Climate Services for Agriculture @ the Continental Level

ACMAD
African Center of Meteorological Applications for Development
Centre Africain pour les Applications de la Météorologie au Développement

www.acmad.ne

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Presented by
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Background

The delivery of climate information services in Africa has come of age.

Climate services evolve around the timely transfer of meteorological data and forecast products to users in several socio-economic sectors……, particularly, agriculture.

Matters Arising

There has been increasing growth of population and economy, as well as urbanization in the continent.

This has consequently resulted in an increase in the activities of different climate-sensitive sectors, such as agriculture and food security, construction, energy, health, water resources and transport.

Though, these changes are largely driving the uptake of climate information services in Africa, there are, however, two major challenges that have been preventing the appropriate uptake of climate information services in the continent.

Major Challenges (1)

Currently and operationally, weather forecasts in Africa are limited to two days in advance. Outlooks cover up to 5 days at most.

Medium-range (7 to 15 days) weather and or climate forecasts are therefore not covered, thereby making short-range (1 to 5 days) weather forecasts operationally predominant.

While these short-range forecasts are useful for reactive decisions, they are less effective for long-term planning and action toward disaster risk reduction particularly in key areas such as health, food security, environment, and water resources.

Major Challenges (2)

Collaborations between the continent's meteorological and hydrological agencies and key stakeholders (i.e., forecast end-users) is weak.

Jointly developed user-tailored impact-based forecasts are almost not existing.

The end-users contribute in no way to the forecaster's operational algorithms.

The outcome of the poor relationship is the end-users' inability to interpret and consume the services offered by the forecasters.

Provisional Solutions

Timely and reliable, real-time sub-seasonal-to-seasonal (S2S) and seasonal climate forecast algorithms that will extend the short-range forecast timescales beyond that of medium-range timescales become necessary for operational purposes.

At the same time, scientists and forecasters need to develop a platform that opens and utilizes communication channels with forecast end-users.

Therefore, institutionalization of continental climate oulook (ACCOFs) and regional climate oulook (RCOFs) fora at 6 regional levels within the continent, with supervisions from ACMAD.

African Continental Climate Outlook Forum

Institutionalization of Climate Outlook Fora in the Continent

* 196 DRM & Humanitarians consulted,
* DRR's needs for climatological information collected for 6 regions,
* Best practices on preparation & response to disaster shared for each 6 region.

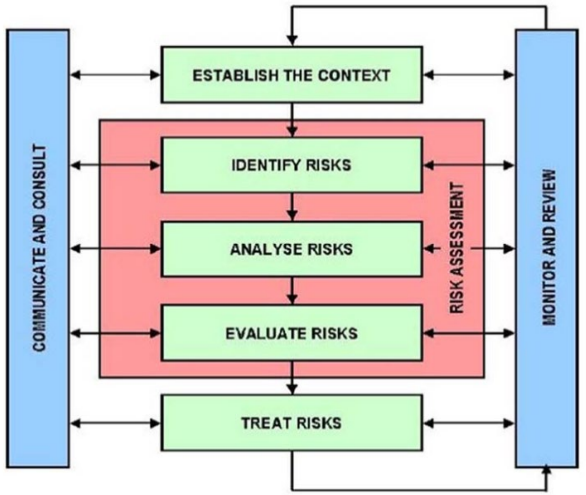
User Interface Platforms Established and Operationalization in progress

African Continental User Interface Platform

Agriculture UIP | Health UIP | Water UIP | DRR UIP

African Continental User Interface for the Agriculture Sector

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



User Interface Platform (UIP) at ACMAD

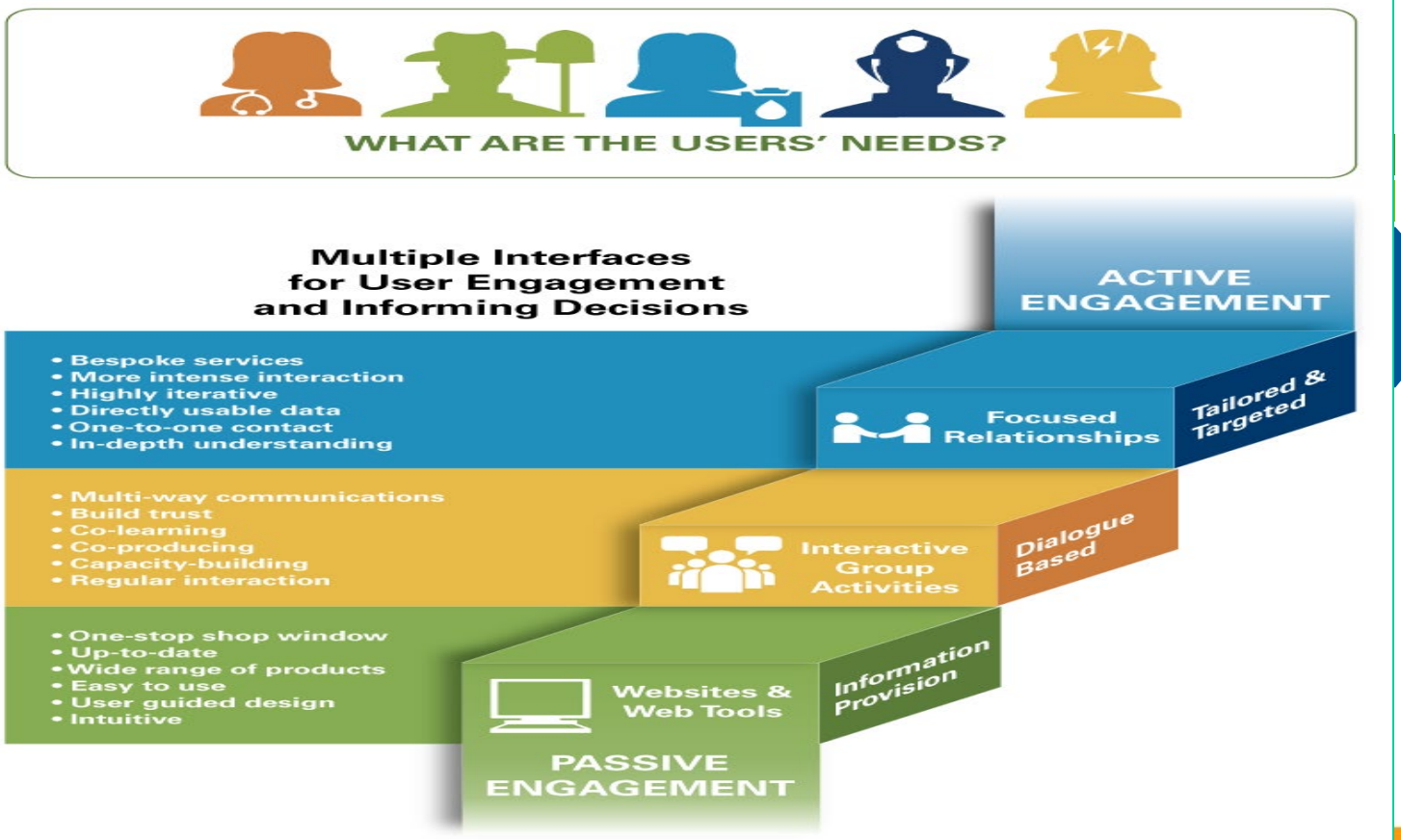
UIPs provide knowledge management frameworks, engage users and strengthen partnerships with specific user sectors

