

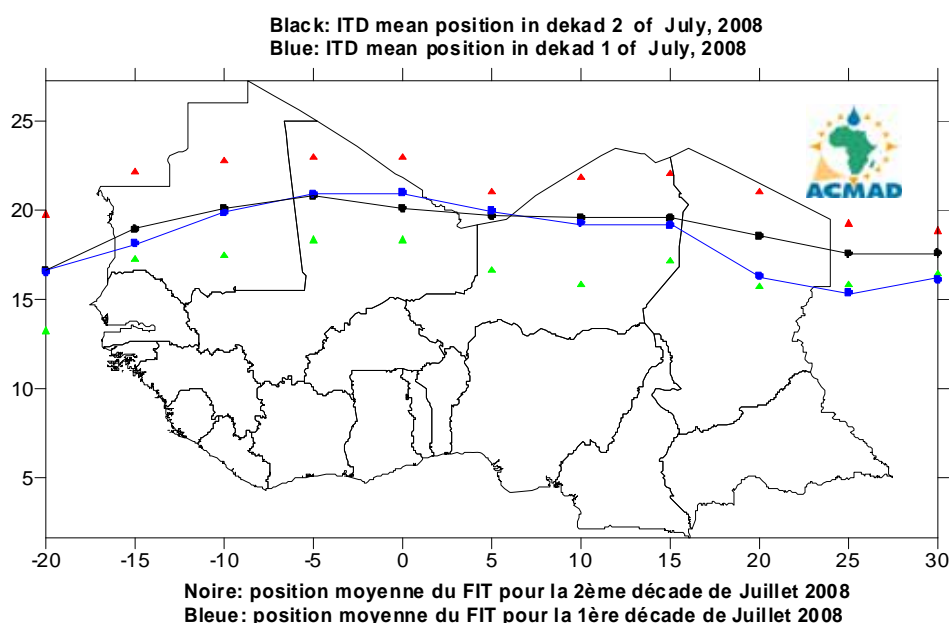
**Ten Day Climate Bulletin**  
**n° 20 Year 2008**  
**Dekad of 11 to 20 July, 2008**

**HIGHLIGHT:** The Greater Horn of Africa (GHA) countries experienced significant rainfall increase over the northern and western parts with the Sahel experiencing deep moisture influx associated with outbreak of heavy rains which are **expected to intensify**. The deepening Indian monsoon thermal low characterized by the highest thermal index (TI) of 249°K at 300hPa is the major source of conditional instability spreading westward over the Sahel and northern parts of Gulf of Guinea countries triggering heavy rainfall with **floods**.

