

## INFLUENCE CLOSURE DEPTH IN COASTAL MANAGEMENT

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**Resumo:** This study endeavors to satisfy the demand for special information concerning the northeast Brazilian coastal zone, as a tool for improving coastal management. It presents a new proposed methodology for zoning, adopting as an establishment parameter the analysis of the behavior of waves in the movement of sea bottom sediments. The study area comprehends a coastal area up to the 30-meter isobath of the central continental shelf in the state of Pernambuco in Northeast Brazil. To reach our objectives, we defined a closure depth and the seaward bound with a theoretical foundation in the methodology presented by Hallermeier (1981). This enabled the cartography of the active zone, between the shoreline and the closure depth ( $d_i = 6.5$  m), an area of effective movement of bottom sediments by wave action. For that reason, this area is the least suitable for the extraction of mineral resources, notwithstanding the deeper zone of incipient movement of bottom sediments between the closure depth and the seaward bound ( $d_i = 21$  m, boundary between the shoal zone and the offshore zone), where morphological changes are less perceptible and there is an intermediate potential risk of mineral extraction and other man-made disturbances. The sedimentary blanket in the study area was found to be sandy to sandy-gravel in composition, with the shallow portion made up of siliciclasts dominated by quartz, and the deeper portion consisting of bioclastic sediments. There is a sharp division of the bottom substrate between the presence of Halimeda and Lithothamne algae coinciding with the external limit of incipient movement at the seaward bound. The observation of the behavior of the closure depth over time indicated an effective erosional process in the study area, with sediment movement towards offshore, associated with the tendency for the occurrence of "sweel" waves.

**Palavras-chave:** closure depth; continental shelf; marine sediments.