

Package: ArchaeoChron (via r-universe)

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Type Package

Title Bayesian Modeling of Archaeological Chronologies

Version 0.2

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Description Provides a list of functions for the Bayesian modeling of archaeological chronologies. The Bayesian models are implemented in 'JAGS' (Plummer 2003). The inputs are measurements with their associated standard deviations and the study period. The output is the MCMC sample of the posterior distribution of the event date with or without radiocarbon calibration.

License GPL (>= 3)

URL <https://ArchaeoStat.github.io/ArchaeoChron/>,
<https://github.com/ArchaeoStat/ArchaeoChron>

BugReports <https://github.com/ArchaeoStat/ArchaeoChron/issues>

Depends R (>= 3.5), rjags

Imports Bchron

Suggests ArchaeoPhases (>= 2.0), coda, knitr, markdown

VignetteBuilder knitr

Encoding UTF-8

LazyData true

NeedsCompilation no

RoxygenNote 7.2.3

Repository <https://archaeostat.r-universe.dev>

RemoteUrl <https://github.com/ArchaeoStat/ArchaeoChron>

RemoteRef HEAD

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chronoEvents_Gauss	<i>Bayesian Chronologies of Gaussian Dates Using the Event Model</i>
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Description

Bayesian Chronologies of Gaussian Dates Using the Event Model

Usage

```

chronoEvents_Gauss(
  M,
  s,
  measurementsPerEvent,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
  numberUpdate = 10000,
  variable.names = c("theta"),
  numberSample = 50000,
  thin = 10
)

```

Arguments

M	A ['numeric'] vector of measurements.
s	A ['numeric'] vector of errors.
measurementsPerEvent	A ['numeric'] vector of giving the number of measurements per event.

studyPeriodMin A length-one [‘numeric’] vector specifying the start time of the study period.
 studyPeriodMax A length-one [‘numeric’] vector specifying the end time of the study period.
 refYear A [‘numeric’] vector specifying the reference year. If ‘NULL’ (the default), AD years are expected.
 numberChains An [‘integer’] giving the number of of parallel chains for the model (see [jags.model()]).
 numberAdapt An [‘integer’] giving the number of iterations for adaptation (see [jags.model()]).
 numberUpdate An [‘integer’] giving the number of iterations to update the model by.
 variable.names A [‘character’] vector giving the names of variables to be monitored (see [coda.samples()]).
 numberSample An [‘integer’] giving the number of iterations to monitor (see [coda.samples()]).
 thin An [‘integer’] giving the thinning interval for monitors (see [coda.samples()]).

Value

An [‘mcmc.list’][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

chronoOutliers_Gauss *Bayesian Chronologies of Gaussian Dates Using Oxcal Outlier Model*

Description

Bayesian Chronologies of Gaussian Dates Using Oxcal Outlier Model

Usage

```

chronoOutliers_Gauss(
  M,
  S,
  outliersIndivVariance,
  outliersBernouilliProba,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
  numberUpdate = 10000,
  variable.names = c("theta"),
  numberSample = 50000,
  thin = 10
)
  
```

Arguments

M	A ['numeric'] vector of measurements.
s	A ['numeric'] vector of errors.
outliersIndivVariance	A ['numeric'] vector.
outliersBernouilliProba	A ['numeric'] vector.
studyPeriodMin	A length-one ['numeric'] vector specifying the start time of the study period.
studyPeriodMax	A length-one ['numeric'] vector specifying the end time of the study period.
refYear	A ['numeric'] vector specifying the reference year. If 'NULL' (the default), AD years are expected.
numberChains	An ['integer'] giving the number of of parallel chains for the model (see [jags.model()]).
numberAdapt	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
numberUpdate	An ['integer'] giving the number of iterations to update the model by.
variable.names	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
numberSample	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
thin	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

chrono_Gauss

Bayesian Chronologies of Gaussian Dates

Description

Bayesian Chronologies of Gaussian Dates

Usage

```
chrono_Gauss(
  M,
  s,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
```

```

    numberUpdate = 10000,
    variable.names = c("theta"),
    numberSample = 50000,
    thin = 10
  )

