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## SE-YEUN LEE

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Climate Impacts Group, University of Washington  
Box 355674, Seattle, WA 98195  
Phone: 206-616-5347, e-mail:leesy@uw.edu

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### EDUCATIONAL HISTORY

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- 2009 Ph.D. Civil and Environmental Engineering, University of Washington  
Dissertation Title: *Development of Optimized Flood Control Rule Curves for the Columbia River Basin in Response to Climate Change and Interannual Climate Variability*
- 2002 MSCE Civil and Environmental Engineering, University of Washington  
Thesis Title: *PCE Degradation in Methanogenic Consortia: Implications for Treatment Trenches*
- 1996 MSEE Environmental Engineering, Chonbuk National University, South Korea  
Thesis Title: *The Transport of Cadmium in Soil*
- 1994 BS Environmental Engineering, Chonbuk National University, South Korea
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### PROFESSIONAL EXPERIENCE

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- 2014-present Research Scientist, Climate Impacts Group, University of Washington
- 2013-2014 Postdoctoral Research Associate, School of Environmental and Forest Sciences, University of Washington
- 2009-2012 Postdoctoral Research Associate, Civil and Environmental Engineering, University of Washington
- 2011-2012 Co-Instructor, Civil and Environmental Engineering, University of Washington
- 1999-2009 Teaching/Research Assistant Civil and Environmental Engineering, University of Washington
- 1998-1999 Instructor, Environmental Engineering, Jeonju University, South Korea
- 1997-1999 Instructor, Environmental Engineering, Kunsan National University, South Korea
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### RESEARCH INTERESTS

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- Water Resources Planning and Management
- Integrated Hydrological and Water Resources Modeling
- Climate Change Planning and Adaptation
- Impacts of Climate Change on Wetland Ecosystems
- Climate Impacts on Hydropower and Energy Systems
- Optimization-Simulation Methods
- Bioremediation of PCE in Groundwater
- Transportation of Heavy-Metal in Groundwater

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## AWARDS AND SCHOLARSHIPS

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2004 Washington Section AWRA 2004-2005 Fellowship Award  
2008 Luther E. Gregory Scholarship  
1990-1994 Scholarships, Chonbuk National University, South Korea

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## SELECTED PUBLICATIONS

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### Journal Articles

- Lee, S.Y., Ryan, M., Hamlet, A.F., Palen, W., Halabisky, M. and Lawler, J.J. (2014). "Modeling the Hydrology of Pacific Northwest Wetland Ecosystems." *PlosOne*, (in review).
- Lee, S.Y., Hamlet, A.F. and Grossman, E. (2014). "Impacts of Climate Change on Regulated Streamflow, Flood Control, Hydropower Production, and Sediment Discharge in the Skagit River Basin." *Northwest Science*, (in review).
- Tohver, I., Hamlet, A.F., and Lee, S.Y. (2014). "Impacts of 21st Century Climate Change on Hydrologic Extremes in the Pacific Northwest Region of North America." *Journal of the American Water Resources Association*, 1-16, DOI: 10.1111/jawr.12199.
- Salathé, E.P., Hamlet, A.F., Mass, C.F., Lee, S.Y., Stumbaugh, M., and Steed, R. (2014). "Estimates of 21st Century Flood Risk in the Pacific Northwest based on Regional Climate Model Simulations." *Journal of Hydrometeorology*, 15, 1881-1899, DOI: 10.1175/JHM-D-13-0137.1.
- Safeeq, M., Mauger, G., Grant, G.E., Arismendi, I., Hamlet, A.F, and Lee, S.Y. (2014). "Comparing Large-Scale Hydrologic Model Predictions with Observed Streamflow in the Pacific Northwest: Effect of Climate and Groundwater." *Journal of Hydrometeorology*, DOI: 10.1175/JHM-D-13-0198.1. (in press).
- Hamman, J., Hamlet, A.F., Lee, S.Y., Fuller, R., and Grossman, E.F. (2014). " Effects of Projected Twenty-First Century Sea Level Rise, Storm Surge, and River Flooding on Water Levels in the Skagit River Floodplain.", *Northwest Science*, (in review).
- Hamlet, A.F., Elsner, M.M., Mauger, G., Lee, S.Y., and Tohver, I. (2013). "An Overview of the Columbia Basin Climate Change Scenarios Project: Approach, Methods, and Summary of Key Results." *Atmosphere-Ocean*, 1:4, 392-415, DOI:10.1080/07055900.2013.819555.
- Lee, S.Y., Hamlet, A.F., Fitzgerald, C.J., and Burges, S.J. (2011). "Daily Time Step Refinement of Optimized Flood Control Rule Curves for a Global Warming Scenario." *Journal of Water Resources Planning and Management*, 137, 309-317, DOI:10.1061/(ASCE)WR.1943-5452.0000125.
- Lee, S.Y., Hamlet, A.F., Fitzgerald, C.J., and Burges, S.J. (2011). "Methodology for Developing Flood Rule Curves Conditioned on ENSO Classification." *Journal of the American Water Resources Association*, 47(1), 81-92. DOI: 10.1111/j.1752-1688.2010.00490.x.
- Elsner, M.M., Cuo, L., Voisin, N., Deems, J.S., Hamlet, A.F., Vano, J.A., Mickelson, K.E.B., and Lee, S.Y. (2010). "Implications of 21st Century Climate Change for the Hydrology of Washington State." *Climatic Change*, DOI:10.1007/s10584-010-9855-0.

