

Robert M. Wallace, P.E., Ph.D.

Dr. Wallace is the head of the Computational Science and Engineering Division within the Information Technology Laboratory at the US Army Engineer and Research Development Center. He leads a team of over 80 federal engineers, computer scientists and technicians in developing state of the art software solutions to support the US Army Corps of Engineers, the Department of Defense and other federal agencies. His diverse scientific team developed and executed over \$15 million in research and development during FY09.

Dr. Wallace has a broad scholastic and vocational background in the area of information technology and hydro-informatics. He has over 15 years of hydro-dynamic riverine and estuarine and hydro-geologic modeling using multi-dimensional models. He also serves as a technical advisor for Unifying Technologies within the System Wide Water Resources Research (SWWRP) program. He is a leading expert on model integration and has been instrumental in developing a standard methodology for data manipulation and decision support for complex regional scale analyses. He is also the Corps of Engineers primary technical expert on the development of advanced user interfaces for multi-dimensional model setup and visualization where he provides technical leadership for software development of the XMS suite of software tools. These tools provide the primary methodology by which multi-dimensional water resource models are setup and their results visualized. XMS continues to provide state-of-the-art software modeling solutions within ERDC and the Corps of Engineers. These tools have been successfully deployed at hundreds of sites and applied on thousands of hydrologic, hydraulic and hydrogeologic investigations.

Dr. Wallace is also a leading expert in the area of spatial modeling where his research has led to advances in the use of parallel computing algorithms to solve spatial optimization problems. Following Hurricane Katrina, he was asked to develop the Digital Elevation Model (DEM) surfaces of the New Orleans levee system for pre- and post- Katrina conditions. These DEM surfaces were generated from existing and recently (post-Katrina) collected LiDAR data. The work was accomplished under extremely difficult time constraints yet was completed on time. The DEM surfaces formed the basis for most of the computational modeling and risk assessment activities that were conducted under IPET. Dr. Wallace is also the primary technical architect for the development of the NIPRNet Globe Services (NGS) decision support environment. NGS is an instance of the Google Earth Server environment tailored for use within the Corps of Engineers. This tool allows for the integration of infrastructure data, computational modeling results and high resolution imagery in a spatially aware context that is intuitive to use and easy to augment. This program is changing the way decision support is used within the Corps of Engineers and will have a significant impact on decision support in the engineering community.