

A land cover - use change study for Kastamonu Province using NDVI values

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Abstract: Today, Global warming is one of the most important issues all around the world. This problem is basically the result of human activities for the last 100+ years. Altering land cover by means of human influences can be counted as one of those activities. Although such topics have long been studied extensively by scientists, studies on the current statuses of some regions and the improvements which can be acquired by implementing new techniques are popular and important today. NDVI (Normalized Difference Vegetation Index) is a remote sensing measurement technique, which provides us important data about green vegetation. Basically, NDVI values are obtained by dividing the difference between the NIR (Near Infrared) band and the VIS (Visible) band divided by the sum of the two. In this research, a 25 year land use history of Kastamonu province was analyzed to demonstrate the negative and positive changes in several different categories. In addition, this study investigated the accuracy of land cover classification derived through Landsat NDVI. Level 1 Landsat 8, 7 and 4-5 images, obtained at different times and seasons, were used in order to calculate and categorize the NDVI values. Forest management plans, topographical maps and DEMs (Digital Elevation Model) were used to increase the accuracy. As a result of this study, the changes in the Kastamonu province were revealed with high accuracy. Besides, reductions and increases in forest cover, agricultural activities, barren lands and residential areas were well established and mapped. Such work indicates climate change level as a result of land degradation, and is an important outcome for decision makers and city planners to interfere and change things for good.

Keywords: Land cover, NDVI, Climate change, Global warming, GIS, Remote sensing