



## **Is the Atlantic Niño mode as asymmetric as ENSO?**

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The El Niño-Southern Oscillation (ENSO) is asymmetric for warm and cold events with respect to amplitude, spatial patterns and temporal evolution. Here we want to address the question whether the Atlantic Niño mode shows the same asymmetric behavior. While several mechanisms have been suggested to contribute to the generation of Atlantic Niño events, it is generally understood that the atmosphere-ocean dynamics that give rise to the ENSO mode in the Pacific, namely the Bjerknes feedback, play a central role.

Using two different ocean reanalysis products, we show that in the equatorial Atlantic, cold events are effectively mirror images of warm events. Calculation of Bjerknes feedback terms reveals that the strength of the feedbacks is very similar for warm and cold phases in the Atlantic. For the Pacific we see a pronounced asymmetry between warm and cold events, though unlike most previous studies, the largest asymmetry is found in the relationship between eastern Pacific thermocline depth and SST anomalies.

The analysis supports not only the conclusion that Atlantic Niños are more symmetric than ENSO, but the hypothesis itself that the Bjerknes feedback is operative in the Atlantic given the strength of the relationship between the key variables involved. The comparatively high symmetry of the Atlantic Niño mode might be related to the smaller overall amplitude and the fact that in the equatorial Atlantic, interannual anomalies occur mainly as a modulation of the seasonal cycle.