CURRICULUM VITAE OF
Arturo S. Leon, Department of Civil and Environmental Engineering (September 2022)

A. EDUCATION

Degree	Institution	Field	Dates
Ph.D.	University of Illinois at Urbana-Champaign, IL	Civil and Environmental Engineering	2002-2007
M.S. (Graduated with honors)	National University of Engineering, Peru	Hydraulic Engineering	1998-2000
C.E. (Civil Engineer Thesis)	National University of San Cristobal de Huamanga, Peru	Civil Engineering	1998
B.S. (5 year program, Graduated with honors)	National University of San Cristobal de Huamanga, Peru	Civil Engineering	1992-1996

B. FULL-TIME ACADEMIC EXPERIENCE

Institution	Rank	Field	Dates
FIU	Associate Professor	Civil and Environmental Engineering	Aug. 2018-Present
University of Houston, TX	Associate Professor	Civil and Environmental Engineering	Sept. 2016-July 2018
Oregon State University, OR	Assistant Professor	Civil and Construction Engineering	Jan. 2011-Aug. 2016
Boise State University, ID	Assistant Professor	Civil Engineering	Sept. 2009-Dec. 2010
University of Illinois at Urbana-Champaign, IL	Post-doctoral Research Associate	Civil and Environmental Engineering	Apr. 2007-Aug. 2009
University of Illinois at Urbana-Champaign, IL	Graduate Research Assistant	Civil and Environmental Engineering	Sept. 2002-Mar. 2007

C. PART-TIME ACADEMIC EXPERIENCE

N/A

D. NON-ACADEMIC EXPERIENCE

Place of Employment	Title	Dates
Knight Piesold Consulting S.A., Lima, Peru	Staff Hydrologic and Hydraulic Engineer	Aug. 2000-July 2002
COSAPI S.A., Lima, Peru	Staff Hydraulic Engineer	Jan 1999-July 2000
Agua y Agro Asesores Asociados S.A.C., Lima, Peru	Assistant Hydraulic Engineer	Jan. 1998-Dec. 1998

E. EMPLOYMENT RECORD AT FIU

Rank	Dates
Associate Professor	Aug. 2018-Present

F. PUBLICATIONS IN DISCIPLINE (*student/post-doc advisees are underlined*)

BOOKS

1. **A. S. Leon** (2009). "Improved Modeling of Transient Flows in Storm-sewer Systems", ISBN 978-3-639-15213-5, VDM Verlag Dr. Müller, Germany.
2. **A. S. Leon** (2000). "Local scour around cylindrical piers in non-cohesive beds (In Spanish)", Distribuidora Lopez G., Lima, Peru.
3. **A. S. Leon** and F. Coronado (1998). "The hydraulic design of a bottom rack-type intake in supercritical regime (In Spanish)", W. H. Editores S.R. Ltda., Lima, Peru.

ARTICLES (REFEREED JOURNAL PAPERS)

Qin, L., Yang, D. Shi, X., **Leon, A. S.**(2021). "Effects of target surface colour and spectral distribution of light sources on luminance perception and obstacle cognition in tunnel lighting." Optik.

1. Maleki, H., Safaei, M. R., **Leon, A. S.**, Muhammad, T., Nguyen, T. K. (2022). Improving shipboard electronics cooling system by optimizing the heat sinks configuration, *Journal of Ocean Engineering and Science*, https://doi.org/10.1016/j.joes.2021.09.013.
2. Zanje, S. R., Bian, L., Verma, V., Yin, Z., and **Leon, A. S.** (June 15, 2022). "Siphon Break Phenomena Associated with Pipe Leakage Location." ASME. *J. Fluids Eng.* November 2022; 144(11): 111202. https://doi.org/10.1115/1.4054654.
3. Yin, Z., Matus, M., Zisis, I., **Leon, A. S.** (2022). Numerical Investigation on the Wind-Excited Dynamic Response of Span-Wire Traffic Signal System, *Fluid Mechanics*. Volume 8, Issue 1, June 2022, pp. 16-26. doi: 10.11648/j.fm.20220801.12
4. Qin, L., Yang, D.-S., Weng, Y.-N., **Leon, A. S.**, & Shi, X.-H. (2022). Tunnel safety: A pilot study investigating drivers' fixation characteristics when approaching tunnel entrance at different driving speeds. *Lighting Research & Technology*. https://doi.org/10.1177/14771535221100261.
5. Troxler, T.G., Amy C. Clement, Yoca Arditi-Rocha, Gretchen Beesing, Mahadev Bhat, Jessica Bolson, Carissa Cabán-Alemán, Karina Castillo, Olivia Collins, Mayra Cruz, Alan Dodd, Scotney D. Evans, Abigail L. Fleming, Carlos Genatios, Jane Gilbert, Alyssa Hernandez, Cheryl Holder, Maria Ilcheva, Elizabeth Kelly, **Arturo S. Leon**, Joanna Lombard, Katharine J. Mach, Diana Moanga, James F. Murley, Amy Knowles, Jayantha Obeysekera, Loren Parra, Jennifer Posner, Arif Sarwat, Rachel Silverstein, John A. Stuart, Michael C. Sukop, Shimon Wdowinski and Elizabeth Wheaton (2021). A System for Resilience Learning: Developing a Community-Driven, Multi-Sector Research Approach for Greater Preparedness and Resilience to Long-Term Climate Stressors and Extreme Events in the Miami Metropolitan Region. *Journal of Extreme Events*, 08(03). Available at: http://dx.doi.org/10.1142/s2345737621500196.
6. **Leon, A. S.**, Bian, L. and Tang Y. (2021). Comparison of the genetic algorithm and pattern search methods for forecasting optimal flow releases in a multi-storage system for flood control. *Environmental Modelling & Software,* 145, 105198.
7. Bian, L.; Melesse, A. M.; **Leon, A. S.**; Verma, V.; Yin, Z. (2021). A Deterministic Topographic Wetland Index Based on LiDAR-Derived DEM for Delineating Open-Water Wetlands. *Water*, 13(18), 2487.
8. Qin, L.; Peña-García, A.; **Leon, A. S.**; Yu, J.-C. (2021). Comparative Study of Energy Savings for Various Control Strategies in the Tunnel Lighting System. *Appl. Sci.* **2021**, *11(14)*, 6372. https://doi.org/10.3390/app11146372.
9. Qin, L., Cao, Q-L., **Leon, A. S.**, Weng, Y-N., Shi, X-H. (2021). "Use of Pupil Area and Fixation Maps to Evaluate Visual Behavior of Drivers inside Tunnels at Different Luminance Levels—A Pilot Study" *Appl. Sci.* 11, no. 11: 5014. https://doi.org/10.3390/app11115014.

10. Chen, Y., Gibson, N., Biswas, A., Li, A., Bashiri, H., Sharifi, E., Fuentes, C., Hoyle, C., **Leon, A. S.**, Skypeck, C.J. (2021). "Valuation of operational flexibility: A case study of Bonneville power administration." *Energy Economics*, 98, 105251. https://www.sciencedirect.com/science/article/pii/S0140988321001560#!.

11. Hosseini, P., Gibson, N., Chen, D., **Leon, A. S.** (2021). "Flexible Decision Variables in Multi-Objective Reservoir Operation." *International Journal of Computer Mathematics*, DOI: 10.1080/00207160.2021.1894418.

12. Chegini, T. and **Leon, A. S.** (2020). Numerical investigation of field-scale geysers in a vertical shaft. *Journal of Hydraulic Research*, 58:3, 503-515.

13. Dadsetani, R.; Sheikhzadeh, G. A.; Safaei, M. R.; **Leon, A. S.**; Goodarzi, M. (2020). Cooling Enhancement and Stress Reduction Optimization of Disk-Shaped Electronic Components Using Nanofluids. *Symmetry*, *12*, 931.

14. **Leon, A. S.**, Tang Y., Qin, L. and Chen, D. (2020). A MATLAB framework for forecasting optimal flow releases in a multi-storage system for flood control. *Environmental Modelling & Software* 125, March 2020, 104618.

15. Qin, L., Shi, X., **Leon, A. S.**, Tong, C., Ding, C. (2020). Dynamic luminance tuning method for tunnel lighting based on data mining of real-time traffic flow, Building and Environment, 176, 106844, https://doi.org/10.1016/j.buildenv.2020.106844.

16. Tang, Y., **Leon, A. S.** & Kavvas, M. L. (2020). Impact of Dynamic Storage Management of Wetlands and Shallow Ponds on Watershed-scale Flood Control. *Water Resour Manage* 34, 1305–1318.

17. Tang, Y., **Leon, A. S.** & Kavvas, M. L. (2020). Impact of Size and Location of Wetlands on Watershed-Scale Flood Control. *Water Resour Manage* 34, 1693–1707.

18. Mehrdad, S., Dadsetani, R., Amiriyoon, A., **Leon, A. S.**, Safaei, M. R., Goodarzi, M. (2020) Exergo-Economic Optimization of Organic Rankine Cycle for Saving of Thermal Energy in a Sample Power Plant by Using of Strength Pareto Evolutionary Algorithm II. *Processes* 2020, *8*, 264.

19. Qin, L., Shi, X., and **Leon, A. S.** (2020). Luminance calculation method accounting for mesopic vision and fog penetration ability. *Applied Optics*, 59(3).

20. Qin, L., **Leon, A. S.**, Bian, L., Dong, L., Verma, V., and Yolcu, A. (2019). A remotely-operated siphon system for water release from wetlands and shallow ponds. *IEEE Access*, 7, 157680-157687.

21. Sarafraz, M. M., Dareh Baghi, A., Safaei, M. R., **Leon**, A. S., Ghomashchi, R., Goodarzi, M., Lin, C-X. (2019). Assessment of Iron Oxide (III)–Therminol 66 Nanofluid as a Novel Working Fluid in a Convective Radiator Heating System for Buildings. *Energies*, 12(22), 4327.

22. Sarafraz, M. M., Safaei, M. R., **Leon, A. S.**, Khaled, U., Goodarzi, M., and Meer, R. (2019). Energetic analysis of different configurations of power plants connected to liquid chemical looping gasification. *Processes, 7*(10), 763.

23. Sarafraz, M. M., Safaei, M. R., **Leon**, A. S., Tlili, I., Alkanhal, T.A., Tian, Z., Goodarzi, M., and Arjomandi, M. (2019). Experimental Investigation on Thermal Performance of a PV/T-PCM (Photovoltaic/Thermal) System Cooling with a PCM and Nanofluid. *Energies*, 12, 2572.

24. **Leon, A. S.** (2019). Mechanisms that lead to violent geysers in vertical shafts. *Journal of Hydraulic Research*, 57(3), 295-306.

25. **Leon, A. S.**, Elayeb I. S., Tang, Y. (2019). An experimental study on violent geysers in vertical pipes. *Journal of Hydraulic Research*, 57(3), 283-294.

26. Chen, D., **Leon, A. S.**, Chen, Q., and Li, R. (2018). A derivative-free hybrid optimization model for short-term operation of a multi-objective reservoir system under uncertainty, Water Resources Management, 32(11), 3707–3721.

27. **Leon, A. S.** and Gifford-Miears, C. (2018) "Evaluation of the PG Method for Modeling

Unsteady flows in Complex Bathymetries." IAHR *Journal of Applied Water Engineering and Research*, 6(2), 139-149.

28. Qin, L., Dong, L. L., Xu, W. H, Zhang L. D, and **Leon, A. S.** (2018). Influence of Vehicle Speed on the Characteristics of Driver's Eye Movement at a Highway Tunnel Entrance during Day and Night Conditions: A Pilot Study, *Int. J. Environ. Res. Public Health*, 15(4), 656.

29. **Leon A. S.,** Tang, Y., Chen, D., Yolcu A., Glennie, C., Pennings, S. C. (2018). Dynamic Management of Water Storage for Flood Control in a Wetland System: A Case Study in Texas, *Water*, 10, 325.

30. Chen, D., **Leon, A. S.,** Fuentes, C., Gibson, N. L., and Qin, H. (2018). Incorporating filters in random search algorithms for the hourly operation of a multi-reservoir system, *ASCE Journal of Water Resources Planning and Management*. 144(2).

31. Qin, L., Dong, L. L., Xu, W. H, Zhang L. D, and **Leon, A. S.** (2017). An intelligent luminance control method for tunnel lighting based on traffic volume, *Sustainability,* 9(12), 2208.

32. Sharifi, E., Bashiri, H., **Leon, A. S.,** Chen, Y., Gibson, N. (2017). "Valuation of flexibility for optimal reservoir operation." *Open Water Journal*, 14(2), Article 5.

33. Bashiri, H., Sharifi, E., **Leon, A. S.,** Chen, Y., Gibson, N. (2017). "Quantification of Short-term Hydropower Generation Flexibility." *Open Water Journal*, 14(2), Article 6.

34. Chen, D., **Leon, A. S.,** Engle, S. P., Fuentes, C., and Chen, Q. (2017). "Offline training for improving online performance of a genetic algorithm based optimization model for hourly multi-reservoir operation." *Environmental Modelling and Software*, 96, 46-57.

35. Chen, D., **Leon, A. S.,** Hosseini, P., Gibson, N. L., and Fuentes, C. (2017) "Application of Cluster Analysis for Finding Operational Patterns of Multireservoir System during Transition Period." *ASCE Journal of Water Resources Planning and Management*. 143(8).

36. Oberg N., Schmidt, A. R., Landry, B. J., **Leon, A. S.,** Waratuke, A. R., Mier, J. M. and García, M. H. (2017) "Improved understanding of combined sewer systems using the Illinois Conveyance Analysis Program (ICAP)." *Urban Water Journal*, 14(8), 811-819.

37. **Leon, A. S.** and Goodell C. (2016) ."Controlling HEC-RAS using MATLAB" *Journal of Environmental Modelling and Software*, 84, 339-348.

38. **Leon, A. S.** (2016). "Mathematical models for quantifying eruption velocity in degassing pipes based on exsolution of a single gas and simultaneous exsolution of multiple gases" *Journal of Volcanology and Geothermal Research*, 323, 72–79.

39. Chen, D., Chen, Q., **Leon, A. S.,** and Li, R. (2016). "A Genetic Algorithm Parallel Strategy for Optimizing the Operation of Reservoirs with Multiple Eco-environmental Objectives" *Water Resources Management*, 30(7), 2127–2142.

40. Chen, D., **Leon, A. S.,** Gibson, N., and Hosseini, P. (2016) "Dimension reduction of decision variables for multireservoir operation: A spectral optimization model." *Water Resources Research*, 52(1), 36–51. Impact Factor 3.55.

41. Lowe, R. J., **Leon, A. S.,** Symonds, G., Falter, J. L., Gruber, R. (2015). "The intertidal hydraulics of tide-dominated reef platforms." Journal of Geophysical Research - Oceans, 120(7), 4845–4868. Impact Factor 3.44.

42. Nania, L. S., **Leon, A. S.,** and Garcia, M. H. (2015). "Hydrologic-Hydraulic Model for Simulating Dual Drainage and Flooding in Urban Areas: Application to a Catchment in the Metropolitan Area of Chicago." *Journal of Hydrological Engineering*, 20(5), 04014071-1 – 04014071-13. Impact Factor 1.62.

