R documentation

of all in 'PBSresilate'

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R topics documented:

`resilate` *Resilate 3-State Models*

Description

Display resilations controlled by an interactive GUI.

Usage

```
resilate(model=NULL, hnam=NULL)
```

Arguments

`model`	string name of a 3-state model.
`hnam`	string name of a history file.

Details

The function `resilate()` creates an interactive GUI that can be used to display resilations of a 3-state model over time.

The GUI controls:

Model

`Lorenz`	Use the Lorenz (1963) model for atmospheric currents.
`Hastings`	Use the Hastings & Powell (1991) model for linear food chains.
`Edwards`	Use the Edwards & Brindley (1999) model for plankton dynamics.
`Ludwig`	Use the Ludwig, Jones & Holling (1978) model for spruce buzzworm outbreak systems.
Solver	
`deSolve`	Use Petzold & Hindmarsh's `lsoda` function for ordinary differential equations.
`PBSddesolve`	Use Couture-Beil & Wood's `dde` function for delay-differential equations.
Parameters	
`Model`	Parameter models (control parameters are different for each model).
`Time`	Time parameters.
`start`	First time value.
`stop`	Last time value.
`step`	Time step at which to evaluate `y1, y2, y3`.
Initial State Values	
`y1,y2,y3`	Initial values for `y1`, `y2`, and `y3`.
Plot 2D or 3D?	
`2D`	Two-dimensional (flat) `pairs` plot.
`3D`	Three-dimensional plot using the `rgl` package function `plot3d`.
`X-Y plane`	On the 3D plot, superimpose the plot coordinates on the x-y plane (flatten z).
`Y-Z plane`	On the 3D plot, superimpose the plot coordinates on the y-z plane (flatten x).
`X-Z plane`	On the 3D plot, superimpose the plot coordinates on the x-z plane (flatten y).
`size2d`	Size of points in 2D-panels of 3D plot.
`size3d`	Size of points/spheres in 3D plot.
`Display points`	Type of points to plot: s = spheres, p = points, l = lines.
`hist`	Histogram bar colour.
`states`	Choose states to plot (`time`, `y1`, `y2`, `y3`, `dy1`, `dy2`, `dy3`). Note: choose only 3 states for a 3D plot.
`Calc`	Button to recalculate the state values and derivatives given the input parameters and time values.
`Plot`	Button to plot the chosen states in the specified dimension.
History	History widget.

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References

Edwards, A.M. and Brindley, J. (1999) Zooplankton mortality and the dynamical behaviour of plankton population models. *Bulletin of Mathematical Biology* **61**, 303–339.

Hastings, A. and Powell, T. (1991) Chaos in a three-species food chain. *Ecology* **72(3)**, 896–903.

Lorenz, E.N. (1963) Deterministic non-periodic flows. *Journal of Atmospheric Science* **20**, 130–141.

Ludwig, D., Jones, D.D. and Holling, C.S. (1978) Qualitative analysis of insect outbreak systems: the spruce budworm and forest. *The Journal of Animal Ecology* **47(1)**, 315–332.

`rtget` *Get/Print Objects From or Put Objects Into Temporary Work Environment*

Description

These functions are wrappers to the PBSmodelling accessor functions that get/print objects from or put objects into a temporary work environment, in this case `.PBSresEnv`. Working objects include `PBSresi`, which acts as a storage object for many of the functions.

Usage

```
rtget(...)
rtcall(...)
rtprint(...)
rtput(...)
rlisp(...)
```

Arguments

`...`	For `rtget` through to `rtput`, the only free argument is: `x` – name (with or without quotes) of an object to retrieve or store in the temporary environment; cannot be represented by a variable. Fixed arguments: `penv = parent.frame(), tenv = .PBSresEnv` See `tget` for additional information. For `rlisp`, there is only one fixed argument: `pos = .PBSresEnv` All other arguments are available – see `lisp`

Details

These accessor functions were developed as a response to the CRAN repository policy statement: "Packages should not modify the global environment (user's workspace)."

Value

Objects are retrieved from or sent to the temporary working environment to/from the place where the function(s) are called. Additionally, `rtcall` invisibly returns the object without transferring, which is useful when the object is a function that the user may wish to call, for example, `rtcall(myfunc)()`.

Note

Additional wrapper functions to access functions in `.PBSresEnv` are named with the prefix `.win` (none at the moment).

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References

CRAN Repository Policy: https://cran.r-project.org/web/packages/policies.html

See Also

`tget` and `lisp` in **PBSmodelling**

`runResilate` *Start a Menu of Models for Resilation*

Description

Start a GUI that controls which models to pass into the `resilate` function.

Usage

```
runResilate()
```

Details

Looks at the names of R-code (`*.r`) in the folder '`.../PBSresilate/examples`' and uses the prefixes as available models.

Value

No value returned.

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See Also

`resilate`

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