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

Ten Day Climate Bulletin

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Dekad of 21 to 31 July, 2008

HIGHLIGHT: The Sahel experienced deep moisture influx associated with outbreak of heavy rains which are **expected to intensify in August**. The deepening Indian monsoon thermal low characterized by the highest thermal index (TI) of 249°K at 300hPa is the major source 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

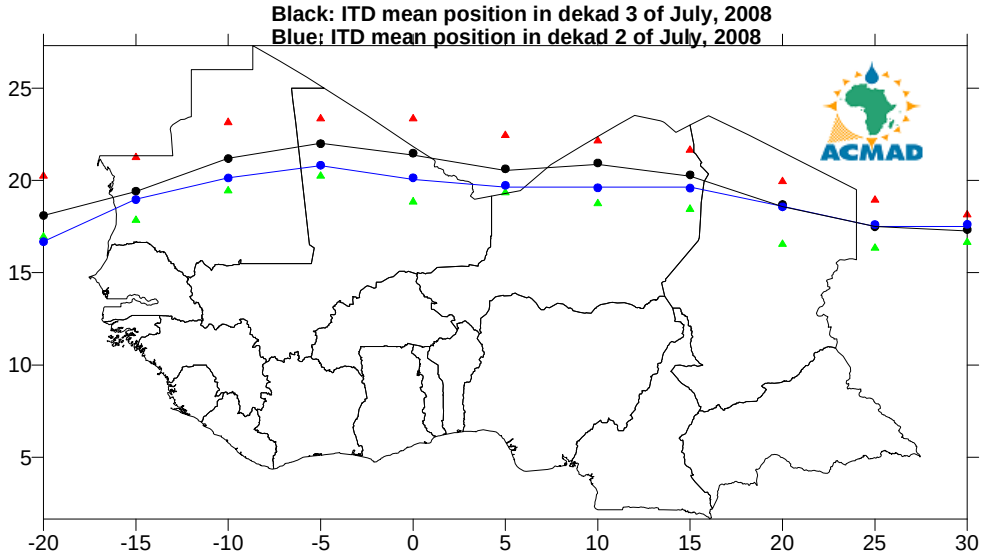
- **Azores high:** The Azores high pressure at 1026hPa weakened by 5hPa compared to the last dekad and shifted towards the southeast. Its mean position was observed at 36°N/25°W with a ridge extended over north Morocco.

- **Saharan thermal low:** The Saharan low of 1005hPa filled up by 1hPa and shifted towards the north. Its mean position was observed at 22°N/00°W with a trough extended over north Mauritania, north Mali, southwest Algeria, northwest Niger and northwest Chad.

- **St. Helena high :** The St. Helena high pressure at 1026hPa weakened by 3hPa and shift towards the northwest compared to the past dekad. Its mean position was observed at 28°S/11°W with an extended ridge over Atlantic Ocean.

- **Mascarene high:** The Mascarene high pressure at 1036hPa strengthened by 2hPa and shifted towards the northeast. Its mean position was observed at about 35°S/60°E with an extended ridges over east southern Africa and south of eastern Africa countries.

- **Inter-Tropical Discontinuity (ITD) :** Between the second and the third dekad of July 2008, the ITD had a slight northward movement over the Sahel and maintained its position over northeast Chad and north Sudan. It's mean position was observed at 18.1°N over longitude 20°W; at 19.4°N and 21.2°N over west and central Mauritania respectively; at 22.0°N and 21.5°N over northwest and northeast Mali respectively; at 20.6°N over extreme south Algeria; at 20.9°Nand 20.3°N over north and northeast Niger respectively; at 18.7°N over north Chad and at 17.5°N and 17.3°N over northwest Sudan and central north Sudan.



