



## **ACMAD AND RCOFS accross Africa**

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***Niamey-Niger***

**RCOFs Meeting orgnized by UNECA/ACPC**

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# OUTLINE

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- 1. RCOFs outlook generation processes**
- 2. Experiences across Africa**
- 3. Lessons learnt**
- 4. Challenges and opportunities**
- 5. Concluding Remarks**



# Rationale for a combination of methods for climate forecasting:

On Monday, September 7, 2015 1:01 PM, "Graham, Richard" <[richard.graham@metoffice.gov.uk](mailto:richard.graham@metoffice.gov.uk)> wrote:

Dear Andre

**I have been watching the West Africa season as it evolves and it seems the ACMAD/PRESAO forecast is coming out to be more consistent with observation than many of the GPC model forecasts. The season is not quite over yet – but congratulations!**

I would be very interested to have your view on what is driving above normal rainfall in the Sahel and below normal over many parts of Guinea Coast? (I believe both the Atlantic and Pacific are configured to favour below normal in the Sahel – so this is curious). I have attached two assessments of the observed tercile using **FEWS-NET ARC2** data and **TRMM data**.

Best wishes,

Richard



# RCOFs METHODS ( PRESASS, MEDCOF/PRESANORD, PRESAGG, PRESAC, SWIOCOF)

- Dynamical Single model Ensemble
- Dynamical multimodel Ensemble
- Statistical Model based on CPT
- Analogue or similar years analysis based on SST patterns analysis
- Persistence Analysis
- Composite analysis
- Climate variability (drivers) and trends

Analysis



# Methods&tools from ACMAD-MESA Service 2:

## Continental Seasonal Climate forecasts

1. Persistence ( SSTA patterns) ( QGIS, GRADS, Ferret, IRI data Library...)
2. Past and current variability/trends analysis for precipitation and temperature ( GRADS, excel...)
3. Analogue years based of SSTA patterns/drivers, variability/ trends/timeseries analysis ( GRADS, IRI data library...)
4. Statistical seasonal forecasting models ( CPT, R ...)
5. Single dynamical model ensemble ( WMO/GPC LRF portal)
6. Multimodel Ensemble ( NMME, IRI, Eurosip web portals, **COPERNICUS data store...**)
7. Combination of 1 to 6 leading to a Continental Seasonal climate Forecast

Challenge: 3 full time experts on seasonal forecasting for operation



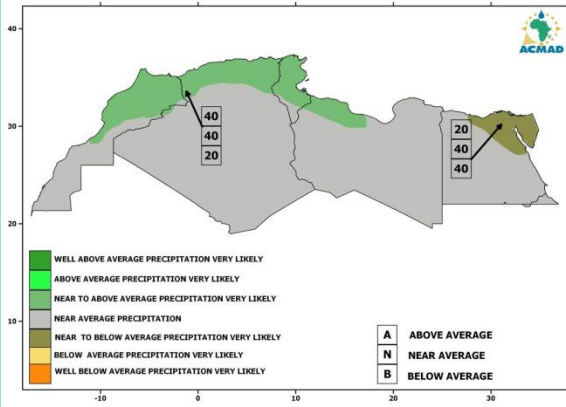
# What is a Climate Service at ACMAD? RCOFs outputs

- A **technical note to support and guide forecasts discussions** and briefings for Climate experts at NMHSs and RCCs
- A **Bulletin or report providing advices** to practitioners in sectors ( e.g farmers ...)
- A **Synthesis or brief for policy and decision making** ( e.g dam manager, development planners and Managers, Disaster Managers ....

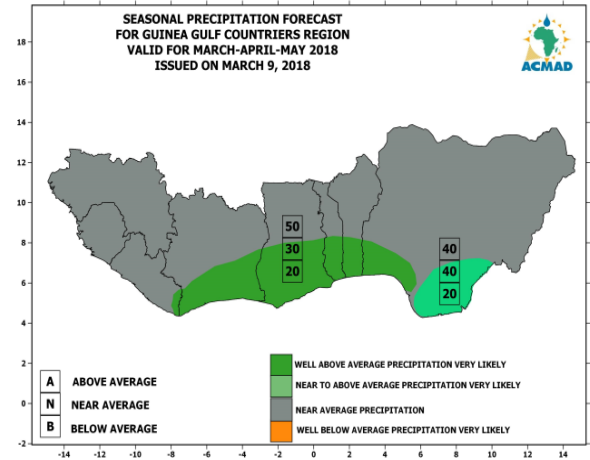
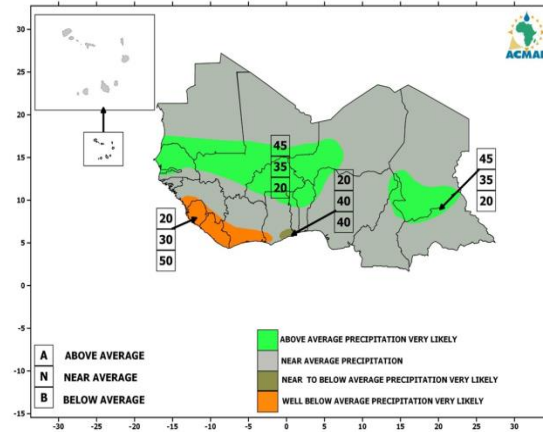


