Spatial Visualisations

Neighbourhood structures

Jan-Philipp Kolb

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Outline

Get the right map

Find the nearest neighbours

More examples - spatial visualisation with R

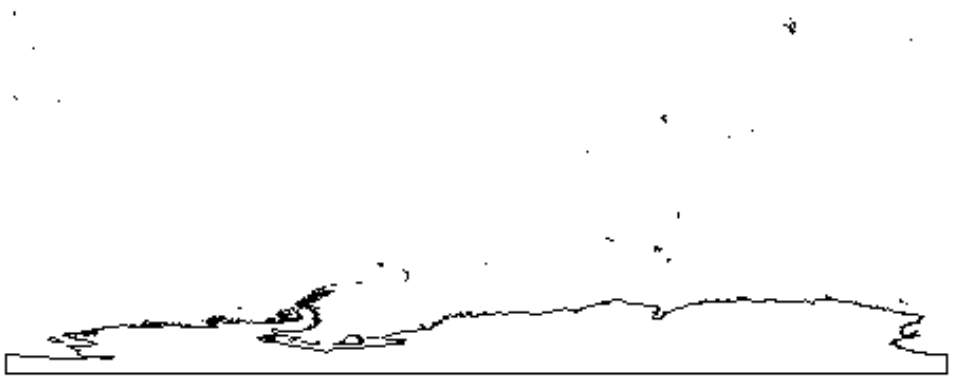
Outline

Get a map of Africa

```
library(maptools)
data(wrld_simpl)
Africa <- wrld_simpl[wrld_simpl@data$REGION==2,]
plot(Africa)
```

Get a maps of other world regions

```
Antarctic <- wrld_simpl[wrld_simpl$REGION==0,]
plot(Antarctic)
```



Get a maps of other world regions

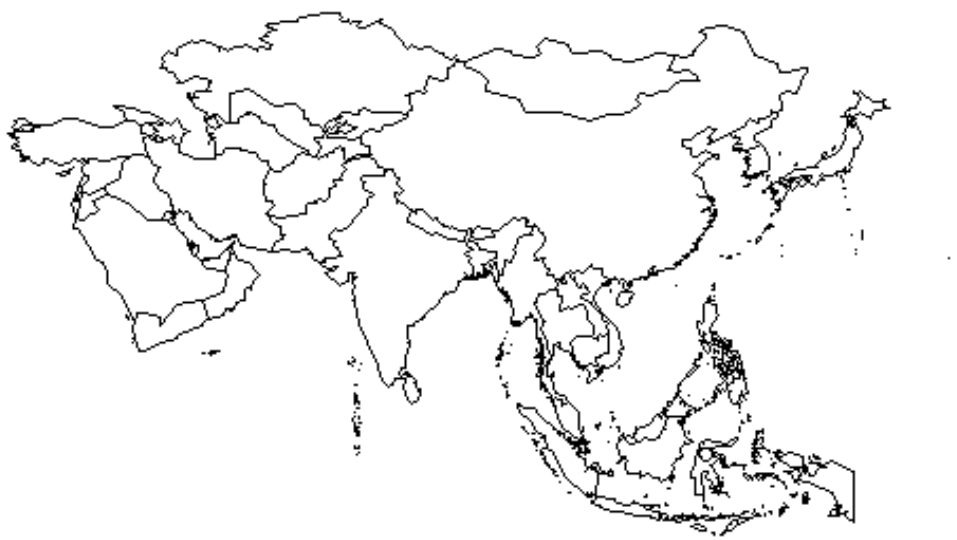
```
Australia <- wrld_simpl[wrld_simpl$REGION==9,]
plot(Australia)
```

Get a maps of other world regions

```
America <- wrld_simpl[wrld_simpl$REGION==19,]
plot(America)
```

Get a maps of other world regions

```
Asia <- wrld_simpl[wrld_simpl$REGION==142,]
plot(Asia)
```

