OPERATIONAL PRACTICES FOR LONG RANGE FORECASTING AT RCC- AFRICA

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Niamey-Niger

First WMO Workshop on operational prediction, 09-11 November 2015
Pune, India

OUTLINE

1) Analysis of Climate Variability, Predictability and Trends

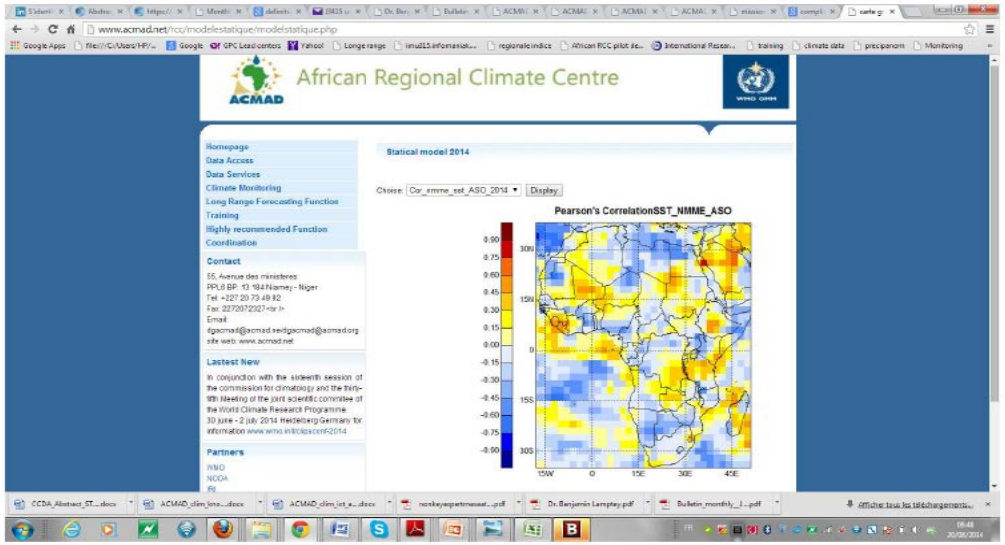
2) Composite, Persistence and Analog

3) Statistical models

4) Dynamical Single Model Ensemble

5) Dynamical Multimodel Ensemble

6) Consensus discussion



STEPS OF THE PROCEDURE

1. Analysis of Climate variability, Predictability and trends
2. Current Climate monitoring
3. Analysis of wet and dry years from historical records
4. Analog/similar years analysis
5. Cumulative precipitation time series analysis
6. Statistical Models
7. Single Models Ensemble
8. Multimodel Ensemble
9. Combination of outputs from steps 1 to 8

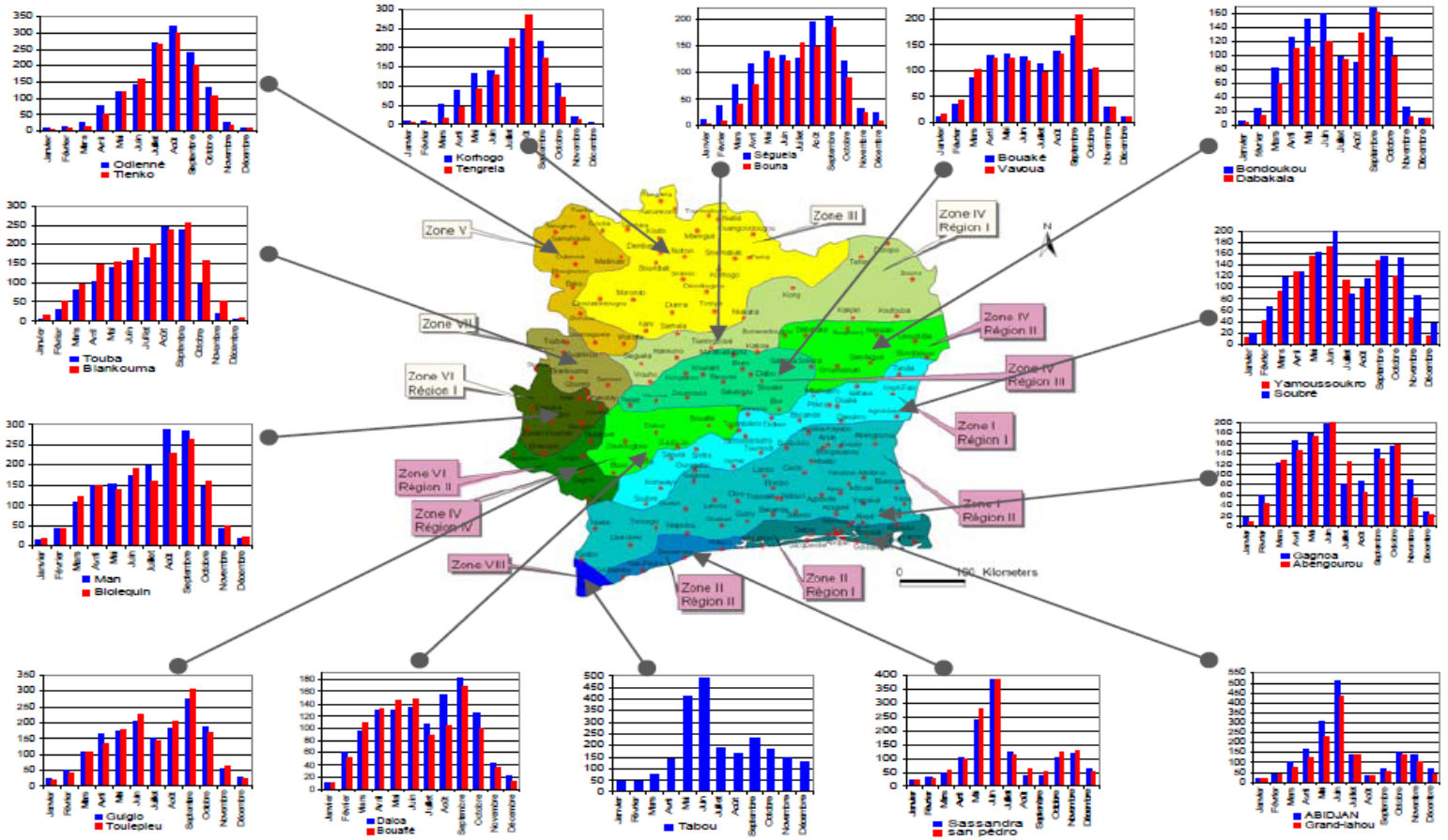
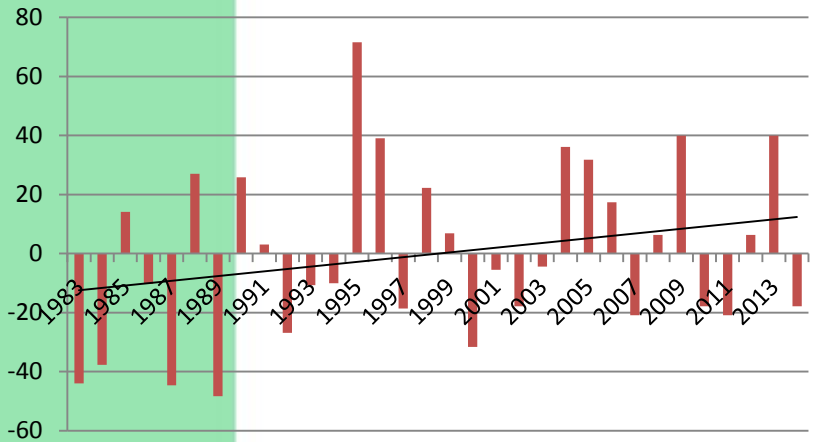


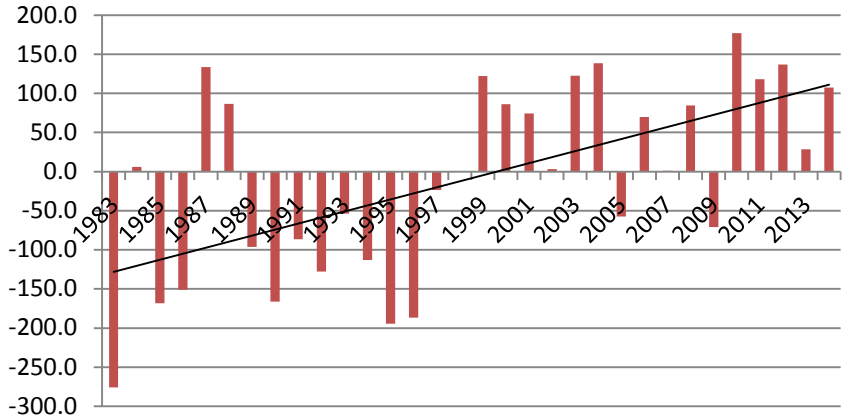
Figure 5: Zoning of rainfall and mean rainfall (1971-2000)

I Analysis of climate variability and trends for Oct-Nov-Dec
Select wet and dry years
WESTERN AFRICA

