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基于GIS的上海浦东暴雨内涝灾害脆弱性研究

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Title: GIS-based study on vulnerability to rainstorm inundation in Pudong of Shanghai

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摘要: 随着全球气候变化和城市化进程的加速发展,城市暴雨洪涝灾害的频度和强度不断加强。灾害脆弱性研究是当前灾害研究的热点,基于灾损率的脆弱性分析方法是当前灾害脆弱性研究的重要课题点与前沿。采用GIS和遥感技术,依据20年、50年、100年、200年、500年、1000年一遇的6个重现期情景,对上海浦东新区开展了基于灾损曲线的脆弱性研究。研究中修正了上海地区的径流模型,基于GIS栅格编制了不同重现期的淹没深度图,实地调查了研究区暴雨内涝灾害的灾损率数据,确定了研究区的脆弱性等级划分,并利用GIS编制了基于不同重现期情景的上海浦东脆弱性图。研究中提出的方法对于沿海城市开展暴雨内涝等自然灾害脆弱性研究具有借鉴意义,研究结果可供区域灾害风险评估和防灾减灾规划参考。

Abstract: With global climate change and rapid urbanization process, rainstorm flood disaster has become major issues and severe challenges faced by human society and economic development. Vulnerability assessment is important basic content of risk assessment, which is a hot points research of international disaster prevention and mitigation. The authors utilized a revised SCS model to calculate heavy rain runoff by DEM and the depth of

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flood inundation for different return periods. Based on six return periods of 20, 50, 100, 200, 500 and 1000 years, we select Pudong New Area as case study and apply GIS and remote sensing technology to carry out hazards analysis and vulnerability analysis in this paper. Based on the grid, we re-classify and draw up the inundation depth maps for different return periods. The data on disaster loss rate of minstorm inundation in study area was surveyed and the vulnerability classification for study area was carried out. The obtained results give a reference to assessment of regional disaster and planning of disaster prevention and reduction.

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