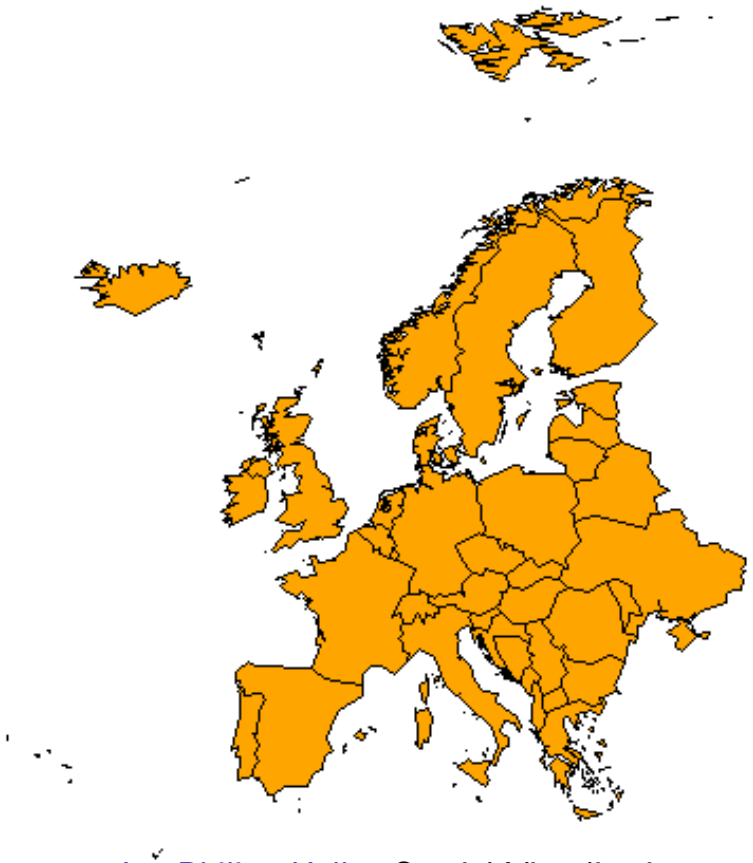


Get a maps of other world regions

```
Europe <- wrld_simpl[wrld_simpl$REGION==150,]
plot(Europe)
```

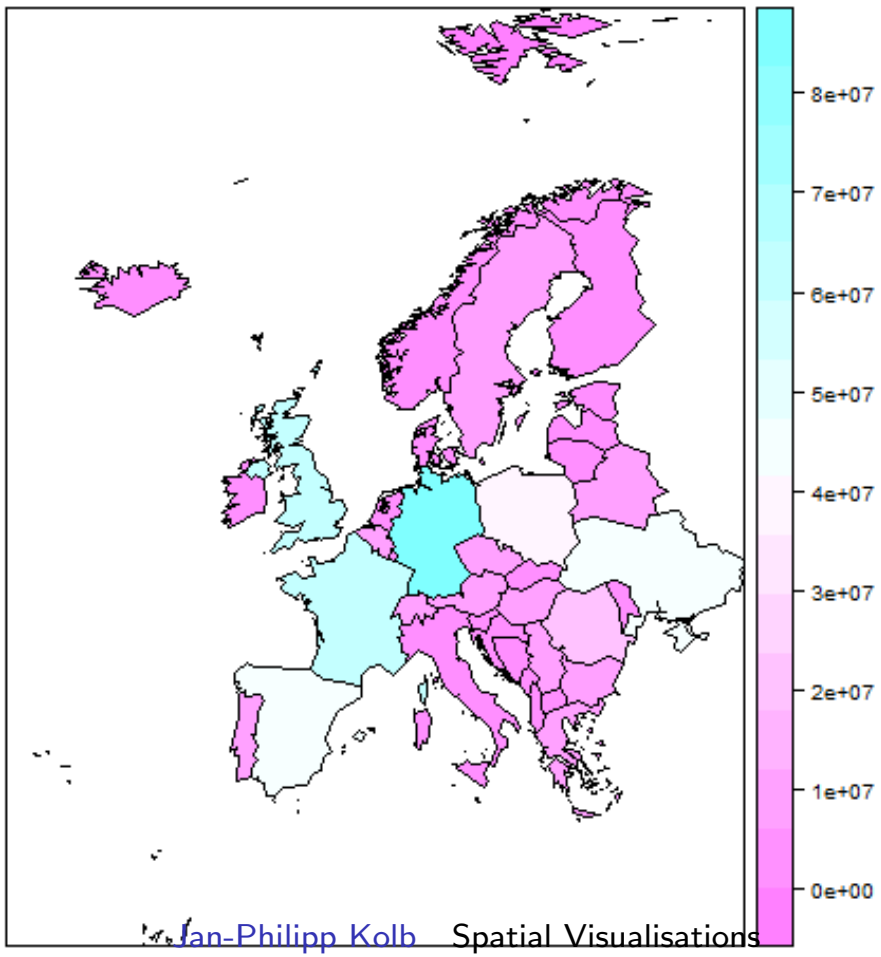
Deleting a country

```
Europe2 <- Europe[-which(Europe$NAME=="Russia"),]
plot(Europe2,col="orange")
```



