

Flood Risk Assessment Using In-Situ and Remote Sensing Products: Development of Flash Flood Forecasting System for Puerto Rico

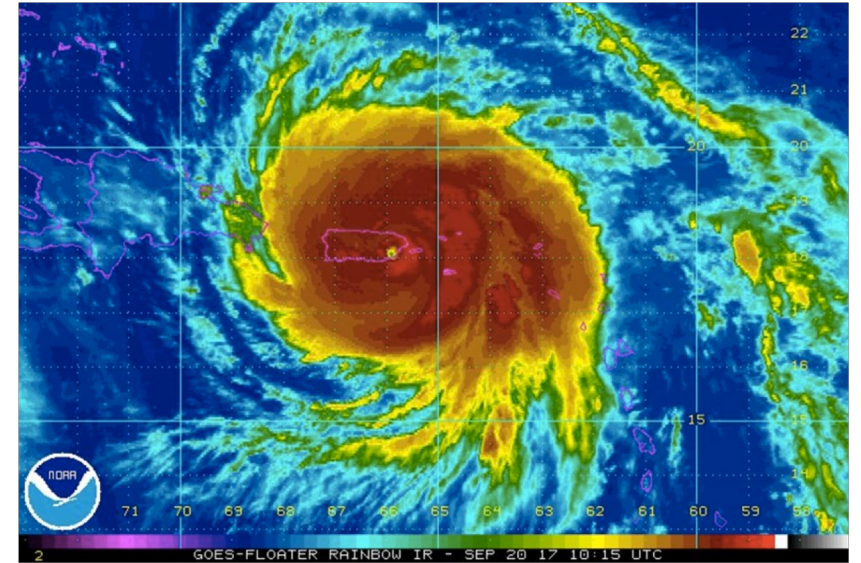
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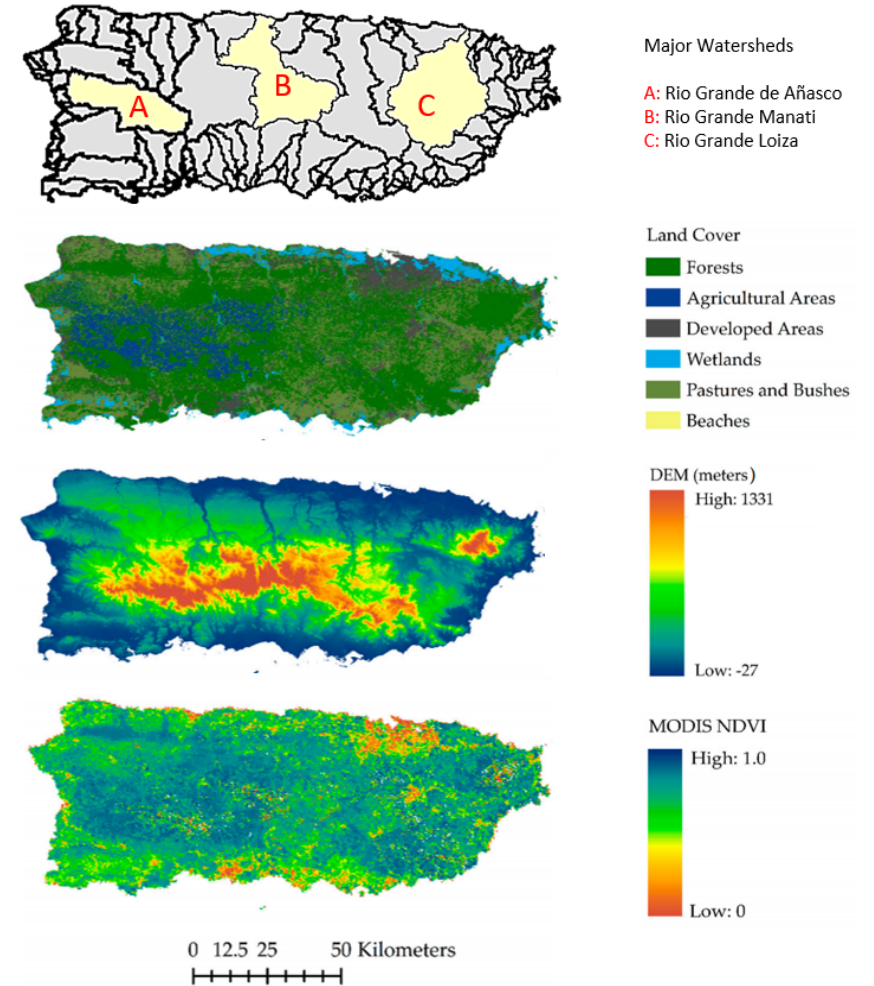
BACKGROUND

- In islands of the Caribbean, floods can occur at any moment throughout the year.
- This can be attributed to the **topographic features** and **weather patterns** of a tropical climate.
- Even though any rainfall event can lead to a flood, they are more likely to occur during the hurricane season.
- For Puerto Rico, the Flash Flood Guidance divides the territory in multiple regions and provides a single value for each one of them.



