



# Existing Early Warning Tools and Approaches to Provide Early Warning To Trigger AA for Flood Risk

## ACMAD CONTINENTAL MULTI-HAZARD ADVISORY CENTER PRODUCTS & SERVICES

*Présenté par :*

**Mr. Godefroid NSHIMIRIMANA**  
**THEMATIC EXPERT ClimSA**  
[n.Godefroid@acmad.org](mailto:n.Godefroid@acmad.org)



INTRA-ACP CLIMATE SERVICES AND RELATED APPLICATIONS PROGRAMME



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



*Abuja – Nigeria 27-29 March 2024*

# ACMAD PRESENTATION



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

➤ **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**

➤ **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, database, research and innovation as functions**

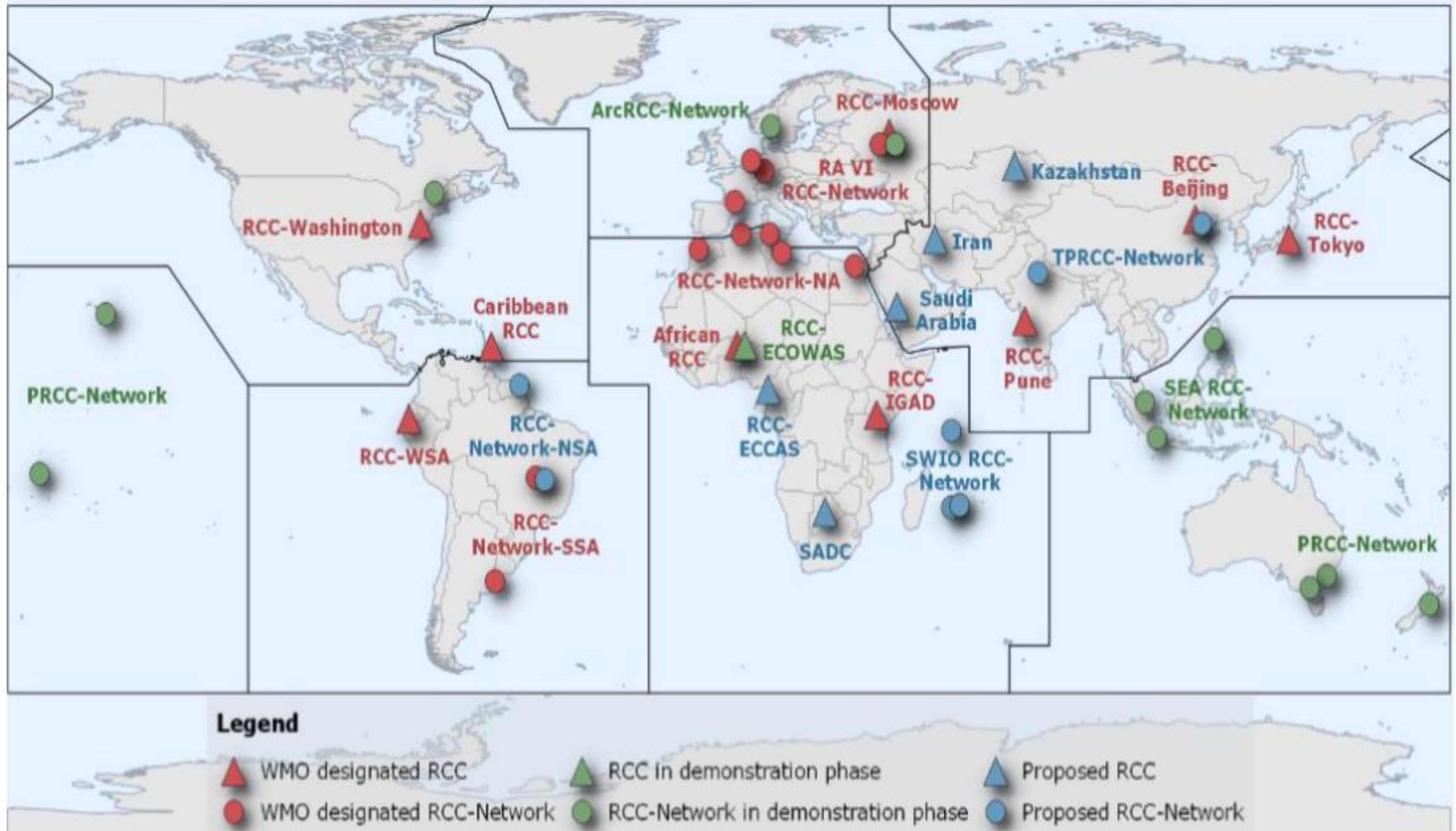
➤ **The Centre is also tasked to carry out capacity development for its Member State's National Meteorological and Hydrological Services (NMHSs) in weather prediction, climate monitoring, Information technology, research and transfer of technology.**

➤ **Since its creation, the African Centre of Meteorological Application for Development (ACMAD) has provided weather watch, prediction, and climate information at different time scales *to support humanitarian action and decision-making throughout Africa***

➤ ***With the Support from UNDRR, ACMAD established the Continental Multi-Hazard Advisory Center and the contribute to AMHEWS by providing Meteorological forecast (Continental Watch).***



# COORDINATION DES CENTRES REGIONAUX CLIMATIQUES Depuis 2015



Established  
Regional  
Climate  
Centres  
(WMO, 2022)



# CENTRE CONTINENTAL D'AVERTISSEMENT POUR LES PHENOMENES DANGEREUX OPERATIONNEL DEPUIS OCTOBRE 2022.





# AMHEWAS Disaster Situation Room Addis Ababa

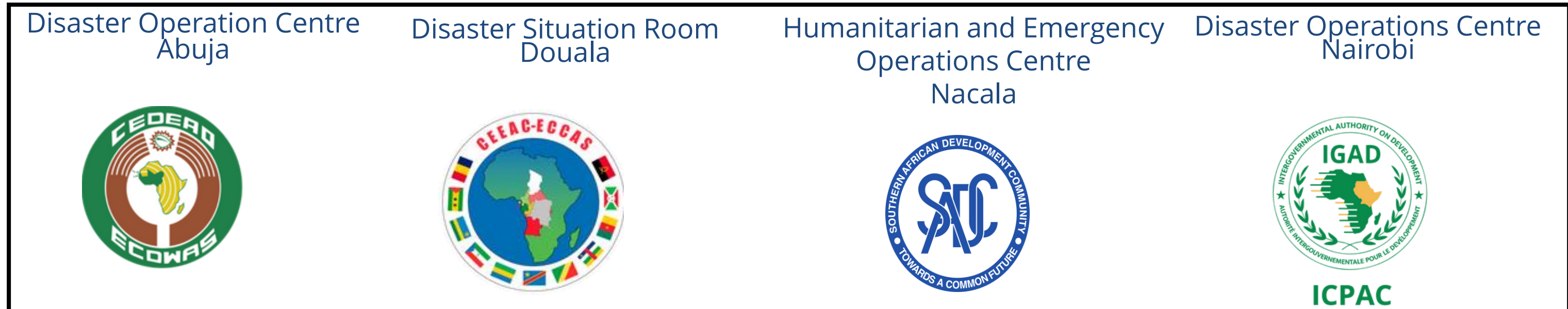
African Multi-Hazard Advisory Centre  
Niamey



ACMAD generates regular continental hazard and disaster situation reports, continental climate trends, and impact-based advisories.



AUC trains Member States and issues advisories through twice weekly "Continental Watch" bulletins and monthly disaster outlooks. Subregional situation rooms feed data to the continental level.

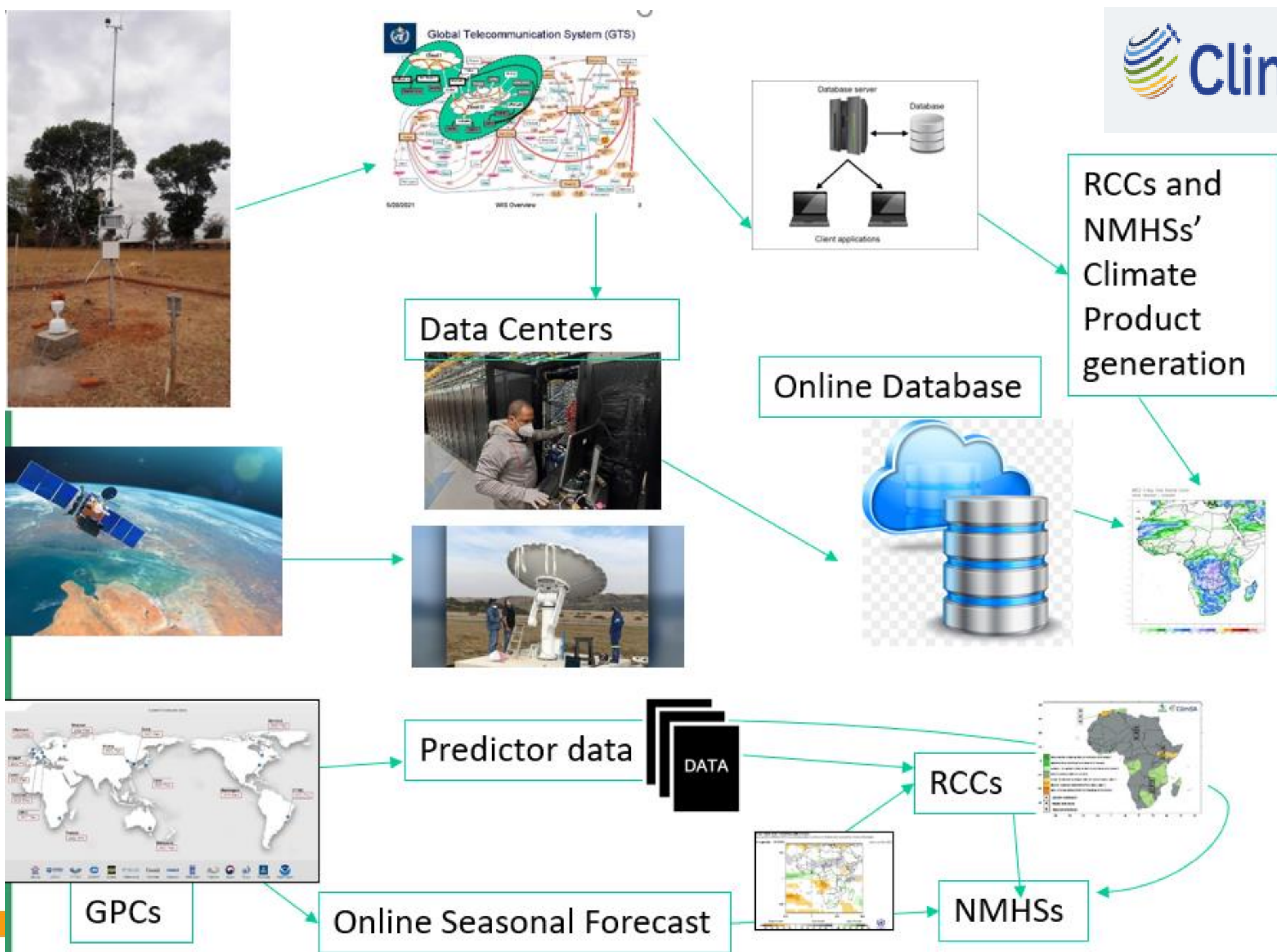


National situation rooms issue national early warnings, coordinate early and anticipatory actions, and feed data to the continental system through the sub-regional situation rooms

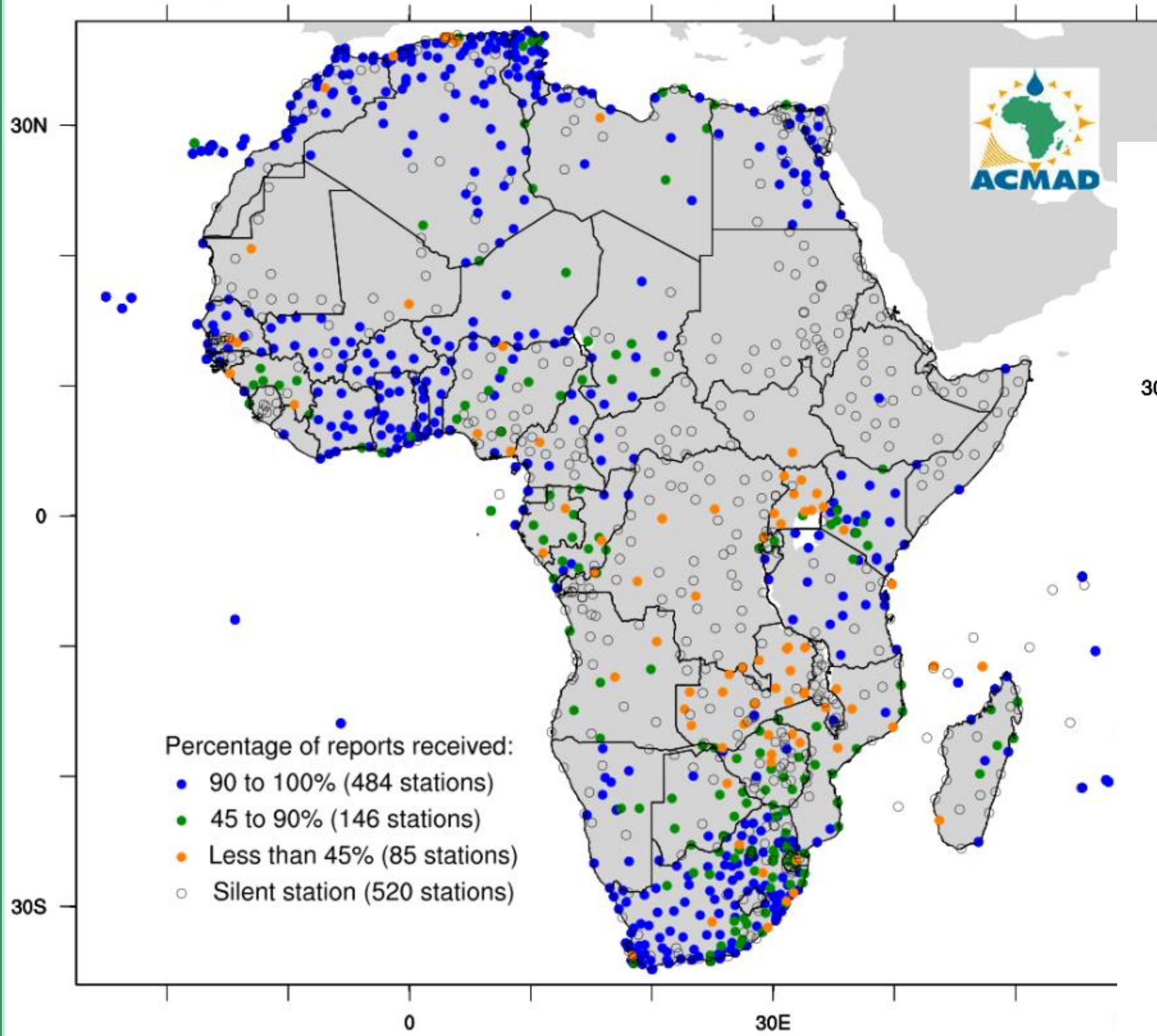
National Situation Rooms

Subregional situation rooms provide hazard information and bulletins as well as capacity support for early warning and anticipatory action to the national situation rooms

