Huidae Cho, Ph.D., PE (MD), M.ASCE, CFM, GISP
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I Education

- **Doctor of Philosophy**, Civil Engineering — August 2008
  Texas A&M University, College Station, Texas
  Area: Metaheuristic Optimization and Uncertainty Analysis
  Dissertation: On the Predictive Uncertainty of a Distributed Hydrologic Model
- **Master of Science**, Civil Engineering — February 2001
  Kyungpook National University, Daegu, South Korea
  Area: Geographic Information System (GIS) and Numerical Modeling
  Thesis: Development of a GIS Hydrologic Modeling System by Using the Programming Interface of GRASS GIS
- **Bachelor of Science**, Civil Engineering — February 1999
  Kyungpook National University, Daegu, South Korea

II Professional Experience

- **Associate Professor** — August 2022–Present
  Department of Civil Engineering, New Mexico State University, Las Cruces, New Mexico
- **Non-Resident Senior Fellow** — May 2025–October 2025
  Korean Institute of Civil Engineering and Building Technology, Goyang, South Korea
- **Non-Resident Senior Fellow** — June 2019–December 2019
  Korean Institute of Civil Engineering and Building Technology, Goyang, South Korea
- **Assistant Professor of Geospatial Science and Computing** — August 2018–August 2022
  Institute for Environmental and Spatial Analysis, University of North Georgia, Oakwood, Georgia
- **Senior Geospatial Engineer** — September 2017–July 2018
  MapAnything, Atlanta, Georgia
- **Part-Time Assistant Professor** — January 2015–May 2018
  Department of Civil and Construction Engineering, Kennesaw State University, Marietta, Georgia
- **Water Resources Engineer / GIS Developer** — September 2008–September 2017
  Dewberry, Fairfax, Virginia, Atlanta, Georgia
- **Research Assistant** — January 2004–May 2008
  Department of Civil Engineering, Texas A&M University, College Station, Texas
- **Lead Software Developer** — December 2000–July 2003
  Cemtlomedia, Daejeon, South Korea
- **Lecturer** — February 2000–October 2000
  Computer Center, Kyungpook National University, Daegu, South Korea
- **GIS Developer** — June 1999–December 1999
  General Information Center, Daegu, South Korea

III Research Interests and Expertise

- Application of GIS to Water Resources and Environmental Engineering
- Hydroinformatics
- Machine Learning and Data Science
- Metaheuristic Optimization and Uncertainty Analysis
- Open-Source Software Development and Internet of Things (IoT)

IV Teaching

- **Associate Professor** August 2022–Present
  New Mexico State University, Las Cruces, New Mexico
  - CE 382 – Hydraulic and Hydrologic Engineering
  - CE 483/503 – Surface Water Hydrology
  - CE 531 – Open Channel Hydraulics
  - CE 582 – Statistical Hydrology
- **Assistant Professor of Geospatial Science and Computing** August 2018–August 2022
  University of North Georgia, Oakwood, Georgia
  - ENST 2030 – Environmental Studies & Sustainability
  - ENVS 2111K – Physical Environmental Science
  - GEOG 1111K – Introduction to Physical Geography
  - GISC 2011/L – Geographic Information Science
  - GISC 3200K – Programming for Geospatial Science & Technology
  - GISC 4360K – Digital Image Processing
  - GISC 4500K – Application Development
  - GISC 4530K – Geospatial Web Application Development
  - GISC 4800K – Geospatial Intelligence (Co-lectured)
  - GISC 4903 – Special Topics in GIS
  - GISC 5200K – Programming for Geospatial Science & Technology (Graduate Level)
- **Part-Time Assistant Professor** January 2015–May 2018
  Kennesaw State University, Marietta, Georgia
  - CE 4703 – Engineering Hydrology (Guest Lecturer, Fall 2020)
  - CE 6303 – Water Resources Management (Graduate Level, Guest Lecturer, Spring 2018)
  - ENGR 3343 – Fluid Mechanics
  - ENGR 3345 – Fluid Mechanics Laboratory

V Grants and Fellowships

PI: Principal Investigator, **SP**: Senior Personnel

Funded Projects

Total Project Budget:	$15,957,653.18	Total Granted:	$15,917,653.18
Institutional Cost Share:	$40,000	**My Total Share:**	$1,582,998.97

My Total Share includes the full PI project budgets but does not include cost shares.

22. Development of a New Groundwater Model Using Publicly Available Datasets for Transboundary Aquifer Modeling—Phase 2. **PI**. Total $53,806 Granted by the New Mexico Water Resources Research Institute (NM WRRI) as Part of the Mesilla Aquifer—Transboundary Aquifer Assessment Program (TAAP) Granted by the U.S. Geological Survey (USGS). October 2025.

21. Development of a Machine Learning Approach for Detecting Culvert Linear Features to Support Statewide Hydrologic and Hydraulic Analysis. **PI**. Total $7,500 Student Water Research Grant Awarded to Dung Ho by the New Mexico Water Resources Research Institute (NM WRRI). October 2025.

20. Remote Sensing-Based Assessment of Groundwater-Induced Subsidence in the Mesilla Aquifer System in New Mexico. **PI**. Total $7,500 Student Water Research Grant Awarded to Madan Pokhrel by the New Mexico Water Resources Research Institute (NM WRRI). October 2025.

19. Development of a New Groundwater Model Using Publicly Available Datasets for Transboundary Aquifer Modeling—Phase 1. **PI**. Total $44,209 Granted by the New Mexico Water Resources Research Institute (NM WRRI) as Part of the Mesilla Aquifer—Transboundary Aquifer Assessment Program (TAAP) Granted by the U.S. Geological Survey (USGS). April 2025.

18. Resilient Agriculture–Water–Community Systems: Transcending Water Scarcity with Community-Based and Networked Western Water Management Solutions. **Co-PI**. Total $10,000,000 (My Share: $345,174) Granted by the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA). November 2024.

17. Dryland Watershed Restoration to Mitigate Floods and Droughts Informed by Integrated Assessments of Hydrology, Vegetation, and Grazing Management. **Co-PI**. Total $1,366,529.18 (My Share: $239,436.93) Granted by the Department of the Interior (DOI). October 2024.

16. Future Projections of Groundwater Recharge in New Mexico Using the CMIP6 Dataset. **PI**. Total $7,500 Student Water Research Grant Awarded to S.M. Asaduzzaman Reshad by the New Mexico Water Resources Research Institute (NM WRRI). October 2024.

15. Snow Water Equivalent Prediction for Northern New Mexico Using the Convolutional LSTM Machine Learning Method. **PI**. Total $7,500 Student Water Research Grant Awarded to Ujjwal Marasini by the New Mexico Water Resources Research Institute (NM WRRI). October 2024.

14. Improving Runoff Estimation Through the Development of a Global High-Resolution Curve Number Dataset. **PI**. Total $7,500 Student Water Research Grant Awarded to Abdullah Azzam by the New Mexico Water Resources Research Institute (NM WRRI). October 2024.

13. Elucidating Fate and Transport Processes and Impacts of Treated Produced Water in the Subsurface. **Co-PI**. Total $143,231 (My Share: $50,315) Granted by the New Mexico Environment Department (NMED). July 2024.

12. Surface Water–Groundwater Coupled Modeling of the Lower Rio Grande Watershed. **PI**. Total $20,000 Granted by the New Mexico Water Resources Research Institute (NM WRRI). July 2024.

11. SBIR: Profitable Waters: Bridging Financial Success with Environmental Stewardship. **Co-PI**. Co-Submitted with Sotaog. Total $46,861 (My Share: $46,861) Granted by the Department of Energy (DOE). July 2024.

