

Scientific and Analysis challenges for the next decade in satellite laser ranging

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The knowledge and the understanding of natural and disastrous changes that occur at the surface and in the inner parts of our planet constitutes a challenge to the international community, to the geosciences and to the geodetic techniques and services. It was one of reasons in 1957-1958 to set up an International Geophysical Year (IGY) and, as a result, it was at the origin of Space Research and Space Geodesy at the international level.

After a phase mainly based on the analysis of satellite motions and positions determined as precisely as possible, it becomes more and more important to associate these analyses of satellite motions and positions with new tracking methods (DORIS tracking, GPS tracking, VLBI), with new technologies (altimetry, satellite to satellite, gradiometry, imagery, collecting data), and also with new fields of research (modeling the Earth, integrating in situ and space data, testing the fundamental physics, sounding the solar system). Nowadays the challenge of measuring and understanding the Earth with the global change and global warming is also more and more important (making crucial new IGY and new International Polar Year, IPY) and the role of SLR is to play its specific role in increasing its precision, accuracy and continuity, in reference terrestrial frames, with a continuous and perennial way, in validating and calibrating the different geoscience systems, in archiving data with an interoperable way with other geophysical data (Importance of GGOS, Global Geodetic Observing System and IGOS-P, Integrated Global Observation Strategy Partnership, and of ILRS/IAG).