

## **Climate and Societal Interactions FY 2014 Information Sheet**

The Climate and Societal Interactions (CSI) Program provides leadership on decision support research, assessments, and climate services development activities to help society adapt to a changing climate. The overarching goals of the CSI Program are the following:

- 1) Support for innovative and broadly applicable and transferable approaches for decision-making, especially for risk characterization in the context of a variable and changing climate;
- 2) Establishment of a network of regionally scoped, long-term efforts to inform climate risk management and decision making; and
- 3) Promotion of the transfer of climate knowledge, tools, products, and services (within NOAA, across the federal government, nationally, and internationally).

CSI research and capacity building activities address several societal challenges articulated in the context of the climate adaptation and mitigation objective of the NOAA Next Generation Strategic Plan (NGSP)<sup>1</sup>, including i) water resources; ii) coastal resilience; iii) marine ecosystems; and iv) extreme events. By supporting the creation of knowledge and capacity for adaptation, these efforts foster NOAA's vision of resilient ecosystems, communities, and economies, as described in the NGSP. CSI houses both U.S.- and internationally-focused projects to facilitate community-building and learning about the challenges and solutions associated with understanding and meeting the climate-related needs of decision makers.

In addressing the societal challenges, CSI will participate in or ensure alignment with the priorities of a number of interagency efforts such as the: National Climate Assessment; Interagency Climate Change Adaptation Task Force; National Integrated Drought Information System Act (P.L. 109-430); National Ocean Council; the National Fish, Wildlife, and Plants Climate Adaptation Strategy; and the international Global Framework for Climate Services (GFCS) initiative.

Funding competitions in FY 2014<sup>2</sup> include:

**Sectoral Applications Research Program (SARP)** (see page 3) – addresses the needs of a specific stakeholder or set of stakeholders within key socioeconomic sectors (e.g., water resources, agriculture, health, etc.) grappling with pressing climate-related issues. For 2014, SARP will focus on (1) climate extreme event preparedness, planning, and adaptation, as well as (2) projects supporting the Coping with Drought Initiative with the National Integrated Drought Information System (NIDIS). NIDIS provides dynamic and easily accessible drought information for the Nation through drought research focusing on risk

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<sup>1</sup> <http://www.ppi.noaa.gov/ngsp/>

<sup>2</sup> Refer to program websites for additional information.

assessment, forecasting, management, and development of decision-support resources.

**Coastal and Ocean Climate Applications (COCA)** (see page 5) – supports interdisciplinary, applied research on the impacts of climate variability and change on coastal communities and coastal and marine ecosystems. For FY14, COCA will hold one competition on: (1) the development and application of methodologies for valuating and integrating ecosystem services into coastal adaptation efforts (e.g.integration of green infrastructure for coastal protection).

The following table provides pertinent information about each program; a description of each of the program competitions follows.

		<i>SARP</i>		<i>COCA</i>
		<i>Extreme Events</i>	<i>Coping with Drought</i>	<i>Ecosystem Services</i>
Program Manager		Nancy Beller-Simms	Nancy Beller-Simms	Adrienne Antoine
Email@noaa.gov		nancy.beller-simms	nancy.beller-simms	adrienne.antoine
Duration of Award		1 - 2 years	1 - 2 years	1 - 2 years
Potential Size of Award		Up to \$300K for 2 years	Up to \$300K for 2 years	Up to \$300K for 2 years
NOAA Societal Challenge	Extremes	☐	☐	☐
	Water	☐	☐	
	Coasts			☐
	Marine			☐

Climate Program Office website: <http://www.climate.noaa.gov/>

Note that both program managers will be holding informational webcasts to discuss the background of these programs and expectations for this competition, as well as to address questions related to the development and submission of letters of intent and proposals. Please monitor the NOAA Climate Program Office website for times and accessibility information. Potential principal investigators can also contact the program managers directly if needed.

## **Sectoral Applications Research Program (SARP)**

For FY14, SARP is soliciting proposals for two focus areas: 1) extreme events preparedness, planning, and adaptation and 2) projects supporting the Coping with Drought Initiative with the National Integrated Drought Information System (NIDIS).

