

Ten Day Climate Bulletin N° 30 Year 2009 Dekad of 21 to 31 October, 2009

HIGHLIGHT: The heaviest cumulative rainfall was experienced over southeast Kenya and south Somalia while significant rainfall amounts were recorded over Libreville in Gabon and Seychelles. Heavy rainfall with floods are expected over eastern central Africa and GHA countries:- Rwanda, Burundi, Uganda, south Sudan, south Ethiopia, south Somalia, Kenya and northeast Tanzania.

1. GENERAL SITUATION

Subsection 1.1 provides the strengths of the surface pressure systems, the ITD displacement while the subsection 1.2 on the Troposphere gives a brief on monsoon, thermal index regimes and relative humidity.

1.1 SURFACE

- **Azores high:** Pressure of 1023 hPa with an NE-SW axis weakened by 2 hPa and shifted southwest compared to the previous dekad. Its mean position was located at about 35°N/06°W, extending a ridge over north Morocco and Algeria.
- **St. Helena high:** Pressure of 1029 hPa with an NW-SE axis maintained its intensity compared to the past dekad and shifted southeast at 38°S/06°E with an extended ridge over South Atlantic Ocean.
- **Mascarene high:** Pressure of 1030 hPa with a W-E axis maintained its intensity compared to the previous dekad and shifted southwest. Its mean position was located at 34°S/85°E with an extended ridge over Indian Ocean.
- **Saharan Thermal Low:** Pressure at 1007 hPa weakened slightly by 1 hPa and shifted northeast compared to the previous dekad. Its mean position was located at 15°N/19°E with an extended trough over east Mali, central Niger and south Chad.

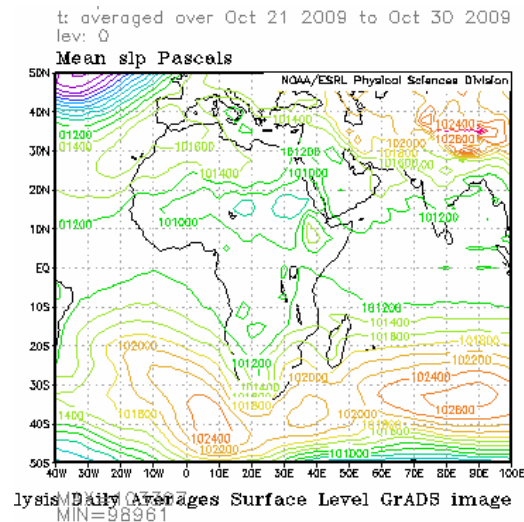


Figure 1: Mean Sea Level Pressure (Source: NOAA/NCEP/ESRL: PSD)

- **Inter-Tropical Discontinuity (ITD):** Between the second dekad (blue) of October and third dekad (black) of October, 2009 in (Figure 2), the ITD fluctuated slightly over the Sahel.

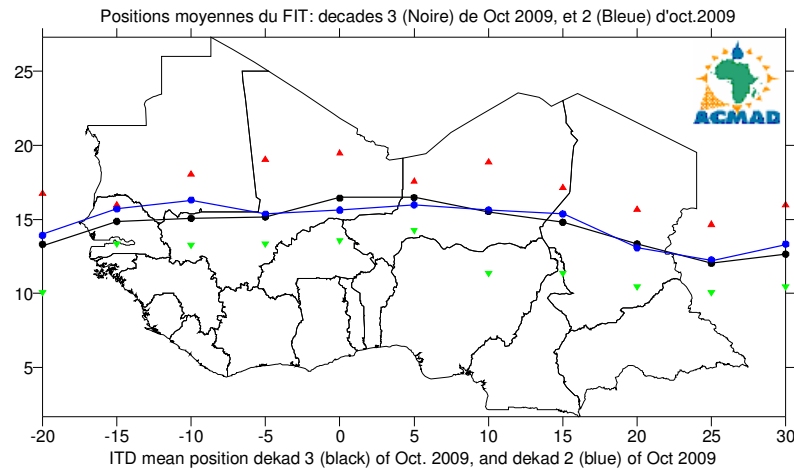


Figure 2: The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

1.2.1 Monsoon

Monsoon influx at 925hPa level was weak (1.0 to 5.0 m/s) over Sierra Leone, Liberia and south Nigeria and moderate (5.5 to 11.5m/s) over north Togo, Benin and northwest Nigeria.

