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

Ten Day Climate Bulletin
n° 16 Year 2008
Dekad of 1 to 10 June, 2008

HIGHLIGHT: While the Greater Horn of Africa (GHA) countries experienced significant rainfall reduction over eastern sector, the Sahel experienced moisture influx associated with outbreak of heavy rains over southern parts.

1. GENERAL SITUATION :

1.1 SURFACE

- **Azores high:** The Azores high pressure of 1030hPa strengthened by 4hPa and shifted towards the northwest as compared to the last dekad. Its mean position was observed at 41°N/24°W with a ridge extended over south Morocco and north Algeria.

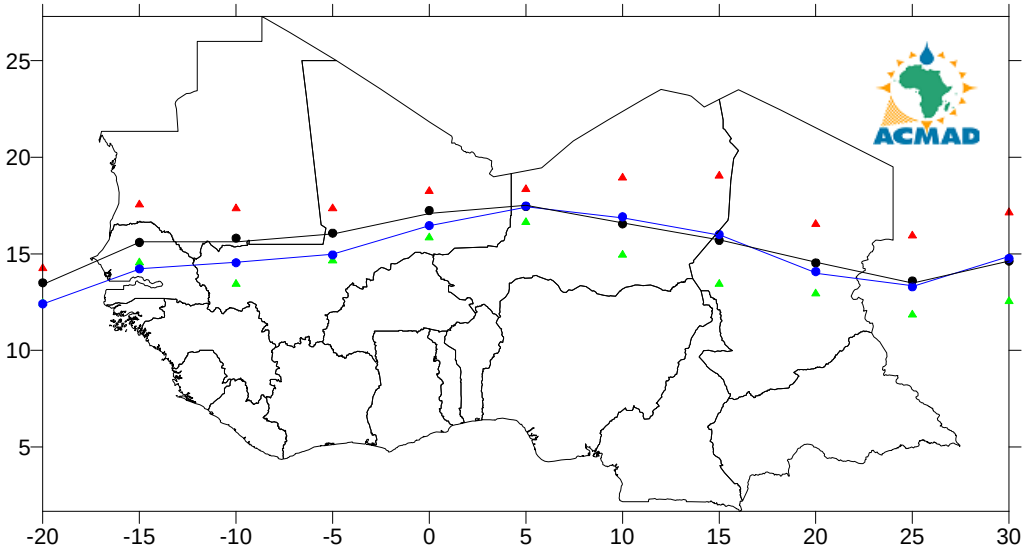
- **Saharan thermal low:** The Saharan low of 1005hPa filled up by 1hPa and shifted towards the northwest. Its mean position was observed at 18°N/07°E with a trough extended over east Mali, north Burkina Faso, south Algeria, north Niger and central Chad.

- **St. Helena high :** The St. Helena high pressure of 1030hPa strengthened by 5hPa and shift towards the southeast compared to the past dekad. Its mean position was observed at 35°S/00°W with an extended ridge over south Angola, Namibia, south of South Africa.

- **Mascarene high:** The Mascarene high pressure at 1031hPa strengthened by 1hPa and shifted towards the eastward. Its mean position was observed at about 37°S/60°E with an extended ridge over eastern South Africa and Mozambique.

Inter-Tropical Discontinuity (ITD) : Between the third dekad of May and the first dekad of June 2008, the ITD continued its migration towards the north over western Sahel and made a slight fluctuation over its eastern part. It's mean position was observed at 13.5°N over longitude 20°W; at 15.6°N over north Senegal; at 15.8°N over extreme south Mauritania; at 16.1°N and 17.2°N over west and east Mali respectively; at 17.5°N and 16.6°N over northwest and central Niger respectively; at 15.7°N and 14.5°N over extreme west and east Chad respectively; at 13.6°N and 14.6°N over west and north-central Sudan respectively.

