Márcio Hofheinz Giacomoni, Ph.D., P.E.

Assistant Professor, Promoted to Associate Professor (Effective September 2019)

Department of Civil and Environmental Engineering
University of Texas at San Antonio, UTSA
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EDUCATION

Ph.D., Civil Engineering, Water Resources 2012
Texas A&M University, College Station, Texas
M. S., Water Resources and Environmental Sanitation 2005
Institute of Hydraulics Research, Federal University of Rio Grande do Sul, Brazil
B.S., Civil Engineer 2002
University of Brasilia, Brasília, Brazil

RESEARCH INTERESTS

Sustainability of the Built and Natural Environments, Stormwater Low Impact Development (LID) and Green Infrastructure, Drought Management and Water Conservation, Resilience and Security of Cyber-Physical Systems

RESEARCH EXPERIENCE

Dissertation: "Complex Adaptive Systems Simulation-Optimization Framework for Adaptive Urban Water Resources Management"
Advisor: Dr. Emily Zechman
Key Contributions:

- Development of a Complex Adaptive System framework to simulate feedbacks, interactions and adaptations among natural, social and built infrastructure
- Use of modeling paradigms such as system dynamics to model population growth, cellular automata to model land use change, agent-based model to simulate urban water use and decision making
- Development of a dynamic optimization procedure to identify optimal adaptive strategies for water sustainability
- Exploration and development of water sustainability and stormwater metrics

Thesis: "Regional Evapotranspiration Estimative using Remote Sensing Techniques integrated with Energy Balance Models: application at Rio Grande do Sul State" (Translated to English)
Advisor: Dr. Carlos André Bulhões Mendes
Key Contributions:

- Implementation of two energy balance models (SEBAL and S-SEBI) to compute actual evapotranspiration using remote sensing imagery
- Development of a automatic procedure to generate daily spatial evapotranspiration time-series from remote sensing satellite imagery

Undergraduate Thesis: "Development of a Decision Support System for Irrigational Water Permitting" (Translated to English).
Advisor: Dr. Demetrios Christofidis
Co-Adviser: Dr. José Wilson Correa Rosa

Research Assistant, **Texas A&M University**, College Station, Texas Aug. 2008 – May 2012

- "BRIGE: A Complex Adaptive Systems Analysis Approach for Integrated Water Resources Sustainability"
- NSF Broadening Participation Research Initiation Grants in Engineering. Sep. 2009 – Sep. 2011
- "Improving Hydrologic Sustainability of Texas A&M University Campus"

U.S. Environmental Protection Agency (EPA) P3: People, Prosperity and the Planet Student Design Competition for Sustainability Aug. 2008 – Apr. 2009

Research Assistant, **Institute of Hydraulics Research**, Porto Alegre, Brazil Jun, 2007 – Jun, 2008

- "Integrated Project of Amazon Cooperation and Hydrologic Monitoring Improvement"
- ➢ *Water National Agency (ANA), Brazil*

Research Assistant, **University of Brasilia**, Brazil Jun, 1998 - Jun, 2002

- Application of geoprocessing and remote sensing to Water Resources and environmental engineering, in the Laboratory of Remote Sensing and Spatial Analysis of the Institute of Geoscience of the University of Brasília. Adviser: Dr. José Wilson Correa Rosa.

TEACHING EXPERIENCE

Department of Civil and Environmental Engineering, University of Texas at San Antonio

Assistant Professor, Promoted to Associate Professor (Effective September 2019)

- CEE 4603 Water Resources Engineering Fall 2013, Spring 2014, 2015, 2016, 2017, 2018, 2019
- CEE 4733 Applied Hydrology Spring 2015, 2017, 2018, 2019
- CEE 6013 Hydrologic Simulation and Analysis Spring 2013, 2016, Fall 2017
- CEE 5703 Water Resource Systems Analysis Spring 2014, Fall 2015, Fall 2016
- CEE 4543 Project Design and Construction Management Fall 2018

Graduate Research Mentoring

- Olufunso Ogidan. PhD in the Environmental Science and Engineering Program, Graduation: December 2016. Dissertation Title: "*Sanitary Sewer Overflow Reduction Optimization using Multiobjective Evolutionary Computation*".
- Vahid Zarezadeh. PhD in Environmental Science and Engineering Program, Graduation: December 2017. Dissertation Title: "*Coupling Hydrologic and Urbanization Modeling: A Multi-Scale Investigation to Enhance Urban Water Resource Systems Sustainability*".
- Bruno Itaquy. Master of Science in Civil and Environmental Engineering, Graduation: May 2016. Thesis Title: "*Multi Objective Genetic Algorithm Approach to Reduce Sanitary Sewer Overflow*".
- Jules Tallichet. Master of Science in Civil and Environmental Engineering, Graduation: May 2018. Thesis Title: "*Exploring the Optimization of Placement and Sizing for Low Impact Developments Using Multi-Objective Evolutionary Algorithm*".
- Siavash Eidi. Master of Science in Civil and Environmental Engineering, Graduation: December 2018. Thesis Title: "*Analyzing the Effect of Urbanization on Surface Runoff for Intense Rainfall Storm Events: Case Study of Olmos Creek in San Antonio, Texas*".
- Abtin Shahrokh Hamedani. PhD in Civil Engineering, Expected Graduation Date: December 2021.
- Cesar do Lago, PhD in Civil Engineering, Graduation: Expected Graduation Date: December 2022.

