Hong-Yi Li, PhD

Associate Professor of Civil Engineering University of Houston

Curriculum Vitae

Education

Ph.D. in Civil Engineering, 2010
- Department of Civil and Environmental Engineering, University of Illinois at Urbana-Champaign, USA
- Dissertation Title: *"Diagnostic analysis of runoff partitioning at the catchment scale"*
- Advisor: Professor Murugesu Sivapalan

M.E. in Hydrology and Water Resources, 2003
- Department of Hydraulic Engineering, Tsinghua University, China
- Dissertation Title: *"Theoretical analysis and application of a distributed basin hydrological model based on hillslope flow unit"*
- Advisor: Professor Zhongjing Wang

B.E. in Hydraulic & Construction Engineering, 2000
- Department of Hydraulic Engineering, Tsinghua University, China
- Minor in Computer Science and Application

Professional Experience

2023/09~	Associate Professor, University of Houston
2018/09~2023/08	Assistant Professor, University of Houston
2016/08~2018/08	Associate Professor (WOT), Montana State University, USA
2011/11~2016/07	Research Scientist, Pacific Northwest National Lab, USA
2010/07~2011/10	Research Associate, Pacific Northwest National Lab, USA
2005/08~2010/06	Research assistant, University of Illinois, USA
2003/08~2005/06	Senior Water Resources Engineer, Beijing Tepia Technology Ltd., China
2000/08~2003/07	Research assistant, Tsinghua University, China

Peer Reviewed Publications (Web of Science h-index: 32; Google Scholar h-index: 40; i10-index, 77)

(Li's name is in **bold**, UH students in Li's group are in **bold and underlined**, [v] indicate visiting students, and [p] indicate former postdocs, and * indicates Li as the corresponding author.)

After joining University of Houston

85. Xu, D., Bisht, G., Tan, Z., Liao, C., Zhou, T., Li, H.-Y., and Leung, L. R.: Disentangling the hydrological and hydraulic controls on streamflow variability in Energy Exascale Earth System Model (E3SM) V2 – a case study in the Pantanal region, *Geosci. Model Dev.*, 17, 1197–1215, https://doi.org/10.5194/gmd-17-1197-2024, 2024.
84. Liao, C., Zhou, T., Xu, D., Tan, Z., Bisht, G., Cooper, M. G., ... & Leung, L. R. (2023). Topological Relationship‐Based Flow Direction Modeling: Stream Burning and Depression Filling. *Journal of Advances in Modeling Earth Systems*, 15(11), e2022MS003487.
83. Abeshu, G. W., Tian, F., Wild, T., Zhao, M., Turner, S., Chowdhury, A. F. M., ... & **Li, H.-Y.** (2023). Enhancing the representation of water management in global hydrological models. *Geoscientific Model Development*, 16(18), 5449-5472.
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(2023). The fully coupled regionally refined model of E3SM version 2: overview of the atmosphere, land, and river results. *Geoscientific Model Development*, 16(13), 3953-3995.