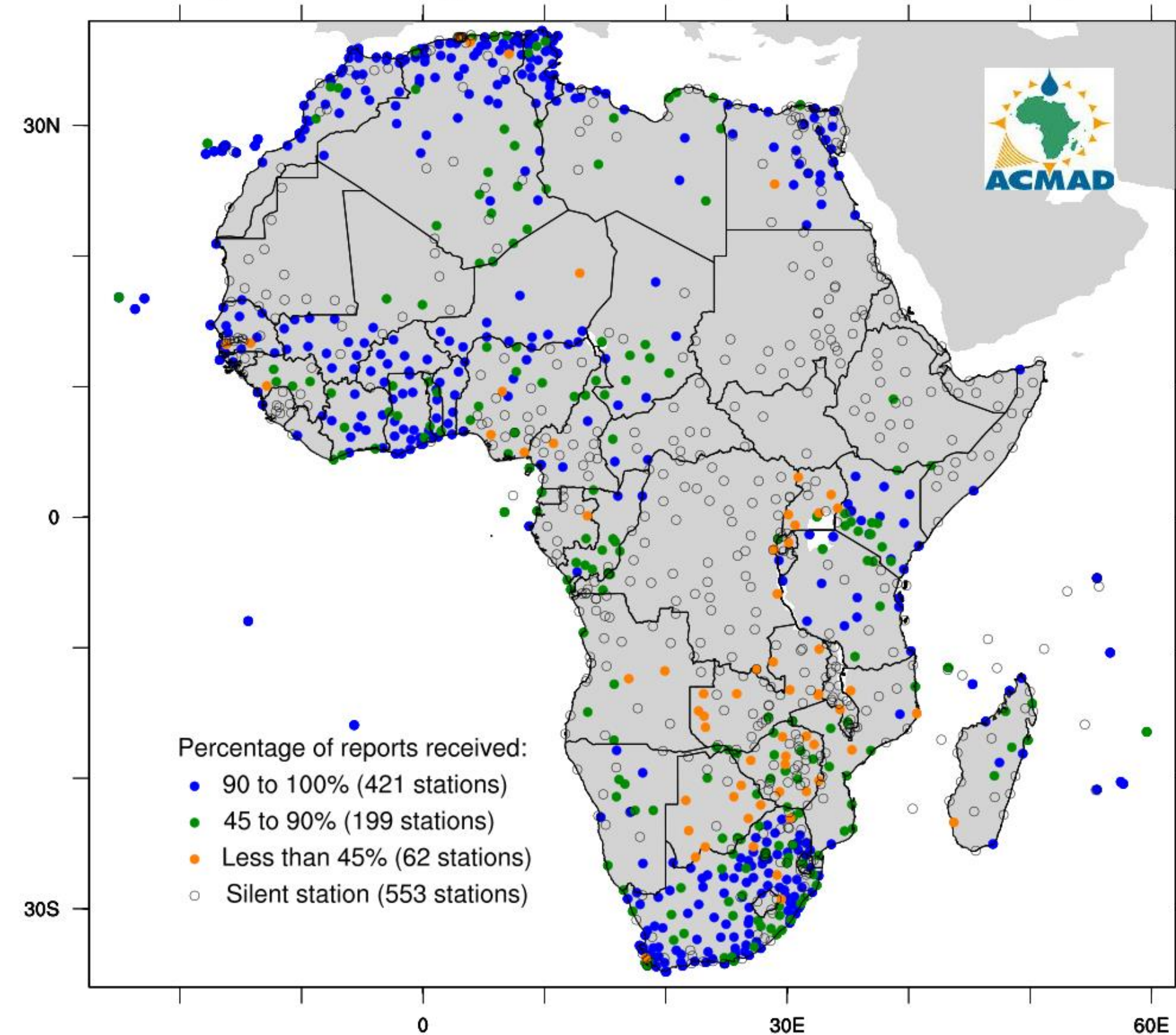
# SOURCE DE DONNEES



# Monthly monitoring of SYNOP reports for January-2024



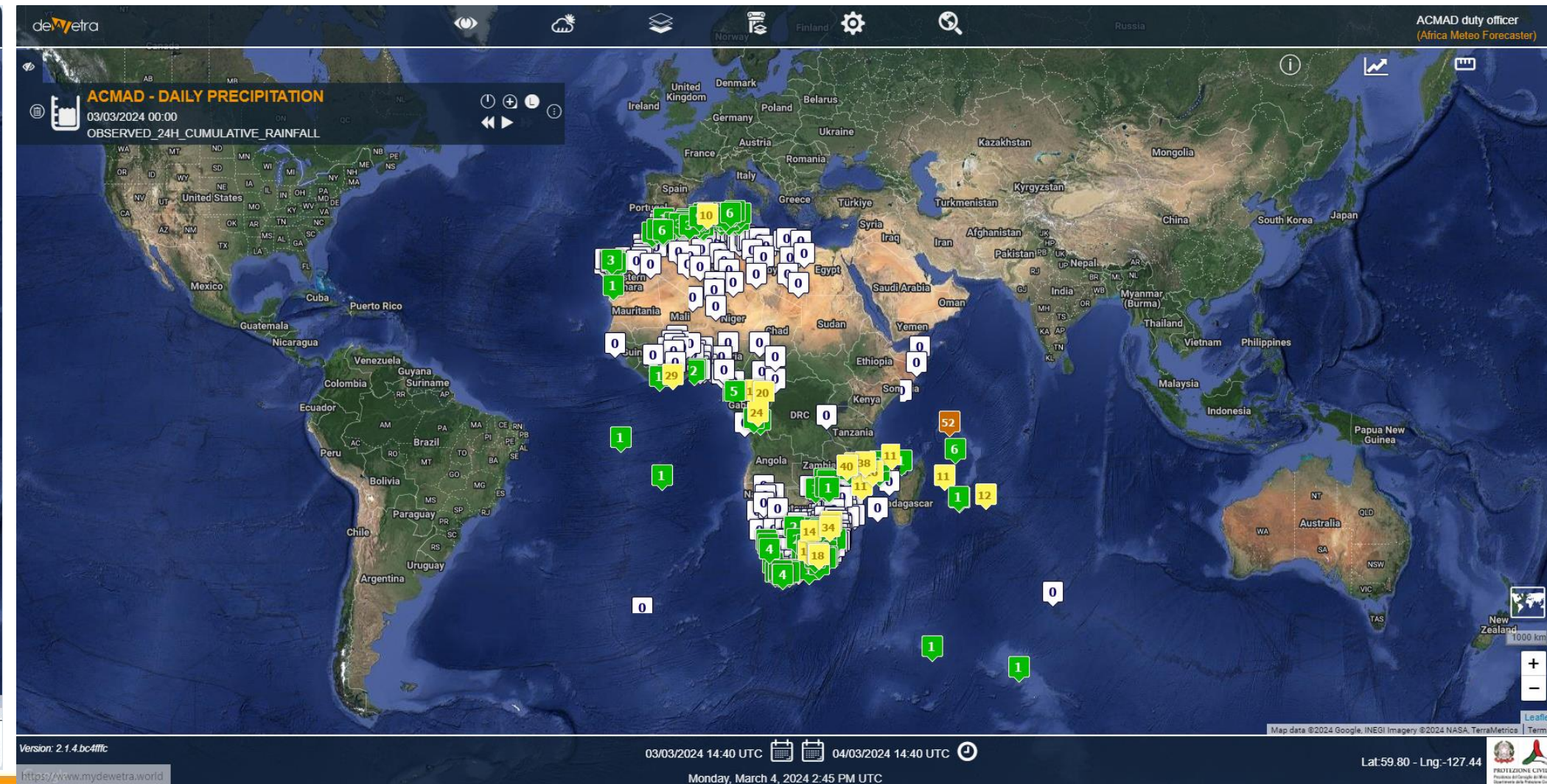
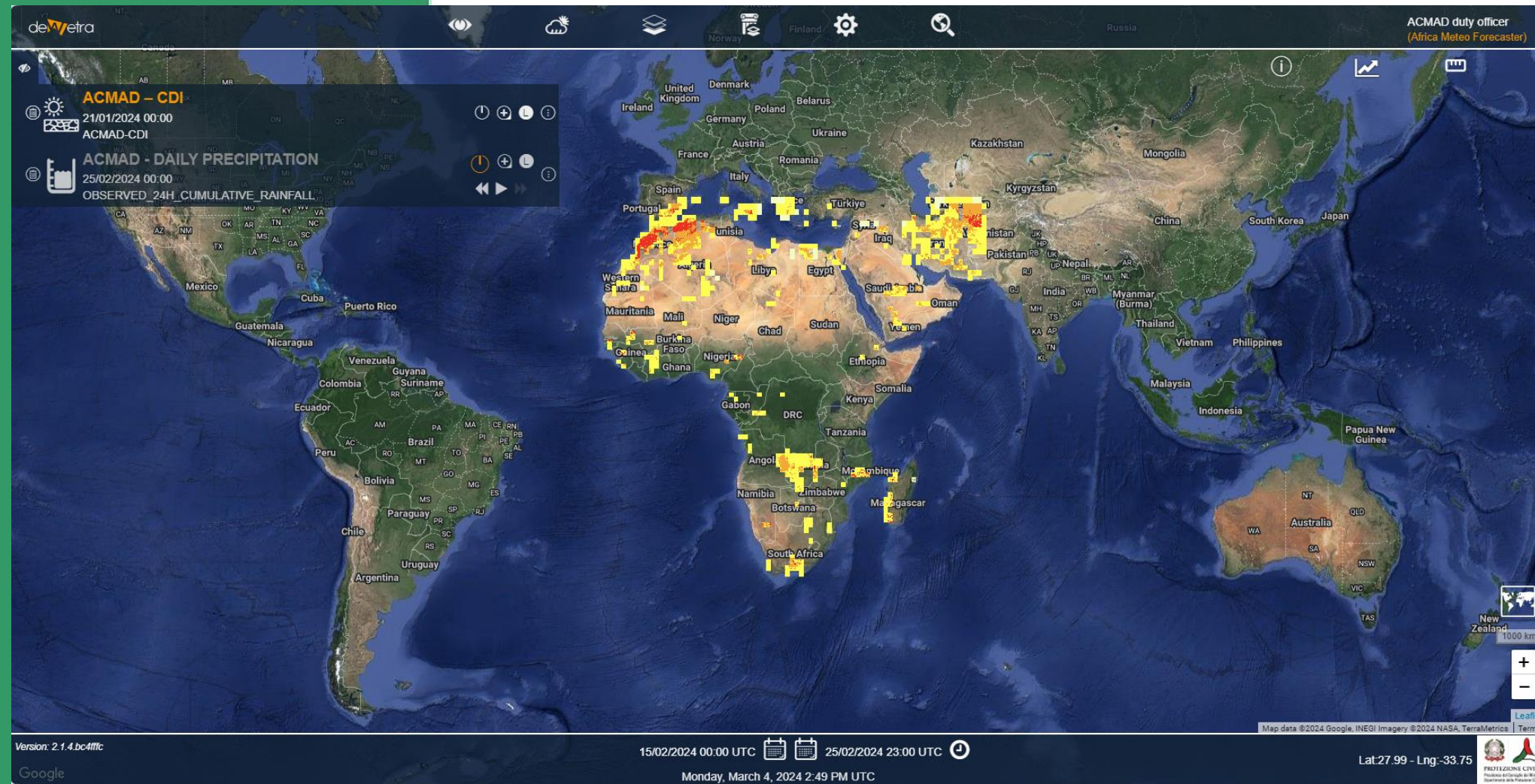
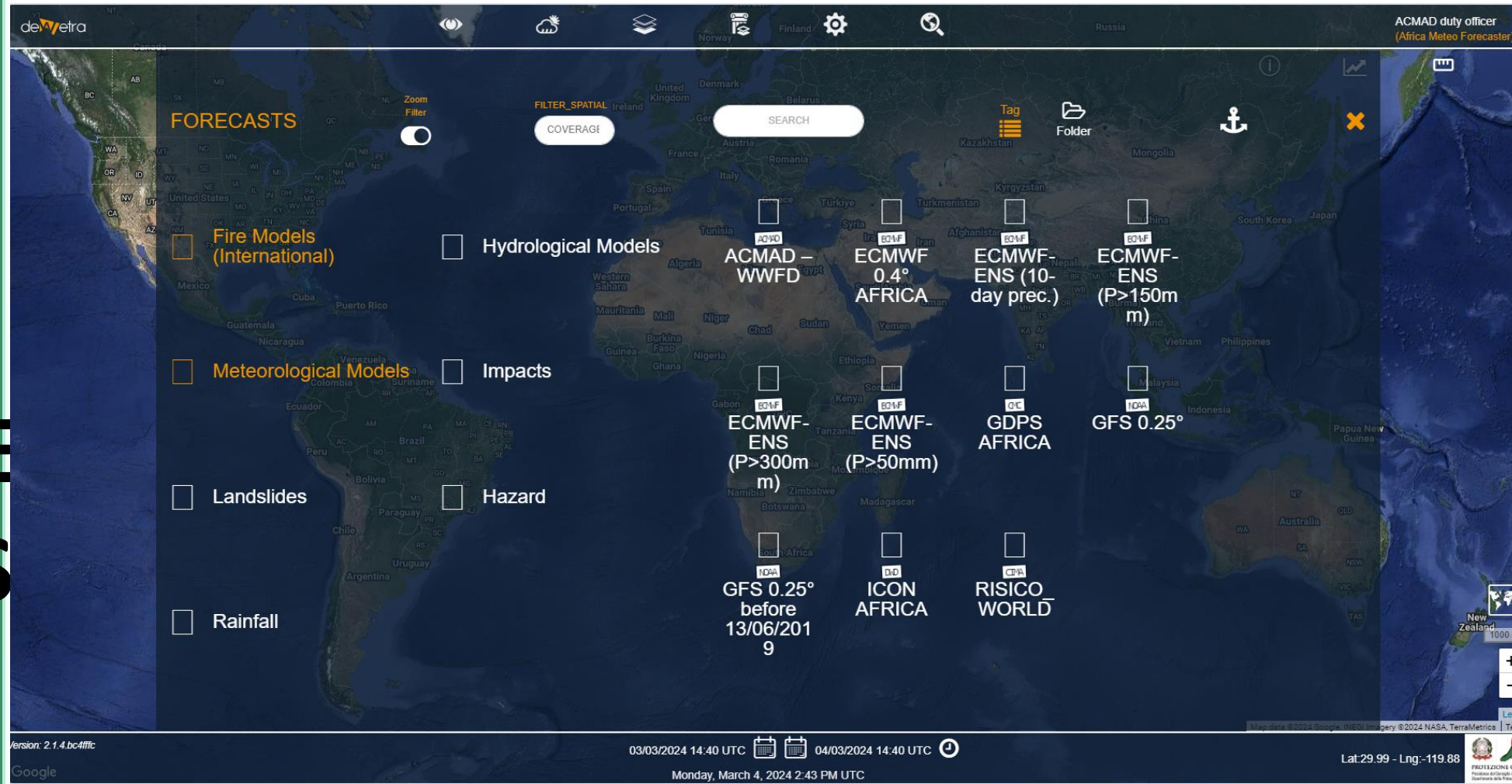
# Monthly monitoring of SYNOP reports for February-2024



