



On the relationship between the Meridional Mode and the equatorial SST anomalies

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The tropical Atlantic climate is dominated by two modes of variability at inter-annual time scales, the Equatorial Mode (EM) and the Meridional Mode (MM). They are characterized by specific Sea Surface Temperature anomalies (SSTA) distributions, respectively with a maximum over the central-eastern equator during boreal summer, and with an inter-hemispheric gradient during boreal spring.

Although their structures, air-sea interactions and impacts have been widely studied, the processes associated to their development, and their connections, still remain a challenge. In the present work, we present a classification of MM events, regarding to their connections with the successive equatorial summer SSTA, associated with an EM or neutral conditions. The MM-I events display SSTA in North Tropical Atlantic (NTA) followed by a same sign summer equatorial SSTA. The MM-II events are related to NTA SSTA and successive equatorial summer SSTA of opposite sign. For both types, the spring north-eastern trades anomalies could generate SSTA impacting on the equatorial SSTA. Nevertheless, it is evidenced that the anomalous wind pattern shown along the equatorial band and South Tropical Atlantic is crucial to give rise, or not, to an EM. In order to further analyse the air-sea interactions and oceanic processes at work in the two different MM types, sensitivity experiments with different wind forcings are performed with the NEMO OGCM.