Undergraduate Research Mentoring

- Alexander Manjarres. Undergraduate Research Assistant. Bachelor in Civil and Environmental Engineering. Graduation: May 2019. Research Title: *"Low Impact Development Soil Media Column Experiments to Test Removal of Stormwater Pollution"*.
- Herta Montoya. Undergraduate Research Assistant. Bachelor in Civil and Environmental Engineering. Graduation: December 2018. Research Title: *"Sensitivity Analysis of an Optimization Approach to Identify Cyber Attacks on Water Distribution Networks"*.
- Travis Lung. Undergraduate Research Assistant. Bachelor in Civil and Environmental Engineering. Graduation: December 2016. Thesis Title: "*Storm Water Quality Monitoring for the Development of Low Impact Basin Design Alternatives*".
- Crista G. Cerda-Garcia. Alamo Colleges CIMA Summer Research Program. Summer 2016. Research title: "*Sand Filter Efficiency on Treating Storm Water at UTSA Main Campus*".
- Paul Martinez. The McNair Scholars program. Summer 2014. Research Title: "*Assessing the Benefits of Rainwater Harvesting on Storm water and Water Supply of an Institutional Watershed in San Antonio, Texas*".

Department of Civil Engineering, Texas A&M University

Teaching Assistant

- Civil Engineering undergraduate course, "Water Resources Engineering" Sum. 2009, Sum. 2010
- Civil Engineering undergraduate course "Design Problems in Civil Engr." Sum. 2009, Sum. 2010

Fellow, Graduate Teaching Academy (GTA) 2010

Center for Teaching Excellence & Office of Graduate Studies, Texas A&M University

- Required activities: attend 16 seminars; observe 3 classroom lectures; write a Statement of Teaching Philosophy; write a Syllabus; write a reflective essay about the academy.

Undergraduate Research Mentoring

- Ramiro Martinez "Climate Change Impacts on Watershed Hydrology" Spring 2011
- Ryan Gomez "Assessing the Effects of Urbanization on Stormwater using the Hydrologic Footprint Residence (HFR)" Spring, Fall 2012

PUBLICATIONS

Published Journal Articles (* indicates student author)

Babbar-Sebens, M., Root, E., Rosenberg, D., Watkins, D., Mirchi, A., **Giacomoni, M.**, Madani, M. (2019) "*Training water resources systems engineers to communicate: Perspectives from on-the-job practitioners*". Journal of Professional Issues in Engineering Education and Practice. Accepted.

Macedo, M., Lago, C. Mendiondo, E. **Giacomoni, M.** (2019) *"Bioretention performance under different rainfall regimes in subtropical conditions: A case study in São Carlos, Brazil"*. Journal of Environmental Management. 248, 109266, https://doi.org/10.1016/j.jenvman.2019.109266.

Aranguren, M.*, Castillo-Villar, K., Aboytes-Ojeda, M. *, **Giacomoni, M.** (2018) "*Simulation-Optimization Approach for the Logistics Network Design of Biomass Co-firing with Coal at Power Plants"*. Sustainability. 10, 4299; doi:10.3390/su10114299.

Zarezadeh, V. *, Lung, T. *, Dorman, T., Shipley, H., **Giacomoni, M.** (2018) "*Assessing the Performance of Sand Filter Basin in Treating Urban Stormwater Runoff*". Environmental Monitoring and Assessment. 190: 697. https://doi.org/10.1007/s10661-018-7069-5.

Taormina, R., Galelli, S., Tippenhauer, N., Salomons, E., Ostfeld, A., Eliades, D., Aghashahi, M., Sundararajan, R., Pourahmadi, M., Banks, M., Brentan, B., Campbell, E., Lima, G., Manzi, D. Ayala-Cabrera, D., Herrera, M., Montalvo, I., Izquierdo, J., Luvizotto Jr., E., Chandy, S., Rasekh, A., Barker, Z., Campbell, B., Shafiee, M., **Giacomoni, M.**, Gatsis, N., Taha, A., Abokifa, A., Haddad, K., Lo, C., Biswas, P., Pasha, M., Kc, B., Somasundaram, S., Housh, M., Ohar, Z. (2018). "*The Battle of the Attack Detection Algorithms: Disclosing Cyber Attacks on Water Distribution Networks*". J of Water Resources Planning and Management. http://doi.org/10.1061/(ASCE)WR.1943-5452.0000969.

Rosenberg, D., Babbar-Sebens, M., Root, E., Herman, J., Mirchi, A., **Giacomoni, M**., Kasprzyk, J., Madani, K., Ford, D., Basdekas, L. (2017) "*Towards More Integrated Formal Education and Practice in Water Resources Systems Analysis*". J Water Resources Planning and Management, doi: 10.1061/(ASCE)WR.1943-5452.0000847.

