Newsletter

July 2025

We're excited ...

to share the latest edition of the OceanPredict (OP) newsletter! It's been a little while since our last update, and during that time, the OP community has grown stronger and achieved several key milestones. In this issue, we'll not only showcase our recent activities but also highlight our contributions to the UN Decade of Ocean Science for Sustainable Development.

Through our ForeSea programme, we continue to work towards developing the foundations for a global ocean information system, integrating of ocean prediction efforts with other components of the operational oceanography value chain and enhancing user applications and delivering greater societal benefits. While these objectives remain a challenge, addressing them is essential to building the ocean prediction capacity of the future.

We are fully committed to this mission — and we are making great progress!

OceanPredict activities

OceanPredict further strengthened its scientific and collaborative agenda by organizing the **Symposium OP'24**, resulting in a collaborative article in **BAMS** *(to be published soon),* followed by a strong **call for international mobilization to advance ocean prediction** by engaging ocean science stakeholders, launching a dedicated **Task-Team on Artificial Intelligence**, and supporting the latest **COSS-TT meeting** to advance coastal ocean forecasting.

ForeSea activities

ForeSea has been actively engaged in advancing ocean prediction for societal benefits through key contributions at **Symposium OP'24.** These included focusing on user applications and societal benefits facilitating the societal aspect in the **international collaboration session**. These initiatives supported the broader **call for international mobilization** to strengthen global ocean forecasting capabilities. Additionally, recent **SynObs updates** have further enriched the scientific dialogue around sustained and integrated

In this issue

Key outcomes from OP'24, BAMS paper

Over the past year, the primary focus of OceanPredict/ForeSea has been the organization of the **OP'24 symposium**, held in collaboration with IOC-UNESCO and the UN Decade of Ocean Science (Paris, November 2024) (Figure 1). The event: *"Advancing Ocean Prediction Science for Societal Benefit"*, served as a major milestone in advancing international coordination and community-building efforts under the ForeSea initiative, aimed at strengthening future ocean prediction capabilities.

Key outcomes of OP'24 Symposium were compiled for a **collaborative publication in the *Bulletin of the American Meteorological Society* (BAMS)**, submitted in May, highlighting the:

- **Acknowledgment of the societal value of ocean information** through accelerated progress in operational oceanography, a clearer understanding of users' evolving needs, and improved service delivery strategies, all aimed at enhancing prediction capabilities to better support government services such as search and rescue operations, marine regulations, and maritime industries (e.g., ship routing).

The BAMS paper publication is expected shortly and will be announced on the OP website.

- **Recognition of the urgent need for advanced ocean monitoring and prediction capabilities** to support sustainable ocean management, marine biodiversity protection, and climate change mitigation and adaptation policies.
- **Community consensus on the need for sustainable ocean environment prediction systems**, with the identification of **four main scientific and operational challenges to advance ocean prediction**:
  - ◊ Strengthening observation systems (in situ, satellite) and data sharing.
  - ◊ Leveraging digital tools and emerging technologies (AI, digital twins, cloud computing) in line with UN Ocean Decade's Vision 2030 on Challenge 8, which focuses on the creation of a digital representation of the ocean.
  - ◊ Advancing ocean modelling and data assimilation to better understand Earth system interactions (ocean–atmosphere–ice-land) and to improve the accuracy of ocean forecasting.
  - ◊ Enhancing international coordination by leveraging the Ocean Decade framework.

- The OP'24 outcomes resulted in a **Global call to action to advance ocean prediction** by mobilizing ocean science stakeholders. This ongoing initiative builds on the outcomes of OP'24 has been officially launched at the UN Ocean Conference in Nice, June 2025. More info page 4.

Summary of the OP'24 outcomes

1. Over 300 contributions (orals and posters),
2. Addressing critical ocean prediction challenges
3. AI and Digital Twins: game-changers for ocean prediction data
4. Societal benefits and policy implications
5. Enhanced international collaboration

The OP'24 symposium website (https://www.oceanpredict24.org/) provides replays and presentations in the sections "oral records" and the OP'24 outcomes in section "OP'24 summary"

OP'24. Photo credits: OceanPredict

Figure 1: OceanPredict Symposium 2024 (OP'24), Paris, France, November 2024

OCEANPREDICT/ FORESEA INVITES ALL COMMUNITY PARTNERS TO SIGNING UP IN SUPPORT FOR THE CALL FOR ACTION — SIGN HERE:
Support the Call for Action to Advance Ocean Prediction for the Benefit of Society

Call for International Mobilization to advance ocean prediction capabilities for the benefit of society

You are invited to sign this call!

