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黄河流域汛期降水非均匀性变化规律研究(PCA)

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Title: Nonuniform change of precipitation in Yellow River Basin during flood period

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摘要: 降水的时间分配对水资源利用有很大影响,降水的分配不均匀更是季风气候区旱涝灾害的主要原因。利用黄河流域72个台站1960-2010年汛期(6-9月)的逐日降水资料,通过EOF,Morlet小波分析等方法分析了该地区近51年来汛期降水集中程度的变化规律,并定量研究了降水集中度与旱涝指数之间的关系。研究表明:黄河流域汛期降水分配具有明显的不均匀性,东北部地区的降水不均匀性和集中度以及降水集中度对旱涝的影响更加明显,应高度警惕极端强降水造成洪涝灾害,而西部地区的降水相对较少,因而进一步加重了西部的干旱;降水集中期表现出从东北向西南地区推进的规律,7月中旬是降水集中的主要时段,并存在年际及年代际变化。

Abstract: The temporal distribution of precipitation has many effects on water resource uses. The non-uniform distribution of precipitation is the main cause of flood and drought disaster in the monsoon climate zone. Based on the daily precipitation data in flood period (June to September) of 72 stations in the Yellow River Basin from

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1960 to 2011, the change rules of precipitation concentration degree in the flood period during these past 51 years in this area and the quantitative relationship between precipitation concentration degree and flood and drought index were analyzed by methods of EOF, Morlet wavelet analysis, etc. The results indicate that, the distribution of precipitation is obviously non-uniform. The non-uniform characteristics and concentration degree of precipitation in the northeast of the area and the effects of precipitation concentration degree are especially obvious on flood and drought disaster, and so flood and drought disasters caused by extreme strong precipitations should be watched out with extra vigilance; while the precipitation in the west of the area is relatively less, which aggravates the drought of the west. The precipitation concentration period shows an advancing trend from northeast to southwest. Mid-July is the main period of precipitation concentration and have inter-annual and inter-decadal change characteristics.

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