MONITORING FOREST COVER CHANGE USING MODIS DATAA case study of middle region of Vietnam

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Forest is an important resource relating to global climate problems, CO2 cycle, water resource, flood, erosion and many other environmental troubles. So, monitoring and detecting the changes of forest cover are very necessary. Forest usually distributes in the terrains that are very difficult for monitoring and measuring on ground. Remote sensing is a very powerful tool to solve this problem.

The recent years in Vietnam, deforestation occurs very quickly but statistical data and tools for monitoring forest cover change are not sufficient. This thesis was done with purpose using remote sensing data to develop a method for monitoring and detecting the changes of forest cover annually. Products of this study include Land Cover Map, Forest Map and Forest Cover Change Map

Study area is a middle region of Vietnam including 10 provinces (about 80,000km2). Multi-temporal MODIS data 250m and 500m 8-day composites in 2000 and 2004 were used. These data were resampled to 9 second resolution (0.0025degree). Then, MODIS data was combined together to remove cloud for making monthly composites by a new model. Training sites were collected based on GPS photos, existed maps and landsat-ETM images. These training sites were used for classifying both 2000 and 2004 data. Each training site was divided to 2 parts: 80% for classification and 20% for validation. Decision tree classification method was used to make land cover maps. Confusion matrix was used for validation. Accuracy of forest classes is estimated greater than 85%. Then, Land cover maps were combined with some other thematic maps like: Rainfall maps (12 months and year), soil map and DEM by a forest distribution model to make forest maps. Finally, Forest maps of 2000 and 2004 were combined together to detect the change of forest and make forest cover change map period 2000 - 2004.