

## TH35 External Flood and Extreme Precipitation Hazard Analysis for Nuclear Plant Safety

Design-basis flood specification for safety-related structures, systems and components of nuclear power plants (NPPs) requires a detailed flood hazard assessment. This assessment involves identification of historical flooding due to abnormally high streamflow, floodway, lake or coastal water stages at or near a NPP site, as well as estimates of future flooding potential. Analysis of local and regional flood potential phenomena involves quantitative evaluation of: extreme storm events involving intense precipitation; storm surges; seiches; as well as flooding caused by dam failures, landslides or effects of ice formation in water bodies. This analysis must also include appropriate assessment of the flooding potential due to combined effects. Hydrometeorological datasets collected in multiscale monitoring programs and model simulations from research conducted by Federal Agencies (e.g., NOAA/National Weather Service, U.S. Bureau of Reclamation, U.S. Geological Survey, and U.S. Army Corps of Engineers) are available to evaluate and confirm flood hazard estimates. This session will summarize lessons learned and recent research in support of ongoing flood assessments for proposed NPP sites. The technical focus will be on recent advances in assessment of intense local precipitation and external flooding, storm-surge modeling at coastal locations, combined effects, development of revised guidance, and recent operational experience.

**Session Chair:** Thomas Nicholson, Senior Technical Advisor for Radionuclide Transport, Division of Risk Analysis, NRC/RES  
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### Speakers/Panelists:

Hierarchical Flood Hazard Assessment  
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*Rajiv Prasad, Senior Hydrologist, Pacific Northwest National Laboratory*

Updating Estimates of Extreme Precipitation  
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*John England, Senior Hydraulic Engineer, Bureau of Reclamation*

Recent Advances in Storm Surge Modeling  
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*Donald Resio, Senior Research Scientist, Engineer Research and Development Center*

## Lessons from the 1999 Blayais NPP Flood: Overview of EDF Flood Risk Management Plan

*Eric de Fraguier, Vice President Fleet Performances, Electricite de France*  
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*Richard Raione, Branch Chief, NRC/NRO*

*Geoffrey Bonnin, Chief, Hydraulic Science and Modeling Branch, NOAA NWS  
Office of Hydrologic Development*  
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*Timothy Cohn, Hydrologist, U.S. Geological Survey*

*Lewis (Ed) Link, Senior Research Engineer and Senior Fellow, Department of  
Civil and Environmental Engineering, University of Maryland*

*Kit Ng, Assistant Chief Engineer, Bechtel Power Corporation*

### **Session Coordinator:**

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