

Future Work in PFHA at EPRI

John E. Weglian
Senior Technical Leader

**3rd NRC External Flooding Research
Workshop
December 4-5, 2017**



Near-Term EPRI External Flooding Research

- Collection of paleoflood evidence
 - Report at end of 2017
- Use of paleoflood data in risk-informed approaches
 - Research in 2017-2018
- Estimation of frequency of hurricane-driven storm surge
 - Research in 2017
- Guidance on conducting PRA external flooding walkdowns
 - Research in 2017

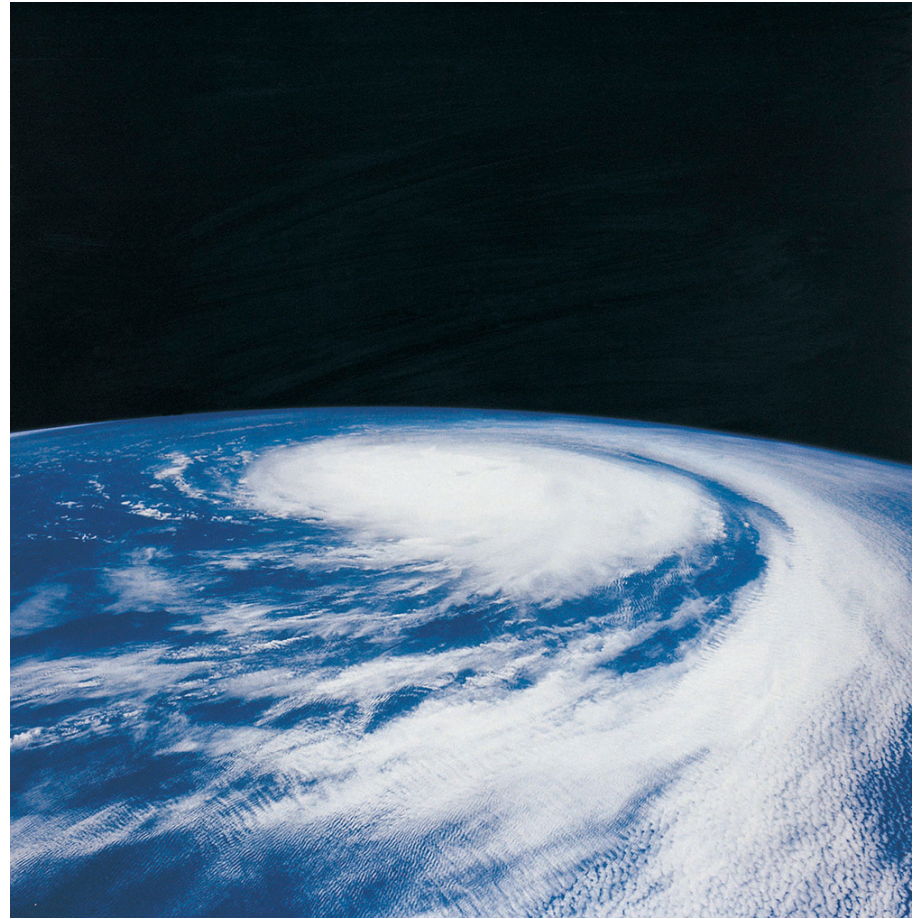


Paleoflood Data

- Paleoflood data has the potential to inform the flood-frequency curve in the $10^{-2}/\text{yr}$ to $10^{-4}/\text{yr}$ range
- Process involves:
 - Finding paleoflood evidence
 - Interpreting the evidence to estimate flood stage or discharge and date for each flood
 - Confirming that the conditions at the time of the floods were applicable to the current conditions
 - Estimate the flood parameters of interest at the site
 - Adjusting the flood-frequency curve based on the applicable data
- EPRI is publishing a report on the paleoflood evidence in 2017 – EPRI ID: 3002010667
- EPRI is prioritizing research on the other aspects of using paleoflood data

Hurricane-Driven Storm Surge

- EPRI is conducting research on the use of simulations of hurricane parameters to estimate the storm surge at a given site
- Research on this topic is expected to be complete in 2018



External Flooding PRA Walkdown Guidance

- EPRI is developing draft guidance for performing external flooding PRA walkdowns
- EPRI plans to pilot the guidance at one or more sites in 2018
- EPRI would then incorporate the lessons learned from the pilot site(s) before issuing the final guidance as a Technical Report



Potential Long-Term External Flooding Research

- Seiche and tsunami frequency estimation
 - Leverage existing international research
- Dam failure
 - Possible coordination with NRC working with dam regulators
- Correlated hazards (e.g., storm surge and wind)
 - Research would investigate whether a simple correlation (e.g., match the 10^{-4} /yr winds with the 10^{-4} /yr storm surge) is sufficient
- Flood barrier fragility
 - Current flooding PRAs treat flood barrier success deterministically (e.g., a door fails at a particular height)
 - Additional methods and data may provide a better estimation for barrier fragilities



Together...Shaping the Future of Electricity

John E. Weglian
Senior Technical Leader
jweglian@epri.com
704-595-2763

Hasan Charkas
Senior Technical Leader
hcharkas@epri.com
704-595-2645