10th Annual meeting of the
OceanPredict Science Team (OPST)

2024
OPST meeting notes

22 November 2024

IOC/UNESCO, Paris, France

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Content

1 Symposium feedback

Members of the OPST shared their feedback on the OP24 symposium. Overall, the feedback was very positive regarding both the execution and the outcome of the event. Some attendees enjoyed the symposium so much that they expressed interest in making it an annual event. However, this is not feasible due to limitations in funding and time. Additional insights on lessons learned are outlined below:

Session organisation

- Running three science sessions in parallel was confirmed to be the optimal number considering the overall choice and session availability. However, it was suggested that session chairs should have been instructed how to deal with sessions which had not the full set of presentations. Most chairs chose to fill the extra time with discussions which was very much appreciated by the audience. Most presenters kept to time which helped avoiding for the sessions to overrun and allowing for sufficient networking opportunities outside sessions.
- Filling up empty oral slots after cancellations should have been in place to avoid
- Poster presenters should have been given the chance to introduce their work through a 30 second/one slide introduction. This would have raised poster presenters' profiles and could have triggered more interest in the poster sessions.
- Session organisation was very well-balanced.
- Some would have liked to see more talks on wave prediction
- A suggestion for the next symposium was to have conversation sessions in groups to provide consolidated outcomes; however, this would be a different type of event in workshop style; was not possible in Paris as we had constraints on the use of rooms

Attracting early careers scientists

- It was stated that the number of young people could have been higher and that next time we need something to attract more emerging scientists.
- One reason could be that OP has no finances for travel grants which would help more young scientists to attend.
- Early career development and capacity building should be more supported

General comments

- Food/lunch/break arrangement were not fully satisfactory. It was overpriced, boring and recycling lunch bags was not organised well.
- Seating areas were too limited

Online experience

- The online experience was generally good, set up like a webinar and the reception was very well.
- AI cameras were picking up discussions and individuals asking questions. Audio worked well because all meeting rooms had individual microphones that could be used directly at seats.

End user representation

- End-user were missing from the symposium not allowing to get a user perspective. Attracting end-users to a pure science event is hard, so if we like end users at such an event, we need to think of how best to entice them to participate.
- It was suggested to change the symposium structure next time, maybe organised it by end user areas showing use cases for various areas (industry, marine transportation, SAR, etc. or blue, green and white ocean use cases) to provide material of the science response, it could also include question about new sat launches or new in-situ obs capabilities.
- It would be helpful to learn about how to do a handshake with the private sector/industry and find ideas of how to link together better, find overlaps, etc.
- The symposium is a unique forum and it is hard to fit everything in. We should consider going to user conferences rather than think of inviting them to our events to build up good relationships.

Reporting

- We will contact rapporteurs/chairs that we are planning the summary of the symposium to be published in BAMS

2 Synergistic opportunities for OP

2.1 OP high-level linkages

(Guest at OPST-10 representing IOC/ WMO was David Richardson, ECMWF, UK)

OceanPredict maintains linkages with various high-level organisations including WMO/JCB, IOC/UNESCO, UN Decade and the OP-DCC. Compatibility with WMO joint approach was of particular interest in the meeting discussion.

The Joint WMO-IOC Collaborative Board will coordinate the collaborative development, integration and implementation of the activities related to oceanographic and meteorological observation, data and information management, services, modelling and forecasting systems as well as research and capacity development carried out by WMO and IOC. Fraser is member of the JCB and will continue to maintain the link to OceanPredict and is suggesting having regular reports from the JCB at OPST meetings, linking in the OP-DCC as well.

David Richardson (ECMWF) explained the workings of WIPPS (WMO Integrated Processing and Prediction System) through which partner countries submit their forecast and observation requirements. Using the example of ocean predictions, he highlighted that currently only two centres are designated by WMO (ECCC and INCOIS) to provide the data and the associated verification information to all WMO members. WMO coordinates this process, making sure requirements are met, evolving over time. He invited OceanPredict to get involved linking up with WMO.

Feedback from the room included comments on the parameter table for required data. It was suggested to communicate on improving the table to make it clearer. Generally, the WMO approach was welcomed as it could help to integrate the atmosphere and ocean communities by

- providing opportunities to work on operationalising verification data in real-time (class-4)
- linking the ocean community into WMO and could provide a mechanism for exploring common ways of building an even better framework together with OP-DCC, OP, and other UN Decade partners.

- avoiding duplication and two set of information in the public domain

WMO representatives were supportive of the suggestion of providing the best possible forecast and observations to their members in collaboration with the ocean community. It was further stated that to help to achieve further advancements, engagement of the WMO with the UN Decade should improve, and take advantage of what has already been built, specifically at OP-DCC.

OceanPredict (OSEval-TT) is committed to the RRR (Rolling Review of Requirements) and is keen to keep its commitment, but OP should make contribution to the coastal observations for the RRR. It is important to discuss and agree this between all task team. Regards other efforts in this area, IOC and WMO is already working together on the RRR for ocean observations through the ocean earth system application category (chaired by Emma Heslop) and the tsunami working group from IOC including a coastal component which has reached out to the COSS-TT.

Requirements are not only providing information about the need of observations but can justify provision of resources.

