Modelling Surface Runoff and Mapping Flood Vulnerability in Lagos State from Digital Elevation Model.

Joseph Odumosu, Oluibukun Ajayi and Ekundayo Adesina (Nigeria)

Key words: Coastal Zone Management; Hydrography; Remote sensing; Spatial planning; Hydrology; Flood

SUMMARY

Flooding in recent times has become a critical problematic phenomenon of spatio-temporal order and of a considerably high frequency of occurrence world over, most especially in coastal nations / states. Lagos State of Nigeria; one of these Coastal States has witnessed and is still witnessing multivariate cases of flooding which peaks in the rainy seasons (May-October) of every year. An hydrological-model-based solution is thus herein presented using a downloaded Digital Elevation Model of the study area to delineate water shed, model flow direction, contributing areas and flow path/Channel. Similarly, surface runoff was simulated for an eight hours heterogeneous rainfall and the resulting gauge readings from eleven (11) fictitious gauge stations distributed across the state was obtained. The study was able to produce a map categorizing Lagos state into three (3) zones on the basis of their vulnerability to flood. Quantum GIS (QGIS) software was used for the analysis and simulation.