

Understanding the mechanisms of the Atlantic meridional climate variability

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Decadal climate variability over tropical Atlantic is dominated by the Atlantic meridional mode (AMM). The AMM is characterized by opposite sea surface temperature anomalies to the north and south of the equator, anomalous wind flow from the cooler to the warmer hemisphere and meridional shift of the inter-tropical convergence zone. The tropical variability has also been linked to meridional variability in the South Atlantic and the extratropics of North Atlantic, with far-reaching impacts over the adjacent continents. The AMM is primarily understood in terms of the thermodynamic ocean-atmosphere interactions, particularly, the wind-evaporation sea surface feedback. Using a global ocean model forced by atmospheric observations, this study suggests that the Atlantic meridional overturning circulation may affect the Atlantic-scale meridional climate variability.

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