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

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Dekad of 21 to 31 August, 2008

HIGHLIGHT: The Sahel had deep moisture influx with maximum northward displacement of the ITD resulting in outbreak of heavy rains with floods. 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. However, rainfall is expected to decrease.

1. GENERAL SITUATION :

1.1 SURFACE

- **Azores high :** The Azores high pressure at 1027hPa strengthened by 2hPa compared to the last dekad and shifted towards the northeast. Its mean position was observed at 40°N/27°W with a ridge extended over north Morocco, north Algeria and south Tunisia.

- **Saharan thermal low:** The Saharan low of 1005hPa filled up slightly by 1hPa compared to the past dekad and shifted towards the southeast at 18°N/07°E with an extended trough over north Mauritania, north Mali, south Algeria, northeast Niger and north Chad.

- **St. Helena high :** The St. Helena high pressure at 1030hPa weakened by 7hPa and shifted southwest at 37°S/15°W with an extended ridge over south Atlantic Ocean.

Mascarene high : The Mascarene high pressure at 1032hPa strengthened by 3hPa and shifted southeast at 36°S/68°E with an extended ridge over Madagascar.

- **Inter-Tropical Discontinuity (ITD) :** Between the second and the third dekad of August, 2008, the ITD had a northward movement over the western Sahel and remained quasi-stationary over its eastern part. It's mean position was observed at 19.9°N over longitude 20°W; at 20.7°N and 22.3°N over west and central north Mauritania respectively; at 22.4°N and 21.9°N over northwest and extreme northeast Mali respectively; at 20.9°N over extreme south Algeria; at 20.6°Nand 20.2°N over north and extreme northeast Niger respectively; at 18.8°N over north Chad; at 17.7°N and 18.1°N over extreme northwest and central north Sudan. The red triangles and blue squares in the figure below represent the maximum and minimum displacements of the ITD respectively

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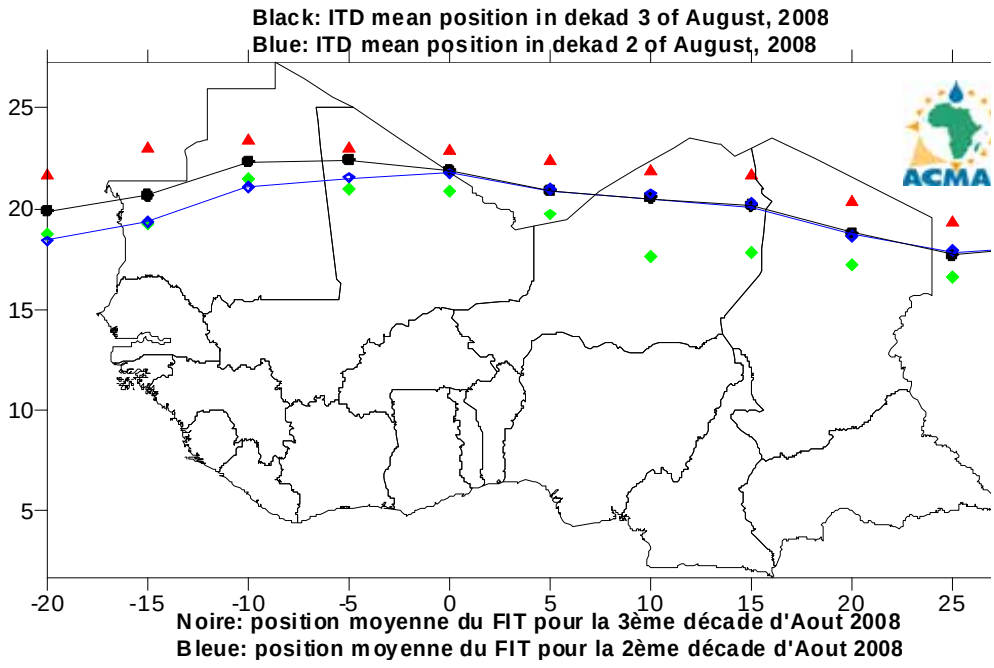

