

Josué Medellín-Azuara, Ph.D.

Professor, University of California, Merced
Agronomist, UC Merced Agricultural Experimental Station
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Education

- PhD. (2006) Ecology-Environmental Policy Analysis.** University of California, Davis.
Dissertation: Economic-Engineering Analysis of Water Management for Restoring the Colorado River Delta, Mexico. Advisor: Jay R. Lund.
- M.S. (2003) Agricultural and Resource Economics.** University of California, Davis.
- M.B.A. (1998)** Escuela de Graduados en Alta Dirección de Empresa. Instituto Tecnológico y de Estudios Superiores de Monterrey, México.
- B.S. (1993) Mechanical and Electrical Engineering,** Instituto Tecnológico y de Estudios Superiores de Monterrey, México.

Professional Experience

Academia

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| 2024-present | Professor. Civil and Environmental Engineering, University of California, Merced. |
| 2024-present | Agronomist, UC Merced Agricultural Experimental Station, University of California, Merced. |
| 2019 to present | Associate Director. Center for Watershed Sciences, University of California, Davis. |
| 2017 to 2022 | Associate Director. University of California Agricultural Issues Center. University of California, Davis. |
| 2017-2024 | Associate Professor. Civil and Environmental Engineering, University of California, Merced. |
| 2015-2017 | Visiting Professor. Instituto de Pesquisas Hidraulicas. Universidade Federal do Rio Grande do Sul. Porto Alegre, RS, Brazil. |
| 2015-2017 | Associate Research Engineer. Dept. of Civil and Environmental Engineering. University of California, Davis. |
| 2012-2015 | Associate Project Scientist. Dept. of Civil and Environmental Engineering. University of California, Davis. |
| 2009-2012 | Assistant Project Scientist. Dept. of Civil and Environmental Engineering. University of California, Davis. |
| 2007-2009 | Postdoctoral Scholar, Professor Jay R. Lund, Dept. of Civil and Environmental Engineering, and Professor Richard E. Howitt, Department of Agricultural and Resource Economics. University of California, Davis. |

- 2005-2006 **Graduate Student Researcher**, Professor Jay R. Lund. Dept. of Civil and Environmental Engineering. University of California, Davis.
- 2003-2005 **Director, Aquatic Toxicology Outreach Program (ATOP)**. Department of Environmental Toxicology. University of California, Davis
- 2002-2005 **Graduate Student Researcher**. Professor J. Edward Taylor. Dept. Agricultural and Resource Economics. University of California, Davis.

Consulting

- 2014-present **Pacific Agroecology and Economics, LLC. *Managing Partner*** Environmental research and consulting company, managing partner. Participation in various projects on economic impact analysis in water resources, agriculture, and related sectors
- 2007 **Natural Heritage Institute, San Francisco, California**. Development of water management scenarios for the Rio Grande-Rio Bravo basin.
- 2005-2006 **El Colegio de México and The World Bank**. Project: México Economic Sector Work (ESW) Economic Assessment of Policy Interventions in the Water Sector. Evaluation of policy.

Industry and Non-Profit

- 2017-Present **Adjunct Research Fellow**, Public Policy Institute of California Water Policy Center.
- 1997-2000 **Environmental Coordinator**. Navistar, formerly International Truck and Engine Corporation Mexico. Management of water treatment, waste disposal, air emission reporting and government permitting. Escobedo, Nuevo León, México.
- 1993-1997 **Plant Engineer**. Corporativo Copamex, S.A. de C.V. Supervision and plant engineering for a Pulp and Paper corporation. Garza García, Nuevo León, México.

Honors and Awards

Ad Hoc Committee Member National Academies of Science, Engineering and Medicine. [Review of the Long-Term Operations of the Central Valley Project and the State Water Project \(2024-2025\)](#).

Research Report:

National Academies of Sciences, Engineering, and Medicine. 2025. *Review of the Long-Term Operations of the Central Valley Project and the State Water Project*. Washington, DC: National Academies Press. <https://doi.org/10.17226/29130>.

Steyer-Taylor Research Fellow on Groundwater Research. Public Policy Institute of California Water Policy Center. (2017-2018).

International Association of Hydrogeologists, Hydrogeology Journal, Editor's Choice Article for 2015, Paper Medellín-Azuara et al. (2015).

American Geophysical Union, Water Resources Research, Editor's Choice Award (2011), Paper Harou, Medellín-Azuara et al. (2010).

Mexican National Network of Researchers (*Sistema Nacional Investigadores*), Level I, September 2010 to Present.

Mexican National Chamber of the Editorial Industry (CANIEM) award for the book: “El Agua en México”, in the category of economic essay, October 2009.

UC Davis Jastro-Shields Graduate Scholarship, 2005, Graduate Studies, UC Davis

CONACYT-UC MEXUS Graduate Fellowship, 2000-2005, Consejo Nacional de Ciencia y Tecnología (México).

ITESM Undergraduate Education Scholarship, 1992-1993, Instituto Tecnológico y de Estudios Superiores de Monterrey (México).

ITESM Academic Excellence Scholarship, 1986-1989, Instituto Tecnológico y de Estudios Superiores de Monterrey (México).

Publications and Related Work

Google Scholar Citations: ~7,700 h-index 40 (July 2026)

<https://scholar.google.com/citations?user=qi6F1-gAAAAJ&hl=en>

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Journal Papers

Corringham, T., De Pinto, D., Ralph, M., Cordeira, J. O'Donnell, A., Medellin-Azuara, J. The Economic Value of Water from Forecast Informed Reservoir Operations (FIRO) in California (Provisionally Accepted). *Environmental Research: Water*.

Sarwar, A., Medellin-Azuara, J., Abatzoglou, J., Viers, J.H. (In Press). Identifying Agricultural Consumptive-Use Patterns to Support Adaptive Water Management in California's Santa Clara Valley via Remote Sensing and Machine Learning. *PLOS-Water*.

Sarwar, A., Medellin-Azuara, J., Abatzoglou, J., Viers, J.H. (In Press) Leveraging AI for Predicting Fallow Land and Resource Allocation in the San Joaquin Valley of California. *Environmental Research: Food Systems*.

Rodriguez-Flores, J.M., Cole, S.A., **Medellin-Azuara, J.**, Escrivá-Bou, A., Abatzoglou, J.T., Viers, J.H., Sumner, D.A. (In Press). Timely Drought Impact Assessment for Agriculture Using a Water–Food Systems Approach. *Environmental Research: Water*.

Salomon-Vera, M. A., **Medellín-Azuara, J.**, Arizmendi-Echegaray, G., & Corona-Vásquez, B. (2025). Interregional Water Systems: An Alternative for Integrated Water Management Through Game Theory Application. *Water*, 17(24), 3562. <https://doi.org/10.3390/w17243562>

Garay-Jacome Angeles S., Valdivia-Alcalá, R. **Medellín-Azuara, J.**, Hernandez-Ortiz, J. (2025) Economic Effects of Drought in Irrigation District 023 San Juan del Río, Querétaro. *Agroproductividad*, 18(10):25-33 <https://doi.org/10.32854/4a36p027>

Harmon, T. C., **Medellín-Azuara, J.**, & Hoyos, N. (2025). Editorial: Transformational strategies for equitable water distribution in a changing climate. *Frontiers in Water*, Volume 7-2025. <https://www.frontiersin.org/journals/water/articles/10.3389/frwa.2025.1706214>

Guevara-Polo, D.-E., Patiño-Gómez, C., **Medellin-Azuara, J.**, & Corona-Vasquez, B. (2025). Insights from Hydro-Economic Modeling for Climate Resilience in the Nazas–Aguanaval Watershed in Mexico. *Water*, 17(21), 3183. <https://doi.org/10.3390/w17213183>

Hughes Lomelin, R. N. H., Hernández-Hernández, M. A., Sanchez Quispe, S. T., **Medellín-Azuara, J.**, Morande, J. A., & Harmon, T. (2025). Groundwater modeling of the

- Aguascalientes Valley aquifer to evaluate the transport of fluoride and arsenic: Current state and recommended next steps. *Frontiers in Water*, Volume 7-2025. <https://www.frontiersin.org/journals/water/articles/10.3389/frwa.2025.1638569>
- Waring, E., Dahlke, H. E., Abatzoglou, J. T., **Medellín-Azuara, J.**, Yost, M. A., Bali, K. M., Naughton, C. C., Putnam, D. H., Sabie, R., Kishore, S., Santos, N. R., & Viers, J. H. (2025). Reimagining alfalfa as a flexible crop for water security in the Southwestern USA. *Science of The Total Environment*, 990, 179851. <https://doi.org/10.1016/j.scitotenv.2025.179851>
- Li, L., Cole, S., Rodriguez-Flores, J. M., Hestir, E., Fink, D., Viers, J. H., **Medellin-Azuara, J.**, Conklin, M., & Harmon, T. (2025). Synergies Between Agricultural Production and Shorebird Conservation With Climate Change in the Central Valley, California, With Optimized Water Allocation and Multi-Benefit Land Use. *Global Change Biology*, 31(6), e70304. <https://doi.org/10.1111/gcb.70304> .
- Li, L., Dogan, M. S., Maskey, M., Rodriguez-Flores, J. M., Vache, K. B., Cole, S., Null, S. E., Viers, J. H., Safeeq, M., **Medellin-Azuara, J.**, & Conklin, M. (2025). Optimized water allocation with managed groundwater recharge and prioritized wetland deliveries to moderate human-nature water use tradeoffs under climate change. *Journal of Hydrology: Regional Studies*, 60, 102496. <https://doi.org/10.1016/j.ejrh.2025.102496> .
- Nuñez-Bolaño, Y., Flores-Landeros, H., Rodríguez-Flores, J. M., Fernández-Bou, A. S., **Medellín-Azuara, J.**, & Harmon, T. C. (2025). A participatory approach for developing a geospatial toolkit for mapping the suitability of California's Multibenefit Land Repurposing Program (MLRP) in support of groundwater sustainability. *Frontiers in Water*, Volume 7-2025. <https://www.frontiersin.org/journals/water/articles/10.3389/frwa.2025.1539834>
- Abatzoglou, J. T., Parker, L. E., Viers, J. H., **Medellín-Azuara, J.**, Escrivá-Bou, A., Huntington, J. L., Williams, E. L., & Rajagopalan, K. (2025). Shorter growing seasons may moderate climate change effects on crop water demands. *Environmental Research Letters*, 20(3), 034017. <https://doi.org/10.1088/1748-9326/adb1f5>
- Bonilla-López, E., Lobato-Sánchez, R., **Medellín-Azuara, J.**, Patiño-Gómez, C., (2025). Satellite Precipitation Assessment and Correction Technique Selection at Sub-Basin Scale for Maximum Annual Events. Case Study: Acaponeta River Basin. *Atmósfera*. **39**,49-55. <https://doi.org/10.20937/ATM.53385>
- Dourado, G. F., **Medellín-Azuara, J.**, Fortier, M.-O., & Viers, J. H. (2025). Knowledge gaps, water caps and regulatory traps: Policies, practices, and lessons from environmental flow requirements in the San Joaquin River, California. *Environmental Research Letters*, 20(2), 021002. <https://doi.org/10.1088/1748-9326/ada8c0>
- Beutel, M.; Mendoza-Espinosa, L.; Medina, C.; Morandé, J.A.; Harmon, T.C.; **Medellín-Azuara, J.** (2024). Achieving Responsible Reclaimed Water Reuse for Vineyard Irrigation: Lessons from Napa Valley, California and Valle de Guadalupe, Baja California. *Water*, **16**, 2817. <https://doi.org/10.3390/w16192817>
- Medellín-Azuara, J., Escrivá-Bou, A., Gaudin, A. C. M., Schwabe, K. A., & Sumner, D. A. (2024). Cultivating climate resilience in California agriculture: Adaptations to an increasingly volatile water future. *Proceedings of the National Academy of Sciences*, **121**(32), e2310079121. <https://doi.org/10.1073/pnas.2310079121>

