

Ganesh R. Ghimire, Ph.D.**Research Staff Scientist**

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**EDUCATION**

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| August 2016 – May 2021 | The University of Iowa (UIOWA), Iowa City, Iowa, U.S.
Ph.D., Hydraulics and Water Resources
Dissertation: Predictability of Streamflow Across Space and Time Scales |
| August 2014 – May 2016 | Southern Illinois University - Carbondale (SIUC), Illinois, U.S.
M.S., Water Resources Engineering
Thesis: Developing Sediment Transport and Deposition Prediction Model of the Lower Ohio River Near the Olmstead Locks and Dam Area |
| October 2004 – March 2009 | Institute of Engineering (IOE), Tribhuvan University, Nepal
B.E., Civil Engineering (Water Resources) |

RESEARCH INTERESTS

Large-scale hydrologic and hydrodynamic modeling; Flood modeling/forecasting; Extreme events; Hydroclimate impact assessment; Energy-Water; Remote sensing and data assimilation; Natural hazards; AI/ML; Uncertainty quantification.

RESEARCH EXPERIENCE

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| April 2025 – Present | R&D Staff Scientist
Water Resources Science and Engineering, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee. |
| November 2022 – March 2025 | R&D Associate Staff Scientist
Water Resources Science and Engineering, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee. |
| May 2021 – October 2022 | Postdoctoral Research Associate
Water Resources Science and Engineering, Environmental Sciences Division, Oak Ridge National Laboratory, Tennessee. |
| August 2016 – May 2021 | Graduate Research Assistant
IIHR–Hydroscience & Engineering, Department of Civil and Environmental Engineering, The University of Iowa, Iowa. |
| June 2016 – July 2016 | Transition from Masters (SIUC) to Ph.D. (UIOWA) |
| August 2014 – May 2016 | Graduate Research Assistant
Department of Civil and Environmental Engineering, Southern Illinois University–Carbondale (SIUC), Illinois. |

TEACHING EXPERIENCE

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| August 2014 – May 2016 | Teaching Assistant ENGR370 Fluid Mechanics (Fluid mechanics lab instructor)
Southern Illinois University-Carbondale (SIUC), Illinois. |
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PROFESSIONAL EXPERIENCE

June 2010 – July 2014	Civil–Hydropower Design Engineer/ Deputy Design Team Leader Hydro–Consult Engineering Ltd., Kathmandu, Nepal.
May 2009 – May 2010	Civil–Hydropower Engineer Tundi Power Company, Lalitpur, Nepal.

KEY DATASET AND SOFTWARE

- [11] Gangrade, S., Morales-Hernández, M., Kelleher, M.E., Kim, Y., Norman, M. R., Kao, S.C., **Ghimire, G.R.**, and Khanam, M. (2026). *Two-dimensional Runoff Inundation Toolkit for Operational Needs, TRITON V2.0*. Oak Ridge National Laboratory, Oak Ridge, TN, <https://code.ornl.gov/hydro/triton/-/tree/2.0.0>.
- [10] Voisin, N., Kao, S.C., Broman, D., Zhou, T., Xu, W., **Ghimire, G.R.**, and Gangrade, S. (2025), *CMIP6-based Multi-model Hydropower Projection over the Conterminous US, Version 1.1*. Oak Ridge National Laboratory, Oak Ridge, TN, <https://doi.org/10.21951/SWA9505V3/3001439>.
- [9] **Ghimire, G. R.**, Gangrade, S., Kao, S.C., Hansen, C., and DeNeale, S. (2025), *Dayflow-PR: High-Resolution Streamflow Reanalysis for Puerto Rico, Version 1.0*. Oak Ridge National Laboratory, Oak Ridge, TN, <https://doi.org/10.13139/OLCF/2583869>.
- [8] **Ghimire, G.R.**, Kao, S.C., Gangrade, S., and Singh, D. (2025). *CONUS-wide Projected Flood Frequency and Uncertainty Estimates Version 1.0*. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. <https://doi.org/10.13139/OLCF/2575147>.
- [7] Turner, S.W.D., **Ghimire, G.R.**, Hansen, C., Singh, D., and Kao, S.C. (2024). *Hydropower Capacity Factor Trends and Analytics for the United States*. HydroSource. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. https://doi.org/10.21951/hydro_trends/2349418.
- [6] Broman, D., Kao, S.-C., Voisin, N., Zhou, T., **Ghimire, G. R.**, & Fernandez, A. (2024). *CONUS-wide HUC4 Watershed Scale Hydropower Projections derived from 9505 Third Assessment (1.0)*. Zenodo. <https://doi.org/10.5281/zenodo.10535565>.
- [5] **Ghimire, G.R.**, Kao, S.C., and Gangrade, S. 2023: *Dayflow: CONUS Daily Streamflow Reanalysis, Version 2 (DayflowV2)*. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. <https://doi.org/10.13139/OLCF/2222888>.
- [4] Kao, S.C., **Ghimire, G.R.**, and Gangrade, S. 2023: *CMIP6-based Multi-model Streamflow Projections over the Conterminous US*. HydroSource. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. <https://doi.org/10.21951/9505V3Flow/2007926>.
- [3] Carly H. Hansen, **Ganesh R. Ghimire**, and Paul G. Matson. 2023. *Hydropower Energy Storage Capacity Dataset, Version 2*. HydroSource, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. <https://doi.org/10.21951/HESC/1972462>.
- [2] **Ghimire, G.R.**, Hansen, C., Gangrade, S., Kao, S.C., Thornton, P., and Singh, D. 2022: *Dayflow: CONUS Daily Streamflow Reanalysis, Version 1*. HydroSource, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. <https://doi.org/10.21951/Dayflow/1847639>.
- [1] Hansen, C.H., **Ghimire, G.R.**, and Gangrade, S. 2021: *Hydropower Energy Storage Capacity Dataset*. HydroSource, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA. <https://doi.org/10.21951/HESC/1822833>.

