

Korelasi Spasiotemporal Intensitas Penangkapan Ikan dengan Pendekatan Vessel Tracking dan Earth Observation Terhadap Potential Fishing Zone di WPPRI-711 = Spatiotemporal Correlation of Fishing Intensity with Vessel Tracking and Earth Observation Approach to Potential Fishing Zone in FMA-711

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Abstrak

Indonesia merupakan negara kepulauan dengan wilayah laut yang luas, yang dikelola melalui Wilayah Pengelolaan Perikanan Republik Indonesia (WPPRI), salah satunya WPPRI-711. Untuk mendukung pengelolaan sumber daya perikanan secara berkelanjutan, pemerintah menetapkan zona potensial penangkapan ikan (Potential Fishing Zone/PFZ) berbasis data oseanografi satelit. Namun, pada tahun 2023, WPPRI-711 masih mengalami overfishing. Penelitian ini bertujuan mengevaluasi efektivitas kebijakan PFZ melalui analisis korelasi spasiotemporal antara intensitas penangkapan ikan dan distribusi PFZ. Variabel utama mencakup intensitas penangkapan dengan data Vessel Monitoring System (VMS), Automatic Identification System (AIS), Synthetic Aperture Radar (SAR), dan Visible Infrared Imaging Radiometer Suite (VIIRS). Distribusi spasiotemporal intensitas penangkapan dianalisis menggunakan analisis tren Mann-Kendall dan pola emerging hotspot. Korelasi antara intensitas penangkapan dan PFZ dilakukan dengan analisis time series cross-correlation. Hasil menunjukkan bahwa, secara spasial, aktivitas penangkapan paling sering terdeteksi di laut teritorial dekat pesisir, dan paling jarang terjadi di ZEE atau perairan lepas yang dekat dengan sengketa Laut Cina Selatan. Secara temporal, intensitas kumulatif cenderung menurun saat muson barat, meskipun beberapa area menunjukkan pola sebaliknya. Korelasi spasial yang sangat rendah mencerminkan ketidaksesuaian antara lokasi penangkapan dan zona PFZ pada waktu tertentu.

.....Indonesia is an archipelagic country with vast marine areas managed under the Fisheries Management Areas of the Republic of Indonesia (FMA), one of which is FMA-711. To support the sustainable management of fisheries resources, the government has implemented Potential Fishing Zones (PFZ), based on satellite oceanographic data. However, in 2023, WPP-RI 711 continued to experience overfishing. This study aims to evaluate the effectiveness of PFZ policy by analyzing the spatiotemporal correlation between fishing intensity and PFZ distribution. The main variables include fishing intensity data obtained from the Vessel Monitoring System (VMS), Automatic Identification System (AIS), Synthetic Aperture Radar (SAR), and the Visible Infrared Imaging Radiometer Suite (VIIRS). Spatiotemporal distribution of fishing intensity was examined using Mann-Kendall trend analysis and emerging hotspot patterns. Correlation between fishing intensity and PFZ was assessed using time series cross-correlation analysis. The results indicate that, spatially, fishing activities are most frequently detected in territorial waters near the coast, and least observed in the Exclusive Economic Zone (EEZ) or open seas near overlapping claims areas. Temporally, cumulative fishing intensity tends to decline during the west monsoon, although some areas exhibit the opposite trend. The very low spatial correlation reflects a mismatch between fishing locations and PFZ areas at specific times.