Package: PEcAn.RothC (via r-universe)

June 5, 2026

Type Package

Title PEcAn Package for Integration of the RothC Model

Version 0.0.0.9000

Description This module provides functions to link the Rothamstead soil carbon model ``RothC'' to PEcAn. Uses RothC >= 2.0, available on GitHub <https://github.com/Rothamsted-Models/RothC_Code> as well as directly from the RothC team <https://www.rothamsted.ac.uk/rothamsted-carbon-model-rothc>.

URL https://pecanproject.github.io

BugReports https://github.com/PecanProject/pecan/issues

Depends R (>= 4.1)

Imports dplyr, lubridate (>= 1.6.0), ncdf4, PEcAn.logger, PEcAn.utils (>= 1.8.0), rlang, stats, utils

Suggests testthat (>= 3.0.0), withr

SystemRequirements RothC

OS_type unix

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Encoding UTF-8

RoxygenNote 7.3.3

Config/testthat/edition 3

Config/pak/sysreqs libicu-dev libnetcdf-dev libssl-dev libudunits2-dev

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

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

RemoteRef HEAD

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RemoteSubdir models/rothc

Contents

`met2model.RothC` *Extract monthly weather from CF file for input to RothC*

Description

Input files need to be named '<in.path>/<in.prefix>.YYYY.nc'

Usage

```
met2model.RothC(
  in.path,
  in.prefix,
  outfolder,
  start_date,
  end_date,
  overwrite = FALSE
)
```

Arguments

`in.path`	path on disk where CF files live
`in.prefix`	prefix for each file
`outfolder`	location where model specific output is written.
`start_date, end_date`	When to start and end output. Specify as exact dates, but output will be padded to whole months.
`overwrite`	logical: replace output files if they already exist?

Details

Output files are named '<outfolder>/<in.prefix>.YY-mm.YY-mm.dat' with one line per month and columns for temperature, rainfall, and evaporation.

Note that the created file contains only weather data and not any of the soil or management data needed for RothC's single combined input file. See 'write.config.RothC()' for assembly into a model-ready RothC_input.dat'.

Value

data frame summarizing file metadata

Author(s)

Chris Black

`model2netcdf.RothC` *Convert RothC output to PEcAn-formatted netCDF*

Description

Convert RothC output to PEcAn-formatted netCDF

Usage

```
model2netcdf.RothC(outdir, sitelat, sitelon, start_date, end_date)
```

Arguments

`outdir`	Location of model output
`sitelat`	Latitude of the site
`sitelon`	Longitude of the site
`start_date`	Start time of the simulation
`end_date`	End time of the simulation

Author(s)

Chris Black

`read_restart.RothC` *Read restart template for SDA*

Description

Reads restart files from RothC. Not implemented yet.

Usage

```
read_restart.RothC(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

Forecast numeric matrix

Author(s)

Chris Black

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write.config.RothC *Writes a RothC config file.*

Description

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

Usage

```
write.config.RothC(defaults, trait.values, settings, run.id)
```

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

Value

configuration file for MODEL for given run

Author(s)

Chris Black

`write_restart.RothC` *Write restart template for SDA*

Description

Not implemented yet.

Usage

```
write_restart.RothC(
  outdir,
  runid,
  start.time,
  stop.time,
  settings,
  new.state,
  RENAME,
  new.params,
  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

Author(s)

Chris Black

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