

EMEP – 33rd intercomparison of analytical methods

Laboratory 3, Czech Hydrometeorological Institute, Praha (Czech Republic)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.65	0.666	0.642	0.089	0.087	S
G2		0.517	0.535	0.52	0.081	-0.043	S
G3		1.473	1.474	1.423	0.234	0.214	S
G4		1.313	1.319	1.272	0.194	0.213	S
G1	NH ₄ ⁺	0.178	0.187	0.184	0.014	-0.422	S
G2		0.2	0.241	0.235	0.018	-1.93	Q
G3		0.302	0.267	0.272	0.023	1.337	S
G4		0.44	0.401	0.4	0.021	1.884	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.371	0.379	0.362	0.032	0.285	S
G3		0.606	0.607	0.595	0.044	0.246	S
G4		0.592	0.707	0.685	0.057	-1.645	Q
G1	Na ⁺	0.291	0.304	0.29	0.016	0.043	S
G2		0.273	0.283	0.268	0.018	0.266	S
G3		0.601	0.608	0.59	0.024	0.462	S
G4		0.531	0.548	0.526	0.023	0.196	S
G1	Mg ²⁺	0.098	0.103	0.101	0.006	-0.523	S
G2		0.085	0.093	0.087	0.005	-0.498	S
G3		0.164	0.175	0.168	0.008	-0.495	S
G4		0.147	0.155	0.15	0.007	-0.419	S
G1	Cl ⁻	0.182	0.193	0.187	0.016	-0.311	S
G2		0.248	0.27	0.258	0.021	-0.503	S
G3		0.362	0.386	0.367	0.026	-0.196	S
G4		0.326	0.347	0.332	0.026	-0.241	S
G1	Ca ²⁺	0.116	0.128	0.13	0.026	-0.525	S
G2		0.113	0.115	0.12	0.025	-0.287	S
G3		0.21	0.217	0.213	0.029	-0.104	S
G4		0.187	0.192	0.191	0.027	-0.143	S
G1	K ⁺	0.16	0.17	0.162	0.016	-0.103	S
G2		0.185	0.204	0.189	0.017	-0.225	S
G3		0.318	0.34	0.325	0.02	-0.362	S
G4		0.287	0.306	0.294	0.019	-0.356	S
G1	pH	4.528	4.57	4.629	0.131	-0.772	S
G2		4.668	4.7	4.738	0.132	-0.529	S
G3		4.199	4.18	4.2	0.122	-0.009	S
G4		4.315	4.22	4.248	0.134	0.498	S
G1	Cond	18.66	17.7	16.55	1.471	1.434	S
G2		16.55	15.2	14.389	1.524	1.418	S
G3		38.9	39.3	37.557	3.093	0.434	S
G4		37.5	37	34.831	3.076	0.868	S

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Foretaksnr./Enterprise no. 941705561

If your laboratory reported values as less than the detection limit, and your detection limit is lower than the expected value, $\frac{1}{2}$ DL is taken as the reported value in further calculations.

✎ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than $\pm 10\%$ of the expected value for SO_4^{2-} and NO_3^- , less than $\pm 15\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and less than ± 0.1 pH-units for pH

Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 4, Aarhus University, Department of Environmental Science (Denmark)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.687	0.666	0.642	0.089	0.502	S
G2		0.538	0.535	0.52	0.081	0.218	S
G3		1.545	1.474	1.423	0.234	0.521	S
G4		1.357	1.319	1.272	0.194	0.439	S
G1	NH ₄ ⁺	0.195	0.187	0.184	0.014	0.753	S
G2		0.245	0.241	0.235	0.018	0.528	S
G3		0.276	0.267	0.272	0.023	0.184	S
G4		0.399	0.401	0.4	0.021	-0.03	S
G1	NO ₃ ⁻	0.351	0.357	0.344	0.024	0.313	S
G2		0.373	0.379	0.362	0.032	0.347	S
G3		0.613	0.607	0.595	0.044	0.404	S
G4		0.705	0.707	0.685	0.057	0.345	S
G1	Na ⁺	0.3	0.304	0.29	0.016	0.592	S
G2		0.28	0.283	0.268	0.018	0.666	S
G3		0.6	0.608	0.59	0.024	0.42	S
G4		0.56	0.548	0.526	0.023	1.448	S
G1	Mg ²⁺	0.11	0.103	0.101	0.006	1.568	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.16	0.175	0.168	0.008	-1.006	S
G4		0.14	0.155	0.15	0.007	-1.367	S
G1	Cl ⁻	0.213	0.193	0.187	0.016	1.568	S
G2		0.278	0.27	0.258	0.021	0.951	S
G3		0.396	0.386	0.367	0.026	1.099	S
G4		0.367	0.347	0.332	0.026	1.35	S
G1	Ca ²⁺	0.14	0.128	0.13	0.026	0.389	S
G2		0.12	0.115	0.12	0.025	-0.003	S
G3		0.22	0.217	0.213	0.029	0.246	S
G4		0.19	0.192	0.191	0.027	-0.033	S
G1	K ⁺	0.16	0.17	0.162	0.016	-0.103	S
G2		0.19	0.204	0.189	0.017	0.076	S
G3		0.33	0.34	0.325	0.02	0.24	S
G4		0.29	0.306	0.294	0.019	-0.199	S
G1	pH	4.62	4.57	4.629	0.131	-0.069	S
G2		4.74	4.7	4.738	0.132	0.016	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 5, Finnish Meteorological Institute. Air Quality Department (Finland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.662	0.666	0.642	0.089	0.222	S
G2		0.522	0.535	0.52	0.081	0.019	S
G3		1.463	1.474	1.423	0.234	0.172	S
G4		1.307	1.319	1.272	0.194	0.182	S
G1	NH ₄ ⁺	0.176	0.187	0.184	0.014	-0.56	S
G2		0.227	0.241	0.235	0.018	-0.455	S
G3		0.268	0.267	0.272	0.023	-0.171	S
G4		0.389	0.401	0.4	0.021	-0.496	S
G1	NO ₃ ⁻	0.349	0.357	0.344	0.024	0.228	S
G2		0.369	0.379	0.362	0.032	0.223	S
G3		0.606	0.607	0.595	0.044	0.246	S
G4		0.701	0.707	0.685	0.057	0.275	S
G1	Na ⁺	0.298	0.304	0.29	0.016	0.47	S
G2		0.276	0.283	0.268	0.018	0.437	S
G3		0.605	0.608	0.59	0.024	0.628	S
G4		0.538	0.548	0.526	0.023	0.498	S
G1	Mg ²⁺	0.102	0.103	0.101	0.006	0.174	S
G2		0.089	0.093	0.087	0.005	0.336	S
G3		0.172	0.175	0.168	0.008	0.528	S
G4		0.154	0.155	0.15	0.007	0.529	S
G1	Cl ⁻	0.19	0.193	0.187	0.016	0.174	S
G2		0.267	0.27	0.258	0.021	0.418	S
G3		0.379	0.386	0.367	0.026	0.451	S
G4		0.342	0.347	0.332	0.026	0.38	S
G1	Ca ²⁺	0.125	0.128	0.13	0.026	-0.183	S
G2		0.121	0.115	0.12	0.025	0.038	S
G3		0.217	0.217	0.213	0.029	0.141	S
G4		0.191	0.192	0.191	0.027	0.004	S
G1	K ⁺	0.17	0.17	0.162	0.016	0.535	S
G2		0.208	0.204	0.189	0.017	1.157	S
G3		0.352	0.34	0.325	0.02	1.341	S
G4		0.315	0.306	0.294	0.019	1.11	S
G1	pH	4.57	4.57	4.629	0.131	-0.451	S
G2		4.7	4.7	4.738	0.132	-0.287	S
G3		4.18	4.18	4.2	0.122	-0.165	S
G4		4.23	4.22	4.248	0.134	-0.136	S
G1	Cond	17.6	17.7	16.55	1.471	0.714	S
G2		15	15.2	14.389	1.524	0.401	S
G3		39.2	39.3	37.557	3.093	0.531	S
G4		36.6	37	34.831	3.076	0.575	S

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Q – Questionable: Your result deviates between ± 10 - 20% of the expected value for SO_4^{2-} and NO_3^- , between ± 15 - 25% of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between ± 0.1 - 0.2 pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 6, SGS Multilab (France)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.685	0.666	0.642	0.089	0.48	S
G2		0.531	0.535	0.52	0.081	0.131	S
G3		1.506	1.474	1.423	0.234	0.355	S
G4		1.339	1.319	1.272	0.194	0.347	S
G1	NH ₄ ⁺	0.184	0.187	0.184	0.014	-0.007	S
G2		0.23	0.241	0.235	0.018	-0.291	S
G3		0.259	0.267	0.272	0.023	-0.57	S
G4		0.368	0.401	0.4	0.021	-1.476	S
G1	NO ₃ ⁻	0.356	0.357	0.344	0.024	0.523	S
G2		0.361	0.379	0.362	0.032	-0.024	S
G3		0.592	0.607	0.595	0.044	-0.07	S
G4		0.685	0.707	0.685	0.057	-0.007	S
G1	Na ⁺	0.299	0.304	0.29	0.016	0.531	S
G2		0.273	0.283	0.268	0.018	0.266	S
G3		0.598	0.608	0.59	0.024	0.337	S
G4		0.537	0.548	0.526	0.023	0.455	S
G1	Mg ²⁺	0.103	0.103	0.101	0.006	0.348	S
G2		0.086	0.093	0.087	0.005	-0.289	S
G3		0.167	0.175	0.168	0.008	-0.111	S
G4		0.149	0.155	0.15	0.007	-0.148	S
G1	Cl ⁻	0.179	0.193	0.187	0.016	-0.493	S
G2		0.25	0.27	0.258	0.021	-0.406	S
G3		0.368	0.386	0.367	0.026	0.032	S
G4		0.328	0.347	0.332	0.026	-0.164	S
G1	Ca ²⁺	0.123	0.128	0.13	0.026	-0.259	S
G2		0.111	0.115	0.12	0.025	-0.368	S
G3		0.208	0.217	0.213	0.029	-0.173	S
G4		0.189	0.192	0.191	0.027	-0.07	S
G1	K ⁺	0.166	0.17	0.162	0.016	0.28	S
G2		0.194	0.204	0.189	0.017	0.316	S
G3		0.328	0.34	0.325	0.02	0.139	S
G4		0.297	0.306	0.294	0.019	0.168	S
G1	pH	4.6	4.57	4.629	0.131	-0.222	S
G2		4.74	4.7	4.738	0.132	0.016	S
G3		4.18	4.18	4.2	0.122	-0.165	S
G4		4.22	4.22	4.248	0.134	-0.211	S
G1	Cond	16.51	17.7	16.55	1.471	-0.027	S
G2		14.42	15.2	14.389	1.524	0.02	S
G3		36.9	39.3	37.557	3.093	-0.212	S
G4		34.9	37	34.831	3.076	0.023	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 8, Umweltbundesamt, Langen (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.65	0.666	0.642	0.089	0.087	S
G2		0.542	0.535	0.52	0.081	0.267	S
G3		1.465	1.474	1.423	0.234	0.18	S
G4		1.296	1.319	1.272	0.194	0.125	S
G1	NH ₄ ⁺	0.179	0.187	0.184	0.014	-0.353	S
G2		0.229	0.241	0.235	0.018	-0.346	S
G3		0.267	0.267	0.272	0.023	-0.215	S
G4		0.392	0.401	0.4	0.021	-0.356	S
G1	NO ₃ ⁻	0.357	0.357	0.344	0.024	0.566	S
G2		0.38	0.379	0.362	0.032	0.563	S
G3		0.585	0.607	0.595	0.044	-0.227	S
G4		0.679	0.707	0.685	0.057	-0.113	S
G1	Na ⁺	0.284	0.304	0.29	0.016	-0.385	S
G2		0.263	0.283	0.268	0.018	-0.304	S
G3		0.595	0.608	0.59	0.024	0.213	S
G4		0.53	0.548	0.526	0.023	0.152	S
G1	Mg ²⁺	0.104	0.103	0.101	0.006	0.523	S
G2		0.089	0.093	0.087	0.005	0.336	S
G3		0.177	0.175	0.168	0.008	1.168	S
G4		0.158	0.155	0.15	0.007	1.071	S
G1	Cl ⁻	0.179	0.193	0.187	0.016	-0.493	S
G2		0.25	0.27	0.258	0.021	-0.406	S
G3		0.363	0.386	0.367	0.026	-0.158	S
G4		0.325	0.347	0.332	0.026	-0.28	S
G1	Ca ²⁺	0.126	0.128	0.13	0.026	-0.145	S
G2		0.113	0.115	0.12	0.025	-0.287	S
G3		0.215	0.217	0.213	0.029	0.071	S
G4		0.187	0.192	0.191	0.027	-0.143	S
G1	K ⁺	0.165	0.17	0.162	0.016	0.216	S
G2		0.196	0.204	0.189	0.017	0.436	S
G3		0.331	0.34	0.325	0.02	0.29	S
G4		0.304	0.306	0.294	0.019	0.534	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.75	4.7	4.738	0.132	0.091	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.27	4.22	4.248	0.134	0.162	S
G1	Cond	17.4	17.7	16.55	1.471	0.578	S
G2		15	15.2	14.389	1.524	0.401	S
G3		38.5	39.3	37.557	3.093	0.305	S
G4		36	37	34.831	3.076	0.38	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 10, Institute for Atmospheric Physics (Hungary)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.732	0.666	0.642	0.089	1.007	S
G2		0.586	0.535	0.52	0.081	0.814	S
G3		1.703	1.474	1.423	0.234	1.195	Q
G4		1.489	1.319	1.272	0.194	1.12	Q
G1	NH ₄ ⁺	0.188	0.187	0.184	0.014	0.269	S
G2		0.234	0.241	0.235	0.018	-0.073	S
G3		0.274	0.267	0.272	0.023	0.095	S
G4		0.401	0.401	0.4	0.021	0.064	S
G1	NO ₃ ⁻	0.357	0.357	0.344	0.024	0.566	S
G2		0.384	0.379	0.362	0.032	0.686	S
G3		0.63	0.607	0.595	0.044	0.787	S
G4		0.732	0.707	0.685	0.057	0.821	S
G1	Na ⁺	0.293	0.304	0.29	0.016	0.165	S
G2		0.278	0.283	0.268	0.018	0.551	S
G3		0.63	0.608	0.59	0.024	1.665	S
G4		0.546	0.548	0.526	0.023	0.843	S
G1	Mg ²⁺	0.108	0.103	0.101	0.006	1.219	S
G2		0.092	0.093	0.087	0.005	0.962	S
G3		0.173	0.175	0.168	0.008	0.656	S
G4		0.16	0.155	0.15	0.007	1.342	S
G1	Cl ⁻	0.182	0.193	0.187	0.016	-0.311	S
G2		0.272	0.27	0.258	0.021	0.66	S
G3		0.362	0.386	0.367	0.026	-0.196	S
G4		0.32	0.347	0.332	0.026	-0.474	S
G1	Ca ²⁺	0.132	0.128	0.13	0.026	0.084	S
G2		0.133	0.115	0.12	0.025	0.525	Q
G3		0.222	0.217	0.213	0.029	0.316	S
G4		0.2	0.192	0.191	0.027	0.336	S
G1	K ⁺	0.181	0.17	0.162	0.016	1.236	S
G2		0.218	0.204	0.189	0.017	1.757	S
G3		0.36	0.34	0.325	0.02	1.742	S
G4		0.329	0.306	0.294	0.019	1.843	S
G1	pH	4.67	4.57	4.629	0.131	0.313	S
G2		4.77	4.7	4.738	0.132	0.243	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.27	4.22	4.248	0.134	0.162	S
G1	Cond	17.4	17.7	16.55	1.471	0.578	S
G2		15	15.2	14.389	1.524	0.401	S
G3		38.9	39.3	37.557	3.093	0.434	S
G4		36.4	37	34.831	3.076	0.51	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 12, Met. Eirann, Dublin (Ireland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.67	0.666	0.642	0.089	0.312	S
G2		0.54	0.535	0.52	0.081	0.242	S
G3		1.51	1.474	1.423	0.234	0.372	S
G4		1.34	1.319	1.272	0.194	0.352	S
G1	NH ₄ ⁺	0.19	0.187	0.184	0.014	0.408	S
G2		0.25	0.241	0.235	0.018	0.801	S
G3		0.29	0.267	0.272	0.023	0.805	S
G4		0.43	0.401	0.4	0.021	1.417	S
G1	NO ₃ ⁻	0.36	0.357	0.344	0.024	0.692	S
G2		0.38	0.379	0.362	0.032	0.563	S
G3		0.62	0.607	0.595	0.044	0.562	S
G4		0.72	0.707	0.685	0.057	0.609	S
G1	Na ⁺	0.27	0.304	0.29	0.016	-1.239	S
G2		0.25	0.283	0.268	0.018	-1.046	S
G3		0.57	0.608	0.59	0.024	-0.824	S
G4		0.51	0.548	0.526	0.023	-0.711	S
G1	Mg ²⁺	0.101	0.103	0.101	0.006	0	S
G2		0.086	0.093	0.087	0.005	-0.289	S
G3		0.173	0.175	0.168	0.008	0.656	S
G4		0.153	0.155	0.15	0.007	0.394	S
G1	Cl ⁻	0.16	0.193	0.187	0.016	-1.645	Q
G2		0.24	0.27	0.258	0.021	-0.891	S
G3		0.37	0.386	0.367	0.026	0.108	S
G4		0.33	0.347	0.332	0.026	-0.086	S
G1	Ca ²⁺	0.1	0.128	0.13	0.026	-1.135	Q
G2		0.09	0.115	0.12	0.025	-1.221	Q
G3		0.19	0.217	0.213	0.029	-0.802	S
G4		0.16	0.192	0.191	0.027	-1.139	Q
G1	K ⁺	0.19	0.17	0.162	0.016	1.81	S
G2		0.19	0.204	0.189	0.017	0.076	S
G3		0.34	0.34	0.325	0.02	0.74	S
G4		0.3	0.306	0.294	0.019	0.325	S
G1	pH	4.62	4.57	4.629	0.131	-0.069	S
G2		4.75	4.7	4.738	0.132	0.091	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.27	4.22	4.248	0.134	0.162	S
G1	Cond	17.3	17.7	16.55	1.471	0.51	S
G2		14.8	15.2	14.389	1.524	0.269	S
G3		38.4	39.3	37.557	3.093	0.272	S
G4		36.2	37	34.831	3.076	0.445	S

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 13, C.N.R. Istituto Inquinamento Atmosferico (Italy)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.67	0.666	0.642	0.089	0.312	S
G2		0.53	0.535	0.52	0.081	0.118	S
G3		1.57	1.474	1.423	0.234	0.628	S
G4		1.38	1.319	1.272	0.194	0.558	S
G1	NH ₄ ⁺	0.2	0.187	0.184	0.014	1.099	S
G2		0.26	0.241	0.235	0.018	1.348	S
G3		0.29	0.267	0.272	0.023	0.805	S
G4		0.41	0.401	0.4	0.021	0.484	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.61	0.607	0.595	0.044	0.336	S
G4		0.7	0.707	0.685	0.057	0.257	S
G1	Na ⁺	0.31	0.304	0.29	0.016	1.203	S
G2		0.29	0.283	0.268	0.018	1.236	S
G3		0.62	0.608	0.59	0.024	1.25	S
G4		0.57	0.548	0.526	0.023	1.88	S
G1	Mg ²⁺	0.11	0.103	0.101	0.006	1.568	S
G2		0.1	0.093	0.087	0.005	2.63	S
G3		0.18	0.175	0.168	0.008	1.551	S
G4		0.16	0.155	0.15	0.007	1.342	S
G1	Cl ⁻	0.21	0.193	0.187	0.016	1.387	S
G2		0.29	0.27	0.258	0.021	1.533	S
G3		0.41	0.386	0.367	0.026	1.632	S
G4		0.38	0.347	0.332	0.026	1.854	S
G1	Ca ²⁺	0.15	0.128	0.13	0.026	0.769	Q
G2		0.14	0.115	0.12	0.025	0.809	Q
G3		0.24	0.217	0.213	0.029	0.944	S
G4		0.21	0.192	0.191	0.027	0.704	S
G1	K ⁺	0.17	0.17	0.162	0.016	0.535	S
G2		0.2	0.204	0.189	0.017	0.676	S
G3		0.34	0.34	0.325	0.02	0.74	S
G4		0.31	0.306	0.294	0.019	0.848	S
G1	pH	4.75	4.57	4.629	0.131	0.925	Q
G2		4.85	4.7	4.738	0.132	0.848	Q
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.25	4.22	4.248	0.134	0.013	S
G1	Cond	17.2	17.7	16.55	1.471	0.442	S
G2		14.9	15.2	14.389	1.524	0.335	S
G3		39.5	39.3	37.557	3.093	0.628	S
G4		36.6	37	34.831	3.076	0.575	S

