J. Input Parameters for the Flux Coupler

The coupler reads an input namelist, called inparm, from stdin at runtime. The Flux Coupler uses the namelist input parameter processing capability which is a FORTRAN 90 standard, but is also available as an extension to most FORTRAN 77 compilers. This section contains a list and description of available namelist input parameters.

I. List of Input Parameters

Flux Coupler input variables follow a naming convention in which the first few letters of the variable identify a basic functionality group:

- **rest_xxx** selects options with respect to model initial conditions and the acquisition and creation of restart files,
- **case_xxx** selects options with respect to specifying a case name and description,
- **stop_xxx** selects options with respect to when a simulation will stop,
- **hist_xxx** selects options with respect to when and what type of history data is created,
- **mss_xxx** selects options with respect to data file storage on NCAR's Mass Storage System,
- **diag_xxx** selects options with respect to run-time diagnostics of the physical simulation,
- **flux_xxx** selects options with respect to flux calculation specifics,
- **info_xxx** selects options with respect to monitoring the computational performance of the model.

The following list of the Flux Coupler Input Namelist includes:

- the default value of the variable. While reasonable default values are selected for all variables, users might want to alter these values according to their application.
- if and when the variable is required input. Note that very few input parameters are required. In a few cases, changing one default value will cause another input parameter to become required.
- a brief description of the purpose and effect of the parameter.
- a reference to an example namelist which uses the variable (examples follow this list).

case_name
Default: "null"
Required: no, but highly recommended
Description: This is the case name text string, up to 8 characters, which is included in output files to help identify the model run.

case_desc
Default: "null"
Required: no, but highly recommended
Description: This is a short text string, up to 80 characters, which is included in output files to help identify the model run.
See Example: 1, 2, 3, 4

rest_type

Default: "initial"
Required: no (but default is of limited usefulness)
Description: This selects the run type. Valid choices are: "initial", "continue", "branch", "regenerate." Selecting "branch" or "regenerate" makes rest_bfile a required input.
See Example: 1, 2, 3, 4

rest_dir

Default: "null"
Required: yes
Description: This is a mass store directory name. Restart and history files go into this directory. For continuation or regeneration runs, the initial condition restart file must also be in this directory.
See Example: 1, 2, 3, 4

rest_bfile

Default: "null"
Required: required if rest_type = "branch" or "regeneration", ignored otherwise
Description: This is the mass store file name of the branch file (a.k.a. the IC data file).
See Example: 3, 4

rest_pfile

Default: "null"
Required: yes
Description: This is the complete path and name of the restart pointer file. This must include an existing, NFS mounted directory.
See Example: 1, 2, 3, 4

rest_date

Default: 00010101 (year 1, month 1, day 1)
Required: no (optional for initial and branch runs, ignored otherwise)
Description: This is the restart date (encoded: yyyymmdd).

- On initial runs, rest_date is the initial date of the simulation.
- On branch runs, if rest_date $>$ 0, it will over-ride the date contained in the rest_bfile IC restart file. Otherwise the date from the rest_bfile data file is used.
- On continuation or regeneration runs rest_date is not used.

See Example: 1

rest_freq

Default: "monthly"
Required: no
Description: This is the restart frequency, one of "monthly", "yearly", or "ndays" which selects how often restart data files are created.
See Example: 3

rest_nday

Default: 10

Required: no (only used if rest_freq = "ndays")

Description: If rest_freq = "ndays", restart files will be created every n days. More specifically, whenever mod(d-p;n) = 0, where
d = the simulation day (1 Jan, year 1 <=> d = 365)
p = an offset such that mod(d-p;n) = 0 on the date specified by rest_odate
n = rest_nday

See Example: 3

rest_odate

Default: 0

Required: no

Description: Selects restart file offset calendar date, used in conjunction with rest_nday when rest_freq = "ndays." If rest_odate > 0, it is a valid calendar date (encoded: yyyymmdd). Restart data is created every n days relative to (and including) either

- the initial date of the run (if rest_odate < 1)
- the date hist_odate (if rest_odate > 0)

stop_option

Default: "newyear"

Required: no

Description: Selects when to stop the simulation.

