

Package: riojaPlot (via r-universe)

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Description Stratigraphic diagrams in R.

License GPL-2

URL <http://www.staff.ncl.ac.uk/stephen.juggins/>,
<https://github.com/nsj3/riojaPlot>

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riojaPlot-package *Stratigraphic diagrams in R*

Description

riojaPlot: An R package for plotting stratigraphic diagrams in R.

Details

The *riojaPlot* is an R package for plotting stratigraphic diagrams in R.

Index: This package was not yet installed at build time.

Author(s)

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riojaPlot *Plot a stratigraphic diagram*

Description

Plots a diagram of multiple biological, physical or chemical parameters against depth or time, as used in geology & palaeoecology.

Usage

```
riojaPlot(x, y, selVars=NULL, groups=NULL, style=NULL, clust=NULL,
          lithology=NULL, riojaPlot=NULL, verbose=TRUE, ...)
```

```
riojaPlot2(riojaPlot, x, y, selVars=NULL, groups=NULL, style=NULL, clust=NULL,
           lithology=NULL, verbose=TRUE, ...)
```

```
addRPClust(riojaPlot, clust, xLeft=NULL, xRight=0.99, verbose=TRUE, ...)
```

```
addRPClustZone(riojaPlot, clust, nZone="auto", xLeft=NULL, xRight=NULL,
               verbose=TRUE, ...)
```

```
addRPZone(riojaPlot, upper, lower=NULL, xLeft=NULL, xRight=NULL, col="red",
           alpha=0.1, border=NA, verbose=TRUE, ...)
```

```
addRPZoneNames(riojaPlot, zones, showColumn=TRUE, xLeft=NULL, xRight=0.99, ...)
```

```
listStyles()
```

```
makeStyles(...)
```

Arguments

x	a data frame or tibble containing variables to plot.
y	a data frame or tibble containing depth and/or age variables for the y-axis.
selVars	a character vector of variable names to include in the plot.
groups	a data frame or tibble with 2 columns giving the variable name (col 1) and factor containing group membership (col 2), used to colour variables by group and / or to generate a summary cumulative plot of group totals.
clust	a constrained cluster object returned by <code>chclust</code> .
nZone	number of zones to include or "auto" to add number of zones suggested by a broken stick model (see details).
style	a riojaPlot style object to control visual aspects of the plot (see details).
riojaPlot	object returned by <code>riojaPlot</code> .
upper, lower	upper and lower values of a zone to add.
xLeft, xRight	left and right position of figure on page (as a fraction of page width).
verbose	show warnings (default TRUE).
col, alpha, border	colour, alpha value (transparency) and border colour of zones.
zones	a data frame with 2 columns, the first giving the y-value to draw the zone label and the second the zones names as character.
showColumn	draw a column around the zone names?
lithology	data frame or tibble that is passed to <code>fun.lithology</code> for plotting the lithological column.
...	additional arguments to control the style of the figure (see details below) or colour of zones.

Details

`riojaPlot` plots a set of variables in a stratigraphic diagram. Diagrams can be plotted as line graphs, silhouettes or bar charts. `riojaPlot` extends `strat.plot` in several ways: variables can be grouped and displayed with different colours, a cumulative summary plot can be added automatically based on the grouping, a cluster dendrogram and resulting zones can be added automatically, a secondary y-axis can be added to plot a depth and age axis, and the figures margins are determined automatically depending on the size and length of labels.

`riojaPlot2` is just a wrapper around `riojaPlot` that takes a `riojaPlot` object as the first argument so it can be used with a pipe.

See `vignette("riojaPlot")` for a user guide or `vignette("riojaPlotPDF")` for a pdf version.

- `yvar.name` name of the variable to use for primary y-axis scale. If not specified the first column in the `y` table will be used. If the primary axis is character data text labels will be drawn at each sample position.

