Infobrief

WISER
Weather and Climate Information Services for Africa

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Regional Climate Outlook Forums: Highlights

A new knowledge exchange initiative – including a best practice guidelines document - enables Africa's Regional Climate Centres to share procedures and practices for improving Regional Climate Outlook Forums.

KEY POINTS

- Across Africa, each RCOF has valuable lessons and experiences that other forums can learn from – but coordination between RCOFs is limited.
- A new 'best practices' guidelines document highlights a number of practices for enhanced ways of working.

RCOFs and pre-RCOFs: overview

Regional Climate Outlook Forums (RCOFs) and the pre-RCOFs taking place before the RCOF, convene experts from national and international climate centres who bring their relevant knowledge and climate information products to predict temperature and rainfall patterns across Africa.

During the pre-RCOF, predictions are merged to form a consensus-based, user-relevant, real-time climate outlook which is used by practitioners and decision makers to reduce climate-related risks. The RCOF then brings together climate scientists, researchers, users from key socio-economic sectors (including agriculture, water, energy, health, transport and disaster risk reduction), governmental and non-governmental organisations, development partners, decision-makers, and civil society stakeholders among others.

These groups join from countries with common climatological characteristics; this enables the RCOFs to ensure consistency in access to, and interpretation of, climate information. Through interaction with user communities, the RCOFs assess the likely implications of the outlooks on socioeconomic sectors for the region of interest over the coming season.

ACPC African Climate Policy Centre

United Nations Economic Commission for Africa

Several user-specific workshops are organised within the forum to review lessons and experiences from the use of the products provided during the previous forum, and to discuss implementation of proposed mitigation measures following the given outlook. Action taken based on the outlook supports efforts to reduce climate-related risks and support development of these sectors for the coming season.

The benefits of knowledge exchange

The RCOFs operate in different ways, using different models and methods to build their consensus; they may have different computational and human resources, and different approaches to applying them.

But while RCOFs may have different ways of building their seasonal forecasts, they share common challenges – particularly around engaging stakeholders, and dissemination and uptake of their forecasts. Some RCOFs have been operational for many years and have valuable lessons and experiences that other forums can learn from.

However, there is limited coordination between Regional Climate Centres (RCCs) on how they operate the RCOFs. This leads to missed opportunities for learning from different approaches, or on successes and failures. The African Climate Policy Centre (ACPC) of the United Nations Economic Commission for Africa (UNECA) under the Weather Information and Climate Services (WISER) project has organised a series of knowledge exchange workshops to enable RCCs to share procedures and practices for improving consensus forecasts. The below highlights a number of practices around which RCOFs could exchange ideas for enhanced ways of working.

Timely and effective organization is key

It is imperative that RCOFs are organised in a timely manner so users can take appropriate action once the consensus is delivered: agricultural practitioners can use the information to work out the optimal time for cropping practices

Lightning over power station in Gauteng, South Africa

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helping to maximise productivity, or make informed decisions on which crops to grow given the predicted rainfall; climate-related losses in livestock can also be reduced; water resource planners can adjust water release schedules depending on the level of rainfall predicted; health authorities can take measures to avoid water-related diseases – such as malaria or cholera – that can result from too much or too little rainfall. Timely forecasts also allow disaster risk management personnel to carry out vulnerability impact assessments and issue advisories on hotspot areas. Areas prone to conflict as a result of competition over scarce climate-based resources can also be identified earlier and mitigation measures can be developed.

Therefore, for an RCOF to be successful it must be carefully planned. Experts and administrators should agree on the country and city where the forum will be held at least two months in advance of when it is set to take place.

Effective organisation also means getting the right people in the room. Participants are selected based on multi-sectoral, multi-stakeholders and multi-disciplinary approaches. It is the RCOF organiser's responsibility to invite the most appropriate people including academics, research centre experts, climate scientists, government representatives, development partners and civil society organisations. The organisers must also ensure a good gender balance which may require selecting a cross-section of users from a particular group. Timely planning of the RCOF also helps to identify new and relevant users and practitioners, to secure financial resources and sponsors, to fund participation of users, to inform stakeholders and to raise awareness among media with sufficient notice so as to guarantee their participation.

Sessions during the RCOF must be carefully planned and designed to support or inform on decision making processes for the various sectors. Some RCOFs integrate sessions during the forum for different sectors to interpret, discuss, and assess the implications of the forecasts for climate risk management. For example, several regions organise dedicated 'user forums' that are held as stand-alone events following the RCOF. For example, in some regions in Africa, Malaria Outlook Forums have been held following the RCOF, where health professionals use the forecast to assess the likelihood of malaria incidents and actions that could be taken to minimise outbreaks[1]. Similar sector-based user forums have been organised for stakeholders in food security, health, water management, and disaster risk reduction and management in many regions of Africa.

