

Interactive comment on “Tropical and mid-latitude forcing of continental Antarctic temperatures” by C. S. M. Turney et al.

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1. I think the main omission by the authors is some calculations to clarify the capability of delta D in representing the local temperature and circulation variabilities. Most people reading this article will probably be more familiar with the SH climate, and are less likely to be experts in the ice core products (myself included) and so it is important that readers are pointed to some source of information about what delta D can tell us. I would be particularly worried about the seasonality of annual resolved delta D in representing the hemispheric circulation change in the SH high latitudes. These worries may be unfounded, but without a source of information about the limitation, I'm left wondering how good these isotope data are representing local climate variability.

This is a fair point. We have added further details regarding the application of stable
C2037

isotopes in the ice core studies and how they relate to climate and broader synoptic conditions, including Jones et al., 2009, The Holocene. The important point here is the isotopic values obtained from our new ice core provide a measure of temperature at the inversion layer which can be related to an Antarctic-wide warming trend observed in the radiosonde observations.

2. There is a strong linear trend in the SLP or Z700 in the SH since 1979 in Era-I and NOAA-20th reanalysis data. It is worth testing whether the results in several figures are sensitive to this long term linear trend in the data.

There is a a major trend in the temperature and SLP data series from the 1970s. To satisfy ourselves that the correlation are robust we deseasonalised and detrended the correlations and regressions above.

3. A caveat ought to be added in the conclusions section that since Fig5 only looks at a simple coherence analysis of two time series there is still a question mark over the statistical significance and physical understanding of the results, and that further studies as new data and modeling become available should help to resolve this issue.

We completely agree and have added the appropriate text.

Interactive comment on The Cryosphere Discuss., 9, 4019, 2015.