IRI Technical Report 10-05

Findings of the East Africa Humanitarian Climate Risk Management Workshop

International Research Institute for Climate and Society
Earth Institute at Columbia University

Authors
Meaghan Daly, Nancy Balfour, Molly Hellmuth, Simon Mason, Jenty Kirsch-Wood, Maarten van Aalst

International Federation of Red Cross and Red Crescent Societies

RED CROSS/RED CRESCENT CLIMATE CENTRE

International Federation of Red Cross and Red Crescent Societies
The Netherlands Red Cross

OCHA

Acknowledgements

This publication is largely a distillation of the outputs and contributions of the workshop participants. The authors would like to acknowledge the input of many stakeholders from development partners, relief organizations, universities, research institutes, the private sector, civil society, and non-government organizations, which were present at the workshop. In particular, we would like to acknowledge contributions from the Kenya Meteorological Services, ICPAC, University of Nairobi, IFRC and OCHA. We would like to acknowledge design services by Jason Rodriguez of IRI.

Collaborators:

International Research Institute for Climate and Society

International Federation of Red Cross/Red Crescent Societies

RC/RC Climate Centre

United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

Citation:

Daly, M., N. Balfour, M. Hellmuth, S. Mason, J. Kirsch-Wood, and M. van Aalst, 2010: Findings of the East Africa Humanitarian Climate Risk Management Workshop. IRI Technical Report 10-05. International Research Institute for Climate and Society, Palisades, NY, 43 pp. [Available online at http://iri.columbia.edu/publications/id=994]

Cover image:

Members of the climate and humanitarian communities team up to improve disaster readiness and response. IRI

Report available online at:

http://iri.columbia.edu/publications/id=994

Findings of the East Africa Humanitarian Climate Risk Management Workshop

23-24 February 2010
Nairobi, Kenya

Executive Summary

The East African humanitarian community is looking for ways to better respond to the challenges presented by climate risks, including climate change, but is struggling to access appropriate and targeted scientific data that can inform their operations. Recent advances in science and technology have produced a variety of new tools for humanitarian organizations working on climate risk management. Humanitarian actors have an enormous opportunity to utilize these tools to inform risk reduction, preparedness and contingency planning, as well as program implementation.

Despite such advances, many challenges remain to the practical application of these tools in the humanitarian context. Often times, climate information is too technical or lacks the context necessary for use in humanitarian planning and operations. Thus, climate information must be tailored to specific needs and presented in formats that are readily accessible to these users.

In response, the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), in close collaboration with the International Federation of Red Cross/Red Crescent Societies (IFRC), initiated the development of a 2-day Humanitarian Climate Risk Management Workshop on 23-24 February 2010.

Initiatives that enable interaction can help to bridge the divide between humanitarian practitioners and climate experts; feedback provided by end-users can guide research and development of new prediction technologies and tools, as well as more appropriate packaging of current information.

At the same time, humanitarian actors need to evaluate how such information can usefully inform their decision-making at various timescales. The challenge of decision-making under uncertainty must be addressed if climate information is to be used effectively within humanitarian planning, preparedness, and response. This workshop aimed to address such barriers to the use of climate information.

The first portion of the workshop was designed to provide regional humanitarian actors with a better understanding of the scientific basis climate variability and change, as well as an enhanced knowledge of climate information tools that could inform short- and long-term disaster risk management (DRM) and disaster risk reduction (DRR) strategies in E.A., through panel sessions and breakout groups.

The second portion of the workshop focused on the practical applications of climate information within humanitarian operations and built upon the knowledge gained during the first segment. This included a half-day contingency planning exercise using available climate information tools. This served to reinforce the operational value of integrating forecasts within planning and preparedness, as well as highlight the challenges and barriers that still remain to systematic incorporation of such tools within planning processes.

The third segment of the workshop involved group work sessions and a plenary to discuss and synthesize findings from the contingency planning exercise. This included sharing best-practice in humanitarian climate risk management (HCRM), as well as identifying barriers to the use of current available climate information to formulate recommendations to enhance their usefulness.

The workshop concluded with an overview of several new prediction methods being explored for the E.A. region. These presentations reinforced the notion that iterative feedback processes can usefully inform the development of useful climate information tools. It also underscored the need and opportunity to link strategies for seasonal climate risk management with climate change adaptation efforts at longer (i.e. decadal) time-scales.

One of the major goals of the workshop was to identify barriers to the current use of climate information. Barriers that were identified were grouped into three categories and are summarized here:

- **Interpretation:** difficulty in accessing, understanding, and interpreting inconsistent and technical formats of current forecasts
- **Translation:** lack of geographic and temporal specificity and climatological context to enable users to estimate probable impacts
- **Utilization:** lack of short-range (3-7 days) information for operational use and lack of thresholds to trigger specific action given uncertainty

Based on these barriers, participants developed 2 major recommendations:

1. **Strengthening of interagency cooperation mechanisms for using climate information to prepare and respond to rapid onset events.**
2. **Development of a "one-stop-shop" disaster risk management climate information platform designed to enhance decision-making across timescales**

These findings were synthesized for delivery at the Greater Horn of Africa Climate Outlook Forum on 25-26 February, which enabled the humanitarian community to directly communicate their climate information needs to the broader climate science community.

In alignment with these outcomes, the International Research Institute for Climate and Society, IFRC, and OCHA will partner to develop several climate information products by the end of 2010 that will be tailored for humanitarian use. Such products will include a regional map-room, which will provide forecasts of seasonal extremes, projections of near-term (i.e. in the next 30 years) climate change scenarios, and more appropriate packaging of existing climatological data and climate change projections.

Section 1: Background and Workshop Rationale

As documented through national and regional consultations undertaken by the Inter-agency Standing Committee (IASC)[1], there is a real demand for knowledge and information on how humanitarian disaster risk management can and is being enhanced through the integrated use of climate information.

[1] IASC standing member and invitee organizations include: OCHA, FAO, UNDP, UNFPA, UNHABITAT, UNHCR, UNICEF, WFP, OHCHR, WHO, IFRC, ICRC, IOM, InterAction, ICVA, RSG on Human Rights of IDPs, SCHR, WB

This is evident in East Africa (E.A.) where, despite the existence of various of climate information tools, the humanitarian community is still struggling to effectively and systematically incorporate climate information within their planning, preparedness, and response activities, both across geographic and temporal scales.

While the skill and accuracy of climate information has improved immensely in past years, forecasts and predictions will never be deterministic. The challenge of decision-making under uncertainty has limited the full integration of climate information within disaster risk management thus far. Additional challenges are presented when approaching this problem from the multi-hazard perspective from which the majority of humanitarian organizations operate.

The difficulty of using current tools is further exacerbated by the limited scope and practicality of information regarding the predicted implications of climate change, both in the near- and long-term. For example, the majority of current climate change projections provide expected end-of-century scenarios over large spatial scales. Lack of predictions at relevant time horizons and spatial scales is a current obstacle to instituting many disaster risk reduction strategies, as it is currently difficult for decision-makers to discern what approaches will be most suitable for managing impacts of near-term climate change (i.e. in the next 20-30 years).

The application of integrated climate risk management (CRM), which involves the utilization of climate information across a variety of timescales, offers the potential to address such challenges. Integrated CRM can enable the implementation of proactive strategies to lessen the deleterious impacts of current variability, while providing the foundation to undertake appropriate adaptation measures to better cope with longer-term shifts in climate.

Emerging research is likely to provide improved information regarding changing climate risks in E.A. over the next several decades. Such developments offer vast potential in helping the humanitarian community to address future climate risks. Yet, the sheer existence of such tools does not guarantee utility to humanitarian operations, as is clearly illustrated by the incomplete integration of currently available climate information tools within planning, preparedness, and response activities.

While such predictions are an immense improvement over the alternative of no information at all, there are additional barriers that limit optimal operational use; more consideration must also be given to the process of decision-making under uncertainty within humanitarian contexts. Thus, improved predictions must be combined with practical strategies for managing probabilistic information, as well as appropriate protocols, systems, and institutional arrangements to ensure consistent usage.

Moreover, the technical packaging of many climate information products can limit the interpretation and utilization of the information provided. Frequently, these tools lack the context needed to assess the range of impacts based on the predictions provided. For example, predictions for gross totals of rainfall over an entire season may not be useful unless users have pre-existing knowledge of local climatology. As such, these tools must also be tailored to provide the contextual grounding necessary for decision-making.

While the need to place climate information within appropriate contexts has been recognized by the meteorological community, there is still uncertainty on how to effectively do so. Currently, climate information is primarily generated in a linear, end-to-end fashion, whereby the tools are produced by scientists who generally have limited understanding of their practical applications. This is particularly true in the humanitarian sector.

In order to appropriately tailor these tools, processes that enable direct interaction and dialogue between the climate science experts, practitioners, and humanitarian actors must be actively undertaken. Provision of feedback can help climate scientists to better develop and communicate their predictions so that they are more user-friendly and relevant to disaster management and risk reduction decision-making. Boundary institutions, which utilize interdisciplinary approaches to integrate science and policy, are uniquely situated to facilitate such interactions.

This workshop is a necessary first step toward the direct engagement of the climate and humanitarian communities to enable appropriate customization of information and tools.

Section 2: Overview of Goals and Objectives of the East Africa Humanitarian Climate Risk Management Workshop

In response to these challenges and the expressed needs of regional humanitarian actors in E.A., the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) initiated the development of a 2-day Humanitarian Climate Risk Management (HCRM) Workshop. (See Annex 1 for Workshop Concept Paper)

Convened in partnership with the Inter-Agency Working Group for Disaster Preparedness in Central and E.A. (IAWG), the International Federation of Red Cross/Red Crescent Societies, the Red Cross/Red Crescent Climate Centre, the IGAD Climate Prediction and Applications Centre, and the International Research Institute for Climate and Society, the workshop was designed to connect representative scientific, climate and humanitarian actors from within the region.

Major goals of the workshop included:

- *Identifying climate information needs*
- *Improving knowledge of available climate information products*
- *Improving understanding of current climate prediction*
- *Exploring appropriate platforms for information dissemination across institutional scales and in inter-agency settings*
- *Exploring the use of probabilistic information for contingency planning and preparedness*
- *Developing joint recommendations for next steps to improve communication, delivery, and utilization of climate information in humanitarian contexts*

The workshop, held on the 23-24 February 2010, was timed to coincide closely with the Greater Horn of Africa Climate Outlook Forum (GHACOF), which took place on 25-26 February. Such timing ensured that the workshop would help build the appropriate mindset and capacity for the humanitarian community to more effectively consider how

the newly released seasonal forecast could be integrated within planning for the upcoming season.

Additionally, this allowed the humanitarian community to present the findings gleaned during the workshop during the GHACOF, to provide feedback to the broader climate science community. As many of the humanitarian organizations that attended the workshop are not integrated within the GHACOF process, this was an excellent opportunity to ensure that the climate information needs of the regional humanitarian and disaster management community were clearly communicated.

Section 3: Workshop Format

In many cases, dissemination of climate information is viewed as a transfer from the "experts" (i.e. the climate science and meteorological community) to the "non-experts" (i.e. users). Yet, this mode of communication can often inhibit maximum understanding of presented material for several reasons.

In such formats, the audience plays a passive role in the absorption of critical information. Thus, climate experts may over-utilize the technical language with which they are comfortable and are not challenged to present the information in terms that are comprehensible to lay-people. This can pose a challenge to effective communication between the two groups, as language can be a barrier to information brokering. Thus, climate information must be communicated in approachable terms, which are clear across disciplines, in order to maximize absorption of content.

