



Geophysical Research Letters

Supporting Information for

Improving Climate Model Simulation of Tropical Atlantic Sea Surface Temperature: The Importance of Enhanced Vertical Atmosphere Model Resolution

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Introduction

This supporting information provides Table S1 and Figure S1 to S4, described and discussed in the result section.

	Total Precipitation			SST
	Tropical Atlantic 20°S-20°N, 70°W-30°E	Land only	Ocean only	Tropical Atlantic 40°S-20°N, 60°W-20°E
<i>LR</i>	38.59	34.75	42.34	1.19
<i>LR_V</i>	37.07	34.37	39.72	1.08
<i>HR</i>	44.65	40.35	46.50	0.95
<i>HR_V</i>	32.83	28.97	35.30	0.65

Table S1. Mean absolute error (MAE) in JAS for total precipitation (mm/month) and sea surface temperature (SST, °C). MAE for total precipitation is calculated over 20°S - 20°N, 70°W - 30°E. *LR* (T42, L31), *LR_V* (T42, L62), *HR* (T159, L31), *HR_V* (T159, L62).

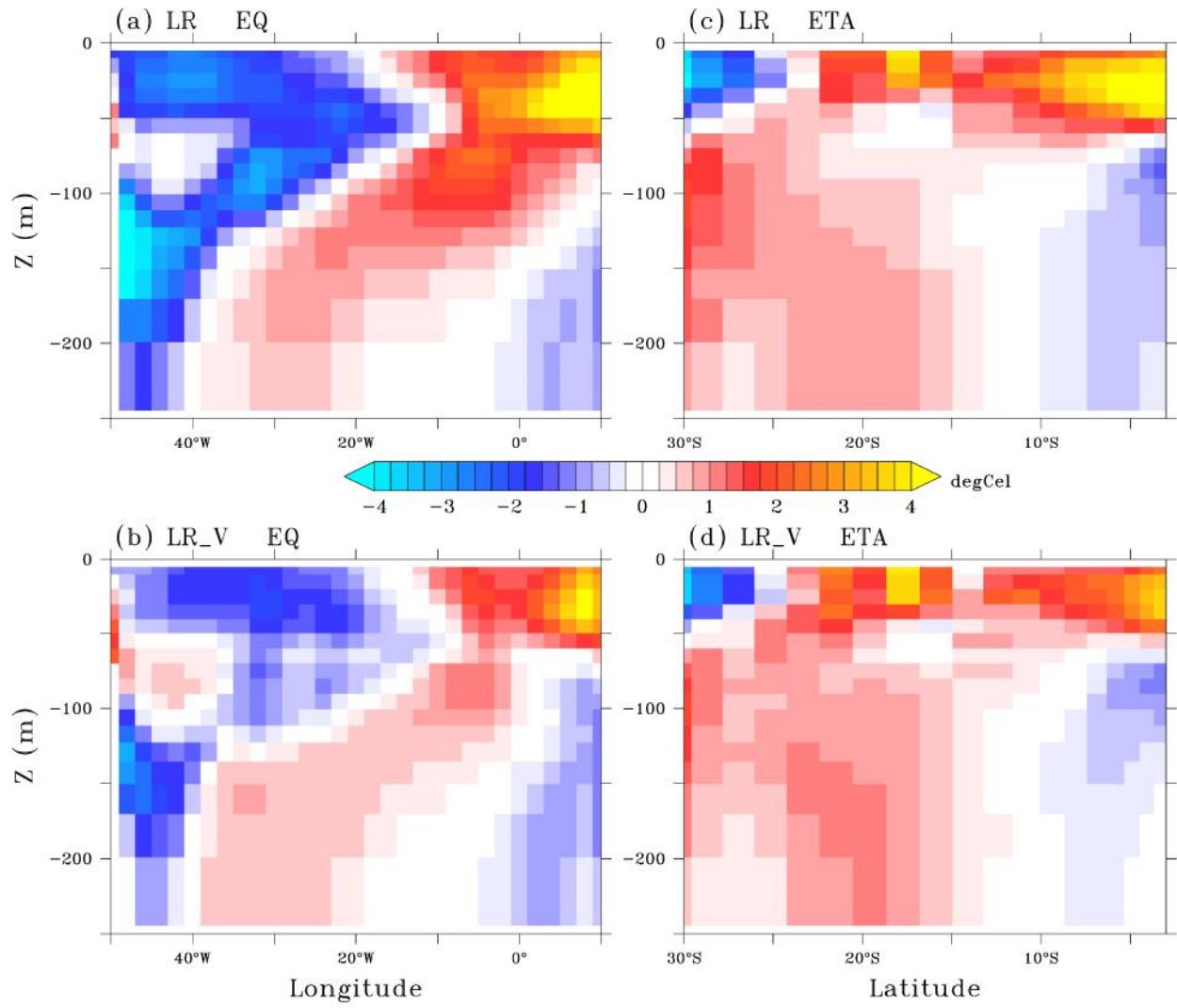


Figure S1. Subsurface temperature bias ($^{\circ}\text{C}$) in the upper 250m with respect to Levitus 1998 in JAS for the equatorial region (EQ, 3°S - 3°N, left panel) and the Eastern Tropical Atlantic (ETA, 10°E - 20°E , right panel). (a,c) *LR* (T42, L31) (b,d) *LR_V* (T42, L62).

