

عنوان مقاله:

Two-dimensional flood model for risk exposure analysis of land use/land cover in a watershed

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خلاصه مقاله:

BACKGROUND AND OBJECTIVES: The study involved developing a two-dimensional flood model to analyze the risk exposure of land use/land cover based on the generated flood hazard maps for the six return period scenarios in the Solana watershed. **METHODS:** The approach consisted of applying hydrologic and hydraulic numerical flood models and the suite of advanced geographic information systems and remote sensing technologies. The process involved utilizing a high-resolution digital elevation model and a set of high-precision instruments such as the real-time kinematic-global position system receiver, digital flow meter, deep gauge, and automatic weather station in collecting the respective data on bathymetry, river discharge, river depth, and rainfall intensity during a particular climatic event, needed for the model development, calibration and validation. **FINDINGS:** The developed two-dimensional flood model could simulate flood hazard with an 86% accuracy level based on the coefficient of determination statistics. The flood risk exposure analysis revealed that coconut is the most affected, with 31.3% and 37.1% being at risk across the 2-year and 100-year return period scenarios, respectively. Results also showed that rice and pineapple are at risk of flooding damage with the increasing rate of exposure by a magnitude of 42.9 and 9.3 across the 2-year and 100-year flood scenarios, respectively. **CONCLUSION:** The study highlighted the integration of the findings and recommendations in the localized comprehensive land use plan and implementation to realize the challenge of building a climate change proof and a flood-resilient human settlement in the urbanizing watershed of Solana.

کلمات کلیدی:

Climate change, Hazards, Remote Sensing, resilience, return period

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