Monitoring the oceans from space

Oceans cover more than 70% of the Earth's surface and play a key role in shaping our weather and climate. The oceans are also an important driver of the global economy. Operational oceanography is about delivering relevant and reliable information services to citizens and decision makers about the past, current and future states of the seas and oceans at global, basin and coastal scales.

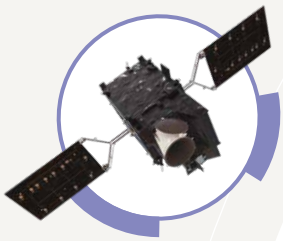
EUMETSAT monitors the oceans using its own satellites, Copernicus Sentinel missions it operates on behalf of the European Union and cooperative missions within the framework of international partnerships. The data from these satellite missions provide information about sea level, surface winds, waves, sea ice, sea surface temperature and ocean colour.

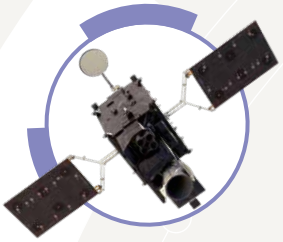
The data are used to provide crucial information for weather and climate forecasting, safety at sea, the operation of marine infrastructure, fisheries, the tourism industry, sustainable use of marine resources and protection of vital marine and coastal ecosystems.

In Europe, the Copernicus Marine Service (CMEMS) is the main provider of analyses and forecasts for the global oceans and regional basins.

The Ocean and Sea Ice Satellite Application Facility (OSI SAF), led by Météo-France, develops, processes and distributes, in near-real time, products related to key parameters of the ocean-atmosphere interface. The OSI SAF also provides climatological data records.

The satellites and the ocean data they provide

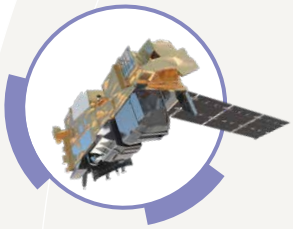

MTG-S

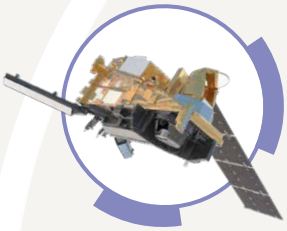

MTG-I


Jason-3


Sentinel-6


CRISTAL


Metop-SGA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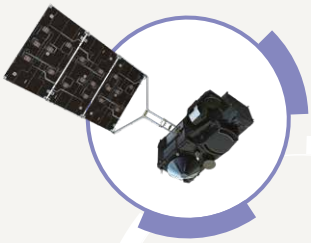
Sentinel-3

Operating satellite fleet

Metop

Ocean surface wind vectors, sea ice parameters, sea surface temperature, also receives in-situ observations via ARGOS receivers.

Meteosat Second Generation

Sea surface temperature, radiative air-sea fluxes.

Jason-3

Sea surface height, wind speed at the ocean surface, significant wave height.

Partners: EUMETSAT, the French Space Agency (CNES), the US National Oceanic and Atmospheric Administration (NOAA), NASA and the European Commission (EC)

Copernicus Sentinel-3

Sea and lake surface height, sea surface wind and waves, height and thickness of sea ice, ocean colour, sea surface temperature, sea ice surface temperature.

Partners: EUMETSAT, the European Space Agency (ESA), the EC

Copernicus Sentinel-6

Sea surface height, sea surface wind and waves.

Partners: EUMETSAT, the EC, ESA, NOAA and NASA, with support from CNES

Future additions to the satellite fleet

Metop Second Generation

All current Metop ocean observations will be continued, enhanced or augmented, new observations of ice parameters and sea ice data, more accurate wind vector measurements, including for very high-speed winds.

Partners: CNES and DLR

Meteosat Third Generation

Additional sea surface temperature products and improvements to the accuracy of incoming long wave flux products.

CRISTAL

Sea surface height, sea surface wind and waves over the global ocean, sea ice thickness, overlying snow depth, ice sheet elevations over polar areas.

Partners: EUMETSAT, ESA, the EC

CIMR

Sea surface temperature, salinity and wind vectors

Partners: EUMETSAT, ESA, the EC

Copernicus Sentinels

The Copernicus Sentinel-3 mission will continue with next generation satellites, featuring two different models of satellite – optical and topography.

The Copernicus Sentinel-6 mission will be followed by the Copernicus Sentinel-6 next generation.

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