2.2 OP linkages with observations: status and issues

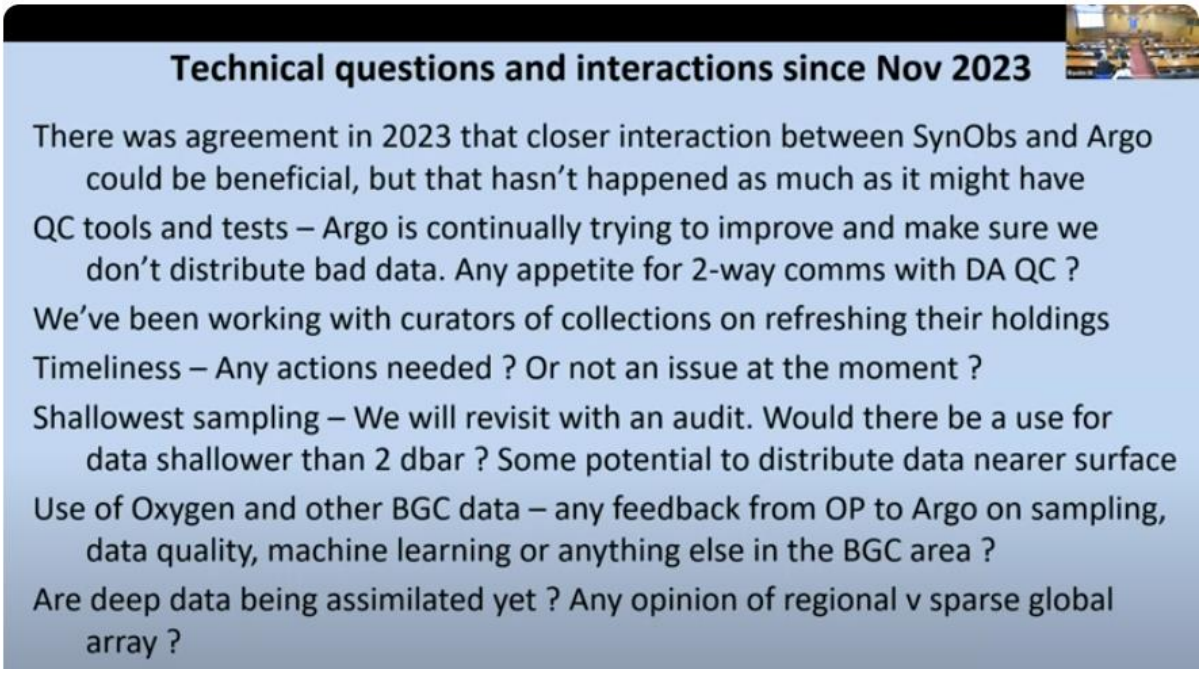
2.2.1 Argo array status and issues

(Presented by Brian King)

BGC Argo has not reached its full design of 1000 floats with all the measurements. The distribution of sensors on the floats is not evenly spread. There are more floats measuring oxygen that nitrate or pH. Some talks at the symposium described attempts to use AI to infer some the more difficult parameters from the easier parameters. It was proposed that OP should work closer with Argo to develop methods to achieve this.

Deep Argo (about 200 floats) shows good measurements in some basins, and it is hoped to extend at least sparsely more deep Argo floats to the global ocean, but resources are tight. Brian is asking for feedback from OceanPredict (groups assimilating or not assimilating Deep Argo data) whether it would be useful to have a extend floats globally (even though sparsely) to help evolve the system.

There are more questions from Brian as they have been developing in discussion with the Argo community. It would be helpful to engage with the OP community on these.



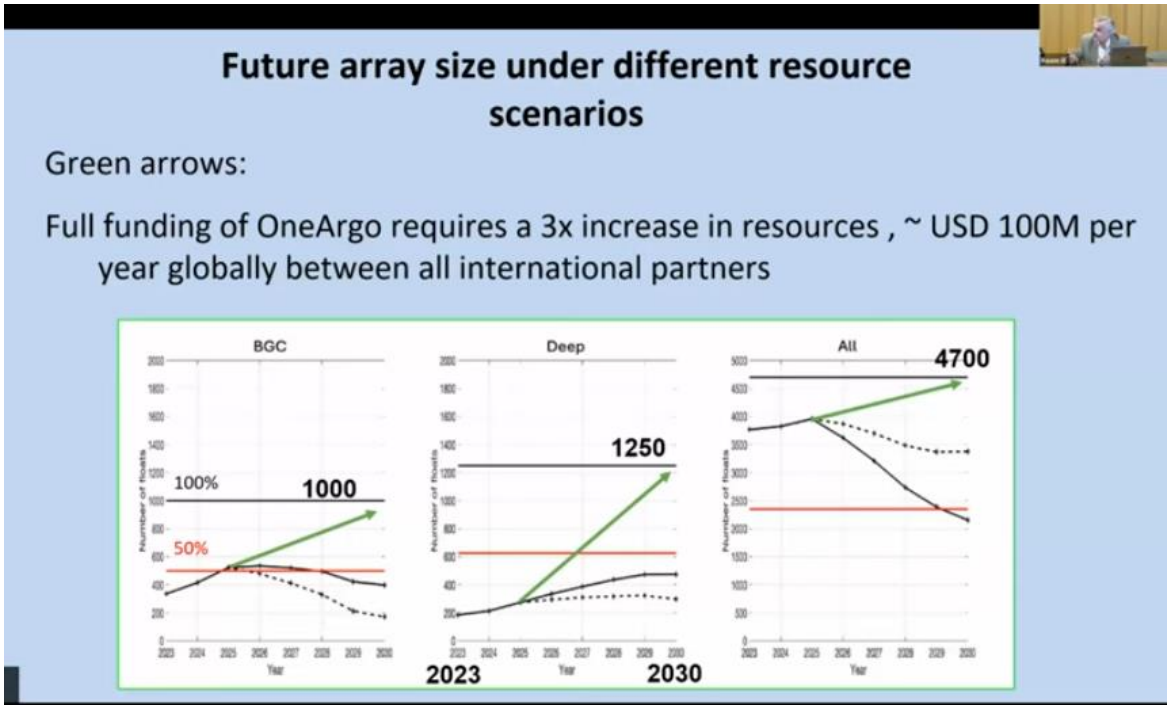


Fig.1: Projections of future Argo float numbers depending on funding → dotted lines: business as usual with the possibility of reduced funding as sponsor discontinue their support; →solid lines: keeping current level of resources and distribution over OneArgo mission evenly.

