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Development of flood risk mapping and mitigation strategies for Al-Qassim region

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ABSTRACT

In this study, a research project aiming at producing a comprehensive map of flood risk in the Al-Qassim region is described. Flooding has become a pressing issue in this region, and this initiative aims to apply fundamental scientific principles to advance our understanding of flood risks, resulting in the development of innovative mitigation strategies. Flood risk mapping is vital in watershed management and planning, especially in reducing flood damage. In this study, a flood risk map will be developed for AL-Qassim by combining geographic information system techniques with a multi-criteria decision-making method known as the Analytical Hierarchy Process (AHP). Several factors will be investigated in the study, including elevation, slope, topographic wetness index, drainage density, rainfall, soil and land use, and land cover. The watershed will be divided into five regions: very high, high, moderate, low, and very low flooding danger areas. The obtained results will provide helpful knowledge for the policy and decision-makers to make the right decisions regarding the effectiveness of the protective structures of the study area against the risk of flash flooding in the future.

Keywords: Flood risk; Al-Qassim; Hydrological modeling; AHP; GIS

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