



Banff International Research Station

for Mathematical Innovation and Discovery

Mathematical Advancement in Geophysical Data Assimilation

February 3-8, 2008

http://www.birs.ca/birspages.php?task=displayevent&event_id=08w5096

TALKS

- Introductory talks [(*) in SCHEDULE]: 1hr = 45min talk + 15min discussion.
 - All other research talks: 30min = 20min talk + 10min discussion.
- Please allow enough time for discussion within your talk.*

MEETING ROOMS

- All lectures: Max Bell 159 (accessible by walkway on 2nd floor of Corbett Hall).
 - LCD projector, overhead projectors and blackboards are available for presentations.
- The meeting space designated for BIRS is the lower level of Max Bell, Rooms 155-159. Please respect that all other space has been contracted to other Banff Centre guests, including any Food and Beverage in those areas.*

CHECK-IN & CHECK-OUT

- Check-In: after 16:00, Sunday, February 3, 2008.
 - Check-out: by 12:00, Friday, February 8, 2008.
- Check-In Desk at the Banff Centre is located in the Professional Development Centre and open 24 hours. The Banff Centre Switch Board is open 24 hours, +1-403-762-6100.*

MEALS

- Meals (breakfast, lunch, and dinner in buffet style): Sally Borden Building
 - Coffee Breaks: Corbett Hall 2nd floor lounge,
- For each meal, please scan your meal card at the host/hostess station in the dining room.*

SCHEDULE

Sunday, February 3, 2008

17:30 - 19:30 Dinner

20:00 - Informal gathering in 2nd floor lounge, Corbett Hall
Beverages and small assortment of snacks are available on a cash honor-system.

Monday, February 4, 2008

Themes of the Day: Atmospheric & Oceanic Data Assimilation, Variational Methods

- 7:00 - 8:45 Breakfast
- 8:45 - 9:00 Introduction & Welcome to BIRS by Brenda Williams, BIRS Station Manager
9:00 - 9:15 Opening Remarks
- 9:15 - 10:15 Andrew Lorenc (UK Met Office)
Research issues in Data Assimilation for Operational NWP ()*
- 10:15 - 10:45 Coffee Break
- 10:45 - 11:15 Mark Buehener (Environment Canada)
Towards an Improved Use of Flow-Dependent Background Error Covariances in a Variational Data Assimilation System
- 11:15 - 11:45 Ricardo Todling (NASA Goddard Space Flight Center, USA)
Catching up to the World: The GMAO 4d-Var and its Adjoint-Based Tools
- 11:45 - 13:00 Lunch
- 13:00 - 14:00 Guided Tour of The Banff Centre [meet in the 2nd floor lounge, Corbett Hall]
14:00 - 14:15 Group Photo [meet on the front steps of Corbett Hall]
- 14:15 - 14:45 Pierre Gauthier (Université du Québec à Montréal, Canada)
Mathematical Problems Associated with Atmospheric Data Assimilation and Weather Prediction
- 14:45 - 15:15 Robert N. Miller (Oregon State University, USA)
Estimation of Representation Error in Ocean Models
- 15:15 - 15:45 Coffee Break
- 15:45 - 16:15 Zhijin Li (NASA Jet Propulsion Laboratory, USA)
Development of Data Assimilation Schemes in Support of Coastal Ocean Observing Systems
- 16:15 - 16:45 Keith Thompson (Dalhousie University, Canada)
Predicting Mesoscale Variability of the North Atlantic Using a Simple Physically Motivated Scheme For Assimilating Altimeter and Argo Data
- 16:45 - 18:00 Discussion
- 18:00 - 19:30 Dinner
- 20:00 - Spontaneous Discussion

Tuesday, February 5, 2008

Themes of the Day: Ensemble-Based Methods, Lagrangian Aspects

- 7:00 - 9:00 Breakfast
- 9:00 - 10:00 Martin Ehrendorfer (University of Reading, UK)
Ensemble-Based Data Assimilation ()*
- 10:00 - 10:30 Zoltan Toth (National Centers for Environmental Prediction, USA)
Issues Related to the Use of Ensembles in Data Assimilation and Targeting
- 10:30 - 11:00 Coffee Break

