Chung-Yi Lin

Postdoctoral Associate · Department of Civil and Environmental Engineering at Virginia Tech

1904 Research Center Dr., APT 420, Blacksburg, VA, 24060

+1 484-767-2587 | philip928lin@gmail.com | https://philip928lin.github.io/ | https://github.com/philip928lin

Education

Lehigh University (LU)   *Bethlehem, PA, USA*
- Ph.D. in Civil & Environmental Engineering (CEE)   *Aug 2019 - Jan 2023*

National Taiwan University (NTU)   *Taipei, Taiwan*
- M.S. in Bioenvironmental Systems Engineering (BSE)   *Sep 2017 - Feb 2019*

National Taiwan University   *Taipei, Taiwan*
- B.S. in Bioenvironmental Systems Engineering   *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	*"Conducting parcel-scale mapping of water rights to irrigation croplands to advance understanding of agricultural water access security."*, PI Landon Marston with Co-PI Chung-Yi Lin, 4-VA Collaborative Research Grant (Spring and Summer)	*$15,000*
PI, 2023	*"Creating a Public US National Groundwater Wells Dataset."*, PI Chung-Yi Lin with Co-PI Yunus Naseri, CUAHSI Hydroinformatics Innovation Fellowship	*$4,990*
Contributor, 2023-2025	*"Understanding the drivers of interbasin water transfers to identify and mitigate future conflict."*, 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