

ATS/CIRA Special Seminar

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Visiting ATS from Princeton/Geophysical Fluid Dynamics Laboratory

Mean precipitation change from invariant radiative cooling

Hosted by Chris Kummerow

Thursday, Feb. 23, 2017

ATS room 101

Discussion will begin at 3:30 p.m.

Refreshments will be served at 3:00 p.m. in the weather lab

Global warming simulations robustly show that mean precipitation increases at 1-3% per Kelvin, but we do not know what sets these values. Mean precipitation is constrained by radiative cooling, however, and we demonstrate here that radiative cooling profiles exhibit a certain invariance under warming when plotted in temperature coordinates. This invariance can then be leveraged to derive simple analytical equations for precipitation change with warming. These equations are tested against both CRM and GCM output, and in both cases give intuition for why precipitation changes at a rate of 1-3% per Kelvin.

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