

sentinel-1

→ DATA ACCESS AND PRODUCTS

Sentinel-1 is a Synthetic Aperture Radar (SAR) mission, providing continuous all-weather, day-and-night imagery at C-band (centre frequency: 5.405 GHz), operating in four exclusive imaging modes with different spatial resolutions and coverages.

Dedicated to Europe's Copernicus programme, the mission supports operational applications in the priority areas of marine monitoring, land monitoring and emergency management services.

Coverage

The mission is based on a constellation of two identical satellites, Sentinel-1A and Sentinel-1B, launched separately. In interferometric wide-swath mode, Sentinel-1A, which was launched in April 2014, can map global landmasses once every 12 days. The eventual two-satellite constellation can deliver a six-day repeat cycle at the equator.

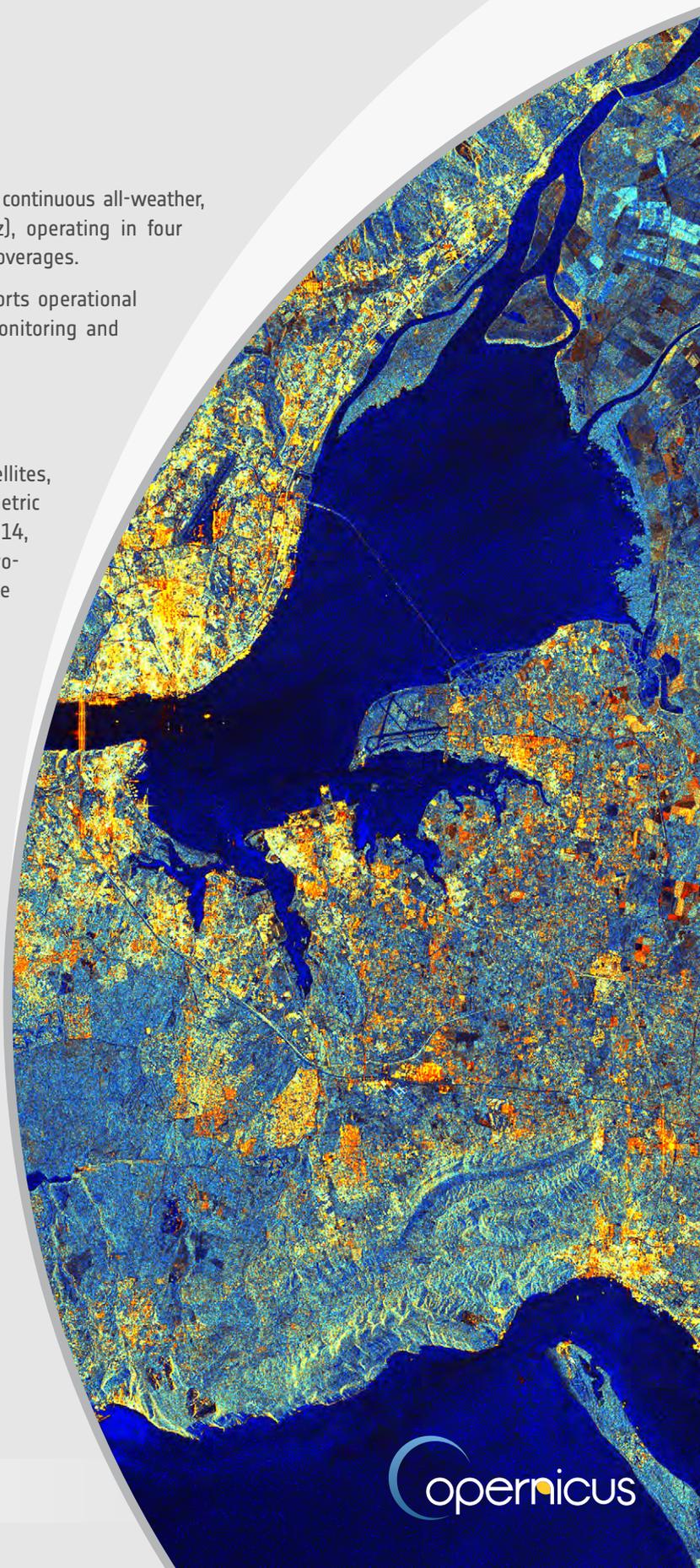
Observation Scenario

The baseline observation scenario is pre-defined. The plan will systematically make use of the same SAR polarisation scheme over a given area to guarantee data in the same conditions for routine operational services. More information can be found at: <https://sentinel.esa.int/web/sentinel/missions/sentinel-1/observation-scenario>