Itaquy, B.*, Olufunso, O. *, **Giacomoni, M**. (2017). "*Application of Multi-Objective Genetic Algorithm to Reduce Wet Weather Sanitary Sewer Overflows and Surcharge*." J of Sustainable Water in the Built Environment. doi:10.1061/JSWBAY.0000826.

Giacomoni, M., Joseph, J. (2017). "*Multi-Objective Evolutionary Optimization and Monte Carlo Simulation for Placement of Low Impact Development in the Catchment Scale*" J Water Resources Planning and Management. 143(9), 10.1061/(ASCE)WR.1943-5452.0000812.

Olufunso, O.*, **Giacomoni, M**. (2017). "*Enhancing the Performance of Multiobjective Evolutionary Algorithm for Sanitary Sewer Overflow Reduction*." J Water Resources Planning and Management. doi:10.1061/(ASCE)WR.1943-5452.0000774.

Olufunso, O.*, **Giacomoni, M.** (2016). "*Multiobjective Genetic Optimization Approach to Identify Pipe Segment Replacements and Inline Storages to Reduce Sanitary Sewer Overflows*." Water Resources Management, 10.1007/s11269-016-1373-z.

Giacomoni, M., E.M. Zechman (2015) "*A Complex Adaptive Simulation Framework for Evaluating Adaptive Demand Management for Urban Water Resources Sustainability*". J Water Resources Planning and Management, 10.1061/(ASCE)WR.1943-5452.0000543 , 04015024.

Giacomoni, M., G. Ryan, E.Z. Berglund (2014) "*Hydrologic Impact Assessment of Land Use Change Using the Hydrologic Footprint Residence*". J American Water Resources Association (JAWRA) 1-15. DOI: 10.1111/jawr.12187.

Giacomoni, M., Kanta, L., E.M. Zechman (2013) "*A Complex Adaptive Systems Approach to Simulate the Sustainability of Water Resources and Urbanization*". J Water Resources Planning and Management, 139(5), Sept. 2013, pp 554- 564.

Zechman, E.M., **Giacomoni, M.**, and Shafiee, M.E. (2013) "*An evolutionary algorithm approach to generate distinct sets of non-dominated solutions for wicked problems*," Engineering Applications of Artificial Intelligence 26(5), pp. 1442-1457.

Giacomoni, **M.**, E.M. Zechman, K. Brumbelow (2012) "*The Hydrologic Footprint Residence: An Environmentally-friendly Criteria for Best Management Practices*," J Hydrologic Engineering, 17(1), pp. 99-108.

Damodaram, C., **Giacomoni, M.**, Prakash Khedun, C., Holmes, H., Ryan, A., Saour, W. and Zechman, E.M., (2010) "*Simulation of Combined Best Management Practices and Low Impact Development for Sustainable Stormwater Management*," J American Water Resources Association 46(5), pp. 907-918.

Giacomoni, M., Mendes, C.A.B. (2008) "*Regional Evapotranspiration Estimates Using Remote Sensing Techniques integrated to Energy Balance Model*". Brazilian Journal of Water Resources (RBRH). V. 13 n. 4, p. 33-42. (Published in Portuguese).

Veríssimo, M., Rosa, J.W.C., Ribeiro, M.C.L., **Giacomoni, M.**, Pinha, P.R.S. (2001) Urban Index to Water Systems Sustainability. Case: Federal District. Revista Universa, Brasília, v. 9, n. 2, p. 245-278, 2001. (Published in Portuguese).

Journal Articles Submitted or Under Review

Wang, S.*, Taha, A., Sela, L., **Giacomoni, M.**, Gatsis, N. (2019) "*GP-Net: A New Geometric Programming-Based Approximation for Solving the Network Water Flow Problem"*. Water Resources Research. Submitted.

Journal Articles in Preparation

Hamedani, A, Bazilio, A., Shipley, H., Giacomoni, M. (2019) "*Enhancing the Performance of Bioretention and Sand Filter Media using Limestone Sand*". J of Sustainable Water in the Built Environment. Expected date of submission: July 2019.

Olufunso, O.*, **Giacomoni, M.** "*Optimization Method to Generate Distinct Sets of Alternatives for Sanitary Sewer Overflow Reduction*". Expected date of submission: Dec. 2019.

Lago, C.*, Macedo, M., Gomes Jr., M., **Giacomoni, M.**, Mendiondo, M. *"Analysis of Rainfall-Runoff Generation of a Subtropical Urban Catchment of Wet and Dry Seasons"*. Expected date of submission: Aug. 2019.

Zarezadeh, V.*, **Giacomoni, M.** "*Incorporating Dynamic Land Use Change into a Semi-Distributed Hydrologic Model to Assess the Effects of Urbanization in the Stream Flow Regime*". Expected date of submission: Dec. 2019.

Books and Book Chapters

Ward S, Dornelles F, Giacomoni M, Memon FA. (2014) *"Incentivising and Charging for Rain Water Harvesting – Three International Perspectives"*, Memon FA,Ward S (eds), Alternative Water Supply Systems, IWA, 153-168.