- Peterson, J. T., McCreless, E., Duarte, A., Wohner, P., Hamilton, S., **Medellín-Azuara, J.**, & Escrivá-Bou, A. (2024). Prototyping structured decision making for water resource management in the San Francisco Bay-Delta. *Environmental Science & Policy*, **157**, 103775. <https://doi.org/10.1016/j.envsci.2024.103775>.
- Erfani M., Maskey Mahesh L., Dogan Mustafa S., **Medellin-Azuara Josue**, & Goharian Erfan. (2024). Hydroeconomic Optimization and Reoperation of Folsom Reservoir for Flood-Managed Aquifer Recharge Implementation. *Journal of Water Resources Planning and Management*, **150**(10), 04024038. <https://doi.org/10.1061/JWRMD5.WRENG-6384>.
- Yao, Y., Lund, J.R., **Medellin-Azuara, J.** (2024) Combining Crop and Water Decisions to Manage Groundwater Overdraft over Decadal and Longer Timescales. *Water*, **16**,1223. <https://doi.org/10.3390/w16091223>
- Dalcin, A. P., Marques, G. F., Tilmant, A., Viers, J. H., & **Medellín-Azuara, J.** (2024). An electricity market-based approach to finance environmental flow restoration. *Journal of Environmental Management*, **353**, 120231. <https://doi.org/10.1016/j.jenvman.2024.120231>
- Moyers, K., Abatzoglou, J. T., Escrivá-Bou, A., Medellín-Azuara, J., & Viers, J. H. (2024). An invisible water surcharge: Climate warming increases crop water demand in the San Joaquin Valley's groundwater-dependent irrigated agriculture. *PLOS Water*, **3**(3), e0000184. <https://doi.org/10.1371/journal.pwat.0000184>
- Dogan, M. S., Medellín-Azuara, J., & Lund, J. R. (2024). Hydropower Reservoir Optimization with Solar Generation-Changed Energy Prices in California. *Water Resources Management*. <https://doi.org/10.1007/s11269-024-03747-6>
- Rodríguez-Flores, J. M., Fernandez-Bou, A. S., Ortiz-Partida, J. P., & Medellín-Azuara, J. (2023). Drivers of domestic wells vulnerability during droughts in California's Central Valley. *Environmental Research Letters*, **19**(1), 014003. <https://doi.org/10.1088/1748-9326/ad0d39>
- Rodríguez-Flores, J. M., Gupta, R. S., Zeff, H. B., Reed, P. M., & Medellín-Azuara, J. (2023). Identifying robust adaptive irrigation operating policies to balance deeply uncertain economic food production and groundwater sustainability trade-offs. *Journal of Environmental Management*, **345**, 118901. <https://doi.org/10.1016/j.jenvman.2023.118901>
- Klassert, C., Yoon, J., Sigel, K., Klauer, B., Talozzi, S., Lachaut, T., Selby, P., Knox, S., Avisse, N., Tilmant, A., Harou, J. J., Mustafa, D., Medellín-Azuara, J., Bataineh, B., Zhang, H., Gawel, E., & Gorelick, S. M. (2023). Unexpected growth of an illegal water market. *Nature Sustainability*. <https://doi.org/10.1038/s41893-023-01177-7>
- Hernández-Cruz Astrid, Sandoval-Solís Samuel, Mendoza-Espinosa Leopoldo G., Ramírez-Hernández Jorge, Medellín-Azuara Josué, & Daesslé Luis W. (2023). Assessing Water Management Strategies under Water Scarcity in the Mexican Portion of the Colorado River Basin. *Journal of Water Resources Planning and Management*, **149**(9), 04023042. <https://doi.org/10.1061/JWRMD5.WRENG-5985>
- Ortiz-Partida, J. P., Fernández-Bou, A. S., Maskey, M., Rodríguez-Flores, J. M., Medellín-Azuara, J., Sandoval-Solis, S., Ermolieva, T., Kanavas, Z., Sahu, R. K., Wada, Y., & Kahil, T. (2023). Hydro-economic modeling of water resources management challenges: current applications and future directions. *Water Economics and Policy*. <https://doi.org/10.1142/S2382624X23400039>

- Rodríguez-Flores, J. M., Valero Fandiño, J. A., Cole, S. A., Malek, K., Karimi, T., Zeff, H. B., Reed, P. M., Escrivá-Bou, A., and **Medellín-Azuara, J.** (2022). Global Sensitivity Analysis of a Coupled Hydro-Economic Model and Groundwater Restriction Assessment. *Water Resources Management*. <https://doi.org/10.1007/s11269-022-03344-5>
- Fernández-Bou, A. S., Rodríguez-Flores, J. M., Guzman, A., Ortiz-Partida, J. P., Classen-Rodríguez, L. M., Sánchez-Pérez, P. A., Valero-Fandiño, J., Pells, C., Flores-Landeros, H., Sandoval-Solís, S., Characklis, G. W., Harmon, T. C., McCullough, M., & **Medellín-Azuara, J.** (2023). Water, environment, and socioeconomic justice in California: A multi-benefit cropland repurposing framework. *Science of The Total Environment*, 858, 159963. <https://doi.org/https://doi.org/10.1016/j.scitotenv.2022.159963>
- Yin, J., **Medellín-Azuara, J.**, & Escrivá-Bou, A. (2022). Groundwater levels hierarchical clustering and regional groundwater drought assessment in heavily drafted aquifers. *Hydrology Research*, 53(7), 1031–1046. <https://doi.org/10.2166/nh.2022.048>
- Maskey, M. L., Dogan, M. S., Fernandez-Bou, A. S., Li, L., Guzman, A., Arnold, W., Goharian, E., Lund, J. R., and **Medellín-Azuara, J.** (2022). Managing Aquifer Recharge to Overcome Overdraft in the Lower American River, California, USA. In *Water* (Vol. 14, Issue 6). <https://doi.org/10.3390/w14060966>
- Maskey, M. L., Dourado, G.F., Rallings, A. M., Rheinheimer, D. E., **Medellín-Azuara, J.**, & Viers, J. H. (2022). Assessing Hydrological Alteration Caused by Climate Change and Reservoir Operations in the San Joaquin River Basin, California. In *Frontiers in Environmental Science* (Vol. 10). <https://www.frontiersin.org/article/10.3389/fenvs.2022.765426>
- Sims, C., Null, S., and **Medellín-Azuara, J.** Odame, A. (2021) "Hurry up or wait: Are private investments in climate change adaptation delayed?" *Climate Change Economics*.12(4):2150012. DOI: 10.1142/S2010007821500123 .
- Fernández-Bou, A., Ortiz-Partida, J. P., Classen-Rodríguez, L., Pells, C., Dobbin, K., ... **Medellín-Azuara, J.** (2021) "3 challenges, 3 errors, and 3 solutions to integrate frontline community needs in climate change policy and research." *Frontiers in Climate*. 3:717554 <https://doi.org/10.3389/fclim.2021.717554>.
- Flores-Landeros, H., Pells, C., Campos-Martínez, M. S., Fernández-Bou, A. S., Ortiz-Partida, J. P., & **Medellín-Azuara, J.** (2021). Community Perspectives and Environmental Justice in California's San Joaquin Valley. *Environmental Justice*. <https://doi.org/10.1089/env.2021.0005>
- Wong, A. J., Jin, Y., **Medellín-Azuara, J.**, Paw U, K. T., Kent, E. R., Clay, J. M., et al. (2021). Multiscale assessment of agricultural consumptive water use in California's Central Valley. *Water Resources Research*, 57 e2020WR028876. <https://doi.org/10.1029/2020WR028876>
- Fernández-Bou, A., Ortiz-Partida, J. P., Dobbin, K., Flores-Landeros, H., Bernacchi, L., **Medellín-Azuara, J.** (2021). Underrepresented, understudied, underserved: Gaps and opportunities for advancing justice in disadvantaged communities. *Environmental Science & Policy*. 122 92–100. <https://doi.org/10.1016/j.envsci.2021.04.014>
- Yan, Z., Liao, S., Cheng, C., **Medellín-Azuara, J.**, & Liu, B. (April 2021) "Lagrangian relaxation based on improved proximal bundle method for short-term hydrothermal scheduling." *Sustainability*. 13(9), 4706; <https://doi.org/10.3390/su13094706>

- Yoon, J., Klassert, C., Selby, P., Lachaut, T., Knox, S., Avisse, N., Harou, J., Tilmant, A., Klauer, B., Mustafa, D., Sigel, K., Talozzi, S., Gawel, E., **Medellín-Azuara, J.**, Bataineh, B., Zhang, H. Gorelick. (2021) "A coupled human-natural system analysis of freshwater security under climate and population change" *Proceedings of the National Academy of Sciences of the United States of America*. **118** (14). <https://doi.org/10.1073/pnas.2020431118>
- Zeff, H. B., Hamilton, A. L., Malek, K., Herman, J. D., Cohen, J., **Medellín-Azuara, J.**, Reed, P., Characklis, G. (2021) "California's food-energy-water system: An open source simulation model of adaptive surface and groundwater management in the Central Valley" *Environmental Modelling and Software*. **141** (9). <https://doi.org/10.1016/j.envsoft.2021.105052>
- Dogan, M., Lund, J. R., **Medellín-Azuara, J.** (2021). "Hybrid Linear and Nonlinear Programming Model for Hydropower Reservoir Optimization" *Journal of Water Resources Planning and Management*. **147** (3). [https://doi.org/10.1061/\(asce\)wr.1943-5452.0001353](https://doi.org/10.1061/(asce)wr.1943-5452.0001353)
- Yin, J., **Medellín-Azuara, J.**, Escrive-Bou, A., Liu, Z. (2021) "Bayesian machine learning ensemble approach to quantify model uncertainty in predicting groundwater storage change." *Science of The Total Environment* 769 (1). <https://doi.org/10.1016/j.scitotenv.2020.144715>
- Bernacchi, L. A., Fernández-Bou, A., Viers, J.H., Valero, J. and **Medellín-Azuara, J.** (2020). "A Glass Half Empty: Limited Voices, Limited Groundwater Security for California." *Science of The Total Environment* **738** (41). <https://doi.org/10.1016/j.scitotenv.2020.139529>
- Williams, J.N., Morandé, J.A., Vaghti, M.G., **Medellín-Azuara, J.**, & Viers, J. H. "Ecosystem services in vineyard landscapes: a focus on aboveground carbon storage and accumulation." (November 2020) *Carbon Balance Manage* **15** (23). <https://doi.org/10.1186/s13021-020-00158-z>
- Kalua, M., Rallings, A. M., Booth, L., **Medellín-Azuara, J.**, Carpin, S., and Viers, J. (Oct. 2020) "sUAS Remote Sensing of Vineyard Evapotranspiration Quantifies Spatiotemporal Uncertainty in Satellite-borne ET Estimates." *Remote Sensing* **12** (19): 3251 <https://doi.org/10.3390/rs12193251>
- Mattiuzzi, C., Marques, G. **Medellín-Azuara, J.** Dalcin, A.P. (August 2020). "The economic value of water and policy implications in Southern Brazil." *Water Management*. **0** (0): 1-13. <https://doi.org/10.1680/jwama.19.00084>
- Durand, J R., Bombardelli, F., Fleenor, W. E., Henneberry, Y., Herman, J., Jeffres, C., Leinfelder-Miles, M., Lund, J. R., Lusardi, R., Manfree, A. D., **Medellín-Azuara, J.**, Milligan, B., et al. (2020). "Drought and the Sacramento-San Joaquin Delta, 2012–2016: Environmental Review and Lessons." *San Francisco Estuary and Watershed Science* **18** (2). <https://doi.org/10.15447/sfews.2020v18iss2art2>.
- González, J., Olivares, M., **Medellín-Azuara, J.** and Moreno, R. (2020). "Multipurpose Reservoir Operation: A Multi-Scale Tradeoff Analysis between Hydropower Generation and Irrigated Agriculture." *Water Resources Management*. **34**, 2837-2849 <https://doi.org/10.1007/s11269-020-02586-5>.
- Escriva-Bou, A., Hui, R., Maples, S., **Medellín-Azuara, J.**, Harter, T., and Lund, J.R. (2020). "Planning for Groundwater Sustainability Accounting for Uncertainty and Costs: An Application to California's Central Valley." *Journal of Environmental Management* **264** (12). <https://doi.org/10.1016/j.jenvman.2020.110426>.

