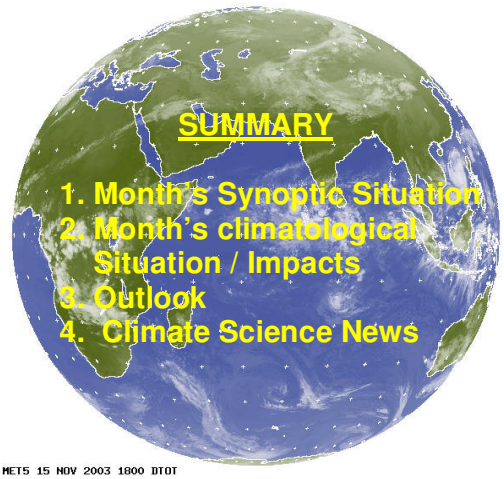
AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT
CENTRE AFRICAIN POUR LES APPLICATIONS DE LA METEOROLOGIE AU DEVELOPPEMENT

CLIMATE WATCH AFRICA BULLETIN

N° 05
May 2009



SUMMARY

HIGHLIGHTS: The most striking events in the month of May, 2009 are the severe widespread rainfall deficits over the Greater Horn of Africa (GHA), northern parts of central Africa, the Gulf of Guinea countries and eastern Madagascar.

1. SITUATION DURING THE MONTH OF MAY, 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 Anticyclone

The Figure1 shows surface pressure systems as described below:

The Azores high pressure at 1024hPa weakened by 2hPa compared to the previous month and shifted northwest at about 37°N/38°W.

The St Helena high pressure at 1018hPa weakened by 2hPa compared to the past month and shifted northward at 25°S/00°.

The Saharan thermal lows of 1008hPa filled up by 2hPa compared to the past month, but covered limited areas over extreme southern Mauritania, central Mali, southern Niger, central Chad and extreme northern Cameroon.

The Mascarene high pressure at 1020hPa weakened significantly by 4hPa and shifted northwest at 30°S/80°E with a ridge over eastern part of Southern African countries.

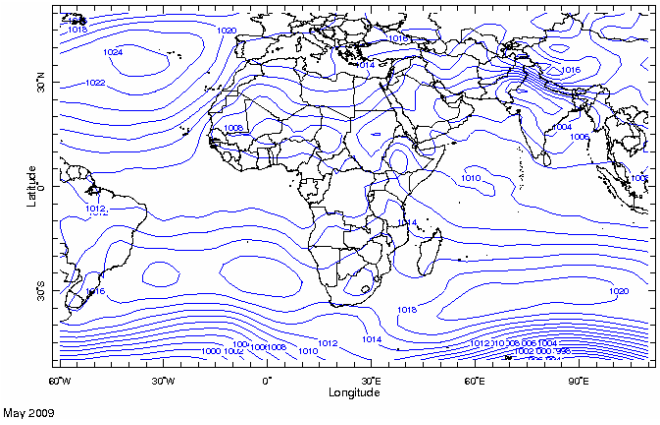


Figure 1 : Mean surface pressure during the Month of May, 2009

(Source : IRI/NOAA/NCEP)

1.2 Low level wind anomaly flow at 850hPa

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

Strong north-easterly wind anomalies were observed over Mediterranean Ocean turning to easterlies anomalies over west Libya, southeast Algeria and extreme north Niger, becoming southerly wind anomalies over northwest Algeria and extreme north Morocco.

Over the Gulf of Guinea strong westerly wind anomalies prevailed while over from south Indian to south Atlantic Oceans strong westerly wind anomalies prevailed.

