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Oscar Perpiñán Lamigueiro

24 de Octubre de 2014

#+begin_src R :exports none

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```
= "Dark2"))

myTheme$strip.background$col='transparent'
myTheme$strip.shingle$col='transparent'
myTheme$strip.border$col='transparent'

xscale.components.custom <- function(...){
  ans <- xscale.components.default(...)
  ans$top=FALSE
  ans}

yscale.components.custom <- function(...){
  ans <- yscale.components.default(...)
  ans$right=FALSE
  ans}

myArgs <- list(as.table=TRUE,
                between=list(x=0.5, y=0.2),
                xscale.components = xscale.components.
                  custom,
                yscale.components = yscale.components.
                  custom)

defaultArgs <- lattice.options()$default.args

lattice.options(default.theme = myTheme,
```

```
default.args = modifyList(defaultArgs,  
                           myArgs))
```

```
#
```

```
#####
```

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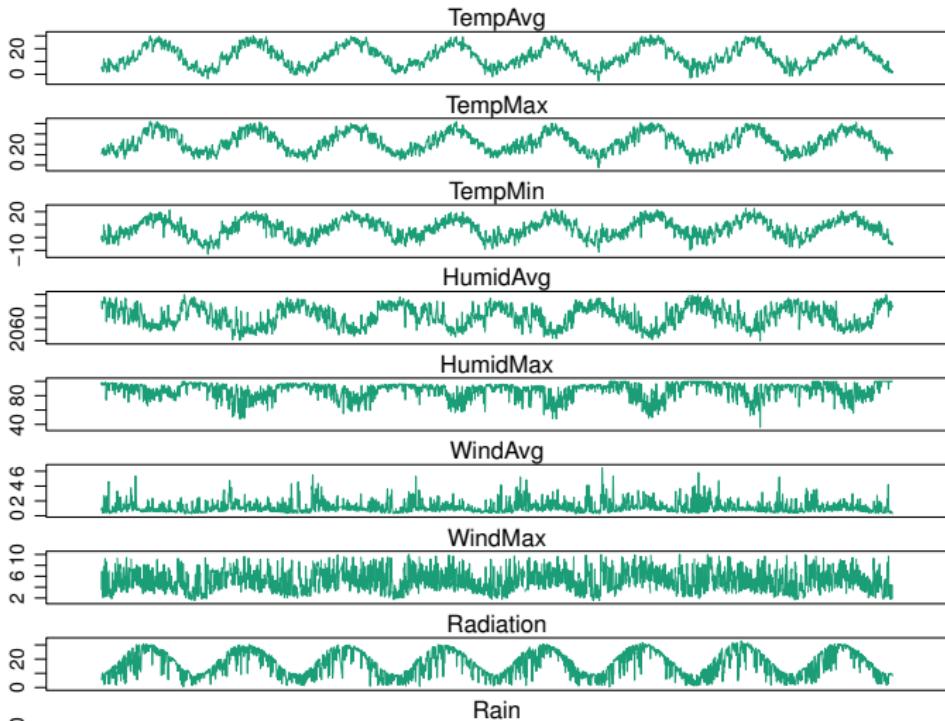
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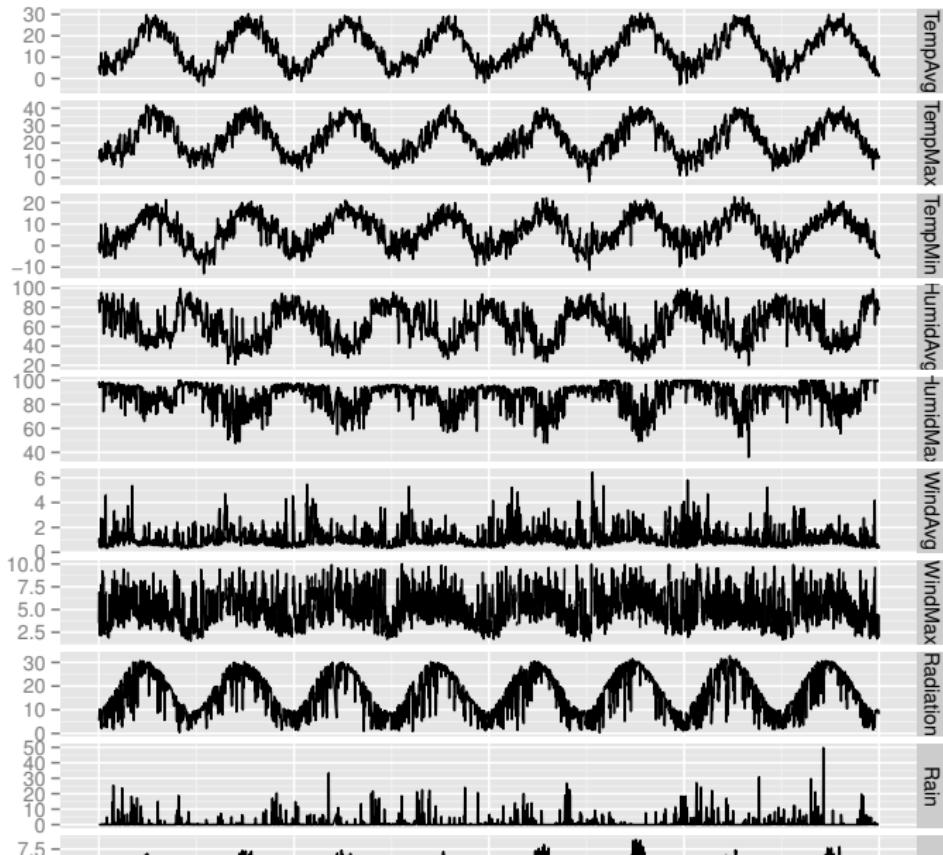
lattice: xyplot

