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Vulnerability of the Nigerian Coast: An Insight into Sea Level Rise Owing to Climate Change and Anthropogenic Activities

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Abstract

Coastal areas are important regions in the world as they host huge population, diverse ecosystems and natural resources. However, owing to their settings, elevations and proximities to the sea, climate change (global warming) and human activities are threatening issues. Herein, we report the coastline changes and possible future threats related to sea level rise owing to global warming and human activities in the coastal region of Nigeria. Google earth images, Digital Elevation Model (DEM) and geological maps were used. Using google earth images, coastal changes for the past 43 years, 3 years prior to and after the construction of breakwaters along Goshen Beach Estate (Lekki) were examined. Additionally, coastline changes along Lekki Phase I from 2013 to 2016 were evaluated. The DEM map was used to delineate 0-2 m, 2-5 m and 5-10 m asl which correspond to undifferentiated sands and gravels to clays on the geological map. The results of the google earth images revealed remarkable erosion along both Lekki and Lekki Phase I, with the destruction of a lagoon in Lekki Phase I. Based on the result of the DEM map and geology, elevations of 0-2 m, 2-5 m and 5-10 m asl were interpreted as highly risky, moderately risky and risky respectively. Considering factors threatening coastal regions, the erosion and destruction of the lagoon along the Nigerian coast may be ascribed to sea level rise as a result of global warming and intense human activities respectively.

Keywords: Sea level rise, Climate change, Global warming, Human activities, Coastal erosion, Nigeria

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