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- Dogan M. S., Buck I., **Medellin-Azuara J.**, and Lund, J.R. (2019). "Statewide Effects of Ending Long-Term Groundwater Overdraft in California." *Journal of Water Resources Planning and Management* **145** (9). [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0001096](https://doi.org/10.1061/(ASCE)WR.1943-5452.0001096).
- Nover, D. M., Dogan, M. S., Ragatz, R., Booth, L., **Medellín-Azuara, J.**, Lund, J.R. and Viers, J. R. (2019). "Does More Storage Give California More Water?" *JAWRA Journal of the American Water Resources Association* **55** (3): 759–71. <https://doi.org/10.1111/1752-1688.12745>.
- Mattiuzzi, C. D. P., Marques, F. and **Medellín-Azuara, J.** (2019). "Reassessing Water Allocation Strategies and Conjunctive Use to Reduce Water Scarcity and Scarcity Costs for Irrigated Agriculture in Southern Brazil." *Water* **11** (6): 1140. <https://doi.org/10.3390/w11061140>.
- Rodríguez-Flores, J. M., **Medellín-Azuara, J.** Valdivia-Alcalá, R. Arana-Coronado, O. and García-Sánchez, R.C. (2019). "Insights from a Calibrated Optimization Model for Irrigated Agriculture under Drought in an Irrigation District on the Central Mexican High Plains." *Water* **11** (4): 858. <https://doi.org/10.3390/w11040858>.
- Gailey, R.M., Lund, J.R. & **Medellín-Azuara, J.** (2019). "Domestic well reliability: evaluating supply interruptions from groundwater overdraft, estimating costs and managing economic externalities." *Hydrogeology Journal* **27** (4); 1159–1182 <https://doi.org/10.1007/s10040-019-01929-w>
- Gailey, R.M., Fogg, G.E., Lund, J.R. and **Medellin-Azuara, J.** (2019). "Maximizing on-farm groundwater recharge with surface reservoir releases: a planning approach and case study in California, USA." *Hydrogeology Journal* **27** (4): 1183 -1206. <https://doi.org/10.1007/s10040-019-01936-x>
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- Medellín-Azuara, J.** Escrivá-Bou, A. (Author), Papadimitropoulos, S., Tapia, M., Viers, J., UCOWR Annual Water Resources Conference 2026, "Strategic Water Futures in Tulare County: Market Solutions and Recharge Under SGMA and Climate Uncertainty," Universities Council on Water Resources, San Antonio Texas. (June 2026).
- Medellín-Azuara, J.** Cai, Y. (Author), Ateljevich, E. (Author), Elser, S. (Author), Gartrell, G. (Author), Milligan, B. (Author), Leinfelder-Miles, M. (Author), Lund, J. R., CWEMF Annual Meeting 2026, "Managing Salinity in the Delta: An integrated modeling-collaboratory approach for research on infrastructure and management solutions," California Water and Environmental Modeling Forum, Panel: Collaborative Modeling in the Delta: Exploring Feasibility Using Three Use Cases, Folsom, California. (April 2026).

- Medellin-Azuara, J.**, American Geophysical Union Fall Meeting 2025, "Advancing Equity and Justice in Water Systems through Science, Engagement, and Education: Insights from California," American Geophysical Union, New Orleans, LA. (December 2025).
- Sharma, A. (Presenter & Author), Gilbert, J. M. (Author), Medellin-Azuara, J. (Author), American Geophysical Union Fall Meeting 2025, "Agricultural Following Patterns Reveal Local Sensitivities and Inform Agent-Based Land-Use Modeling in California's Central Valley.," American Geophysical Union, New Orleans, LA. (December 2025).
- Konialian, A. (Presenter & Author), Escrive-Bou, A. (Author), Medellin-Azuara, J. (Author), Dobbin, K. (Author), Cai, Y. (Author), American Geophysical Union Fall Meeting 2025, "Assessing Disparities in Water Reliability and Economic Impact for California's Water Users over the 21st Century," American Geophysical Union, New Orleans, LA. (December 2025).
- Medellin-Azuara, J.** Kishore, S. (Author), Escrive-Bou, A. (Author), Konialian, A. (Author), Gilbert, J. M. (Author), Abatzoglou, J. (Author), Viers, J. H. (Author), American Geophysical Union Fall Meeting 2025, "Climate Extreme-Induced Economic Impacts on California Crops, Livestock, and Communities," American Geophysical Union, New Orleans, LA. (December 2025).
- Trujillo, E. (Author), Morande, J. A. (Presenter & Author), Harmon, T. C. (Presenter & Author), Medellin-Azuara, J. (Author), American Geophysical Union Fall Meeting 2025, "Evaluation of Economic Benefits from Managed Aquifer Recharge (MAR) Strategies in California's San Joaquin Valley: The Tule and Kaweah Sub-Basins Case Study," American Geophysical Union, New Orleans, LA. (December 2025).
- Partridge, T. (Author), Cai, Y. (Presenter & Author), Sanchez, L. (Author), Escrive-Bou, A. (Author), Medellin-Azuara, J. (Author), Perkins, K. S. (Author), Traum, J. (Author), Olson, C., American Geophysical Union Fall Meeting 2025, "Frameworks for integrating human decisions into hydrologic models for irrigated agriculture," American Geophysical Union, New Orleans, LA. (December 2025).
- Cai, Y. (Presenter & Author), Medellin-Azuara, J. (Author), Escrive-Bou, A. (Author), Porse, M. (Author), Dobbin, B. (Author), Gilbert, L. (Author), American Geophysical Union Fall Meeting 2025, "Scenario-Based Assessment of Welfare Losses from Urban Water Shortages in California's Central Valley," American Geophysical Union, New Orleans, LA. (December 2025).
- Harmon, T. C. (Presenter & Author), Nunez-Bolano, Y. (Author), Flores-Landeros, J. (Author), Morande, J. A. (Author), Trujillo, E. (Author), Medellin-Azuara, J. (Author), American Geophysical Union Fall Meeting 2025, "Stakeholder-Informed Land Repurposing for Groundwater Sustainability: Evaluating Agricultural, Economic, and Environmental Trade-offs in Overdrafted Subbasins of California's San Joaquin Valley," American Geophysical Union, New Orleans, LA. (December 2025).
- Medellin-Azuara, J. Cai, Y. (Presenter & Author), Tapia, M. (Author), Escrive-Bou, A. (Author), Milligan, B. (Author), Larsen, L., American Geophysical Union Fall Meeting 2024, "Economic Analysis of Just Land Use Transitions in the California's Sacramento San Joaquin Delta.," American Geophysical Union, Washington, D.C. (December 2024).

- Escriva-Bou, A. (Presenter & Author), Medellin-Azuara, J. (Author), Gilbert, J. M. (Author), Grantham, T. (Author), American Geophysical Union Fall Meeting 2024, "Estimating the economic effects of climate change on California's agriculture," American Geophysical Union, Washington, D.C. (December 2024).
- Li, L. (Presenter & Author), Medellin-Azuara, J. (Author), Viers, J. H. (Author), Harmon, T. C. (Author), American Geophysical Union Fall Meeting 2024, "Multi-benefit Conservation Planning for Balancing the Competing Land and Water Use for Human and Biodiversity Conservation," American Geophysical Union, Washington, D.C. (December 2024).
- Harmon, T. C. (Presenter & Author), Rodriguez-Flores, J. (Author), Fernandez-Bou, A. S. (Author), Medellin-Azuara, J. (Author), Nunez-Bolano, Y. (Author), American Geophysical Union Fall Meeting 2023, "A Multibenefit Land Repurposing Project Selection Tool for Critically Overdrafted Groundwater Sub-Basins in the San Joaquin Valley, California, USA," American Geophysical Union, San Francisco, CA. (December 2023).
- Medellin-Azuara, J.**, Null, S. E. (Author), Fernald, A. (Author), Escriva-Bou, A. (Author), Viers, J. H., American Geophysical Union Fall Meeting 2023, "Exploring Western States Regional Water Market Cases for Agriculture and Community Climate Extreme Resilience: Tulare Lake Basin, CA, Mesilla Valley, NM and Cache Valley, UT," American Geophysical Union, San Francisco, CA. (December 2023).
- Li, L. (Presenter & Author), Maskey, M. (Author), Cole, S. (Author), Rodriguez-Flores, J. (Author), Medellin-Azuara, J. (Author), American Geophysical Union Fall Meeting 2023, "Integrated modeling framework for shorebird population changes under land-use and climate changes using remote-sensed and citizen science data for Central Valley farmlands in California," American Geophysical Union, San Francisco, CA. (December 2023).
- Viers, J. H. (Author), Sarwar, A. (Presenter & Author), Santos, N. (Author), Moyers, K. (Author), Abatzoglou, J. (Author), Medellin-Azuara, J. (Author), American Geophysical Union Fall Meeting 2023, "Predicting Fallow Land and Water Management Implications Using Advances in AI for California's San Joaquin Valley," American Geophysical Union, San Francisco, CA. (December 2023).
- Zhang, B. (Presenter & Author), Medellin-Azuara, J. (Author), Hestir, E. (Author), Viers, J. H. (Author), Santos, N. (Author), Dahlke, H. (Author), Medina, C. (Author), Morande, J. A., Moses, Z. (Author), American Geophysical Union Fall Meeting 2023, "Regional Estimation of Groundwater Recharge from Atmospheric River-Induced Flooding for Agricultural Areas in 2023 Across California," American Geophysical Union, San Francisco, CA. (December 2023).
- Medellin-Azuara, J.** and Morande, J.A. Crop Water Consumptive Use in the Sacramento-San Joaquin Delta: Large Scale Comparative Study and UAV Applications for Field Scale Estimations. UC Water Annual Retreat III: Integration in Water Resources Research, September 20-22, 2023, Davis, California. **Invited Speaker.**
- Medellin-Azuara, J. (2023). Is the Drought Over? Which Drought. (Invited) Extreme Precipitation Symposium, June 27, 2023, Davis, California. **Invited Speaker.**

- Medellin-Azuara, J. (2022) Science Presentation and Panel: What we know about ET, cover crops and, and water budgets. Soil Water Expert Convening: Cover Crops' Impact on Water Budgets. UC ANR. Sacramento, California, November 30, 2022. **Invited Panelist.**
- Medellin-Azuara, J. (2022) Adapting to a Drier, Hotter California: Policy Responses to Drought and Extreme Heat Seminar Series. UC Center Sacramento, Sacramento, California, November 16, 2022. **Invited Speaker.**
- Medellín-Azuara, J.** Not a Drop to Drink: California Faces the Worst Drought in 1,200 Years. Ethnic Media Services News Briefing. Online. April 22, 2022. **Invited Speaker.**
- Medellín-Azuara, J.** Drought Impacts on Agriculture. Board Meeting of the California State Board of Food and Agriculture. Merced, California. April 05, 2022. **Invited Speaker.**
- Maskey, M. L., Serrano Suarez, D. J., Viers, J. H., **Medellin-Azuara, J.**, Sivakumar, B., and Diaz, L. E. G.: Fractal-multifractal ensembles of downscaled precipitation and temperature sets as implied by climate models, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-13741, <https://doi.org/10.5194/egusphere-egu21-13741>
- Maskey, M. L., Li, L., Fernandez-Bou, A. S., Viers, J. H., and **Medellin-Azuara, J.**: Integrated Spatial and Economic Analysis on Water Infrastructure Expansion Profitability and Affecting Climatic Factors within the Central Valley of California, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-13766, <https://doi.org/10.5194/egusphere-egu21-13766>
- Whipple, A., Deverel, S., Wells, E., Zeleke, D., **Medellín-Azuara, J.** Resilient Staten Island: Pilot Application for Landscape Scenario Analysis. 2021 Bay-Delta Conference. Online (Due to Covid-19). April 9th, 2021.
- Serrano, D., Maskey, M., **Medellín-Azuara, J.**, Sivakumar, B., Puente, C. Revisiting the Fractal-Multifractal method in describing geometries of precipitation and temperature: Case of global circulation models outputs. AGU Fall Meeting 2020. December 17th, 2020.
- Maskey, M., **Medellín-Azuara, J.**, Fernandez-Bou, A., Guzman, A., Goharian, E., Dogan, M. Investigating benefits from additional recharge facilities within the American River Basin. AGU Fall Meeting 2020. December 12th, 2020.
- Valero-Fandino, J., Rodríguez-Flores, J. M., Cole, S., Escriva-Bou, A., Zeff, H. B., **Medellín-Azuara, J.**, Optimal agricultural production under different climatic scenarios through a coupled hydrologic and economic models in Kern county, California. AGU Fall Meeting 2020. December 14th, 2020.
- Escriva-Bou, A., & **Medellín-Azuara, J.** Dynamic Adaptive Pathways for Groundwater Sustainability: Exploring Human-Water Interactions under Uncertain Conditions. AGU Fall Meeting 2020. December 14th, 2020.
- Zhu, T., Marques, G., **Medellín-Azuara, J.**, Lund, J. R. Optimizing Regional Water Management using Probabilistic Seasonal Forecasts. AGU Fall Meeting 2020. December 12th, 2020.
- Rodriguez-Flores, J. M., Cole, S., Valero-Fandino, J., Malek, K., Karimi, T., Zeff, H. B., Escriva-Bou, A., **Medellín-Azuara, J.** Global Sensitivity Analysis for a coupled Hydro-economic model under a groundwater management policy in Kern County, California. AGU Fall Meeting 2020. December 11th, 2020.
- Medellín-Azuara, J.** A Multi-Objective Framework for Agricultural Production and Water Use