Therefore, rather than relying solely on uni-directional transfer of information (i.e. from scientists to humanitarian practitioners), these workshop sessions were designed to promote maximum interaction between the humanitarian and climate science communities and participants were encouraged to actively ask questions. As such, the technical aspects of climate science were conveyed through interactive panel discussions and break-out group sessions.

Additionally, activities were integrated within the schedule to enable practitioners to apply the knowledge they had gained during the technical portion of the workshop to concretely conceptualize how climate information can be integrated in their day to day operations. This entailed a contingency planning exercise and small group activities.

The following provides an overview of some of the workshop activities and a brief explanation of the format and process. (See Annex 2 for complete workshop schedule.)

Ask the Climate Experts: Frequently Asked Questions from the Humanitarian Community

Drawing from questions gathered from an electronic survey distributed to participants prior to the workshop, this session allowed the humanitarian community to engage scientists directly to address specific questions and concerns. (See Annex 3 for Climate Science Questions from Humanitarians.)

Building a Climate Information Toolbox: Training Session

During this session, participants divided into breakout groups. Climate expert facilitators were asked to address a specific time scale of climate information (short to mid-range weather and climate predictions, seasonal predictions, and long-term climate change projections) during a 30-minute session with each group, before rotating through to each of the groups. Facilitators were asked to provide participants with: 1) an overview of tools available at this time scale, 2) a brief explanation of how the tools are produced, and 3) recommendations regarding how this information could be interpreted for use within the humanitarian sector. During this session, facilitators were requested to avoid use of PowerPoint to enable more direct interaction and discussion.

Climate Informed Contingency Planning

Participants were asked to develop a detailed contingency plan based on background country information and seasonal precipitation forecasts provided. Participants were then given updated information and forecasts at shorter timescales and asked to adjust their contingency plans and/or response activities accordingly. (See Annex 4 for Workshop Activities.)

Section 4: Workshop Attendance

Attendees were convened under the umbrella of Inter-Agency Working Group for Disaster Preparedness in Central and East Africa (IAWG). This ensured the participation of a wide range of humanitarian actors, including UN agencies, IGOs, and NGOs. (See Annex 5 for detailed participant list.) Approximately 50 representatives from over 25 international, regional, and national organizations attended the workshop.

The variety of participants was useful for a several of reasons. Incorporating diverse institutional perspectives, mandates, and capacities enabled all participants to gain an understanding of how other organizations are responding to the climate challenge. This type of inter-agency collaboration and information sharing will be useful for future efforts to improve coordination in the realm of climate risk management. Additionally, the array of representation ensured that issues were approached from a multi-hazard perspective.

While there was a wide range of participants, it was noted that governmental representation was lacking. This was largely due to the workshop's regional scope, which posed a challenge to integrating national level governmental structures, as well as the fact that many governmental actors were already slated to attend the Disaster Management user session of the GHACOF. Future efforts, however, should strive to incorporate governmental actors to provide a more integrated and cohesive approach to CRM.

Section 5: Workshop Findings

Several key messages surfaced during the workshop. Most fundamentally, participants recognized that current climate information has significant potential to usefully inform humanitarian operations and to enable more effective early warning, early action strategies. This realization was enhanced particularly during the contingency planning exercise.

Despite this recognition, several major barriers to the effective use of climate information were identified. Conceptually, these obstacles can be grouped into three main categories: ***interpretation, translation, and utilization.***

Interpretation:

Participants identified 4 main barriers to interpretation of current climate information:

1. Too Technical

Interpretation roughly refers to the ability of participants to successfully extract relevant and accurate information from the climate information products available to them. The challenges of interpretation varied among the tools and across the time scales. Generally, however, the majority of the participants found that the information was provided in formats that were too technical.

For example, there was widespread difficulty understanding most seasonal forecasts, which are presented in a tercilistic format (three evenly divided categories) providing the probability of above normal, near normal, or below normal rainfall, relative to historical averages. These broad categories are challenging to understand and correlate to early preparedness and action, as they provide little information about the extremes that are highly correlated with disaster events.

For example, it is important for users to understand the fact that without any prediction, each of the categories (above, normal, below) would have a 33% chance of occurring. Many of the participants acknowledged that they did not understand how these terciles were formulated. Thus, relatively small shifts in probability, from the initial 33% to 40% for example, can often be misinterpreted.

2. Inconsistent Packaging

Additionally, participants found that because the tools are produced by various institutions and often for a range of audiences, packaging across products was inconsistent and often confusing.

For example, in the FEWS NET maps, green signifies areas of relative food security, implying that no action is necessary. On the other hand, maps produced by ICPAC may use green to signify regions where higher than average rain is the most probable outcome for the upcoming season. This may imply the need to undertake early action to prepare for the upcoming rainy season. Between these two tools, the colour green has completely opposite implications in terms of humanitarian preparedness activities.

Thus, there is a need for clear and consistent packaging across products used by humanitarian actors, which will enable users to quickly identify if and where action is necessary. This will require coordination among information producers and clear explanation of colour schemes and map keys.

3. Not Easily Accessible

While some climate information products were well known amongst participants, many of the other tools were not widely disseminated. Many of the tools require users to navigate from the producing organization's home page and to know

exactly where to access forecasts and predictions.

In other instances, the forecasts are not readily available online. In some cases this was because forecasts are only distributed to a select mailing list. Alternatively, some organizations fail to update their websites regularly, meaning that information provided is outdated and no longer relevant to future decision-making.

Additionally, participants raised questions about the accessibility of raw climate data (such as daily precipitation measurements) at the national level. Many times, such data is collected for internal use within national meteorological services, but is not made freely available to the public.

4. Difficulty Relating Probability to Magnitude of Impacts

Many of the participants expressed difficulty in assessing how to interpret probabilities in a way that would provide them with a sense of the magnitude of the impacts. For example, when utilizing a seasonal forecast that had an enhanced probability of higher than average rainfall, participants were unsure how to estimate the scale of their preparedness activities. The category of "above normal" covers a wide range of outcomes, as there is no way of differentiating between the likelihood of conditions that are likely to only slightly exceed the threshold for above average rainfall and those that are expected to greatly exceed it. Additionally, predictions for near-normal seasonal averages do not preclude the incidence of extreme events.

At the seasonal level, this problem may be partially solved by creating alternative predictive thresholds with which may be more descriptive from the humanitarian perspective. For example, rather than using simple terciles, in which each category would have an equal 33% chance of occurrence, it could be more useful to produce forecasts to describe the probability of extreme events. For example, predictions could be tailored to hone in the likelihood of the driest 15% or wettest 15% of the historical record, which would provide disaster managers with a better indication of the likelihood of conditions that could lead to a disaster.

Translation:

During the contingency planning exercise, it became clear that forecasts were difficult to translate to impacts, for several different reasons. It was noted that in the Greater Horn of Africa Region that much has been done to monitor and capture slow-onset events, such as drought.

Yet, there is a limited capacity to link the information that is currently available with rapid onset events, such as flood. While rather sophisticated tools exist to provide the context necessary to monitor and evaluate the need for action for areas like food-security, no such specialized tools exist for flood risk in E.A. There is currently no flood prediction capacity for the majority of the region.

There is also a lack of relevant climatological context (i.e. comparison to past events) for the forecasts to help users to evaluate the level of risk they will face over the upcoming season. Several suggestions were made, such as changing the percentile range of the forecasts (as discussed in Section 4), providing analogue years for comparison, and/or estimating a

range of outcomes based on historical outcomes.

Limited temporal and geographic specificity of current climate information compounds the problems listed above. Participants were interested in receiving downscaled forecasts that could support more localized decision-making. Additionally, there was an expressed need for more detailed indications of exactly when extremes were likely to occur over the next months, rather than precipitation totals over the entire season.

Utilization:

Through the various exercises undertaken during the workshop, participants came to the conclusion that currently, seasonal forecasts are being used most effectively for strategic decision-making. For example, seasonal forecasts have informed activities like tactical resource allocation, prepositioning of stocks, and budget allocation.

Conversely, this underscored the relative lack of useful information at operational timescales (3 to 7 days) that could help mobilize preparedness in the short-term lead up to disaster events. Many national meteorological services do not produce reliable forecasts beyond 24-48 hours in advance. Even when this information is produced, much of this information is provided in textual form and it is not disseminated to effectively reach the humanitarian community.

Another barrier to utilization identified is the difficulty in navigating to forecasts within meteorological and climate websites, especially if users are not made explicitly aware that the forecast exists. Additionally, short-term forecasts are produced by national meteorological services, while regional climate centres generally distribute the seasonal forecasts. This requires time, knowledge, and navigation of multiple web sites to extract relevant information to inform operations across the necessary timescales.

Furthermore, participants struggled to correlate long-term climate change projections, which are accompanied by high levels of uncertainty, with specific impacts and risks. For example, current technology limits the spatial resolution of long-term projections. Many of the global models presented in the International Panel on Climate Change (IPCC) Fourth Assessment Report provide information at the scale of 250 square kilometres, a dimension that is not particularly useful to humanitarian activities, since it is well known that the impacts of disaster events vary widely at local levels.

Furthermore, the outcomes of long-term projections for changes in temperature and precipitation are primarily dependent upon future carbon emissions scenarios, which are highly unpredictable due to current lack of regulation. Such uncertainty can limit the ability of practitioners assess likely impacts in order to implement appropriate adaptation efforts.

Lastly, participants indicated that the systematic use of climate information is limited by the existence of thresholds to trigger action. While the forecasts provided helpful information, it is unclear at what level concrete actions should be undertaken. Therefore, consideration must be given to linking forecast scenarios with systematic preparedness and response measures in the short-term.

Section 6: General Recommendations

Based on the barriers to the interpretation, translation, and utilization of climate information, it was possible for attendees to formulate general recommendations for delivery to the climate science community. The obstacles identified resulted in 2 main recommendations:

1. Creation of interagency platforms or cooperation mechanisms for rapid onset events.

It was recognized that there is little interagency coordination for rapid onset events. Thus, the recommendation of the development of an interdisciplinary, interagency platform to more effectively enable collaboration was recommended. Such a platform would bring humanitarian actors and providers of climate information together for more integrated management of risks posed by rapid onset events.

A key component of this recommendation is that the platform be led and directed by the humanitarian sector. This is essential, as it will ensure that the processes are demand-driven and will help to avoid overly technical presentation and packaging of information.

Such a mechanism will also enable sustainable conduits for dialogue and information sharing, particularly between the humanitarian and climate sectors. The workshop highlighted the benefit of such interaction. Continued interaction will facilitate improvements in the way that climate information is produced, disseminated, and utilized.

Additionally, the development of this type of platform will help to prevent the proliferation of parallel processes. It is clear that there is a growing understanding of the need to improve organizational capacities to undertake more comprehensive CRM strategies. Such a cooperative structure can ensure that as various organizations move forward in this realm, efforts can be streamlined to avoid negative duplication of effort.

In the E.A. region, the food security sector already utilizes collaborative interagency platforms. For example, the Food Security and Nutrition Working Group has been a successful example of such interagency cooperation. Additionally, the food security sector also organizes a sector-specific post-GHACOF meeting to interpret the implications of the forecast. Thus, it will be helpful to evaluate and build from previous experience in other sectors to develop similar capacities for rapid onset events.