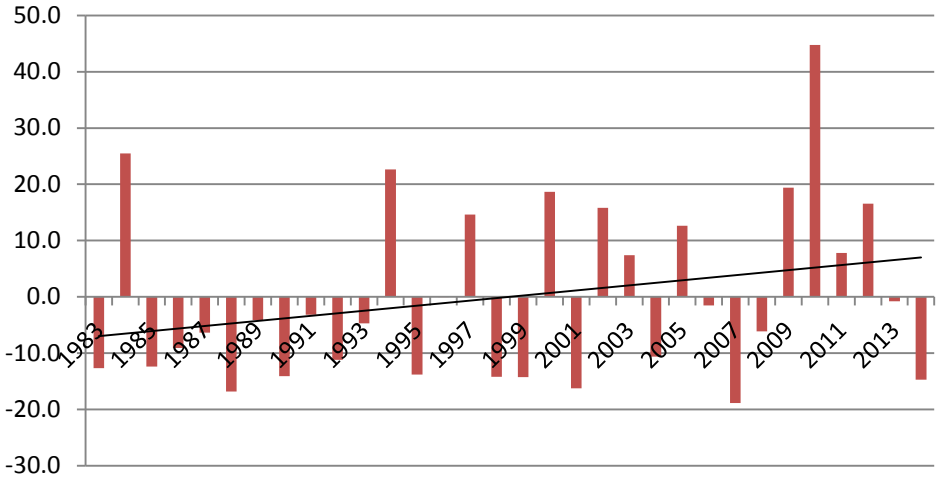
BAMAKO Long: 8°00 Lat: 12°38



LAGOS Long: 3°22 Lat: 6°31



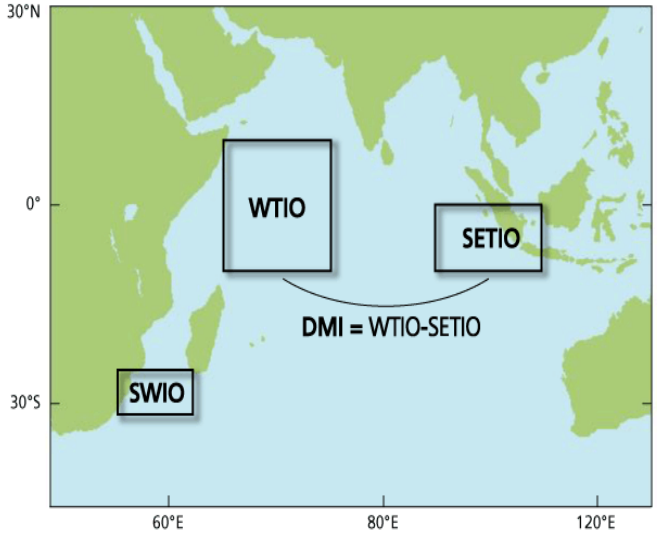
NIAMEY Long: 2° 07 Lat: 13° 30

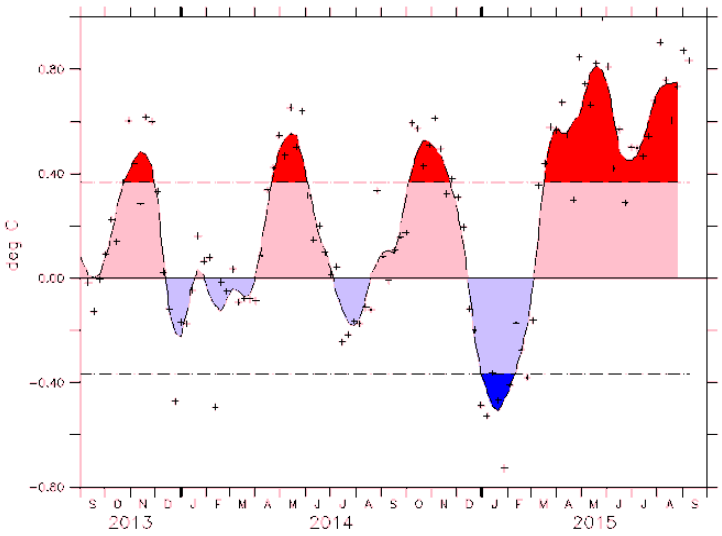


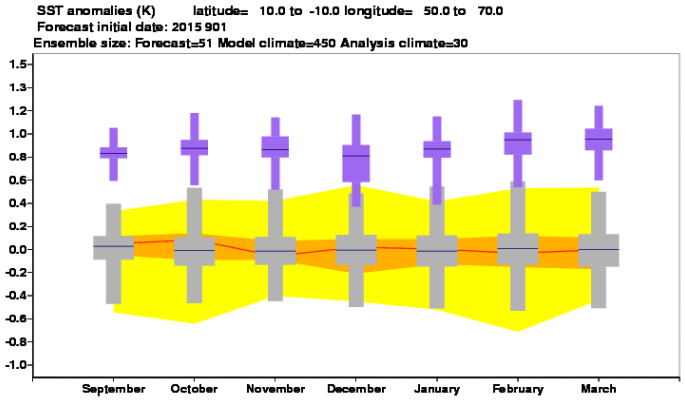
CLIMATE VARIABILITY

Indian Basin

Western Trop Indian



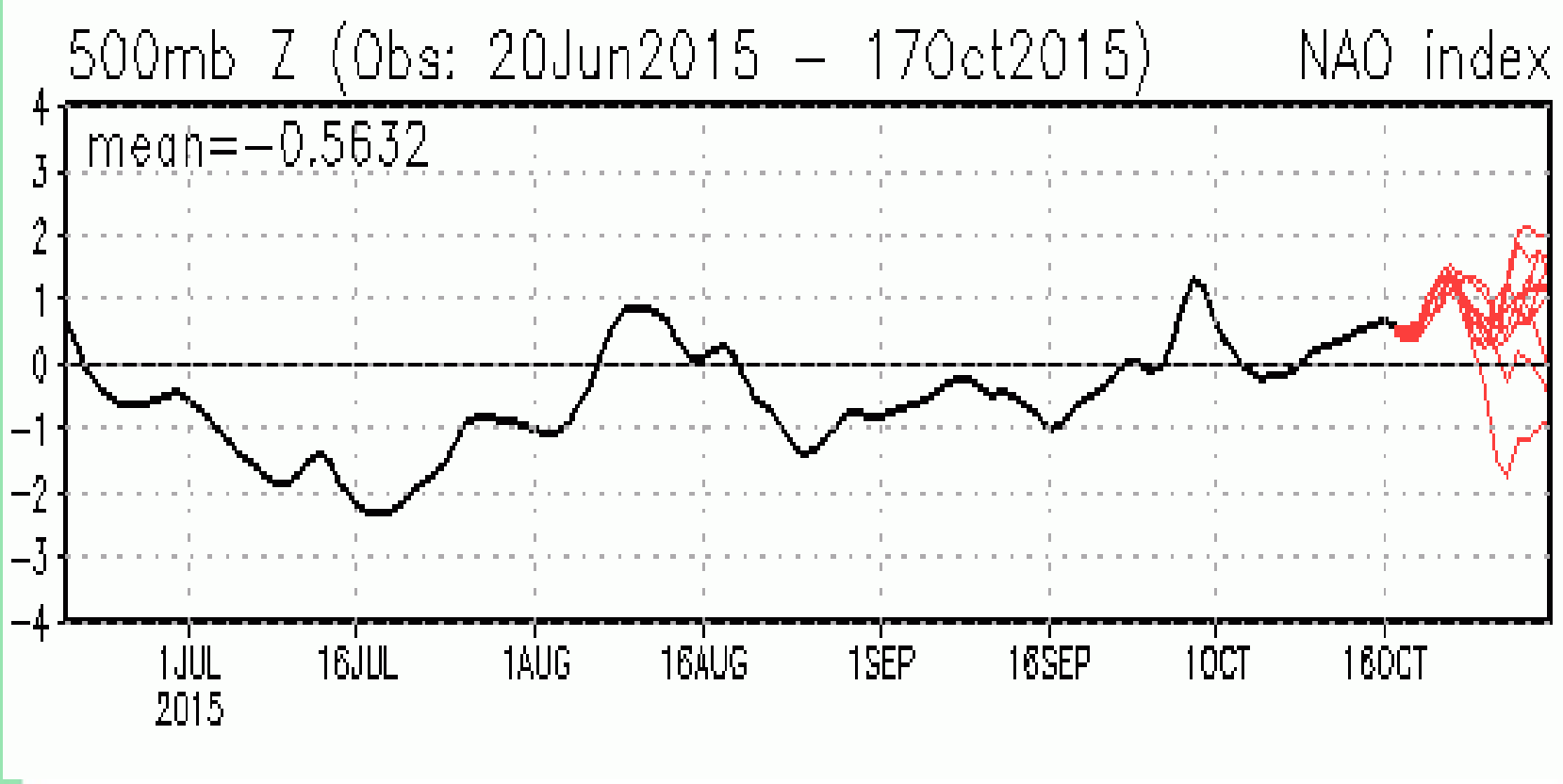




http://ioc-goos-oopc.org/state_of_the_ocean/sur/ind/wtio.php

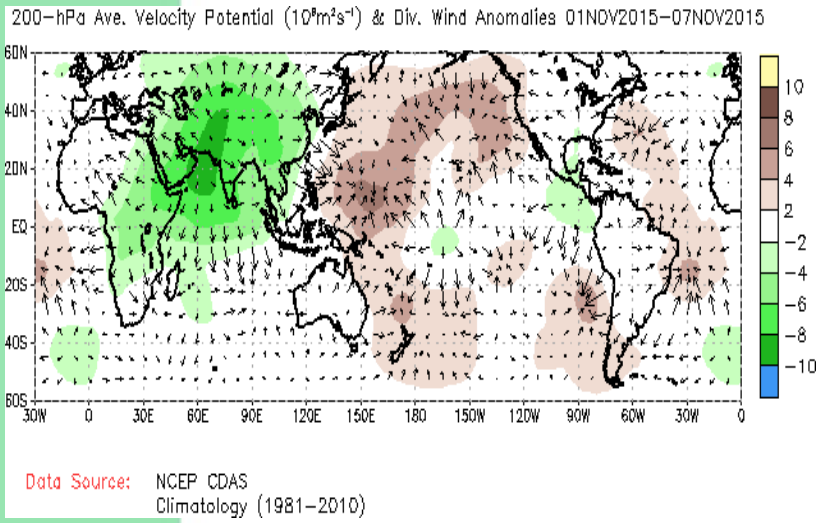
http://old.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/seasonal_range_forecast/groupp/Climagrams_sst!Sea%20Surface%20Temperature!Western%20Trop%20Indian!201508!/

