

# Global Flood Partnership Annual Conference

## “ EW4ALL : Strengthening resilience against flooding”

*By:*

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Godefroid Nshimirimana**



INTRA-ACP CLIMATE SERVICES AND RELATED APPLICATIONS PROGRAMME



An initiative of the Organisation of African, Caribbean  
and Pacific States funded by the European Union



*Nairobi– Kenya : 24 JULY 2024*



## ACMAD MISSION

**Created through** resolution 540 of the UNECA Conference of Ministers in April 1985 **following the droughts of the 70s and 80s**  
**ACMAD was established in Niamey-Niger since October 1992**

Continental Weather and Climate Watch Centre for Africa **with**  
**Monitoring, forecasting and early warning for droughts, floods, tropical cyclones and other extreme events as functions**

ACMAD is a **WMO designated RCC** since Congress in May 2015  
and a **Continental MultiHazards Advisory Centre** since October 2022 for the AUC situation room of the AMHEWAS

Institution of excellence for the Applications of meteorology for sustainable development **with capacity building, methods, tools and products development, contribution to global weather and climate programs, promotion of database , research and innovation as functions**





# ACMAD Continental Multi-Hazard Advisory Centre operational since October 2022





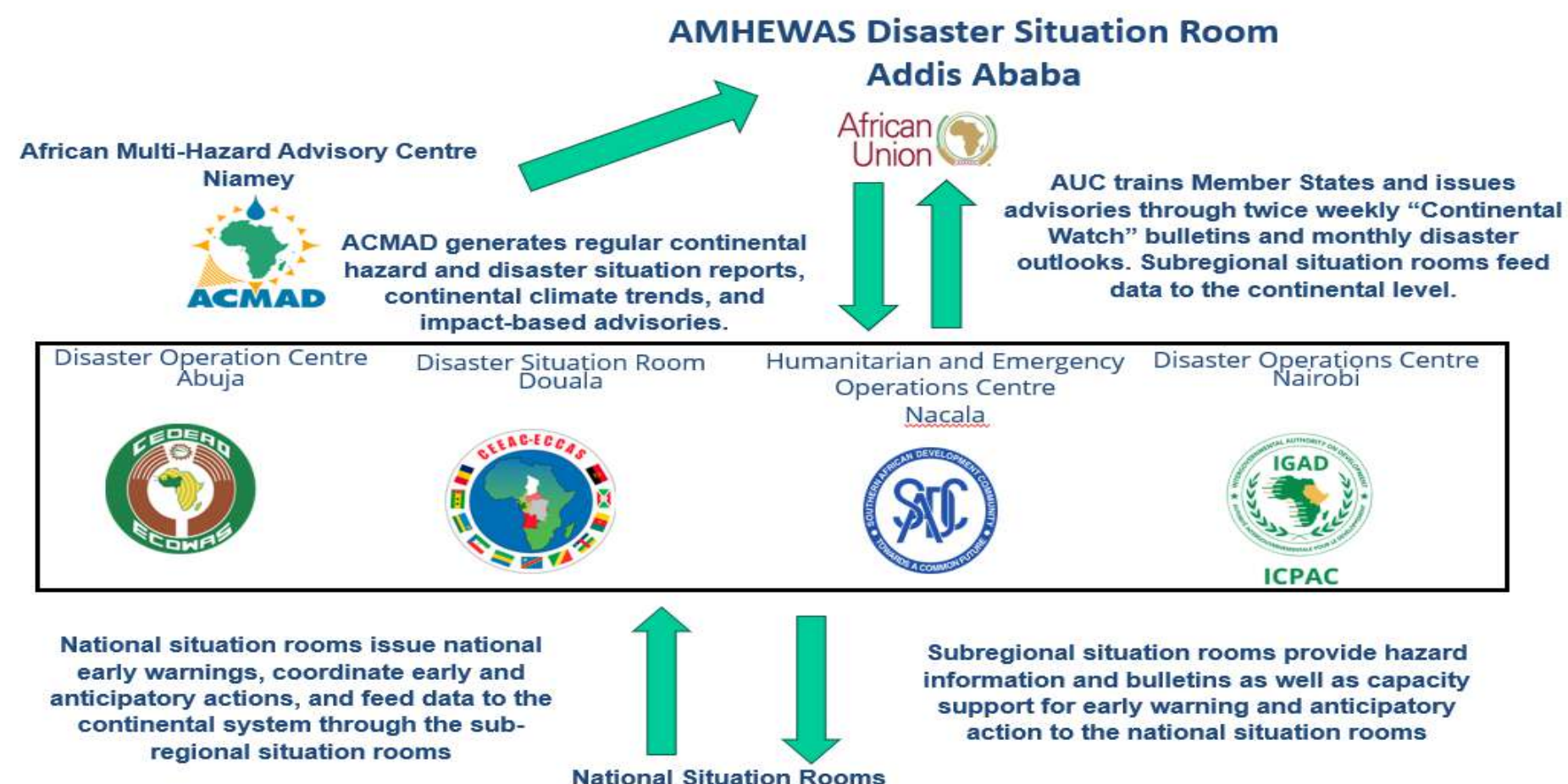


# ACMAD Role and Responsibilities in AMHEWAS

ACMAD contributes mainly in 2 components :

- **Disaster Risk Knowledge :** Collect, aggregate, and disseminate continental risk information and mapping, and collaboration with other continental facilities  
Facilitate joint training and capacity building initiatives
- **Detection, Monitoring, Analysis: and Forecasting of the Hazards**

Monitoring, analysis, and forecasting systems for identified hazards at the continental level ( Heavy Rainfall, Strong winds, Cyclone Track, and Drought)



*The ACMAD Sit Room is now operational as part of the African multi-hazard early warning system for rapid action and provides twice-weekly Continental Watch, information on extreme rainfall, strong winds and cyclone tracks, as well as collaborating with the AUC SitRoom and Sit Room ICPAC in the production of Situation Reports.*

*The centre also contributes to the organisation of ad-hoc briefings for anticipatory action.*



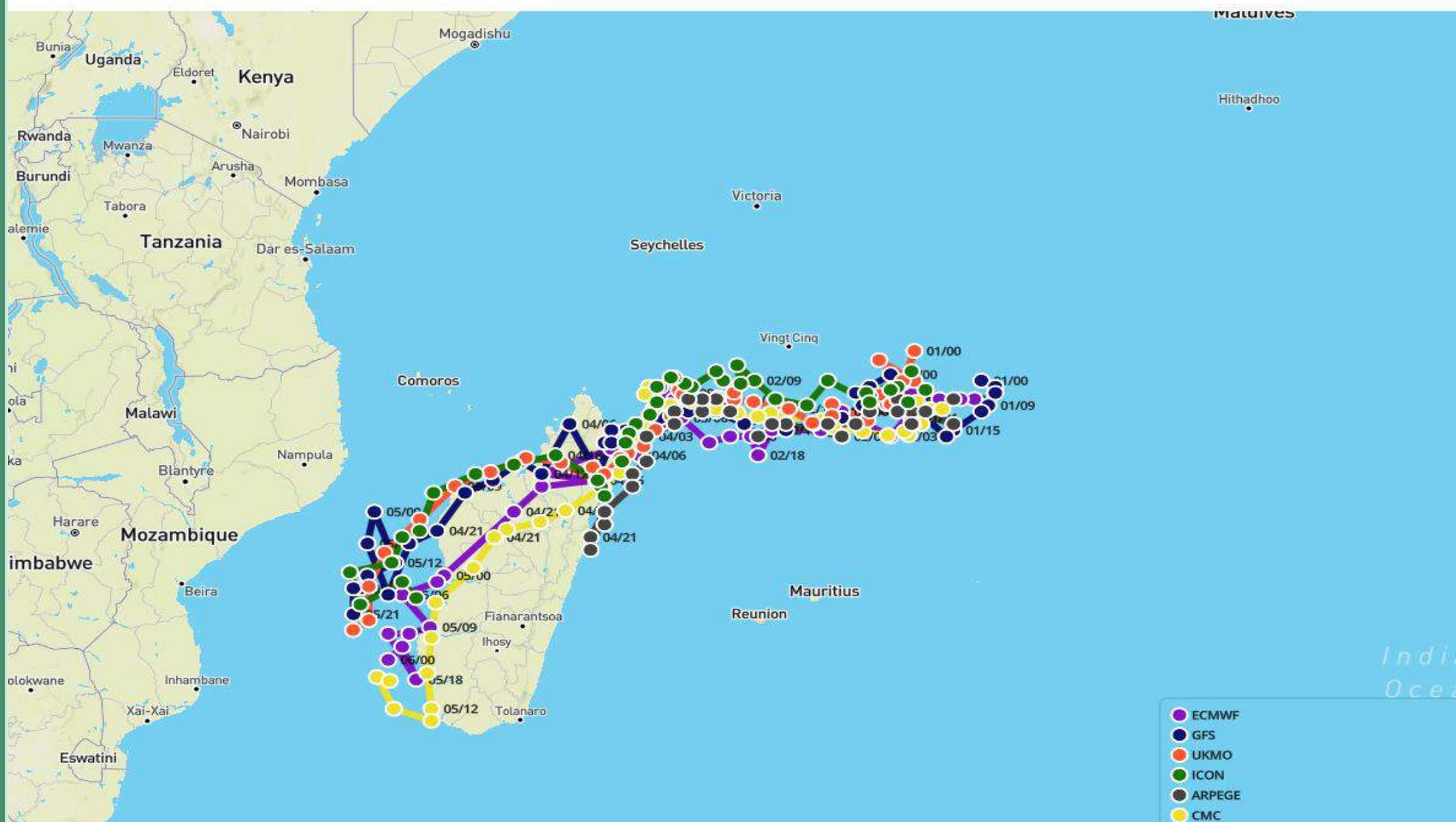


## PRODUCTS TO SUPPORT AUC SitRoom In AMHEWAS

Tropical cyclone track forecasts from: 01-March-2024, 00UTC to 06-March-2024, 00UTC



Models : ARPEGE, CMC, ECMWF, ICON, GFS and UKMO



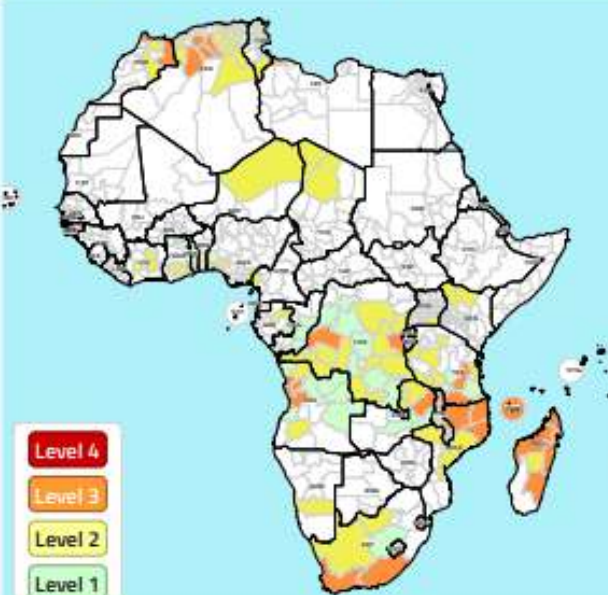
## Contribution in Continental Watch



Africa Multi-Hazard Early Warning and Action System for DRR  
Continental Situation Room