2. Development of a DRM climate information platform designed for decision-making across time scales.

Effective early warning, early action strategies require the monitoring and utilization of climate information at a variety of time-scales. This can be likened to a “Ready, Set, Go!” model, in which planning and preparedness activities can be undertaken in advance at various lead-times to improve preparedness in advance of a disaster and efficiency once response is needed. (See Figure 1)

For example, seasonal (3 month) forecasts can be used at the “Ready” stage to inform activities such as strategic resource allocation or training of volunteers. At the “Set” stage, mid-range forecasts (3-10 days)

can be used to mobilize resources. Short-range forecasts (0-2 days) utilized at the "Go" stage can then inform the explicit deployment of resources or evacuation just prior to the occurrence of the event in question. Since forecasts have more accuracy as lead-time decreases, activities undertaken at the "Set" and "Go" stage can be undertaken with more temporal and geographic specificity than those at the seasonal scale.

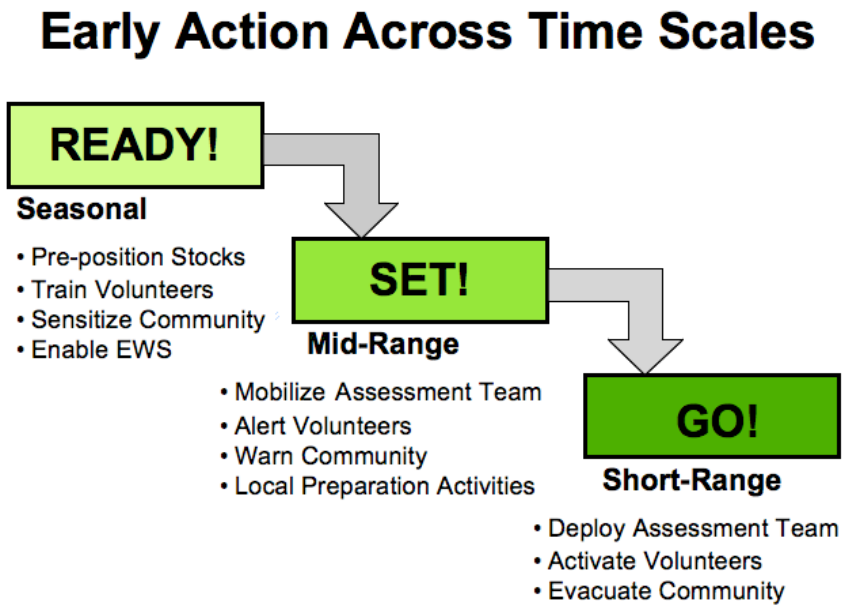


Figure 1: Effective CRM links early actions and climate information across timescales.

Currently, this strategy is most readily applied at seasonal timescales. Yet, the same conceptual approach is relevant for the CRM at timescales associated with long-term climate change. Successful CRM for longer timescales will rely on the use of flexible, no-regrets adaptation strategies, which can be adjusted as uncertainty is decreased through updated information at shorter lead-times. Thus monitoring across timescales is an effective management strategy for both current and future climate risks.

Workshop participants recognized the value of utilizing climate information at a variety of time-scales; however, utilization of multiple climate information products is currently difficult and time-consuming, due to the fact that they are produced and disseminated by various organizations.

Thus, there is an expressed need for a comprehensive "one-stop-shop" platform that can facilitate streamlined access to relevant forecasts across timescales. The tools in this platform should be presented in a consistent fashion, with corresponding formats and delivery. Such a platform will be likely to help humanitarian actors to more consistently and systematically manage

uncertainty and to undertake effective early actions prior to disasters.

Section 7: Delivery of Workshop Findings at the GHACOF

The workshop was timed to closely coincide with the GHACOF on 25-26 February 2010. This provided an excellent opportunity for the findings and recommendations discussed in the previous sections to be delivered directly to representatives of the regional climate science community.

This was an important development, as previously there had not been any representation from the broader humanitarian community at the GHACOF; the majority of the attendees are either climate scientists or representatives from government agencies. Additionally, most of humanitarian actors attending the HCRM workshop had not previously been aware of the GHACOF proceedings. Thus, given the current lack of engagement between humanitarian and climate science community at the regional level in E.A., it was significant that the climate information needs of the humanitarian community were clearly represented through the delivery of workshop findings at the GHACOF.

This presentation of findings served to initiate a meaningful dialogue between the regional humanitarian and climate science communities. Many of the findings and recommendations from the HCRM workshop were cited during other GHACOF sessions, illustrating that the needs of the humanitarian community had resonated within the climate science circles. This kind of iterative feedback process will be essential to improving the utility of climate information in the humanitarian sector in the future.

Section 8: Conclusion

There are inherently high levels of uncertainty associated with long-term climate projections, yet it is clear that climate change will bring about a changing and growing set of risks that humanitarians must manage. This necessitates the monitoring and use of climate information at shorter timescales to effectively cope with such uncertainty.

Thus, integrated CRM offers a means of responding to the increasing challenges presented by climate change, while also more effectively managing the risks imposed by current climate variability. It is clear that the East African humanitarian community is eager to increase knowledge and capacity in the realm of CRM, as was reflected by the strong attendance of the workshop.

All workshop participants who responded to the post-workshop survey indicated that the workshop had met or exceeded their expectations in terms of improving their knowledge of available climate information tools and how these tools might be useful to humanitarian decision-making, including the exploration of platforms for information dissemination.

Several participants expressed a desire for more opportunities to develop a better understanding of cutting edge prediction science. This may be explained by the fact that the presentation of the new prediction science is an inherently technical topic, as well as the fact that this was the only portion of the workshop where scientists were allowed to use PowerPoint as a presentation tool, which may have limited the interaction and dialogue between presenters and participants. This should

be kept in mind for future workshop processes.

Additionally, many participants articulated a desire to devote more time to the climate information contingency planning exercise. While the exercise lasted 3 hours, in the future it would be good to allot 4-5 hours. In addition to providing participants with sufficient time to complete the exercise, it is also important to ensure that there is an opportunity to review each group's plans and findings.

When asked to identify major skills gained through the workshop, participants identified two major areas in which they felt they had acquired new knowledge: 1) improved ability to interpret climate forecasts and predictions and 2) an improved ability to integrate early warning information within contingency plans.

The format of the workshop contributed to success in these realms. Through the facilitation of direct interaction and conversation between scientists and humanitarians, via interactive panels and breakout groups, participants were able to ask questions when they did not understand content. This ensures more thorough absorption of information presented. Additionally, the climate informed contingency planning exercise required participants to directly apply what they had gleaned during their interactions with climate scientists. This enabled comprehension and appreciation of the practical implications of the knowledge they had gained.

While the workshop was designed specifically to meet the needs of the humanitarian community, the workshop process was also mutually beneficial for the climate science community. The climate scientists who participated directly in the workshop expressed that they had gained a better understanding of the realities of humanitarian operations. Climate scientists want their forecasts to provide societal benefit, but often struggle to identify how to make their forecasts and predictions more user-friendly. Clear and concise communication of expressed needs from users, as was done at the GHACOF, helps scientists to understand what users require from forecasts and predictions in order to help them make meaningful decisions.

While this workshop represents a meaningful step towards better integration of humanitarian and climate science communities, it will be necessary to consider how to facilitate sustained interaction between the East African humanitarian and climate science communities. The development of interagency CRM cooperation mechanisms and information platforms offers a means to institutionalize this dialogue.

Section 9: Next Steps

As a direct result of this workshop, the E.A. humanitarian community was involved in the GHACOF process for the first time. There is a clear opportunity to continue to build the ties between the humanitarian and climate communities, though continued engagement at future GHACOFs.

Yet, attendance of the GHACOF by humanitarian actors will not be enough. It will be necessary for the humanitarian community to develop a forum to aid in the systematic interpretation and use of the forecast within their operations. Such a forum could be modelled after the Food

Security Outlook, which takes place as a separate process from the main GHACOF activities and enables more detailed contextualization of the seasonal forecast for the food security sector. It will be essential to identify viable institutional arrangements that will enable such activities in the humanitarian realm. The IAWG offers a potentially useful framework for continuing efforts in this realm.

Furthermore, it will be necessary to supplement currently available climate information with forecast and prediction tools that are designed specifically to meet the needs of the humanitarian community. In response, the IRI and IFRC have initiated the development of a regional map room for East Africa, which will combine innovative packaging and cutting edge prediction technologies in a “one-stop-shop” platform.

Climate information products being developed for this regional map room include prediction of seasonal extremes and near-term climate change projections. Combined with existing predictions, such tools will enable more comprehensive CRM at a variety of timescales.

Such opportunities are not limited to the E.A. region. This recognition has motivated the development of similar workshop and map room processes in the South African and East Asian regions. Such efforts will be implemented through ongoing partnership between the IRI, IFRC, and UNOCHA during the remainder of 2010.

Annex 1: Humanitarian Climate Risk Management Workshop Concept Paper

HUMANITARIAN CLIMATE RISK MANAGEMENT WORKSHOP

Nairobi, Kenya
23-24 February 2009

The East African humanitarian community is looking for ways to better respond to the challenges presented by climate change, but is struggling to access appropriate and targeted scientific data that can inform their operations. Recent advances in science and technology have produced a variety of new tools for humanitarian organizations working on climate risk management. Examples include satellite data to monitor extreme hazard events in real time, as well as predictions ranging from short-term weather events, to seasonal precipitation amounts, to long-term climate change trends. Humanitarian actors have enormous opportunity to utilize these tools to inform risk reduction, preparedness and contingency planning, as well as program implementation.

Recent efforts to build relationships and to establish joint initiatives between climate information producers and humanitarian actors within the Greater Horn of Africa region have enabled significant progress toward reducing the impacts of climate-related disasters and to address the challenges posed by climate change. For example, IGAD's Climate Prediction and Applications Centre (ICPAC) has facilitated activities involving Regional and National Meteorological Services and Red Cross/Red Crescent National Societies, with a view toward increasing regional collaboration with scientific institutions to bridge the gap between climate science and disaster risk reduction, preparedness, and response.

Such initiatives are imperative to successful climate risk management, as the amount and the complexity of current monitoring, predictions, and projections has often limited practical use within many humanitarian settings; climate information must be tailored to specific needs and presented in formats which are readily accessible to such users. At the same time, humanitarian actors need to evaluate how such information can usefully inform their decision-making at various timescales. Thus, direct and sustained communication between these sectors must continue, to ensure the integration of feedback provided by end-users within the research and development of new prediction technology and tools. Forums that enable and promote mutual learning and constructive dialogue will be necessary in order for climate information to achieve its full potential as a means of improving disaster risk reduction efforts.

This workshop will be designed to build upon existing regional partnerships and to bring together a broader spectrum of humanitarian practitioners and climate specialists to discuss the current needs, challenges, and opportunities for using information on current climate variability and future climate change scenarios in E.A. It will also be a forum to present best practice and to review what state of the art climate services can currently provide in terms of actionable information.

Participants from the humanitarian sector will include the United Nations Office for the Coordination of Humanitarian Affairs, the International Federation of the Red Cross and Red

Crescent Societies, and other regional non- and inter-governmental entities, including members of the Interagency Working Group for Disaster Preparedness for Central and East Africa. Primary participants from the climate science community will include ICPAC and the International Research Institute for Climate and Society, with the possible attendance of other regional and international climate centres, including other Regional and National Meteorological Services from the East Africa region.

The workshop will be a 2-day event. This will include technical training sessions, to be hosted by the climate science and humanitarian communities, as well as interactive sessions to apply knowledge gained. This will include cross-sectoral working groups, simulation of climate informed humanitarian decision-making processes, and provision of joint recommendations and next steps.

