Sooyeon Yi, Ph.D.

Postdoctoral Researcher
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EDUCATION

Ph.D. Environmental Planning – *UC Berkeley* 2017 - 2022
M.S. Hydrology and Water Resources Management – *UC Davis* 2014 - 2016
B.S. Hydrology and Water Resources Management – *UC Davis* 2010 - 2013

RESEARCH EXPERIENCES & EMPLOYMENT

Postdoctoral Researcher 2024 -
Prof. Ted Grantham, *UC Berkeley*
Project: Collaboratory for Equity in Water Allocations (COEQWAL)

- Explore how the Central Valley's water management system performs under a wide range of operational alterations and climate futures.
- Assess how operational alternatives enable or hinder our ability to sustain environmental flows in Central Valley rivers, assessed in relation to natural, unpaired flows and to functional flow targets.
- Show that changes in the volumes and priorities of environmental flow requirements have substantial effects on other water management objectives, including water deliveries from the State Water Project and Central Valley Project and to Delta salinity dynamics.

Researcher 2022 - 2023
Prof. G. Mathias Kondolf, *UC Berkeley*

- Developed ML/DL models to predict streamflow in ungauged basins and assess the impact of various meteorological and topographic factors on these predictions.
- Implemented ML/DL approaches for reservoir-based flood forecasting by utilizing release data from upstream reservoirs to predict hourly stream discharge.

Ph.D. Research 2017 - 2022
Prof. G. Mathias Kondolf, *UC Berkeley*
Dr. Larry Dale, *Lawrence Berkeley National Laboratory (LBNL)*

- Ph.D. Dissertation: Water-Energy-Food Nexus: Decision-support for water infrastructure management

M.S. Research 2014- 2016
Prof. Samuel Sandoval-Solis, *UC Davis*

- Master's Thesis: Current and perspective water management in the Apurimac River Basin, Peru. A modeling approach

PUBLICATIONS – Google Scholar

Journal paper (Published)

1. **Yi, S.** (2024). Water Transfer Energy Efficiency Index for inter-basin water transfer projects. *Water and Environment Journal,* 38(3), 535–547. https://doi.org/10.1111/wej.12929
2. **Yi, S.**, Kondolf, G. M., Sandoval-Solis, S., & Dale, L. (2024). Groundwater Level Forecasting Using Machine Learning: A Case Study of the Baekje Weir in Four Major Rivers Project, South

Korea. *Water Resources Research*, *60, e2022WR032779*. https://doi.org/10.1029/2022WR032779

3. Lee, E., Ji, J., Lee, S., Yoon, J., **Yi, S.**, & Yi, J. (2023). Development of an Optimal Water Allocation Model for Reservoir System Operation. *Water*, *15*(20), 3555. https://doi.org/10.3390/w15203555
4. Lee, S., Choi, Y., Ji, J., Lee, E., **Yi, S.**, & Yi, J. (2023). Flood Vulnerability Assessment of an Urban Area: A Case Study in Seoul, South Korea. *Water*, *15*(11), 1979. https://doi.org/10.3390/w15111979
5. Choi, Y., Ji, J., Lee, E., Lee, S., **Yi, S.**, & Yi, J. (2023). Developing Optimal Reservoir Rule Curve for Hydropower Reservoir with an add-on Water Supply Function Using Improved Grey Wolf Optimizer. *Water Resources Management*. https://doi.org/10.1007/s11269-023-03478-0
6. Chae, H., Ji, J., Lee, E., Lee, S., Choi, Y., **Yi, S.**, & Yi, J. (2022). Assessment of activating reservoir emergency storage in climate-change-fueled extreme drought. *Water*, *14*(20), 3242. https://doi.org/10.3390/w14203242
7. **Yi, S.**, Kondolf, G. M., Sandoval-Solis, S., & Dale, L. (2022). Application of machine learning-based energy use forecasting for inter-basin water transfer project. In *Water Resources Management*. https://doi.org/10.1007/s11269-022-03326-7
8. Yang, L., Bai, X., Zheng Khanna, N., **Yi, S.**, Hu, Y., Deng, J., Gao, H., Tuo, L., Xiang, S., & Zhou, N. (2018). Water evaluation and planning (WEAP) model application for exploring the water deficit at catchment level in Beijing. *Desalination and Water Treatment*, *118*, 12–25. https://doi.org/10.5004/dwt.2018.22332

Journal paper (under second round of review)

1. ** **Yi, S.,** Yi, J**.** Reservoir-based flood forecasting and warning using machine learning and deep learning techniques [Second round of revision]. *Applied Water Science*.
2. * Lee, S., Ji, J., Lee, E., Lee, J., **Yi, S.**, Yi, J. Predicting streamflow in ungauged basins using deep learning algorithms. [Under review]. *Applied Water Science*.