The **Call for International Mobilization,** led by OceanPredict/ ForeSea and Mercator Ocean International, aims to advance ocean prediction capabilities **in response to societal needs**. Building on the outcomes of the OceanPredict'24 Symposium and aligned with UN Ocean Decade priorities, it aims to engage key international stakeholders to advance ocean observing, modeling, data assimilation, and digital technologies to collectively advancing ocean prediction science for societal benefit. A first commitment was approved during the UNOC3 in Nice last June (Figure 2) , involving IOC-UNESCO, GOOS, OceanPredict/ForeSea, Mercator Ocean International, space agencies, the European Commission, OceanPrediction Decade Collaborative Center and many other relevant UN Decade programmes. This call for action aims to emphasize the urgent need to advance ocean prediction capabilities to sustainably manage the ocean, protect marine biodiversity and support climate change mitigation and adaptation policies.

« Ocean prediction tools, including reanalyses and forecasting systems, are essential to enable evidence-based decision-making and further support the sustainable stewardship of ocean resources, the protection of marine biodiversity, and the development of effective climate change mitigation and adaptation policies » *Pierre-Yves Le Traon, Scientific Director of Mercator Ocean International*

In direct support to the UN **SDG 14 on the sustainable use of the Ocean's resources, the protection of marine biodiversity**, and the **development of effective climate change mitigation and adaptation** strategies.

United Nations

14 LIFE BELOW WATER
Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Building on the outcomes of OceanPredict symposium '24, the Call for action highlights the urgent need to enhance ocean observing, modeling, data integration, and the development of innovative, reliable, and **Ocean prediction decision-making tools**, including reanalysis and forecasting systems:

- based on **reliable observation** networks,
- based on **improved models and data assimilation** for fit-for-purpose services,
- that fully leverage of **artificial intelligence** and the acceleration in **digital twin** development,

Challenges to address:

- enhancing the integration of models representing ocean and sea ice physics, biogeochemistry, biology, surface waves, and the atmosphere,
- advancing the prediction of coastal and polar areas,
- advancing and expanding ocean biogeochemistry, marine life and ecosystem prediction,
- developing further marine pollution modelling, including marine debris, chemicals and oil spill,
- filling gaps in the global ocean observing network, including implementing and sustaining the OneArgo array and preparing the required future satellite oceanography missions,
- developing and using tools to design and assess the impact of observing systems,
- developing higher resolution submesoscale models and data assimilation,
- extending the forecast horizon up to 1 month, and extending seasonal, decadal prediction and climate projection to the marine ecosystems,
- enhancing the intelligence of ocean prediction products by providing uncertainties and probabilistic forecasts,
- developing artificial intelligence modelling and data assimilation methods, harnessing digital twins to enhance the interaction between ocean prediction centres and users' communities, including the co -design of "what-if" scenario tools to support planning for climate resilience, restoration, and ocean-based economies

Photo credits: Mercator Ocean International

Figure 2: Launch of international mobilization to enhance ocean prediction capabilities for societal benefits. OOSC and UNOC3, Nice, France, June 2025. Top Left: S. Cuven (MOi), M. Drévillon (MOi), PY. Le Traon (MOi), V.Helgesen (IOC-UNESCO), A. Cacciari (DG-DEFIS, European Commission) , J. Post (GOOS), P. Bahurel (MOi) - High-level event at the EU Digital Pavilion, UNOC3. Top right: J. Tintore (SOCIB), P. Bahurel (MOi), D. Lecellier (MOi, GeoBluePlanet), PY Le Traon (MOi), Y. Faugere (CNES), S. Wijfells (WHOI), M. Drévillon (MOi), E. Alvarez (MOi, OceanPrediction DCC), Joana Staneva (Hereon), J. Veitch (SAEON) - Town Hall at the OOSC. Bottom left: M. Drevillon (MOi, OceanPredict). Bottom right; J. Post (GOOS), C. Donlon (ESA).

