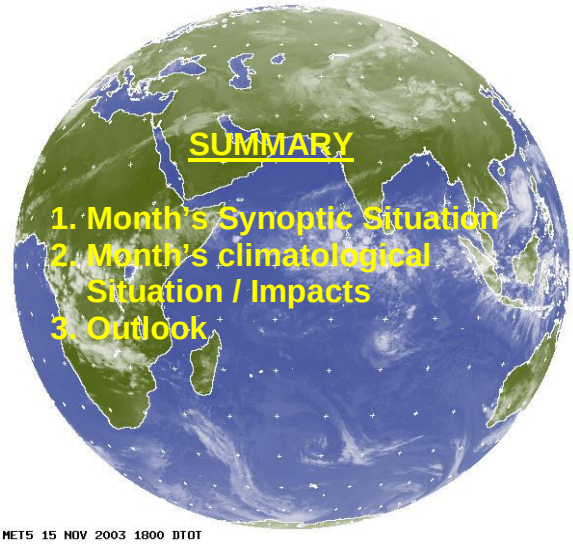
AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT
CENTRE AFRICAIN POUR LES APPLICATIONS DE LA METEOROLOGIE AU DEVELOPPEMENT

CLIMATE WATCH AFRICA BULLETIN

N° 08
AUGUST 2010



SUMMARY

1. Month's Synoptic Situation
2. Month's climatological Situation / Impacts
3. Outlook

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HIGHLIGHTS: Excessive rainfall was observed over some parts of Sahel, northern Central Africa, and part of Gulf of Guinea countries. Southern Africa countries along with southern parts of central Africa, most of northern Africa and eastern areas of GHA remained dry with isolated rains reported over few areas. High temperatures anomalies were observed over northeastern, northwestern and southwestern parts of the continent.

1. SYNOPTIC SITUATION DURING THE MONTH OF AUGUST 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 weakened significantly by 4hPa a. Its centre shifted slightly to the south and was located at about 34°N/35°W over north Atlantic Ocean.

The St Helena high pressure at 1024hPa weakened slightly by 1hPa and shifted northeast compared to the past month. Its center was located at about 23°S/19°W over south Atlantic Ocean.

The Saharan thermal low at 1006hPa deepened by 2hPa as compared to the previous month. It had two cells centred at about 22°N/02°W over Mali and 17°N/15°E over Niger/Chad.

The Mascarene high pressure of 1028hPa strengthened by 2hPa and shifted southeast compared to the past month. Its mean position was located at about 33°S/65°E with an extended ridge over eastern part of Africa.

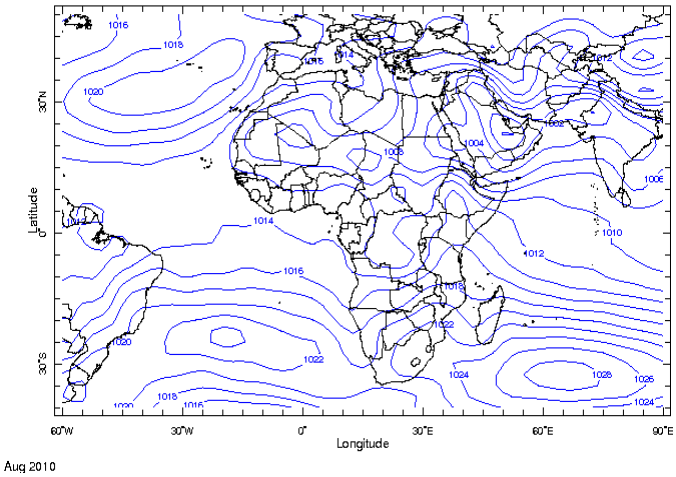

Figure 1 : Mean surface pressure during the Month of August, 2010

(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 south-westerly wind anomalies turning to north-westerlies were observed over western coasts of the Gulf of Guinea countries.

Northerly wind anomalies were observed over off coast of Angola.

