Package 'mapsf'

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Title Thematic Cartography

Version 0.6.1

Description Create and integrate thematic maps in your workflow. This package helps to design various cartographic representations such as proportional symbols, choropleth or typology maps. It also offers several functions to display layout elements that improve the graphic presentation of maps (e.g. scale bar, north arrow, title, labels). 'mapsf' maps 'sf' objects on 'base' graphics.

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URL https://riatelab.github.io/mapsf/

BugReports https://github.com/riatelab/mapsf/issues/

Depends R (>= 3.6.0)

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R topics documented:

`mapsf` *Package description*

Description

Create maps with simple features. mapsf helps to map sf objects and offers features that improve the graphic presentation of maps (scale bar, north arrow, title or legend).

`mf_annotation` *Plot an annotation*

Description

Plot an annotation on a map.

Usage

```
mf_annotation(
  x,
  txt,
  pos = "topright",
  cex = 0.8,
  col_arrow,
  col_txt,
  halo = FALSE,
  bg,
  s = 1,
  ...
)
```

Arguments

x	an sf object with 1 row, a couple of coordinates (c(x, y)) or "interactive"
txt	the text to display
pos	position of the text, one of "topleft", "topright", "bottomright", "bottomleft"
cex	size of the text
col_arrow	arrow color
col_txt	text color
halo	add a halo around the text
bg	halo color
s	arrow size (min=1)
...	further text arguments.

Value

No return value, an annotation is displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_annotation(
  x = c(711167.8, 1614764),
  txt = "Look!\nImportant feature\nhere!",
  pos = "bottomleft", cex = 1.2, font = 2,
  halo = TRUE, s = 1.5
)

mf_annotation(
  x = mtq[20, ],
  txt = "This is less\nimportant",
  cex = .7, font = 3, s = 1.3
)
```

mf_arrow *Plot a north arrow*

Description

Plot a north arrow.

Usage

```
mf_arrow(pos = "topleft", col, adjust)
```

Arguments

pos	position. It can be one of 'topleft', 'top','topright', 'right', 'bottomright', 'bottom','bottomleft', 'left', 'interactive' or a vector of two coordinates in map units (c(x, y))
col	arrow color
adjust	object of class sf or sfc used to adjust the arrow to the real north

Value

No return value, a north arrow is displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_arrow(pos = "topright")
```

mf_background *Plot a background image*

Description

Plot a background image on an existing plot

Usage

```
mf_background(filename, ...)
```

Arguments

filename	filename of the background image, PNG or JPG/JPEG format.
...	further parameters for rasterImage

Value

No return value, a background image is displayed.

Examples

```
mtq <- mf_get_mtq()
mf_init(mtq)
mf_background(system.file("img/background.jpg", package = "mapsf"))
mf_map(mtq, lwd = 3, col = NA, border = "white", add = TRUE)
mf_credits(
  txt = "Background photo by Noita Digital on Unsplash",
  col = "white"
)
```

---

mf_credits *Plot credits*

Description

Plot credits (sources, author, year...).

Usage

```
mf_credits(
  txt = "Source(s) & Author(s)",
  pos = "bottomleft",
  col,
  cex = 0.6,
  font = 3,
  bg = NA
)
```

Arguments

txt	text of the credits, use '\n' to add line breaks
pos	position, one of 'bottomleft', 'bottomright' or 'rightbottom'
col	color
cex	cex of the credits
font	font of the credits
bg	background color

Value

No return value, credits are displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_credits(txt = "Author\nSources - Year")
```

`mf_export` *Export a map*

Description

Export a map with the extent of a spatial object.
The map is exported in PNG or SVG format.
If only one of `width` or `height` is set, `mf_export` uses the width/height ratio of `x` bounding box to find a matching ratio for the export.
Always use `add = TRUE` in `mf_map` calls following an `mf_export` call.
Use `dev.off` to finish the export (see Examples).

Usage

