African Centre of Meteorological Application for Development
Centre Africain pour les Applications de la Météorologie au Développement

Ten Day Climate Bulletin
n° 18 Year 2008
Dekad of 21 to 30 June, 2008

HIGHLIGHT: The Greater Horn of Africa (GHA) countries had significant rainfall increase over the northern parts with the Sahel experiencing deep moisture influx associated with outbreak highest thermal index (TI) at 300hPa which is the major source conditional instability spreading westward over the Sahel and other parts of West Africa countries will trigger heavy rainfall with floods.

1. GENERAL SITUATION :

1.1 SURFACE

- **Azores high:** The Azores high pressure at 1027hPa had no change compared to the last dekad, but shifted slightly towards the south. Its mean position was observed at 38°N/26°W with a ridge extended over south Morocco and north Algeria.

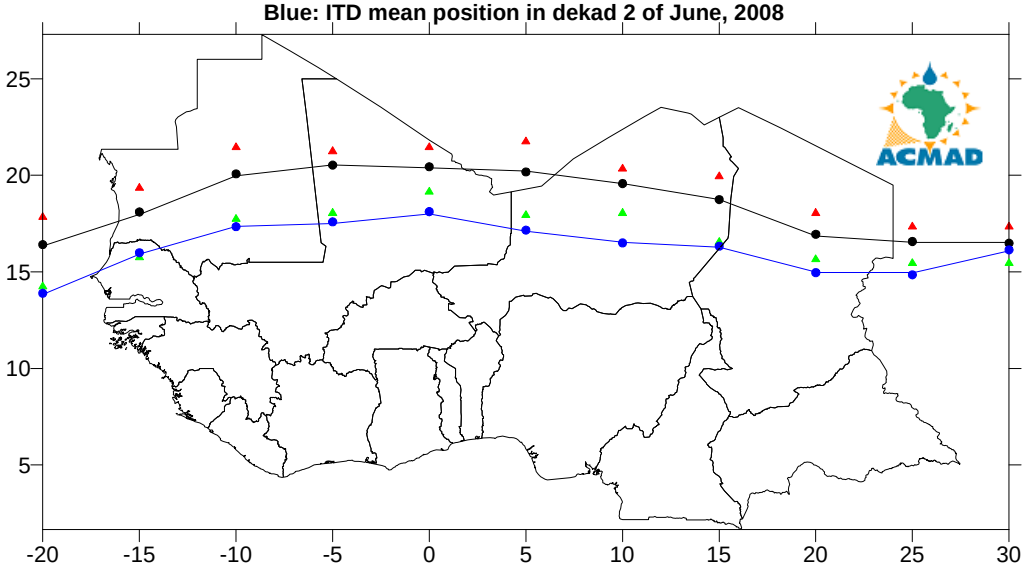
- **Saharan thermal low:** The Saharan low of 1004hPa had no variation, but shifted towards the northwest. Its mean position was observed at 21°N/01°E with a trough extended over north Mali, southwest Algeria, east Niger, and north Chad.

- **St. Helena high :** The St. Helena high pressure at 1036hPa strengthened significantly by 10hPa and shift towards the southeast compared to the past dekad. Its mean position was observed at 41°S/10°W with an extended ridge over southern Atlantic Ocean.

- **Mascarene high:** The Mascarene high pressure at 1032hPa weakened by 3hPa and shifted towards the northeast. Its mean position was observed at about 35°S/70°E with an extended ridge over Indian Ocean.

- **Inter-Tropical Discontinuity (ITD) :** Between the second and the third dekad of June 2008, the ITD migrated about 2 degree of latitude towards the north over the Sahel. It's mean position was observed at 16.4°N over longitude 20°W; at 18.1°N and 20.1°N over west and central Mauritania respectively; at 20.5°N over north Mali; at 20.2°N over extreme south Algeria; at 19.6°N and 18.7°N over north and extreme northeast Niger respectively; at 16.9°N over northeast Chad; at 16.6°N and 16.5°N over northwest and central north Sudan respectively.

