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Education

Ph.D. 2002 University of California, Los Angeles, California, USA
M.Sc. 1995 National Taiwan University, Taipei, Taiwan
B. Sc. 1993 National Chung Hsing University, Taichung, Taiwan

Professional Experience

2019-present Fellow, Coastal Studies Institute, Louisiana State University, Baton Rouge, Louisiana, USA
2015-present Adjunct Professor, Center for Computation and Technology (CCT), Louisiana State University, Baton Rouge, Louisiana, USA
2015-present Professor, Department of Civil & Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana, USA. Chevron Professorship of Engineering (2016-present)
2015-present Director, Louisiana Water Resources Research Institute (LWRRRI), Louisiana State University, Baton Rouge, Louisiana, USA
2018 Travel Grant from Ministry of Science and Technology, Taiwan, ROC for visiting National Taiwan University and National Chung Hsing University, Taiwan.
2009-2015 Associate Professor, Department of Civil & Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana, USA
2010 Visiting Scholar (Sabbatical Leave), National Taiwan University, Taiwan
2003-2009 Assistant Professor, Department of Civil & Environmental Engineering, Louisiana State University, Baton Rouge, Louisiana, USA
2002-2003 Postdoctoral Fellow, Department of Civil & Environmental Engineering University of California, Los Angeles, California, USA
1998-2002 Graduate Student Researcher, Department of Civil & Environmental Engineering University of California, Los Angeles, California, USA
1997-1998 Research Assistant, Hydraulic Research Laboratory, National Taiwan University, Taipei, Taiwan
1993-1995 Research Assistant, Department of Civil Engineering, National Taiwan University, Taipei, Taiwan

Associate Editor, NGWA, Groundwater, 2018-present

Editorial Board, Advances in Water Resources, 2015-present

Associate Editor, ASCE Journal of Hydrologic Engineering, 2008-2018

Associate Editor, ASCE Journal of Water Resources Planning and Management, 2008-2015

Major Areas of Research Interest

Groundwater hydrology and hydraulics, Coastal subsurface flow and hydrogeology, water resources system and management, geological architecture modeling, density-driven flow and transport modeling in porous

media, inverse problems and experimental designs, uncertainty analysis, computational method, optimization, high performance computing

Published Book Chapters/Monographs

1. Nadiri, A.A., R. Khatibi, and F. T.-C. (2019), "Chapter 19: Prediction of Spatial Fluoride Concentrations by a Hybrid Artificial Neural Network in Complex Aquifers", GIS and Geostatistical Techniques for Groundwater Science, edited by S. Venkatramanan, P. M. Viswanathan, and S. Y. Chung, Elsevier.
2. Pham, H. V., and F. T.-C. Tsai (2016), Chapter 48: Groundwater Modeling, Handbook of Applied Hydrology 2nd edition, edited by V.P. Singh. McGraw Hill Education.
3. ASCE/EWRI KSTAT Standards Committee (2010), Standard Guideline for the Geostatistical Estimation and Block-Averaging of Homogeneous and Isotropic Saturated Hydraulic Conductivity, ASCE/EWRI Standard 54-10, 19p. ISBN: 9780784473320.
4. ASCE/EWRI KSTAT Standards Committee (2008), Standard Guideline for Fitting Saturated Hydraulic Conductivity Using Probability Density Functions, ASCE/EWRI Standard 50-08 and 51-08, 28p. ISBN: 9780784472484
5. Tsai[†], F. T.-C. and W. W-G. Yeh. (2011). Chapter 7: Model Calibration and Parameter Structure Identification in Characterization of Ground Water Systems, in Groundwater Quantity and Quality Management, M.M. Aral and S.W. Taylor ed., American Society of Civil Engineers. doi: 10.1061/9780784411766
6. Tsai[†], F. T.-C. and X. Li. (2008). Chapter 18: Conditional Estimation of Distributed Hydraulic Conductivity in Groundwater Inverse Modeling: Indicator-Generalized Parameterization and Natural Neighbors, in *Practical Hydroinformatics: Computational Intelligence and Technological Developments in Water Applications*, Water Science and Technology Library, Vol. 68, p245-257, (RJ Abraham, LM See, and DP Solomatine ed.), Springer. ISBN: 978-3-540-79881-1

Published/Accepted Articles in Refereed Journals

1. Yin, J., H. V. Pham, F. T.-C. Tsai. (2019). Bayesian set pair analysis and machine learning based ensemble surrogates for optimal multi-aquifer system remediation design. *Journal of Water Resources Planning and Management*
2. Tubbs, K.R., Hai V. Pham and F. T.-C. Tsai. (2019). MRT-lattice Boltzmann model for multilayer shallow water flow, *Water*, 11(8), 1623; <https://doi.org/10.3390/w11081623>
3. Termeh, Seyed Vahid; Khosravi, Khabat; Sartaj, Majid; Keesstra, Saskia; Tsai, Frank; Dijkstra, Roel; Pham, Binh Thai. (2019). Optimization of Adaptive Neuro-Fuzzy Inference System for Groundwater Potential Mapping, *Hydrogeology Journal*. <https://doi.org/10.1007/s10040-019-02017-9>
4. Jina Yin and Frank T.-C. Tsai. (2019). Freshwater-saltwater interface approximation in a two-horizontal-well scavenging system. *ASCE Journal of Hydrologic Engineering*, 24(10): 06019008. [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001836](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001836)
5. An Li, Navid H. Jafari, and Frank T.-C. Tsai. (2019). Modeling of 3-D Soil Stratigraphy Using Subsurface Borings and Cone Penetrometer Tests in Coastal Louisiana, USA. *Georisk: Assessment and Management of Risk for Engineered Systems and Geohazards*. <https://doi.org/10.1080/17499518.2019.1637528>
6. An Li, Frank T.-C. Tsai, Kehui Xu, Jiase Wang, Crawford M. White, Samuel J. Bentley Sr., and Qin J. Chen. (2019). Modeling Sediment Texture of River-Deltaic Wetlands in the Lower Barataria Bay and Lower Breton Sound, Louisiana, USA. *Geo-Marine Letter*, 39(2), 161–173. <https://doi.org/10.1007/s00367-019-00566-2>
7. Beigi, E., F. T.-C. Tsai, V. P. Singh, and S.-C. Kao. (2019). Bayesian Hierarchical Model Uncertainty Quantification for Future Hydroclimate Projections in Southern Hills-Gulf Region, USA. *Water*, 11(2), 268. <https://doi.org/10.3390/w11020268>

8. Khabat Khosravi, Vijay P. Singh, Frank T.-C. Tsai, Nerantzis Kazakis, Assefa M. Melesse, Indra Prakash, and Binh Thai Pham. (2018), A Comparison Study of DRASTIC Methods with Various Objective Methods for Groundwater Vulnerability Assessment, *Science of the Total Environment*, 642, 1032-1049. <https://doi.org/10.1016/j.scitotenv.2018.06.130>
9. Jina Yin and Frank T.-C. Tsai. (2018). Saltwater scavenging optimization under surrogate uncertainty for a multi-aquifer system. *Journal of Hydrology*, 565, 698-710. <https://doi.org/10.1016/j.jhydrol.2018.08.021>
10. Nadiri, A. A., S. Shokri, F. T.-C. Tsai, A. Asghari Moghaddam (2018), Prediction of effluent quality parameters of a wastewater treatment plant using a supervised committee fuzzy logic model, *Journal of Cleaner Production*, 180, 539-549. <https://doi.org/10.1016/j.jclepro.2018.01.139>
11. Pham, H.V., and F. T.-C. Tsai (2017), Modeling complex aquifer systems: a case study in Baton Rouge, Louisiana (USA). *Hydrogeology Journal* 25(3), 601-615. <https://doi.org/10.1007/s10040-016-1532-6>
12. Mani, A., and F. T.-C. Tsai (2017), Ensemble averaging methods for quantifying uncertainty sources in modeling climate change impact on runoff projection. *Journal of Hydrologic Engineering* 22(4). [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001487](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001487)
13. Fijani, E., A. A. Moghaddam, F. T.-C. Tsai, and G. Tayfur. (2016). Analysis and Assessment of Hydrochemical Characteristics of Maragheh-Bonab Plain Aquifer, Northwest of Iran. *Water Resources Management*. <https://doi.org/10.1007/s11269-016-1390-y>
14. Mani, A., F. T.-C. Tsai, S.-C. Kao, B. S. Naz, M. Ashfaq, and D. Rastogi. (2016). Conjunctive management of surface and groundwater resources under projected future climate change scenarios. *Journal of Hydrology*, 540, 397-411. <https://doi.org/10.1016/j.jhydrol.2016.06.021>
15. Mani, A., F. T.-C. Tsai, and K. Paudel. (2016). Mixed integer linear fractional programming for conjunctive use of surface water and groundwater, *Journal of Water Resources Planning and Management*, 142 (11). [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000676](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000676)
16. Pham, H.V., and F. T.-C. Tsai. (2016). Optimal Observation Network Design for Conceptual Model Discrimination and Uncertainty Reduction. *Water Resources Research*, 52(2), 1245-1264, <https://doi.org/10.1002/2015WR017474>.
17. Chitsazan, N., H.V. Pham, F.T.-C. Tsai. (2015). Bayesian Chance-Constrained Hydraulic Barrier Design under Geological Structure Uncertainty. *Groundwater* 53(6), 908-919. <https://doi.org/10.1111/gwat.12304>
18. Elshall, A.S., H.V. Pham, F.T.-C. Tsai, L. Yan, and M. Ye. (2015). Parallel Inverse Modeling and Uncertainty Quantification for Computationally Demanding Groundwater Flow Models Using Covariance Matrix Adaptation, *Journal of Hydrologic Engineering*, 20(8). [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0001126](https://doi.org/10.1061/(ASCE)HE.1943-5584.0001126)
19. Jamshidzadeh, Z, F. T.-C. Tsai, H. Ghasemzadeh, S. A. Mirbagheri, M. T. Barzi, and J. S. Hanor. (2015). Dispersive thermohaline convection near salt domes: a case at Napoleonville Dome, southeast Louisiana, USA. *Hydrogeology Journal* 23, 983-998. <https://doi.org/10.1007/s10040-015-1251-4> (**Editors' Choice article for 2015**)
20. Chitsazan, N., A.A. Nadiri, and F. T.-C. Tsai. (2015). Prediction and Structural Uncertainty Analyses of Artificial Neural Networks Using Hierarchical Bayesian Model Averaging, *Journal of Hydrology* 528, 52-62. <https://doi.org/10.1016/j.jhydrol.2015.06.007>
21. Pham, H.V., and F. T.-C. Tsai. (2015). Bayesian Experimental Design for Identification of Model Propositions and Conceptual Model Uncertainty Reduction, *Advances in Water Resources* 83, 148-159. <https://doi.org/10.1016/j.advwatres.2015.05.024>
22. Shen, J., J. Lorenzo, J., C. White, and F. T.-C Tsai. (2015). Soil density, elasticity and the soil water characteristic curve inverted from field-based seismic P- and S-wave velocity in shallow (< 25 m depth) near-saturated (> 99%) layered soils. *Geophysics*, 80(3), WB11-WB19. <https://doi.org/10.1190/geo2014-0119.1>