### 2. DETAILED MULTI-HAZARD OUTLOOK FOR THE NEXT 5 DAYS From March 1, 2024 to March 5, 2024

#### Multi-Hazard assessment



#### Extreme Precipitation



#### Wind Storms



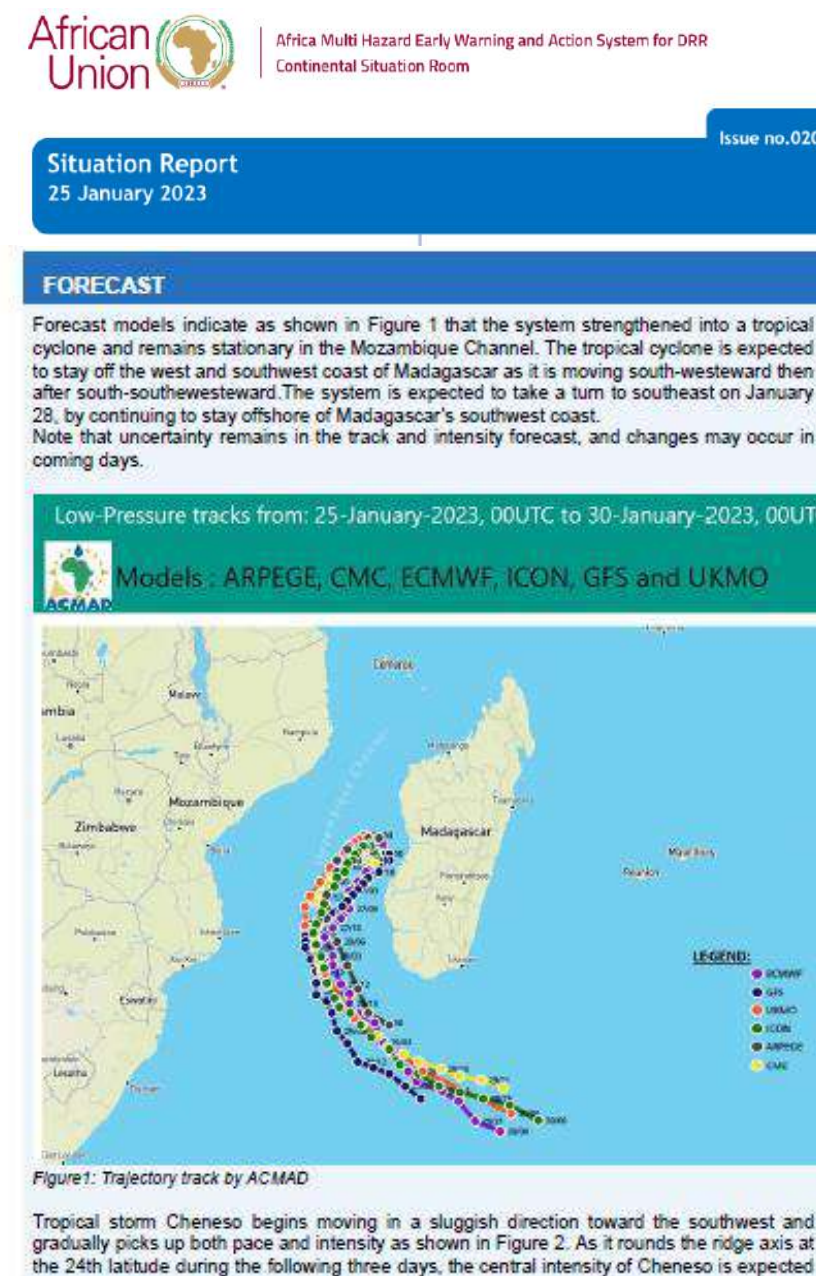
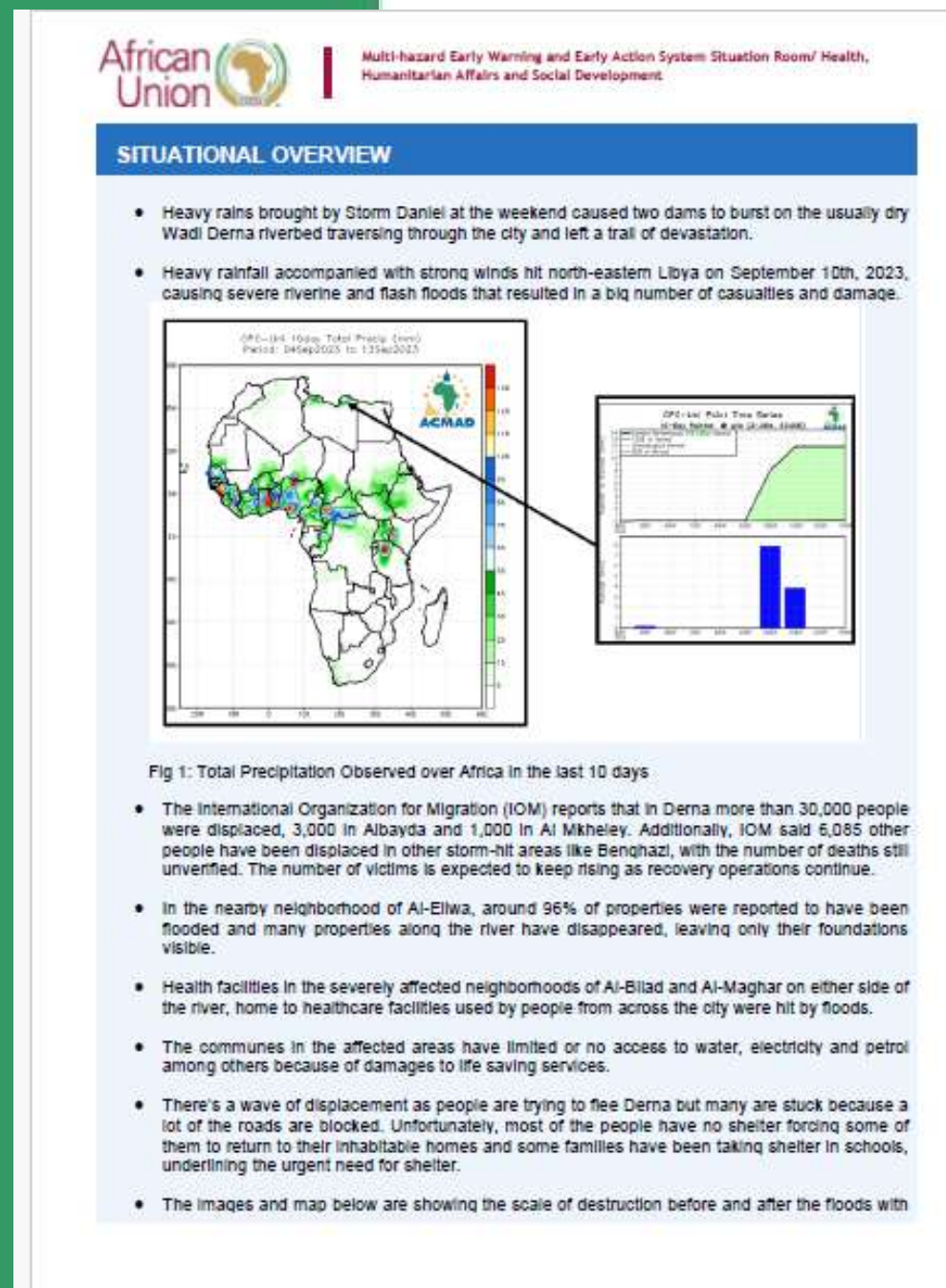
#### Riverine Floods







- ✓ ACMAD participated in elaboration of the SOPs on Sit Report document
- ✓ ACMAD Contribute in generation of the Situation Report in collaboration with AUC sitRoom
- ✓ Collect and disseminate continental risk information and mapping through the State of Climate of Africa



## High-Impact Hydrometeorological Disasters State of Climate in Africa 2022

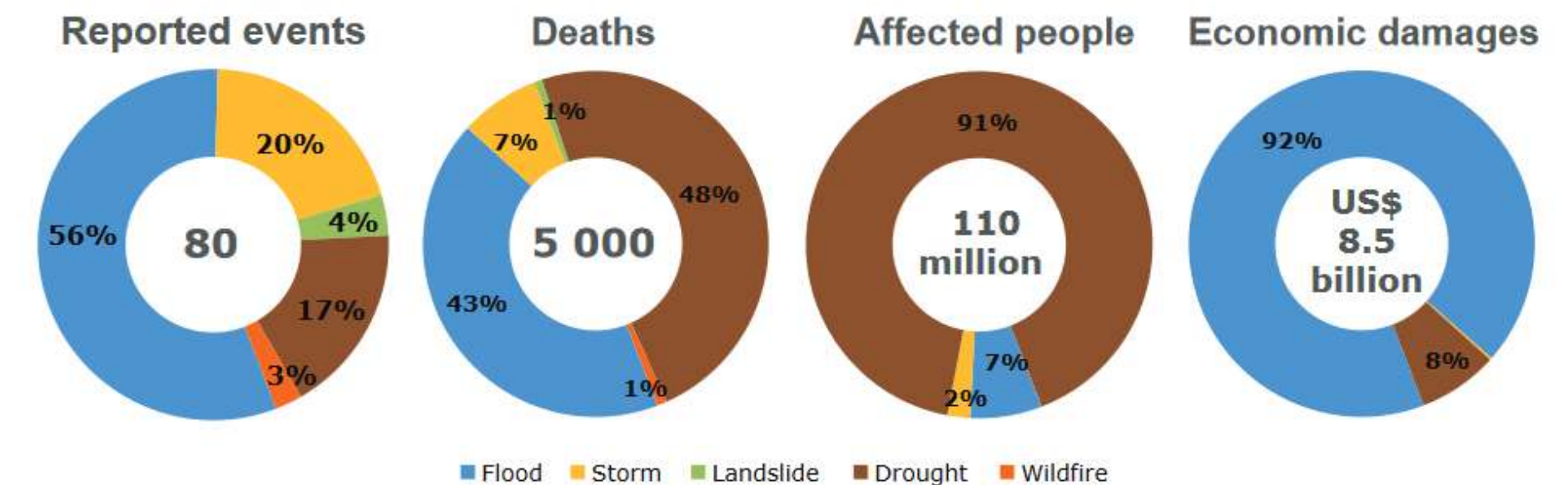


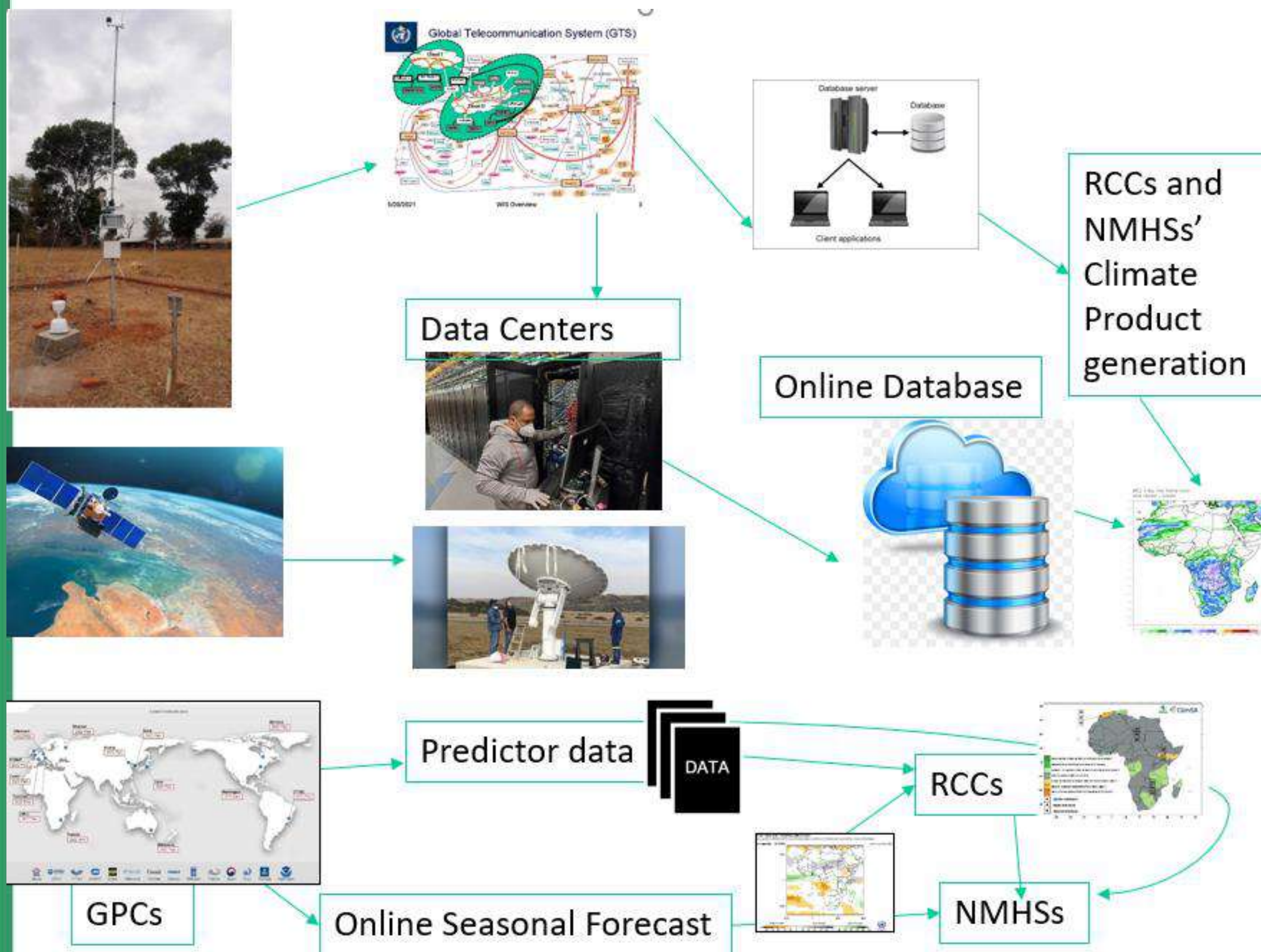
Figure 11. Weather-, climate- and water-related disasters in Africa in 2022. Note: The economic damages of some disaster occurrences are not presented in the figure due to data unavailability.

Source: Data as of June 2023 from EM-DAT

In process of the élaboration of the State of Climate, a **Chapter of Climate-related risks and socioeconomic impacts** was integrated in the documents and ACMAD is in charge to collect major extrêmes events with socio economic impacts

## Contribution in Situation Report





ACMAD adopted a cascading communication chain to facilitate the movement of information from its source to the final users.

Information moves from the global forecast centres on the international scale to national meteorological services.

