



## **Multidecadal modulation of El Niño-Southern Oscillation (ENSO) variance by Atlantic Ocean sea surface temperatures**

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Observations suggest a possible link between the Atlantic Multidecadal Oscillation (AMO) and El Niño - Southern Oscillation (ENSO) variability, with the warm AMO phase being related to weaker ENSO variability. A coupled ocean-atmosphere model is used to investigate this relationship and to elucidate mechanisms responsible for it. Anomalous sea surface temperatures (SSTs) associated with the positive AMO lead to a La Niña-like basic state change in the tropical Pacific Ocean. This basic state change is associated with a deepened thermocline and reduced vertical stratification of the equatorial ocean in the western and central tropical Pacific, which in turn leads to weakened ENSO variability. We suggest a role for an atmospheric bridge that rapidly conveys the influence of the Atlantic ocean to the tropical Pacific. The results suggest a non-local mechanism for changes in ENSO statistics and imply that anomalous Atlantic ocean SSTs can mediate both mean climate and climate variability over the Pacific.