



U.S. Army Corps of Engineers Institute for Water Resources

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HEC Engineers Highlight New Software Capabilities at Water Resources Conference

ALEXANDRIA, VIRGINIA. The annual World Environmental and Water Resources Congress was organized by the Environmental and Water Resources Institute of the American Society of Civil Engineers in Austin, TX, 17 – 21 May 2015. Approximately 1000 water resources engineers from various Federal, state and local agencies participated in the conference with others from academia, the water resources profession and foreign entities. The theme of this year's Congress was "Floods, Droughts, and Ecosystems: Managing Our Resources Despite Growing Demand and Diminishing Funds". The Congress was very well run with an assortment of technical tracks, short courses, plenary presentations, award lectures, technical tours and social events. The Congress offers a great way to hear about new trends in the profession and to share ideas with other water resources engineers. A total of 34.5 Professional Development Hours or PDH's were offered through the Congress. Professional Engineers are obligated to seek continuing education units and attendance and participation at a Congress such as the ASCE/EWRI Congress helps you to meet that professional requirement.

A number of the IWR's Hydrologic Engineering Center (HEC) staff including Chris Dunn (Director), Matt Fleming (HHT Division Chief), Gary Brunner, Mark Jensen, and Jay Pak (Senior Hydraulic Engineers) and Kervi Ramos (HEC intern and University of California at Davis student) participated. Collectively, they made nine presentations. In addition, Mr. Dunn was a Panel Member in the discussion of "How to Educate the Next Generation of Environmental and Water Resources Systems Analysts".

The HEC engineers introduced new capabilities within various pieces of software including, HEC-HMS (Hydrologic Modeling System), HEC-RAS (River Analysis System), and HEC-WAT (Watershed Analysis Tool) and also provided a presentation on the history of the Hydrologic Engineering Center. Because HEC software is so popular, each HEC presentation was well attended as fellow engineers wanted to hear about the new capabilities and features. The HEC technical presentations covered topics such as 2D modeling, visualization tools and uncertainty modeling in HEC-RAS, uncertainty analysis and sediment transport in HEC-HMS, how to convert real-time Corps Water Management Systems models into HEC-WAT models for expedited planning purposes, and how to use HEC-WAT to perform a stochastic simulation to extend a reservoir pool stage frequency curve.

The panel discussion was also well received with approximately 80 people in attendance. The panel of practitioners and academics discussed current practices to teach environmental and water resources systems analysis and how to better educate the next generation of analysts and practitioners. Through a facilitated discussion, the panelists addressed questions such as: How is systems analysis currently being taught? What role should systems analysis play in professional practice? What encourages or limits the use of systems analysis in the water resources engineering profession? And what systems analysis skills and techniques should universities teach to prepare new practitioners to successfully join the profession? The facilitator also encouraged audience participation in an effort to identify and recommend practices to better educate the next generation of environmental and water resources systems analysts and practitioners. Perhaps the most interesting thing about

the panel discussion was defining what “systems analysis” really means. Several definitions were provided by the panel members themselves. One definition described the traditional system optimization process and the second definition described the inter-relationships between all the physical processes over time and how one impacts another and thus should be accounted for throughout the watershed.

The Congress was refreshing as it provided a way to hear about the innovative work that is being done not only by the Corps but also by many of the other agencies, academia and the profession as well. It is a great place to share ideas and discuss potential collaboration and we were exposed to many technical topics. The presentations and discussions reminded us as to why we were so excited about civil engineering in the first place. While it is still difficult for Federal employees to obtain conference approval, if you get a chance to participate in a conference, they are a great way to rejuvenate your commitment to the profession, share your work, meet others and learn new things. You would find the effort of getting the conference approval worth it.

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