NAO timeseries

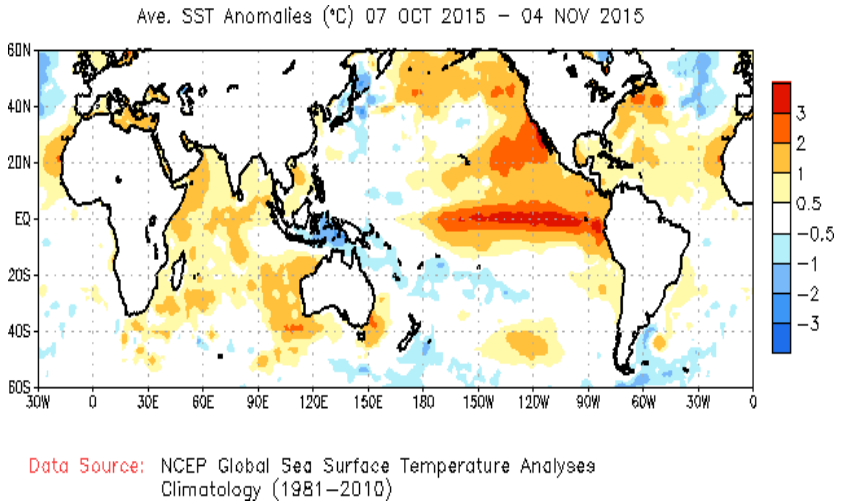


Climate monitoring (current and past 3 to 6 months)

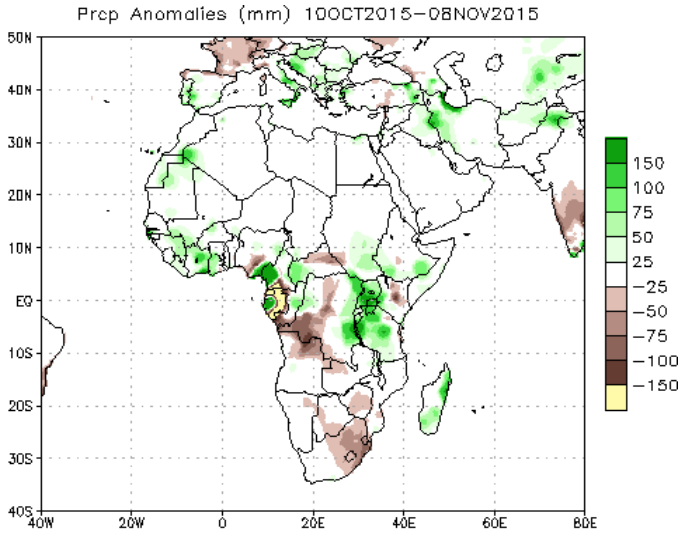
SST, Precip, Velocity potential , Oscillations …



Data Source: NCEP CDAS
Climatology (1981-2010)



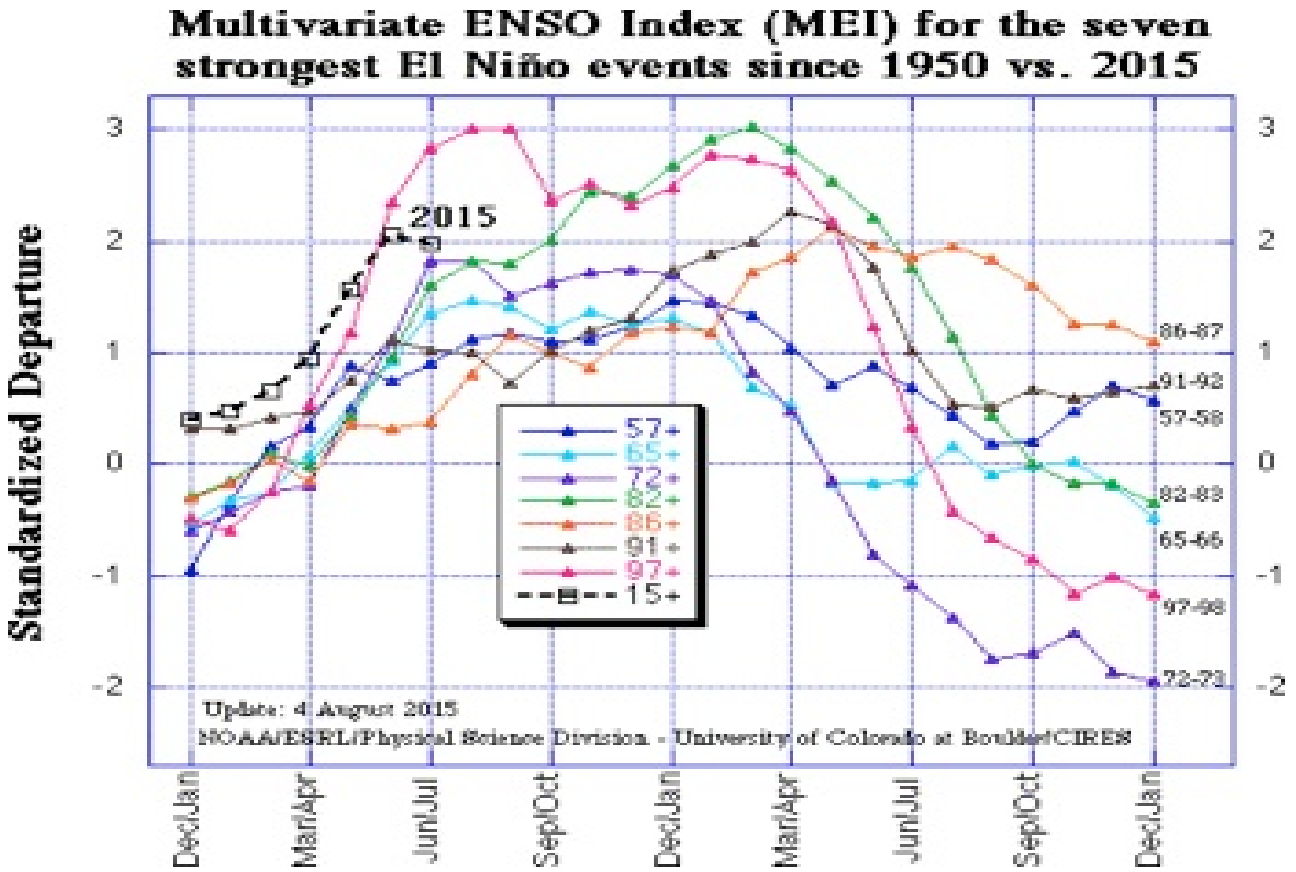
Data Source: NCEP Global Sea Surface Temperature Analyses
Climatology (1981-2010)



Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis
Climatology (1981-2010)

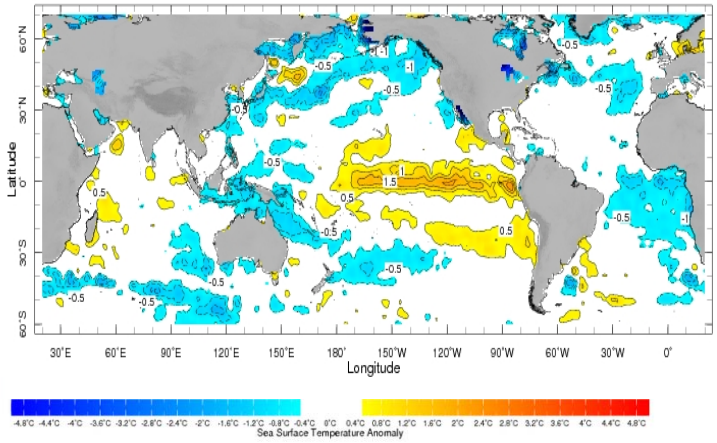
Select locations for cummulative precipitation timeseries analysis

