

## Wind-Mixed layer-SST modes in the tropical Atlantic

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The tropical Atlantic Ocean hosts a “meridional mode”, which is accompanied by cross-equatorial sea surface temperature (SST) anomaly gradient. It is thought that this mode is destabilized due to thermodynamic coupling between the wind speed, evaporation, and SST (WES feedback). Using a simple linear coupled model, we show that two additional ocean-atmosphere coupled feedback, which contribute to a cross-equatorial SST anomaly gradient, are possible in the tropical Atlantic, by taking mixed layer depth (MLD) variations into account. It is found that those feedback processes are stronger than the canonical WES feedback in our simple model framework. In the presence of damping effects, however, they exist either as a weakly unstable mode or a least damped mode. The SST and MLD structures in the simple model bear a resemblance to those of observed Atlantic meridional modes.