



Consistency of observations and modeling results on Fennoscandian GIA

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Fennoscandia is one of the key regions for glacial isostatic adjustment (GIA) investigations. Typical geodetic observables are ellipsoidal height changes of the Earth's surface from GPS and relative sea-level changes from tide-gauge records.

The determination of present-day deformations of the solid Earth by means of GPS relies in our study upon homogeneously processed observations and a stable realization of the terrestrial reference system. Our determination of crustal deformations for 44 stations of a densified regional GPS network benefits from the results of a reprocessed global GPS network.

The relative sea-level changes refer to the Earth's crust and are therefore affected by GIA too. Relative sea-level changes including both crustal deformations and eustatic sea-level changes can be obtained from homogeneous long-term tide-gauge time series. We determined relative sea-level changes for approximately 60 tide-gauge stations around the Baltic Sea and the adjacent North Sea.

One possible check on consistency of the results can be performed in case of collocation of both techniques. If so the combined effect results in the eustatic sea-level change rate.

Recent relative sea-level changes and crustal deformations due to GIA have also been modeled for different ice load histories and visco-elastic earth models. For this purpose we solved the sea-level equation that links changes in relative sea-level, crustal deformations and gravity as a consequence of the deglaciation of Pleistocene ice sheets. An intercomparison of model based and observational results has been performed.