CTBS Newsletter
The Center for Texas Beaches and Shores

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Urban Flooding Study

Floods present significant economic and social challenges in the United States and around the globe. Losses continue to grow and the potential impact of climate change and population increases are expected to accelerate this rise. Primary attention has been focused on the flooding that results from overflow along coastlines as a resulted of sea level rise, tidal variability, and coastal storm surges. However, contemporary analysis indicate that a growing segment of flood losses occur because of flooding outside the 1% annual chance flood zone of the US National Flood Insurance Program (NFIP) in both coastal and riverine environments. Much of this flooding occurs in more densely occupied urban areas. In many of these areas, the population is socially and economically vulnerable. Unfortunately, little data are available to determine the extent of losses in these areas. Although property owners in most of the areas are eligible to purchase flood insurance under the NFIP, there is little participation. Pioneering work by the Center for Neighborhood Technology (CNT) and Illinois have identified within that state and the Chicago metropolitan area the significant losses occurring outside the regulatory floodplain, but little analysis has been conducted at the national level.

Urban Flood Loss Outside of the 100-year Floodplain in SE Houston, TX
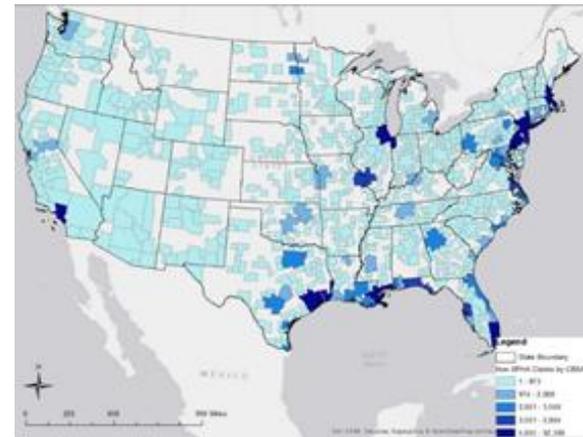
Top Metropolitan Areas with Insured Flood Losses Outside the 100-year Floodplain

The initial analysis will be followed by more detailed investigations as data is made available by federal and local agencies for national analysis.

To address this gap, Texas A&M University Galveston and the University of Maryland, with the cooperation of federal, state and local agencies, are conducting an analysis to better determine nationally the extent of urban flooding in areas outside the regulatory floodplain and to identify actions that can be taken to deal with this growing flood challenge. This effort will maintain close ties to a current effort of the National Academies to explore the issue of urban flooding in 3-8 metropolitan areas in order to gain an initial understanding of its extent and causes and to the ongoing efforts of the CNT in this same area.

This analysis seeks to identify the intensity and geospatial extent of this national urban flooding threat and methods to reduce its impacts as well as the gaps and challenges that impede development of a better understanding of the challenge. The final report will include a high-resolution national analysis review of the extent of the urban flood problem and detailed analyses of the challenges faced in several urban areas. An initial analysis is currently painting a national picture of the urban flood problem and scoping-level reviews of selected urban areas where higher resolution data are currently available. The initial analysis will be followed by more detailed investigations as data is made available by federal and local agencies for national analysis.

Laura Stearns Biography

Laura Stearns is a Master's student in the Marine Resource Management program at Texas A&M University at Galveston. She also received her Bachelor's from TAMUG in Ocean and Coastal Resources. She is currently a part-time assistant at the Center for Texas Beaches and Shores, working on updating datasets for the Texas Coastal and Bay Atlases. Laura is interested in further her knowledge of WebGIS and creating tools similar to the Atlas.