

PRESS RELEASE

CSTEP Study: Southern States of India Set for Warmer Winters, Heavier & More Frequent Rainfall

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Changing climate patterns – from warmer summer maximum and winter minimum temperature to heavier and more frequent rainfall – are to be expected across all states in South India, according to a new study by the Center for Study of Science, Technology and Policy (CSTEP).

The report 'District-Level Changes in Climate: Historical Climate and Climate Change Projections for the Southern States of India' mentions changes in climate patterns that are likely to occur in South India over the next three decades, compared to the historical 30 years (1991-2019). The study analysis looked at two representative scenarios: medium emissions and high emissions.

The study looks at all the districts of all the five southern states – Andhra Pradesh, Telangana, Kerala, Karnataka, and Tamil Nadu and is part of a larger study projecting climate change across all the states of India.

Highlights from the study:

- Over the last 3 decades (1991-2019), temperature and rainfall have increased. We are also witnessing a greater variability in rainfall across all South Indian states.
- Climate projections (2021-2050) indicate overall warming of both summer and winter minimum temperatures, an increase in the number of rainy days (>2.5 mm rainfall/day), and an increase in the number of heavy rainfall events across almost all the districts of the southern states.
- The summer maximum temperature is projected to increase by 0.50 °C to 1.50 °C, and the winter minimum temperature is projected to increase by 1.0 °C to 2.0 °C in a majority of the districts of southern India.
- During the monsoons, rainfall during the kharif (June to September) and rabi (October to December) seasons are projected to increase in the 2030s across South India. The maximum increase in the kharif season rainfall is projected in the districts of Andhra Pradesh (up to 29% increase). Rainfall during the rabi season is also projected to increase substantially in all the districts of South India, even up to 40% in Andhra Pradesh and 59% in Telangana.
- Rainfall variability shows mixed trends but it decreases during both kharif and rabi seasons in a majority of the districts of South India
- The number of rainy days is projected to increase in the 2030s in almost all the districts in South India, and rainfall deficient years (<20% of long period average rainfall) are projected to decline
- States are likely to see an increase in high-intensity (51–100 mm/day) and very high-intensity (>100 mm/day) rainfall events in the 2030

In the light of these findings, the study calls on states to integrate this information into the State Action Plans on Climate Change, which are currently under revision; and to institute climate risk assessments. “Such climate risk mapping will help states buffer the loss and damage that are likely to incur from extreme climate events,” said Dr Indu K Murthy, Sector Head for Climate, Environment and Sustainability at CSTEP.

The full report is available [here](#).

For more details and interviews, please write to us at cpe@cstep.in

About CSTEP: Headquartered in Bengaluru, the Center for Study of Science, Technology and Policy (CSTEP) is one of India's leading think tanks with a mission to enrich policymaking with innovative approaches using science and technology for a sustainable, secure, and inclusive society. CSTEP's areas of focus are Climate, Environment and Sustainability, Energy and Power, AI and Digital Labs, Materials and Strategic Studies, and Computational Tools.