```
load('data/aranjuez.RData')
library(zoo)
## The layout argument arranges panels in rows
xyplot(aranjuez, layout=c(1, ncol(aranjuez)))
```



ggplot2: autplot

```
autoplot(aranjuez) + facet_free()
```



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lattice

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```
library(grid)
library(latticeExtra)

## Auxiliary function to extract the year value of
## a POSIXct time
## index
Year <- function(x)format(x, "%Y")

xyplot(aranjuez, layout=c(1, ncol(aranjuez)), strip
=FALSE,
       scales=list(y=list(cex=0.6, rot=0)),
       panel=function(x, y, ...){
         ## Alternation of years
         panel.xblocks(x, Year,
                       col = c("lightgray", "white"),
                       border = "darkgray")
         ## Values under the average highlighted with
         ## red regions
         panel.xblocks(x, y<mean(y, na.rm=TRUE),
                       col = "indianred1",
                       border = "darkgray")})
```

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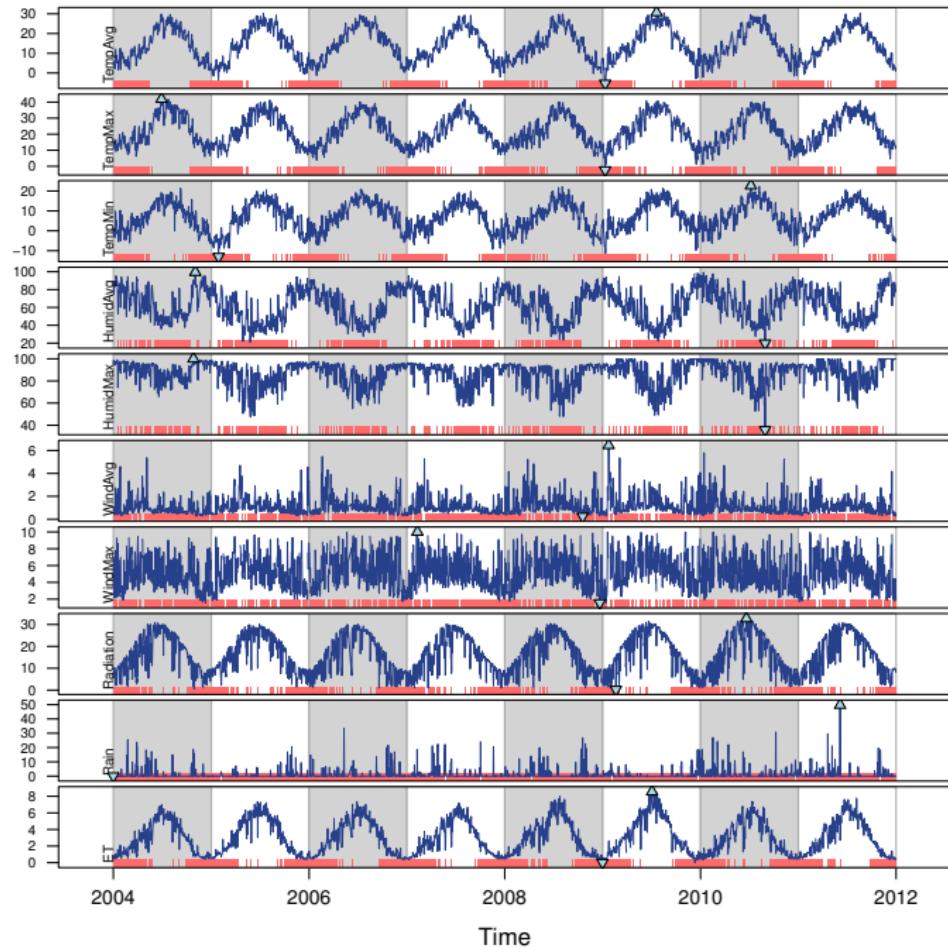
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```
timeIdx <- index(aranjuez)  
  