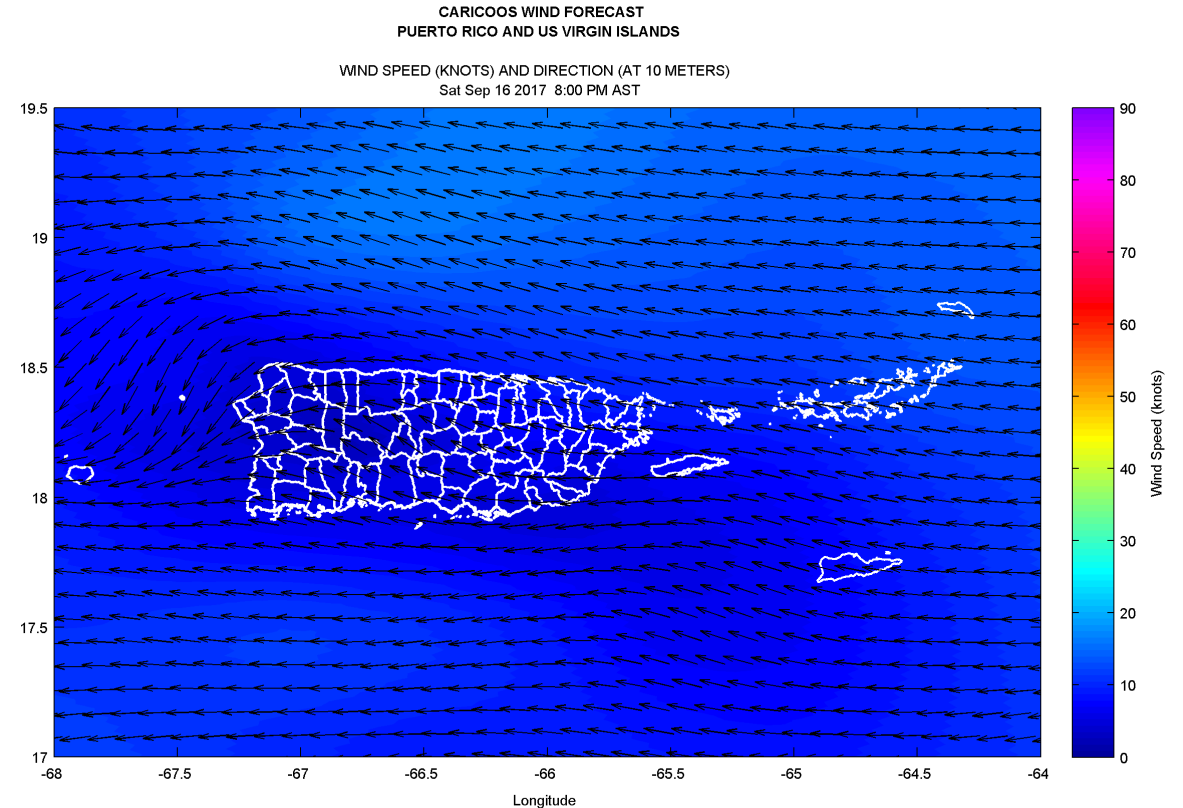
OBJECTIVES

- Implement the Weather and Research Forecasting Hydrological modeling system (WRF-Hydro) for watersheds in Puerto Rico.
- Validate the output of WRF-Hydro for the selected watersheds in Puerto Rico.
- Develop the framework for the application of WRF-Hydro for a Flash Flood Guidance system in Puerto Rico.