Black: ITD mean position in dekad 3 of June, 2008
Blue: ITD mean position in dekad 2 of June, 2008



Noire: position moyenne du FIT pour la 3ème décade de Juin 2008
Bleue: position moyenne du FIT pour la 2ème décade de Juin 2008

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

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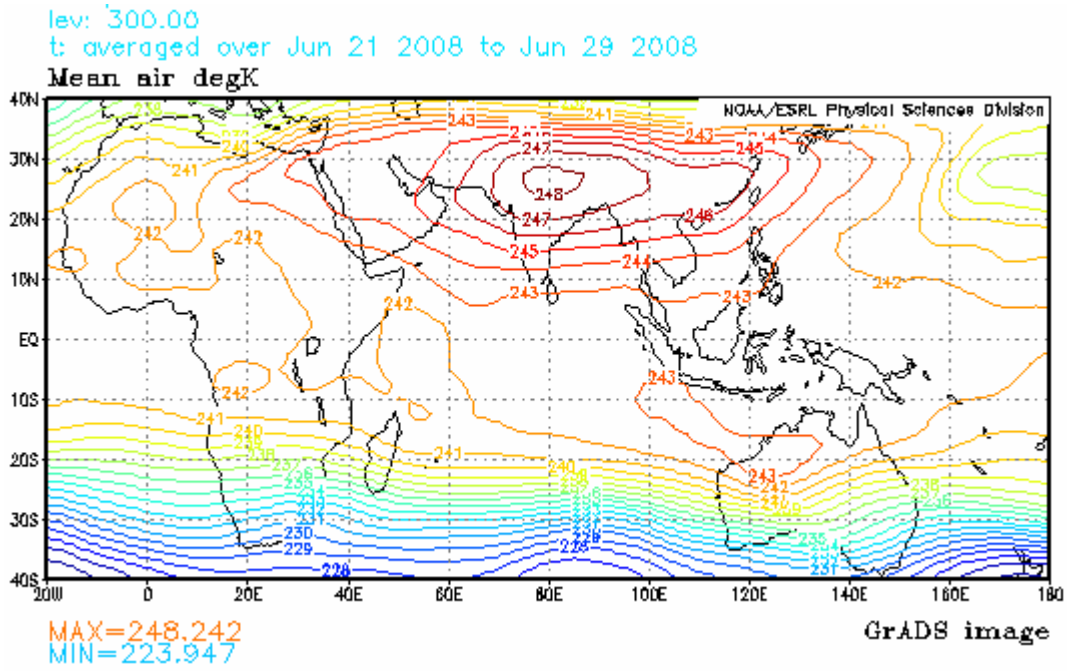
1.2 TROPOSPHERE

- **Monsoon :** Monsoon influx was moderate (5.5 to 12.5 m/s) at 925hPa level over Sierra Leone, Liberia, Côte d'Ivoire, east Mali, Ghana, south Burkina Faso, Togo, Benin, Nigeria and south Niger

- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed of about 17m/s at 700hPa weakened by 3m/s compare to the past dekad. Its axis was located at about 15°N moved by 3 degree stretching from southwest Mali, north Senegal up to 25°W in the north Atlantic Ocean.

- **Thermal Index (TI) :** In the third 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 over 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.