# DIFFERENT PRODUITS SUR MyDEWETRA avec la collaboration ACMAD - CIMA



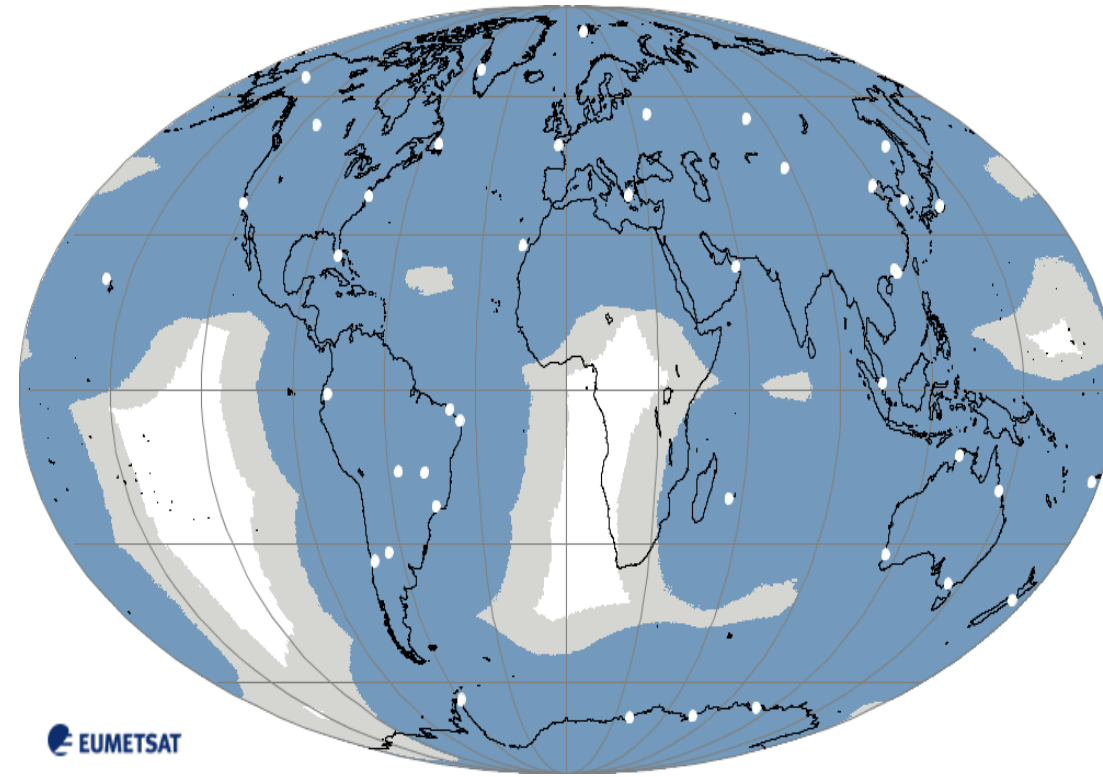
SOURCE DE  
DONNEES



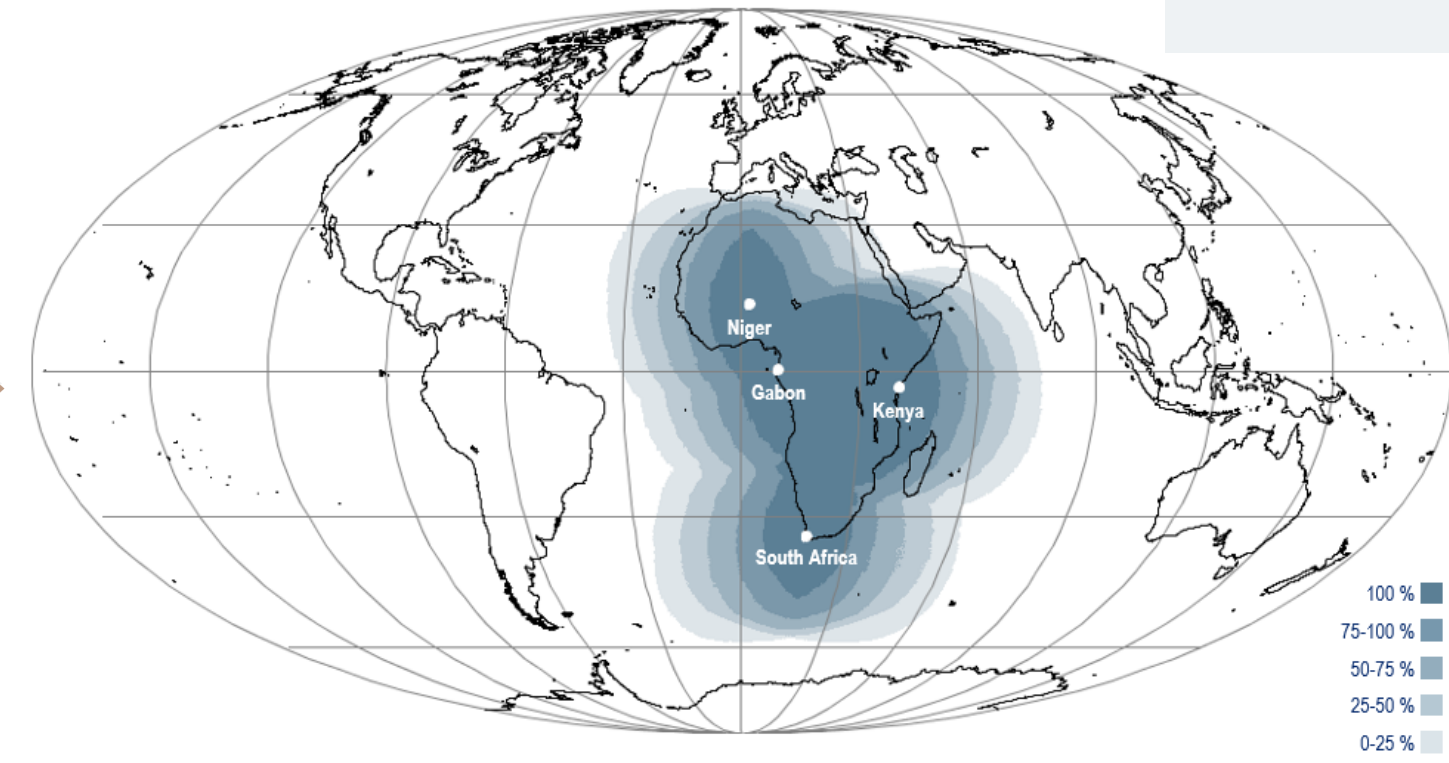


# SOURCE DE DONNEES

BEFORE

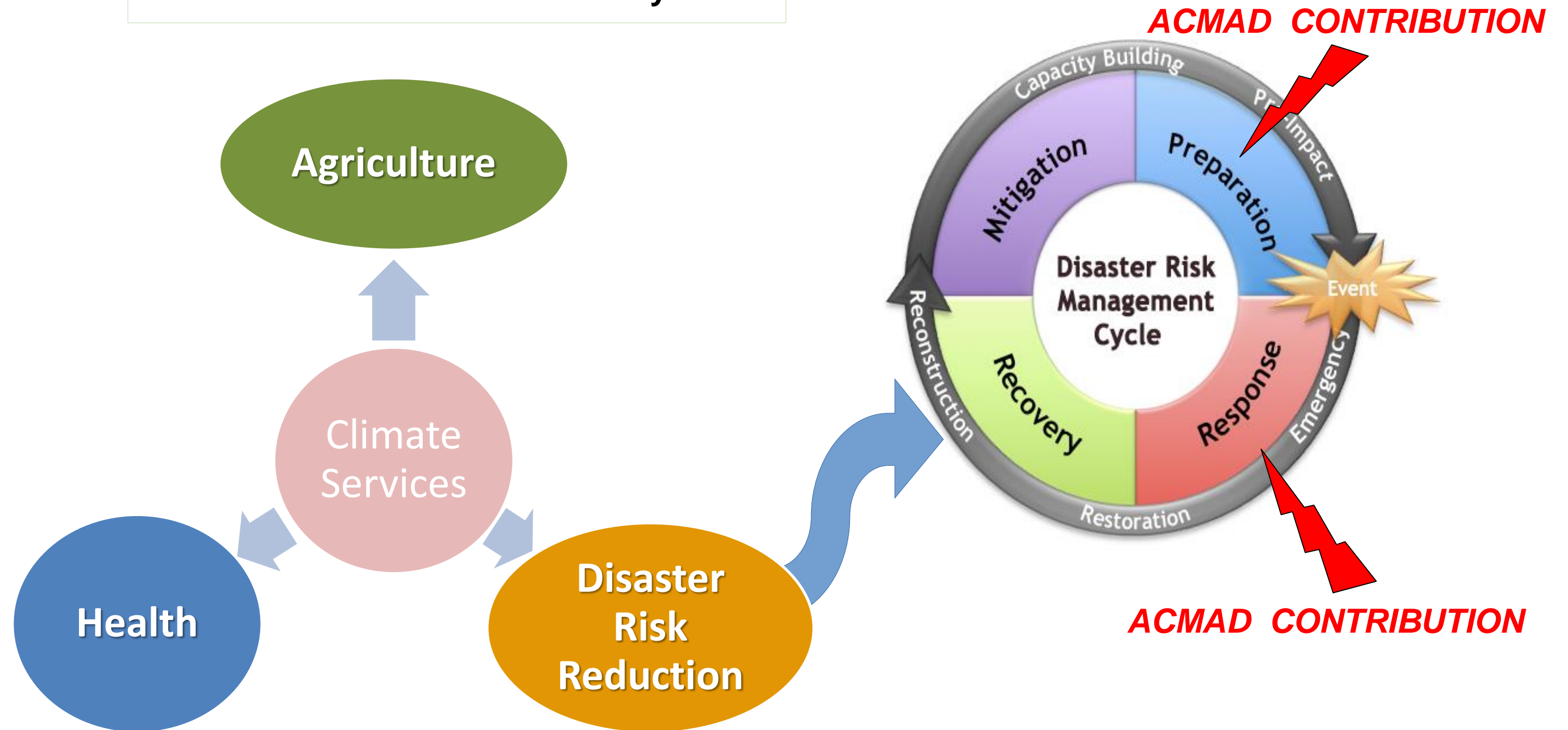


AFTER



# Provision of climate information

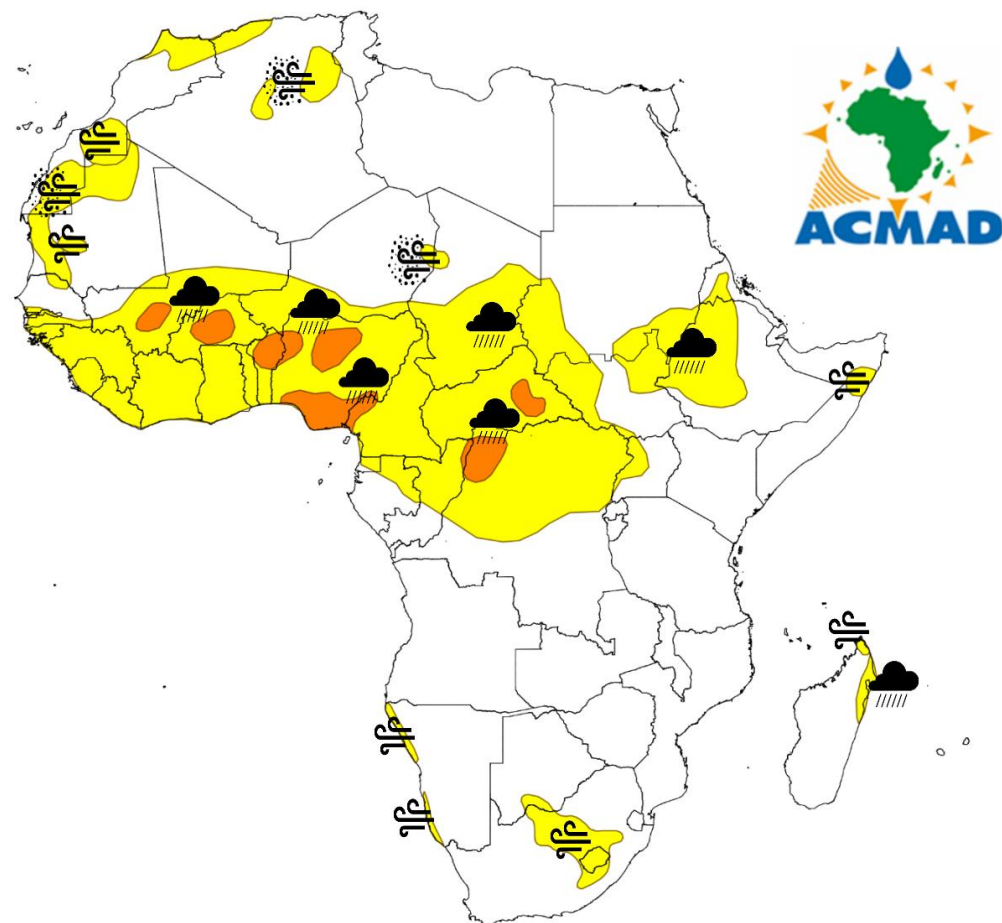
Climate Services: ACMAD Priority Areas



*ACMAD provide Climate services tailored with significant weather and climate phenomena, related hazards, potentials impacts , responses measures*



# PRODUITS POUR ACTION ANTICIPATOIRE Cas de l'Algerie



## 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>	



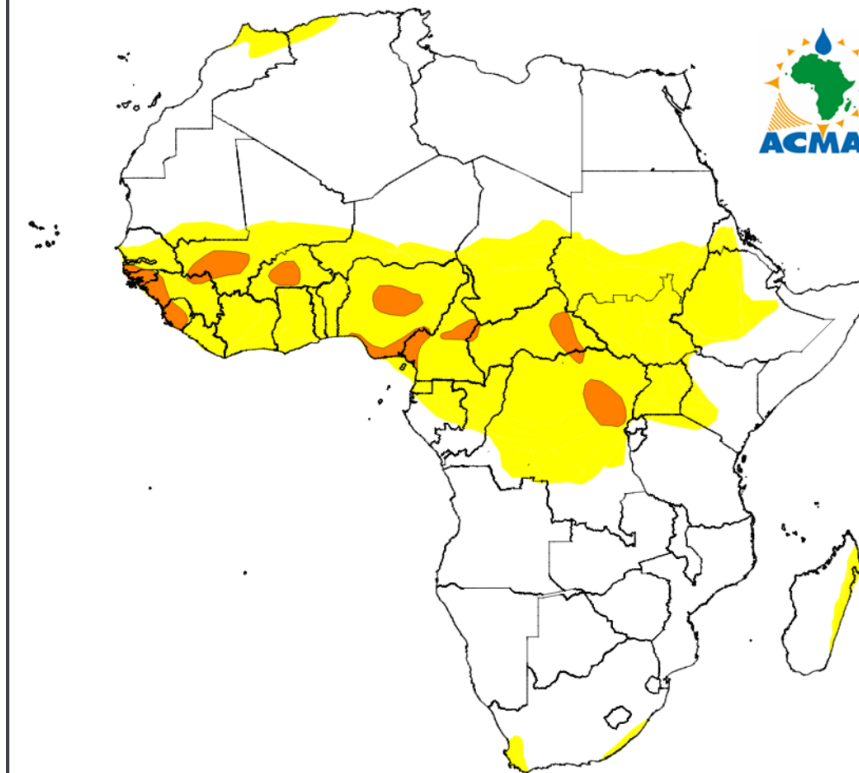
## VIGILANCE MAP AND POLICY BRIEF FOR HEAVY RAINFALL AND STRONG WINDS

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 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 NHMSs
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 NHMSs 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.



