

Chung-Yi Lin, Ph.D.

POSTDOCTORAL ASSOCIATE · DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING AT VIRGINIA TECH

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Education

Lehigh University (LU)

- PH.D. IN CIVIL & ENVIRONMENTAL ENGINEERING (CEE)

Bethlehem, PA, USA

Aug 2019 - Jan 2023

National Taiwan University (NTU)

- M.S. IN BIOENVIRONMENTAL SYSTEMS ENGINEERING (BSE)

Taipei, Taiwan

Sep 2017 - Feb 2019

National Taiwan University

- B.S. IN BIOENVIRONMENTAL SYSTEMS ENGINEERING

Taipei, Taiwan

Sep 2014 - Jun 2017

Research Experiences

Themes & Interests

- HUMAN-WATER SYSTEMS

Agent-based modeling, uncertainty characterization, large data analysis, software development

- MANAGEMENT IN COMPLEX ADAPTIVE WATER SYSTEMS

Climate risk assessment, agricultural water allocation, groundwater management, nonpoint source pollution control, food-energy-water nexus

- INFRASTRUCTURE RESILIENCE & CYBER-PHYSICAL SYSTEMS

Smart stormwater systems, cyber-physical risks (e.g., cyber-attacks), optimization, control

Postdoctoral Associate

- MARSTON'S RESEARCH GROUP, VT

Feb 2023 - present

Research Assistant

- COMPLEX ADAPTIVE WATER SYSTEMS LAB., LU

Sep 2020 - Jan 2020

Intern

- INSTITUTE FOR GLOBAL ENVIRONMENTAL STRATEGIES (IGES), HAYAMA, JAPAN

Jun 2019 - Jul 2019

- MICROSOFT STUDENT PARTNER, TAIPEI, TAIWAN

Jun 2017 - Jun 2018

Publications & Creative Activities

PUBLISHED (TOTAL 5)

Lin, C. Y., Yang, Y. C. E., & Wi S. (2022), HydroCNHS: A Python Package of Hydrological Model for Coupled Natural Human Systems. *Journal of Water Resources Planning and Management*, 148(12), 6022005.

Jhong, B. C., **Lin, C. Y.**, Jhong, Y. D., Chang, H. K., Chu, J. L., Fang, H. T. (2022) Assessing effective spatial characteristics of input features by physics-informed machine learning in inundation forecasting during typhoons, *Hydrological Sciences Journal*, 1-19.

Lin, C. Y., Yang, Y. C. E., Malekc, K., & Adam, J. C. (2022). An investigation of coupled natural human systems using a two-way coupled agent-based modeling framework, *Environmental Modelling & Software*, 155, 105451

Lin, C. Y., & Yang, Y. C. E. (2022). The effects of model complexity on model output uncertainty in co-evolved coupled natural-human systems, *Earth's Future*, 10, e2021EF002403.

Tung, C. P., Tsao, J. H., Tien, Y. C., **Lin, C. Y.**, & Jhong, B. C. (2019). Development of a Novel Climate Adaptation Algorithm for Climate Risk Assessment. *Water*, 11(3), 497.

IN REVIEW (TOTAL 2)

- Lin, C. Y.**, Yang, Y. C. E., & Moazeni, F. (2023). Flood Risks of Cyber-physical Attacks in a Smart Storm Water System, *Water Resources Research*.
- Lin, C. Y.**, Yang, Y. C. E., & Chaudhary, A. K. (2023). Pay-for-practice or Pay-for-performance? A Coupled Agent-based Evaluation Framework for Assessing Sediment Management Incentive Policies, *Journal of Hydrology*.

SOFTWARE (WITHOUT JOURNAL PUBLICATION; TOTAL 1)

- Lin, C. Y.** (2021). MultiWG: Multi-site stochastic Weather Generator (MultiWG) (v1.0.0). *Zenodo*.

IN PREP (TOTAL 3)

- Lin, C. Y.**, Orduna Alegria, M., & Marston, L. (2023) Exploring the Interplay of Heterogeneity in Coevolved Human-Water Systems for Effective Community-Driven Groundwater Management.
- Miller, A., **Lin, C. Y.**, & Marston, L. (2023) Survey of Groundwater Wells in the United States.
- Tysinger, W., Ao, Z., **Lin, C. Y.**, & Marston, L. (2023) The Delineation of Commands Areas of Large Irrigation Dams in the United States.

