



Error structures of GRACE monthly solutions and their propagation into inferred regional mass variations

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We analyse the error structures of current GRACE monthly solutions from different institutions by an empirical method. We set special emphasis on error correlations between individual Stokes coefficients.

A common application of GRACE data is the computation of regionally averaged surface mass variations (RMV). Errors of GRACE products propagate into these RMV. Previous evaluations of this error propagation have usually ignored error correlations although their existence is well known (e.g., ‘striping’ in the spatial domain).

We show that by ignoring GRACE error correlations the errors of RMV may be dramatically underestimated, especially for near-polar regions. We discuss consequences on error estimation and error separation for RMV.