

Application of Remote Sensing for Monitoring the Impact of Lapindo Mud Sedimentation for Mangrove Ecosystem, Case Study in Sidoarjo, East Java

Authors : Akbar Cahyadhi Pratama Putra, Tantri Utami Widhaningtyas, M. Randy Aswin

Abstract : Indonesia as an archipelagic nation have very long coastline which have large potential marine resources, one of that is the mangrove ecosystems. Lapindo mudflow disaster in Sidoarjo, East Java requires mudflow flowed into the sea through the river Brantas and Porong. Mud material that transported by river flow is feared dangerous because they contain harmful substances such as heavy metals. This study aims to map the mangrove ecosystem seen from its density and knowing how big the impact of a disaster on the Lapindo mud to mangrove ecosystem and accompanied by efforts to address the mangrove ecosystem that maintained continuity. Mapping coastal mangrove conditions of Sidoarjo was done using remote sensing products that Landsat 7 ETM + images with dry months of recording time in 2002, 2006, 2009, and 2014. The density of mangrove detected using NDVI that uses the band 3 that is the red channel and band 4 that is near IR channel. Image processing was used to produce NDVI using ENVI 5.1 software. NDVI results were used for the detection of mangrove density is 0-1. The development of mangrove ecosystems of both area and density from year to year experienced has a significant increase. Mangrove ecosystems growths are affected by material deposition area of Lapindo mud on Porong and Brantas river estuary, where the silt is growing medium suitable mangrove ecosystem and increasingly growing. Increasing the density caused support by public awareness to prevent heavy metals in the material so that the Lapindo mud mangrove breeding done around the farm.

Keywords : archipelagic nation, mangrove, Lapindo mudflow disaster, NDVI

Conference Title : ICRS 2015 : International Conference on Remote Sensing

Conference Location : Osaka, Japan

Conference Dates : October 08-09, 2015