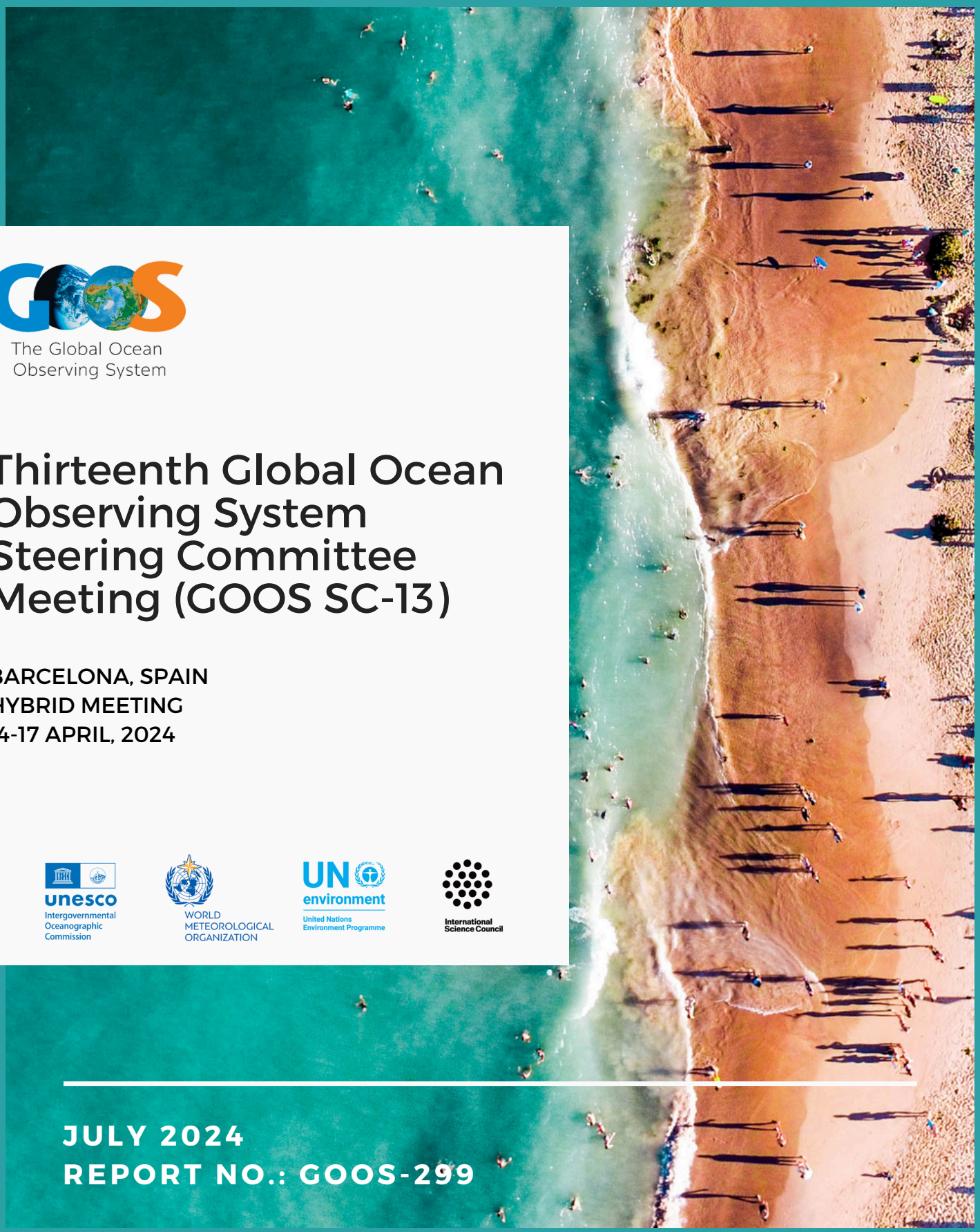
MEETING REPORT



The Global Ocean Observing System

Thirteenth Global Ocean Observing System Steering Committee Meeting (GOOS SC-13)

BARCELONA, SPAIN
HYBRID MEETING
14-17 APRIL, 2024

unesco Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment United Nations Environment Programme

International Science Council

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Executive Summary

The thirteenth meeting of the GOOS Steering Committee (SC-13) was held from 14th to 17th of April, 2024 in Barcelona, Spain, at the World Trade Center, with a virtual option for online participation. The agenda of SC-13 was based around updates on strategic goals and the priorities for GOOS identified in the outcomes of the twelfth GOOS SC meeting, held in April 2023. The sessions at the meeting were conducted to enable time for presentations on the topic followed by discussion sessions led by the GOOS SC co-chairs. Directly preceding the meeting was the Barcelona 2024 Ocean Decade Conference, where the GOOS Regional Alliances Forum was held as a 2 day satellite event. The outcomes of both of these events also fed into the discussions.

The GOOS SC meeting recognised the need and urgency to strengthen engagement with Member States and other stakeholders to invest in the global ocean observing system - to codesign observations as the raw ingredients for the value chain that provides the operational services for, amongst other things, early warning systems, risk management, marine protection and safety, biodiversity positive resilient communities, climate change mitigation and adaptation, and sustainable ocean economy.

Many operational systems (starting from numerical weather prediction for weather and climate forecasting) are dependent on ocean data and ocean observing networks and associated data systems, yet these systems are fragile. GOOS must provide the coordination, integration and advocacy for the whole observing system, including EOVs, networks, metadata, data ecosystem, regional alliances and national focal points. Investment and wide engagement is needed to enable a critical sustainable observing system –framed by the GOOS Strategy and the Ocean Decade Vision 2030 for Challenge 7. Communication and advocacy should be built in as strong elements of the GOOS coordination work at international, regional and national level. Clear terms of reference of all components of the work are critical.