43. **Leon, A. S.,** Zhu, L. (2014). "A dimensional analysis for determining optimal discharge and penstock diameter in impulse and reaction water turbines." *Renewable Energy*, 71, 609–615. Impact Factor 3.36.

44. Gibson, N. L., Gifford-Miears, C., **Leon, A. S.**, Vasylkivska, V. S. (2014). "Efficient computation of unsteady flow in complex river systems with uncertain inputs." *International Journal of Computer Mathematics*, 91(4), 781-797. Impact Factor 0.72.

45. **Leon, A. S.**, Kanashiro, E. A., Valverde, R., and Sridhar V. (2014) "Dynamic Framework for Intelligent Control of River Flooding - Case Study." *ASCE Journal of Water Resources Planning and Management*, 140(2), 258-268. Impact Factor 1.76.

46. **Leon A. S.**, Kanashiro E. A., and Gonzalez-Castro J. A. (2013), "Fast Approach for Unsteady Flow Routing in Complex River Networks Based on Performance Graphs", *Journal of Hydraulic Engineering*, 139(3), 284-295. Impact Factor 1.26.

47. **Leon, A. S.** and Gifford-Miears, C. H. and Choi, Y. (2013) "Well-balanced scheme for modeling open-channel and surcharged flows in steep-slope closed conduit systems." *Journal of Hydraulic Engineering*, 139(4), 374. Impact Factor 1.26.

48. **Leon, A. S.**, Oberg N., Schmidt, A. R., and García, M. H. (2011). "The Illinois Transient Model. A state-of-the-art model for simulating the flow dynamics in combined storm-sewer systems". Urban Water Systems, Monograph 19. No Impact Factor.

49. **Leon, A. S.**, Liu, X., Ghidaoui, M. S., Schmidt, A. R., and Garcia, M. H. (2010) "Junction and drop-shaft boundary conditions for modeling free-surface, pressurized, and mixed free-surface pressurized transient flows." *Journal of Hydraulic Engineering,* 136(10), 705-715. Impact Factor 1.26.

50. **Leon, A. S.**, Ghidaoui, M. S., Schmidt, A. R. and Garcia, M. H. (2010) "A Robust two-equation model for transient mixed flows." *Journal of Hydraulic Research*, 48(1), 44-56. Impact Factor 1.347.

51. **Leon, A. S.**, Ghidaoui, M. S., Schmidt, A. R. and Garcia, M. H. (2009) "Application of Godunov-type schemes to transient mixed flows." *Journal of Hydraulic Research*, 47(2), 147-156. Impact Factor 1.347.

52. **Leon, A. S.**, Ghidaoui, M. S., Schmidt, A. R. and Garcia, M. H. (2008) "Efficient second-order accurate shock-capturing scheme for modeling one and two-phase water hammer flows." *Journal of Hydraulic Engineering,* 134(7), 970-983. Impact Factor 1.26.

53. **Leon, A. S.**, Ghidaoui, M. S., Schmidt, A. R., and García, M. H. (2007). "An efficient finite-volume scheme for modeling water hammer flows." *Contemporary Modeling of Urban Water Systems*, Monograph 15. No Impact Factor.

54. **Leon, A. S.**, Ghidaoui, M. S., Schmidt, A. R. and Garcia, M. H. (2006) "Godunov-type solutions for transient flows in sewers". *Journal of Hydraulic Engineering,* 132(8), 800-813. Impact Factor 1.26.

Journal Discussions:

55. Nania, L. S., Gómez, M., Dolz, J. and **Leon, A. S.** (2010). Discussion to "Experimental and numerical modelling of symmetrical four-branch supercritical cross junction flow" by Emmanuel Mignot, André Paquier, and Nicolas Riviere. *Journal of Hydraulic Research*, 48(6), 826-828. doi:10.1080/00221686.2010.512813. Impact Factor 1.347.

56. **Leon, A. S.**, and Ghidaoui, M. S. (2010) **Closure** to Discussion of "Application of Godunov-type schemes to transient mixed flows." *Journal of Hydraulic Research*, 48(5), 688-689. Impact Factor 1.347.

57. **Leon, A. S.**, Ghidaoui, M.S. (2010). Discussion of "Numerical oscillations in pipe-filling bore predictions by shock-capturing models" by J. G. Vasconcelos, S. J. Wright, and P. L. Roe. *J. Hydraulic Engng.*, 136(6), 392-393. Impact Factor 1.26.

58. **Leon, A. S.**, Nania, L. S. and Sridhar, V. (2010). Discussion of "Potential Dangers of Simplifying Combined Sewer Hydrologic/Hydraulic Models" by J. P. Cantone and A. R. Schmidt. *J. Hydrological. Engng.*, 15, 587-588. Impact Factor 1.62.

PROCEEDINGS

Peer-reviewed

All of these papers were presented at their respective conferences. (*) identifies the presentations I made, (†) represents presentations made by students or Post-Doc that I advise(d), and the (§) represents presentations made by my collaborators.

1. Mahyawansi, P., Lin, C-X, **Leon, A. S.** (2022). Understanding the Influence of Pressure Disturbance on the Transition of Stratified to Slug Flow. 7th Thermal and Fluids Engineering Conference (TFEC), 947-957, Las Vegas, NV, May 15-18, 2022. †

2. Verma, V., Bian, L., **Leon, A. S.** (2022). "A Remotely Operated Software Defined Radio Based Framework to Release Water from a Network of Storage Units." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 8-15, Atlanta, GA, June 5–8, 2022. †

3. Campbell, W. H., Savant, G., **Leon, A. S.**, Bian, L. (2022). "Applying HEC-RAS to Simulate the Complex Tidal Conditions for Estuaries and Bays: A Case Study of the Cook Inlet in Alaska." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 232-243, Atlanta, GA, June 5–8, 2022. †

4. Zanje, S. R., Verma, V., Bian, L., Yin, Z., **Leon, A. S.** (2022). "Impact of Pipe Leakage Location on Siphon Flow Breakage." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 1211-1220, Atlanta, GA, June 5–8, 2022. †

5. Verma, V., Bian, L., **Leon, A. S.** (2022). "A Remotely Operated Framework Based on Internet of Things (IoT) Technology to Release Water from Ponded Systems." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 1-7, Atlanta, GA, June 5–8, 2022. †

6. Bian, L., Yin, Z., Verma, V., Campbell, W. H., **Leon, A. S.**, Melesse, A. M. (2022). "Estimating the Potential Wetland Storage Capacity for Flood Mitigation by Using Deterministic Topographic Wetland Index." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 1252-1263, Atlanta, GA, June 5–8, 2022. †

7. Mahyawansi, P., Zanje, S. R., Lin, C-X, **Leon, A. S.** (2022). "An Affordable PIV Technique for Water Using Potato Starch with Diode Laser and Smartphones." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 390-399, Atlanta, GA, June 5–8, 2022. †

8. Yin Z., Zahedi, L., **Leon, A. S.**, Hamini, M. H., Bian, L. (2022). "A Machine Learning Framework for Overflow Prediction in Combined Sewer Systems." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 194-205, Atlanta, GA, June 5–8, 2022. †

9. Zanje, S. R., Mahyawansi, P., **Leon, A. S.**, Lin, C-X. (2022). "CFD Modeling of Storm Sewer Geysers in Partially Filled Dropshafts." In proceedings of *2022 ASCE-EWRI World Environmental & Water Resource Congress*, 1187-1195, Atlanta, GA, June 5–8, 2022. †

10. Verma, V., Bian L., Ozecik, D., Sirigineedi, S.S. and **Leon, A. S.** (2021). Internet-Enabled Remotely Controlled Architecture to Release Water from Storage Units. *World Environmental and Water Resources Congress 2021*, 586-592. †

11. Bian L., Verma, V., Li, J., Zanje, S. R., Vento, A., Filgueiras, L., Ozecik, D., **Leon, A. S.**, et al. (2021). A Feasibility Study on Harvesting Rainwater from Large Solar Panel Canopies to Supplement Makeup Water for Cooling Towers by Using Remotely Controlled and Self-Cleaning Rain Cistern. *World Environmental and Water Resources Congress 2021*, 1118-1134. †

12. <u>Bian L.</u>, <u>Verma, V.</u>, <u>Rojali, A.</u>, <u>Ozecik, D</u>. and **Leon, A. S.** (2021). Operational Reliability Assessment of a Remotely Controlled Siphon System for Draining Shallow Storage Ponds. *World Environmental and Water Resources Congress 2021*, 607-620. †

13. Ying J., <u>Qin L.</u>, Cao, Q., and **Leon, A. S.** (2021). Autonomous Control and Monitoring of On-site In-network Storage Systems in Remote Environments to Mitigate Floods. In: Xu J., García Márquez F.P., Ali Hassan M.H., Duca G., Hajiyev A., Altiparmak F. (eds) Proceedings of the Fifteenth International Conference on Management Science and Engineering Management. ICMSEM 2021. Lecture Notes on Data Engineering and Communications Technologies, vol 78. Springer, Cham. https://doi.org/10.1007/978-3-030-79203-9_3. §

14. <u>Verma, V.</u>, Vutukuru K. S., <u>Bian L.</u>, <u>Rojali, A.</u>, <u>Ozecik, D.</u>, and **Leon, A. S.** (2020). Reliability and Robustness Evaluation of a Remotely Operated Siphon System for Flood Mitigation during Hurricanes. World Environmental and Water Resources Congress 2020: Emerging and Innovative Technologies and International Perspectives, 31-39. https://ascelibrary.org/doi/abs/10.1061/9780784482940.004 †

15. <u>Verma, V.</u>, <u>Bian L.</u>, <u>Rojali, A.</u>, <u>Ozecik, D.</u>, and **Leon, A. S.** (2020). A Remotely Controlled Framework for Gravity-Driven Water Release in Shallow and Not Shallow Storage Ponds. World Environmental and Water Resources Congress 2020: Emerging and Innovative Technologies and International Perspectives, 12-22. https://ascelibrary.org/doi/abs/10.1061/9780784482940.002 †

16. **Leon, A. S.** and <u>Zanje S.</u> (2019). "Experiments and numerical modeling of field-scale geysers in stormsewer systems." In e-proceedings of the *38th IAHR World Congress*, 3370-3379, Panama City, Panama, September 1-6, 2019 (doi:10.3850/38WC092019-1900). *

17. **Leon, A. S.** (2019). "Upper Limit Velocity of Geyser Eruptions in Stormwater and Combined Sewer Systems." In proceedings of *2019 ASCE-EWRI World Environmental & Water Resource Congress*, 122-128, Pittsburgh, PA, May 19-23, 2019. *

18. **Leon, A. S.** and <u>Verma, V.</u> (2019). "Towards Smart and Green Flood Control: Remote and Optimal Operation of Control Structures in a Network of Storage Systems for Mitigating Floods." In proceedings of *2019 ASCE-EWRI World Environmental & Water Resource Congress*, 177-189, Pittsburgh, PA, May 19-23, 2019. *

19. Kang D., Kim J., <u>Verma, V.</u>, **Leon, A. S.** and Kang, B. (2019). "Evaluation of urban inundation under changing landuse - Application of EPA SWMM-LID to Andong city in South Korea." In proceedings of *2019 ASCE-EWRI World Environmental & Water Resource Congress*, 83-88, Pittsburgh, PA, May 19-23, 2019. §

20. Vasconcelos, J. and **Leon, A. S.** (2019). "Evaluation of mathematical model alternatives for the simulation of unsteady, two-phase flows in urban water systems." In proceedings of *2019 ASCE-EWRI World Environmental & Water Resource Congress*, 99-108, Pittsburgh, PA, May 19-23, 2019. §

21. Maleki, H., <u>Safaei, M. R.</u>, **Leon, A. S.** and Khang, T. N. (2019). "Thermal and hydraulic performance of longitudinal perforated rectangular fins with perforation shape and size variations", In proceedings of 4th Thermal and Fluids Engineering Conference, (TFEC), TFEC-2019-27962, 1-8, Las Vegas, NV, April 14–17, 2019. †

22. <u>Chegini, T.</u>, <u>Phan, M. K.</u>, and **Leon, A. S.** (2018). "Comparison of Various Turbulence Models for Violent Geysers in Vertical Pipes." In proceedings of *2018 ASCE-EWRI World Environmental & Water Resource Congress*, 99-108, Minneapolis, MN, June 3-7, 2018. **This paper won the third place in graduate student technical paper competition.** https://ascelibrary.org/action/showCitFormats?doi=10.1061%2F9780784481424.011 †

23. **Leon, A. S.** (2017). "Mechanisms that lead to the occurrence of violent geysers in storm water and combined sewer systems." In Proceedings of *37th IAHR World Congress*, Volume 1, pp. 5821-5830, Kuala Lumpur, Malaysia, August 13-18, 2017. *

24. **Leon, A. S.** (2016). "Determining Optimal Discharge and Optimal Penstock Diameter in Water Turbines." In B. Crookston & B. Tullis (Eds.), Hydraulic Structures and Water System Management. *6th IAHR International Symposium on Hydraulic Structures*, Portland, OR, 27-30 June (pp. 332-342). doi:10.15142/T390628160853 (ISBN 978-1-884575-75-4). *

25. **Leon, A. S.** and Alnahit, A. O. (2016). "A Remotely Controlled Siphon System for Dynamic Water Storage Management." In B. Crookston & B. Tullis (Eds.), Hydraulic Structures and Water System Management. *6th IAHR International Symposium on Hydraulic Structures*, Portland, OR, 27-30 June (pp. 1-11). doi:10.15142/T3690628160853 (ISBN 978-1-884575-75-4). *

26. Choi, Y., **Leon, A. S.,** and Apte, S. (2016). "A One-Dimensional Numerical Model to Predict Pressure and Velocity Oscillations of a Compressed Air Pocket in a Vertical Shaft Filled with Water." In proceedings of *ASCE-EWRI World Environmental & Water Resource Congress*, 202-211, West Palm Beach, FL, May 22-26, 2016. †

27. **Leon, A. S.** (2016). "New Evidence on the Causes of Explosives Geysers in Stormwater and Combined Sewer Systems: A Simplified Model for the Prediction of These Geysers." In proceedings of *ASCE-EWRI World Environmental & Water Resource Congress*, 224-233, West Palm Beach, FL, May 22-26, 2016. *

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20. Gibson, N., **Leon, A. S.** and <u>Hosseini P.</u> (2017). "Flexible decision variables in reservoir operation using dimension reduction approach", Presented in the 2017 SIAM Conference on Optimization, Vancouver, British Columbia, Canada, May 22-25, 2017.

21. **Leon, A. S.** (2017). "Why Violent Geysers Occur in Stormwater and Combined Sewer Systems?" Presented in the *ASCE-EWRI World Environmental & Water Resource Congress*, Sacramento, CA, May 21-25, 2017. †

22. <u>Chen, D.</u>, **Leon, A. S.**, Gibson, N. L., and Vasylkivska, V. S. (2014). "Using a Concurrent Hybrid Method to Optimize Short-Term Operation of a Multi-Reservoir System with Multiple Objectives". In Proceedings of the 11th International Conference on Hydroinformatics HIC 2014, New York City, NY, August 17-21, 2014.

