



Committee on Earth Observation Satellites

# OCR-VC

*Ewa Kwiatkowska (EUMETSAT), Paul  
DiGiacomo (NOAA), Craig Donlon (ESA)*

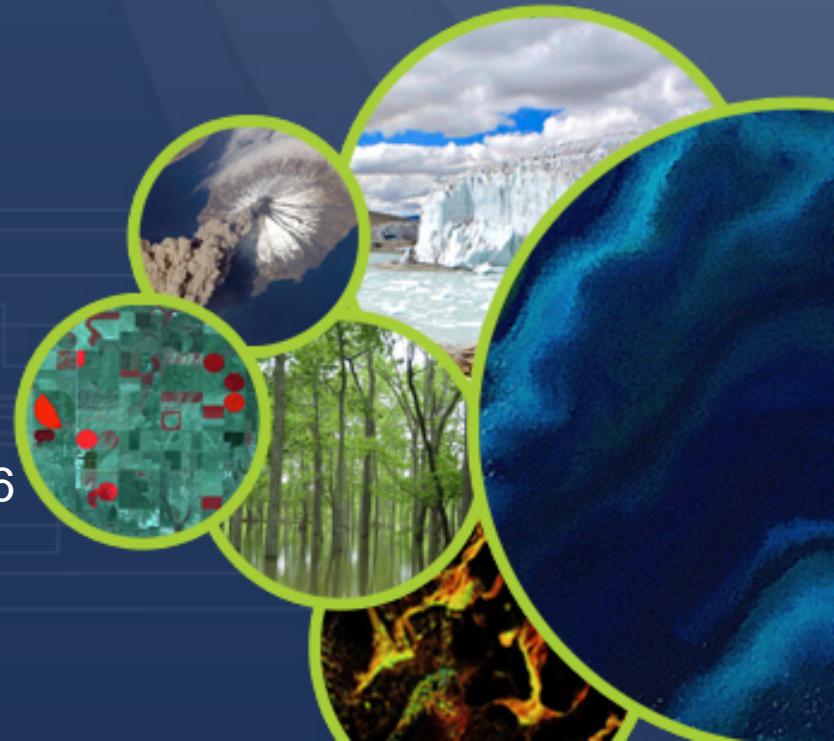
OCR-VC Co-chairs

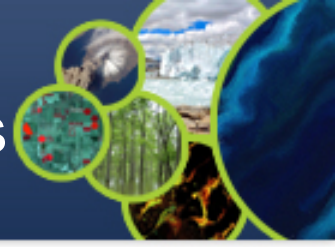
CEOS 2018 SIT Technical Workshop

Session 5: Oceans and Freshwater, Item #5.6

EUMETSAT, Darmstadt, Germany

13 – 14 September 2018





- 3.1 Climate Monitoring, Research, and Services (*contributions to GEO*)
  - Revision of OCR Essential Ocean Variables for GOOS (observational requirements)
  - Planned update of OCR ECVs for the next GCOS IP (based on data record importance & availability)
  - Lake ECVs under development (SIT-33-08 Feasibility study for Water Quality measurements)
  - **Recommendation** for update of WGClimate OCR ECV inventory to include missing datasets during the cycle 2 gap analysis
- 3.2 Carbon Observations, Including Forested Regions
  - **Recommendation** for stronger emphasis on aquatic biology, biogeochemistry, ecology and harmonization with “CEOS Strategy for Carbon Observations from Space”
  - “Aquatic Carbon From Space” special journal issue under discussion at IOCCG
- 3.5 Observations for Water
  - IOCCG recent report “Earth Observations in Support of Global Water Quality Monitoring”
  - IOCCG reports – contribution to “CEOS Strategy for Water Observations from Space” and “CEOS Feasibility Study on Satellite Missions/Instruments Focused on Water Quality Measurements”
- 3.7 Capacity Building, Data Access, Availability and Quality
  - IOCCG Summer Lecture Series - 25 June - 6 July 2018 (Villefranche)
  - IOCS-2019 Symposium development underway – 9-12 April, Busan, South Korea (NASA OCRT meeting 8 April 2019)
  - **Recommendation** for COVERAGE to include variables beyond chlorophyll & increased spatial res < 0.25°



SIT-33-08	OCR-VC and LSI-VC	Review the <i>CEOS Feasibility Study on Satellite Missions/Instruments Focused on Water Quality Measurements</i> and report to SIT TW on any implications for their work, including opportunities to address the recommendations that may be on the horizon.	SIT TW 2018
<i>Rationale: Measurements identified in the study are of direct relevance to OCR-VC and LSI-VC data coordination.</i>			

- Feasibility Study is harmonized with IOCCG reporting “Earth Observations in Support of Global Water Quality Monitoring”, A.Dekker, P.DiGiacomo, S.Greb (GEO-AquaWatch chairs)
- Relevance with the joint meeting of GloboLakes and AquaWatch, 29-31 Aug 2018
  - GloboLakes – 5-year program, the state of lakes and their response to climatic/environmental change
  - AquaWatch – the GEO water quality initiative and community of practice Ongoing IOCCG/OCR-VC activities
  - **Strong requirement for consistent quality of EO data** → Ongoing IOCCG/OCR-VC activities
    - Analysis Ready Datasets (ARD) available from many sources, e.g. Copernicus, USGS-Google Earth Engine, ESA, Calimnos (Globalakes) Open DataCube, UNESCO WQ Portal
    - In situ measurements for validation and product development are critical, from Fiducial Reference Measurements (FRM) to citizen science-based in situ data
  - **Strong requirement for education, training, capacity building** → Ongoing IOCCG/OCR-VC activities
- The Feasibility Study has impact on OCR observational and mission requirements, particularly for dedicated radiometric quality, spectral coverage, and spatial resolution
- **Looking for coordination with other VCs / EO communities** to harmonize observational requirements and develop joint mission requirements



