

NILU
REFERANSE: 22776
DATO: JUNI 1978

DATAVEDLEGG TIL OPPDRAGSRAPPORT
NR 27/78
DIFFUSE UTSLIPP FRA EN SEMENTFABRIKK

AV
Y. GOTAAS OG T.C. BERG

VEDLEGG A - STØVMÅLINGER
VEDLEGG B - METEOROLOGISKE DATA
VEDLEGG C - KORTPERIODISKE MÅLEDATA

VEDLEGG A
STØVMÅLINGER

MD	AR	H	SVEVE	CERL			PH	STØVFALL			ANALYSE		
			-STØV UG/M3	VOL ML	UOPPL. G	JPPL. G		VOL ML	UOPPL. G	OPPL. G	FH	S04	CA
9	76	2	0.	0.	.01	0.00	0.0	1275.	.30	.23	8.3	56.	50.
9	76	10	0.	0.	.01	0.00	0.0	830.	.36	.23	8.2	53.	43.
9	76	25	0.	0.	.02	0.00	0.0	495.	.44	.23	8.1	89.	35.
9	76	NS	0.	0.	.02	0.00	0.0	1370.	.27	.25	8.1	53.	53.
10	76	2	0.	115.	.00	0.00	0.0	7120.	.42	.59	8.3	95.	123.
10	76	10	0.	420.	.03	0.00	0.0	5840.	.45	.50	8.2	89.	116.
10	76	25	0.	90.	.07	0.00	0.0	4450.	.50	.50	8.1	86.	113.
10	76	NS	0.	700.	.01	0.00	0.0	7310.	.18	.43	7.7	73.	102.
11	76	2	0.	0.	.44	0.00	0.0	4920.	2.78	1.11	10.8	168.	120.
11	76	10	0.	0.	1.21	0.00	0.0	4560.	2.64	1.14	10.7	177.	123.
11	76	25	0.	0.	2.78	0.00	0.0	3780.	2.58	1.02	10.6	194.	139.
11	76	NS	0.	0.	.35	0.00	0.0	5150.	1.70	.86	10.5	123.	120.
12	76	2	0.	0.	.45	0.00	0.0	1900.	4.53	.57	11.2	139.	108.
12	76	10	0.	0.	1.13	0.00	0.0	1700.	4.33	.55	11.2	143.	128.
12	76	25	0.	0.	2.65	0.00	0.0	970.	4.26	.36	11.4	114.	106.
12	76	NS	0.	0.	1.28	0.00	0.0	2010.	3.60	.45	11.1	122.	102.
1	77	2	31.	0.	.40	0.00	0.0	1330.	2.85	.44	11.2	110.	57.
1	77	10	37.	0.	.85	0.00	0.0	940.	2.68	.41	10.7	121.	58.
1	77	25	27.	0.	2.12	0.00	0.0	460.	3.43	.38	10.7	110.	55.
1	77	NS	0.	0.	.29	0.00	0.0	1520.	2.31	.50	11.1	86.	51.
2	77	2	95.	0.	.08	0.00	0.0	1200.	1.73	.35	10.9	0.	0.
2	77	10	100.	0.	.20	0.00	0.0	700.	1.83	.40	10.7	111.	84.
2	77	25	111.	0.	.47	0.00	0.0	380.	2.18	.33	10.9	132.	64.
2	77	NS	0.	0.	.28	0.00	0.0	1380.	1.74	.35	9.9	137.	64.
3	77	2	54.	0.	.11	0.00	0.0	1250.	2.40	.60	10.0	72.	76.
3	77	10	58.	0.	.24	0.00	0.0	920.	2.50	.55	9.6	90.	81.
3	77	25	74.	0.	.55	0.00	0.0	490.	2.70	.54	9.8	78.	71.
3	77	NS	0.	0.	.02	0.00	0.0	1300.	1.36	.50	8.5	73.	76.
4	77	2	61.	0.	1.16	0.00	11.0	1110.	2.69	.75	8.1	152.	101.
4	77	10	62.	0.	2.43	0.00	11.4	380.	2.50	.47	8.1	143.	54.
4	77	25	67.	0.	3.89	0.00	11.5	70.	2.09	.39	8.4	137.	40.
4	77	NS	0.	0.	1.11	0.00	10.5	1130.	.87	.55	8.1	87.	93.
5	77	2	55.	0.	.15	.04	11.4	0.	2.05	.24	11.1	74.	38.
5	77	10	68.	0.	.29	.10	11.1	0.	1.50	.02	11.4	64.	38.
5	77	25	75.	0.	.98	.11	11.9	0.	.68	.22	11.3	66.	39.
5	77	NS	0.	0.	.20	.06	11.8	0.	1.57	.23	10.9	57.	35.
6	77	2	58.	0.	.64	.12	8.6	490.	4.06	.52	8.5	150.	51.
6	77	10	61.	0.	1.90	.23	9.3	0.	3.45	.47	10.2	155.	52.
6	77	25	56.	0.	3.95	.46	11.3	0.	2.90	.42	10.3	144.	51.
6	77	NS	0.	0.	.60	.15	9.0	520.	1.79	.45	8.4	79.	53.
7	77	2	40.	310.	.14	.05	8.8	520.	2.11	.41	8.5	91.	48.
7	77	10	51.	255.	.52	.09	8.6	230.	1.68	.30	8.5	128.	56.
7	77	25	59.	510.	1.33	.16	10.8	210.	1.39	.26	8.4	135.	80.
7	77	NS	0.	305.	.22	.05	8.5	670.	.90	.32	8.4	43.	46.
8	77	2	37.	230.	.07	.04	8.1	505.	1.69	.18	8.3	61.	49.
8	77	10	38.	320.	.36	.08	8.4	170.	1.23	.27	8.3	76.	54.
8	77	25	56.	340.	.85	.12	8.7	0.	1.31	.28	8.1	76.	41.
8	77	NS	0.	325.	.03	.10	8.1	600.	1.10	.12	8.2	42.	46.

VEDLEGG B
METEOROLOGISKE DATA

VIND
TEMPERATUR
FUKTIGHET
STABILITET BASERT PÅ TEMPERATUR -
DIFFERANSE (25-10)M

VEDLEGG C
KORTPERIODISKE MÅLEDATA
(FRA EKSAMENSARBEID AV G. WEDDE,
UNIVERSITETET I LEEDS, ENGLAND)

FAR (F) - 1500 M AVSTAND
NEAR (N) - 700 M AVSTAND
TRAVERSE (T) - RIKSVEIEN (R)