23. Beigi, E., and F. T.-C. Tsai. (2015). Comparative study of climate-change scenarios on groundwater recharge, southwestern Mississippi and southeastern Louisiana, USA. *Hydrogeology Journal* 23(4), 789-806. <https://doi.org/10.1007/s10040-014-1228-8>
24. Chitsazan, N. and F. T.-C. Tsai. (2015). Uncertainty segregation and comparative evaluation in groundwater remediation designs: A chance-constrained hierarchical Bayesian model averaging approach, *Journal of Water Resources Planning and Management* 141(3), 04014061. [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000461](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000461)
25. Chitsazan, N. and F. T.-C. Tsai. (2015). A Hierarchical Bayesian Model Averaging Framework for Groundwater Prediction under Uncertainty, *Groundwater* 53(2), 305-316. <https://doi.org/10.1111/gwat.12207>
26. Beigi, E., and F. T.-C. Tsai. (2014). A GIS-Based Water Budget Framework for High-Resolution Groundwater Recharge in Humid Regions. *Journal of Hydrologic Engineering*, 19(8), 05014004, [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0000993](https://doi.org/10.1061/(ASCE)HE.1943-5584.0000993)
27. Elshall, A.S., and F. T.-C. Tsai. (2014). Constructive Epistemic Modeling of Groundwater Flow with Geological Architecture and Boundary Condition Uncertainty under Bayesian Paradigm, *Journal of Hydrology*, 517, 105-119. <https://doi.org/10.1016/j.jhydrol.2014.05.027>
28. Nadiri, A.A., N. Chitsazan, F. T.-C. Tsai, and A. Asghari Moghaddam. (2014). Bayesian Artificial Intelligence Model Averaging for Hydraulic Conductivity Estimation. *Journal of Hydrologic Engineering*, 19(3), 520-532. [https://doi.org/10.1061/\(ASCE\)HE.1943-5584.0000824](https://doi.org/10.1061/(ASCE)HE.1943-5584.0000824)
29. Fijani, E., A. A. Nadiri, A. Asghari Moghaddam, F. T.-C. Tsai, and B. Dixon. (2013). Optimization of DRASTIC Method by Supervised Committee Machine Artificial Intelligence to Assess Groundwater Vulnerability for Maragheh-Bonab Plain Aquifer, Iran. *Journal of Hydrology*, 503, 89-100. <https://doi.org/10.1016/j.jhydrol.2013.08.038>
30. Elshall, A.S., F. T.-C. Tsai, and J.S. Hanor. (2013). Indicator Geostatistics for Reconstructing Baton Rouge Aquifer-Fault Hydrostratigraphy, Louisiana, USA. *Hydrogeology Journal*, 21(8), 1731-1747. <https://doi.org/10.1007/s10040-013-1037-5>
31. Tsai, F. T.-C., and A. S. Elshall. (2013). Hierarchical Bayesian model averaging for hydrostratigraphic modeling: Uncertainty segregation and comparative evaluation. *Water Resources Research*, 49, 5520-5536. <https://doi.org/10.1002/wrcr.20428>
32. Jamshidzadeh, Z., F. T.-C. Tsai, S. A. Mirbagheri, and H. Ghasemzadeh. (2013). Fluid Dispersion Effects on Density-Driven Thermohaline Flow and Transport in Porous Media, *Advanced in Water Resources*, 61, 12-28. <https://doi.org/10.1016/j.advwatres.2013.08.006>
33. Nadiri, A.A., E. Fijani, F. T.-C. Tsai, and A. Asghari Moghaddam. (2013). Supervised Committee Machine with Artificial Intelligence for Prediction of Fluoride Concentration, *Journal of Hydroinformatics*, 15(4), 1474-1490. <https://doi.org/10.2166/hydro.2013.008>
34. Nadiri, A.A., A. Asghari Moghaddam, F. T.-C. Tsai, and E. Fijani. (2013). Hydrogeochemical Analysis for Tasuj Plain Aquifer, Iran, *Journal of Earth System Science*, 122(4), 1091-1105. <https://doi.org/10.1007/s12040-013-0329-4>
35. Tubbs, K. R., and F. T.-C. Tsai. (2011). GPU Accelerated Lattice Boltzmann Model for Shallow Water Flow and Mass Transport, *International Journal for Numerical Methods in Engineering*, 86(3), 316-334. <https://doi.org/10.1002/nme.3066>
36. Tsai, F. T.-C. (2010). Bayesian Model Averaging Assessment on Groundwater Management under Model Structure Uncertainty, *Stochastic Environmental Research and Risk Assessment*. 24(6), 845-861. <https://doi.org/10.1007/s00477-010-0382-3>
37. Tsai, F. T.-C. and X. Li. (2010). Reply to Comment on "Inverse Groundwater Modeling for Hydraulic Conductivity Estimation Using Bayesian Model Averaging and Variance Window" by Ye, M., D. Liu, S.P. Neuman, and P.D. Meyer, *Water Resources Research* 46, W02802. <https://doi.org/10.1029/2009WR008591>.

38. Servan-Camas, B., and F. T.-C. Tsai. (2010). Two-Relaxation-Time Lattice Boltzmann Method for Anisotropic Dispersive Henry Problem. *Water Resources Research* 45, W02515. <https://doi.org/10.1029/2009WR007837>.
39. Cao, H., F. T.-C. Tsai, and K. A. Rusch. (2010). Salinity and Soluble Organic Matter on Virus Sorption in Sand and Soil Columns. *Ground Water*, 48(1), 42-52. <https://doi.org/10.1111/j.1745-6584.2009.00645.x>
40. Cao, H., F. T.-C. Tsai, and K. A. Rusch. (2009). Fecal Bacteria Removal and Background Recovery within the Marshland Upwelling System. *Environmental Engineering Science*, 26(11), 1633-1641. <https://doi.org/10.1089/ees.2009.0102>.
41. Tubbs, K. R., and F. T.-C. Tsai. (2009). Multilayer Shallow Water Flow using Lattice Boltzmann Model with High Performance Computing. *Advances in Water Resources*, 32(11), 1767-1776. <https://doi.org/10.1016/j.advwatres.2009.09.008>
42. Cao, H., F. T.-C. Tsai, and K. A. Rusch. (2009). Impact of Salinity on MS-2 Sorption in Saturated Sand Columns - Fate and Transport Modeling. *ASCE Journal of Environmental Engineering*, 135(10), 1041-1050. [https://doi.org/10.1061/\(ASCE\)0733-9372\(2009\)135:10\(1041\)](https://doi.org/10.1061/(ASCE)0733-9372(2009)135:10(1041))
43. Li, X., and F. T.-C. Tsai (2009). Bayesian Model Averaging for Groundwater Head Prediction and Uncertainty Analysis Using Multimodel and Multimethod. *Water Resources Research*, 45, W09403. <https://doi.org/10.1029/2008WR007488>.
44. Servan-Camas, B, and F. T.-C. Tsai. (2009). Saltwater Intrusion Modeling in Heterogeneous Confined Aquifers using Two-Relaxation-Time Lattice Boltzmann Method, *Advances in Water Resources*, 32(4), 620-631. <https://doi.org/10.1016/j.advwatres.2009.02.001>
45. Tsai, F. T.-C., V. Kartiyar, D. Toy, and R.A. Goff. (2009). Conjunctive Management of Large-Scale Pressurized Water Distribution and Groundwater System in Semi-Arid Area Using Parallel Genetic Algorithm, *Water Resources Management*, 23(8), 1497-1517. <https://doi.org/10.1007/s11269-008-9338-5>
46. Tsai, F. T.-C. (2009). Indicator Generalized Parameterization for Interpolation Point Selection in Groundwater Inverse Modeling, *ASCE Journal of Hydrologic Engineering*, 14(3), 233-242. [https://doi.org/10.1061/\(ASCE\)1084-0699\(2009\)14:3\(233\)](https://doi.org/10.1061/(ASCE)1084-0699(2009)14:3(233))
47. Servan-Camas, B., and F. T.-C. Tsai. (2009). Non-negativity and Stability Analyses of Lattice Boltzmann Method for Advection-Diffusion Equation, *Journal of Computational Physics*, 228(1), 236-256. <https://doi.org/10.1016/j.jcp.2008.09.005>
48. Tsai, F. T.-C. and X. Li. (2008). Inverse Groundwater Modeling for Hydraulic Conductivity Estimation Using Bayesian Model Averaging and Variance Window, *Water Resources Research*, 44(9), W09434. <https://doi.org/10.1029/2007WR006576>.
49. Tsai, F. T.-C. and X. Li*. (2008). Multiple Parameterization for Hydraulic Conductivity Identification, *Ground Water*, 46(6), 851-864. <https://doi.org/10.1111/j.1745-6584.2008.00478.x>
50. Rahman, A., F. T.-C. Tsai, C. White, and C.S. Willson. (2008). Coupled Semivariogram Uncertainty of Hydrogeological and Geophysical Data on Capture Zone Uncertainty Analysis, *ASCE Journal of Hydrologic Engineering*, 13(10), 915-925. [https://doi.org/10.1061/\(ASCE\)1084-0699\(2008\)13:10\(915\)](https://doi.org/10.1061/(ASCE)1084-0699(2008)13:10(915))
51. Servan-Camas, B. and F. T.-C. Tsai. (2008). Lattice Boltzmann Method with Two Relaxation Times for Advection-Diffusion Equations: Third-Order Analysis and Stability Analysis, *Advances in Water Resources*, 31(8), 1113-1126. <https://doi.org/10.1016/j.advwatres.2008.05.001>
52. Rahman, A., F. T.-C. Tsai, C. White, D. Carlson, C.S. Willson. (2008). Geophysical Data Integration and Stochastic Simulation on Significance Analysis of Groundwater Responses Using ANOVA. *Hydrogeology Journal*, 16(4), 749-764. <https://doi.org/10.1007/s10040-007-0258-x>
53. Tan, C-C., C-P. Tung, and F. T.-C. Tsai. (2008). Applying Tabu Search and Zonation Methods to Identify Parameter Structure in Groundwater Modeling, *Journal of the American Water Resources Association*, 44(1), 107-120. <https://doi.org/10.1111/j.1752-1688.2007.00141.x>

