

## **Mustafa M. ARAL**

Ph.D., P.E., P.Hy., F. ASCE

Professor

Civil Engineering Department

Bartın University

Bartın, 74100 Türkiye

E-mail: [mustafaaral@bartin.edu.tr](mailto:mustafaaral@bartin.edu.tr)

### **EĞİTİM BİLGİLERİ:**

Doktora: (1999 Environmental Fluid Mechanics with minor in Numerical Analysis and Applied Mathematics, Sept. 1971, School of Civil Eng., Georgia Institute of Technology, USA.

Yüksek Lisans: (1999) Civil Engineering with major in Environmental and Water Resources Engineering, June 1969, School of Civil Eng., Georgia Institute of Technology, USA.

Lisans: (1999) Civil Engineering, June 1967, Department of Civil Engineering, Middle East Technical University, Turkey.

### **ÜNVAN:**

2018-present	Professor	Department of Civil Engineering, Bartın University.
1994-2018	Professor	School of Civil and Environmental Engineering, Ga. Tech.
1993-2018	Director	Multimedia Environmental Simulations Laboratory (MESL) Ga. Tech
1983-1994	Assoc. Professor	School of Civil and Environmental Engineering, Ga. Tech.
1979-1983	Visiting Professor	School of Civil and Environmental Engineering Ga. Tech. (On sabbatical)
1974-1982	Adjunct Professor	Marine Sciences Dept., Civil Eng. Dept., Eng. Science Dept., Middle East Technical University, Turkey.
1977-1982	Assoc. Professor	Mathematics Dept., Middle East Tech. Univ., Turkey.
1974-1979	Assistant Chairman	Mathematics Dept., Middle East Tech. Univ., Turkey.
1971-1977	Assistant Professor	Mathematics Dept., Middle East Tech. Univ., Turkey.

### **ONUR VE ÖDÜLLER:**

1973, **NATO, Science Fellowship**, September 1973.

1976, **Best Teacher Award**, Middle East Technical Univ., Mathematics Department, May 1976.

1976, **NATO, Science Fellowship**, September 1976.

1980, **Who is Who in Science, Engineering and Education** series since 1980.

1984, **Award of Appreciation**, in acknowledgment of contributions to the organization of the ASCE International Conference held in Atlanta, American Society of Civil Engineers, June 1984.

1986, **Outstanding Faculty Member**, Georgia Institute of Technology, May 1986.

1986, **Sigma Xi Research Society**.

1986, **Best Teacher Award**, Georgia Institute of Technology, June 1986.

1995, **Award of Recognition**, for the Organization of the East-West Advanced Study Institute on Environmental Issues, NATO, Scientific and Environmental Affairs Division, August 1995.

- 1996, **Engineering Technical Excellence Award**, Public Health Serv., USDHHS 1996 for the technical paper: "Estimating Exposure to VOCs from Municipal Water System Pipelines: Use and Application of a Computational Model, *Archives of Environmental Health*, May 1996 (with co-authors).
- 1997, **Research Program Development Award**, in Recognition for Developing a Consistent and Comprehensive Research Program in Environmental Health, School of Civil and Environmental Engineering, Georgia Institute of Technology, May 1997.
- 1997, **Science Publication Award**, ATSDR, US DHHS, for the technical paper: "Use of Computational models to Reconstruct and Predict Trichloroethylene Exposure," in *Toxicology and Industrial Health*, April 1997 (with co-authors).
- 1997, **Award of Appreciation and Recognition**, in acknowledgment of contributions to the organization of the International Conference on Geology and Environment (GeoEnv'97), September 1997.
- 1998, **Engineering Literary Excellence Award**, Public Health Serv., USDHHS for the technical paper: "Exposure Assessment Using Analytical and Numerical Models: A Case Study," in *ASCE Practice Periodical of Hazardous, Toxic, and Radioactive waste Management*, April 1998 (with co-authors).
- 1998, **Honorary Professor of Environmental Sciences**, Huazong University of Science and Technology, Wuhan, Peoples Republic of China.
- 2000, **Cuming Medal Award 2000**, The Society of American Military Engineers award to Dover Township Water Distribution System Modeling Research Team.
- 2000, **Best Practice Oriented Paper Award**, ASCE Environmental & Water Resources Institute Planning and Management Council, for the technical paper "Using Water-Distribution System Modeling to Assist Epidemiologic Investigations," *ASCE Journal of Water Resources Planning and Management*, Vol. 126, No. 4, 2000 (with co-authors).
- 2003, **Excellence in Environmental Engineering Award in Research Category**, American Academy of Environmental Engineers (AAEE). *Research Topic: "Enhancing Environmental Engineering Science to Benefit Public Health: Integrating Hydraulic Network Modeling, Spatial Analysis, and Genetic Algorithms with Epidemiologic Studies,"* Awarded to **M. M. Aral** for the Leadership of the ATSDR – MESL/GT Research Group.
- 2005, **Engineering Technical Excellence Award**, Public Health Service, USDHHS for the technical paper: "ACTS - A Multimedia Environmental Fate and Transport Analysis System." in *ASCE Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management*, published in 2004 (with co-authors).
- 2006, **Excellence in Applied Environmental Health Research**, National Center for Environmental Health (NCEH), Centers for Disease Control and Prevention (CDC), for our work in assisting NCEH/CDC in an epidemiological study of childhood leukemia and central nervous system cancers that occurred in the period 1979 through 1996 in Dover Township, New Jersey and Camp Lejeune (Air Force Army Base) at North Carolina.
- 2010, **Best Research Paper Award**, ASCE Water Resources Management Council, for the technical paper "Saltwater Intrusion Hydrodynamics in a Tidal Beach," *ASCE Journal of Hydrologic Engineering*, Vol. 13, No. 9: pp. 863-872.126 (with co-authors).
- 2010, **US Public Health Service Engineering Best Research Paper Award**, CDC, DHHS. "Reconstructing Historical Exposures to Volatile Organic Compound-Contaminated Drinking Water at a U.S. Military Base," *Journal of Water Quality, Exposure and Health*, Vol. 1, No. 1, pp. 49-68, (with co-authors).
- 2010, **ASCE Outstanding Service Award**, ASCE EWRI, for Groundwater Hydrology Committee Chair activities under EWRI Groundwater Council.

- 2010, **Life Member**, ASCE EWRI.
- 2010, **Fellow ASCE**, ASCE, EWRI.
- 2011, **James R. Croes Medal**, ASCE EWRI, for the paper: "Optimal Design of Sensor Placement in Water Distribution Systems," ASCE Journal of Water Resources Planning and Management, Vol. 136, No. 1, pp.5-18, 2010.
- 2011, **Founders Award**, American Institute of Hydrology for dedicated contribution to the profession.
- 2011, **USPHS Engineering Literary Award**, for an outstanding Engineering Management Paper entitled "Stochastic Analysis of Pesticide Transport in the Shallow Groundwater of Oatland Island, Georgia." Published in the International Journal on Water Quality, Exposure and Health, Vol. 2, No. 1, pp. 47-64.
- 2013, **Sustained Interdisciplinary Research Award**, in Recognition for Developing a Consistent, Comprehensive and Integrated Research Program within CEE, Georgia Institute of Technology.
- 2015, **Panel Leadership and Organization Recognition, 68. Turkish Geology Conference**. "Groundwater Supplies and Drought" Panel, 68. Turkish Geology Conference, Organized by Turkish Maden Tetkik Arama Kurumu and Turkish Geology Engineers, 6 April 2015, Ankara, Turkey.
- 2015, **Invited Speaker in the opening session of the 68. Turkish Geology Conference**. "Evolution of Environmental and Geological Engineering Systems Analysis in Modern Day," 68. Turkish Geology Conference, Organized by Turkish Maden Tetkik Arama Kurumu and Turkish Geology Engineers, 6 April 2015, Ankara, Turkey.
- 2015, **Grand Prize in Environmental Engineering Award in Research Category by American Academy of Environmental Engineers (AAEE)**. *Research Topic: "Using Environmental Engineering Tools, Scientific Analyses, and Epidemiological Studies to Quantify Human Exposure to Contaminated Drinking Water and to Benefit Public Health,"* Awarded to **M. M. Aral** for the Leadership of the ATSDR – MESL/GT Research Group.
- 2018, **Best Teacher Award**, Center for Teaching and Learning, Georgia Institute of Technology, January 09, 2018.
- 2018, **Invited Speaker, HIDRODER**. "Climate Change and its Effects on Water Quality and Quantity" Organized by HIDRODER-2018 National Hydrology and Water Resources Symposium, 27-29 September 2018, Ankara, Turkey.