VINDROSE FRA NORCEM BREVIK

MANED: OKTOBER 1976

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	16.1	25.8	16.1	16.1	25.8	9.7	26.7	25.8	20.1	
50- 70	35.5	22.6	25.8	41.9	25.8	29.0	36.7	25.8	29.1	
80-100	9.7	16.1	12.9	9.7	19.4	19.4	13.3	19.4	13.8	
110-130	3.2	3.2	3.2	6.5	6.5	3.2	3.3	0.0	3.2	
140-160	0.0	6.5	3.2	0.0	3.2	6.5	3.3	3.2	4.0	
170-190	3.2	3.2	3.2	6.5	6.5	6.5	0.0	3.2	4.5	
200-220	3.2	3.2	0.0	0.0	0.0	3.2	3.3	0.0	2.0	
230-250	3.2	3.2	3.2	0.0	0.0	0.0	3.3	6.5	3.4	
260-280	3.2	0.0	3.2	0.0	0.0	3.2	3.3	0.0	1.8	
290-310	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	.1	
320-340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.4	
350- 10	22.6	12.9	29.0	19.4	12.9	19.4	6.7	16.1	17.5	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ANT. OBS.	31	31	31	31	31	31	30	31	741	
MIDL. VIND	3.2	3.3	3.3	3.3	3.5	3.4	3.1	3.1	3.3	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	5.5	3.8	4.2	.8	1.3	1.3	1.6	2.3	.8	.1	.4	4.3	26.6
2.1- 4.0 M/S	8.6	6.9	5.3	1.8	1.1	2.3	.4	1.1	.9	0.0	0.0	13.2	41.6
4.1- 6.0 M/S	3.8	12.4	3.0	.7	1.6	.8	0.0	0.0	0.0	0.0	0.0	0.0	22.3
OVER 6.0 M/S	2.2	6.1	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6
TOTAL	20.1	29.1	13.8	3.2	4.0	4.5	2.0	3.4	1.8	.1	.4	17.5	100.0
MIDL. VIND M/S	3.2	4.4	3.2	2.8	3.0	2.7	1.3	1.6	2.2	1.0	1.3	2.4	3.3
ANT. OBS.	149	216	102	24	30	33	15	25	13	1	3	130	741

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 3.3 M/S, BASERT PÅ 743 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: NOVEMBER 1976

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	30.0	15.0	25.0	36.8	16.7	11.8	16.7	11.1	18.8	
50- 70	0.0	10.0	20.0	26.3	27.8	35.3	27.8	5.6	19.9	
80-100	10.0	25.0	5.0	0.0	11.1	0.0	16.7	11.1	11.9	
110-130	15.0	0.0	0.0	5.3	11.1	11.8	0.0	11.1	5.4	
140-160	0.0	0.0	5.0	10.5	16.7	17.6	11.1	5.6	5.4	
170-190	0.0	5.0	0.0	5.3	0.0	5.9	0.0	0.0	2.2	
200-220	0.0	0.0	5.0	0.0	5.6	5.9	5.6	5.6	2.0	
230-250	0.0	0.0	0.0	5.3	0.0	5.9	0.0	5.6	3.1	
260-280	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	1.1	
290-310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	.2	
320-340	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	.9	
350- 10	45.0	40.0	40.0	10.5	11.1	5.9	16.7	38.9	29.1	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ANT. OBS.	20	20	20	19	18	17	18	18	447	
MIDL. VIND	2.4	2.2	2.1	2.2	2.2	2.9	2.5	2.4	2.3	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	11.6	7.2	4.9	2.0	2.7	1.6	2.0	3.1	1.1	.2	.7	9.2	46.3
2.1- 4.0 M/S	6.7	5.6	4.7	2.9	2.5	.2	0.0	0.0	0.0	0.0	.2	19.2	42.1
4.1- 6.0 M/S	.4	5.6	2.2	.4	.2	.4	0.0	0.0	0.0	0.0	0.0	.7	10.1
OVER 6.0 M/S	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
TOTAL	18.8	19.9	11.9	5.4	5.4	2.2	2.0	3.1	1.1	.2	.9	29.1	100.0
MIDL. VIND M/S	1.8	3.1	2.5	2.3	2.0	1.9	.9	1.0	.9	.7	1.9	2.4	2.3
ANT. OBS.	84	89	53	24	24	10	9	14	5	1	4	130	447

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 2.1 M/S, BASERT PÅ 713 OBSERVASJONER

Desember 1966 ingen målinger

VINDROSE FRA NORCEM BREVIK

MANED: JANUAR 1977

SEKTOR	VINDROSE KL.								DØGN
	1	4	7	10	13	16	19	22	
20- 40	27.3	21.7	17.4	33.3	25.0	22.7	27.3	21.7	20.4
50- 70	9.1	17.4	13.0	14.3	25.0	13.6	9.1	13.0	15.8
80-100	0.0	0.0	4.3	4.8	5.0	9.1	13.6	0.0	5.7
110-130	4.5	4.3	0.0	0.0	0.0	4.5	0.0	0.0	2.1
140-160	4.5	0.0	0.0	0.0	5.0	0.0	0.0	8.7	1.9
170-190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.2
200-220	0.0	0.0	0.0	0.0	0.0	4.5	4.5	4.3	.8
230-250	4.5	4.3	0.0	0.0	0.0	0.0	0.0	0.0	.9
260-280	0.0	4.3	0.0	9.5	0.0	4.5	0.0	8.7	2.5
290-310	9.1	4.3	0.0	0.0	5.0	0.0	4.5	4.3	2.8
320-340	0.0	0.0	13.0	4.8	0.0	0.0	0.0	0.0	2.5
350- 10	40.9	43.5	52.2	33.3	35.0	40.9	40.9	39.1	44.5
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ANT. OBS.	22	23	23	21	20	22	22	23	530
MIDL. VIND	3.3	2.8	2.8	3.1	2.9	2.8	2.6	2.7	2.9

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	11.1	4.7	2.5	.4	.2	.2	.8	.8	1.9	.9	.9	13.2	37.5
2.1- 4.0 M/S	5.7	4.7	2.5	.9	1.1	0.0	0.0	.2	.6	1.9	1.5	18.3	37.4
4.1- 6.0 M/S	2.3	4.3	.8	.8	.6	0.0	0.0	0.0	0.0	0.0	0.0	12.1	20.8
OVER 6.0 M/S	1.3	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.9	4.3
TOTAL	20.4	15.8	5.7	2.1	1.9	.2	.8	.9	2.5	2.8	2.5	44.5	100.0
MIDL. VIND M/S	2.4	3.8	2.3	3.6	3.4	.7	.6	1.1	1.4	2.4	2.6	3.1	2.9
ANT. OBS.	108	84	30	11	10	1	4	5	13	15	13	236	530

MIDLERE VINDSTYRKE FOR HELE DATASETET ER 2.9 M/S, BASERT PÅ 566 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MÅNED: FEBRUAR 1977

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	35.7	32.1	25.0	29.6	33.3	42.3	23.1	14.3	30.9	
50- 70	17.9	7.1	7.1	18.5	18.5	15.4	15.4	25.0	16.1	
80-100	3.6	14.3	10.7	7.4	3.7	0.0	7.7	7.1	4.3	
110-130	3.6	3.6	3.6	0.0	3.7	0.0	0.0	0.0	1.8	
140-160	3.6	3.6	0.0	7.4	7.4	7.7	7.7	7.1	5.8	
170-190	0.0	0.0	3.6	3.7	3.7	7.7	0.0	0.0	2.3	
200-220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3	
230-250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3	
260-280	0.0	0.0	3.6	0.0	0.0	3.8	0.0	0.0	.9	
290-310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	
320-340	0.0	3.6	0.0	3.7	0.0	0.0	0.0	7.1	1.7	
350- 10	35.7	35.7	46.4	29.6	29.6	23.1	46.2	39.3	35.0	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ANT. OBS.	28	28	28	27	27	26	26	28	657	
MIDL. VIND	2.6	2.6	2.7	2.7	2.9	2.7	2.3	2.4	2.6	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	12.3	6.4	3.3	1.4	2.6	.5	.3	.3	.9	.5	1.2	8.7	38.4
2.1- 4.0 M/S	14.8	2.9	.3	.2	3.2	.9	0.0	0.0	0.0	.2	.5	24.4	47.2
4.1- 6.0 M/S	3.8	3.8	.5	.3	0.0	.9	0.0	0.0	0.0	0.0	0.0	2.0	11.3
OVER 6.0 M/S	0.0	3.0	.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
TOTAL	30.9	16.1	4.3	1.8	5.8	2.3	.3	.3	.9	.6	1.7	35.0	100.0
MIDL. VIND M/S	2.5	3.5	1.7	1.9	2.1	3.2	.5	.4	.7	1.0	1.7	2.7	2.6
ANT. OBS.	203	106	28	12	38	15	2	2	6	4	11	230	657

