Current status of operations of

PRESASS & PRESAGG &PRESAC

A. KAMGA FOAMOUHOUE, ACMAD

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

WMO OMM

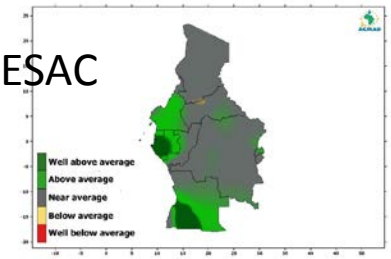
World Meteorological Organization
Organisation météorologique mondiale

WMO International Workshop on Global Review of Regional Climate Outlook Forums, Ecuador, 5 – 7 September 2017

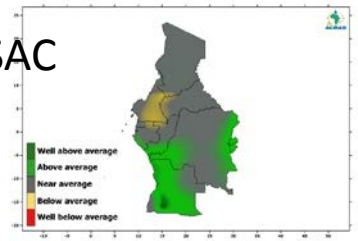
BACKGROUND (1/4)

- ***Target region***: *Sudano-Sahelian Region of Africa*
- ***Coordinating institutions:*** *ACMAD & AGRHYMET for SS and GG, ACMAD for AC*
- ***Target season(s);*** *JJA & JAS for SS, MAM&AMJ for GG, SON&OND for AC*
- ***Parameters:*** *discharge, total seasonal precipitation and related precipitation indices (frequency of heavy rains potentially leading to floods, frequency of dry/wet spells, onset, withdrawal, length of the season…)*
- ***major forcings on the regional climate*** *(ENSO, TNA, TSA, EqA, AtD, IOD, SIOD Med&Southern Europe summer Temperatures)*
- ***potential applications of seasonal outlooks****: Agriculture, DRM, Water Management*
- ***RCOF frequency****: Once a year in April or May*
- , ***sources of funding****: ACMAD member states, WMO, AfDB, WB, AFD, EDF, Spain Cooperation*

PRESAC



PRESAC



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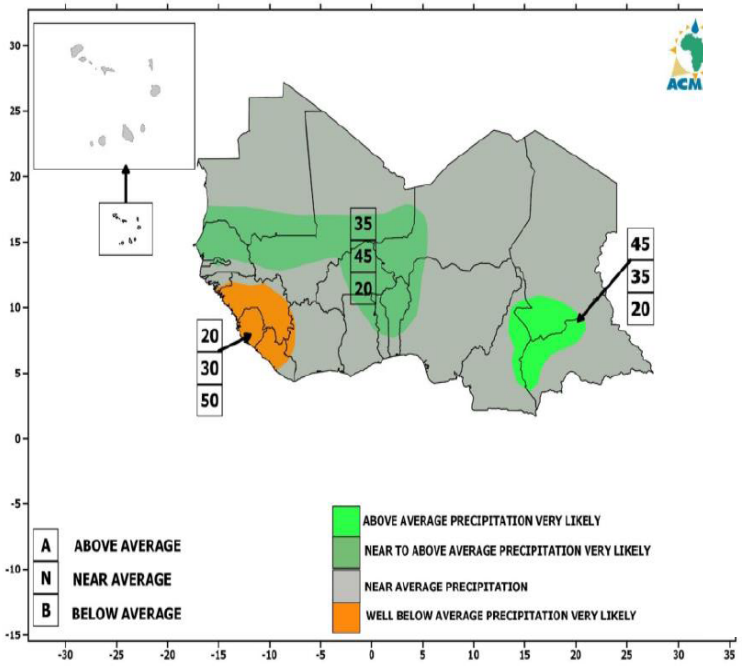
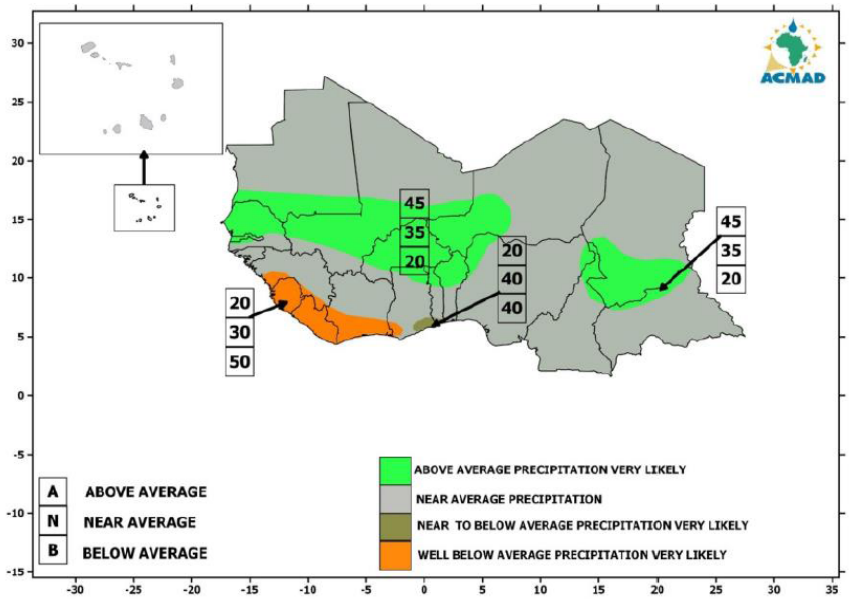
PRESASS BACKGROUND (2/4)