Black: ITD mean position in dekad 1 of June, 2008
Blue: ITD mean position in dekad 3 of May, 2008



Noire: position moyenne du FIT pour la 1ère décade de Juin 2008
Bleue: position moyenne du FIT pour la 3ème décade de Mai 2008

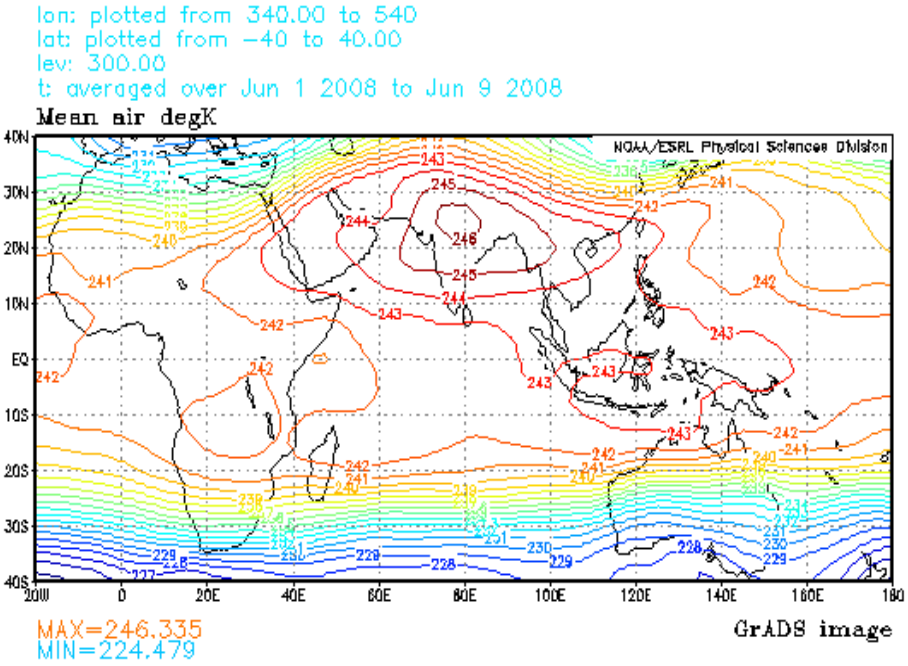
The triangles in red represent the maximum northward displacement of the ITD while the green triangles represent its minimum displacement.

1.2 TROPOSPHERE

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

- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed at 700 hPa of about 20m/s strengthened by 2m/s compared to the past dekad. Its axis was located at about 10°N moved by 3° crossing extreme north of Côte d'Ivoire and central Guinea up to 16.5°W in the north Atlantic Ocean.

- **Thermal Index (TI) :** In the first 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 northeastern part of Africa extended from TI regime maximum of 246°K centered over Asia that 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 first dekad of June, 2008 shows spatial and rainfall intensity decrease over northern Africa and southern Africa countries; spatial decrease in rainfall activities over Central Africa and Great Horn of Africa countries while the Sahel countries experienced slight spatial increase. In summary:

- **North Africa countries :** Spatial rainfall decreased over north Africa recording amounts ranging from 10 to 20 mm over north Algeria and Tunisia.

