CLIMATE RISK MANAGEMENT AND WATER

More than a billion people, mostly in developing countries, lack access to safe drinking water, and at least twice this number live in areas without proper sanitation. One of the Millennium Development Goals is to cut in half the proportion of people living in these conditions by 2015. But the success of this extraordinary effort will depend on how well we understand and manage risks associated with climate.

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The supply of fresh water in the developing world is very sensitive to the impacts of climate fluctuations. Population growth, changing lifestyles and shifting land use patterns have already increased the demands on water systems. Add climate uncertainty to the mix, and the need for water-management strategies that make use of the best available climate information becomes essential.

The last decade has seen advances in hydroclimatic science, compilation of global data sets, including remote sensing, and the improved ability to forecast climate in many parts of the world. The IRI recognizes these advances as new opportunities for "climate-smart" water management, infrastructure planning and disaster-risk management.

The IRI works with research partners, water-resource managers and stakeholders such as agricultural organizations to identify system vulnerabilities to climate and to find the right strategies to better manage climate risk.

Fetching water in Niger. Giulio Napolitano/FAO

Our approach helps developing countries use scarce water resources more efficiently and manage the risk of impacts from climate variability and change. The approach has been successful because it takes advantage of the combined expertise of climate scientists, water resources engineers and local partners. We work with urban water suppliers, shared-reservoir systems and their stakeholders, regional planners and development agencies.

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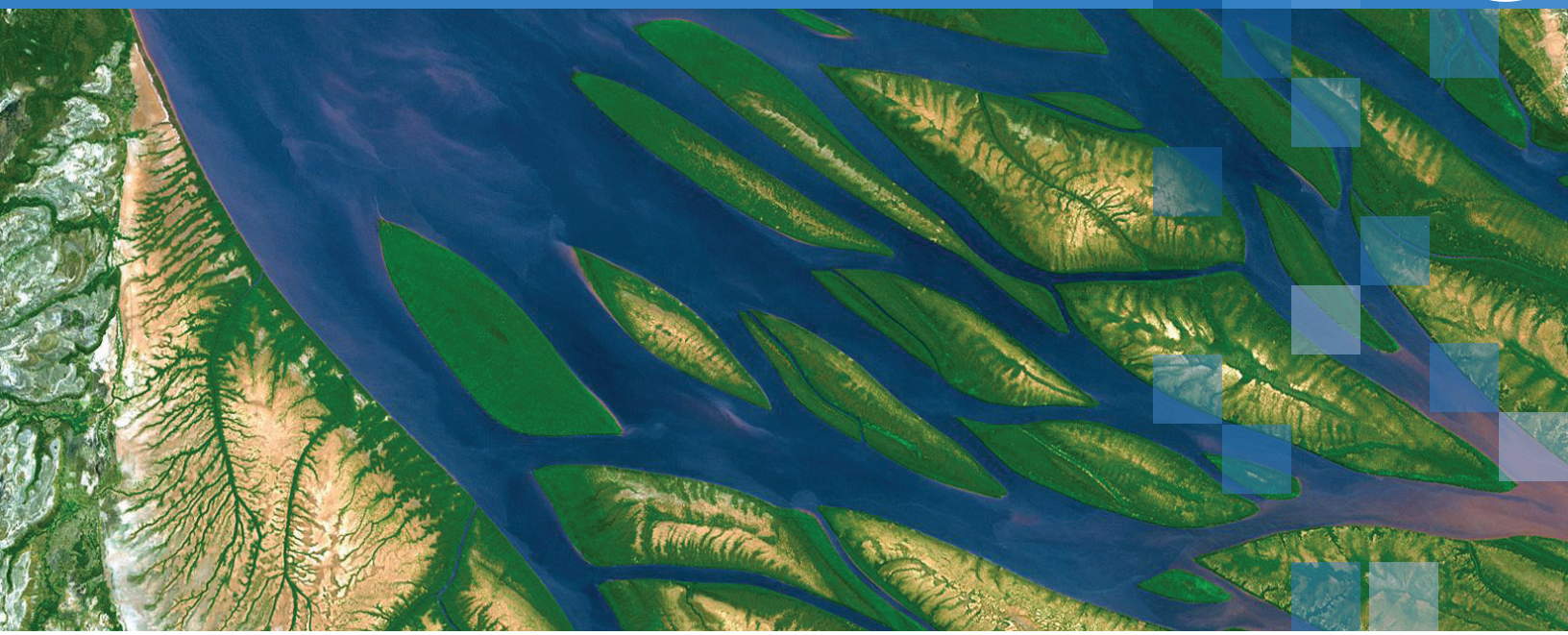

NASA

Improved Reservoir Operations with Climate Forecasts in Ceará, Brazil

Drought is a major challenge for those who rely on water in Ceará, Northeast Brazil, such as farmers and irrigators, as well as the Fortaleza metropolitan area. IRI scientists have developed a long-range forecast (up to 18 months in advance) of the inflows to the major reservoir system. Simulations have shown the potential for improved reliability of water deliveries for all users when forecasts are integrated with reservoir releases. Continuing work focuses on capacity building with local stakeholders in order to operationalize forecast use.

IRI uses advances in climate information and risk management to help partners in their efforts to:

- Improve resiliency to droughts and floods
- Design robust water systems
- Conduct strategic regional planning for water resources
- Allocate water efficiently and equitably

Creating Resilience Strategies for Urban Water Supply, Metro Manila, Philippines

The reservoir that supplies water to Metro Manila is increasingly vulnerable to hydrologic variability, both drought and flood. A large irrigation area also relies on water from the reservoir in this shared water system. In times of water scarcity, questions of where the water should be allocated become critical and often contentious. The IRI works with the urban water supply service, irrigators and national level agencies to create anticipatory strategies for managing water crises. Together, we are exploring economic mechanisms such as option contracts and index insurance and building capacity in the use of climate information and forecasts.

Climate Risk Management in the Berg River Basin, South Africa

Over the past ten years, increasing competition among water users and drought in the Cape Town area has resulted in frequent water shortages and emergency water- management responses. In recognition, the South African government has begun building a new dam and developing water markets. How will these investments fare in the face of changing climate and development? IRI and its local and international partners are developing economic tools and approaches to help planners understand the trade-offs of these, and other water resources investment decisions, given the uncertain future.

About the IRI

The IRI works on the development and implementation of strategies to manage climate related risks and opportunities. Building on a multidisciplinary core of expertise, IRI partners with research institutions and local stakeholders to best understand needs, risks and possibilities. The IRI supports sustainable development by bringing the best science to bear on managing climate risks in sectors such as agriculture, food security, water resources, and health. By providing practical advancements that enable better management of climate related risks and opportunities in the present, we are creating solutions that will increase adaptability to long term climate change. IRI is a member of the Earth Institute at Columbia University.