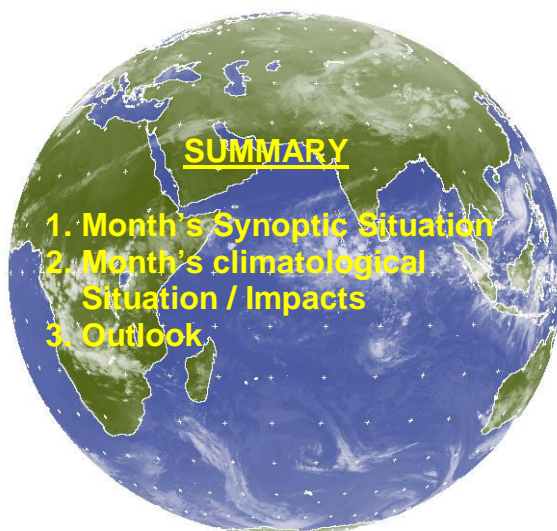


CLIMATE WATCH AFRICA BULLETIN

N° 09
SEPTEMBER 2010



MET5 15 NOV 2003 1800 DTOT

HIGHLIGHTS: Excessive rainfall was observed over west part of the Sahel, while deficit rainfall prevailed over most of central African countries. High temperatures anomalies were observed over northeastern, north western, extreme eastern, southern parts of Africa and part of Gulf of Guinea countries.

1. SYNOPTIC SITUATION DURING THE MONTH OF SEPTEMBER 2010

This section provides the strengths of the surface pressure systems; the 850hPa general circulation anomalies; upper troposphere thermal regimes; relative humidity; sea surface temperature (SST) and El Nino/Southern Oscillation (ENSO).

1.1 Centres of Surface Pressure Systems

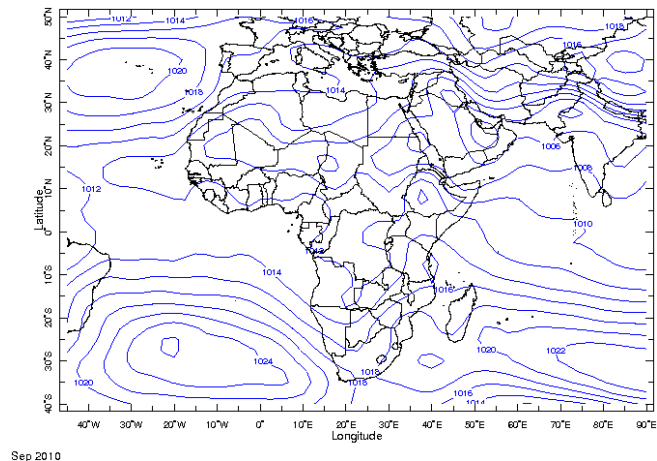
The Figure 1 shows surface pressure systems as described below:

The Azores high: A high pressure of 1020hPa maintained its intensity and shifted northeast. Its centre was located at about 38°N/32°W over north Atlantic Ocean.

The St Helena high pressure at 1026hPa strengthened slightly by 2hPa and shifted southwest compared to the past month. Its center was located at about 26°S/22°W over south Atlantic Ocean.

The Saharan thermal low at 1008hPa filled up by 2hPa as compared to the previous month. It cell centred at about 16°N/23°E extending a trough over west Chad and east Niger.

The Mascarene high pressure of 1020hPa weakened significantly by 8hPa and shifted northwest compared to the past month. Its mean position was located at about 30°S/40°E with an extended ridge over eastern part of Africa.



Sep 2010

Figure 1 : Mean surface pressure during the Month of September, 2010

(Source: IRI/NOAA/NCEP)

1.2 The 850hPa wind anomaly

The Figure 2 shows wind anomalies at 850hPa derived from reference period 1971-2000.

Strong westerly wind anomalies from equatorial Atlantic ocean were observed over most of the Gulf of Guinea countries and western part of Central Africa Republic.

North-easterly wind anomalies were observed over the off coast of Angola.

Over southern coast of Madagascar a southerly wind anomalies veering to south-westerlies wind anomalies were observed.

The average wind anomaly speed (shaded) was observed at about 08 m/s and above.

