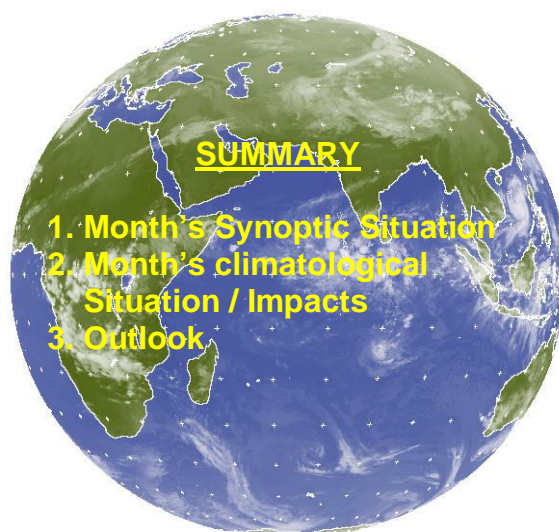


CLIMATE WATCH AFRICA BULLETIN

N° 10
OCTOBER 2011



MET5 15 NOV 2003 1800 DTOT

HIGHLIGHTS: The Mascarene high weakened significantly. The Sahel and northern part of the Gulf of Guinea countries are under the influence of Harmattan. The highest amounts of rainfall were observed over central Africa while the highest and lowest temperatures continued to be observed in the northern and southern hemispheres countries respectively.

1. SYNOPTIC SITUATION DURING THE MONTH OF OCTOBER 2011

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 compared to the past month as described below:

The Azores high of 1020hPa weakened slightly by 1hPa and shifted north-east. Its centre was located over north Atlantic ocean at about 37°N/22°W extending a ridge over northern Africa.

The St. Helena high of 1022hPa weakened slightly by 2hPa and shifted south-west. Its centre was located at about 32°S/15°W over south Atlantic Ocean.

The Saharan thermal low of 1009hPa deepened by 1hPa compared to the past dekad. Its two centres were at about 15°N/02°E over western Niger/Burkina Faso and 13°N/17°E over Chad.

The Mascarene high of 1020hPa weakened significantly by 4hPa and shifted south-east. Its centre was located at about 32°S/95°E with an extended ridge over south-eastern Africa.

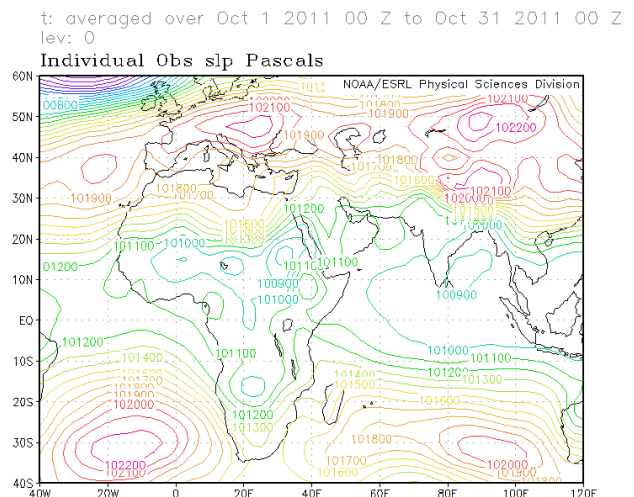


Figure 1 : Mean Surface Pressure during October 2011
(Source: NOAA/NCEP)

1.2 The 850hPa wind anomaly

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

Strong westerly to north-westerly wind anomalies from equatorial Atlantic Ocean were observed over south-western part of the Gulf of Guinea and coastal central Africa.

In western Algeria, extreme northern Morocco, northern Mauritania and Mali strong north/north-easterly wind anomalies from Mediterranean sea prevailed.

Over the continent strong westerly wind anomalies were observed over south-eastern Angola, north-eastern and extreme north-western Botswana.

In the southern hemisphere strong north-westerly wind anomalies from southern Atlantic prevailed off coast of South Africa.

The average wind anomaly speed (shaded) was observed at about 03m/s and above.