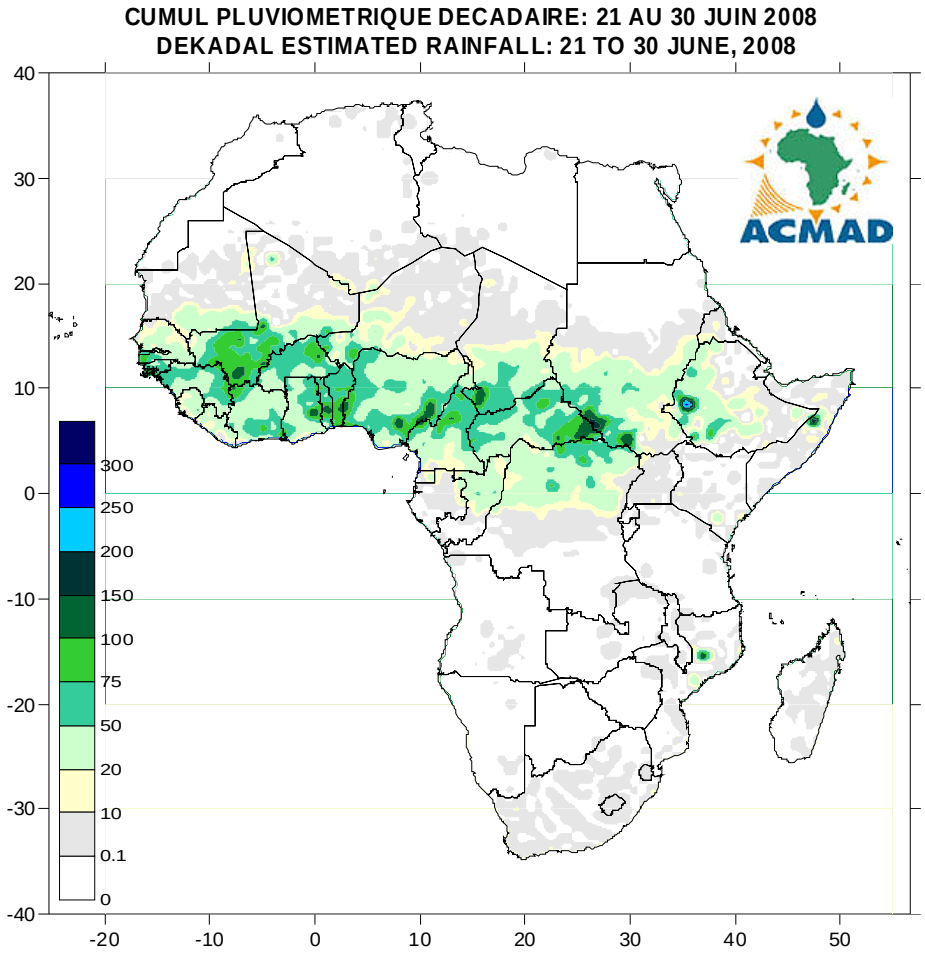
(Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the third dekad of June, 2008 shows increased rainfall activities over the Sahel countries, Gulf of Guinea countries, central Africa countries and GHA countries while northern and southern Africa countries experienced no significant rainfall activities. In summary:

- **North Africa countries :** No significant rainfall amount was recorded over northern Africa
- **Gulf of Guinea countries: E**xperienced significant increase in rainfall activities recording amounts ranging from 20mm to 100mm with peaks of about 150mm over southern Nigeria, southern Togo, southern Benin and south eastern Ghana.
- **The Sahel :** Spatial and intensity rainfall increase were recorded with amounts ranging from 10mm to 100mm with peaks of about 150mm over southern Mali, western Burkina Faso and southern Chad .
- **Central Africa countries :** The central Africa countries experienced spatial and intensity rainfall increase recording amounts ranging from 10mm to 100mm with a maximum of 150mm over eastern Central Africa Republic.
- **GHA countries:** The north GHA countries experienced spatial and intensity rainfall increase recording amounts of rainfall ranging from 10mm to 150mm with heavy rainfall above 200mm over western Ethiopia.
- **Southern Africa countries:** No significant rainfall amount was recorded except over northern Mozambique that recorded a peak of 100mm.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Lomé in Togo. The lowest temperatures of 0.9°C was recorded at Maseru in Lesotho with the highest temperatures of 43.1°C 42.6°C recorded at Bilma and Khartoum in Niger and Sudan respectively.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	92	4	30,6	25,3
