Special Seminar

Aaron Donohoe

Visiting ATS from the University of Washington

Energetic constraints on global climate

Hosted by Chris Kummerow

Monday, March 6, 2017

ATS room 101
Discussion will begin at 2:45 p.m.
Refreshments will be served at 2:15 p.m. in the weather lab

Spatial variations in the solar heating of the climate system drive the atmospheric and oceanic circulation and set patterns of temperature and precipitation. This presentation explores the processes that determine the absorption of solar radiation in the climate system including latitudinal, vertical and seasonal distributions. It is shown that atmospheric circulations and temperature adjust to the distribution of absorbed solar radiation resulting in two general findings: I) model biases in the distribution of absorbed solar radiation result in climate biases – most notably in the strength of the atmospheric circulation and the location of tropical precipitation and ii) changes in the circulation and temperature under global warming follow the spatial pattern of changes in absorbed solar radiation. The latter has much uncertainty due to cloud processes but there is a robust increase in absorbed solar radiation due to atmospheric moistening and reduced surface brightness due to snow and ice melt.

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