

Gráficos con R

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Contenidos

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Base y grid

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En R existen dos formas de generar gráficos:

- ▶ Base graphics
- ▶ Grid graphics

Dentro del conjunto grid existen dos grandes paquetes:

- ▶ lattice
- ▶ ggplot2

Conjunto de datos de ejemplo

- Leemos desde el archivo local

```
aranjuez <- read.csv('data/aranjuez.csv')  
  
summary(aranjuez)
```

X		TempAvg	TempMax	TempMin			
2004-01-01:	1	Min. : -5.309	Min. : -2.362	Min. : -12.980			
2004-01-02:	1	1st Qu.: 7.692	1st Qu.: 14.530	1st Qu.: 1.515			
2004-01-03:	1	Median : 13.810	Median : 21.670	Median : 7.170			
2004-01-04:	1	Mean : 14.405	Mean : 22.531	Mean : 6.888			
2004-01-05:	1	3rd Qu.: 21.615	3rd Qu.: 30.875	3rd Qu.: 12.590			
2004-01-06:	1	Max. : 30.680	Max. : 41.910	Max. : 22.710			
(Other)	:2892			NA's :4			
		HumidAvg	HumidMax	WindAvg	WindMax		
Min.	: 19.89	Min.	: 35.88	Min.	: 0.251	Min.	: 0.000
1st Qu.:	47.04	1st Qu.:	81.60	1st Qu.:	0.667	1st Qu.:	3.783
Median :	62.58	Median :	90.90	Median :	0.920	Median :	5.027
Mean :	62.16	Mean :	87.22	Mean :	1.174	Mean :	5.208
3rd Qu.:	77.38	3rd Qu.:	94.90	3rd Qu.:	1.431	3rd Qu.:	6.537
Max.	:100.00	Max.	:100.00	Max.	:8.260	Max.	:10.000
		NA's	:13	NA's	:8	NA's	:128
		Rain	Radiation	ET			
Min.	: 0.000	Min.	: 0.277	Min.	:0.000		
1st Qu.:	0.000	1st Qu.:	9.370	1st Qu.:	1.168		
Median :	0.000	Median :	16.660	Median :	2.758		
Mean :	1.094	Mean :	16.742	Mean :	3.091		
3rd Qu.:	0.200	3rd Qu.:	24.650	3rd Qu.:	4.926		
Max.	:49.730	Max.	:32.740	Max.	:8.564		
NA's	:4	NA's	:13	NA's	:18		

Conjunto de datos de ejemplo

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► Añadimos algunas columnas

```
aranjuez$month <- as.numeric(  
  format(as.Date(aranjuez$X), '%m'))  
aranjuez$year <- as.numeric(  
  format(as.Date(aranjuez$X), '%Y'))  
aranjuez$day <- as.numeric(  
  format(as.Date(aranjuez$X), '%j'))  
aranjuez$jday <- julian(as.Date(aranjuez$X))  
aranjuez$quarter <- quarters(as.Date(aranjuez$X))
```

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- Documentación: [Código y Figuras del libro](#)

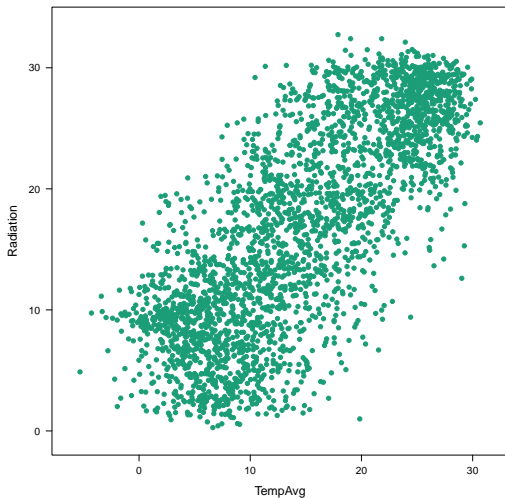
```
library(lattice)
```

xyplot

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```
xyplot(Radiation ~ TempAvg, data=aranjuez)
```



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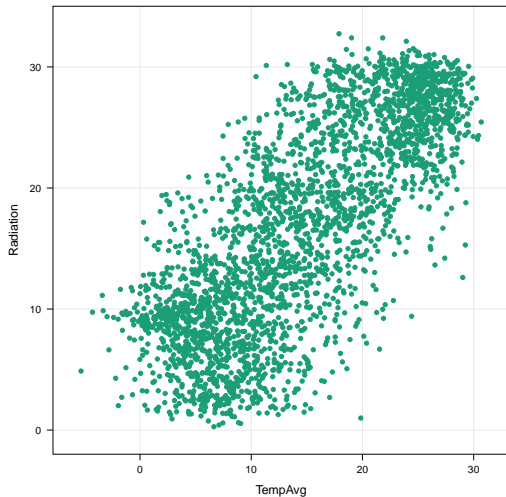
ggplot2

xyplot

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```
xyplot(Radiation ~ TempAvg, data=aranjuez,  
       type=c('p', 'g'))
```



