

Results and comparison of gravity time series at Vienna and Conrad observatory

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The gravity time series observed by the Superconducting gravimeter C025 in Vienna (VI) and at Conrad observatory (CO) are compared especially with respect to earth model validation and environmental effects on gravity. The SG operated more than 12 yrs in Vienna and was moved to the Conrad observatory in autumn 2007. Numerous calibration experiments using both FG5 and Scintrex relative gravimeters as reference revealed that the SG scale factor remained constant within the error bounds. Tidal analyses show a perfect agreement between both time series after correcting for ocean load using 8 OL models (Scherneck and Bos, <http://holt.oso.chalmers.se/loading/>). The maximum deviation from the numbers provided by the non-hydrostatic-body-tide models DDW and MAT01 is 0.8‰. Residuals are calculated applying 3D atmospheric (Atmospheric attraction computation service, BKG) and global hydrological (GLDAS) models.

The 2nd part focuses on comparing short-term environmental effects studying high frequency air pressure signatures and the air pressure to gravity admittance between 1 and 10 mHz. Both VI and CO show site dependant characteristics in the admittance function while the notch frequencies are almost equal (1.9 – 2.0 mHz) on average. We also discuss the local gravity effect of atmospheric water content and try, in a very first attempt, utilizing weather radar and MRR data for quantification.