



## A BETTER CLIMATE FOR DISASTER RISK MANAGEMENT

*In June of 2008, the Red Cross issued its first-ever emergency appeal based on a seasonal climate forecast. An increased chance of above-normal precipitation in West Africa prompted the Red Cross to train volunteers, finalize contingency plans, and preposition stocks even before the rains began. When floods finally did overwhelm communities in Togo, Senegal, Ghana and the Gambia, the Red Cross was ready: Early action allowed them to distribute supplies within 48 hours of the onset of the floods and at one one-third the per-beneficiary cost of a similar response the year before.*

The Red Cross's experience represents just one of many recent efforts to use climate information for disaster risk management. Organizations including the World Food Programme and the UN Office for the Coordination of Humanitarian Affairs are just a few of the groups working to harness the potential of seasonal, decadal, and long-term climate information to improve livelihoods and protect lives.

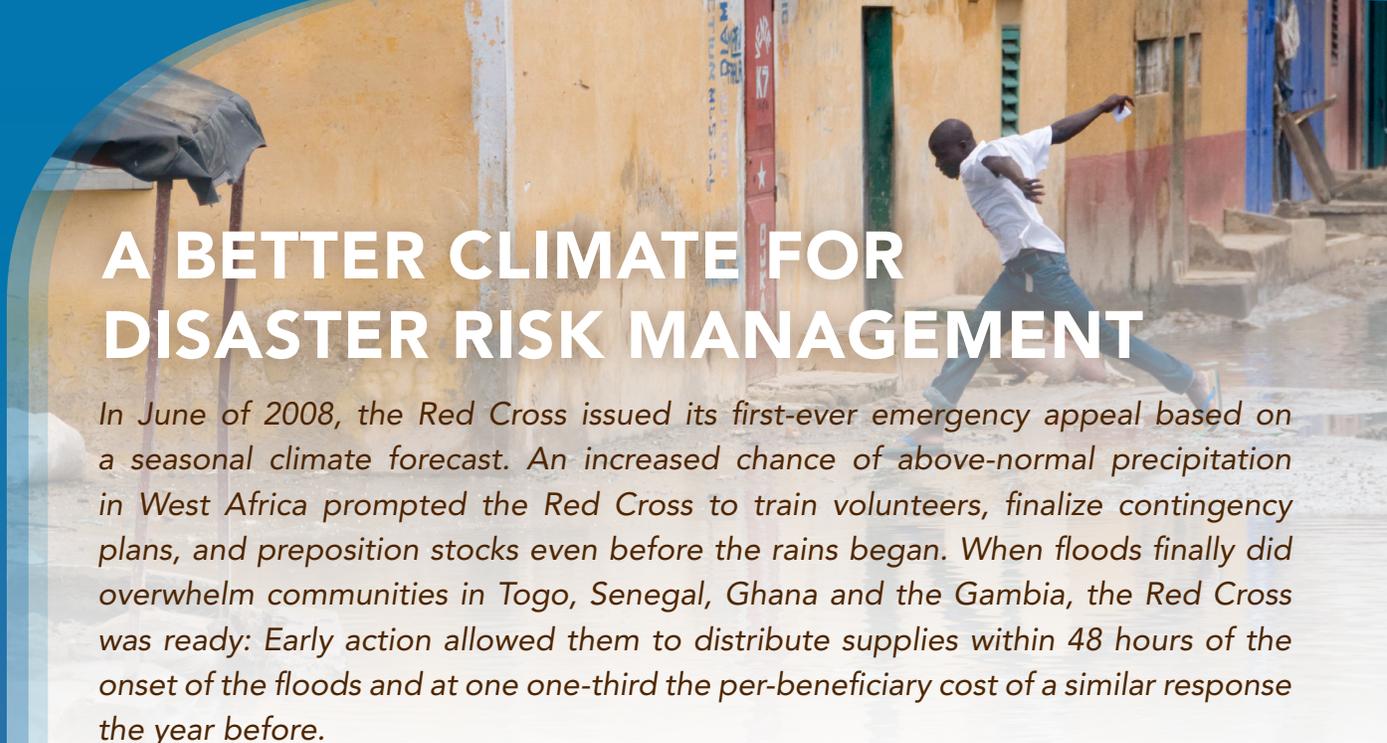
These efforts come at the same time that costs associated with climate-related disasters are on the rise. Among both disaster managers and national governments, these costs have fuelled an increased interest in preparedness and early action as a means to mitigate disasters before they occur. Rising costs have also underscored the fundamental role that managing climate risk plays in development, focusing the attention of the scientific community on the provision of climate services as a way to contribute both to climate change adaptation and to disaster risk management.

