

# Package ‘mapsf’

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**Title** Thematic Cartography

**Version** 0.3.0

**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.

**License** GPL-3

**URL** <https://github.com/riatelab/mapsf/>,  
<https://riatelab.github.io/mapsf/>

**BugReports** <https://github.com/riatelab/mapsf/issues/>

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**Author** Timothée Giraud [cre, aut] (<<https://orcid.org/0000-0002-1932-3323>>),  
Diego Hernangómez [ctb] (<<https://orcid.org/0000-0001-8457-4658>>),  
Hugues Pecout [ctb],  
Ian Fellows [cph] (No overlap algorithm for labels, from wordcloud package),  
Jim Lemon [cph] (Arc drawing algorithm for annotations, from plotrix package),  
Florian Zenoni [cph] (Orthographic projection visualisation)

**Maintainer** Timothée Giraud <[timothee.giraud@cnrs.fr](mailto:timothee.giraud@cnrs.fr)>

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## R topics documented:

mapsf . . . . .	2
mf_annotation . . . . .	3
mf_arrow . . . . .	4
mf_background . . . . .	5
mf_credits . . . . .	5
mf_export . . . . .	6
mf_get_breaks . . . . .	7
mf_get_links . . . . .	8
mf_get_mtq . . . . .	9
mf_get_pal . . . . .	10
mf_init . . . . .	11
mf_inset_on . . . . .	12
mf_label . . . . .	13
mf_layout . . . . .	14
mf_legend . . . . .	15
mf_map . . . . .	17
mf_raster . . . . .	20
mf_scale . . . . .	20
mf_shadow . . . . .	21
mf_theme . . . . .	22
mf_title . . . . .	23
mf_worldmap . . . . .	24
<b>Index</b>	<b>26</b>

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mapsf

*Package description*

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## 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).

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mf_annotation	<i>Plot an annotation</i>
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---

## 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)).
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 <a href="#">text</a> arguments.

## Value

No return value, an annotation is displayed.

**Examples**

```

mtq <- mf_get_mtg()
mf_map(mtg)
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' 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_mtg()
mf_map(mtg)
mf_arrow(pos = "topright")

```

---

mf_background	<i>Plot a background image</i>
---------------	--------------------------------

---

**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 <a href="#">rasterImage</a>

**Value**

No return value, a background image is displayed.

**Examples**

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

---

mf_credits	<i>Plot credits</i>
------------	---------------------

---

**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_mtg()
mf_map(mtg)
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.

**Usage**

```
mf_export(
  x,
  export = "png",
  filename = paste0("map.", export),
  width,
  height,
  res = 96,
  ...,
  expandBB = rep(0, 4),
  theme = "default"
)
```

**Arguments**

x	object of class sf, sfc or Raster
export	if set to "png" or "svg" a png or svg plot device is opened
filename	path to the exported file
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 from mf_theme

**Value**

No return value, a map is initiated.

**Examples**

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

---

mf_get_breaks	<i>Get class intervals</i>
---------------	----------------------------

---

**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
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 <a href="#">classIntervals</a>

## 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.

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_mtg()
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\_mtg

*Get the 'mtq' dataset*


---

**Description**

Import the mtq dataset (Martinique municipalities).

**Usage**

```
mf_get_mtg()
```

**Details**

This is 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_mtg()
```

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 ( $\geq 1$ ) to be in the palette.
palette	a valid palette name (one of <code>hcl.pals()</code> ). 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 <code>hsv</code> and <code>hcl</code> , 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\_init***Initialize a map with a specific extent*

---

### Description

Plot an invisible layer with the extent of a spatial object.

### Usage

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

### Arguments

x	object of class sf, sfc or Raster
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_mtg()
target <- mtq[30, ]
mf_init(target)
mf_map(mtq, add = TRUE)
```

---

mf_inset_on	<i>Plot an inset</i>
-------------	----------------------

---

### 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 <a href="#">mf_worldmap</a> .
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(mtg)
mf_inset_on(x = "worldmap", pos = "bottomleft")
mf_worldmap(x = mtg)
mf_inset_off()

mf_map(mtg)
mf_inset_on(fig = c(0, 0.25, 0, 0.25))
mf_map(x = mtg)
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 <code>sf</code>
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, then a 'halo' is printed around the text and additional arguments <code>bg</code> and <code>r</code> can be modified to set the color and width of the halo.
bg	halo color
r	width of the halo
...	further <a href="#">text</a> arguments.

