

COASTAL SOLUTIONS WORKSHOP

Coastal Flood Modeling, Prediction and Observations for the U.S. Gulf Coast

April 27, 2021: 9:00am – 12:30pm CT

April 28, 2021: 9:00am – 12:30pm CT

AGENDA & INVITED SPEAKERS

<https://www.oceanvisions.org/2021-gulf-coast-solutions-workshop>

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Coastal Flood Modeling, Prediction and Observations for the U.S. Gulf Coast

An Ocean Visions Coastal Solutions Workshop

April 27, 2021: 9:00 a.m. – 12:15 p.m. CT

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Workshop Purpose:

In recent years, there has been significant progress in U.S. Gulf Coast coastal flood observations, modeling, and forecasting efforts with communities facing more frequent and severe flooding, inundation, sea-level rise, and coastal change. Many of these products and observations are now designed in active partnership with local and state partners and are intended to assist community stakeholders with addressing today's coastal flood hazards and future flooding, inundation, sea-level rise, and coastal change. This workshop will serve as a forum for assembling the research community working on these various Gulf Coast efforts to improve integration and collaboration among these entities to better serve coastal stakeholders. The workshop will also showcase case studies for how these products are evolving to meet a range of coastal stakeholder needs for addressing contemporary and future coastal flood hazards. This will include a specific focus on understanding how to enhance the co-development of these products and services among underserved communities. This is one of three workshops across the U.S. which will more broadly inform the Ocean Visions Team in their pursuit of more equitable coastal solutions.

Workshop Goals:

- Compile and characterize a set of ongoing coastal solutions projects that actively engage stakeholders at the city, county, and/or state level to co-design and deploy observing and modeling frameworks for coastal inundation and change along U.S. Coasts.
- Identify the highest priority (cross-cutting) short-term (6 mo- 1 yr) and long-term (3-5) years research tasks that support the creation of core services that meet stakeholder needs
- Draft the terms of reference for a national task force for Coastal Solutions for Climate Adaptation & Resilience to provide a platform for ongoing collaboration, coordination, and synthesis activities.

Workshop Outputs

- Online publicly accessible video library of all submissions featuring success stories and lessons learned of coastal flooding solutions projects that are co-designing and deploying coastal solutions with stakeholders.
- Summary/synthesis paper describing the ongoing coastal solutions that actively engage stakeholders entitled *Towards Integrated Solutions for Coastal Flooding Monitoring and Prediction in the US Coast* for Bulletin of the American Meteorological Society.
- "Perspective" piece (or similar) targeted to a high-impact journal, highlighting the purpose and scope of this area of research.
- A living e-report, *Transferring Knowledge into Action with Coastal Stakeholders*, to inform local stakeholders and coastal research communities.
- A white paper, *Co-Designing Coastal Observing Networks with Coastal Communities*, that can inform decision-makers and coastal programs at NOAA and other agencies.



Draft Agenda Day One

8:45 a.m. Tech Check

We encourage participants can log on early and check their audio and connection

Connection Info:

<https://msstateextension.zoom.us/j/92294377477?pwd=TUNQNktxbjhodi80c3hiNIhmRWVNkdz09>

9:00 a.m. Welcome

Objectives

- Welcome participants
- Set the stage for the day including agenda review, technology recap, and ground rules

Materials

- Padlet link for answering the question “What is one thing you hope to gain from this workshop.”:

<https://padlet.com/ngomsentinel/sitecooperative/g1gbr954uyb4qq7e>

9:15 a.m. Keynote Address

Dr. Hilary Stockdon, U.S. Geological Survey

9:45 a.m. Landscape of Ongoing Coastal Solutions Projects

Objectives

- Characterize the ongoing work in the Gulf around observing and modeling that employs co-development
- Facilitate connections across practitioners and projects

Compound Coastal Flood Hazard Modeling Speed Presentations

- The WRF-Hydro Based Water Model Development for Coastal Flood Simulation
- Characterization and Modeling of Compound Flooding: Introducing Texas Integrated Flooding Framework Planning Project
- A Coupled Flooding Modeling Framework for Assessing Infrastructure Resilience along Southeast Texas Coast

Discussion

10:20 a.m. Break

10:30 a.m. Landscape of Ongoing Coastal Solutions Projects cont.