### **1) Extreme event preparedness, planning and adaptation**

With increased numbers and intensity of extreme events coupled with a growing population in vulnerable locations, resource managers at all levels of government are acutely aware of a need for better understanding of, and planning for, extreme events. In 2011, there were 14 separate weather and climate events that caused \$1 billion or more in damages in addition to loss of human life (<http://www.noaa.gov/extreme2011/>); in 2012, there were 11 such events (<http://www.ncdc.noaa.gov/news/preliminary-info-2012-us-billion-dollar-extreme-weatherclimate-events>). Last year, the Intergovernmental Panel on Climate Change issued a special report on “Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation” (IPCC 2012)<sup>3</sup>. This report documented changes in extreme events since 1950. As the authors note: “The severity of the impacts of climate extremes depends strongly on the level of the exposure and vulnerability to these extremes... [and]... Risk sharing and transfer mechanisms at local, national, regional, and global scales can increase resilience to climate extremes.”

To better understand the needs of decision makers preparing for extreme events, SARP, in FY12, began funding grants with a focus on climate and weather extremes. In addition, in FY13, SARP was one of six members of an interagency/NGO working group that conducted a series of case studies on “Water Resource Strategies and Information needs in Response to Extreme Weather/Climate Events” (See: <http://cpo.noaa.gov/ClimatePrograms/ClimateSocietalInteractionsCSI/SARPPProgram/ExtremeEventsCaseStudies.aspx>).

For FY14, SARP will award grants up to two-year duration with awards up to \$150K/year (not to exceed \$300K for 2 years) to provide a better understanding of the information needs of communities addressing risks and opportunities associated with climate and weather extremes. For purposes of this competition, climate and weather extremes will include: “the occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variable.” (IPCC, 2012). It may include a cumulative series of weather events (e.g., a series of cyclonic events or floods) or a single event that lasts more than two weeks (e.g., a drought).

The focus of these grants will be on disaster risk reduction with the water resources sector. Specific topics include the following options:

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<sup>3</sup> Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. <http://ipcc-wg2.gov/SREX/>

- A. Developing a climate focus within community multi-hazard planning, including frameworks for reducing impacts of extreme events
- B. Identifying co-benefits of and/or approaches toward preparing for extreme climatic and sequences of events (e.g., benefits of pre-hazard mitigation versus post hazard costs)
- C. Understanding appropriate temporal, spatial, and jurisdictional scales for planning and decision making (e.g., work in urban locations within a watershed environment)
- D. Improving methods for developing integrated indicators<sup>4</sup> (such as land use change), and understanding thresholds for vulnerability assessments and risk management
- E. Developing methods for determining the (a) cost of climate impacts and/or (b) long term costs and benefits of climate adaptation investments
- F. Understanding and expanding the linkages between extreme event forecasts, the operations of water resource management and the emergency planning sectors
- G. Improving understanding of and interactions with “the decision maker” as they respond to anticipating or living through an extreme event – a focus on perceptions, behavior, communication, and/or patterns of response.

Please specify which option(s) you are addressing on the cover page of your proposal. Theoretically, one could address all of these options, but a more refined proposal will most likely directly address one, or maybe two options.

PIs are highly encouraged to partner with NOAA and/or other federal agencies, academia, NGOs, related foundations/associations, local government, private business partners, media outlets, etc. *The number of projects funded and funding amounts of all projects are subject to the availability of funding.*

## **2) Projects Supporting the Coping with Drought Initiative with the National Integrated Drought Information System (NIDIS) [www.drought.gov](http://www.drought.gov).**

In FY14, the Coping with Drought Initiative will continue to focus on existing and planned NIDIS drought early warning pilot areas, targeting specific communities within these areas. These awards are expected to be between one to two years in length and cost no more than \$150,000 per year.

