

## **Josué Medellín-Azuara, Ph.D.**

Acting Associate Professor  
University of California, Merced  
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### **Education**

- Ph.D. (2006) Ecology-Environmental Policy Analysis.** University of California, Davis.  
Dissertation: Economic-Engineering Analysis of Water Management for Restoring the Colorado River Delta, Mexico. Professor, 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*

- 2017 to present** **Acting Associate Professor.** School of Engineering. University of California, Merced.
- 2015-2017** **Associate Research Engineer.** Dept. of Civil and Environmental Engineering. University of California, Davis.
- 2015-2017** **Visiting Professor.** Instituto de Pesquisas Hidraulicas. Universidad Federal de Rio Grande do Sul. Porto Alegre, RS, Brazil.
- 2013-2015** **Associate Project Scientist.** Dept. of Civil and Environmental Engineering. University of California, Davis.
- 2009-2013** **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*

- 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**

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.

2005-2006 **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**

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: ~1,611, h-index 19 (August 2017)*

#### **Journal Papers**

Welle, P., **Medellín-Azuara, J.**, Viers, J.H. Mauter, M.S. (In Press). Economic and Policy Drivers of Agricultural Water Desalination. Submitted to *Agricultural Water Management*.

Lopes, V.A., Dornelles, F., Marques, G., and **Medellin-Azuara, J.** (2017). Performance of Rainwater Harvest Systems under Scenarios of Non-Potable Water Demand and Roof Area Typologies using a Stochastic Approach. *Journal of Cleaner Production*. 148: 304–313. <http://dx.doi.org/10.1016/j.jclepro.2017.01.132>.

Fraga, C. C. S., **Medellín-Azuara, J.**, Marques, G. F. (2016). Planning for infrastructure capacity expansion of urban water supply portfolios with an integrated simulation-optimization approach. *Sustainable Cities and Society*. doi: <http://dx.doi.org/10.1016/j.scs.2016.11.003>

- Forni, L. G., **Medellín-Azuara, J.**, Tansey, M., Young, C., Purkey, D., & Howitt, R. (2016). Integrating complex economic and hydrologic planning models: An application for drought under climate change analysis. *Water Resources and Economics*, 16, 15-27. doi: <http://dx.doi.org/10.1016/j.wre.2016.10.002>
- Sandoval-Romero, F., Valdivia-Alcalá, R., Cuevas-Alvarado, C.M., Hernández-Ortiz, J., **Medellín-Azuara, J.**, Hernandez-Avila, A. Valoración Económica del Agua Potable en la Delegación Iztapalapa, D.F. *Revista Mexicana de Ciencias Agrícolas* 7(6):1467-1475.
- Medellín-Azuara, J.** (2016). The California Case: Managing Groundwater in Irrigated Agriculture. *Harvard College Review of Environment and Society*, 3:11-12. **Invited contribution.**
- Nelson, T; Chou, H; Zikalala; P., Lund; JR Hui, R. and **Medellín-Azuara** (2016). Economic and Water Supply Effects of Ending Groundwater Overdraft in California's Central Valley. *San Francisco Estuary and Watershed Science*, 14(1).
- Nelson, T; Hui; R., Lund JR, and **Medellín-Azuara, J.** (2016). Reservoir Operating Rule Optimization for California's Sacramento Valley. *San Francisco Estuary and Watershed Science*, 14(1).
- MacEwan, D; R Howitt and **J Medellín-Azuara** (2016). Combining Physical and Behavioral Response to Salinity. *Water Economics and Policy*, 02(01), 1650010.
- Medellín-Azuara J**, MacEwan D, Howitt R, Kourakos G, Dogrul E, Brush C, Kadir T, Harter T, Melton F, Lund J (2015) Hydro-economic analysis of groundwater pumping for irrigated agriculture in California's Central Valley, USA. *Hydrogeology Journal* 23: 1205-1216 DOI 10.1007/s10040-015-1283-9. **Winner Editor Choice Award 2015.**
- Mayzelle M, Viers J, **Medellín-Azuara J**, Harter T (2015) Economic Feasibility of Irrigated Agricultural Land Use Buffers to Reduce Groundwater Nitrate in Rural Drinking Water Sources. *Water* 7: 12-37.
- Medellín-Azuara, J.** Howitt, R.E. Hanak, E., Lund, J.R. and Fleenor, W.E. (2014). Agricultural Losses from Salinity in California's Sacramento-San Joaquin Delta. *San Francisco Estuary and Watershed Science Journal*. 12(1):1-16.
- Null, S. **Medellín-Azuara, J.**, Escrivá-Bou, A., Lent, M., Lund, J.R. (2014) Optimizing the dammed: Water supply losses and fish habitat gains from dam removal in California. *Journal of Environmental Management*, 136:121-131.
- Sicke, W.S., Lund, J.R., and **Medellín-Azuara, J.** (2013). Climate Change Adaptations for California's San Francisco Bay Area Water Supplies. *British Journal of Environment and Climate Change*. 3(3):292-315.
- Cahill, R., Lund, J.R., DeOreo, B., **Medellín-Azuara, J.**, (2013). Household water use and conservation models using Monte Carlo techniques. *Hydrol. Earth Syst. Sci.* 10(4):4869-4900.
- Medellín-Azuara, J**, Rosenstock, T., Howitt, R.E., Harter, T., Jessoe, K., Dzurella, K., Pettygrove, S., Lund, Jay R. (2013) Agro-Economic Analysis of Nitrate Crop Source Reductions. *Journal of Water Resources Planning and Management*. 139(5):501-511.
- Howitt, R.E., **Medellín-Azuara, J**, MacEwan, D.M, and Jay R. Lund, (2012) Calibrating Disaggregate Economic Models of Agricultural Production and Water management, *Environmental Modeling and Software*.38:244-258.

