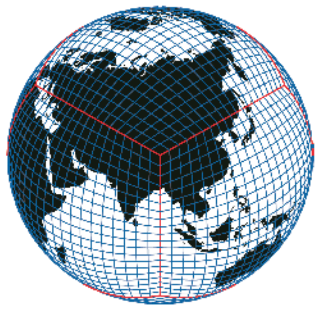
***The National Center for Atmospheric Research Announces An Advanced Study Program Summer Colloquium on***

# Numerical Techniques for Global Atmospheric Models

## JUNE 1-13, 2008
## Boulder, Colorado

*Hosted by*
*The Advanced Study Program (ASP) of the Societal-Environmental Research and Education Laboratory (SERE),*
*Climate and Global Dynamics Division of the Earth & Sun Systems Laboratory (ESSL),*
*and Computational and Information Systems Laboratory (CISL) at NCAR.*

*The colloquium will survey the latest developments in numerical methods for the dynamical cores of Atmospheric General Circulation Models. Dynamical cores are the central component of every climate and weather research model. They solve the equations of motion on the resolved scales and determine not only the choice of the computational grid but also the predicted variables. Research in dynamical cores faces many scientific and computational challenges. For example, there is a high demand for inherent conservation (like conservation of mass, energy and enstrophy) and the anticipated increases in grid resolution and put strong demands on the computational efficiency of the numerical schemes on parallel computing platforms. This includes highly scalable numerical methods on non-traditional computational grids such as cubed-sphere, icosahedral or Yin-Yang meshes. Next-generation dynamical cores will also allow for local grid refinement and foster switches in the dynamical approximations that are appropriate for the selected resolution. These choices incorporate hydrostatic and non-hydrostatic equation sets.*

**Organization:**

We invite graduate students from the atmospheric sciences, applied mathematics and other relevant disciplines to apply. The course will engage students in the primary options available for global models such as the choice of computational grids, numerical methods, resolutions, prognostic variables or model equations. Students will participate in lectures and tutorial sessions, but devote a large fraction of time to research projects to be developed in small groups. Each group will be assigned to a specific dynamical core with which they will run idealized test cases. Model-specific tutors will provide expert advise during the hands-on experience. Students will gain in-depth knowlege of the numerical techniques and scientific performance of the dynamical core in question. The goal is to survey the advantages and trade-offs of different computational approaches and grids for climate and weather research.

**Requirements:**

Because of the advanced and quantitative nature of the proposed course, the course prerequisites are:

1) One year of graduate school in quantitative physical science relevant to numerical modeling of weather and/or climate,
2) A course in numerical methods for solving partial differential equations,
3) Knowledge of a high-level computer language (Fortran90 or similar),
4) Working knowledge of a Unix or Linux variant of an operating system.

**Application deadline: March 1, 2008**
**See web site: www.asp.ucar.edu/colloquium/2008**

**Primary organizers:**
Peter H. Lauritzen (NCAR), Christiane Jablonowski (University of Michigan), Mark Taylor (Sandia National Laboratories), Ramachandran D. Nair (NCAR). Additional funding provided by NASA.




***More details on the application procedure and course can be found at the following website:***

**www.asp.ucar.edu/colloquium/2008**