These areas can include, but are not limited to:

- Chesapeake Bay Watershed - Water resource management focus
- Missouri River Basin - Agricultural focus
- Pacific Northwest - Trans-boundary focus
- Coastal Carolinas - Ecosystems impacts focus

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<sup>4</sup> In addition to NOAA's interest in indicators, there is currently a national-scale effort underway in developing indicators for the National Climate Assessment (NCA). For those proposing to use indicators or develop indicators, you may wish to discuss the state of the science for indicators as it relates to your topic and indicate the potential relevance to the NCA indicator system. For more information on the NCA indicator effort, consult: <http://globalchange.gov/what-we-do/assessment/nca-overview> and/or [http://www.nesdis.noaa.gov/NCADAC/pdf/nov\\_16/NCADAC\\_Mtg\\_Pres\\_Nov11\\_VisionforIndicators\\_Final\\_111711\\_6a.pdf](http://www.nesdis.noaa.gov/NCADAC/pdf/nov_16/NCADAC_Mtg_Pres_Nov11_VisionforIndicators_Final_111711_6a.pdf).

- US/Mexico border area -Trans-boundary focus (specifically the Rio Grande/Rio Bravo watersheds)
- Southern plains - Agricultural focus (specifically within Texas, New Mexico, or Oklahoma)
- Tribal Lands – specifically in partnership with tribal colleges and governments (focusing on: (a) barriers to identifying and reducing vulnerability and (b) implementing risk reduction strategies).

Within these regions, projects should contribute to the development of the NIDIS effort through one or more of the following objectives:

- Characterizing climate-related risk perception among actors faced with making decisions in a variable and changing climate
- Assessing the components and types of risk analyses (including changes in resource demand) as drought severity increases after onset that are needed for planning
- Assess indirect or secondary economic impacts and develop socio-economic baselines
- Developing drought risk scenarios (e.g., water supply analyses, ecosystem services) and how these effect water budgets and accounts
- Understanding how a jurisdiction (local, tribal, regional, or state) plans and responds to water demand in the face of drought.
- Characterizing the readiness of institutions that are dealing with drought to utilize climate information
- Identifying how non-structural approaches, including socioeconomic and institutional approaches (e.g., utility involvement in land-use protection, regional collaborations, etc.), to water resource management could increase adaptive capacity for managing climate risks.

Examples of previously funded drought projects that work in conjunction with NIDIS can be found here:

[http://www.cpo.noaa.gov/cpo\\_pa/sarp/index.jsp?pg=../cpo\\_pa/cpo\\_pa\\_index.jsp&pa=sarp&sub=water.jsp](http://www.cpo.noaa.gov/cpo_pa/sarp/index.jsp?pg=../cpo_pa/cpo_pa_index.jsp&pa=sarp&sub=water.jsp).

## Coastal and Ocean Climate Applications (COCA) Program: Ecosystem Services for a Resilient Coast

With \$1 trillion of the gross domestic product coming from the coasts, the coastal zone is one of the key components to the sustainability of the U.S. economy.<sup>5</sup> More than 50% of Americans currently live in coastal and Great Lakes watershed counties.<sup>6</sup> However, human pressures, such as coastal development, pollution, and habitat destruction, are impacting the health and sustainability of coastal ecosystems. As human pressures continue to increase along the coast, so too will the stress placed on these vital ecosystems. In addition to these non-climatic stressors, impacts from changing climate conditions are impacting coastal ecosystems and the communities and economies that depend on them.<sup>7</sup>

Coastal ecosystem services are the benefits (e.g. food, flood protection, opportunities for recreation) that ecosystems provide to people.<sup>8</sup> As decision-makers begin to plan for a changing climate, there is increased recognition of the importance of coastal ecosystems and their services, resulting in increased demand from managers and decision makers for information on valuating ecosystem services as well as mechanisms to incorporate this information into coastal decision-making.

For FY14, COCA will support interdisciplinary applied research projects focused on the development and application of methodologies for integrating ecosystem services into coastal adaptation efforts (e.g. **the** integration of green infrastructure for coastal protection) to support sustainable coastal communities and ecosystems in a changing climate. COCA intends to support projects up to **\$300,000 for up to two years**. *The number of projects funded and funding amount of all projects are subject to the availability of funding.*

All projects should:

1. Advance the application and integration of climate-related information into coastal and marine decision-making.
2. Collaborate with and/or leverage relevant research and decision-making institutions in the area of study, e.g.: NOAA Sea Grant, Coastal Services Center, National Estuarine Research Reserve System, Fisheries Science Centers, and Office of Habitat Conservation; non-governmental organizations; academic institutions; state and local governments; private sector organizations; other federal agencies

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<sup>5</sup> Global Climate Change Impacts in the United States. Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.