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

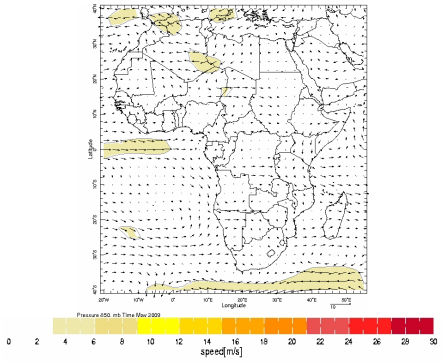


Figure 2 : May 2009, Wind Anomalies at 850hPa
(Source : IRI/NOAA/NCEP)

1.3 Mid and upper troposphere winds

At the 600hPa (Figure 3), a winds core associated with the African Easterly (AEJ) of about 12m/s were observed at about 08°N of latitude over Sierra Leone, Guinea and Côte d'Ivoire.

The Figure 4 shows, the westerly wind mean maximum of 32m/s at 150hPa over northern Africa, while, equatorial easterly wind primary and secondary maxima of 12 m/s and 4 m/s were observed over northwest Indian Ocean and western part of central Africa countries respectively.

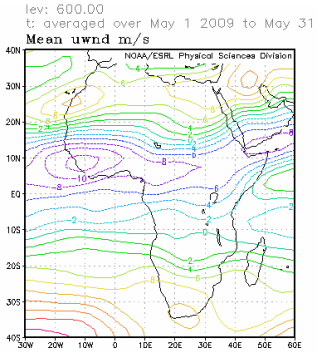


Figure 3 : U - Winds velocity at 600hPa (Source : NOAA/NCEP)

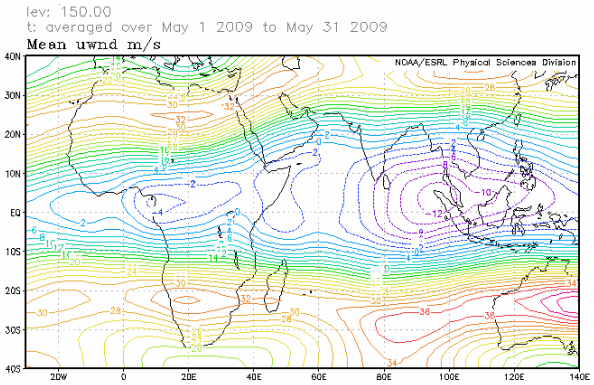


Figure 4 : U - Winds velocity at 150hPa (Source : NOAA/NCEP)

1.4 Thermal index

In the month of May, 2009, the thermal index (TI) regime at 300hPa, Figure 5, had a near-threshold value of 242°K isotherm over equatorial Africa extending about 12°N to 12°S covering extreme southern part of the Sahel, Gulf of Guinea, central Africa and GHA countries maintaining reasonable conditional instability associated with heavy rainfall. The threshold value of 243°K and above maintained the highest conditional instability associated with heavy convective rainfall with floods over eastern Uganda and western Kenya. The low TI regime value of 241°K and below was associated with suppressed convection over most of the Sahel and the Sahara countries.

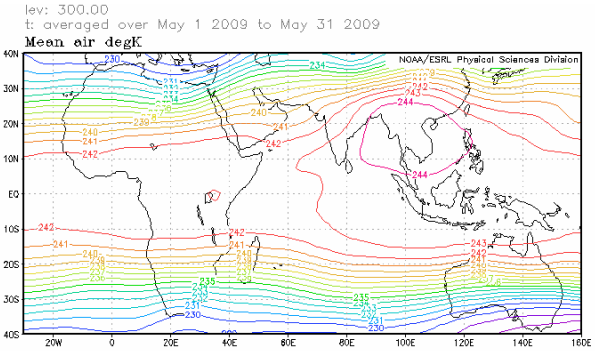


***Figure 5* : Monthly Mean Temperature at 300hPa (Data Source: NOAA/NCEP)**

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

A neutral to warming conditions prevailed in most of the Pacific Ocean except in the southern and north-eastern where cooling conditions prevailed. Neutral to warming conditions were observed in most of the Atlantic Ocean except in the equatorial north-eastern and north-west parts where some cooling conditions were observed. Neutral to warming condition were observed in most of the Indian Ocean except the cooling conditions observed south of Mozambique Channel and south of Madagascar.