Noire: position moyenne du FIT pour la 3ème décade de Juillet 2008
Bleue: position moyenne du FIT pour la 2ème décade de Juillet 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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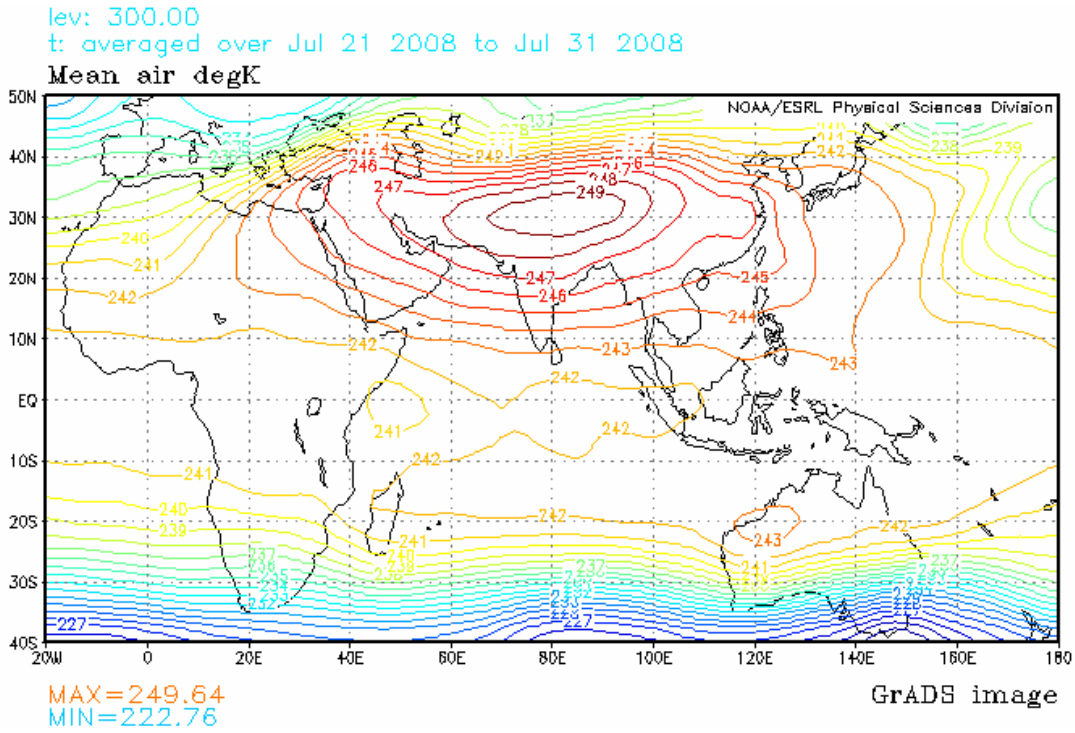
1.2 TROPOSPHERE

- **Monsoon :** Monsoon influx was moderate (5.5 to 12.5 m/s) at 925hPa level over Sierra Leone, Liberia, Côte d'Ivoire, east Mali, east Burkina Faso, Ghana, Togo, Benin, Nigeria, central Niger, north Cameroon, 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 16.5°N stretching from south Mauritania, extreme north Senegal and Cap Verde.

- **Thermal Index (TI) :** In the third 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 Gulf of Guinea countries and the Sahel 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.



