

EMEP – 30th intercomparison of analytical methods

Laboratory 2, Flemish Environment Agency (Belgium)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.165	1.076	1.077	0.055	1.608	S
G2	SO ₄ ²⁻	0.617	0.987	0.997	0.058	-6.541	U
G3	SO ₄ ²⁻	0.72	0.52	0.528	0.025	7.7	U
G4	SO ₄ ²⁻	0.7	0.661	0.67	0.038	0.79	S
G1	NH ₄ ⁺	0.209	0.187	0.193	0.019	0.838	S
G2	NH ₄ ⁺	0.226	0.207	0.211	0.02	0.729	S
G3	NH ₄ ⁺	0.354	0.321	0.327	0.023	1.213	S
G4	NH ₄ ⁺	0.355	0.326	0.329	0.023	1.148	S
G1	NO ₃ ⁻	0.353	0.357	0.355	0.02	-0.122	S
G2	NO ₃ ⁻	0.011	0.417	0.42	0.025	-16.609	U
G3	NO ₃ ⁻	0.008	0.484	0.483	0.028	-16.985	U
G4	NO ₃ ⁻	0.008	0.469	0.467	0.034	-13.361	U
G1	Na ⁺	0.224	0.254	0.253	0.015	-1.94	S
G2	Na ⁺	0.31	0.34	0.335	0.024	-1.074	S
G3	Na ⁺	0.278	0.308	0.303	0.025	-0.999	S
G4	Na ⁺	0.293	0.318	0.314	0.02	-1.09	S
G1	Mg ²⁺	0.13	0.114	0.117	0.013	1.007	S
G2	Mg ²⁺	0.119	0.103	0.101	0.011	1.101	Q
G3	Mg ²⁺	0.154	0.124	0.128	0.01	2.686	Q
G4	Mg ²⁺	0.159	0.134	0.138	0.009	2.284	Q
G1	Cl ⁻	0.158	0.116	0.129	0.046	0.653	U
G2	Cl ⁻	0.231	0.193	0.192	0.038	0.844	Q
G3	Cl ⁻	0.343	0.309	0.305	0.03	1.278	S
G4	Cl ⁻	0.307	0.27	0.27	0.03	0.885	S
G1	Ca ²⁺	0.021	0.089	0.097	0.029	-2.583	U
G2	Ca ²⁺	0.066	0.128	0.133	0.027	-2.478	U
G3	Ca ²⁺	0.167	0.179	0.183	0.025	-0.639	S
G4	Ca ²⁺	0.189	0.204	0.21	0.03	-0.687	S
G1	K ⁺	0.169	0.17	0.171	0.028	-0.058	S
G2	K ⁺	0.24	0.238	0.235	0.032	0.157	S
G3	K ⁺	0.274	0.272	0.267	0.038	0.185	S
G4	K ⁺	0.176	0.17	0.167	0.028	0.313	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.33	4.33	4.358	0.053	-0.528	S
G3	pH	4.77	4.88	4.877	0.071	-1.496	Q
G4	pH	4.67	4.7	4.736	0.055	-1.188	S
G1	Cond	27.4	27.9	27.503	2.113	-0.049	S
G2	Cond	26.7	27	26.521	1.154	0.155	S
G3	Cond	14.6	14	14.539	0.624	0.097	S
G4	Cond	17.2	17	17.033	0.718	0.233	S

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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

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.071	1.076	1.077	0.055	-0.11	S
G2	SO ₄ ²⁻	0.995	0.987	0.997	0.058	-0.032	S
G3	SO ₄ ²⁻	0.516	0.52	0.528	0.025	-0.484	S
G4	SO ₄ ²⁻	0.656	0.661	0.67	0.038	-0.379	S
G1	NH ₄ ⁺	0.218	0.187	0.193	0.019	1.322	Q
G2	NH ₄ ⁺	0.229	0.207	0.211	0.02	0.879	S
G3	NH ₄ ⁺	0.341	0.321	0.327	0.023	0.636	S
G4	NH ₄ ⁺	0.333	0.326	0.329	0.023	0.175	S
G1	NO ₃ ⁻	0.358	0.357	0.355	0.02	0.129	S
G2	NO ₃ ⁻	0.419	0.417	0.42	0.025	-0.034	S
G3	NO ₃ ⁻	0.484	0.484	0.483	0.028	0.021	S
G4	NO ₃ ⁻	0.476	0.469	0.467	0.034	0.264	S
G1	Na ⁺	0.252	0.254	0.253	0.015	-0.048	S
G2	Na ⁺	0.337	0.34	0.335	0.024	0.073	S
G3	Na ⁺	0.305	0.308	0.303	0.025	0.064	S
G4	Na ⁺	0.321	0.318	0.314	0.02	0.331	S
G1	Mg ²⁺	0.111	0.114	0.117	0.013	-0.467	S
G2	Mg ²⁺	0.113	0.103	0.011	0.011	0.564	S
G3	Mg ²⁺	0.123	0.124	0.128	0.01	-0.461	S
G4	Mg ²⁺	0.134	0.134	0.138	0.009	-0.462	S
G1	Cl ⁻	0.111	0.116	0.129	0.046	-0.313	S
G2	Cl ⁻	0.184	0.193	0.192	0.038	-0.172	S
G3	Cl ⁻	0.298	0.309	0.305	0.03	-0.222	S
G4	Cl ⁻	0.269	0.27	0.27	0.03	0.081	S
G1	Ca ²⁺	0.1	0.089	0.097	0.029	0.1	S
G2	Ca ²⁺	0.134	0.128	0.133	0.027	0.033	S
G3	Ca ²⁺	0.209	0.179	0.183	0.025	1.028	Q
G4	Ca ²⁺	0.228	0.204	0.21	0.03	0.613	S
G1	K ⁺	0.165	0.17	0.171	0.028	-0.2	S
G2	K ⁺	0.245	0.238	0.235	0.032	0.313	S
G3	K ⁺	0.269	0.272	0.267	0.038	0.052	S
G4	K ⁺	0.168	0.17	0.167	0.028	0.022	S
G1	pH	4.312	4.27	4.326	0.043	-0.321	S
G2	pH	4.361	4.33	4.358	0.053	0.059	S
G3	pH	4.894	4.88	4.877	0.071	0.246	S
G4	pH	4.738	4.7	4.736	0.055	0.042	S
G1	Cond	27.3	27.9	27.503	2.113	-0.096	S
G2	Cond	27.4	27	26.521	1.154	0.762	S
G3	Cond	15.44	14	14.539	0.624	1.443	S
G4	Cond	17.72	17	17.033	0.718	0.957	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 Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.032	1.076	1.077	0.055	-0.822	S
G2	SO ₄ ²⁻	0.979	0.987	0.997	0.058	-0.307	S
G3	SO ₄ ²⁻	0.51	0.52	0.528	0.025	-0.725	S
G4	SO ₄ ²⁻	0.637	0.661	0.67	0.038	-0.883	S
G1	NH ₄ ⁺	0.193	0.187	0.193	0.019	-0.024	S
G2	NH ₄ ⁺	0.208	0.207	0.211	0.02	-0.17	S
G3	NH ₄ ⁺	0.322	0.321	0.327	0.023	-0.208	S
G4	NH ₄ ⁺	0.322	0.326	0.329	0.023	-0.311	S
G1	NO ₃ ⁻	0.357	0.357	0.355	0.02	0.078	S
G2	NO ₃ ⁻	0.416	0.417	0.42	0.025	-0.156	S
G3	NO ₃ ⁻	0.476	0.484	0.483	0.028	-0.265	S
G4	NO ₃ ⁻	0.472	0.469	0.467	0.034	0.147	S
G1	Na ⁺	0.22	0.254	0.253	0.015	-2.21	S
G2	Na ⁺	0.29	0.34	0.335	0.024	-1.924	S
G3	Na ⁺	0.28	0.308	0.303	0.025	-0.921	S
G4	Na ⁺	0.29	0.318	0.314	0.02	-1.242	S
G1	Mg ²⁺	0.11	0.114	0.117	0.013	-0.544	S
G2	Mg ²⁺	0.1	0.103	0.011	0.011	-0.601	S
G3	Mg ²⁺	0.12	0.124	0.128	0.01	-0.766	S
G4	Mg ²⁺	0.13	0.134	0.138	0.009	-0.902	S
G1	Cl ⁻	0.104	0.116	0.129	0.046	-0.457	S
G2	Cl ⁻	0.183	0.193	0.192	0.038	-0.193	S
G3	Cl ⁻	0.299	0.309	0.305	0.03	-0.188	S
G4	Cl ⁻	0.249	0.27	0.27	0.03	-0.342	S
G1	Ca ²⁺	0.09	0.089	0.097	0.029	-0.24	S
G2	Ca ²⁺	0.12	0.128	0.133	0.027	-0.484	S
G3	Ca ²⁺	0.17	0.179	0.183	0.025	-0.52	S
G4	Ca ²⁺	0.21	0.204	0.21	0.03	0.013	S
G1	K ⁺	0.17	0.17	0.171	0.028	-0.023	S
G2	K ⁺	0.24	0.238	0.235	0.032	0.157	S
G3	K ⁺	0.27	0.272	0.267	0.038	0.079	S
G4	K ⁺	0.17	0.17	0.167	0.028	0.095	S
G1	pH	4.3	4.27	4.326	0.043	-0.602	S
G2	pH	4.35	4.33	4.358	0.053	-0.15	S
G3	pH	4.87	4.88	4.877	0.071	-0.091	S
G4	pH	4.72	4.7	4.736	0.055	-0.283	S
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		B

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.108	1.076	1.077	0.055	0.566	S
G2	SO ₄ ²⁻	1.037	0.987	0.997	0.058	0.691	S
G3	SO ₄ ²⁻	0.538	0.52	0.528	0.025	0.399	S
G4	SO ₄ ²⁻	0.683	0.661	0.67	0.038	0.339	S
G1	NH ₄ ⁺	0.185	0.187	0.193	0.019	-0.455	S
G2	NH ₄ ⁺	0.208	0.207	0.211	0.02	-0.17	S
G3	NH ₄ ⁺	0.311	0.321	0.327	0.023	-0.696	S
G4	NH ₄ ⁺	0.312	0.326	0.329	0.023	-0.753	S
G1	NO ₃ ⁻	0.362	0.357	0.355	0.02	0.329	S
G2	NO ₃ ⁻	0.422	0.417	0.42	0.025	0.088	S
G3	NO ₃ ⁻	0.488	0.484	0.483	0.028	0.164	S
G4	NO ₃ ⁻	0.476	0.469	0.467	0.034	0.264	S
G1	Na ⁺	0.257	0.254	0.253	0.015	0.29	S
G2	Na ⁺	0.346	0.34	0.335	0.024	0.455	S
G3	Na ⁺	0.306	0.308	0.303	0.025	0.103	S
G4	Na ⁺	0.32	0.318	0.314	0.02	0.28	S
G1	Mg ²⁺	0.117	0.114	0.117	0.013	-0.001	S
G2	Mg ²⁺	0.107	0.103	0.101	0.011	0.026	S
G3	Mg ²⁺	0.128	0.124	0.128	0.01	0.047	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻	0.115	0.116	0.129	0.046	-0.231	S
G2	Cl ⁻	0.192	0.193	0.192	0.038	0.001	S
G3	Cl ⁻	0.31	0.309	0.305	0.03	0.178	S
G4	Cl ⁻	0.273	0.27	0.27	0.03	0.166	S
G1	Ca ²⁺	0.093	0.089	0.097	0.029	-0.138	S
G2	Ca ²⁺	0.132	0.128	0.133	0.027	-0.041	S
G3	Ca ²⁺	0.187	0.179	0.183	0.025	0.155	S
G4	Ca ²⁺	0.212	0.204	0.21	0.03	0.079	S
G1	K ⁺	0.179	0.17	0.171	0.028	0.296	S
G2	K ⁺	0.259	0.238	0.235	0.032	0.749	S
G3	K ⁺	0.292	0.272	0.267	0.038	0.663	S
G4	K ⁺	0.177	0.17	0.167	0.028	0.349	S
G1	pH	4.28	4.27	4.326	0.043	-1.071	S
G2	pH	4.34	4.33	4.358	0.053	-0.339	S
G3	pH	4.85	4.88	4.877	0.071	-0.372	S
G4	pH	4.7	4.7	4.736	0.055	-0.645	S
G1	Cond	27.9	27.9	27.503	2.113	0.188	S
G2	Cond	26.4	27	26.521	1.154	-0.105	S
G3	Cond	14.4	14	14.539	0.624	-0.223	S
G4	Cond	17.1	17	17.033	0.718	0.094	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 – 30th 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 ^x
G1	SO ₄ ²⁻	1.121	1.076	1.077	0.055	0.804	S
G2	SO ₄ ²⁻	1.064	0.987	0.997	0.058	1.156	S
G3	SO ₄ ²⁻	0.558	0.52	0.528	0.025	1.201	S
G4	SO ₄ ²⁻	0.695	0.661	0.67	0.038	0.657	S
G1	NH ₄ ⁺	0.182	0.187	0.193	0.019	-0.616	S
G2	NH ₄ ⁺	0.201	0.207	0.211	0.02	-0.519	S
G3	NH ₄ ⁺	0.31	0.321	0.327	0.023	-0.741	S
G4	NH ₄ ⁺	0.311	0.326	0.329	0.023	-0.798	S
G1	NO ₃ ⁻	0.378	0.357	0.355	0.02	1.131	S
G2	NO ₃ ⁻	0.423	0.417	0.42	0.025	0.128	S
G3	NO ₃ ⁻	0.482	0.484	0.483	0.028	-0.05	S
G4	NO ₃ ⁻	0.473	0.469	0.467	0.034	0.177	S
G1	Na ⁺	0.224	0.254	0.253	0.015	-1.94	S
G2	Na ⁺	0.314	0.34	0.335	0.024	-0.904	S
G3	Na ⁺	0.282	0.308	0.303	0.025	-0.842	S
G4	Na ⁺	0.293	0.318	0.314	0.02	-1.09	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.105	0.103	0.101	0.011	-0.153	S
G3	Mg ²⁺	0.126	0.124	0.128	0.01	-0.156	S
G4	Mg ²⁺	0.134	0.134	0.138	0.009	-0.462	S
G1	Cl ⁻	0.114	0.116	0.129	0.046	-0.252	S
G2	Cl ⁻	0.191	0.193	0.192	0.038	-0.02	S
G3	Cl ⁻	0.301	0.309	0.305	0.03	-0.122	S
G4	Cl ⁻	0.267	0.27	0.27	0.03	0.039	S
G1	Ca ²⁺	0.092	0.089	0.097	0.029	-0.172	S
G2	Ca ²⁺	0.116	0.128	0.133	0.027	-0.632	S
G3	Ca ²⁺	0.183	0.179	0.183	0.025	-0.004	S
G4	Ca ²⁺	0.194	0.204	0.21	0.03	-0.521	S
G1	K ⁺	0.157	0.17	0.171	0.028	-0.483	S
G2	K ⁺	0.227	0.238	0.235	0.032	-0.249	S
G3	K ⁺	0.265	0.272	0.267	0.038	-0.054	S
G4	K ⁺	0.16	0.17	0.167	0.028	-0.269	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.25	4.33	4.358	0.053	-2.042	S
G3	pH	4.72	4.88	4.877	0.071	-2.198	Q
G4	pH	4.58	4.7	4.736	0.055	-2.815	Q
G1	Cond	27.7	27.9	27.503	2.113	0.093	S
G2	Cond	26.2	27	26.521	1.154	-0.278	S
G3	Cond	14.8	14	14.539	0.624	0.418	S
G4	Cond	17.1	17	17.033	0.718	0.094	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.072	1.076	1.077	0.055	-0.091	S
G2	SO ₄ ²⁻	0.988	0.987	0.997	0.058	-0.152	S
G3	SO ₄ ²⁻	0.519	0.52	0.528	0.025	-0.364	S
G4	SO ₄ ²⁻	0.659	0.661	0.67	0.038	-0.299	S
G1	NH ₄ ⁺	0.18	0.187	0.193	0.019	-0.724	S
G2	NH ₄ ⁺	0.194	0.207	0.211	0.02	-0.869	S
G3	NH ₄ ⁺	0.304	0.321	0.327	0.023	-1.007	S
G4	NH ₄ ⁺	0.305	0.326	0.329	0.023	-1.063	S
G1	NO ₃ ⁻	0.035	0.357	0.355	0.02	-16.059	U
G2	NO ₃ ⁻	0.405	0.417	0.42	0.025	-0.603	S
G3	NO ₃ ⁻	0.474	0.484	0.483	0.028	-0.336	S
G4	NO ₃ ⁻	0.458	0.469	0.467	0.034	-0.26	S
G1	Na ⁺	0.241	0.254	0.253	0.015	-0.791	S
G2	Na ⁺	0.323	0.34	0.335	0.024	-0.522	S
G3	Na ⁺	0.294	0.308	0.303	0.025	-0.369	S
G4	Na ⁺	0.305	0.318	0.314	0.02	-0.481	S
G1	Mg ²⁺	0.113	0.114	0.117	0.013	-0.312	S
G2	Mg ²⁺	0.105	0.103	0.011	0.011	-0.153	S
G3	Mg ²⁺	0.125	0.124	0.128	0.01	-0.258	S
G4	Mg ²⁺	0.127	0.134	0.138	0.009	-1.232	S
G1	Cl ⁻	0.111	0.116	0.129	0.046	-0.313	S
G2	Cl ⁻	0.216	0.193	0.192	0.038	0.52	S
G3	Cl ⁻	0.263	0.309	0.305	0.03	-1.388	S
G4	Cl ⁻	0.253	0.27	0.27	0.03	-0.257	S
G1	Ca ²⁺	< 0.010	0.089	0.097	0.029	-3.126	U
G2	Ca ²⁺	< 0.010	0.128	0.133	0.027	-4.731	U
G3	Ca ²⁺	0.029	0.179	0.183	0.025	-6.114	U
G4	Ca ²⁺	0.062	0.204	0.21	0.03	-4.923	U
G1	K ⁺	0.18	0.17	0.171	0.028	0.331	S
G2	K ⁺	0.258	0.238	0.235	0.032	0.718	S
G3	K ⁺	0.294	0.272	0.267	0.038	0.716	S
G4	K ⁺	0.17	0.17	0.167	0.028	0.095	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.38	4.33	4.358	0.053	0.418	S
G3	pH	4.9	4.88	4.877	0.071	0.33	S
G4	pH	4.75	4.7	4.736	0.055	0.259	S
G1	Cond	29.4	27.9	27.503	2.113	0.898	S
G2	Cond	27.51	27	26.521	1.154	0.857	S
G3	Cond	15.15	14	14.539	0.624	0.979	S
G4	Cond	17.7	17	17.033	0.718	0.929	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.11	1.076	1.077	0.055	0.603	S
G2	SO ₄ ²⁻	1.02	0.987	0.997	0.058	0.399	S
G3	SO ₄ ²⁻	0.54	0.52	0.528	0.025	0.479	S
G4	SO ₄ ²⁻	0.68	0.661	0.67	0.038	0.259	S
G1	NH ₄ ⁺	0.18	0.187	0.193	0.019	-0.724	S
G2	NH ₄ ⁺	0.2	0.207	0.211	0.02	-0.569	S
G3	NH ₄ ⁺	0.32	0.321	0.327	0.023	-0.297	S
G4	NH ₄ ⁺	0.32	0.326	0.329	0.023	-0.4	S
G1	NO ₃ ⁻	0.35	0.357	0.355	0.02	-0.272	S
G2	NO ₃ ⁻	0.41	0.417	0.42	0.025	-0.4	S
G3	NO ₃ ⁻	0.48	0.484	0.483	0.028	-0.122	S
G4	NO ₃ ⁻	0.47	0.469	0.467	0.034	0.089	S
G1	Na ⁺	0.24	0.254	0.253	0.015	-0.859	S
G2	Na ⁺	0.32	0.34	0.335	0.024	-0.65	S
G3	Na ⁺	0.29	0.308	0.303	0.025	-0.527	S
G4	Na ⁺	0.3	0.318	0.314	0.02	-0.735	S
G1	Mg ²⁺	0.109	0.114	0.117	0.013	-0.622	S
G2	Mg ²⁺	0.099	0.103	0.011	0.011	-0.69	S
G3	Mg ²⁺	0.122	0.124	0.128	0.01	-0.563	S
G4	Mg ²⁺	0.134	0.134	0.138	0.009	-0.462	S
G1	Cl ⁻	0.12	0.116	0.129	0.046	-0.128	S
G2	Cl ⁻	0.18	0.193	0.192	0.038	-0.258	S
G3	Cl ⁻	0.3	0.309	0.305	0.03	-0.155	S
G4	Cl ⁻	0.26	0.27	0.27	0.03	-0.109	S
G1	Ca ²⁺	0.13	0.089	0.097	0.029	1.118	U
G2	Ca ²⁺	0.15	0.128	0.133	0.027	0.624	Q
G3	Ca ²⁺	0.16	0.179	0.183	0.025	-0.916	S
G4	Ca ²⁺	0.18	0.204	0.21	0.03	-0.988	S
G1	K ⁺	0.17	0.17	0.171	0.028	-0.023	S
G2	K ⁺	0.24	0.238	0.235	0.032	0.157	S
G3	K ⁺	0.27	0.272	0.267	0.038	0.079	S
G4	K ⁺	0.18	0.17	0.167	0.028	0.458	S
G1	pH	4.29	4.27	4.326	0.043	-0.837	S
G2	pH	4.35	4.33	4.358	0.053	-0.15	S
G3	pH	4.82	4.88	4.877	0.071	-0.794	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	25.67	27.9	27.503	2.113	-0.868	S
G2	Cond	26.27	27	26.521	1.154	-0.218	S
G3	Cond	14.04	14	14.539	0.624	-0.8	S
G4	Cond	16.89	17	17.033	0.718	-0.199	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

