CGIAR | AICCRA
Accelerating Impacts of CGIAR Climate Research for Africa

Alliance Bioversity & CIAT

Conference Internationale sur le Changement Climatique (COCC 2024)

Niamey, Niger, 09-11 Septembre 2024

Enabling capacity to improve climate information services in West Africa

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AGRHYMET

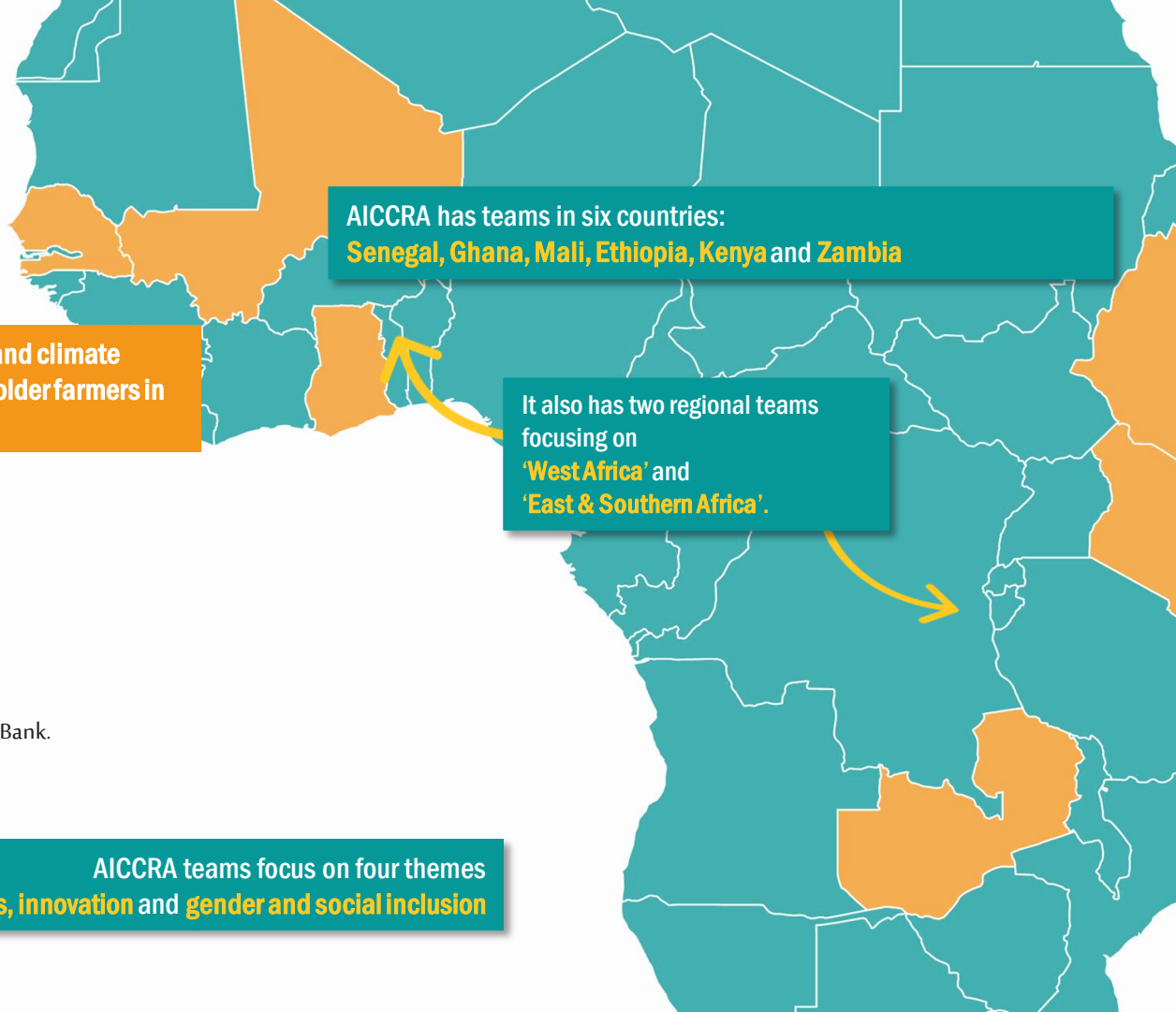
Columbia Climate School
International Research Institute for Climate and Society

Outline

- Context
  - Adaptation is imperative
  - Climate Information Services are part of the solution
- Experiences of AICCRA program in West Africa
- Instructional change and change in practices
- Some reflections and next steps

What is AICCRA?