# ACMAD and coordination of 5 RCOFS in Africa

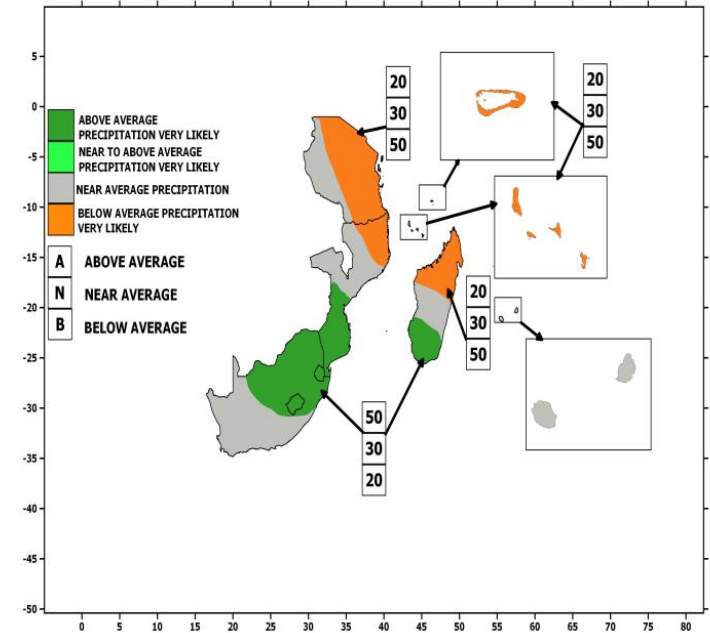
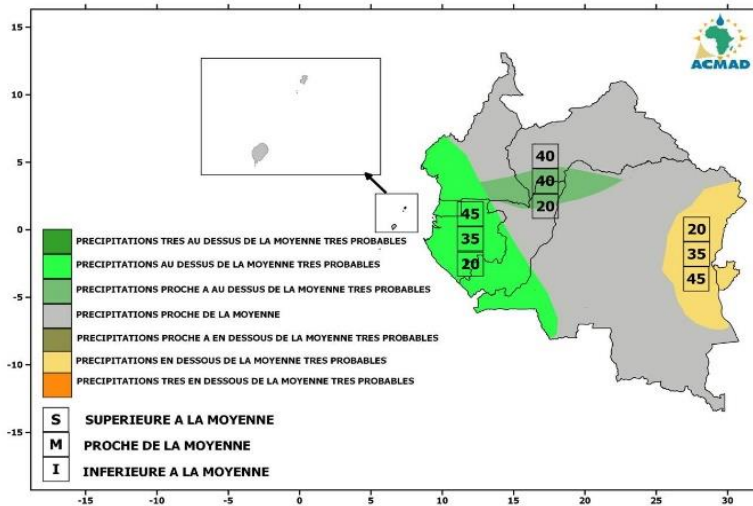
SEASONAL PRECIPITATION FORECAST  
FOR NORTH AFRICA REGION  
VALID FOR DECEMBER-JANUARY-FEBRUARY 2016-2017  
ISSUED ON NOVEMBER 18, 2016



SEASONAL PRECIPITATION FORECAST  
FOR SUDANO-SAHELIAN REGION OF AFRICA  
VALID FOR JULY-AUGUST-SEPTEMBER 2017  
ISSUED ON MAY 19, 2017



PREVISION SAISONNIERE DES PRECIPITATIONS  
POUR LA REGION DE LA AFRIQUE CENTRALE  
VALABLE POUR NOVEMBRE-DECEMBRE 2016-JANVIER 2017  
ELABOREE LE 10 OCTOBRE 2016





# *RCCs/NMHSs Governance/visibility: A Challenge in Africa*

- RCCs, Developing RCCs in Africa and NMHSs increased visibility require:
- Climate knowledge used by policy , decision makers and development stakeholders.
- Competencies to provide quality climate services developed, strengthened and *empowered*.
- **It is essential to attract, train, maintain and motivate skilled labor for high quality climate Services**
- **Governance structure for climate services involving clients**
- **Given the large number of sectors and needs for climate services RCCs /NMHSs **should better positioned in organizational structures** of Institutions moving from projects to operational entities**





# ***Technical skills and needs***

- Strengthen capacity to *explain climate phenomena/features/impacts, communicate to policy, decisions and practitioners,*
- *Partnerships and joint action* within African institutions and with global centres
- Need a forum for international cooperation on meteorology in Africa
- Need innovative DRM policies, plans and practices
- *QMS is an essential need for sustainability* of climate services ( policy , manual, procedures, records)

