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

Ten Day Climate Bulletin
N° 28 Year 2008
Dekad of 01 to 10 October, 2008

HIGHLIGHT: The highest rainfall was recorded over northeast Cameroon, northwest Central African Republic and southern Chad. The southern part of the Sahel countries recorded light to moderate rainfall that spread over Gulf of Guinea countries, central Africa and the Greater Horn of Africa (GHA) countries.

1. GENERAL SITUATION :
1.1 SURFACE

- **Azores high:** Pressure at 1028hPa weakened by 3hPa compared to the last dekad and shifted to the southwest. Its mean position was observed at 40°N/23°W with a ridge extended over north Mauritania, south Morocco, south Algeria and over Tunisia.

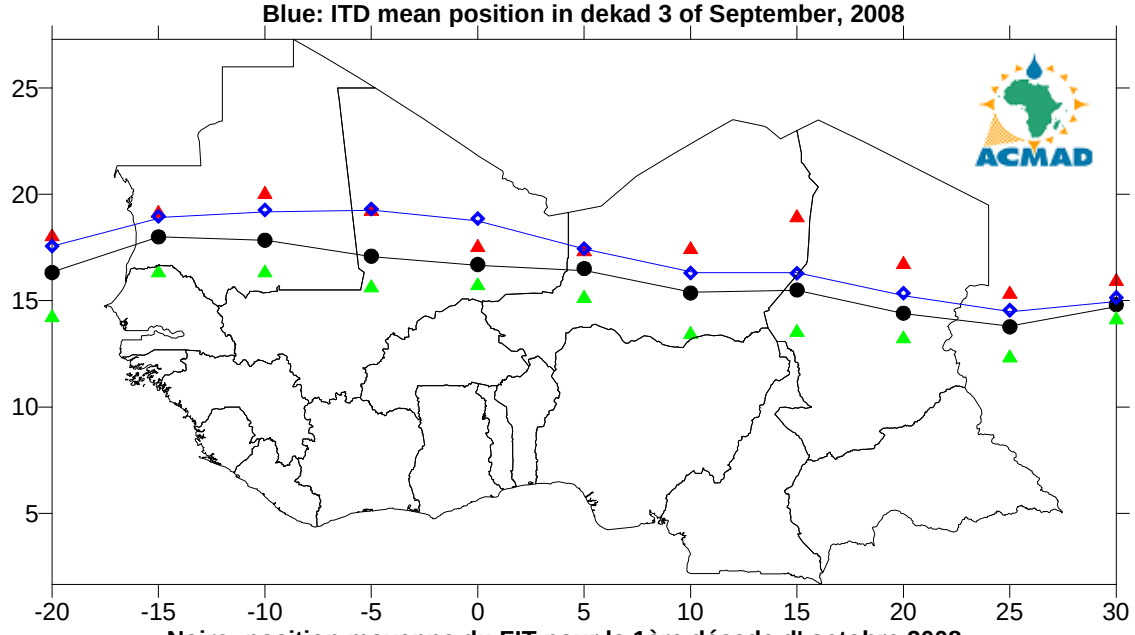
- **St. Helena high:** Pressure at 1032hPa strengthened significantly by 5hPa and shifted to the southwest at 37°S/07°W with an extended ridge over south Atlantic Ocean.

- **Mascarene high:** Pressure at 1030hPa weakened by 3hPa compared to the previous dekad and shifted to the northeast at 36°S/67°E with an extended ridge over Indian Ocean.

- **Saharan thermal low:** The Saharan low of 1006hPa deepened by 1hPa compare to the past dekad but shifted to the southeast at 15°N/10°E with an extended trough over south Mauritania, central Mali, north Burkina Faso, central Niger and central Chad.

- **Inter-Tropical Discontinuity (ITD) :** Between the third dekad of September and the first dekad of October, 2008, the ITD continued its southwards migration over the Sahel particularly over west and central east Mali. It's mean position was observed at 16.3°N over longitude 20°W; at 18.0°N and 17.8°N over southwest and south Mauritania respectively; at 17.1°N and 16.7°N over west and central Mali respectively; at 16.5°N and 15.4°N over west and central south Niger respectively; at 15.5°N and 14.4°Nover extreme west and east Chad; at 13.8°N and 14.8°N over west and central north Sudan.

