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Making Communities More Resilient to Extreme Flooding
October 30-31 | Columbia, MD
2019 Symposium Agenda

Wednesday, October 30

8:00 am:
Registration

8:30 am:
EfSI Opening Ceremony and Welcome
Opening Remarks: *Senator Chris Van Hollen, U.S. Senate (D-MD)*
Dr. Jeffrey Isaacson, President and CEO, USRA
Dr. Miguel Román, Founding Director, USRA/EfSI

9:15 am:
Session 1 (Plenary)
Building Resiliency in the State of Maryland: Catalyzing Community-Based Flood Mitigation and Adaptation Programs

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Moderator: *Dr. Calvin Ball, County Executive, Howard County*
Panelists: *Ms. JaLeesa Tate, Maryland State Hazard Mitigation Officer; Mr. Kevin Wagner, Maryland Department of the Environment; Dr. John Bolten, NASA; Ms. Rebecca Starosta, AECOM; Mr. Chas Eby, Maryland Emergency Management Agency*

In Maryland, several recent flood events have raised public awareness of the costs and threats posed by coastal and flash flooding. Achieving community-level resilience requires coordinated flood-preparedness activities at the local, county, and state levels. Panelists will share diverse perspectives on the topics of flood disaster risk management, and delve into the innovative policies and programs being pioneered to ensure safe communities and thriving local economies for years to come.

Wednesday, October 30 cont'd

10:15 am:
Break

10:30 am:
Session 2 (Plenary)
Monitoring Flood Dynamics Using Next Generation Satellite Data

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Moderator: ***Dr. Chris Aubrecht****, European Space Agency*
Panelists: *Dr. Kumar Nevulur, Digital Globe Foundation; Dr. Batu Osmanoglu, NASA; Mr. Scott Soenen, Capella Space; Prof. Donglian Sun, George Mason University; Dr. Gigiraj Amarnath, International Water Management Institute*

Advances in remote sensing technologies—including shorter satellite repeat cycles, increased spatial resolution, and new instrument capabilities—are expected to transform how agencies utilize satellite data for disaster response and mitigation. However, with terabytes of new data being produced each day, data availability does not always equal accessibility. This session will focus on the challenges and opportunities that data providers and risk managers face when exploiting these richly complex datasets. Session panelists will also address current research, infrastructure, and knowledge gaps in satellite-based flood monitoring.

11:30 am:
Break

11:40 am:
Keynote 1 (Plenary)
State-of-the-Art in Flood Prediction
Professor Rick Luettich*, University of North Carolina*

12:30 pm:
Lunch at USRA Headquarters

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1:45 pm:

Wednesday, October 30 cont'd

Session 3 (Plenary)
Compound Flooding: Use Cases, Methods, and Challenges

Moderator: ***Ms. Jen Schwartz****, Scientific American*
Panelists: *Dr. Jane Smith, U.S. Army Corp of Engineers; Prof. Thomas Wahl, University of Central Florida; Mr. David Alexander, Department of Homeland Security*

Multiple flood mechanisms can often occur simultaneously or in quick succession, resulting in a phenomenon known as compound flooding. The combined effects of fluvial (riverine), coastal (tidal or storm surge), and pluvial (rainfall triggered) mechanisms can dramatically exacerbate flood impacts, yet approaches that delineate these interactive and multiplicative effects are only partially complete. As a result, no comprehensive nationwide estimate of household-level exposure resulting from compounding flood drivers currently exists. Session panelists will discuss current monitoring and statistical frameworks that seek to explore the evolving risks of compound flooding, with an emphasis on how they can be incorporated into national flood insurance and mitigation efforts.

