



## **The Hydroclimatology of Flash Flooding in the Urban Corridor of the Northeastern US**

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We examine the hydroclimatology of flash flooding in the urban corridor of the northeastern US, focusing on the densely urbanized region from Philadelphia PA to New York, NY. We examine the hydrometeorology of flash flooding in the region through empirical studies using “storm catalogs” of flash flood producing storms in the region and through numerical modeling experiments using the Weather Research and Forecasting (WRF) model. Empirical analyses are based primarily on volume scan reflectivity observations from the WSR-88D radar network and cloud-to-ground lightning observations from the National Lightning Detection Network (NLDN). Empirical and numerical modeling analyses are designed to determine the role of spatial heterogeneities of land surface properties (both natural and man-made) in controlling rainfall properties of flash flood producing storms. We focus on Lagrangian properties of storms in both empirical and numerical modeling studies. Analyses of urban flooding focus on the Pennypack Creek watershed in Philadelphia and the Harry’s Brook watershed in Princeton, NJ. We examine the interplay of storm properties and drainage basin properties in determining flood hazards in urban watersheds.