

CEOS MIM Database Quarterly Report

October 2022

@EOHandbook

The Earth Observation Handbook, prepared by the European Space Agency (ESA) in support of the Committee on Earth Observation Satellites (CEOS), presents the main capabilities of satellite Earth observations, their applications, and a comprehensive overview of present and planned civil space agency Earth observation satellite missions and their instruments. The database which serves as the foundation for the missions, instruments, and measurements information at the heart of the Handbook content is updated annually and is always available online at:

<http://database.eohandbook.com>

This page provides a summary of key mission activities from the past quarter (Jul - Sep, 2022), and the coming two quarters (Oct, 2022 - Mar, 2023).

Latest News

Operated by Agenzia Spaziale Italiana (ASI), **LARES-2 (LAsER RELativity Satellites 2)** was launched on 13 July, 2022. It is in a non-sun-synchronous orbit with an altitude of approximately 5900 km and an inclination of 70°. **LARES-2** hosts 303 retroreflectors that will reflect laser pulses from ground stations and allow ASI to measure the position of the satellite within 1 mm. The precisely determined orbit of the satellite will be used to calculate the dragging of inertial frames due to the Earth's angular momentum, known as the Lense-Thirring effect.

The **Earth Surface Mineral Dust Source Investigation (EMIT)** instrument developed by NASA was launched on 14 July, 2022, and is being hosted on the International Space Station (ISS). On July 22, it was removed from the launch vehicle and installed on the exterior of the station using the Canadarm2 robotic arm. Following the 40-hour installation and 72-hour cooling process, the instrument took its first-light image on July 27. **EMIT** is comprehensively measuring the mineral composition of Earth's dust source regions to help scientists understand how they heat or cool our planet when strong winds lift the particles from Earth's desert and dryland regions and carry them great distances through the atmosphere.

The end of mission of Copernicus **Sentinel-1B** was declared in July 2022. **Sentinel-1B's** unavailability started on 23 December 2021. The most probable root failure cause is a capacitor which is part of the two regulators of the 28 V bus, which provides power to the SAR electronics, but other causes (or a double failure) can also not be excluded. All attempts at reactivating the related functions have been unsuccessful. The satellite remains under control, and regular orbit control manoeuvres are routinely performed. De-orbiting will take place once the commissioning phase of **Sentinel-1C** is completed.

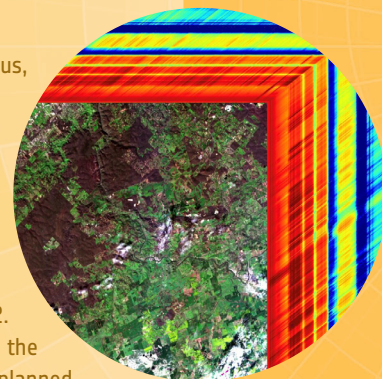
Upcoming Satellite Launches

The second satellite in the Joint Polar Satellite System (JPSS) series, **JPSS-2** is expected to launch in November 2022. With support from the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) and NASA, the National Oceanic and Atmospheric Administration (NOAA) operates the series, which has an additional two launches planned for 2027 and 2032. JPSS provides weather and climate measurements for numerical weather prediction, with the aim of increasing the timeliness, accuracy, and cost-effectiveness of forecasts.

The **Surface Water Ocean Topography (SWOT)** mission is expected to launch in November 2022. Operations are led by NASA and the French space agency (CNES), with contributions also made by the Canadian Space Agency (CSA) and the UK Space Agency (UKSA). **SWOT** aims to catalogue and monitor changes in all landbound bodies of water such as lakes, rivers, reservoirs, and wetlands. Additionally, the satellite will monitor the discharge of these bodies of water into the ocean and monitor the changes in sea level that are caused as a result of this discharge and other factors.



LARES-2 ready for launch (Credit: ESA)



EMIT first-light image (Credit: NASA)

Launched

LARES-2
ASI
13 July 2022

EMIT-on-ISS
NASA
14 July 2022

Upcoming

JPSS-2
NOAA / EUMETSAT / NASA
November 2022

Oceansat-3
ISRO
November 2022

SWOT
NASA / UKSA / CNES / CSA
November 2022

SAC-E/SABIA_MAR-1
CONAE / AEB
November 2022

MTG-I1 (Imaging)
EUMETSAT / ESA
December 2022

Kondor-FKA N1
ROSKOSMOS
December 2022

HY-1E, -3A, -3B
NSOAS / CAST
December 2022

TEMPO
NASA
January 2023

THEOS-2 Main VHR
GISTDA
February 2023

NORSAT-TD
NOSA / NSO / ASI / CNES
February 2023

LOTUSat-1
VAST
March 2023

ALOS-3
JAXA
March 2023