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Nitrate deposition and preservation in the snowpack along a traverse from coast to the ice sheet summit (Dome A) in East Antarctica

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Table S1 Atmospheric concentrations of NO_3^- and SO_4^{2-} on the traverse from coastal Zhongshan Station to Dome A in East Antarctica.

Sample ID	Sampling date	Sampling location		Atmospheric NO_3^- /ng m^{-3}	Atmospheric SO_4^{2-} /ng m^{-3}
		Longitude/^{o} E	Latitude/^{o} S		
AN01	15-16, Dec., 2015	76.49	69.79	25	161
AN02	16-17, Dec., 2015	76.92	70.64	20	125
AN03	17-18, Dec., 2015	77.62	71.5	17	158
AN04	18-19, Dec., 2015	77.69	72.37	11	123
AN05	19-20, Dec., 2015	77.17	73.15	17	122
AN06	20-22, Dec., 2015	76.97	73.86	22	86
AN07	22-23, Dec., 2015	76.98	74.9	31	118
AN08	23-24, Dec., 2015	76.82	75.87	11	127
AN09	24-25, Dec., 2015	77.02	76.86	30	211
AN10	25-26, Dec., 2015	77.71	77.15	61	193
AN11	26-27, Dec., 2015	76.99	78.36	97	113
AN12	27-29, Dec., 2015	77.00	79.01	24	87
AN13	29-30, Dec., 2015	77.26	79.82	64	114
AN14	30-31, Dec., 2015	77.12	80.42	118	320
AN15	3-5, Jan., 2016	77.12	80.42	43	238
AN16	10-12, Jan., 2016	77.12	80.42	57	220
AN17	12-14, Jan., 2016	77.12	80.42	65	201
AN18	14-16, Jan., 2016	77.12	80.42	80	268
AN19	16-18, Jan., 2016	77.12	80.42	80	205
AN20	18-19, Jan., 2016	77.12	80.42	52	155
AN21	19-20, Jan., 2016	77.12	80.42	56	115
AN22	21-22, Jan., 2016	77.17	79.63	55	152
AN23	22-23, Jan., 2016	77.03	78.77	14	170
AN24	23-24, Jan., 2016	77.19	77.83	27	185
AN25	24-25, Jan., 2016	77.02	76.74	24	191
AN26	25-26, Jan., 2016	77.03	76.42	30	244
AN27	26-27, Jan., 2016	76.83	75.87	30	183
AN28	27-28, Jan., 2016	76.96	75.03	33	189
AN29	28-29, Jan., 2016	77.00	74.09	24	162
AN30	29, Jan.-1, Feb., 2016	76.97	73.86	16	152
AN31	1-2, Feb., 2016	77.38	72.84	13	170
AN32	2-3, Feb., 2016	77.97	71.93	6	172
AN33	3-4, Feb., 2016	77.19	70.97	19	169
AN34	4-6, Feb., 2016	76.52	69.97	12	168

