



S6/JCS Mission Advisory Group

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Overview

- What is the Sentinel-6/Jason-CS Mission Advisory Group (MAG)?
- MAG relationship to the OSTST
- Terms of Reference
- Membership
- Key Issues raised to OSTST
- Next Steps



The S6-JCS MAG

- **MAG is established as part of the Implementing Arrangement (MOU) between Agencies Article 8.4 establishes the MAG:**
 - *“[8].4. Organize the science support and advice to the primary mission objective of the Sentinel- 6/Jason-CS Mission through a dedicated Mission Advisory Group (MAG), which will also interface with the international multi-mission OSTST.”*
- limited to the primary mission objective (i.e. ocean surface altimetry).
- In addition, two working groups have been set up within the S6-JCS project: the System Engineering Working Group (SEWG) and the Mission Performance Working Group (MPWG).
- The MAG is tasked to respond to specific technical and scientific questions **raised by Project implementation teams**.
- Implementation of the Mission follows **agreed** requirements.
 - Requirements flow through an established mechanismsConsequently, the MAG **shall not establish new requirements**
- **The MAG shall maintain a strong working relationship with the OSTST (via co-chairs of MAG/OSTST – which are the same)**
- **Unlike OSTST, the S6/JCS MAG will be dissolved once the Mission is fully Commissioned into Operations.**



Sentinel-6/JCS MAG Aim and Objectives

- The aim of the MAG, that is convened and managed jointly by the Partner Mission Scientists is:
 - ***to deliver competent, independent and unprejudiced advice to the Partners by addressing questions raised during implementation relating to any aspect of the Sentinel-6/Jason-CS Mission Performance.***
- The scope of the MAG is limited to the primary mission objective (i.e. ocean surface altimetry). The scientific aspects related to the secondary mission objective (i.e. radio occultation) are addressed in other advisory bodies.
- The important link to the International Ocean Surface Topography Science Team (OSTST) will be maintained via the Project Scientists (who are also co-chairs of the OSTST) in their presentation of an annual status report to the OSTST.



Sentinel-6/Jason-CS Mission Advisory Group

General Terms of Reference

User requirements for the Sentinel-6/Jason-CS mission are defined in the End User Requirements Document (EURD, EUM/LEO-JASCS/REQ/12/0013) and are the responsibility of the EC (or its mandated body for the service component of Copernicus) and the Partner Agencies. The derived System Requirements Document (SRD) developed under joint leadership of the Partner Agencies and endorsed by the EC, serve as the baseline for this mission performance specification against User Requirements. Consequently, the main working documents of the Sentinel-6/Jason-CS Mission Advisory Group (MAG) will be the EURD and SRD.

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to deliver competent, independent and unprejudiced advice to the Partners by addressing questions raised during implementation relating to any aspect of the Sentinel-6/Jason-CS Mission Performance.

The scope of the MAG is limited to the primary mission objective (i.e. ocean surface topography). The scientific aspects related to the secondary mission objective (i.e. radio occultation) are addressed in other advisory bodies.

In this context, the Sentinel-6/Jason-CS Mission Advisory Group (S6-JCS MAG) is tasked as follows:

1. The Partners request credible, independent scientific support and advice from the S6/JCS MAG on:
 - i. The fitness for purpose of Sentinel-6/Jason-CS data products for Copernicus and other applications as defined by the EURD and SRD,
 - ii. Compatibility between Sentinel-6/Jason-CS system specifications/mission objectives and requirements identified in the EURD and SRD, Sentinel-6/Jason-CS instrument calibration,
 - iii. Specification of Sentinel-6/Jason-CS Level-1 and Level-2 products, product quality requirements and product quality indicators (error and uncertainty estimation),
 - iv. Data quality requirements for the Level-1/Level-2 interface,
 - v. Sentinel-6/Jason-CS product validation,
 - vi. Study and campaign requirements for the Sentinel-6/Jason-CS mission including end-to-end product calibration/validation, retrieval algorithms and quality indicator verification and validation,
 - vii. Sentinel-6/Jason-CS data processing, archiving, retrieval and product delivery,
 - viii. Promoting the Sentinel-6/Jason-CS mission using presentations and publications,

- ix. Interfacing to the Ocean Surface Topography Science Team (OSTST) that is also jointly chaired by the Sentinel-6/Jason-CS Project Scientists.

