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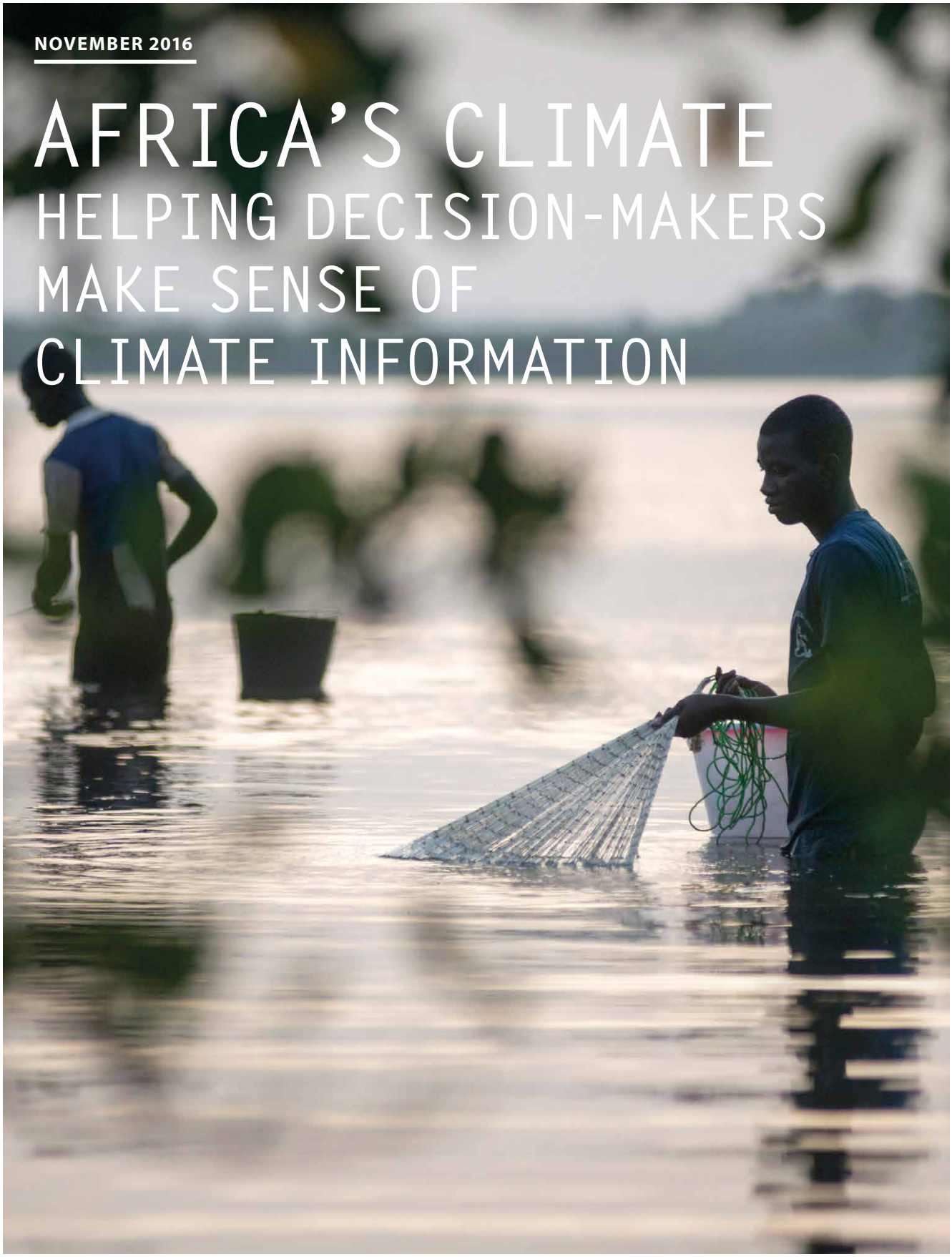
AFRICA'S CLIMATE
HELPING DECISION-MAKERS MAKE SENSE OF CLIMATE INFORMATION



FUTURE CLIMATE FOR AFRICA

GENERAL READERS

MALAWI
COUNTRY
FACTSHEET

WEATHER AND CLIMATE INFORMATION FOR DECISION-MAKING

AUTHORS

This factsheet was written by the UMFULA research team, with inputs from Malawi's Department of Climate Change and Meteorological Services.