10. New Mexico Department of Transportation (NMDOT) Culvert Asset Management Program (CAMP) Amendment No. 4. **Co-PI**. Total $271,700 (My Share: $42,495.04) Granted by NMDOT. April 2024.

9. New Mexico Statewide Drought Vulnerability Analysis Under Future Climate Change Scenarios Using a Physically-Based Coupled Model. **PI**. Total $80,000 (Cost Share: $40,000) Granted by the New Mexico Water Resources Research Institute (NM WRRI) as Part of the U.S. Geological Survey (USGS) 104b Grant Program. August 2023.

8. POSE: Growing GRASS OSE for Worldwide Access to Multidisciplinary Geospatial Analytics. **Co-PI (NMSU PI)**. Co-Submitted with North Carolina State University, Arizona State University, and Yale University. Total $1,499,988 (My Share: $131,200) Granted by the National Science Foundation (NSF) Pathways to Enable Open-Source Ecosystems (POSE) Program Award 2303651. August 2023.

7. Leveraging PARETO for Rare-Earth Elements and Critical Minerals (REE/CM) Recovery from Produced Water and Seismicity Response Optimization. **PI**. Total $160,000 Granted by KeyLogic as Part of a Department of Energy (DOE) National Energy Technology Laboratory (NETL) Strategic Analysis (SA) Contract. August 2023.

6. Water and Community Resilience Through Spatial Integration of Ecohydrological Processes and Traditional Sociocultural Knowledge. **SP**. Total $1,600,000 (My Share: $178,990) Granted by the NSF Dynamics of Integrated Socio-Environmental Systems (DISES) Program 2308358. August 2023.

5. New Mexico Department of Transportation (NMDOT) Culvert Asset Management Program (CAMP) Amendment No. 3. **Co-PI**. Total $530,000 (My Share: $89,183) Granted by NMDOT. March 2023.

4. Georgia Statewide Canopy Assessment Phase 2: Canopy Change 2009–2019 Project, UNG Canopy Phase 2–25279. **PI**. Total $7,851 Granted by the Georgia Forestry Commission. November 2020.

3. Georgia Statewide Canopy Assessment Phase 1.5: Canopy Analysis 2019 Project, UNG Canopy Phase 1.5–25278. **PI**. Total $16,978 Granted by the Georgia Forestry Commission. April 2020.

2. Georgia Statewide Canopy Assessment Phase 1: Canopy Analysis 2009 Project, UNG Canopy Phase 1–15377. **PI**. Total $19,000 Granted by the Georgia Forestry Commission. September 2019.

1. National Grant for Graduate Students, Korea Science and Engineering Foundation Grant M06-2003-000-10064-0. Total $60,000 Granted by the Korean Ministry of Science & Technology. July 2003.

Unfunded Proposals

26. Redacted Project Title. Project Budget Total $7,500. Co-Submitted as the **PI** with Abdullah Azzam to the New Mexico Water Resources Research Institute (NM WRRI). September 2025.

25. Redacted Project Title. Project Budget Total $7,500. Co-Submitted as the **PI** with Abdullah Azzam to the New Mexico Water Resources Research Institute (NM WRRI). September 2025.

24. Redacted Project Title. Project Budget Total $7,500. Co-Submitted as the **PI** with Jason Pena to the New Mexico Water Resources Research Institute (NM WRRI). September 2025.

23. Redacted Project Title. Project Budget Total $7,500. Co-Submitted as the **PI** with Nelson Kandel to the New Mexico Water Resources Research Institute (NM WRRI). September 2025.

22. Redacted Project Title. Project Budget Total $7,500. Co-Submitted as the **PI** with Ujjwal Marasini to the New Mexico Water Resources Research Institute (NM WRRI). September 2025.

21. Redacted Project Title. Project Pitch Co-Submitted as a **Co-PI (NMSU PI)** with Solid Logix LLC to the National Science Foundation (NSF) Small Business Innovation Research and Small Business Technology Transfer (SBIR/STTR) Program. August 2025.

20. Redacted Project Title. Project Budget Total $25,000. Submitted as the **PI** to the New Mexico State University (NMSU) Institute for Applied Practice in AI and Machine Learning (IAAM). July 2025.

19. Redacted Project Title. Project Budget Total $320,542 (My Share: $112,634.80). Co-Submitted as a **Co-PI** to the New Mexico Department of Transportation (NMDOT). April 2025.

18. Redacted Project Title. Project Budget Total $242,000 (My Share: $1,500,000). Co-Submitted as a **Co-PI (NMSU PI)** to the National Science Foundation (NSF). April 2025.

17. Redacted Project Title. Project Budget Total $300,000. Submitted as the sole **PI** to the National Science Foundation (NSF). April 2025.

16. Redacted Project Title. Project Budget Total $45,000. Submitted as the sole **PI** to the New Mexico Consortium (NMC) LANL Collaboration Funding Program. March 2025.

15. Redacted Project Title. Project Budget Total $775,128 (My Share: $140,000). Co-Submitted as a **Co-PI (NMSU PI)** to the National Science Foundation (NSF). December 2024.

14. Redacted Project Title. White Paper Co-Submitted as the **PI** with the National Oceanic and Atmospheric Administration (NOAA) Office of Water Prediction (OWP)/the University of Alabama, Oak Ridge National Laboratory, and Missouri University of Science and Technology to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 3 "Innovating Hydroinformatics Applications." November 2024.

13. Redacted Project Title. White Paper Co-Submitted as the **PI** with the University of Saskatchewan and Arizona State University to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 2 "Advancement & Acceleration of Community Water Resources Modeling." November 2024.

12. Redacted Project Title. White Paper Co-Submitted as the **PI** with the University of Illinois and Brigham Young University to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 1 "Expansion & Improvement of Water Prediction Capabilities." November 2024.

11. Redacted Project Title. White Paper Co-Submitted as the **PI** with the University of Saskatchewan and the University of Alabama to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 3 "Innovating Hydroinformatics Applications." November 2024.

10. Redacted Project Title. White Paper Co-Submitted as a **Co-PI (NMSU PI)** with the National Oceanic and Atmospheric Administration (NOAA) Office of Water Prediction (OWP)/the University of Alabama and Missouri University of Science and Technology to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 3 "Innovating Hydroinformatics Applications." November 2024.

9. Redacted Project Title. Statement of Interest Submitted as the **PI** to the U.S. Army Corps of Engineers (USACE) Engineer Research and Development Center (ERDC), Funding Opportunity W81EWF-24-SOI-0034 "Automated Organization and Analysis of Hydrologic and Infrastructure Data." August 2024.

8. Redacted Project Title. Project Budget Total $25,000. Co-Submitted as the **Co-PI** to the Department of Energy (DOE). March 2024.

7. Redacted Project Title. Project Budget Total $500,000 (My Share: $230,000). Full Proposal Invited After a White Paper Review. Submitted as the **PI** with the University of Saskatchewan, the University of Alabama, and the Alabama Water Institute to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 3 "Innovating Hydroinformatics Applications." February 2024.

6. Redacted Project Title. Project Budget Total $1,960,656 (My Share: $158,514.50). Co-Submitted as a **Co-PI** to the New Mexico Environment Department (NMED). January 2024.

5. Redacted Project Title. White Paper Co-Submitted as a **Co-PI (NMSU PI)** with the University of Saskatchewan and the University of Alabama to the Cooperative Institute for Research to Operations in Hydrology (CIROH), USACE Research Theme 2 "Advancement & Acceleration of Community Water Resources Modeling." November 2023.