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24. **Leon, A. S.**, <u>Hosseini P.</u> (2014). "Effects of Small Tidal-type Waves on Rating Curves in Rivers", Presented in the ASCE-EWRI World Environmental & Water Resource Congress, Portland OR, June 1-5, 2014.

25. **Leon, A. S.**, Zhu L. (2014). "A Dimensional Analysis for Determining Optimal Discharge and Optimal Penstock Diameter in Impulse and Reaction Water Turbines", Presented in the ASCE-EWRI World Environmental & Water Resource Congress, Portland OR, June 1-5, 2014.

26. <u>Gomez, L.</u>, and **Leon, A. S.** (2014). "Investment Time for Flood Control Under Uncertainty: A Real Options-Based Framework". 2014 Water Research Symposium, Oregon State University, Corvallis, Oregon, May 12, 2014.

27. Gibson, N., <u>Gomez, L.</u>, **Leon, A. S.**, and Vasylkivska, V. (2014). "A Domain Decomposition Method for Unsteady Flow Routing in Complex River Systems". 16th SIAM Conference on Parallel Processing for Scientific Computing, Portland OR, February 18-21, 2014.

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29. <u>Chen, D.</u>, **Leon, A. S.**, Chen, Q. and Li, R. (2013). "Pareto-Optimal Solutions and Operational Strategies for a Multi-Objective Reservoir with Ecological and Environmental Purposes: A Case Study of Qingshitan Reservoir", Presented in the 2013 AWRA Annual Water Resources Conference, Portland OR, November 4-7, 2013.

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32. Choi, Y., and **Leon, A. S.** (2013). "Towards Predicting the occurrence of geysers and CSOs in combined sewer systems - An experimental, theoretical and numerical approach". 2013 Water Research Symposium, Oregon State University, Corvallis, Oregon, May 13, 2013.

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37. Choi, Y., and **Leon, A. S.** (2012). "Minimizing Geysers and CSOs in the Portland Combined Sewer System." 2012 Water Research Symposium, Oregon State University, Corvallis, Oregon, May 18, 2012.

38. Gifford-Miears, C. H., and **Leon, A. S.** (2012). "Applicability of Three Dimensional Modeling in the Construction of Hydraulic Performance Graphs for Unsteady Flow Routing in Complex River Networks." 2012 Water Research Symposium, Oregon State University, Corvallis, Oregon, May 18, 2012.

39. Gomez, L.A., and **Leon, A. S.** (2012). "Improving the Computational Efficiency of the Hydraulic Performance Graphs for Unsteady Flow Routing in Complex River Networks." 2012 Water Research Symposium, Oregon State University, Corvallis, Oregon, May 18, 2012.

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41. **Leon, A. S.,** Kanashiro, E. A., Valverde, R., Gifford-Miears, C. H., Gichamo, T. Z., Gomez L., and Rask, J. (2012) "A Computationally Efficient and Robust Approach for Multi-objective Operation of Multi-reservoir systems Subjected to Multiple Constraints." Reservoir System Modeling Technologies Conference, Bonneville Power Administration, February 21-22, 2012, Portland, Oregon.

42. Gibson, N. L., Gichamo, T. Z., Valverde, R., Gifford-Miears, C. H., and **Leon, A. S.** (2012) "Towards reduction of uncertainty in the operation of reservoir systems." Reservoir System Modeling Technologies Conference, Bonneville Power Administration, February 21-22, 2012, Portland, Oregon.

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45. **Leon, A. S.** (2006). "Efficient numerical modeling of one and two-phase transient flows (In Spanish)." *Proc., I International Congress of Hydraulics, Hydrology and Environment*. Organized by Instituto de la Construcción y Gerencia, Lima, Peru.

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47. **Leon, A. S.** (2004). "Special topics in unsteady flows and its applications to Hydraulic Engineering (Key Note speaker - in Spanish)." *Proc., I Conference in Hydraulics of Rivers and Channels*, Lima, Peru.

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49. **Leon, A. S.** (2002). "Alternative of hydraulic design for intakes in steep rivers and large transport of boulders. (In Spanish)." *Proc., Instituto de la Construcción y Gerencia*, Lima, Peru.

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Posters (NPR):

51. Strane M. S., Louie S., Pennings S. C., and **Leon, A. S.** (2022). "Constructed Wetlands at The University of Houston Coastal Center." Poster presented in the Joint Aquatic Sciences Meeting (JASM), Grand Rapids, Michigan, May 18, 2022.

52. Verma V., Bian L., Rojali A., Ozecik D., and **Leon, A. S.** (2019). "Flood Control using smart low-cost hardware for remote operation of siphons and outlet gates in a network of storage systems." Poster presented in the 2019 Annual Water Resources Conference, Salt Lake City, UT, November 03, 2019.

53. Hogan A. and **Leon, A. S.** (2019). "EcoFLow: Sustainable and Smart Stormwater Solutions for Future Generations of South Florida." Poster presented in the Conference for Undergraduate Research at FIU (CURFIU), Miami, FL, April 08, 2019.

54. **Leon, A. S.** and Goodell, C. (2017). "Automation of HEC-RAS using MATLAB." Poster presented in the *ASCE-EWRI World Environmental & Water Resource Congress*, Sacramento, CA, May 21-25, 2017.

55. Chen, D., **Leon, A. S.**, Hosseini, P. (2016). "A warm-start Strategy to Improve the Performance of an Evolutionary Algorithm for Optimizing Operation of Multi-reservoirs." Poster presented in the ASCE-EWRI World Environmental & Water Resource Congress, West Palm Beach, FL, May 22-26, 2016.

56. **Leon, A. S. and** Elayeb, I., (2016). "An Experimental Study on Geysers with Unsaturated Air and Near-saturation CO2. Implications on the Design of Stormwater and Combined Sewer Systems." Poster presented in the ASCE-EWRI World Environmental & Water Resource Congress, West Palm Beach, FL, May 22-26, 2016.

57. Elayeb, I., and **Leon, A. S.** (2016). "An experimental study on air- and CO_2 based geyser flows" Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, April 18, 2016.

58. Hosseini, P., Chen D., **Leon, A. S.** and Gibson N. (2016). "Optimization of reservoir operation considering uncertain decision variables." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, April 18, 2016.

59. Choi, Y., **Leon, A. S.**, and Apte, S. (2016). "A one-dimensional numerical model for predicting pressure and velocity oscillations due to buoyancy of a compressed air-pocket in a vertical

shaft" Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, April 18, 2016.

60. Elayeb, I., and **Leon, A. S.** (2016). "An experimental study of geyser occurrence in combined sewer systems" Poster presented in the Oregon State COE Graduate Student Research Expo, Portland, March 01, 2016.

61. Choi, Y., **Leon, A. S.**, and Apte, S. (2016). "A one-dimensional numerical model for predicting pressure and velocity oscillations due to buoyancy of a compressed air-pocket in a vertical shaft." Poster presented in the Oregon State COE Graduate Student Research Expo, Portland, March 01, 2016.

62. Hosseini, P., Chen, D. **Leon, A. S.**, Gibson, N. (2016). "Robust Optimization of Reservoir Operation Considering Uncertainty of Inflows and Flexible Decision Variables." Poster presented in the Oregon State COE Graduate Student Research Expo, Portland, March 01, 2016.

63. Alnahit, A. O., and **Leon, A. S.** (2015). "A Remotely Controlled Siphon System for Dynamic Water Storage Management." Poster presented in the American Geophysical Union Fall Meeting, San Francisco, California, December 14-18, 2015.

64. Choi, Y., **Leon, A. S.**, and Apte, S. (2015). "A one-dimensional numerical model for predicting pressure and velocity oscillations of a compressed air-pocket in a vertical shaft." Poster presented in the American Geophysical Union Fall Meeting, San Francisco, California, December 14-18, 2015.

65. Hosseini, P., Chen, D., **Leon, A. S.** and Gibson, N. (2015). "Flexible Decision Variables in Short-term Operation of Reservoirs Using Dimension Reduction Approach." Poster presented in the American Geophysical Union Fall Meeting, San Francisco, California, December 14-18, 2015.

66. Elayeb, I. S., **Leon, A. S.**, Choi, Y., and Alnahit, A. O. (2015). "An experimental study of geyser-like flows induced by a pressurized air pocket." Poster presented in the American Geophysical Union Fall Meeting, San Francisco, California, December 14-18, 2015.

67. Chen, D., **Leon, A. S.**, Hosseini, P., and Gibson, N. (2015). "Robust multi-objective optimization for short-term reservoir operation under inflow uncertainty." Poster presented in the American Geophysical Union Fall Meeting, San Francisco, California, December 14-18, 2015.

68. Hosseini, P., and **Leon, A. S.** (2015). "Multi-Objective Optimization of Reservoir Operation Considering Flexibility in Decision Variables." Poster presented in the OSU College of Engineering Research Engineering Expo, Portland, March 04, 2015. **Parnian received the Runner-up Award** (School of Civil and Construction Engineering).

69. Choi, Y., **Leon, A. S.**, and Apte, S. (2014). "Predicting Air-Water Geysers and their Implications on Reducing Combined Sewer Overflows." Poster presented in the American Geophysical Union Fall Meeting, San Francisco, California, December 15-19, 2014.

70. Livingston, G. E., **Leon, A. S.** and Babbar-Sebens, M. (2014). "Oregon BEST Lab: OSU-Benton County, Green Stormwater Infrastructure Research Facility." Poster presented in the Oregon BEST FEST, Portland, Oregon, September 15th –16th, 2014.

71. Livingston, G. E., Babbar-Sebens, M. and **Leon, A. S.** (2014). "Green Infrastructure for Stormwater Treatment." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, May 12, 2014.

72. Choi, Y., **Leon, A. S.**, and Apte, S. (2014). "Three-Dimensional Numerical Study of the Turbulent Flow Structures Present in Air-Water Geyser Flows." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, May 12, 2014.

73. Hosseini, P., and **Leon, A. S.** (2014). "A Multi-Objective Optimization for the Operation of Multi-Reservoir Systems under Uncertainty." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, May 12, 2014.

74. <u>Gomez, L.</u>, Lee, H. W, and **Leon, A. S.** (2014). "A Domain Decomposition strategy for Unsteady Flow Routing in River Systems." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, May 12, 2014.

75. <u>Hosseini, P.</u>, and **Leon, A. S.** (2014). "Effects of small tidal-type waves on average flow discharge in mild-sloped rivers and canals." Poster presented in the OSU College of Engineering Research Engineering Expo, Portland, OR, 2014.

76. <u>Hosseini, P.</u>, **Leon, A. S.** and Chen D. (2014). "A Framework for Optimizing Short-time Operation of Multiple Reservoirs with Multi-objectives Under Uncertainty." Poster presented in the OSU College of Engineering Research Engineering Expo, Portland, OR, 2014.

77. **Leon, A. S.**, <u>Gifford-Miears C.</u> and <u>Gomez L.</u> (2013). "Unsteady flow routing using Performance Graphs based on two-dimensional hydrodynamic simulations" Poster presented in the ASCE-EWRI World Environmental & Water Resource Congress, *Cincinnati OH*, May 19-22, 2013

78. **Leon, A. S.** and <u>Choi Y.</u> (2013). "A new numerical model that preserves "lake at rest" conditions in open-channel and surcharged flows in steep-slope closed conduit systems" Poster presented in the ASCE-EWRI World Environmental & Water Resource Congress, *Cincinnati OH*, May 19-22, 2013.

79. <u>Gomez, L.</u>, Lee, H. W, and **Leon, A. S.** (2013). "A *real options*-based framework to evaluate investments in river flood control under uncertainty." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, May 13, 2013.

80. <u>Gomez, L.</u>, and **Leon, A. S.** (2013). "The OSU Rivers Model and its Comparison with the Unsteady HEC-RAS Model." Poster presented in the Water Research Symposium, Oregon State University, Corvallis, Oregon, May 13, 2013.

81. **Leon, A. S.**, Gichamo, T. Z., <u>Valverde, R.</u>, and <u>Rask, J.</u> (2012). "Hydraulic performance graph-based model for unsteady flow simulations in topologically complex river networks." Poster presented in the XIX International Conference on Computational Methods in Water Resources (CMWR), University of Illinois at Urbana-Champaign, Urbana, Illinois, June 17-21, 2012.

82. <u>Choi, Y.</u>, and **Leon, A. S.** (2012). "Design, Analysis and Implementation of Multipurpose River Research Facility at O.H. Hinsdale Wave Research Laboratory." Poster presented in the 2012 Water Research Symposium, Oregon State University, Corvallis, Oregon, May 18, 2012.

83. Bernedo C., Salas, J. and **Leon, A. S.** (2012). "Considering climate uncertainties to determine hydrologic design criteria – Does traditional Rainfall-Frequency Analysis works?" Poster presented in the ASCE-EWRI World Environmental & Water Resource Congress, Albuquerque, NM, May 20-24, 2012.

CHAPTERS IN BOOKS

1. **A. S. Leon**, N. Oberg, A. R. Schmidt and M. H. García (2011). "The Illinois Transient Model. A state-of-the-art model for simulating flow dynamics in combined storm-sewer systems". *Urban Water Systems*, Monograph 19.

2. **A. S. Leon**, M. S. Ghidaoui, A. R. Schmidt and M. H. García (2007). "An efficient finite-volume scheme for modeling water hammer flows." *Contemporary Modeling of Urban Water Systems*, Monograph 15.

GOVERNMENT REPORTS OR MONOGRAPHS

N/A

BOOK REVIEWS

1. Hydrologic Analysis and Design, 4th Edition, by Richard McCuen, November 2014

2. Sustainable Water Resources Planning and Management, by Larry W. Mays and Y.K. Tung, August 2013

G. OTHER PUBLICATIONS

Professional Reports

1. **Leon, A. S.,** and other nine authors (2018). "Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS – **Final Report, Software and User's Manual**", Report, Software and User's Manual prepared for the Bonneville Power Administration, US Department of Energy.
2. **Leon, A. S.,** and other nine authors (2018). "Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS – **Stage gate 5**", Report prepared for the Bonneville Power Administration, US Department of Energy.
3. **Leon, A. S.** (2017). "Prediction and quantification of CSOs in combined sewer systems under extreme storm events: Extreme events, Flow dynamics, Reduction of CSOs", **Final Report** prepared for the U.S. Environmental Protection Agency.
4. **Leon, A. S.,** and other nine authors (2017). "Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS – **Stage gate 4**", Report prepared for the Bonneville Power Administration, US Department of Energy.
5. **Leon, A. S.,** and other nine authors (2017). "Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS – **Stage gate 3**", Report prepared for the Bonneville Power Administration, US Department of Energy.
6. **Leon, A. S.,** and other eight authors (2016). "Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS – **Stage gate 2**", Report prepared for the Bonneville Power Administration, US Department of Energy.
7. **Leon, A. S.** (2016). "Prediction and quantification of CSOs in combined sewer systems under extreme storm events: Extreme events, Flow dynamics, Reduction of CSOs", Progress Report **Year 4** prepared for the U.S. Environmental Protection Agency.
8. **Leon, A. S.,** and other eight authors (2016). "Framework for Quantification of Risk and Valuation of Flexibility in the FCRPS – **Stage gate 1**", Report prepared for the Bonneville Power Administration, US Department of Energy.
9. **Leon, A. S.,** and other nine authors (2015). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty – **Final Report, Software and Other Deliverables**", Report prepared for the Bonneville Power Administration, US Department of Energy.
10. **Leon, A. S.,** and <u>Choi Y.</u> (2015). "Prediction and quantification of CSOs in combined sewer systems under extreme storm events: Extreme events, Flow dynamics, Reduction of CSOs", Progress Report **Year 3** prepared for the U.S. Environmental Protection Agency.
11. Babbar-Sebens M. and **Leon, A. S.** (2015). "Improving sustainability of urban streets via rain gardens – How effective are these practices in the Pacific Northwest?", Final Project Report prepared for the Pacific Northwest Transportation Consortium (PacTrans), USDOT University Transportation Center for Federal Region 10, University of Washington.
12. **Leon, A. S.,** and other nine authors (2015). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty - **Stage gate 6**", Report prepared for the Bonneville Power Administration, US Department of Energy.
13. **Leon, A. S.,** and other nine authors (2014). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty - **Stage gate 5**", Report prepared for the Bonneville Power Administration, US Department of Energy.