54. Tu, M-Y., N-S. Hsu, F. T.-C. Tsai, and W. W-G. Yeh. (2008). Optimization of Hedging Rules for Reservoir Operations, *ASCE Journal of Water Resources Planning and Management*, 134(1), 3-13. [https://doi.org/10.1061/\(ASCE\)0733-9496\(2008\)134:1\(3\)](https://doi.org/10.1061/(ASCE)0733-9496(2008)134:1(3))
55. Bray, B., F. T.-C. Tsai, Y. Sim, and W. W-G. Yeh. (2007) Model Development and Calibration of a Saltwater Intrusion Model in Southern California, *Journal of the American Water Resources Association*, 43(5), 1329-1343. <https://doi.org/10.1111/j.1752-1688.2007.00098.x>
56. Tsai, F. T.-C. (2006). Enhancing Random Heterogeneity Representation by Mixing the Kriging Method with the Zonation Structure, *Water Resources Research*, 42, W08428, <https://doi.org/10.1029/2005WR004111>.
57. Tu, M-Y., F. T.-C. Tsai, and W. W-G. Yeh. (2005). Optimization of Water Distribution and Water Quality by Hybrid Genetic Algorithm, *ASCE Journal of Water Resources Planning and Management*, 131(6), 431-440. [https://doi.org/10.1061/\(ASCE\)0733-9496\(2005\)131:6\(431\)](https://doi.org/10.1061/(ASCE)0733-9496(2005)131:6(431))
58. Tsai, F. T.-C., N-Z. Sun, and W. W-G. Yeh. (2005). Geophysical Parameterization and Parameter Structure Identification Using Natural Neighbors in Groundwater Inverse Problems. *Journal of Hydrology*, 308(1-4), 269-283. <https://doi.org/10.1016/j.jhydrol.2004.11.004>
59. Tsai, F. T.-C., and W. W-G. Yeh. (2004) Characterization and Identification of Aquifer Heterogeneity with Generalized Parameterization and Bayesian Estimation, *Water Resources Research*, 40, W10102. <https://doi.org/10.1029/2003WR002893>.
60. Tsai, F. T.-C., N-Z. Sun, and W. W-G. Yeh. (2003). Global-Local Optimization Methods for the Identification of Three-Dimensional Parameter Structure in Groundwater Modeling, *Water Resources Research*, 39(2), 1043. <https://doi.org/10.1029/2001WR001135>.
61. Tsai, F. T.-C., N-Z. Sun, and W. W-G. Yeh. (2003). A Combinatorial Optimization Scheme for Parameter Structure Identification in Ground-Water Modeling, *Ground Water*, 41(2), 156-169. <https://doi.org/10.1111/j.1745-6584.2003.tb02579.x>
62. Barros, M. T. L., F. T.-C. Tsai, S. Yang, J. E. G. Lopes, and W. W-G. Yeh. (2003). Optimization of Large-Scale Hydropower System Operations, *ASCE Journal of Water Resources Planning and Management*, 129(3), 178-188. [https://doi.org/10.1061/\(ASCE\)0733-9496\(2003\)129:3\(178\)](https://doi.org/10.1061/(ASCE)0733-9496(2003)129:3(178))

Manuscripts Under Review

63. Li, A., and F. T.-C. Tsai, Understanding dynamics of groundwater flows in the Mississippi River Delta.
64. Li, An, Frank T.-C. Tsai, Brendan T. Yuill, and Chenliang Wu, Characterizing Stratigraphy of Mississippi River Delta and Implications to Subsidence and Erosion
65. Ye-Hong Chen, Frank T.-C. Tsai, Jack Cadigan, Navid H. Jafari, and Tzenge-Huey Shih, Relief well design and evaluation: three-dimensional modeling and blanket theory.
66. Jina Yin, and Frank T.-C. Tsai. Multi-objective Spatial Pumping Optimization for Groundwater Management in a Multi-Aquifer System.

Manuscripts Under preparation

67. Yin, J., Karakullucu, R., F. T.-C. Tsai, K. Paudel, and S.-C. Kao, Complex alluvial aquifer modeling for Mississippi Alluvial Plain, Northeast Louisiana
68. Pham, H.V., and F. T.-C. Tsai, A Robust Experimental Design for Conceptual Model Discrimination based on Information Theory.
69. Yang, S. and F. T.-C. Tsai, Groundwater Flooding and Levee Underseepage of New Orleans
70. Tsai, F.T.-C., and W. W.-G. Yeh. A Proposed Mixed Zonation and Interpolation Scheme for Hydraulic Conductivity Estimation.

Refereed Conference Proceedings

1. Tsai, F.T.-C., Ye-Hong Chen, Jack Cadigan, Navid Jafari, and Ignacio Harrouch, Model Development for Evaluating Relief Wells Along Inner Harbor Navigation Canal (IHNC), New Orleans, Louisiana, 2019 World Environmental & Water Resources Congress, Pittsburgh, Pennsylvania | May 19-23, 2019
2. Yin, J., and F. T.-C. Tsai, Saltwater scavenging optimization for the Baton Rouge aquifer system, American Water Works Association, Southwest Section (AWWASW) 2018 Annual Conference & Exposition, Baton Rouge, October 28-30, 2018 (**1st prize for student award**)
3. Tsai, Frank T.-C. Tsai, Hamid Vahdat-Aboueshagh, Dependra Bhatta, and Krishna P. Paudel, Complex Groundwater Model Development for the Chicot Aquifer System in Southwest Louisiana, World Environmental & Water Resources Congress 2018, Minneapolis, Minnesota, June 3-7, 2018
4. Pham, H.V., F. T.-C. Tsai, and K. Pohlmann. 2017, Grid generation and model calibration for complex fluvial aquifer system including geological faults, MODFLOW and More 2017, Golden, Colorado, May 21-24, 2017. (**One figure was selected as the front page of the proceedings**).
5. Tsai, F. T.-C., H.V. Pham and J. Yin. 2017, Construction of Groundwater Systems with Very Large Well Log Dataset, World Environmental & Water Resources Congress 2017, Sacramento, CA, May 21-25, 2017
6. Tsai, F. T.-C., and A. Mani. 2017, Quantifying Uncertainty Sources in Modeling Climate Change Impact on Runoffs, World Environmental & Water Resources Congress 2017, Sacramento, CA, May 21-25, 2017
7. Krishna Paudel, Doleswar Bhandari, Matt Fannin and Frank Tsai. (2016). Economic impacts of salt water intrusion in Mississippi River Valley Alluvial Aquifer and Possible Remedy. Selected paper presented at the CNREP 2016 Challenges of Natural Resource Economics and Policy. 5th National Forum of Socioeconomic Research in Coastal Systems. March 20-22, New Orleans, Louisiana.
8. Krishna Paudel, Frank Tsai, Doleswar Bhandari, and Matt Fannin. (2016). Assessing the economic impacts of salt water intrusion in an aquifer: a case of Mississippi River Valley Alluvial Aquifer, Louisiana. Southern Agricultural Economics Association 48th Annual Meeting Program, February 6-9, 2016, San Antonio, Texas
9. Tsai, F. T.-C., and E. Beigi, Bayesian Model Averaging for Uncertainty Analysis on Hydrologic Projections under Future Climate Change, World Environmental & Water Resources Congress 2016, West Palm Beach, FL, May 22-26, 2016
10. Tsai, F. T.-C., and H.V. Pham, Chance-constrained hydraulic barrier design to protect pumping wells from saltwater intrusion, 2015 World Environmental & Water Resources Congress, Austin, Texas, May 17-21, 2015
11. Beigi*, E, and F. T.-C. Tsai, A GIS-based water budget framework for parallel computing high-resolution groundwater recharge in humid regions, 2014 World Environmental & Water Resources Congress, Portland, Oregon, June 1-5, 2014
12. Tsai F. T.-C., A. Mani*, H.V. Pham*, E. Beigi*, A.S. Elshall*, and N. Chitsazan*, Characterization of Siliciclastic Aquifer-Fault System for Southeastern Louisiana, 2013 World Environmental & Water Resources Congress, Cincinnati, Ohio, May 19-23, 2013
13. Anderson*, C. E., J. S. Hanor, and F. T.-C. Tsai, 2013, Sources of salinization of the Baton Rouge aquifer system, southeastern Louisiana: Gulf Coast Association of Geological Societies Transactions, v. 63, p. 3-12.
14. Elshall*, A. S., F. T.-C. Tsai, and J. S. Hanor, Indicator geostatistical approach to reconstruct geological architecture of the Baton Rouge aquifer-fault system, Louisiana. Gulf Coast Association of Geological Societies Transactions. v. 63, p. 539-542, 2013
15. Chamberlain*, E. L., J. S. Hanor, and F. T.-C. Tsai, 2013, Sequence stratigraphic characterization of the Baton Rouge aquifer system, southeastern Louisiana: Gulf Coast Association of Geological Societies Transactions, v. 63, p. 125-136, 2013
16. Chitsazan*, N., H. V. Pham*, F. T.-C. Tsai, and J. S. Hanor, 2013, Salinization simulation for the "1200–1500–1700-foot" sands of the Baton Rouge area, southeastern Louisiana: Gulf Coast Association of Geological Societies Transactions, v. 63, p. 519-522, 2013

17. Pham*, H. V., A. S. Elshall*, F. T.-C. Tsai, L. Yan, Parallel Inverse Groundwater Modeling Using CMA-ES, 2013 World Environmental & Water Resources Congress, Cincinnati, Ohio, May 19-23, 2013
18. Tsai F. T.-C., and A. S. Elshall*, A Bayesian Model Averaging Method to Characterize the Baton Rouge Aquifer System, 2012 World Environmental & Water Resources Congress, Albuquerque, NM, May 20-24, 2012
19. Tsai, F. T.-C., and A.S. Elshall*. (2011). A Hierarchical Bayesian Model Averaging Approach to Cope With Sources of Uncertainty in Conceptual Ground Water Models, World Water & Environmental Resources Congress, Palm Springs, CA, May 22-26, 2011.
20. Tsai, F. T.-C. (2011). Development of Scavenger Well Operation Model To Stop Saltwater Intrusion Toward Water Wells In The "1,500-Foot" Sand of The Baton Rouge Area, Louisiana, World Water & Environmental Resources Congress, Palm Springs, CA, May 22-26, 2011.
21. Tsai, F. T.-C. (2011). Scavenger Wells Stop Saltwater Intrusion in Baton Rouge, Louisiana, MODFLOW and More 2011, Golden, CO, June 5-8, 2011
22. Tsai, F. T.-C. (2010). A Co-Generalized Parameterization Method for Hydraulic Conductivity Estimation, World Water & Environmental Resources Congress, Providence, Rhode Island, May 16-20, 2010.
23. Tsai, F. T.-C. (2010). Multimodel Approach for Groundwater Model Calibration, Prediction, and Application, World Water & Environmental Resources Congress, Providence, Rhode Island, May 16-20, 2010. (invited)
24. Tubbs*, K. R., and F. T.-C. Tsai. (2009). A GPU Accelerated Lattice Boltzmann Model for Shallow Water Flow and Mass Transport, Sixth International Conference for Mesoscopic Methods in Engineering and Science (ICMMES), Guangzhou City, Guangdong Province, China, July 13-17, 2009
25. Tsai, F. T.-C., A. Rahman, and X. Li*. (2009). Groundwater Management and Uncertainty Analysis Using Bayesian Model Averaging, World Water & Environmental Resources Congress, Kansas City, Missouri, May 17-21, 2009.
26. Tsai, F. T.-C., and M. Pillala*. (2009). Subsurface Characterization Using Electrical Resistivity Tomography, World Water & Environmental Resources Congress, Kansas City, Missouri, May 17-21, 2009.
27. Tubbs*, K. R., and F. T.-C. Tsai (2009). Simulation of Multilayer Shallow Water Fluid Flow using Lattice Boltzmann Modeling and High Performance Computing, World Water & Environmental Resources Congress, Kansas City, Missouri, May 17-21, 2009.
28. Tsai, F. T.-C. and X. Li*. (2008). Saltwater Intrusion and Hydraulic Conductivity Estimation in East Baton Rouge Parish, Louisiana, Proceedings of the 20th Salt Water Intrusion Meeting (SWIM), 4 pp, Naples, Florida, June 23-27, 2008.
29. Li, X. *, F. T.-C. Tsai. (2008). Groundwater Head Prediction and Uncertainty propagation using Bayesian Multi-Model Multi-Method, Proceedings of MODFLOW and More: Ground Water and Public Policy, 5 pp, Golden, Colorado, May 18-21, 2008.
30. Li, X. *, F. T.-C. Tsai. (2008). Generalized Parameterization Method, Computer Demonstration and Poster in the conference of *MODFLOW and More: Ground Water and Public Policy*, Golden, Colorado, May 19, 2008.
31. Tsai, F. T.-C., H. Cao*, and K. A. Rusch. (2008). Viral Fate and Transport Modeling under Salinity Impact, Proceedings of the ASCE EWRI World Water & Environmental Resources Congress, 1 pp, Honolulu, Hawaii, May 12-16, 2008.
32. Tsai, F. T.-C., X. Li*. (2008). Maximum Weighted Log-likelihood Estimation for Parameterization Selection Uncertainty, Proceedings of the ASCE EWRI World Water & Environmental Resources Congress, 1 pp, Honolulu, Hawaii, May 12-16, 2008.
33. Servan-Camas*, B., K. Tubbs*, and F. T.-C. Tsai. (2007). Lattice Boltzmann Method in Saltwater Intrusion Modeling, Proceedings of the ASCE EWRI World Water & Environmental Resources Congress, 10 pp, Tampa, Florida, May 15-19, 2007.

