EMEP – 38th intercomparison of analytical methods - % deviation from expected value

Precipitation

Lab no	SO_4^{2-} % deviation form expected value				NH_4^+ % deviation form expected value				NO_3^- % deviation form expected value			
	G1	G2	G3	G4	G1	G2	G3	G4	G1	G2	G3	G4
3	4	0	1	0	-9	-3	-1	-1	1	1	0	1
4	-6	-6	-4	-4	2	-1	-1	-1	-6	1	-1	1
5	7	5	2	2	11	2	3	3	3	0	2	2
6	5	6	7	7	-13	-13	3	3	2	1	0	0
7	-8	-8	-2	-2	0	-2	-1	-1	1	1	0	0
8	0	-2	0	0	-3	-1	-1	-1	0	0	0	1
10	12	5	0	3	-13	-4	-3	-1	19	6	6	4
12	0	-2	-3	-4	-67	-1	11	13	-2	-2	-2	-1
15	2	0	2	0	12	3	4	10	3	0	1	1
16	-1	-1	0	1	8	3	2	-1	2	2	0	0
18	-6	-3	2	6					-3	-1	-4	0
19	-6	-2	-4	-6	33	12	15	16	-2	-5	-4	-3
20	1	0	-2	-2	0	0	-2	-1	1	-1	-2	-2
21	1	3	1	0	2	-2	0	-1	3	2	1	1
22	1	4	11	6	0	-19	-3	-13	3	5	7	9
23	-8	-9	-9	-9	38	-11	-9	-10	-2	-1	-2	-2
24			-2	-2			2	2			-2	-2
27	-1	0	1	2	-3	1	1	2	4	4	1	0
30	6	5	1	0	75	8	10	9	2	1	1	1
31	-3	-3	-2	-3	-5	-1	-2	-1	0	-1	0	-1
32	5	0	-3	-4	8	2	4	0	-4	1	-2	0
33	-22	-7	-4	-1	-23	-13	-5	-1	-9	1	5	11
34	17	7	-14	-12	50	258	-26	-22	-17	-14	-12	-10
35	4	2	2	2	0	0	-1	1	6	5	4	4
36	-3	-3	-1	-1	223	1	0	1	-1	-2	-2	-2
38	1	0	-3	-3	-5	2	2	1	-1	-2	-2	-1
39	2	0	-1	-1	0	1	0	0	3	2	2	3
45	-7	-13	3	-7	172	19	11	3	5	2	1	2
46												
49	-1	-1	0	0	-2	7	8	10	2	2	2	2
50	-7	-7	-4	-4	25	8	7	6	-4	-4	-3	-3
53	6	11	-2	-1	7	4	-10	-10	4	-1	-3	0
110	-28	-8	-6	1	-18	-19	-17	-17	-11	-7	-7	-8
112	-3	-3	0	-1	7	3	5	5	-2	-1	-1	-1
114	2	1	-4	-6	0	-1	0	1	-5	-5	-3	-3
115	-9	-8	-7	-8	-20	0	-8	0	-8	-7	-5	-4
116	6	-9	-5	-6	-3	-2	-2	-1	2	1	2	2
117	1	3	7	7		-7	-5	-4	-7	-5	-6	-8
121	3	-4	-3	-6	-35	-1	-12	-5	2	2	2	-2
124	-3	0	5	-1					0	-1	1	0
125	-8	-10	-4	-7	29	6	7	3	-5	-4	-2	4
126	3	0	15	13	-17	-17	-18	-13	-3	-1	6	8
145	6	3	0	1	-14	2	3	3	8	3	0	1
153	-5	-6	-5	-5	15	3	1	0	-1	348	324	327
155	-2	-5	-1	-1	20	-5	-4	-1	0	-1	-1	-1
158	1	-1	0	0	0	1	0	0	2	1	1	1
166	-1	0	0	-1	18	12	4	4	0	2	1	0
178	-3	-4	-3	-3	0	-6	-1	-5	0	-1	-1	-1
179	2	-3	0	0		6	1	1	-10	-7	-5	-3
200	1	-6	-2	-2	3	1	0	2	0	0	-1	-1
203												