long <- fortify(aranjuez, melt=TRUE)
```

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The bands of values below the average can be easily extracted with

scale because these regions are negative when the data.frame is centered.

```
## Values below mean are negative after being
  centered
scaled <- fortify(scale(aranjuez, scale=FALSE),
  melt=TRUE)
## The 'scaled' column is the result of the
  centering.
## The new 'Value' column store the original values
  .
scaled <- transform(scaled, scaled=Value, Value=
  long$Value)
underIdx <- which(scaled$scaled <= 0)
## 'under' is the subset of values below the
  average
under <- scaled[underIdx,]
```

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The years bands are defined with the function endpoints from the

xts package:

```
library(xts)
ep <- endpoints(timeIdx, on='years')
N <- length(ep[-1])
## 'tsp' is start and 'tep' is the end of each band
tep <- timeIdx[ep]
tsp <- timeIdx[ep[-(N+1)]+1]
## 'cols' is a vector with the color of each band
cols <- rep_len(c('gray', 'white'), N)
```

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The minima and maxima points of each variable are extracted with

apply:

```
minIdx <- timeIdx[apply(aranjuez, 2, which.min)]
minVals <- apply(aranjuez, 2, min, na.rm=TRUE)
mins <- data.frame(Index=minIdx,
                     Value=minVals,
                     Series=names(aranjuez))

maxIdx <- timeIdx[apply(aranjuez, 2, which.max)]
maxVals <- apply(aranjuez, 2, max, na.rm=TRUE)
maxs <- data.frame(Index=maxIdx,
                     Value=maxVals,
                     Series=names(aranjuez))
```

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With ggplot we define the canvas, and the layers of information are

added successively:

```
ggplot(data=long, aes(Index, Value)) +  
    ## Time series of each variable  
    geom_line(colour = "royalblue4", lwd = 0.5) +  
    ## Year bands  
    annotate(geom='rect', ymin = -Inf, ymax = Inf,  
            xmin=tsp, xmax=tep,  
            fill = cols, alpha = 0.4) +  
    ## Values below average  
    geom_rug(data=under,  
             sides='b', col='indianred1') +  
    ## Minima  
    geom_point(data=mins, pch=25) +  
    ## Maxima  
    geom_point(data=maxs, pch=24) +  
    ## Axis labels and theme definition  
    labs(x='Time', y=NULL) +  
    theme_bw() +  
    ## Each series is displayed in a different panel
```

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

