



Programmatic overview of GMES Space Component and implementation status

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GMES, the Global Monitoring for Environment and Security initiative, is a programme to provide the most comprehensive understanding of the state of land, air and water. Created in 1998 as an independent joint initiative of the European Commission (EC) and the European Space Agency (ESA), GMES will combine information from the world's biggest fleet of satellites and from thousands of atmospheric and Earth based sensors across the world in order to provide joined-up, timely, reliable and easily accessible information in domains such as natural disaster planning and response, the environment, agriculture, land use, climate change and security.

GMES is made up of an In-situ Component, a Services Component and a Space Component.

ESA is responsible for coordinating the Space Component which is composed of dedicated satellite missions, called Sentinels, and so called Contributing Missions, owned and operated by national agencies or commercial entities of ESA/EU Member States, EUMETSAT or other third parties. It also comprises the associated Ground Segment infrastructure necessary to access, process and disseminate the data from the multitude of missions contributing to GMES. ESA is also responsible for the development and procurement of the dedicated Sentinel satellites. Lastly, ESA will act as interim operator for Sentinel missions -1, -2 and land part of Sentinel-3 while EUMETSAT will operate the ocean part of Sentinel-3 as well as the S-4/5 instruments which are flying on-board EUMETSAT's MTG and post-EPS respectively.

The Sentinels will be the first series of dedicated operational satellites to meet the Earth observation needs of GMES users concerning atmosphere, ocean and land monitoring as well as emergency response and security.

The Sentinel-1 constellation is a pair of synthetic aperture radar (SAR) imaging satellites. It ensures continuity of C-band SAR data and builds upon heritage and experience with the ERS and Envisat satellites. Sentinel-1 satellites will provide almost 10 times the data obtained by Envisat's ASAR instrument.

A pair of Sentinel-2 satellites will routinely provide high resolution (10-60 m) optical images globally with frequent revisits tailored to the needs of GMES land and emergency services. Sentinel-2 aims at ensuring continuity of SPOT and LANDSAT type data, with improvements to allow service evolution.

A pair of Sentinel-3 satellites will provide global near real time ocean, ice and land monitoring. It continues observations of ERS, Envisat and SPOT/Vegetation.

Sentinel 4 and 5 will be dedicated to monitor atmospheric trace gases from geostationary and low Earth orbit respectively. A Sentinel-5 precursor satellite will be launched at the end of 2014 to fill the gap until the arrival of Sentinel-5 on board post-EPS.

The Contributing Missions are satellite missions operated by national agencies or commercial entities of Member States, EUMETSAT or other third parties, which do not replace nor duplicate the capacities of the dedicated Sentinel missions but rather complement them.

The GMES data will feed the different services: Land, Marine, Atmosphere, Emergency and Security. Data from the former 3 services will also feed Climate Change applications. Some of these services will become fully operational in the next years.

As part of the ESA led GMES Space Component, ESA and the EC are working together to define the principles and implementation scheme of the Sentinel Data Policy. The new data policy aims at providing free-of-charge access to all Sentinel data, both for public, commercial and scientific use. These “free and open” data policy principles have been approved by ESA Member States. EU approval is expected in the course of 2010.