- Medellín-Azuara, J.**, Howitt, R.E. and Harou, J.J. (2012). Predicting farmer responses to water pricing, rationing and subsidies assuming profit maximizing investment in irrigation technology. *Agricultural Water Management*, 108:73-82
- Medellín-Azuara, J.** Howitt, R.E., MacEwan, D.M. and Lund, J.R. (2012) Economic Impact of Agricultural Climate Related Yield Changes in California. *Climatic Change*, 109(1):387-405.
- Connell, C.R., **Medellín-Azuara, J.**, Lund, J.R. and Madani, K. (2012). Adapting California's water system to warm vs. warm-dry climates. *Climatic Change*, 109(1):103-149.
- Tanaka, S.K., C. Connell, K. Madani, J. **Medellín-Azuara, J.** Lund, E. Hanak, (2011) "Economic Costs and Adaptations for Alternative Regulations of California's Sacramento-San Joaquin Delta," *San Francisco Estuary and Watershed Science*.
- Medellín-Azuara, J.**, Harou, J.: Howitt, R.E. (2010). Estimating economic value of agricultural water under changing conditions and the effects of spatial aggregation. *Science of the Total Environment*, 408(23):5639-5648. doi:10.1016/j.scitotenv.2009.08.013.
- Harou, J., **Medellín-Azuara, J.**, Zhu, T., Tanaka, S., Lund, J., Stine, S., Olivares, M. and M. Jenkins (2010) Extreme Drought and Water Management in California. *Water Resources Research*, 46(W05522): 1-12. **Winner of the Editor's Choice Award in Water Resources Research.**
- Harou, J., Pulido-Velazquez, M.A., Rosenberg, D.E., **Medellín-Azuara, J.**, Lund, J.R., Howitt, R.E. (2009), Hydro-economic Models: Concepts, Design, Applications, and Future Prospects, *Journal of Hydrology*, 375:334-350.
- Waller-Barrera, C., Mendoza-Espinosa, L. G., **Medellín-Azuara, J.** and J.R. Lund, (2009) Optimización económico-ingenieril del suministro agrícola y urbano: una aplicación de reúso del agua en Ensenada, Baja California, *Revista Ingeniería Hidráulica en México*, 24(4):87-103.
- Medellín-Azuara, J.**, Mendoza-Espinosa, L.G., Lund, J.R., Harou, J.J., and Howitt, R.E. (2009) Virtues of simple hydro-economic optimization networks: Baja California, México. *Journal of Environmental Management*, 90(11):3470-3478.
- Medellín-Azuara, J.**, Lund, J.R., Howitt, R.E. (2009). A calibrated agricultural water demand model for three regions in northern Baja California, *Agrociencia*, 43(2):83-96.
- Medellín-Azuara, J.**, L.G. Mendoza-Espinosa, J.R. Lund, and R.E. Howitt (2008). Hydro-economic analysis of water supply for the binational tranboundary region of Baja California, Mexico, *Water Science and Technology: Water Supply*, 8(2):189-196.
- Medellín-Azuara, J.** Harou, J.J., Olivares, M.A., Madani, K., Lund, J.R., Howitt, R.E., Tanaka, S., Jenkins, M.W., and Zhu, T. (2008) Adaptability and Adaptations of California's Water Supply System to Dry Climate Warming. *Climatic Change*, 87 (Suppl 1):S75-S90.
- Medellín-Azuara, J.**, Lund, J.R. and Howitt, R.E. (2007) Water Supply Analysis for Restoring the Colorado River Delta, México. *Journal of Water Resources Planning and Management*, 133(5):462-471.
- Medellín-Azuara, J.**, Mendoza-Espinosa, L.G., Lund, J.R., Ramirez-Acosta, R.J. (2007). The application of economic-engineering optimization for water management in Ensenada, Baja California, México. *Water Science and Technology*, 55(1-2):339-347.
- Medellín-Azuara, J.** and J.R. Lund (2006). Systems Analysis for Restoring the Lower Colorado River Delta. *Pacific McGeorge Global Business & Development Law Journal*, 19(1) 2006.