The GOOS SC meeting focused on these key issues alongside hearing of ongoing resource and other challenges for the GOOS components and evolving GOOS strategy, outreach and governance to attempt to address some of these challenges. Decisions, recommendations and actions from the meeting are provided in the document and listed in Annex 1: Action Table.

Report

Note that this is an interactive document with links to recordings, presentations, and background and working documents. Click the blue underlined hyperlinks to reach those resources. The Report covers the discussions and follows the SC-13 Meeting Agenda (here), the decisions, recommendations and/or actions arising from these discussions are noted in the text and compiled in the Actions Table.

Each substantive agenda item below captures a short summary, the main points of discussion and action items of each session.

1. Opening

Key points

- Welcome from the Executive Secretary highlighting the importance of the Steering Committee to guide coordination, integration, and advocacy for GOOS
- Recognise limited resources and that budgets for actions should be outlined (as per GOOS mandate) to ensure feasibility.
- Important to move forward with GOOS using co-design approach
- Encourage increased support to National Focal Points

Presentations

- Opening remarks, Vidar Helgesen, IOC Executive Secretary
- Overview of GOOS and the introduction to the SC meeting
- Update on the GOOS Strategic Objectives

Summary

Dr. Vidar Helgensen, IOC Executive Secretary and UNESCO Assistant Deputy General opened the meeting with a video message encouraging GOOS and GOOS SC to continue its good work ensuring the link between science, policy, and action and being responsive to the needs of Member States. Dr. Joanna Post, GOOS Director, gave an overview of GOOS mandates and structure, recent developments and planning. She highlighted that the identification of the 'core' staff members coordinating GOOS will be known as the GOOS Management Team so as to differentiate with the wider GOOS system. Dr. Emma Heslop gave an update on the 11 strategic objectives of the GOOS 2030 Strategy, showing progress in many actions. There are over 70 current actions and the SC discussed optimising and reducing the actions to a more manageable number. A tactical revision of the actions in the project management tool (Monday) would ensure that the actions are future looking, track against resources and KPIs.

Also outlined in this session were updates from and linkages with the UN Decade Conference and outcomes. The Conference took place the week immediately before the SC meeting and the Barcelona Statement emphasises the priority for ocean science infrastructure needs and user engagement.

As many members of the GOOS SC had reached the end of their terms at this meeting according to the GOOS TOR, there was discussion about providing documents and/or a process that can help provide legacy information for the new incoming members.

Actions

1.1 Develop onboarding documents and/or process to onboard new SC members

1.2 Reassess and optimize the actions under the Strategic Objectives 11, ensure that the actions are future looking and track actions against resources

2. Engagement with co-sponsors

Key point

- IOC is the lead sponsor for GOOS and its governing bodies provide the mandates. As the GOOS HQ sits within IOC, engagement and impact are integrated across the agenda.
- WMO presentation and related discussion focused on ongoing collaboration to support: understanding of climate change impacts and projection, the critical infrastructure for Early Warning for All; the G3W implementation plan; as well as support at national level between NFPs
- In regards to the WMO/IOC Joint Collaborative Board (JCB), the SC should explore procedures on how to provide advice to the JCB
- UNEP presentation and related discussion focused on the collaboration on GEMS and Marine litter and strengthening collaboration, including GOOS representation at UNEA
- The ISC representative, GOOS's fourth co-sponsor, was unable to join the meeting.

Presentations

- WMO
- UNEP

Summary

Dr. Albert Fisher, WMO, presented an update on WMO including the importance of the value chain from WMO Member States collecting observations (WMO Integrated Global Observing System (WIGOS)), feeding that data into numerical weather prediction (NWP) (WMO Information System 2.0 (WIS 2.0)), Earth systems modeling (WMO Integrated Processing and Prediction System (WIPPS)) and ultimately to providing information and services for decision making.

Dr Fisher gave an update on Global Basic Observing Network (GBON) compliance globally and highlighted that many countries are making improvements. In this regard, he made reference to the Systematic Observations Financing Facility (SOFF) which aims to support SIDS and LDCs meet their GBON requirements. There is an opportunity for SOFF to support GBON marine observations, and long term potential for wider support.

Dr. Fischer highlighted the collaboration between IOC and WMO on GOOS, including on OceanOPS, and the increasing need for strong collaboration, and strengthened and integrated ocean observations for the WMO priority focus areas: operational forecasting, G3W and the UN Early Warning Initiative.

Dr. Fisher highlighted the opportunities for collaboration on governance including through the WMO Infrastructure Commission (INFCOM) and WMO/IOC Joint Collaborative Board (JCB) as well as more technical engagements such as the Expert Team on operational ocean forecasting (ETOOFS). The SC discussed how best to provide information to advise Member States through these mechanisms to better accelerate understanding of ocean observation needs and information delivery.

Ms. Joana Akrofi, UNEP, provided an update on UNEP and the increased focus on Early Warning for the Environment as well as the UNEA Resolution on "Strengthening Ocean efforts to tackle climate change, marine biodiversity loss and pollution." She outlined the importance of GOOS to GEMS and the increasing opportunities to coordinate with UNEP in their work.

Recommendations

2.1 Continue to build collaboration between WMO/GOOS on G3W, EW4All and operational forecasting

2.2 Support the routes for GOOS contributions to WMO technical regulations and guides, and governance mechanisms (such as JCB, INFCOM).

2.3 Coordinate across UNEP/GOOS to identify and build strategic approach as part of the sponsorship role of UNEP

3. GOOS response to mandates for global ocean carbon implementation plan

Key points

- Proposal for a carbon observation plan that will respond to existing requirements in the various mandates

Presentation

- GOOS response to mandates for global ocean carbon implementation plan

Summary

Dr. Maciej Telszewski presented a proposal for a Global Ocean Carbon Implementation Plan that responds to existing requirements and mandates: GCOS IP 2022, WMO G3W Implementation Plan 2024, IOC Integrated Ocean Carbon Research (IOC-R) Working Group Report 2021 and 2024. This plan is led by the BGC panel Veronique Garcon, Adrienne Sutton and Maciej Telszewski. A zero draft of the table of content was presented and discussed.