-intermediation

- Internalization

-Externalization

-Cognition



UIP AGRICULTURE

-AGRICULTURE SECTOR

Risk causes:

Floods, drought, High and low temperature, spells, disruptions of start and end of season, strong winds and thunderstorms, hailstorms

Products and services

Seasonal total precipitation and temperature outlooks

Start and end of season, dry and wet spells monitoring and outlooks

Advices for land preparation, sowing, fertilizer spray, weed control and management, harvesting, crop conservation, optimal crop varieties for agro climatic zones

Warnings and Alerts for pests and diseases

Activities

- Analysis of climate information needs along the agriculture value chain, share bespoke impact based climate monitoring and forecasting information, advices
- Climate risk assessment along the value chain for each commodity
- Prepare advices for farmers, herders, fishermen and other stakeholders of the value chain
- Estimation of food production and advices for agriculture products conservation
- Estimation of demand and supply in agriculture commodity markets
- Management of agriculture commodity conservation and market prices
- Update, tailor and share bespoke climate information among agriculture stakeholders, monitoring and evaluation of activities

Rules of procedures

Chair Elected from the PAFO members: Secretariat: ACMAD, frequency of meetings: twice a year ahead of major agriculture seasons and ad hoc

Continental and Regional support Services at ACMAD

BRIEF FOR POLICY AND DECISION MAKERS

Impact outlook Update

CONTINENTAL

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

VALID FOR: AUGUST TO DECEMBER 2023

CLIMATE ANOMALIES

Wetter than average season leading to heavy rainfall with possibility of flooding events very likely

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 leading to outbreak of water borne diseases, damage to infrastructures (dams, reservoirs, bridges, roads...) Displacement of people due to floods.

MEASURES

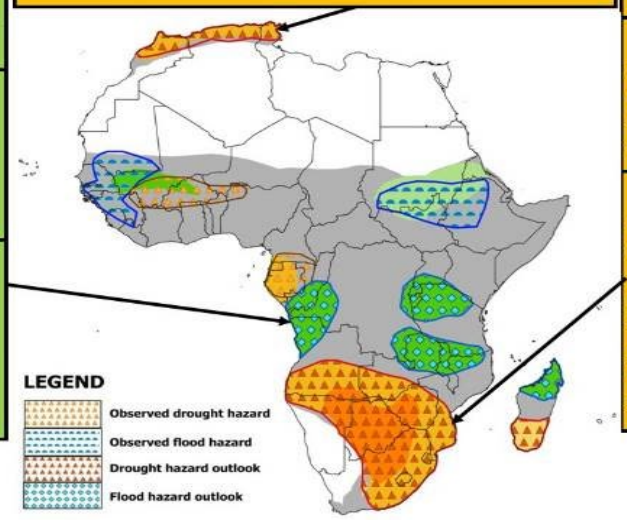
Plant water-logged-tolerant crops. Tree planting campaigns. Develop new and rehabilitate existing drainage structure. Update and implement flood contingency plans. Improve water managementin reservoirs and dams.

CLIMATE ANOMALIES

Drier than average with wetter pre winter period

A very hot season with more warmer than normal days within the seasons. Rainy days are likely to be less than normal with very marked rainfall deficit

Establish a prevention, preparedness and adaptation system for planning and anticipating future El Niño events within a broader framework of preparing for extreme weather events



CLIMATE ANOMALIES

Drier than average season leading to prolonged drought with possibility of persistent drought events very likely

HAZARDS

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

POTENTIAL IMPACTS

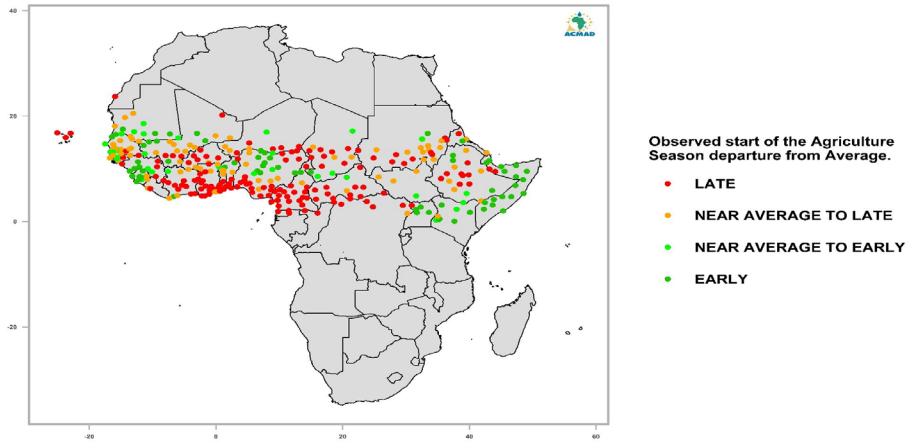
Moisture stress, decreased river discharge, reduced rain-fed crop yield prospect, degradation of pastures and high food prices.

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 Developand Implement policy In support of weather based insurance and dam management

Possible starts of the Agriculture season

START OF THE AGRICULTURE SEASON FROM JANUARY TO JULY IN 2020 OVER SUB-SAHARAN AFRICA.



