

## Circulation and rainfall types modulate the linkage between hourly precipitation extremes and atmospheric temperature

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Events of extreme precipitation have a huge influence on society. They are associated with flooding and landslides, and can have impacts on transport and safety of basic infrastructure. It is commonly expected that precipitation extremes will increase as the climate warms. A simple explanation is that due to the saturation vapor pressure increase with temperature (Clausius–Clapeyron relation), the air parcel tends to have more moisture in the warmer condition. But the question is whether changes in other dynamical processes along with temperature can play a role in determining the rainfall amount and pattern during the weather extremes. Past studies showed evidence of decrease in extreme rainfall extreme beyond a certain temperature threshold of approximately 24 °C. It was argued to be associated with decreases in moisture availability or wet-event duration at high temperatures. Using the local concurrent temperature, moisture, precipitation, circulation pattern, we demonstrate the possibility of modulation on linkage between precipitation extreme and environmental thermal conditions due to local weathers associated with different summer rainfall types

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