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Degradation mangrove by using Landsat 5 TM and Landsat 8 OLI image in Mempawah Regency, West Kalimantan Province year 1989 - 2014

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Abstract

Mangrove ecosystems can be found in tropical and subtropical coastlines. Function of mangroves is preventing sea water intrusion, preventing beach erosion and abrasion, biofilters, as a place to live and coastal food web, create the new island and stabilizing coastal areas. Mangrove should be preserved in order to achieve sustainable ecological functions. The lack of data and information become its own problems in the management of mangrove ecosystems. This study aimed to analyse the area and density of the distribution of mangrove in the Mempawah Regency of West Kalimantan Province using NDVI analysis through recording Landsat 5 the recording on 29 June 1989 and Landsat 8 recording on 6 February 2014, found the land area of 250.88 hectares (Ha) of mangrove degraded within that time. Of the total mangrove only 377.25 Ha or 51.02%, which has a high density so as to be maintained and expanded its presence while 362.06 Ha or 48.98 has medium and low density so that needs to be improved through conservation and rehabilitation of mangrove ecosystems.

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Keywords: mangrove; Landsat image 5 and 8; NDVI; SNI

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1. Introduction

The mangrove ecosystem is a natural resource of tropical and sub-tropical which have benefits with a very wide influence. The role played by mangrove ecosystems for life can be seen from the many species of animals and plants are dependent on mangrove ecosystems. Currently the mangrove ecosystem increasingly pressured by the growing trend towards the need to use land to meet human needs, so as to threaten the preservation.

Mempawah Regency is the one Regency that has the second largest mangrove after Kubu Raya in West Kalimantan. Situated between 0°44' North Latitude and 0°00.4' South Latitude and 108°24' East Longitude and 109°21.5' East Longitude where administratively, Mempawah Regency in the North is bordered by Bengkayang Regency, South Kubu Raya and Pontianak city, in the East Landak Regency and west side of the Natuna Sea which is overgrown with mangrove coastal areas.

The lack of data and information, especially mangrove in Mempawah Regency become its own problems in the management of mangrove ecosystems. Mangrove ecosystem management will be optimized if it had known that its application for certain potential in there Kustanti [1] for the necessary research that will eventually be used to develop strategies for mangrove ecosystem management.

2. Method

To determine the extent of mangrove ecosystems used Landsat images (Path 121 Row 60, and Path 122 Row 60) in 2 scenes of 1989 image and 2 scenes of 2014 image) computer, ENVI Imagine 9.1 software is used for processing image data digitally and ArcView version 10.1 used to overlay the image and display the image.

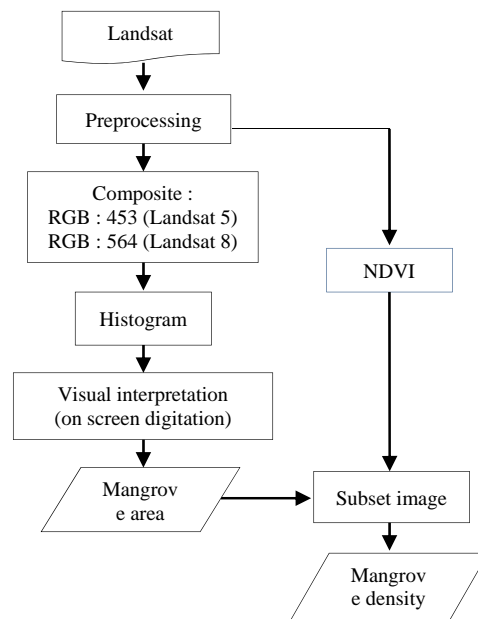


Fig. 1. Data processing flow chart.

Image processing into maps using The study was conducted in accordance Indonesian National Standard (SNI) Number 7717 Year 2011 the Surveying and Mapping Mangroves and Regulation Head of Geospatial Information Number 3 Year 2014 about the Technical Guidelines Geospatial Data Collection and Processing of Mangrove.

The initial stage is pre-processing, is a radiometric correction, geometric correction, and cut out the image. The 2 study area covered by scenes of Landsat imagery, so that all three scenes of the necessary process of merging (mosaic). The next process is the process of correction of radiometric and geometric correction. Radiometric correction aims to

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