

# Taking an objective view

**Two projects supported by WISER are introducing objective seasonal forecasts to East and West Africa. The aim of both projects is to transform preparation and response to extreme weather events.**

Across the countries of East Africa, farmers, businesses and families are highly dependent on natural resources to make a living. The area experiences two rainy seasons a year, but if the rains fail or fall at an unexpected time, it can have a devastating effect, ruining crops and livelihoods and crippling vital infrastructure.

Seasonal climate forecasts are an extremely important way to help people plan ahead and stay safe in any extreme climate event. However, creating reliable seasonal forecasts is a developing area of science and there are a number of different procedures in use. The most advanced methods require climate models to be run multiple times, using slightly different starting values each time. Using this method, scientists produce what is known as an ensemble forecast. “The ensemble forecast is intended to capture the different potential scenarios that the climate might take,” explains Dr Zewdu Segele at the IGAD Climate Prediction and Applications Centre (ICPAC), the regional climate centre in eastern Africa.

Until early 2019, climatologists developing regional forecasts for East Africa used a mixture of available forecasting methods to generate what’s known as a ‘consensus seasonal forecast’. In other words, climate experts would view results from the methods and use their judgement to draw up a forecast map. “This type of forecast is a subjective one because of the human input, which differs from one person to another,” explains Dr Segele. Experts’ assumptions can also differ from season to season, which makes it impossible to assess forecasts over time. So, if the season’s weather turns out to be different from that forecast, the scientists have no way of pinpointing the reasons why.

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The subjective forecasts also pose challenges across borders. Different countries use their own distinct methods for assessing data and creating forecasts. This means that forecasts for neighbouring countries don't always match at the boundaries. To create a consistent outlook, national climatologists meet to discuss climate data from various sources so that they can draw up a forecast map that they can all be satisfied with.

### **Updated seasonal forecasts**

The World Meteorological Organization (WMO) has been promoting the need for objective approaches to generating seasonal forecasts. It has also issued guidelines on best practices in seasonal forecasting. ICPAC has been keen to follow these guidelines and, with the support of the Weather and Climate Information Services for Africa (WISER) programme through the W2-SIP project, has now introduced forecast modelling that follows an objective path.

“ICPAC established a task force to advise and oversee the implementation of the objective seasonal forecasting approach,” explains Dr Richard Graham, Manager, Seasonal Forecasting International Outreach at the Met Office. This led to a Skype session between regional climate centres and international scientists to kick off the new approach.

ICPAC then began developing a fully objective seasonal forecast system that uses predictions only from the climate model “ensemble” method. “A predetermined algorithm is scripted and applied to produce the forecasts,” explains Dr Graham, “So anyone with access to the same global forecast data would produce the same forecast using the scripts.”

This new objective approach has been used to generate seasonal forecasts at the two most recent Greater Horn of Africa Climate Outlook Forums (GHACOFs), for June to September and for October to December 2019. “The forecast has shown very good performance,” enthuses Abubakr Salih Babiker, Climate Scientist at ICPAC. Although ICPAC is still gathering feedback from end users, there is anecdotal evidence that end users are impressed. For instance, Deus Bamanya from the Uganda National Meteorological Authority (UNMA) and Ezequiel Kayoya from the Burundi meteorological service (Meteo Burundi) have already expressed their satisfaction with the new forecasts and their accuracy.

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## **Interest is growing**

The objective forecasts could be a gamechanger across the region, enabling governments to plan ahead and improve their responses to extreme weather events. That means making communities more resilient to climate shocks, ultimately saving lives and property. “The model-based forecasts give better information in a number of ways,” adds Dr Graham, “By working with decision-makers to make use of the information we can now approach seasonal climate early warning with increased confidence.” This can bring increased demand for forecasts and more investment in meteorology, and improved knowledge, leading to ongoing benefits across countries in East Africa.

Interest is certainly increasing, as Marta Baraibar, Climate Information Expert at ICPAC, explains: “We have a lot of aid agencies, non-governmental organisations (NGOs), government agencies, social enterprises and more and more private companies signing up for our forecasts. For instance, a dairy company called Brookside have signed up to our ten-day and monthly forecasts, as we include information on the state of crops and vegetation which we source through satellite imagery.”

## **Social protection in West Africa**

ASPIRE (Adaptive Social Protection – Information for Enhanced Resilience) is another project supported by WISER that is enabling objective seasonal forecasting. ASPIRE was originally set up to integrate climate and livelihoods information into social protection programmes, supporting climate service providers in western African countries including Senegal, Mali, Mauritania, Burkina Faso, Nigeria and Chad. “The Sahel region in West Africa has one dominant rainy season,” says Joe Daron, Met Office Science Lead on the ASPIRE project, “So the area is reliant on the rains for successful harvests.” By promoting and enabling accurate and objective seasonal forecasting, ASPIRE aims to help governments take early action in the case of any climate emergency.

The World Bank is investing and supporting governments in the region to set up social protection programmes with the aim of supporting vulnerable communities in times of crisis. ASPIRE is integrating climate information within these programmes, giving governments a better chance of anticipating climate shocks such as drought or flooding so they can then scale up assistance for the people affected.

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ASPIRE has also conducted research assessing the performance of seasonal forecasts in West Africa to support the regional climate forum in the region known as PRESASS (Prévisions Climatiques Saisonnières en Afrique Soudano-Sahélienne). “We’ve been working with the meteorological centres in West Africa to enhance the use of dynamical models and ultimately move to a more objective way of calculating and presenting the seasonal forecast in the region,” explains Joe.

As the seasonal forecasts being adopted are now more objective, they provide bolder probabilities and therefore potentially richer information for users. The project is also introducing training for national meteorological services to digitise and assess past forecasts. “Once you’ve digitised previous forecasts, you can compare with observations and assess the reliability of forecasts,” explains Joe. The hope is that as well as promoting objectivity in the forecast process, verification of previous forecasts becomes routine, helping to improve understanding of the reliability of seasonal forecasts.

### **An encouraging start**

It may be early days for both projects, but the results so far are encouraging – as the last two seasonal forecasts in East Africa demonstrate. By embedding objective forecasting, both projects should enable more effective planning and responses to climate events in the region. “We’re getting those conversations started and bringing the right parties into the room,” says Joe. “We’re creating the demand for climate information and then hopefully providing reliable information that’s useful.”

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