

Remote Sensing Landscape Indices on Land Cover Change Detection Bakun Hydropower Bakun, Sarawak

ABSTRACT

Sarawak's location in the equatorial region makes it an area rich in rainfall. Therefore, hydroelectric power generation facilities have been established in several hydrological basins in Sarawak, especially in the Kapit area. In particular, this must be used to improve the economic and social living standards of the people of Sarawak. This article analyzes the stratum changes of the Bakun Dam in Sarawak over the past 30 years (1985 to 2018) and proposes land use and land protection. This study uses Landsat 5 and Landsat 8 satellite data. Both of these data need to be pre-processed, such as radiometric measurement and atmospheric correction. In this study, the selected landscape index was used to classify the water body area, vegetation, and man-made buildings, namely the Modified Normalized Water Difference Index (MNDWI), the Normalized Water Difference Index (NDWI), and the Normalized Difference Vegetation Index (NDVI). Apply overlay analysis to identify areas in the study area that have changed in the past 30 years. The results showed that MNDWI showed better results compared with other selected indicators. The study also found the biggest change from vegetation to water bodies in 30 years. The results showed that the most severely affected land cover was the formation of forests, which was reduced by 740km², and was mainly transferred to the water body of 669.9km², while the area of human habitation was 68.7 km². Land cover mapping is very important when providing information to those responsible for planning for sustainable development. In addition, land cover maps are also important for avoiding land-use conflicts for land use planning and land use regulations.