1.2.2 Thermal Index (TI)

In third dekade of October, 2009, the thermal index (TI) regime at 300hPa in (figure 3), had TI regime value of 242°K covering 10°N and 10°S over Africa supporting convective activities with threshold value of 243°K for heavy rains resulting in floods covering parts of GHA countries characterized by high relative humidity as observed in Figure 4.

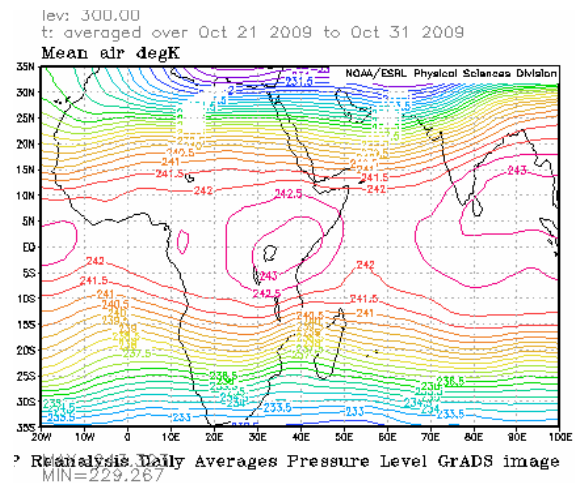


Figure 3: TI at 300hPa (Source: NOAA/NCEP/ESRL: PSD)

1.2.3 Relative Humidity (RH): The 850hPa (Figure 4) shows high RH (>70%) in the third dekade of October, 2009 over Gulf of Guinea countries and northern part of 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%.

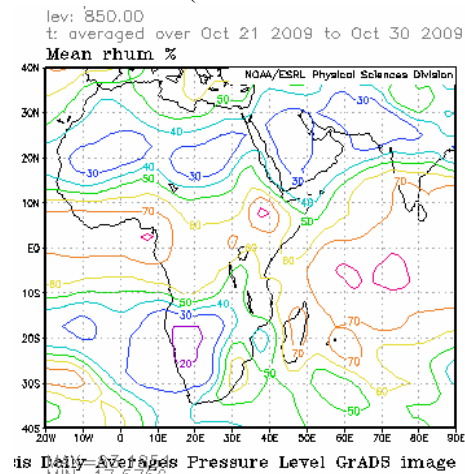


Figure 4 : RH at 850hPa (Source: NOAA/NCEP/ESRL: PSD)

2. RAINFALL AND TEMPERATURE SITUATION

Subsection 2.1 provides a summary on estimated rainfall amounts and distribution while subsection 2.2 provides a Table showing stations' observed rainfall, number of rainy days, mean maximum and mean minimum temperatures.

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge in Figure 5 below shows rainfall increase over the north Africa, Gulf of Guinea, central Africa countries and spatial decrease with increased amounts over GHA countries. In detail:

- **North Africa countries:** had rainfall increase, amounts ranging from 10mm to 75mm with maximum of about 100mm over northern Libya.
- **The Sahel:** had an in rainfall increase amounts ranging from 10mm to 75mm over southern part with maxima of about 100mm over Burkina Faso and Mali.
- **Gulf of Guinea countries:** continued had rainfall distribution increase with amounts ranging from 10mm to 100mm with maximum of about 150mm over south eastern Nigeria.
- **Central Africa countries:** observed rainfall amounts increase ranging from 10mm to 150mm with peaks of about 200mm and above over Gabon, Angola and eastern Democratic Republic of Congo.
- **GHA countries:** experienced significant increase in rainfall amounts ranging from 10mm to 200mm with peaks of about 250mm to 300mm and above over southeast Kenya and southern Somalia.
- **Southern Africa countries:** continued to get rainfall with amounts ranging from 0.1mm to 75mm with a peak of about 100mm over northeast South Africa