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 15, Norwegian Institute for Air Research NILU (Norway)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.664	0.666	0.642	0.089	0.244	S
G2		0.528	0.535	0.52	0.081	0.093	S
G3		1.488	1.474	1.423	0.234	0.278	S
G4		1.323	1.319	1.272	0.194	0.264	S
G1	NH ₄ ⁺	0.184	0.187	0.184	0.014	-0.007	S
G2		0.233	0.241	0.235	0.018	-0.127	S
G3		0.277	0.267	0.272	0.023	0.228	S
G4		0.397	0.401	0.4	0.021	-0.123	S
G1	NO ₃ ⁻	0.355	0.357	0.344	0.024	0.481	S
G2		0.377	0.379	0.362	0.032	0.47	S
G3		0.614	0.607	0.595	0.044	0.426	S
G4		0.714	0.707	0.685	0.057	0.504	S
G1	Na ⁺	0.291	0.304	0.29	0.016	0.043	S
G2		0.271	0.283	0.268	0.018	0.152	S
G3		0.589	0.608	0.59	0.024	-0.036	S
G4		0.524	0.548	0.526	0.023	-0.107	S
G1	Mg ²⁺	0.118	0.103	0.101	0.006	2.961	S
G2		0.108	0.093	0.087	0.005	4.299	Q
G3		0.175	0.175	0.168	0.008	0.912	S
G4		0.158	0.155	0.15	0.007	1.071	S
G1	Cl ⁻	0.192	0.193	0.187	0.016	0.295	S
G2		0.266	0.27	0.258	0.021	0.37	S
G3		0.371	0.386	0.367	0.026	0.146	S
G4		0.338	0.347	0.332	0.026	0.224	S
G1	Ca ²⁺	0.145	0.128	0.13	0.026	0.579	S
G2		0.14	0.115	0.12	0.025	0.809	Q
G3		0.221	0.217	0.213	0.029	0.281	S
G4		0.196	0.192	0.191	0.027	0.188	S
G1	K ⁺	0.171	0.17	0.162	0.016	0.598	S
G2		0.197	0.204	0.189	0.017	0.496	S
G3		0.326	0.34	0.325	0.02	0.039	S
G4		0.296	0.306	0.294	0.019	0.115	S
G1	pH	4.52	4.57	4.629	0.131	-0.833	S
G2		4.67	4.7	4.738	0.132	-0.514	S
G3		4.17	4.18	4.2	0.122	-0.247	S
G4		4.23	4.22	4.248	0.134	-0.136	S
G1	Cond	17.4	17.7	16.55	1.471	0.578	S
G2		14.8	15.2	14.389	1.524	0.269	S
G3		38.9	39.3	37.557	3.093	0.434	S
G4		36.2	37	34.831	3.076	0.445	S

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✎ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than $\pm 10\%$ of the expected value for SO_4^{2-} and NO_3^- , less than $\pm 15\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and less than ± 0.1 pH-units for pH

Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 16, Institute of Meteorology and Water Management, Warsaw (Poland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.646	0.666	0.642	0.089	0.043	S
G2		0.525	0.535	0.52	0.081	0.056	S
G3		1.457	1.474	1.423	0.234	0.146	S
G4		1.291	1.319	1.272	0.194	0.099	S
G1	NH ₄ ⁺	0.148	0.187	0.184	0.014	-2.496	Q
G2		0.226	0.241	0.235	0.018	-0.51	S
G3		0.254	0.267	0.272	0.023	-0.792	S
G4		0.395	0.401	0.4	0.021	-0.216	S
G1	NO ₃ ⁻	0.36	0.357	0.344	0.024	0.692	S
G2		0.374	0.379	0.362	0.032	0.377	S
G3		0.6	0.607	0.595	0.044	0.111	S
G4		0.69	0.707	0.685	0.057	0.081	S
G1	Na ⁺	0.297	0.304	0.29	0.016	0.409	S
G2		0.275	0.283	0.268	0.018	0.38	S
G3		0.579	0.608	0.59	0.024	-0.451	S
G4		0.52	0.548	0.526	0.023	-0.28	S
G1	Mg ²⁺	0.108	0.103	0.101	0.006	1.219	S
G2		0.092	0.093	0.087	0.005	0.962	S
G3		0.169	0.175	0.168	0.008	0.145	S
G4		0.152	0.155	0.15	0.007	0.258	S
G1	Cl ⁻	0.192	0.193	0.187	0.016	0.295	S
G2		0.262	0.27	0.258	0.021	0.176	S
G3		0.374	0.386	0.367	0.026	0.261	S
G4		0.336	0.347	0.332	0.026	0.147	S
G1	Ca ²⁺	0.135	0.128	0.13	0.026	0.198	S
G2		0.13	0.115	0.12	0.025	0.403	S
G3		0.237	0.217	0.213	0.029	0.84	S
G4		0.218	0.192	0.191	0.027	0.999	S
G1	K ⁺	0.169	0.17	0.162	0.016	0.471	S
G2		0.197	0.204	0.189	0.017	0.496	S
G3		0.327	0.34	0.325	0.02	0.089	S
G4		0.293	0.306	0.294	0.019	-0.042	S
G1	pH	4.52	4.57	4.629	0.131	-0.833	S
G2		4.66	4.7	4.738	0.132	-0.59	S
G3		4.13	4.18	4.2	0.122	-0.574	S
G4		4.2	4.22	4.248	0.134	-0.36	S
G1	Cond	17.5	17.7	16.55	1.471	0.646	S
G2		15.1	15.2	14.389	1.524	0.466	S
G3		38.6	39.3	37.557	3.093	0.337	S
G4		36	37	34.831	3.076	0.38	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 18, National Environment Protection Agency (Romania)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.67	0.666	0.642	0.089	0.312	S
G2		0.536	0.535	0.52	0.081	0.193	S
G3		1.468	1.474	1.423	0.234	0.193	S
G4		1.304	1.319	1.272	0.194	0.166	S
G1	NH ₄ ⁺	-999	0.187	0.184	0.014		B
G2		-999	0.241	0.235	0.018		B
G3		-999	0.267	0.272	0.023		B
G4		-999	0.401	0.4	0.021		B
G1	NO ₃ ⁻	0.348	0.357	0.344	0.024	0.186	S
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.607	0.607	0.595	0.044	0.269	S
G4		0.697	0.707	0.685	0.057	0.204	S
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	0.183	0.193	0.187	0.016	-0.251	S
G2		0.257	0.27	0.258	0.021	-0.067	S
G3		0.371	0.386	0.367	0.026	0.146	S
G4		0.343	0.347	0.332	0.026	0.418	S
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

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<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 19, Centro Nacional de Sanidad Ambiental (Spain)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.62	0.666	0.642	0.089	-0.249	S
G2		0.51	0.535	0.52	0.081	-0.13	S
G3		1.41	1.474	1.423	0.234	-0.055	S
G4		1.3	1.319	1.272	0.194	0.146	S
G1	NH ₄ ⁺	0.216	0.187	0.184	0.014	2.205	Q
G2		0.278	0.241	0.235	0.018	2.331	Q
G3		0.327	0.267	0.272	0.023	2.445	Q
G4		0.469	0.401	0.4	0.021	3.238	Q
G1	NO ₃ ⁻	0.34	0.357	0.344	0.024	-0.151	S
G2		0.36	0.379	0.362	0.032	-0.055	S
G3		0.56	0.607	0.595	0.044	-0.791	S
G4		0.66	0.707	0.685	0.057	-0.448	S
G1	Na ⁺	0.3	0.304	0.29	0.016	0.592	S
G2		0.29	0.283	0.268	0.018	1.236	S
G3		0.6	0.608	0.59	0.024	0.42	S
G4		0.54	0.548	0.526	0.023	0.584	S
G1	Mg ²⁺	0.1	0.103	0.101	0.006	-0.174	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.18	0.175	0.168	0.008	1.551	S
G4		0.16	0.155	0.15	0.007	1.342	S
G1	Cl ⁻	< 0.300	0.193	0.187	0.016		B
G2		< 0.300	0.27	0.258	0.021		B
G3		0.37	0.386	0.367	0.026	0.108	S
G4		0.3	0.347	0.332	0.026	-1.25	S
G1	Ca ²⁺	0.13	0.128	0.13	0.026	0.008	S
G2		0.12	0.115	0.12	0.025	-0.003	S
G3		0.23	0.217	0.213	0.029	0.595	S
G4		0.2	0.192	0.191	0.027	0.336	S
G1	K ⁺	0.17	0.17	0.162	0.016	0.535	S
G2		0.2	0.204	0.189	0.017	0.676	S
G3		0.34	0.34	0.325	0.02	0.74	S
G4		0.3	0.306	0.294	0.019	0.325	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.8	4.7	4.738	0.132	0.47	S
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.25	4.22	4.248	0.134	0.013	S
G1	Cond	15.9	17.7	16.55	1.471	-0.442	S
G2		13.3	15.2	14.389	1.524	-0.715	S
G3		36.4	39.3	37.557	3.093	-0.374	S
G4		34	37	34.831	3.076	-0.27	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 20, Swedish Environmental Research Institute IVL, Gothenburg (Sweden)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.656	0.666	0.642	0.089	0.155	S
G2		0.52	0.535	0.52	0.081	-0.006	S
G3		1.48	1.474	1.423	0.234	0.244	S
G4		1.31	1.319	1.272	0.194	0.197	S
G1	NH ₄ ⁺	0.187	0.187	0.184	0.014	0.2	S
G2		0.246	0.241	0.235	0.018	0.583	S
G3		0.275	0.267	0.272	0.023	0.14	S
G4		0.414	0.401	0.4	0.021	0.671	S
G1	NO ₃ ⁻	0.348	0.357	0.344	0.024	0.186	S
G2		0.371	0.379	0.362	0.032	0.285	S
G3		0.603	0.607	0.595	0.044	0.178	S
G4		0.698	0.707	0.685	0.057	0.222	S
G1	Na ⁺	0.299	0.304	0.29	0.016	0.531	S
G2		0.281	0.283	0.268	0.018	0.723	S
G3		0.611	0.608	0.59	0.024	0.876	S
G4		0.549	0.548	0.526	0.023	0.973	S
G1	Mg ²⁺	0.105	0.103	0.101	0.006	0.697	S
G2		0.094	0.093	0.087	0.005	1.379	S
G3		0.165	0.175	0.168	0.008	-0.367	S
G4		0.147	0.155	0.15	0.007	-0.419	S
G1	Cl ⁻	0.19	0.193	0.187	0.016	0.174	S
G2		0.268	0.27	0.258	0.021	0.466	S
G3		0.387	0.386	0.367	0.026	0.756	S
G4		0.35	0.347	0.332	0.026	0.69	S
G1	Ca ²⁺	0.127	0.128	0.13	0.026	-0.106	S
G2		0.128	0.115	0.12	0.025	0.322	S
G3		0.192	0.217	0.213	0.029	-0.732	S
G4		0.168	0.192	0.191	0.027	-0.844	S
G1	K ⁺	0.168	0.17	0.162	0.016	0.407	S
G2		0.201	0.204	0.189	0.017	0.736	S
G3		0.346	0.34	0.325	0.02	1.041	S
G4		0.314	0.306	0.294	0.019	1.057	S
G1	pH	4.62	4.57	4.629	0.131	-0.069	S
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.25	4.22	4.248	0.134	0.013	S
G1	Cond	17.35	17.7	16.55	1.471	0.544	S
G2		14.85	15.2	14.389	1.524	0.302	S
G3		38.38	39.3	37.557	3.093	0.266	S
G4		35.85	37	34.831	3.076	0.331	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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B – Blank: You reported either no value or the detection limit

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EMEP – 33rd intercomparison of analytical methods

Laboratory 21, Swiss Federal Laboratories for Materials Testing EMPA (Switzerland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.666	0.666	0.642	0.089	0.267	S
G2		0.524	0.535	0.52	0.081	0.044	S
G3		1.481	1.474	1.423	0.234	0.248	S
G4		1.323	1.319	1.272	0.194	0.264	S
G1	NH ₄ ⁺	0.19	0.187	0.184	0.014	0.408	S
G2		0.244	0.241	0.235	0.018	0.473	S
G3		0.281	0.267	0.272	0.023	0.406	S
G4		0.408	0.401	0.4	0.021	0.391	S
G1	NO ₃ ⁻	0.349	0.357	0.344	0.024	0.228	S
G2		0.371	0.379	0.362	0.032	0.285	S
G3		0.602	0.607	0.595	0.044	0.156	S
G4		0.695	0.707	0.685	0.057	0.169	S
G1	Na ⁺	0.299	0.304	0.29	0.016	0.531	S
G2		0.279	0.283	0.268	0.018	0.609	S
G3		0.603	0.608	0.59	0.024	0.545	S
G4		0.54	0.548	0.526	0.023	0.584	S
G1	Mg ²⁺	0.104	0.103	0.101	0.006	0.523	S
G2		0.091	0.093	0.087	0.005	0.753	S
G3		0.172	0.175	0.168	0.008	0.528	S
G4		0.154	0.155	0.15	0.007	0.529	S
G1	Cl ⁻	0.184	0.193	0.187	0.016	-0.19	S
G2		0.263	0.27	0.258	0.021	0.224	S
G3		0.376	0.386	0.367	0.026	0.337	S
G4		0.338	0.347	0.332	0.026	0.224	S
G1	Ca ²⁺	0.126	0.128	0.13	0.026	-0.145	S
G2		0.12	0.115	0.12	0.025	-0.003	S
G3		0.213	0.217	0.213	0.029	0.001	S
G4		0.19	0.192	0.191	0.027	-0.033	S
G1	K ⁺	0.174	0.17	0.162	0.016	0.79	S
G2		0.206	0.204	0.189	0.017	1.037	S
G3		0.353	0.34	0.325	0.02	1.391	S
G4		0.316	0.306	0.294	0.019	1.162	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.74	4.7	4.738	0.132	0.016	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	17.29	17.7	16.55	1.471	0.503	S
G2		14.81	15.2	14.389	1.524	0.276	S
G3		38.64	39.3	37.557	3.093	0.35	S
G4		36.07	37	34.831	3.076	0.403	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 22, Institute of Global Climate and Ecology (Russian Federation)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.696	0.666	0.642	0.089	0.603	S
G2		0.55	0.535	0.52	0.081	0.367	S
G3		1.629	1.474	1.423	0.234	0.879	Q
G4		1.454	1.319	1.272	0.194	0.939	Q
G1	NH ₄ ⁺	0.237	0.187	0.184	0.014	3.657	U
G2		0.296	0.241	0.235	0.018	3.314	Q
G3		0.328	0.267	0.272	0.023	2.49	Q
G4		0.439	0.401	0.4	0.021	1.837	S
G1	NO ₃ ⁻	0.364	0.357	0.344	0.024	0.861	S
G2		0.386	0.379	0.362	0.032	0.748	S
G3		0.641	0.607	0.595	0.044	1.035	S
G4		0.748	0.707	0.685	0.057	1.102	S
G1	Na ⁺	0.315	0.304	0.29	0.016	1.508	S
G2		0.271	0.283	0.268	0.018	0.152	S
G3		0.537	0.608	0.59	0.024	-2.193	S
G4		0.469	0.548	0.526	0.023	-2.482	S
G1	Mg ²⁺	0.098	0.103	0.101	0.006	-0.523	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.162	0.175	0.168	0.008	-0.75	S
G4		0.146	0.155	0.15	0.007	-0.554	S
G1	Cl ⁻	0.197	0.193	0.187	0.016	0.598	S
G2		0.26	0.27	0.258	0.021	0.079	S
G3		0.366	0.386	0.367	0.026	-0.044	S
G4		0.336	0.347	0.332	0.026	0.147	S
G1	Ca ²⁺	0.179	0.128	0.13	0.026	1.874	U
G2		0.164	0.115	0.12	0.025	1.783	U
G3		0.254	0.217	0.213	0.029	1.434	Q
G4		0.218	0.192	0.191	0.027	0.999	S
G1	K ⁺	0.182	0.17	0.162	0.016	1.3	S
G2		0.195	0.204	0.189	0.017	0.376	S
G3		0.31	0.34	0.325	0.02	-0.762	S
G4		0.277	0.306	0.294	0.019	-0.879	S
G1	pH	5.04	4.57	4.629	0.131	3.141	U
G2		5.16	4.7	4.738	0.132	3.194	U
G3		4.68	4.18	4.2	0.122	3.93	U
G4		4.72	4.22	4.248	0.134	3.518	U
G1	Cond	12.3	17.7	16.55	1.471	-2.889	U
G2		10.9	15.2	14.389	1.524	-2.29	U
G3		28.4	39.3	37.557	3.093	-2.96	U
G4		26.5	37	34.831	3.076	-2.708	U

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 23, Ricardo-AEA Limited (United Kingdom)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.685	0.666	0.642	0.089	0.48	S
G2		0.539	0.535	0.52	0.081	0.23	S
G3		1.54	1.474	1.423	0.234	0.5	S
G4		1.359	1.319	1.272	0.194	0.45	S
G1	NH ₄ ⁺	0.233	0.187	0.184	0.014	3.38	Q
G2		0.299	0.241	0.235	0.018	3.478	Q
G3		0.328	0.267	0.272	0.023	2.49	Q
G4		0.5	0.401	0.4	0.021	4.684	Q
G1	NO ₃ ⁻	0.361	0.357	0.344	0.024	0.734	S
G2		0.381	0.379	0.362	0.032	0.594	S
G3		0.633	0.607	0.595	0.044	0.855	S
G4		0.721	0.707	0.685	0.057	0.627	S
G1	Na ⁺	0.316	0.304	0.29	0.016	1.569	S
G2		0.281	0.283	0.268	0.018	0.723	S
G3		0.611	0.608	0.59	0.024	0.876	S
G4		0.543	0.548	0.526	0.023	0.714	S
G1	Mg ²⁺	0.075	0.103	0.101	0.006	-4.529	U
G2		0.064	0.093	0.087	0.005	-4.877	U
G3		0.135	0.175	0.168	0.008	-4.203	Q
G4		0.119	0.155	0.15	0.007	-4.21	Q
G1	Cl ⁻	0.177	0.193	0.187	0.016	-0.615	S
G2		0.251	0.27	0.258	0.021	-0.358	S
G3		0.375	0.386	0.367	0.026	0.299	S
G4		0.336	0.347	0.332	0.026	0.147	S
G1	Ca ²⁺	0.096	0.128	0.13	0.026	-1.287	Q
G2		0.138	0.115	0.12	0.025	0.728	Q
G3		0.168	0.217	0.213	0.029	-1.571	Q
G4		0.15	0.192	0.191	0.027	-1.507	Q
G1	K ⁺	0.131	0.17	0.162	0.016	-1.952	Q
G2		0.155	0.204	0.189	0.017	-2.027	Q
G3		0.293	0.34	0.325	0.02	-1.614	S
G4		0.246	0.306	0.294	0.019	-2.502	Q
G1	pH	4.6	4.57	4.629	0.131	-0.222	S
G2		4.73	4.7	4.738	0.132	-0.06	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	15.2	17.7	16.55	1.471	-0.918	S
G2		12.7	15.2	14.389	1.524	-1.109	Q
G3		38.2	39.3	37.557	3.093	0.208	S
G4		35.6	37	34.831	3.076	0.25	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 24, Serbian Environmental Protection Agency (Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.69	0.666	0.642	0.089	0.536	S
G2		0.539	0.535	0.52	0.081	0.23	S
G3		1.472	1.474	1.423	0.234	0.21	S
G4		1.31	1.319	1.272	0.194	0.197	S
G1	NH ₄ ⁺	0.16	0.187	0.184	0.014	-1.666	S
G2		0.209	0.241	0.235	0.018	-1.439	S
G3		0.235	0.267	0.272	0.023	-1.634	S
G4		0.353	0.401	0.4	0.021	-2.177	S
G1	NO ₃ ⁻	0.372	0.357	0.344	0.024	1.198	S
G2		0.378	0.379	0.362	0.032	0.501	S
G3		0.611	0.607	0.595	0.044	0.359	S
G4		0.714	0.707	0.685	0.057	0.504	S
G1	Na ⁺	0.298	0.304	0.29	0.016	0.47	S
G2		0.273	0.283	0.268	0.018	0.266	S
G3		0.611	0.608	0.59	0.024	0.876	S
G4		0.539	0.548	0.526	0.023	0.541	S
G1	Mg ²⁺	0.111	0.103	0.101	0.006	1.742	S
G2		0.087	0.093	0.087	0.005	-0.081	S
G3		0.176	0.175	0.168	0.008	1.04	S
G4		0.165	0.155	0.15	0.007	2.019	S
G1	Cl ⁻	0.196	0.193	0.187	0.016	0.538	S
G2		0.28	0.27	0.258	0.021	1.048	S
G3		0.4	0.386	0.367	0.026	1.251	S
G4		0.375	0.347	0.332	0.026	1.66	S
G1	Ca ²⁺	0.141	0.128	0.13	0.026	0.427	S
G2		0.117	0.115	0.12	0.025	-0.125	S
G3		0.2	0.217	0.213	0.029	-0.453	S
G4		0.163	0.192	0.191	0.027	-1.028	Q
G1	K ⁺	0.172	0.17	0.162	0.016	0.662	S
G2		0.199	0.204	0.189	0.017	0.616	S
G3		0.329	0.34	0.325	0.02	0.189	S
G4		0.307	0.306	0.294	0.019	0.691	S
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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EMEP – 33rd intercomparison of analytical methods

