

## ***Interactive comment on “Climatic signals from 76 shallow firn cores in Dronning Maud Land, East Antarctica” by S. Altnau et. al***

**Anonymous Referee #4**

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Altnau et al. compile available records of 76 shallow firn cores from the western part of Dronning Maud Land to analyze the relationship between the temperature proxy,  $\delta^{18}O$ , and the surface mass balance. As can be expected from the complex terrain including ice shelves, mountain ranges, ice divides and the plateau considerable differences are found. It is an interesting analysis, well written. I think what I can add as another referee is the following:

The introduction is very detailed. I have the feeling from the title, abstract and introduction the point of your interest is changing climate and recent climate change. What I am missing in the paper are a few sentences commenting on the massive mass changes in the DML area described by Boening et al. (GRL2012) and the following papers. The years after 2009 are not part of this work, I am aware of this, but you must have looked

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through lots of records and should be able to tell us whether or not the 2009 mass change event in DML has counterparts during the last 60 or 200 years.

Reanalysis data The authors list tells me that you have expertise in the analysis of reanalysis data. There is a 50-60 year long record available. Of course, reanalysis data have lots weaknesses particularly in the polar regions as you mentioned. However, we generally see in the  $\delta^{18}O$  a temperature signal. I do not expect a complete reanalysis work but you should be able to say more than Halley the only station with a longer record is too far south. Are the periods showing a positive  $^{18}O$ -trend in the ice core records reflected in the reanalysis data records as periods of positive temperature anomaly? I expect you know more what you tell us.

You argue with changes in seasonality. I do not like this argument. It is some form of "deus ex machina" everywhere right. From the Neumayer data E. Schlosser has analyzed you should be able to make a clearer statement if accumulation or whatever may have changed recently if anything has changed. This argument is often used but it is a quite cheap argument and explaining nothing.

Little Ice Age Considering that you only present records not older than 200 years it is probably hard to make firm statements about the LIA. Furthermore, the bipolar seesaw may (?) also work on shorter and even decadal time scales then what can we expect to see in a 200 year record as evidence of the LIA.

No altitude effect on the Ekström ice shelf and the ~600 m high ridges east and west of it. I believe that this is easy to understand. The 600 m is cloudy level and the Ekströmisen gets lots or most of its snow from clouds from this level. Don't you think so?

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Interactive comment on The Cryosphere Discuss., 8, 5961, 2014.

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