

Zonal Statistics for GDP



Zonal statistics refers to the calculation of statistics on values of a raster within the zones of another dataset.

This project is a collaborative work of UXO India and IDFC.

In the following **example** the GDP of each state in India is calculated for 1990.

Load required libraries and packages [Packages are installed to use the required functions in the library]

```
library(rgdal) # To import raster data
library(maptools) # To plot the data
library(proj4) # To reproject raster
library(xtable) # To export data to html tables
library(raster) # Required for rgdal
library(rgeos) # Required for maptools
library(spatstat) # Analysing spatial point patterns
library(tiff) # Read TIFF images and required for rgdal
library(sp) # Required for maptools
library(data.table) # Modifying columns
library(modeest) # To calculate mode value for the zone
library(foreign) # Required for maptools
```

Setting the memory limit [To accommodate large data]

```
memory.limit(size = 100000)
```

```
## [1] 1e+05
```

To read shapefile and assign to a variable [zone]

```
Zone<-readOGR("D:/K/New folder/R Markdown/Input/SHP","State")
```

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

```
## Source: "D:/K/New folder/R Markdown/Input/SHP", layer: "State"
```

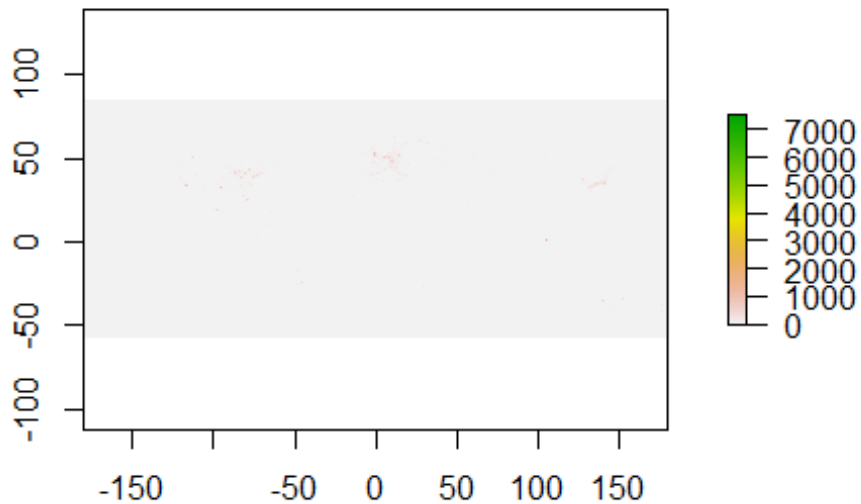
```
## with 36 features  
## It has 4 fields
```

```
plot(Zone)
```



To read Raster data and assign to a variable [Lumin]

```
Lumin <- raster("D:/K/New folder/R Markdown/Input/Economic data/gdp90_15mi.tif")  
plot(Lumin)
```



Calculate sum of the values of the raster data falling in the zone

```
out <- extract(Lumin, Zone, fun = sum, na.rm = T, small = T, df = T)
```

Assign the values 0 to NA

```
out[out == 0] <- NA
```

Extract the attributes from zone

```
z <- Zone@data
```

Bind the extracted attributes and the output

```
M <- cbind(z,out)
```

Write the output to the CSV format

```
write.csv(M,"D:/K/New folder/R Markdown/Input/Economic data/zonal_stat_GPW_2020_count  
_Dist_2001.csv", na="NA")
```