International Research Institute
for Climate and Society
EARTH INSTITUTE | COLUMBIA UNIVERSITY

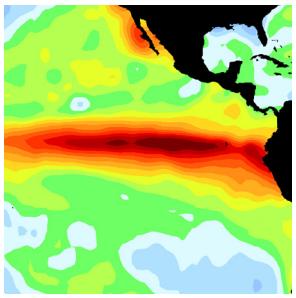
Climate and Society

Mission

The **International Research Institute for Climate and Society (IRI)** was established in 1996 by the U.S. National Oceanic and Atmospheric Administration (NOAA) and Columbia University as the world's first international institute with a mission to apply climate science in the service of society. We use a science-based approach to enhance society's capability to understand, anticipate and manage the impacts of climate in order to improve human welfare and the environment, especially in developing countries. By providing practical advancements that reduce vulnerability to climate related risks in the present, we are creating solutions that will increase adaptability to long term climate change.

Climate Variability and its Risks

The temperature and rainfall changes that come from *climate variability*, which is on time scales of years to decades, can be as large or larger than those predicted to come from longterm climate change. There are hundreds of millions of people *right now* who are kept poor, sick or malnourished because of their climate. In many regions of the world, climate variability causes social and economic shocks that can become significant and chronic constraints to development. In many regions of the world, climate variability from one season, year, or even decade to the next causes social and economic shocks that can become significant and chronic constraints to development. The resources and attention governments must be spend on preparations and responses for droughts, floods, epidemics and other climate-related risks can severely diminish their ability to take advantage of periods when climate conditions are favorable. Being able to consistently manage risks and opportunities in a resource-constrained environment can mean the difference between staying in poverty and rising out of it.



Climate information is available on a variety of time scales and is derived from different sources. Historical records, real-time monitoring and forecasting can each serve a critical function in a decision maker's toolkit. As such, we have seen a rapidly growing demand for climate-related information, tools and other resources that can be embedded into decision making in all sectors. The demands are different depending on each user community and the time scales and geographical scales on which they must act. For example, multilateral organizations and development agencies might require global and regional-level information. Governments, private-sector institutions and nongovernmental organizations represent operations that typically need a national or local-level context.

Building on its multidisciplinary core of scientific expertise, IRI collaborates with organizations and stakeholders of all scales to best understand societal needs, risks and opportunities related to climate fluctuations. We bring the best science to bear on climate risk management in agriculture, food security, water and health. We leverage existing U.S. science investments and expertise, such as global climate models, satellites and ocean observation systems, into practical tools for climate change adaptation, natural resource management and disaster risk reduction, where the linkages with weather and climate information for early warning and action have emerged strongly.

IRI works with U.S. scientific institutions and federal agencies such as NOAA, the National Aeronautics and Space Administration, the National Science Foundation, and

the U.S. Agency for International Development. We also partner with international organizations such as the Red Cross, Oxfam America, and the World Food Programme, as well as countries such as India and Brazil. Private sector partners include Google and SwissRe.

Our Work

Innovations in Climate Science

We continue to research the causes and impacts of climate fluctuations. For example, we are trying to understand what's driving the recent spate of droughts in eastern Africa and the large trends of increased rainfall in southeastern South America. This research, based on observations and climate models, contributes to climate information about the future, including reliable year-to-year predictions, informed interpretation and use of climate change projections and consideration of how natural decade-to-decade fluctuations may enhance or reduce the trends associated with anthropogenic climate change. The information we produce is stored, delivered, and visualized through our Data Library and numerous map rooms developed for different user communities.

A Climate Services Framework

The innovations in climate science are largely driven by what is needed in specific regions and sectors, with a goal of contributing to information decision support systems. IRI's work in linking climate and sectoral impacts and decisions addresses agriculture, water, health and disasters. We have active collaborations with partners in-region to develop this research and these decision systems in Latin America, Africa and Asia. These partnerships result in more targeted information development and systems that can actually be put into real-time operations. Related to this, the IRI hosts the secretariat for the newly formed *Climate Services Partnership*, which is a platform for knowledge sharing and collaboration to advance climate services capabilities worldwide.

Building Capacity

For more than a decade, we have been providing capacity building and training to scientists, practitioners and decision makers around the world. In many cases, we 'train the trainers' to create an even broader reach. These types of trainings help strengthen the regional and national networks that make climate-related risk management and adaptation decisions as well as those that formulate policy. Related to this, the IRI is closely linked with Columbia University's *Master of Arts Program in Climate and Society*–an intensive one-year program that emphasizes understanding and application of climate information through a set of core classes and a wide offering of electives. However, probably the greatest opportunity for building capacity comes through our collaborations with partners in the development of informational products and decision support systems.

AFFILIATES AT THE UNIVERSITY

- Lamont-Doherty Earth Observatory
- Department of Earth and Environmental Sciences
- Cooperative Institute for Climate Applications and Research
- NASA Goddard Institute for Space Studies
- Center for Climate Systems Research
- Center for Environmental Research and Conservation
- Department of Ecology, Evolution and Environmental Biology
- Department of Earth and Environmental Engineering
- Columbia Water Center
- Columbia Climate Center
- Mailman School of Public Health
- Center for Research on Environmental Decisions
- Department of Civil Engineering and Engineering Mechanics
- Center for International Earth Science Information Network
- Master of Arts Program in Climate and Society

For more information on the IRI and its projects, go to iri.columbia.edu
To join the conversation, go to twitter.com/climatesociety and facebook.com/climatesociety

THE EARTH INSTITUTE
COLUMBIA UNIVERSITY

earth.columbia.edu

The International Research Institute for Climate and Society is affiliated with the Earth Institute, Columbia University, whose mission is to mobilize the sciences, education and public policy to achieve a sustainable Earth. Through interdisciplinary research among more than 500 scientists in diverse fields, the Institute is adding to the knowledge necessary for addressing the challenges of the 21st century and beyond. With over two dozen associated degree curricula and a vibrant fellowship program, the Earth Institute is educating new leaders to become professionals and scholars in the growing field of sustainable development. We work alongside governments, businesses, nonprofit organizations and individuals to devise innovative strategies to protect the future of our planet.