

## **THE INTERNATIONAL LASER RANGING SERVICE AND ITS IMPACT ON GEOSS**

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Satellite Laser Ranging (SLR) techniques are used to accurately measure the distance from ground stations to retro-reflectors equipped satellites. Data products from these measurements support key aspects of the GEOSS 10-Year Implementation Plan adopted on February 16, 2005. In particular, using the Lageos class of satellites, SLR is one of the fundamental techniques that define the International Reference Frame, which is the basis upon which we measure many aspects of global change over space, time, and evolving technology. Lasers also provide precision orbit determination and instrument calibration/validation for satellite-borne altimeters for the better understanding of sea level, ocean dynamics, ice budget, and terrestrial topography. Many of the GNSS satellites now carry retro-reflectors for improved orbit determination and in-orbit co-location and system performance validation.

The International Laser Ranging Service (ILRS) was established within the International Association of Geodesy to support applications in geodetic, geophysical, and lunar programs. A network of more than forty SLR stations around the world participates in routine tracking of nearly thirty satellites and the Moon in support of these programs. The Service coordinates activities from data collection through to the development of data products that support program needs.

Regions such as Europe, Asia, North and South America, and the South Pacific are well represented in the network and in the SLR analysis community. Africa is not and represents a very significant deficiency in global coverage. One SLR station is operational in Hartebeesthoek, South Africa. There is great interest in densifying the network in this region.

Work continues at several institutions on ground system development toward the next generation laser ranging system with the introduction of kilohertz pulse repetition rates, greater automation, and greater eye safety. Work also continues on the development of new lighter weight retroreflector arrays.

The ILRS Central Bureau maintains a comprehensive web site (<http://ilrs.gsfc.nasa.gov>) as the primary vehicle for the distribution of information.