

Frontiers in Global Change Seminar Series presents ...



Synoptic Classification and Related Cloud Structures: A New Approach to Atmospheric Analysis and Climate Model Evaluation

- ▶ Tuesday, September 7, 2010
- ▶ 9:30am-10:30am
- ▶ Columbia River Room

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We have developed an automated classification technique that combines European Centre for Medium-range Weather Forecast analysis data and vertically pointing millimeter wavelength cloud radar observations to identify commonly occurring atmospheric patterns or states and associated cloud profiles (Marchand et al., 2006, 2009). The atmospheric states are defined only by large-scale, synoptic variables such that, once defined, these states can be used to composite climate model output. Millimeter-wavelength cloud radar observations of clouds are used to ensure that each state is statistically robust and unique. We have applied this technique at the SGP site and the TWP site in Darwin. This talk will focus on the methodology and the preliminary results from the Darwin analysis. The technique identifies five atmospheric states: a westerly monsoon, an easterly monsoon, suppressed convection, very dry conditions, and isolated convection. We use these states as the basis for compositing precipitation rate, liquid water path, and Madden-Julian Oscillation phase to further understand the meteorology of each state. Applications to climate model evaluation will be discussed using analysis results from the SGP and model results from the Multi-scale Modeling Framework (MMF).



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