



Supplement of

The Ross Sea Dipole – temperature, snow accumulation and sea ice variability in the Ross Sea region, Antarctica, over the past 2700 years

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Supplementary Information.

Table S1: Pearson correlation coefficient (r) and significance values (p) for correlations between RICE δD record and relevant observational records from automatic weather stations and reanalysis data. Data for the reconstructed Byrd Station meteorological data (Bromwich et al., 2013) are accessed via the Byrd Polar Research Centre, Polar Meteorological Group, Ohio State University (http://www.polarmet.osu.edu/datasets/Byrd_recon/). Weather station data for Ferrell, Gill, and Margaret AWS are accessed via Antarctic Meteorological Research Center and Automatic Weather Station Project (<https://amrc.ssec.wisc.edu>). Data for McMurdo Station and Scott Base are accessed via the MET-READER (<https://legacy.bas.ac.uk/met/READER/data.html>). The number of years of observations represents the total number of years which contain monthly averages for each month of a calendar year. Only years with 12 monthly values are included in the correlation.

Correlation with RICE δD	Location (lat/long)	Elevation (m asl)	Time Period Overlap	No of Years of Observations	r	p-Value
Byrd Station (revised by Bromwich et al.)	80.0° S 120.0° W	1515	1957-2012	56	0.05	0.72
Ferrell AWS	77.833° S 170.819° E	45	1982-2012	17	0.30	0.24
Gill AWS	79.879° S 178.565° W	53	1987-2012	20	0.24	0.31
Margaret AWS	79.981 ° S 165.099° W	67	2009-2012	4	0.33	0.67
McMurdo AWS	77.9° S 166.7° E	24	1957-2012	48	0.11	0.46
Scott Base AWS	77.9° S 166.7° E	16	1958-2009	51	0.02	0.90
Siple Station AWS	75.9° S 84.0° W	1054	1982-1992	5	0.02	0.97
NB2014	Extracted for nearest grid point to RICE location 79.39° S / 161.71° W		1979-2012	34	0.26	0.14
NB2014	Extracted for nearest grid point to RICE location 79.39° S / 161.71° W		1958-2012	55	0.23	0.09
ERAi	Extracted for nearest grid point to RICE location 79.39° S / 161.71° W		1979-2012	34	0.42	0.01



Figure S1: RICE AWS covered with rime after the winter season. The photo was taken in November 2012.

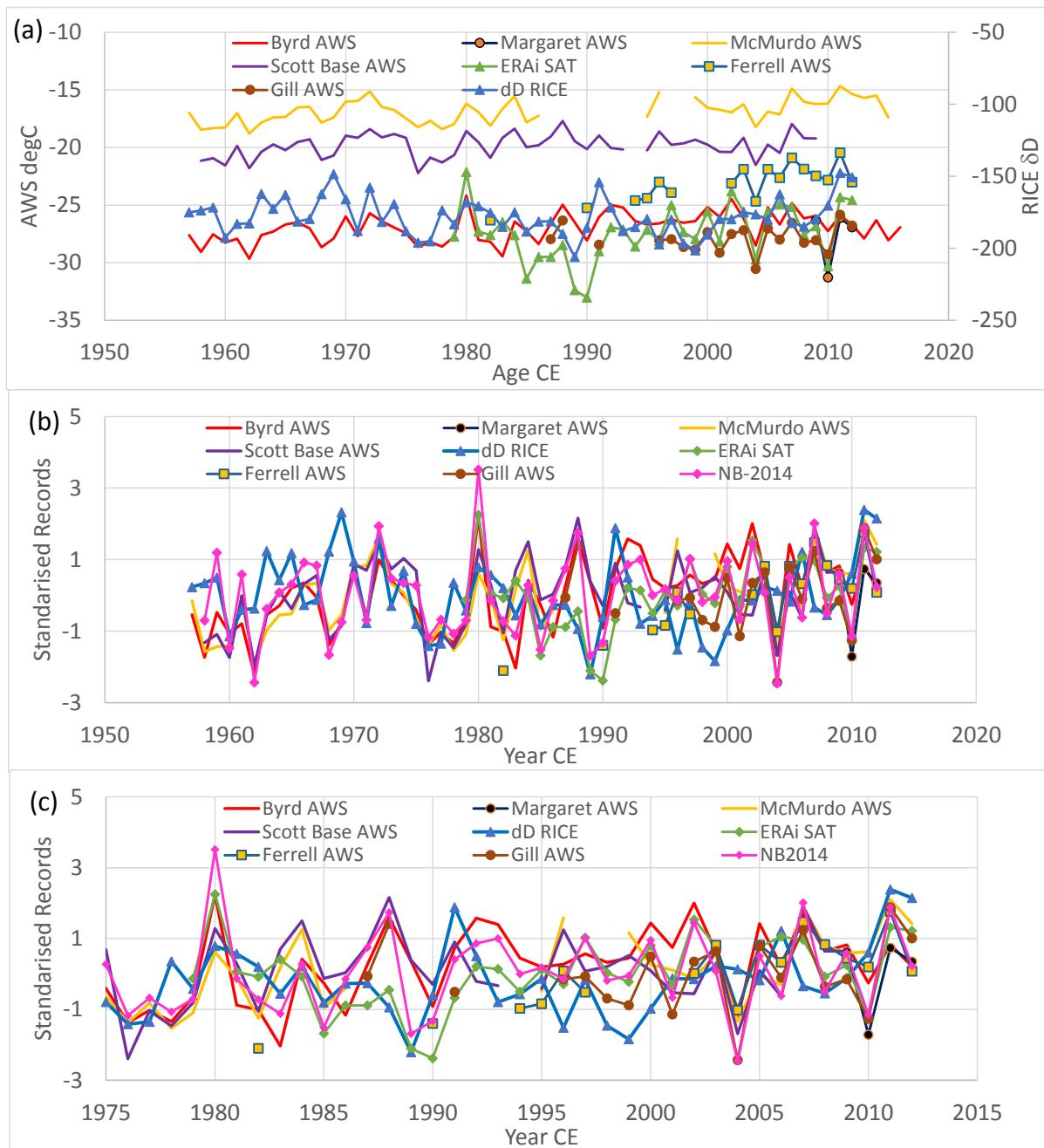


Figure S2: Comparison of temperature data from Antarctic Stations, remote Antarctic Weather Stations (AWS), and reanalysis products with δD RICE data. Origin of the data is referenced in Table R1-1. Panel (a) shows the actual data, panels (b) and (c) show the comparison of the standardised records for the time periods 1957-2012 and 1975-2012, respectively.