14. **Leon, A. S.,** and <u>Choi Y.</u> (2014). "Prediction and quantification of CSOs in combined sewer systems under extreme storm events: Extreme events, Flow dynamics, Reduction of CSOs", Progress Report **Year 2** prepared for the U.S. Environmental Protection Agency.

15. **Leon, A. S.,** and other nine authors (2014). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty - **Stage gate 4**", Report prepared for the Bonneville Power Administration, US Department of Energy.

16. **Leon, A. S.,** and other nine authors (2013). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty - **Stage gate 3**", Report prepared for the Bonneville Power Administration, US Department of Energy.

17. **Leon, A. S.,** and <u>Choi Y.</u> (2013). "Prediction and quantification of CSOs in combined sewer systems under extreme storm events: Extreme events, Flow dynamics, Reduction of CSOs", Progress Report **Year 1** prepared for the U.S. Environmental Protection Agency.

18. **Leon, A. S.,** and other nine authors (2013). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty - **Stage gate 2**", Report prepared for the Bonneville Power Administration, US Department of Energy.

19. **Leon, A. S.,** and Oberg, N. (2013). "User's manual for Illinois Transient Model-two equation model v. 1.3. A Model for the Analysis of Transient Free surface, Pressurized and Mixed flows in Storm-sewer Systems", Oregon State University, Corvallis.

20. **Leon, A. S.,** and other nine authors (2012). "Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty - **Stage gate 1**", Report prepared for the Bonneville Power Administration, US Department of Energy.

21. **Leon, A. S.,** and Oberg, N. (2010). "User's manual for Illinois Transient Model-two equation model. A Model for the Analysis of Transient Free surface, Pressurized and Mixed flows in Storm-sewer Systems. Version 1.2".

22. **Leon, A. S.,** and Oberg, N. (2009). "Illinois Transient Model Programmer's Manual", University of Illinois at Urbana-Champaign.

23. **Leon, A. S.,** Oberg, N., Choi, N.J., Schmidt, A., and García, M.H., 2009. "Transient Analysis of the Calumet TARP System" Report prepared for the Metropolitan Water Reclamation District of Greater Chicago. University of Illinois at Urbana-Champaign, Civil Engineering Studies, Hydraulic Engineering Series.

24. Cataño-Lopera Y. A., Oberg N., Choi N. J., Schmidt, A. R., **Leon, A. S.,** and Garcia, M. H. (2009). "Hydraulic Conveyance Analysis of the Tarp Calumet System." Report prepared for the Metropolitan Water Reclamation District of Greater Chicago. University of Illinois at Urbana-Champaign, Civil Engineering Studies, Hydraulic Engineering Series.

25. **Leon, A. S.,** and Oberg, N. (2009). "User's manual for Illinois Transient Model-two equation model v. 1.1. A Model for the Analysis of Transient Free surface, Pressurized and Mixed flows in Storm-sewer Systems", University of Illinois at Urbana-Champaign.

26. Oberg, N., Schmidt, A., **Leon, A. S.,** Waratuke, A., and García, M.H., 2008. "Illinois Hydraulic Conveyance Analysis Program: ICAP." Report prepared for the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). University of Illinois at Urbana-Champaign, Civil Engineering Studies, Hydraulic Engineering Series No. 81, ISSN: 0442-1744.

27. **Leon, A. S.,** Christensen, D. R., Schmidt, A. R., and García, M. H. (2007). "Illinois Transient Model (One-equation model) user's manual. A Model for the Analysis of Unsteady Free

surface, Pressurized and Mixed flows in Storm-sewer Systems", University of Illinois at Urbana-Champaign.

28. García, M. H., **Leon, A. S.,** Ancalle, C. (2007) "Sedimentation analysis of Valenciano reservoir, Juncos, Puerto Rico", Prepared by CA Engineering for CSA Group, San Juan, Puerto Rico.

29. García, M. H., **Leon, A. S.,** Ancalle, C. (2007) "Safe yield Analysis of Valenciano reservoir, Juncos, Puerto Rico", Prepared by CA Engineering for CSA Group, San Juan, Puerto Rico.

30. **Leon, A. S.,** Schmidt, A. R., Ghidaoui, M. S. and García, M. H. (2006) "Review of sewer surcharging phenomena and models." University of Illinois at Urbana-Champaign. *Civil Engineering Studies, Hydraulic Engineering Series No. 78*

31. García, M. H., Niño, Y., Abad, J. D., Cantero, M., Leon, A. S., Manzini, S., Sequeiros, O. (2003) "Sedimentation management in combined sewer overflow storage reservoirs using water jets." University of Illinois at Urbana-Champaign. Report to Metropolitan Water Reclamation District of Greater Chicago.

H. PRESENTED PAPERS, AND LECTURES

INVITED-KEYNOTE

1. Keynote Talk, 2021 International Workshop on Sustainable Urban Drainage, Virtual Conference, "Geysers in Sewer Systems and Physics-based AI for CSO Mitigation," August 06, 2021.

2. Keynote Talk, *HGS Flood Conference: FLOODING IN SOUTHEAST TEXAS: THE SCIENCE BEHIND THE FLOODS* (https://www.hgs.org/civicrm/event/info?id=1958), *Houston, Texas,* "Towards smart and green flood control," June 2018.

3. Keynote Talk, *XXIV Congreso Nacional de Estudiantes de Ingenieria Civil del Perú* (http://coneic2016.com/), *Ayacucho, Peru,* "State-of-the-art strategies on flood mitigation, reservoir operation and control of geyser eruptions in stormwater and combined sewer systems," August 2016

4. Keynote Talk, *Pacific Northwest Waterways Association (PNWA) Summer Conference, Hood River, OR,* "Development of a Computational Framework for the Optimal Control of Multi-Reservoir Systems Under Uncertainty: Application to the Columbia River System", June 2015

5. Keynote Talk, *X Congreso Latinoamericano de Estudiantes de Ingenieria Civil - XXII Congreso Nacional de Estudiantes de Ingenieria Civil del Perú* (http://www.coleic-coneic2014.com/), *Arequipa, Peru,* "Recent advances on Flood Control, Reservoir Operation and Transient Flows," August 2014

INVITED-OTHER

6. Invited Talk, University of Miami, Miami, FL, "Towards minimizing overflows in combined sewer systems," September 16, 2022.

7. Invited Talk, Vicksburg District, U. S. Army Corps of Engineers, Vicksburg, MS, "Potential Areas for Research Collaboration on Coastal and Hydraulic Engineering," August 04, 2021.

8. Invited Talk, Universidad Peruana de Ciencias Aplicadas (Lima, Peru), Virtual Seminar, "Geysers in Sewers and "Smart" and "Green" Flood Control," October 02, 2020.

9. Invited Talk, FIU Department of Mechanical and Materials Engineering Graduate Seminar, Miami, FL, "Violent Geysers in Stormsewer Systems and Towards "Smart" and "Green" Flood Control," January 24, 2020.

10. Invited Talk, South Florida Water Management District, West Palm Beach, FL, "Optimal Multi-objective Reservoir Operation and Decision Support System/Low-Cost Hardware for Automated and Remote Control of Hydraulic Systems," May 2, 2019.

11. Invited Talk, "Lunch n' Learn" at FIU Miami Beach Urban Studios, Miami Beach, FL, "Towards Smart and Green control of Stormwater Quantity and Quality. Coastal Communities in the not so near future," April 12, 2019.

12. Invited Talk, Center for Thermo-Fluid Mechanics Seminar, University of Houston, Houston, TX, "Violent Geysers in Stormwater and Combined Sewer Systems: Experimental and Numerical Modeling," April 2017.

13. Invited Talk, Harris County Flood Control District, Houston, TX, "Flood Control Research and Applications," March 2017.

14. Invited Talk, Technology Innovation Summit, Bonneville Power Administration, Portland, OR, "Framework for Quantification of Risk and Valuation of Flexibility in the Federal Columbia River Power System (FCRPS)," January 2017.

15. Invited Talk, Technology Innovation Summit, Bonneville Power Administration, Portland, OR, "Framework for Quantification of Risk and Valuation of Flexibility in the Federal Columbia River Power System (FCRPS)," January 2016.

16. Invited Talk, *Changjiang River Scientific Research Institute (CRSRI), Wuhan, Hubei, China*, "Recent Advances on Flood Control and Reservoir Operation", May 2015.

17. Invited Talk, *Winter Seminar Series, Water Resources Graduate Program, Oregon State University, Corvallis, OR,* "Development of Computer Models for the Optimal Control of Multi-Reservoir Systems Under Uncertainty: Application to the Columbia River System," March 2015

18. Invited Talk, Technology Innovation Summit, Bonneville Power Administration, Portland, OR, "Development of a computational framework and platform for the optimal control of multi-reservoir systems under uncertainty," January 2015

19. Invited Talk, Geosyntec, Portland, OR, "Stormwater and Reservoir Operation Research and Potential Collaborations between OSU and Geosyntec," June 2014

20. Invited Talk, Technology Innovation Summit, Bonneville Power Administration, Portland, OR, "Development of a computational framework and platform for the optimal control of multi-reservoir systems under uncertainty," January 2014

21. Invited Talk, *EPA RESEARCH FORUM: Extreme Event Impacts on Air Quality and Water Quality with a Changing Global Climate, Arlington, VA,* "Prediction and quantification of CSOs under extreme storm events: Flow dynamics and Reduction of CSOs," February 2013

22. Invited Talk, Technology Innovation Summit, Bonneville Power Administration, Portland OR "Development of a computational framework and platform for the optimal control of multi-reservoir systems under uncertainty," January 2013

23. Invited Talk, *Reservoir System Modeling Technologies Conference, Bonneville Power Administration, Portland, OR,* "A Computationally Efficient and Robust Approach for Multi-objective Operation of Multi-reservoir systems Subjected to Multiple Constraints," February 2012

24. Invited Talk, *Winter Seminar Series, Department of Mathematics, Oregon State University, Corvallis, OR,* "Towards the intelligent control of river flooding. Harmonizing long-term objectives with the flooding objective," February 2012

25. Invited Talk, Universidad Nacional San Cristobal de Huamanga, Ayacucho, Peru, "Real-time Control of Multi-Objective and Multi-Reservoir Systems," December 2011

26. Invited Talk, Universidad Nacional de Ingenieria, Lima, Peru, "Real-time Control of Multi-Objective and Multi-Reservoir Systems," December 2011

27. Invited Talk, Bonneville Power Administration (BPA), Portland, Oregon, "Towards Real-time Control of Multi-objective and Multi-Reservoir Systems," October 2011

28. Invited Talk, Ecosystem Informatics at Oregon State University (IGERT), Corvallis, OR, "Towards Real-time Control of Multi-objective and Multi-Reservoir Systems," May 2011

29. Invited Talk, Universidad Nacional de Ingenieria, Lima, Peru, "Modeling of Combined Sewer Systems," December 2010
30. Invited Talk, Montgomery Watson and Harza Engineering (MWH), Denver, CO, "Modeling of Unsteady Flows using HEC-RAS," July 2010
31. Invited Talk, Oregon State University, Corvallis, OR, "Towards Real-time Control of Reservoir Systems," May 2010
32. Invited Talk, University of Idaho, Boise, Idaho, "Application of Genetic Algorithms to the Operation of Reservoir Systems," May 2010
33. Invited Talk, Boise State University, Boise, ID, "Towards Real-time Control of Combined Sewer Systems," March 2009
34. Invited Talk, University of Illinois at Urbana-Champaign, Urbana, IL, "A mathematical and numerical model for the simultaneous occurrence of free surface and pressurized flows," May 2006
35. Invited Talk, Universidad Nacional de Ingenieria, Lima, Peru, "Transient flows in Combined Sewer Systems," December 2005
36. Invited Talk, *I Conference in Hydraulics of Rivers and Channels, Lima, Peru,* "Special Topics in Unsteady Flows and its Applications to Hydraulic Engineering," December 2004
37. Invited Talk, *I Conference in Hydraulics of Rivers and Channels, Lima, Peru,* "Special Topics in Unsteady Flows and its Applications to Hydraulic Engineering," December 2004
38. Invited Talk, Universidad Nacional San Cristobal de Huamanga, Ayacucho, Peru, "Unsteady transition between free surface and pressurized flows (In Spanish)," December 2004

NON-INVITED (CONTRIBUTED TALKS)
39. Contributed Talk, ASCE-EWRI World Environmental & Water Resource Congress (virtual), "Laboratory Tests and OpenFOAM Simulations of Field-Scale Stormsewer Geysers and Retrofitting Methods for their Control," June 2021.
40. Contributed Talk (with Linlong Bian and Vivek Verma), ASCE-EWRI World Environmental & Water Resource Congress (virtual), "Operational Reliability Assessment of a Remotely-controlled Siphon System for Draining Shallow Storage Ponds," June 2021.
41. Contributed Talk (with Vivek Verma and Linlong Bian), ASCE-EWRI World Environmental & Water Resource Congress (virtual), "Internet-enabled remotely controlled architecture to release water from storage units," June 2021.
42. Contributed Talk (with Linlong Bian and Vivek Verma), ASCE-EWRI World Environmental & Water Resource Congress (virtual), "A Feasibility Study on Harvesting Rainwater from Large Solar Panel Canopies to Supplement Makeup Water for Cooling Towers by Using Remotely Controlled and Self-Cleaning Rain Cistern," June 2021.
43. Contributed Talk, *2020 Florida Stormwater Association (FSA) Winter Conference*, "DSS for Operation of a Network of Storage Ponds for Mitigating Floods," December 2020.
44. Contributed Talk, *38th IAHR World Congress*, Panama City, Panama, "Experiments and Numerical Modeling of Field-Scale Geysers in Stormsewer Systems", September 2019.
45. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress,* Pittsburgh, PA, "Decision Support System for the remote and optimal operation of control structures in a network of storage systems for mitigating floods," May 2019.
46. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress,* Pittsburgh, PA, "Towards Smart and Green Flood Control: Remote and optimal operation of control structures in a network of storage systems for mitigating floods," May 2019.
47. Contributed Talk, ASCE-EWRI World Environmental & Water Resource Congress, Pittsburgh, PA, "Upper Limit Velocity of Geyser Eruptions in Stormwater and Combined Sewer Systems," May 2019.

48. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Minneapolis MN,* "Chain mechanisms preceding and during violent geysers in sewer systems," June 2018.
49. Contributed Talk, *The 8th International Symposium on Environmental Hydraulics,* Notre Dame, IN, "Physical mechanisms preceding and during violent geysers in sewer systems," June 2018.
50. Contributed Talk, *37th IAHR World Congress,* Kuala Lumpur, Malaysia, "Mechanisms that lead to the occurrence of violent geysers in storm water and combined sewer systems", August 2017.
51. Contributed Talk, *37th IAHR World Congress,* Kuala Lumpur, Malaysia, "Dynamic management of water storage of wetlands and shallow ponds for flood control", August 2017.
52. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Sacramento CA,* "Why Violent Geysers Occur in Stormwater and Combined Sewer Systems," May 2017.
53. Contributed Talk, *6th International Symposium on Hydraulic Structures, Portland OR,* "Determining Optimal Discharge and Optimal Penstock Diameter in Water Turbines," June 2016.
54. Contributed Talk, *6th International Symposium on Hydraulic Structures, Portland OR,* "A Remotely Controlled Siphon System for Dynamic Water Storage Management," June 2016.
55. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress,* West Palm Beach, FL, "New Evidences on the Causes of Explosives Geysers in Stormwater and Combined Sewer Systems: A Simplified Model for Prediction of These Geysers," May 2016.
56. Contributed Talk, *International Conference on Water Management Modeling, Toronto Canada,* "New insights on the causes of explosives geysers in stormwater and combined sewer systems: A model for their prediction.," February 2016
57. Contributed Talk, *American Geophysical Union Fall Meeting, San Francisco CA,* "Minimizing water consumption when producing hydropower," December 2015.
58. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Portland OR,* "Effects of Small Tidal-type Waves on Rating Curves in Rivers," June 2014.
59. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Portland, OR,* "A Dimensional Analysis for Determining Optimal Discharge and Optimal Penstock Diameter in Impulse and Reaction Water Turbines," June 2014.
60. Contributed Talk, *AWRA Annual Water Resources Conference, Portland, OR,* "Development of a State-of-the-Art Computational Framework for the Optimal Control of Multi-Reservoir Systems Under Uncertainty," November 2013.
61. Contributed Talk, City of Portland, Environmental Services, Portland OR, "Flow Dynamics in Combined Storm-sewer Systems. Modeling needs and Application of the Illinois Transient Model (ITM)," October 2013.
62. Contributed Talk, ASCE-EWRI World Environmental & Water Resource Congress, Cincinnati, OH, "A Framework for Propagation of Uncertainty in River Systems," May 2013
63. Contributed Talk, *XIX International Conference on Computational Methods in Water Resources (CMWR), Urbana, IL,* "Toward Reduction of Uncertainty in Complex Multi-reservoir River Systems," June 2012
64. Contributed Talk, *XIX International Conference on Computational Methods in Water Resources (CMWR), Urbana, IL,* "Towards the Intelligent Control of River Flooding. Harmonizing Long-term Objectives (e.g., irrigation, hydropower) with the Flooding Objective," June 2012
65. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Albuquerque, NM,* "A Robust, Numerically Efficient Model for Unsteady Flow Routing in Topologically Complex River Networks," May 2012
66. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Albuquerque, NM,* "Towards the Intelligent Control of River Flooding," May 2012

67. Contributed Talk, *Oregon Water Conference, Corvallis, OR,* "A Novel Physically-based Framework for the Intelligent Control of River Flooding," May 2011
68. Contributed Talk, *Watershed Management Conference, Theme: "Innovations in Watershed Management Under Land Use and Climate Change",* Madison, WI, "A New Coupled Optimization-hydraulic Routing Model for Real-time Operation of Highly Complex Regulated River Systems," August 2010
69. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Providence, RI,* "Flow Dynamics in Combined Storm-Sewer Systems: Application of the Illinois Transient Model (ITM) to the Calumet TARP System in Chicago, Illinois," May 2010
70. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Kansas City, MO,* "A Robust and Fast Model for Simulating Street Flooding," May 2009
71. Contributed Talk, *ASCE-EWRI World Environmental & Water Resource Congress, Kansas City, MO,* "Boundary Conditions for Simulating Complex Storm-sewer Systems in Free Surface, Pressurized, and Mixed Flow Conditions," May 2009
72. Contributed Talk, *10th International Conference on Pressure Surges, BHR Group, Edinburgh, United Kingdom* "A Shock-capturing Approach for Simulating Gravity Flows, Pressurized Flows and the Simultaneous Occurrence of Gravity and Pressurized Flows," May 2008
73. Contributed Talk, *World Water and Environmental Resources Congress, Honolulu HI,* "A Finite Volume Model for Mixed Free Surface-pressurized Flows in Drainage Systems," May 2008
74. Contributed Talk, *World Water and Environmental Resources Congress, Honolulu HI,* "Experimental and CFD Modeling of a Vortex Flow Restrictor," May 2008
75. Contributed Talk, *5th International Symposium on Environmental Hydraulics, Tempe AZ* "Godunov-type Solutions for Two-phase Water Hammer Flows," December 2007
76. Contributed Talk, *Contemporary Modeling of Urban Water Systems, Toronto Canada,* "An efficient finite-volume scheme for modeling water hammer flows.," February 2007
77. Contributed Talk, *Annual Illinois Water Conference, Urbana IL,* "Towards Modeling for Real-time Control of Combined Sewer Overflow Systems: Application to the Calumet TARP System in Chicago, Illinois," October 2006
78. Contributed Talk, *I International Congress of Hydraulics, Hydrology and Environment, Lima, Peru* "Efficient Numerical Modeling of One and Two-phase Transient Flows (In Spanish)," June 2006
79. Contributed Talk, *I International Congress of Hydraulics, Hydrology and Environment, Lima, Peru,* "New Numerical Model for the Simultaneous Simulation of Unsteady Free Surface and Pressurized Flows (In Spanish)," June 2006
80. Contributed Talk, *World Environmental & Water Resources Congress, Omaha NE,* "An Efficient Numerical Scheme for the Modeling of Two-phase Bubbly Homogeneous Air-water Mixtures," May 2006
81. Contributed Talk, *XXXI IAHR Congress, Seoul, Korea,* "Importance of Numerical Efficiency for Real-Time Control of Transient Gravity Flows in Sewers," September 2005
82. Contributed Talk, *XIV National congress of Civil Engineering, Iquitos, Peru,* "One-dimensional Modeling of the Intrusion of Contaminants for Conservative Substances in Non-permanent and Non-uniform Flows (In Spanish)," September 2003
83. Contributed Talk, Instituto de la Construcción y Gerencia, Lima, Peru, "Alternative of Hydraulic Design for Intakes in Steep Rivers and Large Transport of Boulders (In Spanish)," August 2002
84. Contributed Talk, *XII National congress of Civil Engineering, Huánuco, Peru,* "Local Scour around Cylindrical Piers in Non-cohesive Beds (In Spanish)," September 1999.

NON-CREDIT COURSES AND WORKSHOPS

85. One-week long course on Steady and Unsteady River Flows in the Winter School Program at the Universidad Peruana de Ciencias Aplicadas (UPC) in Lima, Peru, July 15-19, 2019.
86. Workshop on "Overview of the OSU-OUU model and its Application to the Columbia River System", 2 hours, held at Bonneville Power Administration Headquarters, Portland, OR, July 22, 2015.
87. Short course on "Flow Dynamics in Combined Storm-sewer Systems. Modeling needs and Application of the Illinois Transient Model (ITM)", 8 hours, held at City of Portland, Environmental Services, Portland, OR, October 25, 2013.
88. Short course on "Modeling of flows in Combined Storm-sewer Systems", 4 hours, held at the ASCE-EWRI World Environmental & Water Resource Congress, Providence, Rhode Island, May 16, 2010.
89. Short course on "Unsteady flow modeling using HEC-RAS", 16 hours, held at Montgomery Watson and Harza Engineering (MWH), Denver, Colorado, August 21 and 23, 2010.

I. CREATIVE WORK

INNOVATION IN CAMPUS STORMWATER DESIGN

- (April 18, 2022). Dr. Leon served as the lead faculty advisor of the FIU team that won the first place in the 2021 EPA Campus RainWorks Challenge (https://www.epa.gov/green-infrastructure/2021-campus-rainworks-challenge-results), Demonstration Project Category. In addition, several students of my research group were awarded the first place in the 2021 EPA Campus RainWorks Challenge, Demonstration Project Category. Our awarded students include Sumit Zanje, William Campbell and Pratik Mahyawansi. The FIU team was led by my graduate student Sumit Zanje.

- (April 19, 2021). Dr. Leon served as the lead faculty advisor of the FIU team that won the second place in the 2020 EPA Campus RainWorks Challenge, Demonstration Project Category. In addition, several students of my research group were awarded the second place in the 2020 EPA Campus RainWorks Challenge, Demonstration Project Category. Our awarded students include Linlong Bian, Zeda Yin, Vivek Verma, Linlong Bian, Sumit Zanje and Dogukan Ozecik. The FIU team was led by my graduate student Linlong Bian.

- (April 29, 2020). Dr. Leon served as the lead faculty advisor (with Prof. Ebru Ozer, Architecture) of the FIU team that won the first place in the 2019 EPA Campus RainWorks Challenge, Master Plan Category. In addition, several students of my research group were awarded the first place in the 2019 EPA Campus RainWorks Challenge, Master Plan Category. Our awarded students include Vivek Verma, Linlong Bian, Sumit Zanje and Dogukan Ozecik. The FIU team was led by my graduate student Vivek Verma.

- (April 23, 2019). Dr. Leon served as the lead faculty advisor (with Dr. Hector Fuentes, CEE) of the FIU team that won the second place in the 2018 Environmental Protection Agency (EPA), Campus RainWorks Challenge, Master Plan Category. In addition, several students of my research group were awarded the second place in the 2018 EPA Campus RainWorks Challenge, Master Plan Category. Our awarded students include Angela Hogan, Vivek Verma and Salome Montoya.

TECHNOLOGY TRANSFER SUCCESS

(January 2016) Our project was featured as a success PacTrans story: "PacTrans Technology Transfer Success Story 2015 #4: How Green is your Green Infrastructure? A Field-Scale Testing Facility to Investigate Efficiency of Roadside Stormwater Technologies". **Investigators:** Meghna Babbar-Sebens and Arturo S. Leon. The complete article can be found

at

DEVELOPED NEW GRADUATE COURSES
Optimization in Water Resources Engineering (500 level)
A proposal for a new graduate course (Optimization in Water Resources Engineering) was proposed by Dr. Leon and accepted by the University Curriculum Committee. General courses on optimization are offered in most universities across the nation, especially through the Departments of Mathematics, Statistics, and Industrial Engineering. Even though there are general courses on optimization across the nation, including in the State of Florida, there is no course on Optimization in Water Resources Engineering. The proposed course is of particular importance in Florida given that most of the state is surrounded by water and, as such, optimal decision for the planning, management and operation of water systems are necessary. The material I created for this course is available at the course website:
https://web.eng.fiu.edu/arleon/Teaching_optimization.html

Unsteady Flows in Rivers and Pipe Networks
Nationally, only two universities (University of South Carolina and University of Minnesota) offer a similar class to this graduate elective. This course covers the introduction and analysis of unsteady open-channel flows (e.g., rivers) and pressurized flows (e.g., full-pipe flows). Strong emphasis is given to the application of efficient numerical techniques and computational procedures for flow routing. This course focuses primarily on one-dimensional unsteady flows, although a brief introduction to two-dimensional flows is also presented. This course involves computer hands-on labs using *HEC-RAS* (USACE), *ITM* (Arturo S. Leon), and *TELEMAC-2D* (EDF-LNHE, Paris). The material I created for this course is available at the course website:
http://web.eng.fiu.edu/arleon/Teaching_unsteady_rivers.html

DEVELOPED SOFTWARE AND CODES
I have developed over 10 computational models, which are available at http://web.eng.fiu.edu/arleon/Codes.html. The main models that I have developed include:
1. **DSS for flood control by managing Wetland and Other Water storage systems** (2018-Present): This framework (DSS-WOW) can be used in near-real time for guiding on the optimal water releases from a network of wetlands, detention ponds and other storage systems for mitigating floods. This approach can enable adaptive release of water from wetlands hours or days ahead of rainfall events, thereby maximizing storage capacity and minimizing flooding. This decision support system incorporates components of hydrological modeling (HEC-HMS), inundation modeling (HEC-RAS) and genetic algorithm optimization. The automated exchange of data between these models is made via HEC-DSS files.
2. **Illinois Transient Model** (2004-Present): The Illinois Transient Model (ITM) is an **open source** multipurpose Finite Volume (FV) model to analyze transient flows in closed-conduit systems ranging from dry-bed flows to gravity flows, to partly gravity-partly surcharged flows (mixed flows) to fully pressurized flows (waterhammer flows). In the ITM model, the free surface region is modeled using the 1D Saint-Venant equations and the pressurized region is modeled using the 1D compressible waterhammer equations. The current version of the ITM model (V. 1.5 May, 2015) has features that make this model superior with respect to other models for analyzing transient flows in complex closed-conduit systems. The ITM model was used for the analysis of combined sewer systems in the United States in cities like Chicago,

Cleveland, San Francisco, and Dallas and has been used in countries such as Switzerland, China, New Zealand and Mexico.
Link: http://web.eng.fiu.edu/arleon/ITM.htm

3. **Controlling HEC-RAS using MATLAB** (2016-Present): This code contains a set of MATLAB scripts to write input files, read output files, make plots, execute parallel computations, and perform fully-automated functions of HEC-RAS. The Examples of procedures are illustrated using a river-reservoir network that involves ten inline structures (e.g., dams) with operation of gates at each of these dams.
Link: http://web.eng.fiu.edu/arleon/Codes.html

4. **Steady-Pipe Networks** (2014-Present): Code for analyzing steady flows in pipe networks. This Matlab code is intended for analyzing steady flows in complex pipe networks. This code can handle reservoirs, pumps and user-defined flows at nodes. The input data is entered in Excel and the equations are solved in Matlab.
Link: http://web.eng.fiu.edu/arleon/Pipe_Network.html

5. **OSU-Hydro turbines** (2013-Present): Matlab code for determining optimal flow discharge and optimal penstock diameter when designing impulse and reaction turbines for hydropower systems. This code is based on the paper "A dimensionless analysis for determining optimal discharge and penstock diameter in impulse and reaction water turbines" by Leon A. (2013).
Link: http://web.eng.fiu.edu/arleon/hydropower_calc.html

6. **Annel2** (2002-Present): Matlab code for computing water surface profiles in circular and trapezoidal channels in series.
Link: http://web.eng.fiu.edu/arleon/Annel2.html

7. **Illinois Conveyance Analysis Program** (ICAP) (2012-Present). ICAP uses hydraulic performance graphs to describe the conveyance of a system, identify bottlenecks for varying conditions, conserve mass by tracking outflow and overflows under stepwise steady flow conditions.
Authors: Oberg, Nils; Schmidt, Arthur R.; Landry, Blake J.; Leon, Arturo S.; Mier, Jose M.; Garcia, Marcelo H.
Link: https://www.ideals.illinois.edu/handle/2142/89288

8. **Dual Drainage Model** (DDM) (2008-Present): Code for modeling overland flows, street flows, Curb-and-grate inlet flows and pipe flows For the street and pipe flows a finite volume-shock-capturing scheme was used. Collaborator: Prof. Leonardo Nania (University of Granada, Spain).

