



In support of Malawi's Community-Based Flood Early Warning System (CBFEWS) for Effective Disaster Preparedness and Recovery

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DoDMA's work and Malawi's NAP Framework.

Malawi's Department of Disaster Management Affairs (DoDMA) in the Office of the President and Cabinet (OPC) is **responsible** for **coordination of Disaster Risk Management** including **early warning systems**, drawing on the hydrology from the Department of Water Resources (**DWR**) and the Department of Climate Change and Met Services (**DCCMS**) to provide climate and (flash floods) hydrological information.



GOVERNMENT OF MALAWI

Malawi's National Adaptation Plan Framework



Ministry of Natural Resources, Energy and Mining
Environmental Affairs Department

March 2020

Malawi's National Adaptation Plan Framework

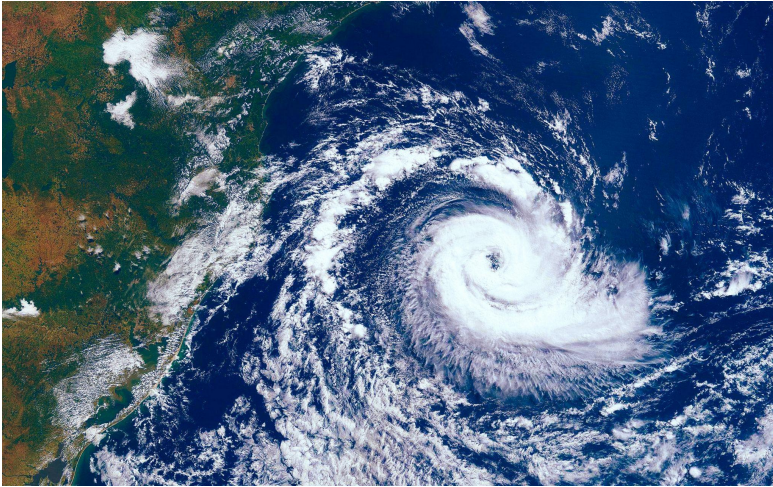
Produced by the Government of Malawi, Ministry of Natural Resources, Energy and Mining, with financial and technical support from the NAP Global Network.

Objective: To improve community resilience to climate change through enhanced agricultural production, infrastructure development and disaster risk management.

The activities will be led by :

- a. The Ministry of Agriculture,
- b. Ministry of Water & Sanitation,
- c. Ministry of Transport and Public Works;
- d. Department of Disaster Management Affairs (DoDMA)

