

# Climate Change and Mesoscale and Synoptic-Scale Precipitation Events

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**Abstract:** The connection between climate change and the frequency and intensity of extreme precipitation is complex. Numerical simulation of extreme precipitation events under climate change is challenging, due to the need to account for disparate temporal and spatial scales. Here, I'll present an investigation of an extreme convective-scale flooding event under current and future climate conditions, and discuss the numerical model strategy and resolution needed to capture the critical processes. An additional set of high-resolution simulations from 10 winter seasons over the North Atlantic storm track will be presented to illustrate climate change impacts on precipitation extremes and (time permitting) windstorms.