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 11 to 21 August, 2008

HIGHLIGHT: The Sahel experienced deep moisture influx associated with outbreak of heavy rains with floods and is expected to continue within August. The Indian monsoon thermal low characterized by the highest thermal index has been 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 1025hPa strengthened by 2hPa compared to the last dekad and shifted towards the west. Its mean position was observed at 37°N/28°W with a ridge extended over north Atlantic Ocean.

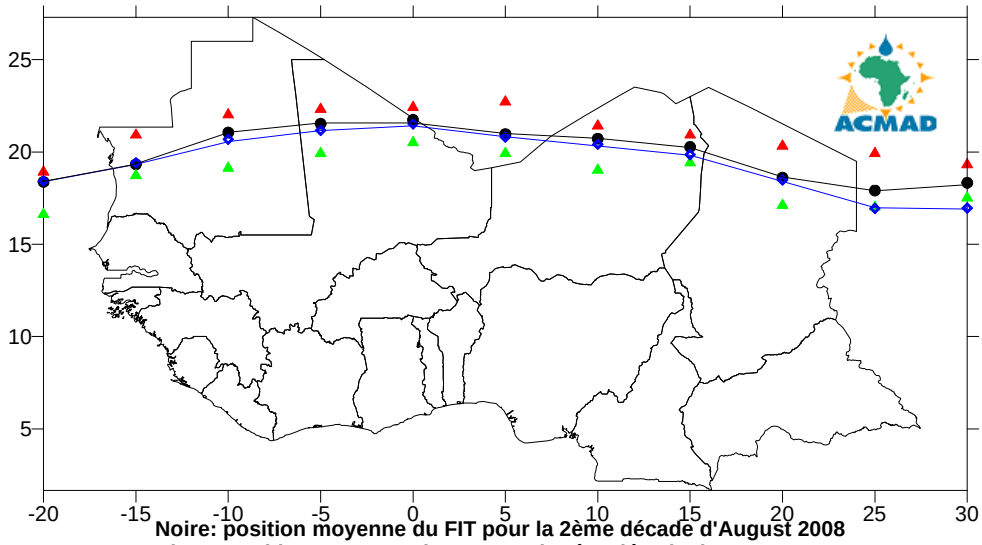
- **Saharan thermal low:** The Saharan low of 1004hPa deepened slightly by 1hpa compared to the past dekad and shifted towards the northwest. Its mean position was observed at 23°N/31°W with an extended trough over northeast Mauritania, north Mali, southwest Algeria, north Niger and north Chad.

- **St. Helena high :** The St. Helena high pressure at 1037hPa strengthened by 4hPa and shift towards the west compared to the past dekad. Its mean position was observed at 36°S/130W with an extended ridge over south Atlantic Ocean.

- **Mascarene high:** The Mascarene high pressure at 1029hPa strengthened by 1hPa and shifted towards the southwest. Its mean position was observed at about 34°S/58°E with an extended ridge over Mozambique and eastern parts of East Africa countries.

- **Inter-Tropical Discontinuity (ITD) :** Between the first and the second dekad of August, 2008, the ITD had a slight northwards movement over the Sahel. It's mean position was observed at 18.4°N over longitude 20°W; at 19.3°N and 21.1°N over west and central north Mauritania respectively; at 21.5°N and 21.5°N over northwest Mali; at 21.7°N and 21.0°N over extreme southwest and south Algeria; at 20.7°Nand 20.3°N over north and extreme northeast Niger respectively; at 18.6°N over north Chad; at 17.9°N and 18.3°N over extreme northwest and central north Sudan.

Black: ITD mean position in dekad 2 of August, 2008
Blue: ITD mean position in dekad 1 of August, 2008