- `sec.yvar.name` name of the variable to use for an optional secondary y-axis scale.
- `plot.sec.axis` show secondary y-axis. Default FALSE.
- `yLabel`, `secyLabel` labels for the primary and secondary y-axes. Uses column names if not specified.
- `scale.percent` scale the diagram for percentage data (default TRUE).
- `scale.minmax` for non-percentage data, only label min and max values of x-axes to avoid crowding (default FALSE).
- `y.rev` reverse the y-axis (default TRUE).
- `ymin`, `ymax`, `sec.ymin`, `sec.ymax` minimum and maximum of primary and secondary y-axes.
- `yinterval`, `sec.yinterval` intervals for primary and secondary y-axes.
- `ytk1`, `ytk2` numeric vector of y-values to print on primary and secondary y-axes.
- `wa.order` rearrange the curves to show trend from bottom left to top right (default FALSE).
- `plot.bar`, `plot.line`, `plot.poly`, `plot.symb` show bars, lines, polygons (silhouettes) and / or symbols (defaults to polygons with thin horizontal lines).
- `lwd.bar`, `lwd.line`, `lwd.pol.line`, `lwd.cumul.line`, `lwd.zones` thickness of bars and lines (default thickness for base graphics is 1).
- `col.bar`, `col.poly.line`, `col.poly`, `col.symb`, `col.zones`, `col.zone.column`, `col.cumul.line`, `col.exag.line` colour of bars, lines, polygon outlines and fills, symbols, zones and lines on cumulative plot.
- `bar.back`, plot horizontal bars on top or below shaded silhouettes (default TRUE).
- `cex.xaxis`, `cex.yaxis`, `cex.ylabel`, `cex.xlabel`, `cex.cumul`, font sizes (size relative to default of 1).
- `tcl` tick length for axes, in logical units (default -0.3).
- `srt.xlabel`, `srt.ylabel` angle (in degrees) of names (default=90).
- `centre.xlabel` centre the names when `srt.xlabel` is zero (ie. horizontal, default=FALSE).
- `do.clust` do a CONISS constrained clustering.
- `clust.data.trans` transform data before cluster analysis ("none", "sqrt", or "scale", default "none").
- `clust.use.selected` use selected variables (ie. those listed in `selVars`) or all variables when calculating cluster dendrogram (default FALSE).
- `plot.clust` add a CONISS cluster dendrogram.
- `clust.width` width of the dendrogram (as fraction of page width).
- `plot.exag` show exaggerated curves (default FALSE).
- `col.exag` colour for exaggerations, either a colour or "auto".
- `exag.mult` multiplication factor for exaggerations (default 2).
- `exag.alpha` alpha value for exaggeration curves.
- `plot.groups` show curves with different colours (default FALSE).
- `plot.cumul` add a cumulative summary based on groups on right of diagram (default FALSE).
- `cumul.mult` width of the cumulative plot (default 1.0).

- `col.group` character vector of 10 colours for groups (will be recycled to 10).
- `xlabels` character vector of labels for the plots (overrides column names).
- `labels.break.long` break long names (default TRUE).
- `labels.break.n` number of characters to break after (default 20).
- `labels.italicize` italicize names.
- `xRight` right hand position of plot (as fraction of page width).
- `xLeft`, `xRight` left and right hand position of plot (as fraction of page width). Will be determined automatically depending of label sizes, override to fine-tune.
- `yTop`, `yBottom` top and bottom positions of plot (as fraction of page height). Will be determined automatically depending of label sizes, override to fine-tune. `yBottom` default is 0.05, increase if axis labels are truncated.
- `las.xaxis`, `las.yaxis` orientation of x- and y-axis labels (1=horz, 2=vert, default 1).
- `col.axis`, `col.baseline` colour for x/y axes and baseline, defaults black and darkgrey.
- `fun.xback`, `fun.xfront` custom functions of add elements to a plot above (`fun.xfront`) or behind (`fun.xback`) data. See below.
- `fun.plotback`, `fun.yaxis` custom functions of add elements to the plot background or to generate a custom y-axis. See below.
- `x.pc.omit0` omit zero value of axis values when scaling for percent data (default TRUE).
- `x.pc.inc` for percentage diagrams single value or numeric vector of intervals for x-axes.
- `min.width.pc` for percentage diagrams the minimum data width of the x-axes.
- `scale.minmax` logical, for non-percentage diagrams show only minimum and maximum values on the x-axis to avoid label crowding (default FALSE).
- `minmax` for non-percentage diagrams an optional dataframe with two columns containing the minimum and maximum values of the x-axis scale for each variable.
- `graph.widths` vector of relative widths for each graph (default 1).
- `xSpace` space between individual graphs (fraction of page width, default=0.01).
- `xGap` space between datasets plotted by repeated calls to `riojaPlot` (fraction of page width, default=0.01).
- `ylabPos` x-position of y-axis label when secondary y-axis is not used (use to tweak position of y-axis label, try values of 0.1-0.4).
- `sep.bar` plot different colours for bars for different levels? Default FALSE.
- `col.sep.bar` character vector with colours for bars for each sample.
- `plot.top.axis`, `plot.bottom.axis` show x-axes on top and/or bottom of plots (default FALSE, TRUE respectively).
- `omitMissing` Strip NAs from data before plotting (default TRUE). Setting to FALSE will leave gaps in lines with NA.
- `cumulSpace` gap to leave between top axis and cumulative plot legend. Default NA for `riojaPlot` to guess.
- `fun.lithology` function that passes a single dat frame or tibble of information for plotting the lithology column.

