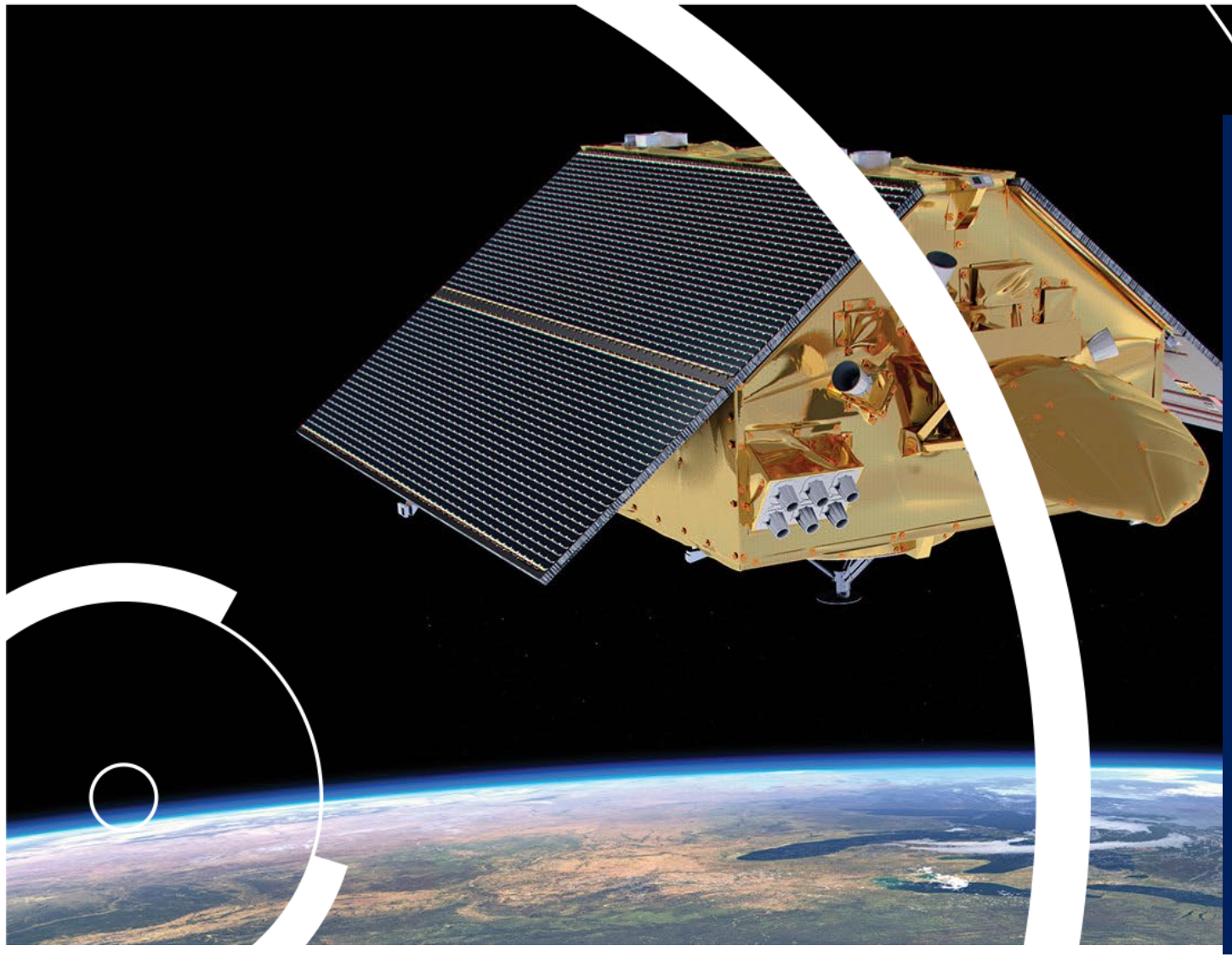
EUMETSAT

PROGRAMME OF THE EUROPEAN UNION

Copernicus Europe's eyes on Earth

NASA NOAA esa cnes CENTRE NATIONAL D'ÉTUDES SPATIALES



Copernicus Sentinel-6 Michael Freilich Mission Operations Status and Outlook

