**Orientation document for the IOC-UNESCO Ocean Best Practices System**

Draft document submitted to the SG-OBPS *(by the IODE Co-Chairs/IODE Secretariat and GOOS Secretariat, 7 December 2023). This is an information document.*

# Preamble

The Ocean Best Practices System (OBPS) is a joint initiative of the International Oceanographic Data and Information Exchange (IODE) and the Global Ocean Observing System (GOOS) of the Intergovernmental Oceanographic Commission (IOC) of United Nations Educational, Scientific, and Cultural Organization (UNESCO).

The OBPS provides the oceanographic community with a sustained archive of methodological documents, multimedia files, and other digital records which either serve as best practices, or are intended to be their precursors. Additionally, the OBPS provides technologies to make its holdings Findable, Accessible, Interoperable, and Reusable (FAIR) via interfaces to the global oceanographic data and information systems and the UN Decade of Ocean Science for Sustainable Development (the Ocean Decade).

# Objectives of the OBPS Project and Terms of Reference of its Steering Group

The OBPS was established as an IOC Project through Decision IOC-XXX/7.2.1 (IOC Committee on International Oceanographic Data and Information Exchange) adopted at the 30th Session of the IOC Assembly (June/July 2019), (see annex 1)

The objectives of the OBPS project, as defined in the above-mentioned decision are:

1. Increase efficiency, reproducibility and interoperability of the entire ocean observing value chain by providing the community with a unified, sustained and readily accessible knowledge base of interdisciplinary best practices;
2. Provide coordinated and sustained global access to best practices in ocean observing to foster innovation and excellence by developing a system and engaging ocean observing communities in a joint and coordinated effort in producing, reviewing and sustaining best practice documents.

To achieve these objectives the decision also established a Steering Group with the following terms of reference:

1. Propose the vision, strategy, work plan and timetable for the Ocean Best Practices System Project;
2. Advise on technical aspects such as user interface, back office, etc. to the project technical task team;
3. Report to the IOC and to other partners on the progress of the Ocean Best Practices System Project;
4. Provide guidance to the project manager and project technical manager;
5. Identify funding sources to further develop the OBPS.

Membership: The Steering Group will be composed, inter alia, of:

1. Representatives from IOC Programmes and JCOMM;
2. Project Manager/Chief Editor;
3. Project Technical Manager;
4. Invited Experts from the ocean observing community;
5. Representatives of the IODE and GOOS Secretariats.

# Current Status

Regarding objective (i) (Increase efficiency, reproducibility and interoperability of the entire ocean observing value chain by providing the community with a **unified, sustained and readily accessible knowledge base of interdisciplinary best practices**) the Ocean Best Practices Repository has been developed and is available through <https://repository.oceanbestpractices.org/> and <https://search.oceanbestpractices.org/>

The <https://repository.oceanbestpractices.org> offers a standard DSpace search interface and also allows searching by submitting community (e.g. Argo, DBCP, EMB, …).

The <https://search.oceanbestpractices.org> offers an advanced search interface: semantic technology and natural language processes supported by recognized broadly used terminologies (e.g., ontologies and vocabularies) offer detailed discovery and display of Best Practice content.

The repository currently (11 October 2023) contains 2020 records. Nine of which are GOOS Endorsed Practices, with Argo just now accepted. Developing a comprehensive suite of endorsed Practices/Best Practices is slow work, as they need to be written, collated and/or synthesized from several circulating best practices, a consensus formed and a review undertaken, a process which can take 1-2 years. As we know from the work of Revelard et al. (2022), under the EuroSea Project, this would likely be faster if institutions/science placed greater value on best practices work. The work of OBPS to highlight the value of agreed practices and/or best practices is important in this respect. However, even if slow, these are being created in the GOOS community, are being endorsed, and are being submitted to OBPS, which is core and valuable work.

Unfortunately, not all the documents accepted into the repository are what OBPS defines as a best practice, a number are strategies , practices, and other allied documents.

Looking across the value chain, ocean observing is the greatest contributor of best practices to date, 1851 documents are identified as ‘ocean observing’ in the repository

[Regarding objectives](https://search.oceanbestpractices.org/) (ii) (**Provide coordinated and sustained global access to best practices in ocean observing** to foster innovation and excellence by developing a system and engaging ocean observing communities in a joint and coordinated effort in producing, reviewing and sustaining best practice documents) coordination actions were undertaken by the Steering Group members.

Referring to (i) of the terms of reference of the SG the OBPS defined the following vision and mission:

**VISION**

 future where there are agreed and broadly adopted methods across ocean research, operations and applications.

**MISSION**

Sustain an evolving system which fosters collaboration, consensus building, and innovation by providing coordinated and global access to best practices and standards across ocean sciences and applications.