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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.067	1.076	1.077	0.055	-0.183	S
G2	SO ₄ ²⁻	0.99	0.987	0.997	0.058	-0.118	S
G3	SO ₄ ²⁻	0.52	0.52	0.528	0.025	-0.324	S
G4	SO ₄ ²⁻	0.649	0.661	0.67	0.038	-0.565	S
G1	NH ₄ ⁺	0.2	0.187	0.193	0.019	0.353	S
G2	NH ₄ ⁺	0.217	0.207	0.211	0.02	0.28	S
G3	NH ₄ ⁺	0.333	0.321	0.327	0.023	0.28	S
G4	NH ₄ ⁺	0.32	0.326	0.329	0.023	-0.4	S
G1	NO ₃ ⁻	0.36	0.357	0.355	0.02	0.229	S
G2	NO ₃ ⁻	0.422	0.417	0.42	0.025	0.088	S
G3	NO ₃ ⁻	0.485	0.484	0.483	0.028	0.057	S
G4	NO ₃ ⁻	0.469	0.469	0.467	0.034	0.06	S
G1	Na ⁺	0.265	0.254	0.253	0.015	0.83	S
G2	Na ⁺	0.356	0.34	0.335	0.024	0.88	S
G3	Na ⁺	0.317	0.308	0.303	0.025	0.536	S
G4	Na ⁺	0.327	0.318	0.314	0.02	0.635	S
G1	Mg ²⁺	0.129	0.114	0.117	0.013	0.929	S
G2	Mg ²⁺	0.108	0.103	0.101	0.011	0.116	S
G3	Mg ²⁺	0.13	0.124	0.128	0.01	0.25	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻	0.118	0.116	0.129	0.046	-0.169	S
G2	Cl ⁻	0.206	0.193	0.192	0.038	0.304	S
G3	Cl ⁻	0.315	0.309	0.305	0.03	0.345	S
G4	Cl ⁻	0.269	0.27	0.27	0.03	0.081	S
G1	Ca ²⁺	0.148	0.089	0.097	0.029	1.73	U
G2	Ca ²⁺	0.144	0.128	0.133	0.027	0.403	S
G3	Ca ²⁺	0.192	0.179	0.183	0.025	0.353	S
G4	Ca ²⁺	0.224	0.204	0.21	0.03	0.48	S
G1	K ⁺	0.178	0.17	0.171	0.028	0.26	S
G2	K ⁺	0.258	0.238	0.235	0.032	0.718	S
G3	K ⁺	0.283	0.272	0.267	0.038	0.424	S
G4	K ⁺	0.187	0.17	0.167	0.028	0.713	S
G1	pH	4.31	4.27	4.326	0.043	-0.368	S
G2	pH	4.34	4.33	4.358	0.053	-0.339	S
G3	pH	4.77	4.88	4.877	0.071	-1.496	Q
G4	pH	4.7	4.7	4.736	0.055	-0.645	S
G1	Cond	27.8	27.9	27.503	2.113	0.141	S
G2	Cond	25.9	27	26.521	1.154	-0.539	S
G3	Cond	13.9	14	14.539	0.624	-1.024	S
G4	Cond	16.3	17	17.033	0.718	-1.02	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 Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.081	1.076	1.077	0.055	0.073	S
G2	SO ₄ ²⁻	0.989	0.987	0.997	0.058	-0.135	S
G3	SO ₄ ²⁻	0.529	0.52	0.528	0.025	0.038	S
G4	SO ₄ ²⁻	0.655	0.661	0.67	0.038	-0.405	S
G1	NH ₄ ⁺	0.187	0.187	0.193	0.019	-0.347	S
G2	NH ₄ ⁺	0.21	0.207	0.211	0.02	-0.07	S
G3	NH ₄ ⁺	0.308	0.321	0.327	0.023	-0.829	S
G4	NH ₄ ⁺	0.323	0.326	0.329	0.023	-0.267	S
G1	NO ₃ ⁻	0.352	0.357	0.355	0.02	-0.172	S
G2	NO ₃ ⁻	0.405	0.417	0.42	0.025	-0.603	S
G3	NO ₃ ⁻	0.479	0.484	0.483	0.028	-0.157	S
G4	NO ₃ ⁻	0.462	0.469	0.467	0.034	-0.144	S
G1	Na ⁺	0.245	0.254	0.253	0.015	-0.521	S
G2	Na ⁺	0.323	0.34	0.335	0.024	-0.522	S
G3	Na ⁺	0.292	0.308	0.303	0.025	-0.448	S
G4	Na ⁺	0.304	0.318	0.314	0.02	-0.532	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.106	0.103	0.101	0.011	-0.063	S
G3	Mg ²⁺	0.126	0.124	0.128	0.01	-0.156	S
G4	Mg ²⁺	0.136	0.134	0.138	0.009	-0.243	S
G1	Cl ⁻	0.116	0.116	0.129	0.046	-0.211	S
G2	Cl ⁻	0.187	0.193	0.192	0.038	-0.107	S
G3	Cl ⁻	0.303	0.309	0.305	0.03	-0.055	S
G4	Cl ⁻	0.266	0.27	0.27	0.03	0.018	S
G1	Ca ²⁺	0.091	0.089	0.097	0.029	-0.206	S
G2	Ca ²⁺	0.136	0.128	0.133	0.027	0.107	S
G3	Ca ²⁺	0.18	0.179	0.183	0.025	-0.123	S
G4	Ca ²⁺	0.203	0.204	0.21	0.03	-0.221	S
G1	K ⁺	0.164	0.17	0.171	0.028	-0.235	S
G2	K ⁺	0.232	0.238	0.235	0.032	-0.093	S
G3	K ⁺	0.26	0.272	0.267	0.038	-0.187	S
G4	K ⁺	0.165	0.17	0.167	0.028	-0.087	S
G1	pH	4.31	4.27	4.326	0.043	-0.368	S
G2	pH	4.36	4.33	4.358	0.053	0.04	S
G3	pH	4.88	4.88	4.877	0.071	0.049	S
G4	pH	4.72	4.7	4.736	0.055	-0.283	S
G1	Cond	28	27.9	27.503	2.113	0.235	S
G2	Cond	26.5	27	26.521	1.154	-0.018	S
G3	Cond	14.5	14	14.539	0.624	-0.063	S
G4	Cond	17.1	17	17.033	0.718	0.094	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.98	1.076	1.077	0.055	-1.772	S
G2	SO ₄ ²⁻	0.93	0.987	0.997	0.058	-1.151	S
G3	SO ₄ ²⁻	0.57	0.52	0.528	0.025	1.682	S
G4	SO ₄ ²⁻	0.69	0.661	0.67	0.038	0.525	S
G1	NH ₄ ⁺	0.229	0.187	0.193	0.019	1.915	Q
G2	NH ₄ ⁺	0.248	0.207	0.211	0.02	1.828	Q
G3	NH ₄ ⁺	0.369	0.321	0.327	0.023	1.879	S
G4	NH ₄ ⁺	0.371	0.326	0.329	0.023	1.856	S
G1	NO ₃ ⁻	0.37	0.357	0.355	0.02	0.73	S
G2	NO ₃ ⁻	0.47	0.417	0.42	0.025	2.038	Q
G3	NO ₃ ⁻	0.52	0.484	0.483	0.028	1.307	S
G4	NO ₃ ⁻	0.51	0.469	0.467	0.034	1.254	S
G1	Na ⁺	0.279	0.254	0.253	0.015	1.776	S
G2	Na ⁺	0.368	0.34	0.335	0.024	1.389	S
G3	Na ⁺	0.332	0.308	0.303	0.025	1.127	S
G4	Na ⁺	0.344	0.318	0.314	0.02	1.497	S
G1	Mg ²⁺	0.116	0.114	0.117	0.013	-0.079	S
G2	Mg ²⁺	0.107	0.103	0.101	0.011	0.026	S
G3	Mg ²⁺	0.127	0.124	0.128	0.01	-0.055	S
G4	Mg ²⁺	0.139	0.134	0.138	0.009	0.087	S
G1	Cl ⁻	< 0.300	0.116	0.129	0.046		B
G2	Cl ⁻	< 0.300	0.193	0.192	0.038		B
G3	Cl ⁻	0.3	0.309	0.305	0.03	-0.155	S
G4	Cl ⁻	< 0.300	0.27	0.27	0.03		B
G1	Ca ²⁺	0.114	0.089	0.097	0.029	0.575	U
G2	Ca ²⁺	0.152	0.128	0.133	0.027	0.698	Q
G3	Ca ²⁺	0.199	0.179	0.183	0.025	0.631	S
G4	Ca ²⁺	0.218	0.204	0.21	0.03	0.28	S
G1	K ⁺	0.19	0.17	0.171	0.028	0.685	S
G2	K ⁺	0.257	0.238	0.235	0.032	0.687	S
G3	K ⁺	0.293	0.272	0.267	0.038	0.689	S
G4	K ⁺	0.19	0.17	0.167	0.028	0.822	S
G1	pH	4.31	4.27	4.326	0.043	-0.368	S
G2	pH	4.39	4.33	4.358	0.053	0.607	S
G3	pH	4.92	4.88	4.877	0.071	0.611	S
G4	pH	4.75	4.7	4.736	0.055	0.259	S
G1	Cond	25.9	27.9	27.503	2.113	-0.759	S
G2	Cond	24.9	27	26.521	1.154	-1.405	S
G3	Cond	13.7	14	14.539	0.624	-1.345	S
G4	Cond	16.2	17	17.033	0.718	-1.159	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.08	1.076	1.077	0.055	0.055	S
G2	SO ₄ ²⁻	1	0.987	0.997	0.058	0.054	S
G3	SO ₄ ²⁻	0.528	0.52	0.528	0.025	-0.003	S
G4	SO ₄ ²⁻	0.666	0.661	0.67	0.038	-0.113	S
G1	NH ₄ ⁺	0.189	0.187	0.193	0.019	-0.239	S
G2	NH ₄ ⁺	0.206	0.207	0.211	0.02	-0.27	S
G3	NH ₄ ⁺	0.33	0.321	0.327	0.023	0.147	S
G4	NH ₄ ⁺	0.328	0.326	0.329	0.023	-0.046	S
G1	NO ₃ ⁻	0.36	0.357	0.355	0.02	0.229	S
G2	NO ₃ ⁻	0.423	0.417	0.42	0.025	0.128	S
G3	NO ₃ ⁻	0.486	0.484	0.483	0.028	0.093	S
G4	NO ₃ ⁻	0.475	0.469	0.467	0.034	0.235	S
G1	Na ⁺	0.26	0.254	0.253	0.015	0.492	S
G2	Na ⁺	0.348	0.34	0.335	0.024	0.54	S
G3	Na ⁺	0.311	0.308	0.303	0.025	0.3	S
G4	Na ⁺	0.327	0.318	0.314	0.02	0.635	S
G1	Mg ²⁺	0.118	0.114	0.117	0.013	0.076	S
G2	Mg ²⁺	0.107	0.103	0.101	0.011	0.026	S
G3	Mg ²⁺	0.132	0.124	0.128	0.01	0.453	S
G4	Mg ²⁺	0.14	0.134	0.138	0.009	0.197	S
G1	Cl ⁻	0.112	0.116	0.129	0.046	-0.293	S
G2	Cl ⁻	0.191	0.193	0.192	0.038	-0.02	S
G3	Cl ⁻	0.308	0.309	0.305	0.03	0.111	S
G4	Cl ⁻	0.269	0.27	0.27	0.03	0.081	S
G1	Ca ²⁺	0.098	0.089	0.097	0.029	0.032	S
G2	Ca ²⁺	0.133	0.128	0.133	0.027	-0.004	S
G3	Ca ²⁺	0.188	0.179	0.183	0.025	0.195	S
G4	Ca ²⁺	0.211	0.204	0.21	0.03	0.046	S
G1	K ⁺	0.177	0.17	0.171	0.028	0.225	S
G2	K ⁺	0.247	0.238	0.235	0.032	0.375	S
G3	K ⁺	0.281	0.272	0.267	0.038	0.371	S
G4	K ⁺	0.182	0.17	0.167	0.028	0.531	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.38	4.33	4.358	0.053	0.418	S
G3	pH	4.89	4.88	4.877	0.071	0.19	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	28.3	27.9	27.503	2.113	0.377	S
G2	Cond	26.9	27	26.521	1.154	0.328	S
G3	Cond	14.8	14	14.539	0.624	0.418	S
G4	Cond	17.4	17	17.033	0.718	0.511	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.126	1.076	1.077	0.055	0.895	S
G2	SO ₄ ²⁻	1.037	0.987	0.997	0.058	0.691	S
G3	SO ₄ ²⁻	0.543	0.52	0.528	0.025	0.599	S
G4	SO ₄ ²⁻	0.692	0.661	0.67	0.038	0.578	S
G1	NH ₄ ⁺	0.191	0.187	0.193	0.019	-0.132	S
G2	NH ₄ ⁺	0.21	0.207	0.211	0.02	-0.07	S
G3	NH ₄ ⁺	0.325	0.321	0.327	0.023	-0.075	S
G4	NH ₄ ⁺	0.326	0.326	0.329	0.023	-0.134	S
G1	NO ₃ ⁻	0.352	0.357	0.355	0.02	-0.172	S
G2	NO ₃ ⁻	0.417	0.417	0.42	0.025	-0.115	S
G3	NO ₃ ⁻	0.48	0.484	0.483	0.028	-0.122	S
G4	NO ₃ ⁻	0.47	0.469	0.467	0.034	0.089	S
G1	Na ⁺	0.247	0.254	0.253	0.015	-0.386	S
G2	Na ⁺	0.333	0.34	0.335	0.024	-0.097	S
G3	Na ⁺	0.3	0.308	0.303	0.025	-0.133	S
G4	Na ⁺	0.313	0.318	0.314	0.02	-0.075	S
G1	Mg ²⁺	0.117	0.114	0.117	0.013	-0.001	S
G2	Mg ²⁺	0.106	0.103	0.101	0.011	-0.063	S
G3	Mg ²⁺	0.128	0.124	0.128	0.01	0.047	S
G4	Mg ²⁺	0.139	0.134	0.138	0.009	0.087	S
G1	Cl ⁻	0.115	0.116	0.129	0.046	-0.231	S
G2	Cl ⁻	0.192	0.193	0.192	0.038	0.001	S
G3	Cl ⁻	0.297	0.309	0.305	0.03	-0.255	S
G4	Cl ⁻	0.264	0.27	0.27	0.03	-0.024	S
G1	Ca ²⁺	0.103	0.089	0.097	0.029	0.202	Q
G2	Ca ²⁺	0.135	0.128	0.133	0.027	0.07	S
G3	Ca ²⁺	0.191	0.179	0.183	0.025	0.314	S
G4	Ca ²⁺	0.214	0.204	0.21	0.03	0.146	S
G1	K ⁺	0.172	0.17	0.171	0.028	0.048	S
G2	K ⁺	0.247	0.238	0.235	0.032	0.375	S
G3	K ⁺	0.28	0.272	0.267	0.038	0.344	S
G4	K ⁺	0.175	0.17	0.167	0.028	0.277	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.36	4.33	4.358	0.053	0.04	S
G3	pH	4.87	4.88	4.877	0.071	-0.091	S
G4	pH	4.73	4.7	4.736	0.055	-0.102	S
G1	Cond	29.03	27.9	27.503	2.113	0.723	S
G2	Cond	27.49	27	26.521	1.154	0.84	S
G3	Cond	14.89	14	14.539	0.624	0.562	S
G4	Cond	17.51	17	17.033	0.718	0.664	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.275	1.076	1.077	0.055	3.617	Q
G2	SO ₄ ²⁻	1.174	0.987	0.997	0.058	3.05	Q
G3	SO ₄ ²⁻	0.593	0.52	0.528	0.025	2.605	Q
G4	SO ₄ ²⁻	0.765	0.661	0.67	0.038	2.517	Q
G1	NH ₄ ⁺	0.25	0.187	0.193	0.019	3.045	U
G2	NH ₄ ⁺	0.261	0.207	0.211	0.02	2.477	U
G3	NH ₄ ⁺	0.39	0.321	0.327	0.023	2.811	Q
G4	NH ₄ ⁺	0.4	0.326	0.329	0.023	3.138	Q
G1	NO ₃ ⁻	0.419	0.357	0.355	0.02	3.186	Q
G2	NO ₃ ⁻	0.494	0.417	0.42	0.025	3.013	Q
G3	NO ₃ ⁻	0.583	0.484	0.483	0.028	3.558	U
G4	NO ₃ ⁻	0.574	0.469	0.467	0.034	3.117	U
G1	Na ⁺	0.285	0.254	0.253	0.015	2.181	S
G2	Na ⁺	0.396	0.34	0.335	0.024	2.579	Q
G3	Na ⁺	0.305	0.308	0.303	0.025	0.064	S
G4	Na ⁺	0.3	0.318	0.314	0.02	-0.735	S
G1	Mg ²⁺	0.13	0.114	0.117	0.013	1.007	S
G2	Mg ²⁺	0.112	0.103	0.101	0.011	0.474	S
G3	Mg ²⁺	0.141	0.124	0.128	0.01	1.366	S
G4	Mg ²⁺	0.152	0.134	0.138	0.009	1.515	S
G1	Cl ⁻	0.139	0.116	0.129	0.046	0.262	Q
G2	Cl ⁻	0.206	0.193	0.192	0.038	0.304	S
G3	Cl ⁻	0.333	0.309	0.305	0.03	0.944	S
G4	Cl ⁻	0.282	0.27	0.27	0.03	0.356	S
G1	Ca ²⁺	0.199	0.089	0.097	0.029	3.461	U
G2	Ca ²⁺	0.2	0.128	0.133	0.027	2.471	U
G3	Ca ²⁺	0.242	0.179	0.183	0.025	2.337	U
G4	Ca ²⁺	0.297	0.204	0.21	0.03	2.914	U
G1	K ⁺	0.195	0.17	0.171	0.028	0.862	S
G2	K ⁺	0.274	0.238	0.235	0.032	1.217	Q
G3	K ⁺	0.294	0.272	0.267	0.038	0.716	S
G4	K ⁺	0.189	0.17	0.167	0.028	0.786	S
G1	pH	4.36	4.27	4.326	0.043	0.804	S
G2	pH	4.45	4.33	4.358	0.053	1.743	Q
G3	pH	4.98	4.88	4.877	0.071	1.454	Q
G4	pH	4.83	4.7	4.736	0.055	1.706	Q
G1	Cond	25.5	27.9	27.503	2.113	-0.948	S
G2	Cond	24.2	27	26.521	1.154	-2.012	S
G3	Cond	13.9	14	14.539	0.624	-1.024	S
G4	Cond	16.6	17	17.033	0.718	-0.602	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.058	1.076	1.077	0.055	-0.347	S
G2	SO ₄ ²⁻	0.97	0.987	0.997	0.058	-0.462	S
G3	SO ₄ ²⁻	0.526	0.52	0.528	0.025	-0.083	S
G4	SO ₄ ²⁻	0.663	0.661	0.67	0.038	-0.193	S
G1	NH ₄ ⁺	0.197	0.187	0.193	0.019	0.192	S
G2	NH ₄ ⁺	0.211	0.207	0.211	0.02	-0.02	S
G3	NH ₄ ⁺	0.33	0.321	0.327	0.023	0.147	S
G4	NH ₄ ⁺	0.34	0.326	0.329	0.023	0.485	S
G1	NO ₃ ⁻	0.365	0.357	0.355	0.02	0.479	S
G2	NO ₃ ⁻	0.426	0.417	0.42	0.025	0.25	S
G3	NO ₃ ⁻	0.492	0.484	0.483	0.028	0.307	S
G4	NO ₃ ⁻	0.478	0.469	0.467	0.034	0.322	S
G1	Na ⁺	0.261	0.254	0.253	0.015	0.56	S
G2	Na ⁺	0.352	0.34	0.335	0.024	0.71	S
G3	Na ⁺	0.309	0.308	0.303	0.025	0.221	S
G4	Na ⁺	0.319	0.318	0.314	0.02	0.229	S
G1	Mg ²⁺	0.12	0.114	0.117	0.013	0.231	S
G2	Mg ²⁺	0.111	0.103	0.101	0.011	0.385	S
G3	Mg ²⁺	0.127	0.124	0.128	0.01	-0.055	S
G4	Mg ²⁺	0.136	0.134	0.138	0.009	-0.243	S
G1	Cl ⁻	0.124	0.116	0.129	0.046	-0.046	S
G2	Cl ⁻	0.204	0.193	0.192	0.038	0.26	S
G3	Cl ⁻	0.324	0.309	0.305	0.03	0.645	S
G4	Cl ⁻	0.278	0.27	0.27	0.03	0.272	S
G1	Ca ²⁺	0.098	0.089	0.097	0.029	0.032	S
G2	Ca ²⁺	0.132	0.128	0.133	0.027	-0.041	S
G3	Ca ²⁺	0.172	0.179	0.183	0.025	-0.44	S
G4	Ca ²⁺	0.199	0.204	0.21	0.03	-0.354	S
G1	K ⁺	0.151	0.17	0.171	0.028	-0.695	S
G2	K ⁺	0.215	0.238	0.235	0.032	-0.623	S
G3	K ⁺	0.236	0.272	0.267	0.038	-0.823	S
G4	K ⁺	0.151	0.17	0.167	0.028	-0.596	S
G1	pH	4.29	4.27	4.326	0.043	-0.837	S
G2	pH	4.32	4.33	4.358	0.053	-0.717	S
G3	pH	4.82	4.88	4.877	0.071	-0.794	S
G4	pH	4.68	4.7	4.736	0.055	-1.007	S
G1	Cond	27.9	27.9	27.503	2.113	0.188	S
G2	Cond	26.45	27	26.521	1.154	-0.062	S
G3	Cond	14.34	14	14.539	0.624	-0.319	S
G4	Cond	17.22	17	17.033	0.718	0.261	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.044	1.076	1.077	0.055	-0.603	S
G2	SO ₄ ²⁻	0.958	0.987	0.997	0.058	-0.669	S
G3	SO ₄ ²⁻	0.504	0.52	0.528	0.025	-0.965	S
G4	SO ₄ ²⁻	0.645	0.661	0.67	0.038	-0.671	S
G1	NH ₄ ⁺	0.173	0.187	0.193	0.019	-1.101	S
G2	NH ₄ ⁺	0.204	0.207	0.211	0.02	-0.37	S
G3	NH ₄ ⁺	0.325	0.321	0.327	0.023	-0.075	S
G4	NH ₄ ⁺	0.326	0.326	0.329	0.023	-0.134	S
G1	NO ₃ ⁻	0.346	0.357	0.355	0.02	-0.473	S
G2	NO ₃ ⁻	0.397	0.417	0.42	0.025	-0.928	S
G3	NO ₃ ⁻	0.468	0.484	0.483	0.028	-0.55	S
G4	NO ₃ ⁻	0.451	0.469	0.467	0.034	-0.464	S
G1	Na ⁺	0.272	0.254	0.253	0.015	1.303	S
G2	Na ⁺	0.343	0.34	0.335	0.024	0.327	S
G3	Na ⁺	0.319	0.308	0.303	0.025	0.615	S
G4	Na ⁺	0.333	0.318	0.314	0.02	0.939	S
G1	Mg ²⁺	0.118	0.114	0.117	0.013	0.076	S
G2	Mg ²⁺	0.108	0.103	0.011	0.011	0.116	S
G3	Mg ²⁺	0.135	0.124	0.128	0.01	0.757	S
G4	Mg ²⁺	0.141	0.134	0.138	0.009	0.307	S
G1	Cl ⁻	0.101	0.116	0.129	0.046	-0.519	S
G2	Cl ⁻	0.186	0.193	0.192	0.038	-0.128	S
G3	Cl ⁻	0.289	0.309	0.305	0.03	-0.522	S
G4	Cl ⁻	0.256	0.27	0.27	0.03	-0.194	S
G1	Ca ²⁺	0.096	0.089	0.097	0.029	-0.036	S
G2	Ca ²⁺	0.129	0.128	0.133	0.027	-0.152	S
G3	Ca ²⁺	0.18	0.179	0.183	0.025	-0.123	S
G4	Ca ²⁺	0.209	0.204	0.21	0.03	-0.021	S
G1	K ⁺	0.171	0.17	0.171	0.028	0.013	S
G2	K ⁺	0.237	0.238	0.235	0.032	0.063	S
G3	K ⁺	0.272	0.272	0.267	0.038	0.132	S
G4	K ⁺	0.173	0.17	0.167	0.028	0.204	S
G1	pH	4.39	4.27	4.326	0.043	1.508	Q
G2	pH	4.4	4.33	4.358	0.053	0.797	S
G3	pH	4.86	4.88	4.877	0.071	-0.232	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	29	27.9	27.503	2.113	0.709	S
G2	Cond	28	27	26.521	1.154	1.282	S
G3	Cond	15	14	14.539	0.624	0.738	S
G4	Cond	18	17	17.033	0.718	1.346	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.071	1.076	1.077	0.055	-0.11	S
G2	SO ₄ ²⁻	0.995	0.987	0.997	0.058	-0.032	S
G3	SO ₄ ²⁻	0.529	0.52	0.528	0.025	0.038	S
G4	SO ₄ ²⁻	0.668	0.661	0.67	0.038	-0.06	S
G1	NH ₄ ⁺	0.188	0.187	0.193	0.019	-0.293	S
G2	NH ₄ ⁺	0.203	0.207	0.211	0.02	-0.42	S
G3	NH ₄ ⁺	0.32	0.321	0.327	0.023	-0.297	S
G4	NH ₄ ⁺	0.324	0.326	0.329	0.023	-0.223	S
G1	NO ₃ ⁻	0.359	0.357	0.355	0.02	0.179	S
G2	NO ₃ ⁻	0.42	0.417	0.42	0.025	0.007	S
G3	NO ₃ ⁻	0.486	0.484	0.483	0.028	0.093	S
G4	NO ₃ ⁻	0.474	0.469	0.467	0.034	0.206	S
G1	Na ⁺	0.256	0.254	0.253	0.015	0.222	S
G2	Na ⁺	0.343	0.34	0.335	0.024	0.327	S
G3	Na ⁺	0.305	0.308	0.303	0.025	0.064	S
G4	Na ⁺	0.322	0.318	0.314	0.02	0.381	S
G1	Mg ²⁺	0.116	0.114	0.117	0.013	-0.079	S
G2	Mg ²⁺	0.106	0.103	0.101	0.011	-0.063	S
G3	Mg ²⁺	0.126	0.124	0.128	0.01	-0.156	S
G4	Mg ²⁺	0.137	0.134	0.138	0.009	-0.133	S
G1	Cl ⁻	0.108	0.116	0.129	0.046	-0.375	S
G2	Cl ⁻	0.19	0.193	0.192	0.038	-0.042	S
G3	Cl ⁻	0.308	0.309	0.305	0.03	0.111	S
G4	Cl ⁻	0.27	0.27	0.27	0.03	0.103	S
G1	Ca ²⁺	0.092	0.089	0.097	0.029	-0.172	S
G2	Ca ²⁺	0.132	0.128	0.133	0.027	-0.041	S
G3	Ca ²⁺	0.181	0.179	0.183	0.025	-0.083	S
G4	Ca ²⁺	0.208	0.204	0.21	0.03	-0.054	S
G1	K ⁺	0.173	0.17	0.171	0.028	0.083	S
G2	K ⁺	0.245	0.238	0.235	0.032	0.313	S
G3	K ⁺	0.275	0.272	0.267	0.038	0.212	S
G4	K ⁺	0.175	0.17	0.167	0.028	0.277	S
G1	pH	4.33	4.27	4.326	0.043	0.101	S
G2	pH	4.38	4.33	4.358	0.053	0.418	S
G3	pH	4.89	4.88	4.877	0.071	0.19	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		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 Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.06	1.076	1.077	0.055	-0.31	S
G2	SO ₄ ²⁻	0.989	0.987	0.997	0.058	-0.135	S
G3	SO ₄ ²⁻	0.526	0.52	0.528	0.025	-0.083	S
G4	SO ₄ ²⁻	0.664	0.661	0.67	0.038	-0.166	S
G1	NH ₄ ⁺	0.189	0.187	0.193	0.019	-0.239	S
G2	NH ₄ ⁺	0.207	0.207	0.211	0.02	-0.22	S
G3	NH ₄ ⁺	0.328	0.321	0.327	0.023	0.058	S
G4	NH ₄ ⁺	0.329	0.326	0.329	0.023	-0.002	S
G1	NO ₃ ⁻	0.351	0.357	0.355	0.02	-0.222	S
G2	NO ₃ ⁻	0.413	0.417	0.42	0.025	-0.278	S
G3	NO ₃ ⁻	0.476	0.484	0.483	0.028	-0.265	S
G4	NO ₃ ⁻	0.464	0.469	0.467	0.034	-0.085	S
G1	Na ⁺	0.247	0.254	0.253	0.015	-0.386	S
G2	Na ⁺	0.329	0.34	0.335	0.024	-0.267	S
G3	Na ⁺	0.296	0.308	0.303	0.025	-0.291	S
G4	Na ⁺	0.309	0.318	0.314	0.02	-0.278	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.106	0.103	0.101	0.011	-0.063	S
G3	Mg ²⁺	0.127	0.124	0.128	0.01	-0.055	S
G4	Mg ²⁺	0.139	0.134	0.138	0.009	0.087	S
G1	Cl ⁻	0.111	0.116	0.129	0.046	-0.313	S
G2	Cl ⁻	0.191	0.193	0.192	0.038	-0.02	S
G3	Cl ⁻	0.309	0.309	0.305	0.03	0.145	S
G4	Cl ⁻	0.27	0.27	0.27	0.03	0.103	S
G1	Ca ²⁺	0.091	0.089	0.097	0.029	-0.206	S
G2	Ca ²⁺	0.13	0.128	0.133	0.027	-0.115	S
G3	Ca ²⁺	0.181	0.179	0.183	0.025	-0.083	S
G4	Ca ²⁺	0.209	0.204	0.21	0.03	-0.021	S
G1	K ⁺	0.168	0.17	0.171	0.028	-0.093	S
G2	K ⁺	0.236	0.238	0.235	0.032	0.032	S
G3	K ⁺	0.269	0.272	0.267	0.038	0.052	S
G4	K ⁺	0.168	0.17	0.167	0.028	0.022	S
G1	pH	4.28	4.27	4.326	0.043	-1.071	S
G2	pH	4.31	4.33	4.358	0.053	-0.907	S
G3	pH	4.81	4.88	4.877	0.071	-0.934	S
G4	pH	4.66	4.7	4.736	0.055	-1.369	S
G1	Cond	28.4	27.9	27.503	2.113	0.425	S
G2	Cond	26.9	27	26.521	1.154	0.328	S
G3	Cond	14.6	14	14.539	0.624	0.097	S
G4	Cond	17.4	17	17.033	0.718	0.511	S