Black: ITD mean position in dekad 1 of October, 2008
Blue: ITD mean position in dekad 3 of September, 2008



Noire: position moyenne du FIT pour la 1ère décade d' octobre 2008
Bleue: position moyenne du FIT pour la 3ème décade de septembre 2008

The red and green triangles represent the max. and min. displacements of the ITD respectively

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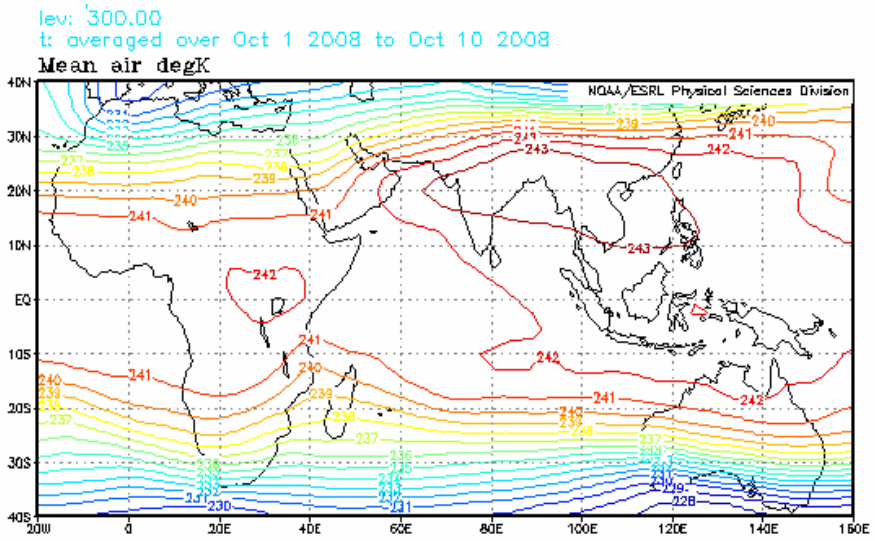
1.2. TROPOSPHERE

- **Monsoon :** Monsoon influx was moderate (5.5 to 12.5 m/s) at 925hPa level over south Liberia, north Guinea, east Burkina Faso, southwest Niger, north Togo, north Benin and southeast Nigeria.

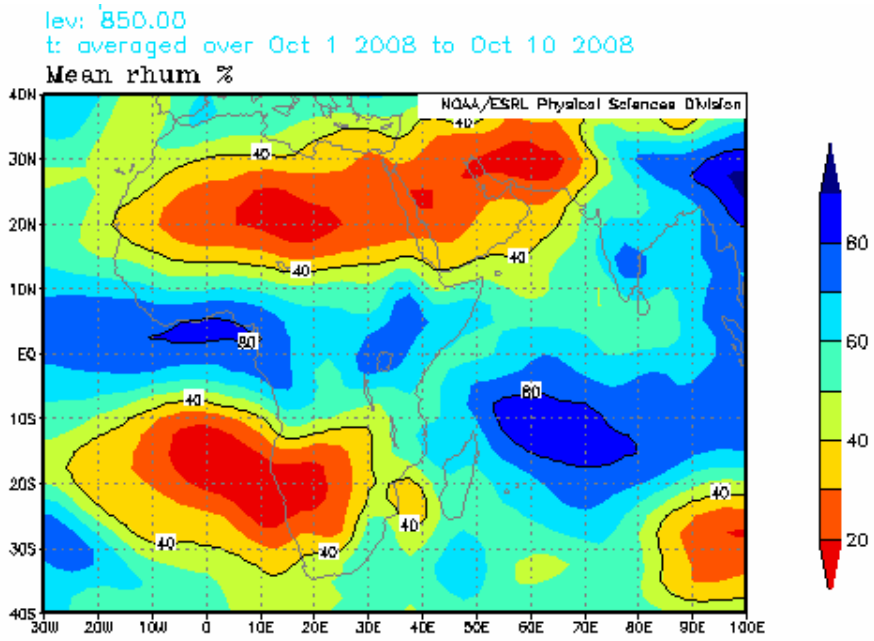
- **African Easterly Jet (AEJ) at 700hPa :** The African Easterly Jet mean speed was about 20m/s at 700hPa strengthened by 2m/s compared to the past dekad. Its axis was located at about 12°N stretching from north Nigeria , extreme north Benin, south Burkina Faso, extreme south Mali and north Guinea.

