



Flooding in Southeast Texas: The Science Behind the Floods

An educational conference bringing together stakeholders, including business, scientists, engineers, citizen coalitions and government agencies to exchange current knowledge and ideas for the future.

June 6 – 7, 2018

7:30 a.m. – 5:00 p.m.

University of Houston Student Center • 4455 University Dr, Houston, TX 77204

Organized by the Houston Geological Society in Cooperation with:
Area Universities, Science and Engineering Societies, and Governmental Agencies



Registration Fee: \$200 Includes Breakfast, Lunch, Coffee Breaks, and **16 PDHs**
(Students: call HGS Office 713-463-9476 to receive \$75 registration and for volunteer opportunities)
To guarantee a luncheon reservation, you must register before 4 pm May 31

Register online – www.hgs.org/civicrm/event/info?id=1958 • Information – HGS 713-463-9476

Event Coordinator—Cheryl Desforges: cheryldesforges@hotmail.com

Sponsorships Available

Speakers from industry, academia, and government, including:

University of Houston: Dr. Bill Dupre, Dr. Julia Wellner, Dr. William Sager, Dr. Arturo Leon

Rice University: Dr. Philip B. Bédient, Dr. Jeff Nittrouer, Dr. Lester King

Texas A & M University: Dr. John Nielsen-Gammon (TX State Climatologist), Dr. Gretchen Miller, Dr. Christopher Mathewson

Harris County Flood Control District: Jeff Lindner, Matthew Zeve

Texas Water Development Board: Dr. Leyon Greene

Harris-Galveston Subsidence District: Michael J. Turco

City of Houston: Stephen Costello

Army Corps of Engineers: Sherri Willey

Elected Officials: Senator Paul Bettencourt, Judge Ed Emmett, Congressman John Culberson

Industry: Keith Owens, Mike Allison, Viktor Hlas, Davis Tolman

Greater Houston Flood Mitigation Consortium: Christof Spieler; Houston Stronger: Auggie Campbell

Flooding in Southeast Texas Conference

The Science Behind the Floods

Preliminary Schedule Subject to Change

Day 1 – Wednesday, June 6, 2018 Program

7:30 a.m. **Doors Open – Registration**

8:30 a.m. **Welcome, Overview**

8:45 a.m. **Science and Technology**

Session 1: Historical Overview

- Deep Time Geological/Hydrological Historical Research – Bill Dupre
- Historical Weather Patterns/Expected Frequency of Extreme Rainfall – Nielsen-Gammon
- Recent History (Harvey) – Jeff Lindner

10:15 a.m. **Break**

10:45 a.m. **Session 2: Causes of Flooding and Risks for the Future**

- Generic Meteorology – Meteorologists: Leyon Greene, John Nielsen-Gammon, and Bill Read/Alec Garcia
- Annual Cycles
- Decal Cycles
- Longer Cycles – Large Scale Flooding and Atlantic Multi Decadal Oscillation
- Generic: Hydrology and Hydraulics of Flooding and Flood Management in an Urban Environment – Christopher Matthewson

11:45 a.m. **Lunch**

Economic Impact of Flooding – Paul Bettencourt

1:00 p.m. **Session 2 (continued)**

- Topography/Geology/Subsidence – Mike Turco (HGSD); Wanda Crupa and Shuhab Kahn, UH
- Geomorphology Including Drainage Basin Spillover – Jeff Nittrouer and Bill Dupre
- Storm Surge – maybe Dr. Merrell, TAMUG or Sebastian, Rice
- Natural vs Concrete or Detention Reservoirs – Bedient
- Meteorology Revisited: The Impact of the Relationship of the Drainage Network to the Path of the Storm.
- History of Flooding and Formerly Proposed Plans – USACE

3:00 **Session 3: Daily Panel Discussion/Brainstorming**

4:45 **Adjourn For Day**

Day 2 - Thursday, June 7, 2018 Program

8:00 a.m. **Session 1 Present Day Design of Mitigation**

- What is Modeling Based on?
- Rainfall Measurements and Analyses – NOAA's Atlas 14 – presenter
- Topographic Control – Fugro Lidar Survey
- Other
 - Reservoirs
 - Detention Ponds
 - Stormwater sewer system
 - Roads – TXDOT?
 - Levees and Dikes
 - Transfer Canals
 - Pumping Systems for Flood-Prone Areas

10:00 a.m. **Break**

10:15 a.m. **Session 2 Current and Proposed Activity to Address Flooding Issues**

- The Role of Government
- USACE Report to Congress
- NOAA Atlas 14 Rainfall Models – Latest Due in November
- Revising Topographic Maps – use of LIDAR, Current LIDAR Study-Fugro
- Modeling Flood Events
- Drainage Tunnels. Pumping Systems for Flood-Prone Areas
- Injection of Flood Waters into the Subsurface.