#### **YAYINLANMIŞ KİTAPLAR ve KİTAPLARDA BÖLÜMLER:**

- Aral, M. M.**, Ground Water Modeling in Multilayer Aquifers - Steady Flow, *Lewis Publ. Inc.*, 1990.
- Aral, M. M.**, Ground Water Modeling in Multilayer Aquifers - Unsteady Flow, *Lewis Publ. Inc.*, 1990.
- Aral, M. M.** (2011) "Environmental Modeling and Health Risk Analysis," Springer Publishers, Berlin, 487p., ISBN 978-90-481-8607-5.
- Aral, M. M.** (Editor), Recent Advances in Ground-Water Pollution Control and Remediation, NATO Adv. Study Inst., *Kluwer Acad. Publ.*, 609p, January 1996.
- Aral, M. M.**, Brebbia, C, Maslia M and Sinks, T. (Editors) (2005) "Environmental Exposure and Health," Proceedings of the 1<sup>st</sup> International Conference on Environmental Exposure and Health, Atlanta Ga. USA, WIT Press, 502p.
- Aral, M. M.** and Taylor S. (Editors) (2011) "Groundwater Quality and Quantity Management," ASCE, 573p., ISBN-978-0-7844-1176-6.

- Aral, M. M.**, C. Shea and F. Al-Khayyal, "Optimization Methods in Ground Water Management," Review Paper in Volume 8, "Applications of Management Science: Network Optimization Applications," *JAI Press Inc.*, pp. 213-246, 1995.
- Aral, M. M.** C. Shea and F. Al-Khayyal, "Optimal Design of Pump-and Treat Well Networks," NATO Adv. Study Inst. on Ground Water Pollution Control and Remediation, *Kluwer Acad. Publ.*, pp. 307-333, January 1996.
- Aral, M. M.**, and Guan, J, "Genetic Algorithms in Search of Groundwater Pollution Sources," NATO Adv. Study Inst. on Ground Water Pollution Control and Remediation, *Kluwer Acad. Publ.*, pp. 347-369, January 1996.
- Aral, M. M.** and Maslia, M. L., Application of Monte Carlo Simulations in Analytical Contaminant Transport Modeling, Chapter 13, pp. 305-315, in ASCE book on "Groundwater Quality Modeling and Management Under Uncertainty," Ed. by Srikan Tamishra, 2003.
- Aral, M. M.**, and Gunduz, O., Scale Effects in Large Scale Watershed Modeling. Chapter 11 in "ADVANCES IN HYDROLOGY" Ed. by V. Singh and R. N. Yadava, 2003.
- Aral, M. M.** and Gunduz, O. Large-Scale Hybrid Watershed Modeling, Section 2 in "WATERSHED MODELS," CRC Press, 2005, Ed. Dr. Vijay Singh, 75-95pp.
- Aral, M. M.** (2010) "Saltwater Intrusion Management in Urban Area Aquifers - A Case Study for Savannah, Georgia," The Effects of Urbanization on Groundwater: An Engineering Case-based Approach for Sustainable Development, Editor, Ni-Bin Chang, *ASCE/EWRI publication*, pp. 51-89.
- Jang, W. and **Aral, M. M.** (2011) "In-Situ Air Sparging and Thermal Venting in Ground Water Remediation," Chapter 11 in Groundwater Quality and Quantity Management, Editors Aral, M. M. and Taylor, S., *ASCE*, pp. 530-575, ISBN-978-0-7844-1176-6.
- Aral, M. M.** (2011) "Groundwater Management," Chapter 14 in Groundwater Quality and Quantity Management, Editors Aral, M. M. and Taylor, S., *ASCE*, pp. 560-568, ISBN-978-0-7844-1176-6.
- Gunduz, O. and **Aral, M. M.** (2015) "Integrated Watershed Modeling," *Handbook of Applied Hydrology*, Edited by Vijay Singh. Chapter 56.

#### **PATENTLER:**

**Aral, M. M. GA. Tech. Atlanta, USA and Demirel. E. Osman Gazi Univ. Eskisehir, Turkey.**

**TITLE:** "Baffle Design to Improve Mixing and Reduce the Flow Through Energy Requirements in Chlorine and Ozone Contact Tanks," USA Patent and Trademark Office, USA Patent # 62/498,260, USA.

#### **YAYINLANMIŞ MAKALELER (SCI indeks):**

1. Martin, C.S. and **Aral, M.M.** (1971). "Seepage Force on Interfacial Bed Particles." Journal of the Hydraulics Division-ASCE 97(HY7): 1081-1101.
2. **Aral, M.M.** and Isilgan, N. (1973). "Seepage Through Earth Dams: A Finite Element Solution." Journal of Pure and Applied Sciences 6(2): 185-194.
3. **Aral, M.M.** and Gulcat, U. (1977). "Finite-Element Laplace Transform Solution Technique for Wave-Equation." International Journal for Numerical Methods in Engineering 11(11): 1719-1732.
4. **Aral, M.M.** (1980). "Steady Jet Impingement on Straight and Curved Surfaces." Journal of Pure and Applied Sciences 13(3): 349-368.
5. **Aral, M.M.** (1981). "A One Dimensional Mass-Transport Model for Natural Rivers." Journal

- of Environmental Systems 11(2): 139-154.
6. **Aral, M.M.** and Sturm, T.W. (1982). "Groundwater Pumping from Shallow Axisymmetric Ponds." Journal of the Hydraulics Division-ASCE 108(12): 1469-1485.
  7. Maslia, M.L. and **Aral, M.M.** (1982). "Evaluation of a Chimney Drain Design in an Earth-fill Dam." Ground Water 20(1): 22-31.
  8. Ozsoy, E., **Aral M.M.**, et al. (1982). "Coastal Amplification of Tsunami Waves in the Eastern Mediterranean." Journal of Physical Oceanography 12: 117-126.
  9. **Aral, M. M.** and Maslia, M.L. (1983). "Unsteady Seepage Analysis of Wallace Dam." Journal of Hydraulic Engineering-ASCE 109(6): 809-826.
  10. **Aral, M.M.** and Maslia, M.L. (1984). "Unsteady Seepage Analysis of Wallace Dam - Closure." Journal of Hydraulic Engineering-ASCE 110(5): 671-673.
  11. **Aral, M.M.** (1985). "Aquifer Parameter Prediction in Leaky Aquifers." Journal of Hydrology 80(1-2): 19-44.
  12. **Aral, M.M.** (1986). "A Regional Multilayered Aquifer Model for Microcomputers." International Journal for Microcomputers in Civil Engineering 1(1): 69-78.
  13. **Aral, M.M.** (1987). "An Unsteady Regional Multilayered Aquifer Model for Microcomputers." International Journal for Microcomputers in Civil Engineering 2(3): 197-206.
  14. **Aral, M.M.** and Tang, Y. (1988). "A Boundary Only Procedure for Time-Dependent Diffusion-Equations." Applied Mathematical Modeling 12(6): 610-618.
  15. **Aral, M.M.** and Tang, Y. (1988). "A New Boundary Element Formulation for Time-Dependent Confined and Unconfined Aquifer Problems." Water Resources Research 24(6): 831-842.
  16. **Aral, M.M.** (1989). "Semianalytic Boundary Element Solution of Groundwater Seepage Problems." Water Resources Research 25(7): 1495-1503.
  17. **Aral, M.M.** (1989). "Waste Stabilization in Multilayer Aquifers by Optimal Hydraulic Control." Ground Water 27(4): 517-523.
  18. **Aral, M.M.** and Tang, Y. (1989). "A Boundary-Only Procedure for Transient Transport Problems with or without 1st-Order Chemical-Reaction." Applied Mathematical Modeling 13(3): 130-137.
  19. Zakikhani, M. and **Aral, M.M.** (1989). "Direct and Boundary-Only Solutions of Multilayer Aquifer Systems .A. Steady-State Solution." Journal of Hydrology 111(1-4): 49-67.
  20. Zakikhani, M. and **Aral, M.M.** (1989). "Direct and Boundary-Only Solutions of Multilayer Aquifer Systems .B. Unsteady-State Solution." Journal of Hydrology 111(1-4): 69-87.
  21. **Aral, M.M.** and Tang, Y. (1992). "Flow against Dispersion in 2-Dimensional Regions." Journal of Hydrology 140(1-4): 261-277.
  22. Maslia, M.L., **Aral, M.M.**, et al. (1992). "Evaluation of Groundwater-Flow Regime at a Landfill with Liner System." Journal of Environmental Science and Health Part a-Environmental Science and Engineering & Toxic and Hazardous Substance Control A27(7): 1793-1816.
  23. Ratzlaff, S.A. and **Aral, M.M.** (1992). "Optimal-Design of Groundwater Capture Systems Using Segmental Velocity-Direction Constraints." Ground Water 30(4): 607-612.
  24. Tang, Y. and **Aral, M.M.**, (1992). "Contaminant Transport in Layered Porous-Media .1. General-Solution." Water Resources Research 28(5): 1389-1397.
  25. Tang, Y. and **Aral, M.M.** (1992). "Contaminant Transport in Layered Porous-Media .2. Applications." Water Resources Research 28(5): 1399-1406.
  26. **Aral, M. M.**, Maslia, M.L. et al. (1993). "Groundwater Remediation Using Smart Pump and Treat - Discussion." Ground Water 31(4): 680-681.
  27. Maslia, M.L., **Aral, M.M.**, et al. (1994). "Exposure Assessment of Populations Using Environmental Modeling, Demographic-Analysis, and GIS." Water Resources Bulletin 30(6):