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.125	1.076	1.077	0.055	0.877	S
G2	SO ₄ ²⁻	0.997	0.987	0.997	0.058	0.003	S
G3	SO ₄ ²⁻	0.53	0.52	0.528	0.025	0.078	S
G4	SO ₄ ²⁻	0.656	0.661	0.67	0.038	-0.379	S
G1	NH ₄ ⁺	0.19	0.187	0.193	0.019	-0.185	S
G2	NH ₄ ⁺	0.194	0.207	0.211	0.02	-0.869	S
G3	NH ₄ ⁺	0.319	0.321	0.327	0.023	-0.341	S
G4	NH ₄ ⁺	0.315	0.326	0.329	0.023	-0.621	S
G1	NO ₃ ⁻	0.358	0.357	0.355	0.02	0.129	S
G2	NO ₃ ⁻	0.416	0.417	0.42	0.025	-0.156	S
G3	NO ₃ ⁻	0.503	0.484	0.483	0.028	0.7	S
G4	NO ₃ ⁻	0.473	0.469	0.467	0.034	0.177	S
G1	Na ⁺	0.254	0.254	0.253	0.015	0.087	S
G2	Na ⁺	0.34	0.34	0.335	0.024	0.2	S
G3	Na ⁺	0.307	0.308	0.303	0.025	0.142	S
G4	Na ⁺	0.322	0.318	0.314	0.02	0.381	S
G1	Mg ²⁺	0.119	0.114	0.117	0.013	0.154	S
G2	Mg ²⁺	0.111	0.103	0.011	0.011	0.385	S
G3	Mg ²⁺	0.135	0.124	0.128	0.01	0.757	S
G4	Mg ²⁺	0.145	0.134	0.138	0.009	0.746	S
G1	Cl ⁻	0.122	0.116	0.129	0.046	-0.087	S
G2	Cl ⁻	0.194	0.193	0.192	0.038	0.044	S
G3	Cl ⁻	0.331	0.309	0.305	0.03	0.878	S
G4	Cl ⁻	0.279	0.27	0.27	0.03	0.293	S
G1	Ca ²⁺	0.093	0.089	0.097	0.029	-0.138	S
G2	Ca ²⁺	0.132	0.128	0.133	0.027	-0.041	S
G3	Ca ²⁺	0.198	0.179	0.183	0.025	0.591	S
G4	Ca ²⁺	0.217	0.204	0.21	0.03	0.246	S
G1	K ⁺	0.143	0.17	0.171	0.028	-0.978	Q
G2	K ⁺	0.209	0.238	0.235	0.032	-0.81	S
G3	K ⁺	0.237	0.272	0.267	0.038	-0.797	S
G4	K ⁺	0.151	0.17	0.167	0.028	-0.596	S
G1	pH	4.6	4.27	4.326	0.043	6.431	U
G2	pH	4.36	4.33	4.358	0.053	0.04	S
G3	pH	4.9	4.88	4.877	0.071	0.33	S
G4	pH	4.71	4.7	4.736	0.055	-0.464	S
G1	Cond	26.1	27.9	27.503	2.113	-0.664	S
G2	Cond	26.2	27	26.521	1.154	-0.278	S
G3	Cond	14.1	14	14.539	0.624	-0.704	S
G4	Cond	16	17	17.033	0.718	-1.438	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.103	1.076	1.077	0.055	0.475	S
G2	SO ₄ ²⁻	1.017	0.987	0.997	0.058	0.347	S
G3	SO ₄ ²⁻	0.537	0.52	0.528	0.025	0.358	S
G4	SO ₄ ²⁻	0.682	0.661	0.67	0.038	0.312	S
G1	NH ₄ ⁺	0.185	0.187	0.193	0.019	-0.455	S
G2	NH ₄ ⁺	0.203	0.207	0.211	0.02	-0.42	S
G3	NH ₄ ⁺	0.337	0.321	0.327	0.023	0.458	S
G4	NH ₄ ⁺	0.34	0.326	0.329	0.023	0.485	S
G1	NO ₃ ⁻	0.363	0.357	0.355	0.02	0.379	S
G2	NO ₃ ⁻	0.428	0.417	0.42	0.025	0.332	S
G3	NO ₃ ⁻	0.496	0.484	0.483	0.028	0.45	S
G4	NO ₃ ⁻	0.484	0.469	0.467	0.034	0.497	S
G1	Na ⁺	0.263	0.254	0.253	0.015	0.695	S
G2	Na ⁺	0.345	0.34	0.335	0.024	0.412	S
G3	Na ⁺	0.303	0.308	0.303	0.025	-0.015	S
G4	Na ⁺	0.321	0.318	0.314	0.02	0.331	S
G1	Mg ²⁺	0.102	0.114	0.117	0.013	-1.165	S
G2	Mg ²⁺	0.101	0.103	0.101	0.011	-0.511	S
G3	Mg ²⁺	0.122	0.124	0.128	0.01	-0.563	S
G4	Mg ²⁺	0.133	0.134	0.138	0.009	-0.572	S
G1	Cl ⁻	0.123	0.116	0.129	0.046	-0.067	S
G2	Cl ⁻	0.186	0.193	0.192	0.038	-0.128	S
G3	Cl ⁻	0.295	0.309	0.305	0.03	-0.322	S
G4	Cl ⁻	0.255	0.27	0.27	0.03	-0.215	S
G1	Ca ²⁺	0.096	0.089	0.097	0.029	-0.036	S
G2	Ca ²⁺	0.127	0.128	0.133	0.027	-0.225	S
G3	Ca ²⁺	0.176	0.179	0.183	0.025	-0.281	S
G4	Ca ²⁺	0.199	0.204	0.21	0.03	-0.354	S
G1	K ⁺	0.17	0.17	0.171	0.028	-0.023	S
G2	K ⁺	0.236	0.238	0.235	0.032	0.032	S
G3	K ⁺	0.268	0.272	0.267	0.038	0.026	S
G4	K ⁺	0.164	0.17	0.167	0.028	-0.123	S
G1	pH	4.35	4.27	4.326	0.043	0.57	S
G2	pH	4.39	4.33	4.358	0.053	0.607	S
G3	pH	4.89	4.88	4.877	0.071	0.19	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	28.5	27.9	27.503	2.113	0.472	S
G2	Cond	27	27	26.521	1.154	0.415	S
G3	Cond	14.8	14	14.539	0.624	0.418	S
G4	Cond	17.73	17	17.033	0.718	0.97	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.048	1.076	1.077	0.055	-0.53	S
G2	SO ₄ ²⁻	0.958	0.987	0.997	0.058	-0.669	S
G3	SO ₄ ²⁻	0.445	0.52	0.528	0.025	-3.332	Q
G4	SO ₄ ²⁻	0.577	0.661	0.67	0.038	-2.478	Q
G1	NH ₄ ⁺	0.21	0.187	0.193	0.019	0.892	S
G2	NH ₄ ⁺	0.244	0.207	0.211	0.02	1.628	Q
G3	NH ₄ ⁺	0.32	0.321	0.327	0.023	-0.297	S
G4	NH ₄ ⁺	0.32	0.326	0.329	0.023	-0.4	S
G1	NO ₃ ⁻	0.351	0.357	0.355	0.02	-0.222	S
G2	NO ₃ ⁻	0.421	0.417	0.42	0.025	0.047	S
G3	NO ₃ ⁻	0.484	0.484	0.483	0.028	0.021	S
G4	NO ₃ ⁻	0.47	0.469	0.467	0.034	0.089	S
G1	Na ⁺	0.245	0.254	0.253	0.015	-0.521	S
G2	Na ⁺	0.32	0.34	0.335	0.024	-0.65	S
G3	Na ⁺	0.304	0.308	0.303	0.025	0.024	S
G4	Na ⁺	0.315	0.318	0.314	0.02	0.026	S
G1	Mg ²⁺		0.114	0.117	0.013		B
G2	Mg ²⁺		0.103	0.011	0.011		B
G3	Mg ²⁺		0.124	0.128	0.01		B
G4	Mg ²⁺		0.134	0.138	0.009		B
G1	Cl ⁻	0.097	0.116	0.129	0.046	-0.601	Q
G2	Cl ⁻	0.164	0.193	0.192	0.038	-0.604	Q
G3	Cl ⁻	0.269	0.309	0.305	0.03	-1.188	S
G4	Cl ⁻	0.239	0.27	0.27	0.03	-0.553	S
G1	Ca ²⁺	0.05	0.089	0.097	0.029	-1.598	U
G2	Ca ²⁺	0.1	0.128	0.133	0.027	-1.223	Q
G3	Ca ²⁺	0.135	0.179	0.183	0.025	-1.908	Q
G4	Ca ²⁺	0.22	0.204	0.21	0.03	0.346	S
G1	K ⁺	0.17	0.17	0.171	0.028	-0.023	S
G2	K ⁺	0.23	0.238	0.235	0.032	-0.155	S
G3	K ⁺	0.26	0.272	0.267	0.038	-0.187	S
G4	K ⁺	0.17	0.17	0.167	0.028	0.095	S
G1	pH	4.3	4.27	4.326	0.043	-0.602	S
G2	pH	4.38	4.33	4.358	0.053	0.418	S
G3	pH	4.96	4.88	4.877	0.071	1.173	S
G4	pH	4.8	4.7	4.736	0.055	1.164	S
G1	Cond	27.5	27.9	27.503	2.113	-0.001	S
G2	Cond	27.1	27	26.521	1.154	0.502	S
G3	Cond	15.3	14	14.539	0.624	1.219	S
G4	Cond	17.5	17	17.033	0.718	0.65	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.054	1.076	1.077	0.055	-0.42	S
G2	SO ₄ ²⁻	1.004	0.987	0.997	0.058	0.123	S
G3	SO ₄ ²⁻	0.533	0.52	0.528	0.025	0.198	S
G4	SO ₄ ²⁻	0.671	0.661	0.67	0.038	0.02	S
G1	NH ₄ ⁺	0.166	0.187	0.193	0.019	-1.478	S
G2	NH ₄ ⁺	0.187	0.207	0.211	0.02	-1.224	S
G3	NH ₄ ⁺	0.295	0.321	0.327	0.023	-1.407	S
G4	NH ₄ ⁺	0.298	0.326	0.329	0.023	-1.372	S
G1	NO ₃ ⁻	0.355	0.357	0.355	0.02	-0.022	S
G2	NO ₃ ⁻	0.422	0.417	0.42	0.025	0.088	S
G3	NO ₃ ⁻	0.494	0.484	0.483	0.028	0.379	S
G4	NO ₃ ⁻	0.478	0.469	0.467	0.034	0.322	S
G1	Na ⁺	0.178	0.254	0.253	0.015	-5.048	U
G2	Na ⁺	0.461	0.34	0.335	0.024	5.34	U
G3	Na ⁺	0.228	0.308	0.303	0.025	-2.968	U
G4	Na ⁺	0.272	0.318	0.314	0.02	-2.155	S
G1	Mg ²⁺	0.112	0.114	0.117	0.013	-0.389	S
G2	Mg ²⁺	0.106	0.103	0.011	0.011	-0.063	S
G3	Mg ²⁺	0.122	0.124	0.128	0.01	-0.563	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻	0.152	0.116	0.129	0.046	0.53	U
G2	Cl ⁻	0.282	0.193	0.192	0.038	1.946	U
G3	Cl ⁻	0.326	0.309	0.305	0.03	0.711	S
G4	Cl ⁻	0.283	0.27	0.27	0.03	0.378	S
G1	Ca ²⁺	0.106	0.089	0.097	0.029	0.303	Q
G2	Ca ²⁺	0.142	0.128	0.133	0.027	0.329	S
G3	Ca ²⁺	0.194	0.179	0.183	0.025	0.433	S
G4	Ca ²⁺	0.229	0.204	0.21	0.03	0.646	S
G1	K ⁺	0.171	0.17	0.171	0.028	0.013	S
G2	K ⁺	0.239	0.238	0.235	0.032	0.126	S
G3	K ⁺	0.25	0.272	0.267	0.038	-0.452	S
G4	K ⁺	0.169	0.17	0.167	0.028	0.059	S
G1	pH	4.31	4.27	4.326	0.043	-0.368	S
G2	pH	4.35	4.33	4.358	0.053	-0.15	S
G3	pH	4.88	4.88	4.877	0.071	0.049	S
G4	pH	4.72	4.7	4.736	0.055	-0.283	S
G1	Cond	28.8	27.9	27.503	2.113	0.614	S
G2	Cond	27.3	27	26.521	1.154	0.675	S
G3	Cond	14.7	14	14.539	0.624	0.258	S
G4	Cond	17.5	17	17.033	0.718	0.65	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

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th intercomparison of analytical methods

