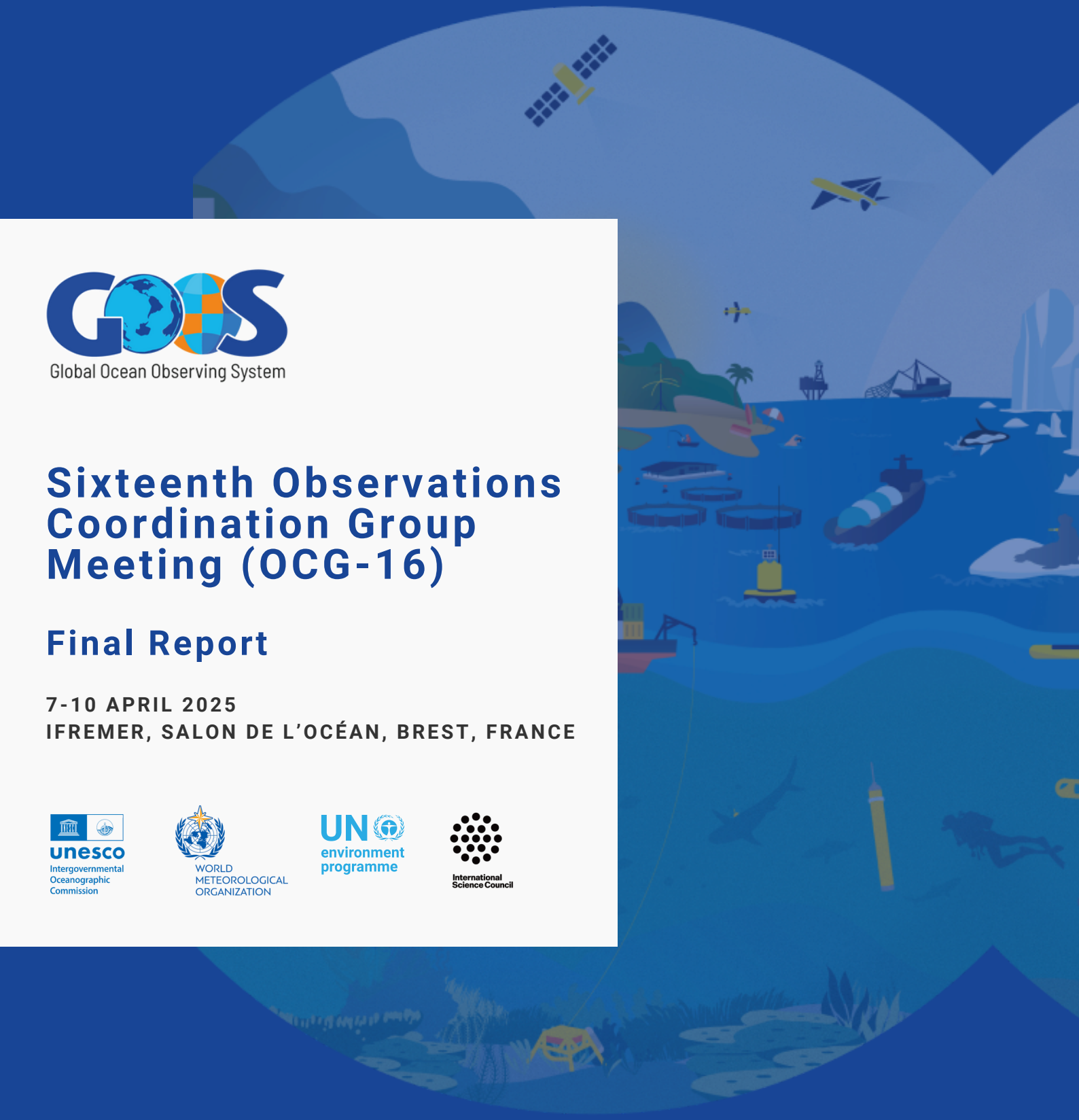
MEETING REPORT



Global Ocean Observing System

Sixteenth Observations Coordination Group Meeting (OCG-16)

Final Report

7-10 APRIL 2025
IFREMER, SALON DE L'OCÉAN, BREST, FRANCE

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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

Sixteenth Meeting of the GOOS Observations Coordination Group (OCG-16)

07 -10 April 2025

Hosted by IFREMER, Salon de l'Océan, Brest, France

GOOS Report No.: GOOS-308

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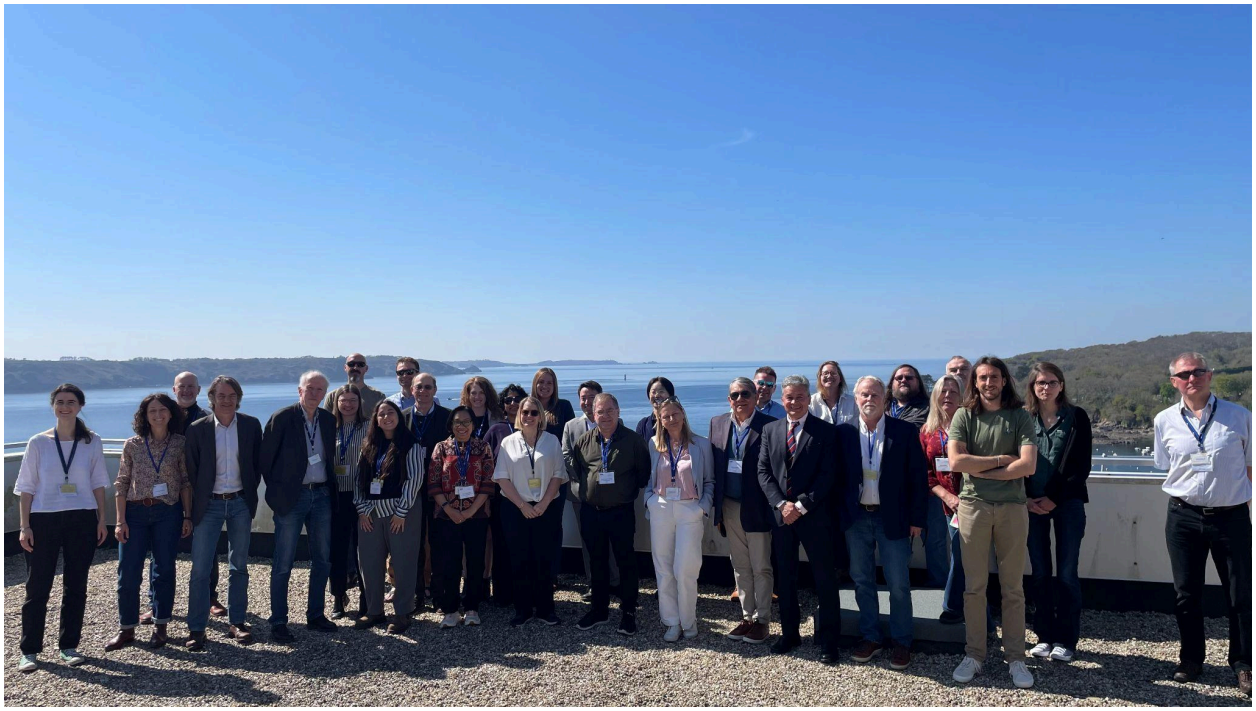
Sixteenth Meeting of the Observations Coordination Group Executive Summary



The Sixteenth meeting of the GOOS Observations Coordination Group (OCG-16) was held in April/May 2025 at IFREMER in Best. With kind thanks to our hosts, IFREMER and OceanOPS, who added to our meeting with impeccable support. IFREMER is the host of OceanOPS, Coriolis and a strong supporter and innovator for ocean observing.

Sixteen is synonymous with coming of age and this could also be said of the GOOS Observations Coordination Group (OCG). The OCG is now larger and more diverse with the addition of new 'emerging' networks, the SUN Fleet joined as an 'emerging' network, and the 13 mature GOOS ocean observing networks. OCG-16 will also be noted for the GOOS networks, advancing the standards around what it means to be an operationally mature GOOS network, with progress on agreed minimum metadata standards, data strategy, Service Level Agreements with OceanOPS, and on defining the features of emerging and mature status for networks to reach, which to adds greater precision to the earlier defined OCG Network Attributes (see Successes and Highlights, below).

The meeting highlighted the growing evidence of the impacts of ocean observations on weather, climate and ocean prediction, with multiple lines of evidence from seasonal and shorter term weather forecasting, tropical cyclone forecasting, ENSO prediction, fuel savings via optimal weather/ship routing from ocean prediction, and forecasting of ocean conditions that affect, for example, fisheries. A concrete effort to compile and communicate on these examples was highlighted for future action, to support the sustained financing of these critical observing networks (see below).

The OCG looked into the future and identified new areas that will require work as the Global Ocean Observing System evolves (see Looking to the Future, below). These new action areas are truly cross-network and oriented towards an integrated, transparent and operational system, supporting the maturing of global ocean observing as an integrated system.

Successes and Highlights:

The SUN Fleet was adopted as an emerging GOOS network under the OCG. This Surface UNcrewed Fleet (SUN Fleet), is able to monitor numerous GOOS Essential Ocean Variables and measure important air-sea exchanges in remote areas and under harsh conditions (news). This grows the unique set of global networks that are coordinated under the OCG to 17: 13 mature networks and 4 emerging networks. It also deepens the links with industry as the SUN Fleet and other emerging networks have strong partners in the private sector. The 13 mature, and 3 emerging networks endorsed at OCG-15, had all made progress (see Network Reports and Session 6).

A framework for the Service Level Agreements (SLAs), between OceanOPS and the GOOS networks, was adopted. This is a big step forward in defining the baseline services that OceanOPS provide, funded through WMO and GOOS resources, and the specific services that are needed by networks for their management, which are supported through specific national contributions. This also supports the transparency and stability of OceanOPS structure and support networks, and gives a clear rationale for fundraising for OceanOPS vital services. OceanOPS also reported on key successes against its Strategic Plan 2021 - 2025 (Session 8), and the OCG congratulated the OceanOPS team! However, significant challenges remain and work on defining the next OceanOPS Strategic Plan 2026 - 2030 will consider the long term funding outlook. This work will start in September 2025.

Data was a key topic at OCG-16 with several key items discussed in session 7. The IOC Data Architecture concept was highlighted as an important step forward for future data access and services. However, the additional support needed to truly implement a

robust and open global federated system needs to be clearly identified. In addition, a Metadata Passport concept was outlined - this identifies the minimum set of metadata required to gain a unique ID (WIGOS identifier) and to enable tracking of data delivery across the system. As work on the IOC Data Architecture develops, this Metadata Passport may develop to include user-focused metadata to ensure appropriate discovery, use and attribution. It was noted that many networks may need additional support to undertake the data advances required under the evolving Data Architecture, including implementing Global Data Assembly Centres for all GOOS networks.

A successful IOCARIBE GOOS Workshop (Session 9) was held during the OCG-16 meeting, and IOCARIBE representatives joined the OCG enabling many opportunities for exchange between this developing GOOS Regional Alliance and the GOOS mature and emerging networks. This was a great aid to IOCARIBE GOOS in setting their plans and provided many ideas for future collaboration in the region.