11:45 a.m. **Lunch:**

1:00 p.m. **Session 2 (continued)**

- Use of Roads and Stormwater Sewer Systems for Storage and Conduits – Possibly TXDOT or Houston
- Cities – City of Houston – Stephen Costello; also possibly Bellaire's Flood Mitigation Task Force
- TexMesnet – Leyon Greene – TWDB

2:15 p.m. **The Role of Developers**

3:00 p.m. **The Role of Citizen Coalitions**

- Helping Governments/Agencies Define the Problem – e.g. JUV drone study

3:00 p.m. **Session 3: Daily Panel Discussion/Brainstorming**

4:45 p.m. **Adjourn**

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HGS FLOOD CONFERENCE

FLOODING IN SOUTHEAST TEXAS: THE SCIENCE BEHIND THE FLOODS

June 6 &7, 2018

Preliminary list of speakers

SPEAKER	ASSOCIATION	GENERAL TOPIC
Sherril Willey	U.S. Army Corps of Engineers, Galveston District	History of evaluating flooding and mitigation; plans for the future
Dr. Philip B. Bedient	Herman Brown Professor of Engineering in Civil and Environmental Engineering at Rice University	Detention reservoirs and natural vs. concrete channels
Dr. Arturo Leon	Associate Professor, Department of Civil Engineering at University of Houston	Technology of flood mitigation
Dr. Gretchen Miller	Associate Professor, Zachry Department of Civil Engineering at Texas A&M University	Subsurface injection of flood waters for mitigation
Dr. Christopher Mathewson	Regents Professor Emeritus, Department of Geology & Geophysics at Texas A&M University	Hydrology and hydraulics of flooding and flood management in an urban environment
Stephen Costello	City of Houston Mayor's Office Chief Resilience Officer "Flood Czar"	Harvey impacts, sources of funding, the recovery and resilience efforts. He usually then focuses on a few key resilience projects
Dr. John Nielsen-Gammon	Texas State Climatologist, Regents Professor at Texas A&M University	Meteorological risk assessment and frequency of rainfall
Keith Owens	Technical and Business Development Manager Fugro USA Land, Inc.	Topography update using LIDAR
Mike Allison	Raptor Aerial Services	Use of drones for aerial surveys
Jeff Lindner	Director Hydrologic Operations Division/Meteorologist, Harris County Flood Control District	Recent history- Harvey
Matthew Zeve	Director of Operation, Harris County Flood Control District	Post Harvey future plans
Dr. Jeff Nittrouer	Assistant Professor, Department of Earth, Environmental and Planetary Sciences, Rice University	Fluvial Geomorphology and its relationship to flooding

Dr. Bill Dupre	Professor Emeritus, University of Houston	Pleistocene controls on modern drainage patterns
Dr. Julia Wellner and Dr. William Sager	Professors, Department of Earth and Atmospheric Sciences University of Houston	Coastal impacts from inland flooding
Dr. Leyon Greene	Texas Water Development Board	TexMesoNet
Michael J. Turco	General Manager, Harris-Galveston Subsidence District, Fort Bend Subsidence District	Impact of subsidence on flooding
Viktor Hlas	OptiRTC, Inc	Preventing Flooding through Intelligent Stormwater Management
Davis Tolman	D Tolman Interests LLC	The Use of LIDAR and Residual Mapping to Communicate Flood Risk
Dr. Lester King	Research Scientist and Lecturer in the School of Natural Sciences, Rice University	
John Culberson	U. S. Congressman	5-10 minute talk (federal funding? et al)
Judge Ed Emmett	Harris County Judge	
Senator Paul Bettencourt	Texas State Senator District 7	Economics
Greater Houston Flood Mitigation Consortium and Houston Stronger		Panel discussion