4. Redacted Project Title. White Paper Co-Submitted as a **Co-PI (NMSU PI)** to the Cooperative Institute for Research to Operations in Hydrology (CIROH), NOAA Research Theme 1 "Expandion & Improvement of Water Prediction Capabilities." November 2023.

3. Redacted Project Title. Project Budget Total $10,000,000 (My Share: $335,737.57). Co-Submitted as a **Co-PI** to the U.S. Department of Agriculture (USDA) National Institute of Food and Agriculture (NIFA). July 2023.

2. Redacted Project Title. Project Budget Total $5,000,000. Co-Submitted as a **Co-PI (UNG PI)** with the Korea Institute of Civil Engineering and Building Technology to the Korea Environmental Industry and Technology Institute. January 2022.

1. Redacted Project Title. Project Budget Total $752,883 (My Share: $119,116). Co-Submitted as a **Co-PI (UNG PI)** with Kennesaw State University and the University of Georgia to the Environmental Protection Division of the Georgia Department of Natural Resources. April 2020.

Fellowships

3. HydroLearn Fellowship. Travel Reimbursement for the 2025 Cooperative Institute for Research to Operations in Hydrology (CIROH) Developers Conference. Awarded by the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), May 2025.

2. HydroLearn Fellowship. Total $2,500 and Travel Reimbursement for the HydroLearn Cooperative Institute for Research to Operations in Hydrology (CIROH) Virtual Summer Hackathon & Workshop. Awarded by the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), March 2024.

1. Department Head Fellowship. Total $3,000 Awarded by the Zachry Department of Civil Engineering at Texas A&M University, August 2007.

VI Publications and Presentations

Peer-Reviewed Journal Articles

24. Cho, H., 2025b. Loop Then Task: Hybridizing OpenMP Parallelism to Improve Load Balancing and Memory Efficiency in Continental-Scale Longest Flow Path Computation. Environmental Modelling & Software 193, 106630. doi:10.1016/j.envsoft.2025.106630.

23. Sagor, N., Stringam, B., Cho, H., Blanco, E. I., 2025. Ratio Control with Error Sharing to Reduce Irrigation Canal Delivery Losses for Run of the River Diversion Systems. Irrigation Science. doi:10.1007/s00271-025-01029-6.

22. Khanal, P., Paudel, S., Neupane, R., Adhikari, S., Shrestha, P., Regmi, R. K., Dahal, S., Cho, H., Marasini, U., 2025. Dam Break Analysis of the Nagmati and Dhap Dams Using HEC-RAS. H2Open Journal 8 (3), 139–156. doi:10.2166/h2oj.2025.058.

21. Cho, H., 2025a. Avoid Backtracking and Burn Your Inputs: CONUS-Scale Watershed Delineation Using OpenMP. Environmental Modelling & Software 183, 106244. doi:10.1016/j.envsoft.2024.106244.

20. Cho, H., 2023. Memory-Efficient Flow Accumulation Using a Look-Around Approach and Its OpenMP Parallelization. Environmental Modelling & Software 167, 105771. doi:10.1016/j.envsoft.2023.105771.

19. Kim, Y., Chung, E.-S., Cho, H., Byun, K., Kim, D., 2023. The Future Water Vulnerability Assessment of the Seoul Metropolitan Area Through Accurate River Discharge Prediction Using a Hybrid Modeling Framework Composed of Physically-Based and Deep-Learning-Based Hydrologic Models. Stochastic Environmental Research and Risk Assessment 37, 1777–1798. doi:10.1007/s00477-022-02366-0.

18. Cho, H., 2020. A Recursive Algorithm for Calculating the Longest Flow Path and Its Iterative Implementation. Environmental Modelling & Software 131, 104774. doi:10.1016/j.envsoft.2020.104774.

17. Cho, H., Park, J., Kim, D., 2019. Evaluation of Four GLUE Likelihood Measures and Behavior of Large Parameter Samples in ISPSO-GLUE for TOPMODEL. Water 11 (3), 447. doi:10.3390/w11030447.

16. Cho, H., Yee, T. M., Heo J., 2018. Automated Floodway Determination Using Particle Swarm Optimization. Water 10 (10), 1420. doi:10.3390/w10101420.

15. Lee, J., Cho, H., Choi, M., Kim, D., 2017. Development of a Land Surface Model for the Soyang River Basin. Journal of the Korean Water Resources Association 50 (12), 837–847. doi:10.3741/JKWRA.2017.50.12.837.

14. Cho, H., Bones, E., 2016. Quantification of Uncertainties in the 100-year Flow at an Ungaged Site Near a Gaged Station and Its Application in Georgia. Journal of Hydrology 539, 640–647. doi:10.1016/j.jhydrol.2016.05.070.

13. Kim, D., Cho, H., Onof, C., Choi, M., 2016. Let-It-Rain: A Web Application for Stochastic Point Rainfall Generation at Ungaged Basins and Its Applicability in Runoff and Flood Modeling. Stochastic Environmental Research and Risk Assessment. doi:10.1007/s00477-016-1234-6.

12. Heo, J., Yu, J., Giardino, J., Cho, H., 2015. Water Resources Response to Climate and Land-Cover Changes in a Semi-Arid Watershed, New Mexico, USA. Terrestrial, Atmospheric and Oceanic Sciences 26 (4), 463–474. doi:10.3319/TAO.2015.03.24.01(Hy).

11. Heo, J., Yu, J., Giardino, J., Cho, H., 2015. Impacts of Climate and Land-Cover Changes on Water Resources in a Humid Subtropical Watershed: A Case Study from East Texas, USA. Water and Environmental Journal 29 (1), 51–60. doi:10.1111/wej.12096.

10. Cho, H., Kim, D., Lee, K., 2014. Efficient Uncertainty Analysis of TOPMODEL Using Particle Swarm Optimization. Journal of the Korean Water Resources Association 47 (3), 285–295. doi:10.3741/JKWRA.2014.47.3.285.

9. Cho, H., Olivera, F., 2014. Application of Multimodal Optimization for Uncertainty Estimation of Computationally Expensive Hydrologic Models. Journal of Water Resources Planning and Management 140 (3), 313–321. doi:10.1061/(ASCE)WR.1943-5452.0000330.

8. Cho, H., Lee, D., Lee, K., Lee, J., Kim, D., 2013. Development and Application of a Storm Identification Algorithm that Conceptualizes Storms by Elliptical Shape. Journal of the Korean Society of Hazard Mitigation 13 (5), 325–335. doi:10.9798/KOSHAM.2013.13.5.325.

7. Kim, D., Olivera, F., Cho, H., Lee, S., 2013. Effect of the Inter-Annual Variability of Rainfall Statistics on Stochastically Generated Rainfall Time Series: Part 2. Impact on Watershed Response Variables. Stochastic Environmental Research and Risk Assessment, doi:10.1007/s00477-013-0697-y.

6. Kim, D., Olivera, F., Cho, H., 2013. Effect of the Inter-Annual Variability of Rainfall Statistics on Stochastically Generated Rainfall Time Series: Part 1. Impact on Peak and Extreme Rainfall Values. Stochastic Environmental Research and Risk Assessment, doi:10.1007/s00477-013-0696-z.

5. Kim, D., Olivera, F., Cho, H., Socolofsky, S., 2013. Regionalization of the Modified Bartlett-Lewis Rectangular Pulse Stochastic Rainfall Model. Terrestrial, Atmospheric and Oceanic Sciences 24 (3), 421–436. doi:10.3319/TAO.2012.11.12.01(Hy).