Finally, a new initiative to dramatically expand the number of commercial vessels involved in supporting the taking of ocean observations under GOOS (SOT networks and others) was discussed - this became the WMO/IOC 10 000 Ships initiative as launched at UNOC3 in June 2025.

Looking to the future:

The evolving nature of the Global Ocean Observing System and its operational landscape were considered, and key areas for OCG cross-network activity were identified:

1. OCG expansion: The success of the OCG in expanding the number of networks that contribute to the global ocean observing system was noted. However, this is now bringing challenges of scale. The OCG Executive was asked to consider how to best manage the growing number of emerging networks, the impact on the OCG's work, the impact on the support structure (OceanOPS, secretariat), and how work is prioritised to ensure a cohesive and integrated system.

2. Cross-network System design: This was noted across the meeting as an area that the networks would like to collectively engage and work on, perhaps taking the work under the WMO Rolling Review of Requirements (RRR) or the Co-Design Programme as a starting point, and considering the complementarity and reliance between networks across the system. It was also recognised that the development of new AI powered

services will increase the need for ocean observational data and OCG should ensure we consider and demonstrate the value of these advances.

3. Use cases and value of ocean observing: A need for OCG to consider valuing the observing system through demonstrating the advances in services and predictions that ocean data provide was highlighted as an important to consider for the future, developing ideas towards a method for providing insight into system benefits and cost. A concrete effort to compile use cases and communicate on these was highlighted for future action.

4. Annual connection with modeling community: Interaction with seasonal and coastal modelling managers identified interest from both OCG observing and modelling/service managers in having more regular meetings.

5. Interaction with private sector: The interaction of networks, including the emerging networks, with the private sector came up at several points in the discussions, and the need to develop cross network ideas towards a process to set the 'bar' for sensor/equipment manufacturers was raised as vital for the commercial viability of sensors and increasingly important for the networks, as well as how achieving such a benchmark could be evaluated.

Summary of key decisions:

OCG approved the OceanOPS Service Level Agreements (SLA) framework (2025).

OCG approved the OceanOPS WorkPlan for 2025-2026, considering the points noted during the session.

OCG welcomed the SUN Fleet as an OCG emerging network, with the following recommendations:

- report annually on progress towards meeting the OCG network attributes
- ensure that its operators adopt the up to date BUFR template (from WMO)
- finalise its network governance structure and report back to OCG-17
- connect with OceanOPS for SLA discussion

OCG to consider using the outcomes of the WMO Rolling Review of Requirements (RRR) for initial assessment of requirements vs EOV coverage (see forward looking topics - session 10) as the WMO RRR Statements of Guidance become complete.

OCG Executive Team to consider how OCG effectively manages the growing number

of emerging networks and prioritises support to ensure a cohesive and integrated system.

OceanOPS to provide a plan for refreshing the OceanOPS 5 Years Strategy to the OCG, WMO, and IOC, and request feedback, aiming to start in September 2025.

OCG Data Task Team to:

- identify the work required across the networks for the OCG Data Implementation Strategy and the IOC Data Architecture (including Global Data Assembly Centres (GDACs), metadata, machine-to-machine (m2m) data and metadata flow).
- develop an uncertainty framework for OCG data/metadata, then discuss with the OCG at a Roundtable

OCG Executive Team to consider forward-looking topics (see below) and suggest lines of action for long term goals, considering the OCG ToRs. It should aim that actions towards these long term goals be identified by the end of 2025 and in place by OCG-17. The following forward looking topics were identified:

- RRR - GBON - cross platform planning
- Uncertainty / precision in observations
- OCG Data Strategy/IOC Data Architecture support and develop
- Testing new technology/links with private sector
- Value, risk, and resourcing of the observing system

OCG-16 Meeting Report

Outline:
The meeting was held daily (7th of April - 10 of April, 2025) in Brest, France and hosted by the IFREMER with a virtual option for participation.

Updates from the intersessional work were discussed and new objectives set, plus new areas for work identified for inclusion in the OCG workplan. All up to date materials can be found on the event web page - **here** and each substantive agenda item below captures a short summary and the main points of discussion.

Note that this is an interactive document with links to presentations, and background and working documents. Click the blue underlined hyperlinks to reach those resources. The Report covers the presentations, discussions and follows the OCG-16 Meeting Agenda (here), the action arising from these discussions are noted in the text and compiled in the action table.

The Observations Coordination Group hosted one additional engagement - an IOCARIBE GOOS Workshop (Session 9) - on Wednesday 09 April as a part of the OCG-16 meeting agenda. This session was an opportunity for the GOOS mature and emerging networks to discuss, advise and exchange ideas on regional implementation in the Caribbean and Latin Americas with representatives from IOCARIBE GOOS, a GOOS Regional Alliance.

Objectives

- Identify actions and major lines of work for OCG 2025-2027, with resource required
- OceanOPS Work Plan, SLA framework & planning for new strategy to 2030
- Assess development of emerging networks
- Identify the data and metadata work towards the IOC Data Architecture and WIS2
- Assist IOCARIBE in planning for a regional ocean observing system. Using the Caribbean as a test case to look at the connection between GOOS OCG networks and GOOS Regional Associations - how do we respond, are the right connections there to address regional identified priorities, Sargassum, Tropical Cyclones, etc.

- Develop the framework for assessing network maturity, health, health and risk, and agree the OCG network/subnetwork list

1. Welcome

(Introductive slides)

Emma Heslop (IOC/GOOS) welcomed everyone and introduced the Observations Coordination Group and the aims of the meeting. Jean-Marc Daniel, CEO of IFREMER, expressed his pleasure in hosting the meeting in Brest. He highlighted the importance of ocean observation and the need for international collaboration. Joanna Post, GOOS Director, welcomed everyone and discussed the challenges and opportunities in building a global ocean observing system. Mathieu Belbeoch, OceanOPS Manager, welcomed everyone, introduced OceanOPS and thanked the OCG and OceanOPS team for their hard work in organizing the meeting.

2. GOOS & WMO update

2.1 GOOS & WMO Updates - Emma Heslop & Albert Fischer
(Presentation link - GOOS, Presentation link - WMO)

Discussion: Emma Heslop presented updates from GOOS and the need to continue to give visibility to the observing system as a critical infrastructure. She also presented the key outcomes of the Fourteen GOOS Steering Committee, mentioning GOOS reform and communications, and highlighted upcoming important events for GOOS, including the IOC Assembly and UNOC 3 in June. Participants emphasized the need to engage policymakers and to develop studies on socio-economic benefits and enhanced forecasting to support political advocacy.

Albert Fischer presented updates from WMO, emphasizing the crucial need for *in situ* ocean observations to improve weather and climate forecasts. He also highlighted the creation of the Global Basic Observing Network in 2021, as part of the WMO Integrated Global Observing System (WIGOS), fundamental to standardizing and improving the availability of data at the international scale.

Proposed action/decision

- OCG asked GOOS to consider how to more effectively demonstrate the socioeconomic impact of improved ocean prediction, which is fed by the observations, to secure funding and support from policy makers
- Will be invited by WMO to provide input to the WIGOS 2040 vision

3. Longer term goals, objectives and expected key results

(Session was held on afternoon of Day 2 (Tuesday) to accommodate changing schedules)

(Presentation link)

Discussion: First part of 2 sessions to look at long term goals for the OCG. What role should the OCG play in the global ocean observing system in 2035, what will the mix of networks look like, what are the key lines of work, what role does OceanOPS play.

David Legler highlighted some environment changes such as the increasing demand for ocean knowledge and data, as well as the increasingly digital environment. He emphasised the need for characterizing the role of observing systems in the value chain and for a robust system for resilience and risk. The importance of collaborating with the private sector, embracing innovation and the role of new technologies in shaping the future of OCG was also noted. David Legler outlined the topics for Session 10, including the goals for 2030 and beyond, the role of OCG in cross-network design planning, and the integration of new observing networks.

4. Requirements implementation

4.1 WMO Rolling Review of Requirements, Co-Design process - towards an ocean GBON - Champika Gallage, Emma Heslop & Ann Cristine Zinkann *(Presentation link)*

Discussion: Emma Heslop provided an update on the Rolling Review of Requirements (RRR), which now includes new areas such as ocean and ice. She emphasized that the inclusion of application areas in the RRR has allowed for the identification of key gaps and critical domains of application. She outlined the next steps for the RRR, including the upcoming distribution of the Statements of Guidance to network leads in the coming weeks, as well as the release of the Statements of Guidance for Ocean, Atmosphere, and Cryosphere in June. Ann presented the relationship between RRR and Co-Design Program, noting that while Co-Design is similar to RRR, it focuses more on the societal impact area and development of pilot regions and processes for implementation. Connections between Networks and the RRR community are critical, focusing on how and when networks should be involved in consultations.

One topic raised was the need to ensure co-design pilots inform WMO RRR. Several mechanisms are being developed to ensure that exemplar projects (‘exemplars’) and the programme develops recommendations and processes to ensure alignment

including project outlines, best practices, multi national representation. The WMO RRR is based on requirements from existing services, and within the Oceans Application area, boundary currents have been identified as a clear gap, therefore this exemplar is vital to inform the RRR in a second iteration. A clear connection needs to be developed between the exemplar areas that develop observational requirements and the RRR to ensure cross pollination of findings and drive global implementation to improve services.

The Boundary Current exemplar has hosted a workshop to identify basic processes that need to be resolved within these systems to better inform weather, extreme events. The workshop also discussed Boundary Current systems in general, to understand what observations are needed globally vs. which ones are needed regionally, as well as understanding the value of the observations for regional stakeholders regionally and establishing regional support for the process.

In thinking practically about requirements implementation, the approach was questioned with regards to global open ocean requirements vs regional requirements. Some of these discussions will come up in the Joint WMO-IOC Collaborative Board (JCB) Subgroup on ‘Global Basic Observing System’ this is looking at te WMO GBON ‘system; and considering what this means for the ocean - including open ocean beyond national jurisdiction, as our weather and ocean models rely on open ocean observing in order to deliver any services for coastal zones. GOOS and IOC Member States need to ensure clear identification of global and regional priorities. Global requirements will not fully meet regional needs and will need to be supplemented according to identified regional priorities and plans. This is an effort where GOOS can lead these dialogues with Member States.

The JCB GBON Sub-group was asked to consider the mechanisms for implementation of requirements within GBON both on areas under national jurisdiction and the open ocean. Observations in the open ocean are the responsibility of no specific member state while under the current WMO GBON, only requirements in areas of national jurisdiction are considered and are subject to implementation by the member states. This is an area where the JCB GBON Sub-group with representation from IOC and WMO experts can discuss and develop suggestions to achieve an ocean GBON and explore potential alignment with already existing mechanisms with the satellite community.

