World Academy of Science, Engineering and Technology
International Journal of Civil and Environmental Engineering
Vol:15, No:09, 2021

Assessing the Impact of Urbanization on Flood Risk: A Case Study

Authors : Talha Ahmed, Ishtiaq Hassan

Abstract : Urban areas or metropolitan is portrayed by the very high density of population due to the result of these economic activities. Some critical elements, such as urban expansion and climate change, are driving changes in cities with exposure to the incidence and impacts of pluvial floods. Urban communities are recurrently developed by huge spaces by which water cannot enter impermeable surfaces, such as man-made permanent surfaces and structures, which do not cause the phenomena of infiltration and percolation. Urban sprawl can result in increased run-off volumes, flood stage and flood extents during heavy rainy seasons. The flood risks require a thorough examination of all aspects affecting to severe an event in order to accurately estimate their impacts and other risk factors associated with them. For risk evaluation and its impact due to urbanization, an integrated hydrological modeling approach is used on the study area in Islamabad (Pakistan), focusing on a natural water body that has been adopted in this research. The vulnerability of the physical elements at risk in the research region is analyzed using GIS and SOBEK. The supervised classification of land use containing the images from 1980 to 2020 is used. The modeling of DEM with selected return period is used for modeling a hydrodynamic model for flood event inundation. The selected return periods are 50,75 and 100 years which are used in flood modeling. The findings of this study provided useful information on high-risk places and at-risk properties.

Keywords : urbanization, flood, flood risk, GIS
Conference Title : ICDRRRBE 2021 : International Conference on Disaster Resilience and Risk Reduction for Built Environment
Conference Location : San Francisco, United States
Conference Dates : September 27-28, 2021