The sp-package

```
spplot(Europe2,"POP2005")
```



Outline

Get the center of a polygon

```
library(sp)
library(spdep)
Af <- coordinates(Africa)
plot(Africa)
points(x=Af[1,1],y=Af[1,2],col="red",pch=20)
```

Find the nearest neighbours

```
Af_nb <- tri2nb(Af)
```

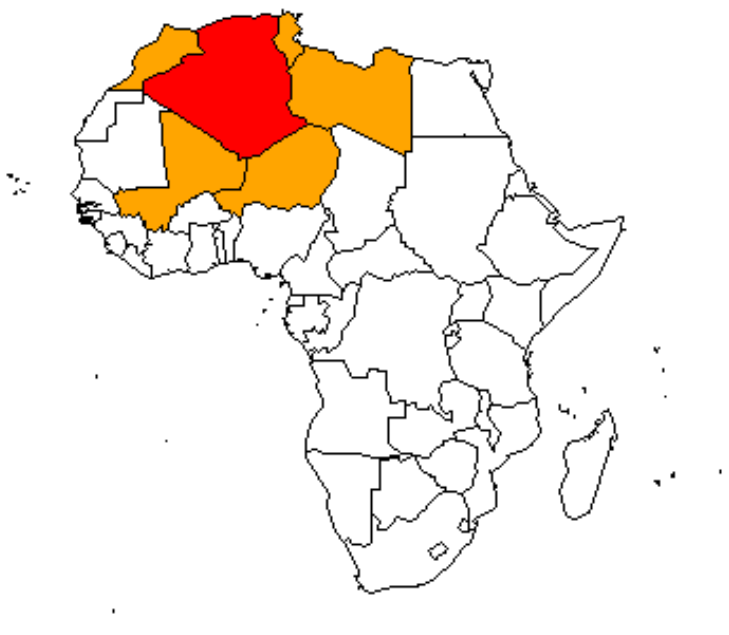
The neighbours for the first country:

```
Af_nb[1]

[[1]]
[1] 24 26 27 32 48
```

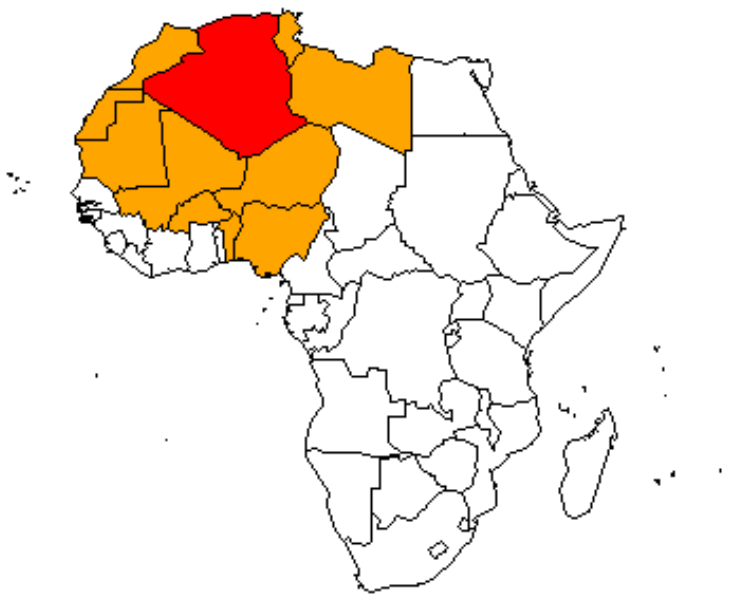
Find the nearest neighbours

```
plot(Africa)
plot(Africa[1,],col="red",add=T)
plot(Africa[Af_nb[1][[1]],],col="orange",add=T)
```