Major goals of the workshop include:

- Better understanding of the climate information needs of the humanitarian community to inform refinement of existing tools and development of future tools
- Improved knowledge of available climate information tools and how they might be applicable to humanitarian operations
- Better understanding of cutting edge climate prediction science and what this may offer the humanitarian community now and in the future
- Exploration of platforms for information dissemination which are appropriate across institutional scales and in inter-agency settings
- Exploration of the implications of the use of probabilistic and uncertain information within humanitarian decision-making across temporal and geographic scales
- Development of joint recommendations for next steps to improve communication, delivery, and utilization of climate information in humanitarian contexts

This workshop is sponsored by the United Nations Office for the Coordination of Humanitarian Affairs. Additional support is provided by the International Federation of the Red Cross and Red Crescent Societies – East Africa Regional Office, the Red Cross/Red Crescent Climate Centre, IGAD Climate and Prediction Applications Centre, and the International Research Institute for Climate and Society.

Annex 2: Workshop Schedule

HUMANITARIAN CLIMATE RISK MANAGEMENT WORKSHOP
23-24 February 2010

Day/Time	Session/Activity	Speakers/Facilitators
DAY 1: Technical Sessions		
23 February		
8:00 am	**Welcome**	Pierre Gelas (OCHA) Dennis Johnson (IFRC)
8:10 am	**Linking Climate Science and Humanitarian Action** *Introduction and game*	Simon Mason (IRI) Meaghan Daly (Red Cross/Red Crescent Climate Centre)
8:30 am	**Ask the Climate Experts: Frequently Asked Questions from the Humanitarian Community** *Expert panel*	Samuel Mwangi (Kenya Meteorological Department) Joseph Mutemi (University of Nairobi) Simon Mason (IRI)
10:00 am	Tea Break	
10:30 am	**Building a Climate Information Toolbox: Training Session** *Small group training session*	Peter Omeny (Kenya Meteorological Department) Samuel Mwangi (Kenya Meteorological Department) Joseph Mutemi (University of Nairobi)
12:00 pm **12:30 pm**	**Climate and Health: Early Warning and Impacts** Lunch	David Gikungu (Kenya Meteorological Department)
1:30 pm	**Climate Informed Contingency Planning** (Part 1) *Group work*	Meaghan Daly (Red Cross/Red Crescent Climate Centre) Nancy Balfour (IFRC)
3:00 pm **3:15 pm**	Tea Break **Climate Informed Contingency Planning** (Part 2) *Group work and debrief*	
4:30 pm	**Debrief and wrap-up**	Meaghan Daly (Red Cross/Red Crescent Climate Centre)
5:00 pm	**Break for day**	

DAY 2: Informational Sessions		
24 February		
8:00 am	**Daily welcome**	
8:10 am	**A Better Climate for Disaster Management: Climate and Society Publication** *Presentation and Q&A*	Molly Hellmuth (IRI)
8:30 am	**Putting Climate Information to Work: Current Efforts and Practice** *Presentation and Q&A* • *IFRC and ACMAD: Early Warning, Early Action in 2008 Floods* • *OCHA: Lessons from South Africa* • *ICPAC: Partnerships with Humanitarians for Disaster Risk Reduction in East Africa* • *FEWS NET: Science for Decision-making* • *PIROI: Getting the Early Warning Message Out*	Meaghan Daly (Red Cross/Red Crescent Climate Centre) Laurent Dufour (OCHA) Zachary Atheru (ICPAC) Gideon Galu (FEWS NET) Eric Sam-Vah (French Red Cross)
9:45 am	Tea Break	
10:15 am	**Bridging the Gap: Identifying Barriers to Use and Provision of Climate Information** *Working groups, facilitated discussion, solution mapping*	Meaghan Daly (Red Cross/Red Crescent Climate Centre)
11:30 am	**Developing Demand-driven Tools for Climate Risk Management** *Presentation and Q&A* • *Meeting in the Middle: How Climate Scientists and Humanitarians Can Work Together* • *Predicting Seasonal Extremes* • *Near-term Climate Change Projections*	Meaghan Daly (Red Cross/Red Crescent Climate Centre) Simon Mason (IRI) Brad Lyon (IRI) **via video presentation**
12:45 pm **1:00 pm**	**Concluding Remarks** **Break for Day**	

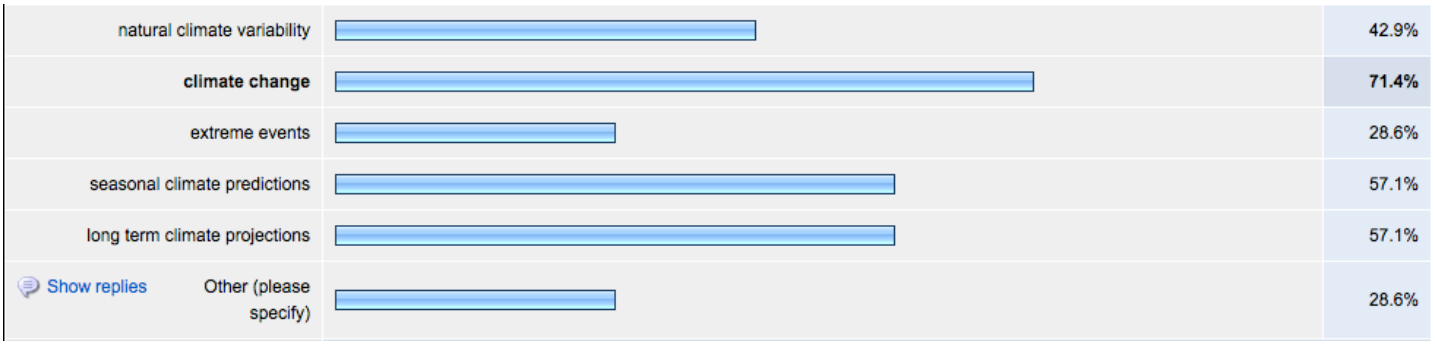
Annex 3: Climate Science Questions from the Humanitarian Community

Questions:

- How can climate prediction at local and grassroots level be enhanced?
- How can the concept of climate change be communicated at the community level?
- What are some basic strategies to adapt to the long-term impacts of climate change?
- What are the main impacts of climate change on health?
- How difficult is it to predict slow-onset disasters, including severity and length, and how can this be communicated at the community level to inform preparedness?
- Can climate scientists provide information for near-term variability (next 10-20 years) of temperature and precipitation in East Africa?
- How will climate change impact the frequency of El Niño events?

What areas of climate science would you be interested to learn more about?

Responses:



Are there any specific areas of climate science or climate information that are particularly difficult to interpret for humanitarian operations?

Responses:

- Prediction of extreme events
- Health hazards
- Interpretation of seasonal predictions to estimate impacts
- Implications of climate information for adaptation strategies (particularly at the community level)

ACTIVITY 1

CLIMATE INFORMED

CONTINGENCY PLANNING

ACTIVITY 1: CLIMATE INFORMED CONTINGENCY PLANNING

ACTIVITY TIMING

3 hours

OBJECTIVE(S)

- Utilize various sources of climate information within contingency planning and scenario development
- Develop an understanding of the various types of climate information available across time scales and how they might inform humanitarian planning, preparedness, and response

ACTIVITY OUTLINE AND DESCRIPTION

This session will have 3 parts. Participants will break into groups of 4-5 people. (Participants may choose to self-select groups according to their specific sectoral interests.)

During Part 1, groups will be presented with a packet of materials to plan for the upcoming rainy season (October, November, December), including seasonal forecasts and frameworks to undertake hazard, vulnerability, and risk analyses, to be used in worst case scenario development, resource identification, and evaluation of early warning, early action strategies.

In Parts 2 and 3, groups will receive brief updates on weather conditions in the region, as well as updated climate information. Groups will need to decide what actions are necessary given the new information and whether or not contingency plans should be updated.
Thus, the session follows the following outline:

- Introduction and instructions (5 minutes)
- Part 1: Risk Analysis, Scenario Development, and Early Action (Group work: 1 hour, Debrief: 30 minutes)
- Part 2: Reassessment of Risks, Scenario, and Early Action (#1) (Group work: 15 minutes, Debrief: 15 minutes)
- Part 3: Reassessment of Risks, Scenario, and Early Action (#2) (Group work: 15 minutes, Debrief: 15 minutes)

SUPPORTING MATERIALS

- Exercise packet (in 3 parts)

ACTIVITY INSTRUCTIONS: CLIMATE INFORMED CONTINGENCY PLANNING

PART 1: RISK ANALYSIS, SCENARIO DEVELOPMENT, AND EARLY ACTION

TIME: 2 hours

It is September and you are preparing for the upcoming rainy season. Given the flooding events that occurred last year, you have decided that you want to try to more effectively utilize various sources of climate and weather information to inform your planning.

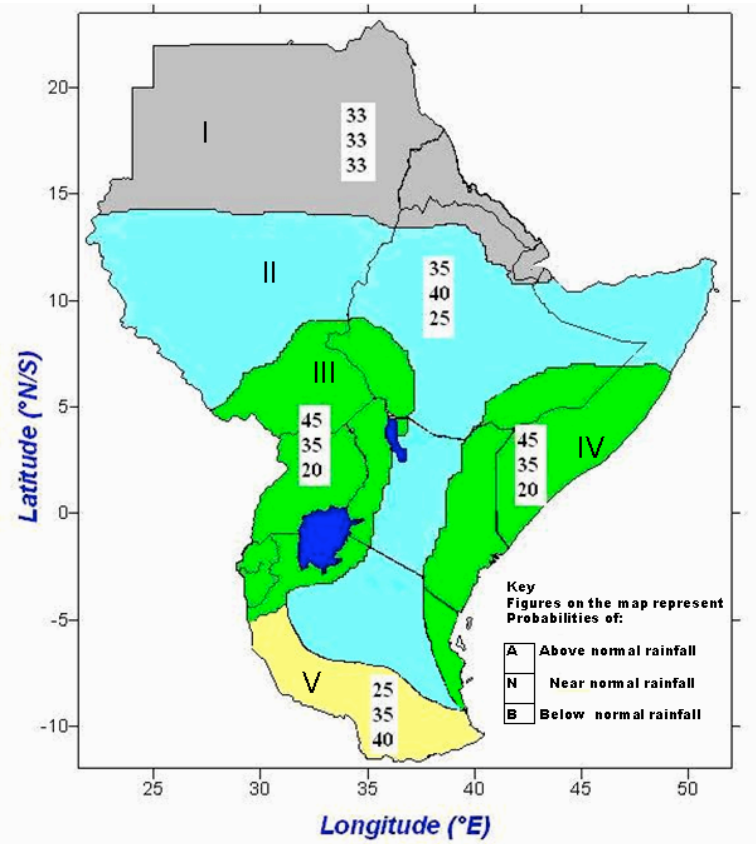
Sections 1-4: Using the forecasts, maps, and information provided, analyze the hazards, vulnerability, and risks facing Kenya in the upcoming season October, November, and December. You will need to evaluate what sources of climate information will be relevant to your planning and decide how to incorporate them within your contingency plan.

Sections 5-6: Based on your findings, develop a scenario for the worst-case outcome and identify what resources are available.

Section 6-7: Review your analysis and scenarios to identify gaps in resources to better evaluate and prioritize early warning, early action strategies.

CLIMATE INFORMATION: SOURCE A

What Information: Seasonal Precipitation Forecast (Greater Horn of Africa Consensus Climate Outlook for September to December)
Issued When: August
Issued by Who: IGAD Climate Predication and Applications Centre (ICPAC)



Zone I: This zone is generally dry and covers northern parts of Ethiopia, Eritrea, and Djibouti as well as central parts of the Sudan northwards.

Zone II: Increased likelihood of near normal rainfall. This zone includes central parts the Sudan, central and southern Ethiopia, the Rift Valley areas of Kenya, northern and central parts of Tanzania.