9. **OSU-OUU** (2012-Present): Code for real-time operation of multi-objective and multi-reservoir systems that accounts for uncertainty and flexibility. This model couples hybrid optimization algorithms with a robust and numerically efficient hydraulic routing approach (OSU-Rivers). This model allows for scalable parallelization and has an integrated platform with a user-friendly graphical interface.

10. **OSU-Rivers** (2011-Present): Code for unsteady flow routing of complex rivers systems based on the performance graphs approach. This model is named OSU-Rivers. This model is robust and numerically efficient and is recommended for simulation of regulated river systems in real-time conditions.

11. Code for modeling the development, propagation, coalescence and release of air pockets in pipelines (2007-2008, Finite volume method & shock-capturing schemes)

12. Code for the solution of the 2D shallow water equations (2004, Finite volume method & shock-capturing schemes)

13. Code for modeling two-phase waterhammer flows in complex networks (2004, Finite volume method & shock-capturing schemes).

J. WORKS IN PROGRESS

PAPERS SUBMITTED TO JOURNALS

1. Verma, V., Linlong Bian, Sumit Zanje, Dogukan Ozecik, **Leon, A. S.** (2021). Software and hardware architecture for the real-time and remote operation of a network of shallow and deep storage systems. Submitted to *Journal of Water Resources Management*.
2. Chen D., Qiuwen Chen; **Leon, A. S.**, Ruonan Li. (2021). Evaluation of optimization models for reservoir operation: from rule-curve to many-objective operation. Submitted to Journal of Hydroinformatics.
3. Verma V., **Leon, A.S.** (2021). Statistical Long-Term Spatial and Temporal Trend Analysis of Precipitation over the State of Texas, USA. Submitted to the Journal of Water Resources - Springer.
4. Four more papers under review

OTHER COMPLETED PAPERS
N/A

RESEARCH IN PROGRESS (REFEREED JOURNAL PUBLICATIONS UNDER DEVELOPMENT)

1. **Leon, A. S.** and Tang, Y. Comparison of the genetic algorithm and pattern search methods for forecasting optimal flow releases in a multi-storage system for flood control. To be submitted to *Journal of Environmental Modelling and Software* on May 2021.
2. Zanje, S., and **Leon, A. S**. A retrofitting strategy for minimizing geyers in combined sewer systems. To be submitted to *Journal of Hydraulic Research* on May 2021.
3. Zanje, S. and **Leon, A. S**. Comparison of numerical solvers for simulating large scale geysers. To be submitted to *Journal of Hydraulic Research* on May 2021.

GRANT PROPOSALS (Under review)

Title of Project	Funding Agency	Date of submission	Requested Amount	Status (*)

K. FUNDED RESEARCH

AT FIU

Investigators	Title of Project	Funding Agency	Project Dates	Amount of Funding
A. S. Leon (PI), M. Amini (Co-PI)	A Physics-Based Artificial Intelligence General Framework for Optimal Control of Sewer Systems to Minimize Sewer Overflows	National Science Foundation	10/22-09/25	$400,000 ($XXXXX, my share)
Joseph Sinicrope (PI), A. S. Leon (Co-PI)	ERDC-FIU Strategic Initiatives to Enhance Critical Engineering Research and Workforce Development	USACE-ERDC-CT	04/22-03/27	$1,993,143 ($996571, my share)

Investigators	Title of Project	Funding Agency	Project Dates	Amount of Funding
B. S. Levitt (PI), R. S. Olson (Co-PI), **A. S. Leon** (Key personnel)	Collaborative Research: Hazard Events, Risk Perception, and Public Support for Disaster Risk Reduction in the Americas: a 17-Country Study	National Science Foundation	09/20-08/23	$152,500 ($3,859, my share)
A. S. Leon (PI), Cheng-Xian Lin (Co-PI)	Dynamics of Violent Geysers in Stormsewer Systems and Novel Retrofitting Methods	National Science Foundation	01/20-12/22	$329,733 ($199,526, my share)
A. S. Leon (PI)	Supplement to "Dynamic Management of Water Storage in Watersheds for Reducing the Magnitude of Floods"	National Science Foundation	10/19-07/21	$4,000
A. S. Leon (PI), S. Pennings (Co-PI), Craig Glennie (Co-PI)	Dynamic Management of Water Storage in Watersheds for Reducing the Magnitude of Floods	National Science Foundation	08/18-07/21	$307,756 ($201,357, my share)
J. Obeysekera (PI), S. Malone (Co-PI), M. Sukop (Co-PI), T. Troxler (Co-PI), **A. S. Leon** (Key personnel)	CoPe Conference: Interoperability and data needs of models for understanding vulnerability of coastal systems to stresses and shocks associated with climate change and sea level rise	National Science Foundation	01/20-12/20	$100,000 ($0, my share)
Steven Pennings (PI), **A. S. Leon** (Co-PI), Stacey Louie (Co-PI)	Wetland facility for the University of Houston Coastal Center	Subcontract from University of Houston (Funded by NSF)	09/18-08/20	$344,938 (Total project) ($105,624, my share)
A. S. Leon (PI*)	Practical Experience of Environmental Engineering Students of the Florida International University at the Miami-Dade Water and Sewer Department	Miami-Dade Water and Sewer Department	Fall 2019-09/21	$89,147 ($0, my share *)
A. S. Leon (PI)	Demonstration of modeling and intelligent operation of stormwater systems for flood control	Dankook University, South Korea	08/18-07/19	$5,500

* I am serving as the Project PI since December of 2019

AT PREVIOUS INSTITUTIONS

Investigators	Title of Project	Funding Agency	Project Dates	Amount of Funding
Stacey Louie (PI) **A. S. Leon** (Co-PI)	Sustainable wetland management for flood and water quality control	Grants to Enhance and Advance Research (GEAR), University of Houston	04/1/18 – 03/31/19	$30,000 ($15,000, my share)
A. S. Leon (PI), N. Gibson (CoPI), C. Hoyle (CoPI), Y. Chen (CoPI), C. Fuentes (CoPI)	Framework for Quantification of Risk and Valuation of Flexibility in the Federal Columbia River Power System (FCRPS)	US Department of Energy (BPA)	11/15-10/18	$1,189,492 ($511,280, my share)

Meghna Babbar-Sebens (PI) **A. S. Leon** (CoPI)	PacTrans Technology Transfer Success Story 2015: How green is your green infrastructure? A field-scale testing facility to investigate efficiency of road-side storm water technologies.	Pac-Trans UTC	12/15-1/16	$4,000 ($2,000, my share)
Meghna Babbar-Sebens (PI) **A. S. Leon** (CoPI)	Improving sustainability of urban streets via rain gardens – How effective are these practices in the Pacific Northwest? This project was featured as a success PacTrans story.	Pac-Trans UTC	7/13-6/14	$25,000 ($12,500, my share)
A. S. Leon (PI), Nathan Gibson (CoPI), Christopher Hoyle (CoPI)	Development of a state-of-the-art computational framework and platform for the optimal control of multi-reservoir systems under uncertainty	US Department of Energy (BPA)	10/12-11/15	$665,993 ($410,390, my share)
A. S. Leon (PI)	Prediction and quantification of CSOs in combined sewer systems under extreme storm events: Extreme events, Flow dynamics, Reduction of CSOs	U.S. Environmental Protection Agency	6/12-5/17	$265,528
A. S. Leon (PI)	Construction of first phase of River Hydraulics Research Facility	RERF - OSU	3/12-12/13	$59,950
Hans Tritico (PI) **A. S. Leon** (Co-PI) Jose Vasconcelos (Co-PI)	Development and Demonstration of an Improved Ranking Algorithm for Fish Passage through Culverts	Federal Highway Administration /CTME	3/12-12/12	$49,531 ($4,250, my share)

L.   PROPOSALS SUBMITTED BUT NOT FUNDED (AT FIU)

Title of Project	Funding Agency	Date of submission	Requested Amount	Status (*)
LEAP-HI: Engineering Soft Bubbles for Hard Problems in Coastal Protection	National Science Foundation (NSF)	09/2021	$2,000,000	Not funded
EFRI ELiS Preliminary Proposal: Quantifying the Integral Benefits of GSI for Improving Water Quality and Reducing Runoff Volume, GHG Emissions, and UHI Effects	National Science Foundation (NSF)	12/16/2021	$1,998,732	Not funded
Collaborative Research: Frameworks: AI-driven Cyberinfrastructure for Cross-Domain Knowledge Engineering: A New Data Analytic Paradigm for Urban and Infrastructure Systems	National Science Foundation (NSF)	12/07/2021	$220,365	Not funded
A Physics-based Artificial Intelligence Framework for Optimal Flood Control of Multi-reservoir systems in Real-time	National Science Foundation (NSF)	09/10/2021	$329,991	Not funded
An HDR Institute for Data-Intensive Research on SunBelt Water Challenges	National Science Foundation (NSF)	02/11/2021	$10,00,000	Not funded
A Physics-Based Artificial Intelligence General Framework for Improving	National Science Foundation (NSF)	04/02/2021	$330,000	Not funded

Overflow Prediction in Combined Sewer Systems				
Quantifying Storm Surge and Hurricane Wind Mitigation Provided by Various Green Infrastructure Types	National Science Foundation (NSF)	11/25/2020	$450,000	Not funded
Collaborative Research: Frameworks: AI-driven Cyberinfrastructure for Cross-Domain Knowledge Engineering: A New Data Analytic Paradigm for Urban and Infrastructure Systems	National Science Foundation (NSF)	10/27/2020	$199,929	Not funded
SCC-CIVIC-PG Track B: An adaptive, multi-modal energy management system for the sustainability and resilience to natural disasters	National Science Foundation (NSF)	08/03/2020	$50,000	Not funded
SCC-CIVIC-PG Track B: CIVIC Data Platform for Resilient Futures: Accelerating Data-Driven Science, Policy Making and Community Solutions	National Science Foundation (NSF)	08/03/2020	$50,000	Not funded
Identifying Sewer Operational Problems and Improving Overflow Prediction in Combined and Sanitary Sewer Systems	National Science Foundation (NSF)	08/28/2020	$330,000	
Collaborative Research: Quantifying Mangrove Mortality from Hurricane Wind Speed and Storm Surge Sedimentation and Forecasting Decline in Energy Dissipation in Coastal Ecosystems	National Science Foundation (NSF)	02/04/2020	$915,788	Not funded
Approaches to Reduce Nutrient Loadings for Harmful Algal Blooms Management	University of Florida (through the Environmental Protection Agency)	12/05/2019	$211,441	Not funded
SCC-IRG Track 1: Smart and Connected Coastal Urban Systems in the Face of Sea Level Rise, Hurricanes and Flooding: Identifying Optimal Trends for Infrastructure Development	National Science Foundation	09/06/2019	$3,841,379	Not funded
Hurricane Heterogeneity & Drivers of Mangrove Mortality	NSF	03/01/2019	732,481	Not funded
Inter-comparison of land surface models to improve the NOAA National Water Model by using remote sensing observations in a cold-region watershed	NOAA	02/01/2019	240,338	Not funded

(*) The table below indicates proposals under review or not funded. Proposals that were funded are not included in this table.

M. PATENT DISCLOSURES, APPLICATIONS, AND AWARDS

N/A

N. PROFESSIONAL HONORS, PRIZES, FELLOWSHIPS

HONORS, PRIZES AND FELLOWSHIPS OF CANDIDATE

1. **Lead Faculty Advisor of FIU team that won the 1st place Award in the 2021 EPA Campus RainWorks Challenge, Demonstration Project Category,** U.S. Environmental Protection Agency (EPA), Office of Wastewater Management, April, 2022. "The Campus RainWorks Challenge is a green infrastructure design competition for American colleges and universities that seeks to engage with the next generation of environmental professionals, foster a

dialogue about effective stormwater management, and showcase the environmental, economic, and social benefits of green infrastructure practices".

2. **Lead Faculty Advisor of FIU team that won the 2nd place Award in the 2020 EPA Campus RainWorks Challenge, Demonstration Project Category,** U.S. Environmental Protection Agency (EPA), Office of Wastewater Management, April, 2021.

3. **Lead Faculty Advisor of FIU team (with Prof. Ebru Ozer as co-advisor) that won the 1st place Award in the 2019 EPA Campus RainWorks Challenge, Master Plan Category,** U.S. Environmental Protection Agency (EPA), Office of Wastewater Management, April, 2020.

4. **Fellow, FIU Extreme Events Institute, July 2019-June 2020.** This recognition was given by the Extreme Events Institute, an FIU Preeminent Program.

5. **Lead Faculty Advisor of FIU team (with Dr. Hector Fuentes, CEE) that won 2nd place Award in the 2018 EPA Campus RainWorks Challenge, Master Plan Category,** U.S. Environmental Protection Agency (EPA), Office of Wastewater Management, April, 2019. "The Campus RainWorks Challenge is a green infrastructure design competition for American colleges and universities that seeks to engage with the next generation of environmental professionals, foster a dialogue about effective stormwater management, and showcase the environmental, economic, and social benefits of green infrastructure practices".

6. **Diplomate (D.WRE), American Academy of Water Resources Engineers** (ASCE), 2014. This award is given by the American Academy of Water Resources Engineers (AAWRE), a subsidiary of the American Society of Civil Engineers (ASCE). The D.WRE certification is the highest post-license certification available in the water resources engineering profession. The D.WRE represents strong professional ethics, a commitment to life-long learning and continuing professional development.

7. **Environmental Protection Agency (EPA) Early CAREER Award,** 2012. The EPA CAREER award supports "research performed by PIs with outstanding promise at the Assistant Professor or equivalent level".

8. **ASCE ExCEEd Teaching Fellow,** 2012. This fellowship award is to attend a six-day workshop that provides engineering educators with an opportunity to improve their teaching abilities. This workshop includes a series of demonstration classes - models of high-quality teaching, presented by ExCEEd faculty mentors. During the latter half of the course, participants apply what they have learned by preparing and teaching three actual classes in a small-group setting. In this workshop I was honored by the lead teaching mentor with the "chalk award" for best teaching improvement in my group.

9. **Society of Peruvian Engineers Outstanding Contributions Award,** 2011. This award is presented by the Society of Peruvian Engineers (Colegio de Ingenieros del Peru) to engineers with outstanding contributions in their field. This award is normally given to one or two engineers every year.