ForeSea strategy

1. Development of the **foundations** for a global ocean information delivery system
2. **Integration of ocean forecasting**/prediction efforts with other affiliated efforts and other components of the operational oceanography value chain.
3. Development of **improved assessments and prediction** of the ocean system
4. Implementation of coordinated **capacity building**
5. Improvement of **ocean modeling capacity** (numerical algorithms, parameterizations, resolution, etc.)

ForeSea activities - OP'24

The successful organization of the **OP'24 symposium** last November in Paris, in collaboration with IOC-UNESCO, stands as a significant achievement for ForeSea and a major milestone in advancing operational oceanography for societal benefit under the Ocean Decade framework.

Session dedicated to societal benefits

Among the seven themes addressed, a dedicated focus was placed on **user applications and societal benefits.** It highlighted operational ocean services that provide essential information for diverse applications aimed at preserving marine ecosystem health and supporting the well-being of communities dependent on ocean resources. This session also focused on innovations in environmental monitoring, sustainable blue economy management, maritime safety, and advanced modeling to support marine policy implementation and enhance ocean resilience.

This session enabled progress in linking science and diplomacy through three key approaches: **diplomacy for science** (promoting international scientific cooperation, through G7 Future of the Seas and Ocean Initiatives), **science for diplomacy** (using scientific collaboration to improve international relations, through the UN Ocean Decade for Sustainable Development), and **science in diplomacy** (providing scientific advice to inform policymakers, demonstrated by Geo Blue Planet) (Figure 3). An example outcome is the Integrated Marine Debris Observation System (IMDOS), developed to coordinate the marine debris scientific community in creating a sustainable global monitoring network with open data access.

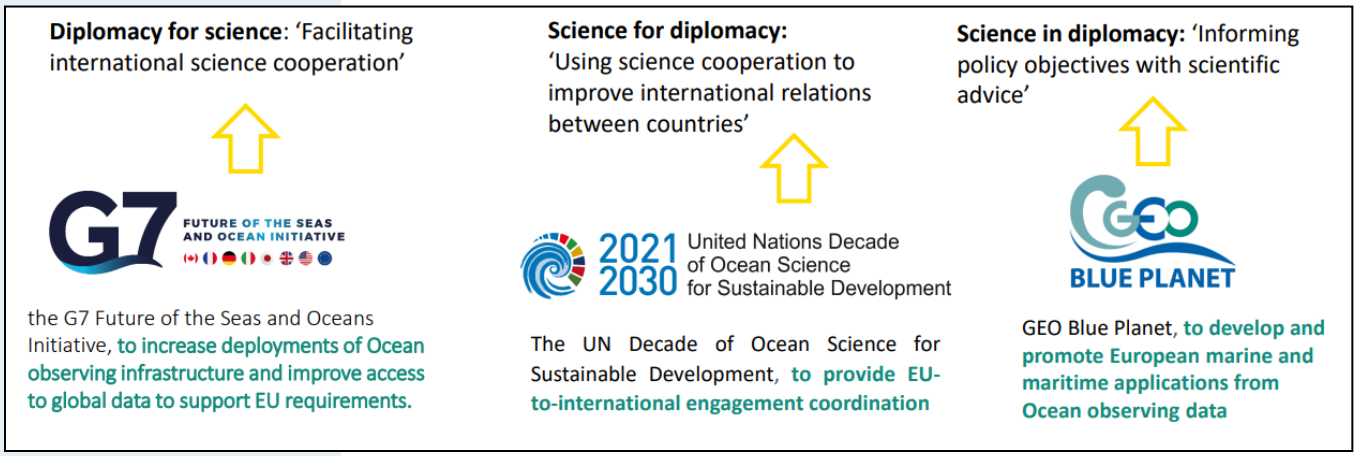


Figure 3: « EU4OceanObs: A Science Diplomacy Instrument ». From A. Hasson's presentation. OP'24, Paris,