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



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



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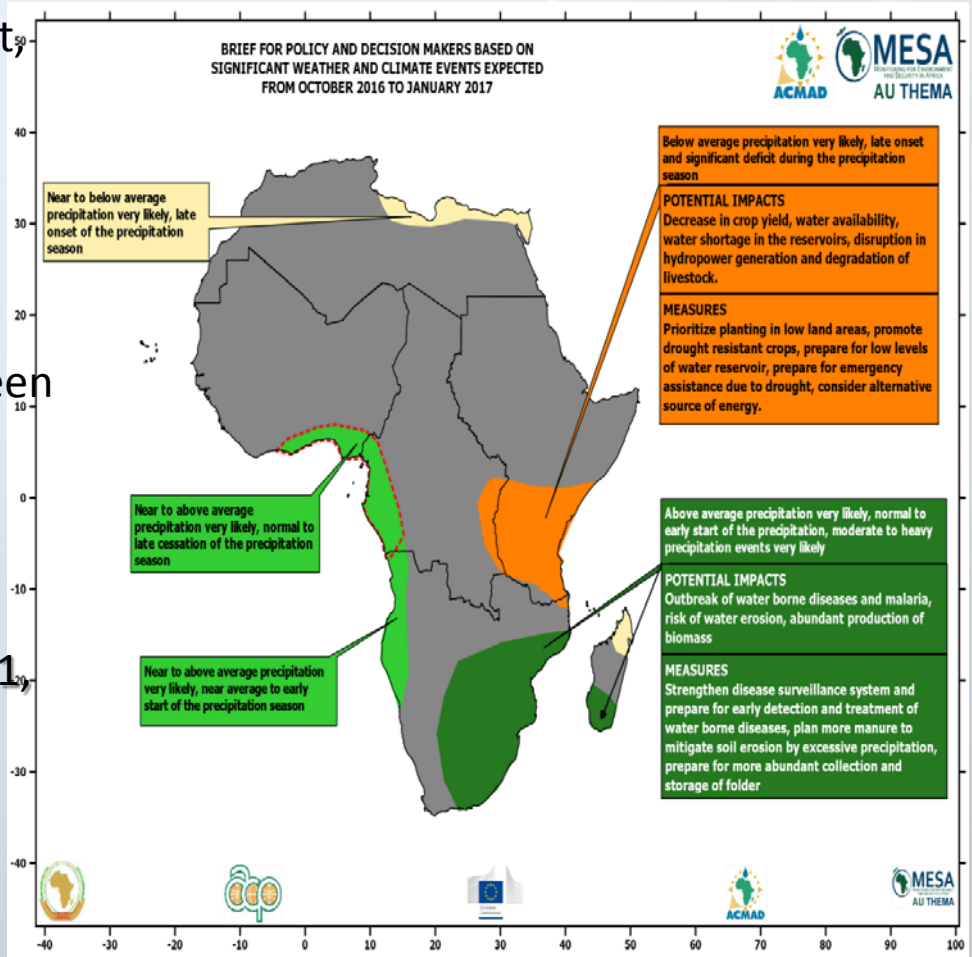
DROUGHT SERVICE AND CONTINENTAL SEASONAL CLIMATE FORECASTS SERVICE/ EXAMPLE WITH DROUGHT OUTLOOK RELATED TO RECENT EASTERN AFRICA DROUGHT(OND 2016) – USING THESE PRODUCTS IN THE OFFICIAL DROUGHT DISASTER DECLARATION IS STILL A MAJOR CHALLENGE