- in California's Greater Kern Region under Groundwater Sustainability Regulations. EGU General Assembly 2020. Online (Due to Covid-19). May 6th, 2020.
- Medellín-Azuara, J.** Annual Water Program Team Meeting. UCANR Building. Davis, CA. March 12th, 2020. **Invited Speaker.**
- Medellín-Azuara, J.** 2020 Vacaville: Farming in the New Normal: A workshop for growers on climate and agriculture. Natural Resources Conservation Service. Ulatis Community Center. Vacaville, CA. Jan. 7th, 2020. **Invited Speaker.**
- Medellín-Azuara, J.** Improving Water Rights Management in the California Sacramento San Joaquin Delta: Results from a Comparative Study Using Remote Sensing, Field Measurements and Self Reporting. AGU Fall Meeting 2019. San Francisco, CA. Dec. 9th 2019.
- Medellín-Azuara, J.** Incentivizing Aquifer Recharge 2019 Flood-MAR Public Forum. CA Dept. of Water Resources. CSU Sacramento Alumni Center. Oct. 28th, 2019. **Invited Panel Moderator.**
- Escriva-Bou, A., **Medellín-Azuara, J.**, Hanak, E. 2019 American Geophysical Union. Quest for Sustainability of Heavily Stressed Aquifers at Regional to Global Scales. Chapman Conference, Valencia, Spain. October 23rd 2019. **Poster Presentation.**
- Medellín-Azuara, J.** Building Trust: Striving Toward Equitable and Inclusive Outcomes. State of the San Francisco Estuary Conference 14th Biennial. San Francisco Estuary Partnership. Scottish Rite Center. Oct. 21st, 2019. **Invited Panelist.**
- Medellín-Azuara, J.**, Paw U, K.T., Jin, Y., Lund, J.R., Kent, E., Clay, J., Alexander-Sanchez, N., Wong, A., Santos, N., Badillo, J., Lambert, J., McAuliffe, M., Edgar, D., Freiberg, S., Gong, R., Mertz, M., Hart, Q., Merz, J., Morande, A., Piles, R., Anderson, A., Viers, J., Chen, Y., Snyder, R., Little, C., Temegsen, B., Sarreshteh, S., Eching, S., Trezza, R., Trout, T., Guzman, A., Johnson, L., Roosevelt, C., Post, K., Allen, R., Clark, B., Jankowski, J., Leinfelder-Miles, M.M., Anderson, M., Howes, D., Melton, F., Kadir T., Liang, L., Orang, M. (2019). A Comparative Study Of Evapotranspiration Estimation in the California Bay Delta: Insights From a Two-Year Study Using Remote Sensing, Field Measurements and Unmanned Aerial Vehicles. MIDH2O Symposium. Merced, CA. October 9, 2019. **Keynote Speaker.**
- Medellín-Azuara, J.**, Escriva-Bou, A., Valero-Fandiño, J., Cole, S.A., Yepiz Yopez, U. Economic and Water Supply Impacts on Food Production from Ending Groundwater Overdraft in California's San Joaquin Valley. National Conference on Environmental Chemistry. Tanjian, China. August 19, 2019. **Keynote Speaker.**
- Medellín-Azuara, J.**, Escriva-Bou, A., Valero-Fandiño, J., Cole, S.A. Achieving Groundwater Sustainability in the San Joaquin Valley: A Hydro-Economic Approach. Universities Council on Water Resources Annual Conference. Snowbird, Utah. June 11-13, 2019. **Invited talk.**
- Medellín-Azuara, J.** Water Resources Monitoring. Contemporary Groundwater Issues Council. UC Davis Walter A. Buehler Alumni Center. May 23, 2019. **Invited Panelist.**
- Escriva-Bou, A., **Medellín-Azuara, J.**, Hanak, E. and Lund, J.R. Transitioning to Sustainable

- Groundwater Use: An Economic Analysis of Supply and Demand Management Options to Inform Policy Decisions in California's San Joaquin Valley. American Geophysical Union Annual Meeting. Washington, D.C. December 10-15, 2018.
- Yoon, J., Klassert, C.J.A., Gorelick, S., Lachaut, T., Selby, P.D., Know, S., Tilmant, A., Rajsekhar, D., Harou, J.J., Kaluer, B., Sigel, K., Mustafa, D., Hawel, E., **Medellín-Azuara, J.** and Zhang, H. Evaluation of Water Security in Jordan using a Multi-Agent Hydroeconomic Model: Climate, Crises, and Stability. American Geophysical Union Annual Meeting. Washington, D.C. December 10-15, 2018.
- Kern, J., Zeff, H.B., Herman, J.D., Reed, P.R., Characklis, G.W., **Medellín-Azuara, J.** and Pavelsky, T. Challenges and opportunities in modeling cross-scale, cross-sector feedbacks to inform critical decision-making in food-energy-water systems. American Geophysical Union Annual Meeting. Washington, D.C. December 10-15, 2018.
- Medellín-Azuara, J.** Lessons Learned in the Field of Water Resources Management during Recent Droughts in California. Colegio De Postgraduados Campus Montecillos. Chapingo, Mexico. November 15-16, 2018. **Speaker.**
- Jankowski, J., **Medellín-Azuara, J.**, Paw U, K., Jin, Y., Lund, J. Water Management and Policy Insights from the Sacramento-San Joaquin Delta Consumptive Study. Bay-Delta Science Conference. Sacramento, CA. September 10-12, 2018.
- Paw U, K.T., Kent, E., Clay, J. J., Temesgen, B., Edgar, D., **Medellín-Azuara, J.**, Little, C. Evapotranspiration from Three Crop Types and Fallow Lands in the Sacramento-San Joaquin River Delta. Bay-Delta Science Conference. Sacramento, CA. September 10-12, 2018.
- Jin, Y., Wong, A., Paw U, K., **Medellín-Azuara, J.**, Fisher, J., Gao, F. Satellite Remote Sensing of Evapotranspiration over Agricultural Land: An Improved Priestley-Taylor Approach. Bay-Delta Science Conference. Sacramento, CA. September 10-12, 2018.
- Medellín-Azuara, J.** Modeling and Decision Support. Bay-Delta Science Conference. Sacramento, CA. September 10-12, 2018. **Moderator.**
- Medellín-Azuara, J.** Modeling Economics in the Sacramento-San Joaquin Delta. Bay-Delta Science Conference. Sacramento, CA. September 10-12, 2018. **Presenter.**
- Medellín-Azuara, J.** A Comparative Study for Consumptive Use in the Sacramento-San Joaquin Delta: Models and Field Data to Inform Water Management and Policy Decisions. Bay-Delta Science Conference. Sacramento, CA. September 10-12, 2018. **Presenter.**
- Medellín-Azuara, J.** A Comparative Study for Consumptive Use in the Sacramento-San Joaquin Delta: Models and Field Data to Inform Water Management and Policy Decisions. World Environmental & Water Resources Congress. Minneapolis, Minnesota. June 3-7, 2018.
- Fefer, M., Herman, J., Hart, Q., Merz, J., **Medellín-Azuara, J.**, Lund, J., Dogan, M. S. An open-source implementation of California's hydroeconomic model. World Environmental & Water Resources Congress. Minneapolis, Minnesota. June 3-7, 2018.
- Hanak, E., **Medellín-Azuara, J.**, Lund, J., Escrivá-Bou, A. How to live with no regrets: Informing policy decisions through marginal economic analysis of water supply and demand management actions under uncertainty. World Environmental & Water Resources Congress. Minneapolis, Minnesota. June 3-7, 2018.

- Jankowski, J., **Medellín-Azuara, J.** A comparative study of evapotranspiration estimation in the California Bay Delta: Insights from a two-year study using remote sensing, field measurements and unmanned aerial vehicles. World Environmental & Water Resources Congress. Minneapolis, Minnesota. June 3-7, 2018.
- Medellín-Azuara, J.** University Engagement on California Water Problems. California Water and Environmental Modeling Forum 2018 Annual Meeting. Folsom, CA. April 2-4, 2018.
Invited talk and Moderator.
- Escriva-Bou, A., **Medellín-Azuara, J.**, Hanak, E., Lund, J.R. (2018). How to Live with No Regrets: Informing Policy Decisions through Marginal Economic Analysis of Water Supply and Demand Management Actions Under Uncertainty. California Water and Environmental Modeling Forum 2018 Annual Meeting. Folsom, CA. April 2-4, 2018.
- Medellín-Azuara, J.**, Paw U, K.T., Jin, Y., Lund, J.R., Kent, E., Clay, J., Alexander-Sanchez, N., Wong, A., Santos, N., Badillo, J., Lambert, J., McAuliffe, M., Edgar, D., Freiberg, S., Gong, R., Mertz, M., Hart, Q., Merz, J., Morande, A., Piles, R., Anderson, A., Viers, J., Chen, Y., Snyder, R., Little, C., Temegsen, B., Sarreshteh, S., Eching, S., Trezza, R., Trout, T., Guzman, A., Johnson, L., Roosevelt, C., Post, K., Allen, R., Clark, B., Jankowski, J., Leinfelder-Miles, M.M., Anderson, M., Howes, D., Melton, F., Kadir T., Liang, L., Orang, M. (2018). A Comparative Study on Consumptive Use in the Sacramento-San Joaquin Delta. California Water and Environmental Modeling Forum 2018 Annual Meeting. Folsom, CA. April 2-4, 2018. **Presenter.**
- Wong, A., Jin, Y., Kent, E., Paw U, K.T., Lund, J.R., He, R., Fisher, J.B., Gulley, G., Rivera, G., Lee, C., Hook, S., **Medellín-Azuara, J.**, Gao, F. Mapping Evapotranspiration in the Sacramento-San Joaquin Delta Using Simulated ECOSTRESS Thermal Data - Validation and Inter-Comparison. California Water and Environmental Modeling Forum 2018 Annual Meeting. Folsom, CA. April 2-4, 2018.
- Morande, J.A., Trezza, R., Anderson, A., Chen, Y., Viers, J., **Medellín-Azuara, J.**, Paw U, K.T., Jin, Y., Badillo, J., Jankowski, J. (2018). Evapotranspiration Estimation from Unmanned Aerial Vehicle Imagery. California Water and Environmental Modeling Forum 2018 Annual Meeting. Folsom, CA. April 2-4, 2018.
- Jankowski, J., **Medellín-Azuara, J.**, Lund, J.R. (2018). Policy Insights from Comparing Evapotranspiration Estimates in the Sacramento-San Joaquin Delta. California Water and Environmental Modeling Forum 2018 Annual Meeting. Folsom, CA. April 2-4, 2018.
- Medellín-Azuara, J.** Consumptive water use in crops in the Sacramento and San Joaquin Delta. Sierra Nevada Research Institute Research Symposium. Merced, CA. March 5, 2018.
Invited Talk.
- Vicuna, S., Melo, O., Meza, F. J., **Medellín-Azuara, J.**, Herman, J. D., & Sandoval Solis, S. (2017, December). Crossing Scales and Disciplines to Understand Challenges for Climate Change Adaptation and Water Resources Management in Chile and California. American Geophysical Union Fall meeting. New Orleans, LA. December 11-15, 2017. **Poster.**
- Rheinheimer, D. E., Garza, L. E., **Medellín-Azuara, J.**, Ramirez, A. A Web-based Tool for Transparent, Collaborative Urban Water System Planning for Monterrey, Mexico. American Geophysical Union Fall meeting. New Orleans, LA. December 11-15, 2017.