NEED TO KNOW

Malawian decision-makers need robust information on short-term weather forecasts, as well as longer-term climate trends, so they can plan for near-term variability and distant changes to the climate system. This fact sheet outlines:

- the kind of weather and climate information available in the region
- who is using it, and how
- how climate information can be more useful to inform decisions.

CURRENT WEATHER AND CLIMATE INFORMATION IN MALAWI

In Malawi, weather information is already distributed and used fairly widely. But recent extreme weather events have highlighted the potential for climate change to disrupt efforts to address development in the region. Malawian decision-makers have the following kinds of weather and climate information available to them.

Short-term weather forecasts

Daily and five-day weather forecasts
These give predictions of temperature, rainfall, and wind for the forecast period. These are distributed through television and newspaper media, as well as on the Department of Climate Change and Meteorological Services (DCCMS) website (www.metmalawi.com).

10-day forecasts
These come out every Monday, and are sent via email to a variety of national and local government departments, as well as development partners and non-governmental organisations (NGOs).

These highlight ongoing trends (for example, the weather consequences of an El Niño event), and help users interpret the information. They also give advanced warnings, such as the potential for flooding if heavy rainfall is expected on already-saturated ground.

10-day weather and farming bulletins
During the growing season, from October to April, the DCCMS issues 10-day weather and farming-specific meteorological bulletins.

These are based on comparing the observed conditions at local weather stations over the preceding 10-day period (rainfall, temperature, wind speed, humidity, and sunshine hours), with the conditions that would be expected over the same time period, based on a 10-year average. There is a particular focus on rainfall. The bulletin also gives the cumulative total through the season, compared with historical records.

To sign up for the 10-day forecast and/or 10-day weather and farming bulletins, email Adams Chavula, Principal Meteorologist (Agrometeorology and Customer Services) (adamschavula@metmalawi.com).

Seasonal forecasts

A seasonal rainfall forecast for the entire southern African region is issued each year by the Southern African Climate Outlook Forum (SARCOF), a function of the Southern African Development Community diplomatic and economic bloc.

This gives a forecast of the expected rainfall over the coming rainy season for the region, and is localised for Malawi by the DCCMS for the months of October to March.

This seasonal forecast is different from a short-term weather forecast, in that it outlines whether the expected rainfall totals for the season will be normal, above normal, or below normal

This seasonal forecast is different from a short-term weather forecast, in that it outlines whether the expected rainfall totals for the season will be normal, above normal, or below normal. SARCOF updates its seasonal forecast mid-way through the rainy season, with a second issued for the period January–February–March.

There are additional seasonal forecasts covering Malawi, produced by other regional and international bodies, and are available online (see box). These tend to be updated more regularly (including every month for the immediate three month period), and give projections for temperature, wind, and rainfall.

Climate change projections

Projections for climate trends look at longer time windows, from now to 2065, 2080, and further.

These are drawn from the results of various global climate modelling (GCM) simulations, and are published in the Intergovernmental Panel on Climate Change's (IPCC) periodic assessments of the most current science. The most recent was the IPCC Fifth Assessment Report, published in three volumes from 2013 to 2014.

The most recent climate projections to focus on Malawi were done by the University of Cape Town's Climate Systems Analysis Group (CSAG), and South Africa's Centre for Scientific and Industrial Research (CSIR). Their modelling projects the amount of deviation from the long-term average with respect to a number of temperature and rainfall variables.

