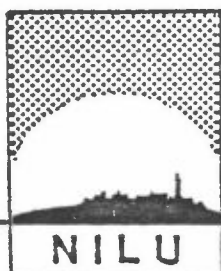


NILU TR : 21/85  
REFERENCE: O-8118  
DATE : DECEMBER 1985

**PRECIPITATION CHEMISTRY AT THE  
NORWEGIAN BACKGROUND STATIONS. 1982**

Kari Hoem og Einar Joranger



NORWEGIAN INSTITUTE FOR AIR RESEARCH

ROYAL NORWEGIAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

NILU TR : 21/85  
REFERENCE: O-8118  
DATE : DECEMBER 1985

*PRECIPITATION CHEMISTRY AT THE  
NORWEGIAN BACKGROUND STATIONS. 1982*

Kari Hoem og Einar Joranger

NORWEGIAN INSTITUTE FOR AIR RESEARCH  
P.O. BOX 130, N-2001 LILLESTRØM  
NORWAY

ISBN 82-7247-658-4

**PRECIPITATION CHEMISTRY AT THE NORWEGIAN  
BACKGROUND STATIONS, 1982**

This report presents precipitation chemistry data and measurements of sulphur dioxide, particulate sulphate and nitrogen dioxide in air for 1982, based on samples collected at 18 background stations in Norway. Ten of the stations were operated as part of the Norwegian national environmental monitoring programme (Statlig program for forurensningsovervåking) which started in 1981 with The State Pollution Control Authority (SFT) as responsible for the co-ordination and implementation of the programme. Six of these stations are also part of the Co-operative programme for Monitoring and Evaluation of the Long Range Transmission of Air Pollution in Europe (EMEP), in operation from 1978.

This data report is a supplement to the SFT yearly report for 1982 (Statens forurensningstilsyn, 1983), including the precipitation chemistry data from 9 supplementary NILU-stations. Of these, 3 stations have daily sampling (Lista, Vatnedalen, Løken), four have weekly sampling (Vikedal, Vardø, Skrova, Kise (week)) and two stations have monthly sampling (As and Kise (month)).

The air samples of sulphur dioxide, particulate sulphate and nitrogen dioxide are made daily, except at Vardø and Skrova with sampling three times a week.

The Norwegian background measurements of zinc, cadmium and lead in precipitation at 4 stations are only presented in the SFT-report. Reference is also made to the SFT-report for description of analytical methods and the discussion of the data.

The data are presented as monthly and yearly values. The daily values are available at NILU.

At the monthly precipitation sampling stations at Ås and Kise the monthly mean concentrations of the main components are generally higher than measured at the stations with daily precipitation sampling. This is probably due to greater dry deposition from local and long-range transported pollutants when using monthly bulk sampling. In addition the evaporation from the bulk sampler may cause higher concentrations particularly in the summer season and with small precipitation amounts.

#### *REFERENCES*

- Statens forurensnings-  
tilsyn                      Overvåking av langtransportert foru-  
renset luft og nedbør. Årsrapport  
1982.  
Oslo 1983. (Statlig program for for-  
urensningsovervåking. Rapport nr  
108/83).

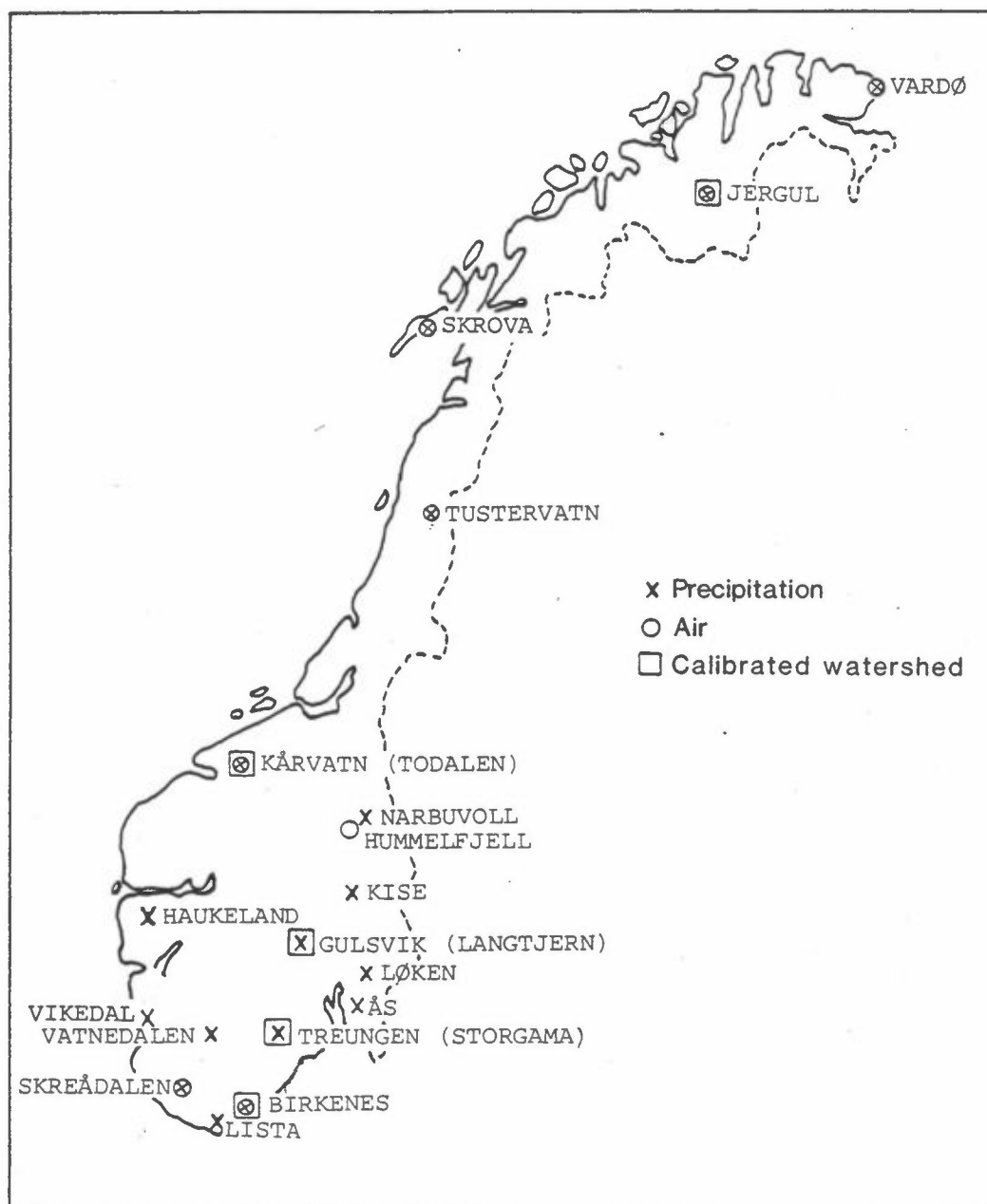


Figure 1: Norwegian background stations, 1982.

Table 1: Background stations in Norway, 1982. The station sites are shown in Figure 1.

Station	County	Precipi. normal 1931-60* mm	m.a.s.l.	Lat. (N)	Long. (E)	Start	Measurements					Station	Adress
							Air	Precipitation			M		
								D	W 1	2			
Birkenes	Aust-Agder	(1305)	190	58° 23'	8° 15'	Nov 71	x	x	x			4760 Birkeland	
Skreådalen*	Vest-Agder	2015	475	58° 49'	6° 43'	Nov 71	x	x				4442 Dorgefoss	
Treungen (Storgama)	Telemark	(1005)	270	59° 01'	8° 32'	Sep 73		x				4860 Treungen	
Gulsvik (Langtjern)	Buskerud	(760)	260	60° 22'	9° 39'	Sep 74	x					3530 Gulsvik	
Narbuvoll	Hedmark	(534)	768	62° 21'	11° 21'	Apr 77	x	x				2554 Narbuvollen	
Hummelfjell	Hedmark	-	1539	62° 27'	11° 16'	Mar 73	x					2550 Os i Østerdalen	
Haukeland*	Hordaland	3225	204	60° 49'	5° 35'	Aug 81	x					5198 Matredal	
Kårvatn (Todalen)	Møre og Romsdal	(1467)	210	62° 47'	8° 53'	Feb 78	x	x				6645 Todalen	
Tustervatn*	Nordland	1100	439	65° 50'	13° 55'	Des 71	x	x				8647 Bleikvasslia	
Jergul	Finnmark	(370)	255	69° 24'	24° 36'	Nov 76	x	x				9732 Jergul	
Lista*	Vest-Agder	1049	13	58° 06'	6° 34'	Nov 71	x					4653 Borhaug	
Vatnedalen	Aust-Agder	(945)	800	59° 28'	7° 23'	Nov 73	x	x				4694 Bykle	
Løken	Akershus	(774)	150	59° 48'	11° 27'	Feb 72	x					1960 Løken i Høland	
Vikedal I*	Rogaland	2650	156	59° 33'	6° 00'	Mar 82			x			4210 Vikedal	
Skrova*	Nordland	742	18	68° 09'	14° 39'	Sep 82	x		x			8320 Skrova	
Vardø	Finnmark	(545)	60	70° 23'	31° 09'	Sep 82	x		x			9950 Vardø	
As*	Akershus	785	95	59° 40'	10° 47'	1954				x		1432 As	
Kise	Hedmark	(534)	128	60° 46'	10° 48'	1956			x			2350 Nes i Hedmark	