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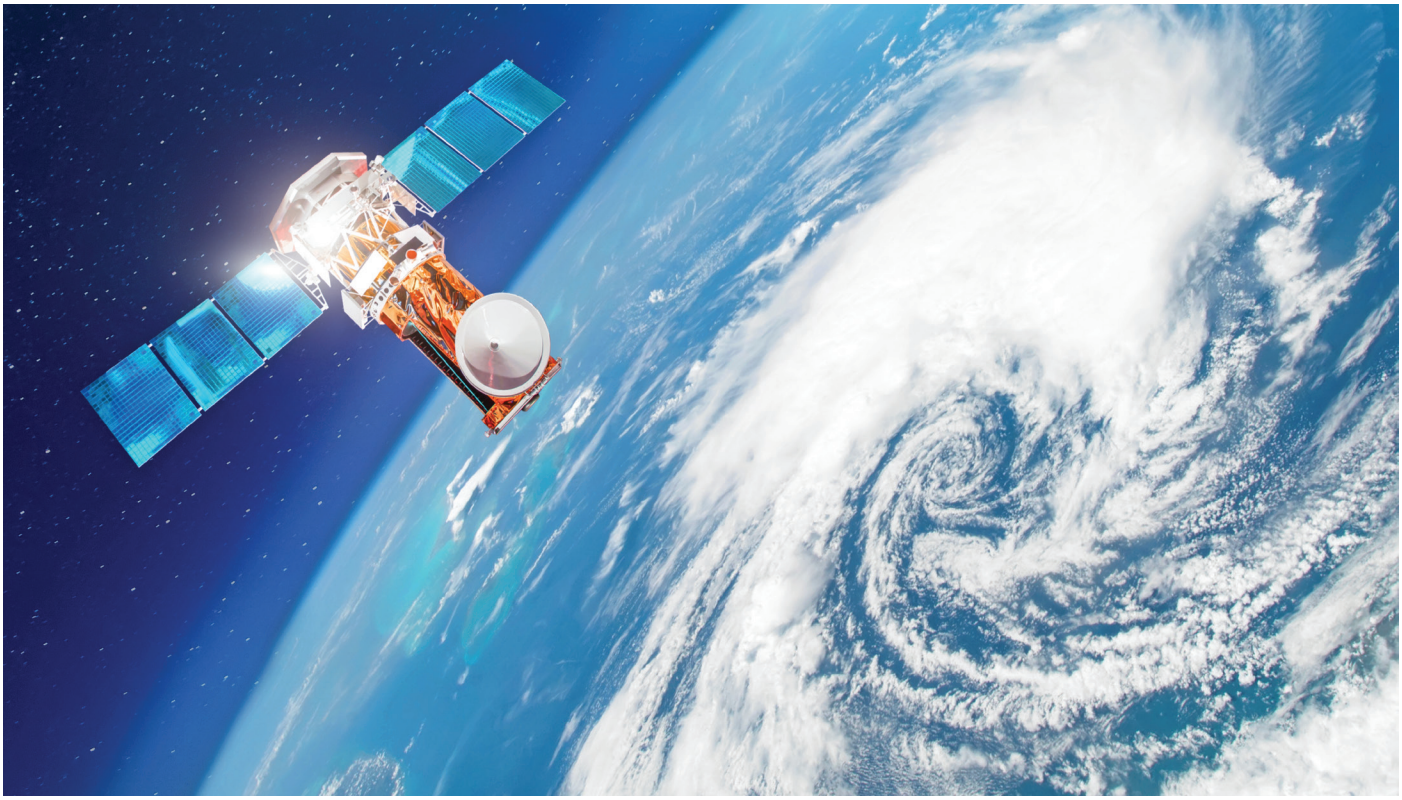
Pre-RCOF: maximising the opportunity for learning

Ahead of the RCOF, National Meteorological and Hydrological Services (NMHS) come together to develop and prepare regional climate outlooks. NMHSs are provided with expertise and tools to customise global model outputs from the Global Producing Centres and develop national forecasts. Different models often produce different results. During the pre-RCOF, discrepancies are worked through and merged to form the regional outlook. After the regional climate outlook forum, NMHSs return to their countries to downscale the forecast to national level. Detailed nationally-scaled climate outlooks and risk information, including warnings for communication to user communities, are developed for use by decision-makers and the general public.

