

DNMI

DET NORSKE METEOROLOGISKE INSTITUTT

klima

HANØYTANGEN , JANUARY 1994

Knut A. Iden

RAPPORT NR. 16/94 KLIMA



DET NORSKE METEOROLOGISKE INSTITUTT
P.O.BOX 43, BLINDERN 0313 OSLO

TEL. : (02) 96 30 00

ISBN

REPORT NR.

16/94 KLIMA

DATE May 5

TITLE

HANØYTANGEN , JANUARY 1994

PREPARED BY

Knut A. Iden

ORDERED BY

KVÆRNER CONCRETE CONSTRUCTION
CONTRACT NO: KCC/PAC004/001

SUMMARY

Monthly summary based on the meteorological data measured at the building site of Kværner at Hanøytangen, Askøy near Bergen.

SIGNATURE

Knut A. Iden

Bjørn Aune

Knut A. Iden
PROJ. RESPONSIBLE

Bjørn Aune
HEAD OF DIVISION

MONTHLY REPORT JANUARY 1994

CLIENT : DNMI
CONTRACT NO. : KCC/PAC004/001
PROJECT NO. :
DOCUMENT NAME : RAPPJAN.94
PROJ. MANAGER : Knut A. Iden
EXECUTED BY : Bjørn. H. Halvorsen and Knut A. Iden
APPROVED BY : Bjørn Aune *Bjørn Aune 03.03.1994*
COMPLETION DATE : April 14 1994
REV 1. : April 27 1994

DSU : serial no. 6602 and no. 6601
Received : January 27 and March 14 1994

Comments regarding the data :

The DSU serial no. 6602 contains data the period 23/11/93 to 20/01/94 and serial no.6601 contains data for the period 26/1/94 to 1/3/94.

The DSU is read by the standard software (P3059) delivered from Aanderaa a/s. The calibration factors applied is provided by Aanderaa in a fax dated January 21 1994.

The data stored for the period 19/1/13^{10h} to 20/1/ is probably suffering from the power malfunctioning. They are of no use and is eliminated during the processing. Appendix 3 gives a listing of these data.

The processing is based on the accepted data and conducted after the following scheme :

- . generate a combined SAS data set of the data for January

In this step 10 min mean wind speed > 35 m/s and gust wind > 40 m/s are replaced with missing values. The wind speed in 30 m is also compared to the wind speed measured 18 m above the ground. If deviation is 10 m/s above or 5 m/s below the wind speed measured in 18 m, the wind speed in 30 m is replaced by missing value. This is because there seem to be some disturbances connected to the measurements in the top of the mast (30 m). The other meteorological parameters are tested to be inside reasonable intervals.

- . Plots of the time series are generated and examined.
- . Un physical values (spikes) are eliminated.
- . Final plots of the time series are generated.

For wind speed and wind direction 10 min values are plotted. For the parameters air temperature (T), humidity (UU) and air pressure reduced to mean sea level (QFF), hourly means are plotted. The hourly mean for 11.00^h is defined by the measurements for 10.30^h, 10.40^h, 10.50^h, 11.00^h, 11.10^h and 11.20^h.

- . Distribution tables wind speed /direction are generated. 22.5° intervals are applied for the direction. N='348.76° - 11.25', NNE = '11.26 - 33.75' ...
- . Wind roses are generated.
- . Coefficient transfert tables are generated.
- . Duration table are generated.

Logging each 10 minute

WIND

<u>Parameter</u>	<u>Height</u>	<u>Cover.</u>	<u>Unit</u>	<u>Mean</u>	<u>ST.D.</u>	<u>Max</u>	<u>Dir¹</u>	<u>D.:Hour</u>	<u>Min</u>	<u>Dir¹</u>	<u>D.:Hour</u>
Wind speed	30 m	76.7 %	m/s	6.1	4.0	20.7	151	29:2123	0.4	16	14:0750
Wind speed	18 m	77.4 %	m/s	5.8	3.9	20.5	N/A	29:2123	0.4	N/A	11:0830
Wind speed	10 m	77.4 %	m/s	5.6	3.9	20.5	163	29:2123	0.5	187	11:0120
Wind gust	30 m	76.0 %	m/s	8.1	5.2	27.9	230 ²	30:0903	1.0	119 ²	14:0800
Wind gust	18 m	77.4 %	m/s	7.9	5.1	27.0	N/A	29:2139	0.4	N/A	26:1337
Wind gust	10 m	77.4 %	m/s	7.7	5.1	27.6	163 ²	29:2139	0.4	351 ²	26:1337

OTHER METEOROLOGICAL DATA

<u>Parameter</u>	<u>Height</u>	<u>Cover.</u>	<u>Unit</u>	<u>Mean</u>	<u>ST.D.</u>	<u>Max</u>	<u>D.:hour</u>	<u>Min</u>	<u>D.:hour</u>
Air Temp.	2. m ³	77.4 %	C	2.1	2.2	6.7	11:2110	-4.0	16:2240
Rel. Hum.	2. m ³	77.4 %	%	70	12.0	89	17:2240	44	04:1320
Air pr.	0. m ³	77.4 %	hPa	998.0	11.3	1019.6	29:0933	966.2	27:2043

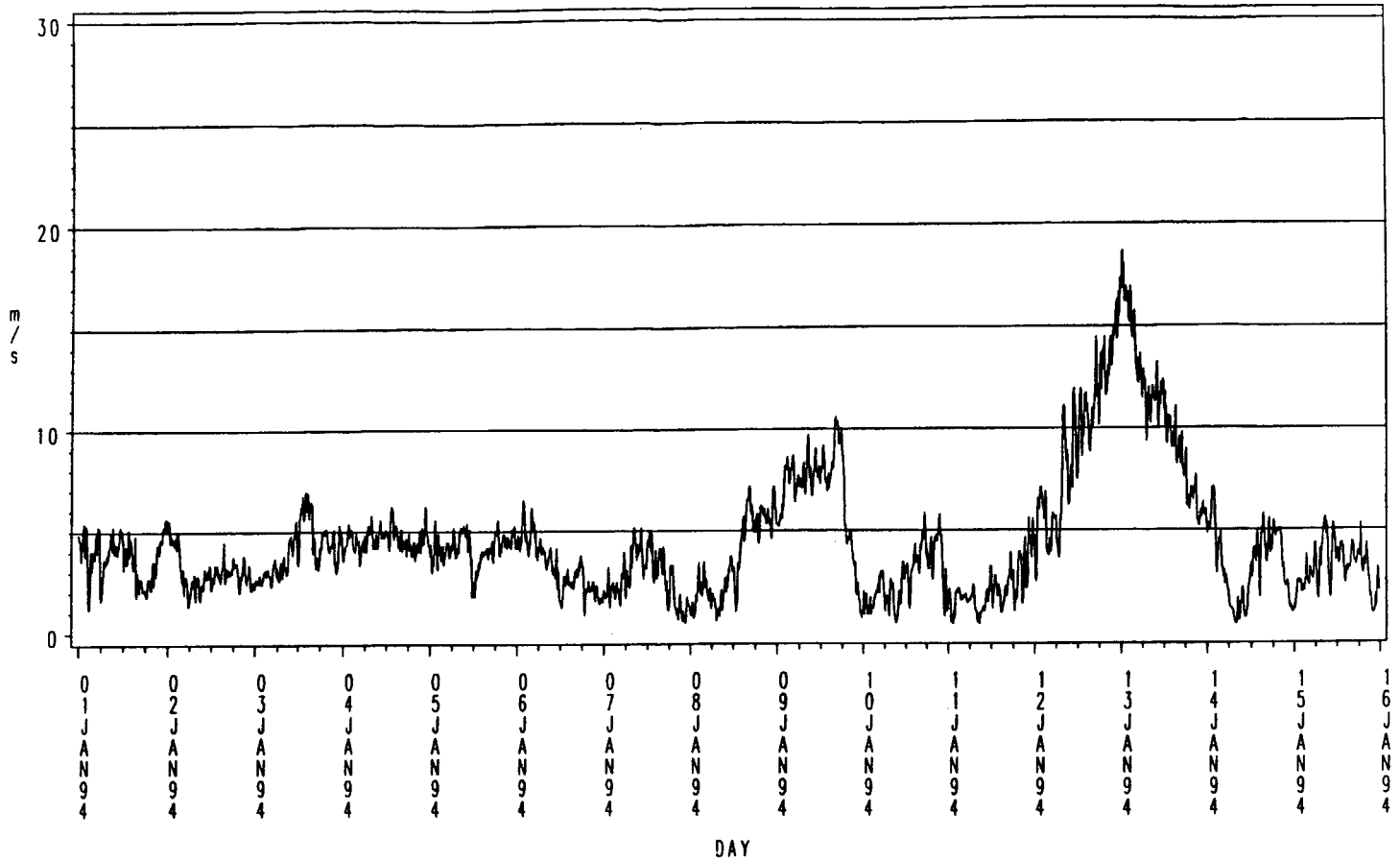
- 1 Direction is referenced to True North (accuracy +- 2°)
- 2 Direction of gust wind is not measured. The mean wind direction for the ten minute period when it has occurred is applied.
- 3 Air temperature sensor and humidity sensor are placed in the mast 2 m above the reference point on the ground while the pressure sensor have the same height as the reference.

The reference point on the ground is located 15.64 m above the mean sea level (NGO).

PLOT OF TIME SERIES

HANØYTANGEN 1994

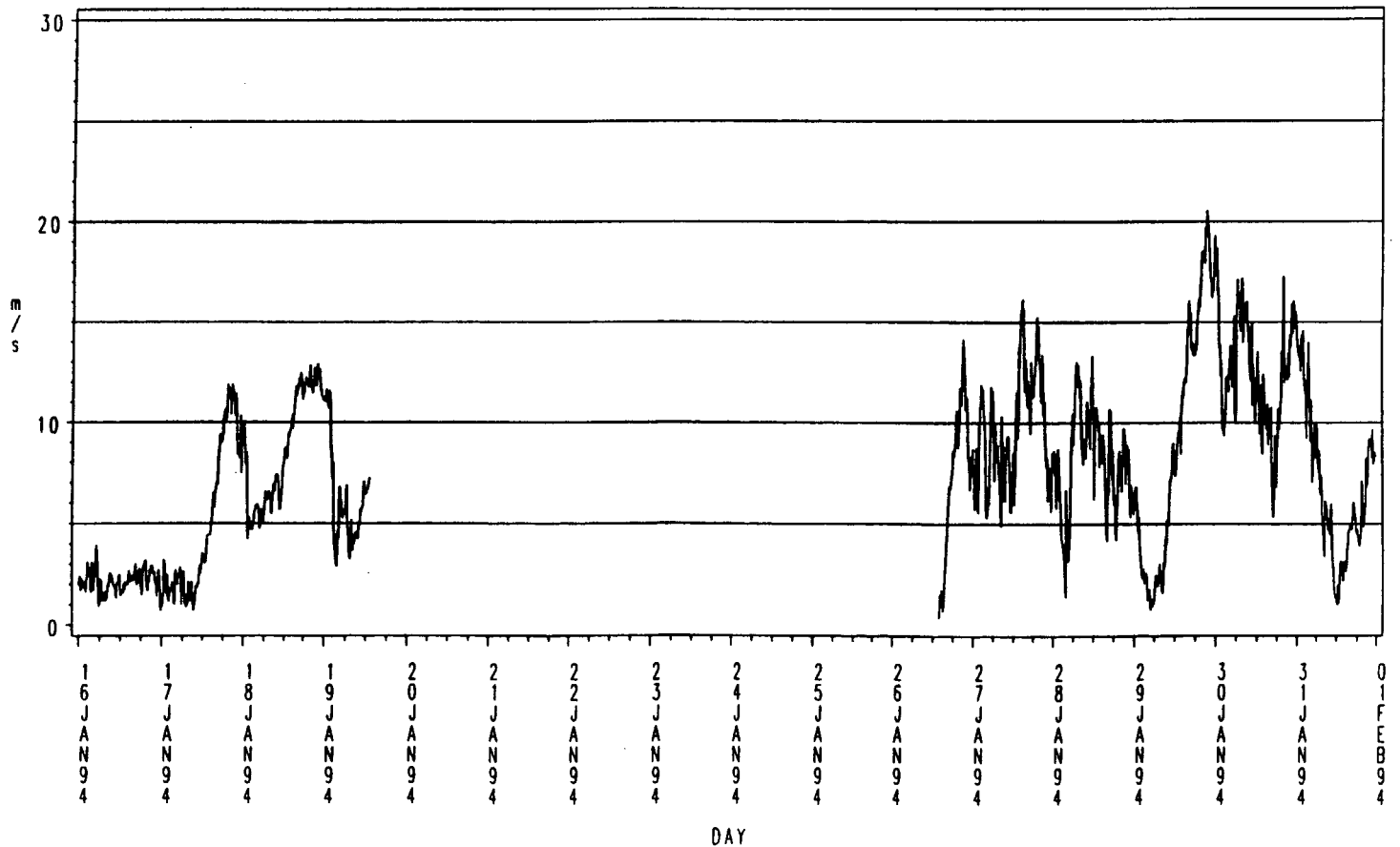
Wind speed 10 m above the ground (m/s)



DNMI - KLIMAAVDELINGEN

HANØYTANGEN 1994

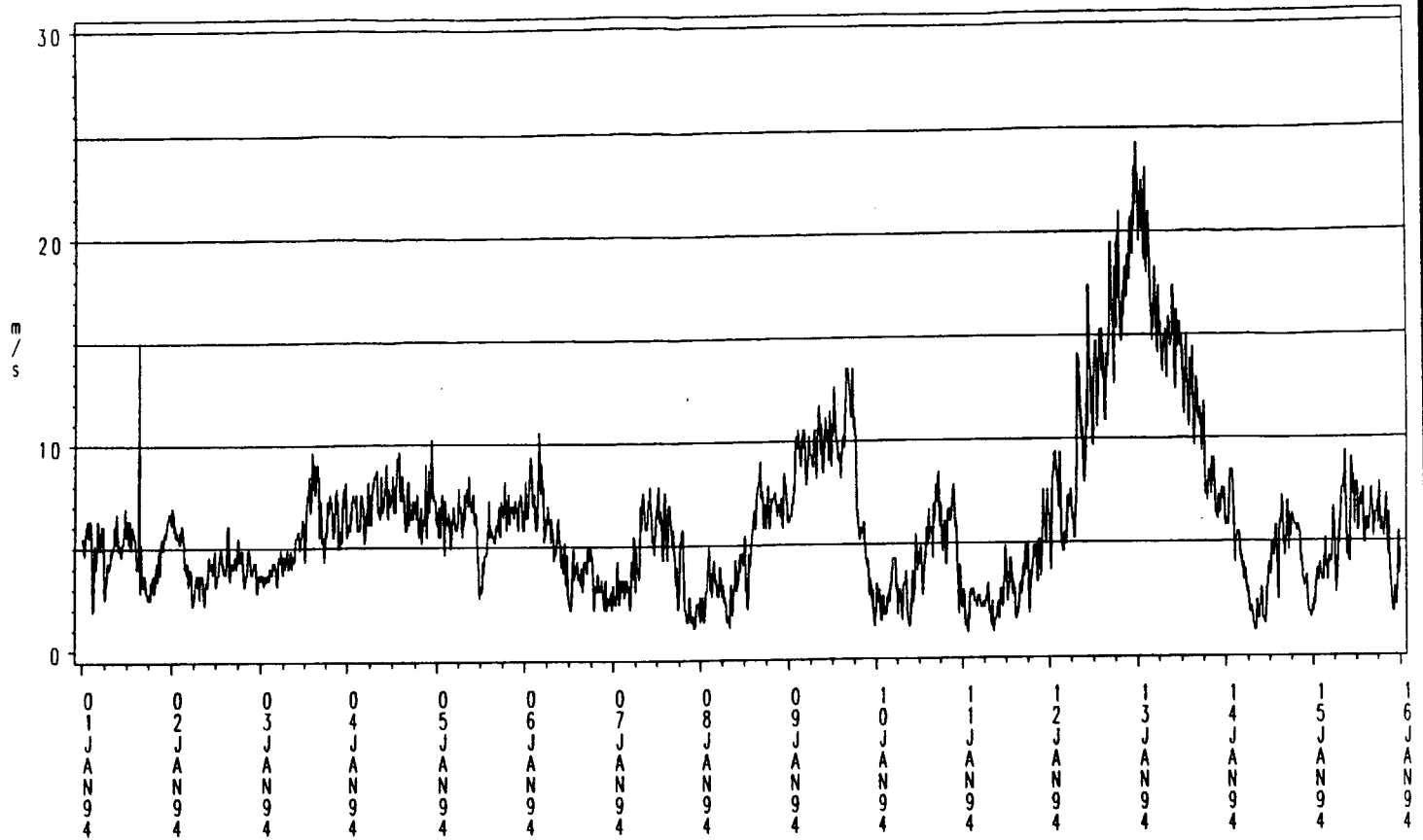
Wind speed 10 m above the ground (m/s)