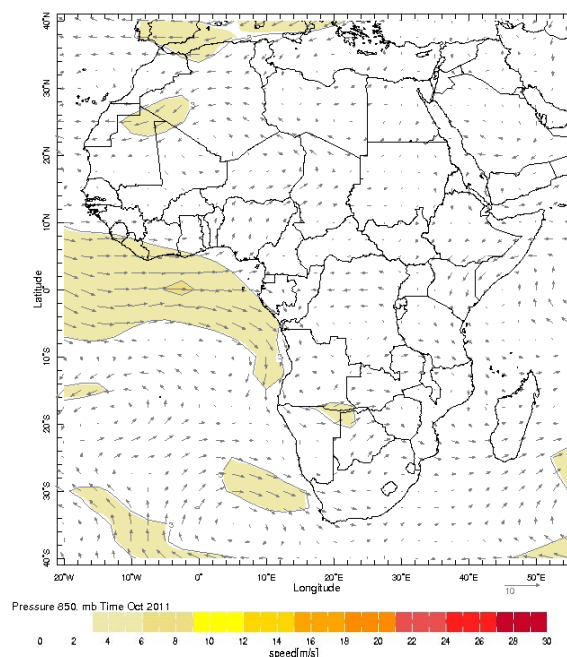


Figure 2 : October 2011, Wind Anomalies at 850hPa
(Source : IRI/NOAA/NCEP)

1.3 Thermal index

In the month of October 2011, the Thermal Index (TI) regime at 300hPa, Figure 3, had an isotherm value of 242°K zone covering southeast of the Sahel, southern part of the Gulf of Guinea countries, most of the GHA and central Africa countries extending 10°S.

High TI ($\geq 242^\circ\text{K}$) can trigger heavy rainfall sometimes with floods over the areas characterized by high relative humidity ($>60\%$) as shown in Figure 6 while the low TI regime $\leq 241^\circ\text{K}$ values were associated with suppressed convection over the rest of Africa.

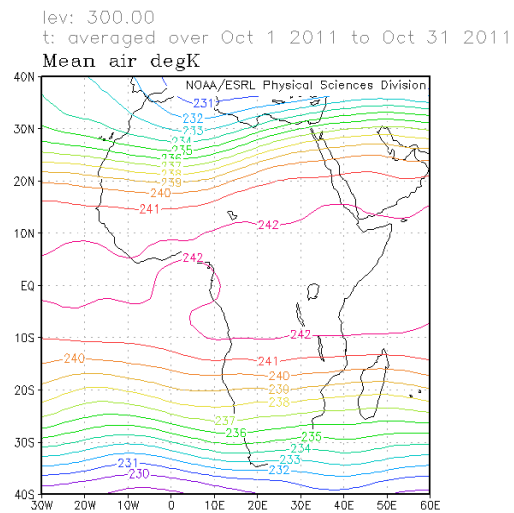


Figure 3: Thermal Regime at 300hpa
(Source: NOAA/NCEP)

1.4 Relative Humidity at 850hPa

The 850hPa (Figure 4) shows high RH ($>60\%$) in October 2011, over Gulf of Guinea countries, most part of Central Africa, most part of GHA and most of Madagascar. However, the northern part of the continent above 15°N and south-western part of the continent experienced dry conditions characterized by the lowest RH ($\leq 40\%$).

