

Scatterplot3d In R
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Setting-up Scatterplot3d

- <http://cran.r-project.org/web/packages/scatterplot3d/index.html>
- Download and save .zip file in an easily accessible place.
- Once R is loaded, click on “Packages” at the top of the screen, and on the drop menu click on “Install package(s) from local .zip files”
- Click on desired .zip file, in our case, the “scatterplot3d” file.
- Then click on “Package” and “Load Package.” A list should pop up which should include “scatterplot3d.” Click “OK.”
- To test that you have successfully loaded the package, type in **scatterplot3d(1,1,1)**. You will see a single point in a three-dimensional field. This means it is working properly.
- The following code is an example of the various things you can do within the scatterplot3d function. It is also recommended that you put your unique data in following this format. If you are doing a simple 3D Scatterplot, it isn't necessary to define all of the terms. You may use as many, or as little of these terms as you see fit.

```
scatterplot3d(x, y=NULL, z=NULL, color=par("col"), pch=NULL, main=NULL, sub=NULL, xlim=NULL, ylim=NULL, zlim=NULL, xlab=NULL, ylab=NULL, zlab=NULL, scale.y=1, angle=40, axis=TRUE, tick.marks=TRUE, label.tick.marks=TRUE, x.ticklabs=NULL, y.ticklabs=NULL, z.ticklabs=NULL, y.margin.add=0, grid=TRUE, box=TRUE, lab=par("lab"), lab.z=mean(lab[1:2]), type="p", highlight.3d=FALSE, mar=c(5,3,4,3)+0.1, col.axis=par("col.axis"), col.grid="grey", col.lab=par("col.lab"), cex.symbols=par("cex"), cex.axis=0.8 * par("cex.axis"), cex.lab=par("cex.lab"), font.axis=par("font.axis"), font.lab=par("font.lab"), lty.axis=par("lty"), lty.grid=par("lty"), lty.hide=NULL, lty.hplot=par("lty"), log="", ...)
```

x

- x coordinates

y

- y coordinates

z

- z coordinates

color

- colors of points in the plot, optional if x is an appropriate structure. Will be ignored if highlight.3d = TRUE.

pch

- Edits appearance of points. i.e) changes point from a circle to a square..etc.

main

- Adds title to your graph

sub

- Adds subtitle

xlim, ylim, zlim

- Sets limits for respective axes.

xlab, ylab, zlab

- Assigns labels to each respective axis.

scale.y

- is the ratio between the y axis and the x and z axes

angle

- rotates the x y plane

axis

- choose to have axis drawn on graph or not i.e) To show axis, axis=TRUE, enter FALSE if you do not want it

tick.marks

- Gives the user the option to put tick marks on his or her graph; only works if user chooses to show axes in graph.

label.tick.marks

- Assigns your tick marks(if enabled) labels.

x.ticklabs, y.ticklabs, z.ticklabs

- Allows user to assign tick mark labels that are specific to each axis

y.margin.add

- Allows the addition of space between tick mark labels and the axis label of the y axis

grid

- choose to have a grid drawn in or not

box

- Gives user the option to have a box around their plot or not.

lab

- Assign the number of tick marks based on the length of the x and y vectors

lab.z

- lab but for the z axis

type

- choose type of plot
- "p" for **p**oints
- "l" for **l**ines
- "b" for **b**oth
- "c" for the lines part alone of "b"
- "o" for both **o**verplotted'
- "h" for **v**ertical lines
- "s" for stair **s**teps
- "n" for no plotting

highlight.3d

- Points are given different colors based on their location on the y axis

mar

- Allows specification of margin lines on all four sides of the graph

col.axis, col.grid, col.lab

- Gives the user the ability to change the color of the axis, grid and labels, respectively.

cex.symbols, cex.axis, cex.lab

- magnification tool not really necessary probably best avoided

font.axis, font.lab

- Changes the font for the axis and labels.

lty.axis, lty.grid

- Changes the type of line used for the axis and grid respectively.

lty.hide

- This is used in plotting non-visible edges on the scatterplot axis.

lty.hplot

- Changes the line type for *vertical* segments.

To add more points to the graph add **\$points3d(x,y,z,col="Color",pch=NULL,type="p")** connected to the end of **scatterplot3d()**

To add a plane of linear regression to the graph add **\$plane3d(lm(z~x+y),lty.box = "solid")** connected to the end of **scatterplot3d()**. **lm()** sets up the plane of linear regression in regards to z along a general plane along x-y.