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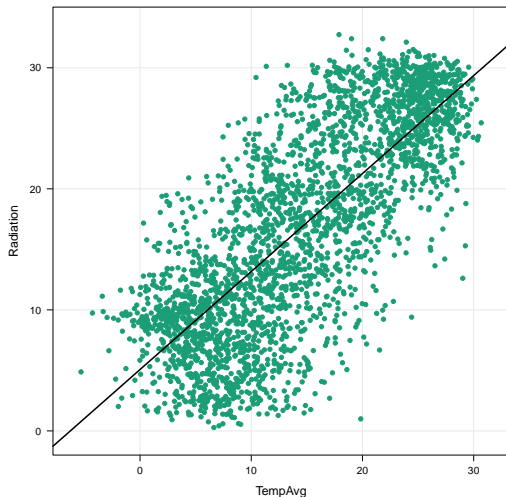
Grid

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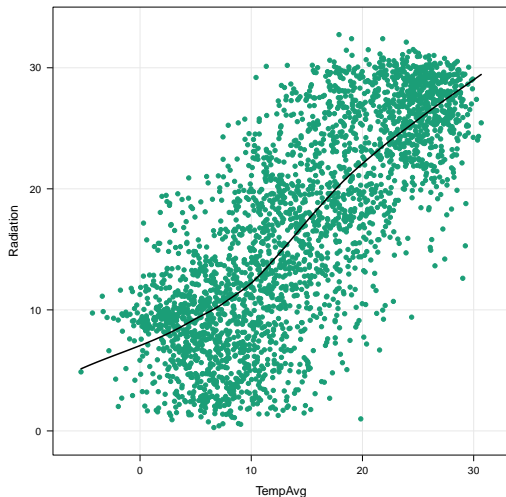
xyplot

```
xyplot(Radiation ~ TempAvg, data=aranjuez,  
       type=c('p', 'r', 'g'),  
       lwd=2, col.line='black')
```



xyplot

```
xyplot(Radiation ~ TempAvg, data=aranjuez,  
       type=c('p', 'smooth', 'g'),  
       lwd=2, col.line='black')
```



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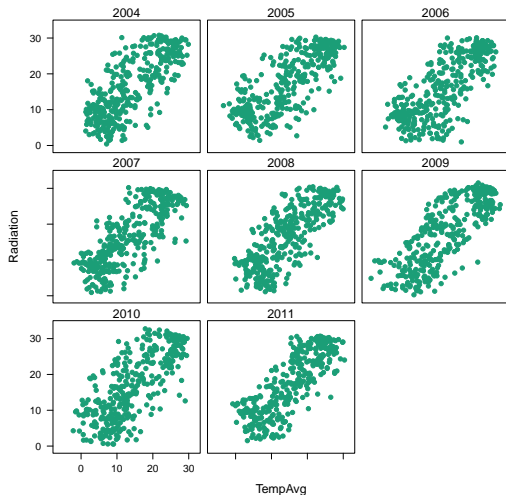
ggplot2

Paneles

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```
xyplot(Radiation ~ TempAvg | factor(year),  
       data=aranjuez)
```



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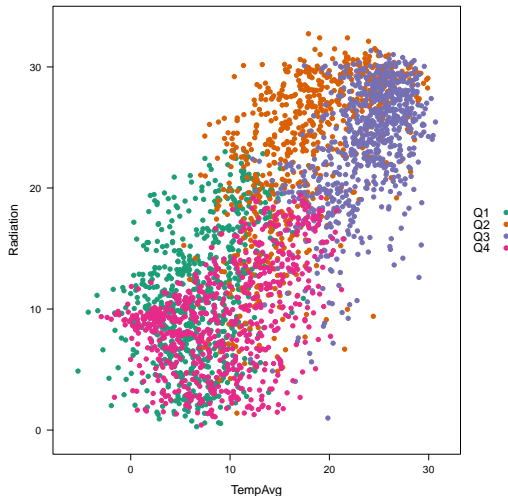
Base y grid

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```
xyplot(Radiation ~ TempAvg, groups=quarter,  
       data=aranjuez, auto.key=list(space='right'))
```

