

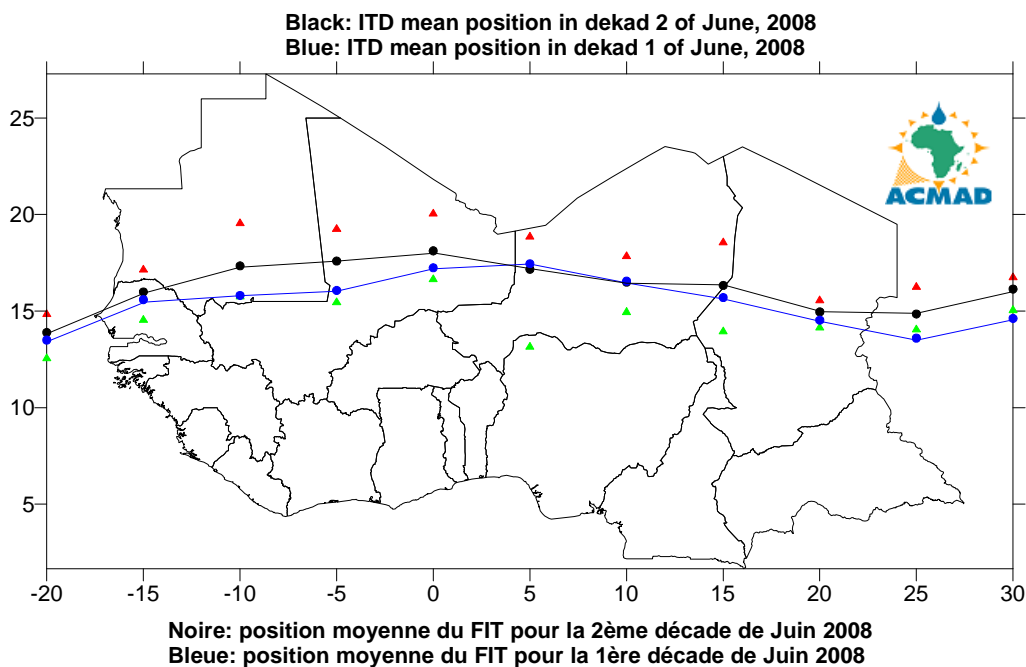
Ten Day Climate Bulletin
n° 17 Year 2008
Dekad of 11 to 20 June, 2008

HIGHLIGHT: The Greater Horn of Africa (GHA) countries experienced significant rainfall reduction with the Sahel experiencing 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) at 300hPa is the major source conditional instability spreading westward over the Sahel and other parts of West Africa countries to trigger heavy rainfall with floods.