- 11:00 - 11:30 Istvan Szunyogh (University of Maryland, USA)
Flow Dependence of the Performance of an Ensemble Based Analysis-Forecast System
- 11:30 - 12:00 Eric Kostelich (Arizona State University, USA)
Recent Results of the Local Ensemble Transform Kalman Filter (LETKF)
- 12:00 - 13:30 Lunch
- 13:30 - 14:00 Andrew Tangborn (NASA Goddard Space Flight Center, USA)
Assimilation of Vorcore Polar Balloons
- 14:00 - 14:30 Kayo Ide (University of California, Los Angeles, USA)
Lagrangian Data Assimilation: Issues and Observing System Design
- 14:30 - 15:00 Guillaume Vernieres (University of North Carolina at Chapel Hill, USA)
Lagrangian Data Assimilation: Eddy-Tracking in Gulf of Mexico
- 15:00 - 15:30 Coffee break
- 15:30 - 16:00 Marc Bocquet (Université Paris-Est, France)
Non-Gaussian Data Assimilation: Application to Inverse Modelling of Atmospheric Tracers
- 16:00 - 16:30 Fuqing Zhang (Texas A&M Univweaity, USA)
Coupling Ensemble Kalman Filter with Four-Dimensional Variational Data Assimilation
- 16:30 - 18:00 Discussion
- 18:00 - 19:30 Dinner
- 20:00 - Spontaneous Discussion

Wednesday, February 6, 2008

Themes of the Day: Observations, Winter in Banff

- 7:00 - 9:00 Breakfast
- 9:00 - 10:00 Gerald Desroziers (Météo-France)
Use of Observations in Data Assimilation Schemes ()*
- 10:00 - 10:30 Art Krener (Naval Postgraduate School, USA)
Eulerian and Lagrangian Observability of Point Vortex Flows
- 10:30 - 11:00 Coffee Break
- 11:00 - 11:30 Richard Menard (Environment Canada)
Model Error as an Unobserved Variable: What Do We Know From Estimation Theory
- 11:30 - 12:00 N. Sri Namachchivaya (University of Illinois at Urbana-Champaign, USA)
Target Detection in Multi-Sensor and Multi-Scale Environments
- 12:00 - 13:30 Lunch
- Afternoon Free
- 17:30 - 19:30 Dinner

Thursday, February 7, 2008

Themes of the Day: Bayesian Approaches, New Directions

- 7:00-9:00 Breakfast
- 9:00 - 10:00 Peter Jan van Leeuwen (University of Utrecht, the Netherlands)
Particle Filtering in Large-Scale Systems: Problems & Potential Solutions (*)
- 10:00 - 10:30 Chris Snyder (National Center for Atmospheric Research, USA)
Obstacles to Particle Filtering in High Dimensions
- 10:30 - 11:00 Coffee Break
- 11:00 - 11:30 Mike Dowd (Dalhousie University, Canada)
Sequential Monte Carlo Approaches for Parameter and State Estimation
- 11:30 - 12:00 Chris Jones (UNC-CH, USA and U. Warwick, UK)
Bayesian Approach to Lagrangian Data Assimilation
- 12:00 - 13:30 Lunch
- 13:30 - 14:00 Youmin Tang (University of North British Columbia, Canada)
Advanced Data Assimilation in Strongly Nonlinear Systems
- 14:00 - 14:30 Tomislava Vukicevic (University of Colorado, Boulder, USA)
Analysis of the Impact of Model Nonlinearities, Modeling Errors and Gaussian Prior in Inverse Problem Solving
- 14:30 - 15:00 Nancy Nichols (University of Reading, UK)
Use of Reduced Order Models in incremental Four-Dimensional Variational Data Assimilation
- 15:00 - 15:30 Coffee break
- 15:30 - 16:00 Olivier Pannekoucke (Météo-France)
Background Error Correlation Modeling: Representation of the Local Length-Scale From ("small") Ensemble
- 16:00 - 16:30 Milija Zupanski (Colorado State University, USA)
Dynamical Approach to Nonlinear Ensemble Data Assimilation
- 16:30 - 18:00 Discussion
- 18:00 - 19:30 Dinner
- 20:00 - 21:00 Olivier Talagrand (Laboratoire de Meteorologie Dynamique, France)
A Few Future Perspectives for Assimilation (*)
- 21:00 - Spontaneous Discussion

Friday, February 8, 2008

Theme of the Day: Spontaneous Discussion, Explore Banff

- 7:00 - 9:00 Breakfast
- 12:00 Checkout
Available until 3pm: Corbett Hall Lounge, Max Bell Meeting Rooms & Reading Rooms
- 12:00 - 13:30 Lunch