The Argo array future is not secured, as not all funders continue their support. Many resources depend on projects or programmes that are time limited. Fig 1 shows a projection of how Argo could develop, showing core (all), BGC and Deep Argo. Funding limitations would force decisions on which floats should be supported most. Diverting funding from core to support Deep and BGC Argo floats (which are broadly unfunded) would degrade the core Argo array over time. This would have an impact on the overall utility of Argo and must be explored through feedback from user groups.

2.2.2 *GOOS status and issues*

(Presented by Joanna Post)

GOOS, as part of IOC, is also sponsored by WMO and therefore linked into the IOC unified data delivery system, specifically responsible for the delivery of observational data and linked to the research, modelling and services.

Joanna explained that the IOC Executive Council met in June 2024, and one of the proposals discussed concerned the evolution of GOOS *(see fig 2).* It included the plans for making GOOS fit for purpose, review its components, create a functioning Digital Ecosystem to enable end user applications, evolve a user and uptake strategy, and better integrate with the UN Decade and IOC.

GOOS is involved with the UN Decade through three programmes, Ocean Observing Co-Design, Observing Together and CoastPredict. The GOOS Observations Coordination Group published a data implementation strategy, and across IOC, GOOS is working with partners to set up the Unified data delivery system to develop the capability to systemize and synergize marine information collection and delivery.

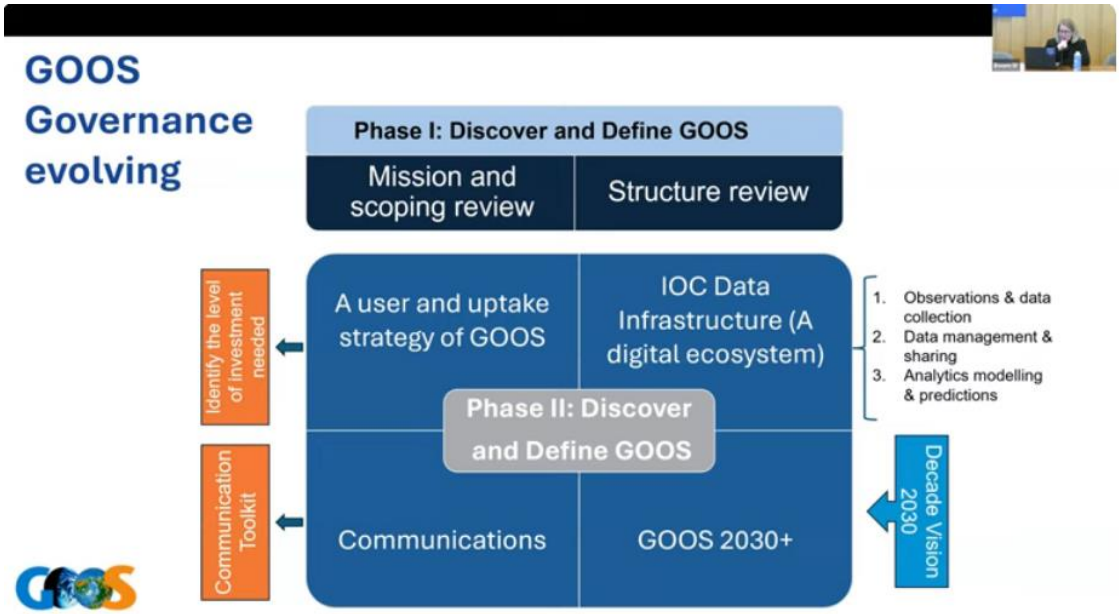


Fig 2.: GOOS governance evolution plan

GOOS is a part of a co-design initiative agreed by the IOC Executive Council to develop “a sustained and sustainable critical ocean observing infrastructure” from the coast to the open ocean and from the surface to the seafloor, nationally, regionally and globally.

2.2.3 *SybObs Updates*

Presented by Yosuke Fujii

The SynObs project (led by the OS-Eval TT, part of the ForeSea programme) aims to identify the optimal combination of 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.

The main SynObs activity is to work on a multi-system OSE and OSSE with partner organisations. Setting this up will support DA scheme developments for better use of observation data. A new plan it to set up a framework to provide information from ocean prediction systems in real time (as an extension of ORA-IP), but there are difficulties. Exchange with partner could help. In addition, SynObs is contributing to the WMO Observation Impact Workshop and the RRR. New publications under the title "Demonstrating observation impacts for ocean and coupled prediction" are being collected in Frontiers. SynObs is supporting the UN Decade also through close collaboration with the Ocean Observing co-design programme.

Yosuke showed results from a recent OSE experiment conducted by JMA, ECMWF and NERSC to assess the impact on Argo QC removing high salinity drift increases from floats. There are various other OSEs experiment going on with contributions of several partners. It is planned to share the results via the JAMSTEC Earth Analyzer. It was emphasized that participation of more prediction systems in these experiments would be desirable.

