

极端事件专栏

1960-2005年长江流域降水极值概率分布特征

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摘要 摘要: 根据1960-2005年长江流域147个气象站逐日降水观测资料和ECHAM5/ MPI-OM气候模式20世纪试验期(1941-2000年)79个格点逐日降水模拟资料, 建立年最大强降水AM (annual maximum) 序列及汛期日降水量<1.27 mm的最长干旱持续天数MI (Munger index) 序列, 分析了长江流域降水极值序列的时空分布特征和概率分布模式。结果表明: 1) 长江流域强降水事件的强度和概率最大的地区位于岷沱江流域中游、洞庭湖湖区、长江中下游干流区与鄱阳湖东南部支流等地区, 干旱事件强度和概率最大的地区位于金沙江流域中下游与嘉陵江流域; 2) 气候模式模拟的长江流域AM事件的多年平均值普遍高于观测值, 但离差系数普遍低于观测值; 3) 气候模式模拟结果与观测的降水极值空间分布有一定的差异, 但对气候模式和实际观测的降水极值概率分布的拟合, 均证明Wakeby分布函数能够较好地拟合降水极值的概率分布。

关键词 [降水极值](#) [概率分布](#) [ECHAM5模式](#) [长江流域](#)

分类号

Probability Distribution of Precipitation Extremes over the Yangtze River Basin During 1960-2005

Abstract Abstract: Based on the daily observational precipitation data of 147 stations in the Yangtze River Basin during 1960-2005 and the simulated daily data of 79 grids from ECHAM5/ MPI-OM in the 20th century, time series of precipitation extremes which contain AM (annual maximum) and MI (Munger index) were constructed. The distributive feature of precipitation extremes was analyzed based on the two index series. Research results show that 1) the intensity and probability of extremely heavy precipitation are higher in the mid-Mintuo River Basin, Dongting Lake area, mid-lower main stream section of the Yangtze River, southeastern Poyang Lake Basin; whereas, intensity and probability of drought events are higher in the mid-lower Jinsha River Basin and the Jialing River Basin; 2) compared with observational data, averaged AM of modeled precipitation is higher but the discrete coefficient of the AM is lower; 3) in spite of certain differences of the spatial distributions between observed and simulated precipitation extremes by applying general extreme value (GEV) and Wakeby (WAK) functions with the method of L-moment estimator (LME) to the precipitation extremes, WAK can fit the probability distribution of precipitation extremes calculated both from observed and simulated data quite well. The WAK could be an important function for estimating the precipitation extreme events under future climatic scenarios.

Key words [precipitation extremes](#) [probability distribution](#) [ECHAM5 model](#) [the Yangtze River Basin](#)

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