Session dedicated to the Ocean Decade

During the special session *"**ForeSea in the UN Ocean Decade Framework"**,* key figures from the international oceanographic community highlighted the essential role of digital ocean forecasting in achieving the ambitions of the UN Decade of Ocean Science for Sustainable Development.
Julian Barbière (IOC-UNESCO) emphasized the strategic roadmap of the UN Decade and its vision towards 2030. Enrique Alvarez (Mercator Ocean International) presented the OceanPrediction DCC as a central coordination mechanism for connecting global efforts in ocean forecasting. Finally, Fraser Davidson (ECCC) showcased the growing impact and contributions of the ForeSea initiative in supporting this collective mission.
The session addressed Challenge 8 of the UN Ocean Decade **"The (numerical) Ocean we want"** which aims to build a globally coordinated, open, and accessible ocean forecasting system. Key objectives include:

- Providing actionable, interoperable ocean predictions linked to big data services
- Supporting coastal forecasting centres in meeting the needs of local communities
- Enhancing predictions related to the blue economy and socio-economic outcomes
- Testing ocean responses to climate change and informing mitigation strategies
- Promoting operational ocean literacy among policymakers and the public

OP'24. Photo credits: OceanPredict

Figure 4: OP'24 sessions, Paris, France, November 2024— Top left: G. Liu (NMEFC), A. Hasson (MOi), J. Post (IOC-UNESCO / GOOS). Bottom left: J. Barbière (IOC-UNESCO / Ocean Decade). Right: E. Chassignet (FSU, ForeSea Co-Chair).

UN Ocean Decade challenges addressed by ForeSea:

UN Ocean Decade Challenge 6: Enhance multi-hazard early warning services for all geophysical, ecological, biological, weather, climate and anthropogenic related ocean and coastal hazards, and mainstream community preparedness and resilience.

UN Ocean Decade Challenge 7: Ensure a sustainable and sustained ocean observing system across all ocean basins that delivers accessible, timely and actionable data and information to all users.

UN Ocean Decade Challenge 8: Through multi-stakeholder collaboration, develop a comprehensive digital representation of the ocean, including a dynamic ocean map, which provides free and open access for exploring, discovering, and visualizing past, current, and future ocean conditions in a manner relevant to diverse stakeholders.

UN Ocean Decade Challenge 9: Ensure comprehensive capacity development and equitable access to data, information, knowledge and technology across all aspects of ocean science and for all stakeholders.

OceanPredict Task Team activities

Coastal Ocean and Shelf Seas (COSS-TT)

"The main goal and central mission of the COSS-TT is to work within OceanPredict towards the provision of a sound scientific and expert basis for sustainable multidisciplinary downscaling and forecasting activities in the world's regional and coastal oceans. ***The strategic goal of the COSS-TT is to help achieve a truly seamless framework from the global to the coastal/ littoral scale.*** *A major contribution is to address the particular challenges on monitoring and forecasting in coastal areas and regional seas, where the majority of human marine activities take place. As these are also the areas of enhanced exploitation of marine resources, the COSS-TT has a mission well aligned with society's needs and benefits."*

The main disciplines considered within the TT are coastal ocean physics and interactions between physical and biogeochemical processes, The COSS-TT and its community meet approximately every 18 months. Meetings aim to bridge several communities and subcultures by addressing their specific questions together, as reflected by the target attendees.

More info: Coastal Ocean and Shelf Seas (COSS-TT) - Ocean Predict

■ COSS-TT June 2025 meeting

From **17 to 20 June 2025**, the Coastal Ocean and Shelf Seas Task Team (COSS-TT) of *OceanPredict* held its meeting at Ifremer in **Plouzané, France**, bringing together members and international experts in a hybrid format. The meeting focused on advancing scientific understanding and forecasting capabilities across the land–sea continuum, addressing the complex chain of interfaces between river basins, estuaries, deltas, coastal seas, and the open ocean. The meeting advanced the scientific foundations of coastal forecasting systems and reinforced COSS-TT's contribution to ***OceanPredict*** and the **UN Ocean Decade**.

Figure 5: Group photo, COSS-TT meeting, Brest, France June 2025.

Key outcomes included advances in integrating in-situ and satellite observations, with promising results from SWOT data assimilation to resolve small-scale coastal features. The importance of cost-effective, smart observing networks, supported by OSSEs and OSEs, was emphasized for improving forecast skill. Progress in high-resolution modeling of coastal dynamics, including wave–current interactions, tidal mixing, and river plumes, highlighted the role of unstructured grids and coupled systems for multi-hazard prediction and downscaling.