SynObs is working hard on publishing new papers, including in Frontiers (special issue), BAMS and as an AMS special collection.

As an UN Decade project SynObs is collaborating with many other projects and programmes and would like to intensify communication with GOOS/IOC and WMO/WCRP, as collaboration is vital for making the SynObs activities effective.

2.2.4 Questions and discussion

AI/ML were highlighted as a useful tool for exploring the value of observation through digital twins. Practical engagement with contributing groups would be helpful. It would possible be useful to give Argo reps access to the intercomparison data OceanPredict is producing to verify the Argo QC. It was also confirmed that near surface temperature and salinity from Argo would be desirable.

Bad data might still be useable, so it would be helpful to get access to the data and not withhold them.

Coastal OSE or OSSE would be welcome. It was proposed to set up a new project under CoastPredict which could deliver this.

Met.no is collecting information on high salinity data from Argo and can feed this back. There is concurrence to provide near surface temperature and salinity from Argo.

The project MER-EP could include working on deduction of nutrient data from BGC Argo float analysis using AI/ML. Within Argo is a Mission team that works on this already which could collaborate. Arctic Argo is important too.

PIRATA array also in danger of losing funding and maintenance, risking the reduction of observation data.

Timeliness of observations are very important too for example for coupled predictions. So, it would be worth exploring to optimise the processing chain of providing obs.

Finally, it was stated that the creation and maintenance of the observing system is mostly based on project or R&D funding, so not done on an operational basis. This means we cannot build a robust and sustainable system as we do not have regular and/or long-term financial investment. This should be a clear message send out by this community.

3 OP work plan updates

3.1 OPOS working group

1. Leveraging DCC activity – best practice
    a. ORL index, short description to best practices, we could use the ORL framework to measure progression (could run the old reports by the ORL index to check how they have evolved).
    b. 4 person WG to write the best practice, and also to publish (within a 4 -month period)

2. Reporting – national report update – include a way to show the progress of the systems (what's new), in line with what the OP-DCC atlas needs to show systems all of our forecast systems, make sure the information is not duplicated and also aligned btw OP and OP-DCC; could also include the history and legacy of the system development
    a. Atlas needs regular updates from the operational systems
    b. Message system to send up system updates ?

3. Class-4 – looking at the operationalisation of the class-4 metrics
    a. Disc-space now in Canada
    b. US GODAE server is to be maintained (Emily Smith)
    c. How to exploit class-4, showcasing improvement of time

Best practices

Jay Pearlman provided a brief presentation on the impacts and benefits of Ocean Best Practices System (OBPS), highlighting the usefulness of sharing experience and its benefits, increasing user trust, getting ocean prediction better integrated in the value-chain, providing better information about uncertainties and improving process representation.

OBPS is providing places for the global community to provide sustained access to best practice methods: the OBP repository system, supported by IOC and co-sponsored by IODE and GOOS, and a journal special topic in Frontiers to collate related publications, including the ORL publication of the OP-DCC.

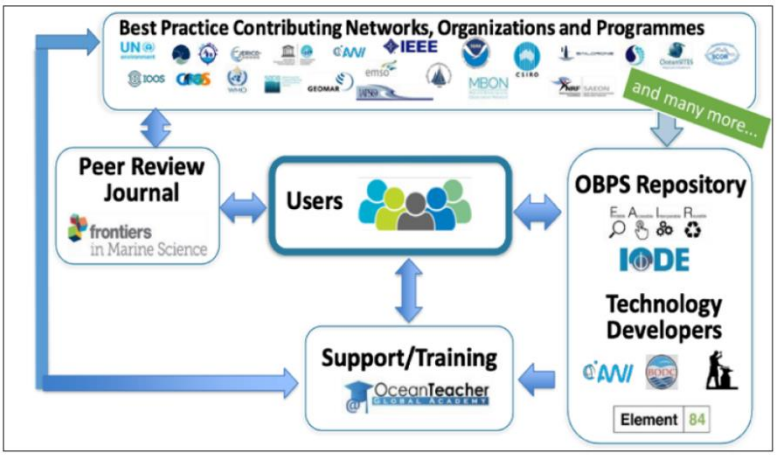


Fig 3: Best practices networks

OceanPractices is a Decade Programme to support all ocean stakeholders in securing equitably sharing and collectively advancing methods to understand and manage our oceans sustainably.

3.2 Class-4 and plans for intercomparison efforts in OP

Although there is strong commitment from the community, it has not been possible to put the class-4 effort on an operational footing. With the emergence of the UN Decade including the OP-DCC, it is hoped that a sustainable solution can be put in place for this. This must include raising the awareness in the IOC/WMO community that intercomparison & validation efforts for ocean predictions are being carried out and should pave the way for operational centres to adopting these practices on a regular basis.

A new server at ECCC, that has been set up earlier in 2024, to support the intercomparison effort is likely to replace the US GODAE server over time, which currently is configured as data back-up server. The new ECCC server has capacity to evolve (e.g. visualisation, collaboration platform, extended space, etc.) and currently provides the best solution for continuing the class-4 effort. Publication of the intercomparison results on a public website could allow better visualisation of the data and would emphasise that the intercomparison effort should be accepted as integral part of every operational centre procedure.

It was proposed to set up the class-4 intercomparison as a funded project and to develop a prototype operational process for broad future implementation.

