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Assessing the Impacts of Bridges on the Development of Fluvial Islands Using Remote Sensing and GIS: Case Study on the Islands of Khartoum State up to Sabaloka Gorge, Khartoum State, Sudan

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Abstract : The population in Sudan has recently grown to a significant level, Khartoum city the capital has the major portion of this growth. Khartoum is separated by three Niles and linked by eight bridges to Khartoum North and Omdurman. The construction of these bridges disrupted the natural flow of water and sediments which will consequently be reflected on the geomorphological settings of fluvial islands including erosion and sedimentation patterns. The objective of this study is to monitor and assess the development of fluvial islands in Khartoum State up to Sabaloka Gorge using Remote Sensing (RS) and Geographical Information System (GIS) techniques. Landsat Images captured during the period from 1975-2015 with standard false color and standardized 30 m resolution were found useful in understanding the impacts of bridges on disrupting the fluvial cycle. Consequently, the rates, trends of erosions and deposition, and the development of fluvial islands are explained. GIS provides the-state-of-the-art tools in mapping, delineating the fluvial islands during different periods and in quantifying the changes that occurred to fluvial islands as well as creating the geographic databases for the Islands in Khartoum State. It was found that, the developments, shapes and sizes of the islands are directly affected by the construction of bridges, specifically in the Nile River from Tutti Island to Sabaloka gorge.

Keywords : fluvial islands, fluvial cycle, GIS and remote Sensing, Khartoum State, landsat, Sabaloka Gorge
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