<sup>6</sup> U.S. Census Bureau. 2010: Population of U.S. Cities. <http://www.census.gov>

<sup>7</sup> Global Climate Change Impacts in the United States. Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009.

<sup>8</sup> Ecosystems and Human Well-Being: Current State and Trends: Findings of the Condition and Trends Working Group, Millennium Ecosystem Assessment. Rashid Hassan, Robert Scholes, Neville Ash (eds). Island Press, 2005.

(e.g. U.S. Army Corps of Engineers, Department of the Interior, Environmental Protection Agency); National Ecosystem Service Partnership; etc.

3. Promote collaboration between scientists (e.g. physical, ecological, social, economic, etc.), engineers, and decision makers (e.g. natural resource managers, Federal/state/local officials).
4. Ensure the science, approaches, lessons learned, and/or tools developed have application and/or transferability beyond the region of study.

Priority Areas of Research include development and application of methodologies, tools, training, and/or guidance that:

- Advance integration of green/grey infrastructure approaches into coastal planning and management.
- Assess costs/benefits/tradeoffs and uncertainties associated with integrating ecosystem services into coastal adaptation efforts.
- Assess the effectiveness of ecosystem-based approaches (e.g. green infrastructure) for coastal flood, storm protection, and sediment management.
- Build the capacity of coastal and marine decision makers to understand the value of ecosystem services and integrate ecosystem services into coastal adaptation approaches.

## CSI General Information

This section is intended to provide additional information for successful submission to all CSI proposals.

### *Letters of Intent*

Interested applicants for all competitions are highly encouraged to submit a 1-2 page Letter of Intent (LOI) outlining plans for your proposal. These should be submitted to the Program Managers indicated in the introduction of this call.

### *Specifics about the Proposal*

Principal Investigators (PIs) need to demonstrate how their proposal builds on what is already known from the published literature and related activities within the area of study about the proposed topic. Examples of background topics include: value of climate information, decision making under uncertainty, use/transfer of new scientific information, integrated modeling of natural and human systems, impact of climate on sector activities, sectoral decision-making analyses, use of climate information in development, etc. Information about current and previously funded projects is listed on each program's respective websites.

### *Nature of Investigator Teams*

Multidisciplinary teams of investigators are often best suited for addressing the complex issues related to climate, society, and enhanced adaptation through the use of science and technology. Previous successful projects/teams have integrated social with natural and/or physical science components to form a more comprehensive analysis of the dynamics of climate-human-natural interactions. The proposal should include an explanation of the roles of the investigators and how the team will interact and integrate the multiple components. Investigators who will not be requesting funds for salaries must also be listed, along with their estimated time of commitment.

### *Partners*

We encourage partnerships and collaborations between researchers and critical decision-making institutions in the region of study such as: NOAA and other federal agencies, non-governmental organizations – both within and outside of the U.S. if appropriate, boundary organizations, international organizations and regional networks, extension services, state, tribal and local governments, the media, and representative private sector organizations. Any in-kind time should be reported within the proposal. Letters of support, or commitment, from partners are encouraged to accompany the proposals. Leveraging and in-kind sharing of resources is encouraged and should be reported within the proposal.

### *Interaction with NOAA*

Applicants whose proposals are chosen for funding will be expected to undertake an ongoing dialogue with the NOAA Climate Program Office and program managers and will be expected to submit annual reports and respond to periodic data requests, including information about the climate information needs of decision makers involved in their projects.

### *List of Suggested Reviewers (optional)*

Proposers are invited to include a list of suggested reviewers who they believe are especially well qualified to review proposals in the relevant subject area. These suggestions are optional, and the decision whether or not to use the suggested reviewers remains with the Program Manager. All reviewers are required to sign a conflict of interest statement.

