

Integrating Data from GRACE and Other Observing Systems for Hydrological Research and Applications

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The Gravity Recovery and Climate Experiment (GRACE) mission provides a unique view of water cycle dynamics, enabling the only space based observations of water on and beneath the land surface that are not limited by depth. GRACE data are immediately useful for large scale applications such as ice sheet ablation monitoring, but they are even more valuable when combined with other types of observations, either directly or within a data assimilation system.

Here we describe recent results of hydrological research and applications projects enabled by GRACE. These include the following: 1) global monitoring of interannual variability of terrestrial water storage and groundwater; 2) water balance estimates of evapotranspiration over several large river basins; 3) NASA's Energy and Water Cycle Study (NEWS) state of the global water budget project; 4) drought indicator products now being incorporated into the U.S. Drought Monitor; 5) GRACE data assimilation over several regions.