Table S1: Classification scheme adopted in this study. Similarly to Kandler et al. (2011), "All" stands for the sum of Na+Mg+Al+Si+P+S+Cl+K+Ca+Ti+Cr+Fe+Ni+Cu+Zn and square brackets indicate an interval of values. "All elements" represents each weight percentage unweighted. Kr2005: Krejci et al. (2005), K2007: Kandler et al. (2007), B2008: Behrenfeldt et al. (2008), G2010: Geng et al. (2010), H2010: Hand et al. (2010), K2011: Kandler et al. (2011). Source in bold: Direct copy of their criteria. Source in italics: Based upon their criteria.

Particle Class	Classification Criteria	Source
Carbonaceous	All elements/All<0.2, C+O>0.92 **OR** C+O>0.9, All elements/All<0.2 **AND** Mg/All≥0.1 **OR** Na/All≥0.1 **OR** S/All≥0.1	*G2010*
	Criteria for secondary Na-rich and Ammonium Sulphate	**K2011**
Biogenic	Criteria for biogenic	**K2011**
	C+O>0.9, Si/Cl¡0.2, Na/Cl¡0.3, Na/S¡0.3 **AND** K/All≥0.2 **OR** P/All≥0.2 **OR** Cl/All≥0.2 **OR** (Ca+K)/All≥0.3 **OR** (Na+P+K)/All ≥ **OR** (Na+Mg+Zn)/All≥0.3	*Kr2005, G2010*
Sulphates	Criteria for NaS sulphates	**K2011**
Gypsum	(Ca+S)/All>0.5, Ca/S=[0.25;4], Si/Ca<0.5	**K2007**
	Criteria for Ca sulphates	**K2011**
Sulphates	S/All>0.4, Si/S<0.5, S>All elements	*K2007, H2010*
	Criteria for CaNaS	**K2011**
Ca-Rich	Ca/All>0.5, Si/Ca<0.5, Al/Ca<0.5, Ca>All elements	*H2010*
	Criteria for Ca- and CaMg-carbonates	**K2011**
	(Ca+Mg)/All>0.5, Mg/Ca=[0.33;3], Si/Ca<0.5, S/Ca<0.25, P/Ca<0.15	**K2007**
Phosphates	Criteria for phosphates	**K2011**
Fresh Chlorides	(Na+Cl)/All>0.5, S/Na<0.375, S/Cl<0.5, Si/Cl<0.2, Fe/Cl<0.5	**K2007**
	OR Na/Cl=[0.5;1.5], S/Cl<0.5, Si/Cl<0.2, S/Na<0.375, Fe/Cl<0.5	*Kr2005, G2010*
	Criteria for NaCl, KCl and other chlorides	**K2011**
Aged Chlorides	(Na+Cl)>0.4, S/Cl<5, S/Na<5, Si/Cl<0.5	*Kr2005, B2008*
	OR Cl/All=[0.1;1.1], Si/All<0.0699, Al/All<0.0099, Na/Cl<2, Mg/Cl<2, P/Cl<0.2, K/Cl<2, Ca/Cl<2, Ti/Cl<0.1, Cr/Cl<0.1, Fe/Cl<0.1	*K2011*
	Criteria for mixClS	**K2011**
Sulphates	Cl/S<0.5, Si/S<0.5, Ti/S<0.2, Cr/S<0.2, Fe/S<0.5, Ni/S<0.2, Cu/S<0.2, Zn/S<0.2	*K2007*
	Criteria for other sulphates	**K2011**
Metallic	Criteria for Fe, Ti, Fe-Ti and Al oxides	**K2011**
	OR Fe/All>0.3, Si/Fe<0.2, Al/Fe<0.2, Cl/Fe<0.2, Ti/Fe<1.33, Mg/Fe<0.2	**K2007**, *H2010*
	OR Ti/All>0.3, Na/Ti<1, Mg/Ti<1, Al/Ti<0.2, Si/Ti<0.2, S/Ti<1, Fe/Ti<1	**K2007**, *H2010*
Silicates	Criteria for quartz, SiAl, SiAlK, SiAlNa, SiAlNaCa, SiAlNaK, SiAlCaFeMg, SiAlKFeMg, SiAlFeMg, SiMgFe, SiMg, SiCaTi	**K2011**
