Climate Program Office

Regional Integrated Sciences and Assessments

How might climate variability and change affect decision making in my community?

NOAA's Regional Integrated Sciences and Assessments (RISA) program supports research teams that help build the nation's capacity to prepare for and adapt to climate variability and change. Central to the RISA approach are commitments to process, partnership, and trust building. The experimental structure and management of RISA teams are important for responding to natural disasters, environmental and institutional changes, and climate-related challenges to society.

RISA's Objectives

RISA teams work with public and private user communities to:

- Understand decision contexts for using climate information
- Develop interdisciplinary knowledge through interdisciplinary research
- Maintain diverse, flexible networks for sharing knowledge
- Innovate climate services to enhance the use of science in decision making

Understanding Decision Contexts

Climate information can inform decisions to adapt to a changing environment, but only if the climate research community and decision makers work together to understand each other's needs and limitations. For example, Pacific Island communities need guidance to assess future water resources in a changing climate.

To support partnerships between scientists and decision makers in the Hawaiian Islands, the Pacific RISA uses a multi-method approach of interviews, workshops, and surveys to characterize what climate information decision makers need and why they are not using available information. Findings indicate that stakeholders face challenges making decisions that integrate uncertain information (e.g., projected rainfall) with more certain information, and managing trade-offs between different factors (e.g., costs versus cultural values).

East-West Center

Participants gather at the East-West Center in Honolulu for a Pacific RISA workshop on climate change impacts on freshwater resources in Hawai'i.

Stakeholders are also interested in learning about impacts of projected water demand on sustainable yield, and how to separate natural variability from long-term climate change. Generally, policy makers want the most-probable and worst-case scenarios. The Pacific RISA is now conducting research on climate impacts on water resources.

Developing Interdisciplinary Knowledge

RISA teams use their understanding of different decision contexts to develop knowledge tailored to suit specific needs across different timescales of climate and across different sectors of society. The Consortium for Climate Risk in the Urban Northeast (CCRUN), in partnership with New York City and Philadelphia, is assessing the cost-effectiveness of green infrastructure strategies for reducing runoff and adapting to climate in urban watersheds. This assessment utilizes a free, web-based LIDRA (Low-Impact-Development Rapid Assess-

ment) tool developed by CCRUN member Drexel University to identify the economic and environmental benefits of green infrastructure, including the co-benefits of using trees for stormwater retention and energy savings. Initial field findings show that green infrastructure can reduce greenhouse gas emissions thirty-fold over a 50-year span while also reducing combined sewer outflows.

Maintaining Knowledge Networks

RISAs work at the interface of science and society to increase capacity for making decisions in a rapidly changing environment. RISA processes and products are designed as systems for learning and knowledge-exchange sustained through lasting relationships between researchers and organizations or individuals engaged in climate-related decision making. A drought of strong intensity and vast geographical extent gripped the South Central United States in 2011.

To respond to these severe ongoing conditions, multiple efforts were launched to engage decision makers from the region in a conversation about drought. The Southern Climate Impacts Planning Program (SCIPP), along with the National Integrated Drought Information System (NIDIS) and other NOAA regional partners, used a four-pronged approach supporting regional workshops, state drought planning, a series of webinars, and local impact reporting.

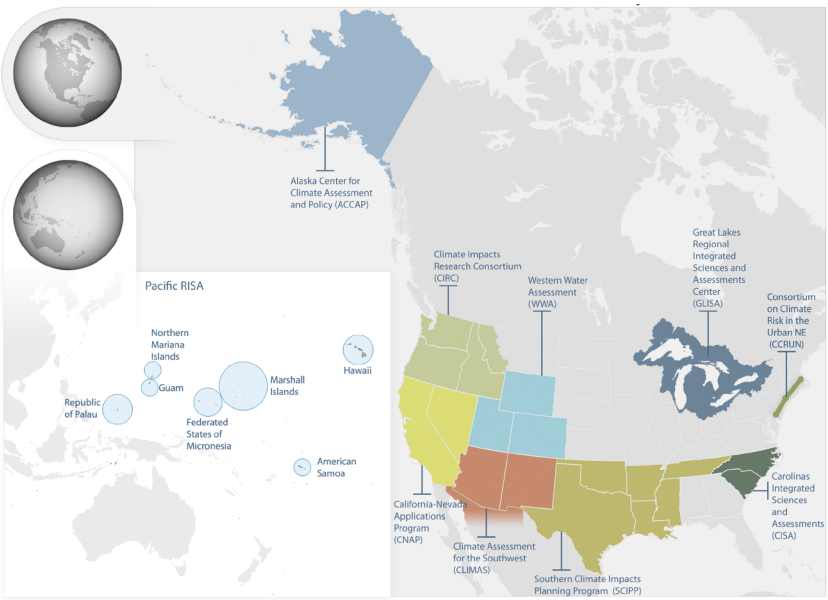
The net effect of these efforts is that interaction between these arenas and between the academic and practitioner communities increased substantially. Many decision makers participated in more than one effort, such as state drought planners attending the regional workshops or local Farm Service Agency offices participating in the drought webinars and impact reporting. In a follow-up survey, 79 percent of respondents indicated that they had forwarded information from a webinar to another person or organization.

U.S. Coast Guard

As sea ice disappears in the Arctic Ocean, scientists are exploring this new frontier and investigating impacts on sectors including energy development, tourism, international shipping, and commercial fisheries.

Innovating Climate Services

Sea ice and ocean observations over the past decade suggest that the Arctic Ocean climate has reached a new state characterized by increasing seasonal open water, less multi-year ice, and a warmer and fresher upper ocean than in 1979-2000. Impacts extend to Native subsistence hunting, homeland security, international shipping, offshore energy development, tourism, and commercial fisheries. In response to stakeholders' need for sea ice information, the Alaska Center for Climate Assessment & Policy (ACCAP), in collaboration with the Alaska Ocean Observing System, is digitizing historical records to create an Alaskan Sea Ice Atlas. This product is designed for on-going updates and will be coupled with a parallel Arctic-wide Atlas.

"The NOAA-funded Regional Integrated Sciences and Assessments (RISA) program offers a notable demonstration model. These university-based partnerships... have benefited many stakeholders that have had the good fortune to work with them and bring the multidisciplinary conversations and a science-meets-policy-meets-decision making focus that we need."

—David Behar,
San Francisco Public Utilities Commission
Water Utility Climate Alliance