Hamlet, A.F., Lee, S.Y., Mickelson, K.E.B., and Elsner, M.M. (2010). "Effects of Projected Climate Change on Energy Supply and Demand in the Pacific Northwest and Washington State." *Climatic Change*, DOI:10.1007/s10584-010-9857-y.

Lee, S.Y., Hamlet, A.F., Fitzgerald, C.J., and Burges, S.J. (2009). "Optimized Flood Control in the Columbia River Basin for a Global Warming Scenario." *Journal of Water Resources Planning and Management*, 135(6), 440-450, DOI: 10.1061/(ASCE)0733-9496(2009)135:6(440).

### **Book Chapters and Reports**

Vano, J., Lee, S.Y., and Hamlet, A.F. (2014). Chapter 104. Columbia River basin, In V.T. Chow (Eds.), *Handbook of Applied Hydrology*, Hill Book Co, N.Y (in preparation).

Littell, J., Mauger, G. S., Salathé, E. P., Hamlet, A.F., Lee, S.Y., Stumbaugh, M. R., Elsner, M.M., Norheim, R.A., Lutz, E.R., and Mantua, N.J. (2013). "Uncertainty and Extreme Events in Future Climate and Hydrologic Projections for the Pacific Northwest: Providing a Basis for Vulnerability and Core/Corridor Assessments." Final Report for Department of the Interior Pacific Northwest Climate Science Center. Climate Impacts Group, University of Washington, Seattle, WA.

Lee, S.Y., and Hamlet, A.F. (2011). "Skagit River Basin Climate Science Report, A Summary Report Prepared for Skagit County and the Envision Skagit Project." Department of Civil and Environmental Engineering and the Climate Impacts Group at the University of Washington, Seattle, WA.

Hamlet, A.F., Lee, S.Y., Mantua, N.J., Salathé, E.P., Snover, A.K., Steed, R., and Tohver, I. (2010). "Seattle City Light Climate Change Analysis for the City of Seattle, Seattle City Light Department." The Climate Impacts Group, Center for Science in the Earth System, Joint Institute of the Study of the Atmosphere and Ocean, University of Washington, Seattle, WA.

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### **SELECTED PRESENTATIONS**

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Lee, S.Y., Ryan, M, Hamlet, A.F., Palen, W.J., Halabisky, M. and Lawler, J.J., 5<sup>th</sup> Annual Pacific Northwest Climate Science Conference, University of Washington, Seattle, WA, September 9<sup>th</sup> – 10<sup>th</sup>, 2014, "Evaluating Climate Change Effects on Wetlands with Field Surveys and Remote Sensing Techniques."

Lee, S.Y., and Hamlet, A.F., 3<sup>rd</sup> Annual Pacific Northwest Climate Science Conference, Boise, Idaho, October 1<sup>st</sup> – 2<sup>nd</sup>, 2012, "Effect of Climate Change on Hydrology and Water Management in the Skagit River Basin."

Lee, S.Y., Hamlet, A.F., and Ryan, M., Society of Wetland Scientists Pacific Northwest Chapter 2012 Regional Conference, September 19<sup>th</sup> – 21<sup>st</sup>, 2012, "Evaluating Climate Change Effects on the Hydrology of Montane Wetland."

Lee, S.Y., Hamlet, A.F., and Ryan, M., 4<sup>th</sup> International Conference on Climate Change: Impacts and Responses, Seattle, WA, July 12<sup>th</sup>-13<sup>th</sup>, 2012, "Modeling Climate Change Effects on the Hydrology of Pacific Northwest Wetland Ecosystems."

Lee, S.Y., and Hamlet, A.F. Second Annual Pacific Northwest Climate Science Conference, University of Washington, Kane Hall, Seattle, WA, Sept., 2011, "Effects of Climate Change on Natural and Regulated Flood Risks in the Skagit River Basin and Prospects for Adaptation."

