Clim. Past Discuss., 11, C201–C202, 2015
www.clim-past-discuss.net/11/C201/2015/

Climate of the Past
Discussions

Interactive comment on "Greenland Ice Sheet influence on Last Interglacial climate: global sensitivity studies performed with an atmosphere–ocean general circulation model" *by* M. Pfeiffer and G. Lohmann

A. Born

andreas.born@climate.unibe.ch

Received and published: 3 April 2015

This study addresses the important question of climate-ice sheet interactions during the last interglacial.

I wonder how the results presented in this manuscript compare with the recently published simulations with a very similar setup and only slightly different aim. Merz et al. (2014a) used the Community Earth System Model (CESM) with a slab ocean at 1 degree resolution. The topography of the Greenland ice sheet was perturbed by using

several simulations from comprehensive ice sheet models.

Changes of the ice sheet topography were found to have negligible effect on the large-scale atmosphere dynamics but significantly modified the local temperature and seasonality over Greenland. Similarly, precipitation anomalies were large over Greenland but of much smaller amplitude in the far field (Merz et al., 2014b). The comparison of different shapes of the Greenland ice sheet revealed that details might be very important for the distribution of precipitation but also for the temperature anomaly.

Interesting aspects of a comparison between these earlier and the present studies could be (1) that the Merz et al. papers use a considerably higher resolution and arguably more realistic ice sheet topographies, and (2) that they do not include an interactive ocean component.

Merz et al. (2014a), Dependence of Eemian Greenland temperature reconstructions on the ice sheet topography, Climate of the Past 10, 1221-1238, doi: 10.5194/cp-10-1221-2014

Merz et al. (2014b), Influence of ice sheet topography on Greenland precipitation during the Eemian interglacial, Journal of Geophysical Research: Atmospheres 119, doi: 10.1002/2014JD021940

Interactive comment on Clim. Past Discuss., 11, 933, 2015.