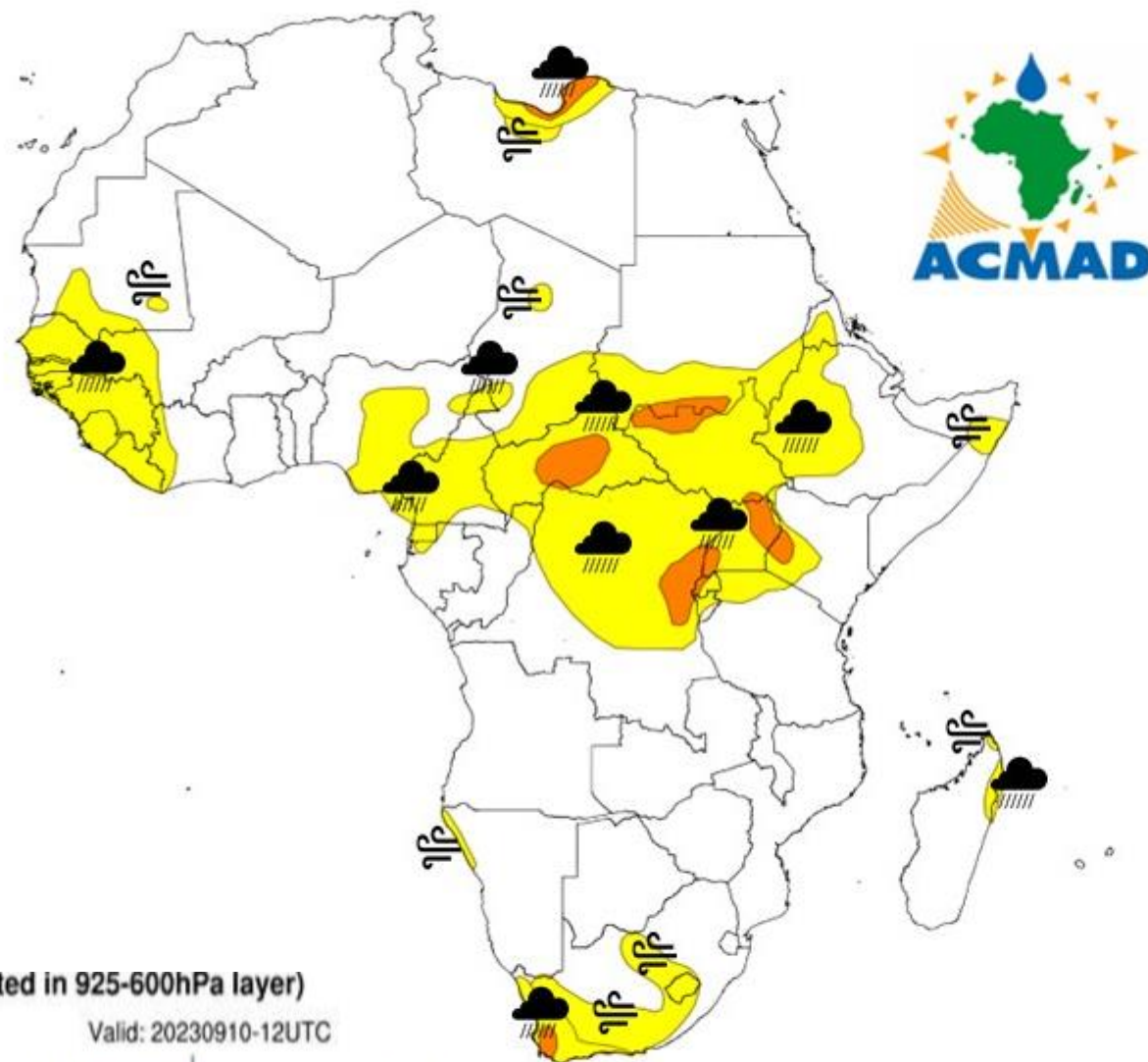
## Algeria – Deadly Flash Floods Following Heavy Rain in North West

4 SEPTEMBER, 2023

Severe flash flooding swept through areas of northwestern 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>

PRODUITS POUR ACTION ANTICIPATOIRE cas de Libya : **Cyclone Daniel du 04 au 10 Septembre 2023**



MULTI-HAZARD OUTLOOK

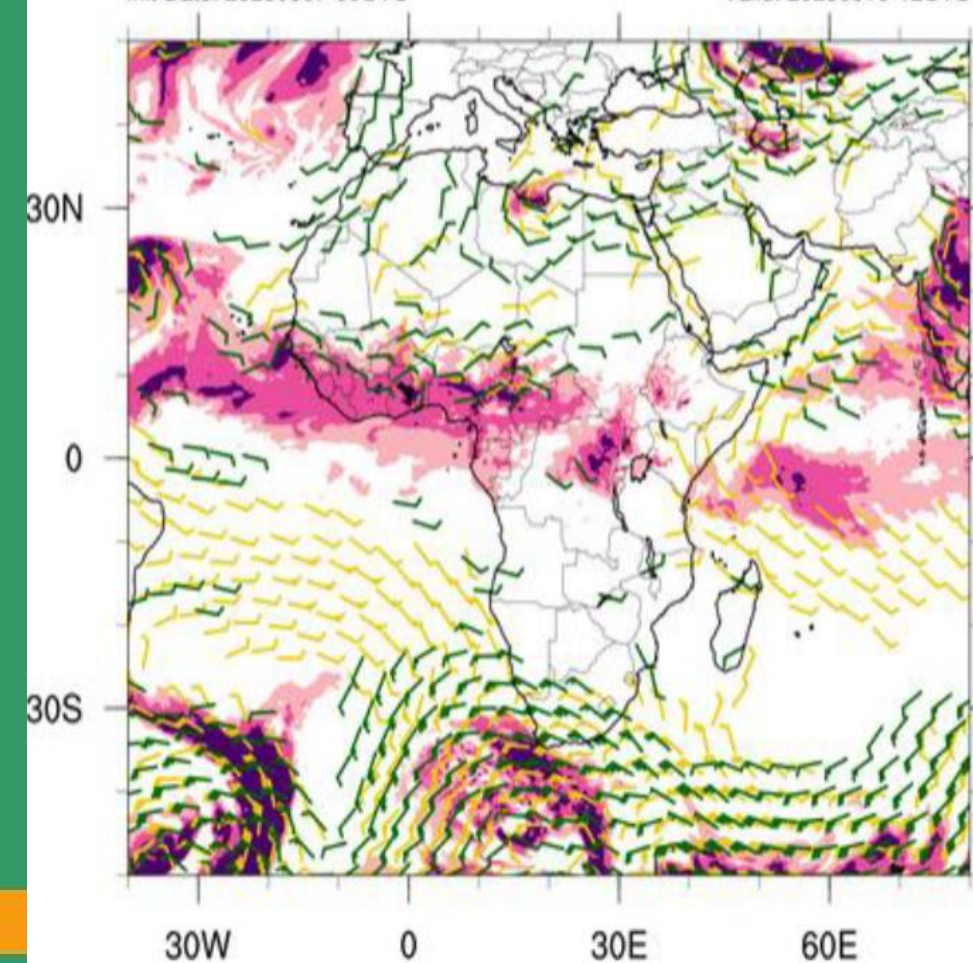
Validity: **2023-09-10**

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>	

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

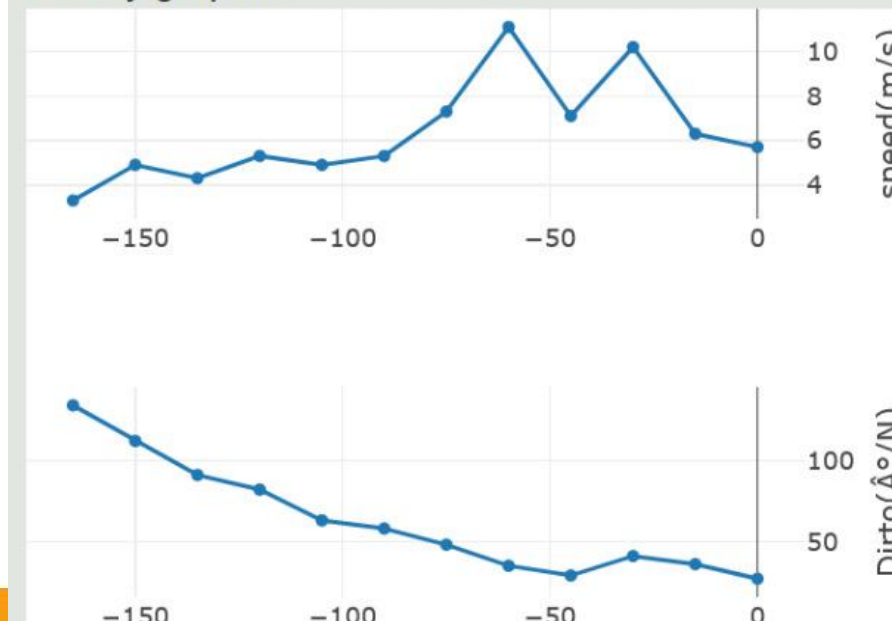
Wind (925 and 700 hPa), RH (Integrated in 925-600hPa layer)  
Init Date: 20230907-00UTC Valid: 20230910-12UTC



