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

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Dekad of 01 to 10 September, 2008

HIGHLIGHT: The Sahel had reduced depth of moisture with the southward displacement of the ITD resulting in rainfall reduction. The Indian monsoon thermal low filled significantly weakening the source of conditional instability that spread westward over the Sahel and northern parts of Gulf of Guinea and GHA countries maintaining moderate rainfall. Rainfall is expected to decrease over parts of the Sahel and eastern GHA countries.

1. GENERAL SITUATION :

1.1 SURFACE

- **Azores high :** The Azores high pressure at 1023hPa weakened by 4hPa compared to the last dekad and shifted to the south. Its mean position was observed at 37°N/27°W with a ridge extended over north Morocco and north Algeria.

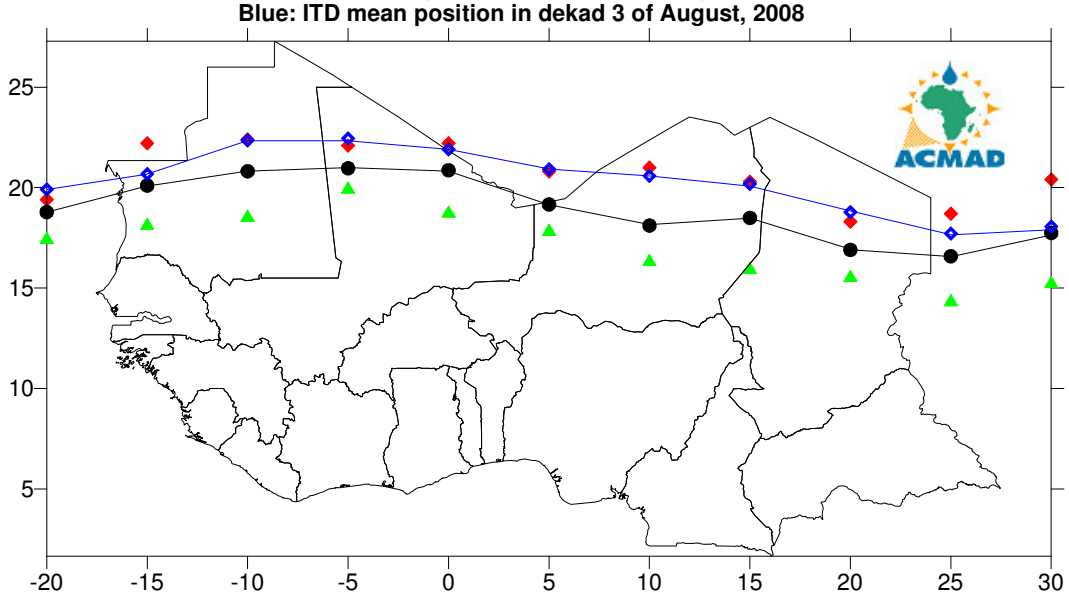
- **St. Helena high :** The St. Helena high pressure at 1027hPa weakened by 3hPa and shifted northeast at 32°S/06°W with an extended ridge over south Atlantic Ocean.

- **Mascarene high :** The Mascarene high pressure at 1031hPa weakened by 1hPa compared to the previous dekad and shifted northeast at 34°S/73°E with an extended ridge over Mozambique and eastern Africa.

- **Saharan thermal low:** The Saharan low of 1006hPa filled up slightly by 1hPa compared to the past dekad and shifted northwest at 22°N/05°E with an extended trough over north Mali, southwest Algeria, east Niger and central Chad.

- **Inter-Tropical Discontinuity (ITD) :** Between the third dekad of August and the first dekad of September, 2008, the ITD had started its southwards movement over the Sahel particularly over its eastern part. It's mean position was observed at 18.8°N over longitude 20°W; at 20.1°N and 20.8°N over west and central Mauritania respectively; at 21.0°N and 20.9°N over northwest and northeast Mali respectively; at 19.2°N over extreme south Algeria; at 18.1°Nand 18.5°N over central and east Niger respectively; at 16.9°N over central north Chad; at 16.6°N and 17.7°N over extreme northwest and central north Sudan.