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

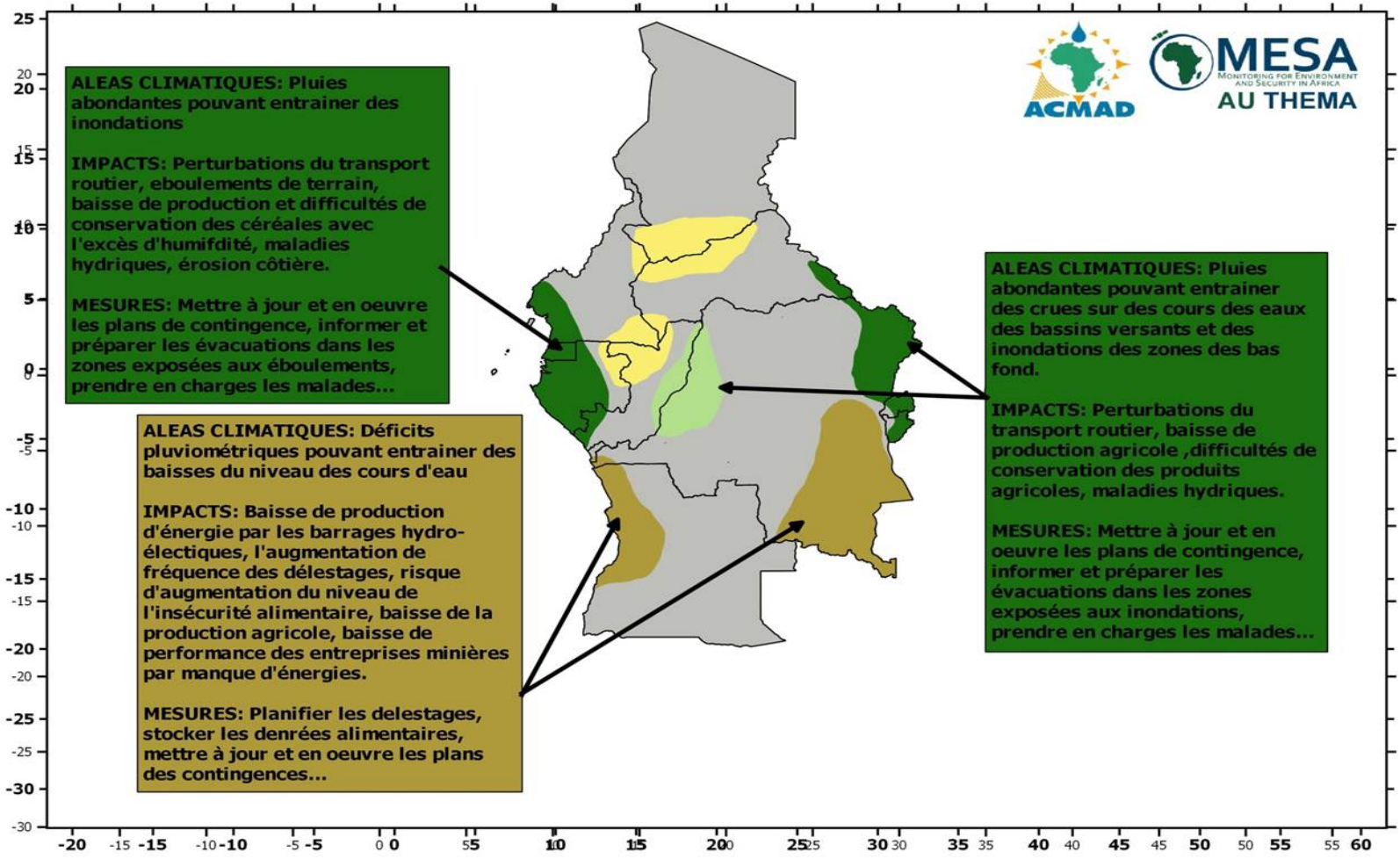
-Other countries in the region have also been hit by the drought
In Somalia, nearly half the population is suffering from food shortages

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



BACKGROUND (3/4)

RESUME DE LA PREVISION SAISONNIERE DES PRECIPITATIONS EN AFRIQUE CENTRALE POUR LES POLITIQUES ET DECIDEURS PERIODE DE SEPTEMBRE-DECEMBRE 2017 ELABOREE LE 25 AOUT 2017