Some key sources of weather and climate information for Malawi

- Malawi Department of Climate Change and Meteorological Services (DCCMS) – daily, five-day, 10-day agro-meteorological forecasts during the rainy season, and seasonal forecasts.
- SADC Climate Services Centre, seasonal, monthly agro-meteorological bulletins during the rainy season.
- Climate Systems Analysis Group at the University of Cape Town in South Africa, for seasonal and localised projections.
- Council for Scientific and Industrial Research (CSIR) in South Africa, for seasonal and El Niño Southern Oscillation forecasts.
- International Research Institute for Climate and Society, at Columbia University in the United States, for seasonal and El Niño Southern Oscillation forecasts, and climate change projections for coming decades.
- Intergovernmental Panel on Climate Change Fifth Assessment Report, the United Nations' body of experts, which approximately each five to seven years publishes a comprehensive overview of all the current climate projections for regions across the globe.

WHO IS USING THIS INFORMATION, AND HOW?

Short-term weather forecasts

This is the most widely used form of information in Malawi, including by government departments such as the Ministry of Local Government and Rural Development, and the Department of Disaster Management Affairs within the Office of the President and Cabinet. These forecasts are typically used as a warning of extreme weather events.

The variety of short-term forecasts (the one to 10 day, and the farming bulletins) are also used by the Ministry of Agriculture, Irrigation and Water Development (including the Departments of Agricultural Extension Services and Land Resources and Conservation) and non-governmental organisations supporting livelihood interventions. They use them to inform planting times, extension services, and so forth.

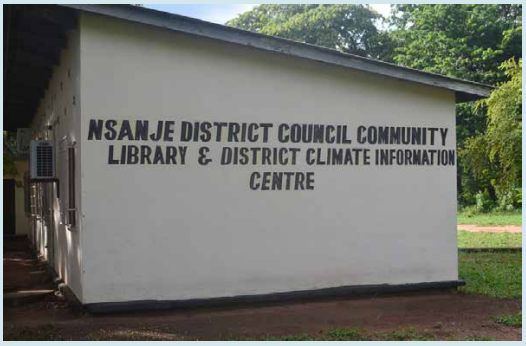
There is a bottleneck in the distribution of information to the grassroots level, which a few international organisations and NGOs are trying to resolve

But there is a bottleneck in the distribution of information to the grassroots level, which a few international organisations and NGOs are trying to resolve.[1] For instance, they are using local radio and mobile phone text services.[2] Climate Information Centres have also been established in a number of districts, from where residents can access the forecasts on the DCCMS website.

Seasonal forecasts

Seasonal forecasts are used by the Ministry of Agriculture, Irrigation and Water Development for annual planning. The Department of Land Resources and Conservation coordinates the process of interpreting the information for agricultural purposes, and the Department of Agricultural Extension Services leads on cascading the information through their institutional structures to the local level. The Department of Disaster Management Affairs also uses seasonal forecasts to inform the development of the annual National Contingency Plan.

Climate Information Centre in Nsanje District, in southern Malawi.



1 Chapota, R., J. Emmanuel, A. Tall, S. Huggins-Rao, M., Leclair, K. Perkins, H. Kaur, and J. Hansen, 2014. Delivering climate services for farmers and pastoralists through interactive radio: scoping report for the GFCS Adaptation Programme in Africa. CCAFS Working Paper no. 111. CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Copenhagen, Denmark. Available online at: www.ccafs.cgiar.org

2 The Farm Radio Trust, Zodiak radio and National Association of Smallholder Farmers of Malawi broadcast forecasts, and the Farm Radio Trust also complements this with mobile phone text message distribution. The National Agricultural Development Content Committee provides the agricultural interpretation. In addition a number of NGOs and programmes are also supporting communication of weather information, for example the Red Cross, Global Framework for Climate Services and Enhancing Community Resilience Programme.

