Project: AWICM

Project acronym for link in /pool/data: AWICM

Principal investigator (long-term responsible contact): Tido Semmler

Applicant (if not the same as above):

Allocation period: 03.11.2021-02.11.2026

Allocation Period	01.12.2021-30.11.2026
Volume	1.6 TB
Expected Volume Change	25 TB
License allows usage on DKRZ resources	

Project overview

These are input files necessary for running the AWI-CM. At the moment they include mesh files of standard meshes for the unstructured model FESOM - both for the finite element version FESOM1 and for the finite volume version FESOM2. Furthermore, they include various reanalysis datasets and ocean climatology data necessary to run FESOM standalone simulations which can also be used to compare results of the atmosphere part of the coupled system with them. The ERA5 data that area already available under a different project are linked to avoid duplication of disk space. However, ERA5 data need to be provided in a preprocessed way as input for FESOM standalone simulations and this is planned to be done under this /pool/data project. The amount will first add 10 TB of data for the time period 1980 to today - once earlier time periods will be added another 10 TB of data will be generated. Different members of the Climate Dynamics section of AWI have generated and provided mesh files and reanalysis files at this central place at DKRZ to ensure comparability of results because of using exactly the same input files provided here.

It is envisaged to save input data of various other earth system components (for example atmosphere, biogeochemistry, ice sheet) to ensure availability of all data necessary on the way to AWI's CMIP7 contribution. Therefore, the volume is expected to increase by another 3 TB. Together with the additions of the preprocessed ERA5 data the amount of data is expected to increase from currently 1.6 TB to about 25 TB in the next few years.

Data content

The mesh files for the unstructured FESOM2 model are constant in time and global and include:

ASCII files giving the coordinates of the unstructured mesh

ASCII files giving the partitioning of all FESOM grid cells to processors

Initial files contain global climatologies of salt and temperature for winter, summer, and annually averaged.

Reanalysis data contain global fields of data necessary to drive ocean stand-alone simulations since around 1950 till today.

Envisaged are additional data necessary to run other earth system components. In most cases data will cover the whole globe. They may cover the historical time period for CMIP7 (1850 to around 2020) and also future conditions beyond 2020. Therefore it is necessary for the core team working on CMIP7 simulations to add those data at some stage.

Range of planned scientific data usage

At this stage AWI-CM is mainly used at AWI. However, it is envisaged that scientists from

GEOMAR and from the EC-Earth community use one or more of the earth system model components.

All of the data are available free of charge and most of the data are subject to the CC BY 4.0 license. This will also be the case for data necessary for the biogeochemistry and ice sheet modules. Data from ECMWF are subject to different licenses: the ECMWF reanalysis data license can be found at https://apps.ecmwf.int/datasets/licences/copernicus/. Once data related to OpenIFS will become available, a license agreement needs to be signed with ECMWF for usage of these data.

Data Storage Usage Plan

These data will need to be offered more than the maximum length of a data project of 5 years. It is clear that we will ask for an extension of at least another 5 years towards the end of this allocation period.