II. IDENTIFICATION OF ANALOG YEARS

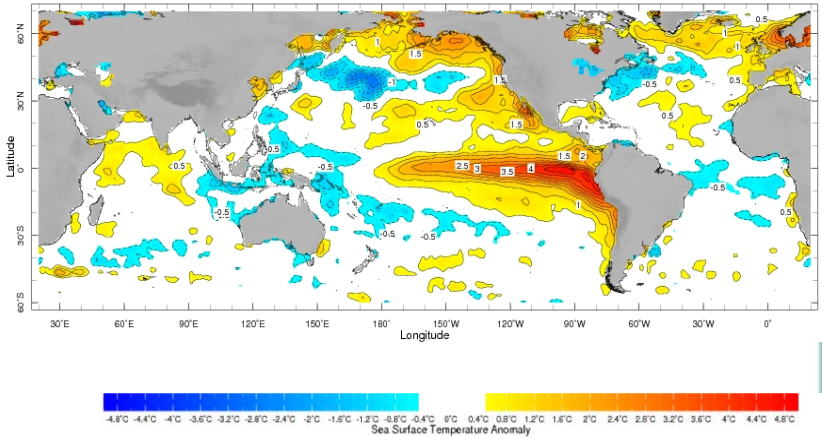


Analog years dectetion based on SST patterns analysis

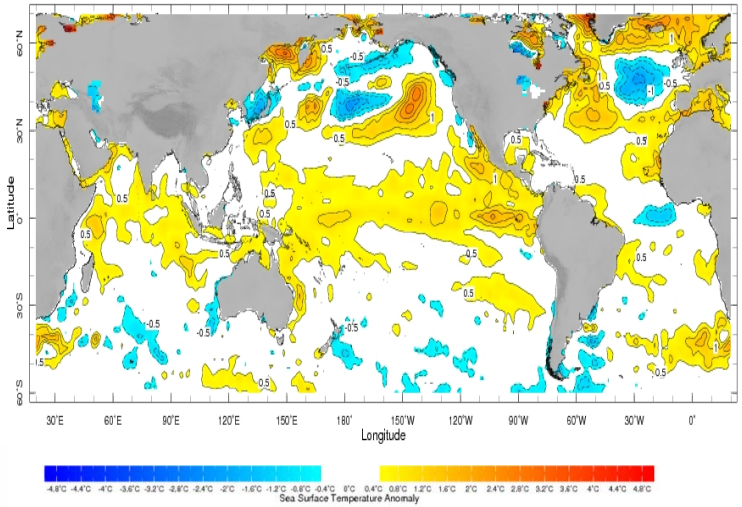
Aug 1982



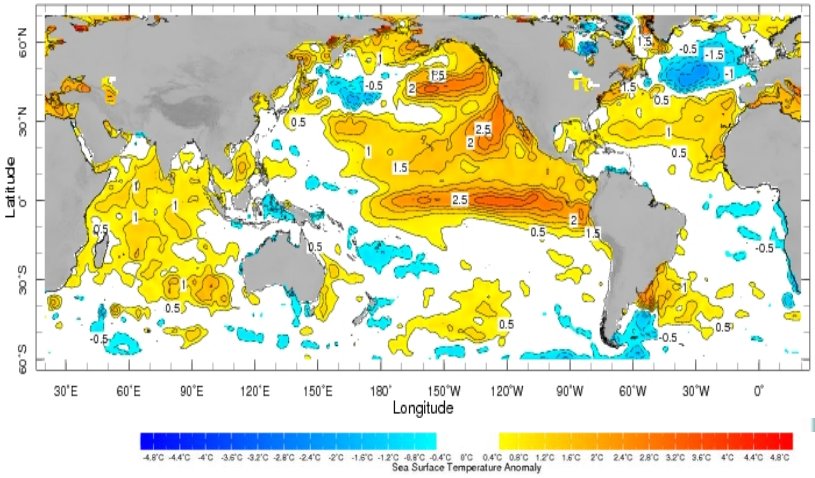
Aug 1997



Aug 2009

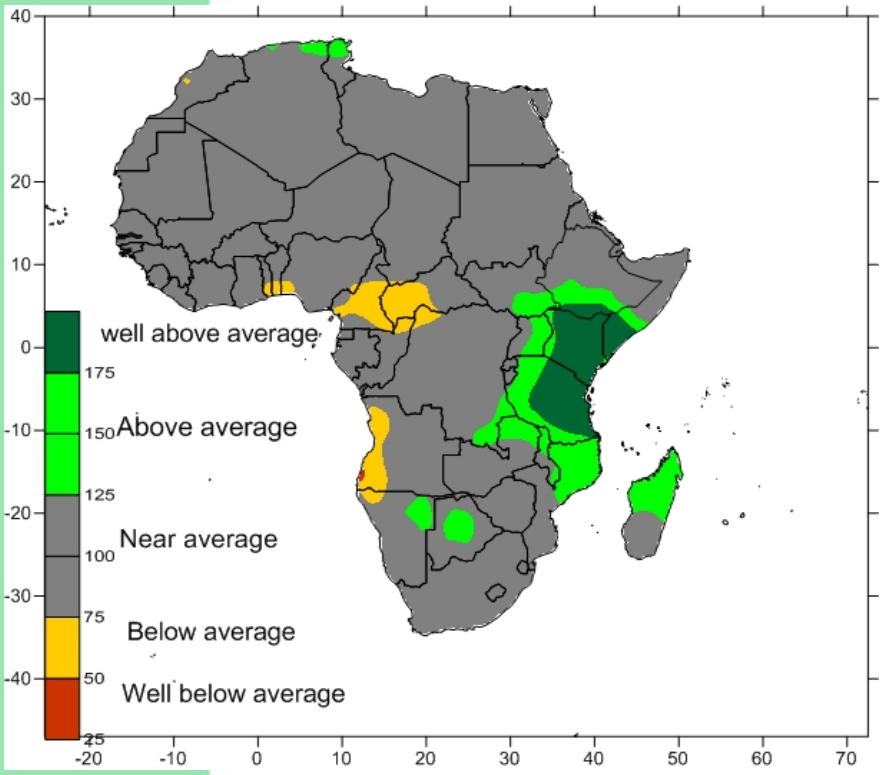


Aug 2015

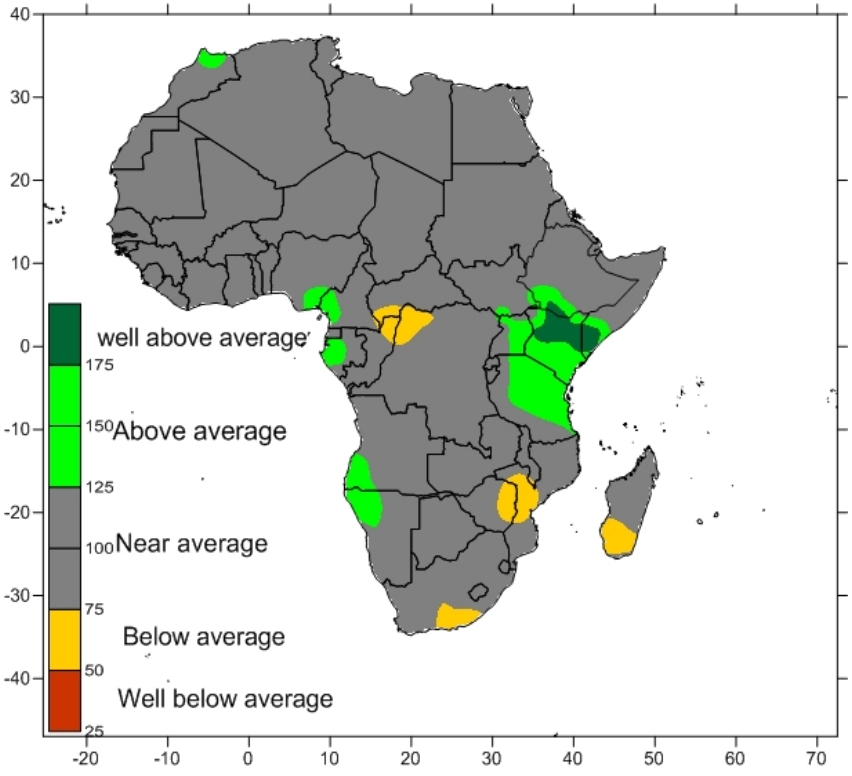


IPRECIPITATION COMPOSITE ANALYSIS OND AND NDJ

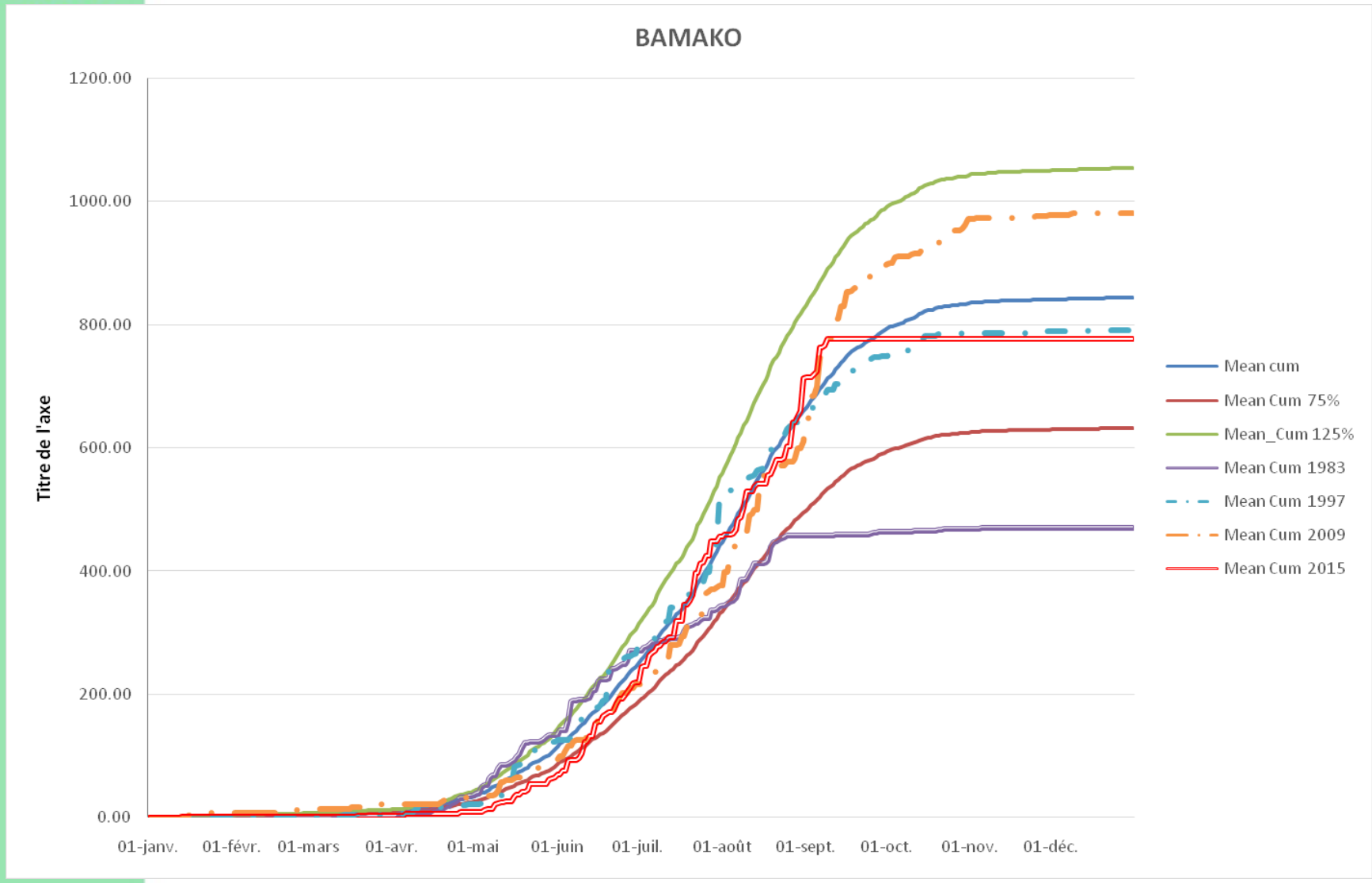
Composite OND (El Nino years)
