

## Model and Data Hierarchies for Simulating and Understanding Climate: Tutorials

**Tuesday March 9, 2010**

- 8:00–8:50 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:50–9:00 *Welcome and Opening Remarks*
- 9:00–10:15 **Marco Giorgetta** (Max-Planck-Institut für Meteorologie)  
*Overview of Earth System Modelling and Fluid Dynamical Issues*
- 10:15–10:45 *Break*
- 10:45–12:00 **Christiane Jablonowski** (University of Michigan)  
*On the Design of Dynamical Cores for Atmospheric General Circulation Models (GCMs): Numerical and Scientific Challenges*
- 12:00–12:30 *Core Orientation with IPAM Staff*
- 12:30–2:00 *Lunch (on your own)*
- 2:00–3:15 **Dargan Frierson** (University of Washington)  
*The Vertical Structure of Temperatures in the Atmosphere: Lapse Rate and Tropopause Height*
- 3:15–3:45 *Break*
- 3:45–5:00 **Rupert Klein** (Freie Universität Berlin)  
*Asymptotic methods in fluid mechanics: survey and recent advances*

**Wednesday March 10, 2010**

- 8:15–9:00 *Continental Breakfast*
- 9:00–10:15 **Marco Giorgetta** (Max-Planck-Institut für Meteorologie)  
*Demands on Next Generation Dynamical Solvers*
- 10:15–10:45 *Break*
- 10:45–12:00 **Christiane Jablonowski** (University of Michigan)  
*On the Design of Dynamical Cores for GCMs: Physical and Computational Challenges*
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:15 **Dargan Frierson** (University of Washington)  
*The Horizontal Structure of Temperatures in the Atmosphere: Energy Transports in the Atmosphere and Ocean*
- 3:15–3:45 *Break*
- 3:45–5:00 **James McWilliams** (University of California, Los Angeles (UCLA))  
*The Concept of a Slow Manifold in Rotating Stratified Fluids and its Potential Limits*



## Thursday March 11, 2010

- 8:15–9:00 *Continental Breakfast*
- 9:00–9:50 **Rupert Klein** (Freie Universität Berlin)  
*Multiscale Asymptotics for the Analysis of Geophysical Flows II*
- 9:50–10:05 *Break*
- 10:05–10:55 **Pier Siebesma** (KNMI)  
*Methodologies, Closures and Models for Clouds and Convection in the Climate system (part 1)*
- 10:55–11:10 *Break*
- 11:10–12:25 **Mark Berliner** (Ohio State University)
- 12:25–2:00 *Lunch (on your own)*
- 2:00–3:15 **Ole Peters** (Imperial College)  
*Stochastic processes*
- 3:15–3:45 *Break*
- 3:45–5:00 **Illia Horenko** (University of Lugano)  
*Time-Series Analysis I*

## Friday March 12, 2010

- 8:15–9:00 *Continental Breakfast*
- 9:00–10:15 **Pier Siebesma** (KNMI)  
*Methodologies, Closures and Models for Clouds and Convection in the Climate system (part 2)*
- 10:15–10:45 *Break*
- 10:45–12:00 **Ole Peters** (Imperial College)  
*Universality near phase transitions*
- 12:00–2:00 *Lunch (on your own)*
- 2:00–3:30 **Simona Bordoni** (California Institute of Technology)  
*Angular momentum transport and the general circulation of the atmosphere*
- 3:30–3:45 *Break*
- 3:45–5:00 **Illia Horenko** (University of Lugano)  
*Time-Series Analysis II*