#Examples of how to use Scatterplot3d

#To make two 3D Scatterplots separated by Species

library(MASS)

attach(snails)

HA=Rel.Hum[Species=="A"]

HB=Rel.Hum[Species=="B"]

TA=Temp[Species=="A"]

TB=Temp[Species=="B"]

DA=Deaths[Species=="A"]

DB=Deaths[Species=="B"]

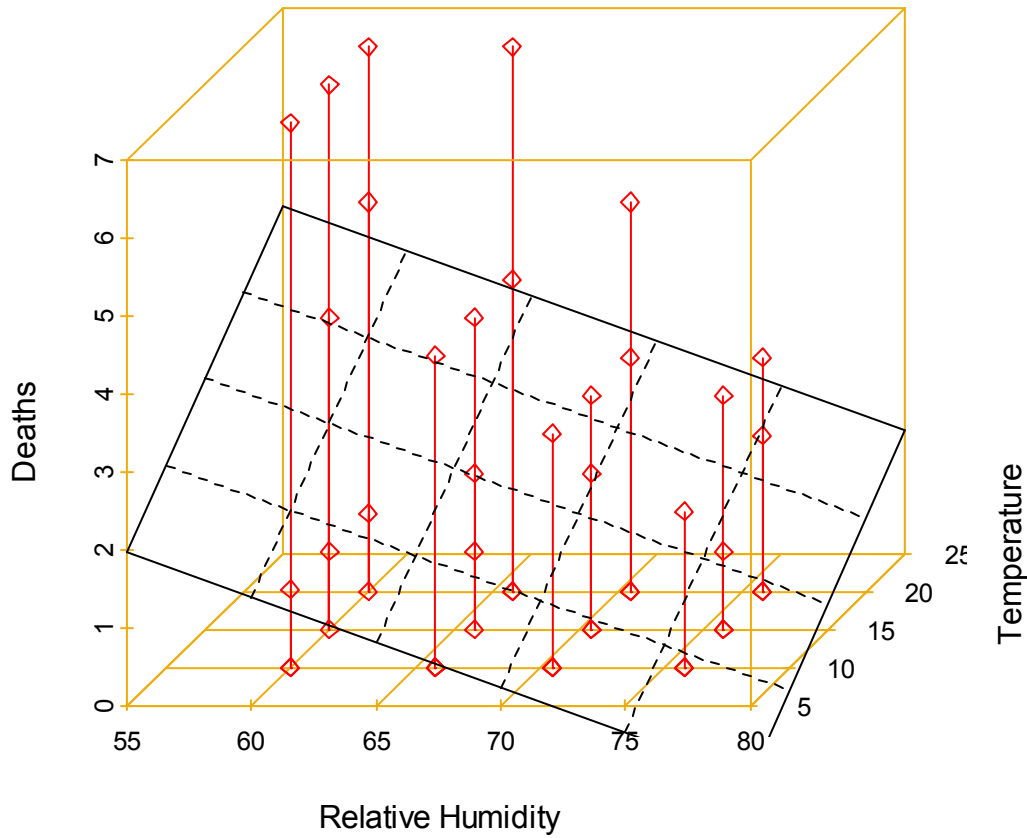
local({pkg <- select.list(sort(.packages(all.available = TRUE)),graphics=TRUE)

if(nchar(pkg)) library(pkg, character.only=TRUE)})

scatterplot3d(HA,TA,DA,color="Red",type="h",main="Effect of Relative Humidity and Temperature on Species A",xlab="Relative Humidity",ylab="Temperature",zlab="Deaths",tick.marks=TRUE,, col.axis="darkgoldenrod2", col.grid="darkgoldenrod2",

```
angle=55, scale.y=0.8,
pch=23,ylim=c(5:25),xlim=c(55:80))$plane3d(lm(DA~HA+TA),lty.box = "solid")
```

Effect of Relative Humidity and Temperature on Species A



```
scatterplot3d(HB,TB,DB,color="Blue",type="h",main="Effect of Relative Humidity and
Temperature on Species B",xlab="Relative Humidity",ylab="Temperature",
zlab="Deaths",tick.marks=TRUE,, col.axis="darkgoldenrod3", col.grid="darkgoldenrod3",
angle=55, scale.y=0.8,
pch=23,ylim=c(5:25),xlim=c(55:80))$points3d(HB,TB,DB,col=rainbow(12))
```

Effect of Relative Humidity and Temperature on Species B