2:45 pm:
Break

3:00 pm:
Breakout Sessions

- **Session 4 (Plenary)**
  Geospatial Data Analytics: Helping Bridge Flood Insurance, Building Codes and Flood Zoning

  Moderator: ***Ms. Catherine Bohn****, Dewberry*
  Panelists: *Ms. Julia O'Brien, FEMA; Dr. Arindam Samanta, Verisk; Prof. Matthew Wilson, Geospatial Research Institute; Mr. Dan Pilone, Element 84*

  Geospatial data analytics have become a critical resource for providing rapid damage assessments to FEMA and other decision-makers following major flood disasters. Such analyses help decision-makers understand where the greatest concentration of damage is and expedite Federal declarations for funding, leading to more efficient distribution of resources. Geospatial analyses also help to mitigate risk prior to a disaster by helping communities define more realistic flood zoning and by informing flood insurance and building codes. A panel of experts in geospatial data analytics

and the insurance industry will discuss the growing value of geospatial data in the context of flood insurance and pre- and post-disaster scenarios.

Wednesday, October 30 cont'd

- **Session 5 (Board Room)**
  Understanding the Relationship Between Extreme Precipitation and Flood Risk

  Moderator: ***Professor Ana Barros****, Duke University*
  Panelists: *Dr. Dag Lohmann, KatRisk, LLC; Dr. Dalia Kirschbaum; NASA/Goddard Space Flight Center; Prof. Tirthankar Roy, University of Nebraska*

  The long-term costs of inland flooding have risen in recent years, impacting communities existing well outside coastal zones. As flood hazards increase, so does the need for the data and analytical tools required to monitor intense precipitation. Effective flood modeling must begin with accurate rain and snowfall estimates, as river gauge-based modeling isn't equipped to handle extreme peaks in precipitation intensity. Session panelists will reflect on recent flooding events across the U.S. Midwest (where in some areas, a large proportion of affected homes and businesses were nowhere near a river or floodplain). Special emphasis will be placed on effective monitoring and prediction strategies to ensure that potential flood losses are well understood and managed appropriately.

4:00 pm:
Break

4:15 pm:
Breakout Sessions

- **Session 6 (Plenary)**
  Flood Risk Communications: What Information Do Users Need?

  Moderator: ***Professor Marshall Shepherd****, University of Georgia*
  Panelists: *Professor Wanyun Shao, University of Alabama; Ms. Necolle Maccherone, Michael Baker International; Ms. Katrina Tavanlar, Booz Allen Hamilton; Dr. Bandana Kar, Oak Ridge National Laboratory*

  Floods are complex and dynamic threats that require rapid dissemination of information to various users (e.g., local governments, policymakers, and the public). Communicating flood risk has thus become an increasingly central part of strengthening resilience. Efforts to improve national risk communication have not

resulted in a corresponding increase in public awareness, enhanced perception, or improved responses to floods and their associated uncertainties. There is an urgent national need to develop community engagement programs designed to increase flood literacy, and to serve as a catalyst for conversation around sustainable development solutions. Session panelists will discuss how agencies and stakeholder groups tasked with communicating flood risks are streamlining current approaches by targeting frontline communities suffering from chronic flooding.

- **Session 7 (Board Room)**
  Flood Forecasting at Local to National Scales

Moderator: ***Professor Dapeng Yu****, Loughborough University, UK*
Panelists: *Dr. Thomas Graziano, NWS Office of Water Prediction; Mr. Perry Oddo, Universities Space Research Association/GESTAR; Dr. David Novak, NWS Weather Prediction Center*

Early warning systems are one of the most effective risk management strategies to minimize the negative impacts of major floods. Recent advances in high- resolution nowcasting have enabled longer lead times for flood warnings. However, the capacity of governments—from local to national levels—to monitor and assess flood scenarios at near-real time scales varies, and gaps in forecasting and storm warning services remain. This session will cover the state-of-the-art in flood forecasting and early warning systems at scales at which risk management decisions are made. Session panelists will discuss current status and gaps in flood forecasting and early warning systems and present strategies to foster institutional coordination and information exchange.