AICCRA works to scale climate-smart agriculture and climate information services that reach millions of smallholder farmers in Africa.



AICCRA is a CGIAR project led by the Alliance of Bioversity International and CIAT

It is supported by a grant from the International Development Association (IDA) of the World Bank.

AICCRA teams focus on four themes
Knowledge, partnerships, innovation and **gender and social inclusion**

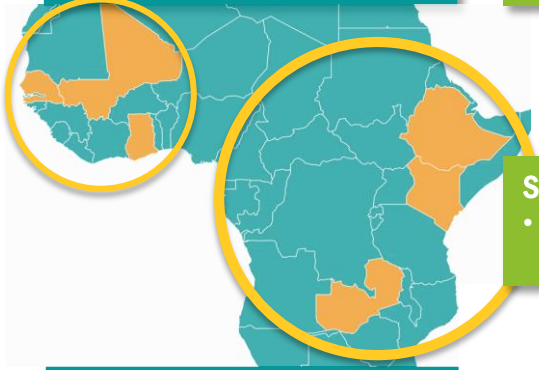
How AICCRA works

SCALE OUT

SYNTHESIZE LEARNINGS

WHERE

AICCRA has teams in six countries: **Senegal, Ghana, Mali, Ethiopia, Kenya** and **Zambia.**



It also has two regional teams focusing on **'West Africa'** and **'East & Southern Africa'.**

SPILLOVER COUNTRIES

WHO

Thematic leads
- Continental partner organizations
- CGIAR centres

Sub-regional leads
- Sub-regional partner organizations

- Lead CGIAR centres
- Other CGIAR centres
- National partner organizations

WHAT

Innovative Partnerships	Decision Support
Capacity Development	Investments and Policies

