Jonathan R. Lamontagne, Ph.D.

Curriculum Vitae

Department of Civil and Environmental Engineering
Tufts University
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Research Interests

Management of complex integrated food-energy-water-climate systems

Risk, uncertainty, and sensitivity analysis for water resources planning and management

Frequency analysis of hydrologic extremes under climate and land use change

Education

Ph.D. in Civil and Environmental Engineering, Cornell University, 2015.
Thesis: *Representation of Uncertainty and Corridor Dynamic Programming for Hydropower Optimization*.
Advisor: Jery Stedinger

M.S. in Civil and Environmental Engineering, Cornell University, 2014.
Thesis: *Development of Regional Skew Models for Rainfall Floods in California using Bayesian Least Squares Regression*.
Advisor: Jery Stedinger

B.S. in Civil Engineering, *Summa Cum Laude*, University of New Hampshire, 2009.

Engineer in Training, New Hampshire

Appointments

2017-pres.	Assistant Professor, Civil and Environmental Engineering, Tufts University
2015-2017	Postdoctoral Researcher, Civil and Environmental Engineering, Cornell University
2013-2014	PhD Candidate, Civil and Environmental Engineering, Cornell University
2009-2014	Graduate Research Assistant, Civil and Environmental Engineering, Cornell University
2009	Hazardous Waste Inspector, NH Department of Environmental Services
2008	Undergraduate Research Assistant, Asphalt Performance Testing Lab, University of New Hampshire

Teaching

Tufts University

Environmental Water Resources Systems Analysis (CEE 0214): Instructor, Spring 2018.

Cornell University

Introduction to Decision Analysis (CEE 5980): Teaching Assistant for P. Reed, Fall 2013.

University of New Hampshire

Mathematics Center: Student Tutor, Fall 2005-Spring 2009.

Awards and Honors

Hydro Research Foundation Fellowship (2010-2013)

Cornell University College of Engineering Fellowship (2009-2010)

Member, Pi Mu Epsilon Mathematics Honors Society (2008-2009)

Member, Tau Beta Pi Engineering Honor Society (2007-2009)

University of New Hampshire Presidential Scholarship (2005-2009)

Boy Scouts of America Eagle Scout Award (2005)

Publications

Peer-Reviewed Journal Articles

1. Timoney, K., J.D. Smith, **J.R. Lamontagne**, M. Jasek. 2018. Discussion of "Frequency of ice-jam flooding of Peace-Athabasca Delta" by S. Beltaos, *Canadian Journal of Civil Engineering, In Press*.

2. **Lamontagne, J.R.**, P.M. Reed, R. Link, K.V. Calvin, L.E. Clarke, J.A. Edmonds. 2018. Large Ensemble Analytic Frameworks for Consequence Driven Discovery of Climate Change Scenarios, *Earth's Future*, doi: 10.1002/2017EF000701.

3. **Lamontagne, J.R.** and J.R. Stedinger. 2018. Generating Synthetic Streamflow Forecasts with Specified Precision, *Journal of Water Resources Planning and Management*, doi: 10.1061/(ASCE)WR.1943-5452.0000915.

4. Herman, J.D., H.B. Zeff, **J.R. Lamontagne**, P.M. Reed, and G. Characklis. 2016. Synthetic Drought Scenario Generation to Support Bottom-Up Water Supply Vulnerability Assessments, *Journal of Water Resources Planning & Management*, doi: 10.1061/(ASCE)WR.1943-5452.0000701.

5. **Lamontagne, J.R.**, J. R. Stedinger, X. Yu, C. A. Whealton, and Z. Xu. 2016. Robust flood frequency analysis: Performance of EMA with multiple Grubbs-Beck outlier tests, *Water Resources Research.*, 52, doi: 10.1002/2015WR018093.

6. **Lamontagne, J.R.** and J.R. Stedinger. 2015. Examination of the Spencer-McCuen Outlier-Detection Test for Log-Pearson Type 3 Distributed Data. *Journal of Hydrologic Engineering*, doi: 10.1061/(ASCE)HE.1943-5584.0001321.

7. Cohn, T.A., J.F. England, C.E. Berenbrock, R.R. Mason, J.R. Stedinger, and **J.R. Lamontagne**. 2013. A Generalized Grubbs-Beck Test Statistic for Detecting Multiple Potentially Influential Low Outliers in Flood Series. *Water Resources Research*, 49, pp. 5047-5058, doi: 10.1002/wrcr.20392.

Papers in Review and Revision

8. Reis, D.S., A.G. Veilleux, **J.R. Lamontagne**, J.R. Stedinger, and E. Martins. Operational Bayesian GLS Regression for Regional Hydrologic Analyses. *Water Resources Research*. (*In Revision*).