- **Thermal Index (TI) :** In the first dekad of October, 2008, the thermal index (TI) regime at 300hPa, map shown below, had a near threshold TI regime value of 242°K over eastern central Africa countries and western part of GHA countries, that maintained high conditional instability associated with heavy rainfall with high relative humidity as observed below. The TI regime maximum of 243°K located over Asia maintained high conditional instability associated with heavy rainfall and floods.



(Data Source: NOAA/NCEP)

- **Relative Humidity (RH):** The 850hPa map below shows high RH in the first dekad of October, 2008 over southern part of Gulf of Guinea countries, northern part of central Africa, western, parts of GHA countries with the rest of the Continent having low RH characterized by rainfall deficits.



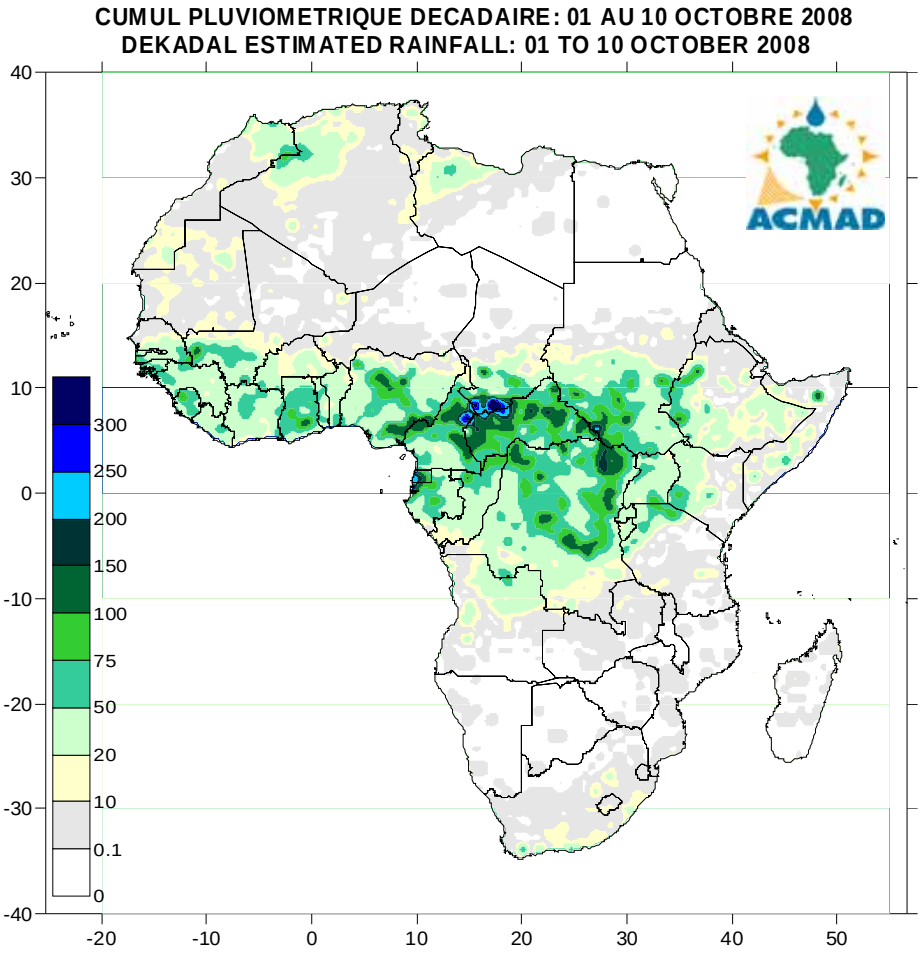
(Data Source: NOAA/NCEP)

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 October, 2008 shows spatial rainfall increase over north Africa, central Africa and GHA countries; while the Sahel and Gulf of Guinea countries experienced some decrease. In summary:

- **North Africa countries :** experienced rainfall intensity increase recording amounts ranging from 10mm to 150mm over Morocco, Algeria, Libya and Tunisia.
- **The Sahel :** had spatial rainfall decrease recording amounts ranging from 10mm to 150mm with peaks of about 200mm over western Mali and highest peaks of above 300mm over southern Chad.
- **Gulf of Guinea countries :** had rainfall intensity decrease recording amounts ranging from 10mm to 100mm with localized peaks ranging from 100 to 200mm intensifying over northeast Cameroon to above 300mm.
- **Central Africa countries :** experienced slight spatial rainfall increase recording amounts ranging from 10mm to 200mm intensifying to about 300mm over northwest Central African Republic.
- **GHA countries :** experienced slight spatial rainfall increase recording amounts ranging from 10mm to 150mm with peaks ranging from 150 to 200mm.
- **Southern Africa countries :** had slight spatial and intensity of rainfall increase recording localized rainfall ranging from 10mm to 75mm over southern part of South Africa.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Libreville in Gabon. The lowest temperatures of 8.7°C was recorded at Johannesburg in South Africa with the highest temperatures of 41.4°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	14	2	30,8	24,3
2	Accra	13	3	31,7	24,3
3	Agadez	0	0	38,4	26,9
4	Alger(Dar El-Beida)	39	5	25,5	13,4
5	Antananarivo	0	0	26,0	11,5
6	Antsiranana	0	0	31,4	20,6
7	Bamako-Senou	78	6	33,4	21,9
8	Bangui	30	6	32,3	22,0
9	Bilma	0	0	41,4	22,5
10	Bobo Dioulasso	31	1	32,3	21,7
11	Brazzaville	0	0	30,7	22,0
12	Casablanca	0	0	23,4	17,2
13	Cotonou	49	5	29,6	24,9
14	Dakar-Yoff	1	1	31,4	26,3
15	Dar-es-Salaam	1	1	32,0	21,0
16	Douala	40	6	30,6	24,0
17	Entebbe	34	5	26,2	17,7
18	Francistown	0,2	1	-	12,5
19	Johannesbourg	0	0	25,5	8,7
20	Khartoum	0	0	39,9	27,7
21	Kigoma	44	3	29,9	18,9
22	Kinshasa	0	0	32,0	21,5
23	Le Caire	0	0	31,9	21,2
24	Le Cap	4	3	16,0	11,5
25	Libreville	181	5	28,6	24,2
26	Lilongwe	0	0	29,1	16,2
27	Lomé	29	4	31,2	24,7
28	Lusaka	0	0	33,0	-
29	Manzini	0	0	-	15,4
30	Maputo	0,3	1	28,4	18,7
31	Maseru	7	2	23,6	9,8
32	Maun	0	0	36,4	-
33	Mbeya	0	0	26,7	11,1
34	Monrovia	0	0	30,2	23,3
35	Nairobi	0	0	26,4	16,3
36	Nampula	0	0	33,6	19,3
37	N'Djamena	8	1	36,9	24,4
38	Niamey-Aéroport	0	0	38,0	26,1
39	Nouakchott	0	0	38,6	27,2
40	Ouagadougou	23	2	35,3	23,4
41	Plaisance	6	6	26,2	21,0
42	Sal	0	0	29,6	25,7
43	Seretse Khama Airport	0	0	33,1	-
44	Seychelles	18	2	30,4	24,8
45	Tamanrasset	0,2	1	32,7	19,8
46	Toalagnaro	42	2	30,8	20,3
47	Tombouctou	0	0	37,6	25,8
48	Tripoli	0	0	29,8	19,3
49	Tunis	0	0	26,5	17,5
50	Windhoek	0	0	31,9	14,9
51	Zinder	0	0	37,7	24,6

NOTE: **0** means no rain;

- means no temperature data available

Data Source **:** ACMAD / GTS

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

3.1 RAINFALL

The ITD will move significantly southward with more displacement over central and eastern parts after the cessation of rainfall over the Sahel. Rainfall is expected to increase over Gulf of Guinea countries, central Africa and parts of GHA countries. In summary:

- **North Africa countries :** expected to experience a slight increase where over northern Morocco and north Algeria recorded light to moderate rainfall of 10mm to 50mm.

