0			
Max. FF	11.6	12.5	12.9	12.0	10.9	11.7	13.1	15.8	11.1	11.8	11.7	12.0			
Mean FF	4.7	6.0	5.9	4.6	3.4	5.2	6.3	7.3	5.5	4.4	5.0	4.6			
St.dev. FF	1.7	2.9	3.0	2.2	2.2	2.7	3.1	2.9	2.8	3.1	3.3	2.7			

DATA COVERAGE: 99.7%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
August 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	1	3	6	11	8	.	8	7	12	14	6	10	86	5.95	5.95
2.0- 3.9	11	27	16	25	11	15	37	18	31	50	29	15	285	19.72	25.67
4.0- 5.9	12	16	35	27	7	22	35	35	45	51	14	7	306	21.18	46.85
6.0- 7.9	4	16	28	20	16	19	33	40	82	34	20	14	326	22.56	69.41
8.0- 9.9	.	15	14	4	4	16	18	24	56	17	2	1	171	11.83	81.25
10.0- 11.9	.	.	10	19	4	16	6	22	61	10	.	.	148	10.24	91.49
12.0- 13.9	.	.	.	1	3	6	3	16	31	.	.	.	60	4.15	95.64
14.0- 15.9	.	.	.	.	1	6	2	19	3	.	.	.	31	2.15	97.79
16.0- 17.9	.	.	.	.	.	13	1	14	.	.	.	.	28	1.94	99.72
18.0- 19.9	.	.	.	.	.	1	.	3	.	.	.	.	4	0.28	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	28	77	109	107	54	114	143	198	321	176	71	47	1445		
Rel.fr.	1.9	5.3	7.5	7.4	3.7	7.9	9.9	13.7	22.2	12.2	4.9	3.3			
Cum.fr.	1.9	7.3	14.8	22.2	26.0	33.8	43.7	57.4	79.7	91.8	96.7	100.0			
Max. FF	7.6	9.6	11.9	12.0	14.0	18.5	16.2	19.5	15.1	11.3	9.5	9.7			
Mean FF	4.5	5.3	6.1	5.8	5.9	8.9	5.8	8.9	7.9	5.2	4.4	4.2			
St.dev. FF	1.5	2.3	2.6	3.2	3.4	4.4	3.0	4.5	3.2	2.6	2.0	2.3			

DATA COVERAGE: 97.1%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
September 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
												Number of calms	0	0.00	
<= 1.9	9	8	8	12	11	1	11	6	8	12	13	10	109	7.73	7.73
2.0- 3.9	19	16	29	9	11	12	36	38	19	13	15	20	237	16.80	24.52
4.0- 5.9	23	9	6	8	4	25	27	50	32	28	17	28	257	18.21	42.74
6.0- 7.9	9	12	4	6	11	16	29	34	36	37	20	16	230	16.30	59.04
8.0- 9.9	11	8	.	10	8	11	13	21	44	37	36	33	232	16.44	75.48
10.0- 11.9	5	.	.	7	7	5	9	7	42	36	25	35	178	12.62	88.09
12.0- 13.9	.	.	.	.	5	9	9	19	25	14	10	21	112	7.94	96.03
14.0- 15.9	.	.	.	.	.	4	.	15	4	6	4	3	36	2.55	98.58
16.0- 17.9	.	.	.	.	.	.	.	8	4	.	1	.	13	0.92	99.50
18.0- 19.9	.	.	.	.	.	.	.	2	3	.	1	.	6	0.43	99.93
20.0- 21.9	.	.	.	.	.	.	.	1	.	.	.	.	1	0.07	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	76	53	47	52	57	83	134	201	217	183	142	166	1411		
Rel.fr.	5.4	3.8	3.3	3.7	4.0	5.9	9.5	14.2	15.4	13.0	10.1	11.8			
Cum.fr.	5.4	9.1	12.5	16.2	20.2	26.1	35.6	49.8	65.2	78.2	88.2	100.0			
Max. FF	11.8	9.7	6.6	11.4	12.9	15.1	13.7	21.1	19.3	14.8	18.2	14.6			
Mean FF	5.3	4.7	3.1	5.5	6.1	7.3	5.8	7.6	8.5	7.9	7.7	7.9			
St.dev. FF	2.9	2.7	1.5	3.5	3.6	3.4	3.2	4.5	3.7	3.4	3.7	3.7			

DATA COVERAGE: 98.0%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
October 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	1	4	5	9	7	4	3	5	7	4	9	5	63	4.39	4.39
2.0- 3.9	11	16	23	20	18	16	6	13	16	21	10	19	189	13.17	17.56
4.0- 5.9	17	32	13	34	27	7	12	14	10	19	18	32	235	16.38	33.94
6.0- 7.9	17	9	14	30	15	4	16	11	29	39	25	38	247	17.21	51.15
8.0- 9.9	16	3	11	34	12	10	13	13	30	35	20	39	236	16.45	67.60
10.0- 11.9	14	2	.	29	6	8	10	15	19	33	6	43	185	12.89	80.49
12.0- 13.9	10	2	.	3	13	6	1	16	25	7	4	32	119	8.29	88.78
14.0- 15.9	4	2	.	.	1	6	3	29	19	1	1	8	74	5.16	93.94
16.0- 17.9	1	.	.	.	.	.	2	22	16	2	.	4	47	3.28	97.21
18.0- 19.9	.	.	.	.	.	.	.	9	7	.	.	1	17	1.18	98.40
20.0- 21.9	.	.	.	.	.	.	.	11	2	.	.	.	13	0.91	99.30
22.0- 23.9	.	.	.	.	.	.	2	5	.	.	.	.	7	0.49	99.79
24.0- 25.9	.	.	.	.	.	.	2	1	.	.	.	.	3	0.21	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	91	70	66	159	99	61	70	164	180	161	93	221	1435		
Rel.fr.	6.3	4.9	4.6	11.1	6.9	4.3	4.9	11.4	12.5	11.2	6.5	15.4			
Cum.fr.	6.3	11.2	15.8	26.9	33.8	38.0	42.9	54.4	66.9	78.1	84.6	100.0			
Max. FF	17.0	15.9	9.6	12.5	14.6	15.4	24.6	24.6	21.2	17.4	14.0	18.8			
Mean FF	8.1	5.4	5.1	7.0	6.6	7.5	8.6	12.4	10.2	7.7	6.7	8.7			
St.dev. FF	3.5	2.9	2.4	3.0	3.6	4.4	5.0	5.8	4.8	3.2	3.1	3.7			

DATA COVERAGE: 96.4%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
November 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	4	5	7	9	19	5	7	9	3	8	11	5	92	6.49	6.49
2.0- 3.9	30	26	24	29	28	21	17	8	16	13	30	52	294	20.73	27.22
4.0- 5.9	15	5	15	39	25	29	13	15	19	9	44	50	278	19.61	46.83
6.0- 7.9	21	11	18	41	15	36	19	12	4	14	35	39	265	18.69	65.51
8.0- 9.9	8	9	5	22	13	40	29	11	8	2	56	17	220	15.51	81.03
10.0- 11.9	7	2	2	4	24	15	21	6	1	2	27	14	125	8.82	89.84
12.0- 13.9	2	1	.	3	11	.	3	7	3	1	16	18	65	4.58	94.43
14.0- 15.9	.	.	.	.	10	.	2	7	.	1	14	6	40	2.82	97.25
16.0- 17.9	.	.	.	.	.	.	.	12	.	3	9	.	24	1.69	98.94
18.0- 19.9	.	.	.	.	.	.	.	.	4	1	6	.	11	0.78	99.72
20.0- 21.9	.	.	.	.	.	.	.	3	.	.	1	.	4	0.28	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	87	59	71	147	145	146	111	90	58	54	249	201	1418		
Rel.fr.	6.1	4.2	5.0	10.4	10.2	10.3	7.8	6.3	4.1	3.8	17.6	14.2			
Cum.fr.	6.1	10.3	15.3	25.7	35.9	46.2	54.0	60.4	64.5	68.3	85.8	100.0			
Max. FF	13.3	12.4	10.5	13.0	15.7	11.5	14.9	21.2	18.6	18.0	20.2	14.9			
Mean FF	5.7	5.0	4.8	5.7	6.9	6.7	7.4	9.0	6.2	6.0	8.2	6.5			
St.dev. FF	2.8	2.8	2.4	2.6	4.3	2.6	3.3	5.5	4.4	4.4	4.3	3.4			

DATA COVERAGE: 98.5%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
December 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			0	0.00	
<= 1.9	4	2	7	6	6	5	5	3	4	3	16	2	63	4.26	4.26
2.0- 3.9	15	31	39	21	17	22	11	14	12	20	20	12	234	15.81	20.07
4.0- 5.9	35	10	33	30	18	36	24	15	35	22	34	26	318	21.49	41.55
6.0- 7.9	30	11	8	42	38	31	31	14	22	32	36	25	320	21.62	63.18
8.0- 9.9	12	2	4	37	19	14	19	19	15	36	19	27	223	15.07	78.24
10.0- 11.9	4	5	.	19	13	2	4	20	14	29	22	23	155	10.47	88.72
12.0- 13.9	.	.	.	.	13	5	2	12	17	17	12	20	98	6.62	95.34
14.0- 15.9	.	.	.	.	1	7	2	3	15	3	5	13	49	3.31	98.65
16.0- 17.9	.	.	.	.	.	2	4	5	4	.	.	2	17	1.15	99.80
18.0- 19.9	.	.	.	.	.	.	.	3	.	.	.	.	3	0.20	100.00
20.0- 21.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
22.0- 23.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
24.0- 25.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
26.0- 27.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
28.0- 29.9	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=30.0	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	100	61	91	155	125	124	102	108	138	162	164	150	1480		
Rel.fr.	6.8	4.1	6.1	10.5	8.4	8.4	6.9	7.3	9.3	10.9	11.1	10.1			
Cum.fr.	6.8	10.9	17.0	27.5	35.9	44.3	51.2	58.5	67.8	78.8	89.9	100.0			
Max. FF	11.5	11.6	8.8	11.5	14.3	17.7	17.5	18.9	17.5	15.4	15.1	16.3			
Mean FF	5.8	4.8	4.3	6.8	7.2	6.5	7.0	8.7	8.5	8.0	6.9	8.8			
St.dev. FF	2.2	2.6	1.8	2.6	3.2	3.6	3.4	4.3	4.1	3.3	3.6	3.8			

DATA COVERAGE: 99.5%

Frequency table of wind direction(DD) degrees
and wind speed(FF) m/s
Jan.-Dec. 1996- 1997

FF	DD 345.0 15.0	15.0 45.0	45.0 75.0	75.0 105.0	105.0 135.0	135.0 165.0	165.0 195.0	195.0 225.0	225.0 255.0	255.0 285.0	285.0 315.0	315.0 345.0	Sum	Rel. fr.	Cum. fr.
										Number of calms			3	0.02	
<= 1.9	27	40	85	103	100	30	63	65	83	102	107	84	889	5.21	5.22
2.0- 3.9	173	279	298	248	176	165	196	166	183	218	209	234	2545	14.90	20.13
4.0- 5.9	302	254	386	409	211	216	223	242	288	273	240	321	3365	19.71	39.83
6.0- 7.9	244	218	287	279	214	198	238	230	379	302	269	250	3108	18.20	58.03
8.0- 9.9	166	206	173	222	130	188	207	255	340	257	264	241	2649	15.51	73.55
10.0- 11.9	117	102	106	120	115	135	123	219	303	195	206	240	1981	11.60	85.15
12.0- 13.9	52	33	26	21	86	72	67	183	230	130	102	153	1155	6.76	91.91
14.0- 15.9	17	4	3	5	24	45	31	153	123	73	60	67	605	3.54	95.46
16.0- 17.9	3	.	.	1	6	32	23	133	101	37	41	31	408	2.39	97.84
18.0- 19.9	3	.	.	.	.	10	7	61	53	30	9	10	183	1.07	98.92
20.0- 21.9	1	.	.	.	.	3	.	40	37	12	6	7	106	0.62	99.54
22.0- 23.9	.	.	.	.	.	.	4	19	25	2	1	1	52	0.30	99.84
24.0- 25.9	.	.	.	.	.	1	2	11	1	1	1	2	19	0.11	99.95
26.0- 27.9	.	.	.	.	.	.	.	3	1	.	.	1	5	0.03	99.98
28.0- 29.9	.	.	.	.	.	.	.	2	.	.	.	.	2	0.01	99.99
>=30.0	.	.	.	.	.	.	.	1	.	.	.	.	1	0.01	100.00
Sum	1105	1136	1364	1408	1062	1095	1184	1783	2147	1632	1515	1642	17076		
Rel.fr.	6.5	6.7	8.0	8.2	6.2	6.4	6.9	10.4	12.6	9.6	8.9	9.6			
Cum.fr.	6.5	13.1	21.1	29.4	35.6	42.0	48.9	59.4	71.9	81.5	90.4	100.0			
Max. FF	20.7	15.9	14.3	16.0	17.5	24.9	24.6	30.6	26.6	24.0	24.0	27.8			
Mean FF	6.8	6.2	5.8	6.0	6.7	7.8	7.2	10.0	9.3	7.9	7.7	7.8			
St.dev. FF	3.1	3.0	2.8	2.9	3.7	4.0	3.9	5.4	4.8	4.4	4.1	4.2			

DATA COVERAGE: 97.3%

STATISTICS

	Mean FF m/s	St.dev. FF m/s	Maximum FF m/s	DD degrees	date
January	9.3	4.7	23.5	244.5	21.01.1997 03 UT
February	10.7	4.8	27.8	331.1	29.02.1996 01 UT
March	8.6	5.2	30.6	201.5	07.03.1997 05 UT
April	8.0	4.0	22.6	321.5	14.04.1997 07 UT
May	6.8	3.2	16.8	316.3	02.05.1997 20 UT
June	7.1	3.5	22.3	194.8	01.06.1996 15 UT
July	5.5	3.0	15.8	211.1	22.07.1996 17 UT
August	6.7	3.6	19.5	206.7	08.08.1997 14 UT
September	7.1	3.8	21.1	204.3	16.09.1997 04 UT
October	8.3	4.4	24.7	201.2	12.10.1996 00 UT
November	6.8	3.8	21.2	208.5	14.11.1996 09 UT
December	7.2	3.6	18.9	195.3	08.12.1996 01 UT

4.3 Frequency tables wave height/wave period (Hs/Tz)

Environmental data has been measured in different positions in the Haltenbank area. From March 1980 until March 1988 measurements were performed by a buoy in position 65°05'N, 07°34'E. The measurements were an activity within the ODAP project (Oceanographic Data Acquisition Project) funded by the oil companies holding licenses north of 62°N and The Norwegian Petroleum Directorate. This data series consist of 3 hourly values. Below we have based the computations on the data series from Heidrun covering the period 1996-1997. The data series consist of values each 10 min. Hourly values of have been extracted from the complete data series. The computations are based on the hourly values. Thus the extreme values presented below may differ from the maximum values presented in table 4.1 which is based on the complete set of 10 min values. As for wind speed and direction the computations are made for 1997 and for the period 1996-1997.

