

README concerning the dataset QUBICC available via DKRZ /pool/data resources

Date: 21. April 2022

T I T L E O F T H E D A T A S E T

QUBICC project initial and boundary condition data

P A T H T O T H E D A T A S E T

/pool/data/ICON/qubicc

O W N E R / P R O D U C E R O F T H E D A T A S E T

Luis Kornblueh, luis.kornblueh@mpimet.mpg.de, Tel.:

D A T A U S A G E L I C E N S E

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 qubicc, monsoon data) come under their own citation, detailed in the files' metadata.

Details of the ICON model are described in Giorgetta, M. A. et al. (2018). ICON-A, the atmosphere component of the ICON Earth system model: I. Model description. *J. Adv. Model. Earth Syst.*, 10, 1613–1637. doi:10.1029/2017MS001242
Korn, P. (2017). Formulation of an unstructured grid model for global ocean dynamics. *Journal of Computational Physics*, 339, 525–552. doi:10.1016/j.jcp.20171246.03.009

extpar is funded by the COSMO-Consortium and can be found (on request only) at <https://github.com/C2SM-RCM/extpar>

volarc: <https://gepris.dfg.de/gepris/projekt/416112203?language=en>

qubicc: <https://romic2.iap-kborn.de/projekte/qubicc>

monsoon: <https://www.kooperation-international.de/laender/asien/china/projekte-china/detail-laendereinsteigsseite/info/china-pilotprojekte-verbundprojekt-monsunzirkulation-in-globalen-sturmaufloesenden-simulationen-2/>

C O N T E N T O F T H E D A T A S E T

This project comprises the input and model state data required for QUBICC, Monsoon, Volarc and several smaller specialized atmospheric ICON setups and

intercomparison projects, as well as development and testing of extpar, the ICON boundary condition pre-processor (includes

versioning of extpar input data from external providers) together with C2SM/ETHZ, MeteoSwiss, and DWD.

Maintaining and organizing grids (copies of grid files) and specific sapphire experiment input data e.g. for

- * qubicc
- * monsoon
- * cave
- * r2b11

and other experiments with specific input data. They are based upon the current NWP physics external parameter data sets, which will be used in the near future (in late 2022);

in many cases these are based up on specific 'historical' data related to volcanic eruptions.

- * volarc

The latter are original ECMWF model data, which are kept to be able to generate ICON input data with alternative horizontal resolutions other than used in the original experiments.

ICON data is provided either as pure structural (grid) data, or as climatology or time-series, either globally/zonally uniform or as spatial distribution data, in numerous different horizontal and vertical.

IFS/ECMWF data are partly in spectral-space. It contains furthermore external input data for extpar from several sources and in various formats. Instructions and scripts for generating ICON compatible data from this data sets for producing ICON input data are provides by extpar.

Boundary data for time-dependent quantities (historical) is available for small subsets of the original sets made available by / pool/data/ICON to ease the transfer of experiments from DKRZ to other computing centres.

Most data are provided in NetCDF format, except for the scripts and some textual dictionary files describing used parameters in files. Contents (variable selection) and format (gridding) of the data files is specific to ICON requirements,

D A T A U S A G E S C E N A R I O S

Access to this data is essential for a substantial number of users of ICON, especially the grid service. As ICON is used as the standard modeling environment, envisaged for at least the next decade, MPI-M and many other institutions associated with DKRZ will depend on it.

M E T H O D S U S E D F O R D A T A C R E A T I O N

See above or contact dataset owner/maintainer.

I S S U E S

No

VOLUME OF THE DATASET (AND POSSIBLE CHANGES THEREOF)

The current data volume is 20 TB. As ICON is envisaged as an ongoing effort, extensive alteration, extension and update of the data is very likely but will not exceed 25 TB.

TIME HORIZON OF THE DATASET ON / POOL / DATA

The data will need to be provided permanently until further notice. The current resources have been officially granted until 2026-12-31.