



A High-Order Multiscale Global Atmospheric Model

Ram Nair

NCAR, Boulder, United States (rnair@ucar.edu)

The High-Order Method Modeling Environment (HOMME), developed at NCAR, is a petascale hydrostatic framework, which employs the cubed-sphere grid system and high-order continuous or discontinuous Galerkin (DG) methods. Recently, the HOMME framework is being extended to a non-hydrostatic dynamical core, named as the “High-Order Multiscale Atmospheric Model (HOMAM).” The spatial discretization is based on DG or high-order finite-volume methods. Orography is handled by the terrain-following height-based coordinate system. To alleviate the stringent CFL stability requirement resulting from the vertical aspects of the dynamics, an operator-splitting time integration scheme based on the horizontally explicit and vertically implicit (HEVI) philosophy is adopted for HOMAM. Preliminary results with the benchmark test cases proposed in the Dynamical Core Model Intercomparison project (DCMIP) test-suite will be presented in the seminar.