## 1. GENERAL SITUATION :

### 1.1 SURFACE

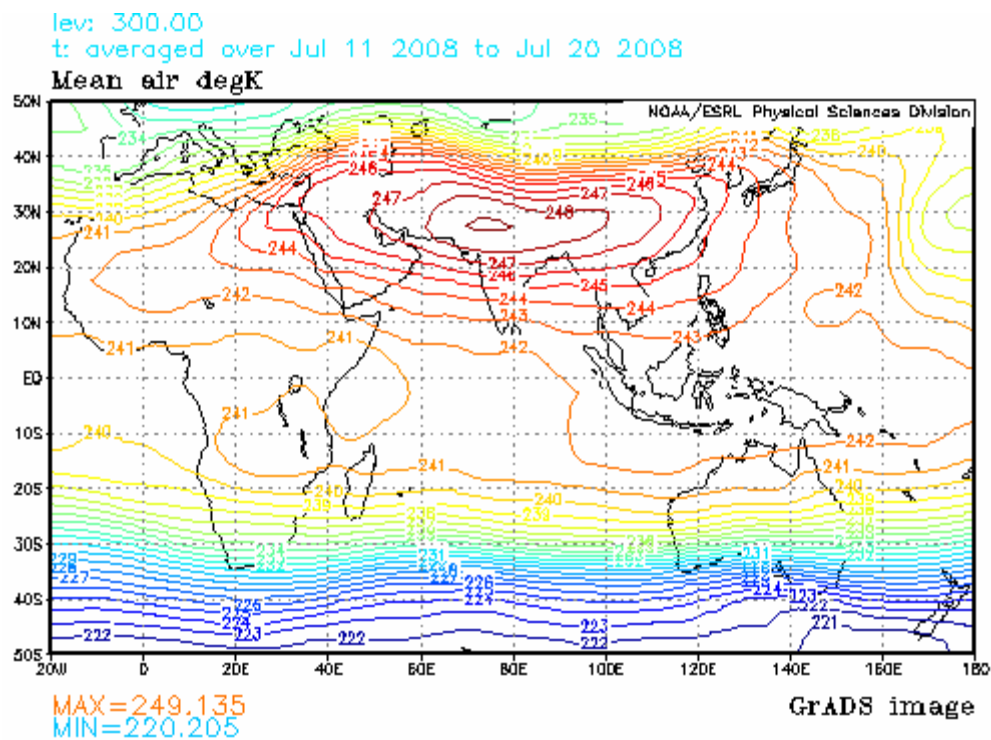
- **Azores high:** The Azores high pressure at 1031hPa strengthened by 5hPa compared to the last dekad and shifted towards the northeast. Its mean position was observed at 42°N/26°W with a ridge extended over north Morocco and north Algeria.
- **Saharan thermal low:** The Saharan low of 104hPa deepened by 1hPa and shifted towards the northwest. Its mean position was observed at 21°N/00°W with a trough extended over north Mauritania, southwest Algeria, north Niger and northwest Chad.
- **St. Helena high :** The St. Helena high pressure at 1029hPa weakened by 4hPa and shift towards the northeast compared to the past dekad. Its mean position was observed at 32°S/03°E with an extended ridge over Atlantic Ocean.
- **Mascarene high:** The Mascarene high pressure at 1034hPa strengthened by 3hPa and shifted towards the northwest. Its mean position was observed at about 36°S/52°E with an extended ridge over eastern Africa countries.
- **Inter-Tropical Discontinuity (ITD) :** Between the first and second dekad of July 2008, the ITD fluctuated slightly over western Sahel and migrated towards the north over the eastern part. Its mean position was observed at 16.7°N over longitude 20°W; at 19.0°N and 20.1°N over southwest and central Mauritania respectively; at 20.8°N and 20.1°N over northwest and northeast Mali respectively; at 19.1°N over extreme south Algeria; at 19.6°N over north Niger; at 18.6°N over north Chad and at 17.6°N over north Sudan.



The triangles in red represent the maximum northward displacement of the ITD while the green triangles represent its minimum displacement.

## 1.2 TROPOSPHERE

- **Monsoon :** Monsoon influx was moderate (5.5 to 12.5 m/s) at 925hPa level over Guinea, southeast Mali, Sierra Leone, Liberia, Burkina Faso, Côte d'Ivoire, Ghana, Togo, Benin, central Niger, Nigeria, and west Chad.
- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed of about 20m/s at 700hPa was maintained compared to the past dekad. Its axis was located at about 14°N stretching from southwest Niger, north Burkina Faso and south Mali and Senegal.
- **Thermal Index (TI) :** In the second dekad of July, 2008, the thermal index (TI) regime at 300hPa, map shown below, had a near threshold TI regime value of 242°K over northern parts of West Africa countries northern part of Central Africa Republic that maintained reasonable conditional instability triggering heavy rains and flash floods. The high TI regime of 243°K and above over northeastern part of Africa extended from highest TI regime maximum of 249°K centered over Asia maintained extremely high conditional instability accompanied with heavy rainfall and severe floods.