### ***Books and Book Chapters***

- Medellín-Azuara, J.**, Howitt, R.E. and J.R. Lund. Modeling Economic-Engineering Responses to Drought- The California Case (2013). In Schwabe et al. Eds. (2013) Drought in Arid and Semi-Arid Environments: A Multi-Disciplinary and Cross-Country Perspective. Springer Publishing, Dordrecht: 341-356.
- Medellín-Azuara, Josué**, Howitt, R.E. and Lund, J.R. (2011). Hydro-economic modeling to assess climate impact and adaptation for agriculture in California in Dinar and Mendelsohn (eds). Handbook of Climate Change and Agriculture. Northampton, MA: Edward Elgar Publishing.
- Medellín-Azuara J**, Mirchi A, Madani K (2011) Water supply for agricultural, environmental and urban uses in California's borderlands:201-212.
- Guerrero, H., Yunez-Naude A. and **Medellín-Azuara, J.**, (2008). El Agua en México: Consecuencias de las políticas de intervención en el sector. Lecturas El Trimestre Económico 100. México, D.F.: Fondo de Cultura Económica.
- Howitt, R.E. and **Medellín-Azuara, J.** (2008) Un Modelo Regional Agrícola de Equilibrio Parcial: El Caso de la Cuenca del Río Bravo in Guerrero, H., Yunez-Naude, A. and Medellín-Azuara, J. ed. El Agua en México: Consecuencias de las políticas de intervención en el sector. Lecturas El Trimestre Económico 100. México, D.F.: Fondo de Cultura Económica.
- Ramírez-Acosta, R.J., Mendoza-Espinosa, L.G., **Medellín-Azuara, J.** y Lund, J.R. (2006). Economía, población y eficiencia para el abastecimiento futuro de agua potable en Baja California, en Mungaray-Lagarda, A. y Ocegueda-Hernández, J.M. (Ed.), Estudios Económicos sobre Baja California. (p. 199), México, D.F.: Miguel Angel Porrúa.

### ***Manuscripts under review***

- Mendes, C.A., Canales, F., Marques, G., **Medellín-Azuara**, Hydropower Expansion Under Climate Change: Economic Risk and Uncertainty in a Large Scale System. Submitted to *Energy Policy*.
- Fadel, A., Marques, G., Goldenfum, J., **Medellín-Azuara, J.**, and Tilmant, A. Full flood cost: insights from a risk analysis perspective. Submitted to *Journal of Environmental Engineering (ASCE)*.

### ***Working Papers***

- Mattiuzzi, C.D.P., Marques, G.F., **Medellin-Azuara, J.** and Baruch, J. Evaluation of marginal benefit curves of water use in an agricultural rice and soybean region - case of santa maria river basin.
- Medellín-Azuara, J.**, Lund, J., Goodwin, P., Enright, C., Bray, B., Argent, R., Ariyama, J., Bratton, J., Escrive-Bou, A., Lee, J., Lindley, S., McWilliams, M., Quinn, N., Siegel, S., Wolfe, J. Integrated Modeling of Estuarine Systems: Lessons for the Sacramento-San Joaquin Delta.
- Medellín-Azuara, J.** Parker, N., Yeo, B., Hart, Q, Jenkins, B. and Howitt, R.E. Economic Analysis of Poplar Production Adoption in Farmlands of the Northwest United States.
- Gonzalez, J.M., Olivares, M.A., **Medellín-Azuara, J.**, Moreno, R., and Marques, G. Multi-Purpose Reservoir Operation: A Tradeoff Analysis Between Hydropower Generation and Irrigated Agriculture Using Hydro-Economic Models.