- **The Sahel :** The southern parts of the Sahel countries will record rainfall ranging from 10mm to 50mm.

- **Gulf of Guinea countries :** The countries will experience significant spatial rainfall increase over Liberia, Ivory Coast, Ghana, Nigeria, Cameroon and Gabon ranging from 10mm to 100mm with peaks of above 150mm.
- **Central Africa countries :** Central African Republic, Democratic Republic of Congo will experience rainfall increase recording amounts ranging from 20mm to 150mm and above with isolated peaks of about 200mm and above.

- **GHA countries :** Uganda, west and central Kenya, southern Sudan and southern Ethiopia, western and north eastern Tanzania will experience general increase recording rainfall amounts ranging from 10mm to 75mm with isolated peaks of above 100mm. The October-November-December (OND), 2008 seasonal rainfall performance will be adversely affected by the evolution of convective activities over eastern Indian Ocean and western Pacific Ocean.

- **Southern Africa countries :** will experience spatial rainfall increase with significant decrease in intensity recording 10mm to 50mm intensifying over north Mozambique and Madagascar ranging from 75mm to 100mm.

3.2 TEMPERATURE

The forecast map below shows that the countries north and south of Equator will record the highest temperatures while few parts of Southern Africa and GHA 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 75% of the Continent expected to record 20°C and above.

3.3 SOIL MOISTURE

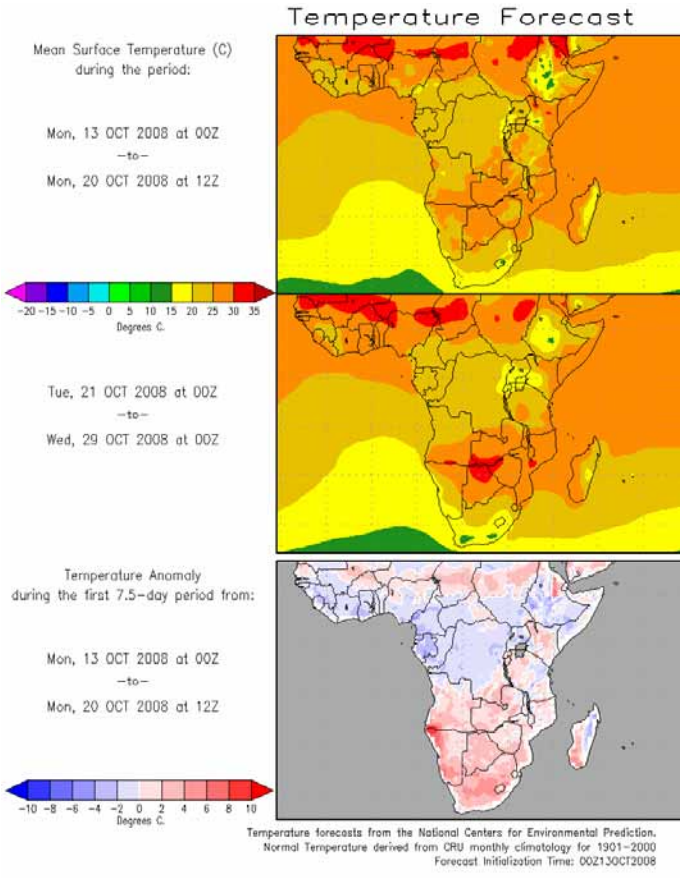
The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast changes over the next 7 days. The soil moisture change and precipitation relationship is discernable on the maps below. The areas forecast to have highest soil moisture increase are confined within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