- Medellín-Azuara, J. Atmospheric & Climactic Modeling Pertaining to SJV Water Availability for the Next 5 years. 2017 Grape and Industry Forum. November 29, 2017. **Invited Talk.**
- Lund, J., **Medellín-Azuara, J.**, Jeffres, C. Water Use and Abuse During Drought. 4th Annual UC Davis One Health Symposium. UD Davis International Center. November 4, 2017. **Invited Panelist.**
- Medellín-Azuara, J.** An Overview of California's Water Resources Infrastructure and Management. Davids Engineering California Study Tour. Sacramento, California. September 12-15, 2017. **Invited Speaker.**
- Medellín-Azuara, J.** Measuring Costs of Inaction and Benefits of Drought Mitigation and Preparedness. The World Bank and Integrated Drought Management Program Joint Drought Mitigation & Preparedness Workshop. Washington, D.C. April 26-27, 2017. **Invited Speaker.**
- Medellín-Azuara, J.**, Paw U, K.T., Jin, Y., Lund, J.R., Kent, E., Clay, J., Alexander-Sanchez, N., Wong, A., Jankowski, J., Leinfelder-Miles, M.M., Anderson, M., Howes, D., Melton, F., Kadir T., Liang, L., Orang, M. (2017). A Comparative Study on Consumptive Use in the Sacramento-San Joaquin Delta. California Water and Environmental Modeling Forum. March 20-22, 2017. Folsom, CA. **Presenter.**
- Alexander-Sanchez, N., Mertz, J., Hart, Q., **Medellín-Azuara, J.**, Lund, J.R. (2017). Google Earth Engine METRIC (GEM) Application for Remote Sensing of Evapotranspiration. California Water and Environmental Modeling Forum. March 20-22, 2017. Folsom, CA.
- Wong, A., Jin, Y., Snyder, R., Zaccaria, D., **Medellín-Azuara, J.**, Hart, Q., Lund, J.R. (2017). Estimating Field Scale Crop Evapotranspiration Using Landsat and MODIS Satellite Observations. California Water and Environmental Modeling Forum. March 20-22, 2017. Folsom, CA.
- Dogan, M., Fefer, M., Herman, J., Mertz, J., Hart, Q., **Medellín-Azuara, J.**, Lund, J.R. (2017). Representing California's Water System with an Open Source Model: PyVIN. California Water and Environmental Modeling Forum. March 20-22, 2017. Folsom, CA.
- Medellín-Azuara, J.**, MacEwan, D., Howitt, R., Lund, J.R. Exploring Physical and Behavioral Responses to Salinity in Agriculture: A Case Study from Kern County, California. 2017 MSSC Annual Salinity Summit, Las Vegas, Nevada, March 2-3, 2017. **Invited Speaker.**
- Medellín-Azuara, J.** The Role of Groundwater Management in Recent Droughts: Insights from California. 50th Anniversary of the Robert S. Kerr EPA Environmental Research Center, Ada, Oklahoma, August 4, 2016. **Invited Talk.**
- Economics of Declining Groundwater Levels: A Case Study for the Tulare Lake Basin, California, International Groundwater Conference. June 29, 2016.
- Medellín-Azuara, J.** Economics of Long Term Groundwater: A Case Study for the Tulare Lake Basin, California. Toward Sustainable Groundwater in Agriculture- An International Conference Linking Science and Policy. Burlingame, California. June 28-30, 2016.
- González, José M., Marcelo A. Olivares, **Josué Medellín-Azuara**, Rodrigo Moreno, and G. Marques. 2016. "Multi-Purpose Reservoir Operation: A Tradeoff Analysis between Hydropower Generation and Irrigated Agriculture Using Hydro-Economic Models." In *World Environmental and Water Resources Congress 2016*, 241–50. West Palm Beach, Florida: American Society of Civil Engineers. <https://doi.org/10.1061/9780784479858.026>.

- Medellín-Azuara, J.** Economic Impacts of Recent California Droughts. Department of Hydraulic and Environmental Engineering, Tech Univ of Valencia, Spain, April 21, 2016. **Invited Talk.**
- Medellín-Azuara, J.** and Lund, J.R. Managing water resources for drought: Insights for California, European Geosciences Union. Vienna, Austria, April 18, 2016.
- Lund, J.R., and **Medellín-Azuara, J.**, (2016). Lessons from Recent California Droughts. California Water and Environmental Modeling Forum. April 11-13, 2016. Folsom, CA.
- Dogan, M., Singh, K., **Medellín-Azuara, J.**, Lund, J.R. (2016). Effects of Ending Long-Term Overdraft on California's Water Supply System. California Water and Environmental Modeling Forum. April 11-13, 2016. Folsom, CA.
- Sing, K., Dogan, M., Lund, J.R., Viers, J., Esralew, R., **Medellín-Azuara, J.** (2016). Central Valley Refuge Management under Non-Stationary Climatic and Management Conditions. California Water and Environmental Modeling Forum. April 11-13, 2016. Folsom, CA.
- Medellín-Azuara, J.**, Sumner D.A., Howitt, R.E., MacEwan, D.M. and Lund, J.R. Economic Impacts of Recent California Droughts. Davis Sunrise Rotary Club, Davis, California. February 10, 2016. **Invited Talk.**
- Medellín-Azuara, J.** Comparison of Methods for Estimating Evapotranspiration in the Sacramento-San Joaquin-Delta. Evapotranspiration Remote Sensing Workshop, Davis, California. November 13, 2015. **Invited Talk.**
- Medellín-Azuara, J.**, Howitt, R.E., MacEwan, D., Lund, J.R. (2015). Response of California Agriculture to Water Reductions. Workshop on Migration of Agriculture. Sponsored by the National Science Foundation. October 21-23, Boulder, Colorado. **Invited Talk.**
- Lund, J. R. and **Medellín-Azuara, J.** (2015). California and Drought—2014 and the Future. In *World Environmental and Water Resources Congress 2015* (pp. 2073-2080). <https://doi.org/10.1061/9780784479162.204>
- Medellín-Azuara, J.** Panel Drought Impacts Water Supply. American Geophysical Union Chapman Conference, Irvine, California. April 2015. **Invited Talk.**
- Medellín-Azuara, J.** Impact Analysis of the 2014 California Drought Using Hydro-economic Models. Department Seminar. Instituto de Pesquisas Hidráulicas, Universidade Federal de Rio Grande do Sul, Porto Alegre, Brazil. April 2015. **Invited Talk.**
- Medellín-Azuara, J.**, Hart, Q., Lund, J.R., Sandoval-Solis, S., Escriba-Bou, A., Rui Hui, Dogan, M., Singh, K., Santos, N. (2015). The HOBBS Project Update. California Water and Environmental Modeling Forum. March 9-11, 2015. Folsom, CA.
- Medellín-Azuara, J.**, Howitt, R.E., MacEwan, D., Lund, J.R. (2015). Economic Analysis of the 2014 California Drought on Agriculture. Post-Assessment and Prospects for 2015. California Water and Environmental Modeling Forum. March 9-11, 2015. Folsom, CA.
- Medellín-Azuara, J.**, Howitt, R.E., MacEwan, D., Lund, J.R. and Sumner, D.A. (2014). Economic Analysis of the 2014 Drought for California Agriculture. A Post-Assessment Using Remote Sensing. Stanford Woods Institute for the Environment, Stanford University, February, 2015. **Invited Talk.**
- Medellín-Azuara, J.**, Alexander, N., Howitt, R.E. (2014). Comparing Consumptive Agricultural Water Use in the Sacramento-San Joaquin Delta: A Proof of Concept using Remote

- Sensing. California Water and Environmental Modeling Forum. Folsom, CA February 24-26, 2014. **Presenter.**
- Medellín-Azuara, J.,** Bell, A., Escriva-Bou, A., Hart, Q., Rui Hui, Lund, J.R., Porse, E., Sandoval-Solis, S., Santos, N., Waetjen, D. (2014). The HOBBS Project at Year One: Adventures in Organizing, Documenting, and Displaying California's Water System Information. California Water and Environmental Modeling Forum. Folsom, CA February 24-26, 2014. **Presenter.**
- Quiñones, R.M., Adams, L., Grantham, T., **Medellín-Azuara, J.,** Lund, J.R., Moyle, P. Better Redd than Dead: Optimizing Chinook Salmon Survival Through Dam-release Manipulation at Folsom Dam. (2014). California Water and Environmental Modeling Forum. Folsom, CA February 24-26, 2014. **Poster.**
- Medellín-Azuara, J.,** Howitt, R.E., MacEwan, D., Lund, J.R. (2014). Economic Gains from Groundwater Management in California and Use of Remote Sensing. American Geophysical Union Meeting, San Francisco, California, December 2014.
- Medellín-Azuara, J.** (2014). Agricultural Losses from Salinity in California's Sacramento-San Joaquin Delta. 8th Biennial Bay-Delta Science Conference. Making Connections. October 28-30, 2014, Sacramento, California.
- Anderson, M., **Medellín-Azuara, et. al.** Field-scale Assessment of Land and Water Use Change using Remote Sensing Data Fusion. Remote Sensing and Hydrology Symposium. May 10, 2018.
- Medellín-Azuara, J.,** Howitt, R.E., MacEwan, D., Lund, J.R. and Sumner D.A. (2014). Agricultural and Food Costs During Drought. San Gabriel Valley Water Forum. October 2014. **Invited Talk.**
- Medellín-Azuara, J.,** Howitt, R.E., MacEwan, D., Lund, J.R. and Sumner, D.A. (2014). Socio Economic Impacts of the 2014 California Drought. Humans for a Healthier World. October, 2014. **Invited Talk**
- Medellín-Azuara, J.,** Howitt, R.E., MacEwan, D., Lund, J.R. and Sumner D.A. (2014). Impacts of Recent Droughts in California Agriculture. Department Seminar. University of California, Riverside, May 21, 2014. **Invited Talk.**
- Medellín-Azuara, J.** (2014) Drought Summit. Panelist. University of California, Davis. Sacramento California, April 2014. **Invited Talk.**
- Medellín-Azuara, J.** (2014). The Colorado River Region and Imperial Valley. California Virtual Water Tour. UC-ANR. January 2014. **Invited Talk.**
- Medellín-Azuara, J.** (2013). Panelist. 2013 Integrated Regional Water Management Conference. Transforming the Water Management Culture. Water Education Foundation. Sacramento. April, 2013. **Invited Talk.**
- Lund, J.R., **Medellín-Azuara, J.,** Sandoval, S., Wei Chu., Escriva A., Vincent A., Porse, E., Zikalala, P., Nelson, T., Rui Hui. The Hobbes Project. California Water and Environmental Modeling Forum. Folsom, CA April 22-24, 2013. **Presenter.**
- Medellín-Azuara, J.** Howitt, R.E. MacEwan D. and Lund, J.R. (2012) Economic Analysis of Climate-Related Agricultural Yield Losses in California. Climate Change Adaptation Consortium. Invited by the California Department of Food and Agriculture. November 28, 2012. Modesto, CA. **Invited Talk.**

- Medellín-Azuara, J.** Transitions in the Delta Economy. 7th Biennial Bay-Delta Science Conference. October 16-18, 2012. Sacramento, CA. **Invited Talk.**
- Medellín-Azuara, J.**, Rosenstock, T., Howitt, R.E., Harter, T., Jessoe, K., Dzurella, K., Pettygrove, S., Lund, Jay R. (2012) Economic Analysis of Crop Nitrate Source Reductions. International Water Resources: Challenges for the 21st Century and Water Resources Education. Universities Council on Water Resources. Santa Fe, NM, July 16-19, 2012. **Presenter.**
- Medellín-Azuara, J.**, De Souza, S. Burley, N. Lund, J.R., Howitt, R.E., Mills, R., Horner, G. and D. Balgobin. An Economic Analysis Guidance Document for Water Recycling Documents in California. WaterReuse California Annual Water Recycling Conference: A Capital Opportunity WaterReuse Foundation, Sacramento, California March 26-28, 2012. **Presenter.**
- Howitt, R.E. Lund, J., **Medellín-Azuara, J.**, MacEwan, D., Garnache, C. Yolo Bypass and Floodplains: Land Use and economic Value. Flood Risk Assessment Group, Sacramento, California. July 20, 2012. **Co-Presenter with Lund and Howitt.**
- Chou, H., Zikalala, P., Buck, C., Lund, J.R., **Medellín-Azuara, J.** CALVIN Groundwater Update. California Water and Environmental Modeling Forum. Folsom, CA April 16-18, 2012. **Poster.**
- Medellín-Azuara, J.**, Hanak, E., Howitt, R.E. and Lund, J.R. Transitions for the California Delta Economy. California Water and Environmental Modeling Forum. Folsom, CA April 16-18, 2012. **Presenter.**
- Hanak, E. and **Medellín-Azuara, J.** Transitions for the California Delta Economy. An Assessment of Planning Priorities. Sacramento Economics Roundtable. Sacramento, CA March 23, 2012. **Invited Talk.**
- Medellín-Azuara, J.** Rosenstock, T., Howitt, R., Harter, T. Pettygrove, S. Dzurella, K. Lund, J.R. (2011). Agro-Economic Analysis of Management of Nitrogen Load of Groundwater in California. Fall Conference American Geophysical Union. San Francisco, CA, December 2011. **Poster.**
- Ragatz, R., Lund, J.R., **Medellín-Azuara, J.**, Bartolomeo, E., Sicke, W., Bates, M. and De Souza, S. (2011). Water Management Costs and Adaptations with Delta Restrictions, Climate Change and Expanded Urban Water Conservation. California Water and Environmental Modeling Forum, Asilomar, February 2011. **Poster.**
- Bartolomeo, E., **Medellín-Azuara, J.** and J.R. Lund (2011). Allocating Scarce Water Between Interior and Exterior Uses in Southern California. California Water and Environmental Modeling Forum, Asilomar, February 2011. **Poster.**
- Sicke, W., **Medellín-Azuara, J.** and J.R. Lund (2011). Climate Change Impacts to Local Water Management in the San Francisco Bay Area. California Water and Environmental Modeling Forum, Asilomar, February 2011. **Poster.**
- Medellín-Azuara, J.** MacEwan, D.M., Howitt, R.E. and J.R. Lund. (2011). Agricultural Water Use Modeling and Remote Sensing. California Water and Environmental Modeling Forum, Asilomar, February 2011. **Presenter.**

