



WILLIAM T. PECORA AWARD

GRACE MISSION TEAM

FOR THE DESIGN, DEVELOPMENT, AND SUCCESSFUL OPERATION OF NEW METHODS OF SATELLITE-BASED MEASUREMENT OF THE EARTH'S GRAVITY RESULTING IN SIGNIFICANT CONTRIBUTIONS TO THE UNDERSTANDING OF THE CHANGING GLOBAL ENVIRONMENT

The Gravity Recovery and Climate Experiment (GRACE) is the first National Aeronautics and Space Administration (NASA) Earth System Science Pathfinder mission. GRACE has proven the feasibility and utility of precision gravity-field measurements for the study of changes in the Earth system. GRACE is the realization of a 30 year long vision of a satellite gravity mission set forth in the *Williamstown Report* and the influential National Research Council report entitled *Satellite Gravity and the Geosphere*—reports inspired by many highly influential Earth scientists led by the late William Kaula.

In its initial years of operation, GRACE increased the accuracy of the measurement of the Earth's mean gravity field by a factor of 400 or more. GRACE further improved upon this accuracy by providing monthly estimates of gravity-field changes in order to monitor mass transport due to climatic and tectonic processes. GRACE provides: (1) monthly, seasonal, and inter-annual estimates of the water balance within major drainage basins, (2) estimates of mass-balance changes in ice sheets, (3) highly improved estimates of ocean circulation and ocean warming, (4) measurements of isostatic rebound, and (5) the first space-based detection of gravity-field deformation caused by earthquake-induced crustal displacement. GRACE also contributed to the verification of the Lense-Thirring Effect of general relativity theory through improvements in the precision satellite-orbit determination of the LAGEOS laser geodynamics satellites. GRACE has opened entirely new vistas for the measurement of global change in the Earth system and has provided a revolutionary new tool in space-based planetary exploration.

On the way to becoming a major scientific and engineering achievement, the GRACE mission demonstrated the importance of innovative international partnerships to the advance of space-based observation of the Earth system. Collaboration among the Center for Space Research at the University of Texas at Austin, the Jet Propulsion Laboratory, the German Aerospace Center (DLR), and the GeoForschungZentrum in Potsdam led to the successful development and operation of the GRACE system.

The great achievements of GRACE thus far are a testament to the leadership, vision, creativity, and hard work of the entire GRACE Mission Team, including Principal Investigators, Byron Tapley and Christoph Reigber; Project Manager, Edgar Davis; Project Scientist, Michael Watkins; Program Scientist, John LaBrecque; and the many scientists, engineers and managers of NASA and DLR. In recognition of these accomplishments, NASA and the Department of the Interior take great pleasure in presenting the 2007 William T. Pecora Award to the GRACE Mission Team.

Administrator
National Aeronautics and Space Administration

Secretary
Department of the Interior