

**SSEC/CIMSS
Seminar**

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Reconciling the character of the Hydrological cycle in climate models with Earth Observations

With global warming we expect an increase in atmospheric water vapor of $\sim 7\%/K$ and changes of this magnitude are supported to some degree by current global measurements accumulated over the past 2 decade. Global precipitation is also expected to increase with warming but the rate of increase is a topic of some debate. Global observations show little or no change in global precipitation over the last 20 years. However, based on tight physical constraints, it will be argued that the global rate of increase of precipitation has to be significantly less than the increase of water vapor. The consequence of this to the character of global precipitation change will also be discussed.

The representation of precipitation in global weather and climate models will be assessed using new A-Train observations. It is expected that '*heavy precipitation events will continue to become more frequent, IPCC 2007*', it will be revealed through comparison between new Earth observations of moist atmospheric processes that our predictive tools (either climate or NWP models) contain major biases that are symptomatic of unrealistic rain physics. While I believe the changes predicted in the FAR are the most likely scenario in a warming world, and further that these are likely to occur primarily driven by changes in the large scale atmospheric flows (hypothesis), the existing model biases are serious enough that we must conclude these models have little or no ability to make credible projections about the changing character of rain and thus cannot conclusively test this fundamental hypothesis.

Friday, 20 November 2009

11:00 a.m.

Room AOSS 351