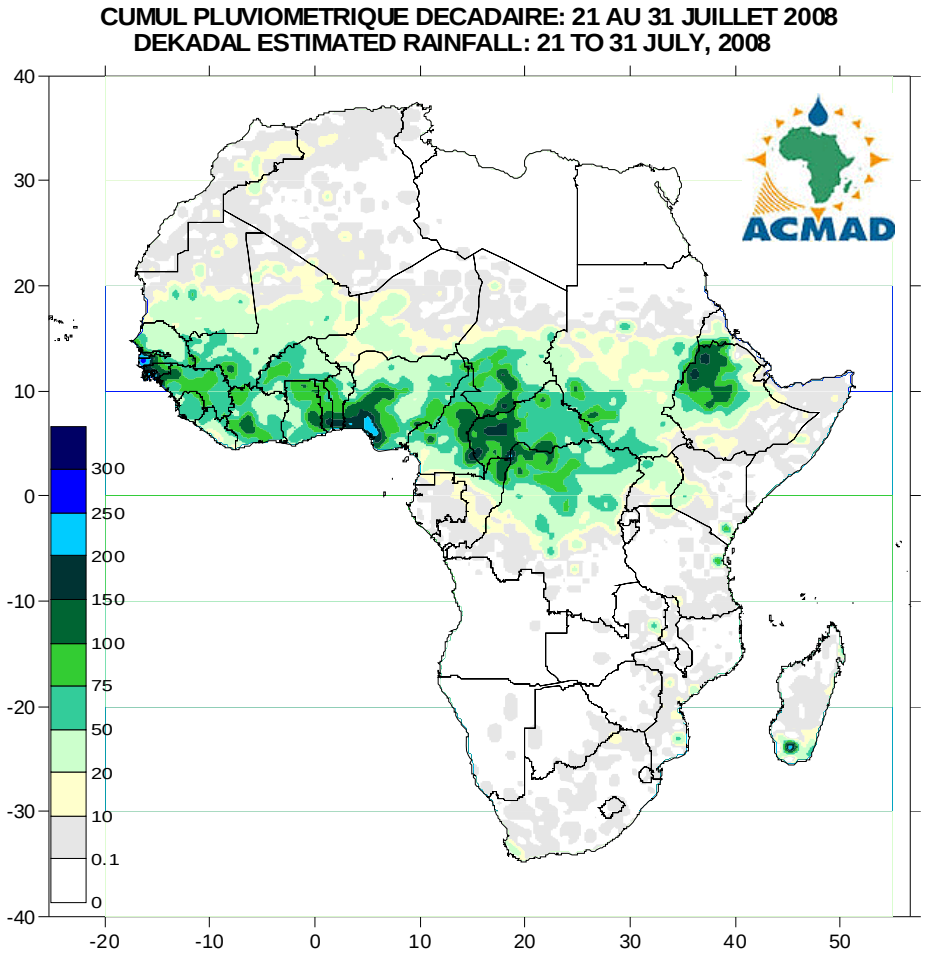
(Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

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

- **North Africa countries :** No significant rainfall amounts were recorded over northern Africa
- **Gulf of Guinea countries:** Recorded rainfall increase of amounts ranging from 20mm to 150mm with heaviest amount of above 200mm over south Nigeria .
- **The Sahel :** Spatial distribution and intensity of rainfall increased recording amounts ranging from 10mm to 150mm with peaks of above 200mm over west Senegal and Gambia.
- **Central Africa countries :** The central Africa countries experienced spatial rainfall increase recording amounts ranging from 10mm to 100mm with peaks of above 150mm over west Central African Republic.
- **GHA countries:** The countries experienced spatial and intensity increase recording rainfall amounts ranging from 10mm to 100mm intensifying over the north with peaks of above 150mm over north Ethiopia.
- **Southern Africa countries:** Experienced significant deficits with isolated localized rainfall activities with the heaviest amounts of above 150mm observed over southern Madagascar.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Bobo Dioulasso in Burkina Faso, Bangui in Central Africa Republic and Bamako in Mali. The lowest temperatures of 1.8°C was recorded at Maseru in Lesotho with the highest temperatures of 43.3 °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	90	4	29,4	23,7
2	Abuja	22	4	30,0	22,5
3	Accra	80	3	28,6	23,5
4	Addis Abéba	72	7	20,2	11,2
5	Agadez	14	2	39,0	25,8
6	Alger(Dar El-Beida)	0	0	32,2	19,9
7	Antananarivo	2	4	18,7	9,7
8	Antsiranana	0	0	28,9	18,9
9	Bamako-Senou	129	8	31,0	22,4
10	Bangui	186	6	28,9	21,3
11	Banjul	89	4	31,1	23,5
12	Bilma	4	2	43,3	22,1
13	Bobo Dioulasso	115	8	30,1	21,3
14	Brazzaville	0	0	28,8	19,4
15	Casablanca	0	0	25,5	20,7
16	Conakry	41	2	28,5	-
17	Cotonou	82	8	28,5	24,5
18	Dakar-Yoff	89	5	30,9	25,6
19	Dar-es-Salaam	7	2	29,0	19,4
20	Douala	69	7	28,9	23,5
21	Entebbe	0	0	26,0	17,7
22	Francistown	0	0	23,5	6,8
23	Harare	0	0	21,0	8,0
24	Johannesbourg	0	0	17,9	6,4
25	Khartoum	0	0	39,6	26,5
26	Kigali	0	0	26,9	16,6
27	Kigoma	0	0	29,4	17,2
28	Kinshasa	0	0	27,7	-
29	Le Caire	0	0	34,6	24,3
30	Le Cap	17	5	15,3	11,0
31	Libreville	0	0	27,5	23,5
32	Lilongwe	0	0	21,8	10,1
33	Lomé	34	5	29,0	24,5
34	Luanda	0	0	24,3	17,8
35	Lusaka	0	0	23,7	7,9
36	Manzini	0	0	-	9,7
37	Maputo	14	5	26,9	14,8
38	Maseru	0	0	18,2	1,8
39	Maun	0	0	25,8	8,6
40	Mbeya	0	0	20,3	8,4
41	Nairobi	2	1	21,3	13,7
42	Nampula	1	1	26,9	16,5
43	N'Djamena	66	4	33,3	23,4
44	Niamey-Aéroport	15	2	34,9	24,9
45	Nouakchott	1	1	32,5	26,4
46	Ouagadougou	31	6	31,5	23,6
47	Plaisance	29	10	23,7	18,6
48	Sal	0	0	28,5	23,9
49	Seretse Khama Aéroport	0	0	22,7	5,4
50	Seychelles	31	7	27,7	23,9
51	Tamanrasset	8	1	36,2	23,7
52	Toalagnaro	74	5	23,3	17,5
53	Tombouctou	8	1	37,6	25,5
54	Tripoli	0	0	34,5	21,7
55	Tunis	0	0	34,2	22,6
56	Windhoek	0	0	23,4	8,4
57	Zinder	6	2	33,3	23,1