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 2.6 M/S, BASERT PÅ 663 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MÅNED: MARS 1977

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	16.7	10.0	13.3	13.8	13.3	10.3	17.2	6.9	14.3	
50- 70	13.3	10.0	6.7	13.8	0.0	6.9	0.0	24.1	9.4	
80-100	6.7	13.3	6.7	17.2	6.7	3.4	10.3	10.3	7.6	
110-130	6.7	13.3	16.7	13.8	20.0	20.7	6.9	10.3	12.3	
140-160	23.3	6.7	10.0	13.8	33.3	17.2	17.2	6.9	17.4	
170-190	3.3	10.0	3.3	6.9	13.3	20.7	20.7	6.9	11.0	
200-220	0.0	0.0	0.0	6.9	3.3	3.4	6.9	6.9	4.6	
230-250	3.3	6.7	3.3	0.0	0.0	3.4	0.0	3.4	3.0	
260-280	0.0	6.7	6.7	3.4	3.3	6.9	6.9	6.9	4.3	
290-310	3.3	0.0	3.3	0.0	0.0	0.0	3.4	3.4	2.4	
320-340	6.7	3.3	3.3	0.0	0.0	0.0	0.0	0.0	1.0	
350- 10	16.7	20.0	26.7	10.3	6.7	6.9	10.3	13.8	12.7	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ANT. OBS.	30	30	30	29	30	29	29	29	700	
MIDL. VIND	1.6	1.5	1.8	2.2	2.5	2.7	1.8	1.7	2.0	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	6.3	7.1	6.9	10.1	11.7	5.0	2.9	1.9	2.6	1.6	.6	4.0	60.6
2.1- 4.0 M/S	4.9	2.1	.6	2.0	5.4	3.3	1.4	.7	1.0	.9	.3	5.3	27.9
4.1- 6.0 M/S	2.9	.1	.1	.1	.3	2.1	.3	.4	.7	0.0	.1	3.4	10.7
OVER 6.0 M/S	.3	0.0	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	.9
TOTAL	14.3	9.4	7.6	12.3	17.4	11.0	4.6	3.0	4.3	2.4	1.0	12.7	100.0
MIDL. VIND M/S	2.6	1.3	1.0	1.4	1.8	2.7	1.8	1.9	2.0	1.8	2.0	2.9	2.0
ANT. OBS.	100	66	53	86	122	77	32	21	30	17	7	89	700

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 2.0 M/S, BASERT PÅ 704 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: APRIL 1977

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	10.0	6.7	13.3	6.9	13.3	13.3	10.0	6.7	9.3	
50- 70	0.0	20.0	6.7	13.8	0.0	3.3	6.7	0.0	5.7	
80-100	6.7	0.0	0.0	6.9	10.0	3.3	0.0	3.3	4.9	
110-130	3.3	3.3	6.7	10.3	10.0	3.3	3.3	0.0	5.4	
140-160	6.7	6.7	10.0	10.3	13.3	20.0	6.7	10.0	10.5	
170-190	6.7	0.0	3.3	6.9	16.7	13.3	10.0	10.0	9.5	
200-220	6.7	3.3	6.7	0.0	0.0	10.0	16.7	3.3	3.6	
230-250	3.3	10.0	0.0	0.0	3.3	0.0	6.7	20.0	6.4	
260-280	13.3	3.3	13.3	13.8	6.7	10.0	6.7	3.3	8.5	
290-310	6.7	10.0	6.7	3.4	6.7	10.0	10.0	10.0	7.7	
320-340	6.7	10.0	10.0	10.3	6.7	6.7	3.3	0.0	6.1	
350- 10	30.0	26.7	23.3	17.2	13.3	6.7	20.0	33.3	22.3	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ANT. OBS.	30	30	30	29	30	30	30	30	717	
MIDL. VIND	2.4	2.5	2.9	3.7	3.9	3.6	2.9	2.6	3.1	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	4.3	3.5	3.2	2.6	4.6	3.3	1.5	1.8	1.3	.8	.4	4.6	32.1
2.1- 4.0 M/S	2.5	1.8	.7	1.4	4.7	3.9	2.0	3.8	2.8	4.0	3.2	10.0	40.9
4.1- 6.0 M/S	1.8	.4	.8	.8	1.0	2.2	.1	.8	4.0	2.5	2.1	6.4	23.2
OVER 6.0 M/S	.7	0.0	.1	.6	.1	0.0	0.0	0.0	.4	.3	.4	1.3	3.9
TOTAL	9.3	5.7	4.9	5.4	10.5	9.5	3.6	6.4	8.5	7.7	6.1	22.3	100.0
MIDL. VIND M/S	2.9	2.1	2.2	2.8	2.4	2.9	2.1	2.8	4.0	3.7	3.9	3.5	3.1
ANT. OBS.	67	41	35	39	75	68	26	46	61	55	44	160	717

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 3.1 M/S, BASERT PÅ 718 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: MAI 1977

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	13.8	20.0	36.7	20.7	13.8	16.7	16.7	13.8	17.6	
50- 70	10.3	6.7	13.3	13.8	6.9	3.3	10.0	13.8	9.4	
80-100	6.9	0.0	3.3	0.0	0.0	0.0	6.7	6.9	4.1	
110-130	6.9	0.0	3.3	17.2	3.4	6.7	10.0	6.9	6.8	
140-160	6.9	3.3	6.7	27.6	44.8	26.7	16.7	6.9	17.1	
170-190	10.3	6.7	6.7	17.2	31.0	36.7	20.0	10.3	16.6	
200-220	0.0	3.3	3.3	0.0	0.0	6.7	10.0	3.4	2.5	
230-250	10.3	6.7	3.3	0.0	0.0	0.0	6.7	10.3	5.1	
260-280	0.0	0.0	0.0	3.4	0.0	3.3	0.0	3.4	2.3	
290-310	3.4	6.7	0.0	0.0	0.0	0.0	0.0	0.0	1.1	
320-340	10.3	6.7	0.0	0.0	0.0	0.0	0.0	3.4	1.4	
350- 10	20.7	40.0	23.3	0.0	0.0	0.0	3.3	17.2	15.8	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	.1	
ANT. OBS.	29	30	30	29	29	30	30	29	709	
MIDL. VIND	1.9	2.4	2.9	3.2	4.1	3.7	2.5	2.8	2.9	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													.1
1- 2.0 M/S	5.5	3.5	3.9	3.4	3.5	2.7	.7	2.1	1.0	.7	.7	3.8	31.6
2.1- 4.0 M/S	5.6	3.0	.1	2.8	11.8	8.3	1.7	3.0	.6	.4	.6	9.6	47.5
4.1- 6.0 M/S	5.2	1.4	0.0	.6	1.7	5.1	.1	0.0	.7	0.0	.1	2.1	17.1
OVER 6.0 M/S	1.3	1.6	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	.3	3.7
TOTAL	17.6	9.4	4.1	6.8	17.1	16.6	2.5	5.1	2.3	1.1	1.4	15.8	100.0
MIDL. VIND M/S	3.3	3.4	1.1	2.3	2.8	3.5	2.6	2.1	2.5	2.0	2.4	2.9	2.9
ANT. OBS.	125	67	29	48	121	118	18	36	16	8	10	112	709