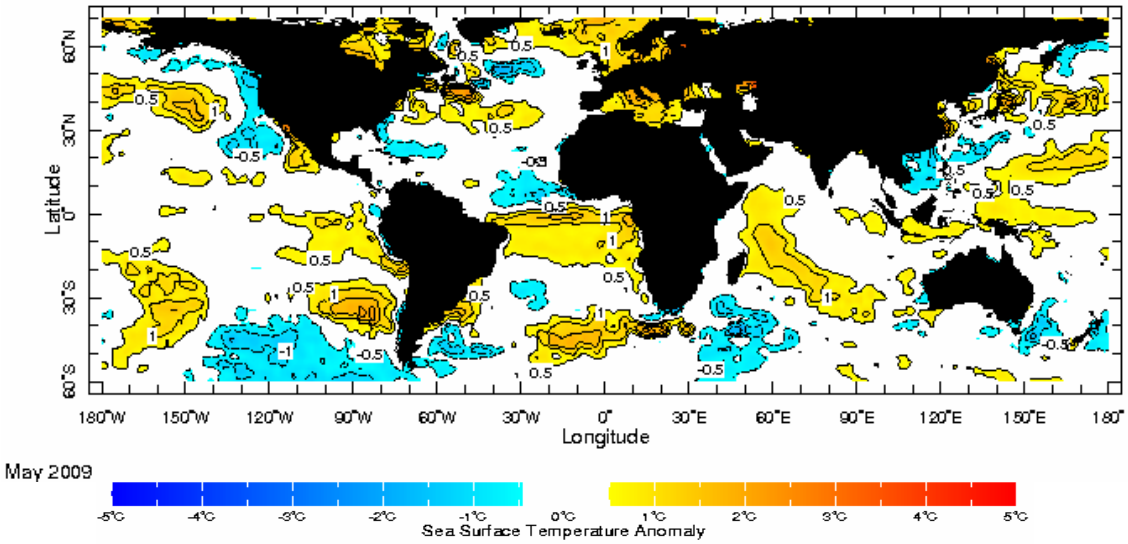


Figure 6: Sea Surface Temperature Anomalies (Source: IRI)

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

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

2.1 Rainfall : Compared to the last month, the estimated rainfall for May in Figure 7 shows spatial and amounts decrease over Northern , Central, Great Horn and Southern Africa countries while, the Sahel and Gulf of Guinea countries observed spatial and amounts of rainfall increase. In detail**:**

- **North Africa** had significant spatial and amounts of rainfall decrease ranging from 10mm to 80mm with maximum rainfall of 150mm western Algeria.

- **The Sahel** Most of the remained generally dry. However, some rainfall amounts ranging from 10mm to 80mm with maximum rainfall amounts of 150mm were recorded over southern Mali, Senegal, Burkina Faso and Chad.

- **Gulf of Guinea** countries experienced spatial and amounts of rainfall increase ranging from 10mm to 300mm with heaviest amounts of 300mm to 400mm over southeast Nigeria/west Cameroon.

- **Central Africa** countries experienced slight spatial and amounts of rainfall decrease recording 10mm to 250mm with peaks ranging from 250mm to 300mm over Central Africa Republic, Democratic Republic of Congo, Gabon and Equatorial Guinea.

- **GHA** countries experienced slight spatial rainfall and amounts decrease ranging from 10mm to 250mm with peaks ranging from 250mm to 300mm over South Sudan, western Ethiopia, Great Lakes countries, western Kenya and central Tanzania.

- **Southern Africa** countries experienced spatial rainfall and amounts decrease recording amounts ranging from 10mm to 80mm. However, localized peaks rainfall amounts of bout 300mm were recorded over southeast Zambia/Mozambique.