NOTE: **0** means no rain;

- means no temperature data available Data Source **:** ACMAD / GTS

3. OUTLOOK FOR DEKAD (11th – 20th August, 2008)

3.1 RAINFALL

The ITD is expected to shift slightly northwards. The moisture influx is expected to increase 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 including northern parts of Gulf of Guinea countries and northern parts of GHA countries. The southern Africa countries will record slight increase in rainfall. In summary:

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

3.2 TEMPERATURE

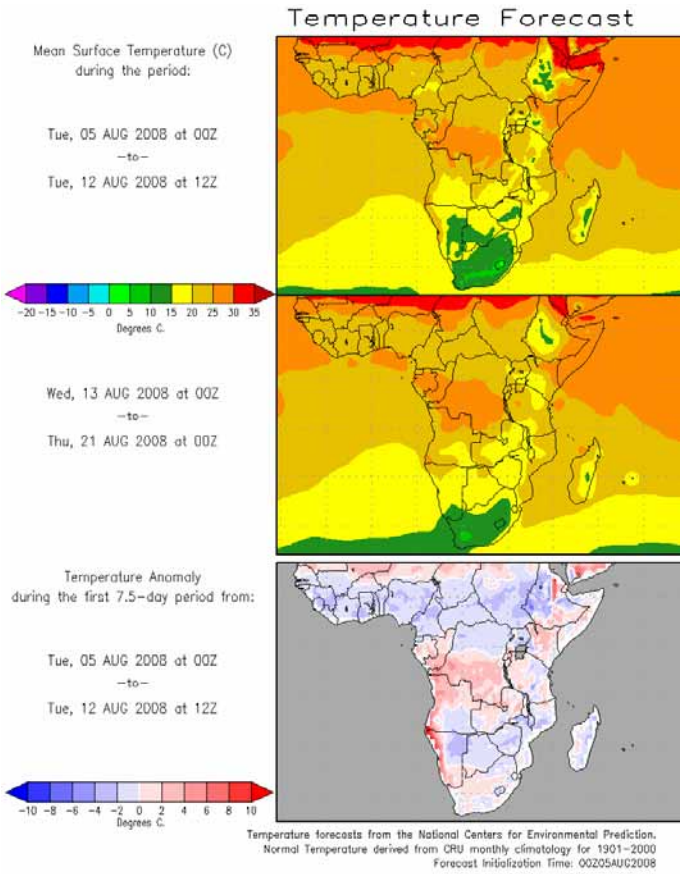
The forecast map below shows that the countries north of Equator will record the highest temperatures while Southern and eastern Africa countries will record the lowest temperatures. The highest forecast temperatures on the map below range from 25°C to 35°C in orange and red colours respectively with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