Noire: position moyenne du FIT pour la 2ème décade d'August 2008
Bleue: position moyenne du FIT pour la 1ère décade d'August 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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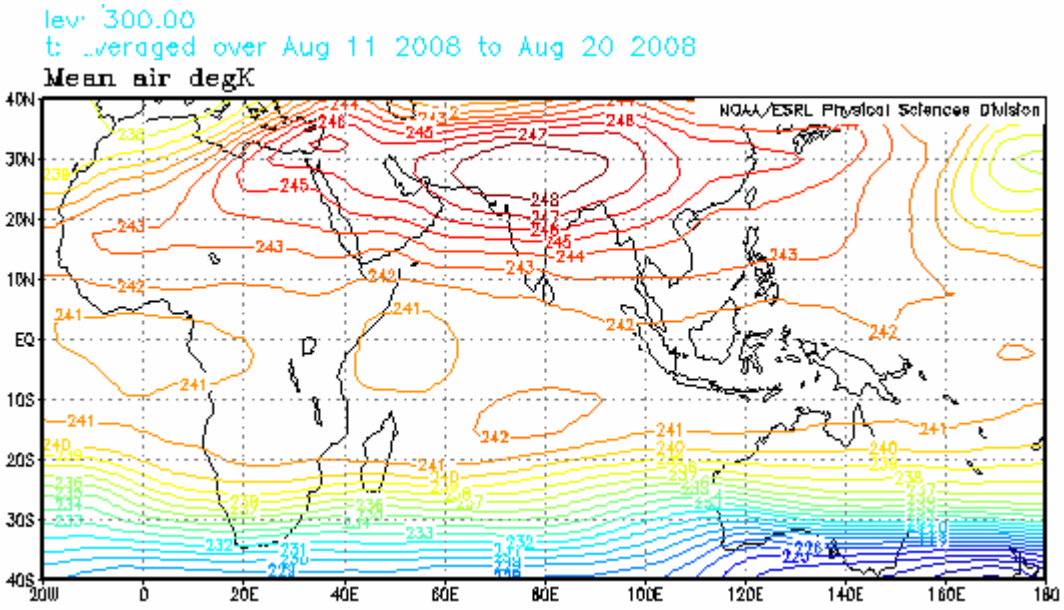
1.2 TROPOSPHERE

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

- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed was about 20m/s at 700hPa. Compared to the past dekad its strengthened by 1m/s. Its axis was located at about 15.4°N stretching from extreme south Niger, central Mali, north Senegal and Cap Verde.

- **Thermal Index (TI) :** In the second 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, the Sahel countries that maintained reasonable conditional instability triggering heavy rains and floods. The high TI regime of 243°K and above over central and eastern parts of the Sahel extended from highest TI regime maximum of 248°K centered over central Asia maintained extremely high conditional instability associated 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 increase in rainfall activities over Sahel countries, central Africa countries and Great Horn Africa counties while Gulf of Guinea countries experience slight spatial decrease. In summary:

- **North Africa countries :** No significant rainfall amounts were recorded over northern Africa during the previous dekad.

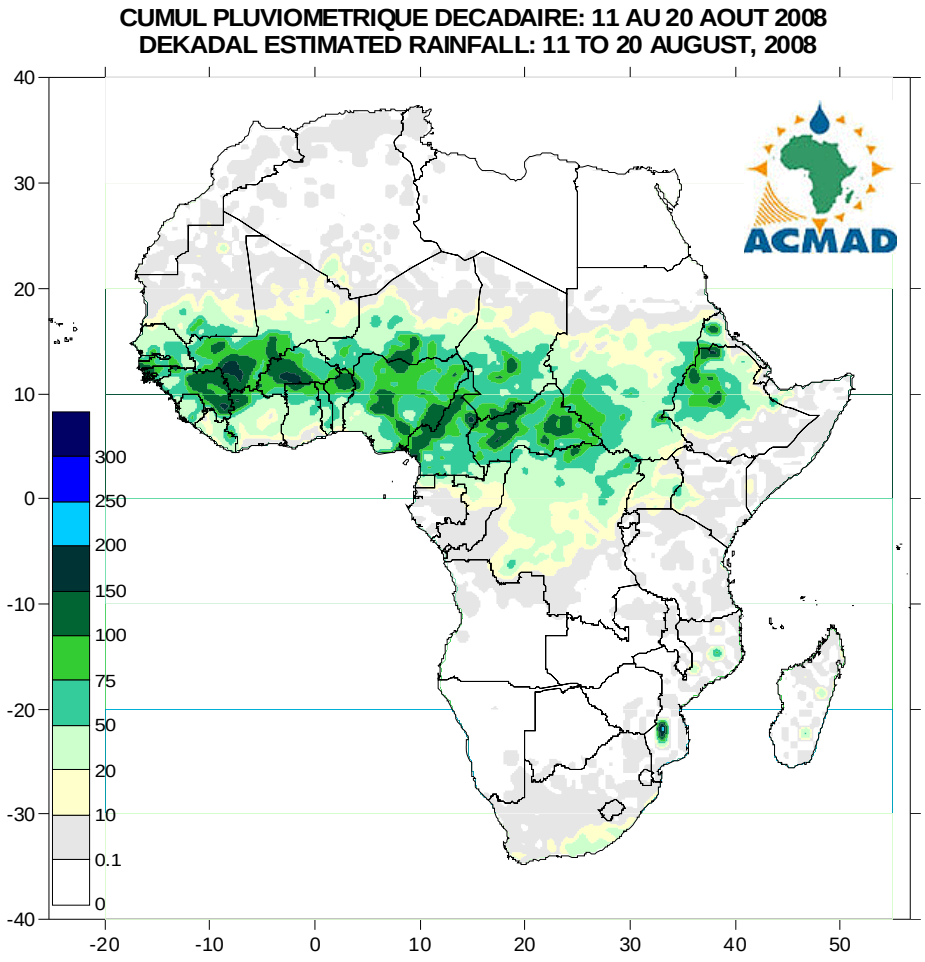
- **Gulf of Guinea countries:** had slight rainfall activities decrease recording amounts ranging from 10mm to 75mm with heaviest amount of above 100mm over north Côte d'Ivoire, Nigeria and Cameroon.