The meeting underlined the value of hybrid physics-informed AI approaches as complementary tools, while calling for transparency, uncertainty quantification, and standardization in AI applications. A shared priority was the co-design of digital twins and decision-support systems that integrate physical, biogeochemical, socio-economic components and AI to provide user-oriented services (e.g. for coastal risk management).

COSS-TT's strengthened coordination with other task teams (AI/ML, Syn-

Obs, ETOOFS) and alignment with initiatives such as OceanPrediction DCC, CoastPredict, and DITTO were key contributions, supporting complementarity, inclusivity, and the translation of science into operational services.

MEAP-TT activities update

The MEAP team is actively contributing to the advancement of marine ecosystem science and modeling through several exciting initiatives.

- The OceanPredict MEAP Task Team has been highly active, regularly organizing **online seminars** to foster collaboration and knowledge sharing within the community.

Link to meetings and seminars: Marine Ecosystem Analysis and Prediction (MEAP-TT) - Ocean Predict

- **Session at OSM2026**

MEAP will host a dedicated session at the Ocean Sciences Meeting 2026, titled: **"OB002 - Advancing Marine Ecosystem Modeling for a Predictable and Sustainable Ocean".** This session will highlight the essential role of marine ecosystem models in tackling climate change and human impacts on the ocean. It will feature cutting-edge developments including AI applications, trophic-level modeling, and novel data integration approaches. During OSM2026, MEAP members will also convene to share their latest scientific progress and review plans for future collaboration. Session details. **Abstract submission deadline: 20 August 2025**

- **Collaboration in NECCTON**
  Several MEAP members are key contributors to the **EU Horizon NECCTON project** (www.neccton.eu). Recent collaborative achievements include:
  - Release of model code in the NECCTON repository
  - Progress on zooplankton diel vertical migration and bio-optical modeling via FABM, shared across European forecasting centers
  - Delivery of major modeling outputs and tools:
    - Climate change indicators → DOI: 10.5281/zenodo.15774352
    - Marine pollutant modeling → DOI: 10.5281/zenodo.14930389
    - Pelagic biogeochemistry modules → DOI: 10.5281/zenodo.14926410
    - Visualization and dissemination tools → DOI: 10.5281/zenodo.14568647

These outcomes were recently presented at the **UN Ocean Conference** in Nice, during the session on Marine Biodiversity.
Watch the presentation: YouTube link

Marine Ecosystem Analysis and Prediction (MEAPTT)

Develop the underpinning science and tools that will further the integration of biogeochemical and ecosystem models into existing ocean operational systems. The area of biogeochemical and ecosystem prediction is of significant societal relevance, supports the UN Sustainable Development Goals 13 (climate change) and 14 (life below water), and supports Blue Growth.

More info: Marine Ecosystem Analysis and Prediction (MEAP-TT) - Ocean Predict

Synergic Observing Network for Ocean Prediction (SynObs)

SynObs is a project endorsed by the UN Ocean Decade.

SynObs will seek to extract maximum benefit from combining various observation platform measurements, typically satellite and in situ observation data, or combinations of coastal and open ocean platforms for ocean/coastal predictions.

SynObs aims to identify the optimal combination of the different ocean observation platforms through observing system design and evaluation, and to develop assimilation methods which can enable drawing synergistic effects from these combinations. Targets of SynObs include open-ocean, such as global, tropical, mid-latitude, arctic and subarctic oceans, as well as coastal-sea, and biogeochemical observing systems.

SynObs is being proposed as a common comprehensive Decade Project to the three Decade Programmes: ForeSea, CoastPredict , and Observing System Co-Design.

SynObs was officially launched at the Joint OS-Eval TT/CP-TT workshop in Tsukuba, Japan, 15-18 Nov 2022.

More info: SynObs UN Decade Project - Ocean Predict

■ SynObs activities

The Observing System Evaluation Task Team (OS-Eval TT) leads "Synergistic Observing Network for Ocean Prediction" (SynObs), which is an UN Ocean Decade Project under the UN Ocean Decade Program ForeSea (SynObs UN Decade Project - Ocean Predict).