The data coverage of the wave measurements in 1997 is generally good. The data coverage on a monthly basis is shown in figure 4.3 as the number of observations. As mentioned in Chapter 2.2 the missing data in the months of June, July and August are due partly to some stop in the registration of the wave parameters. In 1996 the data coverage of the wave parameters are generally much lower than later on.

Statistical parameters based on the monthly frequency distributions of significant wave height are given in figure 4.4. As the data coverage in 1996 in some months are very poor, the derived statistical parameters for 1996 must be used with caution.

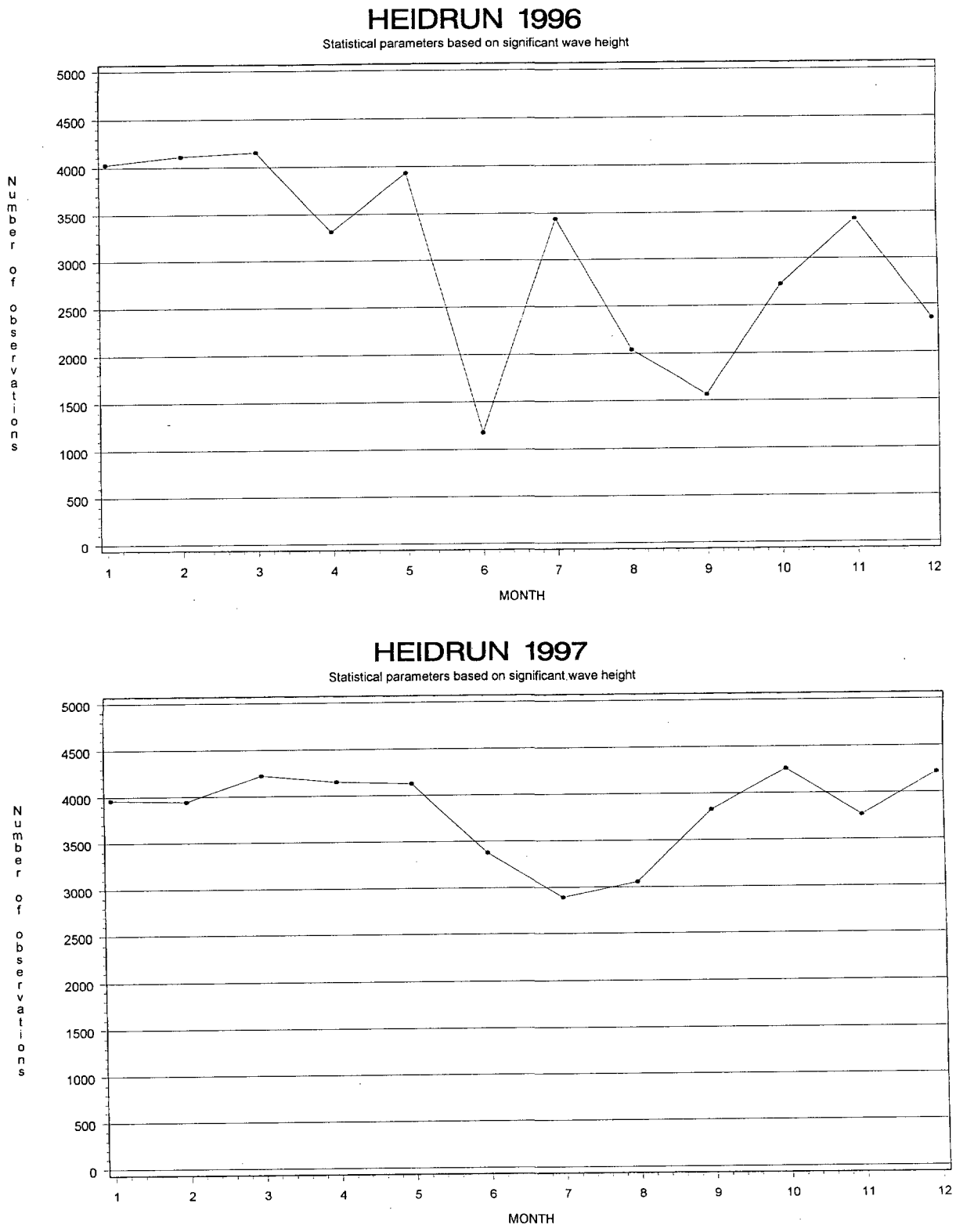
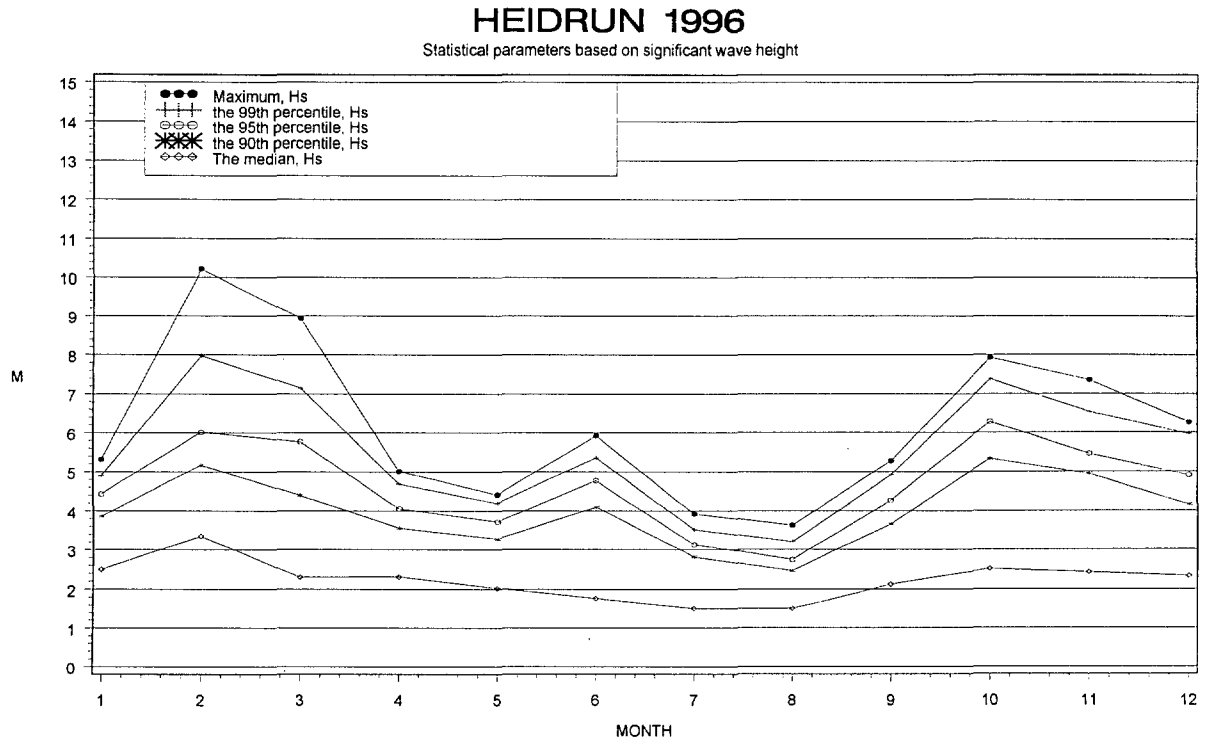


Figure 4.3 Data coverage for significant wave height given as number of observations each month. 4464/4320 or 4032 (February) observations/month represents 100 % coverage.



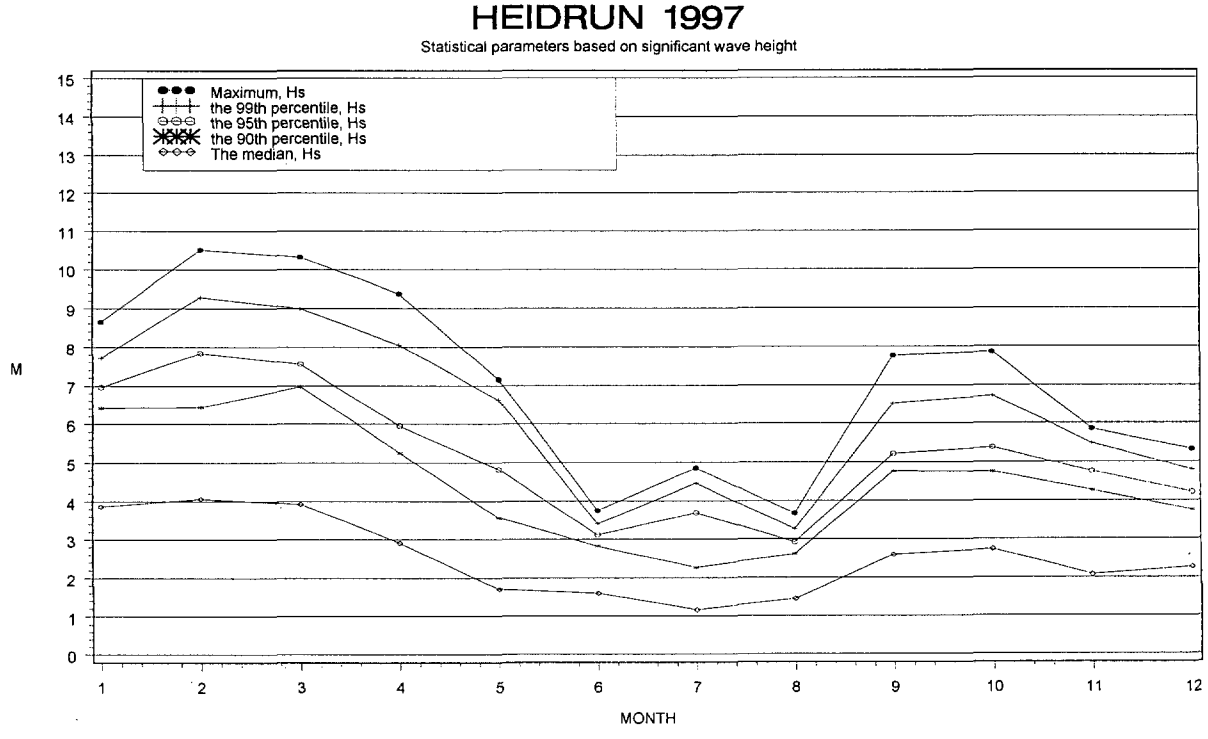


Figure 4.4 Statistical parameters based on the monthly frequency distribution of significant wave heights.

4.3.1 Frequency tables wave height/wave period (Hs/Tz) for 1997

Frequency table of wave period(TZ) s
and wave height(HS) m
January 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	7	3	.	.	.	.	.	.	.	.	10	1.52	1.52
1.0- 1.4	.	.	.	2	2	2	.	.	.	.	.	.	.	6	0.91	2.44
1.5- 1.9	.	.	.	1	26	8	2	.	.	.	.	.	.	37	5.63	8.07
2.0- 2.4	.	.	.	3	40	28	2	.	.	.	.	.	.	73	11.11	19.18
2.5- 2.9	.	.	.	1	25	31	2	.	.	.	.	.	.	59	8.98	28.16
3.0- 3.4	.	.	.	.	29	45	16	.	.	.	.	.	.	90	13.70	41.86
3.5- 3.9	.	.	.	.	11	37	21	.	.	.	.	.	.	69	10.50	52.36
4.0- 4.4	.	.	.	.	2	57	32	4	.	.	.	.	.	95	14.46	66.82
4.5- 4.9	.	.	.	.	.	28	19	6	.	.	.	.	.	53	8.07	74.89
5.0- 5.4	.	.	.	.	.	5	24	4	.	.	.	.	.	33	5.02	79.91
5.5- 5.9	.	.	.	.	.	.	17	9	.	.	.	.	.	26	3.96	83.87
6.0- 6.4	.	.	.	.	.	1	25	15	.	.	.	.	.	41	6.24	90.11
6.5- 6.9	.	.	.	.	.	.	15	14	.	.	.	.	.	29	4.41	94.52
7.0- 7.4	.	.	.	.	.	.	4	21	.	.	.	.	.	25	3.81	98.33
7.5- 7.9	.	.	.	.	.	.	.	9	.	.	.	.	.	9	1.37	99.70
8.0- 8.4	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.15	99.85
8.5- 8.9	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.15	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	14	138	242	179	84	0	0	0	0	0	657		
Rel.fr.	0.0	0.0	0.0	2.1	21.0	36.8	27.2	12.8	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	2.1	23.1	60.0	87.2	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	2.7	4.3	6.0	7.4	8.6	.	.	.	.	.			
Mean Hs	.	.	.	1.4	2.5	3.5	4.9	6.4	.	.	.	.	.			
St.dev. Hs	.	.	.	0.6	0.7	0.9	1.2	1.0	.	.	.	.	.			

