

Pecha Kucha Inspired Presentation Abstracts

*Presentations and their associations are highlighted

◆ **Jeewasmi Thapa, Texas Target Communities, TAMU**

Rockport Strong: Planning for Resilience

Abstract:

In the wake of Hurricane Harvey, the City of Rockport partnered with the Texas Target Communities (TxTC) program to update the city's comprehensive plan mindful of the challenges and issues of recovery. TxTC connected with students and faculty to tackle a host of community-identified issues related to resilience. Seven courses in urban planning, landscape architecture, law, and public administration worked together with the community in a data-driven and participatory process. The multidisciplinary projects were coordinated with the Texas Rural Leadership Program, the American Planning Association, the Texas Sea Grant Community Resilience Collaborative, TAMU School of Law, TAMU at Corpus Christi, Texas Tech, the Hazard Reduction & Recovery Center, and the Department of Landscape Architecture and Urban Planning. The presentation will provide an overview of the TxTC community engagement process, and discuss the multiple interdisciplinary partnerships formed, and the recommendations made.

◆ **Barbara Bellows, Texas Institute for Applied Environmental Research, Tarleton State University**

The Role of Soil in Disaster Resilience

Abstract:

Soil can be a bulwark for flood resilience, or a storehouse for contaminants deposited in the retreat of a storm. Wetlands, marshes, and fields provide ecosystem services absorbing floodwaters and filtering contaminants. As extreme weather events become more common and sea levels rise, retention and restoration of these natural sponges will become increasingly critical and cost-effective for protecting homes, businesses, and infrastructure.

Soil can also become a repository and transformation zone for contaminants left behind by floods. For many contaminants, undetectable concentrations seep into soils during floods. For other contaminants, soil chemical or biological processes rapidly degrade toxic substances into less toxic components. However, heavy metals and more persistent contaminants can build up in the soil. Health concerns associated with these contaminants can increase over time with repeated flooding and deposition. Restoration must recognize risks associated with contaminated soils while employing practices that enhance stabilization of contaminants within the soil.

◆ **John Nielsen-Gammon, Department of Atmospheric Sciences, TAMU**

The Worst Case Scenario

Abstract:

The occurrence of Harvey, an exceptional event, reminds us that we need to be able to deal with exceptional events. For some purposes, it is essential to know whether Harvey was as bad as it gets. We will approach this question from four perspectives: (1) a comparison with the heaviest rainfall events in US history; (2) an investigation

likelihood of slow-moving tropical cyclones; (3) an analysis of the sensitivity of Harvey's rainfall to its track; and (4) an assessment of climate change's role in the risk of future extreme rainfall.

- ◆ **Timothy Dellapenna**, Mason Bell, Lisa Hill, Victoria Bartlett, Mohammad Al Mukaimi, Jiabi Du, Kyeong Park, Tony Knap

Department of Communication, TAMU

Cyclone Driven Sediment Flux within an Urbanized Estuary: Impact of Hurricane Harvey on Galveston Bay

Abstract:

The lower San Jacinto River and the Houston Ship Channel (SJR/HSC) has experienced up to 3 m of subsidence in the past century resulting in the accumulation of over 2 m of heavily contaminated (e.g. Hg, Dioxin, PAH's) sediment. Controlled releases from the Barker and Addicks Reservoirs (BAR), resulted in continual high discharges across Buffalo Bayou and the SJR/HSC for weeks after Harvey, scouring at least 0.5 m of this sediment and exporting it to Galveston Bay and the Gulf of Mexico. Analyses of a series of ~75 push cores revealed that Hurricane Harvey deposited ~141 million tons of sediment within GB and this sediment contained ~6 tons of mercury (Hg), in average, tripling the surface concentration of mercury in the sediment within the upper half of the bay. It is estimated that ~5 tons of the Hg deposited in GB came from the scoured sediments of Buffalo Bayou.

- ◆ **Nishita Sinha**, Catherine Eckel, Rick Wilson

Department of Agricultural Economics, TAMU

Decision to Donate for Disaster Relief: Insights from Preferences Measured in Lab Experiment

Abstract:

In this study, we use surveys and incentivized decisions to explore the behavioral factors that increase the likelihood of money and time donations for disaster relief among Rice University students. Several important preferences of student subjects are measured, including altruism, risk tolerance, and loss aversion. We then estimate their relationship with donations of money and time to arrive at the determining factors. The subjects self-report their donation choices. We find that social norms, measured as subjects' beliefs about donation behavior of other students, plays an important role in determining the decision to make donations.

Individuals who believe that a large number of their peers are giving money or time are significantly more likely to make donations themselves. In addition, decisions to donate cash and time are also driven by civic responsibility and environmental stewardship, measured using survey questions. We did not observe any trade-off between monetary and time donations.

- ◆ **Kai Wu**, Department of Landscape Architecture and Urban Planning, TAMU

With global climate change and rapid development in environmentally vulnerable areas, communities are increasingly looking for ways to manage, adapt to and mitigate adverse impacts from disaster events. To help communities achieve this goal, planners must first understand how various stakeholders behave in post-disaster situations. In this study, we use household and business surveys conducted in New York City after the 2012 Hurricane Sandy to examine recovery decisions of businesses as compared to households, as well as their respective use of social, financial, and institutional network resources to recover. Our findings suggest that community businesses, particularly locally-owned small businesses, are not simply economic units but also play critical social roles in community functioning. Business recovery decisions are often made based on social, not purely profit-maximizing reasons. Recognizing this dual characteristic of businesses is an important step to better engaging this stakeholder group in community resilience and recovery planning processes.

◆ **Michael Machen, Texas Institute of Applied Environmental Research, Tarleton State University**

Rebuild and Protect Texas: Helping Plan for, Respond To, and Recover from Contamination during Catastrophic Flood Events

Abstract:

In 2017 Hurricane Harvey focused a harsh spotlight on the impacts of floods in the coastal zone of Texas; a threat shared by all Gulf coast states. The immediate response to such events is aggressive, rescuing people and getting the community and economic structure back to normal. Understandably, the environment is not the primary concern during the event, but the habitats and ecosystems of the impacted area are degraded significantly during flood events. These deleterious environmental impacts threaten public, animal, and habitat health.

Every flood is a major spill and redistribution of contaminants from industrial, agricultural, transportation, and urban developments. What happens to these pollutants, hydrocarbons, heavy metals, pesticides, bacteria, etc., as the flood recedes? Did they impact human health during the event? Can they continue to impact human health after the event? How are contaminants distributed throughout the ecosystem and food production? The program proposed by the Texas Institute for Applied Environmental Research and its partners aims to address these questions and offer guidance for the future based on the scientific understanding of the biological/chemical threats posed.

This effort is critical to protecting human health, economic robustness, and quality of life.