```
mf_export(
  x,
  filename = "map.png",
  width,
  height,
  res = 96,
  ...,
  expandBB = rep(0, 4),
  theme,
  export = "png"
)
```

Arguments

`x`	object of class `sf`, `sfc` or `SpatRaster`
`filename`	path to the exported file. If the file extention is ".png" a png graphic device is opened, if the file extension is ".svg" a svg graphic device is opened.
`width`	width of the figure (pixels for png, inches for svg)
`height`	height of the figure (pixels for png, inches for svg)
`res`	resolution (for png)
`...`	further parameters for png or svg export
`expandBB`	fractional values to expand the bounding box with, in each direction (bottom, left, top, right)
`theme`	apply a theme
`export`	deprecated

Value

No return value, a map file is initiated (in PNG or SVG format).

Examples

```
mtq <- mf_get_mtq()
(filename <- tempfile(fileext = ".png"))
mf_export(mtq, filename = filename)
mf_map(mtq, add = TRUE)
dev.off()
```

---

mf_get_breaks *Get class intervals*

Description

A function to classify continuous variables.

Usage

```
mf_get_breaks(x, nbreaks, breaks, k = 1, central = FALSE, ...)
```

Arguments

x	a vector of numeric values. NA and Inf values are not used in the classification.
nbreaks	a number of classes
breaks	a classification method; one of "fixed", "sd", "equal", "pretty", "quantile", "kmeans", "hclust", "bclust", "fisher", "jenks", "dpih", "q6", "geom", "arith", "em" or "msd" (see Details).
k	number of standard deviation for "msd" method (see Details)
central	creation of a central class for "msd" method (see Details)
...	further arguments of classIntervals

Details

"fixed", "sd", "equal", "pretty", "quantile", "kmeans", "hclust", "bclust", "fisher", "jenks" and "dpih" are classIntervals methods. You may need to pass additional arguments for some of them.

Jenks ("jenks" method) and Fisher ("fisher" method) algorithms are based on the same principle and give quite similar results but Fisher is much faster.

The "q6" method uses the following quantile probabilities: 0, 0.05, 0.275, 0.5, 0.725, 0.95, 1.

The "geom" method is based on a geometric progression along the variable values, all values must be strictly greater than zero.

The "arith" method is based on an arithmetic progression along the variable values.

The "em" method is based on nested averages computation.

The "msd" method is based on the mean and the standard deviation of a numeric vector. The `nbreaks` parameter is not relevant, use `k` and `central` instead. `k` indicates the extent of each class in share of standard deviation. If `central=TRUE` then the mean value is the center of a class else the mean is a break value.

Value

A numeric vector of breaks

Note

This function is mainly a wrapper of `classIntervals` + "arith", "em", "q6", "geom" and "msd" methods.

See Also

classIntervals

Examples

```
mtq <- mf_get_mtq()
mf_get_breaks(x = mtq$MED, nbreaks = 6, breaks = "quantile")
```

---

mf_get_links *Get a link layer from a data.frame of links.*

Description

Create a link layer from a data.frame of links and an sf object.

Usage

```
mf_get_links(x, df, x_id, df_id)
```

Arguments

`x`	an sf object, a simple feature collection.
`df`	a data.frame that contains identifiers of starting and ending points.
`x_id`	name of the identifier variable in x, default to the first column (optional)
`df_id`	names of the identifier variables in df, character vector of length 2, default to the two first columns. (optional)

Value

An sf object is returned, it is composed of df and the sfc (LINESTRING) of links.

Examples

```
mtq <- mf_get_mtq()
mob <- read.csv(system.file("csv/mob.csv", package = "mapsf"))
# Select links from Fort-de-France (97209))
mob_97209 <- mob[mob$i == 97209, ]
# Create a link layer
mob_links <- mf_get_links(x = mtq, df = mob_97209)
# Plot the links
mf_map(mtq)
mf_map(mob_links, col = "red4", lwd = 2, add = TRUE)
```

---

mf_get_mtq *Get the 'mtq' dataset*

Description

Import the mtq dataset (Martinique municipalities).

Usage