34. Cao*, H., F. T.-C. Tsai, and K.A. Rusch. (2007). Model for Sorption and Transport of MS-2 in Saturated Sediments under Impacts of Salinity and Soluble Organic Matter, Proceedings of the ASCE EWRI World Water & Environmental Resources Congress, 10 pp, Tampa, Florida, May 15-19, 2007.
35. Li, X., Z. Lei, C. White, G. Allen, G. Qin, F. T.-C. Tsai. (2007). Grid-Enabled Ensemble Subsurface Modeling, Proceedings of The 19th IASTED International Conference on Parallel and Distributed Computing and Systems (PDCS 2007), 6 pp, Cambridge, Massachusetts, November 19-21, 2007.
36. Cao*, H., F. T.-C. Tsai, and K. A. Rusch. (2006). Impacts of Salinity and Soluble Organic Matter on Sorption and Transport of MS-2 in Saturated Sediments, Proceedings of the American Institute of Hydrology 25th Anniversary Meeting & International Conference: Challenges in Coastal Hydrology and Water Quality, p421-430, Baton Rouge, Louisiana, May 21-24, 2006.
37. Elrawady*, M. H., and F. T.-C. Tsai. (2006). Saltwater Intrusion Barrier Development and Management in Coastal Aquifer System., Proceedings of the American Institute of Hydrology 25th Anniversary Meeting & International Conference: Challenges in Coastal Hydrology and Water Quality, p411-419, Baton Rouge, LA, May 21-24, 2006.
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44. Tsai, F. T.-C., N-Z. Sun, and W. W-G. Yeh. (2001), A Combinatorial Optimization Scheme For Parameter Structure Identification In Ground-Water Modeling. Proceedings of MODFLOW 2001 and Other Modeling Odysseys Conference, Vol. 1, 123-129, Golden, Colorado, Sep. 11-14, 2001. (Best Student Paper Award.)
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46. Lai, J-S., G-F. Lin, and F. T.-C. Tsai. (1998). A Study on the Equilibrium Slope of a Check Dam, Proceedings of Watershed Management Conference, Hong Kong, 1998.
47. Liu, K-F., W-Y. Chang, and F. T.-C. Tsai. (1994). Flow Field Within a Pressured Thin Cylindrical Tube, Proceedings of the 7th Hydraulic Engineering Conference, Taiwan, July 1994.

Refereed Abstracts

1. Yin, J. and F. T.-C. Tsai. (2018). Saltwater scavenging optimization for the Baton Rouge aquifer system, American Water Works Association, Southwest Section 2018 Annual Conference & Exposition, Baton Rouge, Louisiana, Oct. 28-30, 2018
2. Chen, Y.-H., J. Cadigan, N. Jafari, F. T.-C. Tsai, T.-H. Shih, and T. E. West, Mississippi River Levee Underseepage Assessment, Abstract No. NS31C-0775, 2018 American Geophysical Union Meeting, Washington, D.C., 10-14 December, 2018
3. Li, A., and F.T.-C. Tsai, Integrated modeling of stratigraphy and groundwater flow for the Lower Mississippi River Delta Plain, Abstract No. EP23C-2350, 2018 American Geophysical Union Meeting, Washington, D.C., 10-14 December, 2018
4. Yin, J. and F. T.-C. Tsai, Bayesian Chance-constrained Saltwater Scavenging Design for Deep Aquifers under Surrogate Uncertainty, Abstract No. H21J-1783, 2018 American Geophysical Union Meeting, Washington, D.C., 10-14 December, 2018
5. Li, An, Frank T.-C. Tsai, Navid H. Jafari, Q. Jim Chen, Sam Bentley, A Geostatistical Toolset For Reconstructing Louisiana's Coastal Stratigraphy Using Subsurface Boring And Cone Penetrometer Test Data, Abstract No. H13H-1487, 2017 American Geophysical Union Meeting, New Orleans, Louisiana, 11-15 December, 2017
6. Yin, Jina and Frank T.-C. Tsai, Impact of Spatial Pumping Pattern on Groundwater Management, Abstract No. H51G-1355, 2017 American Geophysical Union Meeting, New Orleans, Louisiana, 11-15 December, 2017
7. Vahdat-Aboueshagh, Hamid, Frank T.-C. Tsai, Dependra Bhatta, and Krishna Paudel, Toward developing more realistic groundwater models using big data, Abstract No. H21A-1419, 2017 American Geophysical Union Meeting, New Orleans, Louisiana, 11-15 December, 2017
8. Karakullukcu, Ramazan E., Frank T.-C. Tsai, Dependra Bhatta, Krishna P. Paudel, Shih-Chieh Kao, Development of a Mississippi River Alluvial Aquifer Groundwater Model, Abstract No. H21A-1417, 2017 American Geophysical Union Meeting, New Orleans, Louisiana, 11-15 December, 2017
9. Tsai, F. T.-C. Tsai and H. V. Pham, Data-Driven Groundwater Model Development: A Case Study in Baton Rouge, Louisiana, 2016 AGU Fall Meeting San Francisco, CA, USA, 12-16 December 2016
10. Tsai, F. T.-C. Tsai, 2016, Groundwater Model Development for Saltwater Intrusion Study and Remediation Designs, The 2016 Southeast Symposium on Contemporary Engineering Topics (SSCET), Jackson, Mississippi, August 26, 2016
11. Pham, H.V. and F. T.-C. Tsai, High-resolution Groundwater Model Development using Supercomputer, Data Flow: Grand Challenges in Water Systems Modeling, Data Management, and Integration, May 9-10, 2016, Baton Rouge, Louisiana
12. Yin, J. and F. T.-C. Tsai, Saltwater Intrusion Mitigation Strategies for Baton Rouge Multi-Aquifer System, Southeast Louisiana, 2016 UCOWR/NIWR Conference, Pensacola, Florida, June 21-23, 2016.
13. Tsai, F. T.-C., Utilizing Big Geological Data for Groundwater Management, Data Flow: Grand Challenges in Water Systems Modeling, Data Management, and Integration, May 9-10, 2016, Baton Rouge, Louisiana
14. Tsai, F. T.-C., Conjunctive Management of Multi-Aquifer System for Saltwater Intrusion Mitigation, Oral Presentation, 2015 American Geophysical Union Fall Meeting, San Francisco, CA, 14-18 December 2015
15. Pham, H.V. and F. T.-C. Tsai, Robust Bayesian Experimental Design for Conceptual Model Discrimination, Poster Presentation, 2015 American Geophysical Union Fall Meeting, San Francisco, CA, 14-18 December 2015
16. Mani, A. and F. T.-C. Tsai, Conjunctive management of multireservoir network system and groundwater system, Poster Presentation, 2015 American Geophysical Union Fall Meeting, San Francisco, CA, 14-18 December 2015

17. Beigi, E. and F. T.-C. Tsai, Hierarchical BMA Analysis of Hydrologic Projections under Climate Modeling and Scenario Uncertainties, Poster Presentation, 2014 American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December 2014
18. Chitsazan, N., H.V. Pham, and F. T.-C. Tsai, A Bayesian Chance-Constrained Method for Hydraulic Barrier Design Under Model Structure Uncertainty, Poster Presentation, 2014 American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December 2014
19. Pham, H.V., and F. T.-C. Tsai, Optimal Observation Network Design for Model Discrimination using Information Theory and Bayesian Model Averaging, Oral Presentation, 2014 American Geophysical Union Fall Meeting, San Francisco, CA, 15-19 December 2014
20. Tsai, F. T.-C., and H. V. Pham*, Monitoring Network Design for Discriminating and Reducing Models in Bayesian Model Averaging Paradigm, H21H-1156, Abstract, 2013 American Geophysical Union Fall Meeting, San Francisco, CA, 9-13 December 2013
21. Pham*, H. V., and F. T.-C. Tsai, Conversion of Highly Complex Faulted Hydrostratigraphic Architecture into MODFLOW Grids, H51G-1276, Abstract, 2013 American Geophysical Union Fall Meeting, San Francisco, CA, 9-13 December 2013
22. Beigi*, E., and F. T.-C. Tsai, Climate Impact on Groundwater Recharge in Southeastern Louisiana and Southwestern Mississippi, H13B-1317 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
23. Chamberlain*, E. L., J. S. Hanor, and F. T.-C. Tsai, Sequence Stratigraphic Characterization of Upper Miocene through Pleistocene Siliciclastic Aquifer Sediments, Baton Rouge Area, Southeastern Louisiana Gulf Coast, H13B-1325 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
24. Elshall*, A. S., F. T.-C. Tsai, J. S. Hanor, Hydrogeophysical Data Fusion and Geostatistical Approach to Characterize Hydrogeological Structure of the Baton Rouge Aquifer System in Louisiana, H13B-1336 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
25. Nadiri*, A. A., N. Chitsazan*, F. T.-C. Tsai, and A. Asghari Moghaddam, Bayesian Model Averaging of Artificial Intelligence Models for Hydraulic Conductivity Estimation, H13B-1338 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
26. Pham*, H. V., A. S. Elshall*, F. T.-C. Tsai, and L. Yan, Local Derivative-Free Parallel Computing Method for Solving the Inverse Problem in Groundwater Modeling, H21A-1164 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
27. Chitsazan*, N. and F. T.-C. Tsai, Hierarchical Bayesian Model Averaging for Chance Constrained Remediation Designs, H33I-1450 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
28. Tsai, F. T.-C., A. S. Elshall* and J. S. Hanor, A Hierarchical Multi-Model Approach for Uncertainty Segregation, Prioritization and Comparative Evaluation of Competing Modeling Propositions, H43B-1326 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
29. Fijani*, E., N. Chitsazan*, A. A. Nadiri*, F. T.-C. Tsai, and A. Asghari Moghaddam, Hierarchical Bayesian Model Averaging for Non-Uniqueness and Uncertainty Analysis of Artificial Neural Networks, H43B-1343 Abstract, 2012 American Geophysical Union Fall Meeting, San Francisco, CA, 3-7 December 2012
30. Elshall*, A. S., F. T.-C. Tsai, and J. S. Hanor. (2011). Uncertainty and Characterization of the Baton Rouge Fault System in a Bayesian Framework, 2011 American Geophysical Union Fall Meeting, December 5-9, 2011, San Francisco, CA.
31. Chitsazan*, N., and F. T.-C. Tsai. (2011). A Chance-Constrained Multimodel Approach to Design a Saltwater Intrusion Mitigation Plan, 2011 American Geophysical Union Fall Meeting, December 5-9, 2011, San Francisco, CA.

