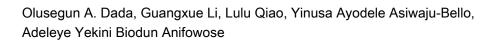
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Recent Niger Delta shoreline response to Niger River hydrology: Conflict between forces of Nature and Humans

Olusegun A. Dada¹, Guangxue Li², Lulu Qiao², Yinusa Ayodele Asiwaju-Bello³, Adeleye Yekini Biodun Anifowose⁴

7 ¹Department of Marine Science and Technology, Federal University of Technology, Akure 340252, Nigeria

²College of Marine Geosciences & Key Lab of Submarine and Processing Techniques, Ocean University of China,
Qingdao 266100, China PR

³Department of Applied Geology, Federal University of Technology, Akure 340252, Nigeria

⁴Department of Remote Sensing and GIS, Federal University of Technology, Akure 340252, Nigeria

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13 ¹ Corresponding author: oadada@futa.edu.ng

14 Abstract

The Niger River Delta is a prolific hydrocarbon province and a mega-delta of economic and environmental relevance. To understand patterns of its recent shoreline evolution (1923-2013) in response to the Niger River hydrology, and establish the role played by forces of Nature and Human, available topographic and satellite remote sensing data, combined with hydro-climatic (rainfall and runoff) data were analyzed.

Results indicate that the entire delta coastline dramatically receded: 82% of the > 400 km-long 20 coast retreated, during the period 1950-1987; and 69% between 2007 and 2012. Prior to 1950, 21 there was a continuation of seaward advancement along 53-74% of the delta coast. The 1950-1987 22 shoreline recession coincided with occurrences of two major events in the Niger River basin; these 23 are downward trends in hydro-climatic conditions (the great droughts of the 1970s-1980s), and 24 dam construction on the Lower Niger River at Kainji (1964-1968). The 2007-2012 event 25 corresponded with the extensive channel dredging during 2009-2012 in the Lower Niger River 26 from the coastal town of Warri in the south to Baro in the north. Remarkably, the largest net 27 shoreline advancement recorded in 74% of the entire delta area occurred within a year (2012-2013), 28 29 which we link to increased sediment supply to the coast caused by the '2012' floods, adjudged the

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