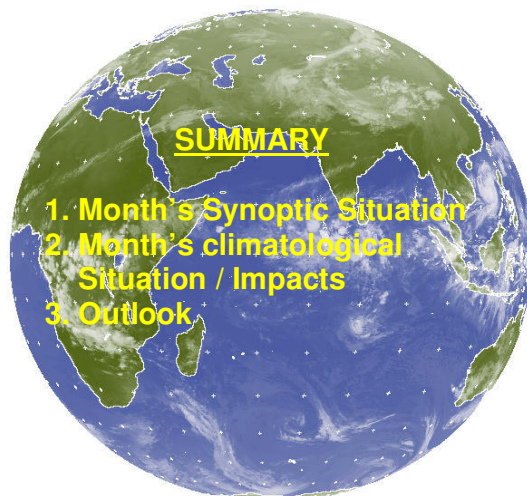


# CLIMATE WATCH AFRICA BULLETIN

N° 10  
OCTOBER 2009



MET5 15 NOV 2003 1800 DTOT

**HIGHLIGHTS:** The month recorded decreased rainfall in distribution and amounts over Northern Africa, southern parts of the Sahel and the Gulf of Guinea countries with an increase over central Africa and Greater Horn of Africa (GHA) countries. The rainfall is expected to increase over parts of central Africa and GHA countries with the heaviest associated with floods over western and eastern parts of GHA countries.

## 1. SITUATION DURING THE MONTH OF OCTOBER, 2009

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

### 1.1 Centres of Surface Pressure Systems

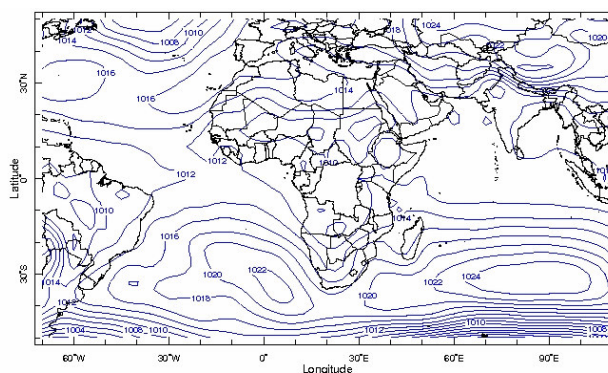
The Figure 1 shows surface pressure systems as described below:

The Azores high pressure at 1016hPa weakened by 6hPa compared to the previous month and shifted southeast at about 35°N/10°W.

The St Helena high pressure at 1022hPa weakened by 2hPa and shifted southeast at about 35°S/05°E extending a ridge over western Gulf of Guinea countries.

The Saharan thermal lows of 1008hPa over Chad and Sudan maintained depths compared to the past month.

The Mascarene high pressure at 1024hPa weakened by 2hPa and shifted northeast. Its mean position was at 32°S/85°E with an extended ridge over eastern Africa.



Oct 2009

Figure 1 : Mean surface pressure during the Month of October, 2009

(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 were observed from equatorial Atlantic ocean up to western part of Gulf of Guinea countries backing to moist south westerlies over Nigeria, Chad Central African republic and Sudan.

Over Democratic Republic of Congo and Congo strong continental north-easterly anomalies prevailed while over Somalia strong southeasterly/easterly wind anomalies from Indian Ocean were observed.

Over Algeria, Tunisia, west Libya and Mauritania northerlies wind anomalies veering into easterlies and backing to strong westerlies and forming cyclonic circulation over the Sahel.

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

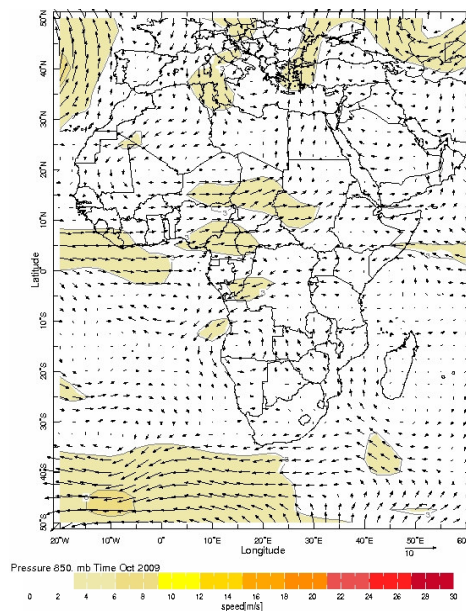


Figure 2 :October 2009, Wind Anomalies at 850hPa  
(Source : IRI/NOAA/NCEP)



### 1.3 Thermal index

In the month of October, 2009, the Thermal Index (TI) regime at 300hPa, Figure 3, had a near-threshold isotherm value of 242.5°K over most parts of central Africa and GHA countries maintaining the high conditional instability associated with heavy rainfall with floods over the areas characterized by high relative humidity as shown in Figure 4. The low TI regime values less or equal to 241°K were associated with suppressed convection over the rest Africa.

