

# Copernicus Sentinel-3

The Copernicus Sentinel-3 mission monitors Earth's oceans, land, ice and atmosphere. EUMETSAT operates the Sentinel-3 satellites on behalf of the European Commission and in cooperation with the European Space Agency (ESA). EUMETSAT processes and distributes the mission's marine and near-real-time atmospheric products. ESA delivers the mission's land and non-time critical atmospheric products.

Copernicus is the European Union's (EU) Earth observation programme, providing users with information from satellites and ground-based, airborne and seaborne sources. The EU has entrusted EUMETSAT to operate its ocean, climate and atmosphere-monitoring satellite missions.

## Altimetry

Altimetry data are used to determine the height of the surface of seas and lakes and detect ocean currents. They also measure sea surface wind speed and the height and thickness of sea ice.

The altimeters on Copernicus Sentinel-3 satellites provide data which are crucial for ocean and weather forecasting and climate monitoring. Forecasters use these data in complex models of the oceans and atmosphere, for example, to improve seasonal forecasting or better predict the track of hurricanes.

## Ocean colour

Ocean colour data provide a window into the ecosystems in our oceans, coastal and inland waters, and measure water quality and sediment dynamics. The data also guide sustainable marine resource management.

The Ocean and Land Colour Instrument (OLCI) on Copernicus Sentinel-3 satellites provides data that are used to monitor phytoplankton, the basis of nearly all life in our seas, certain types of which can be hazardous to marine life and the populations who depend on it for food or their livelihood.

## Sea and ice surface temperature

Sea surface temperature data are used to monitor ocean current systems and ocean fronts, eddies, upwelling areas and the



development of large scale El Niño/La Niña events. They are also crucial for monitoring climate change.

Sea surface temperature data are essential for weather and ocean forecasts, such as predicting the track and intensity of storms which can cause flooding, putting communities at risk. Observing sea ice surface temperature and extent is crucial for monitoring climate change.

**Atmospheric composition**

The Copernicus Sentinel-3 mission includes two instruments that contribute to monitoring atmospheric composition and air quality. They can detect aerosols such as dust or smoke and their

transportation across continents or hotspots caused by wildfires or gas flares.

**Who benefits?**

The benefits from the data provided by Copernicus Sentinel-3 are felt widely. The data are used for operational oceanography, weather forecasting and climate monitoring, from helping to predict storms' intensity and tracks through to seasonal forecasting months in advance. They aid maritime safety and industries such as tourism, transport, fishing and aquaculture. Air quality data benefit public health and information about wildfires helps aid their monitoring and control. Sentinel-3 data are a key input to the Copernicus Marine Service.

**Copernicus Sentinel-3**

Copernicus Sentinel-3, with two satellites simultaneously flying in orbit, is a European satellite mission that is designed to monitor the Earth's oceans, land, ice, and atmosphere. The first-generation satellites of this mission are expected to continue their observations of oceans, land and atmosphere until at least the mid 2030s. The satellites fly on a near polar, sun-synchronous orbit at an altitude of 814 kilometres. Copernicus Sentinel-3A and -3B were launched in 2016 and 2018, respectively.

**Ocean and Land Colour Instrument**

The Ocean and Land Colour Instrument (OLCI) measures the reflectance of sunlight from Earth's surface in 21 spectral bands at a resolution of 300m. This data can be used to map ocean colour, vegetation cover, and land use.

**Sea and Land Surface Temperature Radiometer**

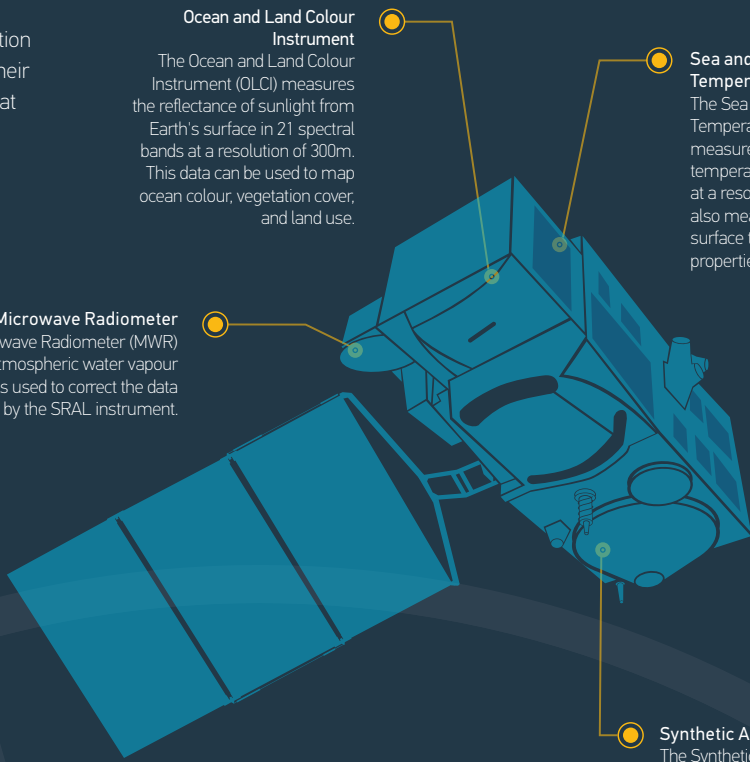
The Sea and Land Surface Temperature Radiometer (SLSTR) measures sea and land surface temperatures in nine spectral bands at a resolution of 1km. The instrument also measures sea ice and land ice surface temperature, aerosols, cloud properties and fire radiative power.

**Microwave Radiometer**

The Microwave Radiometer (MWR) measures atmospheric water vapour which is used to correct the data sensed by the SRAL instrument.

**Synthetic Aperture Radar Altimeter**

The Synthetic Aperture Radar Altimeter (SRAL) is used to measure ocean and inland water surface height, significant wave height, ocean surface wind speed and land and sea ice height and thickness.



**Dimensions**

Length: 2.113m  
Height: 3.789m  
Width: 2.153m  
(stowed configuration)

**Launch mass**

1,140kg

**Power**

2,095W

**Orbit**

Type: Sun-synchronous  
Distance: 814.5km  
Repeat cycle: 27 days (385 orbits)



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