

ABSTRACT

Remote sensing offers the potential to provide up-to-date information on changes in forestry areas over large areas. Its application makes it possible to make assessments related to land use change. This research aims to assess whether land change using remote sensing can provide an efficient alternative, both in terms of cost and time, including improving forest governance policy support. Remote sensing and forest governance are state-of-the-art in this research for the development of knowledge from in-depth data analysis. This study was conducted in Bengkalis-Riau Province, Indonesia because, the regency has become the most vulnerable region for forest fires since 2013 and the province has experienced growing pressure from an expanding palm oil industry. It has the largest tropical peatland area and palm oil plantation in Indonesia. The use of remote sensing data methods improved the sensitivity of detecting classified forest cover, providing a better understanding of changes that are usually difficult to map, including fires, smallholders and industrial scale of agricultural areas, peatland cover, wetlands, and barren forest land. Both smallholder and industrial agricultural areas are also better detected. The result from Sentinel data indicate forest, and land cover changes after evaluation, which focuses on the spatial, spectral, and temporal resolution of the imagery. The cover of land use change generated by remote sensing data shows the classification of land conditions in the study area, ranging from cultivated land, bare soil, forestry, oil palm plantations, and peatlands within the plantation area. Integration of artificial intelligence will be further explored.