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GRACE-like: A Possible Way to Estimate Total Water Storage without Stripes

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GRACE is considered as a valuable tool to estimate water storage changes over an entire region or basin, with higher accuracy at larger spatial scales. A number of global gravity field models (e.g., EIGEN-6C2, Förste et al., 2012), merging GRACE data with other data like GOCE, LAGEOS, altimetry, and terrestrial data to estimate time-dependent harmonic coefficients, are available. Using such time-dependent harmonic coefficients models allows the computation of sets of harmonic coefficients at specific time epochs, yielding what we call GRACE-like models. The GRACE-like models can be used to estimate the water storage changes. The advantage of using the GRACE-like coefficients to estimate water storage changes is that no smoothing is needed. Therefore, no signal attenuation will take place. The paper attempts to detect the GRACE harmonic coefficients which are responsible for the stripes behaviour appearing in the estimated water storage changes by comparing the GRACE coefficients with their corresponding values of the GRACE-like coefficients and try to introduce a solution for the stripes problem. The results are shown and widely discussed.