Journal paper (under first round of review)

1. * **Yi, S.,** Kondolf, M. Environmental Planning in U.S. Inter-Basin Water Transfer Projects [Under review]. *Frontiers in Environmental Science*.
2. * **Yi, S.**, Lee, J., Lee., C., Lee., Lee., S., Ji, J., Lee, E., Yi., J. Predicting flow regime alterations post-dam removal: A machine learning approach incorporating land use and cover dynamics [Under review]. *International Journal of Water Resources Development*.
3. * Lee, E., **Yi, S.,** Ji, J., Hong, J., Lee, S., Lee, J., Yi, J. Development of reservoir operation model determining the pre-release strategy for the flood events [Under review] *Journal of Hydroinformatics*.

Journal paper (Preparation)

1. **Yi, S.**, Stanford, B., Yarnell, S., Zimmerman, J., Grantham, T. Evaluating Environmental Flows in the Central Valley Under Various Management Scenario. *Journal of Environmental Sciences*.

2. **Yi, S.,** Sandoval-Solis, S. Reservoir water balance simulation model using machine learning and deep learning algorithms. *Journal of Hydrology*
3. **Yi, S.**, Sandoval-Solis, S., Bombardelli, F., Puente, C. Water resources management in the Apurímac River Basin: One-bucket model approach. *Water*.
4. **Yi, S.**, Lisa, T., Kilduff, P., Sandoval-Solis, S. WEAPhish: Integrating water resources and fish population dynamics tools. *Journal of Hydroinformatics*.
5. Lee, E.; Ji, J., **Yi, S.**, Choi, Y., Lee, S., Yi, J. Development of a water allocation estimation model for reservoirs utilizing rule curves: A case study of the Han River Basin. *Hydrology earth system sciences*.
6. Lee, E., Ji, J., **Yi, S.**, Lee, S., Lee, J., Yi, J. Enhancing flood control and water management efficiency. *Scientific Report*.

Technical Report

1. Lisa, T., Kilduff, P., Sandoval-Solis, S. **Yi, S.**, *Modeling Tool to Assess and Mitigate the Effect of Small Hydropower on Stream Fishes in Changing California Climate, California Energy Commission, Online Report. June 2015*.
2. Radke, J., Biging, G., Roberts, K., Schmidt-Poolman, M., Foster, H., Roe, E., Ju, Y., Lindbergh, S., Beach, T., Maier, L., He, Y., Ashenfarb, M., Norton, P., Wray, M., Alruheili, A., **Yi, S.**, Rau, R., Collins, J., Radke, D., Coufal, M., Marx, S., Gohar, A., Moanga, D., Ulyashin, V., Dalal, A., 2018. *Assessing Extreme Weather-Related Vulnerability and Identifying Resilience Options for California's Interdependent Transportation Fuel Sector* (Technical Report No. CCCA4- CEC-2018– 012). State of California Energy Commission.

Book Chapters

1. Lund, J., Hui, R., Escriva, A., Porse, E., Adams, L., Connaughton, J., Kasuri, L., Lord, B., Siegfried, L., Thayer, R., Sandoval-Solis, S., **Yi, S.** *Reservoir operation design*. Chapter 124, Handbook of Applied Hydrology, February 2015.
2. **Yi, S.,** Yi, J. *Water Resources Management in South Korea*. Chapter 10, Integrated Water Resource Management: Cases from Africa, Asia, Australia, Latin America and USA, July 2019.

CONFERENCES

Yi, S., Sandoval-Solis, S. Reservoir water balance simulation model using machine learning and deep learning algorithms. (Oral) *EWRI*, 5/18-21/2025, Anchorage, Alaska.

Yi, S., Stanford, B., Yarnell, S., Zimmerman, J., Grantham, T. Evaluating environmental flows in the Central Valley under various management scenario. (Oral) *AGU* 12/9-13/2024, San Francisco, California.

Yi, S., Stanford, B., Yarnell, S., Zimmerman, J., Grantham, T. Assessment of environmental flows in the Central Valley under different management scenarios. (Oral) *Biennial Bay-Delta Science Conference*, 9/30 – 10/2/ 2024, Sacramento, California.

