

Tanzania Meteorological Agency successfully scales delivery of improved weather forecast

Introduction

Since 2017 the Tanzania Meteorological Agency (TMA) has successfully operationalised a new and improved five-day weather forecast. The forecast focuses on the most important weather-related impacts facing coastal communities, such as flooding, strong winds, and high waves. Feedback from the Disaster Management Department and local fishermen and farmers confirm that the new forecast provides relevant information in an understandable format. Sustained awareness raising with end users, and investment in improving dissemination channels, will be key to ensure wider usage of the forecast.

Meeting the needs of weather and climate information users

A novel pilot project, initiated in 2016, to develop an improved five-day weather forecast for communities along the Tanzanian coast has overcome the first major hurdle to long-term impact: it has been successfully continued as a standard service by TMA over the past two years. TMA have also extended the geographic coverage to include areas around the lakes in the north and west of the country.

Between 2016 and 2018 TMA partnered with the Met Office, the UK's national meteorological service, to design an improved weather forecast to serve the needs of coastal communities. This was funded by the UK Government's Department for International Development through the Weather and Climate Information Services for Africa (WISER) programme. Through a collaborative process with key user communities from the coastal region, including fishermen, coastal traders and seaweed farmers, several innovations were made to improve the usefulness and accessibility of weather information. These included a shift from providing weather information (such as how many millimetres it will rain, or wind speed in kilometres

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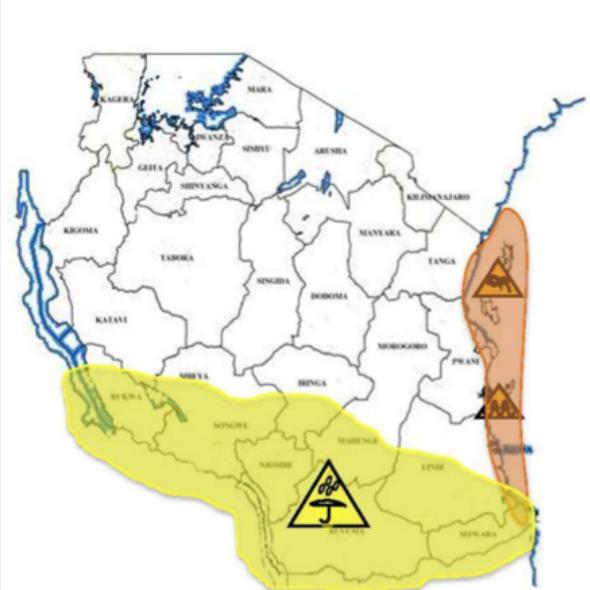


per hour) to providing advice and warnings based on the weather forecast, such as warnings about high waves and flooding. Other changes included the design of new symbols to represent hazards (e.g. risks of heavy rainfall, floods and strong winds) in an understandable way to vulnerable communities with low literacy rates.

The collaborative process for developing the impact-based forecast, as well as sustained engagement with a growing stakeholder community has also enabled TMA to progress its implementation of the User Interface Platform of the Global Framework for Climate Services, a key guiding goal for the agency. “TMA has used the multi-hazard impact-based forecast to reduce the gap between producers and users of climate services”, says Dr Ladislaus Chang’a, Director of Research and Applied Meteorology at TMA. “Engaging stakeholders throughout the design of the product ensures that information is clear and understandable.”

Utabiri wa Hali ya Hewa wa Siku Tano na Athari Zinzazoweza Kutokea

Umetolewa Leo Tarehe 08-02-2019 Saa 10:00 Jioni na Mamlaka ya Hali ya Hewa Tanzania



Alama za Athari	
Joto Kali:	Maporomoko ya Ardhi:
Mvua Kubwa:	Upepo Mkali:
Mafuriko:	Mawimbi Makubwa:

Ijumaa 08-02-2019

ANGALIZO la mvua kubwa zinazoambatana na ngurumo limetolewa kwa maeneo ya Iringa, Njombe, Ruvuma, Lindi, Mtwara na Morogoro (south) Mahenge
Tafadhali **ZINGATIA NA UJIANDAE**
UWEZEKANO WA KUTOKEA: WASTANI, KIWANGO CHA
ATHARI ZINAZOWEZA KUTOKEA: CHA WASTANI.
(Baadhi ya makazi kuzungukwa na maji, ucheleweshwaji wa usafiri, kusimama kwa muda kwa baadhi ya shughuli za kiuchumi na kijamii)

TAHADHARI ya Upepo Mkali na mawimbi makubwa imetolewa kwa maeneo ya pwani ya mikoa ya Tanga, Pwani, Dar es salaam, Lindi, Mtwara pamoja na Visiwa vya Unguja na Pemba.
Tafadhali **CHUKUWA HATUA**

UWEZEKANO WA KUTOKEA: MKUBWA, KIWANGO CHA
ATHARI ZINAZOWEZA KUTOKEA: WASTANI.

