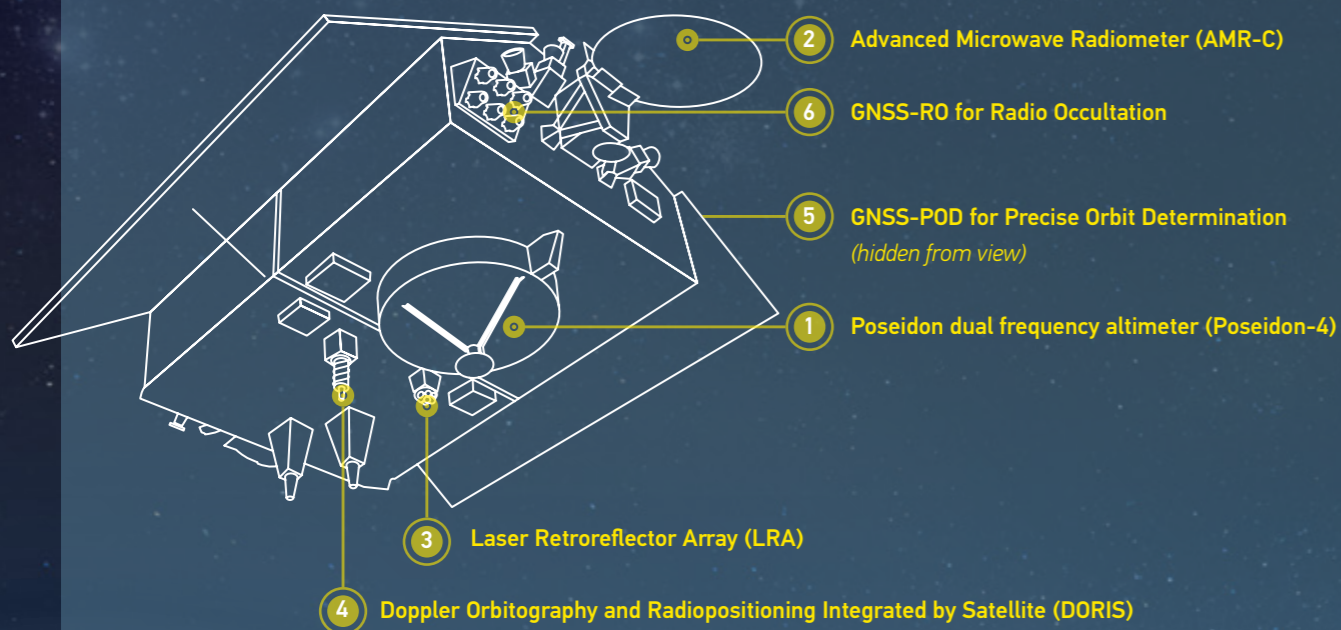


Instrument payload



Facts and figures

DIMENSIONS
5.13m x 4.17m x 2.34m
(in-orbit configuration)

PAYLOAD
Six instruments

MASS
1,200 (including fuel)

POWER
891W (average consumption)

DESIGN LIFETIME
5.5 years

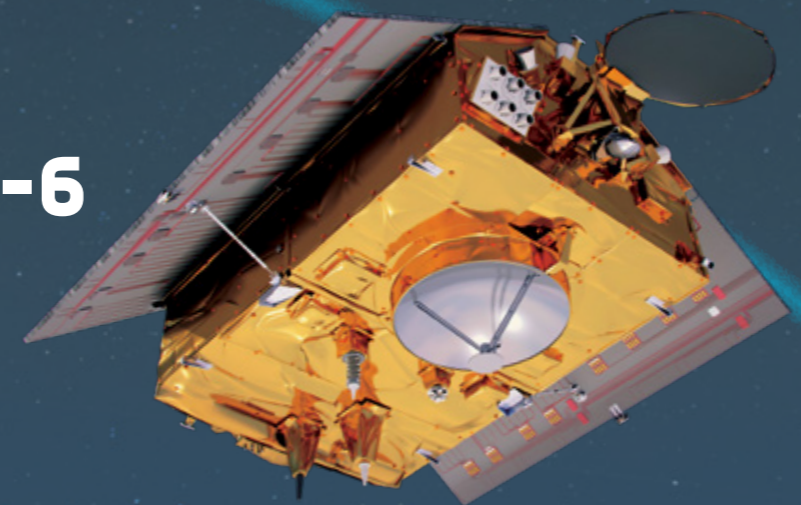
ORBIT
non-sun-synchronous orbit,
1,336km altitude, 66° inclination

