A history and overview of IOCCG activities

22 April 2026

Shubha Sathyendranath, IOCCG Chair
Raisha Lovindeer, IOCCG Project Coordinator
Cara Wilson, IOCCG Past-Chair

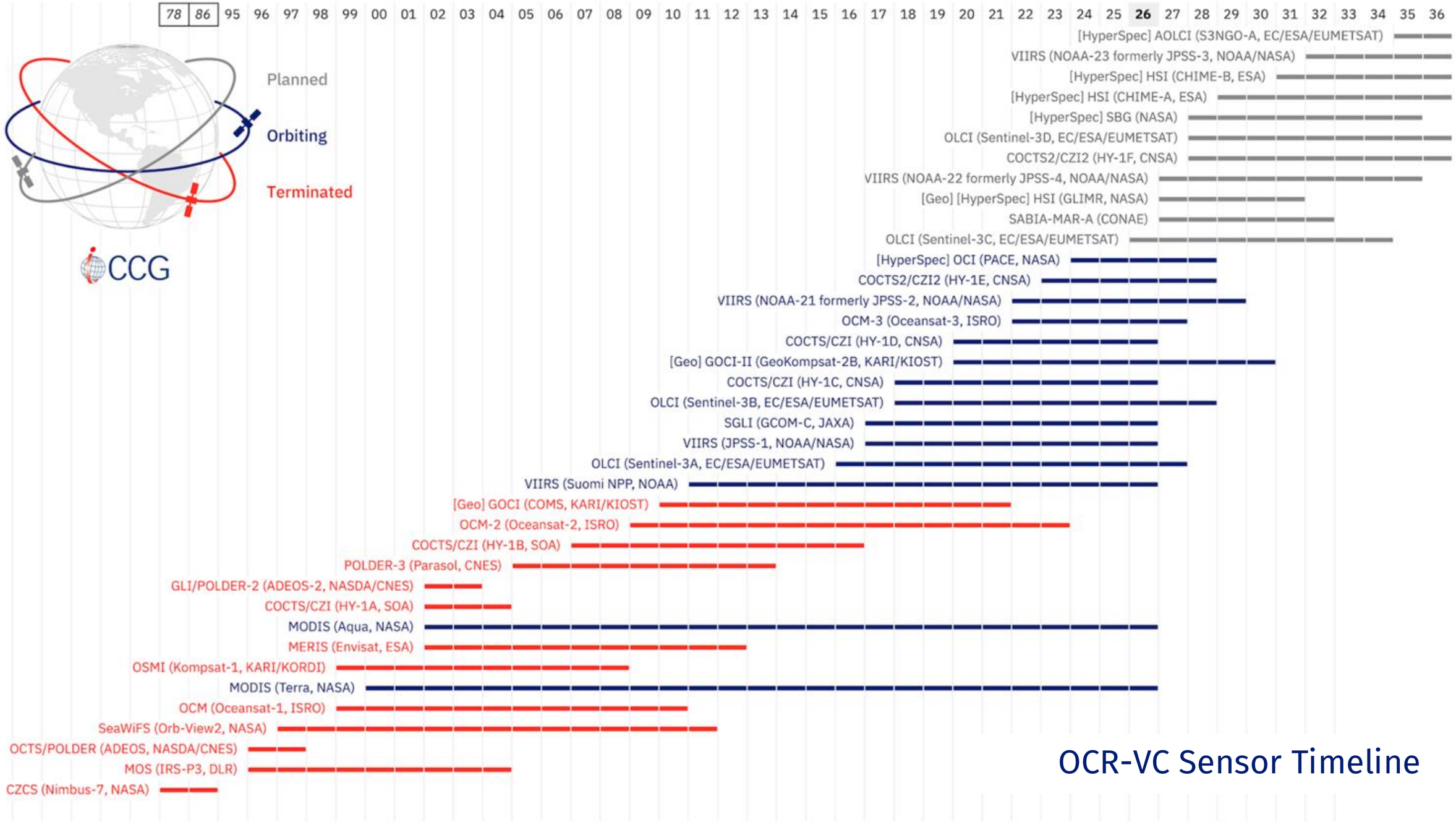
IOCCG
International Ocean Colour Coordinating Group



Vision
Robert Frouin,
when at NASA, 1996



First Chair of IOCCG
Trevor Platt



OCR-VC Sensor Timeline



Promoting development and applications of science and technology that underpin remote sensing of ocean colour across all aquatic environments (in-land, coastal, open-ocean), through coordination, training, liaising between providers and users, advocacy, and provision of expert advice.



