



Postglacial rebound and secular change of gravity in Estonia

T. Oja (1), H. Sildvee

(1) Tallinn University of Technology, Department of Physics, Tallinn, Estonia
(tonis@maaamet.ee/3726650604)

Noticeable crustal movements in Estonia result mainly from the postglacial rebound (PGR) of Northern Europe. PGR has a clear impact on the establishment and the maintenance of national geodetic networks because geodetic coordinates, gravity and geoid surface vary continuously in time. In Estonia, geological and sea level data, repeated levelling and gravity measurements are available for the determination of vertical crustal movements and for the study of glacioisostatic adjustment.

In 2003 the Estonian national gravity network as a whole was measured with La-Coste&Romberg G-type relative gravimeters. On the basis of the collected data and the absolute gravity measurements a new realization of the Estonian gravity system will be established soon in the near future. Majority of the stations in the gravity network were established at the beginning of the 1970s, and there followed several measuring campaigns between 1977 and 1989. Considering the postglacial uplift of the Estonian territory (several mm per year) and the relatively long history of the network, it is possible and also reasonable to carry out general adjustment of the gravity data with simultaneous estimation of secular change of gravity. For that purpose the remarkable amount of observations' data that has accumulated over the years is currently being collected and inserted into a digital database. In addition to that, the adjustment model of the gravity network has been updated with the parameters of secular change of gravity. In the current study a preliminary solution of the network is introduced and secular variations of gravity are estimated. Those variations correlate roughly with the pattern of observed crustal movements.