D: Daily sampling  
W: Weekly sampling  
M: Monthly sampling

Analyses:  
Air, daily and three times : SO<sub>2</sub> and SO  
a week (see text) : Amount (mm), pH, conductivity, SO<sub>4</sub>, NH<sub>4</sub>, NO<sub>3</sub>, Ca, K, Mg, Cl, Na  
Precipitation D : Amount (mm), Pb, Cd, Zn  
Precipitation W1 : Amount (mm), pH, conductivity, SO<sub>4</sub>, NH<sub>4</sub>, NO<sub>3</sub>, Ca, K, Mg, Cl, Na  
Precipitation W2 : Amount (mm), pH, conductivity, SO<sub>4</sub>, NH<sub>4</sub>, NO<sub>3</sub>, Ca, K, Mg, Cl, Na  
Precipitation M : Amount (mm), pH, conductivity, SO<sub>4</sub>, NH<sub>4</sub>, NO<sub>3</sub>, Ca, K, Mg, Cl, Na

\*Precipitation stations for the Norwegian Meteorological Institute (DNMI)  
( ) the nearest DNMI station

Table 2: Yearly weighted mean concentrations ( $\mu\text{ekv/l}$ ) of precipitation components and the ion balances, measured at the Norwegian background stations, 1982.

Stasjon							Sea salt content				Total ion balance I cation / I anion
	H <sup>+</sup>	SO <sub>4</sub> <sup>-2</sup>	NO <sub>3</sub> <sup>-</sup>	NH <sub>4</sub> <sup>+</sup>	Ca <sup>2+</sup>	K <sup>+</sup>	Mg <sup>2+</sup>	Na <sup>+</sup>	Cl <sup>-</sup>	SO <sub>4</sub> <sup>2-</sup>	
Birkenes	54	65	40	51	11	5	17	66	93	9	0.99
Skreådalen	30	36	20	26	8	6	18	79	99	9	1.02
Treungen	48	52	32	36	7	2	6	20	27	3	1.04
Gulsvik	42	56	32	37	11	5	4	10	13	2	1.06
Narbuvoll	20	31	20	26	12	6	5	14	11	2	1.30
Haukeland	27	30	13	14	7	3	20	86	105	10	0.99
Kårvatn	13	16	6	8	7	3	13	57	65	7	1.07
Tustervatn	11	10	6	6	11	5	38	162	204	19	0.97
Jergul	22	23	9	10	5	3	3	8	6	1	1.31
Lista	52	68	47	43	42	19	149	650	791	79	0.97
Vatnedalen	24	24	13	12	6	4	7	27	32	3	1.11
Løken	47	66	43	56	12	5	9	33	41	5	1.05
Kise (week)	45	60	38	53	12	5	4	9	12	2	1.14
As	34	81	42	59	25	13	15	43	52	7	1.04
Kise (monthly)	36	78	39	58	35	3	6	10	10	3	1.14



Table 3: Yearly weighted mean concentrations of precipitation components at the Norwegian background stations, 1982.

Stasjon	H <sup>+</sup>	SO <sub>4</sub> <sup>2-</sup> - S	NO <sub>3</sub> <sup>-</sup> - N	NH <sub>4</sub> <sup>-</sup> - N	Ca	K	Mg	Na	Cl
	µekv/l	mg S/l	mg N/l	mg N/l	mg/l	mg/l	mg/l	mg/l	mg/l
Birkenes	54	1.05	0.56	0.72	0.22	0.18	0.21	1.51	3.29
Skreådalen	30	0.57	0.28	0.37	0.17	0.23	0.22	1.82	3.52
Treungen	48	0.84	0.45	0.50	0.14	0.08	0.07	0.47	0.94
Gulsvik	42	0.89	0.44	0.52	0.22	0.19	0.05	0.24	0.45
Narbuvoll	20	0.49	0.28	0.36	0.25	0.23	0.06	0.32	0.40
Haukeland	27	0.48	0.18	0.20	0.14	0.12	0.24	1.97	3.72
Kårvatn	13	0.26	0.08	0.11	0.15	0.10	0.16	1.32	2.30
Tustervatn	11	0.16	0.08	0.09	0.22	0.21	0.47	3.74	7.23
Jergul	22	0.36	0.13	0.14	0.10	0.10	0.03	0.19	0.21
Lista	52	1.09	0.65	0.60	0.85	0.75	1.82	14.94	28.05
Vatnedalen	24	0.38	0.18	0.17	0.13	0.14	0.08	0.63	1.12
Løken	47	1.06	0.60	0.79	0.24	0.18	0.11	0.75	1.47
Kise (week)	45	0.96	0.53	0.74	0.24	0.18	0.04	0.21	0.41
Ås	34	1.30	0.59	0.82	0.51	0.50	0.18	1.00	1.83
Kise (monthly)	36	1.25	0.55	0.81	0.71	0.10	0.07	0.24	0.35

Table 4: The wet deposition of precipitation components at the Norwegian background stations, 1982.

Stasjon	H <sup>+</sup>	SO <sub>4</sub> <sup>2-</sup> - S	NO <sub>3</sub> <sup>-</sup> - N	NH <sub>4</sub> <sup>-</sup> - N	Ca	K	Mg	Na	Cl
	µ ekv/m <sup>2</sup>	g S/m <sup>2</sup>	g N/m <sup>2</sup>	g N/m <sup>2</sup>	g/m <sup>2</sup>	g/m <sup>2</sup>	g/m <sup>2</sup>	g/m <sup>2</sup>	g/m <sup>2</sup>
Birkenes	86	1.66	0.89	1.14	0.35	0.29	0.34	2.40	5.23
Skreådalen	76	1.44	0.71	0.93	0.43	0.58	0.55	4.59	8.87
Treungen	54	0.95	0.50	0.56	0.16	0.09	0.08	0.53	1.06
Gulsvik	33	0.70	0.35	0.41	0.17	0.15	0.04	0.19	0.35
Narbuvoll	7	0.18	0.10	0.13	0.09	0.08	0.02	0.12	0.14
Haukeland	101	1.76	0.67	0.72	0.50	0.43	0.89	7.27	13.71
Kårvatn	13	0.26	0.08	0.11	0.15	0.10	0.16	1.31	2.29
Tustervatn	15	0.23	0.11	0.12	0.30	0.29	0.65	5.19	10.01
Jergul	11	0.17	0.06	0.06	0.05	0.05	0.01	0.09	0.10
Lista	55	1.16	0.70	0.64	0.91	0.81	1.95	15.98	30.01
Vatnedalen	23	0.37	0.17	0.16	0.12	0.13	0.08	0.61	1.09
Løken	40	0.91	0.52	0.68	0.20	0.15	0.10	0.64	1.26
Kise (week)	22	0.46	0.26	0.36	0.11	0.09	0.02	0.10	0.20
Ås	23	0.90	0.41	0.57	0.36	0.35	0.13	0.70	1.27
Kise (monthly)	12	0.40	0.18	0.26	0.23	0.03	0.02	0.08	0.11

Table 5: Monthly and yearly weighted mean values of the pH in precipitation at the Norwegian background stations, 1982.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	4.39	4.09	4.29	4.23	4.28	4.33	4.05	4.28	4.13	4.17	4.49	4.46	4.27
Skreådalen	4.71	4.37	4.47	4.68	4.69	4.50	4.38	4.37	4.44	4.20	4.74	4.91	4.52
Treungen	4.50	4.11	4.24	4.37	4.36	4.38	4.26	4.32	4.21	4.21	4.52	4.60	4.32
Gulsvik	4.56	4.11	4.15	3.96*	4.38	4.62	4.43	4.34	4.34	4.30	4.80	4.69	4.38
Narbuvoll	5.13	4.65	4.25	4.92	4.57	5.14	5.27	5.10	4.56	4.49	4.91	4.70	4.71
Haukeland	4.51	4.35	4.39	4.48	4.52	5.42*	4.64	4.73	4.50	4.35	4.86	4.79	4.56
Kårvatn	5.03	4.87	4.93	4.76	4.58	4.36	4.98	4.67	4.97	4.57	5.58	5.36	4.87
Tustervatn	5.07	4.67	5.05	4.90	5.21	5.47	4.96	4.91	4.94	4.92	5.06	5.02	4.98
Jergul	5.41	4.70	4.67	4.71	4.35	4.53	4.99	4.69	4.63	4.63	4.63	4.55	4.65
Lista	4.37	4.20	4.32	4.07	4.36	4.56	4.07	4.30	4.27	4.05	4.67	4.35	4.29
Vatnedalen	4.61	4.41	4.49	4.67	4.59	4.89	4.39	4.42	4.47	4.47	5.00	5.08	4.62
Løken	4.37	3.99	4.28	4.34	4.32	4.83	4.50	4.54	4.19	4.19	4.46	4.46	4.33
Vikedal				4.41	4.62	3.93	4.25	4.59	4.29	4.27	4.66	4.73	(4.46)
Vardø									5.00	4.62	4.75	5.04	(4.83)
Skrova									4.96	4.78	4.90	4.84	(4.86)
Kise (week)	4.59	4.15	4.11	4.16	4.48	4.75	4.41	4.63	4.23	4.32	4.53	4.47	4.34
As	4.95	4.30	4.30	4.30	4.20	5.00	4.20	4.75	-	5.25	4.55	4.55	4.47
Kise (monthly)	4.15	4.15	4.15	4.15	4.40	4.75	6.50	6.05	4.60	4.15	4.50	4.60	4.44

\* Small amounts of precipitation, look at Table 14.

