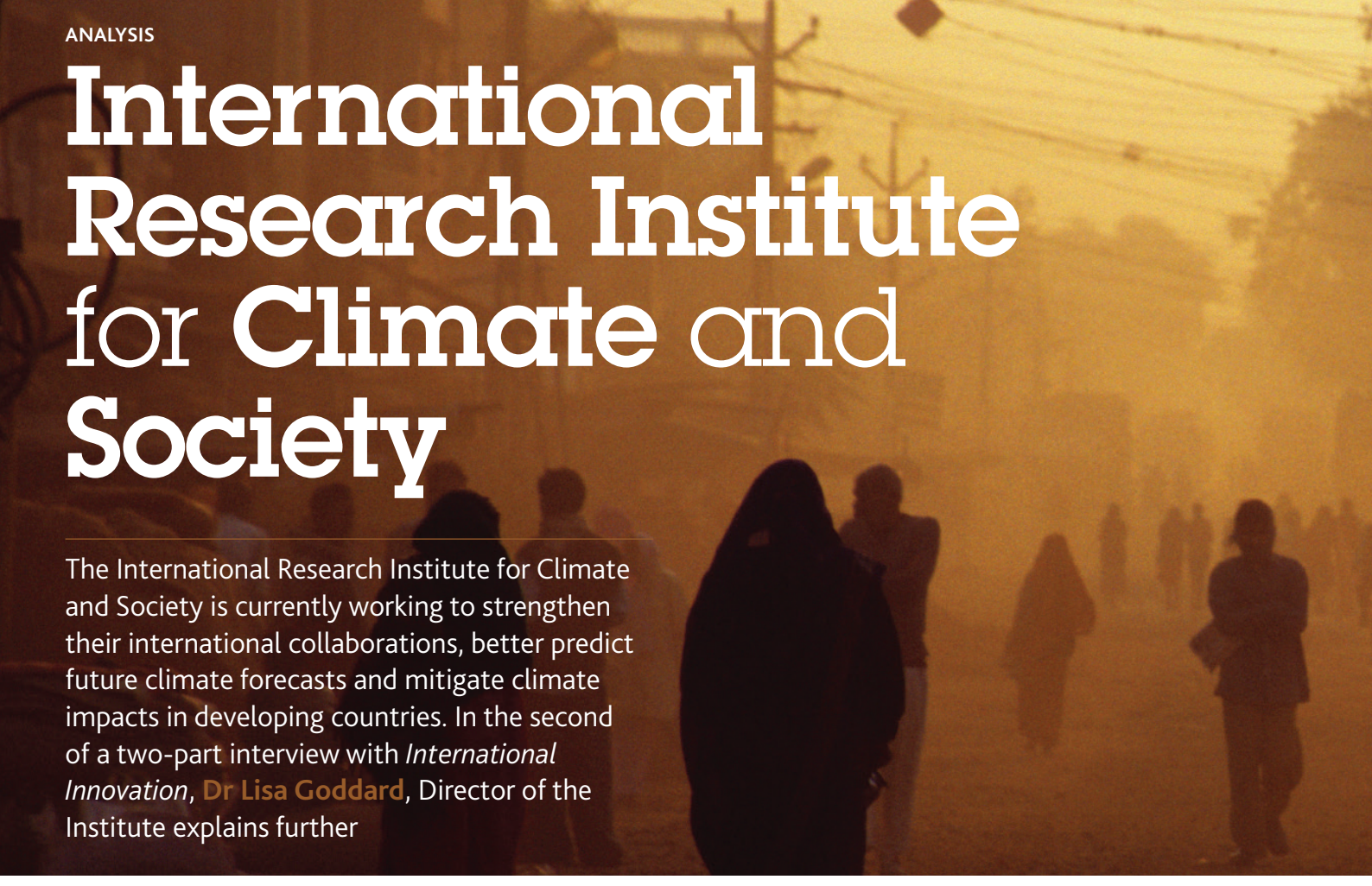
International Research Institute for Climate and Society



The International Research Institute for Climate and Society is currently working to strengthen their international collaborations, better predict future climate forecasts and mitigate climate impacts in developing countries. In the second of a two-part interview with *International Innovation*, **Dr Lisa Goddard**, Director of the Institute explains further

Every aspect of the International Research Institute's work is built upon international collaboration. Could you highlight some of these key partnerships and the work that they are facilitating?

Even the scientific information we provide is enabled by our international collaboration. Our seasonal climate forecasts, for example, are based on models developed in the US – at the National Oceanic and Atmospheric Administration (NOAA) Geophysical Fluid Dynamics Laboratory, the NOAA National Center for Environmental Prediction, and the National Center for Atmospheric Research – and at international modelling centres such as the Max Planck Institute and the European Centre for Medium Range Forecasts. Transforming those model predictions into probabilistic forecasts draws on our research partners in the UK, South Africa, Brazil, to name but a few. Our environmental monitoring work also draws heavily on collaboration between US and European space agencies and scientists.