- Forni, L. Purkey, D., **Medellín-Azuara, J.** and Howitt, R.E. (2011). Economic and Hydrological Models Integration: Evaluating Future Climate Change Scenarios Using WEAP and SWAP. California Water and Environmental Modeling Forum, Asilomar, February 2011.
- Howitt, R.E., **Medellín-Azuara, J.**, MacEwan, D. and J.R. Lund. (2010). Improved agricultural water use modeling in California using remote sensing. Bay-Delta Science Conference 2010. Sacramento, CA. September 2010. **Presenter.**
- Connell, C.R., **Medellín-Azuara, J.** Brown, S. Viers, J. Sicke, W., Bates, M., Nover, D., Sukardi, M., Rheinheimer, D. Ragatz, R., Fung, K., Bartolomeo, E., Khimsara, P., Korth, D., Lund J.R. (2010). Groundwater Database for California, Poster, California Water and Environmental Modeling Forum, Asilomar, February 2010. **Poster.**
- Medellín-Azuara, J.** K. Madani, C. Connell, M. Bates, W. Sicke, and J.R. Lund. (2010). The Water 2.0 Social Calendar. California Water and Environmental Modeling Forum, Asilomar, February 2010, **Poster.**
- Connell, C.R. **Medellín-Azuara, J.** Lund, J.R. (2010). California's Water: Adaptation to Climate Change. California Water and Environmental Modeling Forum, Asilomar, February 2010.
- Medellín-Azuara, J.**, Howitt, R.E. and J.R. Lund. (2010). Transitions in the Structure of the Delta's Economy. Presentation, California Water and Environmental Modeling Forum, Asilomar, February 2010, **Presenter.**
- Howitt, R.E., **Medellín-Azuara, J.**, MacEwan, D and J.R. Lund. (2010). Estimating the Economic Impacts of Climate Change on California Agriculture. California Water and Environmental Modeling Forum, Asilomar, February 2010. **Presenter.**
- Medellín-Azuara, J.** (2009). Urban Water Demand Analysis of Five Border Cities of Northwestern Mexico. Universities Council on Water Resources. Chicago, IL July 2009. **Presenter Jay R. Lund.**
- Medellín-Azuara, J.**, Howitt, R.E. Lund, J.R. and Hanak, E. (2009) Agricultural Effects of Delta Management, California Water and Environmental Modeling Forum, Asilomar, February 2009. **Presenter.**
- Medellín-Azuara, J.**, Connell, C.R., Lund, J.R. and Howitt, R.E. Sensitivity analysis of key components in large scale hydro-economic models. Fall Conference American Geophysical Union. San Francisco, CA, December 2008.
- Harou, J. J., Pulido-Velasquez, M., **Medellín-Azuara, J.** Rosenberg, D.E. and Lund, J.R. (2008) Insights for Integrated Management and Adaptation to Climate Change. 13th IWRA World Water Congress. Montpellier, France. September, 1-4, 2008.
- Medellín-Azuara J.**, Mendoza-Espinosa L. G., Lund, J.R. (2008) Water supply for Baja California –development of CALVIN planning model, México. Border Infrastructure Conference. California Department of Water Resources Water Education Foundation. San Diego, California, May 28-29, 2008. **Invited Talk.**
- Medellín-Azuara, J.**, Mendoza-Espinosa, L.G., Lund, J.R., Howitt, R.E. (2008) Hydro-economic Analysis of Water Supply for the Binational Transboundary Region of Baja California, Mexico. Accepted for presentation in the International Water Association (IWA) 2008 Congress in Vienna, Austria, September 2008.
- Medellín-Azuara, J.**, Mendoza-Espinosa, L.G., Lund, J.R., Howitt, R.E. (2008) Hydroeconomic Analysis of Water Supply for northern Baja California in 2025 and 2080. International

- Water Resources: Challenges for the 21st Century and Water Resources Education. Universities Council on Water Resources. Durham, North Carolina, July 22-24, 2008. Presented by Jay R. Lund.
- Medellín-Azuara, J.,** Mendoza-Espinosa, L.G., Lund, J.R. and R.E. Howitt (2008). Hydroeconomic Analysis of Water Supply for Baja California, Mexico, World Environmental and Water Resources Congress 2008, Honolulu, HI. May12-16, 2008. **Presenter.**
- Medellín-Azuara, Josué.** Agua para Uso en el Delta del Río Colorado: balanceando aspectos ambientales, económicos en ingenieriles. Instituto Tecnológico y de Estudios Superiores de Monterrey, Monterrey, México. April 28, 2008. **Invited Talk.**
- Barrera, C. W., Espinosa, L. M., **Medellín-Azuara, J.** and Lund, J. R. (2009). Optimización Económico-Ingenieril Del Suministro Agrícola Y Urbano: Una Aplicación De Reúso Del Agua En Ensenada, Baja California, México. *Tecnología y Ciencias del Agua*, 24(4), 87-103.
- Medellín-Azuara, J.,** Howitt, R.E., and Lund, J.R. (2008). Modeling Economic Costs to agriculture of Changes in the Delta Export Salinity. California Water and Environmental Modeling Forum, Asilomar, February 2008. **Presenter.**
- Mendoza-Espinosa, L.G., **Medellín-Azuara, J.** and Lund, J.R (2007) *An Optimization Model for Water Management in the USA-Mexico Californian Border*. Submitted for the 80th Annual Water Environment Federation Technical Exhibition and Conference. San Diego, CA October 13-17.
- Medellín-Azuara J.,** Mendoza-Espinosa L. G., Lund, J. R. and Ramírez-Acosta R. J. (2006) Economic-engineering optimization modeling for water management in Ensenada, Baja California, México. IWA's 5th World Water Congress, Beijing, China, September 2006. **Poster.**
- Harou, J.J., **Medellín-Azuara, J.,** Zhu, T., Tanaka, S. K., Lund, J. R., Stine, S., Jenkins, M. W., and Olivares, M. A. (2006). Extreme Drought and Water Supply Management in California. Proceedings of the 2006 ASCE World Environmental and Water Resources Congress, Reston, VA.
- Medellín-Azuara, J.,** Lund, J.R., and R.H., Howitt (2006). Economic-Engineering Optimization for the Binational México-Us Lower Colorado River Delta: The Mexicali Valley Case Study. Universities Council on Water Resources Conference on Increasing Freshwater Supplies July 18-20, 2006 Santa Fe, New México. **Presenter** Jay R. Lund.
- Medellín-Azuara, J.** Harou, J.J., Olivares, M.A. and Lund, J.R. Climate Change and Water Supply Adaptation in California 2050 (2006). Universities Council on Water Resources Conference on Increasing Freshwater Supplies July 18-20, 2006 Santa Fe, New México. **Presenter** Jay R. Lund.
- Medellín-Azuara, J.** Mendoza-Espinosa, L.G., Lund J.R. (2006). Análisis Económico-Ingenieril de Uso Eficiente de Agua en Baja California, Coloquio Sobre Disponibilidad y Abastecimiento de Agua en Nuestra Región. Comisión Estatal de Servicios Públicos de Tijuana. Tijuana, México, April 19-21. **Invited Talk.**
- Medellín-Azuara J.,** Mendoza-Espinosa L. G., Lund, J. R. and Ramírez-Acosta R. J. (2005). The application of an economic-engineering optimization model for water management in

Ensenada, Baja California, México. IWA's 5th International Symposium on Wastewater Reclamation and Reuse for Sustainability. Jeju, Korea, 8-11 November 2005. **Poster.**

Medellín-Azuara, J. (2005). "Systems Analysis for Restoring the Colorado River Delta in México". Graduate Student Symposium. University of California, Davis. March 5. Davis, California. **Presenter.**

Medellín-Azuara, J. and J.R. Lund (2005). "Systems Analysis for Restoring the Lower Colorado River Delta". 2005 International Law Conference. Freshwater Ecosystem Restoration: The Role of Law Process and Lawyers. McGeorge School of Law. University of the Pacific. February 19-20, 2005. **Invited Talk.**

Lecturing, Mentoring, Student Supervision and Examinations

Courses as UC Faculty

Environmental Systems 299. Directed Independent Study. Fall 2025, Spring 2026, for Masters Student Wendy Haw.

Environmental Systems 240. Water Resources Management and Planning. Graduate class in water resources including water law, institutions, flood management, droughts, hydropower, groundwater and natural capita. Co-taught with Dr. Roger Bales, UC Merced. 3 units. Enrollment 6 students, Spring 2019, 7 students, Spring 2021, 8 students, Spring 2023. Volunteer 3 lectures on Spring 2025.

Environmental Engineering 140. Water Resources Management. Upper division class on water resources, including flood management, optimization and simulation models in water resources, environmental flows and regulations, Climate change with practical applications to California and other locations. 3 units. Enrollment Spring 2019 (12 students), Spring 2025 (6 students).

Environmental Engineering 155. Engineering Economics. Upper division class on principles of economic analysis for engineering infrastructure projects. 3 units. Enrollment 120-175 students. Fall 2018, Spring 2019, Fall 2020, Fall 2022, Spring 2024, Spring 2025, Spring 2026

Environmental Engineering 110. Hydrology and Climate. Upper division class on principles of hydrology. 4 units. Enrollment 15-25 students. Fall 2018*, Fall 2019, Fall 2020*, Fall 2021*, Fall 2022*. *Co-taught with Dr. M. Safeeq.

Environmental Systems 295. Graduate Research. Fall 2023, Spring 2024, Fall 2024, Spring 2025, Fall 2025, Spring 2026

Environmental Systems 292. California Fourth Climate Assessment for the San Joaquin Valley. Directed study group to draft a selection of topics for the San Joaquin Valley regional assessment report. 3 units. Enrollment 10 students. Spring 2018.

Environmental Systems 291. Environmental Systems Seminar Series. Graduate student section of the seminar series which includes a discussion section with guest speakers. Enrollment 12 students. Fall 2017 and Spring 2018.

As a visiting professor

Selected Topics in Water Resources Management with Applications. Instituto de Pesquisas Hidraulicas. Universidade Federal do Rio Grande do Sul, Brazil. Fall Semester, 2016. Delivered as a visiting professor.

Guest lecturer

"The Colorado River", January 2024, California Rivers Class, University of California, Davis, Professor Sarah Yarnell

“Economic Value of Water” Lecture (2006-to date), Water Resources Management, ECI 267, UC Davis, Professor Jay Lund.

“CALVIN Model”, July 2016. Water Economics Training, Department of Water Resources, Sacramento California.

“Water Economic Valuation”, Winter 2016, Infrastructural Economics Class, University of California, Davis, Professor Jay R. Lund.

“Water Management in California's Agroecosystems: past, present and future”, Winter 2016, Agroecology Course, University of California, Santa Cruz, Professor Deborah Letourneau

“Hydroeconomic Lecture Series”. Spring 2015, Water Management Class, Universidade Federal do Rio Grande do Sul, Brazil, Professor Guilherme F. Marques.

“Application of Systems Analysis in Large Scale Water Resources Modeling”, Fall 2008, Systems Analysis for Resources Development, CE250, Graduate Level, Sacramento State University, Lecturer Kaveh Madani.

“Transboundary Water Resources Management for Restoring the Colorado River Delta”, 2008, Global Water Resources Group Study”, ESP278, Graduate Level, UC Davis, Dr. Joshua Viers.

“Large-scale Water Resource System Optimization”, 2007, Advanced Water Resources Management, ECI 270, UC Davis, Professor Jay Lund.

Teaching Assistant, University of California, Davis-Department of Agricultural and Resource Economics, Quantitative Methods in Agricultural Economics, 2002.

Research Assistant and Laboratory Instructor, ITESM-Department of Mechanical Engineering. Materials and Manufacturing Processes Laboratory, edited laboratory manual, 1993.