Assessing Vulnerability and Adaptation Strategies on Barrier Islands Speed Presentations

- Assessing Sustainable Restoration Measures to Increase Barrier Island Resilience through Data Collection, Integrated Modeling, and Decision Support – the Alabama Barrier Island Restoration Assessment
- Dauphin Island Adaptation Pathway: Navigating sea-level rise uncertainty on barrier islands

Discussion

10:55 a.m. Data and Modeling at Regional Scales for Local Application Speed Presentations

- USGS Forecasts of Total Water Level and Coastal Change Hazards along the U.S Gulf Coast

- High-Resolution (2 m) 3-D Mapping for Habitat, Biodiversity, and Flood Hazard Assessments of Coastal and Wetland Areas of the Southern US from Florida to Texas (3D Wetlands Spoke)

Discussion

11:20 a.m. *Communicating Local Flood Risk and Impacts Speed Presentations*

- Predicting Future Coastal Risk due to Compounded Effects of Sea Level Rise and Tropical Cyclones
- Communicating the Socio-Economic Impacts of Storm Surge Flood Plains Under the Coastal Dynamics of Sea-Level Rise in the northern Gulf of Mexico
- Engaging Stakeholders and Exploring the Effects of Sea-Level Rise in the northern Gulf of Mexico

Discussion

12:00 p.m. **Wrap Up**

Objectives

- Reflect on the lessons learned, similarities of successes, and next steps to tackle heard throughout the day
- Connect Day One to Day Two
- Review logistics for Day Two

Materials

- Padlet link answering the question “What is something you are taking away from these case studies? Challenges, opportunities, critical gaps to address?”: <https://padlet.com/ngomsentinel/sitecooperative/lfjcwv1oliam5lno>

12:15 p.m. **Adjourn**

Draft Agenda Day Two

8:45 a.m. **Tech Check**

We encourage participants can logon early and check their audio and connection
Connection Info:

<https://msstateextension.zoom.us/j/92294377477?pwd=TUNQNktxbjhodi80c3hiNIhmRWNkdz09>

9:00 a.m. **Welcome**

Objectives

- Remind people of the work done yesterday
- Set the stage for the rest of the day
- Refresh on the ground rules

9:10 a.m. **Panel Discussion**

Objectives

- Understand current challenges around observing, modeling, and stakeholder engagement
- Prime the discussions for the breakout rooms

Speakers

- David Kidwell, NCCOS Competitive Research Program

- Teal Harrison, Adaptation International
- Kara Doran, USGS St. Petersburg Coastal and Marine Science Center
- Tanya Gallagher, Santa Rosa County

Topics to Cover

- Products and services critical to improve or provide to coastal communities
- Plans for future development of core services and solutions platforms
- Integration across ongoing efforts
- Reaching underserved and under resourced communities during and after development of products and services
- Critical gaps to advancing the goal of maximizing the application and use of products and services to identify coastal solutions to inundation and sea-level rise

10:10 a.m. Break

10:20 a.m. Breakout Groups

Objectives

- Identify short-, mid- and long-term activities the research field can undertake to enhance co-development of coastal services and solutions

Topics to Cover in Breakout Groups

- Integration
 - Where do we draw the line between integration of observing/modeling efforts at the national level and local diversity of projects?
- Data visualization/portals
 - Based on what we have seen over the past two days, which approaches/frameworks seemed highly successful? What common elements were found throughout?
 - Are there priority needs or gaps to be addressed to enhance capacity around data visualization portals and mobile apps that are responsive to end-user needs?
- Connection to end-users
 - Beyond increased awareness among potential users, how can we ensure that the core services and solutions are reaching underserved and under resourced communities as and after they are developed?
 - How do we ensure the priorities being developed here today are being ground-truthed with end-users?

