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Forecasting the weather
- ensemble techniques
in probabilistic weather prediction

Relationships between the North Atlantic Oscillation and temperature extremes over Europe in an ensemble of global climate model simulations

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The study evaluates relationships between the North Atlantic Oscillation (NAO) and seasonal maxima/minima of daily temperatures over Europe in an ensemble of transient simulations of current global climate models (GCMs). We focus on identification of areas and seasons in which the NAO index is linked to temperature extremes in simulations of recent climate (1961-2000), and evaluate how these relationships change in future climate change scenarios for the 21st century. Although the results differ between individual GCMs, the NAO index is found to represent a useful covariate that explains an important fraction of interannual variability of temperature extremes in winter. Its incorporation into extreme value models for daily temperatures (and their possible changes under climate change) improves performance of these models and reliability of estimates of high quantiles and their uncertainty.