4. Cho, H., Kim, D., Olivera, F., Guikema, S. D., 2011. Enhanced Speciation in Particle Swarm Optimization for Multi-Modal Problems. European Journal of Operational Research 213 (1), 15–23. doi:10.1016/j.ejor.2011.02.026.

3. Cho, H., Olivera, F., 2009. Effect of the Spatial Variability of Land Use, Soil Type, and Precipitation on Streamflows in Small Watersheds. Journal of the American Water Resources Association 45 (3), 673–686. doi:10.1111/j.1752-1688.2009.00315.x.

2. Cho, H., Olivera, F., Guikema, S. D., 2008. A Derivation of the Number of Minima of the Griewank Function. Applied Mathematics and Computation 204 (2), 694–701. doi:10.1016/j.amc.2008.07.009.

1. Olivera, F., Valenzuela, M., Srinivasan, R., Choi, J., Cho, H., Koka, S., Agrawal, A., 2006. ArcGIS-SWAT: A Geodata Model and GIS Interface for SWAT. Journal of the American Water Resources Association 42 (2), 295–309. doi:10.1111/j.1752-1688.2006.tb03839.x.

Journal Editorials

1. Cho, H., Liuzzo, L., 2021. Editorial for Special Issue: "Multi-Source Data Assimilation for the Improvement of Hydrological Modeling Predictions." Hydrology 9 (1), 4. doi:10.3390/hydrology9010004.

Conference Presentations

74. Cho, H., November 5, 2025. GRASS Meets Longest Flow Paths, Shortest Compute Times. Free and Open Source Software for Geospatial North America (FOSS4G NA) 2025. Hyatt Regency Reston, Reston, VA.

73. White, C., Cho, H., Mangafić, A., Petras, V., November 5, 2025. State of Growing GRASS. Free and Open Source Software for Geospatial North America (FOSS4G NA) 2025. Hyatt Regency Reston, Reston, VA.

72. Kandel, N., Cho, H., October 22, 2025. A First Step Toward Quantum Routing of Shallow Water Flows. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

71. Pena, J., Cho, H., October 22, 2025. Low-Cost Stereo Image Monitoring System for Ephemeral Streams. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

70. Ho, D., Cho, H., October 22, 2025. Development of a Machine Learning Approach for Detecting Culvert Linear Features to Support Statewide Hydrologic and Hydraulic Analysis. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

69. Pokhrel, M., Cho, H., October 22, 2025. Remote Sensing-Based Assessment of Groundwater-Induced Subsidence in the Mesilla Aquifer System in New Mexico. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

68. Azzam, A., Cho, H., October 22, 2025. GCN10 - Global 10m Curve Number Dataset and High Performance Raster Processing Framework. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

67. Marasini, U., Cho, H., October 22, 2025. Snow Water Equivalent Prediction for Northern New Mexico Using the Convolutional LSTM Machine Learning Method. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

66. Fernald, A., Carroll, K., Cho, H., Granados, A., Azzam, A., Garza, I., October 22, 2025. Transboundary Aquifer Assessment Program. 2025 New Mexico Water Conference. New Mexico Farm & Ranch Heritage Museum, Las Cruces, NM.

65. Cho, H., July 5, 2025. Keynote Speech: GRASS, Rebuilt: Toward Scalable Cyberinfrastructure for a New Era of Hydrologic Modeling. Free and Open Source Software for Geospatial 2025 Kansai (FOSS4G 2025 Kansai). I-site, Osaka, Japan.

64. Cho, H., Azzam, A., June 27, 2025. Special Lecture: A Coupled Hydrologic Modeling Framework for Drought Evaluation in New Mexico. GEOINFORUM-2025: The 36th General Meeting and Lecture of the Japanese Society for Geoinformatics. Osaka Metropolitan University Sugimoto Campus Science Hall, 1st floor, Building G, Osaka, Japan.

63. Cho, H., June 5, 2025. 1D Fate and Transport Modeling. 2025 New Mexico Produced Water Research Consortium (NMPWRC) Mid-Year Review Meeting. NMSU Golf Course, Las Cruces, NM.

62. Cho, H., May 29, 2025. Longest Flow Paths, Shortest Compute Times. 2025 CIROH Developers Conference. UVM Dudley H. Davis Center, Burlington, VT.

61. Marasini, U., Cho, H., May 29, 2025. Snow Water Equivalent Prediction for Northern New Mexico Using the Convolutional LSTM Machine Learning Method. 2025 CIROH Developers Conference. UVM Dudley H. Davis Center, Burlington, VT.

60. Cho, H., Ashraf, F., Dahal, K., May 28, 2025. HydroLearn Module: CIROH CE483 - Flood Inundation Mapping Using Machine Learning for Sustainable vs. Resilient Design. 2025 CIROH Developers Conference. UVM Dudley H. Davis Center, Burlington, VT.

59. Cho, H., May 22, 2025. Continental-Scale Hydrologic Modeling Using GRASS. GRASS Developer Summit 2025. North Carolina State University, Raleigh, NC.

58. Azzam, A., Cho, H., April 28, 2025. GCN10: A High-Resolution Global Curve Number Dataset and a Parallelized Framework For Large-Scale Raster Operations. American Water Resources Association (AWRA) 2025 Spring Conference. Marriott Anchorage Downtown, Anchorage, AK.

57. Cho, H., Reshad, S.M. A., Pokhrel, M., April 24, 2025. How to Address Uncertainty in Culvert Capacity Analysis for the NMDOT Culvert Asset Management Program (CAMP). 2025 New Mexico Transportation and Construction Conference (NM TransCon). Las Cruces Convention Center, Las Cruces, NM.

56. Cho, H., December 13, 2024. MESHED: A Memory-Efficient OpenMP Parallel Algorithm for Delineating a Large Number of Watersheds From High-Resolution Continental-Scale Digital Elevation Models. American Geophysical Union (AGU) 2024 Annual Meeting. Washington Convention Center, Washington, D.C.

55. Reshad, S.M. A., Cho, H., December 13, 2024. Statewide Hydrologic-Hydraulic Modeling and Culvert Capacity Evaluation for the New Mexico Department of Transportation. American Geophysical Union (AGU) 2024 Annual Meeting. Washington Convention Center, Washington, D.C.

54. Azzam, A., Cho, H., December 12, 2024. Coupling of Parallelized Surface Water and Groundwater Models for Statewide Hydrologic Modeling. American Geophysical Union (AGU) 2024 Annual Meeting. Washington Convention Center, Washington, D.C.

53. Cho, H., December 11, 2024. GRASS GIS Is Fair: Its Evolution Towards Open Science. American Geophysical Union (AGU) 2024 Annual Meeting. Washington Convention Center, Washington, D.C.

52. Cho, H., November 6, 2024. Just How Uncertain Are Our Extreme Flow Estimations for Flood Hazard Modeling in Ungauged Basins? 2024 New Mexico Floodplain Managers Association (NMFMA) Workshop. Santa Ana Star Hotel & Casino, Bernalillo NM.