```
avRad <- zoo(rowMeans(navarra, na.rm=1), index(navarra))
pNavarra <- xyplot(navarra - avRad,
                     superpose=TRUE, auto.key=FALSE,
                     lwd=0.5, alpha=0.3, col='midnightblue')
pNavarra
```

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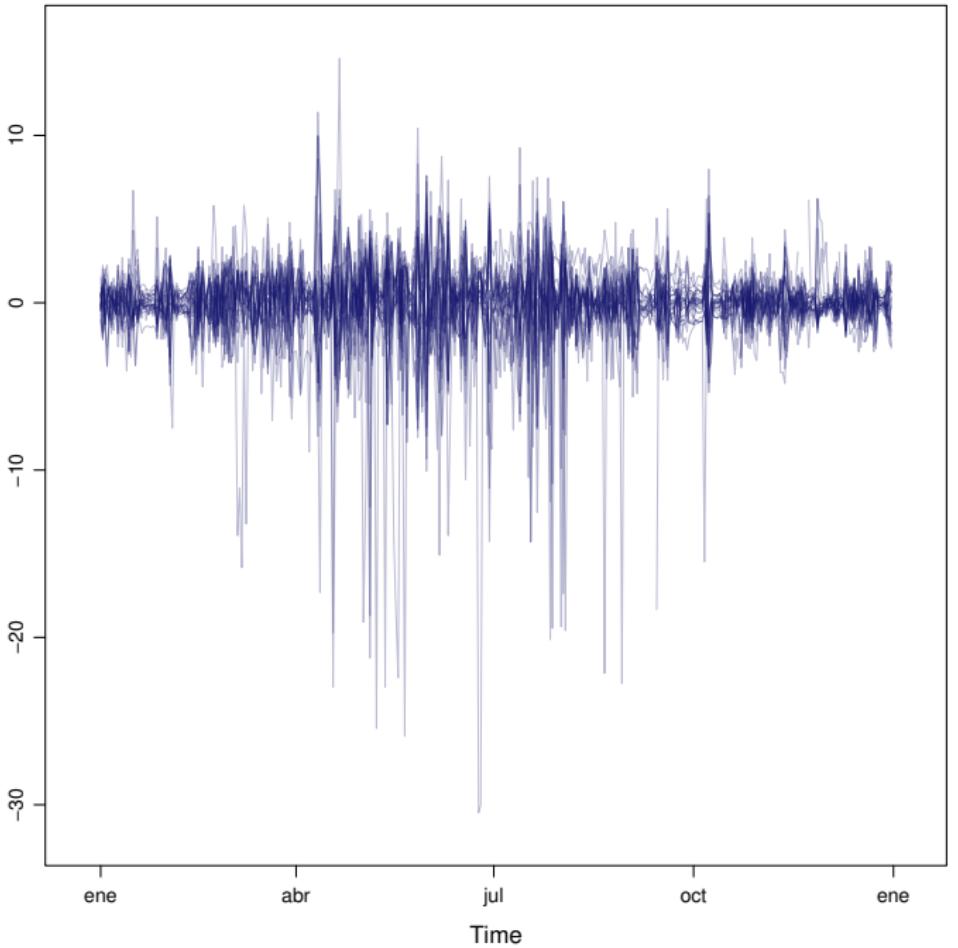
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```
xyplot(navarra ~ avRad,  
       aspect='xy', cut=list(n=3, overlap=0.1),  
       strip=FALSE,  
       superpose=TRUE, auto.key=FALSE,  
       lwd=0.5, alpha=0.3, col='midnightblue')
```