Structure

International Ocean Colour Coordinating Group

Affiliated with

SCOR Affiliate Programme
CEOS Associate Member

Sponsored by

Convenor



IOCS Meeting Coordinator

The IOCCG Committee

The IOCCG committee consists of:

- sponsoring agency representatives
- scientists from the ocean colour community that serve 3-year terms
- a chair on a 3-year term (may extend to max 5 years) + 1 term as Past-Chair

IOCCG Project Coordinator

Dr. Venetia Stuart
1996-2022



Dr. Raisha Lovindeer
2022-Current



Chairs of the IOCCG Committee

Current chair



Dr. Shubha Sathyendranath
Plymouth Marine Lab, UK

Past chairs



Dr. Cara Wilson
2017-2022



Dr. Stewart Bernard
2014-2017



Dr. David Antoine
2010-2014



Dr. Jim Yoder
2006-2009



Dr. Trevor Platt
1996-2006

The IOCCG Committee

consists of:

- 27 members from the ocean colour community from 25 agencies and universities around the world: Argentina, Australia, Brazil, Canada, China, India, Japan, South Korea, USA, UK, France, Germany, Italy, and all EU Member States

meets annually

- Find minutes of past meetings at *ioccg.org/what-we-do/committee-meetings*

28th IOCCG Committee Meeting, 2024 hosted by CONAE, Córdoba Argentina →

Next meeting in Japan, hosted by JAXA, in May 2026





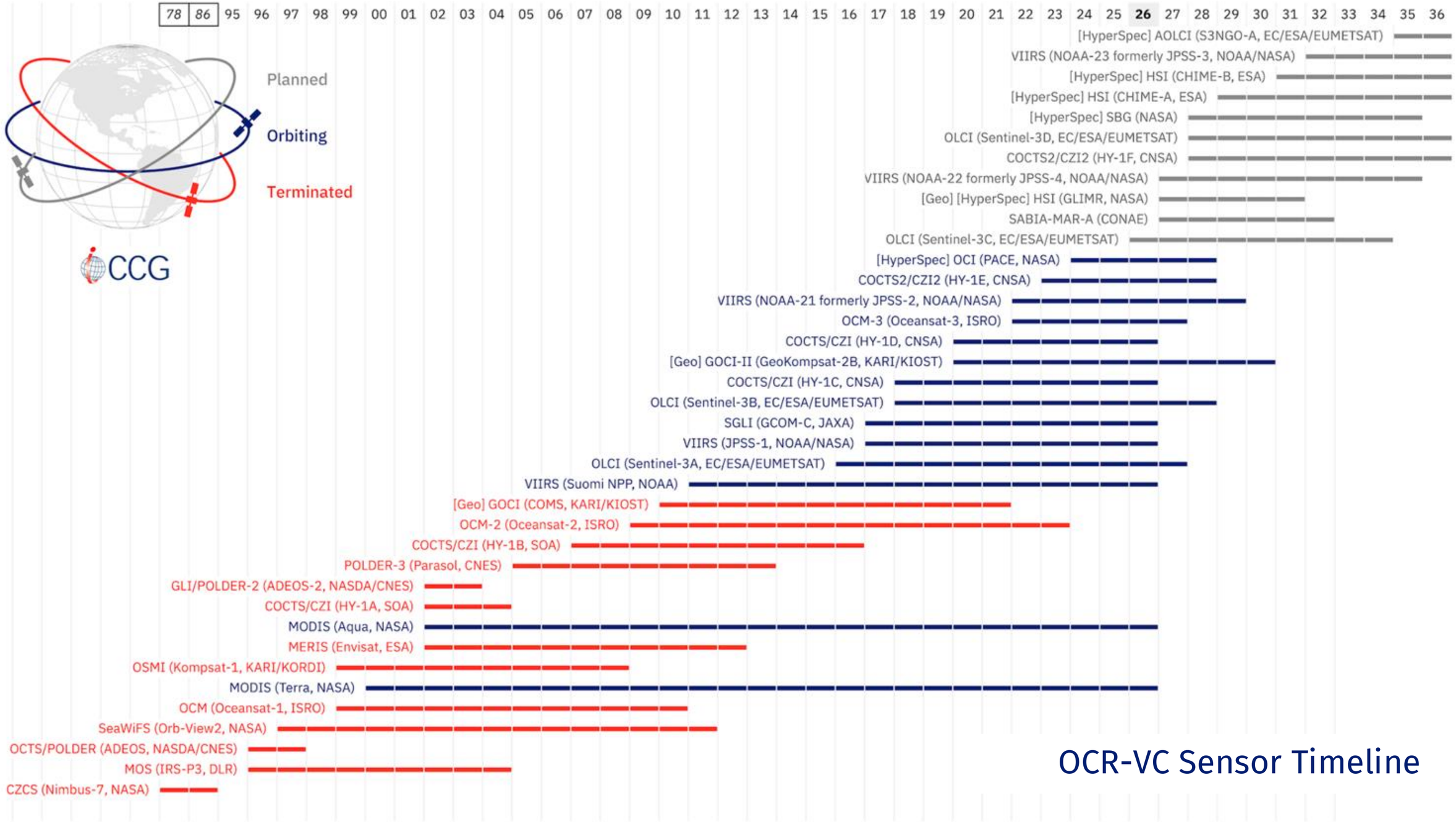
CEOS Ocean Colour Radiometry Virtual Constellation (OCR-VC)