Veríssimo, M., **Giacomoni, M.H.**, Ribeiro, M.C.L., Rosa, J.W.C., Meneses, P.R. "*APA Gama Cabeça-de-Veado – Conservation Unit Mosaic"*. In: Subsidies to environmental zoning of APA Gama Cabeça-de-Veado. Characterizations e Socio-Environmental Conflicts. Brasília: UNESCO, MAB, Biosphere Reserve of Cerrado, 2003.

Veríssimo, M., Rosa, J.W.C., **Giacomoni, M.H.**, Ribeiro, M.C.L., Felfili, J.M., Rezende, J.A., Meneses, P.R. *"Socio-Environmental Characterization"*. In: Subsidies to environmental zoning of APA Gama Cabeça-de-Veado. Characterizations e Socio-Environmental Conflicts. Brasília: UNESCO, MAB, Biosphere Reserve of Cerrado, 2003.

Veríssimo, M., **Giacomoni, M.H.**, Rosa, J.W.C., Ribeiro, M.C.L., Goepfert, A.S.J., Meneses, P.R. *"Socio-Environmental Conflicts."* In: Subsidies to environmental zoning of APA Gama Cabeça-de-Veado. Characterizations e Socio-Environmental Conflicts. Brasília: UNESCO, MAB, Biosphere Reserve of Cerrado, 2003.

Veríssimo, M., Rosa, J.W.C., **Giacomoni, M.H.**, Ribeiro, M.C.L., Meneses, P.R. *"Land-Use and Occupation"*. In: Subsidies to environmental zoning of APA Gama Cabeça-de-Veado. Characterizations e Socio-Environmental Conflicts. Brasília: UNESCO, MAB, Biosphere Reserve of Cerrado, 2003.

Conference Proceedings

Hamedani, A*, Bazilio, A., Cerda, C. *, Manjarres, A. *, Hall, A., Shipley, H., **Giacomoni, M.** (2019) *Assessing the Performance of Bioretention and Sand Filter Media Using Columns and Synthetic Stormwater*. World Environmental and Water Resources Congress 2019: pp. 57-70. doi:10.1061/9780784482360.007.

M. Bazrafshan, N. Gatsis, **M. Giacomoni** and A. Taha, (2018) *A Fixed-Point Iteration for Steady-State Analysis of Water Distribution Networks*, 2018 IEEE Global Conference on Signal and Information Processing (GlobalSIP), Anaheim, CA, USA, 2018, pp. 880-884. doi: 10.1109/GlobalSIP.2018.8646545

Macedo, M., Lago, C., Mendiondo, E., **Giacomoni, M.** (2018) *Decentralized Low Impact Development (LID) Practices Addressing the Security of the Water-Energy-Food Nexus.* International Low Impact Development Conference 2018. doi: 10.1061/9780784481783.004.

Lago, C., Macedo, M., Mendiondo, E., **Giacomoni, M.** (2018) *The Effects of Climate Change on Low Impact Development (LID) Performance—A Case of Study in Sao Carlos, Brazil*. International Low Impact Development Conference 2018. doi:10.1061/9780784481783.005.

Zarezadeh, V.*, **Giacomoni, M**. (2017) *Incorporating Dynamic Land Use Change into Hydrologic Model to Assess Urbanization Effects on Hydrologic Flow Regime.* World Environmental and Water Resources Congress 2017: pp. 22-33. doi: 10.1061/9780784480601.003.

Giacomoni, M., Gatsis, N., Taha, A. (2017) *Identification of Cyber Attacks on Water Distribution Systems by Unveiling Low-Dimensionality in the Sensory Data.* World Environmental and Water Resources Congress 2017: Hydraulics and Waterways and Water Distribution Systems Analysis. pp. 660 - 675. doi: 10.1061/9780784480625.062.

Ogidan, O.*, Itaquy, B. *, and **Giacomoni, M**. (2016) *Enhancing the Performance of Multiobjective Evolutionary Algorithms for Sanitary Sewer Rehabilitation Problems.* World Environmental and Water Resources Congress 2016: pp. 171-180. doi: 10.1061/9780784479858.019.

Itaquy, B. *, Ogidan, O. *, and **Giacomoni, M**. (2016) *Multi-Objective Approach to Reduce Sanitary Sewer Overflow Using Genetic Algorithms.* World Environmental and Water Resources Congress 2016: pp. 322-329. doi: 10.1061/9780784479889.034.

Zarezadeh, V. *, **Giacomoni, M**. (2016) *Use of a Cellular Automata Model to Assess Land Use Change and Its Effects on the Hydrologic Flow Regime.* World Environmental and Water Resources Congress 2016: pp. 181-188. doi: 10.1061/9780784479858.020

Ogidan, O. * and **Giacomoni, M**. (2015) *Sanitary Sewer Overflow Reduction Optimization Using Genetic Algorithm.* World Environmental and Water Resources Congress 2015: pp. 2218-2225. .doi: 10.1061/9780784479162.218

Giacomoni, M. (2015) *Low Impact Development Placement Investigation Using a Multi-Objective Evolutionary Optimization Algorithm.* World Environmental and Water Resources Congress 2015: pp. 344-348. doi: 10.1061/9780784479162.033.

