

# **The Influence of Decadal Variability in North Atlantic Sea Surface Temperature on Climate Extremes**

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The variability in North Atlantic sea surface temperature (SST) can be seen as an indicator for AMOC variations. The presented modeling study addresses the influence of warm and cool phases of the Atlantic multi-decadal variability (AMV) in SSTs to climate.

The investigation is based on reanalyses, observational data and a set of idealized simulations using an atmosphere general circulation model with prescribed SST and sea ice conditions reflecting warm or respectively cool phases of the AMV. These patterns are derived from the pre-industrial control simulation of the coupled atmosphere-ocean model MPI-ESM. The model used for this sensitivity simulations is ECHAM6 with a horizontal resolution of T63 and 47 vertical levels up to 0.01 hPa.

The response to the two phases of the AMV in precipitation, in temperature and in the geopotential height field is analyzed. Additional focus is laid on the modulation of the North Atlantic Oscillation influencing European climate and on the examination of the frequency and intensity of climate extremes in various regions of the Northern Hemisphere with special emphasis on European and especially Mediterranean climate.