[1]肖名忠,张强,陈永勤,等.基于三变量Copula函数的东江流域水文干旱频率分析[J].自然灾害学报,2013,02:99-108.

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基于三变量Copula函数的东江流域水文干旱频率分

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Title: Hydrological drought frequency analysis of East River basin based on trivariate Copulas function

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摘要: 东江流域肩负着给珠三角内城市及香港供水的重要任务,水文干旱特征的研究对东江流域供水的不确定性及可持续性研究具有重要意义。为此,利用三变量Plackett Copula函数对东江流域3个水文站1975-2009年的日流量数据进行了分析,其中水文干旱由干旱历时、严重程度和最小流量3个特征表示,然后对其进行了联合重现期及条件概率分析。研究结果表明,Plackett Copula函数对各水文站干旱历时、严重程度和最小流量任意两变量和三变量之间的相关关系拟合良好,同时发现整体上看,东江流域下游干旱风险最高,中游最低。

Abstract: The East River basin, one of the major tributaries of the Pearl River basin, China, is the major source of water supply for mega-cites within and in the vicinity of

the Pearl River Delta. For this reason, study of the sustainability and variability of the hydrological drought water resources of the East River basin is of practical and scientific significance. This study aims to investigate the probability behaviors of the hydrological droughts of the East River basin using trivariate Plackett copula function. Daily streamflow data for the period of 1975-2009 from 3 hydrological stations in the East River basin were analyzed, in which hydrological droughts were defined by drought severity, duration and the minimum flow, and then the joint return periods and conditional probability were analyzed. The results show that the Plackett copula function is capable of yielding bivariate and trivariate probability distribution of correlated drought variables, and the risk of drought of the East River basin are the highest in the downstream, and the lowest in the midstream.

参考文献/REFERENCES

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