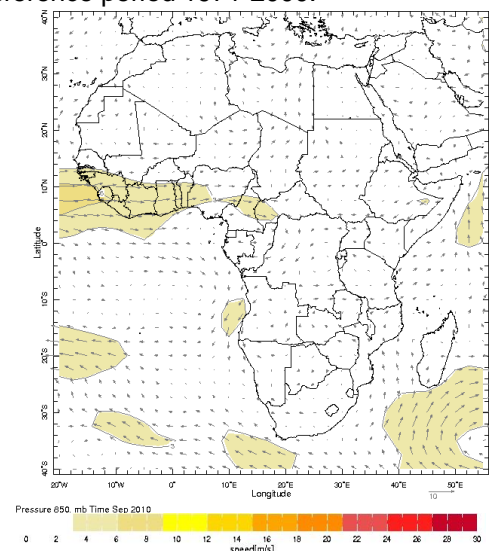


Figure 2 : September 2010, Wind Anomalies at 850hPa
(Source : IRI/NOAA/NCEP)

1.3 The African Easterly Jet (AEJ) and The Tropical Easterly Jet (TEJ)

AEJ at 700hPa:

During the month of September 2010, the African Easterly Jet (AEJ) with a core value of about 10m/s strengthened by 2m/s compared to the past month. It's centered at about 13°N, stretching from coastal Senegal/Mauritania up to western Chad.

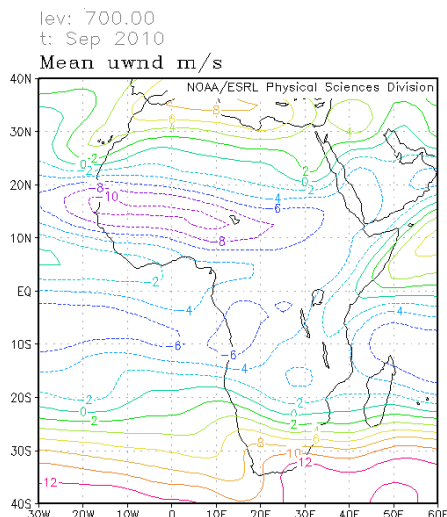


Figure 3: U-Winds at 700hPa
(Source: NOAA/NCEP)

TEJ at 150hPa:

The Tropical Easterly Jet (TEJ) with a core value of about 26m/s weakened by 2m/s. Its axis was located at about 05°N over eastern Indian Ocean with secondary core of about 18m/s over off coast of Guinea/Sierra Leone.

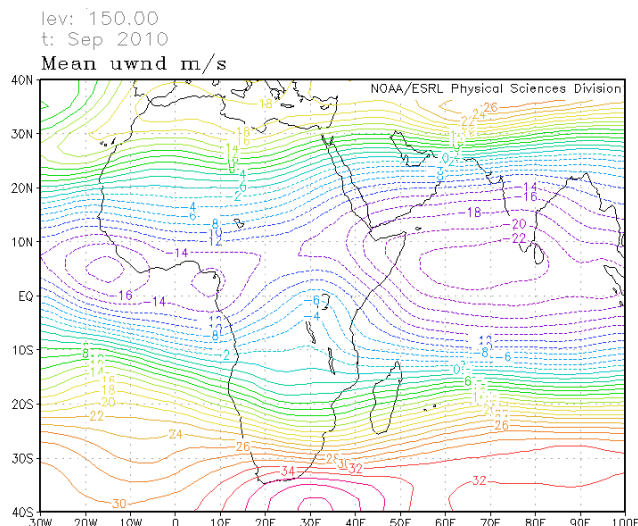


Figure 4: U-Winds at 150hPa
(Source: NOAA/NCEP)

1.4 Thermal index

In the month of September, 2010, the Thermal Index (TI) regime at 300hPa, Figure 5, had an isotherm value close to 242°K forming a belt over the Sahel, northern part of Central Africa and part of GHA countries. The highest TI value of 246°K was located over Asia. These indices were linked to the heavy rainfall with floods over the areas characterized by high relative humidity as shown in Figure 6. The low TI regime values less or equal to 241°K were associated with suppressed convection over the rest of Africa.

