

# National Weather Service Southeast River Forecast Center and Office of Water Prediction's Support of the Implementation of Flood Inundation Mapping in Puerto Rico

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Flood Inundation Mapping: Part II 15th

Conference on Research to Operations 105th

Annual Meeting of the American Meteorological

Society

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*Service Innovation and Partnership  
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## Map Legend



Population served by  
**October 2023.**



Population served by  
**October 2024.**



Population served by  
**October 2025.**

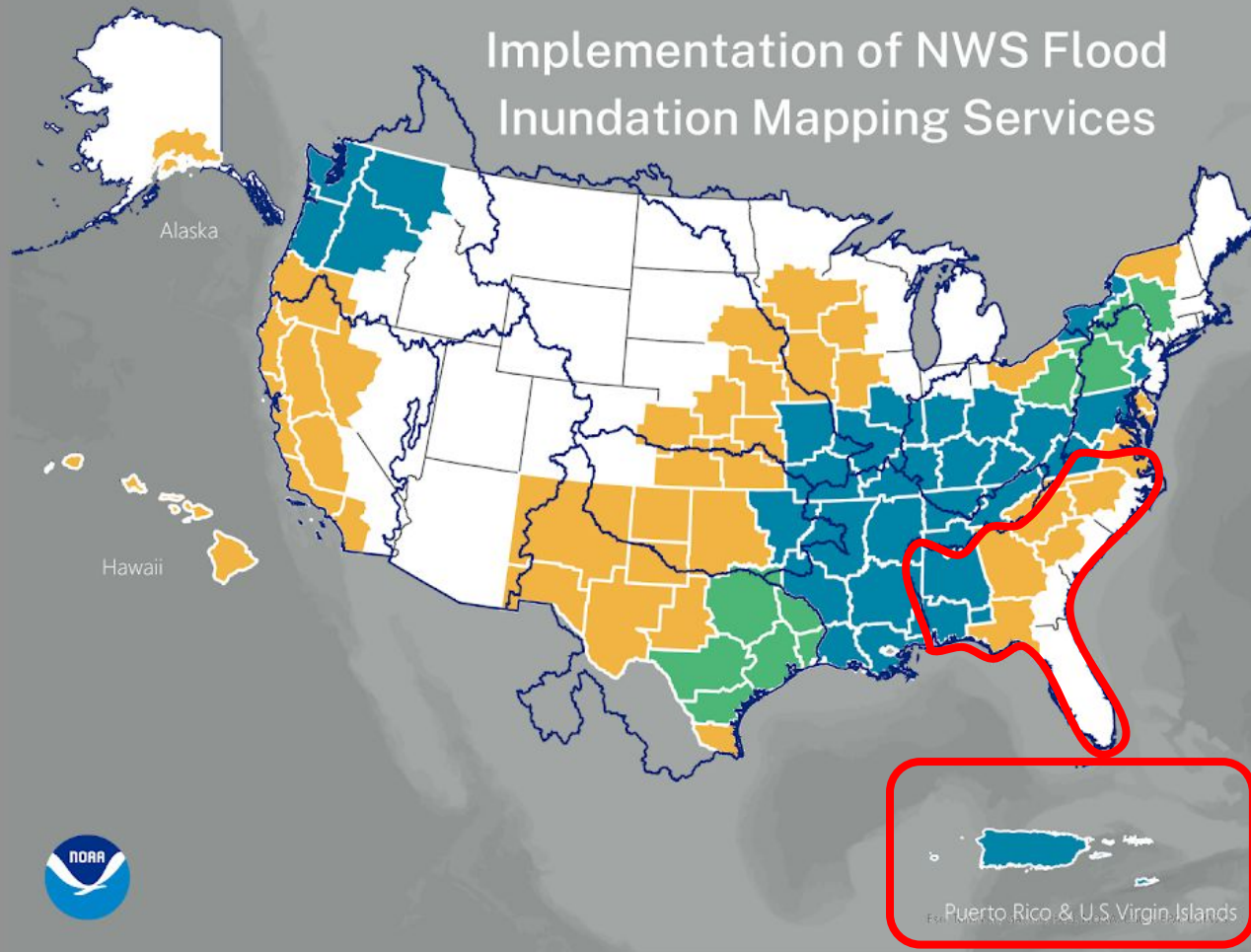
— NWS County Warning Areas

— NWS River Forecast Center Boundaries

Over the next 3 years, the **National Weather Service's National Water Center** will work in coordination with **NWS River Forecast Centers**, **Weather Forecast Offices**, and other Federal partners to release forecast flood inundation mapping services to the Nation.



## Implementation of NWS Flood Inundation Mapping Services



# Available Dynamic FIM Services for Puerto Rico

## National Water Model (NWM) Latest Analysis FIM

- Observation-based simulations
- 30-minute latency
- Hourly updates
- Used as a snapshot of the most recent modeled inundation
- Error Sources:
  - Radar or gage malfunctions
  - For ungaged reaches, errors associated with NWM and estimated precipitation
  - HAND errors (10 m DEM resolution)

## National Water Model (NWM) 48-Hour Forecast FIM

- Forecast based on 48-hour WRF-ARW QPF
- 3-hour latency
- Updates every 12 hours at 6 UTC and 18 UTC
- Used for rivers and streams not covered by RFC forecast
- Error Sources:
  - WRF-ARW QPF
  - NWM flow simulations
  - HAND errors (10 m DEM resolution)

Both use HAND method and are only available for reaches that meet and/or exceed the “High Water” threshold in NWM







