



ROBERT J. GLASS, Jr.

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*Distinguished Member of Technical Staff
Complex Adaptive Infrastructures & Behavioral Systems
National Infrastructure Simulation and Analysis Center (NISAC)
Sandia National Laboratories, Albuquerque, NM 87185
Office: (505) 844-5606; Email: rjglass@sandia.gov*

Dr. Robert J. Glass, received his BS from Haverford College in 1980 with a self designed major in biology-ecology and course work at Haverford, Bryn Mawr and Swarthmore Colleges, and the University of Pennsylvania. After two years in the tropics where he conducted research in a variety of ecosystems, he continued his education at the Yale School of Forestry & Environmental Studies and then at Cornell University's Department of Agricultural and Biological Engineering where he received his MS in 1985 and Ph.D. in 1988 with emphases on experimental, analytical, numerical and field research methods applied to address problems of fluid flow and chemical transport in environmental systems, e.g. soil, rock formations, groundwater, lakes, streams, atmosphere, and oceans.

Dr. Glass joined Sandia National Laboratories in 1988 where he led the unsaturated zone model development and validation task for the Yucca Mountain Project, the goal for which was to design and build the US's repository for high level nuclear waste. From 1988 until 2003, his research, funded through a variety of programs at the Department of Energy, covered wide ranging topics in arid region vadose zone hydrology, groundwater hydrology, multi-phase and multi-component transport, and large scale transport pathway delineation in glacial till, alluvial sediments and fractured rock. During this period, Dr. Glass created the Flow Visualization and Processes Laboratory (FVPL) at Sandia where he, colleagues and students developed and applied state of the art visualization methods to illuminate the fundamental temporal and spatial structure of subsurface flow and transport. These experiments led to extended theory and models for vadose zone flow and transport, fingering, multi-phase and multi-component transport instabilities, the delineation of Dense Non Aqueous Phase Liquids (DNAPLs) within aquifers, and to the application of complexity science to infiltration cascading in fractured rock networks such as at Yucca Mountain, Nevada. Dr. Glass achieved the Sandia Distinguished Level for these efforts in 1998.

In 2003, Dr. Glass joined the National Infrastructure Simulation and Analysis Center (NISAC), a joint center between Sandia and Los Alamos National Laboratory funded by the Department of Homeland Security. There, he has grown a research team that focuses on the analysis and control of complex interdependent adaptive systems as embodied by many critical infrastructures and behavioral systems. Example applications include community containment strategies for pandemic influenza, the movement of large value payments (\$2T per day) within the U.S. Federal Reserve's Fedwire system, and cascading blackouts within high voltage electrical power grids. This work has grown into a new and growing initiative in Complex Adaptive Systems of Systems Engineering at Sandia.

Dr. Glass has held Adjunct Professor appointments at the University of Colorado, New Mexico Institute of Mining and Technology, University of Nevada, University of New Mexico and most recently at the Uniformed Services University of the Health Sciences in Bethesda Maryland. In connection with these and other universities from across the country and abroad, he has taught graduate classes and seminars, advised graduate research (12 PhD, 4 MS) and incorporated undergraduates into research (over 25). He has authored or co-authored: more than 70 journal articles; 15 book chapters or symposium series papers, 50 reports or papers in conference proceedings; 50 invited presentations at conferences, universities and other research institutions; and 125 contributed presentations at conferences.

Journal Publications:

76. Renault, F., W.E. Beyeler, R.J. Glass, K. Soramäki and M.L. Bech, Congestion and Cascades in Interdependent Payment Systems, *International Journal of Central Banking*, in review.
75. Fox, D.T., R.J. Glass, T.Q. Wood, Mechanisms Causing Pressure-Saturation Hysteresis in a Horizontal Unsaturated Rough Walled Fracture, *Water Resources Research*, in review.

74. Perthroth, Daniella J., Robert J. Glass, Victoria J. Davey, Alan M. Garber, Douglas K. Owens, Health Outcomes and Costs of Community Mitigation Strategies for an Influenza Pandemic in the U.S, *Clinical Infectious Diseases*, <http://www.journals.uchicago.edu/doi/abs/10.1086/649867>, 50:165–174, DOI: 10.1086/649867, *expedited publication*, 2010.
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