Study on the Driven Mechanism of Watershed Hydrological Drought Based on Geomorphological Spatial Distribution Pattern: A Case Study of Guizhou, China

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Abstract

In recent years, hydrological drought has become more and more frequent, which has caused serious ecological and environmental problems. This paper is taking Guizhou province of China as an example to analyze the geomorphologic distribution and temporal-spatial evolution of hydrological droughts, and to study driving mechanisms of both the rainfall in drought periods and geomorphologic factors on the hydrological droughts, based on the hydrometeorological data from the 2000 to 2010, and the TM and DEM data. The results show that (1) the rainfall and its temporal-spatial distribution have less impacts on the hydrological droughts and its temporal-spatial distribution, showing the obvious phase characteristics, and the regional hydrological droughts are more serious in the south than in the north, and the less serious in the east than in the west; and (3) in terms of the overall distribution of landform types, the mountain, hill and basin have less impacts on hydrological droughts; in terms of the distribution of single geomorphic type, hydrological droughts are significantly influenced by the high-medium mountain, deep-high hill and high basin, where the hydrological droughts are relatively lighter. While there are more serious areas in the low basin, shallow-low hill and low mountain.

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