The 4 core goals of the plan would be to (i) address ocean carbon and nitrous oxide observation gaps; (ii) Provide climate information for modeling, forecasting product development, mitigation and adaptation; iii) identify sustained funding needs for observations and data management; iv) Develop optimal support structure for ocean carbon coordination efforts with GOOS. The proposed timeline is to develop this plan by 2025. Discussions highlighted that this is a critical time to develop a GOOS position with regards to priority actions for the ocean carbon community aimed at closing the ocean carbon budget. An accurate estimate of a baseline budget is urgently needed along with reliable and comprehensive ocean carbon and biogeochemistry forecasting systems provided through enhanced synthesis products, modelling, and model-data fusion activities.

Discussions included ensuring that engagement on the carbon plan was built across GOOS including with all expert panels, OCG and networks (the topic was also brought to the OCG meeting in May 2024) and GOOS Co-Design programme.

Action
3.1 GOOS BGC panel to lead effort to co-design and coordinate integrated carbon implementation plan

Other materials:

- GCOS IP 2022
- WMO G3W Implementation Plan 2024
- IOC Integrated Ocean Carbon Research Report 2021

4. Updates from GOOS Components

Key points

- Across all components, there is need for coordination as much as possible to optimise funding availability
- A number of issues were discussed which were later addressed in greater detail in other agenda items, including evolving a data strategy and strengthening communication
- In addition to a carbon observation plan, importance for a biodiversity observation plan was recognised.
- Funding challenges faced particularly by OceanOPS
- Enhanced communication from GOOS and sponsors to Member States and others should clarify needs and priorities for additional funding
- National support can be enhanced through support to ETOOFS to evolve readiness levels and communication tools

Presentations

- Expert panels cross-panel meeting outcomes
- Biogeochemistry Panel
- Ocean Observations Physics and Climate Panel
- Biology and Ecosystems Panel
- Observations Coordination Group
- OceanOPS
- Expert Team on Operational Ocean Forecasting Systems

Summary

Presentations provided an overview of achievements, challenges, and recommendations moving forward.

Dr. Belen Miguez presented a summary of the cross-panels meeting which took place in advance of the Steering Committee meeting on Sunday 14 April. The meeting discussed opportunities and priority topics for collaboration, which included coordination on GCOS, ocean indicators, carbon and biodiversity observation plans, and enhancing data and metadata flows.

Dr. Weidong Yu (OOPC), Karen Evans and Gabriell Canonico (BioEco), and Véronique Garçon and Adrienne Sutton (BGC) provided updates from the individual GOOS expert panels. Discussions included on the need to prioritize and increase the focus of Essential

Ocean Variables (EOVs) towards enhancing operational services, fisheries observations, and habitat suitability assessments. Opportunities for collaboration include co-locating panel meetings and holding joint sessions with the full panels every 2 years, starting in 2025. The panels should engage more closely with the modeling community to develop optimal metrics for observing system design and demonstrate the value of observations.

A general theme was the need for appropriate levels of funding as a priority to enable GOOS to fulfil its goals and support its activities. The increased funding to IOC from Member States for the 2024-2025 biennium was welcomed. Discussion included opportunities for engaging with private enterprises for additional funding, with suggestions for GOOS leadership to engage private and philanthropic companies, such as RevOceans.

Continuing and strengthening engagement with relevant UN entities, e.g. UNFCCC, and international initiatives was recommended to bolster the expert panels' work and enhance the impact of GOOS activities to support countries and advocate the importance of observations.

With the evolvement of the work of the BioEco panel and OBIS, the SC recognised how a biodiversity observation plan could help support GOOS response to e.g. UNEP GEMS requirements, BBNJ Agreement and Kunming-Montreal Global Biodiversity Framework.

Dr. David Legler provided updates from the OCG. The GOOS SC recognised the OCG data strategy and the necessity for a robust, GOOS-wide data management strategy as a key priority.

Dr. Matthieu Belboch provided an update from OceanOPS. The SC expressed concern about the outage for 4 months of OceanOPS web-based services due to the lack of appropriate IT resources to complete the migration of its Information System from CLS/Toulouse to Ifremer/Brest. Due to resource constraints OceanOPS's is restructuring in 2024 which will eliminate one of the three network experts, impeding its full function and resulting in the fall of core services such as visualization, critical bricks for data distribution, warnings for EEZ, etc. Discussions noted the importance of the Observation Report Card and that this would not be produced in 2024 due to resource constraints. OceanOPS needs support long-term to position for its future built around interoperability and scalable support.

Dr. Enrique Alvarez provided updates from ETOOFS highlighted how it is taking advantage of Ocean Decade developments, and of the previously developed ETOOFS guide. Planned activities discussed will provide practical outcomes that will be offered by GOOS/ETOOFS to Member States to promote the implementation of better and more reliable ocean forecasting services worldwide, including a tool to evaluate operational readiness level.

Recommendations

4.1 Provide minimum staffing and secretariat support for expert panels, even if external funding is reduced, to ensure continuity.

Actions

4.2 Consider co-locating panel meetings and having joint sessions to strengthen cross-panel collaboration.

4.3 Lead cross-panel/ community effort to co-design and coordinate an integrated and responsive marine biodiversity observing implementation plan to meet current and future assessment, reporting and conservation requirements (GOOS SC and BioEco Panel).

4.4 Further develop outreach to highlight the need for increased resources for GOOS, including OceanOPS.

4.5 ETOOFS to evolve readiness levels and communication tools to seek national-level support for GOOS.

5. Proposed procedures and definitions for the management of GOOS projects

Key points:

- GOOS projects require clear procedure and definition
- Projects are finite and should have clear benefit to GOOS, with clearly stated metrics, requirements and objectives

Presentation:

- Draft GOOS Projects procedure

Summary:

Dr. Emily Smith presented a procedure for evolving GOOS projects and their system of integration. It was asserted that projects need to have clear metrics, clear outcomes and mutual benefits for GOOS and the project. More importantly, projects need to have a beginning and an end. This then raised questions around the relationship between projects and GOOS once they are finalised: do they stop being affiliated with GOOS when they end or do they need to formally re-apply to be recognised as a project of GOOS? Discussions identified that there is a need to create a timeline for projects and a set of recommendations for them to fit into the GOOS structure, if appropriate.

