Increasing trends of warm and wet extremes slowed in China during recent global warming hiatus

September 1 2021, by Li Yuan

Heavy rain caused lake level to rapidly rise. Credit: QIN Peihua

Although annual concentrations of atmospheric greenhouse gases have increased continuously in past years, the global surface air temperature did not increase as much as expected during a period starting from 1997/1998 with a strong El Nino and ending around 2013.

This unexpected warming hiatus has received much attention, and researchers want to figure out what contributed to it and how climate extremes changed during the warming hiatus.

Recently, Dr. QIN Peihua from the Institute of Atmospheric Physics (IAP) of the Chinese Academy of Sciences and his collaborators investigated trends of precipitation and temperature extremes in China during the global warming hiatus relative to the reference period (1982–1997) and the whole historical period (1982–2017).

During the global warming hiatus, annual warmest days and the number of summer days over China and most of its four subregions were found to decrease relative to both periods. Annual coldest nights over China and its four subregions were found to decrease moderately relative to both periods, whereas the number of frost days increased consistently.

"We found precipitation extremes showed more temporal and spatial variability than temperature extremes. Trends of annual wet extremes during the hiatus decreased relative to the whole historical period and the reference period, whereas the dry extreme index during the hiatus was found to increase generally over China and in most subregions," said QIN.

The study suggests that lighter winds and lower relative humidity over most areas of China might have contributed to less pronounced trends of wet extremes during the hiatus period.

This work was published in the *International Journal of Climatology* on August 20.

More information: Peihua Qin et al, Characteristics of climate extremes in China during the recent global warming hiatus based upon machine learning, *International Journal of Climatology* (2021). DOI: 10.1002/joc.7354

Provided by Chinese Academy of Sciences