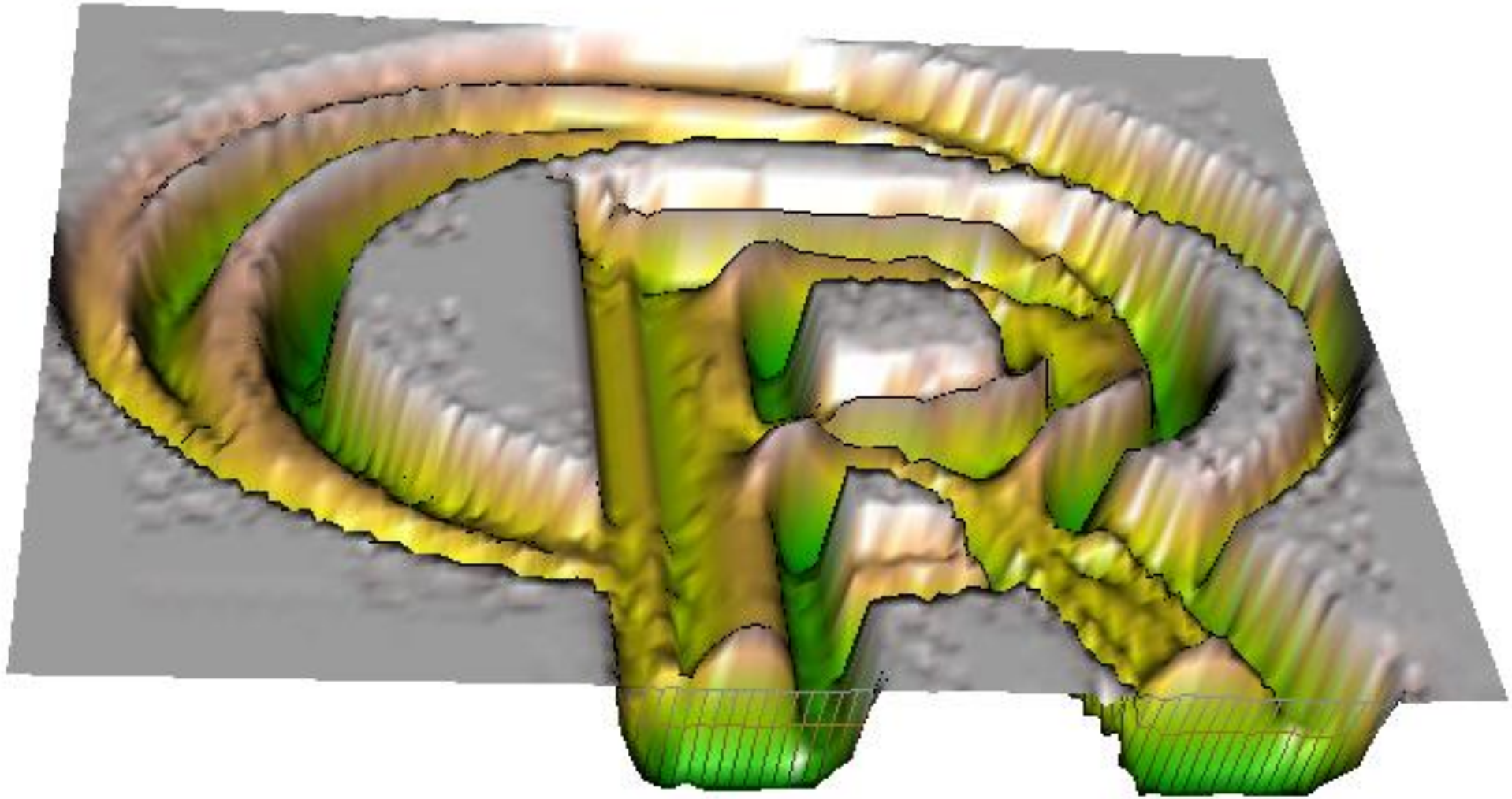