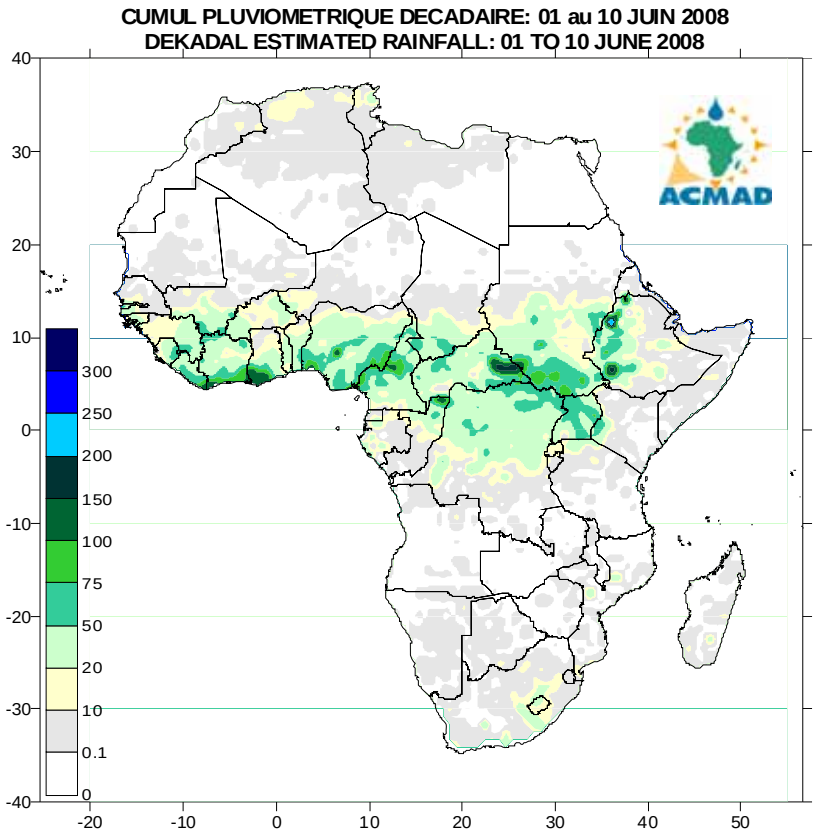
- **Gulf of Guinea countries:** No significant change in rainfall pattern. The Gulf of Guinea countries recorded amounts ranging from 20mm to 100mm with peaks of about 150mm over southern Ghana and southern Côte d'Ivoire.

- **The Sahel :** Slight spatial increase over southern part of the Sahel countries recorded rainfall amounts ranging from 10mm to 50mm.

- **Central Africa countries :** The central Africa countries experienced slight spatial rainfall decrease recording amounts ranging from 20mm to 100mm with heaviest of about 150mm over Central Africa Republic and north Congo.

- **GHA countries:** The countries experienced spatial rainfall decrease recording amounts between 10mm to 100mm with major peaks of 200mm to 250mm over western Ethiopia..

- **Southern Africa countries:** Southern Africa countries experienced spatial rainfall decrease recording rainfall amounts ranging from 10mm to 50mm over South Africa and Lesotho.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Abidjan in Côte d'Ivoire and Pleasance in Mauritius island. The lowest temperatures of 3.0°C was recorded at Maseru in Lesotho with the highest temperature of about 44.0°C recorded at Bilma and Timbuktu in Niger and Mali respectively.

N°	STATIONS	Précipitations (mm)	Number of rainy days	Temperature Max mean°C)	Temperature min mean (°C)
1	Abidjan	159	5	31,2	25,4
2	Agadez	0	0	43,1	27,5
3	Alger(Dar El-Beida)	2	2	25,2	13,5
4	Antananarivo	8	1	22,6	10,0
5	Antsiranana	0	0	31,3	18,3
6	Bamako-Senou	3	4	37,1	24,2
7	Bangui	24	4	31,9	22,3
8	Banjul	0	0	34,0	23,7
9	Bilma	0	0	44,0	22,1
10	Bobo Dioulasso	25	2	33,7	24,0
11	Brazzaville	0	0	28,1	20,4
12	Casablanca	0	0	23,4	17,1
13	Cotonou	15	3	29,9	25,4
14	Dakar-Yoff	0	0	28,8	23,4
15	Dar-es-Salaam	0	0	30,2	20,0
16	Douala	77	5	30,5	23,8
17	Entebbe	1	1	25,4	18,1
18	Johannesbourg	9	1	17,2	5,0
19	Khartoum	7	1	42,8	27,5
20	Kigali	0	0	25,5	-
21	Kigoma	13	2	-	18,6
22	Kinshasa	0	0	27,9	20,6
23	Le Caire	0	0	36,3	23,5
24	Le Cap	16	6	16,1	11,5
25	Libreville	0	0	28,5	23,8
26	Luanda	0	0	25,6	19,6
27	Lusaka	0	0	25,4	8,6
28	Maputo	0	0	26,5	15,1
29	Maseru	38	2	-	3,0
30	Maun	0	0	27,5	9,2
31	Mbeya	0	0	22,0	8,1
32	Nairobi	0	0	24,0	10,4
33	Nampula	9	2	27,0	16,1
34	N'Djamena	0	0	39,5	25,4
35	Niamey-Aéroport	21	1	40,3	28,0
36	Nouakchott	0	0	37,6	22,5
37	Ouagadougou	3	1	36,3	26,4
38	Plaisance	100	8	25,5	18,8
39	Sal	0	0	25,9	21,3
40	Seretse Khama Aéro	6	1	23,1	5,2
41	Seychelles	8	4	30,4	25,8
42	Tamanrasset	0	0	37,3	22,4
43	Toalagnaro	43	4	24,5	16,8
44	Timbuktu	0	0	44,2	28,8
45	Tripoli	0	0	31,1	18,5
46	Tunis	0	0	27,3	18,2
47	Windhoek	0	0	23,4	8,0
48	Zinder	6	1	40,1	25,6

