

THE BEACH NOURISHMENT AS A TECHNIQUE TO STABILIZE THE LYCEE MBA BEACH: SETTING UP A MORPHO SEDIMENTARY MONITORING.

Vivino Max Thierry Mouyalou

National Oceanographic of Data and Information Center. BP 10961 Libreville - Gabon.

E-mail: vivinomax2@yahoo.fr

In the seventies, to fight against coastal erosion in the Libreville coastal zone, many groynes were built and their results are much controversial. Some of them have been the factors of coastal erosion, leaving the whole problems of sea advanced and the loss of the beaches.

For example, the dialogue's groyne erected on the lycee Mba beach has caused the total loss of all beaches downstream. Moreover, all beaches located upstream are affect by a significant thinning down. The case to be more worried about is the lycee Mba beach which is the most attractive of Libreville. Caused by these elements of vulnerabilities, and the lack of data, a sedimentologic and morphologic monitoring has been put in place for two years in order to improve the status of knowledge on the sediments dynamic.

The Grain-size distributions of beach sands were analyzed by a parametric method and by modal analysis. Samples were taken from 11 cross-shore profiles (lower beach, middle beach and high beach), but not evenly distributed throughout the entire sandy coast of Libreville, of an average length of 16 km.

Modal statistics indicate that a mixture of dominant components contributing to the grain-size distribution of the sediments: fine sand (Sedimentary Type I: Modal value: 0.15 mm), medium sand (ST II: Modal value: 0.2 mm); coarse sand (ST III: Modal value: 0.68 mm); and very coarse Shelly particles and gravel (ST IV: Modal value: 2.5 mm).

This analysis allows us to discriminate three mains sedimentary cells on 16 km, and to highlight the impact of the human activities like sand mining on the beach and building on the top of beaches, on the distribution of each ST on the space and time and their origin.

The beach of lycee Mba (average length 800 meters), located at the downstream limit of all sedimentary cells, is characterized by very well sorted fine and medium sand, with uniform modal values (0.15-0.2 mm). Moreover, the sizes of sands are the same as well as on the top and the bottom of the beach, and presents a cross-shore profile very flattened which evokes the weakness of the supplies of sand by the littoral drift.¶ Also, the irregularity of the modal value in the three sedimentary cells was correlated with the rate of the shoreline retreat. In the northern zone, between 2001 and 2012, the shoreline retreat has been estimated around 40 meters, for modal values going from 0.1mm to 2.5mm. In the southern zone at the beach of lycee Mba, for the same period, the shoreline retreat is around 5 meters with values modal going from 0.15 to 0.16 mm. For us, these results will be used as a contribution for the development of a plan for "sediments management", and lead us to the choice of the beach nourishment as a technique intending for the stabilization of the lycee Mba beach

This project aims at the study on the physical framework of all conditions required for the nourishment of this beach, and as well as the valorization of this main entertaining space threatened by the thinning down. The methodology of implementation of this project is based on the development of a system of data collect in the field of morphology, bathymetry, sedimentology, overlay with hydrodynamic climatic forcing and factors. These data will make it possible to monitoring, understanding, and preventing any morphological change to adapt as much as possible the nourishment.