- "newdecade" => stop at the start of the next decade
- "newyear" => stop on the next January 1st
- "newmonth" => stop on the 1st of the next month
- "ndays" => stop after advancing n days, where n=stop_nday
- "date" => stop when stop_date is reached. This makes stop_date a required input.

See Example: 1, 2, 3, 4

stop_nday

Default: 1

Required: no (only used when stop_option = "ndays")

Description: If stop_option = "ndays," stop after advancing stop_nday days.

See Example: 3

stop_date

Default: 00010101 (year 1, month 1, day 1)

Required: no (required if stop_option = "date," ignored otherwise)

Description: If stop_option = "date," stop on this date.

See Example: 4

hist_freq

Default: "monthly"

Required: no

Description: One of "monthly," "biweekly," "weekly," or "ndays," which selects how often history data files are created.

- "monthly" => data is created on the 1st of each month
- "biweekly" => data is created on the 1st and 15th of each month
- "weekly" => data is created on the 1st, 8th, 15th, and 22nd of each month
- "ndays" => history data is created every n days relative to a history offset date specified by hist_odate. Note: a history file is never created on a simulation stopping date, but a history file can be created on a simulation starting date.

See Example: 2

hist_nday

Default: 10

Required: no (only used if hist_freq = "ndays")

Description: If hist_freq = "ndays" > 0, restart files will be created every n days. More specifically, whenever mod(d-p;n) = 0, where
d = the simulation day (1 Jan, year 1 <=> d = 365)
n = hist_nday
p = an offset such that mod(d-p;n) = 0 on the date specified by rest_odate

See Example: 2

hist_odate

Default: 0

Required: no (only used if hist_freq = "ndays")

Description: Selects history file offset calendar date, used in conjunction with hist_nday when hist_freq = "ndays". If hist_odate > 1, it is a valid calendar date (encoded: yyyymmdd). See hist_freq for usage. History data is created every n days relative to (and including) either

- the initial date of the run (if hist_odate < 1)
- the 1st of the month (if hist_odate = 1)
- the date hist_odate (if hist_odate > 1)

See Example: 2

hist_tavg

Default: 0 (false)

Required: no

Description: If hist_tavg is true (non-zero), the Coupler will create monthly average history data files and component models will be requested to do the same.

mss_opts

Default: "nowait, nomail"
Required: no
Description: Options used when data files are sent to NCAR's Mass Storage System (MSS) via a mswrite library call. This default request uses asynchronous data file transfer. See the mswrite man pages at NCAR for more details.
See Example: 4

mss_pass

Default: " "
Required: no
Description: Mswrite password string for files sent to the MSS. See the mswrite man pages at NCAR for more details. The format is "[read-password][,write-password]."
See Example: 4

mss_rtpd

Default: 365
Required: no
Description: Retention period for data files sent to the MSS. See the mswrite man pages at NCAR for more details.
See Example: 4

diag_glob

Default: 0 (false)
Required: no
Description: If true (non-zero), print global diagnostic information.
See Example: 2

flx_albd

Default: 0 (false)
Required: no
Description: If true (non-zero), the atm is sent albedo fields which are zenith angle independent. The default is that the atm is sent albedo fields which are zenith angle dependent.

flx_epbal

Default: 0 (false)
Required: no
Description: If true (non-zero), adjust the precipitation field over the non-land-locked ocean and ice by a factor. The default factor is such that E + P = 0 over that ocean and ice surface area, but the ocean model may provide an alternate factor during execution.

init_tavg

Default: 1 (true) for initial runs, 0 (false) otherwise

Required: no

Description: If true (non-zero), on startup, the atm, ice, and lnd models are advanced one ocn synchronization interval while the ocn does not advance. This allows the formation of initial time-averaged fluxes for the ocn component. After this initial procedure, all models will begin to advance in unison.

info_dbug

Default: 1

Required: no

Description: Debugging information level: 0, 1, 2, or 3.

