



Ocean-atmosphere interactions in the Tropical Atlantic at intraseasonal timescales

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Projections for the future climate are still confronted to the presence of very strong biases in global coupled simulations of the present climate, compared to the observations, especially in the Eastern Tropical Atlantic and Pacific. Increasing the resolution seems to be not sufficient to solve the problem, especially in the Eastern Tropical Atlantic, where it appears important to better investigate the ocean-atmosphere coupling mechanisms at stake. While previous studies showed the existence of interannual to decadal-and-longer (equatorial and meridional mode) coupled modes, very few investigated the intraseasonal timescales so far. Our work is based on daily satellite observations (TMI SST and QuikSCAT surface winds) for the 2000-2009 decade, as well as reanalyses (ECMWF ERA interim and NCEP CFSR). Statistical analyses were performed on the boreal summer period (JJA). Carefully chosen indices of SST and surface winds were built and daily lagged regressions performed onto these indices. At the scale of the whole Atlantic basin, a clear influence of the Santa Helena anticyclone were detected on these equatorial intraseasonal anomalies. Within the equatorial band, the signatures of mechanisms explaining the coupling, advection and / or waves propagation (such as Tropical Instability Waves) was found as well. In addition, low-pass filtering with progressively decreasing cutoff frequencies allowed to link the statistical signatures of the processes from daily timescales to interannual and longer variability.