```
mf_get_mtq()
```

Details

This a wrapper around `st_read(system.file("gpkg/mtq.gpkg", package = "mapsf"),quiet = TRUE)`.

Value

an sf object of Martinique municipalities

Examples

```
mtq <- mf_get_mtq()
```

`mf_get_pal` *Get color palettes*

Description

`mf_get_pal` builds sequential, diverging and qualitative color palettes. Diverging color palettes can be dissymmetric (different number of colors in each of the two gradients).

Usage

```
mf_get_pal(n, palette, alpha = NULL, rev = c(FALSE, FALSE), neutral)
```

Arguments

`n`	the number of colors (>= 1) to be in the palette.
`palette`	a valid palette name (one of hcl.pals()). The name is matched to the list of available palettes, ignoring upper vs. lower case, spaces, dashes, etc. in the matching.
`alpha`	an alpha-transparency level in the range [0,1] (0 means transparent and 1 means opaque), see argument alpha in hsv and hcl, respectively.
`rev`	logical indicating whether the ordering of the colors should be reversed.
`neutral`	a color, if two gradients are used, the 'neutral' color can be added between them.

Details

See hcl.pals to get available palette names. If two gradients are used, the 'neutral' color can be added between them.

Value

A vector of colors.

Examples

```
cols <- mf_get_pal(n = 10, pal = "Reds 2")
plot(1:10, rep(1, 10), bg = cols, pch = 22, cex = 4)
cols <- mf_get_pal(n = c(3, 7), pal = c("Reds 2", "Greens"))
plot(1:10, rep(1, 10), bg = cols, pch = 22, cex = 4)
cols <- mf_get_pal(n = c(5, 5), pal = c("Reds 2", "Greens"))
plot(1:10, rep(1, 10), bg = cols, pch = 22, cex = 4)
cols <- mf_get_pal(n = c(7, 3), pal = c("Reds 2", "Greens"))
plot(1:10, rep(1, 10), bg = cols, pch = 22, cex = 4)
cols <- mf_get_pal(n = c(5, 5), pal = c("Reds 2", "Greens"), neutral = "grey")
plot(1:11, rep(1, 11), bg = cols, pch = 22, cex = 4)
opar <- par(bg = "black")
cols <- mf_get_pal(n = c(7, 3), pal = c("Reds 2", "Greens"), alpha = c(.3, .7))
plot(1:10, rep(1, 10), bg = cols, pch = 22, cex = 4)
```

```
par(opar)
cols <- mf_get_pal(
  n = c(5, 5), pal = c("Reds 2", "Greens"),
  rev = c(TRUE, TRUE)
)
plot(1:10, rep(1, 10), bg = cols, pch = 22, cex = 4)
```

`mf_get_ratio` *Get map width and height values*

Description

This function is to be used to get width and height values for maps created in reports (*.Rmd, *.qmd).
It uses the width / height ratio of a spatial object bounding box to find a matching ratio for the map.
If width is specified, then height is deduced from the width / height ratio of x, figure margins and title size.
If height is specified, then width is deduced from the width / height ratio of x, figure margins and title size.

Usage

```
mf_get_ratio(
  x,
  width,
  height,
  res = 96,
  expandBB = rep(0, 4),
  theme = "default"
)
```

Arguments

`x`	object of class `sf`, `sfc` or `SpatRaster`
`width`	width of the figure (inches), use only one of width or height
`height`	height of the figure (inches), use only one of width or height
`res`	resolution
`expandBB`	fractional values to expand the bounding box with, in each direction (bottom, left, top, right)
`theme`	theme used for the map

Value

Width and height are returned in inches.

Examples

```
mtq <- mf_get_mtq()
mf_get_ratio(x = mtq, width = 5)
```

`mf_init` *Initialize a map with a specific extent*

Description

Plot an invisible layer with the extent of a spatial object.
Always use `add = TRUE` in `mf_map` calls following an `mf_init` call.

Usage

