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Detecting coastline changes using GIS and remote sensing, a case study from Oman

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Detecting changes is one of the most interesting applications of remote sensing and GIS. Change detection often involves comparing satellite imagery of the area taken at different times. Change detection has been widely used to assess deforestation, urban growth, impact of natural disasters and use/land cover changes. Coastal erosion can be detected as well by the same methods. Coastal erosion is a universal phenomenon because of sea level rise, which is considered a result of climate change. This paper aims to detect and measure coastline changes of Wedam_Alsahel area, Batinah, north of Oman using GIS and remote sensing. For this purpose, two satellite images were used. The first one is IRS image acquired in 1998, while the second one is IKONOS image acquired in 2008. The images were geometrically corrected. Spatial resolution of IKONOS image was modified to conform to spatial resolution of IRS image to perform comparison between images. Coastline was identified and digitized in both images, and then coastline changes were measured in many locations along the coast of the area of study. The size of coastline erosion ranged between 50.81 meter and 112.27 meter. The average coastline erosion is 8.78 meter annually. This size of change is very hazardous and it has great impacts on the population and environment. This critical issue needs to be managed. The study introduced some recommendations to deal with this phenomenon.

Biography

Lotfy Kamal Azaz is an Associate Professor in Geography department, Faculty of Arts, Menofya University, Egypt. He has obtained his PhD in GIS and Urban Planning from School of Civil Engineering and Geosciences and school of Architecture, Planning & Landscape, Newcastle University (UK). He has more than 20 years of total experience in teaching research, and community service in the universities in Egypt, UK, and Oman. Moreover, he has more than 20 years of total experience in managing GIS and Remote sensing projects from conception to completion in Egypt, UK and Oman. He has published a number of books, articles in the fields of GIS and remote sensing applications. He acts as a reviewer for some international and regional journals.

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