Table 6: Monthly and yearly weighted mean concentrations of excess sulphate in precipitation at the Norwegian background stations, 1982.  
Unit: mgS/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.67	1.98	1.13	0.76	1.32	0.94	1.74	0.69	1.55	1.24	0.56	0.49	1.05
Skreådalen	0.43	0.94	0.45	0.60	0.56	0.76	0.99	0.71	0.61	1.34	0.36	0.22	0.57
Treungen	0.44	1.59	0.82	0.69	0.79	0.76	1.27	0.72	1.23	1.18	0.44	0.29	0.84
Gulsvik	0.43	1.13	1.27	3.26*	0.93	1.09	0.72	0.59	1.30	1.04	0.38	0.41	0.89
Narbuvoll	0.33	0.43	0.89	0.25	0.51	0.56	0.52	0.45	0.74	1.11	0.21	0.25	0.49
Haukeland	0.48	0.62	0.72	0.76	0.61	0.83*	1.19	0.26	0.55	0.79	0.23	0.24	0.48
Kårvatn	0.19	0.29	0.24	0.33	0.47	1.18	0.19	0.28	0.15	0.70	0.10	0.12	0.26
Tustervatn	0.17	0.36	0.11	0.25	0.18	0.09	0.14	0.16	0.16	0.16	0.11	0.15	0.16
Jergul	0.05	0.32	0.33	0.32	0.99	0.47	0.26	0.27	0.34	0.39	0.24	0.26	0.36
Lista	0.66	1.40	0.90	1.30	1.14	0.75	1.91	0.65	1.39	1.55	0.70	1.09	1.08
Vatnedalen	0.38	0.42	0.40	0.53	0.29	0.36	0.76	0.64	0.53	0.72	0.14	0.11	0.38
Løken	0.93	2.22	1.12	1.02	1.24	0.70	0.86	0.78	1.72	1.25	0.67	0.57	1.06
Vikedal I				0.80	0.53	2.75	1.26	0.40	0.93	0.98	0.41	0.34	(0.66)
Vardø									1.76	1.73	2.20	2.08	(1.89)
Skrova									0.41	0.38	0.87	1.08	(0.64)
Kise (week)	0.56	0.79	1.27	1.51	0.82	0.88	1.11	0.66	1.23	1.19	0.55	0.46	0.96
As	1.75	2.59	1.35	0.97	2.04	1.20	1.22	0.98	-	1.66	0.84	0.61	1.30
Kise (monthly)	1.54	0.84	1.67	1.87	1.40	0.87	1.39	0.86	1.54	1.86	0.64	0.55	1.25

\* Small amounts of precipitation, look at Table 14.

Table 7: Monthly and yearly weighted mean concentrations of nitrate in precipitation at the Norwegian background stations, 1982.  
Unit: mgN/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.47	1.44	0.85	0.47	0.41	0.31	0.54	0.39	0.86	0.51	0.39	0.33	0.56
Skreådalen	0.27	0.56	0.40	0.25	0.20	0.30	0.27	0.30	0.26	0.61	0.18	0.13	0.28
Treungen	0.32	0.15	0.66	0.29	0.23	0.26	0.34	0.37	0.64	0.55	0.30	0.25	0.45
Gulsvik	0.45	1.04	0.89	1.70*	0.34	0.31	0.18	0.23	0.58	0.43	0.36	0.34	0.44
Narbuvoll	0.18	0.52	0.87	0.12	0.23	0.18	0.14	0.16	0.26	0.45	0.25	0.29	0.28
Haukeland	0.28	0.30	0.27	0.28	0.19	0.19*	0.24	0.08	0.19	0.29	0.09	0.12	0.18
Kårvatn	0.05	0.13	0.07	0.06	0.12	0.29	0.07	0.13	0.05	0.39	0.06	0.07	0.08
Tustervatn	0.09	0.18	0.06	0.07	0.05	0.04	0.06	0.05	0.05	0.10	0.10	0.13	0.08
Jergul	0.03	0.23	0.20	0.08	0.12	0.11	0.07	0.08	0.11	0.46	0.26	0.35	0.13
Lista	0.63	0.99	0.70	0.81	0.42	0.35	0.83	0.54	0.74	1.00	0.40	0.56	0.66
Vatnedalen	0.30	0.35	0.42	0.27	0.16	0.16	0.20	0.23	0.21	0.26	0.07	0.10	0.18
Løken	0.69	1.36	0.72	0.46	0.52	0.26	0.25	0.46	0.85	0.69	0.52	0.40	0.60
Vikedal I				0.37	0.17	0.94	0.33	0.19	0.38	0.45	0.20	0.19	(0.28)
Vardø									0.30	0.46	0.55	0.60	(0.44)
Skrova									0.14	0.24	0.18	0.49	(0.24)
Kise (week)	0.41	0.72	0.98	0.89	0.32	0.31	0.34	0.31	0.58	0.52	0.48	0.60	0.53
As	1.04	1.18	0.92	0.40	0.58	0.31	0.32	0.55	-	0.68	0.65	0.38	0.59
Kise (monthly)	0.62	0.62	0.80	0.98	0.39	0.31	0.36	0.34	0.63	0.65	0.47	0.59	0.55

\* Small amount of precipitation, look at Table 14.

Table 8: Monthly and yearly weighted mean concentrations of ammonium in precipitation at the Norwegian background stations, 1982.  
Unit: mgN/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.43	2.01	1.32	0.27	0.84	0.46	0.89	0.31	1.12	0.57	0.45	0.24	0.72
Skreådalen	0.38	0.78	0.42	0.47	0.31	0.38	0.55	0.31	0.35	0.85	0.26	0.15	0.37
Treungen	0.25	1.73	0.61	0.20	0.30	0.37	0.67	0.32	0.84	0.59	0.26	0.07	0.50
Gulsvik	0.37	1.00	0.87	2.50*	0.42	0.72	0.40	0.16	0.80	0.56	0.27	0.19	0.52
Narbuvoll	0.14	0.30	0.83	0.08	0.19	0.62	0.90	0.32	0.53	0.42	0.11	0.10	0.36
Haukeland	0.20	0.28	0.37	0.27	0.25	1.50*	1.24	0.06	0.23	0.28	0.06	0.09	0.20
Tårvatn	0.04	0.13	0.10	0.08	0.30	0.67	0.13	0.16	0.05	0.48	0.06	0.05	0.11
Tustervatn	0.10	0.24	0.05	0.13	0.12	0.10	0.06	0.04	0.05	0.07	0.09	0.11	0.09
Jergul	0.02	0.03	0.10	0.08	0.28	0.13	0.39	0.09	0.09	0.04	0.04	0.03	0.14
Lista	0.37	1.31	0.67	0.56	0.47	0.33	0.59	0.42	0.62	1.12	0.75	0.42	0.67
Vatnedalen	0.33	0.15	0.40	0.31	0.05	0.26	0.24	0.30	0.19	0.21	0.04	0.09	0.17
Løken	0.84	2.01	1.10	0.39	0.66	0.50	0.52	0.67	1.31	0.87	0.54	0.30	0.79
Vikedal I				0.70	0.23	1.54	0.52	0.19	0.43	0.56	0.16	0.19	(0.34)
Vardø									5.07	0.79	0.72	0.43	(2.38)
Skrova									0.07	0.09	0.04	0.12	(0.08)
Kise (week)	0.47	0.61	1.21	2.01	0.41	0.73	0.65	0.47	0.82	1.02	0.41	0.44	0.74
As	1.08	2.60	0.92	0.36	0.78	1.14	0.36	0.96	-	0.76	0.86	0.32	0.82
Kise (monthly)	0.48	0.36	1.18	1.38	0.54	0.73	2.30	0.70	0.96	0.56	0.34	0.36	0.81

\* Small amount of precipitation, look at Table 14.

