THE CLASSIFICATION OF FOREST TREE SPECIES USING SATELLITE IMAGERY IN MONGOLIA

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ABSTRACT:

Forest is a very important ecosystem and natural resource for living things. Based on forest inventories, government is able to make decisions to converse, improve and manage forests in a sustainable way. Field work for forestry investigation is difficult and time consuming, because it needs intensive physical labor and costs, especially surveying in a widely and remotely mountainous area. A reliable forest inventory can give us more accurate and timely information to develop new and efficient approaches of solving problems in a forest area. The remote sensing technology have been recently used for forest investigation for large scale. To produce an informative forest inventory, forest attributes, including tree species and ages, are necessarily investigated. This research focuses on the classification of forest tree species in Erdenebulgan sum, Huwsgul province, Mongolia, using satellite imagery. The study area covers a forest area of 4230.1km2 and located in a high mountain region in northern Mongolia. Landsat 7 satellite imagery in July, 2011 were used. In this study, supervised classification, support vector machine (SVM), involving the use of normalized difference vegetation index (NDVI) and 30x30 m digital elevation model (DEM), are applied to tree species classification.

Result shows that main six different tree species were classified using Landsat data and the percentage of coniferous species was found to be nearly 75% of the total vegetation, whereas, broadleaved specie were estimated to be 20%. We suggest that a better result could be obtained, if a high spatial resolution imagery can be used in image classification analysis.

SUGGESTED TOPICS:

Remote sensing applications, forestry /ecosystem destruction

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