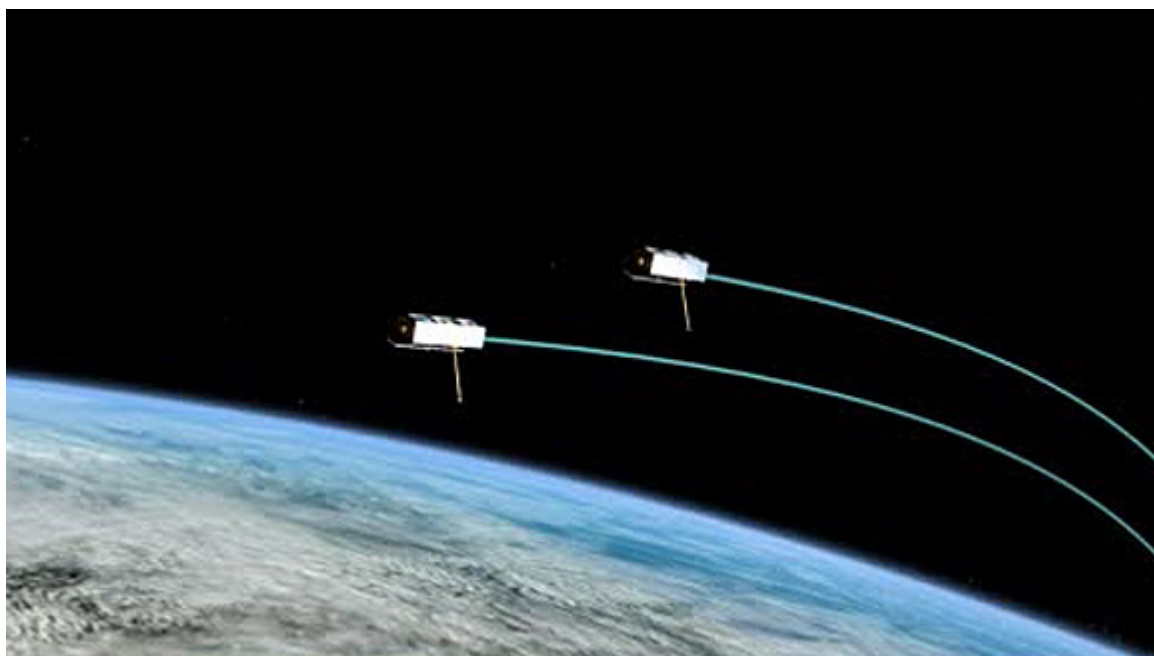


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TerraSAR-X's 'twin' satellite, TanDEM-X, certified ready for space

29 April 2010

The construction of the German radar satellite TanDEM-X (TerraSAR-X add-on for Digital Elevation Measurement) is complete and the satellite has been qualified for space operations during a series of tests conducted at IABG in Ottobrunn, near Munich. As with its 'twin' satellite TerraSAR-X, the TanDEM-X project has been implemented as a public-private partnership (PPP) between the German Aerospace Centre (Deutsches Zentrum für Luft- und Raumfahrt; DLR) and Friedrichshafen-based Astrium GmbH.



On 11 May, the satellite will set off on the first leg of its journey – from Munich airport to the Baikonur Cosmodrome in Kazakhstan. Lift-off aboard a Russian Dnepr launcher is scheduled for 21 June 2010.

With the almost identical TerraSAR-X satellite, operational since 2007, TanDEM-X will gather data for a digital elevation model portraying Earth's landmasses in unprecedented quality. Collecting the data for this new model will take three years. To do this, TanDEM-X and TerraSAR-X will form a radar interferometer. The satellites will fly in close formation, only a few hundred metres apart, enabling terrain images to be acquired simultaneously from different viewing angles. The two satellites are scheduled to map the complete land area of Earth – 150 million square kilometres – on a 12-metre grid and with a relative vertical accuracy of less than 2 metres.

DLR will operate TanDEM-X and its ground segment

IABG conducted extensive tests to space qualify the satellite. The programme covered testing of electromagnetic compatibility, thermal-vacuum tests including solar simulation, vibration tests, acoustic tests and the determination of the satellite's mass properties. A special feature of the campaign was the 'boom-release' test, which investigated the shock loads on the satellite due to antenna deployment. The tests were conducted by IABG in its Ottobrunn space centre, one of the ESA-coordinated test centres.