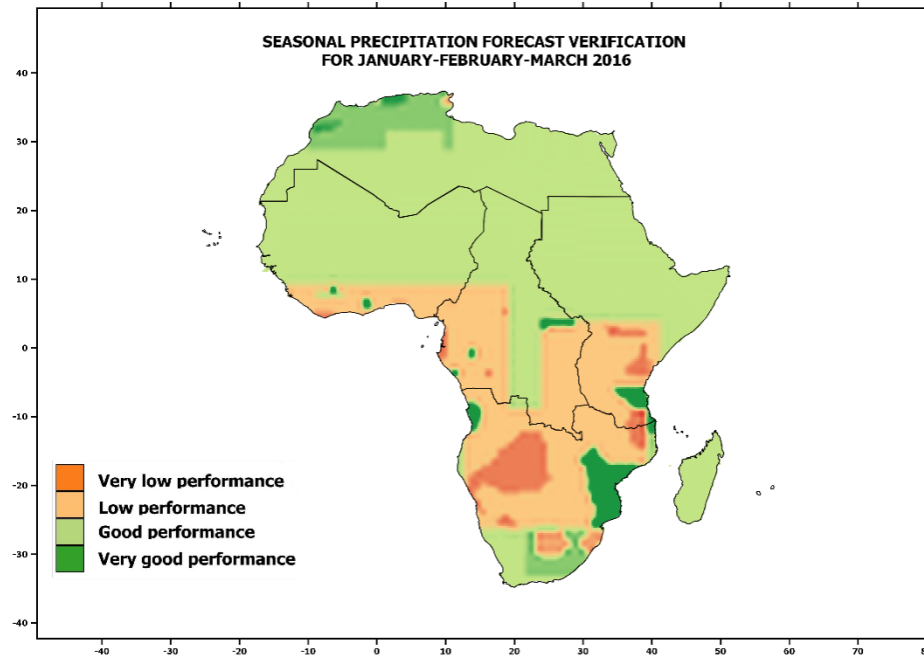
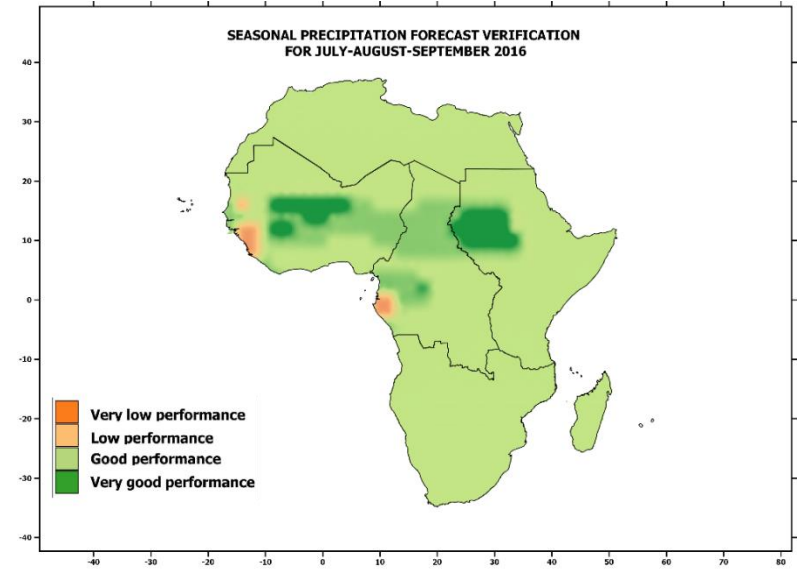
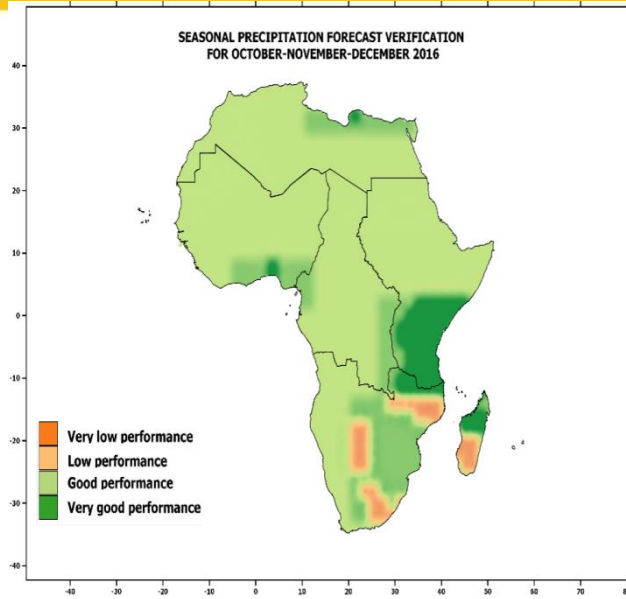
COMPETENCIES FOR ACMAD/RCC: CURRENT STATUS AND NEEDS



Function	Competencies available	Competencies needed
Data Services	Part time webmaster(1)	webmaster(1) Database admin and maintenance (1) Software developer (1) IT expert (1) GIS support expert (1) Total: 5
Climate Monitoring	Technical expert (1)	Climate diagnostics products expert(1) Climate monitoring expert (1) Climate assessment expert (1) Total : 3
Climate forecasting	Technical expert ( 2)	Current Climate analysis and forecast verification expert (1) Statistical prediction expert (1) Dynamical models post processing/interpretation expert (1) Sub-seasonal and seasonal climate outlook expert for operations(1) Sub-seasonal and seasonal climate outlook expert for 6RCOFs(2) Total : 6
Training	No expert	Data services training expert (1) Climate monitoring training expert (1) Climate forecasting training expert (1) Total : 3
Coordination	Team leader (1)	Team Leader (1)
	<b>Total: 5</b>	<b>Total: 17 GAP: 12 only 29% of the optimal need is available Annual budget ~ US\$ (3/4) million</b>



