



The Status and Future Directions for the GRACE Mission

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The twin satellites of the Gravity Recovery and Climate Experiment (GRACE) were launched on March 17, 2002 and have operated continuously for over 12 years. The mission objectives are to sense the spatial and temporal variations of the Earth's mass through its effects on the gravity field at the GRACE satellite altitude. The primary mission objectives of GRACE are to measure: 1) the Earth's time-averaged gravity field over the mission life and 2) the monthly variations in the mean gravity field at wave lengths between 300 and 4000 km. The major cause of the time varying mass is water motion and the GRACE mission has provided a continuous decade long measurement sequences which characterizes the seasonal cycle of mass transport between the oceans, land, cryosphere and atmosphere; its inter-annual variability; and the climate driven secular, or long period, mass transport signals. Measurements of continental aquifer mass change, polar ice mass change and ocean bottom currents are examples of paradigm shifting remote sensing observations enabled by the GRACE satellite measurements. In 2012, a complete reanalysis of the mission data, referred to as the RL05 data release, was initiated. The monthly solutions from this effort were released in mid-2013 and have been applied in numerous science and application related investigations. The RL05 mean and combined models, involving the GRACE/GOCE data combinations, are still in development. This presentation will review some of the science improvements from the RL05 data and the remaining tasks to be conducted in completing the solution, describe the current mission status and the current operations, which are focused on extending enhance the mission lifetime, and discuss future operation concepts including the impact of the future science data products.