REPEAT CYCLE
10 days (127 orbits)

*In January 2020, the Sentinel-6/ Jason-CS A satellite was renamed the Sentinel-6 "Michael Freilich" in honour of the former Director of NASA's Earth Science Division.

Copernicus
Europe's eyes on Earth

sentinel-6



Mission factsheet

The collaborative, joint European-US Copernicus Sentinel-6 mission is unique. Its primary aim is to continue highly accurate measurements of the mean sea level in our changing climate. It relies on close international cooperation to achieve its aim.

The mission is co-funded by the European Commission, the European Space Agency, EUMETSAT and the US through NASA and the National Oceanic and Atmospheric Administration (NOAA).

EUMETSAT will exploit the Copernicus Sentinel-6 mission in synergy with Copernicus Sentinel-3 and its own missions to deliver an integrated stream of marine data to users.

SEA LEVEL RISE

Mean sea level rise is both an impact and sensitive indicator of climate change with particular repercussions for coastal areas and small island States. Copernicus Sentinel-6's provision of reliable, highly accurate mean sea level measurements will be crucial for achieving the central aims of the 2015 Paris Agreement. Those aims are to strengthen the global response to the threat of climate change, as well as countries' ability to deal with its impacts.

THE MISSION WILL:

- improve knowledge and understanding of the role of the ocean in climate change;
- increase understanding of how human activities impact the health of the global ocean;
- be crucial for developing mitigation and adaptation policies in coastal areas and for small island States.

USES OF THE DATA

Monitoring and forecasting ocean currents, which is important for ship routing, and support for off-shore and other marine industries, such as fishing, and for responses to environmental hazards.


Short-range forecasting of high-impact weather.

Medium-range forecasting of the trajectory and intensity of cyclones and hurricanes; forecasting of heat waves in days or weeks ahead, etc.

Extended-range forecasting of seasonal and multiannual variability, e.g. El Nino episodes, the likelihood of droughts or active cyclone seasons, severe or mild winters.

Copernicus Sentinel-6 altimetry data will be the reference data against which all other altimetry measurements will be calibrated for accuracy.

PARTNERS

 **Europe:** The European Commission, EUMETSAT and the European Space Agency, with support from the French Space Agency (CNES),

 **United States:** NASA and NOAA

PARTNERS' ROLES

FINANCIAL RESPONSIBILITIES

Through its Copernicus Space Component Programme, ESA funds the development of the first satellite, with a fixed financial contribution from EUMETSAT.

Through its Copernicus programme, the European Union co-funds the second satellite with EUMETSAT and funds all European contributions to system operations.

Through its Jason-CS programme, EUMETSAT funds the development of the ground segment, contributes a fixed financial contribution to the development of the first satellite and co-funds the second one with the EU.

Through its Earth Science programme, NASA funds the development of two payload instruments, the launch services for both satellites and, together with NOAA, the US contribution to the ground segment and operations.

TECHNICAL RESPONSIBILITIES

ESA, EUMETSAT, NASA and NOAA are the implementing agencies of the programme.

CNES provides system support to ESA and EUMETSAT.

