

WHY IS NORTHEAST INDIA DRYING UP RAPIDLY?

Relevant for: Geography | Topic: Indian Climate including Monsoons

Root cause: Rainfall reduction over the last 36 years is associated with natural phenomena. | Photo Credit: [S S KUMAR](#)

Northeast India, one of the wettest places on the Earth has been experiencing rapid drying, especially in the last 30 years. Some places which used to get as high as 3,000 mm of rain during the monsoon season have seen a drop of about 25-30%.

A team of researchers from the Indian Institute of Tropical Meteorology, Pune, and Assam University set out to understand whether this decline is caused by anthropogenic activity or is it part of natural changes.

The results published recently in *JGR-Atmospheres* show that the decreasing monsoon rainfall is associated with natural changes in the subtropical Pacific Ocean.

“We found that changes in the Pacific decadal oscillation (PDO) — a pattern of fluctuations in the ocean, particularly over the north Pacific basin — are mainly associated with this declined rainfall,” explains Abida Choudhury, a Ph.D. scholar at Assam University and the first author of the paper. “Just like El Nino/La Nina in the tropical Pacific, PDO has a signature for a longer time (on the decadal scale) in the sea surface temperatures and its interaction with the atmosphere, which in turn affects the northeast Indian summer monsoon.”

The team used observed rainfall and sea surface temperature data for the period 1901-2014 for the study. The results show out that the reduction in rainfall during a major part of the last 114 years may be associated with global man-made factors, while the trend during the last 36 years is associated with natural phenomena.

“Only about 7% of the rainfall in this region is associated with local moisture recycling, which means that anthropogenic activities can affect only this small percentage. So we concluded that the recent rapid drying is a part of interdecadal variability of monsoonal rainfall which is strongly associated with the PDO,” says Subodh Kumar Saha from IITM, Pune.

The researchers note that this study can be used to predict the monsoon rainfall over the northeast region on a decadal time scale using Pacific Ocean region data.

Previous studies have found that a dry spell may be preceded by a wet spell, so the researchers warn that “change in land cover and deforestation could potentially result in more natural disasters, for example, flash flood, landslides from torrential rains, and damage to crops and biodiversity”.

“Policymakers should take these long-term predictions into account while planning construction of dams, power plants, etc. to prevent loss of property,” adds Mahen Konwar, the corresponding author of the study from IITM, Pune.

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