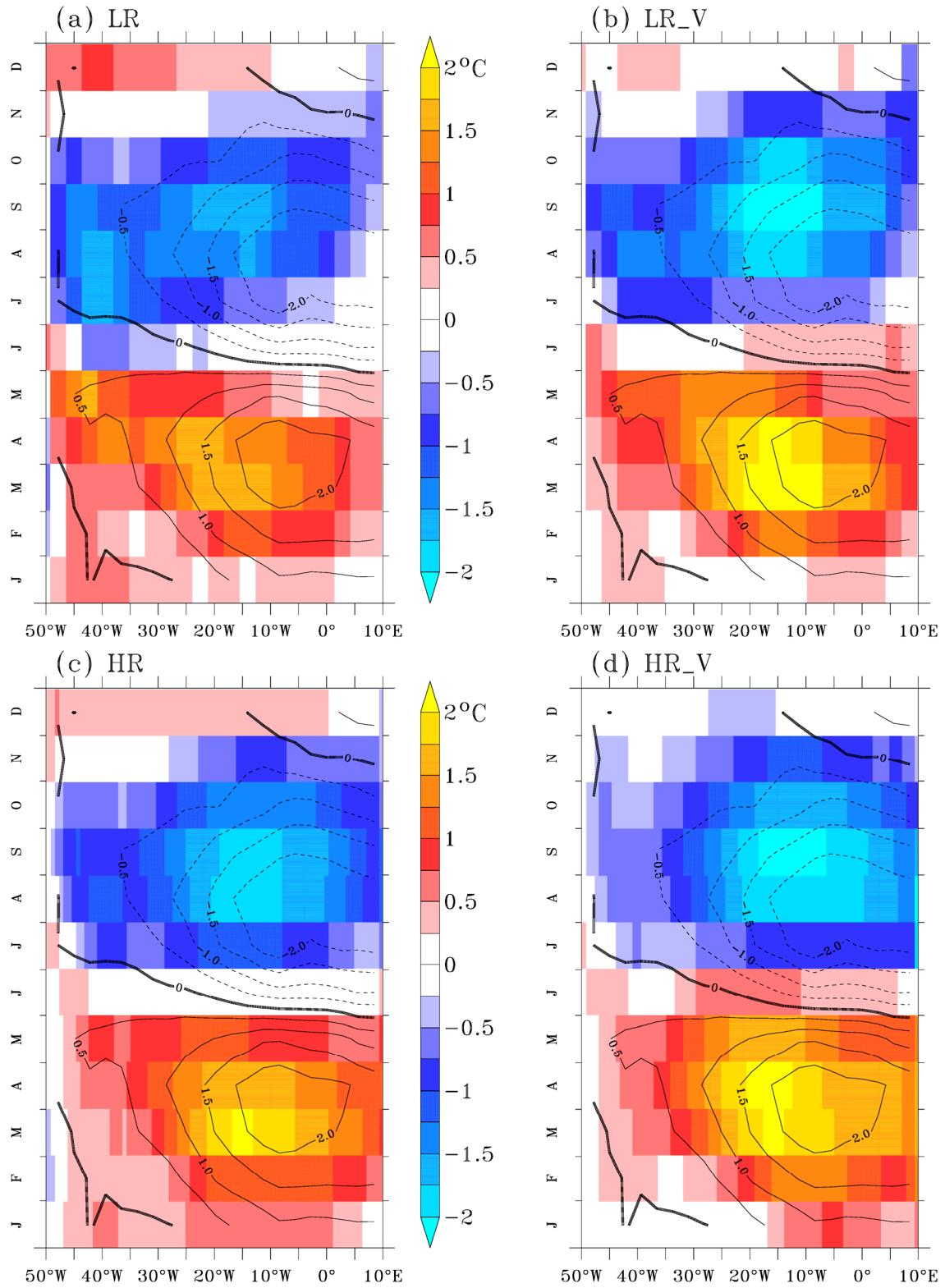


Figure S2. Sea surface temperature (SST, in °C) anomalies along the equator (3°S-3°N) as a function of calendar month. Black contour lines denote observed SST (HadISST). (a) *LR* (T42, L31), (b) *LR_V* (T42, L62), (c) *HR* (T159, L31), (d) *HR_V* (T159, L62).

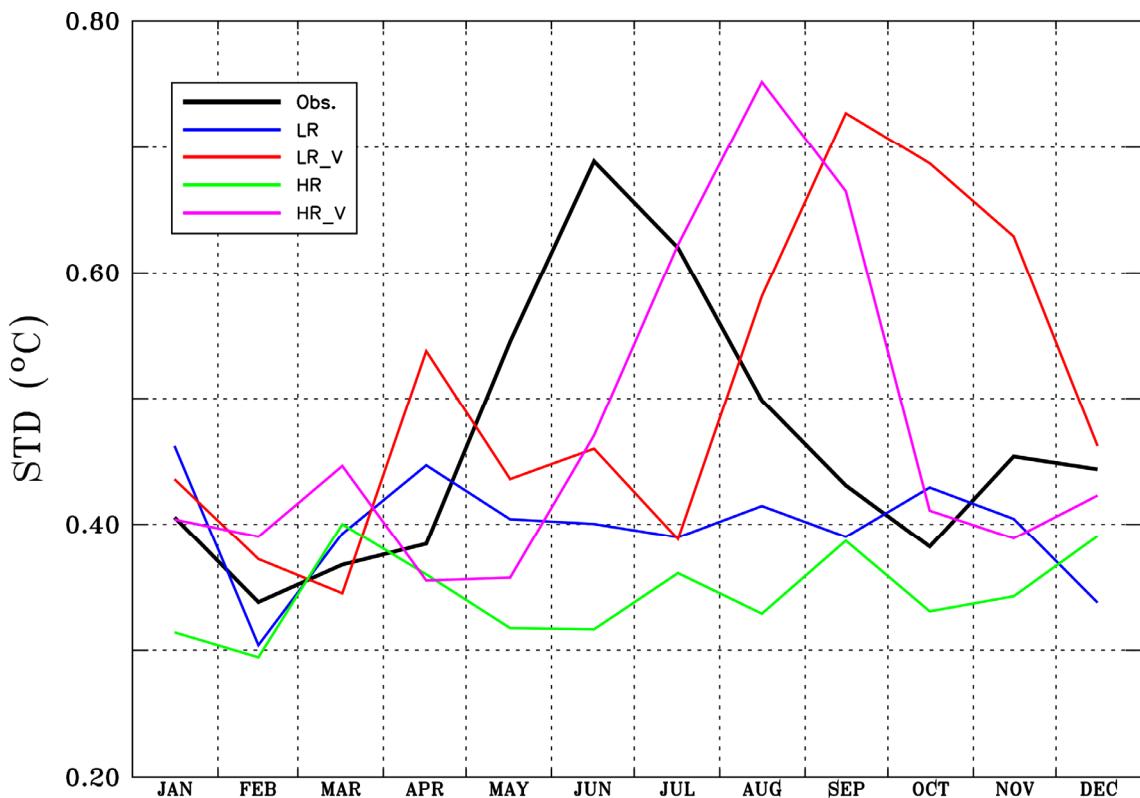


Figure S3. Standard deviation of SST anomalies in the ATL3 (3°S - 3°N , 20°W - 0°E) region as function of the calendar month in the four different coupled model simulations with the KCM. Black line denotes observed SST (HadISST), blue: *LR* (T42, L31), red: *LR_V* (T42, L62), green: *HR* (T159, L31) and purple: *HR_V* (T159, L62).