# OCR-VC deliverable VC-09

## International Network for Sensor Inter-comparison and Uncertainty Assessment



### INSITU-OCR White Paper

**VC-09: Implementation of the International Network for Sensor InTerc...** Minimize Close

**Number :** VC-09 Share Print

**Title :**  
Implementation of the International Network for Sensor InTercomparison and Uncertainty Assessment for Ocean Colour Radiometry (INSITU-OCR)

**Status :** Open

**Creation Year :** 2014

**Completion Date :** 2019-Q4

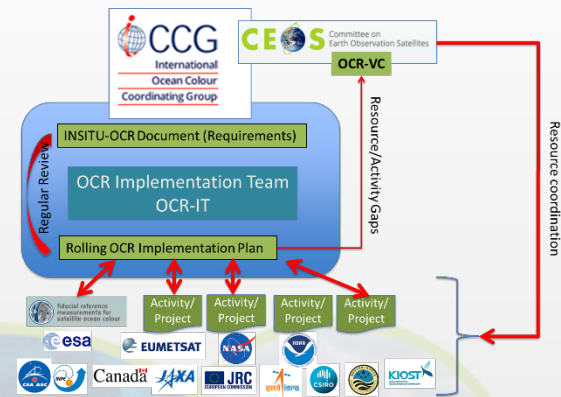
	Recommendations
<b>Space Sensor Radiometric Calibration, Characterization and Temporal Stability</b>	R1.1 Comprehensive pre-launch instrument calibration/characterization
	R1.2 Open access to calibration and characterization data
	R1.3 Permanent working group on satellite sensor calibration
	R1.4 Vicarious calibration
	R1.5 Support for calibration teams
	R1.6 Assess and correct for instrument degradation
<b>Development and Assessment of Satellite Products</b>	R2.1 Distribution of calibrated and uncalibrated data
	R2.2 Permanent working groups on algorithm topics
	R2.3 Product uncertainties
	R2.4 Regional bio-optical algorithms
	R2.5 Open access to source codes for processing algorithms
	R2.6 Long-term field measurement programs
	R2.7 Validation protocols
	R2.8 Level-3 data products generation
	R2.9 Ancillary data

	Recommendations
<b>In Situ Data / Fiducial Reference Measurements</b>	R3.1 Improving traceability of in situ measurements
	R3.2 Continuous consolidation and update of measurement protocols
	R3.3 Uncertainty budgets
	R3.4 Quality Assurance of in situ data
	R3.5 Archival of in situ data
	R3.6 Community processor for in situ data
	R3.7 Priority for variables to be collected
	R3.8 General coordination of field campaigns
<b>Information Management and Support</b>	R4.1 Accessibility and distribution of large volumes of data
	R4.2 Processing capabilities for calibration and validation activities
	R4.3 Accessibility to documentation
	R4.4 Data formats
	R4.5 Support for open source data processing and visualization



## System Vicarious Calibration

R1.4



### Coordinated cross-agency activities:

- NASA – completing 3-year/US\$8M investment in first phase of SVC development, 3 projects (UV-SWIR)
- NASA – preparing for follow-on in situ SVC competition
- ESA – FRM4SOC SVC workshop in Feb 2017
- ESA – FRM4SOC radiometry protocols under IOCCG review, final workshop 4-5 October 2018
- ESA / CNES – continuous operations of BOUSSOLE
- NOAA – continuous operations of MOBY
- NOAA – MOBY Technology Refreshment on-going
- JRC – peer-review publications, OC-SVC requirements
- EUMETSAT – “Requirements for Copernicus OC-SVC Infrastructure” under IOCCG review
- EUMETSAT – “Preliminary design of Copernicus OC-SVC Infrastructure” to be started soon

## Task Force on Satellite Sensor Calibration

R1.3, 1.1, 1.5, 1.6

Collaboration on space instrument accuracy and stability to maximize the quality of OCR data records

- regular coordination at IOCS meetings
- interest in WGCV/GSICS lunar model activities



## Coordination of In Situ Measurement Protocols

Coordination, revision, development of in situ measurement protocols

R3.1, 3.2, 3.3, 3.4

## Geostationary OCR capabilities

Support and promotion of geostationary activities:

- KIOST-GOCI – first demonstration geoOCR benefits
- Early geoOCR activities at various agencies, e.g. NASA report on GEO-CAPE accomplishments and lessons learned
- Relevance to CEOS Strategic Directions: Geostationary Applications & Combined Products

**Looking for coordination with other VCs/EO-communities** for harmonization of observational and mission requirements

R2.2, 2.4

## Exploration of measurements beyond the passive multi-band radiometry

R2.2, 2.4

Coordinated cross-agency activities on examining advantages of other measurements for aquatic biological / biogeochemical/ ecological retrievals:

- Hyperspectral spectroscopy – NASA PACE
- Lidar – white paper in preparation, initial demonstrations with CALIPSO
- Polarimetry – white paper in preparation, POLDER experience, PACE

**Looking for coordination with other VCs/EO-communities** for harmonization of observational requirements and development of joint mission requirements, e.g. atmospheric communities (aerosols and clouds)