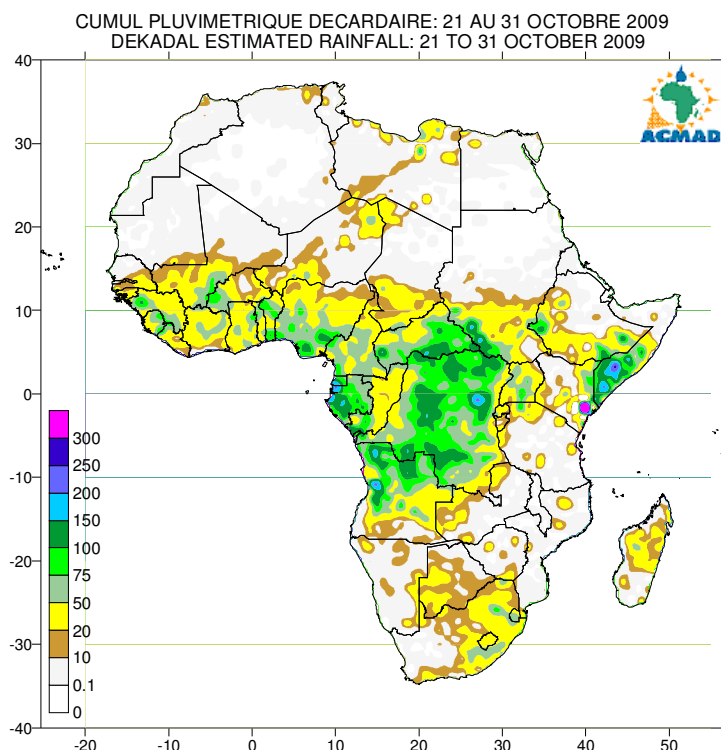


Figure 5 : Estimated precipitations, (Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heaviest cumulative rainfall recorded over Libreville in Gabon and Seychelles, while high temperatures were experienced in the Sahel with mean maximum temperature of 38.8°C recorded at Bilma in Niger and the lowest mean minimum temperature of 7.8°C at Addis Ababa in Ethiopia.

N°	STATIONS	Precipitations (mm)	Number of rainy days	Temperature Max mean (°C)	Temperature Min mean (°C)
1	Abidjan	1	1	31,9	24,4
2	Abuja	30	2	30,4	22,1
3	Accra	1	1	31,5	24,5
4	Addis Abéba	0	0	23,3	7,8
5	Agadez	4	1	37,6	25,6
6	Alger(Dar El Beida)	8	2	24,9	12,1
7	Antananarivo	7	2	26,8	14,6
8	Antsiranana	6	2	32,2	21,3
9	Bamako-Senou	27	3	34,1	21,1
10	Bangui	100	4	31,9	21,2
11	Banjul	6	1	32,9	22,9
12	Beira	55	3	28,5	21,1
13	Bilma	0	0	38,8	23,4
14	Bobo Dioulasso	101	6	32,6	21,7
15	Brazzaville	24	4	31,8	22,4
16	Casablanca	0	0	24,7	17,7
17	Conakry	21	2	-	-
18	Cotonou	42	6	29,8	24,7
19	Dakar-Yoff	0	0	31,6	25,6
20	Dar-es-Salaam	28	2	32,7	22,8
21	Douala	60	7	29,6	23,2
22	Durban	29	6	23,2	18,1
23	Entebbe	0	0	26,9	17,9
24	Francistown	2	1	31,3	17,4
25	Johannesbourg	57	6	24,4	12,8
26	Khartoum	0	0	39,3	27,6
27	Kigali	0	0	25,7	17,8
28	Kigoma	5	2	31,2	21,5
29	Le Caire	0	0	28,8	20,6
30	Le Cap	2	2	21,2	12,8
31	Libreville	162	7	28,5	23,0
32	Lomé	24	4	32,3	24,7
33	Lusaka	0	0	32,2	15,6
34	Manzini	64	6	-	15,6
35	Maputo	7	4	29,2	19,4
36	Maseru	20	4	-	12,4
37	Maun	30	3	35,0	20,5
38	Mbeya	2	1	27,6	13,6
39	Nairobi	26	7	25,9	14,8
40	Nampula	0	0	33,3	19,8
41	Ndele (RCA)	18	2	-	19,0
42	N'Djamena	1	1	37,2	23,4
43	Niamey-Aéroport	0	0	36,5	25,8
44	Nouakchott	0	0	37,4	24,6
45	Ouagadougou	3	3	35,1	24,6
46	Plaisance	120	10	26,5	21,4
47	Sal	0	0	29,8	24,8
48	Seretse Khama- Aéro	1	1	31,6	17,7
49	Seychelles	152	5	30,0	24,5
50	Tamanrasset	0	0	29,3	16,3
51	Toalagnaro	28	6	25,7	20,1
52	Tombouctou	1	1	36,8	23,6
53	Tripoli	49	4	26,9	17,9
54	Tunis	3	3	23,8	16,3
55	Windhoek	0	0	31,4	16,7
56	Zinder	2	1	37,1	24,8

