



Drought Disaster Risks under CMIP5 RCP Scenarios in Ningxia Hui Autonomous Region, China

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The Ningxia Hui Autonomous Region of China (Ningxia) is an important food production area in northwest China severely affected by drought. Based on observed meteorological data, outputs of 20 GCMs and drought disaster data, future climate change and drought hazard were projected in Ningxia in the 21st century, under RCP2.6 and RCP4.5; the classic measurement method of risk was employed to quantitatively assess the risks of population, crop area, and agriculture economic to drought disasters in Ningxia, with physical vulnerability curve models, probability distribution functions and Monte Carlo Simulation method. The Ningxia climate is likely to experience a warming and wetting tendency in the 21st century. Drought hazard degree is likely to have increasing trends, and its increase rate is greater under RCP4.5 than that under RCP2.6. In general, the risks of population, crop area, and agriculture economic to drought disasters are likely to increase in Ningxia in the 21st century. The magnitude of increase in drought disaster risks is likely to the greatest in the latest-term (2016–2035), the second is in the medium-term (2046–2065), and the slowest is the later-term (2081–2100). Compared to results under RCP2.6, drought disaster risks are likely to increase further in three periods of the 21st century under RCP4.5. The results of this work will contribute to providing suggestions for risk-based decision-making and drought disaster risk management.