KEY PUBLICATIONS

- [33] **Ghimire, G.R.**, Kao S.C., Gangrade, S., Foley, M., and Singh, D. (2026). Emerging Patterns, Extremes, and Regime Shifts in CONUS-wide Streamflow Projections. *Journal of Hydrology (In preparation)*.

- [32] Talchabhadel, R., Panthi, J., Pandey, V.P., Rakhali, B., **Ghimire, G.R.**, Bista, S., Bhattarai, S., Poudel, S., Bhattarai, Y., Prajapati, R., Thapa, B.R., Nepal, B., and Sharma, S. 2025. Yesterday's Extremes, Today's New Normal – Flood Risk in the Kathmandu Valley, Nepal. *Natural Hazards*. <https://doi.org/10.1007/s11069-025-07524-5>.
- [31] **Ghimire, G.R.**, Liu, Y., Jager, H., Gangrade, S., Kao, S.C., Parish, E., and DeRolph, C. 2025: Integrated Modeling driven Evaluation of Climate-Resilient Perennial Biomass Crops in Flood-Prone Agricultural Landscapes. *Journal of Flood Risk Management*. <https://doi.org/10.1111/jfr3.70056>.
- [30] **Ghimire, G.R.**, Kao, S.C., and Gangrade, S. 2025: Enhancing Streamflow Reanalysis Across the Conterminous U.S. Leveraging Multiple Gridded Precipitation Datasets. *Water Resources Research*, 61, e2024WR038256. <https://doi.org/10.1029/2024WR038256>.
- [29] Broman, D., Voisin, N., Kao, S.C., Fernandez, A., and **Ghimire, G.R.** 2024: Multi-scale impacts of climate change on hydropower for long-term water-energy planning in the contiguous United States. *Environmental Research Letters* <https://doi.org/10.1088/1748-9326/ad6ceb>.
- [28] Turner, S.W.D., **Ghimire, G.R.**, Hansen, C., Singh, D., and Kao, S.C. 2024: Hydropower capacity factors trending down in the United States. *Nature Communications*. <https://doi.org/10.1038/s41467-024-49553-x>.
- [27] Bista, S., Baniya, R., Sharma, S., **Ghimire, G.R.**, Panthi, J., Prajapati, R., Thapa, B.R., and Talchabhadel, R. 2023: Hydrologic applicability of satellite precipitation estimates for irrigation water management in the data-scarce region. *Journal of Hydrology* <https://doi.org/10.1016/j.jhydrol.2023.130157>.
- [26] Baniya R., Regmi, R.K., Talchabhadel, R., Sharma, S., Panthi, J., **Ghimire, G.R.**, Bista, S., and Thapa, B.R. 2023: Integrated modeling for assessing climate change impacts on water resources and hydropower potential in the Himalayas. *Theoretical and Applied Climatology* <https://doi.org/10.1007/s00704-024-04863-4>.
