

Interactive  
Comment

# ***Interactive comment on “Comparing a thermo-mechanical Weichselian ice sheet reconstruction to GIA driven reconstructions: aspects of earth response and ice configuration” by P. Schmidt et al.***

**P. Schmidt et al.**

peter.schmidt@geo.uu.se

Received and published: 5 February 2014

We thank the referee M. Ekman for a constructive review that have helped to improve the quality of the manuscript. Here we reply to the remarks raised by Ekman in the order they were listed.

1. As pointed out by Ekman, both the processing by Lidberg et al. (2007) and Lidberg et al. (2010) are found consistent with century-long geodetic observations. We will add this information to the section where the observational data is discussed.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



2. The referee is correct in that our Figure 5 is not presented in Lidberg et al. (2007). We will adjust the caption of the figure so that this is clear to the reader. The "strangely shaped" contour lines results from the interpolation scheme used when creating the figure and should be interpreted with caution as the deformation rates have only been measured at the GPS sites at the locations indicated by the horizontal velocity vectors on the map. We will add this information to the caption as well, as we believe that it is beneficial for the understanding of the present day GIA-signal to display the data in map view with an interpolation between the measure points.

3. The extension of ICE-5G from 21 kyr bp and back to the last Eemian interglacial 120 kyr bp presented in Peltier and Fairbanks (2006) is based on the assumptions that, citing Peltier and Fairbanks (2006): "the area of the continents covered by ice remains equal to the LGM coverage and that the ice thickness simply rises synchronously with  $\delta^{18}\text{O}$  so as to achieve the thickness distribution of the ICE-5G (VM2) model by LGM". The information about the constant areal coverage was however not included in the original version of our manuscript but we will do so to clarify this point.

4. We will change the reference from Ekman (1991) to Ekman (2009) in accordance with the recommendations of the referee.

In addition to the remarks we have replied to above Ekman has listed a number of typos and misspellings, all of these have been adjusted. In case of the last comment by the referee we have chosen to use the abbreviation RSL for the relative sea-level as this abbreviation is commonly used in GIA studies and should be familiar to the interested reader.

## References

Ekman, M.: A concise history of postglacial land uplift research (from its beginning to 1950), *Terra Nova*, 3, 358–365, doi:10.1111/j.1365-3121.1991.tb00163.x, 1991.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)

- Ekman, M.: The Changing Level of the Baltic Sea during 300 Years: A Clue to Understanding the Earth, Summer Institute for Historical Geophysics, 155 pp, available from: <http://www.historicalgeophysics.ax>, 2009.
- Lidberg, M., Johansson, J. M., Scherneck, H.-G., and Davis, J. L.: An improved and extended GPS-derived 3D velocity field of the glacial isostatic adjustment (GIA) in Fennoscandia, *J. Geodes.*, 81, 213–230, doi:10.1007/s00190-006-0102-4, 2007.
- Lidberg, M., Johansson, J. M., Scherneck, H.-G., and Milne, G. A.: Recent results based on continuous GPS observations of the GIA process in Fennoscandia from BIFROST, *J. Geodyn.*, 50, 8–18, doi:10.1016/j.jog.2009.11.010, 2010.
- Peltier, W. R. and Fairbanks, R. G.: Global glacial ice volume and last glacial maximum duration from an extended Barbados sea level record, *Quaternary Sci. Rev.*, 25, 3322–3337, doi:10.1016/j.quascirev.2006.04.010, 2006.

---

Interactive comment on *Solid Earth Discuss.*, 5, 2345, 2013.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)