Climate risk management

The Access and Use of Climate and Weather Information in the International Federation of Red Cross and Red Crescent Societies: Initial observations from the field

Amir Jina (2009)

Background

In December of 2007 the International Research Institute for Climate and Society (IRI) at Columbia University's Earth Institute formed a partnership with the International Federation of Red Cross and Red Crescent Societies (IFRC). The Red Cross Red Crescent (RC/RC) Climate Centre helps facilitate the effort to provide the IFRC with tools and support to improve disaster management and decision making through climate information. Through this collaboration, IRI works to understand the needs of the IFRC and provide accessible and relevant climate information to support humanitarian decisions. Since 2007, IRI has developed ways to better serve the IFRC including: 1) a mapping tool, accessible to Disaster Managers around the world through IFRC's online Disaster Management Information System (DMIS), which displays precipitation forecasts on multiple timescales in the context of how the forecasted rainfall compares to normal rainfall for that time and place; and 2) a Help Desk, through which climate scientists aim to respond within 24 hours to inquiries from IFRC staff and volunteers regarding climate, weather and forecasts. Students from the IRI-affiliated Climate and Society Master's Program at Columbia University also help facilitate the collaboration between the IRI and IFRC through summer internship projects and research.

Climate change demands improved response and a greater emphasis on emergency preparedness and risk reduction.

The IFRC is the largest humanitarian organization with a network of about 100 million volunteers and staff in 186 countries to take action to respond to disasters. But response is only one element in the chain of action to reduce the impacts of disasters. Prevention, preparedness, early warning and early action are necessary to save lives, livelihoods and use resources efficiently. Climate change, rapid population growth, environmental degradation and other ongoing processes require a better understanding of vulnerabilities and risks. These notions are shared by the humanitarian community, as highlighted in the Hyogo Framework for Action, the 2009 Global Platform for Disaster Risk Reduction and the World Climate Conference-3. Early Warning for Early Action was the central theme of the 2009 IFRC *World Disasters Report*.

Opportunities

Effective use of weather and climate information has great potential to improve disaster preparedness and response.

The IFRC can utilize climate and weather information to trigger actions that will save lives and protect livelihoods. The information, however, needs to be readily available, reliable and easy to understand in order to support hu-

manitarian decisions. The usefulness of this information is affected by the policies that are in place for its use, the training and capacity of workers and volunteers, available resources and the type of crisis.

For example, climate information has the potential to greatly benefit work in the following humanitarian areas:

- Disaster Management: Seasonal precipitation forecasts, when accompanied by monitoring of rainfall on shorter timescales and 'no-regrets' strategies for flood preparedness, enable early warnings to be translated into early actions that save lives.
- Food Security and Livelihoods: Climate forecasts could be used to help ensure food aid is sufficient to meet the needs of food insecure populations, or to advise farmers on the best crops to plant based on anticipated rainfall, or when a harvest left to dry is at risk of being spoiled by rains.
- Health: Climate forecasts can also feed into early warning systems that enable disease prevention measures and health promotion activities that reduce suffering and impacts on livelihoods from climate related illness such as malaria, water-borne diseases and heat stress.

Yet the IFRC is not using climate information to its full potential. To better understand the humanitarian needs and current use of weather and climate information, the IRI and the RC/RC Climate Centre set up an initial fact-finding mission involving graduate students from Columbia University. These young scholars conducted surveys, interviews, meetings and workshops over two-month periods in 2008 and 2009. Scientists from the IRI provided technical support to the students, who were supervised by RC/RC Climate Centre staff. Some of the students worked with National Societies, others with small local offices, and others with Zonal or Regional offices that serve multi-country areas (see Figure 1). The US National Oceanic and Atmospheric Administration (NOAA) Climate Program Office provided funding for the project. While the research is ongoing, this report captures the key lessons learned to date.

Current Use of Climate Information

All IFRC offices reported using at least one type of weather or climate information.

In total, students identified 18 different types of weather and climate information used by IFRC offices, ranging from seasonal precipitation forecasts to flood alerts (see Figure 2). Weather and climate information is typically provided by national meteorological services and institutions that specialize in region-specific hazards (e.g. hurricanes or climate-related threats to food security). When asked why they prefer certain sources of information over others, IFRC staff most commonly identified the following reasons:

- The information is provided directly to decision makers or to IFRC staff at large through email, fax, SMS, a printout discussed at regular meetings, or is easily accessible via television or radio.
- The information provider has a good reputation or is widely trusted as a reliable source of information.
- The information is simple, non-technical and easy-to-use or interpret.
- The monitoring product is a "one stop shop" for disaster managers to get information on all types of disasters.
- The information is well displayed and organized.