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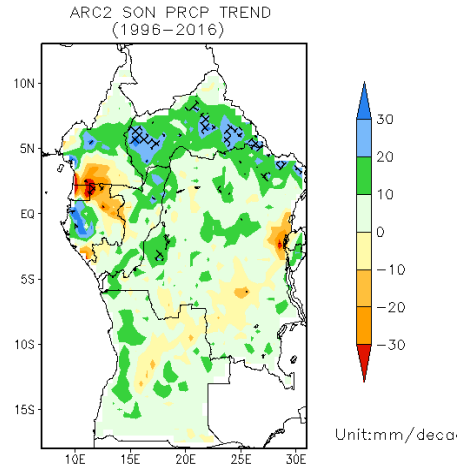
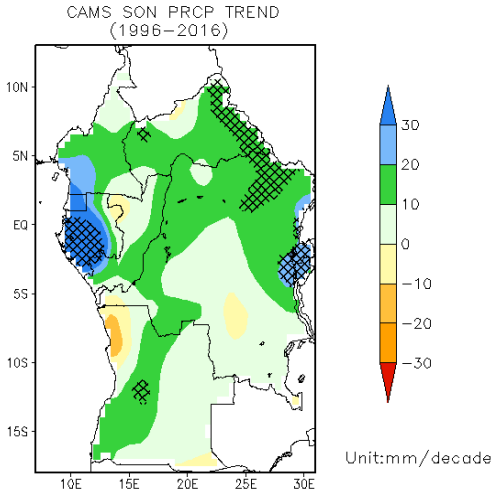
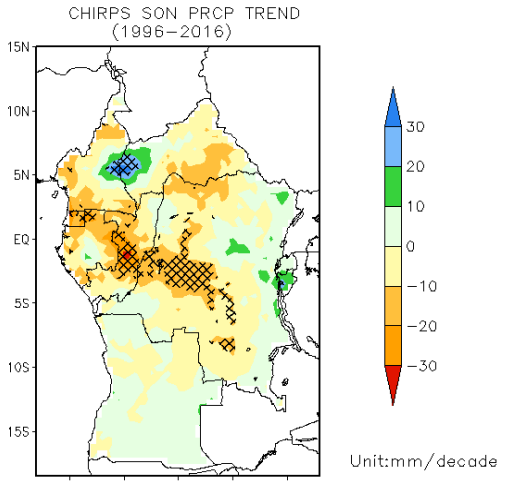
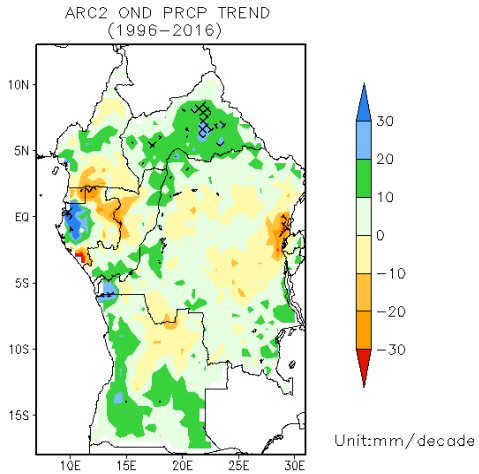
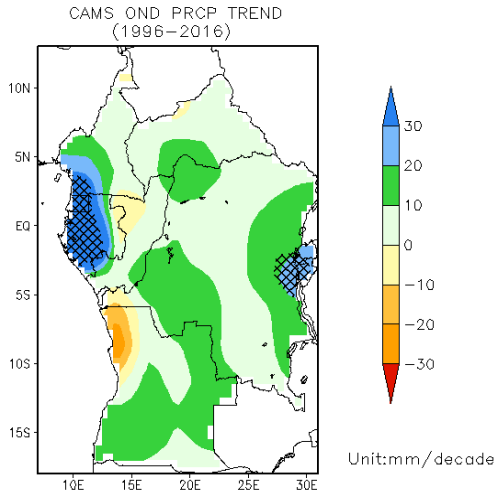
SAMPLING UNCERTAINTIES IN PRECIPITATION TREND FOR SON AND OND OVER CENTRAL AFRICA GENERATED WITH ARC2 , CAMPS_OPI AND CHIRPS DATASET REFEREENCE PERIOD: 1996-2016

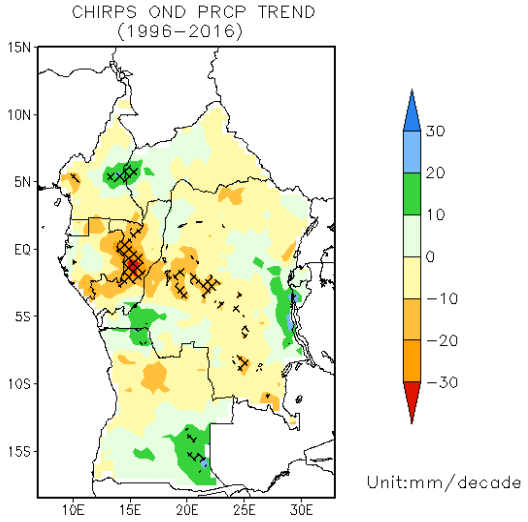












http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.FEWS/.Africa/.DAILY/.ARC2/.monthly/.est_prcp/?Set-Language=en

