

# ***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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The new RICE ice core data are much welcome and add an important new Antarctic dataset. Looking at the past few millennia, the existing ice core isotope curves from Antarctica often differ greatly from each other, making it complicated to identify common trends. The Ross Sea Dipole described in the current manuscript highlights an important regional climate relationship which needs to be taken into account when extrapolating Antarctic palaeoclimate data across the continent. While some ice cores and sedimentary cores have larger-scale significance, other palaeoclimate records may only be of local character, which needs to be thoroughly worked out before at-

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tempting full scale continent-wide palaeoclimate reconstructions.

The manuscript describes a new deuterium dataset. Oxygen isotope data are unfortunately not presented. This may be planned for a future paper. Nevertheless, a comparison of dD and d<sup>18</sup>O may be useful, because it appears that the two temperature proxy types may not always show the same evolution in the Ross Sea Region. The Taylor Dome Ice Core lies on the opposite, western side of the Ross Ice Shelf. The dD and d<sup>18</sup>O data have been archived here: <http://isolab.ess.washington.edu/isolab/taylor/data/iso.html>

I have plotted the dD and d<sup>18</sup>O curves for the past 1500 years (correlation attached, MCA=Medieval Climate Anomaly) and found some interesting opposing trends. Between 600-900 AD the two Taylor Dome temperature proxies show inverse behaviour. The same happens between 1000-1450 AD. Which of the two proxies shows the real temperature? It would be important to better understand these opposing trends in the Taylor Dome Ice Core. Does a similar phenomenon occur in the RICE ice core? Notably, dD and d<sup>18</sup>O curves are very similar in the Siple Dome.

Also plotted in the attached correlation is the Victoria Lower Glacier, VLG (Bertler et al. 2011) which shows some peculiar similarities and differences with the other ice cores mentioned in the current manuscript. It may be worth comparing the VLG with the other ice cores.

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CPD

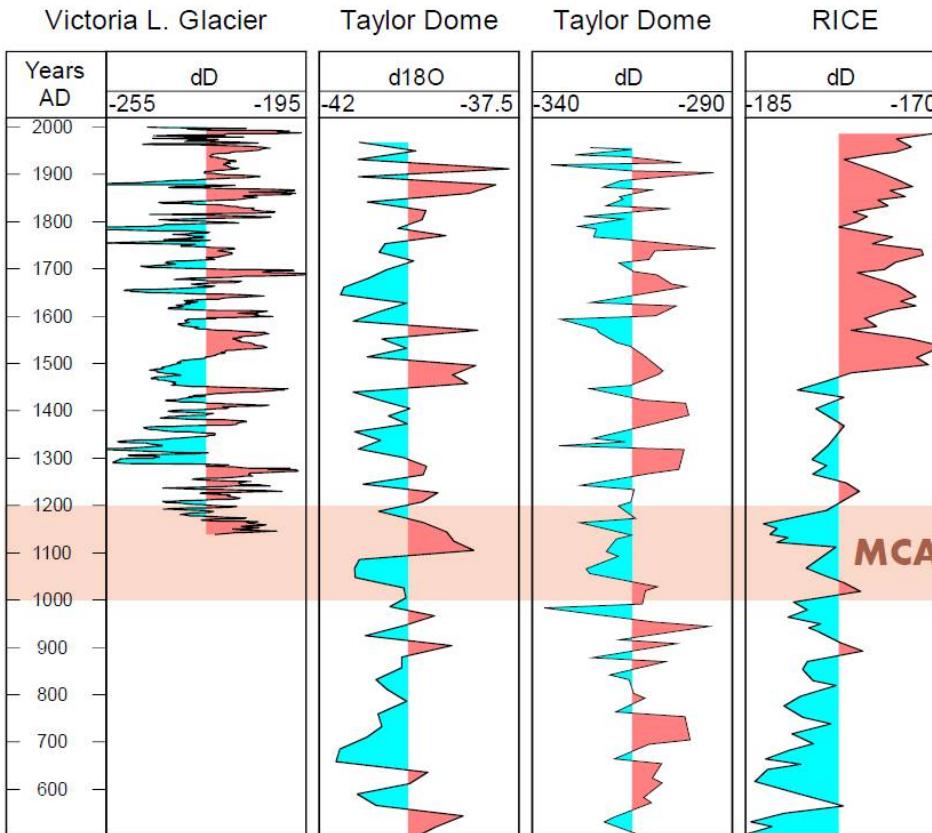
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Fig. 1.