

# Quirky summer monsoon behaviors affect rainfall in East Asia

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In 2010, 28 regions in China suffered a five-month-long flood. This disaster resulted in over 4000 people dead or missing, and over U.S. \$50 billion in property loss. In 1987, India experienced one of the worst droughts in history affecting almost all of north, east, and west India. Over 300 million people were impacted.

These are some examples of extreme climate perils that motivate Renguang Wu to study monsoon behavior and predictability. Wu is a professor at the Institute of Atmospheric Physics at the Chinese Academy of Sciences.

In the first issue of *Advances in Atmospheric Sciences*, published in January 2017, Wu reviews the relationship between [rainfall](#) variations during the Indian and East Asian summer monsoons, the factors connecting these variations, and questions that researchers need to address. "Both India and China are countries that are subjected to large impacts of summer monsoon[s] that bring rainfall for agricultural production and water supply. [Insufficient] and excessive rainfall can lead to drought[s] and floods," he said.

One issue that concerns Wu is the weakening of the historically strong correlation between rainfall variations in India and East Asia. This observation indicates that the year-to-year summer rainfall variations in these regions are no longer closely related to each other. "This [change] is relevant to the prediction of summer rainfall over East Asia, which has been a difficult issue for decades," Wu explained.

One factor connecting these rainfall anomalies is two pathways that arise from the Indian summer monsoon due to abnormal heating in India. Termed the south and north pathways, they affect the atmospheric circulation, moisture transport, and precipitation over East Asia. These phenomena ultimately lead to rainfall anomalies in East Asia.

Wu is particularly interested in determining the efficacy of climate models for simulating the relationship between rainfall during Indian and East Asian summer monsoons. "I [plan] to address this [question using] available climate model simulations provided by the IPCC [Intergovernmental Panel on Climate Change] Coupled Model Intercomparison Project," said Wu. He also wants to further analyze daily [rainfall data](#) to understand intra-seasonal rainfall fluctuations.

Wu hopes that his review will inspire researchers to further examine the relationship between rainfall variations during Indian and East Asian summer monsoons. Studies with detailed observational analyses and well-designed model experiments are crucial in improving our understanding of monsoon behaviors, as well as our ability to predict weather events during these seasons.

**More information:** Renguang Wu, Relationship between Indian and East Asian summer rainfall variations, *Advances in Atmospheric Sciences* (2016). [DOI: 10.1007/s00376-016-6216-6](https://doi.org/10.1007/s00376-016-6216-6)

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