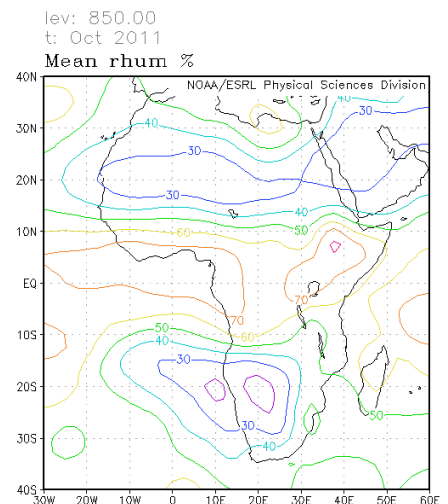
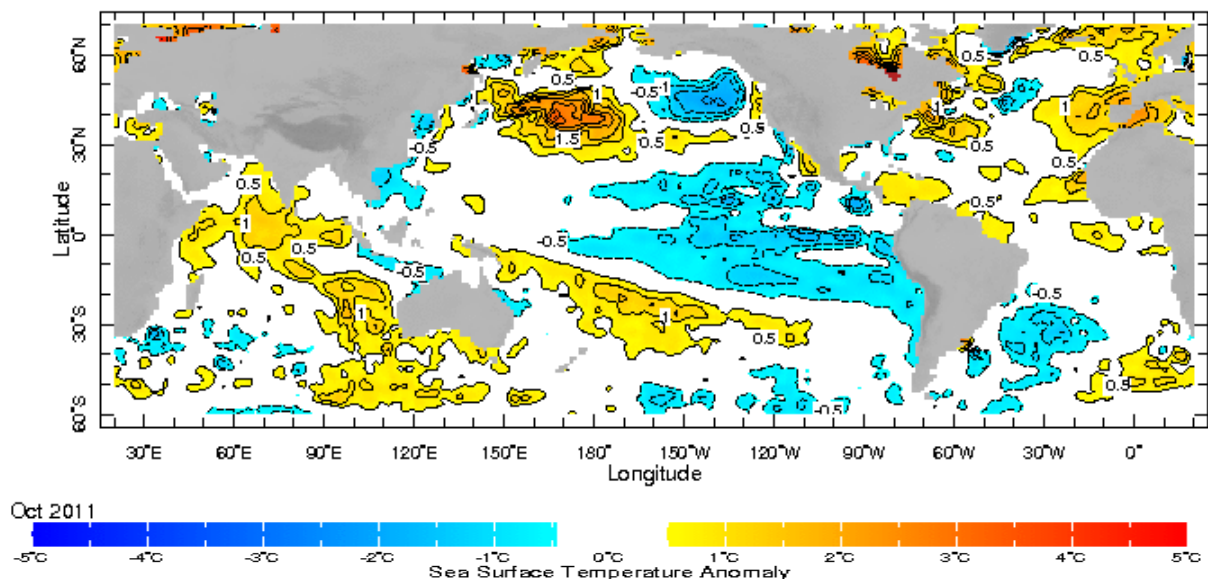


Figure 4: RH at 850 hPa (Source : NOAA/NCEP)

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

Warming conditions persisted in most of northern and south-western parts of the Pacific Ocean while in most the eastern part cooling conditions continued. Neutral to warming conditions continued in most of the Atlantic Ocean except in the south-western part where cooling conditions continued. Neutral to warming conditions persisted in most of Indian Ocean and Mozambique Channel except around south-eastern Asia and south-western Indian Ocean where some cooling prevailed.



2. CLIMATOLOGICAL SITUATION AND IMPACTS DURING OCTOBER

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

2.1 Rainfall

The estimated rainfall for October, 2011 in Figure 6, shows increase in rainfall activities over northern Africa, GHA and Southern Africa countries. However, decrease in rainfall was observed over Sahel countries. In detail:

- **North Africa:** had increase in rainfall distribution and amounts, ranging from 10mm to 150mm over northern Morocco, Algeria, Tunisia and Libya.
- **The Sahel:** had decrease in rainfall distribution and amounts, ranging from 10mm to 100mm over the extreme southern part of Mali, Burkina Faso, Chad and Senegal.
- **Gulf of Guinea countries:** had rainfall amounts ranging from 20mm to 300mm over most parts intensifying south-eastwards to about 500mm over Nigeria.
- **Central Africa:** had rainfall distribution amounts ranging from 20mm to 400mm increasing northwards to the heaviest amount of about 600mm over north-east Democratic Republic of Congo, Gabon and Cameroon.
- **GHA:** countries had increase rainfall distribution and amounts ranging from 10mm to 300mm over most countries with localized high amounts between 300mm to 600mm over northeast Kenya and South Somalia.
- **Southern Africa** had increase in rainfall distribution and amounts recording 10mm to 200mm over northern and eastern parts.