- 1025-1041.
28. **Aral, M.M.**, Maslia, M.L. et al. (1996). "Estimating exposure to volatile organic compounds from municipal water-supply systems: Use of a better computational model." Archives of Environmental Health 51(4): 300-309.
  29. **Aral, M.M.** and Liao, B. (1996). "Analytical Solutions for Two-Dimensional Transport Equation with Time Dependent Dispersion Coefficients." Journal of Hydrologic Engineering 1(1): 20-32.
  30. Maslia, M.L., **Aral, M.M.**, et al. (1996). "Use of computational models to reconstruct and predict trichloroethylene exposure." Toxicology and Industrial Health 12(2):139-152.
  31. Maslia, M.L., **Aral, M.M.**, et al. (1997). "Exposure assessment Using Analytical and Numerical Models: A Case Study." Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management-ASCE 1(2): 50-60.
  32. **Aral, M.M.**, Zhang, Y. et al. (1998). "Application of relaxation scheme to wave-propagation simulation in open-channel networks." Journal of Hydraulic Engineering-ASCE 124(11): 1125-1133.
  33. Guan, J. and **Aral, M.M.** (1999). "Optimal remediation with well locations and pumping rates selected as continuous decision variables." Journal of Hydrology 221(1-2): 20-42.
  34. Guan, J. and **Aral, M.M.** (1999). "Progressive genetic algorithm for solution of optimization problems with nonlinear equality and inequality constraints." Applied Mathematical Modeling 23(4): 329-343.
  35. Liao, B. and **Aral, M.M.** (1999). "Interpretation of LNAPL Thickness Measurements under Fluctuating Groundwater Table Conditions." Journal of Hydrologic Engineering 4(2): 125-134.
  36. **Aral, M.M.** and Liao, B.S. (2000). "LNAPL thickness interpretation based on bail-down tests." Ground Water 38(5): 696-701.
  37. **Aral, M.M.**, Zhang, Y. et al. (2000). "Application of relaxation scheme to wave-propagation simulation in open-channel network - Closure." Journal of Hydraulic Engineering-ASCE 126(1): 91-91.
  38. Liao, B.S. and **Aral, M.M.** (2000). "Semi-analytical solution of two-dimensional sharp interface LNAPL transport models." Journal of Contaminant Hydrology 44(3-4): 203-221.
  39. Maslia, M.L., Sautner, J.B., **Aral, M.M.**, et al. (2000). "Using water-distribution system modeling to assist epidemiologic investigations." Journal of Water Resources Planning and Management-ASCE 126(4): 180-198.
  40. **Aral, M.M.**, Guan, J. et al. (2001). "Identification of contaminant source location and release history in aquifers." Journal of Hydrologic Engineering 6(3): 225-234.
  41. **Aral, M.M.**, Guan, J. et al. (2002). "Closure to "Identification of contaminant source location and release history in aquifers" by Mustafa M. Aral, Jiabao Guan, and Morris L. Maslia." Journal of Hydrologic Engineering 7(5): 400-401.
  42. **Aral, M.M.**, Guan, J. et al. (2002). "Optimal reconstruction of hydraulic management of a water distribution system." Epidemiology 13(4): S86-S86.
  43. **Aral, M.M.** and Liao, B. (2002). "Effect of groundwater table fluctuations on LNAPL thickness in monitoring wells." Environmental Geology 42(2-3): 151-161.
  44. Maslia, M.L., Sautner, J.B. and **Aral, M.M.** (2002). "Using water-distribution system modeling to assist epidemiologic investigations." Epidemiology 13(4): S86-S86.
  45. Jang, W. and **Aral, M.M.** (2003). "Concentration evolution of gas species within a collapsing bubble in a liquid medium." Env. Fluid Mechanics 3(3): 173-193.
  46. Guan, J. and **Aral, M.M.** (2004). "Optimal design of groundwater remediation systems using fuzzy set theory." Water Resources Research 40(1): 1-20.

47. Maslia, M.L. and **Aral, M.M.** (2004). "ACTS - A Multimedia Environmental Fate and Transport Analysis System." ASCE Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management-ASCE 8(3): 181-198.
48. Park, C.H. and **Aral, M.M.** (2004). "Multi-objective optimization of pumping rates and well placement in coastal aquifers." Journal of Hydrology 290(1-2): 80-99.
49. Zhang, Y. and **Aral, M.M.** (2004). "Solute Transport in Open-Channel Networks in Unsteady Flow Regime." Environmental Fluid Mechanics 4(3): 225-247.
50. Kentel, E. and **Aral, M.M.** (2004). "Probabilistic-Fuzzy Health Risk Modeling," International Journal for Stochastic Environmental Research & Risk Assessment (SERRA), 18: 324-338.
51. **Aral, M.M.**, Guan, J., Liao, B., Maslia, M.L., Sautner, J., Williams, R. and Reyes, J.J. 2004. "Optimal Reconstruction of Historical Water Supply to a Water-Distribution System: A Methodology", Journal of Water and Health, 2:123-136.
52. **Aral, M.M.**, Guan, J., Liao, B., Maslia, M.L., Sautner, J., Williams, R. and Reyes, J.J. 2004. "Optimal Reconstruction of Historical Water Supply to a Water-Distribution System: B Applications", Journal of Water and Health, 2:137-156.
53. Gunduz, O. and **Aral, M.M.** (2005). "River Networks and Groundwater Flow: Simultaneous Solution of a Coupled System," J. of Hydrology 301(1-4): 216-234.
54. Kentel, E. and **Aral, M.M.** (2005). "2D Monte Carlo versus 2D Fuzzy Monte Carlo Health Risk Assessment," International Journal for Stochastic Environmental Research & Risk Assessment (SERRA), 19: 86-96.
55. Maslia, M.L, Reyes, JJ, Gillig, RE, Sautner, JB, Fagliano, JA and **Aral, M.M.** (2005) "Public Health Partnerships Addressing Childhood Cancer Investigations: Case Study of Toms River, Dover Township, New Jersey, USA," International Journal of Hygiene and Environmental Health, 208: pp. 45-54.
56. Guan, J. and **Aral, M.M.** (2005) "Remediation System Design with Multiple Uncertain Parameters using Fuzzy Sets and Genetic Algorithm," ASCE Journal of Hydrologic Engineering, 10(5): pp. 386-394.
57. Gunduz, O. and **Aral, M.M.** (2005) "A Dirac-Delta Function Notation for Source/Sink Terms in Groundwater Flow," ASCE Journal of Hydrologic Engineering, 10(5): pp. 420-427.
58. Guan, J., **Aral, M.M.**, Maslia, M. L. and Grayman, W. M. (2006) "Identification of Contaminant Sources in Water-Distribution Systems Using Simulation-Optimization Method: A Case Study," ASCE, Journal of Water Resources Planning and Management, July 132(4): pp. 252-262.
59. Kentel, E. and **Aral, M.M.** (2007) "Fuzzy Multi-Objective Decision Making Approach to Evaluate Pumping Demands in Coastal Aquifers: A Case Study for Savannah Georgia", ASCE Journal of Hydrologic Engineering, March 12(2): pp. 206-217.
60. Kentel, E. and **Aral, M.M.** (2007) "Risk Tolerance Measure for Fuzzy Health Risk Assessment," International Journal for Stochastic Environmental Research & Risk Assessment (SERRA), 21: pp. 405-417.
61. Park, C-H and **Aral, M.M.** (2007) "Sensitivity of the Solution of Elders Problem to Density, Velocity and other Numerical Perturbations," Journal of Contaminant Hydrology, 92: pp.33-49.
62. Jang, W and **Aral, M.M.** (2007) "Density Driven Transport of Volatile Organic Compounds and Its impact on Contaminated Groundwater Plume Evolution," Journal of Transport in Porous Media, 67(3): pp. 353-374.
63. Ayvaz, T., Karahan, H. and **Aral, M.M.** (2007). "Aquifer Parameter and Zone Structure Estimation Using Kernel-Based Fuzzy C-Means Clustering and Genetic Algorithm," Journal of Hydrology, 343 (3-4): pp. 240-253.