### *Selected Research Reports and other Publications*

- Hanak, E., Lund, J.R., Arnold, B., Escriva-Bou, A., Gray, B., Green, S., Harter, T., Howitt, R., MacEwan D., **Medellín-Azuara, J.**, Moyle, P., Seavy, N. (2017) Water Stress and a Changing San Joaquin Valley. Public Policy Institute of California. Available at <<http://www.ppic.org/main/publication.asp?i=1224> > Last visit May 18, 2017.
- Medellín-Azuara, J.**, Paw U, K.T., Jin, Y., Hart, Q., Kent, E., Clay, J., Wong, A., Bell, A., Anderson, M., Howes, D., Melton, F., Kadir, T., Orang, M., Leinfelder-Miles, M., and J.R. Lund. (2016). Estimation of Crop Evapotranspiration in the Sacramento San Joaquin Delta for the 2014-2015 Water Year. An Interim Report for the Office of the Delta Watermaster, State Water Resources Control Board. Center for Watershed Sciences, University of California, Davis. Last Access Sept. 28, 2016 at <<https://watershed.ucdavis.edu/project/delta-et> >.
- Medellín-Azuara, J.**, MacEwan, D., Howitt, Richard E., Sumner, D.A. Lund, J.R. (2016). Economic Analysis of the 2016 California Drought on Agriculture. Center for Watershed Sciences, UC Davis. Davis, CA, 19 pp.
- Lund, J.R., Mount, J., Hanak, E. Green, J. Gurdak, J., Harter, T., **Medellín-Azuara, J.**, Sandoval, S., Thompson, B. and Viers, J. (2015) California's Water: Storing Water. Public Policy Institute of California. Available at < <http://www.ppic.org/main/publication.asp?i=1136>> Last Visit August 2016.
- Hanak, E. Lund, J.R. Burt, C., Howitt, E. , **Medellín-Azuara, J.** Parker, D., Sumner, D. and Zoldoske, D. (2015) Water for Farms. Public Policy Institute of California. Available at. <<http://www.ppic.org/main/publication.asp?i=1140>> Last Visit August 2016.
- Hanak, E., Mount J., Chappelle, C. Lund, J.R., **Medellín-Azuara, J.**, Moyle P., Seavy N. (2015) What if the California's Drought Continues? Public Policy Institute of California, San Francisco, California. Available at <<http://www.ppic.org>>. August 2015.
- Howitt, R.E., MacEwan, D.M., **Medellín-Azuara, J.** Lund J.R., Sumner, D.A. (2015). Economic Analysis of the 2015 Drought for California Agriculture, Center for Watershed Sciences. University of California, Davis. 16 pp. <https://droughtimpacts.ucdavis.edu>> Last access August 2015.
- Sexton, R., **Medellín-Azuara, J.** and Saitone, T.L. The Economic Impact of Food and Beverage Processing in California. (2015). Agricultural and Resource Economics Update. University of California Giannini Foundation of Agricultural Economics. 18(4)(2015):5-8. Available at: : <http://giannini.ucop.edu/are-update/issues/> Last Visit, August 2016.
- Howitt, R.E, **Medellin-Azuara, J.**, MacEwan, D., Lund, J.R., and Sumner, D.A.. Economic Impact of the 2015 Drought on Farm Revenue and Employment Agricultural and Resource Economics Update 18(5):9-11. Available at: <http://giannini.ucop.edu/are-update/issues/> Last Visit September 2015.
- Medellín-Azuara J.**, MacEwan, D., Lund, J.R., Howitt, R.E. and Sumner, D.A. (2015) "Agricultural Irrigation in This Drought: Where Is the Water and Where Is It Going?" Agricultural and Resources Economics Update. 18(5):6-8. Available at: <http://giannini.ucop.edu/are-update/issues/> Last Visit September 2015.
- Sumner D.A., **Medellín-Azuara, J.** Coughlin, E. (2015). Contribution of the Dairy Industry to the California Economy. A report for the California Milk Advisory Board. Agricultural Issues