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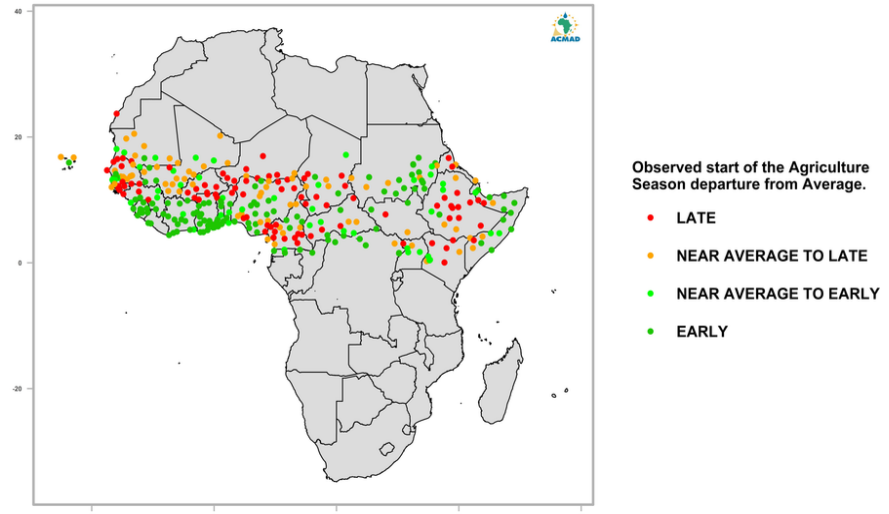
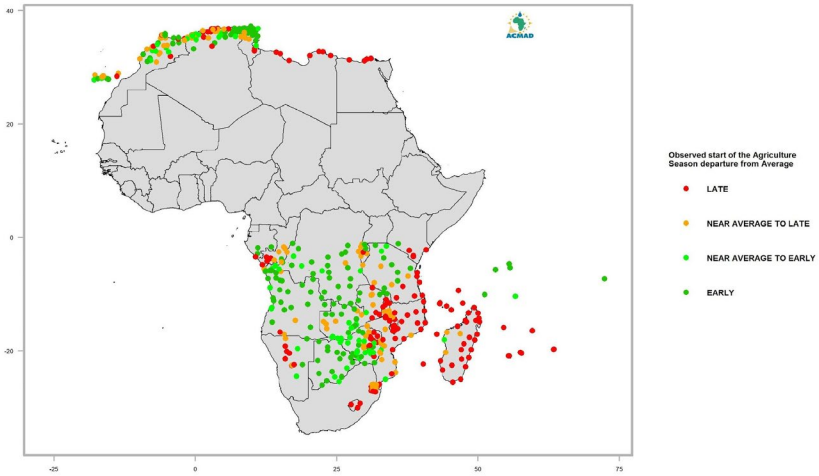


START OF THE AGRICULTURE SEASON FROM JULY TO DECEMBRER IN 2020 OVER SOUTHERN AND NORTHERN AFRICA.



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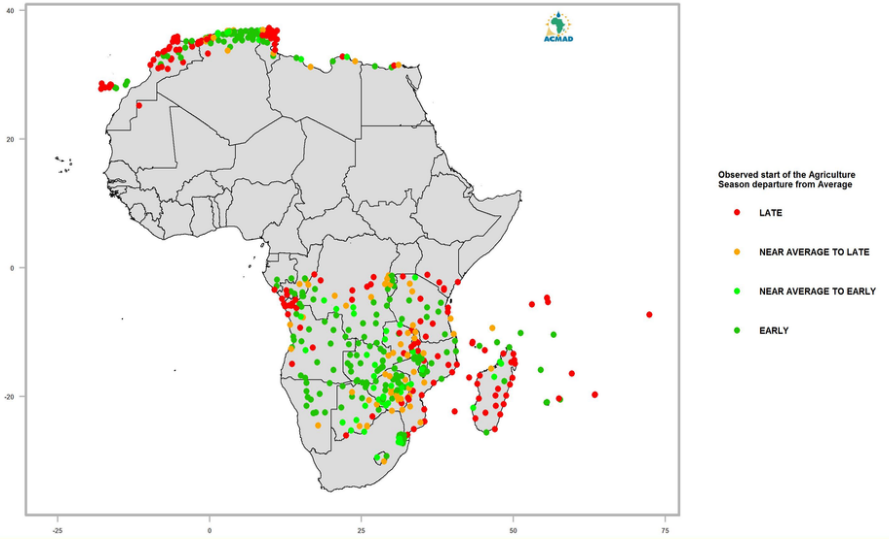
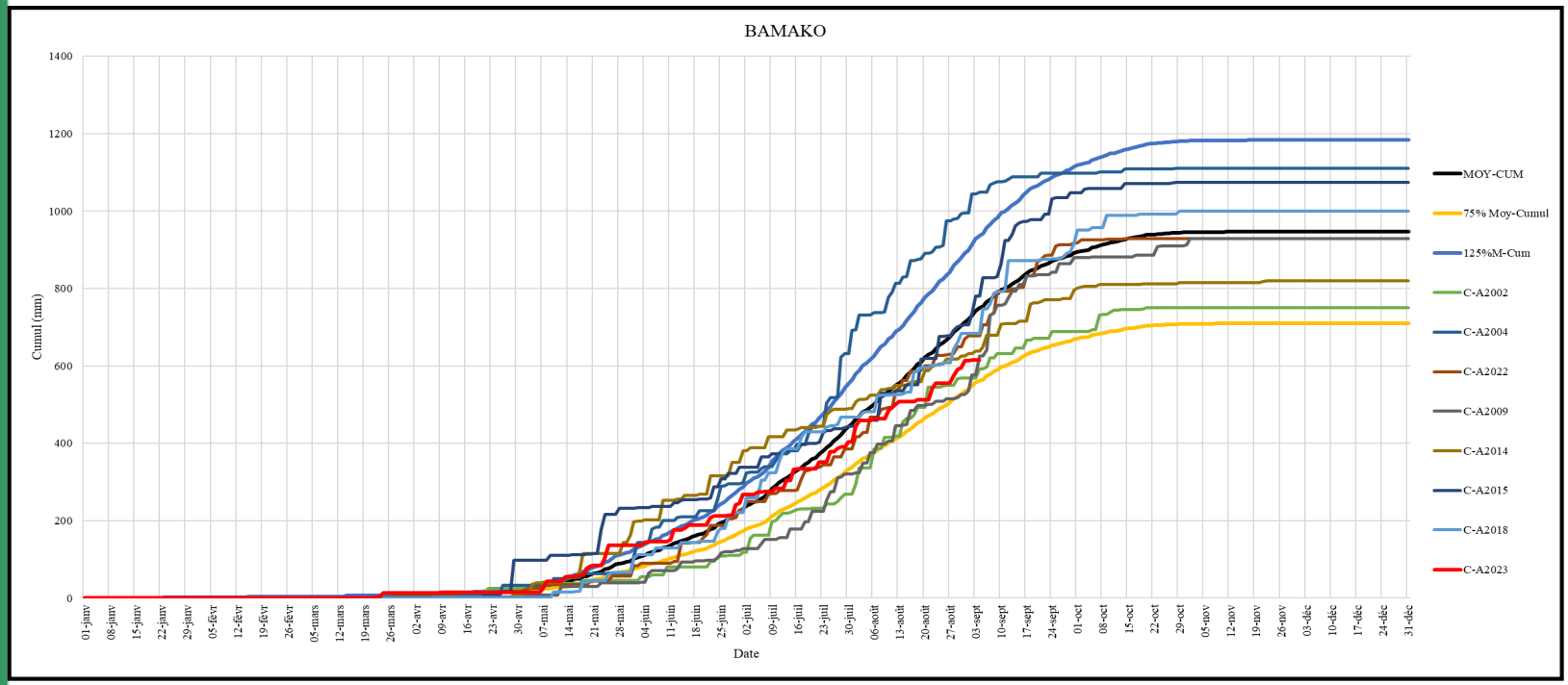