DATA COVERAGE: 88.3%

Frequency table of wave period(TZ) s
and wave height(HS) m
February 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
1.0- 1.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
1.5- 1.9	.	.	.	.	17	.	1	.	.	.	.	.	.	18	2.74	2.74
2.0- 2.4	.	.	.	.	47	19	3	.	.	.	.	.	.	69	10.49	13.22
2.5- 2.9	.	.	.	.	31	28	13	1	.	.	.	.	.	73	11.09	24.32
3.0- 3.4	.	.	.	.	24	23	19	4	.	.	.	.	.	70	10.64	34.95
3.5- 3.9	.	.	.	.	13	29	26	4	.	.	.	.	.	72	10.94	45.90
4.0- 4.4	.	.	.	.	5	29	48	11	.	.	.	.	.	93	14.13	60.03
4.5- 4.9	.	.	.	.	.	28	22	20	2	1	.	.	.	73	11.09	71.12
5.0- 5.4	.	.	.	.	.	9	20	9	9	5	1	.	.	53	8.05	79.18
5.5- 5.9	.	.	.	.	.	2	25	9	4	1	1	.	.	42	6.38	85.56
6.0- 6.4	.	.	.	.	.	.	17	8	4	.	.	.	.	29	4.41	89.97
6.5- 6.9	.	.	.	.	.	.	9	10	3	.	.	.	.	22	3.34	93.31
7.0- 7.4	.	.	.	.	.	.	3	3	1	.	.	.	.	7	1.06	94.38
7.5- 7.9	.	.	.	.	.	.	1	6	1	.	.	.	.	8	1.22	95.59
8.0- 8.4	.	.	.	.	.	.	.	5	2	.	.	.	.	7	1.06	96.66
8.5- 8.9	.	.	.	.	.	.	.	3	6	.	.	.	.	9	1.37	98.02
9.0- 9.4	.	.	.	.	.	.	.	2	6	.	.	.	.	8	1.22	99.24
9.5- 9.9	.	.	.	.	.	.	.	.	3	.	.	.	.	3	0.46	99.70
10.0- 10.4	.	.	.	.	.	.	.	.	2	.	.	.	.	2	0.30	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	0	137	167	207	95	43	7	2	0	0	658		
Rel.fr.	0.0	0.0	0.0	0.0	20.8	25.4	31.5	14.4	6.5	1.1	0.3	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	0.0	20.8	46.2	77.7	92.1	98.6	99.7	100.0	100.0	100.0			
Max. Hs	.	.	.	.	4.3	5.8	7.6	9.0	10.2	5.6	5.7	.	.			
Mean Hs	.	.	.	.	2.6	3.6	4.6	5.6	7.3	5.2	5.5	.	.			
St.dev. Hs	.	.	.	.	0.7	0.9	1.2	1.5	1.8	0.2	0.2	.	.			

DATA COVERAGE: 97.9%

Frequency table of wave period(TZ) s
and wave height(HS) m
March 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	1	1	.	.	.	.	.	.	.	.	2	0.28	0.28
1.0- 1.4	.	.	1	51	43	6	.	.	.	.	.	.	.	101	14.35	14.63
1.5- 1.9	.	.	.	24	36	7	.	.	.	.	.	.	.	67	9.52	24.15
2.0- 2.4	.	.	.	7	11	11	1	.	.	.	.	.	.	30	4.26	28.41
2.5- 2.9	.	.	.	1	7	19	9	2	.	.	.	.	.	38	5.40	33.81
3.0- 3.4	.	.	.	.	14	22	21	2	.	.	.	.	.	59	8.38	42.19
3.5- 3.9	.	.	.	.	.	35	17	3	.	.	.	.	.	55	7.81	50.00
4.0- 4.4	.	.	.	.	.	32	21	9	.	.	.	.	.	62	8.81	58.81
4.5- 4.9	.	.	.	.	.	28	29	7	.	.	.	.	.	64	9.09	67.90
5.0- 5.4	.	.	.	.	.	16	20	15	2	.	.	.	.	53	7.53	75.43
5.5- 5.9	.	.	.	.	.	2	19	12	3	.	.	.	.	36	5.11	80.54
6.0- 6.4	.	.	.	.	.	.	8	16	3	3	.	.	.	30	4.26	84.80
6.5- 6.9	.	.	.	.	.	.	10	10	8	.	.	.	.	28	3.98	88.78
7.0- 7.4	.	.	.	.	.	.	4	17	14	2	.	.	.	37	5.26	94.03
7.5- 7.9	.	.	.	.	.	.	.	13	9	.	.	.	.	22	3.12	97.16
8.0- 8.4	.	.	.	.	.	.	.	6	2	.	.	.	.	8	1.14	98.30
8.5- 8.9	.	.	.	.	.	.	.	1	3	.	.	.	.	4	0.57	98.86
9.0- 9.4	.	.	.	.	.	.	.	.	3	.	.	.	.	3	0.43	99.29
9.5- 9.9	.	.	.	.	.	.	.	.	4	.	.	.	.	4	0.57	99.86
10.0- 10.4	.	.	.	.	.	.	.	.	1	.	.	.	.	1	0.14	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	1	84	112	178	159	113	52	5	0	0	0	704		
Rel.fr.	0.0	0.0	0.1	11.9	15.9	25.3	22.6	16.1	7.4	0.7	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.1	12.1	28.0	53.3	75.9	91.9	99.3	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.3	2.6	3.4	5.5	7.2	8.5	10.0	7.3	.	.	.			
Mean Hs	.	.	1.3	1.4	1.8	3.7	4.6	6.1	7.5	6.6	.	.	.			
St.dev. Hs	.	.	0.0	0.4	0.7	1.0	1.2	1.4	1.2	0.6	.	.	.			

DATA COVERAGE: 94.6%

Frequency table of wave period(TZ) s
and wave height(HS) m
April 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
1.0- 1.4	.	.	.	7	15	3	.	.	.	.	.	.	.	25	3.64	3.64
1.5- 1.9	.	.	.	4	46	12	3	.	.	.	.	.	.	65	9.48	13.12
2.0- 2.4	.	.	.	11	91	34	4	.	.	.	.	.	.	140	20.41	33.53
2.5- 2.9	.	.	.	.	55	54	8	.	.	.	.	.	.	117	17.06	50.58
3.0- 3.4	.	.	.	.	30	33	7	.	.	.	.	.	.	70	10.20	60.79
3.5- 3.9	.	.	.	.	12	52	13	.	.	.	.	.	.	77	11.22	72.01
4.0- 4.4	.	.	.	.	2	57	12	.	.	.	.	.	.	71	10.35	82.36
4.5- 4.9	.	.	.	.	.	23	11	.	.	.	.	.	.	34	4.96	87.32
5.0- 5.4	.	.	.	.	.	19	13	1	.	.	.	.	.	33	4.81	92.13
5.5- 5.9	.	.	.	.	.	5	12	3	.	.	.	.	.	20	2.92	95.04
6.0- 6.4	.	.	.	.	.	2	6	2	.	.	.	.	.	10	1.46	96.50
6.5- 6.9	.	.	.	.	.	1	6	2	.	.	.	.	.	9	1.31	97.81
7.0- 7.4	.	.	.	.	.	.	4	1	.	.	.	.	.	5	0.73	98.54
7.5- 7.9	.	.	.	.	.	.	1	3	.	.	.	.	.	4	0.58	99.13
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	99.13
8.5- 8.9	.	.	.	.	.	.	.	4	.	.	.	.	.	4	0.58	99.71
9.0- 9.4	.	.	.	.	.	.	.	1	1	.	.	.	.	2	0.29	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	22	251	295	100	17	1	0	0	0	0	686		
Rel.fr.	0.0	0.0	0.0	3.2	36.6	43.0	14.6	2.5	0.1	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	3.2	39.8	82.8	97.4	99.9	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	2.3	4.0	6.5	7.9	9.0	9.3	.	.	.	.			
Mean Hs	.	.	.	1.8	2.4	3.5	4.6	7.2	9.3	.	.	.	.			
St.dev. Hs	.	.	.	0.4	0.6	1.0	1.4	1.3	0.0	.	.	.	.			

DATA COVERAGE: 95.3%

Frequency table of wave period(TZ) s
and wave height(HS) m
May 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	3	48	2	.	.	.	.	.	.	.	.	53	7.66	7.66
1.0- 1.4	.	.	1	154	62	2	.	.	.	.	.	.	.	219	31.65	39.31
1.5- 1.9	.	.	.	115	35	11	1	.	.	.	.	.	.	162	23.41	62.72
2.0- 2.4	.	.	.	43	43	17	1	.	.	.	.	.	.	104	15.03	77.75
2.5- 2.9	.	.	.	8	32	3	.	.	.	.	.	.	.	43	6.21	83.96
3.0- 3.4	.	.	.	1	22	14	1	.	.	.	.	.	.	38	5.49	89.45
3.5- 3.9	.	.	.	.	6	7	3	.	.	.	.	.	.	16	2.31	91.76
4.0- 4.4	.	.	.	.	2	9	9	.	.	.	.	.	.	20	2.89	94.65
4.5- 4.9	.	.	.	.	.	2	1	.	.	.	.	.	.	3	0.43	95.09
5.0- 5.4	.	.	.	.	.	4	4	.	.	.	.	.	.	8	1.16	96.24
5.5- 5.9	.	.	.	.	.	3	9	.	.	.	.	.	.	12	1.73	97.98
6.0- 6.4	.	.	.	.	.	.	8	.	.	.	.	.	.	8	1.16	99.13
6.5- 6.9	.	.	.	.	.	.	4	.	.	.	.	.	.	4	0.58	99.71
7.0- 7.4	.	.	.	.	.	.	2	.	.	.	.	.	.	2	0.29	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	4	369	204	72	43	0	0	0	0	0	0	692		
Rel.fr.	0.0	0.0	0.6	53.3	29.5	10.4	6.2	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.6	53.9	83.4	93.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.3	3.0	4.1	5.8	7.1	.	.	.	.	.	.			
Mean Hs	.	.	0.9	1.4	2.0	3.1	5.2	.	.	.	.	.	.			
St.dev. Hs	.	.	0.3	0.4	0.8	1.2	1.3	.	.	.	.	.	.			

DATA COVERAGE: 93.0%

Frequency table of wave period(TZ) s
and wave height(HS) m
June 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	48	2	.	.	.	.	.	.	.	.	50	8.91	8.91
1.0- 1.4	.	.	1	120	59	2	.	.	.	.	.	.	.	182	32.44	41.35
1.5- 1.9	.	.	.	71	57	15	.	.	.	.	.	.	.	143	25.49	66.84
2.0- 2.4	.	.	.	25	67	8	.	.	.	.	.	.	.	100	17.83	84.67
2.5- 2.9	.	.	.	13	27	4	.	.	.	.	.	.	.	44	7.84	92.51
3.0- 3.4	.	.	.	.	37	2	.	.	.	.	.	.	.	39	6.95	99.47
3.5- 3.9	.	.	.	.	3	.	.	.	.	.	.	.	.	3	0.53	100.00
4.0- 4.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
4.5- 4.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.0- 5.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.5- 5.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	1	277	252	31	0	0	0	0	0	0	0	561		
Rel.fr.	0.0	0.0	0.2	49.4	44.9	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.2	49.6	94.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.1	2.9	3.6	3.1	.	.	.	.	.	.	.			
Mean Hs	.	.	1.1	1.4	2.1	2.0	.	.	.	.	.	.	.			
St.dev. Hs	.	.	0.0	0.5	0.7	0.5	.	.	.	.	.	.	.			

DATA COVERAGE: 77.9%

Frequency table of wave period(TZ) s
and wave height(HS) m
July 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	4	115	18	.	.	.	.	.	.	.	.	137	28.42	28.42
1.0- 1.4	.	.	2	158	62	.	.	.	.	.	.	.	.	222	46.06	74.48
1.5- 1.9	.	.	.	15	46	4	.	.	.	.	.	.	.	65	13.49	87.97
2.0- 2.4	.	.	.	8	3	4	.	.	.	.	.	.	.	15	3.11	91.08
2.5- 2.9	.	.	.	3	5	.	.	.	.	.	.	.	.	8	1.66	92.74
3.0- 3.4	.	.	.	4	4	.	.	.	.	.	.	.	.	8	1.66	94.40
3.5- 3.9	.	.	.	.	11	.	.	.	.	.	.	.	.	11	2.28	96.68
4.0- 4.4	.	.	.	.	11	.	.	.	.	.	.	.	.	11	2.28	98.96
4.5- 4.9	.	.	.	.	3	2	.	.	.	.	.	.	.	5	1.04	100.00
5.0- 5.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.5- 5.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	6	303	163	10	0	0	0	0	0	0	0	482		
Rel.fr.	0.0	0.0	1.2	62.9	33.8	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	1.2	64.1	97.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.1	3.1	4.7	4.8	.	.	.	.	.	.	.			
Mean Hs	.	.	0.8	1.1	1.8	2.5	.	.	.	.	.	.	.			
St.dev. Hs	.	.	0.2	0.4	1.0	1.2	.	.	.	.	.	.	.			