3.4 IMPACTS

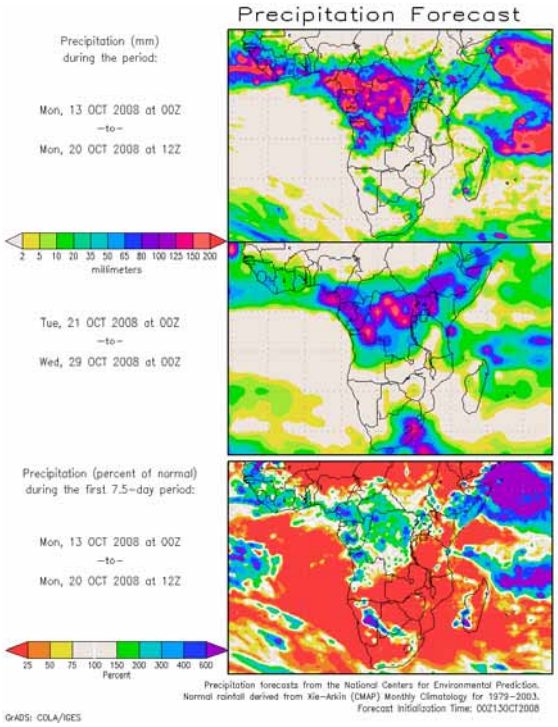
- **Health:** The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy periods. The temperatures in the range of 20°C to 28°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector resulting in high incidences of malaria even in low prevalence areas. The Gulf of Guinea countries, parts of central Africa countries and GHA countries with high humidity/rainfall and the prevailing high temperatures support the survival of parasite resulting in higher incidences of vector borne diseases such as malaria. 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 are of crucial importance. We often emphasize on the importance of well documented onset and cessation dates of seasonal rainfall as well as monitoring of the phenological stages of crops in our countries. However, it is of crucial importance 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 by taking advantage, for example from forecasts issued by regional climate outlook forum (RCOF) such as the PRESAO, GHACOF and SARCOF.

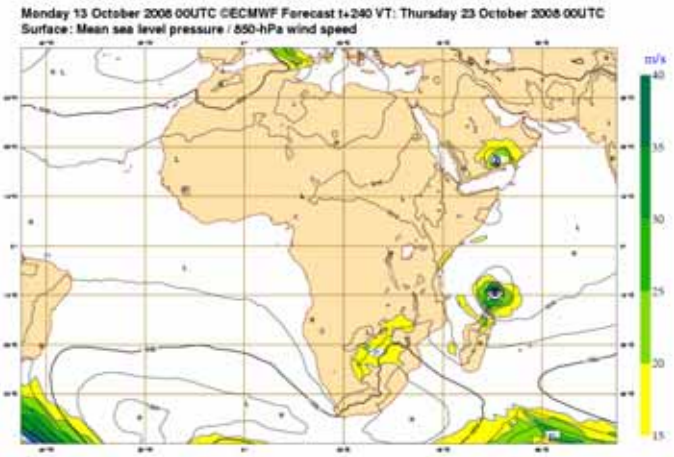
- **African Natural Ecosystems :** There is a need to invest in the rehabilitation of our presently degraded water catchments areas within our natural ecosystems through enhanced national heritage conservation strategies such as national tree planting, afforestation and soil conservation programmes during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



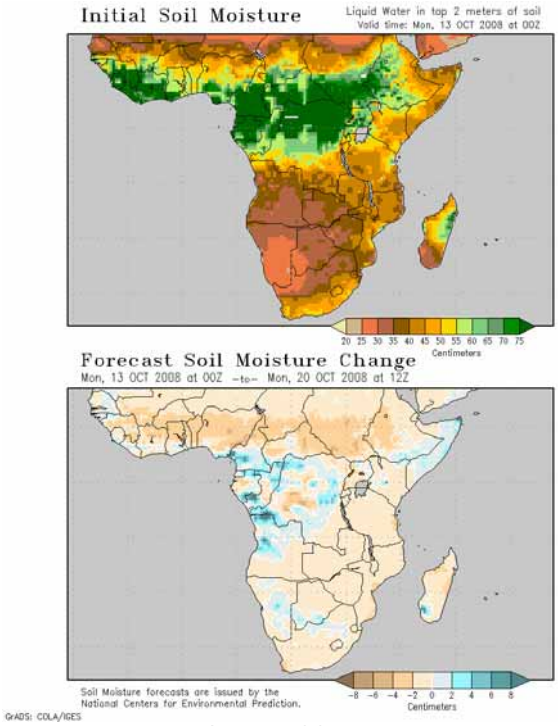
Source : COLA



Source : COLA



Source : ECMWF



Source : COLA