1. GENERAL SITUATION :

1.1 SURFACE

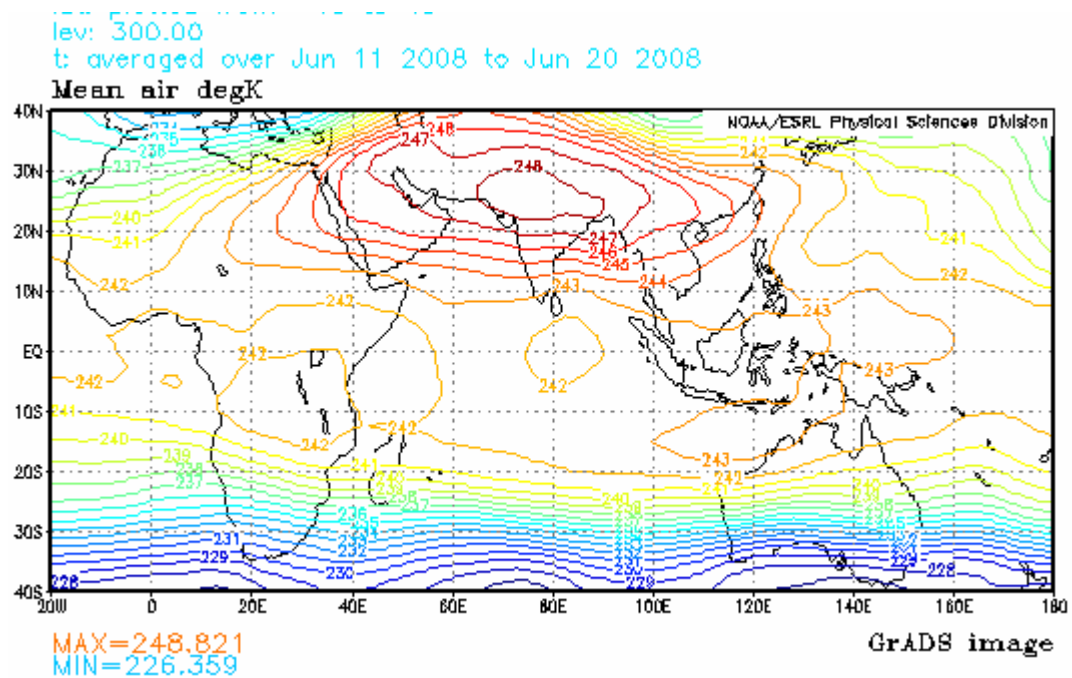
- **Azores high:** The Azores high pressure of 1027hPa weakened by 3hPa and shifted towards the northwest compared to the last dekad. Its mean position was observed at 39°N/26°W with a ridge extended over south Morocco and north Algeria.
- **Saharan thermal low:** The Saharan low of 1004hPa deepened slightly by 1hPa and shifted towards the southeast. Its mean position was observed at 17°N/08°E with a trough extended over north Mali, south Algeria, northwest Niger, and central Chad.
- **St. Helena high :** The St. Helena high pressure of 1026hPa weakened by 4hPa and shift towards the southwest compared to the past dekad. Its mean position was observed at 31°S/11°W with an extended ridge over south Namibia, southwest of South Africa.
- **Mascarene high:** The Mascarene high pressure at 1035hPa strengthened by 4hPa and shifted towards the west. Its mean position was observed at about 37°S/52°E with an extended ridge over eastern South Africa and east Africa.
- **Inter-Tropical Discontinuity (ITD) :** Between the first and the second dekad of June 2008, the ITD continued its migration towards the north over the Sahel. It's mean position was observed at 13.9°N over longitude 20°W; at 16.0°N over north Senegal; at 17.8°N over south Mauritania; at 17.6°N and 18.1°N over extreme west and east Mali respectively; at 17.25°N and 16.5°N over northwest and central Niger respectively; at 16.3°N and 15.0°N over extreme west and east Chad respectively; at 14.9°N and 16.1°N over northwest and north-central Sudan respectively.



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 Sierra Leone, Liberia, Côte d'Ivoire, Ghana, south Burkina Faso, Togo, Benin, Nigeria, south Niger and south Chad.
- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed of about 20m/s at 700 hPa was maintained during this dekad. Its axis was located at about 12°N moved by 2° crossing south Burkina Faso, south Mali, and central Guinea Bissau up to 22°W in the north Atlantic Ocean.
- **Thermal Index (TI) :** In the second dekad of June, 2008, the thermal index (TI) regime at 300hPa, map shown below, had a near threshold TI regime value of 242°K over parts of West Africa, central Africa and parts of GHA countries that maintained reasonable conditional instability triggering heavy rains. The high TI regime of 243°K and above over northeastern part of Africa extended from TI regime maximum of 248°K centered over Asia maintained extremely high conditional instability accompanied by heavy rainfall with severe floods.



