

SPACE SYSTEMS

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## Airbus completes first GRACE-FO satellite for NASA/JPL



*The first of the GRACE-FO research satellites being prepared for transport in an Airbus cleanroom in Friedrichshafen.*

*Photo: Airbus DS GmbH / A. Ruttloff*

Airbus Defence and Space, the world's second largest space company, has finished construction of the first of the two GRACE-FO (GRACE = Gravity Recovery and Climate Experiment, FO = Follow-On) satellites in Friedrichshafen, Germany. The satellite will now be transferred to Ottobrunn near Munich for several months of operational testing in the IABG test centre.

NASA's Jet Propulsion Laboratory JPL (Pasadena, California) will send both GRACE-FO research satellites into a polar orbit at an altitude of around 500 km and at a distance of 220 km apart. This is a follow-on to the GRACE mission, which has been successfully in operation since 2002. As they travel around the Earth, these satellites constantly take very exact measurements of their separation distance, which changes depending on the Earth's gravity. In this way, scientists are able to map the Earth's gravitational fields.

A global positioning system and a microwave ranging system enable the distance between the satellites to be measured to within one micron. The GRACE-FO satellites will feature an additional element: a new inter-satellite laser ranging instrument, developed by a German/American joint venture, which will be tested for use in future generations of gravitational research satellites.

Launch of the GRACE-FO twin satellites is planned for no earlier than late 2017. Over the course of the five-year mission, measurements will be taken to provide an updated model of the Earth's gravitational fields every 30 days. In addition, each of the satellites will supply up to 200 profiles of temperature distribution and water-vapour content for the atmosphere and the ionosphere on a daily basis.

The second GRACE-FO satellite will be ready for testing in about four weeks.

GRACE-FO is a partnership between NASA and the German Research Centre for Geosciences (GFZ).

**Airbus Defence and Space**, a division of Airbus Group, is Europe's number one defence and space enterprise and the second largest space business worldwide. Its activities include space, military aircraft and related systems and services. It employs more than 38,000 people and in 2015 generated revenues of over 13 billion Euros.

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