64. Guan, J., Kentel, E. and **Aral, M.M.** (2008) "Genetic Algorithm for Constrained Optimization Models and Its Application," ASCE Journal of Water Resources Planning and Management, 134(1): pp. 64-72.
65. Jang, W. and **Aral, M.M.** (2008) "Effect of Biotransformation on Multi-species Plume Evolution and Natural Attenuation" International Journal on Transport in Porous Media, 72(2): pp. 207-226.
66. Kilic, G.S. and **Aral, M.M.** (2008) "Probabilistic Fugacity Analysis of Lake Pontchartrain Pollution after Hurricane Katrina", Journal of Environmental Management, 88(3): pp. 448-457.
67. Park, C-H and **Aral, M. M.** (2008) "Saltwater Intrusion Hydrodynamics in a Tidal Beach," ASCE Journal of Hydrologic Engineering, 13(9): pp. 863-872.
68. Jang, W. and **Aral, M.M.** (2008) "Multiphase Flow Fields in In-Situ Air Sparging and It's Effect on Remediation" International Journal on Transport in Porous Media, 76, pp. 99-119.
69. Kilic, G.S. and **Aral, M.M.** (2009) "A Fugacity Based Continuous and Dynamic Fate and Transport Model for River Networks and Its Application to Altamaha River," Journal of Science of the Total Environment, Vol. 407, No.12, pp. 3855-3866.
70. **Aral, M.M.** (2009) "Water Quality, Exposure and Health: Purpose and Goals," Journal of Water Quality, Exposure and Health, Vol. 1, No. 1, pp. 1-4.
71. Maslia, M.L., **Aral, M.M.**, Faye, R.E., Suárez-Soto, R. J., Sautner, J.B., Wang, J., Jang, W., Bove, F. J., and Ruckart, P.Z.. (2009) "Reconstructing Historical Exposures to Volatile Organic Compound-Contaminated Drinking Water at a U.S. Military Base," Journal of Water Quality, Exposure and Health, Vol. 1, No. 1, pp. 49-68.
72. Ilker, T.T., Nam, K., Guan, J. and **Aral, M.M.** (2009) "Optimal Water Quality Monitoring Network Design for River Systems," Journal of Environmental Management, Vol. 90, pp. 2987-2998.
73. Anderson, B.A., Maslia, M.L., Caparoso, J.L., Ausdemore, D. and **Aral, M.M.** (2010) "Stochastic Analysis of Pesticide Transport in the Shallow Groundwater of Oatland Island, USA," Journal of Water Quality, Exposure and Health, Vol. 2, No. 1, pp. 47-64.
74. **Aral, M.M.**, Guan, J., Maslia, M.L. (2010) "Optimal Design of Sensor Placement in Water Distribution Systems," ASCE Journal of Water Resources Planning and Management, Vol. 136, NO.1, pp.5-18.
75. **Aral, M.M.** (2011) "Editorial: Surgery was Successful but the Patient Died," ASCE Journal of Hydrologic Engineering, Vol. 16, No. 2, pp. 91-92.
76. Telci, T. and **Aral, M.M.** (2011) "Contaminant Source Location Identification in River Networks Using Water Quality Monitoring Systems for Exposure Analysis," Journal of Water Quality, Exposure and Health, Vol. 2, No. 4, pp. 205-218.
77. Goktas, R.K. and **Aral, M.M.** (2011) "Integrated Dynamic Modeling of Contaminant Fate and Transport within a Soil-Plant System," Vadose Zone Journal, Vol. 10, 1130-1150.
78. Maslia, M.L., **Aral, M.M.** et al.(2011) *Discussion on: "Complexities in Hindcasting Models—When Should We Say Enough Is Enough,"* by T. Prabhakar Clement, Groundwater, v. 49, no. 5: 620–629.
79. **Aral, M.M.**, Guan, J. and Chang, B. (2012) "A Dynamic System Model to Predict Global Sea-Level Rise and Temperature Change," ASCE Journal of Hydrologic Engineering, Vol. 17, No. 2, pp237- 242, doi:10.1061/(ASCE)HE.1943-5584.0000447.
80. **Aral, M.M.**, Guan, J. and Chang, B. (2013) "A Dynamic System Model to Predict Global Sea-Level Rise and Temperature Change," ASCE Journal of Hydrologic Engineering, Closure, Vol. 18, No. 3, pp372-375.
81. Chuljin, P., Telci, I. Kim, S-H and **Aral, M.M.** (2013) "Designing Optimal Water Quality



- Monitoring Network for River Systems Using Constrained Discrete Optimization via Simulation,” Engineering Optimization, DOI:10.1080/0305215X.2012.748049.
82. Dede, O. T., Telci, I. and **Aral, M.M.** (2013) “The Use of Water Quality Index Models for the Evaluation of Surface Water Quality: A case study for Kirmir Basin, Ankara, Turkey,” Journal of Water Quality, Exposure and Health, Vol. 5, No. 1, pp. 41-56.
  83. **Aral, M.M.** (2013) “Climate Change and Human Population Dynamics,” Journal of Water Quality, Exposure and Health: Special Issue on Climate Change, Vol. 5, No. 4, pp. DOI: 10.1007/s12403-013-0091-5.
  84. Guan, J., Chang, B. and **Aral, M.M.** (2013). “A Dynamic Control System Model for Global Temperature Change and Sea Level Rise in Response to CO<sub>2</sub> Emissions,” Climate Research, Vol. 58: 55–66, DOI: 10.3354/cr01189.
  85. Guan, J., Zhang, A. and **Aral, M.M.** (2013). “An Optimization Approach for Sustainable Development Planning of Savanna Systems,” Journal of Arid Environments, Vol. 98, pp. 60-69: DOI:10.1016/j.jaridenv.2013.07.013.
  86. Chang, B., Guan, J. and **Aral, M.M.** (2013). “Modeling Spatial Variations of Sea Level Rise and Corresponding Inundation Impacts: A Case Study for Florida, U.S.A.,” Journal of Water Quality Exposure and Health (Climate Change Special Issue), DOI 10.1007/s12403-013-0099-x.
  87. **Aral, M.M.** (2014). Perspectives and Challenges on Climate Change and Its Effects on Water Quality and Health, Water Q. Exp. and Health, Vol. 6, pp1, DOI 10.1007/s12403-014-0125-7.
  88. Zhang, A. and **Aral, M.M.** (2015). Characterization of CO<sub>2</sub> Injection into Deep Saline Aquifers Using Two-phase Darcy-Forchheimer Flow, ASCE Journal of Hydrologic Engineering. DOI: 10.1061/(ASCE)HE.1943-5584.0001097.
  89. Morgan, W. and **Aral, M.M.** (2015). An implicitly coupled hydro-geomechanical model for hydraulic fracture simulation with the discontinuous deformation analysis, International Journal of Rock Mechanics and Mining Sciences. DOI 10.1016/j.ijrmms.2014.09.021.
  90. **Aral, M.M.** (2015). Climate Change and Persistent High Temperatures: Does it Matter? Frontiers in Environmental Science, Section on Interdisciplinary Climate Studies. DOI: 10.3389/fenvs.2014.00045.
  91. Chang, B., Guan, J. and **Aral, M.M.** (2015). “A Scientific Discourse: Climate Change and Sea-Level Rise,” ASCE Journal of Hydrologic Engineering (Invited Special Issue paper), Vol. 20, No. 1, pp. A4014003-1–14. DOI: 10.1061/ (ASCE) HE. 1943-5584.0000860.
  92. **Aral, M.M.** and Nam, K. (2015). “Optimal Monitoring Network Design for Wind Driven and Tidal Estuaries,” ASCE Journal of Environmental Engineering (Invited Special Issue paper – DOI: 10.1061/(ASCE)EE.1943-7870.0001051).
  93. Kim, S-H, **Aral, M.M.**, Eun, Y, Park, JJ, Park, C. (2016) “Impact of Sensor Measurement Error on Sensor Positioning in Water Quality Monitoring Stations,” Stochastic Environmental Research and Risk Assessment (SERRA), DOI 10.1007/s00477-016-1210-1.
  94. Demirel, E. and **Aral, M.M.** (2016) “Unified Analysis of Multi-Chamber Contact Tanks and Mixing Efficiency Based on Vorticity Field. Part I: Hydrodynamic Analysis,” Water, 8(11), 495; doi:[10.3390/w8110495](https://doi.org/10.3390/w8110495).
  95. Demirel, E. and **Aral, M.M.** (2016) “Unified Analysis of Multi-Chamber Contact Tanks and Mixing Efficiency Based on Vorticity Field. Part II: Transport Analysis,” Water, 8(11), 537; doi:[10.3390/w8110537](https://doi.org/10.3390/w8110537).
  96. **Aral, M.M.** and Guan, J. (2016) “Global Sea Surface Temperature and Sea Level Rise Estimation with Optimal Historical Time Lag Data” Water, 8, 519; doi:[10.3390/w8110519](https://doi.org/10.3390/w8110519).
  97. Maslia, M.L., **Aral, M.M.**, Ruckard, P. Z., Bove, F. (2016) “Reconstructing Historical VOC