Giacomoni, M. (2015) *Use of Multiobjective Evolutionary Algorithm Optimization for Low-Impact Development Placement.* International Low Impact Development Conference 2015: pp. 53-62. doi: 10.1061/9780784479025.006.

Kanta, L., **Giacomoni, M.** (2013) *A Coupled Framework of Cellular Automata-based Fire Spread Model and Water Distribution System for Dynamic Simulation of Urban Conflagration Events.* World Environmental and Water Resources Congress 2013: pp. 589-597. doi: 10.1061/9780784412947.057.

Giacomoni, M., E. M. Zechman, (2011) *Avaliação da Sustentabilidade Sistemas Integrados Urbanos de Recursos Hídricos por meio de Abordagem Sistêmica Complexa Adaptativa.* Proceedings of the Brazilian Symphosium of Water Resources, Maceio, AL, December 2011.

Giacomoni, M., Zechman, E.M., Shafiee, M. (2011) *Generating Alternative Non-Inferior Sets through the Multi-Objective Niching Co-Evolutionary Algorithm (MNCA)*. INFORMS Annual Meeting 2011, Charlotte, NC, November 2011.

Giacomoni, M., E. M. Zechman, (2011) *Assessing Sustainability of Integrated Urban Water Resources Systems through a Complex Adaptive Systems Approach.* Proceedings of the ASCE/EWRI World Environmental and Water Resources Congress, Palm Springs, CA, May 2011.

Zechman, E.M., **M. Giacomoni**, M.E. Shafiee (2011) *A multi-objective niching co-evolutionary algorithm (MNCA) for identifying diverse sets of non-dominated solutions.* Proceedings of the Genetic and Evolutionary Computation Conference 2011 (GECCO), Companion, Dublin, Ireland, pp. 805-806, July 2011.

Giacomoni, M., E. M. Zechman, (2010) *A Complex Adaptive Systems Approach to Simulate Urban Water Resources Sustainability*. Proceedings of the ASCE/EWRI World Environmental and Water Resources Congress, Providence, RI, May 2010.

Damodaram, C., **M. Giacomoni**, and E. M. Zechman, (2010) *Using the Hydrologic Footprint Residence to Evaluate Low Impact Development in Urban Areas*. Proceedings of the ASCE 2010 International Low Impact Development Conference, San Francisco, CA, April 2010.

Giacomoni, M., Zechman, E. M. (2009) *Hydrologic Footprint Residence: A New Metric to Assess Hydrological Alterations Due to Urbanization*. World Environmental & Water Resources Congress, EWRI – ASCE, Kansas City, May 17-21, 2009.

Giacomoni, M., Mendes, C.A.B. (2005) *Estimation of Energy Balance and Evapotranspiration by remote sensing: application of S-SEBI method to Rio Grande do Sul State*, 1st ÁGUASUL - Symposium of Water Recourses of the South and 1st Symposium of Waters of AUGM, Santa Maria - RS, Brazil, 20 to March 23, 2005. (Published in Portuguese).

Conference Presentations or Posters

Wang, S.*, **Giacomoni, M.**, Gatsis, N., Taha, A. (2019) "*Geometric Programming Approach for Optimal Control of Water Distribution Networks*", World Environmental and Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Pittsburg, PA. (May, 2019). (Poster)

Montoya, H.*(Author & Presenter), **Giacomoni, M.**, Gatsis, N. *"Sensitivity Analysis of an Optimization Approach to Identify Cyber Attacks on Water Distribution Networks"*. World Environmental and Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Minneapolis, MN. (June, 2018).

Giacomoni, M, Zarezadeh, V.*, Cerda, C. *, Bazilio, A., Hernandez, A. *, Adkison, C. *, Shipley, H. *"Assessing the Performance of Bioretentions and Sand Filter Basins using a Low Impact Development Test Bed at The University of Texas at San Antonio Main Campus"*, World Environmental and Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Minneapolis, MN. (June, 2018).

Giacomoni, M, Castillo, K., Shipley, H., Chen, F. *"Opportunities for Higher Education and Research Experience in Renewable Energy and Water Quality to Enable STEM Hispanic Leaders"*, World Environmental and Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Minneapolis, MN. (June, 2018).

Giacomoni, M., *"Research, Teaching and Outreach using a Low Impact Development Test Bed at the University of Texas at San Antonio",* 19th Annual EPA Region 6 Stormwater Conference, Environmental Protection Agency, San Antonio, TX. (September 19, 2017).

Giacomoni, M., Gatsis, N., & Taha, A., *"Identification of Cyber Attacks on Water Distribution Systems by Unveiling Low-Dimensionality in the Sensory Data",* World Environmental and Water Resource Congress 2017, Environmental and Water Resources Institute/ASCE, Sacramento, CA. (May 2017).