81. Lu, J., Li, X., **Li, H.**, Chegini, T., Gamarra, C., Yang, Y. C., ... & Dillingham, G. (2023). A Synthetic Texas Backbone Power System with Climate-Dependent Spatio-Temporal Correlated Profiles. *arXiv* preprint arXiv:2302.13231.
80. Kreibich et al. (including **Li H-Y**) (2023). Panta Rhei benchmark dataset: Socio-hydrological data of paired events of floods and droughts. *Earth System Science Data Discussions*, 15, 2009–2023, https://doi.org/10.5194/essd-15-2009-2023, 2023.
79. **Chegini T.** and **Li H.-Y.***: An algorithm for deriving the topology of belowground urban stormwater networks, *Hydrol. Earth Syst. Sci.*, 26, 4279–4300, https://doi.org/10.5194/hess-26-4279-2022, 2022.
78. Kreibich et al. (including **Li H-Y** and **Abeshu GW**) The challenge of unprecedented floods and droughts in risk management. Nature. 608, 80–86 (2022). https://doi.org/10.1038/s41586-022-04917-5.
77. Cohen S, Syvitski J, Ashely T, Lammers R, Fekete B, **Li H-Y**. Spatial Trends and Drivers of Bedload and Suspended Sediment Fluxes in Global Rivers. *Water Resour Res*. 58(6), e2021WR031583.
76. Heal K V, Bartosova A, Hipsey MR, Chen X, Buytaert W, **Li H-Y**, McGrane SJ, Gupta AB, Cudennec C. Ensuring consideration of water quality in nexus approaches in the science--practice continuum: reply to discussion of "Water quality: the missing dimension of water in the water--energy--food nexus?" *Hydrol Sci J*. 67(8), 1291-1293.
75. Gai DHB, Shittu E, Ethan Yang YC, **Li H-Y**. A Comprehensive Review of the Nexus of Food, Energy, and Water Systems: What the Models Tell Us. *J Water Resour Plan Manag*. 2022;148(6):4022031.
74. **Abeshu GW**, **Li H-Y***, Zhu Z, Tan Z, Leung LR. Median bed-material sediment particle size across rivers in the contiguous US. *Earth Syst Sci Data*. 2022;14(2). doi:10.5194/essd-14-929-2022.
73. **Chegini T***, de Almeida Coelho G, Ratcliff J, Ferreira CM, Mandli K, Burke P, **Li H-Y**. A Novel Framework for Parametric Analysis of Coastal Transition Zone Modeling. *JAWRA J Am Water Resour Assoc*. 2022;58(1):86-103.
72. **Li H-Y***, Tan Z, Ma H, Zhu Z, **Abeshu G**, Zhu S, Cohen S, Zhou T, Xu D, Leung L-YR. A new large-scale suspended sediment model and its application over the United States. *Hydrol Earth Syst Sci*. 2022;26(3):665-688. doi: 10.5194/hess-26-665-2022.
71. Li L, Qiao J, Yu G, Wang L, **Li H-Y**, Liao C, Zhu Z. Interpretable tree-based ensemble model for predicting beach water quality. *Water Res*. 2022;211:118078.
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69. Zhang J, Yang Y-CE, **Li H-Y**, Shittu E. Examining the Food-Energy-Water-Environment Nexus in Transboundary River Basins through a Human Dimension Lens: Columbia River Basin. *J Water Resour Plan Manag*. 2021;147(10):05021019. doi:10.1061/(asce)wr.1943-5452.0001461.
68. Yao Y, Tian H, Pan S, Najjar RG, Friedrichs MAM, Bian Z, **Li H-Y**, Hofmann EE. Riverine carbon cycling over the past century in the Mid-Atlantic region of the United States. *J Geophys Res Biogeosciences*. 2021;126(5):e2020JG005968.
67. **Chegini T***, **Li H-Y**, Leung L. HyRiver: Hydroclimate Data Retriever. *J Open Source Softw*. 2021;6(66). doi:10.21105/joss.03175.
66. **Abeshu GW**, **Li H-Y***. Horton Index: Conceptual Framework for Exploring Multi-Scale Links Between Catchment Water Balance and Vegetation Dynamics. *Water Resour Res*. 2021;57(5). doi:10.1029/2020WR029343.
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64. Heal K V, Bartosova A, Hipsey MR, Chen X, Buytaert W, **Li H-Y**, McGrane SJ, Gupta AB, Cudennec C. Water quality: the missing dimension of water in the water--energy--food nexus. *Hydrol*

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61. Moges E, Demissie Y, **Li H-Y**. Uncertainty propagation in coupled hydrological models using winding stairs and null-space Monte Carlo methods. *J Hydrol*. 2020;589. doi:10.1016/j.jhydrol.2020.125341.
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59. Tan Z, Leung LR, **Li H-Y**, Tesfa T, Zhu Q, Huang M. A substantial role of soil erosion in the land carbon sink and its future changes. *Glob Chang Biol*. 2020;26(4):2642-2655. doi:10.1111/gcb.14982.
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54. Golaz JC, et al. (including **Abeshu GW** and **Li H-Y**) The DOE E3SM Coupled Model Version 1: Overview and Evaluation at Standard Resolution. *J Adv Model Earth Syst*. 2019;11(7):2089-2129. doi:10.1029/2018MS001603.
53. Mortuza MR, Moges E, Demissie Y, **Li H-Y**. Historical and future drought in Bangladesh using copula-based bivariate regional frequency analysis. *Theor Appl Climatol*. 2019;135(3-4):855-871. doi:10.1007/s00704-018-2407-7.
52. Yigzaw W [P], **Li H-Y***, Fang X, Leung LR, Voisin N, Hejazi MI, Demissie Y. A Multilayer Reservoir Thermal Stratification Module for Earth System Models. *J Adv Model Earth Syst*. 2019;11(10):3265-3283. doi:10.1029/2019MS001632.
51. Li C, Lu H, Leung LR, Yang K, **Li H-Y**, Wang W, Han M, Chen Y. Improving Land Surface Temperature Simulation in CoLM Over the Tibetan Plateau Through Fractional Vegetation Cover Derived From a Remotely Sensed Clumping Index and Model-Simulated Leaf Area Index. *J Geophys Res Atmos*. 2019;124(5):2620-2642. doi:10.1029/2018JD028640.
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49. Yigzaw W [P], **Li H-Y***, Demissie Y, Hejazi MI, Leung LR, Voisin N, Payn R. A New Global Storage-Area-Depth Data Set for Modeling Reservoirs in Land Surface and Earth System Models. *Water Resour Res*. 2018;54(12):10,372-10,386. doi:10.1029/2017WR022040.
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doi:10.1016/j.jhydrol.2018.10.044.