MSG 2023-09-10T06:15:00Z : RDT-CW\_v522\_\_ and overshoot



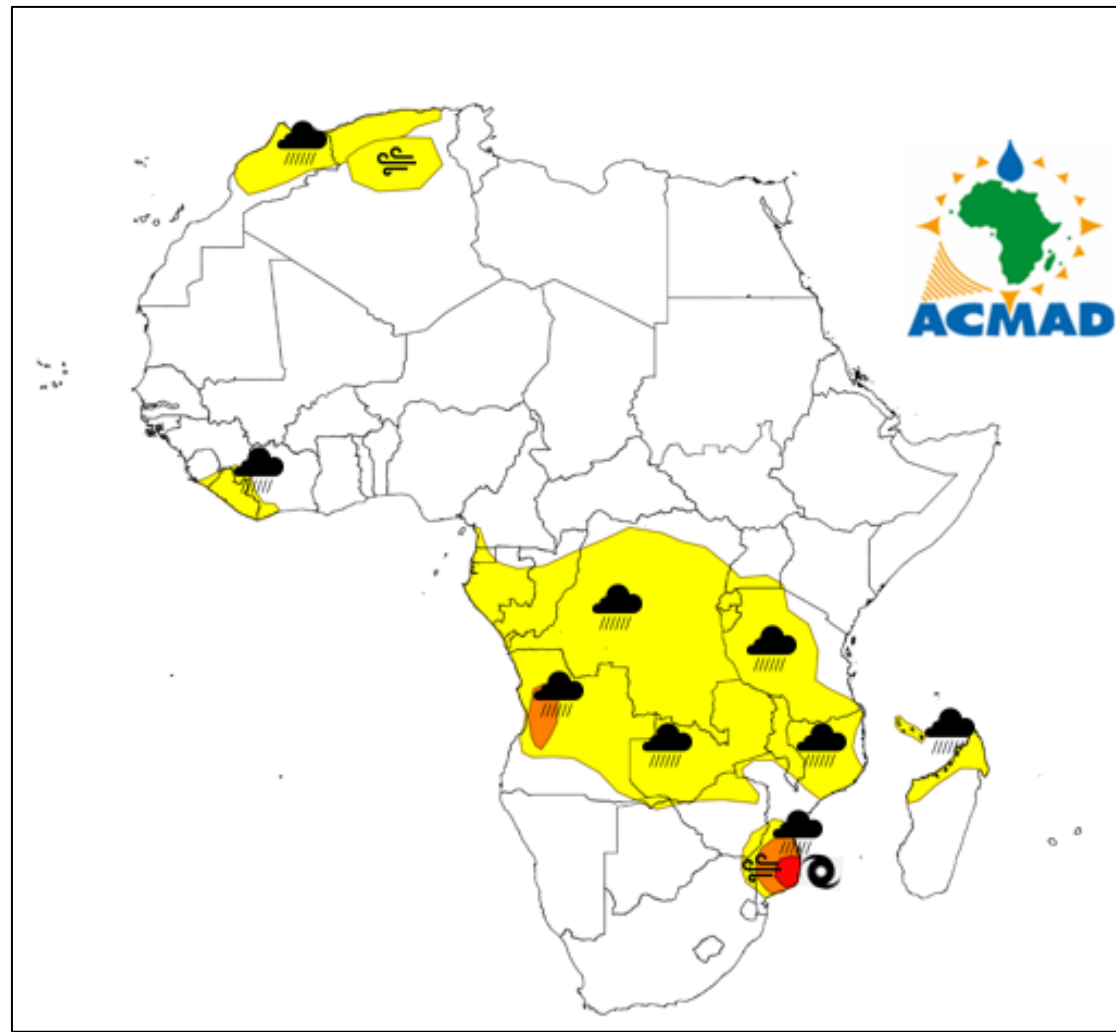
History graphs





**PRODUITS POUR ACTION  
ANTICIPATOIRE cas du Cyclone FREDDY**

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

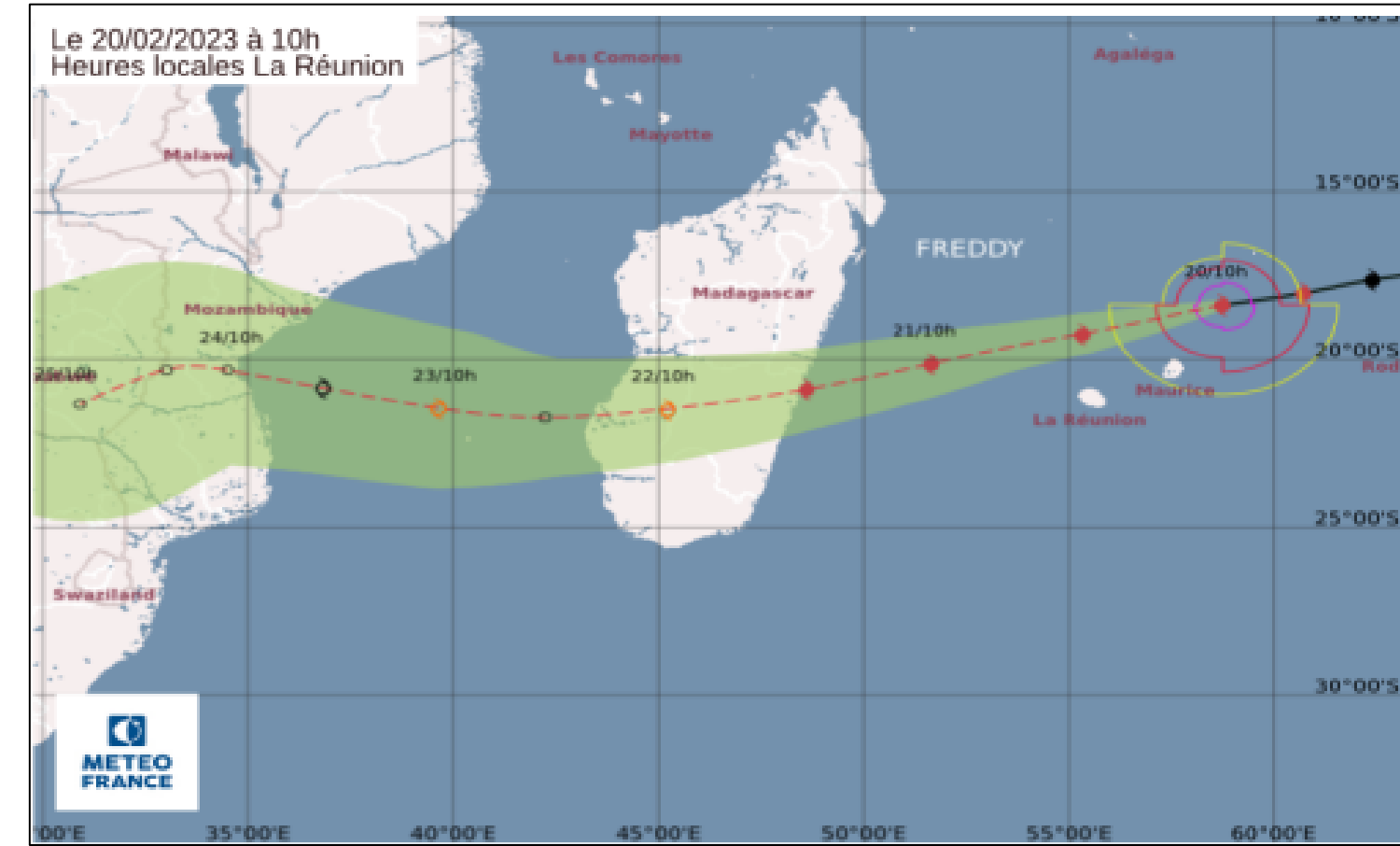


**MULTI-HAZARD OUTLOOK**

**Validity: 2023-02-24**

issued on 2023-02-20

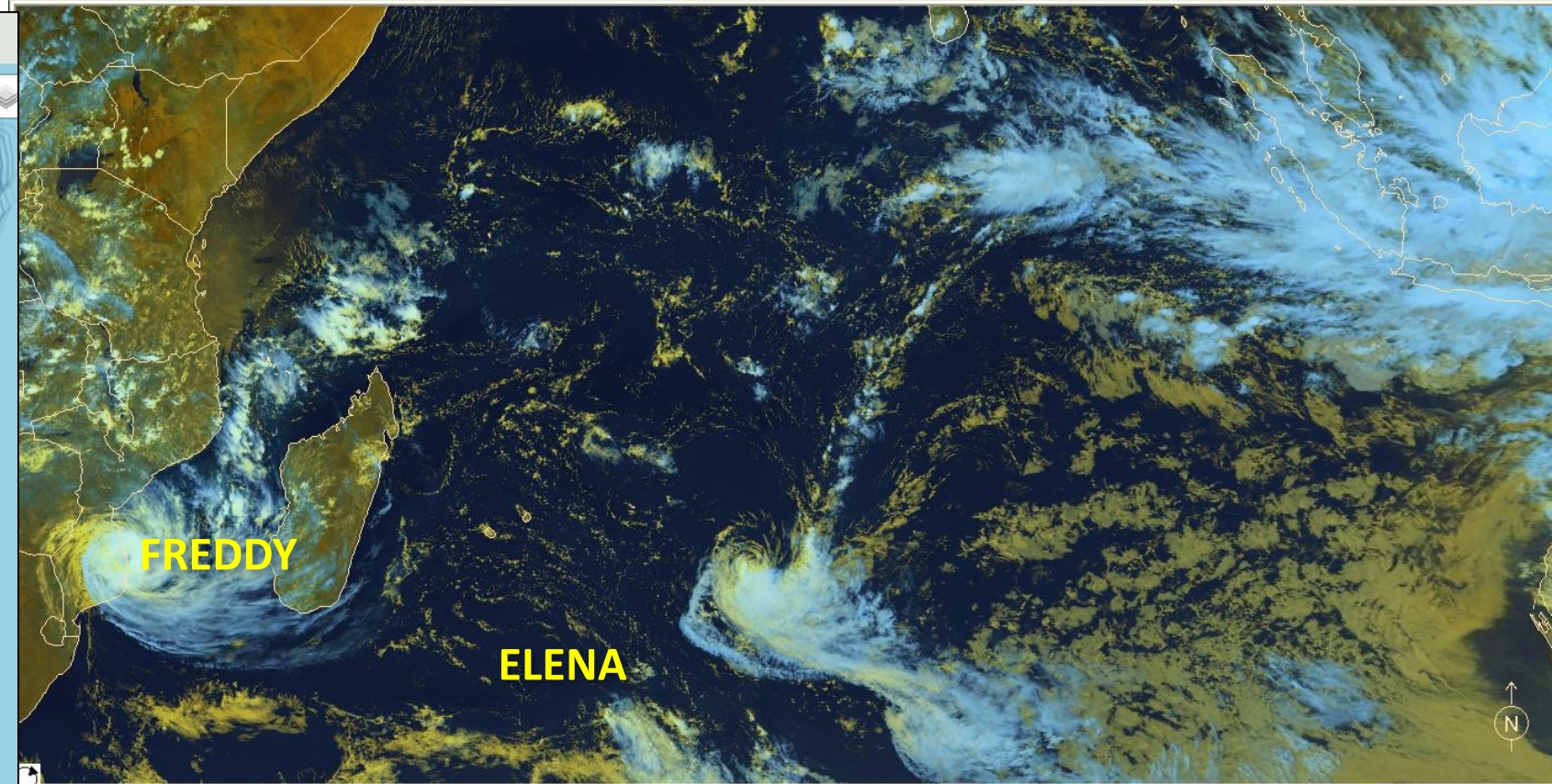
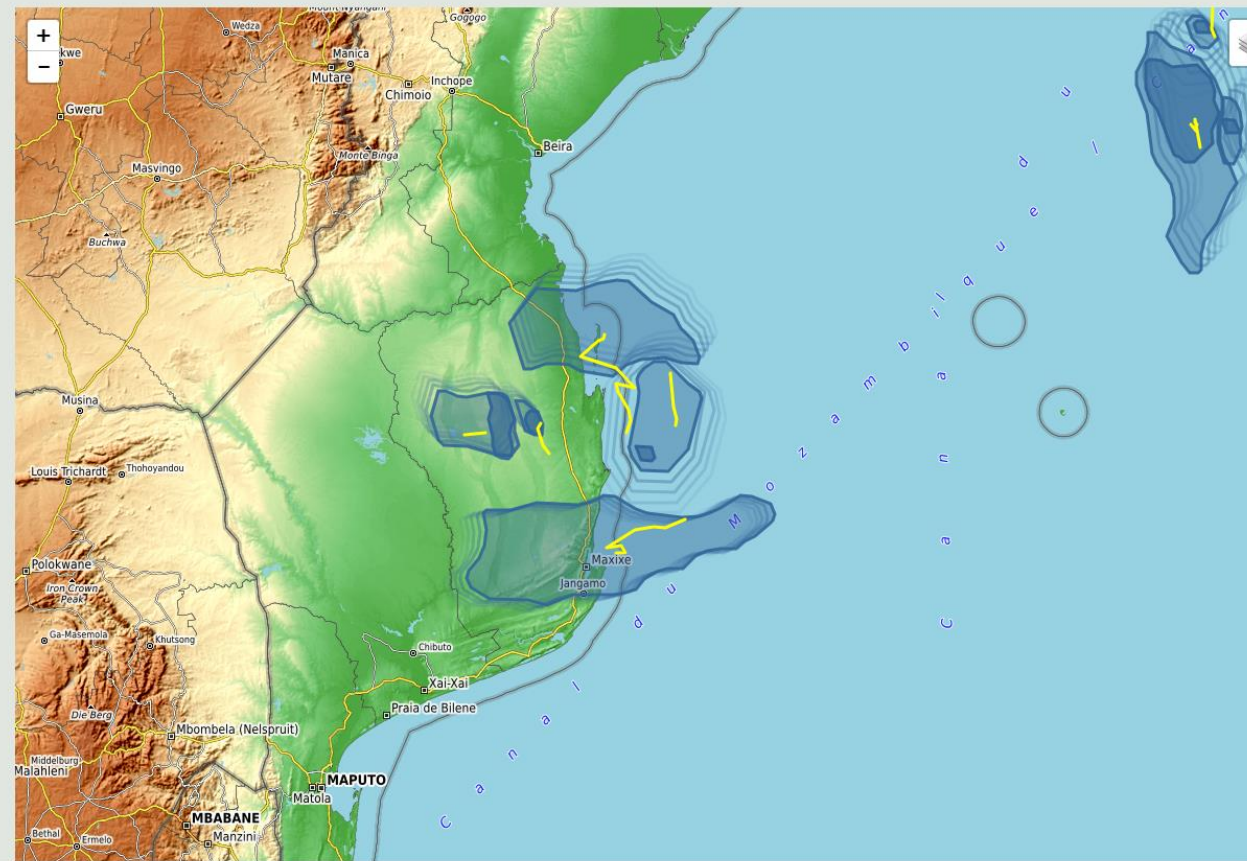
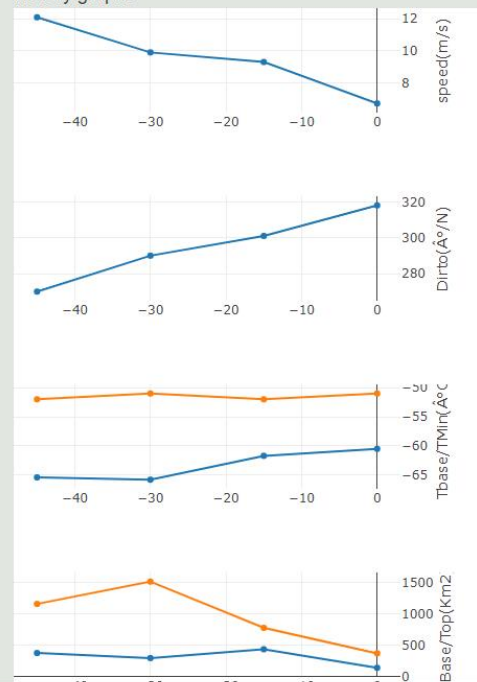
Rain	Wind	Dust	Meningitis
Very heavy >100mm	Very strong >80kmh <sup>-1</sup>	Very heavy >1000µg m <sup>-3</sup>	Very likely
Heavy 50-100mm	Strong >65kmh <sup>-1</sup>	Heavy >600µg m <sup>-3</sup>	Likely
Moderate 10 - 49mm	Moderate >50kmh <sup>-1</sup>	Moderate >400µg m <sup>-3</sup>	Less likely
Light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



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



History graphs

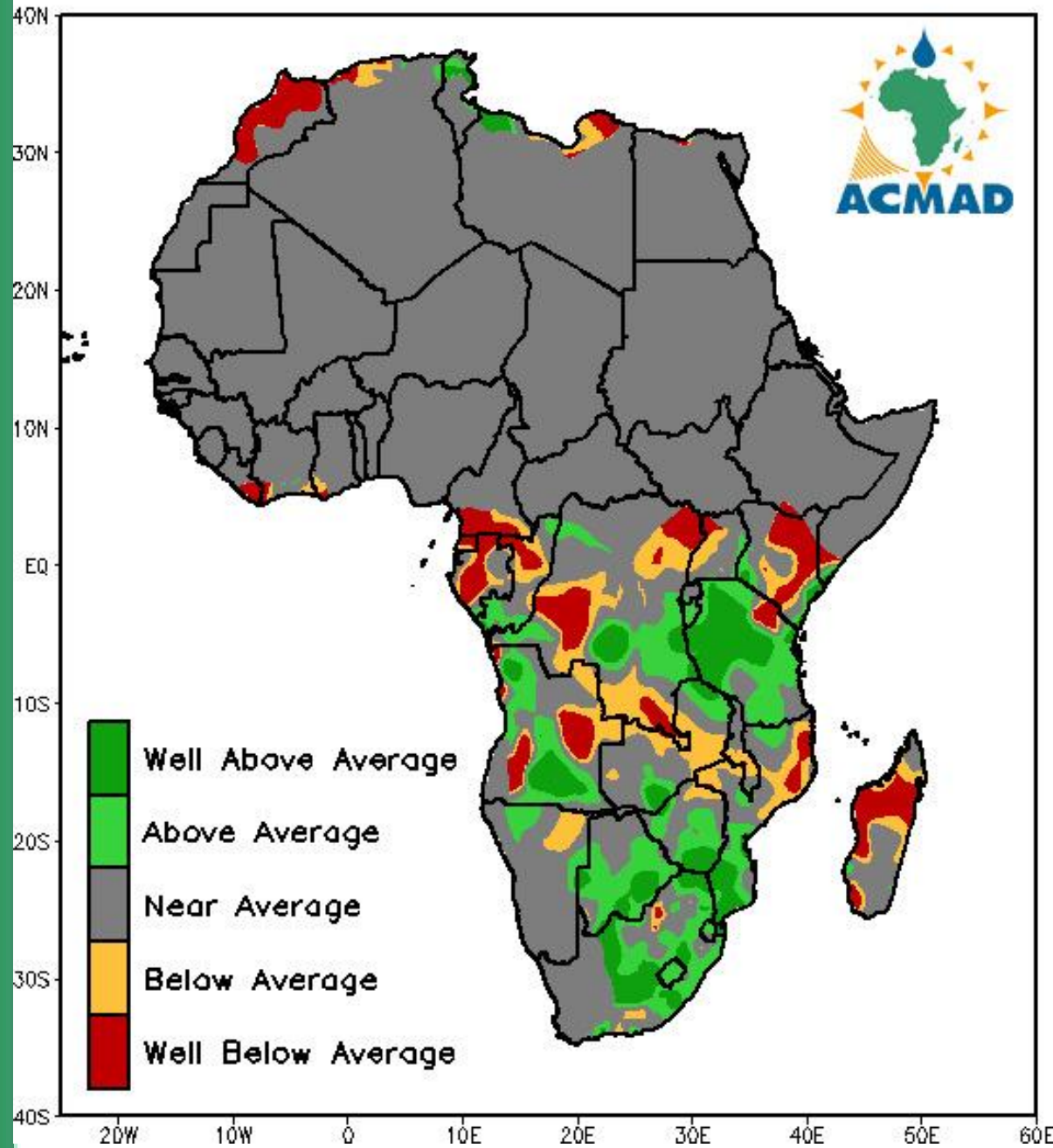


RDT FOR 24-02-2023 , 1030UTC

24-02-2023 , 1030UTC


# PRODUITS POUR LE SUIVI CLIMATIQUE

CPC-Uni 31-Day Precipitation in Percent of Average (%)  
 Period: 01Dec2023 to 31Dec2023