2. The S6/JCS MAG may be requested to help generate scientific/technical documentation addressing specific topics.
3. The S6/JCS MAG will meet on an *ad hoc* basis, up to twice per year and with additional meetings as required by the Partners.
4. Membership and the terms of reference shall be reviewed by the Project Scientists of the Partners at the end of post-launch Switch-on and In-Orbit Verification (SIOV).
5. MAG Members selected by the Partners shall be supported under terms of agreement with their respective Partner organisation¹
6. MAG Members cannot be a member of, or consultant to, any industrial consortium working on the Sentinel-6/Jason-CS mission.
7. MAG Members shall sign a non-disclosure agreement to safeguard proprietary information and intellectual property.
8. Communications, press releases, and publication material concerning the work of the S6/JCS MAG shall be discussed and agreed with the Partners through the S6/JCS MAG framework prior to release.

MAG Membership and role

Name	Nationality	Role
Ole Baltazar Andersen	Danish	Altimeter Instrument products and processing (L1 to L2 measurement to product chain, corrections, calibration etc.)
Lofti Aouf	French	Sigma-0 to Hs/U10 and ice applications
Pascal Bonnefond	French	Altimeter Instrument products and processing (L1 to L2 measurement to product chain, corrections, calibration etc.)
Paolo Cipollini	Italian	Altimeter Instrument products and processing (L1 to L2 measurement to product chain, corrections, calibration etc.)
Yannice Faugere	French	Product validation (Multi-mission homogeneity, range, sigma-0, multi-mission crossovers (GSICS), tide gauges, land motions, transponder, wet troposphere, ionosphere, Sigma-0, Hs, U10, SSH, quality, uncertainty, processing, etc.)
Stelios Mertikas	Greek	Product validation (Multi-mission homogeneity, range, sigma-0, multi-mission crossovers (GSICS), tide gauges, land motions, transponder, wet troposphere, ionosphere, Sigma-0, Hs, U10, SSH, quality, uncertainty, processing, etc.)
Ernst Schrama	Dutch	Orbit (POD/AOCS/Gravity field, processing, orbit quality and uncertainties).
Detlef Stammer	German	Sea level, ocean circulation and ocean dynamics applications (MSS, Geoid, Dynamic topography, quality, uncertainty, processing, tides, etc.)
Bruce Haines	USA	Orbit (POD/AOCS/Gravity field, processing, orbit quality and uncertainties) Waveform analysis (sea state bias, SAR and LRM quality, uncertainty, processing, etc.)
Shannon Brown	USA	Wet Tropo corrections, Radiometer, calibration, Radiometer Instrument products and processing (L1 to L2 measurement to product chain, corrections, calibration etc.)
Walter Smith	USA	Altimeter Instrument products and processing (L1 to L2 measurement to product chain, corrections, calibration etc.)
Alejandro Egido	USA	SAR/LRM/RMC altimeter processing (e.g. L1a to higher order products, on-board processor, aliasing etc.)



