



Disentangling increasing compound extremes at regional scale during Indian summer monsoon

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Co-PRoPARE

Background and Motivation

- ISM precipitation is crucial for agricultural activities... India has witnessed compound dry and hot summers that occurred during 1957, 1972, 1979, 2002, 2009 and 2014, causing a significant crop yield reduction¹.
- Widespread increase in compound extremes is likely to pose a substantial challenge to the future food security of billions of people....
- Present study disentangle different types of compound extremes and identify climate change hotspots.

Methodology

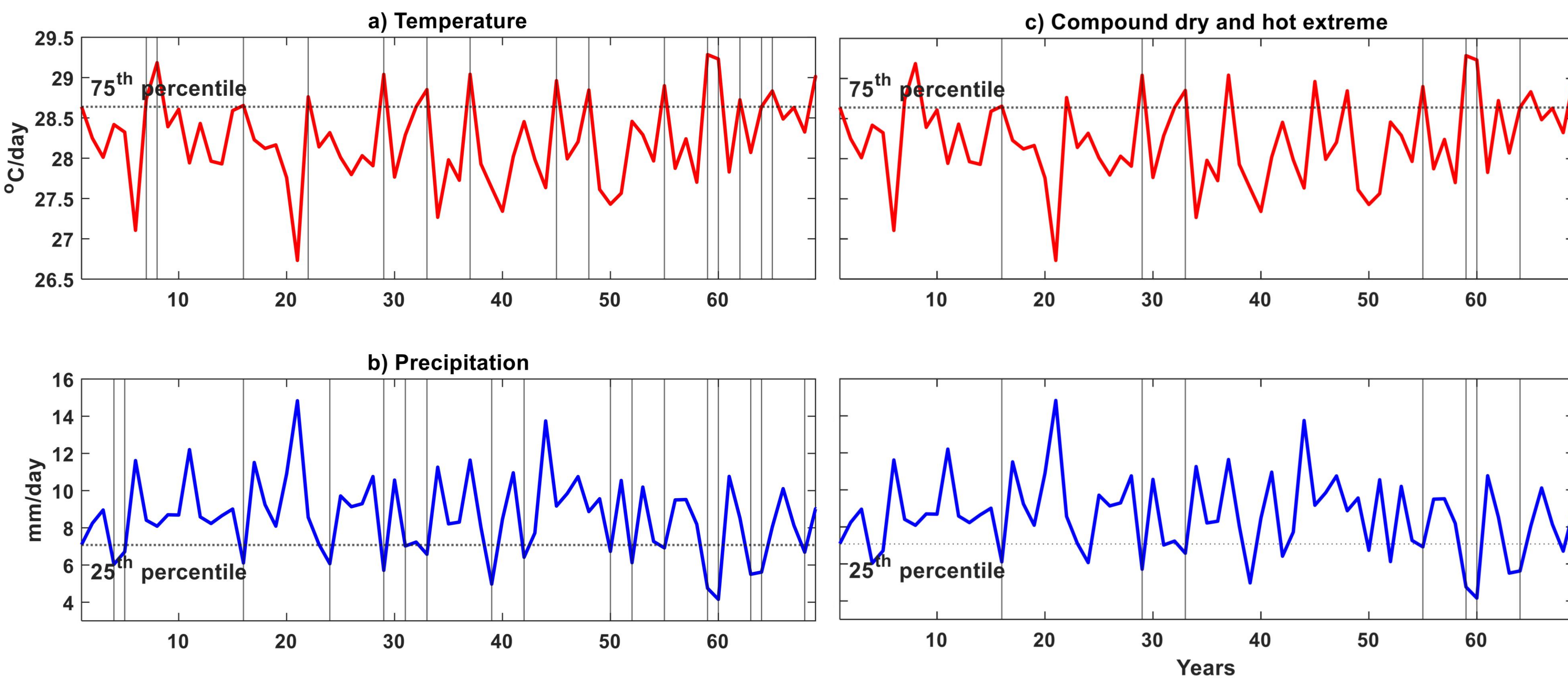
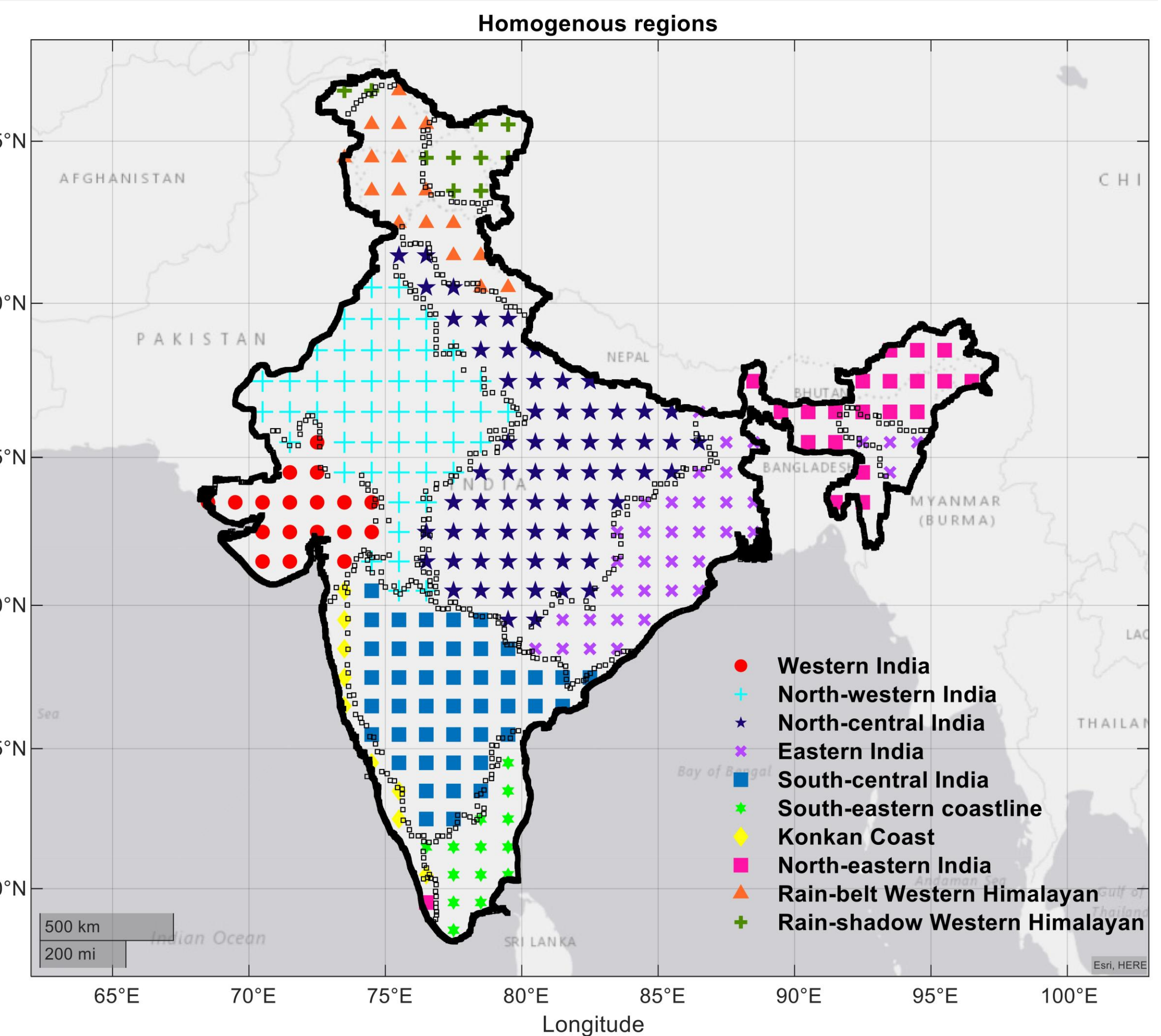
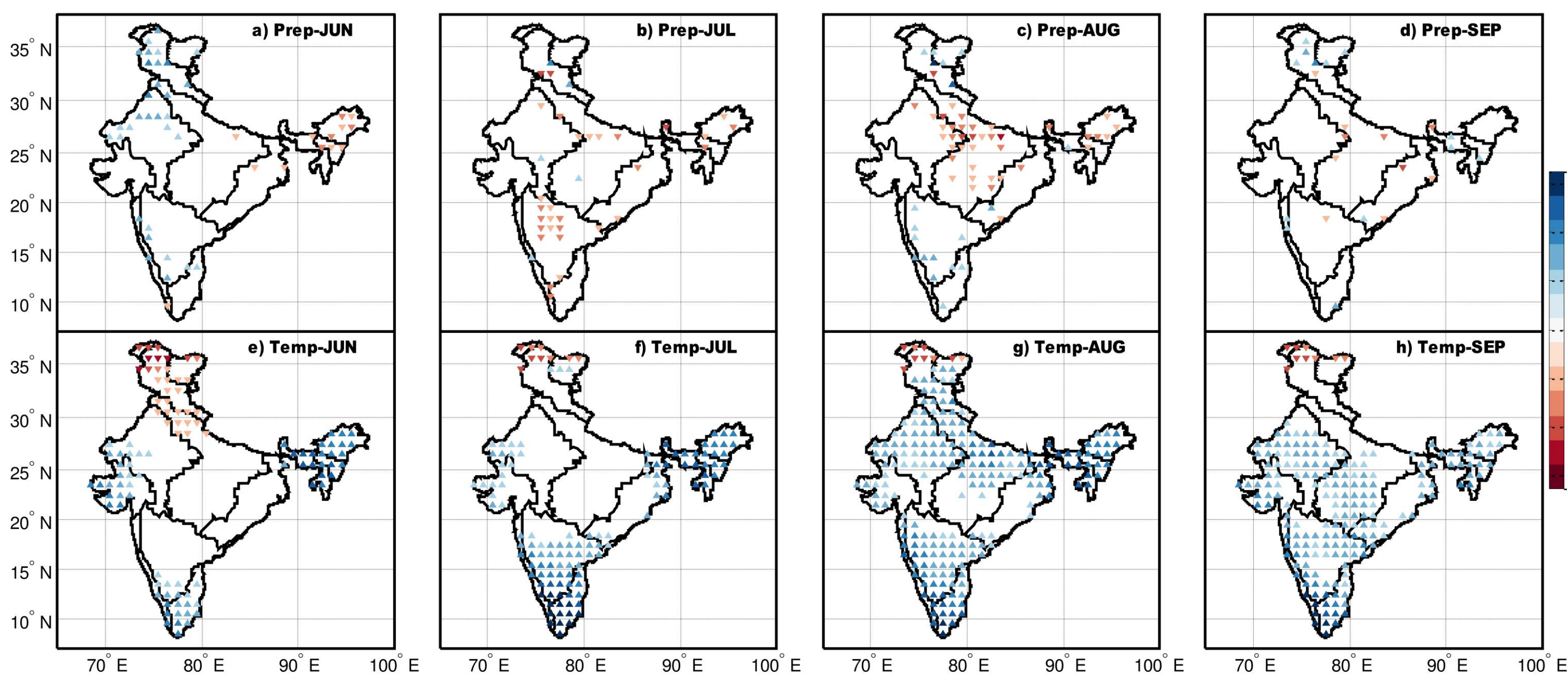


