

## Ten Day Climate Bulletin N° 34 Year 2008

Dekad of 01 to 10 December, 2008

**HIGHLIGHT:** The highest rainfall amount of about 300mm characterized by the highest relative humidity was recorded over Equatorial Guinea and north west Gabon.

### 1. GENERAL SITUATION :

#### 1.1 SURFACE

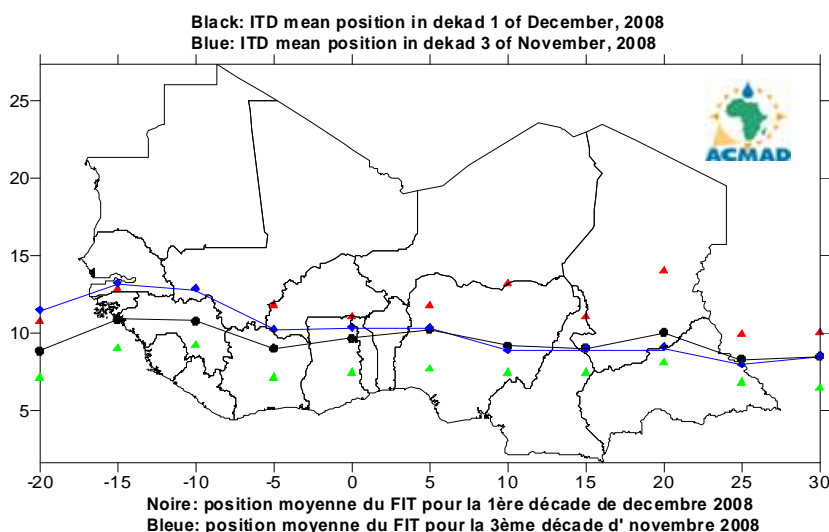
• **Azores high:** Pressure at 1032hPa weakened by 4hPa compared to the last dekad and shifted southwest. Its mean position was observed at 41°N/22°W with a ridge over south Morocco, Mauritania and north Mali.

• **St. Helena high:** Pressure at 1026hPa strengthened significantly by 6hPa and shifted to the northeast at 33°S/03°W with an extended ridge over south Atlantic Ocean.

• **Mascarene high:** Pressure at 1024hPa maintained its intensity compared to the previous dekad and shifted southeast at 40°S/60°E with an extended ridge over Indian Ocean.

• **Saharan thermal low:** Pressure at 1008hPa deepened by 1hPa compared to the past dekad and shifted northeast at 11°N/12°E with an extended trough over east Burkina Faso, south Niger, north Nigeria, north Cameroon and south Chad.

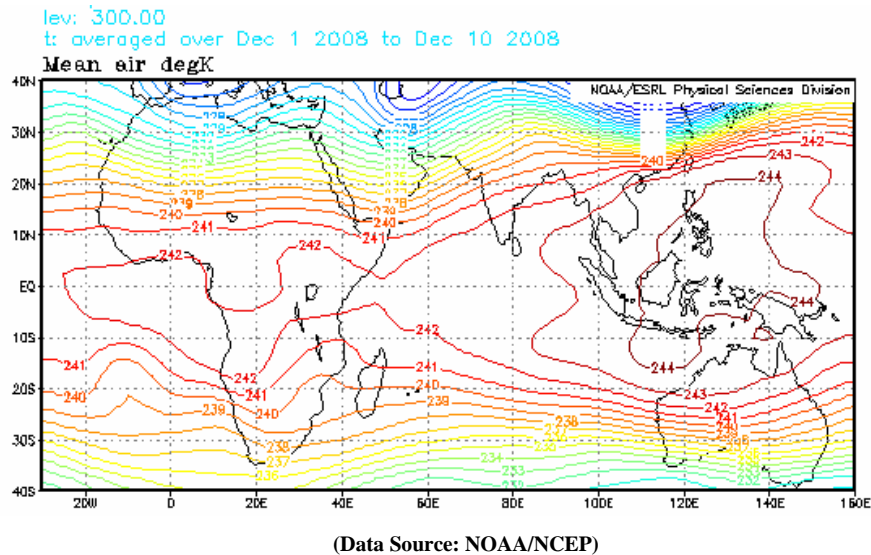
• **Inter-Tropical Discontinuity (ITD) :** Between the third dekad of November and the first dekad of December, 2008, the ITD had a significant southward displacement over the western part while its remain quasi-stationary over the eastern part, except over south Chad and north east Cameroon where it had slight northward movement. It's mean position was observed at 8.8°N over longitude 20°W; at 10.9°N and 10.8°N over west and central east Guinea respectively; at 9.0°N over north Côte d'Ivoire; at 9.7°N over extreme northeast Ghana; at 10.3°N and 9.2°N over west and east Nigeria respectively; at 9.1°N and 10.1°N over extreme southwest and southeast Chad respectively; at 8.3°N and 8.5°N over extreme southwest and south Sudan respectively.