11:50 a.m. Wrap Up

Objectives

- Summarize the findings from the breakout rooms
- Understand next steps

Materials

- Padlet link for answering the question “What is one personal short- and mid-term gap or action to tackle?”:
<https://padlet.com/ngomsentinelsitecooperative/2lha2gw0cb6q5ko>

12:15 p.m. Adjourn

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KEYNOTE SPEAKER: Dr. Hilary Stockdon

Hilary Stockdon is a Research Oceanographer with the U.S. Geological Survey. For almost 20 years, she has been part of a multifaceted project that quantifies how sea level rise, storms and long-term erosion are shaping our shorelines. Her research contributions include advances in:

- Real-time forecasts and scenario-based predictions of coastal total water level and geomorphic change during storms
- Use of wave runup parameterization in coastal hazard assessments
- Barrier island response to extreme storms and hurricanes
- Modeling wave swash, setup, and runup
- Lidar-derived measures of coastal change



Her work is both fundamental and applied: rigorous science on coastal processes is used to create tools for decision makers who are responsible for preparedness, response, and resilience along our coastlines. Her work on the effects of storms on the coastal communities of our Nation has raised public awareness about the value of scientific information on coastal vulnerability, helping residents prepare for future events. She is currently acting as a Science Advisor for the Coastal and Marine Geology Program, helping to develop National programs for coastal change hazards research and applications.

INVITED PANEL SPEAKERS

David Kidwell, NOAA NCCOS Competitive Research Program

David Kidwell is the NOAA National Centers for Coastal Ocean Sciences' Competitive Research Program (CRP) Director, where he oversees an external national science portfolio of over 80 active projects. CRP research provides science solutions to address a variety of priority issues including sea level rise, hypoxia, ocean acidification, and ecosystem-based management. Prior to his current role, David was program manager for the Effects of Sea Level Rise program, which focuses on providing actionable science to inform inundation adaptation planning. He joined NOAA as a Knauss Marine Policy Fellow in 2007 and received his Masters of Science from the University of Maryland while working as a research assistant for the U.S. Geological Survey. Outside of NOAA, David enjoys traveling with his wife and exploring local parks and marshes looking for birds.



Teal Harrison, Adaptation International

Teal Harrison is a Climate Resilience Specialist specialized in coastal science, flood resilience, and community engagement. An advocate for equitable climate change adaptation, she currently works with Gulf South communities to assess climate risk and proactively plan for future storms, floods, and coastal hazards. In past roles, Teal has worked in advocacy, outreach, and research capacities on nature-based flood mitigation, equitable disaster recovery, nonpoint source pollution, agricultural stewardship, and coastal ecology. She holds a B.A. in Behavioral Biology from Johns Hopkins University and a M.S. in Ecology and Evolutionary Biology from the University of Michigan.



Kara Doran, USGS St. Petersburg Coastal and Marine Science Center

Kara Doran is an oceanographer with the USGS St. Petersburg Coastal and Marine Science Center. Her area of expertise is understanding and forecasting storm impacts to sandy coastlines. For the last decade, she has studied Storm-Induced Coastal Change Hazards with a focus on producing real-time forecasts and scenario-based predictions of coastal total water level and geomorphic change during storms. Since 2018 she has acted as the coastal change hazards liaison to the USGS Storm Team and has worked in partnership with other federal agencies such as US Army Corps of Engineers (USACE) and National Oceanic and Atmospheric Administration (NOAA) to provide the nation scientifically rigorous information to assess national vulnerability to coastal change hazards.



Dr. Tanya Gallagher, Santa Rosa County, Florida

Tanya Gallagher, PhD, GIS Coordinator, Santa Rosa County & Adjunct Professor, University of West Florida, Tarleton State University: Dr. Tanya Gallagher is the GIS Coordinator for the Santa Rosa County Board of County Commissioners, an adjunct professor for the University of West Florida's Online GIS Program, and an adjunct professor for Tarleton State University's Department of Geosciences. Tanya has a bachelor's and master's in environmental sciences, and she received her PhD in Forestry from the University of British Columbia (UBC). While at UBC Tanya's research interests included social-ecological systems, aquatic ecosystem service mapping, and resilience mapping. Tanya currently oversees GIS projects for the County and serves as a member of the County's Resilience Team.