- [25] Gangrade, S., **Ghimire, G.R.**, Kao, S.C., Morales-Hernández, M., Tavakoly, A.A., Gutenson, J.L., Sparrow, K.H., Darkwah, G.K., Kalyanapu, A.J., and Follum, M.L. 2023: Unraveling 2021 Central Tennessee flood event using a hierarchical multi-model inundation modeling framework. *Journal of Hydrology* <https://doi.org/10.1016/j.jhydrol.2023.130157>.
- [24] Baniya R., Talchabhadel, R., Panthi, J., **Ghimire, G.R.**, Sharma, S., Khadka, P., Shin, S., Pokhrel, Y., Bhattarai, U., Prajapati, R., Thapa, B.R., and Maskey, R.K. 2023: Nepal Himalaya offers considerable potential for pumped storage hydropower. *Sustainable Energy Technologies and Assessments* <https://doi.org/10.1016/j.seta.2023.103423>.
- [23] **Ghimire, G.R.**, Hansen, C., Gangrade, S., Kao, S.C., Thornton, P., and Singh, D. 2022: Insights from Dayflow: A historical streamflow reanalysis dataset for the Conterminous United States. *Water Resources Research* <https://doi.org/10.1029/2022WR032312>.
- [22] Sharma, S., **Ghimire, G.R.**, and Siddique, R. 2022: Machine Learning for Postprocessing Ensemble Streamflow Forecasts. *Journal of Hydroinformatics* <https://doi.org/10.2166/hydro.2022.114>.
- [21] Shrestha R., Rakhali, B., Adhikari, T.R., **Ghimire, G.R.**, Talchabhadel, R., Tamang, D., KC, R., and Sharma, S. 2022: Farmers' Perception of Climate Change and its Impacts on Agriculture. *Hydrology*, 9, 212. <https://doi.org/10.3390/hydrology91202123>
- [20] Hansen, C., **Ghimire, G.R.**, and Kao, S.C. 2022: Evaluation of nominal energy storage at existing hydropower reservoirs in the US. *Water Resources Research* <https://doi.org/10.1029/2022WR032210>
- [19] Sharma, S., Talchabhadel, R., Nepal, S., **Ghimire, G.R.**, Rakhali, B., Panthi, J., Adhikari, B.R., Pradhanang, S.M., Maskey, S., and Kumar, S. 2022: Increasing risk of cascading hazards in the central Himalayas. *Natural Hazards* <https://doi.org/10.1007/s11069-022-05462-0>
- [18] **Ghimire, G. R.**, Krajewski, W.F., Ayalew, T.B., and Goska, R. 2022: Hydrologic investigations of radar-rainfall errors propagation to rainfall-runoff model hydrographs. *Advances in Water Resources* <https://doi.org/10.1016/j.advwatres.2022.104145>
- [17] Sharma, S., Dahal, K., Nava, L., Gouli, M. R., Talchabhadel, R., Panthi, J., Roy, T., and **Ghimire, G.R.** 2022: Natural Hazards Perspectives on Integrated, Coordinated, Open, Networked (ICON) Science *Earth and Space Science* <https://doi.org/10.1029/2021EA002114> (Featured as a Research Spotlight on

AGU EOS issue <https://eos.org/research-spotlights/icon-principles-underused-as-a-natural-hazards-research-tool>).