1982-1997-2009



Composite NDJ (El Nino years)
1982, 1997, 2009

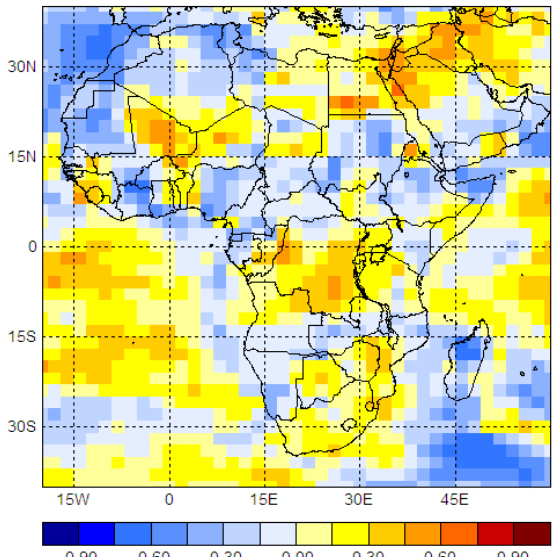


Cumulative Precipitation time series Analysis

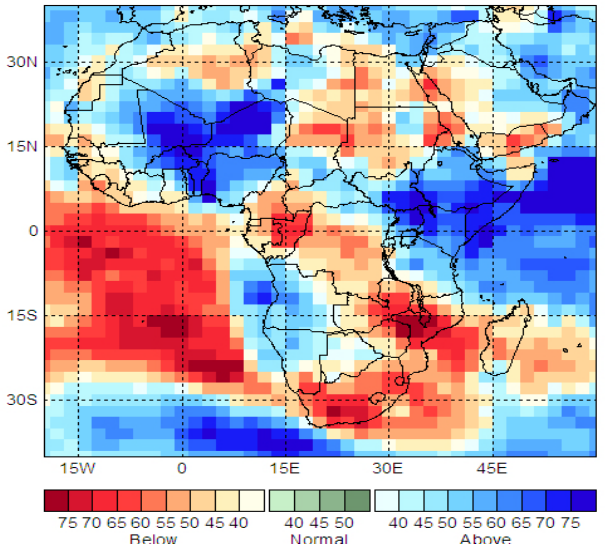


Statistical Models products
Skill and forecast run by NMME valid from October to December 2015

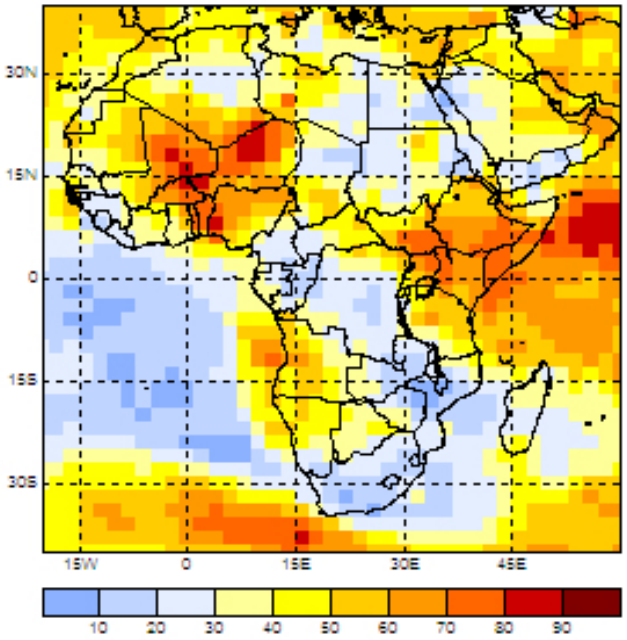
Correlation_sst_NMME_Sep_icOND2015



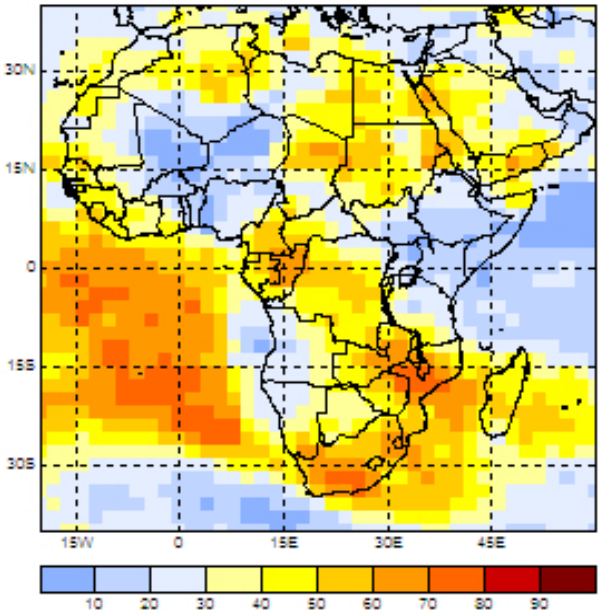
Probabilistic forecasts_sstnmme_sep_ic_OND2015



