Martin Durocher

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Research interest

I am interested in recent statistical developments and their integration to practical situations. I have expertise in application of regression, time series, spatial statistics and extreme value theory.

Education

Doctorate in Water Science, University of Quebec (expected in September 2015)

Development and adaptation of statistical methods to evaluate the risk of extreme hydrological events at ungauged locations. The thesis treats of situations where linearity and normality are unrealistic assumptions. **Thesis title** : *Développement d'outils statistiques pour l'analyse fréquentielle régionale des variables hydrologiques en l'absence d'hypothèses de linéarité et normalité.* **Adviser** : Fateh Chebana.

Master in Statistics, University of Sherbrooke (2009)

Development of a functional benchmarking methods for reconciliation of time series sampled at different time rate. The discrepancies between survey are modelled as spline function and treated as functional objects. **Master title** : *Méthode de Denton et modèle non-paramétrique d'étalonnage*. **Adviser** : Bernard Colin.

Bachelor in Mathematics, University of Sherbrooke (2005)

Publications

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2015). On the importance of hydrological information to form neighborhood in regional frequency analysis (Unpublished).

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2015). On the prediction of extremes flood quantiles at ungauged locations with spatial copula (Submitted).

Durocher, M., Ribatet, M. & Ouarda, T.B.M.J. (2015). Regional Frequency Analysis From Approximate Bayesian Computing of Max-Stable Processes (Submitted).

Durocher, M., Lee, T. & Ouarda, T.B.M.J. (2015). Hybrid signal detection approach for hydro-meteorological variables combining EMD and cross-wavelet analysis, doi : 10.1002/joc.4444 (In press).

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2015). A nonlinear approach to regional flood frequency analysis using projection pursuit regression. Journal of Hydrometeorology,
doi :10.1175/JHM-D-14-0227.1 (In press).

Lemieux, J., Forget, G., Brochu, O., Provencher, L., Cantin, G., Desbiens, C., ... & **Durocher, M.** (2014). Evaluation of eligibility and recruitment in breast cancer clinical trials. The Breast, 23(4), 385–392. doi :10.1016/j.breast.2014.02.002

Vida, S., **Durocher, M.**, Ouarda, T. B. M. J. & Gosselin, P. (2012). Relationship Between Ambient Temperature and Humidity and Visits to Mental Health Emergency Departments in Québec. Psychiatric Services, 63(11), 1150–1153,
doi :10.1176/appi.ps.201100485

Conferences and Presentations

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2014). Improving prediction at ungauged basins with spatial copula framework. Poster session, CRM-Canssi Workshop 2014, Montreal, Canada.

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2014). Projection pursuit regression : new points of view for predicting at ungauged basins. Oral session, STAHY International Workshop 2014, Abu Dhabi, United Arab Emirates.

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2014). Projection pursuit regression : a nearly automatic procedure to regional flood frequency analysis. Oral session, Canada water resources congress 2014, Hamilton, Canada.

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2014). Analyse fréquentielle régionale des crues : approches basées sur la construction d'espaces physiographiques. Oral session, Statistical seminars 2014 at University Laval.

Durocher, M., Chebana, F. & Ouarda, T.B.M.J. (2013). Les projections successive en analyse régionale Oral session, Atelier : L'observatoire canadien des sciences de l'eau 2013. St-Jacques, Canada.

Durocher, M., Ribatet, M. & Ouarda, T.B.M.J. (2012) Approximate Bayesian Computing to the estimation of max-stable processes with application to extremes rainfall in a small region of California (2012). Poster session, STAHY International Workshop, Tunis, Tunisia.

Professional experiences

Biostatistician Unité de recherche en santé des populations (Oct 09 - Oct 10)

Survival analysis, Factorial analysis, Mixed-models regression, Logistic regression, Database administration, Students support.

Junior Statistician Statistic Canada (18 months between Sep 04 - Jun 07).

ARIMA modelling, Benchmarking time series, Seasonal Adjustment.

Teaching assistant University of Sherbrooke (2008)

Supervising exercise sessions, Corrections of homework and exams. **Course** : Introduction to statistics, Introduction to linear programming.

Skills

Languages : French (mother tongue), English (functional), Spanish (beginner)

Scientific : R, SAS, X12-ARIMA, Matlab.

Programming : Python, SQL, C/C++.

Other : MS Office, MS Access, MS Visio, Latex, Linux/Unix.