Table 9: Monthly and yearly weighted mean concentrations of calcium in precipitation at the Norwegian background stations, 1982.  
Unit: mg/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.18	0.48	0.30	0.13	0.15	0.12	0.37	0.15	0.30	0.19	0.20	0.19	0.22
Skreådalen	0.16	0.17	0.12	0.38	0.21	0.19	0.21	0.17	0.11	0.22	0.20	0.13	0.17
Treungen	0.07	0.32	0.10	0.19	0.12	0.15	0.29	0.10	0.20	0.18	0.09	0.08	0.14
Gulsvik	0.13	0.19	0.11	0.80*	0.14	0.53	0.12	0.08	0.23	0.26	0.47	0.16	0.22
Narbuvoll	0.20	0.41	0.26	0.11	0.24	0.39	0.29	0.20	0.27	0.55	0.21	0.23	0.25
Haukeland	0.20	0.08	0.08	0.14	0.11	0.50*	0.17	0.10	0.13	0.11	0.20	0.14	0.14
Kårvatn	0.22	0.12	0.12	0.10	0.07	0.17	0.09	0.09	0.08	0.76	0.32	0.24	0.15
Tustervatn	1.13	0.20	0.08	0.11	0.12	0.16	0.10	0.08	0.12	0.16	0.10	0.23	0.22
Jergul	0.08	0.21	0.10	0.06	0.10	0.15	0.09	0.07	0.09	0.24	0.11	0.13	0.10
Lista	0.41	0.40	0.80	0.46	0.83	0.31	0.70	0.60	1.37	0.33	1.26	1.44	0.85
Vatnedalen	0.11	0.10	0.06	0.11	0.10	0.17	0.17	0.13	0.13	0.25	0.13	0.09	0.13
Løken	0.23	0.31	0.15	0.34	0.27	0.29	0.15	0.25	0.29	0.31	0.22	0.11	0.24
Vikedal I				0.14	0.10	0.41	0.15	0.13	0.16	0.12	0.26	0.17	(0.16)
Vardø									1.33	1.64	3.01	3.91	(2.19)
Skrova									0.89	0.52	1.75	5.71	(1.81)
Kise (week)	0.26	0.16	0.13	0.27	0.28	0.73	0.33	0.17	0.24	0.22	0.19	0.12	0.24
As	1.40	1.00	0.50	0.40	0.50	0.42	0.30	0.40	-	1.20	0.20	0.20	0.51
Kise (monthly)	0.50	0.20	0.30	0.30	0.40	0.73	1.50	1.20	1.10	0.60	0.30	0.60	0.71

\* Small amount of precipitation, look at Table 14.

Table 10: Monthly and yearly weighted mean concentrations of potassium in precipitation at the Norwegian background stations, 1982.  
Unit: mg/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.15	0.28	0.13	0.10	0.24	0.11	0.21	0.17	0.18	0.15	0.20	0.19	0.18
Skreådalen	0.25	0.33	0.16	0.50	0.32	0.27	0.23	0.20	0.12	0.21	0.32	0.19	0.23
Treungen	0.09	0.16	0.03	0.08	0.06	0.18	0.07	0.13	0.13	0.07	0.07	0.06	0.08
Gulsvik	0.17	0.14	0.07	0.43*	0.22	0.40	0.10	0.09	0.19	0.33	0.18	0.31	0.19
Narbuvoll	0.16	0.30	0.14	0.05	0.23	0.38	0.45	0.21	0.34	0.52	0.14	0.13	0.23
Haukeland	0.10	0.06	0.05	0.12	0.09	1.03*	0.57	0.10	0.10	0.08	0.17	0.11	0.12
Kårvatn	0.15	0.08	0.06	0.12	0.05	0.13	0.08	0.09	0.06	0.39	0.13	0.14	0.10
Tustervatn	0.98	0.26	0.07	0.18	0.08	0.15	0.10	0.09	0.10	0.17	0.14	0.25	0.21
Jergul	0.15	0.11	0.09	0.10	0.07	0.05	0.17	0.11	0.06	0.10	0.11	0.09	0.10
Lista	0.43	0.30	0.74	0.49	0.77	0.23	0.39	0.61	0.99	0.26	1.30	1.29	0.75
Vatnedalen	0.12	0.08	0.04	0.25	0.06	0.19	0.08	0.23	0.07	0.34	0.16	0.09	0.14
Løken	0.14	0.21	0.17	0.22	0.19	0.19	0.12	0.28	0.17	0.13	0.20	0.09	0.18
Vikedal I				0.11	0.11	0.17	0.09	0.10	0.12	0.09	0.23	0.25	(0.15)
Vardø									1.25	1.37	3.15	3.19	(1.98)
Skrova									0.80	0.54	1.74	5.23	(1.71)
Kise (week)	0.23	0.08	0.09	0.04	0.21	0.33	0.27	0.21	0.21	0.23	0.11	0.13	0.18
As	0.41	0.13	0.05	0.11	0.23	0.36	0.17	0.63	-	2.30	0.14	0.12	0.50
Kise (monthly)	0.04	0.01	0.02	0.11	0.06	0.33	0.37	0.04	0.13	0.06	0.04	0.05	0.10

\* Small amount of precipitation, look at Table 14.

Table 11: Monthly and yearly weighted mean concentrations of magnesium in precipitation at the Norwegian background stations, 1982.  
Unit: mg/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.05	0.20	0.21	0.06	0.14	0.06	0.09	0.14	0.15	0.18	0.31	0.44	0.21
Skreådalen	0.18	0.12	0.12	0.41	0.27	0.03	0.07	0.13	0.11	0.07	0.45	0.29	0.22
Treungen	0.02	0.11	0.05	0.02	0.06	0.05	0.05	0.07	0.08	0.05	0.08	0.12	0.07
Gulsvik	0.02	0.05	0.03	0.13*	0.07	0.09	0.03	0.03	0.08	0.04	0.03	0.05	0.05
Narbuvoll	0.06	0.05	0.04	0.04	0.04	0.06	0.07	0.04	0.07	0.20	0.05	0.06	0.06
Haukeland	0.18	0.14	0.18	0.23	0.12	0.31*	0.22	0.16	0.21	0.19	0.42	0.32	0.24
Kårvatn	0.34	0.07	0.16	0.25	0.05	0.08	0.04	0.04	0.05	0.09	0.16	0.28	0.16
Tustervatn	3.60	0.37	0.16	0.21	0.07	0.05	0.07	0.03	0.08	0.33	0.09	0.29	0.47
Jergul	0.03	0.11	0.04	0.02	0.03	0.04	0.04	0.02	0.02	0.08	0.03	0.04	0.03
Lista	0.84	0.37	2.07	1.23	1.71	0.45	0.47	1.36	1.95	0.44	3.62	3.80	1.84
Vatnedalen	0.05	0.04	0.03	0.18	0.05	0.05	0.03	0.08	0.05	0.07	0.15	0.07	0.08
Løken	0.06	0.08	0.11	0.06	0.17	0.08	0.03	0.11	0.08	0.14	0.15	0.13	0.11
Vikedal I				0.10	0.17	0.11	0.08	0.18	0.22	0.21	0.62	0.29	(0.26)
Vardø									2.76	3.79	7.19	10.21	(5.20)
Skrova									2.63	1.06	4.85	16.01	(4.95)
Kise (week)	0.04	0.03	0.04	0.03	0.04	0.08	0.06	0.04	0.06	0.04	0.03	0.05	0.04
As	0.29	0.23	0.21	0.05	0.16	0.10	0.05	0.16	-	0.25	0.18	0.28	0.18
Kise (monthly)	0.09	0.05	0.09	0.04	0.07	0.08	0.09	0.08	0.09	0.05	0.04	0.07	0.07

\* Small amount of precipitation, look at Table 14.

Table 12: Monthly and yearly weighted mean concentrations of sodium in precipitation at the Norwegian background stations, 1982.  
Unit: mg/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.39	1.32	1.70	0.48	1.05	0.39	0.42	1.13	1.05	1.43	1.79	3.39	1.51
Skreådalen	1.29	1.09	1.02	4.00	2.56	0.33	0.62	0.98	0.86	0.57	3.69	2.38	1.82
Treungen	0.35	0.59	0.37	0.15	0.39	0.23	0.12	0.42	0.54	0.28	0.60	0.98	0.47
Gulsvik	0.12	0.30	0.20	0.50*	0.36	0.16	0.11	0.18	0.43	0.13	0.20	0.40	0.24
Narbuvoll	0.38	0.46	0.28	0.30	0.17	0.32	0.27	0.23	0.22	1.17	0.33	0.29	0.32
Haukeland	1.50	1.05	1.47	2.04	0.96	1.90*	0.47	1.55	1.69	1.60	3.37	2.57	1.97
Kårvatn	2.72	0.50	1.27	2.14	0.33	0.55	0.23	0.26	0.35	3.18	1.33	2.16	1.32
Tustervatn	28.52	3.09	1.32	1.82	0.52	0.25	0.48	0.16	0.59	2.72	0.80	2.52	3.74
Jergul	0.32	0.78	0.29	0.23	0.16	0.26	0.10	0.10	0.09	0.51	0.21	0.27	0.19
Lista	6.16	2.92	16.78	10.59	9.58	3.64	3.93	11.48	15.15	3.58	29.74	33.24	15.00
Vatnedalen	0.46	0.30	0.25	1.64	0.24	0.19	0.17	0.34	0.42	0.42	1.33	0.54	0.63
Løken	0.30	0.63	1.02	0.58	1.35	0.37	0.32	0.67	0.52	0.28	0.82	1.18	0.75
Vikedal I				0.80	1.40	0.89	0.45	1.42	1.83	1.65	4.81	2.18	(2.05)
Vardø									23.37	30.77	59.80	91.17	(44.44)
Skrova									22.48	8.75	41.58	133.47	(41.74)
Kise (week)	0.23	0.16	0.29	0.08	0.20	0.17	0.18	0.16	0.26	0.19	0.14	0.35	0.21
As	0.50	0.60	1.40	0.20	0.90	0.30	0.10	1.20	-	0.30	1.50	2.30	1.00
Kise (monthly)	0.20	0.20	0.30	0.10	0.20	0.17	0.40	0.20	0.30	0.20	0.20	0.40	0.24

\* Small amount of precipitation, look at Table 14.

