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Observed precipitation and temperature extremes over Europe and North Atlantic weather regimes

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Two datasets developped within the European EMULATE project (see http://www.cru.uea.ac.uk/cru/projects/emulate) are used to investigate the relationships between daily weather regimes and extremes in precipitations and temperatures over North Atlantic and Europe from 1850 to 2003. Recurrent atmospheric circulation patterns over the region are first derived using clustering of December to February mean-sea-level-pressure daily anomalies. The influence of variability and trends in these patterns on the frequency and intensity of precipitation and temperature extremes are then investigated using simple analyses (correlation and composites) as well as more sophisticated ones, following recent developpments on the use of covariates in the estimation of the Generalized Pareto Distribution parameters. In this presentation a particular attention is devoted to daily weather regimes that projects onto station- based and seasonally defined indices of the North Atlantic Oscillation.