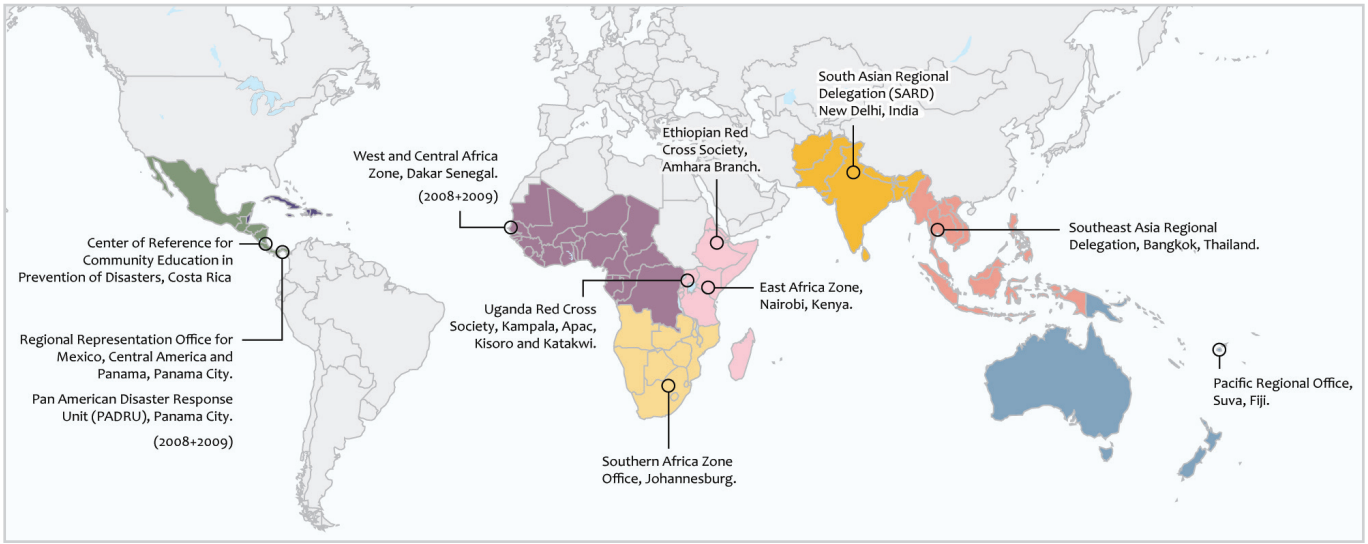

Figure 1. IFRC office locations where students conducted research.

Short-term weather forecasts are utilized most frequently by IFRC offices.

The three most commonly utilized types of climate information are short-term forecasts for cyclonic activity, one- to six-day weather forecasts (temperature and precipitation), and short-term flood forecasts and alerts (see figure 2). Flood forecasts have emerged as a common need across IFRC offices. National Societies and Regional offices in Central America, Southeast Asia, South Asia, East Africa, West and Central Africa all requested improved flood forecasts on various timescales. Currently, disaster managers typically receive flood forecasts no more than 48 hours before a flood. Frequently, alerts are sent as little as 10 hours in advance, or once flooding has already begun.

Although IFRC offices commonly utilize short-term forecasts, the manner and extent to which they are effectively integrated into decision making varies. Decisions for action are taken on a case-by-case basis and depend on many factors including: the type of hazard, the role and capacity of the national society, density and vulnerability of the population at risk and the role of other key stakeholders involved. For example, in Mexico, when a hazard is detected, the national society alerts its branches and mobilizes its national disaster response unit. In the case of a hurricane, the unit will arrive two days before the expected impact in order to prepare people, and to coordinate with state authorities and local Red Cross personnel to manage logistics, communications, humanitarian assistance,

	Pan-American DR Unit	Costa Rica Red Cross	Mexico Red Cross	Guatemala Red Cross	El Salvador Red Cross	East Africa Zone	Ethiopia, Red Cross	Uganda Red Cross	West and Central Africa Zone	Southeast Asia Regional Delegation	Philippines Red Cross	Indonesia Red Cross	South Asia Regional Delegation	Bangladesh Red Crescent	Pacific Regional Office	**Total**
Hurricane/Cyclone/Typhoon forecasts and alerts	√	√	√	√	√					√	√	√		√	√	**10**
Weather forecasts (short-term rain and temperature)		√	√	√	√	√		√		√	√	√	√			**9**
Flood Alerts and Forecasts	√	√	√	√	√			√		√	√	√				**9**
Seasonal Hurricane Forecasts	√	√	√	√	√											**5**
General Disaster Monitoring Tools	√	√		√			√			√						**4**
ENSO Forecasts and Information	√	√				√		√				√				**3**
Food Security or Locust Alerts						√		√	√							**3**
Info from Disaster Management Coordination Tools	√			√						√						**3**
Seasonal Precipitation Forecasts								√	√							**2**
Precipitation Forecasts in Context (On multiple timescales)									√				√			**2**
Seasonal Temperature Forecasts									√							**1**
Monsoon Forecasts									√							**1**
Climate-realted health warnings									√							**1**
Landslide forecast											√					**1**
Drought Monitoring							√	√				√				**1**
Rainfall Intensity Forecasts												√				**1**
Real-time High Resolution Satellite Monitoring		√														**1**

Figure 2.Types of weather and climate information reported as utilized by some IFRC offices

rescue, and pre-hospital medical assistance. In South-east Asia, the Regional Delegation will alert a National Society to a detected storm risk. The National Society then decides whether to request external assistance, position resources and alert volunteers.