# Verification of seasonal forecasts in 2016





## Evidence of challenges on the use of climate services : Severe drought in Africa 2015/16

The Southern African Development Community (SADC) declared a regional drought emergency and launched a regional humanitarian appeal in July 2016

The Government of Mozambique activated the institutional Red alert due to drought on April 12, 2016

The Government of Madagascar has declared a state of drought emergency for southern Madagascar on March 22, 2016

The Government of Zimbabwe, declared a State of Drought Disaster following the impact of El Niño induced erratic rainfall on February 04, 2016

Malawian government declared a state of disaster as a severe drought has caused a sharp decline in crop production across the country on January 11 2016.

On 22 December 2015, the Government of Lesotho declared a state of drought emergency and appealed for assistance from the international community.

- ACMAD-MESA, RELEASED A BRIEF FOR POLICY MAKERS INDICATING DROUGHT VERY LIKELY IN SOUTHERN AFRICA. ON OCTOBER 31, 2015

- SARCOF OUTLOOK HIGHLIGHTED EXPECTATIONS FOR DROUGHT IN LATE AUGUST 2015

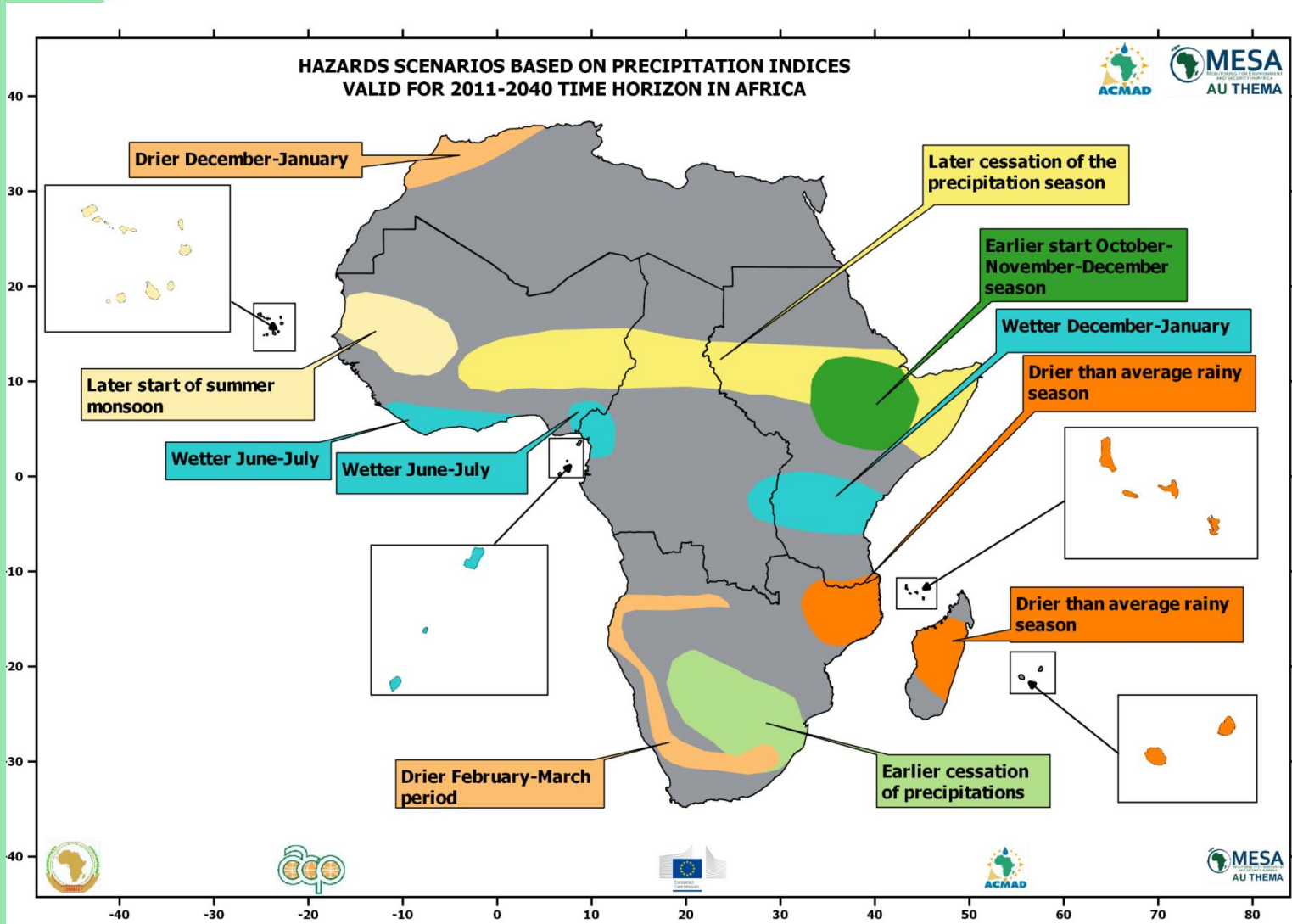
### Improvements required:

Potential impacts assessments, further tailoring of climate information with hazards info, effective communication, formalize updates of DRM policies, contingency planning and action



# Hazards scenario for update and implementation of Africa's DRR and CCA policies and strategies

## Updates of Agriculture calendars to improve food production implementing the AU Malabo declaration on implementation of CAADP



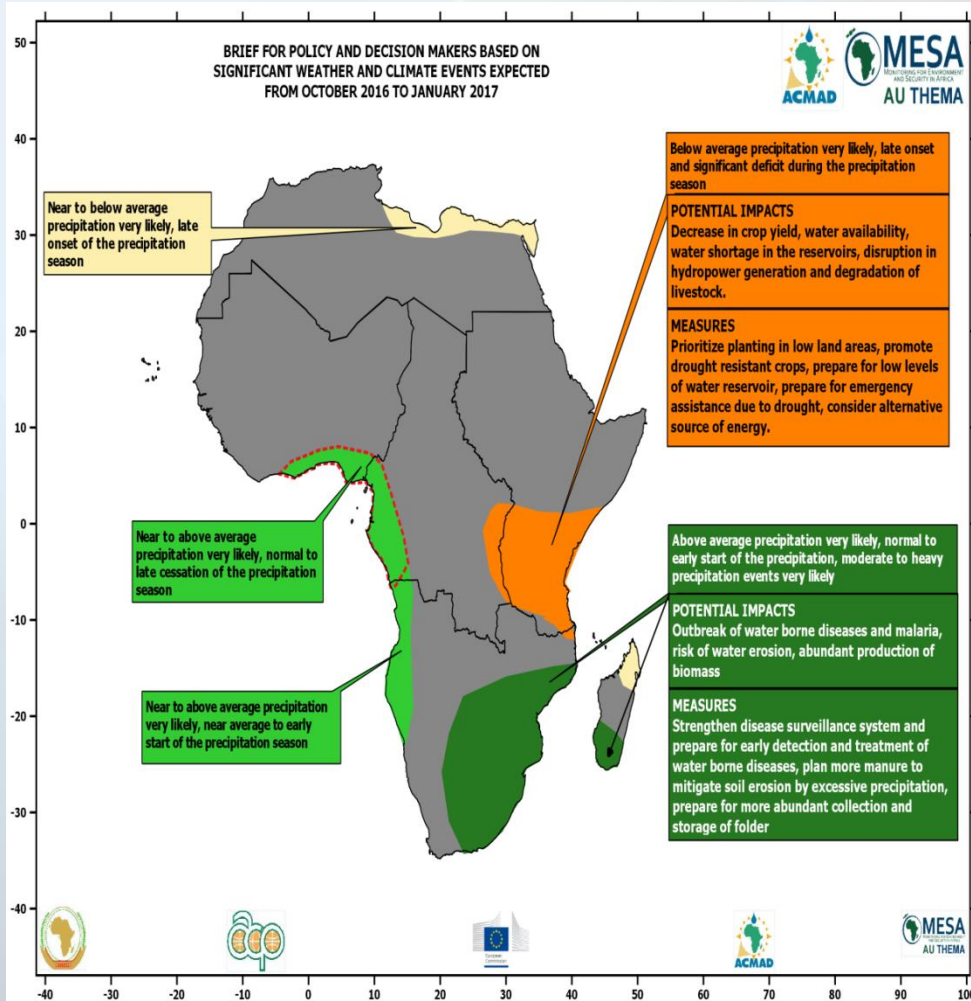
Africa CORDEX simulations used

**DROUGHT SERVICE AND CONTINENTAL SEASONAL CLIMATE FORECASTS SERVICE/  
EXAMPLE WITH DROUGHT OUTLOOK RELATED TO RECENT EASTERN AFRICA DROUGHT(OND 2016) –  
USING THESE PRODUCTS IN THE OFFICIAL DROUGHT DISASTER DECLARATION IS STILL A MAJOR  
CHALLENGE**

Kenya's president declared the drought, which has affected as much as half of the country, a national disaster. Uhuru Kenyatta appealed for international aid in February 2017 ( 5 months later).

-Other countries in the region have also been hit by the drought  
In Somalia, nearly half the population is suffering from food shortages