- [16] Krajewski, W.F., **Ghimire, G. R.**, Demir, I., and Mantilla, R. 2021: Real-time streamflow forecasting: AI vs. Hydrologic insights. *Journal of Hydrology X* <https://doi.org/10.1016/j.hydroa.2021.100110>
- [15] Sharma, S., **Ghimire, G.R.**, Talchabhadel, R., Panthi, J., Lee, B.S., Sun, F., Baniya, R., and Adhikari, T.R. 2021: Characterizing uncertainties surrounding fluvial flood hazard estimates using a Bayesian approach. *Hydrologic Sciences Journal* <https://doi.org/10.1080/02626667.2021.1999959>
- [14] **Ghimire, G. R.**, Jadidoleslam, N., Goska, R., and Krajewski, W.F. 2021: Insights into storm direction effect on flood response. *Journal of Hydrology* <https://doi.org/10.1016/j.jhydrol.2021.126683>
- [13] Panthi, J., Talchabhadel, R., **Ghimire, G.R.**, Sharma, S., Dahal, P., Baniya, R., Boving, T., Pradhanang, S.M., and Parajuli, B. 2021: Hydrologic regionalization under data scarcity: An implication for streamflow prediction *ASCE Journal of Hydrologic Engineering*, [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0002121](https://doi.org/10.1061/(ASCE)HE.1943-5584.0002121)
- [12] **Ghimire, G. R.**, Krajewski, W.F., and Quintero, F. 2021: Scale-dependent value of QPF for real-time streamflow forecasting. *Journal of Hydrometeorology*, <https://doi.org/10.1175/JHM-D-20-0297.1>
- [11] Rakhhal, B., Sharma, S., **Ghimire, G.R.**, Adhikari, T.R., and Shrestha, R. Nepal's communities brace for multihazard risks. *EOS*, 102, <https://doi.org/10.1029/2021EO159039>
- [10] Talchabhadel, R., **Ghimire, G.R.**, Sharma, S., Dahal, P., Panthi, J., Baniya, R., Pudashine, J., Thapa, B.R., PC, S., and Parajuli, B. 2020: Weather radar in Nepal: Opportunities and challenges in a mountainous region. *Weather*, <https://doi.org/10.1002/wea.3994>
- [9] Talchabhadel, R., Panthi, J., Sharma, S., **Ghimire, G.R.**, Baniya, R., Dahal, P., Baniya, M.P., K.C, S., Jha, B., Kaini, S., Dahal, K., Gnyawali, K.R., Parajuli, B., and Kumar, S. 2021: Insights on the impacts of hydroclimatic extremes and anthropogenic activities on sediment yield of a river basin *Earth*, 2(1), 32-50, <https://doi.org/10.3390/earth2010003>
- [8] Rakhhal, B., Adhikari, T.R., Sharma, S., and **Ghimire, G.R.** 2021: Assessment of channel shifting of Karnali Megafan in Nepal using remote sensing and GIS. *Annals of GIS*, <https://doi.org/10.1080/19475683.2021.1871950>
- [7] **Ghimire, G.R.**, DeVantier, B.A., and Sharma, S. 2020: Site-specific sediment deposition model for dredging planning: Case study of Olmstead locks and dam. *ASCE Journal of Waterway, Port, Coastal and Oceanic Engineering*. [https://doi.org/10.1061/\(ASCE\)WW.1943-5460.0000598](https://doi.org/10.1061/(ASCE)WW.1943-5460.0000598)
- [6] **Ghimire, G. R.**, Sharma, S., Panthi, J., Talchabhadel, R., Parajuli, B., Dahal, P., and Baniya, R. 2020: Benchmarking real-time streamflow forecasting skill in the Himalayan region. *Forecasting*, 2, 3, 230-247, <https://doi.org/10.3390/forecast2030013>
- [5] **Ghimire, G. R.**, and Krajewski, W. F. 2020: Hydrologic implications of wind farm effect on radar-rainfall observations. *Geophysical Research Letters*, 47, <https://doi.org/10.1029/2020GL089188>
- [4] **Ghimire, G. R.**, Jadidoleslam, N., Krajewski, W.F., and Tsonis, A. A. 2020: Insights on streamflow predictability across scales using horizontal visibility graph-based networks. *Frontiers in Water*, 2, 17, 1-15, <https://doi.org/10.3389/frwa.2020.00017>
- [3] Krajewski, W. F., **Ghimire, G. R.**, and Quintero, F. 2020: Streamflow forecasting without models. *Journal of Hydrometeorology*, 21, 1689-1704, <https://doi.org/10.1175/JHM-D-19-0292.1>
- [2] **Ghimire, G. R.**, and W. F. Krajewski, 2020: Exploring persistence in streamflow forecasting. *Journal of the American Water Resources Association*, 56, 542–550, <https://doi.org/10.1111/1752-1688.12821>
- [1] **Ghimire, G.R.**, W.F. Krajewski, and R. Mantilla. 2018: A power law model for river flow velocity in Iowa basins. *Journal of the American Water Resources Association*, 1–13, <https://doi.org/10.1111/1752-1688.12665>

RESEARCH PROJECTS

- [9] Quantifying Energy Use across U.S. Water Sectors: A Scalable AI/ML-Driven Framework for Data Integration and Resilience Planning (PI; in review)