The sharing of technical responsibilities is as follows;

- ESA has responsibility for the development of the first satellite and the ground prototype processors and for procurement of the second satellite on behalf of EUMETSAT and the European Commission;
- ESA has responsibility for launch and early operations phase (LEOP) of both satellites;
- ESA will support flight operations performed by EUMETSAT;
- EUMETSAT has responsibility for ground segment development and coordination at system level, including for operations preparation;
- EUMETSAT will have responsibility for operations of the two satellites after LEOP performed by ESA;
- EUMETSAT will have responsibility for operations of the European part of the ground segment, including processing of altimeter data and delivery of product services to European users;
- NASA has responsibility for the development and delivery of the US payload instruments, the microwave radiometer and the GNSS radio occultation receiver;
- NASA provides launch services for both satellites;
- NASA provides ground segment development support and will contribute to operations and data processing on the US side, including processing of GNSS radio occultation data;
- NASA and NOAA will share responsibility for the distribution of products to research and operational users in the US;
- NOAA provides a US ground station for tracking and command of the satellite and data downlinks;
- CNES has responsibility for processing higher-level products (L2B, L3) and for providing precise orbit determination and support for Doris and altimeter operations.

All partners contribute to system-level activities coordinated by EUMETSAT, mission commissioning and calibration and validation activities, and performance monitoring during the mission lifetime.

HISTORY

Exemplary cooperation between Europe and the United States over more than 30 years underpins the series of high-precision ocean altimetry missions that have provided critical data for the development of operational oceanography and understanding of the role of the ocean in our changing climate.

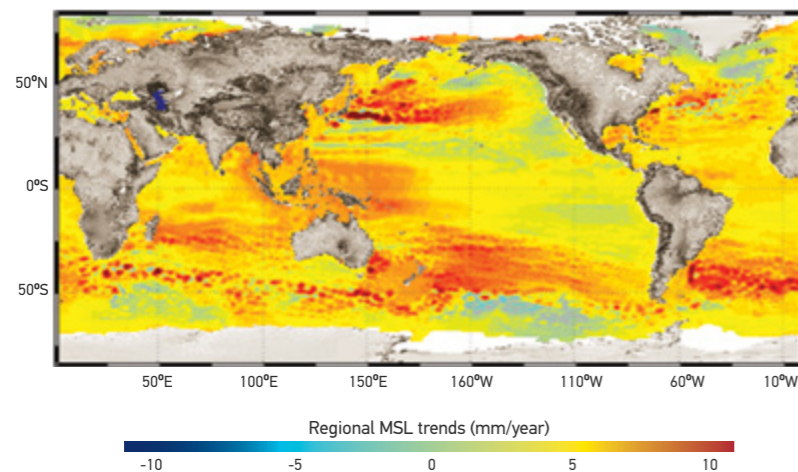
Each partner organisation provides its particular expertise and all contribute to achieving the unique overall system performance required to deliver a reference data set to the worldwide user community.

The high-precision ocean altimetry data time series began in 1992 with the launch of the TOPEX/Poseidon mission (1992-2006). The initial European-US partnership involved NASA and CNES.

It was continued by Jason-1 (2001-2013), Jason-2 (2008-2019, when EUMETSAT and NOAA became involved), and Jason-3 (launched in 2016, when the EC also became involved).

The Copernicus Sentinel-6 mission will ensure this time series continues until at least 2030, through two successive satellites, Jason-CS A* and B.

Mean sea level evolves at typical rates of a few millimetres per year and varies in space and time. Monitoring of climate changes requires long time series of homogeneous data. Through Copernicus Sentinel-6, the climate record started in 1992 will continue for another decade.



Combined map of regional patterns of observed sea level (1993-2015). This map can be obtained using gridded, multi-mission Ssalto/Duacs data since 1993, which enable the local slopes to be estimated with a very high resolution (1/4 of a degree on a Cartesian projection). Isolated variations in MSL are thus revealed, mainly in the major ocean currents and ENSO events (Credits EU Copernicus Marine Service, CLS, Cnes, Legos).

