

More than 6 billion people will be increasingly exposed to extremes under global warming

April 6 2022, by Li Yuan

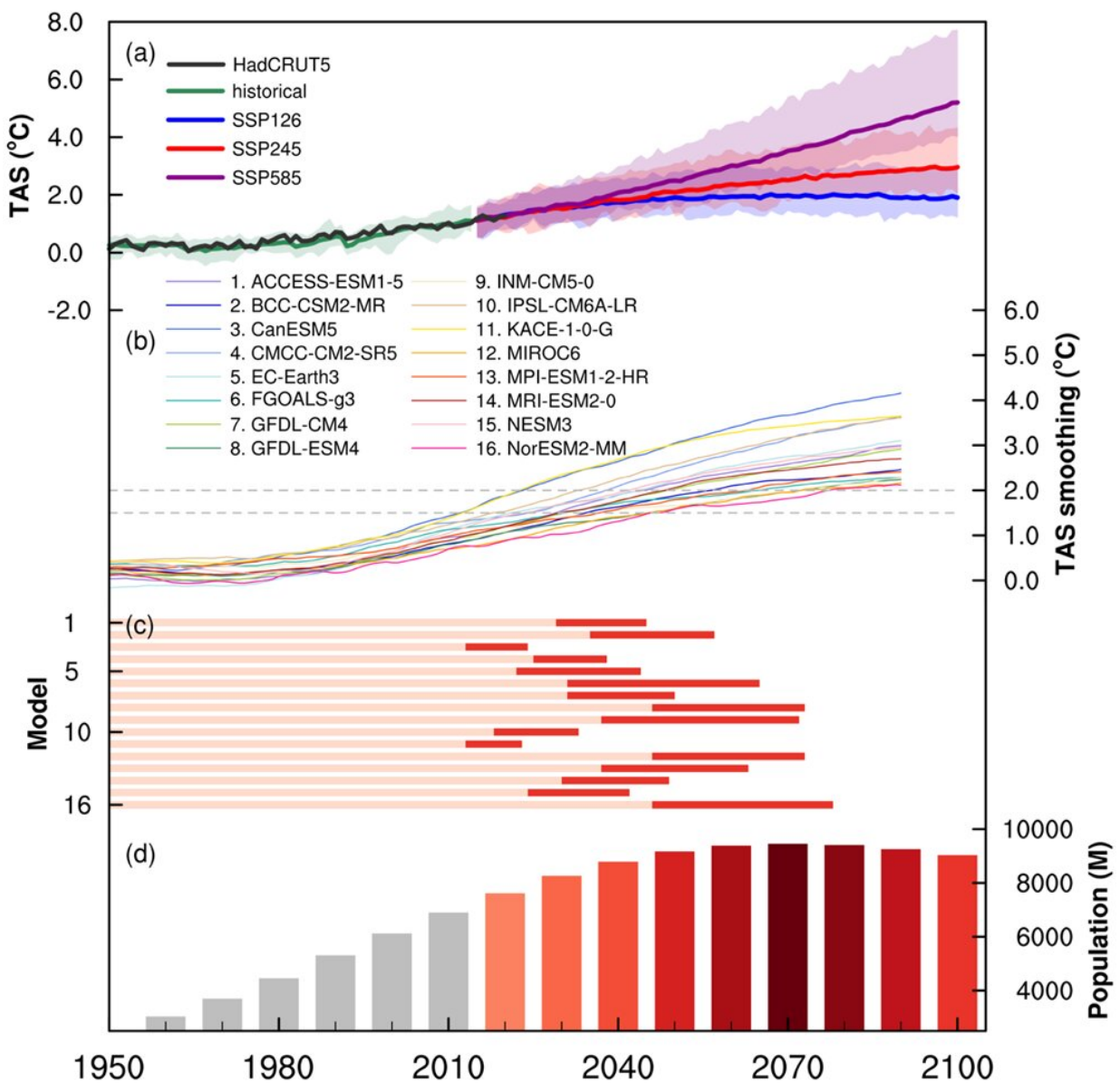


Fig. 1. Time series of global surface air temperature and total population, as well as the year when 1.5°C and 2.0°C warming occur. Credit: IAP

The Intergovernmental Panel on Climate Change's 6th Assessment Report has reported that changes in many climate extremes have increased with global warming. The Paris Agreement considered two warming levels in the 21st Century compared to preindustrial times: 1.5 degrees Celsius as the ideal objective, and 2.0 degrees Celsius as the upper boundary.

Climate-related risks result from changes in [climate extremes](#), as well as changes in global population size and spatial population distribution. Recently, Dr. Qin Peihua from the Institute of Atmospheric Physics (IAP) of the Chinese Academy of Sciences and his collaborators investigated population exposure to climate extremes with global climate models in the Coupled Model Intercomparison Project Phase 6.

This work was published in *Atmospheric Research*.