### **References:**

#### *Websites:*

- Coastal and Ocean Climate Applications: [http://www.cpo.noaa.gov/cpo\\_pa/coca/](http://www.cpo.noaa.gov/cpo_pa/coca/)
- SARP: [http://www.climate.noaa.gov/cpo\\_pa/SARP/](http://www.climate.noaa.gov/cpo_pa/SARP/)
- Regional Integrated Sciences and Assessments: [http://www.climate.noaa.gov/cpo\\_pa/risa/](http://www.climate.noaa.gov/cpo_pa/risa/)
- NOAA Climate Portal: <http://www.climate.gov>
- National Climate Assessment: <http://www.globalchange.gov/what-we-do/assessment>
- NOAA Next Generation Strategic Plan: <http://www.ppi.noaa.gov/ngsp/>
- Climate Prediction Center: <http://www.cpc.ncep.noaa.gov/>
- NIDIS: <http://www.drought.gov/>
- National Climatic Data Center: <http://www.ncdc.noaa.gov/oa/ncdc.html>
- NWS Climate Services: <http://www.weather.gov/os/csd/index.php>
- U.S. Global Change Research Program: <http://www.globalchange.gov/>
- International Research Institute for Climate and Society: <http://portal.iri.columbia.edu/portal/server.pt>

#### *General:*

- Jacobs, K.L., 2002. Connecting Science, Policy and Decision-Making: A Handbook for Researchers and Science Agencies, National Oceanic and Atmospheric Administration, Office of Global Programs, Silver Spring, Maryland
- NRC, 2009. Restructuring Federal Climate Research to Meet the Challenges of Climate Change. Washington, D.C.: The National Academies Press. (V. Ramanathan, Chair)
- NRC, 2009. Informing Decisions in a Changing Climate. Washington, D.C.: The National Academies Press. (R. Corell, Chair)
- NRC, 2010. ACC: Informing an Effective Response to Climate Change. Washington, DC. National Academies Press. (D. Liverman and P. Raven, Co-Chairs)
- NRC, 2010. ACC: Advancing the Science of Climate Change. Washington, DC. National Academies Press. (P. Matson, Chair)
- NRC, 2010. ACC: Adapting to the Impacts of Climate Change. Washington, DC. National Academies Press. (K. Jacobs and T. Wilbanks, Chairs)

#### *Water Related:*

- Brekke, L.D., Kiang, J.E, Olsen, J.R, Pulwarty, R.S, Raff, D.A, Turnipseed, D.P, Web, R.S, and White, K.D, 2009. Climate Change and Water Resource Management: A Federal Perspective: U.S. Geological Survey Circular 1331, 65p.
- NIDIS Implementation Team, 2007. The National Integrated Drought Information System Implementation Plan.
- Sectoral Applications Research Program website:  
<http://cpo.noaa.gov/ClimatePrograms/ClimateSocietalInteractionsCSI/SARPPProgram.aspx>.
- U.S. Climate Change Science Program, 2008. Synthesis and Assessment Product 5.3 Decision-Support Experiments and Evaluation using Seasonal-to-Interannual Forecasts and Observational Data: A Focus on Water Resources.

*Ocean and Coastal Related:*

- U.S. Climate Change Science Program, 2009. Synthesis and Assessment Product 4.1 Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region
- U.S. Climate Change Science Program, 2009. Synthesis and Assessment Product 4.2 Thresholds of Climate Change in Ecosystems
- Culver, M.E., J. R. Schubel, M.A. Davidson, J. Haines, and K.C. Texeira (editors), 2010. Proceedings from the Sea Level Rise and Inundation Community Workshop, Lansdowne, MD, Dec 3-5, 2009. Sponsored by the National Oceanic and Atmospheric Administration and U.S. Geological Survey
- Glick, P., B.A. Stein, and N.A. Edelson, editors, 2011. Scanning the Conservation Horizon: A Guide to Climate Change Vulnerability Assessment. National Wildlife Federation, Washington, D.C.
- National Oceanic and Atmospheric Administration (NOAA), 2010. Adapting to Climate Change: A Planning Guide for State Coastal Managers. NOAA Office of Ocean and Coastal Resource Management. <http://coastalmanagement.noaa.gov/climate/adaptation.html>