DATA COVERAGE: 64.8%

Frequency table of wave period(TZ) s
and wave height(HS) m
August 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	56	7	.	.	.	.	.	.	.	.	63	12.48	12.48
1.0- 1.4	.	.	1	103	87	3	.	.	.	.	.	.	.	194	38.42	50.89
1.5- 1.9	.	.	1	64	52	11	.	.	.	.	.	.	.	128	25.35	76.24
2.0- 2.4	.	.	.	23	22	7	.	.	.	.	.	.	.	52	10.30	86.53
2.5- 2.9	.	.	.	10	22	13	.	.	.	.	.	.	.	45	8.91	95.45
3.0- 3.4	.	.	.	.	3	19	.	.	.	.	.	.	.	22	4.36	99.80
3.5- 3.9	.	.	.	.	1	.	.	.	.	.	.	.	.	1	0.20	100.00
4.0- 4.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
4.5- 4.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.0- 5.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.5- 5.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	2	256	194	53	0	0	0	0	0	0	0	505		
Rel.fr.	0.0	0.0	0.4	50.7	38.4	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.4	51.1	89.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.5	2.8	3.6	3.4	.	.	.	.	.	.	.			
Mean Hs	.	.	1.4	1.4	1.7	2.5	.	.	.	.	.	.	.			
St.dev. Hs	.	.	0.2	0.5	0.6	0.6	.	.	.	.	.	.	.			

DATA COVERAGE: 67.9%

Frequency table of wave period(TZ) s
and wave height(HS) m
September 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	5	6	.	.	.	.	.	.	.	.	11	1.72	1.72
1.0- 1.4	.	.	.	42	10	6	2	.	.	.	.	.	.	60	9.38	11.09
1.5- 1.9	.	.	.	24	44	23	16	.	.	.	.	.	.	107	16.72	27.81
2.0- 2.4	.	.	.	4	64	39	9	.	.	.	.	.	.	116	18.13	45.94
2.5- 2.9	.	.	.	.	39	28	.	.	.	.	.	.	.	67	10.47	56.41
3.0- 3.4	.	.	.	.	28	33	3	.	.	.	.	.	.	64	10.00	66.41
3.5- 3.9	.	.	.	.	9	46	14	1	.	.	.	.	.	70	10.94	77.34
4.0- 4.4	.	.	.	.	4	23	7	8	.	.	.	.	.	42	6.56	83.91
4.5- 4.9	.	.	.	.	.	35	10	6	1	.	.	.	.	52	8.12	92.03
5.0- 5.4	.	.	.	.	.	9	9	4	5	.	.	.	.	27	4.22	96.25
5.5- 5.9	.	.	.	.	.	1	6	1	.	.	.	.	.	8	1.25	97.50
6.0- 6.4	.	.	.	.	.	.	3	5	.	.	.	.	.	8	1.25	98.75
6.5- 6.9	.	.	.	.	.	.	1	5	.	.	.	.	.	6	0.94	99.69
7.0- 7.4	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.16	99.84
7.5- 7.9	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.16	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	75	204	243	80	32	6	0	0	0	0	640		
Rel.fr.	0.0	0.0	0.0	11.7	31.9	38.0	12.5	5.0	0.9	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	11.7	43.6	81.6	94.1	99.1	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	2.2	4.0	5.4	6.6	7.7	5.3	.	.	.	.			
Mean Hs	.	.	.	1.3	2.3	3.3	3.6	5.4	5.1	.	.	.	.			
St.dev. Hs	.	.	.	0.3	0.7	1.0	1.5	1.1	0.2	.	.	.	.			

DATA COVERAGE: 88.9%

Frequency table of wave period(TZ) s
and wave height(HS) m
October 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	2	.	.	.	.	.	.	.	.	.	2	0.28	0.28
1.0- 1.4	.	.	.	21	35	5	.	.	.	.	.	.	.	61	8.63	8.91
1.5- 1.9	.	.	.	24	71	10	.	.	.	.	.	.	.	105	14.85	23.76
2.0- 2.4	.	.	.	7	83	22	2	.	.	.	.	.	.	114	16.12	39.89
2.5- 2.9	.	.	.	3	68	26	6	.	.	.	.	.	.	103	14.57	54.46
3.0- 3.4	.	.	.	.	36	36	10	1	.	.	.	.	.	83	11.74	66.20
3.5- 3.9	.	.	.	.	28	36	11	3	.	.	.	.	.	78	11.03	77.23
4.0- 4.4	.	.	.	.	5	34	15	2	1	.	.	.	.	57	8.06	85.29
4.5- 4.9	.	.	.	.	2	29	14	1	.	.	.	.	.	46	6.51	91.80
5.0- 5.4	.	.	.	.	.	12	8	3	.	.	.	.	.	23	3.25	95.05
5.5- 5.9	.	.	.	.	.	5	6	.	.	.	.	.	.	11	1.56	96.61
6.0- 6.4	.	.	.	.	.	.	14	.	.	.	.	.	.	14	1.98	98.59
6.5- 6.9	.	.	.	.	.	.	6	.	.	.	.	.	.	6	0.85	99.43
7.0- 7.4	.	.	.	.	.	.	2	1	.	.	.	.	.	3	0.42	99.86
7.5- 7.9	.	.	.	.	.	.	1	.	.	.	.	.	.	1	0.14	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	57	328	215	95	11	1	0	0	0	0	707		
Rel.fr.	0.0	0.0	0.0	8.1	46.4	30.4	13.4	1.6	0.1	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	8.1	54.5	84.9	98.3	99.9	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	2.6	4.7	5.9	7.6	7.4	4.0	.	.	.	.			
Mean Hs	.	.	.	1.5	2.4	3.5	4.7	4.5	4.0	.	.	.	.			
St.dev. Hs	.	.	.	0.5	0.7	1.0	1.3	1.2	0.0	.	.	.	.			

DATA COVERAGE: 95.0%

Frequency table of wave period(TZ) s
and wave height(HS) m
November 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
1.0- 1.4	.	.	.	62	37	1	.	.	.	.	.	.	.	100	15.95	15.95
1.5- 1.9	.	.	.	78	88	8	.	.	.	.	.	.	.	174	27.75	43.70
2.0- 2.4	.	.	.	24	54	16	.	.	.	.	.	.	.	94	14.99	58.69
2.5- 2.9	.	.	.	1	24	27	4	.	.	.	.	.	.	56	8.93	67.62
3.0- 3.4	.	.	.	.	11	41	17	.	.	.	.	.	.	69	11.00	78.63
3.5- 3.9	.	.	.	.	5	25	10	6	.	.	.	.	.	46	7.34	85.96
4.0- 4.4	.	.	.	.	7	14	11	6	.	.	.	.	.	38	6.06	92.03
4.5- 4.9	.	.	.	.	2	18	5	5	.	.	.	.	.	30	4.78	96.81
5.0- 5.4	.	.	.	.	.	6	3	3	.	.	.	.	.	12	1.91	98.72
5.5- 5.9	.	.	.	.	.	1	3	4	.	.	.	.	.	8	1.28	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	165	228	157	53	24	0	0	0	0	0	627		
Rel.fr.	0.0	0.0	0.0	26.3	36.4	25.0	8.5	3.8	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	26.3	62.7	87.7	96.2	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	2.6	4.5	5.5	5.5	5.6	.	.	.	.	.			
Mean Hs	.	.	.	1.6	2.1	3.3	3.8	4.5	.	.	.	.	.			
St.dev. Hs	.	.	.	0.3	0.7	0.9	0.8	0.7	.	.	.	.	.			

DATA COVERAGE: 87.1%

Frequency table of wave period(TZ) s
and wave height(HS) m
December 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9		.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
1.0- 1.4	.	.	.	89	30	1	.	.	.	.	.	.	.	120	17.09	17.09
1.5- 1.9	.	.	.	58	86	5	.	.	.	.	.	.	.	149	21.23	38.32
2.0- 2.4	.	.	.	33	44	37	5	1	.	.	.	.	.	120	17.09	55.41
2.5- 2.9	.	.	.	10	23	43	17	2	.	.	.	.	.	95	13.53	68.95
3.0- 3.4	.	.	.	1	47	37	23	4	.	.	.	.	.	112	15.95	84.90
3.5- 3.9	.	.	.	.	12	32	7	2	.	.	.	.	.	53	7.55	92.45
4.0- 4.4	.	.	.	.	4	26	2	.	.	.	.	.	.	32	4.56	97.01
4.5- 4.9	.	.	.	.	.	15	3	.	.	.	.	.	.	18	2.56	99.57
5.0- 5.4	.	.	.	.	.	3	.	.	.	.	.	.	.	3	0.43	100.00
5.5- 5.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	191	246	199	57	9	0	0	0	0	0	702		
Rel.fr.	0.0	0.0	0.0	27.2	35.0	28.3	8.1	1.3	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	27.2	62.3	90.6	98.7	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	3.0	4.2	5.3	4.8	3.6	.	.	.	.	.			
Mean Hs	.	.	.	1.6	2.2	3.2	3.2	3.1	.	.	.	.	.			
St.dev. Hs	.	.	.	0.4	0.8	0.8	0.6	0.5	.	.	.	.	.			

DATA COVERAGE: 94.4%

Frequency table of wave period(TZ) s
and wave height(HS) m
Jan.-Dec. 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	7	282	39	.	.	.	.	.	.	.	.	328	4.30	4.30
1.0- 1.4	.	.	6	809	442	31	2	.	.	.	.	.	.	1290	16.93	21.23
1.5- 1.9	.	.	1	478	604	114	23	.	.	.	.	.	.	1220	16.01	37.24
2.0- 2.4	.	.	.	188	569	242	27	1	.	.	.	.	.	1027	13.48	50.72
2.5- 2.9	.	.	.	50	358	276	59	5	.	.	.	.	.	748	9.81	60.53
3.0- 3.4	.	.	.	6	285	305	117	11	.	.	.	.	.	724	9.50	70.03
3.5- 3.9	.	.	.	.	111	299	122	19	.	.	.	.	.	551	7.23	77.26
4.0- 4.4	.	.	.	.	42	281	157	40	1	.	.	.	.	521	6.84	84.10
4.5- 4.9	.	.	.	.	7	208	114	45	3	1	.	.	.	378	4.96	89.06
5.0- 5.4	.	.	.	.	.	83	101	39	16	5	1	.	.	245	3.21	92.27
5.5- 5.9	.	.	.	.	.	19	97	38	7	1	1	.	.	163	2.14	94.41
6.0- 6.4	.	.	.	.	.	3	81	46	7	3	.	.	.	140	1.84	96.25
6.5- 6.9	.	.	.	.	.	1	51	41	11	.	.	.	.	104	1.36	97.61
7.0- 7.4	.	.	.	.	.	.	19	44	15	2	.	.	.	80	1.05	98.66
7.5- 7.9	.	.	.	.	.	.	3	32	10	.	.	.	.	45	0.59	99.25
8.0- 8.4	.	.	.	.	.	.	.	12	4	.	.	.	.	16	0.21	99.46
8.5- 8.9	.	.	.	.	.	.	.	9	9	.	.	.	.	18	0.24	99.70
9.0- 9.4	.	.	.	.	.	.	.	3	10	.	.	.	.	13	0.17	99.87
9.5- 9.9	.	.	.	.	.	.	.	.	7	.	.	.	.	7	0.09	99.96
10.0- 10.4	.	.	.	.	.	.	.	.	3	.	.	.	.	3	0.04	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	14	1813	2457	1862	973	385	103	12	2	0	0	7621		
Rel.fr.	0.0	0.0	0.2	23.8	32.2	24.4	12.8	5.1	1.4	0.2	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.2	24.0	56.2	80.6	93.4	98.5	99.8	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.5	3.1	4.7	6.5	7.9	9.0	10.2	7.3	5.7	.	.			
Mean Hs	.	.	1.0	1.4	2.2	3.4	4.5	5.8	7.2	5.8	5.5	.	.			
St.dev. Hs	.	.	0.3	0.5	0.8	1.0	1.3	1.4	1.6	0.8	0.2	.	.			

DATA COVERAGE: 87.0%

STATISTICS

	Mean Hs m	St.dev. Hs m	Maximum Hs m	Tz s	date
January	4.0	1.6	8.6	9.6	27.01.1997 05 UT
February	4.3	1.7	10.2	10.7	04.02.1997 02 UT
March	4.0	2.1	10.0	10.6	07.03.1997 12 UT
April	3.3	1.4	9.3	10.0	14.04.1997 11 UT
May	2.0	1.2	7.1	8.9	03.05.1997 02 UT
June	1.7	0.7	3.6	6.3	15.06.1997 22 UT
July	1.4	0.8	4.9	7.0	01.07.1997 21 UT
August	1.6	0.6	3.6	6.6	23.08.1997 13 UT
September	2.9	1.3	7.7	9.5	09.09.1997 05 UT
October	3.0	1.3	7.6	8.5	23.10.1997 13 UT
November	2.5	1.1	5.6	9.3	17.11.1997 17 UT
December	2.4	0.9	5.3	7.1	31.12.1997 12 UT

	Mean Tz s	St.dev. Tz s	Maximum Tz s	Hs m	date
January	7.7	1.0	9.9	4.7	01.01.1997 14 UT
February	8.1	1.2	12.7	5.7	19.02.1997 17 UT
March	7.9	1.4	11.4	6.1	10.03.1997 09 UT
April	7.2	0.8	10.0	9.3	14.04.1997 11 UT
May	6.2	0.8	8.9	7.1	03.05.1997 02 UT
June	6.0	0.5	7.8	1.9	05.06.1997 20 UT
July	5.8	0.5	7.5	1.8	31.07.1997 08 UT
August	6.0	0.6	7.8	3.0	23.08.1997 17 UT
September	7.1	1.0	10.3	5.2	30.09.1997 03 UT
October	7.0	0.9	10.0	4.0	02.10.1997 12 UT
November	6.7	1.0	9.6	5.5	17.11.1997 16 UT
December	6.7	0.9	9.3	2.6	25.12.1997 15 UT