#1 Knowledge generation and sharing

#2 Partnerships for delivery

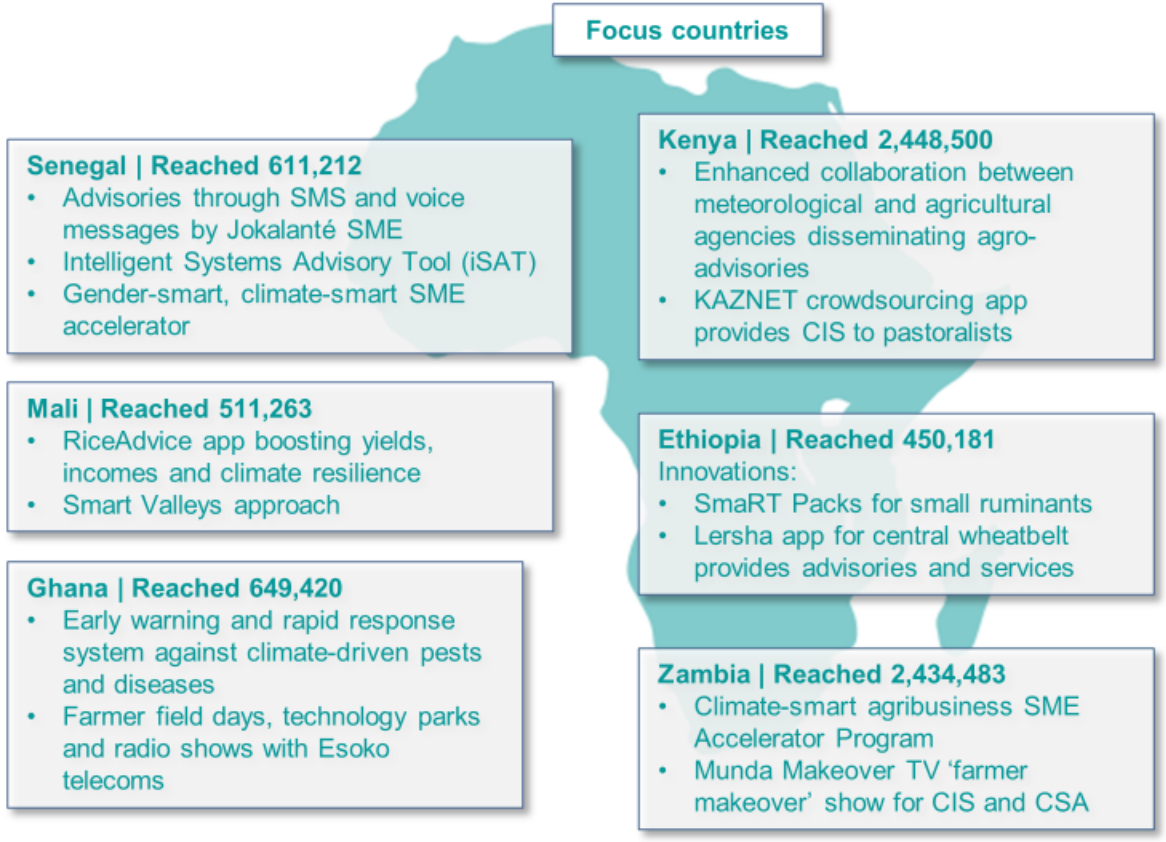
#3 Supporting uptake

CIS and CSA Packages	Engagement Platforms
Gender-sensitive plans and priorities	

AICCRA achievements in countries

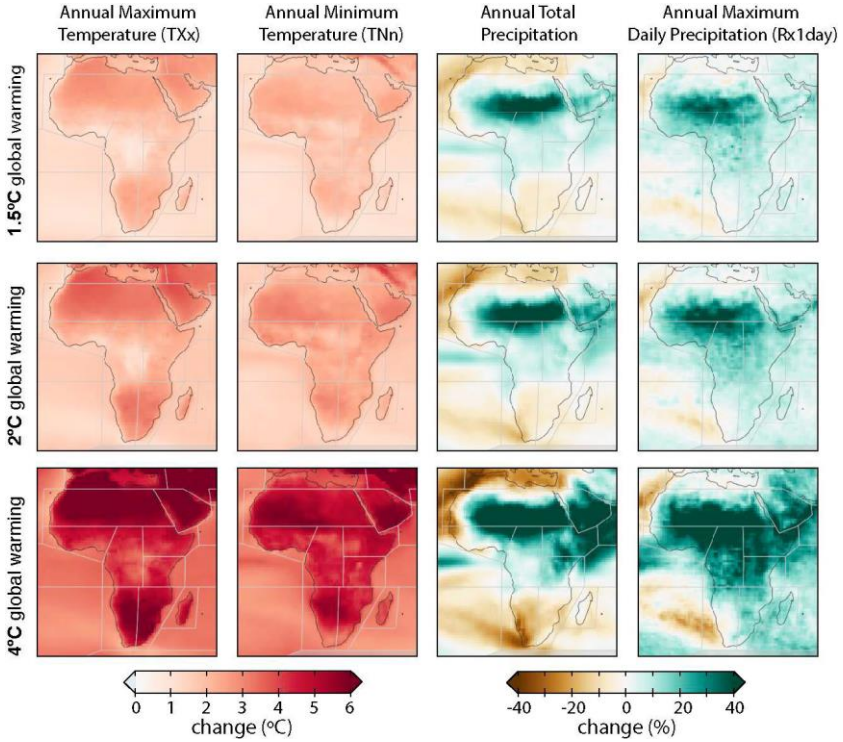
Key impact in numbers

- 7,096,921 beneficiaries reached with increased access to enhanced climate information services (CIS) and/or validated climate-smart agriculture (CSA) technologies.
- 160 partners increasingly accessing enhanced CIS and/or CSA technologies.
- 26,429 people engaged in AICCRA funded capacity development activities.
- 6 focus countries and 38 'spillover' countries in Sub-Saharan Africa access enhanced CIS and validated CSA technologies.



Adaptation is imperative!

- Surface temperature increase: **more rapid than global average**
- Observed increase in hot extremes, river flooding, **agricultural & ecological droughts**
- Agricultural **productivity** reduction due to CC **more than any other region**
- Extreme climate events: key drivers in **rising undernutrition** of millions of people

