

2022 SSPEED CONFERENCE

POST-HARVEY CLIMATE & FLOOD IMPACTS ON THE BUILT ENVIRONMENT



DAY 1 THURSDAY, APRIL 28, 2022

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| 8:00 - 8:30 | REGISTRATION & COFFEE (THE COMMONS) |
| WELCOME | |
| 8:30 - 8:45 | Reginald DesRoches, Provost, Rice University |
| 8:45 - 9:10 | Philip Bedient, Director, SSPEED Center & Professor, Rice University |
| SESSION I. | CLIMATE IMPACTS & DISASTERS |
| 9:10 - 9:30 | The New Orleans Story: Katrina to Ida John Pardue, Professor, Louisiana State University |
| 9:30 - 10:00 | Coastal Protection: a Dutch perspective on the Upper Texas Coast Baukje "Bee" Kothuis, Chief Dutch Representative, NBSO Texas |
| 10:00 - 10:20 | Projected changes in large-scale hydroclimate for the Southern Great Plains in the 21st century: key messages & uncertainties Sylvia Dee, Assistant Professor, Rice University |
| 10:20 - 10:40 | BREAK (THE COMMONS) |
| SESSION II. | MEASURING AND MAPPING FLOOD RISK |
| 10:40 - 11:00 | Inland Flood Risk and Analysis Philip Bedient, Director, SSPEED Center & Professor, Rice University |
| 11:00 - 11:30 | Smart Resilience: Harnessing Big Data and AI to Augment Flood Resilience Ali Mostafavi, Associate Professor, Director, UrbanResilience.AI Lab, Texas A&M |
| 11:30 - 12:00 | Climate Change Impact on Design Charlie Penland, Managing Principal, Infrastructure, Walter P Moore |
| 12:00 - 1:00 | LUNCH (THE COMMONS) |

DAY 1

KEYNOTE

RECENT ANALYSIS OF STORM SURGE IMPACTS FOR PROPOSED COASTAL PROTECTION SYSTEMS FOR HOUSTON-GALVESTON

1:00 - 1:25 Clint Dawson, J.J. McKetta Centennial Energy Chair in Engineering, University of Texas

SESSION III.

FLOOD RESPONSE IN THE BUILT ENVIRONMENT

1:25 - 1:45

Longitudinal Flood Vulnerabilities in Built Environments and Their Association with Resilience and Recovery

Hanadi Rifai, John and Rebecca Moores Professor, University of Houston

1:45 - 2:05

Urban Flood Risk Pt 1: A Shallow Dive

Andy Yung, Principal, Infrastructure, Walter P Moore

2:05 - 2:25

Urban Flood Risk Pt 2: Update on the HCFCD Study

Christina Hughes, Walter P Moore with Todd Ward (HCFCD) and Ataul Hannan (HCFCD)

2:25 - 2:50

BREAK (THE COMMONS)

SESSION IV.

CLIMATE & MODELING OF COASTAL CLIMATE IMPACTS

2:50 - 3:10

Understanding the Role of Sea Level Rise & Changing Storm Climatology on US Compound Flood Hazard

Avantika Gori, PhD Candidate, Princeton University

3:10 - 3:30

Projected changes in Texas hurricanes by the end of the 21st Century

Pedram Hassanzadeh, Assistant Professor, Rice University

3:30 - 3:50

Atlantic hurricane and climate interactions over past two thousand years: Insights from sedimentary records of coastal overwash

Lizzie Wallace, Junior Fellow, Rice University

SESSION V.

ADVANCED FLOOD MODELING & PREDICTION

3:50 - 4:10

Smart Systems for Transportation Mobility and Safety during Floods

Andrew Juan, Research Scientist, Rice University

Pranavesh Panakkal, PhD Candidate, Rice University

4:10 - 4:25

Mesh Modularization Enables Surrogate ML for Hydrodynamic Applications

Matthew Garcia, PhD Candidate, Rice University

4:25 - 4:45

Predictive Flood Modeling System for Urban Flooding & Swiftwater Rescue

Kelsey McDonough, Hydrologic Engineer, Vieux & Associates, Inc.

4:45 - 5:00

How Utilities and Agencies are Leveraging Innovative Tools to Address Flood Risk

Morgan Jackson, Water Resources EIT, Stantec

RECEPTION

PLEASE JOIN US FOR APPETIZERS & DRINKS

5:00 - 6:30

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THANK YOU TO OUR SPONSORS!