- Center. University of California. Available at. <http://aic.ucdavis.edu/> Last access June 2015.
- Hanak, E., Gray, B., Lund, J.R., Mitchell, D., Phillips-Chappelle, C., Fahlund, A., Jessoe, K., **Medellín-Azuara, J.**, Misczynski, D., Nachbaur, J., Suddeth, R. (2014). Paying for Water in California. Public Policy Institute of California, San Francisco, California. Available at <<http://www.ppic.org/>>. March 2014.
- Howitt, R., **Medellín-Azuara, J.**, MacEwan, D., Lund, J. and Sumner, D.A. (2014) Economic Analysis of the 2014 Drought for California Agriculture. Center for Watershed Sciences, University of California, Davis, Davis, California. < <https://droughtimpacts.ucdavis.edu>> Last Access July 2014.
- Sumner, D.A. Matthews, W. A, **Medellín-Azuara, J.** Bradley, A. (2014). The Economic Impacts of the California Almond Industry. A report for the A Report Prepared for the Almond Board of California. Agricultural Issues Center. University of California. Available at. <http://aic.ucdavis.edu/> Last access December 2014.
- Howitt, R., **Medellín-Azuara, J.**, Lund, J.R. and MacEwan, D. (2014) Preliminary 2014 Drought Economic Impact Estimates in Central Valley Agriculture. Center for Watershed Sciences, University of California, Davis <<https://droughtimpacts.ucdavis.edu>> Last Access July 2014.
- Alston, J. **Medellín-Azuara J.** and Saitone, T. (2014) Economic Impact of the North American Cranberry Industry. Available at < <http://www.uscranberries.com>> Last Access December 2014.
- Medellín-Azuara, J.**, Howitt, R.E. (2013). Comparing Consumptive Agricultural Water Use in the Sacramento-San Joaquin Delta: A proof of concept using remote sensing. A report for the Delta Protection Commission. 27pp.
- Medellín-Azuara, J.**, Mendoza-Espinosa, L.G. Pells, C. M. and J.R. Lund (2013). Pre-Feasibility Assessment of a Water Fund for the Ensenada Region: Infrastructure and Stakeholder Analyses. A Report for the Nature Conservancy. Prepared by the Center for Watershed Sciences, UC Davis.
- Hanak, E., Lund, J.R., Durand, J. Fleenor, W, Gray, B., **Medellín-Azuara, J.** Mount, J. Moyle, P. Phillips, C. and Thompson, B. (2013). Stress Relief: Prescriptions for a Healthier Delta Ecosystem. Public Policy Institute of California, San Francisco, California. Available at <<http://www.ppic.org/>>. May 2013.
- Medellín-Azuara, J.**, Durand, J. Fleenor, W., Hanak, E. Lund, Jay, Moyle, P., Phillips, C. (2013). Costs of Ecosystem Management Actions for the Sacramento-San Joaquin Delta. Public Policy Institute of California, San Francisco, California. Available at <<http://www.ppic.org/>> May 2013.
- Howitt, R.E., MacEwan, D.E., Garnache, C., **Medellín-Azuara, J.**, Marchand, P., Brown, D. (2013). Yolo Bypass Flood Date and Flow Volume Agricultural Impact Analysis. Final Report. University of California, Davis60p. Last Visit May 2013. Available at: <http://www.yolocounty.org/index.aspx?recordid=2379&page=26>
- Sicke, W.S., Lund, J.R., **Medellín-Azuara, J.** (2012). Climate Change Adaptations for Local Water Management in the San Francisco Bay Area. California Climate Change Center. California