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 2.9 M/S, BASERT PÅ 712 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: JUNI 1977

SEKTOR	VINDROSE KL.								DØGN
	1	4	7	10	13	16	19	22	
20- 40	13.3	6.7	30.0	13.3	0.0	0.0	0.0	6.9	10.5
50- 70	6.7	0.0	13.3	13.3	10.0	6.7	0.0	6.9	7.5
80-100	6.7	10.0	13.3	6.7	6.7	3.3	3.3	10.3	7.4
110-130	10.0	6.7	0.0	26.7	10.0	16.7	20.0	13.8	9.9
140-160	3.3	0.0	6.7	10.0	43.3	20.0	23.3	6.9	17.0
170-190	6.7	10.0	3.3	10.0	16.7	36.7	30.0	17.2	15.4
200-220	0.0	3.3	3.3	0.0	0.0	3.3	6.7	3.4	2.4
230-250	3.3	0.0	0.0	3.3	0.0	3.3	3.3	3.4	3.6
260-280	0.0	6.7	6.7	0.0	3.3	3.3	3.3	10.3	3.8
290-310	10.0	10.0	6.7	6.7	0.0	6.7	3.3	6.9	5.3
320-340	13.3	10.0	0.0	3.3	10.0	0.0	6.7	0.0	5.9
350- 10	23.3	36.7	16.7	6.7	0.0	0.0	0.0	13.8	11.0
STILLE	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.3
ANT. OBS.	30	30	30	30	30	30	30	29	716
MIDL. VIND	2.2	2.3	2.9	3.0	3.6	3.4	2.5	2.4	2.8

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													.3
1- 2.0 M/S	4.5	4.3	3.8	4.1	5.0	3.1	1.0	1.3	.6	.3	.7	3.8	32.3
2.1- 4.0 M/S	3.6	2.0	2.5	5.7	10.6	7.7	1.3	1.7	1.3	2.8	3.8	6.7	49.6
4.1- 6.0 M/S	1.5	1.1	1.0	.1	1.4	3.6	.1	.7	1.8	2.0	1.4	.4	15.2
OVER 6.0 M/S	.8	.1	.1	0.0	0.0	1.0	0.0	0.0	.1	.3	0.0	.1	2.7
TOTAL	10.5	7.5	7.4	9.9	17.0	15.4	2.4	3.6	3.8	5.3	5.9	11.0	100.0

MIDL. VIND M/S 2.9 2.3 2.3 2.2 2.7 3.4 2.2 2.7 3.5 3.9 3.4 2.6 2.8
 ANT. OBS. 75 54 53 71 122 110 17 26 27 38 42 79 716

MIDLERE VINDSTYRKE FOR HELE DATASETET ER 2.8 M/S, BASERT PÅ 717 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: JULI 1977

SEKTOR	VINDROSE KL.								DØGN
	1	4	7	10	13	16	19	22	
20- 40	29.0	22.6	25.8	29.0	12.9	6.7	10.0	13.3	16.8
50- 70	16.1	3.2	16.1	3.2	6.5	3.3	13.3	10.0	9.2
80-100	0.0	3.2	0.0	6.5	0.0	10.0	6.7	0.0	3.6
110-130	3.2	12.9	0.0	6.5	9.7	10.0	13.3	13.3	8.2
140-160	6.5	3.2	3.2	29.0	29.0	23.3	16.7	20.0	17.2
170-190	9.7	12.9	6.5	6.5	22.6	43.3	30.0	6.7	17.5
200-220	3.2	6.5	9.7	3.2	6.5	3.3	3.3	6.7	4.2
230-250	3.2	0.0	3.2	0.0	3.2	0.0	0.0	3.3	1.5
260-280	3.2	9.7	0.0	0.0	3.2	0.0	0.0	0.0	2.6
290-310	3.2	6.5	3.2	3.2	3.2	0.0	0.0	3.3	3.1
320-340	3.2	3.2	3.2	0.0	0.0	0.0	3.3	0.0	1.6
350- 10	19.4	16.1	29.0	12.9	3.2	0.0	3.3	23.3	14.4
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ANT. OBS.	31	31	31	31	31	30	30	30	731
MIDL. VIND	2.0	1.7	2.4	2.9	3.7	3.8	2.7	2.7	2.7

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
1- 2.0 M/S	7.3	4.1	2.1	3.8	5.7	4.0	1.6	.8	1.4	1.4	.7	4.1	36.9
2.1- 4.0 M/S	5.5	1.8	1.1	3.7	10.7	8.3	2.6	.5	1.1	1.5	1.0	7.9	45.7
4.1- 6.0 M/S	3.0	1.4	.3	.5	.8	5.2	0.0	.1	.1	.3	0.0	2.3	14.1
OVER 6.0 M/S	1.1	1.9	.1	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
TOTAL	16.8	9.2	3.6	8.2	17.2	17.5	4.2	1.5	2.6	3.1	1.6	14.4	100.0

MIDL. VIND M/S 2.7 3.3 2.2 2.2 2.5 3.1 2.2 2.0 2.0 2.2 2.2 2.2 2.8 2.7
 ANT. OBS. 129 67 26 60 126 128 31 11 19 23 12 105 731

MIDLERE VINDSTYRKE FOR HELE DATASETET ER 2.7 M/S, BASERT PÅ 733 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: AUGUST 1977

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	12.9	16.1	12.9	12.9	3.2	3.2	3.2	19.4	13.2	
50- 70	12.9	12.9	19.4	12.9	22.6	9.7	12.9	6.5	12.7	
80-100	9.7	12.9	9.7	12.9	3.2	3.2	3.2	6.5	6.9	
110-130	0.0	3.2	6.5	3.2	12.9	6.5	9.7	6.5	6.1	
140-160	3.2	3.2	9.7	16.1	22.6	29.0	22.6	12.9	13.2	
170-190	9.7	6.5	0.0	12.9	12.9	38.7	19.4	9.7	15.1	
200-220	6.5	9.7	3.2	0.0	6.5	0.0	16.1	6.5	5.8	
230-250	0.0	3.2	6.5	6.5	3.2	0.0	3.2	3.2	3.5	
260-280	3.2	3.2	3.2	0.0	3.2	0.0	3.2	6.5	3.0	
290-310	6.5	0.0	0.0	6.5	0.0	0.0	0.0	0.0	1.8	
320-340	0.0	0.0	0.0	0.0	3.2	3.2	0.0	3.2	1.1	
350- 10	35.5	29.0	29.0	16.1	6.5	6.5	6.5	16.1	17.5	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	.1	
ANT. OBS.	31	31	31	31	31	31	31	31	741	
MIDL. VIND	1.7	1.8	2.7	2.8	3.5	3.4	2.5	1.5	2.6	

