

# Package: PEcAn.SIPNET (via r-universe)

November 4, 2024

**Type** Package

**Title** PEcAn Functions Used for Ecological Forecasts and Reanalysis

**Version** 1.8.0.9000

**Description** The Predictive Ecosystem Carbon Analyzer (PEcAn) is a scientific workflow management tool that is designed to simplify the management of model parameterization, execution, and analysis. The goal of PEcAn is to streamline the interaction between data and models, and to improve the efficacy of scientific investigation.

**Imports** dplyr, lubridate (>= 1.6.0), ncd4 (>= 1.15),  
PEcAn.data.atmosphere, PEcAn.data.land, PEcAn.logger,  
PEcAn.remote, PEcAn.utils, stats

**Suggests** coda, testthat (>= 1.0.2)

**SystemRequirements** SIPNET ecosystem model

**OS\_type** unix

**License** BSD\_3\_clause + file LICENSE

**Copyright** Authors

**Encoding** UTF-8

**RoxygenNote** 7.3.2

**Repository** <https://pecanproject.r-universe.dev>

**RemoteUrl** <https://github.com/PecanProject/pecan>

**RemoteRef** HEAD

**RemoteSha** caad7b3f8386df43eaf44f9316459f66ffc69b0b

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mergeNC	<i>Merge multiple NetCDF files into one</i>
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## Description

Merge multiple NetCDF files into one

## Usage

```
mergeNC(files, outfile)
```

## Arguments

files	character. List of filepaths, which should lead to NetCDF files.
outfile	character. Output filename of the merged data.

## Value

A NetCDF file containing all of the merged data.

## Source

<https://github.com/RS-eco/processNC/blob/main/R/mergeNC.R>

## Examples

```
## Not run:
files <- list.files(paste0(system.file(package="processNC"), "/extdata"),
                  pattern="tas.*\\.nc", full.names=TRUE)
temp <- tempfile(fileext=".nc")
mergeNC(files=files, outfile=temp)
terra::rast(temp)

## End(Not run)
```

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met2model.SIPNET      *met2model.SIPNET*

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## Description

met2model wrapper for SIPNET

## Usage

```
met2model.SIPNET(  
  in.path,  
  in.prefix,  
  outfolder,  
  start_date,  
  end_date,  
  overwrite = FALSE,  
  verbose = FALSE,  
  year.fragment = FALSE,  
  ...  
)
```

## Arguments

<code>in.path</code>	location on disk where inputs are stored
<code>in.prefix</code>	prefix of input and output files OR the full file name if <code>year.fragment = TRUE</code>
<code>outfolder</code>	location on disk where outputs will be stored
<code>start_date</code>	the start date of the data to be downloaded (will only use the year part of the date)
<code>end_date</code>	the end date of the data to be downloaded (will only use the year part of the date)
<code>overwrite</code>	should existing files be overwritten
<code>verbose</code>	should the function be very verbose
<code>year.fragment</code>	the function should ignore whether or not the data is stored as a set of complete years (such as for forecasts).
<code>...</code>	Additional arguments, currently ignored

## Author(s)

Luke Dramko, Michael Dietze, Alexey Shiklomanov, Rob Kooper

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model2netcdf.SIPNET    *Convert SIPNET output to netCDF*

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### **Description**

Converts all output contained in a folder to netCDF.

### **Usage**

```
model2netcdf.SIPNET(  
  outdir,  
  sitelat,  
  sitelon,  
  start_date,  
  end_date,  
  delete.raw = FALSE,  
  revision,  
  prefix = "sipnet.out",  
  overwrite = FALSE,  
  conflict = FALSE  
)
```

### **Arguments**

outdir	Location of SIPNET 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
delete.raw	logical: remove sipnet.out files after converting?
revision	model revision
prefix	prefix to read the output files
overwrite	Flag for overwriting nc files or not
conflict	Flag for dealing with conflicted nc files, if T we then will merge those, if F we will jump to the next.

