



Observational evidence of multidecadal modulation of the Meridional Mode – Equatorial Mode connection

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The tropical Atlantic variability is governed by two air-sea coupled modes: the Meridional Mode (MM) and the Equatorial Mode (EM), peaking in boreal spring and summer respectively. Previous studies have proposed a possible connection between them, but without reaching a consensus about its frequency, type and associated mechanisms.

Here, using a set of different observations and reanalyses datasets, we demonstrate that the MM-EM connection has suffered inter-decadal changes from 1850 up to the present. Negative correlations are found between the MM and EM during the whole period, suggesting that a positive (negative) phase of the MM will be followed by a negative (positive) EM during summer months. However, the strength of this interaction decays drastically during certain decades. The air-sea processes responsible of this connection along the observational record will be assessed, as well as the role played by the natural variability and global warming in the activation of the MM-EM connection.