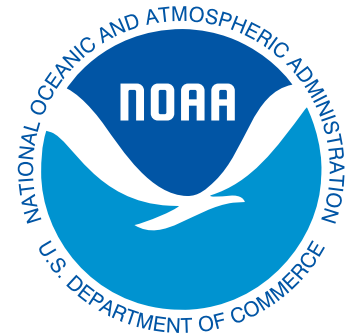


NATURAL HAZARD RISK COMMUNICATION

EXECUTIVE SUMMARY

Communicating natural hazard risk and uncertainty is critical to delivering on a central tenet of NOAA's mission: *to share knowledge and information with others*. Across the nation, organizations, businesses, communities, and individuals use NOAA's research, data, and knowledge every day. These entities depend on NOAA's climate predictions, weather forecasts and warnings, navigational information, Earth observations, and other data to plan and inform their activities and to make critical decisions.



PURPOSE AND METHODS

In June 2016, NOAA published the "Risk Communication and Behavior: Best Practices and Research Findings" report. This report presents a summary of risk communication and behavior literature related to hazards relevant to NOAA's mission, and provides recommendations for implementation and future research. In 2017, the NOAA Social Science Committee identified the need to take an in-depth look at NOAA risk and uncertainty communication practices and propose a simple and practical framework that all line offices can use.

As a result, NOAA's Performance, Risk, and Social Science Office (PRSSO) contracted with Eastern Research Group, Inc. (ERG) in 2017 to conduct the "Natural Hazard Risk and Uncertainty Communication Practical Guide and Pilot Project." The goals of this project were to:

- Identify natural hazard risk and uncertainty communication needs, capabilities, and current practices at NOAA.
- Identify existing risk and uncertainty communication work at other federal agencies to benchmark NOAA's efforts and help strengthen NOAA's capabilities.
- Develop a natural hazard risk communication framework to help guide and institutionalize risk communication at NOAA.
- Develop recommendations to improve natural hazard risk and uncertainty communication NOAA-wide.

To help NOAA achieve these goals, ERG interviewed 32 individuals from NOAA line offices and external stakeholders, researched risk communication at other federal agencies, and created and pilot-tested a practical guide for risk and uncertainty communication at NOAA.

KEY FINDINGS

NOAA's work is diverse, spanning from space to sea. This means that NOAA must address and communicate about multiple, interconnected risks, involving harm to people, ecosystems, and the economy.

In describing NOAA's natural hazard risk communication capabilities, interviewees within NOAA and in other organizations noted the following strengths:

- **NOAA is a trusted, credible source of natural hazard risk information.** External interviewees universally praised the quality of NOAA's data and the professionalism, responsiveness, and accessibility of its staff.
- **NOAA staff are highly engaged with stakeholders.** External interviewees noted that robust engagement and outreach has allowed NOAA to effectively get information into the hands of decision-makers and the public.
- **NOAA's risk communication benefits from the interconnected nature of its work.** The foundational research, data, and infrastructure provided by one line office can often help other offices assess and characterize risk and uncertainty, transfer this knowledge internally and externally, and promote informed decision-making.
- **NOAA partnerships are an asset to risk communication.** Line office staff have established positive, productive partnerships, and are working on new ones, to help translate and amplify NOAA risk messaging and connect NOAA with its diverse audience base.
- **NOAA is evolving its natural hazard risk communication.** Many of the line offices are working with social scientists to better understand their customers' information needs and decision processes, as well as to improve their products and services and strengthen their risk communication capabilities.

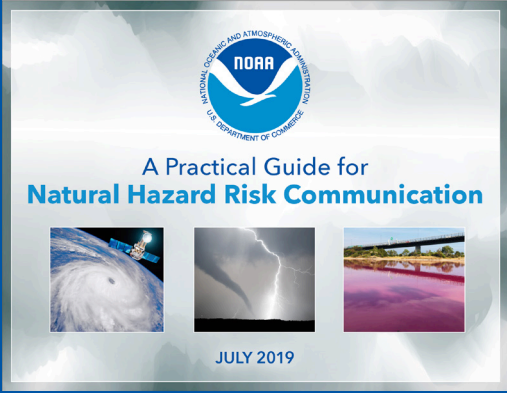
In addition to identifying strengths, the research for this project also revealed challenges to integrating effective natural hazard risk and uncertainty communication at NOAA. Some challenges stem from communicating science or data, which may be inherently uncertain, dynamic, or complex. Other challenges are cultural, organizational, or operational, relating to NOAA's structure, management, or workforce. Still others are connected to technological or political constraints. Key challenges include the following:

- Lack of a common, consistent language for communicating natural hazard risk.
- Aspects of natural hazard risk that are difficult to communicate (e.g., the relevance of long-term risks to people's lives, lack of data at a local scale).
- Communicating uncertainty, especially to non-technical audiences.
- Where responsibility for risk communication lies within in a given line office.
- Lack of risk communication experience or resources to build capacity.
- Lack of awareness about existing NOAA risk communication resources.
- Inconsistent or missing protocols and procedures for risk communication.
- Limited understanding of who target audiences are or how to reach them effectively.
- Lack of information about how risk messages and information are perceived or used.

RECOMMENDATIONS

To build on NOAA's natural hazard risk communication strengths and address challenges, we have developed six recommendations to improve and integrate risk and uncertainty communication across all NOAA line offices. The full report describes specific opportunities and best practices for implementing these recommendations.

- **Recommendation 1: Secure and maintain leadership support for risk communication activities.** Leadership must be committed to the idea that risk communication is a worthwhile activity and provide resources to support this activity.
- **Recommendation 2: Enhance planning and measurement for risk communication.** Consider developing an agency-wide strategic plan or line office-specific plans with concrete goals, activities, and performance metrics.
- **Recommendation 3: Look for opportunities to collaborate internally.** NOAA can leverage the interconnectedness of its work to build collaboration among line offices and share resources and best practices.
- **Recommendation 4: Build capacity for communication around uncertainty.** Better guidance around communicating uncertainty, including a common lexicon, could help prevent misunderstanding and better serve the risk information needs of NOAA's diverse audiences.
- **Recommendation 5: Help staff who have risk communication responsibilities become more confident and consistent communicators.** NOAA can take steps to establish internal processes for sharing resources, building capacity, and enabling staff to measure their impacts—and be rewarded for their achievements and performance.
- **Recommendation 6: Evaluate training needs and consider incentives.** Training on risk communication fundamentals, incorporating relevant scenarios and hands-on exercises, can enhance specific skills and help incorporate risk communication and outreach into job responsibilities at NOAA.



Practical Guidance for External Risk and Uncertainty Communication

As part of this project, we have created a step-by-step, proactive, and systematic guide that all NOAA staff can employ in their risk communication efforts. This guide was designed to complement other NOAA risk communication resources and add value by providing guidance on communicating uncertainty to external stakeholders as part of risk communication. A draft guide was pilot-tested by staff from each line office and revised to reflect their input.