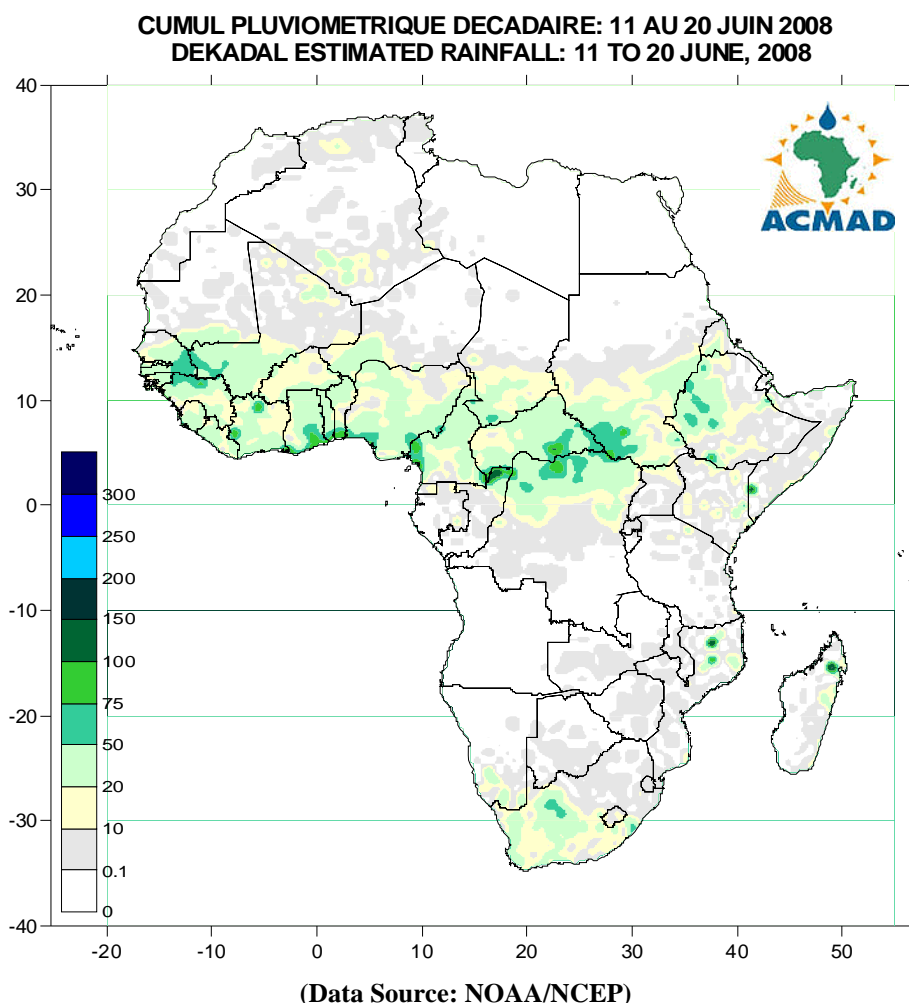
(Data Source: NOAA/NCEP)

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 June, 2008 shows spatial and rainfall intensity decrease over northern Africa and Great Horn Africa countries; spatial decrease in rainfall activities over Central Africa; decrease in rainfall intensity over Gulf of Guinea countries while the Sahel and Southern Africa countries experienced increase in rainfall activities. In summary:

- **North Africa countries :** Spatial rainfall decreased over north Africa recording rainfall amounts between from 10 to 20 mm over Algeria
- **Gulf of Guinea countries:** Experienced decrease in rainfall intensity recording amounts ranging from 10mm to 75mm with peaks of about 100mm over southern Nigeria, southern Togo, southern Benin and southern Ghana.
- **The Sahel :** Slight increase in rainfall activities over southern part of the Sahel countries recorded rainfall amounts ranging from 10mm to 75mm.
- **Central Africa countries :** The central Africa countries experienced spatial rainfall decrease recording amounts ranging from 10mm to 100mm over Northern Congo, northern Democratic Republic of Congo, Central Africa Republic, Cameroon, southern Sudan and southern Chad.
- **GHA countries:** The countries experienced spatial and rainfall intensity decrease recording amounts of rainfall ranging from 10mm to 75mm over western Ethiopia..
- **Southern Africa countries:** Southern Africa countries experienced spatial and rainfall intensity increase recording rainfall amounts ranging from 10mm to 75mm with peaks of about 100mm over South Africa, Lesotho, North Mozambique and north Madagascar.



2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Abidjan in Côte d'Ivoire and Cotonou in Benin. The lowest temperatures of 4.6°C was recorded at Seretse Khama Airport in Botswana with the highest temperature of 44.4°C and 43.7°C recorded at Bilma and Timbuktu in Niger and Mali respectively.

