NASA Contribution to the EarthScope Project (poster, 2007)

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NASA Contribution to the EarthScope Project

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Abstract

NASA-JPL provides support for the GNSS infrastructure through a network of permanent GPS stations called the Global GNSS Network (GGN). These stations represent approximately 20% of the stations that make up the International GNSS Service (IGS) permanent station global network. The data from these stations are publicly available and are contributed to the IGS data set for use by agencies and institutions around the world. GGN data are used to produce highly accurate products that are essential for Earth science research, multidisciplinary applications, and education, including: GPS satellite ephemerides, Earth rotation parameters, tracking station coordinates and velocities, GPS satellite and tracking station clock information, Zenith troposhperic path delay estimates, and Global ionospheric maps. These products support Earth science and other activities such as: improving and extending the International Terrestrial Reference Frame (ITRF) maintained by the International Earth Rotation and Reference Systems Service (IERS); monitoring deformation of the Earth; monitoring Earth rotation; monitoring the troposphere and ionosphere; determining orbits of scientific satellites such as GRACE and CHAMP; calibrating other instruments such as the Ocean Topography Experiment Satellite (TOPEX), Synthetic Aperture Radar (SAR) and Deep Space Network (DSN) communications equipment, and scientific and commercial navigation. The UNAVCO Facility provides support in conjunction with personnel from JPL for 68 permanent NASA GPS stations. An additional ten non core stations that had originally been funded through research application projects under the DOSE and SENH programs also contribute data to the GGN. The UNAVCO Facility supports the operation and maintenance of these critical components of the NASA –GGN efforts through the daily monitoring of the GGN network, research application projects, special project support, and support for the IGS Central Bureau. The NASA-GGN network helps to provide the highly accurate global gps data products needed for accurate and timely processing of PBO station data, meeting the science goals set forth by EarthScope.

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