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

Ten Day Climate Bulletin
N° 29 Year 2008

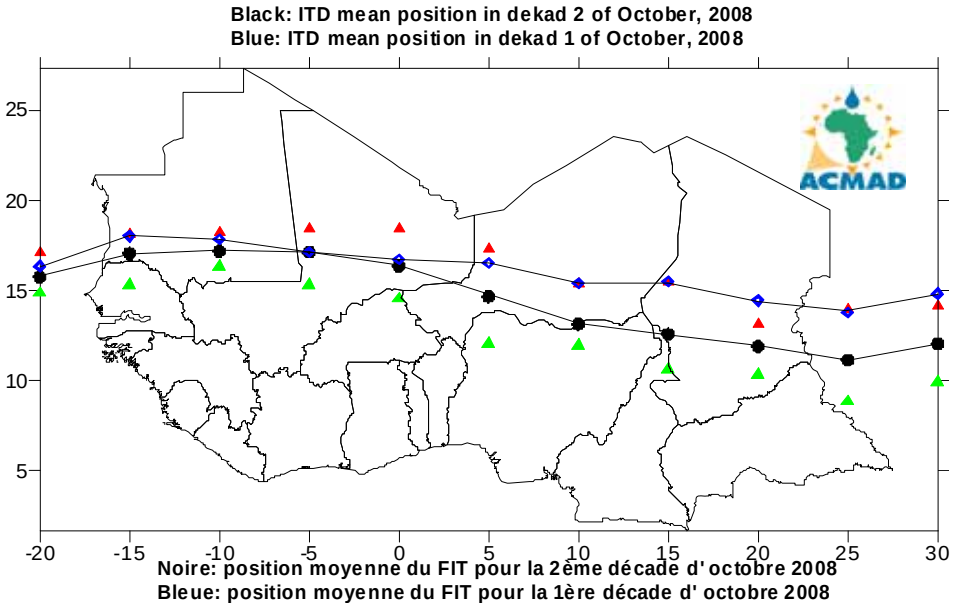
Dekad of 11 to 20 October, 2008

HIGHLIGHT: The highest rainfall was experienced over central Africa countries and parts of Greater Horn of Africa (GHA) countries with one of the heaviest rainfall record of 240mm over Libreville in Gabon. The northern African countries also experienced significant rainfall increase.

1. GENERAL SITUATION :

1.1 SURFACE

- **Azores high:** Pressure at 1025hPa weakened by 3hPa compared to the last dekad and shifted to the southwest. Its mean position was observed at 36°N/26°W with a ridge extended over central Mauritania, south Morocco and southwest Algeria.
- **St. Helena high:** Pressure at 1027hPa weakened significantly by 5hPa and shifted to the northwest at 33°S/11°W with an extended ridge over south Atlantic Ocean.
- **Mascarene high:** Pressure at 1026hPa weakened by 4hPa compared to the previous dekad and shifted to the northwest at 34°S/61°E with an extended ridge over Indian Ocean.
- **Saharan thermal low:** The Saharan low of 1008hPa filled up by 2hPa compared to the past dekad and shifted to the west at 14.5°N/02°E with an extended trough over southeast Mauritania, south Mali, north Burkina Faso, south Niger and Chad.
- **Inter-Tropical Discontinuity (ITD) :** Between the first and second dekad of October, 2008, the ITD continued its southwards migration over the Sahel particularly over its eastern part. However, the ITD was quasi-stationary over central Mali. It's mean position was observed at 15.7°N over longitude 20°W; at 17.0°N and 17.2°N over southwest and south Mauritania respectively; at 17.1°N and 16.3°N over west and central Mali respectively; at 14.6°N and 13.1°N over southwest and central southeast Niger respectively; at 12.6°N over extreme northeast Cameroon; at 11.9°N over southeast Chad; at 11.1°N and 12.1°N over west and central north Sudan respectively.



