



EGSIEM combination service: combination of GRACE monthly K-band solutions on normal equation level

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The European Gravity Service for Improved Emergency Management (EGSIEM) project offers a scientific combination service, combining for the first time monthly GRACE gravity fields of different analysis centers (ACs) on normal equation (NEQ) level and thus taking all correlations between the gravity field coefficients and pre-eliminated orbit and instrument parameters correctly into account. Optimal weights for the individual NEQs are commonly derived by variance component estimation (VCE), as is the case for the products of the International VLBI Service (IVS) or the DTRF2008 reference frame realisation that are also derived by combination on NEQ-level. But variance factors are based on post-fit residuals and strongly depend on observation sampling and noise modeling, which both are very diverse in case of the individual EGSIEM ACs. These variance factors do not necessarily represent the true error levels of the estimated gravity field parameters that are still governed by analysis noise. We present a combination approach where weights are derived on solution level, thereby taking the analysis noise into account.