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Title: Calculation of multivariable flood frequency

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摘要: 将Gunbel-logistic模型和Gumbel-mixed模型进行了对比,并解析了不同组合情形下的洪水频率结果。研究表明:当输入的二元变量的相关性不大于2/3时,两模型计算出的重现期值差异不大,当输入的二元变量的相关性大于2/3时,两模型计算出的重现期值存在较大的差异,这是由于此时Gumbel-mixed模型已经失效的缘故,因此Gunbel-logistic模型的应用范围较Gunbel-mixed模型更宽。就Gunbel-logistic模型而言,对不同洪水特征量的组合情形得到的重现期差异较大,所得重现期差异幅度达800年。可见,二元变量的洪水频率计算,模型的选择和洪水特征量组合情形的选取是决定洪水频率结果的主要影响因素。

Abstract: This paper compared the Gumbel-logistic model and Gumbel-mixed model and analyzed the flood frequencies under different combination situation. The results show that when the correlation coefficient between inputted binary variables is not greater than 2/3,the difference of recurrence periods calculated from the two models is not obvious; but when the correlation coefficient is greater than 2/3,there is a large difference between the two recurrence periods because of failure of the Gumbel-mixed model at that time. Therefore, the applicable range

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of the Gumbel-logisitic model is wider than that of the Gumbel-mixed model. As for the Gumbel-logislic model, the difference of recurrence periods from different combination of flood characteristic quantities is more obvious and the recurrence period obtained in this paper reaches to 800 years. Therefore, in calculation of binary variables' flood frequencies, the selection of models and the choice of combination of flood characteristic quantities are the main influencing factors on flood frequency results.

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