- Energy Commission. Report: CEC-500-2012-036. Available at: <<http://www.energy.ca.gov>>.
- Hanak, E., Lund, J.R., Thompson, B., Cutter, W.B., Gray, B. Houston, D. Howitt, R., Jessoe, K., Libecap, G. **Medellín-Azuara, J.** Olmstead, S., Sumner, D. Sunding, D., Thomas, B. Wilkinson, R. (2012) Water and the California Economy. Public Policy Institute of California. Available online at <<http://www.ppic.org/main/publication.asp?i=1015>>
- Harter, T., J. R. Lund, J. Darby, G. E. Fogg, R. Howitt, K. K. Jessoe, G. S. Pettygrove, J. F. Quinn, J. H. Viers, D. B. Boyle, H. E. Canada, N. DeLaMora, K. N. Dzurella, A. Fryjoff-Hung, A. D. Hollander, K. L. Honeycutt, M. W. Jenkins, V. B. Jensen, A. M. King, G. Kourakos, D. Liptzin, E. M. Lopez, M. M. Mayzelle, A. McNally, **J. Medellín-Azuara,** and T. S. Rosenstock. 2012. Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater. Report for the State Water Resources Control Board Report to the Legislature. Center for Watershed Sciences, University of California, Davis. 78 p. <http://groundwaternitrate.ucdavis.edu>.
- Dzurella, K.N., **Medellín-Azuara, J.,** Jensen, V.B., King, A.M., De La Mora, N., Fryjoff-Hung, A., Rosenstock, T.S., Harter, T., Howitt, R., Hollander, A.D., Darby, J., Jessoe, K., Lund, J.R., & Pettygrove, G.S. (2012) Nitrogen Source Reduction to Protect Groundwater Quality. Technical Report 3 in: Addressing Nitrate in California's Drinking Water with a Focus on Tulare Lake Basin and Salinas Valley Groundwater. Report for the State Water Resources Control Board Report to the Legislature. Center for Watershed Sciences, University of California, Davis.
- Medellín-Azuara, J.,** Hanak, E., Howitt, R. & Lund, J. R. (2012). Transitions for the Delta Economy. pp. 62. Public Policy Institute of California, San Francisco, California. Available at <<http://www.ppic.org/>>. February 2012.
- De Souza, S., **Medellín-Azuara, J.,** Burley, N., Lund, J.R., Howitt, R., 2011. Guidelines for Preparing Economic Analysis for Water Recycling Projects. Center for Watershed Sciences, University of California, Davis: Davis, California, p. 59.
- De Souza, S., **Medellín-Azuara, J.,** Burley, N., Lund, J.R., Howitt, R., 2011. Beneficiary-Pays Analysis of Water Recycling Projects. Center for Watershed Sciences, University of California, Davis: Davis, California, p. 12.
- Howitt, R.E. MacEwan, D.J. and **Medellín-Azuara, J** (2011) Drought, Jobs, and Controversy: Revisiting 200 *Agricultural and Resource Economics Update*, Giannini Foundation of Agricultural Economics, University of California. Available online at <<http://www.agecon.ucdavis.edu/extension/update/issues/v14n6.pdf>>.
- Michaels, J., Howitt, R.E., **Medellín-Azuara, J.** and MacEwan, D.J. (2010). A retrospective estimate of the economic impacts of reduced water supplies to the San Joaquin Valley in 2009. (2010). University of the Pacific and University of California, Davis. Available at: [http://forecast.pacific.edu/water-jobs/SJV\\_Rev\\_Jobs\\_2009\\_092810.pdf](http://forecast.pacific.edu/water-jobs/SJV_Rev_Jobs_2009_092810.pdf)
- Howitt, R.E., D. MacEwan, **J. Medellín-Azuara** and J.R. Lund (2009). Economic Modeling of Agriculture and Water in California Using the Statewide Agricultural Production Model. A report for the California Department of Water Resources. Davis, University of California. Available at: <<http://tinyurl.com/2cq49j9>>