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



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

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

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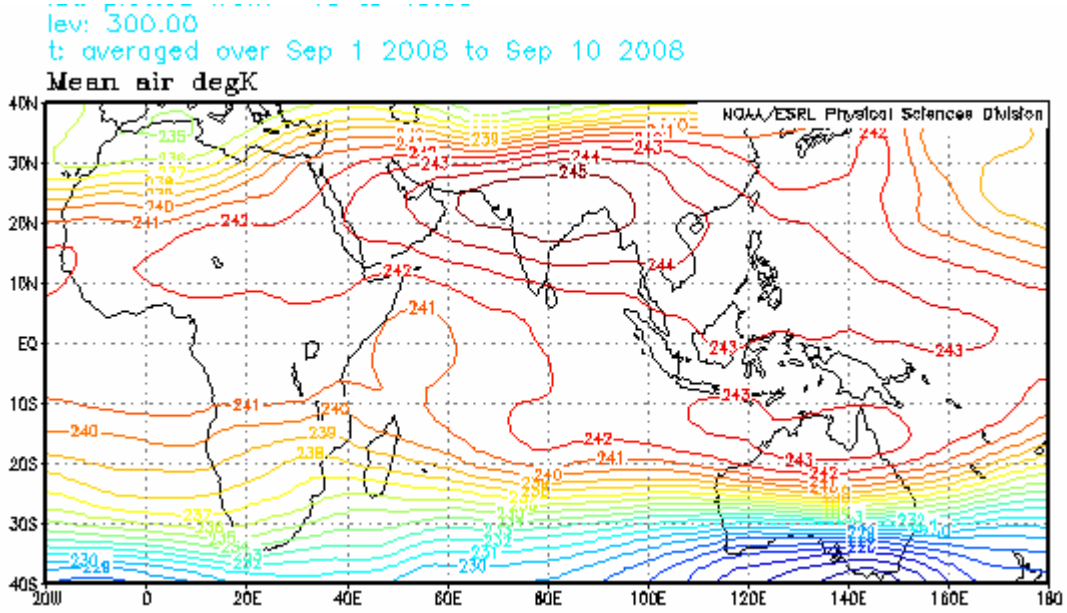
1.2 TROPOSPHERE

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

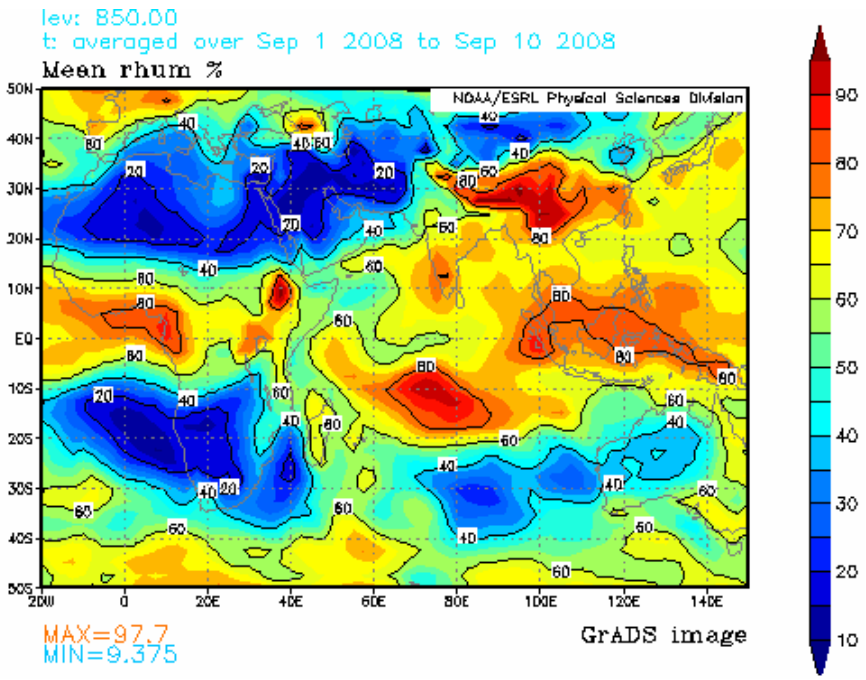
- **African Easterly Jet at 700hPa :** The African Easterly Jet mean speed was about 22m/s at 700hPa having strengthened by 1m/s compared to the past dekad. Its axis shifted by about 3 degree towards the south and was located at about 14.5°N stretching from south Mali, north Senegal up to about 24.8°W over south of Cape Verde Island.