VINDANALYSE

DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													.1
.1- 2.0 M/S	7.7	3.9	4.3	2.7	5.7	3.4	3.4	2.2	.8	.3	.5	7.6	42.4
2.1- 4.0 M/S	3.5	3.2	2.3	3.2	5.8	7.3	2.3	1.3	1.1	.9	.5	8.6	40.2
4.1- 6.0 M/S	1.8	4.2	.3	.1	1.8	3.9	.1	0.0	1.1	.5	0.0	1.3	15.1
OVER 6.0 M/S	.3	1.3	0.0	0.0	0.0	.5	0.0	0.0	0.0	0.0	0.0	0.0	2.2
TOTAL	13.2	12.7	6.9	6.1	13.2	15.1	5.8	3.5	3.0	1.8	1.1	17.5	100.0

MIDL. VIND M/S 2.2 3.5 1.9 2.1 2.6 3.3 1.9 2.0 3.2 3.2 2.1 2.3 2.6

ANT. OBS. 98 94 51 45 98 112 43 26 22 13 8 130 741

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 2.6 M/S, BASERT PÅ 743 OBSERVASJONER

VINDROSE FRA NORCEM BREVIK

MANED: SEPTEMBER 1976

SEKTOR	VINDROSE KL.									DØGN
	1	4	7	10	13	16	19	22		
20- 40	9.5	28.6	33.3	19.0	28.6	13.6	14.3	27.3	23.4	
50- 70	33.3	14.3	19.0	28.6	14.3	13.6	0.0	18.2	16.6	
80-100	4.8	0.0	0.0	14.3	9.5	0.0	4.8	9.1	6.0	
110-130	0.0	0.0	0.0	4.8	4.8	9.1	0.0	4.5	4.1	
140-160	4.8	4.8	0.0	4.8	23.8	22.7	14.3	9.1	9.7	
170-190	9.5	0.0	0.0	0.0	9.5	27.3	9.5	0.0	6.4	
200-220	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.0	1.9	
230-250	0.0	4.8	0.0	4.8	4.8	0.0	0.0	4.5	3.1	
260-280	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	1.0	
290-310	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.5	.4	
320-340	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
350- 10	28.6	47.6	42.9	23.8	4.8	13.6	47.6	22.7	26.3	
STILLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ANT. OBS.	21	21	21	21	21	22	21	22	513	
MIDL. VIND	2.3	2.3	2.5	2.4	2.3	2.7	2.1	1.7	2.3	

VINDANALYSE

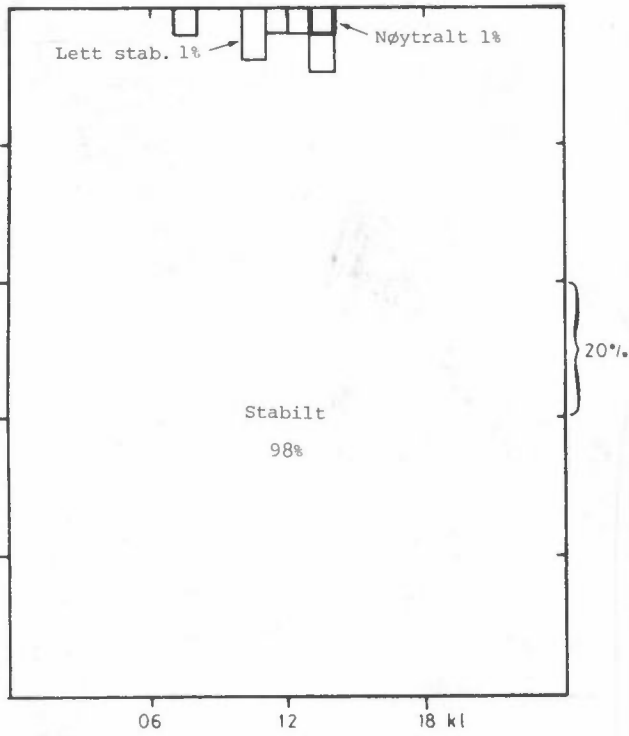
DØGNMIDDEL	30	60	90	120	150	180	210	240	270	300	330	360	TOTAL
STILLE													0.0
.1- 2.0 M/S	8.0	6.8	5.1	2.9	6.6	3.5	1.2	2.3	1.0	.4	.6	11.7	50.1
2.1- 4.0 M/S	10.5	4.7	.8	1.2	2.9	2.9	.8	.8	0.0	0.0	.4	14.0	39.0
4.1- 6.0 M/S	3.9	4.5	.2	0.0	.2	0.0	0.0	0.0	0.0	0.0	.6	9.4	
OVER 6.0 M/S	1.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
TOTAL	23.4	16.6	6.0	4.1	9.7	6.4	1.9	3.1	1.0	.4	1.0	26.3	100.0

MIDL. VIND M/S 2.8 2.8 1.1 1.6 1.9 1.9 1.7 1.5 1.1 .4 1.5 2.2 2.3

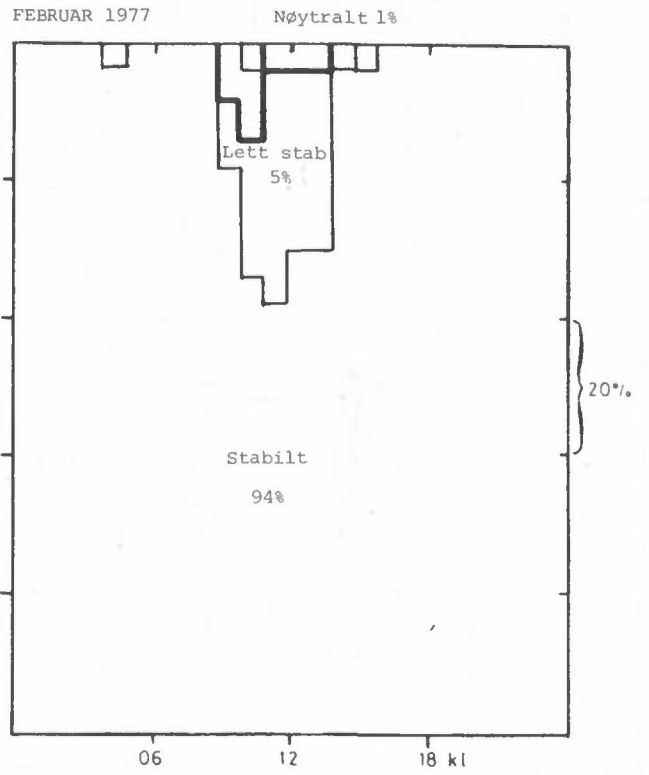
ANT. OBS. 120 85 31 21 50 33 10 16 5 2 5 135 513

