Anzy Lee

Research Scientist

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MISSION STATEMENT: A detail-oriented, adaptable professional with a passion for environmental hydrodynamics, fluvial geomorphology, surface & groundwater interactions, sediment transport, aquatic ecosystem, and watershed hydrology. My mission is to understand watershed dynamics and nteractions to enhance ecosystem function and resilience.

EDUCATION

Ph.D in Civil Engineering *2016 - 2020*
Purdue University

MS in Civil and Environmental Engineering *2014 - 2016*
Seoul National University, Republic of Korea

BS in Construction, Urban and Environmental Engineering *2010 - 2014*
Handong Global University, Republic of Korea

WORK EXPERIENCE

Research Scientist *2020 - Current*
Utah State University, UC Davis

Research/Teaching Assistant *2016 - 2020*
Purdue University

RESEARCH PROJECTS

National Oceanic and Atmospheric Association [$1,500,000] *2023 - Current*
Novel Geospatial Architecture of Channel and Floodplain Morphological Attributes within the OWP Hydrofabrics

California State Water Resources Board [$3,000,000] *2020 - Current*
Application of methods and models to support the development and implementation of policies for water quality control for cannabis cultivation

Purdue Research Foundation *2016 - 2020*

SELECTED PEER-REVIEWED JOURNAL ARTICLES

Lee, A., Castejon, J., Patterson, N., Diehl, R., Phillips, C. B., and Lane, B. *(In Preparation)* Probabilistic quantification of within-reach hydraulic geometry variability.

Castejon, J., **Lee, A.**, Patterson, N. K., Lane, B., and Phillips, C. B. *(Submitted)* Leveraging High-resolution Topography to Advance Parsimonious Reach-scale Flood Inundation Mapping.

Lee, A., Lane, B., and Pasternack, G. B. *(Submitted)* RiverSTICH: A modular synthetic 3D channel terrain generator from sparse transect data.

Lee, A., Lane, B., and Pasternack, G. B. (2025). Spectral Slope and Coherence Quantitatively Summarize Nested Topographic Variability Patterns in Rivers. *River Res. Applic.*, 41: 1093-1103. doi:10.1002/rra.4437

Lee, A., Lane, B., and Pasternack, G. B. (2023). Identifying key channel variability functions controlling ecohydraulic conditions using synthetic channel archetypes. *Ecohydrology*, e2533. doi:10.1002/eco.2533

Lee, A., Cardenas, M. B., Aubeneau, A., and Liu, X. (2022). Hyporheic exchange due to cobbles on sandy beds. *Water Resour. Res.* 58, e2021WR030164. doi:10.1029/2021WR030164

Lee, A., Cardenas, M. B., Aubeneau, A., and Liu, X. (2021). Hyporheic Exchange in Sand Dunes Under a Freely Deforming River Water Surface. *Water Resour. Res.* 57, e2020WR028817. doi:10.1029/2020WR028817

Lee, A., Cardenas, M. B., and Aubeneau, A. (2020). The Sensitivity of Hyporheic Exchange to Fractal Properties of Riverbeds. *Water Resour. Res.* 56, e2019WR026560. doi:10.1029/2019WR026560

Lee, A., Geem, J. W., and Suh, K. D. (2016). Determination of near-global optimal initial weights of artificial neural network using harmony search algorithm: Application to breakwater armor stones. *Appl. Sci.* 6(6), 164. doi:10.3390/app6060164

Lee, A., Kim, S. E., and Suh, K. D. (2016). An easy way to use artificial neural network model for calculating stability number of rock armor. *Ocean Eng.* 127, 349-356. doi:10.1016/j.oceaneng.2016.10.013

AWARD & SERVICE

Peer Reviewer 2019 - Current
River Res. Applic., Earth Surf. Process. Landf., Water Resour. Res., J. Hydrol., J. Hydraul. Eng.

Dorothy Faye Dunn Fellowship, *Purdue University* 2019

Delleur Award, *Purdue University* 2017, 2018

Merit Scholarship (Top 5%), *Handong University* 2012

SELECTED CONFERENCE PROCEEDINGS

Stieve, J., Lane, B., and **Lee, A.** *(Submitted to ISE 2026).* Generating Syntetic Terrain Models from Sparse Historic Datasets for Ecohydraulic Assessment.

Lee, A., Castejon, J., Patterson, N., Diehl, R., Phillips, C. B., and Lane, B. *(Accepted to AGU 2025. Oral Presentation).* Probabilistic quantification of within-reach hydraulic geometry.

Castejon Villalobos, J., **Lee, A.,**, Lane, B., and Phillips, C. B. (2024). Accurate River Channel Representation Within a HAND-y Method for Flood Inundation Mapping. *AGU 2024 Fall Meeting.* Dec 2024, Washington D.C., United States.

Lee, A., Lane, B., Pasternack, G. B., and Sandoval-Solis, S. (2021). Identifying key geomorphic parameters characterizing eco-hydraulic responses of river channels using RiverBuilder. *AGU 2021 Fall Meeting.* Dec 2021, New Orleans, United States.

Lee, A. and Aubeneau, A. (2017). 3D Numerical Modeling of Hyporheic Exchange Processes in Fractal Riverbed. *AGU 2017 Fall Meeting.* Dec 2017, New Orleans, United States.

DIGITAL PRODUCTS

Lee, A. and Lane, B. (2024). HAND-FIM Assessment Tools [Python]. GitHub. Link.

Lee, A. (2024). Width Extraction Tools [Python]. GitHub. Link.

Lee, A. (2024). Habitat Analysis Tools [Python]. GitHub. Link.

Lee, A. (2024). Spectral Analysis Tools for Geomorphic Variability Functions [MATLAB]. GitHub. Link.

Lee, A. (2020). hyporheicScalarInterFoam [C++, OpenFOAM]. HydroShare. Link.

TEACHING & MENTORING

Research Mentoring, *Utah State University* *2020 - Current*
Undergraduate- Maddie Witte, *Graduate*- Steve White, Jared Stieve

Lab Instructor for Elementary Fluid Mechanics, *Purdue University* *2019*