Activities of the OCR-VC

- Developed *International Network for Sensor Inter-comparison and Uncertainty assessment for Ocean Colour Radiometry* (INSITU-OCR) white paper *(ioccg.org/wp-content/uploads/2016/02/INSITU-OCR-white-paper.pdf)*
- Established the OCR Implementation Team (OCR-IT) to prepare a rolling implementation plan encompassing CEOS deliverables
- Contributes themes to current UN Decade of Ocean Science
- Provides support to Group on Earth Observation (GEO) Blue Planet initiatives

Implementation Plan includes:

- ESA FRM4SOC *(frm4soc.org/)* and EUMETSAT FRM4SOC-2 *(frm4soc2.eumetsat.int/)* projects
- IOCCG Task Force activities
- IOCCG Scientific Reports
- IOCCG Ocean Optics and Biogeochemistry Protocols
- CEOS COVERAGE initiative *(coverage.ceos.org)*



OCR-VC Sensor Timeline

Aquatic Carbon Roadmap

- To improved understanding of what controls the trends and variability in the ocean carbon sink, and better align model carbon estimates with observation-based data
- A deliverable to CEOS led by the OCR-VC
- To include contributions from
  - Members across all aquatic environments (in-land, coastal and oceanic waters)
  - IOCCG Task Force on Aquatic Carbon from Space
  - IOCCG Working Group on Ocean Primary Production



GEO Blue Planet Collaboration on Aquaculture & Fisheries

History & Timeline

- July 2007, request from GEO to assimilate satellite Earth Observation (EO) into fisheries research and ecosystem-based fisheries management.
- Development of SAFARI Programme, quickly accepted by GEO as a way forward.
- International coordination and Canadian activities funded for three ears by Canadian Space Agency, November 2007 and extended for another three years in 2010.
- Activities were executed jointly with IOCCG
- GEO Blue Planet WG on Fisheries: WS in London, 21-22 April
- Regional meeting of WG in India, Kochi, Nov. 2026

Early products of the collaboration →



Current Opportunities

- Current IOCCG Chair is a member of GEO Blue Planet Fisheries working group
  geoblueplanet.org/fisheries/
- IOCCG involvement in planning of 3rd SAFARI Symposium: **TREVOR–SAFARI Symposium 2026,** 4-6 November 2026, at ICAR-CMFRI, hosted by CUSAT, Kochi, India.
  - Preceded by Training Course: *Observing Marine Ecosystem Structure and Function: From Microbial Communities to Fisheries and Human Health (27 Oct - 3 Nov 2026)* at INCOIS, Hyderabad, India and field work in Vembanad Lake, organised by CUSAT, Kochi, India



Task Forces

Semi-Permanent Task Forces

- address issues that require ongoing capabilities or expertise
- help to facilitate interagency collaboration on an ongoing basis
- remain until the need they serve no longer exists
- progress is reviewed annually at the IOCCG Committee meeting

