

EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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THE GLOBAL MONITORING FOR ENVIRONMENT AND SECURITY (GMES) SPACE
COMPONENT

Abstract

GMES is the most ambitious and complex operational Earth Observation programme to date and will combine information from the world's biggest fleet of satellites and from thousands of in-situ 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. The overall programme and the Services component are being led by the European Commission while ESA has been assigned the role of coordinator of the GMES Space Component (GSC). The GSC includes 5 families of dedicated satellite missions, called Sentinels, specifically developed by ESA and so called Contributing Missions. The design of the Sentinel missions is driven by the needs of GMES services. The Sentinel-1 is a C-band imaging radar mission to provide all-weather day-and-night imagery for GMES user services with improved revisit frequency and coverage. The Sentinel-2 satellites will provide imagery with a Multispectral Imager instrument in 13 spectral bands, with resolutions of 10–20–60 m for land and emergency applications.

The Sentinel-3 mission's main objective is to determine parameters such as sea-surface topography, sea- and land-surface temperature as well as ocean- and land-surface colour, with a suite of different instruments.

The Sentinel-4 and Sentinel-5 missions will be devoted to atmospheric composition monitoring. The former will fly in a geostationary orbit while the latter flies in a low Earth orbit. The Sentinel-5 precursor mission, planned for launch in 2015, will bridge the data gap from the end of the Envisat mission to the launch of Sentinel-5.

Whilst the priority of the GMES Contributing Missions is to primarily serve their respective operators they nevertheless play a crucial role in ensuring that adequate datasets are provided for the GMES Services until data from the Sentinel satellites is available. They are operated by national agencies or commercial entities of ESA's Member States, EUMETSAT or other third parties. The list of Contributing Missions will evolve in time in order to keep up with new user requirements. All the dedicated Sentinels, Contributing Missions and the corresponding Ground Segment infrastructure will be part of the overall GMES Space Component architecture managed by ESA. ESA is therefore responsible for establishing a mechanism to integrate, harmonise and coordinate access to all the relevant data from the multitude of missions contributing to GMES.