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北京“7·21”暴雨引发的城市内涝灾害防御思考

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摘要: 利用北京市1951-2011年6-8月逐日降雨量数据、1951-2012年7月总降雨量和日最大降水量以及2012年6-7月份降水量资料,分析了北京市不同暴雨等级的频次分布和重现期,利用波动和趋势双变量分析了1951-2012年7月总降雨量和日最大降雨量的稳定性水平。结果表明:与1951-2011年的6-7月平均降雨量和降雨天数相比,2012年6-7月平均降水量属于异常多的状态,降雨天数属于正常现象;"7·21"暴雨事件中,2012年7月21日和22日总降雨量属于百年一遇的水平;1951-2012年北京市7月总降水量和日最大降水量的波动随时间有逐渐稳定的趋势,即降水的稳定性逐渐增强。虽然目前北京市排水系统设计的是1~3 a一遇水平,很难抵御"7·21"暴雨事件,基于对近60 a降水数据的分析,是否需要提高排水系统能力还需要对暴雨内涝灾害风险和提高排水系统能力所需成本进行进一步分析。

Abstract: With daily precipitation data of Beijing from 1951 to 2011 (from June to August) and June and July precipitation material in 2012, the frequency distribution and return period of different rain levels were analyzed herein. The total rainfall and the maximum rainfall in July during 1951-2012 were also analyzed using the

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fluctuation and trend of precipitation. Result show that: In June and July 2012, the monthly average rainfall is in unusually high state and the rain days are in the normal range; in the "7 • 21" storm events, the rainfall reached a-hundred-year return period level on July 21-22, 2012; the fluctuation of maximum daily precipitation and total precipitation in July from 1951 to 2012 in Beijing has a gradually stable trend of gradually increasing precipitation. Although the present Beijing' s drainage system design is 1-3 years return period level and is difficult to resist "7 • 21" storm events, however, based on the recent sixty years precipitation data analysis, whether to improve drainage ability still need further analysis of the heavy rains waterlogging disaster risk and the required cost in improving the drainage system capability.

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