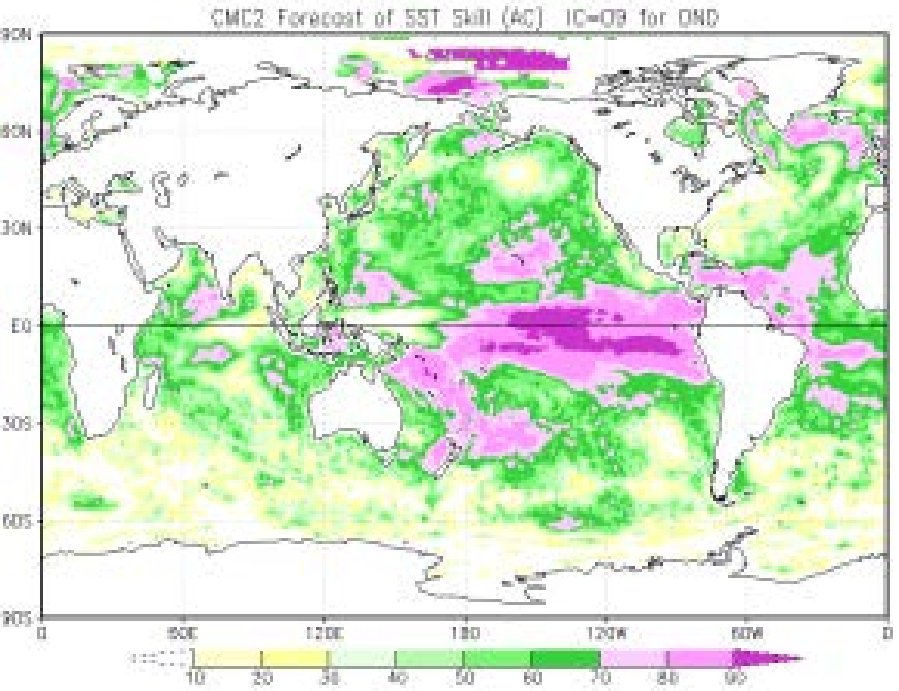
Above_sst_nmme_sep_icOND2015

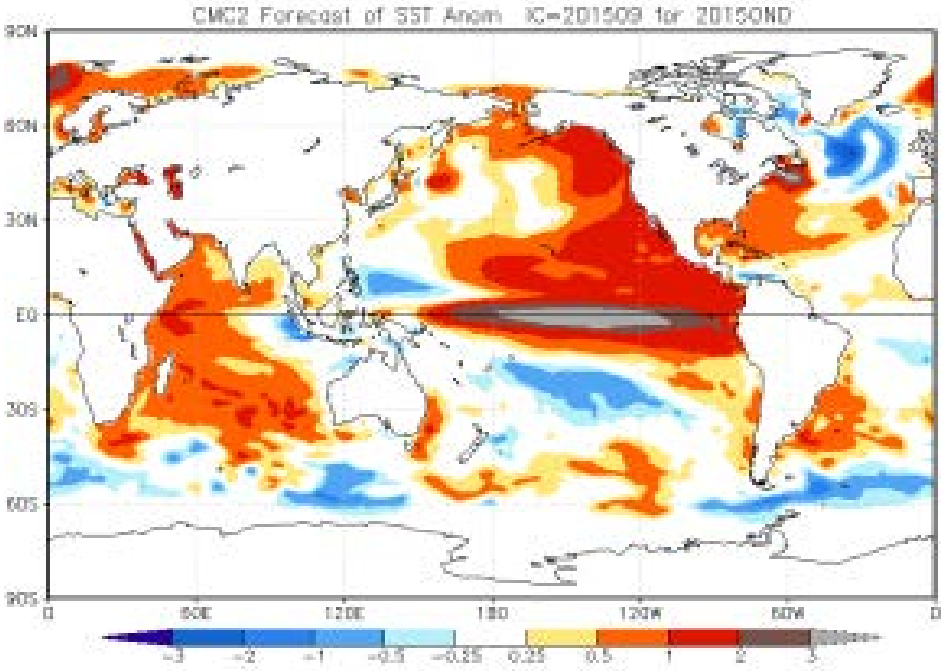


Below_sst_nmme_sep_ic_OND2015



Single Model Dynamical ensemble product CMC 2



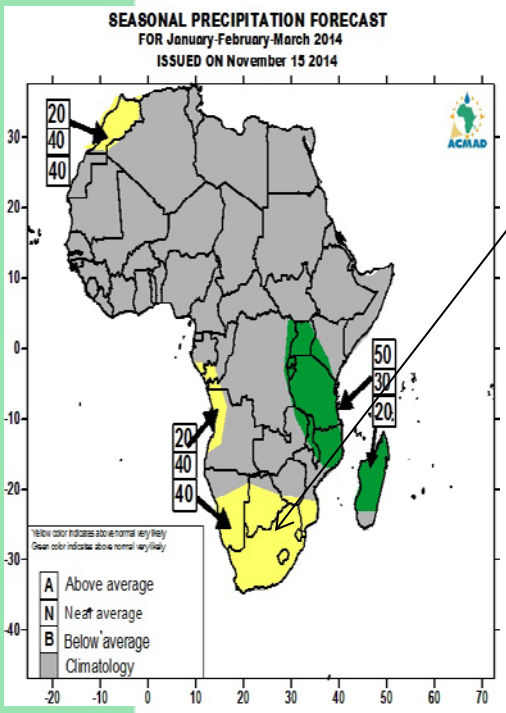


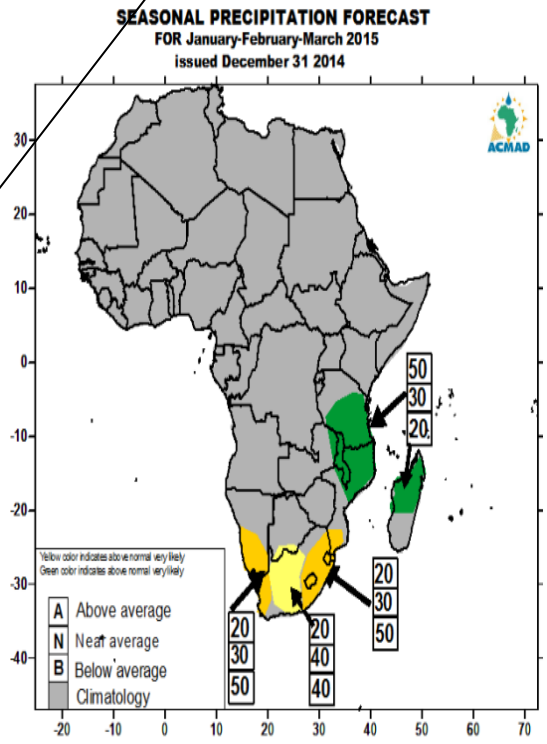
http://www.cpc.ncep.noaa.gov/products/NMME/current/images/CMC2_ensemble_tmpsfc_season1.png

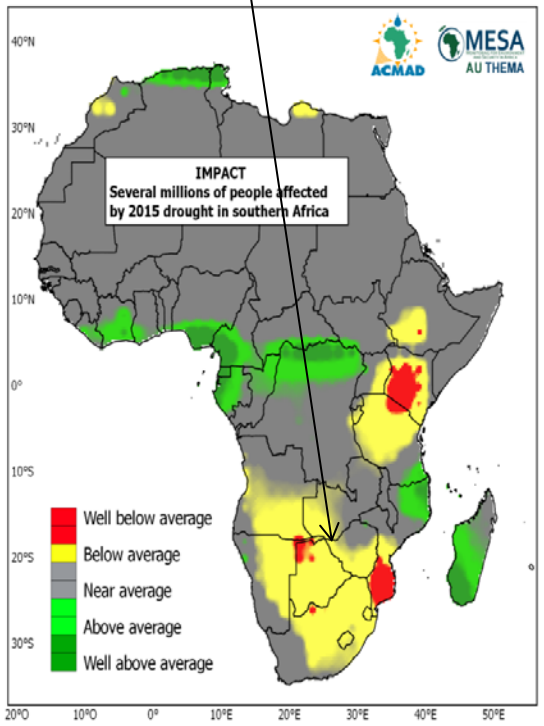
CLIMATE PRODUCTS GENERATION

JAN-MARCH 2015 FORECASTS AND OBSERVATIONS SITUATION IN SOUTHERN AFRICA

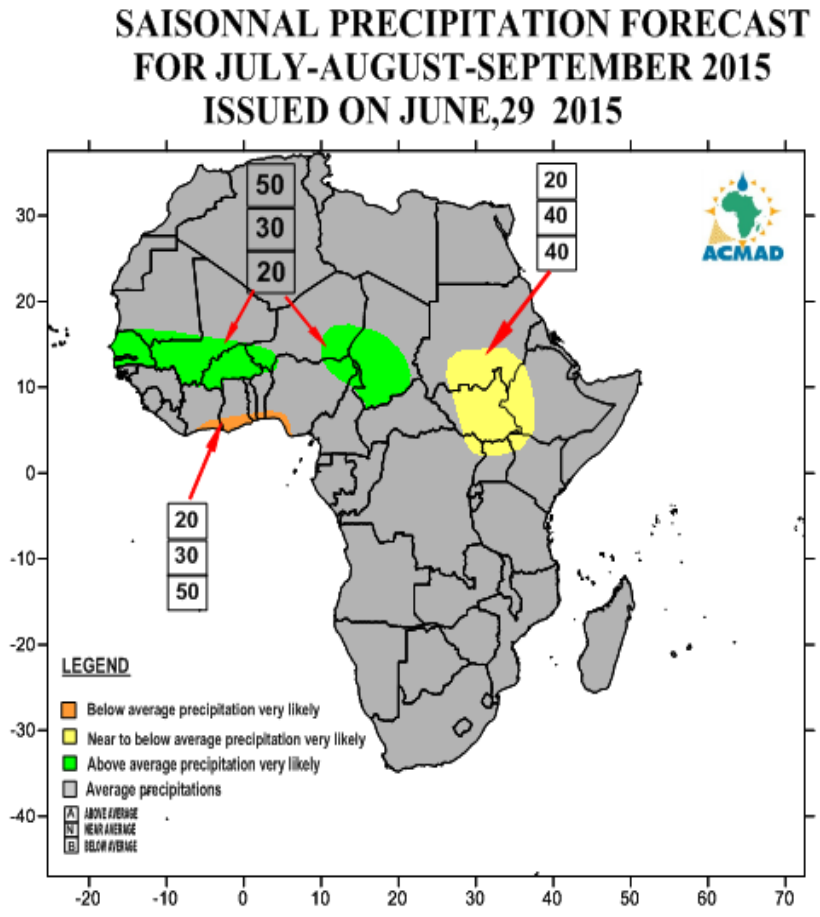
Communication ???