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

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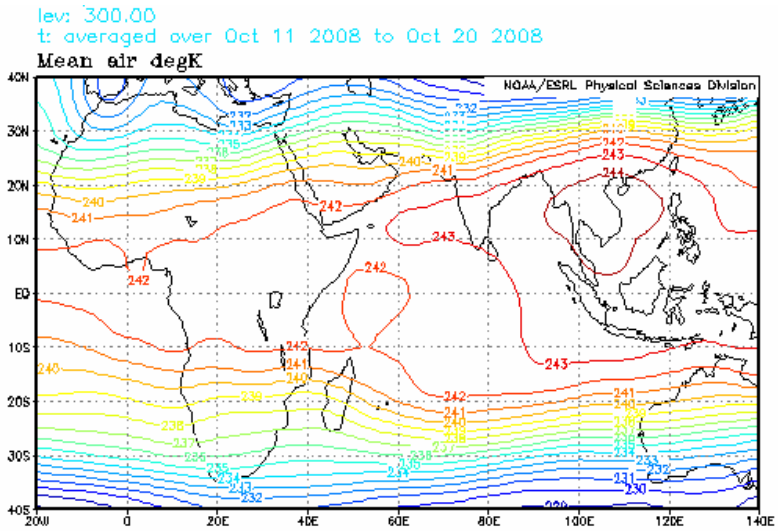
1.2. TROPOSPHERE

- **Monsoon :** Monsoon influx was weak (1 to 5 m/s) at 925hPa level over Liberia, southeast Ghana, south Nigeria and southwest Cameroon.

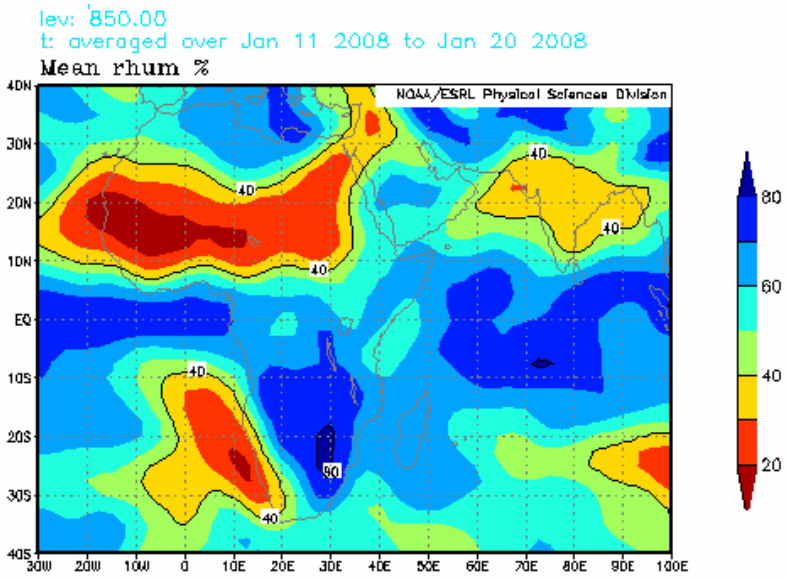
- **African Easterly Jet (AEJ) at 700hPa :** The African Easterly Jet mean speed was about 17m/s at 700hPa weakened by 3m/s compared to the past dekad. Its axis was located at about 10.5°N stretching from north Benin, north Togo, south Burkina Faso and north Guinea.

- **Thermal Index (TI) :** In the second 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 western and eastern parts of Gulf of Guinea countries, central Africa countries and GHA countries, that maintained high conditional instability associated with some heavy rainfall and high relative humidity as observed below.



(Data Source: NOAA/NCEP)

- **Relative Humidity (RH):** The 850hPa map below shows high RH (>60%) in the first dekad of October, 2008 over extreme southern part of Gulf of Guinea countries, southern part of central Africa, eastern parts of GH, northern part of north African countries as well as central and eastern part of Southern African countries. The lowest RH (<40%) are over Sahel countries, The Sahara and extreme western part of South part of South African countries.



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

- **North Africa countries :** experienced spatial rainfall increase over Algeria and Morocco recording amounts ranging from 10mm to 100mm with localised peaks over north Morocco and Egypt.

- **The Sahel :** had significant spatial and rainfall intensity decrease recording amounts ranging from 10mm to 75mm with peaks of about 100mm over western Mali, Guinea and Chad.

