

Workshop on
Big Data in Environmental Science

May 11 to 15, 2015
University of British Columbia, PIMS

Earth and Ocean Sciences Building

Draft Program as of 30 April

The timings indicated below are not intended to be too rigid; we will tolerate small deviations from the time table to make sure that discussion gets followed up on. The event ends Friday at lunch and we have scheduled a free afternoon on Wednesday for speakers to have some time to get out in Vancouver. We want, however, to draw your attention to a public lecture by Gavin Shaddick on spatio-temporal methods in environmental epidemiology to be given Wednesday afternoon at 4 PM the same building as the one in which our conference is being held. A reception is to follow. Details concerning the location and title will be provided at the workshop.

Organizing Committee: Richard Lockhart, Simon Fraser University; Charmaine Dean, Western University; Peter Guttorp, University of Washington; Will Kleiber, Colorado; Bo Li, University of Illinois; Steve Sain, the Climate Corp; and James V. Zidek, University of British Columbia.

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Monday 11 May

- Morning** Biologging. James V. Zidek, organizer
- 9:00 – 9:45** Andrew Trites, University of British Columbia
Tentative title A biologist's perspective on biologging and big data
- 9:45 – 10:30** James V. Zidek and Seagle Liu, University of British Columbia
Interpolating the high dimensional track record of the fur seal: fusing a physical model with data.
- 10:30 – 11:00** Coffee
- 11:00 – 11:45** Mevin Hooten, Colorado State University, via Skype
Fringe benefits: The hidden utility of constraints in telemetry studies.
- 11:45 – 12:00** Discussion
- 12:00 – 1:30** Lunch – not organized but there are many places to eat at UBC.

Afternoon

- 1:30 – 2:20** Finn Lindgren, University of Bath
Stochastic partial differential equations and numerical methods for large scale spatial statistics
- 2:30 – 3:00** Coffee
- 3:00 – 3:45** Timothy Johnson, University of Michigan
Analysis of Point Pattern Imaging Data using Log Gaussian Cox Processes with Spatially Varying Coefficients
- 3:45 – 4:30** Marco Ferreira, Virginia Tech
Dynamic Multiscale Spatiotemporal Models for Gaussian and Poisson Processes

Tuesday 12 May

Morning

- 9:00 – 9:45** Soutir Bandyopadhyay, Lehigh University
Spatial Methods for Nonstationary Fields Using Compact Basis Functions
- 9:45 – 10:30** Hao Zhang, Purdue University
Modeling the Complexity of Data Structure in Environmental Sciences
- 10:30 – 11:00** Coffee
- 11:00 – 11:45** Jonathan Bradley, University of Missouri
Efficient Parameterizations for Multiscale Multivariate Spatio-Temporal Data
- 11:45 – 12:00** Discussion
- 12:00 – 1:30** Lunch – not organized but there are many places to eat at UBC

Afternoon

- 1:30 – 2:20** Finn Lindgren, University of Bath
Towards realistic stochastic modelling of global temperatures
- 2:30 – 3:00** Coffee
- 3:00 – 3:45** Robert Lund, Clemson University
Changepoints and Associated Climate Controversies
- 3:45 – 4:30** Dorit Hammerling, NCAR
A new ensemble-based consistency test for the Community Earth System Model
- After that** Conference reception.

Wednesday 13 May

Morning

- 9:00 – 9:45** Peter Craigmile, The Ohio State University
Heteroscedastic asymmetric spatial processes (HASP)
- 9:45 – 10:30** James Balamuta, University of Illinois
Powering Up the Computation for Big Data
- 10:30 – 11:00** Coffee
- 11:00 – 11:45** Luke Bornn, Simon Fraser University
Lost Moments: The Effect of Pre-processing on Environmental Data.
- 11:45 – 12:30** Will Kleiber, University of Colorado
Coherence for Random Fields
- Afternoon** We plan to give everyone an afternoon free in Vancouver.
- 4:00 – 5:00** Gavin Shaddick, University of Bath & International Visiting Research Scholar at UBC's Peter Wall Institute of Advanced Studies
Public Lecture with a reception to follow. Details to be announced.

Thursday 14 May

Morning Computation for Large Geostatistical Datasets. Bo Li, organizer

9:00 – 9:45 Doug Nychka, NCAR
*Extremes in regional climate: What to do with
8000 histograms*

9:45 – 10:30 Sudipto Banerjee, UCLA
*On Gaussian Process Models for High-Dimensional Geo-
statistical Datasets*

10:30 – 11:00 Coffee

11:00 – 11:45 Matthias Katzfuß, Texas A & M
A multi-resolution approximation for big spatial data

12:00 – 1:30 Lunch – not organized but there are many places to eat at UBC.

Afternoon

1:30 – 2:15 Bo Li, University of Illinois
*Evaluating Climate Field Reconstructions in Reduced Di-
mension*

2:15 – 3:00 Bruno Sanso, University of California at Santa Cruz
*Using MARS for functional computer model emulation
and sensitivity analysis*

3:00 – 3:30 Coffee

3:30 – 5:00 Jennifer Bryan, UBC
Visualization with ggplot2; bring your laptop

Friday 15 May

- Morning** Environmental Epidemiology. James V. Zidek, organizer
- 9:00 – 9:45** Michael Brauer, University of British Columbia
Tentative title An environmental epidemiologist's perspective on the role of big data in environmental health risk assessment
- 9:45 – 10:30** Renjun Ma, University of New Brunswick
Spatiotemporal Analysis of Environmental Health Risk
- 10:30 – 11:00** Coffee
- 11:00 – 11:45** Gavin Shaddick, University of Bath
Incorporating large scale exposure modelling into environmental epidemiological studies
- 11:45 – 12:00** Discussion
- Afternoon** The conference ends at lunch. Whenever you choose to end a workshop or conference there are some who need to leave a little bit earlier! This is life.