- [8] Uncertainty Characterization of Extreme Rainfall Estimates to Enhance Operational Flood Predictions (co-I; in review)
- [7] Awarded California Department of Water Resources (CADWR) - Flood Inundation Modeling Support for California (co-PI; \$ 2.5 million)
- [6] Awarded DOE GDO Resilience Planning – Flood Risk Assessment proposal 2024: Accelerated Hydrodynamic Flood Risk Assessment Using the High-Performance Inundation Model (co-PI; \$ 1.2 million)
- [5] Department of Energy (DOE), Office of Science FOA 2025: Howard Center for Resilient Water Systems (co-I; in review)
- [4] Awarded DOE WPTO Hydropower Lab Call proposal 2024: Impact-Informed Dam Safety Risk Assessment for Securing Hydropower Assets (PI; \$ 900k)
- [3] Awarded DOE’s Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program proposal, 2023: Open-source ensemble hydrodynamic flood risk assessment for climate change (co-PI: 3 million node hours in OLCF Frontier and Aurora)
- [2] Awarded DOD’s Environmental Security Technology Certification Program (ESTCP) program grant, 2022: A demonstration of climate-informed flood vulnerability assessment for Department of Defense installations (co-PI: \$1.5 million)
- [1] Awarded DOE Water Power Technology Office (WPTO) hydropower lab seedling program request for innovation grant, 2022: Flood hazard and uncertainty assessment tool for evaluating dam safety under climate change (PI; \$50k)

CONFERENCE PAPER / PRESENTATIONS

- [65] American Meteorological Society (AMS) annual conference, 01/2024, Houston, TX. [HYDRO Climate-Hydro Analytics Platform: An Open-Access Resource for Large-Scale Hydrologic Risk Assessment](#) (Speaker).
- [64] American Meteorological Society (AMS) annual conference, 01/2024, Houston, TX. [HYDRO Advancing the GPU-Accelerated 2D Hydrodynamic Model TRITON for Cross-Platform Performance Portability.](#)
- [63] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Optimizing Reservoir Operation Under Changing Climate in the Central Himalayas.](#)
- [62] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [High-Resolution Hydrodynamic Reconstruction of Hurricane Helene \(2024\) Flooding in the Southeastern United States.](#)
- [61] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Enhancing Riverine Flood Inundation Predictions with Artificial Intelligence.](#)
- [60] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [An Attention-Guided Deep Learning Model for High-Resolution Flood Inundation Prediction – A Proof of Concept.](#)
- [59] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Future Dynamics of Water Availability and Hydropower Potential at Existing US Reservoirs.](#)
- [58] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Probabilistic Dam Break Flood Risk Mapping Using a Copula-Based Framework and GPU-Accelerated Hydrodynamic Model.](#)
- [57] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Mapping Shifts in Future Flood Hazards Across the Conterminous United States: A Multi-Model, Regional L-Moment Approach](#) (Speaker).
- [56] ASDSO Dam Safety Conference, 09/2025, Cleveland, OH. Assessing Change and Uncertainty in Future Flood Estimates with Large-Ensemble Streamflow Projections (Speaker).
- [55] Invited seminar on “Advancing Large-Scale Streamflow Predictions: From Reanalysis to Projections for the CONUS” at the American Institute of Hydrology (AIH), 07/2025.
- [54] ASCE EWRI Conference, 05/2025, Anchorage, AK. A Climate-Informed Framework for Probabilistic Flood and Societal Risk Assessment: Pilot Analysis for the Midwestern United States
- [53] ASCE EWRI Conference, 05/2025, Anchorage, AK. Towards Impact-Informed Dam Safety Risk Assessment: Understanding the Shift in Flood Hazards and Uncertainties across the Conterminous US (Speaker)

