Jerrell R. Ballard, Jr.

Phone: 601-529-7204 Email: <u>Jerry.Ballard@us.army.mil</u>

EDUCATION

Ph.D.	Computational Engineering	Mississippi State University	2011
M.S.	Mathematics	Mississippi College	1996
B.S.	Computer Science, Mathematics	Mississippi College	1987

PROFESSIONAL INTERESTS

Near surface thermal physics of natural landscapes; high-performance computing; thermal scene simulation; conductive and convective heat transfer in vegetation; and remote sensing.

CAREER

Associate Technical Director, Military Engineering,

U.S. Army Engineer Research and Development Center (ERDC) 2009-present As Associate Technical Director, provides technical and scientific advice to Technical Director for the Military Engineering Basic and Applied Research Programs. Additionally, serves on research evaluation panels for other military basic and applied research programs. By special assignment, serves as Science Advisor and Technical Program Manager for the Joint IED Defeat Organization (JIEDDO) and for the Office of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)).

Research Computer Scientist, U.S. Army ERDC

1989-2009

As a research scientist, pursued basic and applied research in the area of environmental biophysics as applied to military applications. As a Principle Investigator, developed and directed a research team consisting of researchers whose unique expertise with data collection, energy and mass transfer modeling of the near-surface environment, and sensor modeling was used to improve minefield and IED detection. Research was focused on two areas; (1) improving our basic understanding of rapid (sub-minute) thermal changes of short vegetation; and (2) studying heat and mass transfer of leafless deciduous forests. This research has led to collaboration with other national and international research groups such as NASA Goddard Space Flight Center, Los Alamos Laboratory, NATO, the United Kingdom Ministry of Defense, and program development for international symposia.

SELECTED AWARDS

U.S. Army ERDC Scientist of the Year (Vogel Award), 2013 Department of the Army, Meritorious Civilian Service Award, 2011 ERDC Program Development Achievement Award, 2011 Mississippi College, Outstanding Alumnus of the Year for Mathematics, 2011 U.S. Army Research and Development Award, 2009 U.S. Army ERDC Research and Development Award, 2009 ERDC Award for Outstanding Team Effort, 2006, 2009 Army Modeling and Simulation Award Nominee, 2008 Service to America Medal Finalist, 2008 ERDC Award for Outstanding Achievement in Technology Transfer, 2008 U.S. Army Superior Civilian Service Award, 2007 ERDC Award for Outstanding Team Effort, 2006 Director's Research and Development Award, U.S. Army Engineer Waterways Experiment Station, 1999

SELECTED PUBLICATIONS

J. R. Ballard, Jr., S. E. Howington, S. C. Wilhelms (2012) "Laboratory-Based Rainfall Effects on LWIR Soil Reflectance," IEEE Geoscience and Remote Sensing Letters, doi: 10.1109/LGRS.2012.2216250

Kinnebrew, P. and J. R. Ballard, Jr. (2012) "Advanced Protective Structures" Army Acquisition Logistics & Training Magazine, Oct/Dec, 2012.

S. E. Howington, J. F. Peters, J. R. Ballard, Jr., O. J. Eslinger, J. R. Fairley, R. V. Kala, R. A. Goodson, S. J. Price, A. M. Hines, L. D. Wakeley (2012) "Using computer simulation to explore the importance of hydrogeology in remote sensing for explosive threat detection," Geological Society, London, Special Publications 2012, v 362, pp. 287-300. doi: 10.1144/SP362.16

Ballard, J. R., Jr., Howington, S. E., Cinnella, P., and Smith, J. A. (2011). "Simulated Seasonal Spatio-Temporal Patterns of Soil Moisture, Temperature, And Net Radiation In A Deciduous Forest," IEEE Geosciences and Remote Sensing Symposium, 25-29 July, Vancouver, Canada.

Ballard, J. R., Jr. (2011). A Three-Dimensional Heat and Mass Transport Model for a Tree Within A Forest. (Doctoral dissertation) Mississippi State University, Mississippi State, MS.

Horner, D. A., Eslinger, O. J., Howington, S. E., Ketcham, S. A., Peters, J. F., Ballard, J. R., Jr. (2010) "Integrated High-Fidelity Geoscience Simulations for Enhanced Terrain-Related Target Detection", Computing in Science and Engineering, 12(5), pp. 56-63.

Howington, S. E., Peters, J. F., Ballard, J. R., Jr., Eslinger, O. J., Fairley, J. R., Kala, R. V., et al. (2010) "The Role of Hydrogeology in Threat Detection," Geological Society, London, UK. Book Chapter (11).

Ballard, J. R., Jr. and Cinnella, P., "A Heat and Fluid Transport Simulation of a Soil-Root-Stem System" 39th American Institute of Aeronautics and Astronautics (AIAA) Fluid Dynamics Conference, San Antonio, TX, 22-25 June 2009.

Smith, J. A. and Ballard, J. R., Jr., "Thermal infrared hot spot and dependence on canopy geometry," Optical Engineering, Vol 40, No. 8, pp. 1435-1437, 2001.

Smith, J. A. and Ballard, J. R., Jr. (1999). "Effects of Spatial Resolution on Thermal and Near Infrared Sensing of Canopies." Optical Engineering, Vol 38, No. 8, pp. 1413-1423, 1999.

Smith, J. A., Ballard, J. R., Jr., and Pedelty, J. A. (1997) Effect of 3D Canopy Architecture on Thermal IR Exitance. Optical Engineering, Vol 36, No. 11, pp. 3093-3100, 1997.

Smith, J. A., Chauhan, N. S., Schmugge, T. J., and Ballard, J. R., Jr., "Remote Sensing of Land Surface Temperature: The Directional Viewing Effect," IEEE Transactions on Geoscience and Remote Sensing, Vol 35, No. 4, pp. 972-979, 1997.