Laboratory 34, Refik Saydam Hygiene Center, Ankara (Turkey)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.055	1.076	1.077	0.055	-0.402	S
G2	SO ₄ ²⁻	0.962	0.987	0.997	0.058	-0.6	S
G3	SO ₄ ²⁻	0.495	0.52	0.528	0.025	-1.326	S
G4	SO ₄ ²⁻	0.632	0.661	0.67	0.038	-1.016	S
G1	NH ₄ ⁺	0.353	0.187	0.193	0.019	8.57	U
G2	NH ₄ ⁺	0.381	0.207	0.211	0.02	8.449	U
G3	NH ₄ ⁺	0.527	0.321	0.327	0.023	8.893	U
G4	NH ₄ ⁺	0.529	0.326	0.329	0.023	8.843	U
G1	NO ₃ ⁻	0.328	0.357	0.355	0.02	-1.375	S
G2	NO ₃ ⁻	0.383	0.417	0.42	0.025	-1.497	S
G3	NO ₃ ⁻	0.446	0.484	0.483	0.028	-1.336	S
G4	NO ₃ ⁻	0.433	0.469	0.467	0.034	-0.988	S
G1	Na ⁺	0.264	0.254	0.253	0.015	0.769	S
G2	Na ⁺	0.178	0.34	0.335	0.024	-6.677	U
G3	Na ⁺	0.153	0.308	0.303	0.025	-5.912	U
G4	Na ⁺	0.162	0.318	0.314	0.02	-7.73	U
G1	Mg ²⁺	0.143	0.114	0.117	0.013	1.984	U
G2	Mg ²⁺	0.128	0.103	0.011	0.011	1.907	Q
G3	Mg ²⁺	0.152	0.124	0.128	0.01	2.514	Q
G4	Mg ²⁺	0.166	0.134	0.138	0.009	2.998	Q
G1	Cl ⁻	0.736	0.116	0.129	0.046	12.542	U
G2	Cl ⁻	1.283	0.193	0.192	0.038	23.572	U
G3	Cl ⁻	1.008	0.309	0.305	0.03	23.435	U
G4	Cl ⁻	0.845	0.27	0.27	0.03	12.264	U
G1	Ca ²⁺	0.117	0.089	0.097	0.029	0.67	U
G2	Ca ²⁺	0.134	0.128	0.133	0.027	0.022	S
G3	Ca ²⁺	0.187	0.179	0.183	0.025	0.155	S
G4	Ca ²⁺	0.22	0.204	0.21	0.03	0.343	S
G1	K ⁺		0.17	0.171	0.028		B
G2	K ⁺	1.336	0.238	0.235	0.032	34.326	U
G3	K ⁺	0.966	0.272	0.267	0.038	18.543	U
G4	K ⁺	0.748	0.17	0.167	0.028	21.098	U
G1	pH	4.313	4.27	4.326	0.043	-0.298	S
G2	pH	4.272	4.33	4.358	0.053	-1.626	S
G3	pH	4.786	4.88	4.877	0.071	-1.271	S
G4	pH	4.94	4.7	4.736	0.055	3.696	U
G1	Cond	32.5	27.9	27.503	2.113	2.365	Q
G2	Cond	28.1	27	26.521	1.154	1.369	S
G3	Cond	15.8	14	14.539	0.624	2.02	S
G4	Cond	17.75	17	17.033	0.718	0.998	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.084	1.076	1.077	0.055	0.128	S
G2	SO ₄ ²⁻	1.004	0.987	0.997	0.058	0.123	S
G3	SO ₄ ²⁻	0.549	0.52	0.528	0.025	0.84	S
G4	SO ₄ ²⁻	0.685	0.661	0.67	0.038	0.392	S
G1	NH ₄ ⁺	0.242	0.187	0.193	0.019	2.615	U
G2	NH ₄ ⁺	0.264	0.207	0.211	0.02	2.627	U
G3	NH ₄ ⁺	0.438	0.321	0.327	0.023	4.942	U
G4	NH ₄ ⁺	0.441	0.326	0.329	0.023	4.951	U
G1	NO ₃ ⁻	0.382	0.357	0.355	0.02	1.331	S
G2	NO ₃ ⁻	0.442	0.417	0.42	0.025	0.9	S
G3	NO ₃ ⁻	0.513	0.484	0.483	0.028	1.057	S
G4	NO ₃ ⁻	0.497	0.469	0.467	0.034	0.875	S
G1	Na ⁺	0.27	0.254	0.253	0.015	1.168	S
G2	Na ⁺	0.361	0.34	0.335	0.024	1.092	S
G3	Na ⁺	0.326	0.308	0.303	0.025	0.89	S
G4	Na ⁺	0.341	0.318	0.314	0.02	1.345	S
G1	Mg ²⁺	0.11	0.114	0.117	0.013	-0.544	S
G2	Mg ²⁺	0.099	0.103	0.011	0.011	-0.69	S
G3	Mg ²⁺	0.126	0.124	0.128	0.01	-0.156	S
G4	Mg ²⁺	0.136	0.134	0.138	0.009	-0.243	S
G1	Cl ⁻	0.117	0.116	0.129	0.046	-0.19	S
G2	Cl ⁻	0.197	0.193	0.192	0.038	0.109	S
G3	Cl ⁻	0.338	0.309	0.305	0.03	1.111	S
G4	Cl ⁻	0.279	0.27	0.27	0.03	0.293	S
G1	Ca ²⁺	0.071	0.089	0.097	0.029	-0.885	Q
G2	Ca ²⁺	0.118	0.128	0.133	0.027	-0.558	S
G3	Ca ²⁺	0.18	0.179	0.183	0.025	-0.123	S
G4	Ca ²⁺	0.205	0.204	0.21	0.03	-0.154	S
G1	K ⁺	0.234	0.17	0.171	0.028	2.242	U
G2	K ⁺	0.292	0.238	0.235	0.032	1.778	Q
G3	K ⁺	0.278	0.272	0.267	0.038	0.291	S
G4	K ⁺	0.138	0.17	0.167	0.028	-1.068	Q
G1	pH	4.35	4.27	4.326	0.043	0.57	S
G2	pH	4.29	4.33	4.358	0.053	-1.285	S
G3	pH	4.67	4.88	4.877	0.071	-2.9	U
G4	pH	4.75	4.7	4.736	0.055	0.259	S
G1	Cond	28.4	27.9	27.503	2.113	0.425	S
G2	Cond	26.4	27	26.521	1.154	-0.105	S
G3	Cond	14.6	14	14.539	0.624	0.097	S
G4	Cond	17.2	17	17.033	0.718	0.233	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.087	1.076	1.077	0.055	0.183	S
G2	SO ₄ ²⁻	1.012	0.987	0.997	0.058	0.261	S
G3	SO ₄ ²⁻	0.542	0.52	0.528	0.025	0.559	S
G4	SO ₄ ²⁻	0.681	0.661	0.67	0.038	0.286	S
G1	NH ₄ ⁺	0.184	0.187	0.193	0.019	-0.509	S
G2	NH ₄ ⁺	0.206	0.207	0.211	0.02	-0.27	S
G3	NH ₄ ⁺	0.317	0.321	0.327	0.023	-0.43	S
G4	NH ₄ ⁺	0.316	0.326	0.329	0.023	-0.576	S
G1	NO ₃ ⁻	0.338	0.357	0.355	0.02	-0.874	S
G2	NO ₃ ⁻	0.405	0.417	0.42	0.025	-0.603	S
G3	NO ₃ ⁻	0.471	0.484	0.483	0.028	-0.443	S
G4	NO ₃ ⁻	0.456	0.469	0.467	0.034	-0.318	S
G1	Na ⁺	0.253	0.254	0.253	0.015	0.019	S
G2	Na ⁺	0.336	0.34	0.335	0.024	0.03	S
G3	Na ⁺	0.311	0.308	0.303	0.025	0.3	S
G4	Na ⁺	0.315	0.318	0.314	0.02	0.026	S
G1	Mg ²⁺	0.122	0.114	0.117	0.013	0.386	S
G2	Mg ²⁺	0.112	0.103	0.011	0.011	0.474	S
G3	Mg ²⁺	0.132	0.124	0.128	0.01	0.453	S
G4	Mg ²⁺	0.141	0.134	0.138	0.009	0.307	S
G1	Cl ⁻	0.151	0.116	0.129	0.046	0.509	U
G2	Cl ⁻	0.223	0.193	0.192	0.038	0.671	Q
G3	Cl ⁻	0.311	0.309	0.305	0.03	0.211	S
G4	Cl ⁻	0.28	0.27	0.27	0.03	0.314	S
G1	Ca ²⁺	0.097	0.089	0.097	0.029	-0.002	S
G2	Ca ²⁺	0.134	0.128	0.133	0.027	0.033	S
G3	Ca ²⁺	0.186	0.179	0.183	0.025	0.115	S
G4	Ca ²⁺	0.208	0.204	0.21	0.03	-0.054	S
G1	K ⁺	0.164	0.17	0.171	0.028	-0.235	S
G2	K ⁺	0.229	0.238	0.235	0.032	-0.186	S
G3	K ⁺	0.271	0.272	0.267	0.038	0.105	S
G4	K ⁺	0.165	0.17	0.167	0.028	-0.087	S
G1	pH	4.4	4.27	4.326	0.043	1.742	Q
G2	pH	4.43	4.33	4.358	0.053	1.364	S
G3	pH	4.96	4.88	4.877	0.071	1.173	S
G4	pH	4.79	4.7	4.736	0.055	0.983	S
G1	Cond	27.2	27.9	27.503	2.113	-0.143	S
G2	Cond	25.7	27	26.521	1.154	-0.712	S
G3	Cond	14.2	14	14.539	0.624	-0.543	S
G4	Cond	16.6	17	17.033	0.718	-0.602	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.979	1.076	1.077	0.055	-1.79	S
G2	SO ₄ ²⁻	0.754	0.987	0.997	0.058	-4.182	U
G3	SO ₄ ²⁻	0.419	0.52	0.528	0.025	-4.375	Q
G4	SO ₄ ²⁻	0.555	0.661	0.67	0.038	-3.062	Q
G1	NH ₄ ⁺	0.16	0.187	0.193	0.019	-1.801	S
G2	NH ₄ ⁺	0.179	0.207	0.211	0.02	-1.618	S
G3	NH ₄ ⁺	0.303	0.321	0.327	0.023	-1.051	S
G4	NH ₄ ⁺	0.318	0.326	0.329	0.023	-0.488	S
G1	NO ₃ ⁻	0.309	0.357	0.355	0.02	-2.327	Q
G2	NO ₃ ⁻	0.351	0.417	0.42	0.025	-2.797	Q
G3	NO ₃ ⁻	0.424	0.484	0.483	0.028	-2.122	Q
G4	NO ₃ ⁻	0.371	0.469	0.467	0.034	-2.793	U
G1	Na ⁺	0.194	0.254	0.253	0.015	-3.967	Q
G2	Na ⁺	0.293	0.34	0.335	0.024	-1.796	S
G3	Na ⁺	0.289	0.308	0.303	0.025	-0.566	S
G4	Na ⁺	0.329	0.318	0.314	0.02	0.737	S
G1	Mg ²⁺	0.124	0.114	0.117	0.013	0.542	S
G2	Mg ²⁺	0.108	0.103	0.011	0.011	0.116	S
G3	Mg ²⁺	0.124	0.124	0.128	0.01	-0.359	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻	0.317	0.116	0.129	0.046	3.924	U
G2	Cl ⁻	0.2	0.193	0.192	0.038	0.174	S
G3	Cl ⁻	0.333	0.309	0.305	0.03	0.944	S
G4	Cl ⁻	0.341	0.27	0.27	0.03	1.604	U
G1	Ca ²⁺	0.076	0.089	0.097	0.029	-0.715	S
G2	Ca ²⁺	0.101	0.128	0.133	0.027	-1.186	Q
G3	Ca ²⁺	0.17	0.179	0.183	0.025	-0.52	S
G4	Ca ²⁺	0.165	0.204	0.21	0.03	-1.488	Q
G1	K ⁺	0.116	0.17	0.171	0.028	-1.934	U
G2	K ⁺	0.099	0.238	0.235	0.032	-4.24	U
G3	K ⁺	0.136	0.272	0.267	0.038	-3.477	U
G4	K ⁺	0.045	0.17	0.167	0.028	-4.449	U
G1	pH	4.2	4.27	4.326	0.043	-2.947	S
G2	pH	4.2	4.33	4.358	0.053	-2.988	Q
G3	pH	4.7	4.88	4.877	0.071	-2.479	Q
G4	pH	4.6	4.7	4.736	0.055	-2.454	Q
G1	Cond	44.7	27.9	27.503	2.113	8.14	U
G2	Cond	24.4	27	26.521	1.154	-1.839	S
G3	Cond	15.7	14	14.539	0.624	1.86	S
G4	Cond	16.1	17	17.033	0.718	-1.298	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.036	1.076	1.077	0.055	-0.749	S
G2	SO ₄ ²⁻	0.949	0.987	0.997	0.058	-0.824	S
G3	SO ₄ ²⁻	0.512	0.52	0.528	0.025	-0.644	S
G4	SO ₄ ²⁻	0.631	0.661	0.67	0.038	-1.043	S
G1	NH ₄ ⁺	0.187	0.187	0.193	0.019	-0.347	S
G2	NH ₄ ⁺	0.204	0.207	0.211	0.02	-0.37	S
G3	NH ₄ ⁺	0.334	0.321	0.327	0.023	0.325	S
G4	NH ₄ ⁺	0.341	0.326	0.329	0.023	0.529	S
G1	NO ₃ ⁻	0.35	0.357	0.355	0.02	-0.272	S
G2	NO ₃ ⁻	0.41	0.417	0.42	0.025	-0.4	S
G3	NO ₃ ⁻	0.478	0.484	0.483	0.028	-0.193	S
G4	NO ₃ ⁻	0.461	0.469	0.467	0.034	-0.173	S
G1	Na ⁺	0.242	0.254	0.253	0.015	-0.69	S
G2	Na ⁺	0.328	0.34	0.335	0.024	-0.314	S
G3	Na ⁺	0.297	0.308	0.303	0.025	-0.251	S
G4	Na ⁺	0.31	0.318	0.314	0.02	-0.227	S
G1	Mg ²⁺	0.116	0.114	0.117	0.013	-0.048	S
G2	Mg ²⁺	0.106	0.103	0.011	0.011	-0.081	S
G3	Mg ²⁺	0.129	0.124	0.128	0.01	0.107	S
G4	Mg ²⁺	0.139	0.134	0.138	0.009	0.087	S
G1	Cl ⁻	0.105	0.116	0.129	0.046	-0.437	S
G2	Cl ⁻	0.156	0.193	0.192	0.038	-0.777	Q
G3	Cl ⁻	0.303	0.309	0.305	0.03	-0.055	S
G4	Cl ⁻	0.264	0.27	0.27	0.03	-0.024	S
G1	Ca ²⁺	0.087	0.089	0.097	0.029	-0.338	S
G2	Ca ²⁺	0.124	0.128	0.133	0.027	-0.325	S
G3	Ca ²⁺	0.175	0.179	0.183	0.025	-0.305	S
G4	Ca ²⁺	0.202	0.204	0.21	0.03	-0.241	S
G1	K ⁺	0.163	0.17	0.171	0.028	-0.274	S
G2	K ⁺	0.233	0.238	0.235	0.032	-0.061	S
G3	K ⁺	0.267	0.272	0.267	0.038	-0.003	S
G4	K ⁺	0.165	0.17	0.167	0.028	-0.098	S
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		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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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻		1.076	1.077	0.055		B
G2	SO ₄ ²⁻		0.987	0.997	0.058		B
G3	SO ₄ ²⁻		0.52	0.528	0.025		B
G4	SO ₄ ²⁻		0.661	0.67	0.038		B
G1	NH ₄ ⁺	0.218	0.187	0.193	0.019	1.322	Q
G2	NH ₄ ⁺	0.238	0.207	0.211	0.02	1.328	S
G3	NH ₄ ⁺	0.346	0.321	0.327	0.023	0.857	S
G4	NH ₄ ⁺	0.358	0.326	0.329	0.023	1.281	S
G1	NO ₃ ⁻	0.343	0.357	0.355	0.02	-0.623	S
G2	NO ₃ ⁻	0.453	0.417	0.42	0.025	1.347	S
G3	NO ₃ ⁻	0.523	0.484	0.483	0.028	1.415	S
G4	NO ₃ ⁻	0.46	0.469	0.467	0.034	-0.202	S
G1	Na ⁺	0.199	0.254	0.253	0.015	-3.629	Q
G2	Na ⁺	0.266	0.34	0.335	0.024	-2.943	Q
G3	Na ⁺	0.222	0.308	0.303	0.025	-3.204	U
G4	Na ⁺	0.241	0.318	0.314	0.02	-3.727	Q
G1	Mg ²⁺	0.078	0.114	0.117	0.013	-3.026	U
G2	Mg ²⁺	0.073	0.103	0.011	0.011	-3.019	U
G3	Mg ²⁺	0.082	0.124	0.128	0.01	-4.623	U
G4	Mg ²⁺	0.091	0.134	0.138	0.009	-5.187	U
G1	Cl ⁻	0.118	0.116	0.129	0.046	-0.169	S
G2	Cl ⁻	0.231	0.193	0.192	0.038	0.844	Q
G3	Cl ⁻	0.326	0.309	0.305	0.03	0.711	S
G4	Cl ⁻	0.309	0.27	0.27	0.03	0.927	S
G1	Ca ²⁺	0.056	0.089	0.097	0.029	-1.394	U
G2	Ca ²⁺	0.086	0.128	0.133	0.027	-1.74	U
G3	Ca ²⁺	0.112	0.179	0.183	0.025	-2.821	U
G4	Ca ²⁺	0.129	0.204	0.21	0.03	-2.688	U
G1	K ⁺	0.1	0.17	0.171	0.028	-2.5	U
G2	K ⁺	0.151	0.238	0.235	0.032	-2.618	U
G3	K ⁺	0.154	0.272	0.267	0.038	-2.999	U
G4	K ⁺	0.101	0.17	0.167	0.028	-2.413	U
G1	pH	4.34	4.27	4.326	0.043	0.335	S
G2	pH	4.18	4.33	4.358	0.053	-3.367	Q
G3	pH	4.58	4.88	4.877	0.071	-4.164	U
G4	pH	4.4	4.7	4.736	0.055	-6.071	U
G1	Cond	23	27.9	27.503	2.113	-2.131	Q
G2	Cond	24	27	26.521	1.154	-2.186	S
G3	Cond	14	14	14.539	0.624	-0.864	S
G4	Cond	16	17	17.033	0.718	-1.438	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th intercomparison of analytical methods

Laboratory 41, Micro Pollutants Technology (France)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.02	1.076	1.077	0.055	-1.041	S
G2	SO ₄ ²⁻	0.95	0.987	0.997	0.058	-0.807	S
G3	SO ₄ ²⁻	0.54	0.52	0.528	0.025	0.479	S
G4	SO ₄ ²⁻	0.74	0.661	0.67	0.038	1.853	Q
G1	NH ₄ ⁺	0.26	0.187	0.193	0.019	3.584	U
G2	NH ₄ ⁺	0.33	0.207	0.211	0.02	5.922	U
G3	NH ₄ ⁺	0.3	0.321	0.327	0.023	-1.185	S
G4	NH ₄ ⁺	0.33	0.326	0.329	0.023	0.043	S
G1	NO ₃ ⁻	0.41	0.357	0.355	0.02	2.735	Q
G2	NO ₃ ⁻	0.45	0.417	0.42	0.025	1.225	S
G3	NO ₃ ⁻	0.54	0.484	0.483	0.028	2.022	Q
G4	NO ₃ ⁻	0.53	0.469	0.467	0.034	1.836	Q
G1	Na ⁺	0.25	0.254	0.253	0.015	-0.183	S
G2	Na ⁺	0.25	0.34	0.335	0.024	-3.623	U
G3	Na ⁺	0.39	0.308	0.303	0.025	3.41	U
G4	Na ⁺	0.4	0.318	0.314	0.02	4.338	U
G1	Mg ²⁺	0.27	0.114	0.117	0.013	11.866	U
G2	Mg ²⁺	0.22	0.103	0.011	0.011	10.147	U
G3	Mg ²⁺	0.23	0.124	0.128	0.01	10.402	U
G4	Mg ²⁺	0.22	0.134	0.138	0.009	8.986	U
G1	Cl ⁻	0.15	0.116	0.129	0.046	0.489	U
G2	Cl ⁻	0.21	0.193	0.192	0.038	0.39	S
G3	Cl ⁻	0.32	0.309	0.305	0.03	0.511	S
G4	Cl ⁻	0.29	0.27	0.27	0.03	0.526	S
G1	Ca ²⁺	0.31	0.089	0.097	0.029	7.231	U
G2	Ca ²⁺	0.34	0.128	0.133	0.027	7.642	U
G3	Ca ²⁺	0.47	0.179	0.183	0.025	11.384	U
G4	Ca ²⁺	0.51	0.204	0.21	0.03	10.017	U
G1	K ⁺	0.2	0.17	0.171	0.028	1.039	Q
G2	K ⁺	0.27	0.238	0.235	0.032	1.092	S
G3	K ⁺	0.31	0.272	0.267	0.038	1.14	S
G4	K ⁺	0.2	0.17	0.167	0.028	1.185	Q
G1	pH	4.35	4.27	4.326	0.043	0.57	S
G2	pH	4.4	4.33	4.358	0.053	0.797	S
G3	pH	4.95	4.88	4.877	0.071	1.032	S
G4	pH	4.85	4.7	4.736	0.055	2.068	Q
G1	Cond	28.57	27.9	27.503	2.113	0.505	S
G2	Cond	27.62	27	26.521	1.154	0.952	S
G3	Cond	15.16	14	14.539	0.624	0.995	S
G4	Cond	17.14	17	17.033	0.718	0.149	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 Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.832	1.076	1.077	0.055	-4.472	U
G2	SO ₄ ²⁻	0.764	0.987	0.997	0.058	-4.009	U
G3	SO ₄ ²⁻	0.385	0.52	0.528	0.025	-5.735	U
G4	SO ₄ ²⁻	0.514	0.661	0.67	0.038	-4.149	U
G1	NH ₄ ⁺	0.209	0.187	0.193	0.019	0.827	S
G2	NH ₄ ⁺	0.256	0.207	0.211	0.02	2.237	Q
G3	NH ₄ ⁺	0.407	0.321	0.327	0.023	3.588	U
G4	NH ₄ ⁺	0.379	0.326	0.329	0.023	2.218	Q
G1	NO ₃ ⁻	0.236	0.357	0.355	0.02	-5.99	U
G2	NO ₃ ⁻	0.281	0.417	0.42	0.025	-5.62	U
G3	NO ₃ ⁻	0.32	0.484	0.483	0.028	-5.834	U
G4	NO ₃ ⁻	0.325	0.469	0.467	0.034	-4.141	U
G1	Na ⁺	0.271	0.254	0.253	0.015	1.249	S
G2	Na ⁺	0.376	0.34	0.335	0.024	1.717	S
G3	Na ⁺	0.367	0.308	0.303	0.025	2.508	Q
G4	Na ⁺	0.397	0.318	0.314	0.02	4.206	Q
G1	Mg ²⁺	0.165	0.114	0.117	0.013	3.683	U
G2	Mg ²⁺	0.145	0.103	0.011	0.011	3.457	U
G3	Mg ²⁺	0.204	0.124	0.128	0.01	7.793	U
G4	Mg ²⁺	0.175	0.134	0.138	0.009	4.053	U
G1	Cl ⁻	0.085	0.116	0.129	0.046	-0.859	U
G2	Cl ⁻	0.104	0.193	0.192	0.038	-1.894	U
G3	Cl ⁻	0.209	0.309	0.305	0.03	-3.191	U
G4	Cl ⁻	0.177	0.27	0.27	0.03	-1.866	U
G1	Ca ²⁺	0.198	0.089	0.097	0.029	3.424	U
G2	Ca ²⁺	0.218	0.128	0.133	0.027	3.125	U
G3	Ca ²⁺	0.348	0.179	0.183	0.025	6.547	U
G4	Ca ²⁺	0.263	0.204	0.21	0.03	1.79	U
G1	K ⁺	0.264	0.17	0.171	0.028	3.311	U
G2	K ⁺	0.314	0.238	0.235	0.032	2.471	U
G3	K ⁺	0.393	0.272	0.267	0.038	3.332	U
G4	K ⁺	0.22	0.17	0.167	0.028	1.898	U
G1	pH	4.42	4.27	4.326	0.043	2.211	Q
G2	pH	4.37	4.33	4.358	0.053	0.229	S
G3	pH	4.95	4.88	4.877	0.071	1.032	S
G4	pH	4.83	4.7	4.736	0.055	1.706	Q
G1	Cond	22	27.9	27.503	2.113	-2.605	Q
G2	Cond	21	27	26.521	1.154	-4.786	Q
G3	Cond	12	14	14.539	0.624	-4.069	S
G4	Cond	14	17	17.033	0.718	-4.222	Q

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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 Youden plots, updated expected values ect:

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

EMEP – 30th intercomparison of analytical methods

Laboratory 43, Centre for Monitoring and Prognostication, Tbilisi (Georgia)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.425	1.076	1.077	0.055	6.357	U
G2	SO ₄ ²⁻	1.263	0.987	0.997	0.058	4.583	U
G3	SO ₄ ²⁻	0.665	0.52	0.528	0.025	5.494	U
G4	SO ₄ ²⁻	0.916	0.661	0.67	0.038	6.529	U
G1	NH ₄ ⁺		0.187	0.193	0.019		B
G2	NH ₄ ⁺		0.207	0.211	0.02		B
G3	NH ₄ ⁺		0.321	0.327	0.023		B
G4	NH ₄ ⁺		0.326	0.329	0.023		B
G1	NO ₃ ⁻	0.325	0.357	0.355	0.02	-1.525	S
G2	NO ₃ ⁻	0.386	0.417	0.42	0.025	-1.375	S
G3	NO ₃ ⁻	0.441	0.484	0.483	0.028	-1.515	S
G4	NO ₃ ⁻	0.418	0.469	0.467	0.034	-1.425	Q
G1	Na ⁺		0.254	0.253	0.015		B
G2	Na ⁺		0.34	0.335	0.024		B
G3	Na ⁺		0.308	0.303	0.025		B
G4	Na ⁺		0.318	0.314	0.02		B
G1	Mg ²⁺		0.114	0.117	0.013		B
G2	Mg ²⁺		0.103	0.011	0.011		B
G3	Mg ²⁺		0.124	0.128	0.01		B
G4	Mg ²⁺		0.134	0.138	0.009		B
G1	Cl ⁻	0.143	0.116	0.129	0.046	0.345	Q
G2	Cl ⁻	0.209	0.193	0.192	0.038	0.368	S
G3	Cl ⁻	0.309	0.309	0.305	0.03	0.145	S
G4	Cl ⁻	1.572	0.27	0.27	0.03	27.64	U
G1	Ca ²⁺		0.089	0.097	0.029		B
G2	Ca ²⁺		0.128	0.133	0.027		B
G3	Ca ²⁺		0.179	0.183	0.025		B
G4	Ca ²⁺		0.204	0.21	0.03		B
G1	K ⁺		0.17	0.171	0.028		B
G2	K ⁺		0.238	0.235	0.032		B
G3	K ⁺		0.272	0.267	0.038		B
G4	K ⁺		0.17	0.167	0.028		B
G1	pH	3.51	4.27	4.326	0.043	-19.123	U
G2	pH	3.85	4.33	4.358	0.053	-9.611	U
G3	pH	4.12	4.88	4.877	0.071	-10.625	U
G4	pH	4.22	4.7	4.736	0.055	-9.327	U
G1	Cond	19.3	27.9	27.503	2.113	-3.883	U
G2	Cond	22.3	27	26.521	1.154	-3.659	Q
G3	Cond	13.2	14	14.539	0.624	-2.146	S
G4	Cond	15.1	17	17.033	0.718	-2.69	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.128	1.076	1.077	0.055	0.932	S
G2	SO ₄ ²⁻	1.033	0.987	0.997	0.058	0.622	S
G3	SO ₄ ²⁻	0.537	0.52	0.528	0.025	0.358	S
G4	SO ₄ ²⁻	0.688	0.661	0.67	0.038	0.471	S
G1	NH ₄ ⁺	0.19	0.187	0.193	0.019	-0.185	S
G2	NH ₄ ⁺	0.213	0.207	0.211	0.02	0.08	S
G3	NH ₄ ⁺	0.338	0.321	0.327	0.023	0.502	S
G4	NH ₄ ⁺	0.338	0.326	0.329	0.023	0.396	S
G1	NO ₃ ⁻	0.366	0.357	0.355	0.02	0.53	S
G2	NO ₃ ⁻	0.424	0.417	0.42	0.025	0.169	S
G3	NO ₃ ⁻	0.49	0.484	0.483	0.028	0.236	S
G4	NO ₃ ⁻	0.475	0.469	0.467	0.034	0.235	S
G1	Na ⁺	0.35	0.254	0.253	0.015	6.573	U
G2	Na ⁺	0.447	0.34	0.335	0.024	4.745	U
G3	Na ⁺	0.459	0.308	0.303	0.025	6.126	U
G4	Na ⁺	0.474	0.318	0.314	0.02	8.092	U
G1	Mg ²⁺	0.157	0.114	0.117	0.013	3.101	U
G2	Mg ²⁺	0.137	0.103	0.011	0.011	2.713	U
G3	Mg ²⁺	0.181	0.124	0.128	0.01	5.427	U
G4	Mg ²⁺	0.193	0.134	0.138	0.009	6.02	U
G1	Cl ⁻	0.114	0.116	0.129	0.046	-0.252	S
G2	Cl ⁻	0.191	0.193	0.192	0.038	-0.02	S
G3	Cl ⁻	0.305	0.309	0.305	0.03	0.012	S
G4	Cl ⁻	0.27	0.27	0.27	0.03	0.103	S
G1	Ca ²⁺	0.094	0.089	0.097	0.029	-0.104	S
G2	Ca ²⁺	0.137	0.128	0.133	0.027	0.144	S
G3	Ca ²⁺	0.268	0.179	0.183	0.025	3.369	U
G4	Ca ²⁺	0.3	0.204	0.21	0.03	3.014	U
G1	K ⁺	0.23	0.17	0.171	0.028	2.1	U
G2	K ⁺	0.297	0.238	0.235	0.032	1.934	Q
G3	K ⁺	0.358	0.272	0.267	0.038	2.414	U
G4	K ⁺	0.234	0.17	0.167	0.028	2.421	U
G1	pH	4.36	4.27	4.326	0.043	0.804	S
G2	pH	4.4	4.33	4.358	0.053	0.797	S
G3	pH	4.89	4.88	4.877	0.071	0.19	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	28.3	27.9	27.503	2.113	0.377	S
G2	Cond	26.5	27	26.521	1.154	-0.018	S
G3	Cond	14.3	14	14.539	0.624	-0.383	S
G4	Cond	16.8	17	17.033	0.718	-0.324	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻		1.076	1.077	0.055		B
G2	SO ₄ ²⁻		0.987	0.997	0.058		B
G3	SO ₄ ²⁻		0.52	0.528	0.025		B
G4	SO ₄ ²⁻		0.661	0.67	0.038		B
G1	NH ₄ ⁺		0.187	0.193	0.019		B
G2	NH ₄ ⁺		0.207	0.211	0.02		B
G3	NH ₄ ⁺		0.321	0.327	0.023		B
G4	NH ₄ ⁺		0.326	0.329	0.023		B
G1	NO ₃ ⁻		0.357	0.355	0.02		B
G2	NO ₃ ⁻		0.417	0.42	0.025		B
G3	NO ₃ ⁻		0.484	0.483	0.028		B
G4	NO ₃ ⁻		0.469	0.467	0.034		B
G1	Na ⁺		0.254	0.253	0.015		B
G2	Na ⁺		0.34	0.335	0.024		B
G3	Na ⁺		0.308	0.303	0.025		B
G4	Na ⁺		0.318	0.314	0.02		B
G1	Mg ²⁺		0.114	0.117	0.013		B
G2	Mg ²⁺		0.103	0.011	0.011		B
G3	Mg ²⁺		0.124	0.128	0.01		B
G4	Mg ²⁺		0.134	0.138	0.009		B
G1	Cl ⁻		0.116	0.129	0.046		B
G2	Cl ⁻		0.193	0.192	0.038		B
G3	Cl ⁻		0.309	0.305	0.03		B
G4	Cl ⁻		0.27	0.27	0.03		B
G1	Ca ²⁺		0.089	0.097	0.029		B
G2	Ca ²⁺		0.128	0.133	0.027		B
G3	Ca ²⁺		0.179	0.183	0.025		B
G4	Ca ²⁺		0.204	0.21	0.03		B
G1	K ⁺		0.17	0.171	0.028		B
G2	K ⁺		0.238	0.235	0.032		B
G3	K ⁺		0.272	0.267	0.038		B
G4	K ⁺		0.17	0.167	0.028		B
G1	pH	4.27	4.27	4.326	0.043	-1.306	S
G2	pH	4.34	4.33	4.358	0.053	-0.339	S
G3	pH	4.84	4.88	4.877	0.071	-0.513	S
G4	pH	4.68	4.7	4.736	0.055	-1.007	S
G1	Cond	27.89	27.9	27.503	2.113	0.183	S
G2	Cond	26.32	27	26.521	1.154	-0.174	S
G3	Cond	14.3	14	14.539	0.624	-0.383	S
G4	Cond	16.88	17	17.033	0.718	-0.213	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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<http://www.nilu.no/projects/ccc/intercomparison.html>

EMEP – 30th intercomparison of analytical methods

Laboratory 107, The Finnish Forest Institute (Finland)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.089	1.076	1.077	0.055	0.219	S
G2	SO ₄ ²⁻	1.009	0.987	0.997	0.058	0.209	S
G3	SO ₄ ²⁻	0.544	0.52	0.528	0.025	0.639	S
G4	SO ₄ ²⁻	0.691	0.661	0.67	0.038	0.551	S
G1	NH ₄ ⁺	0.189	0.187	0.193	0.019	-0.239	S
G2	NH ₄ ⁺	0.208	0.207	0.211	0.02	-0.17	S
G3	NH ₄ ⁺	0.334	0.321	0.327	0.023	0.325	S
G4	NH ₄ ⁺	0.328	0.326	0.329	0.023	-0.046	S
G1	NO ₃ ⁻	0.343	0.357	0.355	0.02	-0.623	S
G2	NO ₃ ⁻	0.409	0.417	0.42	0.025	-0.44	S
G3	NO ₃ ⁻	0.468	0.484	0.483	0.028	-0.55	S
G4	NO ₃ ⁻	0.464	0.469	0.467	0.034	-0.085	S
G1	Na ⁺		0.254	0.253	0.015		B
G2	Na ⁺		0.34	0.335	0.024		B
G3	Na ⁺		0.308	0.303	0.025		B
G4	Na ⁺		0.318	0.314	0.02		B
G1	Mg ²⁺		0.114	0.117	0.013		B
G2	Mg ²⁺		0.103	0.011	0.011		B
G3	Mg ²⁺		0.124	0.128	0.01		B
G4	Mg ²⁺		0.134	0.138	0.009		B
G1	Cl ⁻	0.101	0.116	0.129	0.046	-0.519	S
G2	Cl ⁻	0.167	0.193	0.192	0.038	-0.539	S
G3	Cl ⁻	0.278	0.309	0.305	0.03	-0.888	S
G4	Cl ⁻	0.249	0.27	0.27	0.03	-0.342	S
G1	Ca ²⁺		0.089	0.097	0.029		B
G2	Ca ²⁺		0.128	0.133	0.027		B
G3	Ca ²⁺		0.179	0.183	0.025		B
G4	Ca ²⁺		0.204	0.21	0.03		B
G1	K ⁺		0.17	0.171	0.028		B
G2	K ⁺		0.238	0.235	0.032		B
G3	K ⁺		0.272	0.267	0.038		B
G4	K ⁺		0.17	0.167	0.028		B
G1	pH	4.33	4.27	4.326	0.043	0.101	S
G2	pH	4.36	4.33	4.358	0.053	0.04	S
G3	pH	4.96	4.88	4.877	0.071	1.173	S
G4	pH	4.76	4.7	4.736	0.055	0.44	S
G1	Cond	27.5	27.9	27.503	2.113	-0.001	S
G2	Cond	26.7	27	26.521	1.154	0.155	S
G3	Cond	13.6	14	14.539	0.624	-1.505	S
G4	Cond	16.7	17	17.033	0.718	-0.463	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

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th intercomparison of analytical methods

Laboratory 110, Thüringer Landesanstalt für Landwirtschaft TTL, Jena (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	0.99	1.076	1.077	0.055	-1.589	S
G2	SO ₄ ²⁻	1.03	0.987	0.997	0.058	0.571	S
G3	SO ₄ ²⁻	0.56	0.52	0.528	0.025	1.281	S
G4	SO ₄ ²⁻	0.65	0.661	0.67	0.038	-0.538	S
G1	NH ₄ ⁺	0.18	0.187	0.193	0.019	-0.724	S
G2	NH ₄ ⁺	0.2	0.207	0.211	0.02	-0.569	S
G3	NH ₄ ⁺	0.33	0.321	0.327	0.023	0.147	S
G4	NH ₄ ⁺	0.32	0.326	0.329	0.023	-0.4	S
G1	NO ₃ ⁻	0.35	0.357	0.355	0.02	-0.272	S
G2	NO ₃ ⁻	0.49	0.417	0.42	0.025	2.85	Q
G3	NO ₃ ⁻	0.48	0.484	0.483	0.028	-0.122	S
G4	NO ₃ ⁻	0.44	0.469	0.467	0.034	-0.784	S
G1	Na ⁺	0.25	0.254	0.253	0.015	-0.183	S
G2	Na ⁺	0.33	0.34	0.335	0.024	-0.225	S
G3	Na ⁺	0.3	0.308	0.303	0.025	-0.133	S
G4	Na ⁺	0.31	0.318	0.314	0.02	-0.227	S
G1	Mg ²⁺	0.12	0.114	0.117	0.013	0.231	S
G2	Mg ²⁺	0.11	0.103	0.011	0.011	0.295	S
G3	Mg ²⁺	0.13	0.124	0.128	0.01	0.25	S
G4	Mg ²⁺	0.14	0.134	0.138	0.009	0.197	S
G1	Cl ⁻	< 0.200	0.116	0.129	0.046		B
G2	Cl ⁻	0.25	0.193	0.192	0.038	1.254	U
G3	Cl ⁻	0.54	0.309	0.305	0.03	7.842	U
G4	Cl ⁻	0.33	0.27	0.27	0.03	1.372	Q
G1	Ca ²⁺	0.083	0.089	0.097	0.029	-0.478	S
G2	Ca ²⁺	0.12	0.128	0.133	0.027	-0.484	S
G3	Ca ²⁺	0.17	0.179	0.183	0.025	-0.52	S
G4	Ca ²⁺	0.19	0.204	0.21	0.03	-0.654	S
G1	K ⁺	0.15	0.17	0.171	0.028	-0.73	S
G2	K ⁺	0.22	0.238	0.235	0.032	-0.467	S
G3	K ⁺	0.27	0.272	0.267	0.038	0.079	S
G4	K ⁺	0.15	0.17	0.167	0.028	-0.632	S
G1	pH	4.36	4.27	4.326	0.043	0.804	S
G2	pH	4.39	4.33	4.358	0.053	0.607	S
G3	pH	4.95	4.88	4.877	0.071	1.032	S
G4	pH	4.76	4.7	4.736	0.055	0.44	S
G1	Cond	23.7	27.9	27.503	2.113	-1.8	Q
G2	Cond	25	27	26.521	1.154	-1.319	S
G3	Cond	14	14	14.539	0.624	-0.864	S
G4	Cond	16.2	17	17.033	0.718	-1.159	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

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 Youden plots, updated expected values ect:

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

EMEP – 30th intercomparison of analytical methods

Laboratory 112, Niedersächsische Forstliche Versuchsanstalt NVF (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.095	1.076	1.077	0.055	0.329	S
G2	SO ₄ ²⁻	1.01	0.987	0.997	0.058	0.226	S
G3	SO ₄ ²⁻	0.523	0.52	0.528	0.025	-0.203	S
G4	SO ₄ ²⁻	0.665	0.661	0.67	0.038	-0.14	S
G1	NH ₄ ⁺	0.19	0.187	0.193	0.019	-0.185	S
G2	NH ₄ ⁺	0.208	0.207	0.211	0.02	-0.17	S
G3	NH ₄ ⁺	0.327	0.321	0.327	0.023	0.014	S
G4	NH ₄ ⁺	0.333	0.326	0.329	0.023	0.175	S
G1	NO ₃ ⁻	0.342	0.357	0.355	0.02	-0.673	S
G2	NO ₃ ⁻	0.402	0.417	0.42	0.025	-0.725	S
G3	NO ₃ ⁻	0.464	0.484	0.483	0.028	-0.693	S
G4	NO ₃ ⁻	0.453	0.469	0.467	0.034	-0.406	S
G1	Na ⁺	0.256	0.254	0.253	0.015	0.222	S
G2	Na ⁺	0.348	0.34	0.335	0.024	0.54	S
G3	Na ⁺	0.315	0.308	0.303	0.025	0.457	S
G4	Na ⁺	0.329	0.318	0.314	0.02	0.737	S
G1	Mg ²⁺	0.105	0.114	0.117	0.013	-0.932	S
G2	Mg ²⁺	0.095	0.103	0.011	0.011	-1.048	S
G3	Mg ²⁺	0.115	0.124	0.128	0.01	-1.273	S
G4	Mg ²⁺	0.126	0.134	0.138	0.009	-1.341	S
G1	Cl ⁻	0.113	0.116	0.129	0.046	-0.272	S
G2	Cl ⁻	0.191	0.193	0.192	0.038	-0.02	S
G3	Cl ⁻	0.301	0.309	0.305	0.03	-0.122	S
G4	Cl ⁻	0.265	0.27	0.27	0.03	-0.003	S
G1	Ca ²⁺	0.087	0.089	0.097	0.029	-0.342	S
G2	Ca ²⁺	0.123	0.128	0.133	0.027	-0.373	S
G3	Ca ²⁺	0.175	0.179	0.183	0.025	-0.321	S
G4	Ca ²⁺	0.202	0.204	0.21	0.03	-0.254	S
G1	K ⁺	0.165	0.17	0.171	0.028	-0.2	S
G2	K ⁺	0.229	0.238	0.235	0.032	-0.186	S
G3	K ⁺	0.272	0.272	0.267	0.038	0.132	S
G4	K ⁺	0.165	0.17	0.167	0.028	-0.087	S
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		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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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.116	1.076	1.077	0.055	0.713	S
G2	SO ₄ ²⁻	1.007	0.987	0.997	0.058	0.175	S
G3	SO ₄ ²⁻	0.479	0.52	0.528	0.025	-1.968	S
G4	SO ₄ ²⁻	0.438	0.661	0.67	0.038	-6.17	U
G1	NH ₄ ⁺	0.122	0.187	0.193	0.019	-3.847	U
G2	NH ₄ ⁺	0.156	0.207	0.211	0.02	-2.767	Q
G3	NH ₄ ⁺	0.264	0.321	0.327	0.023	-2.783	Q
G4	NH ₄ ⁺	0.281	0.326	0.329	0.023	-2.124	S
G1	NO ₃ ⁻	0.377	0.357	0.355	0.02	1.081	S
G2	NO ₃ ⁻	0.405	0.417	0.42	0.025	-0.603	S
G3	NO ₃ ⁻	0.427	0.484	0.483	0.028	-2.015	Q
G4	NO ₃ ⁻	0.29	0.469	0.467	0.034	-5.151	U
G1	Na ⁺	0.228	0.254	0.253	0.015	-1.67	S
G2	Na ⁺	0.316	0.34	0.335	0.024	-0.819	S
G3	Na ⁺	0.278	0.308	0.303	0.025	-0.999	S
G4	Na ⁺	0.298	0.318	0.314	0.02	-0.836	S
G1	Mg ²⁺	0.103	0.114	0.117	0.013	-1.087	S
G2	Mg ²⁺	0.098	0.103	0.011	0.011	-0.78	S
G3	Mg ²⁺	0.114	0.124	0.128	0.01	-1.375	S
G4	Mg ²⁺	0.124	0.134	0.138	0.009	-1.561	S
G1	Cl ⁻	0.18	0.116	0.129	0.046	1.106	U
G2	Cl ⁻	0.21	0.193	0.192	0.038	0.39	S
G3	Cl ⁻	0.338	0.309	0.305	0.03	1.111	S
G4	Cl ⁻	0.214	0.27	0.27	0.03	-1.082	Q
G1	Ca ²⁺	0.117	0.089	0.097	0.029	0.677	U
G2	Ca ²⁺	0.104	0.128	0.133	0.027	-1.075	Q
G3	Ca ²⁺	0.153	0.179	0.183	0.025	-1.194	S
G4	Ca ²⁺	0.18	0.204	0.21	0.03	-0.988	S
G1	K ⁺	0.126	0.17	0.171	0.028	-1.58	U
G2	K ⁺	0.197	0.238	0.235	0.032	-1.184	Q
G3	K ⁺	0.22	0.272	0.267	0.038	-1.248	Q
G4	K ⁺	0.127	0.17	0.167	0.028	-1.468	U
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.35	4.33	4.358	0.053	-0.15	S
G3	pH	4.83	4.88	4.877	0.071	-0.653	S
G4	pH	4.75	4.7	4.736	0.055	0.259	S
G1	Cond	21.9	27.9	27.503	2.113	-2.652	Q
G2	Cond	21.4	27	26.521	1.154	-4.439	Q
G3	Cond	10.9	14	14.539	0.624	-5.831	Q
G4	Cond	14.1	17	17.033	0.718	-4.082	Q

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.05	1.076	1.077	0.055	-0.493	S
G2	SO ₄ ²⁻	0.97	0.987	0.997	0.058	-0.462	S
G3	SO ₄ ²⁻	0.51	0.52	0.528	0.025	-0.725	S
G4	SO ₄ ²⁻	0.65	0.661	0.67	0.038	-0.538	S
G1	NH ₄ ⁺	0.19	0.187	0.193	0.019	-0.185	S
G2	NH ₄ ⁺	0.2	0.207	0.211	0.02	-0.569	S
G3	NH ₄ ⁺	0.32	0.321	0.327	0.023	-0.297	S
G4	NH ₄ ⁺	0.32	0.326	0.329	0.023	-0.4	S
G1	NO ₃ ⁻	0.35	0.357	0.355	0.02	-0.272	S
G2	NO ₃ ⁻	0.42	0.417	0.42	0.025	0.007	S
G3	NO ₃ ⁻	0.48	0.484	0.483	0.028	-0.122	S
G4	NO ₃ ⁻	0.46	0.469	0.467	0.034	-0.202	S
G1	Na ⁺	0.23	0.254	0.253	0.015	-1.535	S
G2	Na ⁺	0.31	0.34	0.335	0.024	-1.074	S
G3	Na ⁺	0.28	0.308	0.303	0.025	-0.921	S
G4	Na ⁺	0.3	0.318	0.314	0.02	-0.735	S
G1	Mg ²⁺	0.12	0.114	0.117	0.013	0.231	S
G2	Mg ²⁺	0.1	0.103	0.011	0.011	-0.601	S
G3	Mg ²⁺	0.13	0.124	0.128	0.01	0.25	S
G4	Mg ²⁺	0.14	0.134	0.138	0.009	0.197	S
G1	Cl ⁻	0.11	0.116	0.129	0.046	-0.334	S
G2	Cl ⁻	0.19	0.193	0.192	0.038	-0.042	S
G3	Cl ⁻	0.3	0.309	0.305	0.03	-0.155	S
G4	Cl ⁻	0.26	0.27	0.27	0.03	-0.109	S
G1	Ca ²⁺	0.13	0.089	0.097	0.029	1.118	U
G2	Ca ²⁺	0.17	0.128	0.133	0.027	1.363	U
G3	Ca ²⁺	0.22	0.179	0.183	0.025	1.464	Q
G4	Ca ²⁺	0.22	0.204	0.21	0.03	0.346	S
G1	K ⁺	0.15	0.17	0.171	0.028	-0.73	S
G2	K ⁺	0.22	0.238	0.235	0.032	-0.467	S
G3	K ⁺	0.26	0.272	0.267	0.038	-0.187	S
G4	K ⁺	0.16	0.17	0.167	0.028	-0.269	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.37	4.33	4.358	0.053	0.229	S
G3	pH	4.86	4.88	4.877	0.071	-0.232	S
G4	pH	4.73	4.7	4.736	0.055	-0.102	S
G1	Cond	28.8	27.9	27.503	2.113	0.614	S
G2	Cond	27.4	27	26.521	1.154	0.762	S
G3	Cond	14.8	14	14.539	0.624	0.418	S
G4	Cond	17.5	17	17.033	0.718	0.65	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

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.089	1.076	1.077	0.055	0.219	S
G2	SO ₄ ²⁻	1	0.987	0.997	0.058	0.054	S
G3	SO ₄ ²⁻	0.527	0.52	0.528	0.025	-0.043	S
G4	SO ₄ ²⁻	0.673	0.661	0.67	0.038	0.073	S
G1	NH ₄ ⁺	0.185	0.187	0.193	0.019	-0.455	S
G2	NH ₄ ⁺	0.203	0.207	0.211	0.02	-0.42	S
G3	NH ₄ ⁺	0.316	0.321	0.327	0.023	-0.474	S
G4	NH ₄ ⁺	0.315	0.326	0.329	0.023	-0.621	S
G1	NO ₃ ⁻	0.347	0.357	0.355	0.02	-0.423	S
G2	NO ₃ ⁻	0.41	0.417	0.42	0.025	-0.4	S
G3	NO ₃ ⁻	0.484	0.484	0.483	0.028	0.021	S
G4	NO ₃ ⁻	0.471	0.469	0.467	0.034	0.118	S
G1	Na ⁺	0.245	0.254	0.253	0.015	-0.521	S
G2	Na ⁺	0.312	0.34	0.335	0.024	-0.989	S
G3	Na ⁺	0.29	0.308	0.303	0.025	-0.527	S
G4	Na ⁺	0.307	0.318	0.314	0.02	-0.379	S
G1	Mg ²⁺	0.106	0.114	0.117	0.013	-0.855	S
G2	Mg ²⁺	0.096	0.103	0.011	0.011	-0.959	S
G3	Mg ²⁺	0.114	0.124	0.128	0.01	-1.375	S
G4	Mg ²⁺	0.124	0.134	0.138	0.009	-1.561	S
G1	Cl ⁻	0.125	0.116	0.129	0.046	-0.025	S
G2	Cl ⁻	0.195	0.193	0.192	0.038	0.066	S
G3	Cl ⁻	0.295	0.309	0.305	0.03	-0.322	S
G4	Cl ⁻	0.269	0.27	0.27	0.03	0.081	S
G1	Ca ²⁺	< 0.100	0.089	0.097	0.029		B
G2	Ca ²⁺	0.127	0.128	0.133	0.027	-0.225	S
G3	Ca ²⁺	0.174	0.179	0.183	0.025	-0.361	S
G4	Ca ²⁺	0.199	0.204	0.21	0.03	-0.354	S
G1	K ⁺	0.185	0.17	0.171	0.028	0.508	S
G2	K ⁺	0.218	0.238	0.235	0.032	-0.529	S
G3	K ⁺	0.28	0.272	0.267	0.038	0.344	S
G4	K ⁺	0.187	0.17	0.167	0.028	0.713	S
G1	pH	4.35	4.27	4.326	0.043	0.57	S
G2	pH	4.43	4.33	4.358	0.053	1.364	S
G3	pH	4.91	4.88	4.877	0.071	0.47	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	26.3	27.9	27.503	2.113	-0.569	S
G2	Cond	24.1	27	26.521	1.154	-2.099	S
G3	Cond	13.4	14	14.539	0.624	-1.825	S
G4	Cond	16.1	17	17.033	0.718	-1.298	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.076	1.076	1.077	0.055	-0.018	S
G2	SO ₄ ²⁻	0.914	0.987	0.997	0.058	-1.427	S
G3	SO ₄ ²⁻	0.512	0.52	0.528	0.025	-0.644	S
G4	SO ₄ ²⁻	0.631	0.661	0.67	0.038	-1.043	S
G1	NH ₄ ⁺	0.211	0.187	0.193	0.019	0.945	S
G2	NH ₄ ⁺	0.224	0.207	0.211	0.02	0.629	S
G3	NH ₄ ⁺	0.349	0.321	0.327	0.023	0.991	S
G4	NH ₄ ⁺	0.341	0.326	0.329	0.023	0.529	S
G1	NO ₃ ⁻	0.346	0.357	0.355	0.02	-0.473	S
G2	NO ₃ ⁻	0.426	0.417	0.42	0.025	0.25	S
G3	NO ₃ ⁻	0.427	0.484	0.483	0.028	-2.015	Q
G4	NO ₃ ⁻	0.47	0.469	0.467	0.034	0.089	S
G1	Na ⁺	0.265	0.254	0.253	0.015	0.83	S
G2	Na ⁺	0.346	0.34	0.335	0.024	0.455	S
G3	Na ⁺	0.319	0.308	0.303	0.025	0.615	S
G4	Na ⁺	0.332	0.318	0.314	0.02	0.889	S
G1	Mg ²⁺	0.112	0.114	0.117	0.013	-0.389	S
G2	Mg ²⁺	0.103	0.103	0.011	0.011	-0.332	S
G3	Mg ²⁺	0.127	0.124	0.128	0.01	-0.055	S
G4	Mg ²⁺	0.134	0.134	0.138	0.009	-0.462	S
G1	Cl ⁻	0.109	0.116	0.129	0.046	-0.355	S
G2	Cl ⁻	0.175	0.193	0.192	0.038	-0.366	S
G3	Cl ⁻	0.282	0.309	0.305	0.03	-0.755	S
G4	Cl ⁻	0.248	0.27	0.27	0.03	-0.363	S
G1	Ca ²⁺	0.121	0.089	0.097	0.029	0.813	U
G2	Ca ²⁺	0.156	0.128	0.133	0.027	0.846	Q
G3	Ca ²⁺	0.207	0.179	0.183	0.025	0.949	Q
G4	Ca ²⁺	0.239	0.204	0.21	0.03	0.98	Q
G1	K ⁺	0.187	0.17	0.171	0.028	0.579	S
G2	K ⁺	0.25	0.238	0.235	0.032	0.469	S
G3	K ⁺	0.289	0.272	0.267	0.038	0.583	S
G4	K ⁺	0.183	0.17	0.167	0.028	0.567	S
G1	pH	4.29	4.27	4.326	0.043	-0.837	S
G2	pH	4.34	4.33	4.358	0.053	-0.339	S
G3	pH	4.97	4.88	4.877	0.071	1.313	S
G4	pH	4.81	4.7	4.736	0.055	1.344	Q
G1	Cond	19.6	27.9	27.503	2.113	-3.741	U
G2	Cond	19.1	27	26.521	1.154	-6.433	U
G3	Cond	9.4	14	14.539	0.624	-8.235	U
G4	Cond	11.1	17	17.033	0.718	-8.258	U

