Hongjing Wu

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Personal Information

Gender:	Male
Status:	Permanent Resident of Canada.

Background Summary

- Produced over **20** refereed publications, with **12** journal papers published or accepted for publication;
- Provided **9** presentations in colloquia/seminars and conferences
- As the sessional lecturer to teach 1 graduate course (**4.3** out of **5**); co-taught **1** course with good evaluation (**4.7** out of **5**); delivered **4** guest lecturers and tutorials; assisted teaching for **16** times for **6** courses;
- Awarded over **10** national/provincial/institutional scholarships and awards
- Involved in many research funding proposals/projects as the key student investigator and/or team leader;
- Solid academic background in watershed and hydrological modeling, statistical analysis, uncertainty analysis, sensitivity analysis, risk assessment, simulation and optimization models, impacts and scenarios of climate change, downscaling studies, environmental engineering systems, and environmental monitoring and analysis.
- Comprehensive knowledge of design of experiments, optimization techniques, environmental laboratory and analysis, GIS mapping systems, municipal solid waste management, wastewater treatment design, environmental systems analysis, monitoring technology, field investigation, pollution controlling and remediation.

Education Background

Jun. 2016	Ph.D. (Civil -- Environmental Engineering), Faculty of Engineering and Applied Science, Memorial University of Newfoundland
Dec. 2008	M.A.Sc. (Environmental Systems Engineering and Management), Faculty of Engineering and Applied Science, Memorial University of Newfoundland
Jun. 2006	B.Eng. (Environmental Engineering). School of Energy and Environment, Xihua University, Sichuan, P.R. China.

Academic Records (Please refer to my transcripts for details)

- Holding 4.0 GPA (out of 4) for Ph.D. study in Memorial University of Newfoundland, St. John's, NL, Canada.
- Rank 1 in 2008 class of MESEM program with 86.4 overall average for ten courses, and holding 4.0 GPA (out of 4) for graduate study in Memorial University of Newfoundland, St. John's, NL, Canada.
- Top 5% ranking with over 87 average for major engineering courses in School of Energy and Environment of Xihua University, Sichuan, China.

Academic Awards, Honors and Scholarships

May 2016	Fellow of the School of Graduate Studies in Memorial University of Newfoundland
Jan. 2009 - Dec. 2015:	Research Assistantship and Teaching Assistantship, Memorial University of Newfoundland
2012-2013:	TD Graduate bursary for Environmental Study for 2012-2013
May 2009:	Fellow of the School of Graduate Studies in Memorial University of Newfoundland
Jan. 2009 -Dec. 2012:	School of Graduate Studies Fellowship
Jan. 2009 -Dec. 2012:	Fellowship for Graduate Studies in Civil Engineering
Dec. 2008:	Best Overall Performance in the 2008 Graduating Class of Master of Applied Science in Environmental Systems Engineering and Management
Dec.2008:	Exemplary Performance in the Capstone Project Course in the 2008 Program of the Master of Applied Science in Environmental Systems Engineering and Management
Jan. 2008:	Entrance scholarship from the Faculty of Engineering and Applied Science, Memorial University of Newfoundland
Jun. 2006:	Second-class student's scholarship; Honored as Excellent Graduate of Xihua University; Honored as Excellent Student Leader in Xihua University;
Jun. 2005:	Third-class student's scholarship; Honored as Excellent student of Xihua University; Honored as Excellent Student Union Leader of Xihua University;
Jun. 2004:	Third-class student's scholarship; Honored as Excellent Student; Honored as Excellent Student Union Leader of Energy and Environment Department and Xihua University;
Jun. 2003:	Third-class student's scholarship; Honored as Excellent Student; Honored as Excellent Student Union Leader of Energy and Environment Department in Xihua University.

Working Experience

2016.9 – 2016.12: **Sessional lecturer**, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
Teaching the graduate course "**ENGI 9625 -- Environmental Impacts of Offshore Oil and Gas Operations**" at Memorial University of Newfoundland,

Canada.

