

Crustal deformations and an interferometric water level tilt meter

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Research for the development of water level tilt meter started in 1965 at the FGI. By the initiative of Kukkamäki a 1 km long instrument was proposed for the Fennoscandian land uplift research. It was never built, but several shorter versions have been built since (Kääriäinen 1979, Kääriäinen & Ruotsalainen 1989). Recently a third generation water-level tilt meter has been designed and built at the Finnish Geodetic Institute (FGI). Global and local tilt deformations of the Earth can be recorded more precisely with the new instrumentation. Earth tides, earthquakes, free oscillation events, ocean and other loadings effects are observed.

Of special interest here in the Fennoscandian post-glacial rebound (PGR) area is the crustal dynamic response under the surface loads of the Baltic Sea. Loading modelling is straightforward and loading signal can be accurately recorded for comparison. Using a modular tilt meter instrument in different locations, which has different crustal thicknesses, it will be possible to find out deviations on crustal dynamics, if and when there exist ones. Tilt meter details as well as tidal and non-tidal loading tilt signals are presented and compared with modelling.