

Mapping and Monitoring Urban Growth on Wetlands in Humid Tropical Context Using Earth Observation technology, case study of Mangrove Zones around Douala City in Cameroon

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Economic capital of Cameroon and with a population of 1.5 millions inhabitants Douala, is placed in the centre of regional dynamism in Central Africa, with a very accelerated growth. The specificity is that the possibilities of spatial extension are limited due to peninsula environment, made of plane topography surrounded by the Atlantic Ocean, the Wouri River and mangroves. These mangroves are formations typical of brackish humid environments, which occupy 2700 km² on the fringes of littoral Cameroon. Progress recorded in recent years in technology within the domain of field observation and methods of digital processing of space information has offered enormous potentials for the mapping of natural resources. This advancement in technology has unveiled and widened our scope and knowledge of these closed, inaccessible and rude natural environments (mangrove zones) hitherto unknown.

This study was carried out in the frame work of the Tiger Initiative witch aimed at *assisting African countries to overcome problems faced in the collection, analysis and dissemination of water related geo-information by exploring the advantages of Earth observation technology.*

This work had as its main objective, to show how the multi source approach in remote sensing can enable important information to be extracted to characterize Mangroves found in the west and south of Douala. Two other types of data were associated on studies in the site, namely topographic maps, Spot image, SAR radar (Tandem Mission ERS 1and2) and ENVISAT ASAR of 2007. Analysis of digital Elevation Model made it possible to understand the topography, and to bring out the importance of the relief factor in spatial distribution of different land uses. The fusion of coherence images and interferometry radar proved to be of interest, as it made it possible to put forward diversified information, thus making it possible to better characterize and spatialize the various mangroves formations (notably areas of dominant space colonisation such as *Rhizophora spp.* and *Avicennia spp.*), distribution of villagers' terroirs, and various river channels. Also, we map ten years urban extension using ERS SAR and ENVISAT ASAR. Advance radar treatments are great potential in this zone of dense and permanent cloud cover. The maps and land use statistics extracted are some of the essential indices for the management of these zones of sea-land interface.

Key words Radar processing, urban growth, mangroves, Douala.