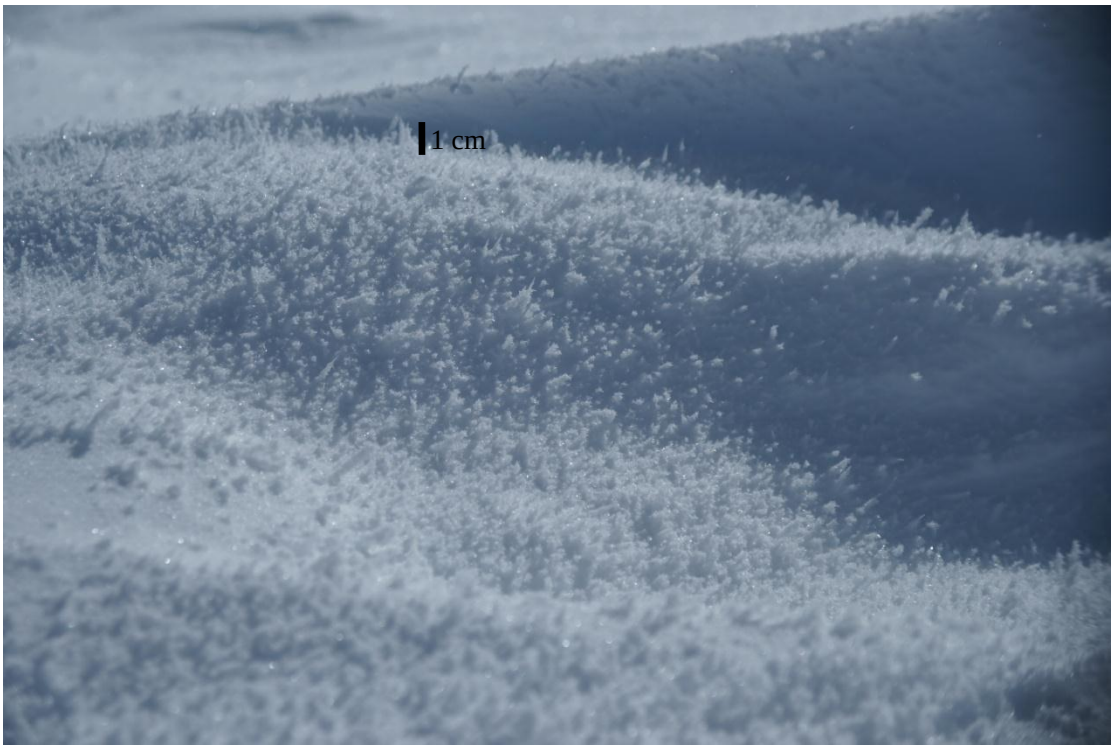

Figure S1 Surface morphology of the snow on Dome A plateau, East Antarctica. The needle crystal ice layer is extensively developed. In general, the depth of the crystal layer is < 1.0 cm, and the snowpack is characterized by soft snow texture.

