

timeGroupFactor

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Outline

Scatterplot Matrix: Time as a Grouping Variable

The scatterplot matrices are based on the technique of small multiples [?]: small, thumbnail-sized representations of multiple images displayed all at once, which allows the reader to immediately, and in parallel, compare the inter-frame differences. A scatterplot matrix is a display of all pairwise bivariate scatterplots arranged in a $p \times p$ matrix for p variables. Each subplot shows the relation between the pair of variables at the intersection of the row and column indicated by the variable names in the diagonal panels [?].

This graphical tool is implemented in the `sp1om` function¹. The following code displays the relation between the set of meteorological variables using a sequential palette from the ColorBrewer catalog (`RbBu`, with black added to complete a twelve-color palette) to encode the month. The order of colors of this palette is chosen in order to display summer months with intense colors and to distinguish between the first and second half of the year with red and blue, respectively (Figure ??).

```
load('data/aranjuez.RData')
```

Scatterplot with Time as a Conditioning Variable

After discussing the hexagonal binning, let's recover the time variable. Figure ?? uses colors to encode months. Instead, we will now display separate scatterplots with a panel for each month. In addition, the statistic type (average, maximum, minimum) is included as an additional conditioning variable.

This matrix of panels can be displayed with `ggplot` using `facet_grid`. The code of Figure ?? uses partial transparency to cope with overplotting, small horizontal and vertical segments (`geom_rug`) to display points density on both variables, and a smooth line in each panel.

```
ggplot(data=aranjuezRshp, aes(Radiation, Temperature)) +  
  facet_grid(Statistic ~ month) +  
  geom_point(col='skyblue4', pch=19, cex=0.5, alpha=0.5) +  
  geom_rug() +  
  stat_smooth(se=FALSE, method='loess', col='indianred4') +  
  theme_bw()
```