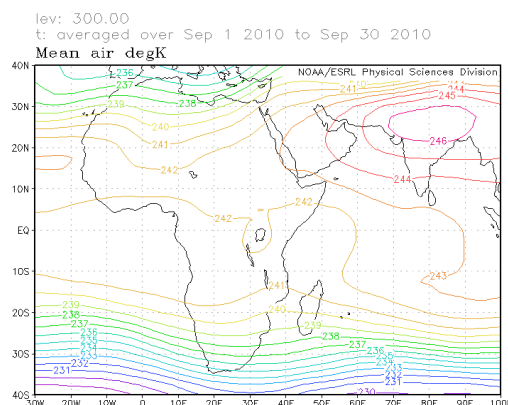


Figure 5: Thermal Regime at 300hPa
(Source: NOAA/NCEP)

1.4 Relative Humidity at 850hPa

The 850hPa (Figure 6) shows high RH (>60%) in September 2010, over most part of Gulf of Guinea countries, southern part of the Sahel, Central Africa, part of GHA countries and extreme northeastern part of Southern Africa countries including northern Madagascar. The Sahara, extreme northern Sahel and western part of Southern Africa countries experienced dry conditions characterized by the lowest RH ($\leq 40\%$).

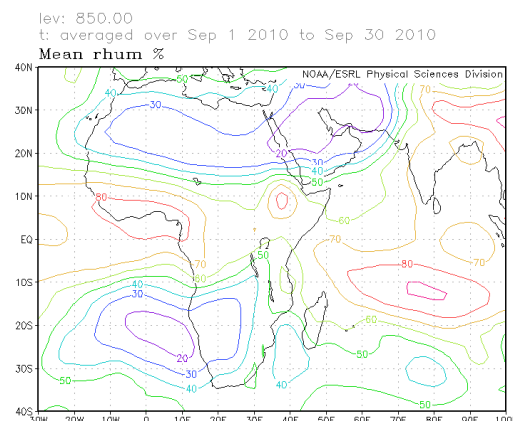
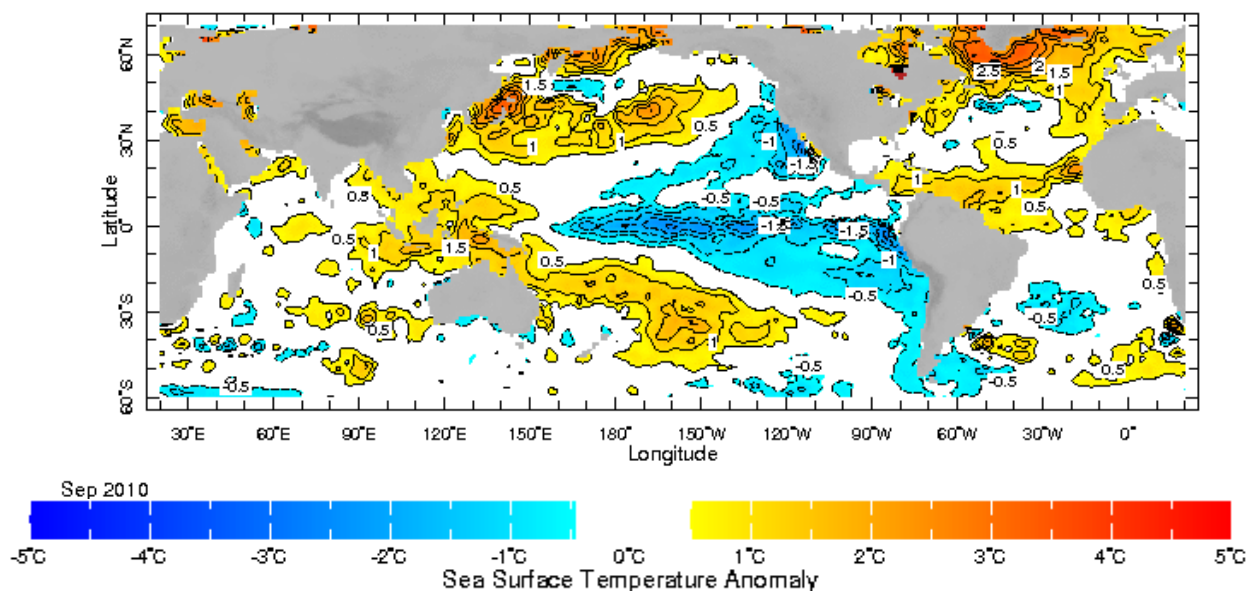