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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

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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.042	1.076	1.077	0.055	-0.639	S
G2	SO ₄ ²⁻	0.967	0.987	0.997	0.058	-0.514	S
G3	SO ₄ ²⁻	0.5	0.52	0.528	0.025	-1.126	S
G4	SO ₄ ²⁻	0.639	0.661	0.67	0.038	-0.83	S
G1	NH ₄ ⁺	0.19	0.187	0.193	0.019	-0.185	S
G2	NH ₄ ⁺	0.2	0.207	0.211	0.02	-0.569	S
G3	NH ₄ ⁺	0.32	0.321	0.327	0.023	-0.297	S
G4	NH ₄ ⁺	0.32	0.326	0.329	0.023	-0.4	S
G1	NO ₃ ⁻	0.34	0.357	0.355	0.02	-0.773	S
G2	NO ₃ ⁻	0.4	0.417	0.42	0.025	-0.806	S
G3	NO ₃ ⁻	0.46	0.484	0.483	0.028	-0.836	S
G4	NO ₃ ⁻	0.44	0.469	0.467	0.034	-0.784	S
G1	Na ⁺	0.241	0.254	0.253	0.015	-0.791	S
G2	Na ⁺	0.322	0.34	0.335	0.024	-0.565	S
G3	Na ⁺	0.286	0.308	0.303	0.025	-0.684	S
G4	Na ⁺	0.299	0.318	0.314	0.02	-0.785	S
G1	Mg ²⁺	0.117	0.114	0.117	0.013	-0.001	S
G2	Mg ²⁺	0.105	0.103	0.101	0.011	-0.153	S
G3	Mg ²⁺	0.125	0.124	0.128	0.01	-0.258	S
G4	Mg ²⁺	0.133	0.134	0.138	0.009	-0.572	S
G1	Cl ⁻	0.25	0.116	0.129	0.046	2.546	U
G2	Cl ⁻	0.25	0.193	0.192	0.038	1.254	U
G3	Cl ⁻	0.3	0.309	0.305	0.03	-0.155	S
G4	Cl ⁻	0.29	0.27	0.27	0.03	0.526	S
G1	Ca ²⁺	0.098	0.089	0.097	0.029	0.032	S
G2	Ca ²⁺	0.138	0.128	0.133	0.027	0.181	S
G3	Ca ²⁺	0.188	0.179	0.183	0.025	0.195	S
G4	Ca ²⁺	0.218	0.204	0.21	0.03	0.28	S
G1	K ⁺	0.159	0.17	0.171	0.028	-0.412	S
G2	K ⁺	0.225	0.238	0.235	0.032	-0.311	S
G3	K ⁺	0.248	0.272	0.267	0.038	-0.505	S
G4	K ⁺	0.157	0.17	0.167	0.028	-0.378	S
G1	pH	4.35	4.27	4.326	0.043	0.57	S
G2	pH	4.4	4.33	4.358	0.053	0.797	S
G3	pH	4.96	4.88	4.877	0.071	1.173	S
G4	pH	4.81	4.7	4.736	0.055	1.344	Q
G1	Cond	29	27.9	27.503	2.113	0.709	S
G2	Cond	27	27	26.521	1.154	0.415	S
G3	Cond	14	14	14.539	0.624	-0.864	S
G4	Cond	17	17	17.033	0.718	-0.046	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 Youden plots, updated expected values ect:

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EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.08	1.076	1.077	0.055	0.055	S
G2	SO ₄ ²⁻	1.02	0.987	0.997	0.058	0.399	S
G3	SO ₄ ²⁻	0.54	0.52	0.528	0.025	0.479	S
G4	SO ₄ ²⁻	0.68	0.661	0.67	0.038	0.259	S
G1	NH ₄ ⁺	0.189	0.187	0.193	0.019	-0.239	S
G2	NH ₄ ⁺	0.21	0.207	0.211	0.02	-0.07	S
G3	NH ₄ ⁺	0.317	0.321	0.327	0.023	-0.43	S
G4	NH ₄ ⁺	0.315	0.326	0.329	0.023	-0.621	S
G1	NO ₃ ⁻	0.35	0.357	0.355	0.02	-0.272	S
G2	NO ₃ ⁻	0.4	0.417	0.42	0.025	-0.806	S
G3	NO ₃ ⁻	0.47	0.484	0.483	0.028	-0.479	S
G4	NO ₃ ⁻	0.46	0.469	0.467	0.034	-0.202	S
G1	Na ⁺	0.24	0.254	0.253	0.015	-0.859	S
G2	Na ⁺	0.31	0.34	0.335	0.024	-1.074	S
G3	Na ⁺	0.3	0.308	0.303	0.025	-0.133	S
G4	Na ⁺	0.3	0.318	0.314	0.02	-0.735	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.103	0.103	0.101	0.011	-0.332	S
G3	Mg ²⁺	0.121	0.124	0.128	0.01	-0.664	S
G4	Mg ²⁺	0.134	0.134	0.138	0.009	-0.462	S
G1	Cl ⁻	0.03	0.116	0.129	0.046	-1.98	U
G2	Cl ⁻	0.04	0.193	0.192	0.038	-3.283	U
G3	Cl ⁻	0.23	0.309	0.305	0.03	-2.487	U
G4	Cl ⁻	0.22	0.27	0.27	0.03	-0.955	Q
G1	Ca ²⁺	0.14	0.089	0.097	0.029	1.458	U
G2	Ca ²⁺	0.21	0.128	0.133	0.027	2.84	U
G3	Ca ²⁺	0.19	0.179	0.183	0.025	0.274	S
G4	Ca ²⁺	0.27	0.204	0.21	0.03	2.014	U
G1	K ⁺	0.17	0.17	0.171	0.028	-0.023	S
G2	K ⁺	0.22	0.238	0.235	0.032	-0.467	S
G3	K ⁺	0.25	0.272	0.267	0.038	-0.452	S
G4	K ⁺	0.16	0.17	0.167	0.028	-0.269	S
G1	pH	4.41	4.27	4.326	0.043	1.977	Q
G2	pH	4.44	4.33	4.358	0.053	1.554	Q
G3	pH	4.94	4.88	4.877	0.071	0.892	S
G4	pH	4.77	4.7	4.736	0.055	0.621	S
G1	Cond	26	27.9	27.503	2.113	-0.711	S
G2	Cond	25	27	26.521	1.154	-1.319	S
G3	Cond	13	14	14.539	0.624	-2.466	S
G4	Cond	16	17	17.033	0.718	-1.438	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

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.06	1.076	1.077	0.055	-0.31	S
G2	SO ₄ ²⁻	0.99	0.987	0.997	0.058	-0.118	S
G3	SO ₄ ²⁻	0.52	0.52	0.528	0.025	-0.324	S
G4	SO ₄ ²⁻	0.68	0.661	0.67	0.038	0.259	S
G1	NH ₄ ⁺	0.22	0.187	0.193	0.019	1.43	Q
G2	NH ₄ ⁺	0.26	0.207	0.211	0.02	2.427	U
G3	NH ₄ ⁺	0.34	0.321	0.327	0.023	0.591	S
G4	NH ₄ ⁺	0.34	0.326	0.329	0.023	0.485	S
G1	NO ₃ ⁻	0.38	0.357	0.355	0.02	1.231	S
G2	NO ₃ ⁻	0.44	0.417	0.42	0.025	0.819	S
G3	NO ₃ ⁻	0.5	0.484	0.483	0.028	0.593	S
G4	NO ₃ ⁻	0.49	0.469	0.467	0.034	0.672	S
G1	Na ⁺	0.287	0.254	0.253	0.015	2.316	S
G2	Na ⁺	0.35	0.34	0.335	0.024	0.625	S
G3	Na ⁺	0.298	0.308	0.303	0.025	-0.212	S
G4	Na ⁺	0.318	0.318	0.314	0.02	0.179	S
G1	Mg ²⁺	0.097	0.114	0.117	0.013	-1.553	S
G2	Mg ²⁺	0.092	0.103	0.011	0.011	-1.317	S
G3	Mg ²⁺	0.111	0.124	0.128	0.01	-1.679	S
G4	Mg ²⁺	0.131	0.134	0.138	0.009	-0.792	S
G1	Cl ⁻	0.21	0.116	0.129	0.046	1.723	U
G2	Cl ⁻	0.26	0.193	0.192	0.038	1.47	U
G3	Cl ⁻	0.34	0.309	0.305	0.03	1.178	S
G4	Cl ⁻	0.3	0.27	0.27	0.03	0.737	S
G1	Ca ²⁺	0.088	0.089	0.097	0.029	-0.308	S
G2	Ca ²⁺	0.133	0.128	0.133	0.027	-0.004	S
G3	Ca ²⁺	0.168	0.179	0.183	0.025	-0.599	S
G4	Ca ²⁺	0.202	0.204	0.21	0.03	-0.254	S
G1	K ⁺	0.205	0.17	0.171	0.028	1.216	Q
G2	K ⁺	0.261	0.238	0.235	0.032	0.812	S
G3	K ⁺	0.27	0.272	0.267	0.038	0.079	S
G4	K ⁺	0.176	0.17	0.167	0.028	0.313	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.34	4.33	4.358	0.053	-0.339	S
G3	pH	4.85	4.88	4.877	0.071	-0.372	S
G4	pH	4.7	4.7	4.736	0.055	-0.645	S
G1	Cond	29	27.9	27.503	2.113	0.709	S
G2	Cond	27	27	26.521	1.154	0.415	S
G3	Cond	15	14	14.539	0.624	0.738	S
G4	Cond	17	17	17.033	0.718	-0.046	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.99	1.076	1.077	0.055	-1.589	S
G2	SO ₄ ²⁻	0.907	0.987	0.997	0.058	-1.547	S
G3	SO ₄ ²⁻	0.523	0.52	0.528	0.025	-0.203	S
G4	SO ₄ ²⁻	0.62	0.661	0.67	0.038	-1.335	S
G1	NH ₄ ⁺	0.195	0.187	0.193	0.019	0.084	S
G2	NH ₄ ⁺	0.207	0.207	0.211	0.02	-0.22	S
G3	NH ₄ ⁺	0.325	0.321	0.327	0.023	-0.075	S
G4	NH ₄ ⁺	0.323	0.326	0.329	0.023	-0.267	S
G1	NO ₃ ⁻	0.356	0.357	0.355	0.02	0.028	S
G2	NO ₃ ⁻	0.419	0.417	0.42	0.025	-0.034	S
G3	NO ₃ ⁻	0.486	0.484	0.483	0.028	0.093	S
G4	NO ₃ ⁻	0.474	0.469	0.467	0.034	0.206	S
G1	Na ⁺	0.247	0.254	0.253	0.015	-0.386	S
G2	Na ⁺	0.312	0.34	0.335	0.024	-0.989	S
G3	Na ⁺	0.611	0.308	0.303	0.025	12.11	U
G4	Na ⁺	0.297	0.318	0.314	0.02	-0.887	S
G1	Mg ²⁺	0.112	0.114	0.117	0.013	-0.389	S
G2	Mg ²⁺	0.1	0.103	0.011	0.011	-0.601	S
G3	Mg ²⁺	0.125	0.124	0.128	0.01	-0.258	S
G4	Mg ²⁺	0.13	0.134	0.138	0.009	-0.902	S
G1	Cl ⁻	0.115	0.116	0.129	0.046	-0.231	S
G2	Cl ⁻	0.175	0.193	0.192	0.038	-0.366	S
G3	Cl ⁻	0.266	0.309	0.305	0.03	-1.288	S
G4	Cl ⁻	0.239	0.27	0.27	0.03	-0.553	S
G1	Ca ²⁺	0.124	0.089	0.097	0.029	0.915	U
G2	Ca ²⁺	0.121	0.128	0.133	0.027	-0.447	S
G3	Ca ²⁺	0.248	0.179	0.183	0.025	2.575	U
G4	Ca ²⁺	0.211	0.204	0.21	0.03	0.046	S
G1	K ⁺	0.156	0.17	0.171	0.028	-0.518	S
G2	K ⁺	0.217	0.238	0.235	0.032	-0.56	S
G3	K ⁺	0.293	0.272	0.267	0.038	0.689	S
G4	K ⁺	0.155	0.17	0.167	0.028	-0.45	S
G1	pH	4.37	4.27	4.326	0.043	1.039	Q
G2	pH	4.39	4.33	4.358	0.053	0.607	S
G3	pH	4.88	4.88	4.877	0.071	0.049	S
G4	pH	4.76	4.7	4.736	0.055	0.44	S
G1	Cond	28.9	27.9	27.503	2.113	0.661	S
G2	Cond	28.4	27	26.521	1.154	1.629	S
G3	Cond	17.3	14	14.539	0.624	4.424	Q
G4	Cond	19.1	17	17.033	0.718	2.877	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

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.072	1.076	1.077	0.055	-0.091	S
G2	SO ₄ ²⁻	0.935	0.987	0.997	0.058	-1.065	S
G3	SO ₄ ²⁻	0.537	0.52	0.528	0.025	0.358	S
G4	SO ₄ ²⁻	0.764	0.661	0.67	0.038	2.491	Q
G1	NH ₄ ⁺	0.11	0.187	0.193	0.019	-4.493	U
G2	NH ₄ ⁺	0.137	0.207	0.211	0.02	-3.715	U
G3	NH ₄ ⁺	0.341	0.321	0.327	0.023	0.636	S
G4	NH ₄ ⁺	0.348	0.326	0.329	0.023	0.839	S
G1	NO ₃ ⁻	0.359	0.357	0.355	0.02	0.179	S
G2	NO ₃ ⁻	0.428	0.417	0.42	0.025	0.332	S
G3	NO ₃ ⁻	0.537	0.484	0.483	0.028	1.915	Q
G4	NO ₃ ⁻	0.543	0.469	0.467	0.034	2.214	Q
G1	Na ⁺	0.255	0.254	0.253	0.015	0.154	S
G2	Na ⁺	0.342	0.34	0.335	0.024	0.285	S
G3	Na ⁺	0.303	0.308	0.303	0.025	-0.015	S
G4	Na ⁺	0.318	0.318	0.314	0.02	0.179	S
G1	Mg ²⁺	0.11	0.114	0.117	0.013	-0.544	S
G2	Mg ²⁺	0.104	0.103	0.101	0.011	-0.242	S
G3	Mg ²⁺	0.119	0.124	0.128	0.01	-0.867	S
G4	Mg ²⁺	0.132	0.134	0.138	0.009	-0.682	S
G1	Cl ⁻	< 0.150	0.116	0.129	0.046		B
G2	Cl ⁻	0.18	0.193	0.192	0.038	-0.258	S
G3	Cl ⁻	0.284	0.309	0.305	0.03	-0.688	S
G4	Cl ⁻	0.253	0.27	0.27	0.03	-0.257	S
G1	Ca ²⁺	0.09	0.089	0.097	0.029	-0.24	S
G2	Ca ²⁺	0.122	0.128	0.133	0.027	-0.41	S
G3	Ca ²⁺	0.164	0.179	0.183	0.025	-0.758	S
G4	Ca ²⁺	0.19	0.204	0.21	0.03	-0.654	S
G1	K ⁺	0.176	0.17	0.171	0.028	0.19	S
G2	K ⁺	0.236	0.238	0.235	0.032	0.032	S
G3	K ⁺	0.268	0.272	0.267	0.038	0.026	S
G4	K ⁺	0.17	0.17	0.167	0.028	0.095	S
G1	pH	4.29	4.27	4.326	0.043	-0.837	S
G2	pH	4.33	4.33	4.358	0.053	-0.528	S
G3	pH	4.86	4.88	4.877	0.071	-0.232	S
G4	pH	4.69	4.7	4.736	0.055	-0.826	S
G1	Cond	29.6	27.9	27.503	2.113	0.993	S
G2	Cond	27.8	27	26.521	1.154	1.109	S
G3	Cond	15.1	14	14.539	0.624	0.899	S
G4	Cond	18	17	17.033	0.718	1.346	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 Youden plots, updated expected values ect:

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

EMEP – 30th intercomparison of analytical methods

Laboratory 125, Bayerisches Landesamt für Umweltschutz, Augsburg (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.08	1.076	1.077	0.055	0.055	S
G2	SO ₄ ²⁻	1.01	0.987	0.997	0.058	0.226	S
G3	SO ₄ ²⁻	0.527	0.52	0.528	0.025	-0.043	S
G4	SO ₄ ²⁻	0.668	0.661	0.67	0.038	-0.06	S
G1	NH ₄ ⁺	0.196	0.187	0.193	0.019	0.138	S
G2	NH ₄ ⁺	0.215	0.207	0.211	0.02	0.18	S
G3	NH ₄ ⁺	0.33	0.321	0.327	0.023	0.147	S
G4	NH ₄ ⁺	0.335	0.326	0.329	0.023	0.264	S
G1	NO ₃ ⁻	0.347	0.357	0.355	0.02	-0.423	S
G2	NO ₃ ⁻	0.41	0.417	0.42	0.025	-0.4	S
G3	NO ₃ ⁻	0.475	0.484	0.483	0.028	-0.3	S
G4	NO ₃ ⁻	0.462	0.469	0.467	0.034	-0.144	S
G1	Na ⁺	0.241	0.254	0.253	0.015	-0.791	S
G2	Na ⁺	0.321	0.34	0.335	0.024	-0.607	S
G3	Na ⁺	0.293	0.308	0.303	0.025	-0.409	S
G4	Na ⁺	0.31	0.318	0.314	0.02	-0.227	S
G1	Mg ²⁺	0.112	0.114	0.117	0.013	-0.389	S
G2	Mg ²⁺	0.103	0.103	0.101	0.011	-0.332	S
G3	Mg ²⁺	0.125	0.124	0.128	0.01	-0.258	S
G4	Mg ²⁺	0.137	0.134	0.138	0.009	-0.133	S
G1	Cl ⁻	0.113	0.116	0.129	0.046	-0.272	S
G2	Cl ⁻	0.198	0.193	0.192	0.038	0.131	S
G3	Cl ⁻	0.324	0.309	0.305	0.03	0.645	S
G4	Cl ⁻	0.28	0.27	0.27	0.03	0.314	S
G1	Ca ²⁺	0.082	0.089	0.097	0.029	-0.512	S
G2	Ca ²⁺	0.116	0.128	0.133	0.027	-0.632	S
G3	Ca ²⁺	0.163	0.179	0.183	0.025	-0.797	S
G4	Ca ²⁺	0.188	0.204	0.21	0.03	-0.721	S
G1	K ⁺	0.166	0.17	0.171	0.028	-0.164	S
G2	K ⁺	0.235	0.238	0.235	0.032	0.001	S
G3	K ⁺	0.272	0.272	0.267	0.038	0.132	S
G4	K ⁺	0.18	0.17	0.167	0.028	0.458	S
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond	29.2	27.9	27.503	2.113	0.803	S
G2	Cond	27.1	27	26.521	1.154	0.502	S
G3	Cond	14.8	14	14.539	0.624	0.418	S
G4	Cond	17.3	17	17.033	0.718	0.372	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.99	1.076	1.077	0.055	-1.589	S
G2	SO ₄ ²⁻	0.92	0.987	0.997	0.058	-1.323	S
G3	SO ₄ ²⁻	0.52	0.52	0.528	0.025	-0.324	S
G4	SO ₄ ²⁻	0.69	0.661	0.67	0.038	0.525	S
G1	NH ₄ ⁺	0.173	0.187	0.193	0.019	-1.101	S
G2	NH ₄ ⁺	0.192	0.207	0.211	0.02	-0.969	S
G3	NH ₄ ⁺	0.32	0.321	0.327	0.023	-0.297	S
G4	NH ₄ ⁺	0.321	0.326	0.329	0.023	-0.355	S
G1	NO ₃ ⁻	0.336	0.357	0.355	0.02	-0.974	S
G2	NO ₃ ⁻	0.387	0.417	0.42	0.025	-1.334	S
G3	NO ₃ ⁻	0.453	0.484	0.483	0.028	-1.086	S
G4	NO ₃ ⁻	0.454	0.469	0.467	0.034	-0.377	S
G1	Na ⁺	0.24	0.254	0.253	0.015	-0.859	S
G2	Na ⁺	0.32	0.34	0.335	0.024	-0.65	S
G3	Na ⁺	0.3	0.308	0.303	0.025	-0.133	S
G4	Na ⁺	0.34	0.318	0.314	0.02	1.294	S
G1	Mg ²⁺	0.11	0.114	0.117	0.013	-0.544	S
G2	Mg ²⁺	0.1	0.103	0.101	0.011	-0.601	S
G3	Mg ²⁺	0.12	0.124	0.128	0.01	-0.766	S
G4	Mg ²⁺	0.13	0.134	0.138	0.009	-0.902	S
G1	Cl ⁻	0.08	0.116	0.129	0.046	-0.951	U
G2	Cl ⁻	0.14	0.193	0.192	0.038	-1.122	U
G3	Cl ⁻	0.23	0.309	0.305	0.03	-2.487	U
G4	Cl ⁻	0.22	0.27	0.27	0.03	-0.955	Q
G1	Ca ²⁺	0.11	0.089	0.097	0.029	0.439	Q
G2	Ca ²⁺	0.13	0.128	0.133	0.027	-0.115	S
G3	Ca ²⁺	0.18	0.179	0.183	0.025	-0.123	S
G4	Ca ²⁺	0.22	0.204	0.21	0.03	0.346	S
G1	K ⁺	0.15	0.17	0.171	0.028	-0.73	S
G2	K ⁺	0.21	0.238	0.235	0.032	-0.779	S
G3	K ⁺	0.25	0.272	0.267	0.038	-0.452	S
G4	K ⁺	0.18	0.17	0.167	0.028	0.458	S
G1	pH	4.34	4.27	4.326	0.043	0.335	S
G2	pH	4.35	4.33	4.358	0.053	-0.15	S
G3	pH	4.85	4.88	4.877	0.071	-0.372	S
G4	pH	4.72	4.7	4.736	0.055	-0.283	S
G1	Cond	25.5	27.9	27.503	2.113	-0.948	S
G2	Cond	25.6	27	26.521	1.154	-0.799	S
G3	Cond	14.3	14	14.539	0.624	-0.383	S
G4	Cond	17	17	17.033	0.718	-0.046	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.04	1.076	1.077	0.055	-0.676	S
G2	SO ₄ ²⁻	0.976	0.987	0.997	0.058	-0.359	S
G3	SO ₄ ²⁻	0.516	0.52	0.528	0.025	-0.484	S
G4	SO ₄ ²⁻	0.661	0.661	0.67	0.038	-0.246	S
G1	NH ₄ ⁺	0.192	0.187	0.193	0.019	-0.078	S
G2	NH ₄ ⁺	0.205	0.207	0.211	0.02	-0.32	S
G3	NH ₄ ⁺	0.325	0.321	0.327	0.023	-0.075	S
G4	NH ₄ ⁺	0.324	0.326	0.329	0.023	-0.223	S
G1	NO ₃ ⁻	0.356	0.357	0.355	0.02	0.028	S
G2	NO ₃ ⁻	0.421	0.417	0.42	0.025	0.047	S
G3	NO ₃ ⁻	0.486	0.484	0.483	0.028	0.093	S
G4	NO ₃ ⁻	0.48	0.469	0.467	0.034	0.38	S
G1	Na ⁺	0.249	0.254	0.253	0.015	-0.251	S
G2	Na ⁺	0.336	0.34	0.335	0.024	0.03	S
G3	Na ⁺	0.306	0.308	0.303	0.025	0.103	S
G4	Na ⁺	0.322	0.318	0.314	0.02	0.381	S
G1	Mg ²⁺	0.114	0.114	0.117	0.013	-0.234	S
G2	Mg ²⁺	0.104	0.103	0.101	0.011	-0.242	S
G3	Mg ²⁺	0.127	0.124	0.128	0.01	-0.055	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻	0.116	0.116	0.129	0.046	-0.211	S
G2	Cl ⁻	0.189	0.193	0.192	0.038	-0.064	S
G3	Cl ⁻	0.301	0.309	0.305	0.03	-0.122	S
G4	Cl ⁻	0.268	0.27	0.27	0.03	0.06	S
G1	Ca ²⁺	0.086	0.089	0.097	0.029	-0.376	S
G2	Ca ²⁺	0.125	0.128	0.133	0.027	-0.299	S
G3	Ca ²⁺	0.178	0.179	0.183	0.025	-0.202	S
G4	Ca ²⁺	0.205	0.204	0.21	0.03	-0.154	S
G1	K ⁺	0.166	0.17	0.171	0.028	-0.164	S
G2	K ⁺	0.238	0.238	0.235	0.032	0.094	S
G3	K ⁺	0.273	0.272	0.267	0.038	0.158	S
G4	K ⁺	0.173	0.17	0.167	0.028	0.204	S
G1	pH	4.36	4.27	4.326	0.043	0.804	S
G2	pH	4.4	4.33	4.358	0.053	0.797	S
G3	pH	4.91	4.88	4.877	0.071	0.47	S
G4	pH	4.76	4.7	4.736	0.055	0.44	S
G1	Cond	29.29	27.9	27.503	2.113	0.846	S
G2	Cond	27.99	27	26.521	1.154	1.273	S
G3	Cond	15.39	14	14.539	0.624	1.363	S
G4	Cond	17.91	17	17.033	0.718	1.221	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th intercomparison of analytical methods

