ALI MIRCHI, Ph.D.

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Department of Civil Engineering
Center for Environmental Resource Management
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EDUCATION

Post-Doctoral Research, Department of Civil and Environmental Engineering, Michigan Technological University, Houghton, MI (2013-2015). Project: Robust decision-making for south Florida water resources by ecosystem valuation, hydro-economic optimization, and conflict resolution modeling.

Ph.D., Civil Engineering (Water Resources Engineering), Michigan Technological University, Houghton, MI (2013). Dissertation: System dynamics modeling as a quantitative-qualitative framework for sustainable water resources management: Insights for water quality policy in the Great Lakes Region.

Graduate Certificate in Sustainable Water Resources Systems, Michigan Technological University, Houghton, MI (2013).

Master of Water Resources, Lund University, Lund, Sweden (2007). Thesis: Impact of coastal erosion and sedimentation along the northern coast of Sinai Peninsula, Egypt.

B.S., Civil/Water Engineering, University of Tabriz, Tabriz, Iran (2004).

RESEARCH INTERESTS

- Application of systems thinking, system dynamics modeling, economics, optimization, and simulation methods in water resources planning, management, and decision making
- Food-Energy-Water nexus, sustainable socio-ecological systems, and sustainable development
- Watershed modeling and water quality management
- Climate change impact assessment and adaptation
- Sustainable stormwater management
- Natural resources and energy policy

PUBLICATIONS

Journal Articles (Peer-Reviewed)

21. **Mirchi, A.**, Watkins, D., Engel, V., Sukop, M., Czajkowski, J., Bhat, M., Rehage, J., Takatsuka, Y., Weisskoff, R. (Accepted). A hydro-economic model of South Florida water resources system. *Science of the Total Environment.* 2018.
20. Takatsukaa, Y., Niekus, M., Harrington, J., Feng, S., Watkins, D., **Mirchi, A.,** Sukop, M. (Accepted). Value of Irrigation Water Usage in South Florida Agriculture. Science of the Total Environment. 2017.
19. Brown, C.E., Bhat, M., Rehage, J., **Mirchi, A.**, Boucek, R., Engel, V., Mozumder, P., Watkins, D., Ault, J., Sukop, M. (Accepted). Ecological-economic assessment of the effects of freshwater flow in the Florida Everglades on recreational fisheries. *Science of the Total Environment.* 2017.
18. Czajkowski, J., Engel, V., Martinez, C., **Mirchi, A.**, Watkins, D., Sukop, M., Hughes, J. (Accepted). Economic impacts of urban flooding in south Florida: Potential consequences of managing groundwater to prevent salt water intrusion. *Science of the Total Environment.* 2017.
17. Ashraf, B., AghaKouchak, A., Alizadeh, A., Mousavi-Baygi, M., Moftakhari, H. R., **Mirchi, A.**, Anjileli, H., Madani, K. (2017). Quantifying anthropogenic stress on groundwater resources. Scientific Reports.
16. Rosenberg, D., Babbar-Sebens, M, Root, E., Herman, J., **Mirchi, A.**, Giacomoni, M., Kasprzyk, J., Madani, K., Ford, D., Basdekas, L. (2017). Towards More Integrated Formal Education and Practice in Water Resources Systems Analysis. Journal of Water Resources Planning and Management.
15. Chen, F., Liu, B., Cheng, C. and **Mirchi, A.** (2017). Simulation and regulation of market operation in hydro-dominated environment: The Yunnan case. Water (20734441), 9(8).
14. Davtalab, R., **Mirchi, A.**, Khatami, S., Gyawali, R., Massah, A., Farajzadeh, M., Madani, K. (2017). Improving continuous hydrologic modeling of data-poor river basins using HEC-HMS: Case study of Karkheh River Basin, Journal of Hydrologic Engineering, 22.8, 05017011.
13. Gohari, A., **Mirchi, A.**, Madani, K. (2017). System dynamics evaluation of climate change adaptation strategies for water resources management in central Iran. *Water Resources* Management, 31.5, 1413-1434.
12. Safavi, H. R., Rezaei, F., **Mirchi, A.**, Madani, K. (2017). f-MOPSO: An alternative multi-objective PSO algorithm for conjunctive water use management. *Journal of Hydro-environment Research,* 14, 1-18.
11. Madani, K., Pierce, T.W., **Mirchi, A.** (2017). Serious games on environmental management. *Sustainable Cities and Society*, 2210-6707, http://dx.doi.org/10.1016/j.scs.2016.11.007.

