Chung-Yi Lin, Ph.D.

Biographical Information

Postdoctoral Associate
Department of Civil and Environmental Engineering
Virginia Tech (VT)

Google scholar | Personal website

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*
- B.S. in Bioenvironmental Systems Engineering (BSE) *Sep 2014 – Jun 2017*

RESEARCH EXPERIENCES

Themes

Coupled Natural-Human Systems

- Agent-based modeling, software development, uncertainty characterization

Risk Assessment in Complex Adaptive Water Systems

- Climate risks, food-water nexus, cyber-physical risks

Cyber-Physical Systems & Infrastructure Resilience

- IoT-based stormwater infrastructures, false data injection (cyber-attacks), optimization, control

Postdoctoral Associate

- Marston's Research Group, VT *Feb 2023 – Present*

Research Assistant

- Complex Adaptive Water Systems (CAWS) Lab., LU *Sep 2020 – Jan 2022*

Intern

- Institute for Global Environmental Strategies (IGES), Hayama, Japan *Jun 2019 – Jul 2019*
- Microsoft Student Partner, Taipei, Taiwan *Jun 2017 – Jun 2018*

Publications and Creative Activities

Peer-reviewed Journals

1. **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*.
2. 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.

3. **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
4. **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.
5. 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.

Preparation & Revision

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

Software (citable without journal publication)

8. **Lin, C. Y.** (2021). MultiWG: Multi-site stochastic Weather Generator (MultiWG) (v1.0.0). *Zenodo*. https://doi.org/10.5281/zenodo.5147575

Conferences

9. **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.
10. **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.
11. **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.
12. 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.
13. Takeda, T. & **Lin, C. Y.** (2019) Japan's Challenges and Opportunities Regarding Nitrogen Management. Water and Environment Technology Conference 2019, Suita, Osaka, Japan.
14. **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.
15. 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.
16. 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.
17. **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**)
18. **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

19. 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)
20. **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)

Honors and Awards

- CUAHSI Hydroinformatics Innovation Fellowship, CUAHSI *Mar 2023*
- Gibson Teaching Fellowship, LU *Aug 2022*
- Certificate of Teacher Development Program, LU *Dec 2019*
- Lehigh University Fellowship, LU *Sep 2019*
- Summer Institute Programme Scholarship (at IMK-IFU, Garmisch-Partenkirchen, Germany), Ministry of Science and Technology-German Academic Exchange Service (MOST-DAAD) *Jul 2018*
- Award for Excellent Oral Presentation, PAWEES International Conference *Nov 2017*
- Chi-Seng Water Management Research & Development Foundation Scholarship, NTU *Sep 2017*
- Water Youth Ambassador (to Netherland), Water Resources Agency (WRA), Taiwan *Aug 2017*
- Award of Academic Research Thesis in Bachelor, NTU *Jun 2017*
- College Student Research Scholarship, MOST, Taiwan *Jul 2016*
- Taiwan Water Youth Camp & Wetskills (Netherland organization) First price, WRA, Taiwan, *Jul 2016*
- Exchanged to Purdue University, NTU *Jan 2016*
- Agricultural Engineering Research Center Scholarship, Agricultural Engineering Research Center, NTU *Dec 2015*
- Academic Excellence Award (4 times), BSE, NTU *Apr 2014, Oct 2014, Apr 2015, Apr 2016*

Research Funding and Training Grants

- 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**.
- 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**.
- 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), Agency: United States Geological Survey and National Institutes for Water Resources, **$248,458**.
  (contribute to the contextualization of modeling approach and visualization)

Professional Presentations

1. **Invited Presenter** *Feb 2023*
   Los Alamos National Lab., Webinar, USA
   Present a topic, "Co-Evolution in Complex Adaptive Water Systems ─ Application of Agent-based Modeling."

2. **Invited Presenter** *Nov 2022*
2022 CUAHSI Making Waves in Water Science: Open Source Tools for Water Science Webinar, USA
Present a developed open-source software, HydroCNHS.

3. **Convener** *Aug 2022*
2022 AGU-H3S Navigating Academic Waters: Succeeding as a Postdoc webinar, USA
Moderated the virtual panel discussion on "Navigating Academic Waters: Succeeding as a Postdoc."

4. **Presenter** *Jun 2022*
2022 EWRI Congress, Atlanta, USA
Presented a research topic about risk assessment of compound disturbances in coupled natural human systems.

5. **Invited Presenter** *Jul 2019*
Institute for Global Environmental Strategies (IGES), Japan
Presented a topic about exploring challenges & opportunities of nitrogen management in Japan & Taiwan.

6. **Invited Presenter** *Aug 2018*
Institute of Meteorology and Climate Research Atmospheric Environmental Research (IMK-IFU) in Garmisch-Partenkirchen, Germany
Presented a research topic about a stochastic weather generator and climate risk assessment in the water-food nexus.

7. **Invited Presenter** *Jun 2018*
National Science and Technology Center for Disaster Reduction (NCDR), Taiwan
Presented a research topic about climate scenario downscaling and a stochastic weather generator.

8. **Presenter** *Sep 2017*
PAWEES International Conference 2017, Taichung, Taiwan
Presented a research topic about the water-food nexus under climate change for Taoyuan, Taiwan.

Teaching and Mentoring

Course Design and Teaching

- *Instructor, CEE 4994 Undergraduate Research: Data Analysis of Human-water System Evolution, VT* *Sp'23*
- *Guest lecture, CEE 4344 Water Resources Planning, VT (with prof. Marston)* *Sp'23*
- *Co-instructor/co-developer, CEE 497 Applications of Catastrophe Modeling, LU (with Prof. Yang)* *F'22*

Teaching Assistant

- *CEE 122 Fluid Mechanics, LU* *F'22*
- *CEE 222 Water Resources Engineering, LU* *Sp'22*
- *BSE 5071 Climate Change and Environmental Ecology, NTU* *Sp'17, Sp'18*
- *BSE 5091 Environmental Systems Analysis, NTU* *F'17*

Mentor

- *Mentored two mentees, Mentor Collective at Lehigh, LU* *Aug – Dec 2020*
  (Tanumoy Banerjee & Jasreen Kaur)

Tutor

- *Taught Python lectures at NCDR, Taiwan* *Feb – Mar 2018*

Service

Professional Service

- AGU, Water and Society Technical Committee, Student Representatives *2022 – present*
- AGU, Hydrology Section Student Subcommittee (H3S),
  Secretary *2023 – present*
  Prof. Dev. Subcommittee Co-chair *2022*
- ASCE, EWRI, Environmental and Water Resources System (EWRS) Committee *2021 – present*

Lehigh University

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

National Taiwan University

- Charter President of Climate Action Club, NTU *Sep 2014 – Dec 2015*

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