3.3 Reanalysis evaluation project

Presented by Marie Drevillon

A new project called MER-EP has been submitted to the UN Decade to sit under ForeSea and DITTO. Its aim is to evaluate marine environment reanalyses to better use their potential for ocean monitoring and prediction. The project has no funding, but it is hoped that it will be supported by its members through in-kind contributions. Plans for the project include alignment with users on how they use reanalyses, as well as including new variables like BGC variables. Best practice will be part of the project scope and for example applied to improving the sharing of methods and tools. The project does not only include global reanalyses but would extend its work into coastal and regional areas. One items for best practices in this context could include looking at regional downscaling. It is still possible for people and institutes to join the effort and should get in touch with Marie for further information. The outcomes would be papers but also guidance for users and good practices.

3.4 New AI task team

Presented by Marie Drevillon

A small sub-group (Marie, Kristian and Greg) within OP has discussed the terms of reference for a new task team in AI.

Brief extract from the ToR: Recent developments in artificial intelligence (AI) capabilities (including here neural network approaches, machine learning and deep learning are related tools) have demonstrated the potential to provide accurate forecasts in weather and environmental forecasting. The OceanPredict Artificial Intelligence Task Team would aim 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. This includes organizing scientific exchanges on:

- The development and evaluation (link with IV-TT) of new machine learning based numerical models for ocean forecasting, trained over past periods (nature runs or reanalyses).
    - Discuss the quality metrics to be used in training
    - the evaluation methodology to understand the added value of AI based forecast (improved performance on which variables? physical consistency?...)

- the development of hybrid methods to optimise the numerical performance of existing models by allowing, for example, optimal integration of these tools on GPU computers (link with CP-TT, COSS-TT and MEAP-TT)
- The **optimization of models and data assimilation** methods by using AI methods in numerical schemes or parameterisations (link with DA-TT and CP-TT)
- Development of **products and applications** (link with COSS-TT)
    - the design of the ML model depends on the final use / need

These AI-TT objectives will still have to be adjusted by the actual team when it starts operating. It needs to be made sure that all relevant aspects are being considered so that the team is not set up too narrowly. However, it also needs to be realistic of what can be achieved.

The next steps include finding members and TT leads. It is planned to first explore the OP community for potential candidates but also be open to extend membership to the wider science community including NWP.

There is consideration to create the AI-TT as an overarching group which should have links into all TTs. It could be called something else than task team to reflect this. All TTs should have at least one of their own members become a member of the AI-TT. We should explore whether other groups working on AI are already in existence (e.g. in NWP) and if so, we should make an effort to communicate and/or pull in representatives from these groups which would allow to collate information ond move into new environments to inform ourselves of the progress. Maybe the name should be extended to AI-TT for ocean observing and forecasting or similar to mark this as a specific team with a clearer scope. It could also grow another larger community (not just the AI-TT members) for information exchange and outreach. One of the first tasks of the team could be setting up seminars or lectures to educate the OP community on AI and ML. This could include lectures from a wider community. The AI-TT could become part of the core OP area linking to all TTs as well as the operational centres via the OPOS-WG.

Training material from the OP ’24 symposium on AI is available at https://www.oceanpredict24.org/content/trainings.

Kristian and Santha have agreed to be co-leads of the AI-TT during the initial phase, but long-term co-leads have to be found. In future it would be desirable to find two co-chairs, one with an ocean forecasting background, the other in AI.

International conference and sessions on AI should be shared on the OP website for information. Presenters of the AI application session at the OP ’24 symposium should be contacted and asked to get involved in the AI-TT. At the next DITTO summit is likely to take place on Sep/Oct 2025 and could be good platform to engage with the AI community.

A white paper providing guidance for the evaluation of AI for ocean forecasting could be another task for the AI. Choosing an influential journal for this would spread the efforts of OceanPredict and the AI-TT widely.

We have to be careful not to duplicate efforts, but we need to establish a link to other ocean prediction activities outside OP, e.g. ocean prediction climate to make we show what we are doing → building a network of links between forecasting centres to learn of how they adapt to using AI.

4 Task Teams

4.1 MEAP-TT

Presented by Kirsten Wilmer-Becker as Stefano Ciavatta and Liuqian Yu were not able to attend

The MEAP-TT has been very active in the last year continuing its monthly seminar series and organising an in-person side event for the TT members at the AMEMR conference in Plymouth in July 2024. Its objectives were to restore the in-person communication, review MEAP-TT activities and plans, discuss advance and challenges in marine ecosite, analysis and prediction, enhance collaboration in the MEAP-TT community and across other TTs, and plan for collaboration with UN Decade programmes. Specific science sessions addressed at the meeting included integrating and novel observations and using novel approaches to improve marine ecosystem analysis and prediction, and modelling at higher trophic levels.

The MEAP-TT contributed to the International Ocean Carbon Coordination Project Scientific Steering group (IOCCP SSSG) and is involved in various new & ongoing projects, like NECCTON, Ocean Alk-align, EARTH-HK, Coastal Oxygen and Hypoxia in Asia and a several H2020 projects.

Future aims of the MEAP-TT include continuing to facilitate discussions of advances and challenges in marine ecosystem analysis and prediction. Enhance collaboration among the MEAP-TT community and collaborate with and contribute to UN Decade programmes.