MIDLERE VINDSTYRKE FOR HELE DATASETTET ER 2.2 M/S, BASERT PÅ 515 OBSERVASJONER

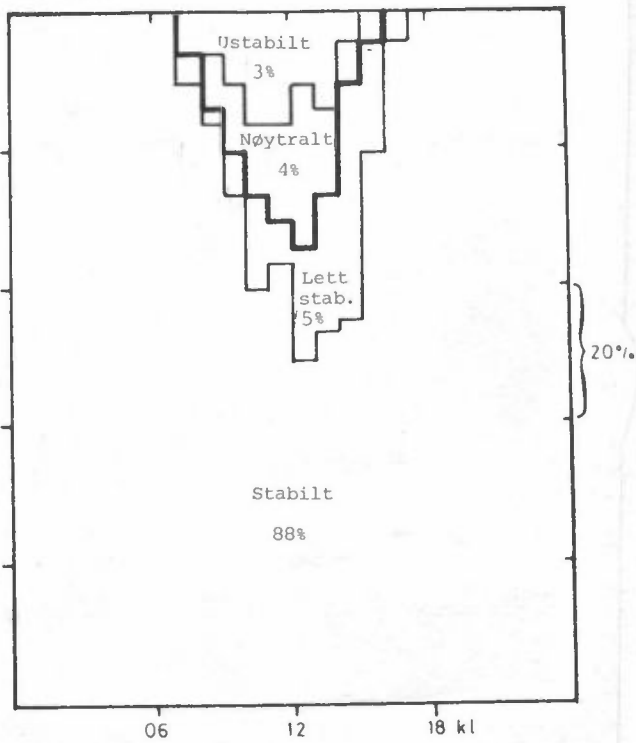
JANUAR 1977



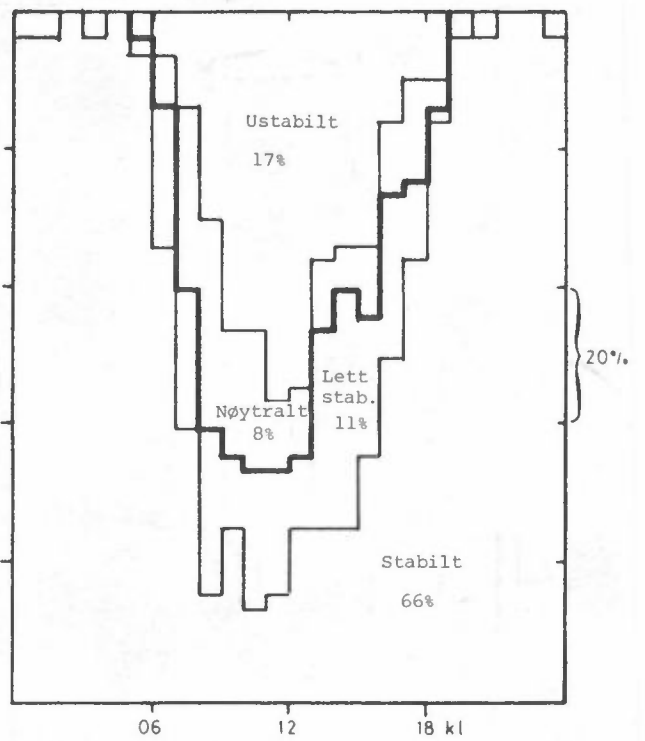
FEBRUAR 1977



MARS 1977

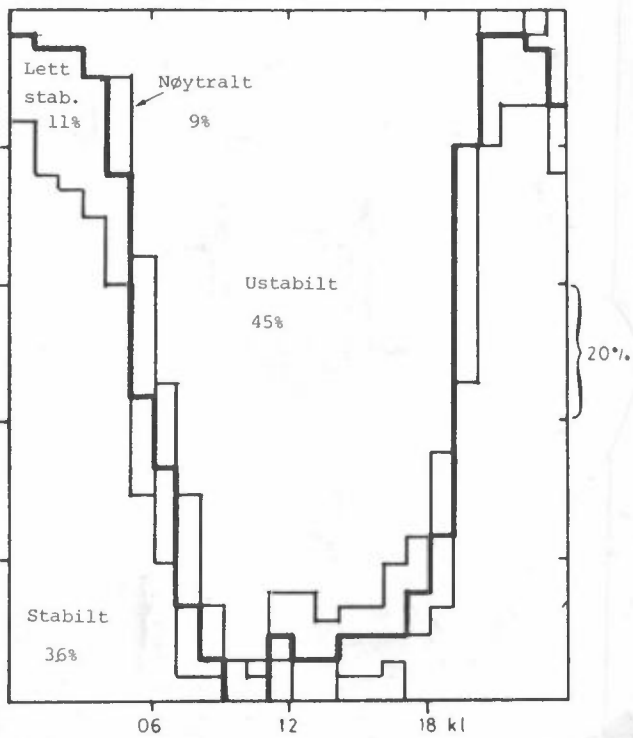


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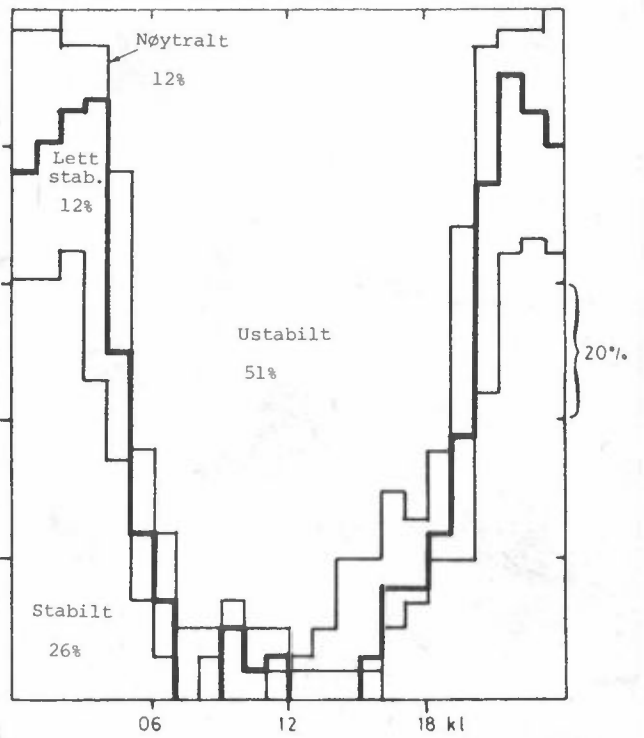


Stabilitet til forskjellige tider på døgnet.