	OR Si/All>0.2, Na/Si<0.7, Mg/Si<1.33, Al/Si<1.33, K/Si<0.5, Ca/Si<0.5, Ti/Si<0.5, Fe/Si<0.5, (P+S+Cl)/All<0.2	**K2007**
	OR Si/All≥0.6, S/Si<0.2, Cl/Si<0.2	*H2010*
	OR Si/All≥0.2, S/Si<0.2, Cl/Si<0.2 **AND** (Al+Si)/All≥0.6 **OR** (Si+Fe)/All≥0.6 **OR** (Al+Si+Fe)/All≥0.5 **OR** (Al+Si+Na)/All≥0.5 **OR** (Al+Si+Mg)/All≥0.5 **OR** (Al+Si+K)/All≥0.5 **OR** (Al+Si+Ca)/All≥0.5 **OR** (Al+Si+Ti)/All≥0.5	
	OR Si/All≥0.5, S/Si<0.2, Cl/Si<0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR (Si+Al)/All≥0.5, S/Si<0.2, Cl/Si<0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR (Si+Fe)/All≥0.5, S/Si<0.2, Cl/Si<0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR (Si+Al+Fe)/All≥0.5, S/Si<0.2, Cl/Si<0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
Mixed Silicates	(Na+S+Mg+Al+Si+K+Ca)/All>0.7, S/Si=[0.6;2] **OR** (Al+Si)/All≥0.6, S/Si>0.2	**K2007**, *H2010*
	OR Si/All≥0.2, Na/Si<0.7, Mg/Si<1.33, Al/Si<1.33, K/Si<0.5, Ca/Si<0.5, Ti/Si<0.5, Fe/Si<0.5, (P+Cl)/All<0.2, S/All>0.2	*K2007*
	OR Si/All≥0.1, S/Si>0.2 **AND** (S+Si)/All≥0.5 **OR** (S+Si+Al)/All≥0.5 **OR** (Si+S+Fe)/All≥0.5 **OR** (Si+S+Al+Fe)/All≥0.5	
	OR Si/All≥0.1, (Si+S)/All≥0.4, S/Si>0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR Si/All≥0.1, (Si+S+Al)/All≥0.4, S/Si>0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR Si/All≥0.1, (Si+S+Fe)/All≥0.4, S/Si>0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR Si/All≥0.1, (Si+S+Fe+Al)/All≥0.4, S/Si>0.2 **AND** Mg/All≥0.1 **OR** K/All≥0.1 **OR** Ca/All≥0.1	
	OR Fe/All>0.15, Si/Fe<1, Ti/Fe<1.33, (Fe+S)/All>0.4 **OR** Ti/All>0.3, Na/Ti<1, Mg/Ti<1, Al/Ti<1, Si/Ti<1, Fe/Si<1, (Ti+S)/All>0.4 **OR** (Ti+S)/All>0.5	*K2007*
	Criteria for mixSiS, mixAlSiS, mixNaClSi, mixNaClSiAl, mixCaSi, mixCaAlSi	**K2011**
Fresh Chlorides	(Na+Cl+Ca)/All≥0.5, Na/Cl=[0.2;1.1], Si/Cl<0.2, S/Cl<0.2	
Aged Chlorides	(Na+Cl+Ca+S)/All≥0.5, Na/Cl=[0.1;1.1], Si/Cl<0.2, S/Cl>0.2	
	OR Cl/All=[0.1;1.1], Si/Cl<0.1, S/Cl>0.2, Cr/Cl<1	
Metallic	(Fe+Ni+Cr+Cu+Zn)/All>0.5, Si/(Fe+Ni+Cu+Zn)<0.05 **OR** Zn/All=[0.2;1.1] **OR** Cu/All=[0.2;1.1] **OR** Cr/All=[0.2;1.1] **OR** Ni/All=[0.2;1.1] **OR** Cu¿All elements	
Silicates	Mg/All=[0.35;1.1], Si≥0.1	*K2011*
Phosphates	P/All=[0.1;1.1], P>All elements	
Silicates	Si/All=[0.1;1.1]	**K2011**
Metallic	Al/All=[0.1;1.1]	
Silicates	(Al+Si)/All=[0.2;1.1], Si≥0.1	
Fresh Chlorides	Cl/All=[0.1;1.1]	
Biomass Tracers	K/All=[0.25;1.1]	**K2011**
Ca-Rich	Ca/All=[0.2;1.1]	*K2011*
Other	Particles not classified by these criteria	