The SC expressly mentioned the need for reporting mechanisms and a revision of requirements for projects. A concern relating to the accumulation of projects under the GOOS structure was raised. It was suggested that the focus could be put on projects that solve key issues for GOOS. In addition a clear process should be developed for projects to determine whether they should be integrated as part of GOOS or be identified as a finished project at the end of their identified timeline. There was some disagreement on whether or not there was a need to clarify funding of projects.

The SC noted that the revision of the original project documentation with a small team of GOOS SC representatives was needed with the above key points.

Action

5.1 Revise the Project documentation (with small team from GMT and GOOS SC)

6. Optimising synergies with the Ocean Decade, raising awareness and resources

Key points

- The Ocean Decade has introduced a process to build transformative, co-designed action for the ocean.
- GOOS Decade Programmes could build connection with other GOOS components and sponsors
- Data/metadata is key: we need to connect across GOOS - delivery, consistency, clear flows, connection to providers including those that are part of the Ocean Decade
- DCO-Ocean Observing, if resources are available can support GOOS including through building infrastructure as part of an 'ocean information' system, and establishing partnerships with key players from public, private and other sectors

Presentations

- Compiled presentation: GOOS, OARS, MarineLife, OASIS, Decade Coordinating Office - Ocean Observing Overview, Vision & Strategy
- Challenge 7 Vision
- CoastPredict

Summary

Dr. Kirsten Isensee presented on two decade programmes working towards reducing ocean stress, the Global Ocean Oxygen Decade (GOOD) and the Ocean Acidification Research for Sustainability (OARS), Dr. Gabrielle Canonico provided an update on MarineLife 2023 and Dr. Meghan Cronin presented on OASIS. Mr. Terry Mcconnell and Dr. Emma Heslop presented on the Decade Coordination Office on Ocean Observing, the GOOS Decade Programmes and the Decade Challenge 7 'Expand the Global Ocean Observing System' 2030 Vision. Dr. Joaquin Tintore presented on the GOOS Decade Programme CoastPredict.

The SC recognised the advances made in the framework of the Ocean Decade, particularly the GOOS Co-Design and CoastPredict programmes, which should be woven into GOOS as they mature. The SC encouraged greater connection of relevant decade programmes with the GOOS expert panels, GRAs and National Focal Points, as well as exploration of funding from global climate funds and private sectors for the GOOS decade programmes. Furthermore, building connections and communication with GOOS NFPs and GRAs could be a way of spreading impact in the regions to address climate risks, adaptation and mitigation. The importance of codesign was emphasised and recognised as part of the Decade programmes presented. There are also opportunities to explore GOOS Decade Programme support to GEMS Ocean, particularly in African region.

The SC discussed the Challenge 7 Vision which is to 'expand the Global Ocean Observing System'. It was noted that the Decade Challenge 7 Vision 2030 paper was not a GOOS

Paper, although many connected with GOOS were involved in the writing. GOOS can utilise the content of and take inspiration from the Vision 2030 paper. The SC recognised that the current structure of GOOS was designed to answer the questions of yesterday and not to deliver the answers needed for the future. A shift is needed to assess what "GOOS 2.0" looks like. This process should include consideration of the challenges and questions in and from the UN Ocean Decade. Connections between all the Ocean Decade Vision 2030 papers was also discussed, particularly between Challenges 2, 5, 7, 8, 9 and 10.

"Sparkly fountains require a robust plumbing system" - The DCO-ocean observing, DCO-ocean data management and DCC-ocean prediction represent the (data) plumbing systems that are crucial to the successful implementation of the information and knowledge delivery systems (including digital twins) that will inform society's needs. Integration of these ideas into the thinking behind the evolvement of GOOS is important. Support and funding to empower this data plumbing system is just as important as support and funding for the information delivery systems themselves.

The SC noted that there are a lot of activities within the Ocean Decade, a lot of scientific wishes, but not many projects in ocean observing have found new funding. In addition, there are many overlaps between the UN Ocean Decade structures and the actual/usual tasks in GOOS and elsewhere. Caution was raised not to create a parallel GOOS in the Ocean Decade, as resources are too tight. Synergies must ensured and be built towards the future system and to focus attention on what GOOS does in the Ocean Decade and how the Decade is helping to evolve GOOS, including beyond the end of the Decade after 2030.

Other materials:

- WG7 Vision 2030 White Paper
- WG7 Presentation
- Ocean Observing poster

Actions

6.1 Encourage the GOOS Decade Programmes to engage more with the components of GOOS and vice versa

6.2 Utilise the vision in Challenge 7 Vision 2030 white paper to help evolve GOOS

7. Regional and national planning, engagement, & support

Key points

- Need for clearer global coordination and improved communication structures between the GOOS Regional Alliances

Presentation

- GRA Update and Report from GRA Forum 8-9 April 2024

Summary:

Dr. Carl Gouldman gave an overview of the GOOS Regional Alliances Forum XI that took place 8-9 April 2024. The need for improved communication structures within the GOOS Regional Alliances was a recurring theme, with speakers emphasizing the importance of clear messaging and common talking points. Collaboration and cooperation among different organizations, countries, and regions were also highlighted as crucial for strengthening ocean observation and management efforts. The role of GOOS GRAs in ocean observing was discussed, with speakers calling for a clear definition of GRA council position and governance. The SC discussed ways to improve connectivity and collaboration between WMO regions and GRAs. The SC agreed that creating an engagement plan and implementing a core set of terms of reference for GRAs to share would be a valuable next step to strengthen coordination and integration including for GRAs to identify structure, observation mapping and needs, governance and contribution to GOOS.