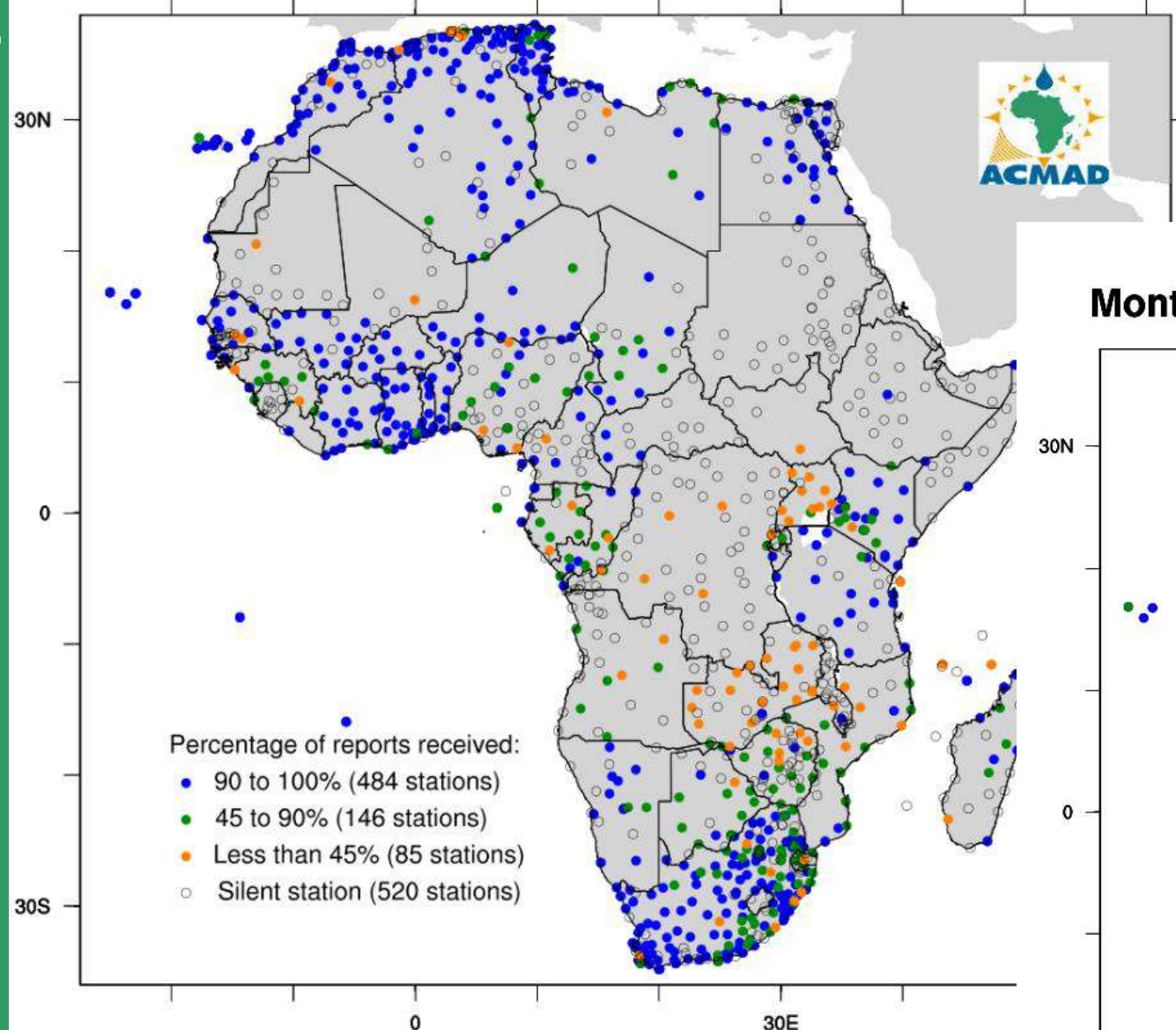
***Information finally reaches other national and community level stakeholders***



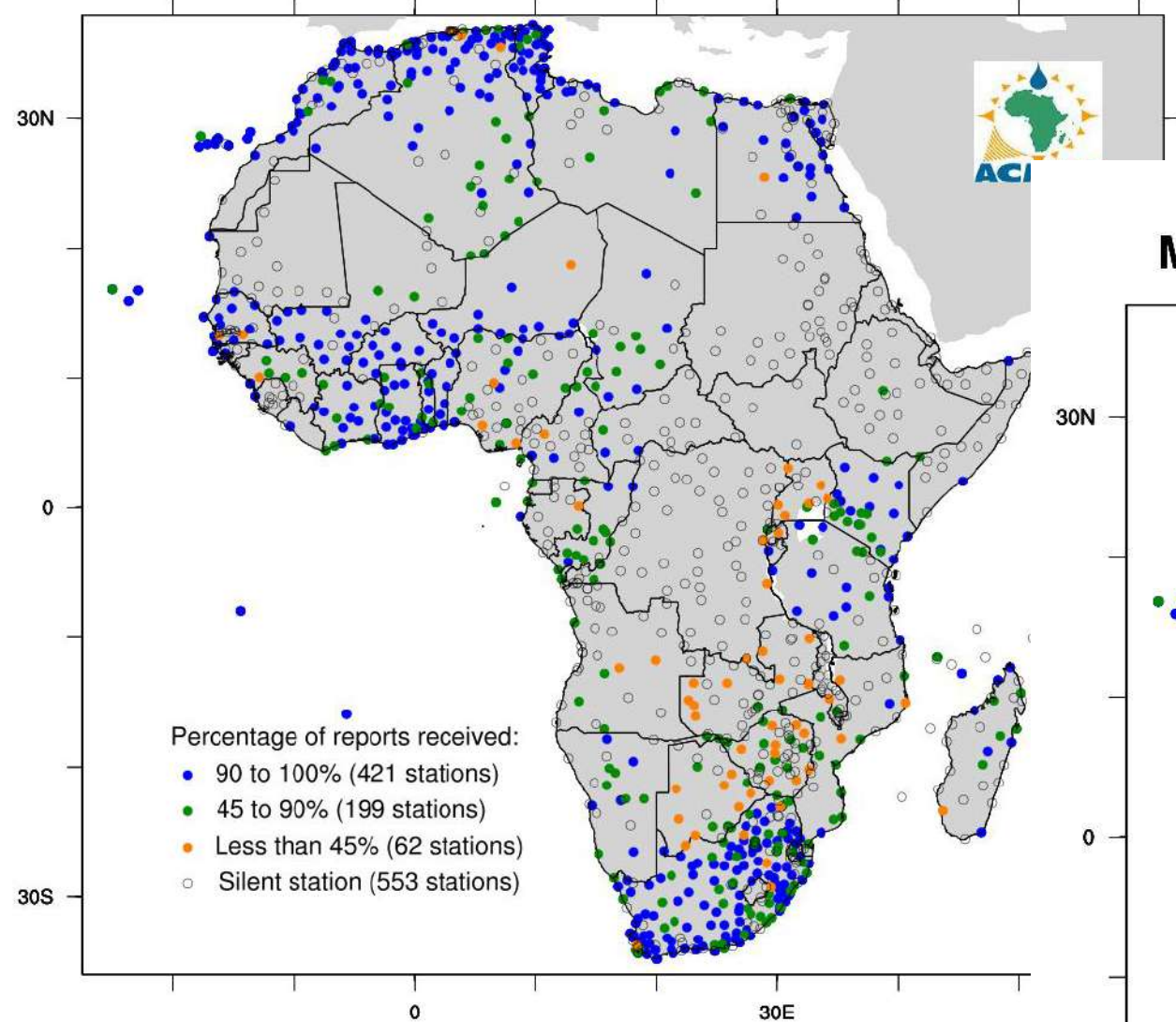
# DATA AVAILABILITY MONITORING OVER AFRICA



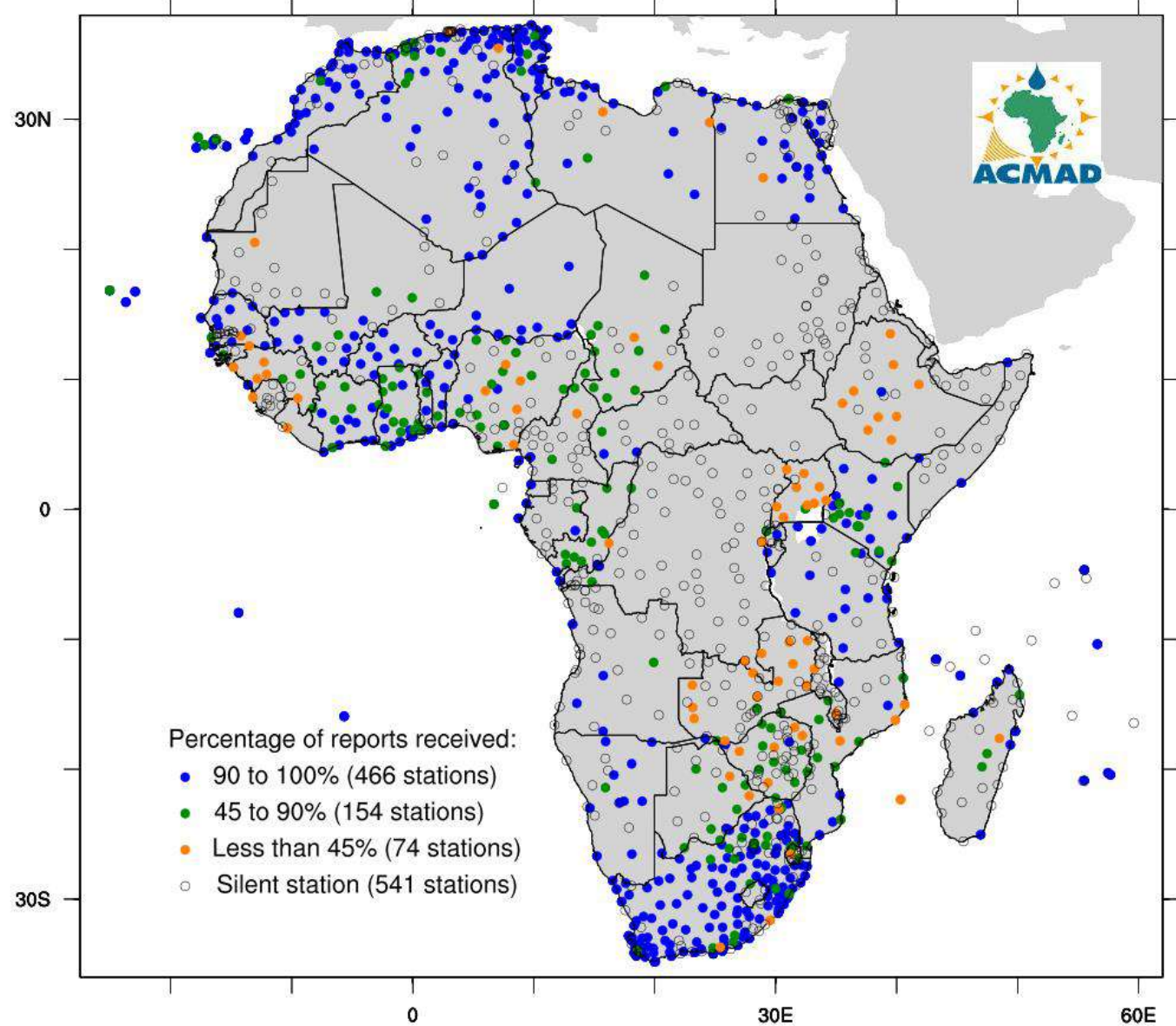
Monthly monitoring of SYNOP reports for January-2024



Monthly monitoring of SYNOP reports for February-2024



Monthly monitoring of SYNOP reports for June-2024

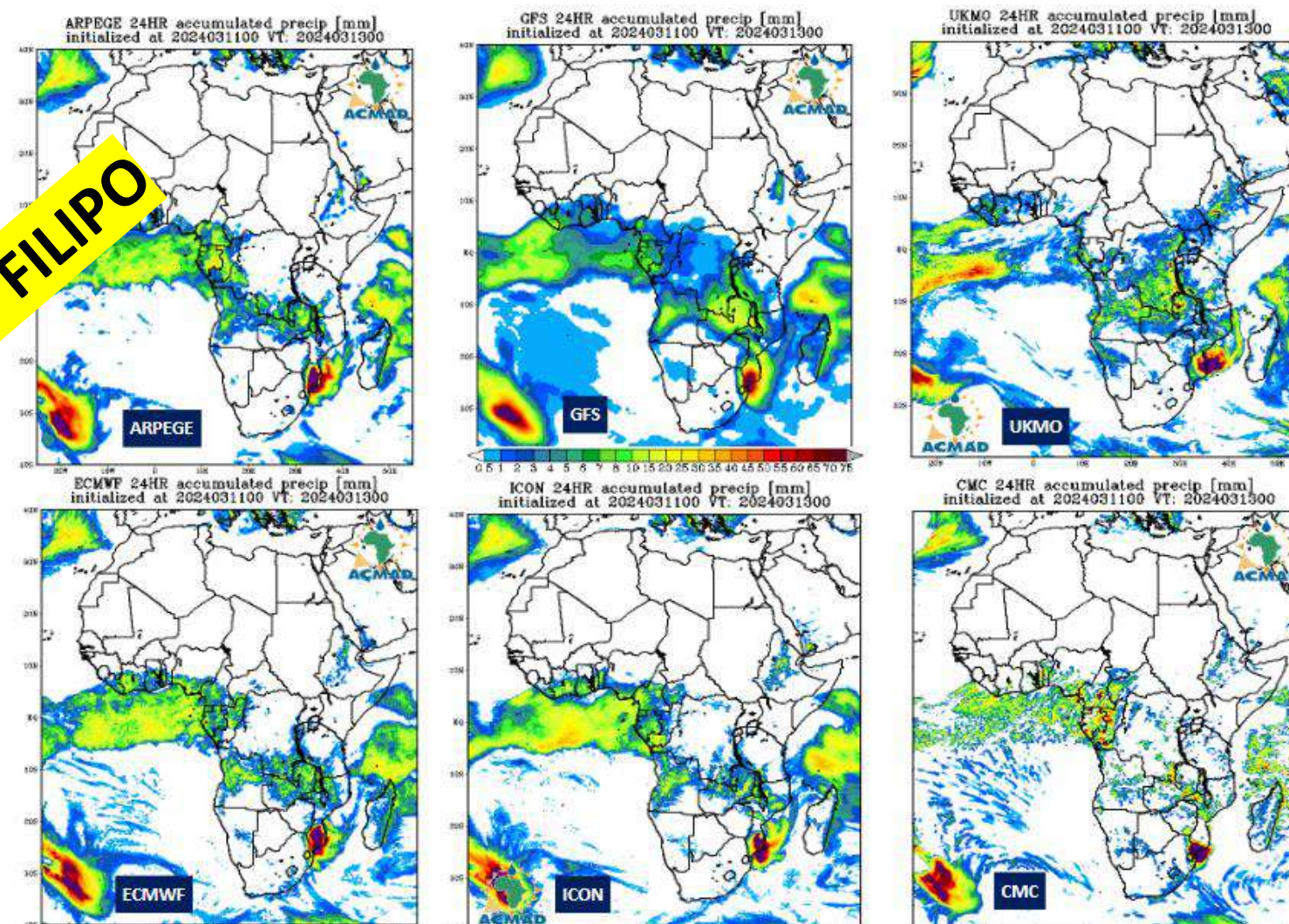




## APPROACH

Daily Forecast by Model (ARPG,GFS,UKMO,ECMWF,ICON,CMC)

