ATS/CIRA Colloquium

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Impacts of a better-resolved stratosphere on El Niño teleconnections

Hosted by Dave Randall

Friday, October 23, 2015

ATS room 101; Discussion will begin at 11:15am
Refreshments will be served at 10:45am in the weather lab

The effects of the tropical Pacific El Nino-Southern Oscillation (ENSO) phenomenon are communicated to the rest of the globe via atmospheric teleconnections. Traditionally, ENSO teleconnections have been viewed as tropospheric phenomena, propagating to higher latitudes as Rossby waves. Recent studies, however, suggest an influence of the stratosphere on extra-tropical ENSO teleconnections. The primary modes of variability in the stratosphere are sudden stratospheric warmings (SSWs) and the tropical quasi-biennial oscillation (QBO). Here, we will show results from a) a 10-member ensemble of AMIP-type simulations (1952 –2001) and b) 40-member seasonal forecast ensembles for selected El Niño years, and demonstrate the effects of SSWs and the QBO on the extra-tropical El Nino response. We compare simulations with the default Community Atmosphere Model, version 5 (CAM5) as well as one with a better-resolved stratosphere and increased model lid. We show that a well-resolved stratosphere, especially SSWs, have a significant influence on El Niño impacts in climate as well as seasonal forecasting simulations.

Link to colloquium videos and announcement page: http://www.atmos.colostate.edu/dept/colloquia.php