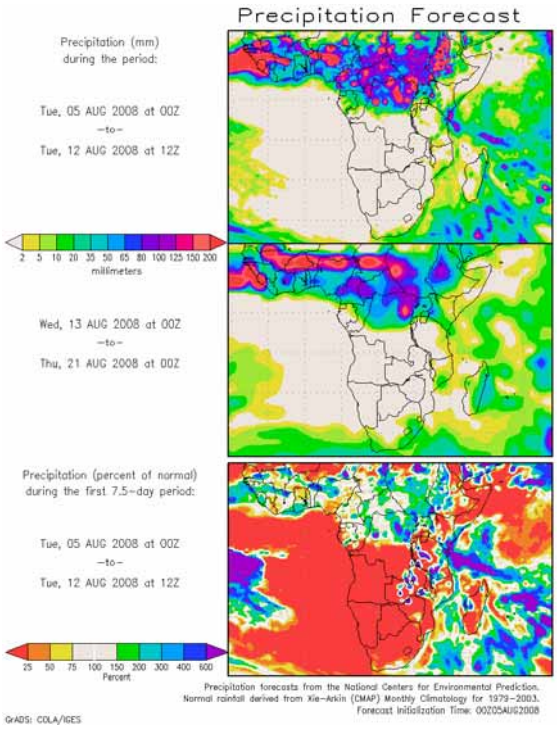
3.3 SOIL MOISTURE

The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast 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 northern parts of the Gulf of Guinea countries, the Sahel, 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:** The applications of climate information in agricultural production is of crucial importance. We often emphasize the importance of well documented onsets and cessations dates of seasonal rainfall and the monitoring phenological stages of crops in our countries. However, it is equally important to carry out cost benefit analysis on determination and 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 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. There is also a need to invest in higher yielding crops during a good rainfall season for example from forecasts provided by regional climate outlook forum (COF) such as the PRESAO, GHACOF and SARCOF.





Source : COLA

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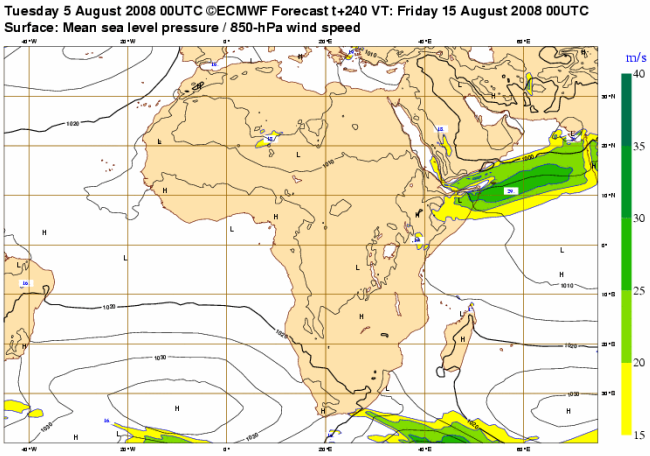
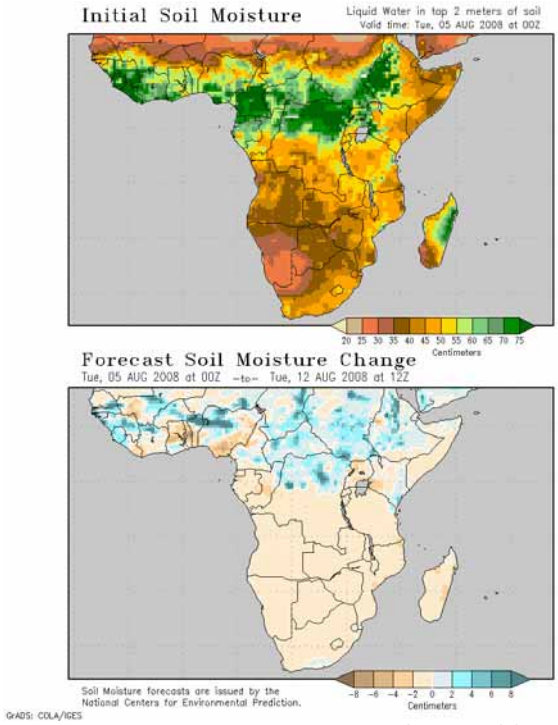


Source : ECMWF



Source : COLA