Package: PEcAn.BASGRA (via r-universe)

March 14, 2025

Type Package

Title PEcAn Package for Integration of the BASGRA Model

Version 1.8.0.9000

Description This module provides functions to link the BASGRA model to PEcAn.

Depends R (>= 4.0.0)

Imports PEcAn.logger, PEcAn.data.atmosphere, PEcAn.utils (>= 1.4.8), lubridate, ncdf4,

Suggests testthat (>= 1.0.2), withr

OS_type unix

SystemRequirements GNU Fortran

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LazyLoad yes

LazyData FALSE

Encoding UTF-8

RoxygenNote 7.3.2

Config/pak/sysreqs cmake libgdal-dev gdal-bin libgeos-dev make libmagick++-dev gsfonts libicu-dev libxml2-dev libnetcdf-dev libssl-dev libproj-dev libsqlite3-dev libudunits2-dev libx11-dev

Repository https://pecanproject.r-universe.dev

RemoteUrl https://github.com/PecanProject/pecan

RemoteRef HEAD

RemoteSha 97e61070b67901b2fa9aa727c73fdaf98a69a70c

RemoteSubdir models/basgra

Contents

`read_restart.BASGRA` *Read restart function for SDA with BASGRA*

Description

Read Restart for BASGRA

Usage

```
read_restart.BASGRA(outdir, runid, stop.time, settings, var.names, params)
```

Arguments

`outdir`	Output directory
`runid`	Run ID
`stop.time`	Year that is being read
`settings`	PEcAn settings object
`var.names`	Variable names to be extracted
`params`	Any parameters required for state calculations

Value

X.vec vector of forecasts

Author(s)

Istem Fer

run_BASGRA *run BASGRA model*

Description

BASGRA wrapper function. Runs and writes model outputs in PEcAn standard.

Usage

```
run_BASGRA(
  run_met,
  run_params,
  site_harvest,
  site_fertilize,
  start_date,
  end_date,
  outdir,
  sitelat,
  sitelon,
  co2_file = NULL,
  write_raw_output = FALSE
)
```

Arguments

run_met	path to CF met
run_params	parameter vector
site_harvest	path to harvest file
site_fertilize	path to fertilizer application file
start_date	start time of the simulation
end_date	end time of the simulation
outdir	where to write BASGRA output
sitelat	latitude of the site
sitelon	longitude of the site
co2_file	path to daily atmospheric CO2 concentration file, optional, defaults to 350 ppm when missing
write_raw_output	write raw output in csv or not

Details

BASGRA is written in fortran is run through R by wrapper functions written by Marcel Van Oijen. This function makes use of those wrappers but gives control of datastream in and out of the model to PEcAn. With this function we skip model2netcdf, we can also skip met2model but keeping it for now. write.config.BASGRA modifies args of this function through template.job then job.sh runs calls this function to run the model

Author(s)

Istem Fer, Julius Vira

`write.config.BASGRA` *Write BASGRA configuration files*

Description

Writes a BASGRA config file.

Usage

```
write.config.BASGRA(defaults, trait.values, settings, run.id, IC = NULL)
```

Arguments

`defaults`	list of defaults to process
`trait.values`	vector of samples for a given trait
`settings`	list of settings from pecan settings file
`run.id`	id of run
`IC`	initial conditions list

Details

Requires a pft xml object, a list of trait values for a single model run, and the name of the file to create

Value

configuration file for BASGRA for given run

Author(s)

Istem Fer

write_restart.BASGRA *write_restart.SIPNET*

Description

Write restart files for BASGRA

Usage

```
write_restart.BASGRA(
  outdir,
  runid,
  start.time,
  stop.time,
  settings,
  new.state,
  RENAME = TRUE,
  new.params = FALSE,
  inputs
)
```

Arguments

outdir	outout directory
runid	run id
start.time	Time of current assimilation step
stop.time	Time of next assimilation step
settings	pecan settings list
new.state	Analysis state matrix returned by sda.enkf
RENAME	flag to either rename output file or not
new.params	optional, additionals params to pass write.configs that are deterministically related to the parameters updated by the analysis
inputs	new input paths updated by the SDA workflow, will be passed to write.configs

Value

TRUE if successful

Author(s)

Istem Fer

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