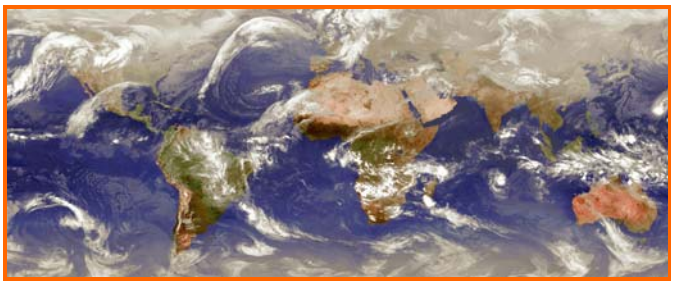
INSTITUTE FOR PURE AND APPLIED MATHEMATICS
Los Angeles, California



Model and Data Hierarchies for Simulating and Understanding Climate

March 8 – June 11, 2010

ORGANIZING COMMITTEE: **BJORN STEVENS** (Max Planck Institut für Meteorologie/ UCLA), **RUPERT KLEIN** (Freie Universität Berlin), **AMY BRAVERMAN** (Jet Propulsion Laboratory), **OLIVIER PAULUIS**, (Courant Institute), **ANDREW J. MAJDA** (Courant Institute)

Scientific Overview

Simulation has greatly advanced climate science, but not sufficiently to the profit of theory and understanding. How can simulation better advance climate science and what mathematical issues does this raise?

Our hypothesis is that the development of climate science (i.e., theory and understanding) will be best served by focusing computational and intellectual resources on model and data hierarchies. Where "model and data hierarchies" refer to successively more complex models, or data structures, and the relations among them. Classic examples are the equations that emerge at different order in an asymptotic expansion; or microscopic, mesoscopic, macroscopic representations of systems that emerge in statistical physics and material science. In the atmosphere/ocean system such approaches lead to familiar families of equation sets used to explore specific phenomena, and the statistical theories (parameterizations) used to close the systems which emerge at different orders; but such ideas are also relevant to the data used to test such systems.

Workshop Schedule

- Tutorials: March 9 - 12, 2010
- Workshop 1: Equation Hierarchies for Climate Modeling, March 22 – 26, 2010
- Workshop 2: Numerical Hierarchies for Climate Modeling, April 12 – 16, 2010
- Workshop 3: Simulation Hierarchies for Climate Modeling, May 3 – 7, 2010
- Workshop 4: Data Hierarchies for Climate Modeling, May 24 – 28, 2010
- Culminating Workshop at Lake Arrowhead, June 6 – 11, 2010

Participation

This long program will involve a community of senior and junior researchers, including mathematicians, physicists, engineers, statisticians and climate scientists. The intent is for participants to learn about new mathematical developments in the area of simulating and understanding climate, to meet a diverse group of people, and have ample opportunities to form new collaborations.

Full and partial support for long-term participants is available. We are especially interested in applicants who intend to participate in the entire program, but will consider applications for shorter periods. Funding is available for participants at all academic levels, though recent PhDs, graduate students, and researchers in the early stages of their careers are especially encouraged to apply. Encouraging the careers of women and minorities is an important component of IPAM's mission and we welcome their applications. More information and an application is available online.

www.ipam.ucla.edu/programs/cl2010

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