- **Thermal Index (TI) :** In the first dekad of September, 2008, the thermal index (TI) regime at 300hPa, map shown below, had a near threshold TI regime value of 242°K over extreme southwest Mauritania, west Senegal, Gambia including eastern of the Sahel countries, northern parts of GHA countries maintained high conditional instability triggering heavy rains. The TI regime maximum of 245°K located over north India maintained high conditional instability associated with heavy rainfall and floods.

- **Relative Humidity (RH):** At 850hPa on the map below shows high RH in the first dekad of September, 2008 over the Gulf of Guinea countries, central Africa, western and northern GHA countries with lest of the Continent having low RH characterized by rainfall deficits.



(Data Source: NOAA/NCEP)



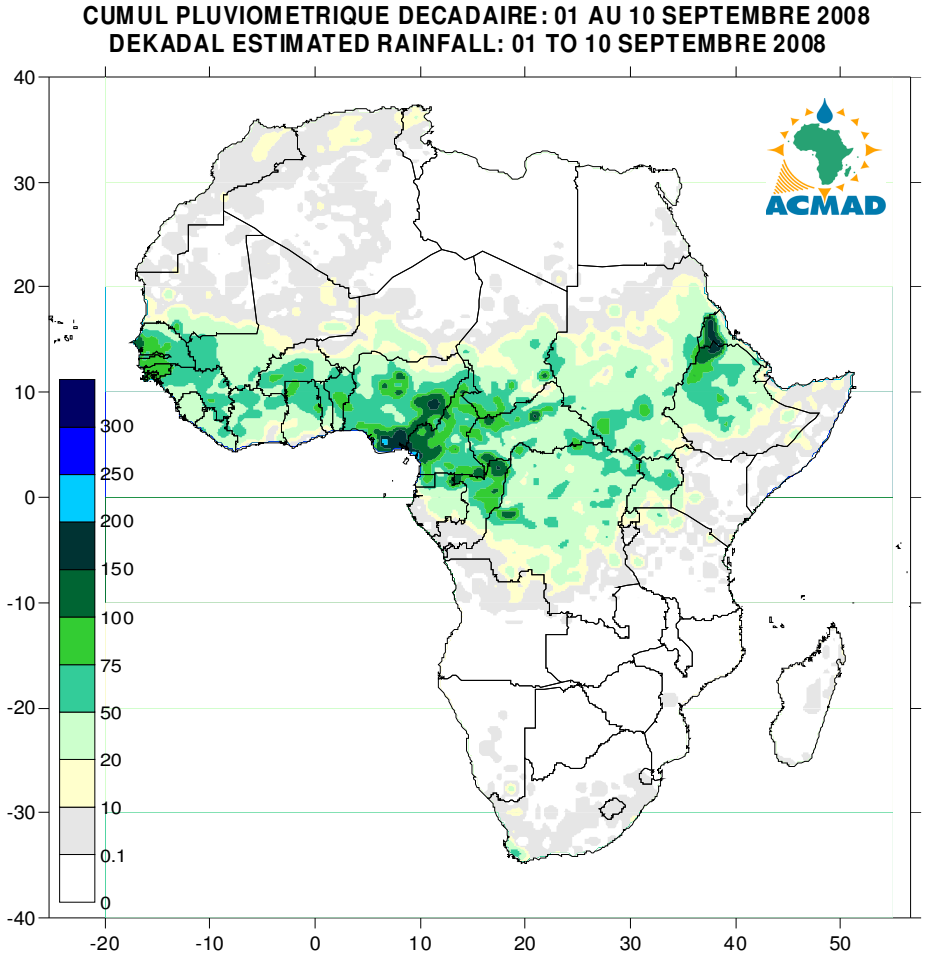
(Data Source: NOAA/NCEP)