In translating that scientific information for the benefit of society, our partners work at a range of scales, from national to international. At the national level, for example, we have been working with Ethiopia's meteorological agency. This work facilitates one of the first explicit examples of nationally-delivered climate services in Africa, and has become the model for similar initiatives in a number of other African countries. These efforts will allow more direct collaboration on decision support systems aimed at health, agriculture and hydropower/water resource management. An example of our international work is our partnership with the International Federation of Red Cross and Red Crescent Societies (IFRCs). We began working with a number of the IFRC's regional offices five years ago. One of our first successes with them involved an early warning of flood risk in West Africa in 2008 and our ongoing collaboration with the IFRC continues to focus on this concept.

By what means and to whom do you disseminate your seasonal climate forecasts?

On the third Thursday of each month we hold a climate briefing to release our latest set of seasonal climate forecasts, which anticipates whether a given locale will see near-, above- or below-normal rainfall and temperatures at various points in the foreseeable future. We review the current state of the El Niño-Southern Oscillation – a natural phenomenon that can have significant impacts on the global climate – and issue its forecast. We also review the performance of our previous month's forecast, and discuss recent climate and weather events that have played out across the world.

All of our forecasts are available on our website: http://bit.ly/iri_forecasts

Anyone can sign up to receive the forecasts each month, as well as our newsletter, via email: http://bit.ly/iri_subscribe.

What are the benefits of the of IRI's demand-driven approach to research?

The main benefit of demand-driven research is that it explicitly addresses the issues, concerns, and decision context of those who could make use of the information. It also, by necessity, connects to those users at the outset, and so it is more likely to get used and make a difference.

How has this approach been applied to delivering climate services in Africa?

One obstacle here has been the lack of observational data, which would be useful for assessing past impacts, monitoring the present, and informing potential climate-related risks in the near future. We have worked with the National Meteorological Agency in Ethiopia where we helped them to quality-control and merge station-based rainfall and temperature data with satellite-derived information. We also transferred our powerful Data Library and Map Room technology to their website. This has allowed the agency to deliver gridded historical information and current monitoring products through their website.

Farmers are one of the most at-risk demographics with regard to climate change impacts. Could you discuss some of the challenges you have faced working with this sector?

Farmers are very risk averse, particularly in areas of rainfed agriculture. They may be unwilling to take out loans for seeds because of the risk of drought – even if that risk may be relatively low. Even seasonal forecasts do not entirely address this concern; while they're able to predict that the risk of drought is lower in a particular year, the risk that remains is still one that many won't take on. In response, we have developed climate-based index insurance contracts that enable famers to take better advantage of the good years and feel, at least partially, covered in the event of a drought. The contracts are affordable because they are based on actual rainfall measurements and not on sending claims adjustors to farmers' fields to assess damage. This means reliable real-time observational data, as mentioned above, must underpin these products if they are to be effective. They also require appropriate estimates of climate risk, which should be based on current and future projected risk.

What activities have you conducted in light of the need for forecasts of extreme events for disaster risk reduction?

Through our collaboration with the IFRC and motivated by the organisation's shift toward early warning-early action, we are developing regional outlooks for extreme rainfall events based on information about the larger-scale climate predicted for the upcoming season(s). Of course it still will not be possible to predict where and when an extreme event will occur a season in advance, but even the indication of increased risk of such an event over a region is useful for disaster agencies, which can then more closely monitor weather forecasts. It may also allow for mobilisation of financial or human resources toward the region should the event occur.

Finally, could you offer some insights into your ongoing work on near-term climate change?

By 'near-term' we refer to what people perceive as climate change, but looking ahead to only the next several years and decades. At a 20-year time scale, for example, while manmade trends are an important consideration, natural variability is likely to dominate them for most areas, particularly for precipitation. Therefore, to provide information on years-to-decades, one must consider both manmade climate change and natural variability, both of which may change the character of weather events. All of these phenomena have implications for resource management, development and/or sustainability, and adaptation efforts.

The fifth assessment report from the Intergovernmental Panel on Climate Change (IPCC) includes experimental predictions for near-term climate change, also referred to as decadal variability. This is a very new discipline in the climate research and prediction community. Right now, we are investigating the quality of the information from near-term prediction models, in addition to what is provided from climate change projections. We are also working toward the characterisation of climate variability on timescales of days to decades (ie. how large are the fluctuations over time and compared to trends, how persistent have these fluctuations been in the past), so that this information can be used in the absence of good quality predictions of the next decade. As with our other research areas, our approach to prioritising our research questions and the way we communicate our findings is to connect with real world partners.

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