



SENTINEL-1 Implementation Status

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The Sentinel-1 synthetic aperture radar (SAR) constellation represents a completely new approach to SAR mission design by ESA in direct response to the operational needs for SAR data expressed under the EU-ESA Global Monitoring for Environment and Security (GMES) programme. The Sentinel-1 constellation is expected to provide near daily coverage over Europe and Canada, global coverage all independent of weather with delivery of radar data within 1 hour of acquisition – all vast improvements with respect to the existing SAR systems.

Data products from the Agency's successful ERS-1, ERS-2 and Envisat missions form the basis for many of the pilot GMES services. Consequently Sentinel-1 data products need to maintain data quality levels of the Agency's previous SAR missions in terms of spatial resolution, sensitivity, accuracy, polarisation and wavelength. In addition to responding directly to current needs of the GMES program, the design of the Sentinel-1 satellite mission with its focus on stability, reliability, global coverage, consistent operations and quick data delivery is expected to enable the development of new applications and meet the evolving needs of GMES, for instance in the area of climate change and associated monitoring needs.

The Sentinel-1 satellite carries a Synthetic Aperture Radar (SAR) instrument with four standard operational modes: Interferometric Wide Swath Mode, Wave Mode, Strip Map Mode, and Extra-wide Swath Mode.

It is expected that Sentinel-1A be launched in 2012 and Sentinel-1B 18 months later. Once in orbit Sentinel-1 will be operated from two centres on the ground. The Agency's facilities in Darmstadt, Germany will command the satellite ensuring its proper functioning along the orbit. The mission exploitation will be managed at the Agency's facilities in Frascati, Italy, including the planning of the acquisitions by the SAR instrument according to the mission requirements, the processing of the acquired data and the provision of the resulting products to the users.

This paper will describe to mission and systems aspects of the Sentinel-1 constellation. The latest status of the current development phase will be presented.