

ABSTRAK

PERUBAHAN TUTUPAN LAHAN KABUPATEN LAMPUNG BARAT BERBASIS PENGINDERAAN JAUH

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Perubahan tutupan lahan merupakan indikator penting dinamika lingkungan yang dipengaruhi aktivitas antropogenik. Tujuan penelitian ini adalah mengetahui dan mengevaluasi tren perubahan penggunaan dan tutupan lahan (LULC) di Kabupaten Lampung Barat periode 2014-2024. Metode pengumpulan data menggunakan penginderaan jauh dengan citra satelit Landsat 8 OLI resolusi 30 meter dari USGS Earth Explorer dan validasi lapangan melalui *ground check* serta Google Earth. Klasifikasi terbimbing dengan algoritma Random Forest diterapkan untuk mengidentifikasi enam kelas tutupan lahan yaitu pemukiman, hutan, badan air, sawah, daerah pertanian, dan lahan terbuka, kemudian dianalisis menggunakan plugin MOLUSCE dengan metode *Artificial Neural Network* (ANN). Hasil penelitian menunjukkan akurasi klasifikasi sangat baik dengan *overall accuracy* 88,17% (2014) dan 90,00% (2024) serta koefisien Kappa >0,85. Perubahan signifikan terjadi pada tutupan hutan yang mengalami deforestasi drastis sebesar 7.249,05 ha (17,46%), diikuti ekspansi lahan pertanian 7.167,96 ha (5,15%) dan pemukiman 432,00 ha (33,45%). Badan air mengalami peningkatan 30,15 ha (9,66%), sedangkan lahan terbuka menurun 32,58 ha (29,99%), dengan matriks transisi menunjukkan konversi hutan menjadi lahan pertanian sebesar 21,4%. Kabupaten Lampung Barat mengalami transformasi lanskap yang didominasi konversi hutan menjadi lahan pertanian akibat tekanan ekonomi dan pertumbuhan penduduk. Hasil ini mengkonfirmasi perlunya kebijakan tata ruang berkelanjutan dan strategi konservasi terintegrasi untuk menjaga keseimbangan ekosistem dan pembangunan ekonomi di wilayah studi.

Kata kunci : Penginderaan Jauh, Perubahan Tutupan Lahan, Random Forest, Landsat 8 OLI, Deforestasi

ABSTRACT

LAND COVER CHANGES IN WEST LAMPUNG REGENCY BASED ON REMOTE SENSING

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Land cover change is an important indicator of environmental dynamics influenced by anthropogenic activities. The objective of this study is to identify and evaluate trends in land use and land cover (LULC) changes in West Lampung Regency during the period 2014–2024. Data collection methods utilized remote sensing with Landsat 8 OLI satellite imagery at 30-meter resolution from the USGS Earth Explorer, along with field validation through ground checks and Google Earth. Supervised classification using the Random Forest algorithm was applied to identify six land cover classes: residential areas, forests, water bodies, rice fields, agricultural areas, and open land. These were then analyzed using the MOLUSCE plugin with the Artificial Neural Network (ANN) method. The results of the study show excellent classification accuracy with an overall accuracy of 88.17% (2014) and 90.00% (2024) and a Kappa coefficient >0.85 . Significant changes occurred in forest cover, which experienced drastic deforestation of 7,249.05 ha (17.46%), followed by agricultural land expansion of 7,167.96 ha (5.15%) and residential land expansion of 432.00 ha (33.45%). Water bodies increased by 30.15 ha (9.66%), while open land decreased by 32.58 ha (29.99%), with the transition matrix showing forest conversion to agricultural land at 21.4%. West Lampung District experienced landscape transformation dominated by forest conversion to agricultural land due to economic pressure and population growth. These results confirm the need for sustainable spatial planning policies and integrated conservation strategies to maintain ecosystem balance and economic development in the study area.

Keywords : Remote Sensing, Land Cover Change, Random Forest, Landsat 8 OLI, Deforestation