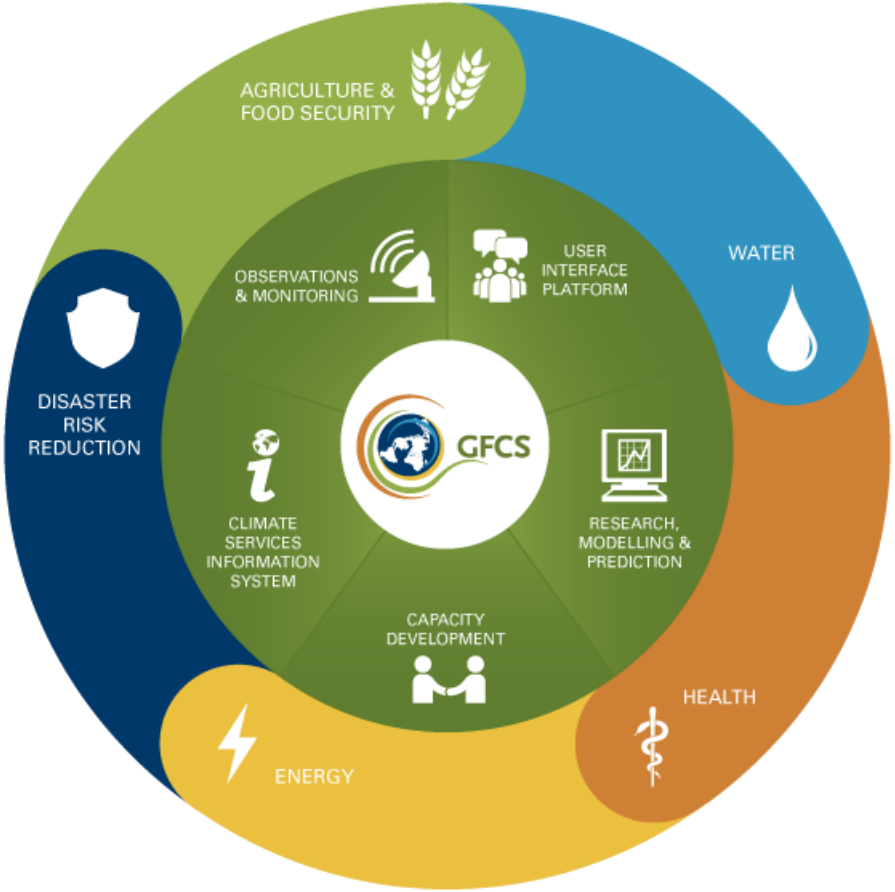


With additional warming, **temperature extremes** and **heavy precipitation events**: **get larger**

IPCC AR6 WGI&II: Africa

CIS: key part of the solution

To enable better **management of the risks** of climate variability and change and **adaptation to climate change**, through the development and incorporation of science-based climate information and prediction into ***planning, policy and practice*** on the global, regional and national **scale**.



Global Framework for Climate Services (WMO, 2011)

Scaling vision of WA regional program

Build multi-actor partnerships of existing scientific & educational networks & centers to achieve outcomes that cannot be achieved easily by engaging with individual partners at country level

Effective large-scale intra-regional & south-south adoption within various value chains are taking place through innovative delivery models

Large-scale capacity building sustained through dedicated and accessible curricula & training materials

Country next users & end-users are increasingly accessing NextGen of CIS and validated CSA technologies

Enabling South-South learning

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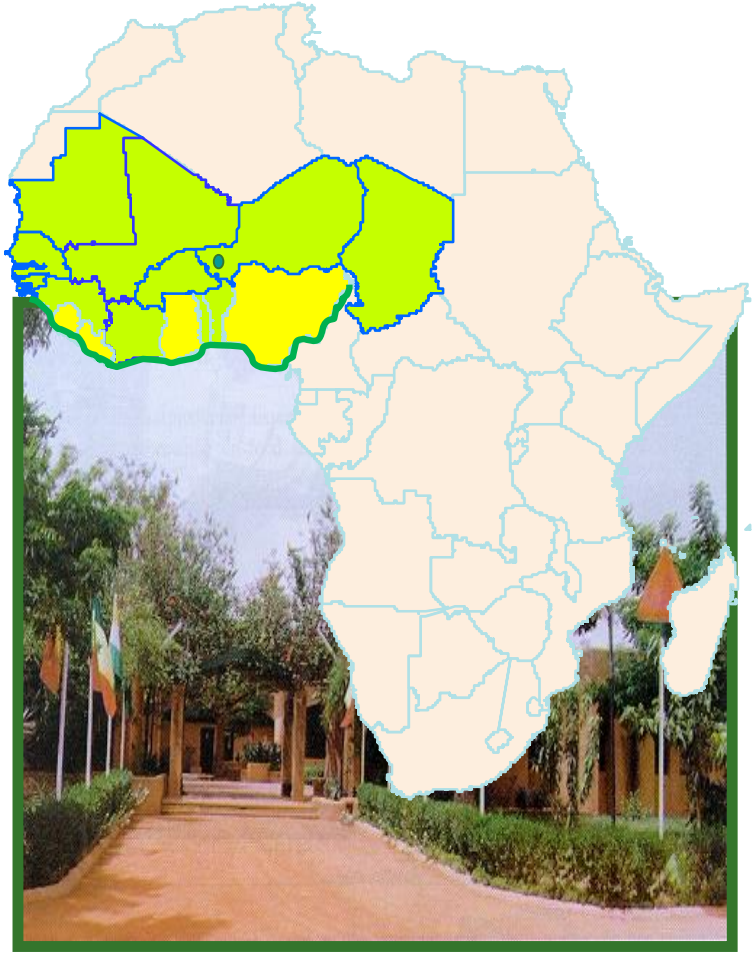
CORAF