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 September, 2008 shows slight spatial rainfall increase over central Africa countries and Greater Horn of Africa countries with a decrease over the Sahel countries. In summary:

- **North Africa countries :** experienced slight decrease in rainfall recording amounts ranging from 10mm to 20mm over Morocco, Algeria and Tunisia.
- **The Sahel :** had spatial and intensity of rainfall decrease recording amounts ranging from 10mm to 150mm with the highest amounts of about 200mm over western Senegal and Guinea Bissau.
- **Gulf of Guinea countries :** had slight spatial and intensity rainfall increase recording amounts ranging from 20mm to 200mm with heaviest amounts of about 250mm over west Cameroon and southeast Nigeria.
- **Central Africa countries :** experienced slight spatial rainfall increase recording amounts ranging from 10mm to 100mm with peaks of 150mm and above over north and west Central African Republic, northwest Democratic Republic of Congo, north Congo and northeast Gabon.
- **GHA countries :** experienced spatial rainfall increase recording amounts ranging from 10mm to 150mm intensifying over south Sudan with the highest peaks of 200mm and above over northwest Ethiopia and Eritrea. However, the eastern sector continued experience severe rainfall deficits.
- **Southern Africa countries :** had widespread severe rainfall deficits with an isolated localized peak of about 75mm over the Cape in South Africa.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Bobo Dioulasso in Burkina Faso, Douala in Cameroon, Dakar-Yoff in Senegal and Banjul in Gambia. The lowest temperatures of 4.9°C was recorded at Maseru in Lesotho with the highest temperatures of 42.0°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	1	1	29,2	22,8
2	Abuja	11	2	31,2	22,2
3	Accra	1	1	29,5	23,3
4	Addis Abéba	79	6	21,5	11,5
5	Agadez	2	2	40,3	26,8
6	Alger(Dar El-Beida)	0	0	33,3	21,6
7	Antananarivo	1	1	25,2	10,8
8	Antsiranana	0	0	30,6	19,8
9	Bamako-Senou	20	5	31,8	22,3
10	Bangui	32	3	31,9	21,3
11	Banjul	149	4	29,9	23,4
12	Bilma	0	0	42,0	24,1
13	Bobo Dioulasso	360	6	30,0	21,8
14	Brazzaville	0	0	32,3	21,4
15	Casablanca	0	0	26,1	19,8
16	Cotonou	50	5	28,9	25,1
17	Dakar-Yoff	191	7	31,6	24,4
18	Dar-es-Salaam	3	2	30,8	19,0
19	Douala	202	8	29,7	23,6
20	Entebbe	0	0	27,6	18,4
21	Francistown	0	0	31,9	11,5
22	Johannesbourg	0	0	25,4	9,5
23	Khartoum	0	0	36,9	26,4
24	Kigoma	0	0	31,9	18,5
25	Kinshasa	0	0	32,0	22,4
26	Le Caire	0	0	34,0	23,7
27	Le Cap	11	5	15,6	10,2
28	Libreville	2	3	28,5	23,2
29	Lomé	2	3	30,0	24,4
30	Lusaka	0	0	31,4	12,8
31	Manzini	0	0	-	13,4
32	Maputo	0	0	28,8	16,3
33	Maseru	0	0	-	4,9
34	Maun	0	0	33,9	14,4
35	Mbeya	0	0	26,1	9,2
36	Nairobi	0	0	26,5	13,7
37	Nampula	0	0	31,8	17,3
38	N'Djamena	12	3	33,1	22,9
39	Niamey-Aéroport	3	2	34,5	25,2
40	Nouakchott	0	0	35,8	28,1
41	Ouagadougou	90	5	32,4	23,0
42	Plaisance	12	7	25,7	19,8
43	Sal	0	0	30,1	25,6
44	Seretse Khama Aéroport	0	0	29,3	9,7
45	Seychelles	7	2	29,2	24,9
46	Tamanrasset	0	0	35,2	23,6
47	Toalagnaro	1	1	26,9	17,2
48	Tombouctou	1	1	38,4	26,5
49	Tripoli	0	0	38,7	22,5
50	Tunis	1	1	36,5	23,9
51	Windhoek	0	0	29,9	12,8
52	Zinder	7	3	34,9	24,2

