IAHS2017-315-1
IAHS Scientific Assembly 2017

Characteristics of Surface Runoff change and Impact on Flood and Drought Disasters in China from 1960 to 2000

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The abrupt changes and trends in runoff and influences on floods and droughts were analyzed using monthly runoff data at 370 hydrological stations during 1960-2000, and irrigation areas, disaster areas of flood and drought during 1972-2000 across China. The results show that: (1) the spatial pattern of abrupt change in monthly runoff is obviously different with abrupt years mainly between 1970 and 1990. (2) The areas showing a significantly decreasing trend in monthly runoff mainly concentrate on the southern part of the Yellow River Basin, Huaihe River, Haihe River and Liaohe River, while the monthly runoff exhibits a significant increase in the down streams of the Yangtze River and the southeastern coastal rivers in consistent with the results of regional trend test. There is no obvious difference in spatial pattern of stations with significant changes among the 12 monthly runoffs. (3) The effective irrigation areas in 24 provinces out 29 provinces show a decreasing or a significantly decreasing trend, but the percentage between the effective irrigation areas and crop areas has a significant change just in 5 provinces. Drought is the main disaster in Northeast China, North China, Northwest, Central China and Southwest China, but the risk of flood disaster in northeast and northwest is increasing. The flood disaster in Southeast China and Southern China is the main disaster, but the drought risk is increasing.