Lee, E., Ji, J., **Yi, S.**, Lee, S., Yoon, J., Lee, C., Yi., J. Enhancing flood control and water management efficiency: A case study in South Korea. (Oral) *International Conference on Water Pollution and Treatment,* 7/21-23/2024, Berlin, Germany.

Yoon, J., Lee, E., Ji, J., Lee, S., Lee, C., **Yi, S.**, Yi., J. Contribution of multipurpose utilization of Hwacheon Reservoir to water supply. (Poster) *International Conference on Water Pollution and Treatment*, 7/21-23/2024, Berlin, Germany.

Lee, S., Ji, J., Lee, E., Yoon, J., Lee, C., **Yi, S.**, Yi., J. Deep learning for unpredicted flow forecasting in South Korea. (Oral) *International Conference on Water Pollution and Treatment,* 7/21-23/2024, Berlin, Germany.

Yi, S., Yi, J. *Hydrological modeling of the Los Angeles River Basin*. (Poster) AGU, 12/9-13/2019, San Francisco, California.

Yi, S., Sandoval-Solis, S., Thompson, L., Kilduff, P. *Master Middle Ware: A Tool to Integrate Water Resources and Fish Population Dynamics Models*. (Poster) California Water and Environmental Modeling Forum, 4/2-4/2018, Folsom, California.

Yi, S., Sandoval-Solis, S., Thompson, L., Kilduff, P. *Master Middle Ware: A Tool to Integrate Water Resources and Fish Population Dynamics Models*. (Poster) Interagency Ecological Program, 3/6-8/2018, Folsom, California.

Yi, S., Ju, Y., He., Y. *Projecting future inland flooding susceptibility due to climate change in California using machine learning.* (Oral) American Association of Geographers (AAG), 04/10-14/2018, New Orleans, Louisiana.

Yi, S., Sandoval-Solis, S., Thompson, L., Kilduff, P. *Master Middle Ware: A Tool to Integrate Water Resources and Fish Population Dynamics Models*. (Poster) AGU, 12/11-15/2017, New Orleans, Louisiana.

Yi, S., Sandoval-Solis, S., Bombardelli, F., Puente, C. *Hydrological WEAP Modeling of the Upper Basin of the Apurimac River Basin, in Peru*. (Poster) AGU, 12/14-18/2015, San Francisco, California.

Yi, S., Sandoval-Solis, S., Bombardelli, F., Puente, C. *Current and Prospective Water Management in the Apurimac River Basin, in Peru. An Assessment of Available Water and Supply.* (Poster), Chile California Conference 2015: "Envisioning the future, Creating it together", 10/17/2015, Davis, California.

Yi, S., Sandoval-Solis, S., Bombardelli, F., Puente, C. *Current and Prospective Water Management in the Apurimac River Basin, in Peru. An Assessment of Available Water and Supply.* (Oral) EWRI, 5/17-21/2015, Austin, Texas.

Yi, S., Thompson, L., Kilduff, P., Sandoval-Solis, S. *WEAPhish & Master_WEAPhish Middle- Ware Link to WEAP*. (Oral) Workshop for University of California Davis Fish Population & Habitat Conceptual Model, 3/25/2015, Sacramento, California.

Yi, S., Sandoval-Solis, S., Bombardelli, F., Puente, C. *Evaluating Current and Future Water Supply and Demands in the Apurimac River Basin in Peru, A Sensitivity Analysis of a Hydrologic and Water Planning Model*. (Poster) AGU, 12/15-19/2014, San Francisco, California.

TEACHING EXPERIENCES

Coordinator	California Water Policy and Management	*UC Berkeley*	2024
Co-Instructor	University of California Water Academy	*UC Berkeley*	2024
Instructor	LA205: Environmental Planning Studio | Hydrology Module	*UC Berkeley*	2024
Instructor	CVIENG103: Terrestrial hydrology	*UC Berkeley*	2021
Teaching Assistant	LA12: Environmental science for sustainable development	*UC Berkeley*	2018 - 2020
Teaching Assistant	CVIENG103: Terrestrial hydrology	*UC Berkeley*	2020
Instructor	LA 253: Landscape Architecture and Environmental Planning Colloquium Water-Energy Nexus	*UC Berkeley*	2018
Teaching Assistant	Hydrology 298: Hydrologic Science Principles of HEC Software	*UC Davis*	2016

SERVICES

Co-Chair	Berkeley Postdoctoral Association Diversity, Equity, Inclusion	*UC Berkeley*	2024