

ATS/CIRA Colloquium

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Visiting CSU ATS from the University of Washington

**Influence of Meridional Constraints on Low-Frequency
Variability and its Response to Climate Change**

Hosted by Dave Thompson

Thursday, February 23, 2012

**ATS room 101; Discussion will begin at 3:30pm
Refreshments will be served at 3:00pm in the coffee lounge**

The eddy-driven jet is located in the midlatitudes, bounded on one side by the pole and often bounded on the opposite side by a strong Hadley-driven jet. This work explores how the eddy-driven jet and its variability persist within these limits. It is demonstrated that as the jet is located at higher latitudes, the leading mode of variability of the jet changes from a meridional shift to a pulse, while the persistence decreases. Looking equatorward, a similar change in eddy-driven jet variability is observed when the jet moves equatorward toward strong subtropical winds. In both the poleward and equatorward limits, the change in variability from a shift to a pulse is due to the modulation of eddy propagation and momentum flux. With human-induced climate change, these results predict a reduction in eddy-mean flow feedback strength, which implies a reduction in the time scale of the leading mode of variability in the troposphere. This work highlights how important it is for models to correctly position the jet, as slight deviations in latitude can cause large changes in the leading mode of variability and thus could influence the circulation's response to external forcings.

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