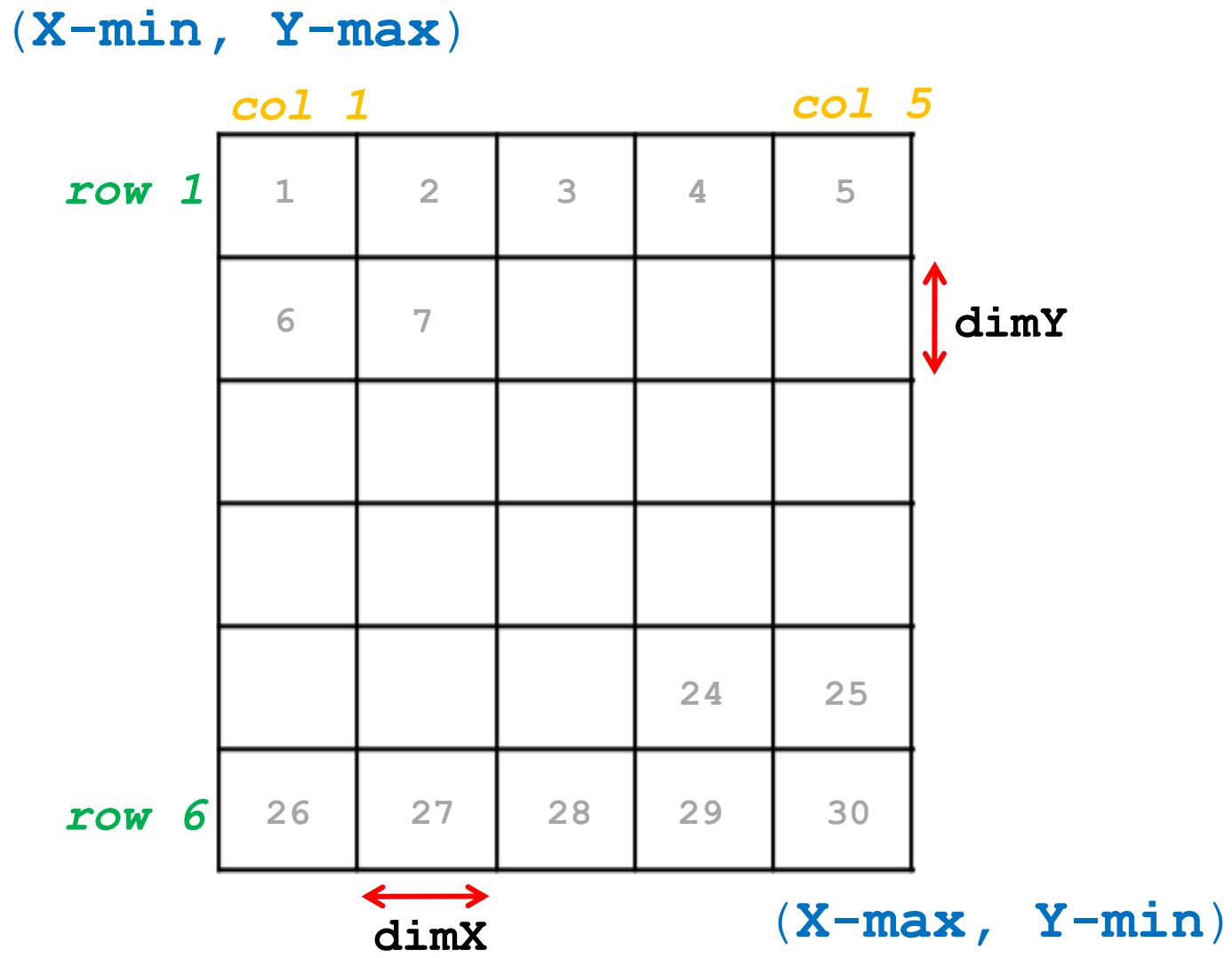