- [52] ASCE EWRI Conference, 05/2025, Anchorage, AK. A Historical Streamflow Reanalysis Study for Puerto Rico
- [51] American Meteorological Society (AMS) annual conference, 01/2025, New Orleans, LA. [Propagation of Uncertainties in CMIP6-Based Multi-Model Streamflow Projections Across the Conterminous US](#) (Speaker)
- [50] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [Application of Triton-Lite, a Deep-learning Surrogate Model for Flood Inundation Modeling](#)
- [49] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [Enhancing US-wide water management and hydropower modeling in support of integrated water and energy climate impacts assessments](#)
- [48] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [Science Supporting Long-Term Planning: The Journey of SECURE Water Act Assessments](#)
- [47] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [Climate-Informed High-Resolution Flood Inundation Mapping Using Leadership Computing: Large-Scale Ensemble Simulations Driven by Downscaled CMIP6 Projections](#)
- [46] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [CMIP6-Based Multi-Model Streamflow Projections over the Conterminous US](#) (Speaker)
- [45] ASCE EWRI Conference, 05/2024, Milwaukee, WI. Shifted Flood Frequencies in the Mid-Atlantic US: Insights from Downscaled CMIP6 Hydroclimate Projections (Speaker)
- [46] ASCE EWRI Conference, 05/2024, Milwaukee, WI. Ensemble Flood Inundation Mapping under Changing Climate Conditions: A Case Study Driven by Downscaled CMIP6 Projections
- [43] Invited seminar on “Advancing Streamflow and Flood Inundation Reanalysis in the Conterminous United States” at the Iowa Flood Center, 02/2024.
- [42] American Meteorological Society (AMS) annual conference, 01/2024, Baltimore, MA. [Advancing a High-Resolution Historical Flood Inundation Reanalysis for the Conterminous United States](#) (speaker)
- [41] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Understanding Infrastructure Resilience to Urban Flooding using Machine Learning](#)
- [40] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Drivers of Long Term Trend in U.S. Hydropower Utilization Over the Past Four Decades](#)
- [39] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Towards the Development of a Climate-Informed Flood Vulnerability Assessment Framework for Department of Defense \(DoD\) Installations](#)
- [38] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Scaling Up Hydrodynamic Inundation Simulation – How Far Can We Go?](#)
- [37] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Advancing Streamflow Reanalysis in the Conterminous United States: Leveraging Multiple Forcings to Enhance Peak Flow Dynamics](#) (speaker)
- [36] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Multi-objective reservoir operation to managing food, energy and water in a changing climate](#)
- [35] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Estimating future risks of hydroclimatic extremes and their impacts on US hydropower reservoirs in a warming climate](#)
- [34] Clean Currents 2023, 10/2023, Cincinnati, OH. Planning for Change: Where to Get Hydro-Climate Projection Datasets and How to Use Them (workshop)
- [33] DOE-WPTO Seedlings Symposium, 08/2023, Washington, DC (virtual). Flood Hazard and Uncertainty Assessment Tool for Evaluating Dam Safety under Climate Change (speaker)
- [32] World Environmental and Water Resource Congress (EWRI), 05/2023, Henderson, NV. CMIP6-informed flood hazard and uncertainty assessment for dam safety evaluation (speaker)
- [31] Innovations in Climate Resilience (ICR), 03/2023, Columbus, OH. Perennial Riparian Buffers for Bioenergy: A Flood-resilient Climate Adaptation for Agricultural Landscapes (speaker)
- [30] American Meteorological Society (AMS) annual conference, 01/2023, Denver, CO. [Hydrodynamic Inundation Simulation for Large Global Watersheds – A Proof of Concept](#)