47. Tan Z, Leung LR, **Li H-Y**, Tesfa T. Modeling Sediment Yield in Land Surface and Earth System Models: Model Comparison, Development, and Evaluation. *J Adv Model Earth Syst*. 2018;10(9):2192-2213. doi:10.1029/2017MS001270.

Before joining University of Houston

46. Covino T, Golden HE, **Li H-Y**, Tang J. Aquatic Carbon-Nutrient Dynamics as Emergent Properties of Hydrological, Biogeochemical, and Ecological Interactions: Scientific Advances. *Water Resour Res*. 2018;54(10):7138-7142. doi:10.1029/2018WR023588.

45. Veettil AV, Konapala G, Mishra AK, **Li H-Y**. Sensitivity of drought resilience-vulnerability-exposure to hydrologic ratios in contiguous United States. *J Hydrol*. 2018;564:294-306. doi:10.1016/j.jhydrol.2018.07.015.

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43. Wan W [v], Zhao J, **Li H-Y***, Mishra A, Hejazi M, Lu H, Demissie Y, Wang H. A Holistic View of Water Management Impacts on Future Droughts: A Global Multimodel Analysis. *J Geophys Res Atmos*. 2018;123(11):5947-5972. doi:10.1029/2017JD027825.

42. Zhang X [p], **Li H-Y***, Deng ZD, Ringler C, Gao Y, Hejazi MI, Leung LR. Impacts of climate change, policy and Water-Energy-Food nexus on hydropower development. *Renew Energy*. 2018;116:827-834. doi:10.1016/j.renene.2017.10.030.

41. Tan Z, Leung LR, **Li H-Y**, Tesfa T, Vanmaercke M, Poesen J, Zhang X, Lu H, Hartmann J. A Global Data Analysis for Representing Sediment and Particulate Organic Carbon Yield in Earth System Models. *Water Resour Res*. 2017;53(12):10674-10700. doi:10.1002/2017WR020806.

40. Wan W [v], Zhao J, **Li H-Y***, Mishra A, Ruby Leung L, Hejazi M, Wang W, Lu H, Deng Z, Demissisie Y, Wang H. Hydrological Drought in the Anthropocene: Impacts of Local Water Extraction and Reservoir Regulation in the U.S. *J Geophys Res Atmos*. 2017;122(21):11,313-11,328. doi:10.1002/2017JD026899.

39. Wang W [v], **Li H-Y***, Leung LR, Yigzaw W, Zhao J, Lu H, Deng Z, Demisie Y, Blöschl G. Nonlinear Filtering Effects of Reservoirs on Flood Frequency Curves at the Regional Scale. *Water Resour Res*. 2017;53(10):8277-8292. doi:10.1002/2017WR020871.

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35. Voisin N, Hejazi MI, Leung LR, Liu L, Huang M, **Li H-Y**, Tesfa T. Effects of spatially distributed sectoral water management on the redistribution of water resources in an integrated water model. *Water Resour Res*. 2017;53(5). doi:10.1002/2016WR019767.

34. Luo X, **Li H-Y**, Ruby Leung L, Tesfa TK, Getirana A, Papa F, Hess LL. Modeling surface water dynamics in the Amazon Basin using MOSART-Inundation v1.0: Impacts of geomorphological parameters and river flow representation. *Geosci Model Dev*. 2017;10(3):1233-1259. doi:10.5194/gmd-10-1233-2017.

