

14th GOOS Steering Committee meeting (SC-14) | 19-21 February 2025 (Paris)
Background paper

Session:

6b – System implementation and applications

Agenda item:

6.3. Update on ETOOFS

Introduction/Background

Including links to relevant documents, mandates etc.

This document outlines a set of activities to define a new phase for ETOOFS. During this new period, the Expert Team will take advantage of the Ocean Decade developments, and of the previously developed ETOOFS guide. These activities will produce **practical outcomes** that will be offered by GOOS/ETOOFS to the **member states** to **promote the implementation of better and more reliable ocean forecasting services** worldwide. The plan builds on existing assets that are described in the next section.

Current status

1. A new scenario for the ETOOFS activity

The launch of the Ocean Decade and the establishment of decentralized coordination structures have created a new landscape for global Ocean forecasting efforts. Within this evolving framework, it is essential to reinforce the role of ETOOFS (Expert Team on Operational Ocean Forecasting Systems) by adapting to this new situation. To achieve this, three strategic principles should guide its evolution:

- Maintaining the ETOOFS Guide as a Dynamic and Evolving Resource
The [ETOOFS Guide](#) is the major achievement of ETOOFS on its previous phase and will continue to serve as a living document, incorporating advancements that emerge throughout the Decade. This ensures that it remains relevant and serves as a reference point for both new and existing forecasting initiatives. Regular updates will reflect evolving scientific, technological, and operational developments.
- Facilitating Cross-Cutting Coordination Across Key Pillars
ETOOFS has the potential to play a key role in fostering cross-cutting coordination between three fundamental pillars of ocean forecasting:

- o Observations (in collaboration with GOOS and the Ocean Observing DCO),
- o Data Management (aligned with IODE and the data sharing DCO), and
- o Forecasting (through close engagement with OceanPrediction DCC).
- **Enhancing ETOOFS' Role as an Endorsement Body**
ETOOFS should play an increasingly prominent role as an endorsement body for new technical developments in operational ocean forecasting. By providing expertise and validation, it can help ensure that innovative methodologies, tools, and systems align with international best practices and contribute effectively to the objectives of GOOS and the Ocean Decade.

Strengthening connections with these pillars, as well as with the World Meteorological Organization (WMO), will ensure a more integrated and effective ocean prediction ecosystem.

2. Existing assets available for improving ETOOFS activity

The following existing assets are relevant for the workplan to be presented in the next section:

- The ETOOFS guide:
Developed by ETOOFS, it comprises the basic knowledge required to build an Ocean Forecasting Service
- The Best practices for ocean forecasting and its associated “Operational readiness level”:
The following paper, developed by the OceanPrediction DCC, lists a series of best practices or operations, validation, and dissemination of ocean forecasting products, along with a tool to evaluate if these are properly implemented (the so-called Operational Readiness Level for Ocean Forecasting – hereafter ORL):
<https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2024.1443284/full>
The institutions involved in developing the ORL area listed in the paper.

Work/Project plan

Including Deliverables (e.g. Activities/Actions/ KPIs) and Budget / Resource needs

→ 2025

→ 2026-2027

1. New Terms of Reference (For reference, the current ETOOFS' ToR and membership are available [here](#))

To adapt and exploit the new scenario introduced in the previous section, the following new ToR are proposed for ETOOFS, which are an evolution of the existing ones:

- Contribute to the joint governance of the activities for the development and integration of the observing system (in-situ and satellite), data management, and ocean forecasting
- Contribute to the Global Ocean Observing System 2030 Strategy and its implementation, ensuring that ocean observing and forecasting systems are connected towards the delivery of services
- Provide recommendations and advice for the reinforcement and development of ocean forecasting capacity worldwide.
- Promote the development of technical improvements for ocean forecasting with shared tools, standards, and best practices, through Collaborative efforts with Oceanprediction DCC, other UN Decade coordination bodies and actions (such as Coastpredict, Foresea, Ocean Observing Co-Design, OBPS, and DITTO) and other relevant bodies such as OceanPredict, and the GRAs of GOOS
- Develop a portfolio of endorsed documentation (including updated version of the ETOOFS guide) to advise on the implementation of OOFs services and products
- Act as Endorsement authority for tools, standards, best practices, and ORLs developed by Decade actions to promote interoperability and other critical advances
- Use the ORL criteria to Provide certification and tracking of Ocean forecasting services
- Contribute to managing and maintaining an overview of active operational ocean forecasting systems.

Once this ToR is approved, a working plan will be launched to foster ETOOFS activities.

