



Winter weather regimes over the North Atlantic and extreme climate events over Europe

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European winter climate fluctuations are essentially determined by the atmospheric circulation variability that can be described by a small number of preferential states, or weather regimes. Four weather regimes are traditionally identified for the North Atlantic region: two phases of the NAO characterised respectively by a northward and southward shift of the jet-stream, blocking representing by an anticyclonic cell over Scandinavia and atlantic ridge showing a strong anticyclone over the North Atlantic. In our study the weather regimes are obtained by classifying the geopotential height anomalies at 700 hPa from ERA40 reanalysis. Relationship between the climatic extremes and the weather regimes is examined. Temperature and precipitation extremes are expressed in terms of 30-year return values of Generalized Pareto distribution fitted to the daily data from the reanalysis and observations for the period 1960-99. A clear link is found for the warm and cold extremes whereas extreme precipitation does not appear to be really associated with the preferred states of the atmosphere. The ability of an atmospheric general circulation model to reproduce the obtained link is discussed.