10. Madani, K., AghaKouchak, A., **Mirchi, A.** (2016). Iran's Socio-economic Drought: Challenges of a Water-Bankrupt Nation. *Iranian Studies* 49(6), 997–1016, hhttp://dx.doi.org/10.1080/00210862.2016.1259286
9. Cheng, C., Yan, L., **Mirchi, A.**, Madani, K. (2016). China's booming hydropower: Systems modeling challenges and opportunities. *Journal of Water Resources Planning and Management*. DOI: 10.1061/(ASCE)WR.1943-5452.0000723
8. Msowoya, K., Madani, K., Davtalab, R., **Mirchi, A.**, Lund, J. (2016). Climate change impacts on maize production in the warm heart of Africa. Water Resources Management. DOI: 10.1007/s11269-016-1487-3
7. AghaKouchak, A., Norouzi, H., Madani, K., **Mirchi, A.**, Azarderakhsh, M., Nazemi, A., Nasrollahi, N., Farahmand, A., Mehran, A., Hasanzadeh, E., (2015). Aral Sea syndrome desiccates Lake Urmia: Call for action. *Journal of Great Lakes Research* 4, 307-311.
6. **Mirchi, A.**, Watkins, Jr., D.W., Huckins, C.J., Madani, K., Hjorth, P., (2014). Water resources management in a homogenizing world: Averting the growth and underinvestment trajectory. *Water Resources Research 50, doi:10.1002/2013WR015128*.
5. Madani, K., Rouhani, O., **Mirchi, A.**, Gholizadeh, S., (2014). A negotiation support system for facilitating an international trans-boundary natural resource conflict. *Environmental Modelling & Software* 51, 240-249.
4. Gohari, A., Eslamian, S., **Mirchi, A.**, Abedi-Koupaei, J., Massah Bavani, A., Madani, K., (2013). Water transfer as a solution to water shortage: A fix that can backfire. *Journal of Hydrology* 491, 23-39.
3. **Mirchi, A.**, Watkins, Jr., D.W., (2012). A systems approach to holistic TMDL policy: The case of Lake Allegan, Michigan. *Journal of Water Resources Planning and Management* 139(5), 544-553.
2. **Mirchi, A.**, Madani, K., Watkins, Jr., D.W., Ahmad, S., (2012). Synthesis of system dynamics tools for holistic conceptualization of water resources problems. *Water Resources Management* 26(9), 2421-2442.
1. **Mirchi, A.**, Hadian, S., Madani, K., Rouhani, O.M., Rouhani, A.M., (2012). World energy balance outlook and OPEC production capacity: Implications for global oil security. *Energies* 5(8), 2626-2651.

Book Chapters

5. **Mirchi, A.**, Heyman, J., Tchobanoglous, G., Minakata, D., Walker, S., Samimi, M., Guerrero, B., Handler, R. (In Review). Community Implementation of Potable Reuse of Treated Wastewater. To be submitted for publication In: Halvorsen, K.E., Schelly, C., Handler, R., and Knowlton, J.L. (Eds.). A Research Agenda for Environmental Management. Edward Elgar Publishing. Cheltenham. 2018.
4. Zarezadeh M., **Mirchi A.**, Read L., Madani K. (2016). Ten bankruptcy methods for resolving natural resource allocation conflicts. In: Islam S., Madani K. (Eds.). Water diplomacy in

action: Contingent approaches to managing complex water problems. Anthem Press. London.

3. **Mirchi, A.**, Madani, K., Roos, M., Watkins, Jr., D.W., (2013). Climate change impacts on California's water resources. In: Schwabe, K., Albiac, J., Connor, J., Hassan, R., Meza-Gonzalez, L. (Eds.). Drought in arid and semi-arid regions: A multi-disciplinary and cross-country perspective. Springer Publishing. Dordrecht.
2. Medellin-Azuara, J., **Mirchi, A.**, Madani, K., (2011). Water supply for agricultural, environmental, and urban uses in California's borderlands. In: Contreras, L. M., (Ed.) Agricultural Policies: New Developments. Nova Science Publishers, Hauppauge, New York.
1. **Mirchi, A.**, Watkins, Jr., D.W., Madani, K., (2010). Modeling for watershed planning, management and decision making. In: Vaughn, J.C. (Ed.) Watersheds: Management, restoration and environmental impact. Nova Science Publishers, Hauppauge, New York.

Journal Articles (In Revision/In Review/In Preparation)

Alian, S., Mayer, A.S., Maclean, A.L., Watkins, D.W., **Mirchi, A**. (In Review). On the "curse of scale": Spatiotemporal dimensions of water stress in the US Great Lakes region. *Environmental Research Letters*, 2018.

Fu, C., Cheng, C., Tu, Q., Ristic, B., **Mirchi, A.**, Madani, K. (In Review). Reform and renewables in China: The architecture of Yunnan's hydropower dominated electricity market. Renewable and Sustainable Energy Reviews. 2018.

Alborzi, A., **Mirchi, A.**, Moftakhari, H., Mallakpour, M., Azaranfar, A., Martinez, A., Ashraf, B., Alian, S., Madani, K., AghaKouchak, A. (In Review). Water for Lake Urmia: Reviving a drying lake facing meteorological and anthropogenic droughts. *Geophysical Research Letters*, 2018.

Ahn, S., Abudu, S., Sheng, Z., **Mirchi, A**., (In Preparation). SWAT Model for an irrigated agricultural watershed under drought: A case study in Rincon Valley, New Mexico. To be submitted to Agricultural Water Management. 2018.

Lanier, A., Drabik, J., Heikkila, T., Bolson, J., Sukop, M., Watkins Jr., D., Rehage, J., Mirchi, A., Engel, V., Letson, D., (In Preparation). Lessons for interdisciplinary science from the South Florida Water, Sustainability, and Climate research project. To be submitted to *Sustainability Science*. 2018.

Capt, T., **Mirchi, A.**, Walker, S., Archuleta, E., (In Preparation). Water management strategies in arid urbanizing areas: Lessons from the U.S. Paso del Norte Region. To be submitted to *Sustainable Cities and Society*. 2018.