4.2 DA-TT

Presented by Ann Kristin Sperrevik

The DA-TT together with the CP-TT is organising a joint workshop at UCAR in Boulder, Colorado in May 2025 which is open to the wider Ocean community and not only TT members. The abstract submission was opened in Dec 2024 and the registration in Feb 2025. Information about the workshop objectives and other details are available on the OP website at: https://oceanpredict.org/events/joint-cp-tt-da-tt-workshop-may-2025/#event-overview.

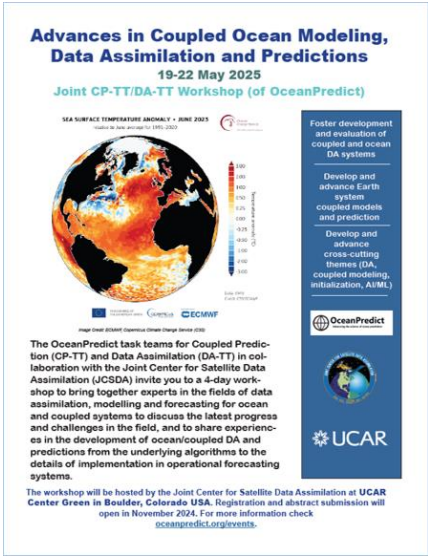


Fig 4: Workshop flyer

Support for training in DA remained an important objective of the DA-TT and has included organising a training session held at the OP '24 symposium. In this context the TT is also exploring partnerships with cross-national and multi-institutional consortia for data assimilation. Training material developed for the OP '24 symposium can be found on the website.

The DA-TT continues to contribute to the UN Decade through engagement of its members in UN Decade projects like SynObs and GlobalCoast. This is extended through links to other international working groups and expert teams, e.g. WMO WWRP DA & Observations Systems WG and the WMO EP on MetOcean requirements. An initiative to start a TT on data assimilation in OceanGliders is underway.

4.3 COSS-TT

Presented by Alex Kurapov

Alex announced that Pierre De Mey-Frémaux and Villy Kourafalou are retiring from their COSS-TT co-chair roles. We all are very grateful for their long-standing and wonderful leadership of the COSS-TT. Alex showed group photos taken during all COSS-TT meeting from the start (and earlier) which can be viewed in Appendix C.

The next COSS-TT meeting is planned for 17-20 June 2025 at Ifremer, near Brest, France hosted by Dr Guillaume Charria. Objectives, themes and venue information are now available on the OP website. Abstract submission is open until 28 February (and will possibly be extended by a week). Registration will open soon. The focus of the meeting will be on discussing the observing infrastructure in coastal seas, to exchange on COSS modelling and seamless integration with larger-scale models, to look at land-ocean continuum and explore coastal vulnerability and impact studies. Special sessions on AI/ML, user applications and UN Decade interactions are also planned. It is considered to work on a new topical collection following the meeting in June.

Other COSS-TT activities include working in common publications and white papers (e.g. contribution to SynObs), topical issues, networking with the other OP TTs and linking to the Copernicus Coast Hub, as well as collaborating with the DCC.

COSS-TT is planning to collaborate closer with the IV-TT to work on best practices for regional or coastal model intercomparisons.

4.4 CP-TT

Presented by Santha Akella

The CP-TT together with the DA-TT is organising a joint workshop on "Advances in coupled modeling, data assimilation, and predictions" (19-22 May 2025). Please find the event information in the DA-TT paragraph above.

The CP-TT organised a short member's meeting with during the OP '24 symposium. The task team is organising with possible others to develop common projects. Santha stated that it is important for forecasting systems to be able to tell the impact of coupling, e.g. what benefit would bring the inclusion of waves for the predictions. The TT could become an authority on providing such information on a broader scale involving the OP forecast systems in the process. Specific projects would include

1. to look at differences in fluxes on the ocean side from coupled and uncoupled systems
2. specific / extreme event (e.g. hurricanes) intercomparisons

The CP-TT is interested to engage with their membership and beyond to identify other activities which could be relevant for the OP and are open for input, but also in increasing the interest for the CP-TT and OP among early career scientists.

In addition to the Santha's comments, Villy mentioned that CoastPredict is organising an ECOP workshop where ECOP projects are being developed. It could also be an idea for ForeSea to create a group of early career scientists to advance the reach of OP and rejuvenate the programme.

4.5 OSEval-TT

Presented by Elisabeth Remy

The OSEval-TT summary was presented by Elisabeth Remy. She highlighted that most of the TT work is now tied up in SynObs (see 2.2.3 above), but that the OSEval-TT continued to be active by driving joint publications and participating in OP and OSEval-TT relevant workshops and meeting. The TT has

initiated a Special Issue in Frontiers on "ocean observation impact in ocean prediction and S2S[1] systems" for which 18 manuscripts were submitted (15 are accepted). Events that the OSEval-TT contributed included the 2024 conference on 30 Years of Progress in Radar Altimetry, the Agulhas Current Observing System Design Workshop (in support of the UN Decade programme Ocean Observing Co-Design), the International Symposium on Data Assimilation, and the WCRP International Conference of Reanalysis, connecting to WMO activities.

It was stated that internal OSEval-TT member's meetings with focus on joint activities and TT plans should be done more frequently again. Elisabeth showed examples of the TT interaction with in-situ networks and GOOS as there is strong interest for observing system design discussions, e.g. with a new DA task team on ocean gliders.

There are also OSEval-TT cross-cutting activities involving the other OP task teams, including supporting OSE/OSSEs for coastal ocean and BGC discussed within the MEAP-TT and COSS-TT. Another activity that is done routinely is the reporting on the use of observations by OP for operational purposes. The OP website is providing detailed information at https://oceanpredict.org/observations-use/#section-argo-profiling-floats. It was also highlighted that any overlap between TTs and WG activities should be discussed, so that communication coming from OP is clear and unambiguous.