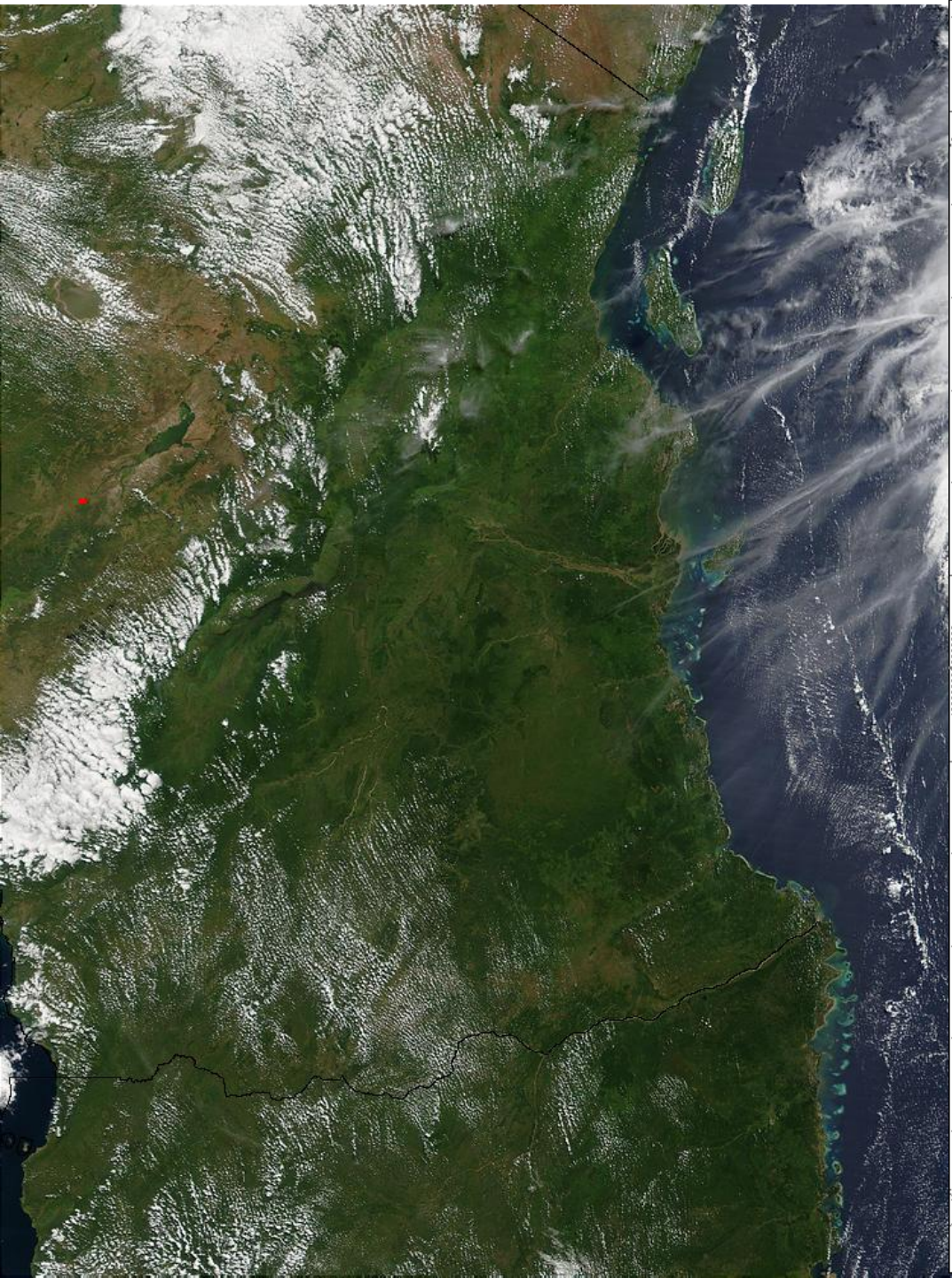
