

R-Paket spdep

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Themen dieses Abschnitts

- Eine räumliche Stichprobe ziehen
- Adressen für die gezogenen Punkte bestimmen
- Adressdatensatz bereinigen
- Wie lässt sich die Entfernung bestimmen

Das erste Gesetz der Geographie (TFLG)

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

Shapefile mit Regionalschlüssel herunterladen

```
library(rgdal)
```

```
## rgdal: version: 1.3-4, (SVN revision 766)
##   Geospatial Data Abstraction Library extensions to R succes
##   Loaded GDAL runtime: GDAL 2.2.3, released 2017/11/20
##   Path to GDAL shared files: D:/Programme/R-3.5.0/library/rg
##   GDAL binary built with GEOS: TRUE
##   Loaded PROJ.4 runtime: Rel. 4.9.3, 15 August 2016, [PJ_VEF
##   Path to PROJ.4 shared files: D:/Programme/R-3.5.0/library/
##   Linking to sp version: 1.3-1
```

```
setwd(vg250path)
```

```
VG250 <- readOGR ("VG250_GEM.shp", "VG250_GEM")
```

```
## OGR data source with driver: ESRI Shapefile
```

```
## Source: "I:\Work\GESTISPanel DATA\01 post processing\c01\ve 2
```

Räumliche Stichprobe

```
spatsamp <- spsample(VG250, 100, type="random")
```

Point in Polygon

```
tmp <- sp::over(spatsamp, VG250)
```

```
# EPSG: 3857
```

```
newData<-spTransform(spatsamp, CRS("+init=epsg:3857"))
```

```
# res <- spTransform(spatsamp, CRS("+proj=utm +zone=51 ellps=
```

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:

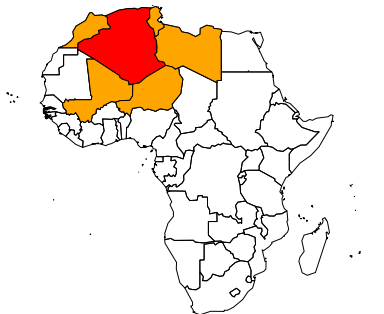
```
Af_nb[1]
```

```
## [[1]]
```

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

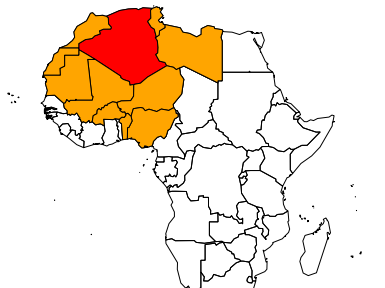

Die Nachbarn finden

```
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)
```



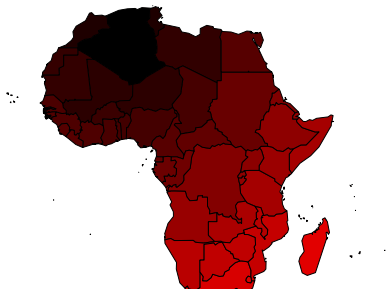
Die Distanz berechnen

```
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)
```



Aufgabe

```
library(sf)
lnd <- read_sf("../data/london_sport.shp")
```

- 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/>