

## CENTER FOR SCIENCE AND TECHNOLOGY POLICY

The Center for Science and Technology Policy Research was initiated within the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado-Boulder in the summer of 2001 as a contribution both to the CIRES goal of “promoting science in service to society” and to the University’s vision of establishing research and outreach across traditional academic boundaries.



The Center is a response to an increased demand by public and private decision makers for “usable” scientific information. Such information can serve decisions that have a scientific component or decisions about the structures, organizations, and priorities of science itself. At the same time, scientists have become increasingly interested in research problems that require the input of more than just a single traditional discipline. Science and technology policy research provides a mechanism to reconcile these two closely related - but not identical - trends. Such research focuses on “problems” and “decisions” to provide information that is useful and relevant in decision making. The focus on problems and decisions sets science and technology policy research apart from other efforts to integrate knowledge across traditional disciplines.

<http://sciencepolicy.colorado.edu>

## CONSORTIUM FOR SCIENCE, POLICY & OUTCOMES

The Consortium for Science, Policy, and Outcomes is an intellectual network aimed at enhancing the contribution of science and technology to society's pursuit of equality, justice, freedom, and overall quality of life. The Consortium creates knowledge and methods, cultivates public discourse, and fosters policies to help decision makers and institutions grapple with the immense power and importance of science and technology as society charts a course for the future.



CSPO is the only intellectual consortium dedicated to understanding the linkages between S&T and its effects on society, and to developing knowledge and tools that can more effectively connect progress in S&T to progress toward desired societal outcomes. The Consortium draws on the intellectual resources of Arizona State University and other institutions for the scholarly foundation to assess and foster outcome-based policies across a broad portfolio of publicly funded scientific research. The Consortium's core commitment is to generating useable knowledge for real-world decision making.

<http://www.cspo.org/>



## Science Policy Assessment and Research on Climate

*SPARC conducts research, education and outreach to improve the ability of climate science policies to support climate-related decision making*



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*This material is based upon work supported by the National Science Foundation under Grant No. 0345604. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.*





## Science Policy Assessment and Research on Climate

Over the past 25 years, U.S. science policy has allocated tens of billions of dollars to reduce uncertainty about future climate behavior with the expectation that the resulting scientific knowledge will enable, support, and improve climate policy decisions. The effectiveness of this strategy hinges upon the relationship between science policy decisions and climate policy decisions. Several important questions emerge in evaluating the effectiveness of this relationship, such as: How does the nation's multi-billion dollar investment in climate research affect those decisions? How can the societal value of this scientific investment be enhanced? How are climate science topic areas currently prioritized, and how do decision maker needs affect these priorities? These are the core organizing questions for Science Policy Assessment and Research on Climate (SPARC) which conducts research and assessments, outreach, and education aimed at helping climate science policies better support climate-related decision making in the face of fundamental and often irreducible uncertainties.

Science policy decisions are defined as those concerned with governing the climate science research enterprise. We distinguish such decisions from climate policy decisions, which are those made in anticipation of or in response to climate change.

The relationship between science policy decisions and climate policy decisions has not been systematically examined. SPARC will help fill this gap. The SPARC research agenda focuses on two themes:

- *Reconciling Supply and Demand for climate research, or how research agendas are developed and user demand for research assessed; and*
- *Sensitivity Analysis: how specific issues are prioritized given the multiple causes of global environmental change.*

There are currently four SPARC research projects under these themes:

### • **Climate Science Policy in the Regional Integrated Science and Assessment (RISA) Program**

In April 2002, the House Science Committee held a hearing to explore the connections on climate science and the needs of decision makers. The Science Committee's hearing highlighted the role of the NOAA Regional Integrated Sciences and Assessment (RISA) as a promising means to connect decision making needs with the research prioritization process.

The RISA program is ongoing for 10 years and has developed a significant body of experience in working to establish a two-way connection between decision makers and

interdisciplinary science and assessment. This experience provides a rich resource for drawing lessons from the various RISA projects on setting science priorities, implementing research, and the resulting output transferred to operational agencies in support of the needs of decision makers.

### • **Reconciling Supply and Demand-Carbon Cycle Science Activities**

RSD—Carbon Cycle project goals are to build knowledge of the needs of potential carbon cycle science users (demand), understand the current priorities, justifications, and activities of the U.S. carbon cycle science community (supply), and improve the ability of supply to meet demand by developing practical ways for setting priorities, directing science activities and building institutional capability.

### • **Ecosystem Function Sensitivity Analysis Activities**

The goal of the Ecosystem SA activity is to investigate the relative magnitude of various causes of environmental change in order to better understand the relation between changing ecosystem functions and the priorities of ecosystem science portfolio. This project will address issues such as factors (natural and anthropogenic) influencing the function of ecosystems, how research priorities compare to the known importance of various impacts on ecosystem function. We hope to use the results of the sensitivity analysis to quantify the relative significance of various causes of impacts on ecosystem function.

### • **Extreme Events and Climate Change Sensitivity Analysis Activities**

The goal of the Extreme Events and Climate Change activity is to investigate the relative magnitude of various causes of the growing societal impacts of weather and climate extremes in order to better understand the relation between the needs of decision makers and the priorities expressed in the climate science portfolio. This project will address factors influencing the increasing costs of disasters, and how research priorities compare to the relative influence of such factors on outcomes of interest to decision makers.

SPARC is a joint project of the University of Colorado's Center for Science and Policy Technology Research and the Arizona State University's Consortium for Science, Policy, & Outcomes, sponsored by the National Science Foundation (NSF).