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Title: MJO modulation of surface variables over the North and South America in the CFS reanalysis

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Abstract:

This study examines the responses in temperature and precipitation over South America due to variations in the Madden-Julian Oscillation (MJO). The data analyzed was acquired from the Climate Forecast System Reanalysis (CFSR), covering every day from January 1979 to June 26, 2010 for precipitation data, and through December 2010 for temperature data. To understand how the MJO affects the characteristics of daily precipitation, changes in the frequency and intensity of precipitation events were examined.

Global composites were created for each of the eight MJO phases as the oscillation progresses eastward across the planet. Focusing on North and South America, anomalies in temperature and precipitation are studied for two seasons, May-September and November-March. The use of two extended seasons was decided in order to highlight responses that may only occur during wet or dry seasons and still include enough active MJO events going into the composites to get statistically significant results. Potential causes of these anomalies are also speculated by looking at deviations in zonal wind, velocity potential, and stream function for each of the eight phases.

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