West Africa innovation and collaboration in practice

In 2008, the IFRC West and Central Africa Zone used available climate information as an early warning for early action to good effect. After receiving a seasonal precipitation forecast from ACMAD in May 2008, indicating an enhanced likelihood for above-normal rainfall in the following July-September season, the WCAZ held a flood preparedness meeting where disaster managers from flood-prone countries developed contingency plans, country-specific risk maps, an early-warning system, partnerships and better coordination.

In late June, the WCAZ office received an updated seasonal forecast from ACMAD, confirming the earlier forecast. It then held a five-day Regional Disaster Response Team (RDRT) Team Leader's Training. The RDRT Team Leaders were prepared to conduct a rapid assessment of the impact and needs of the most vulnerable victims of the disaster; to write a flood contingency plan and a Disaster Relief Emergency Fund (DREF) request; to mobilize people, as well as logistical, financial and administrative procedures. Visas and medical insurance were secured for RDRT Team Leaders so that their deployment across borders could be expedited.

The Zone was able to use funds immediately available from the DREF to pre-position the emergency stocks around the region in order to be able to meet flood victims' needs within 24-48 hours. As a result, most countries received needed supplies in a matter of days after flooding. In contrast, the year before it took on average 40 days to deliver many relief items and services. A preliminary quantitative comparison between the costs of flood response alone (2006 and 2007) and the cost of flood response with Early Warning/Early Action (2008) also showed a 33% lower cost per beneficiary.

Reference: Braman (2009), Early Warning, Early Action: An Evaluation of IFRC West and Central Africa Zone Flood Preparedness and Response, 2008

Longer-term forecasts are also utilized, but IFRC offices are often less clear on how to take action or lack capacity to act.

IFRC offices are used to managing the uncertainty in short-term forecasts. Longer-term forecasts, however, are more difficult to translate into action. For example, many offices at the national and community level have a hard time envisioning how a forecast for 50% chance of 'above-normal' rainfall over the southeastern corner of their continent over the next 3 months could serve as a warning that translates into operational decisions on the ground. With the larger uncertainty of precipitation forecasts and their rather tentative connection to actual flooding events, decision-making requires a better understanding of the types of decisions that forecasts with longer lead-time can inform (see Figure 3).

A number of IFRC offices reported using or being familiar with longer-term forecasts for cyclone seasons, El Niño and La Niña, seasonal precipitation, climate-related health concerns and food security. Other offices reported being unaware of long-term forecasts, or unconvinced that they offered any useful information for operations. Even where IFRC offices receive long-term forecasts, it appears that they have trouble taking action based on this information. For example, in Central America and the Caribbean, the seasonal hurricane forecast is announced to disaster managers at the annual pre-hurricane season meeting. However, the seasonal forecast does not seem to influence the level of preparedness activities undertaken in the region--for instance, by enhancing funding and capacity at the start of above-average seasons. In the Pacific Islands region, where precipitation patterns are often influenced by the El Niño-Southern Oscillation (ENSO), offices have not yet begun to monitor seasonal precipitation forecasts and prepare accordingly.

A notable exception can be found in the IFRC West and Central Africa Zone (WCAZ), which began taking action for flood preparedness based on seasonal precipitation forecasts in 2008 (see box). The zone's 2008 success in acting on long-term forecasts was due in part to the collaboration with the RC/RC Climate Centre and information providers, the African Centre of Meteorological Applications for Development (ACMAD) and the IRI. As in West Africa, other IFRC offices need to work with information providers to assess opportunities and develop strategies for using long-term forecasts to improve on-the-ground work.

Although the IFRC is focused on preparedness in addition to response, acting on long-term forecasts is hampered by the reality that when hazards become disasters they trigger media attention, donor support and volunteer engagement. Carefully averted disasters, on the other hand, do not always capture the same kind of attention, and thus new mechanisms are required to trigger funding and support for preparedness activities that reduce risk based on longer-term forecasts.

