

## ***Interactive comment on “The 8.2 ka cooling event related to extensive melting of the Greenland Ice Sheet” by H. Ebbesen et al.***

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This paper discusses records of the period around 8.2 ka bp on the Greenland shelf. As already discussed in Hillaire-Marcel's review, the 8.2 k event is very obviously THE stand-out event of the Holocene in Greenland ice cores (e.g. Thomas et al., 2007), and indeed it has been observed as a rather unique event in some other archives around the North Atlantic (e.g. Marshall et al., 2007; von Grafenstein et al., 1998). However, it is also true that it does not stand out against the remaining variability at centennial scales in numerous other records around the world (Rohling and Palike, 2005). There is an unfortunate tendency for authors to associate any event within a few centuries of 8.2 ka with the event. Unless the feature they observe occurs (within uncertainty) at the correct date, and with similar features (e.g approximately 200 year length) then it is

not the event, but is merely part of the background climate signal and noise.

Of course it is reasonable to ask whether there might be an 8.2 k signal in cores from sites so near to Greenland. And undoubtedly the evolution of water properties around Greenland and into the Labrador Sea is of interest because it must form part of the background conditions that would allow a lake outburst (if that was the cause) to affect the overturning. However, I see very little evidence in this paper of events in their record that can be associated with the 8.2 k event. In Figure 3 and 4, we are not shown a long enough record to assess whether any of the changes observed under the dark band are significant compared to the rest of the Holocene. A longer context is clearly needed. The only sharp event shown to us is at about 7.8 ka, presumably outside the uncertainty in dating that would allow it to be related causally to the 8.2 k event. I appreciate that the authors do not claim that they see the event itself; however the data shown do not appear to show "significant freshening....prior to 8200 yr bp" (from abstract), in the sense that we do not have the context to know what is meant by "significant".

It may be that I am missing the point the authors want to make because of the apparent problems with the figures. Figure 2 has no caption, while Figure 3 is lacking parts h and i (Fe and Ti) that are referred to in the text and caption. Without these sections, a part of the text makes no sense, and perhaps if they were included all would become clear.

However, from what is currently presented, I would say that there is an interesting record of water properties in the centuries around 8.2 ka bp, but that it is misleading to attempt to associate this with the 8.2 k event.

Marshall, J. D., Lang, B., Crowley, S. F., Weedon, G. P., van Calsteren, P., Fisher, E. H., Holme, R., Holmes, J. A., Jones, R. T., Bedford, A., Brooks, S. J., Bloemendal, J., Kiriakoulakis, K. and Ball, J. D.: Terrestrial impact of abrupt changes in the North Atlantic thermohaline circulation: Early Holocene, UK, *Geology*, 35, 639-642, 2007.

Rohling, E. J. and Palike, H.: Centennial-scale climate cooling with a sudden cold event around 8,200 years ago, *Nature*, 434, 975-979, 2005.

Thomas, E. R., Wolff, E. W., Mulvaney, R., Steffensen, J. P., Johnsen, S. J., Arrowsmith, C., White, J. W. C., Vaughn, B. and Popp, T.: The 8.2 kyr event from Greenland ice cores, *Quat. Sci. Rev.*, 26, 70-81, doi:10.1016/j.quascirev.2006.07.017, 2007.

von Grafenstein, U., Erlenkeuser, H., Muller, J., Jouzel, J. and Johnsen, S.: The cold event 8200 years ago documented in oxygen isotope records of precipitation in Europe and Greenland, *Clim. Dynam.*, 14, 73-81, 1998.

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