RUFORUM Capacity Building in Agriculture

WASCAL West African Science Service Centre on Climate Change and Adapted Land Use

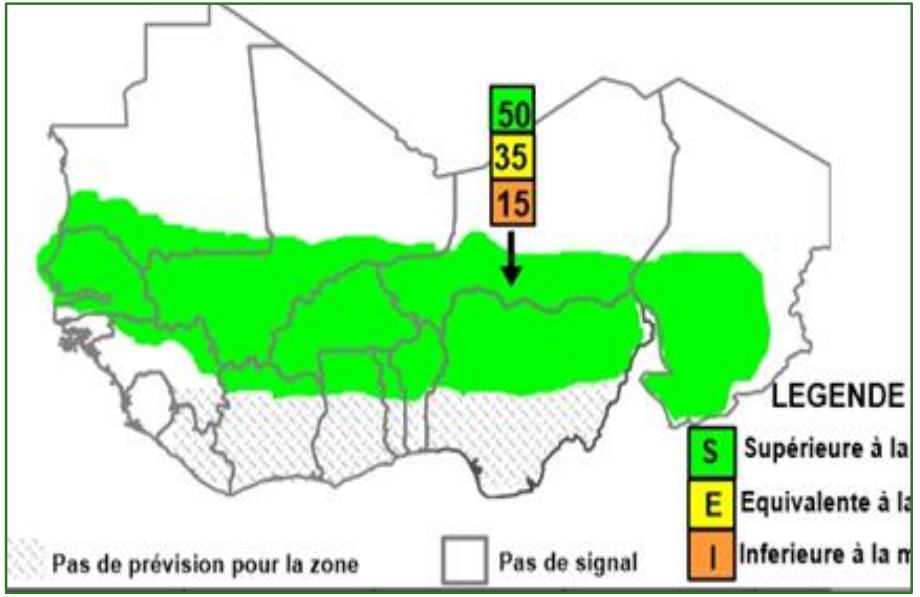
Enabling capacity to improve CIS in West Africa

- AGRHYMET = AGRométéorologie, HYdrologie, METéorologie: **Information, Training, Research services**
- Intergovernmental centre of excellence (Summit of the Heads of the States every 2 years, Council of Ministers)
- AGRHYMET Regional Climate Centre for West-Africa and Sahel (RCC-WAS)
- Regional scientific and technical arm of ECOWAS
- Regional Climate Outlook Forum (PRESASS & PRESAGG)



Focus: Seasonal forecasts, strategic in WA

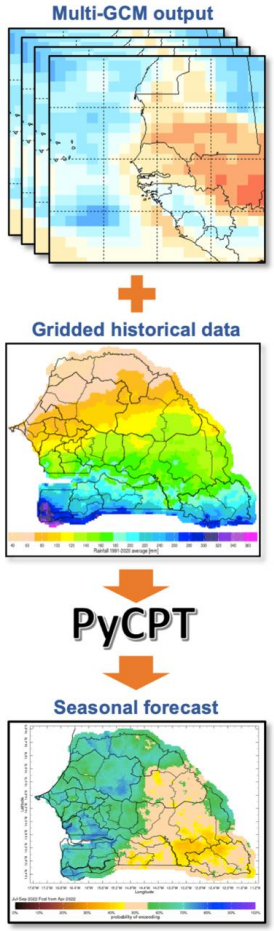
- Provide guidance for strategic planning of the rainy seasons
- Select the type of crop varieties and land (low or high land)
- Risk informed strategy to prevent flood, drought, crop pests, etc.
- Investments to be done during the rainy season (is it suitable to invest more not, on which crop is it more beneficial to invest)