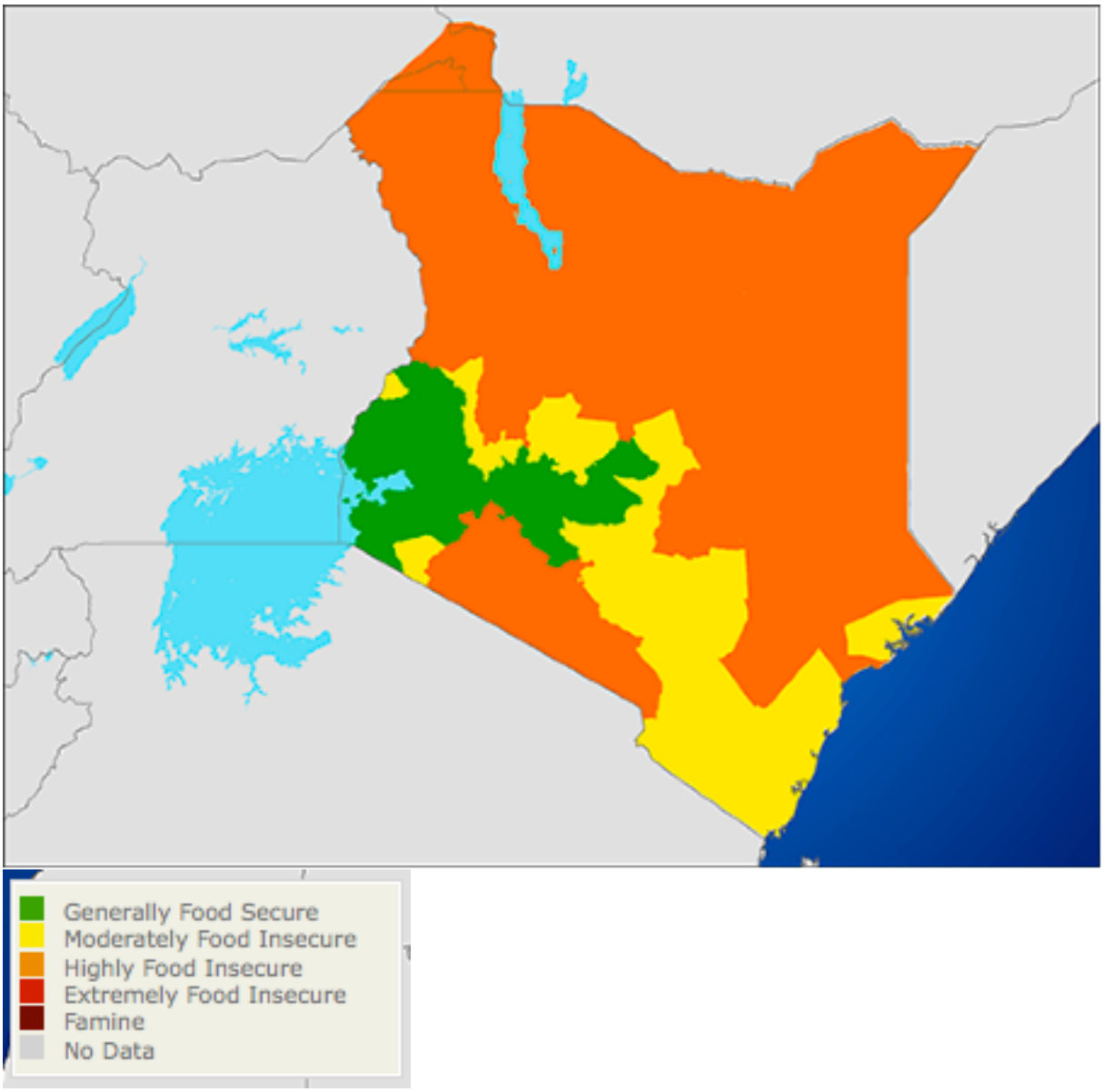
Zone III: Increased likelihood above normal rainfall. This zone covers western sectors around Lake Victoria basin and adjacent countries of Burundi, Rwanda, Uganda, southern Sudan and western Kenya.

Zone IV: Increased likelihood above normal rainfall. This zone covers parts of east and coastal Kenya, coasts of Somalia, Kenya and Tanzania.

Zone IV: Increased likelihood of below normal rainfall. This zone covers southern and southwestern Tanzania.

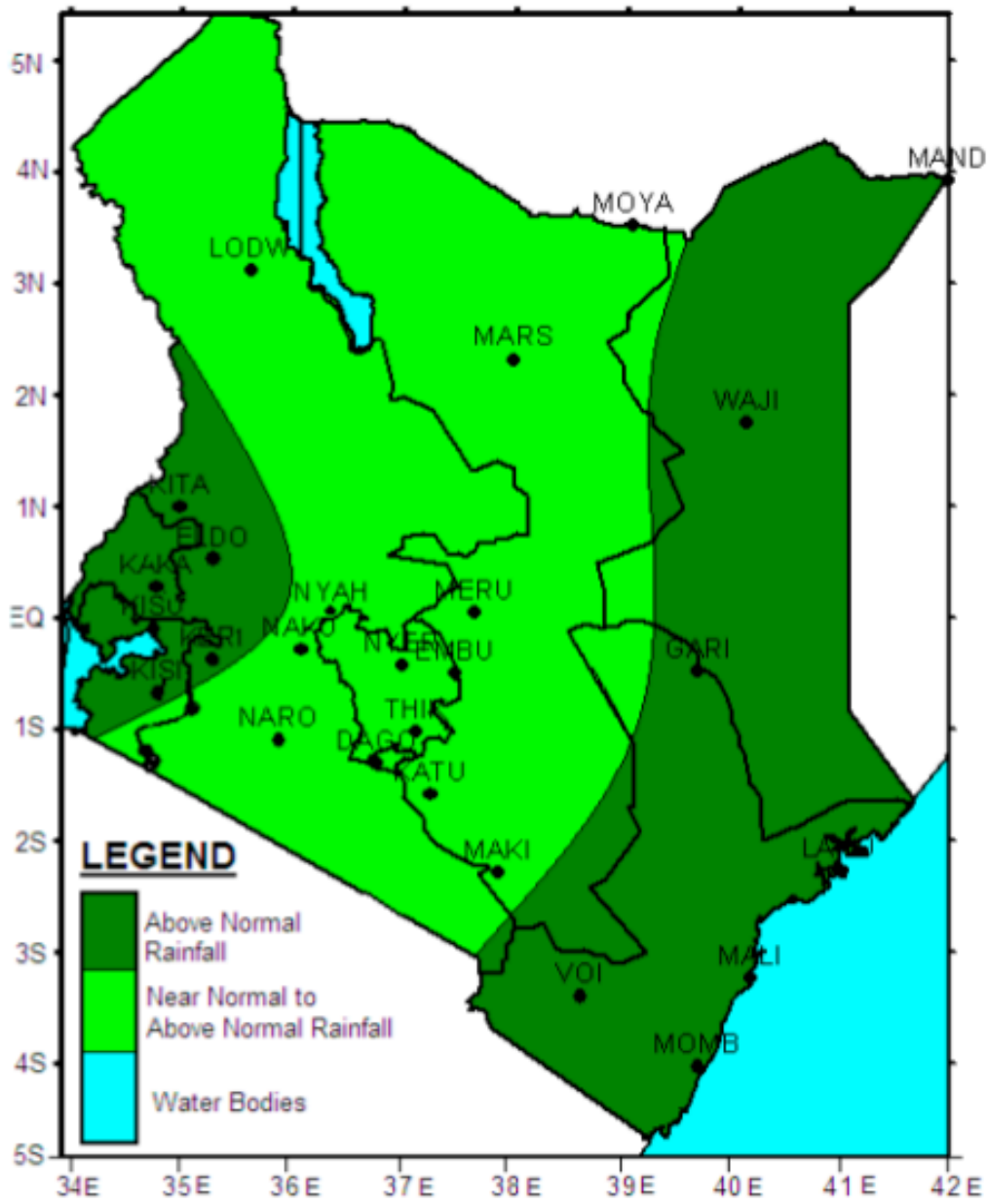
CLIMATE INFORMATION: SOURCE B

What Information: Medium-term Food Security Outlook, October through March
Issued When: August
Issued by Who: FEWS NET



CLIMATE INFORMATION: SOURCE C

What Information: Seasonal Precipitation Forecast for Kenya (October, November, December)
Issued When: September
Issued by Who: Kenya Meteorological Department



SECTION 1: ANALYSIS OF HAZARDS

WHAT ARE THE POTENTIAL HAZARDS?
What area is likely to be affected and what is the geographical scale?
What is (are) the time frame(s)?
What are the most important hazard(s)? (e.g. flooding, cyclones, drought, landslide)
What is the likelihood of the hazard(s) occurring?
What is the potential magnitude of damage/losses?
What percentage of the population is likely to be affected?
How might other environmental change (e.g. deforestation) interact with these hazards?
What other institutions can be partnered with to enhance access to relevant information?

SECTION 2: VULNERABILITY ANALYSIS

WHAT ARE THE VULNERABILITIES?
What are the conditions of exposure and vulnerability? (i.e. physical, social, economic, cultural, livelihood)
How does the ***timing*** of the forecast help you to assess if populations are more or less vulnerable? (e.g. during planting or harvesting)
What other indicators and information are available to help quantify levels of exposure and vulnerability?

SECTION 3: RISK ANALYSIS

BASED ON THE ANALYSIS OF HAZARDS AND VULNERABILITY, WHAT ARE THE RISKS?
What geographic zones or areas are most exposed to risk? Which areas should be prioritized?
Approximate number of people at risk:
Potential impacts:
Summary of risks (please provide 4-5 sentences):

SECTION 4: SCENARIO

	WORST CASE
Scenario summary	
Scenario assumptions and indicators	
Scenario Analysis	
Probability	

SECTION 5: RESOURCE IDENTIFICATION AND MOBILIZATION

WHAT ARE THE CAPACITIES AT DIFFERENT LEVELS?
Local:
National:
Regional and International:
External Institutions:
Other Partner Agreements:
Generalized climate considerations (e.g. it is usually dry during January and February):

WHAT ARE THE LIKELY GENERALIZED NEEDS?
Local:
National:
Regional:

WHAT RESOURCES ARE IMMEDIATELY AVAILABLE? WHAT RESOURCES CAN BE MOBILIZED?
What resources, to serve how many people, for how long?
How could community capacity be increased?
What staff or volunteers can be made available in the case of a disaster?
What resources are needed that are not available?
What plans exist for receiving and managing resources and assistance?
Is there a gap between needs and resources? If yes, what additional resources will be needed?

SECTION 6: EARLY WARNING, EARLY ACTION

What are early actions that can be undertaken to prepare for the risks identified above? What activities should be undertaken immediately, and which should be undertaken later, when more information is available, based on current forecasts?

Given the forecast tools available, use the framework below to consider what actions can be taken and for which time scale, to fill in the chart above.

