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Modeling the Impact of Land-Use Change on Water Budget of Gaza Strip

PDF (Size: 1244KB) PP. 325-333 DOI: 10.4236/jwarp.2012.46036

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ABSTRACT

Gaza has a water crisis and faces serious challenges for the future sustainability of its water resources. Land-use change has an expected effect on water budget of the Gaza Strip. Three different land cover scenarios; the and cover of 2007, land cover of 2020, and full urbanization land cover were simulated independently using The Automated Geospatial Watershed Assessment (AGWA) tool which work under the umbrella of GIS. In general, the simulation results indicate that land-cover changes will significantly alter the hydrologic response of Gaza region. Percolation is expected to decrease in all options as urban areas are expanded where as the simulated surface runoff reflected a relative departure from the first scenario comparing with other scenarios. In the baseline scenario (2007), the simulated surface runoff and percolation represent 12% and 41% respectively from the water budget components of the Gaza Strip. In year 2020, these values were expected by the simulation results to be 20% and 27% respectively. A unique linear relationship between the relative change in urban area and the corresponding relative change in surface water has been investigated from the simulation results. The analysis of the three urbanization scenarios can give decision makers better understand for the future situation and assist them to advance towards achieving sustainable development planning for water resources system in the Gaza Strip.

KEYWORDS

Land-Use Change; Automated Geospatial Watershed Assessment; Water Budget; Hydrologic Modeling; Gaza Strip Water Crisis

Cite this paper

 J. T. Hamad, T. A. Eshtawi, A. M. Abushaban and M. O. Habboub, "Modeling the Impact of Land-Use Change on Water Budget of Gaza Strip," *Journal of Water Resource and Protection*, Vol. 4 No. 6, 2012, pp. 325-333. doi: 10.4236/jwarp.2012.46036.

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