Interactive comment on “Warm Nordic Seas delayed glacial inception in Scandinavia” by A. Born et al.

Anonymous Referee #2

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I also concur with the first reviewer that the submission by Born et al needs more detail (comments below were written before reading the first review) in the model setup description. Until more details are provided about the climate model, its biases and such, no significance can be gleaned from the stated magnitude of extra cooling required to get inception. Such a study also needs some analysis of the climate dynamically processes involved. What is happening to sea ice, storm tracks,... during the inception interval? Until I see more details on the model setup, I’m unable to judge whether this paper is worth publishing.

#specific comments

by 74 m (Peltier, 2004). Eurasia was covered with a ice volume equal to 2.5 times the Greenland ice sheet, or 17 m sea level equivalent. Additional 25-30 m of sea level...
choice, though for inception studies this is not a major issue.

What land ice boundary conditions were used in the IPSL CM4 climate model?

What temporal resolution of the GCM output did you apply to the ice-sheet model? And how did you compute Positive Degree Days if you did not use hourly time resolution?

A description of the inherent limitations and biases of the climate model wrt capturing the physical dynamics of the atmosphere/ocean/sea-ice is in order. What key relevant features of the ocean/atmosphere circulation are not well captured by the model? How biased are model fields (seasonal precip, temperature, sea-ice extent) for PD conditions?

5 to simulate the last glacial inception and was validated against the available proxy data to simulate the transient warmth in the Nordic Seas at 115 ka (Braconnot et al., 2008; Be more concrete/specific. What does "was validated" really mean quantitatively? how were the climate fields down-scaled to the ice-sheet grid resolution?

much lower temporal resolution. Sea surface temperatures of the Nordic Seas need to 10 cool by at least 3 C from the 115 ka average for inception over southern Scandinavia. A 4 C cooling induces ice growth over northern Scandinavia. Cooling also has a positive I can’t evaluate the significance of the results without knowing the present-day region biases of the climate model.

Interactive comment on Clim. Past Discuss., 6, 1503, 2010.