

Status of the ILRS support for the GRACE-FO mission

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On May 22nd 2018 the two Gravity Recovery and Climate Experiment (GRACE) Follow-On satellites, were launched successfully into their 490 km circular polar orbit from Vandenberg Airforce Base in California, USA. After the GRACE mission the GRACE-FO satellites continue the monitoring of Earth's gravity field from space on a monthly basis. From the differences between monthly solutions, changes of mass in ice sheets and terrestrial storages can be inferred for all regions of the globe. Such data shall be used to answer questions related with climate change, such as the future trend of sea level rise and the increasing use of ground water.

Both satellites are equipped with a Laser Retro Reflector (LRR) that was developed by GFZ. It allows Satellite Laser Ranging (SLR) stations to collect range measurements to the satellites at sub centimeter precision. Stations organized within the ILRS are supporting the mission, by tracking the satellites, whenever they are visible. The SLR measurements are used for Precise Orbit Determination (POD) of the two satellites, which is required for the calibration and the continuous monitoring of the positioning derived from the onboard GNSS receivers, as well as a backup in case of failure.

We intend to give a short overview about the status of the mission, statistics about the tracking of the ILRS network as well as the quality of the SLR data provided so far and the derived solutions. Also an analysis of the agreement between the GNSS and SLR based positioning solutions shall be given.