

# Package ‘aridec’

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**Title** Arid decomposition database

**Version** 0.0.0.1

**Description** This package provides functions to load and analyse the arid decomposition database.

**Depends** R (>= 3.4.3)

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**Imports** yaml, FME, SoilR

**RoxygenNote** 7.1.1.9000

**NeedsCompilation** no

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biome	<i>Creates a data frame with the ecosystem type of the sites</i>
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---

**Description**

Creates a data frame with the ecosystem type of the sites

**Usage**

```
biome(database)
```

**Arguments**

database      A list with the aridec structure

**Value**

A data frame with the ecosystem types from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
biome=biome(database=aridec)
```

---

carbon	<i>Creates a data frame with the carbon content in litter samples</i>
--------	---

---

**Description**

Creates a data frame with the carbon content in litter samples

**Usage**

```
carbon(database)
```

**Arguments**

database      A list with the aridec structure

**Value**

A data frame with the carbon content (

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
C=carbon(database=aridec)
```

---

coordinates	<i>Creates a data frame with the coordinates of the sites</i>
-------------	---

---

**Description**

Creates a data frame with the coordinates of the sites

**Usage**

```
coordinates(database)
```

**Arguments**

database	A list with the aridec structure
----------	----------------------------------

**Value**

A data frame with the longitude and latitude of sites from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')  
coor=coordinates(database=aridec)
```

---

countries	<i>Creates a data frame with the countries of the sites</i>
-----------	---

---

**Description**

Creates a data frame with the countries of the sites

**Usage**

```
countries(database)
```

**Arguments**

database	A list with the aridec structure
----------	----------------------------------

**Value**

A data frame with the countries from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')  
countries=countries(database=aridec)
```

---

elevation	<i>Creates a data frame with elevation values of the sites</i>
-----------	--

---

**Description**

Creates a data frame with elevation values of the sites

**Usage**

```
elevation(database)
```

**Arguments**

database      A list with the aridec structure

**Value**

A data frame with the elevation values (mm) from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
elevation=elevation(database=aridec)
```

---

lignin	<i>Creates a data frame with the lignin content in litter samples</i>
--------	---

---

**Description**

Creates a data frame with the lignin content in litter samples

**Usage**

```
lignin(database)
```

**Arguments**

database      A list with the aridec structure

**Value**

A data frame with the lignin content (

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
lignin=lignin(database=aridec)
```

---

loadEntries	<i>Load all entries of the aridec dataset</i>
-------------	---

---

**Description**

Load all entries of the aridec dataset

**Usage**

```
loadEntries(path = "~/aridec/data/")
```

**Arguments**

path                      character string with the path where aridec data is stored

**Value**

R list with all entries

**Examples**

```
aridec=loadEntries()
```

---

MAP	<i>Creates a data frame with mean annual precipitation values of the sites</i>
-----	--

---

**Description**

Creates a data frame with mean annual precipitation values of the sites

**Usage**

```
MAP(database)
```

**Arguments**

database                  A list with the aridec structure

**Value**

A data frame with the mean annual precipitation values (mm) from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')  
MAP=MAP(database=aridec)
```

---

MAT	<i>Creates a data frame with mean annual temperature values of the sites</i>
-----	--

---

**Description**

Creates a data frame with mean annual temperature values of the sites

**Usage**

```
MAT(database)
```

**Arguments**

database            A list with the aridec structure

**Value**

A data frame with the mean annual temperature values (Celsius degrees) from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')  
MAT=MAT(database=aridec)
```

---

material	<i>Creates a data frame with the list of litter samples' plant parts</i>
----------	--

---

**Description**

Creates a data frame with the list of litter samples' plant parts

**Usage**

```
material(database)
```

**Arguments**

database            A list with the aridec structure

**Value**

A data frame with the list of the litter samples' plant parts from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')  
material=material(database=aridec)
```

---

nitrogen	<i>Creates a data frame with the nitrogen content of litter samples</i>
----------	---

---

**Description**

Creates a data frame with the nitrogen content of litter samples

**Usage**

```
nitrogen(database)
```

**Arguments**

database      A list with the aridec structure

**Value**

A data frame with the nitrogen content (

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
N=nitrogen(database=aridec)
```

---

onepFit	<i>Fits a one pool model to a time-series</i>
---------	---

---

**Description**

Fits a one pool model to a time-series

**Usage**

```
onepFit(timeSeries, initialCarbon)
```

**Arguments**

timeSeries      A time series of decomposition values over time  
initialCarbon    The initial amount of carbon in units that correspond to the time series data

**Value**

R list with an FME model object, a aridec model object, and the AIC value

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')
entry=aridec[[20]]
a=onepFit(timeSeries = entry$timeSeries[,1:2],
initialCarbon=100)
```

---

plotEntry	<i>Plot individual entries of the aridec dataset</i>
-----------	--

---

**Description**

Plot individual entries of the aridec dataset

**Usage**

```
plotEntry(entry)
```

**Arguments**

entry	character string with the name of the entry to be plotted
-------	---

**Value**

A plot

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')  
plotEntry(entry=aridec[["Adair2017"]])
```

