# Mapping with R

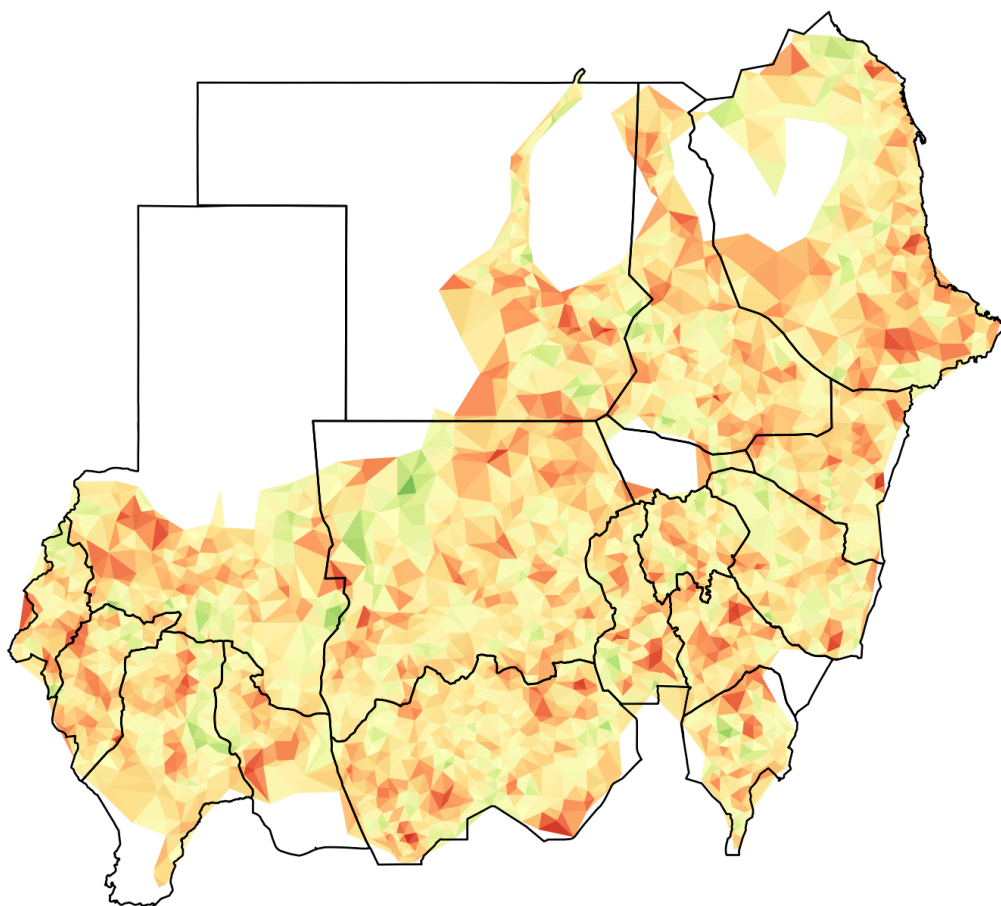*Ernest Guevarra*

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# Contents

# Short course on the use of R for the mapping requirements of S3M

# 1 Retrieving map data in R

In this exercise we will use **R** to read a **shapefile** dataset and get oriented with the structure and features of a **shapefile** dataset. The aim of the exercise is for you to become familiar with the use of R in handling **shapefile** datasets.

By this time, you have already learned how to issue a command to retrieve a standard or typical dataset using the `read.table()` function

For this exercise, we will use the `readOGR()` function provided by the `rgdal` package to retrieve **shapefile** dateset.

First, we need to install and load the `rgdal` package.

```r
install.packages("rgdal")
library(rgdal)
```

We can now try to read the Sudan **shapefile**. To do this however, we need to have an orientation on what **shapefiles** are.

A **shapefile** is a digital vector storage format for storing geometric location and associated attribute information. This format lacks the capacity to store topological information. The **shapefile** format was initially developed for proprietary use with ArcView GIS version 2 in the early 1990s. It is now possible to read and write **shapefiles** using a variety of programs including data analysis software such as **R**.

**Shapefiles** are simple because they store the primitive geometric data types of points, lines, and polygons. They are of limited use without any attributes to specify what they represent. Therefore, a table of records will store properties/attributes for each primitive shape in the **shapefile**. Shapes (points/lines/polygons) together with data attributes can create infinitely many representations about geographic data. Representation provides the ability for powerful and accurate computations.

While the term "shapefile" is quite common, a **shapefile** is actually a set of several files. Three individual files are mandatory to store the core data that comprise a **shapefile**:

- .shp
- .shx
- .dbf

The actual **shapefile** relates specifically to `.shp` files but alone is incomplete for distribution, as the other supporting files are required.

# 2   Plotting maps

# 3 Manipulating shapefile data