



# Banff International Research Station

for Mathematical Innovation and Discovery

## Frontiers in the Detection and Attribution of Climate Change

May 27 - June 1, 2012

### MEALS

\*Breakfast (Buffet): 7:00 – 9:00 am, Sally Borden Building, Monday – Friday

\*Lunch (Buffet): 11:30 am – 1:30 pm, Sally Borden Building, Monday – Friday

\*Dinner (Buffet): 5:30 – 7:30 pm, Sally Borden Building, Sunday – Thursday

Coffee Breaks: As per daily schedule, in the foyer of the TransCanada Pipeline Pavilion (TCPL)

**\*Please remember to scan your meal card at the host/hostess station in the dining room for each meal.**

### MEETING ROOMS

All lectures will be held in the new lecture theater in the TransCanada Pipelines Pavilion (TCPL). LCD projector, overhead projectors and blackboards are available for presentations.

### NOTES ON THE MEETING

- Speakers and poster presenters: Please bear in mind the breadth of background of participants. Please provide titles and abstracts by email to Paul ASAP.
- 60 minute slots for oral presentation are expository lectures (all on Monday). They should include about 45 minutes of material and allow about 15 minutes for discussion.
- 30 minute slots for oral presentation are more research oriented (Tuesday to Friday). They should include about 25 minutes of material and allow about 5 minutes for discussion.
- Poster presenters will be given a couple of minutes each to present their poster to the group at the start of the poster sessions Monday and Tuesday evenings.
- Poster boards are 6' (180 cm) wide and 4' (120 cm) tall.
- Session/breakout chairs are asked to guide and stimulate the discussion.
- Workshop website with abstracts can be found at <http://da-frontiers-birs-2012.wikispaces.com>
- Rapporteurs are asked to record notes on presentations and discussion onto blackboards and/or computer files. Please post the files or pictures of the blackboards to the workshop website, or email to Paul to post for you.
- Please let the organizers know if you are not comfortable with your chair or any other assignment.
- Please consider sharing your slides and posters on the workshop website. You can upload yourself or email to Paul to do this for you.

### SCHEDULE

#### Sunday

16:00 Check-in begins (Front Desk – Professional Development Centre - open 24 hours)

17:30-19:30 Buffet Dinner

20:00 Informal gathering in 2nd floor lounge, Corbett Hall (if desired)

Beverages and small assortment of snacks are available on a cash honor system.

#### Monday

##### Theme 1: Detection and Attribution Problem and State of the Art

7:00-8:30 Breakfast

8:30-8:45 Introduction and Welcome by BIRS Station Manager, TCPL

*Morning Session. Chair: R. Smith. Rapporteur: A. Braverman*

8:45-9:00 Introduction to workshop (P. Kushner)

9:00-10:00 Identifying a "discernible human influence" on global climate (B. Santer)  
 10:00-10:30 Coffee Break, TCPL  
 10:30-11:30 Impacts of climate change on agriculture (D. Lobell)  
 11:30-13:30 Lunch  
*Afternoon Session. Chair: C. Tebaldi. Rapporteur: P. Kushner*  
 13:30-14:30 An introduction to climate change detection and attribution (N. Gillett)  
 14:30-15:00 Coffee Break, TCPL  
 15:00-16:00 Human health impacts of climate change (C. Paciorek)  
 16:00-17:30 Panel Discussion: summary, discussion on key issues raised  
 C. Tebaldi (chair), C. Paciorek, N. Gillett, D. Lobell, B. Santer  
 17:30-19:30 Dinner  
 19:30-21:00 Poster Session 1: introductions and poster viewing in TCPL Foyer (Chair: P. Kushner)

## Tuesday

### Theme 2: Climate Extremes and Events

7:00-8:45 Breakfast  
*Morning Session. Chair: T. Delsole. Rapporteur: C. Tebaldi*  
 8:45-9:00 Recap/goals for the day (T. Delsole)  
 9:00-9:30 Progress in Detecting Anthropogenic Influence on Temperature and  
 Precipitation Extremes (F. Zwiers)  
 9:30-10:00 D&A of extremes/climate events (R. Smith)  
 10:00-10:30 Coffee Break, TCPL  
 10:30-11:30 Panel discussion: theory and methodology  
 P. Guttorp (chair), D. Lobell, C. Paciorek, F. Zwiers  
 11:30-13:00 Lunch  
 13:00-14:00 Guided Tour of The Banff Centre; meet in the 2nd floor lounge, Corbett Hall  
 14:00 Group Photo; meet in foyer of TCPL (photograph will be taken outdoors  
 so a jacket might be required).  
*Afternoon Session. Chair: J. Imbers. Rapporteur: P. Kushner*  
 14:00-14:30 Event Attribution: Physical-Diagnostic Approach (R. Dole)  
 14:30-15:00 D&A of climate events: practice 2 (P. Pall)  
 15:00-15:30 Coffee Break, TCPL  
 15:30-16:30 Breakouts:  
 1) D&A of climate extremes/events: theory, methodology, practice  
 (Chair: P. Pall. Rapporteur: A. Hannart)  
 2) D&A of climate extremes/events: human health/agriculture perspective  
 (Chair: D. Lobell. Rapporteur: T. Greasby)  
 16:30-17:30 Plenary: summary of breakouts (P. Pall and D. Lobell)  
 19:30-21:00 Poster Session 2: introductions and poster viewing in TCPL Foyer (Chair: C. Tebaldi)