Conference Proceedings

12. Samimi, M., Tahneen Jahan, N., **Mirchi, A.** (In Review). Assessment of climate change impacts on surface water hydrologic processes in New Mexico-Texas-Mexico border region. Proceedings of the 2018 World Environmental and Water Resources Congress: Protecting

and Securing Water and the Environment for Future Generations, American Society of Civil Engineers. Minneapolis, Minnesota. 2018.

11. Bahaddin, B., **Mirchi, A.**, Watkins Jr., D., Ahmad, S., Rich, E., Madani, K. (In Review). System archetypes in water resource management. Proceedings of the 2018 World Environmental and Water Resources Congress: Protecting and Securing Water and the Environment for Future Generations, American Society of Civil Engineers. Minneapolis, Minnesota. 2018.
10. Kashi, H., Madani, K., Ameri, A., Mohammad Zadeh, H., **Mirchi, A.**, Taravat, M. (2016). An Innovative Strategy for Sustainable Groundwater Resource Management: The Case of Khorasan-Razavi Province, Iran. 12th International Conference on Hydroinformatics, HIC 2016, Incheon,South Korea.
9. **Mirchi, A.**, Watkins Jr., D.W. (2016). A hydro-economic perspective into South Florida's water resource management tradeoffs under climate change. Proceedings of the 2016 World Environmental and Water Resources Congress, West Palm Beach, Florida. In: Pathak, C. S., Reinhart, D. (Eds.). World Environmental and Water Resources Congress 2016: Watershed Management, Irrigation and Drainage, and Water Resources Planning and Management. American Society of Civil Engineers.
8. **Mirchi, A.**, Watkins Jr., D.W., Czajkowski, J., Martinez, C., (2015). Hydro-economic Model of South Florida's Water Resources. Proceedings of the 2015 World Environmental and Water Resources Congress, Austin, Texas. In: Karvazy, K., Webster, V.L. (Eds.). World Environmental and Water Resources Congress 2015: Floods, Droughts, and Ecosystems. American Society of Civil Engineers.
7. Gohari, A., Madani, K., **Mirchi, A.**, Bavani, A., (2014). System-Dynamics Approach to Evaluate Climate Change Adaptation Strategies for Iran's Zayandeh-Rud Water System. Proceedings of the 2014 World Environmental and Water Resources Congress, Portland, Oregon. In: Huber, W.C., (Ed.). World Environmental and Water Resources Congress 2014: Water without borders. American Society of Civil Engineers.
6. Hadian, S., Madani, K., Gonzalez, J., Mokhtari, S., **Mirchi, A.,** (2014)**.** Sustainable energy planning with respect to resource use efficiency: Insights for the United States. Proceedings of the 2014 World Environmental and Water Resources Congress, Portland, Oregon. In: Huber, W.C., (Ed.). World Environmental and Water Resources Congress 2014: Water Without Borders. American Society of Civil Engineers.
5. Madani, K., Gohari, A., **Mirchi, A.**, (2013). Water transfer: A fix that may fail. Proceedings of the 2013 World Environmental and Water Resources Congress, Cincinnati, Ohio. In: Patterson, C.L., Struck, S.D., Murray, Jr., D.J., (Eds.). World Environmental and Water Resources Congress 2013: Showcasing the Future. American Society of Civil Engineers.
4. **Mirchi, A.**, Watkins, Jr., D.W., (2012). A systems approach to TMDL policy assessment: The case of Lake Allegan, Michigan. Proceedings of the 2012 World Environmental and Water Resources Congress, Albuquerque, New Mexico. In: Loucks, E.D., (Ed.). World Environmental and Water Resources Congress 2012: Crossing Boundaries. American Society of Civil Engineers.

3. Mayer, A.S., Watkins, Jr., D.W., **Mirchi, A.**, Gyawali, R., Watson, K., (2012). Determination of water stress indices as a function of ecological flows. Proceedings of the 2012 World Environmental and Water Resources Congress, Albuquerque, New Mexico. In: Loucks, E.D., (editor). World Environmental and Water Resources Congress 2012: Crossing Boundaries. American Society of Civil Engineers.
2. **Mirchi, A.**, Watkins, Jr., D.W., (2011). Integrated systems dynamics model for TMDL policy assessment: A Lake Allegan case study. Proceedings of the 2011 World Environmental and Water Resources Congress, Palm Springs, California. In: Beighly, E., Kilgore, M.W., (Eds.) World Environmental and Water Resources Congress 2011: Bearing Knowledge for Sustainability. American Society of Civil Engineers.
1. **Mirchi A.**, Alerasoul S., (2008). Rehabilitation and retrofication of Iranian bridges: Lessons learned from the I-35W (Minneapolis) bridge collapse. Proceedings of the Third International Conference on Disaster Management. Tehran, Iran.

Op-Ed Articles, Technical Reports, and Other Publications

Mirchi, A., Madani, K., (2017). Will Iran's next president care enough to put the environment first? The Guardian, May 16, 2017.

Mirchi, A., Madani, K., (2016). A grand but faulty vision for Iran's water problems. The Guardian, May 9, 2016.

Mirchi, A., Madani, K., (2016). How Iran's elections are going green. The Guardian, February 23, 2016.