Find the nearest 10 neighbours

```
IDs <- row.names(as(Africa, "data.frame"))
Af10_nb <- knn2nb(knearneigh(Af, k = 10), row.names = IDs)
plot(Africa)
plot(Africa[1,],col="red",add=T)
plot(Africa[Af10_nb[1][[1]],],col="orange",add=T)
```



Compute the distance

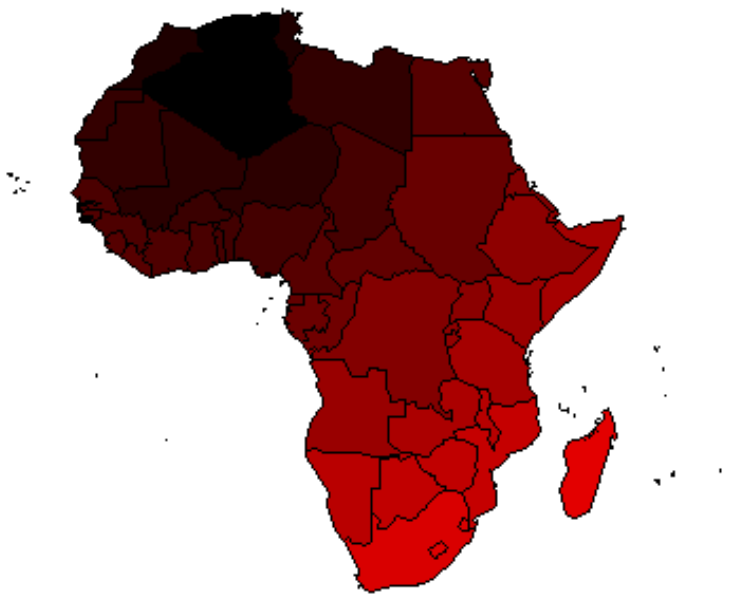
```
Af <- coordinates(Africa) # get centroid
library(raster)
pointDistance(Af[1:4,], lonlat=TRUE) # compute distance
```

Compute the distance

	1	2	3	4
1	0.00			
2	4789101.03	0.00		
3	2067138.93	2967661.45	0.00	
4	3501686.52	1303347.32	1844025.87	0.00

Compute/plot a distance matrix

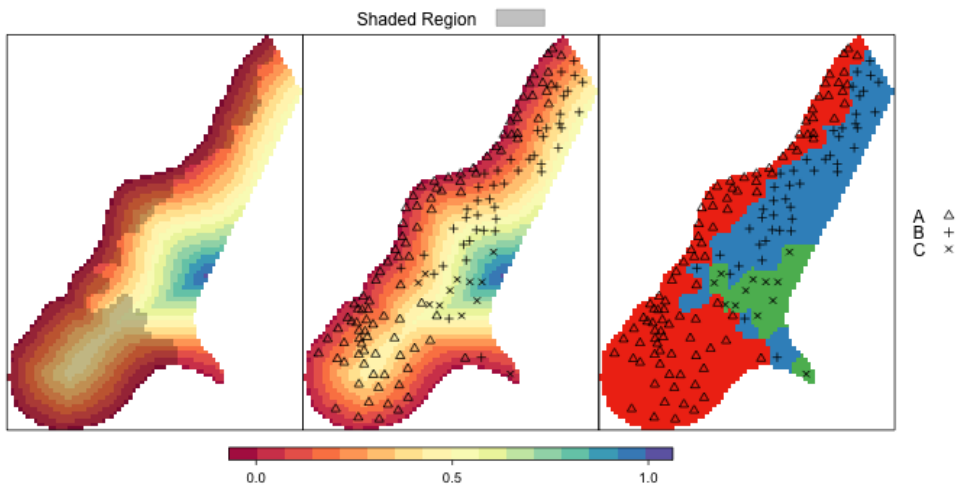
```
Dist_Af <- pointDistance(Af, lonlat=TRUE)
Af_color <- Dist_Af[,1]
Af_color <- Af_color/max(Af_color)
Af_color <- rgb(Af_color,0,0)
plot(Africa,col=Af_color)
```



