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Eurofleets+ Data Management guidelines for Principal Investigators

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This document describes the data management plan and the general data management steps and is intended for applicants and PIs enrolling in one of the Eurofleets+ ship calls.

1. 'FAIR', Open Data and licenses

The Horizon 2020 Programme asks that the research output of its beneficiaries adheres to the FAIR principle and furthermore, that open access to research data is ensured to a maximal extent. Open access refers to the practice of providing online access to scientific information (publications and research data) that is free of charge to the end-user and reusable. FAIR data is findable, accessible, interoperable and readable. FAIR data may still be (partially) private, eg. when it is only shared under certain conditions. Open research data is freely available to anyone to access, use and share. Since 2017, open research data is the default option for H2020, while it is still possible to opt-out and select a more closed data model. For general H2020 projects, this may be because you want to protect your data before any publication has taken place, keep intellectual property rights for commercial purposes, or have privacy or security concerns. In summary, any Eurofleets+ research data must be Findable, Accessible, Interoperable and Reusable for the group of users you as a research cruise principal investigator have defined; this may be anyone, with unrestricted access, in which case your data is considered open data.

Within open data there are gradations, going from fully open (public domain), to legally obliging attribution, to barring commercial re-use etc. A good overview of open licenses can be found on CreativeCommons, https://creativecommons.org/licenses. A further benefit is that these licenses are ready-for-use, unambiguous (as they already have a legal description), and are machine readable.

The default Eurofleets+ license for cruise data is the public domain CC0-license, https://creativecommons.org/publicdomain/zero/1.0, as re-using data should not be made unnecessarily complex. Exceptions to this rule are allowable must be clearly justified in the DMP.

2. Data Management Plan

Eurofleets+ applies the FAIR and Open principles of the H2020 framework on three levels: the EF+ project itself, the JRA research output and the TNA funded cruises. For this reason there will be two Data Management Plan (DMP) types in use: a general one for Eurofleets+, and one for each funded cruise. Your Data Management Plan should detail the steps you will take to get the data ready before ingestion into the Eurofleets infrastructure (which is detailed in the general DMP). The DMP for cruises comes in two forms, a preliminary DMP at submission time and a final DMP after the cruise funding has been granted.

We have based ourselves on the Guidelines on FAIR Data Management in Horizon 2020 (http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf) to define the template for the Cruise DMP. Some of the specifics, for instance those on the timing of any opt-out (see p. 3), make less sense in the Eurofleets+ context, and are not applicable.

For Eurofleets+, opting out of open data is possible at the time the preliminary DMP is created or after the project has been granted, at the time the final DMP is submitted, but only for data with a distinct commercialibility, or by extending the embargo period. The embargo period may last up to two years after the cruise, however, the data must be provided to the Eurofleets+ data centres in a timely fashion (it will be curated but not be disseminated further).

Crucial elements like embargoes, opting-out data and licensing must be included as soon as possible in the DMP for the different types of datasets.
Project proposals will be judged on the completeness of the Data Management Plan. The final DMP helps proper data management. The final DMP is a living document that follows the research lifecycle and should be updated during the project lifetime, especially after the cruise ended, to reflect any changes to your procedures. A data management plan prerecords the procedures you plan to follow with regards to data management, to ensure that they are actually followed.

3. DMP Roadmap

Because it is a dynamic process and as versioning is difficult to manage using text documents, we use an online DMP tool, called DMP Roadmap. This also facilitates managing a multitude of submissions.

The Data Management Plan (both the preliminary and full DMP) of a cruise proposal MUST be created with DMP Roadmap on the website http://dmp.ef-ears.eu and kept up-to-date after funding.

A preliminary DMP is created at the time of the project proposal. This preliminary DMP contains a more limited set of questions. You can leave out details at this stage. After the proposal is granted, the Data Management Plan will have to be completed in full. For this, you need to answer additional

questions and extend your previous answers more in-depth. Three reference data management centres, assigned to a funded project, will review your DMP and provide feedback at that stage. The Data Management partners are the Hellenic Centre for Marine Research (HCMR) in Greece, the Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS) in Italy and the Belgian Marine Data Centre (BMDC). The data centres are also responsible for receiving and processing your datasets.

