

**Progress report on seasonal gravity campaign carried out on
permanent GPS stations in Walloon region
M. Everaerts**

Abstract

Since 2006 gravity campaigns have been carried out on the permanent GPS stations in Walloon region (south of Belgium). Until now three campaigns have already been measured: autumn 2006, spring 2007, autumn 2007. The aims of those campaigns are: to ensure the durability of first order gravity network (pillars are checked regularly) and to collocate gravity and GPS data, which is of geodetic interest. There is a particular interest for the Walloon region for the assessment of the stability of their pillar and for the detection of possible seasonal effects linked to changes in position or water table. For that at each pillar base there is a slab where gravimeters can be installed. Each point has been measured with two gravimeters for each campaign. The preliminary result show that the difference between the adjusted and the initial value at the reference stations (absolute points) is generally lower than $5\mu\text{gal}$. Comparison of different campaigns shows some discrepancies larger than $20\mu\text{gal}$. It is sometimes due to bad local conditions or to insufficient connections to the neighboring stations. Unfortunately, the only spring campaign met some difficulties, so that no firm conclusion can be drawn concerning possible seasonal effects. Nevertheless, large unexplained gravity differences seem to exist in the province of Luxemburg between spring and autumn. These conclusions need to be confirmed by the next spring campaign.