Climate services offer a range of benefits. While three-day weather forecasts are generally good only for last-minute life-saving decisions, medium-term and seasonal forecasts can be used to guide contingency planning, logistical prepara-

tions, and resource management decisions. At longer timescales, information about decadal and climate change trends help disaster managers evaluate how decisions and investments taken today will stand up to future extremes.

Information about the past is also important when planning for the future. Because our climate is influenced by seasonal, decadal, and long-term dynamics, disaster managers must work with climate scientists to understand the relative contribution of each of these components to past and thus future climate. Climate change adaptation strategies that do not take these overlapping forces into account may be ineffective.

To ensure that climate information usefully contributes to current and future welfare, humanitarian actors and climate scientists must work in concert – identifying problems, developing solutions, and taking action to mitigate climate-related risk. In this context, partnerships ensure that the information provided by climate scientists is salient and relevant to the problems and decisions faced by humanitarian actors. They also help translate scientific information into action by encouraging credibility and legitimacy.

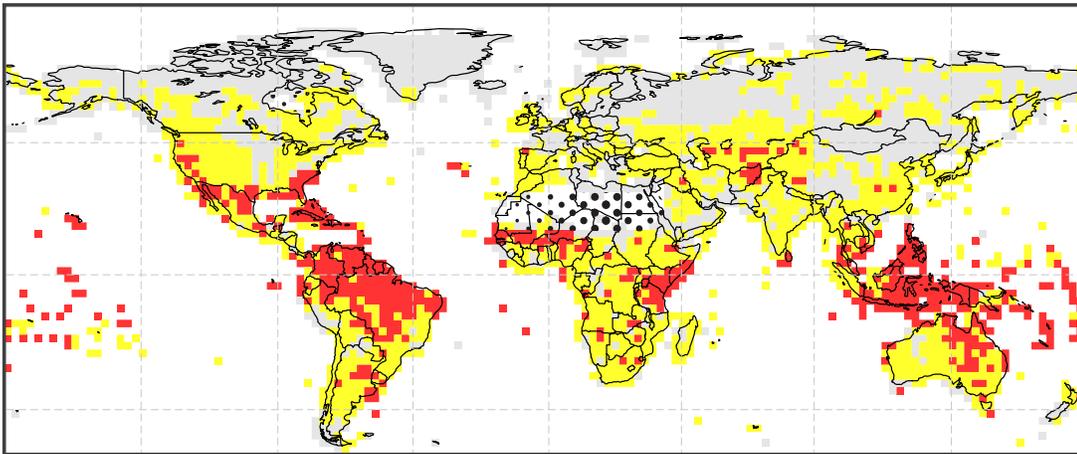


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## MAKING SCIENCE USEFUL FOR DISASTER RISK MANAGEMENT



### Precipitation forecast skill: best of all seasons



Disaster risk managers have frequently complained that climate information is difficult to use. Forecasts are often provided in technical probabilistic terms or by way of abstruse color-coded maps. Disaster managers also frequently take issue with the timing of forecasts, which do not always provide them with the lead-time they would like for preparedness or prevention. In some cases, the forecasted information is itself not useful. In these cases, disaster managers who want to know whether or not their region will experience flooding are forced to settle for a shift in the odds regarding overall seasonal precipitation.

To address these complaints, the partners on this publication have teamed up to create information that is useful for disaster risk management. The work has involved a range of different strategies from innovative research to improved presentation. Though efforts are still very much underway and lessons are still being learned, preliminary work reveals the importance of simplifying the presentation of information.

Simplifying the presentation of climate information involves identifying the questions that are most important to users, removing unnecessary information, and indicating suggested actions. Here we use the example of global skill maps to illustrate how good presentation can make climate information easier to use.

Skill maps provide an at-a-glance indication of where seasonal forecasts can be used for early warning. While forecast skill is incorporated into the forecast itself – that is, a higher shift in the odds represents a greater level of skill – skill maps like this one show areas where seasonal forecasts may rarely (“Little or No Skill”), sometimes (“Some Skill”), or often (“Good Skill”) provide useful information about rainfall for the next three months. Based on this information, disaster managers can decide whether or not seasonal forecasts are worth monitoring. For instance, in places where there is little to no skill, any shift in the probabilities is likely to be small and early warning opportunities will thus be very limited.