Malawi's climate and weather conditions



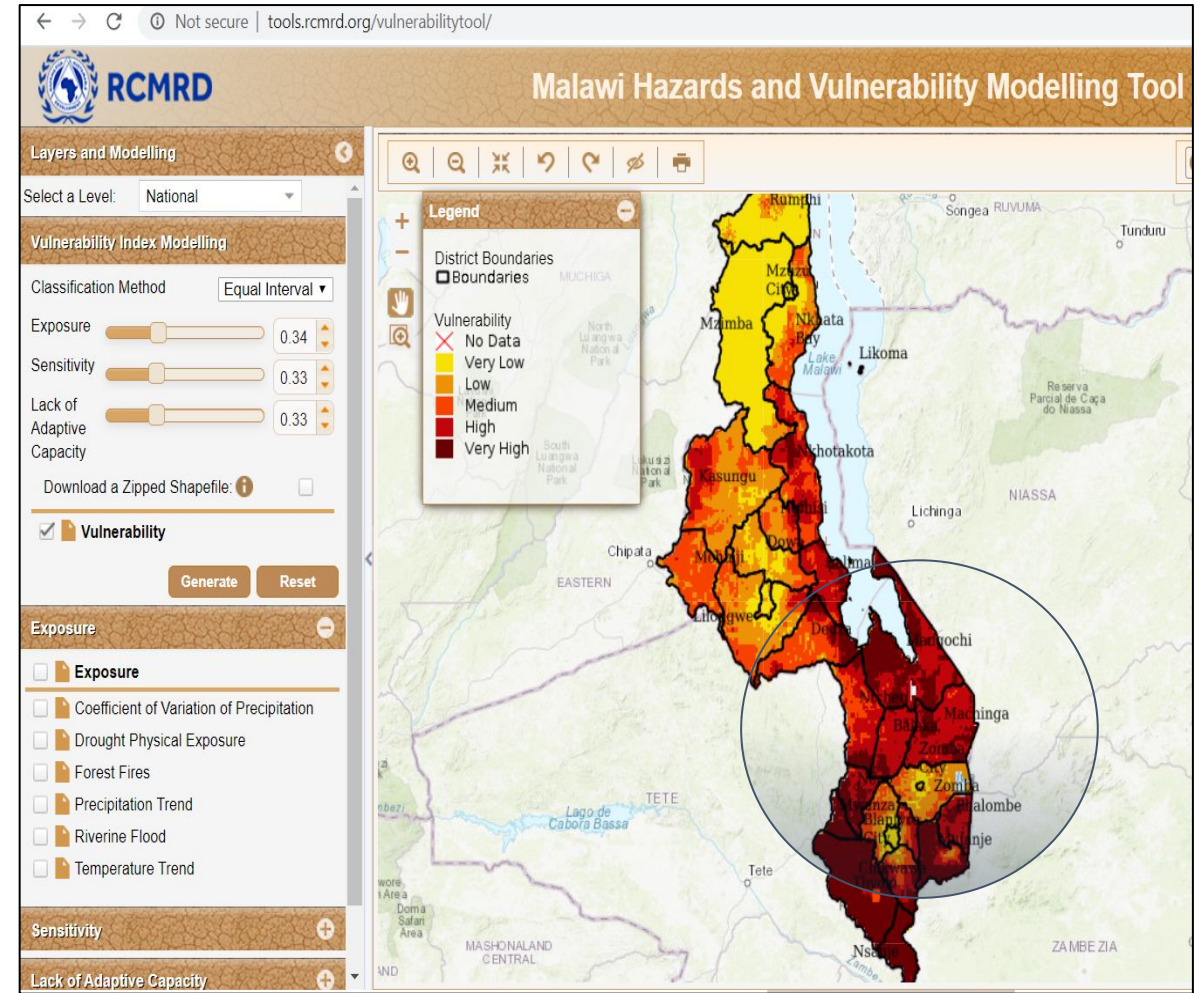
Common Hazards Include:

- **Floods**
- Heavy storms
- **Drought**
- Landslides
- Pest Infestations
- **Disease epidemics / Waterborne diseases**





Malawi's Vulnerability

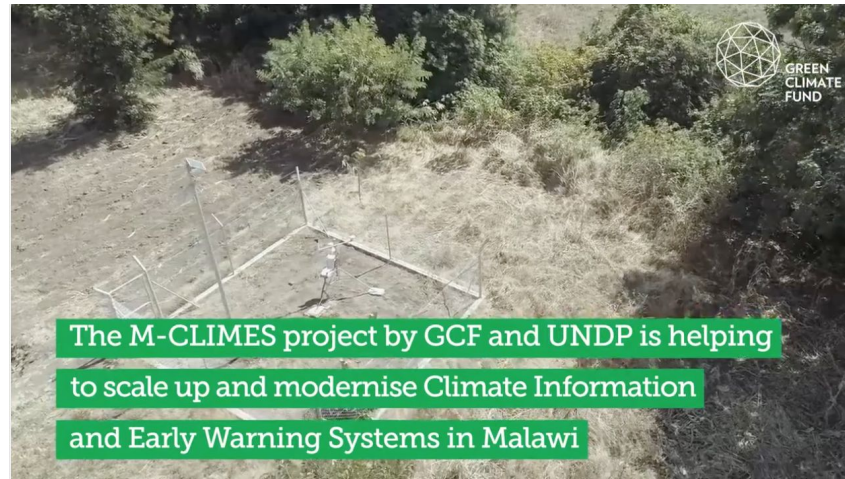


- **Malawi's economy** is heavily dependent on **agriculture** which employs over **85% of the population**.
- Higher Impact of climate change and variability in the South
- Over-reliance on in-situ measurements for flood forecasting.
- Extensive deforestation and watershed degradation

