**PFF-DART README**

Please checkout the branch ‘PFF-DART-2024’ for the following instruction.

**Step 1. Create the work directories for PFF-DART**

./generate\_dir.sh

will generate 4 directories:

/state\_output

The netcdf files for the state (prior & posterior)

/obs\_space\_diag

The DART diagnostic observation space diagnostic files (prior & posterior)

/observation

The directory for the observation files

/temp\_for\_input\_nml

The DART namelist for PFF-DART for DA cycle, ensemble forecasting, and posterior diagnostics

/log\_files

The DART output messages

**Step 2. Put the observation files into ./observation**

Please move and untar the observation file for the experiment. Make sure to include both of the two different format of observation files!

“obs\_seq.out\_<date>\_<hour>”

The original DART observation file format. Used for ensemble forecasting and posterior diagnostics

“obs\_seq.out\_<date>\_<hour>\_seq”

The “fake time” format for PFF-DART code. Note that the observation time in these files have been modified as the “fake time”, which is simply used as an iteration index for the sequential assimilation for PFF-DART code.

**Step 3. Customize ./DART\_cycling.sh and run cycling experiment**

./DART\_cycling.sh is the main cycling script for running PFF-DART.

DART\_cycling.sh prepares the “input.nml” file for each step of PFF-DART. There are 3 main steps:

(1) ensemble forecasting from analysis at time t to time t+dt, and store the prior diagnostics at time t+dt

(2) DA at time t+dt

(3) posterior diagnostics at time t+dt.

Note that each of these 3 steps require modifying “input.nml” from “input.nml.template” for PFF-DART, which is controlled by DART\_cycling.sh

If you would like to change the namelist for PFF-DART, please either modify “input.nml.template” (recommended), or “DART\_cycling.sh” directly.

Note that the default setup runs all the 3 steps in the login node of the machine (see L60-61, L95-96, L132-133, L164-165). Please customize the code based on the machine that you’re working on.

Please contact Chih-Chi Hu ([ch0683@princeton.edu](mailto:ch0683@princeton.edu)) for further details of the code.