

Sentinel-6 Products Status

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OSTST Fall Meeting 2022, 4 Nov 2022

Continued,
enhanced ocean altimetry
and climate monitoring
from space

31 October > 4 November 2022

IDS workshop
OSTST meeting



In partnership with:



Venice - Italy

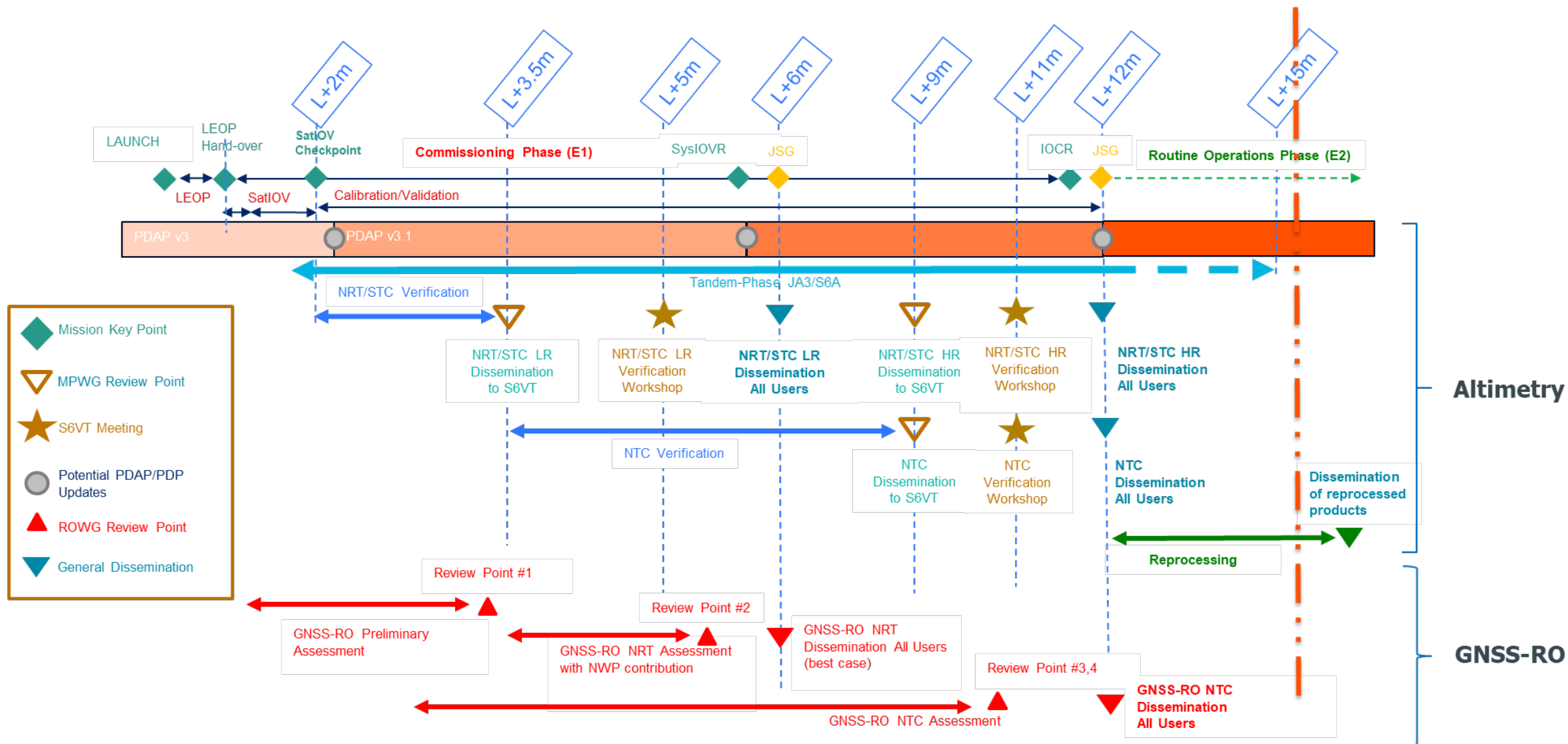


<https://ostst-altimetry-2022.com/>



Sentinel-6 MF - the journey

copernicus.eumetsat.int





Sentinel-6 Product Releases

copernicus.eumetsat.int

Product	Latency	Format	Distributed since June 2021	Distributed since November 2021	Distributed since April 2022
ALT Low Resolution (LRM)	NRT	BUFR	L2 (GTS since Sep 2021)		
		NetCDF	L2		L2P, L3 Wind/Waves
	STC	NetCDF	L1B, L2		
	NTC	NetCDF		L1B, L2	(L2P, L3)
ALT High Resolution (SAR)	NRT	BUFR		L2	
		NetCDF		L2	L2P
	STC	NetCDF		L1A, L1B, L2	L2P, L3
	NTC	NetCDF		L1A, L1B, L2	(L2P, L3)
MWR	NRT	NetCDF	L2		
	STC	NetCDF	L2		
	NTC	NetCDF		L2	
RO	NRT		L2 (GTS since Aug 2021)		
	NTC			L1B, L2	