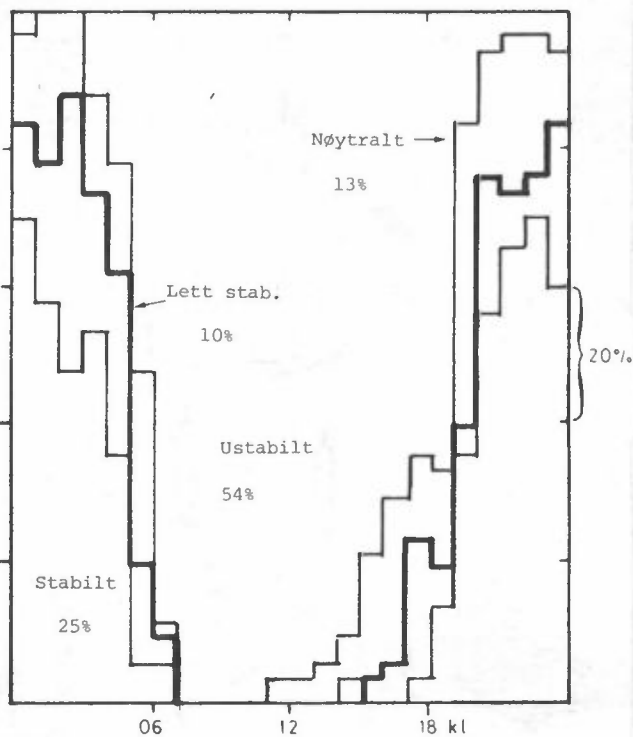
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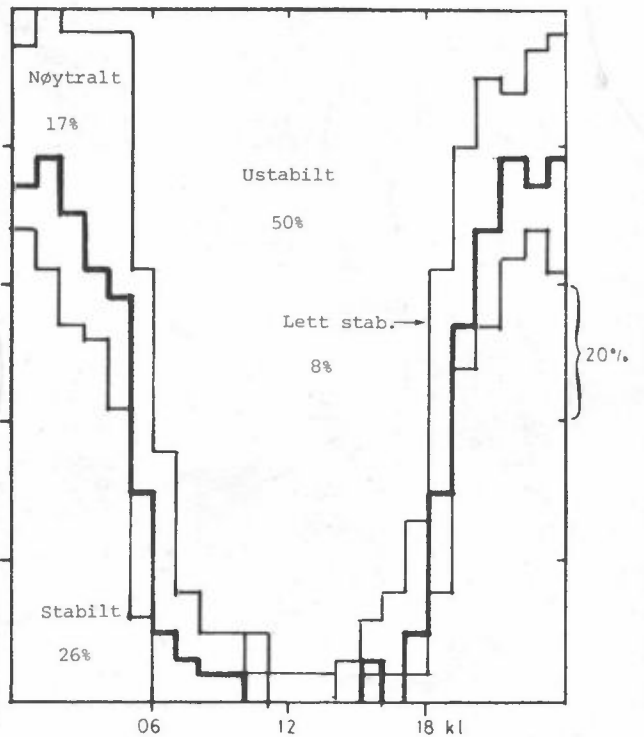
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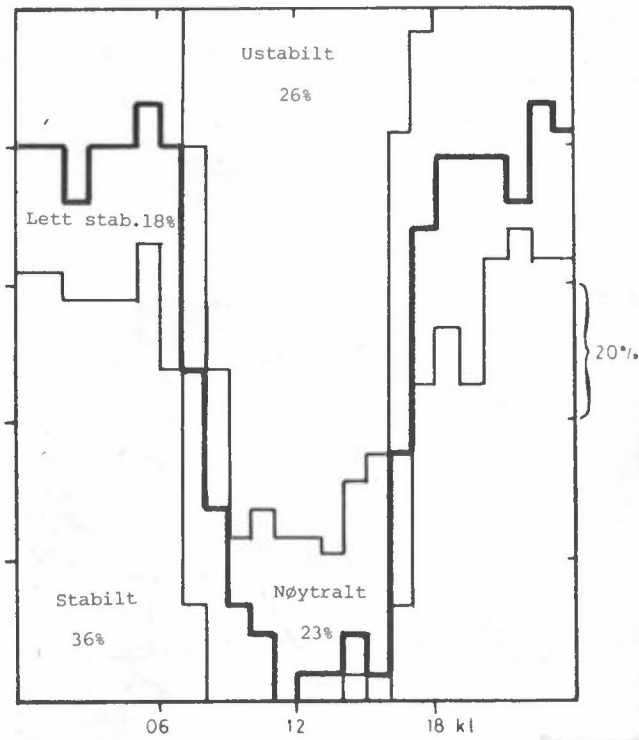
JULI 1977