Lab no	Na^+ % deviation form expected value				Mg^{2+} % deviation form expected value				Cl^- % deviation form expected value			
	G1	G2	G3	G4	G1	G2	G3	G4	G1	G2	G3	G4
3	-6	-8	-5	-4	0	-1	-5	-3	-4	-6	0	-1
4	-11	-10	-5	-4	-31	-18	-13	-8	0	-3	-4	-3
5	0	0	0	1	1	0	3	3	1	-1	0	-1
6	-1	-2	-1	-2	-1	-3	0	0	4	2	2	1
7	-5	-6	-6	-5	-7	-8	-1	-1	-2	-4	-3	-2
8	-2	-2	-1	-2	-3	-4	0	-1	-4	-3	-1	-2
10	4	1	1	-5	-3	-5	-3	-3	52	11	3	1
12	-6	-8	-6	-6	-18	-16	-3	-4	-7	-7	-3	-3
15	-1	-2	3	3	-6	-11	1	0	7	1	2	-1
16	-2	-4	1	0	1	-1	3	2	-1	-1	-3	-2
18									4	-1	-7	-3
19	-6	-8	-3	-7	11	-4	-3	-3		-2	-10	-11
20	-9	-9	-6	-7	0	-4	-1	-2	-3	-3	-3	-3
21	-4	-4	-2	-1	3	1	3	3	-1	-1	-1	-2
22	12	53	6	4	-36	0	2	22	-57	-28	5	10
23	-20	-18	-8	-8	-29	-31	-26	-29	-6	-6	-5	-5
24			1	2			-16	-15			0	-1
27	-2	-3	-3	-4	1	1	3	2	3	2	0	1
30	-1	2	9	7	11	10	11	7	-1	-1	8	5
31	-7	-6	-3	-3	-18	-18	-3	-6	-3	-4	-3	-5
32	-6	-2	-2	-2	-7	-2	-18	-11	-6	-4	-6	-2
33	6	3	8	7	-15	-18	-2	1	1	-6	2	17
34	32	32	-13	-18	4	3	3	-2	156	94	4	-6
35	3	1	0	1	3	0	2	2	9	3	2	2
36	-2	-1	-1	-2	0	-4	0	1	-5	-5	-3	-3
38	-5	-4	-5	-4	-3	-1	2	2	-2	-3	-4	-3
39	-4	-5	-2	-1	-1	-2	1	-1	-3	-4	-2	-1
45	-2	0	2	-1	1	1	1	3	-1	-1	0	-1
46												
49	-4	-6	-6	-7	7	8	5	4	-2	-1	0	0
50	-2	-2	1	0	4	-5	-7	-10	-3	-3	-1	0
53	2	-9	-10	-9	-25	-27	-13	-13	-187	-176	-41	-37
110	1	-2	1	-3	6	2	5	3	-23	-19	-7	-5
112	4	3	3	2	3	1	1	0	-2	-2	-3	-3
114	-6	-8	-6	-6	-3	-4	1	-3	-7	-7	-3	-5
115	-2	-5	-4	-3	-8	-11	-7	-8	-5	-8	-7	-5
116	2	1	7	5	11	-4	1	2	-1	-5	-4	-4
117	-7	-9	-11	-12	0	-2	1	0	59	19	-6	-14
121	-4	-4	-3	-5	0	-1	-2	-1	14	0	-6	-4
124	-4	-5	3	3	1	-1	-1	0	0	-3	-4	-2
125	-3	-3	-2	-2	-1	-2	-1	0	-10	-11	-3	-5
126	-24	-31	46	43	21	75	24	35	-1	-6	3	4
145	-2	-2	0	-8	19	4	-1	-15	12	0	-4	-1
153	6	2	5	3	0	-2	5	4	-9	-7	-8	-7
155	-3	-4	-2	-3	-4	-6	-4	-4	-3	-4	0	1
158	1	0	0	0	0	-1	1	0	-1	-2	-2	-3
166	-3	-6	-5	-6	-4	-5	-2	-4	0	-1	0	-1
178	0	-4	-3	-4	-3	-4	3	2	1	-4	-3	-1
179	0	-3	-2	-3			-6	-7	-4	-1	-9	-7
200	2	0	0	-1	15	8	6	7	1	4	-1	-1
203	36	29	0	-14	-19	-16	-14	-9			-57	-68

