



## The Geodetic Reference Antenna in Space (GRASP) Mission Concept

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The Geodetic Reference Antenna in Space (GRASP) is a micro satellite mission concept dedicated to the enhancement of all the space geodetic techniques, promising revolutionary improvements to the definition of the TRF, its densification, and accessibility. GRASP collocates GPS, SLR, VLBI, and DORIS sensors on a supremely calibrated and modelable spacecraft, offering an innovative space-based approach to a heretofore intractable problem: establishing precise and stable ties between the key geodetic techniques used to define and disseminate the TRF. GRASP also offers a solution to another difficult problem, namely, the consistent calibration of the myriad antennas used to transmit and receive the ubiquitous signals of the present and future Global Navigation Satellite Systems (GNSS). The resulting improvement in GNSS signal modeling will benefit all precision applications of these systems, which are the cornerstone of many Earth science missions.

This paper will describe the GRASP mission concept, and the simulations analyses carried out to quantify the science benefits of this mission.