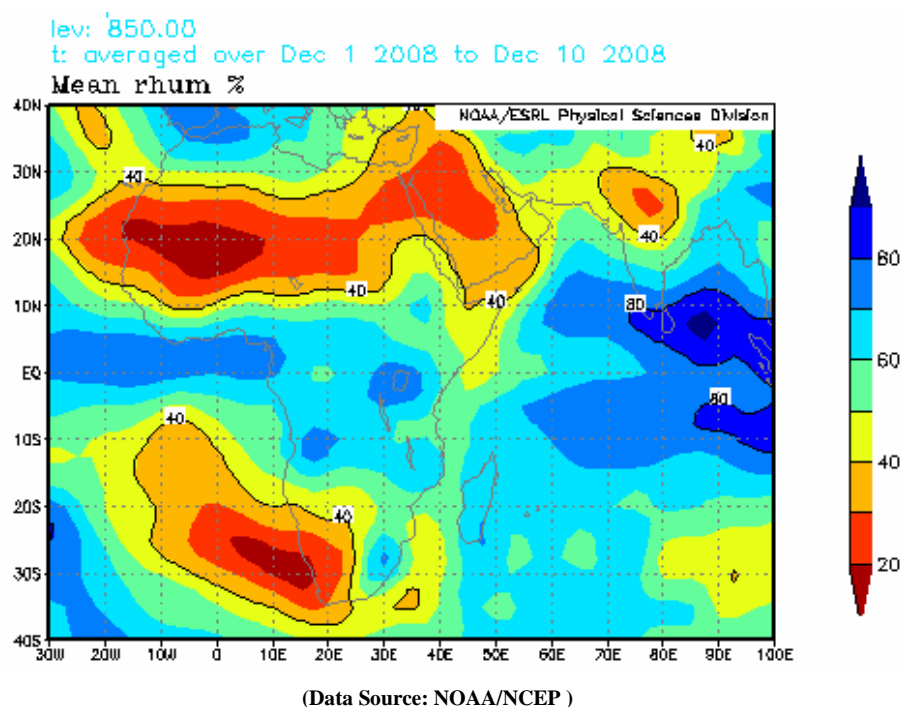
*The red and green triangles represent the max. and min. displacements of the ITD respectively*

## 1.2 TROPOSPHERE

- **Monsoon** : Monsoon influx was weak (1 to 5 m/s) at 925hPa level over south Cameroon.
- **Thermal Index (TI)** : In the first dekad of December, 2008, the thermal index (TI) regime at 300hPa, map shown below, had TI regime value of 242°K near threshold 243°K over extreme southern part of Gulf of Guinea countries, part of central Africa countries, parts of GHA countries and north western parts of Southern Africa countries associated with heavy rainfall over areas characterized by high relative humidity as observed below.



- **Relative Humidity (RH)**: The 850hPa map below shows high RH (>70%) in the first dekad of December, 2008 over extreme southern part of Gulf of Guinea countries, parts of central Africa and western parts of GHA countries, associated with the highest rainfall over Equatorial Guinea and north west Gabon. The Sahara, the Sahel countries and the western part of South African countries experienced dry conditions characterized by the lowest RH (<40%).