Many lessons can be shared from the pre-RCOF. Each method of developing a national outlook has pros and cons; one potential challenge is integrating all national outlooks objectively so they are each given equal weight. This requires developing an objective ensemble approach to combine forecasts from different GPC models (raw or post-

1 Learning from 10 Years of Climate Outlook Forums in Africa, Patt et al. 2007.



Satellite takes weather measurements in a tropical storm

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processed/bias corrected) based on the skills of individual models and their historical performance in producing the observed climate in operational settings.

Much can be learnt about different forecasting models and methods for applying them. Some RCCs use statistical and dynamic downscaling techniques to develop seasonal forecasts; some use expert judgement based on the climatology and local factors to modify downscaled forecasts to develop consensus products. Each model and method has its own strengths and weaknesses; each could over or under predict the climate. The more models used, and averaged values taken, the more accurate the forecast becomes.

The pre-RCOF is an opportunity for rich scientific exchange: to understand more about which tools and methods each RCC is using, what computational resources they have and how they are deploying them for best use.

Increasing objectivity in consensus forecasting

When there are discrepancies between outlooks, a consensus forecast is generated. This is built by considering the outputs from the global circulation models against the downscaled forecast from the ground stations dataset provided by the member states. The consensus discussion is held in different ways by region. The combination of large scale, regional and national information can be subjective. However, the verification and the feedback from end-user communities testify the added value of the consensus products.

There are some users from countries with their own models who continue to rely more on the consensus products than on the output of a single model. For the purpose of inter-comparison and consolidation of RCOFs products from different regions, measures must be taken to guide operational practices that are still pending, to ensure a more objective methodology for preparing the consensus.

These include the following:

- Operational research

  During the RCOF, participants verify the products over specific areas with historical datasets to identify and address model weaknesses.

- Sharing knowledge between the RCCs

  RCOFs should share trainers for knowledge transfer, leading to harmonisation of the methodology.

- Product uptake

  Seasonal climate prediction uptake and application are carried out by end-users at the same time that products such as the hydro-climate and agro-climate information are released and disseminated. This helps the issue of sectoral outlooks such as water-level, agriculture and food security at the same time as the climate outlook. However, other RCCs might convene a sectoral meeting after the RCOF. This is the case for DRR contingency planning workshop which is organised two months later (in the case of the South African RCOF) after the RCOF.

- Tools and methods

  Many tools are used for building the consensus such as Climate Predictability Tools (CPT) tool for statistical downscaling; Weather Research and Forecasting (WRF) for dynamical; Geospatial Climate Outlook Forecasting Tools (GeoCOF) for climate clustering and prediction using Sea Surface Temperature (SST) products; manually coded on Fortran, Shell scripting, GrADS, NCL, IDL platforms. The use of different tools allows strengths and weaknesses of each tool to be identified.

- Improved technology

  The automation of the process incorporated in some tools instead of manual coding has shortened the time taken to carry out and improve forecasts. The combination of statistical to statistical + General Circulation Model (GCM) in automated function has improved the products. The Southern African Development Community (SADC) has developed the GeoCOF software as an open source which is used by all RCOFs.

- Identifying analogue years

Some RCOFs use the comparison of seasonal predicted SST patterns with historical and analogue years (3, 4, 5 years). From these analogue years, an input is drawn to show the direction of the forecast according to the tercile approach.

Engaging the media to maximize participation in the regional climate outlook forums

The RCOF's principle aim is to communicate the seasonal forecast with users from key socio-economic sectors. Representatives from agriculture, water, energy, health and disaster risk attend the forum to extract information they need for services they provide. Other sectors such as tourism, transportation, urban planning are increasingly involved. The forums assess the likely implications of the outlooks for these sectors and explore how they could be applied.

The media plays a key role in maximising participation at the RCOFs. Journalists sit at the interface between the climate science community and those who the forecast will benefit. They are well placed to publicise the forum – explaining what it is, why it is important, how it can be used – on TV, radio and social media. Broadcasting information about the RCOF can ensure the right people attend.

One strategy for engaging the media is for the communications teams within NMHSs to organise bespoke training sessions with media experts to improve their interpretation and communication

Girl walking in farm field in N'Djamena, Chad

Credit: Shutterstock

of the forecasts. Providing training to media and boundary stakeholders enhances better communication and dissemination of RCOF products.

