Tree Example from ELMR

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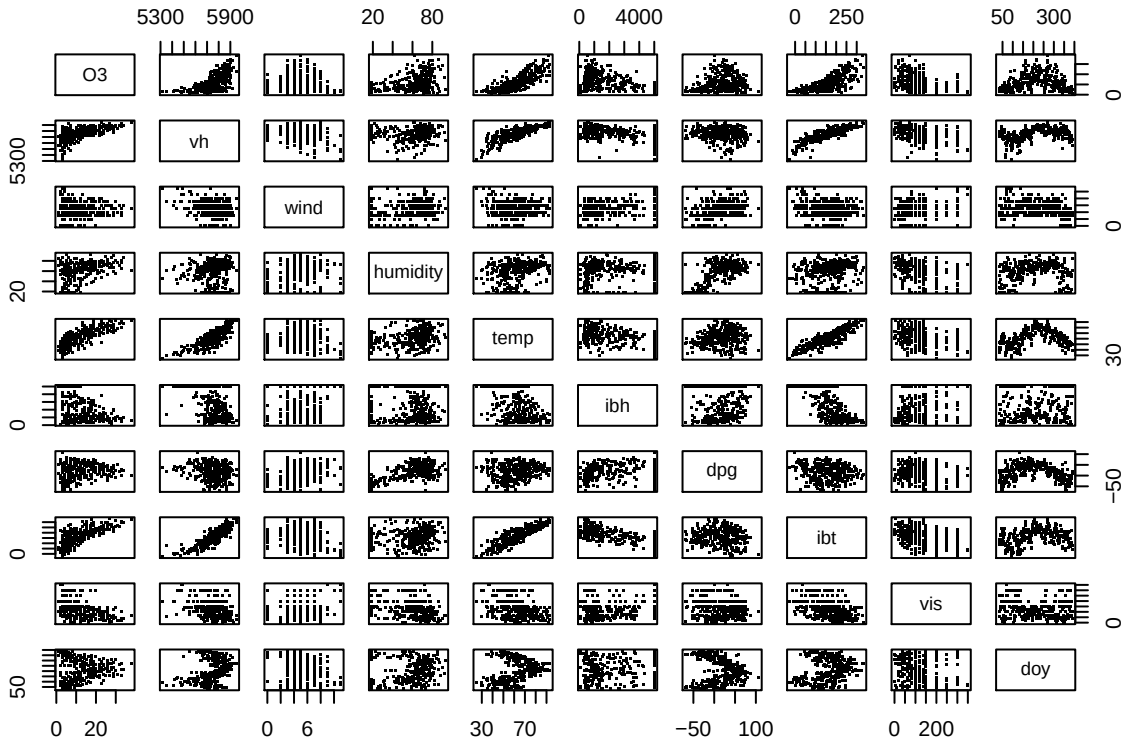
```
library(faraway)
library(rpart)
```

```
##
## Attaching package: 'rpart'

## The following object is masked from 'package:faraway':
##
##     solder
```

```
data(ozone)

summary(ozone)
```

```
##        O3              vh            wind           humidity
##  Min.   : 1.00   Min.   :5320   Min.   : 0.000   Min.   :19.00
##  1st Qu.: 5.00   1st Qu.:5690   1st Qu.: 3.000   1st Qu.:47.00
##  Median :10.00   Median :5760   Median : 5.000   Median :64.00
##  Mean   :11.78   Mean   :5750   Mean   : 4.848   Mean   :58.13
##  3rd Qu.:17.00   3rd Qu.:5830   3rd Qu.: 6.000   3rd Qu.:73.00
##  Max.   :38.00   Max.   :5950   Max.   :11.000   Max.   :93.00
##       temp            ibh              dpg              ibt
##  Min.   :25.00   Min.   : 111.0   Min.   :-69.00   Min.   :-25.0
##  1st Qu.:51.00   1st Qu.: 877.5   1st Qu.: -9.00   1st Qu.:107.0
##  Median :62.00   Median :2112.5   Median : 24.00   Median :167.5
##  Mean   :61.75   Mean   :2572.9   Mean   : 17.37   Mean   :161.2
##  3rd Qu.:72.00   3rd Qu.:5000.0   3rd Qu.: 44.75   3rd Qu.:214.0
##  Max.   :93.00   Max.   :5000.0   Max.   :107.00   Max.   :332.0
##       vis             doy
##  Min.   :  0.0   Min.   : 33.0
##  1st Qu.: 70.0   1st Qu.:120.2
##  Median :120.0   Median :205.5
##  Mean   :124.5   Mean   :209.4
##  3rd Qu.:150.0   3rd Qu.:301.8
##  Max.   :350.0   Max.   :390.0
```

```
pairs(ozone, pch=".")
