

## Intisari

### Pemantauan Sedimen Tersuspensi dan Batimetri pada Jalur Pelayaran Kapal di Muara Sungai Juwana dan Perairan Pantai Kabupaten Pati Menggunakan Data Satelit dan Pemeruman

Sungai Juwana di Kabupaten Pati merupakan jalur pelayaran kapal perikanan menuju Pelabuhan Perikanan Pantai (PPP) Bajomulyo. Jalur pelayaran ini memiliki masalah pendangkalan akibat sedimentasi yang disebabkan erosi pada badan sungai. Penelitian ini bertujuan mengetahui pola spasial dan temporal sedimen tersuspensi di perairan Kabupaten Pati dengan menganalisis reflektansi spektral sedimen tersuspensi (Rrs 555), material organik terlarut berwarna (Rrs 443), dan fitoplankton (aph 443) citra satelit Aqua MODIS periode 2016-2022. Pemeruman juga dilakukan pada jalur pelayaran kapal perikanan pada bulan November 2024. Hasil penelitian menunjukkan pola spasial dan temporal pantulan spektral sedimen tersuspensi di perairan Kabupaten Pati diduga tidak dipengaruhi suplai sedimen dari darat dan debit sungai serta anomali iklim ENSO, namun diduga lebih dipengaruhi arus sepanjang pantai. Dugaan ini diperkuat dengan nilai pantulan spektral fitoplankton (aph 443) yang selalu rendah ( $0,00-0,45 \text{ m}^{-1}$ ) yang mengindikasikan tingkat produktivitas primer perairan yang rendah. Batimetri pada jalur pelayaran kapal perikanan memiliki kisaran kedalaman 1-6,2 m dan kisaran ini berpotensi mengalami penurunan akibat pendangkalan. Strategi pengelolaan jalur pelayaran kapal perikanan yang adaptif dan kolaboratif diperlukan guna menjaga keberlanjutan aktivitas pelayaran dan ekonomi Kabupaten Pati.

**KATA KUNCI** : Aqua MODIS, batimetri, Kabupaten Pati, pantulan spektral, sedimen tersuspensi

*Abstract*

Monitoring of Suspended Sediment and Bathymetry in the Shipping Channel at the Juwana River Estuary and the Coastal Waters of Pati Regency Using Satellite Data and Echo Sounding

The Juwana River in Pati Regency serves as a shipping route for fishing vessels to the Bajomulyo Coastal Fisheries Port. This route experiences shallowing issues resulting from sedimentation linked to river body erosion. This study aims to analyze the spatial and temporal patterns of suspended sediment in Pati Regency's waters by examining the spectral reflectance of suspended sediment (Rrs 555), colored dissolved organic material (Rrs 443), and phytoplankton (aph 443) of the Aqua MODIS satellite images from 2016 to 2022. Sounding was conducted on the shipping route of fishing vessels in November 2024. The study's results suggest that the spatial and temporal patterns of spectral reflectance of suspended sediment in the waters of Pati Regency are likely not affected by sediment supply from land and river discharge or ENSO climate anomalies, but are presumably influenced by alongshore currents. The spectral reflectance value of phytoplankton (aph 443) showed consistently low ( $0.00-0.45 \text{ m}^{-1}$ ), supports the assumption of reduced primary productivity in the waters. The bathymetry of the fishing vessel shipping lane exhibits a depth range of 1 to 6.2 m, with the potential for this range to diminish due to shallowing. A strategy for adaptive and collaborative management of fishing vessel routes is essential to sustain shipping and economic activities in Pati Regency.

**KEYWORDS:** Aqua MODIS, bathymetry, Pati Regency, spectral reflectance, suspended sediment