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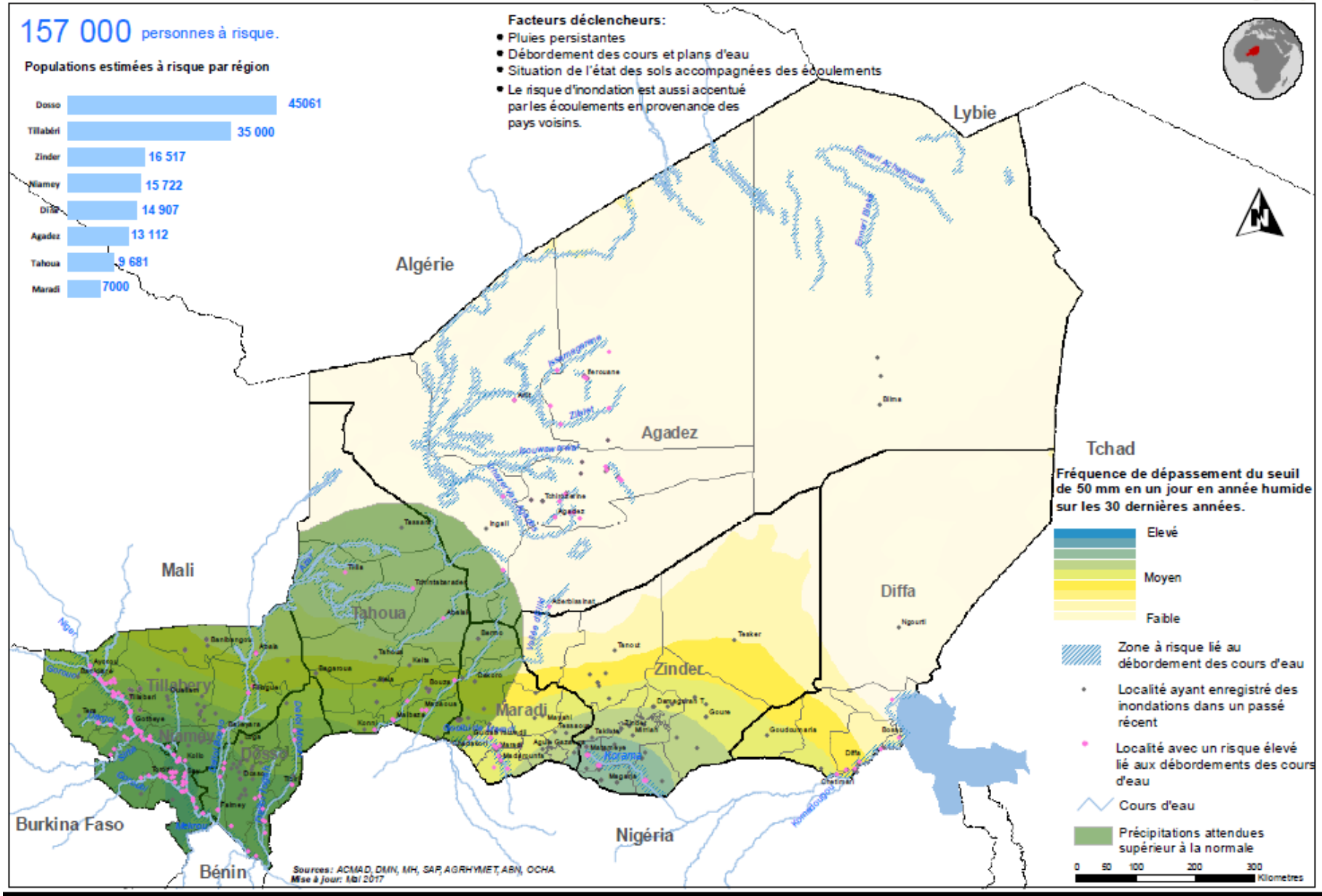
http://iridl.ldeo.columbia.edu/SOURCES/.NOAA/.NCEP/.CPC/.CAMS_OPI/.v0208/.mean/.prcp

http://iridl.ldeo.columbia.edu/SOURCES/.UCSB/.CHIRPS/.v2p0/.monthly/.global/.precipitation/

Niger: Zones potentiellement inondables (plan de contingence 2017)