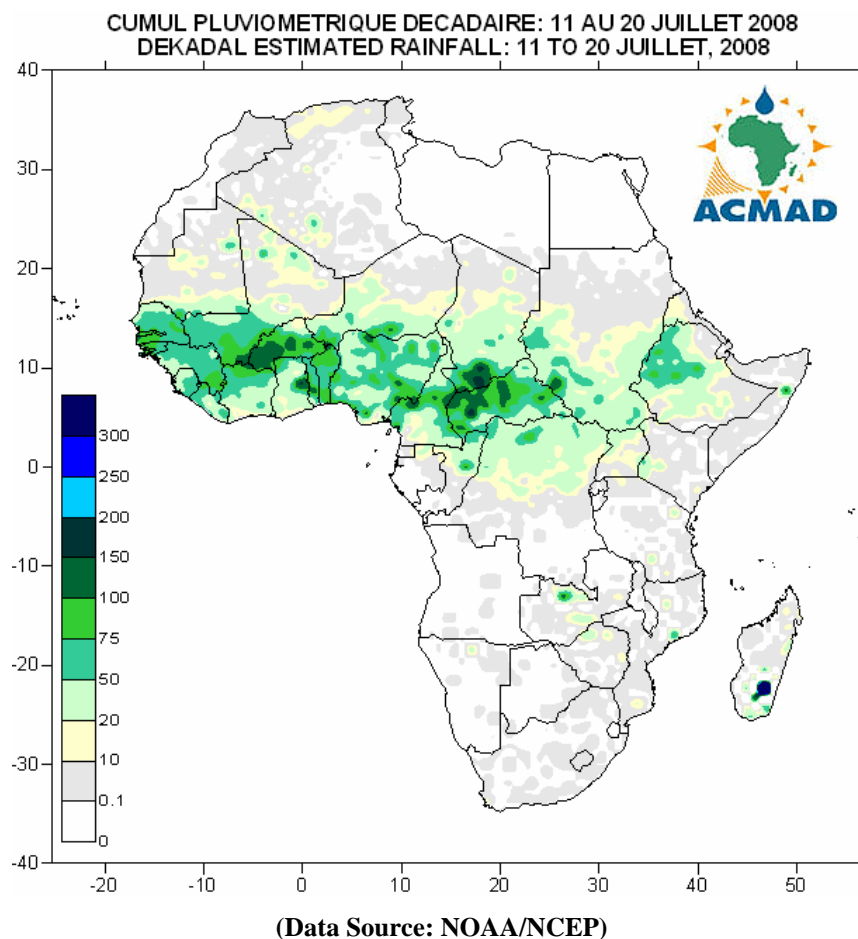
(Data Source: NOAA/NCEP )

## 2. RAINFALL AND TEMPERATURE SITUATION

### 2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the second dekad of July, 2008 shows increased spatial rainfall activities over the Sahel countries, Gulf of Guinea countries and GHA countries while southern Africa and central Africa experience slight decrease in rainfall activities. In summary:

- **North Africa countries :** No significant rainfall amount was recorded over northern Africa
- **Gulf of Guinea countries:** Recorded slight increase of rainfall amounts ranging from 20mm to 150mm.
- **The Sahel :** Spatial expansion and rainfall intensity increased recording amounts ranging from 10mm to 100mm with peaks of above 150mm over southern Burkina Faso, southern Niger and southern Chad.
- **Central Africa countries :** The central Africa countries experienced significant spatial rainfall increase recording amounts ranging from 10mm to 100mm with a localized peaks of 150mm over Central African Republic.
- **GHA countries:** The countries experienced slight spatial rainfall increase recording rainfall amounts ranging from 10mm to 100mm over Ethiopia, southern Sudan, Uganda and western Kenya.
- **Southern Africa countries:** Experienced some localized rainfall activities with heaviest amounts of above 100mm over Zambia and southern Madagascar.



