

R-Paket spdep

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Das erste Gesetz der Geographie (TFLG)

“All things are related, but nearby things are more related than distant things” [Tobler, 1970]

Eine Karte von Afrika

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



Das Zentrum eines Polygonzuges

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



Die nächsten Nachbarn finden

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

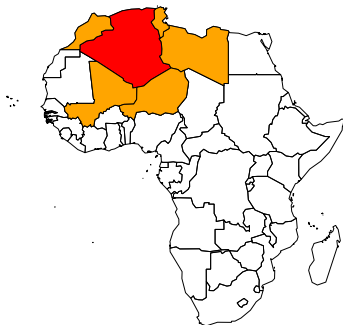
Die Nachbarn für das erste Land:

```
Af_nb[1]
```

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

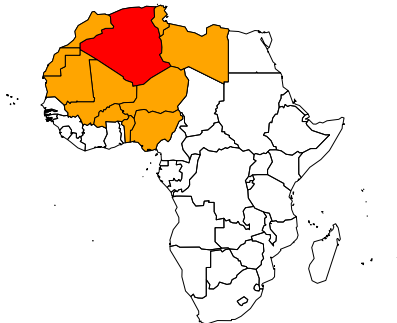
Die Nachbarn finden

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



Die 10 nächsten Nachbarn finden

```
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)
```



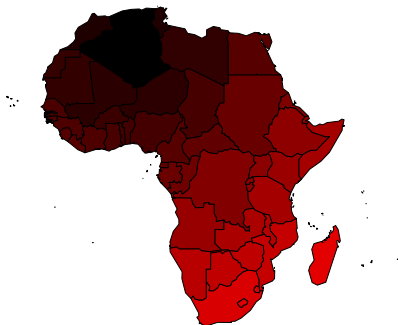
Die Distanz berechnen

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

##		[,1]	[,2]	[,3]	[,4]
##	[1,]	0	NA	NA	NA
##	[2,]	4763231	0	NA	NA
##	[3,]	2055609	2954497	0	NA
##	[4,]	3484053	1295173	1839191	0

Berechnen/zeichnen einer Distanzmatrix

```
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)
```



- Raster, CMSAF and solaR

<https://procomun.wordpress.com/2011/06/17/raster-cmsaf-and-solar/>

- Getting rasters into shape from R

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