Illustration of a typical compound dry and hot extreme (c) and its comparison with univariate events (a) Temperature >75th percentile and (b) Precipitation <25th percentile. The vertical and horizontal lines are shown to visualize an event and the threshold used to define the event)

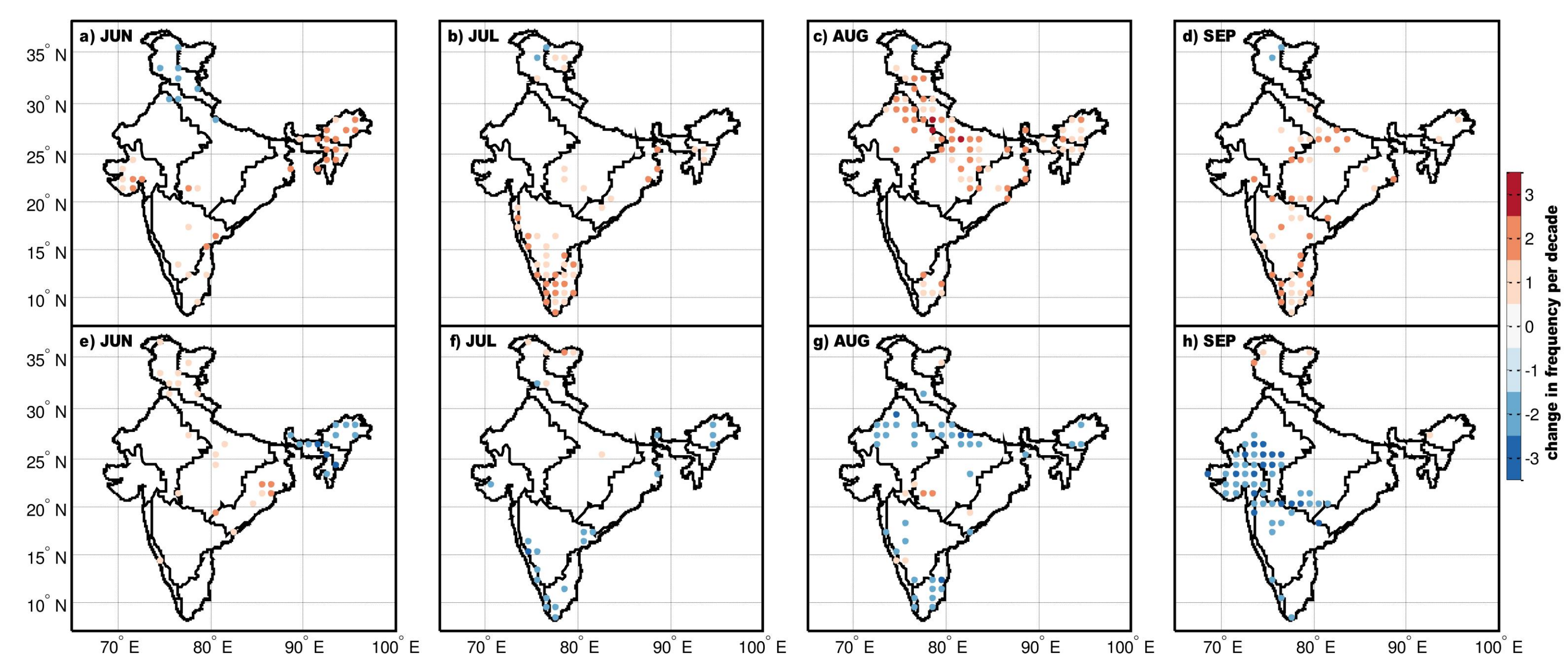