Compared to the reference period 1979-2000, the May, 2009, rainfall anomalies, Figure 8 shows significant rainfall deficits over most African countries lying between 10°N and 10°S and Madagascar. The highest rainfall deficit ranging from 100mm to 200mm was observed over Liberia, southwest Côte d'Ivoire, south Nigeria, Cameroon, Central Africa Republic, Sudan/Ethiopia, southeast Kenya/northeast Tanzania and east Madagascar.

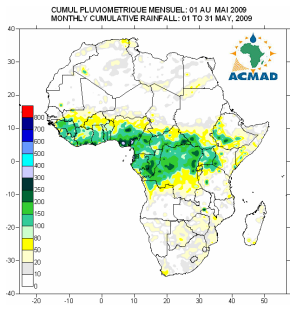


Figure 7: Monthly cumulative rainfall (Data Source: NOAA/NCEP)

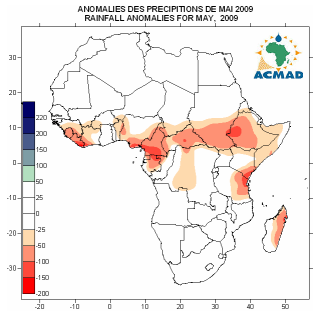


Figure 8: Monthly Precipitations Anomalies (Data Source: NOAA/NCEP)

2.2 Surface Temperature Anomalies

In May 2009, the temperature anomalies (Figure 9) compared to 1971-2000 base period, in most of African countries were generally normal (1°C to –1°C). However, positive temperature anomalies (>1.5°C) were observed over western Gabon, northwest Nigeria/Benin, west Mauritania, south and central Morocco, north Algeria with the highest positive temperature anomalies epicenter (>2.5°C) covering western Mauritania, while negative anomalies (<-1.5°C) were observed over southeast Egypt/north Sudan.

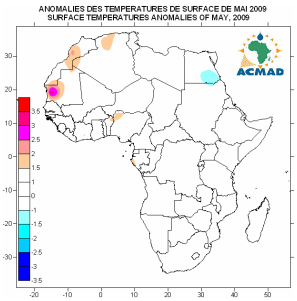


Figure 9 : Monthly Temperatures Anomalies (Data Source: NOAA/NCEP)

3. OUTLOOK

The subsections provide the expected SSTs and ENSO characteristics and evolution of events based on Figures 10 and 11 respectively with rainfall outlook in June.

3.1 Forecast Sea Surface Temperature (SST)

The figure 10 shows the forecast Sea Surface Temperature Anomalies from May 2009 for the period ranging from June to July.

Pacific Ocean: Neutral to warming conditions will continue over most of Pacific ocean except in the eastern equatorial, north eastern and southern parts where cooling will prevail.

Atlantic Ocean: A neutral to warming condition is expected over most of Atlantic Ocean except around coastal Senegal/Sierra Leone, western parts of the Ocean.

Indian Ocean: Neutral to warming condition are expected over most of the Indian Ocean except over the southern central parts where cooling conditions will persist. Over Mozambique Channel, neutral condition will prevail.

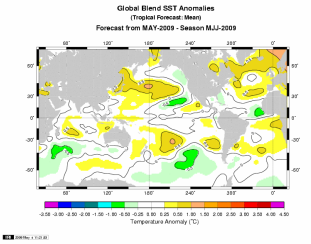


Figure 10 : Forecast Sea Surface Temperatures Anomalies (source IRI)

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 11 that, Tropical Pacific atmospheric conditions have been returning to ENSO-neutral conditions from La Nina conditions, while oceanic conditions have been ENSO-neutral since early April. However, current forecasts and observations indicate that ENSO-neutral conditions are the most likely scenario through 2009, but with an El Nino scenario only slightly less likely..