Timeliness of the RRR recommendations were discussed as being partially missing from the RRR and Statements of Guidance. however behind the Statements of Guidance (top level gaps and recommendations) is the OSCAR database that houses

all the requirements by application area and includes coverage, temporal/spatial, timeliness, precision, etc.. It was also noted that timeliness (real time) can be addressed by the modeling community, although collective understanding through processes like the RRR are more robust. A proposition discussed was whether GOOS could act as a sort of 'enforcement agency', for this to become reality GOOS mandates have to clearly state this to be a core function. OceanOPS however could be a key entity to create awareness of compliance with a GBON or set of agreed requirements, creating ''awareness'' rather than "enforcement".

4.2 BioEco Panel - update from OCG-15 actions (AniBOS), BioEco Panel Meeting, Biodiversity Plans, relevance and interaction with OCG Networks (*Presentation link*)

Discussions: Ana Lara Lopez provided updates on the BioEco panel. She highlighted the work done by the BioEco panel on updating the EOV (Essential Ocean Variables) specification sheet. In addition, the panel is working on data flows and metadata, as part of a workshop organised by OBIS, responsible for managing the data. They are also involved in assessing the maturity level of BioEco networks. Ana also highlighted the need for partnership with networks to get biological data flowing into OBIS, including AniBOS, GO-SHIP and OceanGliders. She finally requested input from OCG on the GOOS Biodiversity plan and called for joint efforts to develop minimum metadata standards to ensure consistency across data sources.

Proposed action/decision

- Share RRR Statement of Guidance with the Global Networks
- Global Networks to review and comment on the Statements of Guidance
- OCG to invite BioEco Panel representatives to collaborate/cooperate on mature/emerging definitions
- OCG to invite BioEco Panel representatives to collaborate/cooperate and on minimum metadata passport linked to Data TT Session 7
- Identify other OCG networks that will participate with BIO/ECO

5. OCG Update

5.1 OCG Updates since OCG-15 - David Legler

(Presentation link)

Discussions: David Legler provided a brief overview of recent accomplishments and a call for action for the next intersessional period to continue to push for change and implementation of the OCG strategy. OCG has continued its central role in developing an impactful ocean observing system through the advancement of OCG Networks, focusing over the past year on the implementation of improved data and metadata flows. OCG welcomed 4 emerging networks (FVON, SOCONET, SmartCables, USV), OceanOPS underwent significant restructuring and a new OCG chair is being onboarded amongst many other accomplishments (*see presentation for details*).

Major challenges that were raised included the erosion of resourcing for ocean observations, the need for better integrating across activities and push for action, and the increasing need to manage risk. David emphasized that OCG needs to take a leading role in improving ocean observing frameworks around EOVs and driving requirements, creating an integrated data infrastructure, and moving towards identifying actions with the private sector to advance initiatives.

The discussion highlighted the need for OCG to ensure that clear actions are determined that focus on network needs, ensure that common needs/risks/opportunities are acted upon across all networks and OCG to take a leadership role in facilitating cross network coordination discussions (e.g., ship time, EOV implementation, etc).

Proposed action/decision

- Evaluate the OCG's capacity to manage the growing number of emerging networks, and explore strategies to prioritize and support them effectively.
- Explore how the OCG can best improve its data architecture by engaging with other relevant initiatives and providing a more consistent framework across networks.
- Assess how the OCG can assist in strengthening the framework for ocean observing, particularly around EOVs and statements of guidance.
- Determine the OCG's role in guiding and assessing the opportunities presented by the private sector, including new technologies and data sources.

6. Network Posters - All networks

Network's posters had been displayed outside of the meeting room so that people had time to look and discuss in this session. People online could participate through a Miro Board. There was also a poster on the work of the Maturity and Metrics TT on definitions for maturity/emerging network status and work towards a network 'health index'.

Posters

AniBOS	FVON	HF Radar	SMARTCables
Argo	GLOSS	OceanSITES	SOCONET
DBCP	GO-SHIP	OceanGliders	USV
VOS			

Proposed action/decision

- OCG Exec to work on OCG future initiatives to present to networks on an OCG Roundtable and to GOOS SC (see session 10 action).
- Assess and integrate the comments on metrics and maturity from OCG-16, and deliver definitions back to OCG networks for comment via email, and suggest for adoption at a future OCG Roundtable in 2025, to finalise by the end of 2025. Think of including precision (see session 10), and see also action in session 5.
- Propose network health index for OCG-17.

6. Network issues & risk, and emerging networks

6.1 Summary across all network reports on opportunities/issues and look at in framework for risk assessment - Ann-Christine Zinkann, Jon Turton *(Presentation link)*

Discussion: The issues across network were discussed and the key points are synthesised below, which will form areas for new action, see session 10:

- GOOS should consider how to effectively demonstrate the socioeconomic impact of enhanced ocean predictions, which rely on observations, to secure funding

and gain support from policymakers. This could involve connecting the concept of multi-platform design with areas of societal need and improving communication on the impact for users. Clear and consistent messaging on this is vital for sustained funding, helping to show how GOOS contributes to key data products (such as GLOSS SL).

- The importance of cross-network design planning around application areas has been emphasized. This includes focusing on key applications, mapping key value chains and identifying requirements by EOV or by region.
- Regarding partnerships with the private sector, there is a need to establish a process for setting standards that manufacturers must meet, testing products within the network, and approving them as suitable suppliers. The need to strengthen partnerships with shipping companies has also been stressed.
- Consider developing risk management processes not only for appropriate management and prioritization of actions but communication of impacts.

6.2 USV progress on network attributes development and discussion on emerging network status - Ruth Patterson
(Presentation link)

Discussion: Ruth Patterson presented the progress of the USV Network since the last OCG meeting. She discussed the publication of the USV network paper, a major achievement for the network. Cooperation between scientists and manufacturers has been emphasized as critical to ensuring data usability and system development as the goal of the network is to strengthen the USV industry through science. She also highlighted the ability of USVs to collect simultaneous measurements of various EOVs. The need for standards and recommended practices for USVs has been mentioned. She finally discussed the challenges of IMO regulations and the importance of global representatives for each country.

6.3 Emerging networks: Brief updates from emerging networks SMARTCables, FVON, SOCONET on progress on network attributes development, issues and next steps - Bruce Howe *(SMARTCables)*, Cooper Van Vranken (*FVON*), Maciej Telszewski (*SOCONET*)

Discussions:
SmartCables

- Bruce Howe from SMARTCables presented updates from the emerging network. He highlighted the time constant of telecom systems at 25 years, providing

high-quality, reliable data. He also discussed several additional SMART cable systems that are in the early planning stages, including trans-Arctic, Atlantic, and Antarctic routes. He also mentioned the need for a Joint Task Force to federate individual cable systems and handle operational aspects.

- Additional support was requested from OCG and IOC to assist with pre-deployment coordination, legal support, and identification of funding opportunities—particularly through cross-sector infrastructure budgets. Bruce Howe also stressed the importance of recognizing subsea cables as critical infrastructure and leveraging recent public and political attention around cable protection to elevate ocean observing as a strategic priority.

FVON

- Cooper van Vranken provided an overview of the emerging network's recent progress and ongoing activities. Significant milestones achieved over the past year include the formalization of governance structures, the development of a strategic plan, and the launch of a dedicated website and branding. The network is also advancing toward centralized data access and pushing some data onto the GTS, with support from OceanOPS and other partners.
- He emphasised that, despite limited funding, FVON is positioning itself as a fisher-centric initiative, with strategic interests that span both oceanographic and fisheries science. He highlighted the collaboration with stakeholders such as FAO and the aim of increasing its relevance to policy and public awareness. He presented their key priorities which include improving metadata standards, developing unified data products that are accessible for new users (e.g., AI applications, weather forecasting), and linking its contributions to global strategies such as the Rolling Review of Requirements (RRR), GBON, and the UN Decade's new communications strategies.

SOCONET

- Maciej Telszewski from SOCONET presented updates from the emerging network, which was recognized as an emerging network by the Observations Coordination Group (OCG) 10 months ago. Significant progress has been made in formalizing the network's governance and operations, notably through the establishment of an interim steering committee and the successful securing of substantial funding to support activities over the next four years. He also highlighted the network's commitment to addressing temporal and geographic gaps in observational coverage by engaging additional vessel types and strengthening collaboration with underrepresented regions. He emphasised SOCONET's intention to strengthen collaboration with initiatives such as the

Global Greenhouse Gas Watch (GGGW). Continued support from the OCG was requested, particularly in areas related to data management, infrastructure coordination, and strategic engagement with global programs.

Background documents:

- USV paper
- SOCONET SC ToR

Extra - *"Towards a global wave drifter program to feed direct satellite/in-situ swell monitoring systems and operational sea state models"*- Dr Fabrice Collard, Ocean Data Lab Director.

DAY 2 - Tuesday 8 April 2025

4. Requirements continued

4.3 BGC Panel - Maciej Telszewski
(Presentation link)

Discussion: Maciej Telszewski provided an update on the work of the BioGeoChemistry Panel over the past year. He highlighted the submission of a paper aiming to fill the gap in ocean indicators for policy makers. The paper proposes translating ocean measurements into actionable indicators that can inform policies on ocean responses.

He also outlined the work of the panel to strengthen collaborations across networks, to optimize the use of observational data across different networks. The panel is also involved in discussions around optimizing observational designs to address geographical and temporal gaps in measurements, particularly in areas that are critical for carbon budget assessments.

7. Data strategy and its implementation

7.1 OCG Data Implementation Plan & Data Task Team updates - Kevin O'Brien
(Presentation link)

Discussion: Kevin O'Brien highlighted the progress of the OCG data implementation strategy and the importance of metadata flows. He mentioned the work of the task team to enhance the metadata flows between observing networks and the OceanOPS system, with the goal of supporting the global federation of oceanographic data.This includes defining the minimum metadata requirements for WIGOS identification,

ensuring data accessibility through standardized metadata pathways, and incorporating systems like ERDDAP for data harvesting. The team has been gathering feedback through surveys, focusing on specific network needs and metadata processes.

Furthermore, Kevin O'Brien stressed the need for the team to address issues including data resilience, licensing, and provenance to ensure that the data is accessible, properly credited, and usable across different platforms and stakeholders. He finally emphasised the continuous efforts that have been made to improve the efficiency and scalability of metadata integration into OceanOPS.

7.2 IOC Data Architecture concept and initial work - Emma Heslop *(Presentation link)*

Emma Heslop provided an overview of the IOC Data Architecture and its connection to the OCG work. The purpose of this initiative is the integration of ocean data systems to create a more efficient, accessible, and interconnected framework for ocean data. There is a critical need to adhere to FAIR principles (Findable, Accessible, Interoperable, and Reusable) and collaborate amongst panels and teams to achieve this goal. Both metadata and the Ocean Data Information System (ODIs) are important as they are the building blocks that will allow data to be shared and accessed through federated networks, ultimately enabling the creation of ocean data products that serve a wide range of users.

Next steps include the formalising of a working group to create a detailed implementation plan by June 2026.