10. **Chancellor Medal and Diploma for outstanding graduate of the Universidad Nacional San Cristobal de Huamanga,** 2008. The medal and diploma was awarded by the Chancellor of the University for being one of the two most outstanding graduates of all times in the Civil Engineering Department of the Universidad Nacional San Cristobal de Huamanga.

11. **Peruvian National Council of Science and Technology** fellow, 1997-1998
This fellowship was awarded by the Peruvian National Council of Science and Technology (Consejo Nacional de Ciencia y Tecnología -CONCYTEC) to support the two years of my MS studies at the National University of Engineering in Lima, Peru.

12. **Research Fellowship at the Hong Kong University of Science and Technology,** China (six weeks), 2004. This Fellowship was awarded by the University of Illinois at Urbana-Champaign to perform research at the Hong Kong University of Science and Technology.

13. **First place in university (M.S.) entrance examination,** 1997.

14. **Fellowship to attend the Peruvian National Annual Conference of Executives** (Peru), 1996. The best student from each department is selected to attend the National Annual Conference of Executives (Conferencia Anual de Ejecutivos). The purpose of this one-week long meeting is to serve as a networking mixer between the very best students of the country and selected CEOs of the most important Peruvian companies.

15. **Best undergraduate student award of Civil Engineering,** 1992-1996 (5 years in a row). The undergraduate curriculum in Peru is a 5 year program. The best undergraduate student award is given every year to the student with highest GPA.

16. **First place in university (B.S) entrance examination** (**out of 26,000 applicants**), 1992.

HONORS, PRIZES AND FELLOWSHIPS OF CANDIDATE STUDENTS/POST-DOCS

1. Several students of our research group were awarded the **1st place in the 2021 EPA Campus RainWorks Challenge, Demonstration Project Category.** Our awarded students include Sumit Zanje, Pratik Mahyawansi and William Campbell. The FIU team was led by Sumit Zanje, who is a member of our research group. April 2022.

2. PhD student Sumit Zanje was awarded a Dissertation Year Fellowship (DYF) from the FIU University Graduate School, April 2022.

3. PhD student Sumit Zanje received the **2021 EPIC/Chittaluru Family Scholarship** from the 2021 ASCE Florida Section Past President Scholarship Endowment, July 2021.

4. Several students of our research group were awarded the **First Place in the Graduate Student Paper Competition of the Environmental and Water Resources Institute of the American Society of Civil Engineers (ASCE)**. The awarded paper was entitled "A Feasibility Study on Harvesting Rainwater from Large Solar Panel Canopies to Supplement Makeup Water for Cooling Towers by Using Remotely Controlled and Self-Cleaning Rain Cistern". Our PhD student Linlong Bian served as the team leader of this competition. June 2021.

5. Several students of our research group were awarded the **2nd place in the 2020 [EPA Campus RainWorks Challenge, Demonstration Project Category](#)**. Our awarded students include Linlong Bian, Vivek Verma, Zeda Yin, Sumit Zanje and Dogukan Ozecik. The FIU team was led by Linlong Bian, who is a member of our research group. April 2021.

6. Several students of our research group (Vivek Verma, Linlong Bian, Sumit Zanje and Dogukan Ozecik) won the **2020 Design Award from the [Florida Chapter of the American Society of Landscape Architects](#) (FLASLA)**. Vivek will receive his award on November 6th at the Grand Bohemian Orlando Resort in Orlando, Florida. November 2020.

7. Several students of our research group were awarded the **1st place in the 2019 [EPA Campus RainWorks Challenge, Master Plan Category](#)**. Our awarded students include Vivek Verma, Linlong Bian, Sumit Zanje and Dogukan Ozecik. The FIU team was led by our student Vivek Verma, April 2020.

8. My Post-doc, Dr. Mohammad Reza Safaei, has being listed as one of the two most highly cited researchers of FIU by the Web of Science (https://recognition.webofsciencegroup.com/awards/highly-cited/2019/). The list identifies scientists who produced multiple papers ranking in the top 1% by citations for their field and year of publication, demonstrating significant research influence among their peers.

9. My Post-doc, Dr. [Mohammad Reza Safaei](#), was selected as the winner of the JTACC-V4 Young Scientist Award. This award recognizes outstanding contributions in the field of thermal analysis and calorimetry of young researchers under the age of 35 as of December 31, 2018. Dr. Reza will receive his award plaque in Budapest on June 18-21, 2019. The winner of the Award will present his/her lecture at one of the Plenary Sessions.

10. Several students of our research group were awarded the second place in the 2018 <u>EPA Campus RainWorks Challenge, Master Plan Category</u>. Our awarded students include <u>Angela Hogan</u>, <u>Vivek Verma</u> and <u>Salome Montoya</u>, April 2019
11. Taher Chegini, Ph.D. student, 3rd Place in the Graduate Student Technical Paper Competition of the Environmental and Water Resources Institute (EWRI) of the American Society of Civil Engineers (ASCE). The awarded paper was entitled "Comparison of various turbulence models for violent geysers in vertical pipes", June 2018.
12. Taher Chegini and Erfaneh Sharifi were named CACDS Fellow, September 2017 (<u>https://www.cacds.uh.edu/about/cacds-fellows/</u>)
13. Parnian Hosseini, Ph.D. student, 2nd Place – CCE-OSU College of Engineering Research Engineering Expo, 2015
14. Parnian Hosseini, Ph.D. student, NW Energy Prize scholarship, 2014
15. Yunji Choi, Ph.D. student, Arthur N. L. Chiu Endowed Scholarship, 2013
16. Christopher Gifford-Miears, M.S. student, <u>ASCE's Arthur S. Tuttle Memorial Scholarship</u>, 2012

O. OFFICES HELD IN PROFESSIONAL SOCIETIES

American Society of Civil Engineers, Environmental & Water Resources Institute (EWRI), Task Committee on Two-Phase Flow In Urban Water Systems, **Vice-Chair**, 2017-Present

P. OTHER PROFESSIONAL ACTIVITIES AND PUBLIC SERVICE

SELECT TRAINING RECEIVED
- Participated in the 2022 Diversity Advocate workshop offered by the FIU Office to Advance Women, Equity & Diversity.
- Participated in the 2022 Strategies and Tactics for Recruitment to Increase Diversity and Excellence (STRIDE) workshop offered by the FIU Office to Advance Women, Equity & Diversity.
- Participated in the 2018-2019 FIU Faculty Mentor Program as mentee. This program was offered by the FIU Office to Advance Women, Equity & Diversity.
- Participated in the 2015 mentorship training workshop offered by the Oregon State University Graduate School.

UNIVERSITY SERVICE
Standing Committees
- Information Technology (IT) Committee Member, AY22/23
- Moss School Research Committee Member, Fall 2020-Present
- Graduate Program Advisory Committee (GPAC) Member, Fall 2019-Present
- GPAC, Non-CEE Faculty Evaluation Committee Chair, Fall 2019-Present
- GPAC, Awards and Fellowships Committee Member, Fall 2019-Present
- CEE DAS Department Evaluation Committee Member, Fall 2019-Present
- FIU Faculty Senate, Alternate Senator, Fall 2018-Summer 2019
- CIVE 6111 Graduate Seminar Coordinator, Fall 2017
- Graduate Committee, Member, AY12/13, 13/14
  - Sub-Committee on Graduate Admissions & Recruiting, Chair, AY 12/13
- Institute for Water and Watersheds (IWW) Executive Committee, Member, AY11 – Present

Ad-Hoc Committees

- Environmental Engineering Tenure-Track Faculty Search Committee, Chair, AY 22
- Transportation Engineering Tenure-Track Faculty Search Committee, Member, AY 22
- Environmental Engineering Tenure-Track Faculty Search Committee, Member, AY 17
- Construction Engineering Tenure-Track Faculty Search Committee, Member, AY 11/12
- Interim School Head of Civil & Construction Engineering Search Committee, Member, AY 11/12

Development of Research Laboratories and Teaching equipment
At FIU

- FIU: Developed a Technology Fee Proposal for the renovation of the CEE Fluid Mechanics Laboratory (PI: Dr. Cora Martinez; Co-PI: Arturo S. Leon). This proposal was resubmitted twice. The proposal included the purchase of hardware and software for cutting edge visualization of the experiments and onsite and remote operation of the laboratory equipment. The funding of our proposal would have allowed FIU students to control and visualize the experiments from their smartphones and home computers. The acquired data will be transferred to the user's device for post-processing and analysis. The proposed renovation equipment will result in novel ways of delivering online curricula, which has become a necessity during the COVID-19 pandemic.
- Designing and implementing a new multi-purpose hydraulic research laboratory at the FIU Engineering Center. The laboratory should be completed in the Fall of 2020.

At Previous institutions

- Identified new equipment for improvement of Labs 3 and 4 in CIVE 3434
- Designed and implemented of a new multi-purpose hydraulic research laboratory at SPA
- Designed and obtained funds for the construction of the River Hydraulics Research Facility (http://web.eng.fiu.edu/arleon/River_Facility.html) located at the O.H. Hinsdale Wave Research Laboratory. This new research facility features a recirculating system with the ability to test up to two simultaneous and independent experiments with flows up to 35 cfs (1000 L/s). The river facility consists of a 20 m (66 ft) x 10 m (33 ft)) concrete platform for hosting hydraulic experiments, two independent head tanks (can be extended), a sediment catchment, a clean water sump, multiple pumps (variable and constant speed), and impulsion and return pipe lines. The river facility is ideal for the testing of river hydraulic structures and low head (< 15 ft) pressurized hydraulic structures. This facility is currently being used for two sponsored research projects (geysers and flood control). Overall, this facility could be used for a wide range of research projects, including flood control, reservoir sedimentation, density currents, erosion and scour, aquatic habitat, stream restoration, fish passage and dam removal. I am currently the director of this facility.
- Helped in the design and in obtaining funds for the construction of the OSU-Benton County Green Stormwater Infrastructure Research (OGSIR) Facility (http://research.engr.oregonstate.edu/hydroinformatics/Avery). This facility is a three-celled stormwater research facility for field-scale experiments and testing on green infrastructure (e.g., raingardens, bioswales, etc.). The cells provide the ability to test various stormwater treatment technologies and treatment of various stormwater contaminants. These cells are also instrumented with multiple sensors to enable better data collection and modeling. Located on the NW corner of the Benton County Development Department property at SW Avery Avenue in Corvallis, Oregon, the facility intercepts and captures runoff from approximately 100,000 square feet of catchment area in the County property. Some of the pollutants being captured include tractor leaks, fuel tank spills, raw asphalt, road fill sediment, parking lot sediments

and chemicals, road paint spills, etc. The facility also provides education and outreach to engage the general public in taking action to support enhancing water quality. Each cell is approximately 93 feet 4 inches long and 10.5 feet wide. The depth of each cell is 3 feet. The underdrain for each cell was laid in an 18 inches trench that is 4 feet from the top of the cell walls. The soils and plants in each of these cells can be replaced by experimental soil and plants. The Co-Directors of this Facility are Dr. Meghna Babbar-Sebens and Dr. Arturo Leon.

- Designed and funded the construction of a 10-m long semi-circular (D = 18") re-circulatory flume (http://web.eng.fiu.edu/arleon/Projects_Flume_Graf.html). This facility is located in the Hinsdale wave lab and is intended to be used for teaching purposes. The maximum flow discharge of this flume is 10 liters per second.

SERVICE TO THE PROFESSION

Journal editorships

- Editorial Board Member, *Environmental Modelling & Software*, Elsevier, Fall 2021-Present.
- Editorial Board Member, *Modelling*, MDPI international peer-reviewed Journal, Spring 2021-Present.

Conference and Workshop Organization

- International Scientific Committee, 8th International Symposium on Environmental Hydraulics, University of Notre Dame, Indiana, United States, June 2018.
- Session organizer [with Jose Vasconcelos, Auburn University], Session on Two-phase flows (Gas-liquid) in Hydraulic Structures, World Environmental & Water Resources Congress 2018 (organized annually), Minneapolis, Minnesota, June 2018.
- Mini-Symposium organizer [with Moez Louati, Hong Kong University of Science and Technology (Hong Kong)], Session on Transients and Geysers in Urban Systems, 8th International Symposium on Environmental Hydraulics (https://ceees.nd.edu/iseh2018), University of Notre Dame, Indiana, United States, June 2018.
- Session organizer [with Silvia Meniconi, University of Perugia (Italy), Pedro Lee, University of Canterbury (New Zealand); Sang Hyun Kim, Pusan National University (South Korea), and Moez Louati, Hong Kong University of Science and Technology (Hong Kong)] on Transients Flows in Pipes, 37th IAHR World Congress (organized biennially), Kuala Lumpur, Malaysia, August 2017.
- Session organizer, Session on Short-term Operation of Reservoir Systems Under Uncertainty, World Environmental & Water Resources Congress 2016 (organized annually), West Palm Beach, Florida, May 2016.
- Session organizer, Session on Reservoir Operation, AWRA Annual Water Resources Conference, Portland, OR, November 2013.
- Steering Committee and Advisory Board Member, International Conference on Engineering & Ecohydrology for Fish Passage, Corvallis, OR, June 2013
- Chair, Spring Hydrology Seminar Series of the Institute of Water and Watersheds (IWW). Theme: "Innovations in International Waters", Corvallis, OR, April-June 2012.

Conference Program Committees

- Session Chair (with Prof. David Ferras, Co-Chair), Special Session: Transients in Pipes, 38th IAHR World Congress, Panama City, Panama, September 2019.