Climate change projections

Climate change projections are rarely used in planning activities in Malawi. However, there is increasing interest to do so, partly prompted by the 2015 floods, and the 2015–16 El Niño event and drought. These exposed the significant vulnerabilities of the region to current extreme weather events, and the increased likelihood of them owing to future changes in climate.

IMPROVING WEATHER AND CLIMATE INFORMATION USE

There is often a misunderstanding of what climate projections are – that they are not crystal ball predictions – which undermines usability in the modelled results

Even though the short-term and seasonal weather forecasts are used widely here, particularly for helping the agriculture sector, climate information is not used much in planning. There is often a misunderstanding of what climate projections are – that they are not crystal ball predictions – which undermines usability in the modelled results, and has acted as a barrier to using this climate information.

Getting models that produce useful information

The agriculture sector needs reliable projections of anticipated trends in rainfall, temperature, humidity and potential evapotranspiration rates, for example, so they can plan and design future investments, such as irrigation projects, and their implementation. However, there is a shortage of modelled projections. This forces people to rely on the use of past observed data. Applying past data to the future, which is also used by other ministries, is potentially problematic as it assumes that the future climate will mirror the past, which may not be the case for projected climate change.

Getting the timescales right

Most government departments are planning according to a three- to five-year time horizon, while the climate projections are based on decades-longer timeframes, such as looking to 2050 and beyond.

Too technical for the average user

The climate model results and scenarios are too technical for most users, which affects how the information is understood, used and spread. This is particularly evident in how it prevents the use of such information in sector-specific decision-making. For instance, the DCCMS and others interpret this climate information for the farming sector. But other sectors don't have institutions offering them the same kind of analysis of trends.

WHERE TO FROM HERE?

After the major 2015 floods in Malawi, a new National Disaster Risk Management Policy was proposed. This makes provision for an Early Warning System that will give the Department of Disaster Management Affairs the scope to use weather and climate information beyond the one-to-ten day forecasts for immediate warning of extreme events.

Similarly the National Adaptation Plan process, currently underway, intends to develop scenarios of climate change that will address the problem of choosing what information to use from among multiple projections.

DCCMS is developing climate services, partly through the Global Framework for Climate Services project (2014–16) (www.wmo.int/gfcs/Norway_2). The agency is assessing information needs and appropriate ways to target the thematic needs of the food security, disaster risk reduction, and health communities. Scientists working in the field aim to support this process by providing climate information suitable for medium-term planning in Malawi (see below).

FCFA'S UMFULA PROJECT

Project objectives

UMFULA ("river" in Zulu) is a four year research project that aims to improve climate information for decision-making in central and southern Africa, with a particular focus on Tanzania and Malawi. UMFULA is a global consortium of 15 institutions specialising in cutting edge climate science, impact modelling and socio-economic research.

UMFULA aims to support long-term – five to 40 year – planning decisions in central and southern Africa around resource use, infrastructure investment and cross-sectoral growth priorities, by identifying adaptation pathways which are robust and resilient in the face of climate change and other non-climate stressors.