Over Central African Republic a strong continental westerly wind anomalies were observed.

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

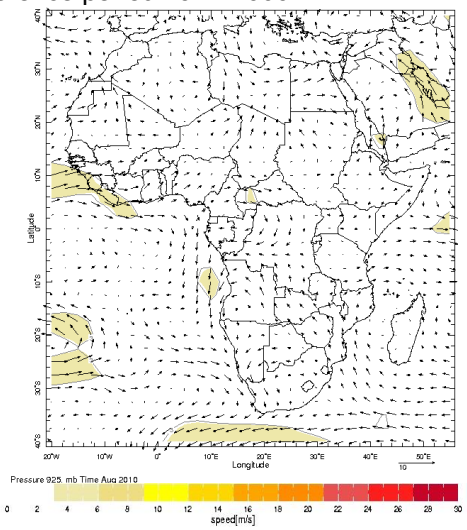

Figure 2 : August 2010, Wind Anomalies at 850hPa
(Source : IRI/NOAA/NCEP)

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

AEJ at 700hPa:

During the month of August 2010, the African Easterly Jet (AEJ) had a core value of about 08m/s located at about 15°N, stretching from central north Atlantic ocean to central western Chad.

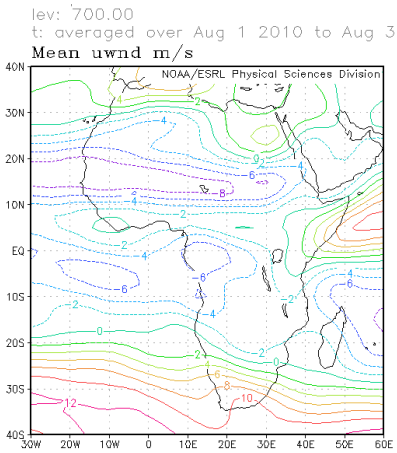

Figure 3: U-Winds at 700hPa
(Source: NOAA/NCEP)

TEJ at 150hPa:

The Tropical Easterly Jet (TEJ) had a core value of about 26m/s located at about 08°N over eastern Indian Ocean with secondary core of about 22m/s at 05°N over southwestern coast of Gulf of Guinea.

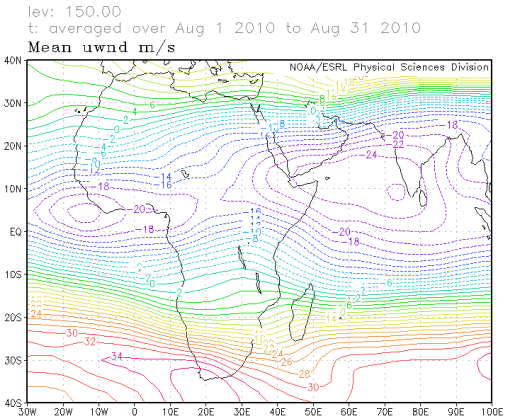

Figure 4: U-Winds at 150hPa
(Source: NOAA/NCEP)

1.4 Thermal index

In the month of August, 2010, the Thermal Index (TI) regime at 300hPa, Figure 5, had an isotherm value close to 242°K forming a belt over the Sahel, Central Africa and GHA countries with a threshold isotherm value of 243°K over the Sahel countries, while the highest TI value of 249°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.

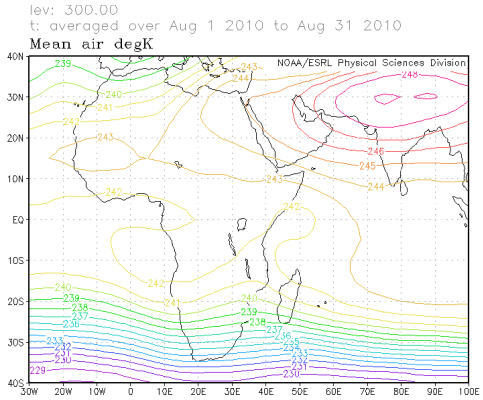

Figure 5: Thermal Regime at 300hpa
(Source: NOAA/NCEP)

