

An iterated global mascon solution with focus on land ice mass evolution

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Land ice mass evolution is determined from a new GRACE global mascon solution. The solution is estimated directly from the reduction of the inter-satellite K-band range rate observations taking into account the full noise covariance, and formally iterating the solution. The new solution increases signal recovery while reducing the GRACE KBRR observation residuals. The mascons are estimated with 10-day and 1-arc-degree equal area sampling, applying anisotropic constraints for enhanced temporal and spatial resolution of the recovered land ice signal. The details of the solution are presented including error and resolution analysis. An Ensemble Empirical Mode Decomposition (EEMD) adaptive filter is applied to the mascon solution time series to compute timing of balance seasons and annual mass balances. The details and causes of the spatial and temporal variability of the land ice regions studied are discussed.