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25. **Li H-Y***, Leung LR, Getirana A, Huang M, Wu H, Xu Y, Guo J, Voisin N. Evaluating global streamflow simulations by a physically based routing model coupled with the community land model. *J Hydrometeorol*. 2015;16(2):948-971. doi:10.1175/JHM-D-14-0079.1.
24. Fang Y, Liu C, Huang M, **Li H-Y**, Leung LR. Steady state estimation of soil organic carbon using satellite-derived canopy leaf area index. *J Adv Model Earth Syst*. 2014;6(4):1049-1064. doi:10.1002/2014MS000331.
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21. **Li H-Y***, Sivapalan M, Tian F, Harman C. Functional approach to exploring climatic and landscape controls of runoff generation: 1. Behavioral constraints on runoff volume. *Water Resour Res*. 2014;50(12):9300-9322. doi:10.1002/2014WR016307.
20. **Li H-Y***, Sivapalan M. Functional approach to exploring climatic and landscape controls on runoff generation: 2 Timing of runoff storm response. *Water Resour Res*. 2014;50(12):9323-9342. doi:10.1002/2014WR016308.
19. Ye S, **Li H-Y**, Huang M, Ali M, Leng G, Leung LR, Wang S wen, Sivapalan M. Regionalization of subsurface stormflow parameters of hydrologic models: Derivation from regional analysis of streamflow recession curves. *J Hydrol*. 2014;519(PA):670-682. doi:10.1016/j.jhydrol.2014.07.017.
18. Ali M, Ye S, **Li H-Y**, Huang M, Leung LR, Fiori A, Sivapalan M. Regionalization of subsurface stormflow parameters of hydrologic models: Up-scaling from physically based numerical simulations at hillslope scale. *J Hydrol*. 2014;519(PA):683-698. doi:10.1016/j.jhydrol.2014.07.018.
17. Tesfa TK, **Li H-Y***, Leung LR, Huang M, Ke Y, Sun Y, Liu Y. A subbasin-based framework to represent land surface processes in an Earth system model. *Geosci Model Dev*. 2014;7(3):947-963. doi:10.5194/gmd-7-947-2014.
16. Guo J [V], **Li H-Y***, Leung LR, Guo S, Liu P, Sivapalan M. Links between flood frequency and annual

water balance behaviors: A basis for similarity and regionalization. *Water Resour Res*. 2014;50(2):937-953. doi:10.1002/2013WR014374.