Current IOCCG Task Forces

- **Ocean Colour Satellite Sensor Calibration**
  ioccg.org/group/calib-tf
  to create a framework for active and hands-on collaboration among instrument calibration and characterization experts
- **Remote Sensing of Marine Litter & Debris**
  ioccg.org/group/marine-litter-debris
  to improve our ability to monitor floating plastic debris from space
- **Ocean Colour System Vicarious Calibration (OC-SVC)**
  ioccg.org/group/vicarious-adjustment (ocsvc-tf)
  to coordinate SVC infrastructure development and maintenance
- **Ocean Carbon from Space**
  ioccg.org/group/ocean-carbon-tf
  to provide expert guidance on how to correctly exploit satellite observations in relation to ocean carbon
- **Hyperspectral Ocean Colour Radiometry**
  ioccg.org/group/hyperspectral-tf
  to define key advantages of hyperspectral ocean colour radiometry and the science it enables
- **Harmonizing Global OC for Long-Term Climate and Ecosystem Monitoring**
  ioccg.org/group/ltts
  to explore and facilitate the development of a reliable, blended, and long-term ocean colour time series product

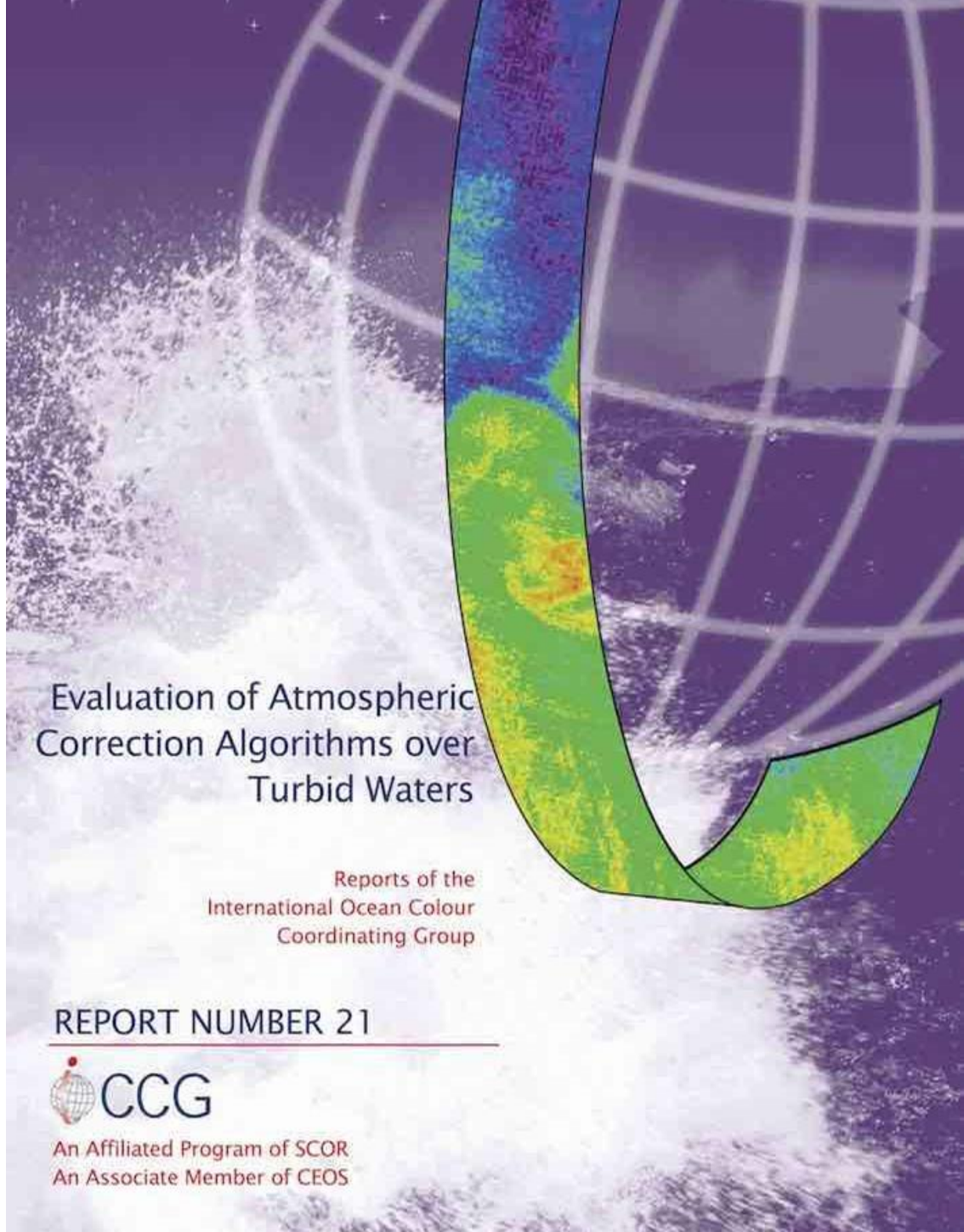


Scientific Working Groups and Reports

Scientific working groups

- Investigate aspects of ocean colour science, technology and its applications
- Contribute to CEOS deliverables
- Publish their findings in peer-reviewed scientific reports
- Progress is reviewed annually at the IOCCG Committee meeting

Latest in the IOCCG Report Series →



IOCCG Scientific Report Series

1. Minimum Requirements for an Operational Ocean-Colour Sensor (1998)
2. Status and Plans for Satellite Ocean-Colour Missions (1999)
3. Remote Sensing of Ocean Colour in Coastal and Other Waters (2000)