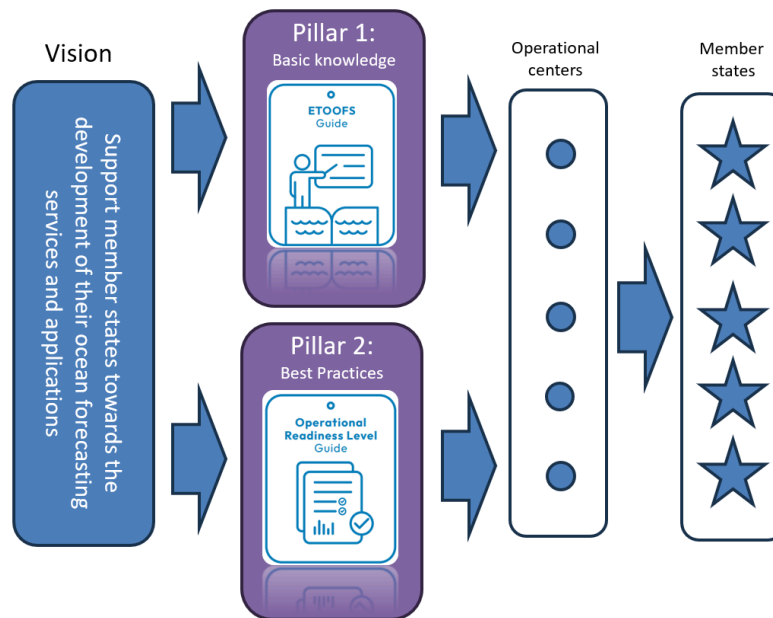
2. Main objectives of the working plan

ETOOFS will be focused on supporting member states to develop their ocean forecasting services and associated applications. This will be done by promoting the creation of specific assets for two strategic lines of action: basin knowledge and best practices. Following this idea, (see figure below) the national focal points will have the role of interfacing with member states, supporting the exploitation of the products generated by ETOOFS.

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To achieve this strategic plan (see figure), it is decided to focus on two main strategic and transformational activities:

- Evolution of the ETOOFS guide
- Development of a detailed set of best practices for ocean forecasting



The following section describes briefly the development plan for both objectives:

3. Development plan

Evolution of ETOOFS guide

The ETOOFS guide lacks some very relevant sections, such as Tsunami and Meteo-tsunami. We propose here to keep on working on the ETOOFS guide to keep it updated with the latest developments and to include the missing contents. We will closely work with WMO on a second updated version of this document.

The ETOOFS guide will be our main channel to provide basic information to member states about the functioning of ocean forecasting services (see figure).

Improving ocean forecasting worldwide thanks to the application of best practices

This work will have the following action lines:

1) Detailed definition of best practices for Ocean Forecasting:

Many of the best practices included in the ORL document are not sufficiently detailed. ETOOFS will work actively on completing these definitions by providing a sufficient level of detail to the best practices established in the mentioned document. When completely defined, these best practices will form a new GOOS/ETOOFS document, that will work as a complement to the ETOOFS guide.

2) Promotion of best practices through the application of the Operational Readiness Level:

ETOOFS, in close collaboration with OceanPrediction DCC, will produce an online tool to facilitate the evaluation of the ORL on member states existing ocean forecasting services. This tool will serve to identify which best practices are still to be implemented and, therefore, to inspire development priorities. The institutions responsible for operating a service will calculate the ORL for their respective systems. The results will only be public if the institution responsible for the system decides so. If required by the corresponding institutions, ETOOFS will certify the computed ORL, providing a stamp of “ETOOFS operationally ready” if certain scores are achieved.

4. Resources

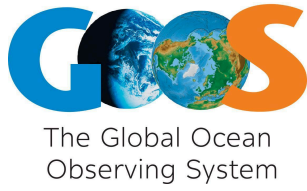
ETOOFS will contribute with a budget of 50 KE per year, for at least two years, for these tasks. Additionally, these activities will leverage heavily on OceanPrediction DCC, for example for the development of capacity building tools.

Expected outcomes for GOOS

GOOS will be in a much better position to provide advice to its member states on how to implement and operate Ocean forecasting services and will act as an endorsement body, in close collaboration with the OceanPrediction DCC, to track the implementation of these recommendations.

Considerations for the GOOS Steering Committee

- Seek SC's comments on the updated Terms of References and membership of ETOOFS.
- How can ETOOFS play a joint role for IOC and WMO, with a functional connection to INFCOM's SC-WIPPS? What is the best way to proceed for jointly publishing the



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updated version of ETOOFS Guide with WMO?

Proposed decisions/recommendations

- ...