

## **ATS/CIRA Colloquium**

**Brian Medeiros**

# **Can Aquaplanets Predict A GCM's Climate Sensitivity?**

**October 25, 2007**

**ATS room 101; Discussion will begin at 3:30pm**

**Refreshments will be served at 3:00pm in the coffee lounge**

Clouds remain the largest source of uncertainty in projections of future climate and estimates of climate sensitivity using general circulation models (GCMs). We use two current generation atmospheric GCMs that have very different climate sensitivity to show that a simplified framework -- the aquaplanet - can replicate the sensitivity of more realistic configurations. In both Earth-like and aquaplanet configurations, tropical low clouds play a leading role in determining the GCM's climate sensitivity. The low cloud response in the GCMs is opposite in sign, and appears to arise from differences in the models' parameterized physics. These results suggest that the idealized aquaplanet configuration is an appropriate laboratory for investigations of cloud effects in GCMs, and is an attractive option because of its relative simplicity. Ongoing work makes use of the aquaplanet configuration to better characterize the tropical cloud response in GCMs.