- Concentrations in Drinking Water for Epidemiological Studies at a U.S. Military Base: Summary of Results” *Water*, 8, 449; doi:10.3390/w8100449.
98. **Aral, M.M.** and Demirel, E. (2017) “Novel slot-baffle design to improve mixing efficiency and reduce cost of disinfection in drinking water treatment” *ASCE Journal of Environmental Engineering* DOI: [10.1061/\(ASCE\)EE.1943-7870.0001266](https://doi.org/10.1061/(ASCE)EE.1943-7870.0001266).
  99. **Aral, M.M.** and Chang, B. (2017) “Spatial Variation of Sea Level Rise at Atlantic and Mediterranean Coastline of Europe” Special Issue Invited Paper, *Water*, 9, 522; doi:[10.3460/w8110444](https://doi.org/10.3460/w8110444).
  100. Okuducu, M.B. and **Aral, M.M.** (2017) “Knowledge Based Dynamic Human Population Models” *Technological Forecasting & Social Change Journal*, 122C pp. 215 - 243, 2017, DOI 10.1016/j.techfore.2017.05.008.
  101. Demirel, E. and **Aral, M.M.** (2018) “An Efficient Contact Tank Design for Potable Water Treatment” *Technical Journal, Turkey*, pp. 8279-8294, *Paper 499*, DOI: 10.18400/tekderg.322491.
  102. Demirel, E. and **Aral, M.M.** (2018) “Performance Assessment of Efficiency Indexes for Contact Tanks,” *ASCE Journal of Environmental Engineering* DOI: [10.1061/\(ASCE\)EE.1943-7870.0001266](https://doi.org/10.1061/(ASCE)EE.1943-7870.0001266).
  103. Okuducu, M.B. and **Aral, M.M.** (2018) “Performance Analysis and Numerical Evaluation of Mixing in 3-D T-Shape Passive Micromixers,” *Micromachines Journal*, Special Issue on Passive Micromixers, doi:10.3390/mi9050210
  104. Kizilaslan, A. M., Demirel, E. and **Aral, M.M.** (2018) “Effect of Porous Baffles on the Energy Performance of Contact Tanks in Water Treatment,” *Water*, 10, 1084; doi:10.3390/w10081084.

#### **YAYINLANMIŞ KONFERANS MAKALELERİ:**

- Aral, MM, Mayer, PG and Smith, CV, Finite Element Galerkin Method Solutions to Selected Elliptic and Parabolic Differential Equations, *Proceedings of the Air Force Third Conference on Matrix Methods in Structural Mechanics*, Wright-Patterson Air Force Base, Ohio, pp. 215-243, October 1971.
- Aral, MM, Finite Element Galerkin Formulation of Heat Transfer Problems, *Proc. of the Conf. on Numerical and Functional Analysis*, Istanbul Technical University, Publ. No. 982, pp. 16-28, 1973.
- Aral, MM and Yazici, A, Finite Element Solution of Problems with Unknown and Moving Boundaries, *Proceedings of the International Conference on Finite Element Methods in Engineering*, University of New South Wales, pp. 719-727, August 1974.
- Aral, MM and Sezgin, M, A Comparison of Iterative Solutions of Navier Stokes Equations, *Proceedings of the International Conference on Finite Element Methods in Engineering*, University of New South Wales, pp. 555-567, July 1979.
- Kunianski, E. and Aral, MM, Application of Digital Optimization for Parameter Estimation of Clayton Aquifer near Albany, Georgia, *Proceedings of the Conference, Water Resources of Georgia and Surrounding States*, Georgia Geologic Survey Bulletin 99, pp. 67-78, October 1983.
- Aral, MM, and Zakikhani, M., Multi-aquifer Parameter Estimation of the Clayton-Clairborne Aquifer Near Albany, Georgia, *Proceedings NWWA East West Conference on Ground Water Management*, Orlando, Florida, pp. 272-298, 1984.

- Aral, MM, Optimization Approach to the Identification of Aquifer Parameters in Multilayer Systems, *Proceedings VI Int. Conf. on Finite Elements in Water Resources*, Portugal, pp.359-369, 1986.
- Haddad, EH and Aral, MM, Ground Water Flow Models and Applications for Microcomputers, *Proceedings 5th National Conference on Microcomputers in Civil Engineering*, pp. 290-294, Orlando, Florida, 1987.
- Aral, MM and Tang, Y., A Comparison of DR-BEM and SR-BEM Solutions for Parabolic Problems, *Proceedings of the International Conference on Computational Engineering Science*, pp. 58iii1-58iii4, Atlanta, Georgia, 1988.
- Aral, MM and Tang, Y., Semianalytic Boundary Element Solution of Time Dependent Partial Differential Equations, *Proceedings of the 11th International Conference on Boundary Element Methods*, pp. 42-52, 1989.
- Maslia, M., Aral, MM, and Gill, HE, "The Importance of Hydrogeologic Controls on Remedial Action Alternatives," *Geophysical Society of America*, Southeastern Section Meeting, Contaminant Hydrogeology Session, Vol. 24, No. 2, pp. 53, 1992 (invited).
- Maslia, M., Aral, MM, Williams, R., Williams, S., Hayes, L. and Wilder, L., "Use of Computational Models to Determine Human Exposure Resulting from Remediation Activities at Hazardous Waste Sites," *Proceedings of the Water Environment Federation Specialty Conference How Clean is Clean*, 85p, January 10-13, 1993 (invited).
- Maslia, M., Aral, MM, Williams, R., Williams, S., Hayes, L. and Wilder, L., "Use of Computational Models to Reconstruct and Predict Trichloroethylene Exposure," *Proceedings of the International Congress on the Health Effects of Hazardous Waste*, p 271-283, May 3-6, 1993 (invited).
- Maslia, ML and Aral, MM, "Health Implications Associated with Hazardous Waste Site Clean-Up Goals: A Case Study of Trichloroethylene (TCE) Contamination", *Proceedings of the Annual Meeting of the Geological Society of America*, Boston, 1993 (invited).
- Aral, MM and Maslia, ML, Radtke, TM, "Conducting Exposure Assessment of Populations by Integrating Environmental Transport Models, Demographic Analysis, and Geographic Information Systems," *Proc. of the Int. Symposium on Assessing and Managing Health Risks from Drinking Water Contamination: Approaches and Applications*, Rome, Italy, pp. 221-233, September 1994 (invited).
- Lyverse, MA, Aral, MM and Tang, Y., "Liquid Hydrocarbon Recovery and Groundwater Protection at a Closed Refinery over a Sand and Gravel Aquifer", *Proceedings of the Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground-Water: Prevention, Detection, and Remediation*, Houston, Texas, November 2-4, 1994.
- Maslia, ML and Aral, MM, "Application of Geographic Information Systems and Numerical Models to Exposure Assessment", *Sixth Joint Conference of the International Society for Environmental Epidemiology and International Society for Exposure Analysis*, The University of North Carolina at Chapel Hill, September 18-21, 1994 (invited).
- Aral, MM, ML. Maslia, "Evaluation of Human Exposure to Contaminated Water Supplies Using GIS and Modeling," *Proc. of the Int. Conference HydroGIS'96*, pp. 243-252, Vienna, Austria, 1996.
- Aral, MM, ML. Maslia, RC. Williams, JE. Abraham, "ATSDR's Exposure-Dose Reconstruction Program: Case Studies in Public Health Analysis of Exposure to Environmental Contamination," *Proceedings of the 1995 Pacific Rim Conference on Occupational and Environmental Health*, (in publication), Sydney Australia, October 1995 (invited speaker).
- Holm, DM, Maslia, ML, Reyes, JJ, Williams, RC, and Aral, MM, 195, *Geographic Information Systems: A Critical Resource in Exposure Assessment*, Superfund XVI Conference and Exhibition Proceedings, Vol. 2, pp. 860-866, Washington, DC, Nov. 6-8, 1995.

