

ATS/CIRA Colloquium

Atmospheric Science 50th Anniversary Speaker

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How Well Do We Know the Earth's Energy Budget?

Hosted by Jeff Collett

Thursday, March 29, 2012

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

Our ability to predict climate change is fundamentally connected to our understanding of the processes that govern global energy balance. Changes in global temperature are ultimately governed by the net flux of energy into the Earth-atmosphere system while the time-scales of responses to energy imbalances is largely governed by the partitioning of this energy between the atmosphere and the oceans. These energy fluxes are, in turn, strongly influenced by the cycling of water between the atmosphere and the surface both through phase changes and the interaction of condensed water with solar and thermal radiation. Accurate observational estimates of the global energy and water cycles are, therefore, a critical first step toward predicting future climate yet recent analyses of state-of-the-art satellite estimates of water and energy fluxes deviate substantially from currently published estimates. This presentation will revisit the problem of closing the Earth's energy budget using the most recent satellite data products available. It will be argued that accurate estimation of global energy fluxes requires a careful accounting of all factors that influence these fluxes at the pixel level. Such an approach will be applied to the latest observations from several current satellite platforms to propose important revisions to previous estimates of global energy balance and highlight new applications of these datasets for observational analyses of regional and global climate forcings.

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