- Lund, Jay R., R. E. Howitt, **J. Medellín-Azuara**, M. W. Jenkins. (2009). Water Management Lessons for California from State-wide Hydro-economic Modeling, a Report for the California Department of Water Resources. Davis: University of California. Available at: <<http://tinyurl.com/244objh>>
- Howitt, R.E., **Medellín-Azuara, J.**, MacEwan, D.J. (2009). Measuring the Employment Impacts of Water Reductions. Technical Note, Department of Agricultural and Resource Economics and Center for Watershed Sciences. University of California, Davis, California. Available at <<http://swap.ucdavis.edu>>, last access: September 2009.
- Howitt, R.E., MacEwan D., **Medellín-Azuara, J.** (2009). Economic Impact of Reductions in Delta Exports on the Central Valley Agriculture. *Agricultural and Resource Economics Update*, Giannini Foundation of Agricultural Economics, University of California. Available online at <<http://www.agecon.ucdavis.edu/extension/update/issues/v12n3.pdf>>
- Medellín-Azuara, J.**, Connell C.R., Madani, K. and Lund, J.R. (2008). Water management adaptation with climate change. California Climate Change Center. California Energy Commission.
- Howitt, R.E. **Medellín-Azuara, J.** and Duncan MacEwan (2008). Measuring economic impact of agricultural yield related changes. California Climate Change Center. California Energy Commission.
- Tanaka, S.K., Connell, C.R., Madani, K., Lund, J.R., Hanak, E. and **Medellín-Azuara, J.** The Economic Costs and Adaptations for Alternative Delta Regulations. Appendix F to: Lund, J.R., Hanak, E. Fleenor, W., Bennett, W. Howitt, R., Mount, J. Moyle, P. Comparing Futures for the Sacramento-San Joaquin Delta. Public Policy Institute of California. Available at <<http://www.ppic.org>>.
- Medellín-Azuara, J.**, Howitt. R.E., Lund, J. R. and Hanak, E. (2008) The Economic effects on Agriculture of Water Export Salinity South of the Delta. Appendix I to: Lund, J.R., Hanak, E. Fleenor, W., Bennett, W. Howitt, R., Mount, J. Moyle, P. Comparing Futures for the Sacramento-San Joaquin Delta. Public Policy Institute of California. Available at <<http://www.ppic.org>>.
- Medellín-Azuara, J.**, Mendoza-Espinosa, L. G., Lund, J. R., Waller-Barrera, C., y Howitt, R. E., 2008. "Water Supply for Baja California: Economic-Engineering Analysis for Agricultural, Environmental and Urban Demands." Draft Report Prepared for the California Environmental Protection Agency, University of California, Davis, Davis, California, USA. Draft January 2008. <<http://cee.engr.ucdavis.edu/BajaCALVIN>>
- Howitt, R.; Kaplan, J.; Larson, D.; MacEwan, D.; **Medellín-Azuara, J.**; Lee, N. and Horner, G.; and "Central Valley Salinity Report" Report for the State Water Resources Control Board. University of California, Davis, California, Draft March 2008.
- Medellín-Azuara J.**, Harou, J.J., Olivares M.A., Lund J.R. Howitt R.E., Tanaka S.K. , Jenkins M.J., Madani, K, Zhu, T (2006). Climate Warming and Water Supply Management in California, California Climate Change Center, California Energy Commission, CEC-500-2005-195-SF.
- Medellín-Azuara, J.**, Richard E. Howitt and Lund, J.R. (2007). California agricultural water demands for year 2050 under historic and warming climates. California Energy Commission, PIER Program. CEC-500-2005-195.

Jenkins, M.W., **Medellín-Azuara, J.** and Lund, J.R. 2007. California Urban Water Demands for Year 2050. California Energy Commission, PIER Program. CEC-500-2005-195.

*Selected Conference Papers, and Posters, Proceedings and Invited Talks*

**Medellín-Azuara, J.** The Role of Groundwater Management in Recent Droughts: Insights from California. 50<sup>th</sup> 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.

**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.

**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. 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.**

**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, Universidad Federal de Rio Grande do Sul, Porto Alegre, Brazil. April 2015. **Invited Talk.**

**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, 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.**, 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. 8<sup>th</sup> Biennial Bay-Delta Science Conference. Making Connections. October 28-30, 2014, Sacramento, California.

- 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.**
- 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,** 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 21<sup>st</sup> 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. WateReuse California Annual Water Recycling Conference: A Capital Opportunity WateReuse 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.**
- 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) 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. 13<sup>th</sup> 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 21<sup>st</sup> 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.**
- Waller-Barrera, C., Mendoza-Espinosa L. G., **Medellín-Azuara, J.** and Lund, J. R. (2008) Water management optimization for urban and agricultural use in semiarid Mexico. 1st IWA Mexico National Young Water Professionals Conference", Mexico City, April 9-12, 2008.
- Howitt, R.E., and Lund, J.R. (2008). Modeling Economic Costs to agriculture of Changes in the **Medellín-Azuara, J.** Delta Export Salinity. California Water and Environmental Modeling Forum, Asilomar, February 2008.
- 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 80<sup>th</sup> 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, Graduate Student Supervision and Examinations**

### *Courses*

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

### *Lecturing*

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

“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.

