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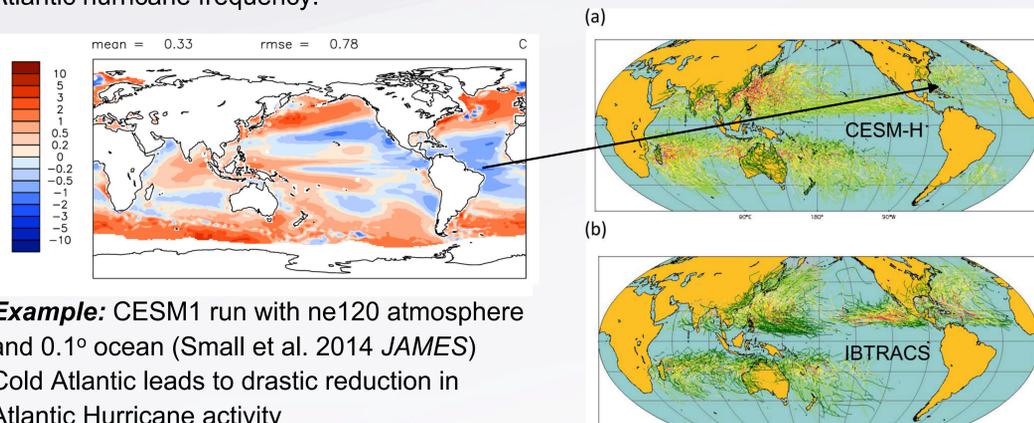
Bias Corrected Time-Slice Runs

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Background

SST biases have negative impacts on features of simulated regional climates
Accurate, fully-coupled high-resolution atmosphere/ocean simulations are the ultimate goal of climate model developers. In the short and medium term, however, it is likely that coupled simulations will continue to exhibit significant sea-surface temperature (SST) biases. These biases can have noticeable negative impacts on features of simulated regional climates, e.g., Atlantic hurricane frequency.

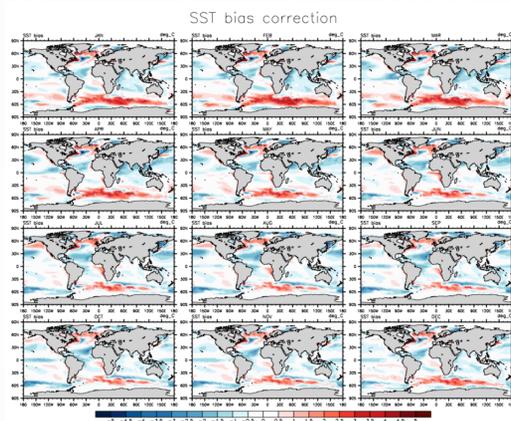


Climate change projections derived from fully-coupled models must be viewed in light of these major SST biases. For some applications, it is desirable to use bias corrected SST.

Correcting the SSTs bias

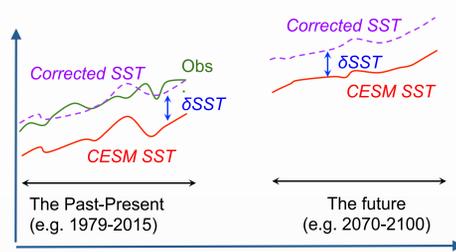
Method

We use 1° present-day coupled runs to produce corrected SSTs timeseries. Climatological monthly biases with respect to observations are calculated from the 1° coupled run SSTs. Then we use the SST bias to generate corrected SST timeseries for present and future runs.