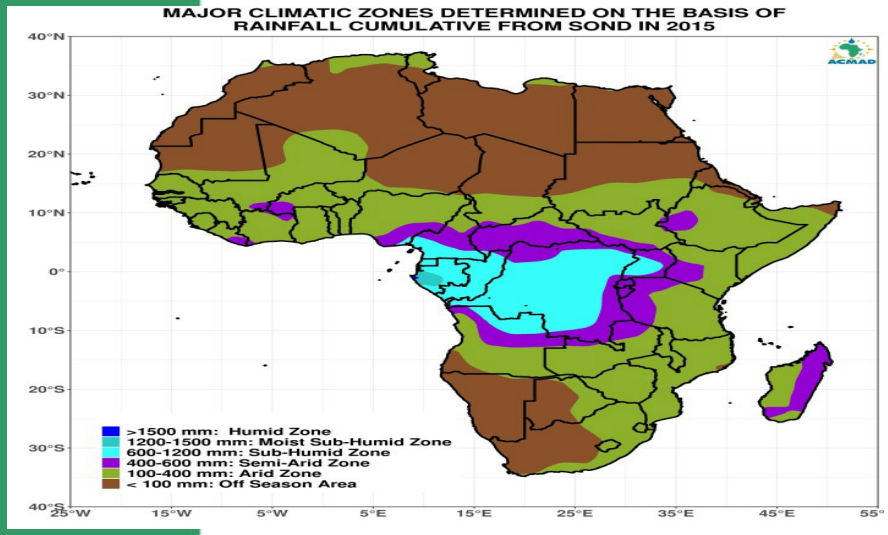
Acceleration of establishment and operationalization of UIPs from continental to local scales

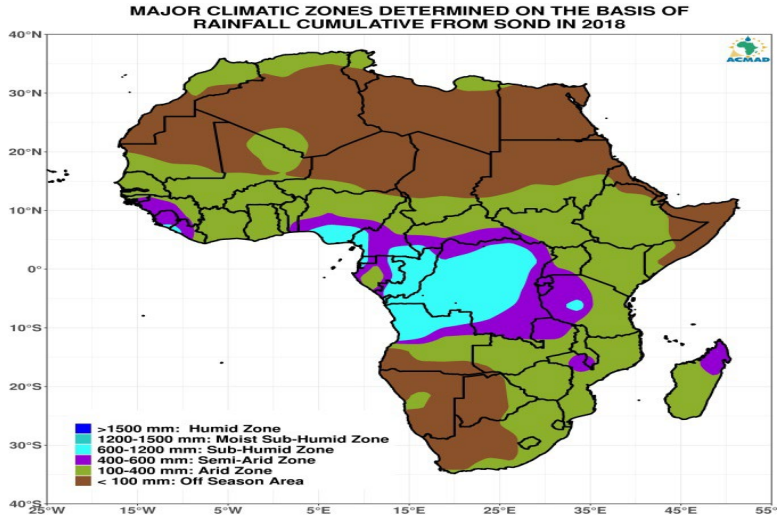


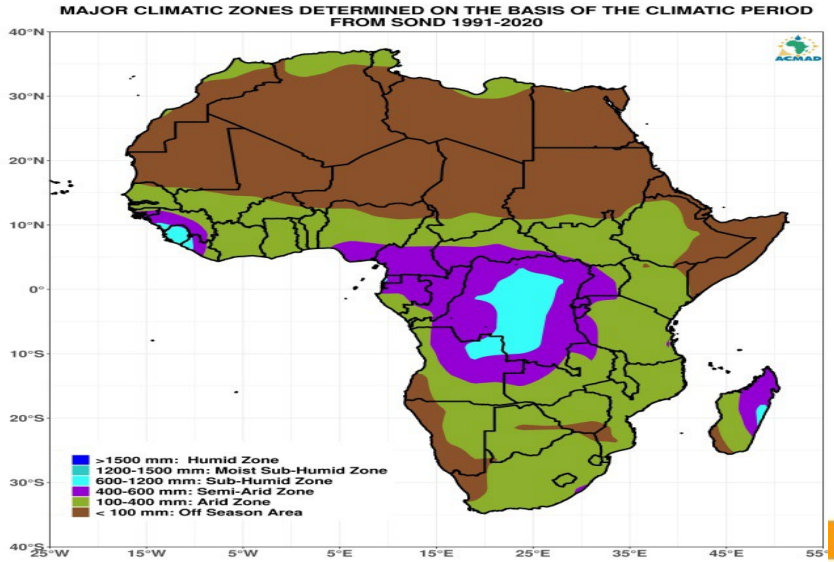
Update seasonal forecast at local level – Bamako expected to be near to below average with dry spell in July-august 2023

To improve interpretation and use of regional products, ad hoc briefings and dialogues are essential and should be promoted between regional centers, NMHS and stakeholders of the agriculture , water , Health and DRR sectors .

Actionable indicator: Extents of African land masses likely to be hit by drought in El Nino years for the SOND season