Milen Tahtadjiev
EUMETSAT System Operations

Living Planet Symposium, Bonn, 25 May 2022

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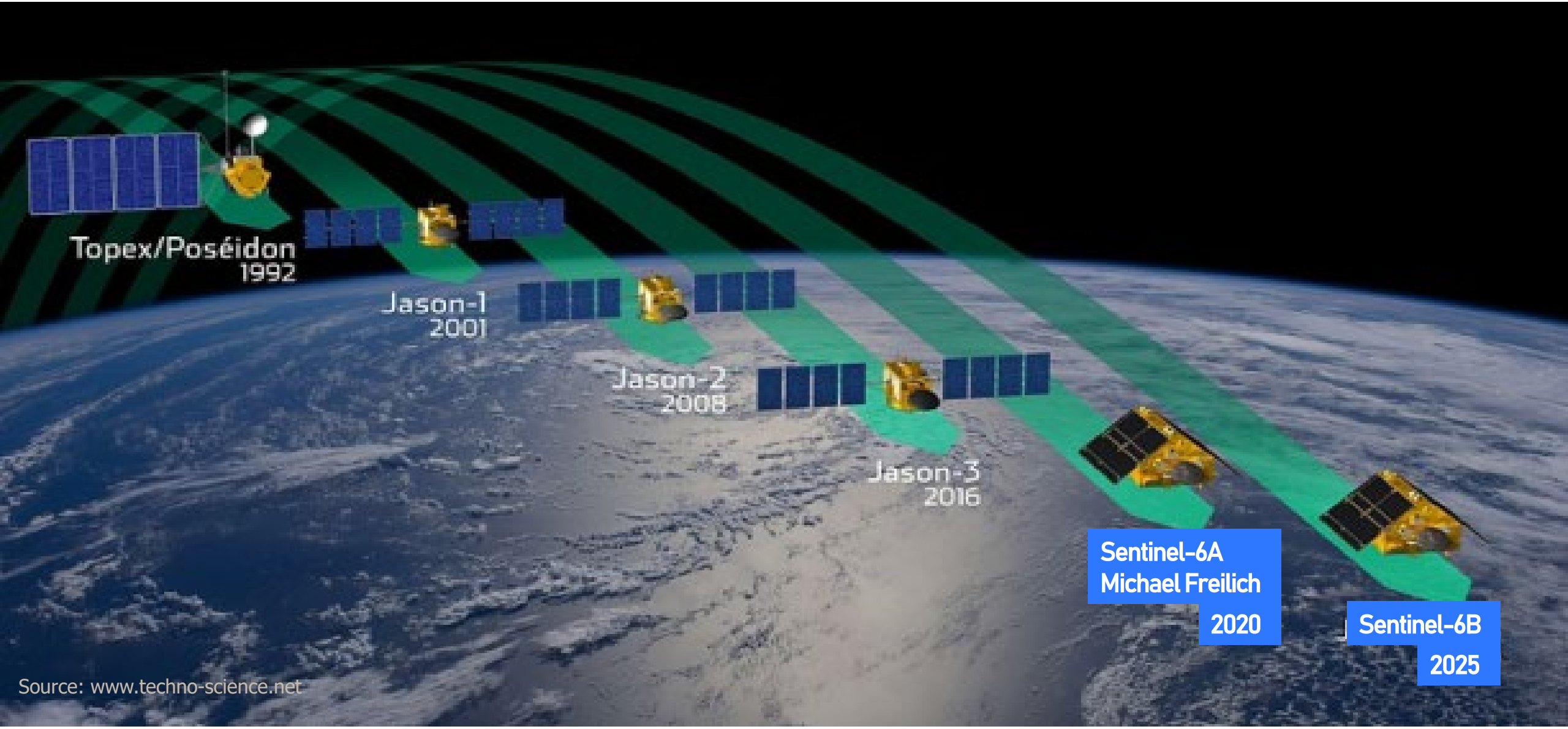
Agenda: Sentinel-6 Michael Freilich Operational Status and Outlook

