

ANALISIS PERUBAHAN GARIS PANTAI DI WILAYAH KEPESISIRAN TELUK PENYU, KABUPATEN CILACAP, JAWA TENGAH

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INTISARI

Dinamika garis pantai pada wilayah kepebisiran Teluk Penyu, Kabupaten Cilacap tidak lepas dari pengaruh dinamika hidro-oseanografi seperti angin, gelombang, pasang surut, dan arus. Kedua fenomena tersebut saling terhubung dan menyebabkan dinamika kepebisiran berupa abrasi dan akresi secara temporal. Oleh karena itu, penelitian ini dilakukan dengan tujuan untuk mengidentifikasi laju perubahan garis pantai yang terjadi di wilayah kepebisiran Teluk Penyu. Penelitian ini juga dilakukan untuk mengidentifikasi pengaruh aspek hidro-oseanografi terhadap perubahan garis pantai di wilayah kepebisiran Teluk Penyu.

Citra landsat 7 ETM+ dan 9 OLI digunakan dalam analisis dinamika garis pantai secara spasial-temporal periode 2007-2023. Laju perubahan garis pantai dihitung menggunakan metode *Digital Shoreline Analysis System (DSAS)*. Dinamika kepebisiran yang terjadi dianalisis dengan aspek hidro-oseanografi pada setiap musim. Aspek hidro-oseanografi berupa tenaga angin, gelombang, pasang surut, dan arus. Hasil penelitian menunjukkan terjadinya fenomena abrasi dan akresi dengan skala yang masif di wilayah kepebisiran Teluk Penyu, Kabupaten Cilacap periode 2007-2023.

Daerah dominan abrasi terjadi di wilayah kepebisiran Kecamatan Cilacap Utara, Kecamatan Kesugihan, dan Kecamatan Adipala dengan keseluruhan daerah didominasi oleh tipe abrasi sangat tinggi. Daerah dominan akresi terjadi di wilayah kepebisiran Kecamatan Cilacap Selatan dengan dominasi tipe akresi sedang, Kecamatan Binangun dengan dominasi tipe akresi tinggi, dan Kecamatan Nusawungu dengan dominasi tipe akresi sangat tinggi. Dinamika hidro-oseanografi dianalisis berdasarkan karakteristik setiap musim di periode 2007-2023. Fenomena abrasi paling masif terjadi pada musim barat dengan dominasi kecepatan angin 4-7 knot, ketinggian gelombang <0,5 meter, tipe pasang surut campuran condong harian ganda, dan kecepatan rata-rata arus zonal $\pm 0,19$ m/s. Fenomena akresi paling masif terjadi pada musim timur dengan dominasi kecepatan 7-11 knot, ketinggian gelombang <0,5 meter, tipe pasang surut campuran condong harian ganda dan kecepatan rata-rata arus zonal $\pm 0,24$ m/s.

Kata Kunci: Garis Pantai, Abrasi, Akresi, Hidro-oseanografi, Wilayah Kepesisiran Teluk Penyu

***ANALYSIS OF SHORELINE CHANGES IN THE COASTAL AREA OF
PENYU BAY, CILACAP REGENCY, CENTRAL JAVA***

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ABSTRACT

Coastal dynamics in the coastal area of Penyu Bay, Cilacap Regency, are influenced by hydro-oceanographic dynamics such as wind, waves, tides, and currents. These two phenomena are interconnected and result in coastal dynamics characterized by erosion and accretion over time. Therefore, this study was conducted with the aim of identifying the rate of coastal line changes occurring in the coastal area of Penyu Bay. The study also sought to identify the influence of hydro-oceanographic aspects on coastal line changes in the coastal area of Penyu Bay.

Landsat 7 ETM+ and 9 OLI imagery were used in the spatial-temporal analysis of shoreline dynamics for the period 2007-2023. The rate of shoreline change was calculated using the Digital Shoreline Analysis System (DSAS) method. The coastal dynamics that occurred were analyzed with hydro-oceanographic aspects in each season. Hydro-oceanographic aspects include wind energy, waves, tides, and currents. The study results indicate the occurrence of massive abrasion and accretion phenomena in the coastal area of Penyu Bay, Cilacap Regency, during the 2007-2023 period.

The dominant abrasion area occurs in the coastal areas of North Cilacap District, Kesugihan District, and Adipala District, with the entire area dominated by very high abrasion. The dominant accretion area occurs in the coastal areas of South Cilacap District, dominated by moderate accretion, Binangun District, dominated by high accretion, and Nusawungu District, dominated by very high accretion. Hydro-oceanographic dynamics were analyzed based on the characteristics of each season in the period 2007-2023. The most massive abrasion phenomenon occurred during the west monsoon season, characterized by wind speeds of 4-7 knots, wave heights <0,5 meters, a mixed tidal type with a double daily trend, and an average zonal current speed of $\pm 0,19$ m/s. The most massive accretion phenomenon occurred during the east monsoon season, characterized by wind speeds of 7-11 knots, wave heights <0,5 meters, a mixed tidal type with a double daily component, and an average zonal current speed of $\pm 0,24$ m/s.

Keywords: *Shoreline, Abrasion, Accretion, Hydro-oceanography, The Coastal Area of Penyu Bay*