1.4 Relative Humidity at 850hPa

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

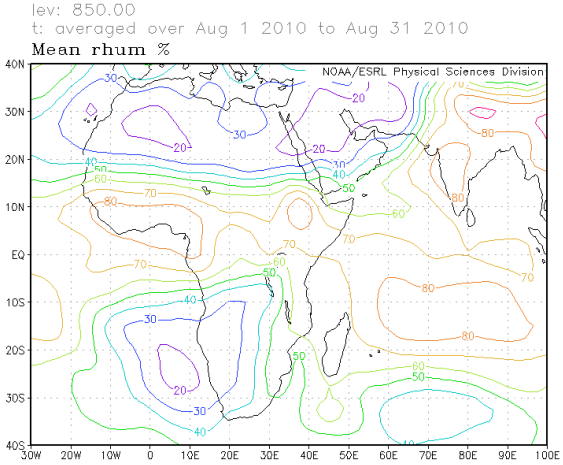

Figure 6:RH at 850 hPa (Source : NOAA/NCEP)

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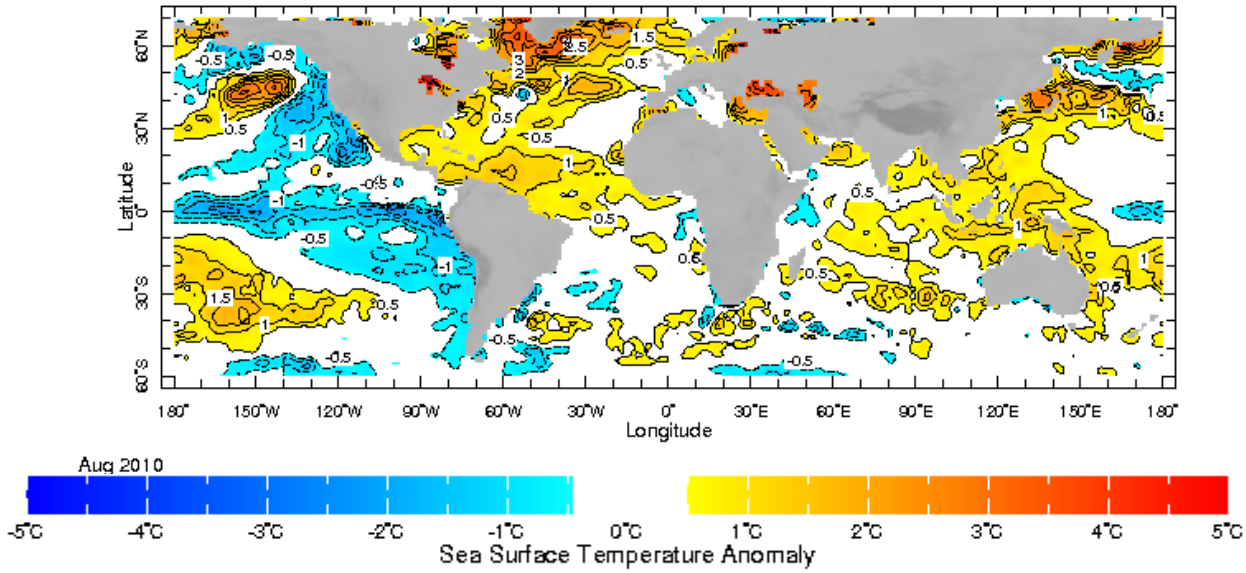
1.5 Sea Surface Temperature (SST) and El Nino/Southern Oscillation (ENSO)

Warming conditions persisted in equatorial west and south-western and north-central Pacific Ocean while in most of the eastern and central equatorial parts cooling conditions were observed. Warming conditions continued in most of the Atlantic Ocean except in southern parts around coastal areas of Gabon/Congo where cooling conditions prevailed. Warming conditions were observed in most of the Indian Ocean except the extreme south-western and north-western parts.