Table 13: Monthly and yearly weighted mean concentrations of chloride in precipitation at the Norwegian background stations, 1982.  
Unit: mg/l.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	0.77	2.38	3.41	0.87	1.98	0.72	0.80	2.20	1.90	2.89	5.03	7.34	3.29
Skreådalen	2.40	2.21	2.15	6.47	3.98	0.42	0.83	1.89	1.53	1.17	7.46	5.03	3.52
Treungen	0.53	1.44	0.89	0.27	0.66	0.25	0.21	0.76	1.26	0.55	1.10	1.96	0.94
Gulsvik	0.15	0.70	0.48	0.60*	0.65	0.22	0.12	0.33	0.73	0.41	0.34	0.64	0.45
Narbuvoll	0.30	0.51	0.44	0.12	0.21	0.40	0.24	0.38	0.41	1.67	0.30	0.57	0.40
Haukeland	2.55	2.10	2.72	3.36	1.55	0.60*	0.76	2.42	3.05	2.96	6.98	5.22	3.72
Kårvatn	4.89	0.98	2.34	3.54	0.45	0.62	0.25	0.45	0.45	2.20	2.43	4.43	2.30
Tustervatn	57.17	3.68	2.62	3.15	0.80	0.36	0.81	0.25	0.99	4.96	1.56	5.09	7.23
Jergul	0.44	0.84	0.38	0.21	0.12	0.26	0.20	0.10	0.11	0.39	0.30	0.30	0.21
Lista	11.77	5.70	31.91	16.81	24.88	5.78	4.54	21.49	27.31	6.58	85.51	59.02	31.93
Vatnedalen	0.36	0.56	0.46	2.51	0.31	0.20	0.20	0.58	0.58	0.71	2.71	1.06	1.12
Løken	0.66	1.36	1.94	0.66	2.24	0.32	0.25	1.21	0.90	0.59	2.29	2.25	1.47
Vikedal I				1.46	2.33	0.55	0.62	2.78	3.29	2.98	9.66	4.32	(3.19)
Vardø									41.94	52.90	102.52	135.34	(72.92)
Skrova									38.40	16.44	74.44	245.42	(75.62)
Kise (week)	0.52	0.46	0.52	0.15	0.37	0.53	0.25	0.36	0.40	0.55	0.23	0.75	0.41
Ås	0.70	0.80	2.00	0.50	1.60	0.30	0.30	2.10	-	1.00	2.70	4.50	1.83
Kise (month)	0.50	0.20	0.40	0.30	0.40	0.50	0.40	0.40	0.40	0.20	0.20	0.60	0.35

\* Small amount of precipitation, look at Table 14.

Table 14: Monthly and yearly amounts of precipitation at the Norwegian background stations, 1982.

Unit: mm. NILU sampler.

\*The nearest DNMI-sampler.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	År	% av normal nedbør, DNMI 1931-1960
Birkenes	45	57	168	25	154	56	47	111	194	292	274	170	1592	109*
Skreådalen	105	124	260	73	193	29	54	307	417	166	449	343	2519	127
Treungen	31	43	131	21	140	24	68	88	170	124	195	96	1130	110*
Gulsvik	17	13	86	4	69	25	105	63	134	112	96	55	778	105*
Narbuvoll	27	15	30	38	29	12	32	40	48	16	41	32	358	86*
Haukeland	177	306	213	290	152	4	66	494	626	268	663	431	3688	118
Kårvatn	103	26	58	187	81	26	77	70	143	8	93	125	995	80*
Tustervatn	125	75	209	113	95	24	12	99	165	100	137	120	1385	126
Jergul	27	8	22	36	47	31	60	88	87	23	30	16	473	132*
Lista	54	77	93	38	57	61	23	109	143	135	150	129	1070	113
Vatnedalen	41	35	33	24	58	34	34	95	193	67	217	137	967	122*
Løken	26	41	72	30	70	37	30	96	123	76	144	113	858	111*
Vikedal I				173	184	20	94	364	460	146	315	287	(2041)	121
Vardø									59	37	25	29	(150)	111*
Skrova									98	138	127	71	(434)	146
Kise (week)	14	26	29	23	55	17	26	43	119	49	58	26	484	81*
Ås	14	27	70	27	94	54	57	86	-	89	94	84	695	121
Kise (month)	9	18	17	23	25	13	23	41	53	37	44	19	320	81*

Table 15: Monthly and yearly wet deposition of strong acid ( $H^+$ ) at the Norwegian background stations, 1982.  
Unit: mekv/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	1.83	4.68	8.70	1.48	8.04	2.61	4.21	5.82	14.23	19.83	8.91	5.91	86.24
Skreådalen	2.04	5.28	8.89	1.51	3.94	0.93	2.26	13.20	15.12	10.49	8.09	4.20	75.95
Treungen	0.98	3.35	7.55	0.90	6.13	0.99	3.77	4.18	10.37	7.69	5.93	2.41	54.24
Gulsvik	0.46	1.02	6.11	0.38	2.90	0.58	3.88	2.86	6.07	5.65	1.53	1.12	32.56
Narbuvoll	0.20	0.33	1.66	0.45	0.77	0.09	0.17	0.32	1.32	0.52	0.50	0.64	6.98
Haukeland	5.45	13.69	8.62	9.65	4.61	0.01	1.51	9.10	19.91	11.97	9.16	6.98	100.67
Kårvatn	0.95	0.35	0.68	3.26	2.13	1.12	0.81	1.49	1.52	0.21	0.24	0.55	13.32
Tustervatn	1.06	1.60	1.85	1.44	0.58	0.08	1.36	1.23	1.90	1.20	1.19	1.15	14.63
Jergul	0.10	0.16	0.46	0.70	2.10	0.91	0.62	1.77	2.02	0.53	0.71	0.44	10.52
Lista	2.31	4.90	4.44	3.28	2.52	1.66	1.99	5.51	7.65	12.05	3.22	5.74	55.26
Vatnedalen	1.00	1.36	1.08	0.52	1.50	0.43	1.38	3.66	6.61	2.25	2.15	1.15	23.11
Løken	1.09	4.26	3.84	1.40	3.35	0.54	0.94	2.76	7.94	4.93	4.96	3.93	39.94
Vikedal I				6.66	4.43	2.36	5.32	9.29	23.40	7.84	6.82	5.30	(71.44)
Vardø									0.58	0.89	0.45	0.26	( 2.19)
Skrova									1.06	2.30	1.59	1.03	( 5.98)
Kise (week)	0.37	1.80	2.22	1.55	1.82	0.31	1.00	0.99	6.94	2.36	1.73	0.89	21.99
As	0.16	1.36	3.48	1.33	5.92	0.54	3.60	1.54	-	0.35	2.64	2.37	23.55
Kise (monthly)	0.60	1.28	1.20	1.60	1.01	0.26	0.00	0.00	1.33	2.60	1.38	0.47	11.60

Table 16: Monthly and yearly wet deposition of excess sulphate at the Norwegian background stations, 1982.  
Unit: mgS/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	30	113	190	19	203	52	81	76	301	362	154	83	1664
Skreådalen	45	117	116	44	108	22	53	219	253	222	162	74	1436
Treungen	14	68	107	14	110	18	87	63	208	146	85	28	948
Gulsvik	7	15	109	11	64	27	75	37	175	116	37	22	696
Narbuvoll	9	6	26	10	15	7	17	18	35	18	8	8	176
Haukeland	85	189	153	221	93	3	79	126	344	212	151	101	1756
Kårvatn	19	8	14	63	38	30	14	20	21	5	9	15	256
Tustervatn	21	27	22	28	17	2	18	16	26	16	15	18	227
Jergul	1	2	7	12	46	14	15	24	30	9	7	4	172
Lista	35	108	84	49	66	45	45	71	199	210	105	140	1156
Vatnedalen	16	15	13	13	17	12	25	61	102	48	30	15	366
Løken	24	92	81	31	87	26	26	74	211	95	96	65	908
Vikedal I				137	97	55	118	146	429	143	129	98	(1352)
Vardø									103	63	56	60	( 282)
Skrova									40	52	111	76	( 279)
Kise (week)	8	20	37	34	45	15	28	28	146	58	32	12	464
As	25	70	94	26	191	64	70	85	-	147	79	51	901
Kise (monthly)	13	15	28	42	36	11	31	35	81	68	28	10	400

