

Investigating the Climate Extremes over India to Changes in Anthropogenic Emissions using a Climate Model

Shiwansha Mishra

Centre For Atmospheric Sciences, Indian Institute Of Technology Delhi, India

Author list (excluding presenting author)

Dilip Ganguly, Puneet Sharma

Abstract

Changing emissions of aerosols and greenhouse gases (GHG) could result in significant changes in rate of precipitation extremes and surface temperature over India. We examined the effect of changing emissions of anthropogenic aerosols, greenhouse gases (GHG), and both on the rate of precipitation extremes and surface temperature over India using a variant of the climate model CESM1.2.2. Our results suggest that the rate of change of precipitation extremes is significantly larger over Western India due to changes in GHG than changes in aerosols. However, changes in precipitation extremes over Central India are dominated by changes in aerosols rather than changes in GHG. Changes in GHG and aerosols induce significant widespread enhancement in temperature extremes across India, but the combined increase of GHG and aerosols results in significantly enhanced temperature extremes over Northern India and parts of Southern and Western India. We also found that the Northern, Central, Eastern, and North Eastern parts of India experience significantly enhanced temperature extremes (cooling), while most of Southern India experiences significantly enhanced temperature extremes (warming) under the combined effect of GHG and aerosols. More detailed results will be presented.

Early Career Scientist

YES, I am an early career scientist.

IGAC Regional Working Groups

MANGO: Monsoon Asia and Oceania Networking Group