CONFERENCES (TOTAL 10)

- Lin, C. Y.**, Yang, Y. C. E. (2022). Analyzing the Role of Social-Economic Factors in Water Quality Management through Agent-Based Modeling-Susquehanna River Basin, US. Abstract [H32L-05] presented at 2022 Fall Meeting, AGU, Chicago, IL, 12-16 Dec.
- Lin, C. Y.**, Yang, Y. C. E. (2022). Risk assessment of compound disturbances in coupled natural human systems. Oral [1107573] presented at 2022 EWRI Congress, Atlanta, GA, 5-8 Jun.
- Lin, C. Y.**, Yang, Y. C. E. (2021). Uncertainty decomposition of coupled natural human systems with differing model parameter complexity. Abstract [H25U-1267] presented at 2021 Fall Meeting, AGU, New Orleans, LA, 13-17 Dec.
- Tung, C. P., Tsao, J. H., Jhong, B. C., Li, M. H., Perng, P. W., Huang, J., Tien, Y. C., & **Lin, C. Y.** (2019) Enable Climate Intelligent Assistant for Resilient Cities. ECCA International Conference Abstracts, Lisbon, Portugal.
- Takeda, T. & **Lin, C. Y.** (2019) Japan's Challenges and Opportunities Regarding Nitrogen Management. Water and Environment Technology Conference 2019, Suita, Osaka, Japan.
- Lin, C. Y.**, Wang, Z. L., Huang, J., Jhong, B. C., & Tung, C. P. (2018). Development of a cross-scale and cross-sector adaptation assessment model integrating agriculture and water resources fields: A case study of regional to local scale. Abstract [H21Q-1953] presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.
- Wang, Z. L., Tung, C. P., **Lin, C. Y.**, Jhong, B. C., & Huang, J. (2018). Investigating the Feasibility of Water Market in Water Reallocation by Virtual Gaming Simulation during Drought Periods: A Case Study of the Taoyuan Area, Taiwan. Abstract [H21Q-1938] presented at 2018 Fall Meeting, AGU, Washington, D.C., 10-14 Dec.
- Jhong, B. C., Tung, C. P., Tsao, J. H., **Lin, C. Y.**, & Li, M. H. (2018). Interdisciplinary assessment of climate risk for water resources and agriculture and flood disaster. PAWEES & INWEPF International Conference 2018 Abstracts, Nara, Japan.
- Lin, C. Y.**, Jhong, B. C., Chen, P. Y., & Tung, C. P. (2017). Development of surrogate model for the hydrological module of SWAT. PAWEES International Conference 2017 Abstracts, Taichung, Taiwan. (Award for Excellent Oral Presentation)
- Lin, C. Y.**, Li, Y. H., Li, M. H., & Tung, C. P. (2015). Analysis of the water-food nexus under climate change: A case study of thousand-ponds-city in Taiwan. ECCA International Conference Abstracts, Glasgow, Scotland.

BOOK, REPORT & THESIS (TOTAL 3)

- Lin, C. Y.** (2023). Co-evolution in Complex Adaptive Water Systems from Long-Term Planning to Short-Term Responses, The Graduated Dissertation of Graduate Institute of Civil Engineering, LU, USA.

Tung, C. P., Li, M. H., Liu, T. M., Sung, R. T., Hong, N. M., Hsu, S. Y., Lee, T. Y., Tsao, J. H., Li, Y. H., Jhong, B. C., & **Lin, C. Y.** (2020) Climate Adaptation Advanced Training – Water Resources (translated), Ministry of Education, Taiwan. (Mandarin)

Lin, C. Y. (2019). Development of Interdisciplinary AgriHydro Model and Application with Climate Smart Adaptation Algorithm - A Case Study in Taoyuan, The Graduated Thesis of Graduate Institute of Bioenvironmental Systems Engineering, NTU, Taiwan. (Mandarin with English abstract)

Research Funding & Grants

Co-PI, 2023-2024	<i>“Conducting parcel-scale mapping of water rights to irrigation croplands to advance understanding of agricultural water access security.”</i> , PI Landon Marston with Co-PI Chung-Yi Lin and Co-PI Majid Shafiee-Jood, 4-VA Collaborative Research Grant	\$30,000
Co-PI, 2023	<i>“Conducting parcel-scale mapping of water rights to irrigation croplands to advance understanding of agricultural water access security.”</i> , PI Landon Marston with Co-PI Chung-Yi Lin, Pre-tenure 4-VA Collaborative Research Grant (Spring and Summer)	\$15,000
PI, 2023	<i>“Creating a Public US National Groundwater Wells Dataset.”</i> , PI Chung-Yi Lin with Co-PI Yunus Naseri, CUAHSI Hydroinformatics Innovation Fellowship	\$4,990
Contributor, 2023-2025	<i>“Understanding the drivers of interbasin water transfers to identify and mitigate future conflict.”</i> , PI Landon Marston with Co-PI Kathryn Powlen (USGS), United States Geological Survey and National Institutes for Water Resources	\$248,458

