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A Spherical Wavelet Approach to Localize Satellite Gravity Field Data for Delineating Water Storage Variations Signal case study: South-Eastern Iran

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To exploit full application of satellite missions in the detection of gravity variations, there is an arising need to investigate various regularization methods due to different assimilation techniques.

Spherical/Harmonic wavelets as a basis for a multiresolution analysis is proposed to window geopotential coefficients from satellite mission data to investigate time-variable gravity inside the region of interest.

The use of Spherical/Harmonic Wavelets as window taper amplifies the SNR. The results based on GRACE and GOCE with altimetry data assimilated has been verified with terrestrial local gravity variations and GPS levelling data, indicate that crustal deformation due to continental water storage variations can be detected in south-eastern Iran where placed Hamoon lake basin. Moreover the signal dealiased from other crustal deformations within the bandwith of spherical degrees 10-45.