TanDEM-X during integration at IABG

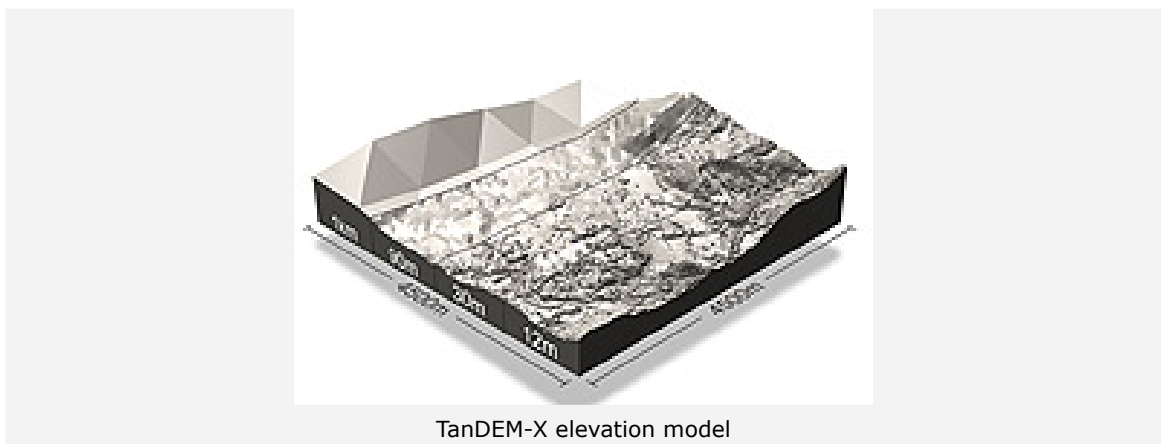
The PPP agreement between Astrium and DLR includes the regulation of the financing of TanDEM-X and the utilisation of its data. The partners have jointly financed the 85 million Euro cost of building the satellite, with DLR contributing 59 million Euro and Astrium 26 million Euro. DLR is also developing the ground segment required to support the mission and is responsible for mission planning and implementation, as well as for the control of both satellites and the generation of the digital elevation model. DLR's Microwaves and Radar Institute (Institut für Hochfrequenztechnik und Radarsysteme) coordinates data exploitation for scientific purposes.

Key project for satellite-borne radar technology

The decisive advantage of satellite-based Earth mapping is the generation of a globally consistent and homogeneous elevation model with no discontinuity at regional or national borders and no inconsistencies resulting from the use of different measurement procedures or from measurement campaigns conducted in phases over a period of time. The radar plays a decisive role here, since it can operate completely independent of weather and cloud cover, day and night. At present, the procedure is unparalleled and is receiving particular attention in the USA. TanDEM-X is key to demonstrating, safeguarding and extending German competence and competitiveness in the field of satellite-based radar technology.

Germany will acquire a digital elevation model of Earth – an attractive and unique data product – which, in addition to possible scientific applications, can be used by organisations such as the Center for Satellite-Based Crisis Information (Zentrum für satellitengestützte Kriseninformation; ZKI) and by programmes and initiatives, such as GMES (Global Monitoring for Environment and Security) and GEOSS (Global Earth Observation System of Systems), and also in security-related cooperation agreements.

Commercial utilisation



TanDEM-X elevation model

Similar to TerraSAR-X, the commercial exploitation of TanDEM-X's data and derived products is part of the PPP agreement between DLR and Astrium. Infoterra GmbH, a wholly-owned subsidiary of Astrium based in Friedrichshafen and founded in 2001, is responsible for the adaptation of the elevation model to meet the needs of commercial users and for its marketing worldwide.

Since the commencement of TerraSAR-X operations in early 2008, Infoterra has established a solid position in the global market for Earth observation data and services and has set up a distribution network with more than 50 partners in 33 countries. This promising business base will also be used to

market TanDEM-X data and products. The fields of application are versatile and range from increased efficiency in the production of oil, gas or minerals through improved crisis mission planning and better prediction of the impacts of disaster situations to more focussed preparation of defence and security missions. Most importantly, in many countries all over the world, the persons responsible for cartography will obtain improved elevation information for standard maps thanks to this precise and up-to-date source of data.

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