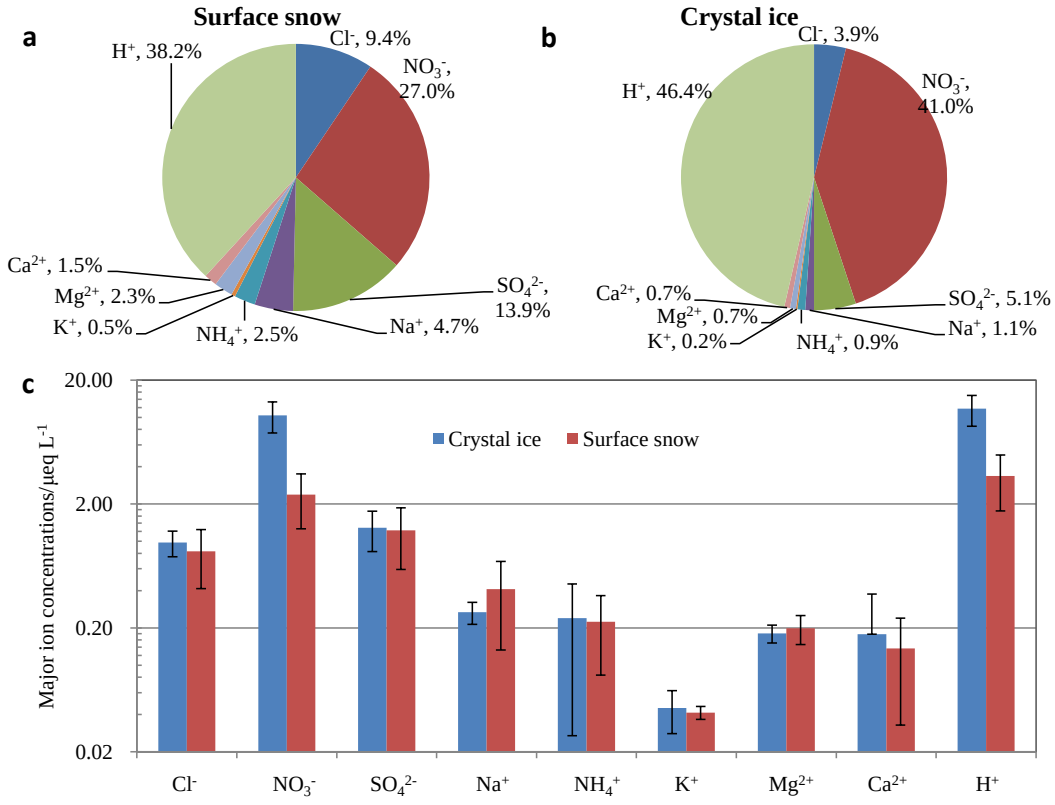

Figure S2 Major chemical ions in surface snow and crystal ice samples on the traverse from coast to the ice sheet summit (Dome A) in East Antarctica. Contribution percentages of each ion to total ion concentrations are shown in (a) and (b), respectively. Concentrations of ions in surface snow and crystal ice are shown in (c), with error bars of one standard deviation (1σ). The concentration of H^+ is calculated from the difference between sum anions and sum cations. Note that a base-10 log scale is used for ion concentrations in (c).

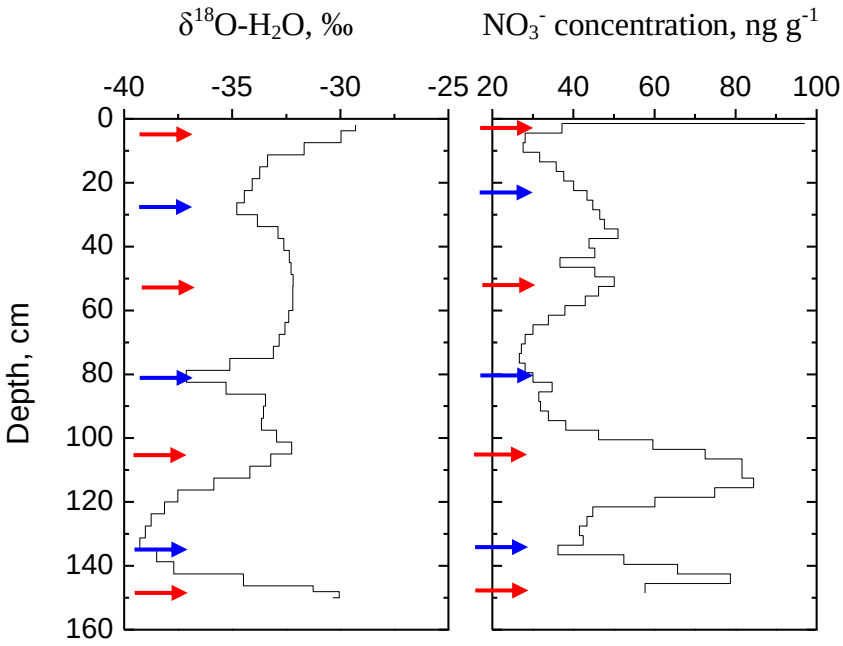

Figure S3 Profiles of $\delta^{18}O$ of H_2O (left panel) and NO_3^- concentration (right panel) in the coastal snowpit SP2. Red and blue arrows represent the middle of the identified warm and cold seasons, respectively. Red solid arrows and blue dashed arrows represent the middle of the identified warm and cold seasons, respectively. One seasonal cycle represents one $\delta^{18}O(H_2O)$ local maxima peak to the next.

Figure S4 Surface morphology of the surface snow at ~600 km from the coast, on the traverse from Zhongshan to Dome A, East Antarctica. The large sastrugi with hard smooth surfaces is extensively developed in this region, mainly formed by wind erosion. The ridges of these sastrugi are typically parallel to the prevailing wind direction.

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