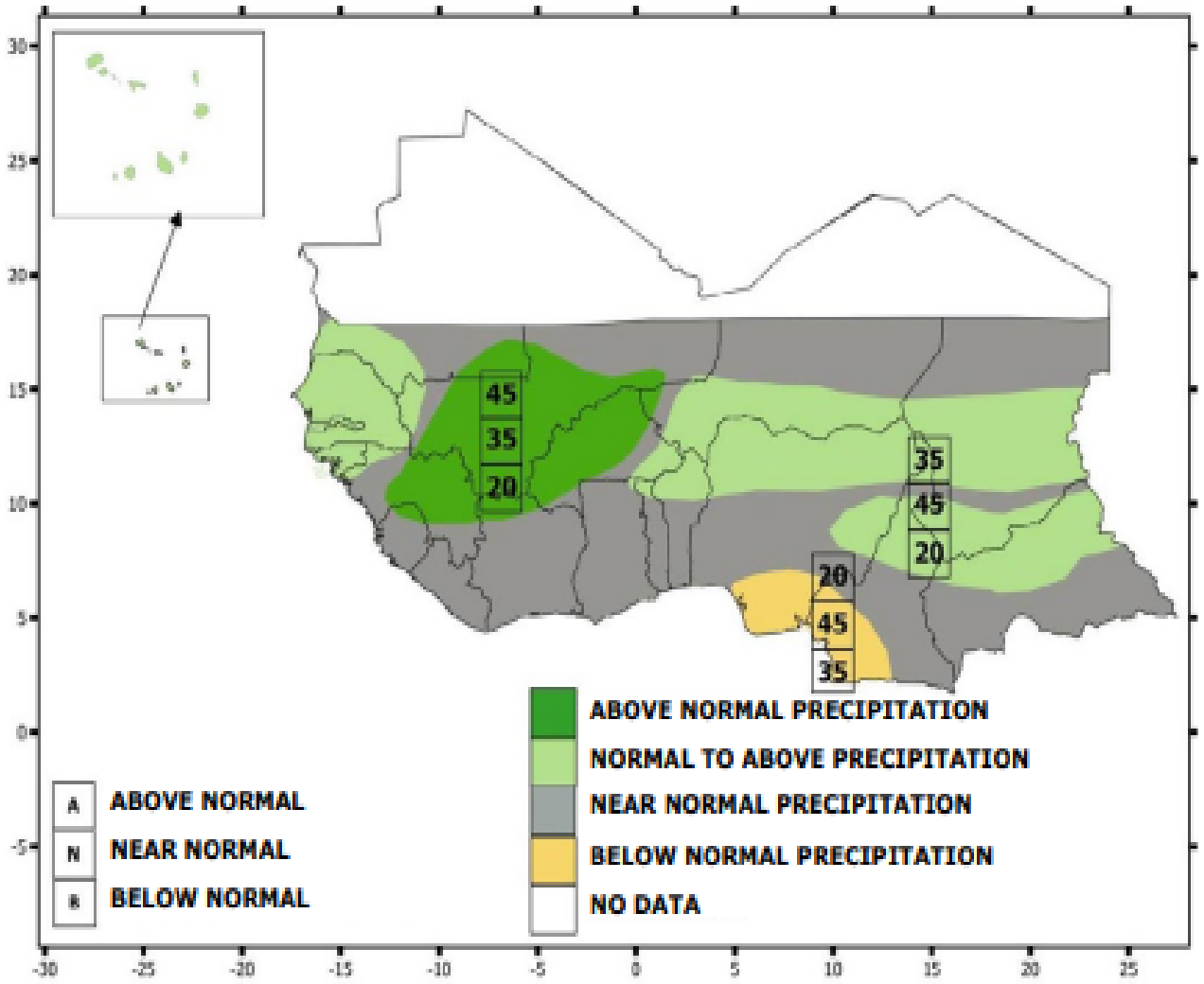


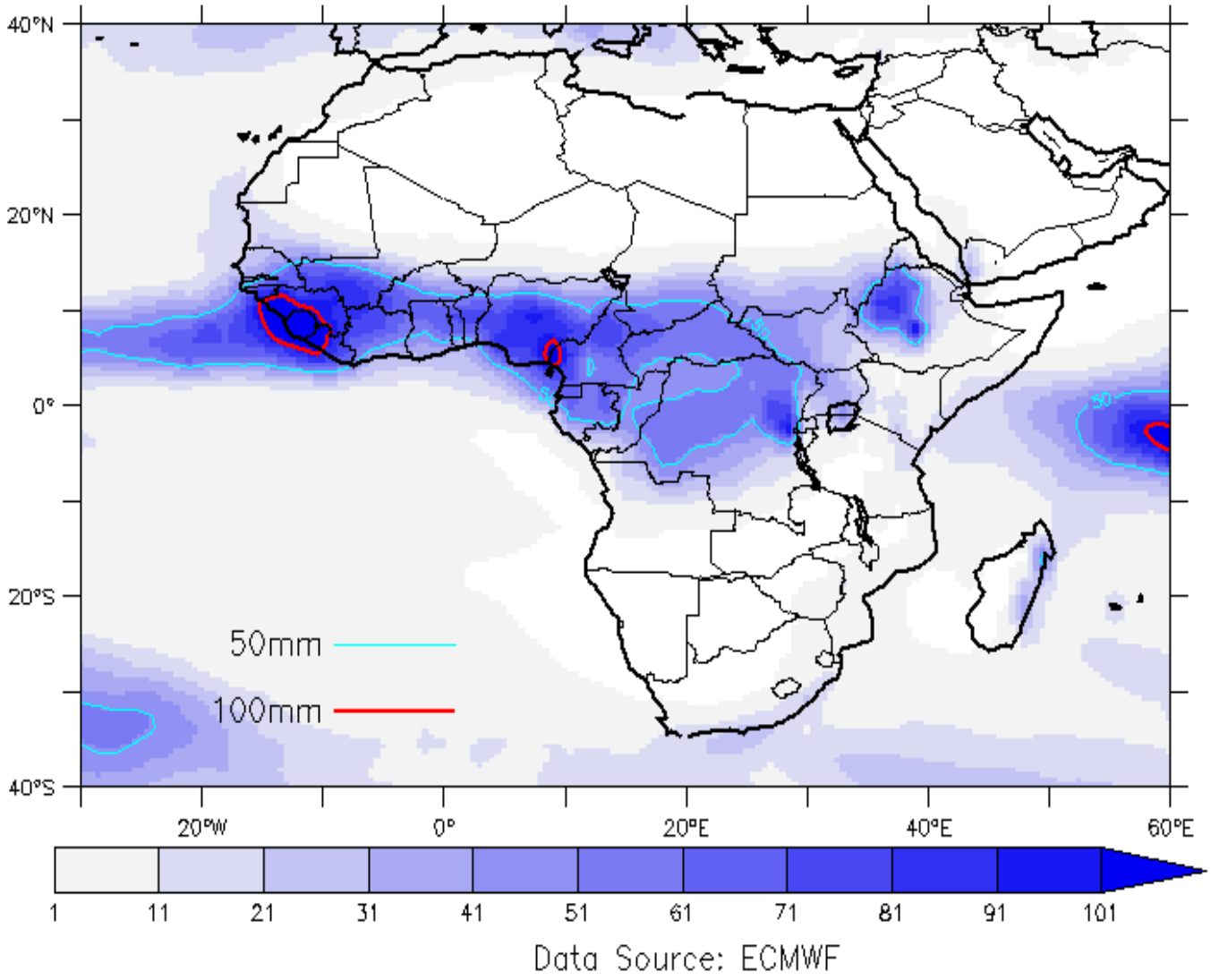




Seasonal precipitation forecast for the Sudano-Sahelian region valid for July-August-September 2023