32. Hanor, J. S., E. L., Chamberlain*, and F. T.-C. Tsai. (2011). Evolution of the Permeability Architecture of the Baton Rouge Fault Zone, Louisiana Gulf Coastal Plain, 2011 American Geophysical Union Fall Meeting, December 5-9, 2011, San Francisco, CA.
33. Tsai, F. T.-C. (2010). Data Fusion using Co-Generalized Parameterization: Hydraulic Conductivity Estimation, 2010 Western Pacific Geophysics Meeting, 22–25 June 2010, Taipei, Taiwan
34. Tsai, F. T.-C. (2010). Hierarchical Bayesian Model Averaging for Groundwater Multimodel Prediction and Management under Uncertainty, 2010 Western Pacific Geophysics Meeting, 22–25 June 2010, Taipei, Taiwan
35. Tubbs*, K. R., and F. T.-C. Tsai. (2009). Simulating Three-Dimensional Shallow Water Flow using Multilayer Lattice Boltzmann Method Accelerated by Graphics Processing Units (GPUs), American Geophysical Union 2009 Fall Meeting, San Francisco, CA, Dec. 14-18, 2009.
36. Tsai, F. T.-C. (2009). Using Multimodel to Assess Model Structure Uncertainty in Groundwater Management, American Geophysical Union 2009 Fall Meeting, San Francisco, CA, Dec. 14-18, 2009.
37. Tubbs*, K. R., and F. T.-C. Tsai. (2008). Lattice Boltzmann Modeling Using High Performance Computing for Shallow Water Fluid Flow and Mass Transport, American Geophysical Union 2008 Fall Meeting, San Francisco, CA, Dec 15-19, 2008.
38. Tsai, F. T.-C., and M. Pillala*. (2008) Electrical Resistivity Tomography Using MODFLOW, American Geophysical Union 2008 Fall Meeting, San Francisco, CA, Dec 15-19, 2008.
39. Servan-Camas*, B., and F. T.-C. Tsai. (2007). Lattice Boltzmann Method for Heterogeneous and Anisotropic Advection-Dispersion Equation in Porous Medium Flow. Eos Transactions American Geophysical Union, 88(52). Fall Meeting Supplement, Abstract H33H-1730, San Francisco, CA, Dec 10-14, 2007. (Best Student Paper Award)
40. Tubbs*, K. R., F. T.-C. Tsai, C. White, G. Allen, and J. Tohline. (2007). Monitoring of Saltwater Intrusion in a Sediment Model Using Electrical Resistivity Tomography in High Performance Computing Environment, Eos Transactions American Geophysical Union, 88(52), Fall Meeting Supplement, Abstract H21C-0705, San Francisco, CA, Dec 10-14, 2007.
41. Tsai, F. T.-C., and X. Li*. (2007). Parameter Estimation and Parameterization Uncertainty Using Bayesian Model Averaging, Eos Transactions American Geophysical Union, 88(52), Fall Meeting Supplement, Abstract H21K-06, San Francisco, CA, Dec 10-14, 2007.
42. Lei, Z., G. Allen, T. Kosar, G. Qin, F. T.-C. Tsai, C.D. White. (2007). A Grid-enabled Framework for Ensemble Inverse Modeling, DOE EPSCOR Program Review, July 2007.
43. Tsai, F. T.-C., and X. Li*. (2006). Hydraulic Conductivity Estimation using Bayesian Model Averaging and Generalized Parameterization", Eos Transactions American Geophysical Union, 87(52), Fall Meeting Supplement, Abstract H41I-01, San Francisco, CA, Dec 11-15, 2006.
44. Servan-Camas*, B., and F. T.-C. Tsai. (2006). Saltwater Intrusion Simulation in Heterogeneous Aquifer Using Lattice Boltzmann Method, Eos Transactions American Geophysical Union, 87(52), Fall Meeting Supplement, Abstract H33D-1534, San Francisco, CA, Dec 11-15, 2006.
45. Tubbs*, K., and F. T.-C. Tsai. (2006). Numerical Investigations of Electrical Resistivity Tomography using Lattice Boltzmann Modeling and Adjoint-State Method, Eos Transactions American Geophysical Union, 87(52), Fall Meeting Supplement, Abstract H31B-1417, San Francisco, CA, Dec 11-15, 2006. (Best Student Paper Award)
46. Tsai, F. T.-C. (2006). Conditional Estimation on Aquifer Heterogeneity Using Bayesian Model Averaging and Generalized Parameterization, Eos Transactions American Geophysical Union, 87(36), Western Pacific Geophysics Meeting Supplement, Abstract H22B-05, 24-27 July, 2006. (Invited)
47. Tsai, F. T.-C. (2005). Bayesian Model Averaging on Parameterization Non-uniqueness and Conditional Uncertainty Analysis, Eos Transactions American Geophysical Union, 86(52), Fall Meeting Supplement, Abstract H13A-1315, San Francisco, CA, Dec 5-9, 2005.

48. Tsai, F. T.-C. (2004). A Bayesian Approach to Estimate Aquifer Heterogeneity with Generalized Parameterization, *Eos Transactions American Geophysical Union*, 85(47), Fall Meeting Supplement, Abstract H23A-1128, San Francisco, CA, Dec 8-12, 2003. Dec. 13-17, 2004.
49. Tsai, F. T.-C., Y. Sim, and W. W-G. Yeh. (2003). A Coupled Zonation-Kriging Method for Parameter Structure Identification in Groundwater Modeling: A Case Study of a Seawater Intrusion Problem, the Alamitos Barrier in Southern California Coastal Plain, *Eos Transactions American Geophysical Union*, 84(46), Fall Meeting Supplement, Abstract H111-08, San Francisco, CA, Dec 8-12, 2003.
50. Tsai, F. T.-C., N-Z. Sun, and W. W-G. Yeh. (2002). Three-Dimensional Parameter Structure Identification: A Case Study of the Central Part of the Western San Joaquin Valley, California, *Eos Transactions American Geophysical Union*, 83(47), Fall Meeting Supplement, Abstract H71A-0785, San Francisco, CA, Dec. 6-10, 2002.
51. Sun, N-Z., W. W-G. Yeh, and F. T.-C. Tsai. (2002). Model Structure Identification: From the Reliability of Model Prediction to the Robustness of Experimental Design, *Eos Transactions American Geophysical Union*, 83(47), Fall Meeting Supplement, Abstract H51C-07, San Francisco, CA, Dec. 6-10, 2002.
52. Tsai, F. T.-C., N-Z. Sun, and W. W-G. Yeh. (2001). Parameter Structure Identification with Natural Neighbor Parameterization in Groundwater Modeling, *Eos Transactions American Geophysical Union*, 82(47), Fall Meeting Supplement, Abstract H12D-0324, San Francisco, CA, Dec. 10-14, 2001.
53. Tu, M-Y., F. T.-C. Tsai, and W. W-G. Yeh. (2001). Optimization of Water Distribution and Water Quality by Genetic Algorithm and Nonlinear Programming, *Eos Transactions American Geophysical Union*, 82(47), Fall Meeting Supplement, Abstract H11F-12, San Francisco, CA, Dec. 10-14, 2001.

Non-Refereed Journal Articles

1. Tsai, F. T.-C. (2013). Effectiveness of using scavenger wells to intercept salt water toward Baton Rouge pumping wells, *Journal of Southwest Water Works*, 24(1), 28-31. (invited)

Invited Seminars

1. Tsai, F. T.-C. (2018). Surface Water-Groundwater Interactions and Modeling, Louisiana Watershed Initiative, Lake Charles, Louisiana, November 7, 2018
2. Tsai, F. T.-C. (2018). Louisiana Groundwater Study and Complex Groundwater Modeling, the 22nd Cross-Straits Hydraulic Science and Technology Conference, Beijing, China, October 19-20, 2018
3. Tsai, F. T.-C. (2018). Louisiana Groundwater Study and Complex Groundwater Modeling, National Chung Hsing University, Taichung, Taiwan, July 24, 2018
4. Tsai, F. T.-C. (2018). Modeling of Louisiana's Aquifer Systems, National Taiwan University, Taipei, Taiwan, July 12, 2018
5. Tsai, F. T.-C. (2018). Louisiana Groundwater Study and Complex Groundwater Modeling, University of Alabama, Tuscaloosa, AL, March 2, 2018
6. Tsai, F. T.-C. (2018). Modeling of Louisiana's Aquifer Systems, 2018 Groundwater Management Districts Association Annual Meeting, January 18, 2018
7. Tsai, F. T.-C. (2017). Construction of Louisiana's Groundwater Systems with Very Large Well Log Dataset, Baton Rouge Geological Society, Baton Rouge, LA, June 9, 2017
8. Tsai, F. T.-C. (2015). Large-Scale Hydropower Optimization and Applications, Dalian University of Technology, School of Hydraulic Engineering, Dalian, China, October 30, 2015.
9. Tsai, F. T.-C. (2015). Saltwater Intrusion in Baton Rouge's Aquifers, Southeastern Louisiana, LSU Center for Computation & Technology, Coast to Cosmos Focus Area, April 1, 2015
10. Tsai, F. T.-C. (2015). Complexity of the Baton Rouge Aquifer System: Knowing Our Aquifers, Seawater Intrusion Simulation and Management, Central Geological Survey, MOEA, Taiwan, January 6, 2015
11. Tsai, F. T.-C. (2014). Saltwater Intrusion Into Louisiana Aquifers: A Broad Perspective, Emerging Issues at the Intersection of Energy and Water, LSU Law Center, October 3, 2014