Source of data : ACMAD/GTS

NOTE : 0 signifie : pas de précipitations
- signifie : données manquantes ou incomplètes.

3. OUTLOOK FOR DEKAD (11th - 20th NOVEMBER, 2009)

3.1 RAINFALL

The ITD will be expected to maintain its southward migration marking the onset of harmattan dusty and dry conditions with high temperature over the Sahel countries. The convective rainfall activities will decrease slightly over Gulf of Guinea countries, but intensify over central Africa and GHA countries. Rainfall deficits will continue over western parts of southern Africa countries with the eastern parts of southern Africa countries getting substantial rainfall amounts. In detail:

- **North Africa countries:** will experience slight rainfall increase with amounts ranging from 10mm to 100mm.
- **The Sahel:** will experience dry conditions characterized by high temperatures and dust marking the onset of harmattan over the Sahel.
- **Gulf of Guinea countries:** will experience rainfall decrease recording amounts ranging from 10mm to 100mm with peaks of about 150mm.
- **Central Africa countries:** will have rainfall increase recording amounts ranging from 10mm to 150mm with peaks ranging from about 200mm and above.
- **GHA countries:** will have rainfall increase over several parts observing amounts ranging from 20mm to 250mm with maxima peaks of 300mm and above resulting in floods.
- **Southern Africa countries:** Rainfall ranging from 5mm to 80mm with peaks of about 100mm and above over eastern parts the subregion.

3.2 TEMPERATURE

The forecast in Figure 7, shows that high temperature will be experienced in the Sahel, southern Africa and parts of GHA countries. The highest forecast temperatures ranging from 20°C to 35°C will cover more than 70% of the Continent.

3.3 SOIL MOISTURE

The outlook on soil moisture change, maps shown in Figure 8 include the initial soil moisture and the forecast changes over the next 7 days. The soil moisture change and precipitation relationship is discernable on the maps below. The areas forecast to have high soil moisture change include central Africa countries and western parts of GHA countries.

3.4 IMPACTS

Health: The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy period. The temperatures in the range of 18°C to 32°C with high rainfall and relative humidity (>60%) favour the survival of the vector and development of the parasite in the vector resulting in high incidences of malaria even in low prevalence areas. The Gulf of Guinea, central Africa and parts of GHA including parts of southern Africa countries with high humidity/rainfall coupled with prevailing conducive temperatures will support the survival of parasite resulting in higher incidences of malaria including other climate related diseases. The Harmattan episodes are expected resulting in meningitis over the Sahel countries. The health authorities and Agencies need to continue the healthcare and humanitarian services to protect lives of the vulnerable communities.

Agriculture and food security: The integration of climate prediction products and information into agricultural production and food security is of crucial importance. We have emphasized on the importance of skilful prediction of seasonal rainfall onset dates and suitable planting dates as well as monitoring of the phenological stages of crops for crop yield assessments in our countries. It is imperative to carry out cost benefit analysis on applications of appropriate planting dates in order to take full advantage of limited soil moisture availability in a shortened crop growing season. The drought-tolerant crops can be grown in zones where the prevailing soil moisture is the major climate constraint on crop yield. The crop varieties that are higher yielding, more drought resistant, earlier maturing, disease and pest tolerant are

recommended in these moisture constrained zones for communities' sustained food livelihoods and adaptation. There is also a need to invest in higher yielding crops during a good rainy season by taking advantage of seasonal climate consensus forecasts, for example those issued by regional climate outlook fora (RCOF), the GHACOF, PRESAO, PRESAC, and SARCOF for Greater Horn of Africa (GHA), West Africa/Chad/Cameroon, central Africa, and southern Africa countries respectively. The eastern Africa are experiencing heavy rains with floods and intensification is expected in November/December, 2009 at the peak of the El Niño. Rain harvesting is recommended particularly in the Arid and Semi-Arid Lands (ASLS).