- [29] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Ecosystem Services from Partially-harvested Riparian Buffers](#)
- [28] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Towards the development of a high-resolution historical flood inundation reanalysis dataset for the conterminous United States](#)
- [27] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Accounting Uncertainties is Crucial to Improving Multipurpose Reservoir Management](#)
- [26] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Multi-satellite Precipitation Estimates Can Improve Irrigation Water Decisions](#)
- [25] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Insights from Dayflow: A Spatiotemporally Continuous Historical Streamflow Reanalysis Dataset for the Conterminous United States](#) (speaker)
- [24] AGU Frontiers in Hydrology Meeting (FIHM), 06/2022, Puerto Rico. [The Water, Climate, and Energy Nexus: Charting the Role of DOE's Technology Offices](#) (panelist)
- [23] AGU Frontiers in Hydrology Meeting (FIHM), 06/2022, Puerto Rico. [Unraveling an extreme flooding event using high-performance computing: A case study for the 2021 Middle Tennessee flooding](#) (speaker)
- [22] AGU Frontiers in Hydrology Meeting (FIHM), 06/2022, Puerto Rico. [Improving Hydrologic Model Performance and Synthetic Rating Curves Using Streamflow Data Assimilation](#)
- [21] EWRI Conference, 06/2022, Atlanta, GA. The Applicability of Deep Learning Techniques in Developing a Surrogate Flood Inundation Model for Operational Needs.
- [20] European Geosciences Union (EGU) Conference, 05/2020, Vienna, Austria. [Hydrologic response to climate change: A case from a high-mountain river basin](#).
- [19] ORNL's Your Science in a Nutshell (YSiNS) competition, 05/2022.
- [18] Joint Aquatic Science Meeting (JASM), 05/2022, Grand Rapids, MI. Building bridges between big datasets to better describe US hydropower reservoirs
- [17] American Geophysical Union (AGU) conference, 12/2021, New Orleans, LA. [Evaluation of energy and water storage of conventional hydropower fleet in the U.S. under climate change](#) (speaker)
- [16] American Geophysical Union (AGU) conference, 12/2021, New Orleans, LA. [Enhancing Operational Flexibility of Integrated Nepalese Power System through Pumped-storage Hydropower](#) (speaker)
- [15] American Geophysical Union (AGU) conference, 12/2020, San Francisco, CA. [Basin rotation method to quantify the effect of rainstorm movement on flood peak response](#) (speaker)
- [14] American Geophysical Union (AGU) conference, 12/2020, San Francisco, CA. [Climate-informed decision-making for hydropower resilience in the central Himalayas](#)
- [13] AWRA 2020 Virtual Geospatial Water Technology Conference, 08/2020, Austin, TX. Predictability of streamflow from complex networks (speaker)
- [12] European Geosciences Union (EGU) Conference, 05/2020, Vienna, Austria. [Scale-Dependent Worth of QPF for Real-Time Streamflow Forecasting](#) (speaker), and [Inference On Streamflow Predictability Using Horizontal Visibility Graph Based Networks](#) (speaker)
- [11] American Geophysical Union (AGU) conference, 12/2019, San Francisco, CA. Streamflow forecasting without models
- [10] American Geophysical Union (AGU) conference, 12/2019, San Francisco, CA. [In Quest for Rainfall Estimation Adequate for Real-Time Streamflow Forecasting](#)
- [9] 12th International Precipitation Conference (IPC12), 06/2019, Irvine, CA. Hydrologic investigations of propagation of errors in rainfall to hydrographs (speaker)
- [8] American Geophysical Union (AGU) conference, 12/2018, Washington D.C. [A Framework for Evaluating the Propagation of Errors in Rainfall to Hydrographs](#) (speaker)
- [7] American Meteorological Society (AMS) Annual Meeting, 1/2018, Austin, TX. [Hydrologic Routing Model of the Iowa Flood Center Real-Time Streamflow Forecasting System](#)
- [6] American Meteorological Society (AMS) Annual Meeting, 1/2018, Austin, TX. [Evaluation Studies of Real-Time Flood Forecasting: A Review of Issues](#)

- [5] American Geophysical Union (AGU) conference, 12/2017, New Orleans, LA. [A Hydrologic Routing Model Based on Geomorphological Characteristics of the River Network](#)
- [4] American Geophysical Union (AGU) conference, 12/2017, New Orleans, LA. [Effects of Radar-Rainfall Products on Distributed Streamflow Prediction](#)
- [3] American Geophysical Union (AGU) conference, 12/2017, New Orleans, LA. [A Hydrologic Routing Model Based on Geomorphological Characteristics of the River Network](#)
- [2] World Environmental and Water Resources (EWRI) Congress, 05/2016, West Palm Beach, FL. “Sediment modeling to develop a deposition prediction model at the Olmsted locks and dam area” and “Role of low impact development in the attenuation of flood flows in urban areas”.
- [1] Mid-American Environmental Engineering Conference (MAEEC), 09/2015. Columbia, MO. Developing sediment transport and deposition prediction model of Lower Ohio River near the Olmstead locks and dam area.