2016.2 - present: **Research Associate,** Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
Conducting research on developing new approaches of sensitivity analysis, calibration and uncertainty analysis for hydrological modeling under changing climatic conditions. The proposed methods were able to evaluate the propagated uncertainty from GCM to hydrological modeling.

2012.1- 2016.2: **Research assistant,** Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
Doing research on uncertainty analysis for climate change, downscaling, and hydrological modeling, development of new uncertainty analysis and calibration method for hydrological modeling, and developing hydrological modeling system for characterization and modeling for the upstream of the Wenjing River watershed in the City of Chongzhou of China, founded by United Nations Development Program (UNDP). Duties include: data collection, preparation of GIS data and digital maps, data analysis, hydrological modeling, statistical downscaling, uncertainty analysis, development of an integrated hydrological system for characterization and modeling of the Wenjing River watershed, technical report drafting and etc.

2011.1 - 2011.12: **Research assistant,** Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
Research on developing decision support system for integrated municipal solid waste management in the City of Shuangcheng in China, funded by United Nations Development Program (UNDP); Research on sensitivity analysis and uncertainty analysis on hydrological modeling (SLURP, WATFLOOD and CLASS model). Duties included: study area investigation and monitoring, developing and improving the algorithm and computation model for a Monte Carlo simulation based fuzzy programming approach under dual uncertainties of possibility and continuous probability, and conducting simulation and optimization for the MSW management system.

2010.1-2010.12: **Research assistant,** Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
Involved in the project “Field investigation and water quality modeling of metals in a coastal watershed by DYNHYD5 and WASP”, and a preliminary study on hydrological characterization and modeling of the Wenjing River Watershed. Duties included: study area identification, field sampling, pollution source identification, data collection, preparation of GIS data and digital maps, preliminary study for hydrological modeling, etc.

2009.1 - 2009.12: **Research assistant,** Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
As a presenter, invited to attend the Incinerator Road Environmental committee

(IREC) meeting and gave presentation based on the project "Pollution Investigation and Risk Assessment in the Nut Brook River and the Kelligrews River Watersheds", and got support from Environment Canada's Lab (about $10,000).

2008.4 - 2008.12: **Research Assistant and team leader**, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada.
Conducting a research for the North Atlantic Avalon Costal Action Program (NAACAP) on metal contamination in the Nut Brook River and the Kelligrews River Watersheds. Duties included: field investigation, risk assessment, identify the source of contamination in the Nut Brook watersheds and finish the project "Pollution Investigation and Risk Assessment in the Nut Brook River and the Kelligrews River Watersheds".

2006.6 - 2007.7: **Assistant Engineer** (Full time), Hydrological Modeling Department of the Pearl River Valley Water Resources Protection Research Institute, P.R. China.
Involved in several projects, such as "A study of reservoir operating and dispatching alternatives of the Baise hydraulic project in the You River", "A study on emergency discharge during the trash rack overhaul period of Xiangshui hydropower station in Guizhou", "Water resource assessment for the Xijiang River watershed", "Environmental impact assessment for the Xiashui reservoir reinforcement project in Yangdong", "Environmental impact assessment for the sixth metro line of Guangzhou — once-through water cooling project in the Haizhu plaza", "Saltwater intrusion modeling for the Pearl River Delta", "Impact analysis of the Xijiang River water diversion project on the main water users in the Xibeijiang River area", etc. Duties included: Study area investigation and monitoring, data collection and analysis, hydrological modeling, flooding analysis, field trip for water and soil sampling, project report drafting and etc.

Teaching experience

1. Sessional lecturer, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada, 2016.

- Graduate course "**ENGI 9625 -- Environmental Impacts of Offshore Oil and Gas Operations**" in **Fall 2016**. These lectures covered the present state of offshore oil and gas operations, general characteristics of offshore oil and gas industries, environmental impacts of different stages of offshore oil and gas operations, wastewater and drilling discharged wastes treatment, environmental impact assessment, environmental management and regulations, and environmental risk assessment.