## 2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Bobo Dioulasso and Ouagadougou in Burkina Faso; Niamey and Zinder in Niger. The lowest temperatures of 1.3°C was recorded at Maseru in Lesotho with the highest temperatures of 41.5 °C recorded at Bilma in Niger.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	23	6	30,2	25,2
2	Abuja	79	2	-	-
3	Accra	1	1	29,6	24,3
4	Addis Abéba	5	1	-	-
5	Agadez	11	3	38,7	26,0
6	Alger(Dar El-Beida)	9	3	31,6	21,4
7	Antananarivo	3	2	19,5	9,5
8	Antsiranana	2	1	29,9	19,6
9	Bamako-Senou	77	5	31,2	22,2
10	Bangui	34	3	31,0	21,2
11	Banjul	23	3	31,1	24,2
12	Bilma	0,4	1	41,5	26,4
13	Bobo Dioulasso	128	4	30,3	21,8
14	Brazzaville	0	0	29,0	19,0
15	Casablanca	0	0	26,4	20,7
16	Cotonou	85	7	29,0	25,1
17	Dakar-Yoff	11	4	31,3	26,6
18	Dar-es-Salaam	0	0	29,6	18,6
19	Douala	67	6	28,8	23,3
20	Entebbe	1	1	25,0	18,4
21	Francistown	0	0	22,2	7,8
22	Johannesbourg	0	0	16,1	4,2
23	Khartoum	7	1	39,6	27,1
24	Kigali	0	0	26,8	15,5
25	Kigoma	0	0	29,1	15,8
26	Kinshasa	0	0	28,9	18,3
27	Le Caire	0	0	34,8	24,3
28	Le Cap	0	0	16,3	9,8
29	Libreville	0	0	27,0	23,3
30	Lomé	52	5	29,6	24,6
31	Luanda	0	0	23,5	18,2
32	Lusaka	0	0	22,4	7,3
33	Manzini	0	0	-	9,7
34	Maputo	1	1	24,5	12,9
35	Maseru	0	0	-	1,3
36	Maun	0	0	26,2	8,3
37	Mbeya	0	0	20,8	6,1
38	Nairobi	0	0	22,2	13,0
39	Nampula	4	3	26,1	16,4
40	N'Djamena	25	4	34,5	23,4
41	Niamey-Aéroport	113	3	34,1	24,9
42	Nouakchott	0	0	32,5	26,4
43	Ouagadougou	112	3	31,7	24,0
44	Plaisance	20	6	24,1	18,6
45	Sal	0	0	27,4	23,3
46	Seretse Khama Aéroport	4	1	19,1	-
47	Seychelles	10	5	28,0	24,7
48	Tamanrasset	0	0	36,2	22,8
49	Toalagnaro	108	7	23,1	17,0
50	Tombouctou	22	1	40,6	26,5
51	Tripoli	0	0	39,9	24,8
52	Tunis	0	0	34,9	23,1
53	Windhoek	0	0	22,0	7,7
54	Zinder	157	6	33,3	22,8

NOTE: 0 means no rain;

- means no temperature data available

Data Source : ACMA / GTS

### 3. OUTLOOK FOR DEKAD (1<sup>st</sup> – 10<sup>th</sup> August, 2008)

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#### 3.1 RAINFALL

The ITD is expected to shift slightly northwards. The temperatures will continue to rise while moisture is expected to increase tremendously over several parts of the Sahel countries. The high TI regime with the maximum TI regime located over north India will maintain high conditional instability spreading westwards triggering heavy rainfall with floods over West Africa particularly over the Sahel and northern parts of Gulf of Guinea countries and parts of GHA countries. The southern Africa countries will record light rainfall. In summary:

- **North Africa countries:** The countries will record light rainfall of 10mm to 20mm.
- **The Sahel countries:** The Sahel countries will experience rising temperatures with increased moisture associated with moderate to heavy rainfall ranging from 50mm to 150mm with peaks of about 200mm.
- **Gulf of Guinea countries:** Guinea, Guinea Bissau, Sierra Leone, Liberia, Cote-d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroon will record increased rainfall amounts ranging from 50mm to 150mm with peaks of about 250mm over northern parts.
- **Central Africa countries:** Gabon, Central Africa Republic, north Democratic Republic of Congo, and Congo will experience moderate to heavy rainfall recording amounts ranging from 50mm to 150mm with peaks of about 200mm confined to the northern parts.
- **GHA countries:** The GHA countries are expected to experience rainfall increase over northern and western parts recording amounts ranging from 10mm to 100mm with peaks of about 150mm.
- **Southern Africa countries:** The countries will experience rainfall deficits recording light rainfall amounts of 10mm to 20mm with a few parts over the north getting moderate rainfall ranging from 50mm to 75mm.

