

Main Workshop Microsoft Teams Meeting (All days)*

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***Note: For Wednesday afternoon Poster Session, each poster has an individual MS Teams meeting**

DAY 1 AGENDA: MONDAY, FEBRUARY 22, 2021

Session 1A: Introduction

Session Chair: Tom Aird, NRC/RES

10:00 - 10:10	Welcome, Webinar Logistics	1A-0
	Kenneth Hamburger* , NRC/RES	
10:10 - 10:25	Opening Remarks	1A-1
	Ray Furstenau* , Director, NRC Office of Nuclear Regulatory Research (NRC/RES)	
10:25 - 10:45	NRC PFHA Research Program Overview	1A-2
	Joseph Kanney* , NRC/RES	
10:45 - 11:05	U.S. Geological Survey Flooding-Related Programs and Recent Activities	1A-3
	Julie Kiang* , Robert Mason, U.S. Geological Survey	
11:05 - 11:25	Committee on the Safety of Nuclear Installations (CSNI) Working Group on External Events (WGEV)	1A-4
	John Nakoski* , NRC/RES (WGEV Chair)	

11:25 - 11:40 **Break**

Session 1B: Climate

Session Chair: Joseph Kanney, NRC/RES

11:40 - 12:10	KEYNOTE - Seasonally Dependent Changes in Multimodel and Large Ensemble Simulations	1B-1
	Lai-Yung (Ruby) Leung* , Pacific Northwest National Laboratory (PNNL)	
12:10 - 12:40	Challenges Associated with Multi-Hazard Characterization of Landfalling Hurricanes	1B-2
	Scott Weaver* , National Institute of Standards and Technology (NIST); Dereka-Caroll Smith , Joint NIST-UMD-NCAR Research Associate	
12:40 - 13:10	Quantifying Shifts in Joint Rainfall-Surge Hazard due to Future Climate Warming	1B-3
	Avantika Gori* , Ning Lin, Princeton University	

*** denotes speaker**

13:10 - 13:30 Climate Panel Discussion 1B-4
All Speakers

13:30 - 14:30 **Lunch**

Session 1C: Precipitation

Session Chair: Elena Yegorova, NRC/RES

14:30 - 15:00 KEYNOTE- On the Applicability of Kilometer-Scale Heavy Precipitation in Flood Risk Assessments 1C-1

Andreas Prein, Jordan Powers, Erin Towler, David Ahijevych, National Center for Atmospheric Research (NCAR)*

15:00 - 15:25 Tropical Cyclone Rainfall-driven Flood Risk Assessment 1C-2

Ali Sarhadi, Kerry Emanuel, Massachusetts Institute of Technology (MIT)*

15:25 - 15:55 Does PMP have an AEP? CO-NM REPS findings bridge deterministic and probabilistic approaches 1C-3

Bill McCormick, Mark Perry, Colorado Division of Water Resources; Kelly Mahoney Rob Cifelli, National Oceanic and Atmospheric Administration (NOAA)*

15:55 - 16:20 Local Intense Precipitation (LIP) Flooding PFHA Pilot Study 1C-4

Rajiv Prasad, Yong Yuan, Pacific Northwest National Laboratory (PNNL)*

16:20 - 16:30 **Break**

16:30 - 16:50 Precipitation Panel Discussion 1C-5
All Speakers

16:50 - 17:00 **Session 1D: Day 1 Wrap-up Discussion**

DAY 2 AGENDA: TUESDAY, FEBRUARY 23, 2021

10:00 - 10:05 **Day 2 Welcome**

Session 2A: Riverine Flooding

Session Chair: Mark Fuhrmann, NRC/RES

10:05 - 10:35 KEYNOTE - Estimating Flood Frequency using Stochastic Storm Transposition, Gridded Precipitation Data, and Physics-based Modeling 2A-1

Daniel Wright, Guo Yu, University of Wisconsin-Madison; Kathleen Holman, U.S. Bureau of Reclamation (USBR)*

10:35 - 11:05 Probabilistic Flood Hazard Assessment for a Small Watershed in Eastern Tennessee: Methodology and Lessons Learned 2A-2

Periandros Samothrakis, Craig Talbot, Kit Ng, and Stewart Taylor, Bechtel Corporation*

11:05 - 11:30 Probabilistic Assessment of Multi-mechanism Floods in Inland Watersheds Due to Snowmelt-Driven Extreme Streamflow Events 2A-3