Elaborated June 7, 2023

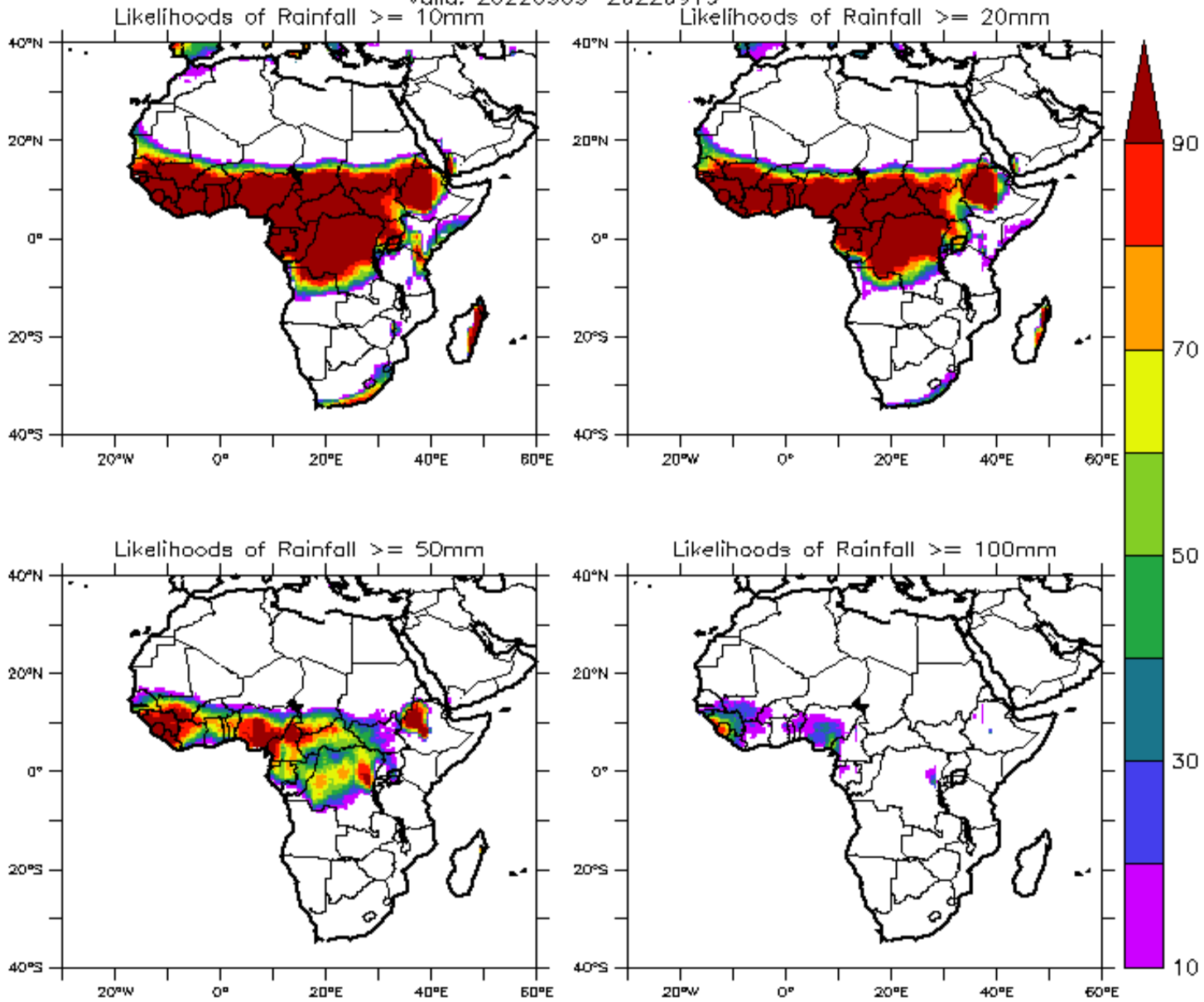



Accumulations of Precipitation for the Week (mm)
Base:20220905
Valid: 20220909–20220915
40°N
20°N
0°
20°S
40°S
20°W
0°
20°E
40°E
60°E
50mm
100mm
1
11
21
31
41
51
61
71
81
91
101
Data Source: ECMWF

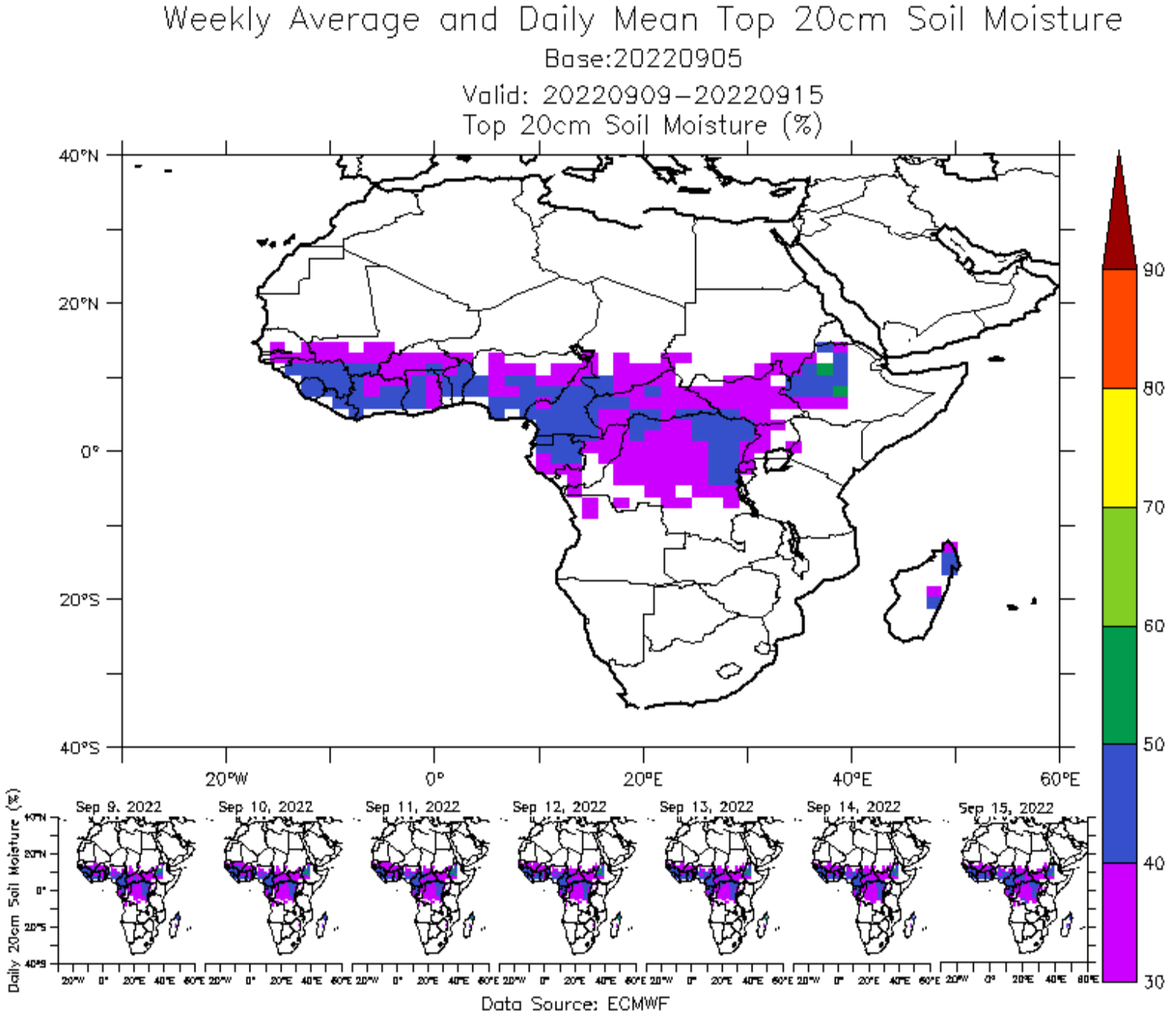
Likelihoods of Weekly Precipitation Accumulations (%)