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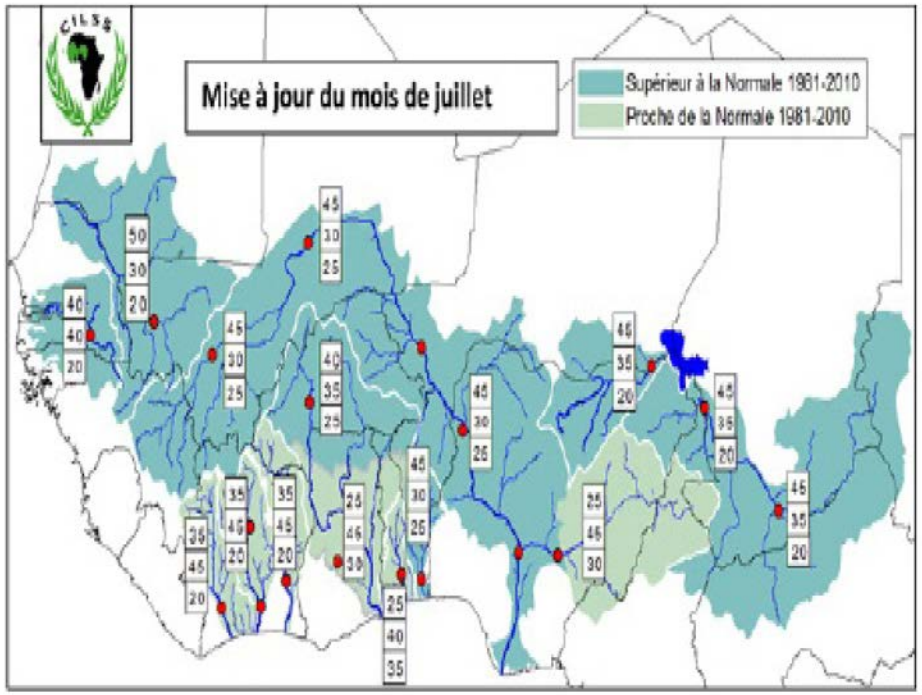
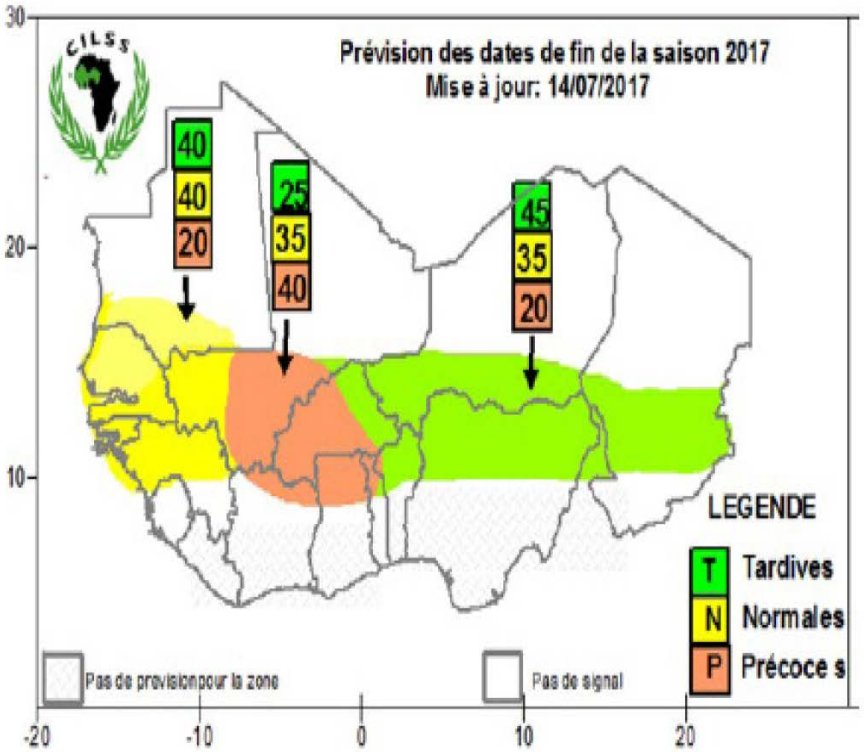
BACKGROUND (3/3)





