Identification of climate regions by means of Remote Sensing

Descripción:
Flora and Fauna are distributed along biogeographical regions, highly correlated with climate regions in many cases. Biogeographical regions are determined by joining all species with a similar distribution. However, climate regions can be identified by Remote Sensing techniques. This proposal aims to analyse which is the best statistical technique of data mining to identify the different climate regions inside a specific study area using data derived from satellite imagery. Several scales will be used: Portugal, Iberian Peninsula, and Europe. Depending on the scale, different sources of environmental data will be used: ASTER GDEM or Shuttle Radar Topography Mission (altitude data), MODIS (climatic data), Landsat (vegetation, NDVI). Several classification techniques will be considered: unsupervised classification by K-means and ISODATA, k-nearest neighbours' algorithm, spatial Principal Components Analysis, neuronal networks, support Vector Machines, random forest, decision trees, and other techniques of data mining and machine learning. It is expected that each data mining techniques will provide different results. Köppen climatic classification will be consider as background for comparisons. Thus, it will be measured the differences in the number and distribution of climatic regions between data mining techniques and between them and Köppen classification.

Referencias:
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