Discussion: The robustness of the IOC data system, specifically its reliance on intergovernmental standards or on more vulnerable resources was raised. In response, it was noted that the system will be governed by IOC and built on open architectures like ODIS, with redundancy in place to mitigate vulnerabilities. Questions were also raised about the delivery of such a system and it was highlighted that the OCG data strategy implementation and enabling all networks to set up GDACs and ensure metadata compliance will be important to see and to cost into this IOC Data Architecture implementation plan. Some identified that having IOC/UN standards are important, but that what will be the core work required to maintain this architecture, and what is the stability of this architecture, will be important questions to address in an implementation plan.

7.3 WMO and WIS 2.0 updates, developments and discussions

- WIS2.0/WIS 2.0 node and discussion around application for other networks, OCG, OceanOPS - Léo Bruvry-Lagadec *(Presentation link)*

Leo Bruvry of Ifremer reported that Coriolis is working to enhance its data services through WIS 2.0 by incorporating data from other Ocean Observing System (OCG) networks. Ifremer is preparing to become a Data Collection or Production Centre (DCPC) under WIS 2.0, which would task it with collecting and distributing specialized environmental data, complete with metadata to ensure accessibility and interoperability. Prototyping for integrating Argo data into WIS 2.0 is complete, pending official WMO approval. Currently, Argo data are available via GDACs in NetCDF (for research) and BUFR (for modeling) formats, and Ifremer plans to offer both data formats via WIS 2.0 with user subscription options. Bruvry also discussed notification mechanisms and data flow processes within WIS 2.0. It was noted that some Argo operators, like the UK, already send data to WIS 2.0, prompting concerns about potential duplication. Clarification was requested from the WMO Secretariat, and the Argo community is encouraged to coordinate data delivery to streamline access. Finally, mechanisms are in place to ensure data remains accessible across both GTS and WIS 2.0 during the transition.

- ERDDAP example of WIS2.0 node - Kevin O'Brien *(Presentation link)*

Kevin O'Brien presented how ERDDAP can connect with WIS 2.0 for data delivery, enabling users to upload and access observational data in various formats via APIs. While ERDDAP currently lacks native support for MQTT (Message Queuing Telemetry Transport)—a lightweight messaging protocol ideal for low-bandwidth environments—work is underway to integrate it. ODIS may serve as an MQTT broker to support organizations unable to host their own WIS 2.0 nodes. ERDDAP will not support the BUFR format but will continue supporting NetCDF and JSON, which are compatible with WIS 2.0 distribution. The group also discussed integrating dataset identification into WIS 2.0 node registration. When a node is registered, the operator provides technical details and a center ID, after which the node publishes metadata describing its datasets. This metadata is key to enabling data discovery, whether in real-time or delayed mode, with the WMO member or node operator determining what data to publish. Metadata thus serves as the central mechanism for organizing and advertising data within WIS 2.0.

- MCDS Update - David Berry, Champika Gallage *(Presentation link)*

David Berry outlined the historical and ongoing development of Marine Climate Data System (MCDS) including its structure, data flow, and integration with global systems like WIS 2.0 and the Ocean Data Portal. He also addressed current challenges, particularly governance gaps following WMO reform, and emphasized the need for updated interoperability standards and clearer recognition processes for new data centers under MCDS . The new joint WMO-IOC collaborative board (JCB) subgroup on data management will be the place to address these issues. It was requested to consider updating the ToR of JCB subgroup to reflect the GOOS/OCG data related activities given its significant role in data flow and system interoperability.

- WIS 2.0 progress in ocean domain - Tom Kralidis (remote) - *(Presentation link)*

Tom Kralidis presented an overview of WIS 2.0, operational since January 1, 2025, and set to fully replace the GTS system by 2033. WIS 2.0 features a distributed, event-driven architecture using open standards and low-barrier technologies like HTTP and MQTT, enabling WIS nodes to publish data and metadata into global services such as the Global Discovery Catalog. Central to this system is the WCMP-2 (WMO Core Metadata Profile version 2) metadata profile, based on OGC (Open Geospatial Consortium) standards, which facilitates data discovery and access. Emphasis was placed on ocean data integration, with datasets already being published, new topic hierarchies defined, and efforts underway to ensure interoperability with ODIS. Open-source tools like the WIS toolbox were highlighted for lowering implementation barriers. WIS 2.0 is designed to complement, not replace, systems like ERDDAP by requiring minimal additional layers. The importance of unique identifiers, especially WIGOS IDs, was stressed for maintaining data traceability and preventing duplication. Participants discussed aligning metadata standards—particularly WCMP-2 and WIGOS metadata—without introducing new ones, and a WMO task team is working on harmonizing these to improve reuse and linking. Finally, the need for improved data provenance and licensing practices was acknowledged, emphasizing shared approaches to track processing history and ensure transparency across communities.

Proposed action/decision

- OCG Data Task Team to consider and cost the work that needs to be delivered across the networks for the OCG Data Implementation Strategy and the IOC Data Architecture.
- OCG Data Vice-chair to complete the review of OCG data survey and share results.

- JCB Data Management TT ToRs to be updated to reference IOC not just IODE, and circulate to OCG Exec for comment.
- OCG Data Vice-chair to liaise with IFREMER and look at optimising ERDDAP installation/configuration.
- WMO to clarify the impact of having duplicate data in WIS2.0.
- Advance pilot project for integrating ERDDAP and WIS2.0.
- OCG to develop/provide clear best practices for network data flows and metadata exchange to support interaction with and between GRAs and national focal points.

8. OceanOPS

8.1 Brief OceanOPS progress with current Strategic Plan - Mathieu Belbeoch *(Presentation link)*

8.2 OceanOPS Budget - Mathieu Belbeoch *(Presentation link)*

8.3 SLA Overview: state of play of SLAs, cost/support structure - Jon Turton/Ann-Christine Zinkann *(Presentation link)*

Discussion: During this session Mathieu provided an update on the OceanOPS activities, including a synthesis of the 2021-25 Strategic Plan implementation, restructuring impact, priorities for the next year and the budget. Budget constraints were highlighted, including the total budget required to operate OceanOPS (1 - 1.2M per year), and personal changes including efforts to enhance support for OceanOPS through Ifremer and in-kind personnel from Polytechnique. A summary of the strategic plan and progress was provided and draft priorities presented on the next strategic plan to be developed this year. The discussion focussed around the SLA's mostly and questions about staffing which were clarified.

The subsequent presentation on the Service Level Agreement completion outlined the goal, final version and next steps. Jon and Ann provided an overview and brief summary with plans to develop a funding structure and seek other funding opportunities to support the networks and sustainability of OceanOPS. A draft cost of the system was presented to the Networks to gauge their feedback on potential funding models and it was highlighted that OceanOPS needs to develop a marketing plan to better communicate the value. Other clarifications were requested concerning the Letter of Agreement conditions and ensuring that it is a non-legally binding document outlining the agreed upon services.

8.4 Future planning for 2025-2026 activities: functions, developments, and work plan priorities - Mathieu Belbeoch *(Presentation link)*

8.5 OceanOPS & EU/FR Projects - Laurent Mortier *(Presentation link)*

8.6 Development OceanOPS Strategic Plan (2026 - 2030): outline a process and gather feedback through an interactive session - Emma Heslop *(Presentation link)*

Discussion: Mathieu discussed the updates and plans of the OceanOPS office going forward including finalizing stable recruitment of the IT manager, as the position has been vacant since Sep. 2023 and covered at minima through various short term contracts. A crosswalk of the existing and funded European projects that OceanOPS is part of was presented and how they are evolving specific components of the OceanOPS system: i) the modernization of OceanOPS Information system and web based applications via AMRIT project and ii) the establishment of a Technical Coordinator position in support of SOCONET via TRICUSO project.

OceanOPS workplan for the next intersessional period, and including most of the specific action items identified in Annex3, will be framed by the SLAs for each network and current Strategic Plan goals, and will include overall:

[Goal 1: monitoring]
-Increase of monitoring/reporting capacity for some networks per SLAs
-Development of the future web services and underlying architecture
-Codesign of the EOV/ECV gap analysis tools, (big) data architecture and initial developments

[Goal 2: data /metadata]
-Continuous improvement of the metadata standard (“OceanOPS passport”), content,
-and exchange mechanisms (API, m2m processes) with data/metadata nodes

[Goal 3: Operations]
-Improvement of tools for operators (autonomous instruments, moorings, CTD cruises, R/V schedules)
-Continue the opportunistic deployment initiatives (sailing and beyond)

[Goal 4: New networks]
-Focus on SOT expansion to private ” (shipping industry) and organize UNOC side event “10 000 ships”
-Complete AniBOS baseline
-Start baseline for another network

[Goal 5: Infrastructure]
-completion of SLA details with each network and LoA signature
-process to develop 2026-30 strategic (and marketing) plan and propose a draft to be completed and endorsed by OCG #17
-complete hosting agreements with France, Ifremer, and its partners
-continue stabilizing staff and budget

Laurent presented on alignment of infrastructure such as France and Europe as a whole and the need to integrate both the coastal and open ocean observing systems. Two paths towards a broad support of ocean observing were presented, (i) creating an organization like AMRIT or (ii) to get ocean observations better incorporated into WMO. Presently the WMO model is useful, but ocean observations are still secondary to atmospheric prediction. In this model the importance of ocean processes for modeling the global climate system needs to be elevated.

The last presentation provided some high level vision of the OceanOPS strategic plan 2026-2030 and suggestions for a process and timeline. Various aspects were highlighted including how to prioritize OceanOPS activities for maximum network impact, the role of OceanOPS in coastal systems and biological observations, potential opportunities for better alignment with parent organizations to ensure more sustainability and impact and potential services to be developed.

A broader challenge that was highlighted is the lack of a clear venue where the Networks, the GRAs and other players come together to organize, make plans and work together. The crosspollination is a piece that is missing and needs to be a priority to improve impact. In addition, it was brought up that the connection of the ocean and the global climate system needs to be articulated more effectively. For OceanOPS specifically, it was raised that services need to be automated and the system partially updated to ensure maximum impact. Before any other expansion this was identified as a high priority.

Proposed action/decision

- Identify key users of OceanOPS outside of the networks and how they are being tracked.
- Plan Roundtable to discuss tool development priorities with the networks.
- OceanOPS to develop a draft OceanOPS 5 Years Strategy and request feedback.

- OceanOPS to confirm with IFREMER the hosting funding arrangement for OceanOPS, consider if appropriate for annex of host country agreement above
- OceanOPS will communicate with the OCG on the next network to be lifted into the baseline services, e.g. GLOSS, FVON, USV.
- OceanOPS to review web views/tools, in light of audiences and for tracking of users - for next stage web development.
- Finalize Letter of Agreements with remaining Networks and develop funding structure.
- GOOS GRA Secretariat and OceanOPS to investigate needs and cost for developing views for GRAs that want this service (OceanOPS will assess and discuss OCG Exec - and see if the SLA framework provides a model)

Background documents:

- OceanOPS Workplan 2025-2026
- OceanOPS Strategic Plan
- OceanOPS Budget
- Service Level Agreement Overview
- Draft Letter of Agreement

DAY 3 - Wednesday 9 April 2025

10. Revisiting - Longer term goals and objectives and key results

(Presentation link)

Discussions: This was a very rich discussion and a clear set of future action areas was developed including for OCG to define clear action in these areas and assess its current ToRs, in line with its actions areas and GOOS development. David Legler presented long-term goals for the OCG by 2030, emphasizing the need for better coordination across observing networks, tools to identify gaps, and user-focused data with high-quality products. Suggestions included aligning network design with specific applications and adopting the RRR to keep priorities updated.

