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## 上海市水灾风险分析(PDF)

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Title: Risk analysis of flood disaster in Shanghai Municipality

作者: [孙阿丽<sup>1; 2</sup>](#); [石勇<sup>1</sup>](#); [石纯<sup>2</sup>](#)

华东师范大学地理信息科学教育部重点实验室, 上海 200062

Author(s): [SUN A-li<sup>1; 2</sup>](#); [SHI Yong<sup>1</sup>](#); [SHI Chun<sup>2</sup>](#)

Key Laboratory of Geographic Information Science of Ministry of Education, East China Normal University, Shanghai 200062, China

关键词: [水灾](#); [信息扩散](#); [风险分析](#); [农业](#); [上海市](#)

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摘要: 利用1949-1990年上海市郊水灾历史灾情资料,分析其时空分布特征显示,自1949年以来,水灾受灾指数和相应粮食减产率呈阶段性下降,尤其自1977年水利控制片贯彻实施后,二者呈大幅度下降。各区县中,综合考虑水灾频次和受灾面积两个因素,得出南汇灾情最为严峻。最终,针对历史灾情资料缺乏、小样本数据使用传统统计模型进行风险分析精度不高的特点,基于信息扩散原理,利用正态信息扩散技术将单一的样本观测值变为一模糊集的模糊数学方法,对各区县受灾指数进行了风险分析,结果显示:南汇、浦东在受灾指数较低时,超越概率较高,即风险较高;崇明、金山在任一受灾指数下,风险都显示最高,受灾指数达0.8的超越概率为0.03345和0.01243,分别达到30年一遇和100年一遇。

Abstract: This paper analyzes spatiotemporal distribution of flood disaster in suburb of shanghai Municipality according to the historical data from 1949 to 1990. Since planning for water resources development carried out in 1979, the index of area damaged by flood disaster has decreased significantly. In all districts and counties of the municipality, considering two factors of flood disaster frequency ratio and area ratio, Nanhui District is the highest. Because the historical data of flood disaster is not enough to be used for analysing the probability distribution, the information diffusion method was introduced to change single sample observations into fuzzy sets, and a quantitatively analyzing model of flood disaster risk was proposed. The results show that the flood disaster risk assessment values are higher in Nanhui District and Pudong District when the index of area damaged by flood disaster is lower. However, the flood disaster risk assessment values in Chongming, Jinshan are always high in any case. When the index reaches 0.8, the exceedance probability are 0.03345 and 0.01243, corresponding to 30-year return period and 50-year return period respectively.

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作者简介:孙阿丽(1985-),女,硕士研究生,主要从事环境科学与自然灾害研究.E-mail:sunali@ecnu.cn

通讯作者:石纯(1972-),女,教授,主要从事环境科学与自然灾害研究.E-mail:shi\_chun@163.com

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