

**International Research and Applications Project (CSI/IRAP):
Decision Support Research on Climate-Sensitive Health Risks
FY18 Information Sheet**

Contact: Lisa Vaughan (Lisa.Vaughan@noaa.gov)

Context: An Overview of NOAA Climate and Societal Interactions Program

The mission of the NOAA Climate and Societal Interactions (CSI) research portfolio is to inform improvements in planning and preparedness in diverse socio-economic regions and sectors throughout the U.S. and abroad via the integration of knowledge and information about extreme weather and climate. Our research advances the nation's understanding of climate-related risks and vulnerabilities across sectors and regions - within and beyond our borders - and the development of tools to foster more informed decision making. These efforts support NOAA's vision to create and sustain enhanced resilience in ecosystems, communities, and economies. The overall objectives of the CSI portfolio are the following:

1. Support innovative, 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.

These objectives are pursued through four complementary, interdisciplinary research programs: the Regional Integrated Sciences and Assessment (RISA) Program; the International Research and Applications Project (IRAP); the Sectoral Applications Research Program (SARP); and the Coastal and Ocean Climate Applications program (COCA).

RISA– supports research teams that conduct innovative, interdisciplinary, user-inspired, and regionally relevant research that informs resource management, planning, and public policy.

IRAP– supports activities to link science and assessments to practical risk management challenges in regions where weather and climate affect U.S. interests at home and abroad.

COCA– supports interdisciplinary applications research on the impacts of climate variability and change on coastal communities and coastal and marine ecosystems to inform decision making.

SARP– 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.

CSI is an active partner in NOAA’s efforts to enhance and support services. This partnership brings together NOAA Regional Climate Services Directors (RCSDs), other NOAA service line offices, and close external partners such as RISA teams, Regional Climate Centers, State Climatologists, Sea Grant and other U.S. Government agencies to help make weather and climate information relevant and accessible to people across the U.S.

CSI activities address the societal challenges identified in NOAA’s Next-Generation Strategic Plan (NGSP): i) climate impacts on water resources; ii) coasts and climate resilience; iii) sustainability of marine ecosystems; and iv) changes in the extremes of weather and climate. These efforts support NOAA’s vision to create and sustain enhanced resilience in ecosystems, communities, and economies, as outlined in the NGSP.

The CSI International Research and Applications Project (IRAP)

The IRAP is home to NOAA/CSI’s decision support science focused on countries and regions where weather and climate impacts may affect U.S. economic, development, scientific and security interests. The IRAP seeks to create practical knowledge, bridges and partnerships among the scientific community’s multi-disciplinary research and services activities, and the needs and capabilities of decision makers and resource managers around the world with a stake in risk management, adaptation and development.

IRAP continues NOAA’s long-term commitment to advancing international decision support research and capacity building activities, dating back to the early 1990s¹. These efforts have evolved over time in response to the state of the science, and the needs and capacities of decision makers and other stakeholders². Based on the increasing importance of understanding and predicting climate-sensitive health risks to ensure health, stability and well-being of US Interests at home and abroad, the IRAP seeks to bridge the gap between scientific capacity and institutional ability to use sub-seasonal to seasonal climate information to predict and manage

¹ Examples of activities supported via this effort over the last 20 years include the development of Regional Climate Outlook Forums; pilot applications research, training and capacity building projects; interdisciplinary competitive research grants focused on impacts and vulnerability; and long-term institutional investment in the International Research Institute for Climate and Society.

² Vaughan, et. al. US Investments in International Climate Research and Applications: reflections on contributions to interdisciplinary climate science and services, development, and adaptation. *Earth Perspectives* 2014, 1:23 (17 June 2014) <https://doi.org/10.1186/2194-6434-1-23>

climate-sensitive health risks that threaten our health, livelihoods, international development strategies and security^{3,4,5}.

The first round of IRAP funding supports an ongoing core project entitled *[Integrating Climate Information and Decision Processes for Regional Climate Resilience](#)*, which connects the synthesis, interpretation and translation of physical climate information, including monitoring and prediction capabilities, with interdisciplinary applications research on impacts, vulnerabilities and decision making needs and capabilities of information users, and the enhancement of the institutional and technical capacity for the application of climate information to support proactive planning and response in the Caribbean, India and Bangladesh⁶. The primary objective of this initial round of IRAP funding is to enhance societal preparedness in the face of weather and climate-related impacts by fostering the effective development and application of capacity, information and knowledge in the context of current and future adaptation and development paths⁷.