There was strong agreement that uncertainty in measurements is critical and should be included in metadata. As technology evolves, documenting how uncertainty is calculated becomes essential and intercomparisons between networks and technologies are vital, especially when engaging with the private sector.

The need for risk assessments was discussed in order to estimate the costs and values of networks, key information to informed decisions. Finally the OCG underlined the importance of global cooperation, especially in demonstrating the value of ocean observations to non-contributing countries.

Background document:

- Framework for Risk Assessment

Proposed action/decision

- Develop a OCG-wide framework and action to include "uncertainties" in the data/metadata systems and is considered in the IOC data architecture
    - Schedule a meeting with Breck, Raquel and …. To discuss their activities to develop data uncertainties for Argo, GO-SHIP and OceanSITES
- Discuss with the Ocean Enterprise Initiative - Technology development and intercomparisons
- Develop an outline for a risk assessment exercise e.g., defining daft metrics for discussion and assess other initiatives that have done such exercises

11. Modelling and services input

Discussion: The panel discussion, featuring presentations from Hao Zuo (ECMWF), Vijay Tallapragada (NOAA), and Giovanni Coppini (CoastPredict/CMCC), focused on how different modelling centres assimilate and use observational data, the sufficiency of current data access mechanisms, and emerging challenges—especially as the community looks toward AI-enhanced forecasting systems.

Hao/ECMWF emphasized the impact of assimilating ocean observations into coupled ocean-atmosphere forecasts, demonstrating measurable improvements in medium-range forecast accuracy and ENSO predictability. ECMWF assimilates all available data on the GTS, including Argo floats, moorings, XBTs, CDTs, and satellite-derived sea surface observations. Although they currently apply their own QC processes, plans are in place to incorporate Argo's "quality flex" flagged data. ECMWF has completed its transition to BUFR format and routinely handles duplication checks, acknowledging that delayed or incorrectly formatted data may be excluded.

Vijay/NOAA, similarly applies internal QC methods and operates under strict data latency constraints. Observations need to be received within 3–6 hours post-collection

to be assimilated into forecasts, with data arriving later generally excluded. This requirement is dictated by the tight timeline of operational NWP forecast cycles. This cutoff represents a major barrier for some data streams, particularly from GOOS networks.

Giovani/CoastPredict**,** described efforts across 30 pilot sites to incorporate both traditional and novel data sources (e.g., USVs). Giovanni noted they rely on Argo's adjusted data and flagged quality metrics, especially in coastal zones where data variability and errors are more pronounced. It also highlighted the underuse of satellite observations in coastal areas and emphasized the need for more cost-effective, high-resolution coastal data collection methods.

A shared concern across presenters was the disconnect between data providers and modellers, particularly regarding data quality, timeliness, and usability. While many networks are eager to receive feedback to improve their data streams, few formal channels exist for modellers to report issues—such as degraded sensor performance or systematically rejected observations. Improving this feedback loop was seen as a critical step for increasing the utility and reliability of ocean observations.

As the field anticipates next-generation AI/ML-based ocean forecasting, participants agreed that data quality, latency, and structured metadata will become even more essential. Model requirements may shift in terms of resolution, frequency, and QC transparency, which could have significant implications for observing system design.

Proposed action/decision

- Establish a regular forum for discussions between modelling centres and observation networks (e.g., through OCG).
- Data must research GTS/WIS within 3-6 hours to be useful for NWP.
- Encourage broader use of Argo adjusted data and QC flags to avoid assimilation of biased data. Some Argo data is still arriving in TAC and this needs to be investigated by the network.
- Consider low-cost technology to fill gaps in coastal areas where data variability and errors are more pronounced.data.
- Anticipate changing needs with AI/ML forecasting, including greater transparency in QC metadata and higher-frequency data access.

DAY 4 - Thursday 10 April 2025

12. Communication GOOS / OCG

12.1 GOOS Communication - Laura Stukonyte

12.2 GOOS Report Card - Emanuela Rusciano *(Presentation link)*

Discussions: Laura Stukonyte introduced the GOOS Communications Toolkit, including a new brand policy, messaging guide, and an updated logo. The reaction was favourable from the networks, with also some caution for resourcing - at a basic level quite simple. Laura also mentioned the need for an update of the GOOS website and collaboration between the networks and GOOS Communication has been discussed regarding updates to the network websites, including the display of the GOOS logo. The OCG discussed updates to the design and content of the network specification sheets, agreeing to maintain distinct content and structure between the EOV and network specification sheets while ensuring consistency in branding.

Emanuela Rusciano discussed the upcoming report card, an annual publication since 2016 aiming to showcase the integrated ocean observing system's value to society across the three GOOS delivery areas. She highlighted improvements, including interactive maps, dynamic gaps, and video content from expert interviews. The OCG discussed the network status table and the need for a simpler table with a key performance indicator (KPI) for each network.

Proposed action/decision

- GOOS to identify where updating network websites is necessary and request Networks to display the new GOOS logo.
- Network specification sheets to be updated and uploaded on the website.
- GOOS and OceanOPS to collect feedback on this year's Report Card.

13. EOV Based Monitoring Tools

13.1 EOV Based Monitoring Tools *(Presentation link)*

Discussions: Ann and Thomas discussed the development of EOV-based monitoring tools for the ocean, its implementation and timeline for development. This type of tool will allow users to search, display and analyse measurements filtered by multiple parameters including EOV. The need to align this tool with existing capabilities like WMO's WDQMS has been highlighted. They discussed the technical challenges and requirements for developing such tools, including data storage and query optimization.

The team presented a Miro board and the networks were encouraged to provide input on the tool's requirements and parameters for consideration during development and planning.

Summary of the recommendations/points raised:

- Ensure alignment with WMO WDQMS tool and RRR (OSCAR database).
- Determine a select (5) variables to develop views, interface, architecture, etc.
- Involve the OCG Vice Chair Data Management in the development and planning, given the IOC Data Architecture development to ensure alignment.
- Develop pilot cases to test tool capabilities.
- Current capability of maps that visualize observational platforms need to be expanded e.g., showing compliance with WMO RRR, Key Performance Indicators, gaps etc.
- Other questions included - Assess longevity of observations needed or not? Could languages be automated? What would views by country look like?

Proposed action/decision

- OCG Exec to create a work plan/outline of this project and deliver the plan back to roundtable in Q2/Q3.
- OceanOPS/GOOS/WMO to assess/review what information from the RRR is needed for the development of an EOV monitoring tool.

14. Summarized Actions and Reflections

OCG networks to work on the network table to complete as per discussions (icons, specification sheets, network name long/short, reporting, best practices, data flows, metadata standards etc.). Vital to define names, complete number of networks and any sub-networks or missions. Needs to be consistent across communications so update OCG to work with networks, on the next OCG Roundtable, to define the number of networks - provide after

Proposed action/decision

- Adoption of a set of OCG-15 decisions, actions, and recommendations

15. Planning for OCG-17

Feedbacks have been collected on the conduct of the meeting. The suggestions that were raised are the following:

- Allowing more time to discuss the networks, perhaps devoting half a day or a whole day to the networks expressing their views before the OCG meeting itself.
- The frequency of the OCG meeting in person, highlighting cost and carbon footprint.
- The need to ensure a good online participation experience.

The next meeting of the OCG has been discussed and it was decided that the date would be April or May 2026.

Proposed action/decision

- Suggested dates within the April - May timeframe

Workshop Report: IOCARIBE-GOOS (Session 9)

The purpose of the IOCARIBE GOOS workshop was to engage with the GOOS Observations Coordination Group (OCG) in order to strengthen the emerging IOCARIBE-GOOS (Global Ocean Observing System) Programme and to gather insights on specific questions to aid in the development of the IOCARIBE-GOOS Work Plan to support IOCARIBE-GOOS goals 2025+. It also serves to explore if there is a useful role for OCG in supporting implementation, mobilization, and technical guidance for developing GOOS Regional Alliances.

Workshop agenda: link	**Presentation :** link
Background documents:	

- The Strategic Plan for IOCARIBE-GOOS
- Recommandation SC-IOCARIBE-17
- Caribbean Sea Observing System
- 2020 Institutions Inventory
	- Ocean Decade - Vision 2030 White Papers:
	  - Sustainably Expand GOOS (#7)
	  - Create a Digital Representation of the Ocean (#8)
	- Ocean Decade TAC Roadmap

Part 1: Past, Present & Planning the Future Overview of IOCARIBE-GOOS

History & Accomplishments – Doug and Edgard

1. Present Status & Strategy (TAC-OOFS) – Doug and Devin
2. Recent Partnerships & Decade Synergies:
    a. Tropical Americas and Caribbean (TAC) Projects-
    b. Tropical Cyclones GOOS Co-Design Exemplar (Slides) - Scott Glenn & Cheyenne S –
3. CoastPredict (UN Ocean Decade Programme)

Summary:
Dr. Cesar Toro, previous Head of IOCARIBE Regional Secretariat and member of the IOCARIBE-GOOS Group of Experts, opened the meeting on behalf of IOCARIBE, expressing gratitude to the OCG-16 committee for hosting the delegation, and provided a background introduction for the OCG as well as the purpose of the meeting. The

introduction highlighted the significance of the Caribbean region including its geo-political, cultural, and economic significance, as well as its unique biodiversity and tourism. There is also a need for enhanced regional cooperation and collective expertise to address the region's lack of sustained ocean observations and services.

Mr. Doug Wilson, an experienced leader who has been actively operating ocean observing and forecasting systems in the Caribbean since 1980s, highlighted the key programmes and projects of IOCARIBE-GOOS, including the global ocean observing system governance system, initial framework for a regional forecasting system, a central location for ocean data and information management, and the successes achieved so far, including the development of the Caribbean sea level network.

Dr. Scott Glenn explained the process of identifying priorities for the GOOS Co-Design Tropical Cyclone Exemplar Caribbean Pilot programme, focusing on the need for subsurface profile data for hurricane prediction. He discussed the importance of Argo and glider data for assimilation and the need for more frequent data to improve hurricane forecasts. He highlighted the successful engagement with the WMO and the impact of the Argo and glider data on hurricane forecasting. Dr Glenn provided an introduction of the plan for 2025, including the expansion of Argo coverage and the use of gliders at critical EOV and Essential Ocean Process choke points in the Caribbean.

