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Impact of land-cover and climate changes on runoff of the source regions of the Yellow River

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After dividing the source regions of the Yellow River into 38 sub-basins, the paper made use of the SWAT model to simulate streamflow with validation and calibration of the observed yearly and monthly runoff data from the Tangnag hydrological station, and simulation results are satisfactory. Five land-cover scenario models and 24 sets of temperature and precipitation combinations were established to simulate annual runoff and runoff depth under different scenarios. The simulation shows that with the increasing of vegetation coverage annual runoff increases and evapotranspiration decreases in the basin. When temperature decreases by 2oC and precipitation increases by 20%, catchment runoff will increase by 39.69%, which is the largest situation among all scenarios.

Paper (PDF)

关键词: distributed hydrological model; source regions of the Yellow River; scenario simulation; changing environment doi: 10.1360/gs040309