

## ***Interactive comment on “A new spatially and temporally variable sigma parameter in degree-day melt modelling of the Greenland Ice Sheet 1870–2013” by A. E. Jowett et al.***

**X. Fettweis (Editor)**

xavier.fettweis@ulg.ac.be

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Dear Authors,

According to the 3 reviewers' remarks (thanks to them for their constructive review), a second round of review will be needed before eventual acceptance for publication.

To deal with the main remarks of the reviewers, I suggest you in the revised version of your manuscript

1. to run your PDD model with and without your new values of  $\sigma$  to see the sensitivity of this new formulation.

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2. to show the interest of the new  $\sigma$  by comparing PDD results to some SMB measurements from the PROMICE data set (Machguth et al., 2015) over the ERA-Interim era.
3. to carry out the same study of the  $\sigma$  variability by using the ERA-20C reanalysis (1900–2010). 20CRv2 is an ensemble mean which could smooth the variability if the spread is large (mainly  $< 1940$ ). ERA-20C is not an ensemble mean and therefore the trend (showing an increasing variability) over the last century will be more robust.

I am waiting a revised version of your manuscript as well as a response to the reviewers remarks.

All the best,

Xavier

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Interactive comment on The Cryosphere Discuss., 9, 5327, 2015.

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