Discussion:

Enhanced observation during hurricane season: The importance of enhancing Argo and Glider observations during hurricane season was highlighted; this was a recommendation by the WMO Region IV Hurricane Committee, following the work of the GOOS Ocean Observing Co-design programme exemplar on Tropical cyclones. It was suggested to try to leverage support from national meteorological offices, emphasizing the value of IOC-WMO collaboration in strengthening regional coordination. Concerns were raised about over-reliance on specific platforms, noting that not all ships need to meet GO-SHIP standards and not all floats need to be Argo; simplified floats could be explored to increase data availability. Exploring deployment of additional float types during hurricane season was encouraged, while cautioning against undermining the integrity of the Argo programme. A thorough assessment of observational impacts should be presented to donors and decision-makers, particularly with regard to coupled model improvements.

Studies of per-profile data impacts were cited, in particular showing the significant positive impacts of glider profiles on improving ocean models for tropical cyclone

forecasts. Discussion reinforced the need for ongoing evaluation and planning, as well as the importance of advocacy and support from OCG and the critical need for a cost-effective plan for Glider operations throughout the region.

Argo: Participants emphasized the pressing need for 48 Argo floats in the Caribbean region to complete Argo targets; more Argo floats would be a good step for baseline monitoring in the region. To implement this level, there needs to be more interaction and control over Argo float deployments (more deployment platforms in more locations) and OceanOPS would like to pilot programs with new resources. It was noted that there is a need for improved archiving of cruise data. The importance of obtaining appropriate permission for Argo (and Glider) deployments within and across EEZs was stressed, given the region's many national jurisdictions, and advocated for a regional alliance to address this challenge (i.e. identifying partner institutions in the region).

Glider: Questions were raised about Glider expertise in the region. It is sparse (presently only available in USVI, Puerto Rico, Brazil, and Mexico). US (Rutgers University and UVI) have supported launches in Martinique and this could be expanded as a potential glider port with French support. There is an ongoing collaborative initiative with Rutgers University, University Of the Virgin Islands, and Caribbean Institute for Meteorology and Hydrology (CIMH) in Barbados for a regional glider deployment, with the goal of initiating the development of a new Glider port.

Data management: IOCARIBE data are currently stored using Ocean Info Hub. There is a 2020 Institutions Inventory based on data from previous IOCARIB- GOOS surveys. It was suggested to use the existing IOC/IODE data policy, instead of creating a new one. The importance of making the most use of existing data was also emphasized, and the experience from EuroGOOS and OceanOPS in using Argo data can be referred to. The region would do well to emphasize the role of citizen science in coastal observations, with the fishermen field school in Indonesia as an example. More effort can be put on data management.

Part 2: Observing Networks, System Mapping & Data Utilization

The group discussed potential options, ideas, locations for new observations in the Caribbean, in collaboration with the networks, through working with a large poster of the IOCARIBE with a snapshot of the present network's data points - developed by OceanOPS. Interactive Map Outcomes: link.

The contributions were gathered around 4 central questions:

- How are the various OCG components/networks presently represented in the Tropical Americas and Caribbean? Contacts, active countries and observations? - What is missing, are there network plans or aspirations?
- What is the current OCG network observing system in the Caribbean? What's working and what needs support? How can we get a more complete view of what is the 'observing system now in the Caribbean and Tropical Americas?
- What are the short/long term goals of the OCG networks in the region - what is planned, what support is needed to make change?
- How can IOCARIBE facilitate trans-boundary access mechanisms?

Status and plans are summarised below:

- **Glider:** It was suggested to engage with the French Glider groups of IFREMER for Martinique/ Guadeloupe / St Martin.
- **HF Radar:** Plans exist for building the HFR network near Barbados, to better observe the Amazon and Orinoco freshwater inflow. There are aspirations for two Cuban HFR sites: one is at Cabo de San Antonio looking across the YucatanYucantan Strait and the other is at Havana looking across the Florida Strait.
- **Argo:** Floats on a 3.25 day cycle going shallow (~500m) and 200m deep every 3rd cycle would meet Argo requirements and provide more frequent profiles, especially important during hurricane season. One of the work packages of the EuroArgoONE project on 'Define Core and BGC sampling strategies in European marginal seas' was mentioned, which also includes the Caribbean Sea. The project will assess the evolution of Argo data density over the last decades and propose a sampling strategy with the consideration of data availability of other observing networks.
- **GLOSS:** Currently, there are 9 GLOSS Core network stations shown in OceanOPS, all transmitting in RT to GLOSS VLIZ. It is planned to expand sea level gauges and DART networks for Tsunami Warning Systems in the region.
- **FVON:** FVON marked their potential and current projects on the map: noting they have one fully established site (Bahamas), three pending and a goal of three more.
- **XBT:** Potential new ideas to connect with the XBT Line- there would be scientific interest as well as SOOP, recommended to reach out to a contact at AOML, TSG & XBT.
- **USV:** Targeted making regional USV Surface Observation where floats/drifters are not sustained.

- **Data:** Several of the EMODnet projects (European Marine Observation and Data Network) are expanding their scope (and thus the products they make) into the Caribbean. This is true for EMODnet Bathymetry, Geology, Chemistry, Data Ingestion and may also be the case for the other EMODnet lots. (see https://emodnet.ec.europa.eu/en)
- **US in Caribbean**: The US supports the following networks in the region, ARGO, GLOSS, HFR, Ocean gliders, DART, DBCP.
- GOOS networks can contact GOOS National Focal Points in the region as operational focal points that work across all networks.

Discussion: It was recognized that the gaps remain in comprehensive coverage and data integration across the region. The following support needed was identified by the participants: 1) consistent, long-term funding to maintain and upgrade existing observation systems; 2) establishment of Regional Data Centers;

One idea suggested was a GOOS 'warehouse' for drifters/floats, SOT and other maintenance for the region, with the idea that this could help .have more floats contributed and deployed; leverage from existing platforms (i.e. oil rigs cruise, ferry ships,), and deployment opportunities on the shipping lines in the tropics, and the need to ensure flow of data and month means of SL to GLOSS (e.g. PSMSL - Monthly means).

The need to integrate existing ocean observing efforts in the region was noted with the following suggestions: 1) to recognise 'non-traditional' observing assets, including sea level gauges from national meteorological services and coastal video monitoring systems, 2) to provide technical guidance and capacity building to support local institutions to register their assets in OceanOPS and/or ocean observing networks, 3) to integrate marine biological data platforms and local regional data assets into GOOS data flows, 4) to leverage citizen science and local ecological knowledge.

IOCARIBE GOOS could play an important role in improving coordination and reducing fragmentation across platforms, networks, and institutions. **There might be a need to convene a regional working group to facilitate deployments in the region.** A key task could be to compile a list of countries willing to grant permission for the deployment of Argo-like floats. Establishing national contact points is essential to support logistics and identify deployment opportunities. Specifically, efforts could be made to broker regional agreements for operational glider lines that cross national jurisdictions, similar to CARICOM or bilateral partnerships like Cuba–Mexico. It is also important to assist countries to link national systems into global ones (e.g., OceanOPS, OCG and BioEco

observing networks, OBIS). Meanwhile, it would also be important to facilitate the usability of data by re-presenting it in more accessible formats, drawing on Argo's experience in conducting workshops and tutorials to build user capacity on using data. **To address technical barriers that hinder data sharing, regional technical workshops could be organized with experts from the Met offices and other regions.**

Part 3: From Strategy to Action – Building the Collective System

Dr. Lorna Inniss, IOCARIBE Secretary Head for IOCARIBE, presented slides on 'The Case for A Collective System', highlighting the requirements from member states on reporting to multilateral environmental agreements (MEAs), as well as the importance of maximising value from making the most of existing data and the need for better coordination between data systems and forecasting models in the Caribbean region in IOCARIBE. It was emphasized that the region needed a comprehensive approach to data management and observation systems in the Caribbean, with a focus on regional cooperation and collaboration between systems.

Dr. Lorna Inniss discussed the importance of hazard forecasting and coastal resilience in the Caribbean and the need to support member states with data and observations to meet their obligations for multilateral environmental agreements. She focused the discussion on 1) How to prioritize next steps for the programme and 2) initial recommendations from the OCG. Based on discussions, what should IOCARIBE-GOOS do next?

Dr Inniss introduced Dr. David Farrell, Director of CIMH, who discussed the importance of the oceans in the work of the and mentions the Institute's role in supporting ocean observation networks. He mentioned the Eureka programme and the coordination of research ships and drones in the collective system to enhance resilience to climate change and climate variability. They discussed the Institute's strong technical capacity and a willingness to provide technical support and resources. They expressed willingness to work with IOCARIBE and other groups to support the ocean observation system and build on existing efforts.

She opened the floor with a challenge to the participants to come up with practical outcomes and recommendations on prioritizing data management, funding alignment, and data product interoperability in 6 key areas.

Promoting Ocean Observations and Supporting Member States

- Examples or cases to highlight the need for better data coverage, especially for small island developing states, for the UNFCCC and the climate change convention.
- The need for an assessment of the readiness of member states to contribute to the system and the importance of making sure they understand the wider benefits.
- The OCG highlighted the need to embrace the meteorological community and mentioned the Caribbean Institute for Meteorology and Hydrology (CIMH) and its role in supporting weather and climate forecasting.

Local Engagement

The question was raised of what other extra-regional partners would have alignment with TAC regional interests and how to engage?

- The Indonesian experience in engaging end user fishermen has been highlighted, with a willingness to share experiences working with them.
- Identifying local contact points and mapping capabilities in the region to facilitate easy access and maximize existing data.
    - OceanOPS proposed to provide local contact points, highlighting their easy access.
- Setting up basin-based coordination meetings to bring partners together and discuss opportunities and challenges. The need to find support for regional workshops and the importance of involving users and key partners in the region was highlighted.
- Using Argo floats more effectively to get the most data out of them and the need for local collaboration and ownership.
    - Argo coordinating forum. IndOOS also assessed covid impact. Invite local expert engagement.
- GOOS GRA can help find the contacts. Jing Li (GOOS secretariat support for the GOOS Regional Alliances) would be able to support GRAs in the assessment of the presence of the regional observation efforts in OceanOPS.

Data Management Framework for Region, Data Sharing and Technical Support

The meeting discussed the initial data management framework for the region. The OCG discussed the questions: 1) Are there specific data sharing & best practices for SIDS, TAC, or that OCG might recommend for the TAC region? (i.e. Capacity development in

data, information management, OBPS) and 2) on the topic of the value of data recovery: Are there legacy surveys or databases the TAC region should know about?

The attendees discussed the need for a data policy and the importance of using existing ones. They also discussed the need for a regional implementation of ownership and control of instruments, as well as the need for a technical workshop to facilitate data sharing. The attendees also discussed the need for a contact point in the region to facilitate logistics and identify deployment opportunities. The conversation ended with a discussion on how to make better use of existing data and how to increase the uptake of data in the region.

Emphasis was placed on identifying the entry points of data—locating where data currently resides—and integrating it into the IOC data architecture.

Where to start?

The IOCARIBE Team asked the OCG input on how to prioritize which observations should be activated or scaled up first.