#### 3.2 TEMPERATURE

The forecast map below shows that the countries north of Equator will record the highest temperatures while Southern and eastern Africa countries will record the lowest temperatures. The highest forecast temperatures on the map below range from 25°C to 35°C in orange and red colours respectively with more than half of the Continent expected to record 20°C and above.

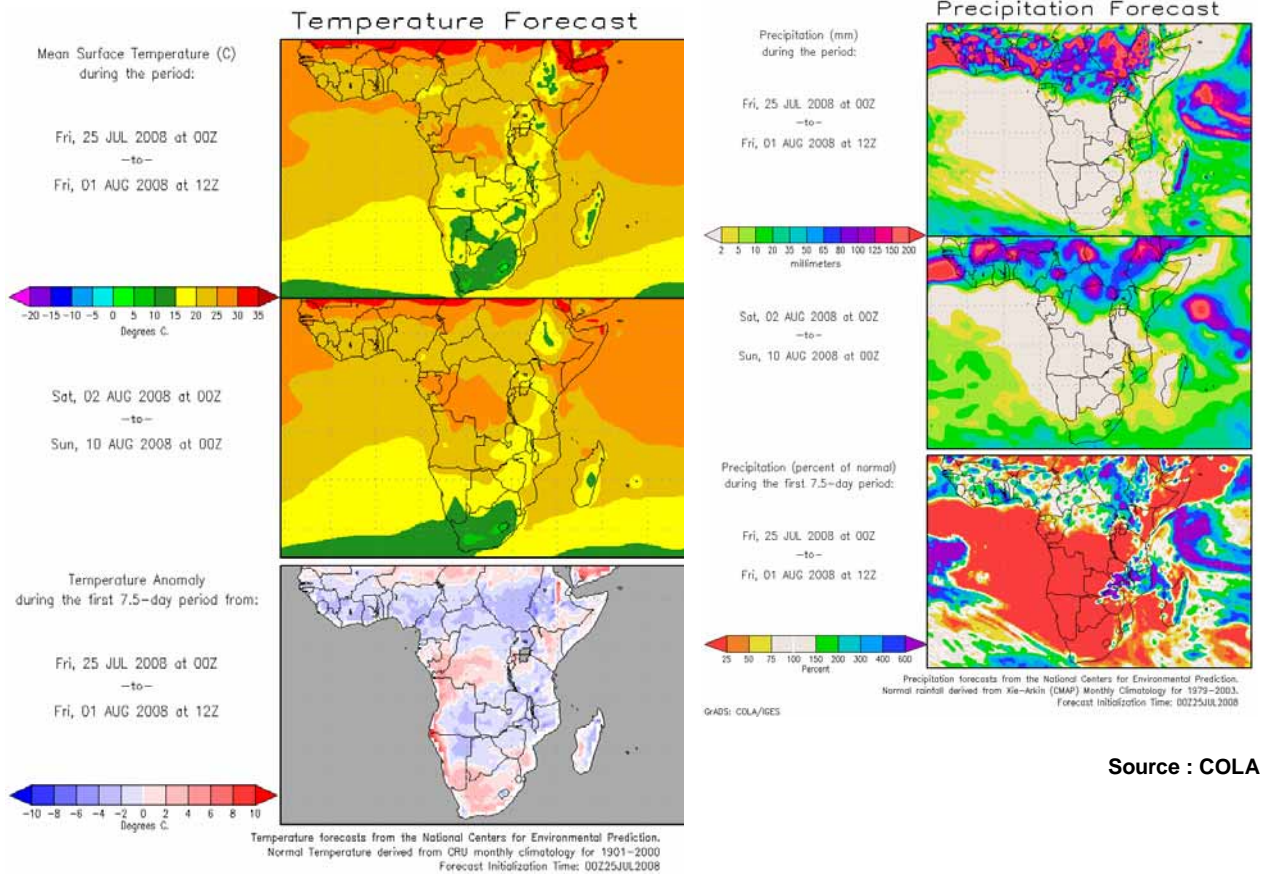
#### 3.3 SOIL MOISTURE

The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast soil moisture changes over the next 7 days. The soil moisture change and precipitation relationship is clearly manifested on the maps below. The areas forecast to have highest soil moisture increase are confined within the West Africa, parts of central Africa and northern parts of GHA countries.