- **The Sahel :** Significant spatial expansion recorded amounts ranging from 10mm to 100mm observing the heaviest amount of above 150mm over Guinea, south Mali, central Burkina Faso and southern Chad.

- **Central Africa countries:** The central Africa countries experienced slight spatial rainfall increase 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 and Djibouti with peaks of about 150mm.

- **Southern Africa countries:** Experienced severe rainfall deficits characterized by localized rainfall activities recording amounts ranging from 10 to 50mm over Southern Africa and southern Madagascar with heaviest amount of about 150 over northern Mozambique.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Bamako in Mali, Douala in Cameroon and Zinder in Niger. The lowest temperatures of 4.9°C was recorded at Maseru in Lesotho with the highest temperatures of 38°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	3	3	28,8	22,9
2	Abuja	16	3	28,3	22,0
3	Accra	2	1	28,8	23,7
4	Addis Abéba	56	7	20,9	11,1
5	Agadez	46	5	37,6	24,7
6	Alger(Dar El-Beida)	0	0	33,3	20,0
7	Antananarivo	0	0	21,9	10,7
8	Antsiranana	6	2	29,2	19,0
9	Bamako-Senou	199	8	30,3	22,3
10	Bangui	37	6	29,8	21,7
11	Banjul	76	6	31,2	23,9
12	Bilma	0	0	38,0	25,9
13	Bobo Dioulasso	76	9	28,9	21,8
14	Brazzaville	0	0	30,1	21,0
15	Casablanca	0	0	26,2	20,3
16	Cotonou	0	0	28,8	24,8
17	Dakar-Yoff	36	5	30,7	26,1
18	Dar-es-Salaam	5	2	30,0	19,2
19	Douala	209	6	28,3	23,3
20	Entebbe	1	1	24,8	18,5
21	Francistown	0	0	25,7	8,4
22	Harare	0	0	23,7	8,4
23	Johannesbourg	0	0	19,2	7,6
24	Khartoum	22	2	36,7	24,3
25	Kigali	0	0	27,9	16,8
26	Kigoma	0	0	30,9	17,4
27	Kinshasa	0	0	30,2	21,0
28	Le Caire	0	0	36,0	24,9
29	Le Cap	0	0	18,6	11,2
30	Libreville	1	1	27,7	23,6
31	Lomé	9	3	28,8	24,0
32	Luanda	0	0	25,4	-
33	Lusaka	0	0	26,7	10,2
34	Manzini	0	0	-	11,0
35	Maputo	4	3	27,9	14,6
36	Maseru	1	1	18,4	4,9
37	Maun	0	0	23,8	11,2
38	Mbeya	0	0	22,9	8,8
39	Nairobi	0	0	23,5	13,5
40	Nampula	6	2	27,4	16,2
41	N'Djamena	1	1	31,2	23,2
42	Niamey-Aéroport	67	4	32,3	23,9
43	Nouakchott	1	1	31,6	25,6
44	Ouagadougou	96	8	31,1	23,5
45	Plaisance	16	8	24,0	19,0
46	Sal	0	0	29,3	24,7
47	Seretse Khama Aéroport	0	0	23,3	8,0
48	Seychelles	0	0	28,8	24,7
49	Tamanrasset	6	1	35,8	22,1
50	Toalagnaro	7	2	23,9	17,5
51	Tombouctou	14	3	36,0	24,7
52	Tripoli	0	0	37,3	22,3
53	Tunis	0	0	35,1	22,9
54	Windhoek	0	0	24,5	9,8
55	Zinder	111	4	33,0	23,5

