Visualizing Houston's Drainage Systems—An Intuitive Assessment of Flood Risk

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EXTENDED ABSTRACT

Introduction

One thing is clear from the aftermath of Harvey: most Houstonians would like to better understand their flood risk. The existing Base Flood Elevation (BFE) is commonly misunderstood by the public and is often treated as a deterministic "Flood–No Flood" boundary. Even if one understands the probabilistic nature of FEMA's flood risk terminology, the frequency of extreme flood events around Houston over the last few years has called into question the accuracy of these risk assessments. The Houston Chronical stated that three-quarters of the structures damaged by Harvey were outside of the FEMA designated 100–year floodplain.[1]

City and County officials have addressed the inadequacies of the pre-Harvey flood risk maps by commissioning a countywide flood hazard map update using the latest software and data. These maps, derived from large, highly complex numerical models, will cost over $14M to build and will not be finalized until the end of 2023.[2] In the meantime, there is an opportunity to consider alternative flood assessment techniques, particularly if they complement the existing methodologies.

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