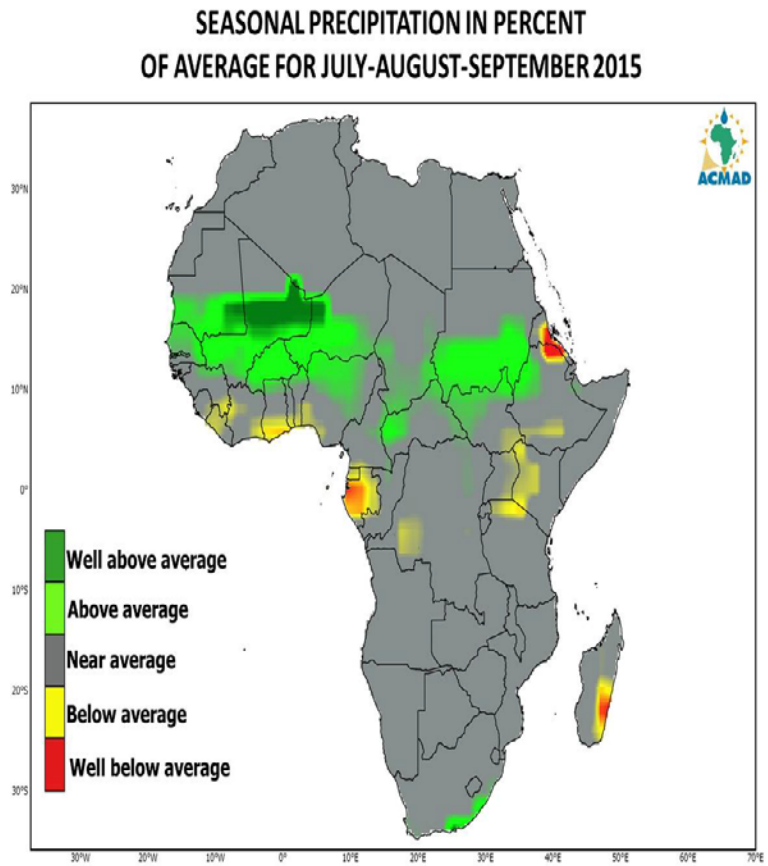




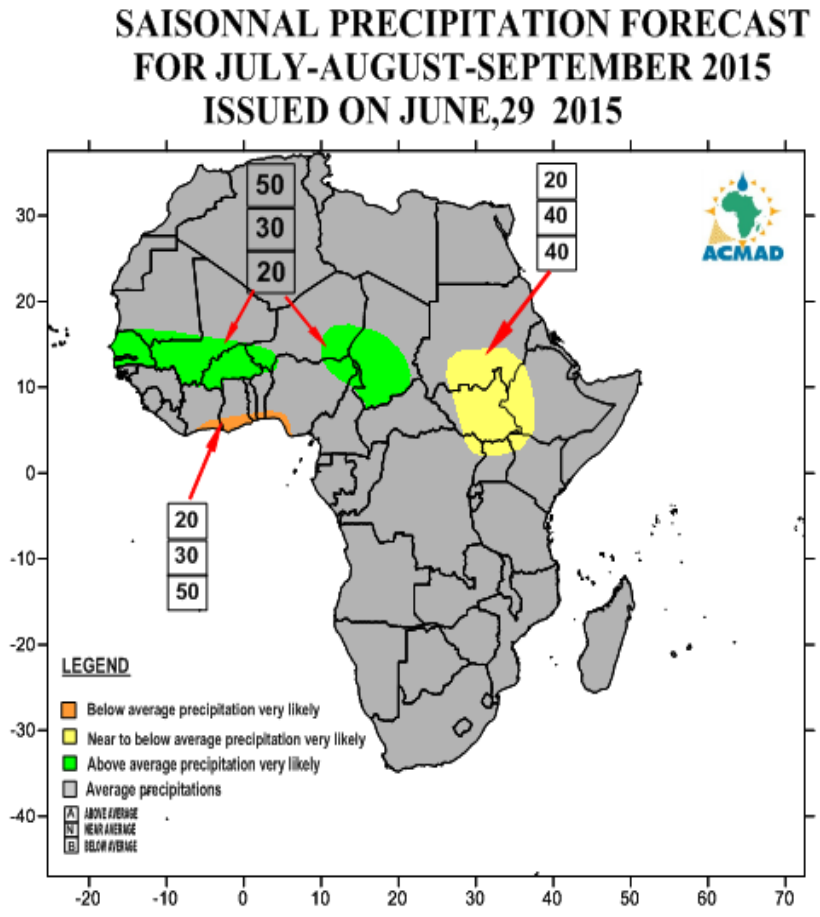


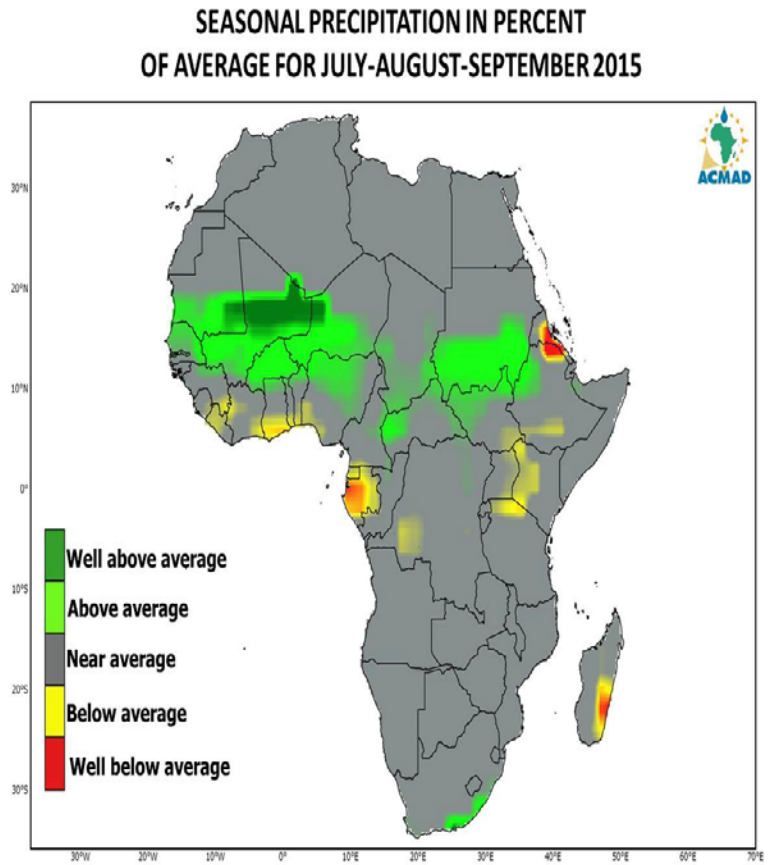
SEASONAL FORECASTS IN 2015





Climate Products and Communication



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El Niño could bring drought ...
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El Niño could bring drought and famine in west Africa, scientists warn
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10:00
03/11/2015

CLIMATE INFORMATION AND POLICY MAKERS

My Minister is not a generator, haagaye magetsi says Mugabe
by Zaniest Zimbabwean · 2015/10/01

The severe electricity problems currently rocking ZImbabwe have nothing to do with Energy Minister, Dr Samuel Undenge says President Mugabe. According to the President, **the power outages are a result of low water levels at Lake Kariba** and Government is working on a robust system premised on harnessing solar energy to avert power shortages, President Mugabe said yesterday.

Addressing supporters and Government officials gathered at the Harare International Airport to welcome him from the from the US yesterday, **President Mugabe said Energy and Power Development Minister Samuel Undenge did not generate electricity, hence it was wrong to blame him for the power blackouts.**

Dr Undenge came under a barrage of attacks ostensibly for failing to address the power situation in the country.
People, the President said, should desist from the habit of trying to score cheap political points through blame games.

Functional needs of the Energy Sector in Africa: Story of Zimbabwe

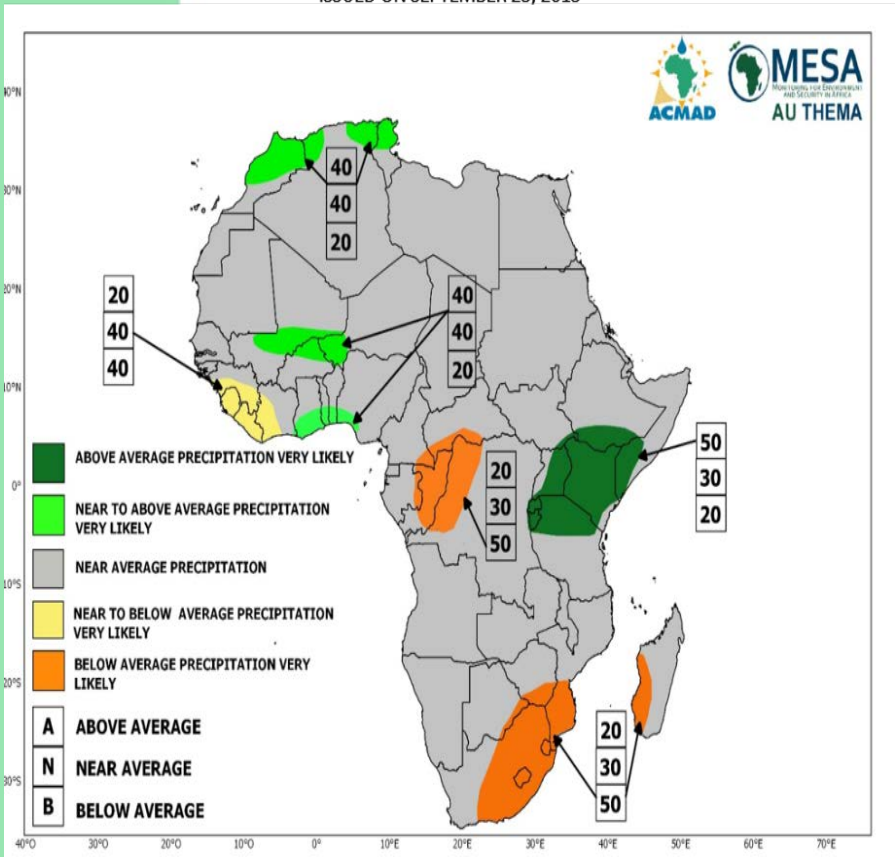
- **“Electricity is generated by drawing water from Kariba Dam through the turning of turbines. When dam levels are low, the generating capacity is also low**. This previous year we received low rainfall,” he said.