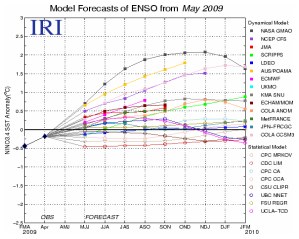


Figure 11 : Multi-model ENSO Forecast (source IRI)

3.3 Rainfall

The ITD northward displacement will lead to moisture increase over northern part of Gulf of Guinea countries and southern Sahel triggering convective rainfall increase. The northern parts of central Africa and northern GHA countries will have rainfall increase with significant decrease over southern parts of GHA and southern Africa countries. In detail:

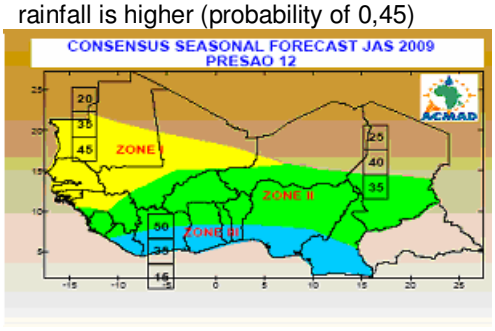
- **North Africa** countries will experience rainfall increase recording about average rainfall over coastal parts.
- **The Sahel** will experience rainfall increase with highest amounts over southern parts of the Sahel recording average rainfall amounts with below average over the rest of the Sahel.
- **Gulf of Guinea** countries will experience rainfall increase recording above average over several parts with maxima peaks along the coastal zone.
- **Central Africa** countries will experience average rainfall tending to below average over southern parts..
- **GHA** countries will experience decreased rainfall amounts over southern parts recording below average rainfall with average to above average amounts over northern and western sectors.
- **Southern Africa** countries experience severe rainfall deficits and possible drought due to prevailing widespread subsidence over the subregion.

3.4 Result of PRESAO12:seasonal rainfall forecast for July-August-September 2009

i) Over the zone III, which covers the southern part of Gulf of Guinea countries (From Cote d'Ivoire to Cameroon), a high probability of rainfall higher than normal (Probability of 0,50)

ii) Over the zone II, which covers Central Sahel including east of Mali, Burkina Faso, Niger, Chad and the countries north of Guinea Gulf a higher probability to a normal (probability of 0,40) with a tendency to below normal (probability of 0,35) precipitation

iii) Over the zone I, which covers southwest Mauritania, Senegal, the Gambia, Guinea Bissau, north and west Guinea Conakry and southwest Mali, the probability of Below normal rainfall is higher (probability of 0,45)



ADVICE:

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

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ACMAD

AFRICAN CENTRE OF METEOROLOGICAL APPLICATIONS FOR DEVELOPMENT

Institution Africaine parrainée par la CEA et l'OMM — African Institution under the aegis of UNECA and WMO

Seasonal Climate Outlook Forum for West Africa
PRESAO 12
From 7th to 22nd May 2009 in Niamey - NIGER

The 12th Regional Climate Outlook Forum (RCOF) on Seasonal Climate Forecasting for West Africa, Chad and Cameroon, the PRESAO-12 organized by ACMAD and partners started with a Pre-Forum training workshop held in Niamey (Niger) from 7th – 20th May, 2009 attended by about 30 participants from 19 countries/international institutions. At the end of this training, seasonal forecast for July-August-September (JAS), 2009 was developed for West Africa countries, Chad and Cameroon.

The country forecasts were presented at the forum that followed the training from 21st to 22nd May, 2009 under the theme: **"Seasonal Climate Prediction as a tool for Water Resources Management, Food Security and risk management"**. The forum brought together experts of national meteorological and hydrological services, representatives of community development (water resources management , agriculture and food security, health, energy and natural ecosystems ...), actors and managers of natural disasters, representatives of regional and international institutions, climate scientists and professionals in Communication.

The Forum discussions focused on the use and impacts of seasonal climate forecast in the countries and development of strategies to improve the applications and dissemination of climate forecast products to end users.

(a)

(b)

(c)

The (a), (b) and (c) are photos taken during the Pre-Forum

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