Calibration and Validation Implementation Plan
What is the Cal and Val Implementation Plan?

- The S6 CVIP describes how the agencies CNES, ESA, EUMETSAT, NASA/JPL and NOAA responds to the Cal/Val Concept Plan, in order to implement and perform the calibration and validation tasks during commissioning (phase E1) through the routine in-orbit (phase E2) for the two satellites, Sentinel-6A and -6B until the end of the mission.

- This document identifies the agencies contribution/coordination per activity with possible delegation, cross-support and contributions.

- This document addresses verification and validation of all performance requirements, linking them to the various activities.

- These activities are presented in the next slides.

This document has been written by all members of the MPWG > see next slide
This is not a public document, but the high level description of activities is provided in the next slides.
The S6 MPWG or S6 Mission Performance Working Group is composed by 2 experts per Agency. The current members are:
- ESA: Robert Cullen, Luisella Giulicchi
- NASA/JPL: Shailen Desai, Jean-Damien Desjonqueres
- CNES: Nicolas Picot, Gilles Tavernier
- NOAA: Alejandro Egido, Eric Leuliette
- EUMETSAT: Remko Scharroo, Cristina Martin-Puig
All Agencies with a cross have committed to work on the activity described.

For S6 CNES will lead all Cal/Val POD activities with the support of NASA/JPL.
All Agencies with a cross have committed to work on the activity described.

For the AMR-C all cal/val activities are under the lead of NASA/JPL for both phases.

Note that S6 is the first altimeter from the Jason series to provide AMR products. These activities will be very interesting in terms of validating the ALT products, as well as the AMR products.

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<tr>
<th>Description</th>
<th>CNES</th>
<th>ESA</th>
<th>EUM</th>
<th>NASA/JPL</th>
<th>NOAA</th>
<th>Coord E1</th>
<th>Coord E2</th>
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<td>AMR-C internal radiometric calibration verification</td>
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<td>NASA/JPL</td>
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<td>AMR-C vicarious calibration</td>
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<td>AMR-C correction validation</td>
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POS4 instrument monitoring activities are under the coordination of
## Product Assessment CVIP activities

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<td>Quality assessment over ocean (STC + NTC)</td>
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<td>Quality assessment over in land water (All timeliness)</td>
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<td>NRT service performance</td>
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Special mode mask for commissioning
Transponder is neither open nor closed loop. When the acquisition mode is transponder by telecommand we can specify a fixed gain and fixed H0.
This is the baseline acquisition mask used so far for sizing.
A dedicated POS4 instrument activity will also allow to the verification of RMC.
The case for LX2

• **LX2 is useful for**
  • Analysing that HR-RMC performance is equivalent to HR-RAW
  • Verifying that HR-RMC can be reconstructed on-ground from HR-RAW

• **However**
  • Once the latter is satisfied **any number of HR-RAW (LX) data** can be converted to HR-RMC on ground
  • LX2 can only be run in **Closed Loop**
  • Switching between Closed Loop and Open Loop creates ~5 second gaps. This is also not good for consistency.
  • Hence, LX2 shall be used **only on limited amount of data** and preferably during drift phase where Open Loop is not possible.
What is needed for RMC everywhere?

During commissioning it will thus be necessary to build up maximum experience of using and understanding the differences between HR-RAW and HR-RMC data and derived products over all surfaces prior to switching to a routine operations mode mask.
BOX 1 = A wide and continuous box (i.e., as for the CryoSat Pacific box) in the open ocean where we can address the potential issues linked to internal tide, swell, geoid slope, ... But no coastal in this Box.

- Aleutian trench
- Hawaiian islands
- Kuril trench
- Pacific
- Sandwich trench
- Internal tides
RS4  Added explanation in title
Remko Scharroo, 04/09/2020
BOX 2 = A box covering the North Atlantic Ocean + Med Sea (from the equator to 66 °), to cover nearly all the dynamics (except tropical waves and atolls), complex coastal areas, Hudson Bay, … thus also including high variability of the tide (and therefore of the centring of the echoes). This box includes only ocean surfaces.
**BOX 3N** = a box covering the Arctic Ocean (sea ice – depending on the season, the marginal ice zone between a 55S and 66S latitude band), choosing the cycle to observe different types of sea ice.

**BOX 3S** = a box covering the Antarctic Ocean (sea ice – depending on the season, the marginal ice zone between a 55S and 66S latitude band), choosing the cycle to observe different types of sea ice.
BOX 4 = A box covering the West of Europe for the inland water analysis, choosing the cycle to observe different types of continental inland water conditions (summer / winter, impact of the snow, ...) This box is proposed to allow an accurate validation with existing insitu networks. We could do the same exercise over North America but on CNES/CLS side we have much more experience over Europe.
BOX 5 = The nominal coastal mask (including larger lakes). The version of this box from 2014 was used for sizing the system. In March 2020 the Madagascar coast was added.
BOX 6 = Covering all transponders sites. This Box is acquired over all cycles.
Commissioning schedule for POS4 acquisition