12. Tsai, F.T.-C. (2013). Reconstruction of Geological Architecture and Groundwater Model Development for Understanding Saltwater Intrusion in the Baton Rouge area, southeastern Louisiana, Baton Rouge Geological Society, Baton Rouge, Louisiana, October 11, 2013.
13. Tsai, F. T.-C. (2013). Characterization of Siliciclastic Aquifer-Fault System for Southeastern Louisiana, an invited presentation to National Central University, Graduate Institute of Applied Geology, Taiwan, May 31, 2013.
14. Tsai, F. T.-C. (2013). Reconstruction of geological architectures and groundwater model development for Southeastern Louisiana (and an application to Taiwan GW Systems), an invited presentation to National Cheng Kung University, Department of Hydraulic & Ocean Engineering, Taiwan, June 13, 2013.
15. Tsai, F. T.-C. (2013). Reconstruction of geological architectures and groundwater model development for Southeastern Louisiana, an invited presentation to National Chiao Tung University, Department of Civil Engineering, Taiwan, June 3, 2013.
16. Tsai, F. T.-C. (2013). Reconstruction of geological architectures and groundwater model development for Southeastern Louisiana, 2013 Hydrogeology and Groundwater Model Architecture Workshop, Central Geological Survey, MOEA, Taiwan, June 18, 2013.
17. Tsai, F. T.-C. (2012). Saltwater Intrusion in the Baton Rouge Aquifer System, Tulane University, Department of Earth and Environmental Sciences, New Orleans, LA, November 9, 2012
18. Tsai, F. T.-C. (2011). Saltwater Intrusion Mitigation Designs, Subsidence, and Stratigraphy Modeling in Conduit-Barrier Fault Zones in the Baton Rouge Area, Louisiana, an invited talk to Water Resources Agency, Ministry of Economic Affairs, Taiwan, Oct. 25, 2011. (sabbatical leave)
19. Tsai, F. T.-C. (2011). Saltwater Intrusion Mitigation Designs, Subsidence, and Stratigraphy Modeling in Conduit-Barrier Fault Zones in the Baton Rouge Area, Louisiana, an invited talk to National United University, Department of Civil and Disaster Prevention Engineering, Taiwan, Oct. 26, 2011. (sabbatical leave)
20. Tsai, F. T.-C. (2011). Saltwater Intrusion Mitigation Designs, Subsidence, and Stratigraphy Modeling in Conduit-Barrier Fault Zones in the Baton Rouge Area, Louisiana, an invited talk to National Chung Hsing University, Department of Soil and Water Conservation, Taiwan, Oct. 24, 2011. (sabbatical leave)
21. Tsai, F. T.-C. (2011). Saltwater Intrusion Mitigation Designs, Subsidence, and Stratigraphy Modeling in Conduit-Barrier Fault Zones in the Baton Rouge Area, Louisiana, an invited talk to National Central University, Graduate Institute of Applied Geology, Taiwan, Oct. 20, 2011. (sabbatical leave)
22. Tsai, F. T.-C. (2011). Saltwater Intrusion Mitigation Designs, Subsidence, and Stratigraphy Modeling in Conduit-Barrier Fault Zones in the Baton Rouge Area, Louisiana, an invited talk to National Taiwan University, Department of Civil Engineering, Taiwan, Oct. 12, 2011. (sabbatical leave)
23. Tsai, F. T.-C. (2011). Saltwater Intrusion Mitigation Designs, Subsidence, and Stratigraphy Modeling in Conduit-Barrier Fault Zones in the Baton Rouge Area, Louisiana, an invited talk to National Taiwan University, Department of Bioenvironmental Systems Engineering, Taiwan, Sept. 29, 2011. (sabbatical leave)
24. Tsai, F. T.-C. (2010). Optimized Injection-Extraction Operations under Uncertainty for Saltwater Intrusion Remediation: A Case Study on "1,500-Foot" Sand Aquifer of Baton Rouge Area, Baton Rouge Geological Society, Baton Rouge, Louisiana, January 22, 2010.
25. Tsai, F. T.-C. (2006). Conditional Estimation on Aquifer Heterogeneity Using Bayesian Model Averaging and Generalized Parameterization, American Geophysical Union, 87(36), Western Pacific Geophysics Meeting, July 2006.
26. Tsai, F. T.-C. (2004) A Generalized Parameterization Method in Groundwater Inverse Modeling, National Taiwan University, Taiwan, May 26, 2004.

Presentations at State/Local Conferences

1. Chen, Ye-Hong, Frank T.-C. Tsai and Navid Jafari, Evaluation of Relief Wells along Levees of Inner Harbor Navigation Canal, New Orleans, 13th Annual Louisiana Water Conference, April 15-16, 2019, Baton Rouge, Louisiana
2. Li, An and Frank T.-C. Tsai, Groundwater-surface water interactions in the Mississippi River Delta, 13th Annual Louisiana Water Conference, April 15-16, 2019, Baton Rouge, Louisiana
3. Yin, Jina, and Frank T.-C. Tsai, Bi-objective saltwater scavenging optimization using Bayesian set pair analysis and machine learning based ensemble groundwater surrogates, 13th Annual Louisiana Water Conference, April 15-16, 2019, Baton Rouge, Louisiana
4. Vahdat-Aboueshagh, Hamid, and Frank T.-C. Tsai, Developing statewide hydrostratigraphy model for Louisiana, 13th Annual Louisiana Water Conference, April 15-16, 2019, Baton Rouge, Louisiana
5. Li, An and Frank T.-C. Tsai, High Pore Water Pressure: A Hidden Coastal Geohazard, Louisiana Coastal Geology Symposium 2018, Baton Rouge, Louisiana, July 10-11, 2018
6. Li, An and Frank T.-C. Tsai, 3-D Modeling of Subsurface Stratigraphy in The Lower Mississippi River Delta Plain, New Orleans Geological Society Luncheon Meeting, New Orleans, Louisiana, May 7, 2018
7. Li, An, Navid Jafari, and Frank T.-C. Tsai, Modeling 3-D Soil Stratigraphy Using Subsurface Borings and Cone Penetrometer Tests In Coastal Louisiana, 2018 State of the Coast Conference, New Orleans, Louisiana, May 30 – June 1, 2018
8. Li, An and Frank T.-C. Tsai, Interactions Between Groundwater and Mississippi River In The Mississippi River Delta Plain, 2018 State of the Coast Conference, New Orleans, Louisiana, May 30 – June 1, 2018
9. Yin, Jina, and Frank T.-C. Tsai, Conjunctive Use of Saltwater Intrusion Mitigation Approaches in Baton Rouge Multi-Aquifer System, 12th Annual Louisiana Water Conference, Baton Rouge, Louisiana, Baton Rouge, Louisiana, March 27-28, 2018
10. Vahdat-Aboueshagh, Hamid and Frank T.-C. Tsai, Calibrating Chicot aquifer groundwater model: challenges and solutions, 12th Annual Louisiana Water Conference, Baton Rouge, Louisiana, Baton Rouge, Louisiana, March 27-28, 2018
11. Chen, Ye-Hong, Jack Cadigan, Navid Jafari, and Frank T.-C. Tsai, Three-dimensional Underseepage Evaluation for Profit Island Vicinity Levee, 12th Annual Louisiana Water Conference, Baton Rouge, Louisiana, Baton Rouge, Louisiana, March 27-28, 2018
12. Karakullukcu, Ramazan E. and Frank T.-C. Tsai, Calibration and Water Budget Analysis of Mississippi River Alluvial Aquifer Groundwater Model, 12th Annual Louisiana Water Conference, Baton Rouge, Louisiana, Baton Rouge, Louisiana, March 27-28, 2018
13. Li, An and Frank T.-C. Tsai, 3-D Modeling of Subsurface Stratigraphy in The Lower Mississippi River Delta Plain, 12th Annual Louisiana Water Conference, Baton Rouge, Louisiana, Baton Rouge, Louisiana, March 27-28, 2018
14. Tsai, Frank T.-C., Modeling of Louisiana's Aquifer Systems, 2018 Groundwater Management Districts Association Annual Meeting, Baton Rouge, Louisiana, January 17-19, 2018
15. Tsai, Frank T.-C., Groundwater as Vital Water Supply to Louisiana, Environment & Health Council of Louisiana Conference, Baton Rouge, Louisiana, September 27, 2017
16. Yin, J. and F. T.-C. Tsai (2017). Saltwater Intrusion modeling for the Baton Rouge aquifer system, Southeast Louisiana, 11th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, April 11-12, 2017.
17. Vahdat-Aboueshagh, H. and F. T.-C. Tsai (2017). A geological modeling framework based on well log data: A case study of Chicot Aquifer, southwest Louisiana, 11th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, April 11-12, 2017.
18. Karakullukcu, R., D. Bhatta, F. T.-C. Tsai, and K. Paudel (2017). Construction of Mississippi River Alluvial Aquifer, Northeast Louisiana, 11th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, April 11-12, 2017.

19. Li, A. and F. T.-C. Tsai (2017). Groundwater pumping induced land subsidence in the Baton Rouge area, Southeast Louisiana, 11th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, April 11-12, 2017.
20. Tsai, F. T.-C., and A. Mani (2017). Conjunctive management of water resources for northern Louisiana under projected future climate change scenarios, 11th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, April 11-12, 2017.
21. Pham, H. and F. T.-C. Tsai (2016). Baton Rouge groundwater model development. 10th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, March 24-25, 2016.
22. Mani, A. and F. T.-C. Tsai (2016). Conjunctive Use of Surface Water and Groundwater for Northern Louisiana. 10th Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, Baton Rouge, Louisiana, March 24-25, 2016.
23. Tsai, Frank T.-C. (2015). Geological architecture construction for Baton Rouge saltwater intrusion study, 9th Annual Louisiana Groundwater, Water Resources & Environmental Symposia, Baton Rouge, Louisiana, April 16, 2015.
24. Beigi, E. and Frank T.-C. Tsai (2015). Climate change impacts on surface water and groundwater recharge of southwestern Mississippi and southeastern Louisiana, 9th Annual Louisiana Groundwater, Water Resources & Environmental Symposia, Baton Rouge, Louisiana, April 16, 2015.
25. Mani, A. and Frank T.-C. Tsai (2015). Conjunctive management of surface water and groundwater for northern Louisiana, 9th Annual Louisiana Groundwater, Water Resources & Environmental Symposia, Baton Rouge, Louisiana, April 16, 2015.
26. Pham, H.V. and Frank T.-C. Tsai (2015). Optimal Groundwater Observation Network Design for Model Discrimination under Conceptual Model Uncertainty: Case Study for Baton Rouge Aquifer System, Louisiana, 9th Annual Louisiana Groundwater, Water Resources & Environmental Symposia, Baton Rouge, Louisiana, April 16, 2015.
27. Frank T.-C. Tsai (2014). Complexity of the Baton Rouge Aquifer System: Knowing Our Aquifers, Capital Area Ground Water Conservation Commission Workshop, December 2, 2014
28. Frank T.-C. Tsai (2014). Saltwater Intrusion Problems and Modeling of the "1,200-Foot" Sand, the "1,500-Foot" Sand, the "1,700-foot" sand and the "2,000-Foot" Sand, Capital Area Ground Water Conservation Commission Workshop, December 2, 2014
29. Frank T.-C. Tsai (2014). Groundwater Planning and Management: Extraction, Injection, and Reduction, Capital Area Ground Water Conservation Commission Workshop, December 2, 2014
30. Chitsazan*, N. and H.V. Pham* and F.T.-C. Tsai (2014). Chance-constrained hydraulic barrier design to protect Government St. pump center, Baton Rouge, Louisiana, 8th Annual Louisiana Groundwater & Water Resources Symposia, Geological Society & Louisiana Geological Survey, Baton Rouge, Louisiana, April 18, 2014.
31. Pham*, H.V. and F.T.-C. Tsai (2014). Converting Baton Rouge Hydrostratigraphic Architecture to Groundwater Model Grid, 8th Annual Louisiana Groundwater & Water Resources Symposia, Geological Society & Louisiana Geological Survey, Baton Rouge, Louisiana, April 18, 2014.
32. Beigi*, E. and F.T.-C. Tsai (2014). Climate Change Effects on Potential Groundwater Recharge in Southeastern Louisiana and Southwestern Mississippi, 8th Annual Louisiana Groundwater & Water Resources Symposia, Geological Society & Louisiana Geological Survey, Baton Rouge, Louisiana, April 18, 2014.
33. Mani*, A. and F.T.-C. Tsai (2014). Development of Hydrologic and Groundwater Models for Assessing Water Availability of North-Central Louisiana, 8th Annual Louisiana Groundwater & Water Resources Symposia, Geological Society & Louisiana Geological Survey, Baton Rouge, Louisiana, April 18, 2014.