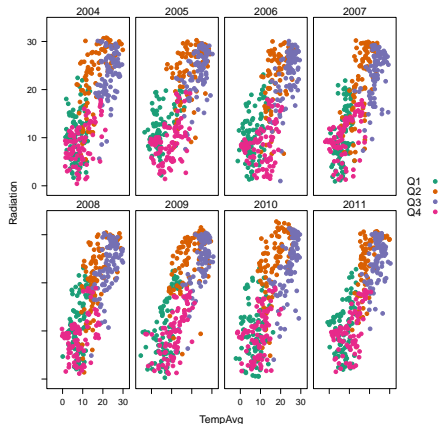


Paneles y grupos

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```
xyplot(Radiation ~ TempAvg | factor(year),  
       groups=quarter,  
       data=aranjuez,  
       layout=c(4, 2),  
       auto.key=list(space='right'))
```



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Base y grid

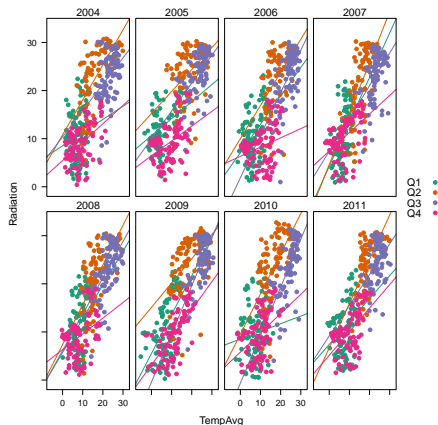
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Paneles y grupos

```
xyplot(Radiation ~ TempAvg | factor(year),  
       groups=quarter,  
       data=aranjuez,  
       layout=c(4, 2),  
       type=c('p', 'r'),  
       auto.key=list(space='right'))
```



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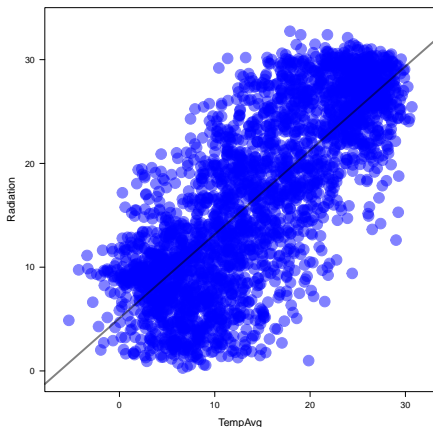
ggplot2

Colores y tamaños

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```
xyplot(Radiation ~ TempAvg,  
       type=c('p', 'r'),  
       cex=2, col='blue',  
       alpha=.5,  
       lwd=3, col.line='black',  
       data=aranjuez)
```



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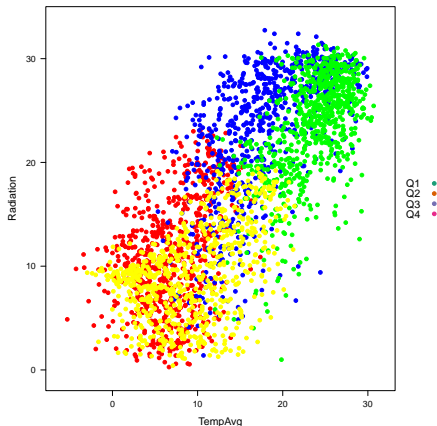
Grid

Lattice

ggplot2

Colores con grupos

```
xyplot(Radiation ~ TempAvg,  
       group=quarter,  
       col=c('red', 'blue', 'green', 'yellow'),  
       auto.key=list(space='right'),  
       data=aranjuez)
```



Colores con grupos: par.settings

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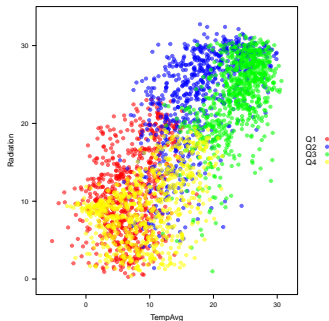
Base y grid

