



**ATS/CIRA Colloquium**

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**The mid-latitude circulation response to global warming and  
implications for regional hydroclimate**

**Hosted by Libby Barnes**

**Friday, December 4, 2015**

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

A critical aspect of human-induced climate change is how it will affect regional hydroclimate around the world. To leading order, the increased ability of the atmosphere to hold moisture as it warms, intensifies moisture transports, making sub-tropical dry regions drier and mid- to high latitude wet regions wetter. But regional changes in hydroclimate will also depend on how the atmospheric circulation responds to warming.

Here, the predictions of the future of the mid-latitude circulation by the current generation of global climate models will be discussed, with a particular focus on circulation changes that impact on regional hydroclimate. While, in the zonal mean, it is thought that the mid-latitude circulation will undergo a poleward shift as the planet warms, there is considerable seasonal and zonal variation to the circulation response. This is particularly true of the Northern Hemisphere winter, where stationary wave changes are a leading order effect and act to bring wetting southerlies to the US west coast, drying northerlies to the US interior southwest and drying to the Mediterranean region.

The underlying cause of some of these circulation anomalies will be discussed along with the possible impact that model biases may have on our future predictions.

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