NOTE: **0** means no rain;

- means no temperature data available

Data Source **:** ACMAD / GTS

3. OUTLOOK FOR DEKAD (01st – 10th September, 2008)

3.1 RAINFALL

The ITD is expected to be quasi-stationary over western part with slight southward displacement over eastern part. The high TI regime will maintain high conditional instability associated with heavy rainfall with floods over northern parts of the Gulf of Guinea Countries and parts of the Sahel. The central Africa countries, northern and western parts of GHA countries expected to record rainfall increase. In summary:

- **North Africa countries:** The countries will record increased rainfall of 10mm to 75mm.

- **The Sahel countries:** The Sahel countries will record slight decrease with rainfall records ranging from 50mm to 100mm with peaks of about 150mm associated with floods.

- **Gulf of Guinea countries:** Guinea, Guinea Bissau, Sierra Leone, Liberia, Cote-d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroon will record slight rainfall increase over northern parts, amounts ranging from 20mm to 150mm with peaks of about 200mm with significant decrease over the coastal parts with amounts ranging from 10mm to 75mm.

- **Central Africa countries:** Central Africa countries will experience significant increase in rainfall recording amounts ranging from 20mm to 150mm with isolated peaks of about 200mm causing floods

- **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, Sudan, Uganda, Rwanda, Burundi and western Kenya.

- **Southern Africa countries:** The countries will remain generally dry with isolated localized rainfall peaks ranging from 10mm to 50mm.

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

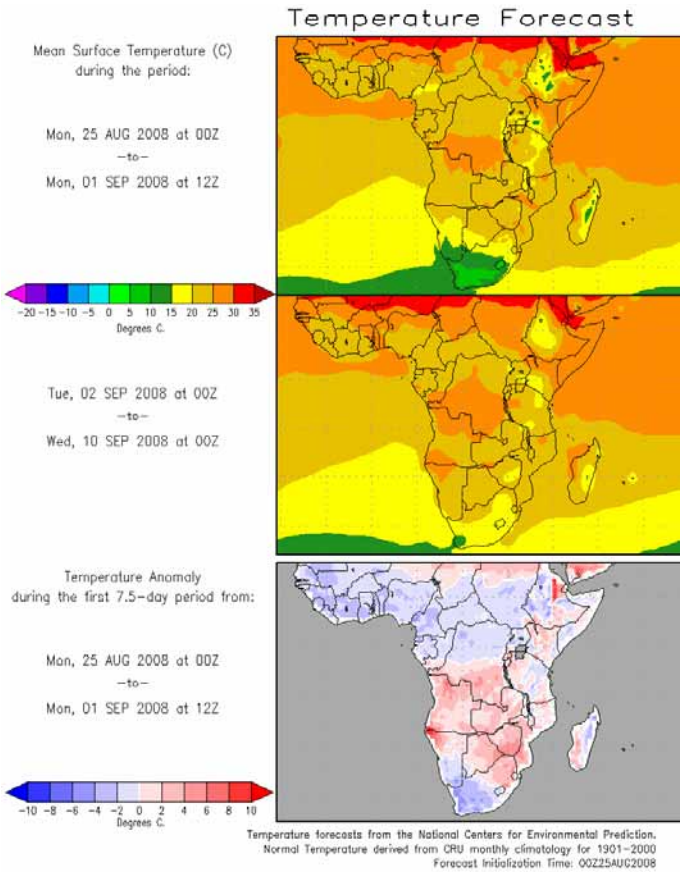
The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast changes over the next 7 days. The soil moisture change and precipitation relationship is discernable on the maps below. The areas forecast to have highest soil moisture increase are confined within the Gulf of Guinea countries, the Sahel, parts of central Africa and Sudan.

