



Regional terrestrial water storage estimated from GRACE satellite gravimetry and macroscale hydrologic models

S. Swenson (1) and J. Wahr (1)

(1) University of Colorado, Department of Physics and CIRES

GRACE time-variable gravity measurements are a new and innovative data type for hydrology. At approximately monthly intervals, the GRACE Project constructs a new, monthly-averaged estimate of the Earth's gravity field. Month-to-month changes in these GRACE gravity fields are primarily due to changes in the vertically-integrated water column, both on land and in the ocean. We have developed techniques that optimally convert the GRACE gravity data into regionally-averaged water storage estimates. Applying these techniques to recently-released gravity fields, we have derived regional estimates of water storage variations for specific areas of the world. We compare these estimates to those produced by macroscale hydrologic models.

Recently, remotely-sensed estimates of snow water equivalent (SWE) have become available. These SWE estimates, produced at the National Snow and Ice Data Center, are derived from a combination of passive microwave and visible sensors [Armstrong and Brodzik, 2001]. In this talk, we also compare GRACE terrestrial water storage estimates to the NSIDC SWE estimates.

Reference: Armstrong, R.L. and M.J. Brodzik, 2001, Recent Northern Hemisphere snow extent: a comparison of data derived from visible and microwave sensors, *Geophysical Research Letters*, Vol. 28, No.19:3673-3676.