Comparison of Prognostic Models in Different Scenarios of Shoreline Position on Ponta Negra Beach in Northeastern Brazil

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Abstract : Prognostic studies of the shoreline are of utmost importance for Ponta Negra Beach, located in Natal, Northeastern Brazil, where the infrastructure recently built along the shoreline is severely affected by flooding and erosion. This study compares shoreline predictions using three linear regression methods (LMS, LRR and WLR) and tries to discern the best method for different shoreline position scenarios. The methods have shown erosion on the beach in each of the scenarios tested, even in less intense dynamic conditions. The WLA_A with confidence interval of 95% was the well-adjusted model and calculated a retreat of -1.25 m/yr to -2.0 m/yr in hot spot areas. The change of the shoreline on Ponta Negra Beach can be measured as a negative exponential curve. Analysis of these methods has shown a correlation with the morphodynamic stage of the beach.

Keywords : coastal erosion, prognostic model, DSAS, environmental safety

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