W08-1: Spatial data I/O and simple classification

This worksheet introduces the handling of spatial data sets. After completing this worksheet you should be able to read raster and vector files and perform simple data manipulations.

Things you need for this worksheet

- R — the interpreter can be installed on any operation system. For Linux, you should use the r-cran packages supplied for your Linux distribution. If you use Ubuntu, this is one of many starting points. If you use windows, you could install R from the official CRAN web page.
- R Studio — we recommend to use R Studio for (interactive) programming with R. You can download R Studio from the official web page.
- Fogo field survey 2014 - a subset of the BIS-Fogo field survey data from 2014 can be downloaded from an internal university server.
- Fogo Landsat 11/2014 - a subset of a Landsat scene from 11/24/2014 over Fogo, Cape Verde, can be downloaded from an internal university server.

Learning log assignments

😎 As always, please add these entries to your today's learning log at teachwiki:

- Favorite aspect of the session (if any)
- Superfluous aspect of the session (if any)
- Eureka effect (if any)
- Links to what I've learned so far (if any)
- Questions (if any)

For more information see this short howto.

As today's special, please complete the following assignment:

On November 23rd, 2014, Pico Pequeno erupted on the island of Fogo, Cape Verde. For the current status have a look at BIS-Fogo's Facebook page.

On November 26th, Landsat data has been collected over Fogo and a calibrated subset of this scene can be found in the dataset mentioned above. Within the caldera of Pico the Fogo and Pico Pequeno, an ecological field survey has been carried out in September 2014. The data set is also available as CSV table.

😕 Please write an R script which uses band 10 of the Landsat scene to map the extend of active (i.e. hot) lava flows. A simple threshold-based classification is fine.

😕 After you have identified the lava flow, please produce a map type figure of it. Contrast stretch etc. can be neglected as long as the lava flow can be clearly distinguished from the surroundings. Hence,

a bitmap image will be as fine as a true color composite with an overlay of the lava flow.

Finally, add the locations of the 2014 field survey on top of your map-type figure. The geographical information within the CSV file is based on geographic coordinates on a WGS84 ellipsoid.

After you have finished your code, please upload it to your learning log along with the finally produced map.

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