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```
myTheme <- custom.theme(symbol=c('red', 'blue',  
                                'green', 'yellow'),  
                          pch=19, alpha=.6)  
xyplot(Radiation ~ TempAvg,  
       groups=quarter,  
       par.settings=myTheme,  
       auto.key=list(space='right'),  
       data=aranjuez)
```



Colores: brewer.pal

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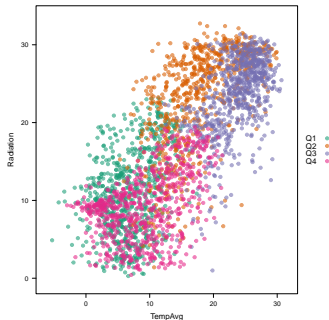
Base y grid

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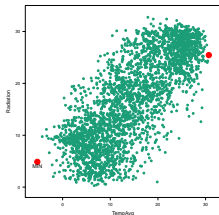
ggplot2

```
library(RColorBrewer)
myTheme <- custom.theme(symbol=brewer.pal(n=4,
                                           'Dark2'),
                        pch=19, alpha=.6)
xyplot(Radiation ~ TempAvg,
       groups=quarter,
       par.settings=myTheme,
       auto.key=list(space='right'),
       data=aranjuez)
```



Paneles a medida

```
xyplot(Radiation ~ TempAvg, data=aranjuez,  
       panel=function(x, y, ...){  
         panel.xyplot(x, y, ...)  
         minIdx <- which.min(x)  
         maxIdx <- which.max(x)  
         panel.points(x[c(minIdx, maxIdx)],  
                      y[c(minIdx, maxIdx)],  
                      cex=2, col='red')  
         panel.text(x[minIdx], y[minIdx],  
                   'MIN', pos=1)  
       })
```



Matriz de gráficos de dispersión

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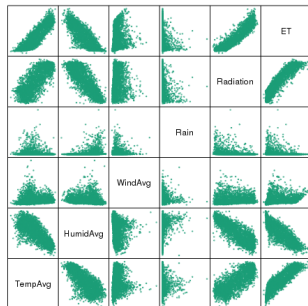
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```
splom(aranjuez[,c("TempAvg", "HumidAvg", "WindAvg",  
                  "Rain", "Radiation", "ET")],  
      pscale=0, alpha=0.6, cex=0.3, pch=19)
```



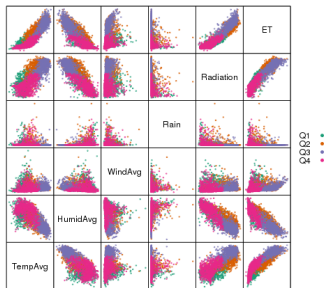
Scatter Plot Matrix

Matriz de gráficos de dispersión

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```
splom(aranjuez[,c("TempAvg", "HumidAvg", "WindAvg",  
                  "Rain", "Radiation", "ET")],  
      groups=aranjuez$quarter,  
      auto.key=list(space='right'),  
      pscale=0, alpha=0.6, cex=0.3, pch=19)
```



Scatter Plot Matrix

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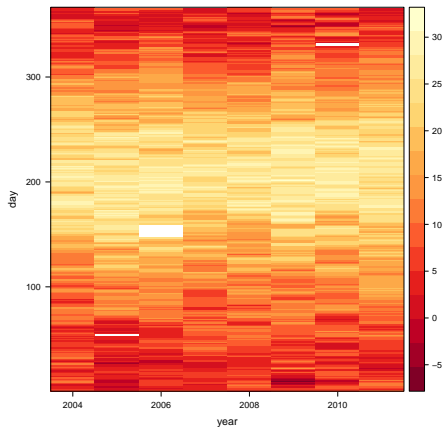
ggplot2

levelplot

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```
levelplot(TempAvg ~ year * day,  
           data=aranjuez)
```



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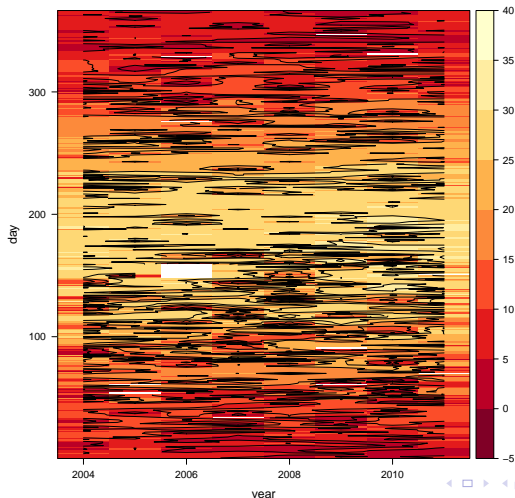
Grid