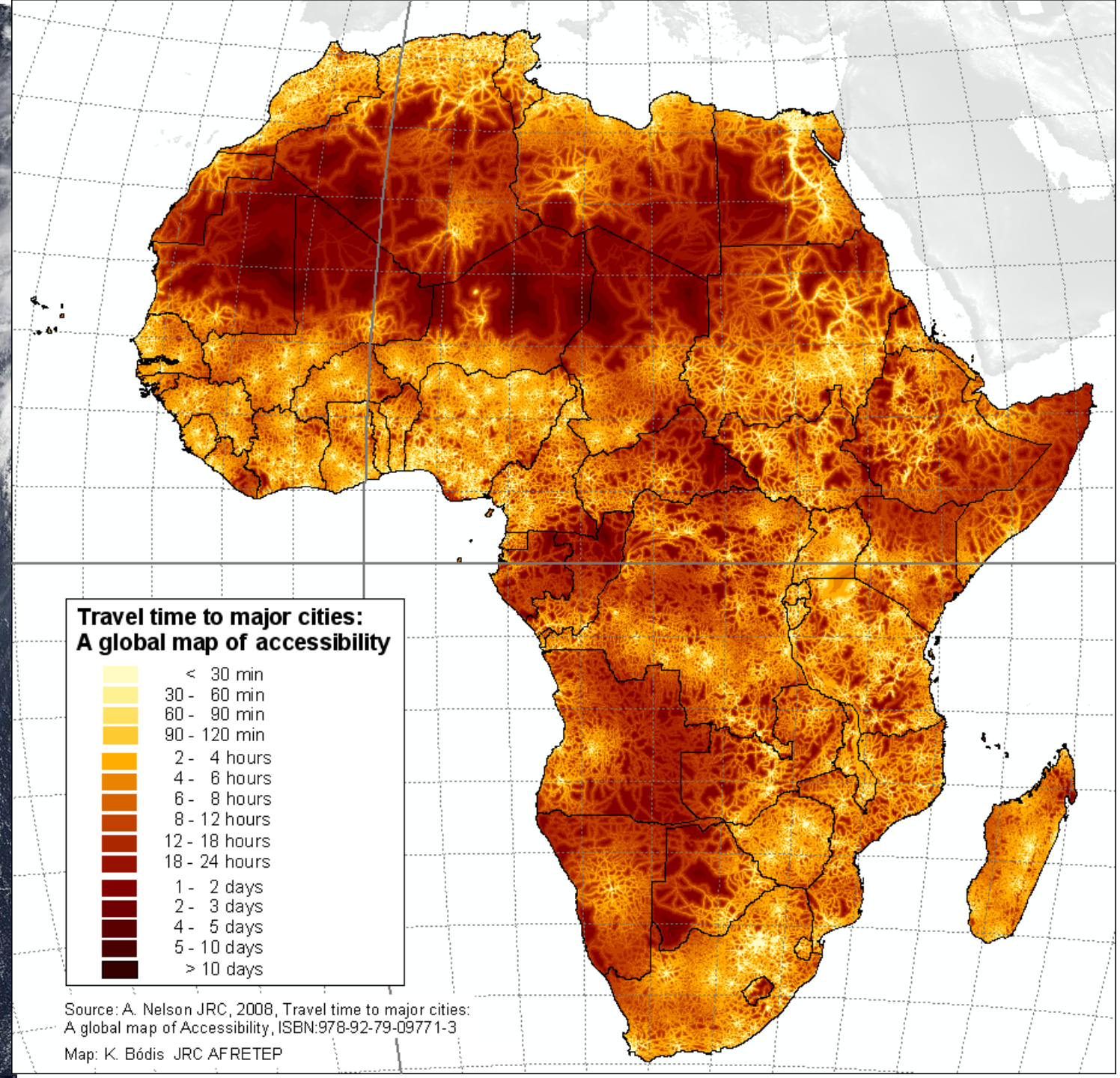
raster data