Laboratory 26, Environment Canada, Ontario (Canada)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.655	0.666	0.642	0.089	0.144	S
G2		0.52	0.535	0.52	0.081	-0.006	S
G3		1.46	1.474	1.423	0.234	0.159	S
G4		1.296	1.319	1.272	0.194	0.125	S
G1	NH ₄ ⁺	0.189	0.187	0.184	0.014	0.339	S
G2		0.244	0.241	0.235	0.018	0.473	S
G3		0.279	0.267	0.272	0.023	0.317	S
G4		0.411	0.401	0.4	0.021	0.531	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.601	0.607	0.595	0.044	0.133	S
G4		0.696	0.707	0.685	0.057	0.187	S
G1	Na ⁺	0.302	0.304	0.29	0.016	0.714	S
G2		0.276	0.283	0.268	0.018	0.437	S
G3		0.609	0.608	0.59	0.024	0.793	S
G4		0.545	0.548	0.526	0.023	0.8	S
G1	Mg ²⁺	0.105	0.103	0.101	0.006	0.697	S
G2		0.089	0.093	0.087	0.005	0.336	S
G3		0.176	0.175	0.168	0.008	1.04	S
G4		0.156	0.155	0.15	0.007	0.8	S
G1	Cl ⁻	0.187	0.193	0.187	0.016	-0.008	S
G2		0.263	0.27	0.258	0.021	0.224	S
G3		0.383	0.386	0.367	0.026	0.604	S
G4		0.345	0.347	0.332	0.026	0.496	S
G1	Ca ²⁺	0.127	0.128	0.13	0.026	-0.106	S
G2		0.117	0.115	0.12	0.025	-0.125	S
G3		0.22	0.217	0.213	0.029	0.246	S
G4		0.191	0.192	0.191	0.027	0.004	S
G1	K ⁺	0.173	0.17	0.162	0.016	0.726	S
G2		0.201	0.204	0.189	0.017	0.736	S
G3		0.343	0.34	0.325	0.02	0.891	S
G4		0.309	0.306	0.294	0.019	0.796	S
G1	pH	4.61	4.57	4.629	0.131	-0.145	S
G2		4.74	4.7	4.738	0.132	0.016	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 27, Illinois State Water Survey (United States of America)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.65	0.666	0.642	0.089	0.087	S
G2		0.495	0.535	0.52	0.081	-0.316	S
G3		1.423	1.474	1.423	0.234	0.001	S
G4		1.257	1.319	1.272	0.194	-0.076	S
G1	NH ₄ ⁺	0.183	0.187	0.184	0.014	-0.076	S
G2		0.239	0.241	0.235	0.018	0.2	S
G3		0.27	0.267	0.272	0.023	-0.082	S
G4		0.402	0.401	0.4	0.021	0.11	S
G1	NO ₃ ⁻	0.345	0.357	0.344	0.024	0.06	S
G2		0.349	0.379	0.362	0.032	-0.395	S
G3		0.566	0.607	0.595	0.044	-0.656	S
G4		0.662	0.707	0.685	0.057	-0.412	S
G1	Na ⁺	0.293	0.304	0.29	0.016	0.165	S
G2		0.273	0.283	0.268	0.018	0.266	S
G3		0.599	0.608	0.59	0.024	0.379	S
G4		0.523	0.548	0.526	0.023	-0.15	S
G1	Mg ²⁺	0.101	0.103	0.101	0.006	0	S
G2		0.088	0.093	0.087	0.005	0.128	S
G3		0.168	0.175	0.168	0.008	0.017	S
G4		0.152	0.155	0.15	0.007	0.258	S
G1	Cl ⁻	0.186	0.193	0.187	0.016	-0.069	S
G2		0.254	0.27	0.258	0.021	-0.212	S
G3		0.373	0.386	0.367	0.026	0.223	S
G4		0.335	0.347	0.332	0.026	0.108	S
G1	Ca ²⁺	0.124	0.128	0.13	0.026	-0.221	S
G2		0.118	0.115	0.12	0.025	-0.084	S
G3		0.212	0.217	0.213	0.029	-0.034	S
G4		0.188	0.192	0.191	0.027	-0.107	S
G1	K ⁺	0.173	0.17	0.162	0.016	0.726	S
G2		0.206	0.204	0.189	0.017	1.037	S
G3		0.353	0.34	0.325	0.02	1.391	S
G4		0.308	0.306	0.294	0.019	0.743	S
G1	pH	4.61	4.57	4.629	0.131	-0.145	S
G2		4.74	4.7	4.738	0.132	0.016	S
G3		4.19	4.18	4.2	0.122	-0.083	S
G4		4.28	4.22	4.248	0.134	0.237	S
G1	Cond	17.4	17.7	16.55	1.471	0.578	S
G2		15.1	15.2	14.389	1.524	0.466	S
G3		40.4	39.3	37.557	3.093	0.919	S
G4		36.3	37	34.831	3.076	0.478	S

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 30, Joint Research Centre, Ispra (Italy)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.684	0.666	0.642	0.089	0.469	S
G2		0.541	0.535	0.52	0.081	0.255	S
G3		1.56	1.474	1.423	0.234	0.585	S
G4		1.385	1.319	1.272	0.194	0.584	S
G1	NH ₄ ⁺	0.184	0.187	0.184	0.014	-0.007	S
G2		0.229	0.241	0.235	0.018	-0.346	S
G3		0.27	0.267	0.272	0.023	-0.082	S
G4		0.39	0.401	0.4	0.021	-0.45	S
G1	NO ₃ ⁻	0.335	0.357	0.344	0.024	-0.362	S
G2		0.357	0.379	0.362	0.032	-0.148	S
G3		0.596	0.607	0.595	0.044	0.021	S
G4		0.696	0.707	0.685	0.057	0.187	S
G1	Na ⁺	0.284	0.304	0.29	0.016	-0.385	S
G2		0.26	0.283	0.268	0.018	-0.475	S
G3		0.591	0.608	0.59	0.024	0.047	S
G4		0.531	0.548	0.526	0.023	0.196	S
G1	Mg ²⁺	0.106	0.103	0.101	0.006	0.871	S
G2		0.092	0.093	0.087	0.005	0.962	S
G3		0.166	0.175	0.168	0.008	-0.239	S
G4		0.153	0.155	0.15	0.007	0.394	S
G1	Cl ⁻	0.166	0.193	0.187	0.016	-1.282	S
G2		0.239	0.27	0.258	0.021	-0.94	S
G3		0.352	0.386	0.367	0.026	-0.577	S
G4		0.316	0.347	0.332	0.026	-0.629	S
G1	Ca ²⁺	0.121	0.128	0.13	0.026	-0.335	S
G2		0.114	0.115	0.12	0.025	-0.247	S
G3		0.226	0.217	0.213	0.029	0.455	S
G4		0.193	0.192	0.191	0.027	0.078	S
G1	K ⁺	0.129	0.17	0.162	0.016	-2.079	Q
G2		0.176	0.204	0.189	0.017	-0.765	S
G3		0.283	0.34	0.325	0.02	-2.115	Q
G4		0.258	0.306	0.294	0.019	-1.874	Q
G1	pH	4.77	4.57	4.629	0.131	1.077	Q
G2		4.71	4.7	4.738	0.132	-0.211	S
G3		4.15	4.18	4.2	0.122	-0.41	S
G4		4.17	4.22	4.248	0.134	-0.583	S
G1	Cond	18.6	17.7	16.55	1.471	1.394	S
G2		18.6	15.2	14.389	1.524	2.764	Q
G3		40.7	39.3	37.557	3.093	1.016	S
G4		37.6	37	34.831	3.076	0.9	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 31, Slovak Hydrometeorological Institute (Slovakia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.706	0.666	0.642	0.089	0.715	S
G2		0.571	0.535	0.52	0.081	0.627	S
G3		1.492	1.474	1.423	0.234	0.295	S
G4		1.337	1.319	1.272	0.194	0.336	S
G1	NH ₄ ⁺	0.204	0.187	0.184	0.014	1.376	S
G2		0.242	0.241	0.235	0.018	0.364	S
G3		0.289	0.267	0.272	0.023	0.76	S
G4		0.407	0.401	0.4	0.021	0.344	S
G1	NO ₃ ⁻	0.349	0.357	0.344	0.024	0.228	S
G2		0.368	0.379	0.362	0.032	0.192	S
G3		0.607	0.607	0.595	0.044	0.269	S
G4		0.701	0.707	0.685	0.057	0.275	S
G1	Na ⁺	0.267	0.304	0.29	0.016	-1.423	S
G2		0.252	0.283	0.268	0.018	-0.932	S
G3		0.567	0.608	0.59	0.024	-0.949	S
G4		0.508	0.548	0.526	0.023	-0.798	S
G1	Mg ²⁺	0.102	0.103	0.101	0.006	0.174	S
G2		0.085	0.093	0.087	0.005	-0.498	S
G3		0.158	0.175	0.168	0.008	-1.262	S
G4		0.143	0.155	0.15	0.007	-0.96	S
G1	Cl ⁻	0.206	0.193	0.187	0.016	1.144	S
G2		0.269	0.27	0.258	0.021	0.515	S
G3		0.392	0.386	0.367	0.026	0.946	S
G4		0.344	0.347	0.332	0.026	0.457	S
G1	Ca ²⁺	0.133	0.128	0.13	0.026	0.122	S
G2		0.105	0.115	0.12	0.025	-0.612	S
G3		0.229	0.217	0.213	0.029	0.56	S
G4		0.207	0.192	0.191	0.027	0.594	S
G1	K ⁺	0.145	0.17	0.162	0.016	-1.059	S
G2		0.169	0.204	0.189	0.017	-1.186	Q
G3		0.299	0.34	0.325	0.02	-1.313	S
G4		0.275	0.306	0.294	0.019	-0.984	S
G1	pH	4.67	4.57	4.629	0.131	0.313	S
G2		4.77	4.7	4.738	0.132	0.243	S
G3		4.28	4.18	4.2	0.122	0.654	Q
G4		4.32	4.22	4.248	0.134	0.535	Q
G1	Cond	17.74	17.7	16.55	1.471	0.809	S
G2		15.17	15.2	14.389	1.524	0.512	S
G3		38.65	39.3	37.557	3.093	0.353	S
G4		36.25	37	34.831	3.076	0.461	S

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 32, Atmospheric Pollution Research Laboratory, Institute of Physics, Vilnius (Lithuania)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.588	0.666	0.642	0.089	-0.608	Q
G2		0.46	0.535	0.52	0.081	-0.751	Q
G3		1.374	1.474	1.423	0.234	-0.208	S
G4		1.213	1.319	1.272	0.194	-0.303	S
G1	NH ₄ ⁺	0.194	0.187	0.184	0.014	0.684	S
G2		0.217	0.241	0.235	0.018	-1.002	S
G3		0.269	0.267	0.272	0.023	-0.126	S
G4		0.393	0.401	0.4	0.021	-0.31	S
G1	NO ₃ ⁻	0.349	0.357	0.344	0.024	0.228	S
G2		0.368	0.379	0.362	0.032	0.192	S
G3		0.609	0.607	0.595	0.044	0.314	S
G4		0.705	0.707	0.685	0.057	0.345	S
G1	Na ⁺	0.294	0.304	0.29	0.016	0.226	S
G2		0.28	0.283	0.268	0.018	0.666	S
G3		0.624	0.608	0.59	0.024	1.416	S
G4		0.53	0.548	0.526	0.023	0.152	S
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	0.199	0.193	0.187	0.016	0.719	S
G2		0.274	0.27	0.258	0.021	0.757	S
G3		0.382	0.386	0.367	0.026	0.566	S
G4		0.344	0.347	0.332	0.026	0.457	S
G1	Ca ²⁺	0.12	0.128	0.13	0.026	-0.373	S
G2		0.085	0.115	0.12	0.025	-1.424	U
G3		0.178	0.217	0.213	0.029	-1.221	Q
G4		0.16	0.192	0.191	0.027	-1.139	Q
G1	K ⁺	0.153	0.17	0.162	0.016	-0.549	S
G2		0.185	0.204	0.189	0.017	-0.225	S
G3		0.33	0.34	0.325	0.02	0.24	S
G4		0.306	0.306	0.294	0.019	0.639	S
G1	pH	4.57	4.57	4.629	0.131	-0.451	S
G2		4.71	4.7	4.738	0.132	-0.211	S
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.23	4.22	4.248	0.134	-0.136	S
G1	Cond	17.2	17.7	16.55	1.471	0.442	S
G2		15	15.2	14.389	1.524	0.401	S
G3		38	39.3	37.557	3.093	0.143	S
G4		36	37	34.831	3.076	0.38	S

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S – Satisfactory: Your result deviates less than $\pm 10\%$ of the expected value for SO_4^{2-} and NO_3^- , less than $\pm 15\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and less than ± 0.1 pH-units for pH

Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 33, Environmental Pollution Observ. Centre (Latvia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.73	0.666	0.642	0.089	0.984	S
G2		0.583	0.535	0.52	0.081	0.776	S
G3		1.61	1.474	1.423	0.234	0.798	S
G4		1.43	1.319	1.272	0.194	0.816	S
G1	NH ₄ ⁺	0.175	0.187	0.184	0.014	-0.629	S
G2		0.225	0.241	0.235	0.018	-0.565	S
G3		0.26	0.267	0.272	0.023	-0.526	S
G4		0.405	0.401	0.4	0.021	0.25	S
G1	NO ₃ ⁻	0.378	0.357	0.344	0.024	1.451	S
G2		0.4	0.379	0.362	0.032	1.181	S
G3		0.65	0.607	0.595	0.044	1.238	S
G4		0.75	0.707	0.685	0.057	1.138	S
G1	Na ⁺	0.287	0.304	0.29	0.016	-0.202	S
G2		0.264	0.283	0.268	0.018	-0.247	S
G3		0.584	0.608	0.59	0.024	-0.244	S
G4		0.533	0.548	0.526	0.023	0.282	S
G1	Mg ²⁺	0.09	0.103	0.101	0.006	-1.916	S
G2		0.08	0.093	0.087	0.005	-1.541	S
G3		0.155	0.175	0.168	0.008	-1.645	S
G4		0.136	0.155	0.15	0.007	-1.908	S
G1	Cl ⁻	0.19	0.193	0.187	0.016	0.174	S
G2		0.26	0.27	0.258	0.021	0.079	S
G3		0.37	0.386	0.367	0.026	0.108	S
G4		0.335	0.347	0.332	0.026	0.108	S
G1	Ca ²⁺	0.119	0.128	0.13	0.026	-0.411	S
G2		0.104	0.115	0.12	0.025	-0.653	S
G3		0.207	0.217	0.213	0.029	-0.208	S
G4		0.185	0.192	0.191	0.027	-0.217	S
G1	K ⁺	0.155	0.17	0.162	0.016	-0.422	S
G2		0.174	0.204	0.189	0.017	-0.885	S
G3		0.3	0.34	0.325	0.02	-1.263	S
G4		0.271	0.306	0.294	0.019	-1.193	S
G1	pH	4.64	4.57	4.629	0.131	0.084	S
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.24	4.18	4.2	0.122	0.327	S
G4		4.28	4.22	4.248	0.134	0.237	S
G1	Cond	17.4	17.7	16.55	1.471	0.578	S
G2		14.8	15.2	14.389	1.524	0.269	S
G3		38.8	39.3	37.557	3.093	0.402	S
G4		36	37	34.831	3.076	0.38	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 34, Ministry of Environment and Urbanisation (Turkey)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.135	0.666	0.642	0.089	-5.686	U
G2		0.147	0.535	0.52	0.081	-4.637	U
G3		0.438	1.474	1.423	0.234	-4.2	U
G4		0.387	1.319	1.272	0.194	-4.559	U
G1	NH ₄ ⁺	0.16	0.187	0.184	0.014	-1.666	S
G2		0.22	0.241	0.235	0.018	-0.838	S
G3		0.249	0.267	0.272	0.023	-1.013	S
G4		0.378	0.401	0.4	0.021	-1.01	S
G1	NO ₃ ⁻	0.046	0.357	0.344	0.024	-12.548	U
G2		0.043	0.379	0.362	0.032	-9.851	U
G3		0.081	0.607	0.595	0.044	-11.592	U
G4		0.081	0.707	0.685	0.057	-10.645	U
G1	Na ⁺	0.292	0.304	0.29	0.016	0.104	S
G2		0.284	0.283	0.268	0.018	0.894	S
G3		0.583	0.608	0.59	0.024	-0.285	S
G4		0.535	0.548	0.526	0.023	0.368	S
G1	Mg ²⁺	0.102	0.103	0.101	0.006	0.174	S
G2		0.087	0.093	0.087	0.005	-0.081	S
G3		0.169	0.175	0.168	0.008	0.145	S
G4		0.15	0.155	0.15	0.007	-0.013	S
G1	Cl ⁻	0.095	0.193	0.187	0.016	-5.587	U
G2		0.09	0.27	0.258	0.021	-8.165	U
G3		0.157	0.386	0.367	0.026	-8.007	U
G4		0.116	0.347	0.332	0.026	-8.389	U
G1	Ca ²⁺	0.177	0.128	0.13	0.026	1.798	U
G2		0.197	0.115	0.12	0.025	3.123	U
G3		0.252	0.217	0.213	0.029	1.364	Q
G4		0.258	0.192	0.191	0.027	2.474	U
G1	K ⁺	0.179	0.17	0.162	0.016	1.108	S
G2		0.211	0.204	0.189	0.017	1.337	S
G3		0.347	0.34	0.325	0.02	1.091	S
G4		0.322	0.306	0.294	0.019	1.476	S
G1	pH	8.766	4.57	4.629	0.131	31.618	U
G2		9.38	4.7	4.738	0.132	35.131	U
G3		9.224	4.18	4.2	0.122	41.146	U
G4		8.647	4.22	4.248	0.134	32.798	U
G1	Cond	13	17.7	16.55	1.471	-2.413	U
G2		10	15.2	14.389	1.524	-2.881	U
G3		25	39.3	37.557	3.093	-4.059	U
G4		25	37	34.831	3.076	-3.196	U

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EMEP – 33rd intercomparison of analytical methods

