



Refinement of palaeotopography in modelling of glacial isostatic adjustment

Volker Kleemann (1), Jan M. Hagedoorn (1), Zdenek Martinec (2,3)

(1) GFZ German Research Centre for Geosciences, Department 1: Geodesy and Remote Sensing, Potsdam, Germany (volkerk@gfz-potsdam.de), (2) Dublin Institute of Advanced Studies, Dublin, Ireland (zdenek@cp.dias.ie), (3) Charles University in Prague, Czech Republic

When modelling the glacial-isostatic adjustment (GIA) by an initial value approach, the earth is assumed to be hydrostatically prestressed in an initial state. Including the sea-level equation in a solution requires, in addition, to define an initial topography, for which the present-day topography is mostly chosen. At the first view, this choice is reasonable: Topographical variability is by a few orders of magnitude larger than the residual surface deformation at present time due to GIA, which is at most of the order of 100 m in northern Canada and some parts of Antarctica. But, when considering the effect of the time-varying ocean load, the influence of palaeotopography may become important. Assuming that coast lines follow the sea level, we determine the initial topography in such a way that the predicted present-day topography after one glacial cycle coincides with the actual topography. We discuss consequences for the prediction of geodetic and geological observables as for the reconstruction of palaeo-sea level.