N°	STATIONS	Precipitations (mm)	Number of rainy days	Temperature max mean(°C)	Temperature min mean (°C)
1	Abidjan	212	5	31,5	24,4
2	Abuja	11	1	31,2	-
3	Addis Abéba	3	1	-	-
4	Agadez	0	0	43,4	29,3
5	Alger(Dar El-Beida)	0	0	28,9	15,5
6	Antananarivo	1	1	19,0	10,8
7	Antsiranana	2	2	29,5	20,1
8	Bamako-Senou	16	2	36,7	24,0
9	Bangui	21	5	31,2	21,3
10	Banjul	2	1	33,1	23,9
11	Bilma	0	0	44,4	26,6
12	Bobo Dioulasso	21	3	32,7	22,8
13	Brazzaville	0	0	28,8	20,1
14	Casablanca	0	0	24,9	18,9
15	Conakry	63	1	-	-
16	Cotonou	193	8	30,1	24,4
17	Dakar-Yoff	0	0	29,5	24,4
18	Dar-es-Salaam	10	3	28,8	19,4
19	Douala	34	4	29,6	24,2
20	Entebbe	0	0	25,6	18,7
21	Francistown	0	0	23,8	7,1
22	Harare	0	0	19,8	8,7
23	Johannesbourg	2	1	17,2	6,6
24	Khartoum	0	0	41,8	27,0
25	Kigali	0	0	24,8	15,1
26	Kinshasa	0	0	28,5	19,7
27	Le Caire	0	0	34,8	22,0
28	Le Cap	16	5	15,6	11,9
29	Libreville	0	0	28,2	23,9
30	Lilongwe	0	0	22,1	10,4
31	Lomé	2	1	-	-
32	Luanda	0	0	25,4	19,9
33	Lusaka	0	0	22,8	8,8
34	Manzini	9	1	-	10,7
35	Maputo	11	2	26,2	14,6
36	Maseru	8	1	-	5,6
37	Maun	0	0	26,3	9,7
38	Mbeya	0	0	20,3	7,1
39	Nairobi	0	0	21,6	13,0
40	Nampula	12	1	26,2	15,3
41	N'Djamena	0	0	39,2	25,6
42	Niamey-Aéroport	3	1	39,1	26,8
43	Nouakchott	0	0	36,8	23,7
44	Ouagadougou	3	1	35,7	26,3
45	Plaisance	19	8	23,8	18,9
46	Sal	0	0	27,2	21,6
47	Seretse Khama Aéro	0	0	-	4,6
48	Seychelles	57	7	29,0	24,8
49	Tamanrasset	0	0	37,9	27,3
50	Toalagnaro	11	5	25,0	17,6
51	Tombouctou	0	0	43,7	29,8
52	Tripoli	0	0	35,5	21,3
53	Tunis	0	0	31,6	20,2
54	Windhoek	0	0	21,5	7,5
55	Zinder	4	1	40,6	27,2

NOTE: 0 means no rain;

- means no temperature data available

Data Source : ACMAD / GTS

3. OUTLOOK FOR DEKAD (1st – 10th July, 2008)

3.1 RAINFALL

The ITD is expected to continue shifting northwards. The temperatures will continue to rise while moisture is expected to increase and penetrate over several parts of the Sahel countries. The high TI regime will spread over West Africa particularly over the Sahel with a maximum TI regime located over north India that will maintain high conditional instability associated with heavy rainfall and floods over parts of West Africa countries, northern parts of central Africa and northern /western 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 100mm with peaks of about 150mm.
- **Gulf of Guinea countries:** Guinea, Guinea Bissau, Sierra Leone, Liberia, Cote-d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroon will record rainfall amounts ranging from 20mm to 150mm with peaks of about 200mm over northern parts.
- **Central Africa countries:** Gabon, Central Africa Republic, north Democratic Republic of Congo, Congo and north Angola will experience moderate to heavy rainfall recording amounts ranging from 20mm 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 75mm with peaks of 100mm to 150mm.
- **Southern Africa countries:** The countries will experience rainfall decrease recording light rainfall of 10mm to 20mm.