Zarezadeh, V.* (Author & Presenter), & **Giacomoni, M.**, *"Incorporating Dynamic Land Use Change into Hydrologic Model to Assess Urbanization Effects on Hydrologic Flow Regime"* World Environmental and Water Resource Congress 2017, Environmental and Water Resources Institute/ASCE, Sacramento, CA. (May 2017).

Giacomoni, M., *"Low Impact Development Placement Investigation using a Multi-Objective Evolutionary Optimization Algorithm"*, World Environmental and Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Austin, TX. (May 20, 2015).

Giacomoni, M., & Ogidan, O.* (Presenter), "*Sanitary Sewer Overflow Reduction Optimization Using Genetic Algorithm",* World Environmental and Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Austin, TX. (May 20, 2015).

Giacomoni, M., Kanta, L., Shafiee, M. Ehsan, & Berglund, E., *"An Agent-based Modeling Framework to Simulate the Diffusion of Water-Efficient Innovations and Urban Water Sustainability",* World Environmental and

Water Resources Congress, American Society of Civil Engineers/Environmental Water Resources Institute, Austin, TX. (May 17, 2015). (Poster)

Giacomoni, M., *"Use of Multi-Objective Evolutionary Algorithm Optimization for Low Impact Development Placement and Design"* International Low Impact Development Conference, Environment and Water Resources Institute, Houston, TX. (January 21, 2015).

Kanta, L. (Presenter), **Giacomoni, M.**, Shafiee, M. Ehsan, & Berglund, E., *"Agent-based Modeling to Simulate the Diffusion of Water-Efficient Innovations and the Emergence of Urban Water Sustainability",* American Geophysical Union Fall Meeting, American Geophysical Union (AGU), San Francisco, CA. (December 17, 2014). (Poster)

Giacomoni, M., Rosa, J.W.C. *"Geographic Information Systems in hydrological modeling to support water withdrawal permitting"*, 8th Congress of Scientific Initiation of the University of Brasília, Brasília - DF, Brazil, 7 to August 9, 2002. (Published in Portuguese). (Poster)

Giacomoni, M., Santos, M.V., Rosa, J.W.C. *"Environmental Information System for Conservation Units: System Development, National Park Grande Sertão Veredas"*, 54th Annual Meeting of the Brazilian Society for the Progress of the Science, Goiânia - GO, Brazil, 7 to July 12, 2002. (Published in Portuguese). (Poster)

Giacomoni, M., Chaves, H.M.L., Santos, M.V., Rosa, J.W.C. *"Environmental Information System for Conservation Units: System Development, National Park Grande Sertão Veredas"*, 7th Congress of Scientific Initiation of the University of Brasília, Brasília - DF, Brazil, 22 to August 24. 2001. (Published in Portuguese). (Poster)

Giacomoni, M., Chaves, H.M.L., Santos, M.V., Rosa, J.W.C. *"Environmental Information System for Conservation Units: System Development, National Park Grande Sertão Veredas"*, 6th Congress of Scientific Initiation of the University of Brasília, Brasília - DF, Brazil, 12 to July 14. 2000. (Published in Portuguese). (Poster)

Chaves, H., Rezende, J.A., Rosa, J.W.C., Santos, M.V., **Giacomoni, M.** *"Environmental Information System for Conservation Units: National Park Grande Sertão Veredas"*, 52nd Annual Meeting of the Brazilian Society for the Progress of the Science, Brasília - DF, Brazil, 9 on July 14, 2000. (Published in Portuguese). (Poster)

Pinha, P.R.S., Rosa, J.W.C., **Giacomoni, M.**, Santos, M.V. *"Integrated Analyses of Hydrological Information to support the water management of Federal District basins: survey and analyses of anthropic data (urban)"*, 5th Congress of Scientific Initiation of the University of Brasília, Brasília – DF, Brazil, 26 and August 27, 1999. (Published in Portuguese). (Poster)

Invited Talks

Giacomoni, M. *"Improving Urban Storm and Sanitary Water Systems Health and Resilience through Low Impact Development: An Analysis of Bioretention and Sand Filter Basins Media"*, Seminar at the CAPES School of Advanced Studies of Water & Society under Change. School of Engineering of São Carlos, University of São Paulo, São Carlos, Brazil (May 2nd, 2019).

Giacomoni, M. *"Stormwater Runoff: Current Treatment Practices and Green Infrastructure Performance"*, Seminar at the Federal University of Santa Maria, Santa Maria, Brazil (April 30th, 2019).

Giacomoni, M. *"The Use of Evolutionary Computation to Address Engineering Water Problems"*, Seminar at the Institute of Hydraulics Research. Federal University of Rio Grande do Sul, Porto Alegre, Brazil (April 29th, 2019).

Giacomoni, M. *"Research Experiences, Opportunities and Tendencies in Water Resources and Environmental Engineering in the United States of America"*, 1st Brazilian National Meeting of Graduate Programs in Water Resources and Environmental Engineering. Federal University of Rio Grande do Sul, Porto Alegre, Brazil (March 25th, 2019).

Giacomoni, M., "Assessing the Performance of Current Stormwater Practices and Green Infrastructure in Treating Urban Stormwater Runoff," University of São Paulo, São Carlos, Brazil. (April 21, 2018).