In October, 2011 the rainfall anomalies compared to the reference period 1971-2000, Figure 7 showed generalized normal rainfall distribution and amounts.

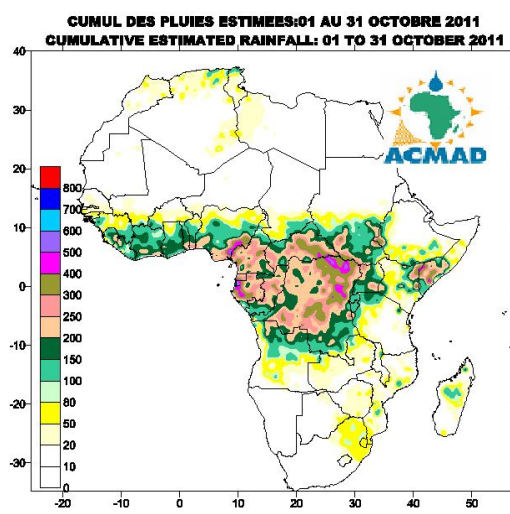


Figure 6: Monthly cumulative rainfall
(Data Source: NOAA/NCEP)

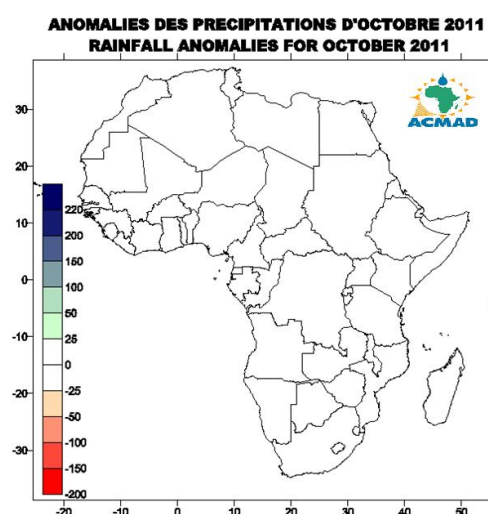


Figure 7: Monthly Precipitations Anomalies
(Data Source: NOAA/NCEP)

2.2 Surface Temperature Anomalies

In October, 2011, the temperature anomalies (Figure 8) compared to 1971-2000 base period, were generally normal over the continent. Warmer temperatures by 1.5°C were observed over north-eastern part of the continent and some Sahel countries with the maximum temperature anomalies between, 2.5°C to 3°C over Algeria, Morocco and Mauritania. However, low temperature anomalies of -1°C were observed over north-western part of Southern Africa with the lowest ranging between -2.5°C to -3°C over southern Angola and northern Namibia.

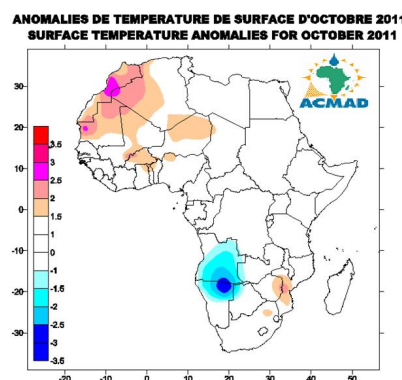


Figure 8 : Monthly Temperatures Anomalies
(Data Source: NOAA/NCEP)

3. OUTLOOK

The subsections provide the expected SSTs and ENSO characteristics and evolution of events based on Figures 9 and 10 respectively and expected rainfall outlook.

3.1 Forecast Sea Surface Temperature (SST)

The figure 9 shows the forecast Sea Surface Temperature Anomalies from November for the period of November-December-January 2011.

- **Pacific Ocean:** warming conditions will persist over most of western part while over most of eastern and equatorial parts the cooling will continue.
- **Atlantic Ocean:** Neutral to warming condition will persist over most of the Ocean except over south-central part where some cooling is expected.
- **Indian Ocean and Mozambique Channel:** Neutral to warming conditions are expected to persist in most of the Ocean and Mozambique Channel.