Climatological monthly biases

Assumptions:
the SST bias is similar during 20th and 21st.
the SST bias is similar across resolutions



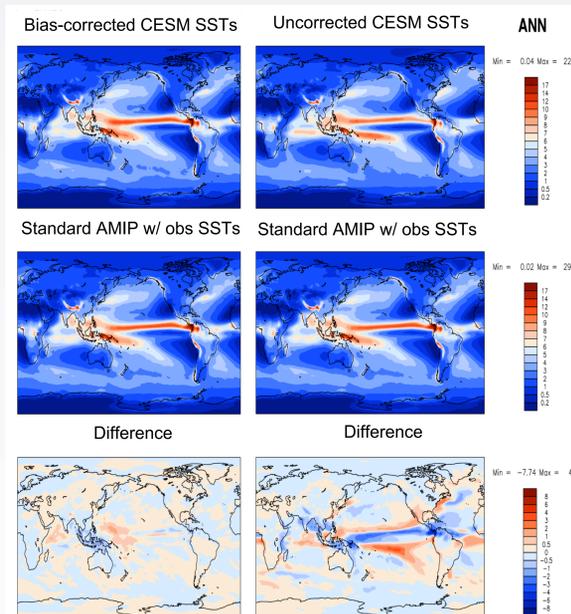
Bias corrected SST timeseries

Testing

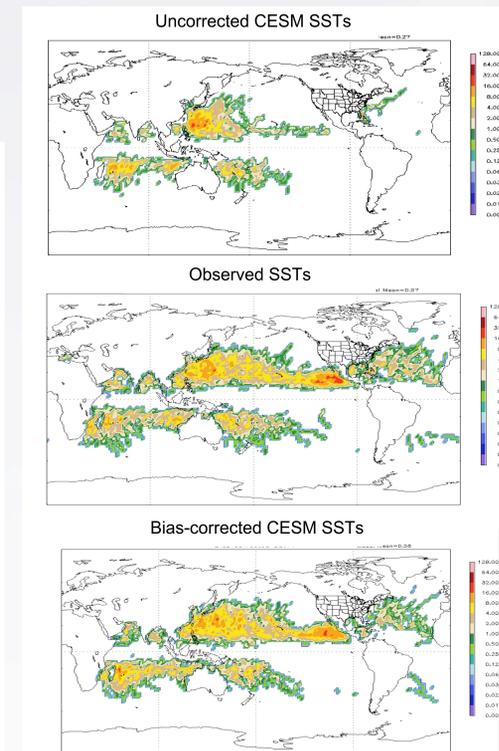
SST biases correction improves features of simulated regional climate.

We compare AMIP runs using:

- Observed SSTs
- Coupled SSTs
- Bias corrected SSTs



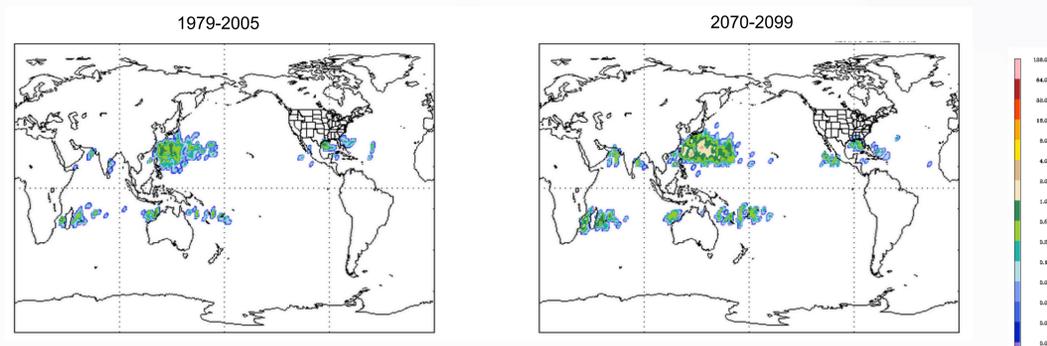
Annually-Averaged Precipitation 1985-2004
(1 degree run with prescribed SSTs)



Hurricane Track density (Category 1)
(0.25 degree run with prescribed SSTs)

Applications

We use the SST bias correction method to look at hurricane statistics in a changing climate. For present day, we use observed SSTs and for future climate, we use SST bias corrected SSTs from RCP8.5.



Change in Track densities of Cat 4 storms and stronger