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The Wouri estuary in Cameroon: an eroding coastline in the Gulf of Guinea

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ABSTRACT

In Cameroon, coastal erosion is a concern in the Wouri estuary with Cape Cameroon as a hot spot. Here we assess coastal dynamics on a large scale and at Cap Cameroon on a small-scale using Landsat and Pleiades images, land use using Landsat image classification, and the hydrogeomorphological context in order to understand the sedimentary dynamics dominated by the sedimentary input of 4 major rivers and marine processes that are still little constrained. In spite of the fragility of the environment due to deforestation and urbanization, coastal erosion is remarkably low except in Cape Cameroon thanks to a significant river sedimentary input which currently compensates for this fragility.

Morphological analysis shows a very important sedimentary contribution from the different rivers, probably linked to an increase in the sedimentary load in connection with the enthronization of their catchment area.

The coastal erosion hotspot is located around Cap Cameroon, on the Atlantic coast.

In the estuary, the classification highlights the growing occupation of the territory by the City of Douala and a population of more than 5 million inhabitants which is at the expense of the mangrove forest that originally occupied almost the entire estuary area. The analysis of the images also highlights a mangrove forest outside the main urban area that has been weakened by illegal and uncontrolled deforestation. Human intervention appears to be the main factor in the fragility of this environment.

In spite of significant deforestation and thus a weakening of the environment, there is no remarkable coastal erosion except at the level of the Cap Cameroon hot-spot. Cause: Sufficient river sediment supply to compensate for the current fragility of the environment.

At Cap Cameroon, erosion linked to a decrease in sedimentary inputs trapped further upstream, significant degradation, greater exposure to storms and waves, an increase in "marine processes", marine action with the growth of the Souélabé Spit which closes the estuary to the south and a local coastal drift from north to south.

Keywords: Wouri Estuary; Eroding coastline, Cameroon, Gulf of Guinea