4.3.2 Frequency tables wave height/wave period (Hs/Tz) for the period 1996-1997

Frequency table of wave period(TZ) s
and wave height(HS) m
January 1996- 1997

Hs	Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<=	0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5-	0.9	.	.	.	9	3	.	.	.	.	.	.	.	.	12	0.90	0.90
1.0-	1.4	.	.	.	53	20	3	.	.	.	.	.	.	.	76	5.71	6.61
1.5-	1.9	.	.	.	27	76	28	4	3	.	.	.	.	.	138	10.37	16.98
2.0-	2.4	.	.	.	10	65	104	32	3	1	.	.	.	.	215	16.15	33.13
2.5-	2.9	.	.	.	4	56	109	32	6	.	.	.	.	.	207	15.55	48.69
3.0-	3.4	.	.	.	.	36	84	56	6	.	.	.	.	.	182	13.67	62.36
3.5-	3.9	.	.	.	.	12	63	42	8	.	.	.	.	.	125	9.39	71.75
4.0-	4.4	.	.	.	.	5	66	47	7	.	.	.	.	.	125	9.39	81.14
4.5-	4.9	.	.	.	.	.	34	35	8	1	.	.	.	.	78	5.86	87.00
5.0-	5.4	.	.	.	.	.	5	31	5	.	.	.	.	.	41	3.08	90.08
5.5-	5.9	.	.	.	.	.	.	17	9	.	.	.	.	.	26	1.95	92.04
6.0-	6.4	.	.	.	.	.	1	25	15	.	.	.	.	.	41	3.08	95.12
6.5-	6.9	.	.	.	.	.	.	15	14	.	.	.	.	.	29	2.18	97.30
7.0-	7.4	.	.	.	.	.	.	4	21	.	.	.	.	.	25	1.88	99.17
7.5-	7.9	.	.	.	.	.	.	.	9	.	.	.	.	.	9	0.68	99.85
8.0-	8.4	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.08	99.92
8.5-	8.9	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.08	100.00
9.0-	9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5-	9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0-	10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5-	10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=	11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum		0	0	0	103	273	497	340	116	2	0	0	0	0	1331		
Rel.fr.		0.0	0.0	0.0	7.7	20.5	37.3	25.5	8.7	0.2	0.0	0.0	0.0	0.0			
Cum.fr.		0.0	0.0	0.0	7.7	28.2	65.6	91.1	99.8	100.0	100.0	100.0	100.0	100.0			
Max. Hs		.	.	.	2.9	4.3	6.0	7.4	8.6	4.7	.	.	.	.			
Mean Hs		.	.	.	1.5	2.3	3.1	4.1	5.6	3.4	.	.	.	.			
St.dev. Hs		.	.	.	0.4	0.7	0.9	1.3	1.7	1.9	.	.	.	.			

DATA COVERAGE: 89.4%

Frequency table of wave period(TZ) s
and wave height(HS) m
February 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
1.0- 1.4	.	.	.	10	8	.	.	.	.	.	.	.	.	18	1.34	1.34
1.5- 1.9	.	.	.	15	46	20	1	.	.	.	.	.	.	82	6.11	7.45
2.0- 2.4	.	.	.	2	90	49	6	.	.	.	.	.	.	147	10.95	18.41
2.5- 2.9	.	.	.	.	83	60	21	1	.	.	.	.	.	165	12.30	30.70
3.0- 3.4	.	.	.	.	64	84	36	4	.	.	.	.	.	188	14.01	44.71
3.5- 3.9	.	.	.	.	30	92	39	5	1	.	.	.	.	167	12.44	57.15
4.0- 4.4	.	.	.	.	13	77	62	18	.	.	.	.	.	170	12.67	69.82
4.5- 4.9	.	.	.	.	.	47	47	28	2	2	.	.	.	126	9.39	79.21
5.0- 5.4	.	.	.	.	.	13	41	18	11	5	1	.	.	89	6.63	85.84
5.5- 5.9	.	.	.	.	.	5	39	11	4	2	1	1	.	63	4.69	90.54
6.0- 6.4	.	.	.	.	.	.	22	8	4	.	.	.	.	34	2.53	93.07
6.5- 6.9	.	.	.	.	.	.	18	10	3	.	.	.	.	31	2.31	95.38
7.0- 7.4	.	.	.	.	.	.	4	6	1	.	.	.	.	11	0.82	96.20
7.5- 7.9	.	.	.	.	.	.	4	8	1	.	.	.	.	13	0.97	97.17
8.0- 8.4	.	.	.	.	.	.	1	10	2	.	.	.	.	13	0.97	98.14
8.5- 8.9	.	.	.	.	.	.	.	3	6	.	.	.	.	9	0.67	98.81
9.0- 9.4	.	.	.	.	.	.	.	2	6	.	.	.	.	8	0.60	99.40
9.5- 9.9	.	.	.	.	.	.	.	2	3	.	.	.	.	5	0.37	99.78
10.0- 10.4	.	.	.	.	.	.	.	.	3	.	.	.	.	3	0.22	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	27	334	447	341	134	47	9	2	1	0	1342		
Rel.fr.	0.0	0.0	0.0	2.0	24.9	33.3	25.4	10.0	3.5	0.7	0.1	0.1	0.0			
Cum.fr.	0.0	0.0	0.0	2.0	26.9	60.2	85.6	95.6	99.1	99.8	99.9	100.0	100.0			
Max. Hs	.	.	.	2.1	4.3	5.8	8.0	9.9	10.2	5.6	5.7	5.6	.			
Mean Hs	.	.	.	1.5	2.6	3.5	4.6	5.7	7.2	5.2	5.5	5.6	.			
St.dev. Hs	.	.	.	0.3	0.7	0.9	1.2	1.6	1.9	0.3	0.2	0.0	.			

DATA COVERAGE: 98.1%

Frequency table of wave period(TZ) s
and wave height(HS) m
March 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	1	26	2	.	.	.	.	.	.	.	.	29	2.08	2.08
1.0- 1.4	.	.	3	104	73	6	.	.	.	.	.	.	.	186	13.33	15.41
1.5- 1.9	.	.	.	35	111	45	1	.	.	.	.	.	.	192	13.76	29.18
2.0- 2.4	.	.	.	13	81	62	12	2	.	.	.	.	.	170	12.19	41.36
2.5- 2.9	.	.	.	2	30	54	11	2	.	.	.	.	.	99	7.10	48.46
3.0- 3.4	.	.	.	.	40	77	28	2	.	.	.	.	.	147	10.54	59.00
3.5- 3.9	.	.	.	.	6	88	25	3	.	.	.	.	.	122	8.75	67.74
4.0- 4.4	.	.	.	.	5	52	26	10	.	.	.	.	.	93	6.67	74.41
4.5- 4.9	.	.	.	.	.	34	29	12	.	.	.	.	.	75	5.38	79.78
5.0- 5.4	.	.	.	.	.	25	21	19	2	.	.	.	.	67	4.80	84.59
5.5- 5.9	.	.	.	.	.	4	23	16	3	.	.	.	.	46	3.30	87.89
6.0- 6.4	.	.	.	.	.	2	11	21	4	3	.	.	.	41	2.94	90.82
6.5- 6.9	.	.	.	.	.	.	13	13	11	.	.	.	.	37	2.65	93.48
7.0- 7.4	.	.	.	.	.	.	4	17	18	4	.	.	.	43	3.08	96.56
7.5- 7.9	.	.	.	.	.	.	.	13	11	1	.	.	.	25	1.79	98.35
8.0- 8.4	.	.	.	.	.	.	.	6	2	.	.	.	.	8	0.57	98.92
8.5- 8.9	.	.	.	.	.	.	.	2	3	2	.	.	.	7	0.50	99.43
9.0- 9.4	.	.	.	.	.	.	.	.	3	.	.	.	.	3	0.22	99.64
9.5- 9.9	.	.	.	.	.	.	.	.	4	.	.	.	.	4	0.29	99.93
10.0- 10.4	.	.	.	.	.	.	.	.	1	.	.	.	.	1	0.07	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	4	180	348	449	204	138	62	10	0	0	0	1395		
Rel.fr.	0.0	0.0	0.3	12.9	24.9	32.2	14.6	9.9	4.4	0.7	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.3	13.2	38.1	70.3	84.9	94.8	99.3	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.3	2.7	4.3	6.0	7.2	8.5	10.0	8.9	.	.	.			
Mean Hs	.	.	1.1	1.3	2.0	3.3	4.4	5.9	7.4	7.3	.	.	.			
St.dev. Hs	.	.	0.2	0.4	0.7	1.0	1.3	1.4	1.1	0.9	.	.	.			

DATA COVERAGE: 93.8%

Frequency table of wave period(TZ) s
and wave height(HS) m
April 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	23	13	.	.	.	.	.	.	.	.	36	2.92	2.92
1.0- 1.4	.	.	1	89	43	7	.	.	.	.	.	.	.	140	11.36	14.29
1.5- 1.9	.	.	.	21	77	29	3	.	.	.	.	.	.	130	10.55	24.84
2.0- 2.4	.	.	.	15	138	73	4	.	.	.	.	.	.	230	18.67	43.51
2.5- 2.9	.	.	.	.	102	116	9	.	.	.	.	.	.	227	18.43	61.93
3.0- 3.4	.	.	.	1	64	57	7	.	.	.	.	.	.	129	10.47	72.40
3.5- 3.9	.	.	.	.	36	65	13	.	.	.	.	.	.	114	9.25	81.66
4.0- 4.4	.	.	.	.	10	69	14	.	.	.	.	.	.	93	7.55	89.20
4.5- 4.9	.	.	.	.	.	31	15	.	.	.	.	.	.	46	3.73	92.94
5.0- 5.4	.	.	.	.	.	19	13	1	.	.	.	.	.	33	2.68	95.62
5.5- 5.9	.	.	.	.	.	5	12	3	.	.	.	.	.	20	1.62	97.24
6.0- 6.4	.	.	.	.	.	2	6	2	.	.	.	.	.	10	0.81	98.05
6.5- 6.9	.	.	.	.	.	1	6	2	.	.	.	.	.	9	0.73	98.78
7.0- 7.4	.	.	.	.	.	.	4	1	.	.	.	.	.	5	0.41	99.19
7.5- 7.9	.	.	.	.	.	.	1	3	.	.	.	.	.	4	0.32	99.51
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	99.51
8.5- 8.9	.	.	.	.	.	.	.	4	.	.	.	.	.	4	0.32	99.84
9.0- 9.4	.	.	.	.	.	.	.	1	1	.	.	.	.	2	0.16	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	1	149	483	474	107	17	1	0	0	0	0	1232		
Rel.fr.	0.0	0.0	0.1	12.1	39.2	38.5	8.7	1.4	0.1	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.1	12.2	51.4	89.9	98.5	99.9	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.0	3.0	4.2	6.5	7.9	9.0	9.3	.	.	.	.			
Mean Hs	.	.	1.0	1.3	2.4	3.2	4.6	7.2	9.3	.	.	.	.			
St.dev. Hs	.	.	0.0	0.4	0.7	1.0	1.4	1.3	0.0	.	.	.	.			

DATA COVERAGE: 85.6%

Frequency table of wave period(TZ) s
and wave height(HS) m
May 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	3	62	2	.	.	.	.	.	.	.	.	67	4.96	4.96
1.0- 1.4	.	.	1	224	87	6	.	.	.	.	.	.	.	318	23.54	28.50
1.5- 1.9	.	.	.	225	89	31	6	.	.	.	.	.	.	351	25.98	54.48
2.0- 2.4	.	.	.	128	87	30	3	.	.	.	.	.	.	248	18.36	72.83
2.5- 2.9	.	.	.	36	86	19	1	.	.	.	.	.	.	142	10.51	83.35
3.0- 3.4	.	.	.	2	76	22	1	.	.	.	.	.	.	101	7.48	90.82
3.5- 3.9	.	.	.	.	34	9	3	.	.	.	.	.	.	46	3.40	94.23
4.0- 4.4	.	.	.	.	20	12	9	.	.	.	.	.	.	41	3.03	97.26
4.5- 4.9	.	.	.	.	.	2	1	.	.	.	.	.	.	3	0.22	97.48
5.0- 5.4	.	.	.	.	.	4	4	.	.	.	.	.	.	8	0.59	98.08
5.5- 5.9	.	.	.	.	.	3	9	.	.	.	.	.	.	12	0.89	98.96
6.0- 6.4	.	.	.	.	.	.	8	.	.	.	.	.	.	8	0.59	99.56
6.5- 6.9	.	.	.	.	.	.	4	.	.	.	.	.	.	4	0.30	99.85
7.0- 7.4	.	.	.	.	.	.	2	.	.	.	.	.	.	2	0.15	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	4	677	481	138	51	0	0	0	0	0	0	1351		
Rel.fr.	0.0	0.0	0.3	50.1	35.6	10.2	3.8	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.3	50.4	86.0	96.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.3	3.1	4.4	5.8	7.1	.	.	.	.	.	.			
Mean Hs	.	.	0.9	1.6	2.4	2.8	4.7	.	.	.	.	.	.			
St.dev. Hs	.	.	0.3	0.5	0.8	1.0	1.7	.	.	.	.	.	.			

DATA COVERAGE: 90.8%

Frequency table of wave period(TZ) s
and wave height(HS) m
June 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	69	4	.	.	.	.	.	.	.	.	73	7.60	7.60
1.0- 1.4	.	.	4	209	100	2	.	.	.	.	.	.	.	315	32.81	40.42
1.5- 1.9	.	.	.	88	99	18	.	.	.	.	.	.	.	205	21.35	61.77
2.0- 2.4	.	.	.	42	87	19	.	.	.	.	.	.	.	148	15.42	77.19
2.5- 2.9	.	.	.	23	47	7	.	.	.	.	.	.	.	77	8.02	85.21
3.0- 3.4	.	.	.	1	60	13	.	.	.	.	.	.	.	74	7.71	92.92
3.5- 3.9	.	.	.	.	8	11	5	.	.	.	.	.	.	24	2.50	95.42
4.0- 4.4	.	.	.	.	9	3	3	.	.	.	.	.	.	15	1.56	96.98
4.5- 4.9	.	.	.	.	3	8	3	2	.	.	.	.	.	16	1.67	98.65
5.0- 5.4	.	.	.	.	.	1	5	4	.	.	.	.	.	10	1.04	99.69
5.5- 5.9	.	.	.	.	.	.	.	3	.	.	.	.	.	3	0.31	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	4	432	417	82	16	9	0	0	0	0	0	960		
Rel.fr.	0.0	0.0	0.4	45.0	43.4	8.5	1.7	0.9	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.4	45.4	88.9	97.4	99.1	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.3	3.0	4.7	5.1	5.3	5.9	.	.	.	.	.			
Mean Hs	.	.	1.2	1.4	2.1	2.8	4.4	5.3	.	.	.	.	.			
St.dev. Hs	.	.	0.1	0.5	0.8	1.1	0.6	0.4	.	.	.	.	.			

