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Topic of Research: Influence of Pacific and Indian Ocean Temperatures on Monsoonal Rainfall in India

Findings

Ph.D. thesis titled “**Influence of Pacific and Indian Ocean Temperatures on Monsoonal Rainfall in India**” presents the results of the work carried out in this research can be summarized as follows:

- During most El-Nino years, a decrease in precipitation was observed at all the stations considered in the present research
- During La-Nina years, increased precipitation is observed at most of the stations considered in this research
- Only 18 stations namely Akola, Amini, Anantpur, Aurangabad, Banglore, Bhuneshwar, Bikaner, Cherrapunji, Darjeeling, Delhi, Dharamsala, Guwahati, Hissar, Hyderabad, Indore, Kolkata, Mumbai and Mysore have a positive correlation between monsoonal precipitation and PDO index.
- The remaining 22 rainfall stations, namely Agra, Allahabad, Ajmer, Amristar, Ambikapur, Baraili, Baroda, Bhopal, Dehradun, Gaya, Gopalpur, Gorakhpur, Gwalior, Jabalpur, Jaipur, Jaisalmer, Jammu, Jamshedpur, Jodhpur, Kanpur, Karnal and Nagpur has a negative correlation between monsoonal precipitation and PDO
- Utilizing the findings derived from investigating the connections between ENSO and monsoonal rainfall could enhance the accuracy of monsoon forecasts in India by integrating sea-surface temperature anomalies into statistical forecasting models.

With the identified linkages the monsoon forecasting skills can be significantly improved. The linkages identified herein could be beneficially utilized in rainfall forecasting models with the aim to improve forecasting. The results of the present research provide a valuable

tool to meteorologists and decision-makers to make more informed predictions about the monsoonal rainfall in northern India.

In future research, it would be worthwhile to delve into potential connections with other prominent climate indices, such as the Indian Ocean Dipole. This exploration could unveil robust associations with monsoonal rainfall in India, offering a more comprehensive understanding of the climatic influences. Furthermore, investigating the relationships between various climate indices, including those associated with the Arabian Sea, and hydrological variables, presents a promising avenue for future research. This multi-faceted analysis could shed light on complex interactions and contribute to a more holistic comprehension of regional climate patterns and their impact on hydrological systems.

Keywords: climate, indices, monsoonal, rainfall, India