Recommendations

7.1 Encourage connections between GRAs and WMO Regional Associations, including inviting the appropriate representative to GRAs or WMO regional meetings

Actions

7.2 Invite the GRAs Council to review the TOR of GRAs, identify clear deliverables to GOOS and reporting to GOOS SC

8. Communications

Key points

- Develop GOOS communications toolkit
- Evolve the GOOS Ocean Observing report card and webresource

Presentations

- GOOS Communications
- Ocean Observing Report Card

Summary

Ms. Laura Stukonyte presented an update on GOOS Communications, including a proposal for a messaging toolkit for GOOS and logo change.

The SC congratulated the GOOS communications team on its planning and work. The SC discussed the importance of a clear external communications and, considering the number of GOOS components, it noted that GOOS also needs an internal communications plan for its components and Member States. The SC suggested that outreach should create a clear visual representation of what GOOS is (for both internal and external audiences) as part of a wider user engagement strategy. Engagement should show cost/benefit and the importance to nations of investment in GOOS as well as encourage external implementation partners / private investors to invest.

In regards to the recently evolved NFP Communications Toolkit, the SC discussed whether this toolkit could be adapted or used by GRAs as part of regional outreach procedures.

Dr. Emanuela Rusciano presented the Ocean Observing Report Card, produced by OceanOPS, its benefits and opportunities for evolvement. The SC agreed that the Report Card is a useful tool and publication for GOOS. They suggested that a powerpoint slide deck of the Report Card should be distributed internally when the Report Card is produced as several GOOS community representatives could use it in their presentations. The SC noted that there would not be a report card produced in 2024, but in the interim, the IOC State of the Ocean Report 2024 would be produced.

There was discussion about the best way to represent the 'dots on the ocean main map' in future report cards, noting this currently overemphasises ocean observations coverage. The SC suggested that a range of images could help show the overall picture, by breaking down coverage over an area and/or time period to give an impression of actual observations and needs. Considerations for improving outreach included:

- consider a launch and press release, plus highlighting stories throughout the year, invest more in web version and web communication for promotion,
- make contributors visible and recognize their contribution,
- consider translations into multiple languages,
- involve more GRAs and NFPs (maybe through regionalized report cards),
- rethink how to represent dots to show platforms on the global map,
- emphasize ocean's critical role in climate regulation, show advancements alongside gaps, highlight significant events and technological advances, emphasize the need for continued support.

Other materials:

- SC-13 Ocean Observing Report Card
- SC-13 Session 8: Communications
- State of the Ocean Report 2024

Action
8.1 Develop messaging and comms toolkit for GOOS components
8.2 Incorporate the suggestions and ideas from the SC in preparing the next Report Card

9. Strengthening operational capacity, metadata and data flow

Key points

- Data and data availability has to be the focus of GOOS and GOOS messaging
- Noting the importance of the data strategy by OCG, BGC, OBIS, and the need for an integrated plan by GOOS.

Presentations (speaker)

- GOOS OceanOPS & OCG Data Implementation Strategy
- BioEco Panel

- BGC Panel
- Decade Data Implementation Strategy
- Initial cross-GOOS suggestions

Summary

Dr. Kevin O'Brien reported on implementing an OCG Data Implementation Strategy, focusing on cross-network data implementation, federated architecture, and better data flow tracking. The strategy represents a new approach for GOOSand was designed to be FAIR from the outset. Dr. Ward Appeltrans highlighted challenges in managing and integrating data from various biological observation programs. Dr. Veronique Garcon noted the plans for the BGC Panel in regards to data and the importance of documenting the data and associated pathways as well as common vocabularies and templates. Dr. Emma Heslop presented a proposal for creating a cross-GOOS data strategy, emphasizing the need for a consistent vision across GOOS and endorsement from the Steering Committee.

The SC discussed the metadata required to ensure that ocean data is ready for AI (digital twins), as well as in the context of the Ocean Decade, the Decade Coordination Office for Ocean Observing. There was discussion around an operational readiness index (ORI) for data, contained in the metadata, to indicate level of data, with the idea being that the highest level would be fully AI ready. Data 'branding' was noted, with the comment that the data is not GOOS data per se, and that attributing the data correctly in metadata is important, giving credit to data providers (institutes and networks). Provenance and attributes are important to advance in metadata.

The importance of data products was discussed. The SC noted that creating data products is non trivial, and that the core focus for GOOS should be on ensuring availability, rather than creating and maintaining products. However it was also noted that in some areas the people taking the observations, and undertaking calibration and quality control, are also the same people that are creating products. The SC also noted that the suggestion made (Neville Smith Report 2021 - GOOS SC-11) that GOOS just focus on taking observations does not make much sense as GOOS is part of the data flow, as indicated in the FOO. The data needs to be available, usable and useful. In the BGC space synthesis products are a part of making the data useful, a push towards more automated production of this data was noted. For the BioEco panel the BioEco EOVs are data products in themselves. The SC considered there was perhaps a need to look at the pros and cons across GOOS for evolving data products.

The need for a cross-GOOS data strategy to align data actions/activity across-GOOS and form a shared vision for a digital ecosystem was noted. IODE have identified the importance for the OCG Data Strategy Implementation Plan to ensure that it is fit for purpose from the ocean data management community standpoint. GOOS does not have enough resources (people) dedicated to data and will need more to support cross GOOS data implementation. It was suggested that GOOS needs ambition in this area, and to resource it appropriately, GOOS needs a more deliberate structure, that is visualised to understand how the different components interact, to have a system with the GOOS name. The role of GRAs was raised and what role they would play in a cross-GOOS data strategy. There is also space to consider how to engage with the private sector in this discussion. The issue of building trust

in the data system was also raised, built up through GOOS, IODE, ODIS, OBIS, the Ocean Decade, structured metadata and a system understood and demonstrably FAIR.