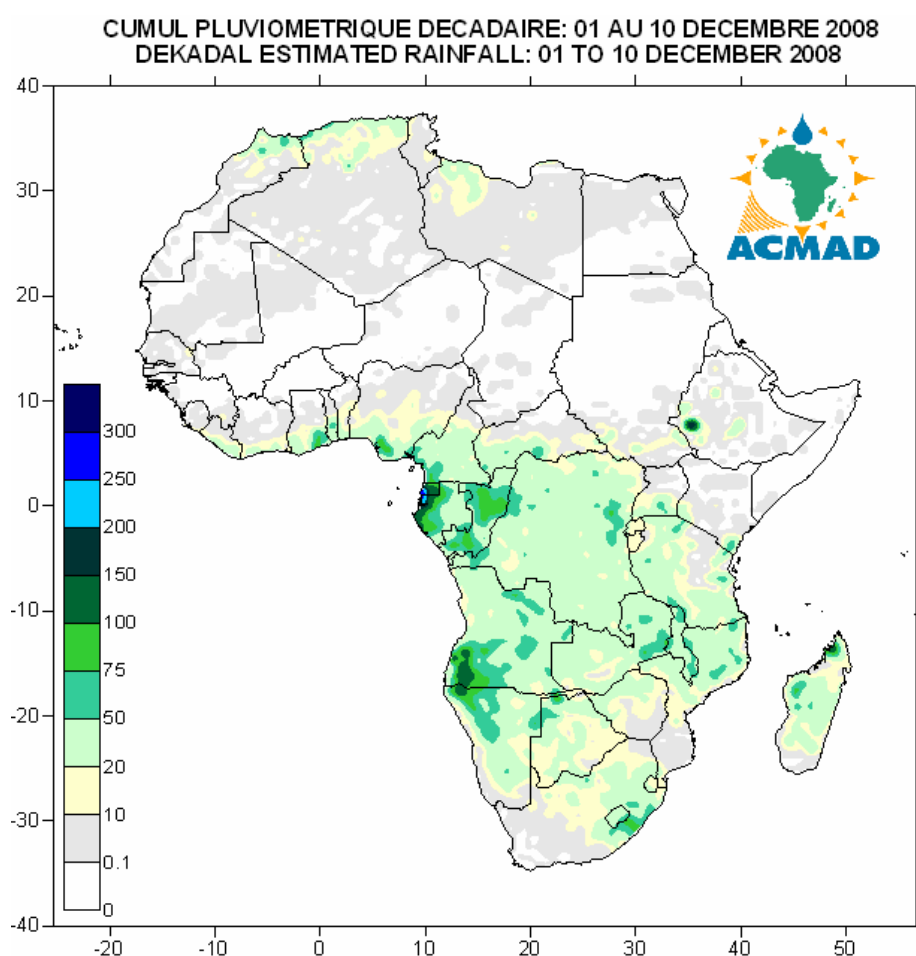
## 2. RAINFALL AND TEMPERATURE SITUATION

### 2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the first dekad of December, 2008 shows spatial rainfall decrease over Central Africa, GHA and southern Africa countries while northern African countries and Gulf of Guinea countries experienced spatial and intensity of rainfall increase.

In summary:

- **North Africa countries** : experienced slight spatial and intensity of rainfall increase recording amounts ranging from 10mm to 75mm over western Libya north Morocco and north Algeria.
- **The Sahel** : continued to experience generally dry and dusty conditions.
- **Gulf of Guinea countries** : had spatial and intensity of rainfall increase recording amounts ranging from 10 to 75mm with maximum rainfall amounts ranging from 75 to 100mm over coastal zone.
- **Central Africa countries** : had decreased rainfall intensity recording amounts ranging from 10 to 100mm with a major peaks ranging from 100 to 300mm over Gabon, Equatorial Guinea, Congo and southern Angola.
- **GHA countries** : experienced slight spatial and intensity of rainfall decrease recording amounts ranging from 10 to 75mm with localized peaks about 200mm over western Ethiopia.
- **Southern Africa countries** : had rainfall intensity decrease recording amounts ranging from 10mm to 75mm intensifying to about 150mm over northern Zambia and north Madagascar.



(Data Source: NOAA/NCEP)

## 2.2 OBSERVED DATA

The Table below shows heaviest rainfall recorded over Libreville in Gabon. The lowest temperature of 5.5°C was recorded at Tamanrasset in Algeria while the highest temperature of 38.3°C was recorded at N'Djamena in Chad..

