



## **Assessing temporally-dynamic flood vulnerability using empirical building-type depth-damage curves – A case study of Houston**

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In recent decades, there has been an increase in global flood risk, causing major damages especially in densely urbanised coastal areas. Hurricane Harvey's record-setting rainfall in the city of Houston underscored the importance of studies focusing on understanding the effects of adaptation measures on changing flood vulnerability. To date, only few studies have analyzed the impacts of flood mitigation measures on reducing flood losses at a parcel or building level. In this study, we create empirical flood depth-damage curves for different building material types using close to 1800 FEMA flood damage claims for different past flood events (i.e. Tropical Storm Allison of 2001 and Hurricane Ike of 2008) that have affected the Brays Bayou watershed in Houston, Texas (USA). These curves are then used to assess the temporal dynamics of flood vulnerability and compared to the implementation of adaptation measures over time as part of Project Brays, one of the largest flood adaptation projects in the US currently under way. Finally, we conduct a preliminary assessment of residential building material types and damages by Hurricane Harvey.