- Early changes
 - Brand new processors and processing environment was set up
 - HR processing was introduced at the eleventh hour, which sped up commissioning considerably
 - Obvious need to fix bugs, misconfigurations, auxiliary data early on to ensure best possible product (F01-F03)
- Experience with Sentinel-6 in-flight resulted in
 - Early alignment of Side A and Side B (F04)
 - Updated surface modelling for better orbit determination (F05)
 - Reduced number of looks in HR to reduce impact ambiguities (F06)
 - Adding HRMR data to wet tropo retrievals (F07)
 - Reduce temperature impacts: calibrate around the orbit by using Echo CAL (F07)
 - Needs for Numerical Retracking to handle more rapid change in PTR than expected (F08 for LR, F09 for HR)
- Lessons Learned from Sentinel-3
 - Introduce Forecast Dynamic Atmospheric Correction (F07)
 - Apply Range Walk in Level 1 processing (F09)



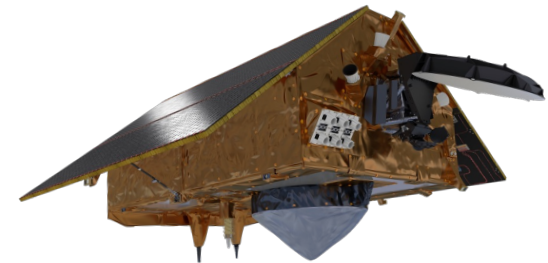
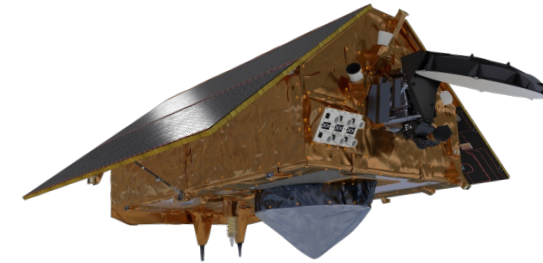
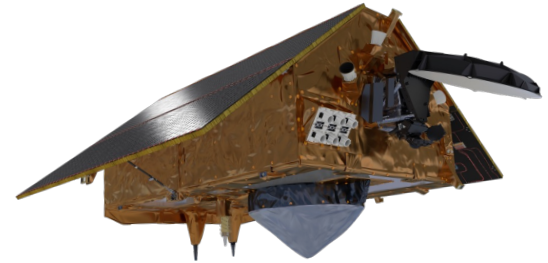
- Reprocessing of July 2022
 - Brought all data to the same standard (F06)
 - Recovered some missing data
 - Distributed data not earlier available to general users
- Next reprocessing
 - Baseline F08 with Echo CAL, HRMR, and LR numerical retracking
 - Planned for early 2023

F00	F01	F02	F03	F04	F05	F06	F07	F08	F09
004-012	013-016	017-024	025-033	034-045	046-053	054-064	065-	Q1 2023	Q3 2023
F06 Reprocessing									
F08 Reprocessing									
				CHDR update	POE updates	HR: reduced number of looks	MOGF; Echo-Cal; AMR-C v4	LR: numerical retracking added	HRMR in ALT L2 HR: range walk+NR
Cycle numbers are those of NTC data									

- **POS-4 – Nominal**
 - The High Power Amplifier Gain is degrading. The rate of degradation (monitored on a weekly meeting) is currently slowing down. The degradation is not affecting the quality of the products.
 - POS-4 is regularly performing Passive Calibrations over desert areas around the globe and active calibrations with transponders (located in Gavdos (Europe) and Catalina (USA) islands) and a corner reflector (located in Spain)
- **AMR - Nominal**
- **HRMR – Nominal**
- **DORIS – Nominal**
- **GNSS-RO – Nominal**
 - Several auto-reboots have occurred since the instrument switch-on (for different reasons).
 - In some cases instrument reboots have been performed from ground upon requests from JPL, to recover cases where no occultation data or partial occultation data were produced by the instrument (in particular affecting occultations of GLONASS satellites)
- **REM – Nominal**

- So called Mode Mask Scenario H was identified as the baseline scenario for routine operations during the design phase
 - POS-4 commanded in LRMC_OL over ocean, LX_OL over coastal zones and LRM_OL over land
- Mode Mask Scenario F was identified by the MPWG as more relevant for Routine operations
 - POS-4 commanded in LRMC_OL every where over the globe (with some exceptions)
 - The scenario F generates a higher volume of science data (POS 4 HR data) but was found to be feasible with low margin during the design phase.
 - Low margin means that if POS-4 is operated in full resolution (LX_OL) the volume of data generated by the instrument cannot be dumped with the current system design.
- The Mode Mask Scenario F is used for routine operations
 - Based on the status of the system performance achieved at the end of System Commissioning it is confirmed that the scenario is achieved with low margin, regularly taken up by ground station issues.

- **Open Burst SAR (HR)**
 - Gives simultaneously conventional (LR) -> seamless transition from previous missions
- **Digital** altimeter architecture
 - Along with the high pulse repetition frequency, leads to very low noise
- HR and LR **everywhere**
 - Upon popular request, and without degradation: using onboard compression to provide HR and LR everywhere
- **Climate quality** by design
 - Stringent drift requirement (less than 1 mm/year) in EURD
 - First altimeter to calibrate around the orbit (Echo CAL)
- **1.5-centimeter NRT orbit** accuracy on reference mission
 - Thanks to GNSS NRT processing on-ground (like Sentinel-3)
- **Coastal focus** on reference mission
 - Allowed by HR altimeter processing and HRMR radiometer





Thank you!

Questions are welcome.