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ggplot2

contourplot

```
contourplot(Radiation ~ year * day,  
            lwd=.5, labels=FALSE,  
            region=TRUE,  
            data=aranjuez)
```

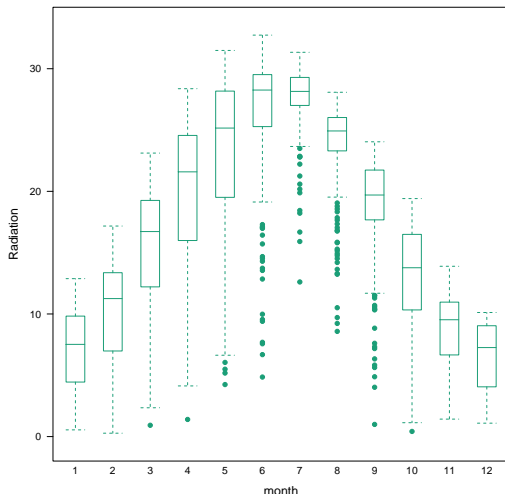


Box-and-Whiskers

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```
bwplot(Radiation ~ month, data=aranjuez,  
       horizontal=FALSE, pch='|')
```



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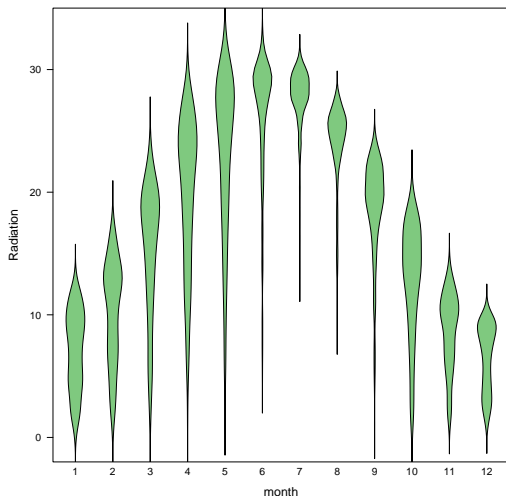
ggplot2

Box-and-Whiskers

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```
bwplot(Radiation ~ month, data=aranjuez,  
       horizontal=FALSE,  
       panel=panel.violin)
```



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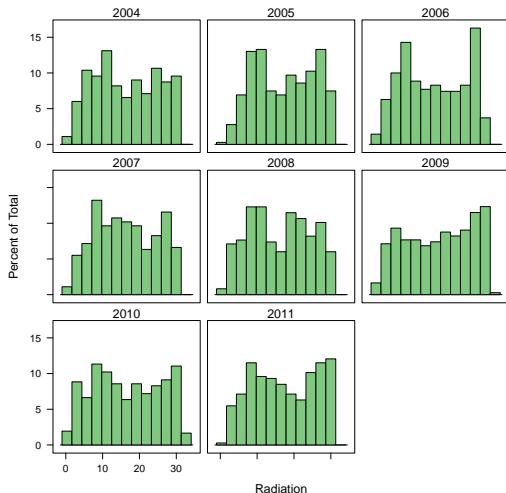
ggplot2

Histogramas

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```
histogram(~Radiation|factor(year), data=aranjuez)
```



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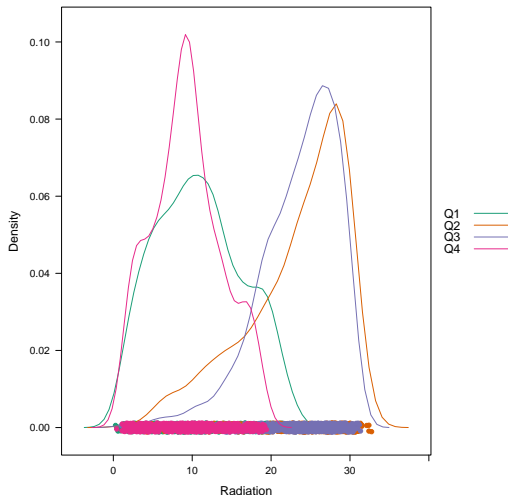
ggplot2

Gráficos de densidad

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```
densityplot(~Radiation, groups=quarter,  
            data=aranjuez,  
            auto.key=list(space='right'))
```



