Research on Urban Flood Disaster Scenario Simulation Based on the Intelligent Planning Platform for Resilient Cities

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Key words: Land management; Reference systems; Risk management; Spatial planning

SUMMARY

Abstract:The acceleration of the urbanization process has a remarkable influence on the global climate and ecological environment. Among them, extreme weather has led to the frequent occurrence of urban flood disasters, posing a threat to the safety of human life and property as well as the stable development of the economy and society. Enhancing the adaptability, resistance, and recovery capacity in response to disasters such as extreme weather has become a core topic in modern urban construction and management. This research establishes an intelligent planning platform for resilient cities and conducts a simulation study on urban flood disasters in Chongqing and Ningbo in China. This study makes full use of the integration of multi-source data and various algorithms, and undertakes unconventional rainstorm simulation and prediction based on terrain multi-source data. By setting rainfall data and rainfall regions, the rainstorm carrying capacity of different terrain areas can be quantified spatially, compensating for the insufficiency of single data information. The possible submerged road networks and existing dangerous points when the city encounters precipitation under different scenarios can be deduced. It can also determine the location of infrastructure needed in the city and improve the accuracy of extracting and classifying disaster-affected areas, improving the timeliness and accuracy of extracting and processing information on flood inundation and other disaster risks, supporting the formulation of emergency plans, and reducing the consumption of various resources and economic losses. The research results can enhance tenhance the early warning capability of urban flood risk, provide reference and guidance for realizing flood resilience and cross-disciplinary technology integration, and provide reference for regional flood disaster management and the construction of resilient cities in large cities.

Key words: Intelligent Planning Platform for Resilient Cities;Urban Flood Disaster ;Scenario Simulation; Resilient Cities

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