- Mission Background
- Primary and Secondary Mission
- International Partnership
- Satellite Overview
- Mission Milestones
- Status of Product Services
- Outlook: what is coming up?
- Questions & Answers

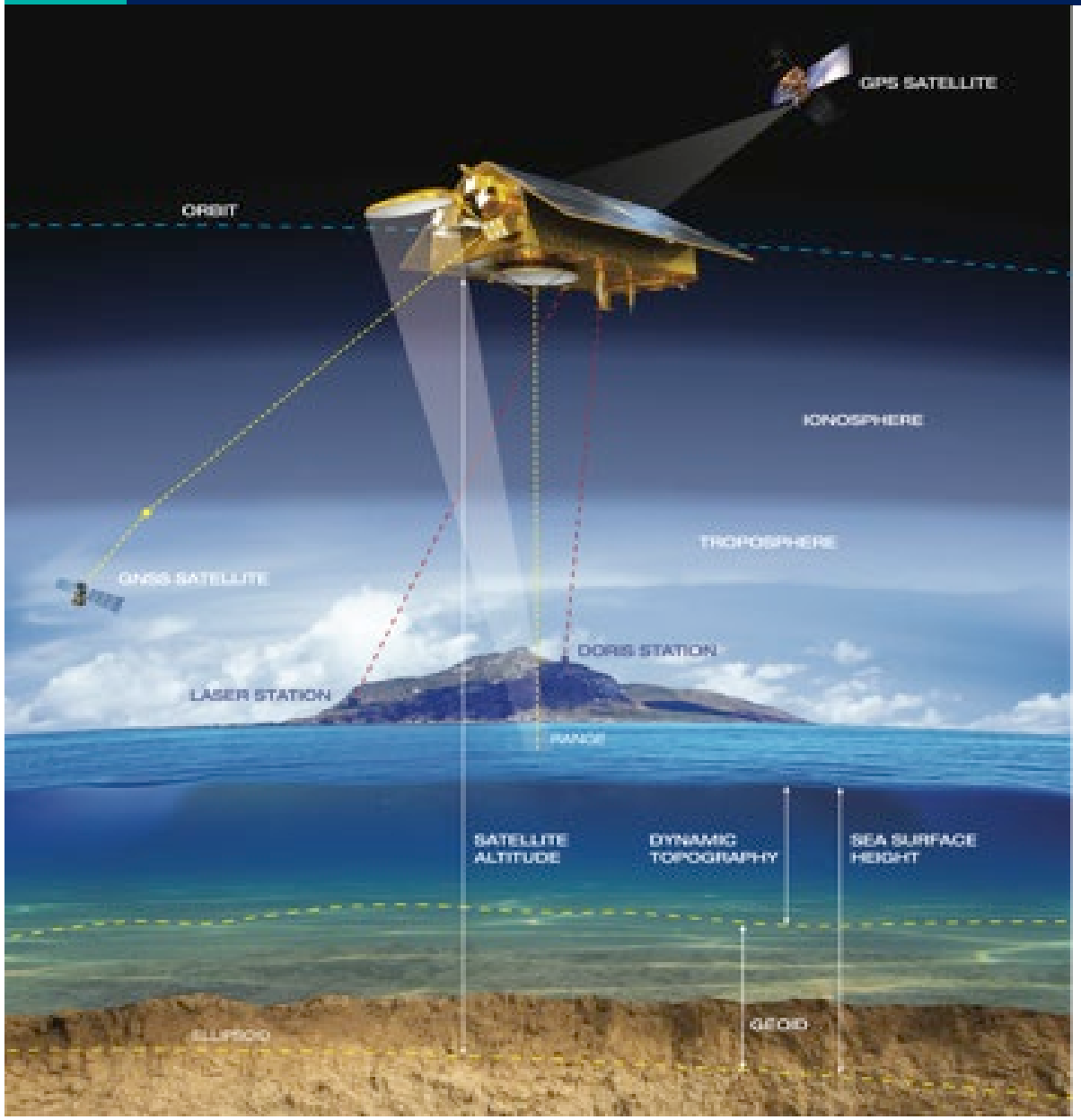
Mission Background: from Research to Operations