NOTE: **0** means no rain;

- means no temperature data available

Data Source **:** ACMAD / GTS

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

3.1 RAINFALL

The ITD will move significantly southward with more displacement over eastern part of the Sahel resulting in decreased rainfall over some parts of the Sahel. Expected slight increase over Senegal, Gambia and significant increase over Gulf of Guinea countries. In summary:

- **North Africa countries :** expected to experience an increase in rainfall recording about 10mm to 50mm.

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

- **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 150mm with peaks of about 200mm.

- **Central Africa countries :** Central African Republic, Democratic Republic of Congo will experience slight decrease in rainfall recording amounts ranging from 10mm to 75mm and above with isolated peaks of above 100mm.

- **GHA countries :** Uganda, western Kenya, southwest Sudan and western Ethiopia will experience a general increase recording rainfall amounts ranging from 10mm to 75mm and above with peaks of above 100mm. However, the eastern sector will continue experience acute 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 few parts of 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 75% of the Continent expected to record 20°C and above.

3.3 SOIL MOISTURE

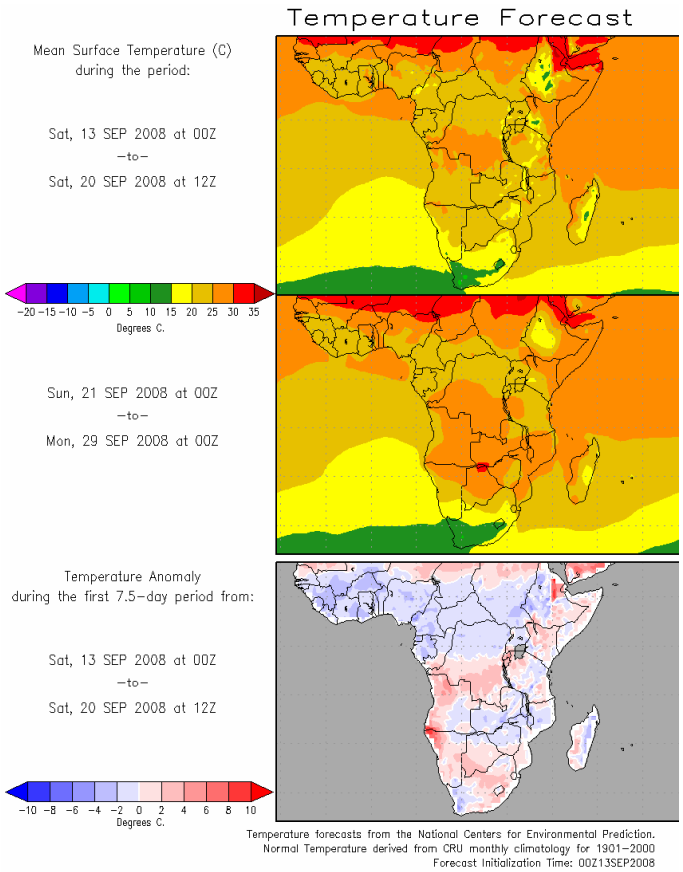
The outlook on soil moisture change, map shown below includes the initial soil moisture and the forecast changes over the next 7 days. The soil moisture change and precipitation relationship is discernable on the maps below. The areas forecast to have highest soil moisture increase are confined within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