Making the local connection: indigenous groups

Typically, countries organise National Climate Outlook Forums (NCOFs) to communicate downscaled information to national and sub-national levels; they do not generate information at community level. Furthermore, local communities tend to have their own traditional methods of climate forecasting. While these methods of collecting climate information may have been effective for decades, or even centuries, local communities can benefit significantly from climate information that has been generated from modern, scientific methods.

A key issue for uptake of climate information at local level is trust; there is often scepticism around climate science – on its reliability and uses. Indigenous people can be bridge-builders; by involving these groups in the outlook forums and demonstrating how the consensus forecasts are developed, they can help with downscaling information further to the local level. They can work with climate scientists to integrate modern and indigenous knowledge; this can be passed on to communities who, since the information is being delivered by indigenous people, are more likely to trust and use it.

Inviting extension officers from different ministries (agriculture, water, livestock, disaster, health, energy etc.) can also help ensure groups at the local level are reached. These officers engage with groups such as farmers unions at the rural level.

Feedback is fundamental

Strong mechanisms must be in place to allow users to feedback on how accurate the predictions proved in practice. RCOFs include sessions where outlook users give feedback on how useful the information was during the preceding season and on successes/gaps/inaccuracies. This enables the RCCs to improve and refine future outlooks. Robust feedback mechanisms

from users has driven the development and improvement of new climate information products presented at the RCOFs. For example, in the Greater Horn of Africa (GHA) region, requests from users have prompted the provision of new types of parameters within the seasonal climate outlook (e.g. seasonal rainfall totals). Many RCOFs employ multiple forms of user engagement across this spectrum; however, the way users are involved can vary from year to year, often due to funding availabilty.

Improving training and building capacity

Over the past years, RCOF-associated capacity building initiatives have helped develop infrastructure (computers, statistical packages and other software) and training materials. Several training events have been organised on climate prediction for national experts participating in RCOF sessions. User representatives have also participated in some of the RCOF training events. However, there is no uniform content of training sessions designed to improve the quality of products (accuracy of climate information and early warning) or how to apply RCOF products by user sectors.

Capacity development can be approached in the following four ways:

1. Human resource capacity:

Equipping national experts with the knowledge, skills and training to enable them to generate, communicate and use decision-relevant climate information. This has been successfully undertaken but more work is needed to enhance this skill development process.

2. Infrastructural capacity:

RCCs have gradually acquired equipment to generate, archive, communicate, exchange and use climate data and decision-relevant information and products, including on the supply of side instruments for observing networks, data management systems, computer hardware and software, internet access, communication tools, manuals and scientific literature. RCCs are now able to run dynamic and statistical downscaling and perform other technical analysis for the generation and improvement of old and new products.

3. Procedural capacity:

Defining, implementing and advancing best practices, producing operational manuals, encouraging the use of guidelines for generation and dissemination according to international standards is a big milestone that has been achieved by some RCCs. This sets a good standard for other RCCs to follow.

4. Institutional capacity:

Many RCOFs are now housed and implemented by a structure that has legal and institutional capacity. Some RCOFs have compiled processes, policies and procedures that enable effective generation and dissemination of climate services. However, there is a need to ensure all RCOFs reach the same level and build on the lessons learnt and best practices gained in one region, and share experiences with the other RCOFs in the continent.

Securing a higher-level of engagement for influence

The RCOFs typically achieve good engagement and buy-in with technical level staff from relevant ministries. However, to ensure the outlooks reach the spaces where policy decisions are made, the forums need higher level engagement. Strategies include working with UN secretariats and Regional Economic Communities (RECs). RECs are regional power houses that require analysis of climate information for specific regions, covering a broad range of sectors including agriculture, risk reduction, water, gender, energy. Outlooks could

be used to inform policy making and direction across all these sectors.

Funding mechanisms to support the sustainability or regional climate outlook forums

RCCs do not factor in RCOFs to their annual budgets; instead RCCs seek to source funding from donor partners to run these important flagship events. Participants from the private sector, NGOs and other agencies are required to find their own funding to attend the RCOF.

Most often, there are further national experts that are usually facilitated by participating member states. These funding sources may run out – posing a risk to the sustainability of RCOFs.

RCCs will continue to lead and coordinate the organisation of the RCOFs in collaboration with the participating NMHSs and partners, and continue to mobilise the resources required. However, there is a continued need for key users to source their own funding to attend these events while RCCs take care of convening the forum and meeting the forum's costs.

About ACPC

The African Climate Policy Centre (ACPC) is a climate knowledge Centre with an overall goal of contributing to poverty reduction through successful mitigation and adaptation to climate change in Africa and to improve the capacity of African countries to participate effectively in multilateral climate negotiations.

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