



Impact of climate change on water resources

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Climate change will affect hydrological regimes of rivers, and have a direct impact on availability, renewability, and quality of water resources. To better understand current and future water resources in the Pearl River basin, here we assess the impact of climate change on river discharge, and identify whether climate change will lead to increasing water availability or scarcity at the catchment scale. The Variable Infiltration Capacity (VIC) model is used for hydrological simulation driven by WATCH (the Integrated Project Water and Global Change) forcing data (1958-2001), WATCH forcing data ERA interim (1979-2001) and ten bias-corrected projected climate scenarios from MPI-ESM-LR, HadGEM2-ES, CNRM-CM5, IPSL-CM5A-LR and EC-EARTH forced by RCP4.5 and RCP8.5 (1961-2099). All subbasins except Yujiang basin show a decrease in streamflow from 1961 to 2099. The results also indicate that the wet season will become more wet, and the dry season will become drier over the whole Pearl River basin after 2030. Highly uneven spatial and temporal distribution of water resources may result in water shortages and severe hazards in this region.