2. Co-instructor, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada, 2015.

- Graduate course "**ENGI 9627 -- Environmental Systems Engineering**" in **Fall 2015** (evaluation of teaching performance: **4.7** out of **5**). These lectures covered linear programming, integer programming, dynamic programming, and multi-objective programming. Examples of their applications to waste management design were provided as well.

3. Guest lecturer, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada, 2013.

- Graduate course "**ENGI 9629 -- Environmental Policy and Regulations**" in **Fall 2013.** The lecture covered sustainable development, command-and-control regulation, pollution tax systems, and marketable allowance systems. Examples of their applications to waste management (e.g., air pollution management) were provided as well.

4. Tutorial lecturer, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada, 2012, 2013, 2014.

- Undergraduate course "**ENGI 4717 -- Applied Environmental Science and Engineering**" in **Spring, 2011, 2012, and 2013, 1** tutorial lecture per semester. These lectures covered solution explanations for midterms and assignments in the area of water/wastewater treatment, air pollutant transport and fate simulation; and waste management.

5. Teaching assistant, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, Canada, 2009 - 2015.

- Graduate course "**ENGI 9628 -- Environmental Laboratory**" in **Spring 2009**.
- Undergraduate course "**ENGI 3911 -- Chemistry and Physics of Engineering Materials I**" in **Fall 2009, 2010, 2011, 2012, 2013, 2014,** and **2015**. Acted as **Super Teaching Assistant** since 2010, leading and mentoring other teaching assistants; and prepare the laboratory tutorials and lab instructions for students.
- Undergraduate course "**ENGI 5911 -- Chemistry and Physics of Engineering Materials II** in **Winter 2011** and **2012.**
- Undergraduate course "**ENGI 7713 -- Hydrology and Water Resources**" in **Spring 2013.**
- Undergraduate course "**ENGI 4717 -- Applied Environmental Science and Engineering**" in **Spring, 2009, 2010 (Super TA), 2014,** and **2015**.
- Undergraduate course "**ENGI 4421 -- Probability and Statistics**" in **Winter 2015.**

Professional Activities

1. Oral/Poster Presentations

- 2 oral presentation at The International Conference on Marine and Freshwater Environments (iMFE) 2014, August 6 - 8, 2014, St John's, Canada.
- 1 poster presentation at the 2014 13th IWA Specialized Conference on Watershed and River Basin Management, September 9-12, San Francisco, USA.
- 1 oral presentation at the Canadian Society for Civil Engineering (CSCE) 2013 Annual Conference, May 29 - June 1, 2013, Montreal, Canada.
- 1 poster presentation at the 3rd Annual Arctic Oil and Gas North America Conference, April 10 - 11, 2013, St John's, Canada.
- 1 oral presentation at the 64th Canadian Water Resources Association (CWRA) National Conference, June 27 - 30, 2011, St John's, Canada.
- 2 oral presentations at regular Incinerator Road Environmental committee (IREC) meetings, 2010, Conception Bay South, Canada.
- 1 oral presentation at the Canadian Society for Civil Engineering (CSCE) 2010 Annual General Conference, June 6-12, Winnipeg, Manitoba, Canada.

2. Organizing Committee Member for Conferences and Workshops

- Organizing Committee Member, International Conference on Marine and Freshwater Environments (iMFE) 2014, August 6 - 8, 2014, St John's, Canada, http://www.engr.mun.ca/NRPOP/Web/iMFE2014
- Organizing Committee Member, Workshop of Offshore Oil Spill in Harsh Environments -

from Challenges to Opportunities, November 14, 2011, St John's, Canada.

3. Reviewer for Journals

- Journal of Hydro-environment Research
- Applied Water Science
- Journal of Environmental Informatics
- Water Resources in Arid Areas
- Water Resource Management
- Arabian Journal of Geosciences
- Canadian Journal of Civil Engineering
- Water Resources Management

4. Professional Memberships (Past and Present)

- Student member, Canadian Society for Civil Engineering (CSCE)
- Student member, Canadian Water Resources Association (CWRA).