### **Author(s)**

Shawn Serbin, Michael Dietze

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read\_restart.SIPNET    *Read restart function for SDA with SIPNET*

---

**Description**

Read Restart for SIPNET

**Usage**

```
read_restart.SIPNET(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)**

Ann Raiho <araiho@end.edu>

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remove.config.SIPNET    *Clear out previous SIPNET config and parameter files.*

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**Description**

Clear out previous SIPNET config and parameter files.

**Usage**

```
remove.config.SIPNET(main.outdir, settings)
```

**Arguments**

main.outdir	Primary PEcAn output directory (will be depreciated)
settings	PEcAn settings file

**Value**

nothing, removes config files as side effect

**Author(s)**

Shawn Serbin, David LeBauer

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sample.IC.SIPNET	<i>Sample initial conditions for SIPNET</i>
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**Description**

Sample initial conditions for SIPNET

**Usage**

```
sample.IC.SIPNET(ne, state, year = 1)
```

**Arguments**

ne	number of ensembles
state	state variables you want to pull
year	year to pull from

**Value**

IC matrix of initial conditions

**Author(s)**

Mike Dietze and Ann Raiho

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sipnet2datetime	<i>Convert SIPNET DOY to datetime</i>
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**Description**

Convert SIPNET DOY to datetime

**Usage**

```
sipnet2datetime(sipnet_tval, base_year, base_month = 1, force_cf = FALSE)
```

**Arguments**

splitnet_tval	vector of SIPNET DOY values
base_year	base year to calculate datetime from DOY
base_month	reference month for converting from DOY to datetime
force_cf	force output to follow CF convention. Default FALSE

**Author(s)**

Alexey Shiklomanov, Shawn Serbin

---

split\_inputs.SIPNET    *split\_inputs.SIPNET*

---

**Description**

Splits climate met for SIPNET

**Usage**

```
split_inputs.SIPNET(
  settings,
  start.time,
  stop.time,
  inputs,
  overwrite = FALSE,
  outpath = NULL
)
```

**Arguments**

settings	PEcAn settings object
start.time	start date and time for each SDA ensemble
stop.time	stop date and time for each SDA ensemble
inputs	list of model inputs to use in write.configs.SIPNET
overwrite	Default FALSE
outpath	if specified, write output to a new directory. Default NULL writes back to the directory being read

**Value**

file split up climate file

**Author(s)**

Mike Dietze and Ann Raiho

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veg2model.SIPNET	<i>veg2model.SIPNET</i>
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**Description**

veg2model.SIPNET

**Usage**

```
veg2model.SIPNET(outfolder, poolinfo, siteid, ens)
```

**Arguments**

outfolder	location to store ncdf files
poolinfo	object passed from write_ic contains output from cohort2pool function
siteid	object passed from write_ic contains site id
ens	number of ensemble members

**Value**

result object with filepaths to ncdf files

**Author(s)**

Alexis Helgeson

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write.config.SIPNET	<i>Writes a configuration files for SIPNET model</i>
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**Description**

Writes a configuration files for your model

**Usage**

```
write.config.SIPNET(
  defaults,
  trait.values,
  settings,
  run.id,
  inputs = NULL,
  IC = NULL,
  restart = NULL,
  spinup = NULL
)
```



**Arguments**

defaults	pft
trait.values	vector of samples for a given trait
settings	PEcAn settings object
run.id	run ID
inputs	list of model inputs
IC	initial condition
restart	In case this is a continuation of an old simulation. restart needs to be a list with name tags of runid, inputs, new.params (parameters), new.state (initial condition), ensemble.id (ensemble id), start.time and stop.time. See Details.
spinup	currently unused, included for compatibility with other models

**Author(s)**

Michael Dietze

---

write\_restart.SIPNET *write\_restart.SIPNET*

---

**Description**

Write restart files for SIPNET. WARNING: Some variables produce illegal values < 0 and have been hardcoded to correct these values!!

**Usage**

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

**Arguments**

<code>outdir</code>	output directory
<code>runid</code>	run ID
<code>start.time</code>	start date and time for each SDA ensemble
<code>stop.time</code>	stop date and time for each SDA ensemble
<code>settings</code>	PEcAn settings object
<code>new.state</code>	analysis state vector
<code>RENAME</code>	flag to either rename output file or not
<code>new.params</code>	list of parameters to convert between different states
<code>inputs</code>	list of model inputs to use in <code>write.configs.SIPNET</code>
<code>verbose</code>	decide if we want to print the outputs.

**Value**

NONE

**Author(s)**

Ann Raiho <araiho@end.edu>

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