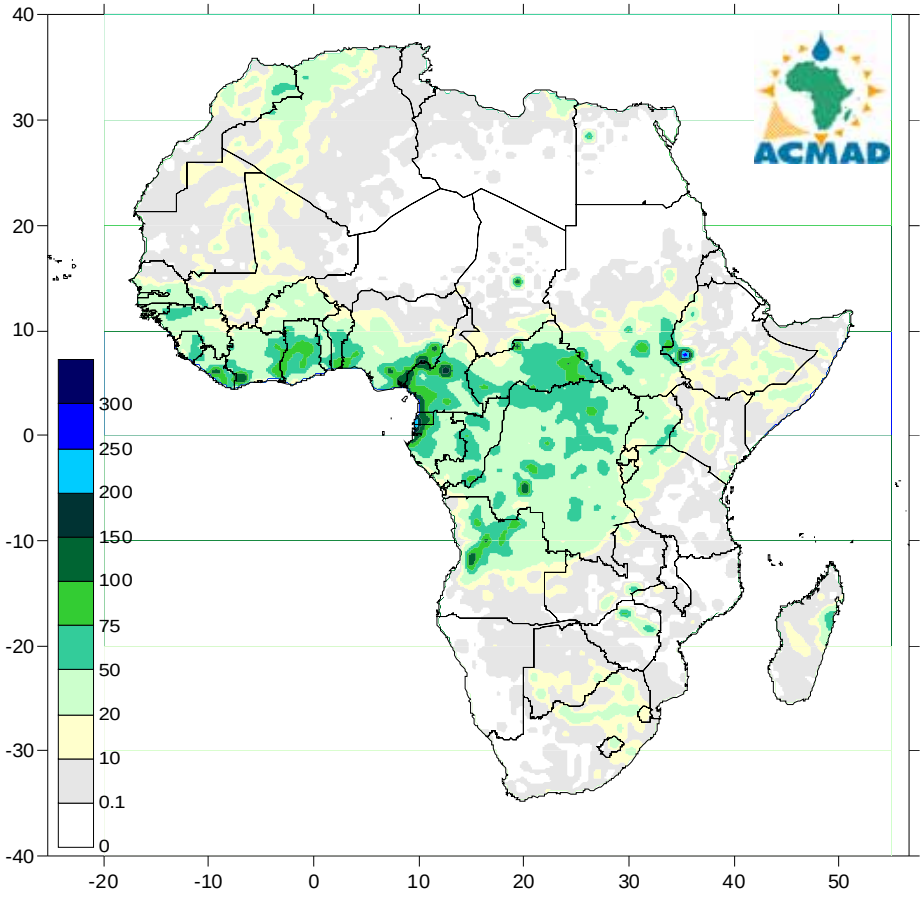
- **Gulf of Guinea countries :** had slight spatial and rainfall intensity decrease recording amounts ranging from 10mm to 150mm with localized peaks ranging from 150 to 200mm southwest Côte d'Ivoire, southeast Nigeria and west Cameroon.

- **Central Africa countries :** experienced spatial rainfall increase but rainfall intensity decrease recording amounts ranging from 10mm to 1500mm with some peaks ranging between 150 to 200mm over north Central African Republic, south democratic Republic of Congo and central west Angola.

- **GHA countries :** experienced spatial and intensity of rainfall decrease recording amounts ranging from 10mm to 75mm with a localized peak of 300mm over Ethiopia.

- **Southern Africa countries :** had spatial and intensity of rainfall increase recording rainfall amount ranging from 10mm to 50mm over South Africa and Botswana with localized peaks between 50 to 100mm over Zambia, Zimbabwe and Madagascar.

CUMUL PLUVIOMETRIQUE DECADAIRE: 11 AU 20 OCTOBRE 2008
DEKADAL ESTIMATED RAINFALL: 11 TO 20 OCTOBER 2008



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Libreville in Gabon. The lowest temperatures of 12.5°C and 12.9°C were recorded at Maseru in Lesotho and Cape Town respectively in South Africa while the highest temperatures of 39.6C was recorded at Khartoum in Sudan.

