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





GENERAL READERS

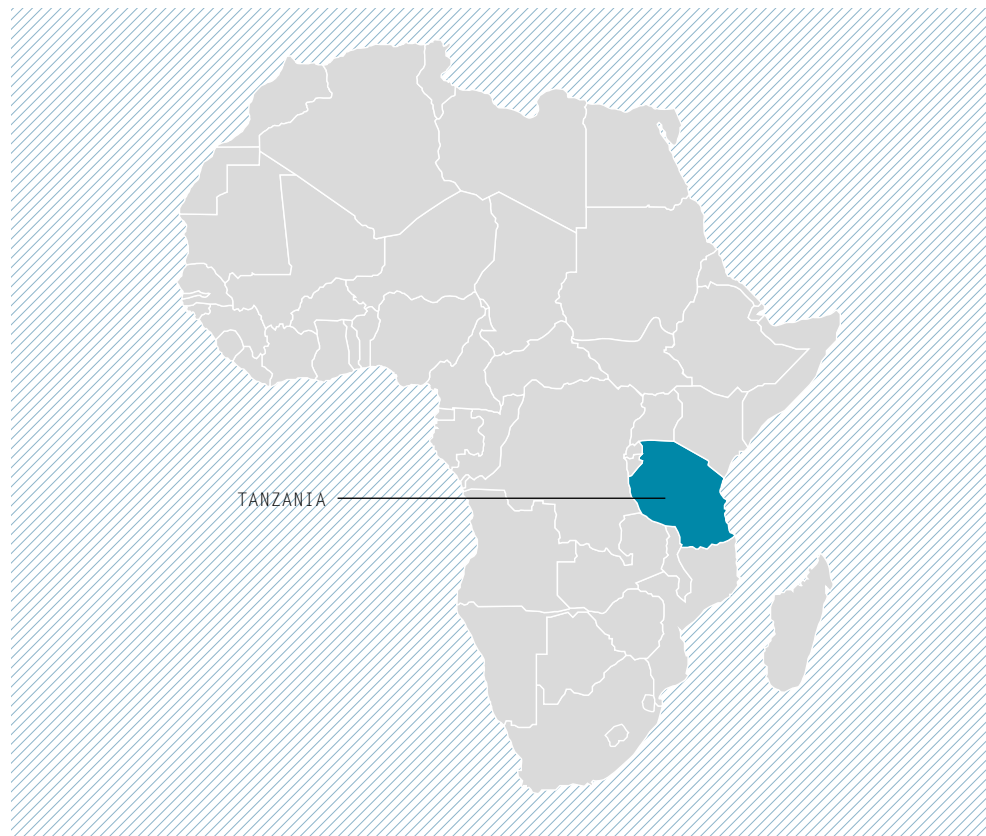
**TANZANIA**  
COUNTRY FACTSHEET

# WEATHER AND CLIMATE INFORMATION FOR DECISION-MAKING<sup>1</sup>

## AUTHORS

This factsheet was written by Tanzania's UMFULA research team.

<sup>1</sup> This report is based on interviews conducted with staff from government departments and ministries, non-governmental organisations and civil society organisations during April and May 2016. It also incorporates insights from a conference to launch the El Niño emergency projects (TCP/URT/3506) (April 2016). Other sources have been recognised throughout.



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## NEED TO KNOW

Decision-makers in Tanzania are eager to get more useable climate information in order to make short- and long-term plans.

This factsheet 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, in order to inform decision-making and planning.

### CURRENT WEATHER AND CLIMATE INFORMATION IN TANZANIA

Tanzanian decision-makers have the following kinds of weather and climate information available to them:

#### Short-term weather forecasts

##### *Immediate weather advisories*

The Tanzania Meteorological Agency (TMA) issues extreme weather warnings and advisories. These alerts are issued for the attention of both the general public and/or other key sectors such as aviation, agriculture, water resource management, disaster management, health and the construction industry.

##### *Next 24 hours to next 10 days*

TMA issues short range weather forecasts covering the next 24 to 48 hours, and medium range forecasts that extend up to 10 days ahead. They contain information on temperature, precipitation and wind speeds. These are broadcast through television, radio, the TMA website ([www.meteo.go.tz/](http://www.meteo.go.tz/)) and via mobile phone alerts. Users are most familiar with these short- and medium-range forecasts.

##### *Targeted 10-day forecasts*

TMA also issues bulletins targeted at the agricultural sector. These bulletins are similar to the standard 10-day forecasts. However, they have some additional interpretation. They review the temperature and rainfall conditions, and the resulting agro-meteorological and hydrological conditions that were observed over the previous 10 days. They also predict temperature, rainfall and hydrology, and provide an agro-meteorological advisory (the Agromet Bulletins), for the coming 10 days.

##### *Monthly forecasts*

TMA produces monthly forecasts. They review the climate and weather systems that have affected the country over the previous month, and the rainfall observations, as well as predicting what rainfall will look like in different parts of the country over the coming month.

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## Seasonal forecasts

### *Seasonal forecasts*

The seasonal forecasts tend to be produced for three key periods: the two rainy seasons, (the Vuli season: October to December; and the Masika season: March to May), and the January/February period in between.<sup>2</sup>

These seasonal forecasts provide a review of rainfall performance, and an outlook for the next season. They also capture phenomena that are likely to affect conditions over the whole season, such as the development of El Niño conditions, and the implications of sea surface temperatures for rainfall amounts. This information is targeted at specific advisories for agriculture and food security, pastures and water for livestock and wildlife, natural resources and tourism, energy and water, local authorities, the health sector, disaster management and the media.