CASE OF FILIPO

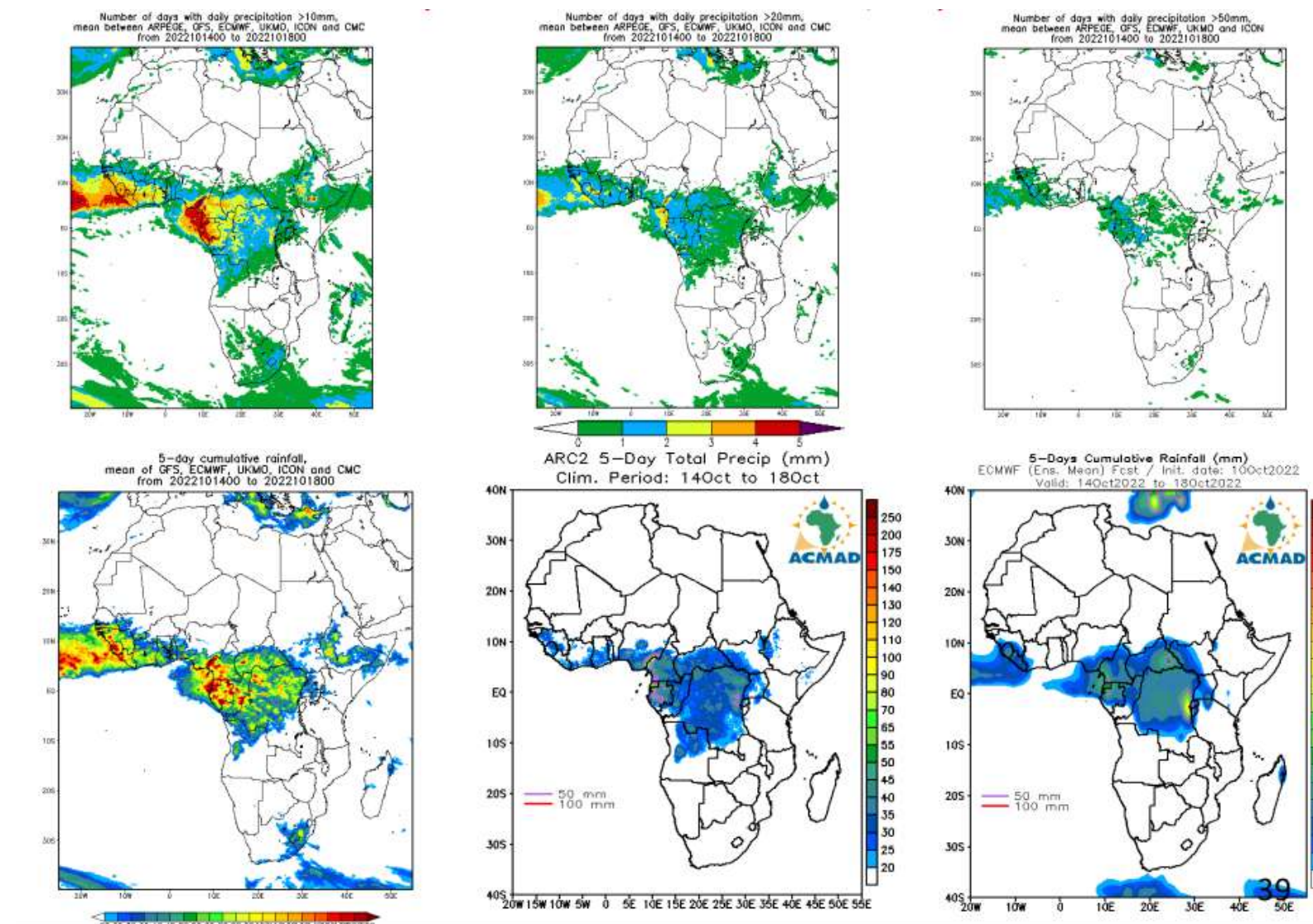


<http://sgbd.acmad.org:8080/thredds/fileServer/FIT/BRIEFING/technote.pdf>

**Poor's Man Ensemble" approach:**

A poor man's ensemble is a set of independent numerical weather prediction (NWP) model forecasts from multiple operational centers.

Because it samples uncertainties in both the initial conditions and the model formulation through variation in the input data, analysis, and forecasting methodologies of its component members, it is less prone to the systematic biases and errors that cause under-dispersive behavior in single-model ensemble prediction systems (PSEs).

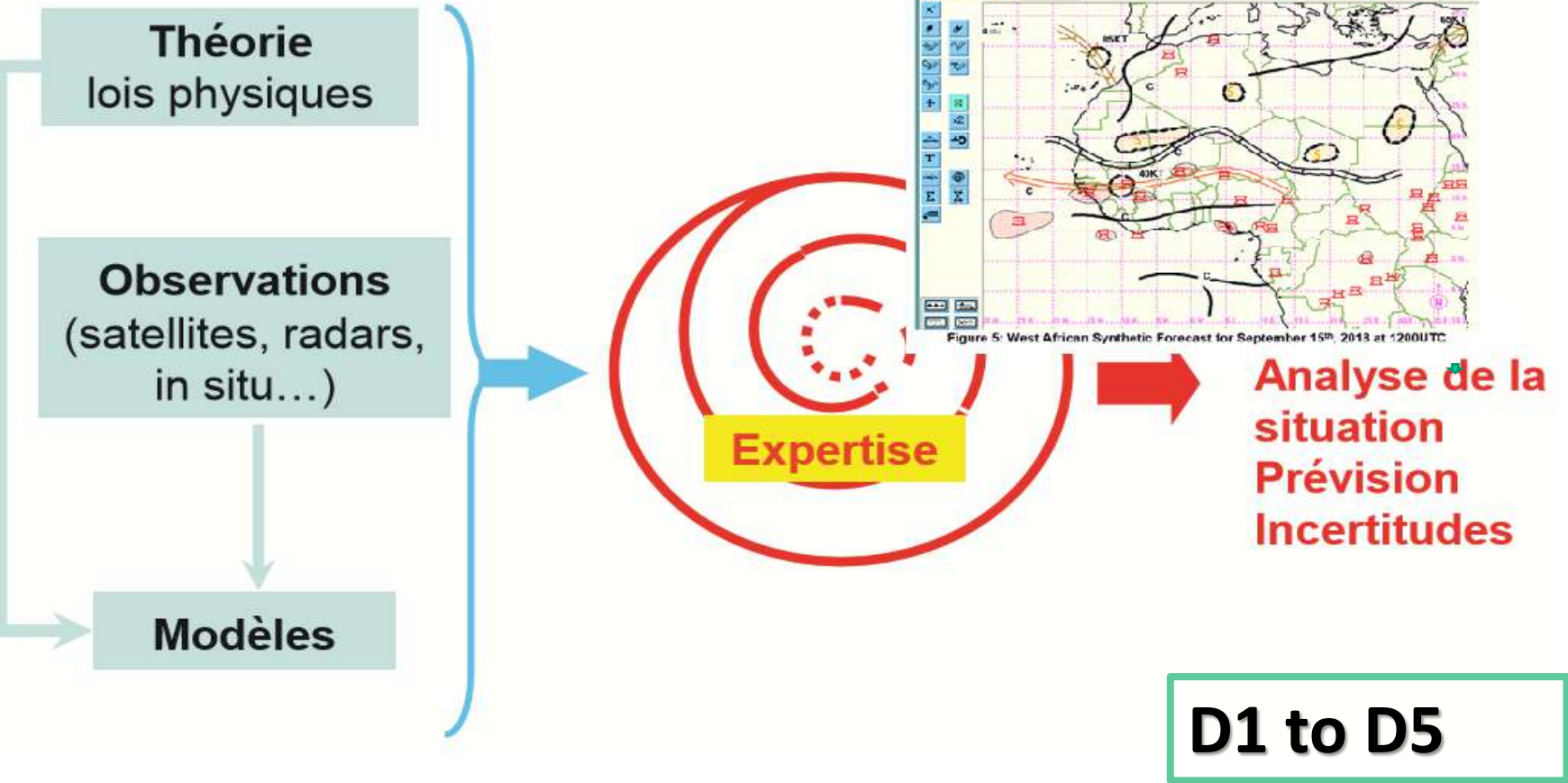




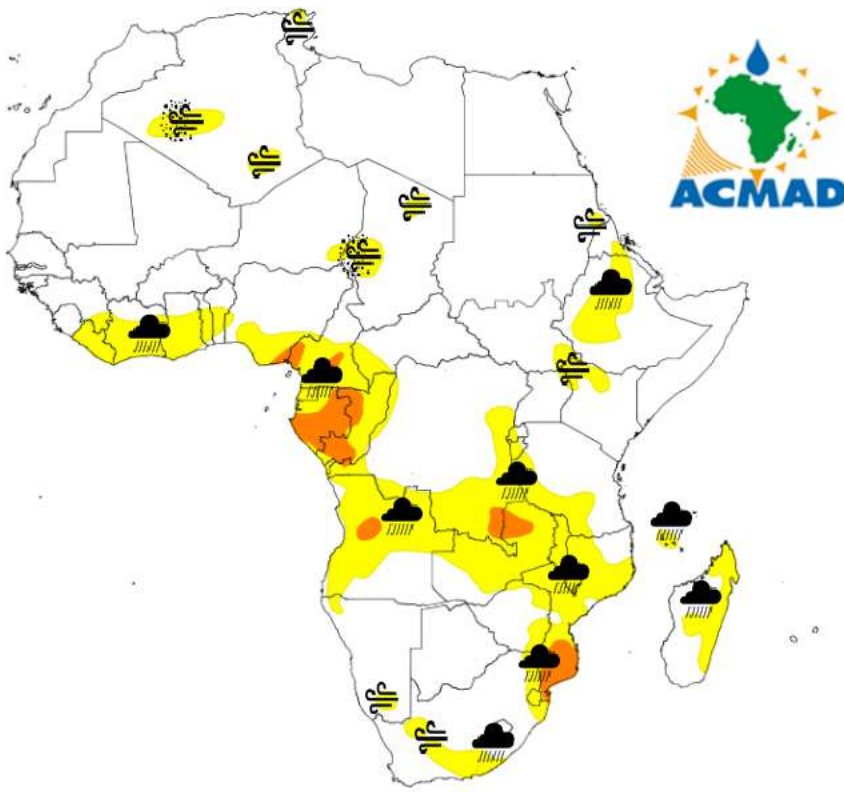
ACMAD PRODUCTION PROCESS



METHODOLOGY



@ACMAD Weather forecasting is developed in three basic steps: *Observation*, *Simulation of the evolution of the atmosphere using numerical models* and *Analysis of the results by forecasters*



MULTI-HAZARD OUTLOOK

Validity: 2024-03-12

issued on 2024-03-11

Rain	Wind	Dust	Meningitis
Very heavy >100mm	Very strong >80kmh <sup>-1</sup>	Very heavy >1000µg m <sup>-3</sup>	Very likely
Heavy 50-100mm	Strong >65kmh <sup>-1</sup>	Heavy >600µg m <sup>-3</sup>	Likely
Moderate 10 - 49mm	Moderate >50kmh <sup>-1</sup>	Moderate >400µg m <sup>-3</sup>	Less likely
Light 1 - 10mm	Light <50kmh <sup>-1</sup>	Light <200µg m <sup>-3</sup>	