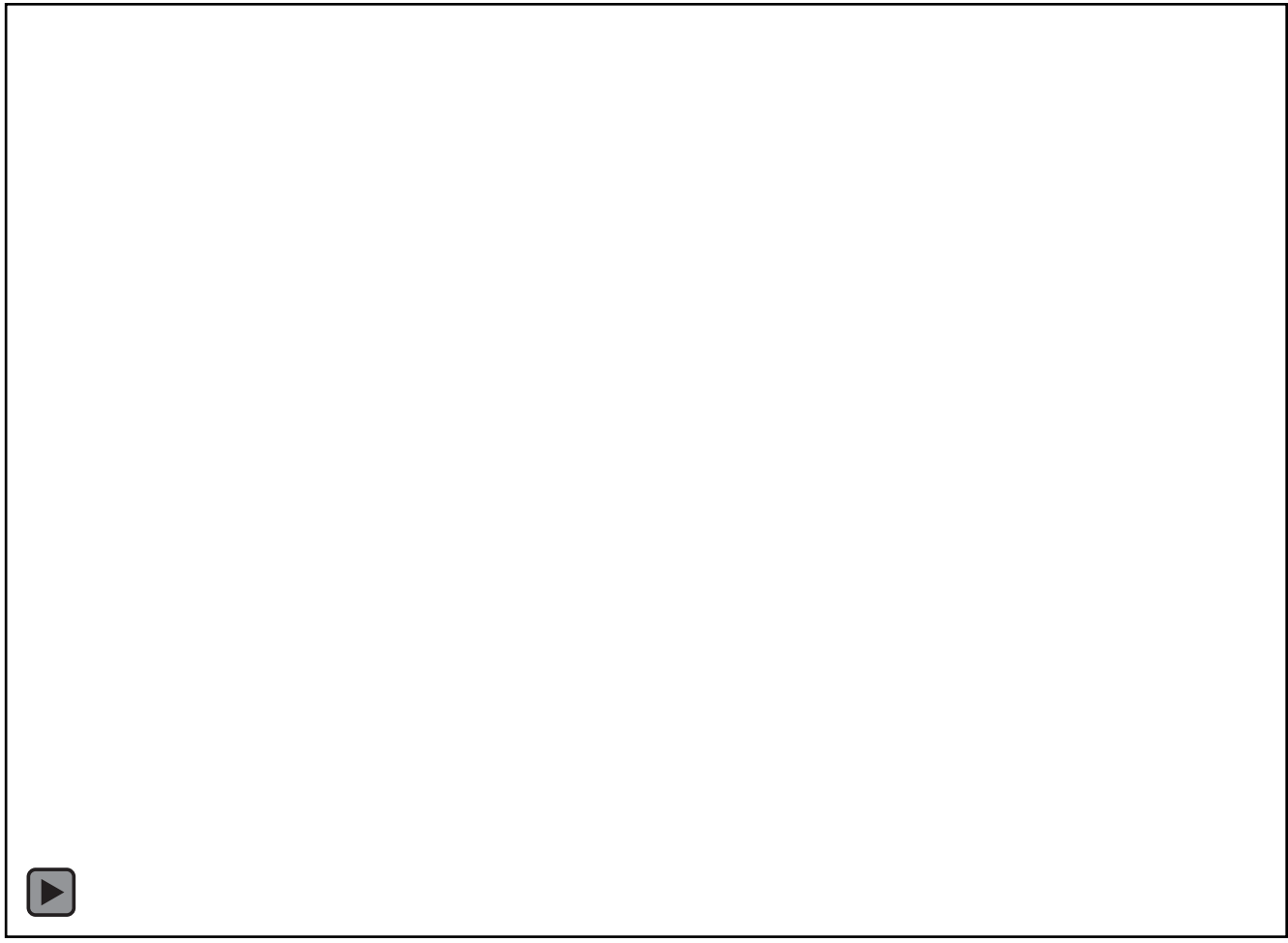
Base:20220905

Valid: 20220909–20220915



Data Source: ECMWF

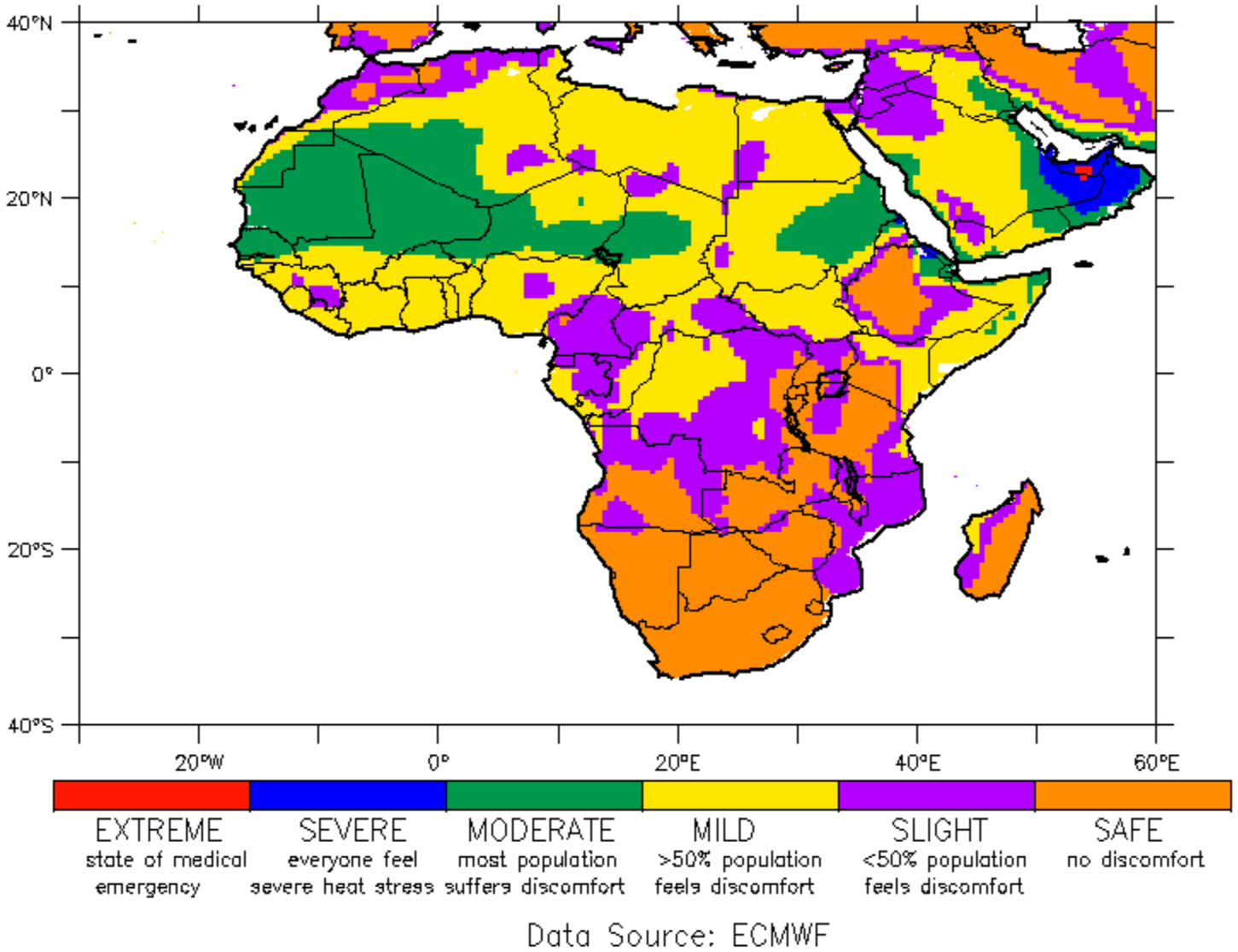

Weekly Average and Daily Mean Top 20cm Soil Moisture
Base:20220905
Valid: 20220909-20220915
Top 20cm Soil Moisture (%)
40°N
20°N
0°
20°S
40°S
20°W
0°
20°E
40°E
60°E
90
80
70
60
50
40
30
Daily 20cm Soil Moisture (%)
Sep 9, 2022
Sep 10, 2022
Sep 11, 2022
Sep 12, 2022
Sep 13, 2022
Sep 14, 2022
Sep 15, 2022
Data Source: ECMWF



Discomfort Index for the Week

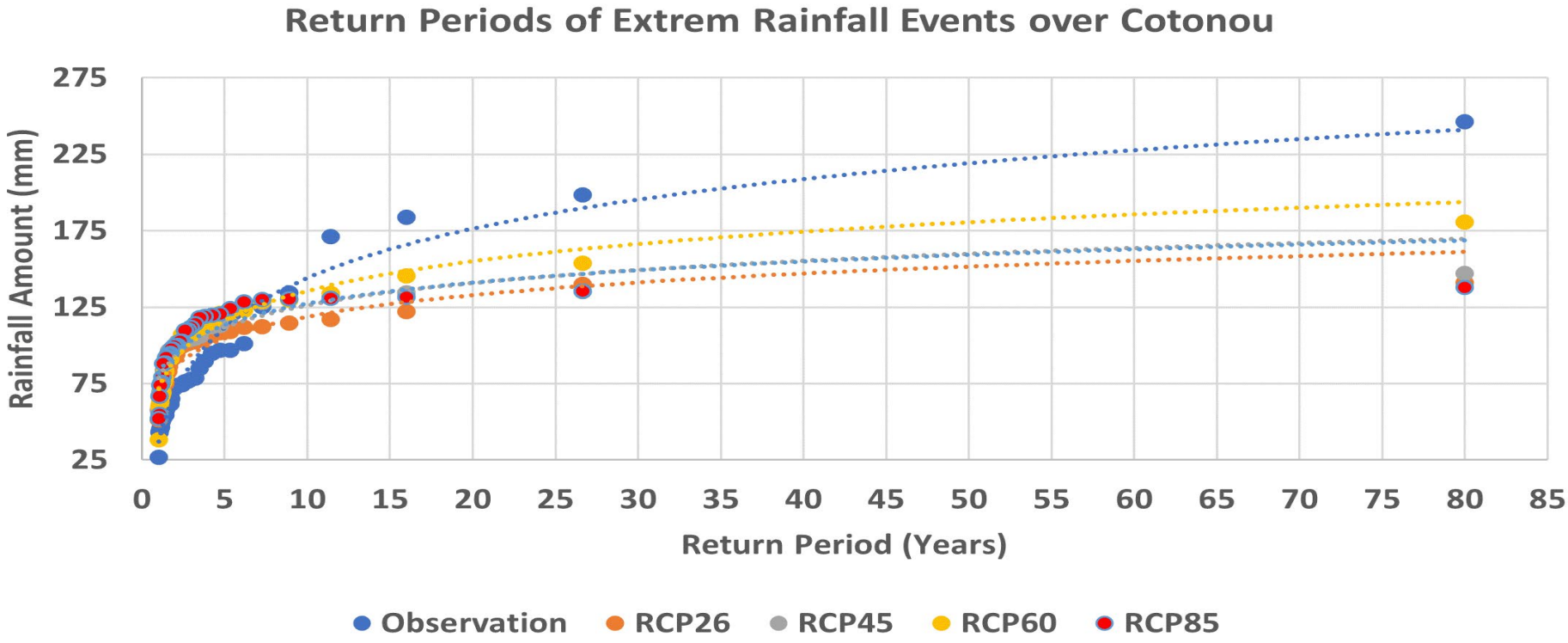
Base:20220905

Valid: 20220909–20220915



Data Source: ECMWF

EXTREME EVENTS RETURN PERIODS (for future planning)



Infrastructures expected to last more than 20 years in Cotonou should be able to withstand a 175mm/day rainstorm.

Likelihood of fall in precipitation amounts in the near-future is not a good omen for agricultural activities

Improvement in the Forecast Products From the Stakeholders' Perspectives

Continuous interactions with several stakeholders indicate that improvement in the co-produced forecast products, from the stakeholders' points of view, are of four standpoints.

1. Graphics of presentation of the forecast products;
2. Understanding and simplicity of language of presentation;
3. Local / point specific (instead of spatial) presentation of forecast products on daily timescale; and
4. The inclusion of specific tailored forecast products.

Achievements

Two things have been achieved here:

1. **Short-range forecast timescales have been extended beyond the medium range forecast timescales,**
2. **Collaboration and communication channels have been sustainably opened between the forecast producers and the forecast users.**

Summary……

- Socio-economic planning and productions in health, food security, agriculture, environment, water resources, etc. have become more effective than before as weather forecasts and outlooks become more reliably extended.

- Users now contribute effectively to the forecasters' operational algorithms, thereby finding it easier to interpret and consume the services offered by the forecasters.

- The first achievement helps in mitigating the risks of sub-seasonal climate variability on socioeconomic activities in Africa.

- The second achievement helps to enhance the development of user-tailored impact-based forecasts; increase users' trusts in the forecasts; and, seamlessly help in the evaluation of the performance of the forecasts.

Overall, smooth delivery of climate information service has been substantially enhanced.

Thank you for your attention