**Gour-Tsyh Yeh**

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**Gour-Tsyh Yeh** is a Provost Professor at University of Central Florida (UCF), Florida, USA since 2000. He is currently taking a one year of leave of absence from UCF to work as a Research Fellow at Taiwan Typhoon and Flood Research Institute (TTFRI). He received his Ph.D. from Cornell University in 1969, M. S. from Syracuse University in 1967, and B. S. National Taiwan University. Dr. Yeh had been a Chair Professor at NCTU from 2006 to 2009 and at NCU from 2007 to 2010. He had been employed at Penn State as a Professor (1989-2000); ORNL, Senior Research Staff (1983-1989) and Research Staff II (1977-1983); Ebasco, Stone and Webster, and Tetra Tech, Senior Environmental Engineers (1972-1977); NASA, Visiting Scientist (1971-1972); NTU, Visiting Associate Professor (1971-1971); and Cornell University, Research Associate. Dr. Yeh's areas of specialty are hydrology, environmental fluid mechanics, hydraulics, and water resources. His current research focuses on physics-based first principle approaches of watershed modeling, coupled surface and subsurface flow and transport processes, geochemical kinetics, biodegradation and micro-organism/geochemical interactions, geochemical equilibrium modelling, multi-phase flow and transport in both fractured and porous media, development of innovative numerical algorithms, and computational fluid dynamics. He has been actively promoting scientific knowledge exchange, crusading for technology transfer of sponsored research, and conducting workshops and short courses. He is a consultant to IAEA, United Nations. He has received National Research Council Research Associateship Award (1971-1972); Martin Marietta Publication Award (1987); Presidential PIP Award (1988); National Research Council Senior Research Associateship Award (1995-1996); PSES Outstanding Research Award (2000); Distinguished Researcher Award, UCF (2005); Graduate Teaching Award, UCF (2008); and Outstanding Alumni Award, NTU (2010).

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## A Modeling System for Disaster-Reduction Research

This position paper calls for the establishment of a modeling system that is integrated with scientific research, information, instrumentation, and observation in disaster reduction and research platform (Fig. 1). The need of such a modeling system and the role it plays in disaster-reduction research is described below. Physics-based modeling system with the design capability of integrating river networks, land surface processes, and subsurface media play the central role in flood and inundation forecast and the attendant mitigation managements. For these to materialize, scientific research on hydrologic cycle is needed to provide watershed processes for incorporation into the core simulators of the modeling system, which in turn will provide modeling tools to validate research hypotheses and discover new processes. Information synthesis is needed to provide the modeling system with filtered data upon the request of needs. Observation is needed to provide the modeling system with raw data upon the request of needs. Although instrumentation may not have direct interaction with the modeling system, it is needed to provide scientific research and observation with measuring tools up the request of needs. By providing measuring tools, instrumentation enables observation and scientific research to obtain data and to derive scientific processes that feed into the modeling system to achieve scientifically improved predictions. The success of these cyclic interactions hinge on the modeling system that should have consisted of physics-based simulators to enable rigorous simulations, graphical pre- and post-processor interfaces to facilitate friendly live simulations, and high performance computing to enable required lee-time forecast.

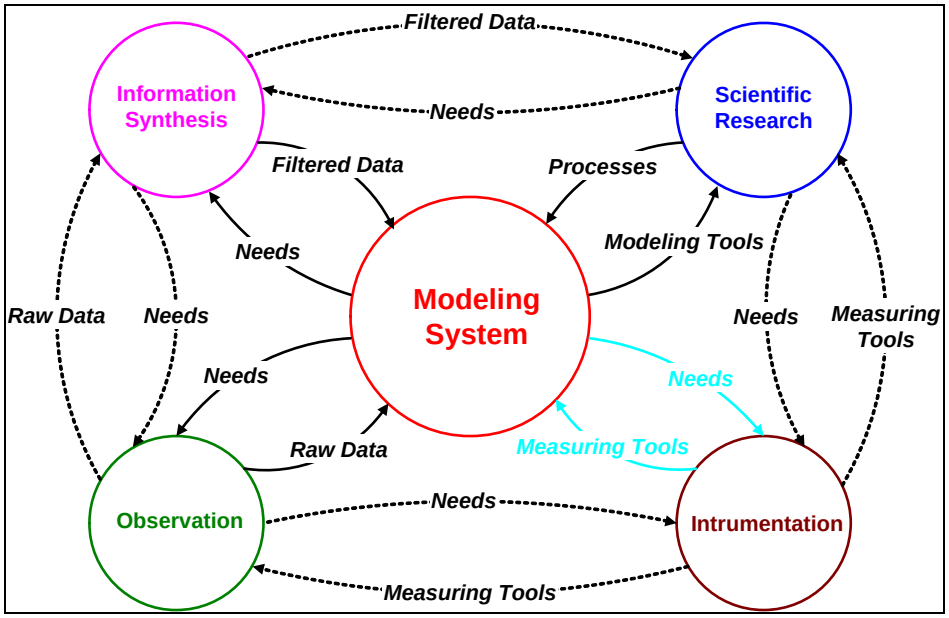


Figure 1 A Platform for Disaster Reduction and Research