Figure 6: RH at 850 hPa (Source : NOAA/NCEP)

1.5 Sea Surface Temperature (SST) and El Nino/Southern Oscillation (ENSO)

Warming conditions persisted in western, northern and south-western Pacific Ocean while in most of the eastern and equatorial parts cooling conditions were observed. Warming conditions continued in most of the Atlantic Ocean except in south-western parts where cooling conditions prevailed. Warming conditions persisted in most of the Indian Ocean except the western parts where some cooling conditions were observed.



2. CLIMATOLOGICAL SITUATION AND IMPACTS DURING THE MONTH OF SEPTEMBRE

The section provides the general climatological situation covering two major parameters that are rainfall and temperature.

2.1 Rainfall

The estimated rainfall for August, 2010 in Figure 8, shows some decrease in rainfall distribution over the Sahel, Gulf of Guinea countries and GHA countries, while the rest of the continent had **no** significant change in rainfall distribution and amounts. In detail:

- **North Africa:** had **no** significant change in rainfall distribution and amount, observing localized amounts ranging of about 20mm to 80mm.
- **The Sahel:** had slight rainfall distribution and amounts decrease, observing amounts ranging between 20mm to 300mm intensifying to about 600mm over south Mali and Senegal.
- **Gulf of Guinea countries:** had increase in rainfall amount ranging from 20mm to 400mm with maximum ranging from 400mm to 600mm over Guinea Conakry and Guinea Bissau.
- **Central Africa:** had slight rainfall distribution and amounts increase, observing amounts ranging from 10mm to 300mm intensifying to about 400mm over eastern Democratic Republic of Congo, North Congo, north Gabon and Central African Republic.
- **GHA:** countries had slight rainfall distribution and amounts decrease, observing 20 to 200mm intensifying to about 300mm over northern part of the sub region.
- **Southern Africa:** countries continued to experience deficit in rainfall. However, some localized rainfall amounts ranging from 20mm to 150 mm were observed over Namibia, South Africa, Mozambique and Madagascar.

September, 2010 rainfall anomalies compared to the reference period 1971-2000, Figure 9 shows excessive rainfall over western part of the Sahel, central part of Gulf of Guinea countries, south Congo/Democratic Republic of Congo and southwest Kenya, while rainfall deficits was observed over west and eastern parts of Gulf of Guinea countries, most of Central Africa, South Ethiopia and eastern part of southern Africa.

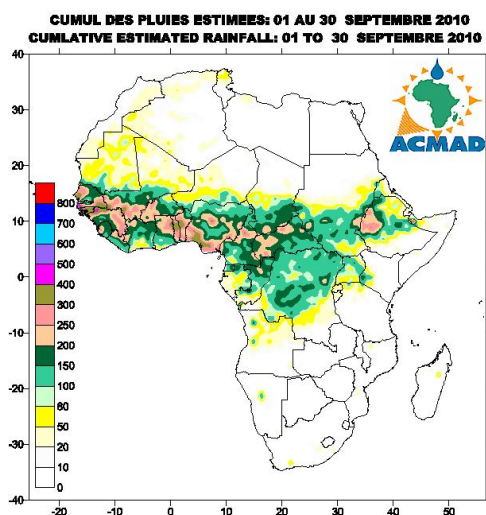


Figure 8: Monthly cumulative rainfall
(Data Source: NOAA/NCEP)