- Aral, MM, Guan, J., "Optimal Groundwater Remediation Design Using Differential Genetic Algorithm," International Conference on Computational Methods in Water Resources," Cancun Mexico, pp. 349-357, July, 1996.
- Tang, Y., Aral, MM and Lyverse, M, "GIS Analysis of Subsurface LNAPL Volume Estimation," Proceedings of the Eleventh Outdoor Action Conference on Groundwater Remediation, Characterization and Management, pp. 156-178, Las Vegas, Nevada, April 1-3, 1997.
- Aral, MM, M. L. Maslia, Exposure Assessment Using Simulation and GIS, Proceedings CSCE/ACSE Environmental Engineering Conference, Edmonton, Alberta, Canada, pp. 885-892, July 22-26, 1997.
- Aral, MM and Guan, J., "Contaminant Source Identification Problem and its Importance in Health Sciences," International Conference on Integrating Engineering and Health Sciences, Mexico, October 1998 (invited key note speaker).
- Zhang, Y and Aral, MM, "Modeling Transport and Fate of Contaminants with Sediment Interaction and Transient Storage in Streams," Proceedings of the Second International Symposium on Environmental Hydraulics, Hong Kong, China, pp. 733-738, 16-18 December, 1998.
- Sautner, JB Maslia, ML and Aral, MM, "Water-Distribution System Modeling as a Tool to Enhance Epidemiologic Case-Control Investigations: A Case Study, The Dover Township (Toms River) Childhood Cancer Investigations," 26<sup>th</sup> Annual Water Resources Planning and Management Conference WRPMD '99, ASCE, Tempe, Arizona, June 6-9, 1999.
- Aral, MM, Liao, B., Guan, J., Maslia, ML, Sautner, J., Williams, R. and Reyes, JJ, "Reconstruction of Hydraulic Management of a Water-Distribution System Using Genetic Algorithms," World Water & Environmental Resources Congress, ASCE, Orlando, Florida, May 20-24, 2001.
- Aral, MM, Maslia, ML, and Guan, J., "ACTS, A Multi-Media Contaminant Transport Modeling Platform," Proceedings of Envirosoft 2002, an International Conference on the Modeling, Monitoring and Management of Environmental Problems, pp. 403-412, Bergen, Norway, 6-8 May 2002.
- Aral, MM, Guan, J., Maslia, ML, "Modeling techniques to aid exposure analysis through Water Distribution Systems," at An International ISEA/ISEE Symposium, August 11-15, 2002, Vancouver, BC, Canada. (invited)
- Maslia, ML., Sautner, JB, Aral, MM., Gillig, RE, Reyes, JJ and Williams J. "Using Water Distribution System Modeling to Assist Epidemiologic Investigations," at International ISEA/ISEE Symposium, August 11-15, 2002, Vancouver, BC, Canada.
- Gunduz, O. and Aral, MM. "Hydrologic Modeling of the Lower Altamaha River Basin," 2003 Georgia Water Resources Conference, Athens, Georgia, March 2003.
- Park, C-H. and Aral, MM. "Saltwater Intrusion Control on Coastal Aquifers," 2003 Georgia Water Resources Conference, Athens, Georgia, March 2003.
- Gunduz, O. and Aral, MM. "Simultaneous Solution of Coupled Surface Water / Groundwater Flow Systems," International Conference on River Basin Management, Edited by C.A. Brebbia, pp. 25-34, Gran Canaria Islands, April 28, 2003.
- Gunduz, O. and Aral, MM. "Satellite Imagery Based Watershed Management Modeling," at International Conference on Water Resources Management II, pp. 367-376, Gran Canaria Islands, April 23, 2003.
- Maslia, ML, Aral, MM, and Sautner, J., Reconstructing Historical Operations of Water Distribution Systems. In: Bizier, P., and DeBarry, P., Eds. Proceedings of the American Society of Civil Engineers, World Water & Environmental Resources Congress 2003 [CD ROM document]. Philadelphia, PA: June 23-26, 2003.
- Aral, MM, and Maslia, ML. Application of Monte Carlo Simulation to Analytical Contaminant Transport Modeling: In: S. Mishra, editor. Proceedings of the Symposium, Groundwater

- Quality Modeling and Management Under Uncertainty, Environmental and Water Resources Institute of the American Society of Civil Engineers, Philadelphia, PA, American Society of Civil Engineers, pp. 305–312, June 23–25, 2003.
- Aral, MM, and Gunduz, O., Scale Effects in Large Scale Watershed Modeling. In V. Singh and R. N. Yadava editors, *Advances in Hydrology. Proceedings of the International Conference on Water and Environment (WE-2003)*, Bhopal India, pp. 37-51, December 15-18, 2003. (invited paper).
- Kentel, E. and Aral, MM, "Optimization of Removal Rates of Target Contaminants from Water Supply Wells," at *6<sup>th</sup> International Congress on Advances in Civil Engineering, ASCE, Istanbul Turkey* 6-8 October, 2004
- Gokgoz, S. and Aral, MM, "Fugacity Analysis of Sediment, Biota and Aquatic pathway Environments and its Potential use in Exposure Studies," at *6<sup>th</sup> International Congress on Advances in Civil Engineering, ASCE, Istanbul Turkey* 6-8 Oct., 2004.
- Gunduz, O. and Aral, MM, "Dynamically Coupled Contaminant Transport Model for a River Aquifer System," at *6<sup>th</sup> International Congress on Advances in Civil Engineering, ASCE, Istanbul Turkey* 6-8 October, 2004.
- Jang, W and Aral, MM, Density-Dependent Transport And Sequential Biotransformation Of Trichloroethylene In The Variably Saturated Zone, The International Conference on Environmental Science and Technology, IC EST 2005, American Academy of Sciences, New Orleans, January 23-26, 2005.
- Maslia, ML, Sautner, JB, Valenzuela, C, Grayman, WM, and Aral, MM, "Use of Continuous Recording Monitoring Equipment for Conducting Water Distribution System Tracer Tests: The Good, the Bad and the Ugly," *Proceedings ASCE, EWRI World Water and Environmental Resources Congress: Impacts of Global Climate Change*, Anchorage, Alaska, May, 15-19, 2005.
- Aral, MM and J. Guan, "Computational Platforms for Environmental Modeling," *Proceedings ASCE, EWRI World Water and Environmental Resources Congress: Impacts of Global Climate Change*, Anchorage, Alaska, May, 15-19, 2005.
- Sautner, JB, Maslia, ML, Valenzuela, C, Grayman, WM, Aral, M.M. and Green, JW, "Field Testing of Water-Distribution Systems at Marine Corps Base, Camp Lejeune, NC, in Support of an Epidemiologic Study," *Proceedings ASCE, EWRI World Water and Environmental Resources Congress: Impacts of Global Climate Change*, Anchorage, Alaska, May, 15-19, 2005.
- Guan, J., Aral, MM and Maslia ML, "Identification of contaminant sources in water distribution system using optimization simulation method," *Proceedings of the 1<sup>st</sup> International Conference on Environmental Exposure and Health*, Atlanta, Ga, USA, October 2005.
- Park, S-K, Piyachaturawat P, Aral, MM and Huang, C-H, "Potential Enhanced N-Nitrosodimethylamine (NDMA) Formation under Water Treatment Conditions," *Proceedings of the 1<sup>st</sup> International Conference on Environmental Exposure and Health*, Atlanta, Ga., USA, October 2005
- Maslia, M. and Aral, MM, "Reconstruction of historical contaminant events: Use of computational tools to assist environmental engineers," *Proceedings of the 1<sup>st</sup> International Conference on Environmental Exposure and Health*, Atlanta, Ga., USA, pp. 175-187, October 2005
- Aral, MM. "Perspectives on environmental health management paradigms," *Proceedings of the 1<sup>st</sup> International Conference on Environmental Exposure and Health*, Atlanta, Ga., pp. 449-457, USA, October 2005
- Kentel, E. and Aral, MM. (2005) "Effect of Fuzzy Aggregation Operators in Selecting Best Groundwater Management Strategies" *EWRA 2005, 6<sup>th</sup> International Conference*, Menton, France. September 7-10, 2005.

- Kentel, E. and Aral, MM. "Spatial Distribution of Groundwater Availability for Various Pumping Scenarios in Savannah Region," ASCE World Environment and Water Resources Conference (EWRI), Nebraska, Omaha, 2006.
- Kilic, SG and Aral, MM. "Preliminary Analysis of Lake Pontchartrain Pollution after Hurricane Katrina," ASCE World Environment and Water Resources Conference (EWRI), Nebraska, Omaha, 2006.
- Kijin, N. and Aral, MM. "Modeling Hydrodynamics and Storm Effects in the Altamaha River Sound," ASCE World Environment and Water Resources Conference (EWRI), Nebraska, Omaha, 2006.
- Wonyong, J. and Aral, MM. "Modeling of Multiphase Flow and Contaminant Removal under In-situ Air Sparging," Air and Waste Management Association Annual Conference (AWMA), 2006.
- Nam K. and Aral MM. Modeling Hydrodynamics and Storm Effect in the Altamaha River Sound. In: Graham R, Editor. Examining the Confluence of Environmental and Water Concerns: *Proceedings of the 2006 World Environmental and Water Resources Congress*; 2006 May 21-25; Omaha, US [CD-ROM]. Reston: ASCE; 2006
- Jang, W. and Aral MM, "Modeling of Multiphase Flow and Contaminant Removal under In-situ Air Sparging," *Air & Waste Management Association's 99th Annual Conference & Exhibition*, New Orleans, LA, June 20-23, 2006.
- Guan, J., Aral, MM, Maslia, ML. and Grayman, W. (2006) "Optimization Model and Algorithms for Design of Water Sensor Placement in Water Distribution Systems" *ASCE Water Distribution System Analysis Symposium (Battle of the Water Sensor Networks)*, Cincinnati, OH, August 27-30, [CD-ROM].
- Suarez-Soto, R., Maslia, M., Wang, J., Aral, MM. and Faye, R. (2007) "Uncertainty Analysis for Reconstructing Historical Tetrachloroethylene (PCE) Exposure in an Epidemiologic Study," *ASCE, World Environmental and Water Resources Congress*, Tampa, Florida, [CD-ROM].
- Nam, K and Aral MM. (2007). "Optimal Placement of Monitoring Sensors in Lakes," *University of Georgia Water Resources Conference*, Athens, Georgia, [CD-ROM].
- Rogers, SW, Guan, J., Maslia, ML and Aral, MM, "Nodal Importance Concept for Computational Efficiency in Optimal Sensor Placement in Water Distribution Systems," *Proceedings of the World Water and Environmental Resources Congress, ASCE*, Tampa, FL, May 15-19, 2007.
- Nam, K. and Aral, MM, "Optimal Sensor Placement for Wind-Driven Circulation Environment in a Lake," *Proceedings of the World Water and Environmental Resources Congress, ASCE*, Tampa, FL, May 15-19, 2007.
- Wang, J and Aral, MM, "The Effect of Historical Supply Well Schedule Variation on PCE Arrival Time," *Proceedings of the World Water and Environmental Resources Congress, ASCE*, Tampa, FL, May 15-19, 2007.
- Park, S-H., Wei S., Mizaikoff, B., Taylor, AE, Aral, MM and Huang C-H., "Mechanistic Insight for the N-nitrosodimethylamine (NDMA) Formation Potential of Amine-Based Water Treatment Polymers," *Proceedings of the 233rd American Chemical Society National Meeting*, Chicago, IL, March 25-29, 2007.
- Kentel, E. and Aral, MM. (2007). "Groundwater Flow Simulation with Imprecise Parameters" *National Hydrology Congress*, Middle East Technical University, September 5-7, [CD-ROM].
- Ayvaz, T., Karahan, H. and Aral, MM. (2007). "Determination of Aquifer Parameters and Parameter Structures with Genetic Algorithm," *National Hydrology Congress*, Middle East Technical University, September 5-7, [CD-ROM].
- Suarez-Soto, R., Wang, J., Faye, RE, Maslia, LM, Aral, MM and Bove, F. J., "Historical Reconstruction of PCE-Contaminated Drinking Water Using Probabilistic Analysis at U.S. Marine Corps Base

