



Uncertainty Estimation in Models of Long-Term GIA: A Brief Comparison

Karen Simon (1,2) and Riccardo Riva (1)

(1) Delft University of Technology, Delft, Netherlands, (2) NIOZ Royal Netherlands Institute for Sea Research, Yerseke, the Netherlands

This work briefly compares four approaches that are sometimes used to estimate uncertainty in models of the long-term glacial isostatic adjustment (GIA) process. The four methods span pessimistic to optimistic representations of GIA uncertainty. Each estimation method is applied to selected one dimensional GIA model predictions and compared with vertical land motion data from Global Positioning System (GPS) measurements across Scandinavia and North America. Non-GIA signals are isolated from the paleo-GIA signal at sites where measurement and model uncertainties do not overlap. Across methods, the frequency and accuracy with which non-GIA signals are separated from GIA signals in GPS data display both consistent similarities and disparities. Especially in regions where GIA contributes significantly to total land deformation, selection of a particular uncertainty estimation method may influence the identification and characterization of underlying non-GIA processes. The goal of the work is not to assess the quality of recent GIA model predictions, it is rather to determine the extent to which the way that researchers choose to view GIA uncertainty affects the separation (and thus interpretation) of GIA and non-GIA signals.