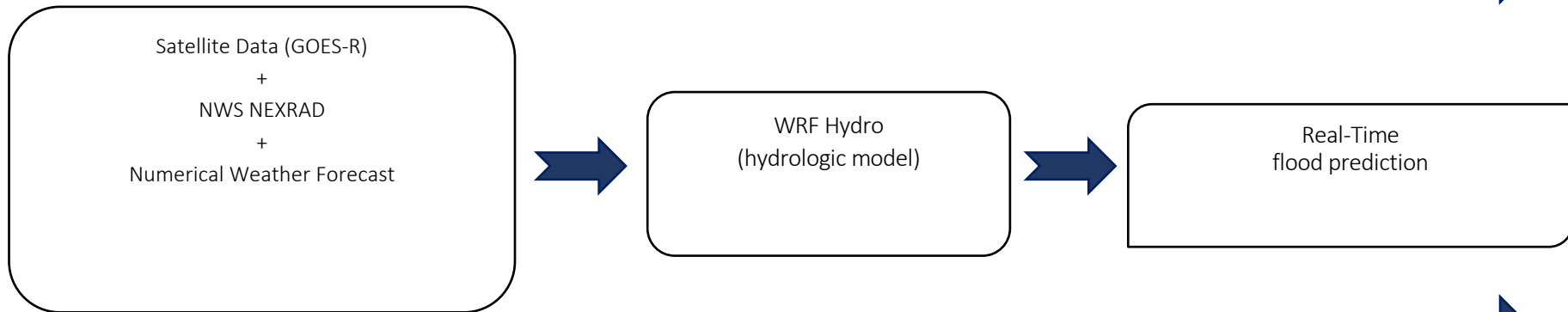
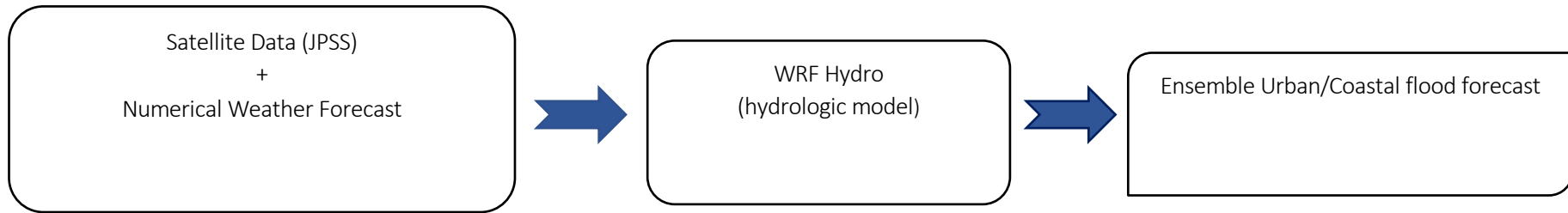


DATA ACQUISITION

- Atmospheric and Land Surface Forcing Data:
 1. National Weather Service- San Juan
 2. Caribbean Coastal Ocean Observing System
 3. JPSS Soil Moisture Data (AMSR2)



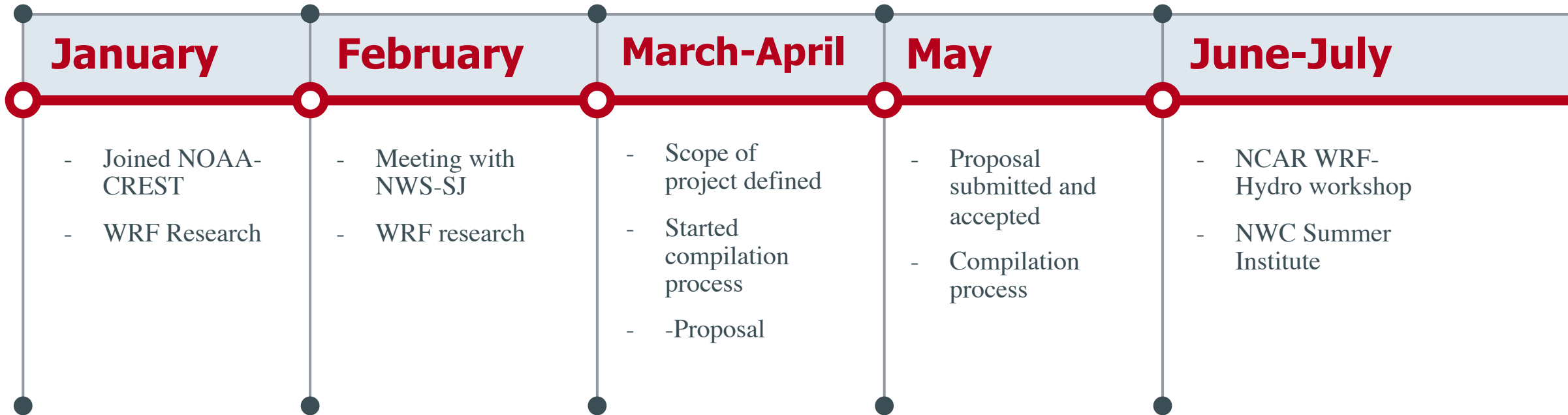
*Operational 1km WRF for Puerto Rico
P. Chardon, et al., (2018)*





