



Additional risk in extreme climate in China from 1.5 °C to 2 °C global warming levels

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The long-term goal of the 2015 Paris Agreement is to limit global warming to well below 2 °C above pre-industrial levels and to pursue efforts to limit it to 1.5 °C. Changes in magnitude and probability of extreme climate over China are investigated under those two global warming levels based on simulations from the Coupled Model Inter-Comparison Projects Phase 5 (CMIP5). Results show that the increase in the hottest day (TXx) and coldest night (TNn) might be more than 1 °C over Northwestern China, Northeastern China and Tibetan Plateau and regional average of Magnitude in extreme precipitation may increase by 4% for addition warming from 1.5 °C to 2 °C. The risk change of extreme events show dependence on the return periods, with rarer events (longer return periods) having larger increase of risk. The hot extreme events with 100 year return period in historical are reduced to 15 and 11 years under 1.5 °C and 2 °C warming climate, respectively. As for the extreme precipitation, 100 year return period events is projected to reduce to 62 and 42 years under 1.5 °C and 2 °C warming conditions. The area-averaged changes in extreme temperature and precipitation are independent of the RCP scenarios.

Keywords: 1.5 °C and 2 °C global warming, Extreme temperature and precipitation, CMIP5, China