



Study on the mutation law of hydrometeorological elements in the Dagu River Basin

Sufang Cui, Baoxiang Zhang, Xin Zhang, Qing Shi, Zhenting Wang, Junling Cui, and Shixia Sun
Shandong Agriculture and Engineering University, Land Resources and Surveying Engineering, Land engineering, China
(cuisufang1981@163.com)

Affected by global warming and environmental changes, meteorological and hydrological factors in the Dagu River Basin have also undergone a series of response changes, resulting in changes of time and space in the quantity of water resources, and the natural ecological environment and the economic development of human society have been seriously affected. In this paper, hydrometeorological factors such as temperature, rainfall and runoff are selected as the research objects. Mann-Kendall order correlation test, sliding t test, YAMAMOTO test signal to noise ratio (SNR) and other mutation point test methods are used to analyze the mutation law of meteorological and hydrological elements in the Dagu River Basin in the past 50 years. The results show that in the last 50 years, the trend of climate warming in Dagu River basin is basically consistent with the general trend of climate change in China, and the annual mean temperature mutation is mainly after 1985, and the abrupt point of annual precipitation in the basin occurred during 1975-1985. The annual evaporation in the basin fluctuates with time, and the decreasing trend is significant. By means of sliding t and SNR test, it is found that the abrupt point of annual runoff occurred between 1965-1968 and 1975-1983 in the studied area, and the precipitation mutation is the main cause of the abrupt change of annual runoff.