51. Kandel, N., Cho, H., November 5, 2024. Groundwater Level Prediction with Machine Learning. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

50. Shreesh, H., Azzam, A., Cho, H., November 5, 2024. Assessing Water Availability in the El Rito Watershed Using SWAT and Parameter Regionalization. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

49. Reshad, S.M. A., Cho, H., November 5, 2024. Future Projections of Groundwater Recharge in New Mexico Using the CMIP6 Dataset. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

48. Reshad, S.M. A., Cho, H., November 5, 2024. Statewide Hydrologic-Hydraulic Modeling and Culvert Capacity Evaluation for the New Mexico Department of Transportation. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

47. Marasini, U., Cho, H., November 5, 2024. Snow Water Equivalent Prediction for Northern New Mexico Using the Convolutional LSTM Machine Learning Method. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

46. Azzam, A., Cho, H., November 5, 2024. Global High-Resolution Curve Number for Hydrological Studies. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

45. Cho, H., Reshad, S.M. A., November 5, 2024. Application of GRASS GIS for New Mexico State-Scale Culvert Capacity Analysis. 2024 New Mexico Water Conference. Buffalo Thunder Hilton Resort, Pojoaque, NM.

44. Cho, H., September 11, 2024. Evolution of GRASS GIS. Free and Open Source Software for Geospatial North America (FOSS4G NA) 2024. Hyatt Regency St. Louis at the Arch, St. Louis, MO.

43. Cho, H., September 11, 2024. An OpenMP Algorithm for Delineating a Large Number of Watersheds. Free and Open Source Software for Geospatial North America (FOSS4G NA) 2024. Hyatt Regency St. Louis at the Arch, St. Louis, MO.

42. Cho, H., May 29, 2024. Open-Source Hydrology Using GRASS GIS. 2024 Cooperative Institute for Research to Operations in Hydrology Developers Conference (CIROH DevCon). University of Utah, Salt Lake City, UT.

41. Cho, H., May 29, 2024. Memory Efficiency in Parallel Computation of Continental-Scale Hydrologic Parameters. 2024 Cooperative Institute for Research to Operations in Hydrology Developers Conference (CIROH DevCon). University of Utah, Salt Lake City, UT.

40. Cho, H., April 19, 2024. Hydrologic Modeling and CAMP (Culvert Asset Management Program). 2024 New Mexico Transportation and Construction Conference (NM TransCon). Las Cruces Convention Center, Las Cruces, NM.

39. Reshad, S.M. A., Cho, H., April 18, 2024. Enhancing Culvert Capacity Assessment Through Regression Analysis of DEM Data. 2024 New Mexico Transportation and Construction Conference (NM TransCon). Las Cruces Convention Center, Las Cruces, NM.

38. Cho, H., March 26, 2024. Single-Node Multi-Threaded Computation of Hydrologic Parameters for Continental-Scale Modeling. American Water Resources Association (AWRA) 2024 Geospatial Water Technology Conference (GWTC). Embassy Suites Orlando—Lake Buena Vista South, Orlando, FL.

37. Cho, H., December 12, 2023. Leveraging Single-Node Multi-Threaded Computing Power for Rapid Flow Accumulation for Cloud-Based Hydrologic Modeling. American Geophysical Union (AGU) 2023 Annual Meeting. Moscone Center, San Francisco, CA.

36. Cho, H., December 1, 2023. State of GRASS GIS: 40 Years Strong and Counting. Free and Open Source Software for Geospatial (FOSS4G) Asia 2023 Conference. The Open Source Geospatial Foundation (OSGeo) Korean Chapter. Seoul Hall of Urbanism & Architecture. Seoul, South Korea.

35. Cho, H., November 30, 2023. Memory-Efficient Flow Accumulation Using OpenMP Parallelization. Free and Open Source Software for Geospatial (FOSS4G) Asia 2023 Conference. The Open Source Geospatial Foundation (OSGeo) Korean Chapter. Seoul Hall of Urbanism & Architecture, Seoul, South Korea.

34. Cho, H., Makhdoom, N., November 8, 2023. Development of a New Mexico Statewide Land Surface Model for Water Availability Analysis. The 68th Annual New Mexico Water Conference. Albuquerque, NM.

33. Arshad, E., Maxwell, C. M., Neupane, K., Prandoni, N., Cho, H., Fernald, A. G., November 8, 2023. Estimating the Effects of Watershed Restoration Practices on Flood Flow Runoff. The 68th Annual New Mexico Water Conference. Albuquerque, NM.

32. Kim, Y., Kim, D., Cho, H., Choi, H., May 19, 2022. Assessment of the Impact of Climate Change on Water Resources in the Paldang Dam Watershed Using an Integrated Method of LSTM and a Hydrologic Model. 2022 Korea Water Resources Association Conference. Busan, South Korea.

31. Cho, H., February 6, 2022. Spatial Query of Coordinate Reference Systems and Its Integration with GRASS GIS. Free and Open Source Software Developers' European Meeting (FOSDEM) 2022. Brussels, Belgium (online).

30. Cho, H., December 15–18, 2021. Data-Driven Streamflow Forecasting Using Machine Learning. The US-KOREA Conference on Science, Technology, and Entrepreneurship (UKC) 2021—Pursuing Global Health and Sustainability. Korean-American Scientists and Engineers Association (KSEA). Los Angeles, CA.

29. Park, J., Kim, D., Cho, H., November 30, 2021. Assessment of GLUE Likelihood Indices and Trend of Parameter Samples in ISPSO-GLUE for TOPMODEL. International Water Resources Association's (IWRA's) XVII World Water Congress. Daegu, South Korea.

28. Smith, O., Cho, H., September 30, 2021. CanoClass: Creation of an Open Framework for Tree Canopy Monitoring. Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. The Open Source Geospatial Foundation (OSGeo). Buenos Aires, Argentina (online).

27. Petras, V., Andreo, V., Landa, M., Petrasova, A., Riembauer, G., Nartišs, M., Lennert, M., Metz, M., Blumentrath, S., Cho, H., Neteler, M. September 29, 2021. State of GRASS GIS: The Dawn of a New Eara. Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. The Open Source Geospatial Foundation (OSGeo). Buenos Aires, Argentina (online).

26. Andreo, V., Petras, V., Landa, M., Petrasova, A., Riembauer, G., Nartišs, M., Lennert, M., Metz, M., Blumentrath, S., Cho, H., Neteler, M. September 8, 2021. GRASS GIS 8: From Desktop to Big Data Cubes. Open Data Science Europe Workshop 2021. The OpenGeoHub Foundation. Wageningen, The Netherlands.

25. Cho, H., February 7, 2021. r.accumulate: Efficient Computation of Hydrologic Parameters in GRASS–Improving the Performance of Geospatial Computation for Web-Based Hydrologic Modeling. Free and Open Source Software Developers' European Meeting (FOSDEM) 2021. Brussels, Belgium (online).

24. Smith, O., Cho, H., McCollum, J., July 13–16, 2020. Tree Canopy Dataset Creation for the State of Georgia with NAIP Imagery and Python. 2020 Esri User Conference. San Diego, CA (online).

23. Smith, O., Cho, H., March 13, 2020. A Reproducible Supervised Classification System for Tree Canopy and Deforestation Detection Within an Open Source Python Framework Utilizing NAIP Imagery. University of North Georgia 25th Annual Research Conference (ARC). Gainesville, GA (online).

22. McCollum, J., Cho, H., March 13, 2020. Georgia Statewide Tree Canopy Analysis. University of North Georgia 25th Annual Research Conference (ARC). Gainesville, GA (online).

21. Henderson, T., Cho, H., March 13, 2020. Expansion of Topographic Wetness Index to Include Remotely Sensed Soil Data. University of North Georgia 25th Annual Research Conference (ARC). Gainesville, GA (online).

20. Cho, H., April 16, 2019. Revisiting the Longest Flow Path Algorithm. 2019 Georgia Water Resources Conference (GWRC). University of Georgia, Athens, GA.