4. Ocean-Colour, Level-3, Binned Data Products (2004)
5. Remote Sensing of IOPs: Fundamentals and Algorithms (2006)
6. Ocean-Colour Data Merging (2007)
7. Why Ocean Colour? The Societal Benefits of Ocean-Colour Technology (2008)
8. Remote Sensing in Fisheries and Aquaculture (2009)
9. Partition of the Ocean into Ecological Provinces (2009)
10. Atmospheric Correction (2010)
11. Bio-Optical Sensors on Argo Floats (2011)
12. Ocean-Colour Observations from a Geostationary Orbit (2012)
13. Mission Requirements for Future Ocean-Colour Sensors (2012)
14. In-flight Calibration of Satellite Ocean-Colour Sensors (2013)
15. Phytoplankton Functional Types from Space (2014)
16. Ocean Colour Remote Sensing in Polar Seas (2015)
17. Earth Observations in Support of Global Water Quality Monitoring (2018)
18. Uncertainties in Ocean Colour Remote Sensing (2019)
19. Synergy between Ocean Colour and Biogeochemical/Ecosystem Models (2020)
20. Observation of Harmful Algal Blooms with Ocean Colour Radiometry (2021)

(series editor: Dr. Venetia Stuart)

IOCCG Scientific Report Series

21. Evaluation of Atmospheric Correction Algorithms over Turbid Waters (2025)
22. A Scientific Roadmap of Aquatic Hyperspectral Remote Sensing: Overview of Status, Challenges and Future Perspectives (Pending)

(series editor: Dr. Raisha Lovindeer)

Current IOCCG Working Groups

- **Conducting benthic reflectance measurements**
  ioccg.org/group/benthic
  established 2020 → draft report in revision
- **Ocean primary production from space**
  ioccg.org/group/oceanpp
  established 2023
- **Classification of optical water types in aquatic radiometry**
  ioccg.org/group/owt
  established 2023
- **Lidar for ocean applications**
  ioccg.org/group/lidar/
  established 2025