Publications

1. Peer-Reviewed Journal publications:

1) Meng, X.Y., Wang, H., Lei, X.H., Cai, S.Y., **Wu, H.J.,** Ji, X.N., and Tao, H. (2017). Hydrological Modeling in the Manas River Basin Using Soil and Water Assessment Tool Driven by CMADS. Tehnicki Vjesnik-Technical Gazette, 24(2), 209-218.

2) Meng, X.Y., **Wu, H.J.**, Lei, X.H., Wang, J.H., Qin, T., Shang, Y.Z., Yin, G., Long, A.H., and Ji. X.N. (2017). Applying Environmental Management System (EMS) to Administrate Municipal Solid Waste (MSW) Industry: A Case Study of Shanghai, China. Journal of Residuals Science and Technology, 14(2), 171-182.

3) **Wu, H.J.**, and Chen, B. (2015). Evaluating uncertainty estimates in distributed hydrological modeling for the Wenjing River watershed in China by GLUE, SUFI-2, and ParaSol methods. *Ecological Engineering*, 79, 110-121, 10.1016/j.ecoleng.2014.05.014/

4) **Wu, H.J.**, Chen, B., Snelgrove, K., and Lye, L.M. (2015). Quantification of uncertainty propagation effects during statistical downscaling of precipitation and temperature to hydrological modeling. *Journal of Environmental Informatics*, accepted.

5) Chen, B., Li P., **Wu, H.J.,** Husain, T., and Khan, F. (2015). MCFP: a Monte Carlo Simulation based Fuzzy Programming Approach for Municipal Solid Waste Management under Dual Uncertainties of Possibility and Continuous Probability. *Journal of Environmental Informatics*, doi:10.3808/jei.201500293.

6) Zheng, J.S., Liu, B., Ping, J., Chen, B., **Wu, H.J.,** and Zhang, B.Y. (2015). Vortex and shaker assisted liquid-liquid micro extraction (VSA-LLME) coupled with gas chromatography and mass spectrometry (GC-MS) for analysis of 16 polycyclic aromatic hydrocarbons (PAHs) in

offshore produced water. *Water, Air, and Soil Pollution*, doi: 10.1007/s11270-015-2575-3

7) **Wu, H.J.,** and Chen, B. (2014). Using Statistical and Probabilistic Methods to Evaluate Health Risk Assessment: A case study. *Toxics,* 2(2), 291-306; doi:10.3390/toxics2020291.

8) Xue, C., Chen, B., and **Wu, H.J.** (2014). Parameter uncertainty analysis of Surface flow and Sediment Yield in the Huolin Basin in China. *Journal of Hydrologic Engineering*, 19(6), 1224-1236, 10.1061/(ASCE)HE.1943-5584.0000909.

9) Li, P., Chen B., Li, Z.L., Zheng, X. **Wu, H.J.,** Jing L., and Lee K. (2014), "A Monte Carlo Simulation-based Two-Stage Adaptive Resonance Theory Mapping Model for Site Classification in Offshore Oil Spill Monitoring", Marine Pollution Bulletin, 86(1-2):434-442.

10) Li, P., **Wu, H.J.**, and Chen, B. (2013). RSW-MCFP: A Resource-oriented Solid Waste Management System for a Mixed Rural-Urban Area through Monte Carlo Simulation-Based Fuzzy programming. *Mathematical Problems in Engineering, 2013*, Article ID 780354, doi:10.1155/2013/780354.

11) Meng, X.Y., Liu, Z.H., Du, J., Lin, H, and **Wu, H.J.** (2013). Design and Application of Tarim Desertification Monitoring and Early Warning System. *Computer Technology and Development, 2013-05 (In Chinese).*

12) **Wu, H.J**., Lye, L. and Chen, B. (2012). A design of experiment aided sensitivity analysis and parameterization for hydrological modeling. *Canadian Journal of Civil Engineering*, 39, 460-472.

2. Other refereed publications:

1) **Wu, H.J.,** and Chen, B. (2014). Uncertainty analysis for propagation effects from statistical downscaling to hydrological modeling. The International Conference on Marine and Freshwater Environments (iMFE) 2014 proceeding, St. John's, Newfoundland, CA, EMR #1330.

