Project: MPI-OM Max-Planck-Institute Ocean Model initial and boundary condition data

Project acronym for link in /pool/data: MPIOM

Principal investigator (long-term responsible contact): Helmuth Haak

Applicant (if not the same as above): Reinhard Budich

Allocation period: 11/2021 - 11/2025

Allocation Period	11/2021 - 11/2026
Volume	15TB
Expected Volume Change	20TB
License allows usage on DKRZ resources	y

Project overview

This project comprises the input and model state data required for common MPIOM/HAMOCC setups and intercomparisons projects, created and compiled by different MPIOM/HAMOCC developers and users.

Data generated by MPI-M is provided under the CC-BY-NC-SA 4.0 license (https://creativecommons.org/licenses/by-nc-sa/4.0/). Their usage is restricted accordingly.

There is no specific citation available for this data set. Individual subsets (such as CMIP6 data) come under their own citation, detailed in the files' metadata or the respective README.

Details of the MPIOM/HAMOCC model are described as part of

Marsland, S., Haak, H., Jungclaus, J., Latif, M. & Röske, F. (2003). The Max-Planck-Institute global ocean/sea ice model with orthogonal curvilinear coordinates. Ocean Modelling, 5(2), 91-127. doi:10.1016/S1463-5003(02)00015-X

Ilyina, T., Six, K. D., Segschneider, J., Maier-Reimer, E., Li, H., and Núñez-Riboni, I. (2013), Global ocean biogeochemistry model HAMOCC: Model architecture and performance as component of the MPI-Earth system model in different CMIP5 experimental realizations, J. Adv. Model. Earth Syst., 5, 287– 315, doi:10.1029/2012MS000178.

Jungclaus, J., Fischer, N., Haak, H., Lohmann, K., Marotzke, J., Matei, D., Mikolajewicz, U., Notz, D. & von Storch, J.-S.(2013). Characteristics of the ocean simulations in MPIOM, the ocean component of the MPI Earth System Model. Journal of Advances in Modeling Earth Systems, 5, 422-446. doi:10.1002/jame.20023

Mauritsen, T. et al. (2019), Developments in the MPI-M Earth System Model version 1.2 (MPI-ESM1.2) and Its Response to Increasing CO2, J. Adv. Model. Earth Syst.,11, 998-1038, doi:10.1029/2018MS001400

Data content

MPIOM/HAMOCC data is provided as climatology or time-series, either globally/zonally uniform or as spatial distribution data, in different horizontal (TOY, GI6, GR30, GR15, TP10, TP04 and TP6M) and vertical resolutions. It also contains instructions and scripts for generating MPIOM/HAMOCC compatible data from source input (SOURCE

directory).

Forcing data derived from Reanalysis are available for at least 1979 - 2020. Several data sets comprise additional periods. Currently, ERA5, ERA40, ERAint, ERA20C, NCEP, German OMIP are available.

Data is provided in NetCDF or GRB format, except for the scripts and some text files.

Range of planned scientific data usage

Access to this data is essential for all users of MPIOM/HAMOCC in the versions provided by MPI-M. Though MPIOM/HAMOCC applications will increasingly be ported to ICON, for the upcoming years many institutions associated with DKRZ will depend on it. Furthermore also ICON-O uses SOURCE directory.

Model use requires consent to our software license agreement (https://mpimet.mpg.de/fileadmin/projekte/ICON-ESM/mpi-m_sla_201202.pdf).

Data Storage Usage Plan

The current data volume is 15 TB. Extension of the time-series data needs to be considered (update of forcing data with information from recent observation or re-analysis). So we estimate an increase to 20 TB in the future.