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Water Resource Response to the Climate Change in Tarim Basin

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Abstract: Climate change threatens water resource availability through affecting components of hydrological cycle. It also has an impact on the safety and quality of social and natural environment through an increase of floods, droughts and erosions, and a decrease of water quality and ecosystem diversity. Taking the climate change of Tarim Basin as the basis and background of analysis, and the hydrological cycle processes as the main line, the present study analyzed and discussed the characteristics of changing temperature and precipitation, as well as that of hydrological variables, such as runoff, evaporation, glacier and snow which is responding to regional climate change with various statistical methods, such as Gray correlation analysis. The results are:(1) Both of the temperature and precipitation on the basin have been increasing in the last 50 years, and had a significant jump in the mid 1980s. (2) The hydrological processes of the four headstreams of Tarim River had altered with the changing climate. (3) The glacier of the Tarim River Basin was accelerating in melting according to the analysis on glacier and snow responding to the climate change.(4) The change of the water level of lakes in the Tarim Basin has a positive response to the regional climate change.
Key words [U+FF1A] climate change; water resources; response; Tarim Basin