5:30pm
Adjourn/Reception

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8:30 am:
Morning Debrief (Plenary)
Recap Wednesday's Action Items, Reports from Session Moderators, and plans for Thursday

9:00 am:
KEYNOTE 2 (Plenary)
U.S. Army Corps of Engineers' Coastal Risk Reduction and Resilience Activities: Lessons Learned and the Path Forward
***Keynote by José Sánchez**, U.S. Army Corp of Engineers Headquarters*

10:00 am:
Break

10:15 am:
Breakout Sessions

- **Session 8 (Plenary)**
  Visualizing Flood Risk and Uncertainty

Moderator: ***Professor Gerik Scheuermann**, University of Leipzig*
Panelists: *Prof. Maryam Rahnemoonfar, Texas A & M University; Prof. Lace Padilla, University of California – Merced; Prof. Jason Leigh, University of Hawaii; Dr. Jason Haga, National Institute of Advanced Industrial Science and Technology, Japan*

Through the exploration and dissemination of flood risk information (e.g., online maps, videos, and interactive content), mitigation plans can be developed to impact outcomes. This session will explore the topic of data visualization to effectively convey information on flood risk and uncertainty. A multidisciplinary group of panelists, from decision-makers to scientific visualization experts, will discuss and share the latest advances in flood-risk visualization and risk mapping capabilities.

- Session 9 (Board Room)

Thursday, October 31 cont'd

Coastal Risk Reduction and Resilience

Moderator: ***Dr. Julie Rosati****, U.S. Army Corp of Engineers*
Panelists: *Dr. Sandra Knight, WaterWonks LLC; Dr. Hilary Stevens, Coastal Risk Consulting*

Coastal communities are particularly vulnerable to flood hazards. Efforts to reduce vulnerability to these hazards are complicated by the deep uncertainties in future sea level, storm surge, and coastal storm intensity projections. As such, many communities are turning to integrated flood management plans to improve resilience to uncertain futures. These integrated approaches often contain a suite of projects, including natural or nature-based features (e.g., wetlands and dunes), nonstructural interventions (e.g., new policies, updated building codes, or emergency response systems like early warning and evacuation plans), and structural interventions (e.g., seawalls and breakwaters). Implementing an integrated approach to coastal flood mitigation requires a collaborative, shared responsibility framework between the public and federal, state, and local agencies. Panelists will discuss strategies for designing integrated flood risk management plans that improve community resilience and reduce vulnerability, as well as the challenges inherent when implementing them.

11:15 am:
Break

11:30 am:
SESSION 10 (Plenary)
What Does Resilience Mean in the Flood Policy Context?

Moderator: Professor ***Rick Luettich****, University of North Carolina*
Panelists: *Dr. Carolyn Kousky, University of Pennsylvania Wharton School; Ms. Marion McFadden, Enterprise Community Partners; Ms. Laura Lightbody, Pew Charitable Trusts*

Resilience is an important concept in natural hazards planning, that seeks to limit the impacts of hazard events on human and natural systems and lessen the time and effort required to recover following their occurrence. In many cases U.S. flood policy, largely effected via the National Flood Insurance Program, has increased risk and made society less resilient by offering a false sense of security for residents living in potentially flood prone areas. This session will explore flood policy options that increase resilience and therefore enable better choices regarding living with water.

Thursday, October 31 cont'd

12:20 pm:
Lunch at USRA Headquarters

1:30 pm:
Breakout Sessions

- **Session 11 (Plenary)**
  The Role of Newsrooms and Data Journalism in Improving Perceptions of Flood Risk

  Moderator: ***Ms. Helen-Nicole Kostis****,*
  Universities Space Research Association/GESTAR
  Panelists: *Ms. Jen Schwartz, Scientific American; Mr. Jason Samenow, Washington Post; Joseph Martínez, Telemundo TV; Ms. Miri Marshall, CBS WUSA9 Weather*

  News stories can reach audiences through many diverse channels (e.g., digital distribution, media outlets, and social media), and play an enormous role in shaping perceptions on flood risk. In order to better educate the public and combat misinformation, it is critical that stories focusing on flooding come from trusted sources and are supported by scientifically accurate information. A large part of these efforts include the gathering, filtering, and visualizing of data to produce compelling narratives about complex phenomena. Flood events are increasingly striking areas with little or no flood history and are impacting communities in unprecedented ways. This session will bring together experts from newsrooms and media outlets to share their efforts and illuminate gaps in improving flood risk perception, before, during and after such events.