- Seasonal forecasts: **consensual and qualitative**, irreproducible (in an independent way), thus less objective
- A tercile format (average, below average or above average)

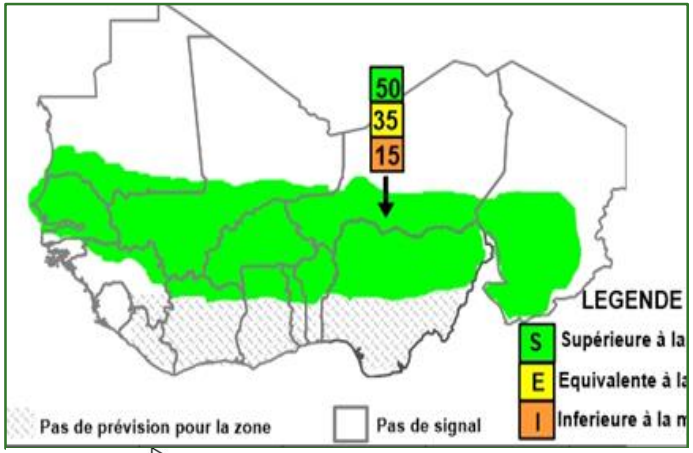
Capacity building on NextGen forecasting

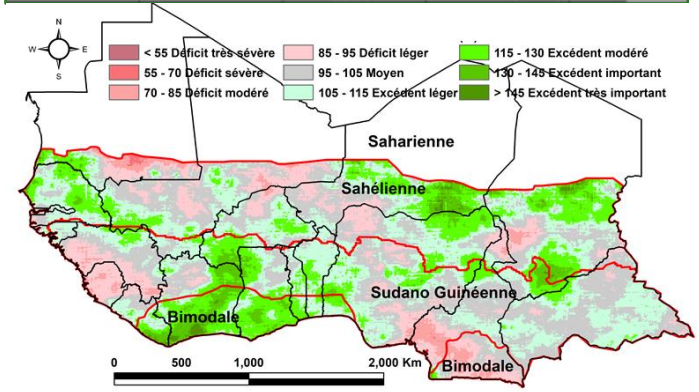
- Enable to select and combine the best dynamical models for their region or country, and automates the generation and verification of objective, probabilistic, statistically calibrated, multi-model predictions of a range of climate or impact variables
- WMO recommendation: **objective**, **traceable** & **reproducible**, and **quantify** forecast quality
- Need for location-specific forecasts (**higher spatial resolution** allowed by climate models), & **probabilistic information** about the **degree of confidence** in the forecast
- Series of **intensive trainings** to capacitate AGRHYMET staffs (2022, 2023)

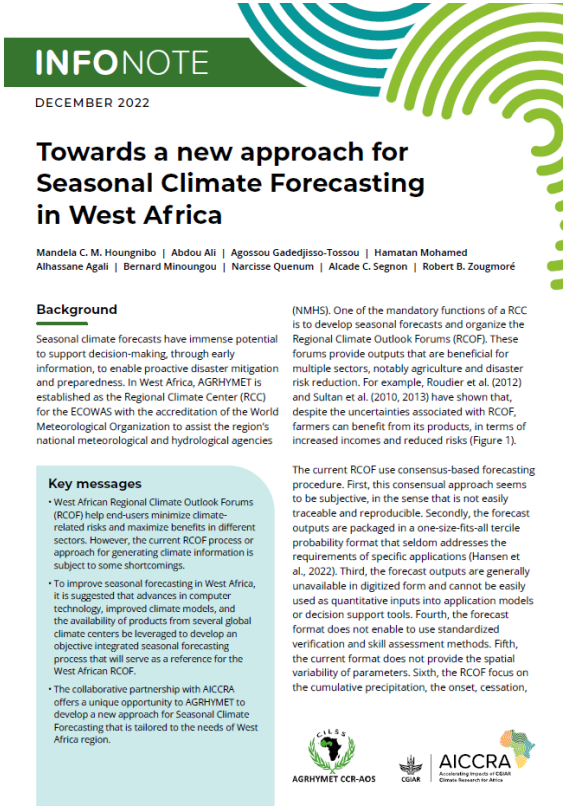


Institutional Capacity enabled

- **Capacity for implementation and operationalization** of NextGen







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DECEMBER 2022

Towards a new approach for Seasonal Climate Forecasting in West Africa

Mandela C. M. Houngnibo | Abdou Ali | Agossou Gadedjisso-Tossou | Hamatan Mohamed Alhassane Agali | Bernard Minoungou | Narcisse Quenum | Alcade C. Segnon | Robert B. Zougmoré