- **All countries that relied on hydro power from Zambezi River were being affected.**

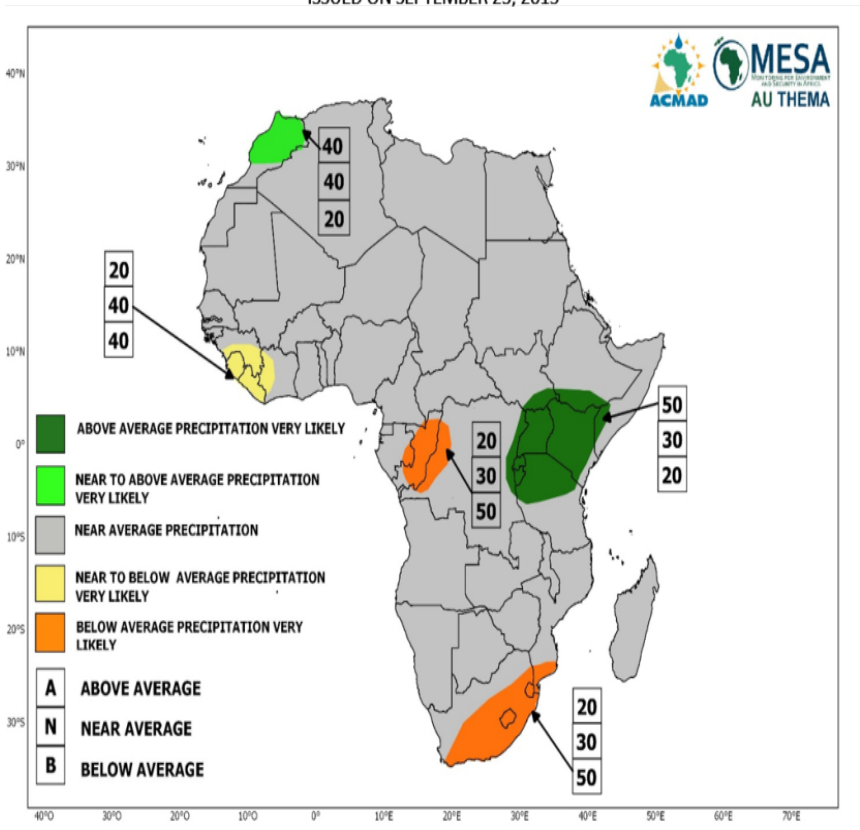
“We were warned before that this year water levels will be low and as such power generation will be low as well,” he said.

- Go the last mile with Contingency planning and action!!!!
- Document success stories
- Who is responsible? Liaison offices, help desks

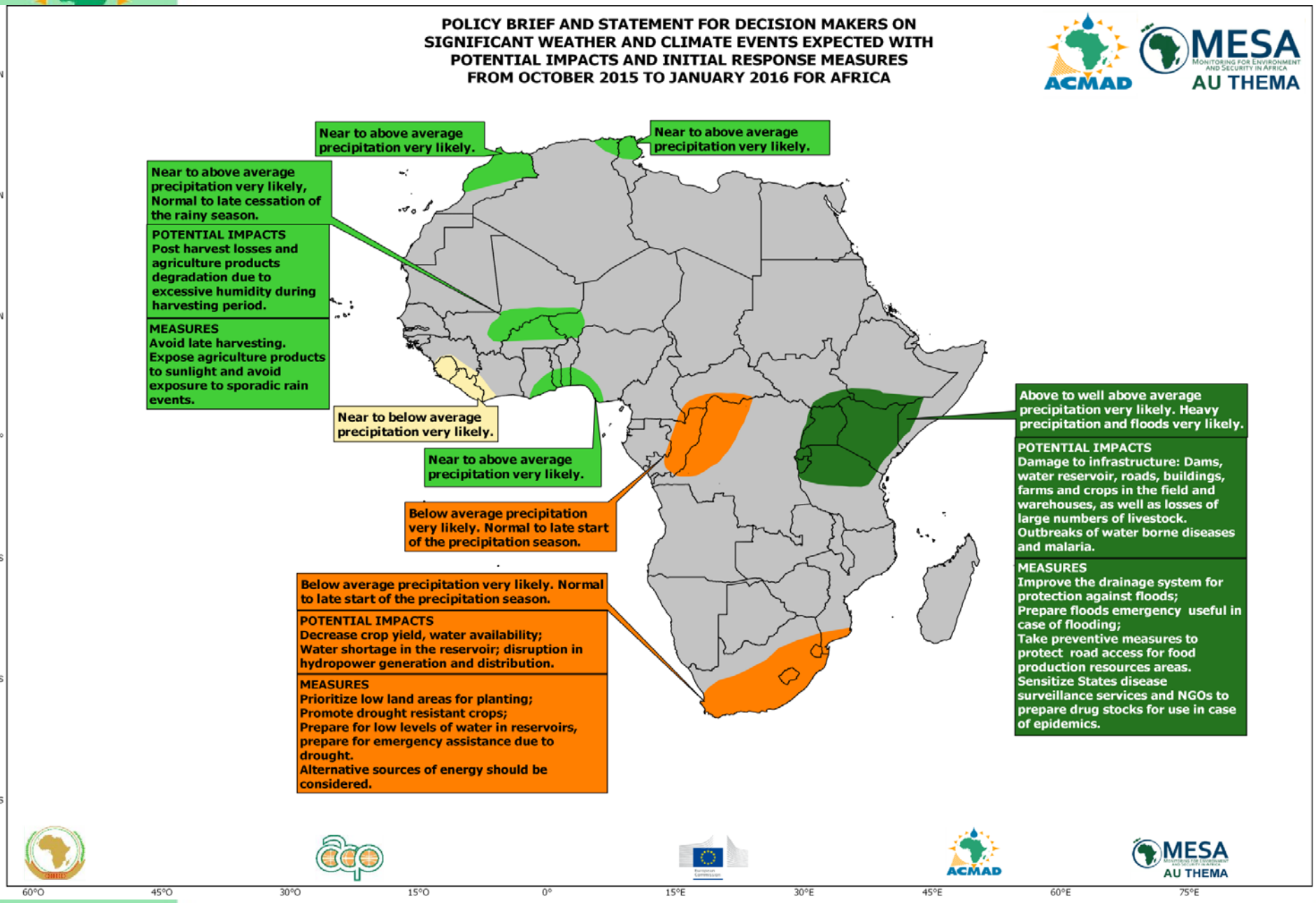
SEASONAL PRECIPITATION FORECAST
FOR OCTOBER-NOVEMBER-DECEMBER 2015
ISSUED ON SEPTEMBER 23, 2015



SEASONAL PRECIPITATION FORECAST
FOR NOVEMBER-DECEMBER-JANUARY 2015/2016
ISSUED ON SEPTEMBER 23, 2015

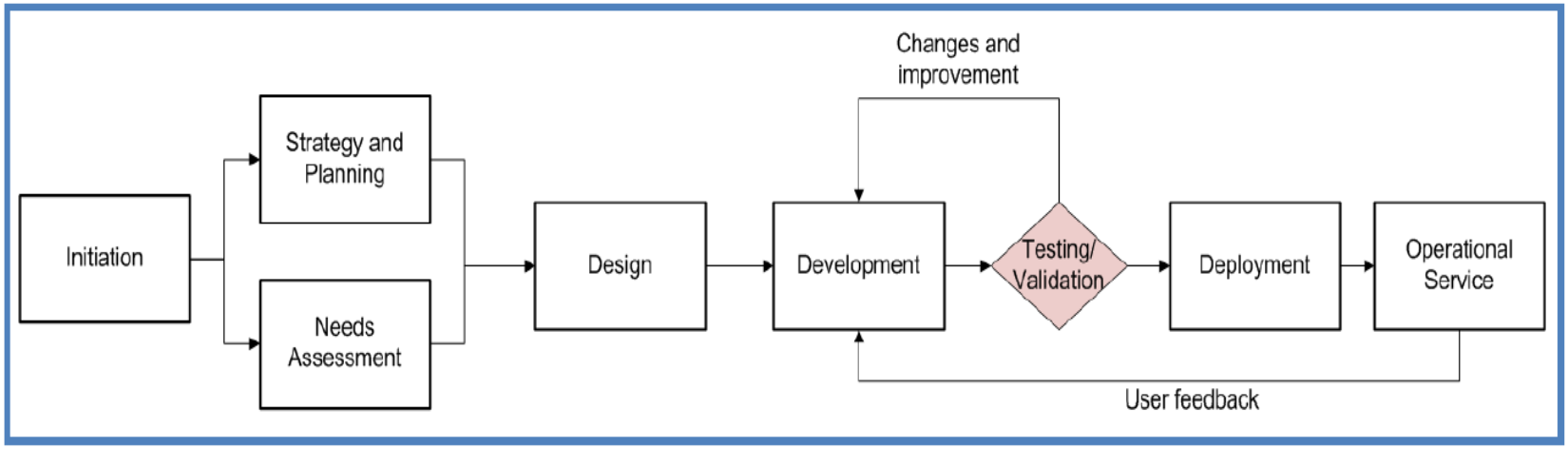


Climate – Impacts- Measures



Functions for climate service applications for GFCS/ORP

-Definition and specification
- Development
- Validation
- Operation including user support



Technical Notes – Bulletins or statement - Briefs for policy/decision making

THANK YOU !!!