

CLAUDIE BEAULIEU
Postdoctoral Research Fellow
Atmospheric and Oceanic Sciences
Princeton University
300 Forrester Road, Princeton, NJ
08540 USA

beaulieu@princeton.edu
609-258-0846

SCIENTIFIC INTERESTS

Statistical applications in atmospheric and water sciences

SUMMARY OF QUALIFICATIONS

- Ph. D. in Water Sciences and B. Sc. in Statistics
- 6 years experience in research, statistical consulting and teaching
- 20 publications: papers published in peer-reviewed journals, conference proceedings, posters and research reports

ACADEMIC BACKGROUND

Ph. D. in Water Sciences INRS-ETE, Quebec, QC, Canada Director: Taha B.M.J. Ouarda, Co-Director: Ousmane Seidou (University of Ottawa) Thesis title: Homogenization of precipitation series (in French)	2005-2009
M. Sc. in Water Sciences (Transfer from Master's to Ph.D. program) INRS-ETE, Quebec, QC, Canada	2003-2005
B. Sc. in Statistics Université Laval, Quebec, QC, Canada	2000-2003

GRANTS AND AWARDS

- | | |
|---|------------------|
| • Postdoctoral fellowship, FQRNT Quebec funding | 2009-2011 |
| • Excellence in publication, Centre d'Études Nordiques | 2009 |
| • Ph.D. Scholarship, FQRNT Quebec funding | 2006-2008 |
| • Ph.D. Scholarship, Caisse Populaire Desjardins du Centre-Ville de Québec funding | 2005-2006 |
| • Honour mention at the Mathematics and Statistics Department, Université Laval | 2003 |
| • Undergraduate research scholarship, NSERC Canada | 2001, 2002, 2003 |
| • Canada Exchange Scholars Award | 2001 |
| • Undergraduate scholarship,
Association des cadres supérieurs de l'Université Laval funding | 1999-2000 |

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PROFESSIONAL EXPERIENCE

Postdoctoral Research Fellow 2009

Atmospheric and Oceanic Sciences, Princeton University, Princeton, NJ, USA

- Study the carbon sources and sinks through statistical analysis of observations

Teaching

INRS-ETE, Quebec, QC, Canada

2009

- Introduction to Bayesian analysis (graduate course)

Statistical consulting

Fisheries and Oceans Canada, Quebec, QC, Canada

2007-2009

- Develop a model to predict the squat of merchant ships

Institut National de Santé Publique du Québec, Quebec, QC, Canada

2006

- Study the climate effects on the West Nile Virus transmission risk in Montreal

Civil Engineering department, Université Laval, Quebec, QC, Canada

2002-2003

- Develop a model to evaluate the impact of tires on the road surface

Trainee in statistical hydrology

2001-2003

INRS-ETE, Quebec, QC, Canada

Teacher assistant

2002

Centre de dépannage et d'aide en mathématiques et statistiques de l'Université Laval, Université Laval, Quebec, QC, Canada

Teacher assistant

2000-2002

Centre de parrainage scolaire, Quebec, QC, Canada

PROFESSIONAL ACTIVITIES

Reviewer

International Journal of Climatology

Journal of Hydroinformatics

Methods in Ecology and Evolution

Member

Institute for Mathematical Statistics

2008-2009

International Society for Bayesian Analysis

2008-2009

The International Environmetrics Society

2009

Centre d'Études Nordiques

2005-2009

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PUBLICATIONS

Papers published or accepted in peer-reviewed journals:

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. (2009) A Bayesian Normal Homogeneity Test for the detection of artificial discontinuities in climatic series. *International Journal of Climatology*, in press.

Beaulieu, C., Seidou, O., Ouarda, T.B.M.J., Zhang, X. (2009) Intercomparison of homogenization techniques for precipitation data continued: the comparison of two recent Bayesian changepoint models. *Water Resources Research*, 45, W08410.

Beaulieu, C., Gharbi, S., Ouarda, T.B.M.J., Seidou, O. (2009) A statistical approach to model the deep draft ships squat in the St. Lawrence waterway. *Journal of Waterway, Port, Coastal, and Ocean Engineering*, May/June, 80-90, doi: 10.1061/(ASCE)WW.1943-5460.0000003.

Beaulieu, C., Seidou, O. Ouarda, T.B.M.J., Zhang, X., Boulet, G., Yagouti, A. (2008) Intercomparison of homogenization techniques for precipitation data. *Water Resources Research*, 44, W02425.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. (2007) A review of homogenization techniques for climate data and their applicability to precipitation series (in french). *Hydrological Sciences Journal*, 52(1), 18-37.

El Adlouni, S., **Beaulieu, C.**, Ouarda, T.B.M.J., Gosselin, P., St-Hilaire, A. (2007) Effects of climate on West Nile Virus transmission risk for decision-making in Quebec. *International Journal of Health Geographics*, 6(40), doi:10.1186/1476-072X-6-40.

Paper in preparation:

Beaulieu, C., Seidou, O., Ouarda, T.B.M.J. (2009) A Bayesian Gamma Homogeneity Test for the detection of artificial discontinuities in precipitation series.

Ph. D. Thesis:

Beaulieu, C. (2009) Homogénéisation des séries de précipitations: Identification des techniques les plus prometteuses et nouveaux développements. INRS-ETE, Quebec, 309 p.

Presentations:

Invited talks:

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. Homogenization techniques for precipitation data. School of Marine and Atmospheric Sciences, Stony Brook University, Stony Brook, NY, United States, November 4th, 2009.

