

## ***Interactive comment on “Climatic variability in Princess Elizabeth Land (East Antarctica) over the last 350 years” by Alexey A. Ekaykin et al.***

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The paper presents a new climate reconstruction for Princess Elizabeth land, based on the stable isotope records from a stack of six ice cores. The data makes an important contribution to the PAGES Antarctica 2k initiative, providing centennial scale records in a data sparse region. The paper is generally well written and should be published following a few minor corrections.

General comments:

Page 2 Line 1- some might consider borehole or historical records. Perhaps reword to “primary” or “a valuable source”

Line 13 – word missing “we find evidence of . . .”, or “we observe a . . .”

C1

Page 4, Line 4 – suggest remove “clear”

Page 4, Line 8 – suggest replace “only” with “solely”

Page 4, Line 21 – are all the correlations done on de-trended data?

Page 5, Line 1 - I know you are choosing to use the term AAO but perhaps an “also known as the SAM” would be helpful. The structuring of this paragraph could be improved. Consider using “the AAO index is available from NOAA (include web link in brackets) and the British Antarctic Survey”

Page 5, Line 11 – not sure if this was a mistake but should PDO be IPO? You are justifying the use of IPO because of a previous teleconnection with IPO?

Page 5, Line 15 – reference to SOI that is not defined in the text

Page 5, Line 22 – suggest changing “monitored” to “observed”

Page 5, results and discussion

Somewhere in this section it would be good to include reference to the moisture source regions or air mass transport routes. Has any back trajectory work been done in this region that you could reference? This might aid the discussion about the differences between stations?

Page 8, Line 20 – can you add a short description of the little ice age? E.g. Cold period observed in northern hemisphere? I am a little nervous about defining LIA periods for Antarctic records. The pages 2k paper you cite states “There were no globally synchronous multi-decadal warm or cold intervals that define a worldwide Medieval Warm Period or Little Ice Age”. Concluding that “a cold period is observed at approximately the same time interval as the little ice age reported in other regions” may be safer.

Page 8, Line 21 – Just for interest and comparison we also see a cold phase during the 1840s in the isotope record from Ferrigno (coastal Ellsworth Land). Might add evidence to it being a continental scale event. Thomas, E. R., T. J. Bracegirdle, J. Turner, and E.

C2

W. Wolff (2013), A 308 year record of climate variability in West Antarctica, *Geophys. Res. Lett.*, 40, doi:10.1002/2013GL057782

Page 9 - Snow accumulation variability. This section is lacking information on the thinning functions applied to the records. You mention the Nye model was used for the 400km core but nothing about the 105 and 200km records. Please just specify which thinning method was used in the text.

Page 10, Line 18 – suggest changing “has evidenced” for “demonstrates”

Page 11, Line 10 - suggest changing “evidenced” for “observed”

Table 1 – Suggest “this study” instead of “this work” For the sample resolution can you give an indicator of the number of samples per year? Or per decade for 400 km?

Figure 1 – Just a style issue but I found it hard to see the ice core locations on my screen. Consider changing the orange used.

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Interactive comment on *Clim. Past Discuss.*, doi:10.5194/cp-2016-76, 2016.