Laboratory 146, Cellule de Recherche en Environment et Biotechnologies Public Research Center-
Gabriel Lippm (Luxembourg)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.046	1.076	1.077	0.055	-0.566	S
G2	SO ₄ ²⁻	0.978	0.987	0.997	0.058	-0.325	S
G3	SO ₄ ²⁻	0.515	0.52	0.528	0.025	-0.524	S
G4	SO ₄ ²⁻	0.649	0.661	0.67	0.038	-0.565	S
G1	NH ₄ ⁺	0.194	0.187	0.193	0.019	0.03	S
G2	NH ₄ ⁺	0.206	0.207	0.211	0.02	-0.27	S
G3	NH ₄ ⁺	0.321	0.321	0.327	0.023	-0.252	S
G4	NH ₄ ⁺	0.315	0.326	0.329	0.023	-0.621	S
G1	NO ₃ ⁻	0.346	0.357	0.355	0.02	-0.473	S
G2	NO ₃ ⁻	0.406	0.417	0.42	0.025	-0.562	S
G3	NO ₃ ⁻	0.476	0.484	0.483	0.028	-0.265	S
G4	NO ₃ ⁻	0.46	0.469	0.467	0.034	-0.202	S
G1	Na ⁺	0.262	0.254	0.253	0.015	0.627	S
G2	Na ⁺	0.34	0.34	0.335	0.024	0.2	S
G3	Na ⁺	0.312	0.308	0.303	0.025	0.339	S
G4	Na ⁺	0.319	0.318	0.314	0.02	0.229	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.102	0.103	0.011	0.011	-0.421	S
G3	Mg ²⁺	0.125	0.124	0.128	0.01	-0.258	S
G4	Mg ²⁺	0.139	0.134	0.138	0.009	0.087	S
G1	Cl ⁻	0.113	0.116	0.129	0.046	-0.272	S
G2	Cl ⁻	0.19	0.193	0.192	0.038	-0.042	S
G3	Cl ⁻	0.296	0.309	0.305	0.03	-0.288	S
G4	Cl ⁻	0.261	0.27	0.27	0.03	-0.088	S
G1	Ca ²⁺	0.084	0.089	0.097	0.029	-0.444	S
G2	Ca ²⁺	0.114	0.128	0.133	0.027	-0.706	S
G3	Ca ²⁺	0.164	0.179	0.183	0.025	-0.758	S
G4	Ca ²⁺	0.202	0.204	0.21	0.03	-0.254	S
G1	K ⁺	0.513	0.17	0.171	0.028	12.115	U
G2	K ⁺	0.232	0.238	0.235	0.032	-0.093	S
G3	K ⁺	0.27	0.272	0.267	0.038	0.079	S
G4	K ⁺	0.167	0.17	0.167	0.028	-0.014	S
G1	pH	4.351	4.27	4.326	0.043	0.593	S
G2	pH	4.396	4.33	4.358	0.053	0.721	S
G3	pH	4.938	4.88	4.877	0.071	0.864	S
G4	pH	4.741	4.7	4.736	0.055	0.096	S
G1	Cond	30.2	27.9	27.503	2.113	1.277	S
G2	Cond	28.3	27	26.521	1.154	1.542	S
G3	Cond	15.1	14	14.539	0.624	0.899	S
G4	Cond	16	17	17.033	0.718	-1.438	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th intercomparison of analytical methods

Laboratory 151, Laboratoire de l'Unite des Eaux et Forest (EFOR) (Belgium)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.206	1.076	1.077	0.055	2.353	Q
G2	SO ₄ ²⁻	1.137	0.987	0.997	0.058	2.417	Q
G3	SO ₄ ²⁻	0.576	0.52	0.528	0.025	1.939	Q
G4	SO ₄ ²⁻	0.742	0.661	0.67	0.038	1.898	Q
G1	NH ₄ ⁺	0.189	0.187	0.193	0.019	-0.261	S
G2	NH ₄ ⁺	0.205	0.207	0.211	0.02	-0.32	S
G3	NH ₄ ⁺	0.327	0.321	0.327	0.023	0.005	S
G4	NH ₄ ⁺	0.326	0.326	0.329	0.023	-0.143	S
G1	NO ₃ ⁻	0.324	0.357	0.355	0.02	-1.56	S
G2	NO ₃ ⁻	0.389	0.417	0.42	0.025	-1.257	S
G3	NO ₃ ⁻	0.458	0.484	0.483	0.028	-0.922	S
G4	NO ₃ ⁻	0.445	0.469	0.467	0.034	-0.65	S
G1	Na ⁺	0.236	0.254	0.253	0.015	-1.129	S
G2	Na ⁺	0.317	0.34	0.335	0.024	-0.785	S
G3	Na ⁺	0.284	0.308	0.303	0.025	-0.775	S
G4	Na ⁺	0.295	0.318	0.314	0.02	-0.963	S
G1	Mg ²⁺	0.117	0.114	0.117	0.013	-0.04	S
G2	Mg ²⁺	0.105	0.103	0.101	0.011	-0.153	S
G3	Mg ²⁺	0.126	0.124	0.128	0.01	-0.187	S
G4	Mg ²⁺	0.136	0.134	0.138	0.009	-0.21	S
G1	Cl ⁻	0.104	0.116	0.129	0.046	-0.453	S
G2	Cl ⁻	0.182	0.193	0.192	0.038	-0.219	S
G3	Cl ⁻	0.297	0.309	0.305	0.03	-0.252	S
G4	Cl ⁻	0.258	0.27	0.27	0.03	-0.145	S
G1	Ca ²⁺	0.102	0.089	0.097	0.029	0.151	S
G2	Ca ²⁺	0.131	0.128	0.133	0.027	-0.085	S
G3	Ca ²⁺	0.174	0.179	0.183	0.025	-0.373	S
G4	Ca ²⁺	0.209	0.204	0.21	0.03	-0.011	S
G1	K ⁺	0.164	0.17	0.171	0.028	-0.228	S
G2	K ⁺	0.227	0.238	0.235	0.032	-0.242	S
G3	K ⁺	0.269	0.272	0.267	0.038	0.055	S
G4	K ⁺	0.167	0.17	0.167	0.028	-0.032	S
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		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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B – Blank: You reported either no value or the detection limit

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.085	1.076	1.077	0.055	0.146	S
G2	SO ₄ ²⁻	1.006	0.987	0.997	0.058	0.158	S
G3	SO ₄ ²⁻	0.521	0.52	0.528	0.025	-0.283	S
G4	SO ₄ ²⁻	0.662	0.661	0.67	0.038	-0.219	S
G1	NH ₄ ⁺	0.193	0.187	0.193	0.019	-0.024	S
G2	NH ₄ ⁺	0.214	0.207	0.211	0.02	0.13	S
G3	NH ₄ ⁺	0.332	0.321	0.327	0.023	0.236	S
G4	NH ₄ ⁺	0.334	0.326	0.329	0.023	0.22	S
G1	NO ₃ ⁻	0.347	0.357	0.355	0.02	-0.423	S
G2	NO ₃ ⁻	0.413	0.417	0.42	0.025	-0.278	S
G3	NO ₃ ⁻	0.47	0.484	0.483	0.028	-0.479	S
G4	NO ₃ ⁻	0.459	0.469	0.467	0.034	-0.231	S
G1	Na ⁺	0.243	0.254	0.253	0.015	-0.656	S
G2	Na ⁺	0.339	0.34	0.335	0.024	0.158	S
G3	Na ⁺	0.304	0.308	0.303	0.025	0.024	S
G4	Na ⁺	0.318	0.318	0.314	0.02	0.179	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.108	0.103	0.011	0.011	0.116	S
G3	Mg ²⁺	0.132	0.124	0.128	0.01	0.453	S
G4	Mg ²⁺	0.139	0.134	0.138	0.009	0.087	S
G1	Cl ⁻	0.103	0.116	0.129	0.046	-0.478	S
G2	Cl ⁻	0.172	0.193	0.192	0.038	-0.431	S
G3	Cl ⁻	0.277	0.309	0.305	0.03	-0.921	S
G4	Cl ⁻	0.246	0.27	0.27	0.03	-0.405	S
G1	Ca ²⁺	0.1	0.089	0.097	0.029	0.1	S
G2	Ca ²⁺	0.146	0.128	0.133	0.027	0.476	S
G3	Ca ²⁺	0.209	0.179	0.183	0.025	1.028	Q
G4	Ca ²⁺	0.219	0.204	0.21	0.03	0.313	S
G1	K ⁺	0.164	0.17	0.171	0.028	-0.235	S
G2	K ⁺	0.237	0.238	0.235	0.032	0.063	S
G3	K ⁺	0.28	0.272	0.267	0.038	0.344	S
G4	K ⁺	0.171	0.17	0.167	0.028	0.131	S
G1	pH	4.43	4.27	4.326	0.043	2.445	Q
G2	pH	4.41	4.33	4.358	0.053	0.986	S
G3	pH	4.96	4.88	4.877	0.071	1.173	S
G4	pH	4.84	4.7	4.736	0.055	1.887	Q
G1	Cond	22.03	27.9	27.503	2.113	-2.591	Q
G2	Cond	24.6	27	26.521	1.154	-1.665	S
G3	Cond	15.1	14	14.539	0.624	0.899	S
G4	Cond	16.93	17	17.033	0.718	-0.143	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻		1.076	1.077	0.055		B
G2	SO ₄ ²⁻		0.987	0.997	0.058		B
G3	SO ₄ ²⁻		0.52	0.528	0.025		B
G4	SO ₄ ²⁻		0.661	0.67	0.038		B
G1	NH ₄ ⁺	0.184	0.187	0.193	0.019	-0.509	S
G2	NH ₄ ⁺	0.203	0.207	0.211	0.02	-0.42	S
G3	NH ₄ ⁺	0.335	0.321	0.327	0.023	0.369	S
G4	NH ₄ ⁺	0.331	0.326	0.329	0.023	0.087	S
G1	NO ₃ ⁻		0.357	0.355	0.02		B
G2	NO ₃ ⁻		0.417	0.42	0.025		B
G3	NO ₃ ⁻		0.484	0.483	0.028		B
G4	NO ₃ ⁻		0.469	0.467	0.034		B
G1	Na ⁺	0.263	0.254	0.253	0.015	0.695	S
G2	Na ⁺	0.339	0.34	0.335	0.024	0.158	S
G3	Na ⁺	0.307	0.308	0.303	0.025	0.142	S
G4	Na ⁺	0.323	0.318	0.314	0.02	0.432	S
G1	Mg ²⁺	0.117	0.114	0.117	0.013	-0.001	S
G2	Mg ²⁺	0.107	0.103	0.011	0.011	0.026	S
G3	Mg ²⁺	0.129	0.124	0.128	0.01	0.148	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻		0.116	0.129	0.046		B
G2	Cl ⁻		0.193	0.192	0.038		B
G3	Cl ⁻		0.309	0.305	0.03		B
G4	Cl ⁻		0.27	0.27	0.03		B
G1	Ca ²⁺	0.063	0.089	0.097	0.029	-1.157	U
G2	Ca ²⁺	0.103	0.128	0.133	0.027	-1.112	Q
G3	Ca ²⁺	0.154	0.179	0.183	0.025	-1.154	S
G4	Ca ²⁺	0.184	0.204	0.21	0.03	-0.854	S
G1	K ⁺	0.145	0.17	0.171	0.028	-0.907	S
G2	K ⁺	0.213	0.238	0.235	0.032	-0.685	S
G3	K ⁺	0.244	0.272	0.267	0.038	-0.611	S
G4	K ⁺	0.148	0.17	0.167	0.028	-0.705	S
G1	pH	4.32	4.27	4.326	0.043	-0.133	S
G2	pH	4.38	4.33	4.358	0.053	0.418	S
G3	pH	4.92	4.88	4.877	0.071	0.611	S
G4	pH	4.76	4.7	4.736	0.055	0.44	S
G1	Cond	28.33	27.9	27.503	2.113	0.391	S
G2	Cond	26.75	27	26.521	1.154	0.198	S
G3	Cond	14.37	14	14.539	0.624	-0.271	S
G4	Cond	17.11	17	17.033	0.718	0.107	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.17	1.076	1.077	0.055	1.699	S
G2	SO ₄ ²⁻	1.085	0.987	0.997	0.058	1.518	S
G3	SO ₄ ²⁻	0.525	0.52	0.528	0.025	-0.123	S
G4	SO ₄ ²⁻	0.68	0.661	0.67	0.038	0.259	S
G1	NH ₄ ⁺	0.172	0.187	0.193	0.019	-1.155	S
G2	NH ₄ ⁺	0.207	0.207	0.211	0.02	-0.22	S
G3	NH ₄ ⁺	0.328	0.321	0.327	0.023	0.058	S
G4	NH ₄ ⁺	0.327	0.326	0.329	0.023	-0.09	S
G1	NO ₃ ⁻	0.375	0.357	0.355	0.02	0.981	S
G2	NO ₃ ⁻	0.451	0.417	0.42	0.025	1.266	S
G3	NO ₃ ⁻	0.492	0.484	0.483	0.028	0.307	S
G4	NO ₃ ⁻	0.481	0.469	0.467	0.034	0.409	S
G1	Na ⁺	0.261	0.254	0.253	0.015	0.56	S
G2	Na ⁺	0.347	0.34	0.335	0.024	0.497	S
G3	Na ⁺	0.315	0.308	0.303	0.025	0.457	S
G4	Na ⁺	0.328	0.318	0.314	0.02	0.686	S
G1	Mg ²⁺	0.119	0.114	0.117	0.013	0.154	S
G2	Mg ²⁺	0.107	0.103	0.101	0.011	0.026	S
G3	Mg ²⁺	0.129	0.124	0.128	0.01	0.148	S
G4	Mg ²⁺	0.142	0.134	0.138	0.009	0.416	S
G1	Cl ⁻	0.181	0.116	0.129	0.046	1.126	U
G2	Cl ⁻	0.251	0.193	0.192	0.038	1.276	U
G3	Cl ⁻	0.351	0.309	0.305	0.03	1.544	S
G4	Cl ⁻	0.322	0.27	0.27	0.03	1.202	Q
G1	Ca ²⁺	0.097	0.089	0.097	0.029	-0.002	S
G2	Ca ²⁺	0.134	0.128	0.133	0.027	0.033	S
G3	Ca ²⁺	0.185	0.179	0.183	0.025	0.076	S
G4	Ca ²⁺	0.214	0.204	0.21	0.03	0.146	S
G1	K ⁺	0.184	0.17	0.171	0.028	0.473	S
G2	K ⁺	0.253	0.238	0.235	0.032	0.562	S
G3	K ⁺	0.289	0.272	0.267	0.038	0.583	S
G4	K ⁺	0.194	0.17	0.167	0.028	0.967	S
G1	pH	4.26	4.27	4.326	0.043	-1.54	S
G2	pH	4.33	4.33	4.358	0.053	-0.528	S
G3	pH	4.91	4.88	4.877	0.071	0.47	S
G4	pH	4.73	4.7	4.736	0.055	-0.102	S
G1	Cond	26.9	27.9	27.503	2.113	-0.285	S
G2	Cond	25	27	26.521	1.154	-1.319	S
G3	Cond	13.8	14	14.539	0.624	-1.184	S
G4	Cond	16.4	17	17.033	0.718	-0.881	S

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

Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.231	1.076	1.077	0.055	2.813	Q
G2	SO ₄ ²⁻	1.106	0.987	0.997	0.058	1.879	Q
G3	SO ₄ ²⁻	0.558	0.52	0.528	0.025	1.201	S
G4	SO ₄ ²⁻	0.72	0.661	0.67	0.038	1.322	S
G1	NH ₄ ⁺	0.178	0.187	0.193	0.019	-0.832	S
G2	NH ₄ ⁺	0.297	0.207	0.211	0.02	4.274	U
G3	NH ₄ ⁺	0.338	0.321	0.327	0.023	0.502	S
G4	NH ₄ ⁺	0.333	0.326	0.329	0.023	0.175	S
G1	NO ₃ ⁻	0.354	0.357	0.355	0.02	-0.072	S
G2	NO ₃ ⁻	0.417	0.417	0.42	0.025	-0.115	S
G3	NO ₃ ⁻	0.478	0.484	0.483	0.028	-0.193	S
G4	NO ₃ ⁻	0.461	0.469	0.467	0.034	-0.173	S
G1	Na ⁺	0.276	0.254	0.253	0.015	1.573	S
G2	Na ⁺	0.384	0.34	0.335	0.024	2.069	S
G3	Na ⁺	0.332	0.308	0.303	0.025	1.127	S
G4	Na ⁺	0.321	0.318	0.314	0.02	0.331	S
G1	Mg ²⁺	0.14	0.114	0.117	0.013	1.783	Q
G2	Mg ²⁺	0.141	0.103	0.101	0.011	3.072	U
G3	Mg ²⁺	0.197	0.124	0.128	0.01	7.051	U
G4	Mg ²⁺	0.151	0.134	0.138	0.009	1.405	S
G1	Cl ⁻	0.214	0.116	0.129	0.046	1.805	U
G2	Cl ⁻	0.28	0.193	0.192	0.038	1.902	U
G3	Cl ⁻	0.37	0.309	0.305	0.03	2.177	Q
G4	Cl ⁻	0.347	0.27	0.27	0.03	1.731	U
G1	Ca ²⁺	0.227	0.089	0.097	0.029	4.412	U
G2	Ca ²⁺	0.332	0.128	0.133	0.027	7.346	U
G3	Ca ²⁺	0.19	0.179	0.183	0.025	0.274	S
G4	Ca ²⁺	0.131	0.204	0.21	0.03	-2.622	U
G1	K ⁺	0.223	0.17	0.171	0.028	1.853	U
G2	K ⁺	0.239	0.238	0.235	0.032	0.126	S
G3	K ⁺	0.253	0.272	0.267	0.038	-0.372	S
G4	K ⁺	0.145	0.17	0.167	0.028	-0.814	S
G1	pH	4.29	4.27	4.326	0.043	-0.837	S
G2	pH	4.41	4.33	4.358	0.053	0.986	S
G3	pH	4.91	4.88	4.877	0.071	0.47	S
G4	pH	4.75	4.7	4.736	0.055	0.259	S
G1	Cond	27.5	27.9	27.503	2.113	-0.001	S
G2	Cond	26.2	27	26.521	1.154	-0.278	S
G3	Cond	14.9	14	14.539	0.624	0.578	S
G4	Cond	17.2	17	17.033	0.718	0.233	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.071	1.076	1.077	0.055	-0.11	S
G2	SO ₄ ²⁻	0.988	0.987	0.997	0.058	-0.152	S
G3	SO ₄ ²⁻	0.511	0.52	0.528	0.025	-0.685	S
G4	SO ₄ ²⁻	0.666	0.661	0.67	0.038	-0.113	S
G1	NH ₄ ⁺	0.185	0.187	0.193	0.019	-0.455	S
G2	NH ₄ ⁺	0.209	0.207	0.211	0.02	-0.12	S
G3	NH ₄ ⁺	0.325	0.321	0.327	0.023	-0.075	S
G4	NH ₄ ⁺	0.332	0.326	0.329	0.023	0.131	S
G1	NO ₃ ⁻	0.352	0.357	0.355	0.02	-0.172	S
G2	NO ₃ ⁻	0.414	0.417	0.42	0.025	-0.237	S
G3	NO ₃ ⁻	0.474	0.484	0.483	0.028	-0.336	S
G4	NO ₃ ⁻	0.463	0.469	0.467	0.034	-0.115	S
G1	Na ⁺	0.244	0.254	0.253	0.015	-0.589	S
G2	Na ⁺	0.318	0.34	0.335	0.024	-0.734	S
G3	Na ⁺	0.284	0.308	0.303	0.025	-0.763	S
G4	Na ⁺	0.302	0.318	0.314	0.02	-0.633	S
G1	Mg ²⁺	0.114	0.114	0.117	0.013	-0.234	S
G2	Mg ²⁺	0.103	0.103	0.011	0.011	-0.332	S
G3	Mg ²⁺	0.123	0.124	0.128	0.01	-0.461	S
G4	Mg ²⁺	0.133	0.134	0.138	0.009	-0.572	S
G1	Cl ⁻	0.11	0.116	0.129	0.046	-0.334	S
G2	Cl ⁻	0.191	0.193	0.192	0.038	-0.02	S
G3	Cl ⁻	0.315	0.309	0.305	0.03	0.345	S
G4	Cl ⁻	0.252	0.27	0.27	0.03	-0.278	S
G1	Ca ²⁺	0.088	0.089	0.097	0.029	-0.308	S
G2	Ca ²⁺	0.126	0.128	0.133	0.027	-0.262	S
G3	Ca ²⁺	0.174	0.179	0.183	0.025	-0.361	S
G4	Ca ²⁺	0.198	0.204	0.21	0.03	-0.387	S
G1	K ⁺	0.156	0.17	0.171	0.028	-0.518	S
G2	K ⁺	0.22	0.238	0.235	0.032	-0.467	S
G3	K ⁺	0.247	0.272	0.267	0.038	-0.531	S
G4	K ⁺	0.156	0.17	0.167	0.028	-0.414	S
G1	pH	4.31	4.27	4.326	0.043	-0.368	S
G2	pH	4.36	4.33	4.358	0.053	0.04	S
G3	pH	4.9	4.88	4.877	0.071	0.33	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	27.5	27.9	27.503	2.113	-0.001	S
G2	Cond	26.6	27	26.521	1.154	0.068	S
G3	Cond	14.71	14	14.539	0.624	0.274	S
G4	Cond	16.64	17	17.033	0.718	-0.547	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th intercomparison of analytical methods