Homogenous regions of India



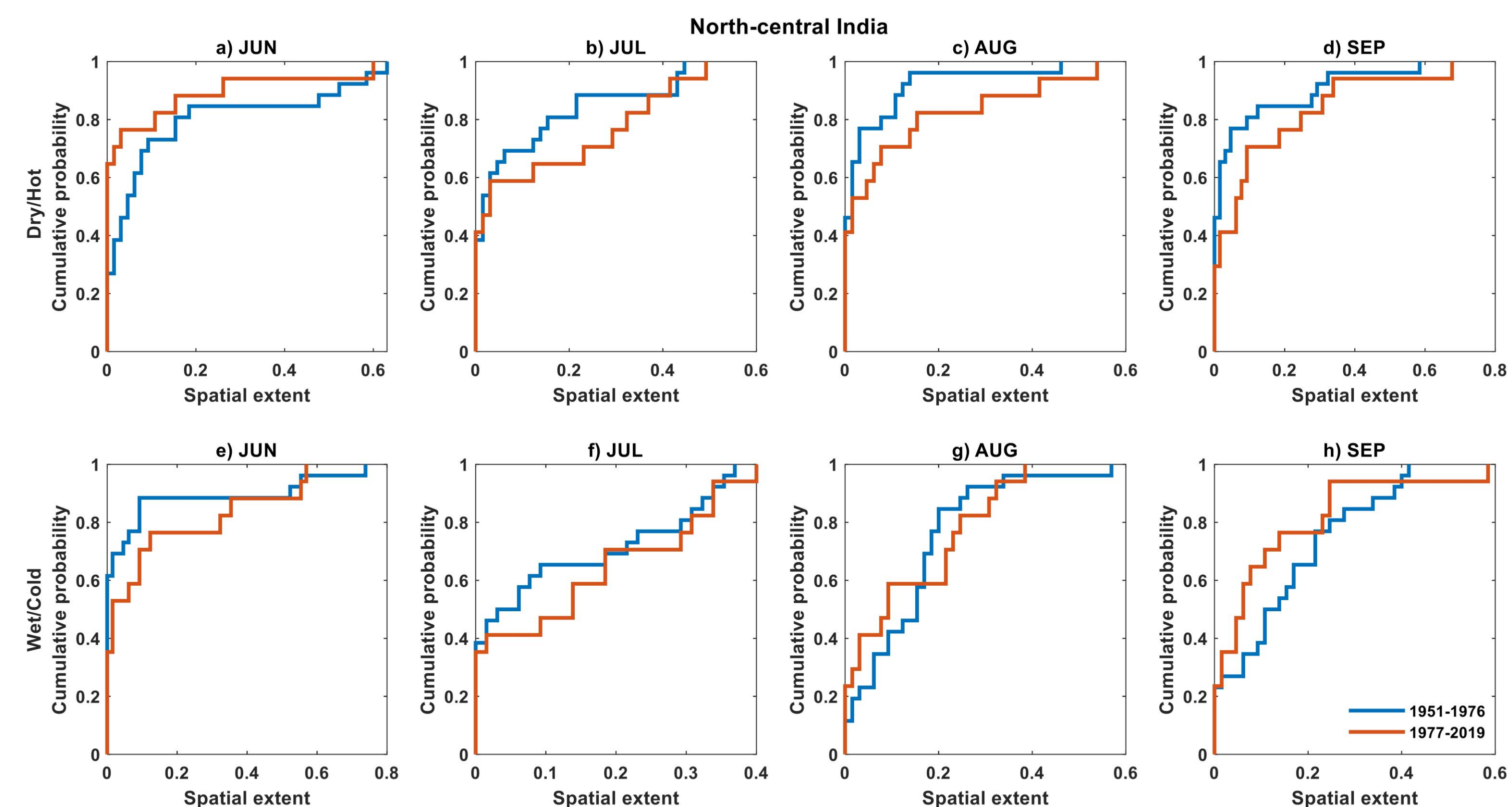
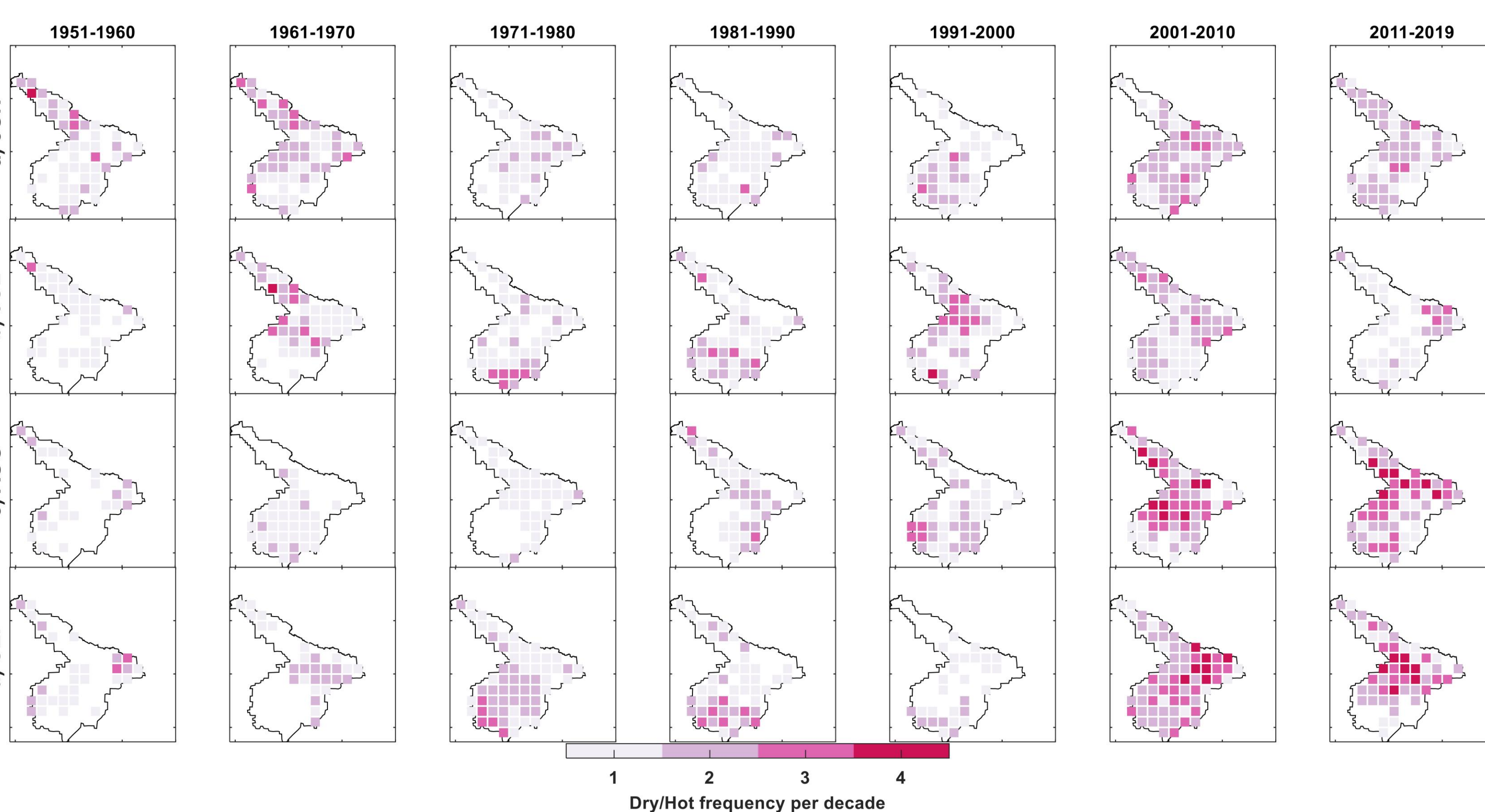
Changing pattern of precipitation and temperature