DATA COVERAGE: 66.7%

Frequency table of wave period(TZ) s
and wave height(HS) m
July 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	4	138	26	.	.	.	.	.	.	.	.	168	15.95	15.95
1.0- 1.4	.	.	2	326	121	2	.	.	.	.	.	.	.	451	42.83	58.78
1.5- 1.9	.	.	.	83	128	17	4	.	.	.	.	.	.	232	22.03	80.82
2.0- 2.4	.	.	.	35	42	5	.	.	.	.	.	.	.	82	7.79	88.60
2.5- 2.9	.	.	.	6	27	6	.	.	.	.	.	.	.	39	3.70	92.31
3.0- 3.4	.	.	.	4	30	12	.	.	.	.	.	.	.	46	4.37	96.68
3.5- 3.9	.	.	.	.	17	2	.	.	.	.	.	.	.	19	1.80	98.48
4.0- 4.4	.	.	.	.	11	.	.	.	.	.	.	.	.	11	1.04	99.53
4.5- 4.9	.	.	.	.	3	2	.	.	.	.	.	.	.	5	0.47	100.00
5.0- 5.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.5- 5.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	6	592	405	46	4	0	0	0	0	0	0	1053		
Rel.fr.	0.0	0.0	0.6	56.2	38.5	4.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.6	56.8	95.3	99.6	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.1	3.1	4.7	4.8	1.6	.	.	.	.	.	.			
Mean Hs	.	.	0.8	1.2	1.9	2.4	1.6	.	.	.	.	.	.			
St.dev. Hs	.	.	0.2	0.4	0.9	0.9	0.0	.	.	.	.	.	.			

DATA COVERAGE: 70.8%

Frequency table of wave period(TZ) s
and wave height(HS) m
August 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	82	8	.	.	.	.	.	.	.	.	90	10.64	10.64
1.0- 1.4	.	.	1	196	116	3	.	.	.	.	.	.	.	316	37.35	47.99
1.5- 1.9	.	.	1	121	99	13	.	.	.	.	.	.	.	234	27.66	75.65
2.0- 2.4	.	.	.	51	43	9	.	.	.	.	.	.	.	103	12.17	87.83
2.5- 2.9	.	.	.	19	30	22	.	.	.	.	.	.	.	71	8.39	96.22
3.0- 3.4	.	.	.	2	6	22	.	.	.	.	.	.	.	30	3.55	99.76
3.5- 3.9	.	.	.	.	2	.	.	.	.	.	.	.	.	2	0.24	100.00
4.0- 4.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
4.5- 4.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.0- 5.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
5.5- 5.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.0- 6.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	2	471	304	69	0	0	0	0	0	0	0	846		
Rel.fr.	0.0	0.0	0.2	55.7	35.9	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.2	55.9	91.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.5	3.4	3.6	3.4	.	.	.	.	.	.	.			
Mean Hs	.	.	1.4	1.4	1.7	2.5	.	.	.	.	.	.	.			
St.dev. Hs	.	.	0.2	0.5	0.5	0.6	.	.	.	.	.	.	.			

DATA COVERAGE: 56.9%

Frequency table of wave period(TZ) s
and wave height(HS) m
September 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	5	6	.	.	.	.	.	.	.	.	11	1.23	1.23
1.0- 1.4	.	.	.	52	49	7	2	.	.	.	.	.	.	110	12.28	13.50
1.5- 1.9	.	.	.	37	78	27	16	.	.	.	.	.	.	158	17.63	31.14
2.0- 2.4	.	.	.	18	95	56	10	.	.	.	.	.	.	179	19.98	51.12
2.5- 2.9	.	.	.	1	57	37	1	.	.	.	.	.	.	96	10.71	61.83
3.0- 3.4	.	.	.	.	39	48	3	.	.	.	.	.	.	90	10.04	71.88
3.5- 3.9	.	.	.	.	11	61	14	1	.	.	.	.	.	87	9.71	81.58
4.0- 4.4	.	.	.	.	6	31	9	8	.	.	.	.	.	54	6.03	87.61
4.5- 4.9	.	.	.	.	.	41	10	6	1	.	.	.	.	58	6.47	94.08
5.0- 5.4	.	.	.	.	.	11	9	4	5	.	.	.	.	29	3.24	97.32
5.5- 5.9	.	.	.	.	.	1	6	1	.	.	.	.	.	8	0.89	98.21
6.0- 6.4	.	.	.	.	.	.	3	5	.	.	.	.	.	8	0.89	99.11
6.5- 6.9	.	.	.	.	.	.	1	5	.	.	.	.	.	6	0.67	99.78
7.0- 7.4	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.11	99.89
7.5- 7.9	.	.	.	.	.	.	.	1	.	.	.	.	.	1	0.11	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	113	341	320	84	32	6	0	0	0	0	896		
Rel.fr.	0.0	0.0	0.0	12.6	38.1	35.7	9.4	3.6	0.7	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	12.6	50.7	86.4	95.8	99.3	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	2.7	4.0	5.4	6.6	7.7	5.3	.	.	.	.			
Mean Hs	.	.	.	1.5	2.2	3.2	3.6	5.4	5.1	.	.	.	.			
St.dev. Hs	.	.	.	0.4	0.7	1.0	1.5	1.1	0.2	.	.	.	.			

DATA COVERAGE: 62.2%

Frequency table of wave period(TZ) s
and wave height(HS) m
October 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	2	.	.	.	.	.	.	.	.	.	2	0.17	0.17
1.0- 1.4	.	.	.	26	68	16	2	.	.	.	.	.	.	112	9.66	9.83
1.5- 1.9	.	.	1	39	131	34	11	.	.	.	.	.	.	216	18.62	28.45
2.0- 2.4	.	.	.	8	106	33	25	.	.	.	.	.	.	172	14.83	43.28
2.5- 2.9	.	.	.	3	83	48	20	1	.	.	.	.	.	155	13.36	56.64
3.0- 3.4	.	.	.	.	57	57	22	4	.	.	.	.	.	140	12.07	68.71
3.5- 3.9	.	.	.	.	33	59	20	7	.	.	.	.	.	119	10.26	78.97
4.0- 4.4	.	.	.	.	7	38	16	5	1	.	.	.	.	67	5.78	84.74
4.5- 4.9	.	.	.	.	2	39	15	4	.	.	.	.	.	60	5.17	89.91
5.0- 5.4	.	.	.	.	.	19	11	9	.	.	.	.	.	39	3.36	93.28
5.5- 5.9	.	.	.	.	.	7	6	7	2	.	.	.	.	22	1.90	95.17
6.0- 6.4	.	.	.	.	.	1	25	1	.	.	.	.	.	27	2.33	97.50
6.5- 6.9	.	.	.	.	.	.	9	6	.	.	.	.	.	15	1.29	98.79
7.0- 7.4	.	.	.	.	.	.	4	6	.	.	.	.	.	10	0.86	99.66
7.5- 7.9	.	.	.	.	.	.	1	3	.	.	.	.	.	4	0.34	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	1	78	487	351	187	53	3	0	0	0	0	1160		
Rel.fr.	0.0	0.0	0.1	6.7	42.0	30.3	16.1	4.6	0.3	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.1	6.8	48.8	79.1	95.2	99.7	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.5	2.6	4.7	6.1	7.6	7.8	5.6	.	.	.	.			
Mean Hs	.	.	1.5	1.6	2.3	3.3	4.0	5.3	5.0	.	.	.	.			
St.dev. Hs	.	.	0.0	0.4	0.8	1.1	1.6	1.4	0.9	.	.	.	.			

DATA COVERAGE: 78.0%

Frequency table of wave period(TZ) s
and wave height(HS) m
November 1996- 1997

Hs	Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<=	0.4	.	.	.	1	.	.	.	.	.	.	.	.	.	1	0.08	0.08
0.5-	0.9	.	.	.	4	4	.	.	.	.	.	.	.	.	8	0.67	0.75
1.0-	1.4	.	.	.	77	65	6	.	.	.	.	.	.	.	148	12.36	13.12
1.5-	1.9	.	.	.	94	177	31	4	.	.	.	.	.	.	306	25.56	38.68
2.0-	2.4	.	.	.	24	107	53	9	.	.	.	.	.	.	193	16.12	54.80
2.5-	2.9	.	.	.	2	52	55	21	.	.	.	.	.	.	130	10.86	65.66
3.0-	3.4	.	.	.	.	26	63	28	.	.	.	.	.	.	117	9.77	75.44
3.5-	3.9	.	.	.	.	8	48	16	6	.	.	.	.	.	78	6.52	81.95
4.0-	4.4	.	.	.	.	9	36	21	6	.	.	.	.	.	72	6.02	87.97
4.5-	4.9	.	.	.	.	3	39	22	5	.	.	.	.	.	69	5.76	93.73
5.0-	5.4	.	.	.	.	.	18	18	3	.	.	.	.	.	39	3.26	96.99
5.5-	5.9	.	.	.	.	.	3	14	4	.	.	.	.	.	21	1.75	98.75
6.0-	6.4	.	.	.	.	.	.	4	2	.	.	.	.	.	6	0.50	99.25
6.5-	6.9	.	.	.	.	.	.	2	4	.	.	.	.	.	6	0.50	99.75
7.0-	7.4	.	.	.	.	.	.	.	3	.	.	.	.	.	3	0.25	100.00
7.5-	7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0-	8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5-	8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0-	9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5-	9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0-	10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5-	10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=	11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum		0	0	0	202	451	352	159	33	0	0	0	0	0	1197		
Rel.fr.		0.0	0.0	0.0	16.9	37.7	29.4	13.3	2.8	0.0	0.0	0.0	0.0	0.0			
Cum.fr.		0.0	0.0	0.0	16.9	54.6	84.0	97.2	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs		.	.	.	2.6	4.8	5.7	6.9	7.3	.	.	.	.	.			
Mean Hs		.	.	.	1.5	2.0	3.3	4.0	5.1	.	.	.	.	.			
St.dev. Hs		.	.	.	0.3	0.7	1.0	1.2	1.2	.	.	.	.	.			

DATA COVERAGE: 83.1%

Frequency table of wave period(TZ) s
and wave height(HS) m
December 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	0.00
0.5- 0.9	.	.	.	3	5	1	.	.	.	.	.	.	.	9	0.82	0.82
1.0- 1.4	.	.	.	93	60	8	1	.	.	.	.	.	.	162	14.77	15.59
1.5- 1.9	.	.	.	64	134	23	1	.	.	.	.	.	.	222	20.24	35.82
2.0- 2.4	.	.	.	37	85	68	18	1	.	.	.	.	.	209	19.05	54.88
2.5- 2.9	.	.	.	10	58	54	24	2	.	.	.	.	.	148	13.49	68.37
3.0- 3.4	.	.	.	1	77	49	24	4	.	.	.	.	.	155	14.13	82.50
3.5- 3.9	.	.	.	.	22	51	12	2	.	.	.	.	.	87	7.93	90.43
4.0- 4.4	.	.	.	.	9	39	5	1	.	.	.	.	.	54	4.92	95.35
4.5- 4.9	.	.	.	.	1	22	4	.	.	.	.	.	.	27	2.46	97.81
5.0- 5.4	.	.	.	.	.	10	2	1	.	.	.	.	.	13	1.19	99.00
5.5- 5.9	.	.	.	.	.	5	1	.	.	.	.	.	.	6	0.55	99.54
6.0- 6.4	.	.	.	.	.	4	1	.	.	.	.	.	.	5	0.46	100.00
6.5- 6.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.0- 7.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
7.5- 7.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.0- 8.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
8.5- 8.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.0- 9.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
9.5- 9.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.0- 10.4	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	0	208	451	334	93	11	0	0	0	0	0	1097		
Rel.fr.	0.0	0.0	0.0	19.0	41.1	30.4	8.5	1.0	0.0	0.0	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.0	19.0	60.1	90.5	99.0	100.0	100.0	100.0	100.0	100.0	100.0			
Max. Hs	.	.	.	3.0	4.6	6.3	6.2	5.2	.	.	.	.	.			
Mean Hs	.	.	.	1.6	2.2	3.2	3.1	3.3	.	.	.	.	.			
St.dev. Hs	.	.	.	0.4	0.8	1.0	0.9	0.8	.	.	.	.	.			