3.1 TEMPERATURE

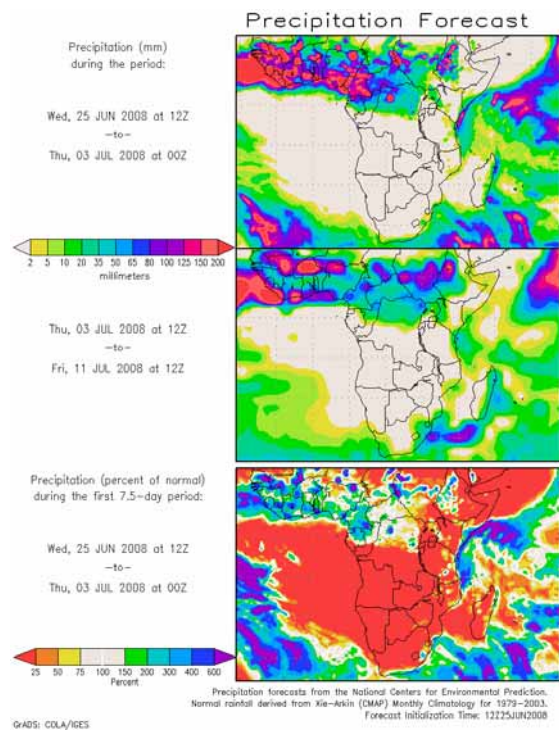
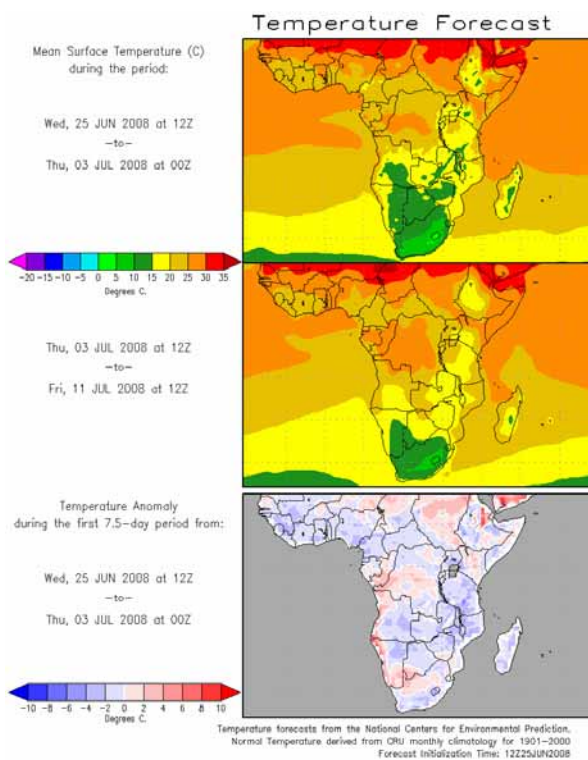
The forecast map below shows that the countries north of Equator will record the highest temperatures while Southern and eastern Africa countries be recording the lowest temperatures. The highest forecast temperatures on the map below range from 25°C to 35°C in orange and red colours respectively with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

3.2 SOIL MOISTURE

The outlook on soil moisture, 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, few parts of central Africa and northern parts of GHA countries, Sudan and Ethiopia.

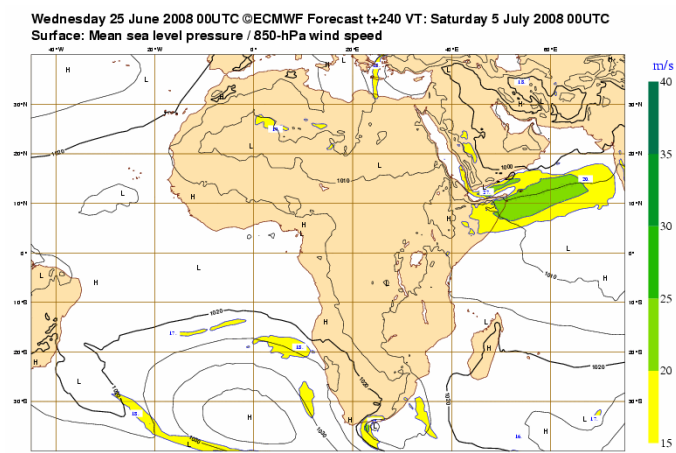
3.3 IMPACTS

- **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, central Africa countries and parts of GHA countries will continue to receive rainfall and with 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 community in the countries.
- **Agriculture and food security :** While we consider the importance of well documented onsets and cessations dates of seasonal rainfall 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 and National Meteorological Services (NMSs).

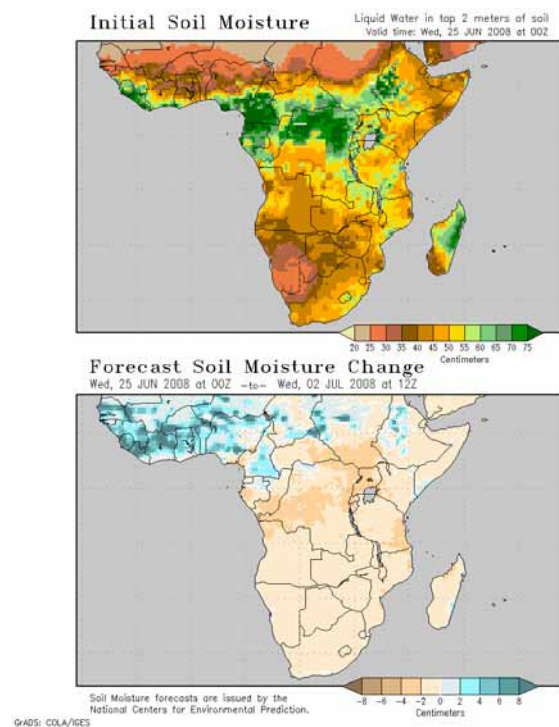


Source : COLA

Source : COLA



Source : ECMWF



Source : COLA