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 01 to 10 August, 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 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

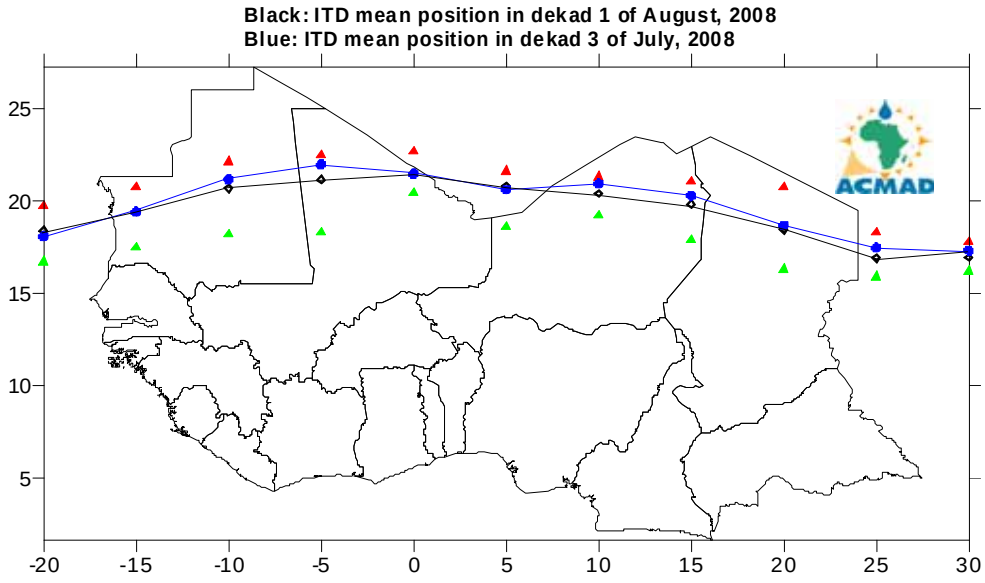
- **Azores high:** The Azores high pressure at 1023hPa weakened by 3hPa compared to the last dekad and shifted towards the northeast. Its mean position was observed at 37°N/23°W with a ridge extended over north Morocco.

- **Saharan thermal low:** The Saharan low of 1005hPa maintained its intensity compared to the past dekad and shifted towards the southwest. Its mean position was observed at 21°N/01°W with an extended trough over north Mauritania, north Mali, south Algeria, north Niger and northwest Chad.

- **St. Helena high :** The St. Helena high pressure at 1033hPa strengthened by 7hPa and shift towards the southeast compared to the past dekad. Its mean position was observed at 36°S/06E with an extended ridge over Atlantic Ocean.

- **Mascarene high:** The Mascarene high pressure at 1028hPa weakened by 8hPa and shifted towards the northeast. Its mean position was observed at about 33°S/70°E with an extended ridge over Mozambique and eastern parts of East Africa countries.

- **Inter-Tropical Discontinuity (ITD) :** Between the third dekad of July, 2008 and the first dekad of August, 2008, the ITD had a slight southwards movement over the Sahel. It's mean position was observed at 18.4°N over longitude 20°W; at 19.4°N and 20.7°N over west and central Mauritania respectively; at 21.2°N and 21.5°N over northwest and northeast Mali respectively; at 20.8°N over extreme south Algeria; at 20.4°Nand 19.9°N over north and northeast Niger respectively; at 18.5°N over north Chad and at 16.9°N and 17.0°N over northwest Sudan and central north Sudan.