Laboratory 35, Meteorological and Hydrological Service of Croatia (Croatia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.68	0.666	0.642	0.089	0.424	S
G2		0.536	0.535	0.52	0.081	0.193	S
G3		1.501	1.474	1.423	0.234	0.334	S
G4		1.335	1.319	1.272	0.194	0.326	S
G1	NH ₄ ⁺	0.189	0.187	0.184	0.014	0.339	S
G2		0.242	0.241	0.235	0.018	0.364	S
G3		0.274	0.267	0.272	0.023	0.095	S
G4		0.417	0.401	0.4	0.021	0.811	S
G1	NO ₃ ⁻	0.358	0.357	0.344	0.024	0.608	S
G2		0.379	0.379	0.362	0.032	0.532	S
G3		0.613	0.607	0.595	0.044	0.404	S
G4		0.711	0.707	0.685	0.057	0.451	S
G1	Na ⁺	0.308	0.304	0.29	0.016	1.08	S
G2		0.286	0.283	0.268	0.018	1.008	S
G3		0.617	0.608	0.59	0.024	1.125	S
G4		0.554	0.548	0.526	0.023	1.189	S
G1	Mg ²⁺	0.107	0.103	0.101	0.006	1.045	S
G2		0.095	0.093	0.087	0.005	1.588	S
G3		0.176	0.175	0.168	0.008	1.04	S
G4		0.157	0.155	0.15	0.007	0.935	S
G1	Cl ⁻	0.186	0.193	0.187	0.016	-0.069	S
G2		0.268	0.27	0.258	0.021	0.466	S
G3		0.392	0.386	0.367	0.026	0.946	S
G4		0.352	0.347	0.332	0.026	0.768	S
G1	Ca ²⁺	0.129	0.128	0.13	0.026	-0.03	S
G2		0.119	0.115	0.12	0.025	-0.044	S
G3		0.219	0.217	0.213	0.029	0.211	S
G4		0.194	0.192	0.191	0.027	0.115	S
G1	K ⁺	0.18	0.17	0.162	0.016	1.172	S
G2		0.209	0.204	0.189	0.017	1.217	S
G3		0.345	0.34	0.325	0.02	0.991	S
G4		0.314	0.306	0.294	0.019	1.057	S
G1	pH	4.62	4.57	4.629	0.131	-0.069	S
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.27	4.22	4.248	0.134	0.162	S
G1	Cond	17.3	17.7	16.55	1.471	0.51	S
G2		14.8	15.2	14.389	1.524	0.269	S
G3		38.7	39.3	37.557	3.093	0.369	S
G4		36.4	37	34.831	3.076	0.51	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 36, Hydrometeorological Institute of Slovenia (Slovenia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.682	0.666	0.642	0.089	0.446	S
G2		0.546	0.535	0.52	0.081	0.317	S
G3		1.615	1.474	1.423	0.234	0.82	S
G4		1.442	1.319	1.272	0.194	0.877	S
G1	NH ₄ ⁺	0.18	0.187	0.184	0.014	-0.284	S
G2		0.24	0.241	0.235	0.018	0.255	S
G3		0.261	0.267	0.272	0.023	-0.481	S
G4		0.408	0.401	0.4	0.021	0.391	S
G1	NO ₃ ⁻	0.355	0.357	0.344	0.024	0.481	S
G2		0.382	0.379	0.362	0.032	0.625	S
G3		0.634	0.607	0.595	0.044	0.877	S
G4		0.741	0.707	0.685	0.057	0.979	S
G1	Na ⁺	0.291	0.304	0.29	0.016	0.043	S
G2		0.273	0.283	0.268	0.018	0.266	S
G3		0.591	0.608	0.59	0.024	0.047	S
G4		0.531	0.548	0.526	0.023	0.196	S
G1	Mg ²⁺	0.105	0.103	0.101	0.006	0.697	S
G2		0.089	0.093	0.087	0.005	0.336	S
G3		0.168	0.175	0.168	0.008	0.017	S
G4		0.152	0.155	0.15	0.007	0.258	S
G1	Cl ⁻	0.183	0.193	0.187	0.016	-0.251	S
G2		0.285	0.27	0.258	0.021	1.291	S
G3		0.392	0.386	0.367	0.026	0.946	S
G4		0.356	0.347	0.332	0.026	0.923	S
G1	Ca ²⁺	0.131	0.128	0.13	0.026	0.046	S
G2		0.121	0.115	0.12	0.025	0.038	S
G3		0.212	0.217	0.213	0.029	-0.034	S
G4		0.19	0.192	0.191	0.027	-0.033	S
G1	K ⁺	0.165	0.17	0.162	0.016	0.216	S
G2		0.19	0.204	0.189	0.017	0.076	S
G3		0.298	0.34	0.325	0.02	-1.363	S
G4		0.297	0.306	0.294	0.019	0.168	S
G1	pH	4.67	4.57	4.629	0.131	0.313	S
G2		4.79	4.7	4.738	0.132	0.394	S
G3		4.25	4.18	4.2	0.122	0.409	S
G4		4.29	4.22	4.248	0.134	0.311	S
G1	Cond	16.84	17.7	16.55	1.471	0.197	S
G2		14.57	15.2	14.389	1.524	0.118	S
G3		37.8	39.3	37.557	3.093	0.078	S
G4		35.4	37	34.831	3.076	0.185	S

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<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 38, Estonian Environmental Research Centre, Tallinn (Estonia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.657	0.666	0.642	0.089	0.166	S
G2		0.527	0.535	0.52	0.081	0.081	S
G3		1.48	1.474	1.423	0.234	0.244	S
G4		1.324	1.319	1.272	0.194	0.269	S
G1	NH ₄ ⁺	-999	0.187	0.184	0.014		B
G2		-999	0.241	0.235	0.018		B
G3		-999	0.267	0.272	0.023		B
G4		-999	0.401	0.4	0.021		B
G1	NO ₃ ⁻	0.337	0.357	0.344	0.024	-0.278	S
G2		0.352	0.379	0.362	0.032	-0.302	S
G3		0.585	0.607	0.595	0.044	-0.227	S
G4		0.682	0.707	0.685	0.057	-0.06	S
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	0.199	0.193	0.187	0.016	0.719	S
G2		0.271	0.27	0.258	0.021	0.612	S
G3		0.38	0.386	0.367	0.026	0.489	S
G4		0.346	0.347	0.332	0.026	0.535	S
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	4.35	4.57	4.629	0.131	-2.132	U
G2		4.47	4.7	4.738	0.132	-2.028	U
G3		4.02	4.18	4.2	0.122	-1.475	Q
G4		4.05	4.22	4.248	0.134	-1.478	Q
G1	Cond	14.4	17.7	16.55	1.471	-1.462	Q
G2		13.4	15.2	14.389	1.524	-0.649	S
G3		35.9	39.3	37.557	3.093	-0.536	S
G4		33.1	37	34.831	3.076	-0.563	S

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✎ EMEP quality norm; the letters in the column indicates:

S – Satisfactory: Your result deviates less than $\pm 10\%$ of the expected value for SO_4^{2-} and NO_3^- , less than $\pm 15\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and less than ± 0.1 pH-units for pH

Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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B – Blank: You reported either no value or the detection limit

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EMEP – 33rd intercomparison of analytical methods

Laboratory 39, Environmental Monitoring Laboratory, Institute of Environmental Protection (Poland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.654	0.666	0.642	0.089	0.132	S
G2		0.515	0.535	0.52	0.081	-0.068	S
G3		1.459	1.474	1.423	0.234	0.154	S
G4		1.286	1.319	1.272	0.194	0.074	S
G1	NH ₄ ⁺	0.18	0.187	0.184	0.014	-0.284	S
G2		0.23	0.241	0.235	0.018	-0.291	S
G3		0.272	0.267	0.272	0.023	0.007	S
G4		0.415	0.401	0.4	0.021	0.717	S
G1	NO ₃ ⁻	0.346	0.357	0.344	0.024	0.102	S
G2		0.365	0.379	0.362	0.032	0.099	S
G3		0.577	0.607	0.595	0.044	-0.408	S
G4		0.671	0.707	0.685	0.057	-0.254	S
G1	Na ⁺	0.282	0.304	0.29	0.016	-0.507	S
G2		0.261	0.283	0.268	0.018	-0.418	S
G3		0.594	0.608	0.59	0.024	0.171	S
G4		0.528	0.548	0.526	0.023	0.066	S
G1	Mg ²⁺	0.101	0.103	0.101	0.006	0	S
G2		0.086	0.093	0.087	0.005	-0.289	S
G3		0.171	0.175	0.168	0.008	0.401	S
G4		0.152	0.155	0.15	0.007	0.258	S
G1	Cl ⁻	0.196	0.193	0.187	0.016	0.538	S
G2		0.27	0.27	0.258	0.021	0.563	S
G3		0.373	0.386	0.367	0.026	0.223	S
G4		0.336	0.347	0.332	0.026	0.147	S
G1	Ca ²⁺	0.123	0.128	0.13	0.026	-0.259	S
G2		0.116	0.115	0.12	0.025	-0.165	S
G3		0.213	0.217	0.213	0.029	0.001	S
G4		0.185	0.192	0.191	0.027	-0.217	S
G1	K ⁺	0.165	0.17	0.162	0.016	0.216	S
G2		0.195	0.204	0.189	0.017	0.376	S
G3		0.333	0.34	0.325	0.02	0.39	S
G4		0.299	0.306	0.294	0.019	0.272	S
G1	pH	4.62	4.57	4.629	0.131	-0.069	S
G2		4.75	4.7	4.738	0.132	0.091	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.27	4.22	4.248	0.134	0.162	S
G1	Cond	16.46	17.7	16.55	1.471	-0.061	S
G2		15.51	15.2	14.389	1.524	0.735	S
G3		40.4	39.3	37.557	3.093	0.919	S
G4		37.9	37	34.831	3.076	0.998	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 40, Hydrometeorological Institute, Skopje (Macedonia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	0.184	0.187	0.184	0.014	-0.007	S
G2		0.223	0.241	0.235	0.018	-0.674	S
G3		0.257	0.267	0.272	0.023	-0.659	S
G4		0.392	0.401	0.4	0.021	-0.356	S
G1	NO ₃ ⁻	0.348	0.357	0.344	0.024	0.186	S
G2		0.324	0.379	0.362	0.032	-1.168	Q
G3		0.681	0.607	0.595	0.044	1.937	Q
G4		0.87	0.707	0.685	0.057	3.251	U
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	0.255	0.193	0.187	0.016	4.115	U
G2		0.305	0.27	0.258	0.021	2.261	S
G3		0.399	0.386	0.367	0.026	1.213	S
G4		0.375	0.347	0.332	0.026	1.66	S
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	4.33	4.57	4.629	0.131	-2.285	U
G2		4.23	4.7	4.738	0.132	-3.844	U
G3		3.64	4.18	4.2	0.122	-4.587	U
G4		3.64	4.22	4.248	0.134	-4.535	U
G1	Cond	14	17.7	16.55	1.471	-1.733	Q
G2		12	15.2	14.389	1.524	-1.568	Q
G3		32	39.3	37.557	3.093	-1.797	Q
G4		30	37	34.831	3.076	-1.57	Q

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 42, State Hydrometeorological Service, Chisnau (Moldova)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.666	0.666	0.642	0.089	0.262	S
G2		0.768	0.535	0.52	0.081	3.079	U
G3		0.588	1.474	1.423	0.234	-3.558	U
G4		0.47	1.319	1.272	0.194	-4.133	U
G1	NH ₄ ⁺	-999	0.187	0.184	0.014		B
G2		-999	0.241	0.235	0.018		B
G3		-999	0.267	0.272	0.023		B
G4		-999	0.401	0.4	0.021		B
G1	NO ₃ ⁻	0.327	0.357	0.344	0.024	-0.704	S
G2		0.295	0.379	0.362	0.032	-2.076	U
G3		0.46	0.607	0.595	0.044	-3.057	U
G4		0.517	0.707	0.685	0.057	-2.959	U
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	0.184	0.193	0.187	0.016	-0.19	S
G2		0.222	0.27	0.258	0.021	-1.769	Q
G3		0.321	0.386	0.367	0.026	-1.766	Q
G4		0.356	0.347	0.332	0.026	0.923	S
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	4.64	4.57	4.629	0.131	0.084	S
G2		4.75	4.7	4.738	0.132	0.091	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	14.6	17.7	16.55	1.471	-1.326	Q
G2		13.1	15.2	14.389	1.524	-0.846	S
G3		35.2	39.3	37.557	3.093	-0.762	S
G4		32.4	37	34.831	3.076	-0.79	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 45, Environmental Impact Monitoring Center, Yerevan (Armenia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.677	0.666	0.642	0.089	0.39	S
G2		0.536	0.535	0.52	0.081	0.193	S
G3		1.561	1.474	1.423	0.234	0.589	S
G4		1.379	1.319	1.272	0.194	0.553	S
G1	NH ₄ ⁺	0.133	0.187	0.184	0.014	-3.533	U
G2		0.274	0.241	0.235	0.018	2.112	S
G3		0.322	0.267	0.272	0.023	2.224	Q
G4		0.43	0.401	0.4	0.021	1.417	S
G1	NO ₃ ⁻	0.36	0.357	0.344	0.024	0.692	S
G2		0.392	0.379	0.362	0.032	0.934	S
G3		0.643	0.607	0.595	0.044	1.08	S
G4		0.741	0.707	0.685	0.057	0.979	S
G1	Na ⁺	0.297	0.304	0.29	0.016	0.409	S
G2		0.274	0.283	0.268	0.018	0.323	S
G3		0.599	0.608	0.59	0.024	0.379	S
G4		0.53	0.548	0.526	0.023	0.152	S
G1	Mg ²⁺	0.099	0.103	0.101	0.006	-0.348	S
G2		0.089	0.093	0.087	0.005	0.336	S
G3		0.163	0.175	0.168	0.008	-0.622	S
G4		0.146	0.155	0.15	0.007	-0.554	S
G1	Cl ⁻	0.196	0.193	0.187	0.016	0.538	S
G2		0.285	0.27	0.258	0.021	1.291	S
G3		0.404	0.386	0.367	0.026	1.404	S
G4		0.363	0.347	0.332	0.026	1.194	S
G1	Ca ²⁺	0.095	0.128	0.13	0.026	-1.325	U
G2		0.087	0.115	0.12	0.025	-1.343	Q
G3		0.19	0.217	0.213	0.029	-0.802	S
G4		0.161	0.192	0.191	0.027	-1.102	Q
G1	K ⁺	0.157	0.17	0.162	0.016	-0.294	S
G2		0.192	0.204	0.189	0.017	0.196	S
G3		0.357	0.34	0.325	0.02	1.592	S
G4		0.32	0.306	0.294	0.019	1.371	S
G1	pH	4.546	4.57	4.629	0.131	-0.634	S
G2		4.634	4.7	4.738	0.132	-0.787	S
G3		4.137	4.18	4.2	0.122	-0.517	S
G4		4.185	4.22	4.248	0.134	-0.472	S
G1	Cond	16.2	17.7	16.55	1.471	-0.238	S
G2		14.2	15.2	14.389	1.524	-0.124	S
G3		36.7	39.3	37.557	3.093	-0.277	S
G4		34.5	37	34.831	3.076	-0.107	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

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<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 46, Diabla Gora Station (Poland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	-999	0.187	0.184	0.014		B
G2		-999	0.241	0.235	0.018		B
G3		-999	0.267	0.272	0.023		B
G4		-999	0.401	0.4	0.021		B
G1	NO ₃ ⁻	-999	0.357	0.344	0.024		B
G2		-999	0.379	0.362	0.032		B
G3		-999	0.607	0.595	0.044		B
G4		-999	0.707	0.685	0.057		B
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	4.62	4.57	4.629	0.131	-0.069	S
G2		4.74	4.7	4.738	0.132	0.016	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.28	4.22	4.248	0.134	0.237	S
G1	Cond	16.07	17.7	16.55	1.471	-0.326	S
G2		13.86	15.2	14.389	1.524	-0.348	S
G3		35.88	39.3	37.557	3.093	-0.542	S
G4		33.2	37	34.831	3.076	-0.53	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 48, Afdeling Rapportering Water Labovestiging Gent, VMM (Belgium)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.58	0.666	0.642	0.089	-0.697	Q
G2		0.445	0.535	0.52	0.081	-0.937	Q
G3		1.4	1.474	1.423	0.234	-0.097	S
G4		1.198	1.319	1.272	0.194	-0.38	S
G1	NH ₄ ⁺	0.188	0.187	0.184	0.014	0.269	S
G2		0.233	0.241	0.235	0.018	-0.127	S
G3		0.265	0.267	0.272	0.023	-0.304	S
G4		0.394	0.401	0.4	0.021	-0.263	S
G1	NO ₃ ⁻	0.363	0.357	0.344	0.024	0.819	S
G2		0.375	0.379	0.362	0.032	0.408	S
G3		0.592	0.607	0.595	0.044	-0.07	S
G4		0.71	0.707	0.685	0.057	0.433	S
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	< 0.200	0.193	0.187	0.016		B
G2		0.263	0.27	0.258	0.021	0.224	S
G3		0.304	0.386	0.367	0.026	-2.406	Q
G4		< 0.200	0.347	0.332	0.026	-9.01	U
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

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EMEP – 33rd intercomparison of analytical methods

Laboratory 49, The Cyprus Institute (Cyl) (Cyprus)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.664	0.666	0.642	0.089	0.244	S
G2		0.526	0.535	0.52	0.081	0.069	S
G3		1.478	1.474	1.423	0.234	0.235	S
G4		1.313	1.319	1.272	0.194	0.213	S
G1	NH ₄ ⁺	0.172	0.187	0.184	0.014	-0.837	S
G2		0.216	0.241	0.235	0.018	-1.056	S
G3		0.25	0.267	0.272	0.023	-0.969	S
G4		0.375	0.401	0.4	0.021	-1.15	S
G1	NO ₃ ⁻	0.347	0.357	0.344	0.024	0.144	S
G2		0.366	0.379	0.362	0.032	0.13	S
G3		0.614	0.607	0.595	0.044	0.426	S
G4		0.709	0.707	0.685	0.057	0.415	S
G1	Na ⁺	0.268	0.304	0.29	0.016	-1.362	S
G2		0.246	0.283	0.268	0.018	-1.274	S
G3		0.574	0.608	0.59	0.024	-0.658	S
G4		0.506	0.548	0.526	0.023	-0.884	S
G1	Mg ²⁺	0.094	0.103	0.101	0.006	-1.219	S
G2		0.084	0.093	0.087	0.005	-0.707	S
G3		0.164	0.175	0.168	0.008	-0.495	S
G4		0.146	0.155	0.15	0.007	-0.554	S
G1	Cl ⁻	0.192	0.193	0.187	0.016	0.295	S
G2		0.269	0.27	0.258	0.021	0.515	S
G3		0.384	0.386	0.367	0.026	0.642	S
G4		0.35	0.347	0.332	0.026	0.69	S
G1	Ca ²⁺	0.121	0.128	0.13	0.026	-0.335	S
G2		0.106	0.115	0.12	0.025	-0.571	S
G3		0.188	0.217	0.213	0.029	-0.872	S
G4		0.166	0.192	0.191	0.027	-0.918	S
G1	K ⁺	0.165	0.17	0.162	0.016	0.216	S
G2		0.194	0.204	0.189	0.017	0.316	S
G3		0.328	0.34	0.325	0.02	0.139	S
G4		0.299	0.306	0.294	0.019	0.272	S
G1	pH	4.61	4.57	4.629	0.131	-0.145	S
G2		4.73	4.7	4.738	0.132	-0.06	S
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.25	4.22	4.248	0.134	0.013	S
G1	Cond	16.1	17.7	16.55	1.471	-0.306	S
G2		13.8	15.2	14.389	1.524	-0.387	S
G3		36.1	39.3	37.557	3.093	-0.471	S
G4		33.9	37	34.831	3.076	-0.303	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 110, Thuringer Landesanstalt f. Landwirtschaft TTL, Jena (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.61	0.666	0.642	0.089	-0.361	S
G2		0.5	0.535	0.52	0.081	-0.254	S
G3		1.39	1.474	1.423	0.234	-0.14	S
G4		1.27	1.319	1.272	0.194	-0.009	S
G1	NH ₄ ⁺	0.189	0.187	0.184	0.014	0.339	S
G2		0.253	0.241	0.235	0.018	0.965	S
G3		0.288	0.267	0.272	0.023	0.716	S
G4		0.439	0.401	0.4	0.021	1.837	S
G1	NO ₃ ⁻	0.33	0.357	0.344	0.024	-0.573	S
G2		0.35	0.379	0.362	0.032	-0.364	S
G3		0.53	0.607	0.595	0.044	-1.468	Q
G4		0.65	0.707	0.685	0.057	-0.624	S
G1	Na ⁺	0.29	0.304	0.29	0.016	-0.018	S
G2		0.267	0.283	0.268	0.018	-0.076	S
G3		0.585	0.608	0.59	0.024	-0.202	S
G4		0.533	0.548	0.526	0.023	0.282	S
G1	Mg ²⁺	0.101	0.103	0.101	0.006	0	S
G2		0.088	0.093	0.087	0.005	0.128	S
G3		0.169	0.175	0.168	0.008	0.145	S
G4		0.15	0.155	0.15	0.007	-0.013	S
G1	Cl ⁻	< 0.200	0.193	0.187	0.016		B
G2		0.25	0.27	0.258	0.021	-0.406	S
G3		0.36	0.386	0.367	0.026	-0.273	S
G4		0.33	0.347	0.332	0.026	-0.086	S
G1	Ca ²⁺	0.142	0.128	0.13	0.026	0.465	S
G2		0.115	0.115	0.12	0.025	-0.206	S
G3		0.214	0.217	0.213	0.029	0.036	S
G4		0.199	0.192	0.191	0.027	0.299	S
G1	K ⁺	0.146	0.17	0.162	0.016	-0.996	S
G2		0.181	0.204	0.189	0.017	-0.465	S
G3		0.33	0.34	0.325	0.02	0.24	S
G4		0.283	0.306	0.294	0.019	-0.565	S
G1	pH	5	4.57	4.629	0.131	2.835	U
G2		4.8	4.7	4.738	0.132	0.47	S
G3		4.3	4.18	4.2	0.122	0.818	Q
G4		4.3	4.22	4.248	0.134	0.386	S
G1	Cond	17.9	17.7	16.55	1.471	0.918	S
G2		15.3	15.2	14.389	1.524	0.598	S
G3		36.5	39.3	37.557	3.093	-0.342	S
G4		34.9	37	34.831	3.076	0.023	S