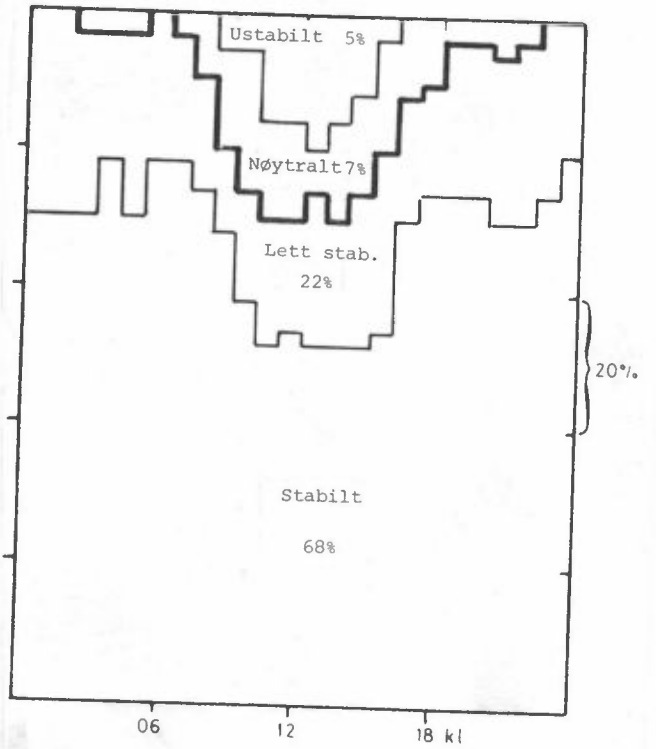
AUGUST 1977



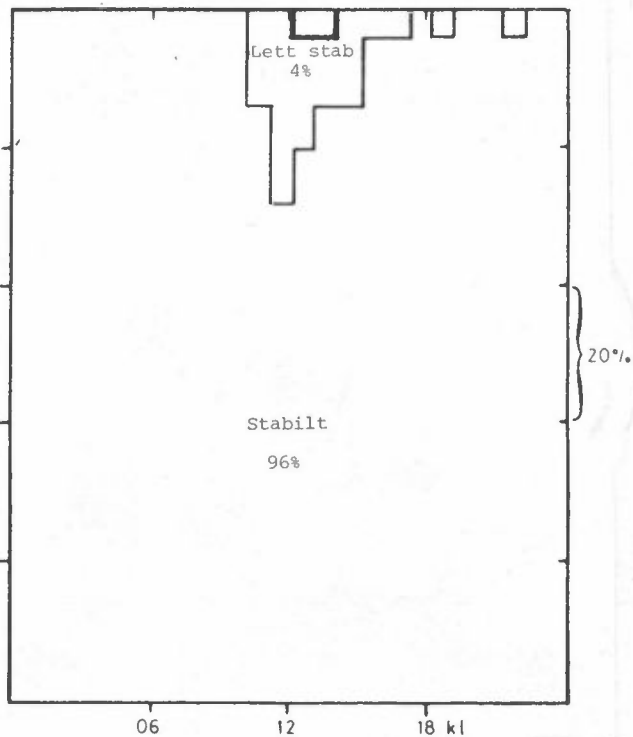
SEPTEMBER 1976



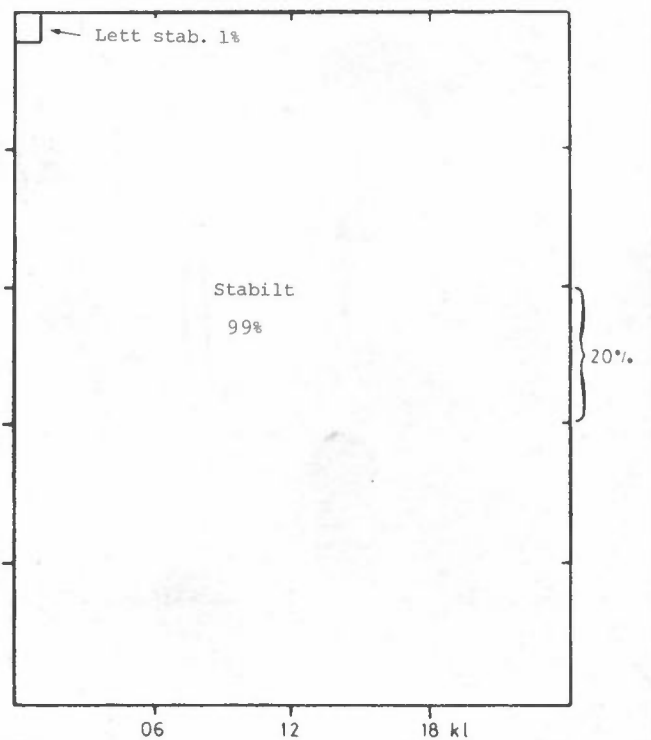
OKTOBER 1976



NOVEMBER 1976



DESEMBER 1976



Concentration ($\mu\text{g}/\text{m}^3$) of Ca and K containing particulates and their relative concentrations at various sites near Norcem, Dalen Cement Plant.

Locations	FAR (F) 1			NEAR (N) 1			FAR (F) 2			NEAR (N) 2			TRAVERSE (T)		
	Ca	K	Ca/K	Ca	K	Ca/K	Ca	K	Ca/K	Ca	K	Ca/K	Ca	K	Ca/K
First stage plate	0.8	0.5	1.6	1.4	0.5	2.8	1.5	0.3	5.0	1.0	0.4	2.5	10.6	6.9	11.8
1 ($>7.2 \mu\text{m}$)	1.9*	0.6*	3.5	9.7	1.5	6.7	7.1	1.3	5.5	12.4	2.9	4.2	175.7	5.0	25.0
2 (7.2-3.0 μm)	15.6*	2.7*	5.8	8.6	1.5	5.7	9.7	1.7	5.9	7.4	2.0	3.7	124.0	6.2	19.9
3 (3.0-1.5 μm)	3.2	1.1	2.8	5.9	1.4	4.2	5.8	1.0	5.5	3.7	1.0	3.6	101.7	5.3	19.1
4 (1.5-0.95 μm)	3.4	2.3	1.5	5.0	1.9	2.6	3.6	1.2	3.0	3.7	2.0	1.9	139.9	8.2	16.9
5 (0.45-0.5 μm)	2.5	2.5	1.0	3.5	1.9	1.9	1.5	1.0	1.4	2.5	2.1	1.2	17.5	2.7	6.4
AFTERFILTER	8.2	1.5	5.4	18.0	1.8	9.8	15.6	2.7	5.7	19.3	3.6	5.3	309.1	16.9	18.3
TOTAL	35.6	11.2	3.2	52.1	10.5	5.1	44.8	9.2	4.8	50.0	14.0	3.6	627.5	15.2	18.4

Locations	TOWER (M) 1						TOWER (M) 2						CHANKER (C)		
	25m			1m			25m			1m			Ca	K	Ca/K
Impactor stages	Ca	K	Ca/k	Ca	K	Ca/K	Ca	K	Ca/K	Ca	K	Ca/K	Ca	K	Ca/K
First stage plate	4.4	1.0	4.4	1.8	0.7	2.6	0.6	0.3	2.0	1.2	0.3	4.0	9.3	0.6	15.5
1 ($>7.2 \mu\text{m}$)	29.5	2.1	14.0	5.1	0.7	7.3	0.8	0.2	5.3	2.2	0.2	13.0	31.4	2.2	14.4
2 (7.2-3.0 μm)	19.9	2.2	9.0	3.7	0.5	7.4	0.9	0.1	8.6	2.2	0.2	12.0	13.4	1.8	7.6
3 (3.0-1.5 μm)	8.4	1.3	6.5	1.8	0.3	6.0	0.8	0.2	5.0	1.6	0.2	8.6	9.7	1.3	7.5
4 (1.5-0.95 μm)	7.0	1.1	6.4	1.6	0.4	4.0	1.1	0.3	4.0	1.5	0.1	10.4	8.5	1.3	6.5
5 (0.95-0.5 μm)	4.3	0.7	6.1	1.2	0.2	6.0	0.7	0.2	4.6	1.6	0.3	6.0	5.8	1.0	5.8
AFTERFILTER	16.6	1.0	16.6	4.0	0.7	5.7	4.2	0.2	17.3	2.2	0.2	14.3	124.0	4.5	27.3
TOTAL	90.1	9.4	9.6	19.0	3.5	5.4	9.1	1.5	7.8	12.5	1.5	10.2	202.2	12.7	15.9

* Stage 1 of impactor inserted backwards; thus, stage 1 collections mainly on stage 2

The size-mass distribution of total particulate matter ($\mu\text{g}/\text{m}^3$) in the aerosol at Norcem, Dalen Cement Plant.

Location Impactor stage	FAR(F)1	NEAR(N)1	FAR(F)2	NEAR(N)2
1 ($>7.2 \mu\text{m}$)	12.5*	44.8	29.1	66.9
2 ($7.2-3.0 \mu\text{m}$)	62.5*	41.9	52.6	40.8
3 ($3.0-1.5 \mu\text{m}$)	17.0	24.0	37.9	23.5
4 ($1.5-0.95 \mu\text{m}$)	17.6	26.8	28.5	26.3
5 ($0.95-0.5 \mu\text{m}$)	11.5	13.7	16.6	20.3
AFTERFILTER	97.6	121.2	102.7	122.9
TOTAL	201.7	272.4	267.4	300.7

* stage 1 of impactor inserted backwards; thus stage 1 collections mainly on stage 2.

Location Impactor stage	TOWER (M) 1		TRAVERSE (T)	CLINKER (C)
	25 m	1 m		
1 ($>7.2 \mu\text{m}$)	82.0	21.7	127.7	92.0
2 ($7.2-3.0 \mu\text{m}$)	68.0	20.6	120.3	46.1
3 ($3.0-1.5 \mu\text{m}$)	37.5	11.5	95.8	34.7
4 ($1.5-0.95 \mu\text{m}$)	33.2	9.1	121.5	36.8
5 ($0.95-0.5 \mu\text{m}$)	20.9	-	23.4	21.3
AFTERFILTER	124.3	52.5	775.0	307.0
TOTAL	365.9	115.4	1343.3	538.5

The size-mass distribution of Ca and K containing particulates and total particulate matter in the aerosol at various sites near Norcem, Dalen Cement Plant.