Watkins, Jr., D.W., Buyung Agusdinata, D., Bahel, E., Becker, J., Bruce, A., Burnham, M., Cai, X., Childers, D., Davis, K., Davis, M., Del Buono, L., D'Odorico, P., Dunn, J., Endres, J., Firestone, J., Floress, K., Fuentes, J., Green, S., Halvorsen, K., Handler, R., Heidari, A., Howe, K., Hughes, S., Kasper, D., Knowlton, J., Lagalo, L., Liao, Q., Lenczewski, M., Ma, Z., Martinez, C., McCarty, J., Minakata, D., **Mirchi, A.**, Noel, L., Onal, H., Pearce, J., Perlinger, J., Pischke, E., Sampson, D., Schelly, C., Schottel, B., Seagren, E., Shonnard, D., Smith, T., Shwom, R., Steele, D., Thissen, W., Wu, S., Zhu, T., (2015). Coupled production-consumption systems for climate change mitigation: Designing equitable food, energy, and water conservation strategies. White paper, the National Science Foundation (Award #1541816)

Mirchi, A., Madani, K., AghaKouchak, A., (2015). Lake Urmia: how Iran's most famous lake is disappearing. The Guardian, January 23, 2015.

Mirchi, A., Madani, K., (2015). Iran's leaders react to the nation's massive environmental challenge. The Guardian, March 18, 2015.

PRESENTATIONS

Conference Presentations (Oral)

Tahneen Jahan, N., Samimi, M., Kumar, S., and **Mirchi, A**. Assessing the compounding impact of precipitation and land use change on runoff in a semiarid watershed. World Environmental and Water Resources Congress 2018 (Accepted), Minneapolis, Minnesota.

Samimi, M., Tahneen Jahan, N., and **Mirchi, A**. Assessment of climate change impacts on surface water hydrologic processes in New Mexico-Texas-Mexico border region. World Environmental and Water Resources Congress 2018 (Accepted), Minneapolis, Minnesota.

Bahaddin, B., **Mirchi, A.**, Watkins Jr., D.W., Ahmad, S., Rich, E., Madani, K. System archetypes in water resources management. World Environmental and Water Resources Congress 2018 (Accepted), Minneapolis, Minnesota.

Tahneen Jahan, N., Samimi, M., Vasquez, M., Moriasi, D., **Mirchi, A**. Modeling water and land management adaptation in New Mexico–Texas-Mexico border region using SWAT. World Environmental and Water Resources Congress 2017, Sacramento, California.

Mirchi, A., Watkins Jr., D.W. A hydro-economic perspective into South Florida's water resource management tradeoffs under climate change. World Environmental and Water Resources Congress 2016, West Palm Beach, Florida.

Mirchi, A., Watkins, Jr., D.W. A simulation-optimization framework for least-cost non-point source phosphorus load reduction in the Kalamazoo River watershed, Michigan. ASCE EWRI Watershed Management Symposium 2015, Reston, Virginia.

Mirchi, A., Watkins, Jr., D.W., Czajowski, J., Martinez, C. Hydro-economic Model of South Florida's Water Resources. World Environmental and Water Resources Congress 2015, Austin, Texas, 2015.

Sukop, M., Engel, V., Bhat, M., Bolson, J., Czajowski, J., Flaxman, M., Fuentes, J., **Mirchi, A.**, Mozumder, P., Nguyen, H., Rehage, J., Smoak, D., Takatsuka, Y., Watkins, D., Weisskoff, R. Ecosystem service valuation and hydro-economic optimization of south Florida water resources. Greater Everglades Ecosystem Restoration 2015, Coral Springs, Florida, 2015.

Mirchi, A., Watkins, Jr., D.W., Flaxman, M., Wiesmann, D. A screening-level hydro-economic model of south Florida water resources system. American Geophysical Union Fall Meeting 2014, San Francisco, California.

Mirchi, A., Watkins, Jr., D.W. Hydro-economic modeling of south Florida water management system. World Environmental and Water Resources Congress 2014, Portland, Oregon, 2014.

Hadian, S., Madani, K., Gonzalez, J., Mokhtari, S., **Mirchi, A.** Sustainable energy planning with respect to resource use efficiency: Insights for the United States. World Environmental and Water Resources Congress 2014, Portland, Oregon.

Norouzi, H., Aghakouchak, A., Madani, K., **Mirchi, A.**, Farahmand, A., Conway, C. Monitoring changes in water resources systems using high resolution satellite observations: Application to Lake Urmia. American Geophysical Union Fall Meeting 2013, San Francisco, California.

Halvorsen, K., Kossak, D., Mayer, A., Vivoni, E., Robles-Morua, A., Gamez Molina, V., Dana, K., **Mirchi, A.** Impacts of participatory modeling on climate change-related water management impacts in Sonora, Mexico. American Geophysical Union Fall Meeting 2013, San Francisco, California.

Mayer, A., Vivoni, E., Halvorsen, K., Robles-Morua, A., Dana, K., Che, D., **Mirchi, A.**, Kossak, D., Casteneda, M. Sustainable Water Resources for Communities under Climate Change: Can State-of-the-Art Forecasting Inform Decision-Making in Data Sparse Regions? American Geophysical Union Meeting of the Americas 2013, Cancun, Mexico.

Mirchi, A., Watkins, Jr., D.W. Optimization of best management practices for phosphorus load reduction in the Kalamazoo River Watershed: A systems perspective. World Environmental and Water Resources Congress 2013, Cincinnati, Ohio.

Mirchi, A., Ballard-Labeau, M., Watkins, Jr., D.W. Muralidharan, D., Mayer, A.S. Market-based policy instruments for non-point source phosphorous reduction in the Maumee Basin. World Environmental and Water Resources Congress 2013, Cincinnati, Ohio.