- `lithology.width` width of lithology column, as fraction of page width.
- `user1`, `user2`, `user3`, `user4` placeholders to supply additional objects (data frames, lists etc.) to custom functions.

`fun.xback` and `fun.xfront` are user-defined functions of the form ‘`myfun(x, y, i, nm, style)`’ that pass four arguments: `x` and `y` values, the index of the plot (`i`, from 1 to `nplots`, left to right) and the variable name (`nm`) to be plotted, as a named character vector. `fun.lithology` is a user-defined function of the form ‘`myfun(x, style)`’ where `x` is the data frame of lithological information passed to `riojaPlot`. `fun.plotback` is a user-defined function of the form ‘`fun.plotback(usr, fig, style)`’ where `usr` and `fig` provides the coordinates of the plotting area in data units(`usr`) and fractions of screen width and height (`fig`) (see `?par`).

`addRPClust` adds a dendrogram to an existing `riojaPlot` diagram.

`addRPZone` adds user-defined horizontal zone lines to an existing diagram.

`addRPClustZone` adds zone lines from a constrained clustering to an existing `riojaPlot` diagram.

`makeStyles` creates a `riojaPlot` style object that can be applied to `riojaPlots`.

`listStyles` returns a list of modifiable styles and their default values.

These function uses base graphics and `fig` to split the screen and may be incompatible with `par(mfrow)` and `split.screen`.

Value

`riojaPlot` returns (invisibly) an object of class `riojaPlot` containing details of the overall diagram and individual curves and styles.

`makeStyles` returns an object of class `riojaPlot.style`.

Author(s)

Steve Juggins

See Also

[strat.plot](#).

Examples

```
# use built-in data from Abernethy Forest
# see ?aber for citation

library(rioja)
data(aber)

# extract pollen percentages
spec <- aber$spec
# replace species codes with full taxon names
colnames(spec) <- aber$names$Name
yvar <- aber$ages

# plot on depth scale
```

```
riojaPlot(spec, yvar,
  yvar.name="Depth (cm)")

# scale for percentage data
riojaPlot(spec, yvar,
  yvar.name="Depth (cm)",
  scale.percent=TRUE)

# reduce number of taxa and add exaggerations
# make a vector of taxon names with max abundance greater than 5 percent
mx <- apply(spec, 2, max)
selTaxa <- names(mx[mx > 5])

riojaPlot(spec, yvar, selTaxa,
  yvar.name="Depth (cm)",
  scale.percent=TRUE,
  plot.exag=TRUE)

# group taxa by type and add cumulative graph
# extract types
types <- aber$names[, -1]
# convert pollen types to a factor
types$Group <- factor(types$Group, levels=c("Trees", "Shrubs", "Herbs"))
riojaPlot(spec, yvar, selTaxa, types,
  yvar.name="Depth (cm)",
  scale.percent=TRUE,
  plot.groups=TRUE,
  plot.cumul=TRUE,
  plot.exag=TRUE)

# or plot on age scale with depth as secondary and italicise names
riojaPlot(spec, yvar, selTaxa, types,
  sec.yvar.name="Depth (cm)",
  yvar.name="Age (years BP)",
  ymin=6000,
  ymax=14300,
  yinterval=500,
  scale.percent=TRUE,
  plot.sec.axis=TRUE,
  plot.groups=TRUE,
  plot.cumul=TRUE,
  plot.exag=TRUE,
  labels.italicise = TRUE)

# add a zonation

riojaPlot(spec, yvar, selTaxa, types,
  sec.yvar.name="Depth (cm)",
  yvar.name="Age (years BP)",
  ymin=6000,
  ymax=14300,
  yinterval=500,
  plot.sec.axis=TRUE,
```

```
scale.percent=TRUE,
plot.groups=TRUE,
plot.cumul=TRUE,
plot.exag=TRUE,
do.clust=TRUE,
plot.clust=TRUE,
plot.zones="auto",
labels.italicise = TRUE)

# save settings as a style and apply to figure, fine-tuning the y-axis:

mystyle <- makeStyles(
  plot.sec.axis=TRUE,
  scale.percent=TRUE,
  plot.groups=TRUE,
  plot.cumul=TRUE,
  plot.exag=TRUE,
  plot.bar="full",
  plot.poly=TRUE,
  bar.back=TRUE,
  lwd.bar=0.5,
  col.bar="lightgrey",
  do.clust=TRUE,
  plot.clust=TRUE,
  plot.zones="auto",
  srt.xlabel=45)

riojaPlot(spec, yvar, selTaxa, types, mystyle,
  sec.yvar.name="Depth (cm)",
  yvar.name="Age (years BP)",
  ymin=6250,
  ymax=14300,
  yinterval=500,
  ytk1=seq(6000, 14500, by=500))
```


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