DNMI - KLIMAAVDELINGEN

HANØYTANGEN 1994

Gust Wind speed 10 m above the ground (m/s)

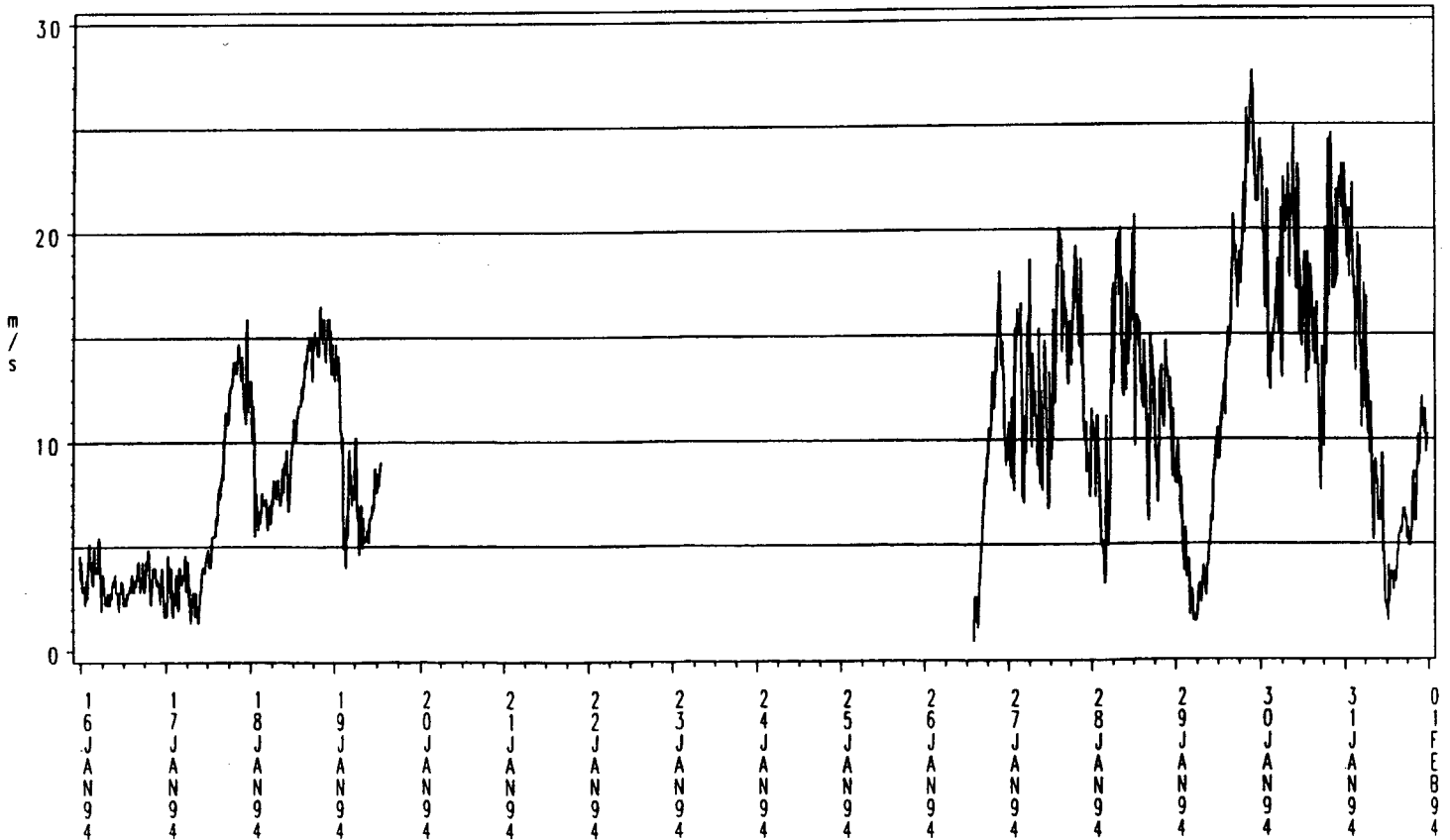


DAY

DNMI - KLIMAABDELINGEN

HANØYTANGEN 1994

Gust Wind speed 10 m above the ground (m/s)

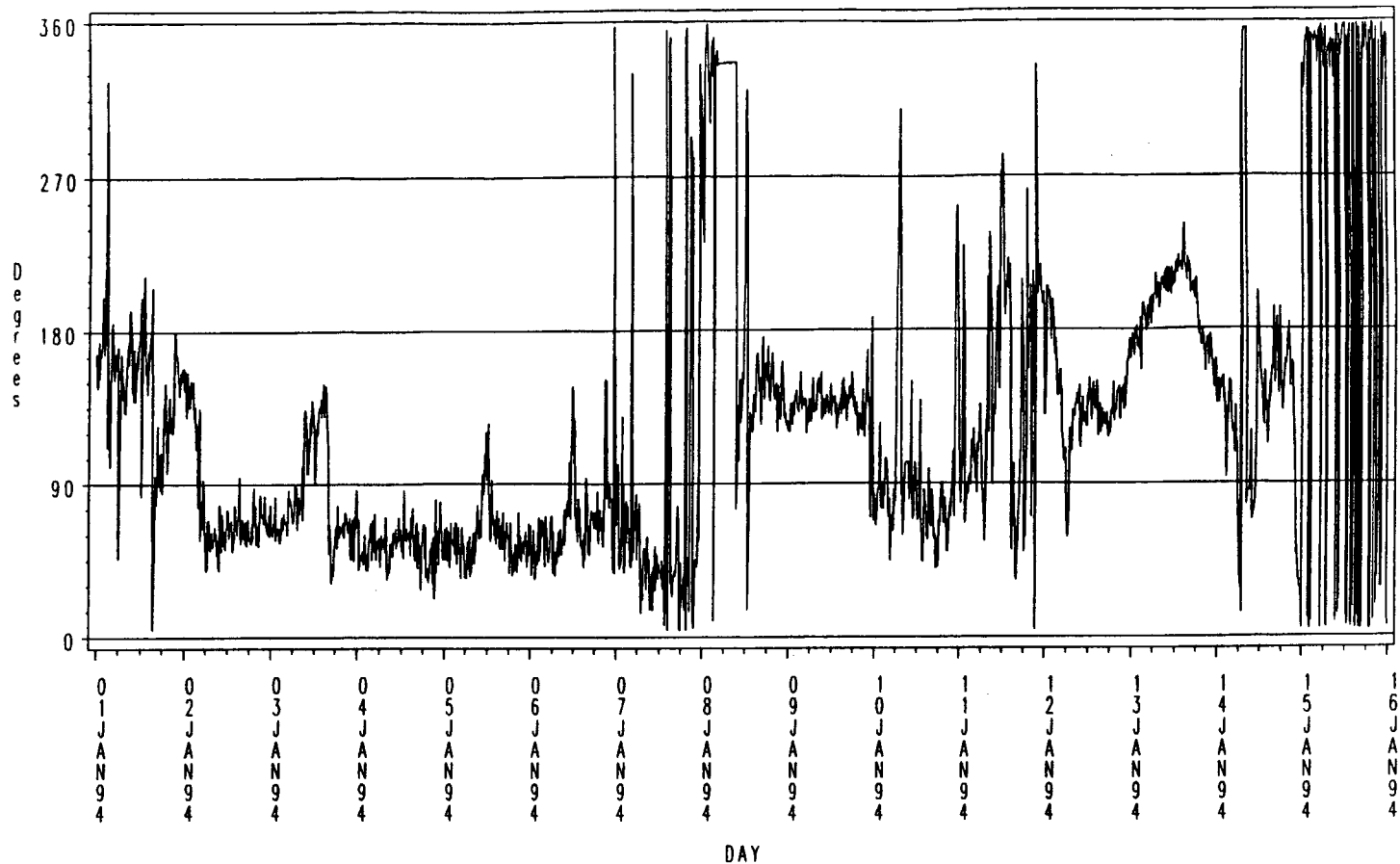


DAY

DNMI - KLIMAABDELINGEN

HANØYTANGEN 1994

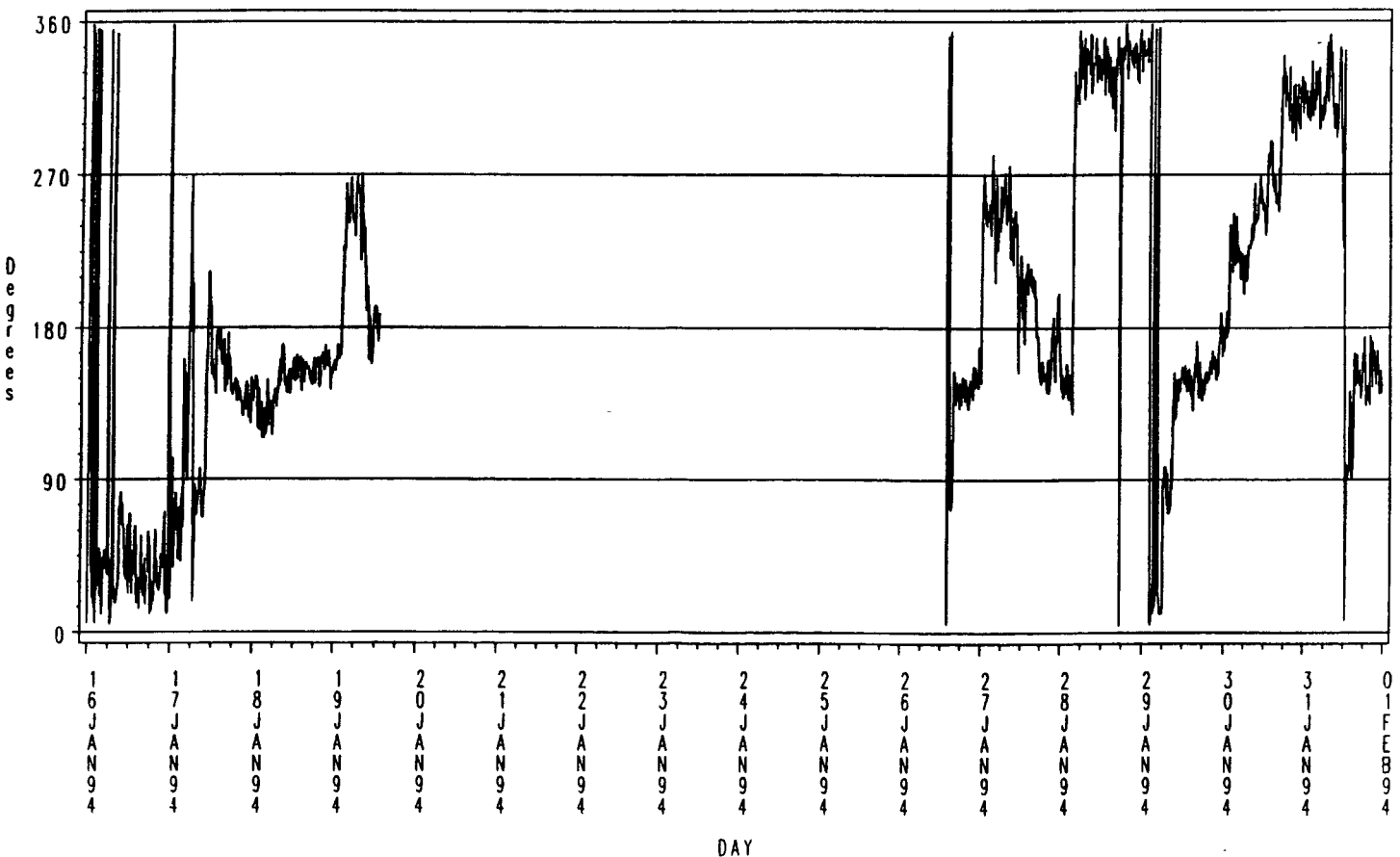
Wind direction 10 m above the ground



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

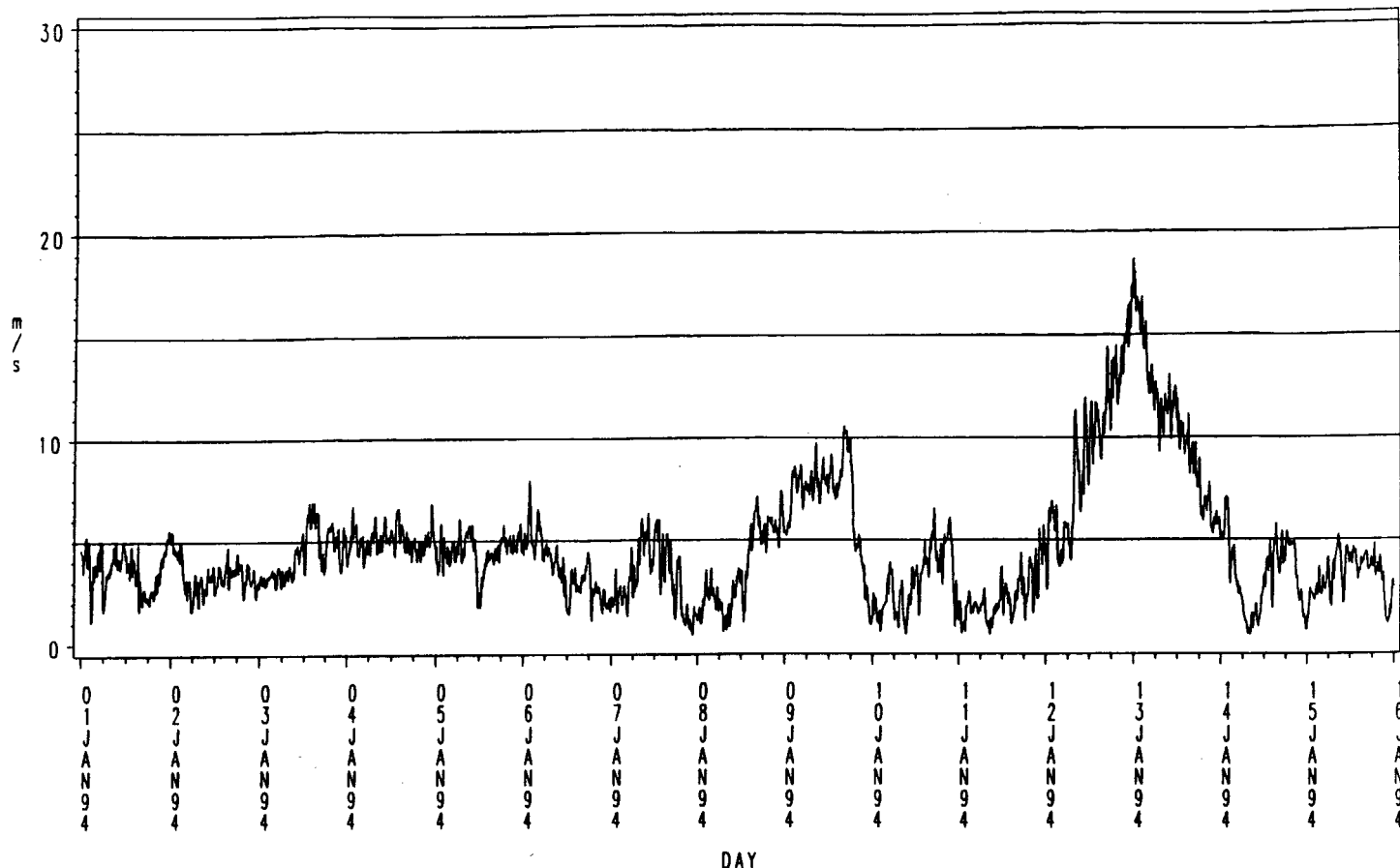
Wind direction 10 m above the ground



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

Wind speed 18 m above the ground (m/s)