Shih-Chieh Kao, Scott T. DeNeale, Oak Ridge National Laboratory (ORNL); Michelle Bensi, Somayeh Mohammadi, University of Maryland (UMD); Elena Yegorova, Joseph Kanney, U.S. Nuclear Regulatory Commission(NRC); Meredith Carr, U.S. Army Corps of Engineers, Engineer Research and Development Center, Coastal and Hydraulics Laboratory (USACE/ERDC/CHL)*

11:30 - 11:45 **Break**

11:45 - 12:15 Updating design flood estimates at sites with changing variability 2A-4

Jory S Hecht, Nancy A. Barth, Karen R Ryberg and Angela E Gregory, U.S. Geological Survey (USGS)*

12:15 - 12:45 Historical and Paleoflood Analyses for Probabilistic Flood Hazard Assessments—Approaches and Review Guidelines 2A-5

Karen Ryberg, Tessa Harden, Jonathan Friedman and Jim O'Connor, U.S. Geological Survey (USGS)*

12:45 - 13:05 Riverine Flooding Panel Discussion 2A-6

All Speakers

13:05 - 14:05 **Lunch**

Session 2B: Coastal Flooding

Session Chair: Meredith Carr, USACE/ERDC/CHL

- | | | |
|---------------|--|------|
| 14:05 - 14:35 | KEYNOTE - A Risk Analysis Framework for Tropical Cyclones (RAFT)
<i>Karthik Balaguru*</i> , Wenwie Xu, David Judi, Lai-Yung (Ruby) Leung,
Pacific Northwest National Laboratory (PNNL) | 2B-1 |
| 14:35 - 15:05 | Storm Surge Modeling Uncertainty
<i>Victor M. Gonzalez*</i> , Norberto C. Nadal Caraballo, U.S. Army Corps of
Engineers, Engineer Research and Development Center, Coastal and
Hydraulics Laboratory (USACE/ERDC/CHL) | 2B-2 |
| 15:05 - 15:35 | Coastal Flooding PFHA Pilot Study
<i>Karlie Wells*</i> , Victor M. Gonzalez, Norberto C. Nadal Caraballo, U.S.
Army Corps of Engineers, Engineer Research and Development Center,
Coastal and Hydraulics Laboratory (USACE/ERDC/CHL) | 2B-3 |
| 15:35 - 16:05 | Probabilistic assessment of multi-mechanism floods in coastal areas due to
hurricane-induced storm surge and river flow
<i>Somayeh Mohammadi*</i> , Michelle Bensi, University of Maryland (UMD);
Shih-Chieh Kao, Scott T. DeNeale, Oak Ridge National Laboratory
(ORNL); Elena Yegorova, Joseph Kanney, U.S. Nuclear Regulatory
Commission (NRC) | 2B-4 |
| 16:05 - 16:25 | Coastal Flooding Panel Discussion
<i>All Speakers</i> | 2B-5 |
| 16:25 - 16:40 | Session 2C: Day 2 Wrap-up Discussion | |

DAY 3 AGENDA: WEDNESDAY, FEBRUARY 24, 2021

10:00 - 10:05 **Day 3 Welcome**

Session 3A: Modeling Frameworks

Session Chair: Tom Nicholson, NRC/RES

- 10:05 - 10:35 KEYNOTE - Stochastic Hydrology in the Tennessee Valley 3A-1
*Miles Yaw**, Tennessee Valley Authority (TVA)
- 10:35 - 11:05 Riverine PFHA Pilot (WAT) 3A-2
*William Lehman**, Sara O'Connell, Brennan Beam and David Ho, Leila Ostadrahimi, U.S. Army Corps of Engineers Hydrologic Engineering Center (USACE/HEC)
- 11:05 - 11:35 Structured Hazard Assessment Committee Process for Flooding (SHAC-F) for Probabilistic Flood Hazard Assessment (PFHA) 3A-3
*Rajiv Prasad**, Philip Meyer, Pacific Northwest National Laboratory (PNNL); Kevin Coppersmith, Coppersmith Consulting; Norberto C. Nadal-Caraballo, Victor M. Gonzalez, U.S. Army Corps of Engineers, Engineer Research and Development Center, Coastal and Hydraulics Laboratory (USACE/ERDC/CHL)
- 11:35 - 11:55 Modeling Frameworks Panel Discussion 3A-4
All Speakers