Gohari, A., Madani, K., **Mirchi, A.** Water transfer: A fix that can fail. World Environmental and Water Resources Congress 2013, Cincinnati, Ohio.

Mirchi, A., Watkins, Jr., D.W. A systems approach to TMDL policy assessment: The case of Lake Allegan, Michigan. World Environmental and Water Resources Congress 2012, Albuquerque, New Mexico.

Mayer, A.S., Watkins, Jr., D.W., M**irchi, A.**, Gyawali, R., Watson, K. Determination of water stress indices as a function of ecological flows. World Environmental and Water Resources Congress 2012, Albuquerque, New Mexico.

Mirchi, A., Watkins, Jr., D.W. Integrated systems dynamics model for TMDL policy assessment: A Lake Allegan case study. World Environmental and Water Resources Congress 2011, Palm Springs, California.

Mirchi, A., Alerasoul, S. Rehabilitation of Iranian bridges: Lessons learned from the I-35W (Minneapolis) bridge collapse. Third International Conference on Disaster Management. Tehran, Iran, 2008.

Conference Presentations (Poster)

Capt, T., Walker, S., **Mirchi, A.** Urban demand forecast modeling: A systematic approach to modern modeling and forecasting in El Paso. UTEP Symposium on Sustainable Water Resources Management in the Rio Grande/Rio Bravo Basin, The University of Texas at El Paso, El Paso, Texas, 2018.

Huang, M., Ahn, S., Abudu, S., Sheng, Z., **Mirchi, A.**, Hargrove, W., Samimi, M. SWAT watershed modeling considering auto-irrigation of the agricultural area in the Rincon Valley, New Mexico. UTEP Symposium on Sustainable Water Resources Management in the Rio Grande/Rio Bravo Basin, The University of Texas at El Paso, El Paso, Texas, 2018.

Samimi, M., Tahneen Jahan, N., R., **Mirchi, A.** Modeling hydrological processes in New Mexico-Texas-Mexico border region. American Geophysical Union Fall Meeting 2017, New Orleans, Louisiana.

Mirchi, A. The Use of monitoring and smart metering for sustainable groundwater management. The Fifth Arab-American Frontiers Symposium, Rabat, Morocco, 2017.

Alian, S., Mayer, A., Maclean, A., Watkins, D.W., Gyawali, R., **Mirchi, A.** Estimating ecological water stress caused by anthropogenic uses in the US Great Lakes region. American Geophysical Union Fall Meeting 2016, San Francisco, California.

Gohari, A., Madani, K., **Mirchi, A.**, Massah Bavani, A. A system dynamics approach to evaluate climate change adaptation strategies for Iran's Zayandeh-Rud water system. World Environmental and Water Resources Congress 2014, Portland, Oregon, 2014.

Mirchi, A., Watkins, Jr., D.W. Growth and Underinvestment System Archetype as a Guide to Holistic Water Quality Management. American Geophysical Union Fall Meeting 2013, San Francisco, California.

Mirchi, A., Watkins, Jr., D.W. Madani, K. Water resources system archetypes: Towards a holistic understanding of persistent water resources problems. American Geophysical Union Fall Meeting 2011, San Francisco, California.

Mirchi, A., Rouhani, O. M., Madani, K. Negotiation support systems for facilitating international water conflicts: The Caspian Sea case study. American Geophysical Union Fall Meeting 2011, San Francisco, California.

Mirchi, A., Watkins, Jr., DW. Application of system dynamics modeling to facilitate integrated water quality management. Center for Water and Society's World Water Day Poster Session 2012, Michigan Technological University, Houghton, Michigan.

Watson, K.A., Ballard, M.M., Gyawali, R., **Mirchi, A.** Modeling and analyzing the use, efficiency, value, and governance of water in the Great Lakes Region: An update on our progress and plans for the future. Sustainability Research Projects Poster Session 2010, Sustainable Futures Institute, Michigan Technological University, Houghton, Michigan.

Invited Talks and Panels

Water Resources Management in the New Mexico-Texas-Mexico Border Region. Institute of Hydropower and Hydroinformatics, Dalian University of Technology, Dalian, China, August 2017.

Ensure access to water and sanitation for all, 8th World Water Forum Symposium at ASCE World Environmental and Water Resources Congress 2017, Sacramento, California

Hydro-economic modeling: application to South Florida. Institute of Hydropower and Hydroinformatics, Dalian University of Technology, Dalian, China, June 2016.

A high-level hydro-economic model of south Florida water resources system. South Florida Water Management District, West Palm Beach, Florida, July 2014.

A virtual winter vacation: Modeling ecosystem services and water management in South Florida. Environmental Engineering CE 5992 Graduate Seminar Series. Michigan Technological University, Houghton, Michigan, January 2014.

The use of penalty functions in water resources systems modeling. South Florida Water Sustainability and Climate Project: 2014 Annual Meeting. Florida FFA Leadership Training Center, Haines City, Florida, January 2014.

Market-based policy instruments for mitigating agricultural phosphorus loads in the Maumee Basin. Environmental Engineering Graduate Seminar Series. Michigan Technological University, Houghton, Michigan, April 2013.

Water as an economic commodity in the Great Lakes Basin. Environmental Engineering Graduate Seminar Series. Michigan Technological University, Houghton, Michigan, April 2012.

Value of water learning module. S-STEM Scholar Colloquium I, Environmental Engineering Graduate Seminar Series. Michigan Technological University, Houghton, Michigan, March 2011.