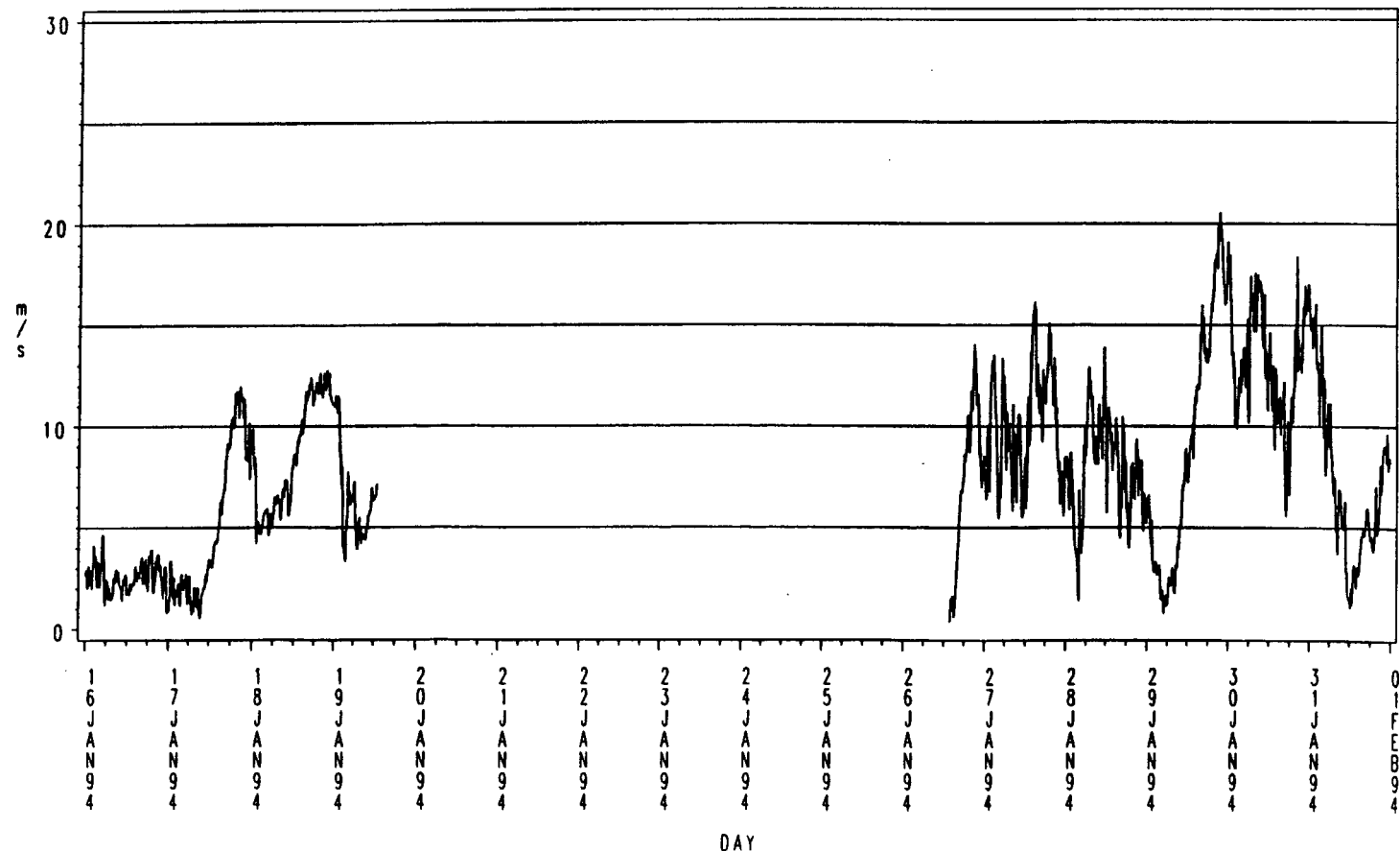


DAY

DNMI - KLIMAARDELINGEN

HANØYTANGEN 1994

Wind speed 18 m above the ground (m/s)

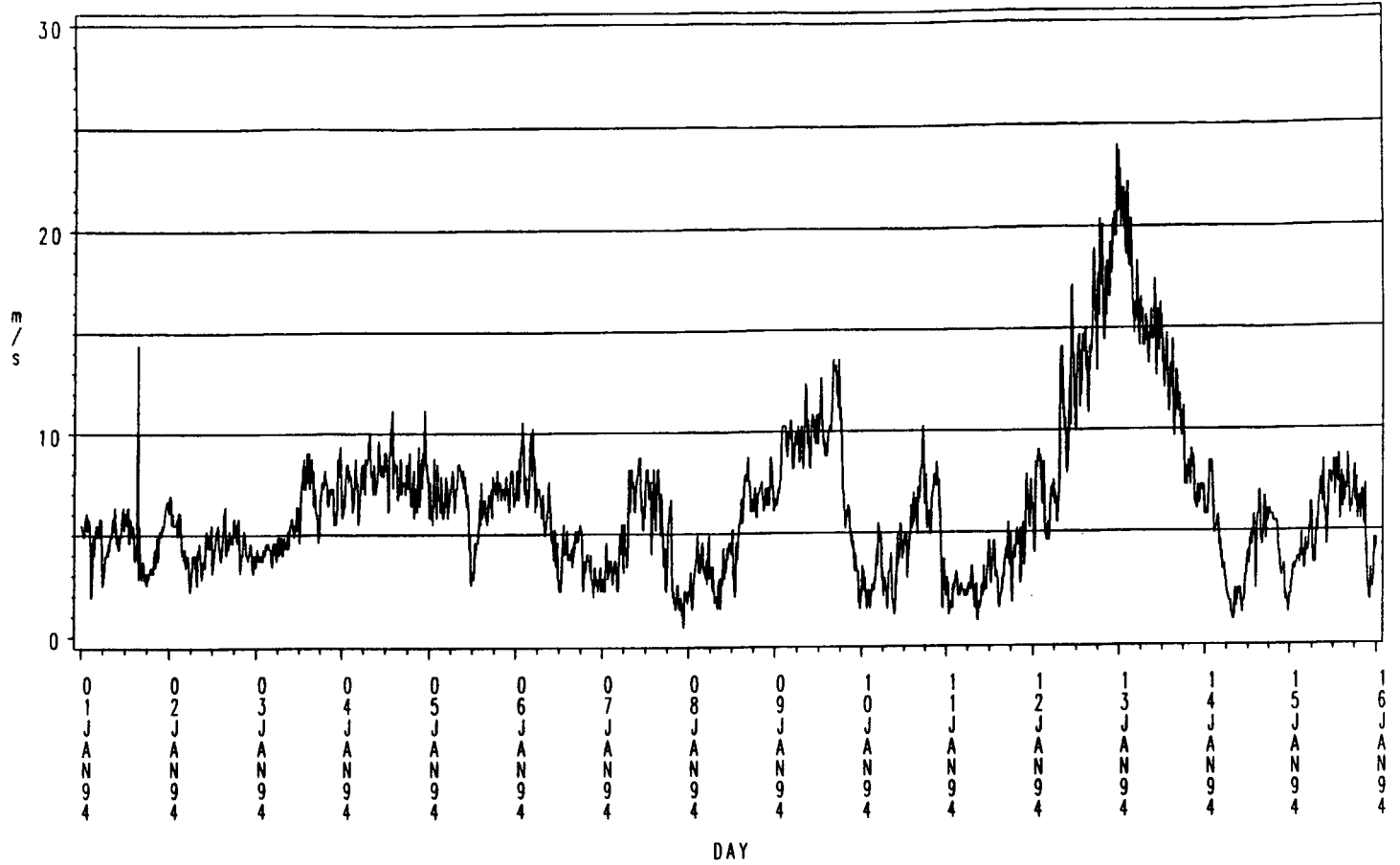


DAY

DNMI - KLIMAARDELINGEN

HANØYTANGEN 1994

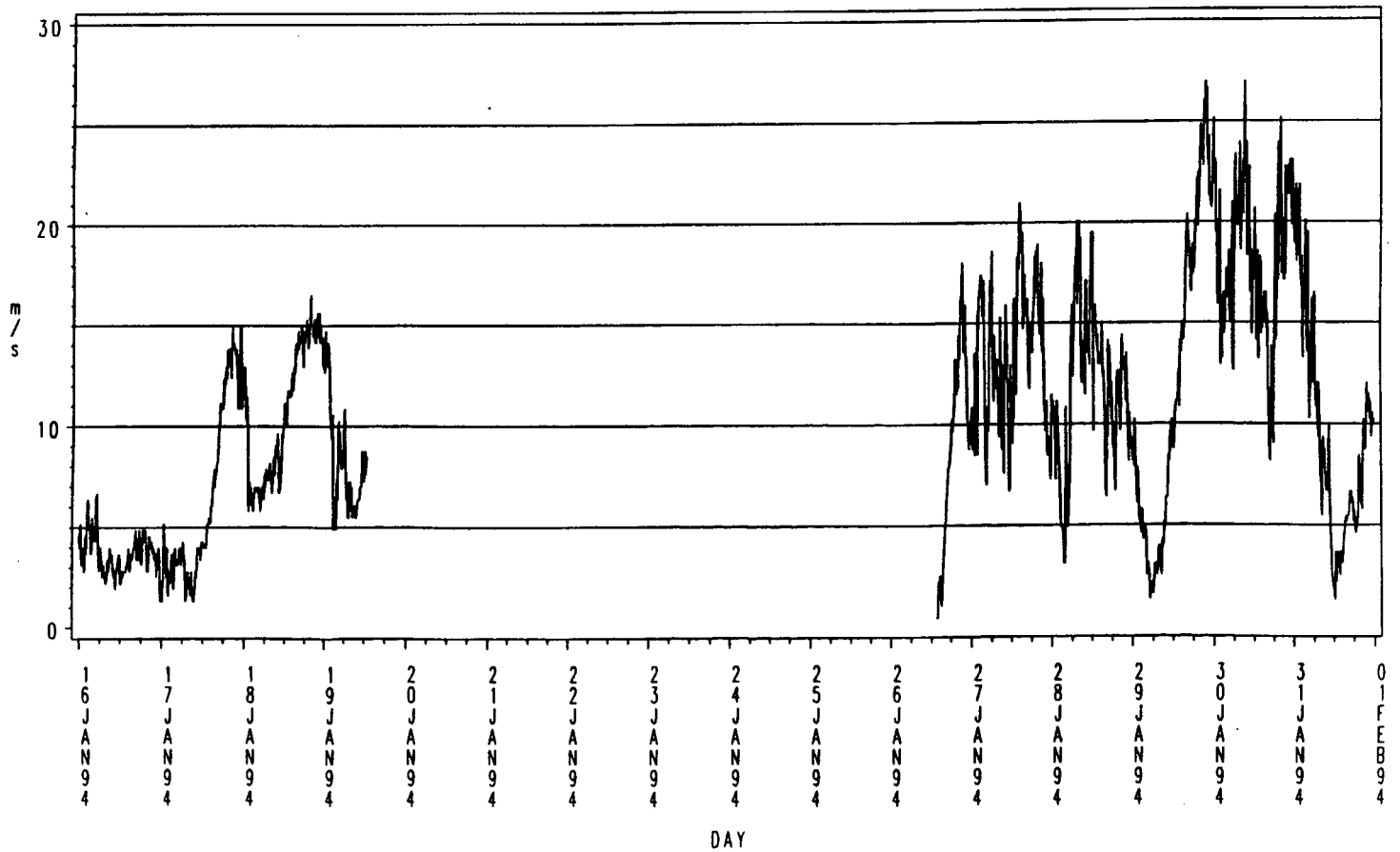
Gust Wind speed 18 m above the ground (m/s)



DNMI - KLIMAÅVDELINGEN

HANØYTANGEN 1994

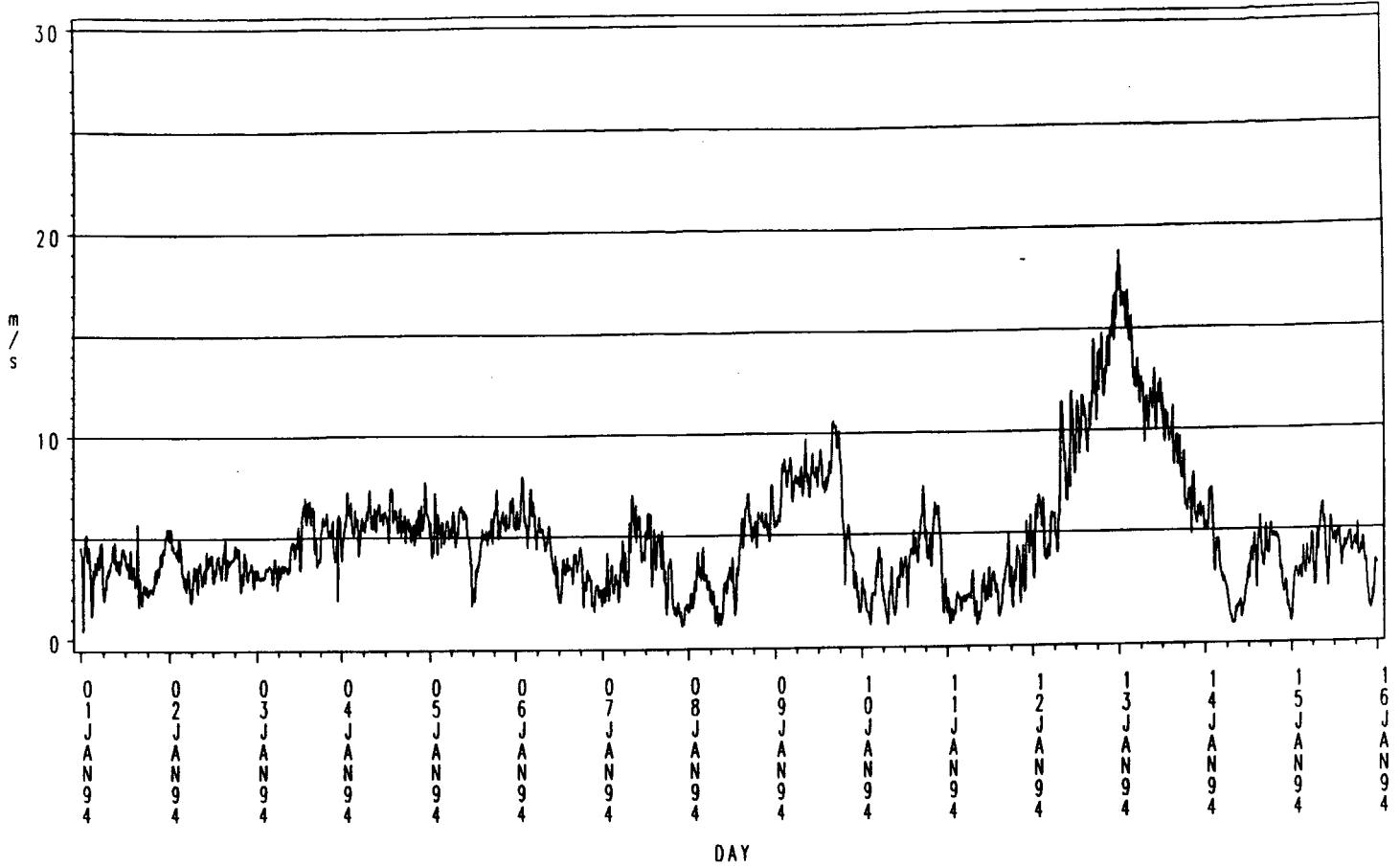
Gust Wind speed 18 m above the ground (m/s)



