



Introduction

The Sentinel-6/Jason-CS mission will be developed and implemented through a partnership between the EU, ESA, EUMETSAT and NOAA. Its aim is to secure the continuity until 2030+ of critical high precision observations of ocean surface topography beyond Jason-3. The European contribution will be implemented through the combination of the ESA Copernicus Segment 3 programme (CSC-3), the EUMETSAT Jason-CS optional programme and the EU Copernicus programme, for the joint benefits of the meteorological and Copernicus user communities in Europe. NASA and CNES will be supporting partners.

Sentinel-6 observation mission	Instrument	Predecessor on J3
Ocean altimetry	Poseidon-4	Poseidon-3B
	AMR-C	AMR
	GNSS-POD	GPSP
	DORIS	DORIS
Radio Occultation	LRA	LRA
	GNSS-RO	—

Relation between Sentinel-6 and Jason-3 observation missions and instruments

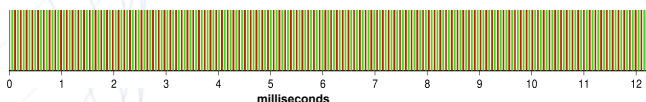
Sentinel-6 Mission Objectives

- Sentinel-6 shall be an **operational** mission.
- Sentinel-6 products shall be of sufficient quality to serve as the **high precision reference mission** in the CEOS virtual altimeter constellation.
- Sentinel-6 services shall provide products with contents enabling **optimal combination with products from other altimeter missions** for monitoring the broadest possible spectrum of ocean variability, including mesoscale features.
- Sentinel-6 services shall contribute to marine meteorology by providing **significant wave height and wind speed products in near real-time**.
- Sentinel-6 products shall maintain their **quality closer to the coastline** than products from TOPEX/Poseidon, Jason, Jason-2, and Jason-3.

Sentinel-6 Products Analysis and Heritage

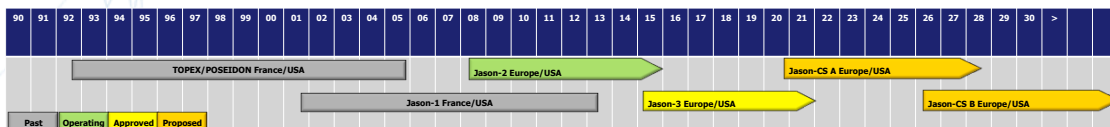
At EUMETSAT, a product analysis has been made to procure an adequate user products baseline for the Sentinel-6 altimetry mission given its objectives as described the Sentinel-6 End-User Requirements Document. On one hand, given the simultaneous LRM, specific elements in the product suite have been selected to ensure seamless use in follow-on of the Jason-1,2,3 (O,I)GDR's. On the other hand, for the most effective use of the SAR Mode capabilities, a further alignment with the Sentinel-3 user products suite has been sought, taking into account the programme constraints. The development of higher level products (L2P, L3) has also been baselined.

The Sentinel-6 user product suite has been designed for effective online (NRT) and offline (STC, NTC) services



Jason-CS altimeter "Interleaved" mode:

- SAR and LRM simultaneously
- No "burst" (like with S3), but continuous transmit/receive
- Pulse Repetition Frequency: ~9 kHz



Continuity between Jason missions

Sentinel-6 Services and Applications

The Near Real Time Altimeter product service (ALT-NRT) delivers Level 2 data products within less than 3 hours after sensing (OGDR service). This service requires dissemination to NWP centres and is mainly used for marine meteorology, air-sea interaction studies and real time operational oceanography.

The Short Time Critical Altimeter product service (ALT-STC) delivers Level 2 data products within 36 hours after data acquisition (IGDR service). The main objective of the ALT-STC product service is to support operational oceanography i.e. improve ocean state analysis, forecasts and hindcasts produced by numerical ocean prediction (NOP) systems assimilating sea surface height (SSH) measurements derived from a multi-mission constellation of spaceborne altimeters. This objective is further supported by the delivery of Level 3 products.

The Non Time Critical Altimeter product service (ALT-NTC) delivers Level 2 data products within typically 2 months after data acquisition, this additional delay allowing the further consolidation of some auxiliary or ancillary data (e.g. precise orbit data) leading to higher accuracy of SSH products (GDR service). The main objective of the ALT-NTC product service is to provide information on ocean topography and mean sea level in support of ocean and climate monitoring services.

Application Category	NRT ('OGDR')		STC ('IGDR')		NTC ('GDR')	
	Level 1	Level 2	Level 1	Level 2	Level 1	Level 2
Marine Meteorology	1	3	1	1	1	1
Operational Oceanography	1	3	1	3	1	2
Climate Change	1	1	1	1	1	3
Research and Remote Sensing Science	1	2	2	2	3	3

Mapping of the main application areas on the altimeter product services (Level 1 and Level 2). The mapping for Level 3 products is equivalent to the one of the Level 2 products. (3 = essential; 2 = beneficial; 1 = not important)

Sentinel-6 Products Baseline

- STC and NTC L2 Products (IGDR,OGDR) dissemination will be on pass basis.
- Level 2 product** content will be harmonized between NRT, STC and NTC.
- Level 1B products** will be produced to provide the 'standard' wave forms.
- Level 1A products** will be provided to expert users via ftp (TBC). Delivery of **Level 1BS products** is not baselined.
- Baseline format for all products is **NetCDF**.
- Level 2 products will be provided in **BUFR format via the GTS**, and their content will be aligned with Sentinel-3.
- Development of **operational L2P and global L3** will be based on L2 products.
- NRT Level 2 product** (OGDR) dissemination will be granule-based.

User Product	LRM	SAR	Auxiliary data	~ Size (GB/day)	Comment
Level 2 (Reduced)	1Hz	1Hz	Corrections Orbits	Tiny	
Level 2 (Standard)	1Hz 20Hz	1Hz 20Hz	Corrections Orbits	Tiny	
Level 1B (Waveforms)	20Hz	20Hz	Internal calibration	3	
Level 1A (Individual echoes)		I/Q Full or RMC	Internal calibration	300	Delivery means TBC

Sentinel-6 User Products Baseline

OSTST members are invited to provide feedback!