African Ecosystems: While noting that forests serve as rainfall catchment areas, the destruction of forests has been blamed for the declining water levels in the African lakes and rivers. We have to rehabilitate our presently degraded rainfall catchment areas and forests ecosystems through enhanced national policies and environmental reclamation strategies. Good practices in ecosystems rehabilitation include national tree planting during rainy season and soil conservation to minimize soil loss during rainy seasons due to heavy runoff. Enhanced national strategies and policies for adaptation to Climate Change are of highest priority for States' enhanced economic growth for sustainable development and the achievement of the United Nations millennium development goals (MDGs). The countries have to invest in environmental conservation now for better tomorrow.

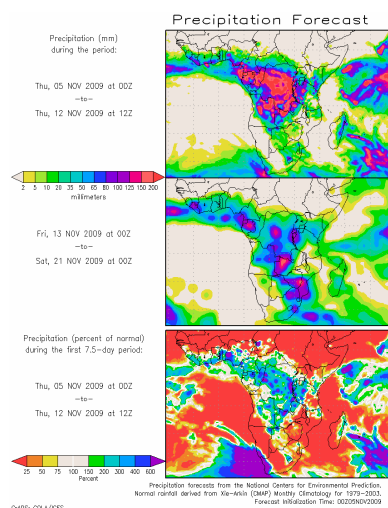


Figure 6 : Precipitation forecast, Source : COLA

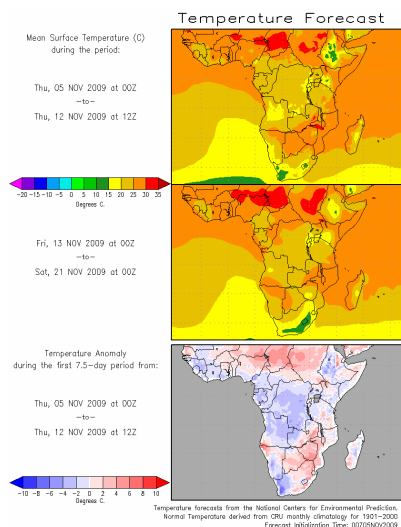


Figure 7 : Temperature forecast Source : COLA

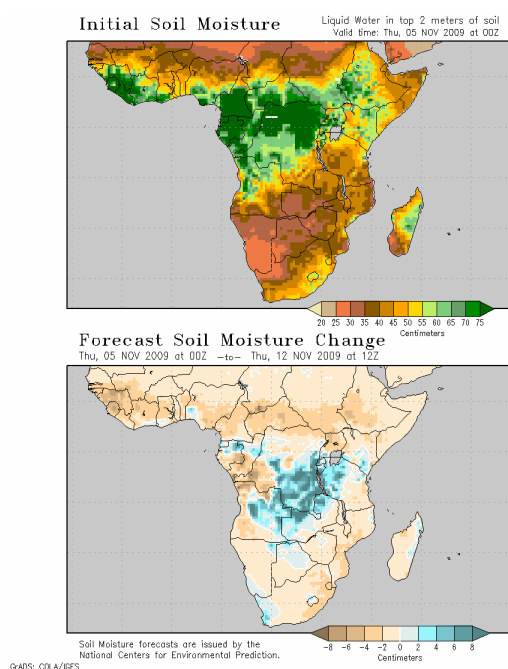


Figure 8 : Soil moisture forecast, Source: COLA

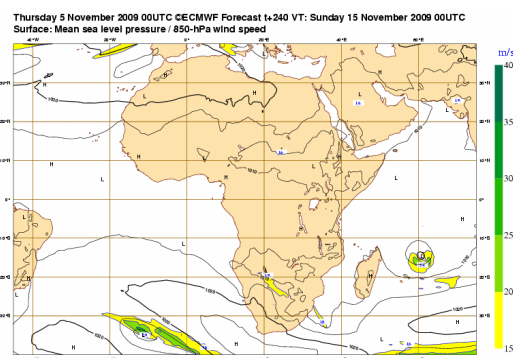


Figure 9 : Mean Sea Level pressure forecast Source : ECMWF