19. Cho, H., Kim, D., Onof, C., Choi, M., October 2, 2018. Let-It-Rain: A Web-Based Stochastic Rainfall Generator. 2018 Georgia Geospatial Conference. Georgia Urban and Regional Information Systems Association. Classic Center, Athens, GA.

18. Flores, M., Cho, H., May 2, 2018. Bridging the Gap between Esri and CRM. 2018 Esri Southeast User Conference. Esri. Charlotte Convention Center, Charlotte, NC.

17. Park, J., Cho, H., Kim, D., May 24, 2017. Efficient Uncertainty Estimation of TOPMODEL Using Particle Swarm Optimization: Case Studies for Texas Watersheds. 2017 Korea Water Resources Association Conference, 161.

16. Lee, J., Cho, H., Kim, D., April 24, 2017. Assessment of the Applicability of the Satellite-In-Situ Composite Soil Moisture Data Assimilation using Ensemble Kalman Filter. European Geosciences Union General Assembly 2017. Vienna, Austria.

15. Cho, H., April 20, 2017. Web-Based Hydrologic Modeling System for Texas. 2017 Georgia Water Resources Conference (GWRC). University of Georgia, Athens, GA.

14. Yee, T. M., Cho, H., April 20, 2017. Floodway Optimization Algorithm for Streams in Georgia. 2017 Georgia Water Resources Conference (GWRC). University of Georgia, Athens, GA.

13. Lee, J., Cho, H., Kim, D., August 22, 2016. Applicability of AMSR2 Soil Moisture Data in a Real-Time Land Surface Model. HIC 2016, The 12th International Conference on Hydroinformatics—Smart Water for the Future. Society of Smart Water Grid. Songdo ConvensiA, Incheon, South Korea.

12. Kim, D., Cho, H., Han, J., May 15, 2014. Development and Validation of a Web-Based Poisson Cluster Synthetic Rainfall Generator. Korea Water Resources Association Conference 2014. Korea Water Resources Association. Busan, South Korea.

11. Cho, H., Kim, D., March 8, 2014. Spatiotemporal Storm Tracking for Hydrologic Modeling Using Particle Swarm Optimization. Southeastern Regional Conference 2014—Future Preparedness: Smart Technologies and Science. Korean-American Scientists and Engineers Association. Atlanta, GA.

10. Cho, H., Choi, J., Demby, J., Crampton, S., Selvanathan, S., March 4, 2013. Development of FEMA's GeoDam-BREACH Toolset for Simplified Dam Break Analysis. Virginia Water Conference 2013. Virginia Lakes and Watersheds Association. Richmond, VA.

9. Sharma, D., Choi, J., Sadhu, J., Selvanathan, S., Cho, H., Logsdon, K., Jr., October 21, 2010. Improved Visualization of Contours/Bands as Symbology Using ESRI Terrain for Flood Mapping and Engineering Analysis. The 6th Annual MAFSM Conference—New Maps, New Regs—Reducing Flood and Stormwater Impacts in Maryland. Maryland Association of Floodplain and Stormwater Managers. Linthicum, MD.

8. Sadhu, J., Choi, J., Sharma, D., Selvanathan, S., Cho, H., Logsdon, K., Jr., October 21, 2010. Overcoming Depth Grid Creation Challenges through the Use of Depth TIN/Terrain. The 6th Annual MAFSM Conference—New Maps, New Regs- Reducing Flood and Stormwater Impacts in Maryland. Maryland Association of Floodplain and Stormwater Managers. Linthicum, MD.

7. Choi, J., Selvanathan, S., Sadhu, J., Sharma, D., Cho, H., October 14, 2010. Automated Peakflow Computations Using NSS and ArcGIS. The 6th NJAFM Annual Conference—Proactive Floodplain Management: Reducing Vulnerability and Leveraging Resources. New Jersey Association for Floodplain Management. Somerset, NJ.

6. Katherine, H., Logsdon, K., Jr., Cho, H., May 18, 2010. Digital Flood Insurance Rate Map Panel Management Module. ASFPM 34th Annual National Conference—Building Blocks of Floodplain Management. Association of State Floodplain Managers. Oklahoma City, OK.

5. Logsdon, K., Jr., Choi, J., Cho, H., May 18, 2010. Layered Flood Theme and an Integrated QC Module. ASFPM 34th Annual National Conference—Building Blocks of Floodplain Management. Association of State Floodplain Managers. Oklahoma City, OK.

4. Cho, H., Bedane, T., Sreetharan, M., Huang, J., October 15, 2009. Floodplain Development for Flood Insurance Studies Using GeoTerrain. The 5th NJAFM Annual Conference: Effective Floodplain Management—Solutions Using Limited Resources. New Jersey Association for Floodplain Management. Somerset, NJ.

3. Olivera, F., Cho, H., July 4, 2007. Importance of Spatial Distribution in Small Watersheds. The 4th International Soil and Water Assessment Tool (SWAT) Conference. UNESCO-IHE. Delft, The Netherlands.

2. Olivera, F., Cho, H., July 14, 2005. Two-Step Calibration Method for SWAT. The 3rd International Soil and Water Assessment Tool (SWAT) Conference. Swiss Federal Institute for Environmental Science and Technology (Eidgenössische Anstalt für Wasserversorgung. Abwasserreinigung und Gewässerschutz–EAWAG). Zürich, Switzerland.

1. Olivera, F., Cho, H., April 2005. The Two-Step Calibration Method of Distributed Models. VII IAHS Scientific Assembly. International Association of Hydrologic Sciences (IAHS). Foz do Iguaçu, Brazil.

Conference Papers

4. Cho, H., Azzam, A., June 2025. A Coupled Hydrologic Modeling Framework for Drought Evaluation in New Mexico. Proceedings of the 36th Conference of the Japan Association for Information and Earth Science, pp. 001–002, 2025.

3. Smith, O., Cho, H., August 2021. An Open-Source Canopy Classification System Using Machine-Learning Techniques Within a Python Framework. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLVI-4/W2-2021, 175–182. doi:10.5194/isprs-archives-XLVI-4-W2-2021-175-2021.

2. Yee, T. M., Cho, H., May 22, 2017. Towards an Automated Floodway Optimizer for HEC-RAS. 2017 EWRI World Environmental & Water Resources Congress. Sacramento, CA.

1. Kim, J., Han, K., Cho, H., Choi, H., November 2001. GIS-Based Hydrological Modeling by Using GRASS. Proceedings of the 2001 Korean Society of Civil Engineers Conference, 1–4.

Conference Workshops

2. Cho, H., September 28, 2021. Physically-Based Hydrologic Modeling Using GRASS GIS r.topmodel. Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. Buenos Aires, Argentina (online).

1. Han, K., Kim, S., Son, I., Baek, C., Choi, K., Cho, H., February 1999. Riverine & Lacustrine Water Quality Prediction Models (QUAL2E, WASP, etc.). 7th Water Resources Engineering Workshop Manual. Korea Water Resources Association.

Book Reviews

1. Cho, H., January 2019. Review of "GIS for Surface Water: Using the National Hydrography Dataset" by Jeff Simley. Photogrammetric Engineering & Remote Sensing 85 (1), 11–12. doi:10.14358/PERS.85.1.11.

Scientific Reports

14. Reshad, S.M. A., Faculty Advisor: Cho, H., September 30, 2025. Future Projections of Groundwater Recharge in New Mexico Using the CMIP6 Dataset. Submitted to the New Mexico Water Resources Research Institute (NM WRRI).