Other materials:

- GOOS-296 GOOS Observations Coordination Group Cross-Network Data Implementation Strategy
- Science Policy connecting the work around Ocean Prediction- presentation at the Decade Conference
- BioEco data brief
- System Integration draft brief

Actions

9.1 Create and adopt a cross GOOS Digital Infrastructure/Ecosystem Strategy in alignment with IODE, Ocean Decade Data Strategy and other partners.

9.2 Start an analysis on the pros and cons of GOOS providing data products

10. Updates on ToRs of GOOS components and GOOS Projects

Key points

- Recognition of challenges of evolving Arctic GRA
- Welcoming of BioEco panel TORs

Presentations

- Projects update
- Arctic Task Team Update

Summary

Dr. Emily Smith presented an update on the GOOS projects: i) AtlantOS; ii) Deep Ocean Observing Strategy (DOOS); iii) Ocean Best Practices; iv) Tropical Pacific Observing System (TPOS); v) Integrated Marine Debris Observing System (IMDOS); vi) SmartCables.

Dr. Craig Lee presented on the work of the Arctic GRA Task Team highlighting Greenland's urgent climate change crisis requires collaboration and best practices. The SC discussed the importance of setting clear goals and coordinating efforts, while highlighting the need for support and resources. Strategies for enhancing project coordination and communication included selecting best practices, defining a framework, and establishing a relationship with governments.

The SC discussed the updates of the projects and noted the need to have clear procedures for projects, as discussed in session 5. The SC welcomed he materials provided for this session and adopted the revised BioEco and Arctic Task Team TORs.

Other materials

- BioEco Panel Terms of Reference

- Arctic Task Team revised Terms of Reference
- GOOS SC 2024 OBPS Questions

Decisions

10.1 The GOOS Steering Committee adopted the BioEco Panel Terms of Reference (adopted in April 2024)

10.2 The GOOS Steering Committee adopted Terms of Reference of the Arctic Task Team (adopted in April 2024) and supported the creations of Arctic GRA Task Team actions

11. Five Years into the 2030 Strategy—What Should the Next 5 Years Bring?

Key points

- A townhall meeting was held at the Ocean Sciences Meeting, 18-23 February 2024, New Orleans, USA

Presentation

- GOOS strategy-five years in

Summary

Dr. Emma Heslop presented on discussions led by the GOOS management team at a town hall meeting held during the Ocean Sciences Meeting, February 2024, on what should the next 5 years bring for GOOS. The key role of GOOS was identified as supporting and coordinating ocean observing. Key areas identified at the town hall for further engagement include clarifying data delivery, focus on regional engagement and open ocean, highlight operational nature of delivery space to link to sustained funding, engage with new partners such as satellite community and Indigenous Peoples, and other UN agencies such as FAO.

The SC discussed how GOOS could focus for key delivery areas: ocean health (BBNJ, CBD, 30x30), aquaculture and fisheries (FAO), Early Warnings (EW4All), ensuring streamlined GOOS data system for EOVs data delivery and access (e.g. metadata standards, data equity, QC and QA), managing climate risk and resilience (UNFCCC), sustainable blue economy (e.g. CoastPredict programme), and the need to agitate and advise coordinated technology development (e.g. commercialisation TL5/TL9)

The SC further discussed the future strategy should consider:

- Setting priorities: GOOS SC should agree on large scale objectives and coordinated implementation plans that are implemented across platforms. In this GOOS needs to understand the priorities and necessities from countries and regions, a survey to the NFPs may be useful to start this conversation.
- Critical infrastructure: Express the need for ocean observing/GOOS to be considered critical infrastructure for risk management and a sustainable blue economy. However,

recognising that GOOS is still mainly funded by science and the evolution to critical infrastructure cannot abandon this connection.
- Partner recognition: implementation is carried out with partners, from data providers to stakeholders, GOOS should adopt procedures to give credit to partners.
- Develop communications: to enhance GOOS influence and guidance, such that we message and seek funding for the change we want e.g. evidence based blue finance.
- Evolvement in line with the Decade Vision 2030.

Actions

11.1 Consider surveying the GOOS NFP and GRA to understand national necessities and priorities for the future

11.2 When reviewing the GOOS strategy, GOOS should revise and focus its priorities noting that it must be seen as critical infrastructure for research and operational services, meeting needs of Member States, multilateral agreements, nations and regions, as well as of science.

11.3 Consider ways to recognise partners' investments in GOOS and the level of investment needed for an optimised global system.

12. Priority activities and next steps

Key points
- Discussion on EC57 agenda item on GOOS governance
- Summary of key messages from the GOOS SC meeting

Summary

Dr. Joanna Post presented on the IOC mandates for GOOS to be addressed at the Executive Council 57, particularly on the draft working document for the session on GOOS governance which was shared with the SC in advance of the SC meeting. The Steering Committee provided input and comments on the paper during the session and in a follow up meeting with to finalise the document.

Ms Post also summarised the actions and priorities identified during the 3 days of the SC meeting. The SC recognised important to:
- Map current structure of GOOS and identify why GOOS is important, what is the value proposition, what are the measures of success.
- Create a stable foundation for GOOS, focusing its mission to facilitate worldwide cooperation in providing a fit-for-purpose ocean observing system that balances support of science with provision of data for operational services;
- Consider review of relevant TO, including SC structure and composition, and prioritization of activities of GOOS components;
- Synergise with the work being undertaken within the Ocean Decade including in regards to building a functioning Digital Ecosystem that fully enables end-user

applications and enable the implementation of an ocean observing system that seamlessly feeds through to knowledge in the hands of end-users;
- Evolve a GOOS user and uptake strategy to identify the level of investment needed for the global ocean observing system.
- Develop a communications toolkit that can be used by all members of the governance and support structure
- Engage with GRA council to encourage regional plans with clear deliverables for GOOS
- Support evolvement of NFPs to national committees