2	Accra	24	4	29,3	-
3	Agadez	2	2	39,7	27,1
4	Alger(Dar El-Beida)	0	0	30,8	18,7
5	Antananarivo	1	2	22,7	10,4
6	Antsiranana	0	0	30,2	19,5
7	Bamako-Senou	78	5	33,1	22,6
8	Bangui	15	3	30,7	21,1
9	Banjul	46	2	32,0	24,3
10	Bilma	0	0	43,1	25,9
11	Bobo Dioulasso	23	4	31,2	22,5
12	Brazzaville	0	0	27,7	19,7
13	Casablanca	0	0	26,4	19,9
14	Cotonou	83	5	28,9	24,8
15	Dakar-Yoff	0	0	30,3	25,1
16	Dar-es-Salaam	1	1	29,3	17,8
17	Douala	18	3	29,6	23,7
18	Entebbe	3	1	26,3	-
19	Francistown	0	0	25,4	3,2
20	Harare	0	0	20,4	7,7
21	Johannesbourg	0	0	17,6	5,4
22	Khartoum	0	0	42,6	29,1
23	Kigali	0	0	28,3	15,8
24	Kigoma	0	0	-	15,7
25	Kinshasa	0	0	28,2	20,1
26	Le Caire	0	0	36,2	24,7
27	Le Cap	4	3	15,4	12,3
28	Libreville	1	1	27,6	23,6
29	Lomé	112	4	30,9	24,9
30	Luanda	0	0	23,7	-
31	Lusaka	0	0	23,8	8,4
32	Manzini	7	1	-	11,0
33	Maputo	0	0	25,4	15,0
34	Maseru	0	0	-	0,9
35	Maun	0	0	25,9	7,5
36	Mbeya	0	0	21,4	5,4
37	Nairobi	0	0	24,4	11,8
38	Nampula	1	1	26,6	15,4
39	N'Djamena	0	0	36,0	24,6
40	Niamey-Aéroport	21	1	35,5	26,2
41	Nouakchott	0	0	31,0	24,6
42	Ouagadougou	71	5	32,7	23,8
43	Plaisance	11	6	24,9	19,2
44	Sal	0	0	26,8	22,0
45	Seretse Khama Aéro	0	0	24,1	-
46	Seychelles	16	4	27,7	24,5
47	Tamanrasset	6	2	34,6	21,7
48	Toalagnaro	0	0	24,6	14,8
49	Tombouctou	0	0	40,1	27,5
50	Tripoli	0	0	34,8	19,5
51	Tunis	0	0	33,3	20,9
52	Windhoek	0	0	23,3	6,8
53	Zinder	9	2	36,4	25,3

