MAPPING HEALTH CORAL REEF USING OBJECT-BASED CLASSIFICATION METHOD IN KEMUJAN ISLAND OF KARIMUNJAWA ISLANDS, JAWA TENGAH

Ridwan Ardiyanto[1], Marindah Yulia Iswari[2]
[1]Universitas Gadjah Mada (UGM),oneread08@yahoo.com
Kampus Bulaksumur, Jl. Kaliurang, Bulaksumur, Yogyakarta 55281
[2]Universitas Gadjah Mada (UGM), marindahyiswari@yahoo.com
Kampus Bulaksumur, Jl. Kaliurang, Bulaksumur, Yogyakarta 55281

Abstract : Indonesia is the largest archipelago in the world, located in around the equator. These characteristics are the main factors to support the development of coral reefs in Indonesia. Coverage area of coral reefs in Indonesia very extensive is a constraint to monitor coral reef health. Because of that constraint, remote sensing image is chosen as one of the alternative methods to monitor coral reef health. This research aims to assess the ability of high-resolution remote sensing imagery to map the health of coral reefs. In this research, coral reefs will be being classed into two categories: healthy and sick. The selected study area is Kemujan island of Karimun Islands. The mapping of coral reef health using classification methods based object (Object based). OBIA classification done after the image is corrected using several kinds of image correction. Image correction is used to get the original spectral values . Correction used in this research is the geometric correction, radiometric correction, water column correction (lyzenga), and sunlight correction. Geometric correction is used to adjust the coordinates of the image to true coordinates in the earth. Radiometric correction aims to change the value of DN (digital number) on the image to the energy value and using two stages such as radiant and reflectance. Lyzenga correction to reduce the impact of the depreciation of the reflected energy caused by the influence of the water column. Sunlight correction is used to neutralize the energy value very different on the water surface because of sea waves. Object-based classification is used because this classification method not only uses the reflection value of electromagnetic waves but also consider the spatial factors that can be identified from the image. Healthy coral reefs obtained from object-based classification method are 2.18 km^2 and sick coral reefs are 3.31 km^2.

Keyword : coral reef, object-based image classification, atmospheric correction, water column correction, mapping.