Two future events will have participation of the OSEval-TT and SynObs. A half-day session during the JpGU annual meeting (May 2025) and the SynObs symposium in Aug 2026 which is followed by the 30th Japanese data assimilation summer school for which still lectures are sought. Yosuke Fujii also offered the location and time for a TT to hold their events together.

4.6 IV-TT

Presented by Fabrice Hernandez

Fabrice provided an overview of the current activities in the IV-TT, specifically efforts related to the class-4 work. The IV-TT is now waiting for feedback from the OSPO-WG on the patron's support for endorsing operationalising the class-4. This is supported by the new GODAE server at ECCC (see fig 5). It is hoped that in the near future the full US GODAE server database can be made visible to increase the server use and allow better discovery and visualisation, including adding class-1 files. Other points raised:

- UK Met Office would like to stop production of reference files (SLA, T/S &SST)
- Evolution to Class-4 reference file productions for SLA (MOi), T/S & SST (ECCC)
- Proposition to draft a "charter" on Class-4 activities with all participants
- Suggestion to start dedicated project on metrics design

IV-TT would like to support UN Decade activities, specifically ForeSea and there is strong interest to interact with the OP-DCC on operationalising class-4 verification, as well as get engaged with the MER-EP project.

The TT started online seminars and plans to build momentum regarding new verification techniques (ensembles, AI, exploitation of class-4, and more).

[1] sub-seasonal to seasonal

A publication on class-4 metrics intercomparison is planned and a draft prepared. The OP community will be contacted for feedback. It is hoped to set up the next IV-TT in-person meeting in 2025, as Fabrice Hernandez and Greg Smith are both planning to step down and hand over to new co-chairs.

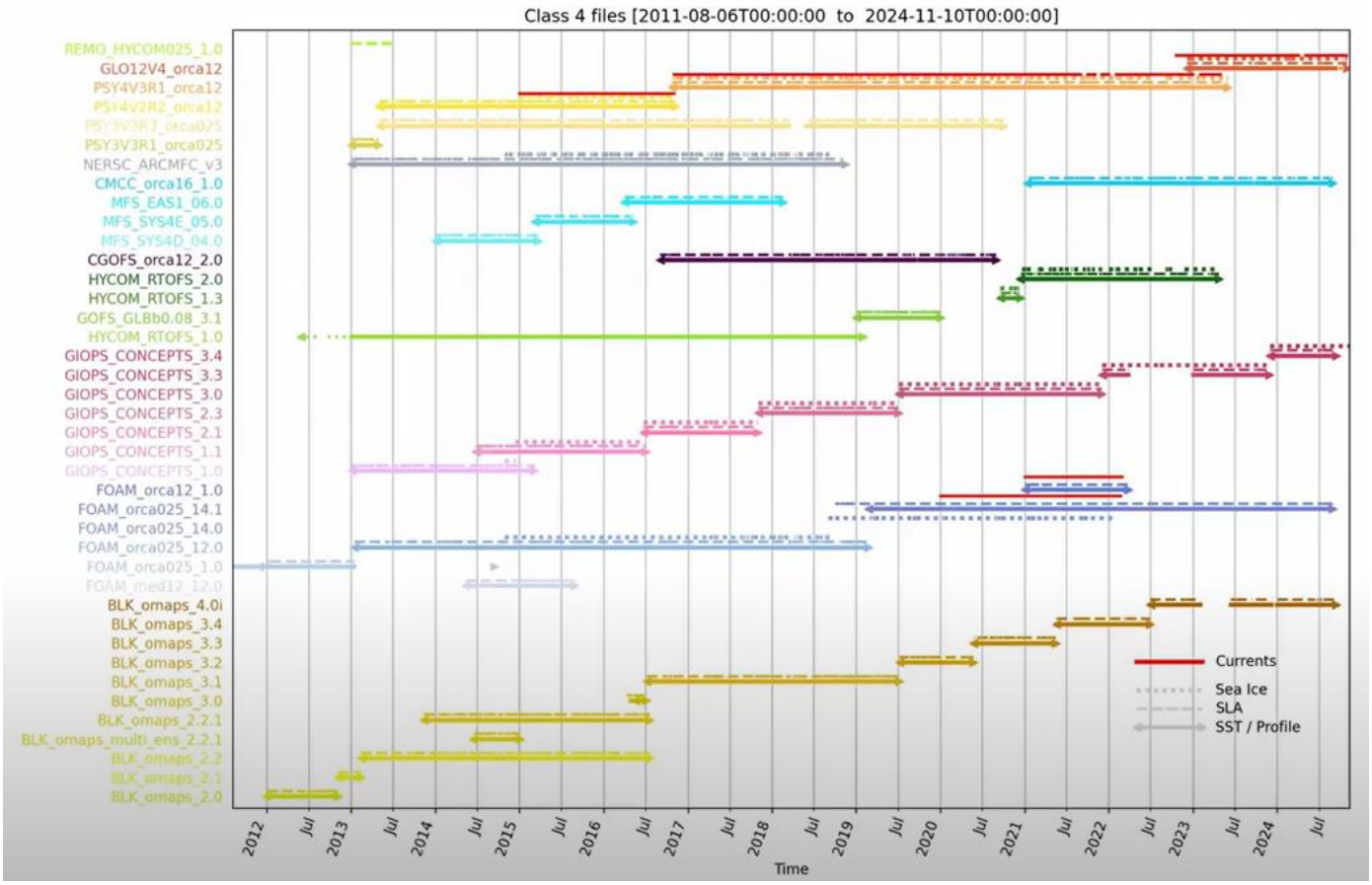


Fig 5: Cumulated Class-4 files on US GODAE and ECCC servers

5 Next OPST meeting

The next OceanPredict science team meeting will be a virtual meeting organised in summer 2025. The next in-person meeting is likely to be in Nov 2025 in St John's, Newfoundland, Canada.