34. Beigi*, E., and F. T.-C. Tsai (2013). Modeling of Potential Groundwater Recharge under Climate Change of Southern Hills Aquifer System, Southeastern Louisiana and Southwestern Mississippi, 7th Annual Louisiana Groundwater and Water Resources Symposia, Baton Rouge, Louisiana, May 8, 2013.
35. Elshall*, A.S., F. T.-C. Tsai, and J.S. Hanor (2013). Reconstructing Baton Rouge Aquifer-Fault Hydrostratigraphy using Indicator Geostatistics, 7th Annual Louisiana Groundwater and Water Resources Symposia, Baton Rouge, Louisiana, May 8, 2013.
36. Hanor, J.S., E. L. Chamberlain*, and F. T.-C. Tsai (2013). A Conceptual Model for the Evolution of the Permeability Architecture of the Baton Rouge Fault Zone, Southeastern Louisiana, 7th Annual Louisiana Groundwater and Water Resources Symposia, Baton Rouge, Louisiana, May 8, 2013.
37. Pham*, H.V. and F. T.-C. Tsai (2013). Development of groundwater model for the “1,200-foot”, “1,500-foot” and “1,700-foot” sands of the Baton Rouge area, Southeastern Louisiana, 7th Annual Louisiana Groundwater and Water Resources Symposia, Baton Rouge, Louisiana, May 8, 2013.
38. Tsai, F. T.-C. (2013). Reconstruction of geological architectures and groundwater model development for understanding saltwater intrusion in the Baton Rouge area, southeastern Louisiana, an invited presentation to Baton Rouge Geological Society, Oct. 11, 2013.
39. Tsai, F. T.-C. (2011). Saltwater Intrusion Simulation in the “1,500-Foot” Sand of the Baton Rouge Area: Pre-Anthropogenic Pumping, Current Situation, Future, Fifth Annual Louisiana Groundwater, Coastal Geology and Subsidence-Land Loss Symposia, Baton Rouge, Louisiana, January 11-12, 2011.
40. Elshall*, A. and F. T.-C. Tsai (2011). Geophysical and geostatistical approaches to subsurface characterization of the Baton Rouge area, Fifth Annual Louisiana Groundwater, Coastal Geology and Subsidence-Land Loss Symposia, Baton Rouge, Louisiana, January 11-12, 2011.
41. Chitsazan*, N. and F. T.-C. Tsai (2011). Bed boundary delineation of “1,500-foot”, “1,700-foot”, and “2,000-foot” sands of the Baton Rouge area, Fifth Annual Louisiana Groundwater, Coastal Geology and Subsidence-Land Loss Symposia, Baton Rouge, Louisiana, January 11-12, 2011.
42. Tsai, F. T.-C. (2010). “1,500-Foot” Sand Saltwater Intrusion Simulation and Management Using Scavenger Wells, Baton Rouge Geological Society, Baton Rouge, Louisiana, December 10, 2010. (invited)
43. Tsai, F.T.-C. (2010), Scavenger Wells Stop Saltwater Intrusion in Baton Rouge, 2010 Louisiana Water Quality Technology Conference, Alexandria and Baton Rouge, Louisiana, December 14-15, 2010. (invited)
44. Tsai, F. T.-C. (2009). Optimal Operations of Hydraulic Barrier and Extraction Systems for Saltwater Intrusion Mitigation in “1,500-Foot” Sand Aquifer in the Baton Rouge Area, Louisiana, Abstract, 3rd Annual Louisiana Groundwater Symposium, March 26, 2009.
45. Cao*, H., F. T.-C. Tsai, K. A. Rusch. (2008) Effect of salinity and soluble organic matter on the fate and transport of MS-2 in saturated sand”, Louisiana Water Environmental Association, April 23-24, 2008.
46. Tsai, F. T.-C. and X. Li*. (2008). Saltwater Intrusion for “1,500-Foot” Sand, East Baton Rouge Parish, Louisiana, 2nd Annual Louisiana Groundwater Symposium, March 6, 2008.
47. Li*, X., and F. T.-C. Tsai.(2008). Uncertainty Propagation Using Bayesian Multi-Model Multi Parameterization Method, 2nd Annual Louisiana Groundwater Symposium, March 6, 2008.

Grants and Funded Projects

1. **Tsai, F. T.-C. (PI)**, Charles Lamar Family Foundation/Integrated Water Model for Louisiana's Future Groundwater, \$134,266, 7/1/2018-6/30/2020
2. **Tsai, F. T.-C. (Co-PI)**, Louisiana Coastal Protection and Restoration Authority, Evaluating the Performance of Relief Wells along the Inner Harbor Navigation Canal (IHNC) and Gulf Intracoastal Waterway (GIWW), \$49,988, 5/1/2018-9/2/2019
3. **Tsai, F. T.-C. (PI)** LSU Economic Development Assistantship, Integrated Water Model for Saltwater Intrusion Mitigation, \$100,000, 08/15/18-07/31/22

4. **Tsai, F. T.-C. (Co-PI)**, Louisiana Sea Grant Program/ IR&E: Managed Aquifer Storage and Recovery in Coastal Louisiana, \$189,882 (\$64,400 LSU), 2/1/2018-1/31/2020
5. **Tsai, F. T.-C. (PI)**, Restore Act Louisiana Center of Excellence/Constructing Mississippi River Delta Plain soil stratigraphy - Implications for coastal land building and compactional subsidence, \$70,070, 8/16/2017-8/15/2019
6. **Tsai, F. T.-C. (PI)**, U.S. Corps of Engineers, New Orleans District/Three-Dimensional Underseepage Evaluation for Profit Island Vicinity Levee, Southeastern Louisiana, \$137,282, 6/1/2017-5/31/2018 (Contract No. W912P8-17-P-0054)
7. **Tsai, F. T.-C. (PI)**, Louisiana Board of Regents ITRS/Development of an Integrated Framework for Managing Sole Source Aquifer, Southeastern Louisiana, \$171,543, 6/1/2017-5/31/2020
8. **Tsai, F. T.-C. (PI)**, CAGWCC/Development of an Integrated Framework for Managing Sole Source Aquifer, Southeastern Louisiana, \$60,000, 6/1/2017-5/31/2020
9. **Tsai, F. T.-C. (PI)**, Louisiana Board of Regents ITRS/Conjunctive Management of Baton Rouge Multi-Aquifer System for Saltwater Intrusion Mitigation, \$166,231, 6/1/2015-5/31/2018
10. **Tsai, F. T.-C. (PI)**, CAGWCC/Conjunctive Management of Baton Rouge Multi-Aquifer System for Saltwater Intrusion Mitigation, \$60,000, 6/1/2015-5/31/2018
11. **Tsai, F. T.-C. (PI)**, Louisiana Board of Regents PFund/Reconstruction of Louisiana Groundwater Systems for Hydraulic Fracturing Study, \$20,000, 6/1/2016-5/31/2017
12. **Tsai, F. T.-C. (PI)**, USGS Water Resources Research Institute, \$92,335, 3/1/2016-2/28/2017
13. **Tsai, F. T.-C. (Co-I)**, Louisiana Board of Regents-Traditional Enhancement/Acquisition of Gravimetric Instrumentation in Support of a New Quasigeoid Model for Accurate Elevations in Louisiana, \$196,440, 6/1/2016-5/31/2017 (PI: George Voyiadjis)
14. **Tsai, F. T.-C. (PI)**, USGS/Louisiana Water Resources Research Institute, Long-Term Groundwater Recharge Projection of Southeastern Louisiana and Southwestern Mississippi Under Climate Change, \$19,680, 3/1/2015-2/29/2016
15. **Tsai, F. T.-C. (PI)**, USGS/Louisiana Water Resources Research Institute, Groundwater Recharge Estimation under Climate Change Impact for the Southern Hills Aquifer System of Southeastern Louisiana and Southwestern Mississippi, \$15,000, 3/1/2014-2/28/2015
16. **Tsai, F. T.-C. (Senior Investigator)**, NSF/MRI: Acquisition of SuperMIC: A Heterogeneous Computing Environment to Enable Transformation of Computational Research and Education in the State of Louisiana, \$3,924,181, 10/1/2013-9/30/2016 (PI: H. Liu, Co-PI: M. Jarrell, Q.J. Chen, J. Ramanujam, and J.E. Tohline)
17. **Tsai, F. T.-C. (PI)**, USGS/Louisiana Water Resources Research Institute, Hydrostratigraphy Modeling of the Southern Hills Aquifer System and Faults, \$18,750, 3/1/2013-2/28/2014
18. **Tsai, F. T.-C. (PI)**, Manysplendid InfoTech Ltd., Two-dimensional Lattice Boltzmann Method and Computing using Graphics Processing Unit for Shallow Water Equation Simulation, \$34,081, 8/1/2012-7/31/2013
19. **Tsai, F. T.-C. (PI)**, USGS/Louisiana Water Resources Research Institute, Hydrostratigraphy Modeling of the Southern Hills Aquifer System and Faults, \$15,600, 3/1/2012-2/28/2013
20. **Tsai, F. T.-C. Tsai (Co-PI)**, Louisiana Board of Regents/RCS, Reducing Catastrophic Risk in Groundwater Withdrawal under Saltwater Intrusion, \$127,000, 6/1/2012-5/31/2015 (PI: Krishna Paudel)
21. **Tsai, F. T.-C. (PI)**, National Science Foundation-EAR Hydrologic Sciences, Modeling and Epistemic Uncertainty Analysis of Faults as Conduit-Barriers to Fluid Flow and Salinization in Siliciclastic Aquifer Systems, \$278,474, 3/01/2011-2/29/2014
22. **Tsai, F. T.-C. (PI)** USGS, Louisiana Water Resources Research Institute/Feasibility Study of Scavenging Approach to Stop Saltwater Toward Water Wells, \$15,606, 03/01/2011-02/28/2012
23. **Tsai, F. T.-C. (PI)** LSU Economic Development Assistantship, Unconventional Hydraulic Control for Deep-Aquifer Saltwater Intrusion Mitigation Under Uncertainty, \$100,000, 08/15/11-07/31/15