Lee, S.Y., Hamlet, A.F. and Burges, S.J., Climate and Water Resource Forecasts for the 2009 Water Year Meeting, Vancouver, WA, October 2<sup>nd</sup>, 2008, "Methodology for Developing Flood Rule Curves Conditioned on ENSO Classification."

Lee, S.Y., Hamlet, A.F. and Burges, S.J., UW/UBC 2007 Hydrology and Water Resources Symposium, Vancouver, BC, September 28<sup>th</sup>, 2007. "Development of Flood Rule Curves for the Columbia River Basin conditioned on ENSO Climate Classification."

Lee, S.Y., Hamlet, A.F., Fitzgerald, C.J., and Burges, S.J., Climate Impacts Group's Climate and Water Resources Forecast for the 2007 Water Year, Kelso, WA, October 3<sup>rd</sup>, 2006. "Optimized Flood Control Curves in the Columbia River Basin for a Global Warming Scenario."

Lee, S.Y., Hamlet, A.F., Fitzgerald, C.J., and Burges, S.J., 2006 Hydrology and Water Resources Symposium, Seattle, WA, September 29<sup>th</sup>, 2006. "Development of Optimized Flood Control Operating Rules in the Columbia River Basin for Climate Change."

Lee, S.Y., Hamlet, A.F., Fitzgerald, C.J., and Burges, S.J., ASCE Operations Management Conference, Sacramento, CA. Aug 14-16<sup>th</sup>, 2006. "Methodology for Developing Optimized Flood Control Curves in the Columbia River Basin for a Warmer Climate."

Lee, S.Y., and Burges, S.J., 2005 Hydrology and Water Resources Symposium, Vancouver, BC, September 30<sup>th</sup>, 2005. "An Investigation of Potential Benefits of Developing Flood Rule Curves Conditioned on Climate Classification for the Columbia River Basin."

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## TEACHING

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*Co-Instructor* (Civil and Environmental Engineering, University of Washington)

2011-2012     Deterministic System

*Instructional Assistant* (Civil and Environmental Engineering, University of Washington)

2006, 2007     Hydraulic Engineering

2005, 2007     Fluid Mechanics

2005, 2006     Physical Hydrology

2005, 2006     Open-Channel Flow

*Instructor* (Civil and Environmental Engineering, Jeonju University, South Korea)

1998-1999     Environmental Engineering I

1998            Environmental Engineering II

1999            The Design for Wastewater Treatment System

*Instructor* (Environmental Engineering, Kunsan National University, South Korea)

1997-1999     Introduction to Environmental Engineering

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## PROFESSIONAL EXPERIENCES/TRAININGS/SERVICES

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### Workshops and Symposia Organized

- 2014 Special Session: *Climate Adaptation and Pacific Northwest Freshwater Wetlands: Strengthening Links between Science and Management*, University of Washington, Seattle, WA. Organizing Committee and Speaker.
- 2012 Symposium: *Pacific Northwest Wetlands Symposium*, Woodland Park Zoo, Seattle, WA. Organizing Committee and Speaker.
- 2007 Workshop: *Optimization, Reservoir Operations and Climate Change Workshop*, Seattle District Office of U.S. Army Corps of Engineers, Seattle, WA. Organizing Committee and Speaker.

### K-12 student Outreach

- 2012 Oral Presentation for 5<sup>th</sup> graders at View Ridge Elementary School, Seattle, WA
- 2013 Oral Presentation for 7<sup>th</sup> to 9<sup>th</sup> graders at Dong-San Middle School, Kunsan, South Korea

### Professional Training

- 2014 *Professional Development Workshop 2014* hosted by Korean-American Scientist and Engineers Association, March 15-16, 2014, Hilton Rosemont Hotel, Chicago, IL.
- 2013 *Writing Retreat* hosted by Landscape Ecology and Conservation, February 20-22, 2013, Waterfront Activities Center, University of Washington, Seattle, WA.
- 2011 *University of Washington Future Faculty Fellow Program: Annual Postdoctoral Workshop and Teaching Apprenticeship Program*, August 25-26, 2011, Hitchcock Hall, University of Washington, Seattle, WA.

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## SKILLS

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**Programming:** C, C++, R, Fortran, Matlab, Arc GIS, Python, GitHub, UNIX/Linux shell scripting (bash,csh)

**Computer Models:** Stella Modelling & Simulation software (ColSim and SkagitSim), Macro-scale hydrologic Variable Infiltration Capacity (VIC) model, Hydrologic Engineering Centers River Analysis System (HEC-RAS), Hydrologic Engineering Centers Prescriptive Reservoir Model (HEC-PRM)