## Visit with WFO San Juan

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- Representatives from SERFC and OWP
- Two-day training and outreach visit in June 2024
- Training sessions on available products and services from NWM and FIM
- Training partner agencies on how to use FIM in their operations
- Tabletop exercise conducted using archive data from Hurricane Fiona
- Meeting with Autoridad De Acueductos Y Alcantarillados (The Puerto Rico Aqueduct and Sewer Authority)



Picture courtesy of Office of Water Prediction



Picture  
courtesy of  
Office of Water  
Prediction



# Hurricane Fiona Exercise

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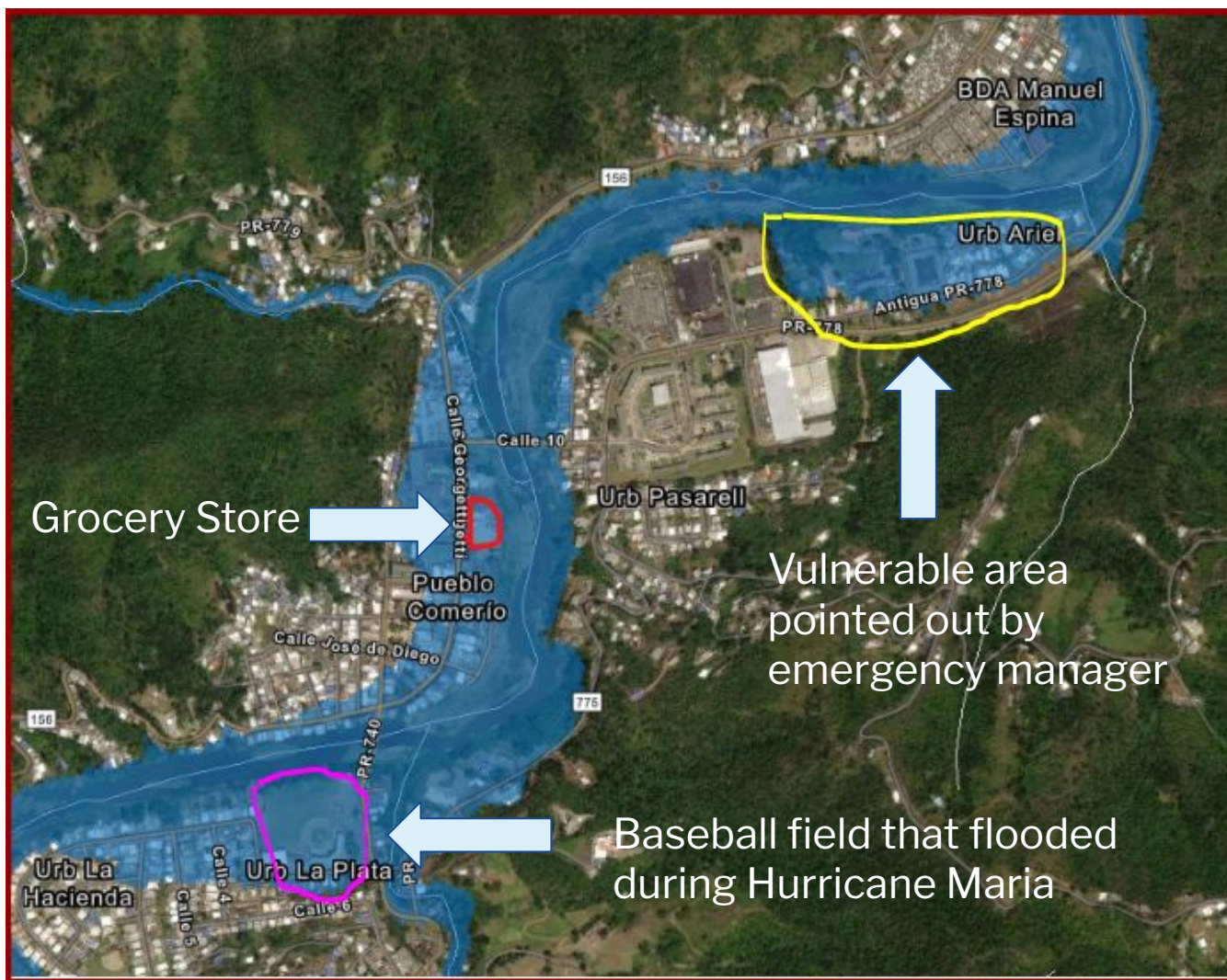
- Used to train SERFC staff, partners, and used at FIM Workshops
- Helps to demonstrate potential questions from partners during an event
- Group puts together a slideshow and gives a briefing to the “partner”

# Objectives

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- Understand how Flow-Based CatFIM can be used in Puerto Rico during outlook period
- Learn how to use provided FIM Review Checklists, NWM Vis Services, gage analysis tool, FIM Reviewer
- Understand differences between types of FIM, how past events can provide insight, how to recognize catchment issues, etc.





# Connecting to Real Life



Pieces of the temporary steel bridge lay on the side of the Guaonica River in Utuado, Puerto Rico. (Ricardo Arduengo/Reuters)

- Bridge destroyed by flows from Hurricane Maria replaced with temporary bridge
- Concern for temporary bridge – will water get that high?
- Given known information about temporary bridge, waters during Fiona expected to be similar to Maria



A dynamic background image of a blue water splash, with droplets and ripples creating a sense of movement. The text is overlaid on this background.

# Thank You! Questions??

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