```
mf_init(x, expandBB = rep(0, 4), theme)
```

Arguments

`x`	object of class `sf`, `sfc` or `SpatRaster`
`expandBB`	fractional values to expand the bounding box with, in each direction (bottom, left, top, right)
`theme`	apply a theme from `mf_theme`

Value

No return value, a map is initiated.

Examples

```
mtq <- mf_get_mtq()
target <- mtq[30, ]
mf_init(target)
mf_map(mtq, add = TRUE)
```

`mf_inset_on` *Plot an inset*

Description

This function is used to add an inset map to the current map.

Usage

```
mf_inset_on(x, pos = "topright", cex = 0.2, fig)

mf_inset_off()
```

Arguments

x	an sf object, or "worldmap" to use with mf_worldmap.
pos	position, one of "bottomleft", "left", "topleft", "top", "bottom", "bottomright", "right", "topright"
cex	share of the map width occupied by the inset
fig	coordinates of the inset region (in NDC, see in ?par())

Details

If x is used (with pos and cex), the width/height ratio of the inset will match the width/height ratio of x bounding box.
If fig is used, coordinates (xmin, xmax, ymin, ymax) are expressed as fractions of the mapping space (i.e. excluding margins).
If map layers have to be plotted after the inset (i.e after mf_inset_off()), please use add = TRUE.
It is not possible to plot an inset within an inset.
It is possible to plot anything (base plots) within the inset, not only map layers.

Value

No return value, an inset is initiated or closed.

Note

This function does not work when mfrow is used in par().

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_inset_on(x = mtq[1, ], cex = .2)
mf_map(mtq[1, ])
mf_inset_off()

mf_map(mtq)
mf_inset_on(x = "worldmap", pos = "bottomleft")
mf_worldmap(x = mtq)
mf_inset_off()

mf_map(mtq)
mf_inset_on(fig = c(0, 0.25, 0, 0.25))
mf_map(x = mtq)
mf_inset_off()
```

`mf_label` *Plot labels*

Description

Put labels on a map.

Usage

```
mf_label(
  x,
  var,
  col,
  cex = 0.7,
  overlap = TRUE,
  lines = TRUE,
  halo = FALSE,
  bg,
  r = 0.1,
  ...
)
```

Arguments

`x`	object of class `sf`
`var`	name(s) of the variable(s) to plot
`col`	labels color
`cex`	labels cex
`overlap`	if FALSE, labels are moved so they do not overlap.
`lines`	if TRUE, then lines are plotted between x,y and the word, for those words not covering their x,y coordinate
`halo`	if TRUE, a 'halo' is displayed around the text and additional arguments bg and r can be modified to set the color and width of the halo.
`bg`	halo color
`r`	width of the halo
`...`	further text arguments.

Value

No return value, labels are displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_label(
  x = mtq, var = "LIBGEO", halo = TRUE, cex = 0.8,
  overlap = FALSE, lines = FALSE
)
```

`mf_layout` *Plot a map layout*

Description

Plot a map layout (title, credits, scalebar, north arrow, frame).

This function uses `mf_title`, `mf_credits`, `mf_scale` and `mf_arrow` with default values.

Usage

```
mf_layout(
  title = "Map Title",
  credits = "Authors & Sources",
  scale = TRUE,
  arrow = TRUE,
  frame = FALSE
)
```

Arguments

`title`	title of the map
`credits`	credits
`scale`	display a scale bar
`arrow`	display an arrow
`frame`	display a frame

Value

No return value, a map layout is displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_layout()
```

`mf_legend` *Plot a legend*

Description

Plot all types of legend. The "type" argument defines the legend type:

- **prop**, for proportional symbols maps, see mf_legend_p for arguments, default values and details;
- **choro**, for choropleth maps, see mf_legend_c for arguments, default values and details;
- **typo**, for typology maps, see mf_legend_t for arguments, default values and details;
- **symb** for symbols maps, see mf_legend_s for arguments, default values and details;
- **prop_line**, for proportional lines maps, see mf_legend_pl for arguments, default values and details;
- **grad_line** for graduated lines maps, see mf_legend_gl, for arguments, default values and details.

