

## GRACE: a satellite-to-satellite tracking geopotential mapping mission

B. D. TAPLEY<sup>(1)</sup> and C. REIGBER<sup>(2)</sup>

<sup>(1)</sup>*Center for Space Research, University of Texas at Austin, USA*

<sup>(2)</sup>*GeoForschungsZentrum Potsdam, Dept. of Kinematics and Dynamics of the Earth, Potsdam, Germany*

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**Abstract.** For a number of applications in oceanography, hydrology, glaciology and the solid Earth sciences, the mapping of the Earth's global gravity field can provide a critical observational and constraint dataset. The GRACE mission, selected under the NASA Earth System Science Pathfinder (ESSP) program for a mid-2001 launch, will provide a major advancement in the mapping of the Earth's gravity field in both the mean sense and for temporal variations on time scales of 30 days and longer. This mission will provide measurements of the range between two low Earth orbiters to submicron precision using dual-one-way, dual frequency microwave tracking. The two orbiters will be placed in near polar, near 500 km altitude orbits, separated from each other by approximately 250 km, over a mission lifespan of 3-5 years. The satellites will also carry GPS receivers and high precision accelerometers to aid the recovery of the gravity field from observational data. In our oral presentation, we provided a summary status of the project to date. Also, we reviewed the science rationale and capabilities of GRACE for the measurement and monitoring of the Earth gravity field changes. The impact of the result from GRACE on our measurement and understanding of global climate change, and its interaction with other space and ground-based geophysical data sets were discussed.

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Corresponding author: B. D. Tapley; CSR, The University of Texas at Austin, 3925 W. Braker Lane Suite 200; Austin Tx-78759; phone: +1 512 471 5573; fax: +1 512 471 3570; e-mail: tapley@csr.intexas.edu

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