W04-2: Land cover classification

Once training sites are available, we can start with classifying the Landsat scene. In this worksheet, we will use Random Forest as a classifier.

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.

- W03-1: Read remote sensing data
- W04-1: Training sites

Learning log assignments

Load the cropped Landsat bands 1-7 and the training site shapefile into R. Make sure that both datasets are in the same projection.

Extract the information of the landsat bands for the location of the training sites. Return the results as a data.frame

Add a new column to the data.frame which contains the land cover information from the training site shapefile

Split your dataset into training and testing data (e.g. 30% Testing, 70% Training).

Use the training dataset to train a random forest model that is able to predict the land cover class from the spectral Landsat bands.

Explore which bands were important in the model

Use the model to predict on the entire Landsat scene. Plot your results with spplot.

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