SynObs is currently promoting a **coordinated multi-system Observing System Evaluation (OSE) project,** named the SynObs flagship OSEs, and the OSE results have been provided from UK Met Office, ECCC, JMA-MRI, Pukyong National University, ECMWF, and NOAA-NCEP, and shared through the SynObs Database (https://www.jamstec.go.jp/jcope/distributions/SynObsDB/). OSE daily analysis and forecast fields are available to anyone volunteer to analyze the sensitivity of a quantity of interest to the assimilation of different ocean observing systems and the different assimilation systems. If you are interested, please contact the SynObs office at (synobs@mri-jma.go.jp).


frontiers | Frontiers in Marine Science

Editorial: Demonstrating observation impacts for the ocean and coupled prediction

Peter R. Oke, Yosuke Fujii and Elizabeth Remy

Editorial on the Research Topic
Demonstrating observation impacts for the ocean and coupled prediction

1 Introduction

SynObs has led the research topic **"Demonstrating Observing Impacts for Ocean and Coupled Prediction"** in the Frontiers in Marine Science, and the research topic is now fully published. Please visit: https://www.frontiersin.org/research-topics/58025/demonstrating-observation-impacts-for-the-ocean-and-coupled-prediction/magazine. We recommend visiting the webpage. You can find the paper on the early results of the SynObs flagship OSEs (https://doi.org/10.3389/fmars.2024.1476131), as well as other papers on variety of ocean observing system evaluation and design.

SynObs organized the science session "Earth System Observation Impacts on Climate and Ocean Predictions" on May 27 in the **Japan Geoscience Union Meeting 2025** in Chiba, Japan. Results of various observing system evaluation studies were presented, and the importance of maintaining the Earth System Observing Network and the need for their impact evaluation were emphasized during the session.

SynObs also proposed the science session "Co-designing the synergistic ocean observing Network for ocean and climate monitoring and predictions" for **2026 Ocean Science Meeting in Glasgow**, jointly with UN Ocean Decade Program "Ocean Observing CoDesign": **Co-designing the synergistic ocean observing Network for ocean and climate monitoring and predictions**. We highly encourage submitting abstracts for relevant studies by August 20, 2025.

In addition, we plan to have **SynObs international Workshop 2026** in 24-28 May 2026 in Mustu, Japan. We hope that many SynObs and OceanPredict members will participate in the workshop, share the SynObs achievements, and enjoy the culture and nature of Mutsu.

Observing System Evaluation (OS-Eval-TT)

OS-Eval TT supports observational communities by giving recommendation on observation system evolution from the OceanPredict perspective. The TT promotes studies assessing the observation data impacts in OceanPredict systems.

It also supports improvements for exploiting observational information more effectively and developments for assimilating new-type observation into OceanPredict systems. Thus, OS-Eval TT aims to create a positive feedback cycle between observational communities and OceanPredict centers to reinforce the value chain between the observations and the monitoring and forecasting systems based on data assimilation.

More info: Observing System Evaluation (OS-Eval TT) - Ocean Predict

■ New Artificial Intelligence Task Team (AI-TT)

A new Task Team on Artificial Intelligence (AI-TT) was set up last month in OceanPredict. Recent developments in artificial intelligence (AI) capabilities (including neural network approaches, machine learning and deep learning related tools) have demonstrated the potential to provide accurate forecasts in weather and environmental forecasting. The AI-TT aims to create a forum to discuss recent developments in the application of AI to ocean forecasting, to share best practices and explore areas for future development.
The TT members held their first team meeting on June 16, 2025. While the date for the next meeting is yet to be confirmed, it is expected to take place in autumn 2025. An in-person AI-TT workshop is also under consideration for next year. The AI-TT is now looking for longer-term co-chairs.
Please visit the AI-TT web pages for more information about its objectives, members and meeting plans.

Artificial Intelligence (AI-TT)

Recent developments in artificial intelligence (AI) capabilities (including neural network approaches, machine learning and deep learning related tools) have demonstrated the potential to provide accurate forecasts in weather and environmental forecasting. The OceanPredict Artificial Intelligence Task Team aims to create a forum to discuss recent developments in the application of AI to ocean forecasting, to share best practices and explore areas for future development.

More info: Artificial Intelligence (AI-TT) - Ocean Predict

Intercomparison and Validation (IV-TT)

The IV-TT designs, tests, and publishes advanced methods for verifying and validating the quality of operational ocean products with the aim to determine skills, strengths and weaknesses of ocean analysis and forecasting systems. The team coordinates and promotes scientific validation and intercomparison activities among operational centres, with the objective to establish best practices. As a legacy of GODAE projects, it pursues intercomparisons projects, where new methods are routinely proposed and tested.

