

2018 HARVEY-RELATED RESEARCH



GREATER HOUSTON FLOOD MITIGATION CONSORTIUM (GHFMC)

SSPEED Center, Consortium Partner

Overview: The consortium's researchers are collaborating to compile, analyze, and share scientifically-informed data about flooding risk and mitigation opportunities. The consortium will be releasing reports and studies on an ongoing basis.

GHFMC Analysis of Federal Flood Projects

PI: Philip Bedient, Ph.D., P.E. and Sam Brody, Ph.D.

Overview: Qualitatively analyze the effectiveness of current and planned structural projects (in terms of flood risk reduction) by comparing reductions in the FEMA floodplain against FEMA flood losses on Greens, Hunting, White Oak, and Brays Bayous.



KINDER INSTITUTE FOR URBAN RESEARCH

Coupled Flood Alert System and Infrastructure Risk Modeling for White Oak Bayou

PI: Jamie E. Padgett, Ph.D.

Team: Philip B. Bedient, Ph.D., P.E. and Andrew Juan, Ph.D.

Small-Scale Applications of Distributed Hydrologic Model *Vflo*[®] to Characterize Impacts from Mitigation Projects and Site-scale Re-development on Street-level Flooding

PI: Philip B. Bedient, Ph.D., P.E.

Team: Samuel Brody, Ph.D., P.E., Andrew Juan, Ph.D., Russell Blessing, and Avantika Gori



Rice Houston Engagement and Recovery Effort (HERE)

Evaluating the Impact of Recent Extreme Precipitation Events on Rainfall Risk Estimates Through Updated Extreme Value Analysis Methods

Rice Collaborators: Kathy Ensor, Philip Bedient, and Chris Hakkenberg

Overview: This analysis will leverage the most up-to-date data and methods to provide new design rainfall estimates that can aid engineers and infrastructure planners in developing a more flood-resilient city. This

analysis will also quantify the increasing frequency of high-intensity events, which will better represent the true rainfall-risk in any given year.

Learning From Harvey: Temporal Evolution of Flooding and Transportation Accessibility

Rice Collaborators: Jamie Padgett, Philip Bedient, and James Elliot

Overview: This project will develop new understanding of the spatial and temporal evolution of flood risks on transportation accessibility for vulnerable communities in the Greater Houston region.

Affect of Climate Change on Future Harvey-like Hurricanes and the Implications for Houston

Rice Collaborators: Pedram Hassanzadeh, Phil Bedient, Daniel Cohan, and Laurence Yeung

Overview: This project will use the projections of future jet stream's wind, sea-surface temperature, and sea level as input in the hurricane track and surge models to produce the first-ever quantitative estimates of the potential impact of climate change on flooding, storm surge, and air pollution in Houston.