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EDUCATIONAL

2009 June	Ph.D. Civil and Environmental Engineering, University of Washington
2002 June	MSCE Civil and Environmental Engineering, University of Washington
1996 Feb	MSEE Environmental Engineering, Chonbuk National University, South Korea
1994 Feb	BS Environmental Engineering, Chonbuk National University, South Korea

PROFESSIONAL EXPERIENCE

2018-Present	Instructor, Civil and Environmental Engineering, Seattle University
2014-2018	Research Scientist, Climate Impacts Group, University of Washington
2015-2016	Instructor, Civil and Environmental Engineering, Seattle University
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	Instructional/Research Assistant Civil and Environmental Engineering, University of Washington
1998-1999	Instructor, Civil and Environmental Engineering, Jeonju University, South Korea
1997-1999	Instructor, Environmental Engineering, Kunsan National University, South Korea

AWARDS AND SCHOLARSHIPS

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

SELECTED PUBLICATIONS

Journal Articles

- Lee, S.Y., and Fullerton, A.H. (2018) "Space Matters: Incorporating Mechanism and Spatiotemporally Explicit Patterns into Projected Impacts of Climate Change on Stream Temperature to Evaluate Consequences for Coldwater Fishes". *Hydrological Processes*. In preparation.
- Steel, E.A., Marsha, A., Fullerton, A.H., Olden, J.D., Larkin, N.K., Lee, S.Y., and Ferguson, A. (2018). "Thermal Landscapes in a Changing Climate: Biological Implications of Water Temperature Patterns in an Extreme Year". *Journal of Fisheries and Aquatic Science*. Submitted.
- Fullerton, A.H., Torgersen, C.E., Lawler, J.J., Steel, E.A., Ebersole, J.L., and Lee, S.Y. (2018) "Longitudinal Thermal Heterogeneity in Rivers and Refugia for Coldwater Species: Effects of Scale and Climate Change". *Aquatic Sciences*, 80.3.

- Lee, S.Y., Hamlet, A.F., and Grossman, E. (2016). "Impacts of Climate Change on Regulated Streamflow, Flood Control, Hydropower Production, and Sediment Discharge in the Skagit River Basin." *Northwest Science*, 90(1) 23-43. DOI: <http://dx.doi.org/10.3955/046.090.0104>.
- Hamman, J., Hamlet, A.F., Lee, S.Y., Fuller, R., and Grossman, E.F. (2016). "Combined Effects of Projected Sea Level Rise, Storm Surge, and Peak River Flows on Water Levels in the Skagit River Floodplain." *Northwest Science*, 90(1):57-78.
- Lee, S.Y., Ryan, M., Hamlet, A.F., Palen, W., Halabisky, M. and Lawler, J.J. (2015). "Modeling the Hydrology of Pacific Northwest Wetland Ecosystems." *PlosOne* 10(9):e0136385, DOI:10.1371/journal.pone.0136385.
- 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*, 15, 2501-2521, DOI: 10.1175/JHM-D-13-0198.1.
- 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. (2016). "Chapter 112. Columbia River Basin Hydrology", In V.T. Chow (Eds.), *Handbook of Applied Hydrology, Second Edition*, McGraw Hill Education. ISBN 978-0-07-183509-1.
- Lee, S.Y., Mauger, G.S., and Won, J.S. (2018). "Effect of Climate Change on Flooding in King County Rivers: Using New Regional Climate Model Simulations to Quantify Changes in