- **Session 12 (Board Room)**
  Nature-Based Solutions as a Component of Flood Risk Management

  Moderator: ***Dr. Raha Hakimdavar,*** *US Department of Agriculture*
  Panelists: *Ms. Suzanne Ozment, World Resources Institute; Ms. Shannon Cunniff, Environmental Defense Fund*

  Recent reports have emphasized the need for significant investments in floodplain risk management and planning. Doing so will ensure that inhabited regions can adapt to both the gradual an extreme consequences of future flood events.

  Floodplain risk management plans commonly rely on "hard" infrastructure systems like levees, channels, drainage systems, or seawalls. While these conventional engineering approaches provide protection from some flood hazards, they are often

costly to implement, have long-term effects on the surrounding environment, and in some cases do not address the root causes of flood risks. "Nature-based solutions," which utilize natural processes and ecosystem services, have been advocated as a more sustainable alternative? or complement? to traditional infrastructure protection. Session participants will discuss how solutions like reforestation, coastal wetlands, reefs, or urban green spaces can contribute to a more comprehensive floodplain risk management plan.

Thursday, October 31 cont'd

2:30 pm:
Break

2:45 pm:
Breakout Sessions

- **Session 13 (Plenary)**
  Flood Resiliency in Practice: How Corporate Responsibility and Charity Can Pivot to Sustainable Disaster Philanthropy

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Moderator: ***Katie Taylor,*** *Pan American Development Foundation*
Panelists: *Ms. Maria Concepción, Oxfam America; Mr. Aaron Van Alstine, Pan American Development Foundation, Dr. Baris Sal, DHL*

In the immediate aftermath of a disaster event, many foundations and individuals respond enthusiastically to provide financial relief to impacted communities. As the intensity of flood-related disasters continues to rise—as well as the corresponding cost—some philanthropists are thinking more strategically about their disaster-related investments. Charitable funds may go farther, for example, when used on communities that take an integrated approach to mitigating future flood events. Such approaches could include the USACE risk reduction measures discussed earlier in the symposium, or implementing more realistic flood zoning and corresponding revisions to flood insurance and building codes also discussed earlier. Panelists will discuss the most recent state of disaster philanthropy, and how individual donors and philanthropic organizations can work with communities to make them more resilient to future flood events.

- **Session 14 (Board Room)**
  Flood Risk Management in Rapidly Urbanized Areas

Moderator: ***Fabio Cian,*** *The World Bank*

Panelists: *Dr. Eleanor Stokes, University of Maryland;*

Thursday, October 31 cont'd

Rapid urbanization and outward expansion are higher in lower-income cities that have weak systems of land governance and less mature financial markets. In the face of these challenges, decision-makers have focused on resilience thinking as a way to mitigate flood risks while providing co-benefits like improved water quality and socio-economic returns to communities. This session will provide an overview of current strategies for urban flood hazard prediction, exposure, and vulnerability analysis. Panelists will explore how flood impacts might spread across the global system of cities, and discuss the mechanisms required to mitigate risks to ensure more equitable and productive communities.

3:45 pm:
Break

4:00 pm:
KEYNOTE 3 (Plenary)
Hurricane Maria: Two Years Later
Ms. Ada Monzón, *Ecoexploratorio*

5:00pm
Symposium Wrap-Up

5:30pm
Adjourn/Reception at USRA Headquarters

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