Outline

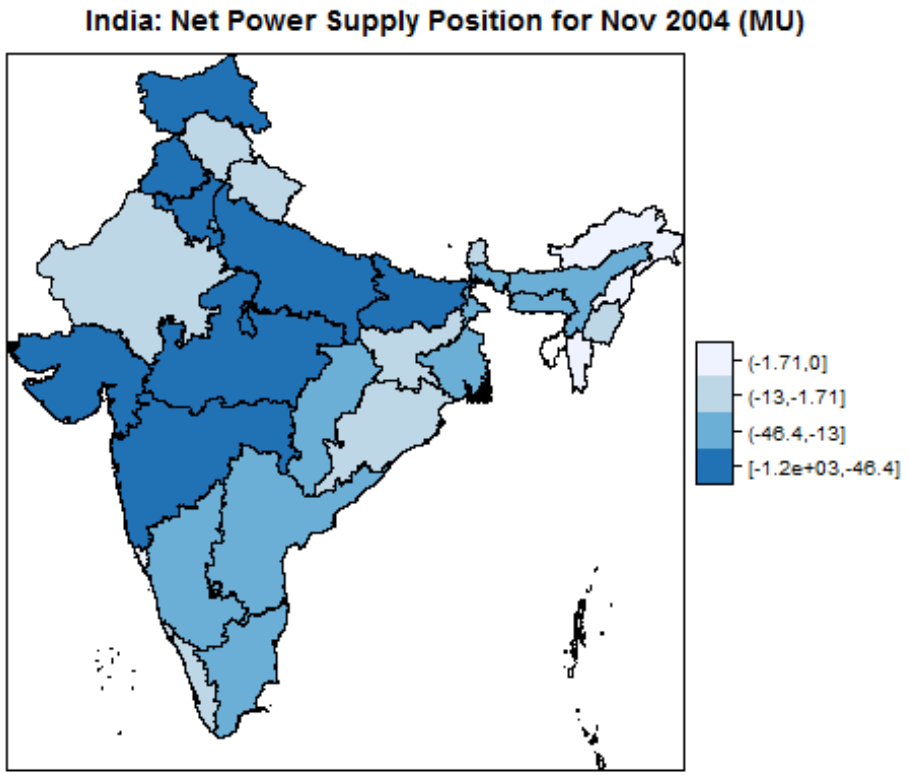
spplot() and latticeExtra functions

http://casoilresource.lawr.ucdavis.edu/drupal/node/962



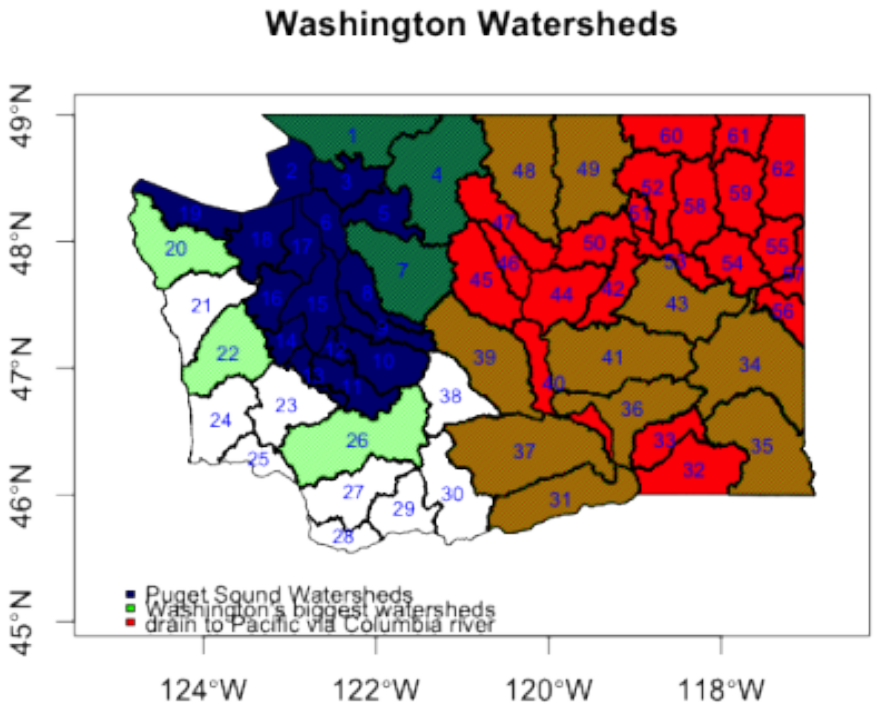
Know India through Visualisations - 1

http://justanotherdatablog.blogspot.de/2014/02/know-india-through-visualisations-1.html



