RECOMMENDATIONS

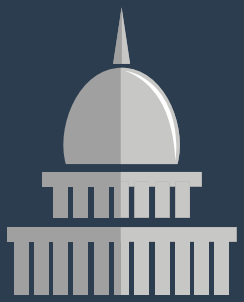
Addressing the complex challenges posed by flooding and extreme weather nationwide will take multiple partners working in collaboration at multiple levels. Science and scientists are a key element of these solutions, but they need support from federal and local governments, and in turn they must be relevant to, accessible to, and engaged with communities.

None of the information and tools provided by the scientists in our example communities would have been nearly as effective without the knowledge of local leaders about their priorities, culture, and existing response capacity. This type of community-based science can only happen through strong mutual trust, communication, and relationship building between scientists and communities. It is a long-term investment that will require commitment and patience from both sides. AGU's Thriving Earth Exchange program provides a library of resources to get started.

To ready our nation for future challenges presented by flooding and other extreme weather impacts, we propose specific recommendations for policy makers, scientists, community leaders, and individuals that will

- Empower communities to make informed decisions about their future;
- Empower scientists to conduct robust scientific research and data collection about flooding and its related issues; and
- Prioritize partnerships that foster collaboration, knowledge sharing, and better communication among scientists who study both the physical world and human behavior, and between scientists and communities.

Together, we can rise above the floodwaters.



CONGRESS CAN

Fund relevant science-based federal agencies.

- Fully fund agencies and programs that provide immediate flooding relief, with an understanding that a long-term sustainable solution requires coordination and cooperation of various stakeholders.
- Support robust and steadily increasing funding for science-based agencies to carry out long-term, watershed-based data collection and research of the mechanisms behind flooding and flood mitigation options. Such funding should match National Academy of Sciences recommendations of at least 4% real growth every year.

Invest in cross-cutting science centers and programs, including:

- Place-based science research centers to address region-specific flooding concerns. Examples at the federal level include the USGS's eight regional Climate Adaptation Science Centers, 28 regional Water Science Centers, and 54 Water Resources Research Institutes, and NOAA's Office of Water Prediction Collaborative Centers. An example at the state level that could be replicated by federal funding is the Iowa Flood Center.
- Programs that incentivize long-term relationship building and two-way communication of problems and solutions between scientists and their communities. Examples at the federal level include NOAA's National Sea Grant College Program and USDA's National Institute of Food and Agriculture Cooperative Extension Services.

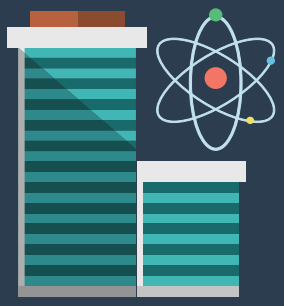
Support evidence-based policy.

- Support legislation that protects the use and the role of science in decision-making by ensuring that science can be conducted and inform policy freely, openly, and without undue political interference.

Emphasize future planning.

- Develop government policies to manage flooding and impact of inundation that account for a changing world and incorporate the best science around climate, human health, and development predictions.

SCIENCE AGENCIES AND CENTERS CAN



Prioritize partnerships and collaboration.

- Engage in deeper communication and collaboration across traditional organizational and disciplinary boundaries (such as microbiology, social sciences, and human health).
- Create unified centers of multidisciplinary collaboration between groups conducting flooding science, leading to a national network of climate, health, and water centers.

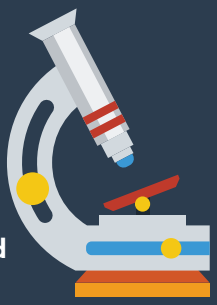
Engage with communities.

- Increase communication of the measures and steps communities can take to prepare for flood events and gain access to flood mitigation and recovery funding.
- Establish science community boundary programs that emphasize and incentivize two-way communication of problems and solutions and connect communities to key technical and government resources.

Pursue critical areas of research and planning.

- Focus research on weather and climate modeling, water quantity modeling, land use change modeling, remote sensing, human/agricultural health, social–economic perspectives of flood risk, and determination of best practices for risk communication, especially long-term risks.
- Incorporate into any policies the best climate science and development predictions.

SCIENTISTS CAN



Engage with communities.

- Start talking with and, more important, listening to communities in your area. Find out what their priorities are and what you can contribute to help them.
- Volunteer for existing programs providing scientific support to communities facing floods and other environmental issues. Opportunities to volunteer include AGU's Thriving Earth Exchange or any of the NSF-funded Extreme Event Reconnaissance networks.

Promote interdisciplinary research and collaboration.

- Seek out and share scientific findings with others working on managing floods and flooding risk, especially those outside of your discipline.
- Emphasize collaboration between physical and social scientists to advance best practices for keeping people safe.

COMMUNITIES CAN

Leverage existing resources.

- Seek out and use existing governmental support structures for managing floods. In the United States, for example, determine whether your state has a Silver Jackets program.
- Take advantage of existing programs providing scientific support to communities facing floods and other environmental issues, such as AGU's Thriving Earth Exchange.
- Develop or join organizations connecting flood-impacted communities with each other, such as Higher Ground.

INDIVIDUALS CAN

Stay informed.

- Learn about the flood risks in your neighborhood through FEMA's Flood Map Service Center.
- Learn about the types of disaster assistance available through FEMA and how to apply.
- Pay attention to and follow warnings contained in forecasts and mobile alerts from your local weather stations and the National Weather Service.

Create a plan.

- If your community is at risk of flooding, plan now for an emergency. You can find suggestions at www.ready.gov/floods.
- Incorporate your community into your plan. Do you or any of your neighbors need support evacuating? What are the local emergency organizations, and what services do they provide?

Be an advocate for science.

- Communicate with policy makers at all levels of government about the need to invest in science and science-based policy.