
Vertical deformation by environmental loading and space geodetic measurements at Mets ahovi geodetic research station

Arttu Raja-Halli*¹, Maaria Nordman¹, and Heikki Virtanen¹

¹Finnish Geospatial Research Institute, National Land Survey (FGI) – Finland

Abstract

Mets ahovi Geodetic Research Station is becoming one of Global Geodetic Observation System's (GGOS) core sites co-locating all space geodetic techniques together with absolute and superconducting gravimeters. However, the vicinity of Baltic Sea and non-tidal sea level variance together with hydrological and atmospheric pressure changes may produce a vertical displacement of more than 10mm affecting the geodetic measurements made in Mets ahovi as well as a change of several microGal's in measured gravity. To achieve GGOS's 1mm accuracy goal for co-located space geodetic measurements we need to better understand and model these environmental effects. During 2018 and 2019 we will start satellite laser ranging (SLR) and very long baseline interferometry (VLBI) observations with the new state-of-the-art systems at Mets ahovi. Here we present preliminary results of calculations showing the contribution of different loading factors on the overall vertical displacement affecting the space geodetic measurements at Mets ahovi.

*Speaker