



How does Atlantic Multi-decadal Overturning Circulation modulate Tropical circulation and precipitation responses to global warming ?

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Tropical precipitation response to global warming remains highly uncertain. Most of the uncertainty is attributed to inter-model spread in atmospheric circulation changes. Model diversity in tropical circulation response has been traced further to differences in Tropical surface warming patterns, and in particular to the location of the maximum increase in the Equatorial Pacific. The involved mechanisms point to the importance of ocean-atmosphere interactions assessed through several process metrics.

Here, we investigate the role of the Atlantic Multi-decadal Overturning Circulation (AMOC) in the response of the Tropical circulation to increased greenhouse gases concentration. AMOC has been shown to affect the global Tropics, including the Equatorial surface warming pattern through atmospheric bridges across Central and/or North America.

We use two ensembles of the coupled (ocean-atmosphere) CNRM-CM5 climate model that differ from their mean AMOC and apply an abrupt doubling CO₂ concentration in both cases. Beyond the modulation role of AMOC in the Tropical circulation and precipitation changes, we show that AMOC has a potential effect on the estimation of the climate sensitivity of the model.