Emergency Assessment
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake early action to prepare at this time? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)

Rescue and Medical Assistance
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake early action to prepare at this time? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)
Health Services
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake early action to prepare at this time? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)

Water, Sanitation, and Hygiene
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake early action to prepare at this time? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)
Food and Nutrition
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake early action to prepare at this time? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)

Shelter
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake immediate early action? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)

Logistics and Transport
How long does it take to mobilize the necessary resources to undertake this activity?
Does the forecast provide enough advanced warning to initiate early action for better preparedness?
Is the probability of the events occurring sufficient to undertake early action to prepare at this time? What action?
If not, what part of the forecast would need change to undertake these activities? (i.e. predicted impact, lead time, geographic location)

SECTION 7: PRIORITIZING EARLY ACTION

What are the consequences if early action is taken, but the worst-case scenario does not materialise?
What are the consequences if the worst-case scenario occurs, but ***no*** early action was taken? How does this compare with the consequences above?
Which areas of preparedness and response are the most difficult to undertake using the climate information provided?
Which of these activities would be considered “no regrets” strategies and what area of preparedness could they be undertaken for?
Based on this, what would be your 3 priority early actions to prepare for the upcoming season? (this can include monitoring shorter term forecasts) 1. 2. 3.

PART 2: REASSEMENT OF RISKS, SCENARIO, AND EARLY ACTION (#1)

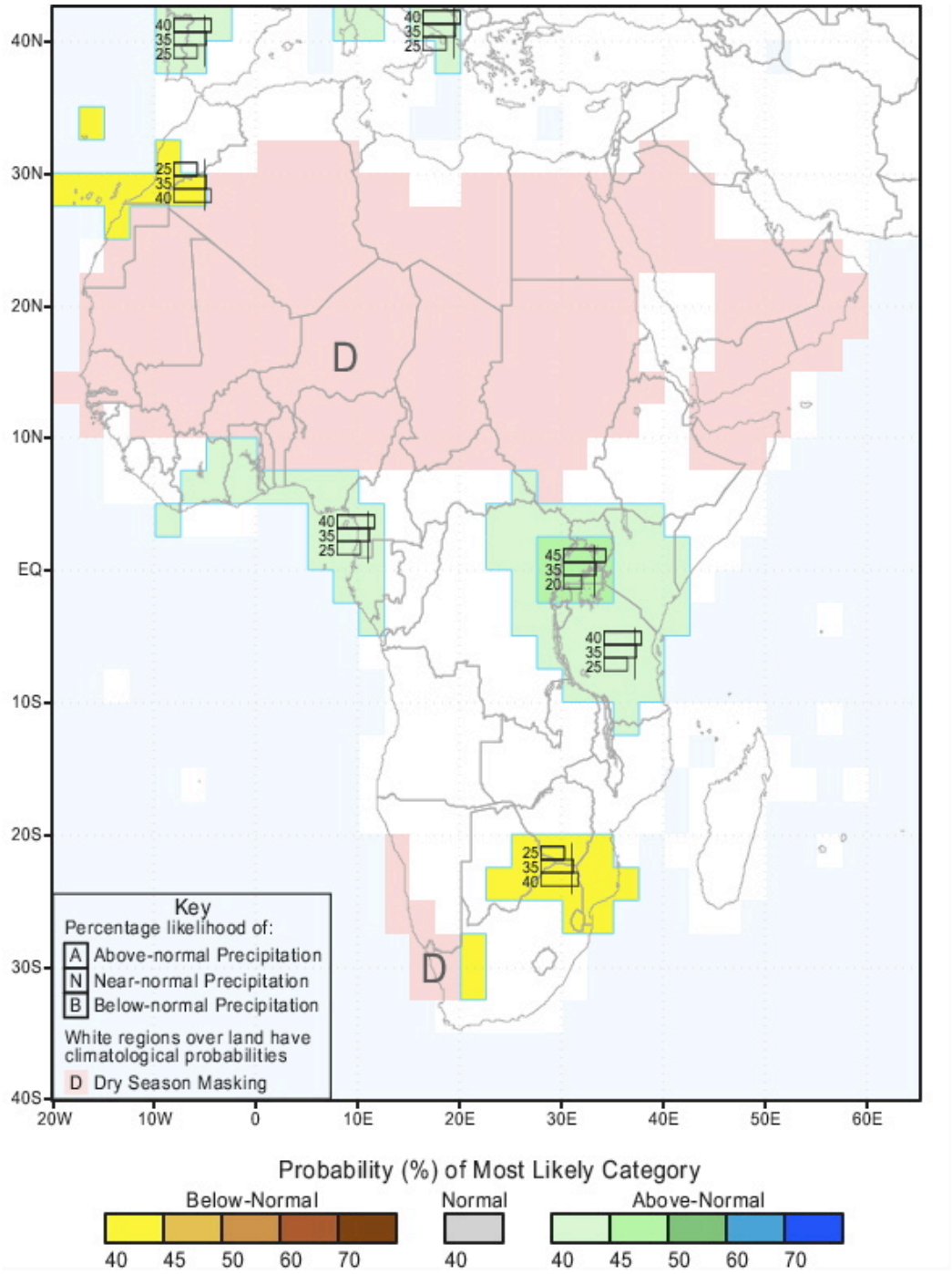
TIME: 30 minutes

It is now October. You developed your contingency plan for the upcoming season in September. Since then, there has been very little rainfall in most of the country and now, one month later, updated forecasts and information are available.

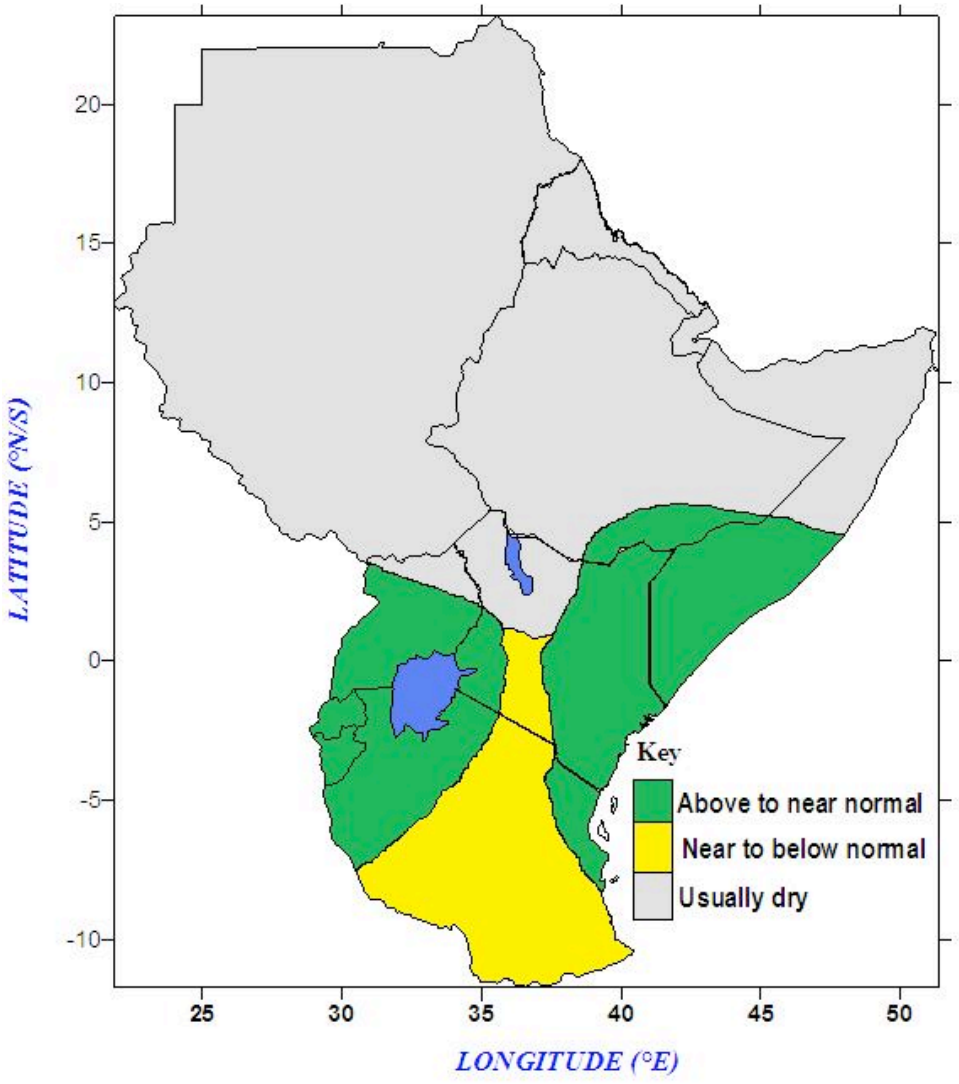
Using the maps provided, roughly reassess the hazards, vulnerability, and risks facing Kenya during the remainder of the season, at the various time scales presented. Determine what (if any) areas of your contingency plan should be adjusted or if other action should be undertaken. (Section 8)

CLIMATE INFORMATION: SOURCE D

What Information: Seasonal Precipitation Forecast (November, December, January)
Issued When: October
Issued by Who: IRI



CLIMATE INFORMATION: SOURCE E
What Information: 10 Day Precipitation Outlook
Issued When: 15 October
Issued by Who: Kenya Meteorological Department

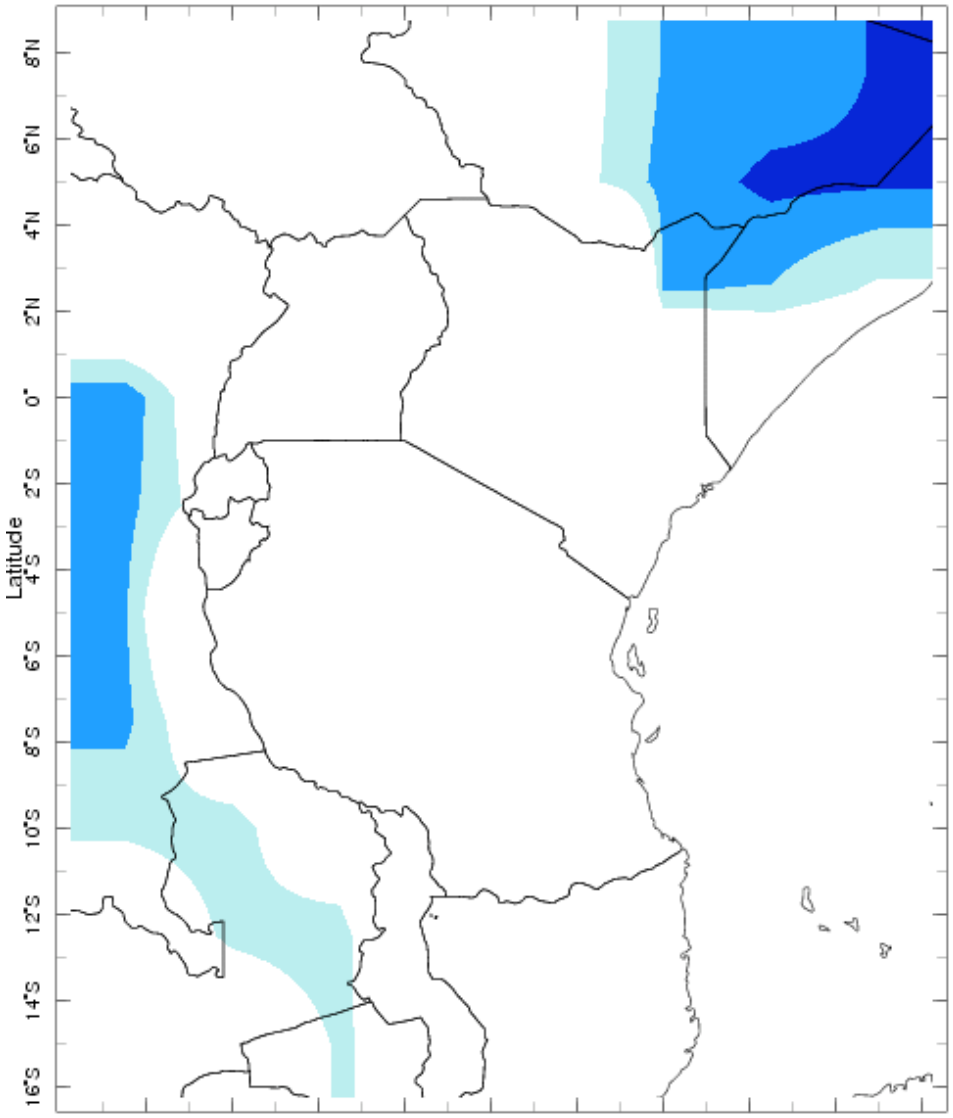


CLIMATE INFORMATION: SOURCE F

What Information: Six Day Forecast for Heavy Rainfall

Issued When: 15 October

Issued by Who: IRI



Recommended action for areas in any of the three shades of blue: check local forecasts immediately for confirmation of timing and severity of rainfall. Floods associated with heavy rainfall may be possible any time within the next 6 days.