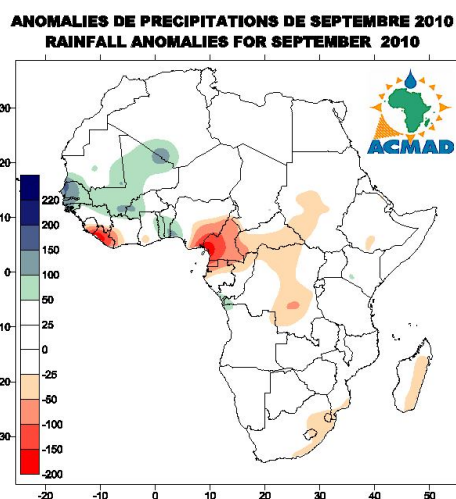


Figure 9: Monthly Precipitations Anomalies
(Data Source: NOAA/NCEP)

2.2 Surface Temperature Anomalies

In September, 2010, the temperature anomalies (Figure 10) compared to 1971-2000 base period, were generally hotter by more than 1.5°C over northeastern, north western, extreme eastern, southern parts of Africa as well as minor part of Gulf of Guinea countries with the highest anomalies epicenter (>2.5°C) located over southwest Morocco and northwest Mauritania. However, negative temperature anomalies (<-1°C) were observed over north Senegal.

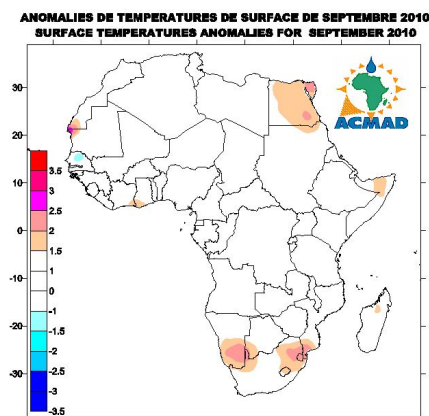


Figure 10 : Monthly Temperatures Anomalies
(Data Source: NOAA/NCEP)

3. OUTLOOK

The subsections provide the expected SSTs and ENSO characteristics and evolution of events based on Figures 11 and 12 respectively and expected rainfall outlook.

3.1 Forecast Sea Surface Temperature (SST)

The figure 11 shows the forecast Sea Surface Temperature Anomalies from October for the period of October-November-December 2010.

- **Pacific Ocean:** warming conditions will persist over western, and north parts of the ocean while over most of equatorial and eastern parts cooling will continue to be observed.
- **Atlantic Ocean:** Neutral to warming condition will persist over most of the Ocean except over the south central part where cooling will be observed.
- **Indian Ocean:** Neutral to Warming conditions are expected to persist in most of the Ocean.

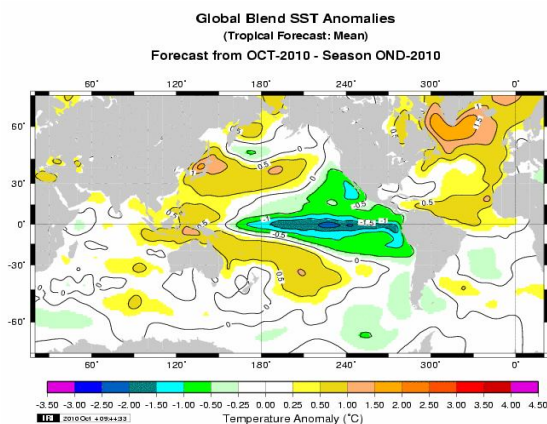


Figure 11 : Forecast Sea Surface Temperatures Anomalies
(source IRI)

3.2 El Ni Niño/La Niña

The set of dynamical and statistical model forecasts of ENSO over Nino 3.4 domain (5°N – 5°S, 120°W – 170°W) are shown in Figure 12.

All the set of dynamical and statistical model predictions issued during late August and early September 2010 indicate La Nina conditions during the September-November season currently in progress. The SST observations in the NINO3.4 region indicate moderate (+) La Nina conditions, with an area-averaged weekly anomaly of -1.5 C. Current predictions and observations indicate a least 90% of chance for maintaining La Nina conditions from September up to March.