(Kuanguka kwa matawi na miti, kuwepo ugumu katika shughuli za usafiri kwa vyombo vya majini na kuathirika kwa shughuli za uvuvi na ugumu wa upatikanaji samaki)

Uwezekano	Mkubwa (70% au Zaidi)	A	T	T
	Wa Wastani (Kati ya 30% na 70%)		A	T
	Mdogo (30% au Kidogo)			A
	Ndugu	Za Wastani	Kubwa	
Athari				

An example of the new daily multi-hazard, impact-based forecast as developed for 14 August, 2018. The forecast is delivered in Swahili, the national language of Tanzania and widely spoken in the coastal communities.

From project to operationalisation

Since the collaboration with the Met Office to design the new weather forecast, TMA’s efforts to operationalise the service have gone from strength to strength. It has successfully produced the forecast over the past year, employing the new innovations and the standard operating procedures developed during the WISER pilot phase. “Many projects end as projects,” says Chang’a. “However, this product is now operationally produced as part of TMA’s forecasting services.”

Umezekano	Mkubwa (70% au Zaidi)	A	T	T
	Wa Wastani (Kati ya 30% na 70%)		A	T
	Mdogo (30% au Kidogo)			A
		Ndogo	Za Wastani	Kubwa
		Athari		

A table gives an explanation of colour-coded advice and warnings in the forecast. “T” stands for “Tahadhari”, meaning “caution”, and is presented as a function of the probability (“umezekano”) and the impact (“athari”) of a particular weather hazard.

<u>Alama za Athari</u>	
<u>Joto Kali:</u> 	<u>Maporomoko ya Ardhi:</u> 
<u>Mvua Kubwa:</u> 	<u>Upepo Mkali:</u> 
<u>Mafuriko:</u> 	<u>Mawimbi Makubwa:</u> 

New pictorial symbols were developed based on local needs. For instance, the symbol for “strong winds” (“upepo mkali” in Swahili) consists of two bent-over palm trees and the symbol for “flooding” (“mafuriko” in Swahili) consists of a submerged house.

Ongoing stakeholder engagement

Along with the sustained production of the new forecast, TMA has convened a growing stakeholder community to raise awareness of the new forecast, and to improve dissemination to people who need the information most.

Currently, TMA disseminates the forecast through mailing lists, which reach the Disaster Management Department (in the Office of the Prime Minister), sectoral government ministries, extension workers, NGOs and the media. It also disseminates the forecast via its [Facebook page](#). Reaching end-users in a timely way, however, remains a challenge. Between TMA and end-users, many intermediary stakeholders are currently required to pass on, and in some instances customise and interpret, the forecast. Different intermediaries require the forecast in different formats, along with assistance to interpret the forecast into customised advisories for specific locations.

For instance, some Tanzanian newspapers have noted a keen interest to publish the daily forecast, but they need to receive it by 21:00 the preceding day to include in the morning print run. Radio stations have requested a voice recording of the forecast that they can include in their programme schedule, but this information also needs to be customised to the broadcasting locations of the respective stations.

The Disaster Management Department (DMD) plays a central role in mitigating, preventing and responding to disasters across the country. The DMD has been successfully disseminating the seasonal forecasts, along with interpretation and directives, to each of the 156 districts of Tanzania for several years. However, currently there are challenges to replicating a similar process on a more frequent basis for the 5-day forecast. “We do not currently have the resources to support the timely dissemination of the 5-day forecasts. We lack the capacity to interpret it and issue advisories or directives for specific districts in time” says Catherine Marimbo, Senior Disaster Management Coordinator within the DMD.

Continuous improvement

TMA and its growing network of stakeholders have signaled their interest to experiment with different dissemination methods, and there may be good lessons to learn from neighbouring national meteorological agencies. In Rwanda, TMA's counterpart, Meteo Rwanda, has partnered with Viamo, a mobile services company, to deliver daily weather forecasts via mobile phone. Rwandans can sign up for free extreme weather alerts on their mobile as well. Viamo, in partnership with meteorological agencies, is now providing approximately 820 000 callers directly with climate information across several African countries.

Whilst challenges persist, TMA and a growing group of stakeholders are committed to experimenting with improving dissemination. “Our focus is now to sustain awareness raising and sensitisation efforts, and aim for simultaneous dissemination of the forecast to all users.” Says Dr. Chang'a.