2. CLIMATOLOGICAL SITUATION AND IMPACTS DURING THE MONTH OF AUGUST

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 increase in rainfall distribution over the Sahel and Central Africa while GHA, Gulf of Guinea countries and southern Africa countries experienced decrease in rainfall distribution. In detail**:**

- **North Africa:** had non significant change in rainfall distribution and amount, observing localized amounts ranging of about 10 to 80mm.
- **The Sahel**: had slight rainfall increase both in space and amount, observing amounts ranging between 20mm to 300mm intensifying to about 400mm over south Chad and Mali.
- **Gulf of Guinea countries:** had increase in rainfall amount ranging from 20mm to 400mm with maximum ranging from 400mm to 600mm over Sierra Leone and West Cameroon.
- **Central Africa**: had slight rainfall amounts increase; observing amounts ranging from 10mm to 300mm intensifying to above 400mm over Central African Republic.
- **GHA**: countries had slight rainfall amounts increase over northern Ethiopia and central Sudan; observing 10mm to 300mm with peak ranging from 300mm to 500mm over north Ethiopia.
- **Southern Africa:** countries continued to experience deficit in rainfall; observing localized amounts ranging from 10mm to 50 mm over southwestern part of South Africa. However, localized amounts ranging from 20mm to 400mm was observed over Madagascar and northern Mozambique.

August, 2010 rainfall anomalies compared to the reference period 1971-2000, Figure 9 shows excessive rainfall over south Mauritania, Mali, southwest Côte d'Ivoire, north Cameroon, southeast Chad, north Central African Republic and north and south Madagascar, while rainfall deficits was observed over west and eastern parts of Gulf of Guinea countries, northwest and central parts of Central Africa countries and parts of GHA countries.

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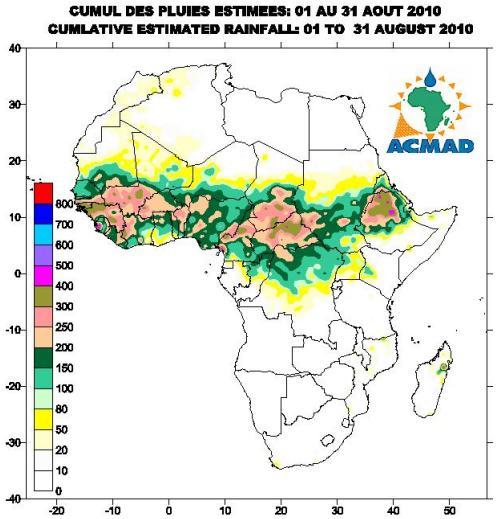

Figure 8: Monthly cumulative rainfall (Data Source: NOAA/NCEP)

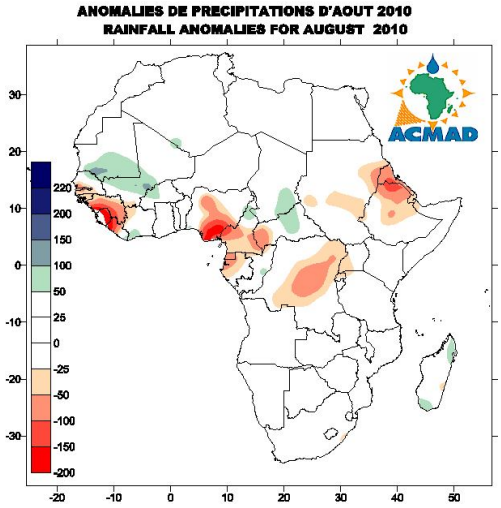

Figure 9: Monthly Precipitations Anomalies (Data Source: NOAA/NCEP)

2.2 Surface Temperature Anomalies

In August, 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 and southwestern parts of Africa with the highest anomalies epicenter (>2.5°C) over west Morocco, Libya, Egypt and south Namibia and southwest Botswana. However, negative temperature anomalies (<-1°C) was observed over south Angola and north Namibia.