- Session Chair (with Prof. Huang-Feng Duan, Co-Chair), Special Session: Transients in Pipes, 37th IAHR World Congress, Kuala Lumpur, Malaysia, August 2017.
- Member of Scientific International Committee, XXVII Latin-American Congress of Hydraulics, Lima, Peru, September 2016.
- Session Chair (Energy Dissipation Basins), 6th International Symposium on Hydraulic Structures, Portland OR, June 2016.
- Session Moderator (Short-term Operation of Reservoirs Systems Under Uncertainty), World Environmental & Water Resources Congress 2016, West Palm Beach, FL, May 2016.
- Session Chair, AWRA Annual Water Resources Conference, Portland, OR, November 2013.
- Session Moderator, International Conference on Engineering & Ecohydrology for Fish Passage, Corvallis, OR, June 2013.
  - Modeling and Design
  - Columbia River Passage

Reviewing
Research Proposals
- National Science Foundation (NSF) Strengthening American Infrastructure (SAI) Research Proposals - Water Resources, Review Panel, July 2022
- National Science Foundation (NSF) SBIR Phase II, Review Panel, May 2021
- National Science Foundation (NSF) SBIR Phase I, Reviewer, April 2020
- National Science Foundation (NSF) CBET, CAREER Review Panel, 2019
- National Science Foundation (NSF) CMMI, Review Panel, 2014
- Natural Sciences and Engineering Research Council of Canada (NSERC), Reviewer, 2013]
- National Science Foundation (NSF) CMMI, Reviewer, 2013, 2014

Archival Journals [63]
- MDPI: Water, 2016 - present [6]
- AGU: Water Resources Research, 2014 – present [5]
- IWA: Journal of Hydroinformatics, 2015 – present [3]
- ASCE: Journal of Water Resources Planning and Management, 2013 – present [3]
- ASCE: Journal of Engineering Mechanics, 2013 – present [4]
- ASCE: Journal of Computing in Civil Engineering, 2013 – present [2]
- IWA: Water Science and Technology, 2013 – present [4]
- ASCE: Journal of Hydrologic Engineering, 2011 – present [3]
- Springer: Journal of Water Resources Management, 2011 – present [3]
- IAHR, International Journal of Hydraulic Research, 2009 – present [6]
- ASCE: Journal of Hydraulic Engineering, 2007 – present [14]

Refereed Conferences [79]
- IAHR World Congress (organized biennially), Kuala Lumpur, Malaysia, August 2017 [6].
- Latin-American Congress of Hydraulics, 2015-present [10]
- ASCE-EWRI World Environmental & Water Resource Congress, 2013 – present [38]
- International Conference on Engineering & Ecohydrology for Fish Passage, 2014 – present [16]
- AWRA Annual Water Resources Conference, 2013 – present [6]

- Computational Hydraulics International (CHI) Annual Conference, 2011 – present [3]

REVIEW PANELS AND TASK COMMITTEES
- MITRE Miami Innovation Hub (iHub), Water Roundtable, *Participant*, 2022.
- American Society of Civil Engineers, Environmental & Water Resources Institute (EWRI), Task Committee on Two-Phase Flow In Urban Water Systems, ***Vice-Chair***, 2017-Present
- American Society of Civil Engineers, Environmental & Water Resources Institute (EWRI), Task Committee on Sustainable Stormwater Infrastructure, *Member*, 2016 – Present
- American Society of Civil Engineers, Environmental & Water Resources Institute (EWRI), Task Committee on Eco-Hydraulics, *Member*, 2013 – Present
- American Society of Civil Engineers, Environmental & Water Resources Institute (EWRI), Task Committee on Low Impact Development - Combined Sewer (LID-CS) Areas, *Member*, 2012 – Present
- Delta Science Program (State of California), Review panel member of the Fall Low Salinity Habitat (FLaSH) Studies and Adaptive Management Plan, 2012
- Oregon Seismic Resiliency, Committee member of Water and Waste Water System task group, 2012-2015

PROFESSIONAL CERTIFICATION AND MEMBERSHIP OF PROFESSIONAL ASSOCIATIONS
- American Academy of Water Resources Engineers (AAWRE), *Member*, 2014 – Present
- Engineers Without Borders (EWB), *Member*, 2012 – Present
- American Geophysical Union (AGU), *Member*, 2012 – Present
- Professional Certification, Professional Engineer (PE 14251, Idaho), 2010
- American Water Resources Association (AWRA), *Member*, 2009 – Present
- American Society of Civil Engineers, *Member*, 2009 – Present
- International Association for Hydraulic Research (IAHR), *Member*, 2009 – Present
- Professional Certification, Professional Engineer (Peru, CIP 58619), 2001

ADVISING

Graduate Advisees – Current

Student	Degree	Expected Graduation	Thesis Title (Tentative)
1. Abbas Sharifi	Ph.D.	Fall 2024	Resilience Modeling in Coastal Urban Systems
2. Zeda Yin	Ph.D.	Fall 2023	Machine learning for optimal control of urban water systems
3. William Campbell	M.S.	Spring 2023	Applying HEC-RAS To Simulate The Complex Tidal Conditions For Estuaries And Bays: A Case Study Of The Cook Inlet In Alaska
4. Hector Mayorga Pauth	M.S.	Spring 2023	Climate change impacts on stormwater management
5. Pratik Mahyawansi **Primary advisor**: Dr. Cheng-Xian Lin, **Co-advisor**: Arturo Leon	Ph.D.	Spring 2023	Particle image velocimetry study of violent geysers in sewer systems
6. Sumit Zanje	Ph.D.	Fall 2022	Retrofitting strategies for preventing violent geysers in stormwater and combined sewer systems.
7. Yliana Serra	M.S.	Spring 2023	Course-based MS

Graduate Advisees – Completed

Student	Degree	Thesis	Graduated
Linlong Bian	Ph.D.	Dynamic flood management at the watershed scale	Fall 2021
Dogukan Ozecik	M.S.	An integrated software and hardware architecture for gravity-driven and remotely-operated water release	Summer 2021
Sumit Zanje	M.S.	MS en-route to PhD	Summer 2021
Vivek Verma	Ph.D.	*Real-time, low-cost, and reliable integrated hardware and software framework for remotely operated water release*	Summer 2021
Li Qin	Ph.D.	*Advances in photoelectric detection (Visiting student of Dalian Maritime University, Dalian, China, August 2017-August 2018)*	Fall 2018
Ahmet Emirhan Yolcu	M.S.	*An Automated and Remotely Operated Siphon System for Flood Control*	Spring 2018
Julia Rask	M.S.	*Free surface flow-groundwater interaction: The Calapooia case study*	Winter 2018
Yunji Choi	Ph.D.	*Numerical Investigations on Sewer Geysers*	Winter 2018
Parnian Hosseini	Ph.D.	*Multi-objective Optimization of Reservoir Operation Under Uncertainty with Robust and Flexible Decision Variables*	Fall 2016

Ibrahem Elayeb	M.S.	*An experimental study on violent geysers in vertical shafts and a retrofitting method to reduce geyser intensity*	Spring 2016
Ali Alnahit	M.S.	*A remotely controlled siphon system for dynamic water storage management*	Summer 2015
Christopher Gifford-Miears	M.S.	*A Novel Framework for Uncertainty Propagation in River Systems based on Performance Graphs using Two-dimensional Hydrodynamic Modeling*	Winter 2014
Akemi E. Kanashiro	M.S.	*A new framework for flooding control in regulated river systems*	Winter 2013

Graduate Thesis or Project Committees
Minor Professor or Committee Member:
Current
1. Miguel E. Valencia, PhD Student (FIU, Earth Systems Science)
2. Oscar Guzman Rey, PhD Student (FIU, Earth & Environment)

Graduated
At FIU
1. Anupama John, PhD, 2020 (FIU, Civil Engineering)
2. Li Fei (External examiner), PhD, 2018, *The Hong Kong Polytechnic University (HKPU), Hong Kong,* Civil Engineering

At Previous institutions
3. Fong-Shu Jao, PhD, 2018 (UH, Civil Engineering)
4. Yan Miao, PhD, 2017 (UH, Civil Engineering)
5. Parameswaran Ariram, MS, 2017 (UH, Civil Engineering)
6. Amir Javaheri, PhD, 2017 (OSU, Civil Engineering)
7. Yun Tang, MEng, 2016 (OSU, Civil Engineering)
8. Eben M. Babb, MEng, 2016 (OSU, Civil Engineering)
9. Luis Gomes, MEng, 2016 (OSU, Civil Engineering)
10. Christopher Ryan Hockert, MEng, 2015 (OSU, Civil Engineering)
11. Grant Livingston, MS, 2015 (OSU Water Resources Graduate Program)
12. Lauren Dove, MEng, 2015 (OSU, Civil Engineering)
13. Joshua Sexton, MEng, 2015 (OSU, Civil Engineering)
14. Benjamin Church, MEng, 2014 (OSU, Civil Engineering)
15. Cao Chang, MEng, 2014 (OSU, Civil Engineering)
16. Kelli Walters, MS, 2014 (OSU, Civil Engineering)
17. Nathan Germann, MEng, 2013 (OSU, Civil Engineering)
18. Perry Morrow, MS, 2013 (OSU Water Resources Graduate Program)
19. Jeff Knowles, MEng, 2013 (OSU, Civil Engineering)
20. Jake Taylor, MEng, 2012 (OSU, Civil Engineering)
21. Kevin Heath, MEng, 2012 (OSU, Civil Engineering)
22. Owen Haskell, MEng, 2012 (OSU, Civil Engineering)

Undergraduate Research Assistants
At FIU

1. Roberto Zotti (Spring 2022 - Present)
2. Carla Barrionuevo (Summer 2020)
3. Nicole Romanach (Spring 2020 – Spring 2021)
4. Francisca Olmos de Aguilera (Spring 2020)
5. Sabrina Hochberg (Spring 2020 – Spring 2021)
6. Angeluz Kobrosly (Spring 2020 – Fall 2020)
7. Daniel Viciana (Fall 2019 – Fall 2020)
8. Salome Montoya (Fall 2018 – Fall 2020)
9. Angela Hogan (Fall 2018 – Spring 2019)

At Previous institutions
10. Davis Isaias Hernandez-Alvarez (Winter 2016)
11. Tyler Oathes (Winter-Spring 2016)
12. Megan Conley (Winter-Spring 2016)
13. Alyssa Saito (Winter-Spring 2016)
14. Emily Napualani Luke (Winter-Spring 2016)
15. Devin Robert Sene (Winter-Spring 2016)
16. Parker Wood Murphy (Winter-Spring 2016)
17. Lee Brian Bissinger (Summer 2011, Fall 2012, Summer 2012, Spring 2014)
18. Tim Lloyd (Winter 2014, Spring 2014)
19. Emiko Fukuchi (Fall 2013 - Spring 2014) [Environmental Engineering]
20. YunJi Choi (Summer 2011, Winter 2012 - Summer 2012)
21. Jeffrey Knowles (Summer 2011)
22. Hadi Mirsadeghi (Summer 2010 - Fall 2010)
23. Esther Contreras (Summer 2010)

Postdoctoral Trainees
1. Linlong Bian, PhD, Spring 2022-Present
2. Vivek Verma, PhD, Fall 2021-Present
3. Mohammad R. Safaei, PhD, August 2018 – Summer 2020
4. Hamid Bashiri, PhD, March 2017 – May 2018
5. Duan Chen, PhD, May 2013 – December 2016

STUDENT ORGANIZATIONS AND COMPETITIONS
At FIU
1. **Lead Faculty Advisor,** Campus RainWorks Challenge, USEPA, August 2018 – Present.
2. **Judge for student presentations and posters,** Conference for Undergraduate Research at FIU (CURFIU), April 8, 2019.
3. **Faculty Advisor, Engineers Without Borders (EWB) Florida International University Chapter,** Fall 2018 – Present.

At Previous institutions
4. **Faculty Advisor, Engineers Without Borders (EWB), University of Houston Chapter,** Spring 2017 – Spring 2018.
5. **Faculty Advisor, Engineers Without Borders (EWB), Oregon State University Chapter,** Winter 2011 – Spring 2016. During this period I reviewed technical reports for two international projects of EWB. I also assisted in the design of hydraulic structures for these projects. In 2013, the EWB-OSU Chapter has received a **Premier Project National Award**

for the successful implementation of a well and rainwater catchment in Lela, Kenya. This award recognizes excellence in EWB-USA projects.

6. **Judge for student presentations and posters,** OSU Water Resources Research Symposium, 2013, 2014.

SERVICE TO THE PUBLIC

1. **International Visitor Leadership Program, 2013.** I participated as panelist in the International Visitor Leadership Program, a greening of America with a focus on renewable energy: A Project for Germany, Corvallis, OR, June 26, 2013.
2. **Laboratory Demonstration, Intel Engineering Summer Scholars (IESS) program, 2013.** IESS is a bridge program for high achieving underrepresented minority freshman in Engineering. A group of 30 students spend 45 minutes in the hydraulics teaching laboratory (recirculation flume) learning about the dangers of submerged hydraulic jumps (downstream of dams) for kayakers and boaters in rivers.
3. **Reviewer of Technical Reports, Engineers Without Borders (EWB), Oregon State University Chapter, 2011-present.** I reviewed various technical reports and designs for two international water-related projects.
4. **Hosted Advocates for Women in Science, Engineering, and Math (AWSEM), 2012:** A group of 25 female high school students, and a group of 25 female middle school students each spend 30 minutes in the hydraulics teaching laboratory (recirculation flume) learning about the dangers of submerged hydraulic jumps (downstream of dams) for kayakers and boaters in rivers.
5. **Designer, Engineers Without Borders, University of Illinois at Urbana-Champaign Chapter (2005-2006).** Helped in the design of water infrastructure for the Enugu State Project (Water development in Nigeria).

SERVICE TO MEDIA AND NEWS OUTLETS (SELECTED)

1. (May 25, 2020). Dr. Leon was interviewed by the [Voz de America](#) on winning the first place in the 2019 [EPA Campus RainWorks Challenge.](#) The note can be seen [here](#).
2. (March 26, 2020). Dr. Leon was interviewed by the Sun Sentinel on why sewer line breaks have stopped during Corona Virus in Fort Lauderdale, Florida. See more at [this link](#).
3. (January 30, 2018) Dr. Leon was interviewed on solutions for Houston's flooding problems. See more at https://www.houstoniamag.com/articles/2018/1/30/houston-flooding-problems-solution , or https://rare.us/local/houston/a-u-of-h-professor-says-he-knows-the-solution-to-houstons-flood-troubles-but-its-nothing-new/
4. (October 25, 2017) Dr. Leon was interviewed on the releases of the Barker and Addicks reservoirs. See more at https://communityimpact.com/houston/katy/development-construction/2017/10/25/barker-addicks-releases-still-frustrating-residents-but-officials-say-flooding-was-inevitable/
5. (October 3, 2017) Dr. Leon was interviewed by HoustonPress on the controlled release of the Addicks and Barker Dams by the U.S. Army Corps of Engineers. See more at http://www.houstonpress.com/news/how-houston-is-recovering-from-hurricane-harvey-one-month-later-9842561
6. (September 21 and 22, 2017) Dr. Leon was interviewed on the replacement of Addicks and Barker Dams in Houston. See more at http://www.houstonpress.com/news/sheila-jackson-lee-calls-for-addicks-and-barker-to-be-redone-post-harvey-9813174 and http://www.houstonpublicmedia.org/articles/news/politics/2017/09/20/238162/jackson-lee-replace-addicks-and-barker-dams/

7. (August 31 2017) Dr. Leon was interviewed by over ten national and international magazines and radio and TV networks with regard to the Hurricane Harvey flooding in Houston. Some of the articles can be seen at https://www.scientificamerican.com/article/hurricane-harvey-houston-has-no-quick-way-to-get-rid-of-floodwater1/, http://plus.lapresse.ca/screens/054d6c99-e395-4274-ba07-950c42e7a4f1%7C_0.html, https://iowaenvironmentalfocus.org/2017/09/, https://www.carbonbrief.org/daily-brief/harvey-makes-another-landfall-port-arthur-now-underwater, https://www.egr.uh.edu/news/201709/uh-civil-engineer-provides-science-behind-hurricane-harvey-floods-national-media

8. (September 2016) Arturo discusses the world's largest indoor waterfall with WIRED Magazine (September 2016 issue). The waterfall, called the Rain Vortex, is scheduled to open inside of Singapore's Changi Airport in 2018. See more at https://www.wired.com/2016/09/fit-worlds-biggest-indoor-waterfall-airport/

9. (Nov 2014) Arturo was interviewed by The American Society of Mechanical Engineers (ASME) about top jobs in Hydraulic Engineering, November, 2014. https://www.asme.org/engineering-topics/articles/workforce-development/4-leading-job-areas-hydraulics