

SENTINEL-1



Sentinel-1

The Sentinel-1 mission is a polar-orbiting satellite system for the continuation of Synthetic Aperture Radar (SAR) operational applications.

Sentinel-1 is a C-band imaging radar mission to provide an all-weather day-and-night supply of imagery for Copernicus user services. The first Sentinel-1 satellite is envisaged to launch in 2013 and will be followed by the second satellite a few years later.

Dedicated to Copernicus, Sentinel-1 will ensure the continuity of C-band SAR data, building on ESA's and

Canada's heritage SAR systems on ERS-1, ERS-2, Envisat and Radarsat.

The SAR sensor will operate in two main modes: Interferometric Wide Swath and Wave. The first has a swath width of 250 km and a ground resolution of 5×20 m. These two modes will satisfy most of the envisaged service requirements. Two other mutually exclusive modes are provided for continuity with other SAR missions and to accommodate emerging user requirements.

Sentinel-1's revisit time, geographical coverage and rapid data dissemination are key to providing essential data for Copernicus. The Sentinel-1 pair is expected to provide coverage over Europe, Canada and main shipping routes in 1–3 days, regardless of weather conditions. Radar data will be delivered within an hour of acquisition – a big improvement over existing SAR systems.

The mission will benefit numerous services. For example, services that relate to the monitoring of Arctic sea-ice extent, routine sea-ice mapping, surveillance of the marine environment, including oil-spill monitoring and ship detection for maritime security, monitoring land-surface for motion risks, mapping for forest, water and soil management and mapping to support humanitarian aid and crisis situations.



Sentinel-1 will aid sea-ice monitoring

The design of the Sentinel-1 mission with its focus on reliability, operational stability, global coverage, consistent operations and quick data delivery is expected to enable the development of new applications and meet the evolving needs of Copernicus.

Sentinel-1 is being realised by an industrial consortium led by Thales Alenia Space Italy as Prime Contractor, with Astrium Germany responsible for the C-SAR payload incorporating the central radar electronics subsystem developed by Astrium UK.

Sentinel-1 will be launched on a Soyuz rocket from Europe's Spaceport in French Guiana.

Related links

Turning up the heat on Europe's first Sentinel

http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/Turning_up_the_heat_on_Europe_s_first_Sentinel

International effort helps users get ready for Sentinel-1

http://www.esa.int/Our_Activities/Observing_the_Earth/Copernicus/International_effort_helps_users_get_ready_for_Sentinel-1

Sentinel-1 to offer new ways of monitoring crops from space

http://www.esa.int/Our_Activities/Observing_the_Earth/Sentinel-1_to_offer_new_ways_of_monitoring_crops_from_space

Satellite data to improve flood forecasting

http://www.esa.int/Our_Activities/Observing_the_Earth/SMOS/Satellite_data_to_improve_flood_forecasting

Sentinel-1 Mission Requirements Document

http://esamultimedia.esa.int/docs/GMES/GMES_SENT1_MRD_1-4_approved_version.pdf

Sentinel-1 (SP-1322/1)

http://esamultimedia.esa.int/multimedia/publications/SP-1322_1/

ESA Bulletin 131: Sentinel-1

http://www.esa.int/esapub/bulletin/bulletin131/bul131a_attema.pdf

Sentinel-1 facts & figures (.pdf)

http://esamultimedia.esa.int/docs/S1-Data_Sheet.pdf

Remote Sensing of Environment–Sentinel-1

<http://www.sciencedirect.com/science/article/pii/S0034425712000600>

European Commission Copernicus site

<http://ec.europa.eu/enterprise/policies/space/copernicus/>

Thales Alenia Space

<http://www.thalesgroup.com/>

EADS Astrium

<http://www.astrium.eads.net/>

Arianespace

<http://www.arianespace.com/index/index.asp>

Copyright 2000 - 2013 © European Space Agency. All rights reserved.