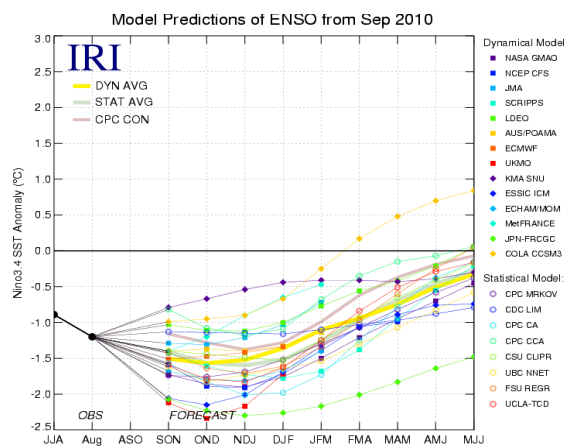


Figure 12 : Multi-model ENSO Forecast (source IRI)

3.3 Rainfall

The prevailing high relative humidity coupled with high conditional instability manifested by TI regimes at 300hPa will maintain heavy rainfall with highest probability of flooding over Gulf of Guinea countries, central Africa countries and western part of GHA countries. In detail:

North Africa countries: will continue to experience **poor** rainfall distribution and amounts ranging from 10mm to 80mm.

The Sahel: will experience decrease in rainfall distribution and amounts ranging from 10mm to about 250mm with maximum of about 300mm over south-western part.

Gulf of Guinea countries: will experience rainfall amounts ranging from 20 to 400 mm, while the coastal zone will record increased rainfall with peaks of about 600mm.

Central Africa countries: will experience rainfall increase with amounts ranging from 10mm to 400mm intensifying to maxima of above 600mm over Democratic Republic of Congo, Congo and Gabon.

GHA countries: will have rainfall increase with amounts ranging from 10mm to 300mm intensifying to amounts ranging between 300mm to 500mm over Great Lakes countries, while the eastern sector of the region will be mainly dry.

Southern Africa countries: will be generally dry with light amounts over some areas. However those countries in the eastern coastal belt will experience some rainfall amounts ranging from 10mm to 150mm, which may reach a peak of about 200mm.

3.4 IRI seasonal Rainfall outlook for Africa issued in September 2010 for OND

The IRI seasonal rainfall forecast issued in September for the period of October- November- December 2010 shows that:

- Above normal to Normal rainfall over most of Southern Africa countries and southern part of Sudan.
- Below normal to Normal rainfall is expected over western part of West Africa and most of GHA countries.

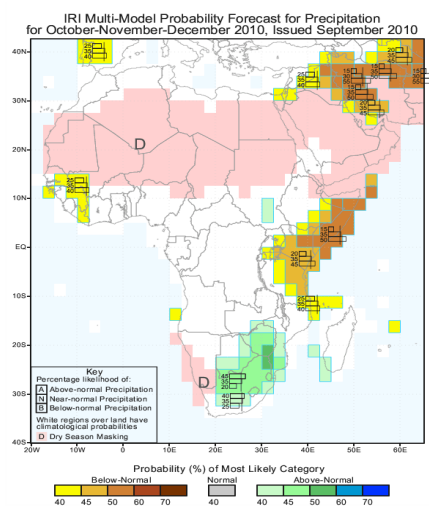


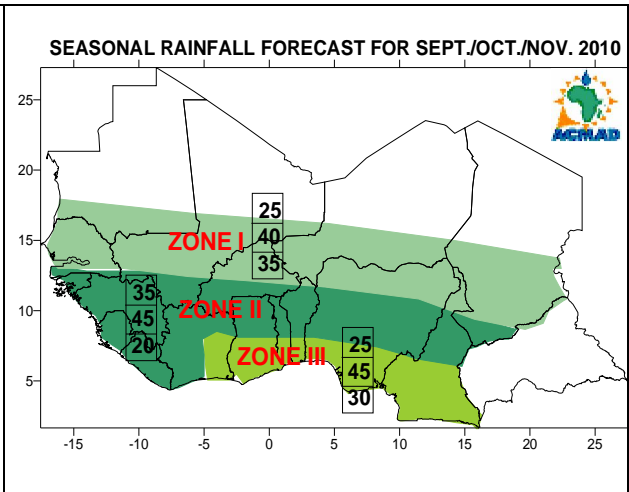
Figure 13: IRI forecast

3.5 ACMAD Seasonal Rainfall outlook for west Africa, Chad and Cameroon issued in August 2010 for SON 2010

Zone I North Sahel (South Mauritania, Senegal, South Mali, South Niger, North Burkina Faso and Central Chad) with normal probability of (0.4) and below Normal rainfall probability of (0.35)

Zone II South Sahel and North Gulf of Guinea (Guinea Bissau, Guinea Conakry, South Burkina Faso, Extreme south of Mali, Sierra Leone, Liberia, Ivory Coast, north /Ghana/Togo/Benin, Central Nigeria, north Cameroon and south Chad) with normal rainfall probability of (0.45) and above normal probability of (0.35).