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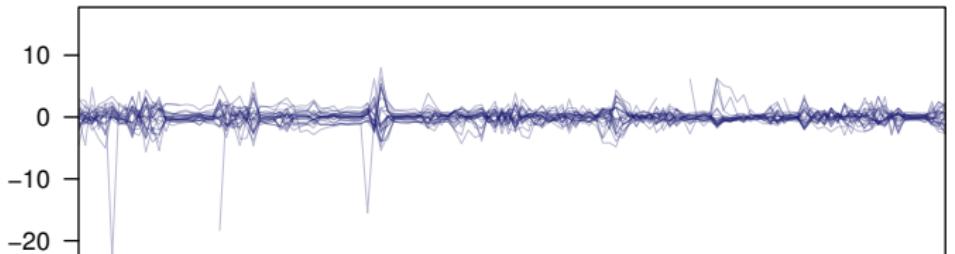
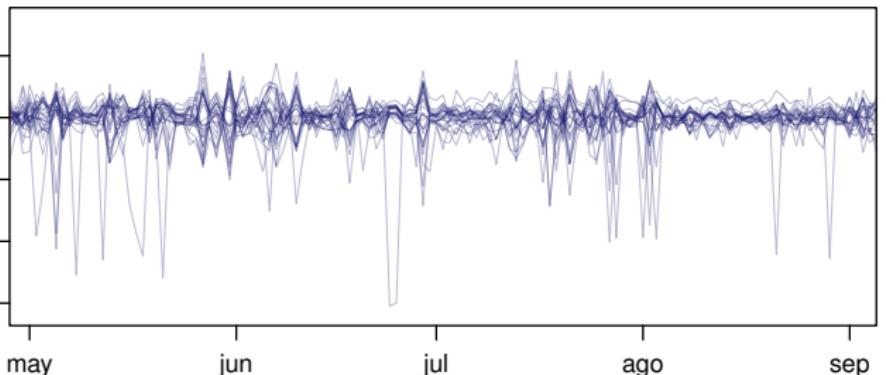
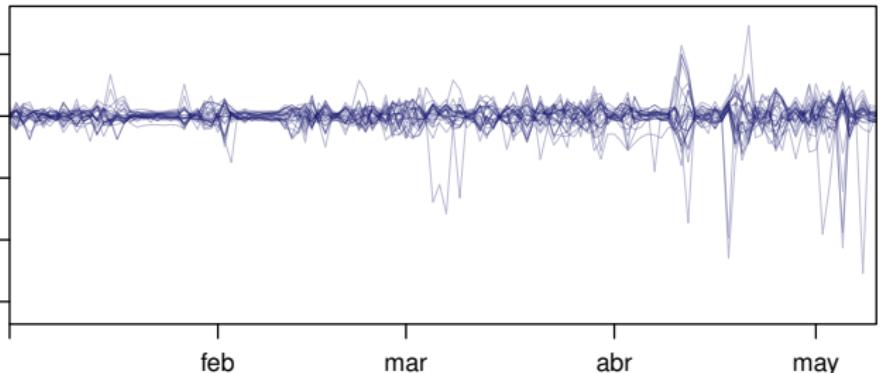
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horizonplot

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```
library(latticeExtra)

horizonplot(navarra-avRad,
            layout=c(1, ncol(navarra)),
            origin=0, colorkey=TRUE)
```

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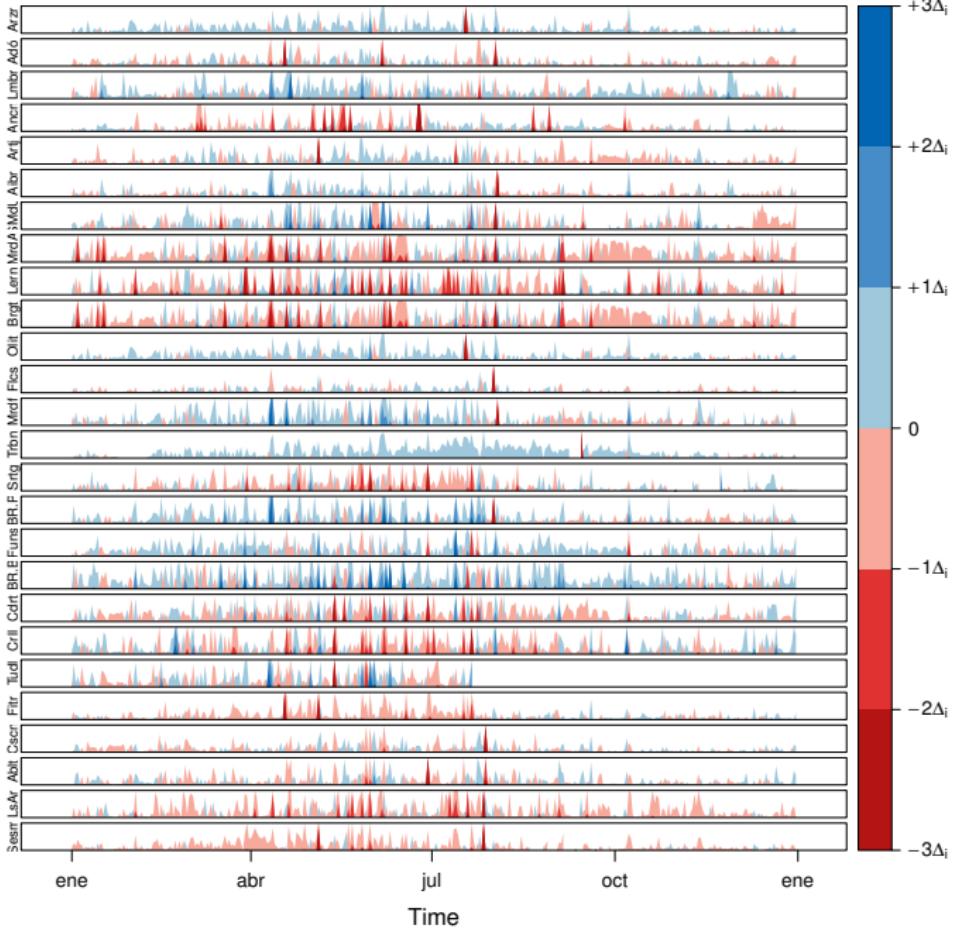
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Diferencias

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```
Ta <- aranjuez$TempAvg
timeIndex <- index(aranjuez)
longTa <- ave(Ta, format(timeIndex, '%j'))
diffTa <- (Ta - longTa)
```

```
years <- unique(format(timeIndex, '%Y'))

horizonplot(diffTa, cut=list(n=8, overlap=0),
            colorkey=TRUE, layout=c(1, 8),
            scales=list(draw=FALSE, y=list(relation='same')),
            origin=0, strip.left=FALSE) +
layer(grid.text(years[panel.number()], x = 0, y
= 0.1,
                gp=gpar(cex=0.8),
                just = "left"))
```