## 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.

Much of the information about the potential risks and impacts of climate change for Tanzania comes from targeted research carried out by universities, in particular Sokoine University of Agriculture, and the University of Dar es Salaam.

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

### **Some key sources of weather and climate information for Tanzania**

- Tanzania Meteorological Agency (TMA) – daily, 10-day and seasonal forecasts in addition to extreme weather alerts.
- World AgroMeteorological Information Service (Tanzania) – archive of previous 10-day and seasonal climate bulletins issued by TMA.
- SADC Climate Services Centre – seasonal, monthly agro-meteorological during the rainy season.
- Climate Systems Analysis Group at the University of Cape Town in South Africa – seasonal and localised projections.
- Council for Scientific and Industrial Research (CSIR) in South Africa – seasonal, El Niño forecasts.
- International Research Institute for Climate and Society at Columbia University in the United States, for seasonal, El Niño forecasts, and climate change projections for coming decades.
- Intergovernmental Panel on Climate Change Fifth Assessment Report, the United Nations' body of experts, which periodically publishes comprehensive overviews of all the current climate projections for regions across the globe.

2 TMA (online) [www.wamis.org/countries/tanzania.php](http://www.wamis.org/countries/tanzania.php)

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## WHO IS USING THIS INFORMATION, AND HOW?

### Short-term weather forecasts

Government departments, non-governmental organisations (NGOs), and private sector actors use the short-term weather forecasts widely. These are also available to the general public, which means that small-scale farmers can access them, usually through radio or television. Short-term weather forecasts are particularly useful for the agriculture sector during the early rainy season to help farmers determine when they should plant their crops and apply fertilisers.

Weather information is also distributed through official channels: TMA prepares the information, and shares it with the Prime Minister's office, which in turn disseminates it to the regional and district levels. Different sectors have specific uses for this information, such as the energy sector, which requires the forecasts to manage dam releases for optimal hydropower generation.

### Seasonal forecasts

The district governments that receive seasonal forecasts try to build them into their plans for the coming season. However, a major challenge has been the timing of the forecasts, which tend to arrive after they have finalised their plans. A key challenge to improving how these forecasts are incorporated into planning is ensuring that they are distributed more rapidly following their release.

Seasonal forecasts are particularly valuable to the agriculture sector, and form the foundation of the advice that extension officers provide to farmers. This is particularly true at the start of the rainy season, when farmers need to decide what crops and seed varieties to plant, and when. Knowing that an El Niño event is approaching, for example, can inform farmers' choices. However, forecasts are often not reliable, which affects trust.

Besides the districts, seasonal forecasts are not spread as widely as the daily and 10-day forecasts. Among government and NGO staff there is a sense that such the longer-range forecasts are less easily available and often require a request to TMA.

### Climate change projections

There is a great deal of uncertainty in the climate change projections for Tanzania, because they tend not to reflect differences between the country's diverse climate and ecological zones. Although TMA recognises the increasing importance of climate change for Tanzania, their focus is more on providing daily, 10-day and seasonal forecasts than longer-term climate projections. Efforts to raise awareness of the projections and climate change impacts tend to rest more with the research institutions. Climate change projections are therefore not routinely integrated into planning and decision-making in Tanzania.

## IMPROVING WEATHER AND CLIMATE INFORMATION USE

### Better weather data from around the country

The country is large, with highly remote areas that are difficult to access for a weather service that has logistical and resource challenges. Tanzania is trying to install more automatic stations that send the information to a central point, but transporting these into the field and then making them operational is expensive. Producing reliable forecasts without such observations is a challenge as it is therefore difficult to predict the effects of different weather systems on the diverse climate and ecological zones.

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**Tanzania comprises eight distinct climate zones, and their differences are currently not well represented in climate models**

### **Making sure information arrives at the right time**

Seasonal forecast information often arrives too late for it to be used in planning. District governments, for example, noted that whilst they regard this information as useful, they struggle to include it because they have already prepared their plans and activities for the season.

While seasonal forecasts and climate change projections are produced by TMA, they are not distributed automatically – instead they must be requested.

#### *Having more robust climate projections*

Tanzania comprises eight distinct climate zones, and their differences are currently not well represented in climate models. This introduces a great deal of uncertainty in the results. Since the country does not have many weather stations, the lack of data makes it hard to refine these models.

#### *Understanding climate change*

Another challenge is interpreting information and knowing what it means for planning in the different sectors. Those involved in planning and decision-making in different departments are not used to including long-term climate information in their planning. They often feel that climate change, as a relatively new topic on the national agenda, is not well understood and the implications can be difficult to determine from the sparse availability of technical information and data.

## **WHERE TO FROM HERE?**

Tanzania has limited resources to address the key challenges of developing climate information, and is therefore focussing efforts on the seasonal forecasts. TMA already analyses the performance of the seasonal forecasts, in order to refine and improve them.

Some new automated monitoring stations are also being installed across the country to improve weather data collection. Projects and research being carried by the key national universities (Sokoine University of Agriculture, and the University of Dar es Salaam) and other partners, continue to support the development of enhanced climate information and insights into what this means for long-term planning.

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# 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 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](http://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

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