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Comparison of watershed models in different spatial extents using GPS-derived vertical movements

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Loading is a multiform phenomenon, mass changes of air and water deform the crust in different ways. We have studied loading caused by atmosphere, by non-tidal mass changes of the sea and also by local and global hydrology. We have compared the loading time series to time series of the radial component of the GPS for selected permanent GPS stations in Fennoscandia. Two global watershed models, monthly model of Climate Prediction Center and daily model GLDAS have been used for Fennoscandia. We have also exploited a local daily model of Finnish Environment Institute together with the global models to have a closer look at local watersheds in Finland. On our test site also a superconducting gravimeter is situated, which can help us to separate different sources of the loading. Results show that the variance in the GPS time series diminishes when the different loading phenomena have been taken into account.