



The Sentinel-3 Mission: Overview and Status

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Global Monitoring for Environment and Security (GMES) is a joint initiative of the European Commission (EC) and European Space Agency (ESA), which aims at achieving an autonomous and operational Earth observation capacity. GMES marks the transition from R&D oriented efforts in earth observation towards operational services. The development of the space infrastructure i.e. the GMES “space segment” for the provision of Earth remote sensing data is led by ESA partly in cooperation with EUMETSAT.

Sentinel-3 is an operational mission in high-inclination, low earth orbit for the provision of observational data to marine and land monitoring services. These services include the generation of sea, ice and land surface altimetry products, land and ocean colour products, sea and land surface temperature products, and the vegetation products. The operational character of the mission implies a high level of availability of the data products and fast delivery time, which have been important design drivers for the mission.

The Sentinel-3 spacecraft accommodates two large optical instruments - the Ocean and Land Colour Instrument (OLCI) with 21 spectral channels from 0.4 to 1.0 μ m, and the Sea and Land Surface Temperature Radiometer instrument (SLSTR) with 9 spectral channels from 0.5 μ m to 13 μ m in nadir and oblique view directions, and a topography payload consisting of a SAR Radar Altimeter (SRAL) and a Microwave Radiometer (MWR) plus a suite of instruments for precise orbit determination (POD). These instruments will ensure the continuation of important data streams established with ESA’s ERS and ENVISAT satellites. Full performance will be achieved with a constellation of two identical satellites, separated by 180 degrees in the same orbital plane.

Two Sentinel-3 satellites are in development with the second satellite expected approximately 18 months after the first. The overall service duration is planned to be 20 years with several satellites. Currently, the launch of the first Sentinel-3 satellite is planned in 2014. This paper describes the Sentinel-3 Mission and reports its current status.