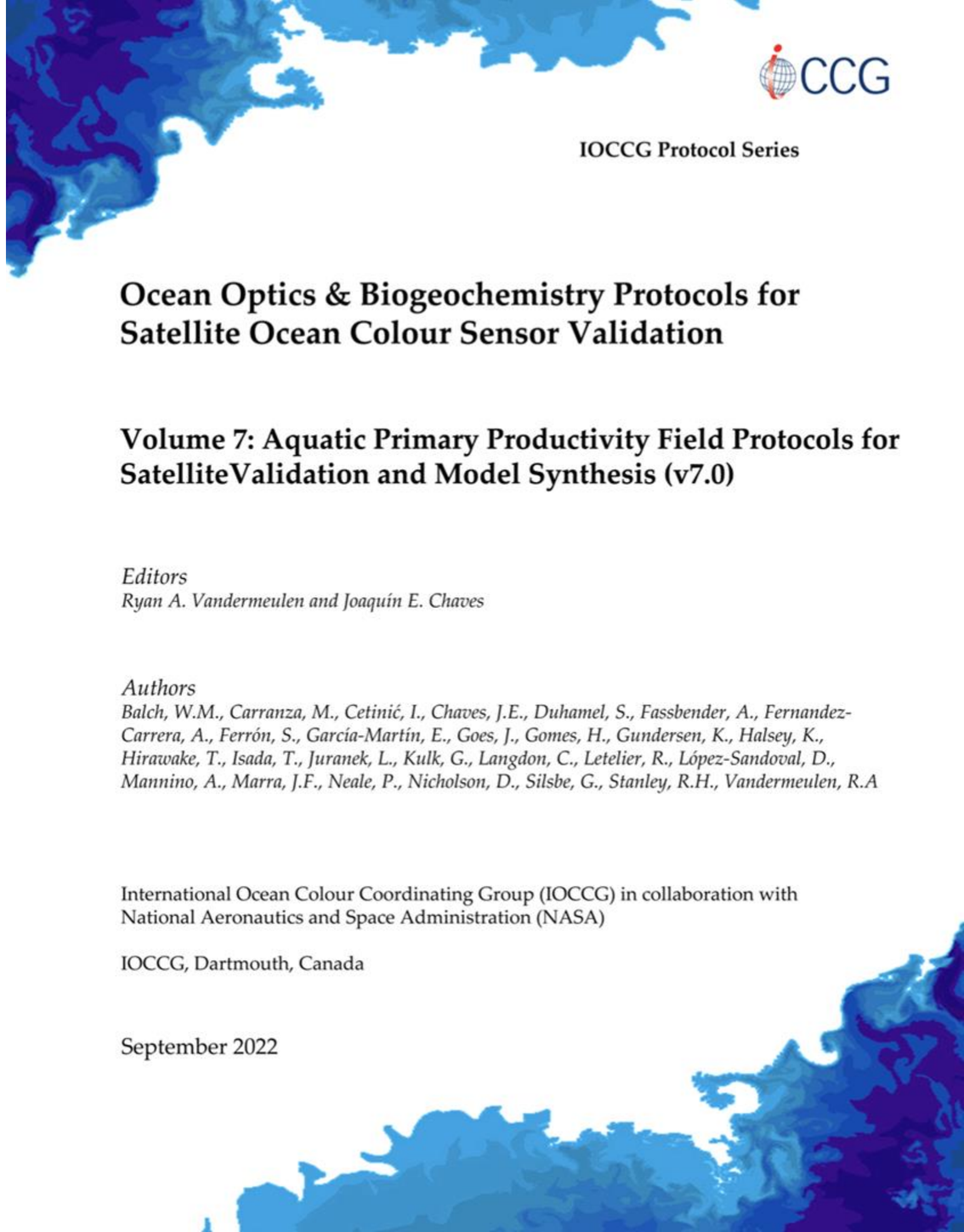


Ocean Optics & Biogeochemistry Protocol Series

Ocean Optics & Biogeochemistry Protocol Series

- Community consensus protocols for ocean colour sensor validation.
- Vetted by the ocean colour community during a 60-day review period.
- Available on the IOCCG website & OBP Repository.
- Initially formed through workshops and working groups sponsored by NASA.
- Now developed by specialized working groups also supported by IOCCG.

Latest in the IOCCG Protocol Series →



Ocean Optics & Biogeochemistry Protocol Series

1. Inherent Optical Property Measurements and Protocols: Absorption Coefficient (2018)
2. Beam Transmission and Attenuation Coefficients: Instruments, Characterization, Field Measurements and Data Analysis Protocols (2019)
3. Protocols for Satellite Ocean Colour Data Validation: In Situ Optical Radiometry (2019) **Addendum (June 2024)**
4. Inherent Optical Property Measurements and Protocols: Best Practices for the Collection and Processing of Ship-Based Underway Flow-Through Optical Data (2019)
5. Measurement Protocol of Absorption by Chromophoric Dissolved Organic Matter (CDOM) and Other Dissolved Materials (in revision)
6. Particulate Organic Matter Sampling and Measurement Protocols: Consensus Towards Future Ocean Color Missions (2021)
7. Aquatic Primary Productivity Field Protocols for Satellite Validation and Model Synthesis (2022)
8. **Dissolved Organic Matter Sampling and Measurement Protocols: Consensus Towards Future Ocean Color Missions (in revision)**