### **Graduate Student Mentoring and Supervision**

#### *Department of Civil and Environmental Engineering*

- 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 to 2013)
- Heidi Chou (M.A. 2011 to 2013)
- Nathan Burley (M.S. Ph.D. 2009- 2013)
- Eleanor Bartolomeo (M.S. 2010-2012)
- David Julian (M.S. 2014)
- Mustafa Dogan (M.S. and Ph.D. 2013-to date),
- Karandev Singh (M.S. 2013-2015)
- Nadya Alexander (Ph.D. 2014 to date)

#### *Graduate Group in Hydrology*

- Christina Connell-Buck, M.S. and Ph.D. Hydrological Sciences (2009-2013)
- José Luis Rodríguez-Arellano M.S. Hydrological Sciences (2014-2015)
- Michelle Lent (M.S. 2011-2013),

#### *Agricultural and Resource Economics*

- Duncan MacEwan. (M.S. 2008-2009) Modeling with SWAP.
- Laura Forni. Interphase between the SWAP and WEAP models. (M.S. 2010)

### **Theses and Dissertation Committees**

- David Julian, M.S. Civil and Env. Engr. (2013), University of California Davis.
- Jessica Sharkey, M.S. International Ag. Development (2014), University of California Davis.
- Chantelise Pells, Ph.D. in Geography (2014), University of California, Davis.
- Miriam Julieta Salamanca Sánchez, Ph.D. Universidad Autónoma de Baja California-Ensenada. Instituto de Investigaciones Oceanológicas (México)

- Yolanda Garrido. Masters Thesis: Optimización del manejo del recurso agua en Tijuana y Rosarito, Baja California. Universidad Autónoma de Baja California-Ensenada. Instituto de Investigaciones Oceanológicas (México).

### ***Examinations***

- 2015 Camila Dalla Porta Mattiuzi, (2015) M.S., Universidad Federal Rio Grande do Sul, Brazil.
- 2014 Cesar Antonio Cardona-Almeida, Ph.D. (since 2014) Pontificia Universidad Javeriana, Bogotá Colombia.
- 2014 Miriam Julieta Salamanca Sánchez, Ph.D. Universidad Autónoma de Baja California-Ensenada. Instituto de Investigaciones Oceanológicas (México)
- 2011 Chantelise Pells. Ph.D. 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	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	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 Caroline (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	PI \$200,000
California Flower Association	Impact of Adult Use of Marijuana Act (AUMA) on the California Floral Industry	Co-PI \$14,000
NSF-INFEWS	Sustaining California's food production through integrated water and energy management	Co-PI \$200,000

## Academic Service and Professional Membership

**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, since 2013.

**Convener (2015 to date). California Water and Environmental Modeling Forum (CWEMF). Formerly, Vice Convener (2013-2015).** A non-profit and non-partisan organization for advancing usefulness of water and environmental models for California.

### *Advisory Committees and Reviewer Activity*

**Project Advisory Committee** for the project: *Evaluating Long and Short Term Planning Scenarios to Better Assess the Role of Water Reuse under Climate Change*, for the WaterReuse Foundation, 2008-2013.

**Member of the Editorial Board Computational Water, Energy, and Environmental Engineering.** Since August 2012.

### *Referee in Journals and Book Chapter Manuscripts*

*Water Resources Research, Journal of Hydrology, Water, Environmental Modeling and Software, Journal of Environmental Management, Water International, Journal of Ecology and Natural Environment, Applied Water Science, Water, Agricultural Water Management, Water Resources Management, Desalination, International Journal of Water, Scientia Iranica, Journal of Water Resources Planning and Management and African Journal of Agricultural Research, Environmental Modeling and Software, Science of the Total Environment, Water Policy, Hydrologic and Earth System Sciences. Nature, Sustainable Cities and Society.*

### *Proposal Reviewer*

- 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,*

### ***Memberships***

American Geophysical Union, California Water and Environmental Modeling Forum, American Waste and Management Association, Union of Concerned Scientists  
Sistema Nacional de Investigadores, SNI México.

## **Languages, Specialized Skills and Training**

### ***Languages***

English (Fluent), Spanish (Native)

### ***Computer Technology and Information Systems***

- Proficient user of Microsoft Office Suite
- Specialized Engineering Software and GIS: ArcGIS, QGIS, AUTOCAD, ERDAS
- Operating Systems: MS-DOS, Windows, UNIX and Apple MAC OS X
- Hydroeconomic modeling: WEAP, CALVIN, SIMETA W
- Business and Statistics: JMP, STATA, and SHAZAM
- Programming Languages: Python, BASIC, Pascal, MS Visual Basic
- Miscellaneous: Internet, Corel Draw, Publisher, Front Page, and Endnote.

### ***Other 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.
- Mapping Evapotranspiration at High Resolution and Internalized Calibration (METRIC) May 2015.