Geophysical Research Abstracts
Vol. 18, EGU2016-7515, 2016
EGU General Assembly 2016

Influence of prolonged Anomalies in North Atlantic Sea Surface Temperature on Winter Windstorms

Ines Höschel, Mareike Schuster, Jens Grieger, and Uwe Ulbrich
FU Berlin, Institute for Meteorolgy, Berlin, Germany (ines.hoeschel@met.fu-berlin.de)

The focus of this presentation is on decadal scale variations in the frequency and in the intensity of mid-latitude winter windstorms. Projections for the end of the next century are often beyond the time horizon of business, thus there is an increasing interest on decadal prediction, especially for infrastructural planning and in the insurance industry. One source of decadal predictability is the Atlantic multidecadal variability (AMV), a change in the sea surface temperature of the North Atlantic, strongly linked to the meridional overturning circulation. Correlation patterns between annual AMV-indices and annual mean of geopotential height at 500 hPa in reanalysis data show an anti-correlation in the North Atlantic. That is, during AMV warm phases the North Atlantic Oscillation (NAO) is more negative. Consequently, AMV should influence the characteristics of winter windstorms at multi-year scales.

For the presented investigations a 10-member ensemble of 38-year-long idealized simulations with the atmosphere model ECHAM6 with lower boundary conditions, representing warm and cool phases of the AMV, is used. In the idealized simulations, the anti-correlation between AMV and NAO is well represented. For the identification of winter windstorms an objective wind tracking algorithm based on the exceedance of the local 98th percentile of 10m wind speed is applied. Storms under AMV-warm and AMV-cool conditions will be compared in terms of storm track density and probability distribution of storm characteristics.