**Disponible: Chaque Mois**

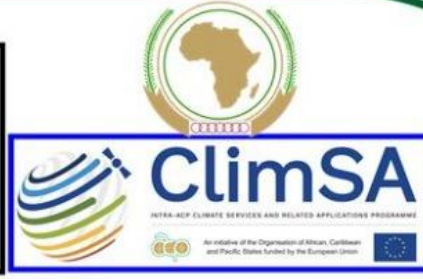
# PRODUITS POUR LA PRISE DE DECISION



**CONTINENTAL**

**BRIEF FOR POLICY AND DECISION MAKERS BASED ON SIGNIFICANT WEATHER AND CLIMATE EVENTS UPDATE.**

**VALID FOR: MARCH TO JUNE 2024**

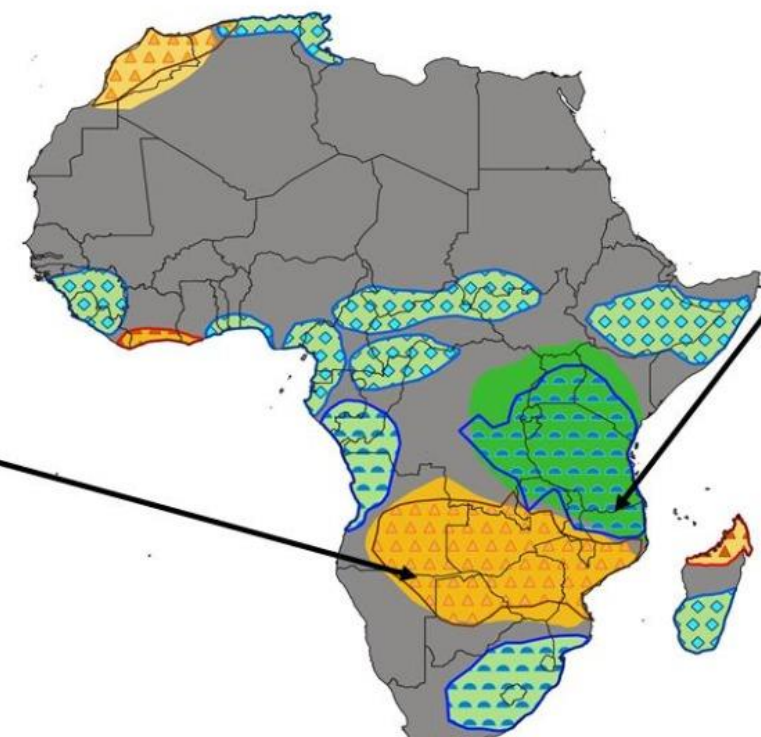


**CLIMATE ANOMALIES**  
 Drier than average season very likely  
 Prolonged drought with reported persistent impacts

**HAZARDS**  
 Weak to Moderate drought, dry spells, near average to late onset very likely.

**POTENTIAL IMPACTS**  
 Moisture stress, decreased river discharge, reduced rain-fed crop yield prospect, degradation of pastures and high food prices.

**MEASURES**  
 Develop and implement policy to support drought tolerant and short cycle crops, soil and water conservation practice, maximize full irrigation farming. Use watershed based in-situ water harvesting structures Develop and Implement policy in support of weather based insurance and dam management







**CLIMATE ANOMALIES**  
 Wetter than average season very likely  
 Heavy rainfall with reported flooding events

**HAZARDS**  
 Heavy rainfall events may lead to flash flood, riverine flooding, landslides and soil erosion. High chance of lightning, hail formation and stormy weather are expected

**POTENTIAL IMPACTS**  
 Waterlogging, pest and diseases Infestation, Outbreak of water borne diseases damage to infrastructures(dams, reservoirs, bridges, roads...) Displacement of people due to floods.

**MEASURES**  
 Select excess-water tolerant crops, wide tree planting campaigns Develop new and rehabilitate the existing drainage structure, Update and implement flood contingency plans improve water management in reservoirs and dams

**LEGEND**

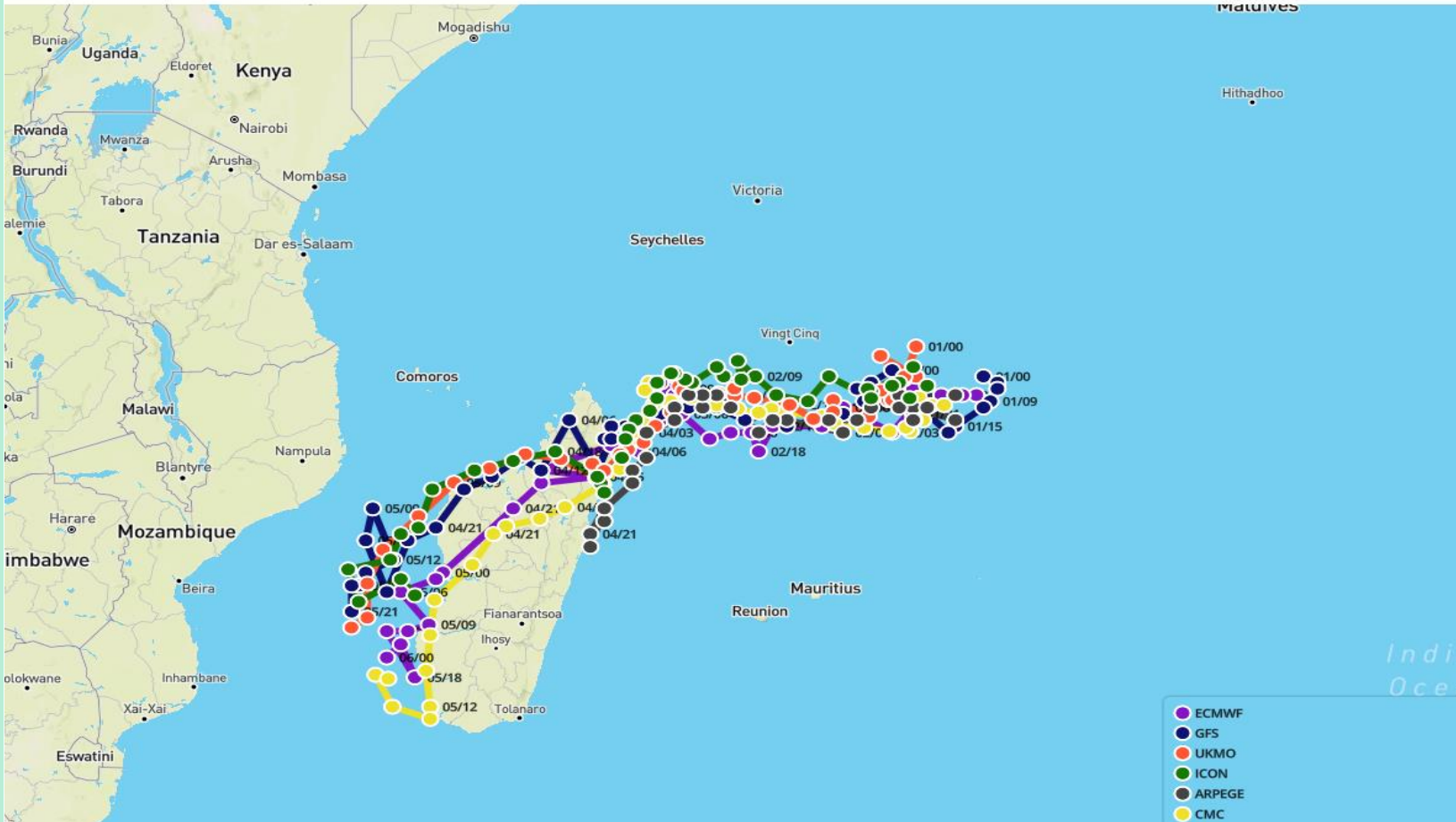
-  Observed drought hazard
-  Observed flood hazard
-  Drought hazard outlook
-  Flood hazard outlook



# PRODUITS POUR le SitRoom AU DANS LE CADRE DU AMHEWAS

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

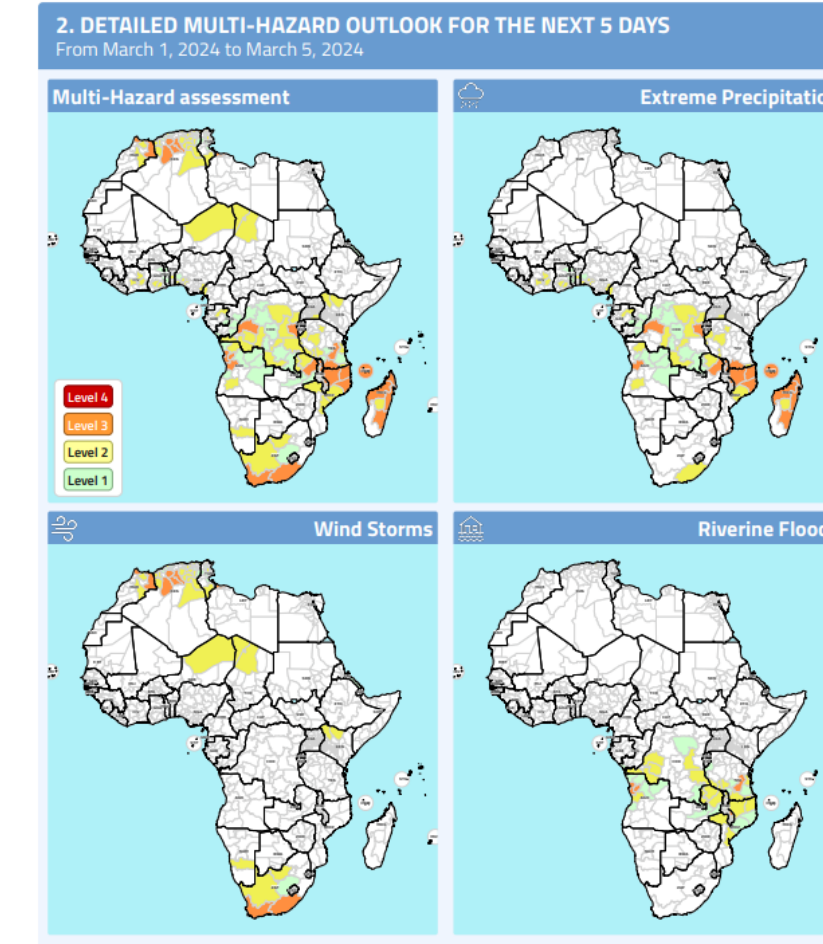
Models : ARPEGE, CMC, ECMWF, ICON, GFS and UKMO



## Contribution in Continental Watch



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



## Contribution in Situation Report

African Union Multi-hazard Early Warning and Early Action System Situation Room/ Health, Humanitarian Affairs and Social Development

### SITUATIONAL OVERVIEW

- Heavy rains brought by Storm Daniel at the weekend caused two dams to burst on the usually dry Wadi Derna riverbed traversing through the city and left a trail of devastation.
- Heavy rainfall accompanied with strong winds hit north-eastern Libya on September 10th, 2023, causing severe riverine and flash floods that resulted in a big number of casualties and damage.

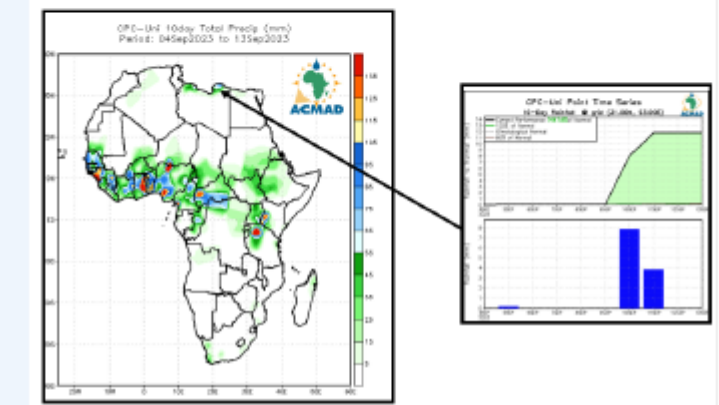
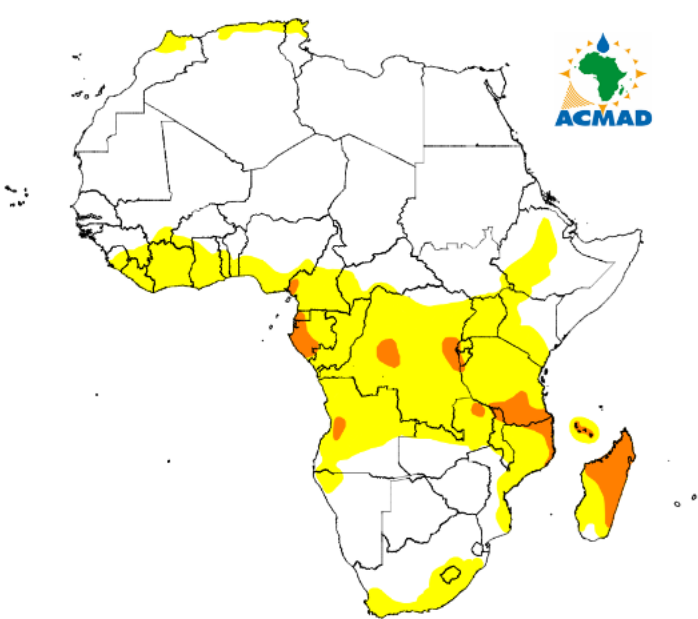


Fig 1: Total Precipitation Observed over Africa in the last 10 days

- The International Organization for Migration (IOM) reports that in Derna more than 30,000 people were displaced, 3,000 in Albayda and 1,000 in Al Mkeheley. Additionally, IOM said 6,085 other people have been displaced in other storm-hit areas like Benghazi, with the number of deaths still unverified. The number of victims is expected to keep rising as recovery operations continue.
- In the nearby neighborhood of Al-Eliwa, around 96% of properties were reported to have been flooded and many properties along the river have disappeared, leaving only their foundations visible.
- Health facilities in the severely affected neighborhoods of Al-Bilad and Al-Maghar on either side of the river, home to healthcare facilities used by people from across the city were hit by floods.
- The communes in the affected areas have limited or no access to water, electricity and petrol among others because of damages to life saving services.
- There's a wave of displacement as people are trying to flee Derna but many are stuck because a lot of the roads are blocked. Unfortunately, most of the people have no shelter forcing some of them to return to their inhabitable homes and some families have been taking shelter in schools, underlining the urgent need for shelter.
- The images and map below are showing the scale of destruction before and after the floods with

### VIGILANCE MAP AND POLICY BRIEF FOR HEAVY RAINFALL AND STRONG WINDS Valid From March 1 to 5, 2024 Issued on February 29, 2024

**HIGHLIGHT:** Heavy rainfall is expected in Cameroon, Equatorial Guinea, Gabon, Angola, D.R.C, Rwanda, Burundi, Zambia, Malawi, Tanzania, Mozambique, Madagascar and Comoros Islands.



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.

*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.



