

Memorandum of understanding between SeaDataNet and MyOcean for in-situ Data Management

The purpose of this Memorandum of Understanding is to define the conditions under which MyOcean and SeaDataNet consortia shall develop the further collaboration on in situ data management activities.

MyOcean is represented by the In-Situ Tac work package leader Sylvie Pouliquen and Pierre Bahurel MyOcean Coordinator on behalf of the MyOcean WP15 partners. SeaDataNet is represented by SeaDataNet Coordinator Gilbert Maudire and Deputy-Coordinator Dick Schaap on behalf of the SeaDataNet consortium. The list of the consortia partners involved is annexed to the MoU.

By signing this MoU the two consortia agree to collaborate to make available a comprehensive dataset of in-situ observations from both operational oceanography programmes and scientific surveys to serve both the Operational Oceanography and research communities as well as other users.

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1 Rationale

MyOcean is the implementation project of the GMES Marine Core Service, aiming at deploying the first concerted and integrated pan-European capacity for Ocean Monitoring and Forecasting. Within this project, the in-situ Thematic Assembly Centre (in-situ TAC) of MyOcean is a distributed service integrating data from different sources for operational oceanography needs. The MyOcean in-situ TAC is collecting and carrying out quality control in a homogeneous manner on data from outside MyOcean data providers to fit the needs of internal and external users. It provides access to integrated datasets of core parameters for initialization, forcing, assimilation and validation of ocean numerical models which are used for forecasting, analyses (nowcast) and re-analysis (hindcast) of ocean conditions. Since the primary objective of MyOcean is to forecast ocean state, the initial focus is on observations from automatic observatories at sea (e.g. floats, buoys, gliders, ferrybox, drifters, SOOP) which are transmitted in real-time to the shore. The second objective is to set up a system for re-analysis purposes that requires products integrated over the past 25 to 50 years.

SeaDataNet is a European Infrastructure (DG-Research – FP6) project which is developing and operating a Pan-European infrastructure for managing, indexing and providing access to ocean and marine environmental data sets and data products (e.g. physical, chemical, geological, and biological properties) and for safeguarding the long term archival and stewardship of these data sets. Data are derived from many different sensors installed on research vessels, satellites and in-situ platforms that are part of various ocean and marine observing systems. Data resources are quality controlled and managed at distributed data centres that are interconnected by the SeaDataNet infrastructure and accessible for users through an integrated portal. The data centres are mostly National Oceanographic Data Centres (NODCs) which are part of major marine research institutes that are developing

/operating national marine data networks, and international organizations such as IOC/IODE and ICES. The data sets managed come from various sources and time periods. This imposes strong requirements towards ensuring quality, elimination of duplicate data and overall coherence of the integrated data set. This is achieved in SeaDataNet by establishing and maintaining accurate metadata directories and data access services, as well as common standards for vocabularies, metadata formats, data formats, quality control methods and quality flags.

The two project consortia recognize the fact that their **in-situ data management activities are complementary** and that there are several areas of development and operational activities that will benefit from cooperation between them.

Therefore, this Memorandum of Understanding (MoU) identifies areas of cooperation and defines how this cooperation will be implemented in practice. Moreover, it formulates a common vision on the planned flow of marine datasets in Europe from sources to users, the functions that MyOcean and SeaDataNet will perform in this data flow, and their mutual data exchange.

2 Areas and mode of cooperation

The systems developed and operated by each consortium are well adapted to the needs of their respective communities. However, developing their interoperability will have a significant impact on the quality of services available and the efficiency of both initiatives in terms of:

- further developments that are collaborative, avoiding duplication of effort;
- interoperability of services provided to users;
- number and quality of data sets made accessible.

Cooperation will be improved in the following areas:

- Establishing and maintaining common standards for data management and exchange in the fields of vocabularies, metadata formats, data formats, quality control methods and quality flags. This will benefit the interoperability between MyOcean and SeaDataNet and streamline the flow of data from various sources. In practice, SeaDataNet should be leading in this process and has already established standards for data management that are being adopted by many initiatives in Europe, including MyOcean.
- Differences identified in planning and approach, as well as requirements for innovation, can benefit from a mutual tuning and cooperative development. This can be implemented by identifying a list of items and charging the teams of technical experts to explore and provide common solutions that can then be adopted officially by the two consortia;
- Encouraging data providers (data sources) to adopt these common standards for data exchange with MyOcean and SeaDataNet following the common vision on marine data flow as to be described in Section 3;
- Operating data exchange and sharing data sets between the two infrastructures, whilst respecting the data access restrictions as set by data providers;
- Sharing efforts in compiling and providing an up-to-date inventory of in-situ monitoring programs, networks and stations, adopting and upgrading the EDIOS directory initiated by EuroGOOS. This activity should be carried out in a distributed manner in collaboration with the EuroGOOS Regional Operational Observing Systems (ROOSes).