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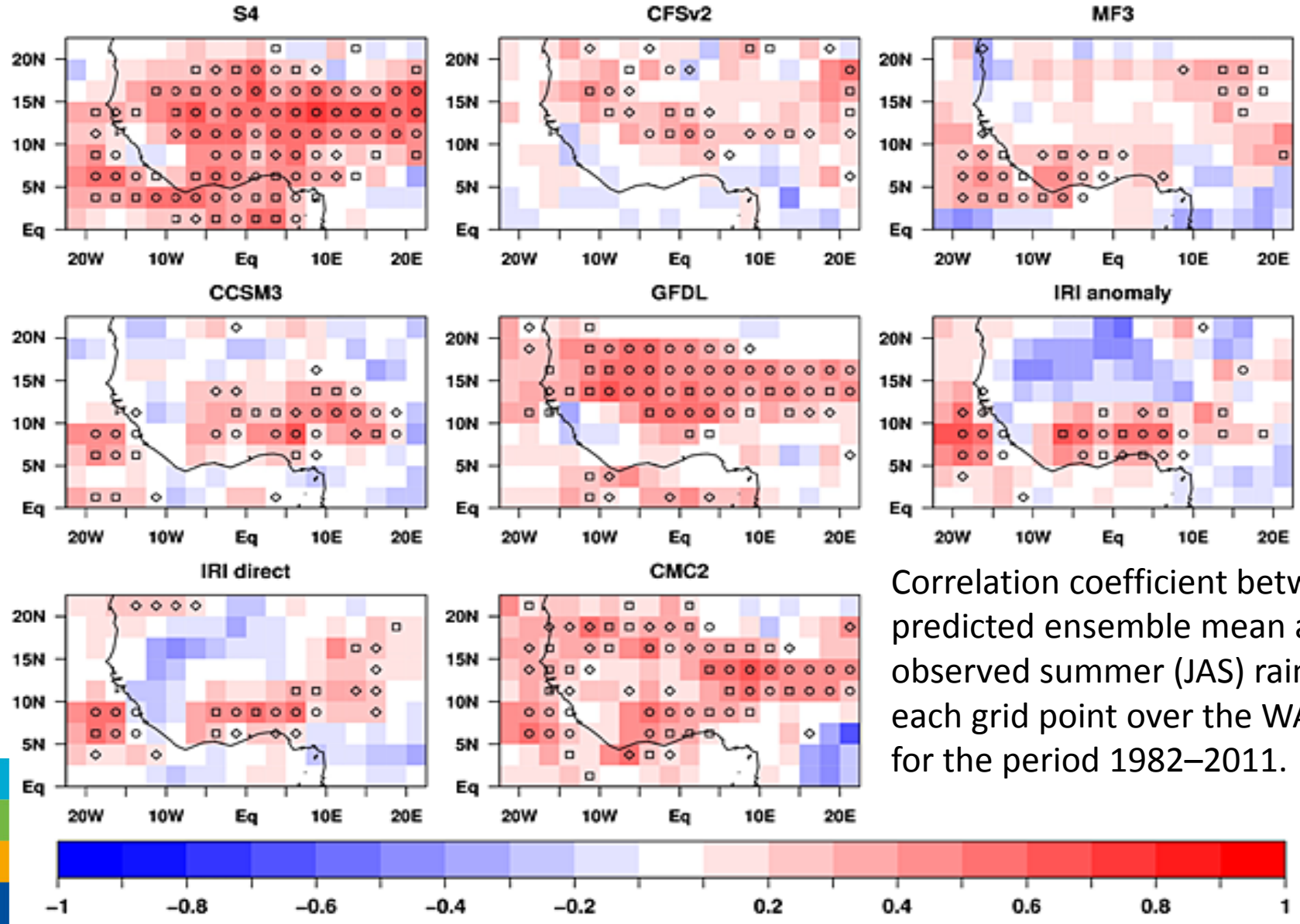
Seasonal forecast quality of the West African monsoon rainfall regimes by multiple forecast systems



Correlation coefficient between the predicted ensemble mean and observed summer (JAS) rainfall at each grid point over the WAM region for the period 1982–2011.

Journal of Geophysical Research: Atmospheres
Volume 119, Issue 13, pages 7908-7930, 7 JUL 2014 DOI: 10.1002/2013JD021316
http://onlinelibrary.wiley.com/doi/10.1002/2013JD021316/full#jgrd51446-fig-0001

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PRESASS&PRESAC&PRESAGG METHODS (1/2)

- *Understand past and present climate variability and trends " **Past and current behavior is required to better predict future behavior is a well-known maxim**"*
- Current patterns persistence analysis
- Analog years Analysis based on ENSO and Regional SST current behavior
- *Composite Analysis (wet and dry years and related SST pattern Analysis)*
- *Cumulative daily precipitation Analysis (climatology,, wet&dry years, Analog years),*
- *Statistical seasonal forecasting (LR,CCA,…)*
- *Single Model dynamical Ensemble forecasting*
- *Multimodel dynamical Ensemble forecasting*
- *Objective/subjective combination of results from application of outputs from tools related to methods above*

PRESASS&PRESAC&PRESAGG process (1/2)