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

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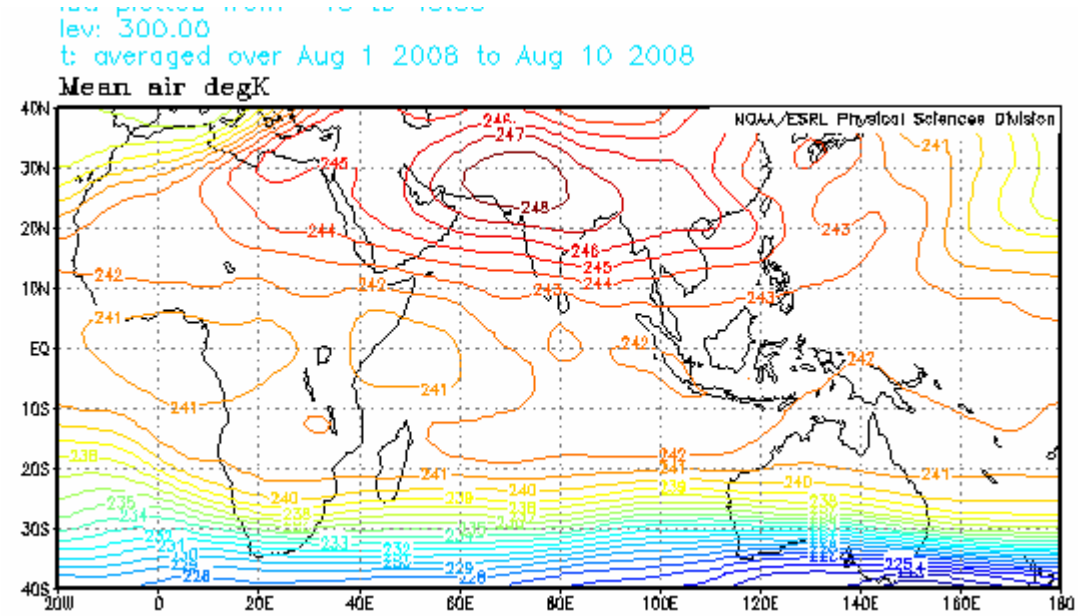
1.2 TROPOSPHERE

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

- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed was about 19m/s at 700hPa. Compared to the past dekad its weakened by 1m/s. Its axis was located at about 15.5°N stretching from extreme south Mauritania, extreme north Senegal and Cap Verde.

- **Thermal Index (TI) :** In the first dekad of August, 2008, the thermal index (TI) regime at 300hPa, map shown below, had a near threshold TI regime value of 242°K and above 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 parts of Africa extended from highest TI regime maximum of 248°K centered over western Asia maintained extremely high conditional instability accompanied with heavy rainfall and severe floods.



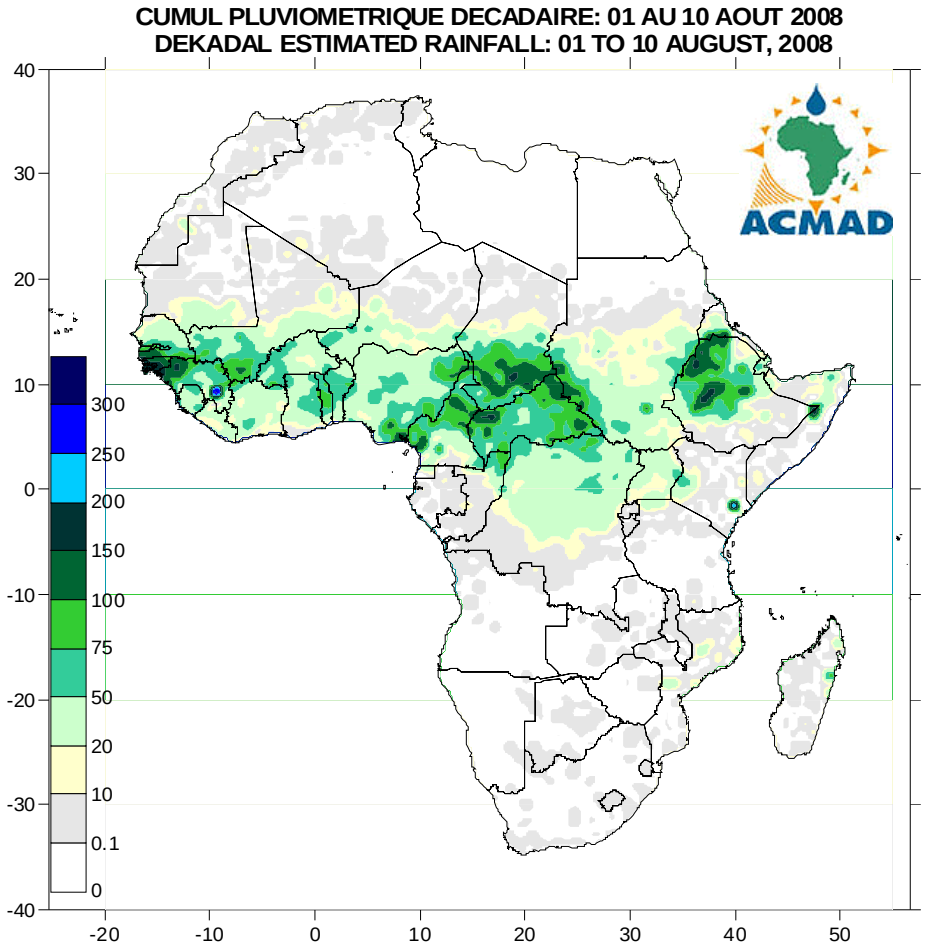
(Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the first dekad of July, 2008 shows decrease in rainfall activities over Gulf of Guinea countries and central Africa countries. The Sahel countries had slight spatial rainfall decrease while Greater Horn of Africa countries experienced more spatial rainfall distribution. In summary:

- **North Africa countries :** No significant rainfall amounts were recorded over northern Africa during the dekad.
- **Gulf of Guinea countries:** had rainfall intensity decrease recording amounts ranging from 10mm to 100mm with heaviest amount of above 150mm over southeast Nigeria and Cameroon.
- **The Sahel :** Rainfall decrease recorded with amounts ranging from 10mm to 150mm observing the heaviest amount of above 300mm over Guinea.
- **Central Africa countries:** The central Africa countries experienced slight rainfall intensity decrease recording amounts ranging from 10mm to 100mm with peaks of 150mm over west Central African Republic.
- **GHA countries:** The countries experienced slight increase in spatial rainfall distribution recording amounts ranging from 10mm to 100mm intensifying over the north Ethiopia with peaks of above 150mm.
- **Southern Africa countries:** Experienced severe rainfall deficits characterized by localized rainfall activities recording amounts ranging from 10 to 50mm over Mozambique and northeast Madagascar.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows moderate rainfall recorded over N'Djamena in Chad, Bamako in Mali, Bangui in Central Africa Republic. The lowest temperatures of 3.3°C was recorded at Maseru in Lesotho with the highest temperatures of 42.7 °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	0	0	30,3	24,2
2	Abuja	25	2	29,3	21,9
3	Accra	0	0	28,7	23,4
4	Addis Abéba	23	4	-	12,2
5	Agadez	4	1	39,7	26,4
6	Alger(Dar El-Beida)	0	0	32,7	19,4
7	Antananarivo	0	0	22,5	10,1
8	Antsiranana	0	0	29,9	19,5
9	Bamako-Senou	65	5	31,3	22,3
10	Bangui	55	4	30,2	21,6
11	Banjul	41	3	31,3	23,2
12	Bilma	0	0	42,7	27,4
13	Bobo Dioulasso	38	6	30,2	21,1
14	Brazzaville	0	0	27,7	19,9
15	Casablanca	0	0	26,2	20,4
16	Conakry	20	1	27,4	-
17	Cotonou	1	1	28,5	24,8
18	Dakar-Yoff	10	1	30,8	26,0
19	Dar-es-Salaam	0	0	30,1	19,0
20	Douala	41	7	28,8	23,8
21	Entebbe	0	0	-	18,3
22	Francistown	0	0	25,2	6,3
23	Harare	0	0	22,4	7,1
24	Johannesbourg	0	0	20,3	7,5
25	Khartoum	0	0	39,1	26,2
26	Kigali	3	2	26,5	15,3
27	Kigoma	0	0	29,2	17,3
28	Kinshasa	0	0	27,7	-
29	Le Caire	0	0	35,6	24,0
30	Le Cap	1	1	15,6	11,1
31	Libreville	0	0	29,2	23,6
33	Lomé	11	2	29,0	23,9
34	Luanda	0	0	24,2	-
35	Lusaka	0	0	24,6	10,2
36	Manzini	1	1	-	10,8
37	Maputo	0	0	27,8	15,2
38	Maseru	0	0	-	3,3
39	Maun	0	0	26,7	9,3
40	Mbeya	0	0	22,9	9,0
41	Nairobi	0	0	23,9	13,0
42	Nampula	2	1	27,4	16,5
43	N'Djamena	70	1	32,2	23,4
44	Niamey-Aéroport	8	4	35,1	24,8
45	Nouakchott	8	1	31,1	26,3
46	Ouagadougou	16	6	32,6	23,4
47	Plaisance	30	10	24,8	19,5
48	Sal	0	0	29,3	24,8
49	Seretse Khama Aéroport	0	0	25,0	6,0
50	Seychelles	30	6	28,1	24,5
51	Tamanrasset	1	1	34,9	23,8
52	Toalagnaro	9	3	24,6	17,2
53	Tombouctou	1	1	37,1	26,9
54	Tripoli	0	0	31,6	21,3
55	Tunis	0	0	35,8	23,7
56	Windhoek	0	0	23,8	9,8
57	Zinder	3	2	35,0	23,8