9. **Lamontagne, J.R.**, G. Marangoni, G.G. Garner, P.M. Reed, K. Keller. Robust pathways to tolerable climate futures require immediate global action. *Nature Climate Change*. (*In Review*)

Papers in Preparation

10. Dolan, F., **J.R. Lamontagne,** M. Hejazi, R. Link, P.M. Reed, S.D. Turner, C. Vernon. Exploration and Quantification of Uncertainty in integrated Energy-Water-Land Systems. *Advances in Water Resources* or *Environmental Modeling & Software.*

11. **Lamontagne, J.R.**, A. Stonewall, G. Lind, Development of regional skews for selected flood durations for the Columbia River Basin. *Journal of the American Water Resources Association* or *Journal of Hydrologic Engineering*.

12. Giuliani, M., **J.R. Lamontagne**, A. Castelletti, Evaluating the Robustness of the Water-Energy-Food Nexus using Integrated Climate and Socio-Economic Scenarios. *Water Resources Research* or *Advances in Water Resources*.

13. Giuliani, M. **J.R. Lamontagne**, A. Castelletti, P.M. Reed, Optimal Water Reservoir Operations Beyond Stochastic Dynamic Programming: A Review. *Water Resources Research or Journal of Water Resources Planning & Management.*

14. **Lamontagne, J.R.** and J.R. Stedinger. Determining the Appropriate Complexity for Uncertainty Representation in Hydropower Optimization Models. *Journal of Water Resources Planning & Management.*

15. **Lamontagne, J.R.**, J.R. Stedinger, and C.A. Shoemaker. Corridor Methods to Reduce the Computational Burden of Multi-Reservoir SDP Models. *Water Resources Research*.

Proceedings Papers and Reports

16. **Lamontagne, J.R.** and J.R. Stedinger. 2014. Short-term Hydropower Optimization using a Time-Decomposition Algorithm. *11th International Conference on Hydroinformatics*, New York, NY.

17. Stedinger, J.R., S.N. Tan, C.A. Shoemaker, **J.R. Lamontagne**, and S.B. Barton. 2014. Short-term Optimization Model with ESP Forecasts for Columbia Hydropower System with Optimized Multi-Turbine Powerhouses. *11th International Conference on Hydroinformatics*, New York, NY.

18. **Lamontagne, J.R.**, J.R. Stedinger, T.A. Cohn, and N. Barth. 2013. Robust National Flood Frequency Guidelines: What is an Outlier?. *World Environmental and Water Resources Congress 2013: Showcasing the Future*, Cincinnati, OH.

19. Stedinger, J.R., B.A. Faber, and **J.R. Lamontagne**. 2013. Developments in Stochastic Dynamic Programming for Reservoir Operations Optimization. *World Environmental and Water Resources Congress 2013: Showcasing the Future*, Cincinnati, OH.

20. **Lamontagne, J.R.** 2013. Hydro Research Foundation Final Research Report. Advisor: J.R. Stedinger. Available at http://www.hydrofoundation.org/

21. **Lamontagne, J.R.**, J.R. Stedinger, C.E. Berenbrock, A.G. Veilleux, J.C. Ferris, and D.L. Knifong. 2012. Development of Regional Skews for Selected Flood Durations for the Central Valley Region, California, Based on Data Through Water Year 2008. U.S. Geological Survey Scientific Investigations Report 2012–5130, 2012, 60 p. Available at http://pubs.usgs.gov/sir/2012/5130/

22. Veilleux, A.G., J.R. Stedinger, and **J.R. Lamontagne**. 2011. Bayesian WLS/GLS Regression for Regional Skewness Analysis for Regions with Large Cross-Correlations among Flood Flows. *World Environmental and Water Resources Congress 2011: Bearing Knowledge for Sustainability*, Palm Springs, CA, May, 2011.

Presentations

Invited Presentations

1. **Lamontagne, J.R.***, "Bulletin 17C: Recent advances in US National Flood Frequency Guidelines." Invited presentation to the New England Water Science Center of the U.S. Geological Survey, Northborough, MA, February 2018.

2. **Lamontagne, J.R.***, "Integrated Water Resources Systems Management." Invited presentation to the Alewife Corridor Resilience Symposium, Medford, MA, January 2018.

3. **Lamontagne, J.R.***, "Bottom-up Global Change Scenario Selection." Invited presentation to the Alewife Corridor Resilience Symposium, Medford, MA, January 2018.

4. **Lamontagne, J.R.***, "Discovering How Agricultural Development Shapes Climate Change Futures." Invited presentation to the MIT Joint Program on the Science and Policy of Global Change, Cambridge, MA, January 2018.