```

Arguments

<code>M</code>	A ['numeric'] vector of measurements.
<code>s</code>	A ['numeric'] vector of errors.
<code>studyPeriodMin</code>	A length-one ['numeric'] vector specifying the start time of the study period.
<code>studyPeriodMax</code>	A length-one ['numeric'] vector specifying the end time of the study period.
<code>refYear</code>	A ['numeric'] vector specifying the reference year. If 'NULL' (the default), AD years are expected.
<code>numberChains</code>	An ['integer'] giving the number of of parallel chains for the model (see [jags.model()]).
<code>numberAdapt</code>	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
<code>numberUpdate</code>	An ['integer'] giving the number of iterations to update the model by.
<code>variable.names</code>	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
<code>numberSample</code>	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
<code>thin</code>	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

combinationWithOutliers_Gauss

Combine Gaussian Dates with Outliers

Description

Combine Gaussian Dates with Outliers

Usage

```

combinationWithOutliers_Gauss(
  M,
  s,
  outliersIndivVariance,
  outliersBernouilliProba,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
  numberUpdate = 10000,
  variable.names = c("theta"),
  numberSample = 50000,
  thin = 10
)

```

Arguments

M	A ['numeric'] vector of measurements.
s	A ['numeric'] vector of errors.
outliersIndivVariance	A ['numeric'] vector.
outliersBernouilliProba	A ['numeric'] vector.
studyPeriodMin	A length-one ['numeric'] vector specifying the start time of the study period.
studyPeriodMax	A length-one ['numeric'] vector specifying the end time of the study period.
refYear	A ['numeric'] vector specifying the reference year. If 'NULL' (the default), AD years are expected.
numberChains	An ['integer'] giving the number of of parallel chains for the model (see [jags.model()]).
numberAdapt	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
numberUpdate	An ['integer'] giving the number of iterations to update the model by.
variable.names	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
numberSample	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
thin	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

 combinationWithRandomEffect_Gauss

Combine Gaussian Dates with a Random Effect

Description

Combine Gaussian Dates with a Random Effect

Usage

```
combinationWithRandomEffect_Gauss(
  M,
  s,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
  numberUpdate = 10000,
  variable.names = c("theta"),
  numberSample = 50000,
  thin = 10
)
```

Arguments

M	A ['numeric'] vector of measurements.
s	A ['numeric'] vector of errors.
studyPeriodMin	A length-one ['numeric'] vector specifying the start time of the study period.
studyPeriodMax	A length-one ['numeric'] vector specifying the end time of the study period.
refYear	A ['numeric'] vector specifying the reference year. If 'NULL' (the default), AD years are expected.
numberChains	An ['integer'] giving the number of of parallel chains for the model (see [jags.model()]).
numberAdapt	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
numberUpdate	An ['integer'] giving the number of iterations to update the model by.
variable.names	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
numberSample	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
thin	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

combination_Gauss *Combine Gaussian Dates*

Description

Combine Gaussian Dates

Usage

```
combination_Gauss(
  M,
  s,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
  numberUpdate = 10000,
  variable.names = c("theta"),
  numberSample = 50000,
  thin = 10
)
```

Arguments

M	A ['numeric'] vector of measurements.
s	A ['numeric'] vector of errors.
studyPeriodMin	A length-one ['numeric'] vector specifying the start time of the study period.
studyPeriodMax	A length-one ['numeric'] vector specifying the end time of the study period.
refYear	A ['numeric'] vector specifying the reference year. If 'NULL' (the default), AD years are expected.
numberChains	An ['integer'] giving the number of of parallel chains for the model (see [jags.model()]).
numberAdapt	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
numberUpdate	An ['integer'] giving the number of iterations to update the model by.
variable.names	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
numberSample	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
thin	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

cuers

Cuers

Description

Cuers

Usage

```
cuers
```

Format

An object of class `data.frame` with 2 rows and 3 columns.