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S – Satisfactory: Your result deviates less than $\pm 10\%$ of the expected value for SO_4^{2-} and NO_3^- , less than $\pm 15\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and less than ± 0.1 pH-units for pH

Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 112, Niedersaechsische Forstliche Versuchsanstalt NVF (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.65	0.666	0.642	0.089	0.087	S
G2		0.52	0.535	0.52	0.081	-0.006	S
G3		1.44	1.474	1.423	0.234	0.073	S
G4		1.27	1.319	1.272	0.194	-0.009	S
G1	NH ₄ ⁺	0.18	0.187	0.184	0.014	-0.284	S
G2		0.23	0.241	0.235	0.018	-0.291	S
G3		0.26	0.267	0.272	0.023	-0.526	S
G4		0.39	0.401	0.4	0.021	-0.45	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.59	0.607	0.595	0.044	-0.115	S
G4		0.68	0.707	0.685	0.057	-0.095	S
G1	Na ⁺	0.3	0.304	0.29	0.016	0.592	S
G2		0.28	0.283	0.268	0.018	0.666	S
G3		0.6	0.608	0.59	0.024	0.42	S
G4		0.54	0.548	0.526	0.023	0.584	S
G1	Mg ²⁺	0.1	0.103	0.101	0.006	-0.174	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.17	0.175	0.168	0.008	0.273	S
G4		0.15	0.155	0.15	0.007	-0.013	S
G1	Cl ⁻	0.19	0.193	0.187	0.016	0.174	S
G2		0.26	0.27	0.258	0.021	0.079	S
G3		0.38	0.386	0.367	0.026	0.489	S
G4		0.35	0.347	0.332	0.026	0.69	S
G1	Ca ²⁺	0.115	0.128	0.13	0.026	-0.563	S
G2		0.123	0.115	0.12	0.025	0.119	S
G3		0.2	0.217	0.213	0.029	-0.453	S
G4		0.18	0.192	0.191	0.027	-0.401	S
G1	K ⁺	0.17	0.17	0.162	0.016	0.535	S
G2		0.2	0.204	0.189	0.017	0.676	S
G3		0.33	0.34	0.325	0.02	0.24	S
G4		0.31	0.306	0.294	0.019	0.848	S
G1	pH	4.68	4.57	4.629	0.131	0.39	Q
G2		4.8	4.7	4.738	0.132	0.47	S
G3		4.26	4.18	4.2	0.122	0.491	S
G4		4.3	4.22	4.248	0.134	0.386	S
G1	Cond	16.2	17.7	16.55	1.471	-0.238	S
G2		13	15.2	14.389	1.524	-0.912	S
G3		36.5	39.3	37.557	3.093	-0.342	S
G4		34.5	37	34.831	3.076	-0.107	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 113, Fachhochschule Eberswalde (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	-999	0.187	0.184	0.014		B
G2		-999	0.241	0.235	0.018		B
G3		-999	0.267	0.272	0.023		B
G4		-999	0.401	0.4	0.021		B
G1	NO ₃ ⁻	-999	0.357	0.344	0.024		B
G2		-999	0.379	0.362	0.032		B
G3		-999	0.607	0.595	0.044		B
G4		-999	0.707	0.685	0.057		B
G1	Na ⁺	0.261	0.304	0.29	0.016	-1.789	S
G2		0.239	0.283	0.268	0.018	-1.673	Q
G3		0.56	0.608	0.59	0.024	-1.239	S
G4		0.478	0.548	0.526	0.023	-2.093	S
G1	Mg ²⁺	0.093	0.103	0.101	0.006	-1.393	S
G2		0.079	0.093	0.087	0.005	-1.749	Q
G3		0.17	0.175	0.168	0.008	0.273	S
G4		0.141	0.155	0.15	0.007	-1.231	S
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	0.209	0.128	0.13	0.026	3.016	U
G2		0.111	0.115	0.12	0.025	-0.368	S
G3		0.703	0.217	0.213	0.029	17.118	U
G4		0.173	0.192	0.191	0.027	-0.659	S
G1	K ⁺	0.144	0.17	0.162	0.016	-1.123	Q
G2		0.18	0.204	0.189	0.017	-0.525	S
G3		0.319	0.34	0.325	0.02	-0.311	S
G4		0.272	0.306	0.294	0.019	-1.141	S
G1	pH	4.73	4.57	4.629	0.131	0.772	Q
G2		4.86	4.7	4.738	0.132	0.924	Q
G3		4.29	4.18	4.2	0.122	0.736	Q
G4		4.29	4.22	4.248	0.134	0.311	S
G1	Cond	13.8	17.7	16.55	1.471	-1.869	Q
G2		12.7	15.2	14.389	1.524	-1.109	Q
G3		32	39.3	37.557	3.093	-1.797	Q
G4		32.8	37	34.831	3.076	-0.66	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 114, C.N.R. Istituto Italiano di Idrobiologia (Italy)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.57	0.666	0.642	0.089	-0.809	Q
G2		0.48	0.535	0.52	0.081	-0.503	Q
G3		1.36	1.474	1.423	0.234	-0.268	S
G4		1.19	1.319	1.272	0.194	-0.421	S
G1	NH ₄ ⁺	0.195	0.187	0.184	0.014	0.753	S
G2		0.237	0.241	0.235	0.018	0.091	S
G3		0.275	0.267	0.272	0.023	0.14	S
G4		0.383	0.401	0.4	0.021	-0.776	S
G1	NO ₃ ⁻	0.326	0.357	0.344	0.024	-0.742	S
G2		0.356	0.379	0.362	0.032	-0.179	S
G3		0.58	0.607	0.595	0.044	-0.34	S
G4		0.672	0.707	0.685	0.057	-0.236	S
G1	Na ⁺	0.3	0.304	0.29	0.016	0.592	S
G2		0.29	0.283	0.268	0.018	1.236	S
G3		0.6	0.608	0.59	0.024	0.42	S
G4		0.53	0.548	0.526	0.023	0.152	S
G1	Mg ²⁺	0.1	0.103	0.101	0.006	-0.174	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.18	0.175	0.168	0.008	1.551	S
G4		0.16	0.155	0.15	0.007	1.342	S
G1	Cl ⁻	0.2	0.193	0.187	0.016	0.78	S
G2		0.26	0.27	0.258	0.021	0.079	S
G3		0.36	0.386	0.367	0.026	-0.273	S
G4		0.32	0.347	0.332	0.026	-0.474	S
G1	Ca ²⁺	0.11	0.128	0.13	0.026	-0.754	S
G2		0.09	0.115	0.12	0.025	-1.221	Q
G3		0.22	0.217	0.213	0.029	0.246	S
G4		0.19	0.192	0.191	0.027	-0.033	S
G1	K ⁺	0.18	0.17	0.162	0.016	1.172	S
G2		0.24	0.204	0.189	0.017	3.079	Q
G3		0.34	0.34	0.325	0.02	0.74	S
G4		0.3	0.306	0.294	0.019	0.325	S
G1	pH	4.61	4.57	4.629	0.131	-0.145	S
G2		4.73	4.7	4.738	0.132	-0.06	S
G3		4.19	4.18	4.2	0.122	-0.083	S
G4		4.24	4.22	4.248	0.134	-0.061	S
G1	Cond	17.5	17.7	16.55	1.471	0.646	S
G2		14.9	15.2	14.389	1.524	0.335	S
G3		39.2	39.3	37.557	3.093	0.531	S
G4		36.8	37	34.831	3.076	0.64	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 115, Bayerische Landesanstalt f. Wald- und Forstwirtschaft (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.652	0.666	0.642	0.089	0.11	S
G2		0.517	0.535	0.52	0.081	-0.043	S
G3		1.487	1.474	1.423	0.234	0.274	S
G4		1.357	1.319	1.272	0.194	0.439	S
G1	NH ₄ ⁺	0.195	0.187	0.184	0.014	0.753	S
G2		0.253	0.241	0.235	0.018	0.965	S
G3		0.255	0.267	0.272	0.023	-0.747	S
G4		0.384	0.401	0.4	0.021	-0.73	S
G1	NO ₃ ⁻	0.332	0.357	0.344	0.024	-0.489	S
G2		0.352	0.379	0.362	0.032	-0.302	S
G3		0.59	0.607	0.595	0.044	-0.115	S
G4		0.685	0.707	0.685	0.057	-0.007	S
G1	Na ⁺	0.289	0.304	0.29	0.016	-0.079	S
G2		0.27	0.283	0.268	0.018	0.095	S
G3		0.604	0.608	0.59	0.024	0.586	S
G4		0.545	0.548	0.526	0.023	0.8	S
G1	Mg ²⁺	0.093	0.103	0.101	0.006	-1.393	S
G2		0.079	0.093	0.087	0.005	-1.749	Q
G3		0.158	0.175	0.168	0.008	-1.262	S
G4		0.141	0.155	0.15	0.007	-1.231	S
G1	Cl ⁻	0.187	0.193	0.187	0.016	-0.008	S
G2		0.254	0.27	0.258	0.021	-0.212	S
G3		0.362	0.386	0.367	0.026	-0.196	S
G4		0.326	0.347	0.332	0.026	-0.241	S
G1	Ca ²⁺	0.124	0.128	0.13	0.026	-0.221	S
G2		0.108	0.115	0.12	0.025	-0.49	S
G3		0.215	0.217	0.213	0.029	0.071	S
G4		0.192	0.192	0.191	0.027	0.041	S
G1	K ⁺	0.152	0.17	0.162	0.016	-0.613	S
G2		0.199	0.204	0.189	0.017	0.616	S
G3		0.321	0.34	0.325	0.02	-0.211	S
G4		0.268	0.306	0.294	0.019	-1.35	S
G1	pH	4.66	4.57	4.629	0.131	0.237	S
G2		4.77	4.7	4.738	0.132	0.243	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.54	4.22	4.248	0.134	2.175	U
G1	Cond	14.5	17.7	16.55	1.471	-1.394	Q
G2		13.7	15.2	14.389	1.524	-0.453	S
G3		37.3	39.3	37.557	3.093	-0.083	S
G4		26.9	37	34.831	3.076	-2.578	U

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 116, Institute for Applied Plant Biology (Switzerland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.33	0.666	0.642	0.089	-3.5	U
G2		0.355	0.535	0.52	0.081	-2.055	U
G3		0.588	1.474	1.423	0.234	-3.56	U
G4		0.688	1.319	1.272	0.194	-3.008	U
G1	NH ₄ ⁺	0.185	0.187	0.184	0.014	0.062	S
G2		0.237	0.241	0.235	0.018	0.091	S
G3		0.27	0.267	0.272	0.023	-0.082	S
G4		0.398	0.401	0.4	0.021	-0.076	S
G1	NO ₃ ⁻	0.618	0.357	0.344	0.024	11.571	U
G2		0.495	0.379	0.362	0.032	4.116	U
G3		1.398	0.607	0.595	0.044	18.104	U
G4		1.268	0.707	0.685	0.057	10.261	U
G1	Na ⁺	0.287	0.304	0.29	0.016	-0.202	S
G2		0.271	0.283	0.268	0.018	0.152	S
G3		0.562	0.608	0.59	0.024	-1.156	S
G4		0.506	0.548	0.526	0.023	-0.884	S
G1	Mg ²⁺	0.097	0.103	0.101	0.006	-0.697	S
G2		0.086	0.093	0.087	0.005	-0.289	S
G3		0.157	0.175	0.168	0.008	-1.39	S
G4		0.145	0.155	0.15	0.007	-0.69	S
G1	Cl ⁻	0.124	0.193	0.187	0.016	-3.828	U
G2		0.84	0.27	0.258	0.021	28.204	U
G3		0.282	0.386	0.367	0.026	-3.244	U
G4		0.255	0.347	0.332	0.026	-2.996	U
G1	Ca ²⁺	0.548	0.128	0.13	0.026	15.925	U
G2		0.513	0.115	0.12	0.025	15.951	U
G3		0.631	0.217	0.213	0.029	14.603	U
G4		0.596	0.192	0.191	0.027	14.933	U
G1	K ⁺	0.153	0.17	0.162	0.016	-0.549	S
G2		0.183	0.204	0.189	0.017	-0.345	S
G3		0.311	0.34	0.325	0.02	-0.712	S
G4		0.287	0.306	0.294	0.019	-0.356	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.73	4.7	4.738	0.132	-0.06	S
G3		4.18	4.18	4.2	0.122	-0.165	S
G4		4.23	4.22	4.248	0.134	-0.136	S
G1	Cond	13.9	17.7	16.55	1.471	-1.801	Q
G2		12.6	15.2	14.389	1.524	-1.174	Q
G3		7.6	39.3	37.557	3.093	-9.684	U
G4		8.7	37	34.831	3.076	-8.495	U

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 117, Standortserkundung/Bodenmonitoring Forsten, Graupa (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.68	0.666	0.642	0.089	0.424	S
G2		0.55	0.535	0.52	0.081	0.367	S
G3		1.51	1.474	1.423	0.234	0.372	S
G4		1.34	1.319	1.272	0.194	0.352	S
G1	NH ₄ ⁺	0.18	0.187	0.184	0.014	-0.284	S
G2		0.23	0.241	0.235	0.018	-0.291	S
G3		0.27	0.267	0.272	0.023	-0.082	S
G4		0.39	0.401	0.4	0.021	-0.45	S
G1	NO ₃ ⁻	0.33	0.357	0.344	0.024	-0.573	S
G2		0.35	0.379	0.362	0.032	-0.364	S
G3		0.58	0.607	0.595	0.044	-0.34	S
G4		0.67	0.707	0.685	0.057	-0.271	S
G1	Na ⁺	0.27	0.304	0.29	0.016	-1.239	S
G2		0.25	0.283	0.268	0.018	-1.046	S
G3		0.56	0.608	0.59	0.024	-1.239	S
G4		0.5	0.548	0.526	0.023	-1.143	S
G1	Mg ²⁺	0.104	0.103	0.101	0.006	0.523	S
G2		0.088	0.093	0.087	0.005	0.128	S
G3		0.168	0.175	0.168	0.008	0.017	S
G4		0.15	0.155	0.15	0.007	-0.013	S
G1	Cl ⁻	0.23	0.193	0.187	0.016	2.599	Q
G2		0.24	0.27	0.258	0.021	-0.891	S
G3		0.3	0.386	0.367	0.026	-2.559	Q
G4		0.29	0.347	0.332	0.026	-1.638	Q
G1	Ca ²⁺	0.13	0.128	0.13	0.026	0.008	S
G2		0.11	0.115	0.12	0.025	-0.409	S
G3		0.21	0.217	0.213	0.029	-0.104	S
G4		0.18	0.192	0.191	0.027	-0.401	S
G1	K ⁺	0.183	0.17	0.162	0.016	1.363	S
G2		0.213	0.204	0.189	0.017	1.457	S
G3		0.353	0.34	0.325	0.02	1.391	S
G4		0.321	0.306	0.294	0.019	1.424	S
G1	pH	4.11	4.57	4.629	0.131	-3.967	U
G2		4.19	4.7	4.738	0.132	-4.147	U
G3		3.93	4.18	4.2	0.122	-2.212	U
G4		3.94	4.22	4.248	0.134	-2.298	U
G1	Cond	43	17.7	16.55	1.471	17.981	U
G2		36.1	15.2	14.389	1.524	14.249	U
G3		66.5	39.3	37.557	3.093	9.356	U
G4		63.1	37	34.831	3.076	9.19	U