- 0 => do not write any extra debugging information to stdout
- 1 => write a small amount of extra debugging information to stdout
- 2 => write a medium amount of extra debugging information to stdout
- 3 => write a large amount of extra debugging information to stdout

See Example: 2

info_time

Default: 0 (false)

Required: no (normally not recommended)

Description: If true (non-zero), write message passing timing info to stdout.

II. Example Input Namelists

Example 1: an initial run

```
$inparm
case_name   = ''test01"
case_desc   = ''testing an initial run "
rest_type   = ''initial"
rest_dir    = ''/DOE/csm/test01/cpl/ "
rest_pfile  = ''$HOME/cpl.test01.rpointer"
rest_date   = 19800101
stop_option = ''date"
stop_date   = 19800701
/
```

Here the inputs specify an initial run starting on 1 Jan 1980 and stopping on 1 Jul 1980. Restart files will be sent to the MSS directory "/DOE/csm/test01/cpl/...". The restart pointer file, rest_pfile, will be in the user's home directory. The restart pointer file contains the name of the most recently created restart file. History data files and restart files will be created according to the default settings (on the 1st of each month). The Flux Coupler will be communicating with atmosphere, ocean, land, and ice models that are executing simultaneously.

Example 2: a continuation run

```
$inparm
case_name   = ``test01"
case_desc   = ``testing a continuation run "
rest_type   = ``continue"
rest_dir    = ``/DOE/csm/test01/cpl/ "
rest_pfile  = ``$HOME/cpl.test01.rpointer"
stop_option = `newyear"
hist_freq   = ``ndays"
hist_nday   = 10
hist_odate  = 1
info_dbug   = 0
diag_glob   = 1
/
```

Here the inputs specify a continuation run. Assuming this run continues from where example 1 finished, this run will start on 1 Jul 1980 and stop on 1 Jan 1981. Exactly where this run continues from is specified by the restart pointer file, which contains the name of the restart file that will be used. New restart files will be sent to the MSS directory specified by rest_dir. Restart files will be created according to the default settings (on the 1st of each month). History data will be created every 10 days relative to the 1st day of each month, i.e. on the 1st, 11th, 21st, and 31st of every month. Setting info_dbug = 0 will minimize the amount of debugging information written to stdout. Setting diag_glob = 1 will signal the coupler to calculate some global diagnostic information and write it to stdout.

Example 3: a branch run

```
$inparm
case_name   = ``test.02"
case_desc   = ``testing  a branch run "
rest_type   = ``branch"
rest_dir    = ``/DOE/csm/test.02/cpl/ "
rest_pfile  = ``$HOME/cpl.test.02.rpointer"
rest_bfile  = ``/DOE/csm/test01/cpl/r1981-01-01 "
rest_freq   = ``ndays"
rest_nday   = 10
stop_option = ``ndays"
stop_nday   = 31
/
```

Here the input parameter rest_type specifies a branch run. The branch file (/DOE/.../r1981-01-01) must be specified. This initial condition file was created by a previous simulation. Since the simulation's starting date (rest_date) is unspecified in the namelist, the date from the branch file will be used (1 Jan 1981). The simulation will stop after advancing 31 days (1 Feb 1981). Restart files will be created every 10 days relative to the start of the run.

Example 4: a regeneration run

```
$inparm
case_name   = ``test01"
case_desc   = ``regenerate some data "
rest_type   = ``regeneration"
rest_dir    = ``/DOE/csm/test01/cpl/ "
rest_pfile  = ``$HOME/cpl.test01.rpointer"
rest_bfile  = ``/DOE/csm/test01/cpl/r1980-07-01 "
stop_option = ``date"
stop_date   = 19800801
mss_rtpd    = 30
mss_pass    = ``,rosebud"
mss_opts    = ``nowait"
/
```

Here the inputs specify a regeneration run. The initial condition file, rest_bfile, must be specified. The simulation's starting date is taken from this branch file (1 Jul 1980). The stop options will cause the simulation to stop on a particular date, 1 Aug 1981. The mass store file retention period and write password have been selected here.