

**National Science and Technology Council
Subcommittee on Ocean Science and Technology
2021 SOST Coastal Resilience Workshop
Public Summary of Findings & Opportunities**

Overview

The National Science and Technology Council (NSTC) Subcommittee on Ocean Science and Technology (SOST) hosted a virtual Coastal Resilience Workshop on June 15, 2021. Coastal resilience was defined for this workshop as the capacity of the social and natural systems in the coastal environment to cope with disturbances, induced by factors such as sea level rise, extreme events, and human impacts, by adapting and mitigating while maintaining their essential functions.

Our coasts are economic engines for the Nation; focal regions for development and growth; and home to lands, waters, and resources of unique national value. However, coastal regions are also susceptible to natural hazards, the effects of pollution and overuse, and the impacts of climate change. The workshop was motivated by the need to ensure the resilience of our coasts in the face of rapid environmental change and increasing risk. The goal of this Federal-only exploratory workshop was to start a conversation and collaboratively strategize to build the Federal community we need to address coastal resilience. Over 400 participants from 27 agencies and departments took part in the event which included keynote speeches from the National Climate Advisor and leaders from the White House Office of Science and Technology Policy, the White House Council on Environmental Quality, and the Department of the Interior as well as breakout group discussions of agency interests, capabilities, and current activities.

The Nation's coastal communities need timely access to actionable information that is relevant to their specific challenges and decisions to build resilience. Scientifically and technologically robust data, tools, training, guidance, and comparable resilience-oriented products and services are useful only if target audiences can access and apply them in the context of their work. Thus, the ways in which Federal agencies design, produce, deliver, and evaluate the efficacy of our resilience products are just as important as the content of the products themselves.

The Coastal Resilience Workshop's framing questions challenged participants to reflect on and share their experiences related to developing and delivering science and technology to support resilience building in coastal communities. From these discussions, the Workshop Planning Committee distilled participant feedback into five themes centering on opportunities to improve the processes driving product and service development and delivery. These themes are discussed in greater depth in a Federal-only white paper.

Federal Coordination

The complexity of the science and scale of the challenges along our coasts demands a purposeful application of a wide range of expert resources, programs, and partnerships. Workshop participants identified four primary opportunities for Federal coordination and activities:

1. Producing relevant science that advances our understanding of, and ability to predict and respond to, coastal threats and hazards;
2. Ensuring the equitable translation, delivery, and use of that science to enable private sector innovation and risk-informed public policy in the face of climate change and extreme events along the coast;

3. Administering grant programs that support states, local communities, Tribal nations, and territories to reduce risk, restore habitat, promote capacity building, expand economic opportunity, and strengthen natural and manmade infrastructure to protect the coast; and,
4. Regulating coastal activities and development.

Multiple interagency groups include goals and activities related to coastal resilience in their work, but greater coordination across groups and prioritization of actions is necessary to meet increasingly complex coastal resilience challenges. Agencies whose roles have traditionally been focused on production of cutting-edge observations, modeling, and breakthrough scientific discovery are increasingly broadening their focus to include quantifying impacts of coastal hazards and the communication of these impacts to the public. Many of these efforts to reach the public have failed to closely connect with existing and long-standing service delivery and sustainable relationships built on the ground over the past 50 years by mission agencies. As a result, Federal staff involved in supporting community resilience projects report confusion from public stakeholders about resources offered by various agencies, how to access relevant information, and how Federal investments in coastal resilience may change in the future. To address these issues and avoid duplicative efforts, Federal agencies should coordinate within each of the four primary responsibilities (detailed above) and develop sustainable pathways for collaboration and information sharing that help institutionalize these processes rather than relying on ad hoc or opportunistic actions.

User Community Engagement, Service Delivery, and Communications

The Federal government's approach to engaging with diverse decision-makers, researchers, and public audiences is critical in shaping program outcomes. Agencies should work to better meet the urgent needs of communities, rather than expecting communities to expend their limited resources to determine how to fit into Federal programs. When possible, agencies should rely on trusted intermediaries to help them understand current community priorities and capacities that influence project design, and to help with service delivery and evaluation.