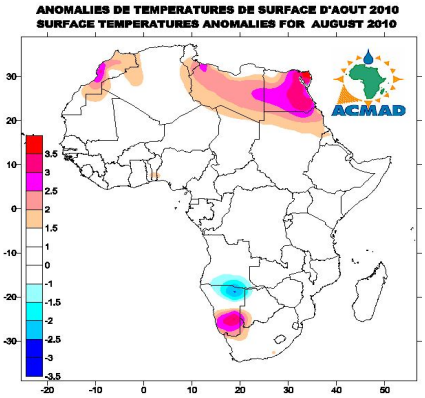

Figure 10 : Monthly Temperatures Anomalies (Data Source: NOAA/NCEP)

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 Septembre for the period of September-Octobre-Novembre 2010.

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

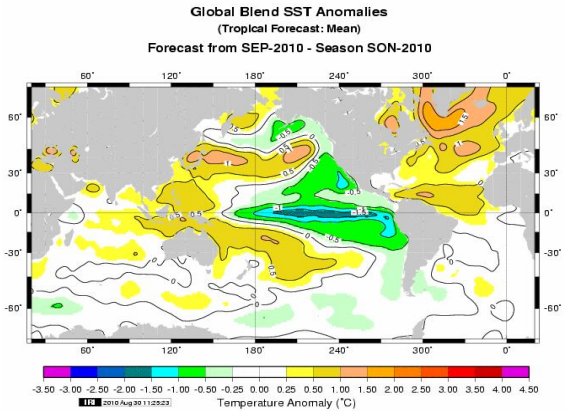

Figure 11 : Forecast Sea Surface Temperatures Anomalies (source IRI)

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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.

Dynamical models predict just slightly stronger La Nina strength than statistical models, although both model types average moderate strength predictions.
The SST observations in the NINO3.4 region indicate moderate La Nina conditions, with an area-averaged weekly anomaly of -1.1 C. Current predictions and observations indicate a probability of about 96%, 94% and 89% for maintaining La Nina conditions during the August-October, October-December and December-February periods, respectively.

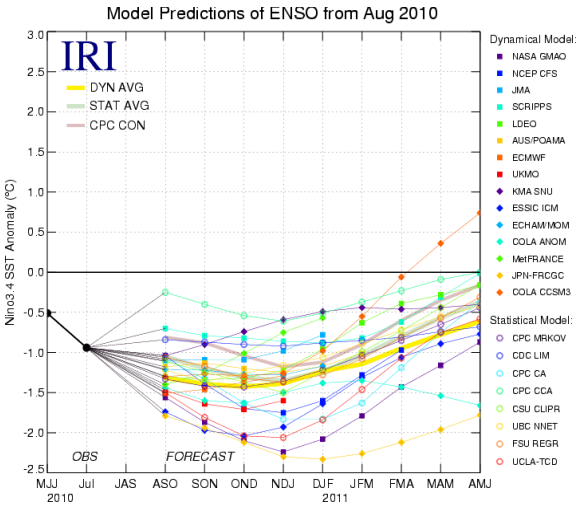

Figure 12 : Multi-model ENSO Forecast (source IRI)

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 western African countries, northern part of central Africa countries and most parts of GHA countries. In detail:

North Africa countries: will experience low in rainfall distribution and amounts ranging from 10mm to 80mm with some slight increase over Morocco and Algeria.

The Sahel: will continue to experience increase in rainfall amounts observing 10mm to about 300mm peaking up in the south to peaks ranging from 300mm to 500mm mostly over southern Mali and southern Niger.

Gulf of Guinea countries: will experience rainfall amounts ranging from 10 to 300 mm but the countries in the western and eastern like Guinea, Sierra Leone, Côte d'Ivoire, Nigeria and Cameroon will notice increased rainfall with peaks above 600mm.

Central Africa countries: will experience rainfall increase with amounts ranging from 10mm to 300mm over Central Africa Republic, which may intensify to maxima above 400mm in some localised areas. Southern areas of the region will be generally dry.