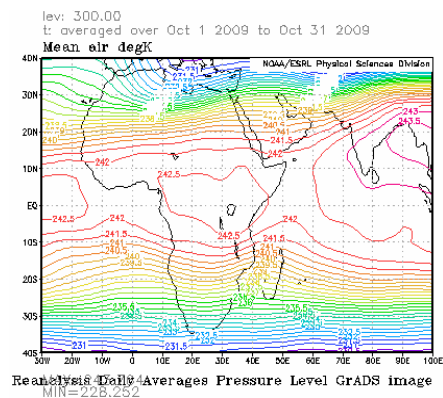


Figure 3: Thermal Regime at 300hpa  
(Source: NOAA/NCEP)

### 1.4 Relative Humidity at 850hPa

The 850hPa (Figure 4) shows high RH (>60%) in October, 2009 over Gulf of Guinea countries, central Africa and GHA countries. The Sahara, northern parts of the Sahel, extreme southern part of Central Africa countries and western southern Africa countries experienced dry conditions characterized by the lowest RH 40%).

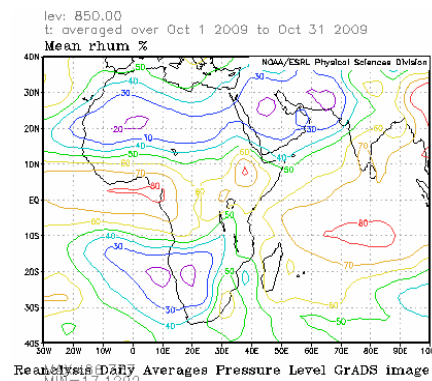


Figure 4: RH at 850 hPa (Source : NOAA/NCEP)

## 2. CLIMATOLOGICAL SITUATION AND IMPACTS DURING THE MONTH OF OCTOBER, 2009

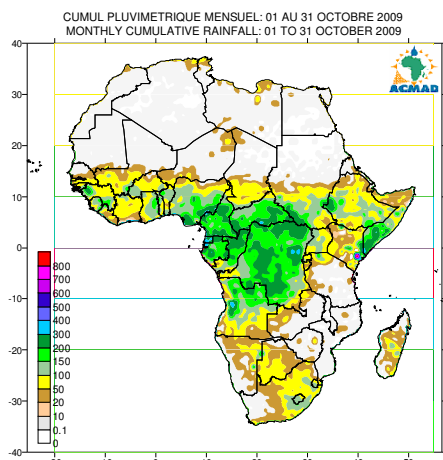
The section provides the general climatological situation covering two major parameters, the rainfall and temperature.

### 2.1 Rainfall

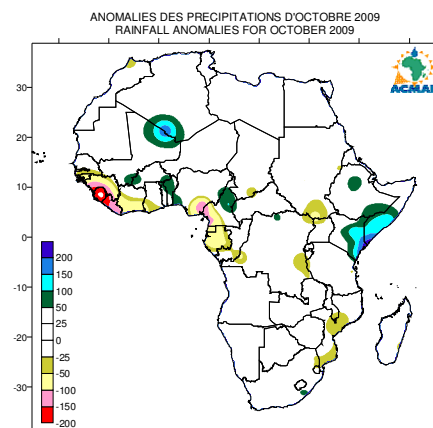
The estimated rainfall for October, 2009 in Figure 6, shows decreased rainfall in distribution and amounts over Northern Africa, southern parts of the Sahel and the Gulf of Guinea countries with an increase over central Africa and Greater Horn of Africa (GHA) countries. In detail:

- **North Africa:** had rainfall decrease in distribution and amounts ranging from 10mm to 50mm with isolated peaks of about 100mm.
- **The Sahel:** had rainfall decrease in distribution and amounts ranging from 10mm to 100mm with maximum rainfall of about 150mm over southeast Mali.
- **Gulf of Guinea:** countries observed rainfall decrease in amounts ranging from 10mm to 150mm with maximum amounts of about 200mm to 300mm and above over southern Nigeria and Cameroon.
- **Central Africa:** countries had increase in rainfall distribution with decrease in amounts ranging from 10mm to 300mm with peaks of about 400mm over Central Africa Republic, Gabon, eastern DRC and Angola.
- **GHA:** countries experienced rainfall increase in amounts ranging from 10mm to 200mm with peaks of above 300mm and 800mm over southern Somalia and southeast Kenya respectively.
- **Southern Africa:** countries experienced widespread rainfall amounts ranging from 10 to 150mm with maximum of about 200mm over eastern Namibia.

Compared to the reference period 1979-2000, the October, 2009, rainfall anomalies, Figure 7 shows significant rainfall deficits over most of Gulf of Guinea countries, central Africa countries while excessive rainfall was observed over parts of the Sahel and GHA countries:- eastern Kenya, and southern Somalia.



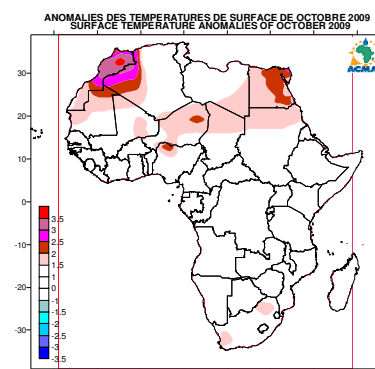
**Figure6: Monthly cumulative rainfall**  
(Data Source: NOAA/NCEP)



**Figure7: Monthly Precipitations Anomalies**  
(Data Source: NOAA/NCEP)

## 2.2 Surface Temperature Anomalies

In October, 2009, the temperature anomalies (Figure 8) compared to 1971-2000 base period, in most of African countries were generally normal ( $1^{\circ}\text{C}$  to  $-1^{\circ}\text{C}$ ). However, positive temperature anomalies ( $>1.5^{\circ}\text{C}$ ) were observed over Niger, northern Nigeria, eastern Egypt with the highest temperature anomalies with epicenter ( $>3.5^{\circ}\text{C}$ ) over northern Morocco.



**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 with rainfall outlook in November.

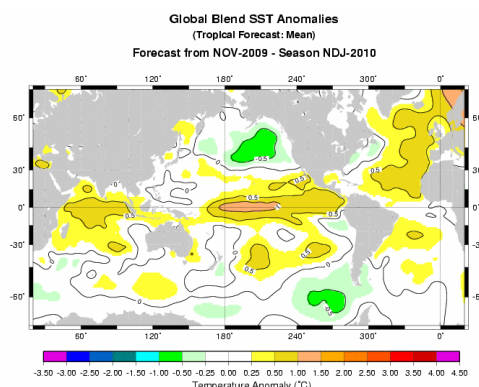
### 3.1 Forecast Sea Surface Temperature (SST)

The figure 9 shows the forecast Sea Surface Temperature Anomalies from October, 2009 SST for the period of November-December-2009 and January-2010.

**Pacific Ocean:** warming conditions will continue over central and eastern Pacific ocean while cooling will prevail above  $30^{\circ}\text{N}$  and  $30^{\circ}\text{S}$ .

**Atlantic Ocean:** A neutral to warming condition is expected over most of Atlantic Ocean except the north-eastern part of the ocean.

**Indian Ocean:** warming conditions are expected over most of the Indian Ocean while cooling condition will prevail in the south-eastern sector off coast of southwestern Australia.



**Figure9 : 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) shown on Figure 10 that, current forecasts and observations indicate a probability of 90% for maintaining weak to moderate El Nino conditions through the end of the year.

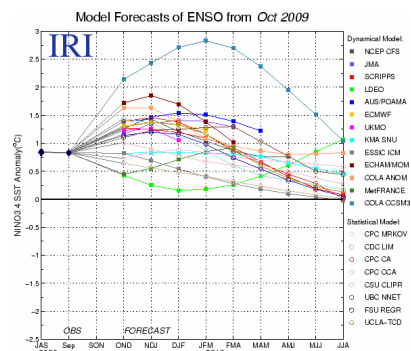


Figure 10 : Multi-model ENSO Forecast

(source IRI)

### 3.3 Rainfall

The prevailing moisture influx and high conditional instability manifested by TI regimes at 300hPa will maintain heavy rainfall over few parts in the Gulf of Guinea countries intensifying and resulting into floods over central Africa and GHA countries. In detail