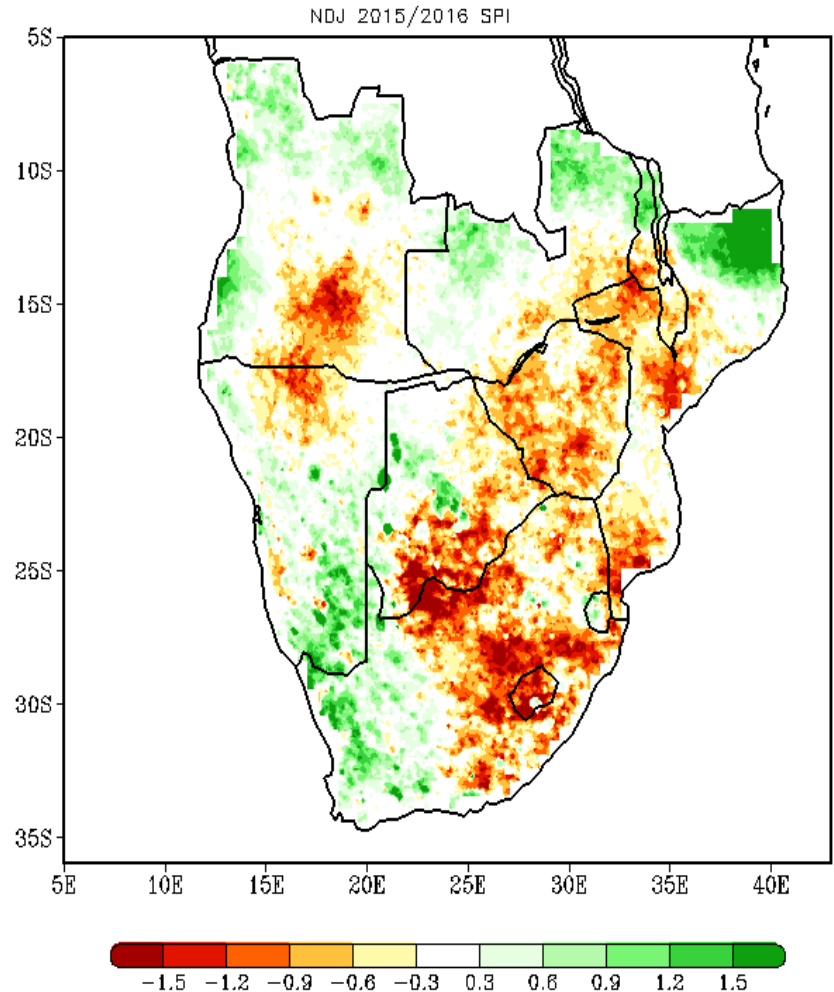
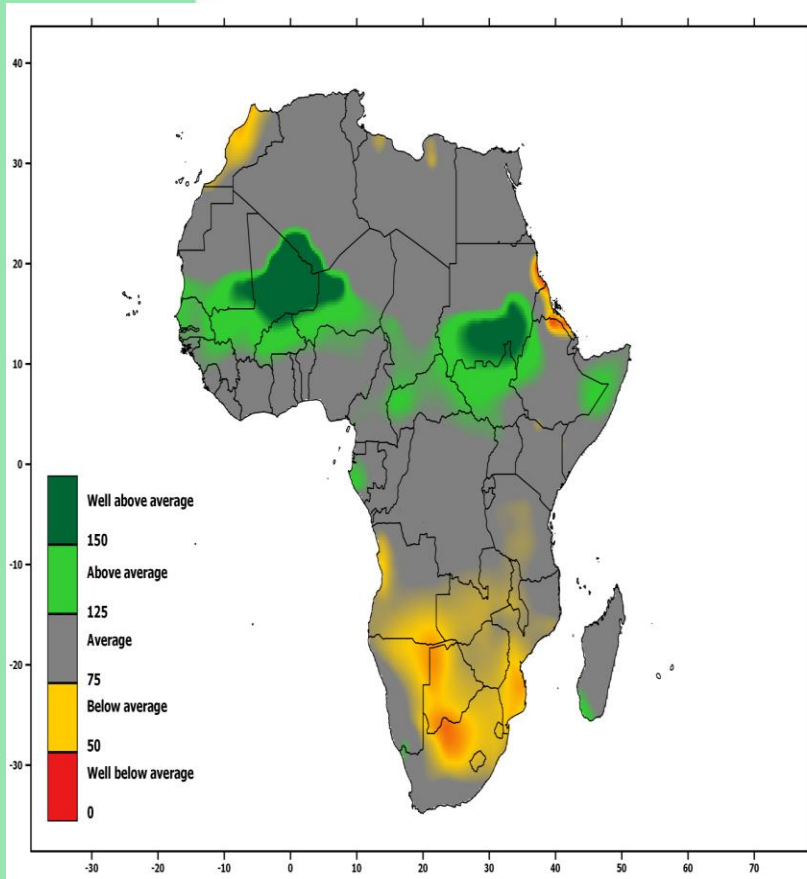
During the last drought of this scale in 2011, famine killed about 250,000 Somalis.