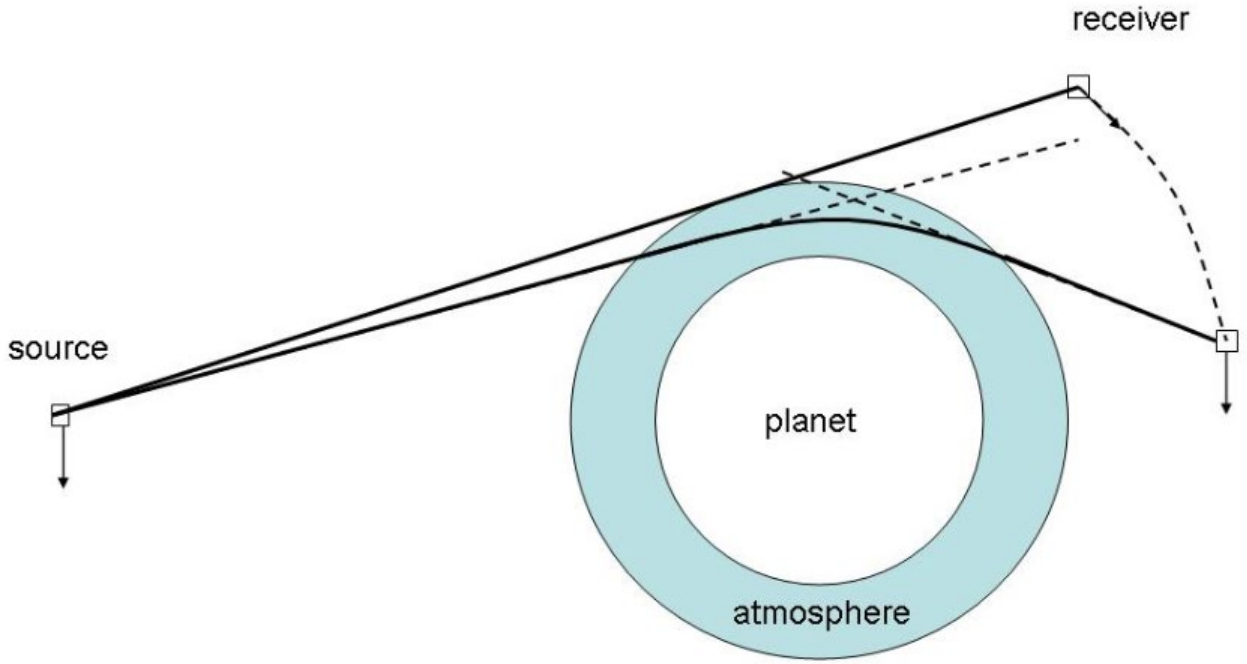


Source: www.techno-science.net

Primary Mission: Altimetry

Secondary Mission: Radio Occultation





Source: wikipedia.org

Sentinel-6 Michael Freilich: International Partnership for Copernicus

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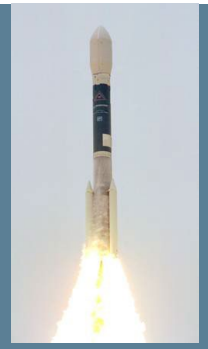
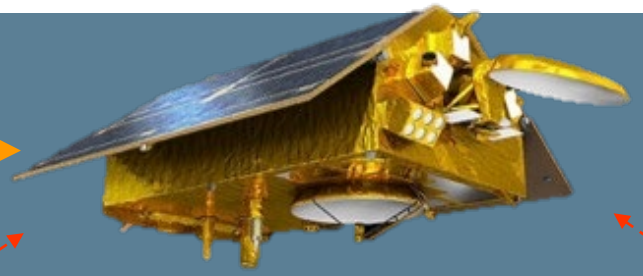


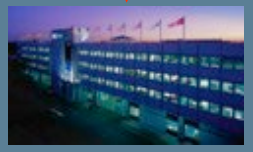
Launch Vehicle
SpaceX-F9 for S-6-MF
TBD for S6-B