- The need to strengthen the GLOSS network was emphasized, noting that some stations are outdated or inactive, while others are missing from current visualizations. A recommendation was made to transfer raw real-time data to the data portal and to consider the use of DT in SL assessment.
- OceanOPS noted the importance of identification of capacity and ship time in the region in order to maximize the use of the existing data.
- The importance of the tsunami warning system in the Caribbean and the need for sustained support and training for operators has been highlighted.
- The need to build on existing efforts and enhance networks in the Caribbean was highlighted, noting that data already exists, the ocean observations are already there, however, they needed to clearly demonstrate the benefits and impacts (if not there) in order to harness increased support from public and external providers.
- FVON was very excited to contribute, they emphasized that local collaboration and ownership are important. They recommended starting a pilot in Jamaica and then expanding to other countries based on the lessons.

Ocean Observation and Funding in the Caribbean

The conversation ended with a discussion on how to connect to major funding and support programme opportunities

- how to integrate with Ocean Decade programmes such as the Ocean Decade Tsunami Programme, CoastPredict and GlobalCoast, and Ocean Observing Co-Design. Connect to major funding & programme opportunities - EW4All, SOFF, CREWS, OceanPredict, CoastPredict, DCC-CR Coastal Resilience
- Comments supported raising funding from the region to contribute ocean observation, at least facilitating access to EEZ.
- From GLOSS, a proposal was made to organise operator training sessions every two years. These sessions aim to foster connections among participants and contribute to the long-term sustainability of the system, which has been maintained for 15 years. The estimated cost for such training is USD 70,000, with seven stations funded through SIDS support.
- Argo noted the importance of local participation and securing resources to support. Poland, Bulgaria and Greece are also contributing to Argo, with support from neighboring countries. e.g., floats provided by EU countries and local partners to secure ship time. Building capacity can be achieved with partnerships and bringing additional people on site. For example could countries with overseas territories,such as France, UK and Netherlands, support the region with floats that could be deployed locally. For the SE ASIA network - all the floats are supplied by regional partners
- IOCARIBE would have potential access to SIDS funding and should make use of that.
- CIMH- sent in a proposal to the CDB to secure 40-50 small buoys, worked with international communities, looking at ocean research, started looking at putting back coastal observing stations, funding for development partners, only put resources in if we could put together sustainable plan, build a business case around the networks, building capacity, additional people supporting the ocean space and not one - off. This was mentioned as an example for the Eastern Caribbean - in the Western Caribbean other institutions need to be identified, (i.e DIMAR in Colombia and the Regional level (i.e CARICOOS and the National Hurricane center as a WMO RSMC for the Caribbean)

Proposed action/decision

- IOCARIBE Team to take inputs and develop a draft Ocean Observing System (OOS) plan.
- GOOS to follow up with French interests in research institutions and planning in the Caribbean.
- GOOS and OceanOPS to collaborate on developing a regional

meeting/workshop across the networks and with regional contacts.

- OCG/Argo to discuss/assess potential data training and make suggestions for IOCARIBE. IOCARIBE to define needs for this assistance and report back to OCG first..
- IOCARIBE will follow up directly for collaboration in the region based on a draft plan and discussion at OCG16.

Annex 1: List of acronyms

AI/ML: Artificial Intelligence/ Machine Learning
AMRIT: Advance Marine Research Infrastructures Together
BGC: Biogeochemistry
CARICOM: Caribbean Community
CARICOOS: Caribbean Coastal Ocean Observing System
CBD: Convention on Biological Diversity
CDTs: Conductivity, Temperature and Depth recorders
CIMH: Caribbean Institute for Meteorology and Hydrology
DCC-CR: Decade Collaborative Centre for Coastal Resilience
DIMAR: Dirección General Marítima
DT: Design Tools
ECMWF: European Centre for Medium-Range Weather Forecasts
EEZ: Exclusive Economic Zone
EMODnet: European Marine Observation and Data Network
EOV: Essential Ocean Variables
ERDAPP: Environmental Research Division Data Access Program
EW4All: Early Warnings for All
FAIR: Findable, Accessible, Interoperable, and Reusable
FAO: Food and Agricultural Organisation
GBON: Global Basic Observing Network
GDACs: Global Data Assembly Centres
GGGW: Global Greenhouse Gas Watch
GOOS: Global Ocean Observing System
GRAs: GOOS Regional Alliances
GSN: Global Seismographic Network
GTS: Global Telecommunications System
iCHEWS: integrated Coastal Hazards Early Warning System
IFREMER: Institut Français de Recherche pour l'Exploitation de la Mer
IMO: International Maritime Organisation
IOC: Intergovernmental Oceanographic Commission
IODE: International Oceanographic Data and Information Exchange
JCB: Joint Collaborative Board
KPI: Key Performance Indicator
MCDS: Marine Climate Data System
MEA: Multilateral Environmental Agreements
NWP: Numerical Weather Prediction

OBIS: Ocean Biodiversity Information System
ODIS: Ocean Data Information System
OCG: Observation Coordination Group
OOFS: Operational Ocean Forecasting Systems
OSCAR: Ocean Surface Current Analyses Real-time
PRSN: Puerto Rico Seismic Network
PSMSL: Permanent Service for Mean Sea Level
RRR: Rolling Review of Requirements
RT: Real Time
RSMC: Regional Specialised Meteorology Centers
SIDS: Small Island Developing States
SLA: Service Level Agreement
SOFF: Systematic Observations Financing Facility
SoG: Statements of Guidance
ToRs: Terms of Reference
TAC: Tropical Americas and Caribbean
TT: Task Team
UNFCCC: United Nations Framework Convention on Climate Change
UNOC: United Nations Ocean Conference
WIGOS: WMO Integrated Global Observing System
WMO: World Meteorological Organisation
WMO WDQMS: WIGOS Data Quality Monitoring System
WIS: WMO Information System

Annex 3: List of participants

Name	Role	Affiliation
IN-PERSON		
Jon Turton	OCG-EXB	UK MetOffice
Champika Gallage	OCG-EXB	WMO
Emma Heslop	OCG-EXB	IOC/UNESCO
Mathieu Belbeoch	OceanOPS/ OCG-EXB	WMO
Albert Fischer	OCG-EXB	WMO
Joanna Post	OCG-EXB	IOC/UNESCO
Joel Cabrie	VOS	BOM
Justine Parks	SOOPIP	UC San Diego
Ashley Parker	SOOPIP	CSIRO
Brian King	Argo	UK's NOC
Pascale Lherminier	GO-SHIP	IFREMER
Laurent Mortier	OceanGliders & AMRIT Project	ENSTA
Begoña Pérez Gómez	GLOSS	Puertos del Estado
Bernardo Aliaga	GLOSS	IOC/UNESCO
Nelly Florida Riama	DBCP	BMKG
Bruce Howe	SMART Cables	Uni. of Hawaii
Ruth Patterson	USV Network	Elysium EPL
Cooper Van Vranken	FVON	FVON
A Miguel Santos	FVON	IPMA
Maciej Telszewski	SOCONET	IOCCP
Martin Kramp	OceanOPS	WMO
Victor Turpin	OceanOPS	WMO
Emanuela Rusciano	OceanOPS	IOC/UNESCO
Magali Krieger	OceanOPS	WMO
Lucie Coquempot	Observer	IFREMER
Signe Lemcke	Maturity and Metriics TT	IOC/UNESCO
Jing Li	GOOS GRAs and NFP	IOC/UNESCO
Louise Blezat	Intern and OCG support	IOC/UNESCO

William Douglas Wilson	IOCARIBE	Uni. of the Virgin Islands
Devin Burri	IOCARIBE	NOAA
Edgard Cabrera	IOCARIBE	MMMO WMO
Cesar Toro	IOCARIBE	IOCARIBE
ONLINE		
David Legler	OCG-EXB	NOAA
Kevin O'Brien	OCG-EXB	NOAA
Ann Christine Zinkann	OCG-EXB	NOAA
Elizabeth Kent	SOT	UK's NOC
Tammy Morris	SOOPIP	SAPRI
Raquel Somavilla	OceanSITES	IEO
Johannes Karstensen	OceanSITES	GEOMAR
Breck Owens	Argo	WHOI
Elaine MCDONAGH	GO-SHIP	NORCE
Leticia Barbero	GO-SHIP	NOAA
Brad DeYoung	OceanGliders	OceanGliders
Fabien Roquet	AniBOS	Uni. of Gothenburg
Elizabeth Bradshaw	GLOSS	UK's NOC
Hugh Roarty	HFR	MARACOOS
Ceci Rodriguez Cruz	SMART Cables	SMART Cables
Meghan Cronin	USV Network	NOAA
Sebastiaan Swart	USV Network	Uni. of Gothenburg
Ana Lara Lopez	BioEco Panel	Uni. of Tasmania
Thomas Letter	OceanOPS	GEOMAR
Orens de Fommervault	IOC/UNESCO	IOC/UNESCO
Paula Sierra	Observer	INVEMAR
Peter Pissierssens	Observer	IOC/UNESCO
Tom Kralidis	WMO WIS2.0	ECCC

Vijay Tallapragada	Modelling	NOAA
Hao Zuo	ECMWF	ECMWF
Lucy Scott	Observer	IODE/ODIS
Giovanni Coppini	CoastPredict	CMCC
Pier Luigi Buttigieg	Observer	IODE/ODIS
Laura Stukonyte	Communications	IOC/UNESCO
Yu Zhaoyuan	Observer	RMIC
Lorna Inniss	IOCARIBE	IOCARIBE
Julio Morrell	IOCARIBE	IOCARIBE
Patricia Chardon	IOCARIBE	IOCARIBE
David Farrell	IOCARIBE	IOCARIBE
Alejandro Jose	IOCARIBE	IOCARIBE
Scott Glenn	IOCARIBE	IOCARIBE
Taco De Bruin	IOCARIBE	IOCARIBE

Annex 3: List of Actions

Session	Topic	Key decisions/recommendations	Priority/when
		The GOOS Observations Coordination Group,	
2	GOOS/WMO	Welcomed: • Engagement with the private sector • Laurent Mortier - joining OCG in the future as a OCG Co-Chair Action: WMO to invite OCG to provide input to the WIGOS 2050 vision - OCG will receive the draft Vision 2050 document for review in around Sept 2025	Medium
4	Requirements implementation	Noted the importance of the WMO Rolling Review of Requirements (RRR) work. Action: **OCG/networks to review the RRR Statements of Guidance for Ocean, Atmosphere and Cryosphere and provide feedback.** Particularly on specificity of requirements such as timeliness. Will be distributed via email in the next 2 weeks. Deadline for feedback 09th May 2025. OCG to consider using the outcomes of the RRR for initial assessment of requirements vs EOV coverage (see session 10) when Statements of Guidance are complete. Also consider how to use this to identify critical variables that are important from a societal perspective and how to develop cross network design	HIGH, next weeks HIGH, Q2