DNMI - KLIMAÅVDELINGEN

HANØYTANGEN 1994

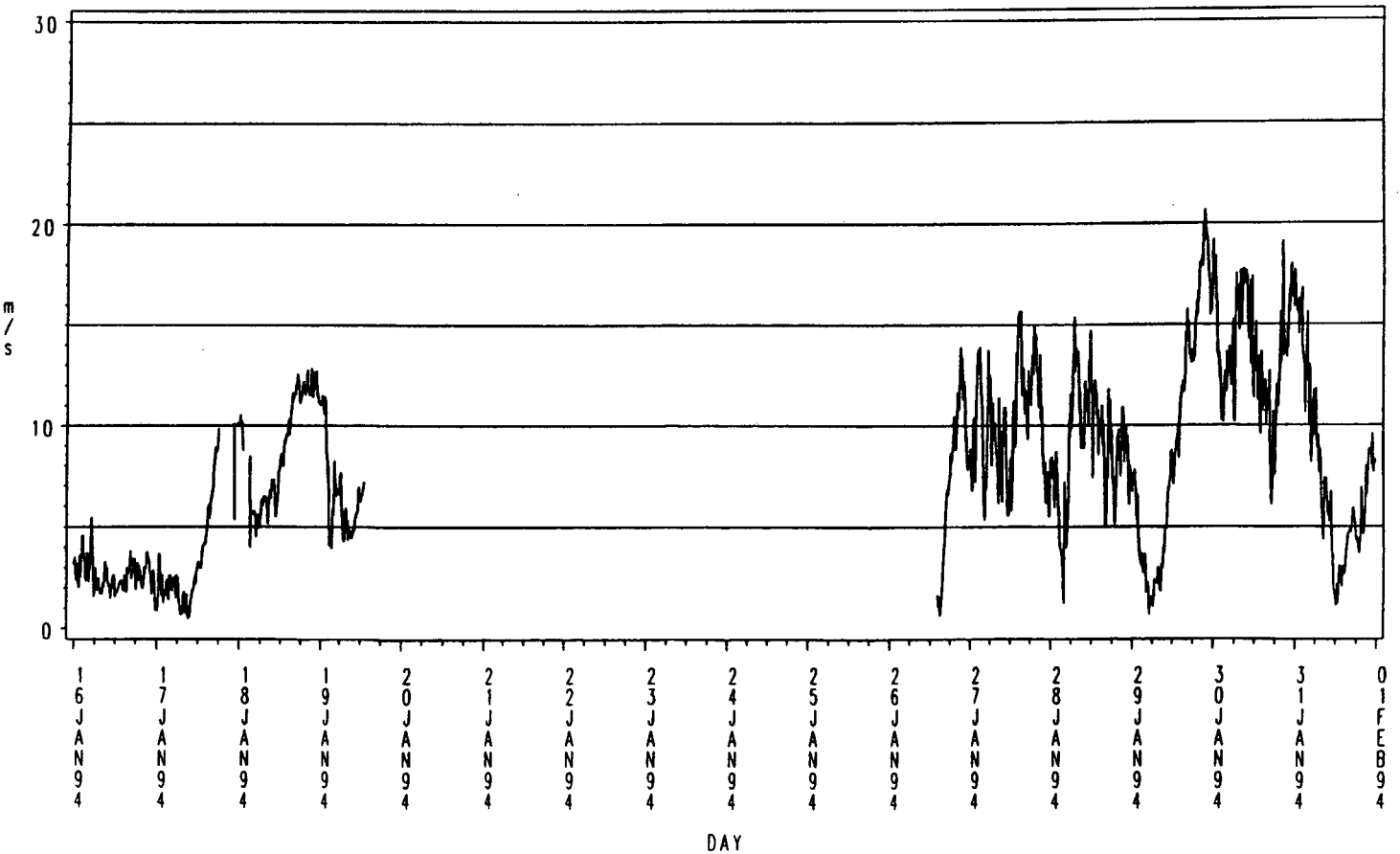
Wind speed 30 m above the ground (m/s)



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

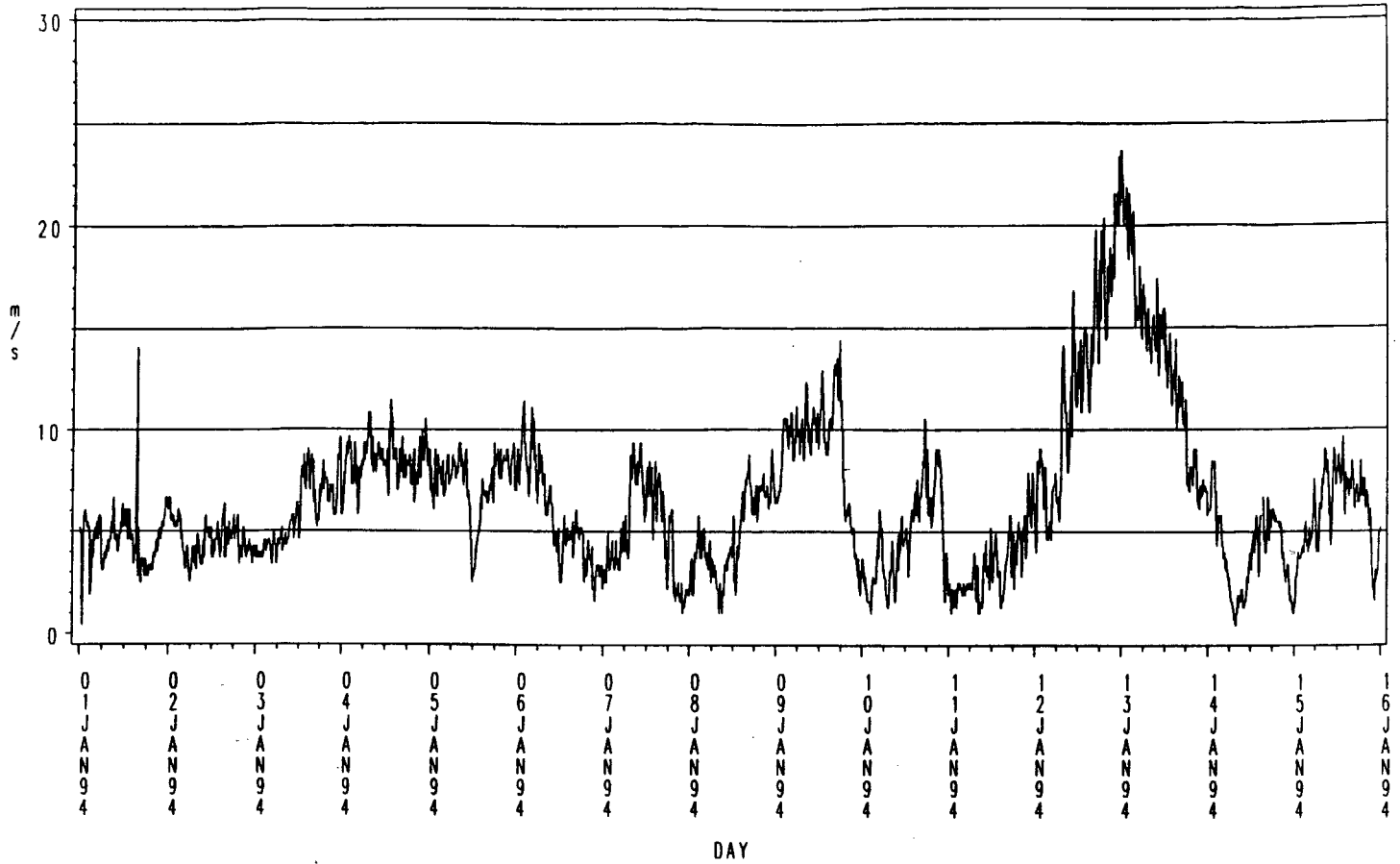
Wind speed 30 m above the ground (m/s)



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

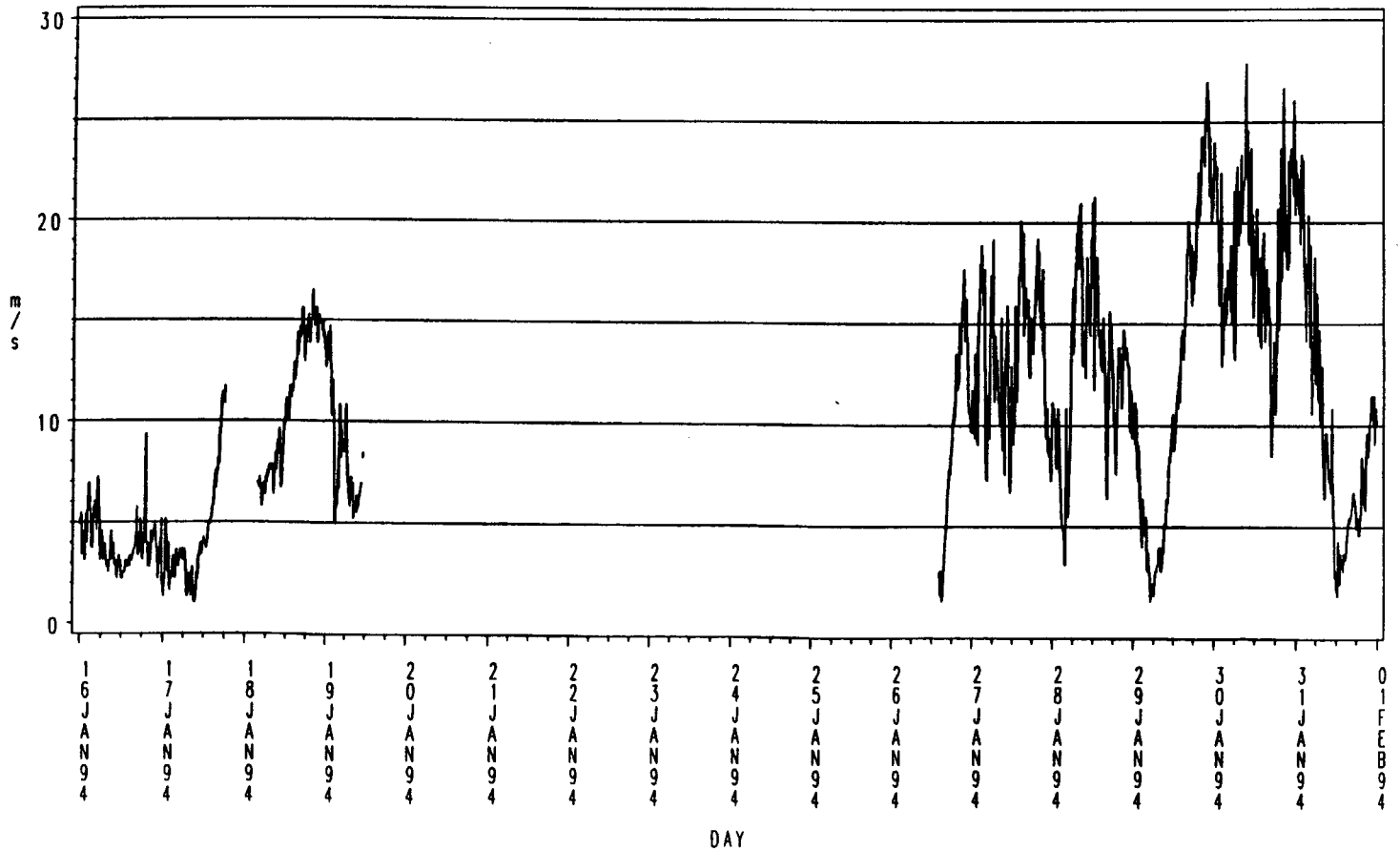
Gust Wind speed 30 m above the ground (m/s)



DNMI - KLIMA-AVDELINGEN

HANØYTANGEN 1994

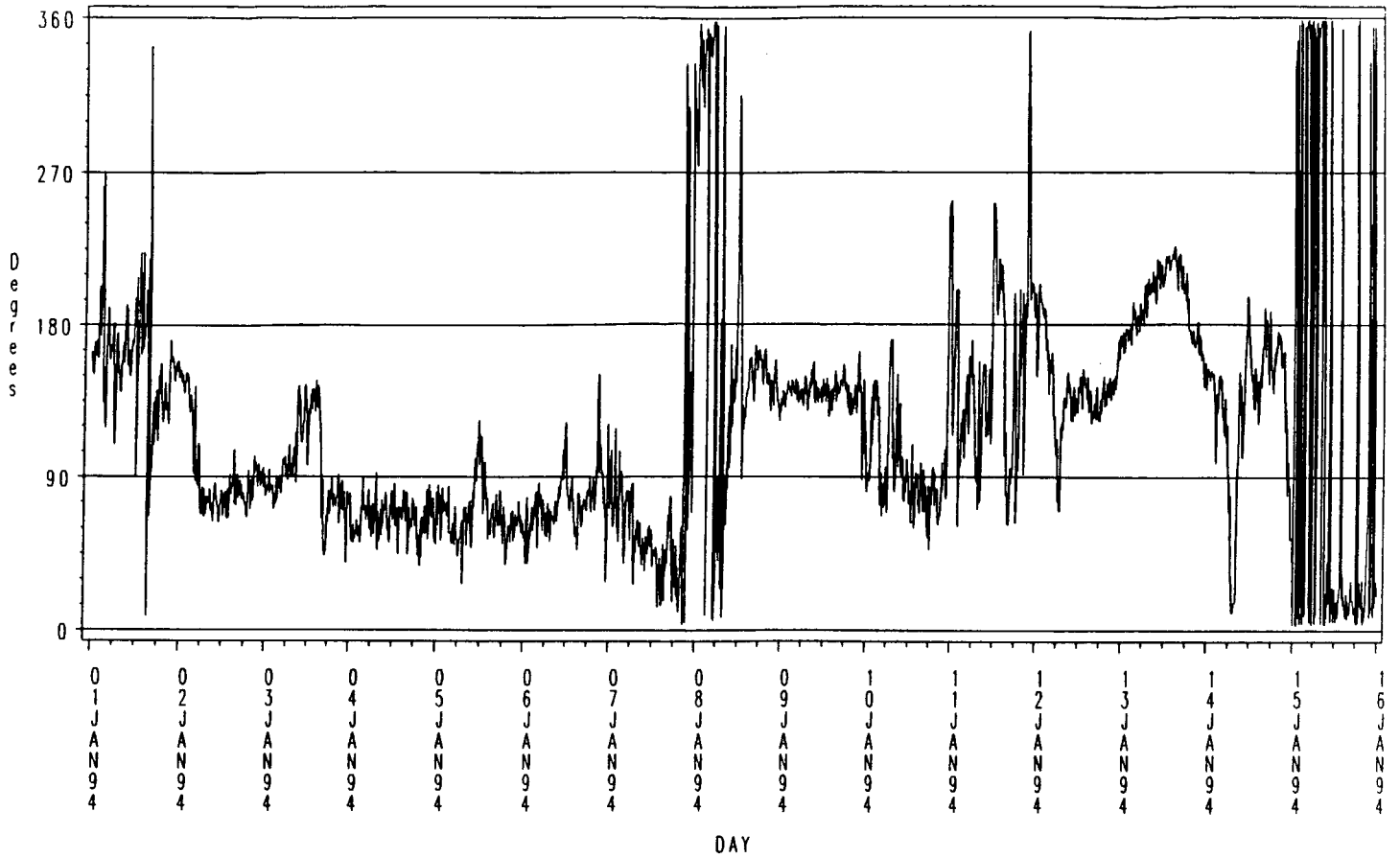
Gust Wind speed 30 m above the ground (m/s)