N°	STATIONS	Precipitation (mm)	Number of rainy days	Temperature Max mean (°C)	Temperature Min mean (°C)
1	Abidjan	9	4	31,9	24,7
2	Abuja	4	1	-	-
3	Accra	0	0	31,2	24,6
4	Agadez	0	0	37,9	23,2
5	Alger(Dar El-Beida)	15	4	28,0	17,9
6	Antananarivo	0,3	1	26,9	14,3
7	Antsiranana	1	1	32,5	20,9
8	Bamako-Senou	54	4	33,6	21,8
9	Bangui	62	6	31,5	21,2
10	Bilma	0	0	37,5	17,2
11	Bobo Dioulasso	1	1	33,0	22,6
12	Brazzaville	19	3	31,7	22,2
13	Bujumbura	5	1	-	-
14	Casablanca	34	3	23,0	16,9
15	Cotonou	63	4	30,4	24,8
16	Dakar-Yoff	9	3	31,8	26,2
17	Dar-es-Salaam	3	2	31,8	21,5
18	Douala	93	4	31,0	23,2
19	Entebbe	9	2	26,3	18,3
20	Francistown	4	1	34,8	17,7
21	Harare	0	0	30,5	16,0
22	Johannesbourg	30	3	27,7	14,2
23	Khartoum	3	1	39,6	26,0
24	Kigali	0	0	28,3	-
25	Kigoma	10	1	29,1	20,4
26	Kinshasa	63	2	32,2	21,5
27	Le Caire	0	0	28,9	20,0
28	Le Cap	0	0	18,1	12,9
29	Libreville	240	8	28,8	24,0
30	Lilongwe	0	0	29,6	15,4
31	Lomé	43	4	31,8	24,7
32	Lusaka	4	1	33,1	17,5
33	Manzini	11	1	-	15,7
34	Maputo	1	1	30,1	18,9
35	Maseru	0	0	29,3	12,5
36	Maun	0	0	34,5	-
37	Mbeya	0	0	28,0	13,2
38	Monrovia	0	0	30,6	23,8
39	Nairobi	34	2	27,2	15,4
40	Nampula	0	0	34,0	20,1
41	N'Djamena	0	0	38,7	22,7
42	Niamey-Aéroport	0	0	38,5	25,8
43	Nouakchott	0	0	36,8	24,6
44	Ouagadougou	5	3	35,3	24,2
45	Plaisance	7	5	26,5	21,0
46	Sal	0	0	28,7	24,6
47	Seretse Khama Airport	0	0	33,3	-
48	Seychelles	21	4	29,7	24,9
49	Tamanrasset	0	0	30,3	18,3
50	Toalagnaro	0	0	29,4	20,1
51	Tombouctou	5	1	38,5	24,1
52	Tripoli	0	0	29,7	17,1
53	Tunis	0	0	27,5	17,5
54	Windhoek	0	0	33,4	17,8
55	Zinder	0	0	37,7	22,8

NOTE: **0** means no rain;

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

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

3.1 RAINFALL

The ITD will maintain significant southward displacement over central and eastern parts over the Sahel. Rainfall is expected to increase over Gulf of Guinea countries, central Africa and GHA countries. In summary:

- **North Africa countries :** expected to experience increase recording rainfall ranging from 10mm to 100mm with isolated peaks of about 150mm.

- **The Sahel :** The Sahel countries will remain generally dry and dusty with isolated rainfall patches 10mm to 20mm over south Chad.

- **Gulf of Guinea countries :** The countries will experience some rainfall decrease over Liberia, Ivory Coast, Ghana, Benin, Togo and Nigeria ranging from 10mm to 75mm with peaks of about 100mm.

- **Central Africa countries :** Central African Republic, Cameroon, Democratic Republic of Congo, Gabon, Congo and Equatorial Guinea 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, southern Somalia, western and north eastern Tanzania will experience general increase recording rainfall amounts ranging from 10mm to 75mm with isolated peaks of about 100mm and above. 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 recording 10mm to 75mm intensifying over north Mozambique and Madagascar with peaks of about 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

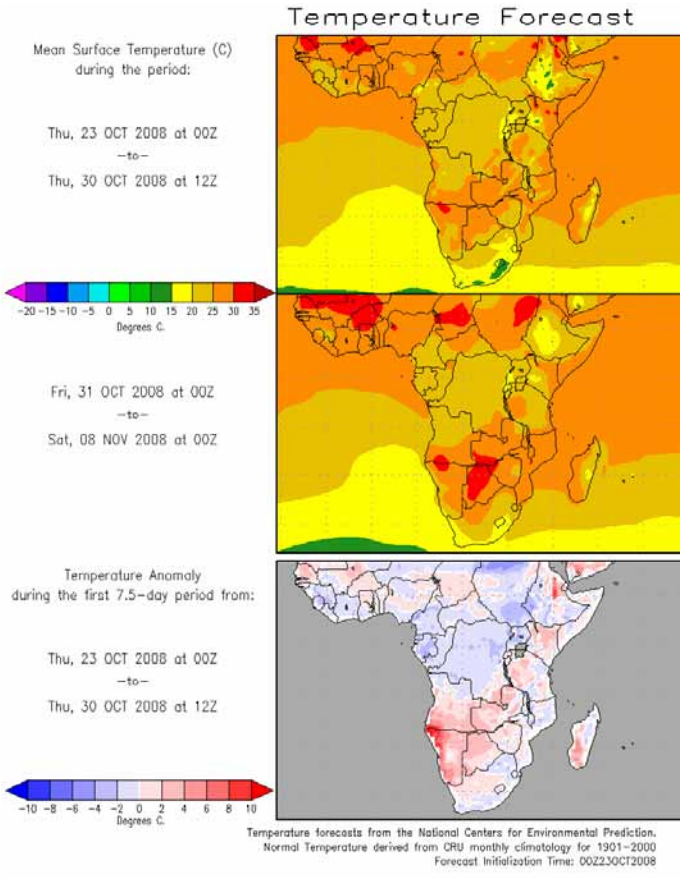
The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast changes over the next 7 days. The soil moisture change and precipitation relationship is discernable on the maps below. The areas forecast to have highest soil moisture increase are confined within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