		OCG to invite BioEco Panel representatives to collaborate/cooperate on mature/emerging definitions OCG to invite BioEco Panel representatives to collaborate/cooperate and on minimum metadata passport linked to Data TT Session 7 OCG to facilitate BioEco Panel to engage in discussion with specific networks, e.g. OceanGliders, Argo (?), GO-SHIP, OceanSites, to discuss opportunities for collaboration regarding BioEco EOV delivery.	Medium Q3/Q4 HIGH Q2 Medium Q4
5	OCG Update	Action: OCG Exec to consider how OCG effectively manages the growing number of emerging networks and prioritizes support to ensure a cohesive and integrated system? Evaluate the OCG's capacity to manage the growing number of emerging networks, and explore strategies to prioritize and support them effectively. OCG Exec to create a discussion paper for OCG-17 on this, also including/referencing the metrics work and develop a process for transitioning networks from emerging to mature (consider SOT, table and BioEco networks, and what is on the horizon) Determine the OCG's role in guiding and assessing the opportunities presented by the private sector, including new technologies and data sources - see also 6 and in session 10	Medium Q3

6	Networks	Noted the areas recommended for defining actions for OCG and linked to session 10 ● Consider how GOOS can effectively demonstrate the socioeconomic impact of improved ocean prediction ● Cross-network design planning around application areas ● Private sector work on having some process to set 'bar' manufacturers , commercial viability of sensors, risks to networks and relationship with shipping companies ● Express the complementarity and reliance across the system Action: OCG Exec to work on OCG future initiatives to present to networks on an OCG Roundtable and to GOOS SC (see session 10 action) Metrics and maturity carry on, assess and integrate the comments from OCG-16, and deliver definitions back to OCG networks for comment via email, and suggest for adoption at a future OCG Roundtable in 2025, to finalise by the end of 2025. Think of including precision (see session 10), and see also action in session 5. Propose network health index for OCG-17.	High Q3/4 HIGH - Q2/Q3 mature/emerging HIGH Q4/Q1 & OCG-17 network health index

	Technology flash talk	DBCP leadership to connect with expendable wave drifters (Fabrice Collard). Waves come up as important in the RRR, an opportunity to collaborate with the satellite community in funding this. OCG also noted that other networks take wave measurements so a 2 way conversation. DBCP to connect with (Fabrice) for 2-way dialogue with this community, and report back to OCG Roundtable and next DBCP session.	Medium (OceanOPS facilitate/check)
7	Data	Action: OCG Data Task Team to consider and cost the the work that needs to be delivered across the networks for the OCG Data Implementation Strategy and the IOC Data Architecture (GDACs, metadata, m2M data flow etc.). In addition develop an idea of the cost for the support that is needed and that should go into the IOC Data Architecture Plan. OCG Data Vice-chair to complete the review of OCG data survey and share results at next OCG Data TT meeting - this will help with action above. JCB Data Management TT ToRs to be updated to reference IOC not just IODE, and circulate to OCG Exec for comment - WMO secretariat to check this OCG Data Vice-chair to liaise with IFREMER and look at optimising ERDDAP installation/configuration as they are serving as a DAC/GDAC for an increasing number of networks WMO to clarify the impact of having duplicate data in WIS2 Advance pilot project for integrating ERDDAP and WIS2	HIGH Q2/Q3 HIGH Q2 HIGH Q2 Medium Medium Medium

		OCG will develop/provide clear best practices for network data flows and metadata exchange to support interaction with and between GRAs and national focal points, in the framework of the IOC Data Architecture development	Medium
8	OceanOPS	Recognised the excellent work undertaken by OceanOPS across the OceanOPS Strategic Implementation Plan 2020 - 2025. Noted the AMRIT project potential to support technical development at OceanOPS Welcomed the work on the OceanOPS SLAs Approved the OceanOPS WorkPlan for 2025-2026, considering the points below. Approved the OceanOPS SLA framework (2025) Action: OceanOPS will put forward a plan for refreshing the OceanOPS 5 Years Strategy OCG Exec, WMO, and IOC, and request feedback on this, aiming to start in Q3 2025 and taking into account the feedback from the session about areas seen as important by the OCG: ● Area 1: be able to show EOVs capacity/coverage, show network achievement against network goals, show EOV 'system' achievements against requirements (RRR, other) ● Area 2: Automation services and baseline metadata/API services - this has to be completed - baseline of system automated and metadata passport there across all network	HIGH Q3 (before summer/Aug)

		• Area 3: Potentially collect vessel work together and recognise it as a line of work - SOT expansion, racing yachts…	
		OceanOPS will communicate with the OCG on the next network to be lifted into the baseline services, e.g. GLOSS, FVON, (USV). OceanOPS to review web views/tools, in light of audiences and for tracking of users - for next stage web development	Medium Q3
		IFREMER/IOC/WMO to complete host country agreement - statement	HIGH Q2 (underway needed by UNOC)
		OceanOPS to confirm with IFREMER the hosting funding arrangement for OceanOPS, consider if appropriate for annex of host country agreement above	HIGH Q2
		OceanOPS SLA / TT next steps/work to undertake 1. OceanOPS to meet with GLOSS, HF Radar and USV to discuss their SLAs (final networks to engage with on this topic) 2. OceanOPS TT to review with OCG Networks the SLA Letter of Agreement, firstly to be customized to their specifics, and identify who will sign on their behalf 3. OCG OceanOPS TT with the networks will continue its work for several months more to complete the Network Agreements and develop marketing materials/messages (Bruce said OceanOPS was great value for money!)	HIGH Q2 - Q4
		GOOS GRA Secretariat and OceanOPS to investigate needs and cost for developing views for GRAs that want this service (OceanOPS will assess and discuss OCG Exec - and see if the SLA framework provides a model)	Low Q4

9	IOCARIBE	**IOCARIBE Team to take inputs and develop a draft Ocean Observing System (OOS) plan to be delivered in 2 weeks for IOCARIBE meeting**, they will also share with OCG for circulation in 1 week for comment, and share with French connections. GOOS (Jing/Emma)/IOCARIBE Follow up with Annaïg Le Guen (director IR ILICO - France overseas territory marine research) and Lucie Cocqempot (IFREMER) for France interests research institutions and planning in the Caribbean GOOS (Jing) and OceanOPS to collaborate on developing a regional meeting across the networks and with regional contacts. Possible connection to upcoming operational workshop; TSU to send details, regional people attend meeting IOCARIBE noted that regional training on data use is needed in the region, and Argo, DBCP, + others could help, based on existing work; OCG see what networks undertake data training and make some suggestions/contacts for IOCARIBE. IOCARIBE to define needs for this assistance and report back to OCG for discussion and action IOCARIBE will follow up directly for collaboration in region based on draft plan and discussion at OCG16 Recommend: ● GOOS assist to make connections Commonwealth Ocean work ● GOOS assist with connections UK and NL for overseas territories ● IOC consider joint TSU, GRA meeting at some point	HIGH

		• GOOS interaction/support with proposed OONJ regional/multi country agreements	
10	Long term goals	Recognised the importance of observations will increase - specifically with AI/ML based prediction systems The following forward looking key topics were discussed: • RRR - GBON - cross platform planning • Uncertainty / precision: • OCG Networks Data/IOC Data Architecture important to support and develop • Testing new technology, • Risk, Cost, & Value Action: OCG Exec will consider the forward looking topics and create some suggestions for lines of action for long term goals, considering OCG ToRs, to discuss with networks and then share on an OCG Roundtable and then with GOOS. Suggest that these long term goals are set up in next months, in place by OCG-17.	HIGH Q2/Q3 (before Sept)
11	Modelling	OCG considers a forum for regular meetings with modelling community players, e.g., a regular session at OCG annual meetings and/or potentially OCG Roundtables as appropriate, for example if we were discussing RRR and cross-network design OceanOPS get info from Argo and others on planned on QC data feedback loop deliverable in AMRIT - could place on the next OCG Roundtable for discussion and/or via email	Medium Q2-Q2 Medium Q3

		OCG Data TT to develop an uncertainty framework for OCG data/metadata, this is important but not urgent - we will need to do some work at the OCG Exec to prepare what we will discuss, what we know, then discuss together on an OCG Roundtable in Q3.	HIGH Q3
	USV	Welcomed USV as an OCG emerging network, with the following recommendations: ● report annually on progress towards meeting the OCG network attributes ● ensure that its operators adopt the approved / up to date BUFR template ● finalise its network governance structure and report back to OCG ● connect with OceanOPS for SLA discussion Action: OCG to consider some a more formal process for the pathway from emerging to mature - metrics TT - which would include reporting and could also include a time period for emerging status	Medium Q2
12	Comms	Action: For network websites ● GOOS (Laura) to reach out to networks interested and/or updating network websites to evaluate the possibilities of brand alignment. ● Networks will be asked to display the new GOOS logo and boilerplate on their websites from June 2025 to indicate network affiliation with GOOS For network specification sheets:	

		• GOOS (Laura) to develop new network specification sheet design in next months for an updated GOOS look. • GOOS (Louise) to work with networks to update the information (best practices, data, sensors, etc.) in the network specification sheets • GOOS to work with four emerging networks and the Tsunami Buoys network to create new icons For the GOOS website: • GOOS to update the GOOS Ocean Observing Network webpages to include emerging networks and ensure all network information and links are up to date and aligned with the updated specification sheets and Ocean Observing Report Card 2025 during the next few months, and consider mechanisms to update maps annually. • GOOS website to be updated end 2025-2026. GOOS will seek feedback from networks on improving network page structure and other aspects. • GOOS will consider in next GOOS website updates (late 2025-early 2026) that some networks might be interested to have websites hosted by them. For the Ocean Observing Report Card: • GOOS and OceanOPS (Laura & Emanuela) to collect feedback from networks about key messages and calls to action they want to highlight in the 2025 GOOS Report Card during the next 3 months.OCG Exec/GOOS/OceanOPS Comms to consider the level of the information on the networks status table.	

		• OCG also needs to consider how to include BioEco EOV observing communities, as they develop expressions of maturity and attributes.OCG to consider contribution to GOOS and make recommendations: what should we track for future for Report Cards For Data TT: • OCG to discuss and define what we will track as contributions (related to metadata provenance and inter network support, Session 7 and Session 10), need to show support platforms, ship time, processing, support to GOOS network leadership…. so defining the purpose and what is needed and what is /useful vs what is nice to have will be important. We will need to track what is really relevant and what is feasible (there will be a threshold below which we do not track).	
13	EOV Views	Action: OCG Exec create a work plan/outline of this project including feedback from session and miro board - deliver plan back to roundtable in Q2/Q3 HIGH, start date tbd at OceanOPS management board and communicated OceanOPS/GOOS/WMO to assess/review what information from the RRR is needed for this development of an EOV monitoring tool	HIGH, Q3
	Wrap Up/Actions	Action: OCG to finalise OCG network list. Link to the list sent out via email to all networks to complete their part, with a couple of more columns (reviewed,	HIGH, Q2

		endorsed/other BP), etc. Linked with specification sheets, ongoing reporting, SLAs and network icons. i.e. if it is a network it will have and do all these OCG Exec to consider feedback on OCG-16, and decide for OCg-17 if in person / virtual and location before September 2025	

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