



North Atlantic warming: Fingerprints of climate change and long-term variability

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Climate change in the North Atlantic Ocean has wide-spread implications for Europe, Africa, and the Americas. This study demonstrates that recent warming over the North Atlantic is linked to both long-term (including anthropogenic) climate change and multidecadal variability (\sim 50–80 years). The multidecadal variability has basin-scale sea surface temperature anomalies accounting for \sim 60% of North Atlantic warming since 1970. In contrast, the overall long-term warming trend exhibits a pattern of cooling in regions associated with major northward heat transports, consistent with a slowdown of the North Atlantic circulation. This localized cooling has been masked in recent decades by warming during the positive phase of multidecadal variability. The next cold phase could induce a cooler North Atlantic, having serious implications for climate over Europe.