Building on the the methodologies established in the first round of IRAP support and those utilized by another NOAA/CSI effort entitled the Regional Integrated Sciences and Assessment (RISA) Program, the next phase of IRAP will turn its attention to the emerging challenge of enhancing risk management in the health sector through the use of climate knowledge and information on timescales of sub-seasonal to seasonal, and beyond.

³ USGCRP, 2016: The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Crimmins, A., J. Balbus, J.L. Gamble, C.B. Beard, J.E. Bell, D. Dodgen, R.J. Eisen, N. Fann, M.D. Hawkins, S.C. Herring, L. Jantarasami, D.M. Mills, S. Saha, M.C. Sarofim, J. Trtanj, and L. Ziska, Eds. U.S. Global Change Research Program, Washington, DC, 312 pp. <http://dx.doi.org/10.7930/J0R49NOX>

⁴ US Climate and Health Science Plan for Climate, Infectious Disease and National Security (in draft form as of September 27, 2017).

⁵ Smith, K.R., A. Woodward, D. Campbell-Lendrum, D.D. Chadee, Y. Honda, Q. Liu, J.M. Olwoch, B. Revich, and R. Sauerborn, 2014: Human health: impacts, adaptation, and co-benefits. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 709-754.

⁶ The US Agency for International Development also provided support for the first IRAP competition.

⁷ For additional information about currently funded IRAP activities, please see <http://irap.climate.org>

FY 18 IRAP Priorities: Decision Support Research on Climate-Sensitive Health Risks

Climate and weather events such as droughts, heavy rains, flooding, heatwaves and severe storms have substantial implications for human health and well-being around the world. In an increasingly global society, these impacts can have cascading consequences for the health and well-being of communities and states within U.S. borders as well as our investments in the private sector, international development, and national security. Understanding how climate and weather events abroad⁸ affect U.S. interests in the health, international development and national security sectors is a critical step in the use of knowledge, products and early warning, and the development of integrated information systems⁹ - including those supported by NOAA and our international partners¹⁰ - to address practical challenges of risk management, economic growth, and bolster the stability and security of the U.S.

In FY 18, IRAP will consider proposals for interdisciplinary, applied science, stakeholder engagement, and capacity building that advances the integration of weather and climate research, assessments and services in practical risk management settings related to health risks that affect US interests at home and abroad. Health risks of particular interest include: temperature-related mortality and illness; infectious and vector borne diseases; flooding due to extreme events such as hurricanes; air quality impacts; water and food-borne illnesses; nutrition, and food and water distribution. One CSI/IRAP competition will be held in FY 18, with two distinct foci, as noted below.

1. Decision Support Research and Application on Climate-Sensitive Health Risks in Transboundary Regions of the United States, in Partnership with the NOAA/CSI Regional Integrated Sciences and Assessment Program

Proposed research should focus on climate-sensitive health risks in the transboundary regions of the United States, and should explicitly connect to and expand the efforts of the NOAA/CSI Regional Integrated Sciences and Assessment (RISA) network. Proposals should apply the RISA approach to transboundary issues related to understanding, predicting and preventing climate-sensitive health risks at sub-seasonal to seasonal time scales. Proposals should address how weather-climate-health linkages interact with and shape the socio-economic well-being and stability of communities and institutions that intersect with countries in one or more of the

⁸ Including transboundary regions.

⁹ Including National Integrated Drought Information System (NIDIS), National Integrated Heat Health Information System (NIHHIS), Global Drought Information System (GDIS), Famine Early Warning Systems Network (FEWS NET) and climate services for health

¹⁰ For example, the Global Framework for Climate Services (GFCS), the North American Climate Services Partnership, Clim-Health Africa

broadly defined regions that border the US, including: a) Mexico and Central America; b) the Caribbean; c) the Pacific Islands; d) the Arctic; e) Canada.