13. Marasini, U., Faculty Advisor: Cho, H., September 30, 2025. Snow Water Equivalent Prediction for Northern New Mexico Using the Convolutional LSTM Machine Learning Method. Submitted to the New Mexico Water Resources Research Institute (NM WRRI).

12. Azzam, A., Faculty Advisor: Cho, H., September 30, 2025. Improving Runoff Estimation Through the Development of a Global High-Resolution Curve Number Dataset. Submitted to the New Mexico Water Resources Research Institute (NM WRRI).

11. Cho, H., Azzam. A., August 31, 2025. Under Review. New Mexico Statewide Drought Vulnerability Analysis Under Future Climate Change Scenarios Using a Physically Based Coupled Model. Submitted to the U.S. Geological Survey (USGS).

10. Cho, H., Azzam. A., July 31, 2025. Under Review. Development of a Computational Framework for Statewide Coupled Surface Water and Groundwater Modeling. Submitted to the New Mexico Water Resources Research Institute (NM WRRI).

9. Cho, H., Smith, O., June 15, 2021. Georgia Statewide Assessment of Canopy Change Between 2009 and 2019. Submitted to the Georgia Forestry Commission as Partial Fulfillment of Georgia Statewide Canopy Assessment Phase 2: Canopy Change Analysis 2009–2019.

8. Cho, H., Smith, O., January 29, 2021. Georgia Statewide Assessment of 2019 Canopy. Submitted to the Georgia Forestry Commission as Partial Fulfillment of Georgia Statewide Canopy Assessment Phase 1.5: Canopy Analysis 2019.

7. Smith, O, Cho, H., January 29, 2021. Training New Automated Feature Extraction Models for Canopy Classification Using the 2019 60cm NAIP Imagery. Submitted to the Georgia Forestry Commission as Partial Fulfillment of Georgia Statewide Canopy Assessment Phase 1.5: Canopy Analysis 2019.

6. Cho, H., Smith, O., McCollum, J., May 27, 2020. Georgia Statewide Assessment of 2009 Canopy. Submitted to the Georgia Forestry Commission as Partial Fulfillment of Georgia Statewide Canopy Assessment Phase 1: Canopy Analysis 2009.

5. Cho, H., McCullum, J., Smith, O., December 19, 2019. Reproducibility of the 2015 Results and a Proposed Method for Future Canopy Analyses. Submitted to the Georgia Forestry Commission as Partial Fulfillment of Georgia Statewide Canopy Assessment Phase 1: Canopy Analysis 2009.

4. Cho, H., December 31, 2019. Application of GIS Database Models to Hydrologic Modeling and Flood Management. Submitted to the Korean Institute of Civil Engineering and Building Technology, Goyang, South Korea, as a Non-Resident Senior Fellow.

3. Cho, H., August 25, 2019. A Method for Improving the Predictive Uncertainty of Models Using Bayesian Probability Theory. Submitted to Dong-A University, Busan, South Korea.

2. Cho, H., July 12, 2019. A Heuristic Approach for Optimizing the Floodway Using the HEC-RAS API. Submitted to Kyungpook National University, Daegu, South Korea.

1. Cho, H., March 14, 2019. Current Trends of the Development of River Information Management Systems in the United States. Submitted to the Korean Institute of Civil Engineering and Building Technology, Goyang, South Korea, as a Non-Resident Senior Fellow.

VII Invited Seminars

28. January 8, 2025. Parallel Processing Methods for Big Data in Hydrology. 2024 Global Seminar Series of Kyungpook National University. Online.

27. November 26, 2024. Memory-Efficient Flow Accumulation Computing Using GRASS GIS. Science Frontier Geoscience Seminar. School of Science / Graduate School of Science, Osaka Metropolitan University, Osaka, Japan.

26. April 16, 2024. Computation of Hydrologic Parameters for Continental-Scale Modeling. The U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center (HEC) Hydrology and Statistics Division Knowledge Transfer Sessions. Online.

25. October 19, 2023. Computation of Hydrologic Parameters for Continental-Scale Modeling. The U.S. Department of the Interior (DOI) Open-Source Geospatial Software Group. Online.

24. August 23, 2023. Memory-Efficient Flow Accumulation Using OpenMP. The U.S. Department of Agriculture (USDA) Lunch & Learn Series. Online.

23. November 19, 2021. Supervised Classification of Tree Canopy Using Remote Sensing Data and Machine Learning. Brain Korea 21 FOUR Seminar. Dong-A University, Busan, South Korea.

22. November 9, 2020. Application of Hack's Law to the Discovery of the Longest Flow Path. Kennesaw State University, Marietta, GA.

21. May 25, 2019. Revisiting the Longest Flow Path Algorithm. Kyungpook National University, Daegu, South Korea.

20. May 22, 2019. Revisiting the Longest Flow Path Algorithm. Sangji University, Wonju, South Korea.

19. May 22, 2019. Recent Trends in GIS Applications. Sangji University, Wonju, South Korea.

18. May 21, 2019. Working in the United States and Recent Trends in Civil Engineering. Semyung University, Jecheon, South Korea.

17. May 20, 2019. Web-Based Hydrologic Modeling System for Texas. Dong-A University, Busan, South Korea.

16. May 20, 2019. Bridging the Gap Between GIS and CRM. Kyungpook National University, Daegu, South Korea.

15. May 17, 2019. Revisiting the Longest Flow Path Algorithm. Hongik University, Seoul, South Korea.

14. May 17, 2019. Bridging the Gap Between GIS and CRM. Hongik University, Seoul, South Korea.

13. May 14, 2019. Recent Trends in GIS Applications. Jungwon University, Goesan, South Korea.

12. May 13, 2019. Revisiting the Longest Flow Path Algorithm. Korea Institute of Civil Engineering and Building Technology, Goyang, South Korea.

11. November 13, 2018. Hydrologic Modeling Using Open Source GIS. GIS Day, Geospatial Alliance Club, University of North Georgia, Oakwood, GA.

10. November 24, 2017. Web-Based Hydrologic Modeling System for Texas. Hongik University, Seoul, South Korea.

9. November 24, 2017. Flood Insurance Study. Hongik University, Seoul, South Korea.

8. November 24, 2017. Development of an Automated Toolset for Simplified Dam Break Analysis. Hongik University, Seoul, South Korea.

7. November 23, 2017. Floodway Optimization Algorithm for Streams in Georgia. Kyungpook National University, Daegu, South Korea.

6. November 11, 2016. Co-Presentation with Yee, T. M., Automation of Floodway Models for HEC-RAS. PDH Day, Georgia Society of Professional Engineers. Georgia Tech Student Center, Atlanta, GA.

5. April 20, 2016. Let-It-Rain: A Web-Based Stochastic Rainfall Generator. Dewberry, Atlanta, GA.

4. May 6, 2015. Effect of Spatial Variability on a Distributed Hydrologic Model. Kyungpook National University, Daegu, South Korea.

3. May 6, 2015. Impacts of Climate Change and Land-Cover Changes on Water Resources—Methodology Review. Korea Institute of Civil Engineering and Building Technology, Goyang, South Korea.

2. May 6, 2015. Improved Search for Local Optima in Particle Swarm Optimization. Hongik University, Seoul, South Korea.

1. April 30, 2015. Hydrologic Modeling Using Open Source Software. Korea Water Resources Corporation, Daejeon, South Korea.

VIII Invited Workshops

1. November 27, 2024. Physically-Based Hydrologic Modeling Using GRASS GIS. School of Science / Graduate School of Science, Osaka Metropolitan University, Osaka, Japan.