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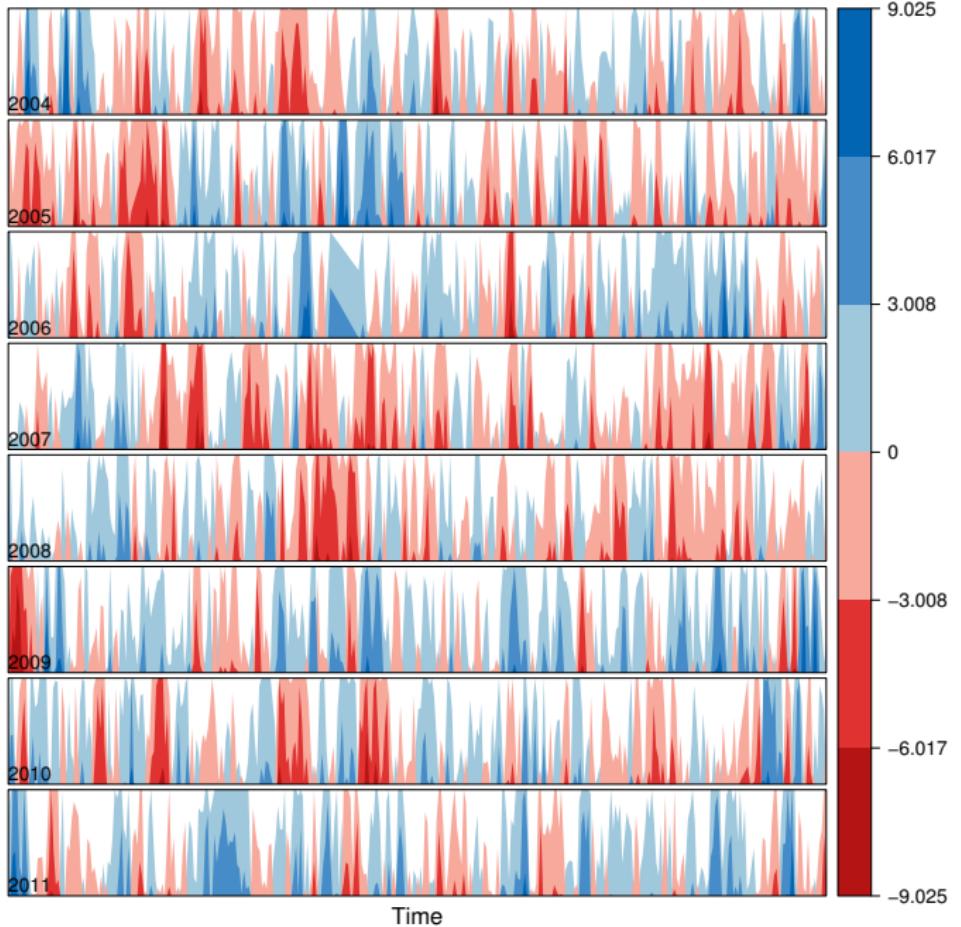
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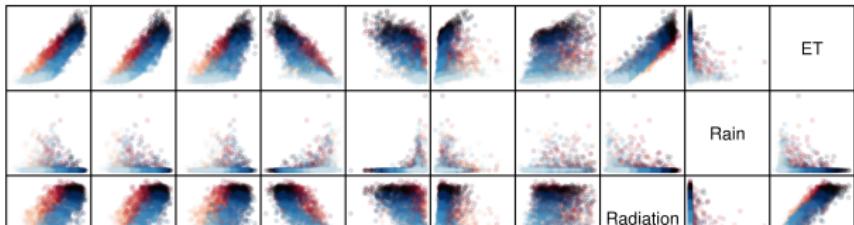
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lattice