DNMI - KLIMA-AVDELINGEN

HANØYTANGEN 1994

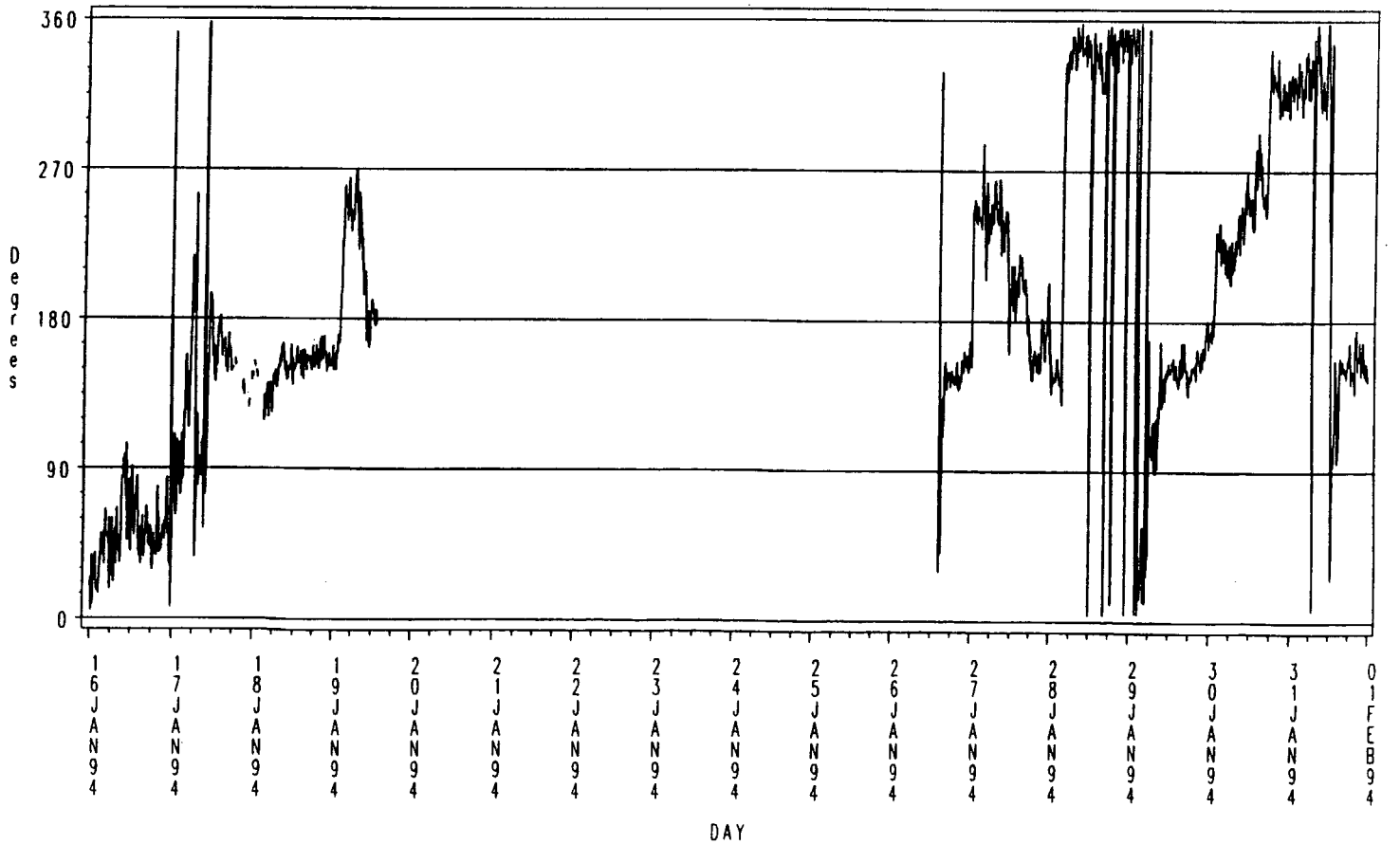
Wind direction 30 m above the ground



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

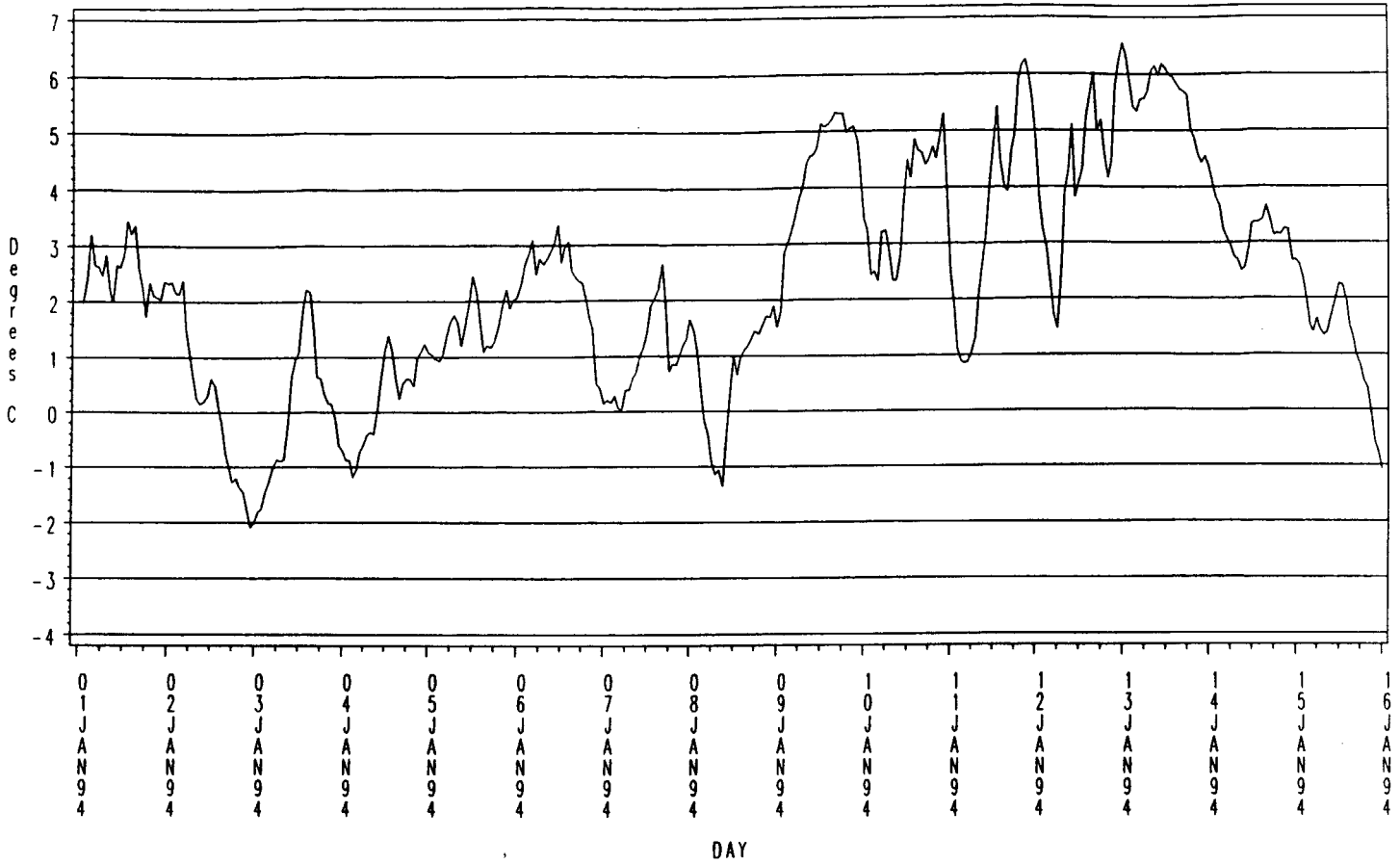
Wind direction 30 m above the ground



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

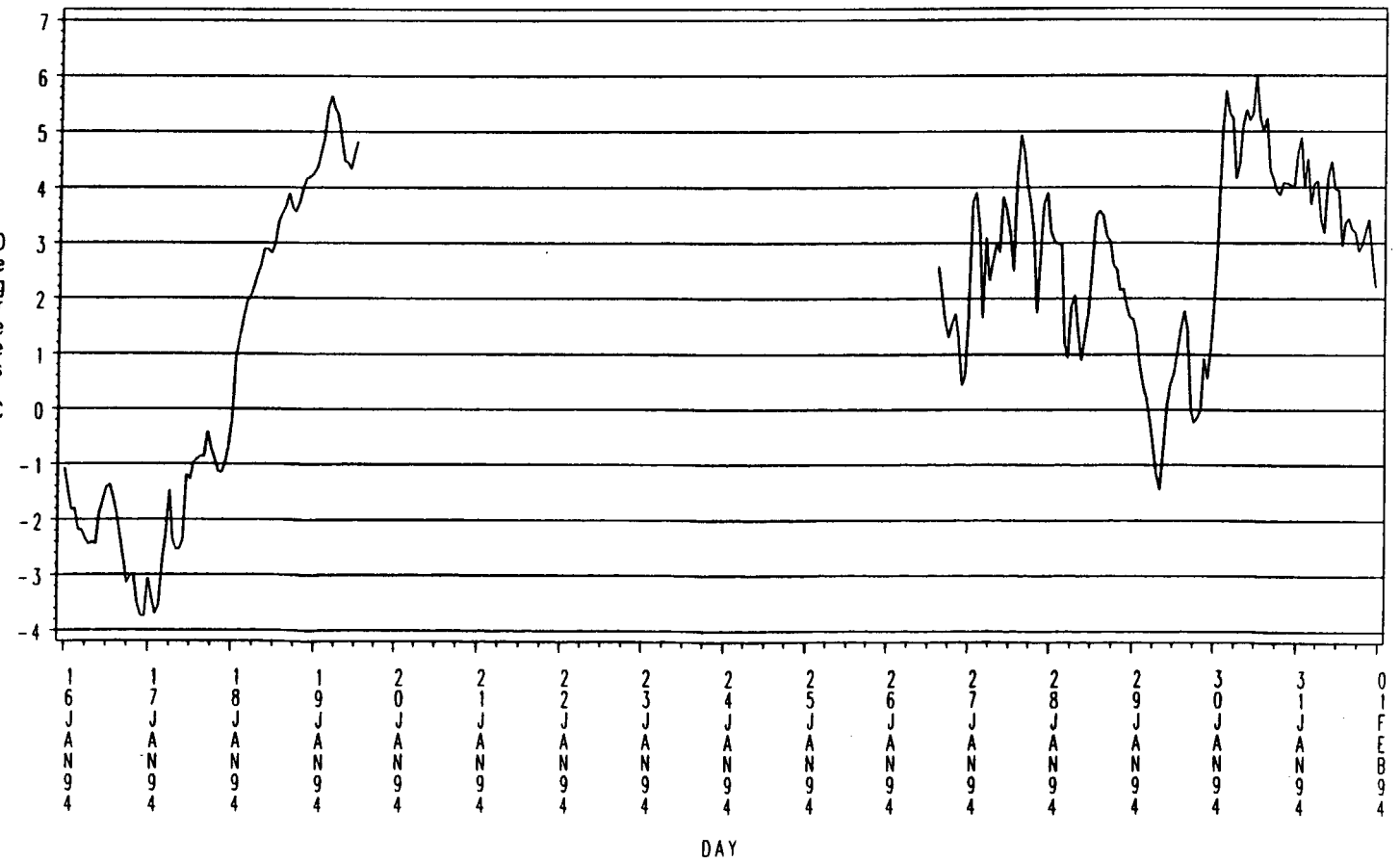
Air Temperature in degrees C (Hourly Means)



DNMI - KLIMAÅVDELINGEN

HANØYTANGEN 1994

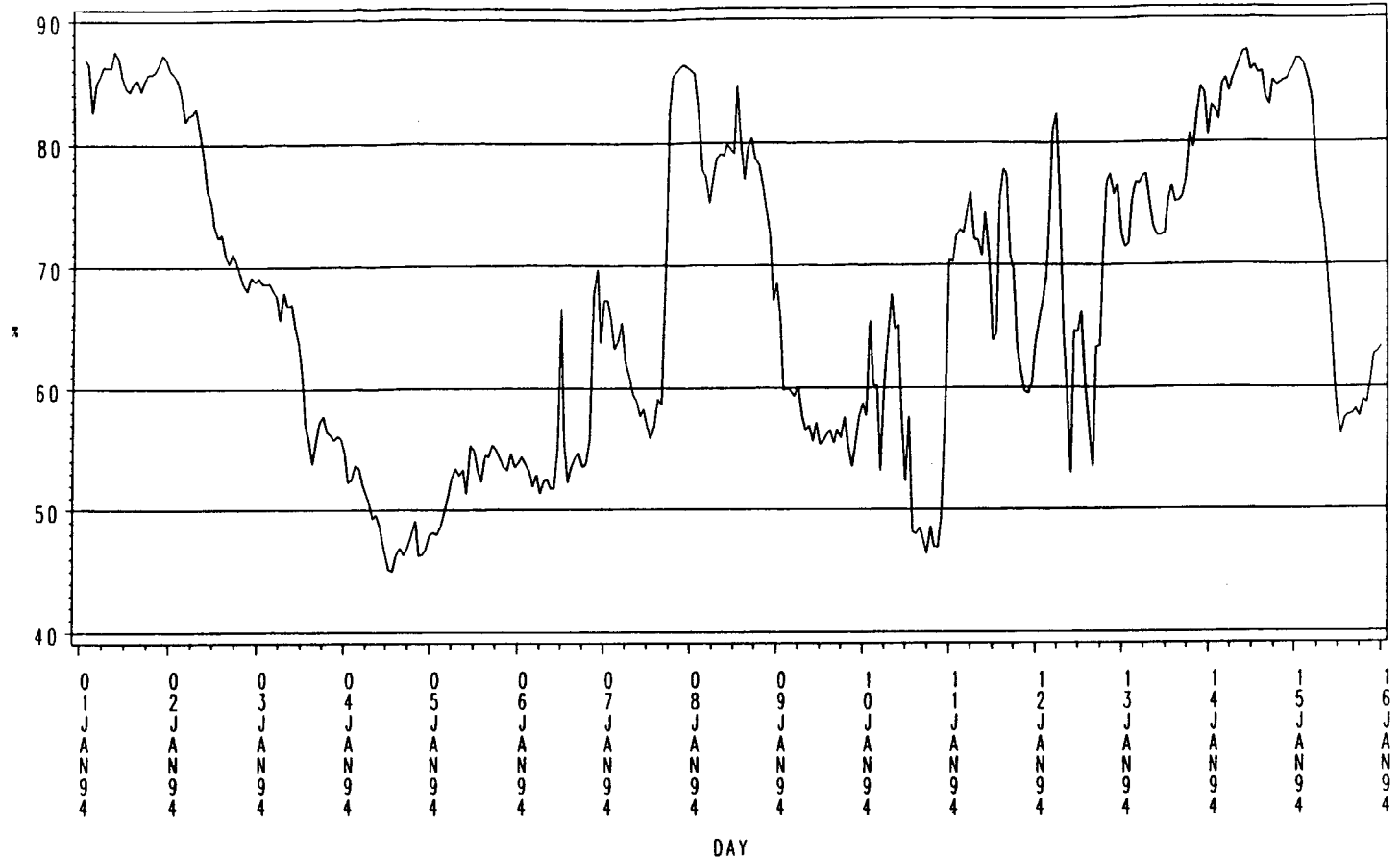
Air Temperature in degrees C (Hourly Means)



