

## ***Interactive comment on “Antarctic climate variability at regional and continental scales over the last 2,000 years” by Barbara Stenni et al.***

### **Anonymous Referee #1**

Received and published: 12 May 2017

General comments: This MS presented a new Antarctic climate data over the past 2k. Many ice core data compiled under PAGES 2k were evaluated quantitatively as changes in air temperatures. The updated results showed over all cooling trend from 0 to 1900CE and the absence of continental-scale warming over the past 100 yr. Although these results are essentially very similar to those published in previous report (PAGES 2k 2013), this MS is suitable to be published in CP because of its robustness supported by the increased numbers of data and various temperature reconstruction methods.

Specific comments: In this MS, a trend is defined as significant when  $p < 0.05$  (e.g., Table 2). Of course, this is widespread practice. However, it should be carefully considered for the choice of this arbitrary-chosen threshold value because significance of the slope is a central issue of this MS. Is there no rule about statistical terms for PAGES

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2k consortium? For example, in IPCC AR5, “very likely” indicates 90-100% probability and “likely” indicates 66-100% probability. In this paper, the statistical significance can be ranked such as: \*\* ( $p < 0.05$ ) and \* ( $p < 0.10$ ).

Technical corrections: Conclusions and implications; I feel the conclusions would be too long.

Page 2, l. 29-30; Please add appropriate citations for each phenomenon that may produce non-climate signals.

Page 2, l. 35, “deuterium” > hydrogen?

Page 4, l. 15, “RACMO2.4 model results”; Please add citation for this model results.

Section 3.4.2 and 3.4.3, The final sentences of these sections (We refer to ...) may be removed or be moved to the last sentence of the previous paragraph.

Figure 2; NB2014 records (bold black lines) in Wilkes Land and Weddell Sea appears to be horizontal zero lines from 1990-2000. Are these correct? They lines should be shown in gray, if these are reference lines.

Figure 3; Same as Figure 2. NB2014 records (bold black lines) in Wilkes Land, Weddell Sea, and DML appears to be zero for older part of the records. These should be shown in gray.

Figure 9a; In the x-axis, year (1830?) was labelled wrongly (183).

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Interactive comment on Clim. Past Discuss., doi:10.5194/cp-2017-40, 2017.

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