Pan Evaporation trend for the Haihe River Basin and its Response to Climate Change

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The Mann-Kendall trend test technique was used to detect the pan Evaporation trend for the Haihe River Basin (HRB), which encompassing Beijing and Tianjin, is the densely populated political, economic, cultural and transport center of China. The results show that there is a statistically significant decrease trend of pan evaporation in the HRB during the last 50 years, and the decreasing trends in spring and summer seasons have larger magnitudes than those in autumn and winter seasons. An empirical formula for calculating pan evaporation was proposed with temperature, sunshine duration, wind speed and humidity to investigate the possible reasons. The results indicate that the positive impacts of increasing temperature and decreasing humidity on pan evaporation are offset by the effects of decreasing trends of sunshine duration and wind speed. The result could be a reference for water resources prediction and management in the HRB.