Geophysical Research Abstracts
Vol. 19, EGU2017-15202, 2017
EGU General Assembly 2017

Status of the GRACE Follow-On Laser Ranging Interferometer

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In approximately one year a follow-on mission to the very successful GRACE (Gravity Recovery And Climate Experiment) mission will be launched. The two GRACE satellites have been mapping the spatial and temporal variations of the Earth's gravitational field by satellite-to-satellite tracking for more than a decade now. While only a microwave ranging instrument has been used for this measurement in GRACE, an additional laser ranging interferometer (LRI) will be operated on board of the GRACE Follow-On satellites as a technology demonstrator. The ranging sensitivity of the LRI is expected to be $\leq$80 nm/sqrt(Hz) which would exceed the original GRACE ranging noise by at least one order of magnitude. The LRI will provide high resolution ranging data for the monthly gravity field solutions and new precise data streams for the line-of-sight alignment of the two spacecraft. It is intended to verify the benefits of a laser-based measurement which is expected to eventually become the main science instrument in future geodesy missions.
The two GRACE Follow-On spacecraft were fully integrated by the end of 2016 and are currently undergoing extensive testing. We will present the latest LRI related results of these tests and give an overview of the upcoming activities.