3.4 IMPACTS

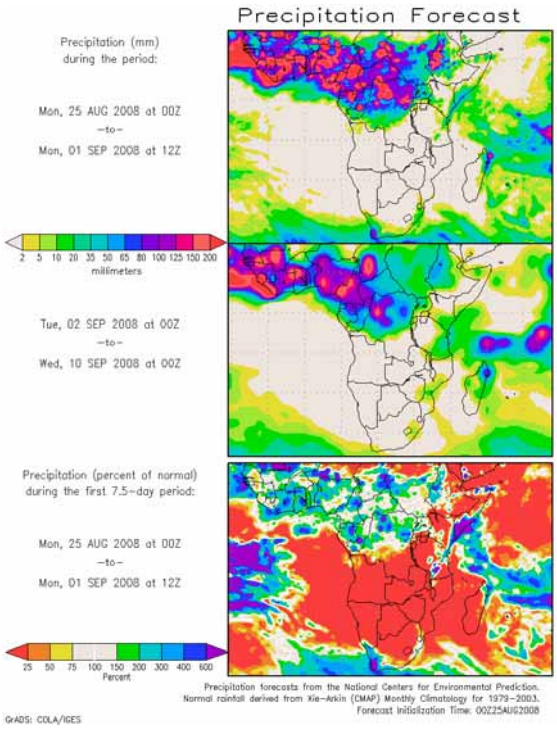
- **Health:** The incidences of malaria and other diseases are higher in areas with high temperatures during periods of heavy rainfall. The temperatures in the range of 20°C to 28°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector resulting in high incidences of malaria even in low prevalence areas. The Gulf of Guinea countries, the Sahel countries, central Africa countries and limited 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.

- **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.

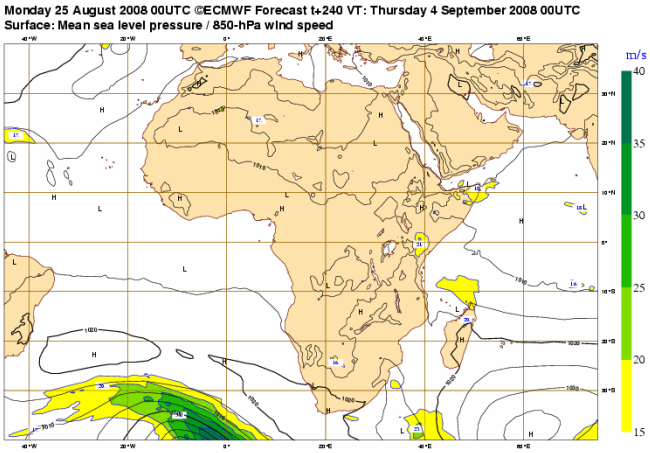
- **African Natural Ecosystems :** There is a need to invest in the rehabilitation of our currently degraded water catchments areas of natural ecosystems through enhanced national aforestation and soil conservation programmes during rainy seasons to minimise soil loss due to runoff.



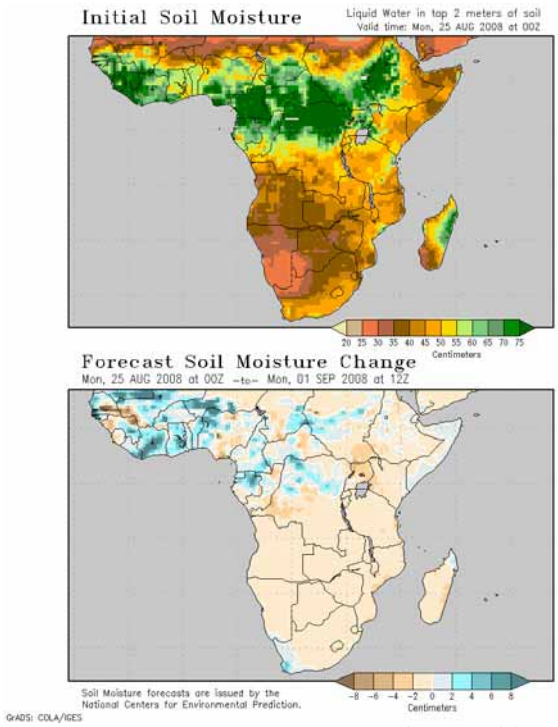
Source : COLA



Source : COLA



Source : ECMWF



Source : COLA