11:55 - 12:10 **Break**

Session 3B: Flood Protection and Flooding Operating Experience

Session Chair: Tom Aird, NRC/RES

- 12:10 - 12:40 KEYNOTE - Modeling of the May 2020 Michigan Dam Breaches 3B-1
*Edward Stowasser**, Wesley Crosby and Christopher Warren, U.S. Army Corps of Engineers (USACE)
- 12:40 - 13:10 Developing a Framework for Flood Barrier Testing Strategies 3B-2
*Zhegang Ma**, Sai Zhang and Curtis L. Smith, Idaho National Laboratory (INL); Chad L. Pope, Idaho State University (ISU)
- 13:10 - 13:40 Qualitative Risk Ranking Process of External Flood Penetration Seals 3B-3
*Marko Randelovic**, Electric Power Research Institute (EPRI)
- 13:40 - 14:00 Flood Protection and Flood Operating Experience Panel Discussion 3B-4
All Speakers

14:00 - 14:10 **Session 3C: Day 3 Wrap-up Discussion**

14:10 - 15:10 **Lunch**

Session 3D: Posters

- 15:10 - 16:30 Investigating Current and Future Precipitation Frequency Estimates for the State of Maryland: Challenges of Applying Machine Learning for Temporal Downscaling of Climate Model Projections 3D-1
- Azin Al Kajbaf***, Michelle T. Bensi, Kaye L. Brubaker, University of Maryland (UMD)*
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- 15:10 - 16:30 Riverine Flooding HEC-WAT Pilot Project Dam Break Modeling 3D-2
- Brennan Beam***, William Lehman, Sara O'Connell, David Ho, U.S. Army Corps of Engineers Hydrologic Engineering Center (USACE/HEC)*
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- 15:10 - 16:30 Nationwide (USA) Pluvial Flood Modeling via Telemac2D 3D-3
- Max Kipp***, Leo Kreyborg, Mike DePue, Atkins North America*
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- 15:10 - 16:30 Combining the best of both worlds, using detailed flood analyses to inform rainfall accumulation characteristics for the World-Record July 1942 "Smethport" Storm – Supporting PMP and flood frequency analyses 3D-4
- Bill Kappel***, Applied Weather Associates (AWA); Joe Bellini, Aterra Solutions, LLC*
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- 15:10 - 16:30 A Tale of Two Cores: harmonized paleoflood hydrologic data works best for estimating flood frequency and magnitude 3D-5
- Ray Lombardi***, Lisa Davis, University of Alabama (UA)*
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DAY 4 AGENDA: THURSDAY, FEBRUARY 25, 2021

10:00 - 10:05 **Day 4 Welcome**

Session 4A: External Flooding PRA

Session Chair: Joseph Kanney, NRC/RES

10:05 - 10:35 Insights, limits and projections for EDF's external flooding PRAs 4A-1

Jeremy Gaudron*, *Cecile Luzoir, Electricité de France (EDF)*

10:35 - 11:05 Methodology developed for the Belgian External Flooding PSA 4A-2

Bogdan Golovchuk*, *Filip Van Opstal, Tractebel ENGIE*

11:05 - 11:35 External Flooding PRA Guidance 4A-3

Marko Randelovic*, *Electric Power Research Institute (EPRI); Raymond E. Schneider, Westinghouse Electric Company*

11:35 - 11:50 **Break**

11:50 - 13:20 **Session 4B: Special Panel Discussion - Drivers of Uncertainty in External Flood Probabilistic Risk Assessment**

Session Chair: Michelle (Shelby) Bensi, University of Maryland

Panelists:

Fernando Ferrante, *Electric Power Research Institute (EPRI)*

Norberto Nadal-Carraballo, *U.S. Army Corps of Engineers (USACE)*

Kit Ng, *Bechtel Corporation*

Jeremy Gaudron, *Électricité de France (EDF)*

Bogdan Golovchuk, *Tractebel ENGIE*

Ray Schneider, *Westinghouse Electric Company;*

Curtis Smith, *Idaho National Laboratory (INL)*

Jeff Mitman, *U.S. Nuclear Regulatory Commission (NRC)*

13:20 - 13:30 **Break**

13:30 - 13:50 **Session 4C: Workshop Wrap-up Discussion**