NOTE: **0** means no rain;

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

3. OUTLOOK FOR DEKAD (21st – 31st August, 2008)

3.1 RAINFALL

The ITD is expected to quasi-stationary. 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, northern and western 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 over northern parts, amounts ranging from 50mm to 150mm with peaks of about 250mm with significant decrease over the coastal parts with amounts ranging from 10mm to 100mm.

- **Central Africa countries:** Gabon, Central African Republic, north Democratic Republic of Congo, and Congo will experience decrease recording rainfall amounts ranging from 10mm to 100mm with peaks of about 150mm confined over the northern parts.

- **GHA countries:** The GHA countries are expected to experience some general increase recording amounts ranging from 10mm to 100mm with peaks of about 150mm over Ethiopia and Sudan. The eastern parts will experience severe rainfall deficits.

- **Southern Africa countries:** The countries will record rainfall increase over Namibia, western parts of South Africa, north Mozambique and parts of Madagascar amounts ranging from 20mm 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.

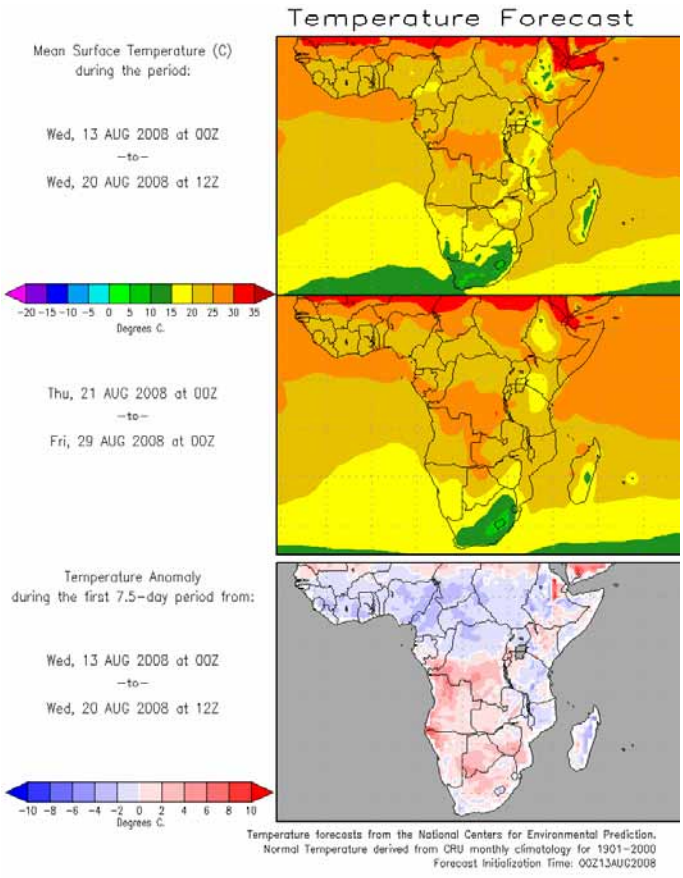
3.3 SOIL MOISTURE

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 countries of GHA.