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

## Red-Blue palette with black added (12 colors)
colors <- c(brewer.pal(n=11, 'RdBu'), '#000000')
## Rearrange according to months (darkest for
## summer)
colors <- colors[c(6:1, 12:7)]

splom(~as.data.frame(aranjuez),
      groups=format(index(aranjuez), '%m'),
      auto.key=list(space='right',
                    title='Month', cex.title=1),
      pscale=0, varname.cex=0.7, xlab='',
      par.settings=custom.theme(symbol=colors,
                                 pch=19), cex=0.3, alpha=0.1)
```



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```
library(hexbin)

splom(~as.data.frame(aranjuez),
      panel=panel.hexbinplot, xlab='',
      colramp=BTC,
      diag.panel = function(x, ...){
        yrng <- current.panel.limits()$ylim
        d <- density(x, na.rm=TRUE)
        d$y <- with(d, yrng[1] + 0.95 * diff(yrng)
                     ) * y / max(y))
        panel.lines(d)
        diag.panel.splom(x, ...)
      },
      lower.panel = function(x, y, ...){
        panel.hexbinplot(x, y, ...)
        panel.loess(x, y, ..., col = 'red')
      },
      pscale=0, varname.cex=0.7
)
```

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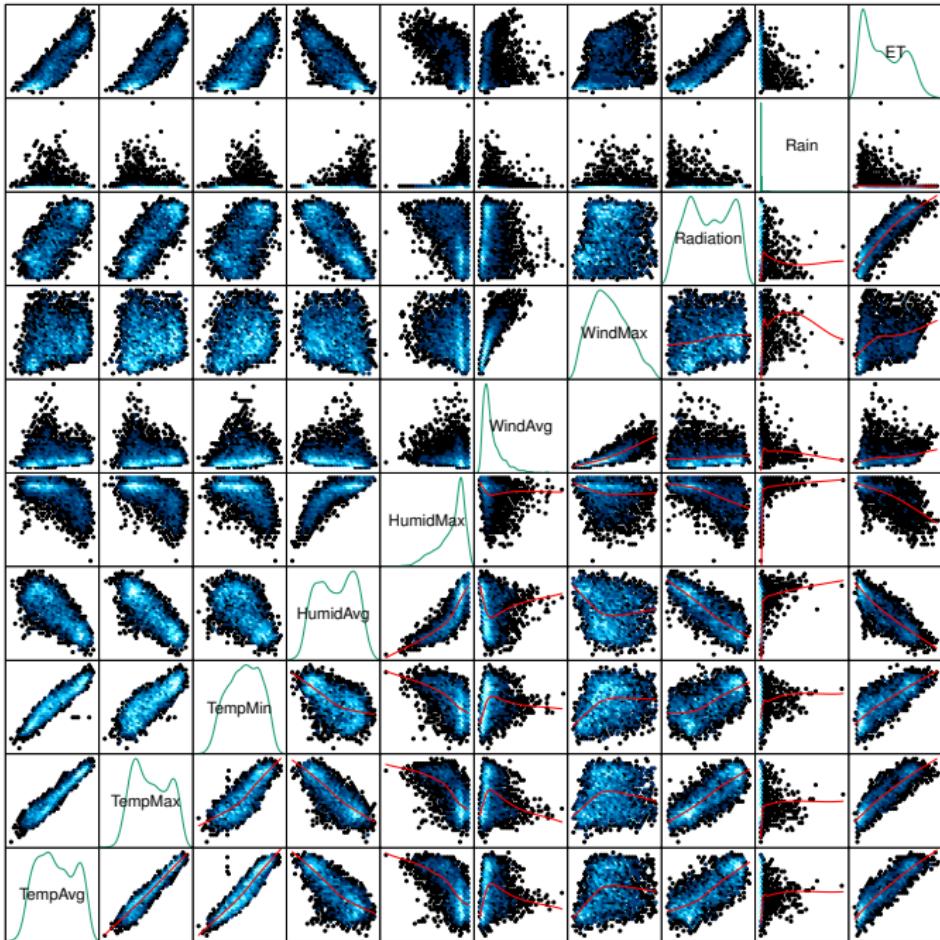
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ggplot2