VIGILANCE MAP AND POLICY BRIEF FOR HEAVY RAINFALL AND STRONG WINDS

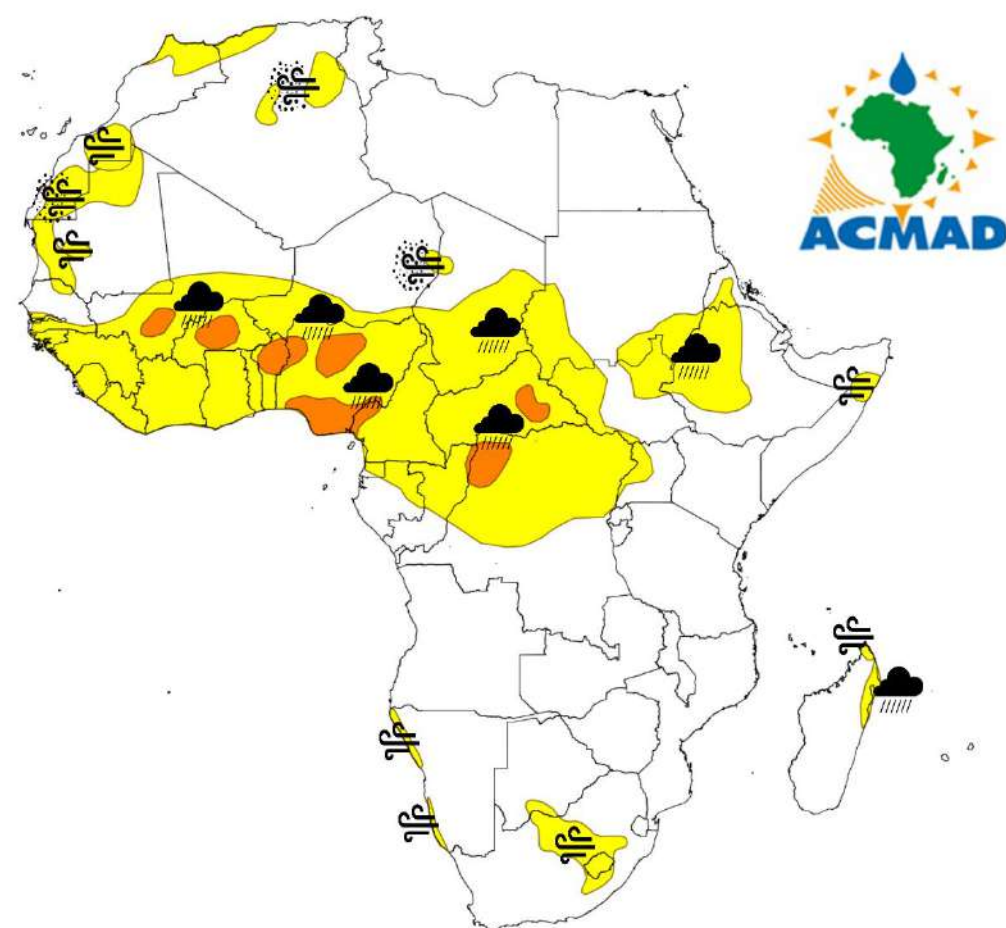
Valid From March 12 to 16, 2024  
Issued on March 11, 2024

HIGHLIGHT: Heavy rainfall is expected in Nigeria, Cameroon, Equatorial Guinea, Gabon, Congo, Angola, D.R.C, Zambia, Tanzania, Mozambique, and Madagascar.

Phenomenon	Hazard	Potentials Impacts	DRM Measures / Advices
In next 5 days accumulated rainfall (50-100mm) is likely,	Moderate rainfall, flash flood, riverine flooding, landslides, soil erosion and lightning likely	Displacements of people due to floods, outbreak of water borne diseases, damage of infrastructures (roads, bridges, ...)	DRM authorities to keep informed about the development of the meteorological situation and raise awareness, taking action is more likely, the situation needs to be monitored closely with NHMS
In next 5 days accumulated rainfall (100 - 150mm) is very likely,	Heavy rainfall, flash flood, riverine flooding, landslides, soil erosion and lightning, strong winds,	Displacements of people due to floods, outbreak of water borne diseases, damage of infrastructures (roads, bridges, ...)	Update Flood contingency plans, Improve water management in reservoirs and dams, DRM authorities be ready to take adequate actions, DRM to be continuously in touch with NHMS to be informed of the detailed expected meteorological conditions.
In next 5 days accumulated rainfall (>150mm) is very likely,	Extreme heavy precipitation, flash flood, riverine flooding, landslides, soil erosion and lightning, strong winds, severe thunderstorms	Loss of lives, Injuries, Displacements of people due to floods, outbreak of water borne diseases, damage of infrastructures (roads, bridges, ...)	Civil Protection service and DRM authorities to activate contingency plan for disaster preparedness and emergency response (awareness, assistance to victims, search & rescue operations), and be in close touch with NHMS for further accuracy at the national level.

Disclaimer: The presentation of country boundaries on the map does not imply any opinion whatsoever on the part of ACMAD concerning the legal status of any country, territory or area, or concerning the delimitation of frontiers or boundaries.









## MULTI-HAZARD OUTLOOK

**Validity: 2023-09-02**

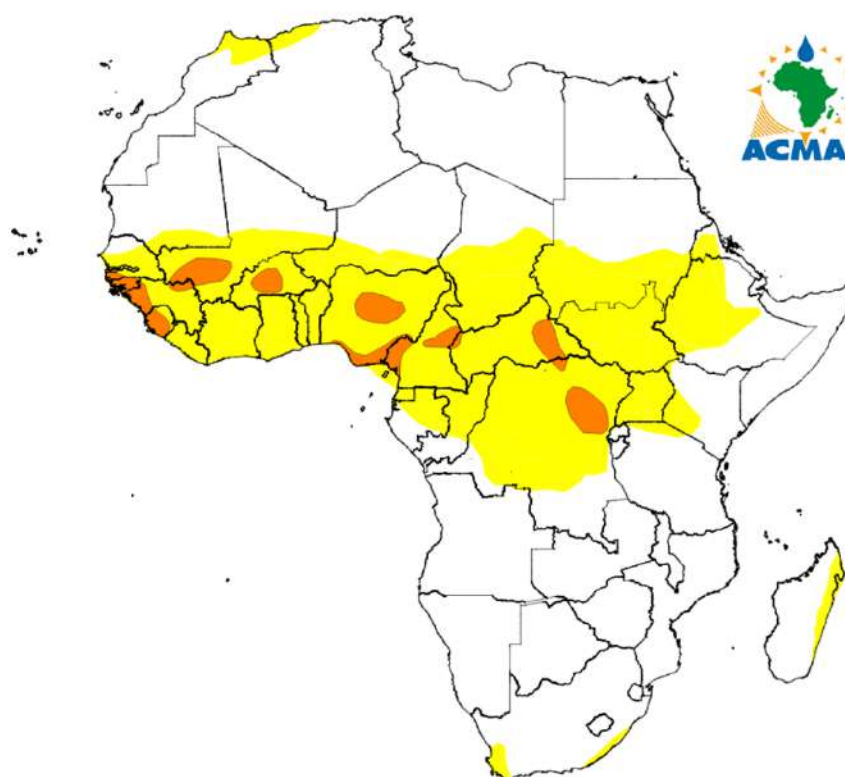
issued on 2023-08-31

 Rain	 Wind	 Dust	 Meningitis
Very heavy >100mm	Very strong >80kmh <sup>-1</sup>	Very heavy >1000µg m <sup>-3</sup>	Very likely
Heavy 50-100mm	Strong >65kmh <sup>-1</sup>	Heavy >600µg m <sup>-3</sup>	Likely
Moderate 10 - 49mm	Moderate >50kmh <sup>-1</sup>	Moderate >400µg m <sup>-3</sup>	Less likely
Light 1 - 10mm	Light <50kmh <sup>-1</sup>	Light <200µg m <sup>-3</sup>	

**Valid From September 1 to 5, 2023**

Issued on August 31, 2023

**HIGHLIGHT:** Heavy rainfall is expected in Senegal, Guinea Bissau, Guinea, Sierra Leone, Mali, Burkina Faso, Nigeria, Cameroon, C.A.R and D.R.C



Phenomenon	Hazard	Potentials Impacts	DRM Measures / Advices
In next 5 days accumulate d rainfall (50-100mm) is likely,	Moderate rainfall, flash flood, riverine flooding, landslides, soil erosion and lightning likely	Displacements of people due to floods, outbreak of water borne diseases, damage of infrastructures (roads, bridges, ...)	DRM authorities to keep informed about the development of the meteorological situation and raise awareness, taking action is more likely, the situation needs to be monitored closely with NHMSs
In next 5 days accumulate d rainfall (100 – 150mm) is very likely,	Heavy rainfall, flash flood, riverine flooding, landslides, soil erosion and lightning, strong winds,	Displacements of people due to floods, outbreak of water borne diseases, damage of infrastructures (roads, bridges, ...)	Update Flood contingency plans, Improve water management in reservoirs and dams, DRM authorities be ready to take adequate actions, DRM to be continuously in touch with NHMSs to be informed of the detailed expected meteorological conditions.
In next 5 days accumulate d rainfall (>150mm) is very likely,	Extreme heavy precipitation, flash flood, riverine flooding, landslides, soil erosion and lightning, strong winds, severe thunderstorms	Loss of lives, Injuries, Displacements of people due to floods, outbreak of water borne diseases, damage of infrastructures (roads, bridges, ...)	Civil Protection service and DRM authorities to activate contingency plan for disaster preparedness and emergency response (awareness, assistance to victims, search & rescue operations ), and be in close touch with NHMS for further accuracy at the national level.

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Best Practices

**VIGILANCE FOR HEAVY PRECIPITATION AND OTHER HAZARDS UP TO 5 DAYS AHEAD SUPPORTING PREPARATION AND EARLY RESPONSE TO DISASTERS**



## Algeria – Deadly Flash Floods Following Heavy Rain in North West

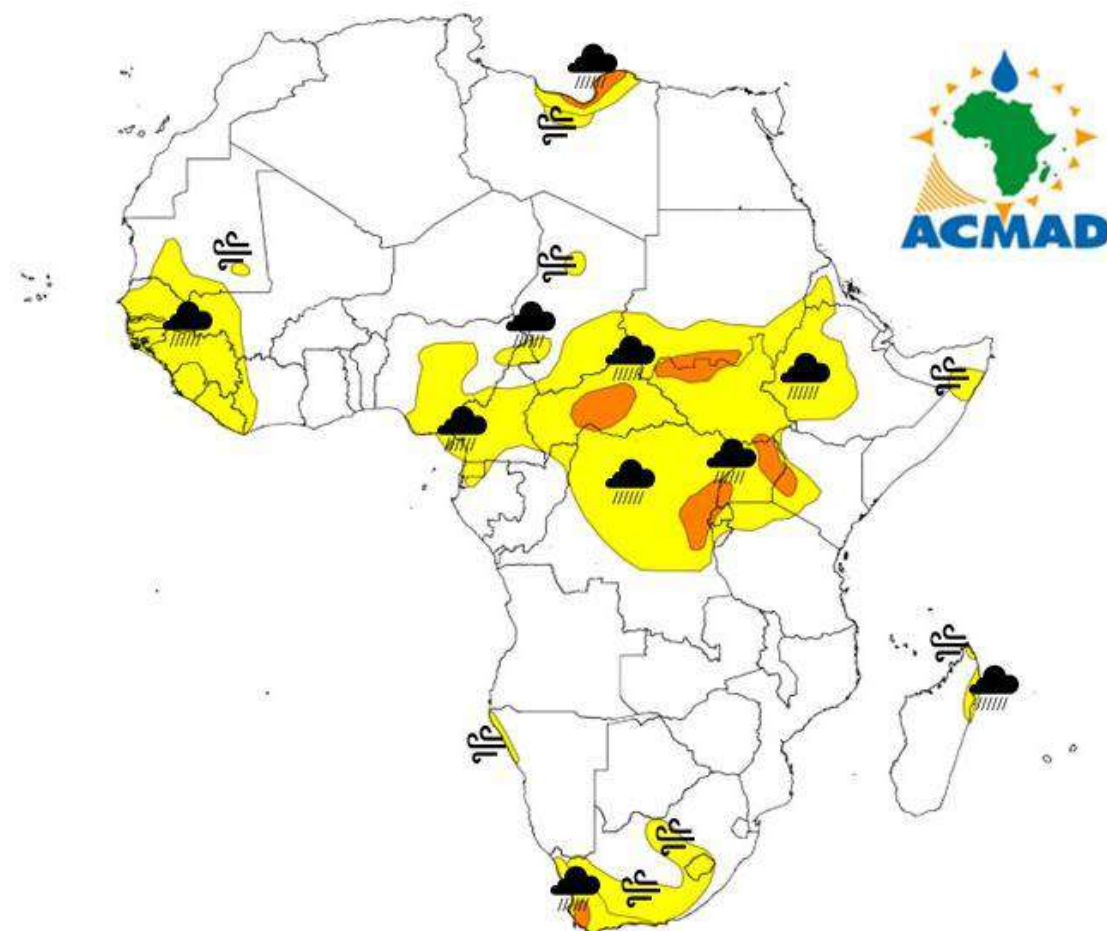
4 SEPTEMBER, 2023

Severe flash flooding swept through areas of northwester Algeria after heavy rainfall from 02 to 03 September 2023. Authorities report at least 8 people have lost their lives as a...