CLIMATE INFORMATION: SOURCE G

What Information: Four-Day Weather Forecast for Kenya
Issued When: 18 October
Issued by Who: Kenya Meteorological Department

FORECAST FOR THE NEXT FOUR DAYS FROM 15–19 OCTOBER

The Lake Victoria basin, Highlands west of the Rift Valley and Central Rift Valley (Kitale, Kakamega, Kisumu, Kisii, Kericho, Eldoret, Nakuru, Narok, Nyahururu, etc) will experience afternoon showers and thunderstorms over few places increasing to several places.
The Northwestern districts (Lodwar, Lokitaung, Lokichoggio, etc), will experience mainly sunny conditions throughout the forecast period.
The Central highlands including Nairobi area (Nyeri, Meru, Dagoretti, Embu, etc) will experience morning rains and afternoon showers over few places occasionally increasing to several places.
The Northeastern districts (Marsabit, Moyale, Mandera, Wajir, Garissa etc) experience sunny conditions throughout the forecast period.
Southeastern lowlands (Voi, Makindu, Machakos etc) experience mainly sunny conditions with occasional morning rains and afternoon showers over few places.
The Coastal region (Mombasa, Kilifi, Malindi, Lamu etc) will experience mainly sunny intervals with occasional morning showers over few places.
N.B: This forecast should be used in conjunction with the daily 24-hour forecast.

CLIMATE INFORMATION: SOURCE H
What Information: One-Day Weather Forecast for Kenya
Issued When: 19 October
Issued by Who: Kenya Meteorological Department

Town	Morning	Afternoon
NAIROBI	Sunny intervals	Sunny intervals/Showers
MOMBASA	Showers/Sunny intervals	Sunny intervals
KISUMU	Sunny intervals	Showers and thunderstorms
NAKURU	Sunny intervals	Showers and thunderstorms
KAKAMEGA	Sunny intervals	Showers and thunderstorms
ELDORET	Sunny intervals	Showers and thunderstorms
NYERI	Light rains/Sunny intervals	Sunny intervals/ Showers
MALINDI	Sunny intervals	Sunny intervals
VOI	Sunny intervals	Sunny intervals
LODWAR	Sunny intervals	Showers and thunderstorms
MARSABIT	Rains/Sunny intervals	Sunny intervals
GARISSA	Sunny intervals	Sunny intervals
MOYALE	Rains/Sunny intervals	Sunny intervals

SECTION 8: ADJUSTING EARLY ACTION AND CONTINGENCY PLANS

Does the new information provided warrant immediate action?
Does the new information provided warrant adjusting the contingency plan?
What actions and at what timescales should be considered? What actions outlined in the original contingency plan, if any, are no longer necessary?
Is the information useful to making this decision? What additional information would be needed to make a decision about what action is necessary?

PART 3: REASSEMENT OF RISKS, SCENARIO, AND EARLY ACTION (#2)

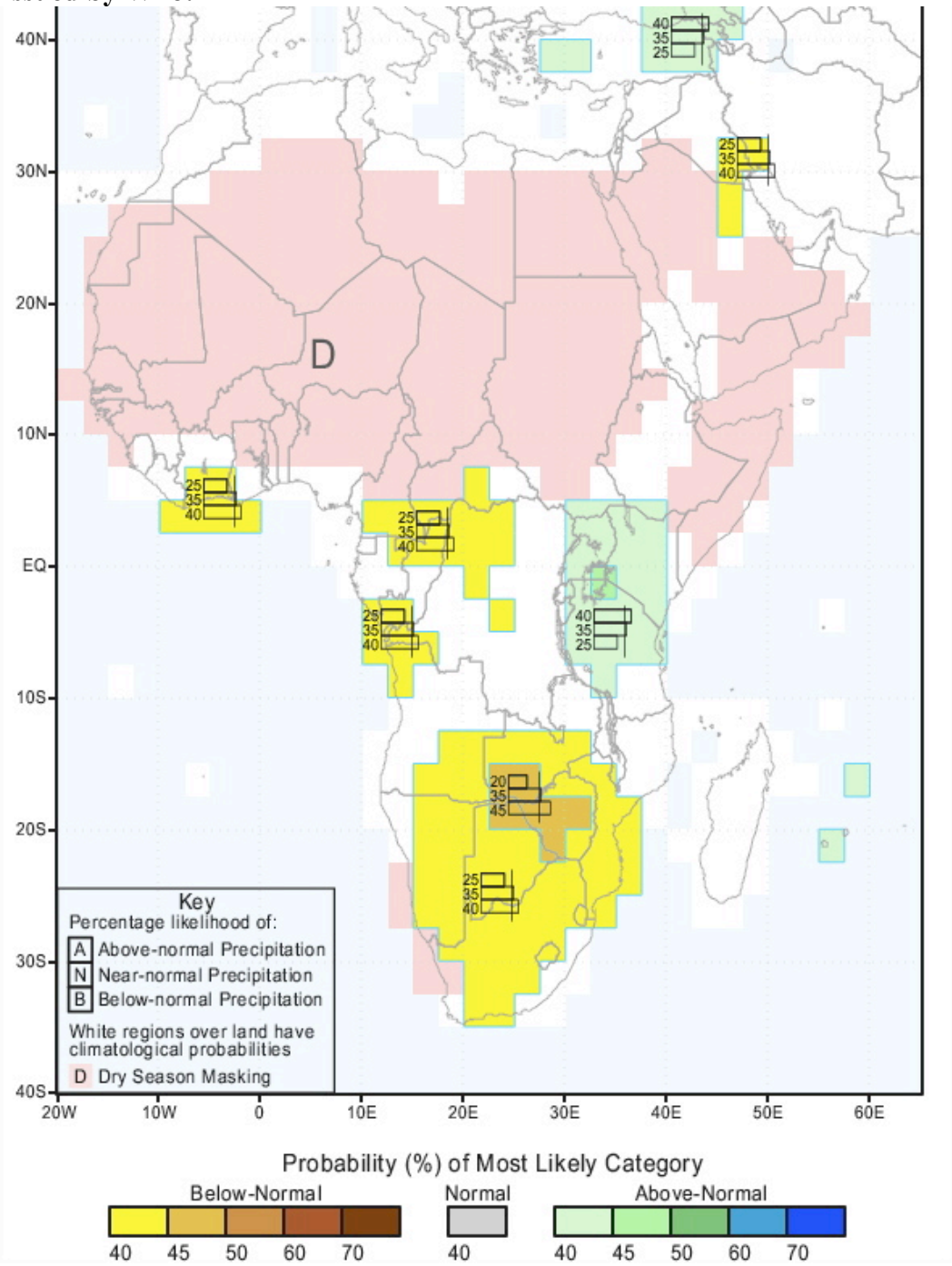
TIME: 30 minutes

It is now November. During the second half of October, there was significant rainfall in most parts of the country. There are now updated forecasts and information available.

Again, using the maps provided, roughly reassess the hazards, vulnerability, and risks facing Kenya during the remainder of the season, at the various time scales presented. Determine what (if any) areas of your contingency plan should be adjusted or if other action should be taken. (Section 9)

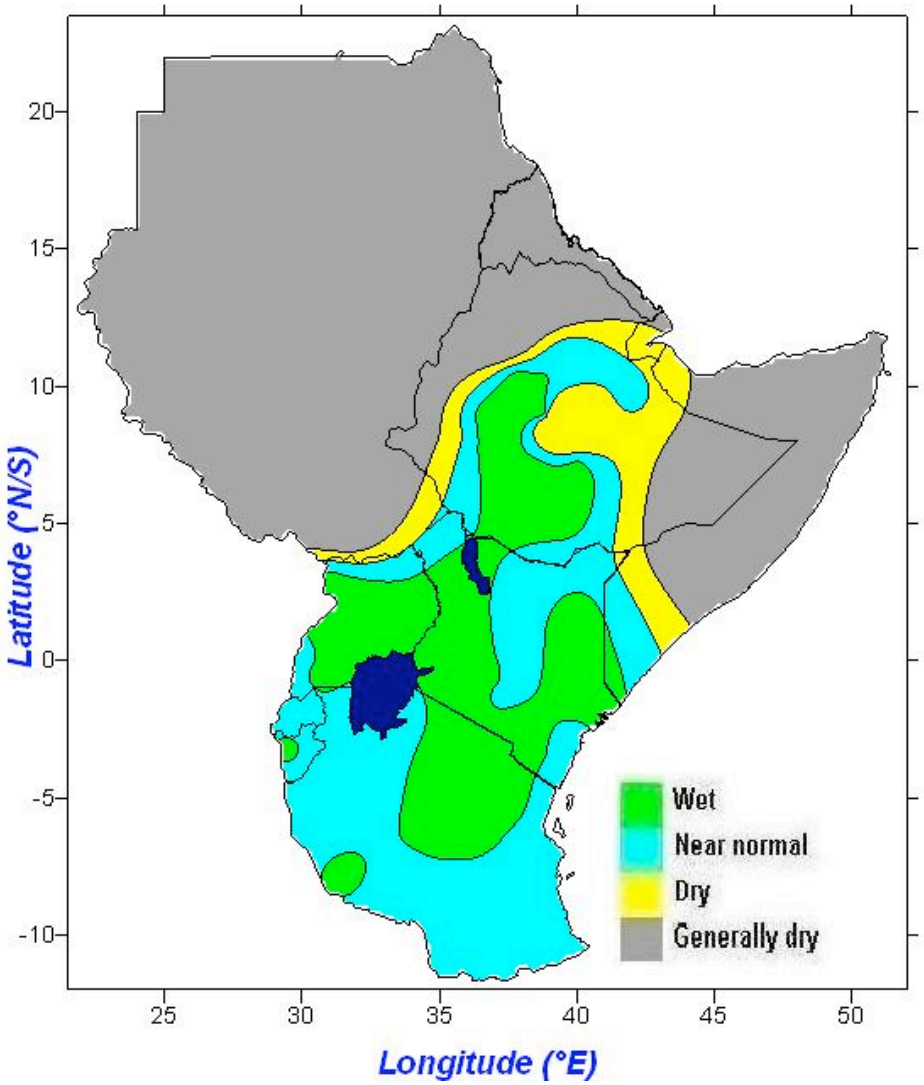
CLIMATE INFORMATION: SOURCE I

What Information: Seasonal Precipitation Forecast (December, January, February)
Issued When: 5 November
Issued by Who: IRI