Table 17: Monthly and yearly wet deposition of nitrate at the Norwegian background stations, 1982.  
Unit: mgN/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	21	82	143	12	63	17	25	43	166	150	107	56	887
Skreådalen	28	70	103	19	38	9	14	93	110	101	80	45	709
Treungen	10	49	86	6	32	6	23	32	109	68	58	24	504
Gulsvik	8	14	76	6	23	8	18	15	77	48	34	19	346
Narbuvoll	5	8	26	4	7	2	4	6	12	7	10	9	101
Haukeland	49	92	57	81	29	1	16	39	116	78	62	53	674
Kårvatn	5	3	4	11	10	7	5	9	7	3	5	8	78
Tustervatn	12	13	12	8	5	1	7	5	8	10	13	15	109
Jergul	1	2	4	3	6	3	4	7	9	10	8	6	62
Lista	34	76	65	31	24	21	19	59	106	135	59	73	703
Vatnedalen	12	12	14	7	9	5	7	22	40	17	16	13	174
Løken	18	56	52	14	37	9	8	44	105	53	74	45	515
Vikedal I				64	31	19	31	70	175	65	63	53	( 570)
Vardø									18	17	14	17	( 66)
Skrova									14	33	22	35	( 104)
Kise (week)	6	18	28	20	18	5	9	13	69	25	28	16	255
As	15	32	64	11	54	17	18	48	-	60	61	32	411
Kise (monthly)	5	11	14	22	10	4	8	14	33	24	20	11	177

Table 18: Monthly and yearly wet deposition of ammonium at the Norwegian background stations, 1982.  
Unit: mgN/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	19	114	222	7	129	26	42	34	216	167	123	41	1140
Skreådalen	40	97	110	34	60	11	30	96	145	141	118	52	933
Treungen	8	74	80	4	42	9	46	28	143	73	50	7	563
Gulsvik	6	13	75	9	29	18	41	10	108	63	26	10	408
Narbuvoll	4	4	24	3	5	7	28	13	25	7	4	3	129
Haukeland	35	85	78	78	37	5	82	28	142	74	38	40	722
Kårvatn	4	3	6	15	24	17	10	11	7	4	5	7	112
Tustervatn	12	18	10	15	11	3	8	4	9	7	12	13	121
Jergul	1	0	2	3	13	4	23	8	8	1	1	1	65
Lista	20	100	63	21	27	20	14	46	89	152	113	54	717
Vatnedalen	13	5	13	7	3	9	8	29	37	14	8	12	159
Løken	22	83	80	12	46	19	16	64	161	66	77	34	679
Vikedal I				120	42	31	49	69	199	82	51	55	( 698)
Vardø									297	29	18	12	( 356)
Skrova									7	13	6	8	( 33)
Kise (week)	7	16	35	46	22	13	17	20	97	50	24	12	357
As	15	70	64	10	73	61	21	83	-	67	81	27	572
Kise (monthly)	4	6	20	31	14	9	52	28	51	21	15	7	258



Table 19: Monthly and yearly wet deposition of calcium at the Norwegian background stations, 1982.  
Unit: mg/m<sup>2</sup>

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	8	28	50	3	23	6	17	17	57	57	55	32	353
Skreådalen	17	22	31	28	41	6	11	54	45	37	92	45	427
Treungen	2	14	13	4	17	4	20	8	33	23	18	8	163
Gulsvik	2	3	10	3	9	13	13	5	31	29	45	9	171
Narbuvoll	5	6	8	4	7	5	9	8	13	9	8	7	89
Haukeland	35	24	16	42	17	2	11	47	84	30	133	62	502
Kårvatn	23	3	7	19	6	4	7	7	12	6	29	30	153
Tustervatn	141	15	18	12	12	4	12	8	19	16	14	28	299
Jergul	2	2	2	2	5	4	6	6	8	6	3	2	48
Lista	22	31	74	17	47	19	16	66	196	44	190	186	909
Vatnedalen	4	4	2	3	6	6	6	12	25	17	28	13	124
Løken	6	13	11	10	19	10	4	24	35	24	32	13	202
Vikedal I				24	19	8	14	47	73	18	83	48	(334)
Vardø									78	60	76	112	(327)
Skrova									87	72	223	403	(785)
Kise (week)	4	4	4	6	16	13	8	7	28	11	11	3	115
As	20	27	35	11	47	23	17	35	-	106	19	17	355
Kise (monthly)	4	4	5	7	10	9	34	49	58	22	13	11	227

Table 20: Monthly and yearly wet deposition of potassium at the Norwegian background stations, 1982.  
Unit: mg/m<sup>2</sup>

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	7	16	22	3	38	6	10	19	36	44	56	32	287
Skreådalen	26	41	41	36	61	8	13	63	52	35	142	66	583
Treungen	3	7	3	2	8	4	5	11	21	9	14	6	93
Gulsvik	3	2	6	2	16	10	10	6	26	37	17	17	151
Narbuvoll	4	4	4	2	7	5	14	8	16	8	6	4	83
Haukeland	17	18	10	36	14	4	38	50	60	22	114	46	428
Kårvatn	15	2	3	22	4	3	6	6	9	3	12	18	104
Tustervatn	123	19	14	20	7	4	12	9	16	17	20	30	291
Jergul	4	1	2	4	3	1	10	10	5	2	3	1	47
Lista	23	23	69	19	44	14	9	67	142	35	195	166	806
Vatnedalen	5	3	1	6	3	6	3	22	14	23	35	12	132
Løken	4	8	12	7	13	7	4	27	21	10	29	10	151
Vikedal I				18	20	3	8	37	57	13	72	73	(301)
Vardø									73	50	80	92	(295)
Skrova									78	74	221	369	(742)
Kise (week)	3	2	3	1	11	6	7	9	25	11	6	4	89
As	6	4	3	3	22	19	10	54	-	204	13	10	348
Kise (monthly)	0	0	0	2	2	4	8	2	7	2	2	1	31

Table 21: Monthly and yearly wet deposition of magnesium at the Norwegian background stations, 1982.  
Unit: mg/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	2.4	11.1	35.6	1.5	21.2	3.3	4.3	15.3	28.2	52.8	85.6	75.3	336.7
Skreådalen	18.5	15.1	30.2	30.1	52.3	1.0	3.9	40.0	43.9	12.2	201.6	99.2	547.7
Treungen	0.7	4.5	6.7	0.5	8.2	1.1	3.6	5.7	13.6	6.0	14.9	11.5	76.9
Gulsvik	0.3	0.6	2.8	0.5	4.7	2.1	2.9	2.1	10.3	4.3	3.2	2.6	36.4
Narbuvooll	1.6	0.8	1.1	1.3	1.3	0.7	2.2	1.5	3.5	3.2	1.9	1.8	20.9
Haukeland	32.2	42.2	39.3	66.1	18.5	1.1	14.2	80.8	132.8	51.6	279.2	135.8	893.7
Kårvatn	35.0	1.8	9.2	46.3	3.8	2.0	3.3	3.0	6.5	0.7	14.5	34.6	160.5
Tustervatn	449.0	28.1	32.7	24.1	6.5	1.3	8.8	3.0	13.8	33.0	12.7	35.0	647.9
Jergul	0.9	0.8	0.8	0.6	1.2	1.1	2.3	1.5	2.0	1.8	0.9	0.6	14.6
Lista	44.8	28.6	192.2	46.9	98.2	27.6	10.9	148.3	278.8	59.0	542.4	490.6	1968.3
Vatnedalen	2.0	1.3	1.1	4.3	2.7	1.6	1.1	7.8	9.0	4.5	33.0	8.9	77.3
Løken	1.5	3.2	7.7	1.9	11.7	2.9	0.9	10.2	9.8	10.8	21.1	15.2	96.9
Vikedal I				17.8	31.4	2.2	7.0	65.9	102.6	30.4	194.9	82.2	( 534.5)
Vardø									161.5	139.5	182.6	293.9	( 777.6)
Skrova									257.6	145.8	616.5	1128.4	(2148.3)
Kise (week)	0.6	0.8	1.2	0.6	2.2	1.3	1.6	1.7	6.7	2.0	1.7	1.2	21.5
As	4.1	6.2	14.6	1.3	15.0	5.4	2.9	13.8	-	22.2	16.9	23.6	125.9
Kise (monthly)	0.8	0.9	1.5	0.9	1.8	1.0	2.0	3.3	4.8	1.8	1.7	1.3	21.8

Table 22: Monthly and yearly wet deposition of sodium at the Norwegian background stations, 1982.  
Unit: mg/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	17	75	285	12	161	22	20	125	203	418	490	577	2404
Skreådalen	136	135	265	292	494	10	33	302	358	95	1656	815	4589
Treungen	11	25	48	3	55	5	8	36	92	35	118	94	532
Gulsvik	2	4	17	2	25	4	11	11	58	15	19	22	189
Narbuvooll	10	7	8	11	5	4	9	9	11	19	13	9	115
Haukeland	264	322	314	591	146	7	31	766	1059	429	2234	1107	7270
Kårvatn	279	13	73	401	27	14	18	18	50	25	124	270	1311
Tustervatn	3562	232	275	205	49	6	60	16	98	272	110	302	5186
Jergul	8	6	6	8	8	8	6	9	8	12	6	4	89
Lista	330	224	1562	402	550	221	92	1255	2171	483	4461	4294	16045
Vatnedalen	19	11	8	39	14	7	6	32	82	28	289	74	608
Løken	8	26	74	17	94	14	10	64	64	21	118	133	643
Vikedal I				138	257	18	42	517	839	240	1514	626	(4191)
Vardø									1367	1132	1519	2626	(6644)
Skrova									2201	1209	5289	9410	(18109)
Kise (week)	3	4	8	2	11	3	5	7	31	9	8	9	101
As	7	16	97	5	84	16	6	104	-	27	141	194	697
Kise (monthly)	2	4	5	2	5	2	9	8	16	7	9	7	77

Table 23: Monthly and yearly wet deposition of chloride at the Norwegian background stations, 1982.  
Unit: mg/m<sup>2</sup>.