<https://floodlist.com/africa>







# MHEWS PRODUCTS AND SERVICES: Case of Daniel Cyclone over Libya : Daniel Cyclone from 04 to 10 September 2023



## MULTI-HAZARD OUTLOOK

**Validity: 2023-09-10**

issued on 2023-09-07

 Rain	 Wind	 Dust	 Meningitis
Very heavy >100mm	Very strong >80kmh <sup>-1</sup>	Very heavy >1000µg m <sup>-3</sup>	Very likely
Heavy 50-100mm	Strong >65kmh <sup>-1</sup>	Heavy >600µg m <sup>-3</sup>	Likely
Moderate 10 - 49mm	Moderate >50kmh <sup>-1</sup>	Moderate >400µg m <sup>-3</sup>	Less likely
Light 1 - 10mm	Light <50kmh <sup>-1</sup>	Light <200µg m <sup>-3</sup>	

Best Practices

VIGILANCE FOR HEAVY PRECIPITATION AND OTHER HAZARDS UP TO 5 DAYS AHEAD SUPPORTING PREPARATION AND EARLY RESPONSE TO DISASTERS



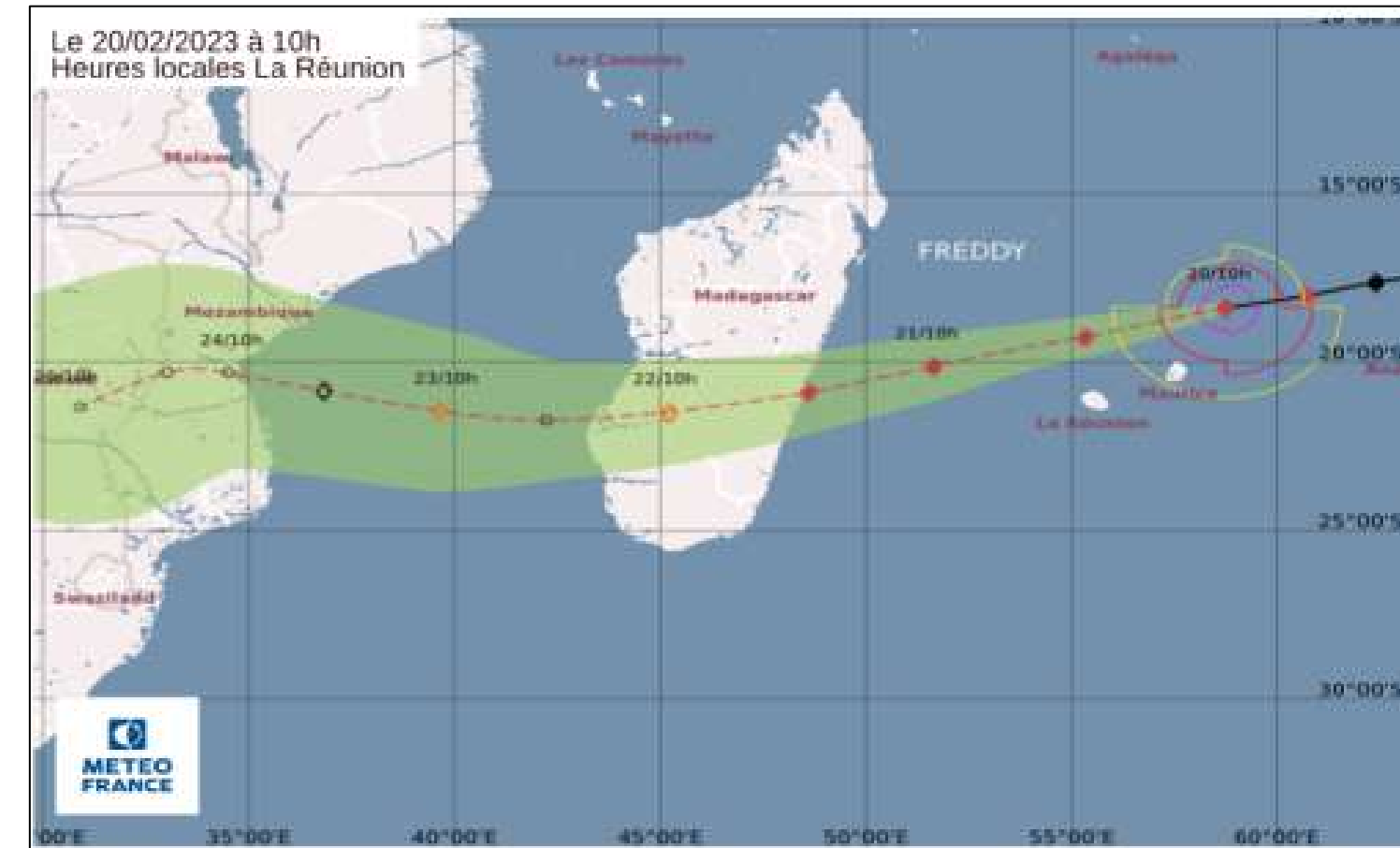
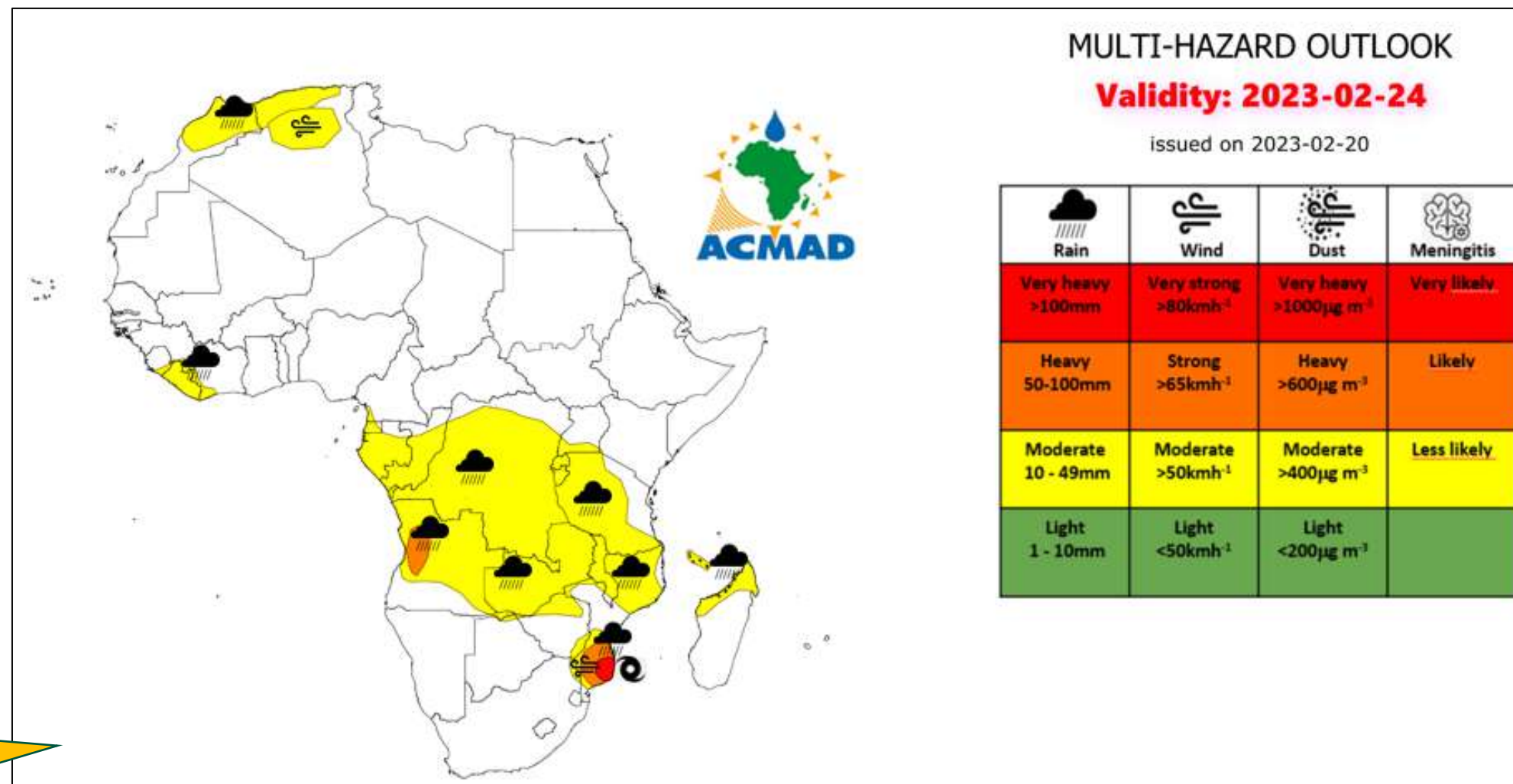
La ville de Derna a en partie été détruite par les eaux après le passage du cyclone Daniel, en Libye, le 12 septembre 2023. ESAM OMRAN AL-FETORI / REUTERS





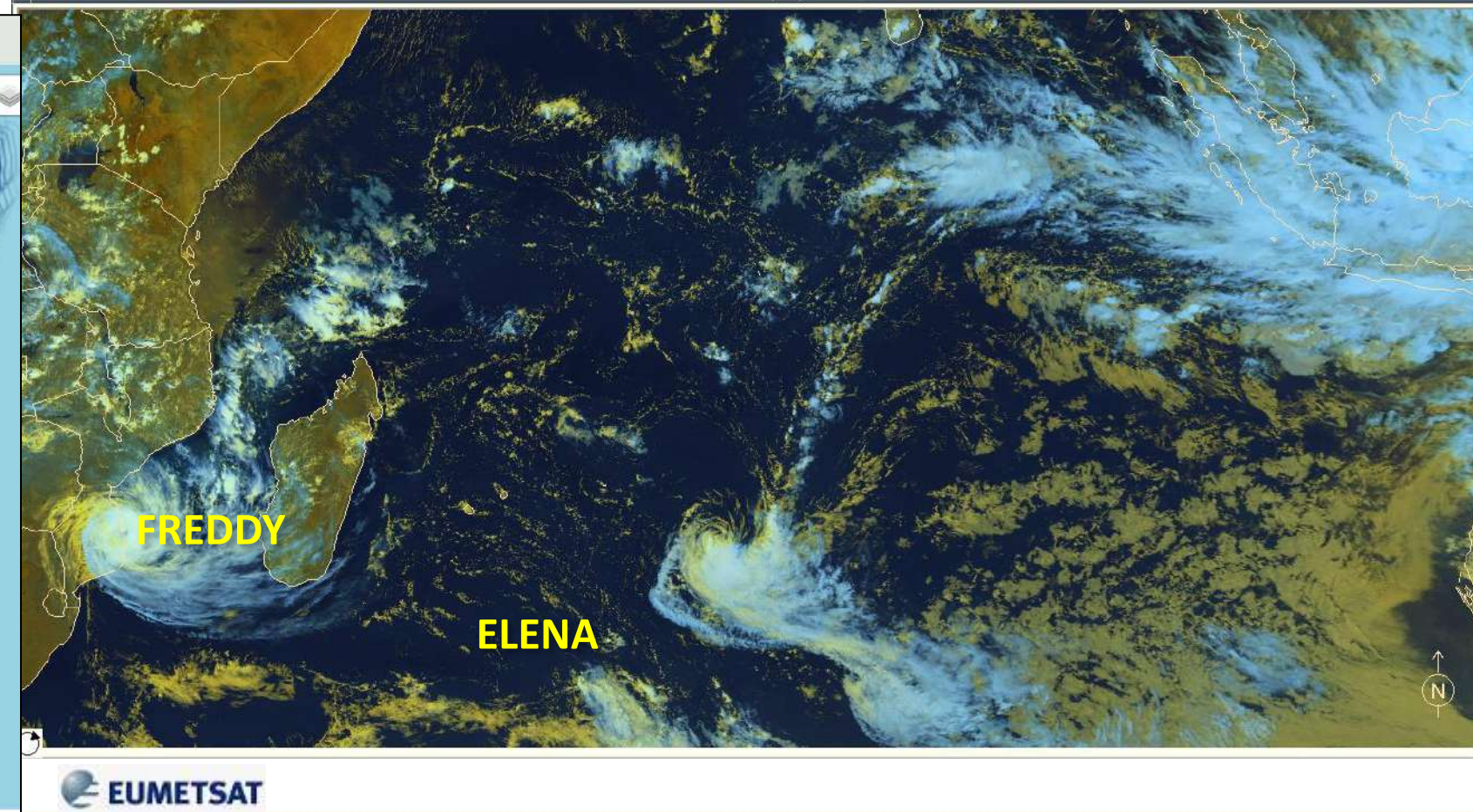
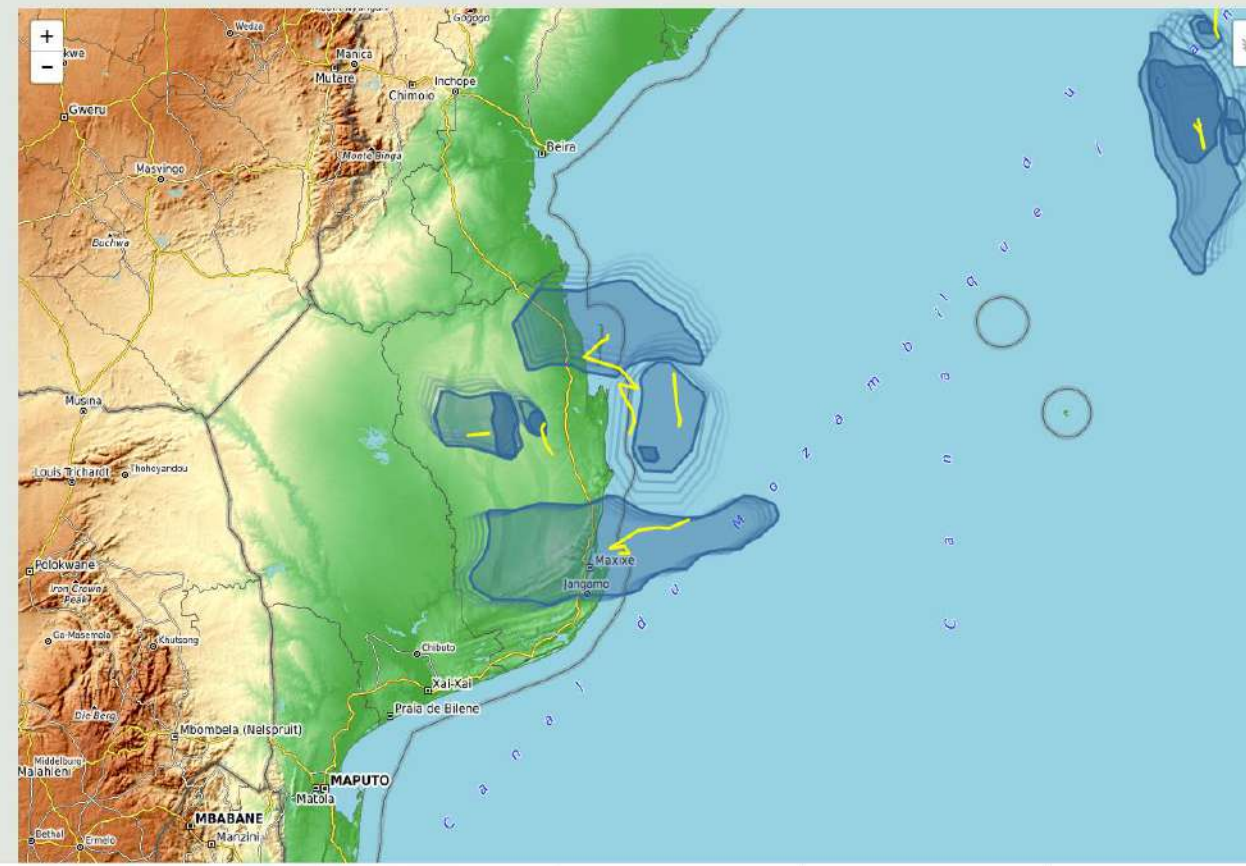
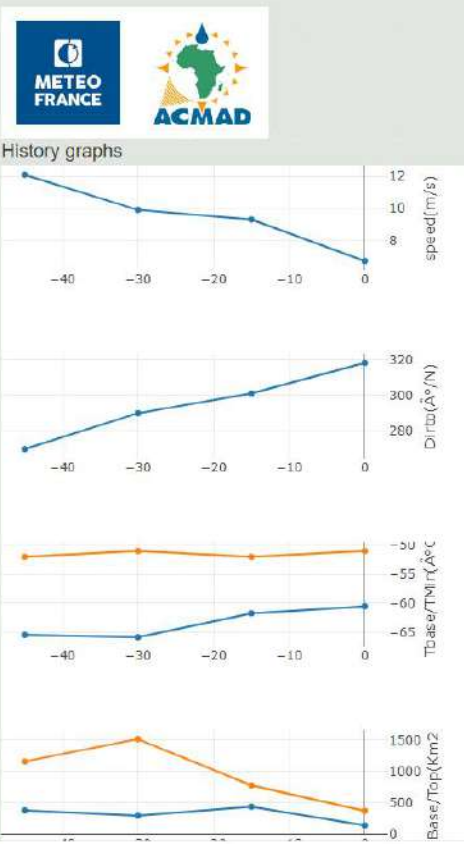
## MHEWS PRODUCTS AND SERVICES: Case of FREDDY Cyclone: February 2023