CONFERENCE / WORKSHOP ORGANIZED

- [13] American Meteorological Society (AMS) Annual Meeting, 01/2026, Houston, TX. [Large-Scale Flood Modeling, Forecasting, Analysis, and Management: Innovations and Applications](#) (convener)
- [12] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Hydrologic Extremes in South and Southeast Asia: Challenges and Opportunities](#) (convener)
- [11] American Geophysical Union (AGU) conference, 12/2025, New Orleans, LA. [Recent Advances in Large-Scale Hydrologic and Flood Modeling: Assessing and Predicting Extreme Floods](#) (convener)
- [10] American Meteorological Society (AMS) Annual Meeting, 01/2025, New Orleans, LA. [Advances in Large-scale Flood Modeling, Monitoring, Forecasting, Analysis, and Management](#) (convener)
- [9] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [Recent Advances in Large-Scale, High-Resolution Hydrologic and Flood Modeling: Assessing Hydroclimatic Extremes](#) (convener)
- [8] American Geophysical Union (AGU) conference, 12/2024, Washington D.C. [Hydroclimatic Analysis in South and Southeast Asia: Challenges and Opportunities](#) (convener)
- [7] American Meteorological Society (AMS) Annual Meeting, 01/2024, Baltimore, MD. [Advances in Large-scale Flood Modeling, Monitoring, Forecasting, Analysis, and Management](#) (convener)
- [6] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Recent Advances in Large-Scale High-Resolution Hydrologic and Flood Modeling and Hydroclimatic Extremes Assessment](#) (convener)
- [5] American Geophysical Union (AGU) conference, 12/2023, San Francisco, CA. [Hydroclimatic Disasters in Data-Scarce Regions: Interfacing Science and Policy Poster](#) (convener)
- [4] American Meteorological Society (AMS) Annual Meeting, 01/2023, Denver, CO. [Recent Advances in Modeling, Monitoring, and Forecasting of Floods](#) (convener)
- [3] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Recent Advances in Large-Scale High-Resolution Hydrologic and Flood Modeling and Hydroclimatic Extremes Assessment - Assigned by Committee](#) (convener)
- [2] American Geophysical Union (AGU) conference, 12/2022, Chicago, IL. [Hydroclimatic Modeling, Analyses, and Projections in South Asia and Southeast Asia: Challenges and Opportunities](#) (convener)
- [1] American Geophysical Union (AGU) conference, 12/2021, New Orleans, LA. [Hydroclimatic Modeling, Analyses, and Projections in South Asia: Challenges and Opportunities](#) (convener)

WORKSHOPS / TRAINING

- ORNL Science Communication Workshop, 05/2024. ORNL.
- DOE’s Climate Communication Workshop, 05/2022. ORNL.
- ATS-Amanzi Hydrologic Modeling Workshop, 08/2021. ORNL.
- The Community WRF-Hydro Modelling System Training Workshop, 06/2018. CUASHI-NCAR, Boulder, CO.
- Pre-conference Workshop on quantitative precipitation estimates (QPE), CHRS-PERSIANN, extreme value analysis, and National Water Model, 06/2019. Irvine, CA.
- Machine learning with Python workshop, 11/2019, The University of Iowa, Iowa City, IA.

HONORS / AWARDS

2023/2024/2025	Supplemental Performance Award, ORNL
2021	Dan Branson fellowship, UIowa (\$3,000)
2020	Ballard and Seashore Ph.D. dissertation fellowship, UIowa (\$10,000)
2018/2019/2020	CGRER travel grant for AGU conference
2018	CUASHI travel grant for WRF-Hydro training workshop
2004	Undergraduate fellowship, Tribhuvan University, Nepal

PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU); American Meteorological Society (AMS); European Geosciences Union (EGU); Nepal Engineer's Association (NEA); American Society of Civil Engineers (ASCE); Society for Industrial and Applied Mathematics (SIAM); CEATI; Engineer in Training (EIT), Michigan board

LEADERSHIP ROLES

August 2016 – April 2021	President, Nepalese Student Association, The University of Iowa
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TECHNICAL SKILLS

- Programming language: Python, MATLAB, R, FORTRAN, PostgreSQL
- Hydrologic models: VIC, RAPID, Hillslope-Link Model (HLM), WRF-Hydro, HEC-HMS
- Hydraulic/hydrodynamic models: TRITON, HEC-RAS 1D/2D, HEC-GeoRAS, CCHE2D, EPA-SWMM
- Datasets: MRMS, NLDAS-2, Daymet, Stage IV, HRRR, GFS, WPC, APHRODITE
- Data formats: HDF5, NetCDF, GRIB2, ASCII, DAT, CSV, Zarr
- Statistics: Bayesian statistics, Geostatistical analysis, Nonlinear dynamics, Extreme value theory, Time series modeling, Forecast verification, Uncertainty quantification, OpenBUGS, SAS
- Research tools: High-performance computing (HPC; OLCF facilities such as Frontier and Andes; US AirForce HPC11), Google Earth Engine, Unix/Linux, Git/GitHub, ArcGIS/QGIS, Latex, Data Visualization

EDITOR / REVIEWER FOR JOURNALS

Associate Editor: Journal of Hydrology

Water Resources Research; Journal of Hydrology; Journal of Hydrometeorology; Nature Scientific Reports; Geophysical Research Letters; Environmental Modeling and Software; Journal of the American Water Resources Association; Frontiers in Water; Earth System Science Data; Journal of Flood Risk Management; Journal of Hydroinformatics; Earth's Future; Natural Hazards; Sustainable and Resilient Infrastructure

Proposal Reviewer for DOE and NSF