Laboratory 167, CEH Edinburgh (United Kingdom)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻		1.076	1.077	0.055		B
G2	SO ₄ ²⁻		0.987	0.997	0.058		B
G3	SO ₄ ²⁻		0.52	0.528	0.025		B
G4	SO ₄ ²⁻		0.661	0.67	0.038		B
G1	NH ₄ ⁺	0.186	0.187	0.193	0.019	-0.401	S
G2	NH ₄ ⁺	0.204	0.207	0.211	0.02	-0.37	S
G3	NH ₄ ⁺	0.321	0.321	0.327	0.023	-0.252	S
G4	NH ₄ ⁺	0.323	0.326	0.329	0.023	-0.267	S
G1	NO ₃ ⁻		0.357	0.355	0.02		B
G2	NO ₃ ⁻		0.417	0.42	0.025		B
G3	NO ₃ ⁻		0.484	0.483	0.028		B
G4	NO ₃ ⁻		0.469	0.467	0.034		B
G1	Na ⁺		0.254	0.253	0.015		B
G2	Na ⁺		0.34	0.335	0.024		B
G3	Na ⁺		0.308	0.303	0.025		B
G4	Na ⁺		0.318	0.314	0.02		B
G1	Mg ²⁺		0.114	0.117	0.013		B
G2	Mg ²⁺		0.103	0.011	0.011		B
G3	Mg ²⁺		0.124	0.128	0.01		B
G4	Mg ²⁺		0.134	0.138	0.009		B
G1	Cl ⁻		0.116	0.129	0.046		B
G2	Cl ⁻		0.193	0.192	0.038		B
G3	Cl ⁻		0.309	0.305	0.03		B
G4	Cl ⁻		0.27	0.27	0.03		B
G1	Ca ²⁺		0.089	0.097	0.029		B
G2	Ca ²⁺		0.128	0.133	0.027		B
G3	Ca ²⁺		0.179	0.183	0.025		B
G4	Ca ²⁺		0.204	0.21	0.03		B
G1	K ⁺		0.17	0.171	0.028		B
G2	K ⁺		0.238	0.235	0.032		B
G3	K ⁺		0.272	0.267	0.038		B
G4	K ⁺		0.17	0.167	0.028		B
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		B

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

EMEP – 30th intercomparison of analytical methods

Laboratory 175, Primorsky Environmental Pollution Monitoring Center, Vladivostok (Russian Federation)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^α
G1	SO ₄ ²⁻	1.158	1.076	1.077	0.055	1.48	S
G2	SO ₄ ²⁻	1.068	0.987	0.997	0.058	1.225	S
G3	SO ₄ ²⁻	0.504	0.52	0.528	0.025	-0.965	S
G4	SO ₄ ²⁻	0.697	0.661	0.67	0.038	0.711	S
G1	NH ₄ ⁺	0.167	0.187	0.193	0.019	-1.424	S
G2	NH ₄ ⁺	0.187	0.207	0.211	0.02	-1.219	S
G3	NH ₄ ⁺	0.261	0.321	0.327	0.023	-2.916	Q
G4	NH ₄ ⁺	0.263	0.326	0.329	0.023	-2.92	Q
G1	NO ₃ ⁻	0.316	0.357	0.355	0.02	-1.976	Q
G2	NO ₃ ⁻	0.409	0.417	0.42	0.025	-0.44	S
G3	NO ₃ ⁻	0.486	0.484	0.483	0.028	0.093	S
G4	NO ₃ ⁻	0.459	0.469	0.467	0.034	-0.231	S
G1	Na ⁺	0.256	0.254	0.253	0.015	0.222	S
G2	Na ⁺	0.358	0.34	0.335	0.024	0.965	S
G3	Na ⁺	0.327	0.308	0.303	0.025	0.93	S
G4	Na ⁺	0.335	0.318	0.314	0.02	1.041	S
G1	Mg ²⁺	0.196	0.114	0.117	0.013	6.126	U
G2	Mg ²⁺	0.18	0.103	0.011	0.011	6.565	U
G3	Mg ²⁺	0.17	0.124	0.128	0.01	4.31	U
G4	Mg ²⁺	0.197	0.134	0.138	0.009	6.459	U
G1	Cl ⁻	< 0.200	0.116	0.129	0.046		B
G2	Cl ⁻	< 0.200	0.193	0.192	0.038		B
G3	Cl ⁻	0.34	0.309	0.305	0.03	1.178	S
G4	Cl ⁻	0.28	0.27	0.27	0.03	0.314	S
G1	Ca ²⁺	0.159	0.089	0.097	0.029	2.103	U
G2	Ca ²⁺	0.194	0.128	0.133	0.027	2.249	U
G3	Ca ²⁺	0.204	0.179	0.183	0.025	0.829	S
G4	Ca ²⁺	0.23	0.204	0.21	0.03	0.68	S
G1	K ⁺	0.2	0.17	0.171	0.028	1.039	Q
G2	K ⁺	0.25	0.238	0.235	0.032	0.469	S
G3	K ⁺	0.275	0.272	0.267	0.038	0.212	S
G4	K ⁺	0.185	0.17	0.167	0.028	0.64	S
G1	pH	4.3	4.27	4.326	0.043	-0.602	S
G2	pH	4.34	4.33	4.358	0.053	-0.339	S
G3	pH	4.86	4.88	4.877	0.071	-0.232	S
G4	pH	4.74	4.7	4.736	0.055	0.078	S
G1	Cond	27.74	27.9	27.503	2.113	0.112	S
G2	Cond	25.94	27	26.521	1.154	-0.504	S
G3	Cond	14.1	14	14.539	0.624	-0.704	S
G4	Cond	16.39	17	17.033	0.718	-0.895	S

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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.896	1.076	1.077	0.055	-3.306	Q
G2	SO ₄ ²⁻	0.813	0.987	0.997	0.058	-3.166	Q
G3	SO ₄ ²⁻	0.549	0.52	0.528	0.025	0.84	S
G4	SO ₄ ²⁻	0.676	0.661	0.67	0.038	0.153	S
G1	NH ₄ ⁺	0.249	0.187	0.193	0.019	2.992	U
G2	NH ₄ ⁺	0.233	0.207	0.211	0.02	1.079	S
G3	NH ₄ ⁺	0.428	0.321	0.327	0.023	4.498	U
G4	NH ₄ ⁺	0.405	0.326	0.329	0.023	3.359	Q
G1	NO ₃ ⁻	0.365	0.357	0.355	0.02	0.479	S
G2	NO ₃ ⁻	0.46	0.417	0.42	0.025	1.632	Q
G3	NO ₃ ⁻	0.535	0.484	0.483	0.028	1.843	Q
G4	NO ₃ ⁻	0.462	0.469	0.467	0.034	-0.144	S
G1	Na ⁺	0.26	0.254	0.253	0.015	0.492	S
G2	Na ⁺	0.35	0.34	0.335	0.024	0.625	S
G3	Na ⁺	0.33	0.308	0.303	0.025	1.048	S
G4	Na ⁺	0.33	0.318	0.314	0.02	0.787	S
G1	Mg ²⁺	0.12	0.114	0.117	0.013	0.231	S
G2	Mg ²⁺	0.11	0.103	0.101	0.011	0.295	S
G3	Mg ²⁺	0.13	0.124	0.128	0.01	0.25	S
G4	Mg ²⁺	0.14	0.134	0.138	0.009	0.197	S
G1	Cl ⁻		0.116	0.129	0.046		B
G2	Cl ⁻		0.193	0.192	0.038		B
G3	Cl ⁻		0.309	0.305	0.03		B
G4	Cl ⁻		0.27	0.27	0.03		B
G1	Ca ²⁺	0.01	0.089	0.097	0.029	-2.956	U
G2	Ca ²⁺	0.1	0.128	0.133	0.027	-1.223	Q
G3	Ca ²⁺	0.15	0.179	0.183	0.025	-1.313	Q
G4	Ca ²⁺	0.17	0.204	0.21	0.03	-1.321	Q
G1	K ⁺	0.2	0.17	0.171	0.028	1.039	Q
G2	K ⁺	0.26	0.238	0.235	0.032	0.78	S
G3	K ⁺	0.31	0.272	0.267	0.038	1.14	S
G4	K ⁺	0.19	0.17	0.167	0.028	0.822	S
G1	pH	4.3	4.27	4.326	0.043	-0.602	S
G2	pH	4.31	4.33	4.358	0.053	-0.907	S
G3	pH	4.81	4.88	4.877	0.071	-0.934	S
G4	pH	4.66	4.7	4.736	0.055	-1.369	S
G1	Cond	28.8	27.9	27.503	2.113	0.614	S
G2	Cond	27.5	27	26.521	1.154	0.848	S
G3	Cond	14.6	14	14.539	0.624	0.097	S
G4	Cond	17.7	17	17.033	0.718	0.929	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^u
G1	SO ₄ ²⁻	1.099	1.076	1.077	0.055	0.402	S
G2	SO ₄ ²⁻	0.999	0.987	0.997	0.058	0.037	S
G3	SO ₄ ²⁻	0.526	0.52	0.528	0.025	-0.083	S
G4	SO ₄ ²⁻	0.652	0.661	0.67	0.038	-0.485	S
G1	NH ₄ ⁺	0.195	0.187	0.193	0.019	0.084	S
G2	NH ₄ ⁺	0.215	0.207	0.211	0.02	0.18	S
G3	NH ₄ ⁺	0.335	0.321	0.327	0.023	0.369	S
G4	NH ₄ ⁺	0.327	0.326	0.329	0.023	-0.09	S
G1	NO ₃ ⁻	0.344	0.357	0.355	0.02	-0.573	S
G2	NO ₃ ⁻	0.411	0.417	0.42	0.025	-0.359	S
G3	NO ₃ ⁻	0.48	0.484	0.483	0.028	-0.122	S
G4	NO ₃ ⁻	0.468	0.469	0.467	0.034	0.031	S
G1	Na ⁺	0.25	0.254	0.253	0.015	-0.183	S
G2	Na ⁺	0.33	0.34	0.335	0.024	-0.225	S
G3	Na ⁺	0.3	0.308	0.303	0.025	-0.133	S
G4	Na ⁺	0.3	0.318	0.314	0.02	-0.735	S
G1	Mg ²⁺	0.12	0.114	0.117	0.013	0.231	S
G2	Mg ²⁺	0.1	0.103	0.011	0.011	-0.601	S
G3	Mg ²⁺	0.12	0.124	0.128	0.01	-0.766	S
G4	Mg ²⁺	0.14	0.134	0.138	0.009	0.197	S
G1	Cl ⁻	0.1	0.116	0.129	0.046	-0.54	S
G2	Cl ⁻	0.17	0.193	0.192	0.038	-0.474	S
G3	Cl ⁻	0.29	0.309	0.305	0.03	-0.488	S
G4	Cl ⁻	0.26	0.27	0.27	0.03	-0.109	S
G1	Ca ²⁺	0.1	0.089	0.097	0.029	0.1	S
G2	Ca ²⁺	0.12	0.128	0.133	0.027	-0.484	S
G3	Ca ²⁺	0.17	0.179	0.183	0.025	-0.52	S
G4	Ca ²⁺	0.2	0.204	0.21	0.03	-0.321	S
G1	K ⁺	0.15	0.17	0.171	0.028	-0.73	S
G2	K ⁺	0.22	0.238	0.235	0.032	-0.467	S
G3	K ⁺	0.27	0.272	0.267	0.038	0.079	S
G4	K ⁺	0.15	0.17	0.167	0.028	-0.632	S
G1	pH	4.26	4.27	4.326	0.043	-1.54	S
G2	pH	4.31	4.33	4.358	0.053	-0.907	S
G3	pH	4.78	4.88	4.877	0.071	-1.355	S
G4	pH	4.62	4.7	4.736	0.055	-2.092	S
G1	Cond	28.5	27.9	27.503	2.113	0.472	S
G2	Cond	27.2	27	26.521	1.154	0.588	S
G3	Cond	15.13	14	14.539	0.624	0.947	S
G4	Cond	17.72	17	17.033	0.718	0.957	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 Youden plots, updated expected values ect:

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	0.971	1.076	1.077	0.055	-1.936	S
G2	SO ₄ ²⁻	0.934	0.987	0.997	0.058	-1.082	S
G3	SO ₄ ²⁻	0.502	0.52	0.528	0.025	-1.046	S
G4	SO ₄ ²⁻	0.645	0.661	0.67	0.038	-0.671	S
G1	NH ₄ ⁺	0.194	0.187	0.193	0.019	0.03	S
G2	NH ₄ ⁺	0.213	0.207	0.211	0.02	0.08	S
G3	NH ₄ ⁺	0.325	0.321	0.327	0.023	-0.075	S
G4	NH ₄ ⁺	0.33	0.326	0.329	0.023	0.043	S
G1	NO ₃ ⁻	0.374	0.357	0.355	0.02	0.93	S
G2	NO ₃ ⁻	0.421	0.417	0.42	0.025	0.047	S
G3	NO ₃ ⁻	0.471	0.484	0.483	0.028	-0.443	S
G4	NO ₃ ⁻	0.459	0.469	0.467	0.034	-0.231	S
G1	Na ⁺	0.255	0.254	0.253	0.015	0.154	S
G2	Na ⁺	0.374	0.34	0.335	0.024	1.644	S
G3	Na ⁺	0.324	0.308	0.303	0.025	0.812	S
G4	Na ⁺	0.373	0.318	0.314	0.02	2.968	Q
G1	Mg ²⁺	0.108	0.114	0.117	0.013	-0.7	S
G2	Mg ²⁺	0.098	0.103	0.011	0.011	-0.78	S
G3	Mg ²⁺	0.12	0.124	0.128	0.01	-0.766	S
G4	Mg ²⁺	0.131	0.134	0.138	0.009	-0.792	S
G1	Cl ⁻	0.109	0.116	0.129	0.046	-0.355	S
G2	Cl ⁻	0.195	0.193	0.192	0.038	0.066	S
G3	Cl ⁻	0.316	0.309	0.305	0.03	0.378	S
G4	Cl ⁻	0.298	0.27	0.27	0.03	0.695	S
G1	Ca ²⁺	0.1	0.089	0.097	0.029	0.1	S
G2	Ca ²⁺	0.135	0.128	0.133	0.027	0.07	S
G3	Ca ²⁺	0.179	0.179	0.183	0.025	-0.162	S
G4	Ca ²⁺	0.203	0.204	0.21	0.03	-0.221	S
G1	K ⁺	0.16	0.17	0.171	0.028	-0.377	S
G2	K ⁺	0.265	0.238	0.235	0.032	0.936	S
G3	K ⁺	0.199	0.272	0.267	0.038	-1.805	U
G4	K ⁺	0.213	0.17	0.167	0.028	1.658	U
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		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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Please check the EMEP intercalibration website for Youden plots, updated expected values ect:

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EMEP – 30th intercomparison of analytical methods

Laboratory 180, vTI - Institut für Agrarrelevante Klimaforschung (Germany)

Precipitation (G-samples)

Sample name	Determinand	Reported value	Expected value	Mean value	Standard deviation	Z score	EMEP quality norm ^x
G1	SO ₄ ²⁻	1.05	1.076	1.077	0.055	-0.493	S
G2	SO ₄ ²⁻	0.973	0.987	0.997	0.058	-0.411	S
G3	SO ₄ ²⁻	0.509	0.52	0.528	0.025	-0.765	S
G4	SO ₄ ²⁻	0.648	0.661	0.67	0.038	-0.591	S
G1	NH ₄ ⁺	0.187	0.187	0.193	0.019	-0.347	S
G2	NH ₄ ⁺	0.209	0.207	0.211	0.02	-0.12	S
G3	NH ₄ ⁺	0.328	0.321	0.327	0.023	0.058	S
G4	NH ₄ ⁺	0.329	0.326	0.329	0.023	-0.002	S
G1	NO ₃ ⁻	0.352	0.357	0.355	0.02	-0.172	S
G2	NO ₃ ⁻	0.418	0.417	0.42	0.025	-0.075	S
G3	NO ₃ ⁻	0.482	0.484	0.483	0.028	-0.05	S
G4	NO ₃ ⁻	0.47	0.469	0.467	0.034	0.089	S
G1	Na ⁺	0.257	0.254	0.253	0.015	0.29	S
G2	Na ⁺	0.354	0.34	0.335	0.024	0.795	S
G3	Na ⁺	0.314	0.308	0.303	0.025	0.418	S
G4	Na ⁺	0.328	0.318	0.314	0.02	0.686	S
G1	Mg ²⁺	0.12	0.114	0.117	0.013	0.231	S
G2	Mg ²⁺	0.111	0.103	0.101	0.011	0.385	S
G3	Mg ²⁺	0.132	0.124	0.128	0.01	0.453	S
G4	Mg ²⁺	0.143	0.134	0.138	0.009	0.526	S
G1	Cl ⁻	0.112	0.116	0.129	0.046	-0.293	S
G2	Cl ⁻	0.187	0.193	0.192	0.038	-0.107	S
G3	Cl ⁻	0.3	0.309	0.305	0.03	-0.155	S
G4	Cl ⁻	0.262	0.27	0.27	0.03	-0.067	S
G1	Ca ²⁺	0.095	0.089	0.097	0.029	-0.07	S
G2	Ca ²⁺	0.156	0.128	0.133	0.027	0.846	Q
G3	Ca ²⁺	0.203	0.179	0.183	0.025	0.79	S
G4	Ca ²⁺	0.25	0.204	0.21	0.03	1.347	Q
G1	K ⁺	0.11	0.17	0.171	0.028	-2.146	U
G2	K ⁺	0.176	0.238	0.235	0.032	-1.839	U
G3	K ⁺	0.209	0.272	0.267	0.038	-1.54	Q
G4	K ⁺	0.121	0.17	0.167	0.028	-1.686	U
G1	pH		4.27	4.326	0.043		B
G2	pH		4.33	4.358	0.053		B
G3	pH		4.88	4.877	0.071		B
G4	pH		4.7	4.736	0.055		B
G1	Cond		27.9	27.503	2.113		B
G2	Cond		27	26.521	1.154		B
G3	Cond		14	14.539	0.624		B
G4	Cond		17	17.033	0.718		B

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

EMEP – 30th 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 ^x
G1	SO ₄ ²⁻	1.17	1.076	1.077	0.055	1.699	S
G2	SO ₄ ²⁻	1.08	0.987	0.997	0.058	1.432	S
G3	SO ₄ ²⁻	0.584	0.52	0.528	0.025	2.244	Q
G4	SO ₄ ²⁻	0.73	0.661	0.67	0.038	1.587	Q
G1	NH ₄ ⁺	0.186	0.187	0.193	0.019	-0.401	S
G2	NH ₄ ⁺	0.203	0.207	0.211	0.02	-0.42	S
G3	NH ₄ ⁺	0.324	0.321	0.327	0.023	-0.119	S
G4	NH ₄ ⁺	0.318	0.326	0.329	0.023	-0.488	S
G1	NO ₃ ⁻	0.406	0.357	0.355	0.02	2.534	Q
G2	NO ₃ ⁻	0.462	0.417	0.42	0.025	1.713	Q
G3	NO ₃ ⁻	0.53	0.484	0.483	0.028	1.665	S
G4	NO ₃ ⁻	0.518	0.469	0.467	0.034	1.487	Q
G1	Na ⁺	0.269	0.254	0.253	0.015	1.1	S
G2	Na ⁺	0.35	0.34	0.335	0.024	0.625	S
G3	Na ⁺	0.317	0.308	0.303	0.025	0.536	S
G4	Na ⁺	0.329	0.318	0.314	0.02	0.737	S
G1	Mg ²⁺	0.115	0.114	0.117	0.013	-0.157	S
G2	Mg ²⁺	0.106	0.103	0.101	0.011	-0.063	S
G3	Mg ²⁺	0.127	0.124	0.128	0.01	-0.055	S
G4	Mg ²⁺	0.138	0.134	0.138	0.009	-0.023	S
G1	Cl ⁻	0.222	0.116	0.129	0.046	1.97	U
G2	Cl ⁻	0.252	0.193	0.192	0.038	1.297	U
G3	Cl ⁻	0.36	0.309	0.305	0.03	1.844	Q
G4	Cl ⁻	0.324	0.27	0.27	0.03	1.245	Q
G1	Ca ²⁺	0.096	0.089	0.097	0.029	-0.036	S
G2	Ca ²⁺	0.14	0.128	0.133	0.027	0.255	S
G3	Ca ²⁺	0.19	0.179	0.183	0.025	0.274	S
G4	Ca ²⁺	0.222	0.204	0.21	0.03	0.413	S
G1	K ⁺	0.164	0.17	0.171	0.028	-0.235	S
G2	K ⁺	0.234	0.238	0.235	0.032	-0.03	S
G3	K ⁺	0.265	0.272	0.267	0.038	-0.054	S
G4	K ⁺	0.167	0.17	0.167	0.028	-0.014	S
G1	pH	4.38	4.27	4.326	0.043	1.273	Q
G2	pH	4.42	4.33	4.358	0.053	1.175	S
G3	pH	4.97	4.88	4.877	0.071	1.313	S
G4	pH	4.78	4.7	4.736	0.055	0.802	S
G1	Cond	29	27.9	27.503	2.113	0.709	S
G2	Cond	28	27	26.521	1.154	1.282	S
G3	Cond	15	14	14.539	0.624	0.738	S
G4	Cond	18	17	17.033	0.718	1.346	S

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Foretaksnr./Enterprise no. 941705561

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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 Youden plots, updated expected values ect:

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