

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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"Page 4, Line 21 – are all the correlations done on de-trended data?" No, but in these series the variance related to trend is significantly less than variance related to the short-term variability. We also tested the correlation on the de-trended series: interestingly, in this case the correlation is stronger. It means that on the short-term scale the temperature records are closely related than on the decadal scale (as discussed in section 3.1 and shown in Figure S2).

"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?" We wanted to say that previously we found the relationship between the Vostok climate record and PDO, this is why we decided to check the link between the PEL2016 and PDO. But

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instead of PDO we took IPO, as it should better work for the Southern Hemisphere. I will re-write this part of text to make the idea clearer.

"Somewhere in this section it would be good to include reference to the moisture source regions or air mass transport routes. Has any backtrajectory work been done in this region that you could reference? This might aid the discussion about the differences between stations?" This comment agrees with a similar comment by Referee 1. I plan to add a short discussion of moisture origin, precipitation type and seasonality to Section 3.3. As for the moisture source regions, the corresponding information could be taken from Sodemann H. and Stohl A. (2009) Asymmetries in the moisture origin of Antarctic precipitation. *Geophys. Res. Lett.*, 36(22), L22803 (doi:10.1029/2009GL040242).

"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." I will change the text as you suggest.

"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. W. Wolff (2013), A 308 year record of climate variability in West Antarctica, *Geophys. Res. Lett.*, 40, doi:10.1002/2013GL057782" Thank you, I will add this into discussion.

"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." For the 105th and 200th km we also calculated

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thinning using the Nye model. We also introduced the advection correction needed to take into account spatial changes of accumulation rate and snow isotopic composition upstream from the drilling site. I will add the corresponding information to the text.

"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?” I will add this information.

"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." I suggest a new version of the figure (see supplement to this comment).

I agree with the other comments and will make the corresponding changes in the text.

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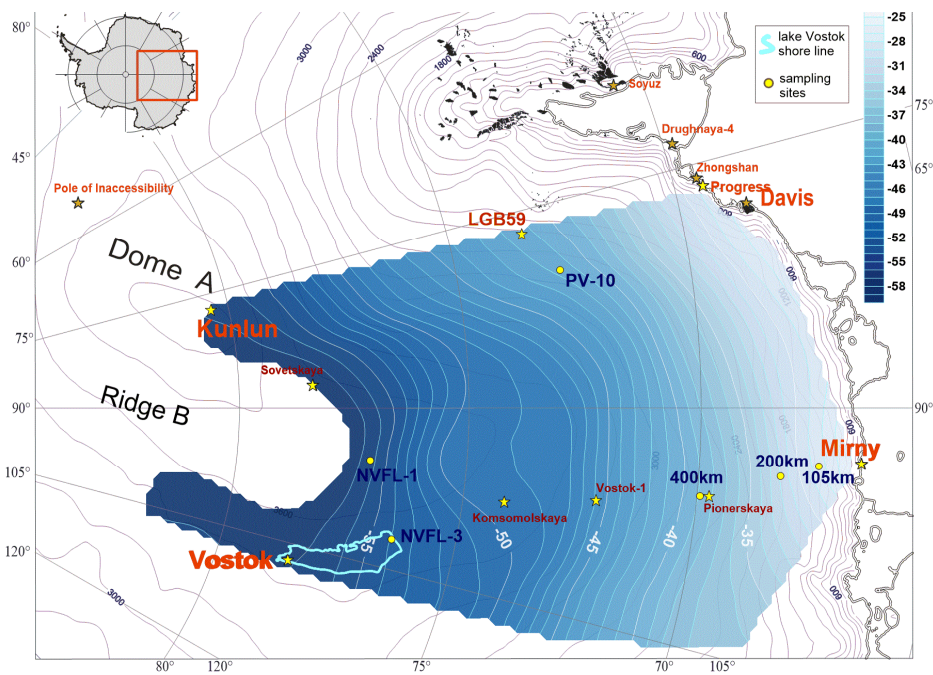


Fig. 1.

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