- ✓ 1- Analysis of climate variability and trends for the target seasons
- ✓ 2- Selection of wet (seasonal precipitation total >= 125%of average) and dry years (seasonal precipitation total <= 75% of average) from your country's station time series
- ✓ 3- Global SST Composite analysis for wet and dry years
- ✓ 4- Analysis of cumulative daily station precipitation for dry years and wet years at each station or region in the country (with Microsoft excel)
- ✓ 5- Generation and analysis of Statistical forecasts with Climate Predictability Tools (CPT, GEOCOF..)
- ✓ 6- Identification of analog years based on SST behavior (in the ENSO, tropical Atlantic and Indian Ocean regions) and analysis of related precipitation and temperatures patterns
- ✓ 7- Analysis of each Global Producing Centre's for Long Range Forecasts products (Single model ensemble approach)
- ✓ 8 Analysis of WMO Lead Centre for Long Range Forecasts multimodel

  Products (Multimodel ensemble approach)
- ✓ 9- Combination of outputs from step 1 to step 8 and generation of the consensus for regions and the countries.

CAPACITY DEVELOPMENT ACTIVITIES

TRAINING ACTIVITIES ASSOCIATED WITH THE RCOF

*-**frequency:** Once a year prior to the forum **for 3 days** , hands on for NMHS experts visiting ACMAD **for 3 to 6 months**, **training workshops for 5 days** usually irregular based on projects budgets*

*- **main themes:** **Seasonal forecasts** :A climate service for DRM and SD, **International workshop** on climate services. **Continental training of trainers** on climate services with Policy dialogue day, **Regional training** on climate services with Policy dialogue day*

*- **Gaps in capacity addressed**:*

- ❑ *understanding global and regional climate variability and related drivers;*
- ❑ *advanced statistical methods and tools used in seasonal forecasting;*
- ❑ *interpretation of statistical/dynamical forecasts products,*
- ❑ *evaluation and verification of forecasts products;*
- ❑ *regional climate patterns and their predictability,*
- ❑ *basic prerequisite for a trainee in advanced sub-seasonal to seasonal forecasting tools/systems*
- ❑ *- High turn over and instability of trained seasonal forecasters*

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USER INVOLVEMENT

Main regional users involved in the RCOF: OCHA, ECOWAS Humanitarian Office, ISDR, IFRC, NGOs, African Working Group on DRR and related platform

Sector focused sessions with: Regional DRR platforms, Farmers and Pastoralists associations/federations

Sector sorganized meetings: Regional committee for disaster management in West Africa

Users sessions are used to collect feedbacks on the use of last forecasts , tailoring forecasts, preparing potential impacts and measures for preparation and early action

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SWOT ANALYSIS

Strengths: *Value of Seasonal forecasts for Red Cross relief activities and UNICEF malaria prevention programmes is demonstrated, Seasonal forecasts recognized as essential for contingency plans update*

Weaknesses: *High turn over of experts, limited capacity for quick absorption of advances in science&technology and expand RCOF product portfolio,*

Opportunities: Advances in science (e.g processes and phenomena, predictability…), technology (e.g high speed internet, access to data and processing power remotely, …) , emergence of open platforms for data, products exchange

Threats: *High level of competencies required to operate sub-seasonal to seasonal forecasting, involvement of the private sector when the activity lacks standards operating procedures, weak organizational structure for seamless forecasting at NMHSs and RCCs is a threat to effective expansion of RCOF products portfolio (weekly to decadal and climate scenarios)*

WAY FORWARD

***-Operations** : expand current seasonal forecasting procedure to sub-seasonal forecasts and climate change scenarios for impact assessment and resilienc policies&plans, train NMHSs and RCC experts on forecast and scenarios provision, Tailor forecasts to specific sectors in need considering practitioners, policy and decisions makers; **Technical notes** for forecasts discussions, **bulletins or reports** for practitioners, **synthesis or statements** for policy and decision making systematically provided as elements of a climate services showing RCOF contribution to GFCS*

- ***User engagement:*** attend more user fora, set up help Desk or clearing house to build confidence and trust;

- ***Sustainability:*** AUC and RECs recognizes RCOFs mostly funded by AfDB, EDF, AFD, WMO. Valuation of climate forecasts in GFCS sectors is essential for sustainability. With a clearing house in place, stakeholders will share benefits therefore sustaining climate services provision .

- ***Research:*** New predictors , optimal combination of forecasts outputs, automatic forecasting procedures, predictability of regional patterns, improve understanding and representation on regional climate processes and phenomena, more observation of the Atlantic, Indian oceans and Mediterranean sea

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TEMPS CLIMAT EAU

Thank you
Merci

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