- Sharing efforts in promoting and encouraging data providers to adopt a data policy of free and open access in provision of data to users, in line with international agreements (e.g. WMO, IOC, ICSU, GEO/GEOSS).

These mutual areas of interest can be implemented by:

- Developing a co-operative technical working group for common standards, whereby existing standards of the two consortia in overlapping areas are identified, compared and merged into one documented standard.
- This Technical Working Group will comprise the SeaDataNet Technical Task Team (TTT) together with the MyOcean in-situ TAC technical experts.
- The agreed standards shall be forwarded for acceptance to the appropriate teams of the two consortia (Steering Committee for SeaDataNet, in-situ TAC Coordination Team for MyOcean), and after acceptance, disseminated internally and externally, as well as implemented in the appropriate tools and services.
- For improving or upgrading agreed standards a comparable approach can be adopted by integrating new members if necessary to the working group described previously
- Where appropriate, presentations and promotional material of both projects shall be tuned between the two consortia to underpin the common vision, mutual cooperation and interoperability for staff working on the projects, external users and data providers.
- Both consortia will inform each other at regular intervals of progress in the field of data management and implementation of the marine data flow in order to refine activities, strategies and data policies.

3 Marine data flow and services

MyOcean and SeaDataNet will cooperate to make available a comprehensive dataset of in-situ observations from both operational oceanography programmes and scientific surveys. Common data management rules will be adopted when necessary to ease the harmonisation of data. Data exchange between the projects will be improved to serve both the Operational Oceanography and research communities as well as other users. Building on the existing work, common protocols and exchange data formats will be upgraded to facilitate these exchanges.

3.1 Services proposed by MyOcean (in-situ TAC) to SeaDataNet

Data access: MyOcean (or MyOcean components) will make available data sets observed by automatic observatories to SeaDataNet for long term archival, integration in regional products and data distribution to non-operational oceanography users. SeaDataNet will make use of these data sets in accordance with the access rights granted (cf. Section 4).

Metadata: MyOcean (or MyOcean components) will give SeaDataNet access to their metadata, especially metadata describing automatic observatories deployed in the framework of Operational Oceanography programmes (e.g. list of buoys, floats, gliders, etc.). These will be used by SeaDataNet in support of the shared maintenance for the EDIOS Directory. In addition, the description of SeaDataNet regional climatologies will be managed in the same way as MyOcean product descriptions and will be hosted by the same catalogue software CAMIOON – the catalogue of product metadata that MyOcean is providing to users.

Vocabularies: MyOcean will inform SeaDataNet about vocabularies that have been developed and used within the Operational Oceanography community. These will be incorporated and integrated in the Common Vocabularies Web Services that are maintained and operated by SeaDataNet for use by many communities.

3.2 Services proposed by SeaDataNet to MyOcean (in-situ TAC)

Data access: SeaDataNet (or the SeaDataNet network of NODCs) will make available the data sets managed by the SeaDataNet infrastructure in accordance with the access rights granted by the data providers (cf. Section 4). SeaDataNet will encourage its partners to make available restricted data sets for distribution and use by MyOcean for improving its model outputs. However, in this case, MyOcean must respect the original access rights granted and not re-distribute the restricted data sets provided via the SeaDataNet infrastructure to external users.

Data Management: Using its Common Data Index and other tools, SeaDataNet will ensure the global coherence of the aggregated data set, including real-time data coming from MyOcean, by detecting redundancy: for example, real-time–delayed mode duplication, identification of the “best or most recent” copy, etc., to allow easier consolidation within an in-situ product for ocean re-analysis purposes.

Metadata: SeaDataNet will maintain a number of European directories which will be used by MyOcean: EDMO for Marine Organizations, EDMERP for Marine Projects and EDIOS for descriptions of permanent observatories and other observing systems and CSR for cruises. In particular, MyOcean and SeaDataNet will work on updating EDIOS regularly using the inputs from the regional components of the in-situ TAC and the EuroGOOS ROOSes.

Vocabularies: SeaDataNet will inform MyOcean about common vocabularies that have been developed and are used by the community of NODCs and related international organizations such as IOC/IODE, JCOMM and ICES. SeaDataNet will maintain vocabulary web services for both SeaDataNet and MyOcean needs. MyOcean may ask SeaDataNet to add new list(s) or upgrade existing one(s).

Regional products: SeaDataNet will grant access to MyOcean to its regional products (i.e. climatologies) for operational oceanography purposes: for example, initialisation of models, validation of models, etc.).