- Flood Risk." Report prepared for King County. Climate Impacts Group, University of Washington.
- Halabisky, M., Lee, S.Y., Hall, S.A. (2018). "Looking to the Past and to Future to Inform Meadow Restoration on the Yakama Reservation." Report prepared to the Wildlife, Range and Vegetation Resources Management Program of the Confederated Tribes and Bands of the Yakama Nation. Climate Impacts Group, University of Washington and Conservation Science Partners.
- Mauger, G.S., Lee, S.Y., Won, J., Byun, K., and Hamlet, A.F. (2018). "Climate Robust Culvert Design: Probabilistic Estimates of Fish Passage Impediments. Final report for the Skagit Climate Science Consortium." Climate Impacts Group, University of Washington, Seattle.
- Halabisky, M, Lee, S.Y., Won, J., Hall, S.A. and Rule, M. (2017). "Can We Conserve Wetlands under a Changing Climate?" Final Report to the Great Northern Landscape Conservation Cooperative and the Northwest Climate Science Center.
- Mauger, G.S., Lee, S.Y., and Won, J. (2017). "Effect of Climate Change on Streamflow in Icicle, Peshastin, and Mission Creeks." Report prepared for Chelan County. Climate Impacts Group, University of Washington, Seattle.
- Fullerton, A.H., Lawler, J.J., Lee, S.Y., and Torgersen, C.E. (2017). "Incorporating Spatial Heterogeneity in Temperature into Climate Vulnerability Assessments for Coastal Pacific Streams." Final Report to the North Pacific Landscape Conservation Cooperative.
- Mauger, G.S., Lee, S.Y., Bandaragoda, C., Serra, Y., and Won, J.S. (2016). "Refined Estimates of Climate Change Affected Hydrology in the Chehalis basin." Report prepared for Anchor QEA, LLC. Climate Impacts Group, University of Washington, Seattle.
DOI:10.7915/CIG53F4MH.
- Lee, S.Y., Mauger, G. S., and Whitely Binder, L. (2015). "Climate Change Impacts on Tacoma Power Watersheds." Final report for Tacoma Power by the Climate Impacts Group, University of Washington, Seattle, WA.
- 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. (2014). "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.
- Mauger, G. S., and Lee, S.Y. (2014). "Climate Change, Sea Level Rise and Flooding in the Lower Snohomish River Basin." Final Report for The Nature Conservancy by the 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 or the Study of the Atmosphere and Ocean, University of Washington, Seattle, WA.
- Elsner, M.M., Mauger, G.S., Tohver, I., Lee, S.Y., and Hamlet, A.F. (2010). Chapter 9 in Final Report for the Columbia Basin Climate Change Scenarios Project, Climate Impacts Group,

Center for Science in the Earth System, Joint Institute for the Study of the Atmosphere and Ocean, University of Washington, Seattle.

Hamlet, A.F., Mauger, G.S., and Lee, S.Y. (2010). Chapter 8 in Final Report for the Columbia Basin Climate Change Scenarios Project, Climate Impacts Group, Center for Science in the Earth System, Joint Institute for the Study of the Atmosphere and Ocean, University of Washington, Seattle.

Elsner, M.M., Cuo, L., Voisin, N., Deems, J., Hamlet, A.F., Vano, J.A., Mickelson, K.E.B., Lee, S.Y., Lettenmaier, D.P. (2009). Implications of 21st century climate change for the hydrology of Washington State. Chapter 3.1 in The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate, Climate Impacts Group, University of Washington, Seattle, Washington.

Hamlet, A.F., Lee, S.Y., Mickelson, K.E.B., Elsner, M.M. (2009). Effects of projected climate change on energy supply and demand in the Pacific Northwest and Washington State. Chapter 4 in The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate, Climate Impacts Group, University of Washington, Seattle, Washington.

TEACHING

Instructor (Civil and Environmental Engineering, Seattle University)

2015-2016 Global Water Supply

2016 Applied Hydraulic Lab

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

Guest Lecturer (Civil and Environmental Engineering, University of Washington)

2008 Water Resources Planning

2006 Hydraulic Design in Environmental Engineering

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

PROFESSIONAL EXPERIENCES/TRAININGS/SERVICES

Selected Workshops and Symposia Organized

2017 Special Session: *Stormwater and Flooding in King County: Co-Producing Research to Support Adaptation*, Tacoma, WA. Organizing Committee and Speaker.

2017 Workshop: *Water Temperature Handbook*, University of Washington, Seattle, WA. Organizing Committee and Speaker.

- 2017 Workshop: *Impacts of Climate Change on Flooding in King County*, Impact HUB, Seattle, WA. Organizing Committee and Speaker.
- 2017 Workshop: *Can We Conserve Wetlands Under a Changing Climate? Scientist-Practitioner Workshop 2: Identifying Climate Change Adaptation Strategies*, Ellensburg, WA. Organizing Committee and Speaker.
- 2016 Workshop: *Can We Conserve Wetlands Under a Changing Climate? Scientist-Practitioner Workshop 1: Defining Information Needs for Climate Adaptation*, Ellensburg, WA. Organizing Committee and Speaker.
- 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.