Other materials (from EC-57, June 2024)

- IOC/EC-57/4.1.Doc(1) Global Ocean Observing System (GOOS) Governance
- EC-57 Action paper
- EC-57 Presentation on governance

Actions

12.1 Finalise governance document to present to EC57, and then implement.

12.2 Incorporate priorities identified at the SC meeting into GOOS planning moving forward.

Section of the report	Actions/Recommendations/Decisions resulting from the GOOS SC	Urgency: High/Medium/Low	Responsible for Action
1. Opening	Action 1.1 Develop onboarding documents/process for new SC members		GOOS Management Team
	1.2 Reassess and optimize the actions under the Strategic Objectives 11, ensure that the actions are future looking and track actions against resources		
2. Engagement with co-sponsors	Recommendations: 2.1 Continue to build collaboration between WMO/GOOS on G3W, EW4All and operational forecasting		
	Recommendation 2.2 Support the routes for GOOS contributions to WMO technical regulations and guides, and governance mechanisms (such as JCB, INFCOM).		
	Recommendation 2.3 Encourage UNEP/GOOS to identify and build strategic approach as part of the sponsorship role of UNEP		
3. GOOS responses to mandates for global ocean carbon implantation plan	Action 3.1 GOOS BGC panel to lead cross-panel/ community effort to co-design and coordinate integrated carbon implementation plan		GOOS BGC panel

Annex 1: Action Table

4. Updates from GOOS Components	Recommendation 4.1 Provide minimum staffing and secretariat support for expert panels, even if external funding is reduced, to ensure continuity.		GOOS Management Team
	Actions 4.2 Consider co-locating panel meetings and having joint sessions to strengthen cross-panel collaboration.		GOOS SC and Panels
	Action 4.3 Lead cross-panel/ community effort to co-design and coordinate an integrated and responsive marine biodiversity observing implementation plan to meet current and future assessment, reporting and conservation requirements		Panels with support from GOOS Management Team
	Action 4.4 Further develop outreach and communications including to highlight the need for increased resources for GOOS, including OceanOPS.		GOOS components
	Action 4.5 ETOOFS to evolve readiness levels and communication tools to seek national-level support for GOOS		GOOS BioEco Panel
5. Proposed procedures and definitions for the management of GOOS projects	Action 5.1 Revise the Project documentation (with small team from GMT and GOOS SC)		GOOS Management Team

6. Optimizing synergies with the Ocean Decade raising awareness and resources	<u>Action</u> 6.1 Encourage the GOOS Decade Programmes to engage more with the components of GOOS and vice versa		GOOS SC
	6.2 Utilise the vision in Challenge 7 Vision 2030 white paper to help evolve GOOS		
7. Regional and national planning, engagement & support	<u>Action</u> 7.1 Encourage connections between GRAs and WMO Regional Associations, including inviting the appropriate representative to GRAs or WMO regional meetings		GOOS Management Team and GRAs
	<u>Recommandation</u> 7.2 Invite the GRAs Council to review the TOR of GRAs, identify clear deliverables to GOOS and reporting to GOOS SC		GOOS Management Team
8. Communications	<u>Action</u> 8.1 Develop messaging and comms toolkit for GOOS components		GOOS Management Team
	8.2 Incorporate the suggestions and ideas from the SC in preparing the next Report Card		

9. Strengthening operational capacity, metadata and data flow	Action 9.1 Create and adopt a cross GOOS Digital Infrastructure/Ecosystem Strategy in alignment with IODE, Ocean Decade Data Strategy and other partners.		GOOS Management Team
	9.2 Start an analysis on the pros and cons of GOOS providing data products		
10. Updates of TORs of GOOS components and GOOS projects	Decision 10.1 The GOOS Steering Committee adopted the BioEco Panel Terms of Reference (adopted in April 2024)		
	Decision 10.2 The GOOS Steering Committee adopted Terms of Reference of the Arctic Task Team (adopted in April 2024) and supported the creations of Arctic GRA Task Team actions		
11. Five Years into the 2030 Strategy – What should the next 5 years bring?	Recommendation 11.1 Consider surveying the GOOS NFP and GRA to understand national necessities and priorities for the future		GOOS Management Team
	Recommendation 11.2 When reviewing the GOOS strategy, GOOS should revise and focus its priorities noting that it must be seen as critical infrastructure for research and operational services, meeting needs of Member States, multilateral agreements, nations and regions, as well as of science.		GOOs Management Team and GOOS SC
	11.3 Consider ways to recognise partners' investments in GOOS and the level of investment needed for an optimised global system.		GMT

12. Priority activities and next steps	12. 1 Finalise governance document to present to EC57.		GOOS Director
	12.2 Incorporate priorities identified at the SC meeting into GOOS planning moving forward.		