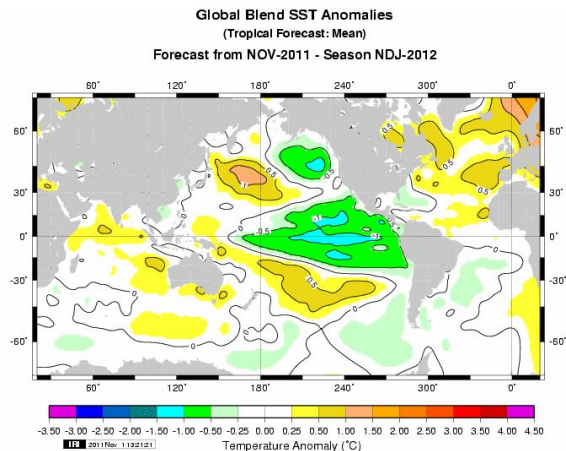


Figure 9 : Forecast Sea Surface Temperatures Anomalies (source IRI)

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 10.

More than half of the set of dynamical and statistical model predictions issued during late September and early October 2011 predict neutral ENSO conditions from the October-December 2011 season currently in progress through the early part of 2012, with most of the other half predicting La Nina conditions. At the time of preparing this, the SST observations in the NINO3.4 region were in the weak La Nina range, with an area-averaged weekly anomaly of -0.8°C in the most recent week. Current predictions and observations indicate probabilities of 75% and 70% for La Nina conditions during the November-January and December-February periods, respectively.

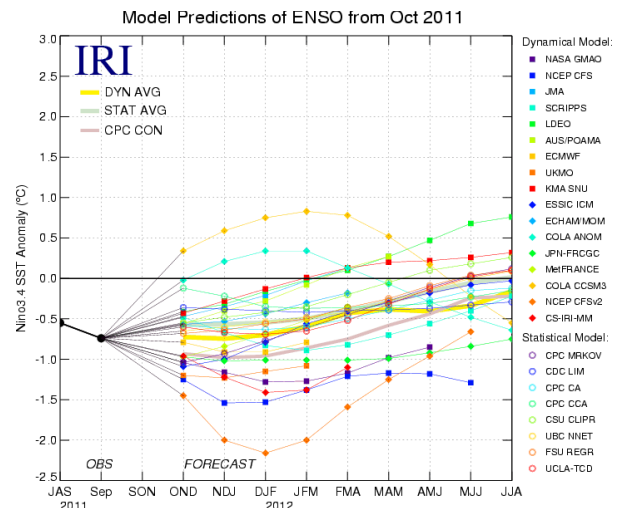


Figure 10 : Multi-model ENSO Forecast (source IRI)

3.3. Rainfall

The prevailing high relative humidity coupled with high conditional instability manifested by TI regimes at 300hPa will continue to maintain heavy rainfall with localised highest probability of flooding over central Africa, GHA countries and south eastern part of the Gulf of Guinea countries. The ITD will continue its southwards migration, leading to the reduction of rainfall activities over the Gulf of Guinea countries and the intensification of Harmattan in the Sahel, the Sahara and northern part of the Gulf of Guinea countries. In detail:

North Africa countries: will have no significant change in rainfall distribution and amounts. However, some localised light amounts ranging from 10mm to 80mm will be observed in the extreme northern part.

The Sahel: will be mostly dry. The region will be under the influence of the Harmattan winds, cold, dry and dusty.

Gulf of Guinea countries: The northern part will be under the influence of the Harmattan while the southern part will experience amounts ranging from 10mm to 100 mm.

Central Africa countries: will continue to experience rainfall amounts ranging from 10mm to 300mm over most part, intensifying to maxima of about 500mm over some parts.

GHA countries: will have amounts ranging from 10mm to 100mm over most parts intensifying with localized peaks ranging from about 150mm to 300mm over Great Lake countries.

Southern Africa countries: most of the region will observe some rainfall amounts ranging from 10mm to 80mm over south-eastern part of South Africa, Lesotho and Swaziland.