K-12 Student Outreach

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

Selected Professional Training

- 2018 *Strategic Planning Retreat 2018* hosted by Climate Impacts Group, University of Washington, March 22nd -23rd, 2018, Ocean Science Building, University of Washington, Seattle, WA.
- 2018 *EarthLab Facilitation Training* hosted by College of the Environment, University of Washington, Feb 27th-28th, 2018, Husky Union Building, University of Washington, Seattle, WA.
- 2018 *Faculty Grants Management: General Workshop* hosted by Professional & Organizational Development, University of Washington, Jan 16th, UW Tower Building Auditorium, University of Washington, Seattle, WA.
- 2017 *Science Communication Training 2017* hosted by College of the Environment, University of Washington, May 5th, 2017, Waterfront Activities Center, University of Washington, Seattle, WA.
- 2014 *Professional Development Workshop 2014* hosted by Korean-American Scientist and Engineers Association, March 15th-16th, 2014, Hilton Rosemont Hotel, Chicago, IL.
- 2013 *Writing Retreat* hosted by Landscape Ecology and Conservation, February 20th-22nd, 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 25th-26th, 2011, Hitchcock Hall, University of Washington, Seattle, WA.

SELECTED PRESENTATIONS

- Lee, S.Y., Fullerton, A, Steel, A., and Torgersen C., Selish Sea Ecosystem Conference, Seattle, WA, April 4th-6th, 2018, "Space matters: incorporating mechanistically determined spatial patterns into projected impacts of climate change on stream temperature."
- Lee, S.Y., Fullerton, A, and Torgersen C., Northwest Indian Fisheries Commission Tribal Climate Change Forum Workshop, Ocean Shores, WA, May 25th, 2017, "Analyzing Changes in Cold Water Patches under Climate Change and It's impacts on Salmon."

- Lee, S.Y., Northwest Indian Fisheries Commission Tribal Climate Change Forum Workshop, Ocean Shores, WA, May 25th, 2017, "Using Data and Models to Assess Impacts and Adapt to Climate Change."
- Lee, S.Y., Fullerton, A, The North Sound Tribal Climate Meeting, Arlington, WA, January 26th 2017, "Options for Analyzing Changes in Cold Water Refuges under Climate Change and it's Impacts on Salmon."
- Lee, S.Y., Halabisky, M., Hall, S. and Rule, M., 7th Annual Northwest Climate Science Conference, Skamania, WA, November 14th – 16th, 2016, "Projecting Climate Change Impacts on Wetlands in the Columbia Plateau?"
- Lee, S.Y., EPA Climate Change Speaker Series: Can We Conserve Wetlands under a Changing Climate?, Seattle, WA, October 4th, 2016, "Modeling Climate Change Effects on the Water Levels of Wetlands in Washington State."
- Lee, S.Y., Ryan, M, Hamlet, A.F., Palen, W.J., Halabisky, M. and Lawler, J.J., 5th Annual Pacific Northwest Climate Science Conference, University of Washington, Seattle, WA, September 9th – 10th, 2014, "Evaluating Climate Change Effects on Wetlands with Field Surveys and Remote Sensing Techniques."
- Lee, S.Y., and Hamlet, A.F., 3rd Annual Pacific Northwest Climate Science Conference, Boise, Idaho, October 1st – 2nd, 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 19th – 21st, 2012, " Evaluating Climate Change Effects on the Hydrology of Montane Wetland."
- Lee, S.Y., Hamlet, A.F., and Ryan, M., 4th International Conference on Climate Change: Impacts and Responses, Seattle, WA, July 12th-13th, 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."

ADVISING

Graduate student committees:

Begum Rabeya Rushi, MS (Washington State University Civil and Environmental Engineering), 2015. "*Application of Reservoir Modeling to Quantify Impacts of the Columbia River Treaty after 2024*"