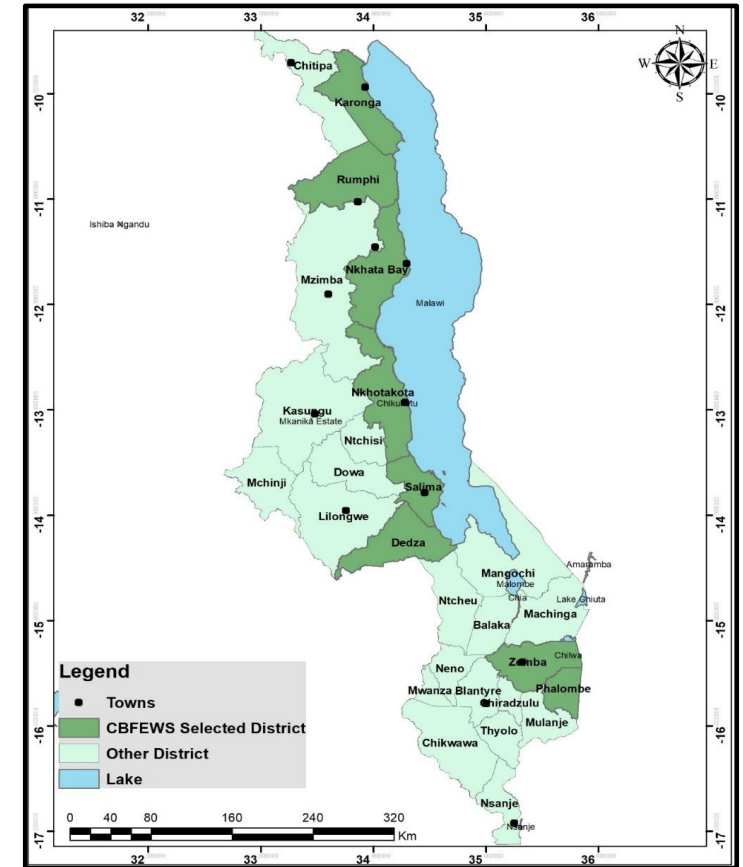
Scaling up the use of Modernized Climate Information and Early Warning Systems in Malawi



- ❖ The **M-CLIMES** project funded by **GCF**, and the Integrated **CBFEWS** project funded by **USAID**, are both designed and implemented under the framework of the NAP