DATA COVERAGE: 73.7%

Frequency table of wave period(TZ) s
and wave height(HS) m
Jan.-Dec. 1996- 1997

Hs \ Tz	<= 2.9	3.0 3.9	4.0 4.9	5.0 5.9	6.0 6.9	7.0 7.9	8.0 8.9	9.0 9.9	10.0 10.9	11.0 11.9	12.0 12.9	13.0 13.9	>= 14.0	Sum	Rel. fr.	Cum. fr.
<= 0.4	.	.	.	1	.	.	.	.	.	.	.	.	.	1	0.01	0.01
0.5- 0.9	.	.	8	423	73	1	.	.	.	.	.	.	.	505	3.64	3.65
1.0- 1.4	.	.	12	1459	810	66	5	.	.	.	.	.	.	2352	16.97	20.62
1.5- 1.9	.	.	2	849	1245	316	51	3	.	.	.	.	.	2466	17.79	38.41
2.0- 2.4	.	.	.	383	1026	561	119	6	1	.	.	.	.	2096	15.12	53.54
2.5- 2.9	.	.	.	106	711	587	140	12	.	.	.	.	.	1556	11.23	64.76
3.0- 3.4	.	.	.	11	575	588	205	20	.	.	.	.	.	1399	10.09	74.86
3.5- 3.9	.	.	.	.	219	549	189	32	1	.	.	.	.	990	7.14	82.00
4.0- 4.4	.	.	.	.	104	423	212	55	1	.	.	.	.	795	5.74	87.73
4.5- 4.9	.	.	.	.	12	299	181	65	4	2	.	.	.	563	4.06	91.80
5.0- 5.4	.	.	.	.	.	125	155	64	18	5	1	.	.	368	2.66	94.45
5.5- 5.9	.	.	.	.	.	33	127	54	9	2	1	1	.	227	1.64	96.09
6.0- 6.4	.	.	.	.	.	10	105	54	8	3	.	.	.	180	1.30	97.39
6.5- 6.9	.	.	.	.	.	1	68	54	14	.	.	.	.	137	0.99	98.38
7.0- 7.4	.	.	.	.	.	.	22	55	19	4	.	.	.	100	0.72	99.10
7.5- 7.9	.	.	.	.	.	.	6	37	12	1	.	.	.	56	0.40	99.50
8.0- 8.4	.	.	.	.	.	.	1	17	4	.	.	.	.	22	0.16	99.66
8.5- 8.9	.	.	.	.	.	.	.	10	9	2	.	.	.	21	0.15	99.81
9.0- 9.4	.	.	.	.	.	.	.	3	10	.	.	.	.	13	0.09	99.91
9.5- 9.9	.	.	.	.	.	.	.	2	7	.	.	.	.	9	0.06	99.97
10.0- 10.4	.	.	.	.	.	.	.	.	4	.	.	.	.	4	0.03	100.00
10.5- 10.9	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
>=11.0	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0.00	100.00
Sum	0	0	22	3232	4775	3559	1586	543	121	19	2	1	0	13860		
Rel.fr.	0.0	0.0	0.2	23.3	34.5	25.7	11.4	3.9	0.9	0.1	0.0	0.0	0.0			
Cum.fr.	0.0	0.0	0.2	23.5	57.9	83.6	95.1	99.0	99.8	100.0	100.0	100.0	100.0			
Max. Hs	.	.	1.5	3.4	4.8	6.5	8.0	9.9	10.2	8.9	5.7	5.6	.			
Mean Hs	.	.	1.0	1.4	2.2	3.2	4.2	5.6	7.1	6.3	5.5	5.6	.			
St.dev. Hs	.	.	0.3	0.5	0.8	1.0	1.4	1.5	1.7	1.3	0.2	0.0	.			

DATA COVERAGE: 79.0%

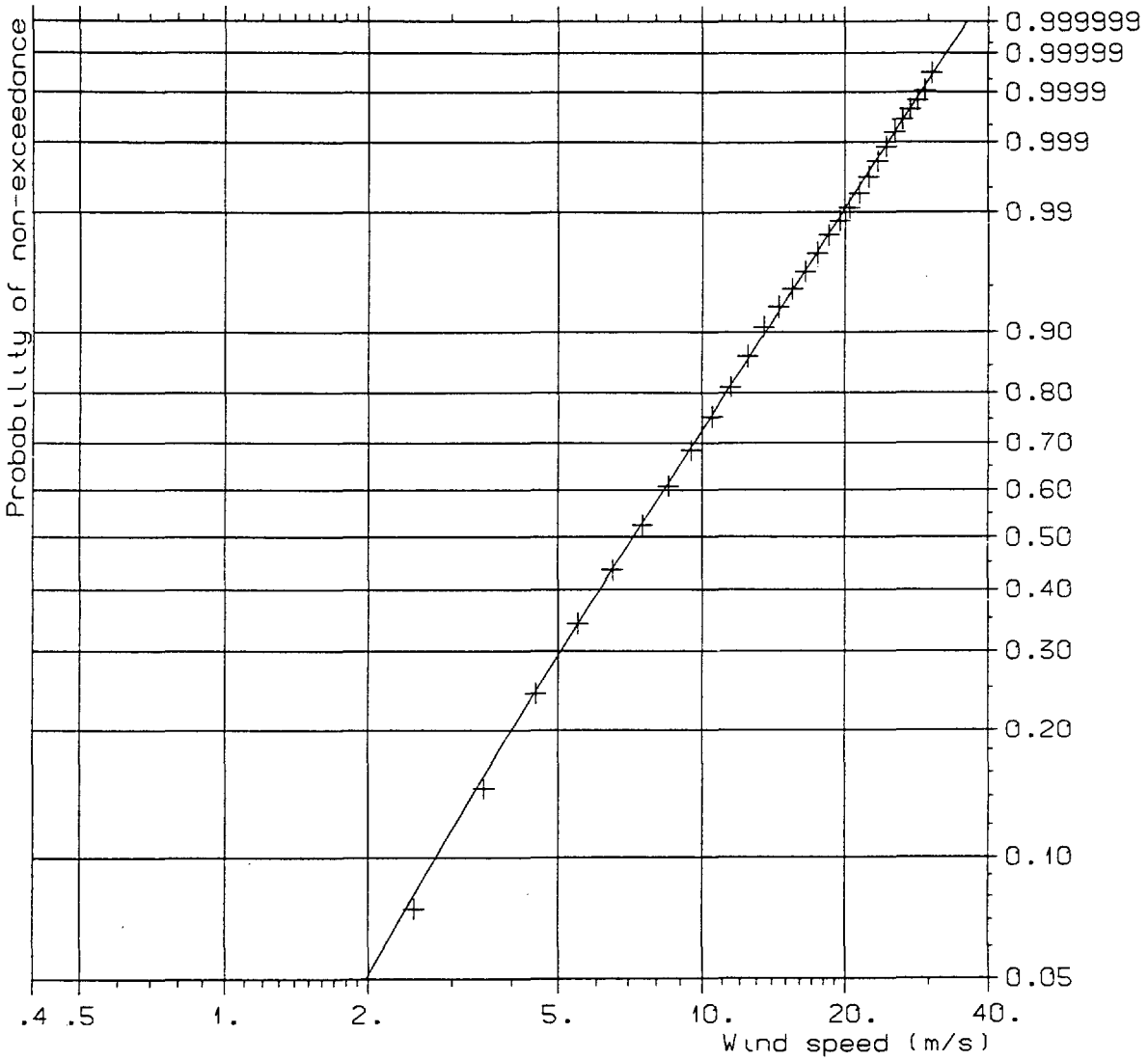
STATISTICS

	Mean Hs m	St.dev. Hs m	Maximum Hs m	Tz s	date
January	3.3	1.5	8.6	9.6	27.01.1997 05 UT
February	3.9	1.6	10.2	10.7	04.02.1997 02 UT
March	3.4	1.9	10.0	10.6	07.03.1997 12 UT
April	2.8	1.3	9.3	10.0	14.04.1997 11 UT
May	2.1	1.0	7.1	8.9	03.05.1997 02 UT
June	1.9	1.0	5.9	9.7	01.06.1996 16 UT
July	1.5	0.7	4.9	7.0	01.07.1997 21 UT
August	1.6	0.6	3.6	6.6	23.08.1997 13 UT
September	2.7	1.3	7.7	9.5	09.09.1997 05 UT
October	3.0	1.4	7.8	9.7	12.10.1996 03 UT
November	2.7	1.3	7.4	9.4	15.11.1996 12 UT
December	2.5	1.0	6.3	7.7	12.12.1996 11 UT

	Mean Tz s	St.dev. Tz s	Maximum Tz s	Hs m	date
January	7.5	1.0	10.3	4.7	31.01.1996 10 UT
February	7.8	1.1	13.1	5.6	17.02.1996 11 UT
March	7.4	1.3	11.8	8.5	12.03.1996 09 UT
April	7.0	0.8	10.0	9.3	14.04.1997 11 UT
May	6.1	0.8	8.9	7.1	03.05.1997 02 UT
June	6.1	0.7	9.9	5.3	01.06.1996 12 UT
July	6.0	0.5	8.3	1.6	27.07.1996 20 UT
August	6.0	0.6	7.8	3.0	23.08.1997 17 UT
September	7.0	1.0	10.3	5.2	30.09.1997 03 UT
October	7.2	1.0	10.4	5.6	13.10.1996 17 UT
November	6.9	0.9	9.7	6.7	15.11.1996 06 UT
December	6.8	0.8	9.3	2.6	25.12.1997 15 UT

5. Computation of 10-100 year estimates

5.1 10-100 year estimates of the wind speed based on the 10 m level



MODEL DISTRIBUTION:	
WEIBULL parameters:	
Shape	1.801
Scale	8.318
Location	0.382
Estimated using:	
Method of Moments	

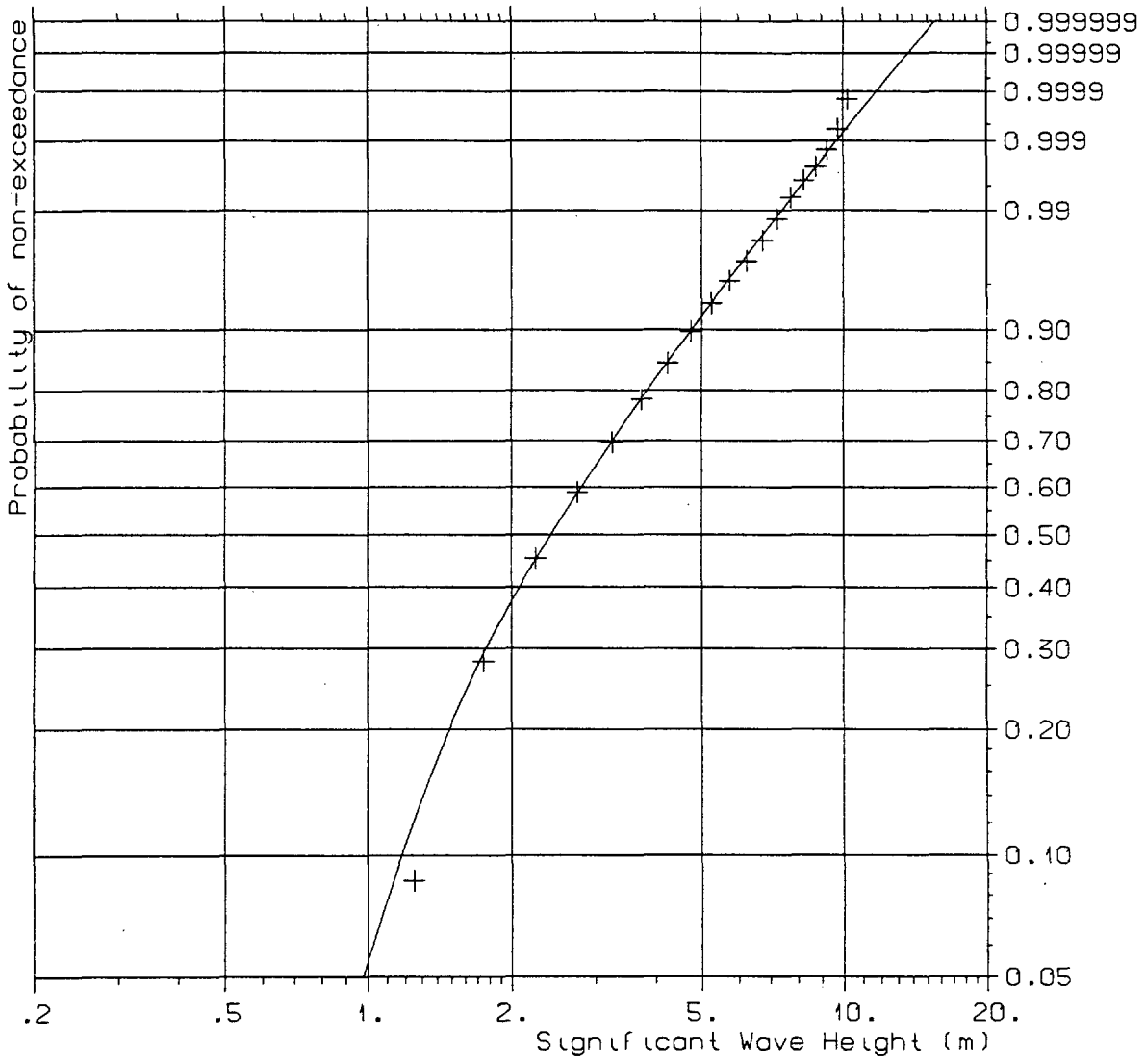
ESTIMATED EXTREMES:	
"RETURN" PERIOD	VALUE
- years -	- m/s -
1.0	26.7
5.0	29.6
25.	32.2
100.	34.3
Duration of exceedance:	
3.0 hours	

OBSERVED DISTRIBUTION:	
Mean value	7.78
Std. deviation	4.25
Skewness	0.78

GENERAL INFORMATION:	
No. of data	: 17373
No. of indep. data:	483

	HEIDRUN 1996-1997 Wind speed measured in top of derrick reduced 10 10 m o.s.l.	FIGURE 5.1

5.2 10-100 year estimates of significant wave height based on data from the MIROS wave radar on Heidrun.