DNMI - KLIMAÅVDELINGEN

HANØYTANGEN 1994

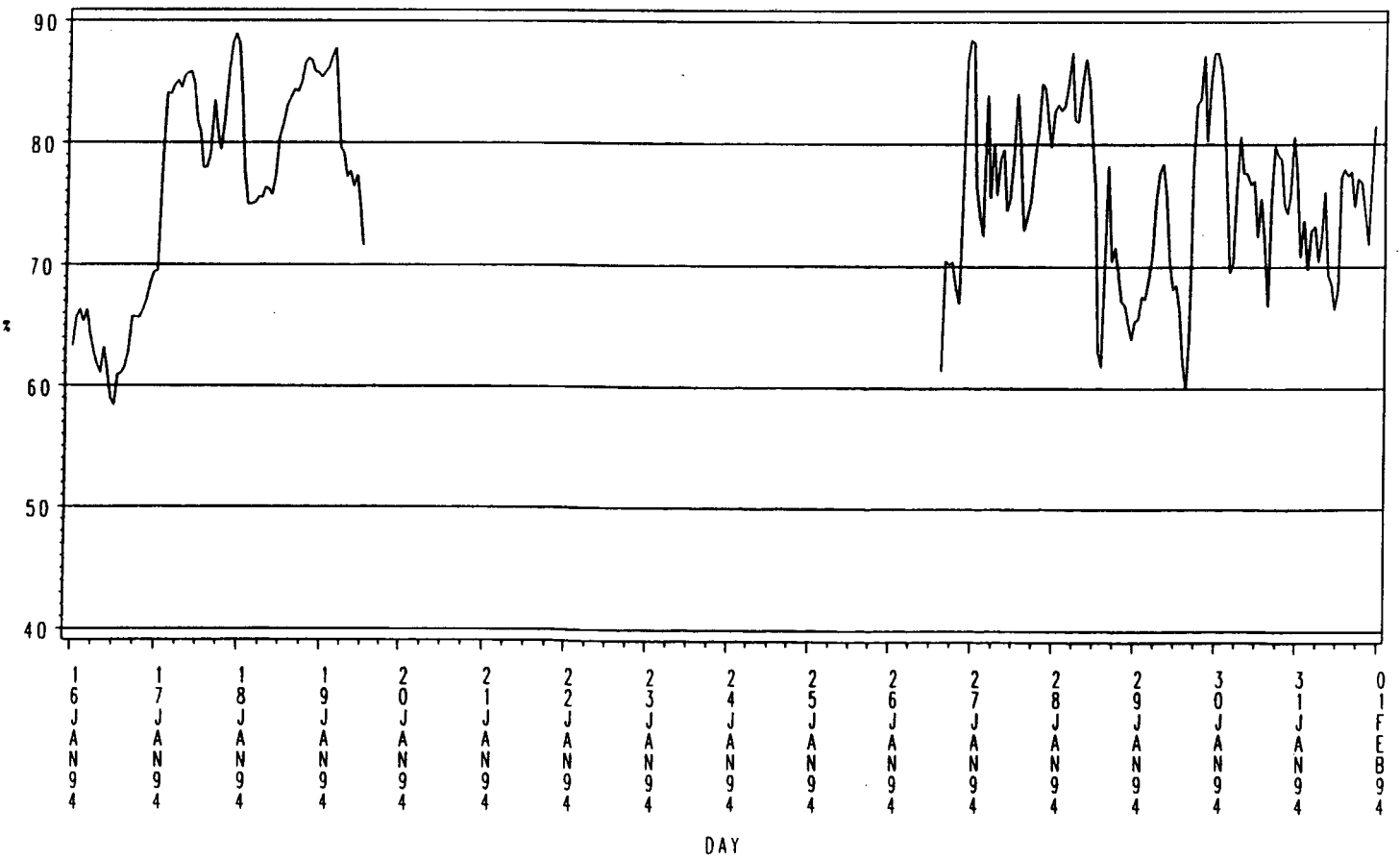
Air Humidity in % (Hourly Means)



DNMI - KLIMA-AVDELINGEN

HANØYTANGEN 1994

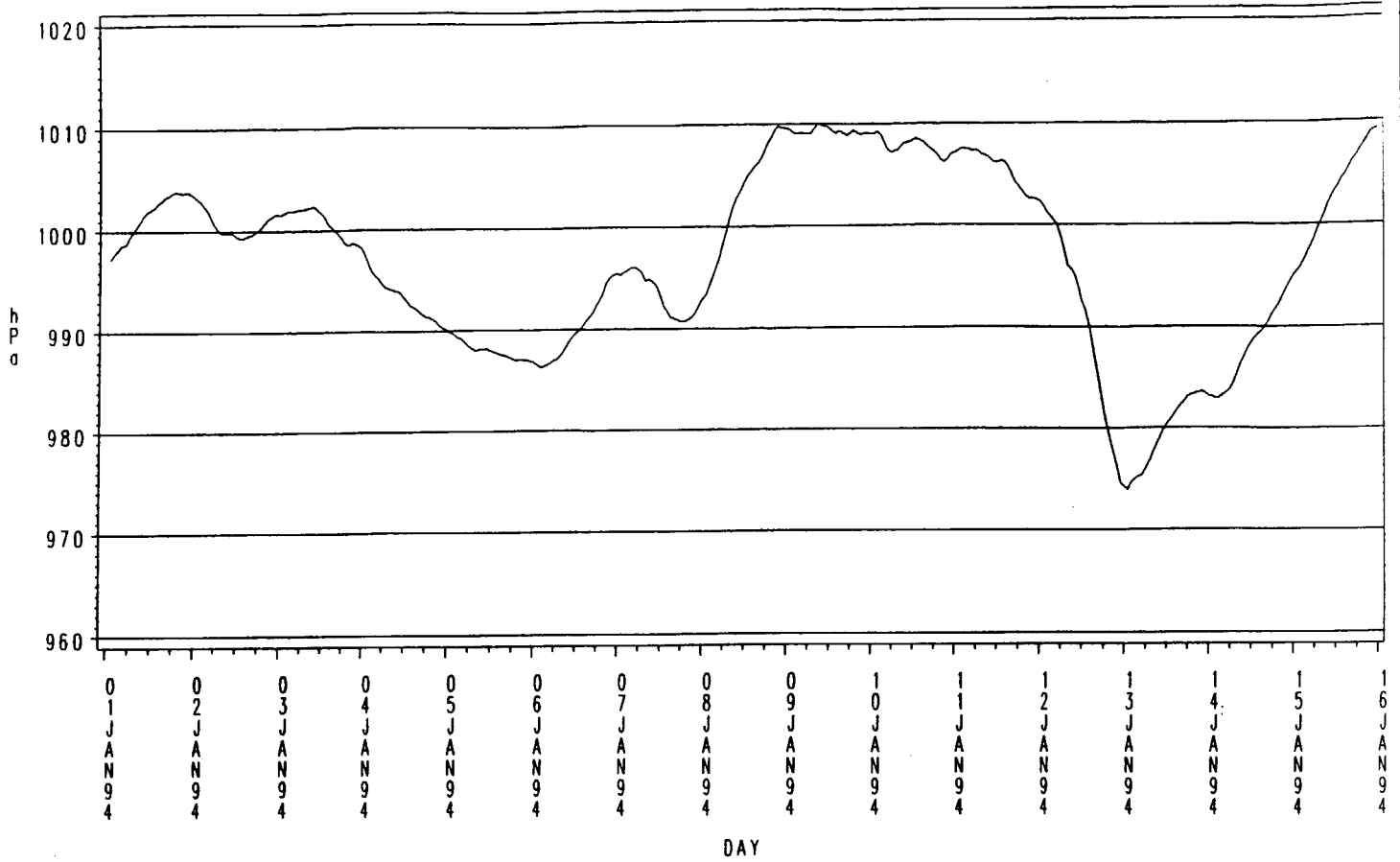
Air Humidity in % (Hourly Means)



DNMI - KLIMA-AVDELINGEN

HANØYTANGEN 1994

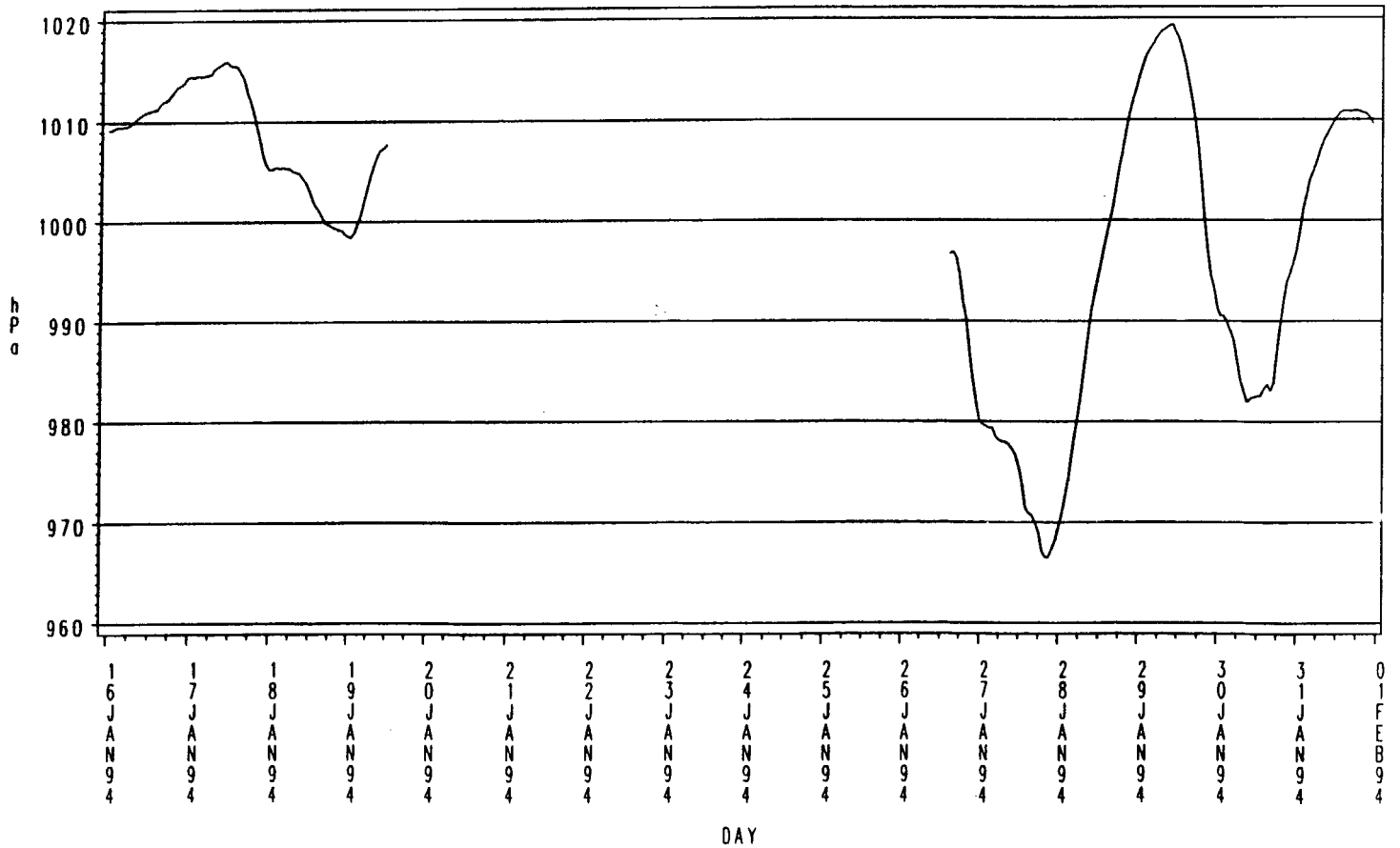
Air Pressure (QFF) in hPa (Hourly Means)



DNMI - KLIMADELINGEN

HANØYTANGEN 1994

Air Pressure (QFF) in hPa (Hourly Means)



DNMI - KLIMADELINGEN

DISTRIBUTION TABLES / WIND ROSES

The distribution table gives details about the distribution of the wind speed for a certain wind direction or the distribution of the wind directions for a certain wind speed.

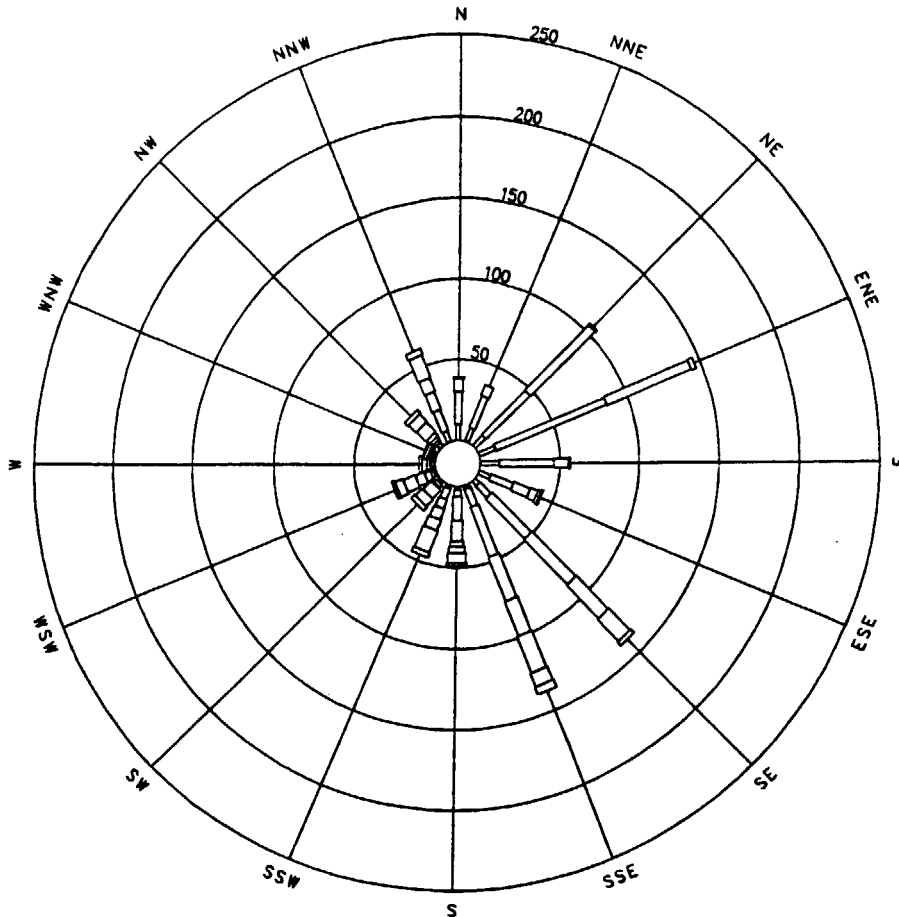
If for example, it is of interest to know the directions for which wind force 5 Beaufort have occurred this month, one has to look at the line for 5 Beaufort in the table.

If the information of the wind forces that have occurred this month for a certain direction is of interest, one has to look at the column for that specific direction.

The frequencies in the table are given per thousand (Prm) of the data available this month.

The wind rose is a graphic representation of the information given in the distribution table. The same number of classes is applied. No Beaufort value is given to the centre of the wind rose. Thus, the first class outside the centre is 0 Beaufort (0-0.2 m/s). Due to the calibration of the wind sensors, this class will always be empty at Hanøytangen.

