



CLIMATE PROGRAM OFFICE

Sectoral Applications Research Program

With more frequent and extreme flood and drought events, and growing populations in vulnerable areas, how can managers better understand climate impacts and manage their risks and opportunities?

The Sectoral Applications Research Program (SARP) supports interdisciplinary research to advance understanding of how climate variability and change affect key socio-economic sectors, and promotes the application of this new knowledge in climate-related decisions. SARP works with scientists and decision makers (e.g., resource managers and policy leaders) to develop new tools and methodologies that they can incorporate into decision-making scenarios. The goal is to help decision makers better prepare for and respond to climate-related impacts. SARP's current foci are water resource management initiatives for coping with drought, and extreme event preparedness.

SARP's Objectives

- Provide a better understanding of the climate-related risks and opportunities faced by resource managers and planners, and assess their needs for decision-support tools, data, and information services;
- Equip resource managers and planners with tools, knowledge, methodologies, and forums to cope with climate-related extreme events;
- Help decision makers better understand their vulnerabilities to a changing climate and plan adaptation and mitigation strategies in accordance with their priorities and values;



Photo by Latham Stack, Syntectic International

Climate change brings very heavy precipitation to some locations, which leads to peaks of increased stormwater runoff. Local water managers are assessing their infrastructure's capacity to accommodate sudden heavy flows, and whether adaptations are needed to prevent flash flooding.

- Infuse scientific information about climate risks and uncertainties into societal decision-making processes on local to national scales; and
- Promote partnerships between the climate science and decision-making communities to improve societal use of climate data, forecasts, and projections.

SARP's Approach

Understanding the timing and intensity of climate conditions that decision makers are likely to face helps them ask the right questions and better plan their future, which in turn can help them save money, lives, and valuable resources. In 2011, for example, the U.S. experienced twelve separate billion-dollar weather/climate disasters costing approximately \$52 billion. This is a major problem in the U.S. and will escalate with a growing population and aging infrastructure.

Resource managers want to better understand potential impacts on their locales and how to interpret available data

continued...

Sectoral Applications Research Program http://climate.noaa.gov/cpo_pa/sarp

Email: oar.cpo.sarp@noaa.gov

SARP's Approach (continued)

and information. They want to learn how to better incorporate this information into their short- and long-term decision-making. They also want to learn how other resource managers are planning for impending extreme events. For example, water utility managers want to combine scale-specific hydrologic, economic and climatologic data for short- and long-term planning. In many cases, utilities are too small and not sufficiently well funded to tackle this problem alone. So SARP brings together like-minded stakeholders and researchers to share knowledge, develop tools and best practices, and initiate mutually beneficial collaborations.

Water Resources Planning

Water managers, long accustomed to managing climate variability, have been demanding more information about climate variability and change that they can incorporate into their risk management plans. Requests from water managers differ in their specificity and sophistication. SARP funds researchers to work with specific communities of decision-makers on key topics of interest, such as:

- examining economic impacts and costs of climate-related extremes and adaptation;
- assessing urban areas' vulnerability to extreme hydrologic events;
- developing tools and methods to help decision makers better understand, use, and communicate scientific information in planning and adapting to climate-related changes; and
- integrating climate data, forecasts, and projections into their management of water resources.

Coping with Drought

SARP supports research projects that advance state-of-the-art drought planning—including scientific analyses of drought events, outlooks and risk assessments, management best practices, and addressing socio-economic and institutional challenges. An overarching objective is to help evolve our nation's drought early warning system (NIDIS) to improve its regional-scale resolution and give longer lead-time. Researchers have focused on topics such as:

- characterizing decision-making institutions' climate-related risk perceptions;
- assessing drought's economic impacts and building tools for producing drought risk scenarios (e.g., water supply analysis); and

- identifying how non-structural approaches to water resources management could increase adaptive capacity (e.g., building water treatment plants on higher ground as water levels will rise with rising sea levels).

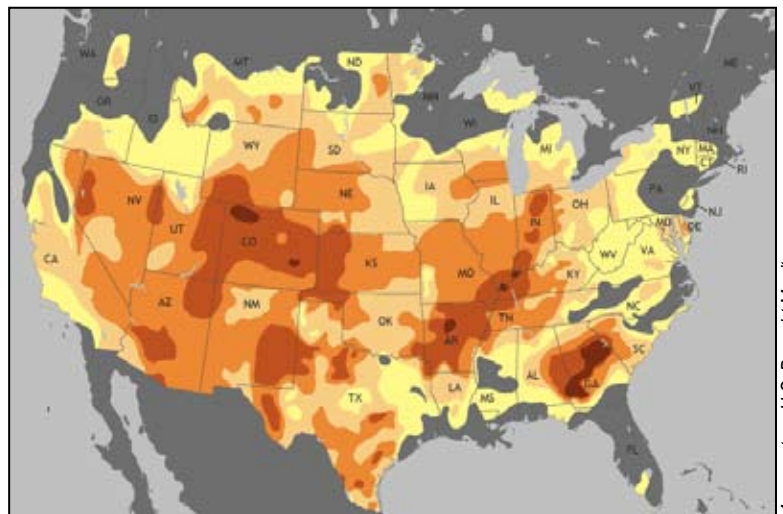
Extreme Events

This topic area is the newest in SARP's portfolio. In FY12, SARP researchers began to assess vulnerability for planning and adapting to extreme hydrologic events in urban areas. Additionally, staff have spearheaded two in a series of five interagency/NGO-led workshops on adaptation strategies and information needs in response to extreme events.

SARP Highlights

SARP began providing grants in 2006. Examples of successful outcomes include:

- development of a drought monitoring and forecast system for the State of Washington which is now being adopted for use by other Pacific Northwest States;
- completion of the first assessment of climate impacts on water resources in the Apalachicola-Chattahoochee-Flint River Basin and development of planning tools to help the State of Georgia address water gaps. These tools are also being transferred to other locations in the U.S. and internationally; and
- urban water case studies in the U.S. southwest and northern Mexico which resulted in identification of major climate-related vulnerabilities for near- and long-term planning horizons.



In July 2012, conditions throughout most of the contiguous United States ranged from abnormally dry (pale yellow) to exceptional drought (dark brown). The U.S. Dept. of Agriculture declared more than 1,000 counties in 26 states natural disaster areas—the largest such area in U.S. history.

Map courtesy U.S. Drought Monitor