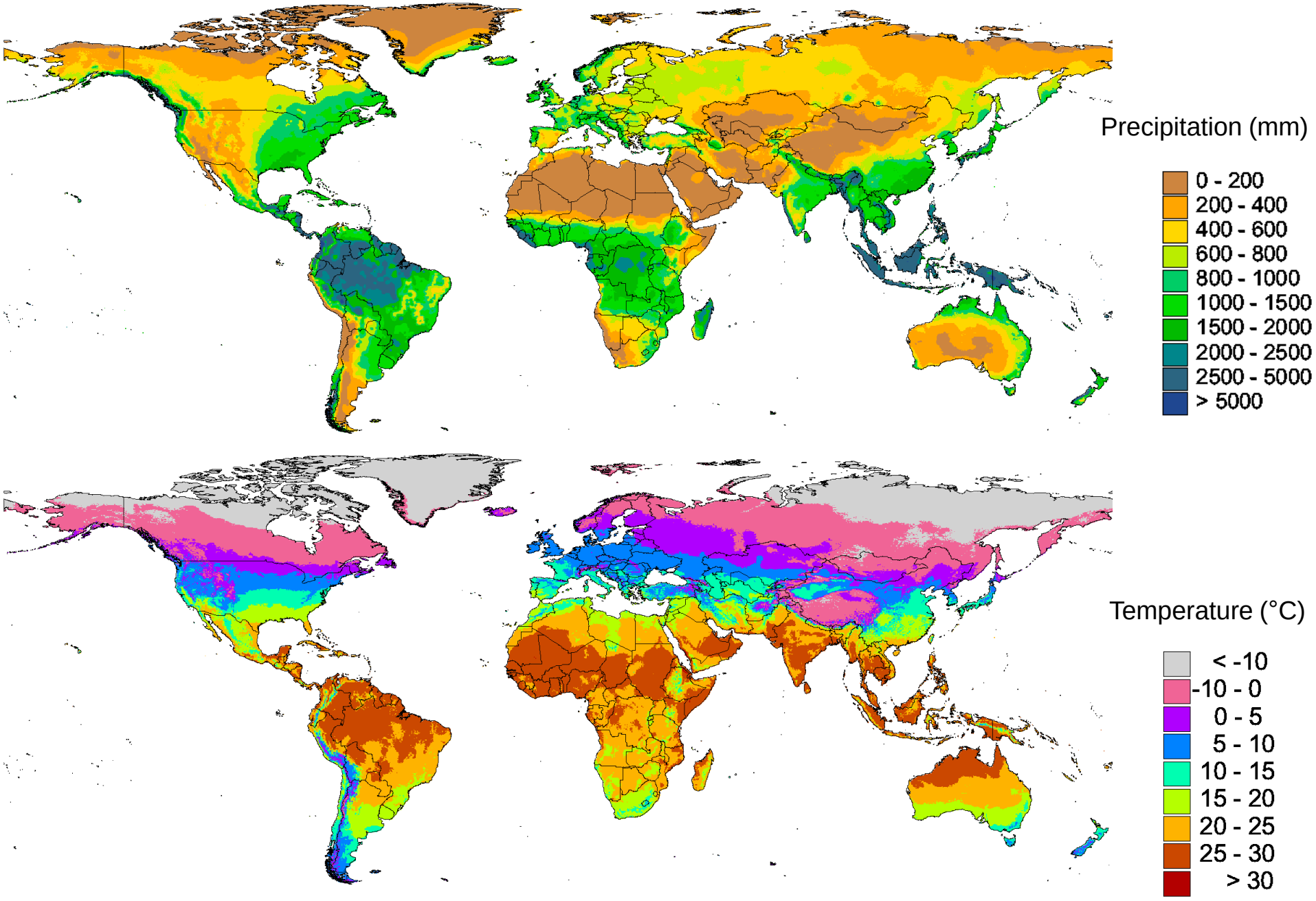


Raster data


(X-min, Y-max)
col 1
col 5
row 1
1
2
3
4
5
6
7
dimY
24
25
row 6
26
27
28
29
30
dimX
(X-max, Y-min)




Travel time to major cities:
A global map of accessibility
< 30 min
30 - 60 min
60 - 90 min
90 - 120 min
2 - 4 hours
4 - 6 hours
6 - 8 hours
8 - 12 hours
12 - 18 hours
18 - 24 hours
1 - 2 days
2 - 3 days
4 - 5 days
5 - 10 days
> 10 days
Source: A. Nelson JRC, 2008, Travel time to major cities:
A global map of Accessibility, ISBN:978-92-79-09771-3
Map: K. Bódis JRC AFRETEP


Precipitation (mm)
0 - 200
200 - 400
400 - 600
600 - 800
800 - 1000
1000 - 1500
1500 - 2000
2000 - 2500
2500 - 5000
> 5000
Temperature (°C)
< -10
-10 - 0
0 - 5
5 - 10
10 - 15
15 - 20
20 - 25
25 - 30
> 30