GHA countries: will have rainfall increase with amounts ranging from 10mm to 300mm intensifying in some parts over western Ethiopia to amounts ranging between 300mm to 500mm. The eastern sector of the region will be mainly dry.

Southern Africa countries: will be generally dry with light drizzle over some areas; however those countries in the eastern coastal belt will experience some rainfall ranging from 10mm to 150mm, which may reach a peak over about 200mm over southeast of south Africa and east of Madagascar.

3.4 IRI seasonal Rainfall outlook for Africa issued in August 2010 for SON

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

- Above normal to Normal rainfall over extreme north-western part of Northern Africa, western part of West Africa and western part of Great Horne of Africa.
- Below normal to Normal rainfall is expected over southern part of Gulf of Guinea countries, western and southern parts of Central Africa countries, extreme northern part of southern Africa and eastern part of GHA countries.

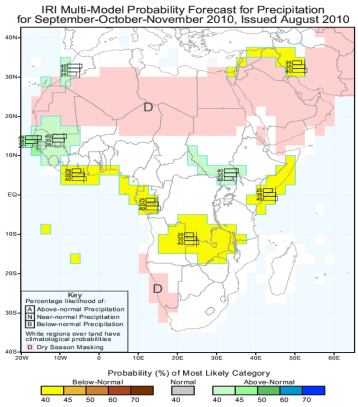

Figure 13: IRI forecast

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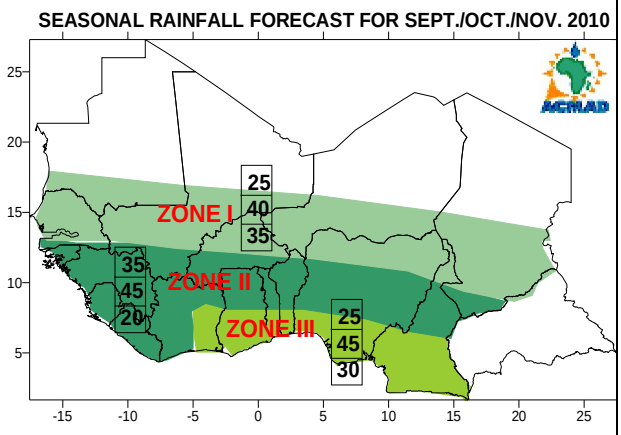
3.5 ACMAD Seasonal Rainfall outlook for west Africa, Chad and Cameroon issued in August 2010 for SON 2010

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).



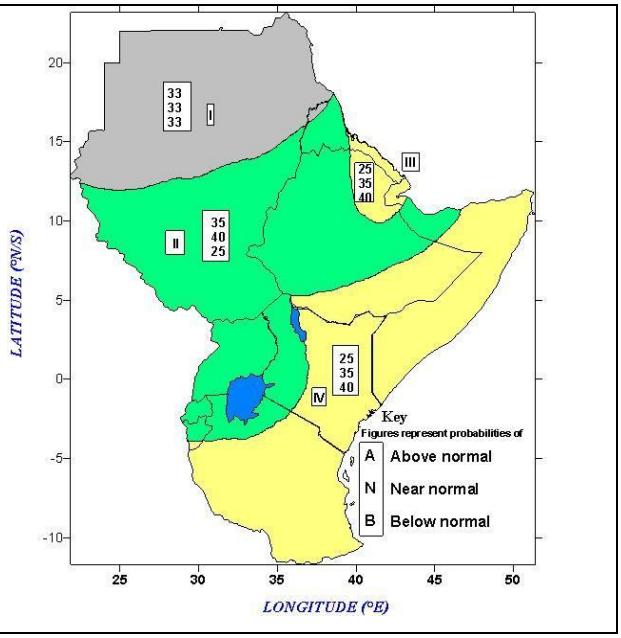
3.6 Greater Horn of Africa Consensus Climate Outlook for the September to December 2010

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 III: 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.



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)**

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