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14. Tesfa TK, Leung LR, Huang M, **Li H-Y**, Voisin N, Wigmosta MS. Scalability of grid- and subbasin-based land surface modeling approaches for hydrologic simulations. *J Geophys Res*. 2014;119(6):3166-3184. doi:10.1002/2013JD020493.
13. Fang Y, Huang M, Liu C, **Li H-Y**, Leung LR. A generic biogeochemical module for Earth system models: Next Generation BioGeoChemical Module (NGBGC), version 1.0. *Geosci Model Dev*. 2013;6(6):1977-1988. doi:10.5194/gmd-6-1977-2013.
12. Voisin N, Liu L, Hejazi M, Tesfa T, **Li H-Y**, Huang M, Liu Y, Leung LR. One-Way coupling of an integrated assessment model and a water resources model: Evaluation and implications of future changes over the US Midwest. *Hydrol Earth Syst Sci*. 2013;17(11):4555-4575. doi:10.5194/hess-17-4555-2013.
11. Voisin N, **Li H-Y**, Ward D, Huang M, Wigmosta M, Leung LR. On an improved sub-regional water resources management representation for integration into earth system models. *Hydrol Earth Syst Sci*. 2013;17(9):3605-3622. doi:10.5194/hess-17-3605-2013.
10. **Li H-Y**, Wigmosta MS, Wu H, Huang M, Ke Y, Coleman AM, Leung LR. A physically based runoff routing model for land surface and earth system models. *J Hydrometeorol*. 2013;14(3):808-828. doi:10.1175/JHM-D-12-015.1.
9. Ke Y, Leung LR, Huang M, **Li H-Y**. Enhancing the representation of subgrid land surface characteristics in land surface models. *Geosci Model Dev*. 2013;6(5):1609-1622. doi:10.5194/gmd-6-1609-2013.
8. Ke Y, Leung LR, Huang M, Coleman AM, **Li H-Y**, Wigmosta MS. Development of high resolution land surface parameters for the Community Land Model. *Geosci Model Dev*. 2012;5(6):1341-1362. doi:10.5194/gmd-5-1341-2012.
7. Wu H, Kimball JS, **Li H-Y**, Huang M, Leung LR, Adler RF. A new global river network database for macroscale hydrologic modeling. *Water Resour Res*. 2012;48(9). doi:10.1029/2012WR012313.
6. Ye S, Covino TP, Sivapalan M, Basu NB, **Li H-Y**, Wang SW. Dissolved nutrient retention dynamics in river networks: A modeling investigation of transient flows and scale effects. *Water Resour Res*. 2012;48(6):W00J17. doi:10.1029/2011WR010508.
5. **Li H-Y***, Sivapalan M, Tian F. Comparative diagnostic analysis of runoff generation processes in Oklahoma DMIP2 basins. *J Hydrol*. 2012;418-419:90-109. https://doi.org/10.1016/j.jhydrol.2010.08.005 TS - CrossRef.
4. Tian F, **Li H-Y**, Sivapalan M. Model diagnostic analysis of seasonal switching of runoff generation mechanisms in the Blue River basin, Oklahoma. *J Hydrol*. 2012;418-419:136-149. doi:10.1016/j.jhydrol.2010.03.011.
3. **Li H-Y***, Huang M, Wigmosta MS, Ke Y, Coleman AM, Leung LR, Wang A, Ricciuto DM. Evaluating runoff simulations from the Community Land Model 4.0 using observations from flux towers and a mountainous watershed. *J Geophys Res Atmos*. 2011;116(24). doi:10.1029/2011JD016276.
2. **Li H-Y***, Sivapalan M. Effect of spatial heterogeneity of runoff generation mechanisms on the scaling behavior of event runoff responses in a natural river basin. *Water Resour Res*. 2011;47(5). doi:10.1029/2010WR009712.
1. **Li H-Y***, Sivapalan M, Tian F, Liu D. Water and nutrient balances in a large tile-drained agricultural catchment: A distributed modeling study. *Hydrol Earth Syst Sci*. 2010;14(11):2259-2275. doi:10.5194/hess-14-2259-2010.

Book Chapters

Trigg MA, Bernhofen M, Marechal D, Alfieri L, Dottori F, Hoch J, Horritt M, Sampson C, Smith A, Yamazaki D, and **Li H-Y**. Global Flood Models. *Glob Drought Flood Obs Model Predict*. Published online 2021:181-200.

Advising

Graduate Students

- **Major advisor:**
  Seife Eriget (PhD, University of Houston, expected 05/2026)
  Lingbo Li (PhD, University of Houston, expected 05/2026)
  Gokul Nair (PhD, University of Houston, expected 05/2025)
  Ge Hua (PhD, University of Houston, expected 05/2025)
  Yuanqi Hong (PhD, University of Houston, expected 05/2025)
  Ksenia Gerasimova (PhD, University of Houston, expected 05/2025)
  Taher Chegini (PhD, University of Houston, 09/2018-06/2023)
  Guta Abeshu (PhD, University of Houston, 09/2018-05/2022)
  Fasil Worku (MS, University of Houston, completed 12/2019)
- **Graduate committee member**
  Cami Barlow (PhD), University of Houston, 2023~
  Meng Wang (PhD), University of Houston, completed in 2023
  Francisco Haces-Garcia (PhD), University of Houston, 2021~
  Zewei Ma (PhD), University of Illinois at Urbana-Champaign, 2020~
  Jiayou Zhang (PhD), Lehigh University, completed in 2023
  Xiao Yu (PhD), University of Houston, completed in 2023
  Tien Du (PhD), University of Houston, completed in 2021
  Chi-Huang Chang (PhD), University of Houston, completed in 2021
  Drews Sims (MS), University of Houston, completed in 2021
  Alec Vila (MS), University of Houston, completed in 2020
  Hanna Broadus (MS), University of Houston, completed in 2020
  Anudeep Maddi (PhD), University of Houston, completed in 2020
  Edom Moges (PhD), Washington State University, completed in 2018
- **Host/supervisor for visiting graduate students**
  Jiali Guo (2013, Wuhan University, China)
  Yubin Xu (2013, Beijing University, China)
  Shuai Li (2014, Wuhan University, China)
  Wei Wang (2015-2016, Tsinghua University)
  Wenhua Wan (2016-2017, Tsinghua University)
  Yuan Zhuang (2016-2017)