An integrated study of water valuation in the Great Lakes Basin; Modeling and analyzing the use, efficiency, value, and governance of water in the Great Lakes Region. Environmental Engineering Graduate Seminar Series. Michigan Technological University, Houghton, Michigan, October 2010.

RESEARCH PROPOSALS

Funded

Mirchi, A. (PI) "Use of Smart Water and Energy Metering for Sustainable Groundwater Management" National Academies of Science, Engineering, and Medicine. $2,500.

Mirchi, A. (PI), Clifton, J. (Co-PI). "Let's Talk About Water." The Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI). $6,000.

Mirchi, A. (PI), Villanueva Rosales, N. (Co-PI). "Developing a web-based system dynamics simulation model of the El Paso water resources system." Interdisciplinary Research Seed (IRS) Fund. University of Texas at El Paso. $20,000.

Instrumental contributor to Watkins, D. (PI), Halvorsen, K. (Co-PI), Agusdinata, B. (Co-PI), Fuentes, J. D. (Co-PI). "Coupled production-consumption systems for climate change mitigation: Designing equitable food, energy, and water conservation strategies." National Science Foundation. $47,260.

Pending

Sukop, M. (PI), Troxler, T. (Co PI), Mirchi, A. (Co PI), Watkins, D. (Co PI), Mostafavi, A. (Co PI) "Integrated hydro-economic and participatory modeling for resilient coastal agroecosystems" United States Department of Agriculture. $1,000,000.

Mirchi, A. (PI), Villanueva Rosales, N. (Co-PI), Hargrove, W. (Co-PI), Heyman, J. (Co-PI), "Exploring Sustainable Water Resources Management Adaptation Strategies Through a Cyber-enabled Systems Approach." National Science Foundation. $311,404.

Convertino, C. (PI), Mirchi, A. (Co-PI), de la Piedra, M. T. (Co-PI), "Bridging Community Funds of Knowledge with Citizen Science: Research in the Service of Diversifying ISL Repertoires of Practice" National Science Foundation. $2,080,000.

Akbar, M. (PI), Villa, E., Mortimer, K., Gates, A., and Mirchi, A. (Co-PI), "Sol y Agua: A Systems Approach to Computational Thinking Development" National Science Foundation. $2,132,555.

TEACHING EXPERIENCE

Classes Taught

Surface Water Hydrology (CE 5340) (Spring), University of Texas at El Paso, El Paso, Texas (2017).

Economics for Engineers & Scientists (CE 2326) (Spring and Fall), University of Texas at El Paso, El Paso, Texas (2017).

Water Resources Management (CE 6313) (Fall 2016, Spring 2018), University of Texas at El Paso, El Paso, Texas, Offered on a 1.5-year cycle.

Water Resources Engineering Laboratory (CE 3620) (Fall and Spring), Michigan Technological University, Houghton, Michigan (2012-2013).

Water Resources Engineering Laboratory (CE 3620) (Fall), Michigan Technological University, Houghton, Michigan (2009).

Guest Lectures

Lake Urmia: A contemporary environmental tragedy. ESCI 7307/GEOG 4307 Arid Lands. The University of Texas at El Paso, El Paso, Texas, Fall 2017.

Rainwater harvesting, Global & Regional Sustainable Communities Program, The University of Texas at El Paso, El Paso, Texas, Summer 2017.

Introduction to watershed modeling. ESCI 4315/ESCI 5315 Regional Water Sustainability in a Changing Climate. The University of Texas at El Paso, El Paso, Texas, Fall 2016.

An introduction to Systems thinking and system dynamics modeling. Interdisciplinary Teamwork in Environmental and Sustainability Science. The University of Texas at El Paso, El Paso, Texas, Summer 2016.

Smart water management and conservation. US-Mexico Bidirectional Faculty Led Smart Cities Program. The University of Texas at El Paso, El Paso, Texas, Spring 2016.

Lecture series about economic and full value of water, linear optimization, and system dynamics modeling. CE 5666 Water Resources Planning and Management. Michigan Technological University, Houghton, Michigan, Fall 2015.

Introduction to systems thinking, system dynamics modeling, and causal loop diagrams. CE 1001 Sustainability and Civil Engineering Practice. Michigan Technological University, Houghton, Michigan, Spring 2015.

Unsteady flow, open channel flow through bridges, and flow routing. CE 4620 Open Channel Hydraulics. Michigan Technological University, Houghton, Michigan, Fall 2013.

The use of linear programming in water quality management. CE/SSE 4760 Optimization Methods & Applications. Michigan Technological University, Houghton, Michigan, Spring 2013.

Simulation of stream flow using HEC-RAS. CE 3620 Water Resources Engineering. Michigan Technological University, Houghton, Michigan, Fall 2012.

Non-linear system optimization. CE/SSE 4760 Optimization Methods & Applications. Michigan Technological University, Houghton, Michigan, Spring 2011.

Demonstration of HEC-RAS capabilities for simulating open channel flow through culverts. CE 4620 Open Channel Hydraulics. Michigan Technological University, Houghton, Michigan, Fall 2011.

WORK EXPERIENCE

Academic Appointments

Research Assistant Professor, Department of Civil Engineering and Center for Environmental Resource Management, The University of Texas at El Paso, El Paso, Texas (2016-present).

Post-Doctoral Research Associate, Department of Civil and Environmental Engineering, Michigan Technological University, Houghton, Michigan (2013-2015).