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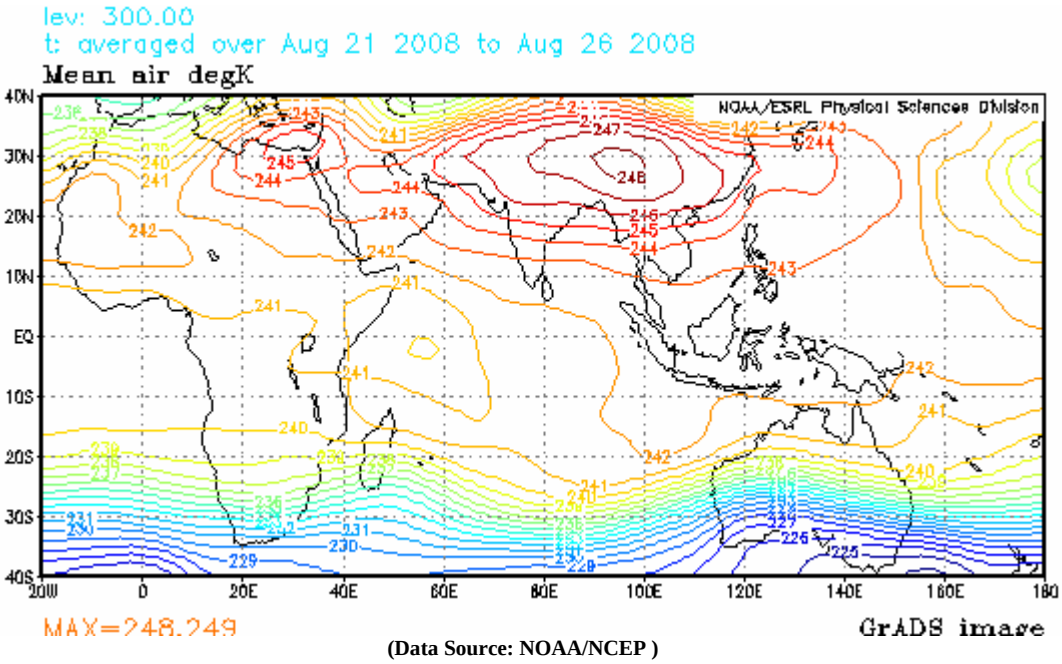
1.2 TROPOSPHERE

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

- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed was about 21m/s at 700hPa. Compared to the past dekad its strengthened by 1m/s. Its axis shifted by about 2 degree and was located at about 17.8°N stretching from south Mauritania up to about 25.3°W over north of Cape Verde Island.

- **Thermal Index (TI) :** In the third 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 west in the Sahel countries and northern parts of GHA countries that maintained reasonable conditional instability triggering heavy rains and floods. The high TI regime of 243°K and above over northeastern part of Africa extended from highest TI regime maximum of 248°K located over central and eastern Asia maintained extremely high conditional instability associated with heavy rainfall and severe floods.



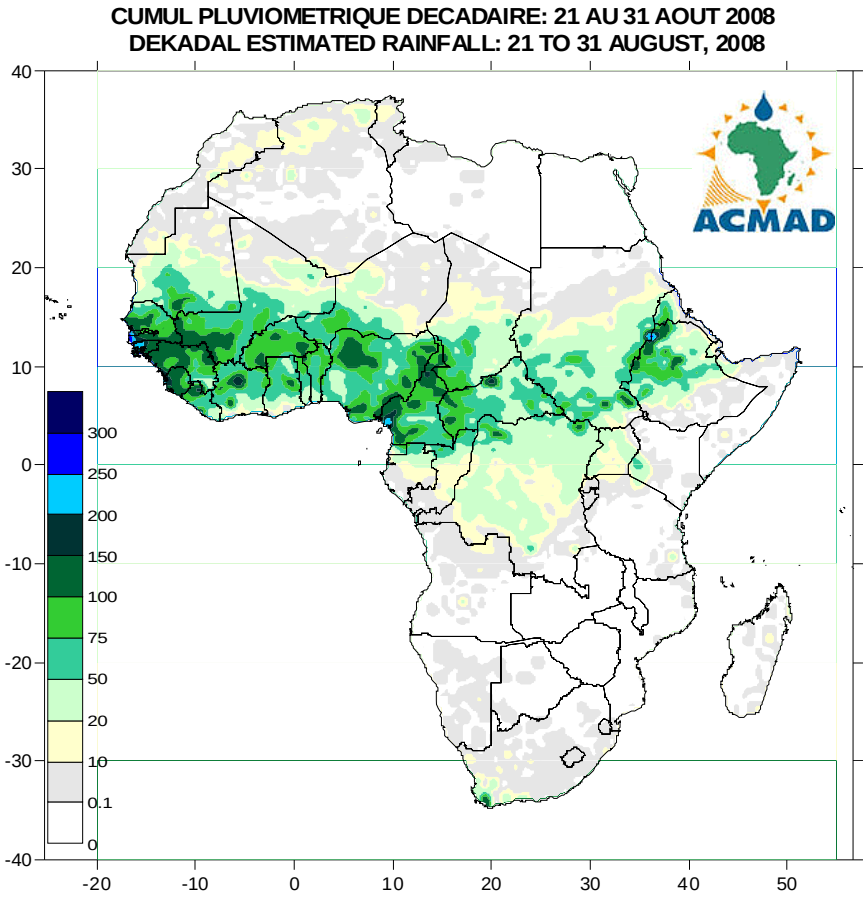
(Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the third dekad of August, 2008 shows increase in rainfall activities over northern Africa countries, the Sahel countries, central Africa countries, Gulf of Guinea countries and Greater Horn of Africa countries. In summary:

- **North Africa countries :** experienced slight spatial increase in rainfall recording amounts ranging from 10 to 50mm over Morocco, Algeria and Tunisia.
- **Gulf of Guinea countries :** had slight spatial and intensity rainfall increase recording amounts ranging from 20mm to 200mm with heaviest amounts of above 250mm over west Cameroon.
- **The Sahel :** had spatial distribution and intensity of rainfall increase recording amounts ranging from 10mm to 200mm recording the heaviest amounts of about 300mm over Guinea Bissau.
- **Central Africa countries :** experienced slight spatial rainfall increase recording amounts ranging from 10mm to 100mm with peaks of 150mm and above over west Central African Republic and north Democratic Republic of Congo.
- **GHA countries :** experienced increase in rainfall intensity recording amounts ranging from 10mm to 150mm intensifying over south Sudan with the highest peaks of 200mm and above over northwest Ethiopia. However, the eastern sector experienced severe rainfall deficits.
- **Southern Africa countries :** Experienced widespread severe rainfall deficits with an isolated localized peak of about 150mm over the Cape in South Africa.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Banjul in Gambia, Douala in Cameroon, Bobo Dioulasso in Burkina Faso and Dakar-Yoff in Senegal. The lowest temperatures of 4.9°C was recorded at Maseru in Lesotho with the highest temperatures of 41.9°C recorded at Bilma in Niger.

N°	STATIONS	Précipitations (mm)	Number of rainy days	Température Max mean (°C)	Température Min mean (°C)
1	Abidjan	8	3	28,4	22,5
2	Accra	0	0	29,2	23,6
3	Addis Abéba	19	2	-	-
4	Agadez	4	3	38,1	25,5
5	Alger(Dar El-Beida)	0	0	31,0	20,3
6	Antananarivo	1	1	23,3	10,6
7	Antsiranana	0	0	30,2	20,1
8	Bamako-Senou	55	6	30,4	21,6
9	Bangui	65	5	31,8	21,4
10	Banjul	149	4	29,9	23,4
11	Bilma	7	2	41,9	26,1
12	Bobo Dioulasso	123	6	30,5	21,2
13	Brazzaville	0	0	30,4	21,5
14	Casablanca	0	0	26,1	20,5
15	Cotonou	2	3	29,4	24,1
16	Dakar-Yoff	109	8	30,4	24,8
17	Dar-es-Salaam	5	1	29,7	18,2
18	Douala	180	9	29,3	23,7
19	Entebbe	1	1	26,8	17,9
20	Francistown	0	0	31,2	12,0
21	Harare	0	0	-	8,0
22	Johannesbourg	0	0	24,1	10,1
23	Khartoum	0	0	39,3	28,0
24	Kigali	2	1	28,4	16,9
25	Kigoma	0	0	29,9	20,4
26	Kinshasa	0	0	30,5	21,6
27	Le Caire	0	0	36,6	25,5
28	Le Cap	46	5	15,3	10,3
29	Libreville	0	0	28,3	24,3
30	Lomé	14	3	29,3	23,9
31	Lusaka	0	0	29,4	10,1
32	Manzini	3	1	-	14,7
33	Maputo	5	2	-	7,2
34	Maseru	1	1	18,4	4,9
35	Maun	0	0	32,3	14,0
36	Mbeya	0	0	26,5	9,5
37	Monrovia	0	0	28,3	23,2
38	Nairobi	0	0	24,7	13,8
39	Nampula	0	0	31,2	16,2
40	N'Djamena	57	3	31,7	22,7
41	Niamey-Aéroport	78	8	31,6	23,7
42	Nouakchott	2	1	33,1	26,9
43	Ouagadougou	63	6	31,1	22,9
44	Plaisance	7	6	24,6	18,9
45	Sal	0	0	29,8	25,1
46	Seretse Khama Aéroport	0	0	-	10,3
47	Seychelles	5	2	29,8	24,4
48	Tamanrasset	0	0	35,1	21,9
49	Toalagnaro	20	2	25,4	17,2
50	Tombouctou	73	3	36,4	25,7
51	Tripoli	0	0	34,6	22,4
52	Tunis	0	0	33,5	22,2
53	Windhoek	0	0	26,4	9,9
54	Zinder	48	5	32,6	22,9