In addition, the OBPS has held annual workshops which have aimed to gain input from the community on development of the OBPS e.g. endorsed practices, convergence and standards and latterly to help communities take the first steps on the path to creating best practices. In response to the changes in approaches to work wrought by covid, the OBPS Workshops became virtual and dramatically increased their reach – from approx. 60 to 500 participants, this has enabled the OBPS to reach more participants from less developed countries, however some closer links to practitioners has been lost.

The OBPS and its SG members have been instrumental in raising awareness for the need for documented best practices to underpin the ocean observing value chain, this will only become more important as new services are envisioned, such as Digital Twins. OBPS has a web site, a bi-monthly newsletter, presents at a variety of fora and has participated in several European projects.

# Assessment of achievements: Strengths, Weaknesses, Opportunities, and Threats (SWOT)

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| --- | --- |
| Strengths1. establishment of community of practice related to ocean observing
2. establishment of online repository of best practices, with many best practices up and down loaded
3. strong engagement of current members of steering group
4. Success in raising awareness of the importance of best practices
5. Established as the ‘home’ of oceanographic practices and best practices
6. Successful in attracting funding from European and other projects
7. GOOS Endorsed Practices implemented in response to community request
8. Success in establishing practices across disciplines, physical, biogeochemical and biological
9. Supporting and writing best practices (e.g. templates)
 | Weaknesses1. scope is limited to ocean observing which makes relevance to IODE less clear
2. no documented procedures on elevating community practices to “best” practices
3. current mix of uploaded documents, with no guidelines on selection of suitable submissions
4. expertise in steering group results in limited expansion of scope to other disciplines which limits scalability
5. efficiency and precision of E84 search technology is uncertain and not user friendly
6. heavy cost of adapting repository technology (DSpace) to new needs
7. Lack of clarity in the role of the OBPS in the exchange of methodological data and information, as well as in the identification and/or endorsement of methods as “best practices” and other forms of qualified methods, has lead to some confusion in its user and stakeholder base
8. Some recent initiatives have not advanced the OBPS core mission
9. Lack of user surveys or metrics to understand how to improve functionality and value for users
10. Connection with Frontiers in Science Best Practice Research topic now weak?
11. OBPS Strategy is 4 years old and needs revision, with sponsors. Including evolution from being a ‘project’, which for GOOS is considered of limited duration
12. Engagement beyond ocean observing in the value chain has been limited, data management, assessment, and modelling community not well represented
13. Lack of ‘carrot’ for institutional buy-in for developing and publishing best practices (Revelard et al 2022)
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| Opportunities1. UN Decade of ocean science for sustainable development offers opportunity to expand scope and relevance of OBPS to other ocean related disciplines and user communities
2. building upon the ODIS concept of a federation of data ecosystems OBPS could apply the same concept, allowing multiple partners to build and share best practice repositories
3. To develop from Project status to becoming a sustained part of GOOS/IODE infrastructure
4. Have best practices mandated as a part of project funding
5. Best practices as part of training and linked to capacity development
6. Evolution of best practices to allow for new platforms/sensors/variables implemented by researchers.
7. Forging stronger links with potential partner organisations like SCOR and IAPSO who put out calls for best practice groups
 | Threats1. Choice of technology; search technology provided by single provider (E84) creates risk of sustainability and availability of servicing the technology framework, storage is changing with cloud, and AI technology is also potentially relevant
2. uncertainty of future funding by UNESCO/IOC (through GOOS and IODE)
3. declining engagement of IODE community due to small number of documents in repository and small IODE membership in steering group
4. Having people in the community able to spend more time creating best practices will require cultural change
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# Requests & Recommendations

The following recommendations are submitted by IODE and GOOS to the Steering Group for the Ocean Best Practices System based upon the SWOT analysis, above:

1- It is proposed to i**mprove the scalability of the OBPS** into other ocean-related disciplines

rationale: “best practices” are referred to repeatedly in the strategic plan of the UN Decade of Ocean Science for Sustainable Development. Taking into account the 9 Decade Challenges it can be expected that “best practices” will be either developed or needed beyond the current limited OBPS scope of mainly “ocean observations”.

actions needed: To best manage methods and proposed best practices in specific disciplines (which may not be represented in the OBPS SG), it is recommended to:

* restructure the centralised OBPS repository as a federated system of “OBPS nodes” and an “OBPS hub”.
* testing through a pilot, convene node-specific management and steering teams, with expertise focused on the practices handled by that node
* this will also include the revision of subject categories and other controlled vocabularies that are needed to describe (by the submitter) or discover (by the end user) the records.
* The ”OBPS hub” will be the OBPS repository as currently existing but with additional capabilities to harvest metadata from the nodes. [more information under heading "Evolution of the OBPS into a federation of best practice repositories" below].

