



Local Intense Precipitation (LIP) PFHA Pilot Study

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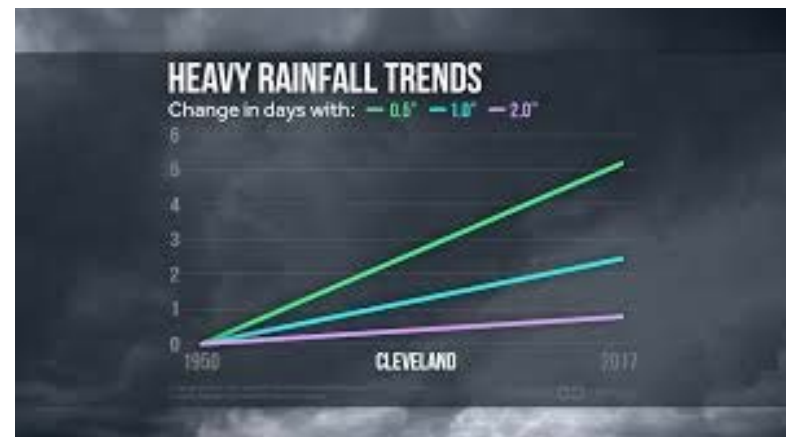
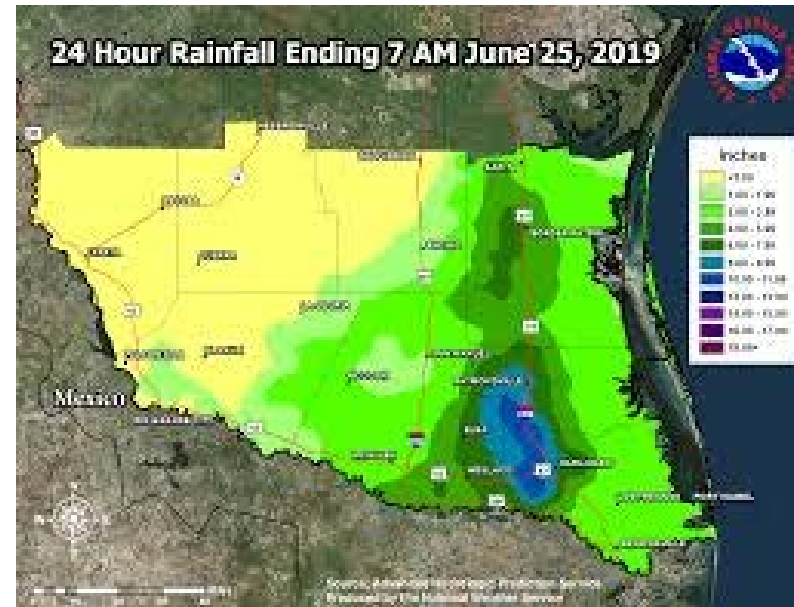
NRC HQ, Rockville, MD

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- Motivation
- Objectives
- Tasks
- Status

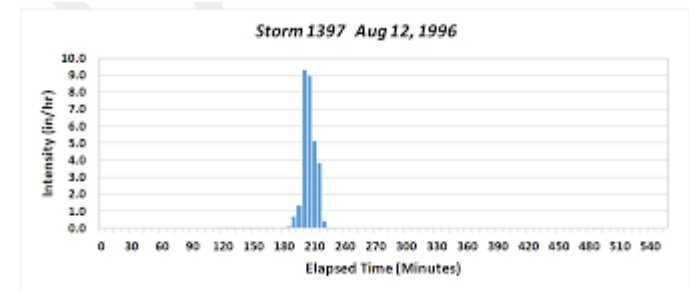


Outline



Motivation

- Local Intense Precipitation (LIP) flooding scenario must be analyzed for every NPP regardless of setting
- LIP flooding comprises unique aspects compared to other scenarios
 - Possibly very short warning time
 - Forecasting limitations
 - Short time to peak flow
 - High percentage of impervious surfaces
 - Complex flows
 - Sheet flow
 - Flow around and between buildings
 - Other structures (e.g., vehicle barrier systems)
 - Drainage from roofs
 - Subsurface drainage systems



Pilot Study Objectives

- Include key mechanisms and features that make LIP flooding unique and challenging
- Quantify aleatory variability and epistemic uncertainties and examine sensitivities
 - Structured analysis favoring realism over stylized conservatism
- Assess strength and weaknesses of available modeling tools
- Provide practical input for risk-informed decision-making (e.g. water levels, timing)
- Inform development of PFHA guidance for LIP scenario

Tasks

- Task 1 - Review characteristics of LIP flooding on industrial sites and available software to support LIP flood modeling
 - General purpose hydrologic and hydraulic models
 - Specialized stormwater models
 - Eulerian and Lagrangian (particle tracking) models
- Task 2 – Analyze LIP flooding aleatory variability and epistemic uncertainties
 - e.g., rainfall amount, temporal distribution
 - e.g., model structure, parameters, resolution
- Task 3 - Perform LIP PFHA for (hypothetical) NPP site
 - Synthetic site with features found to be significant in previous studies
- Task 4 - Knowledge Transfer
 - Presentations and seminars
 - Technical letter reports, final technical report

- Task 1 in progress
 - *Technical Letter Report submitted*
 - *Under review by NRC staff*
 - *Expected completion 04/2020*
- Task 2 in progress
 - *Expected completion 07/2020*
- Task 3 - expected completion 01/2021
- Task 4 - expected completion 03/2021

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