NOTE: **0** means no rain;

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

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

3.1 RAINFALL

The ITD will move significantly southward with more displacement over eastern part of the Sahel. Expected slight increase over Senegal, Gambia and Niger with significant increase over Gulf of Guinea countries, central Africa and Greater Horn of Africa (GHA) countries. In summary:

- **North Africa countries :** Expected to experience a decrease in rainfall recording 10mm to 20mm.

- **Gulf of Guinea countries :** Guinea, Guinea Bissau, Sierra Leone, Liberia, Cote-d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroon will record slight rainfall increase amounts ranging from 20mm to 100mm with peaks of about 150mm.

- **The Sahel :** The convective rainfall expected to be maintained over Senegal, Gambia, south Mali and south Niger recording amounts ranging from 20mm to 75mm with isolated peaks of above 100mm.

- **Central Africa countries :** Central African Republic, Democratic Republic of Congo will experience increase in rainfall recording amounts ranging from 10mm to 100mm with peaks of above 150mm over Central African Republic.

- **GHA countries :** Uganda, western Kenya, southwest Sudan and southwest Ethiopia will experience a general increase recording rainfall amounts ranging from 10mm to 75mm with peaks of above 100mm. However, the eastern sector will experience severe rainfall deficits.

- **Southern Africa countries :** the southern Africa countries will continue to experience generally dry conditions.

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

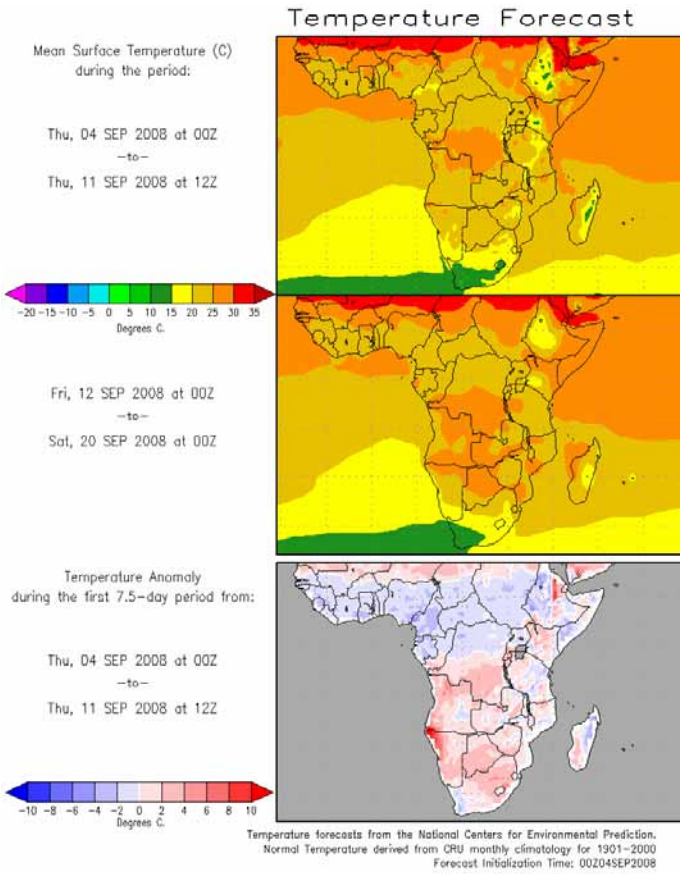
The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast changes over the next 7 days. The soil moisture change and precipitation relationship is discernable on the maps below. The areas forecast to have highest soil moisture increase are confined within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

