

## ***Interactive comment on “The Ross Sea Dipole – Temperature, Snow Accumulation and Sea Ice Variability in the Ross Sea Region, Antarctica, over the Past 2,700 Years” by Nancy A. N. Bertler et al.***

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Hi Sebastian, Thank you for your comment and suggestions. With regards to your suggestion to compare the RICE data with the Victoria Lower Glacier (VLG) and Taylor Dome records, please note that we include in our manuscript the comparison between the RICE and VLG records (along other records) – please see page 11, lines 30-38 and also page 10, lines 7-9. The comparison discusses the spatial differences, including the MWP/LIA temperature anomalies. So your point is well taken but we feel it is already addressed in our manuscript. With regards to the Taylor Dome ice core, we initially did not include this record here because of its somewhat larger age uncertainty.

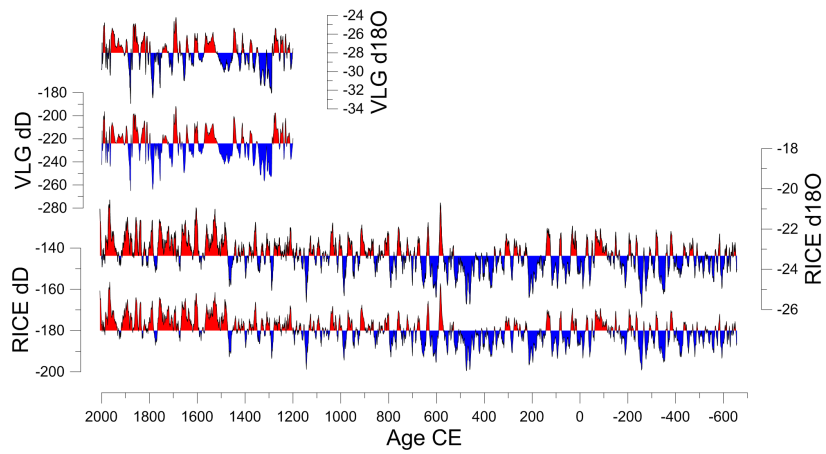
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However, prompted by your comment and by Reviewer 2, we have now added the the Taylor Dome record in Figure 6 for comparison of the long term trends, which is very useful. With regards to the opposing trends between Taylor Dome d18O and dD values – we suspect that there might be an issue with the data in this file or the age scale used to plot the Taylor Dome records. It is surprising that d18O and dD values are so different. We would suggest that you contact the owners of the data to check whether perhaps the correct/same age scale is used for both files. It is inconceivable that dD and d18O measured on the same sample and plotted on the same age scale would show a distinct phase relationship. Below we plotted the d18O and dD data for VLG and RICE for comparison. As you can see from the figure, the two data sets (dD and d18O of each core) look almost indistinguishable. Of course when you calculate the deuterium excess, it becomes apparent that they are not identical. But we expect dD and d18O to be highly correlated (i.e.  $r > 0.95$ ).

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**Fig. 1.** Figure SC\_1: Comparison between dD and d18O for RICE and VLG. Colour coding – red (blue) values indicate values above (below) the long term average. Both records are plotted on the CE time scale.