3.4 IMPACTS

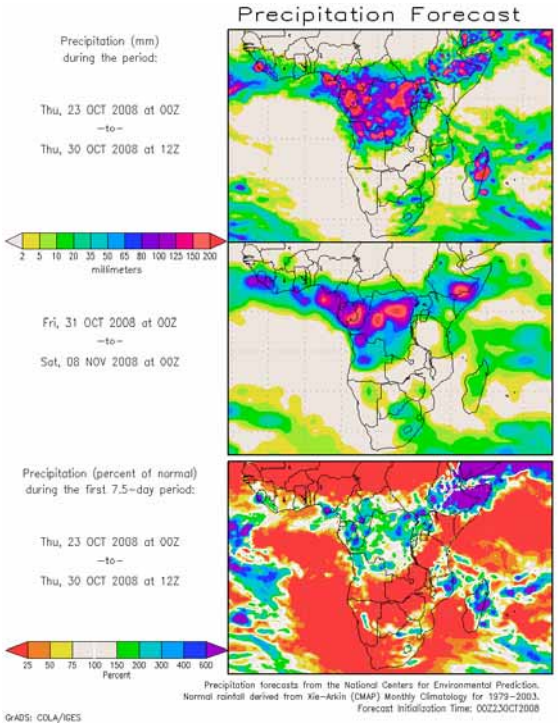
- **Health:** The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy periods. The temperatures in the range of 20°C to 28°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector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

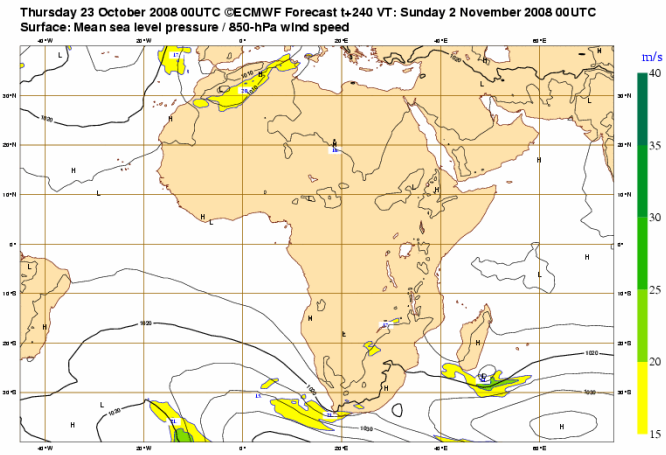
- **African Natural Ecosystems :** There is a need to invest in the rehabilitation of our presently degraded rainfall catchments areas within our natural ecosystems through enhanced national heritage conservation strategies such as national tree planting, afforestation and soil conservation programmes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



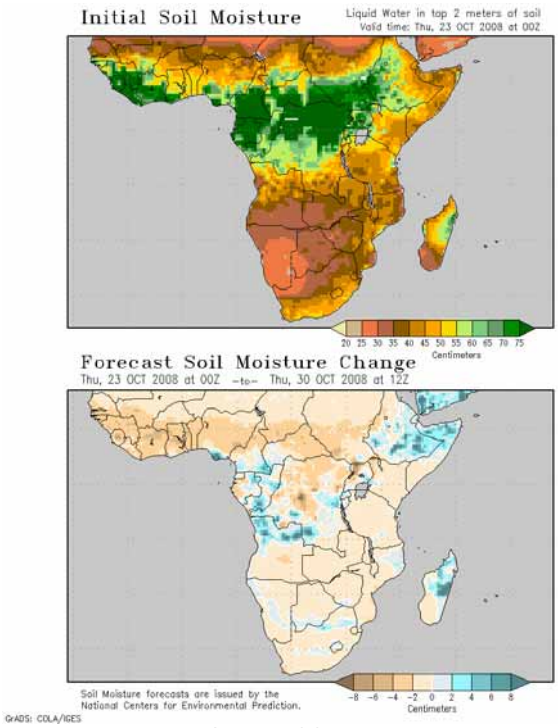
Source : COLA



Source : COLA



Source: ECMWF



Source: COLA