Background

Seasonal climate forecasts have immense potential to support decision-making, through early information, to enable proactive disaster mitigation and preparedness. In West Africa, AGRHYMET is established as the Regional Climate Center (RCC) for the ECOWAS with the accreditation of the World Meteorological Organization to assist the region's national meteorological and hydrological agencies (NMHS). One of the mandatory functions of a RCC is to develop seasonal forecasts and organize the Regional Climate Outlook Forums (RCOF). These forums provide outputs that are beneficial for multiple sectors, notably agriculture and disaster risk reduction. For example, Roudier et al. (2012) and Sultan et al. (2010, 2013) have shown that, despite the uncertainties associated with RCOF, farmers can benefit from its products, in terms of increased incomes and reduced risks (Figure 1).

Key messages

- West African Regional Climate Outlook Forums (RCOF) help end-users minimize climate-related risks and maximize benefits in different sectors. However, the current RCOF process or approach for generating climate information is subject to some shortcomings.
- To improve seasonal forecasting in West Africa, it is suggested that advances in computer technology, improved climate models, and the availability of products from several global climate centers be leveraged to develop an objective integrated seasonal forecasting process that will serve as a reference for the West African RCOF.
- The collaborative partnership with AICCRA offers a unique opportunity to AGRHYMET to develop a new approach for Seasonal Climate Forecasting that is tailored to the needs of West Africa region.

The current RCOF use consensus-based forecasting procedure. First, this consensual approach seems to be subjective, in the sense that is not easily traceable and reproducible. Secondly, the forecast outputs are packaged in a one-size-fits-all tercile probability format that seldom addresses the requirements of specific applications (Hansen et al., 2022). Third, the forecast outputs are generally unavailable in digitized form and cannot be easily used as quantitative inputs into application models or decision support tools. Fourth, the forecast format does not enable to use standardized verification and skill assessment methods. Fifth, the current format does not provide the spatial variability of parameters. Sixth, the RCOF focus on the cumulative precipitation, the onset, cessation,

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NextGen approach to hydrological forecasting: Adapting PyCPT tool for hydrological forecasting

Bernard Minoungou | Abdou Ali | Mandela Houngnibo | Mohamed Hamatan | Agossou Gadedjisso-Tossou | Alcade C. Segnon | Robert B. Zougmoré

December • 2023

Info Note

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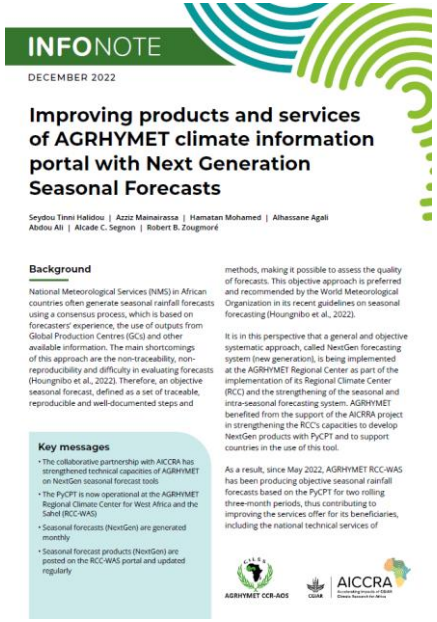
Institutional Capacity enabled

- Improving **products and services** of AGRHYMET **climate information portal**
- Downscaling **Capacity to NHMSs** of 17 countries in WA & Sahel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Improving products and services of AGRHYMET climate information portal with Next Generation Seasonal Forecasts

Seydou Tinni Halidou | Aziz Mainairassa | Hamatan Mohamed | Alhassane Agali
Abdou Ali | Alcade C. Segnon | Robert B. Zougmoré

Background

National Meteorological Services (NMS) in African countries often generate seasonal rainfall forecasts using a consensus process, which is based on forecasters' experience, the use of outputs from Global Production Centres (GCs) and other available information. The main shortcomings of this approach are the non-traceability, non-reproducibility and difficulty in evaluating forecasts (Houngnibo et al., 2022). Therefore, an objective seasonal forecast, defined as a set of traceable, reproducible and well-documented steps and methods, making it possible to assess the quality of forecasts. This objective approach is preferred and recommended by the World Meteorological Organization in its recent guidelines on seasonal forecasting (Houngnibo et al., 2022).