# ACMAD ADVISORY VERIFICATION FOR D+4 FROM 20 FEBRUARY 2023



Best  
Practices

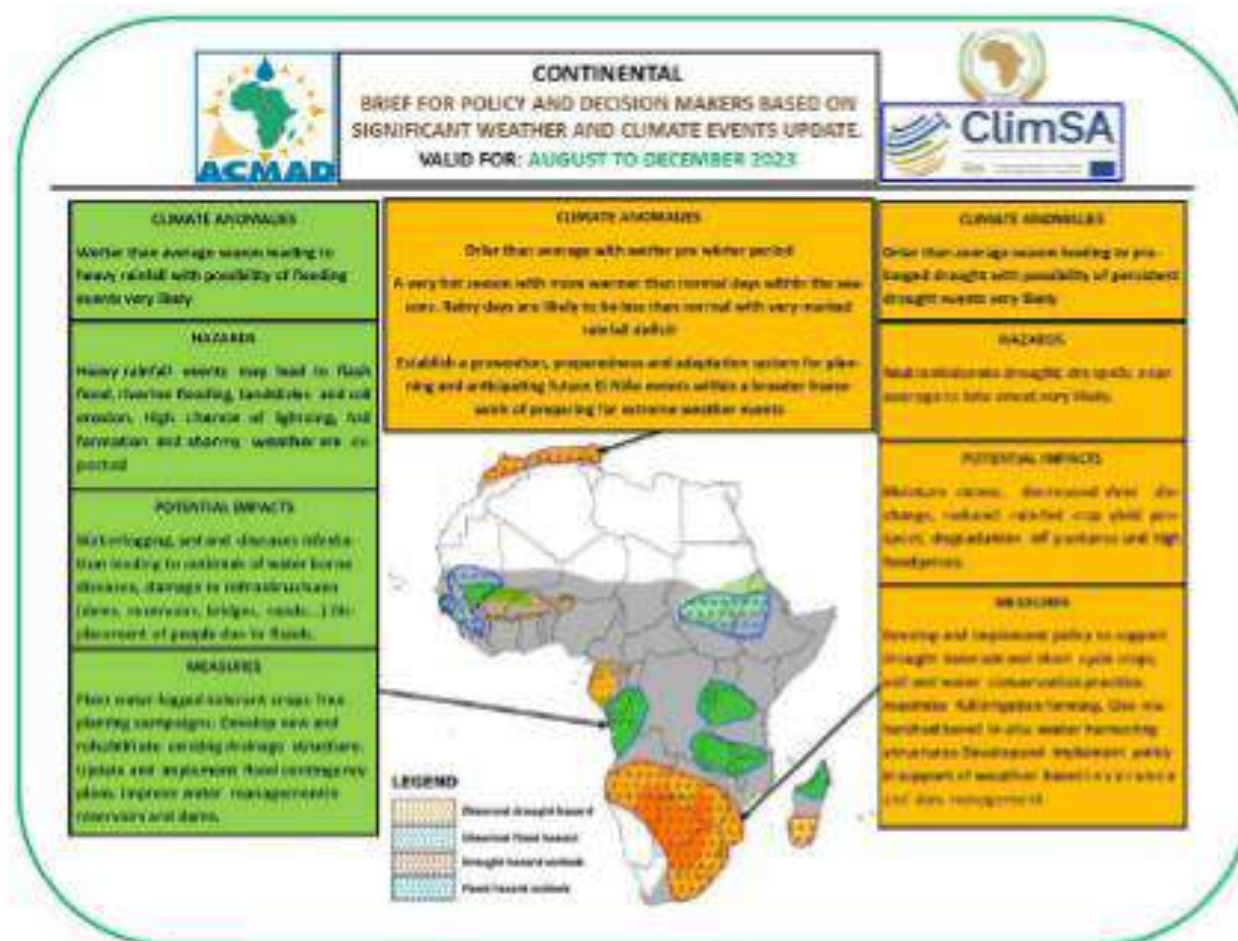
MSG 2023-02-24T10:30:00Z : RDT-CW\_v515\_



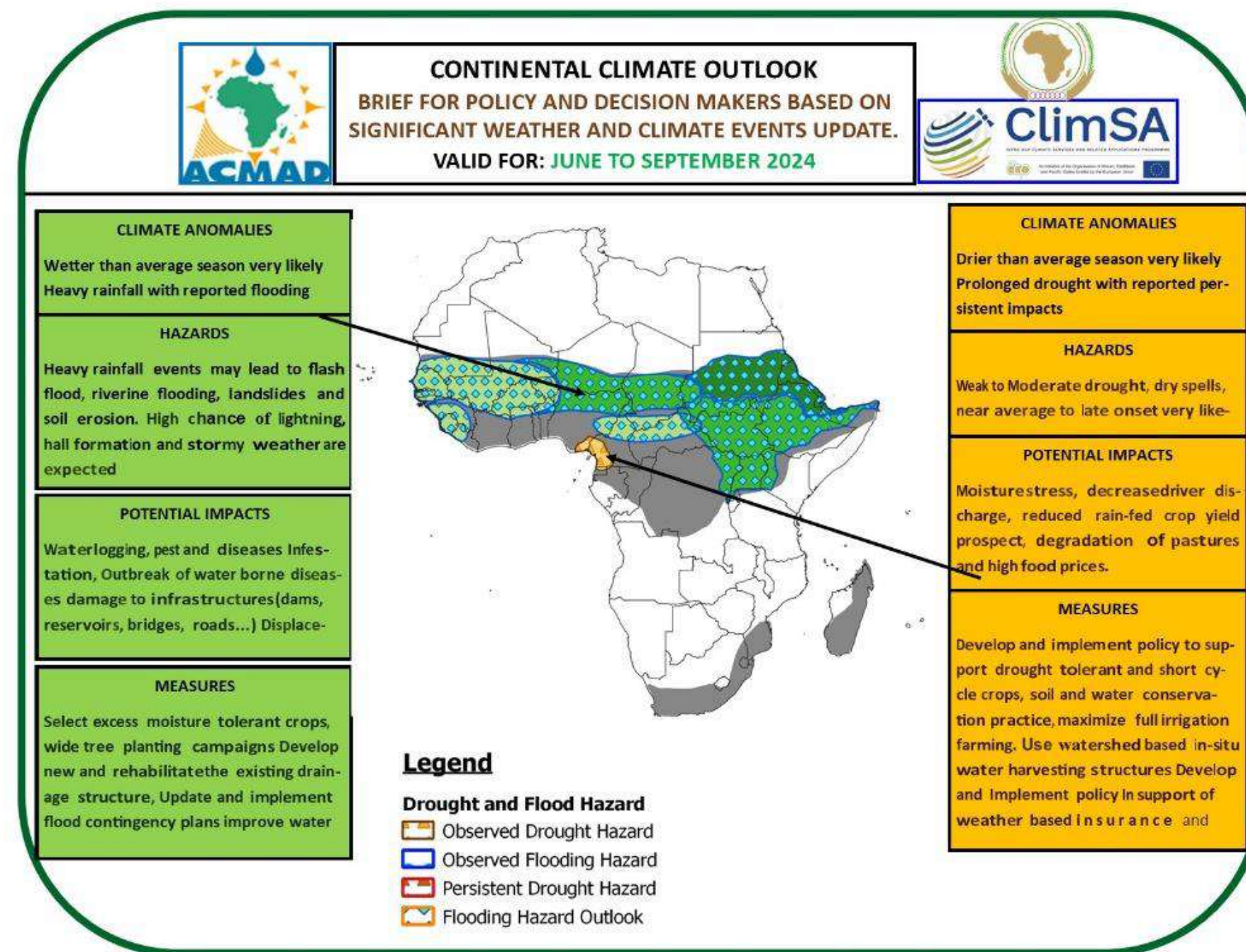
RDT FOR 24-02-2023 , 1030UTC

24-02-2023 , 1030UTC





The question is no longer whether El Niño will happen, but what we must do to mitigate its impacts in Africa knowing floods in the east and drought in the south are key El Niño related hazards in the continent.



This product is the outcome of the ACCOF mechanism which involve all RCCs over Africa



# Continental Climate Services User Interface Platforms (UIPs)

CONTINENTAL USER INTERFACE PLATFORMS ESTABLISHED AND OPERATIONALIZE

## African Continental User Interface Platform

Agriculture  
UIP

Health UIP

Water UIP

DRR UIP

### African Continental User Interface

- ▶ Term of reference
- ▶ Rules of procedure
- ▶ Composition of the platform
- ▶ Meetings and Workshops
- ▶ Programmes, Products and Services

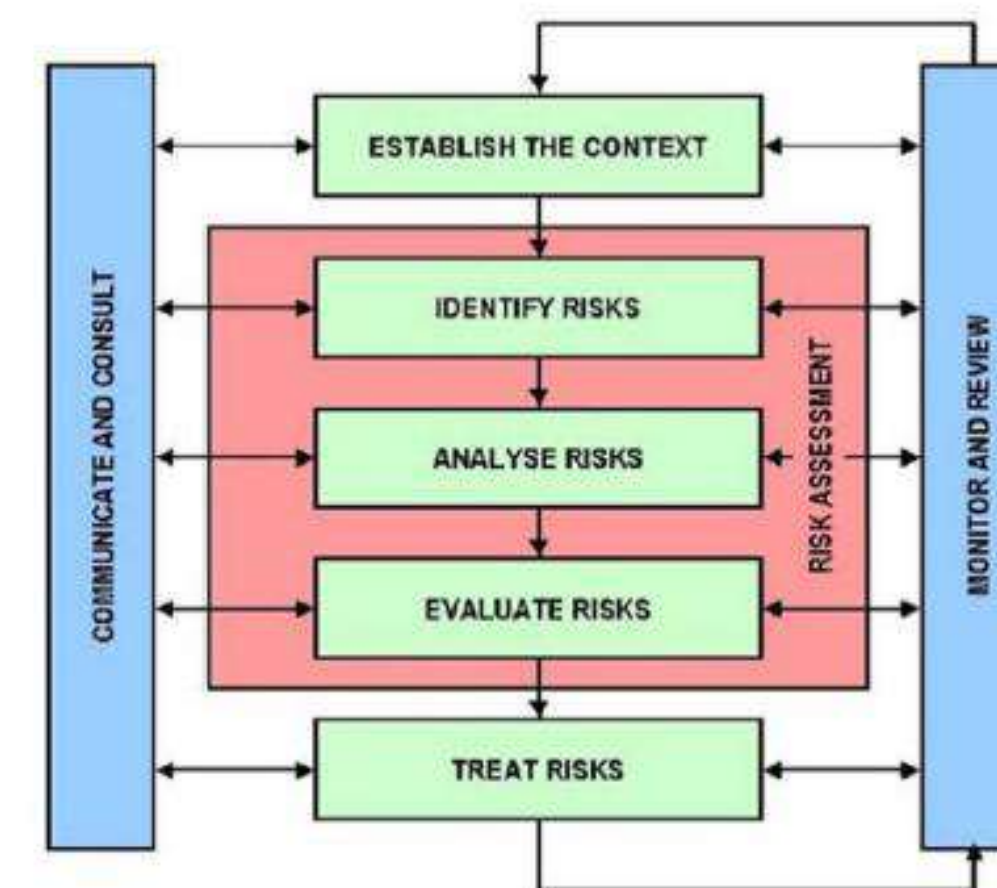


Figure 2. ISO 31000.



