
Large-scale circulation anomalies driving compound climate extremes in Europe and North America

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Abstract

Cold extremes over North America and stormy (wet and windy) weather over Europe, have typically been discussed separately. However, their repeated co-occurrence in recent winters raises the question of whether there may be a systematic, physically-based link between the two.

In this presentation, I will first provide a statistical analysis of these compound extremes, showing that they are unlikely to be a result of random variability. This supports the notion of a systematic link between extremes on the two sides of the North Atlantic. Next, I will present evidence that this link is mediated by anomalous configurations of the North Atlantic Jet Stream, associated to specific planetary wave-breaking configurations.

This opens the question of how interannual and longer storm-track variability may modulate the occurrence of compound climate extremes in Europe and North America.

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