



Splinter 12

Satellite instrument pre- and
post-launch calibration

Proposal to establish a new inter-Agency task force on satellite sensor calibration





Motivation for the calibration task force

Recommendation from the INSITU-OCR white paper

- INSITU-OCR = International Network for Sensor Inter-comparison and Uncertainty Assessment for Ocean Colour Radiometry
- INSITU-OCR – initiative within the framework of CEOS OCR-VC
- OCR-VC – aims to “provide long time series of calibrated ocean colour radiance at key wavelength bands from measurements obtained from multiple satellites. OCR-VC activities will include calibration, validation, merging of satellite and *in situ* data, product generation, as well as development and demonstrations of new and improved applications.”

INSITU-OCR White Paper

International Network for Sensor Inter-comparison and Uncertainty assessment for Ocean Color Radiometry (INSITU-OCR)

Working toward consistency and accuracy in the development of essential climate variables from multiple missions

Executive Summary

The Ocean Color Radiometry - Virtual Constellation (OCR-VC) developed in the context of the Committee on Earth Observation Satellites (CEOS), aims at producing sustained data records of well calibrated and validated satellite ocean color radiometry to assess the



Goal of the proposal

Creation of a framework for collaboration on satellite sensor calibration among Space Agencies engaged in the OCR-VC initiative

- establish collaboration among sensor characterization and calibration experts from Space Agencies
- unite expertise and facilitate cross-pollination, further development and inter-Agency support
- maximize the accuracy and temporal and spatial stability of OCR records
- address the requirements of most of the ocean colour applications, including climate, coastal management, ecosystem modelling, and services (e.g. fisheries, harmful algal blooms, water quality, turbidity)



Why this special consideration for ocean color?

Ocean colour has very stringent accuracy requirements (IOCCG report 13, GCOS)

- the final performance is met by the system, and not only by the instrument itself. All parts of the system have to be analysed in concert and considered as individual contributions to the total performance
- 0.2% uncertainties on individual components, such as polarization, stray light, linearity, detectors, cameras, mirror sides
- 0.5% absolute uncertainty goal on sensor measured TOA radiances after vicarious calibration
- 0.5% temporal stability per decade
- the requirements are on pre-launch and on-orbit characterizations



Permanent calibration task force

Permanent inter-Agency framework for collaborative hands-on work on space instrument calibration and characterization

Space Agencies facilitate

- exchange of ideas, information and data
- hands-on research
- rapid response to emerging issues
- implementation of solutions into the sensor data processing
- maintenance of documentation, mission requirements and instrument specs

Meetings

- active remote collaboration via calibration website and wiki
- focused sub-group working sessions to address specific issues
- dedicated splinter sessions during IOCS meetings



Permanent calibration task force

Long term structure

- Terms of Reference supplemented by an annual program of work

Close interaction with the extended ocean colour community

- community's feedback and recommendations regarding the accuracy and quality of calibration and characterization of individual instruments

Calibration and characterization expert activities

- interaction on specific technical problems
- work hands-on with data and prototyping
- delivery of solutions and transfer of the solutions to operations

Text of proposal

- <http://www.ioccg.org/Meetings/IOCCG18/>