



**11th International Conference on Hydrosience & Engineering**  
**"Hydro-Engineering for Environmental Challenges"**  
**September 28th-October 2nd 2014**  
**Hamburg, Germany**

**Mini-Symposium**  
**Advances of Modeling Methodology for Agricultural Research**

To meet today's ever-increasing demand on agricultural productions, quality of water resources, ecology and environment, the Agricultural Research Services of the US Department of Agriculture have strengthened the numerical modeling studies together with the physical modeling and field studies both in their own laboratories and with external collaborating institutions to achieve cost-effectiveness.

Numerous empirical models based on physical laboratory experiments and field managements, and numerical models based on physical/mathematical principles and computational technologies, have been developed. Some of these models can not only simulate the water and sediment runoff and routing over uplands and in channel networks in agricultural watersheds, but also study and assess their effects of ecol-environmental quality due to agricultural practices and operations. Some of the models have included the capabilities of considerations of effects of chemical, biological, economical implications on cost-effectiveness, security issues on the community, etc. Recent progress has been encouraging in obtaining more realistic understanding of complicated agricultural processes in nature, more cost-effective solutions of comprehensive solutions with multi-disciplinary effects, and more acceptably decisions (most likely compromised ones) for agricultural watershed management.

This Mini-Symposium is to provide an overview of the recent advances of modeling and integrated computational modeling methodology for application to agricultural research today and to seek experts' input on identifying the challenges for future advancements.

A few typical areas of recent contributions are covered in this Mini-Symposium:

- An Overview on today's Agricultural Research Needs and Recent Advance of Computational Modeling in the Field.
- The Application of Optimization Based Decision Support System (DSS) to Agricultural Watershed Management
- Modeling Water/Sediment Runoff and Routing over upland and in Channels of a Watershed Using AnnAGNPS and CCHE-1D
- Erosion and Sedimentation Process Simulations on Stream Bed and Banks Studied by CONCEPTS and CCHE-2D and 3D
- Prediction of Sediment Movement and Control Sediment Relocations during the Dam Rehabilitation and Removal Projects

In addition, a Panel Discussion Session is held at the closing to identify the future methodology research needed in this specific area.

**Contact:**

Dr. Sam S.Y. Wang, Director Emeritus, National Center for Computational Hydrosience and Engineering, Oxford MS. [wang@ncche.olemiss.edu](mailto:wang@ncche.olemiss.edu)