

Sentinel-3



What is Sentinel-3?

Sentinel-3 provides high-accuracy optical, radar and altimetry data for marine and land services, measuring variables such as sea-surface topography, sea- and land-surface temperature, ocean colour and land colour with highend accuracy and reliability. The first Sentinel-3 satellite (S-3A) was launched on 16 February 2016 and is supporting ocean forecasting systems, as well as environmental, agriculture and climate monitoring. A second satellite (S-3B) is scheduled for launch on Wednesday 25 April 2018.

Sentinel-3 mission

The Sentinel-3 Mission consists of 4 satellites, including the "Sentinel-3A" and "Sentinel-3B" units, which together provide a global observation capability every 1-4 days, depending upon the instrument. These satellites are low earth polar orbiting satellites which means they fly from pole to pole at an average altitude of 815 km above the earth's surface.

The Sentinel-3 mission provides continuous measurements of land and ocean temperature, land and ocean surface colour and sea surface topography in support of ocean forecasting systems and environmental and climate monitoring.

Sentinel-3 has two main objectives:

- To provide topography observations, in terms of altimeter height measurements primarily over oceans and inland water;
- To provide optical observations, in terms of temperature and colour measurements over land and ocean.

Topography observations are realised through the combination of two instruments, namely a SAR Radar Altimeter (SRAL) Instrument and a Microwave Radiometer (MWR) Instrument.



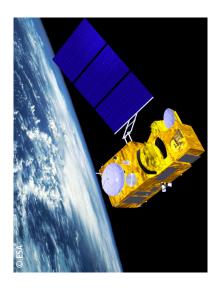


Together, these instruments generate products for use in marine meteorology, ocean-atmosphere gas studies, geophysical studies and operational oceanography.

Optical observations are realised through the Ocean and Land Colour Instrument (OLCI) and the Sea and Land Surface Temperature Radiometer (SLSTR) instrument. OLCI provides water, land and atmospheric geophysical products (such as for example chlorophyll, water vapour and aerosols) for marine and land applications with a 1.2km and 300m ground resolution. SLSTR generates ocean and land surface temperature products with a 1km spatial resolution. For OLCI global coverage at the equator is achieved every 2-3 days, for SLSTR global coverage is achieved every 2 days with one satellite and less than a day with 2 satellites.



The satellite payload consists of three more instruments to enable the precise determination of the satellite orbit, namely a Global Navigation Satellite Systems (GNSS), a Doppler Orbit determination and Radio-positioning Integrated on Satellite (DORIS) assembly and a Laser Retro-Reflector (LRR). These instruments are all used to ensure the performance, accurate positioning and calibration of the SRAL products.



Concrete applications

Sentinel-3 is essential for the oceans, measuring seasurface temperature, colour and height as well as sea-ice thickness. These measurements are used, for example, to monitor changes in sea level, marine pollution and biological productivity.

Over land, this innovative and ground-breaking mission follows on from the previous European Union satellite missions. The instruments map the way in which land is used but will also provide indices crucial for monitoring vegetation and agriculture at worldwide level. Water quality and water level of main rivers and lakes are also be measured and followed. In addition, Sentinel-3 monitors wildfires.

This broad scope of data allows European environmental policies to be administered with confidence.