24. **Tsai, F. T.-C. (PI)** and Jeffrey S. Hanor, USGS-NIWR National Competitive Program, Hierarchical Multimodel Saltwater Intrusion Remediation and Sampling Designs: A BMA Tree Approach, \$217,645, 09/01/2010-08/31/2014
25. **Tsai, F. T.-C. (PI)** Baton Rouge Water Works Company and Louisiana Capital Area Ground Water Conservation Commission, Scavenger Well Operation to Stop Saltwater Intrusion Toward The BRWC Water Wells In The Baton Rouge Area, \$79,927, 05/2010-04/2012
26. **Tsai, F. T.-C. (PI)** USGS, Louisiana Water Resources Research Institute/Multimodel Uncertainty Analysis for Chance-Constrained Saltwater Intrusion Management, \$15,500, 03/2010-02/2011
27. **Tsai, F. T.-C. (PI)** USGS, Louisiana Water Resources Research Institute/Bayesian Model Averaging for Saltwater Intrusion Management Under Model Uncertainty, \$16,909, 03/2009-02/2010
28. **Tsai, F. T.-C. (PI)**, "Electrical Resistivity Tomography (ERT) Laboratory Experiments on Saltwater Encroachment Tracking and Modeling in Saturated Heterogeneous Sediment" USGS/Louisiana Water Resources Research Institute, \$16,500 (2008-2009).
29. **Tsai F. T.-C. (PI)**, "Bayesian Model Integration and Uncertainty Analysis in Groundwater Inverse Modeling Development of Saltwater Intrusion Management Model for Coastal Aquifer Protection" LSU Faculty Research Grant Program, \$10,000 (2007-2008).
30. **Tsai, F. T.-C. (PI)** and Kelly R. Rusch, "Development of a Fate and Transport Model for Pathogen Tracking in Coastal Subsurfaces Impacted by Anthropogenic Pollutant Sources" NOAA/Louisiana Sea Grant College Program, \$150,659 (2006-2008).
31. **Tsai, F. T.-C. (PI)**, "A Pilot Study on Modeling and Management of Hurricane-Accelerated Saltwater Encroachment in Coastal Aquifers" USGS/Louisiana Water Resources Research Institute, \$15,500 (2006-2007).
32. **Tsai F. T.-C. (PI)**, "Development of Production Well Management Model" City of Chandler, Arizona, \$46,750 (2005-2006).
33. **Tsai, F. T.-C. (PI)**, "Development of Saltwater Intrusion Management Model for Coastal Aquifer Protection" LSU Faculty Research Grant Program, \$10,000 (2005-2006).
34. **Tsai, F. T.-C. (PI)** and Vijay P. Singh, "Saltwater Intrusion Management with Conjunctive Use of Surface Water and Ground Water" U.S. Geological Survey & National Institutes for Water Resources, Water Resource Research National Competitive Grants Program, \$172,842 (No indirect cost.) (2005-2008).
35. **Tsai, F. T.-C. (PI)**, "Development of a Generalized Parameterization Method under the Geostatistical Framework" Louisiana Board of Regents, Research Competitiveness Subprogram, \$97,981 (2005-2008).
36. **Tsai, F. T.-C. (PI)**, "Modeling of Saltwater Encroachment in East Baton Rouge Parish" LSU Summer Stipend, \$5,000 (2005).

Honors and Awards

1. LSU College of Engineering Award for Instructor Excellence-Longwell Award, 2018
2. EWRI Best Associate Editor Award, 2018
3. CEE Educational Achievement Award, LSU, 2017
4. LSU Tiger Athletic Foundation Undergraduate Teaching Award, 2016
5. Hydrogeology Journal, 2015 Editors' Choice article "Dispersive thermohaline convection near salt domes: a case at Napoleonville Dome, southeast Louisiana, USA", 2015
6. LSU Tiger Athletic Foundation Undergraduate Teaching Award, 2008
7. CEE Outstanding Achievement Award in Teaching and Research, LSU, 2006
8. UCLA Department Outstanding Doctor of Philosophy Degree Award, 2002
9. Best Student Paper Award in MODFLOW 2001 and Other Modeling Odyssey Conference, Golden, Colorado, 2001
10. UCLA Dissertation Year Fellowship, 2001-2002

Membership in Professional Organization

1. Member, American Society of Civil Engineering (ASCE)
2. Member, ASCE Environmental Water Resources Institute (EWRI)
3. Member, American Geophysical Union (AGU)
4. Member, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)
5. Member, National Institutes for Water Resources (NIWR)
6. Member, Universities Council on Water Resources (UCOWR)
7. President, Chinese American Water Resources Association (CAWRA)

Professional Committees

1. 2016 UCOWR Conference Planning Committee (Hilton Pensacola Beach, Florida, June 21-23, 2016)
2. Data Flow 2016 Water Conference Planning Committee (The Cook Hotel, LSU, May 9-10, 2016)
3. Convener, Louisiana Groundwater and Water Resources Symposium, 2015-present
4. Chair (2011-2013), ASCE/EWRI Groundwater Management Committee
5. Member, ASCE/EWRI Groundwater Hydrology Committee, 2003-present
6. Member, ASCE/EWRI Groundwater Symposium and Continuing Education Committee, 2006-present
7. Member, ASCE/EWRI, Environmental and Water Resources Systems Committee, 2008-present
8. Member, ASCE, KSTAT Standards Committee, 2006-2018
9. Member, ASCE Hydraulic Fracturing Committee, 2014-present
10. Judge of student papers, Hydrology Section, American Geophysical Union Fall Meeting (2005, 2007)

Conference Sessions Chaired

1. The 2019 Southeast Symposium on Contemporary Engineering Topics (SSCET) and the UNO Engineering Forum, Track B: Civil, Coastal, and Environmental Engineering, September 13, 2019, University of New Orleans, New Orleans, LA
2. The 2016 7th Southeast Symposium on Contemporary Engineering Topics (SSCET), Track: Civil, Coastal, and Environmental Engineering, August 26, 2016, Jackson, Mississippi
3. "Capital Area Groundwater and Saltwater Intrusion", 9th Annual Louisiana Groundwater, Water Resources & Environmental Symposia, Baton Rouge, Louisiana, April 16, 2015.
4. "Aquifer Parameter Estimation, Operation, and Management", 2015 World Environmental & Water Resources Congress, May 17-21, 2015
5. "Aquifer Parameter Estimation, Operation, and Management", 2014 World Environmental & Water Resources Congress, June 1-5, 2014
6. "Aquifer Parameter Estimation, Operation, and Management", 2013 World Environmental & Water Resources Congress, May 19-23, 2013
7. "Aquifer Parameter Estimation, Inverse Modeling, and Data Assimilation", 2012 World Environmental & Water Resources Congress, May 20-24, 2012
8. "Probabilistic Methods for Aquifer Parameter Estimation and Groundwater Modeling, and Inverse Modeling", 2011 World Environmental & Water Resources Congress, May 22-26, 2011
9. "Probabilistic Methods for Aquifer Parameter Estimation and Groundwater Modeling, and Inverse Modeling", 2010 World Environmental & Water Resources Congress, May 16-20, 2010
10. "Vadose Zone Hydrology", 2010 World Environmental & Water Resources Congress, May 16-20, 2010
11. "Uncertainty in Groundwater Model Calibration and Applications", 2010 Western Pacific Geophysics Meeting, Taipei, Taiwan, 22-25 June 2010.
12. "Aquifer Characterization and Protection", 2009 World Environmental & Water Resources Congress, May 17-21, 2009
13. "Probabilistic Methods for Aquifer Parameter Estimation and Groundwater Modeling, and Inverse Modeling", 2009 World Environmental & Water Resources Congress, May 17-21, 2009

14. "Management of Coastal Aquifers", in the 20th Salt Water Intrusion Meeting (SWIM), Naples, Florida, June 23-27, 2008.
15. "Groundwater Inverse Modeling", in the ASCE EWRI World Water & Environmental Resources Congress, Honolulu, Hawaii, May 12-16, 2008.
16. "Groundwater – Surface Water Interaction II" in the ASCE EWRI World Water & Environmental Resources Congress, Tampa, Florida, May 15-19, 2007.
17. "Groundwater Management/Modeling Under Uncertainty I" in the ASCE EWRI World Water & Environmental Resources Congress, Tampa, Florida, May 15-19, 2007.
18. "Hydrologic Modeling – Watersheds" in the American Institute of Hydrology 25th Anniversary Meeting & International Conference: Challenges in Coastal Hydrology and Water Quality, Baton Rouge, Louisiana, May 21-24, 2006.
19. "Aquifer Parameter Estimation and Inverse Modeling" in the ASCE EWRI World Water & Environmental Resources Congress, Omaha, Nebraska, May 21-25, 2006.

Journal Referee for 26 journals

Conference paper reviewer

1. International Conference of Numerical Analysis and Applied Mathematics, 2008
2. Groundwater Symposium in World Environmental and Water Resources Congress, 2006-present
3. American Institute of Hydrology 25th Anniversary Meeting, 2006

Proposal Reviewer

1. National Science Foundation, 2003-present
2. The University of Wisconsin Water Resources Institute (WRI), 2005-present

Book chapter reviewer

1. Quantitative Information Fusion for Hydrological Sciences edited by X. Cai and J. Yeh, 2007

Theses/Dissertations/Post-doctors Directed

Post-doctors: (2 completed)
 Ph.D. Dissertations: (9 completed, 4 in progress)
 M.S. Theses: (5 completed, 1 current)
 M.S. Reports (3 completed)

Visiting Students

Ph.D. Students (3 Iran, 1 Malaysia, completed)
 M.S. Students (1 Brazil, completed)

Dissertations External Examiner

University of Tübingen, Center for Applied Geoscience (Fall 2015)
 Indian School of Mines, Department of Applied Mathematics, (Fall 2013)
 Indian School of Mines, Department of Applied Mathematics, (Summer 2013)

University Services - University Level

1. Member, Committee on Committees (2017-2019)
2. Member, Center of Computation & Technology, HPC Resource Allocation Committee (2015-2019)
3. Judge for LSU Triple EX(EXcite, EXplore, EXperiment) Symposium, LSU, October 29, 2009.
4. Advisor for the Chancellor's Future Leaders in Research (CFLR), 2006

University Services - College Level

1. Member, College of Engineering, College Policy Committee (2012-2014)

University Services - Department level

1. CEE Department Water Resources and Coastal Coordinator (2018-present)
2. CEE Promotion & Tenure Committee (2018-present)
3. CEE Department Award Committee (2016-present)
4. Faculty search committee member for Environmental Engineering positions (2015-2016).
5. Faculty search committee member for joint CEE/CCT coastal positions (2013-2014)
6. Committee member of undergraduate civil engineering curriculum (2004-present).
7. Faculty Advisor to Chi Epsilon, the Civil Engineering Society, LSU Chapter (2009-2015)
8. Seminar coordinator to 10 more speakers per year (2005-2010).

Conference Organizer

1. Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, 2015
2. Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, 2016
3. Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, 2017
4. Annual Louisiana Groundwater, Surface Water and Water Resources Symposium, 2018

State Services

1. East Baton Rouge Parish Design and Planning Selection Board, 2016 - 2018
2. Planning and Specifications subcommittee, Capital Area Ground Water Conservation Commission, 2017-present
3. Ad Hoc Group, Capital Area Ground Water Conservation Commission, 2015-2017
4. Judge for Region VII Science and Engineering Fair, Louisiana, 2006
5. Judge for Louisiana Science and Engineering Fair, 2006

Professional Registration and Certification

Registered Professional Engineer (Discipline: Civil) in Louisiana, License number (32164), 2006-present