Postdoctoral associates

Guta Abeshu (UH, 2022~2023)
Md Monir Hassain (UH, 2020~2021)
Misako Hatono (UH, visiting), 2019~2020
Chen Yang (UH, visiting), 2019
Senlin Zhu (UH), 2019~2020
Wondmagegn Yigzaw (UH/MSU), 2016~2020
Xiao Zhang (PNNL), 2014-2016
Sheng Ye (PNNL), 2013-2014

Undergraduate Students advised in research activities

Matthew Shakerian (2019-2020, University of Houston)
Ge Hua (2019-2020, University of Houston)
Elizabeth Walker (2019, University of Houston)

Jake Martin (2017, Montana State University)
Kimberlie Massie (2016, Montana State University)
Xin Mao (2015, visiting from Tsinghua University)

Grants

At U of Houston

- DOE, "Hydropower Reservoir Modeling Powered by Deep Reinforcement Learning". (Amount $249,118.0; **Single PI**; 2024-2026)
- NSF, "NSF Convergence Accelerator Track K: Living Matter, Artificial Intelligence, and Water Nascency (LAWN) for Regenerative Environments and Equity". (Total amount 650,000.0; my portion 35,000.0; **co-PI**; 2024)
- DOE via Lawrence Livermore National Lab, "E3SM Phase 3". (Amount $483,409; **Single PI**; 2023-2026) Note: This is part of a DOE long-term Scientific Area, Energy Exascale Earth System Model (https://e3sm.org/).
- DOE, "A strategic partnership between the College of Engineering at the University of Houston and Pacific Northwest National Lab". (Total amount $75,321.0; my portion $15,064; **PI**; 2022-2024)
- Los Alamos National Lab, "A PROCESS-BASED MODEL TO PREDICT SUB-SEASONAL RISKS OF MOSQUITO-BORNE DISEASES DUE TO FLOODING AND CLIMATE VARIABILITY". (Amount $125,378.0; **Single PI**; 2021-2-24)
- Sloan Foundation via Houston Advanced Research Center, "PYTHIAS DECISION FRAMEWORK". (My portion $100, 935; **co-PI** at UH; 2021-2023)
- DOE via Pacific Northwest National Lab, "INCORPORATING MAN-MADE RESERVOIRS AND NATURAL LAKES IN XANTHOS". (Amount $273, 452; **Single PI**; 2021-2024) Note: This is part of a DOE long-term Scientific Area, Global Change Intersectoral Modeling System (https://gcims.pnnl.gov/global-change-intersectoral-modeling-system).
- DOE via Pacific Northwest National Lab, "Integrated Coastal Modeling". (Amount $351,141; **Single PI**; 2020-2024) Note: This is part of a DOE long-term project, Integrated Coastal Modeling (https://icom.pnnl.gov/).
- DOE via Lawrence Livermore National Lab, "DEVELOPMENT OF A NEW LAKE PARAMETERIZATION FOR THE ENERGY EXASCALE EARTH SYSTEM MODEL (E3SM)", (Amount $483,410; **Single PI**; 2019-2023) Note: This is part of a DOE long-term Scientific Area, Energy Exascale Earth System Model (https://e3sm.org/).
- Houston Advanced Research Center, "ENERGY SCENARIO PLANNING WITH PHYSICAL CLIMATE RISK ANALYTICS". (Amount $12,500; **Single PI**; 2019-2020)
- NSF, "INFEWS: US-China – Quantify complex adaptive FEW systems with coupled agent-based modeling framework" (My portion $131, 982; **Co-PI** with PI Ethan Yang from Lehigh University; 2018-2023)
- USGS via Montana Water Center, "Deciphering the combined effects of artificial and natural water storage structures on late-season flows" (Amount $15,000; **PI**; 2016-2018)
- DOE via Pacific Northwest National Lab, "Developing a new reservoir water temperature module within the IMMM framework" (Amount $74,044; **Single PI**; 2018-2019)

Before U of Houston

- DOE via Pacific Northwest National Lab, "Developing a new reservoir water temperature module within the IMMM framework" (Amount $230,134; **Single PI**; 2016-2018)
- DOE via Pacific Northwest National Lab, "Adding MOSART-sediment and MOSART-BGC into ACME" (Amount $135,462; **Single PI**; 2016-2018)
- DOE via Pacific Northwest National Lab, "Enhancing the Representation of River Dynamics in GCAM Hydrology" (Amount $54,915; **Single PI**; 2016-2017)
- DOE project, "Accelerated Climate Modeling for Energy", 2014-2017, Co-I.
- DOE project, "Next Generation Ecosystem Experiments – Tropics", 2015-2018, Co-I.