"Global population exposure to climate extremes shows moderate increases under global warming and intensified increases with a higher warming level, with the southern Asia and Central Africa regions mainly contributing to these increases," said Qin. Due to a population decrease when moving from 1.5 degrees Celsius to 2.0 degrees Celsius warming over eastern Asia, population exposure to extremes is found to decrease slightly.

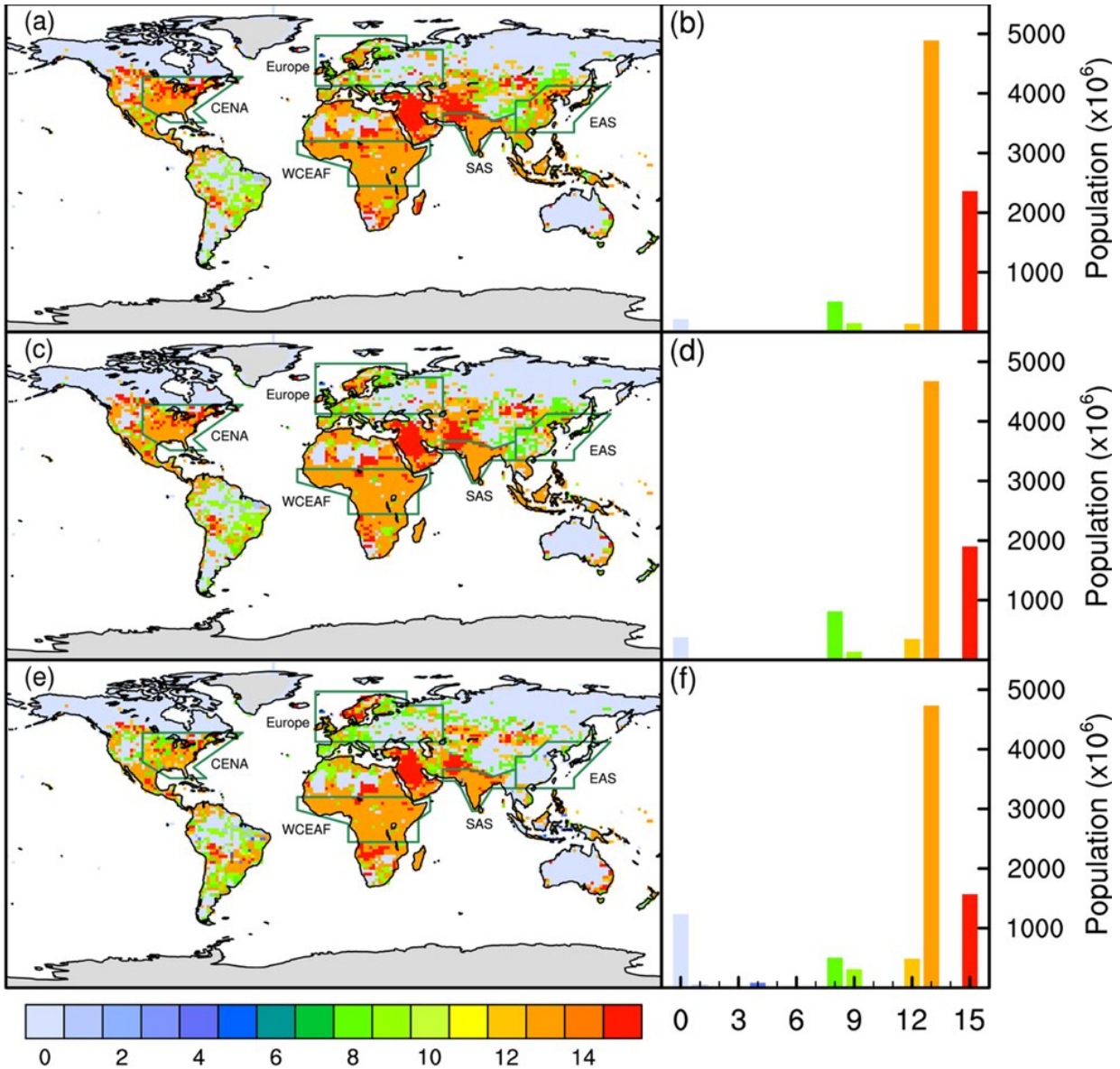


Fig. 2. Compound indices of increases in population exposure to extremes under different global warming level. Credit: IAP

According to their study, total population of 1,569–2,358 million will be increasingly exposed to wet (consecutive wet days), dry (consecutive dry days), heat (summer days) and cold (frost days) extremes at 1.5 degrees Celsius warming, 2.0 degrees Celsius warming and from 1.5 to 2.0

degrees Celsius warming. Additionally, more than two-thirds of total world population might encounter more exposure to all four extremes but the cold extreme during the above periods.

"Obviously, we should do more to face possible climate risks under [global warming](#)," said Qin.

More information: Peihua Qin, More than six billion people encountering more exposure to extremes with 1.5 °C and 2.0 °C warming, *Atmospheric Research* (2022). [DOI: 10.1016/j.atmosres.2022.106165](#)

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