```

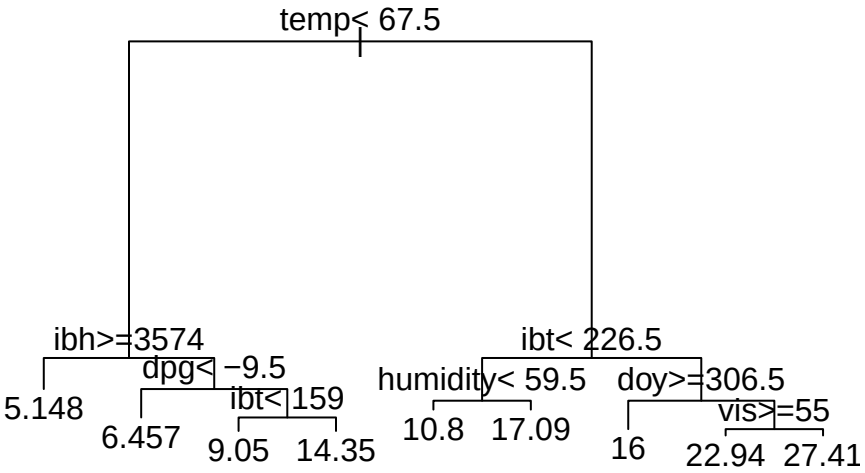



```
colnames(ozone)[1] <- "target"
```

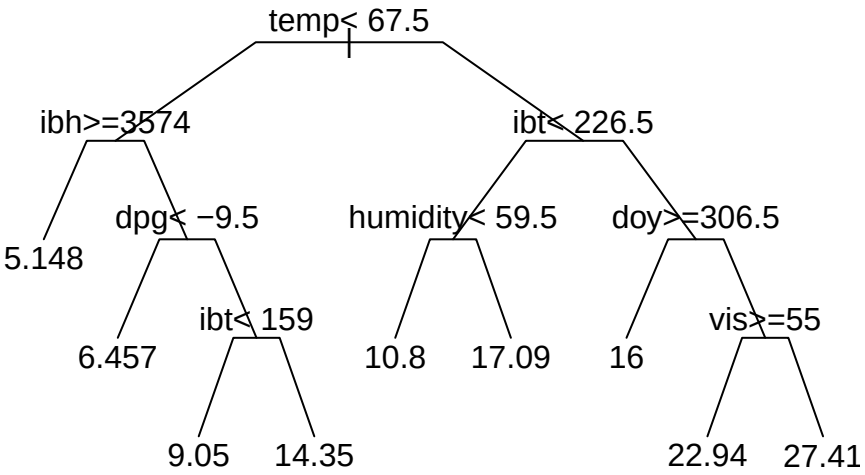
```
(roz <- rpart(target ~ ., data = ozone))
```

```
## n= 330
##
## node), split, n, deviance, yval
##       * denotes terminal node
##
##  1) root 330 21115.4100 11.775760
##    2) temp< 67.5 214  4114.3040  7.425234
##      4) ibh>=3573.5 108   689.6296  5.148148 *
##      5) ibh< 3573.5 106  2294.1230  9.745283
##       10) dpg< -9.5 35   362.6857  6.457143 *
##       11) dpg>=-9.5 71  1366.4790 11.366200
##         22) ibt< 159 40   287.9000  9.050000 *
##         23) ibt>=159 31   587.0968 14.354840 *
##    3) temp>=67.5 116  5478.4400 