Usage

```
mf_legend(
  type,
  pos,
  val,
  pal,
  col,
  inches,
  lwd,
  border,
  symbol,
  pt_pch,
  pt_cex,
  title,
  title_cex,
  val_cex,
  val_rnd,
  col_na,
  pt_cex_na,
  pt_pch_na,
  no_data,
  no_data_txt,
  frame,
  bg,
  fg,
  cex
)
```

Arguments

type	type of legend; one of "prop", "choro", "typo", "symb", "prop_line", "grad_line"
pos	position. It can be one of 'topleft', 'top','topright', 'right', 'bottomright', 'bottom','bottomleft', 'left', 'interactive' or a vector of two coordinates in map units (c(x, y))
val	a vector of values
pal	a set of colors or a palette name (from hcl.colors)
col	a color
inches	size of the biggest symbol (radius for circles, half width for squares) in inches.
lwd	line width(s)
border	border color
symbol	type of symbols, 'circle' or 'square'
pt_pch	pch of the symbols (0:25)
pt_cex	cex of the symbols
title	legend title
title_cex	size of the legend title
val_cex	size of the values in the legend
val_rnd	number of decimal places of the values in the legend
col_na	color for missing values
pt_cex_na	cex of the symbols for missing values
pt_pch_na	pch of the symbols for missing values
no_data	if TRUE a 'missing values' box is plotted
no_data_txt	label for missing values
frame	whether to add a frame to the legend (TRUE) or not (FALSE)
bg	background color
fg	foreground color
cex	size of the legend; 2 means two times bigger

Value

No return value, a legend is displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_legend(type = "prop", pos = "topright", val = c(1, 5, 10), inches = .3)
mf_legend(
  type = "choro", pos = "bottomright", val = c(10, 20, 30, 40, 50),
  pal = hcl.colors(4, "Reds 2")
)
mf_legend(
```

```
  type = "typo", pos = "topleft", val = c("A", "B", "C", "D"),
  pal = hcl.colors(4, "Dynamic")
)
mf_legend(
  type = "symb", pos = "bottomleft", val = c("A", "B", "C"),
  pt_pch = 21:23, pt_cex = c(1, 2, 2),
  pal = hcl.colors(3, "Dynamic")
)
mf_legend(
  type = "grad_line", pos = "top", val = c(1, 2, 3, 4, 10, 15),
  lwd = c(0.2, 2, 4, 5, 10)
)
mf_legend(type = "prop_line", pos = "bottom", lwd = 20, val = c(5, 50, 100))
```

`mf_map` *Plot a map*

Description

This is the main function of the package. mf_map can be used to plot all types of maps. The three main arguments are: `x` (sf object), `var` (variable to map), and `type` (map type).

Relevant arguments and default values are detailed in specific functions.

Maps types:

- **base**, base maps (mf_base);
- **prop**, proportional symbols maps (mf_prop);
- **choro**, choropleth maps (mf_choro);
- **typo**, typology maps (mf_typo);
- **symb**, symbols maps (mf_symb);
- **grad**, graduated symbols maps (mf_grad);
- **prop_choro**, proportional symbols maps with symbols colors based on a quantitative data classification (mf_prop_choro);
- **prop_typo**, proportional symbols maps with symbols colors based on qualitative data (mf_prop_typo);
- **symb_choro**, symbols maps with symbols colors based on a quantitative data classification (mf_symb_choro).

Usage

