

India weather tool could make floods in Sri Lanka floods easier to predict

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Floods and landslides in Sri Lanka could be better predicted by applying weather forecasting techniques currently used in India, a study has found.

The new research has the potential to help communities better prepare for [extreme rainfall](#) in Sri Lanka. The South Asian island is extremely vulnerable to floods and landslides caused by [heavy rainfall](#). In May 2017, more than 150 people were killed after Sri Lanka experienced

flooding triggered by [monsoon rains](#).

Led by Dr. Akshay Deoras and published in *Geophysical Research Letters*, the study expands the list of countries the University of Reading is supporting in its research and highlights the importance of studying extreme [weather](#) in Sri Lanka.

Dr. Deoras said, "Sri Lanka has largely been ignored by researchers despite being extremely vulnerable to catastrophic floods and [extreme weather](#) events, which are likely to intensify in the future due to climate change. Our study is the first to show that techniques already being used to improve weather forecasting in India can be used effectively in Sri Lanka as well.

"People who forecast the weather are actively monitoring big patterns of wind which can help them to predict what will come next. We have identified specific wind patterns that are most responsible for triggering extreme rainfall in Sri Lanka. Understanding the link between weather patterns and extreme rainfall is really important for helping Sri Lankan communities prepare and respond to deadly natural disasters and could ultimately save lives."

Predicting extreme rainfall

A monsoon climate is characterized by a dramatic seasonal change in direction of the prevailing winds over a region. The study found extreme rainfall in Sri Lanka occurred most frequently during the northeast monsoon (December-February) and second intermonsoon seasons (October-November). In contrast, the amount of rainfall was very small in weather patterns associated with the southwest monsoon (May-September) and first intermonsoon (March-April) seasons.

Using multiple datasets, the research team also investigated the link

between extreme rainfall in Sri Lanka, weather patterns and the Madden-Julian Oscillation (MJO). The MJO is an eastward moving band of clouds and rainfall over the equatorial Indian Ocean and the western Pacific Ocean, which influences the weather in the tropics. The researchers found that the location of the MJO is important in determining whether a weather pattern will trigger extreme rainfall in Sri Lanka. The likelihood of extreme rainfall in some weather patterns was considerably larger when the MJO was located over the Indian Ocean. It decreased by over 90% in the same [weather patterns](#) when the MJO was located over the western Pacific Ocean.

Leading weather prediction models can accurately predict the location of the MJO a week or so in advance. It is hoped the findings from this study will enhance the predictability of extreme rainfall in Sri Lanka, given its link with the MJO.

More information: The influence of weather patterns and the Madden-Julian Oscillation on extreme precipitation over Sri Lanka., *Geophysical Research Letters* (2023). [DOI: 10.1029/2023GL103727](https://doi.org/10.1029/2023GL103727)

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