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Towards a new time-series of GRACE continental and non-tidal ocean mass variations

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Continental and residual non-tidal mass variations in the Earth system are rigorously estimated by the inversion and downward continuation of GRACE K-Band observations. In order to increase the spatio-temporal resolution a Kalman filter is employed, constrained by the auto-correlation of land hydrology and short-term atmosphere and non-tidal ocean fluctuations. Current status and comparison of large-scale hydrological catchments and polar ice-sheet melting with available GRACE time-series, in-situ hydraulic modeling (Mekong) and GPS uplift rates (GNET) are presented.