README concerning the MESSy related dataset available via DKRZ
/pool/data resources

Date: 26 August 2021

T I T L E O F T H E D A T A S E T
MESSy input and boundary conditions

P A T H T O T H E D A T A S E T
/pool/data/MESSY/DATA

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
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D A T A U S A G E L I C E N S E
The data are provided for use with the Modular Earth Submodel System
(MESSy).
By agreeing to the MESSy license, the reuse of the MESSy dataset
available
via /pool/data is permitted for that purpose.

https://www.messy-interface.org -> MESSy Licence

In particular the ECMWF forecast related "nudging" data (see below)
must not be made publicly available, since ECMWF forecast data are
subject to
a very restrictive license.

C O N T E N T O F T H E D A T A S E T
Data is stored in a hierarchy of subdirectories:

1) Some directories contain data which are specific for various
legacy
   base-models, which are connected to MESSy:

  - CESM1
    - initial and boundary data for the CESM1 Earth System Model
  - COSMO
    - grid, initial, and boundary data for the COSMO model
  - ECHAM5/
          <version>/init/<resolution>   : original ECHAM5
initial files
          <version>/add_spec*/<resolution> : specific (date/time)
ECHAM5
                                             initial files
        NOTES:
        <version> = echam5.3.01, echam5.3.02
        <resolution> = T106L191MA, T106L41DLR, T106L90MA, T21L19,
                       T31L31ECMWF, T31L49MA, T42L31ECMWF,
T42L47MA,
                       T63L31ECMWF, T63L47MA, T63L90MA, T85L39MA,
T85L49MA,
                       T85L90MA, T106L31ECMWF, T106L47MA,
T106L95MA,

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                        T21L39MA, T31L39MA, T31L90MA, T42L39MA,
T42L87MA,
                        T63L39MA, T63L49MA, T63L95MA, T85L41DLR,
T85L60ECMWF,
                        T85L95MA, T106L39MA, T106L87MA, T10L39MA,
T255L47MA,
                        T31L47MA, T42L19, T42L41DLR, T42L90MA,
T63L41DLR,
                        T63L87MA, T85L31ECMWF, T85L47MA, T85L87MA,

        The specific initial files are required for "realistic"
initialization
        at a given date and time (e.g. nudged hind-cast
simulations).

   - ICON/<version>/<setup>
     - grid and initial data for the ICON model in various setups

         NOTES:
         <version> = icon2.0
         <setup> = HDCP2, NWP  : specific setups
         <setup> = shared      : data shared between various setups

2) Some directories contain data for legacy components, which are
   used with MESSy:

   - MPIOM (is used as MESSy submodel)
     - initial data for the ocean model

   - CLM (coupled to COSMO/MESSy via OASIS3-MCT)
     - initial and boundary data for the community land model

   - OASIS/<setup>
     - weight data for various coupled COSMO/MESSy -- CLM and
       MECO(n) -- CLM setups

3) These directories contain initial and boundary conditions for the
   various (mostly atmospheric chemistry related) MESSy submodels:

   - MESSy1/<setup>         : development cycle 1 of MESSy, old
specific setups
   - MESSy2/<setup>         : development cycle 2 of MESSy, old
specific setups
   - MESSy2/raw/<submodel> : submodel specific initial and boundary
data, e.g.

                              emissions of trace gases and aerosols,
specific

                              scenarios, etc.

4) These directories contain "nudging" data for EMAC (ECHAM/MESSy)
   in specified dynamics ("nudged") mode:

   - NUDGING/ECMWF/[ANALY,ERAI]/<resolution> : old IEEE file format
                                               based on ECMWF ERA-
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                                  interim or
                                            operational ANALYsis
data
     - NUDGING_NC/ECMWF/<type>/<resolution>
       <type> = ERA05.0, ERA05.1, ERA05: ECMWF ERA5-data
               = ERAI                    : ECMWF ERA-Interim data
               = ANALY                   : ECMWF operatoinal ANALYsis
data
               = ANA,FCpre,FC            : ECMWF forecast data [!!!
License !!!]

5) Sea surface temperature / sea ice data for performing EMAC
(ECHAM/MESSy)
     climate simulations:
     - SST

6) Auxiliary data to create specific boundary conditions or initial
files:
     - EMISSIONS
     - TOOLS


Data are mostly in netcdf, some in grib, and some in ASCII format.

D A T A   U S A G E   S C E N A R I O S
The data are provided for use with the Modular Earth Submodel System
in
connection with the various legacy base-models
   - CESM1/MESSy
   - COSMO/MESSy and MECO(n) [= COSMO/MESSy nested on-line n-times
into EMAC]
   - ECHAM/MESSy [= EMAC]
   - ICON/MESSy
and additional components (MPIOM, CLM, OASIS3-MCT) etc.
Anybody performing simulations with MESSy related models requires
access to
these data.

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
The data are provided for use with the Modular Earth Submodel System
(MESSy)
and are therefore suited for just this purpose.

The basis of the data are several external data sources (ECMWF, CCMI
& CMIP
communities, scenario providers, etc.). In many cases the
originators and
creation methods of the data files are mentioned in the netcdf-file
headers.
Usage of data is documented in various MESSy-related publications
(https://www.messy-interface.org -> MESSy Publications).

Nudging data for EMAC "specified dynamics" simulations are created
from
ECMWF raw data with specific cdo-based tools.
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I S S U E S
None.

V O L U M E   O F   T H E   D A T A S E T   (A N D   P O S S I B L E   C
H A N G E S   T H E R E O F)
The volume of the dataset is (2021/08/26) 143 TByte.
It is expected that this volume increases in the future, in
particular:
 - more recent ECMWF ERA5 based "nudging" data, shortly after the
   corresponding raw data become available
 - ECMWF operational analysis and forecast data for MECO(n)-based
hind- and
   forecast simulations accompanying measurement campaigns
 - additional emission inventories and scenario data for atmospheric
chemistry
   applications

T I M E   H O R I Z O N O F   T H E   D A T A S E T   O N   / P O O L / D
A T A
EMAC, COSMO/MESSy & MECO(n), CESM1/MESSy, ICON/MESSy are all in use,
therfore
long-term access to these data is required.

Storage resources are granted until ... (cf info by WLA).