## Wednesday

### Theme 3: Observational Perspectives, Past and Present

7:00-8:45 Breakfast  
*Morning Session. Chair: A. Braverman. Rapporteur: P. Kushner*  
 8:45-9:00 Recap/goals for the day (A. Braverman)  
 9:00-9:30 Making sense of the uncertainty in in-situ climate data (P. Thorne)  
 9:30-10:00 Realistic and Easy-to-Use Uncertainty Analyses for Climate Observations (C. Mears)  
 10:00-10:30 Coffee Break, TCPL  
 10:30-11:00 Arctic temperature extremes over the last 600 years (M. Tingley)  
 11:00-11:30 Statistical modeling of extreme value behavior in paleoclimate proxies (P. Craigmile)  
 11:30-13:00 Lunch  
*Afternoon Session Chair: B. Rajaratnam. Rapporteur: Y. Sun*  
 13:00-14:00 Panel discussion on paleoclimate  
 B. Rajaratnam (chair), B. Li, M. Tingley, P. Craigmile

- 14:00-15:00 Breakouts  
1) Modern Earth Observations (J. Brynjarsdottir chair)  
2) Paleoclimate (B. Li chair)  
15:00-16:00 Tour of Banff Centre Open Studios

### **Theme 1 Reprise: Focus on Climate Change Impacts: Agriculture and Human Health**

*Afternoon Session. Chair: W. Schlenker. Rapporteur: B. Shaby*

- 16:00-16:30 Agriculture and climate impacts (M. Roberts)  
16:30-17:00 Discussion on agriculture  
17:00-17:30 Human health and climate impacts (J. Schwartz)  
17:30-18:00 Discussion on human health  
18:00-19:30 Dinner

## **Thursday**

- 7:00-9:00 Breakfast  
9:00-11:30 Free morning  
11:30-13:30 Lunch

### **Theme 4: Frontiers and Synthesis**

*Afternoon Session. Chair: C. Tebaldi. Rapporteur: W. Anderegg*

- 13:30-14:30 Panel discussion: Synthesis, setting the stage for new research.  
C. Tebaldi (chair), R. Smith, B. Rajaratnam, J. Schwartz  
14:30-15:00 Coffee Break, TCPL  
15:00-16:30 Breakouts  
1) Breakout 1: D&A/extremes methodology perspectives (Chair: A. Ribes. Rapporteur: P. Pall)  
2) Breakout 2: Observational perspectives (Chair: TBD, Rapporteur: Y. Sun)  
3) Breakout 3: Human health/agriculture perspectives  
(Chair: J. Schwartz. Rapporteur: B. Shaby)  
16:30-17:30 Panel discussion: breakout summary, new frontiers  
M. Tingley (chair), A. Ribes, J. Schwartz, one TBD  
17:30-19:30 Dinner

## **Friday**

### **Theme 4 Continued: Connections to assessments, operational needs, programmes, etc..**

- 7:00-8:45 Breakfast  
*Morning Session Chair: P. Kushner. Rapporteur: J. Imbers*  
8:45-9:00 Recap/goals for the morning (P. Kushner)  
9:00-9:30 Detection/attribution in climate and impacts assessment (F. Zwiers)  
9:30-10:00 Climate change, health, and detection/attribution: a broader context (B. Armstrong)  
10:00-10:30 Coffee Break, TCPL  
10:30-11:30 Panel discussion: next steps  
B. Santer (chair), B. Armstrong, P. Thorne, R. Dole  
11:30-11:35 Closing remarks (P. Kushner)  
11:30-13:00 Lunch

## **Checkout by 12 noon.**

\*\* 5-day workshop participants are welcome to use BIRS facilities (BIRS Coffee Lounge, TCPL and Reading Room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon. \*\*

### **List of Posters**

1. William Anderegg: Detection and attribution of climate-related tree mortality rates in the western US

and Canada

2. Amy Braverman: Likelihood-based comparison of CMIP5 decadal experiment runs and AIRS specific humidity observations
3. Jenny Brynjarsdottir: Downscaling temperatures over Antarctica - Dimension reduced spatio-temporal modeling with Maximum Covariance Patterns
4. Tim Delsole: Robust Multi-year Predictability on Continental Scales
5. Tim Delsole: Optimizing Detectability on Continental Scales
6. T. Greasby: TBA
7. Alexis Hannart: Approaching D&A as an inverse problem: data Assimilation in a toy model of stratospheric cooling
8. Jara Imbers: Sensitivity of detection and attribution to simulated internal variability
9. Paul Kushner: Statistical representations of climate persistence
10. Pardeep Pall: Anthropogenic greenhouse gas contribution to flood risk in England and Wales in Autumn 2000
11. Aurélien Ribes: D&A on global mean temperature based on CMIP5 models'
12. Aurélien Ribes: Regularised optimal Fingerprint for attribution
13. Ben Shaby: Bayesian spatial extreme value analysis to assess the changing risk of widespread crop failure in Europe
14. Ying Sun: Function Median Polish with Climate Applications
15. P. Thorne (one or two): The International Surface Temperature Initiative