**The Cryosphere**

Discussions

Open Access

EGU

# *Interactive comment on* "PISM-LakeCC: Implementing an adaptive proglacial lake boundary into an ice sheet model" *by* Sebastian Hinck et al.

**Evan Gowan**

evangowan@gmail.com

Received and published: 5 February 2021

The Lingle-Clark GIA module that we use calculates the effects of the ice load on a self-gravitating, spherical Earth that responds to changes in the ice load. It is calculating the visco-elastic and elastic deformation and gravitational changes, i.e. changes in the geoid. We fully acknowledge that the Lingle-Clark model is not as sophisticated as a full sea level equation solver like SELEN, particularly because it does not include a higher viscosity lower mantle that is responsible for a substantial amount of the GIA response in North America. However, for the purposes of our experiments where we want to demonstrate that dynamically evolving lakes affect ice sheet retreat in a sub-

stantial way, the Lingle-Clark model includes the two components most important for determining lake geometry - Earth deformation and gravitational changes. The lake module responds to dynamic changes in the topography, and therefore evolves when there are changes in the geoid in the experiment.

―――――――――――――――――