

SESSION: (A1) Mechanisms of S2S predictability

(A1-07)

Diagnosing sources of operational forecast model errors in tropical-extratropical interactions

Dias, Juliana (1,2) and Kiladis, George (2)

(1) CIRES, University of Colorado Boulder, (2) NOAA/ESRL Physical Sciences Division

The atmospheric response to variations in latent heating in the tropics is known to extend well beyond its source region and therefore it is thought that a reduction of tropical forecast errors is beneficial for forecast skill over remote regions such as North America.

In this presentation, the impact of the quality of tropical forecasts in extra-tropical week 1 to 4 forecast skill is evaluated, using reforecasts from the S2S project. It is shown that in most models there is a positive correlation between performance of tropical forecasts and extra-tropical forecast at later lead times. The strength of these correlations varies with lead time, variable and model. One interpretation is that when tropical heat sources are well (poorly) predicted, extra-tropical skill is gained (lost) due to properly (improperly) triggered Rossby-like wavetrains. The quality of the S2S tropical forecasts is shown to be related to each model's ability to simulate the MJO, as well as higher frequency convectively coupled equatorial waves. This analysis also suggests that model physics, rather than dynamics, control the link between tropical and extra-tropical skill.