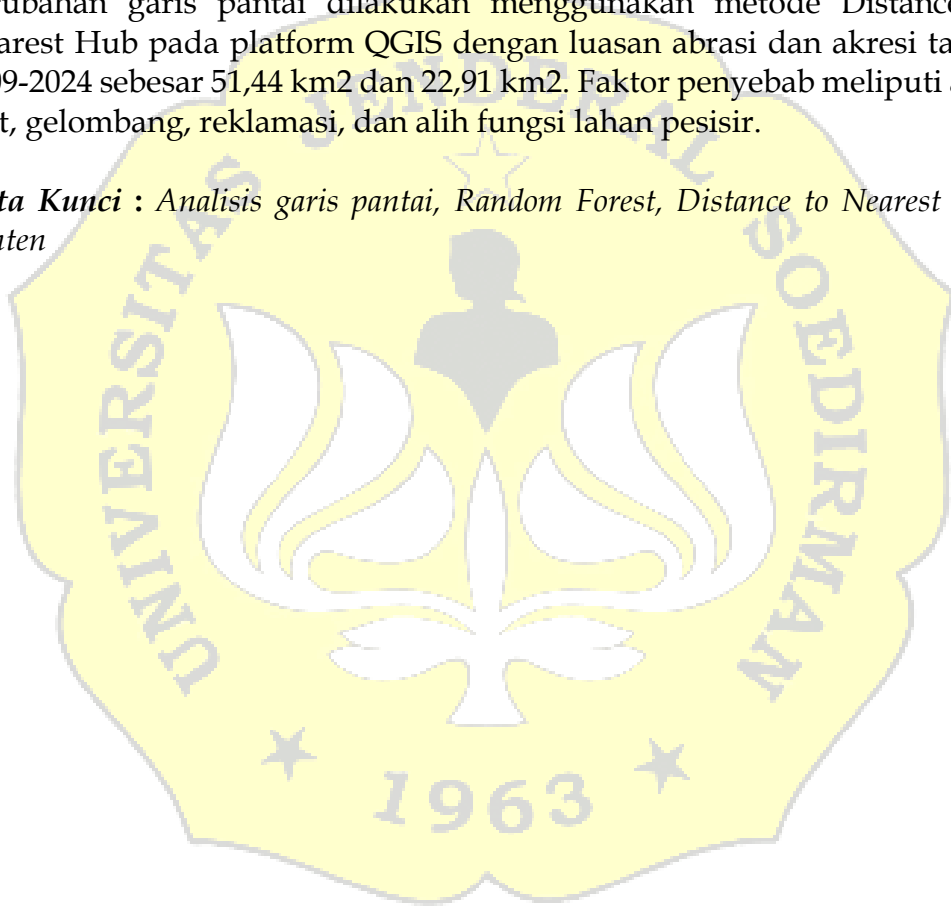


ABSTRAK

Penelitian ini mengkaji penggunaan machine learning berbasis citra landsat dalam analisis perubahan garis pantai di Banten. Penelitian ini bertujuan untuk menganalisis perubahan garis pantai di wilayah pesisir Provinsi Banten selama periode 2009–2024. Metode yang digunakan adalah pengolahan citra satelit Landsat dengan algoritma Random Forest untuk klasifikasi daratan dan perairan. Proses dilakukan melalui pra-pemrosesan, klasifikasi, dan uji akurasi menggunakan Confusion Matrix dan Kappa Coefficient. Hasil klasifikasi Random forest menunjukkan Overall Accuracy sebesar 99,9986%, menandakan model sangat andal. Analisis perubahan garis pantai dilakukan menggunakan metode Distance to Nearest Hub pada platform QGIS dengan luasan abrasi dan akresi tahun 2009-2024 sebesar 51,44 km² dan 22,91 km². Faktor penyebab meliputi arus laut, gelombang, reklamasi, dan alih fungsi lahan pesisir.

Kata Kunci : Analisis garis pantai, Random Forest, Distance to Nearest hub, Banten



ABSTRACT

This research examined the use of machine learning based on Landsat imagery in analyzing shoreline changes in Banten. The study aimed to analyze shoreline changes in the coastal areas of Banten Province during the period 2009–2024. The method used was the processing of Landsat satellite imagery with the Random Forest algorithm for land and water classification. The process was carried out through preprocessing, classification, and accuracy assessment using the Confusion Matrix and Kappa Coefficient. The Random Forest classification results showed an Overall Accuracy of 99.9986%, indicating that the model was highly reliable. The analysis of shoreline changes was conducted using the Distance to Nearest Hub method on the QGIS platform, with abrasion and accretion areas from 2009 to 2024 amounting to 51.44 km² and 22.91 km², respectively. The driving factors included ocean currents, waves, reclamation, and coastal land-use changes.

Key Word : *Shoreline analysis, random forest, Distance to nearest hub, Banten*