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	29	2	32,2	25,3
2	Abuja	0	0	33,9	21,8
3	Accra	124	1	31,8	24,6
4	Agadez	0	0	33,1	16,4
5	Alger(Dar El-Beida)	30	5	16,3	7,7
6	Antananarivo	0	0	28,8	16,2
7	Bamako-Senou	0	0	31,8	15,0
8	Bangui	0	0	32,4	18,2
9	Banjul	0	0	34,4	20,3
10	Bilma	0	0	31,2	14,8
11	Bissau	0	0	32,6	-
12	Bobo Dioulasso	0	0	32,7	19,4
13	Brazzaville	72	4	30,2	22,0
14	Casablanca	12	4	17,1	10,6
15	Conakry	0	0	31,6	-
16	Cotonou	12	1	31,4	26,1
17	Dakar-Yoff	0	0	27,9	21,1
18	Dar-es-Salaam	8	3	31,9	23,9
19	Douala	50	4	30,2	23,7
20	Entebbe	27	4	-	18,7
21	Francistown	22	3	33,2	19,1
22	Harare	18	1	28,6	16,3
23	Johannesbourg	36	6	26,5	15,1
24	Khartoum	0	0	35,4	21,3
25	Kigoma	3	2	27,2	20,0
26	Kinshasa	46	4	29,9	20,4
27	Le Caire	0	0	25,7	15,2
28	Le Cap	0	0	22,5	16,2
29	Libreville	138	5	28,7	23,9
30	Lilongwe	13	3	27,4	18,2
31	Lomé	80	1	32,5	25,1
32	Lusaka	6	1	29,1	18,5
33	Manzini	14	2	-	19,2
34	Maputo	21	3	32,4	22,2
35	Maseru	36	3	27,6	15,5
36	Maun	18	2	34,7	21,2
37	Mbeya	27	4	24,6	14,1
38	Monrovia	0	0	30,6	23,8
39	Nairobi	0	0	26,9	14,7
40	N'Djamena	0	0	38,3	19,3
41	Niamey-Aéroport	0	0	34,7	17,3
42	Nouakchott	0	0	29,2	15,7
43	Ouagadougou	0	0	33,7	17,7
44	Plaisance	7	5	29,1	22,3
45	Sal	0	0	25,9	21,2
46	Seretse Khama Airport	8	1	32,7	19,6
47	Seychelles	88	5	29,9	25,1
48	Tamanrasset	0	0	20,9	5,5
49	Tombouctou	0	0	29,1	12,8
50	Tripoli	29	1	19,9	8,4
51	Tunis	30	3	18,2	10,4
52	Windhoek	16	6	29,3	17,1
53	Zinder	0	0	33,8	18,2

NOTE: 0 means no rain;

- means no temperature data available

Data Source : ACMAD / GTS

### 3.OUTLOOK FOR DEKAD (21<sup>st</sup> – 31<sup>st</sup> DECEMBER, 2008)

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#### 3.1 RAINFALL

The ITD will maintain southward displacement reducing the on-the-land moisture depth resulting in decreased rainfall over Gulf of Guinea countries. However, rainfall will intensify over southern part of central Africa countries and northern part of south Africa countries including southern Tanzania. In summary:

- **North Africa countries** : expected to experience decrease in rainfall with amounts ranging from 10mm to 50mm.
- **The Sahel** : The Sahel countries will continue to experience dry condition with localized dusty episodes.
- **Gulf of Guinea countries** : The countries will experience significant decrease recording rainfall amounts ranging from 10mm to 50mm over coastal zone with isolated peaks of about 75mm .
- **Central Africa countries** : Democratic Republic of Congo, Gabon, Congo, Angola and Equatorial Guinea will experience rainfall decrease recording amounts ranging from 10mm to 100mm with localized peaks of about 150mm.
- **GHA countries** : will record rainfall decrease with amounts ranging from 10mm to 100mm with isolated peaks of about 150mm. The October-November-December (OND), 2008 seasonal rainfall performance has been adversely affected by the evolution of convective activities over eastern Indian Ocean and western Pacific Ocean.
- **Southern Africa countries** : will experience some decrease in spatial and intensity of rainfall recording 10mm to 100mm with isolated peaks of about 150mm.

#### 3.2 TEMPERATURE

The forecast map below shows that the countries around the Equator north and south will record the highest temperatures while northern Africa and parts of 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 high soil moisture increase are south of Equator within the highest soil moisture increase expected in parts of Zambia , Mozambique and Madagascar.

#### 3.4 IMPACTS

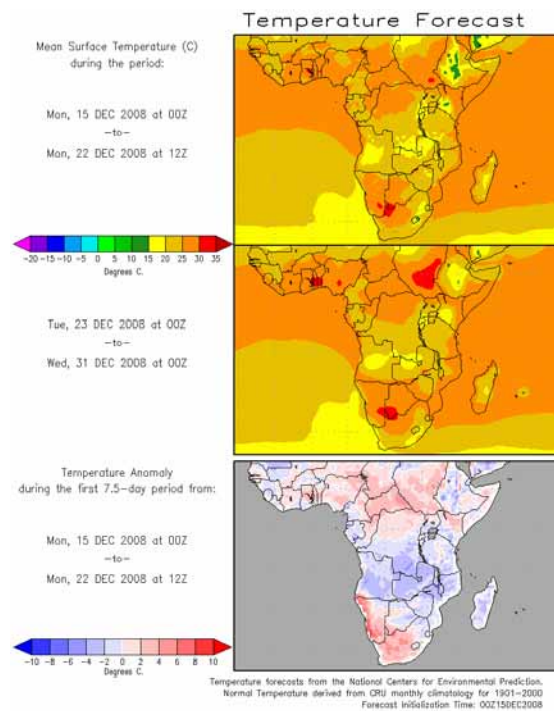
- **Health:** The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy periods. The temperatures in the range of 18°C to 32°C with high rainfall (high humidity) favour the survival of the vector and development of the parasite in the vector resulting in high incidences of malaria even in low prevalence areas. The parts of Gulf of Guinea countries, central Africa countries, GHA countries and southern Africa countries with high humidity/rainfall and the prevailing conducive 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 for crop yield assessments in our countries. However, it is also 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 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

