



Dr. Michael Annable

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Dr. Michael Annable is a Professor in the Department of Environmental Engineering Sciences at the University of Florida. He joined the faculty in 1992 after receiving his Ph.D. from Michigan State University where he worked on soil vapor extraction of multi-component non-aqueous phase liquids. His current interests are in physical-chemical processes related to field scale application of innovative technologies for subsurface remediation. He is also investigating innovative techniques for measuring groundwater flow and contaminant flux in aquifers. He has published more than 60 journal articles and currently serves as an Associate Editor for the Journal of Contaminant Hydrology.

Research Areas of Interest

- Subsurface Remediation
- Flux Meter ESTCP Project
- Wetland Hydrology
- Dry Cleaner Site Remediation

Selected Papers

Selected Publications

- Kaye, A.J., J. Cho, N.B. Basu, X. Chen, M.D. Annable, J.W. Jawitz. Laboratory Investigation of Flux Reduction from Dense Non-Aqueous Phase Liquid (DNAPL) Partial Source Zone Remediation by Enhanced Dissolution. Accepted, *Journal of Contaminant Hydrology*.
- Brooks, M.C., A.L. Wood, M.D. Annable, K. Hatfield, J. Cho, C. Holbert, P.S.C. Rao, C.G. Enfield, K. Lynch, and R.E. Smith. Changes in Contaminant Mass Discharge from DNAPL Source Mass Depletion: Evaluation at Two Field Sites. Accepted, *Journal of Contaminant Hydrology*.
- Martinez, C.J., K.L. Campbell, M.D. Annable, and G.A. Kiker. 2008. An Objected-Oriented Hydrologic Model for Humid, Shallow Water-Table Environments. *J. Hydrology*, 351(3-4), 368-381.
- Klammler, H., M.A. Newman, E. Szilágyi, J.C. Padowski, K. Hatfield, J.W. Jawitz, M.D. Annable. 2007. Initial Test Results for a Passive Surface Water Fluxmeter to Measure Cumulative Water and Solute Mass Fluxes. *Environmental Science & Technology*, Vol. 41, 2485-2490.
- Basu, N.B., P.S.C. Rao, R.W. Falta, M.D. Annable, J.W. Jawitz, K. Hatfield. 2007. Temporal Evolution of DNAPL Source and Contaminant Flux Architecture: Impacts of Source Mass Depletion. *Journal of Contaminant Hydrology*, 95(3-4), 93-109.
- Cho, J., M.D. Annable, J.W. Jawitz, K. Hatfield. 2007. Passive Flux Meter Measurement of Water and Nutrient Flux in Porous Media. *Journal of Environmental Quality*, 36: 1266-1272.
- Totten, C.T., M.D. Annable, J.W. Jawitz, J.J. Delfino. Fluid and Porous Media Property Effects on Dense Non-Aqueous Phase Liquid Migration and Contaminant Mass Flux. *Environmental Science & Technology*. Vol. 41, 2007, pp. 1622-1627.
- Lee, J., P.S.C. Rao, I.C. Poyer, R.M. Toole, M.D. Annable, K. Hatfield. Oxyanion Flux Characterization Using Passive Flux Meters. Development and Field Testing of Surfactant-Modified Sorbents. *Journal of Contaminant Hydrology*, 92 (3-4): 208-229, 2007.
- Fure, A.D., J.W. Jawitz, M.D. Annable, DNAPL Source Depletion: Linking Architecture and Flux Response, *Journal of Contaminant Hydrology*, 85, 2006, pp. 118-140.
- Klammler, H., K. Hatfield, M.D. Annable. Concepts for Measuring Horizontal Groundwater Flow Directions Using the Passive Flux Meter, *Advances in Water Resources*, 30 (4): 984-997, 2007.
- Klammler, H., K. Hatfield, M. D. Annable, E. Agyei, B. L. Parker, J. A. Cherry, and P. S. C. Rao (2007), General analytical treatment of the flow field relevant to the interpretation of passive fluxmeter measurements, *Water Resour. Res.*, 43, W04407, doi:10.1029/2005WR004718.
- Campbell, T.J., K. Hatfield, H. Klammler, M.D. Annable, and P.S.C. Rao. Magnitude and Directional Measures of Water and Cr(VI) Fluxes by Passive Flux Meter, *Environmental Science & Technology*. Vol. 40, 2006, pp. 6392-6397.
- Kim, H., K.M. Choi, J.W. Moon, M.D. Annable. Changes in Air Saturation and Air-Water Interfacial Area During Surfactant-Enhanced Air Sparging in Saturated Sand, *Journal of Contaminant Hydrology*, 88, 2006, pp. 23-35.
- Basu, N.B., P.S.C. Rao, I.C. Poyer, M.D. Annable, K. Hatfield. Flux-Based Assessment at a Manufacturing Site Contaminated with Trichloroethylene, *Journal of Contaminant Hydrology*, 86(1-2), 2006, pp. 105-127.
- Kim, H. and M.D. Annable, Effect of surface tension reduction on VOC removal during surfactant-enhanced air sparging, Accepted *Environmental Science and Health Part A*, 41 (12), pp. 2799-2811.
- Annable, M.D., K. Hatfield, J. Cho, H. Klammler, B.L. Parker, J.A. Cherry, P.S.C. Rao, "Field-Scale Evaluation of the Passive Flux Meter for Simultaneous Measurement of Groundwater and Contaminant Fluxes". *Environmental Science & Technology*. Vol. 39, 2005, pp. 7194-7201.
- Cho, J., M.D. Annable and P.S.C. Rao. Measured Mass Transfer Coefficients in Porous Media Using Specific Interfacial Area. *Environmental Science & Technology*, 39 (20): 2005, pp. 7883-7888.
- Childs, J., E. Acosta, M.D. Annable, M.C. Brooks, C.G. Enfield, J.H. Harwell, M. Hasegawa, R.C. Knox, P.S.C. Rao, B. Shiau, E. Szekeres, A.L. Wood and D.A. Sabatini. Field Demonstration of Surfactant-Enhanced Solubilization of DNAPL at Dover Air Force Base, Delaware. *Journal of Contaminant Hydrology*, 82 (1-2): 2006, pp. 1-22.
- Cho, J. and M.D. Annable. Characterization of pore scale NAPL morphology in homogeneous sands as a function of grain size and NAPL dissolution. *Chemosphere*, 61 (7): 2005, pp. 899-908.
- Enfield, C.G., A.L. Wood, M.C. Brooks, M.D. Annable, P.S.C. Rao. Design of aquifer remediation extraction systems: (1) Describing hydraulic structure and NAPL architecture using tracers. *Journal of Contaminant Hydrology*, 81 (1-4): 2005, pp. 125-147.