

**Scenario dependence of future changes in climate extremes under 1.5 °C and 2 °C  
global warming**

Zhili Wang<sup>1\*</sup>, Lei Lin<sup>2\*</sup>, Xiaoye Zhang<sup>3</sup>, Hua Zhang<sup>4</sup>, Yangyang Xu<sup>5</sup> & Liangke Liu<sup>6</sup>

<sup>1</sup>State Key Laboratory of Severe Weather and Key Laboratory of Atmospheric Chemistry of CMA, Chinese Academy of Meteorological Sciences, Beijing, China.

<sup>2</sup>Department of Atmospheric Sciences, Sun Yat-sen University, Guangzhou, China.

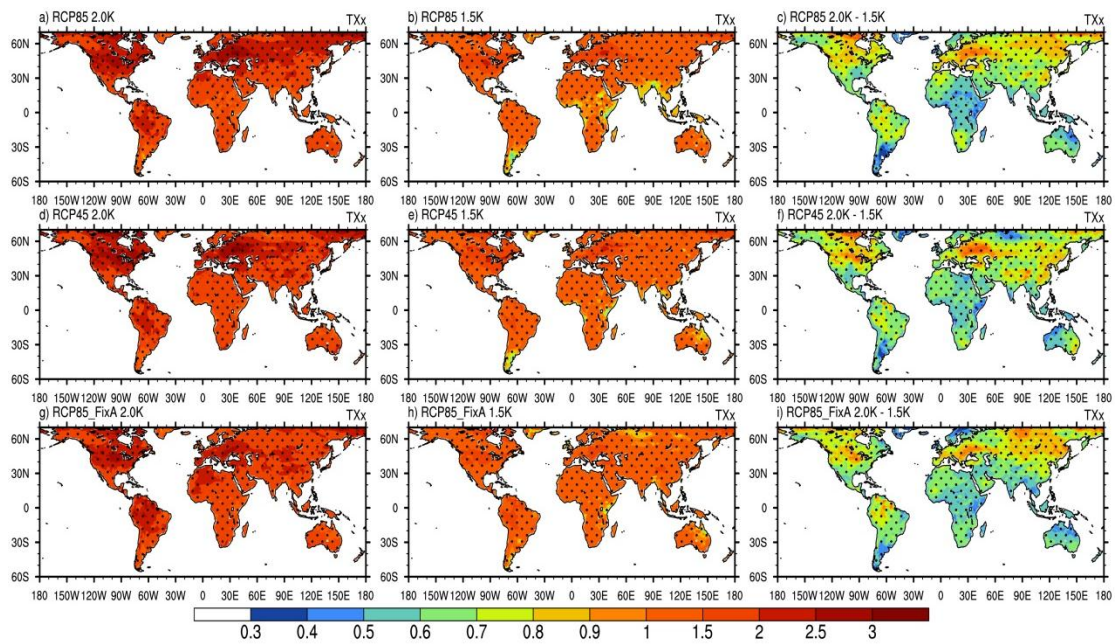
<sup>3</sup>Chinese Academy of Meteorological Sciences & Center for Excellence in Regional Atmospheric Environment, IUN, CAS, China.

<sup>4</sup>Laboratory for Climate Studies, National Climate Center, China Meteorological Administration, Beijing, China.

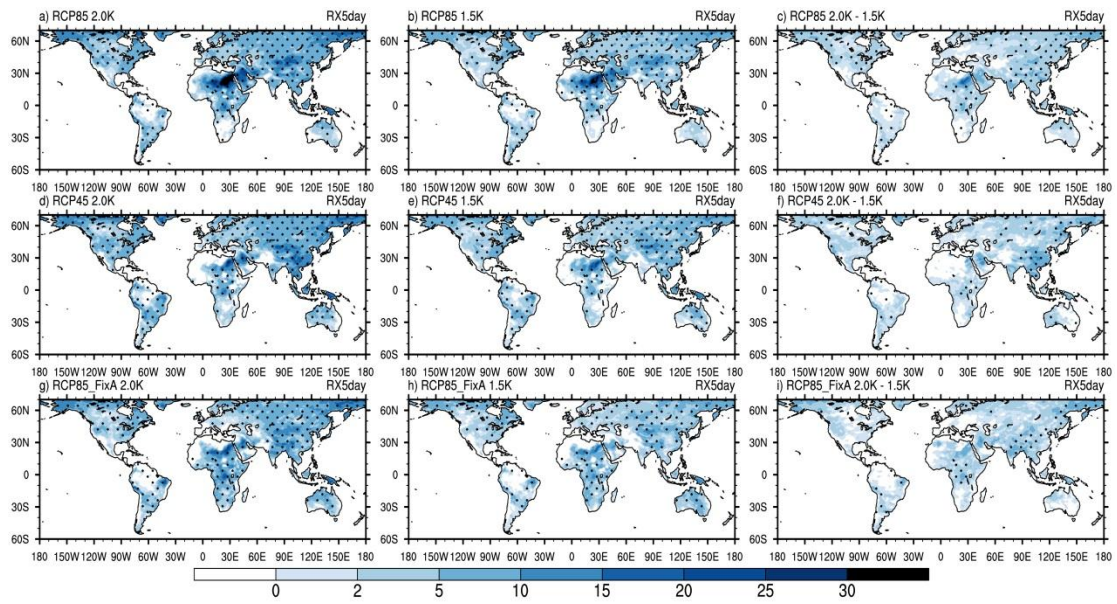
<sup>5</sup>Department of Atmospheric Sciences, Texas A&M University, College Station, Texas, USA.

