European Commission

European Space Agency

sentinel-3

→ A BIGGER PICTURE FOR COPERNICUS

Satellites to serve

The Sentinels are a new fleet of satellites designed to deliver the wealth of data and imagery that are central to Europe's ambitious Copernicus programme. This unique global monitoring initiative – the largest in the world – is making a step change in the way we manage our environment, understand and tackle the effects of climate change, and safeguard everyday lives.

The big picture

Sentinel-3 is arguably the most comprehensive of all the Sentinel missions. Carrying a suite of state-of-the-art instruments, it provides systematic measurements of Earth's oceans, land, ice and atmosphere to monitor and understand large-scale global dynamics and provide critical information for ocean and weather forecasting.

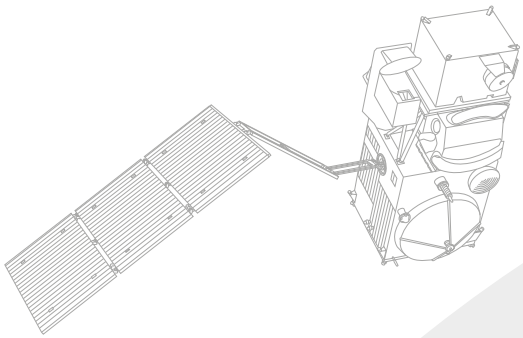
The mission is based on a constellation of two identical satellites in the same orbit, 180° apart, for optimum global coverage and data delivery. For example, with a swath width of 1270 km, the ocean and land colour instrument will provide global coverage every two days. Data are free of charge and open to users worldwide.

Earth's health check

Focusing largely on the oceans, Sentinel-3 measures sea-surface 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 mission maps the way land is used, provides indices of vegetation state and measures the height of rivers and lakes. In addition, Sentinel-3 can monitor wildfires. This broad scope of data will allow European environmental policies to be administered with confidence.