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```
ggplot(data=aranjuezRshp, aes(Radiation,  
    Temperature)) +  
  facet_grid(Statistic ~ month) +  
  geom_point(col='skyblue4', pch=19, cex=0.5,  
    alpha=0.3) +  
  geom_rug() +  
  stat_smooth(se=FALSE, method='loess', col='  
    indianred1', lwd=1.2) +  
  theme_bw()
```

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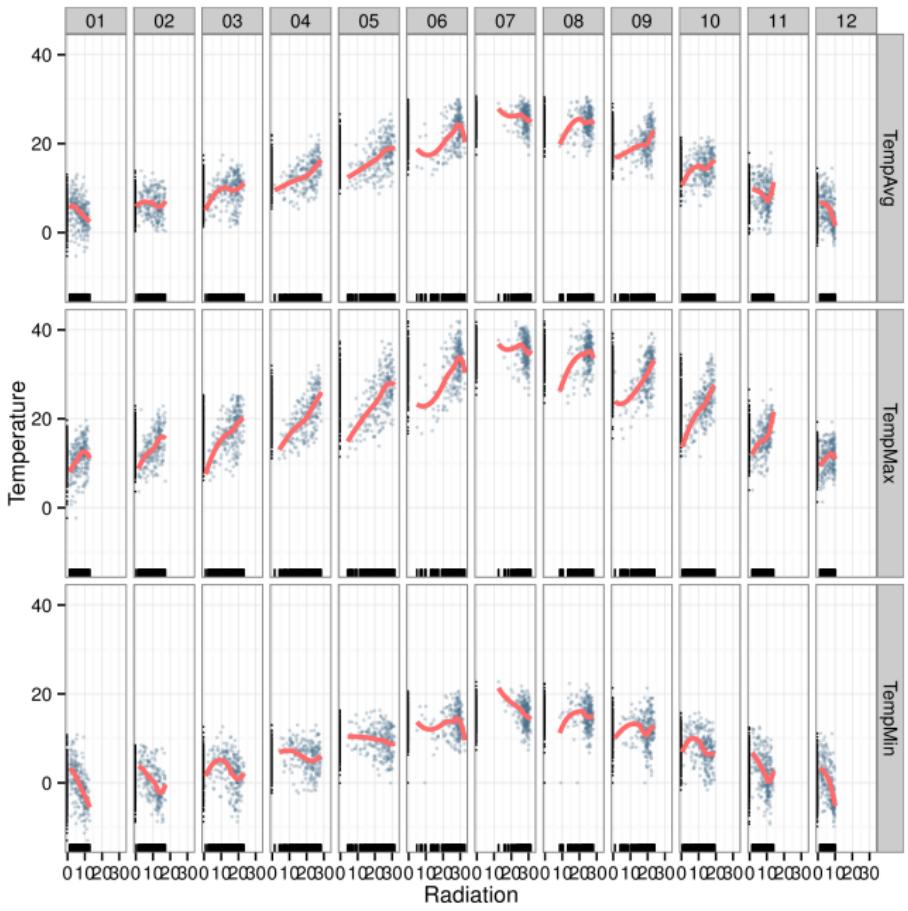
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lattice

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```
useOuterStrips(xyplot(Temperature ~ Radiation |  
month * Statistic,  
    data=aranjuezRshp,  
    between=list(x=0),  
    col='skyblue4', pch=19,  
    cex=0.5, alpha=0.3)) +  
  
layer({  
    panel.rug(..., col.line='indianred1', end  
    =0.05, alpha=0.6)  
    panel.loess(..., col='indianred1', lwd=1.5,  
    alpha=1)  
})
```

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