Supplementary material

Chemical speciation of Antarctic atmospheric depositions

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1. NIST 1640a Certified Reference Material analysis

The NIST 1640a Certified Reference Material (CRM) was used to validate the measurement procedure by both ICP-OES and HR-ICP-MS. The CRM was an acidified (2%) spring water and it was analyzed without treatment or diluted, in order to best simulate the concentration level of real samples. All measurements were performed in triplicate. The best percentage recovery obtained for the cations of interest and the corresponding measurement conditions are shown in Table S1.

Table S1 Concentrations of certified elements in the NIST 1640a and corresponding expanded uncertainties (95 % level of confidence), estimated percentage recovery and corresponding measurement conditions.

Element	Certificate value ($\mu g\ L^{-1}$)	Uncertainty [a] ($\mu g\ L^{-1}$)	% recovery	Meas. conditions
Cu	85.75	0.51	100.81	HR-ICP-MS MR [b]
Fe	36.8	1.8	99.66	HR-ICP-MS MR
Mn	40.39	0.36	99.89	HR-ICP-MS MR
Zn	55.64	0.35	99.22	HR-ICP-MS MR
Indicative concentrations				
Element	Certificate value ($mg\ L^{-1}$)	Uncertainty [a] ($mg\ L^{-1}$)	% recovery	Meas. conditions
Ca	5.615	0.021	101.06	ICP-OES [c]
Mg	1.0586	0.0041	99.55	ICP-OES
K	0.5799	0.0023	97.38	ICP-OES
Na	3.137	0.031	102.18	ICP-OES

[a] Expanded uncertainty with 95% level of confidence.

[b] HR-ICP-MS: High Resolution - Inductively Coupled Plasma – Mass Spectrometry (analytical technique); MR: medium resolution (working conditions)

[c] ICP-OES: Inductively Coupled Plasma – Optical Emission Spectroscopy (analytical technique).