

SIMULATING THE SST RESPONSE OF WARM PHASE OF THE ATLANTIC MULTI-DECADAL OSCILLATION DURING CONTRASTING YEARS ON NORTHEAST BRAZIL

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INTRODUCTION

The Atlantic Multi-decadal Oscillation (AMO) is a natural variability background pattern in Sea Surface Temperature (SST) occurring on the North Atlantic. The AMO cycle is about the 60-80 years and have been addressed to import climate impact. Kayano et al. (2016) showed influences of warm and cold phases of the AMO on variability Northeast Brazil (NEB) during different phases on Tropical Ocean modes. We aim to investigate the response of WARM phase of AMO during contrasting years on Northeast Brazil by using Global Modeling.

METHODOLOGY

Simulations have focus on NEB rainy period FMA/2017. The composites are chosen within years during warm phase of the AMO whereas positive (WAMO-WET 1929, 1935, 1947, 1957, 2006) e negative (WAMO-DRY 1930, 1946, 1954, 2001, 2002) rainfall anomalies in NEB (Kayano et al. 2016). WAMO-WET and WAMO-DRY were performed using the atmospheric global model ECHAM4.6. The procedure was constituted by initializing the model from the SST conditions of Dec/2016 for 20 members. SST anomaly evolution from Dec(0) to Jun(+1) for each year of the experiments was added to climatological annual cycle and prescribed to the runs.

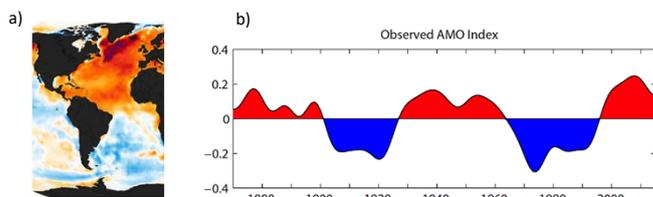


Figure 1. a) Regression of sst anomalies during warm phase of the AMO. b) Smoothed AMO index from 1970 to presente.

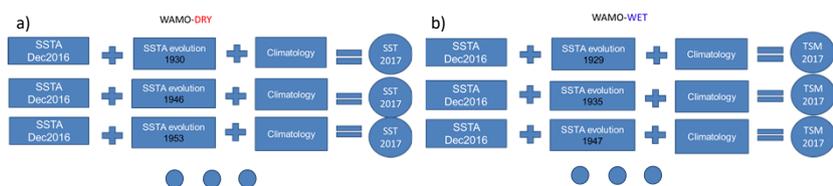
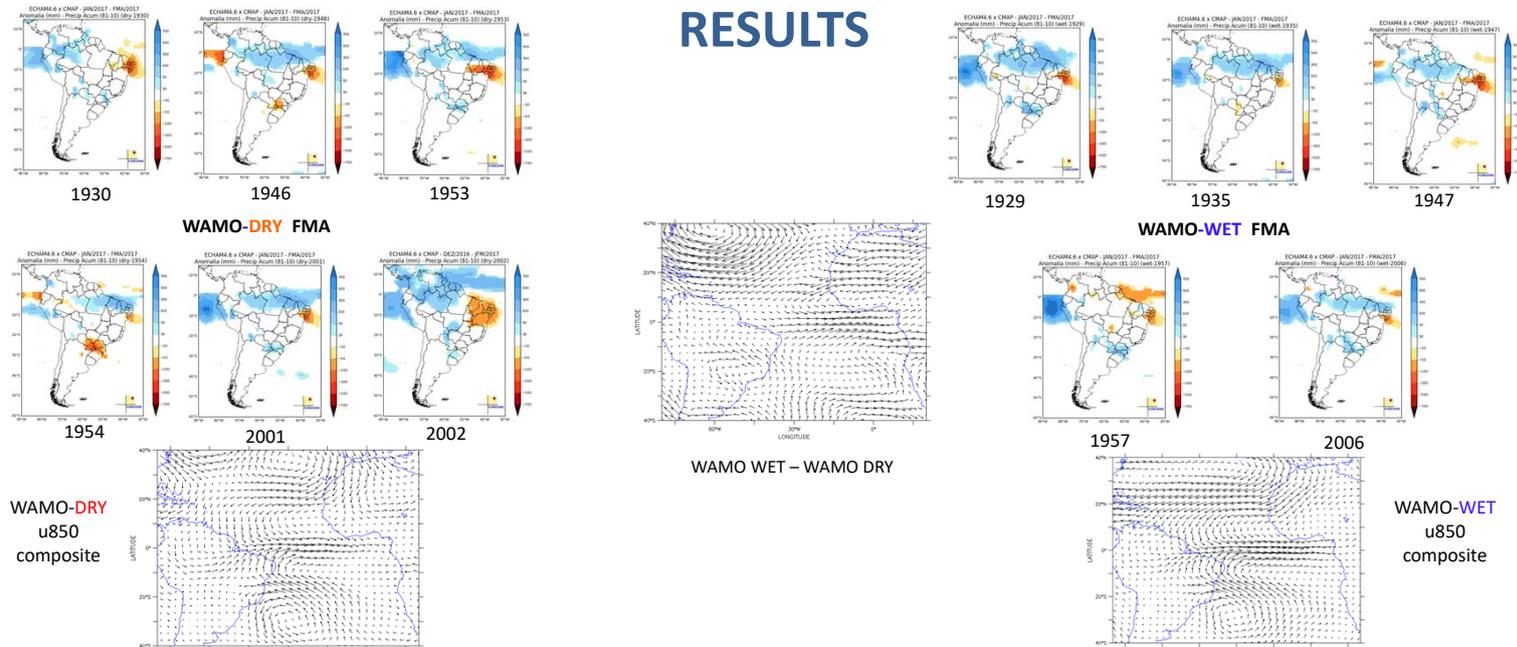


Figure 2. Example of the creating SST field for a) WAMO-DRY and b) WAMO-WET.

RESULTS



CONCLUSIONS

ALow level circulation anomalies suggest weakening of the trades winds in Tropical Atlantic from February to April. The WAMO-DRY experiment pointed out the same pattern found on WAMO-WET, positive anomalies in northern Northeast Brazil and negative anomalies on southeastern NEB. gradient pattern in precipitation anomalies is recurrent in all years also trade winds weakened seem to be a common feature, indicating combination between initial condition and background SST forcing cause. SST scenarios in seasonal forecasting based on climate model is a powerful tool to understanding regional climate and its relationship with remote and background forcing like AMO.

REFERENCES

KAYANO, M. T., CAPISTRANO, V., ANDREOLI, R., SOUZA, R.A.F.: A further analysis of the tropical Atlantic SST modes and their relations to north-eastern Brazil rainfall during different phases of Atlantic Multidecadal Oscillation. *Int. J. Climatol.*, 36(12), 4006-4018, 2016.