Hypothetical Model of Sediment Budget As Initial Indicator of Land Subsidences in North Coast Java Island

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Abstrak

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North Coast of Java Island continues to experience coastal dynamics which resulted significant coastline erosion problems. According to the Ministry of Marine and Fisheries data (KKP), from 100 locations of coastline erosion in 17 provinces of Indonesia, North Coast of Java Island suffered the worst erosion, reaching 745 km or 44 percent of total coastline length. The shoreline retreat can be caused by three factors: sea level rise, erosion and land subsidence. The aim of this research was to determine the correlation between sediment equilibrium in coastal cells and the initial hypothesis of land subsidence which caused a coastline retreat. The method to calculate sediment equilibrium uses hypothetical sediment budget model. Modeling itself is done along the North Coast of Java. LITDRIFT model of Longshore Sediment Drift is employed to assess the coastline profile. The result of the research shows that there is anomalous model that is the condition of sediment is surplus but the condition of the field is backward. Several locations experienced a sediment surplus but experienced a coastline retreat, and after comparison with field observations and secondary data there was evidence of land subsidence: Pondok Bali Beach, Randusongo Beach, Muara Reja Beach, Depok Beach, Slamaran Beach, Jeruksari-Mulyorejo Beach and Sriwulan Beach. This models result can be used as an initial indicator of the land subsidence causing the coastline to retreat. In order to solve the erosion and sedimentation problem, the detail study with more comprehensive parameter needs to be conducted