NOTE: **0** means no rain;

- means no temperature data available

Data Source **:** ACMAD / GTS

3. OUTLOOK FOR DEKAD (21st – 30th June, 2008)

3.1 RAINFALL

The ITD is expected to shift 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 westward over Africa north of the Equator with a maximum TI regime located over north India that will maintain high conditional instability associated with heavy rainfall over parts of West Africa countries, northern parts of central Africa and northern, western and south eastern 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 giving light to moderate rainfall ranging from 10mm to 75mm with localised peaks of about 100mm.

- **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.

- **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.

- **GHA countries:** The GHA countries are expected to experience rainfall increase over northern, western and eastern parts recording amounts of 20mm to 100mm with isolated peaks of about 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 most of countries north of Equator will record the highest temperatures while South 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 most of the Continent expected to record 20°C and above.

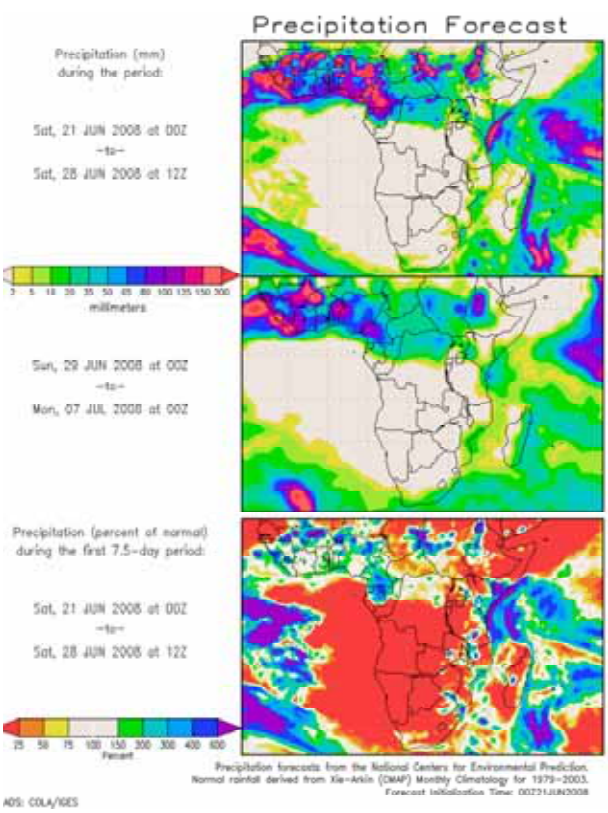
3.2 SOIL MOISTURE

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 few parts of GHA countries.