3.4 IMPACTS

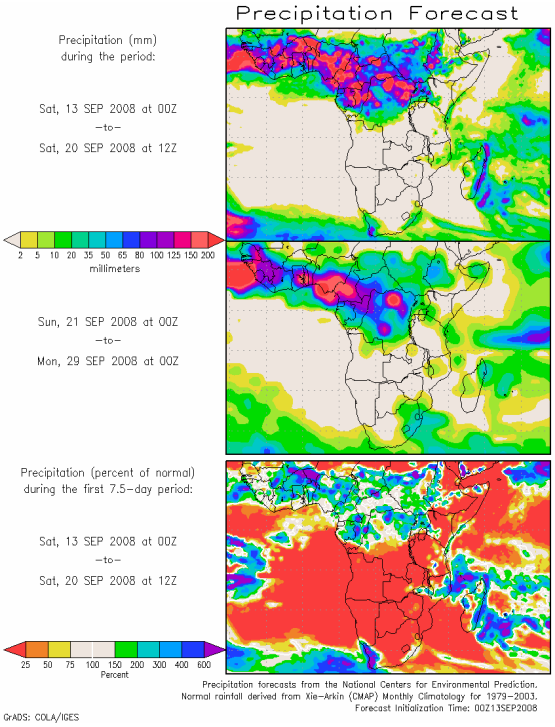
- **Health:** The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy periods. The temperatures in the range of 20°C to 28°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector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

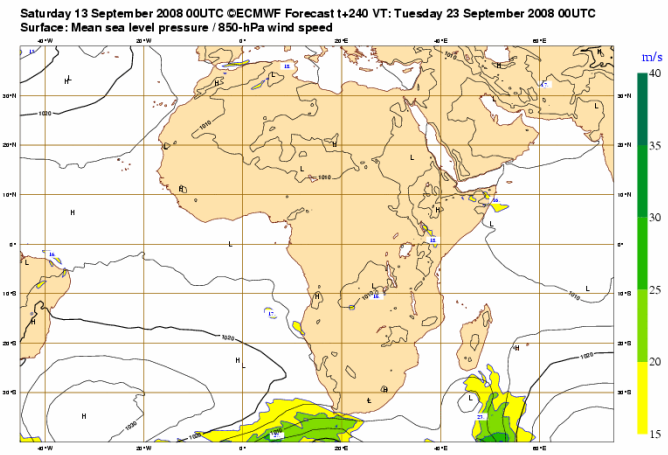
- **African Natural Ecosystems :** There is a need to invest in the rehabilitation of our presently degraded water catchments areas within our natural ecosystems through enhanced national heritage conservation strategies such as national tree planting, afforestation and soil conservation programmes during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



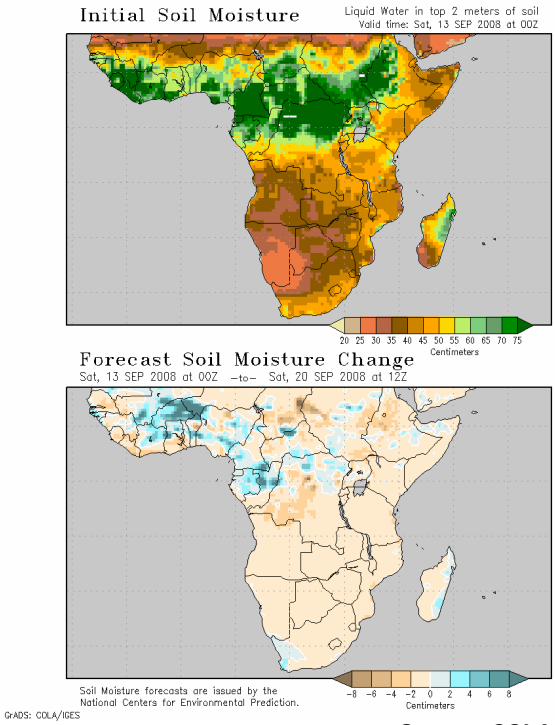
Source : COLA



Source : COLA



Source : ECMWF



Source : COLA