IX Patents

1. Kim, D., Choi, E., Cho, H., 2018. The System for Generating Stochastic Rainfall of the Poisson Cluster Based on Optimized Parameter Maps, and the Method for the Same. Registration No. 10-1818568. Korean Intellectual Property Office.

X Student Advising

Graduate Committee Chair

- Madan Pokhrel (PhD Student, Spring 2024–Present)
- Hari Shreesh (MS Student, Fall 2024–Present)
- Ujjwal Marasini (PhD Student, Fall 2024–Present)
- Nelson Kandel (MS Student, Fall 2024–Present)
- Muhammad Abdullah Azzam (PhD Student, Spring 2024–Present)
- S.M. Asaduzzaman Reshad (MS Student, Fall 2023–Summer 2025)

Graduate Committee Member

- Nazmul Sagor (MS Student in Water Science & Management, Spring 2024–Spring 2025)
- Darby Kellum (PhD Student in Water Science & Management, Fall 2023–Present)
- Emaz Arshad (MS Student in Water Science & Management, Fall 2022–Fall 2024)
- Saman Mostafazadeh-Fard (PhD Student, Fall 2022–Spring 2023)

Graduate Research Advisor

- Jason Pena (MS Student in Computer Science, Fall 2025–Present)
- Dung Ho (PhD Student in Computer Science, Fall 2025–Present)
- Mahesh Maddineni (MS Student in Computer Science, Summer–Fall 2024)
- Baokun Li (MS Student in Computer Science, Fall 2023)
- Nageena Makhdoom (PhD Student in Water Science & Management, Fall 2023)

Undergraduate Research Advisor

- Rene Diaz (BS in Geography, Spring 2024)

Student Organization Advisor

- NMSU Chapter of the Chi Epsilon Civil Engineering Honor Society (Fall 2023–Spring 2025)

XI Professional Services

University Services

- University Program Approval Committee (UPAC) (Fall 2025–Present)
- University Research Council (URC) (Fall 2023–Present)
- Executive Committee Member, Water Science and Management Graduate Program (Fall 2022–Present)

Department Services

- Faculty Search Committee Member for an Interdisciplinary Position (Requisition No. 502377) (Fall 2024–Present)
- Programming/Curriculum Committee Member (Spring 2023–Spring 2024)
- Faculty Search Committee Member for a Water Resources Engineering Position (Requisition No. 2200160F) (Fall 2022–Fall 2023)
- Research Focus Committee Chair (Spring–Summer 2023)

National and International Services

- Cooperative Institute for Research to Operations in Hydrology (CIROH) Hydrologic Modeling & Prediction Working Group Member (September 2025–Present)
- American Geophysical Union (AGU) Catchment Hydrology Technical Committee Member (December 2024–Present)
- GRASS Project Steering Committee Member and Translation Manager (February 2021–Present)
- GRASS Core Development Team Member (June 2000–Present)

XII Editorial and Review Activities

Editorial Board Memberships

- Editorial Board Member for the GIS-IDEAS Journal Published by the Association of GeoInformatics Laboratories for Earthsciences (AGILE)
- Associate Editor for the Journal of Spatial Hydrology Published by ScholarsArchive, Brigham Young University

Guest Editorships

- Special Issue "Water Modeling Using Combined Machine Learning and Fieldwork Investigation" for the Water Journal Published by MDPI
- Special Issue "Advances in Hydroinformatics for Water Data Management and Analysis, Volume II" for the Water Journal Published by MDPI
- Special Issue "Big Data and Machine Learning in Hydrology: Recent Advances and Trends" for the Hydrology Journal Published by MDPI
- Special Issue "Multi-Source Data Assimilation for the Improvement of Hydrological Modeling Prediction" for the Hydrology Journal Published by MDPI

Proposal Reviews

- Kennesaw State University Grand Challenges 2025
- University of Texas at San Antonio Transdisciplinary Teams Program Review FY 26
- Kennesaw State University Grand Challenges 2024
- National Aeronautics and Space Administration (NASA) Postdoctoral Program (NPP) 2024
- National Science Foundation (NSF) Hydrologic Sciences Program 2022

Peer Reviews

- Environmental Modelling & Software
- Journal of Water Management Modeling Published by Computational Hydraulics International
- KSCE Journal of Civil Engineering Published by the Korean Society of Civil Engineers
- Hydrology Published by MDPI
- International Journal of Environmental Research and Public Health Published by MDPI
- Journal of Flood Risk Management Published by Chartered Institution of Water and Environmental Management and John Wiley & Sons Ltd.
- Sustainability Published by MDPI
- Water Published by MDPI
- Smart Water Published by Springer
- Journal of Hydroinformatics Published by International Water Association Publications
- Resources, Conservation & Recycling Published by Elsevier
- Computers and Electronics in Agriculture Published by Elsevier
- 2017 International Conference on Water Resource and Environment
- Journal of Hydrologic Engineering Published by the American Society of Civil Engineers

- Applied Mathematics and Computation Published by Elsevier
- PLOS ONE Published by the Public Library of Science
- Journal of Water Resources Planning and Management Published by the American Society of Civil Engineers
- Journal of the Operational Research Society Published by the Operational Research Society
- European Journal of Operational Research Published by Elsevier
- Journal of the American Water Resources Association Published by the American Water Resources Association

XIII Conference Organization

- Committee for the 2025 New Mexico Transportation and Construction Conference. April 23–25, 2025. Las Cruces, New Mexico.
- Academic Track Program Committee for the Free and Open Source Software for Geospatial (FOSS4G) Asia 2024 Conference. December 15–18, 2024. Bangkok, Thailand.
- Committee for the 2024 New Mexico Transportation and Construction Conference. April 17–19, 2024. Las Cruces, New Mexico.
- Committee for the 2023 New Mexico Transportation and Construction Conference. April 12–14, 2023. Las Cruces, New Mexico.
- Academic Track Program Committee for the Free and Open Source Software for Geospatial (FOSS4G) 2023 Conference. June 26–July 2, 2023. Prizren, Kosovo.
- General Track Program Committee for the Free and Open Source Software for Geospatial (FOSS4G) 2022 Conference. August 22–28, 2022. Firenze, Italy (online).
- General Track Program Committee for the Free and Open Source Software for Geospatial (FOSS4G) 2021 Conference. September 27–October 2, 2021. Buenos Aires, Argentina (online).
- Scientific Committee for the International Commission on Statistical Hydrology-Statistical Hydrology (ICSH-STAHY) Workshop 2021 (ICSH-STAHY2021). September 16–17, 2021. València, Spain (online).
- Han, K., Cho, H., Heo, J., New Technology for Mitigating Flood Disaster Under Climate Change Session in the Hydrological Sciences Section. The Asia Oceania Geosciences Society 17th Annual Meeting. June 28–July 4, 2020. Hongcheon, South Korea. Event Cancelled Because of COVID-19.

XIV Professional Affiliations

- American Society of Civil Engineers (ASCE)
- American Water Resources Association (AWRA)
- American Geophysical Union (AGU)
- Association of State Floodplain Managers, Inc. (ASFPM)
- New Mexico Floodplain Managers Association (NMFMA)
- Open Source Geospatial Foundation (OSGeo)

XV Professional Licenses and Certifications

- Professional Engineer (PE), Maryland Department of Labor, June 2013–Present.
- Certified Floodplain Manager (CFM), New Mexico Floodplain Managers Association (NMFMA) / Association of State Floodplain Managers, Inc. (ASFPM), November 2009–Present.
- Certified Geographic Information Systems Professional (GISP), GIS Certification Institute (GISCI), April 2011–Present.