WRF-Hydro Timeline

2018 Progress



FALL 2018 SEMESTER GOALS

1

- Model Run for each watershed

2

- Preliminary validation for one watershed

3

- Use different atmospheric forcing data

Other Works: NWC-Summer Institute

- **Title:**

- Sensitivity of Urban Flooding to Subsurface Storm Drainage Systems in Low-Gradient Watersheds

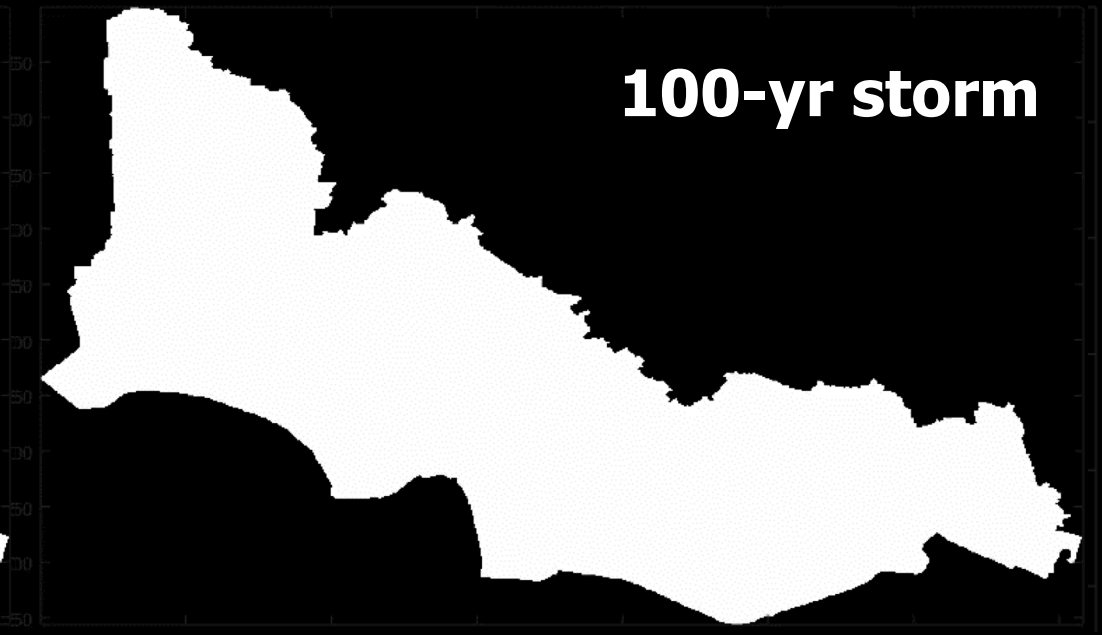
- **Description:**

- Quantify the sensitivity of hydrologic models to stormwater drainage systems for different return periods.