Data Access

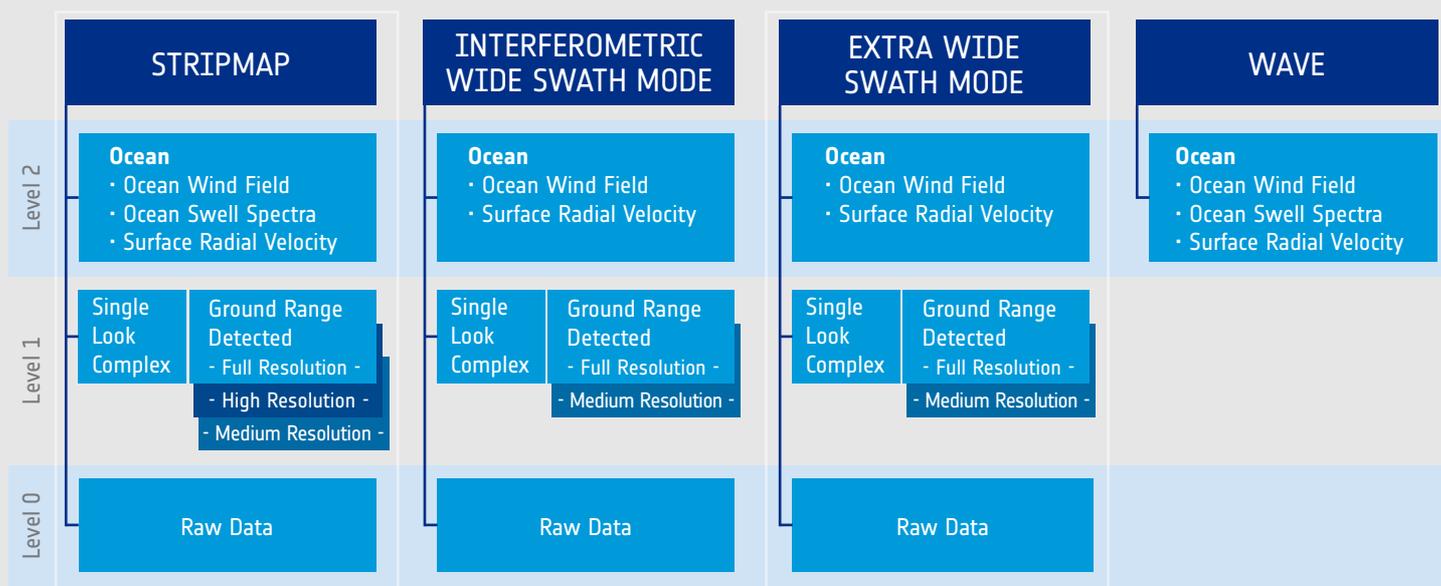
Sentinel data products are made available systematically and free of charge to all data users including the general public, scientific and commercial users. All data products are distributed in the Sentinel Standard Archive Format for Europe (SAFE) format.

More information can be found at: <https://sentinel.esa.int/web/sentinel/sentinel-data-access>



User Products

Data is acquired in either of the following four modes:



- Strip Map (SM): 80 km swath, 5 x 5 m spatial resolution
- Interferometric Wide Swath (IW): 250 km swath, 5 x 20 m spatial resolution
- Extra-Wide Swath (EW): 400 km swath, 20 x 40 m spatial resolution
- Wave (WV): 20 x 20 km, 5 x 5 m spatial resolution

Over land, Sentinel-1 operates primarily in IW and over the open ocean it operates primarily in WV.

Data products are available in single polarisation (VV or HH) for Wave mode and dual polarisation (VV+VH or HH+HV) and single polarisation (HH or VV) for SM, IW and EW modes.

Each mode can potentially produce products at:

- Raw Level-0 data (for specific usage) (typical size 1GB/product)
- Level-1 Single Look Complex data comprising complex imagery with amplitude and phase (systematic distribution limited to specific relevant areas) (typical size 8GB/product)
- Level-1 Ground Range Detected data with multilook intensity only (systematically distributed) (typical size 1GB/product)
- Level-2 Ocean data for retrieved geophysical parameters of the ocean (systematically distributed).

Tools

The open source Sentinel-1 Toolbox contains tools to enable calibration, TOPSAR debursting, terrain correcting, data conversion as well as for interferometric and polarimetric applications.

More information can be found at:

<https://sentinel.esa.int/web/sentinel/toolboxes/sentinel-1>

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The Sentinel Online Handbook

The **Sentinel-1 Mission Guide** is an overview of the mission, its objectives, the satellite, its payload, the ground segment, generated data products and related news.

<https://sentinel.esa.int/web/sentinel/missions/sentinel-1>

Further Information

For Copernicus User support, please contact EOSupport@Copernicus.esa.int

The **Sentinel-1 User Guide** provides a high-level description of the instruments, coverage and acquisition, and available product levels.

<https://sentinel.esa.int/web/sentinel/user-guides/sentinel-1-sar>

The **Sentinel-1 Technical Guide** provides a point of engagement for ESA and technical users who have previous experience of similar Earth observation missions, and possess in-depth understanding of data manipulation and management.

<https://sentinel.esa.int/web/sentinel/sentinel-1-sar-wiki>