



## **Impact of the Atlantic Multidecadal Oscillation on Baltic Sea Variability**

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The Atlantic Multidecadal Oscillation (AMO) is a natural mode of variability of the North Atlantic sea surface temperature (SST). The AMO can be used to describe the complex interaction of the coupled atmosphere-ocean system of the North Atlantic. By analyzing a preindustrial period of 850 years with a regional climate model, we show that the AMO influences the Baltic Sea. AMO-related changes of the atmospheric circulation affect precipitation over the Baltic Sea region, which leads to altered river runoff influencing the salinity of the Baltic Sea. A wavelet coherence analysis reveals a persistent coherence between AMO and salinity for the whole period of 850 years. This suggests that the Baltic Sea is under the constant influence of the AMO. In our study we focus on the mean salinity of the Baltic Sea, however, similar relationships can be found for more parameters, e.g. SST. Nearly closed systems like the Baltic Sea vary much faster than open systems like the North Sea. A better understanding of the AMO helps to put the response of these different systems into perspective. Our findings for the Baltic Sea suggest that the state of the AMO should be considered when discussing the state of a coastal ocean.

Börgel, F., C. Frauen, T. Neumann, S. Schimanke and H. E. M. Meier (2018). Impact of the Atlantic Multidecadal Oscillation on Baltic Sea variability. *Geophys. Res. Lett.* 45: 9880-9888, doi: 10.1029/2018gl078943