Brian Kahn (2009)

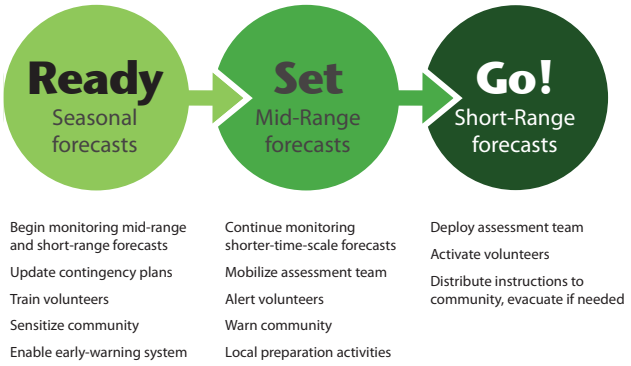

Figure 3: Translating warnings into action using forecasts at multiple timescales.

This figure was adapted from a presentation slide from: Daly, Meaghan. "Translating Climate Information Into Action: Considering Next Steps for Early Warning, Early Action in the West and Central Africa Zone." Columbia University, New York. August 5, 2009

Recommendations

1 Form Partnerships between Information Providers and IFRC Offices for Support, Training and Ongoing Dialogue

Partnerships between IFRC offices and information providers would provide the opportunity for continued support, training and dialogue necessary to realize the potential benefits of using climate information. Specifically, these partnerships should pursue the following goals:

A. Increase the Accessibility and User-Friendliness of Products

Many existing information products should be made more accessible and easier to use. The assumption that climate information will be utilized simply because a provider makes it freely available on a website is false. First, the user must find out that the product exists and then work with the provider to see that the information is delivered in a timely manner through the preferred means of communication (e.g. email, SMS, phone, etc). Ongoing dialogue and interaction between the information provider and end user is also necessary to ensure that relevant information is presented in a well-organized and non-technical format that is easy to understand. New types and sources of climate information should meet the criteria described above for preferred information sources. Regional and global products should be provided in the language of their intended users.

B. Provide New Products to Fill Information Gaps for IFRC Needs -Starting with Improved Flood Forecasting Tools Developed in Close Collaboration with the Designated National Hydrology Service Provider(s).

In some cases, IFRC offices could benefit from information products that do not currently exist. A number of IFRC offices expressed a need for improved flood forecasting tools. Collaboration between climate scientists, meteorologists and hydrologists to produce flood forecasts for the IFRC on multiple timescales is highly recommended. An improved flood tool should incorporate information related to climate, hydrology, population and vulnerability. Translating seasonal precipitation forecasts into flood forecasts would provide disaster managers with the same service that is provided to food security officers when the climate forecasts are translated into food security warnings, or to health officials when those forecasts are translated into dengue or malaria advisories.

C. Provide Training for IFRC Staff in the Use of Climate Tools and How Climate Information Could Trigger Humanitarian Action

Once climate information tools and strategies are identified IFRC staff will need additional training in how to make best use of climate information. This training may include:

- Learning to access and interpret climate information tools.
- Learning how to monitor seasonal forecasts in conjunction with medium-range and short-term forecasts.
- Understanding how to take action through a series of gradually increasing preparedness activities that start with a 'no-regrets' approach (investments that benefit the IFRC even if the forecasted event does not take place like updating contingency plans).
- Establishing channels of communication and decision-making within the IFRC that are prepared to receive and take appropriate action based on time-sensitive climate information.

Meaghan Daly (2009)

Ujala Qadir (2009)

Recommendations (continued)

2 Strengthen Organizational Capacity to Scale Up Risk Reduction and Preparedness Activities with Improved Use of Climate Information

The shift from traditional preparedness and response to early warning and early action using climate information could be supported by:

- Monitoring and evaluating the impact of early warning, early action on reducing the number of lives lost and minimizing suffering from climate-related disasters.
- Monitoring and evaluating the financial cost and benefits of early warning, early action over time.
- Educating donors on opportunities for benefiting from effective use of climate information.
- Adjusting mechanisms for donors beyond the DREF to allow for provision of funds before disasters have occurred.
- Considering establishment of a 'Global Safety and Resilience Fund' to capture the interest and highlight the need for increased funding to prepare for the increasing frequency and severity of hazards related to climate change.
- Recognizing IFRC offices and individuals who save lives, funds and minimize suffering through early warning, early action and other preparedness activities.
- Creating opportunities for IFRC offices to share best practices amongst each other in the use of climate information for early warning and early action.

Reference: This document was written for the WCC3 by Lisette Braman, Technical Advisor to the RC/RC Climate Centre. The document is a synthesis of reports, presentations and contributions of the following IRI/Climate Centre/IFRC interns from Columbia University's Climate and Society Masters Program: Sarah Abdelrahim, Julie Arrighi, Lisette Braman, Nickleson Cook, Meaghan Daly, Amir Jina, Brian Kahn, Caitlin Kopcik, Mary Mwangi, Ujala Qadir, Jessica Sharoff, Arame Tall, and Cynthia Thomson.

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