More info: Intercomparison and Validation (IV-TT) - Ocean Predict

Intercomparison and Validation (IV-TT)

The Intercomparison and Validation Task Team (IV-TT) convened virtually on June 26 to discuss significant developments in their activities. A key milestone was the **migration of the Class4 intercomparison to an external server hosted by Environment and Climate Change Canada.** This new platform offers enhanced computing power and greater storage capacity compared to the previous US GODAE server, paving the way for an expanded scope that could eventually incorporate Class1 (full-field) metrics.
As part of efforts to further operationalize the project, the team considered adopting a new set of reference observations. The preferred option centers on using sea level anomaly and in situ profile data provided by the Copernicus Marine Service. The group also discussed strategies to strengthen the robustness and reliability of the service.
With 13 years of comprehensive data, the Class4 intercomparison dataset delivers valuable insights into the evolution of operational oceanographic capabilities. A publication is currently in progress to share key lessons learned from this initiative—particularly timely as the dataset is increasingly being used as a benchmark for evaluating deep learning emulators.
The meeting reconfirmed strong interest in launching a regular online seminar series to showcase the latest research in ocean verification; plans are underway to begin this series in the fall.

Lastly, it was announced that Greg Smith and Fabrice Hernandez will be stepping down as IV-TT co-chairs. Nominations for their successors are now being accepted.

General News relevant for OceanPredict and ForeSea

CALL FOR DECADE ACTION

DEADLINE APPROACHING!
Don't miss your chance to contribute to the **Ocean Decade**!
The **Call for Decade Actions No. 09/2025** is now open

Deadline: Submit your **DECADE PROJECT** proposal to be endorsed by ForeSea **by 31 August 2025.**
More infos: DEADLINE APPROACHING! Take part in the Call for Decade Actions No. 09/2025 / Call for Decade Actions No. 09/2025 - Ocean Decade

unesco
Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

Ocean Prediction Capacity of the Future
ForeSea

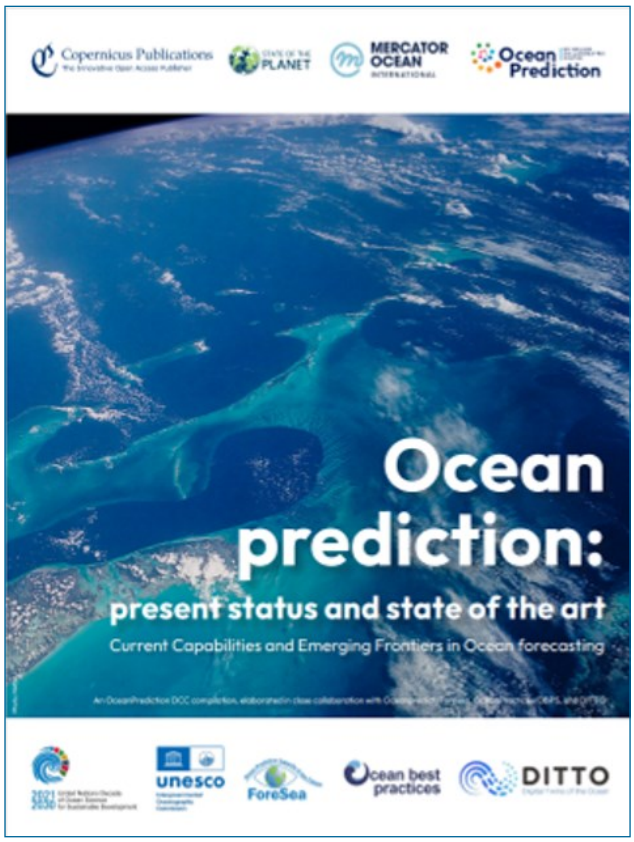
OceanPrediction DCC Special Issue

« Ocean prediction: present status and state of the art »

Current Capabilities and Emerging Frontiers in Ocean forecasting

An OceanPrediction DCC compilation, elaborated in close collaboration with OceanPredict/ForeSea, OceanBestPractices/OBPS, and DITTO

Special issue published in "State of the Planet" – Copernicus Publications



Ocean prediction services have been improving and evolving during the last decades and today are a crucial tool for decision-making in multiple socio-economic sectors, being the backbone of many applications, including those that enhance marine safety, disaster risk reduction, and coastal zone management. The issue describes the actual status of ocean forecasting, detailing its degree of development in the different regions of the world and the most recent advances in all the relevant specific aspects associated with the technology, such as artificial intelligence and cloud computing, written by a group of experts that forms the so-called “Ocean Forecasting Co-Design Team”, integrated in the OceanPrediction Decade Collaborative Centre (OP-DCC).