MODEL DISTRIBUTION:	
WEIBULL parameters:	
Shape	1.381
Scale	2.215
Location	0.719
Estimated using:	
Method of Moments	

ESTIMATED EXTREMES:	
"RETURN" PERIOD - years -	VALUE - m -
1.0	10.7
5.0	12.1
25.	13.5
100.	14.6
Duration of exceedance: 3.0 hours	

OBSERVED DISTRIBUTION:	
Mean value	2.74
Std. deviation	1.48
Skewness	1.22

GENERAL INFORMATION:	
No. of data	: 13860
No. of indep. data:	385

	HEIDRUN 1996-1997 Significant Wave Height measured by a MIROS wave radar.	FIGURE 5.2

6. References

Kvalitetskontroll rapport naturdata, januar 1996, Miros a/s

Kvalitetskontroll rapport naturdata, februar 1997, Miros a/s

Kvalitetskontroll rapport naturdata, mars 1997, Miros a/s

Kvalitetskontroll rapport naturdata, april 1997, Miros a/s

Kvalitetskontroll rapport naturdata, mai 1997, Miros a/s

Kvalitetskontroll rapport naturdata, juni 1997, Miros a/s

Kvalitetskontroll rapport naturdata, juli 1997, Miros a/s

Kvalitetskontroll rapport naturdata, august 1997, Miros a/s

Kvalitetskontroll rapport naturdata, september 1997, Miros a/s

Kvalitetskontroll rapport naturdata, oktober 1997, Miros a/s

Kvalitetskontroll rapport naturdata, november 1997, Miros a/s

Kvalitetskontroll rapport naturdata, desember 1997, Miros a/s

Appendix A

Complete set of parameters that can be available in the format DF022 but not all are implemented in the EMS at Heidrun.

Block Navn	Parameter nr	-nr	-kode	Navn	Observasjons sted	tid	Middl tid	Enhet	Merknad
WR1-031	01	07	VARn	Variance of surface elevation				m*m	Ref. to Point Spectrum
WR1-031	02	08	Hm0	Significant Wave Height				m	
WR1-031	03	09	Tp1	Peak Period				s	of Point Spectrum
WR1-031	04	10	SDp1	Peak Spectral Density				m*m/Hz	of Point Spectrum
WR1-031	05	11	Dp1	Peak Direction corresponding to SDp1				deg	
WR1-031	06	12	Dm1	Mean Direction corresponding to SDp1				deg	
WR1-031	07	13	SPR1	Spread corresponding to SDp1				deg	Around the Mean
WR1-031	08	14	H2	Wave Height corresp. to Secondary peak				m	
WR1-031	09	15	Tp2	Period of Secondary Peak				s	
WR1-031	10	16	SDp2	Secondary Peak Spectral Density				m*m/Hz	
WR1-031	11	17	Dp2	Peak Direction of Secondary Peak				deg	
WR1-031	12	18	Dm2	Mean Direction of Secondary Peak				deg	
WR1-031	13	19	SPR2	Spread corresponding to SDp2				deg	Around the Mean
WR1-031	14	20	Dpt	Total energy Peak Direction				deg	
WR1-031	15	21	Dmt	Total energy Mean Direction				deg	
WR1-031	16	22	SPRt	Total energy Directional Spread				deg	Around the Mean
WR1-031	17	23	Tz	Mean Zero Upcrossing Period				s	
WR1-031	18	24	Tav	Mean Period				s	
WR1-031	19	25	CM	Current Magnitude				m/s	
WR1-031	20	26	CD	Current Direction				deg	
WR1-031	21	27	CE	East component of Current velocity				m/s	
WR1-031	22	28	CN	North component of Current velocity				m/s	
WR1-031	23	29	SPRc	Current Spread				m/s	
WR1-031	24	30	Hmax	Maximum Wave height				m	
WR1-031	25	31	Ts	Significant Wave Period				s	
WR1-031	26	32	Tmax	Maximum Wave Period				s	
WR1-031	27	33	HTmax	Wave height of Maximum Wave Period				m	
WR1-031	28	34	THmax	Wave Period of Maximum Wave height				s	
WR1-031	29	35		not used					
WR1-031	30	36		not used					
ST1-002	01	38	Tew1	Seawater Temperature				deg	
ST2-002	01	40	Tew2	Seawater Temperature				deg	
WL1-002	01	42	Hw1	Water level ten min. average				m	
WL2-002	01	44	Hw2	Water level ten min. average				m	
WIA-015	01	46	DifWsa	Speed Difference				m/s	
WIA-015	02	47	DifWda	Direction Difference				deg	
WIA-015	03	48	Mwm1a	Min. Gust Last 2 min				m/s	
WIA-015	04	49	Mwa1a	Aver. Speed Last 2 min				m/s	
WIA-015	05	50	Mwp1a	Max. Gust Last 2 min				m/s	
WIA-015	06	51	Dwm1a	Min. Direction Last 2 min				deg	
WIA-015	07	52	Dwa1a	Aver. Direction Last 2 min				deg	
WIA-015	08	53	Dwp1a	Max. Direction Last 2 min				deg	
WIA-015	09	54	Mwm2a	Min. Gust Last 10 min reduced	10 m			m/s	
WIA-015	10	55	Mwa2a	Aver. Speed Last 10 min reduced	10 m			m/s	
WIA-015	11	56	Mwp2a	Max. Gust Last 10 min reduced	10 m			m/s	
WIA-015	12	57	Dwm2a	Min. Direction Last 10 min				deg	
WIA-015	13	58	Dwa2a	Aver. Direction Last 10 min				deg	
WIA-015	14	59	Dwp2a	Max. Direction Last 10 min				deg	
WIB-015	01	61	DifWsa	Speed Difference				m/s	
WIB-015	02	62	DifWda	Direction Difference				deg	
WIB-015	03	63	Mwm1b	Min. Gust Last 2 min				m/s	
WIB-015	04	64	Mwa1b	Aver. Speed Last 2 min				m/s	
WIB-015	05	65	Mwp1b	Max. Gust Last 2 min				m/s	
WIB-015	06	66	Dwm1b	Min. Direction Last 2 min				deg	
WIB-015	07	67	Dwa1b	Aver. Direction Last 2 min				deg	
WIB-015	08	68	Dwp1b	Max. Direction Last 2 min				deg	
WIB-015	09	69	Mwm2b	Min. Gust Last 10 min reduced	10 m			m/s	
WIB-015	10	70	Mwa2b	Aver. Speed Last 10 min reduced	10 m			m/s	
WIB-015	11	71	Mwp2b	Max. Gust Last 10 min reduced	10 m			m/s	
WIB-015	12	72	Dwm2b	Min. Direction Last 10 min				deg	
WIB-015	13	73	Dwa2b	Aver. Direction Last 10 min				deg	
WIB-015	14	74	Dwp2b	Max. Direction Last 10 min				deg	
TH1-009	01	76	Tea1	Air Temperature 1 min. mean	66 m		1 min	deg	
TH1-009	02	77	Ted1	Dewpoint Temp. 1 min. mean	66 m		1 min	deg	
TH1-009	03	78	Hua1	Air Humidity 1 min. mean	66 m		1 min	%RH	
TH1-009	04	79	Pa11	Air Pressure at sensor 1 min. mean	56.2 m		1 min	hPa	
TH1-009	05	80	Pa21	Air Pressure QFE 1 min. mean	m		1 min	hPa	QFE
TH1-009	06	81	Pa31	Air Pressure QNH 1 min. mean	00 m		1 min	hPa	QNH
TH1-009	07	82	Pa41	Air Pressure QFF 1 min. mean	00 m		1 min	hPa	QFF
TH1-009	08	83	Pa51	Air Pressure 3 Hour Trend	00 m		1 min	hPa	
TH2-009	01	85	Tea2	Air Temperature 1 min. mean	66 m		1 min	deg	
TH2-009	02	86	Ted2	Dewpoint Temp. 1 min. mean	66 m		1 min	deg	
TH2-009	03	87	Hua2	Air Humidity 1 min. mean	66 m		1 min	%RH	
TH2-009	04	88	Pa12	Air Pressure at sensor 1 min. mean	56.2 m		1 min	hPa	
TH2-009	05	89	Pa22	Air Pressure QFE 1 min. mean	m		1 min	hPa	QFE
TH2-009	06	90	Pa32	Air Pressure QNH 1 min. mean	00 m		1 min	hPa	QNH
TH2-009	07	91	Pa42	Air Pressure QFF 1 min. mean	00 m		1 min	hPa	QFF
TH2-009	08	92	Pa52	Air Pressure 3 Hour Trend	00 m		1 min	hPa	
CL1-005	01	94	Hc11	Cloud Level 1 (lowest cloud)				m	
CL1-005	02	95	Hc21	Cloud Level 2				m	
CL1-005	03	96	Hc31	Cloud Level 3				m	
CL1-005	04	97	Hv11	Vertical Visibility				m	
VI1-002	01	99	Lv11	Horisontal Visibility				m	
PT1-002	01	101	Hr11	Precipitation last fixed 3 hours				mm	
MR1-005	01	103	Mwpp31	Max Gust last fixed 3 hours				m/s	
MR1-005	02	104	Uwpp31	UTC time for parameter 103				h:m	
MR1-005	03	105	Mwap31	Max Average speed last fixed 3 hours				m/s	
MR1-005	04	106	Uwap31	UTC time for parameter 105				h:m	
MR2-005	01	108	Mwpp61	Max Gust last fixed 6 hours				m/s	
MR2-005	02	109	Uwpp61	UTC time for parameter 108				h:m	
MR2-005	03	110	Mwap61	Max Average speed last fixed 6 hours				m/s	
MR2-005	04	111	Uwap61	UTC time for parameter 110				h:m	
WS1-248	01	154		Observation direction spectrum 1				deg	
WS1-248	02	155		Configuration parameter				deg	
WS1-248	03	156		Spectral Density (point 1,direct.1)				m*m/Hz	
WS1-248	04	157		Spectral Density (point 2,direct.1)				m*m/Hz	
WS1-248	248	401		Spectral Density (point 41,direct.6)				m*m/Hz	
CV1-007	01	403	ffdd1	Current Speed, Direction 1				m/s	
CV1-007	02	404	ffdd2	Current Speed, Direction 2				m/s	
CV1-007	03	405	ffdd3	Current Speed, Direction 3				m/s	
CV1-007	04	406	ffdd4	Current Speed, Direction 4				m/s	
CV1-007	05	407	ffdd5	Current Speed, Direction 5				m/s	
CV1-007	06	408	ffdd6	Current Speed, Direction 6				m/s	

Appendix B

Short comparison of significant wave heights measured by a MIROS wave radar and a Seatex buoy at Heidrun in 1997.

Below, two Figures are given that shortly summarises the wave measurement performed by the MIROS wave radar and the Seatex buoy in 1997. January is not presented as the storing of the data from the SEATEX buoy started at DNMI in the end of January 1997. Extension 'mi ' and 'sx' in the parameter names means that the parameters is measured by MIROS radar and SEATEX buoy respectively. In Figure 1 monthly means of Hmo and Hmax are given. In all of the months, parameters derived from the SEATEX buoy are lower than those derived from the MIROS radar.

The monthly maxima for the same parameters are given in Figure 2 which is quite similar to Figure 1. Only February have a maximum in Hm0 which is highest derived from the SEATEX buoy.

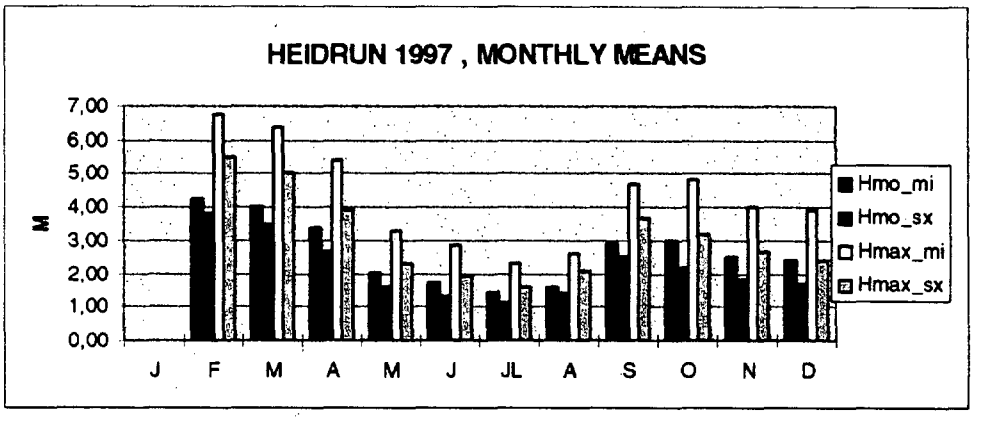


Figure 1 Monthly means of both significant wave height (Hm0) and maximum wave height (Hmax) measured by MIROS wave radar (mi) and SEATEX buoy (sx).

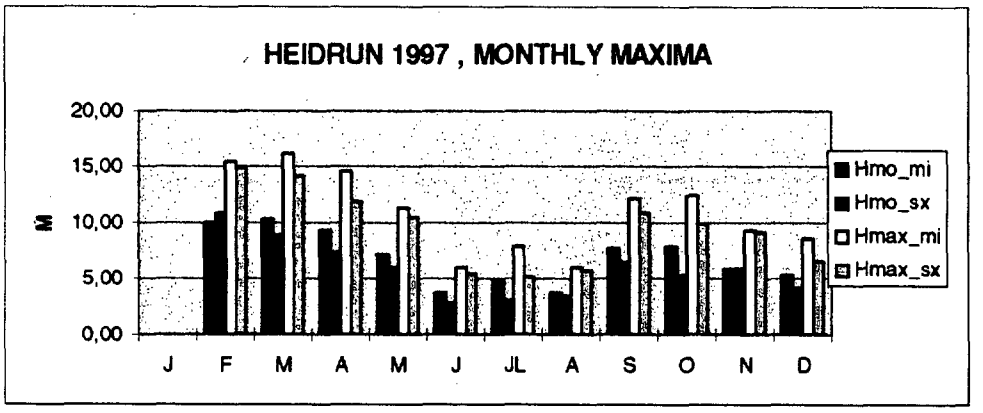


Figure 2 Monthly maxima of both significant wave height (Hm0) and maximum wave height (Hmax) measured by MIROS wave radar (mi) and SEATEX buoy (sx).