Beaulieu, C. A Bayesian approach to detect artificial discontinuities in climatic series. Program in Atmospheric and Oceanic Sciences, Princeton University, Princeton, NJ, United States, September 26, 2008.

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Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Boulet, G., Yagouti, A. Homogénéisation des séries de précipitations : identification des techniques les plus prometteuses et nouveaux développements. Consortium OURANOS, Montreal, QC, Canada, January 17, 2007.

Conferences:

Beaulieu, C., Sarmiento, J.L., Gloor, E., Jacobson, A. Possible shift in the mean land carbon uptake occurring in 1989. 8th International Carbon Dioxide Conference, Jena, Germany, September 13-19, 2009 (poster).

Beaulieu, C. Ouarda, T.B.M.J., Seidou, O. Bayesian detection of inhomogeneities in precipitation series. The International Environmetrics Society Conference 2009, University of Bologna, Italy, July 5-9, 2009.

Beaulieu, C. Ouarda, T.B.M.J., Seidou, O. A Bayesian approach to detect artificial discontinuities in climatic series. Stochastic probabilistic methods for atmosphere, ocean and climate dynamics Workshop, University of Victoria, Victoria, BC, Canada, July 20-23, 2008.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. Application des techniques Bayésiennes pour l'homogénéisation des données climatiques. Colloque sur l'analyse des pluies et des crues extrêmes de l'École Nationale des Ingénieurs de Tunis, Tunis, Tunisia, April 2-3, 2008.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Boulet, G., Yagouti, A. Deux méthodes Bayésiennes pour l'homogénéisation des données climatiques. 27^e Colloque du Centre d'Études Nordiques, Université Laval, Quebec, QC, Canada, February 1-2, 2007.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Zhang, X., Boulet, G., Yagouti, A. Performance of several homogenization techniques to detect shifts in precipitation data. Canadian Meteorological and Oceanographical Society, Canadian Geophysical Union and American Meteorological Society joint congress, St-John's, NF, Canada, May 28 – June 1, 2007 (poster).

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Boulet, G., Yagouti, A. Homogénéisation des séries de précipitations : comparaison des méthodes. 26^e Colloque du Centre d'Études Nordiques, Université Laval, Quebec, QC, Canada, January 26-27, 2006.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Boulet, G., Yagouti, A. Homogenization of precipitation series: comparison of methods and recommendations. Sixth Annual meeting of the European Meteorological Society, Sixth European Conference on Applied Climatology, Ljubljana, Slovenia, September 4-8, 2006.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Zhang, X., Boulet, G., Yagouti, A. Étude comparative des méthodes d'homogénéisation des séries de précipitations. 2e Symposium scientifique : Climatologie et adaptation à l'échelle régionale, OURANOS, Montreal, QC, Canada, November 2-3, 2006 (poster).

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Beaulieu, C., Ouarda, T.B.M.J., Seidou, O., Boulet, G., Yagouti, A., Genest, C. Étude comparative des méthodes d'homogénéisation des séries de précipitations. Atelier de l'Association Canadienne des Ressources Hydriques Section Québec, Québec, QC, Canada, March 31, 2005 (poster).

Seminars:

Beaulieu, C., Sarmiento, J.L, Rodgers, K. (2009) Change point detection in presence of autocorrelation with applications in atmospheric sciences. Program in Atmospheric and Oceanic Sciences, Princeton University, Princeton, NJ, United States, October 16, 2009.

Beaulieu, C. Modélisation du squat des navires marchands qui transitent par le fleuve Saint-Laurent. INRS-ETE, Québec, QC, Canada, May 12, 2008.

Beaulieu, C. Étude comparative des méthodes d'homogénéisation des précipitations. INRS-ETE, Québec, QC, Canada, May 14, 2005.

Technical reports:

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. (2008) Modélisation du surenfoncement des navires marchands qui transitent par le fleuve Saint-Laurent. Canada Research Chair on the Estimation of Hydrometeorological Variables, Hydro-Québec/NSERC Chair in Statistical Hydrology, INRS-ETE, Research Report No R-974, 66 p.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. (2007) Étude comparative de méthodes d'homogénéisation des séries de précipitations. Canada Research Chair on the Estimation of Hydrometeorological Variables, Hydro-Québec/NSERC Chair in Statistical Hydrology, INRS-ETE, Research Report No R-907, 108 p.

Beaulieu, C., El-Adlouni, S., Ouarda, T.B.M.J., Charron, C., St-Hilaire, A., Gachon, P. (2006). Étude des conditions climatiques favorables à la propagation du Virus du Nil Occidental à Montréal. Canada Research Chair on the Estimation of Hydrometeorological Variables, Hydro-Québec/NSERC Chair in Statistical Hydrology, INRS-ETE, Research Report No R-877, 63 p.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. (2005) Revue bibliographique des techniques d'homogénéisation des séries climatiques et analyse d'applicabilité aux séries de précipitations. Canada Research Chair on the Estimation of Hydrometeorological Variables, Hydro-Québec/NSERC Chair in Statistical Hydrology, INRS-ETE, Research Report No R-811, 67 p.

Beaulieu, C., Ouarda, T.B.M.J., Seidou, O. (2005) Étude comparative de méthodes d'homogénéisation des séries de précipitations. Canada Research Chair on the Estimation of Hydrometeorological Variables, Hydro-Québec/NSERC Chair in Statistical Hydrology, INRS-ETE, Research Report No R-849, 67 p.