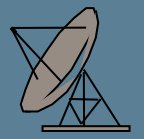
NASA Elements, NOAA Elements,
European Elements (EUMETSAT, ESA, EC, CNES)

US X/S-band Ground Station (Fairbanks)

ESA ESTEC + NASA/JPL
(sat. dev) (US Payload)



ESA ESOC
(LEOP)



European X/S-band Ground Station (Kiruna)

EUMETSAT

ROM SAF
Generation and distribution of RO L2 products

NOAA

Operational NOAA and RO WMO users

System, G/S development, product processing, Operations, dissemination & archiving

CNES

Development and operations Support, L2P/L3, POD and Mission Performance Services

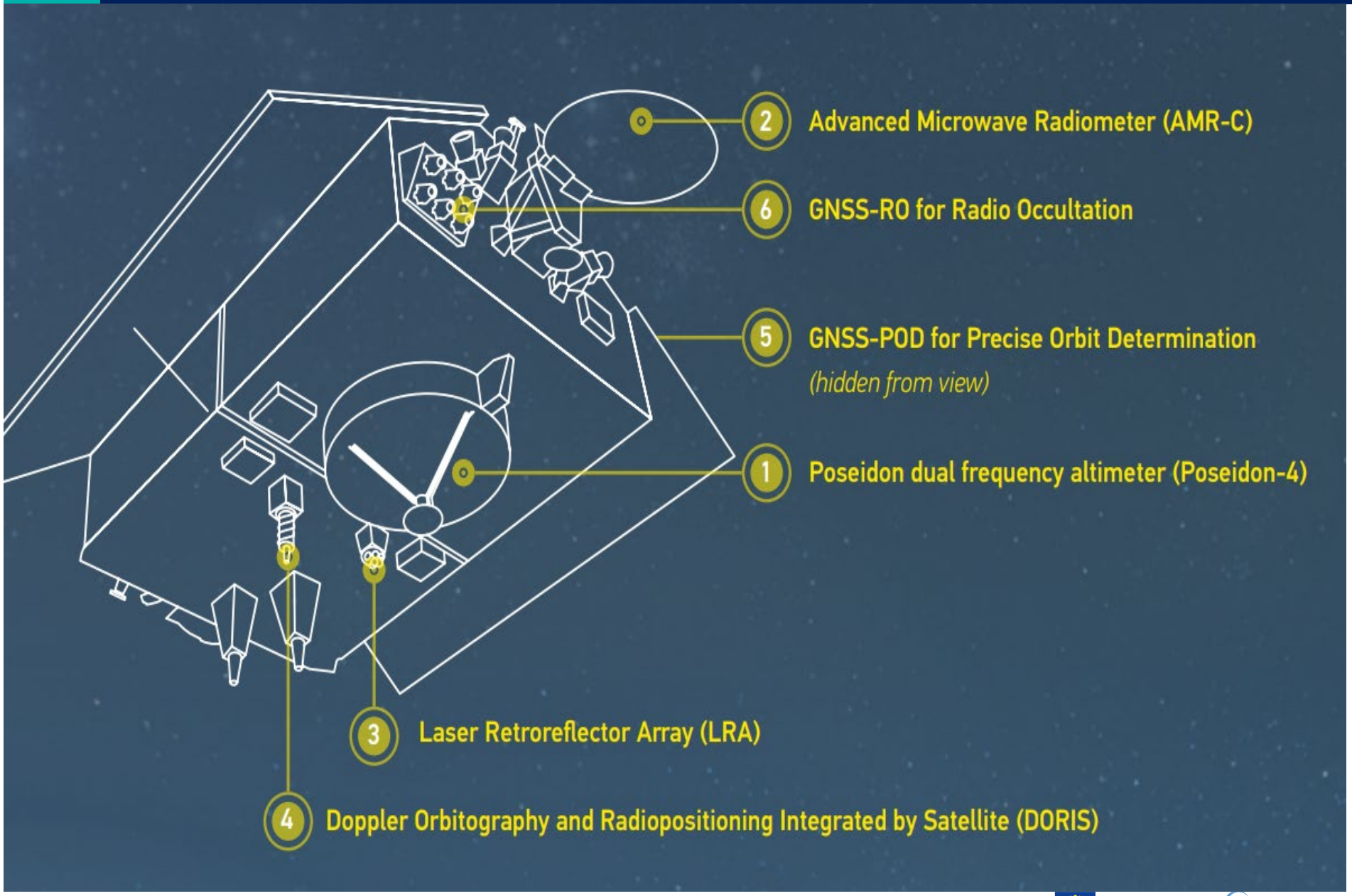
NASA/JPL

RO product processing, US Payload Monitoring & Ops support, data dissemination & archiving

US Users
PO.DAAC (Altimetry products)

European, Copernicus (EC) and ALT WMO Users

Sentinel-6 Michael Freilich: Satellite Overview



