



# **Coastal Flooding PFHA Pilot Study**

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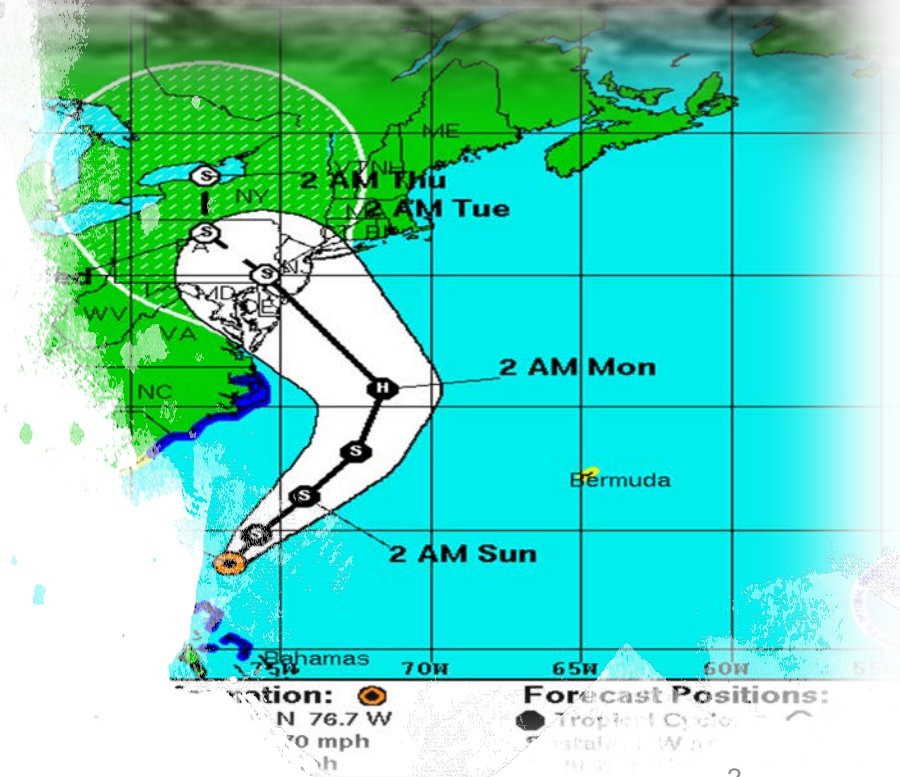
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# Outline

- Objectives
- Tasks
- Status



# Pilot Study Objectives

- Demonstrate PFHA for external flooding due to coastal flooding phenomena
- Include key mechanisms and features that make coastal flooding unique and challenging
  - Storm surge
  - Wind wave effects
  - Riverine discharge
- Include propagation of aleatory and epistemic uncertainties
- Uncertainty and sensitivity analysis
- Inform development of PFHA guidance for coastal flooding scenario





- **Task 1 – Site Selection**

- Focus on coastal areas and adjoining watersheds that are representative of settings where NPPs could be sited
- Priority on areas for which existing hydrodynamic (storm surge), hydrologic and hydraulic models (riverine discharge) are available
  - Leverage studies in Coastal Hazard System (CHS)

- **Task 2 – Data Collection and Analysis**

- Climate and precipitation information
- Historical information on extratropical and tropical storms affecting the region
- Available water level observations (e.g. river discharge, tides)
- Site and watershed information
- Hydrodynamic, hydrologic and hydraulic models



- **Task 3 - Review and Selection of Probabilistic Modeling Approach and Methods**
  - Select an overall probabilistic modeling approach and methods for probabilistic modeling of specific processes.
- **Task 4 - Construct inputs for Hydrodynamic, Hydrologic and Hydraulic Modeling**
  - Probabilistic space-time inputs to the hydrodynamic, hydrologic, and hydraulic models used in the study.
  - Aleatory model for stochastic aspects of these processes
  - Characterization and quantification of epistemic uncertainties (e.g. model structure and parameter uncertainties).



- **Task 5 – Hydrodynamic, Hydrologic, and Hydraulic Modeling**
  - The types of simulations based on the outcome of the assessment performed in the previous tasks. Options are:
    - Full leverage of existing CHS data and no H&H modeling
    - Full leverage of existing CHS data with hydraulic modeling
    - Partial leverage of existing CHS data. ADCIRC and hydraulic modeling (soft-coupling) of subset of storms
    - Full coastal and H&D modeling (full-coupling) of full JPM storm suite
- **Task 6 – Construct Final Hazard Curves**
  - Hazard curves for selected flooding hazards (e.g., still water level, total waters level, forces).
  - Uncertainty quantification and sensitivity analysis



- **Task 7 - Peer Review**
  - In-process peer review
- **Task 8 - Knowledge Transfer**
  - Presentations and seminars, technical letter reports, final report

# Status

- Tasks 1, 2, 3, 7, 8 in progress
  - *Tasks 1-3 expected completion 07/2020*
  - *Tasks 7,8 ongoing throughout project*
- Tasks 4,5 – expected completion 03/2021
- Task 6 - expected completion 07/2021
- Project completion expected 12/2021



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