<sup>6</sup>Nanjing University of Information Science and Technology, Nanjing, China.

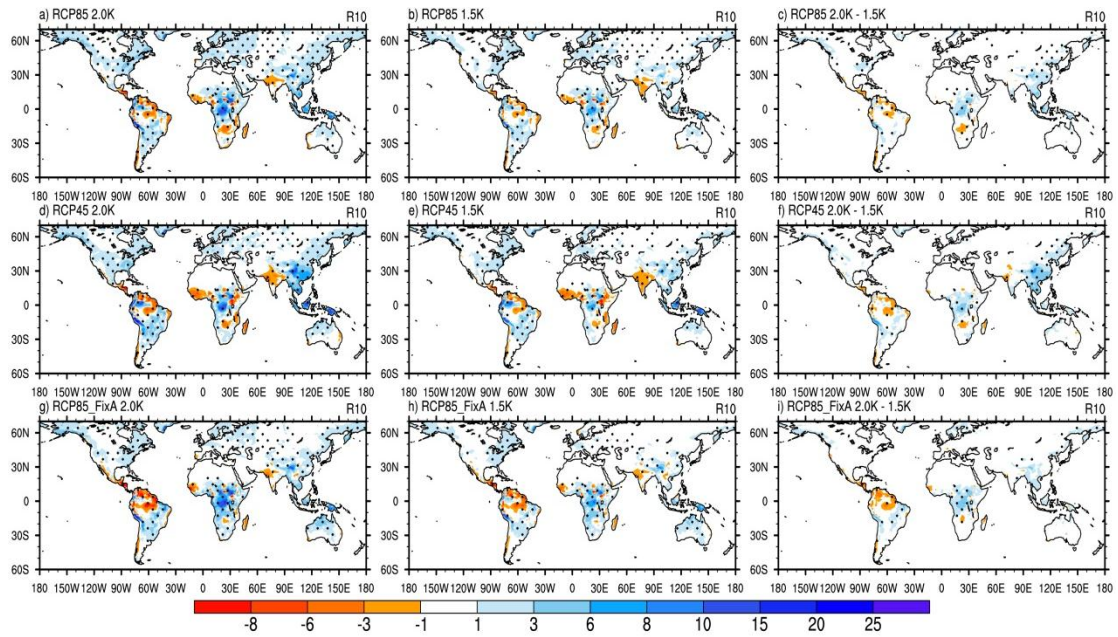
\*Corresponding author: L.L. (email: linlei3@mail.sysu.edu.cn) and Z.W. (email: wangzl@camsma.cn).



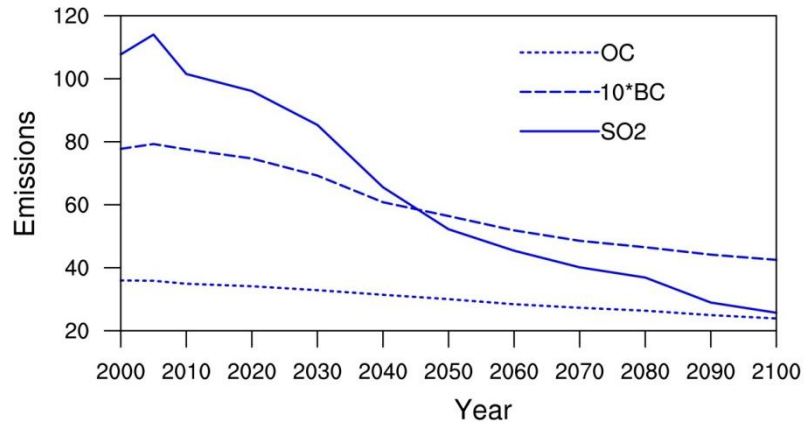
**Supplementary Figure S1.** Spatial distributions of changes in TXx under 1.5 °C and 2 °C warming and the difference between the two warming levels in the RCP8.5, RCP4.5, and RCP8.5\_FixA scenarios (unit: °C). The dots represent significance at  $\geq 95\%$  confidence level from a two-sided t-test. Maps were generated using NCAR Command Language (The NCAR Command Language (Version 6.3.0) [Software]. (2013). Boulder, Colorado: UCAR/NCAR/CISL/TDD. <http://www.ncl.ucar.edu/>).



**Supplementary Figure S2.** Spatial distributions of changes in RX5day under 1.5 °C and 2 °C warming and the difference between the two warming levels in the RCP8.5, RCP4.5, and RCP8.5\_FixA scenarios (unit: %). The dots represent significance at  $\geq 95\%$  confidence level from a two-sided t-test. Maps were generated using NCAR Command Language (The NCAR Command Language (Version 6.3.0) [Software]. (2013). Boulder, Colorado: UCAR/NCAR/CISL/TDD. <http://www.ncl.ucar.edu/>).



**Supplementary Figure S3.** Spatial distributions of changes in R10 under 1.5 °C and 2 °C warming and the difference between the two warming levels in the RCP8.5, RCP4.5, and RCP8.5\_FixA scenarios (unit: days). The dots represent significance at  $\geq$  95% confidence level from a two-sided t-test. Maps were generated using NCAR Command Language (The NCAR Command Language (Version 6.3.0) [Software]. (2013). Boulder, Colorado: UCAR/NCAR/CISL/TDD. <http://www.ncl.ucar.edu/>).



**Supplementary Figure S4.** SO<sub>2</sub> (unit: Tg yr<sup>-1</sup>), BC and OC (units: TgC yr<sup>-1</sup>) emissions from 2000 to 2100 in the RCP8.5 scenario.