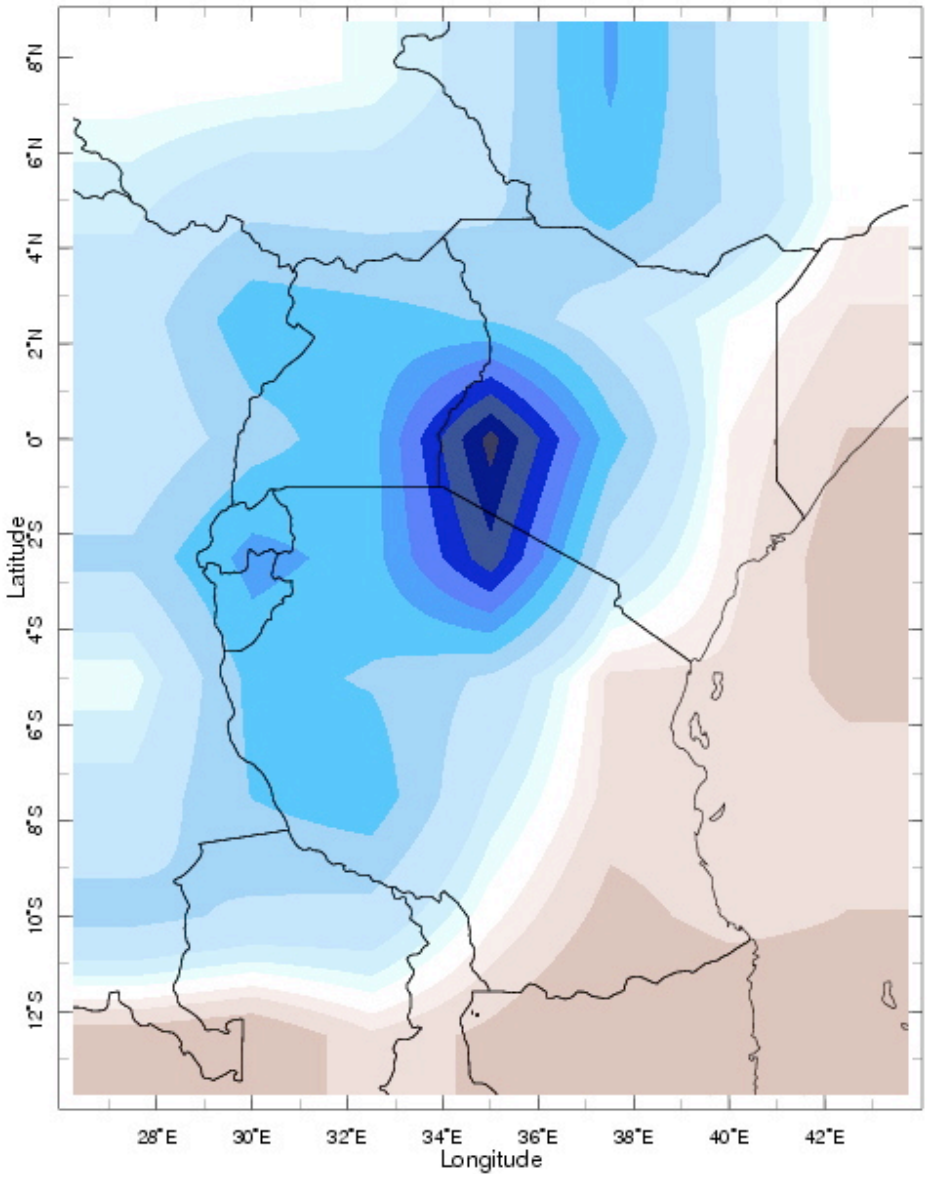
CLIMATE INFORMATION: SOURCE J

What Information: Rainfall Severity Index: Observed Conditions during October
Issued When: 6 November
Issued by Who: ICPAC



Rainfall severity indices are derived by considering all observations which are less than 25% (first quartile) of the ranked historical records to be dry while those which are more than 75% (third quartile) are considered wet.

CLIMATE INFORMATION: SOURCE K
What Information: Six-Day Forecast of Heavy Rainfall
Issued When: 15 November
Issued by Who: IRI



Recommended action for areas in any of the three shades of blue: check local forecasts immediately for confirmation of timing and severity of rainfall. Floods associated with heavy rainfall may be possible any time within the next 6 days.

SECTION 9: ADJUSTING EARLY ACTION AND CONTINGENCY PLANS

Does the new information provided warrant immediate action?
Does the new information provided warrant adjusting the contingency plan?
What actions and at what timescales should be considered? What actions outlined in the original contingency plan, if any, are no longer necessary?
Is the information useful to making this decision? What additional information would be needed to make a decision about what action is necessary?

ACTIVITY 2

IDENTIFYING BARRIERS TO USE AND PROVISION OF CLIMATE INFORMATION

ACTIVITY2: IDENTIFYING BARRIERS TO THE USE OF CLIMATE INFORMATION

ACTIVITY TIMING

2 hours

OBJECTIVE(S)

- Identify main sources of regional and sub-regional climate information is available and relevant to decision makers in the humanitarian and disaster risk management sectors and their limitations to informing humanitarian planning, preparedness, and response
- Identify primary barriers to the use of climate information with humanitarian planning, preparedness, and response
- Formulate primary actions that can be undertaken to overcome institutional barriers to the integration of climate information within humanitarian operations

ACTIVITY OUTLINE AND DESCRIPTION

This session provides the basic groundwork for determining what information decision makers need and when for both policy dialogue as well as specific interventions for humanitarian response and disaster management operations. The session will have 3 parts. For all parts, participants will break into groups of 4-5 people, (ideally, these will be the same groups they formed for the contingency planning exercise.).

During Part 1, participants will conduct a critical thinking exercise to examine existing climate information. In Part 2, participants will remain in groups to critically examine the capacity of humanitarian organizations to absorb, integrate, and act upon climate information. In part 3, participants will identify next steps to overcome prominent barriers identified.
Thus, the session follows the following outline:

- Introduction and instructions (5 minutes)
- Thinking Critically About Climate Information (group work: 30 minutes, debrief and mapping: 15 minutes)
- Thinking Critically About Humanitarian Capacity (group work: 30 minutes, debrief and mapping: 15 minutes)
- Building a Road Map (25 minutes)

During the introductory presentation the facilitator should stress the following points:

- Effective decision-making is driven both by the availability of information as well as the time required to organize action.
- Thus, the best time to answer questions are not always the best time to give the answer

The activity instructions for this activity provide specific detail on how the activity will be implemented and managed.

ACTIVITY INSTRUCTIONS: IDENTIFYING AND ADDRESSING BARRIERS TO THE USE OF CLIMATE INFORMATION

PART 1: THINKING CRITICALLY ABOUT CLIMATE INFORMATION

TIME: 45 Minutes

Form groups of 4-5 people. If possible, these should be the same groups undertaken for the contingency planning exercise.

Refer to your contingency planning exercise packet. For each of the maps provided in the contingency exercise for the upcoming short rainy season, take 30 minutes to address the following questions with your group. Based on your individual answers, reach a group consensus for each answer. Write the answer on the note card/sticky note provided. Bring the cards to the facilitator.

A 15-minute debrief, based on answers provided, will follow.

Is the information provided in this map easily comprehensible?
If yes, what information are you able to extract?
If no, what is not comprehensible?
What early actions were identified as desirable during the contingency planning exercise? Is the climate information in the maps relevant to the decisions available during the contingency exercise?
Is the information provided in the maps useful and relevant to other areas of humanitarian practice? If so, what areas?
If not, why? What could be done to improve the usefulness of the information provided in the forecasts?

PART 2: THINKING CRITICALLY ABOUT HUMANITARIAN CAPACITY

TIME: 45 Minutes

Form groups of 4-5 people. If possible, these should be the same groups undertaken for the contingency planning exercise.

Refer to your contingency planning exercise packet. Consider the early warning, early action activities identified address the following questions. Based on your individual answers, reach a group consensus for each question. Write the answer on the note card/sticky note provided. Bring the cards to the facilitator.

A 15-minute debrief, based on answers provided, will follow.

Are the necessary institutions, structures, or systems in place to effectively enact the early warning, early action activities identified?
If yes, list which institutions, structures, and systems are currently place to enact early warning, early action strategies identified?
If no, what institutions, structures, or systems would be necessary to enable early warning, early action strategies identified?

PART 3: SOLUTION MAPPING

TIME: 45 Minutes

Form groups of 4-5 people. If possible, these should be the same groups undertaken for the contingency planning exercise.

Using the note cards/sticky notes that have been submitted from Part 1 and 2 of the exercise, the facilitator will work with participants to identify informational and institutional barriers into issues that can be addressed in the near future, those that will take significant time to address, and those for which no solution is readily available.

For each of the obstacles that can potentially be addressed in the near term, brainstorm immediate actions that can be taken to initiate solutions and who might undertake these activities. For longer-term issues, participants will brainstorm future activities that could be undertaken to initiate solutions. Issues for which no solution was readily identified will be tabled, but recorded.

The outcomes of the brainstorming session will be used to formulate a rough action plan and synthesis statement for delivery at the Greater Horn of Africa Climate Outlook Forum.

Annex 5: Workshop Participant List

Last Name	First Name	Company
Kituku	Stephen	Caritas
Malesi	Samson	Caritas
Kithikii	Agnes	Catholic Agency for Overseas Development
Owitwi	Jack	CHF International
Mohammed	Omar	Christian-Aid
Kiragu	Ephraim	Church World Service
Mutua	Sammy	Church World Service
Galu	Gideon	FEWSNET
Savi	Gabrielle	French Red Cross
Sam-Vah	Eric	French Red Cross
Balangio	Lilian	German Agro Action
Mung'oni	Moses	German Red Cross
Oyundi Nehondo	Thomas	HelpAge
Ouma	Marion	HelpAge
Atheru	Zachary	ICPAC
Mesureur	Bruno	ICRC
Balfour	Nancy	IFRC
Kariuki	Nychomba	International Institute of Rural Reconstruction
Ningome	Miriam	International Institute of Rural Reconstruction
Mgece	Nicholas	International Institute of Rural Reconstruction
Tjossem	Kurt	International Rescue Committee
Mason	Simon	International Research Institute for Climate and Society
Hellmuth	Molly	International Research Institute for Climate and Society
Khanbabai	Anoucheh	IOM
Pecourt	Sophie	IPPF/SPRINT
Mwangi	Samuel	Kenya Meteorological Department
Omeny	Peter	Kenya Meteorological Department
Gikungu	David	Kenya Meteorological Department
Lukania	Charles	Oasis of Hope
Nerlander	Lina	Red Cross/Red Crescent Climate Centre
Keiru	Bilha Joy	Tearfund
Mutiso	Stephen	Trocaire
Emoru	Francis	Trocaire
Myendo	Elizabeth	Trocaire
Theuri	Mwangi	UNEP
Lugadiru	Alex	UNEP - DEPHA
Kangethe	Jackson	UNFAO
Olesambu	Emmanuella	UNFAO
Kisoyan	Philip	UNFAO
Nyambane	Thomas	UNFAO
Shah	Khalid	UNHCR
Abdisa	Yodit	UNICEF
Lafferty	Helene	UNISDR
Oludhe	Christopher	University of Nairobi
Mutemi	Joseph	University of Nairobi
Cooper	Jeanine	UNOCHA

Dufour	Laurent	UNOCHA
Gelas	Pierre	UNOCHA
Gitenga	Ayub	UNOCHA
Nyambane	Thomas	UNOCHA
Mandra	Cristiano	UNWFP
Teprey	James	WHO
Ndegwa	Wilfred	WHO
Kibirige	Edward	World Vision International
Dube	Francis	World Vision International

International Research Institute for Climate and Society
Earth Institute at Columbia University
PO Box 1000, Palisades, NY10964-000, USA
Tel: +1.845.680.4468, Fax: +1.845.680.4864