Other Protocol Documents linked from the IOCCG website

1. GLaSS (Global Lakes Sentinel Services) Dedicated protocols for optical measurements & satellite validation for inland waters
2. Protocols for Fiducial Reference Measurements of Water-Leaving Radiance for Validation of Satellite Remote Sensing Data
3. Protocols for Fiducial Reference Measurements of Downwelling Irradiance for the Validation of Satellite Remote Sensing Data



Capacity Building and Community Engagement

Multi-Sensor Ocean Colour Course

December 2025, hosted by EUMETSAT in Darmstadt, Germany

- The first Multi-Sensor Ocean Colour (MSOC) Course was hosted by EUMETSAT at EUMETSAT Headquarters in Darmstadt, Germany with support from NASA, ESA and IOCCG.
- The course following the 2025 International Ocean Colour Science meeting. All meeting material will be available on the EUMETSAT website at *classroom.eumetsat.int* & IOCCG

  ioccg.org/what-we-do/training-and-education/lectures

Location of MSOC 2025 →





First Multi-Sensor Ocean Colour Course, EUMETSAT, December 2025

© EUMETSAT, 2025. IOCCG Multi-Sensor Ocean Colour (MSOC) training course

IOCCG Summer Lecture Series

July 2026, hosted by CNR-ISMAR in partnership with Venice International University (VIU), Italy

- Biennial 2-week advanced training course on the fundamentals of ocean optics, bio-optics and ocean colour remote sensing to help produce future leaders in the field.
- Applications open in early 2026
- Course material made available on the IOCCG website after the courses along with a host of ocean colour resources

  ioccg.org/what-we-do/training-and-education/ioccg-sls

Location of the 2026 SLS →





Last IOCCG Summer Lecture Series, hosted by INCOIS, November 2024

IOCCG Platt Scholarship

USD $5000 awarded to a student / scholar from a developing country to conduct hands-on research or receive in-depth training in ocean colour at a foreign institution for up to 3 months.

Application window:

12 August - 12 November each year

ioccg.org/what-we-do/training-and-education/platt-scholarship

Our 2026 awardee →



B Goutami
XIM University, India

Proposed research: Satellite-Based Assessment of Phytoplankton Phenology as an Indicator of Ecosystem Resilience in Coastal and Estuarine Environments with Gemma Kulk at Plymouth Marine Lab (PML), UK

International Ocean Colour Science Meeting



- First meeting in 2013, biennial event
- Builds, represents, and reinforces global ocean colour community voice
- Promotes international links among ocean & Earth science communities
- Provides forum for discussion on key research and technology
- Facilitates broader engagement of the ocean colour community in IOCCG activities
- Generates community recommendations to advance ocean colour science and applications

iocs.ioccg.org/iocs-recommendtions



Last IOCS (2025) in Darmstadt, Germany

International Ocean Colour Science Meeting 2025

Advancing Global Ocean Colour Observations

Darmstadt, Germany
1-4 December 2025

CCG International Ocean Colour Coordinating Group

HOSTED BY EUMETSAT esa

WITH SUPPORT OF PROGRAMME OF THE EUROPEAN UNION Copernicus

- 1 - 4 December 2025, Darmstadt, Germany.
- Theme: *Ocean Colour: serving Earth system science & our society.*
- Hosted by ESA & EUMETSAT.
- Associated trainings held on 5 December 2025
- Complementary *Multi-sensor satellite ocean colour* course held on 7 - 11 December 2025.

iocs.ioccg.org

The 2025 venue →



Communication Channels

Quarterly news bulletins
ioccg.org/news

- News from IOCCG, sponsoring agencies, and the community
- Upcoming events
- Released Feb, May, Aug, & Nov annually

Our mailing list
ioccg.org/news/subscribe-ioccg-mailing-list

- Official communications from the IOCCG Project Office
- Community announcements

Our websites
ioccg.org

- Training & education resources
- Committee meeting minutes
- IOCCG scientific reports, protocols, & task force white papers
- Employment and funding opportunities
- Ocean colour bibliography

iocs.ioccg.org

- Community recommendations for advancing ocean colour science
- Past IOCS meeting proceedings, presentations, and documents



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Other ways to stay in touch
ioccg.org/news/subscribe-ioccg-mailing-list

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