Coastal resilience projects should avoid approaches that result in the delivery of a dataset, report, or tool with no prior inclusion of community, state, local, or Tribal government input. Additionally, funding should focus not only on science generation, but also on the transition and translation of science to users, including transparent evaluation of project impacts. Federal agencies should consider how to better connect communities with resilience resources, including those from other agencies. Community users are bombarded by an ever-growing ecosystem of internet-based platforms and portals developed by Federal agencies to manage and share data and tools. Agencies should leverage data, funding, and partnerships from across the Federal family toward simplifying access, reducing site complexity, standardizing data formats (to promote interoperability), and minimizing duplication of effort.

Diversity, Equity, Inclusion, and Accessibility (DEIA)

Increased prioritization of diversity, equity, inclusion, and accessibility (DEIA) throughout coastal resilience activities should be considered across the full breadth of Federal coordination and coastal resilience science. To ensure engagement across the array of coastal resilience community stakeholders, Federal agencies should work to level the playing field in funding access and access to broader decision-making processes, alongside increasing inclusion in the development of coastal resilience science and knowledge. Federal agencies have amassed significant formal and informal educational resources for our partners. Improved access to and technical guidance on how to utilize

existing resources, rather than solely focusing on developing new initiatives, will help put coastal partners on equal footing. Federal agencies should work towards filling in gaps and making existing data sources FAIR (findable, accessible, interoperable, and reusable) to improve the usefulness of Federal coastal research efforts to the communities we serve.

Rectifying the current lack of diversity in the scientific enterprise should also be complimented by efforts to build trust with coastal communities by ensuring that end users are involved in all stages of project or product design, development, and implementation and that their expertise and the time required to participate is acknowledged and valued. Building strong, long-term relationships with Tribal nations and Indigenous peoples is especially important to achieving equitable, effective coastal resilience outcomes.

Collaborative Research

Collaborative research, work that is community driven and represents input of multiple sectors, agencies, and groups, is an important component of building resilient coasts. While collaborative research represents only one segment of Federal science efforts, success in this area can influence other governmental engagement efforts and set the tone for relationships among communities and agency partners. Identifying community stakeholders, in addition to state, local, and Tribal governmental representatives, and understanding the unique needs of all groups involved in research is the first step to successful collaborative coastal resilience research.

Effective collaboration among Federal agencies and local communities seeking to build their own resilience requires establishing and maintaining trust, where agencies engage with communities as equal partners in the development and delivery of coastal resilience planning and projects. To this end, workshop participants highlighted two-way communications between Federal bodies and the communities they work with, emphasizing the importance of working to mitigate or eliminate systemic barriers to participation in the communications process.

Social Sciences

While physical and natural sciences are essential to describing and forecasting the condition of our coasts, the future of our coasts will largely be determined by human decisions in response to individual and community values and perceptions of risk. Increased prioritization of social science is needed across the spectrum of science production, as well as in science delivery and communication. Social science can help Federal agencies, Tribal governments, and local stakeholders understand the history, perceptions and attitudes of communities, the value they place on ecosystems, the impacts of coastal hazards on communities and economies, and the costs and benefits of various actions to address climate change or coastal resilience needs, among a wide range of other environmental considerations. Since many agencies depend on science from other agencies, science-producing agencies should be aware of the needs of science-using agencies to ensure data and informational needs are being met. In addition, Federal coastal resilience activities should be regularly evaluated and iteratively improved to address evolving community challenges.

Conclusions

The SOST Coastal Resilience Workshop builds on decades of agency and interagency efforts related to coastal resilience. This workshop is merely one step in reinvigorating the conversation on coastal resilience. Achieving and implementing the recommendations outlined in the full Federal-only white paper will require many partners across the Federal government and beyond. Interagency working groups will be able to foster communication and collaboration between agencies, but actual product

development and institutional change will be driven by agency action. This workshop included participants across the Federal government, but non-Federal communities are also key partners in the work of coastal resilience. Additional workshops focused on connecting Federal and non-federal communities and receiving input from private, academic, NGO, and community sectors, as well as Tribal governments, should be considered to include all relevant actors in the conversation.

For more information about the SOST Coastal Resilience Workshop or the Federal-only white paper, please reach out to crw2021@nsf.gov.