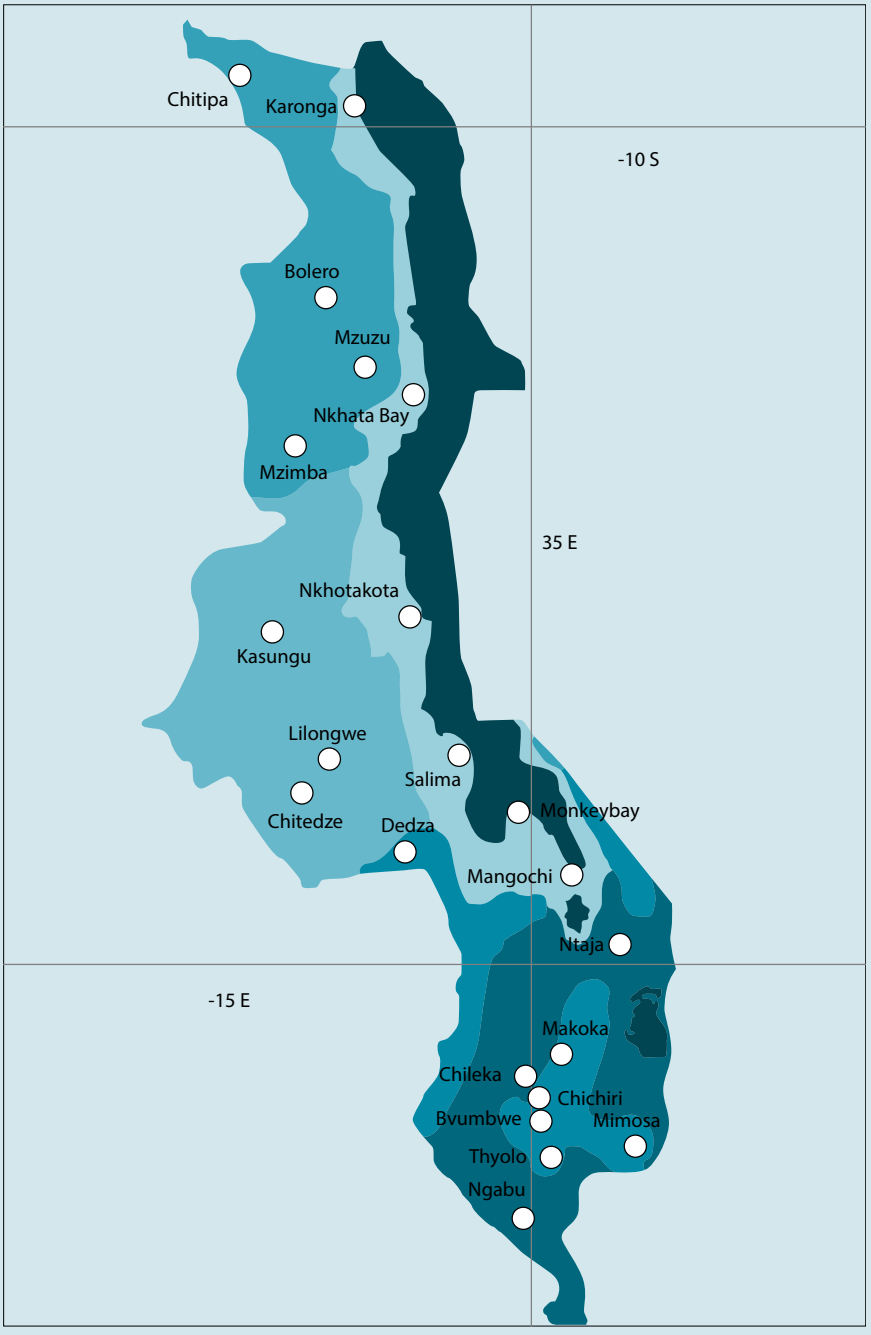
The team is generating for the region new insights and more reliable information about climate processes and extreme weather events and their impacts on water, energy and agriculture. These insights will support the more effective use of climate information in national and local decision-making. See www.futureclimateafrica.org/project/umfula/

The institutions involved in UMFULA are:

- Grantham Research Institute on Climate Change and the Environment (London School of Economics and Political Science)
- Kulima Integrated Development Solutions
- University of Oxford
- University of Cape Town
- Sokoine University of Agriculture
- Lilongwe University of Agriculture and Natural Resources
- University of Leeds
- Council for Scientific and Industrial Research
- University of Manchester
- University of KwaZulu-Natal
- University of Sussex
- University of Dar Es Salaam
- University of Yaoundé
- Tanzanian Meteorological Agency
- Mozambique National Institute of Meteorology

FIGURES

Figure 1
The spread of Malawi's weather stations (source: www.metmalawi.com)



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