3.2 IRI seasonal Rainfall outlook for Africa issued in October 2011 for NDJ

The IRI seasonal rainfall forecast issued in October for the period of November-December-January 2011 shows:

- High probability of below normal to normal rainfall over most of GHA.
- High probability of above to normal rainfall over most of southern Africa.
- Normal situation over south-eastern Gulf of Guinea countries.
- Elsewhere, the climatology will prevail.

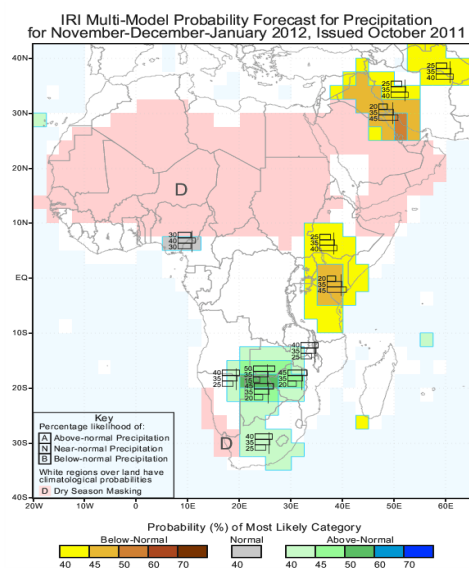


Figure 11: IRI forecast

3.3 Seasonal Rainfall Outlook of central Africa for OND 2011 by ACMAD issued in September

Zone I covering Equatorial Guinea, Sao Tome et Principe, the coastal area of Cameroun, most part of Gabon and coastal part of Congo, will have above normal rainfall.

Zone II including south-east Cameroun, south-west of Central African Republic, east Gabon, central and north of Congo and part of western Democratic Republic of Congo will be characterized by normal to below normal rainfall.

Zone III, covering the extreme south of Chad, central part of Cameroon, most part of Central Africa Republic and democratic Republic of Congo will be characterized by normal rainfall.

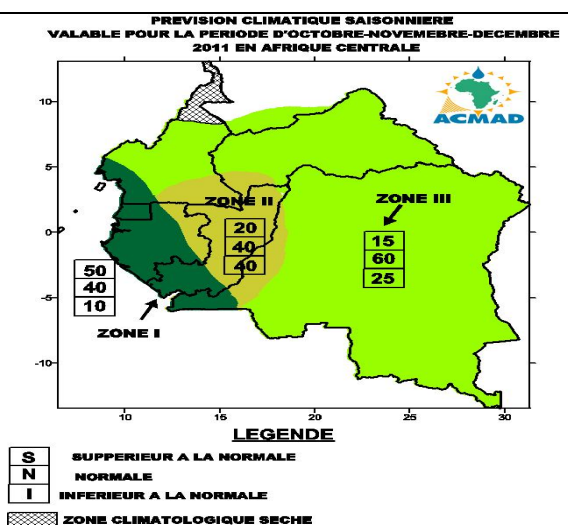


Figure 12: Precipitation Outlooks Valid for October-November-December 2011 over Central Africa.

3.4 Seasonal Rainfall Outlook for west Greater Horn of Africa for SOND 2011 by ICPAC issued in September

- **Zone I:** Increased likelihood of near to below normal rainfall over western Tanzania; southern Burundi and southwestern Rwanda.
- **Zone II:** Increased likelihood of near normal to above normal rainfall over much of Tanzania; northern Burundi; much of Rwanda; western Kenya as well as southern and central Uganda.
- **Zone III:** Increased likelihood of above to near normal over northeastern and northern coast of Tanzania; coastal, central and northeastern Kenya; extreme southern Ethiopia as well as southern and central Somalia.
- **Zone IV:** Increased likelihood of to near normal to below normal rainfall over northern Somalia; eastern and southern Ethiopia; northwestern Kenya and northern Uganda.
- **Zone V:** Increased likelihood of near normal to above normal rainfall over much of South Sudan; western, central and northern Ethiopia and Djibouti.
- **Zone VI:** Increased likelihood of generally dry conditions over Sudan; northern Ethiopia and much of Eritrea.