#### 3.4 IMPACTS

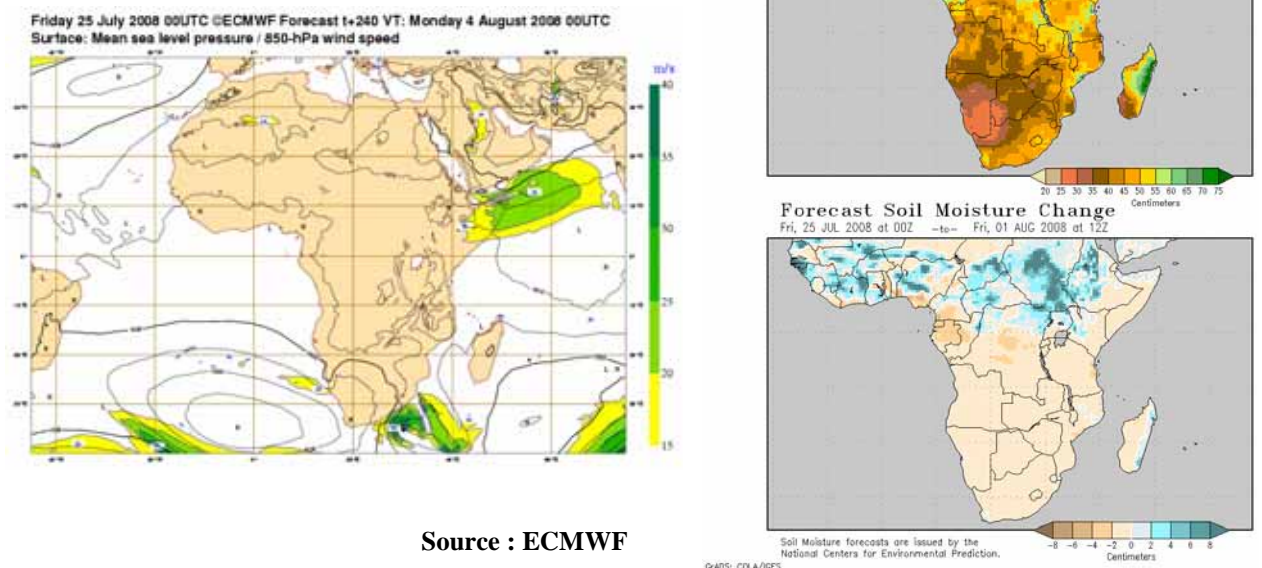
- **Health:** The incidences of malaria and other diseases are higher in areas with high temperatures during periods of heavy rainfall. The temperatures in the range of 20°C to 28°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector resulting in high incidences of malaria even in low prevalence areas. The Gulf of Guinea countries, the Sahel countries, central Africa countries and few parts of GHA countries with high humidity/rainfall and the prevailing high temperatures, the survival of parasite will be high resulting in higher incidences of vector borne diseases such as malaria epidemic among others. The health authorities need to continue the health care services to protect lives of the vulnerable communities in the countries.
- **Agriculture and food security:** While we consider the importance of well documented onsets and cessations dates of seasonal rainfall and the monitoring phenological stages of crops in our countries it is equally important to carry out cost benefit analysis on determination and applications of appropriate planting dates in order to take 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 climate constraint on 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 security and adaptation. However, there is a need to invest in higher yielding crops during a good rainfall season for example forecasts provided by regional climate outlook forum (COF) such as the PRESAO, GHACOF, SARCOF and National Meteorological Services.





Source : COLA

Source : COLA



Source : ECMWF

Source : COLA