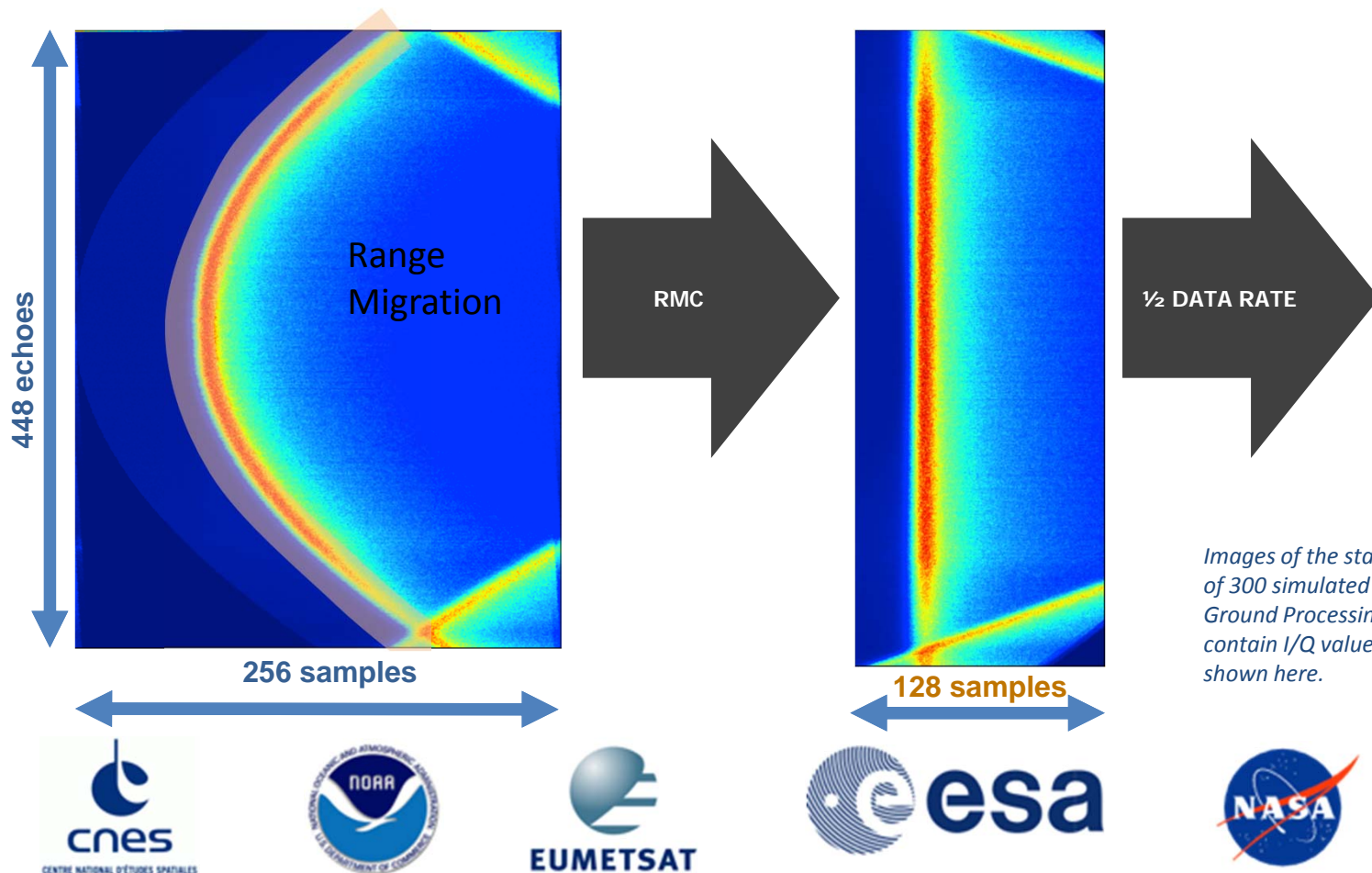
On-going MAG discussions

- The implications of using a new SAR Altimeter as part of the reference mission needs to be managed with care. Full advantage should be taken of Sentinel-3 Tandem operations (i.e. SAR and LRM) in this respect
- Further effort is required to maintain the Fiducial Reference Measurements (FRM) required to verify and validate performance (getting more challenging).
- Developing a justification to exercise both POS-4 Side A and Side B electronics during the Tandem phase with J3?
- Is it possible to acquire more SAR-RAW-HR data over the open ocean? What are the limits/costs/issues?
- Alternative processing approaches such as fully-focused SAR processing are emerging. Will the current Sentinel-3 and Jason-CS/Sentinel-6 systems allow for novel processing approaches to be fully exploited?
- What is the mode switching mask to define [coastal] areas where raw high resolution SAR data will be downlinked (not foreseen everywhere today).



Sentinel-6/Jason-CS HR operational modes

- Jason-CS will operate in “HR-RAW” over coastal areas. That means that the delay/Doppler map of 256 samples will be available for creating a HR multi-looked waveform.
- Note however the Doppler ambiguities.
- Jason-CS will operate in “HR-RMC” over open ocean. The number of samples is reduced to 128 in order to reduce on-board storage and downlink, while retaining most useful information.
- The range migration correction is done on board and un-done on ground