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 118, Forstliche Versuchs-und Forschungsanstalt (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.63	0.666	0.642	0.089	-0.137	S
G2		0.49	0.535	0.52	0.081	-0.378	S
G3		1.47	1.474	1.423	0.234	0.201	S
G4		1.31	1.319	1.272	0.194	0.197	S
G1	NH ₄ ⁺	0.176	0.187	0.184	0.014	-0.56	S
G2		0.228	0.241	0.235	0.018	-0.401	S
G3		0.255	0.267	0.272	0.023	-0.747	S
G4		0.381	0.401	0.4	0.021	-0.87	S
G1	NO ₃ ⁻	0.34	0.357	0.344	0.024	-0.151	S
G2		0.36	0.379	0.362	0.032	-0.055	S
G3		0.59	0.607	0.595	0.044	-0.115	S
G4		0.67	0.707	0.685	0.057	-0.271	S
G1	Na ⁺	0.23	0.304	0.29	0.016	-3.682	Q
G2		0.22	0.283	0.268	0.018	-2.757	Q
G3		0.51	0.608	0.59	0.024	-3.313	Q
G4		0.46	0.548	0.526	0.023	-2.871	Q
G1	Mg ²⁺	0.087	0.103	0.101	0.006	-2.439	Q
G2		0.075	0.093	0.087	0.005	-2.583	Q
G3		0.152	0.175	0.168	0.008	-2.029	S
G4		0.138	0.155	0.15	0.007	-1.637	S
G1	Cl ⁻	0.23	0.193	0.187	0.016	2.599	Q
G2		0.3	0.27	0.258	0.021	2.018	S
G3		0.39	0.386	0.367	0.026	0.87	S
G4		0.37	0.347	0.332	0.026	1.466	S
G1	Ca ²⁺	0.1	0.128	0.13	0.026	-1.135	Q
G2		0.1	0.115	0.12	0.025	-0.815	S
G3		0.19	0.217	0.213	0.029	-0.802	S
G4		0.2	0.192	0.191	0.027	0.336	S
G1	K ⁺	0.13	0.17	0.162	0.016	-2.016	Q
G2		0.16	0.204	0.189	0.017	-1.726	Q
G3		0.28	0.34	0.325	0.02	-2.265	Q
G4		0.26	0.306	0.294	0.019	-1.769	Q
G1	pH	4.75	4.57	4.629	0.131	0.925	Q
G2		4.84	4.7	4.738	0.132	0.772	Q
G3		4.26	4.18	4.2	0.122	0.491	S
G4		4.33	4.22	4.248	0.134	0.61	Q
G1	Cond	17	17.7	16.55	1.471	0.306	S
G2		15	15.2	14.389	1.524	0.401	S
G3		39	39.3	37.557	3.093	0.466	S
G4		36	37	34.831	3.076	0.38	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 120, Landwirtschaftliche Untersuchungs- und Forschungsanstalt LUFA (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.584	0.666	0.642	0.089	-0.652	Q
G2		0.464	0.535	0.52	0.081	-0.701	Q
G3		1.318	1.474	1.423	0.234	-0.447	Q
G4		1.16	1.319	1.272	0.194	-0.576	Q
G1	NH ₄ ⁺	0.21	0.187	0.184	0.014	1.79	S
G2		0.26	0.241	0.235	0.018	1.348	S
G3		0.31	0.267	0.272	0.023	1.692	Q
G4		0.43	0.401	0.4	0.021	1.417	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.39	0.379	0.362	0.032	0.872	S
G3		0.6	0.607	0.595	0.044	0.111	S
G4		0.7	0.707	0.685	0.057	0.257	S
G1	Na ⁺	0.164	0.304	0.29	0.016	-7.711	U
G2		0.143	0.283	0.268	0.018	-7.15	U
G3		0.459	0.608	0.59	0.024	-5.429	Q
G4		0.41	0.548	0.526	0.023	-5.03	U
G1	Mg ²⁺	0.108	0.103	0.101	0.006	1.219	S
G2		0.094	0.093	0.087	0.005	1.379	S
G3		0.176	0.175	0.168	0.008	1.04	S
G4		0.156	0.155	0.15	0.007	0.8	S
G1	Cl ⁻	0.17	0.193	0.187	0.016	-1.039	S
G2		0.22	0.27	0.258	0.021	-1.861	Q
G3		0.33	0.386	0.367	0.026	-1.416	S
G4		0.3	0.347	0.332	0.026	-1.25	S
G1	Ca ²⁺	0.167	0.128	0.13	0.026	1.417	U
G2		0.14	0.115	0.12	0.025	0.809	Q
G3		0.29	0.217	0.213	0.029	2.691	U
G4		0.22	0.192	0.191	0.027	1.073	S
G1	K ⁺	0.13	0.17	0.162	0.016	-2.016	Q
G2		0.15	0.204	0.189	0.017	-2.327	U
G3		0.28	0.34	0.325	0.02	-2.265	Q
G4		0.25	0.306	0.294	0.019	-2.293	Q
G1	pH	4.59	4.57	4.629	0.131	-0.298	S
G2		4.71	4.7	4.738	0.132	-0.211	S
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.24	4.22	4.248	0.134	-0.061	S
G1	Cond	17	17.7	16.55	1.471	0.306	S
G2		15	15.2	14.389	1.524	0.401	S
G3		39	39.3	37.557	3.093	0.466	S
G4		36	37	34.831	3.076	0.38	S

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U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 121, Landeslabor Schleswig-Holsteinmwelt (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.757	0.666	0.642	0.089	1.287	Q
G2		0.503	0.535	0.52	0.081	-0.217	S
G3		1.473	1.474	1.423	0.234	0.214	S
G4		1.307	1.319	1.272	0.194	0.182	S
G1	NH ₄ ⁺	0.166	0.187	0.184	0.014	-1.251	S
G2		0.217	0.241	0.235	0.018	-1.002	S
G3		0.25	0.267	0.272	0.023	-0.969	S
G4		0.382	0.401	0.4	0.021	-0.823	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.369	0.379	0.362	0.032	0.223	S
G3		0.603	0.607	0.595	0.044	0.178	S
G4		0.694	0.707	0.685	0.057	0.151	S
G1	Na ⁺	0.246	0.304	0.29	0.016	-2.705	Q
G2		0.232	0.283	0.268	0.018	-2.073	Q
G3		0.55	0.608	0.59	0.024	-1.654	S
G4		0.488	0.548	0.526	0.023	-1.661	S
G1	Mg ²⁺	0.097	0.103	0.101	0.006	-0.697	S
G2		0.085	0.093	0.087	0.005	-0.498	S
G3		0.165	0.175	0.168	0.008	-0.367	S
G4		0.147	0.155	0.15	0.007	-0.419	S
G1	Cl ⁻	0.191	0.193	0.187	0.016	0.234	S
G2		0.244	0.27	0.258	0.021	-0.697	S
G3		0.337	0.386	0.367	0.026	-1.149	S
G4		0.31	0.347	0.332	0.026	-0.862	S
G1	Ca ²⁺	0.109	0.128	0.13	0.026	-0.792	S
G2		0.095	0.115	0.12	0.025	-1.018	Q
G3		0.184	0.217	0.213	0.029	-1.012	Q
G4		0.161	0.192	0.191	0.027	-1.102	Q
G1	K ⁺	< 0.150	0.17	0.162	0.016	-5.522	U
G2		0.174	0.204	0.189	0.017	-0.885	S
G3		0.296	0.34	0.325	0.02	-1.463	S
G4		0.277	0.306	0.294	0.019	-0.879	S
G1	pH	4.72	4.57	4.629	0.131	0.695	Q
G2		4.79	4.7	4.738	0.132	0.394	S
G3		4.23	4.18	4.2	0.122	0.245	S
G4		4.28	4.22	4.248	0.134	0.237	S
G1	Cond	18.6	17.7	16.55	1.471	1.394	S
G2		17	15.2	14.389	1.524	1.713	S
G3		38.8	39.3	37.557	3.093	0.402	S
G4		36.8	37	34.831	3.076	0.64	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 124, Laboratorium voor Bondemkunde, Gent (Belgium)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.661	0.666	0.642	0.089	0.211	S
G2		0.51	0.535	0.52	0.081	-0.13	S
G3		1.462	1.474	1.423	0.234	0.167	S
G4		1.308	1.319	1.272	0.194	0.187	S
G1	NH ₄ ⁺	0.199	0.187	0.184	0.014	1.03	S
G2		0.268	0.241	0.235	0.018	1.785	S
G3		0.274	0.267	0.272	0.023	0.095	S
G4		0.411	0.401	0.4	0.021	0.531	S
G1	NO ₃ ⁻	0.347	0.357	0.344	0.024	0.144	S
G2		0.365	0.379	0.362	0.032	0.099	S
G3		0.586	0.607	0.595	0.044	-0.205	S
G4		0.674	0.707	0.685	0.057	-0.201	S
G1	Na ⁺	0.297	0.304	0.29	0.016	0.409	S
G2		0.278	0.283	0.268	0.018	0.551	S
G3		0.61	0.608	0.59	0.024	0.835	S
G4		0.545	0.548	0.526	0.023	0.8	S
G1	Mg ²⁺	0.1	0.103	0.101	0.006	-0.174	S
G2		0.087	0.093	0.087	0.005	-0.081	S
G3		0.166	0.175	0.168	0.008	-0.239	S
G4		0.148	0.155	0.15	0.007	-0.283	S
G1	Cl ⁻	0.18	0.193	0.187	0.016	-0.433	S
G2		0.247	0.27	0.258	0.021	-0.552	S
G3		0.366	0.386	0.367	0.026	-0.044	S
G4		0.325	0.347	0.332	0.026	-0.28	S
G1	Ca ²⁺	0.121	0.128	0.13	0.026	-0.335	S
G2		0.117	0.115	0.12	0.025	-0.125	S
G3		0.21	0.217	0.213	0.029	-0.104	S
G4		0.186	0.192	0.191	0.027	-0.18	S
G1	K ⁺	0.17	0.17	0.162	0.016	0.535	S
G2		0.199	0.204	0.189	0.017	0.616	S
G3		0.329	0.34	0.325	0.02	0.189	S
G4		0.297	0.306	0.294	0.019	0.168	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	18	17.7	16.55	1.471	0.986	S
G2		16	15.2	14.389	1.524	1.057	S
G3		41	39.3	37.557	3.093	1.113	S
G4		32	37	34.831	3.076	-0.92	S

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 125, Bayerisches Landesamt f. Umweltschutz, Augsburg (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.681	0.666	0.642	0.089	0.435	S
G2		0.544	0.535	0.52	0.081	0.292	S
G3		1.53	1.474	1.423	0.234	0.457	S
G4		1.36	1.319	1.272	0.194	0.455	S
G1	NH ₄ ⁺	0.19	0.187	0.184	0.014	0.408	S
G2		0.23	0.241	0.235	0.018	-0.291	S
G3		0.27	0.267	0.272	0.023	-0.082	S
G4		0.39	0.401	0.4	0.021	-0.45	S
G1	NO ₃ ⁻	0.34	0.357	0.344	0.024	-0.151	S
G2		0.36	0.379	0.362	0.032	-0.055	S
G3		0.6	0.607	0.595	0.044	0.111	S
G4		0.69	0.707	0.685	0.057	0.081	S
G1	Na ⁺	0.28	0.304	0.29	0.016	-0.629	S
G2		0.263	0.283	0.268	0.018	-0.304	S
G3		0.564	0.608	0.59	0.024	-1.073	S
G4		0.495	0.548	0.526	0.023	-1.359	S
G1	Mg ²⁺	0.096	0.103	0.101	0.006	-0.871	S
G2		0.084	0.093	0.087	0.005	-0.707	S
G3		0.162	0.175	0.168	0.008	-0.75	S
G4		0.142	0.155	0.15	0.007	-1.096	S
G1	Cl ⁻	0.19	0.193	0.187	0.016	0.174	S
G2		0.26	0.27	0.258	0.021	0.079	S
G3		0.37	0.386	0.367	0.026	0.108	S
G4		0.33	0.347	0.332	0.026	-0.086	S
G1	Ca ²⁺	0.115	0.128	0.13	0.026	-0.563	S
G2		0.109	0.115	0.12	0.025	-0.45	S
G3		0.214	0.217	0.213	0.029	0.036	S
G4		0.172	0.192	0.191	0.027	-0.696	S
G1	K ⁺	0.157	0.17	0.162	0.016	-0.294	S
G2		0.184	0.204	0.189	0.017	-0.285	S
G3		0.313	0.34	0.325	0.02	-0.612	S
G4		0.273	0.306	0.294	0.019	-1.089	S
G1	pH	4.71	4.57	4.629	0.131	0.619	Q
G2		4.77	4.7	4.738	0.132	0.243	S
G3		4.23	4.18	4.2	0.122	0.245	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	17.1	17.7	16.55	1.471	0.374	S
G2		14.9	15.2	14.389	1.524	0.335	S
G3		38.7	39.3	37.557	3.093	0.369	S
G4		36.5	37	34.831	3.076	0.543	S

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 126, APPA Laboratorio Biologico Provinciale (Italy)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	1.65	0.666	0.642	0.089	11.299	U
G2		1.26	0.535	0.52	0.081	9.183	U
G3		3.85	1.474	1.423	0.234	10.351	U
G4		3.48	1.319	1.272	0.194	11.378	U
G1	NH ₄ ⁺	0.154	0.187	0.184	0.014	-2.081	Q
G2		0.196	0.241	0.235	0.018	-2.149	Q
G3		0.224	0.267	0.272	0.023	-2.122	Q
G4		0.349	0.401	0.4	0.021	-2.363	S
G1	NO ₃ ⁻	0.289	0.357	0.344	0.024	-2.302	Q
G2		0.296	0.379	0.362	0.032	-2.033	U
G3		0.532	0.607	0.595	0.044	-1.423	Q
G4		0.628	0.707	0.685	0.057	-1.011	Q
G1	Na ⁺	0.29	0.304	0.29	0.016	-0.018	S
G2		0.25	0.283	0.268	0.018	-1.046	S
G3		0.58	0.608	0.59	0.024	-0.41	S
G4		0.52	0.548	0.526	0.023	-0.28	S
G1	Mg ²⁺	0.09	0.103	0.101	0.006	-1.916	S
G2		0.07	0.093	0.087	0.005	-3.626	Q
G3		0.15	0.175	0.168	0.008	-2.285	S
G4		0.14	0.155	0.15	0.007	-1.367	S
G1	Cl ⁻	0.15	0.193	0.187	0.016	-2.252	Q
G2		0.19	0.27	0.258	0.021	-3.316	U
G3		0.29	0.386	0.367	0.026	-2.94	Q
G4		0.26	0.347	0.332	0.026	-2.802	U
G1	Ca ²⁺	0.24	0.128	0.13	0.026	4.197	U
G2		0.23	0.115	0.12	0.025	4.463	U
G3		0.27	0.217	0.213	0.029	1.992	Q
G4		0.2	0.192	0.191	0.027	0.336	S
G1	K ⁺	0.17	0.17	0.162	0.016	0.535	S
G2		0.178	0.204	0.189	0.017	-0.645	S
G3		0.3	0.34	0.325	0.02	-1.263	S
G4		0.28	0.306	0.294	0.019	-0.722	S
G1	pH	4.74	4.57	4.629	0.131	0.848	Q
G2		4.89	4.7	4.738	0.132	1.151	Q
G3		4.33	4.18	4.2	0.122	1.064	Q
G4		4.4	4.22	4.248	0.134	1.132	Q
G1	Cond	17.8	17.7	16.55	1.471	0.85	S
G2		16.5	15.2	14.389	1.524	1.385	S
G3		38.9	39.3	37.557	3.093	0.434	S
G4		37.3	37	34.831	3.076	0.803	S

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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 140, C.N.R. Istituto di Ricerca sulle Acque (Italy)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.668	0.666	0.642	0.089	0.289	S
G2		0.533	0.535	0.52	0.081	0.156	S
G3		1.449	1.474	1.423	0.234	0.112	S
G4		1.276	1.319	1.272	0.194	0.022	S
G1	NH ₄ ⁺	0.181	0.187	0.184	0.014	-0.214	S
G2		0.225	0.241	0.235	0.018	-0.565	S
G3		0.261	0.267	0.272	0.023	-0.481	S
G4		0.393	0.401	0.4	0.021	-0.31	S
G1	NO ₃ ⁻	0.351	0.357	0.344	0.024	0.313	S
G2		0.377	0.379	0.362	0.032	0.47	S
G3		0.609	0.607	0.595	0.044	0.314	S
G4		0.702	0.707	0.685	0.057	0.292	S
G1	Na ⁺	0.285	0.304	0.29	0.016	-0.324	S
G2		0.27	0.283	0.268	0.018	0.095	S
G3		0.612	0.608	0.59	0.024	0.918	S
G4		0.556	0.548	0.526	0.023	1.275	S
G1	Mg ²⁺	0.081	0.103	0.101	0.006	-3.484	Q
G2		0.067	0.093	0.087	0.005	-4.252	U
G3		0.14	0.175	0.168	0.008	-3.564	Q
G4		0.141	0.155	0.15	0.007	-1.231	S
G1	Cl ⁻	0.185	0.193	0.187	0.016	-0.129	S
G2		0.271	0.27	0.258	0.021	0.612	S
G3		0.396	0.386	0.367	0.026	1.099	S
G4		0.365	0.347	0.332	0.026	1.272	S
G1	Ca ²⁺	0.131	0.128	0.13	0.026	0.046	S
G2		0.106	0.115	0.12	0.025	-0.571	S
G3		0.2	0.217	0.213	0.029	-0.453	S
G4		0.176	0.192	0.191	0.027	-0.549	S
G1	K ⁺	0.152	0.17	0.162	0.016	-0.613	S
G2		0.184	0.204	0.189	0.017	-0.285	S
G3		0.318	0.34	0.325	0.02	-0.362	S
G4		0.287	0.306	0.294	0.019	-0.356	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.2	4.18	4.2	0.122	-0.001	S
G4		4.24	4.22	4.248	0.134	-0.061	S
G1	Cond	16.69	17.7	16.55	1.471	0.095	S
G2		14.27	15.2	14.389	1.524	-0.078	S
G3		38.32	39.3	37.557	3.093	0.247	S
G4		35.77	37	34.831	3.076	0.305	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 145, Estonian Environmental Research Centre, Tartu laboratory (Estonia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.594	0.666	0.642	0.089	-0.54	Q
G2		0.474	0.535	0.52	0.081	-0.577	Q
G3		1.36	1.474	1.423	0.234	-0.268	S
G4		1.18	1.319	1.272	0.194	-0.473	Q
G1	NH ₄ ⁺	0.191	0.187	0.184	0.014	0.477	S
G2		0.247	0.241	0.235	0.018	0.637	S
G3		0.283	0.267	0.272	0.023	0.494	S
G4		0.423	0.401	0.4	0.021	1.091	S
G1	NO ₃ ⁻	0.295	0.357	0.344	0.024	-2.049	Q
G2		0.315	0.379	0.362	0.032	-1.446	Q
G3		0.522	0.607	0.595	0.044	-1.648	Q
G4		0.56	0.707	0.685	0.057	-2.209	U
G1	Na ⁺	0.283	0.304	0.29	0.016	-0.446	S
G2		0.26	0.283	0.268	0.018	-0.475	S
G3		0.592	0.608	0.59	0.024	0.088	S
G4		0.527	0.548	0.526	0.023	0.023	S
G1	Mg ²⁺	0.093	0.103	0.101	0.006	-1.393	S
G2		0.075	0.093	0.087	0.005	-2.583	Q
G3		0.148	0.175	0.168	0.008	-2.541	Q
G4		0.136	0.155	0.15	0.007	-1.908	S
G1	Cl ⁻	0.181	0.193	0.187	0.016	-0.372	S
G2		0.247	0.27	0.258	0.021	-0.552	S
G3		0.366	0.386	0.367	0.026	-0.044	S
G4		0.327	0.347	0.332	0.026	-0.202	S
G1	Ca ²⁺	0.151	0.128	0.13	0.026	0.807	Q
G2		0.131	0.115	0.12	0.025	0.443	S
G3		0.241	0.217	0.213	0.029	0.979	S
G4		0.195	0.192	0.191	0.027	0.151	S
G1	K ⁺	0.158	0.17	0.162	0.016	-0.23	S
G2		0.19	0.204	0.189	0.017	0.076	S
G3		0.325	0.34	0.325	0.02	-0.011	S
G4		0.301	0.306	0.294	0.019	0.377	S
G1	pH	4.8	4.57	4.629	0.131	1.307	U
G2		4.8	4.7	4.738	0.132	0.47	S
G3		4.4	4.18	4.2	0.122	1.637	U
G4		4.3	4.22	4.248	0.134	0.386	S
G1	Cond	16.4	17.7	16.55	1.471	-0.102	S
G2		13.4	15.2	14.389	1.524	-0.649	S
G3		36.5	39.3	37.557	3.093	-0.342	S
G4		34.7	37	34.831	3.076	-0.042	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 146, Luxembourg Institute of Science and Technology (LIST) (Luxembourg)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.613	0.666	0.642	0.089	-0.327	S
G2		0.482	0.535	0.52	0.081	-0.478	S
G3		1.387	1.474	1.423	0.234	-0.153	S
G4		1.233	1.319	1.272	0.194	-0.199	S
G1	NH ₄ ⁺	0.205	0.187	0.184	0.014	1.445	S
G2		0.254	0.241	0.235	0.018	1.02	S
G3		0.288	0.267	0.272	0.023	0.716	S
G4		0.41	0.401	0.4	0.021	0.484	S
G1	NO ₃ ⁻	0.327	0.357	0.344	0.024	-0.699	S
G2		0.347	0.379	0.362	0.032	-0.457	S
G3		0.579	0.607	0.595	0.044	-0.363	S
G4		0.671	0.707	0.685	0.057	-0.254	S
G1	Na ⁺	0.289	0.304	0.29	0.016	-0.079	S
G2		0.267	0.283	0.268	0.018	-0.076	S
G3		0.594	0.608	0.59	0.024	0.171	S
G4		0.533	0.548	0.526	0.023	0.282	S
G1	Mg ²⁺	0.098	0.103	0.101	0.006	-0.523	S
G2		0.087	0.093	0.087	0.005	-0.081	S
G3		0.166	0.175	0.168	0.008	-0.239	S
G4		0.15	0.155	0.15	0.007	-0.013	S
G1	Cl ⁻	0.153	0.193	0.187	0.016	-2.07	Q
G2		0.226	0.27	0.258	0.021	-1.57	Q
G3		0.338	0.386	0.367	0.026	-1.111	S
G4		0.303	0.347	0.332	0.026	-1.134	S
G1	Ca ²⁺	0.116	0.128	0.13	0.026	-0.525	S
G2		0.118	0.115	0.12	0.025	-0.084	S
G3		0.198	0.217	0.213	0.029	-0.523	S
G4		0.177	0.192	0.191	0.027	-0.512	S
G1	K ⁺	0.153	0.17	0.162	0.016	-0.549	S
G2		0.179	0.204	0.189	0.017	-0.585	S
G3		0.315	0.34	0.325	0.02	-0.512	S
G4		0.286	0.306	0.294	0.019	-0.408	S
G1	pH	4.69	4.57	4.629	0.131	0.466	Q
G2		4.89	4.7	4.738	0.132	1.151	Q
G3		4.25	4.18	4.2	0.122	0.409	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	17.1	17.7	16.55	1.471	0.374	S
G2		13.8	15.2	14.389	1.524	-0.387	S
G3		30.7	39.3	37.557	3.093	-2.217	Q
G4		35.5	37	34.831	3.076	0.218	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 153, Slovenian Forestry Institute, Ljubljana (Slovenia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.639	0.666	0.642	0.089	-0.036	S
G2		0.505	0.535	0.52	0.081	-0.192	S
G3		1.445	1.474	1.423	0.234	0.095	S
G4		1.281	1.319	1.272	0.194	0.048	S
G1	NH ₄ ⁺	0.151	0.187	0.184	0.014	-2.288	Q
G2		0.203	0.241	0.235	0.018	-1.766	Q
G3		0.23	0.267	0.272	0.023	-1.856	S
G4		0.353	0.401	0.4	0.021	-2.177	S
G1	NO ₃ ⁻	0.336	0.357	0.344	0.024	-0.32	S
G2		0.356	0.379	0.362	0.032	-0.179	S
G3		0.583	0.607	0.595	0.044	-0.273	S
G4		0.675	0.707	0.685	0.057	-0.183	S
G1	Na ⁺	0.191	0.304	0.29	0.016	-6.063	U
G2		0.208	0.283	0.268	0.018	-3.442	U
G3		0.545	0.608	0.59	0.024	-1.862	S
G4		0.493	0.548	0.526	0.023	-1.446	S
G1	Mg ²⁺	0.097	0.103	0.101	0.006	-0.697	S
G2		0.085	0.093	0.087	0.005	-0.498	S
G3		0.169	0.175	0.168	0.008	0.145	S
G4		0.151	0.155	0.15	0.007	0.123	S
G1	Cl ⁻	0.149	0.193	0.187	0.016	-2.312	Q
G2		0.208	0.27	0.258	0.021	-2.443	Q
G3		0.302	0.386	0.367	0.026	-2.482	Q
G4		0.273	0.347	0.332	0.026	-2.298	Q
G1	Ca ²⁺	0.124	0.128	0.13	0.026	-0.221	S
G2		0.135	0.115	0.12	0.025	0.606	Q
G3		0.222	0.217	0.213	0.029	0.316	S
G4		0.216	0.192	0.191	0.027	0.926	S
G1	K ⁺	0.124	0.17	0.162	0.016	-2.398	U
G2		0.151	0.204	0.189	0.017	-2.267	U
G3		0.27	0.34	0.325	0.02	-2.766	Q
G4		0.247	0.306	0.294	0.019	-2.45	Q
G1	pH	4.66	4.57	4.629	0.131	0.237	S
G2		4.8	4.7	4.738	0.132	0.47	S
G3		4.26	4.18	4.2	0.122	0.491	S
G4		4.3	4.22	4.248	0.134	0.386	S
G1	Cond	15.54	17.7	16.55	1.471	-0.687	S
G2		13.41	15.2	14.389	1.524	-0.643	S
G3		37.33	39.3	37.557	3.093	-0.073	S
G4		35.99	37	34.831	3.076	0.377	S