2- It is proposed to urgently **develop guidelines** for the submission, review and entry of practices into the repository

rationale: it has been observed that many records in the OBPS do not appear to be descriptions of (best) practices but publications that refer to a practice. This dilutes the usefulness of the repository. There don’t seem to guidelines to “test” a submission on its suitability for inclusion in the repository.

actions needed: the SG-OBPS should urgently develop generic guidelines for the submission, review and entry of practices into the repository. Scope OBPS content, in particular delimiting what should not be archived in the OBPS. How the current catalogue in the repository is addressed, should be considered.

3- it is proposed to agree on **rules that allow a “practice” to be elevated to “best practice” and to an endorsed practice or best practice**

rationale: while the OBPS web site provides a definition of a “best practice” (*A best practice is a methodology that has repeatedly produced superior results relative to other methodologies with the same objective; to be fully elevated to a best practice, a promising method will have been adopted and employed by multiple organizations*) there is no guidance or agreement on the methodology and authority that can elevate submitted practices to “best practices”.

actions needed: the SG-OBPS should urgently develop guidance on the methodology and authority that can elevate submitted practices to “best practices”, and practices to endorsed practices and best practices, so as to distinguishing between the simple archiving of contend and the identification of or development of “best practices” and other forms of qualified methodology

4- **review of search technology**

rationale: nearly every search generates close to 2000 hits unless double quotes are used. Although the results are, by default, ordered based on relevance the other sorting methods are of limited use as it is not possible to combine relevance with other sorting methods. The ability to search the entire document rather than just the metadata appears appealing, but this results in too many hits that are not highly relevant. The use of tags is not well explained. The ability to search using the “generic” DSpace search engine is not encouraged (the link can not be found on the OBPS web site). The Oceanknowledge tagger produce an error when we tried it (Uh oh. Looks like something may have gone wrong. Try searching again. If that doesn't work, try refreshing your browser.) and its use is not explained. It is noted that the maintenance of the E84 search engine as well as further development of new functionality will be expensive and the obligation to use one service provider poses risks.

actions needed: it is highly recommended to make a comprehensive review of the two available search engines in terms of their usability, user friendliness, precision and cost of maintenance. Set in the context of new technology developments, including AI.

5-**User feedback initiation**

Rationale: OBPS has little documented information on the user experience, and no established process to assess and evolve its utility in response to feedback.

Actions needed: Develop mechanisms for user feedback to inform service development.

6- **Advocacy for Best Practices**

Rationale: Advocacy remains important, IODE and GOOS should consider how they can help OBPS raise the profile of the need for practices and best practices in their communities.

Actions needed: An assessment of success of the advocacy undertaken and where greater visibility is required. There is a need to continuously raise the profile of the need for best practices and to advocate for cultural change. OBPS could identify potential partners e.g. POGO, SCOR, IAPSO.

7- **assured future support by the host programmes**

rationale: OBPS was established by the IOC Assembly in 2019 as a joint IODE-GOOS project. A project is inherently limited in time. While both parent programmes have been able to provide some base funding and in-kind support for staffing (consultant, IT support), software development, hosting and meetings, it was always understood that the amount of resources needed exceeds the capabilities of the parent programmes. These resources were complemented by extra-budgetary and project funding (EU, IEEE), but this creates the risk of OBPS adjusting to the needs of these funding sources, and they are also finite in time. In addition, revenue from other sources is not assured. The SG-OBPS is considering the creation of an AISBL but legal, governance, and practical implications of such a construct have not yet been fully assessed.

actions needed: it is highly recommended to reflect on the terms of reference and objectives of the OBPS as defined in 2019 and to focus on these as core of the activity.

It is highly recommended that the OBPS revise its Strategy, although the core objectives may not have changed the OBPS, needs to look to the future, taking into account the SWOT, these recommendations.

Note: The IODE committee (at its 27th Session in March 2023) has restructured its programmatic elements into Programme Components, Programme Activities and Projects. There are 3 Programme Components (OBIS, ODIS, OTGA) that are considered as core programmatic elements and receive substantial UNESCO/IOC funding to maintain their foundational activities. Programme activities are associated with Programme Components and are funded partially from UNESCO/IOC regular programme funds but more from extra-budgetary and in-kind contributions (from experts and/or member states and donors). The ad hoc IODE management group meeting (September 2023) decided to make OBPS a Programme Activity associated with ODIS. The next formal IODE management group meeting (February 2024) will allocate resources to all IODE programmatic elements. While financial resources are expected to be higher than during the past 10 years it will be essential for OBPS to submit a realistic short- and long-term work plan and budget for its basic operations (hosting and maintenance of the web site and repository, organization of meetings of the steering group(s), development of manuals and guides, organization of training activities, promotional activities).