3.3 Services developed in partnership

Data exchange protocols: Data exchange protocols and data formats will be developed in partnership in order to facilitate harmonization and integration of data coming from Operational Oceanography and other sources. This includes the adoption of common data formats like CF compliant NetCDF which is widely used in Operational Oceanography and sharing of tools to convert automatically between ODV and NetCDF formats.

Metadata: SeaDataNet and MyOcean will study together the newest standards proposed by the Open GIS Consortium such as the “Sensor Web Enablement” family (e.g. SensorML, Observations and Measurements) to extend metadata services for data providers.

Quality Control: SeaDataNet and MyOcean will work together to ensure the adoption and, where necessary, development, of harmonised quality control procedures for the real-time and delayed-mode data streams.

4 Data Policy and Access Rights

In order to encourage wide access to observational data, MyOcean and SeaDataNet have both opted for a data policy derived from the INSPIRE directive, that is: free of charge access to metadata and data are granted for research, education and environmental management with citation and acknowledgment of data providers.

However, exceptions to these general rules may be required by data providers or NODCs to be compliant with their own (national or local) data policies as explicitly allowed by the INSPIRE Directive (e.g. economic model of the data provider, protection of sensitive environmental areas). In these circumstances, the data policies of the data providers are applied.

These general rules are also applicable for data exchange related to in-situ observations between MyOcean and SeaDataNet.

Three levels of access to data and products are recognised:

- **open access:** data and products made available by one project to the other can be used internally and can also be redistributed to the external users their community serves. Citation and acknowledgment of data providers must be ensured. Typical examples of this level of access are: 1) distribution and long term preservation of operational oceanography data by SeaDataNet subsequent to their usage for operational oceanography (mostly in real-time), 2) aggregation of historical data from SeaDataNet to generate reference data sets to be disseminated by MyOcean for operational oceanography purposes;
- **internal access:** data and products made available by one project could only be used for internal purposes by the other project such as integration into internal models or generation of regional climatologies but not be redistributed;
- **restricted access:** access to data should be negotiated directly between data user and data provider. SeaDataNet and MyOcean services will only facilitate the negotiation.

In order to prevent the distribution of non-identical copies of the same datasets, MyOcean and SeaDataNet will harmonize their in-situ data management procedures (cf. Section 3).


5 Entry into force and duration

This Memorandum of Understanding will enter into force once it has been signed. The Memorandum of Understanding is valid until 31st March 2011, end of SeaDataNet project.

SIGNED:
(On behalf of MyOcean)

Date: 19.01.2010

P.Bahurel, MyOcean Coordinator



Sylvie Pouliquen, MyOcean In-Situ Tac
work package leader (WP15)



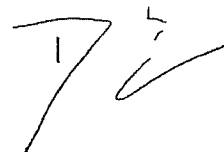
SIGNED:
(On behalf of SeaDataNet)

Date: 18/01/2010

G.Maudire, SeaDataNet Coordinator



D.Schaap, SeaDataNet Technical Coordinator



ANNEX: Partners of MyOcean and SeaDataNet consortia

Part 1 : MyOcean WP15 partners (*in alphabetical order*)

IOBAS	Bulgaria
FMI	Finland
SYKE	Finland
Ifremer	France
CNRS	France
BSH	Germany
HCMR	Greece
OGS	Italy
ENEA	Italy
DMI	Netherlands
Niva	Norway
IMR	Norway
Puertos del Estado	Spain
CSIC	Spain
SMHI	Sweden
NERC	UK

Part 2 : SeaDataNet partners (*in alphabetical order*)

AWI	Germany
BSH/DOD	Germany
CLS	France
CMR	Lithuania
CNR-ISAC	Italy
ENEA	Italy
ENSSMAL	Algeria
FMI	Finland
HCMR/HNODC	Greece
IAE/UL	Latvia
ICES	International
IEO	Spain
IFREMER	France,
IHPT	Portugal
IMGW	Poland
IMR	Norway
INGV	Italy
INRH	Morocco
INSTM	Tunisia
IO/BAS	Bulgaria
IOC	International - UNESCO
IOF	Croatia
IOLR	Israel
JRC	European Commission
MARIS	Netherlands
MHI/DMIST	Ukraine
METU	Turkey
MI	Ireland
MRI	Iceland
MSI	Estonia
NCSR/NCMS	Lebanon
NERC/BODC	United Kingdom
NERI	Denmark
NIB	Slovenia
NIMRD	Romania
OC/UCY	Cyprus
OGS	Italy
PUT	Albania
RBINS/MUMM	Belgium
RIHMI/WDC	Russia
RIKZ	Netherlands
SIO/RAS	Russia
SMHI	Sweden
TSU	Georgia
ULg	Belgium
UoM	Malta