Appendices

Appendix A: Attendance list

Co-chairs:	Fraser Davidson, ECCC, Canada,	(FD)
	Marie Drevillon, MOi, France	(MD)
OPST members:	Santha Akella, NOAA, USA	(SA)
	Enrique Alvarez, MOi, France	(EA)
	Gary Brassington, BoM, Australia	(GB)
	Do-Seong Byun, KHOA, Korea	(DSB)
	Stephanie Cuven, MOi, France	(SC)
	Pierre De Mey-Frémaux, CNRS	(PDMF)
	Yann Drillet, MOI, France	(YD)
	Yosuke Fujii, MRI/JMA, Japan	(YF)
	Fabrice Hernandez, IRD, France	(FH)
	Alex Kurapov, NOAA, USE	(AK)
	Villy Kourafalou, University of Miami, USA	(VK)
	Guimei Liu, NMEFC, China	(GL)
	Matthew Martin, Met Office, UK	(MM)
	Simona Masina, CMCC, Itlay	(SM)
	Kristian Mogensen, ECMWF, UK	(KM)
	Andrew Moore, UCSC	(AMM)
	Elisabeth Remy, Mercator Ocean, France	(ER)
	Andreas Schiller, CSIRO, Australia	(AS)
	Gregory Smith, ECCC, Canada	(GS)
	Ann Kristin Sperrevik, Met.no, Norway	(AKS)
	Joanna Staneva, Hereon, Germany	(JS)
	Clemente Tanajura, UFBA, Brazil	(CT)
	Kirsten Wilmer-Becker, Met Office, UK	(KWB)
Patrons' Group:	Eric Bayler, NOAA, USA	(EB)
	Mikhail Entel, BoM, Australia	(ME)
Guests:	Brian King, NOC, UK	(BK)
	Yvonnick LeClainche, DFO, Canada	(YLC)
	Françoise Pearlman, IEEE	(FP)
	Jay Pearlman, IEEE, USA	(JP)
	Joanna Post, IOC/UNESCO	(JPo)
	David Richardson, ECMWF, UK	(DR)

Appendix B: Meeting agenda (10th OceanPredict Science Team meeting)

09:00-09:30 Welcome

General impressions of symposium, lessons learnt (discussion)

Meeting objectives **(co-chairs)**

09:30-11:00 OceanPredict future focus in context of symposium outcomes at internal, OP community and Decade level. Is the OP strategy still fit for purpose[2]?

Where OP is heading – part 1 – synergistic opportunities – chaired by Eric Bayler

- *09:30-10:15*
  OP linkages with WMO/JCB, IOC/UNESCO, UN Decade, compatibility with WMO joint approach, OP-DCC (guests include David Richardsen, ECMWF and Enrique Alvarez, MOi) (45 min)

  Presentation by Fraser Davidson (15 min) followed by discussion

- *10:15-11:00*
  Linkages with Observations – what is the status and the major issues (example GOOS and Argo – invitees Brian King and Joanna Post), contributions from SynObs (45 min)

  Presentations by Brian King (10 min), Joanna Post (10 min) and Yosuke Fujii (10 min) followed by discussion

11:00-11:30 Break

11:30-13:00 Where OP is heading – part 2 – revise action plan – chair TBC

- OPOS-WG plans (20 min) – Fraser Davidson
- Class-4 and how to continue intercomparison activities, interoperability of class-4 with OP-DCC and link with ForeSea (IV-TT, CP-TT and OPOS-WG) (20 min)- Fabrice Hernandez/Greg Smith
- New structuring projects: reanalysis evaluation project, etc. (15 min) – Marie Drevillon
- AI – new OP task team, involvement with the UN Decade programmes planning to apply AI (like DITTO) (20 min) – Marie Drevillon
- Additional item or extra lunch time (15 min)

13:00-14:00 Lunch

14:00-15:30 Where OP is heading – part 3 – TT and WG plans – chair Marie or Fraser

Ongoing activities and future goals: update of Task team activities (15 min per TT) – chaired by Fraser or Marie

14:00-14:15 DA-TT: Ann Kristin Sperrevik

14:15-14:30 COSS-TT: Alex Kurapov

[2] Defining an operational oceanography framework with standards and best practices for the ocean information value chain, permitting assessment of its components and enabling end use benefit.

	14:30-14:45	CP-TT: Kristian Mogensen
	14:45-15:00	OSEval-TT/SynObs: Elisabeth Remy
	15:00-15:15	MEAP-TT: Stefano Ciavatta
	15:15-15:30	IV-TT: Fabrice Hernandez
15:30-15:40	Conclusion, next meeting, etc. Fraser Davidson and Marie Drevillon	
15:40	Close of meeting	

Appendix C: COSS-TT group photos to honour Pierre and Villy's retirement

Madrid 2018

Cape Town 2017

Lisbon 2015

Puerto Rico 2014

Lecce 2013

Miami 2012

CSSWG meeting – Liverpool 2007