<https://www.greenclimate.fund/project/fp002>



Water level Sensor



Data
Transmission

Data Server Upload



Upload

Alarm Unit



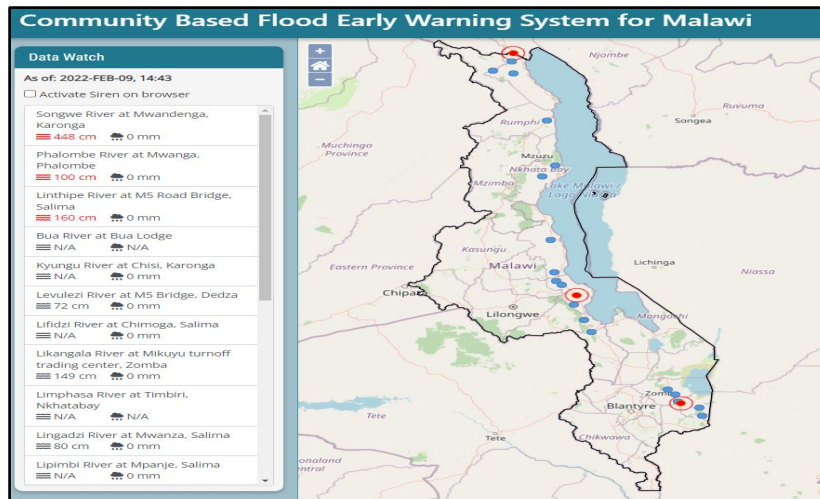
Manual
Trigger
Remote
Trigger

Alarm track

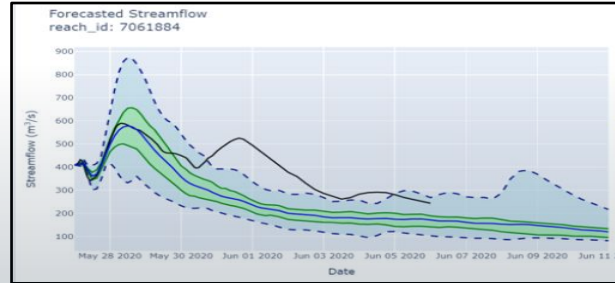
Trigger



Manual
River
Staff
Gauge



GEOGloWS ECMWF Streamflow forecast



REST
API

The GEOGloWS-ECMWF Streamflow Forecasting Service

<https://geoglows.apps.aquaveo.com/apps/geoglows-hydroviewer/>

<https://tethys.byu.edu/apps/geoglows-hydroviewer/>

GEOGloWS ECMWF Streamflow Hydroviewer

Map Controls

Map Animation

Mon Jun 20 2022 03:00:00 GMT+0300 (East Africa Time)

Find A Reach ID

Zoom to Lat/Lon Coordinates

Remove Map Marker

Switch to HydroShare Map

Stream Gauge Networks

Choose A Gauge Network

ESRI Topographic

ESRI Terrain

ESRI Grey

Stream Network

Gauge Network

VIIRS Imagery

20-yr Return Period Flow

10-yr Return Period Flow

2-yr Return Period Flow

Stream Line

6001, Lon: -1.0547

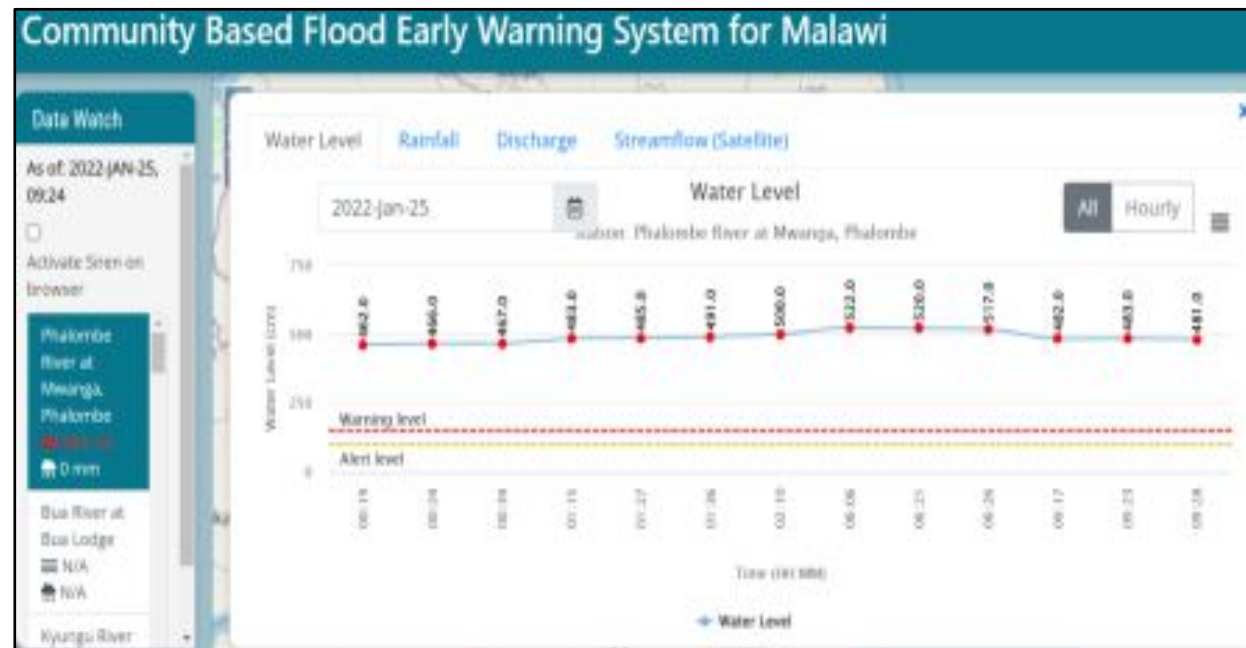
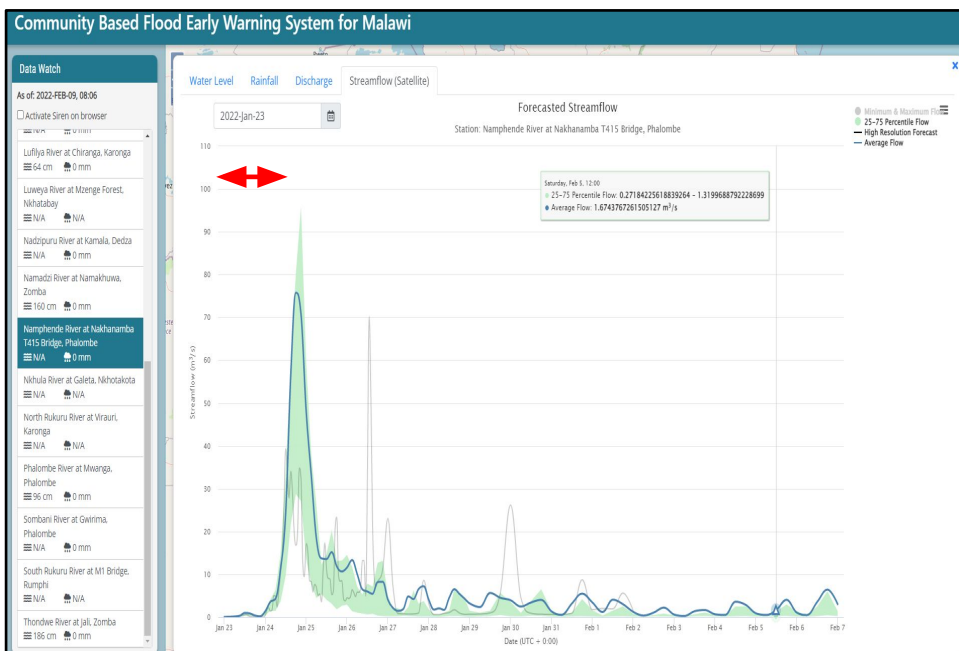
Leaflet | Powered by Esri | USGS, NOAA, Source: GEOGloWS ECMWF Streamflow System