- **North Africa countries:** will experience rainfall increase with amounts ranging from 10mm to 100mm with peaks of about 150mm.
- **The Sahel:** will continue to experience mean temperatures decreases, characterized by dry conditions and dust associated with harmattan.
- **Gulf of Guinea countries:** will experience rainfall decrease recording amounts ranging from 10mm to 100mm with peaks ranging from about 150mm to 200mm.
- **Central Africa countries:** will have rainfall increase recording amounts ranging from 20mm to 300mm with peaks of about 400mm to 600mm.
- **GHA countries:** will record rainfall increase over western, central and eastern parts with amounts ranging from 20mm to 300mm with peaks ranging from about 400mm to 800mm.
- **Southern Africa countries:** will experience rainfall increase with amounts ranging from 10 to 100mm intensifying with peaks ranging from 150mm to 200mm and above over eastern sector characterized by the highest relative humidity (RH >60%)

### 3.4 The GHA Consensus Climate Outlook for September to December 2009

- Zone I:** This zone is generally dry and covers northern parts of Ethiopia, Eritrea, and Djibouti as well as central parts of the Sudan northwards.
- Zone II:** Increased likelihood of near normal rainfall. This zone includes central parts the Sudan, central and southern Ethiopia, the Rift Valley areas of Kenya, northern and central parts of Tanzania.
- Zone III:** Increased likelihood above normal rainfall. This zone covers western sectors around Lake Victoria basin and adjacent countries of Burundi, Rwanda, Uganda, southern Sudan and western Kenya.
- Zone IV:** Increased likelihood above normal rainfall. This zone covers parts of east and coastal Kenya, coasts of Somalia, Kenya and Tanzania.
- Zone V:** Increased likelihood of below normal rainfall. This zone covers southern and south western Tanzania.

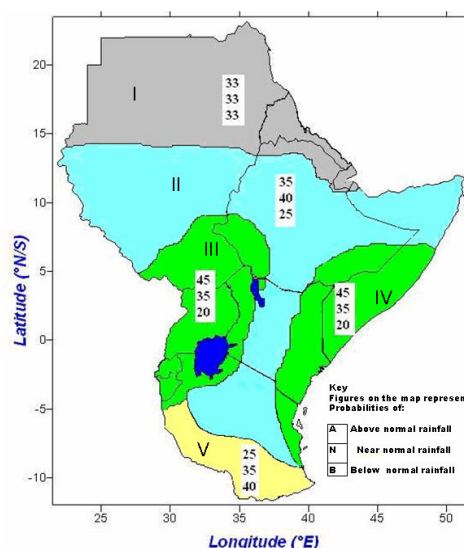


Figure 11: Consensus Climate Outlook issued by GHACOF24 (ICPAC)

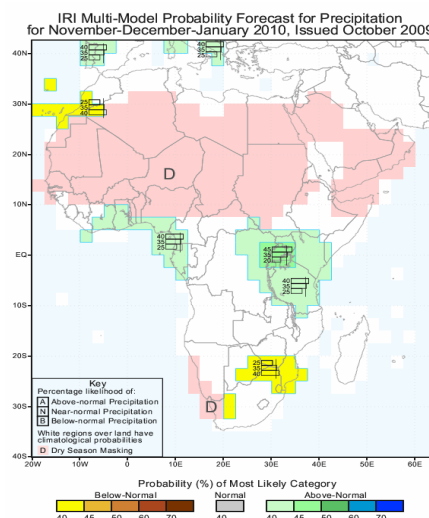
**ADVICE:**

**THE POTENTIAL OF ADVERSE IMPACTS IN THE REGIONS ARE CLEAR FROM THE FORECAST PROBABILITIES. ORGANISATIONS INVOLVED IN EARLY WARNING AND INTERVENTION SERVICES NEED MORE THAN EVER, TO MAINTAIN CLOSE AND PERMANENT COORDINATION.**

**3.5 IRI seasonal Rainfall outlook issued in October 2009 for November-December-January**

The IRI seasonal rainfall forecast issued in October 2009 for the period of November-December-January 2010 is conformed with GHACOF24 and shows:

- excessive rainfall over parts Gulf of Guinea, western and eastern parts of Central Africa countries.
- Below normal rainfall is expected over central Morocco and extreme western Algeria, north eastern and extreme south-western southern Africa.



**Figure 12: IRI forecast**