Teaching Assistant (Fall and Spring), CE 3620 Water Resources Engineering, Michigan Technological University, Houghton, Michigan (2012-2013).

Research Assistant, Michigan Technological University, Houghton, Michigan (2010-2012).

Teaching Assistant (Fall), CE 3620 Water Resources Engineering, Michigan Technological University, Houghton, Michigan (Fall 2009).

Industry

Water resources engineer, Rahab Consulting Engineers Co., Tehran, Iran (2007-2009).

Student Intern, Mamloo Dam project, Sabir Construction Co., Tehran, Iran (Summer 2002).

HONORS AND AWARDS

U.S. National Academies of Science, Engineering, and Medicine, Arab-American Frontiers Fellowship Award (2018).

Arab-American Frontiers Symposium, U.S. National Academies of Science, Engineering, and Medicine (2017; The Symposium convenes "outstanding researchers from the Middle East and North Africa and the United States to discuss cutting edge research").

Academic Achievement Award, Association of Professors and Scholars of Iranian Heritage, (2014).

Doctoral Finishing Fellowship, Graduate School, Michigan Technological University (2013).

Dean's Award for Outstanding Scholarship, Graduate School, Michigan Technological University (2013).

The Award of Exceptional Leadership in Student Governance, Student Affairs' Annual Leadership Awards, Michigan Technological University (2012).

The Award of Best Student Organization of the Year, presented to the executive board of NOSOTROS student organization, Student Affairs' annual leadership awards, Michigan Technological University (2012).

Operations Manager's Award for poster "Modeling and analyzing the use, efficiency, value, and governance of water in the Great Lakes Region," Sustainable Futures Institute, Michigan Technological University (2010).

Sustainable Futures Scholar, Sustainable Futures Institute, Michigan Technological University (2009).

ACADEMIC AND PROFESSIONAL SERVICES

Journals

Guest Editor

Special Issue on Synergies and Tradeoffs of Food, Energy and Water Nexus, Sustainable Cities and Society (Elsevier), 2017.

Reviewer

Agricultural and Forest Meteorology (Elsevier), British Journal of Environment and Climate Change (ScienceDomain International), Earth Perspectives (Springer), Energies (MDPI), Engineering Science and Technology (Elsevier), Environmental Earth Sciences (Springer), Environmental Management (Springer), Environmental Modelling and Software (Elsevier), International Journal of Water Resources Development (Taylor & Francis), Journal of American Water Resources Association (Wiley), Journal of Cleaner Production (Elsevier), Journal of Energy Engineering (ASCE), Journal of Environmental Management (Elsevier), Journal of Flood Risk Management (Wiley), Journal of Great Lakes Research (Elsevier), Journal of Hydroinformatics (IWA Publishing), Journal of Infrastructure Systems (ASCE), Journal of

Irrigation and Drainage Engineering (ASCE), Journal of Land Degradation and Development (Wiley), Journal of Mountain Science (Springer), Journal of Water Resources Planning and Management (ASCE), Land (MDPI), Science of the Total Environment (Elsevier), Sustainable Cities and Society (Elsevier), Sustainability (MDPI), Sustainability Science (Springer), Theoretical and Applied Climatology (Springer), Water (MDPI), Water Resources Research (Wiley), WIREs WATER (Wiley)

Reviewer (Proposal and Book)

Hydrologic Sciences. National Science Foundation (NSF), 2017.

Book proposal review for Cambridge University Press, 2016.

U.S. Geological Survey and National Institutes for Water Resources National Competitive Grants Program, 2016.

Innovations at the Nexus of Food, Energy and Water Systems (INFEWS). National Science Foundation (NSF), 2016.

Environmental Sustainability. National Science Foundation (NSF), 2016.

Primary Advisor

Samimi, M., Civil Engineering PhD Student, UTEP, Expected: 2019.
Tahneen Jahan, N., Civil Engineering Master's Student, UTEP, Expected: 2018.
Allahmoradi, M., Civil Engineering Master's Student, UTEP, Graduated: Dec. 2017. Thesis: Developing a system dynamics model of the El Paso water resources system.

Member of Dissertation and Thesis Advisory Committees

Capt, T., Civil Engineering PhD Student, UTEP, Expected: 2019.
Asadi, M., Civil Engineering PhD Student, UTEP, Expected: 2019.
Naderi Noreini, M., Agricultural Engineering/Water Resources Engineering, University of Tehran, Expected: 2019.

Mentor/Supervisor

Reddy, R. T., Civil Engineering Master's Student, Michigan Technological University, Houghton, Michigan. 2016
Sanda, R. K., Civil Engineering Master's Student, Michigan Technological University, Houghton, Michigan. 2015.
Wohlgemuth, A., Peace Corps Master's International- Environmental Engineering Master's Student, Michigan Technological University, Houghton, Michigan. 2015.
Heidari, A., Civil Engineering Ph.D. student, Michigan Technological University, Houghton, Michigan. 2014.

Thakur, S., Environmental Engineering Undergraduate Student, Michigan Technological University, Houghton, Michigan. 2014.

Sachar, R., Environmental Engineering Undergraduate Student, Michigan Technological University, Houghton, Michigan. 2014.

Leav, J., Peace Corps Master's International- Civil Engineering Master's Student, Michigan Technological University, Houghton, Michigan. 2011.