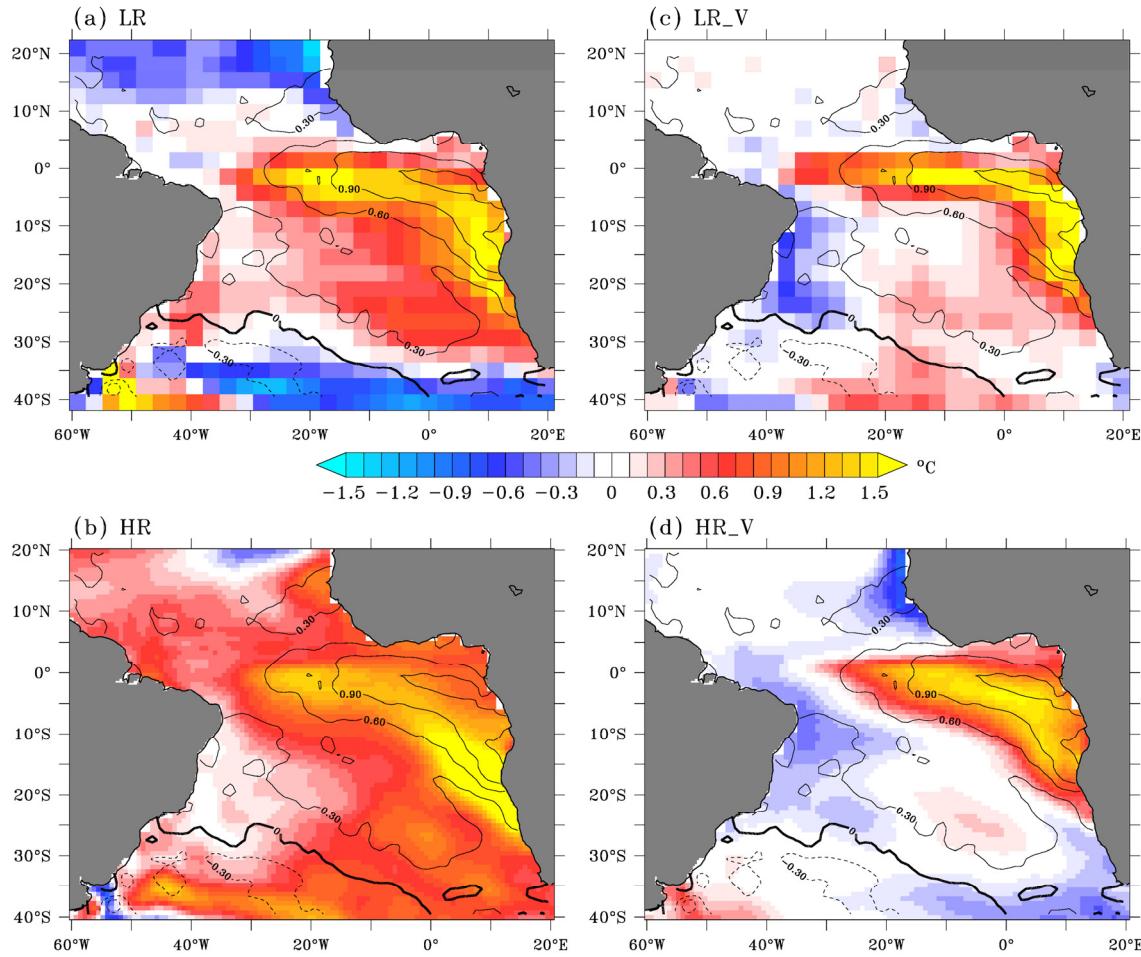


Figure S4. Regression of ATL3 index (20°W - 0°W , 3°S - 3°N) on sea surface temperature (SST) in JAS. Black contours denote regression on observed SST (HadISST). (a) *LR* (T42, L31), (b) *HR* (T159, L31), (c) *LR_V* (T42, L62), (d) *HR_V* (T159, L62).