DAY 2 FRIDAY, APRIL 29, 2022

8:00 – 8:30 REGISTRATION & COFFEE (THE COMMONS)

SESSION VI. MEASURES TO IMPROVE FLOOD RISK ESTIMATES

- 8:30 – 9:00 **Texas Storm Study - Development of Design Storms for Large Watersheds in Texas**
Simeon Benson, USACE, Fort Worth
- 9:00 - 9:20 **Review of the Depth-Area-Reduction-Factor for the Design Storms**
Daniel Li, Postdoctoral Researcher, University of Texas, Arlington
- 9:20 – 9:40 **Improving Design Storm Concepts for Large Watersheds in Texas**
David Curtis, Sr. Vice President, WEST Consultants, Inc.
- 9:40 – 10:00 **Modern Flood Warning Systems and Future Trends**
Nick Fang, Associate Professor, UT Arlington

10:00 - 10:20 BREAK (THE COMMONS)

SESSION VII. GOVERNMENTAL ROLE

- 10:20 - 10:40 **Houston's Resilient Future**
Carol Ellinger Haddock, Director, Houston Public Works City of Houston
- 10:40 - 11:00 **Empowering Decision Makers with the Information They Want**
Tyler Payne, Project Manager, Community Development & Revitalization, Texas GLO
- 11:00 - 11:20 **The Changing Face of Flood Mitigation in Texas – A Success Story in the Making**
Jerry Cotter, Chief of Water Resources Management, USACE (Ft. Worth)
- 11:20 – 11:40 **Introduction to Risk Rating 2.0: Equity in Action**
Gilbert Giron, CFM, MPA, Regional Flood Insurance Liaison, FEMA
- 11:40 – 12:00 **Systemic Financial Risk arising from Flood Losses to Residential Properties**
Greg Characklis, Director, Center of Financial Risk in Environmental Systems, UNC

12:00 – 1:00 LUNCH (THE COMMONS)

SESSION VIII. CONCURRENT SESSIONS

SESSION A WILL BE HELD IN THE AUDITORIUM. SESSION B WILL BE HELD IN ACC 108.

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| <p>1:00 - 2:20 1:00 - 1:20</p> | <p>A. CLIMATE & THE BIG FREEZE (AUDITORIUM) Why Texas energy systems collapsed in Winter Storm Uri, & how to prepare them for future freezes Daniel Cohan, Associate Professor, Rice</p> <p>1:20 - 1:40 Why is the Texas electricity grid so unreliable? Andrew Dessler, Reta A. Haynes Chair in Geosciences, Texas A&M University</p> <p>1:40 - 2:00 Unprecedented impacts do not require unprecedented weather James Doss-Gollin, Assistant Professor, Rice</p> <p>2:00 - 2:20 Defining and Assessing Historic Climate-Driven Trends in Events "Like" February 2021 John Nielsen-Gammon, Texas State Climatologist, Texas A&M University</p> | <p>B. MAPPNEXT (ACC 108) Strategic Data Investments, MAAPnext, & the Future of Flood Mitigation Planning Ataul Hannan, P.E., CFM : Planning Division Director, HCFCD</p> <p>Multiple Models and Flood Risks, Producing a Single Map through Combined Probability Todd Ward, Risk Mitigation Dept Mgr, HCFCD</p> <p>Eliminating Flood with Buyouts James Wade, Property Acquisition Department Manager, HCFCD</p> <p>Floating treatment wetlands, our new BMP? Roberto Vega III, Environmental Quality Section Leader, HCFCD</p> |
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2:20 – 2:40 BREAK (THE COMMONS)

SESSION IX. CONCURRENT SESSIONS

SESSION A WILL BE HELD IN THE AUDITORIUM. SESSION B WILL BE HELD IN ACC 108.

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| <p>2:40 - 3:40 2:40 – 3:10</p> | <p>A. COVID IN THE ENVIRONMENT (AUDITORIUM) SARS-CoV-2 Wastewater Surveillance and Public Health Applications in Houston, TX Lauren Stadler, Assistant Professor, Rice</p> <p>3:10 - 3:40 An operational university surveillance system for SARS CoV-2 informed by wastewater viral dynamics at different spatial scales John Pardue, Professor, LSU</p> | <p>B. PANEL BRIDGING THE GAP BETWEEN DATA ANALYTICS & DECISION MAKING FOR A DISASTER RESILIENT TEXAS (ACC 108)</p> <p>MODERATED BY SAM BRODY, DIRECTOR, IDRT</p> <ul style="list-style-type: none"> ▪ Russell Blessing, IDRT, TAMUG ▪ Kayode Atoba, IDRT, TAMUG ▪ Suzanne Pierce, TDIS, UT, TACC ▪ Ali Mostafavi, Urban Resilience.AI Lab, TAMU |
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KEYNOTE CLIMATE CHANGE: ENGINEERING METHODS AND THE FUTURE OF THE TEXAS COAST

3:45 - 4:05 Jim Blackburn, Co-Director, SSPEED Center & Professor in the Practice, Rice

CLOSE THANK YOU FOR ATTENDING SSPEED'S ANNUAL CONFERENCE.

4:05 - 4:15 Philip Bedient, Director, SSPEED Center & Professor, Rice University