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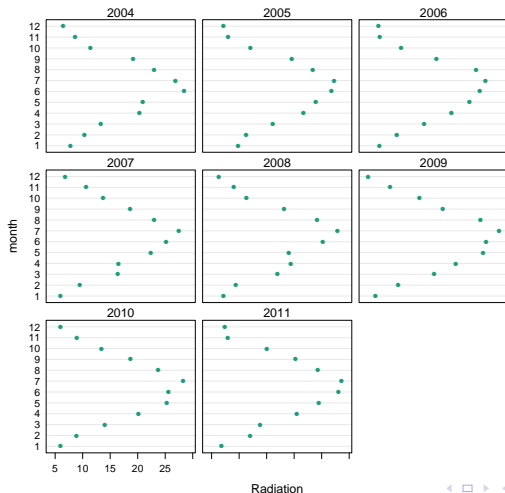
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dotplot

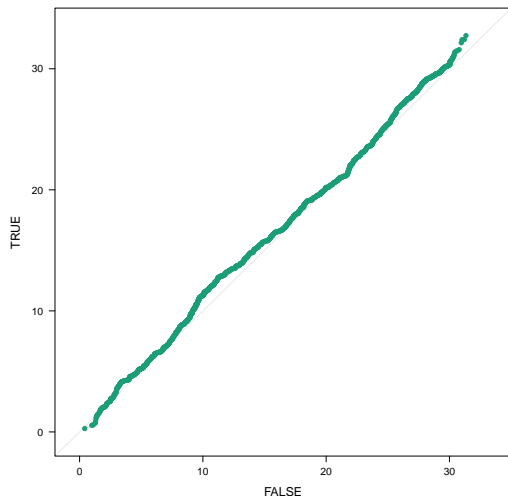
```
avRad <- aggregate(Radiation ~ month * year,  
  data=aranjuez, FUN=mean)
```

```
dotplot(month ~ Radiation | factor(year), data=avRad)
```



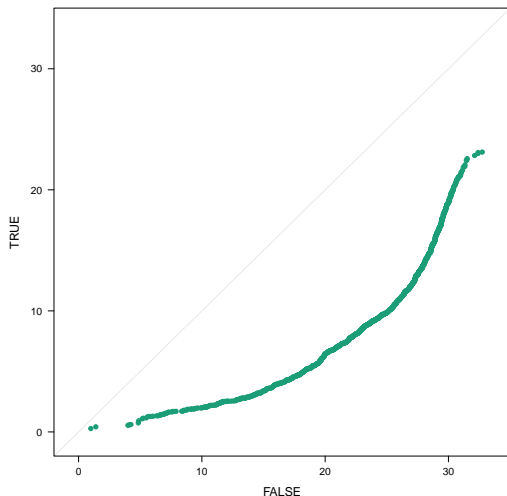
Quantile-Quantile

```
firstHalf <- aranjuez$quarter %in% c('Q1', 'Q2')  
  
qq(firstHalf ~ Radiation, data=aranjuez)
```



Quantile-quantile

```
winter <- aranjuez$quarter %in% c('Q1', 'Q4')  
  
qq(winter ~ Radiation, data=aranjuez)
```

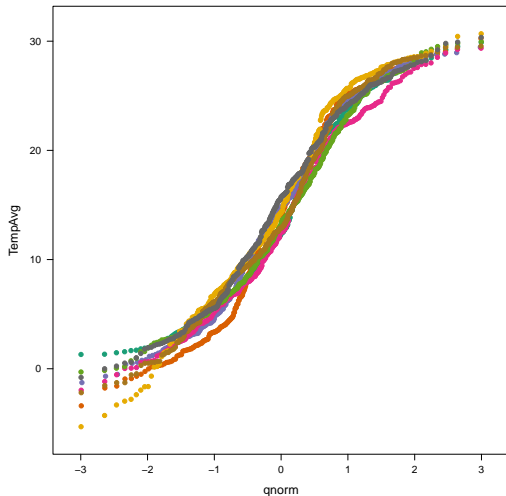


Quantile-Quantile

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```
qqmath(~TempAvg, data=aranjuez,  
       groups=year, distribution=qnorm)
```



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- ▶ Documentación de ggplot2
- ▶ Código del libro
- ▶ ggplot2 desde lattice (PDF)