19.801720
##      6) ibt< 226.5 55  1276.8360 15.945450
##       12) humidity< 59.5 10   167.6000 10.800000 *
##       13) humidity>=59.5 45   785.6444 17.088890 *
##      7) ibt>=226.5 61  2646.2620 23.278690
##       14) doy>=306.5 8   398.0000 16.000000 *
##       15) doy< 306.5 53  1760.4530 24.377360
##         30) vis>=55 36  1149.8890 22.944440 *
##         31) vis< 55 17   380.1176 27.411760 *
```

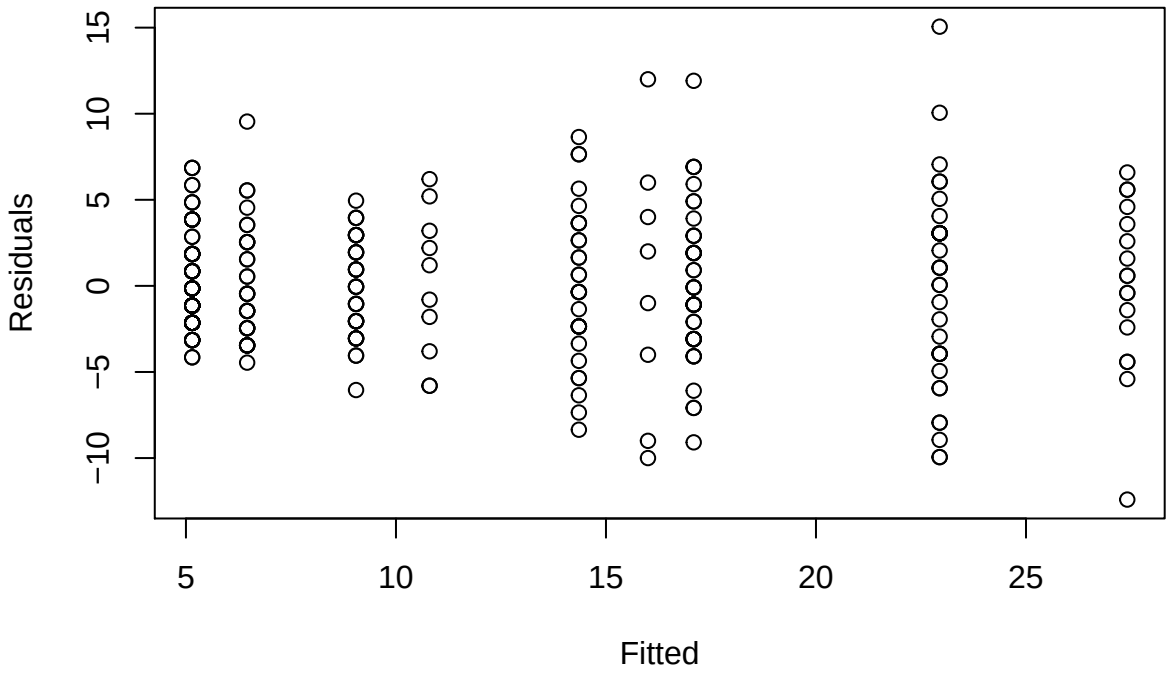
```
plot(roz,margin=.10)
text(roz)
```




```
plot(roz,compress=T,uniform=T,branch=0.4,margin=.10)
text(roz)
```




```
plot(predict(roz), residuals(roz), xlab="Fitted",ylab="Residuals")
```




```
qqnorm(residuals(roz))
```