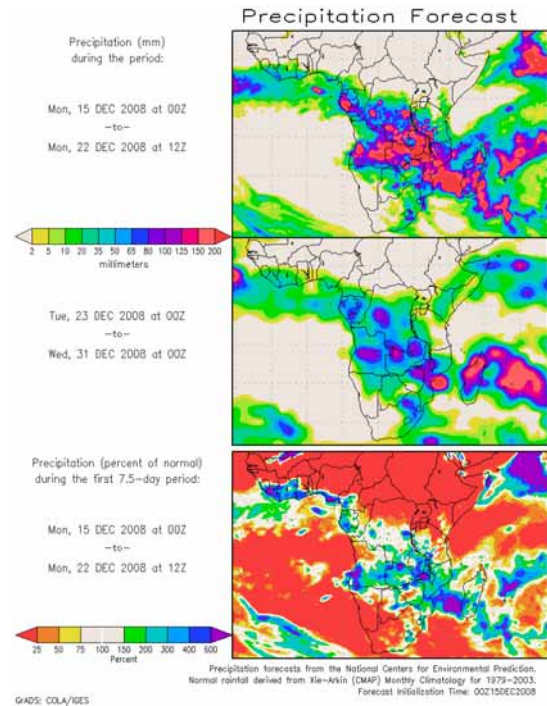


for communities' sustained food security and adaptation. There is also a need to invest in higher yielding crops during a good rainy season by taking advantage, for example of forecasts issued by regional climate outlook forum (RCOF) such as the PRESAO, PRESAC, GHACOF and SARCOF.

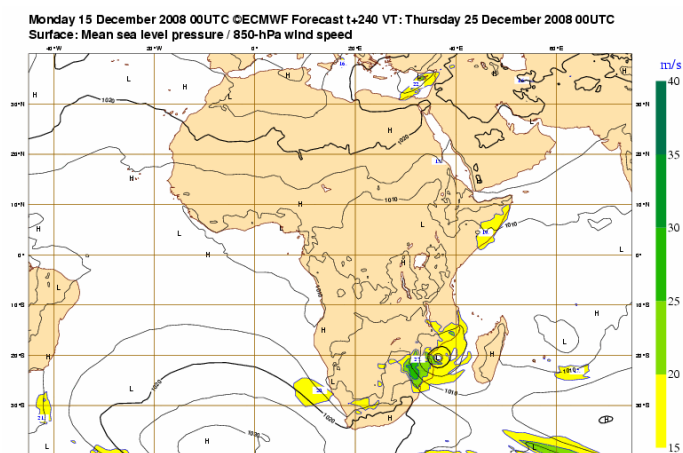
• **African Natural Ecosystems** : There is a need to invest in the rehabilitation of our presently degraded rainfall catchments areas within natural ecosystems through enhanced national conservation strategies such as national tree planting, afforestation and soil conservation programmes during rainy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



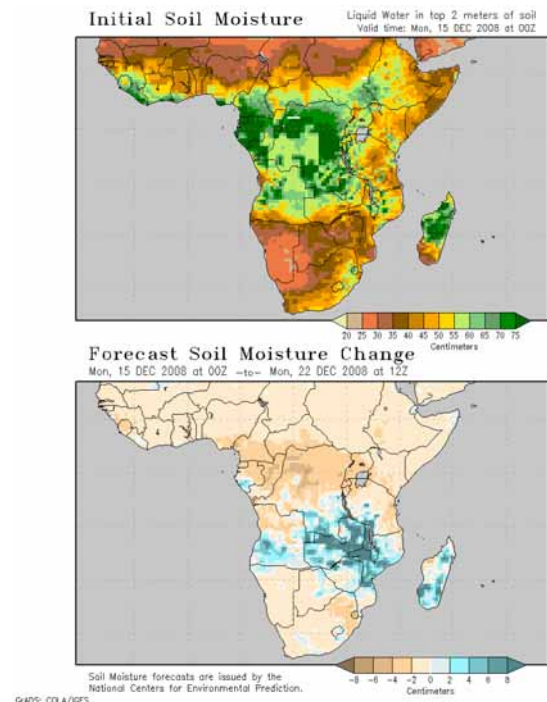
Source : COLA



Source : COLA



Source: ECMWF



Source: COLA