Researcher Mentoring

Department of Environmental Engineering, UC Merced

- Addison Chen, Undergraduate Researcher (October 2023-2025)
- Pranav Tadepalli, Undergraduate Researcher (January 2024-August 2024)
- Edison Zhang, Undergraduate Researcher (August 2023-August 2024)
- Andrew Alamillo, Undergraduate Researcher (Summer 2023)
- Clara Medina, Undergraduate Researcher (August 2022- August 2023)
- Ricardo Arevalo, Undergraduate Researcher (August 2021-August 2023)
- Ricardo Arevalo, FACTS Mentorship (July 2021 – August 2021)
- Lafrance Daniels III, Undergraduate Researcher (June 2021 – 2022)
- Duy Do, Undergraduate Researcher (June 2021 – 2022)
- Kimberly Parra, Undergraduate Researcher (Nov. 2020 – 2022)
- Elisa Gonzales, Undergraduate Researcher (Sept. 2020 – 2022)
- Spencer Cole Jr. Researcher (Feb 2020 – Sept 2020)
- Jina Yin, Postdoctoral Researcher (Feb 2020 – Feb 2021)
- Humberto Flores Undergraduate Researcher (Nov. 2019 – Jan 2021)
- Mahesh Maskey, Postdoctoral Researcher (Dec 2019 – August 2021)
- Alexander Guzman, Jr. Researcher (August 2019 – August 2021)

- Angel Fernandez-Bou, Postdoctoral Researcher (August 2019 – August 2021)
- Leigh Bernacchi Researcher (Jan. – June 2019)
- Ulises Yepiz Yepiz Undergraduate Researcher (Jan. – Nov. 2019)
- Spencer Cole Undergraduate Researcher (Sept. 2018 – Dec 2019)
- Christina Nguyen Undergraduate Researcher (Feb 2018 – May 2018)

Graduate Student Mentoring and Supervision

Facultad de Ciencias Biológicas – Universidad Juárez del Estado de Durango

- Omag Cano Villegas M.S. 2018-2019.

Center for Water in the Minerals Industry, University of Queensland, Australia

- Juan Sebastián Ossa Moreno PhD. 2018-2019. Dissertation Committee Member.

Department of Civil and Environmental Engineering, UC Davis

- Natalie Mall, M.S., 2018, 2019. Thesis Committee Member.
- Rachel Ragatz M.S. 2009- 2013.
- Matthew Bates M.S. 2009- 2010.
- William Sicke M.S. 2009- 2011.
- Sachi De Souza M.S. 2009- 2011.
- Prudentia Zikalala M.S. 2010-2013.
- Heidi Chou M.A. 2011-2013.
- Nathan Burley M.S. & PhD. 2009-2013.
- Eleanor Bartolomeo M.S. 2010-2012.
- David Julian M.S. 2014., Thesis Committee Member.
- Mustafa Dogan M.S. and PhD. 2013-2017.
- Karandev Singh M.S. 2013-2015.
- Nadya Alexander PhD. 2014 to date, Agricultural Engineering)
- Jesse Jankowsky M.S. 2019. Thesis Committee Member.

Graduate Group in Hydrology, UC Davis

- Christina Connell-Buck, M.S. and PhD. 2009-2013.
- José Luis Rodríguez-Arellano M.S. 2014-2015.
- Michelle Lent M.S. 2011-2013.

Agricultural and Resource Economics, UC Davis

- Duncan MacEwan. M.S. 2008-2009.
- Laura Forni. M.S. 2010.

Postdoctoral and Researcher

- Sidharth Kishore , Postdoc, UC Merced (2025-present)
- Yu Cai, Postdoc, UC Merced (2024- present)
- Sadia Bibi, Project Scientist, UC Merced (2025-present)

- Symeon Papadimitropoulos, UC Merced (2025-present)
- Abhinav Sharma (2024 –2026) Postdoc, UC Santa Cruz, Seagrant Fellow.
- Gerardo Aragon-Castano Postdoc, UC Merced (2023-2024)
- Angel Fernandez-Bou, UC Merced (August 2019-August 2021).
- Mahesh Maskey, UC Merced (December 2019-September 2021)
- Jina Yin, UC Merced, February 2020-February 2021

Theses and Dissertation Committees

School of Engineering, UC Merced

- **Wendy Haw, M.S., 2025 – 2026, M.S. Advisor**
- **Everardo Trujillo, since 2023-present, Ph.D. Advisor**
- **Lisa Wu, since 2023-2025, formerly, Ph.D. Advisor.**
- Yelenka Nuno-Bolano, 2023-present, Ph.D. Member
- **Humberto-Flores, since 2021-present, Ph.D. Co-Advisor**
- Shobha Khanna (2023 – Present). PhD Committe Member.
- Isaac Sanchez (2023 – Present). PhD Committe Member.
- Raji Lukkoor (2023 – Present). PhD Committe Member.
- Gustavo F. Dourado, 2021-2024, Ph.D. Member
- **Liying Li, 2021 – 2024, Ph.D. Advisor**
- Maryam Nematian, Spring 2022- 2023, PhD. Member
- Vicky Espinoza PhD. (2018-2023) Member.
- **Spencer Cole, M.S. Sept 2020 – February 2023, M.S., Advisor**
- **José Manuel Rodriguez-Flores PhD. Sept 2019 – 2023, PhD. Advisor**
- **Jorge Valero PhD. Sept 2018- 2023, PhD. Advisor**
- Ana Grace Alvarado-Fitzimons, M.S. 2019-2021
- Cinita Pertiwi, PhD. 2018-2019, Member.
- Alan Cai, M.S. (2018 - 2020), Member.

Center for Water in the Minerals Industry, University of Queensland, Australia

- Juan Ossa Moreno, PhD. 2018.

Department of Civil and Environmental Engineering, UCLA

- Armen Konialian (2024 – Present). PhD Committe Member.

Department of Civil and Environmental Engineering, UC Davis

- Wyatt Arnold, M.S. 2021. Thesis Committee.
- David Julian, M.S. 2013. Thesis Committee.
- Jessica Sharkey, M.S. 2014. Thesis Committee.
- Chantelise Pells, PhD. 2014. Dissertation Committee.

Universidad Autónoma de Baja California-Ensenada. Instituto de Investigaciones Oceanológicas, México

- Astrid Hernández-Cruz, Ph.D. Dissertation Committee.

Universidad de las Americas Puebla, Mexico

- David Eduardo Guevara-Polo, Ph.D. 2023-2025. Member Dissertation Committee.
- Edith Bonilla-Lopez, Ph.D., 2023-2025. Member Dissertation Committee.
- Miguel Angel Salomón, Ph.D, 2023-2026. Member Dissertation Committee.

Universidad Autónoma de Chapingo

- Angeles Sughey Garay-Jacome, Ph.D., 2023-2025. Member Dissertation Committee.

Universidad Michoacana de San Nicolas de Hidalgo

- Luis Angel Acosta Chavez, 2025 B.S. Honors Thesis Committee Member.

Visiting Scholars

- Ana Paula Dalcin, Universidade Federal de Rio Grande do Sul, Jan – May 2022
- Zhiyu Yan, Dalian University of Technology, China, Dec 2019 – Dec 2020
- José Manuel Rodríguez, Universidad Autónoma de Chapingo, Summer 2018
- Professor Oscar Melo, Catholic University of Chile, 2017 - 2018 (at UC Davis)
- Esteban Toha, Ministerio de Energía, Chile, December 2017-March 2018 (at UC Davis)
- Dr. Raquel Iglesias-Esteban, CEDEX, Spain, August 2017-June 2018 (at UC Davis)
- Jorge Juvenal Campos Ferreira, El Colegio de México, Summer 2017.
- Professor Leopoldo Mendoza-Espinosa, UABC, Sabbatical Year at Center for Watershed Sciences, 2016 -2017 (at UC Davis)

Examinations and Defenses

- 2025 Cintya Villacorta-Ranera Ph.D. Defense
- 2025 Olmo Guerrero Medina, Qualifying Exam. UC Davis
- 2023 Astrid Hernández, Universidad Autónoma de Baja California, May 2023
- 2023 Edith Bonilla-Lopez, Ph.D., Universidad de las Americas Puebla March, 2023
- 2023 Spencer Cole, Environmental Systems Graduate Group, University of California, Merced, MS Defense February 2023
- 2022 Gustavo F. Dourado, Environmental Systems Graduate Group, University of California, Merced, May 2022
- 2019 Cinita Pertiwi, Environmental Systems Graduate Group, University of California, Merced
- 2019 Vicky Espinoza, Environmental Systems Graduate Group, University of California, Merced
- 2019 Marina Mautner, Hydrological Sciences Graduate Group, University of California, Davis.
- 2019 Johnathan Cohen, PhD. Qualifying exam, Civil & Environmental Engineering, University of California, Davis.
- 2018 Yiqing Yao, PhD., University of California, Davis. Civil and Environmental Engineering, University of California, Davis.
- 2018 Andy Wong, PhD. Hydrological Sciences Group. University of California, Davis.

- 2015 Camila Dalla Porta Mattiuzi, (2015) M.S., Universidad Federal Rio Grande do Sul, Brazil.
- 2014 Cesar Antonio Cardona-Almeida, PhD. (since 2014) Pontificia Universidad Javeriana, Bogotá Colombia.
- 2014 Miriam Julieta Salamanca Sánchez, PhD. Universidad Autónoma de Baja California-Ensenada. Instituto de Investigaciones Oceanológicas (México)
- 2011 Chantelise Pells. PhD. Geography Graduate Group, University of California, Davis.
- Cynthia Waller: Masters Thesis: Modelación las Alternativas de Abastecimiento del Agua en la Zona Urbana de Ensenada y las Zonas Agrícolas de Mandadero y Valle de Guadalupe, Baja California. Instituto de Investigaciones Oceanológicas (México). Degree granted in January, 2008.

Grant Activity and Selected Research Projects

The Nature Conservancy	P.I. Water Funds for the Ensenada Baja California Region. (2012-2013)	PI \$23,000
California Delta Protection Commission	Comparing Crop Agriculture Consumptive Use Estimates in the Sacramento San Joaquin Delta: Proof of Concept (2013)	PI \$45,000
California Department of Food and Agriculture	Economic Impacts of the California Drought (2014-2015)	PI \$125,000
National Science Foundation	A Workshop on Community Integrated Environmental Models (2015-2016).	PI \$50,000
Delta Stewardship Council	Workshop on Integrated Modeling of Estuarine Systems (2015-2016)	PI \$50,000
California Department of Food and Agriculture	Economic Impacts of the California Drought (2015-2016)	PI \$200,000
National Science Foundation	Sustainability-aware Management of Interdependent Power and Water Systems (2015-2017).	Co-PI \$40,500
California Waterboards. Delta Water Master Office	Crop Consumptive Use Estimation in the Sacramento-San Joaquin Delta (2015-2017)	PI \$575,000
University of California, UC Water Security and Sustainability Initiative	Use of Unmanned Aerial Vehicles for Improving Land and Consumptive Use Information in the Sacramento-San Joaquin Delta" (2016-2017)	PI \$30,000
California Energy Commission. California Fourth Climate Assessment	Economic and Environmental Implications of California Crop and Livestock Adaptation to Climate Change and Climate Policy (2016-2018)	Co-PI \$196,563
California Energy Commission. California Fourth Climate Assessment	Advancing hydro-economic optimization to identify vulnerabilities, tradeoffs, and adaptation opportunities in California's water system (2016-2018)	Co-PI \$298,182

Center for Information Technology in the Interest of Society (CITRIS)	A decision support system for water resources management: An Application to Monterrey Mexico (2016-2017)	PI \$30,000
California Department of Food and UC Ag Issues Center (Prime)	Economic Impact Analysis of California Regulation of Medical Marijuana (2016-2017)	Co-PI \$52,000
United States Department of Agriculture-through University of Alabama (Prime)	Tools and Planning for Migration of Agriculture as a Sustainable Path for Agricultural Production (2016-2018)	PI \$47,000
National Science Foundation INFEWS program. University of North Carolina (Prime)	The sustainability-productivity tradeoff: Water supply vulnerabilities and adaptation opportunities in California's coupled agricultural and energy sectors (2016-2019)	Co-PI \$1.6 million (UCD Granted)
California Department of Food and Agriculture	Economic Analysis of the California Drought (2016-2017). UC Davis	PI \$200,000
California Flower Association	Impact of Adult Use of Marijuana Act (AUMA) on the California Floral Industry (2017)	Co-PI \$14,000
NSF-INFEWS	Sustaining California's food production through integrated water and energy Management. UC Merced (2018-2023)	Co-PI \$200,000
Public Policy Institute of California	Steyer-Taylor Fellowship (2017-2018) for research on groundwater. UC Merced.	PI \$60,000
Blum Center Seed Grants	Exploring opportunities for redress under SGMA for DACs in the Central Valley (2018-2019). UC Merced.	PI \$10,000
State Water Resources Control Board (MCA through UC Davis)	Environmental Flows (2018-2020)	Co-PI \$47,000
Delta Stewardship Council, subaward through Tetrattech	Integrated modeling (2018-2019)	Co-PI \$30,000
California Strategic Growth Council, subaward from Cal Poly San Luis Obispo (Prime)	The Effect of Climate Change and Water Supply on Disadvantaged Rural Communities in the San Joaquin Valley (2018-2019)	PI \$100,000

