



## **Evaluation of RL05 GRACE Based Global Geopotential Models on a Regional Scale: A case study of Turkey**

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With the launch of GRACE (Gravity Recovery And Climate Experiment) mission in 2002, the study of temporal mass variations within the Earth system has become possible. GRACE satellite twins offer an unprecedented alternative remote sensing technique to measure changes in equivalent water thickness (EWT) over continental areas, providing a new information source for hydrologists and global hydrological modellers.

The main aim of this contribution is to study the performance of all de-correlation filters (i.e. DDK1, DDK2, DDK3, DDK4, DDK5, DDK6, DDK7, DDK8) applied to reduce the noise included in RL05 GRACE-based GGMs from the official GRACE Science Data System, i.e. CSR (Centre for Space Research), GFZ (GeoForschungs Zentrum) and JPL (Jet Propulsion Laboratory) centers. Temporal variations of EWT were determined over the territory of Turkey using RL05 GRACE-based GGMs. In order to validate them, they were compared with the corresponding ones obtained from WaterGAP (Water Global Assessment and Prognosis) Global Hydrology Models (WGHMs), GLDAS (Global Land Data Assimilation System) models and JPL Mascons (Mass concentrations).

Numerical results obtained were discussed. The most reliable DDK filters to reduce the noise, i.e. the north-south striped patterns, included in RL05 GRACE-based GGMs were investigated. The recommended data from the aforementioned centers of the official GRACE Science Data System to estimate temporal mass variations in the Earth system over Turkey is specified.

**Keywords:** Decorrelation filters, GFZ, GRACE, hydrological models, Mascons