Zone III South of Gulf of Guinea (east Ivory Coast, south Ghana, Togo, Benin, Nigeria and Cameroon with normal rainfall probability of (0.45) and a below normal rainfall probability of (0.30).



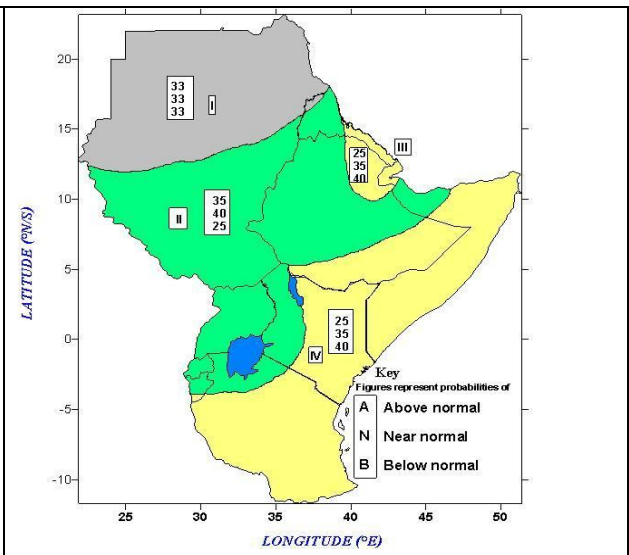
3.6 Greater Horn of Africa Consensus Climate Outlook for the September to December 2010

Zone I: This zone is generally dry during the season and covers northern parts of Sudan and northwestern Eritrea.

Zone II: Increased likelihood of near normal to above normal rainfall over central and southern Sudan, western, central and northern Ethiopia, much of Uganda, Rwanda, Burundi, western Kenya, and Lake Victoria basin of Tanzania.

Zone II: Increased likelihood of below to near normal rainfall over southern Eritrea, northeastern Ethiopia, and Djibouti.

Zone IV: Increased likelihood of below normal to near normal rainfall over much of Kenya, southern and southeastern Ethiopia, much of Somalia, Tanzania and southern Burundi.



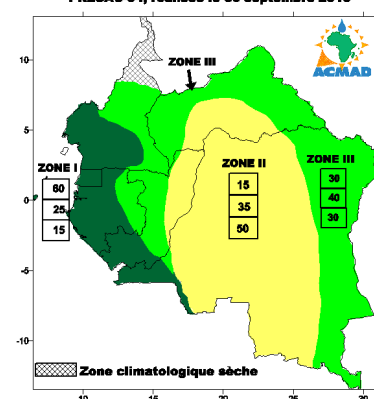
3.7 ACMAD Seasonal Rainfall outlook for central Africa issued in September 2010 for OND 2010

Zone I, covering Equatorial Guinea, Sao Tome et Principe, southern part of Cameroon, most of Gabon and coastal Gabon will experience above normal to normal rainfall.

Zone II, covering north of Congo, central CAR and DRC, will have below normal to normal rainfall.

Zone III, including extreme East of Cameroon, East of Gabon, central d Congo, extreme East, West and North CAR and East DRC will be characterized by normal rainfall.

Prévision Climatologique saisonnière valable pour la période Octobre-Novembre-Décembre 2010 en Afrique Centrale
PRESAC-04, réalisée le 30 septembre 2010



ADVICE:

- ✓ The high rainfall variability in the region may cause risks with adverse effects throughout the season, particularly on goods and persons (flooding) on plants (locust invasion) and Public Health (malaria epidemics and other waterborne diseases such as cholera).