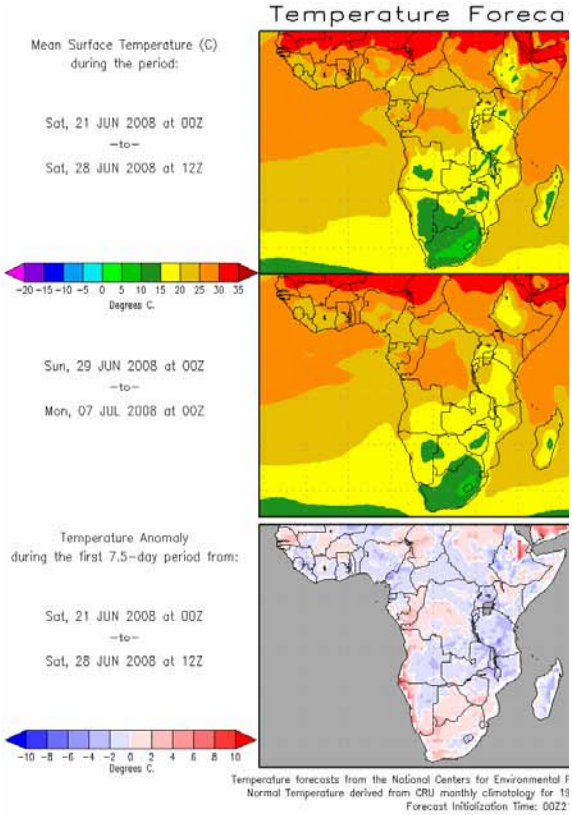
3.3 IMPACTS

- **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 parts of 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 cases of meningitis in the West Africa countries is expected to decrease tremendously However, health authorities need to continue the health care services to protect lives of the vulnerable community in the sub-region. The dry and dusty winds from Sahara observed in varying magnitudes will reduce significantly with the increased rainfall.

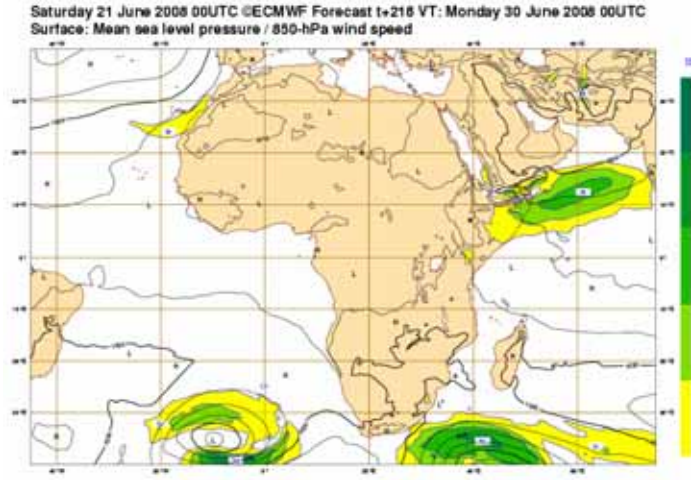
- **Agriculture and food security:** While we consider the importance of well documented onsets and cessations dates of seasonal rainfall in our countries it is equally important to carry out cost benefit analysis on determination and applications of appropriate planting dates in order to take advantage 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).



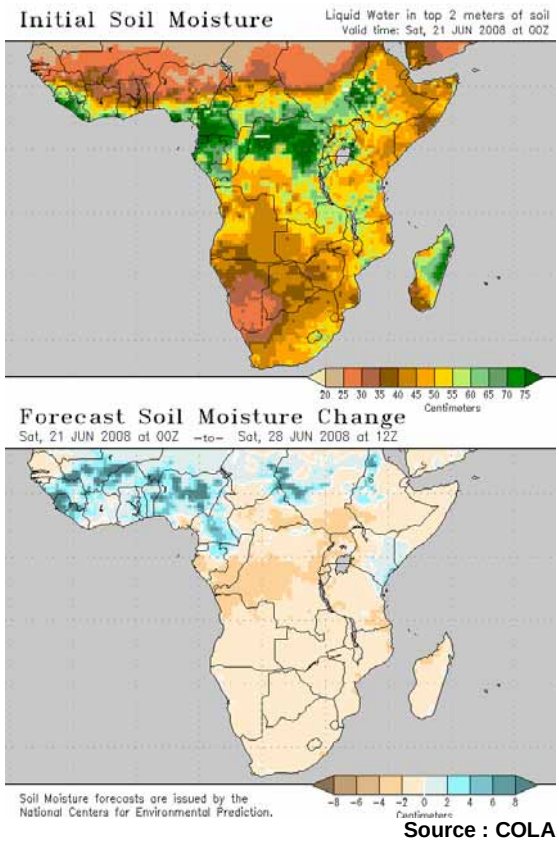
Source : COLA



Source : COLA



Source : ECMWF



Source : COLA