

Philip B. Bedient, PH.D., P.E.

EXPERIENCE

45 Years

EDUCATION

Ph.D., Environmental Engineering Sci, University of Florida

M.S., Environmental Engineering Sci, University of Florida

B.S., Physics, University of Florida

REGISTRATIONS/CERTIFICATIONS

Professional Engineer, Texas #45626

Professional Hydrologist, American Institute of Hydrology



TECHNICAL SPECIALTIES/EXPERIENCE HIGHLIGHTS

Hydrology and Flood Prediction, Flood Warning Systems, H&H Modeling, Flood Mitigation Studies, Water Resources Planning and Management, Community Outreach

AFFILIATIONS & MEMBERSHIPS

InFRM Academic Council

American Society of Civil Engineers

American Institute of Hydrology

American Water Resources Association

Association of Environmental Engineering Professors

American Academy of Water Resources Engineers

American Geophysical Union

BRIEF BIO

Dr. Philip B. Bedient is the Chair and Herman Brown Professor of Engineering in the Department of Civil and Environmental Engineering at Rice University. He teaches and performs research in surface water hydrology, disaster management, and flood modeling and prediction systems. He has directed 90 research projects over the past 45 years, has written over 200 articles in journals and conference proceedings. He is lead author on a textbook on “Hydrology and Floodplain Analysis” (Pearson, 6th ed., 2018) used in over 60 universities across the United States. Dr. Bedient received the Herman Brown Endowed Chair of Engineering in 2002 at Rice University, and received Fellow ASCE in 2006. He also received the C.V. Theis Award from the American Institute of Hydrology in 2007. In 2021, Bedient was awarded for the prestigious Ray K. Linsley Award in honor of outstanding contributions in surface water hydrology.

Dr. Bedient has four decades of experience working on flood and flood prediction problems in the U.S. He routinely runs computer models such as HEC-HMS, HEC-RAS, ADCIRC, and Vflo[®] for advanced hydrologic analysis, flood prediction, and coastal surge. He developed one of the first radar-based rainfall flood alert systems (FAS5) in the U.S. for the TMC in Houston. The system has successfully run for over twenty years and predicted over 60 storm events.

He formed the Severe Storm Prediction Center (SSPEED) at Rice University in 2009 consisting of a team of seven universities and 15 investigators from Gulf coast universities dedicated to improving storm prediction, education, and evacuation from disaster. The Center has been funded at over \$10.0 million for the past 10 years from various sources including the Houston Endowment and the Greater Houston Flood Mitigation Consortium. The SSPEED Center has taken a regional approach to developing mitigation strategies and has identified various zones of interest in the Houston-Galveston region: The new approach is called H-GAPS and includes a coastal spine and mid bay option for surge control. See Galveston Bay Park below for more details.

Dr. Bedient is currently involved in the analyzing major floods in Houston, 2015, 2016, and Harvey in 2017. He is currently working on seven watershed projects related to impacts and future mitigation from Hurricane Harvey (see sspeed.rice.edu). Dr Bedient has also headed up major outreach activities as part of the SSPEED Center, leading 8 major conferences at Rice since 2008. Finally, he has been involved in technical exchange with the TU Delft over the past 10 years including Study Abroad Programs with Rice and LSU. He has received funding from agencies that include US EPA, NSF, TX Medical Center, GHFMC, TAMU, and GLO. SSPEED has graduated 8 PHD students and 17 MS students since 2008.

RELEVANT EXPERIENCE

FIRST (Flood Information & Response System) | City of Houston | Principal in Charge was developed for the City of Houston as an end-to-end radar-based flood assessment and mapping tool for critical infrastructure. Facilities include hospitals, nursing homes, fire stations and shelters. The system allows for early warning with real-time visualizations of critical hotspots and inundated areas during rain events. The system is designed to assist the City of Houston in addressing emergency management and operations, including emergency closures, evacuation, as well as rescue operations. firstcoh.org

FAS5 Flood Warning System for TMC | Texas Medical Center | Principal in Charge Designed by Dr. Philip Bedient at Rice, with assistance from Dr. Nick Fang and Dr. Baxter Vieux, FAS5 is an integrated system that predicts inundation levels caused by heavy rainfall events in order to provide lead-time for flood-response decisions. Drs. Bedient and Vieux were the first to implement a fully operational radar-based system in the U.S. For over twenty years, FAS5 has monitored the Brays Bayou Watershed to provide vital flood information to the Texas Medical Center. (\$2.5 million from TMC/FEMA over 20 years). fas5.org

Galveston Bay Park Plan | Houston Endowment | Principal in Charge This project for Houston and Galveston Bay is designed to provide vital surge protection within the bay. As the Houston Ship Channel continues to be expanded and dredged, the materials could be used to create the barriers next to the Houston Ship Channel. In addition, Galveston Bay Park would be created as a recreational habitat and facilities for the community to enjoy. This project is being reviewed now by the USACE and was found to be compatible with the proposed Coastal Spine Project. The GBPP has been reviewed favorably by the City of Houston, Harris County, USACE, and the Port of Houston. sspeed.rice.edu/gbpp