See Also

Other datasets: [intcal13](#), [marine13](#), [shcal13](#), [sunspot](#)

eventModel_C14

Event Model for Radiocarbon Dates

Description

Event Model for Radiocarbon Dates

Usage

```
eventModel_C14(  
  M,  
  s,  
  studyPeriodMin,  
  studyPeriodMax,  
  calibCurve = "intcal13",  
  numberChains = 2,  
  numberAdapt = 10000,  
  numberUpdate = 10000,  
  variable.names = c("theta"),  
  numberSample = 50000,  
  thin = 10  
)
```

Arguments

M	A ['numeric'] vector of measurements.
s	A ['numeric'] vector of errors.
studyPeriodMin	A length-one ['numeric'] vector specifying the start time of the study period.
studyPeriodMax	A length-one ['numeric'] vector specifying the end time of the study period.
calibCurve	A ['character'] string specifying the calibration curve to be used.
numberChains	An ['integer'] giving the number of of parallel chains for the model (see [jags.model()]).
numberAdapt	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
numberUpdate	An ['integer'] giving the number of iterations to update the model by.
variable.names	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
numberSample	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
thin	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

eventModel_Gauss

Event Model for Gaussian Dates

Description

Event Model for Gaussian Dates

Usage

```
eventModel_Gauss(
  M,
  s,
  studyPeriodMin,
  studyPeriodMax,
  refYear = NULL,
  numberChains = 2,
  numberAdapt = 10000,
  numberUpdate = 10000,
  variable.names = c("theta"),
  numberSample = 50000,
  thin = 10
)
```

Arguments

<code>M</code>	A ['numeric'] vector of measurements.
<code>s</code>	A ['numeric'] vector of errors.
<code>studyPeriodMin</code>	A length-one ['numeric'] vector specifying the start time of the study period.
<code>studyPeriodMax</code>	A length-one ['numeric'] vector specifying the end time of the study period.
<code>refYear</code>	A ['numeric'] vector specifying the reference year. If 'NULL' (the default), AD years are expected.
<code>numberChains</code>	An ['integer'] giving the number of parallel chains for the model (see [jags.model()]).
<code>numberAdapt</code>	An ['integer'] giving the number of iterations for adaptation (see [jags.model()]).
<code>numberUpdate</code>	An ['integer'] giving the number of iterations to update the model by.
<code>variable.names</code>	A ['character'] vector giving the names of variables to be monitored (see [coda.samples()]).
<code>numberSample</code>	An ['integer'] giving the number of iterations to monitor (see [coda.samples()]).
<code>thin</code>	An ['integer'] giving the thinning interval for monitors (see [coda.samples()]).

Value

An ['mcmc.list'][coda::mcmc.list()] object.

Author(s)

A. Philippe, M.-A. Vibet

intcal13

IntCal13

Description

IntCal13

Usage

```
intcal13
```

Format

An object of class `data.frame` with 5141 rows and 3 columns.

See Also

Other datasets: [cuers](#), [marine13](#), [shcal13](#), [sunspot](#)

marine13

Marine13

Description

Marine13

Usage

marine13

Format

An object of class `data.frame` with 4801 rows and 3 columns.

See Also

Other datasets: [cuers](#), [intcal13](#), [shcal13](#), [sunspot](#)

shcal13

ShCal13

Description

ShCal13

Usage

shcal13

Format

An object of class `data.frame` with 5141 rows and 3 columns.

See Also

Other datasets: [cuers](#), [intcal13](#), [marine13](#), [sunspot](#)

sunspot

Sunspot

Description

Sunspot

Usage

sunspot

Format

An object of class `data.frame` with 171 rows and 2 columns.

See Also

Other datasets: [cuers](#), [intcal13](#), [marine13](#), [shcal13](#)

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