5. Reed, P.M.* and **J.R. Lamontagne**, "Discovering how Agricultural Development Shapes Climate Change Futures." Invited presentation to the 5th Arab-American Frontiers of Science, Engineering, and Medicine, Rabat, Morocco, November 2017.

6. **Lamontagne, J.R.**, P.M. Reed, K. Calvin, R.P. Link, L.E. Clarke, J. Edmonds, "Leading with Consequences: A Peta-Scale Ensemble Experiment to Discover Important Multi-sector, Multi-scale Climate Change Scenarios." Invited presentation to the Department of Energy's Integrated Assessment Workshop, Stanford University, CA, December 2016.

7. **Lamontagne, J.R.***, P.M. Reed, K. Calvin, R.P. Link, L.E. Clarke, J. Edmonds, "Uncertainty and the SSPs: Large Ensemble Explorations." Invited presentation to the JGCRI 2016 Annual Integrated Assessment Workshop and GCAM Community Modeling Meeting, University of Maryland, College Park, MD, October 2016.

8. **Lamontagne, J.R.***, J.R. Stedinger, X. Yu, C.A. Whealton, Z. Xu, "Toward Robust Flood Frequency Analysis: An adaptive approach using the Multiple Grubbs-Beck Test." Invited presentation to the U.S. Geological Survey, Reston, VA, May 2016.

9. Reed, P.M.*, **J.R. Lamontagne**, R.P. Link, H. McJeon, L.E. Clark, and K. Keller, "Distinguishing Time-Varying Regional Stabilization Sensitivities in GCAM." Invited presentation to the Department of Energy's Integrated Assessment Workshop, Stanford University, December 2015.

10. Stedinger, J.R., C.A. Shoemaker, **J.R. Lamontagne***, S.N. Tan, E. Chiew*, "Short-term Hydropower Optimization and Uncertainty Analysis Laboratory (SHOAL) for the BPA System." at Bonneville Power Administration's 'Technology Innovation Council Summit,' Portland, OR, January 2015.

11. Stedinger, J.R.* and **J.R. Lamontagne**, "Value and Use of Forecasts in Hydropower Optimization Models." Keynote address to 'From Operational Hydrologic Forecast to Reservoir Management Optimization Workshop,' Quebec City, QC, September 2014.

12. Stedinger, J.R., C.A. Shoemaker, S.N. Tan*, and **J.R. Lamontagne***, "Short-term Hydropower Optimization and Uncertainty Analysis Laboratory (SHOAL) for BPA Columbia-Snake System." Invited presentation to the Bonneville Power Administration, Portland, OR, June 2014.

13. **Lamontagne, J.R.***, J.R. Stedinger, T.A. Cohn, and N. Barth, "Robust National Flood Frequency Guidelines: What is an Outlier?" Invited presentation to the Bureau of Reclamation, Denver, CO, July 2013.

14. Stedinger, J.R.* and **J.R. Lamontagne**, "Robustness, Outliers and Distributions as well as Behavior of Grubbs-Beck Tests." Invited Presentation to the Hydrologic Frequency Analysis Work Group, Alexandria, VA, September 2012.

15. **Lamontagne, J.R.*** and J.R. Stedinger, "Behavior of Multiple Grubbs-Beck Tests." Invited presentation to the Hydrologic Frequency Analysis Work Group, Teleconference, September 2012.

* Denotes Presenter(s)

Conference Oral Presentations

16. Rouge, C.*, P.M. Reed, S. Zuidema, D.S. Grogan, A.A. Proussevitch, S. Glidden, **J.R. Lamontagne**, R.B. Lammers, "Reservoirs in Hydrological Models: Is there a Pilot on Board?" American Geophysical Union Fall Meeting, Washington, DC, December 2018.

17. **Lamontagne, J.R.*** and P.M. Reed, "Untangling Consequential Futures: Discovering Self-Consistent Regional and Global Multi-Sector Change Scenarios." American Geophysical Union Fall Meeting, New Orleans, LA, December 2017.

18. **Lamontagne, J.R.*** and P.M. Reed, "Discovering How Agricultural Development Shapes Climate Change Futures." Annual Decision Making Under Deep Uncertainty Workshop, Oxford, England, November 2017.

19. **Lamontagne, J.R.***, J.R. Stedinger, X. Yu, C.A. Whealton, Z. Xu, "Toward Robust Flood Frequency Analysis: An adaptive approach using the Multiple Grubbs-Beck Test." ASCE World Environmental and Water Resources Congress, West Palm Beach, FL, May 2016.