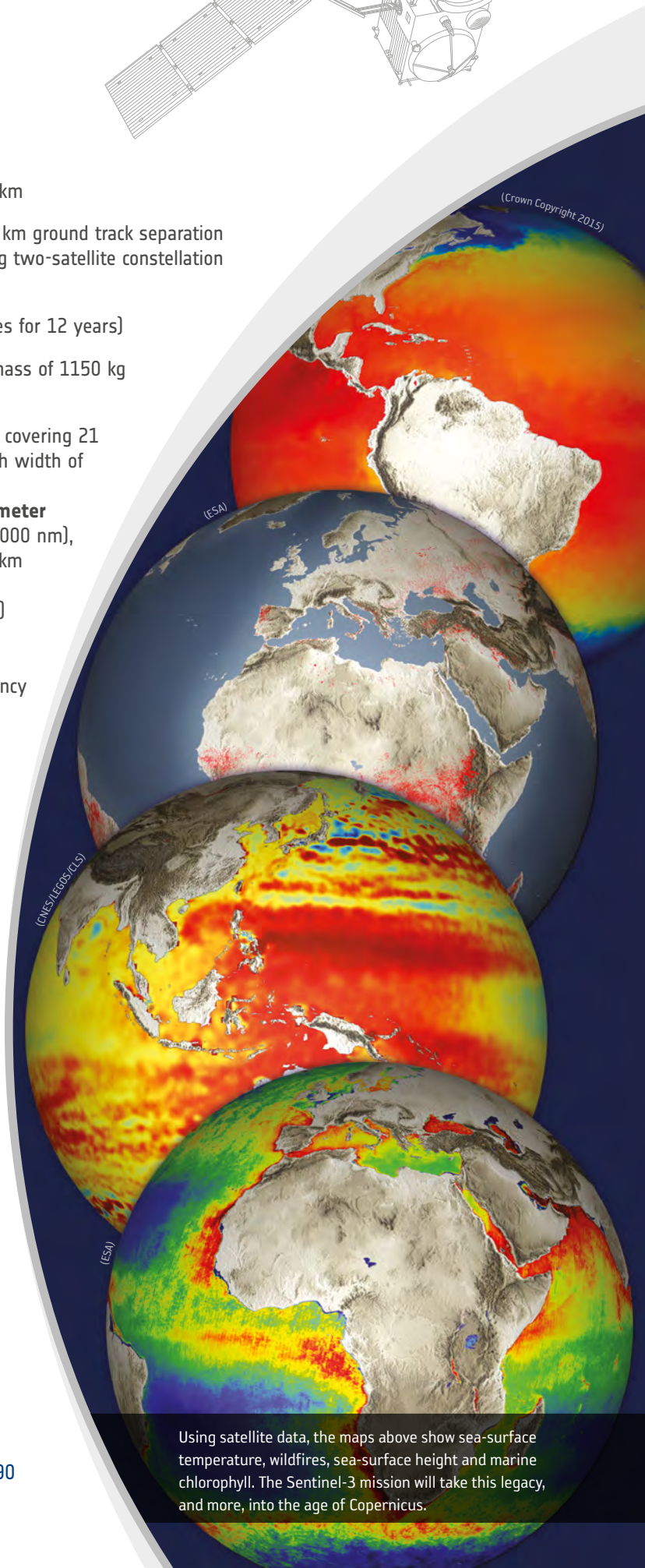
Teamwork

Offering a wealth of complementary data for a wide range of practical applications, Sentinel-3 is the result of close collaboration between ESA, the European Commission, Eumetsat, France's CNES space agency, industry, service providers and data users. As a prime example of Europe's technological excellence, the two Sentinel-3 satellites have been designed and built by a consortium of around 100 companies under the leadership of Thales Alenia Space, France. While Sentinel-3 will provide enhanced continuity of satellites such as Envisat and Spot, its sheer breadth of data means that this new mission is set to be the workhorse for Copernicus.



Facts and figures

Launch	Sentinel-3A in 2016, Sentinel-3B in 2017
Launcher	Rockot from Plesetsk, Russia
Orbit	Polar, Sun-synchronous at altitude of 814.5 km
Revisit time (ocean)	SLSTR ~1 day, OLCI ~2 days, SRAL has a 57 km ground track separation after 27 days (at the equator), all cases using two-satellite constellation separated by 180° in the same orbit
Life	Planned for seven years (carries consumables for 12 years)
Satellite	2.2 m long, 2.2 m wide, 3.7 m high and a mass of 1150 kg (including 130 kg fuel)
Instruments	**Ocean and Land Colour Instrument** (OLCI) covering 21 spectral bands (400–1020 nm) with a swath width of 1270 km. **Sea and Land Surface Temperature Radiometer** (SLSTR) covering 9 spectral bands (550–12 000 nm), dual-view scan with swath widths of 1420 km (nadir) and 750 km (oblique view). **Synthetic Aperture Radar Altimeter** (SRAL) Ku-band (300 m after SAR processing) and C-band. **Microwave Radiometer** (MWR) dual-frequency at 23.8 & 36.5 GHz.
Receiving stations	Scientific data: transmitted to core Sentinel ground stations Telemetry data: transmitted to and from Kiruna ground station in Sweden
Main applications	Sea-level change & sea-surface temperature mapping, water quality management, sea-ice extent and thickness mapping, and numerical ocean prediction; land-cover mapping, vegetation health monitoring; glacier monitoring; water resource monitoring; wildfire detection; numerical weather prediction.
Mission	Developed by ESA, jointly operated by ESA and Eumetsat
Funding	ESA Member States and the European Union
Prime contractors	Thales Alenia Space, France for satellite, OLCI & SRAL; Selex ES Italy for SLSTR; EADS-CASA for MWR
Data access	sentinels.copernicus.eu



Using satellite data, the maps above show sea-surface temperature, wildfires, sea-surface height and marine chlorophyll. The Sentinel-3 mission will take this legacy, and more, into the age of Copernicus.

For further information
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