Conferences

Convener, H21S: Water and Society: Modeling Food-Energy-Water Nexus for Sustainable Resource Management, American Geophysical Union Fall Meeting 2017, New Orleans, Louisiana.

Track Chair, International Participation Committee's Sponsored Track, World Environmental and Water Resources Congress, 2017 (Sacramento, California).

Session Chair, H32C: Food, Energy, and Water Nexus: Synergies and Tradeoffs, American Geophysical Union Fall Meeting 2016, San Francisco, California.

Session Chair, Food, Energy, and Water (FEW) Nexus Panel Discussion, 2016 World Environmental and Water Resources Congress, West Palm Beach, Florida.

Judge, Graduate Student Research Expo 2016, University of Texas at El Paso, El Paso, Michigan (Fall 2016).

Track Co-chair, International Participation Committee's Sponsored Track, World Environmental and Water Resources Congress, 2016 (West Palm Beach, Florida) and 2015 (Austin, Texas).

Moderator, Track II - Fisheries, Operations and Climatic Trends: Operations Issues in Watershed Management, ASCE Watershed Management Symposium 2015 (Reston, Virginia)

Moderator, Water Recourses Planning and Management Sessions at World Environmental and Water Resources Congress 2013 (Cincinnati, Ohio), 2014 (Portland, Oregon), and 2015 (Austin, Texas).

Reviewer, Water Recourses Planning and Management Sessions at World Environmental and Water Resources Congress 2014 (Portland, Oregon), 2015 (Austin, Texas), and 2016 (West Palm Beach, Florida).

Judge, Graduate Research Colloquium, Michigan Technological University, Houghton, Michigan, 2014 and 2015.

Lead Convener, Graduate Research Colloquium, Michigan Technological University, Houghton, Michigan.2012.

Judge (posters), American Geophysical Union (AGU), Fall Meeting 2011, 2013, and 2014, San Francisco, California.2011.

Committees

2016-Present Member, Water and Society (AGU)
2015-Present Member, Systems Education Committee (ASCE/ EWRI)
2014-Present Member, International Participation Committee (ASCE/ EWRI)
2014-Present Member, Environmental and Water Resources Systems Committee (ASCE/ EWRI)

Academic and Professional Memberships

Interdisciplinary Research and Education Community of Practice, University of Texas at El Paso (2016-present)

World Environmental & Water Resources Institute, American Society of Civil Engineers (ASCE), (2012-preset).

American Geophysical Union (AGU), (2012-present).

Center for Water and Society, Michigan Technological University (2011-present).

Sustainable Futures Institute, Michigan Technological University (2009-present).

EXTRA-CURRICULAR

Administrative

Graduate Student Government's liaison to the University Senate, Michigan Technological University, Houghton, Michigan (2012-2013).

Vice-president, Global City student organization, Michigan Technological University, Houghton, Michigan (2012-2013).

Chair of the Academic Committee, Graduate Student Government, Michigan Technological University, Houghton, Michigan (2011-2012).

Executive board member, NOSOTROS student organization (Michigan Tech's best student organization of the year), Michigan Technological University, Houghton, Michigan (2011-2012).

Graduate Student Government Representative of the Department of Civil & Environmental Engineering, Michigan Technological University, Houghton, Michigan (2010-2011).

Member of editorial board of Payam, Journal of Alumni Association of Engineering Faculty of University of Tabriz, Iran (2007-2009).

President, Scientific Association of Civil Engineering Students, University of Tabriz, Tabriz, Iran (2003-2004).

Executive board member, Scientific Association of Civil Engineering Students, University of Tabriz, Tabriz, Iran (2002-2003).

Executive Manager, Journal of Civil Engineering Students of University of Tabriz, Tabriz, Iran (2002-2003).

Other Extra-Curricular Services

Facilitator, Center For Teaching and Learning Luncheon Workshop, International Students: How can we help them succeed in the classroom?, Michigan Technological University, Houghton, Michigan (November 2014).

Judge (poster), Undergraduate Expo 2013, Michigan Technological University, Houghton, Michigan (Spring 2013).

Judge (poster), Western UP Science Fair, Poster session for elementary and middle-school students (grade 4-8), Michigan Technological University, Houghton, Michigan (Spring 2012).

Facilitator, Graduate School orientation (Fall 2011, Spring 2011, Fall 2011), Michigan Technological University, Houghton, Michigan (2010-2011).

Volunteer, tutor (TOEFL and GRE), and mentor, Canterbury House International Tutoring Center, Houghton, Michigan (2010-2012).

IN THE MEDIA

BBC	Interview with 60 Minutes TV program (in Persian) (January 15, 2018)
BBC	Interview with Cheshmandaz-e-Bamdadi radio program (in Persian) (Nov 19, 2016)
BBC	Interview with 60 Minutes TV program (in Persian) (September 4, 2016)
BBC	Interview with 60 Minutes TV program (in Persian) (March 7, 2016)
Climate Home	Drought, air pollution rise up agenda in Iran election (Feb 25, 2016)
Circle of Blue	Biggest Lakes in the World Under Pressure From Human and Environmental Threats (June 03, 2015)
Lake Scientist	Scientists Urge Action for Disappearing Lake Urmia (January 29, 2015)
Shargh Daily	Lake Urmia is Disappearing (In Persian) (January 27, 2015)
Iranian Students' News Agency (ISNA)	Drought Acquitted of Killing Lake Urmia: Poor Water Management to Blame (In Persian) (September 24, 2015)