It is in this perspective that a general and objective systematic approach, called NextGen forecasting system (new generation), is being implemented at the AGRHYMET Regional Center as part of the implementation of its Regional Climate Center (RCC) and the strengthening of the seasonal and intra-seasonal forecasting system. AGRHYMET benefited from the support of the AICRRA project in strengthening the RCC's capacities to develop NextGen products with PyCPT and to support countries in the use of this tool.

As a result, since May 2022, AGRHYMET RCC-WAS has been producing objective seasonal rainfall forecasts based on the PyCPT for two rolling three-month periods, thus contributing to improving the services offer for its beneficiaries, including the national technical services of

Key messages

- The collaborative partnership with AICCRA has strengthened technical capacities of AGRHYMET on NextGen seasonal forecast tools
- The PyCPT is now operational at the AGRHYMET Regional Climate Center for West Africa and the Sahel (RCC-WAS)
- Seasonal forecasts (NextGen) are generated monthly
- Seasonal forecast products (NextGen) are posted on the RCC-WAS portal and updated regularly

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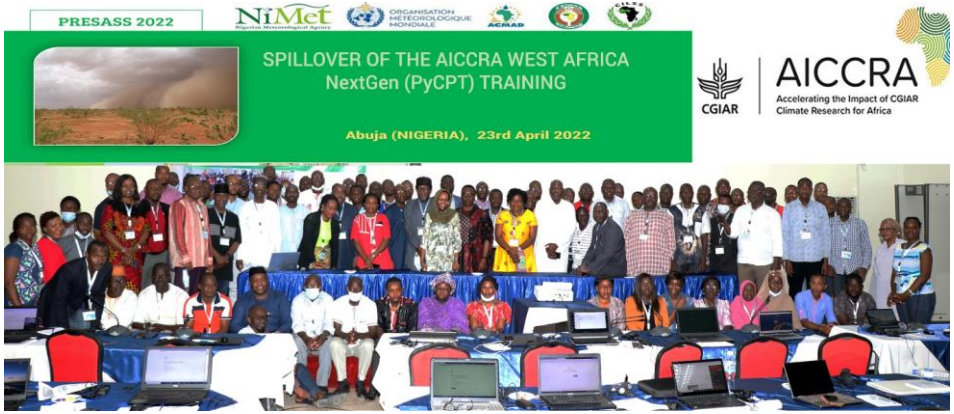

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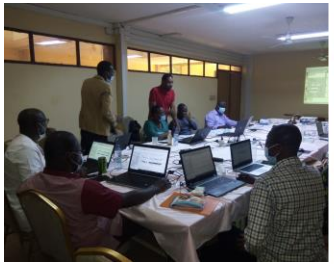

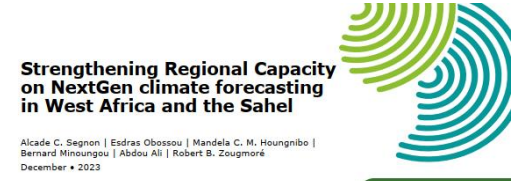
Strengthening Regional Capacity on NextGen climate forecasting in West Africa and the Sahel

Alcade C. Segnon | Esdras Obossou | Mandela C. M. Houngnibo | Bernard Minoungou | Abdou Ali | Robert B. Zougmoré
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Next steps and some lessons learnt

- Translating seasonal forecasting in terms of sectorial impacts (agriculture, water) & NextGen Sub-seasonal forecasting
- To operationalize NextGen at country level: **investment** in infrastructure and **sustained** capacity development
- **Outcome-oriented research** program
- Innovative **partnerships** for delivery:
  - Complementary visions (not always tightly structured)
  - **Deep, respectful and trustful** relationships (often informal)
  - Collaborative arrangements (flexible & informal)
  - Mutual learning and capacity development

Thank you

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