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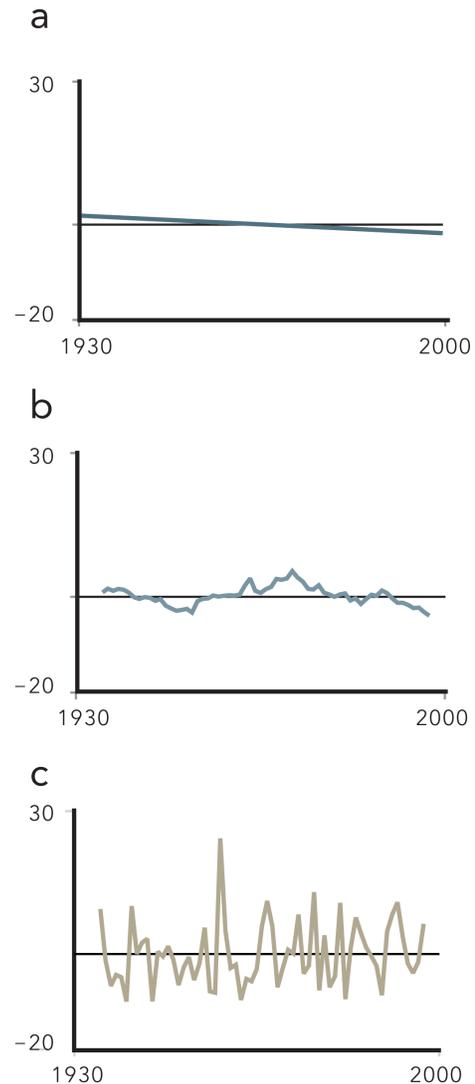
### EXAMINING THE MANY INFLUENCES ON CLIMATE VARIABILITY

Though most climate change predictions are made at coarse spatial scales, the impacts of climate change will be felt locally. This means that a good understanding of the local and regional dynamics of climate is essential to the development of effective adaptation strategies. While many efforts have focused on forecasting the future, examining the past is also an important part of understanding local climate.

Because local climate is influenced by seasonal, decadal, and long-term dynamics, this understanding requires an analysis of the relative contribution of each of these components. In places in which decadal variability plays an important role, for instance, the trend over the next 30 years could easily run counter to that associated with long-term climate change. In this case, disaster managers may have to adjust their expectations regarding climate change. This is equally true in locations, like the one represented by the following graphs, in which interannual variability is the dominant component in the time series.

In cases in which the necessary data is available, this type of analysis helps disaster managers get a sense of the way the climate-related risk faced by their region has changed and may continue to evolve over time.

This series of graphs shows the various timescale elements that contribute to historical precipitation. In the first graph, units are monthly precipitation; in the following three, units are anomaly from long-term mean, with the solid horizontal line represents the long-term mean.



*a) The variation in observed precipitation that can be explained through long-term change.*

*b) The variation in observed precipitation that can be explained through decadal variability.*

*c) Seasonal variability, obtained by subtracting long-term and decadal variability from overall variability.*

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Produced in partnership with a range of humanitarian organizations, *A Better Climate for Disaster Risk Management* highlights recent advances in the use of climate information to improve livelihoods and save lives. By analyzing experiences like that of the Red Cross in West Africa, the third edition of the Climate and Society Publication identifies the achievements and obstacles associated with this difficult endeavor. It also distills lessons learned and offers the following recommendations:

- » Actionable climate information is best created in dialogue between climate information users and providers. Partnerships between climate scientists and disaster risk managers should promote knowledge sharing, trust, and the development of innovative solutions.
- » Initial efforts to integrate climate information into disaster risk management should focus on immediate opportunities and potential quick wins. Practical engagements can be fostered by initially focusing on areas with relatively good seasonal forecast skill and influencing humanitarian decisions that provide strong and immediate returns on investment.
- » To ensure that disaster managers can use climate information in their daily activities, information should be integrated into decision-making platforms and attached to decision-making thresholds.
- » Climate scientists and disaster managers must work together to understand the relative contribution that seasonal, decadal, and long-term trends make to current and future climate. Climate change strategies that do not take these different dynamics into account may be ineffective.
- » Meteorological services must increase their interactions with users, with the goal of providing climate services to support disaster risk management and, ultimately, development. Climate information providers should tailor their information to the problem at hand, either by refining products with additional analysis or by simplifying the presentation.
- » Disaster risk managers must enhance their understanding of the potential and limitations of climate information. The development of realistic expectations is vital to maintaining trust with information providers.

*This policy brief includes preliminary findings prepared for discussion during the 16th Conference of the Parties to the UNFCCC.*



For more information on this process visit: <http://www.iri.columbia.edu/climateandsociety>