Station	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Birkenes	34	136	572	22	304	40	37	244	369	846	1378	1249	5231
Skreådalen	252	274	558	473	767	12	44	580	638	193	3351	1725	8869
Treungen	17	62	117	6	93	6	14	67	213	69	213	188	1063
Gulsvik	2	9	41	2	45	5	12	21	98	46	33	35	351
Narbuvoll	8	8	13	4	6	5	7	15	19	27	12	18	143
Haukeland	451	644	580	974	236	2	50	1196	1911	792	4623	2251	13710
Kårvatn	502	26	135	664	36	16	19	31	65	17	225	553	2288
Tustervatn	7141	277	546	355	76	9	100	25	164	495	215	610	10013
Jergul	12	7	8	7	6	8	12	9	9	9	9	5	100
Lista	630	438	2971	639	1428	351	106	2348	3913	890	12827	7626	34167
Vatnedalen	15	19	15	60	18	7	7	55	111	48	587	145	1088
Løken	17	56	140	20	157	12	7	116	111	44	329	255	1265
Vikedal I				252	427	11	58	1010	1511	434	3040	1240	(7984)
Vardø									2453	1947	2604	3898	(10902)
Skrova									3759	2272	9469	17302	(32803)
Kise (week)	7	12	15	3	20	9	6	15	48	27	14	20	196
As	10	22	139	13	150	16	17	181	-	89	253	379	1269
Kise (month)	4	4	7	7	10	7	9	16	21	7	9	11	112

Table 24: Yearly weighted mean concentrations and wet depositions of main components in precipitation at Norwegian background stations, 1973-1982.

Station	Year	Yearly mean conc. mg/l					Yearly means pH	Yearly prec. mm	Wet deposition				
		SO <sub>4</sub> -S mg/m <sup>2</sup>	NO <sub>3</sub> -N mg/m <sup>2</sup>	NH <sub>4</sub> -N mg/m <sup>2</sup>	Ca	Mg			SO <sub>4</sub> -S mg/m <sup>2</sup>	NO <sub>3</sub> -N mg/m <sup>2</sup>	NH <sub>4</sub> -N mg/m <sup>2</sup>	H <sup>+</sup> mekv/m <sup>2</sup>	
Birkenes	1973	1.06				0.11	4.27	1072	1136			58	
	1974	1.11	0.50	0.52	0.23	0.19	4.25	1563	1735	782	813	88	
	1975	1.01	0.49	0.45	0.19	0.17	4.27	1341	1354	657	603	72	
	1976	1.18	0.63	0.50	0.17	0.12	4.21	1434	1692	903	717	88	
	1977	1.04	0.54	0.54	0.17	0.17	4.27	1597	1661	862	862	86	
	1978	1.17	0.62	0.57	0.17	0.12	4.11	1242	1453	770	708	96	
	1979	1.25	0.57	0.65	0.22	0.15	4.09	1560	1950	889	1014	127	
	1980	1.23	0.57	0.63	0.22	0.11	4.16	1160	1427	661	731	80	
	1981	1.04	0.52	0.53	0.20	0.13	4.21	1316	1369	684	697	81	
	1982	1.05	0.56	0.72	0.22	0.21	4.27	1592	1663	887	1140	86	
Skreådalen	1973	0.50				0.19	4.60	2185	1093			55	
	1974	0.55				0.18	4.47	2460	1350			83	
	1975	0.57	0.18	0.17		0.19	4.55	2436	1389	438	414	69	
	1976	0.60	0.24	0.23		0.17	4.55	1687	1012	405	388	48	
	1977	0.57	0.27	0.28	0.15	0.13	4.55	2051	1169	554	574	58	
	1978	0.49	0.20	0.26	0.20	0.29	4.52	1769	867	354	460	53	
	1979	0.61	0.26	0.28	0.16	0.14	4.33	2311	1410	601	647	108	
	1980	0.48	0.21	0.21	0.15	0.17	4.54	1949	936	409	409	56	
	1981	0.49	0.20	0.28	0.16	0.18	4.58	2260	1107	452	633	59	
	1982	0.57	0.28	0.37	0.17	0.22	4.52	2519	1436	709	933	76	
Treungen (Storgama)	1974	0.94	0.38	0.33	0.14	0.07	4.27	1039	977	395	343	56	
	1975	0.91	0.37	0.34	0.15	0.06	4.26	894	814	331	304	49	
	1976	1.05	0.50	0.42	0.11	0.06	4.20	706	741	353	297	45	
	1977	0.81	0.44	0.39	0.11	0.05	4.32	1165	944	513	454	56	
	1978	0.87	0.38	0.41	0.14	0.04	4.21	945	822	359	387	58	
	1979	-	-	-	-	-	-	-	-	-	-	-	-
	1980	0.88	0.37	0.39	0.14	0.04	4.23	759	668	281	296	45	
	1981	0.86	0.39	0.46	0.12	0.05	4.29	949	816	370	437	49	
	1982	0.84	0.45	0.50	0.14	0.07	4.32	1130	948	504	563	54	

Table 24, cont.

Gulsvik (Langtjern)	1974	0.81	0.38	0.28	0.13	0.04	4.28	783	634	298	219	41
	1975	0.89	0.40	0.34	0.21	0.05	4.36	560	498	224	190	24
	1976	0.85	0.38	0.30	0.10	0.03	4.35	641	545	244	192	29
	1977	0.77	0.39	0.35	0.13	0.03	4.35	683	526	266	239	31
	1978	0.94	0.40	0.38	0.16	0.03	4.22	693	651	277	263	42
	1979	1.27	0.53	0.62	0.23	0.04	4.11	790	1003	419	490	61
	1980	0.78	0.25	0.27	0.13	0.03	4.33	667	520	167	180	31
	1981	0.86	0.35	0.40	0.13	0.03	4.30	628	540	220	251	31
	1982	0.89	0.44	0.52	0.22	0.05	4.38	778	696	346	408	33
Narbuvoll	1978	0.34	0.16	0.15	0.18	0.03	4.71	380	129	61	57	7
	1979	0.59	0.23	0.22	0.31	0.04	4.49	422	249	97	93	14
	1980	0.40	0.15	0.14	0.23	0.04	4.80	600	240	90	84	10
	1981	0.41	0.18	0.28	0.23	0.04	4.83	541	222	97	151	8
	1982	0.49	0.28	0.36	0.25	0.06	4.71	358	176	101	129	7
Haukeland	74/75*	0.31	0.13	0.15	0.17	0.29	4.70	3901	1207	522	582	78
	75/76*	0.36	0.10	0.17	0.17	0.37	4.73	4551	1636	431	753	85
	76/77*	0.59	0.23	0.45	0.18	0.25	4.59	1808	1060	417	813	46
	1982	0.48	0.18	0.20	0.14	0.24	4.56	3688	1756	674	722	101
Kårvatn (Nauståa)	1978**	0.16	0.05	0.09	0.11	0.13	4.98	1317	211	66	119	14
	1979	0.23	0.09	0.08	0.10	0.10	4.63	1248	287	112	100	29
	1980	0.20	0.07	0.08	0.11	0.13	4.88	1225	245	86	98	16
	1981	0.20	0.08	0.15	0.17	0.25	4.96	1101	220	88	165	12
	1982	0.26	0.08	0.11	0.15	0.16	4.87	995	256	78	112	13
Tustervatn	1973	0.24				0.18	4.94	1336	321			15
	1974	0.28				0.11	4.88	695	195			9
	1975	0.25				0.33	4.91	1756	439			22
	1976	0.27				0.16	4.97	1064	287			11
	1977	0.30	0.09	0.11	0.17	0.16	4.91	1111	333	100	122	14
	1978	0.23	0.08	0.10	0.16	0.16	4.85	1128	259	90	113	16
	1979	0.28	0.08	0.13	0.15	0.11	4.73	1168	327	93	152	22
	1980**	0.29	0.09	0.16	0.14	0.12	4.91	858	249	77	137	11
	1981	0.18	0.07	0.10	0.21	0.15	5.00	1099	198	77	110	11
	1982	0.16	0.08	0.09	0.22	0.47	4.98	1385	227	109	121	15

\* From July the first year and to June the next year. Sulphate in precipitation is corrected for sea salt with Cl (instead of Mg).

