



European data centre for GMES Sentinel satellites at DLR

24 July 2012

The ground segment for GMES (Global Monitoring for Environment and Security) is starting to take shape; the German Remote Sensing Data Center (Deutsche Fernerkundungsdatenzentrum; DFD) of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) in Oberpfaffenhofen will be the European data centre for GMES satellites Sentinel-1 and Sentinel-3.

"DLR's expertise in Earth observation, data repositories and data processing is fundamental for the successful establishment of the European data centre planned by ESA," explained Hansjörg Dittus, DLR Executive Board Member for Space Research and Technology.

On 24 July, Volker Liebig, ESA Director of Earth Observation, DLR's Hansjörg Dittus, and the director of DFD, Stefan Dech, signed a contract in Oberpfaffenhofen to establish a GMES Processing and Archiving Center (PAC).

"With its unique combination of research and engineering abilities, DFD has been a reliable partner of ESA for many years in designing and operating complex systems for the reception, processing and archiving of Earth observation data," emphasised Volker Liebig.

In 2013, data from Sentinel-1, and later also data from the Ocean and Land Colour Instrument (OLCI) on the Sentinel-3 satellites will be processed to yield information products that will be distributed to users and archived for the long term. ESA is providing 13.6 million Euro over seven years to establish and operate the data centre. This new GMES data centre is, to a large extent, based on existing infrastructure. The existing computer systems and national data archive at DLR will be expanded in the coming months to handle the additional data requirements of over two petabytes to be processed annually. T-Systems has been awarded a subcontract to expand the network infrastructure.

Satellite data, independent of weather and time of day

The radar instruments on the Sentinel-1 satellites will collect data globally from Earth's land surface and oceans, independent of cloud cover and time of day. With the Sentinel-1 satellite, the polar ice caps can be monitored continuously, oil spills in the oceans can be detected, and floods and other natural disasters rapidly mapped over large areas.

OLCI on the Sentinel-3 satellites can acquire data from Earth's entire surface within two days, using 21 spectral channels, and with a ground resolution of 300 metres. This will provide important data about global change relating to vegetation dynamics, water quality and the carbon cycle.

"Data sets of this quality collected over several decades will supply basic information for understanding the dynamics of the geosphere and addressing urgent global problems," explained Stefan Dech.

Data from the Sentinel satellites will arrive at the GMES data centre in Oberpfaffenhofen from the ground stations via high-speed networks. For time-critical applications, such as detecting oil spills in the oceans or mapping sea ice for shipping, DFD is planning to receive Sentinel data directly with its ground station at Neustrelitz, about 100 kilometres north of Berlin, and via its receiving stations in Canada, Mexico and Antarctica.

In addition, DLR in Oberpfaffenhofen is participating in the construction and operation of a 'European Data Relay System' (EDRS), which will permit reception of Earth observation data via geostationary relay satellites.

Sentinel-1 and Sentinel-3 continue the Earth observation efforts that began in Europe in 1991, with the ESA satellites ERS-1, ERS-2 and Envisat. DFD has been working on behalf of ESA since 1991 as a processing and data centre for these first European Earth observation satellites.

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Sentinel-1



The European Earth observation satellite Sentinel-1 will provide radar images of the entire Earth. These are processed and archived at the DLR site in Oberpfaffenhofen.

Credit: ESA.

The Earth Observation Center at DLR Oberpfaffenhofen



Processing and archiving data centres for the Sentinel-1 and Sentinel-3 satellites are being prepared at the DLR Earth Observation Center in Oberpfaffenhofen.

Credit: DLR (CC-BY 3.0).

Contract signing



Signing the contract for the GMES Processing and Archiving Center. From left to right: Stefan Dech (Director of the DLR German Remote Sensing Data Center [Deutsche Fernerkundungsdatenzentrum; DFD]), Volker Liebig (ESA Director of Earth Observation) and Hansjörg Dittus (DLR Executive Board Member for Space Research and Technology).

Credit: DLR (CC-BY 3.0).

Contract signing – group photograph



Erhard Dietrich, Thomas Hahmann, Hans Weber, Volker Liebig (ESA Director of Earth Observation), Barbara Wild, Hansjörg Dittus (DLR Executive Board Member for Space Research and Technology), Gunther Kohlhammer (Head of ESA's Earth Observation Ground Segment Department), Anna Tschetschetkin (Bavarian State Ministry of Economic Affairs, Infrastructure, Transport and Technology), Stefan Dech (Director of the DLR German Remote Sensing Data Center [Deutsche Fernerkundungsdatenzentrum; DFD]).

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