



Application of remote sensing and GIS-methods for the regional climatic characterisation of the high mountain region of Corsica, France

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The microclimatic conditions and the spatial distribution of vegetation display a high correlation in rugged mountains. Thus, their vegetation cover indirectly indicates differentiation of microclimate conditions hardly coverable by meteorological instrumentation. In this study, we have studied the spatial distribution of characteristic trees, forest line, tree line, and seasonal snow lines. The climatic distribution pattern is also compared with the climatic differentiation during the last Glacial Maximum, as reflected by the climatic snowline.

The seasonal snow cover was mapped on two satellite images from April, during the snow melting period. For vegetation mapping a summer Landsat image has been used. Supervised classification was accomplished with training areas mapped in May 2006. The generated land cover map and seasonal snow cover maps were combined with a digital elevation model (DEM) in ArcInfo, and analyzed with respect to slope and aspect. The combination of the vegetation map with a digitized geological map unraveled a dependence of vegetation type with bedrock, such as lack of beech trees on rhyolite substratum. Glacial moraines, according to published maps and own mapping, provide deep and moisture-rich soils favourable of beech tree expansion even in dry south to southwest aspect, if a critical amount of summer precipitation is provided (south-central Corsica).

The integration of multitemporal satellite images, DEM, field work data and various GIS-layers, as well as the conceptual application of remote sensing and GIS enabled to assess the regional climatologic characteristics of the high mountains of Corsica.