- DOE Science Focus Area project, "Integrating Human and Earth System Dynamics", 2016-2018, key personnel.
- DOE Science Focus Area project, "High Resolution Climate Modeling and Water Cycle Variability and Extremes", 2013-2015, Co-I.
- PNNL Lab Directed Research and Development project, "Developing the Next Generation Biogeochemical Module for Earth System Models", 2013-2015, Co-I
- PNNL Lab Directed Research and Development project, "Integration of Water in iRESM", 2013-2014, Co-I
- DOE project, "Developing a Regional Integrated Assessment Model Framework", 2010-2015, key personnel
- PNNL Lab initiative, "Platform for Regional Integrated Modeling and Analysis", 2010-2015, key personnel

Professional Services

- Chair, ASCE Risk Uncertainty And Resilience Quantification committee, 10/2023~
- Vice Chair, ASCE Risk Uncertainty And Resilience Quantification committee, 2022~2023
- Associate Editor, AGU *Water Resources Research*, 2021~
- Associate Editor, ASCE *Journal of Hydrologic Engineering*, 2021~2023
- Guest Editor, *Proceedings of the National Academy of Sciences of the United States of America*, Dec. 2022~April 2023
- Member, Technical Advisory Committee for Texas General Land Office, 2020~
- Vice President, IAHS International Commission of Water Quality, 2019~2023
- Associate Editor, *Stochastic Environmental Research & Risk Assessment* (Springer), 2016~2021
- Proposer, special issue on "Emergent aquatic carbon-nutrient dynamics as products of hydrological, biogeochemical, and ecological interactions" at *Water Resour. Res.*, 2015-2017
- Co-organizer (with Dr. Chongxuan Liu), international workshop on "Hydro-Biogeochemical Processes: Mechanisms, Coupling and Impact", Oct. 27-29, 2015, Wuhan China
- Chair, IAHS working group on "Changing biogeochemistry of aquatic systems in the Anthropocene", 2014-2016
- Lead guest editor, special issue on "Catchment Co-evolution: Space-Time Patterns and Functional Controls" at *Hydro. and Earth Sys. Sci.*, 2014-2015
- Session chair, AGU fall meeting, 2013, 2014, 2019, 2020, 2021
- Referee, Science, Nature Sustainability, Water Resources Research, Journal of Geophysical Research, Journal of Hydrometeorology, Journal of Hydrology, Hydrology and Earth System Science, Hydrologic Science Journal, Journal of Hydrologic Engineering, Advances in Atmospheric Sciences, British Journal of Environmental and Climate Change, PLOS ONE, Stochastic Environmental Research and Risk Assessment, Journal of American Water Resources Association**,** Journal of Applied Meteorology and Climatology
- Proposal reviewer, NASA-MAPS, NASA-NEWS, NASA-USDA Managed Landscapes, USDA-NIFA, Indiana Water Resources Center

Honors and Awards

- Editor's Choice Award (co-author), Water Resources Research, 2015
- Exceptional Contribution Award, 2015, Energy and Environment Directorate, Pacific Northwest National Lab
- Outstanding performance award, 2011, 2012, Energy and Environment Directorate, Pacific Northwest National Lab

Professional Affiliations

- American Geophysical Union
- American Society of Civil Engineering

- European Geophysical Union
- International Association of Hydrological Sciences

Invited Talks

- 2023, Spring 2023, Department of Civil and Environmental Engineering, Iowa State University
- 2021, Fall 2021 Interdisciplinary Lecture Series "Science and Engineering for Sustainability", Texas A&M University at College Station
- 2019, Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign
- 2019, IUGG General Assembly, Montreal, QC, Canada
- 2019, Department of Environmental Engineering, Texas A&M University – Kingsville, USA
- 2017, AGU fall meeting, New Orland, Louisiana, USA
- 2017, Department of Civil, Structural and Environmental Engineering, University at Buffalo, SUNY
- 2017, Department of Earth System Science, Tsinghua University, China
- 2015, Department of Civil and Environmental Engineering, Washington State University