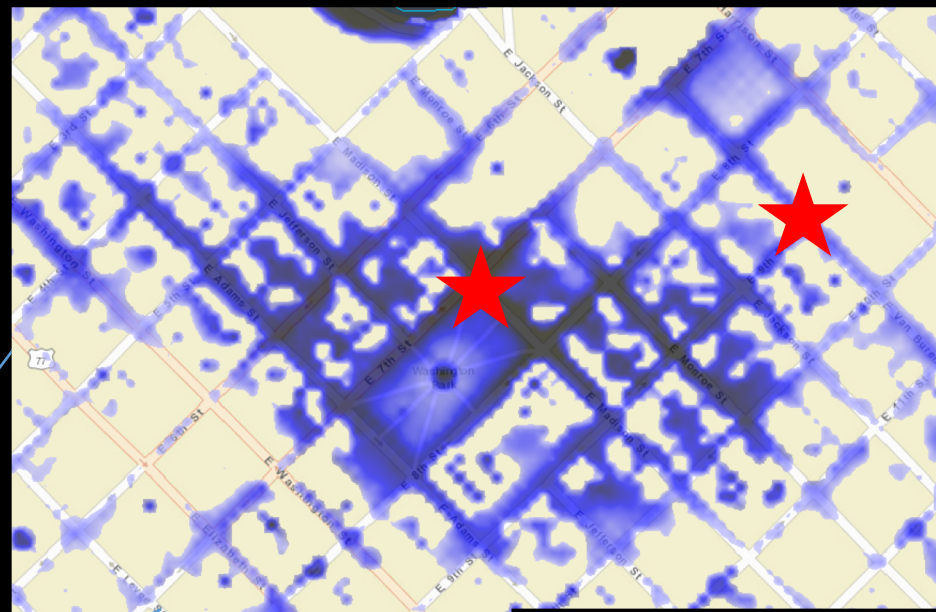
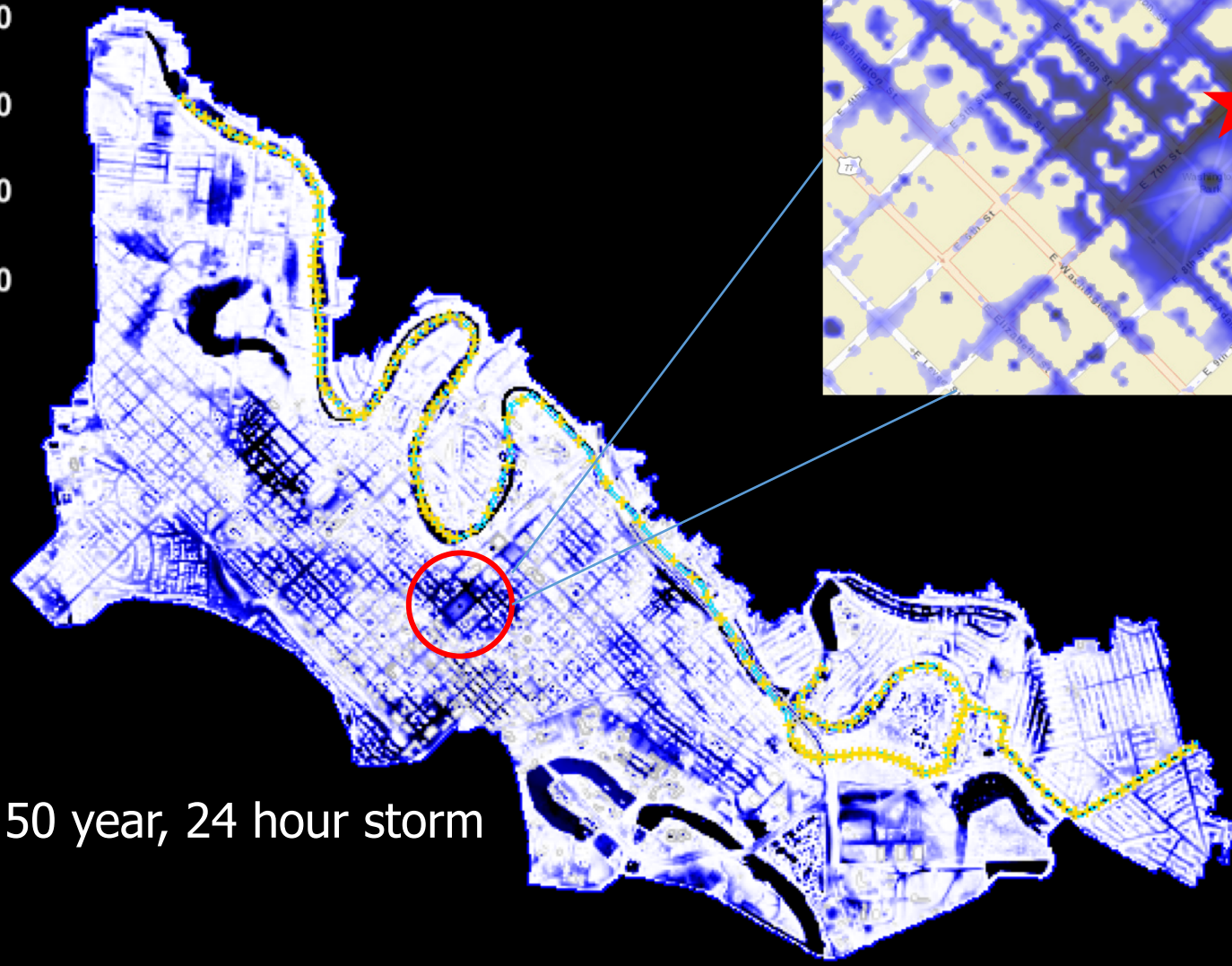
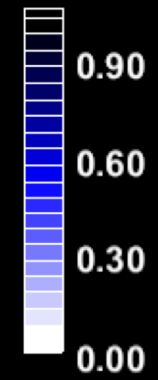
- **Authors:**

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24-hr storm



Maximum Water Depth(m)



50 year, 24 hour storm