Facts and figures

DIMENSIONS
5.13m x 4.17m x 2.34m
(in-orbit configuration)

PAYLOAD
Six instruments

MASS
1,200 (including fuel)

POWER
891W (average consumption)

DESIGN LIFETIME
5.5 years

ORBIT
non-sun-synchronous orbit,
1,336km altitude, 66° inclination

REPEAT CYCLE
10 days (127 orbits)

Sentinel-6 Michael Freilich: Mission Milestones (1/2)

- ✓ Launched on 21 November 2020 from Vandenberg Air Force Base, US.
- ✓ In orbit verification of the satellite (January 2021) and the overall system (June 2021)
  - ➢ release of the first products (ALT LR and RO, NRT/STC)

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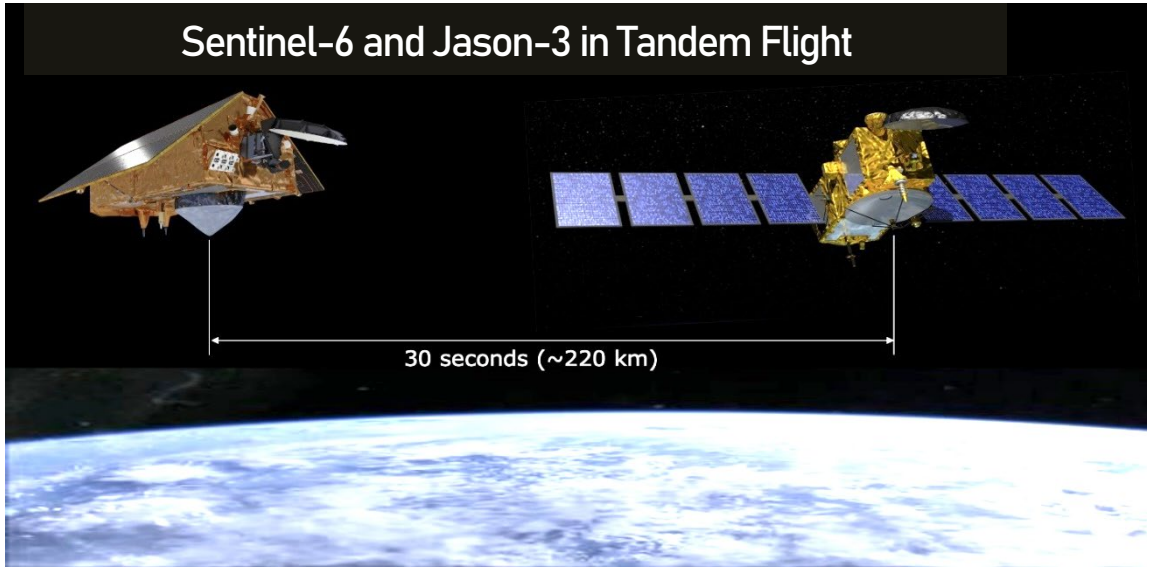
- ✓ Tandem Flight: Cross-calibration with Jason-3 of both Side-A and Side-B of the POS-4 altimeter, to ensure the continuation of the 30-year Global Mean Sea Level record