Annex 2: List of participants

Name	Email	Affiliation	Role	Note
David Legler	david.legler@noaa.gov	OCG-EXB	Speaker	Online
Emma Heslop	e.heslop@unesco.org	GOOS	Speaker/Moderator	In person
Mathieu Belbéoch	mbelbeoch@ocean-ops.org	OCG-EXB	Speaker	In person
Ann-Christine Zinkann	ann-christine.zinkann@noaa.gov	OCG-EXB	Speaker/Moderator	In person
Ting Yu	t.yu@unesco.org	OCG-EXB	Speaker	In person
Forest Collins	f.collins@unesco.org	GOOS	Participant	Online
Emanuela Rusciano	erusciano@ocean-ops.org	OceanOPS	Speaker	Online
Belen Martin Miguez	bmartinmiguez@wmo.int	OOPC	Participant	in Person
Maciej Telszewski	m.telszewski@ioccp.org	BGC Panel	Speaker	In person
Laura STUKONYTE	l.stukonyte@unesco.org	GOOS	Speaker	Online
Belen Jimenez Baron	Belen.JimenezBaron@niwa.co.nz	Seabed 2030	Speaker	Online
Akrofi Joana	joana.akrofi@unep.org	UNEP	Speaker	In person
Canonico Gabrielle	gabrielle.canonico@noaa.gov	Ex Officio Panel co-chair BioEco	Speaker/Participant	In person
Suzan El-Gharabawy	suzymooo@yahoo.com	Regional Expert Group V		In person
Albert Fischer	afischer@wmo.int	WMO	Speaker	Online
Karen Evans	Karen.Evans@csiro.au	Ex Officio Panel co-chair BioEco	Speaker/Participant	In person
Fyrberg Katarina Lotta	Lotta.Fyrberg@smhi.se	Ex Officio IODE co-chair		In person
Garcon Veronique	garcon@ipgp.fr	Ex Officio Panel co-chair GOOS BGC	Speaker	In person
Patrick Gorringe	patrick.gorringe@smhi.se	Regional Expert Group I		In person
Carl Gouldman	Carl.gouldman@noaa.gov	Ex officio GRA Chair	Speaker	In person
Dwikorita Karnawati	dwiko@bmkg.go.id	SC core member	Participant	Online
Dominik Krzyminski	d.krzyminski@ioccp.org	International Ocean Carbon Coordination Project	Participant	In person
Terry Mcconnell	t.mcconnell@unesco.org	UNESCO-IOC	Speaker	In person
Craig Mclean	craig.mclean@noaa.gov	SC core member	Speaker	In person
Balakrishnan T.M Nair	bala@incois.gov.in	Regional Expert Group IV		In person
Wei Peng	viaway@126.com	SC core member		In person
Peter H. Pissierssens	peter.pissierssens@me.com	UNESCO-IOC		Online

Nelly Florida Riama	nelly.florida@bmkg.go.id			In person
Vladislav Shaimardanov	vlad@meteo.ru	Regional Expert Group II		Online
John Siddorn	john.siddorn@noc.ac.uk	SC core member		In person
Paula Cristina Sierra-Correa	paula.sierra@invemar.org.co	Ex officio IODE co-chair		Online
Matias Ignacio Sifon	msifona@gmail.com	Regional Expert III		In person
Toshio Suga	suga@pol.gp.tohoku.ac.jp			In person
Adrienne Sutton	adrienne.sutton@noaa.gov	Ex officio Panel co-chair BGC	Speaker	In person
Toste Tanhua	ttanhua@geomar.de	SC core member, co-chair	Speaker	In person
Joaquin Tintore	jtintore@socib.es	SC core member	Speaker	In person
Anya M Waite	anya.waite@dal.ca	SC core member, c0-chair	Speaker	In person
Yu Weidong	yuwd@mail.sysu.edu.cn	ex officio Panel co-chair OOPC	Participant	Online
Enrique Alvarez	ealvarez@mercator-ocean.fr	ETOOFS	Speaker	Online
Meghan Cronin	Meghan.F.Cronin@noaa.gov	OASIS	Speaker	Online
Kevin O' Brien	kevin.m.obrien@noaa.gov	GOOS OceanOPS	Speaker	In person
Ward Appeltans	w.appeltans@unesco.org	UNESCO-IOC	Speaker	Online
Maria Paz Chidichimo	mpchidichimo@hidro.gov.ar		Participant	Online
Jessica Snowden	jessica.snowden@noaa.gov	US IOOS	Participant	Online
Renellys Perez	renellys.c.perez@gmail.co	CIMAS	Participant	Online
Christine S			Participant	Online
Sergey Belov	belov@meteo.ru		Participant	Online
Ana Lara-Lopez	a.laralopez@unesco.org	BioEco Panel	Participant	Online
Wang Yi	wyiocean_nmdis@163.com	National Marine Data Information Service	Participant	In person
Tri BMKG			Participant	Online
Nico Lange	nlange@geomar.de	GEOMAR	Participant	Online
Joseph Nolan	joseph.nolan@eurogoos.eu	EUROGOOS	Participant	Online
Craig Lee	craig@apl.washington.edu		Participant	Online
Johannes Karstensen	jkarstensen@geomar.de	Ocean Best Practices	Participant	Online

Pauline Simpson	p.simpson@unesco.org	UNESCO	Participant	Online
Jay pearlman	jay.pearlman@ieee.org	IEEE	Participant	Online
C Gallage	cgallage@wmo.int	WMO	Participant	Online
Honda/WMO			Participant	Online
Int.Cooperation BMKG			Participant	Online

Annex 3: Group Photo

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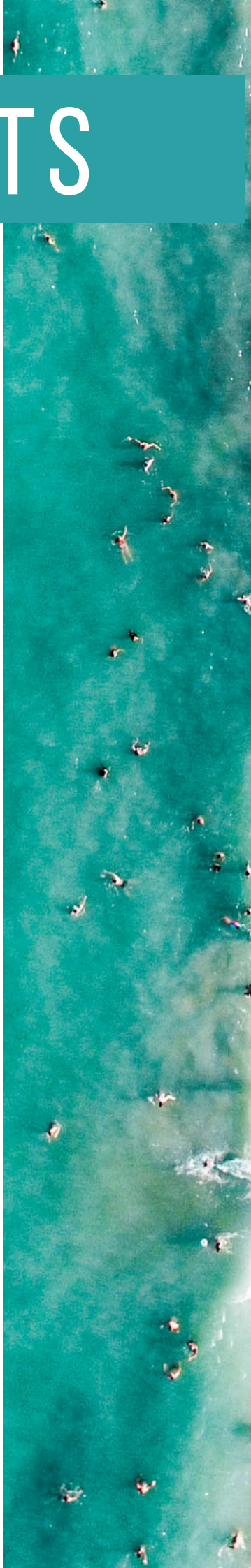

The Global Ocean Observing System

unesco Intergovernmental Oceanographic Commission

WORLD METEOROLOGICAL ORGANIZATION

UN environment United Nations Environment Programme

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