

## Unifying Hydroinformatic Technologies for the US Army Corps of Engineers

**Robert M. Wallace, USACE-ERDC-CHL, [Robert.M.Wallace@erdc.usace.army.mil](mailto:Robert.M.Wallace@erdc.usace.army.mil);  
David R. Richards, USACE-ERDC-ITL; and Steven L. Ashby – USACE-ERDC-EL**

**Abstract:** The US Army Corps of Engineers (USACE) has a strong tradition for developing computational programs to model and simulate the hydraulics and hydrology of riverine, coastal and estuarine environments. Many of these simulation programs have become defacto standards within the hydraulic and hydrologic (H&H) engineering community. Success, however, has led to significant challenges in managing and maintaining these computational resources. One estimate is that there are as many as 150 computational programs for simulating H&H, sediment and environmental phenomenon developed for and by the USACE. Furthermore, the USACE is being asked to investigate the impacts of complex, interdependent environments on a regional or basin wide scale, yet few of these resources were designed to operate in this way. In order to address some of these issues, the U.S. Army Engineer Research & Development Center (ERDC) is in the process of defining and implementing a strategic hydroinformatic plan to support the H&H community within the USACE. All Research and Development (R&D) programs within the USACE relating to H&H are expected to conform to this development and operational paradigm.

The System Wide Water Resources Project (SWWRP), which began in FY05, is an all encompassing R&D program funded by the USACE. SWWRP has replaced multiple R&D programs within the USACE including Regional Sediment Management (RSM), System-wide Modeling, Assessment, and Restoration Technologies (SMART) and Technologies and Innovations for Urban Watershed Networks (TOWNS). A key goal of SWWRP is to provide tools and knowledge needed to holistically and proactively manage H&H regionally in order to achieve high performance projects that are economically and environmentally sustainable. In order to do this, SWWRP focuses significant resources toward addressing the hydroinformatic needs of USACE modeling tools. This includes developing Graphical User Interfaces (GUI's) for computational models, defining and implementing cutting edge data manipulation processes, tightly integrating Geographic Information Systems (GIS) within the H&H process and providing for model linking and model coupling. The presentation will describe the ongoing hydroinformatics R&D taking place within the USACE SWWRP R&D program.