NOTE: **0** means no rain;

- means no temperature data available

Data Source **:** ACMAD / GTS

3. OUTLOOK FOR DEKAD (11th – 20th 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 tremendously 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 deficits 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.

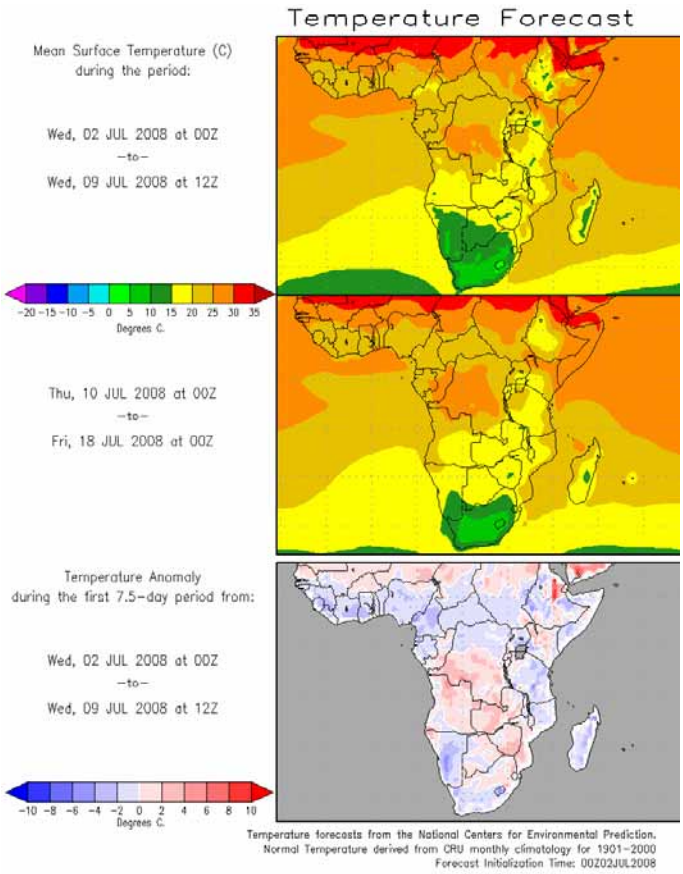
3.2 SOIL MOISTURE

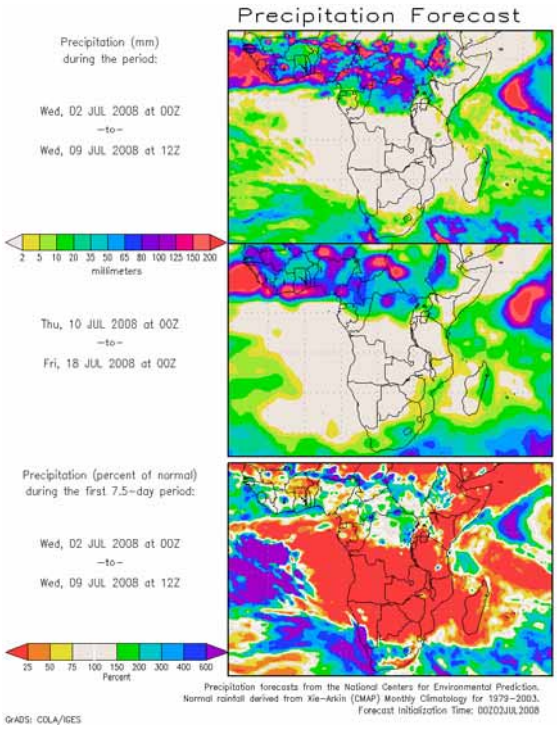
The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast soil moisture changes over the next 7 days. The soil moisture change and precipitation relationship is clearly manifested on the maps below. The areas forecast to have highest soil moisture increase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

3.3 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, the Sahel countries, central Africa countries and 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 community in the countries.

- **Agriculture and food security:** While we consider the importance of well documented onsets and cessations dates of seasonal rainfall and 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 and National Meteorological Services (NMSs).





Source : COLA

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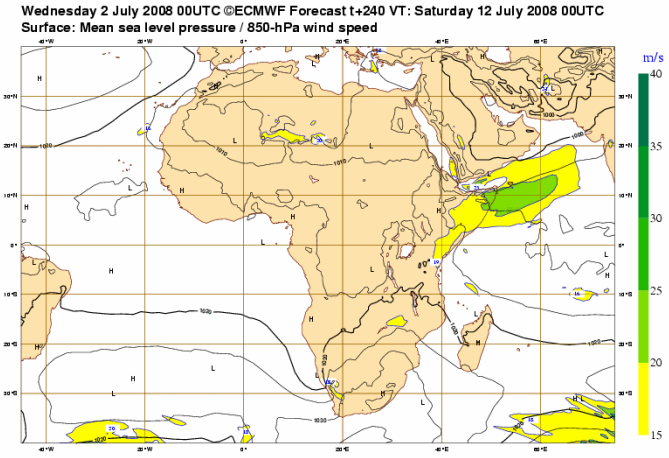
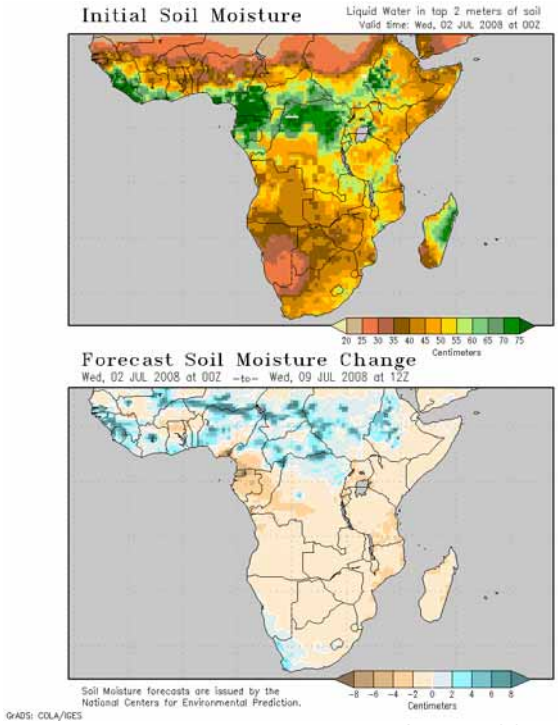


Source : ECMWF



Source : COLA