HANOYTANGEN JAN 1994 WIND DISTRIBUTION 10 m

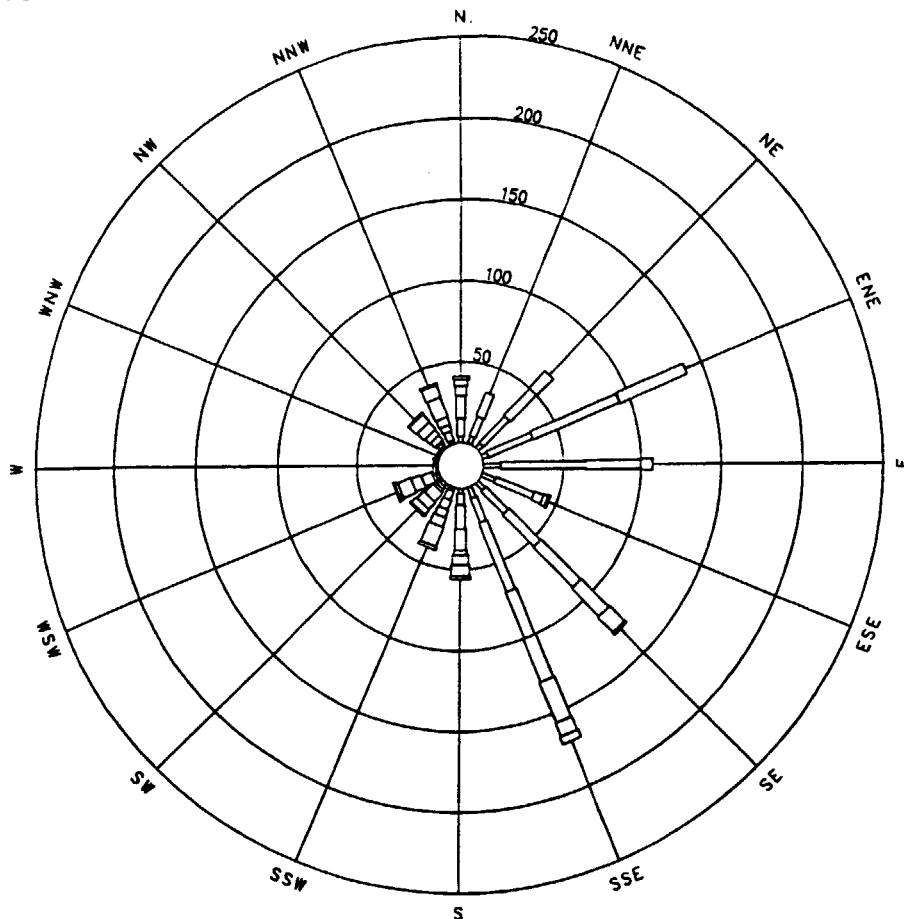


LENGTH : (NUMBER OF OBS/NUMBER OF DATA) * 1000
 WIDTH = SPEED (M/S / BEAUFORT SCALE)

Wind direction (DD) / Wind speed (Beaufort and m/s) 10 m above the ground

m / s	Beaufort	DD																ALL
		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
		Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm	Prm
0		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.2	1	10	9	9	11	12	8	4	2	2	2	2	1	0	2	3	7	91
1.5	2	20	21	38	75	34	15	10	12	4	7	0	2	2	0	2	14	263
3.3	3	8	7	57	57	9	11	35	33	15	6	2	4	1	1	2	12	268
5.4	4	1	.	1	3	1	5	39	29	13	7	1	6	2	1	3	9	128
7.9	5	0	.	.	.	.	2	29	23	3	7	7	8	3	1	8	15	111
10.7	6	0	.	.	.	.	1	19	24	4	14	6	5	2	2	7	4	93
13.8	7	.	.	.	.	.	.	3	9	6	3	3	2	0	1	3	0	33
17.1	8	.	.	.	.	.	.	.	5	2	.	.	.	.	.	0	.	8
20.7	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
24.4	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
28.4	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
32.6	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	ALL	43	38	107	147	57	44	142	140	53	49	24	30	13	11	30	63	1000

HANOYTANGEN JAN 1994 WIND DISTRIBUTION 30 m

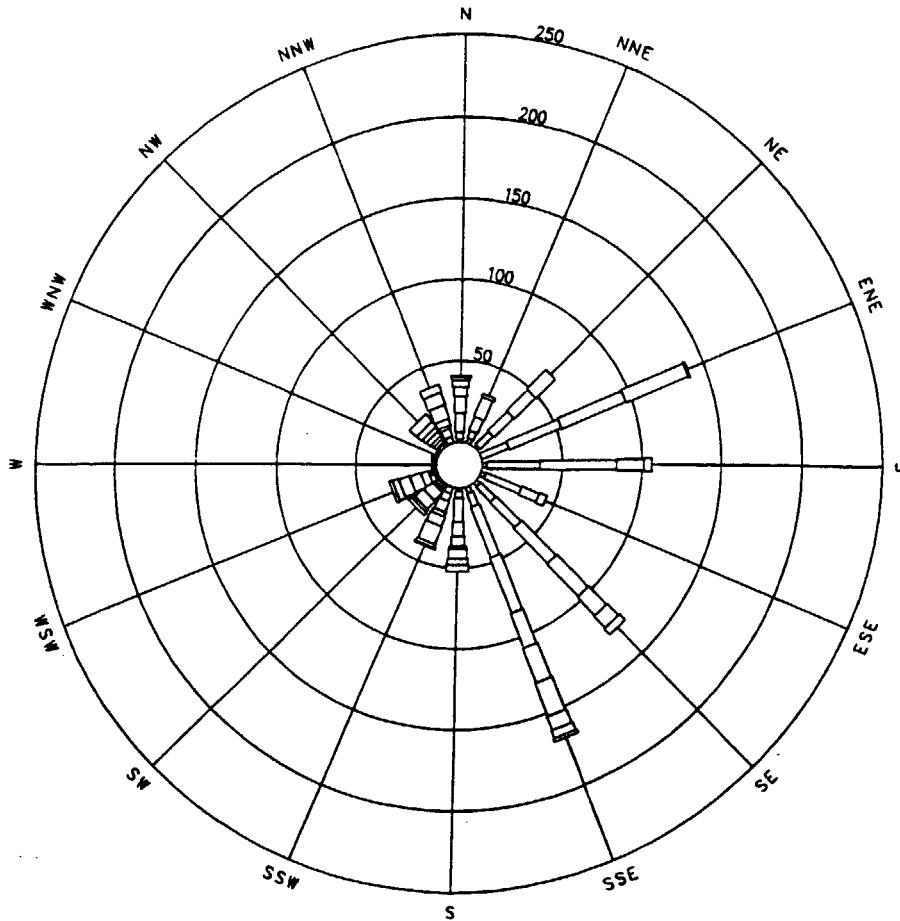


LENGTH : (NUMBER OF OBS/NUMBER OF DATA) * 1000
 WIDTH = SPEED (M/S / BEAUFORT SCALE)

Wind direction (DD) / Wind speed (Beaufort and m/s) 30 m above the ground

m	Beaufort	DD																ALL
		N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
		Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	
0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
.2	1	4	5	4	4	11	9	6	7	3	2	0	0	0	1	2	2	68
1.5	2	11	13	23	30	53	26	20	16	7	6	2	2	0	0	2	6	223
3.3	3	14	16	23	59	36	6	28	46	15	6	2	2	0	0	1	4	264
5.4	4	6	.	14	46	7	3	35	31	13	5	2	7	1	0	4	5	185
7.9	5	4	.	0	.	.	1	25	29	3	6	7	6	0	.	4	13	104
10.7	6	2	.	.	.	.	0	13	27	6	13	6	9	2	1	6	8	100
13.8	7	.	.	.	.	.	.	2	9	7	2	4	2	0	0	6	1	37
17.1	8	.	.	.	.	.	.	0	5	2	.	1	1	.	0	1	0	12
20.7	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
24.4	10	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
28.4	11	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
32.6	12	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ALL		45	34	66	141	108	48	133	174	59	44	27	33	7	4	28	42	1000

HANOYTANGEN JAN 1994 GUST WIND DISTR. 30 M



LENGTH : (NUMBER OF OBS/NUMBER OF DATA) * 1000
 WIDTH = SPEED (M/S / BEAUFORT SCALE)



Wind direction (DD)/ Gust wind speed (m/s) 30 m above the ground.

m/s	DD																ALL
	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	
	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	Pcm	
0-.2	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
0.3-1.5	2	3	2	0	3	3	3	4	2	0	0	.	.	.	.	0	29
1.6-3.3	4	5	11	18	33	24	13	9	4	4	1	1	0	1	2	4	143
3.4-5.4	12	9	17	35	48	12	22	34	15	5	2	1	0	.	1	5	224
5.5-7.9	10	13	18	43	17	5	31	37	9	7	1	3	0	0	2	2	204
8.0-10.7	6	2	17	42	5	0	28	23	6	3	1	5	0	0	2	4	154
10.8-13.8	4	.	0	1	.	0	16	23	2	6	7	7	1	.	3	9	85
13.9-17.1	2	.	.	.	.	0	10	22	6	12	7	7	1	1	3	8	84
17.2-20.7	1	.	.	.	.	.	5	9	4	2	2	4	1	0	4	5	44
20.8-24.5	0	.	.	.	.	.	0	5	4	1	2	2	0	0	6	0	24
24.5-28.4	.	.	.	.	.	.	.	2	.	.	.	0	.	.	0	.	3
28.5-32.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
> 32.6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
ALL	45	35	66	142	109	48	132	173	57	44	27	33	7	4	28	42	1000

COEFFICIENT TRANSFERT TABLES

The tables are actually histograms of the quotient given in the heading of the tables, plotted horizontally. They give details about the distribution of the quotients.

The class interval is 0.05 and the frequencies for the actual class is plotted at the midpoint of the class. If the quotient is 1 the wind speed in the two heights considered have the same value.

The classes start at 0.75 (.725-.774) and end at 1.80 (1.775-1.824). Quotients below or above these limits are counted in these classes respectively.

The tables are giving the frequencies in the actual classes in percent and also as cumulative frequencies in percent.

F30 = Wind speed 30 m above the ground
F18 = Wind speed 18 m above the ground
F10 = Wind speed 10 m above the ground

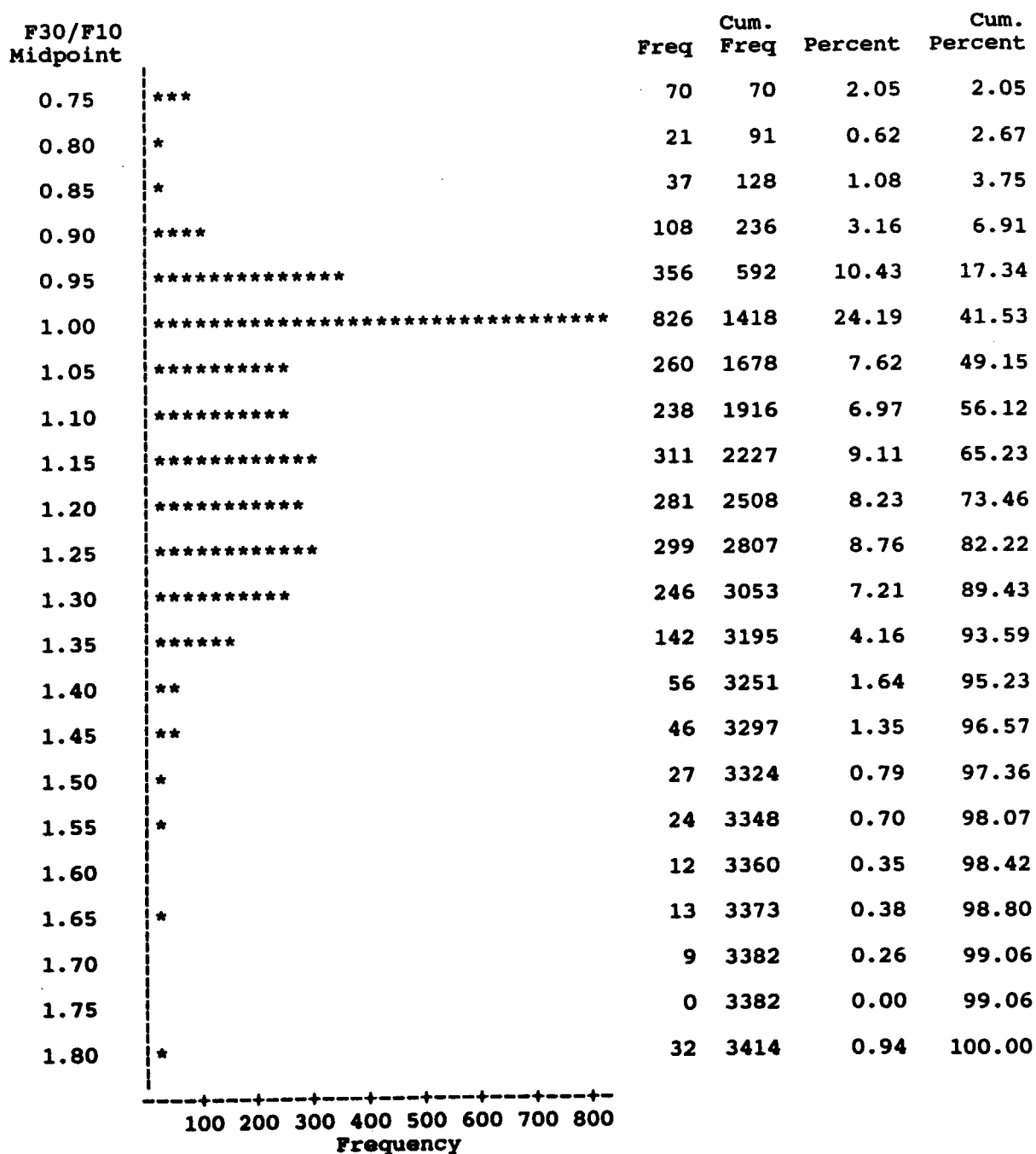
HANØYTANGEN JANUARY 1994

QUOTIENT F30/F18

F30/F18 Midpoint		Freq	Cum. Freq	Percent	Cum. Percent
0.75	*	48	48	1.41	1.41
0.80		20	68	0.59	1.99
0.85	*	31	99	0.91	2.90
0.90	**	96	195	2.81	5.71
0.95	*****	280	475	8.20	13.91
1.00	*****	1213	1688	35.53	49.44
1.05	*****	537	2225	15.73	65.17
1.10	*****	315	2540	9.23	74.40
1.15	*****	340	2880	9.96	84.36
1.20	*****	268	3148	7.85	92.21
1.25	***	136	3284	3.98	96.19
1.30	*	56	3340	1.64	97.83
1.35	*	27	3367	0.79	98.62
1.40		12	3379	0.35	98.97
1.45		10	3389	0.29	99.27
1.50		5	3394	0.15	99.41
1.55		7	3401	0.21	99.62
1.60		5	3406	0.15	99.77
1.65		0	3406	0.00	99.77
1.70		3	3409	0.09	99.85
1.75		1	3410	0.03	99.88
1.80		4	3414	0.12	100.00