Drought product for 2015 in Africa. Wet summer in West Africa with above average food production. Need establishment of contingency grain reserve to reduce inflation in agric commodity markets or dry areas. Such an effort may accelerate Africa's integration

## 2015 Annual precipitation in percent of the 1981-2010 average



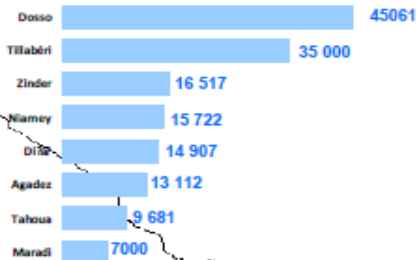


## Niger: Zones potentiellement inondables (plan de contingence 2017)



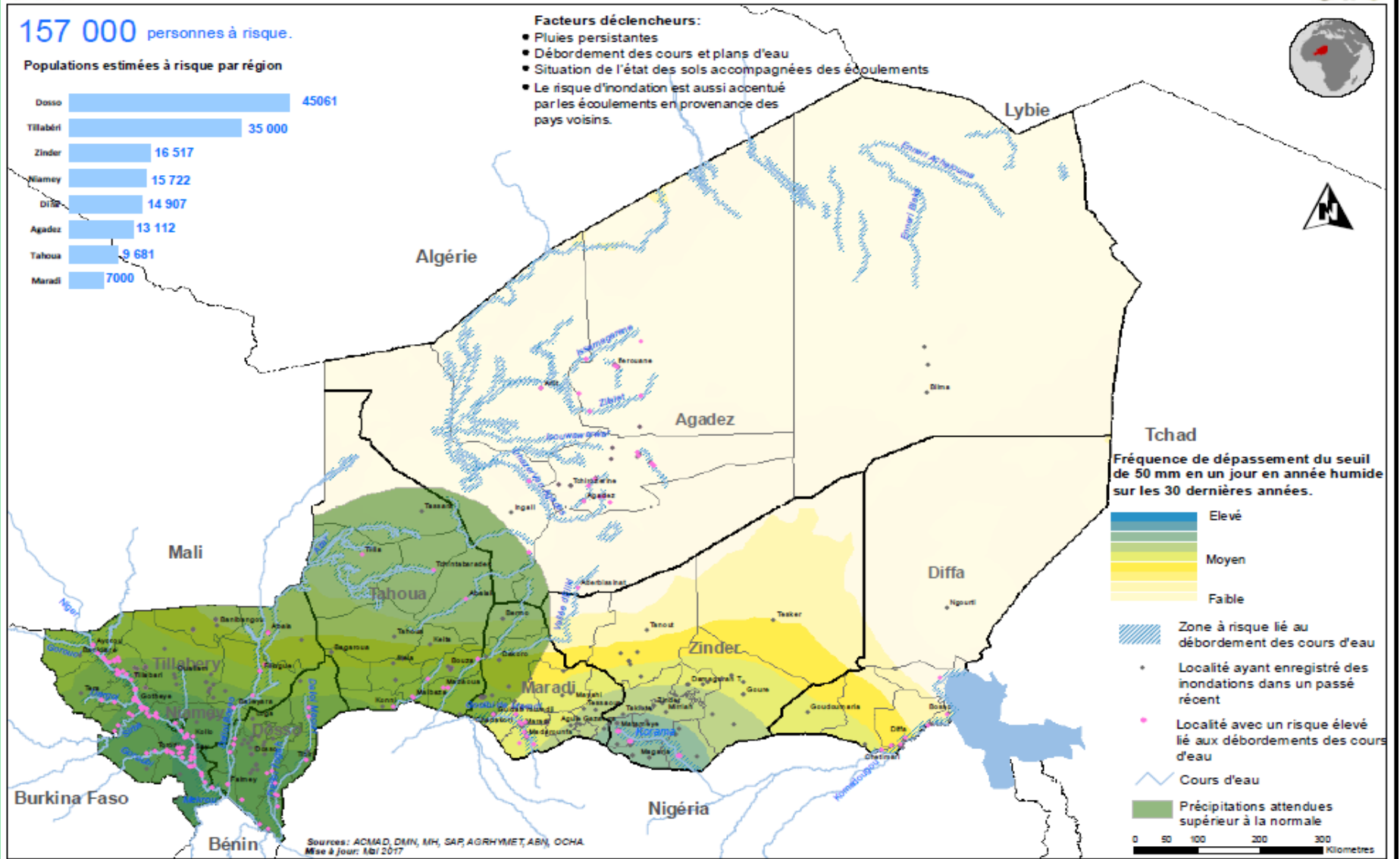
**157 000** personnes à risque.