Changes in the frequency of compound extremes



Changes in the spatial extent of compound extremes

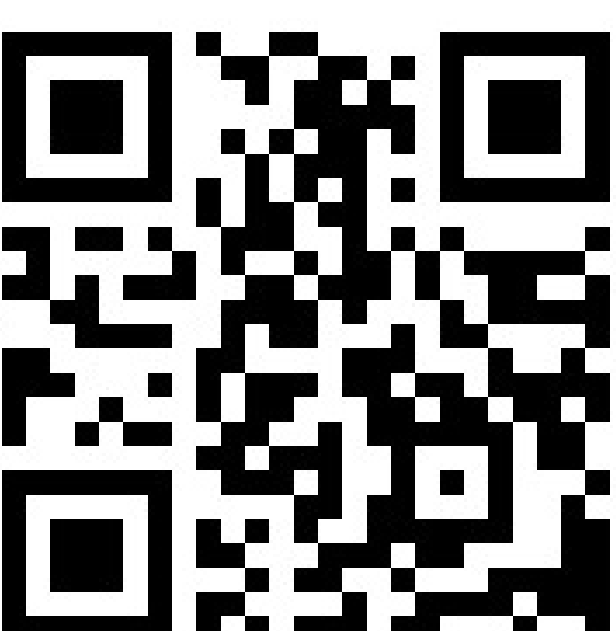


Conclusions

- Study finds a widespread three-fold rise in compound dry and hot summer monsoon extremes during the past decades over India.
- This increasing pattern of CDHE is high across North-central India, Western India, North-eastern India and South-eastern coastlines.

Remarks

Know more.....



¹ R.K. Guntu, and A. Agarwal, Scientific reports, 11, 16447 (2021).