2) **Wu, H.J.,** and Chen, B. (2014). Hydrological Modeling and Uncertainty Analysis for the up reach of the Wenjing Watershed, Sichuan, China. Poster presented at 2014 13th IWA Specialized Conference on Watershed and River Basin Management, San Francisco, USA.

3) Zheng, X., Chen, B., **Wu, H.J.** (2014) Interpolation method and uncertainty analysis in oil spilling trajectory model. The International Conference on Marine and Freshwater Environments (iMFE) 2014 proceeding, St. John's, Newfoundland, CA,

4) **Wu, H.J.**, Chen, B., and Li, P. (2013). Comparison of Sequential Uncertainty Fitting Algorithm (SUFI-2) and Parameter Solution (ParaSol) Method for Analyzing Uncertainties in Distributed Hydrological Modeling – A Case Study. CSCE 2013 General Conference proceeding, Montreal, Quebec, CA, Gen-309.

5) Jing, L., Chen, B., Zhang, B.Y., Li, P., and **Wu, H.J.** (2013). Modeling the Effects of Photon Flux, Salinity and Temperature on UVC Photolysis of Polycyclic Aromatic Hydrocarbons (PAHs) in Oily Seawater. Poster presented at the Arctic Oil & Gas North America Conference 2013, St. John's, Canada.

6) Chen, B, and **Wu, H.J.** (2012). A Preliminary Study on Hydrological Characterization and Modeling of the Wenjingjiang River Watershed in the City of Chongzhou, Sichuan. Technical Report, *United Nations Development Program (UNDP)*.

7) **Wu, H.J.**, and Chen, B. (2011). Human Risk Assessment of Dermal Exposure to Water Pollutants: A Case Study. 64th Canadian Water Resources Association National Conference. St. John's, Newfoundland, CA.

8) Chen, B., Li, P., **Wu, H.J.** and Liu, B. (2011). "Integrated Environmental Planning for Municipal Solid Waste and Management of the City of Shuangcheng, China", Technical Report, United Nations Development Program (UNDP), 228pp.

9) **Wu, H.J.**, Lye, L., & Chen, B. (2010). Sensitivity Analysis of the Input Parameters of the SLURP Hydrological Model Using Design of Experiment (DOE) Methodology. CSCE 2010 General Conference proceeding, Winnipeg, Manitoba, CA, GC-059.

3. Theses

1) **Wu, H.J.** (2016). Integrated sensitivity analysis, calibration, and uncertainty propagation analysis approaches for supporting hydrological modeling. *PhD Thesis*, Memorial University of Newfoundland, 331pp.

2) **Wu, H.J.**, Dadashzadeh, M., & Chen, Y. (2008). Pollution Investigation and Risk Assessment in the Nut Brook River and the Kelligrews River. Master thesis (project) of Memorial University of Newfoundland, St. John's, NL, CA.

4. Paper submitted

1) Li, Z.L., Chen, B., **Wu, H.J.**, and Ye, X.D. (2017). Modeling bio-surfactant enhanced aquifer remediation based on a hybrid Stochastic-Design of Experiment aided parameterization method. Journal of Environmental Engineering, under revision.
2) Li, Z.L., Chen, B., **Wu, H.J.,** and Ye, X.D. (2015). A hybrid Stochastic-Design of Experiment aided parameterization method for modeling aquifer NAPL contaminations. Environmental Modeling & Assessment, submitted.

5. Paper under preparation

1) **Wu, H.J.**, and Chen, B. Assessment of uncertainty propagation from climate modeling to

hydrologic forecasting under changing climatic conditions. Journal of Hydrology, to be submitted.

2) **Wu, H.J.,** and Chen, B. A novel statistical method for efficient parameter calibration and uncertainty analysis for hydrological modeling. Journal of Environmental Engineering, ASCE, to be submitted.

3) **Wu, H.J.**, Chen, B., and Jing, L. Performance assessment of two downscaling methods for hydrological impact study under climate change conditions in the Wenjing River watershed, China. Climatic Change, under preparation.

References:

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