



Mascons from GRACE and Hydrology Recovery

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The GRACE mission has demonstrated the recovery of the time-variable gravity field of the Earth. A variety of techniques have been applied to the GRACE data to extract the TVG signal, including use of global spherical harmonics, and alternate representations such as mass concentrations (or mascons). In this paper, we review the recovery of the terrestrial hydrology signal using more than three years of GRACE data, from March 2003 through July 2006. We spectrally analyze the signal content of the GSFC spherical solutions and compare these with local (mascon) recoveries for different regions of the globe. We assess the quality of the signal recovery for different regions, paying close attention to the Mississippi Basin, where detailed in-situ data are available, and to the signal in other continental regions such as Australia where we clearly discern the dichotomy between the monsoon signal in the tropics and the more muted hydrology signal in other regions. We intercompare the hydrology recovery with mascons on a regular grid, and those tailored to specific drainage basins. Finally, we briefly review the mascon recoveries of ice mass loss for the terrestrial glaciers and ice sheets, intercomparing the mascon recoveries with solutions by other centers using spherical harmonics.