- Camp Lejeune, North Carolina," *Proceedings of the World Water and Environmental Resources Congress, ASCE/EWRI*, Honolulu, Hawaii, May 12-16, 2008.
- Telci, IT, Nam, K., Guan, J. and Aral, MM, "Real Time Optimal Monitoring Network Design in River Networks," *Proceedings of the World Water and Environmental Resources Congress, ASCE/EWRI*, Honolulu, Hawaii, May 12-16, 2008.
- Guan, J. and Aral, MM, "Identification of Contaminant Sources in Aquifers under Uncertainty," *Proceedings of the World Water and Environmental Resources Congress, ASCE/EWRI*, Honolulu, Hawaii, May 12-16, 2008.
- Aral, MM, Guan, J. and Maslia, ML, "A Multi-objective Optimization Algorithm for the Solution of Water Sensor Placement Problem in Water Distribution Systems," *Proceedings of the World Water and Environmental Resources Congress, ASCE/EWRI*, Honolulu, Hawaii, May 12-16, 2008.
- Jang, W. and Aral, MM, "The Effect of Oxygen Transport on Biotransformation of Trichloroethylene in the Subsurface," *Proceedings of the World Water and Environmental Resources Congress, ASCE/EWRI*, Honolulu, Hawaii, May 12-16, 2008.
- Maslia, ML, RE Faye, MM Aral, FJ Bove, and W. Jang. (2008) "Historical reconstruction of single-specie and multispecies PCE-contaminated drinking water, U.S. Marine Corps Base Camp Lejeune, North Carolina," *World Environmental & Water Resources Congress 2008*, American Society of Civil Engineers, Honolulu, HI, May 13-16.
- Suarez-Soto, RJ, Anderson, BA, Maslia, ML. and Aral, MM, "A Comparison Between Biochlor and the Analytical Contaminant Transport System (ACTS) for a Case Study in Coastal Georgia," *Proceedings of the World Water and Environmental Resources Congress, ASCE/EWRI*, Honolulu, Hawaii, May 12-16, 2008.
- Jang, W. and MM. Aral. (2009) "Modeling of chlorinated VOCs transport under dual bioreactions," *World Environmental & Water Resources Congress 2009*, American Society of Civil Engineers, Kansas City, Missouri, May 17-21.
- Guan, J., Maslia, ML and MM. Aral. (2009) "A Novel Methodology to Reconstruct Groundwater Contamination History with Limited Field Data," *World Environmental & Water Resources Congress 2009*, American Society of Civil Engineers, Kansas City, Missouri, May 17-21.
- Aral, MM, Guan, J., and Maslia, ML. (2009). "Reconstructing Groundwater Contamination History: A Control Theory Based Approach," *Water and Public health, American Public Health Association Conference*, Philadelphia, PA, November 7-11.
- Jang, W. Maslia, ML and Aral, MM. (2010). "The Effect of Atmospheric Chemical Release on the Reduction in Groundwater Pollution by CVOCs," *ASCE, EWRI Water Resources Congress*, Rhode Island. May 25-30.
- Guan, J. Jang, W., Maslia, ML and Aral, MM. (2010). "Historical Reconstruction of Groundwater Contamination at Contaminated Sites and Uncertainty Analysis," *ASCE, EWRI Water Resources Congress*, Rhode Island. May 25-30.
- Aral, MM. (2010) "Resilience Analysis of Climate Change Effects on Water Quality," *NATO Advanced Research Workshop on Climate Change and Health*, Izmir, Turkey.
- Park. C., S.-H. Kim, I. Telci and MM. Aral. (2010). "Designing Optimal Water Quality Monitoring Networks for River Systems and Application to a Hypothetical case, *Proceedings of the 2010 Winter Simulation Conference*, Austin, TX. (Invited).
- Guan, J., Maslia, ML and Aral, MM. (2011). "Reconstruction of Groundwater Contamination History in Hadnot Point Area of Camp Lejeune, North Carolina Using Linear Stochastic Model," *ASCE, EWRI Water Resources Congress*, Palm Springs California, May 25-30.

- Maslia, ML, Aral, MM. and Faye R. (2011). "Impact of Historical Contaminant Source Uncertainty Analysis and Variability on Human Health Risk," ASCE, EWRI Water Resources Congress, Palm Springs California, May 25-30.
- Aral, MM, Guan, J. and Chang, B. (2011). "Climate Change and Sea Level Rise," ASCE, EWRI Water Resources Congress, Palm Springs California, May 55-68.
- Biao, C, Guan, J. and Aral, MM, (2012). "Semi-Empirical Modeling of Spatial Variations in Sea Level Rise," ASCE, EWRI Water Resources Congress, Albuquerque, NM, May.
- Guan, J., Biao, C. and Aral, MM, (2012). "Exploration for Impact of Radiative Forcing on Global Warming and Sea-Level Rise," ASCE, EWRI Water Resources Congress, Albuquerque, NM.
- Telci, IT and Aral MM (2012). "Renewable Energy Production from Water Distribution Systems." Hydro Research Foundation Conference.
- Dede, OT, Telci, IT and Aral MM (2013). "Water Quality Index Assessment of Surface Waters near Ankara, Turkey," ASCE, EWRI, IPWE 2013 Congress, Izmir, Turkey, January 2013.
- Chang, B, Guan, J and Aral MM (2013). "Spatial Analysis of Climate Change and Sea Level Rise," ASCE, EWRI, IPWE 2013 Congress, Izmir, Turkey, January 2013.
- Aral, MM. (2014). Application of Water-Modeling Tools to Reconstruct Historical Drinking Water Concentrations in Epidemiological Studies, Exposure Science Integration to Protect Ecological Systems, Human Well-Being, and Occupational Health 24<sup>th</sup> Annual Conference of The International Society of Exposure Science, Cincinnati, Ohio.
- Morgan, W. and Aral, MM. (2015). "Modeling Hydraulic Fracturing in Pre-Fractured Rock Using the Discontinuous Deformation Analysis." 49<sup>th</sup> U.S. Rock Mechanics/Geomechanics Symposium, June 28 – July 1, 2015, San Francisco, USA.
- Aral, M. M. (2015) "Concepts and development of modeling principles in environmental analysis," 68<sup>th</sup> National Geological Engineers Conference, 6 – 10 April 2015, MTA Kultur Sitesi, Ankara, Turkey (Keynote speech.)
- Aral, M. M. (2015) "Integrated modeling of coupled watershed processes," 68<sup>th</sup> National Geological Engineers Conference, 6 – 10 April 2015, MTA Kultur Sitesi, Ankara, Turkey (invited).
- Kentel, E., Gunduz, O. and Aral, M. M. (2015). "Critical Infrastructure Management: Risk, Resilience, Extent Concepts," The International Emergency Management Society 2015 Annual Conference, 30<sup>th</sup> September - 2<sup>nd</sup> October 2015, Rome, Italy.
- Aral, M. M. (2016) "Transition from simple, complicated to complex systems," YTSAM, Yeni Türkiye Bilim ve Araştırma Merkezi International Conference, Ankara, Turkey, September 14, 2016.