3.4 IMPACTS

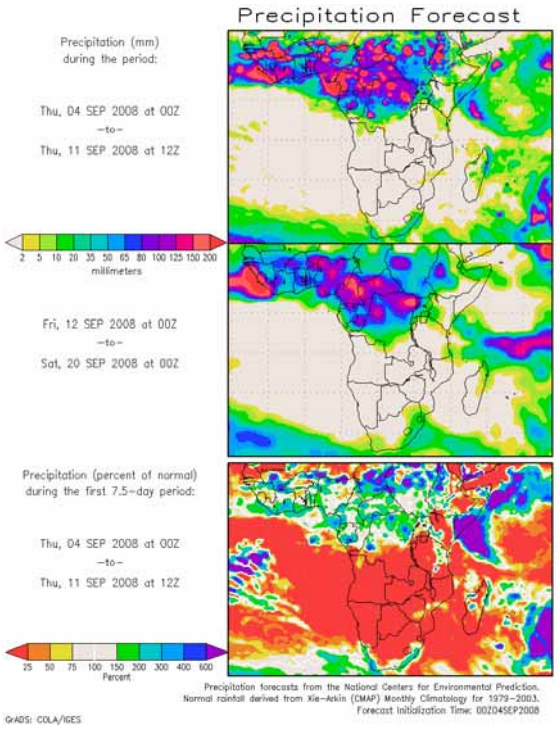
- **Health:** The incidences of malaria and other diseases are higher in areas with high temperatures during rainy periods. The temperatures in the range of 20°C to 28°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector resulting in high 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 rainy season for example from forecasts issued by regional climate outlook forum (COF) such as the PRESAO, GHACOF and SARCOF.

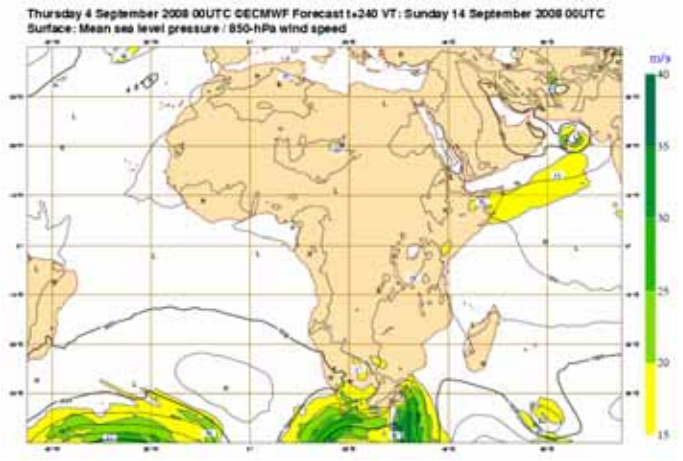
- **African Natural Ecosystems :** There is a need to invest in the rehabilitation of our currently degraded water catchments areas of natural ecosystems through enhanced national heritage conservation strategies such as afforestation and soil conservation programmes during rainy seasons to minimise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



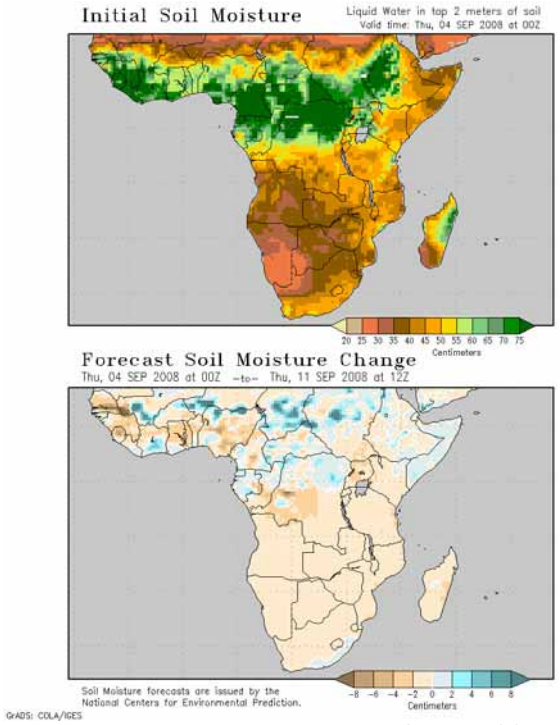
Source : COLA



Source : COLA



Source : ECMWF



Source : COLA