**DATE:** Tuesday, 09 December 2014  
**TIME:** 11:00 a.m.  
**LOCATION:** Mesa Lab, Main Seminar Room  
NCAR, 1850 Table Mesa Drive  
**SPEAKER:** Colin Zarzycki, NCAR/ASP  
**TITLE:** Variable-resolution CAM-SE: A tool to both achieve and assess high regional resolution

**ABSTRACT:**
Variable-resolution general circulation models can serve as the bridge between traditional global models and high-resolution limited area models. They can achieve fine regional grid spacing while maintaining global continuity, therefore eliminating the need for externally-forced and possibly numerically and physically inconsistent boundary conditions. A statically-nested, variable-resolution option has recently been implemented in the Community Atmosphere Model's (CAM) Spectral Element (SE) dynamical core. I demonstrate how variable-resolution grids in idealized aquaplanet simulations can provide insight into the performance of the CAM physical parameterization sets across grid scales. The capability of variable-resolution CAM to provide improved tropical cyclone representation and mountain meteorology in coupled climate simulations is also highlighted. Finally, I explore the use of refined grids as a weather prediction tool. At 13 kilometer grid spacing, CAM-SE produces comparable tropical cyclone track skill to operational numerical weather models but forecasts storms which are too strong, indicating potential parameterization deficiencies at ultra-high resolutions. Sensitivity runs which attempt to ascertain culprits behind this cyclone intensity bias are discussed.

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