\*\* One month is missing.

Table 24, cont.

Station	Year	Yearly mean conc. mg/l					Yearly means pH	Yearly prec. mm	Wet deposition			
		SO <sub>4</sub> -S	NO <sub>3</sub> -N	NH <sub>4</sub> -N	Ca	Mg			SO <sub>4</sub> -S mg/m <sup>2</sup>	NO <sub>3</sub> -N mg/m <sup>2</sup>	NH <sub>4</sub> -N mg/m <sup>2</sup>	H <sup>+</sup> mekv/m <sup>2</sup>
Jergul	1977	0.45	0.13	0.11	0.20	0.04	4.75	344	155	45	38	6
	1978	0.43	0.10	0.11	0.13	0.02	4.52	351	151	35	39	11
	1979	0.59	0.18	0.13	0.14	0.03	4.33	306	181	55	40	14
	1980	0.42	0.12	0.09	0.12	0.03	4.57	262	110	31	24	7
	1981	0.46	0.13	0.12	0.11	0.02	4.57	434	200	56	52	12
	1982	0.36	0.13	0.14	0.10	0.03	4.65	473	172	62	65	11
Lista	1973	1.01				1.31	4.33	851	860			40
	1974	1.06				1.00	4.28	1208	1280			63
	1975	1.10				1.06	4.30	1109	1220			56
	1976	1.37				1.21	4.23	922	1263			54
	1977	0.95				1.09	4.34	1114	1058			51
	1978	1.01	0.50	0.45	0.54	1.18	4.27	931	940	466	419	50
	1979	1.27	0.63	0.57	0.53	1.04	4.09	1157	1469	729	659	94
	1980	1.05	0.59	0.54	0.47	1.00	4.22	953	1001	562	515	57
	1981	0.90	0.47	0.50	0.60	1.36	4.34	1037	933	487	519	47
	1982	1.09	0.65	0.60	0.85	1.82	4.29	1070	1161	699	645	55
Løken	1973	1.03				0.06	4.48	569	586			19
	1974	0.94				0.08	4.43	831	781			31
	1975	1.03	0.41	0.42		0.08	4.32	657	677	269	276	31
	1976	1.20	0.49	0.50	0.40	0.09	4.39	533	640	261	267	22
	1977	0.96	0.41	0.43	0.22	0.07	4.41	699	671	287	301	27
	1978	1.10	0.48	0.52	0.24	0.07	4.25	597	657	287	310	34
	1979	1.03	0.49	0.57	0.30	0.07	4.22	784	808	384	447	47
	1980	0.97	0.39	0.49	0.25	0.08	4.33	695	674	271	341	33
	1981	0.77	0.36	0.51	0.20	0.06	4.48	700	539	252	357	23
	1982	1.06	0.60	0.79	0.24	0.11	4.33	858	908	515	679	40

Table 24, cont.

Station	Year	Yearly mean conc. mg/l					Yearly means pH	Yearly prec. mm	Wet deposition			
		SO <sub>4</sub> <sup>-S</sup>	NO <sub>3</sub> <sup>-N</sup>	NH <sub>4</sub> <sup>-N</sup>	Ca	Mg			SO <sub>4</sub> <sup>-S</sup> mg/m <sup>2</sup>	NO <sub>3</sub> <sup>-N</sup> mg/m <sup>2</sup>	NH <sub>4</sub> <sup>-N</sup> mg/m <sup>2</sup>	H <sup>+</sup> mekv/m <sup>2</sup>
Vatne-dalen	1974	0.54				0.06	4.59	884	477			23
	1975	0.53	0.17	0.22		0.09	4.85	994	527	169	219	14
	1976	0.50	0.20	0.36	0.12	0.10	4.85	715	358	143	257	10
	1977	0.44	0.21	0.25	0.13	0.06	4.71	761	335	160	190	15
	1978	0.41	0.17	0.23	0.14	0.10	4.62	862	353	147	198	21
	1979	0.56	0.22	0.20	0.20	0.06	4.38	948	531	209	190	40
	1980	0.45	0.16	0.10	0.14	0.06	4.55	799	360	128	80	23
	1981	0.49	0.19	0.18	0.14	0.09	4.49	900	441	171	162	29
	1982	0.38	0.18	0.17	0.13	0.08	4.62	967	366	174	159	23
Ås	1975	1.58	0.13	0.59	0.42	0.15	4.25	484	765	63	286	27
	1976	1.62	0.57	0.79	0.73	0.18	4.44	506	820	288	400	18
	1977	1.50	0.55	1.06	0.78	0.22	4.50	522	783	287	553	17
	1978	1.71	0.62	0.90	0.60	0.13	4.20	496	848	308	446	31
	1979	2.11	0.88	1.27	0.89	0.25	4.15	454	958	400	577	32
	1980	1.82	0.64	0.75	0.79	0.21	4.22	483	879	309	362	29
	1981	1.11	0.53	0.76	0.47	0.16	4.48	534	593	283	406	18
	1982**	1.30	0.59	0.82	0.51	0.18	4.47	695	901	411	572	23
Kise (month)	1975	0.88	0.10	0.35	0.24	0.05	4.36	335	295	34	117	15
	1976	1.24	0.40	0.61	0.36	0.07	4.40	378	469	151	231	15
	1977	1.32	0.34	0.73	0.32	0.07	4.50	344	454	117	251	11
	1978	1.97	0.49	0.83	0.56	0.10	4.24	203	400	99	168	12
	1979	1.40	0.38	0.81	0.39	0.05	4.33	399	559	152	323	19
	1980	1.10	0.35	1.68	0.55	0.17	4.60	457	503	160	768	11
	1981	1.24	0.42	0.55	0.53	0.06	4.38	325	403	137	179	14
	1982	1.25	0.55	0.81	0.71	0.07	4.44	320	400	177	258	12

\* From July the first year and to June the next year. Sulphate in precipitation is corrected for sea salt with Cl (instead of Mg).

\*\* One month is missing.

Table 25: Monthly and yearly mean concentrations of sulphur dioxide ( $\text{SO}_2$ ) in air at the Norwegian background stations, 1982.  
Unit:  $\text{g S/m}^3$ .

Station	Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
Birkenes	4.8	2.2	1.1	0.3	0.4	0.5	0.2	0.3	0.6	0.5	0.4	0.4	1.0
Skreådalen	3.4	1.7	1.3	0.3	0.3	0.4	0.2	0.2	0.5	0.7	0.4	0.5	0.8
Hummelfjell	0.4	0.8	0.8	0.2	0.3	0.2	0.1	0.1	0.2	0.3	0.2	0.2	0.3
Kårvatn	0.4	0.4	1.2	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.1	0.3	0.3
Tustervatn	0.8	0.8	2.3	0.2	0.1	0.3	0.2	0.1	0.1	0.2	0.1	0.5	0.5
Jergul	1.0	1.3	3.5	0.6	0.8	0.3	0.1	0.2	0.1	0.2	0.3	0.8	0.8
Vardø									1.0	1.6	2.4	2.2	(1.7)
Skrova									0.1	0.3	0.1	0.7	(0.3)

Table 26: Monthly and yearly mean concentrations of sulphate ( $\text{SO}_4$ ) in air at the Norwegian background stations, 1982.  
Unit:  $\text{g S/m}^3$ .

Station	Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
Birkenes	1.7	2.2	1.4	0.7	0.9	1.2	0.9	0.8	1.6	1.4	0.5	0.6	1.1
Skreådalen	1.1	1.2	1.0	0.8	0.8	1.2	0.7	0.7	0.9	1.2	0.5	0.5	0.9
Hummelfjell	0.3	0.6	0.6	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.2	0.2	0.4
Kårvatn	0.3	0.3	0.6	0.4	0.6	0.6	0.5	0.3	0.3	0.6	0.2	0.2	0.4
Tustervatn	0.4	0.6	1.2	0.4	0.4	0.8	0.4	0.3	0.3	0.6	0.2	0.5	0.5
Jergul	0.4	0.6	1.5	0.9	0.7	0.2	0.2	0.4	0.3	0.6	0.4	0.5	0.5
Vardø								1.2	1.1	1.6	1.1		(1.3)
Skrova								0.2	0.4	0.3	0.6		(0.4)

Table 27: Monthly and yearly mean concentrations of nitrogen dioxide ( $\text{NO}_2$ ) in air at Birkenes, 1982.  
Unit:  $\text{g N/m}^3$ .

Station	Jan	Feb	March	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
Birkenes	2.9	3.4	1.3	0.4	0.4	0.6	0.6	0.5	0.7	1.2	1.1	1.1	1.2