```
mf_map(
  x,
  var,
  type = "base",
  breaks,
  nbreaks,
  pal,
```

```
  alpha = 1,
  inches,
  val_max,
  symbol,
  col,
  lwd_max,
  val_order,
  pch,
  cex,
  border,
  lwd,
  col_na,
  cex_na,
  pch_na,
  leg_pos,
  leg_title,
  leg_title_cex,
  leg_val_cex,
  leg_val_rnd,
  leg_no_data,
  leg_frame,
  add,
  ...
)
```

Arguments

x	object of class sf or sfc
var	name(s) of the variable(s) to plot
type	one of "base", "prop", "choro", "typo", "symb", "grad", "prop_choro", "prop_typo", "symb_choro"
breaks	either a numeric vector with the actual breaks, or a classification method name (see mf_get_breaks)
nbreaks	number of classes
pal	a set of colors or a palette name (from hcl.colors)
alpha	if pal is a hcl.colors palette name, the alpha-transparency level in the range [0,1]
inches	size of the biggest symbol (radius for circles, half width for squares) in inches.
val_max	maximum value used for proportional symbols
symbol	type of symbols, 'circle' or 'square'
col	color
lwd_max	line width of the largest line
val_order	values order, a character vector that matches var modalities
pch	pch (point type) for symbols
cex	cex (point size) for symbols

border	border color
lwd	border width
col_na	color for missing values
cex_na	cex (point size) for NA values
pch_na	pch (point type) for NA values
leg_pos	position of the legend, one of 'topleft', 'top','topright', 'right', 'bottomright', 'bottom', 'bottomleft', 'left' or a vector of two coordinates in map units (c(x, y)). If leg_pos = NA then the legend is not plotted. If leg_pos = 'interactive' click onthe map to choose the legend position.
leg_title	legend title
leg_title_cex	size of the legend title
leg_val_cex	size of the values in the legend
leg_val_rnd	number of decimal places of the values in the legend
leg_no_data	label for missing values
leg_frame	whether to add a frame to the legend (TRUE) or not (FALSE)
add	whether to add the layer to an existing plot (TRUE) or not (FALSE)
...	further parameters from plot for sfc objects

Value

x is (invisibly) returned.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_map(mtq, var = "POP", type = "prop")
mf_map(mtq, var = "MED", type = "choro")
mf_map(mtq, var = "STATUS", type = "typo")
mf_map(mtq)
mf_map(mtq, var = "STATUS", type = "symb")
mf_map(mtq)
mf_map(mtq, var = "POP", type = "grad")
mf_map(mtq)
mf_map(mtq, var = c("POP", "MED"), type = "prop_choro")
mf_map(mtq)
mf_map(mtq, var = c("POP", "STATUS"), type = "prop_typo")
mf_map(mtq)
mf_map(mtq, var = c("STATUS", "MED"), type = "symb_choro")
```

mf_raster *Plot a raster*

Description

Plot a raster object (SpatRaster from terra).

Usage

```
mf_raster(x, add = FALSE, ...)
```

Arguments

x	a SpatRaster
add	whether to add the layer to an existing plot (TRUE) or not (FALSE).
...	bgalpha, smooth, maxcell or other arguments passed to be passed to plotRGB or plot

Value

No return value, a map is displayed.

Examples

```
if (require("terra")) {
  r <- rast(system.file("ex/elev.tif", package = "terra"))
  mf_raster(r)
}
```

mf_scale *Plot a scale bar*

Description

Plot a scale bar.

Usage

```
mf_scale(size, pos = "bottomright", lwd = 1.5, cex = 0.6, col, unit = "km")
```

Arguments

size	size of the scale bar in units (default to km). If size is not set, an automatic size is used (1/10 of the map width)
pos	position. It can be one of 'bottomright', 'bottomleft', 'interactive' or a vector of two coordinates in map units (c(x, y)).
lwd	width of the scale bar
cex	cex of the text
col	color
unit	units used for the scale bar. Can be "mi" for miles, "m" for meters, or "km" for kilometers (default)

Value

No return value, a scale bar is displayed.