terra package

SpatRaster class for raster data

no file size (or format) restrictions

> 200 functions

SpatRasterDataset
SpatRasterCollection

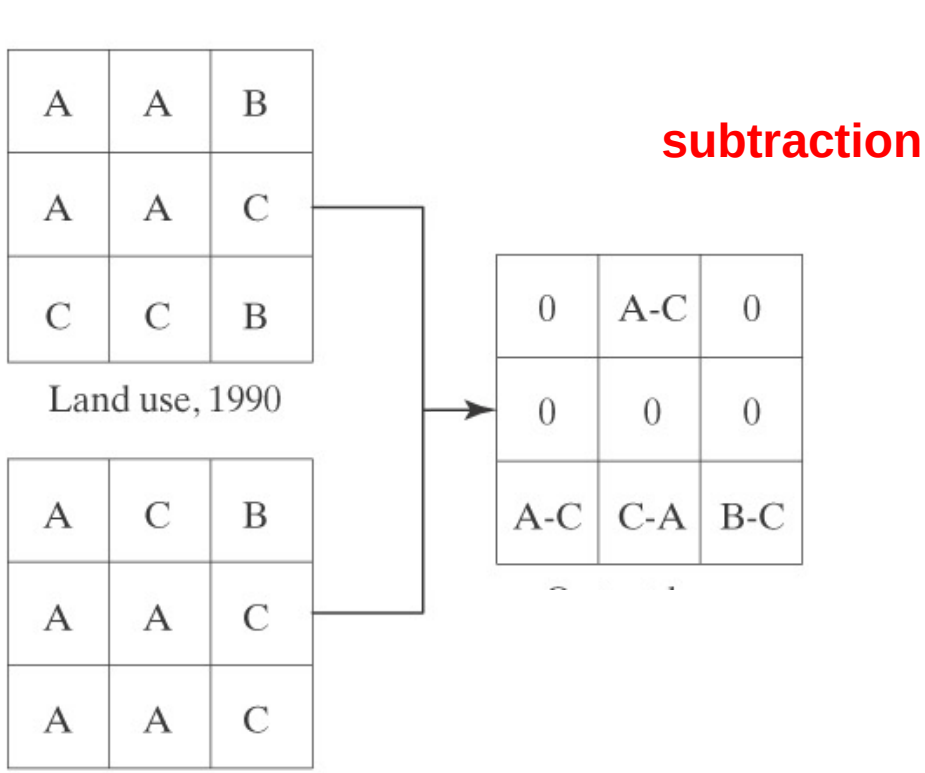
SpatRaster

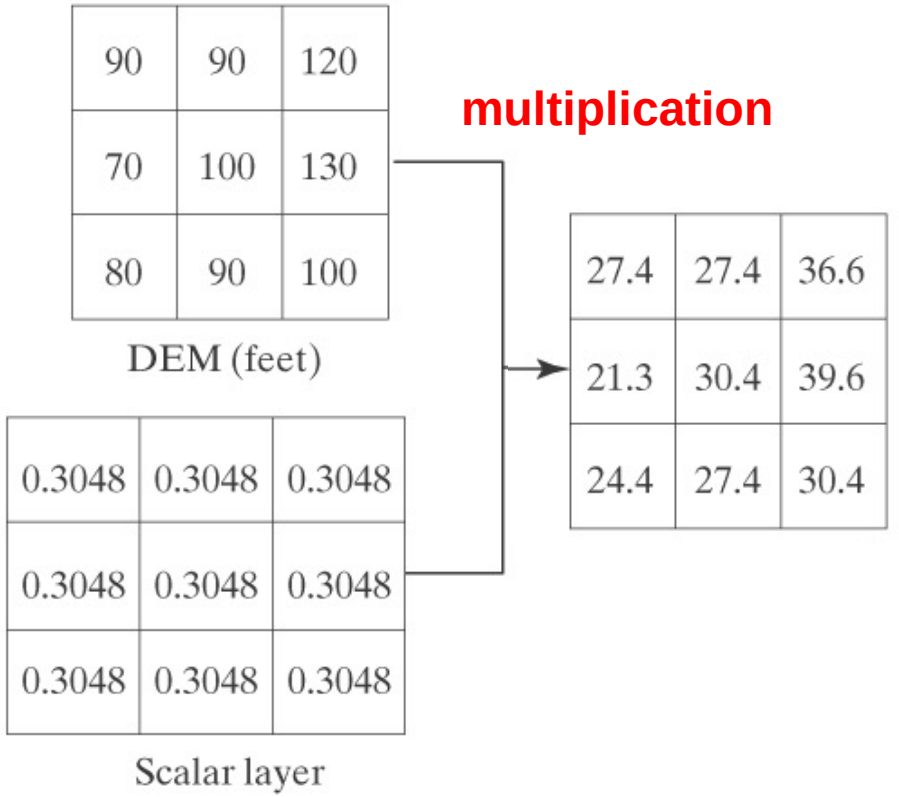
```
> library(terra)
>
> x <- rast()
>
> x <- rast('volcano.tif')
>
> x
class       : SpatRaster
dimensions  : 87, 61, 1  (nrow, ncol, nlyr)
resolution  : 10, 10  (x, y)
extent      : 2667400, 2668010, 6478700, 6479570  (xmin,
Coord. ref. : +proj=nzmg +lat_0=-41 +lon_0=173 +x_0=251
source(s)   : memory
min value   : 94
max value   : 195
```

Basic functions

```
ncell(x)

xyFromCell(x, 10)

getValues(x, row)

writeRaster(x, filename, …)
```

Raster algebra





Raster algebra

```
r <- raster(nc=10, nr=10)
values(r) <- 1:ncell(r)
q <- sqrt(r)
x <- (q + r) * 2

s <- stack(r, q, x)
ss <- s * r
```

Raster manipulation

merge, crop,

project, aggregate,

classifcy, resample,

rasterize, …

Raster analysis

`distance,`

`focal,`

`predict,`

…

and other *R* functions
and external models