Copernicus Publication at https://sp.copernicus.org/articles/sp-5-opsr.pdf

(DOI: https://doi.org/10.5194/sp-5-opsr)

Upcoming events

- **OPST-11** - virtual , September 2025, date tbc
- **AGU2025,** in New Orleans, USA, 15-19 December
  - CoastPredict's session "**OS021 – Satellite and In Situ Observations in Support of the Prediction of Coastal Hazard Impacts for Enhancing the Resilience of Coastal Communities**"

  This session will highlight recent advancements in integrating satellite and in situ observations with coastal models to support early warning systems and enhance the resilience of coastal communities to ocean hazards. We welcome abstracts covering a wide range of topics, including:
  - Coupling of observations and models
  - AI/ML model training and data assimilation
  - Digital Twins for coastal management
  - Climate downscaling and validation
  - Nature-based solutions and science-policy integration
  - Transdisciplinary approaches addressing environmental, socioeconomic, and policy dimensions

  We particularly encourage submissions from Early Career Ocean Professionals and researchers from the Global South. **Submit your abstract here:** AGU25. **Abstract submission deadline: 30 July 2025 (23:59 EDT/03:59 UTC). Guidelines and requirements for abstract submission**
- **OPST-12** - In-person, Canada, dates tbc
- **Ocean Science Meeting 2026** in Glasgow, Scotland, 22-27 February 2026. Ocean Sciences Meeting 2026
  - Session (co-led by OceanPredict): **Advances in Ocean Data Assimilation and Prediction Science.**Topic area: **Digital Ocean.** Submit your abstract by 20 Aug. 2025.
  - Session Synobs: **Co-designing the synergistic ocean observing Network for ocean and climate monitoring and predictions**.Topic area: **Ocean Technology and Observatories.** Submit your abstract by 20 Aug. 2025.
  - Session MEAP/NECCTON: **Advancing Marine Ecosystem Modeling for a Predictable and Sustainable Ocean**.Topic Area: **Ocean Biology and Biogeochemistry.** Submit your abstract by 20 Aug. 2025.
  - Session Marine Heatwave drivers: **Marine Heatwave drivers and compound events in a changing climate**. Topic Area: **Climate and Ocean Science.** Submit your abstract by 20 Aug. 2025.

  Link to Sessions: 2026 Ocean Sciences Meeting.
  Abstract submission deadline for all sessions: 20 August 2025.
  Guidelines: Present | Ocean Sciences Meeting 2026.
  Early bird **registration** by 14 January 2026 (23:59 EST/03:59 +1 GMT): Attend | Ocean Sciences Meeting 2026 .
- **Frist AI-TT meeting** - in-person, location and date to tbc
- **SynObs international Workshop 2026,** Mustu, Japan, 24-28 May 2026
- **CP/DA TT joint Meeting,** postponed, location and date tbc
- **COSS-TT Meeting,** end 2026, in-person, location and date tbc
- **OceanPredict Summer School 2026/2027,** India, date tbc

OceanPredict Offices

Kirsten Wilmer-Becker
OceanPredict Programme Coordinator
Address: Met Office, FitzRoy Road, Exeter, EX1 3PB, United Kingdom
Email: kirsten.wilmer-becke@metoffice.gov.uk
Phone: +44 330 135 0000
www.metoffice.gov.uk

Stéphanie Cuven
OceanPredict Programme Coordinator
Address: 2 Av. de l'Aérodrome de Montaudran, 31400 Toulouse
Email: scuven@mercator-ocean.fr
Phone: +33 5 61 39 38 83
www.mercator-ocean.eu

https://oceanpredict.org

News to share?
Contact us by email
kirsten.wilmer-becke@metoffice.gov.uk
and
scuven@mercator-ocean.fr