

# Package ‘khroma’

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**Title** Colour Schemes for Archaeological Data Visualization

**Version** 1.0.0

**Description** Colour schemes for archaeological data visualization. Provides Paul Tol's colour schemes and several thematic palettes (geologic timescale, etc.) with scales for 'ggplot2'.

**URL** <http://github.com/nfrerebeau/khroma>

**BugReports** <http://github.com/nfrerebeau/khroma/issues>

**Depends** R (>= 3.4)

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 6.1.0

**Suggests** ggplot2 (>= 3.0.0), scales

**Imports** grDevices

**Collate** 'colour.R' 'utilities.R' 'ggplot2.R'

**NeedsCompilation** no

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**Repository** CRAN

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 colour

*Colour palette*


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**Description**

Provides qualitative, diverging and sequential colour palettes.

**Usage**

```
colour(palette, reverse = FALSE, names = TRUE, ...)
```

```
color(palette, reverse = FALSE, names = TRUE, ...)
```

**Arguments**

palette	A <b>character</b> string giving the name of the palette to be used (see below).
reverse	A <b>logical</b> scalar specifying if the resulting vector of colours should be reversed.
names	A <b>logical</b> scalar specifying if the names of the colours should be kept in the resulting vector.
...	Further arguments passed to <code>colorRampPalette</code> .

**Value**

A palette function that when called with a single integer argument (the number of levels) returns a vector of colours.

**Paul Tol's Colour Schemes**

The following palettes are available (maximum supported colours in brackets):

**Qualitative data** bright (7), vibrant (7), muted (9), light (9)

**Diverging data** sunset (11), BuRd (9), PRGn (9)

**Sequential data** YlOrBr (9), rainbow (23), smooth rainbow (34)

**Scientific Colour Schemes**

The following palettes are available:

**stratigraphy** International Chronostratigraphic Chart

**Author(s)**

N. Frerebeau

## References

Tol, Paul (2018). *Colour Schemes*. SRON. Technical Note No. SRON/EPS/TN/09-002. URL: <https://personal.sron.nl/~pault/data/colourschemes.pdf>

Commission for the Geological Map of the World

## Examples

```
library("scales")

# Paul Tol's colour schemes
# Qualitative data
show_col(colour("bright")(7))
show_col(colour("vibrant")(7))
show_col(colour("muted")(9))
show_col(colour("light")(9))
show_col(colour("rainbow")(14))
show_col(colour("rainbow")(23))
# Diverging data
show_col(colour("sunset")(11))
show_col(colour("BuRd")(9))
show_col(colour("PRGn")(9))
# Sequential data
show_col(colour("YlOrBr")(9))
show_col(colour("smooth rainbow")(34))

# Scientific colour schemes
# Geologic Timescale
show_col(colour("stratigraphy")(175))
```

---

scale\_colour\_stratigraphy

*Geologic Timescale Colour Scheme for ggplot2*

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## Description

Provides the geologic timescale colour scale.

## Usage

```
scale_colour_stratigraphy(..., aesthetics = "colour")

scale_color_stratigraphy(..., aesthetics = "colour")

scale_fill_stratigraphy(..., aesthetics = "fill")
```

**Arguments**

... Arguments passed on to [discrete\\_scale](#).

aesthetics A [character](#) string or vector of character strings listing the name(s) of the aesthetic(s) that this scale works with.

**Details**

Values will be matched based on the unit names.

**Author(s)**

N. Frerebeau

**References**

[Commission for the Geological Map of the World](#)

**See Also**

Other colour scales for ggplot2: [scale\\_colour\\_tol](#)

**Examples**

```
library(ggplot2)

strati <- data.frame(
  name = c("Phanerozoic", "Paleozoic", "Cambrian", "Ordovician", "Silurian",
           "Devonian", "Carboniferous", "Mesozoic", "Triassic", "Cretaceous",
           "Jurassic", "Cenozoic", "Paleogene", "Neogene", "Quaternary"),
  type = c("Eon", "Era", "Period", "Period", "Period", "Period", "Period",
           "Era", "Period", "Period", "Period", "Era", "Period", "Period",
           "Period"),
  start = c(541, 541, 541, 485, 444, 419, 359,
            252, 252, 201, 145, 66, 66, 23, 2.6),
  end = c(0, 252, 485, 444, 419, 359, 252,
          66, 201, 145, 66, 2.6, 23, 2.6, 0)
)

ggplot(strati, aes(fill = name)) +
  geom_rect(aes(xmin = rep(0, 15), xmax = rep(1, 15),
               ymin = start, ymax = end)) +
  scale_y_reverse() + facet_grid(.~type) +
  scale_fill_stratigraphy(name = "Stratigraphy")
```

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scale\_colour\_tol      *Paul Tol's Colour Schemes for ggplot2*

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### Description

Provides qualitative, diverging and sequential colour scales from Paul Tol's *Colour Schemes*.

### Usage

```
scale_colour_tol(..., palette, reverse = FALSE, aesthetics = "colour")
```

```
scale_color_tol(..., palette, reverse = FALSE, aesthetics = "colour")
```

```
scale_fill_tol(..., palette, reverse = FALSE, aesthetics = "fill")
```

### Arguments

...	Arguments passed to <a href="#">discrete_scale</a> or <a href="#">continuous_scale</a> , used respectively for qualitative data and diverging/sequential data.
palette	A <a href="#">character</a> string giving the name of the palette to be used (see details).
reverse	A <a href="#">logical</a> scalar specifying if the resulting vector of colours should be reversed.
aesthetics	A <a href="#">character</a> string or vector of character strings listing the name(s) of the aesthetic(s) that this scale works with.

### Details

Paul Tol provides colour schemes ready for each type of data, with colours that are :

- distinct for all people, including colour-blind readers;
- distinct from black and white;
- distinct on screen and paper;
- matching well together.

The qualitative colour schemes are used as given: colours are picked at random up to the maximum number of supported values (in brackets). Diverging and sequential colour schemes are linearly interpolated. The following palettes are available:

**Qualitative data** bright (7), vibrant (7), muted (9), light (9), rainbow (23)

**Diverging data** sunset (11), BuRd (9), PRGn (9)

**Sequential data** YlOrBr (9), smooth rainbow (34)

### Author(s)

N. Frerebeau

## References

Tol, Paul (2018). *Colour Schemes*. SRON. Technical Note No. SRON/EPS/TN/09-002. URL: <https://personal.sron.nl/~pault/data/colourschemes.pdf>

## See Also

Other colour scales for ggplot2: [scale\\_colour\\_stratigraphy](#)

## Examples

```
library("ggplot2")

# Qualitative data
ggplot(mpg, aes(displ, hwy, colour = class)) +
  geom_point() +
  scale_colour_tol(palette = "bright")

ggplot(diamonds, aes(clarity, fill = cut)) +
  geom_bar() +
  scale_fill_tol(palette = "vibrant")

# Diverging data
ggplot(economics, aes(psavert, pce, colour = unemploy)) +
  geom_point() +
  scale_color_tol(palette = "sunset")

# Sequential data
ggplot(faithfuld, aes(waiting, eruptions, fill = density)) +
  geom_raster() +
  scale_fill_tol(palette = "YlOrBr", reverse = TRUE)
```

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