

NASA's Next Generation Space Geodesy Network

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NASA's Space Geodesy Project (SGP) is developing a prototype core site for a next generation Space Geodetic Network (SGN). Each of the sites in this planned network co-locate current state-of-the-art stations from all four space geodetic observing systems, GNSS, SLR, VLBI, and DORIS, with the goal of achieving modern requirements for the International Terrestrial Reference Frame (ITRF). In particular, the driving ITRF requirements for this network are 1.0 mm in accuracy and 0.1 mm/yr in stability, a factor of 10-20 beyond current capabilities.

Development of the prototype core site, located at NASA's Geophysical and Astronomical Observatory at the Goddard Space Flight Center, started in 2011 and will be completed by the end of 2013. In January 2012, two operational GNSS stations, GODS and GODN, were established at the prototype site within 100 m of each other. Both stations are being proposed for inclusion into the IGS network. In addition, work is underway for the inclusion of next generation SLR and VLBI stations along with a modern DORIS station. An automated survey system is being developed to measure inter-technique vector ties, and network design studies are being performed to define the appropriate number and distribution of these next generation space geodetic core sites that are required to achieve the driving ITRF requirements.

We present the status of this prototype next generation space geodetic core site, results from the analysis of data from the established geodetic stations, and results from the ongoing network design studies.