

Bash Script for postprocessing with CDO

The shell (bash) script below is an example for postprocessing using multiple CDO commands including the following general parts:

- Selecting time periods
- Selecting variables
- Temporal resampling (e.g. to daily means, if the data is already at daily means, then this step would be idle but harmless)
- Interpolation to a longitude-latitude grid (see section "[Regridding the data](#)" using CDO within the shell)

The script assumes the existence of a grid-description and a weight-file (see also "[Regridding the data](#)").

Since the required computational performance may exceed what is available at the interactive prepost nodes, it may be useful to read the Wiki introduction section about [SLURM workload manager](#) and allocating an exclusive computational environment.

As an example, the script selects surface temperature (ts) for the months January-March of the 1 year-long coupled diamond simulation), calculates daily mean values and interpolates the data onto a 1°x1° longitude-latitude grid. This script makes use of the [SLURM workload manager](#) and can be submitted via `sbatch scriptname.sh`. If it is intended to execute the script without SLURM, just delete the `'SBATCH ...` lines at the top (leave the `#!/bin/sh`) and execute the script via `bash scriptname.sh`.

```
#!/bin/sh
#SBATCH --job-name=myjobname
#SBATCH --partition=gpu
#SBATCH --nodes=1
#SBATCH --time=01:00:00
#SBATCH --mail-type=FAIL
#SBATCH --account=project_name_to_be_charged
#SBATCH --output=job_log.o%j
#SBATCH --error=job_log.e%j

set -xe

## example of how to postprocess 2d (lon-lat and time) atmospheric variable.

### START USER INPUT
CDO="/home/mpim/m214003/local/bin/cdo" #path for cdo version (here Uwes
local version)
var="ts" #variable
years="2020"
exp="dpp0016"
grid="1" #in degree (i.e. 1x1): other option: grid="005" for 0.05x0.05 or
define own grid description file and weight file
months="01 02 03"
model_files="${exp}_atm_2d_ml_" #adjust for variable of interest
```

```
path_to_scratch="$SCRATCH/${exp}"
path_to_model_raw_data="/work/mh0287/k203123/GIT/icon-aes-
dyw_albW/experiments/${exp}"
griddes_file="griddes_${grid}.txt" #specifiy grid description text file here
(see Wiki on this:
https://wiki.mpimet.mpg.de/doku.php?id=analysis:postprocessing\_icon:regridding:shell:start)
weight_file="weight_${exp}_${grid}.nc" #specifiy weight file here (see Wiki
on this:
https://wiki.mpimet.mpg.de/doku.php?id=analysis:postprocessing\_icon:regridding:shell:start)
out_dir="$SCRATCH/${exp}" # this is the path where the final file will be
stored. In this example, this is also the $SCRATCH dir of the user, but
could be changed to the $WORK dir of the user for instance
griddes_file="griddes_${grid}.txt" #specifiy grid description text file here
(see Wiki on this:
https://wiki.mpimet.mpg.de/doku.php?id=analysis:postprocessing\_icon:regridding:shell:start)
weight_file="weight_${exp}_${grid}.nc" #specifiy weight file here (see Wiki
on this:
https://wiki.mpimet.mpg.de/doku.php?id=analysis:postprocessing\_icon:regridding:shell:start)
### END USER INPUT

#####
### creating directory structure on scratch (if non existing)

for yy in ${years}; do
    for mm in ${months}; do

        ${CD0} -O -P 24 -remap,${griddes_file},${weight_file} -daymean -cat -
apply,"-selname,${var}" [
${path_to_model_raw_data}/${model_files}*${yy}${mm}*.nc ]
${path_to_scratch}/${var}_tmp_${mm}.nc

        done #mm
    done #yrs

## cat and del monthly chunk files
${CD0} -O -P 24 cat ${path_to_scratch}/${var}_tmp_*.nc
${out_dir}/${exp}_${var}_${grid}x${grid}.nc
rm ${path_to_scratch}/${var}_tmp_*.nc
```

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