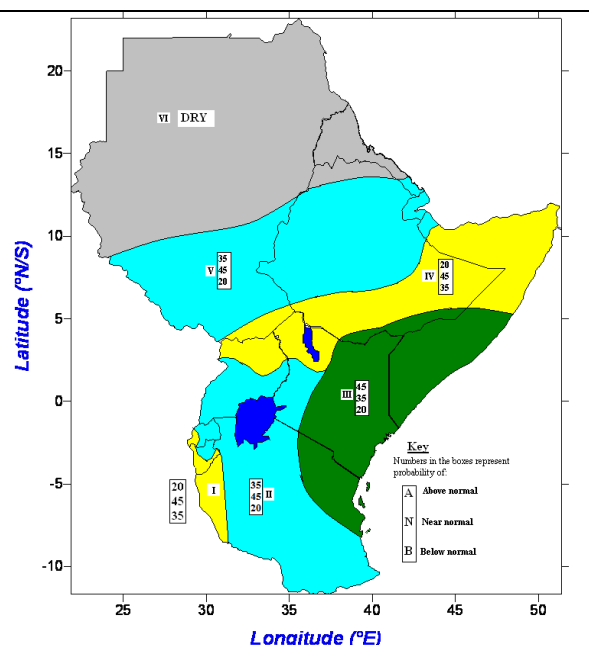


Figure 13 : GHA Climate Outlook for September to December 2011

3.5 Southern Africa Rainfall Outlook (SARCOF-15) for OND 2011 issued in September

Zone 1 (The extreme north of the DRC): Increased chances of normal to below-normal rainfall

Zone 2 (North-eastern half of Tanzania): Increased chances of above-normal rainfall

Zone 3 (North-western half of Angola, the bulk of DRC, south-western half of Tanzania, extreme north-eastern parts of Zambia, northern half of Malawi and north eastern Mozambique): Increased chances of normal to above-normal rainfall

Zone 4 (Central South Africa, south-western half of Lesotho, western half of Botswana, most of Namibia, south-eastern half of Angola, extreme south of DRC, central parts of Zambia, southern half of Malawi, north-eastern half Zimbabwe and central Mozambique): Increased chances of normal to below-normal rainfall

Zone 5 (North-eastern half of Lesotho, north-eastern parts of South Africa, Swaziland, southern parts of Mozambique, south-western half of Zimbabwe, eastern half Botswana and southwestern Zambia): Increased chances of normal to below-normal rainfall

Zone 6 (The west coastal areas of South Africa, Namibia and the extreme south-western Angola): Increased chances of normal to below-normal rainfall

Zone 7 (Western Madagascar): Increased chances of normal to below-normal rainfall

Zone 8 (Eastern Madagascar): Increased chances of normal to above-normal rainfall

Zone 9 (Southern Madagascar): Increased chances of above- normal to normal rainfall

Zone 10 (Mauritius): Increased chances of normal to above-normal rainfall

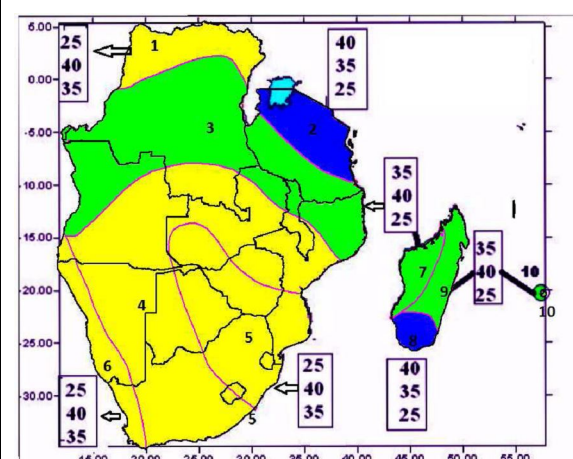


Figure14: Rainfall forecast for October-December 2011

ADVICES:

- ✓ *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).*
- ✓ *Users of this product are encouraged to contact NMHSs for more detailed advices at country level.*