The competition encourages projects that: 1) advance knowledge of sub-seasonal to seasonal climate impacts on the health, economy and well-being of transboundary regions in the U.S., and stimulate the development and use of related products and knowledge; 2) identify causal linkages and solutions for reducing risk through the application of climate and weather information; 3) demonstrate the role of innovation in coordinating climate and weather services across transboundary regions (e.g. through contributions to early warning systems or transboundary resource management mechanisms or other agreements); 4) inspire the production of information of near term relevance to planning and preparation designed to anticipate, mitigate and prevent health threats such as diseases outbreaks, mortality and morbidity, worker safety and productivity, and migration; and 5) identify, elucidate and test the institutional partnerships and pathways to effective use of predictive information to reduce health risks and enhance resilience at multiple time scales. Topics could include development of a West Nile Virus risk prediction system or other integrated information systems to predict and reduce risk of mosquito borne, water-related, heat, food and air quality health impacts.

All proposals related to this first focus area should include at least one Co-PI from an existing RISA team

(<http://cpo.noaa.gov/Meet-the-Divisions/Climate-and-Societal-Interactions/RISA/RISA-Teams>),

and should feature practical partnerships among scientists from multiple disciplines, decision makers and other stakeholders, including state, local or Federal agencies and the private sector (including NGOs and companies). Proposals should connect to the network of NOAA research and services (e.g., National Weather Service, Oceanic and Atmospheric Research, National Ocean Service, National Environmental Satellite Data Information Service, National Marine Fisheries Service). Proposals are encouraged to build on and expand existing RISA investigations and networks, link to the National Integrated Heat Health Information System (NIHHIS) Pilots or partners (<http://cpo.noaa.gov/NIHHIS>), partner with the Centers for Disease Control and Prevention's Building Resilience Against Climate Effects Framework (<https://www.cdc.gov/climateandhealth/BRACE.htm>) grantees, and include public health and related state and local decision makers.

2. Developing and Using Subseasonal and Seasonal Global Health Risk Maps, Prediction Tools and Information to Anticipate and Manage Climate-Sensitive Health Risk.

The purpose of this second FY 18 IRAP priority is to advance the knowledge, networks, capacity and global health engagement needed to develop and demonstrate the use of tools and predictive information for climate-sensitive health risks in order to safeguard US interests within and

outside of our borders, and that affect US response capacity—whether international, federal, state or local. The goal is to build on existing activities and develop both the technical and institutional capacity to produce and use a global health risk map that provides an indication of health risks with weeks or months lead time. This includes identifying and contributing to the institutional capacity to use and act on this predictive information to reduce health risks (e.g. emergency response needs, long range mitigation planning).

Proposals are encouraged to include relevant institutional representatives such as the Department of Defense, NOAA, US Department of State, US Agency for International Development, Health and Human Services, states, and other government and private sector partners involved in research, prediction and response. This element is envisioned as a collaborative pilot project (s) to identify information needs and institutional pathways needed to assess and predict, on sub-seasonal and seasonal time scales (and beyond, where appropriate), climate sensitive health risks around the globe that are likely to affect US interests at home and abroad. The proposal should build on existing global hazard risk and mapping efforts and include partners responsible for decision making that facilitates improved and timely planning and preparation to reduce these health risks before they affect US interests, or foster a more efficient response. Proposals should demonstrate and advance concepts, techniques and network capacities for developing and utilizing global hazard health risk maps and associated tools (e.g., decision support calendars for the management of climate-sensitive health risks, monthly or seasonal health outlooks, etc).

Proposals to this component of the IRAP FY 18 FFO are expected to demonstrate familiarity with and include representatives of the suite of actors involved in ongoing dialogues, research, management and other climate-sensitive health risk activities on the global and/or regional scale, and the challenges and opportunities associated with developing maps and other usable tools.

Proposals focused on this 2nd research priority have no requirement to include a Co-PI from the RISA network; however, we encourage linkages among the two elements of this competition once the awards are made. For instance, once an experimental global health risk that is likely to affect the US is identified, that experimental outlook (developed in foci 2) would be shared with the PIs in foci 1).

FY 18 Funding

We anticipate that a total of \$1.5M will be awarded for this competition in FY 18, pending budget appropriations and the availability of funds. Within this context, we anticipate the following distribution across the two priority areas: 1) Focus area 1: We estimate that awards for transboundary work involving RISA teams will be up to \$350K per year, for a period of 1-2

years, pending budget appropriations. We anticipate that the total amount awarded for this foci will be \$1.2M per year, depending on budget appropriations and the availability of funds;

2) Focus area 2: We estimate that awards for this focus area will be \$150-\$300K per year for a period of 1-2 years, pending the availability of funds. We estimate that a total of \$300K per year will be available for this area, and that only 1-2 proposals will be funded.