Remote sensing data for coastal zone vulnerability assessment -Algiers bay case-

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Abstract

Algeria coastal zone is one of the most vulnerable in the southern shore of the Mediterranean Sea. It is facing natural and anthropogenic pressure and hazards. The Algerian margin is seismically very active with tsunami risks, it also knows erosion/accretion phenomena, drought and salt-water intrusion, etc., but the most noticeable effect is the urban sprawl and its consequences on the environment (pollution, loss of biodiversity and economic value, etc.).

The aim of this work is to produce coastal vulnerability index (CVI) maps to erosion and flooding at different spatial scales. This index, developed by Gornitz & White (1992), is achieved by integrating in a GIS, different factors contributing to the vulnerability of this coastal zone. The lack of data, particularly time series over naturel process and even socio-economic data is an impediment for decision making. Many relevant parameters were derived from remote sensing, combined with other data, they are analyzed with a multicriteria method in three sub-indexes; coastal physical characteristics, coastal forcing and socioeconomic factors, which combined gives the CVI. This index turned out to be a relevant tool for coastal planning and decision-making. It identifies the vulnerability of some physiographic units and give at local, regional and the national level a broad image of coastal zone sensitivity to erosion and flooding. The results of this contribution will be proposed for improving the “IMCA” (integrate management of the coastal area) policies in the country.

Keywords: Coastal Zones, Erosion and Sedimentation, Urban, GIS Integration, Land Cover and Land Use