Detection of Forest Degradation Using MODIS Imagery in East Kalimantan, Indonesia

S. Wodjojo, M. Darmawan, A. Poniman, N. Maulida & A. Sutanto
Geospatial Information Agency / BIG
Jalan Raya Jakarta-Bogor, km 46 Cibinong 16911, Indonesia
Phone / Fax: +6221 87906041
E-mail: Suharto_widjojo@yahoo.com

Abtracts

Indonesia's tropical rain forest is one of the most endangered forests on the earth. In the period between 1990 and 2005, the State of Indonesia has lost more than 28 million hectares of forests, including 21.7 percent of virgin forest. The decline of primary forests are biologically rich is the second under Brazil. The number of forests in Indonesia continues to decline, and many were destroyed by human activities. Data in 1960, as many as 82% of the country is covered by tropical moist forest in Indonesia, fell to 68% in 1982, 53% in 1995, and 49% at the moment. Generally, these forests can be categorized as degraded forests. Humans are the main cause of degradation of tropical rain forests. In Indonesia, destructive human activities such as logging, mining in forest areas, agriculture, roads, villages, and farms. Forests in Indonesia is now in serious condition after losing more than two million hectares of forest every year. Damage mainly occurs in tropical rain forests of East Kalimantan in Borneo especially in recent years. Satellite data is important in managing natural resources, including in humid tropical forests in the study area. Tropical rain forests in Indonesia are the global ecosystem role as breathing world. Forest in East Kalimantan, Indonesia has become a subject for the expansion of timber, agriculture and plantations and settlements for years.Deforestation means the loss of a continuous or continual degradation due to abuse of human needs, such as agriculture, urban life, sustainable forestry practices are illegal, mining and petroleum exploration. Although it has undergone many changes due to land clearing, forest degradation, both spatially and temporally rarely studied, especially in Indonesia.

The purpose of the study was to evaluate the ability of satellite remote sensing of moderate resolution (MODIS) to detect degradation. The method used to detect the level of degradation of forest used change detection method. Results of analysis of MODIS image data showed that the trend of decline in forest cover change in East Kalimantan reached 3,029,538 ha of degraded forests 4,736,444 ha (MODIS image 2003). Degraded areas turned into 7,054,482 ha (MODIS image 2008). The results of this study indicate that the MODIS image has ability to detect foreast degradation in East Kalimantan properly.