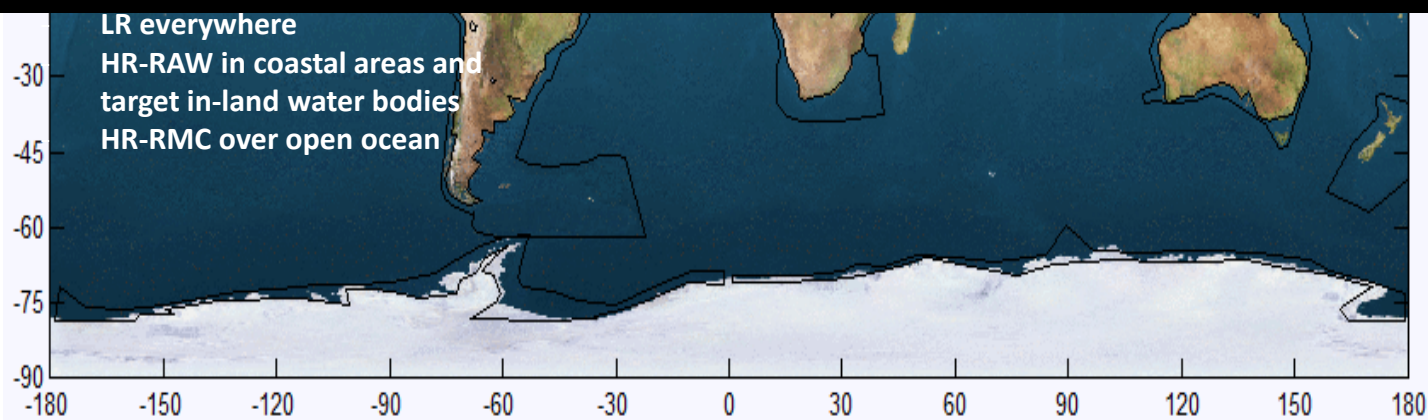


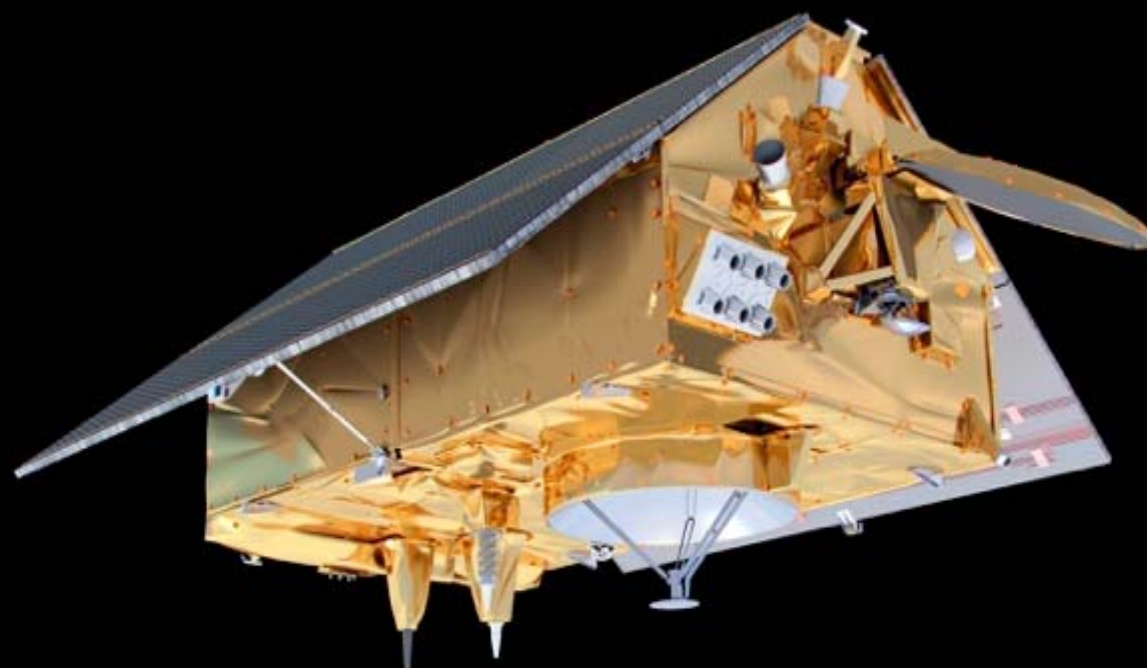
Draft Mode mask (for sizing): inputs requested to consolidate the current mode mask



Some issues:

- How might swells alias into the products and what is the best mode to use and where?
- Will discontinuities at mode switch boundaries cause problems for modeling teams?
- How will we manage uncertainties across the different mode areas?
- What are the best areas to use of the available RAW SAR allocation?





Thank You – any
Questions