November 2022 | Accra, Ghana

The GEOGloWS-ECMWF Streamflow Forecasting Service Partnership



Integrated CBFEWS performance during Cyclone Ana in 22th - 25th January 2022 –Southern Malawi



Malawi's annual flood impact

November/April	Event	Financial Impact (Millions U.S. dollars)		Population		
		Damage & Losses	Recovery	Affected by economic loss	Displaced	Dead
2011/2012	Heavy rainfall	12	22	18,000	6,800	18
2014/2015	2 Cyclones	215	494	1,101,364	230,000	106
2018/2019	2 Cyclones	220	368	975,600 (277,089) ★	N/A	60
CBFEWS Implemented 2021/2022	2 Cyclones	156	185	994,967 (156,197) ★	221,127	46

2015/2016 Drought

★ 8 Southern Districts in which CBFEWS was implemented in 2021

Next Steps

- ❖ With support from the World Bank, *DoDMA* plans to *upscale the integrated CBFEWS* into 10 flood prone districts frequently impacted by cyclones in the Southern part of Malawi, targeting additional 40 river systems.
- ❖ Interest to replicate Malawi's experience expressed by *Tanzania, Mozambique, Zambia, Uganda, Lesotho, Kenya, and Botswana*.
- ❖ *RCMRD and GEOGloWS partners* through the *SERVIR Program* is working to replicate the integrated *CBFEWS* and increase the institutional capacity in the region but funding is needed for the technical support for GEOGloWS in countries outside the SERVIR hub.
- ❖ Develop guidelines to connect the *GEOGloWS ECMWF streamflow forecast service* to National Adaptation Plans (*NAPs*) in other countries.

March 20, 2023



Thank You.
Medaase.
Oyiwaladon.