The OBPS was accepted as a GOOS Project. GOOS Projects are aimed at filling identified gaps in the system, they may be Development Projectswith a broad scope covering requirements, observations, and data systems universally relevant to GOOS, or a geographic or thematic focus, or Pilot Projects focused on specific areas or systems to improve readiness for sustained observations. GOOS Projects should support GOOS Principles (and more recently the GOOS 2030 Strategy), use frameworks such as the EOVs, identify and manage appropriate interfaces with existing GOOS structures, have clear objectives and expected results within a sufficient, but limited period of time, be fundable, and have potential to be scalable/reusable. The OBPS has fulfilled a number of these expectations, however the OBPS should consider its evolution from being a Project to becoming part of the sustained GOOS/IODE infrastructure, and to evolving its governance to support this changed status.

**ANNEX 1: ANNEX III OF DECISION IOC-XXX/7.2.1**

**III
Establishment of the IOC Ocean Best Practices System Project (OBPS)**

Recalling Recommendation IODE-XXII.19 for the establishment of the IODE Clearing House Service for Data/Information Management Practices Project, which replaced the JCOMM Catalogue of Best Practices,

**Recognizing** that:
(i) the dissemination and use of rigorously tested best practice methods in ocean observing promote and facilitate activity within and across disciplinary boundaries of ocean science,
(ii) IODE has successfully established a permanent repository offering the scientific community a platform to publish their ocean-related best practices and find practices of others using innovative search and access technology, a peer review journal publishing outlet and community forum, and a training resource leveraging community capabilities,
(iii) IOC and JCOMM have established close, efficient and effective collaboration in ocean best practices,

**Noting** that the Ocean Best Practices System Repository (OBPS-R) of best practices will support all IOC programmes and contribute to the UN Decade of Ocean Science for Sustinable Development and UN Sustainable Development Goals by providing a permanent curated archive of best practices in ocean sciences,

**Noting** further that within the context of the project, a best practice is defined[1] as a methodology that has repeatedly produced superior results relative to other methodologies with the same objective; to be fully elevated to a best practice, a promising method will have been adopted and employed by multiple organizations,

**Noting** also that best practices can be in many forms including standard operating procedures, manuals, etc.,

**Decides** to:
(i) establish the IOC Ocean Best Practices System (OBPS) as a joint IODE-GOOS project with the terms of reference as attached in Annex 2 to this decision;
(ii) establish the IOC Steering Group for the Ocean Best Practices System (OBPS) project with the terms of reference as attached in Annex 3 to this decision;
Urges Member States to actively participate in the OBPS project by submitting relevant community practices on ocean observation, data management, products and services, and by promoting the use of practices contained in the OBPS at the national, regional and global level;
Invites
relevant stakeholders to contribute community practices and collaborate with the OBPS.

**Annex 2 to IOC-XXX, Dec. 7.2.1
Terms of Reference of the IOC Ocean Best Practices System Project (OBPS)**

Objectives: The objectives of this project are to:

(i) Increase efficiency, reproducibility and interoperability of the entire ocean observing value chain by providing the community with a unified, sustained and readily accessible knowledge base of interdisciplinary best practices;
(ii) Provide coordinated and sustained global access to best practices in ocean observing to foster innovation and excellence by developing a system and engaging ocean observing communities in a joint and coordinated effort in producing, reviewing and sustaining best practice documents.

**Annex 3 to IOC-XXX, Dec. 7.2.1
Terms of Reference of the IOC Steering Group for the Ocean Best Practices System (SG-OBPS)**

Objectives: The SG-OBPS will have the following Terms of Reference:

(i) Propose the vision, strategy, work plan and timetable for the Ocean Best Practices System Project;
(ii) Advise on technical aspects such as user interface, back office, etc. to the project technical task team;
(iii) Report to the IOC and to other partners on the progress of the Ocean Best Practices System Project;
(iv) Provide guidance to the project manager and project technical manager;
(v) Identify funding sources to further develop the OBPS.

Membership: The Steering Group will be composed, *inter alia*, of:
(i) Representatives from IOC Programmes and JCOMM;
(ii) Project Manager/Chief Editor;
(iii) Project Technical Manager;
(iv) Invited Experts from the ocean observing community;
(v) Representatives of the IODE and GOOS Secretariats.

[Members of the Steering Group](https://oceanexpert.org/group/477)

[1] Following a review of the literature by OBPWG, a definition of best practices was agreed by consensus of ocean observing community participants at the Evolving and Sustaining Ocean Best Practices Workshop in November 2017 See: Simpson, P., Pearlman, F. and Pearlman J. (eds) (2018) Evolving and Sustaining Ocean Best Practices Workshop, 15–17 November 2017, Intergovernmental Oceanographic Commission, Paris, France: Proceedings. AtlantOS/ODIP/OORCN Ocean Best Practices Working Group (OBPWG), 74pp .DOI: 10.25607/OBP-3