# OPERATIONAL SERVICE CO-DESIGNED AND CO-DEVELOPED WITH UN and HUMANITARIAN AGENCIES



WMO Coordination Mechanism (WCM)

## WCM Regional HydroMet Weekly Scan | Sudan

Issued on 07 September 2023 12:00 UTC, Validity: 08 September - 14 September 2023

WORLD METEOROLOGICAL ORGANIZATION

Icons: UNOCHA

Considered hydromet events: DROUGHT, HEAT WAVE, COLD WAVE, LANDSLIDES, HEAVY RAIN, FLOODS, FLASH FLOODS, STORM, STORM SURGE, TORNADO, VIOLENT WIND, TROPICAL CYCLONE

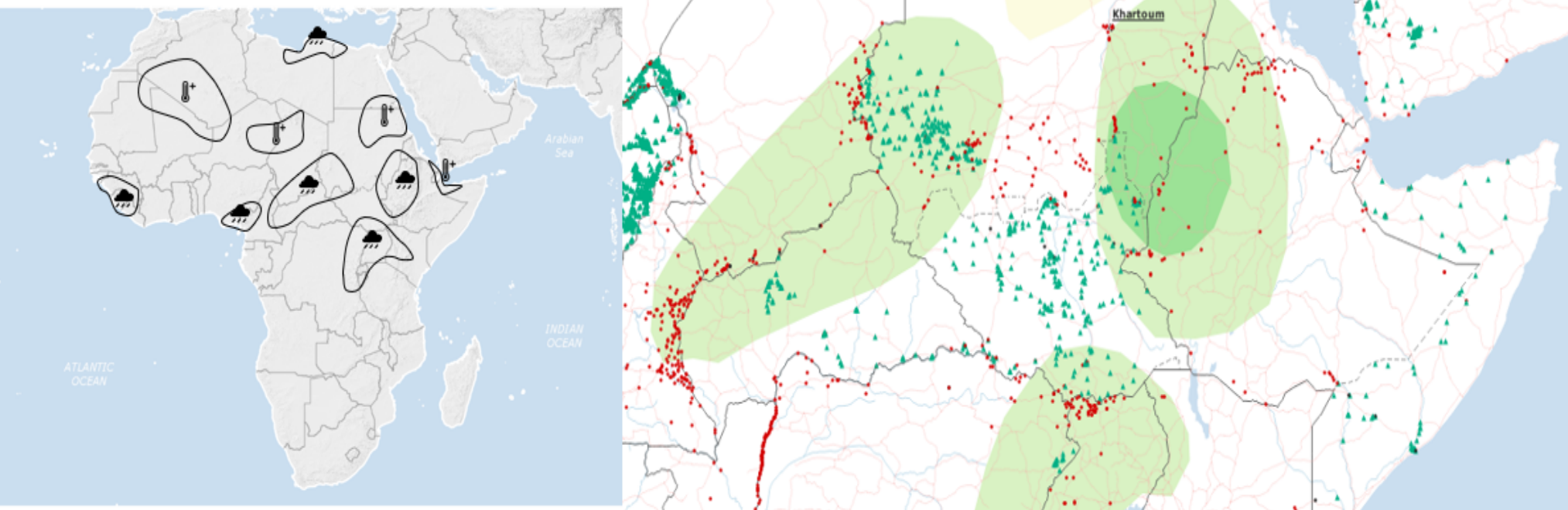
Legend: Past track, Forecast track, Cone of uncertainty

### Current situation and possible evolution

Possibility of **well above average** rainfall is very likely for next 7 days (08 to 14 September 2023) over south-eastern Sudan, north-eastern South Sudan, and western Ethiopia, while **above average** rainfall is expected over western Sudan as well as eastern Sudan.

Possibility of **below average** is expected over central and north-eastern Sudan.

**Moderate to severe heat wave** conditions are likely to persist for 3 days consecutive ( $\geq 45^{\circ}\text{C}$ ) more with varied severity over most of north-eastern Sudan, which will **increase likelihood** of heat illness symptoms in people who are either exposed to sun for a prolonged period or doing outside heavy work.



On-going or Potential impacted areas over the next 7 days. No guarantee is provided about these areas (completeness, geographical extent, etc.). Source: Human expertise.

UNHCR: Locations of forcibly displaced persons. ACMAD: Precipitation outlook for the upcoming week.

Legend: Well Above Average, Above Average, Average, Below Average, Well Below Average.

Sources: [1]NMHS, [2]WMO, [3]ECMWF, [4]ACMAD, [5]UNHCR, [6]NaturalEarth. With contribution from ACMAD.

Disclaimer: This product highlights HydroMet events which may be of interest to humanitarian agencies. WMO makes no warranty in respect of the correctness or completeness of this information, nor does this information represent the official view of WMO. This information does not replace the advice and guidance provided by the official meteorological services for these regions. For official national guidance please refer to the national hydromet and disaster management agencies. The designations employed in this map are in conformity with United Nations practice. The presentation of material therein does not imply the expression of any opinion whatsoever on the part of WMO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its borders. The depiction and use of boundaries, geographic names and related data are not warranted to be error free nor do they necessarily imply official endorsement or acceptance by WMO.

### CONTINENTAL BRIEF FOR POLICY AND DECISION MAKERS BASED ON SIGNIFICANT WEATHER AND CLIMATE EVENTS UPDATE. VALID FOR: JULY TO OCTOBER 2022

**CLIMATE ANOMALIES**

Wetter than average season very likely  
Heavy rainfall with reported flooding events

**HAZARDS**

Heavy rainfall events may lead to flash flood, riverine flooding, landslides and soil erosion. High chance of lightning, hail formation and stormy weather are expected

**POTENTIAL IMPACTS**

Waterlogging, pest and diseases infestation, Outbreak of water borne diseases damage to infrastructures (dams, reservoirs, bridges, roads...) Displacement of people due to floods.

**MEASURES**

Select excess moisture tolerant crops, wide tree planting campaigns Develop new and rehabilitate the existing drainage structure, Update and implement flood contingency plans improve water management in reservoirs and dams

**CLIMATE ANOMALIES**

Drier than average season very likely  
Prolonged drought with reported persistent impacts

**HAZARDS**

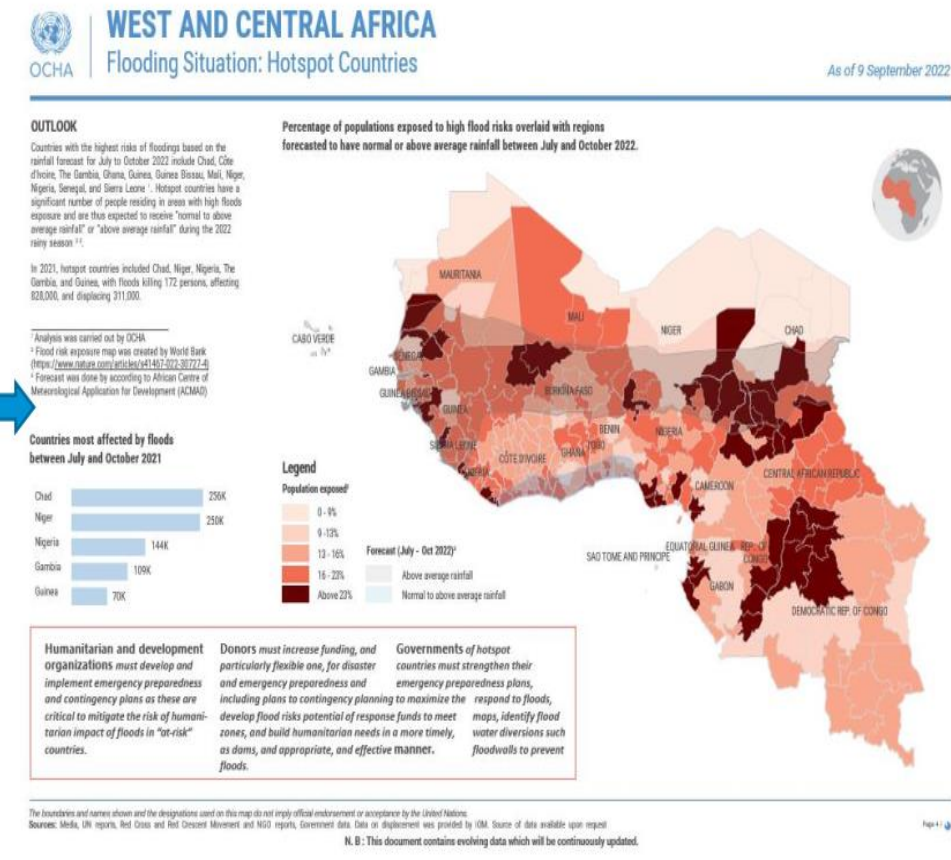
Weak to Moderate drought, dry spells, near average to late onset very likely.

**POTENTIAL IMPACTS**

Moisture stress, decreased river discharge, reduced rain-fed crop yield prospect, degradation of pastures and high food prices.

**MEASURES**

Develop and implement policy to support drought tolerant and short cycle crops, soil and water conservation practice, maximize full irrigation farming, Use watershed based in-situ water harvesting structures Develop and implement policy in support of weather based insurance and dam management



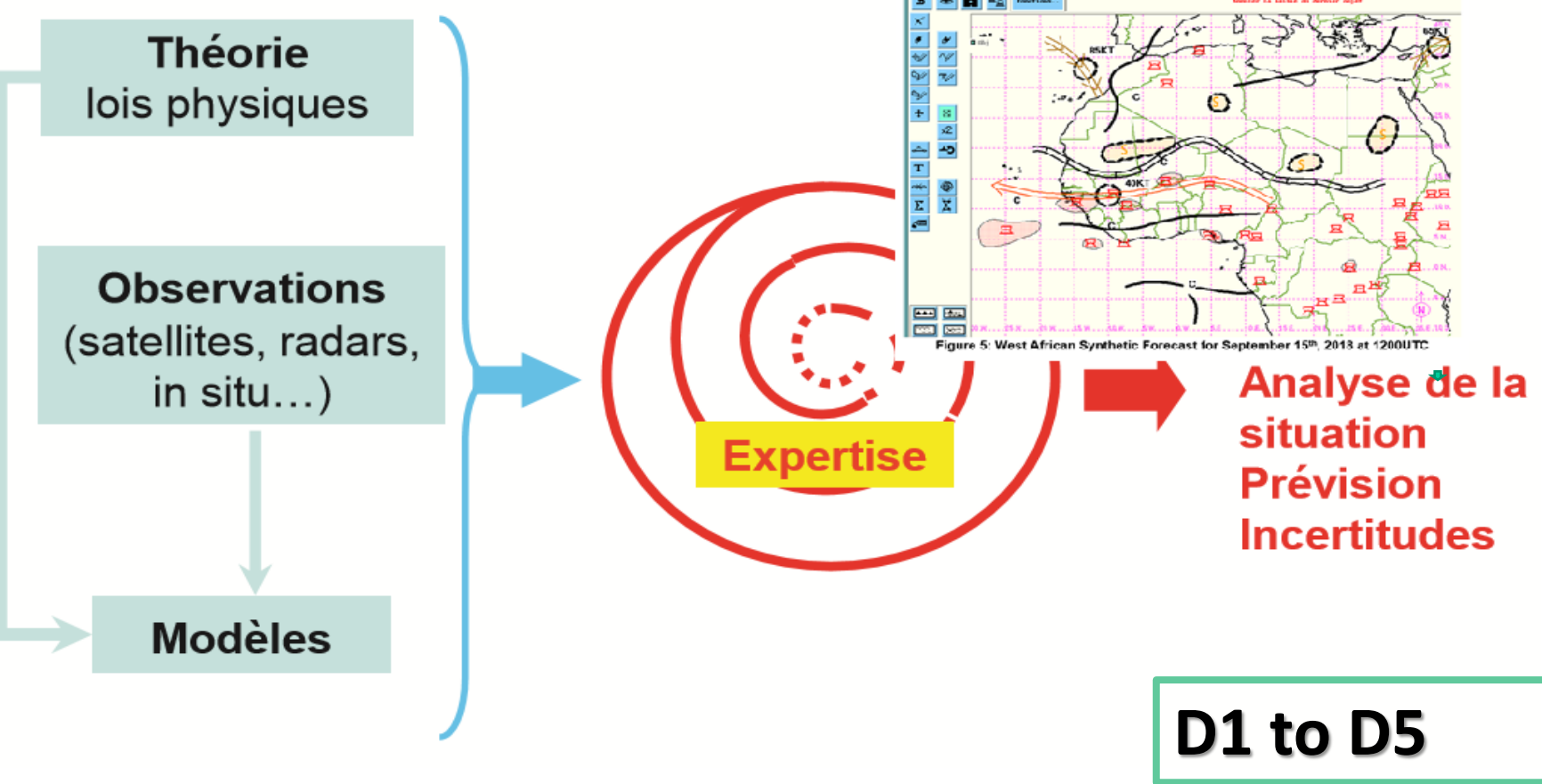
**Provision of information's on expected impacts and risk, anticipatory action preventing implementation of risk reduction measures**



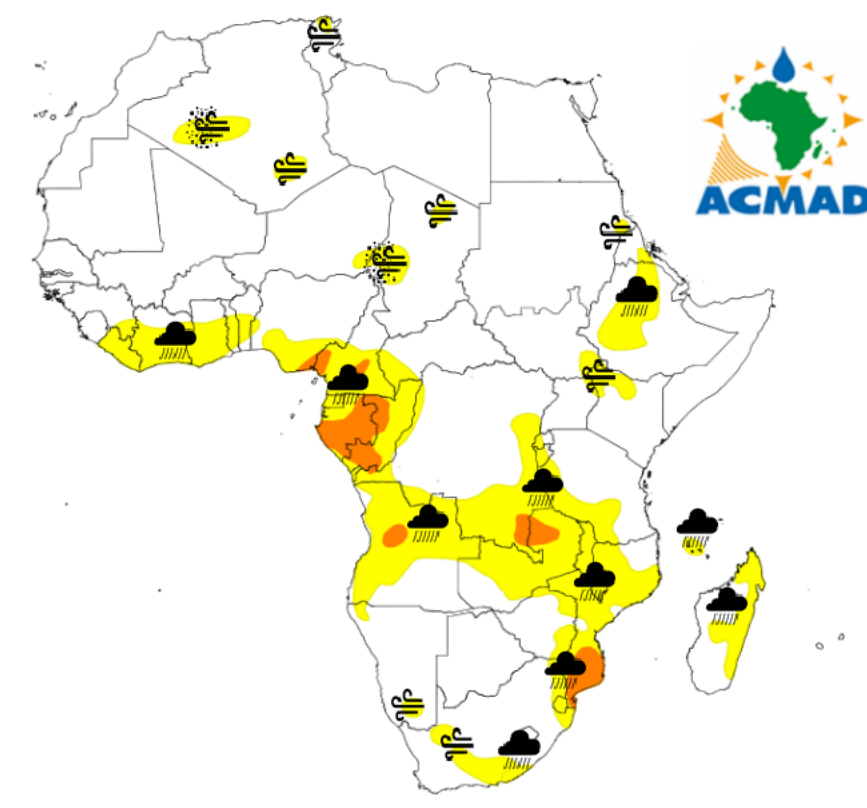


# ACMAD PRODUCTION PROCESS

## 2. 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

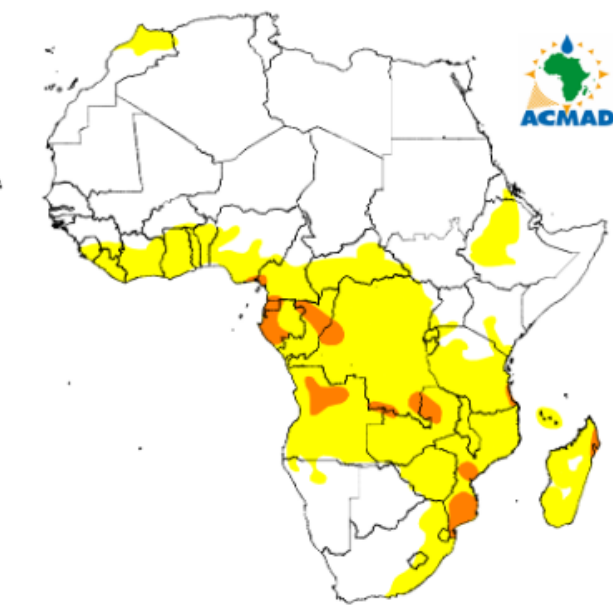
issued on 2024-03-11

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 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 NHMS
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 NHMS 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.