Giacomoni, M., "An Evolutionary Algorithm Approach to Generate Distinct Sets of Non-Dominated Solutions for Wicked Problems," Seminar Department of Electrical and Computer Engineering UTSA, Dep. Electrical and Computer Engineering, UTSA. (March 3, 2018).

Giacomoni, M., "Use of Evolutionary Computation to Address Engineering Water Problems," Seminar at Trinity University, Trinity University, San Antonio, TX. (October 31, 2017).

Giacomoni, M., "Water Resources Systems Analysis and Smart Cities," Smart Cities Networking Luncheon, UTSA, San Antonio, TX. (October 3, 2017).

Giacomoni, M., "Moderation of Water Round Table," Equinox Festival, UTSA, San Antonio, TX. (September 22, 2017).

Giacomoni, M., "Assessing the Performance of Current Stormwater Practices and Green Infrastructure in Treating Urban Stormwater Runoff," Seminar Geosciences, Geosciences Department - UTSA, San Antonio, TX. (September 1, 2017).

Giacomoni, M., "Water Resources Engineering," Transfer Academy for Tomorrow's Engineers (TATE) Workshop, UTSA, San Antonio, TX. (June 28, 2017).

Giacomoni, M., "Implementation of a Low Impact Development Test Bed at The University of Texas at San Antonio Main Campus," TCEQ Innovative Technology Group, Texas Commission on Environmental Quality, San Antonio. (January 10, 2017).

Giacomoni, M., "Current and Future State of Stormwater Quality at UTSA Main Campus," Aquifer Management Planning Committee Meeting, Edwards Aquifer Authority, EAA Boardroom (900 E. Quincy). (August 23, 2016).

Giacomoni, M., "Development of an Optimization Framework for Sanitary Sewer Overflow Reduction in the San Antonio Sanitary System," Environmental Science and Engineering Seminar, UTSA, San Antonio, TX. (October 23, 2015).

Giacomoni, M., "Water Resources Engineering and Systems Analysis," WeARE Summer Camp, UTSA WeARE, San Antonio, TX. (May 28, 2015).

Giacomoni, M. "Water Resources in Brazil: the Richest Water Country in the World on the Brink of a Water Collapse," Citizens Advisory Panel Meeting, San Antonio Water Systems, San Antonio, TX. (April 21, 2015).

Giacomoni, M., "An Evolutionary Algorithm Approach to Generate Distinct Sets of Non-Dominated Solutions for Wicked Problems," Department of Electrical and Computer Engineering, UTSA, UTSA Main Campus. (March 6, 2015).

Giacomoni, M., "Hydrologic Impact Assessment of Land Cover Change and Stormwater Management using the Hydrologic Footprint Residence," North Texas Low Impact Development (LID) Workshop, University of Texas Arlington (UTA), Arlington, TX. (May 3, 2014).

Giacomoni, M., "Hydrologic Impact Assessment of Land Cover Change and Stormwater Management using the Hydrologic Footprint Residence," Low Impact Development in Houston Workshop, Rice University, Houston, TX. (April 3, 2014).

Giacomoni, M., "Finding your Ideal Faculty Position," Monthly Meeting of TAMU Grad Peer Mentor Program/Student Chapter of AWRA, Texas A&M Grad Peer Mentor Program/Student Chapter of the American Water Resources Association, College Station, TX. (March 20, 2014).

Giacomoni, M., "Sanitary Sewer Overflow Reduction: San Antonio's $1 Billion Water Problem," Alamo Heights Rotary Club, San Antonio, TX. (March 11, 2014).

GRANTS and AWARDS

- Sharif, H., Weissmann, A., **Giacomoni, M.**, Dessouky, S., Rashed-Ali, H., Kapoor, V. "Hydrology Infrastructure Data Collection and Analysis Services", Sponsored by Texas General Land Office, State, $1,536,419 (June 1st – October 31st 2019).
- Papagiannakis, A. **& Giacomoni, M.** "Demonstrating the Environmental Benefits of Permeable Paved Surfaces over the Edwards Aquifer", Sponsored by City of San Antonio, Local, $1,035,761 (September 1st 2019 – August 31st 2022).
- **Giacomoni, M.** & Olivera, F. "Assessing the Impacts of Super Storm Flooding in the Transportation Infrastructure – Case Study: San Antonio, TX", Sponsored by TranSET and City of San Antonio, Regional, $140,000 (July 1st 2018 – December 31st 2019).
- **Giacomoni, M.** & Shipley, H., "Implementation of a Low Impact Development Test Bed at The University of Texas at San Antonio Main Campus", Sponsored by City of San Antonio, Local, $1,069,113 (June 1, 2017 – May 31, 2020).
- Taha, A., Gatsis, N., **Giacomoni M.**, "Collaborative Research: Selecting Sensors and Actuators for Topologically Evolving Networked Dynamical Systems: Battling Contamination in Water Networks", Sponsored by National Science Foundation, Division of Civil, Mechanical & Manufacturing Innovation, #1728629, Federal, $299,974 (August 1 2017 – July 31 2020).
- **Giacomoni, M.** & Shipley, H. J., "Monitoring and Modeling Stormwater Quality at UTSA Main Campus", Sponsored by Great Edwards Aquifer Alliance/San Antonio River Authority, State, $42,800.00 (January 1, 2016 – December 31, 2016).