Lab no	Ca^{2+} % deviation form expected value				K^+ % deviation form expected value				pH pH-units from expected value				Cond % deviation form expected value			
	G1	G2	G3	G4	G1	G2	G3	G4	G1	G2	G3	G4	G1	G2	G3	G4
3	0	-24	-3	-3	-2	2	-1	-1	-0.05	0.05	0.04	0.02	-4	6	-4	-3
4	-27	-22	-17	-11	-22	-16	-14	-14	0.09	0.12	0.11	0.10				
5	6	2	4	3	-1	5	3	2	-0.01	0.00	0.02	0.01	0	-1	0	-1
6	-13	-25	-8	-13	-4	0	-2	-2	-0.07	-0.06	-0.04	-0.08	8	54	4	4
7	-13	-20	-4	-5	-2	1	-1	-3	-0.31	-0.27	-0.26	-0.25	-12	-10	-14	-13
8	15	-1	1	-1	-8	-2	-2	-8	-0.01	-0.01	-0.05	-0.01	4	4	3	1
10	-4	-8	-1	-13	-4	-2	-5	-5	0.22	0.11	0.10	0.06	5	4	2	2
12	1	-12	-6	-10	-4	-2	-1	0	-0.02	-0.03	-0.04	0.00	2	0	-1	-3
15	-11	-19	-10	-11	4	9	8	6	0.12	0.06	0.00	0.05	63	27	-10	0
16	-2	-5	0	-2	1	2	-1	4	0.00	0.07	0.09	0.13	-3	0	-1	-1
18																
19		-51	-3	-6	-1	2	2	2	0.15	0.16	0.12	0.12	6	6	2	0
20	-2	-4	-3	-3	-10	-6	-4	-4	-0.05	-0.03	-0.02	-0.04	-4	1	-2	-2
21	-8	-8	-8	-5	2	7	3	4	0.10	0.03	0.00	0.00	2	-1	-1	-2
22	2	43	22	43	-19	-10	6	63	-0.14	-0.10	-0.14	-0.14	24	10	0	-3
23	-16	-15	-31	-32	-21	-16	-18	-15	0.35	0.14	0.04	-0.03	-2	-4	-3	-2
24							2	3								
27	2	-3	0	-2	0	2	0	-1	0.09	0.09	0.05	0.05	1	0	0	0
30	15	12	10	9	2	7	18	3	0.15	0.18	0.07	0.15	-8	-12	-13	-14
31	-16	-23	3	-8	-10	-5	-6	-4	-0.23	-0.14	0.02	-0.07	5	7	5	4
32	28	64	-15	-9	-6	9	-5	-2	0.07	-0.01	-0.04	-0.02	4	1	2	-1
33	-8	6	12	7	-6	-1	1	-1	-0.11	-0.11	-0.16	-0.36	6	7	3	1
34	-44	-35	-10	-17	29	41	36	33	-2.17	-1.52	-0.74	-0.62	12	5	3	4
35	16	-4	-1	0	1	5	2	3	-0.37	-0.42	-0.46	-0.46	6	4	1	1
36	13	-3	0	2	-4	-2	-2	1	0.04	-0.03	0.01	0.00	-5	-4	-3	-4
38	-1	-6	-4	-2	-6	-1	-3	-3	-0.22	-0.23	-0.18	-0.10	-4	-5	-3	-3
39	-2	-5	-3	0	-1	0	-1	-1	0.04	0.09	-0.01	0.01	-1	-3	-2	-4
45	6	2	2	2	-1	9	6	9	0.61	0.77	0.77	0.68	6	4	2	0
46									0.07	0.10	-0.02	0.04	-10	-6	-1	-2
49	12	2	11	5	-11	-6	-7	-6								
50	-27	-21	-6	-2	-7	-3	-6	-5	0.08	0.07	0.03	0.04	-1	-2	-1	-2
53	-57	-71	-30	-34	-7	-6	-9	-7	0.00	0.00	-0.05	0.07	12	9	7	11
110	2	-2	1	0	1	2	1	-2	-0.09	-0.09	0.00	0.00			0	0
112	2	8	3	-1	3	7	3	2	-0.05	0.03	-0.06	-0.06	-9	-10	-7	-7
114	1	18	3	2	-4	-2	-6	-6	-0.12	-0.05	-0.07	-0.04	-4	-1	-1	-1
115	0	-13	-3	-4	-7	-3	-5	-4	-0.04	-0.05	0.05	-0.03	-14	-10	-4	-5
116	1	-2	3	2	-12	-8	-1	0	0.05	0.04	0.04	0.07	-8	-8	-9	-10
117	1	0	10	7	-14	-10	-11	-11	0.07	0.08	0.02	0.06			-4	-4
121	6	-4	-4	-5	0	-2	-1	-5	-0.08	-0.02	-0.02	0.95	-14	-13	-8	-9
124	-1	-1	3	4	-13	-4	1	4	-0.13	-0.13	-0.16	-0.11	2	-4	-9	-12
125	8	-3	0	1	0	5	2	3	0.06	0.14	0.19	0.19	4	3	2	2
126	508	274	72	102	8	18	-59	-57	0.08	0.13	0.12	0.08	-13	-14	-15	-14
145	21	-6	-7	-21	-6	4	-2	-6	-0.06	-0.11	-0.21	-0.05	-4	-4	-2	-2
153	38	17	10	10	-7	0	-5	-6	0.07	0.05	0.08	0.18	5	6	7	5
155	7	-2	-1	2	-12	-9	-6	-6	-0.02	-0.07	-0.10	-0.09	2	2	1	0
158	0	-2	0	-2	1	4	1	1	-0.13	-0.06	-0.16	-0.14	-3	-1	-2	-2
166					-8	-4	-5	-5	-0.24	0.05	-0.08	-0.01	11	18	4	1
178	0	3	-13	-2	-4	1	0	0	0.11	0.07	0.05	0.12	3	2	3	1
179	12	9	-8	-9	2	2	-4	3	0.01	-0.06	0.40	0.42	-4	-3	-1	-3
200	-2	-7	4	6	10	14	11	11	-0.04	-0.21	-0.17	-0.21	-3	-2	-2	-2
203	80	75	-18	-2												

SO_4^{2-} and NO_3^-: between ±10 and 20%

SO_4^{2-} and NO_3^-: more than ±20%

NH_4^+, Cl^-, Na^+, Mg^{2+}, Ca^{2+}, K^+ and cond: between ±15 and 25%

NH_4^+, Cl^-, Na^+, Mg^{2+}, Ca^{2+}, K^+ and cond: more than ±25%

pH: between ±0.1 -0.2 pH-units

pH: more than ±0.2 pH-units