4. When to provide data to the reference data centres

There are two periods considered: a) the period during which the scientist should entrust the data centres with his/her data; b) the embargo period, which may extend beyond period a). Data delivered under a) will be imported in databases, normalised against vocabularies, but if the embargo still applies the data will not be made available for download anywhere. In any case the data must be provided well before the end of the whole Eurofleets+ project (before M45 (01/11/2022)) otherwise there is no time for the data centres to make it interoperable.

Information regarding your cruise must be provided withing the following timelines:

- Metadata of the cruise (SeaDataNet Cruise Summary Report): within two weeks after the cruise (cfr. the 'Guidelines for applicants', 'Reporting'.)

- Metadata of the datasets of the cruise: within two months after the cruise

- en-route data: via EARS, within two months after the cruise

- CTD data and data of deployed devices: within two months after the results are obtained

- "manual" data, e.g. observations and/or measurments on samples: within two months after the result is obtained

- embargo: optional, up to two years after the cruise, justified in the DMP

5. How this is done

The Eurofleets+ project will provide the necessary infrastructure to make the data that is gathered during the funded cruises FAIR.

The Eurofleets+ infrastructure takes care of manual data (data originating from specific manual operations like sampling and deployments) and en-route data acquisition (salinity, temperature, depth etc. that are continuously measured). The Eurofleets+ infrastructure should be installed on the vessel before the cruise begins. It:

- takes care of en-route data acquisition (salinity, temperature, depth etc. that are continuously measured). The EARS acquisition software is responsible for this.

- ensures that "manual" data (data originating from specific manual operations like sampling and deployments) can be enriched with the necessary meta-information (e.g. sampling devices, time of sampling, person responsible for sampling). The EARS services and front end-software is responsible for this.

- Provides a metadata and data portal for you to submit your data, the EMODnet Data Ingestion Portal (DIP). Depending on the embargo, the dataset will then appear in the DIP and in the Eurofleets+ catalogue systems. Via EMODnet DIP your dataset receives a digital object identifier, so it can be properly cited.

Eurofleets+ also bridges with and from SeaDataNet to other systems. Your datasets will show up in the SeaDataNet Common Data Index data repository, your cruise will be findable on the Cruise Summary Report Inventory, on the relevant EMODnet portal and the European Geological Data Infrastructure (EGDI). With all these steps complete, FAIRness is achieved.

6. Dataflows per data type

7. Summary

1. Follow the webinar on FAIR, DMPs and DMP Roadmap via http://www.eurofleets.eu

2. Prepare your proposal

3. Create an account on the EF+ DMP Roadmap (http://dmp.ef-ears.eu) and complete the preliminary DMP

4. Submit your proposal on the official Eurofleets+ submission website, together with a pdf of the DMP generated from DMP Roadmap

5. Await confirmation that you are awarded the project

6. Complete the final DMP on http://dmp.ef-ears.eu

7. Receive additional feedback from the reference data centres on improving the DMP

8. Participate in the cruise

9. Within 2 weeks after the cruise, provide the SeaDataNet Cruise Summary Report following the 'Guidelines for applicants', chapter 'Reporting'.

10. Within 2 months after the cruise, provide the Cruise Report to the EUROFLEETS+ Evaluation Office at AWI (cfr. the 'Guidelines for applicants', chapter 'Reporting'.)

11. Perform the necessary QC on your raw data so that it is ready for publication in a data repository.

12. You or a data manager of your institute gathers all the data collected during the cruise:

13. CTD data, ROV/AUV data: provided during the data submission

14. Multibeam data and imagery should not be submitted.

15. "Manual" data: provided during the data submission, *together with*

16. Metadata on all ship operations as completed by using the EARS Front end software.

17. En route data will be transferred through the EARS acquisition software to the reference data centres, or separately provided by the vessel operator. No to be included in the data submission.

18. Within 2 months after the cruise, provide the data and metadata of the dataset(s) in the EMODnet Data ingestion Portal, following the guidelines on https://www.emodnet-ingestion.eu/media/emodnet_ingestion/org/documents/helpguide_ds_22sept2017.pdf . Note that there can only be one submission per cruise and that all data files must be zipped into one archive.

19. Depending on the sea area the cruise takes place in, a data centre will be assigned to your dataset(s). A datra manager will take contact if there are any questions about making your data interoperable.