# **The Water User Interface Platform in Africa**





## Water Users Interface Platform

- The User Interface Platform (UIP) is the Framework pillar that provides a structured means for users, climate researchers and climate service providers to interact at the global, regional, and national levels to ensure that the GFCS meets user needs for climate services.
- The objective of the UIP is to promote effective decision-making where it involves climate considerations.
- To advance the provision of climate services, the UIP needs to include all those providing and using climate services at the global, regional and national levels.







# Water Users Interface Platform

## Aim:

Establish cooperation between water stakeholders, knowledge producers, decision makers and users,

## Objectives:

1. Make the water sector a climate resilient
2. Improve the management and sharing of knowledge on water through a single platform that will be the one-stop shop for water stakeholders
3. Improve the communication system between users through the hydroclimatic data and information management platform





# WUIP Organisational structure

After the risk events, causes, impacts and existing mitigation measures were identified, climate services and communication methods were established.

The WUIP organisational structure was subsequently established

The WUIP is made of the **steering committee, Leader or Chair, Secretariat, and members** classed into three groups (See table 5):

**Group1** is made of decision makers,

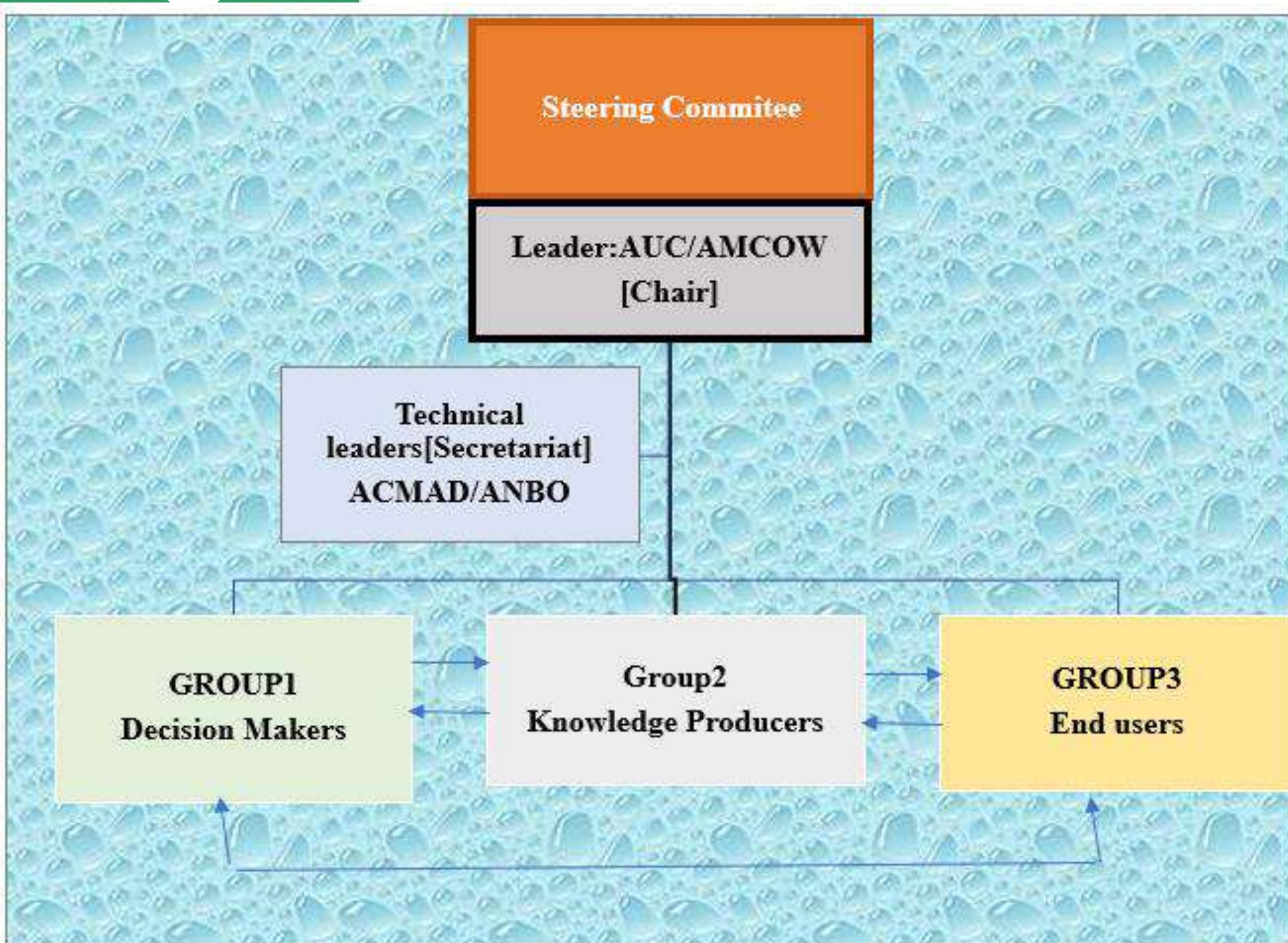
**Group2** is made of knowledge producers and

**Group 3** is made of Users.





## WUIP's organizational chart



The WUIP is governed by a steering committee and the steering committee is made of 9 members:

- 1) 1-AUC
- 2) 1 member per subregion which makes 5
- 3) 1-ACMAD
- 4) 1 -ANBO (African Network of Basin Organisation)
- 5) 1-representing users

The steering committee will be permanent and shall meet once a year to:

- A. Evaluate the WUIP
- B. Approve the annual work plan and budget

### Elections of the chair and secretariat

- The chairperson will be elected among the steering committee for 1year term in office and the rotation will be done alphabetically.
- ANBO is a secretariat, and the position is permanent, the institution holding the position of secretariat cannot be elected to be the chair of the WUIP.





# *Water resources: risk identification, causes, impacts and existing mitigation measures*

Risk Events		Risk Cause	Impacts	Significant consequences	Existing mitigation measures
1	Flooding	Excessive Rainfall, Poor drainage, <b>Urbanization</b>	Destruction of properties & human beings	Death	Early warning system
				Migration	Drainage network
				Poverty	Urbanization Master Plan)
				Water bone diseases	Crisis communication
2	Water shortage	Drought	Loss of water	Water conflict	Dam construction
			Loss of crops	Ethnical conflict	
			Energy shortage	Deaths	
			Lack of potable water	Decrease of productivity	
3	Water Pollution	Mining Activity	Public Health	Water bone disease	Water treatment
		Use of chemical fertilizer	Ecosystem destruction		
4	Melting of glaciers (Fonte des glaciers)	Increase rate of temperature	Increasing sea level, soil erosion,	Coastal destruction	

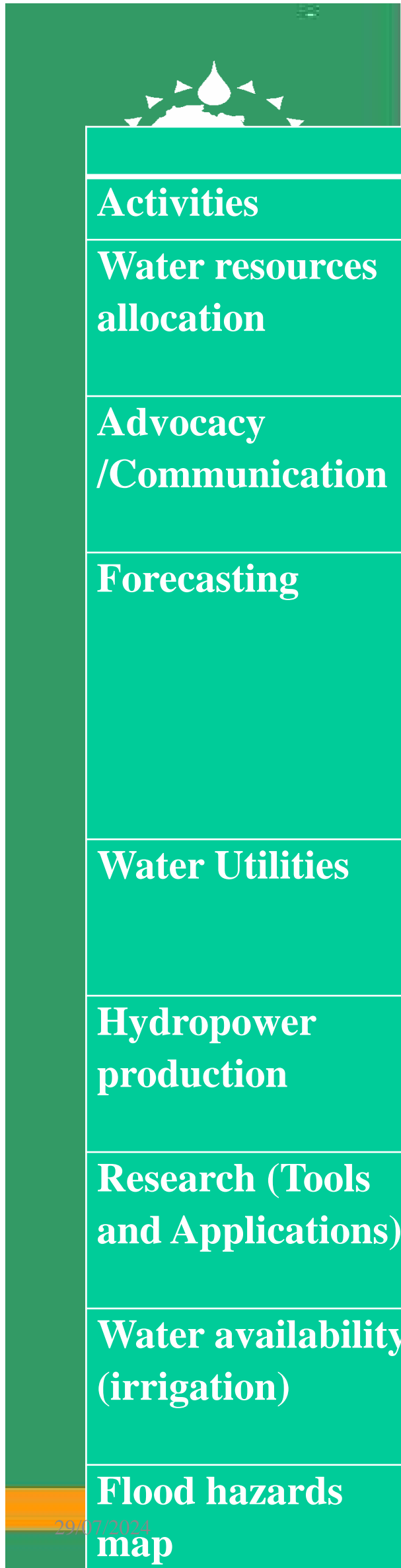




# WUIP activities and climate services

Activities	Local	National	Regional	Global	Climate services for Water	Timelines /Services
Water resources allocation		X	X		Quantitative precipitation forecasting (QPF)	Seasonal
Advocacy /Communication	X	X	X	X	State of water/ Climate change reports	Monthly
Forecasting		X	X		Short term QPF	Daily/ Weekly/Seasonal
Water Utilities	X	X			Short term QPF	Seasonal
Hydropower production	X	X	X		Seasonal QPF	Seasonal
Research (Tools and Applications)	X	X	X	X	Partnering climate services and water resources management	All time
Water availability (irrigation)	X	X	X		Seasonal QPF	Seasonal
Flood hazards map	X	X				Decade (10 years)





# WUIP Communication Strategy

		COMMUNICATION		
Activities	Climate services for Water	Users	Channel	Format/product
Water resources allocation	Quantitative Precipitation Forecasting (QPF)	Ministry/River Basin Organization Dams authorities	Email Meetings Website	Report
Advocacy /Communication	State of water/ Climate change reports	Decisions Makers Civil Society	Dialogue Workshop Sensitization Campaign	Policy brief Flyers Newsletter
Forecasting	Short term QPF	Humanitarians Agency Civil Protection NGOs  Disaster Risk Reduction Committee Communities	Social media (WhatsApp, Facebook), Website, Television, Radio, SMS	Bulletins Newsletter Maps
Water Utilities	Short term QPF	Ministries (Electricity and water) Electricity and water supply companies	Email Meetings Website	Report
Hydropower production	Seasonal QPF	Ministries (Electricity and water) Hydropower water supply companies	Email Meetings Website	Report
Research (Tools and Applications)	Partnering climate services and water resources management	Academics Ministries	Websites Scientific forum	Publications Reports Maps
Water availability (irrigation)	Seasonal QPF	Irrigation Schemes Ministries UN Organization (FAO, WMO)	Email Meetings Website	Report
Flood hazards map	Partnering climate services and water resources	Ministry of Urban Planning DRRC	Meetings Emails	Publications Reports





# List of organisations making up the WUIP

List of organisations making up the WUIP

Group 1: Decision Makers	Level of Operation			
	Local	National	Regional	Continental
Government	X	X		
River Basins (Transboundary River Basin)	X			
RECS (ECOWAS, SADAC, CEMAC, IGAD, CEEAC)			X	
AUC				X
AMCOW				X
Financial and Technical partners	X	X	X	X





## List of organisations making up the WUIP

Group 2: Knowledge Producers	Level of operations			
	Local	National	Regional	Continental
WMO			X	X
WHO			X	X
ACMAD				X
UNESCO			X	X
FAO			X	X
UNECE			X	X
CIWA			X	X
TWMO /African Network of Basin Organisation			X	X
RCCs		X	X	X
GWP		X	X	
NMHs	X	X	X	X
Universities	X	X	X	X





# List of organisations making up the WUIP

Group 3: Users	Level of operations			
	Local	National	Regional	Continental
Ministries	X	X		
River Basin Organisation			X	
Dam Authority		X		
Civil Societies	X	X		
Decision Makers	X	X		
Humanitarian Agency	X	X		
Civil Protection	X	X		
Disaster Risk Reduction Committee	X	X		
Electricity, Water Companies	X	X		
Irrigation Scheme	X	X		
NGOs	X	X		
Communities	X	X		



## **CONCLUDING REMARKS**

- **Operational Collaboration between HYDRO SOS and Climate Water Interface in the WMO RA-1 Africa to develop, deliver and use identified products and services needs to be sustained with additional Platforms**
  - **Partnership with GFD and any other platform (s) for informed flood emergency preparation and response planning and implementation is highly welcomed**
- **The need to update needs and services requirement and mobilize additional climate services providers for effective delivery**
- **Thanks to our partners MyDEWETRA (CIMA) and MAKAU for operationalizing the dashboard tool for flood EWS in Africa**





Any questions?

**Thank you for your attention**