Honors & Awards

Mar 2023	CUAHSI Hydroinformatics Innovation Fellowship , CUAHSI
Dec 2022	Graduate Student Senate Travel Grant , LU
Aug 2022	Gibson Teaching Fellowship , LU
Dec 2019	Certificate of Teacher Development Program , LU
Sep 2019	Lehigh University Fellowship , LU
Jul 2018	Summer Institute Programme Scholarship (at IMK-IFU, Garmisch-Partenkirchen, Germany) , Ministry of Science and Technology-German Academic Exchange Service (MOST-DAAD)
Nov 2017	Award for Excellent Oral Presentation , PAWEES International Conference
Sep 2017	Chi-Seng Water Management Research & Development Foundation Scholarship , NTU
Aug 2017	Water Youth Ambassador (to the Netherlands) , Water Resources Agency, Taiwan
Jun 2017	Award of Academic Research Thesis in Bachelor , NTU
Jul 2016	College Student Research Scholarship , Ministry of Science and Technology, Taiwan
Jul 2016	First prize in Taiwan Water Youth Camp & Wetskills (an Netherlands organization) , Water Resources Agency, Taiwan
Jul 2016	Exchange program to Purdue University , NTU
Apr 2016	Academic Excellence Award , BSE, NTU
Jan 2016	Exchange program to Purdue University , NTU
Dec 2015	Agricultural Engineering Research Center Scholarship , Agricultural Engineering Research Center, NTU
Apr 2015	Academic Excellence Award , BSE, NTU
Oct 2014	Academic Excellence Award , BSE, NTU
Apr 2014	Academic Excellence Award , BSE, NTU

Professional Presentations

INVITED TALKS

Feb 2023. Los Alamos National Lab., Webinar, USA.

"Co-Evolution in Complex Adaptive Water Systems: Application of Agent-based Modeling."

Nov 2022. 2022 CUAHSI Making Waves in Water Science: Open Source Tools for Water Science Webinar, USA.

"An open-source software, HydroCNHS."

Jul 2019. Institute for Global Environmental Strategies (IGES), Japan.

"Exploring challenges & opportunities of nitrogen management in Japan & Taiwan."

Aug 2018. Institute of Meteorology and Climate Research Atmospheric Environmental Research (IMK-IFU) in Garmisch-Partenkirchen, Germany.

"Stochastic weather generator and climate risk assessment in the water-food nexus."

Sep 2017. National Science and Technology Center for Disaster Reduction (NCDR), Taiwan.

"The water-food nexus under climate change for Taoyuan, Taiwan."

CONFERENCE TALKS

Dec 2022. 2022 Fall Meeting, AGU, Chicago, USA.

"Analyzing the role of social-economic factors in water quality management through agent-based modeling-Susquehanna River Basin, US."

Jun 2022. 2022 EWRI Congress, Atlanta, USA.

"Risk assessment of compound disturbances in coupled natural human systems."

Sep 2017. PAWEES International Conference 2017, Taichung, Taiwan.

"The water-food nexus under climate change for Taoyuan, Taiwan."

CONVENER AND OTHERS

Aug 2022. 2022 AGU-H3S Navigating Academic Waters: Succeeding as a Postdoc webinar, USA.

Organize and moderate the virtual panel discussion on *"Navigating Academic Waters: Succeeding as a Postdoc."*

Teaching Experience

Sp'23	Instructor , CEE 4994 Undergraduate Research: Data Analysis of Human-water System	VT
Sp'23	Guest lecture (with Prof. Marston) , CEE 4344 Water Resources Planning	VT
F'22	Co-instructor/developer (with Prof. Yang) , CEE 497 Applications of Catastrophe Modeling	LU
F'22	Teaching Assistant , CEE 122 Fluid Mechanics	LU
Sp'22	Teaching Assistant , CEE 222 Water Resources Engineering	LU
Sp'18	Teaching Assistant , BSE 5071 Climate Change and Environmental Ecology	NTU
F'17	Teaching Assistant , BSE 5091 Environmental Systems Analysis	NTU
Sp'17	Teaching Assistant , BSE 5071 Climate Change and Environmental Ecology	NTU

Mentoring

2023 **Megan Schantz**, undergraduate student, VT

2020 **Tanumoy Banerjee**, Ph.D., LU (through *Mentor Collective Program at Lehigh*)

2020 **Jasreen Kaur**, Ph.D., LU (through *Mentor Collective Program at Lehigh*)

Service

PROFESSIONAL SERVICE

2022-present **AGU, Water and Society Technical Committee**, Student Representatives

2023-present **AGU, Hydrology Section Student Subcommittee (H3S)**, Secretary

2022 **AGU, Hydrology Section Student Subcommittee (H3S)**, Prof. Dev. Subcommittee Co-chair

2021-present **ASCE, EWRI, Environmental and Water Resources System (EWRS)**, Committee member

LEHIGH UNIVERSITY

- 2021-2022 **Graduate Students Recruitment Program**, CEE Department Representatives
- 2021 **Graduate Senate Meeting**, CEE Department Representatives
- 2021-2022 **Lehigh Graduate Open House**, CEE Department Representatives
- 2021-2022 **Lehigh Mentor Collective**, CEE Department Representatives

NATIONAL TAIWAN UNIVERSITY

- 2014-2015 **Climate Action Club**, Charter President

AD HOC REVIEWER – JOURNALS

- Journal of Water Resources Planning and Management – ASCE
- Science of the Total Environment – ELSEVIER
- Environmental Modeling & Software – ScienceDirect
- Ecology & Society – Resilience Alliance
- Journal of Hydrology – ELSEVIER
- PLOS Water – PLOS