#### **ARAŞTIRMA PROJELERİ:**

1. Principal investigator of the project titled, *Finite Element Analysis in Continuum Mechanics: FEMAC Computer Program*, (Funded by Middle East Technical Univ. Research funds - \$18,000), 1972-73.
2. Principal investigator of the project titled, *An Analysis of Convective Diffusion Equation and Its Finite Element Solution*, (Funded by Turkish Sci. and Tech. Research Inst.- \$ 12,000), 1976-77.
3. Principal investigator of the project titled, *Analytical and Numerical Study of Jet Deflection from Curved Boundaries*, (Funded by Middle East Technical Univ. Research funds - \$ 19,000), 1976-77.
4. Principal investigator of the project titled, *Tsunami Study: Akkuyu Nuclear Power Plant*, (Funded by Turkish Electric Authority, Nuclear Energy Division - \$ 75,000), 1977-79.



5. Principal investigator of the project titled, *Analysis of the Development of Shallow Ground Water Supplies by Pumping from Ponds*, (Funded by the Department of the Interior, Office of Water Resources Research and Technology - \$ 48,000), 1979-80.
6. Principal investigator of the project titled, *Mathematical Modeling of Aquatic Dispersion of Effluents in Natural Rivers*, (Funded by the Health and Safety Division of the Oak Ridge National Laboratories, Oak Ridge Tennessee - \$ 52,000), 1979-80.
7. Principal investigator of the project titled, *Aquifer Parameter Prediction by Numerical Modeling*, (Funded by the Department of the Interior, Office of Water Research and Technology - \$ 56,000), 1981-82.
8. Principal investigator of the proposal titled, *An Analysis of Rimming Condensate Flow*, (Funded by Beloit corporation, Beloit, Wisconsin - \$ 68,000), 1981-83.
9. Principal investigator of the project titled, *Parameter Identification in Layered Aquifer Systems*, (Funded by the Department of the Interior, Office of Water Policy - \$ 44,000), 1983-84.
10. Principal investigator of the project titled, *A Simplified Approach to Regional Multilayered Aquifer Analysis*, (Funded by the Department of the Interior, U.S. Geological Survey - \$25,000), 1986-88.
11. Principal investigator of the project titled, *Modeling Transient Ground Water Flow in Multilayered Aquifer Systems*, (Funded by the Department of the Interior, USGS - \$ 29,000), 1988-89.
12. Principal investigator of the project titled, *Multilayered Aquifer Modeling in a Landfill Site*, (Funded by the Waste Management, Inc., Geosyntec, Inc. - \$ 42,000), 1990-91.
13. Principal investigator of the Research Program titled, *Exposure-Dose Reconstruction at Graton Massachusetts*, (Funded by: U.S. DHHS - \$ 44,000), 1992 (first phase).
14. Director, NATO Advanced Study Institute, *Recent Advances in Groundwater Pollution Control and Remediation*, (NATO - Directorate of Environmental Programs \$ 111,000), 1994.
15. National Science Foundation, *Water, Sustaining A Critical Resource*, Joint Proposal with Dr. A. Zoporozec, University of Wisconsin, \$ 30,000 1995.
16. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC - \$ 180,400), 1993-1994 (1<sup>st</sup> year of second phase).
17. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 310,697), 1994-1995 (2<sup>nd</sup> year of second phase).
18. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 331,642), 1995-1996 (3<sup>rd</sup> year of second phase).
19. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 338,658), 1996-1997 (4<sup>th</sup> year of second phase).
20. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 345,000), 1997-1998 (5<sup>th</sup> year of second phase).
21. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 2,500,000), 1998-2003 (third phase. Initiated in September 1998).

22. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 365,000), 1998-1999 (1<sup>st</sup> year of third phase).
23. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 370,000), 1999-2000 (2<sup>nd</sup> year of third phase).
24. Principal investigator of the Research Program titled, *Analysis of Coastal Georgia Ecosystem Stressors Using GIS Integrated Remotely Sensed Imagery and Modeling: A Pilot Study for the Lower Altamaha River Basin*, (Funded by: Sea Grant Program - \$ 288,000), 2000-2003.
25. Principal investigator of the Research Program titled, *GIS Integrated Environmental Systems Modeling*, (Funded by: CDC - GT Bioengineering Center \$ 30,000), 2000-2001.
26. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 345,000), 2000-2001 (3<sup>rd</sup> year of third phase).
27. Principal investigator of the Research Program titled, *GIS Integrated Environmental Systems Modeling*, (Funded by: CDC - GT Bioengineering Center \$ 30,000), 2001-2002.
28. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 405,000), 2001-2002 (4<sup>th</sup> year of third phase).
29. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 305,000), 2002-2003 (5<sup>th</sup> year of third phase).
30. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 2,500,000), 2003-2008 (fourth phase. Initiated in September 2003).
31. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 399,000), 2003-2004 (1<sup>st</sup> year of fourth phase).
32. Principal investigator (joint proposal with Prof. Ching-Hua Huang) of the research Program titled "*Potential n-Nitrosodimethylamine (NDMA) Formation at Water and Waste water Treatment Plants and Exposure Pathway Analysis*," (Funded by: SNF FLOERGER, France, program period: 2004-2006. \$ 550,432)
33. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 415,000), 2004-2005 (2<sup>nd</sup> year of fourth phase).
34. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 565,000), 2005-2006 (3<sup>rd</sup> year of fourth phase).
35. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 655,000), 2006-2007 (4<sup>th</sup> year of fourth phase).
36. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 535,000), 2007-2008 (5<sup>th</sup> year of fourth phase).
37. Principal investigator (co-investigator Prof. Ching-Hua Huang) of the research Program titled "*Potential n-Nitrosodimethylamine (NDMA) Formation at Water and Waste water*

- Treatment Plants and Exposure Pathway Analysis,”* (Second Phase Funded by: SNF FLOERGER, France, program period: 2007-2009. \$ 308, 821).
38. Principal investigator of the Research Program titled, *Research Program on Exposure-Dose Reconstruction*, (Funded by: ATSDR/CDC- \$ 2,500,000), 2008-2013.
  39. Principal investigator of the Research Program titled, *Chinese Drywall Emission and Exposure through Inhalation*, (Funded by: ATSDR/CDC- \$ 500,000), 2012-2014.
  40. Co-Principal investigator of the research program, “Combining Statistical Process Control and Optimization via Simulation for Robust Sensor Network Design in the Presence of Sensor Measurement Error,” Funded by National Science Foundation, \$ 350,000), 2016 – 2018.

#### **DOKTORA TALEBELERİ:**

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|--------------|--|
| D. Gurses    | <b>Thesis Title:</b> “Micro Plastic Strain Energy Criterion Applied to Reversed Notched Fatigue.” (1974).                      |
| M. Zakikhani | <b>Thesis Title:</b> “Solution of Flow and Mass Transport in Multilayer Aquifers using Boundary Integral Method.” (1997).      |
| Y. Tang      | <b>Thesis Title:</b> “Multilayer Multi-species ground-water and Contaminant Transport Analysis.” (1998).                       |
| Y. Zhang     | <b>Thesis Title:</b> “Contaminant Transport in Multiply Connected Open Channels.” (2000).                                      |
| J. Guan      | <b>Thesis Title:</b> “Application of Genetic Algorithms in Optimal Groundwater Management.” (2001)                             |
| B. Liao      | <b>Thesis Title:</b> “Dense and Light Two Phase Contaminant Migration in subsurface Environment.” (2002).                      |
| O. Gunduz    | <b>Thesis Title:</b> “Evaluation of Environmental Stressors via Satellite Imagery and Modeling.” (2004).                       |
| C. Park      | <b>Thesis Title:</b> “Global Climate Change and its Effect on Saltwater Intrusion in Coastal Regions.” (2004).                 |
| E. Kentel    | <b>Thesis Title:</b> “Environmental Health Risk Analysis Using Fuzzy Logic and Statistical Methods.” (2005).                   |
| W. Jang      | <b>Thesis Title:</b> “Reactive Multi-Phase Immiscible Flow and Transport Processes.” (2005).                                   |
| S. Gokgoz    | <b>Thesis Title:</b> “Continuous Fugacity analysis in water pathways and engineered systems and health risk analysis.” (2006). |
| K. Nam       | <b>Thesis Title:</b> “Risk Based Environmental Modeling in Costal Georgia.” (2006).  |
| J. Wang      | <b>Thesis Title:</b> “Optimization Methods under Uncertainty.” (2007).   |
| S. Rogers    | <b>Thesis Title:</b> “Optimal Sensor Placement in Water Distribution Systems.” (2008).   |
| R. Goktas    | <b>Thesis Title:</b> “Ecological Models for Large Watersheds.” (2010).   |
| I. Telci     | <b>Thesis Title:</b> “Optimal Monitoring Station Placement in Large Watersheds” (2012)   |
| A. Zhang     | <b>Thesis Title:</b> “Effect of Non Darcy Flow regimes in deep aquifer injection.” (2013).                                     |
| B. Chang     | <b>Thesis Title:</b> “Climate Change and Sea-Level Rise.” (2013)   |
| W. Morgan    | <b>Thesis Title:</b> “Hydraulic Fracturing Mechanism and Computational Analysis.” (2014)                                       |
| B. Okuducu   | <b>Thesis Title:</b> “Micro fluidic mixing design.” (2019)   |