Note

This scale bar is not accurate on unprojected (long/lat) maps.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_scale()
```

---

mf_shadow *Plot a shadow*

Description

Plot the shadow of a polygon layer.

Usage

```
mf_shadow(x, col = "grey50", cex = 1, add = FALSE)
```

Arguments

x	an sf or sfc polygon object
col	shadow color
cex	shadow extent
add	whether to add the layer to an existing plot (TRUE) or not (FALSE)

Value

x is (invisibly) returned.

Examples

```
mtq <- mf_get_mtq()
mf_shadow(mtq)
mf_map(mtq, add = TRUE)
```

`mf_theme` *Set a theme*

Description

This function set a map theme. The parameters set by this function are the figure margins, background and foreground colors and some mf_title options. Use `mf_theme('default')` to reset to default theme settings.

Usage

```
mf_theme(x = "default", bg, fg, mar, tab, pos, inner, line, cex, font)
```

Arguments

`x`	name of a map theme. One of "default", "brutal", "ink", "dark", "agolalight", "candy", "darkula", "iceberg", "green", "nevermind", "jsk", "barcelona". If x is used other parameters are ignored.
`bg`	background color
`fg`	foreground color
`mar`	margins
`tab`	if TRUE the title is displayed as a 'tab'
`pos`	position, one of 'left', 'center', 'right'
`inner`	if TRUE the title is displayed inside the plot area.
`line`	number of lines used for the title
`cex`	cex of the title
`font`	font of the title

Details

It is also possible to set a custom theme using a list of arguments (see Examples). `mf_theme()` returns the current theme settings.

Value

The (invisible) list of theme parameters is returned.

Examples

```
mtq <- mf_get_mtq()

# built-in theme
mf_theme("green")
mf_map(mtq)
mf_title()

# theme from arguments
mf_theme(
  bg = "darkslategrey", fg = "cornsilk3", mar = c(2, 2, 4, 2),
  tab = FALSE, pos = "center", inner = FALSE,
  line = 2, cex = 2, font = 4
)
mf_map(mtq)
mf_layout()

# theme from list
custom <- list(
  name = "custom",
  bg = "green",
  fg = "red",
  mar = c(2, 2, 2, 2),
  tab = TRUE,
  pos = "center",
  inner = TRUE,
  line = 2,
  cex = 1.5,
  font = 3
)
mf_theme(custom)
mf_map(mtq)
mf_title()

(mf_theme("default"))
```

`mf_title` *Plot a title*

Description

Plot a title

Usage

```
mf_title(txt = "Map Title", pos, tab, bg, fg, cex, line, font, inner)
```

Arguments

txt	title text
pos	position, one of 'left', 'center', 'right'
tab	if TRUE the title is displayed as a 'tab'
bg	background of the title
fg	foreground of the title
cex	cex of the title
line	number of lines used for the title
font	font of the title
inner	if TRUE the title is displayed inside the plot area.

Value

No return value, a title is displayed.

Examples

```
mtq <- mf_get_mtq()
mf_map(mtq)
mf_title()
```

---

mf_worldmap *Plot a point on a world map*

Description

Plot a point on a world map.

Usage

```
mf_worldmap(
  x,
  lon,
  lat,
  water_col = "lightblue",
  land_col = "grey60",
  border_col = "grey40",
  border_lwd = 0.8,
  ...
)
```

Arguments

x	object of class sf or sfc
lon	longitude
lat	latitude
water_col	color of the water
land_col	color of the land
border_col	color of the borders
border_lwd	width of the borders
...	further parameters related to the plotted point aspect (cex, pch, col...)

Value

No return value, a world map is displayed.

Note

The main part of the code is stolen from @fzenoni (https://gist.github.com/fzenoni/ef23faf6d1ada5e4a91c9ef23b0

Examples

```
mtq <- mf_get_mtq()
mf_worldmap(mtq)
mf_worldmap(lon = 24, lat = 39)
mf_worldmap(
  lon = 106, lat = 26,
  pch = 4, lwd = 3, cex = 2, col = "tomato4",
  water_col = "#232525", land_col = "#A9B7C6",
  border_col = "white", border_lwd = 1
)
```

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