



Atlantic Cold Tongue in CMIP5 models: mean characteristics and interannual variability

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Atmosphere-Ocean Coupled General circulation models are known to poorly represent the mean annual cycle of sea surface temperatures (SSTs) in the equatorial Atlantic region (Richter and Xie, 2008). In most climate models participating to the IPCC-AR4, the equatorial SST gradient in JJA was even reversed, in line with too warm SSTs in the Guinea Gulf. This bias reflects the poor representation of the Atlantic Cold Tongue in models. In this study, the ability of IPCC-AR5 models to simulate the Atlantic Cold Tongue is assessed and compared to the IPCC-AR4 models.

Additionally, the interannual variability of several characteristics of the Atlantic Cold Tongue are compared to observations. In particular it is shown that the position of the maximum cooling at the Equator is nearly fixed in the observations whereas it is highly variable in models.

In a second part, we will analyse sensitivity experiments done with the CNRM-CM5 model, in which the surface wind or the surface net solar flux are locally corrected to assess their impact on the ocean seasonal cycle. It is shown that the wind stress correction is a priority in the equatorial band. It improves not only the mean characteristics of the Atlantic Cold tongue but also its interannual variability.