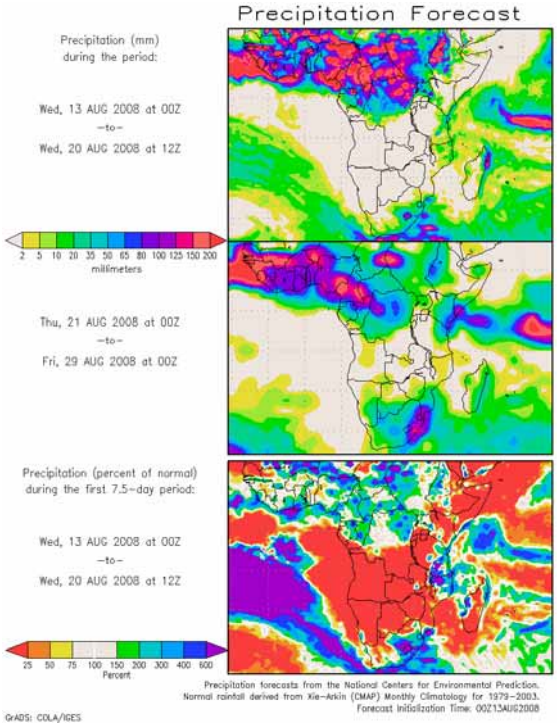
3.4 IMPACTS

- **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 on the importance of well documented onsets and cessations dates of seasonal rainfall and the monitoring of 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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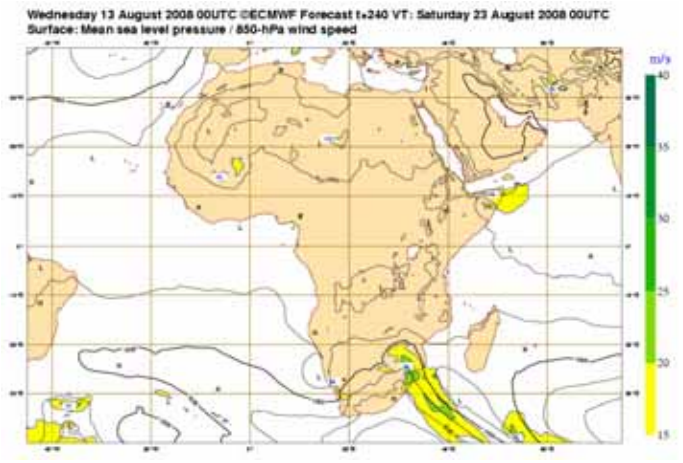
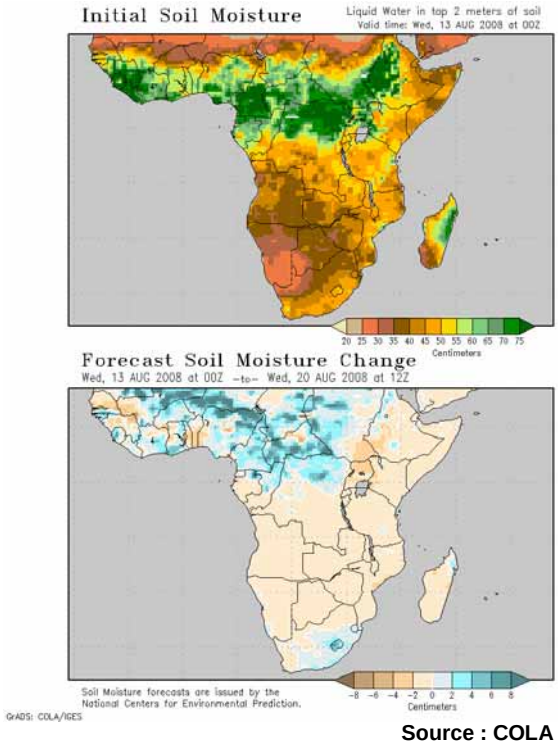


Source : ECMWF



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