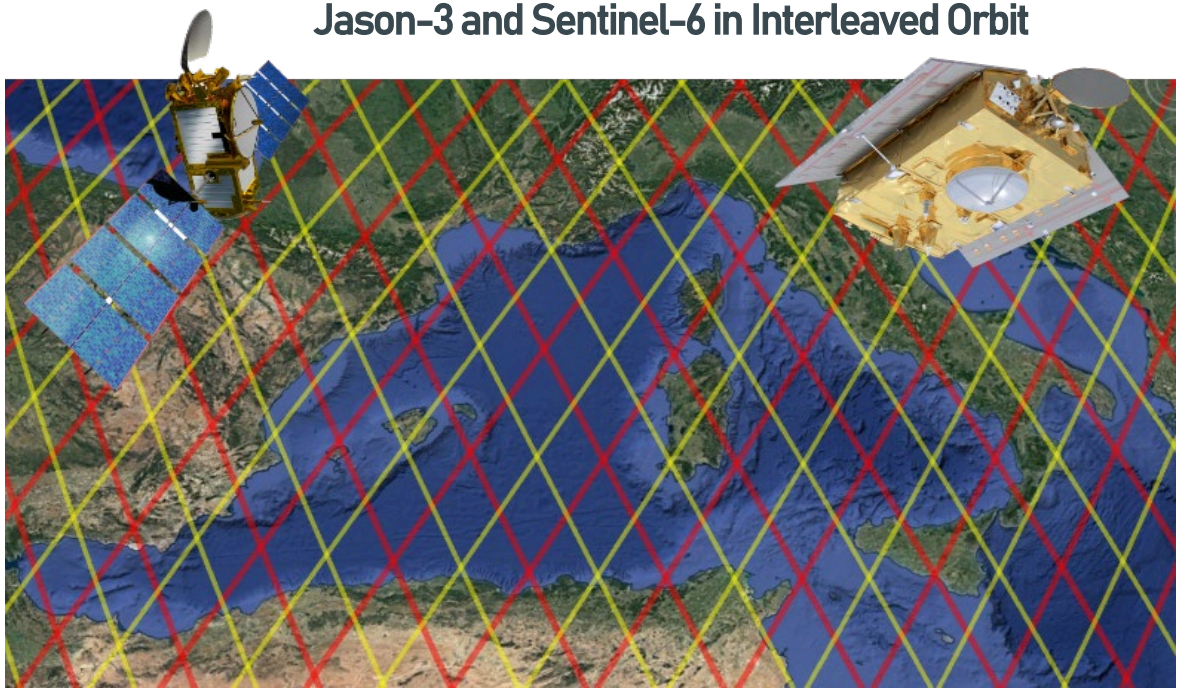


Sentinel-6 Michael Freilich: Mission Milestones (2/2)

- ✓ Commissioning Review in November 2021, marking the start of Routine Operations
  - ➢ Completion of Cal/Val activities (ALT HR and all NTC products)
    -> release of the remaining mission products
  - ➢ Decision to implement mode mask F:
    -> interleaved Low Resolution and High Resolution (Range Migration Corrected SAR mode), globally!

- ✓ Becomes Altimetry Reference Mission in April 2022
  - ➢ Jason-3 moved to interleaved orbit
    -> maximising the space and temporal sampling of the two altimetry missions

Jason-3 and Sentinel-6 in Interleaved Orbit



Sentinel-6 Michael Freilich: Status of Product Services

Product release:

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	

Outlook for Sentinel-6 Michael Freilich: What is coming up?

- ✓ Higher level products (L2P/L3) ready to be assimilated in ocean and atmosphere models by the Copernicus Marine Environment Monitoring Service (CMEMS)
  - ✓ L2P/L3 NTC products expected to be released in September/October 2022 (TBC)

- ✓ Re-processing data release
  - ➢ Re-processed data set will include data acquired during the commissioning phase, processed with the state-of-the-art L1/L2 operational processor version at EUMETSAT
  - ➢ Includes some data recovery during early mission

- ✓ Day-2 evolutions to implement necessary corrections/improvements identified already at the time of the commissioning review
  - ➢ Makes it possible to perform beyond the requirements and achieving the goals

Thank you!

Questions are welcome.