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 155, Environmental Research Branch, Farnheim (UK)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.639	0.666	0.642	0.089	-0.036	S
G2		0.493	0.535	0.52	0.081	-0.341	S
G3		1.46	1.474	1.423	0.234	0.159	S
G4		1.301	1.319	1.272	0.194	0.151	S
G1	NH ₄ ⁺	0.178	0.187	0.184	0.014	-0.422	S
G2		0.234	0.241	0.235	0.018	-0.073	S
G3		0.26	0.267	0.272	0.023	-0.526	S
G4		0.388	0.401	0.4	0.021	-0.543	S
G1	NO ₃ ⁻	0.339	0.357	0.344	0.024	-0.193	S
G2		0.356	0.379	0.362	0.032	-0.179	S
G3		0.621	0.607	0.595	0.044	0.584	S
G4		0.71	0.707	0.685	0.057	0.433	S
G1	Na ⁺	0.278	0.304	0.29	0.016	-0.751	S
G2		0.258	0.283	0.268	0.018	-0.59	S
G3		0.582	0.608	0.59	0.024	-0.327	S
G4		0.517	0.548	0.526	0.023	-0.409	S
G1	Mg ²⁺	0.101	0.103	0.101	0.006	0	S
G2		0.085	0.093	0.087	0.005	-0.498	S
G3		0.162	0.175	0.168	0.008	-0.75	S
G4		0.15	0.155	0.15	0.007	-0.013	S
G1	Cl ⁻	0.177	0.193	0.187	0.016	-0.615	S
G2		0.245	0.27	0.258	0.021	-0.649	S
G3		0.364	0.386	0.367	0.026	-0.12	S
G4		0.325	0.347	0.332	0.026	-0.28	S
G1	Ca ²⁺	0.114	0.128	0.13	0.026	-0.602	S
G2		0.107	0.115	0.12	0.025	-0.531	S
G3		0.204	0.217	0.213	0.029	-0.313	S
G4		0.177	0.192	0.191	0.027	-0.512	S
G1	K ⁺	0.155	0.17	0.162	0.016	-0.422	S
G2		0.181	0.204	0.189	0.017	-0.465	S
G3		0.308	0.34	0.325	0.02	-0.862	S
G4		0.28	0.306	0.294	0.019	-0.722	S
G1	pH	4.68	4.57	4.629	0.131	0.39	Q
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.21	4.18	4.2	0.122	0.081	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	17.1	17.7	16.55	1.471	0.374	S
G2		14.7	15.2	14.389	1.524	0.204	S
G3		38.8	39.3	37.557	3.093	0.402	S
G4		36.3	37	34.831	3.076	0.478	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 158, Acid Deposition and Oxidant Research Center ADOCRC, Niigata (Japan)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.655	0.666	0.642	0.089	0.144	S
G2		0.526	0.535	0.52	0.081	0.069	S
G3		1.51	1.474	1.423	0.234	0.372	S
G4		1.35	1.319	1.272	0.194	0.403	S
G1	NH ₄ ⁺	0.186	0.187	0.184	0.014	0.131	S
G2		0.237	0.241	0.235	0.018	0.091	S
G3		0.26	0.267	0.272	0.023	-0.526	S
G4		0.381	0.401	0.4	0.021	-0.87	S
G1	NO ₃ ⁻	0.352	0.357	0.344	0.024	0.355	S
G2		0.381	0.379	0.362	0.032	0.594	S
G3		0.631	0.607	0.595	0.044	0.81	S
G4		0.735	0.707	0.685	0.057	0.873	S
G1	Na ⁺	0.297	0.304	0.29	0.016	0.409	S
G2		0.274	0.283	0.268	0.018	0.323	S
G3		0.603	0.608	0.59	0.024	0.545	S
G4		0.528	0.548	0.526	0.023	0.066	S
G1	Mg ²⁺	0.108	0.103	0.101	0.006	1.219	S
G2		0.094	0.093	0.087	0.005	1.379	S
G3		0.179	0.175	0.168	0.008	1.424	S
G4		0.161	0.155	0.15	0.007	1.477	S
G1	Cl ⁻	0.184	0.193	0.187	0.016	-0.19	S
G2		0.26	0.27	0.258	0.021	0.079	S
G3		0.381	0.386	0.367	0.026	0.527	S
G4		0.335	0.347	0.332	0.026	0.108	S
G1	Ca ²⁺	0.126	0.128	0.13	0.026	-0.145	S
G2		0.122	0.115	0.12	0.025	0.078	S
G3		0.215	0.217	0.213	0.029	0.071	S
G4		0.191	0.192	0.191	0.027	0.004	S
G1	K ⁺	0.167	0.17	0.162	0.016	0.343	S
G2		0.196	0.204	0.189	0.017	0.436	S
G3		0.335	0.34	0.325	0.02	0.49	S
G4		0.298	0.306	0.294	0.019	0.22	S
G1	pH	4.66	4.57	4.629	0.131	0.237	S
G2		4.8	4.7	4.738	0.132	0.47	S
G3		4.23	4.18	4.2	0.122	0.245	S
G4		4.28	4.22	4.248	0.134	0.237	S
G1	Cond	16.7	17.7	16.55	1.471	0.102	S
G2		14.4	15.2	14.389	1.524	0.007	S
G3		38.1	39.3	37.557	3.093	0.175	S
G4		35.5	37	34.831	3.076	0.218	S

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U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 165, Institute of Meteorology and Hydrology, Ha Noi city (Vietnam)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.761	0.666	0.642	0.089	1.332	Q
G2		0.594	0.535	0.52	0.081	0.913	Q
G3		1.711	1.474	1.423	0.234	1.229	Q
G4		1.547	1.319	1.272	0.194	1.418	Q
G1	NH ₄ ⁺	0.184	0.187	0.184	0.014	-0.007	S
G2		0.252	0.241	0.235	0.018	0.911	S
G3		0.235	0.267	0.272	0.023	-1.634	S
G4		0.392	0.401	0.4	0.021	-0.356	S
G1	NO ₃ ⁻	0.343	0.357	0.344	0.024	-0.025	S
G2		0.366	0.379	0.362	0.032	0.13	S
G3		0.601	0.607	0.595	0.044	0.133	S
G4		0.688	0.707	0.685	0.057	0.046	S
G1	Na ⁺	0.303	0.304	0.29	0.016	0.775	S
G2		0.283	0.283	0.268	0.018	0.837	S
G3		0.58	0.608	0.59	0.024	-0.41	S
G4		0.512	0.548	0.526	0.023	-0.625	S
G1	Mg ²⁺	0.095	0.103	0.101	0.006	-1.045	S
G2		0.083	0.093	0.087	0.005	-0.915	S
G3		0.162	0.175	0.168	0.008	-0.75	S
G4		0.142	0.155	0.15	0.007	-1.096	S
G1	Cl ⁻	0.181	0.193	0.187	0.016	-0.372	S
G2		0.259	0.27	0.258	0.021	0.03	S
G3		0.373	0.386	0.367	0.026	0.223	S
G4		0.33	0.347	0.332	0.026	-0.086	S
G1	Ca ²⁺	0.142	0.128	0.13	0.026	0.465	S
G2		0.148	0.115	0.12	0.025	1.134	U
G3		0.274	0.217	0.213	0.029	2.132	U
G4		0.26	0.192	0.191	0.027	2.547	U
G1	K ⁺	0.118	0.17	0.162	0.016	-2.781	U
G2		0.139	0.204	0.189	0.017	-2.987	U
G3		0.238	0.34	0.325	0.02	-4.368	U
G4		0.211	0.306	0.294	0.019	-4.334	U
G1	pH	4.52	4.57	4.629	0.131	-0.833	S
G2		4.66	4.7	4.738	0.132	-0.59	S
G3		4.09	4.18	4.2	0.122	-0.902	S
G4		4.24	4.22	4.248	0.134	-0.061	S
G1	Cond	17.7	17.7	16.55	1.471	0.782	S
G2		15.4	15.2	14.389	1.524	0.663	S
G3		41.4	39.3	37.557	3.093	1.242	S
G4		34.6	37	34.831	3.076	-0.075	S

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B – Blank: You reported either no value or the detection limit

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EMEP – 33rd intercomparison of analytical methods

Laboratory 166, Forest Research Institute, Laboratory of Forest Environment Chemistry (Poland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.671	0.666	0.642	0.089	0.323	S
G2		0.511	0.535	0.52	0.081	-0.118	S
G3		1.469	1.474	1.423	0.234	0.197	S
G4		1.319	1.319	1.272	0.194	0.244	S
G1	NH ₄ ⁺	0.194	0.187	0.184	0.014	0.684	S
G2		0.248	0.241	0.235	0.018	0.692	S
G3		0.284	0.267	0.272	0.023	0.539	S
G4		0.422	0.401	0.4	0.021	1.044	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.614	0.607	0.595	0.044	0.426	S
G4		0.701	0.707	0.685	0.057	0.275	S
G1	Na ⁺	0.27	0.304	0.29	0.016	-1.239	S
G2		0.242	0.283	0.268	0.018	-1.502	S
G3		0.582	0.608	0.59	0.024	-0.327	S
G4		0.529	0.548	0.526	0.023	0.109	S
G1	Mg ²⁺	0.099	0.103	0.101	0.006	-0.348	S
G2		0.088	0.093	0.087	0.005	0.128	S
G3		0.172	0.175	0.168	0.008	0.528	S
G4		0.154	0.155	0.15	0.007	0.529	S
G1	Cl ⁻	0.179	0.193	0.187	0.016	-0.493	S
G2		0.263	0.27	0.258	0.021	0.224	S
G3		0.374	0.386	0.367	0.026	0.261	S
G4		0.331	0.347	0.332	0.026	-0.047	S
G1	Ca ²⁺	0.115	0.128	0.13	0.026	-0.563	S
G2		0.114	0.115	0.12	0.025	-0.247	S
G3		0.215	0.217	0.213	0.029	0.071	S
G4		0.191	0.192	0.191	0.027	0.004	S
G1	K ⁺	0.157	0.17	0.162	0.016	-0.294	S
G2		0.185	0.204	0.189	0.017	-0.225	S
G3		0.317	0.34	0.325	0.02	-0.412	S
G4		0.286	0.306	0.294	0.019	-0.408	S
G1	pH	4.66	4.57	4.629	0.131	0.237	S
G2		4.77	4.7	4.738	0.132	0.243	S
G3		4.22	4.18	4.2	0.122	0.163	S
G4		4.26	4.22	4.248	0.134	0.088	S
G1	Cond	16.88	17.7	16.55	1.471	0.224	S
G2		15.13	15.2	14.389	1.524	0.486	S
G3		38.5	39.3	37.557	3.093	0.305	S
G4		35.8	37	34.831	3.076	0.315	S

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 176, Main Geophysical Observatory, Saint-Petersburg (Russian Federation)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.643	0.666	0.642	0.089	0.009	S
G2		0.522	0.535	0.52	0.081	0.019	S
G3		1.505	1.474	1.423	0.234	0.351	S
G4		1.346	1.319	1.272	0.194	0.383	S
G1	NH ₄ ⁺	0.21	0.187	0.184	0.014	1.79	S
G2		0.226	0.241	0.235	0.018	-0.51	S
G3		0.296	0.267	0.272	0.023	1.071	S
G4		0.428	0.401	0.4	0.021	1.324	S
G1	NO ₃ ⁻	0.322	0.357	0.344	0.024	-0.91	S
G2		0.353	0.379	0.362	0.032	-0.271	S
G3		0.589	0.607	0.595	0.044	-0.137	S
G4		0.698	0.707	0.685	0.057	0.222	S
G1	Na ⁺	0.298	0.304	0.29	0.016	0.47	S
G2		0.268	0.283	0.268	0.018	-0.019	S
G3		0.603	0.608	0.59	0.024	0.545	S
G4		0.555	0.548	0.526	0.023	1.232	S
G1	Mg ²⁺	0.096	0.103	0.101	0.006	-0.871	S
G2		0.082	0.093	0.087	0.005	-1.124	S
G3		0.165	0.175	0.168	0.008	-0.367	S
G4		0.135	0.155	0.15	0.007	-2.044	S
G1	Cl ⁻	0.196	0.193	0.187	0.016	0.538	S
G2		0.262	0.27	0.258	0.021	0.176	S
G3		0.398	0.386	0.367	0.026	1.175	S
G4		0.515	0.347	0.332	0.026	7.092	U
G1	Ca ²⁺	0.098	0.128	0.13	0.026	-1.211	Q
G2		0.085	0.115	0.12	0.025	-1.424	U
G3		0.17	0.217	0.213	0.029	-1.501	Q
G4		0.15	0.192	0.191	0.027	-1.507	Q
G1	K ⁺	0.16	0.17	0.162	0.016	-0.103	S
G2		0.183	0.204	0.189	0.017	-0.345	S
G3		0.305	0.34	0.325	0.02	-1.013	S
G4		0.31	0.306	0.294	0.019	0.848	S
G1	pH	4.56	4.57	4.629	0.131	-0.527	S
G2		4.69	4.7	4.738	0.132	-0.363	S
G3		4.15	4.18	4.2	0.122	-0.41	S
G4		4.21	4.22	4.248	0.134	-0.285	S
G1	Cond	15.6	17.7	16.55	1.471	-0.646	S
G2		14.16	15.2	14.389	1.524	-0.151	S
G3		38.17	39.3	37.557	3.093	0.198	S
G4		35.35	37	34.831	3.076	0.169	S

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Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 178, Environmental Chemistry and EANET Monitoring Laboratory, Limnological Institute
RAS/SB, Irkutsk (Russian Federation)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.624	0.666	0.642	0.089	-0.204	S
G2		0.494	0.535	0.52	0.081	-0.329	S
G3		1.396	1.474	1.423	0.234	-0.114	S
G4		1.237	1.319	1.272	0.194	-0.179	S
G1	NH ₄ ⁺	0.177	0.187	0.184	0.014	-0.491	S
G2		0.238	0.241	0.235	0.018	0.146	S
G3		0.268	0.267	0.272	0.023	-0.171	S
G4		0.415	0.401	0.4	0.021	0.717	S
G1	NO ₃ ⁻	0.329	0.357	0.344	0.024	-0.615	S
G2		0.35	0.379	0.362	0.032	-0.364	S
G3		0.577	0.607	0.595	0.044	-0.408	S
G4		0.665	0.707	0.685	0.057	-0.359	S
G1	Na ⁺	0.299	0.304	0.29	0.016	0.531	S
G2		0.277	0.283	0.268	0.018	0.494	S
G3		0.61	0.608	0.59	0.024	0.835	S
G4		0.544	0.548	0.526	0.023	0.757	S
G1	Mg ²⁺	0.102	0.103	0.101	0.006	0.174	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.171	0.175	0.168	0.008	0.401	S
G4		0.153	0.155	0.15	0.007	0.394	S
G1	Cl ⁻	0.167	0.193	0.187	0.016	-1.221	S
G2		0.237	0.27	0.258	0.021	-1.037	S
G3		0.347	0.386	0.367	0.026	-0.768	S
G4		0.309	0.347	0.332	0.026	-0.901	S
G1	Ca ²⁺	0.15	0.128	0.13	0.026	0.769	Q
G2		0.11	0.115	0.12	0.025	-0.409	S
G3		0.247	0.217	0.213	0.029	1.189	S
G4		0.212	0.192	0.191	0.027	0.778	S
G1	K ⁺	0.166	0.17	0.162	0.016	0.28	S
G2		0.195	0.204	0.189	0.017	0.376	S
G3		0.335	0.34	0.325	0.02	0.49	S
G4		0.3	0.306	0.294	0.019	0.325	S
G1	pH	4.63	4.57	4.629	0.131	0.008	S
G2		4.76	4.7	4.738	0.132	0.167	S
G3		4.23	4.18	4.2	0.122	0.245	S
G4		4.28	4.22	4.248	0.134	0.237	S
G1	Cond	18.59	17.7	16.55	1.471	1.387	S
G2		15.97	15.2	14.389	1.524	1.037	S
G3		40.8	39.3	37.557	3.093	1.048	S
G4		38.37	37	34.831	3.076	1.151	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 179, Murmansk Environmental Monitoring Center, Murmansk (Russian Federation)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	2.774	0.666	0.642	0.089	23.9	U
G2		2.195	0.535	0.52	0.081	20.793	U
G3		6.107	1.474	1.423	0.234	19.976	U
G4		5.451	1.319	1.272	0.194	21.534	U
G1	NH ₄ ⁺	0.18	0.187	0.184	0.014	-0.284	S
G2		0.235	0.241	0.235	0.018	-0.018	S
G3		0.275	0.267	0.272	0.023	0.14	S
G4		0.404	0.401	0.4	0.021	0.204	S
G1	NO ₃ ⁻	0.319	0.357	0.344	0.024	-1.037	Q
G2		0.324	0.379	0.362	0.032	-1.168	Q
G3		0.54	0.607	0.595	0.044	-1.242	Q
G4		0.621	0.707	0.685	0.057	-1.134	Q
G1	Na ⁺	0.289	0.304	0.29	0.016	-0.079	S
G2		0.279	0.283	0.268	0.018	0.609	S
G3		0.582	0.608	0.59	0.024	-0.327	S
G4		0.528	0.548	0.526	0.023	0.066	S
G1	Mg ²⁺	0.111	0.103	0.101	0.006	1.742	S
G2		0.109	0.093	0.087	0.005	4.507	Q
G3		0.167	0.175	0.168	0.008	-0.111	S
G4		0.151	0.155	0.15	0.007	0.123	S
G1	Cl ⁻	0.181	0.193	0.187	0.016	-0.372	S
G2		0.27	0.27	0.258	0.021	0.563	S
G3		0.344	0.386	0.367	0.026	-0.882	S
G4		0.311	0.347	0.332	0.026	-0.823	S
G1	Ca ²⁺	0.113	0.128	0.13	0.026	-0.64	S
G2		0.106	0.115	0.12	0.025	-0.571	S
G3		0.154	0.217	0.213	0.029	-2.06	U
G4		0.122	0.192	0.191	0.027	-2.539	U
G1	K ⁺	0.205	0.17	0.162	0.016	2.766	Q
G2		0.193	0.204	0.189	0.017	0.256	S
G3		0.335	0.34	0.325	0.02	0.49	S
G4		0.315	0.306	0.294	0.019	1.11	S
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	16.1	17.7	16.55	1.471	-0.306	S
G2		14.2	15.2	14.389	1.524	-0.124	S
G3		37.9	39.3	37.557	3.093	0.111	S
G4		35.7	37	34.831	3.076	0.283	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
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EMEP – 33rd intercomparison of analytical methods

