Ecoregion Classification in Korea based on Analysis of Geospatial Variables

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The purpose of this research is to classify the Ecoregion of the Korean peninsular including South and North Korea by using the MODIS images, which have the 250m to 1 km spatial resolution and the geospatial variables such as climate, topography, watershed. In order to classify the ecological region of the Korean Peninsular, the principal factors, concluding the Ecoregion of the Korean Peninsular, are divided into climate property, topography property, watershed and vegetation property. Among the biggest hierarchy, the important variable is climate factor. River flow and its watershed are considered as second factor. The third primary factor is related to vegetation and used NDVI acquired by the satellite image. Especially, in order to classify the Ecoregion, MODIS images is converted to polygon after the landcover large classification and combined watershed. The mean value of continuous data is valued in categorical data by Zonal Function. And each variables are clustered by similarity between factors.

Results of the analysis by the above methods can be summarized as follows. First, I classified the ecological regions from 5 to 11 regions and divided them by each group according to geospatial variables and then showed this division by each group is voluntary through statistical authorization. Second, the amount of precipitation by months and NDVI are grouped into each three and two factors through the factor analysis of the relation among the geospatial variables (Topography, Climate, Location, Vegetation Index). Third, each Ecoregion is explained by the characteristic of geospatial Variables. Fourth, the clear Ecological boundary, has been drafted uncertainly by botanist's survey, can be defined using GIS and Remote Sensing. Fifth, Forest Pattern is very different in the boundary of cease-fire line, because of North Korea's carelessness and felling after the Korean division.

The research can be used in the study which understands an environment from under connection of the geography area and solves the environmental matters by the discriminated approach.