---

readEntry	<i>Read single entry of the aridec database</i>
-----------	---

---

**Description**

Read single entry of the aridec database

**Usage**

```
readEntry(path, entryName)
```

**Arguments**

path	character string with the path where aridec is stored
entryName	character string with the name of the entry in the database

**Value**

R list with the entry

**Examples**

```
Adair2017=readEntry(path="~/Documents/GitHub/aridec/data/", entryName="Adair2017")
```



---

soilorder	<i>Creates a data frame with soil orders of the sites</i>
-----------	---

---

**Description**

Creates a data frame with soil orders of the sites

**Usage**

```
soilorder(database)
```

**Arguments**

database            A list with the aridec structure

**Value**

A data frame with the soil orders from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
soilorder=soilorder(database=aridec)
```

---

species	<i>Creates a data frame with the species list of litter samples</i>
---------	---

---

**Description**

Creates a data frame with the species list of litter samples

**Usage**

```
species(database)
```

**Arguments**

database            A list with the aridec structure

**Value**

A data frame with the list of species of the litter samples from the database

**Examples**

```
aridec<-loadEntries(path='~/Repos/aridec/data/')
species=species(database=aridec)
```

---

threepFit	<i>Fits a three pool model with parallel structure to a time series</i>
-----------	---

---

**Description**

Fits a three pool model with parallel structure to a time series

**Usage**

```
threepFit(timeSeries, initialCarbon, inipars = c(1, 0.5, 0.5, 0.5, 0.5))
```

**Arguments**

timeSeries	A time series of respiration values
initialCarbon	The initial amount of carbon in units that correspond to the time series data
inipars	vector of parameter values for the initial search of the optimization algorithm

**Value**

R list with an FME model object, a SoilR model object, and the AIC value

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')
entry=aridec[[20]]
a=threepFit(timeSeries = entry$timeSeries[,c(1,2)],
initialCarbon=100,
inipars = c(0.05, 0.01, 0.001, 0.1, 0.1))
```

---

threepsFit	<i>Fits a three pool model with series structure to a time series</i>
------------	---

---

**Description**

Fits a three pool model with series structure to a time series

**Usage**

```
threepsFit(
  timeSeries,
  initialCarbon,
  inipars = c(1, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5)
)
```

**Arguments**

timeSeries	A time series of respiration values
initialCarbon	The initial amount of carbon in units that correspond to the time series data
inipars	vector of parameter values for the initial search of the optimization algorithm

**Value**

R list with an FME model object, a SoilR model object, and the AIC value

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')
entry=aridec[["20"]]
a=threepsFit(timeSeries = entry$timeSeries[,c(1,2)],
initialCarbon=100,
inipars=c(0.9,0.01, 0.000001, 0.01, 0.01, 0.01, 0.1))
```

---

twopfFit

*Fits a two pool model with feedback structure to a time series*


---

**Description**

Fits a two pool model with feedback structure to a time series

**Usage**

```
twopfFit(timeSeries, initialCarbon, inipars = c(1, 0.5, 0.5, 0.5, 0.3))
```

**Arguments**

timeSeries	A time series of respiration values
initialCarbon	The initial amount of carbon in units that correspond to the time series data
inipars	vector of parameter values for the initial search of the optimization algorithm

**Value**

R list with an FME model object, a SoilR model object, and the AIC value

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')
entry=aridec[["20"]]
b=twopfFit(timeSeries = entry$timeSeries[,c(1,2)],
initialCarbon=100,
inipars=c(0.005, 0.00001, 0.1, 0.01, 0.01))
```

---

twoppFit

*Fits a two pool model with parallel structure to a time series*


---

**Description**

Fits a two pool model with parallel structure to a time series

**Usage**

```
twoppFit(timeSeries, initialCarbon, inipars = c(1, 0.5, 0.5))
```

**Arguments**

`timeSeries`      A time series of decomposition values  
`initialCarbon`    The initial amount of carbon in units that correspond to the time series data  
`inipars`            vector of parameter values for the initial search of the optimization algorithm

**Value**

R list with an FME model object, a SoilR model object, and the AIC value

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')
entry=aridec[["20"]]
a=twoppFit(timeSeries = entry$timeSeries[,c(1,2)],
initialCarbon=100,
inipars=c(0.01, 0.001, 0.1))
```

---

twopsFit

*Fits a two pool model with series structure to a time series*


---

**Description**

Fits a two pool model with series structure to a time series

**Usage**

```
twopsFit(timeSeries, initialCarbon, inipars = c(1, 0.5, 0.5, 0.3))
```

**Arguments**

`timeSeries`      A time series of decomposition values  
`initialCarbon`    The initial amount of carbon in units that correspond to the time series data  
`inipars`            vector of parameter values for the initial search of the optimization algorithm

**Value**

R list with an FME model object, a SoilR model object, and the AIC value

**Examples**

```
aridec<-loadEntries(path='~/Documents/GitHub/aridec/data/')
entry=aridec[["20"]]
b=twopsFit(timeSeries = entry$timeSeries[,c(1,2)],
  initialCarbon=100,
  inipars=c(0.005, 0.00001, 0.1, 0.01))
```

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