Laboratory 181, TNO innovation for life (The Netherlands)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.62	0.666	0.642	0.089	-0.249	S
G2		0.49	0.535	0.52	0.081	-0.378	S
G3		1.41	1.474	1.423	0.234	-0.055	S
G4		1.24	1.319	1.272	0.194	-0.163	S
G1	NH ₄ ⁺	0.18	0.187	0.184	0.014	-0.284	S
G2		0.24	0.241	0.235	0.018	0.255	S
G3		0.27	0.267	0.272	0.023	-0.082	S
G4		0.39	0.401	0.4	0.021	-0.45	S
G1	NO ₃ ⁻	0.35	0.357	0.344	0.024	0.27	S
G2		0.36	0.379	0.362	0.032	-0.055	S
G3		0.57	0.607	0.595	0.044	-0.566	S
G4		0.65	0.707	0.685	0.057	-0.624	S
G1	Na ⁺	0.3	0.304	0.29	0.016	0.592	S
G2		0.27	0.283	0.268	0.018	0.095	S
G3		0.61	0.608	0.59	0.024	0.835	S
G4		0.54	0.548	0.526	0.023	0.584	S
G1	Mg ²⁺	0.11	0.103	0.101	0.006	1.568	S
G2		0.09	0.093	0.087	0.005	0.545	S
G3		0.17	0.175	0.168	0.008	0.273	S
G4		0.16	0.155	0.15	0.007	1.342	S
G1	Cl ⁻	0.22	0.193	0.187	0.016	1.993	S
G2		0.28	0.27	0.258	0.021	1.048	S
G3		0.37	0.386	0.367	0.026	0.108	S
G4		0.34	0.347	0.332	0.026	0.302	S
G1	Ca ²⁺	0.13	0.128	0.13	0.026	0.008	S
G2		0.13	0.115	0.12	0.025	0.403	S
G3		0.23	0.217	0.213	0.029	0.595	S
G4		0.21	0.192	0.191	0.027	0.704	S
G1	K ⁺	0.18	0.17	0.162	0.016	1.172	S
G2		0.2	0.204	0.189	0.017	0.676	S
G3		0.34	0.34	0.325	0.02	0.74	S
G4		0.31	0.306	0.294	0.019	0.848	S
G1	pH	4.65	4.57	4.629	0.131	0.16	S
G2		4.78	4.7	4.738	0.132	0.318	S
G3		4.24	4.18	4.2	0.122	0.327	S
G4		4.29	4.22	4.248	0.134	0.311	S
G1	Cond	18.6	17.7	16.55	1.471	1.394	S
G2		16	15.2	14.389	1.524	1.057	S
G3		42	39.3	37.557	3.093	1.436	S
G4		39	37	34.831	3.076	1.355	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 186, Public Health Institute - Kralevo (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	0.206	0.187	0.184	0.014	1.514	S
G2		0.247	0.241	0.235	0.018	0.637	S
G3		0.281	0.267	0.272	0.023	0.406	S
G4		0.432	0.401	0.4	0.021	1.511	S
G1	NO ₃ ⁻	0.259	0.357	0.344	0.024	-3.567	U
G2		0.267	0.379	0.362	0.032	-2.929	U
G3		0.484	0.607	0.595	0.044	-2.505	U
G4		0.569	0.707	0.685	0.057	-2.05	Q
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	4.53	4.57	4.629	0.131	-0.757	S
G2		4.66	4.7	4.738	0.132	-0.59	S
G3		4.07	4.18	4.2	0.122	-1.066	Q
G4		4.17	4.22	4.248	0.134	-0.583	S
G1	Cond	14.7	17.7	16.55	1.471	-1.258	Q
G2		12.7	15.2	14.389	1.524	-1.109	Q
G3		34.3	39.3	37.557	3.093	-1.053	S
G4		31.9	37	34.831	3.076	-0.953	S

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EMEP – 33rd intercomparison of analytical methods

Laboratory 187, Public Health Institute - Nis, Department for Sanitary Chemistry (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	0.29	0.187	0.184	0.014	7.32	U
G2		0.283	0.241	0.235	0.018	2.604	Q
G3		0.382	0.267	0.272	0.023	4.884	U
G4		0.416	0.401	0.4	0.021	0.764	S
G1	NO ₃ ⁻	0.395	0.357	0.344	0.024	2.168	Q
G2		0.46	0.379	0.362	0.032	3.035	U
G3		0.673	0.607	0.595	0.044	1.757	Q
G4		0.751	0.707	0.685	0.057	1.155	S
G1	Na ⁺	0.32	0.304	0.29	0.016	1.813	S
G2		0.3	0.283	0.268	0.018	1.807	S
G3		0.62	0.608	0.59	0.024	1.25	S
G4		0.53	0.548	0.526	0.023	0.152	S
G1	Mg ²⁺	0.117	0.103	0.101	0.006	2.787	S
G2		0.114	0.093	0.087	0.005	5.55	Q
G3		0.185	0.175	0.168	0.008	2.191	S
G4		0.162	0.155	0.15	0.007	1.612	S
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	0.09	0.128	0.13	0.026	-1.515	U
G2		0.257	0.115	0.12	0.025	5.559	U
G3		0.115	0.217	0.213	0.029	-3.422	U
G4		0.292	0.192	0.191	0.027	3.727	U
G1	K ⁺	0.132	0.17	0.162	0.016	-1.888	Q
G2		0.17	0.204	0.189	0.017	-1.126	Q
G3		0.338	0.34	0.325	0.02	0.64	S
G4		0.272	0.306	0.294	0.019	-1.141	S
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for more statistics, Youden plots, updated expected values ect:
<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 33rd intercomparison of analytical methods

Laboratory 191, Institute for Public Health - Pancevo (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	-999	0.187	0.184	0.014		B
G2		-999	0.241	0.235	0.018		B
G3		-999	0.267	0.272	0.023		B
G4		-999	0.401	0.4	0.021		B
G1	NO ₃ ⁻	-999	0.357	0.344	0.024		B
G2		-999	0.379	0.362	0.032		B
G3		-999	0.607	0.595	0.044		B
G4		-999	0.707	0.685	0.057		B
G1	Na ⁺	< 0.200	0.304	0.29	0.016	-11.618	U
G2		< 0.200	0.283	0.268	0.018	-9.603	U
G3		0.35	0.608	0.59	0.024	-9.951	U
G4		0.32	0.548	0.526	0.023	-8.917	U
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	< 0.200	0.17	0.162	0.016		B
G2		< 0.200	0.204	0.189	0.017	-5.33	U
G3		0.32	0.34	0.325	0.02	-0.261	S
G4		0.28	0.306	0.294	0.019	-0.722	S
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 193, Institute of Public Health of Vojvodina (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.647	0.666	0.642	0.089	0.054	S
G2		0.505	0.535	0.52	0.081	-0.192	S
G3		1.452	1.474	1.423	0.234	0.125	S
G4		1.286	1.319	1.272	0.194	0.074	S
G1	NH ₄ ⁺	0.194	0.187	0.184	0.014	0.684	S
G2		0.235	0.241	0.235	0.018	-0.018	S
G3		0.276	0.267	0.272	0.023	0.184	S
G4		0.407	0.401	0.4	0.021	0.344	S
G1	NO ₃ ⁻	0.31	0.357	0.344	0.024	-1.416	Q
G2		0.333	0.379	0.362	0.032	-0.889	Q
G3		0.569	0.607	0.595	0.044	-0.588	S
G4		0.665	0.707	0.685	0.057	-0.359	S
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

B – Blank: You reported either no value or the detection limit

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EMEP – 33rd intercomparison of analytical methods

Laboratory 194, Institute of Public Health - Zrenjanin (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	< 1.660	0.666	0.642	0.089		B
G2		< 1.660	0.535	0.52	0.081		B
G3		< 1.660	1.474	1.423	0.234		B
G4		< 1.660	1.319	1.272	0.194		B
G1	NH ₄ ⁺	0.19	0.187	0.184	0.014	0.408	S
G2		0.223	0.241	0.235	0.018	-0.674	S
G3		0.286	0.267	0.272	0.023	0.627	S
G4		0.393	0.401	0.4	0.021	-0.31	S
G1	NO ₃ ⁻	0.166	0.357	0.344	0.024	-7.488	U
G2		0.233	0.379	0.362	0.032	-3.98	U
G3		0.466	0.607	0.595	0.044	-2.911	U
G4		0.5	0.707	0.685	0.057	-3.266	U
G1	Na ⁺	< 0.600	0.304	0.29	0.016		B
G2		< 0.600	0.283	0.268	0.018		B
G3		0.539	0.608	0.59	0.024	-2.11	S
G4		0.474	0.548	0.526	0.023	-2.266	S
G1	Mg ²⁺	0.103	0.103	0.101	0.006	0.348	S
G2		0.088	0.093	0.087	0.005	0.128	S
G3		0.174	0.175	0.168	0.008	0.784	S
G4		0.158	0.155	0.15	0.007	1.071	S
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	< 0.200	0.128	0.13	0.026		B
G2		< 0.200	0.115	0.12	0.025		B
G3		0.207	0.217	0.213	0.029	-0.208	S
G4		0.195	0.192	0.191	0.027	0.151	S
G1	K ⁺	< 0.200	0.17	0.162	0.016		B
G2		< 0.200	0.204	0.189	0.017	-5.33	U
G3		0.308	0.34	0.325	0.02	-0.862	S
G4		0.278	0.306	0.294	0.019	-0.827	S
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

U – Unsatisfactory: Your result deviates more than $\pm 20\%$ of the expected value for SO_4^{2-} and NO_3^- , more than $\pm 25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and more than ± 0.2 pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 195, Institute of Public Health - Suobtica (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.589	0.666	0.642	0.089	-0.596	Q
G2		0.828	0.535	0.52	0.081	3.819	U
G3		0.903	1.474	1.423	0.234	-2.217	U
G4		1.216	1.319	1.272	0.194	-0.287	S
G1	NH ₄ ⁺	0.158	0.187	0.184	0.014	-1.804	Q
G2		0.2	0.241	0.235	0.018	-1.93	Q
G3		0.237	0.267	0.272	0.023	-1.545	S
G4		0.365	0.401	0.4	0.021	-1.616	S
G1	NO ₃ ⁻	0.403	0.357	0.344	0.024	2.505	Q
G2		0.427	0.379	0.362	0.032	2.015	Q
G3		0.735	0.607	0.595	0.044	3.155	U
G4		0.798	0.707	0.685	0.057	1.983	Q
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 197, Institute of Occupational Health - Novi Sad (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.638	0.666	0.642	0.089	-0.047	S
G2		0.495	0.535	0.52	0.081	-0.316	S
G3		1.49	1.474	1.423	0.234	0.287	S
G4		1.268	1.319	1.272	0.194	-0.019	S
G1	NH ₄ ⁺	0.168	0.187	0.184	0.014	-1.113	S
G2		0.219	0.241	0.235	0.018	-0.892	S
G3		0.261	0.267	0.272	0.023	-0.481	S
G4		0.41	0.401	0.4	0.021	0.484	S
G1	NO ₃ ⁻	0.069	0.357	0.344	0.024	-11.578	U
G2		0.072	0.379	0.362	0.032	-8.955	U
G3		0.123	0.607	0.595	0.044	-10.645	U
G4		0.148	0.707	0.685	0.057	-9.465	U
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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EMEP – 33rd intercomparison of analytical methods

Laboratory 198, Institute for public health - Sremska Mitrovica (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	-999	0.666	0.642	0.089		B
G2		-999	0.535	0.52	0.081		B
G3		-999	1.474	1.423	0.234		B
G4		-999	1.319	1.272	0.194		B
G1	NH ₄ ⁺	0.164	0.187	0.184	0.014	-1.39	S
G2		0.204	0.241	0.235	0.018	-1.712	Q
G3		0.232	0.267	0.272	0.023	-1.767	S
G4		0.361	0.401	0.4	0.021	-1.803	S
G1	NO ₃ ⁻	-999	0.357	0.344	0.024		B
G2		-999	0.379	0.362	0.032		B
G3		-999	0.607	0.595	0.044		B
G4		-999	0.707	0.685	0.057		B
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	-999	4.57	4.629	0.131		B
G2		-999	4.7	4.738	0.132		B
G3		-999	4.18	4.2	0.122		B
G4		-999	4.22	4.248	0.134		B
G1	Cond	-999	17.7	16.55	1.471		B
G2		-999	15.2	14.389	1.524		B
G3		-999	39.3	37.557	3.093		B
G4		-999	37	34.831	3.076		B

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EMEP – 33rd intercomparison of analytical methods

Laboratory 200, FUB AG (Switzerland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	0.635	0.666	0.642	0.089	-0.081	S
G2		0.509	0.535	0.52	0.081	-0.142	S
G3		1.447	1.474	1.423	0.234	0.103	S
G4		1.273	1.319	1.272	0.194	0.007	S
G1	NH ₄ ⁺	0.189	0.187	0.184	0.014	0.339	S
G2		0.246	0.241	0.235	0.018	0.583	S
G3		0.281	0.267	0.272	0.023	0.406	S
G4		0.416	0.401	0.4	0.021	0.764	S
G1	NO ₃ ⁻	0.351	0.357	0.344	0.024	0.313	S
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.601	0.607	0.595	0.044	0.133	S
G4		0.68	0.707	0.685	0.057	-0.095	S
G1	Na ⁺	0.31	0.304	0.29	0.016	1.203	S
G2		0.291	0.283	0.268	0.018	1.293	S
G3		0.612	0.608	0.59	0.024	0.918	S
G4		0.55	0.548	0.526	0.023	1.016	S
G1	Mg ²⁺	0.098	0.103	0.101	0.006	-0.523	S
G2		0.085	0.093	0.087	0.005	-0.498	S
G3		0.165	0.175	0.168	0.008	-0.367	S
G4		0.147	0.155	0.15	0.007	-0.419	S
G1	Cl ⁻	0.184	0.193	0.187	0.016	-0.19	S
G2		0.259	0.27	0.258	0.021	0.03	S
G3		0.362	0.386	0.367	0.026	-0.196	S
G4		0.334	0.347	0.332	0.026	0.069	S
G1	Ca ²⁺	0.116	0.128	0.13	0.026	-0.525	S
G2		0.117	0.115	0.12	0.025	-0.125	S
G3		0.208	0.217	0.213	0.029	-0.173	S
G4		0.187	0.192	0.191	0.027	-0.143	S
G1	K ⁺	0.177	0.17	0.162	0.016	0.981	S
G2		0.212	0.204	0.189	0.017	1.397	S
G3		0.347	0.34	0.325	0.02	1.091	S
G4		0.318	0.306	0.294	0.019	1.267	S
G1	pH	4.61	4.57	4.629	0.131	-0.145	S
G2		4.75	4.7	4.738	0.132	0.091	S
G3		4.19	4.18	4.2	0.122	-0.083	S
G4		4.24	4.22	4.248	0.134	-0.061	S
G1	Cond	17.18	17.7	16.55	1.471	0.428	S
G2		15.43	15.2	14.389	1.524	0.683	S
G3		40.32	39.3	37.557	3.093	0.893	S
G4		37.83	37	34.831	3.076	0.975	S

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Q – Questionable: Your result deviates between $\pm 10\text{-}20\%$ of the expected value for SO_4^{2-} and NO_3^- , between $\pm 15\text{-}25\%$ of the expected value for NH_4^+ , Cl^- , Na^+ , Mg^{2+} , Ca^{2+} , K^+ and cond and between $\pm 0.1\text{-}0.2$ pH-units for pH

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EMEP – 33rd intercomparison of analytical methods

Laboratory 201, Public Health Institute Timok (Republic of Serbia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm st
G1	SO ₄ ²⁻	1.7	0.666	0.642	0.089	11.859	U
G2		< 1.670	0.535	0.52	0.081		B
G3		< 1.670	1.474	1.423	0.234		B
G4		< 1.670	1.319	1.272	0.194		B
G1	NH ₄ ⁺	0.2	0.187	0.184	0.014	1.099	S
G2		0.3	0.241	0.235	0.018	3.533	Q
G3		0.39	0.267	0.272	0.023	5.239	U
G4		0.5	0.401	0.4	0.021	4.684	Q
G1	NO ₃ ⁻	0.27	0.357	0.344	0.024	-3.103	U
G2		0.37	0.379	0.362	0.032	0.254	S
G3		0.59	0.607	0.595	0.044	-0.115	S
G4		0.63	0.707	0.685	0.057	-0.976	Q
G1	Na ⁺	-999	0.304	0.29	0.016		B
G2		-999	0.283	0.268	0.018		B
G3		-999	0.608	0.59	0.024		B
G4		-999	0.548	0.526	0.023		B
G1	Mg ²⁺	-999	0.103	0.101	0.006		B
G2		-999	0.093	0.087	0.005		B
G3		-999	0.175	0.168	0.008		B
G4		-999	0.155	0.15	0.007		B
G1	Cl ⁻	-999	0.193	0.187	0.016		B
G2		-999	0.27	0.258	0.021		B
G3		-999	0.386	0.367	0.026		B
G4		-999	0.347	0.332	0.026		B
G1	Ca ²⁺	-999	0.128	0.13	0.026		B
G2		-999	0.115	0.12	0.025		B
G3		-999	0.217	0.213	0.029		B
G4		-999	0.192	0.191	0.027		B
G1	K ⁺	-999	0.17	0.162	0.016		B
G2		-999	0.204	0.189	0.017		B
G3		-999	0.34	0.325	0.02		B
G4		-999	0.306	0.294	0.019		B
G1	pH	4.59	4.57	4.629	0.131	-0.298	S
G2		4.77	4.7	4.738	0.132	0.243	S
G3		4.02	4.18	4.2	0.122	-1.475	Q
G4		3.92	4.22	4.248	0.134	-2.447	U
G1	Cond	14.3	17.7	16.55	1.471	-1.53	Q
G2		10.2	15.2	14.389	1.524	-2.75	U
G3		22.6	39.3	37.557	3.093	-4.835	U
G4		24.5	37	34.831	3.076	-3.358	U

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