Using R Working with Geospatial Data

http://mazamascience.com/WorkingWithData/?p=1277

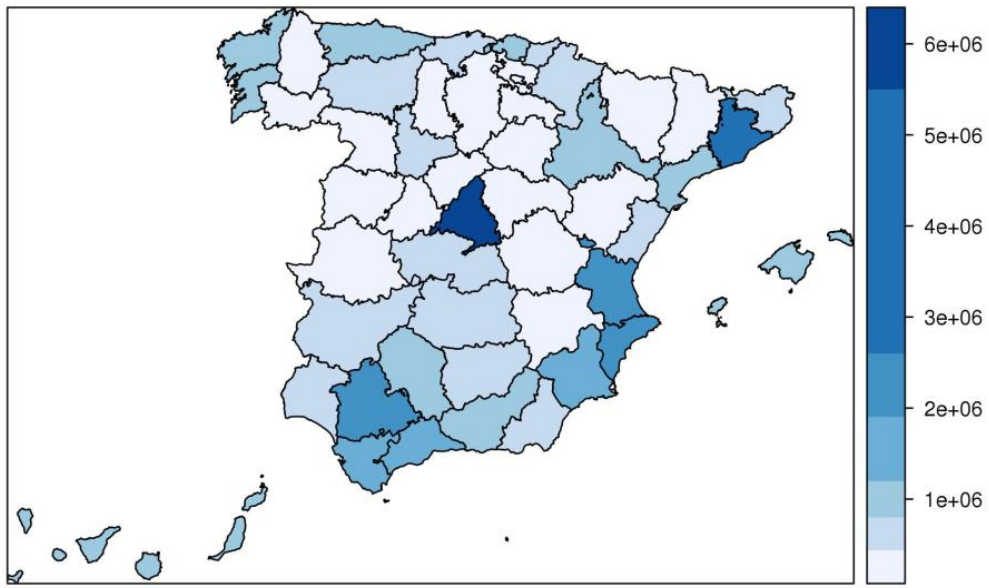


Very interesting blog

- http://procomun.wordpress.com/2013/04/24/stamen-maps-with-spplot/
- http://procomun.wordpress.com/2011/05/20/great-circles/
- http://procomun.wordpress.com/2011/06/17/raster-cmsaf-and-solar/
- http://procomun.wordpress.com/2012/02/18/maps_with_r_1/

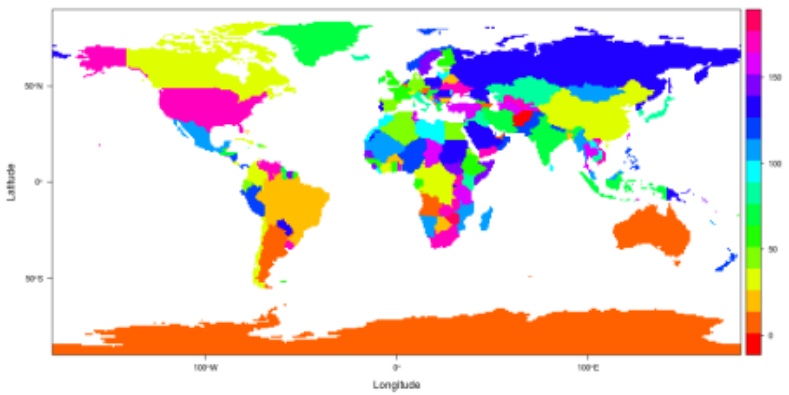
Maps with R (III)

http://procomun.wordpress.com/2012/02/23/maps_with_r_3/



Getting rasters into shape from R

http://johnbaumgartner.wordpress.com/2012/07/26/getting-rasters-into-shape-from-r/



Vote Compass: visualizing Canadian poll results with R

http://blog.revolutionanalytics.com/2011/12/vote-compass-visualizing-canadian-poll-results-with-r.html