- Castillo Villar, K. K. & **Giacomoni, M.**, "Increasing Awareness through the Development of an Web-based Educational Tool to Reduce Greenhouse Gas Emissions in Coal Power Plants", Sponsored by Environmental Protection Agency, Federal, $15,000.00 (September 2016 – August 2017).
- Castillo Villar, K., **Giacomoni, M.**, Shipley, H., Chen, F., "Opportunities for Higher Education and Research Experience in Renewable Energy and Water Quality to Enable STEM Hispanic Leaders", Sponsored by National Institute of Food and Agriculture, Federal, $290,000.00 (August 1, 2014 – July 31, 2016).
- **Giacomoni, M.**, "Development of an Optimization Framework for Sanitary Sewer Overflow Reduction in the San Antonio Sanitary System", Sponsored by San Antonio Water System, Local, $187,972.00 (October 1, 2013 – September 30, 2015).
- DOCUmation Award for Academic Excellence ($2,000.00) September 2017.
- Best Work of Scientific Initiation of the Session 47, in the area of Forest Engineering, with the research "Environmental Information System for Conservation Units - System Development: National Park Grande Sertão Veredas". Adviser: Dr. Henrique Marinho Leite Chaves, during the 7th Congress of Scientific Initiation of University of Brasilia, 2001.

SCHOLARSHIPS/FELLOWSHIPS

- Department Head Doctoral Fellowship 2009-2010
- Zachry Department of Civil Engineering at Texas A&M University Mills Scholarship 2009 – 2010
  Texas Water Resources Institute
- Zachry Department of Civil Engineering PhD Student Travel Grant 2009
  Support travel to ASCE World Environmental and Water Resources Congress
- Water Resources Department Graduate Fellowship 2008 – 2009
  Zachry Department of Civil Engineering at Texas A&M University

PROFESSIONAL EXPERIENCE

Professional Engineer, **State of Texas**, # 134261.

Consultant, **ECOPLAN Engineering and Consultancy**, Porto Alegre, Brazil 2007 – 2008

- Development of Master Plan of Urban Drainage of Palmas, Tocantins, Brazil.
- Project designer of drainage system of portion of main channel of São Francisco interbasin water transfer.

Consultant, **ECSAM Engineering and Consultancy in Environmental Sanitation**, Porto Alegre, Brazil 2005 – 2007

- Consultant at the project "Definition of a Structure for the Section of the Installment of the Services of Water supply and Sanitary Exhaustion and its regulation, in the State of Santa Catarina", contracted for the General Office of Sustainable Development of the State of Santa Catarina.
- Geographic Information System consultant at the "Study of Environmental Impacts of the Sanitary Embankment of Solid Residues in the Old Mine of Iruí - RS", contracted for the Company Riograndense of Mining.
- Project Designer of Urban Drainage in the Municipal districts of Caçapava do Sul, Rio Pardo and Novo Cabrais, contracted for the General Office of Public Works and Sanitation – SOPS, State of Rio Grande do Sul.
- Project Designer of Sanitary Sewer Systems in the Municipal districts of Arvorezinha, Imigrante, Nova Bréscia, Bom Retiro do Sul and Taquari, contracted for the General Office of Public Works and Sanitation – SOPS, State of Rio Grande do Sul.
- Project Designer of Micro-Drainage in Parque da Pedreira's neighborhoods, Parque do Meio and Praia, located in the municipal district of Taquari, contracted for the General Office of Public Works and Sanitation – SOPS, State of Rio Grande do Sul.
- Geographic Information System consultant for the project "Development of Pilot Geographic Information System to support water losses reduction in the water supply system of São Leopoldo/RS", contracted for the Municipal Service of Water and Sewerage – SEMAE, of the municipal district of São Leopoldo.
- Consultant at the Master Plan of Sanitation of the Municipal districts of Bagé and Hulha Negra, contracted for the Department of Waters and Sewerage Systems of City of Bagé - DAEB.

PROFESSIONAL ORGANIZATIONS and SERVICE

- Member of American Society of Civil Engineers and Environmental and Water Resources (ASCE/EWRI)
  - Member of the Environmental and Water Resources Systems Committee
  - Member of the International Participation Committee
  - Member of the task committee on Excellence in Systems Analysis Teaching and Innovative Communication (ECSTATIC).
- Co-editor of the special issue about Integrated Water Resource Systems Modeling to Support Sustainable Water Management for the journal Water.
- Member of American Water Resources Association.
- President 2010-2011
  Student Chapter of the American Water Resources Association at Texas A&M University.
- Member, Organizing Commission, Conservation of the Cerrado Symposium - Survey of short duration, coordinator of the Discussion Group on Geoprocessing, NGO Pequi Research and Conservation of the Cerrado (Savannah). University of Brasília, DF, Brazil, October 9 to 11, 2002.