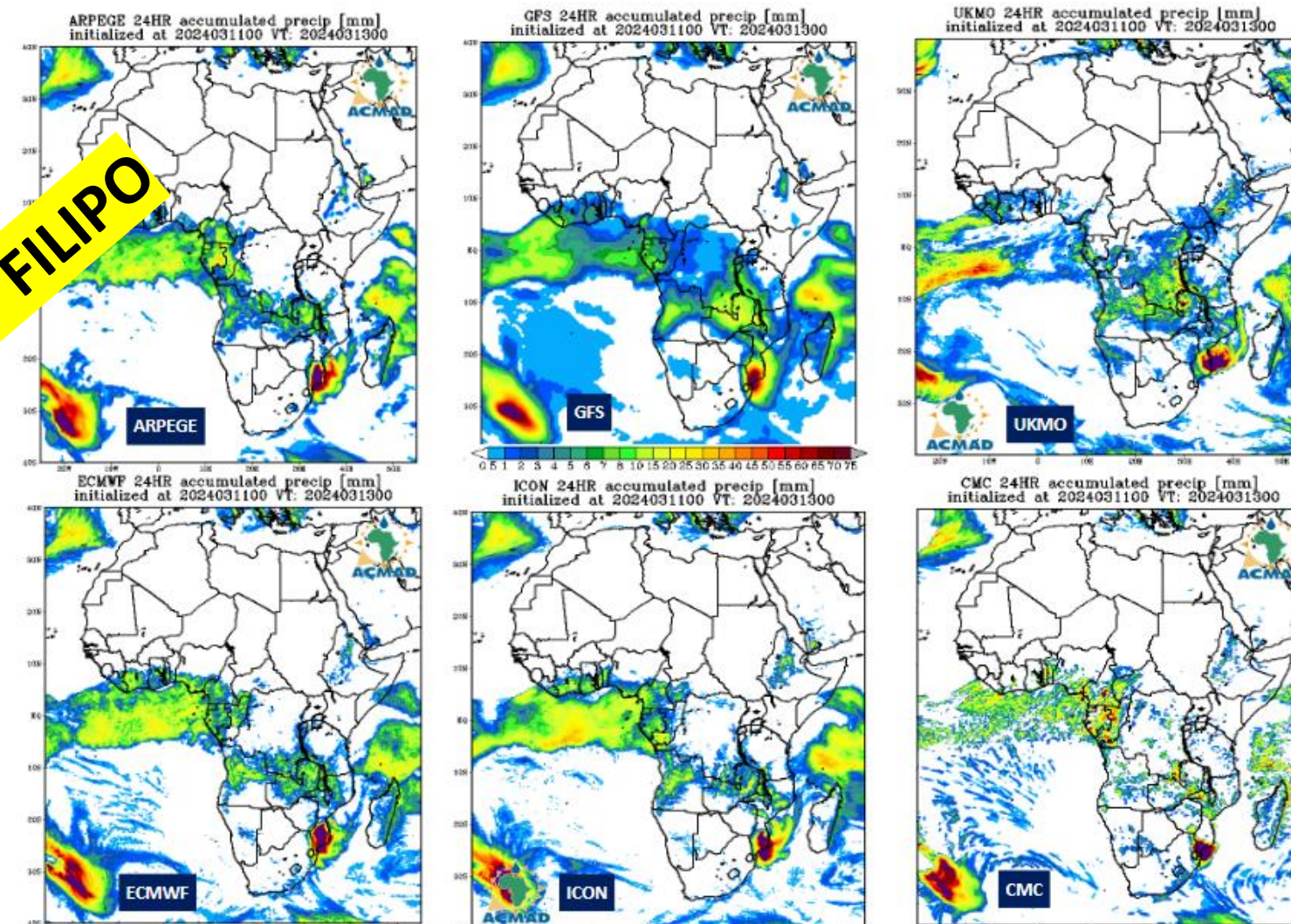
Disclaimer: The presentation of country boundaries on the map does not imply any opinion whatsoever on the part of ACMAD concerning the legal status of any country, territory or area, or concerning the delimitation of frontiers or boundaries.

# ACMAD PRODUCTION PROCESS

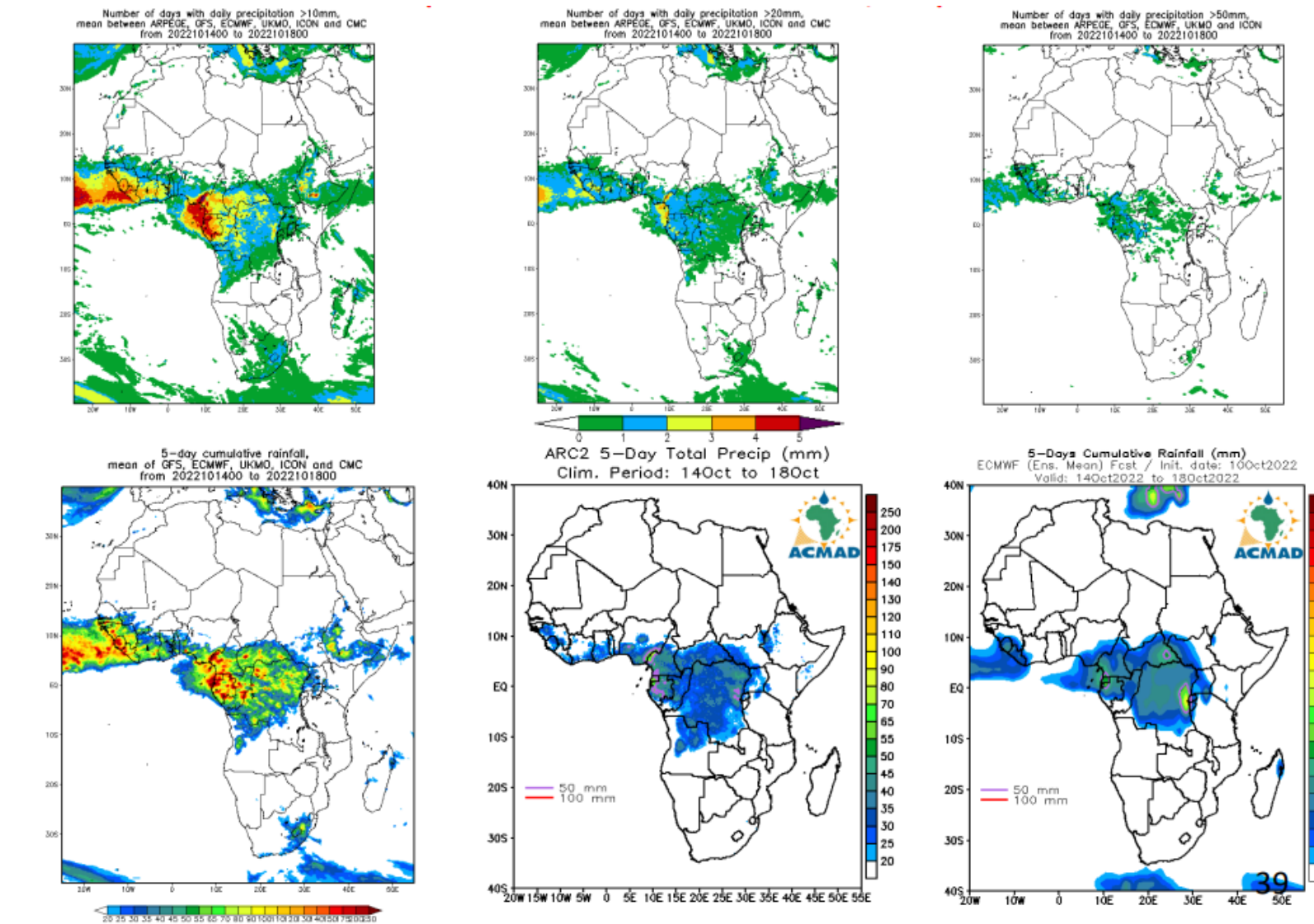
## 3. APPROACH

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

CASE OF FILIPO



Nbre Of Days Computed with Operational Model Ensemble



<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).

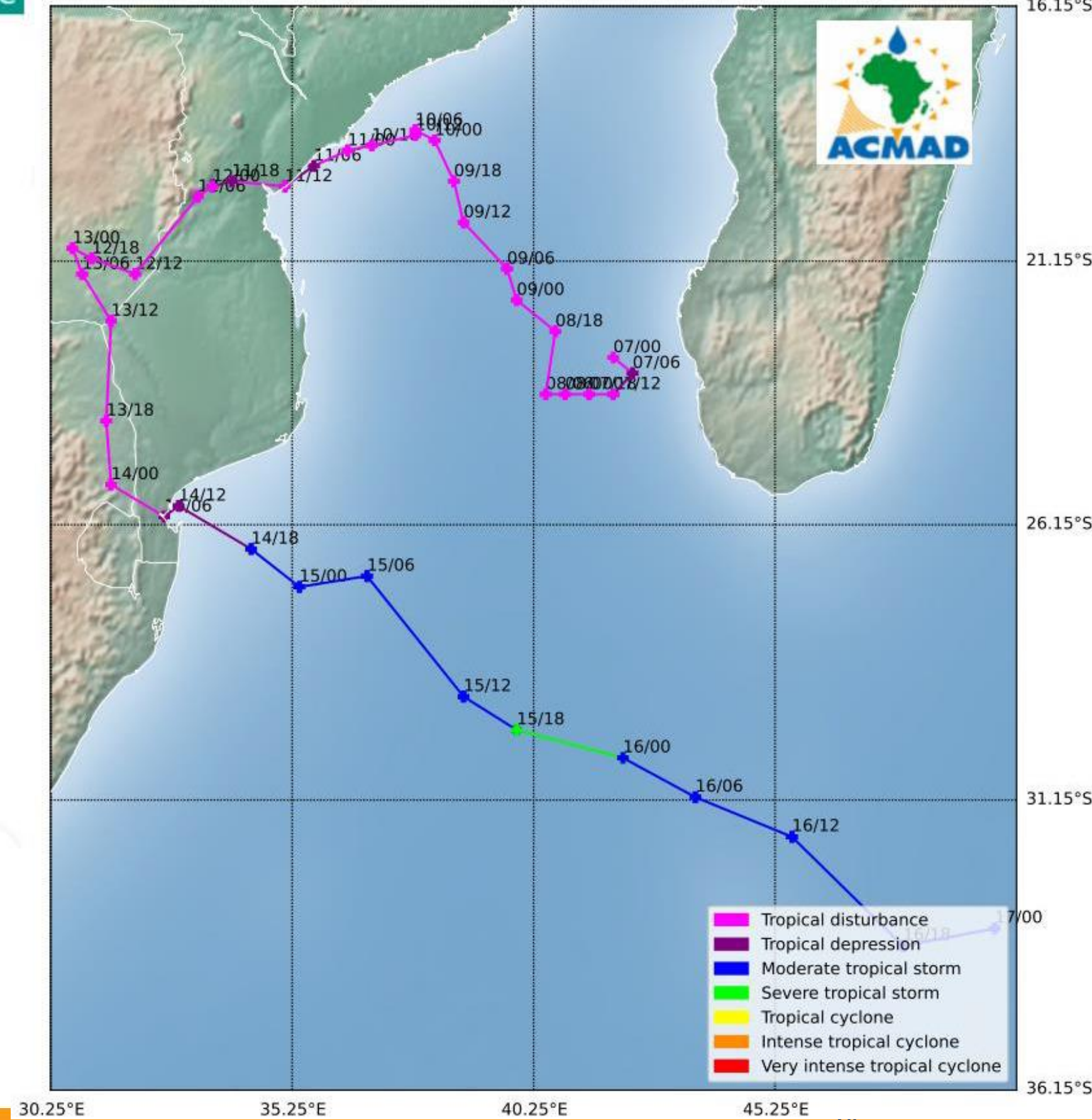
Tropical cyclone track forecasts from: 01-March-2024, 00UTC to 06-March-2024, 00UTC



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



Tropical Cyclone forecast, valid from 00UTC on 7 to 17 March 2024  
TC name: 08S (source: control member of ECMWF ensemble model)



To Be integrated in MyDEWETRA

# CHALLENGES AND OPPORTUNITIES



1. *Limited expertise to cover all types of Hazards ( e.g land and mud slides)*
2. *Address the huge capacity and capability gaps ( e.g establishing and operating situation rooms to generate and share information on hazards, impacts, preparation, anticipatory actions and response)*
3. *EW4ALL*
4. *Assessment and management of compounding and cascading disasters*
5. *Routine exchange of local impact data between communities, national, regional and continental stakeholders to accelerate impact forecasting and improve the production of the State of Climate for Africa supporting African Climate Negotiators on Loss and damage*
6. *Raising Awareness for policy makers to invest more and better in hazards and impact forecasts modernization, budgeting and financing Anticipatory action*
7. *Building capacity of DMAs to mainstream preparation and Anticipatory action in National budget*
8. *Capacity development with testbed and forecast demonstrations, ad hoc and regular briefings and debriefings at the situation room including with humanitarian and DRR communities*
9. *Prioritize training and operation of impact forecasting, warning, decision making and action as well as benefits assessments*

- Provide ***multimodel ensemble and deterministic high resolution*** Analysis and forecasts supporting briefings preparation by countries
- ***Nowcasting and synoptic technical notes*** supporting operational forecaster's briefings at National level to facilitate anticipation and response to national emergencies
- ***Train forecasters and DRR experts on tools and products***
- Support countries ***establish and operate national early warning Information system/centres*** and DRR or humanitarian platform for emergency planning and implementation
- ***Support disaster managers*** from continental to local levels to receive and give feedbacks on ***impact information*** for strong winds and heavy rains
- Support measures to ***reduce risks or exploit opportunity*** through forecast based ***integrated emergency planning , budgeting, financing and implementation***



[www.acmad.org](http://www.acmad.org)

Follow us on X:  
[@ACMAD\\_org](https://twitter.com/ACMAD_org)

Follow us on Facebook:

<https://www.facebook.com/ACMAD-470332183044388>