Populations estimées à risque par région



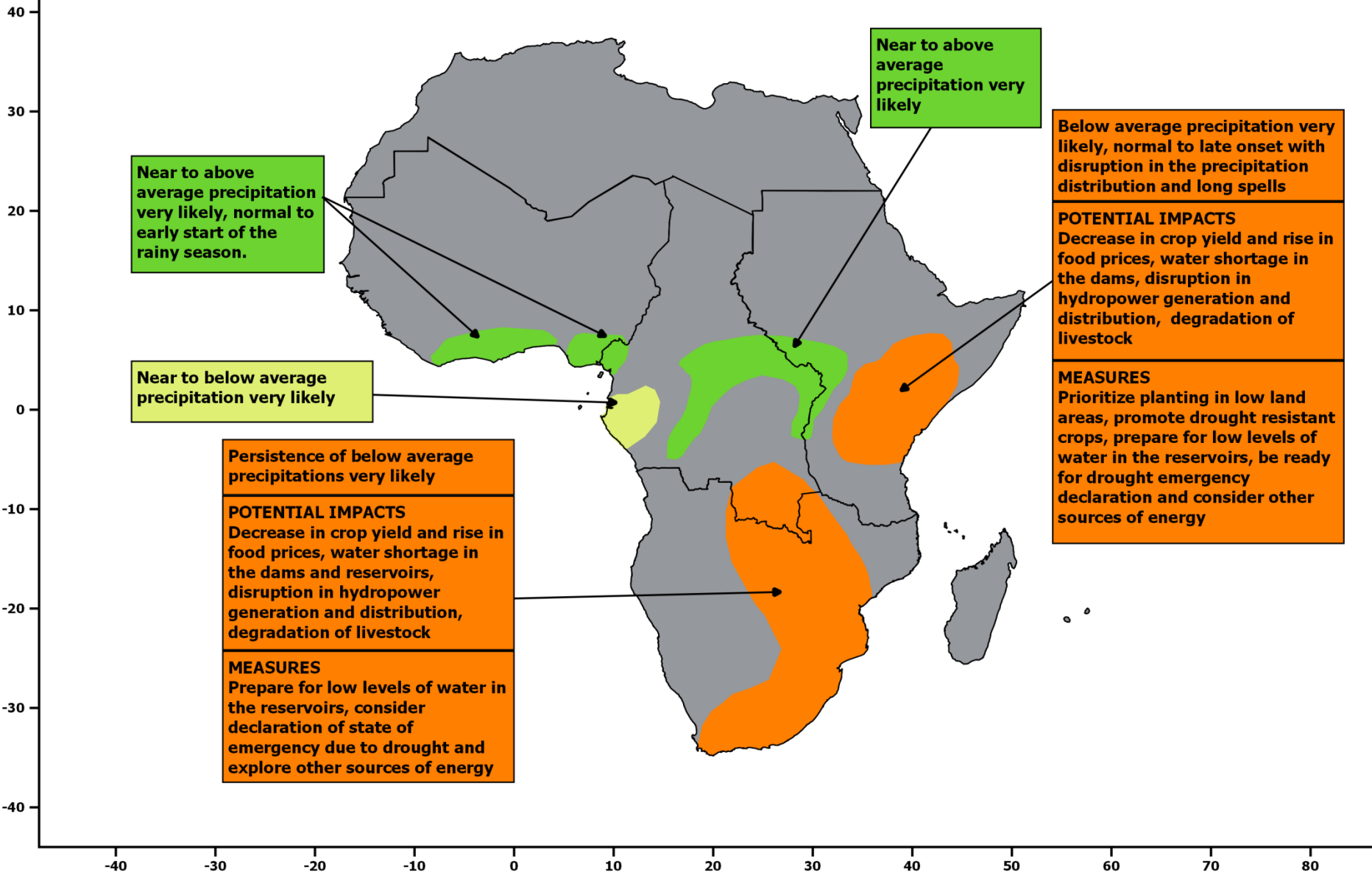
### Facteurs déclencheurs:

- Pluies persistantes
- Débordement des cours et plans d'eau
- Situation de l'état des sols accompagnées des écoulements
- Le risque d'inondation est aussi accentué par les écoulements en provenance des pays voisins.





**BRIEF FOR POLICY AND DECISION MAKERS BASED ON  
SIGNIFICANT WEATHER AND CLIMATE EVENTS EXPECTED  
FROM MARCH TO JUNE 2018**



**Near to above average precipitation very likely, normal to early start of the rainy season.**

**Near to above average precipitation very likely**

**Near to below average precipitation very likely**

**Persistence of below average precipitations very likely**

**POTENTIAL IMPACTS**  
Decrease in crop yield and rise in food prices, water shortage in the dams and reservoirs, disruption in hydropower generation and distribution, degradation of livestock

**MEASURES**  
Prepare for low levels of water in the reservoirs, consider declaration of state of emergency due to drought and explore other sources of energy

**Below average precipitation very likely, normal to late onset with disruption in the precipitation distribution and long spells**

**POTENTIAL IMPACTS**  
Decrease in crop yield and rise in food prices, water shortage in the dams, disruption in hydropower generation and distribution, degradation of livestock

**MEASURES**  
Prioritize planting in low land areas, promote drought resistant crops, prepare for low levels of water in the reservoirs, be ready for drought emergency declaration and consider other sources of energy



# Concluding Remarks&Opportunities

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- Further tailoring climate information for DRM including expected Hazards, potential impacts, measures and implementation plan;
- Expand tailoring on other GFCS sectors;
- Develop and implement proactive Risk Communication strategy;
- *Support for more involvement of Global, Regional Climate Centres and Advanced NMHSs in the formulation and implementation of climate resilient and low carbon development programmes of the World Bank and Regional Development Banks*



## Concluding Remarks & Opportunities

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- ✓ National Capacity Building and governance (NFCS, NCOFs, RCOFs)
- ✓ Maintain and Sustain climate Services **providing regular facts on the state of Africa's Climate for future COPs negotiations**
- ✓ Tailor Climate services for resilient development ( e.g PIDA), early warning and risk management in Africa
- ✓ Establish clearing houses for valuation of climate services and manage uncertainties effects
- ✓ **Financial instruments provided by the Paris Agreement are major opportunities for future implementation of CSIS**

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**THANK YOU !!!**