Climate of the Past Discussions

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Comment on cp-2021-89

Anonymous Referee #1

Referee comment on "Melt in the Greenland EastGRIP ice core reveals Holocene warm events" by Julien Westhoff et al., Clim. Past Discuss., https://doi.org/10.5194/cp-2021-89-RC1, 2021

This is a very thorough and remarkably detailed record of melt features in a NE Greenland ice core that spans most of the Holocene. The authors carefully note all of the difficulties that such an analysis entails, and present the results in a way that allows rhe reader to understand the uncertainties involved. That being said, I was surprised that there was no discussion of whether singular, synoptic-scale events (perhaps only lasting a day or two in a year) might reflect (or not) the ***overall*** summer conditions. The implicit argument in the paper is that more melt events correspond to warmer (summer) seasonal conditions in the past. This may indeed be true, but advection of warm air is related to synoptic conditions and as such, a short-lived warm event can occur somewhat at random, even in winter months. For example, temperatures at Alert (82N) have exceeded 0C on occasion even in January/February. Such events are by definition, very rare and perhaps it is reasonable to equate specific melt features to overall temperatures in a season, but an analysis of daily meteorological records (e.g. from Nord) might shed some light on this. Perhaps a brief comment on this question is warranted in the discussion section. By the same token, it is not at all convincing that a short-lived warm episode (lasting only a few days?) "*was the trigger for the first Viking voyages to sail from Iceland to Greenland*". It is hard to imagine such an expedition was simply waiting for a warm spell before setting off. I think this point (in the Abstract & on lines 530-543 should be removed.