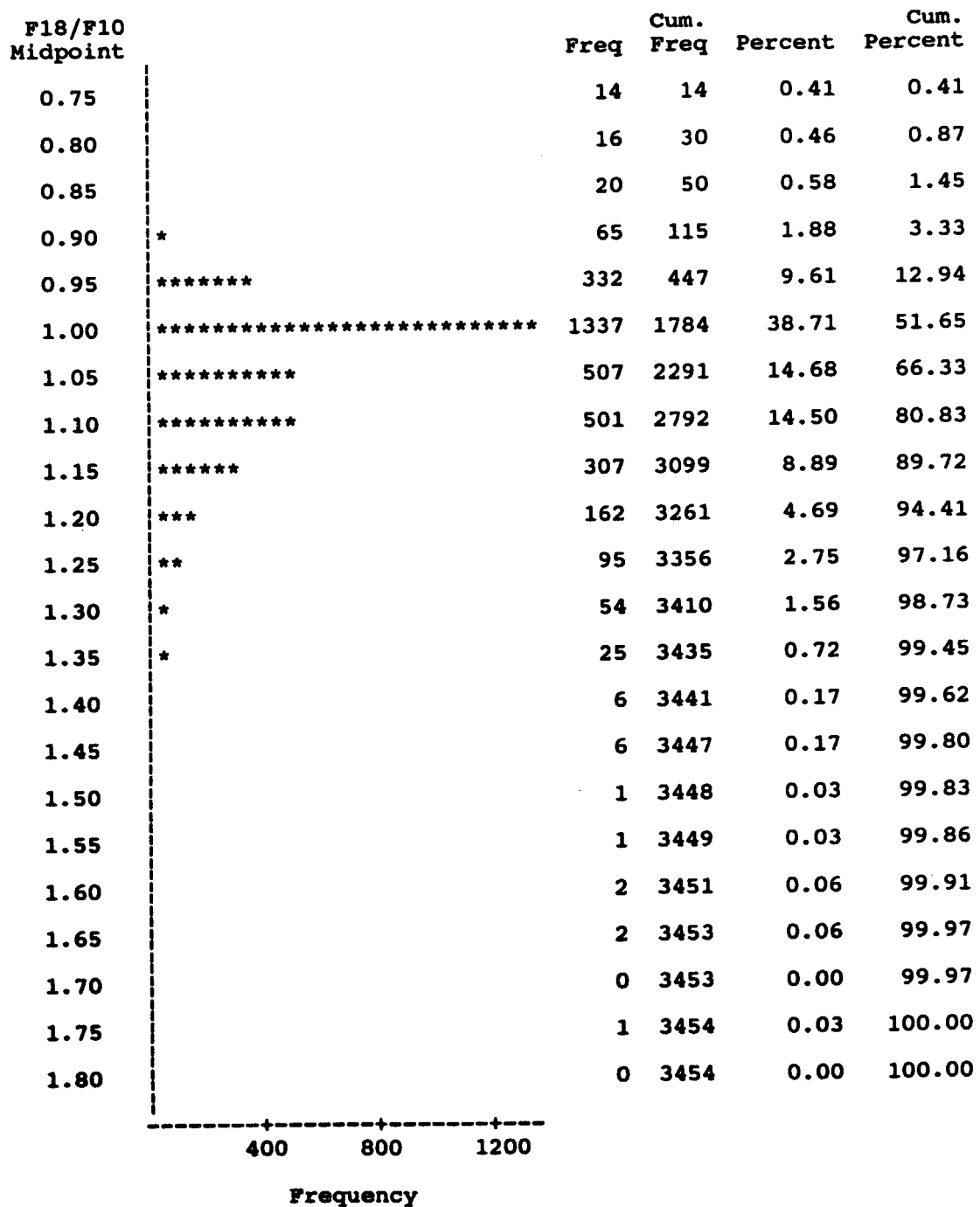
HANØYTANGEN JANUARY 1994

QUOTIENT F30/F10



HANØYTANGEN JANUARY 1994

QUOTIENT F18/F10



OCCURRENCE TABLES

The content of the table is based on the hourly maxima (Fx) of the 10 min wind speed. First a period fulfilling the criterion $F_x < \text{Limit}$ is sought. The length of this period is divided by the length of the windows specified and may result in multiples of the actual window or zero if the length of the period is less than the length of the actual window. This procedure is repeated through the month and the number of the different windows are accumulated.

Observation Period :									Location :	
From :01/01/94	JANUARY 1994								Level : 10 m a.gr.	
To : 31/01/94									Coordinates:	
Coverage : 77.4%	HANØYTANGEN								X = 71908	
Number of data: 3454									Y = 47414	
OCCURRENCE TABLE										
NUMBER OF WINDOWS FROM 6 TO 72 HOURS										
Wind Speed <= Beaufort	1	2	3	4	5	6	7	8		
Duration										
6 H	0	19	43	64	74	85	92	95		
12 H	0	4	18	31	35	41	44	47		
18 H	0	2	9	18	22	26	29	31		
24 H	0	1	6	13	16	18	21	23		
48 H	0	0	2	6	7	8	9	11		
72 H	0	0	0	3	4	5	6	7		
Remarks : Based on maximum 10mn wind speed within the interval period, in any direction, at 10 metres level										

CLIMATOLOGICAL SUMMARY

Observation Period :												Location:		
From : 01/01/94												Level: 2 m a.gr.		
To : 31/01/94												HANØYTANGEN 1994		
Coverage : 77.4%														
Number of data :3454														
CLIMATOLOGICAL SUMMARY														
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
Air Temperature														
Mean Day min.	0.2													
Abs min.	-4													
Mean Day max.	3.8													
Abs max.	6.7													
Mean	2.1													
Relative Humidity														
Mean Day min.	61													
Abs min.	44													
Mean Day max.	81													
Abs max.	89													
Mean	70													
Air pressure														
Mean Day min.	991.6													
Abs min.	966.2													
Mean Day max.	1003.5													
Abs max.	1019.6													
Mean	998													
Coefficient Transfert														
from level 10 to 18	1.051													
from level 10 to 30	1.117													
from level 18 to 30	1.059													
Remarks:														
The summary is based on air temperature, humidity and pressure measured each 10 minute.														

Appendix 1

BEAUFORT SCALE OF WIND

BEAUFORT NUMBER	DESCRIPTIVE TERM	MEAN VELOCITY IN KNOTS	MEAN VELOCITY IN m/s
0	Calm	< 1	0 - 0.2
1	Light air	1 - 3	0.3 - 1.5
2	Light breeze	4 - 6	1.6 - 3.3
3	Gentle breeze	7 - 10	3.4 - 5.4
4	Moder. breeze	11 - 16	5.5 - 7.9
5	Fresh breeze	17 - 21	8.0 - 10.7
6	Strong breeze	22 - 27	10.8 - 13.8
7	Near gale	28 - 33	13.9 - 17.1
8	Gale	34 - 40	17.2 - 20.7
9	Strong gale	41 - 47	20.8 - 24.4
10	Storm	48 - 55	24.5 - 28.4
11	Violent storm	56 - 63	28.5 - 32.6
12	Hurricane	64 and over	32.7 and over

Appendix 2

Data rejected prior to the processing.

Table with 13 columns and rows of numerical data. The first column contains a sequence of numbers from 940119 0040 to 940119 1500. The table is organized into a grid-like structure with multiple columns of values.



REJECTED

Table with 13 columns and rows of numerical data, continuing from the previous table. The first column contains a sequence of numbers from 940119 1510 to 940119 1910. The table is organized into a grid-like structure with multiple columns of values.

Appendix 3

Records where at least one of the parameters is outside the
criteria.

HANOYTANGEN 1994

09:01 Tuesday, March 29, 1994 28

RECORDS WITH PARAMETERS OUTSIDE THE CRITERIONS

OBS	AAR	MND	DAG	TIME	MIN	REF	F30	G30	DD30	F18	G18	F10	G10	DD10	T	UU	P	
80	1994	1	14	15	10	645	5.70	38.60	162.04	5.77	6.96	5.77	7.26	157.50	3.34	85.80	987.63	
81	1994	1	17	18	10	645	48.29	0.55	152.27	10.17	12.34	10.32	12.34	144.24	-0.92	79.52	1009.78	
82	1994	1	17	18	20	645	48.44	41.06	150.87	10.40	12.04	10.55	12.63	145.29	-0.92	81.44	1009.27	
83	1994	1	17	18	30	645	19.65	57.92	156.46	10.47	12.34	10.69	12.63	147.38	-1.01	81.44	1009.44	
84	1994	1	17	18	40	645	10.10	48.74	151.92	9.87	12.93	10.10	12.63	148.43	-0.56	81.14	1009.27	
85	1994	1	17	18	50	645	20.09	24.50	154.01	10.10	12.34	10.32	12.93	149.82	-0.65	80.94	1009.10	
86	1994	1	17	19	0	645	5.40	19.72	147.38	10.55	13.53	10.77	13.23	136.56	-1.01	81.34	1008.77	
87	1994	1	17	19	10	645	19.72	30.24	149.82	11.66	13.83	11.89	13.83	143.89	-0.92	83.17	1008.77	
88	1994	1	17	19	20	645	57.92	19.65	152.97	11.14	13.53	11.37	13.83	148.08	-1.01	84.58	1008.26	
89	1994	1	17	19	30	645	57.92	57.84	138.31	11.07	12.93	11.14	13.23	136.91	-1.01	84.58	1008.26	
90	1994	1	17	19	40	645	43.59	10.10	146.33	11.74	13.83	11.74	13.83	144.24	-1.19	84.79	1007.92	
91	1994	1	17	19	50	645	58.89	19.72	140.40	11.52	13.83	11.66	13.83	143.89	-1.19	85.39	1007.58	
92	1994	1	17	20	10	645	5.40	19.65	143.19	10.40	12.34	10.40	13.23	137.61	-1.19	86.81	1007.24	
93	1994	1	17	20	20	645	10.02	57.99	141.80	10.92	14.13	11.07	14.13	135.86	-1.10	87.22	1007.08	
94	1994	1	17	20	30	645	24.50	10.17	143.89	11.96	15.02	11.89	14.72	136.56	-1.19	87.62	1006.57	
95	1994	1	17	20	40	645	62.62	10.17	135.52	11.59	14.13	11.66	14.72	132.72	-1.19	87.93	1006.57	
96	1994	1	17	20	50	645	19.72	57.84	137.26	11.44	13.83	11.52	13.83	137.77	-1.19	88.64	1006.23	
97	1994	1	17	21	0	645	19.65	57.92	143.19	11.44	14.13	11.37	13.83	132.72	-1.10	88.33	1006.23	
98	1994	1	17	21	20	645	48.29	57.84	130.28	10.40	13.53	10.32	12.93	133.77	-1.19	88.64	1006.05	
99	1994	1	17	21	30	645	67.47	60.15	142.50	11.22	13.53	11.22	13.53	141.10	-1.19	88.64	1006.05	
100	1994	1	17	21	40	645	2.94	10.17	144.24	11.37	13.83	11.44	14.13	130.98	-1.10	88.84	1004.71	
101	1994	1	17	22	0	645	0.55	48.22	144.94	9.50	13.53	9.50	12.63	148.08	-1.01	89.14	1004.54	
102	1994	1	17	22	10	645	10.10	29.20	135.17	8.31	10.84	8.38	11.44	132.37	-0.92	89.24	1004.37	
103	1994	1	17	22	20	645	0.55	38.74	138.31	8.53	11.44	8.53	11.44	145.99	-0.92	89.24	1004.37	
104	1994	1	17	22	30	645	10.10	48.74	126.44	8.76	10.84	8.83	11.44	126.09	-0.92	89.24	1004.03	
105	1994	1	17	22	40	645	5.32	0.55	131.33	8.23	11.44	8.23	10.84	127.84	-0.83	89.24	1003.86	
106	1994	1	17	22	50	645	42.25	29.27	148.43	8.76	14.72	8.90	14.72	140.40	-0.74	88.84	1003.19	
107	1994	1	17	23	0	645	19.72	57.92	140.75	10.17	15.02	10.32	15.92	137.26	-0.65	88.03	1003.52	
108	1994	1	17	23	10	645	67.32	67.32	143.89	9.35	12.63	9.50	12.63	123.30	-0.56	87.22	1003.86	
109	1994	1	17	23	20	645	10.10	48.22	142.84	7.34	10.84	7.49	11.44	150.52	-0.56	86.00	1003.52	
110	1994	1	18	0	0	645	20.77	6.44	146.68	9.80	12.93	9.95	12.93	140.05	-0.20	83.98	1003.02	
111	1994	1	18	0	10	645	10.10	0.55	155.06	9.87	12.93	10.10	12.93	146.68	-0.02	80.63	1003.19	
112	1994	1	18	0	20	645	10.55	2.94	151.22	8.76	11.14	8.90	11.14	146.33	0.16	80.63	1003.19	
113	1994	1	18	0	30	645	38.74	48.29	145.29	7.93	10.25	8.01	9.95	148.78	0.61	80.23	1003.36	
114	1994	1	18	0	40	645	9.95	48.89	149.13	8.46	10.55	8.53	10.55	149.13	1.16	78.30	1002.85	
115	1994	1	18	1	0	645	8.76	40.31	144.59	7.41	9.95	7.49	10.25	145.99	0.97	76.68	1003.52	
116	1994	1	18	1	10	645	19.57	19.57	126.79	4.95	6.67	5.03	6.37	120.16	0.97	75.87	1003.52	
117	1994	1	18	1	20	645	4.88	58.51	138.31	4.20	5.77	4.20	5.47	120.86	0.97	76.48	1003.69	
118	1994	1	18	1	30	645	29.20	67.39	151.92	5.10	7.26	5.10	7.56	143.89	1.25	75.77	1003.52	
119	1994	1	18	1	40	645	29.12	67.32	128.54	5.25	6.67	5.32	7.26	118.76	1.07	74.25	1003.52	
120	1994	1	18	1	50	645	29.12	29.12	114.58	5.25	6.37	5.17	6.67	119.46	0.97	74.45	1003.36	
121	1994	1	18	2	0	645	19.72	67.32	131.33	4.95	6.96	4.88	6.67	126.44	1.25	75.06	1003.52	
122	1994	1	18	2	10	645	19.57	20.69	126.79	4.65	6.07	4.65	5.77	123.30	1.43	75.06	1003.52	
123	1994	1	18	2	20	645	57.77	57.77	139.01	5.10	6.67	5.10	6.67	135.86	1.61	75.06	1003.52	
124	1994	1	18	2	30	645	72.09	14.42	122.25	4.95	6.07	4.88	6.37	113.88	1.43	74.25	1003.36	
125	1994	1	18	2	40	645	29.12	67.32	122.60	4.65	5.77	4.65	6.07	123.30	1.52	75.47	1003.36	
126	1994	1	18	2	50	645	29.12	29.12	137.26	5.10	6.37	5.03	6.37	131.68	1.52	75.06	1003.36	
127	1994	1	18	3	0	645	8.46	39.71	118.76	5.03	6.67	4.95	6.67	114.58	1.61	75.47	1003.52	
128	1994	1	18	3	10	645	3.98	1.30	134.47	5.40	6.96	5.40	7.56	127.49	1.70	75.06	1003.36	
129	1994	1	19	12	0	645	6.37	26.66	182.63	6.37	7.56	6.44	7.56	182.63	4.80	72.43	1005.89	
130	1994	1	19	12	10	645	6.22	26.66	185.42	6.29	7.26	6.44	7.56	191.70	4.89	69.79	1005.89	
131	1994	1	19	12	20	645	6.59	27.55	176.70	6.52	8.76	6.67	8.46	178.09	4.80	69.79	1005.89	
132	1994	1	19	12	30	645	6.52	37.10	176.00	6.52	7.56	6.67	7.86	179.49	4.70	70.20	1005.89	
133	1994	1	19	12	40	645	6.74	37.70	176.00	6.44	7.86	6.67	8.16	171.81	4.80	69.39	1005.89	
134	1994	1	19	12	50	645	6.82	38.30	185.77	6.82	8.46	6.96	8.76	182.63	4.80	68.17	1005.89	
135	1994	1	19	13	0	645	7.19	38.00	176.70	7.11	8.46	7.26	9.05	187.87	4.80	69.79	1006.06	
1	1994	1	26	13	27	645	0.92	7.41	1.85	2.34	1.37	2.56	940126.00	1337.00	645.00	67.24	0.40	
2	1994	1	26	13	47	645	67.24	0.40	9.88	0.40	0.40	0.40	0.40	0.40	5.34	2.61	59.26	994.22
3	1994	1	26	13	57	645	67.24	0.40	317.69	0.40	0.40	0.40	0.40	0.40	5.34	2.79	58.45	994.73