

Presentation Abstracts – Session 1

*Presenters and their associations are highlighted.

- ❖ **Ramalingam Saravanan**, Christina Patricola, Ping Chang

Department of Atmospheric Sciences, TAMU

Large-scale Environmental Influences on Atlantic Tropical Cyclones

Abstract:

The genesis and evolution of tropical cyclones is strongly affected by the background flow conditions in the atmosphere and the ocean. In this talk, we address how different aspects of the background flow, such as vertical wind shear and sea surface temperature, affect the year-to-year variability of Atlantic hurricane activity. The most dominant influence is the occurrence of El Niño in the tropical Pacific, which affects the vertical shear in the tropical Atlantic. The Atlantic Meridional Mode of variability also affects hurricane activity, through its impact on the sea surface temperature. The warming of the ocean associated with climate change can also be a factor in affecting hurricane activity. The implication of these factors for Hurricane Harvey and other Atlantic hurricanes will be discussed.

- ❖ Sam Brody, **Wesley Highfield**, Antonia Sebastian, Russell Blessing, William Mobley, Kayode Atoba, Laura Sterns, Kirana Pandian, Jayton Rainey

Department of Marine Sciences, TAMUG

Measuring, Mapping, & Managing Flood Risk: A Pilot Program in Southeast Texas

Abstract:

When Hurricane Harvey struck the Texas coast in 2017 as one of the most damaging storms in U.S. history, it exemplified a long-term trend of increasing flood loss across Southeast Texas. In response, researchers have launched new study to measure, map, and articulate flood risk in communities seeking to better prepare for and reduce the adverse impacts of future storm events. This project will develop novel ways to identify and communicate flood risk and impact. Specifically, we will produce maps and other visuals that paint a more complete picture of flood risk by integrating multiple data sources and models. These data include advanced hydraulic models, insurance- and aid-based flood payouts, crowd sourced data, socioeconomic characteristics, and survey responses. Maps will be shared with local stakeholders to obtain feedback on how to refine our products and make them most effective in helping localities prepare, mitigate, and recover from flood events.

- ❖ **Ali Mostafavi**, Cheng Zhang, Chao Fan, Yang Yang, Yucheng Jiang

Department of Civil & Environmental Engineering, TAMU

Interdisciplinary Disaster Research in the Digital Age: Uncovering Human Network Dynamics during Built Environment Disruptions

Abstract:

Social media and other crowdsourced applications have become a new form of infrastructure for communities in coping with disasters. The growing use of digital technologies in disasters provides unprecedented data for researchers in the interdisciplinary field of disasters to embark upon a new era. This talk will highlight two

interrelated studies focusing on understanding human interactions with the built environment during disaster-induced disruptions. The first study examines the emergence of influential users and their role in improving situational information dissemination about infrastructure disruptions in disasters. Various essential characteristics that give rise to emerging influential users are explained using twitter data from Hurricane Harvey in Houston. The second study describes an Online Network Reticulation (ONR) framework to examine four modalities (i.e., enactment, activation, reticulation, and network performance) in the evolution of online social networks to analyze the interplays among disruptive events in disasters, user activities, and information diffusion performance on social media.

❖ **Louis Ngamassi, Camille Gibson**

Department of Accounting, Finance & MIS, PVAMU

Information and Communication Technologies for Disaster Management: A Research and Education Agenda

Abstract:

The goal of this initiative is twofold. First, investigate the ways in which information and telecommunication technologies (ICT) can be used for improved disaster situational awareness and for better and more effective collaborative decision making during the four phases of disaster management. Second, broaden the participation of minority students in the information society by providing them with a set of new innovative skills and by engaging them in exploring the use ICT including social media analytics in information-producing and sharing for disaster management and relief. Sam Brody,

❖ **Jaimie Masterson, Matthew Malecha, Phil Berke**

Department of Landscape Architecture & Urban Planning, TAMU

Integrating Resilience into Networks of Plans

Abstract:

A new method has been developed by the Texas A&M Institute for Sustainable Communities to help communities plan for hazards and rebound from disasters. Many places struggle to align their plans – transportation, parks, economic development, mitigation, land use – to work together to reduce social and physical vulnerability to hazards.

The Plan Integration for Resilience Scorecard Guidebook walks users through: 1) evaluating community plans with respect to hazards vulnerability, identifying where they are in conflict; 2) understanding how well plans target areas that are most vulnerable; and 3) resolving conflicts across plans and identifying missed opportunities to improve community resilience.

The Texas A&M team has partnered with communities across the country to implement the resilience scorecard method. The session will review results from application of the scorecard in assisting communities along the Texas Coast after Hurricane Harvey.