**Value**

No return value, labels are displayed.

**Examples**

```
mtq <- mf_get_mtg()
mf_map(mtg)
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\\_scale](#) 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_mtg()
mf_map(mtg)
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' 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 <a href="#">hcl.colors</a> )
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,
    bg,
    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 <a href="#">mf_get_breaks</a> )
nbreaks	number of classes
pal	a set of colors or a palette name (from <a href="#">hcl.colors</a> )
alpha	if pal is a <a href="#">hcl.colors</a> 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 for symbols
cex	cex for symbols

border	border color
lwd	border width
bg	background color
col_na	color for missing values
cex_na	cex for NA values
pch_na	pch 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 is 'n' then the legend is not plotted.
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 <a href="#">plot</a> 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	<i>Plot a raster</i>
-----------	----------------------

---

**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).
...	bgamma, interpolate, or other arguments passed to be passed to <a href="#">plotRGB</a> or <a href="#">plot</a>

**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	<i>Plot a scale bar</i>
----------	-------------------------

---

**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 of the legend, default to "bottomright". "bottomright" or a vector of two coordinates (c(x, y)) are possible.
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_mtg()
mf_map(mtg)
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.

**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). Use `mf_theme('default')` to reset theme settings. `mf_theme()` returns the current theme settings.

**Value**

The (invisible) list of theme parameters is returned.

**Examples**

```
mtq <- mf_get_mtg()

# built-in theme
mf_theme("green")
mf_map(mtg)
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(mtg)
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(mtg)
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, ...)
```

**Arguments**

x	object of class sf or sfc
lon	longitude
lat	latitude
...	further parameters to pass to points (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_mtg()
mf_worldmap(mtg)
mf_worldmap(lon = 24, lat = 39)
```

# Index

classIntervals, [7](#), [8](#)

hcl.colors, [16](#), [18](#)  
hcl.pals, [10](#)

mapsf, [2](#)  
mf\_annotation, [3](#)  
mf\_arrow, [4](#)  
mf\_background, [5](#)  
mf\_base, [17](#)  
mf\_choro, [17](#)  
mf\_credits, [5](#), [14](#)  
mf\_export, [6](#)  
mf\_get\_breaks, [7](#), [18](#)  
mf\_get\_links, [8](#)  
mf\_get\_mtg, [9](#)  
mf\_get\_pal, [10](#)  
mf\_grad, [17](#)  
mf\_init, [11](#)  
mf\_inset\_off (mf\_inset\_on), [12](#)  
mf\_inset\_on, [12](#)  
mf\_label, [13](#)  
mf\_layout, [14](#)  
mf\_legend, [15](#)  
mf\_legend\_c, [15](#)  
mf\_legend\_gl, [15](#)  
mf\_legend\_p, [15](#)  
mf\_legend\_pl, [15](#)  
mf\_legend\_s, [15](#)  
mf\_legend\_t, [15](#)  
mf\_map, [17](#)  
mf\_prop, [17](#)  
mf\_prop\_choro, [17](#)  
mf\_prop\_typo, [17](#)  
mf\_raster, [20](#)  
mf\_scale, [14](#), [20](#)  
mf\_shadow, [21](#)  
mf\_symb, [17](#)  
mf\_symb\_choro, [17](#)  
mf\_theme, [22](#)  
mf\_title, [14](#), [22](#), [23](#)  
mf\_typo, [17](#)  
mf\_worldmap, [12](#), [24](#)

plot, [19](#), [20](#)  
plotRGB, [20](#)

quantile, [8](#)

rasterImage, [5](#)

text, [3](#), [13](#)