

## North Atlantic Teleconnections Linking Worlds Apart

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The instrumental record of North Atlantic sea surface temperature (SST) displays basin scale fluctuations on multidecadal time scales, a phenomenon referred to as the Atlantic Multidecadal Oscillation (AMO). Climate models provide evidence to the influence of the AMO on precipitation in North America, Europe, Africa, and the Middle East. They also link the phenomenon to fluctuations in the Atlantic Meridional Overturning Circulation (AMOC). We examine the modern instrumental record and proxy data from the Holocene to verify the validity of model evidence on AMO impact and conclude that the phenomenon is indeed linked with a rich record of significant climate variations associated with AMO-like decadal to millennial time-scale fluctuations. We examine the mechanisms by which these North Atlantic SST fluctuations influence the climate system over the Northern Hemisphere throughout the annual cycle using both observations and models. These confirm that week but long-lasting change in the circulation, resulting from the influence of persistent SST anomalies, can give rise to the fluctuations in precipitation and temperature found in the data. The significance of this ocean influence on climate is discussed in the context of climate change throughout the Holocene and into the greenhouse future.

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