Delta Stewardship Council	A Collaborative Platform for Agricultural Production and Water Use Economic Modeling in the Delta (2019-2020)	PI \$85,000
National Oceanic and Atmospheric Administration Climate Program Office FY 2019	Utilizing Drought Forecasts to Develop Decision Calendars for Reoperation of California's Hydroelectric Reservoir Systems and Managed Aquifer Recharge (Sept. 2019 – Aug. 2020)	Co-PI \$66,666
Washington State Department of Agriculture	A Collaborative Platform for Agricultural Production and Water Use Economic Modeling in the Washington State (2020-2021)	PI \$356,100
US Dept of Agriculture	San Joaquin Valley Food and Agriculture Cyberinformatics Tools and Science (FACTS) Bridge (2020-2024)	Co-PI \$100,000
USDA-NSF	AI Institute: Agricultural AI for Transforming Workforce and Decision Support (AgAID) (2021-2026)	Co-PI \$1.6 million
USDA NIFA	Securing a climate resilient water future for agriculture and ecosystems through innovation in measurement, management, and markets (2021-2025)	Co-PI \$10 million
California Department of Food and Agriculture	A Drought Impact Assessment Web-Based Platform for California's Agricultural Systems and Communities (2021-2024)	PI \$1.47 million
UC Alianza MX	Water Resources Management in Agriculture and Ecosystems to Improve Climate Extreme Resilience in Mexico and the United States (2022-2023)	PI \$200,000
Delta Stewardship Council	Enhancements to the OpenDAP modeling framework, training, and documentation (2022-2023)	PI \$49,000
Desert Research Institute (Prime: NOAA)	Climate Adaptation Pathways—building capacity for near- and long-term resiliency in California and Nevada (2022-2027)	Co-PI \$215,000

***** Since Last Merit Review on June 30, 2023 *****

Pixley Irrigation District (Prime: CA Dept. Conservation)	Multi-Benefit Land Repurposing (MLRP) in the Tule Basin (2022-2026)	Co-PI \$595,234
UC Office of the President	COEQWAL: Equitable Stewardship of California's Water in a Changing Climate (2023-2026). UC Berkeley Lead PI	UCM-PI \$502,948 Total: \$8,000,000
NOAA NIDIS	Refining Multi-Sectoral Drought Hazard Indicators Oriented to Assess Drought Impacts (2023-2025), UC Davis PI Escrivá-Bou	UCM-PI \$25,280
California Natural Resources Agency CIEE	A Multi-Sector Assessment of Climate Change Adaptations in California Agriculture and Communities (2024-2026)	PI \$353,515
UC Alianza MX	UC Merced-UDLAP Undergraduate Research and Internship Program (2024)	PI \$44,000
United States Geological Survey	Building Capacity for Hydrologic Prediction: Forecasting Water Use for Agriculture and Economic Implications for Food Systems (2024- 2027)	PI \$400,000
San Luis & Delta-Mendota Water Authority	Decision Support Tool for Assessing Socio- Economic Impacts of Water Allocation (2025- 2027)	PI \$199,889
California Delta Stewardship Council	Salinity Management Modeling Collaboratory Use Case (2025-2026)	PI \$30,000
Washington State Department of Agriculture	Economic Assessment of Drought Impacts and Adaptation Strategies in Washington State's Agriculture (2025-2026)	PI \$316,072
California State University, San Diego State University / National Science Foundation	NSF R2I2: Adaptive Water Resilience and Climate Operations in the Southwest Incubator (AWRCOS Incubator) (2025-2026)	PI \$43,719

Professional Qualifications

Professional Activities

- **Proposal Review Panel.** BARD US Ag Econ Meeting Panel Meeting. 2021, 2022, 2023
- **Oversight and Selection Committee.** Delta Drought Response Pilot Program, since 2021.
- **Advisory Group.** Ad Hoc advisor for the Statewide Water Efficiency and Enhancement Program (SWEEP). California Dept. of Food and Agriculture. 2020-2021

- **Review Committee.** 2020 UC MEXUS-CONACYT Review Committee for postdoctoral research fellowship and collaborative grant competitions. 2020
- **Advisory Committee.** Member of the Advisory Committee for Open ET. Since July 2020
- **Advisory Committee.** Ad-Hoc Committee Member on Modeling Protocols of CWEMF, hydro-economic models and economic analysis. Dec 2019 - Dec 2020.
- **Reviewer.** Economic Sustainability Plan 2019, Sacramento San Joaquin Delta. For the Delta Protection Commission. October 2019.
- **Associate Editor.** San Francisco Estuary & Watershed Science Journal. 2019 – Present
- **Water Tenure Technical Paper Expert Consultation.** United Nations Food and Agricultural Organization. July 2019.
- **Member of Editorial Board.** San Francisco Estuary Watershed Science Journal. Spring 2019 – Spring 2020
- **Guest Editor.** *Water*. Special Issue: Hydro-economic Analysis for Sustainable Water Management. August 2018 to April 2019.
https://www.mdpi.com/journal/water/special_issues/hydroeconomic_water_management
- **Member of the Advisory Board.** Open ET Initiative. The Environmental Defense Fund. 2018-Present.
- **Past-Convener (2017-2019) California Water and Environmental Modeling Forum (CWEMF). Formerly, Convener (2015 to 2017) and Vice Convener (2013-2015).** A non-profit and non-partisan organization for advancing usefulness of water and environmental models for California. Participate in the Awards, and Education/Peer Review Committees
- **Project Advisory Committee.** *Evaluating Long- and Short-Term Planning Scenarios to Better Assess the Role of Water Reuse under Climate Change*, for the WaterReuse Foundation, 2008-2013.
- **Editorial Board.** Computational Water, Energy, and Environmental Engineering. 2012 – 2019

Referee in Journals and Book Chapter Manuscripts

- | | |
|---|---|
| • <i>African Journal of Agricultural Research</i> | • <i>Agricultural Water Management</i> |
| • <i>Applied Water Science</i> | • <i>Desalination</i> |
| • <i>Environmental Modeling and Software</i> | • <i>Frontiers in Water</i> |
| | • <i>Hydrologic and Earth System Sciences</i> |
| • <i>International Journal of Water</i> | • <i>Journal of Contemporary Water Research and Education</i> |
| | • <i>Journal of Environmental Management</i> |
| • <i>Journal of Ecology and Natural Environment</i> | |
| • <i>Journal of Hydrology</i> | • <i>Journal of Water Resources Planning and Management</i> |
| | • <i>RTI Press</i> |
| • <i>Nature</i> | • <i>Science of the Total Environment</i> |
| • <i>Science Advances</i> | • <i>Sustainable Cities and Society</i> |
| • <i>Scientia Iranica</i> | |

- *Water*
- *Water Policy*
- *Water Resource Research*
- *Water International*
- *Water Resources Management*

Proposal Reviewer

- 2021. **Deutsche Forschungsgemeinschaft (DFG)**. German Corp. Feb 2021
- 2020. **Water Technologies**. Israeli Ministry of Science and Technology. June 2020.
- 2019. **Partnerships for Enhanced Engagement in Research (PEER)**. National Academy of Sciences, Engineering and Medicine. June 2019.
- 2018. **UCMEXUS** Proposal Reviewer, Collaborative Grants and Postdoctoral Fellowships. June 2018.
- 2019. **The Georgia Sea Grant College Program**. Hydroeconomic Modeling of Groundwater Sustainability in The Red Zone Coastal Georgia.
- 2016. **Blum Center for Developing Economies**. Poverty Alleviation through Sustainable Solutions (PASS) and Poverty Alleviation Through Action (PATA).
- 2015. **National Science Foundation**. Experimental Program to Stimulate Competitive Research (EPSCoR)
- 2015. **European Science Foundation**. Research Fund Junior Research (Post-Doctoral) Fellowship Scheme
- 2014. **University of California Agricultural and Natural Resources**. Water Resources Research.
- 2014. **National Science Foundation**. Geography and Spatial Sciences Program.
- 2013. **National Science Foundation**. Geography and Spatial Sciences Program.
- **2009 National Oceanic and Atmospheric Administration**. Climate Change Research Proposals, Sectoral Applications Research Program (SARP). *National Oceanic and Atmospheric Administration, Sector Applications Research Program*,

Professional Memberships

- American Society of Civil Engineers (ASCE 2017-2021)
- Groundwater Resources Association (2017-2018)
- European Geosciences Union (2016-Present)
- Sistema Nacional de Investigadores, SNI México – Level 1, (2009-Present).
- American Geophysical Union (2008-Present)
- Union of Concerned Scientists (2008-Present)
- California Water and Environmental Modeling Forum (2007-Present)
- American Waste and Management Association (1996-2002)

University Specific Service

University California Merced

- **Member.** Search Committee Specialist in Cooperative Extension Groundwater Quantity and Quality. Jan 2026 – Dec 2026
- **Member.** Faculty Advisory Committee on Sustainability. Aug 2025 – Aug 2026
- **Member.** Search Committee Specialist in Cooperative Extension Groundwater Quantity and Quality. July 2025 – Dec 2025
- **Member.** UC Divisional Council Committee on Equity and Inclusion. Aug 2023 – Aug 2024
- **Vice-Chair.** UC Divisional Council Committee on Equity Diversity and Inclusion. Aug 2022 – Aug 2023
- **Judge.** Innovate to Grow. Fall 2020
- **Co-Chair.** Committee for Diversity and Equity. AY 2020-2021
- **Member.** Faculty Advisory Committee on Sustainability. AY 2020-2021.
- **Presentation.** Bobcat Certificate Program. UC Learning Center. August 2020
- **Grant Review Committee.** Environmental Sciences Graduate Group professional development grants. Spring 2020.
- **Faculty Advisory Committee on Sustainability.** AY 2019-2020.
- **Scholarship Review Committee.** Calvin E Bright Engineering Scholarship, School of Engineering, UC Merced. March 2019.
- **Graduate Committee.** Review of AY 2020-21 Graduate Recruitment Fellowships. AY 2018-2019.
- **Search Committee.** Lecturer with Potential Security of Employment, Department of Civil and Environmental Engineering AY 2019-2020
- **Divisional Council Member at Large.** UC Merced. AY 2019-2020.
- **Faculty Advisory Committee on Sustainability.** AY 2018-2019.
- **STEM faculty hire initiative.** Civil and Environmental Engineering Department Liaison. Fall 2018
- **Search Committee.** UC Agriculture and Natural Resources (UC ANR), Watershed Modelling Cooperative Extension Specialist, UC Merced. 2017-2018
- **Search Committee.** Lecturer with Potential Security of Employment, Department of Civil and Environmental Engineering 2018-2019
- **Search Committee.** Assistant Professor in Civil and Environmental Engineering, 2018-2019
- **Search Committee.** School of Engineering, Life Cycle Analysis. 2017-2018

University of California, Davis

- **Faculty Mentor and co-organizer, Research Experiences for Undergraduates (REU).** Mentoring of Mexican undergraduate students in a 10-week program at UC Davis. Program sponsored by Consulate General of Mexico in Sacramento and UC Davis Division of Student Affairs, (2013 – 2017).

Languages, Specialized Skills and Training

Languages

English (Fluent), Spanish (Native)

Computer Technology and Information Systems

- Specialized Engineering Software and GIS: ArcGIS, QGIS, AUTOCAD, ERDAS, Google Earth Engine
- Operating Systems: MS-DOS, Windows, UNIX and Apple MAC OS
- Hydroeconomic modeling: WEAP, CALVIN, SWAP
- Business and Statistics: JMP, STATA, and SHAZAM
- Programming Languages: Python, BASIC, Pascal, MS Visual Basic, Python
- Miscellaneous: Corel Draw, Publisher, Front Page, GitHub and Endnote.

Specialized Training

- Certified Auditor ISO 14001 and QS 9000, 1998.
- Lean Manufacturing (by University of Tennessee in Knoxville), 1998.
- Sustainable development diploma (ITESM-Monterrey), 1999.
- Hazardous material and waste handling diploma (ITESM-Monterrey), 1998.
- Impact Analysis for Planning (IMPLAN), Minnesota IMPLAN Group, Inc., Hudson Wisconsin, April 2013.
- Mapping Evapotranspiration at High Resolution and Internalized Calibration (METRIC) May 2015.