

IOCCG Task Force on Ocean Colour System Vicarious Calibration (OC-SVC)

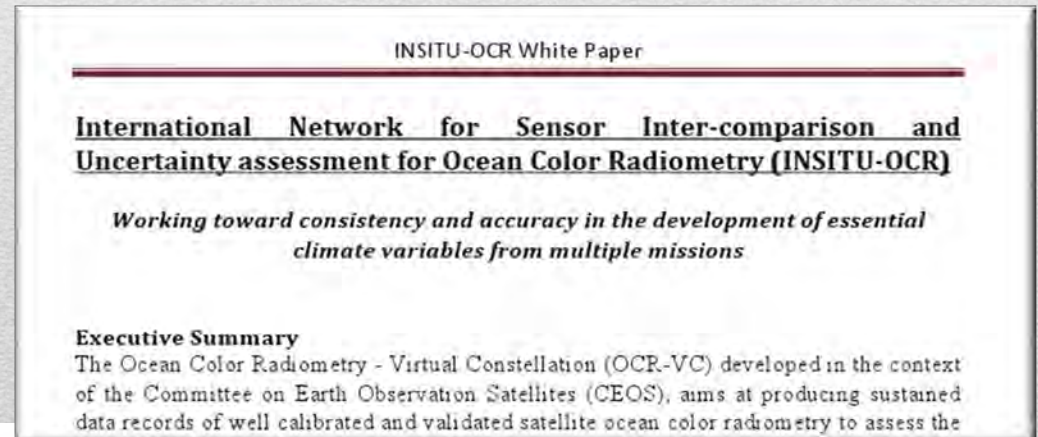
Ewa Kwiatkowska (EUMETSAT) Carol Johnson (NIST)

Motivation for the OC-SVC task force

- OC-SVC is a fundamental requirement for all Ocean Colour missions
- OC-SVC allows the missions to meet stringent accuracy requirements for water radiometric products and all downstream bio-optical products
- IOCCG Working Group “Long-term Vicarious Adjustment of Ocean Colour Sensors” has had little progress but IOCCG finds the activity important

Recommendation R1.4 from the INSITU-OCR White Paper

“the adoption of a commonly agreed vicarious calibration approach, supported by sharing of processing modules, would enhance inter-mission consistency of radiometric products”



- **R1.4 Vicarious calibration**

Current target for absolute calibration uncertainty of satellite ocean color sensors is 0.5%. This stringent value is justified by the high accuracy requirements established for utilizing satellite ocean color products in climate and operational investigations. Such a level of accuracy can be achieved with vicarious calibration: the adjustment of pre-launch calibration coefficients using top-of-atmosphere (TOA) radiance predicted from *in situ* measurements through modeling of atmospheric radiative

Multiple agencies aim to maintain or establish new OC-SVC infrastructures

- NOAA: <https://coastwatch.noaa.gov/cw/field-observations/MOBY.1.html>
 - NASA: https://pace.oceansciences.org/docs/PACE-SCI-PLAN-0140-VC_20190226.pdf
 - ESA/CNES/EC Copernicus: <http://www.obs-vlfr.fr/Boussole/html/home/home.php>
 - JRC: <https://publications.jrc.ec.europa.eu/repository/handle/JRC105497>
 - ESA: <https://frm4soc.org/index.php/activities/workshop-on-vicarious-infrastructure/>
 - EUMETSAT/EC Copernicus: <https://www.eumetsat.int/OC-SVC>
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- OC-SVC infrastructures are highly specialized and very expensive
 - It is useful to have
 - coordination across the Agencies
 - exchange of lessons learned, strategies, methodologies

OC-SVC task force establishment and initial membership

- IOCCG 2020 recommendation to establish an OC-SVC task force
- IOCCG email was sent to an initial group of members from the previous working group
- Co-chairmanship: Carol Johnson (NIST) and Ewa Kwiatkowska (EUM)
- Initial membership: Davin Antoine (Curtin Uni.), Susanne Craig (NASA), Nigel Fox (NPL), Bryan Franz (NASA), Christophe Lerebourg (ACRI-ST), Constant Mazeran (SOLVO), Frederic Melin (JRC), Hiroshi Murakami (JAXA), Marie-Helene Rio (ESA), Ken Voss (U. Miami)
- Agencies are welcome to nominate new members, if desired – Potential new members: **Andrew Barnard (Oregon State), Brian Barnes (Univ. South Florida), Paolo Cipollini (ESA-S3NGO), Marco Celesti (ESA-CHIME/S2), Menghua Wang (NOAA)**

OC-SVC task force activities

- OC-SVC task force - no activities until now
- However, many ongoing activities at the agencies:
 - NASA PACE SVC developments
 - NOAA MOBY refreshment
 - EUMETSAT/EC Copernicus SVC developments
- A lot of expertise and lessons learned now exist to be taken up by the task force
- CEOS OCR-VC White Paper – the first activity to be undertaken up by the OC-SVC task force
 - White Paper describing a strategy planning for global OC-SVC infrastructures
- Meeting to discuss the task force and the White Paper in Fall (Sep/Oct) 2022

IOCCG discussion on the OC-SVC task force

- Recommendations for the OC-SVC task force
 - to include Covariance matrix on the noise of the measurements
 - to follow FIDUCEO-type of methodology