20. Herman, J.D.*, H.B. Zeff, **J.R. Lamontagne**, P.M. Reed, and G. Characklis, "Synthetic Drought Scenario Generation to Support Bottom-up Water Supply Vulnerability Assessments." ASCE World Environmental and Water Resources Congress, West Palm Beach, FL, May 2016.

21. Herman, J.D.*, H.B. Zeff, **J.R. Lamontagne**, P.M. Reed, and G. Characklis, "Robust analysis of regional water supply portfolios using synthetic inflow scenarios with variable drought frequency." American Geophysical Union Fall Meeting, San Francisco, CA, December 2015.

22. **Lamontagne, J.R.*** and J.R. Stedinger, "The Complexity Tradeoff: Solution Speed vs. Model Complexity in Short-Term Reservoir Operations." ASCE World Environmental and Water Resources Congress, Austin, TX, May 2015.

23. Stedinger, J.R.*, S.N. Tan, C.A. Shoemaker, **J.R. Lamontagne**, and S.B. Barton, "Short-term Optimization Model with ESP Forecasts for Columbia Hydropower Systems with Optimized Multi-Turbine Powerhouses." International Conference on Hydroinformatics, New York, NY, August 2014.

24. **Lamontagne, J.R.*** and J.R. Stedinger, "Short-term Hydropower Optimization using a Time-Decomposition Algorithm." International Conference on Hydroinformatics, New York, NY, August 2014.

25. **Lamontagne, J.R.*** and J.R. Stedinger, "Hydropower Operations Optimization using Dynamic Programming." Hydro Fellows roundtable at Hydrovision International, Denver, CO, July 2013.

26. **Lamontagne, J.R.***, J.R. Stedinger, T.A. Cohn, and N. Barth, "Robust National Flood Frequency Guidelines: What is an Outlier?" ASCE World Environmental and Water Resources Congress, Cincinnati, OH, May 2013.

27. Stedinger, J.R.*, B.A. Faber, and **J.R. Lamontagne**, "Developments in Stochastic Dynamic Programming for Reservoir Operations Optimization." ASCE World Environmental and Water Resources Congress, Cincinnati, OH, May 2013.

28. **Lamontagne, J.R.*** and J.R. Stedinger, "Real-time Hydro Power Operations Optimization using SSDP with Forecasts." Hydro Fellows roundtable at Hydrovision International, Louisville, KY, July 2012.

29. **Lamontagne, J.R.*** and J.R. Stedinger, "Real-time Hydro Power Operations Optimization using SSDP with Forecasts." Hydro Fellows roundtable at Hydrovision International, Sacramento, CA, July 2011.

30. Veilleux, A.G.*, J.R. Stedinger, and **J.R. Lamontagne**, "Bayesian WLS/GLS Regression for Regional Skewness Analysis for Regions with Large Cross-Correlations among Flood Flows." ASCE World Environmental and Water Resources Congress, Palm Springs, CA, May 2011.

* Denotes Presenter

Conference Poster Presentations

31. **Lamontagne, J.R.**, P.M. Reed, G. Marangoni, K. Keller, G.G. Garner. "Pathways to the Paris Agreement targets are narrow and rapidly closing." AGU Fall Meeting, Washington, DC, December 2018.

32. Giuliani, M., **J.R. Lamontagne**, A. Castelletti. "Evaluating the Robustness of the Water-Energy-Food Nexus using Integrated Climate and Socio-Economic Scenarios." AGU Fall Meeting, Washington, DC, December 2018.

33. **Lamontagne, J.R.***, F. Dolan, M. Hejazi, S.D. Turner, R. Link, C. Vernon, "Exploration and Quantification of Uncertainty in integrated Energy-Water-Land Systems," Department of Energy's SFA PI's Meeting, Potomac, MD, November, 2018.

34. **Lamontagne, J.R.**, P.M. Reed, K. Calvin, R.P. Link, L.E. Clarke, J. Edmonds. "Leading with Consequences: An Ensemble Experiment to Discover Important Multi-sector, Multi-scale Climate Change Scenarios." AGU Fall meeting, San Francisco, CA, December 2016.

Professional Activity

Reviewer for *Journal of Water Resources Planning and Management*, *Journal of Flood Risk Management*, *Journal of the American Water Resources Association*, *Journal of Hydrology*, *Water Resources* Research, *Environmental Modeling and Software*, *Journal of Hydrologic Engineering*, and *Advances in Water Resources*.

Member, American Society of Civil Engineers

Member, Society for Industrial and Applied Mathematics

Member, Hydrologic Frequency Analysis Work Group of the Advisory Committee on Water Data to update federal flood frequency guidelines

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