Ten Day Climate Bulletin
N° 10
Dekad 01st to 10th April, 2010

HIGHLIGHT: The highest cumulative estimated rainfall was over Equatorial Guinea, Gabon and southern Somalia. The highest mean maximum temperature was recorded at recorded at Tombouctou in Mali while the lowest mean minimum temperature was observed at Alger (Dar-El Beida) in Algeria. The area with TI regime threshold value of 243°K will continue to experience heavy rains with floods particularly over the parts with relative humidity (>60%).

1. GENERAL SITUATION

Subsection 1.1 provides the strengths of the surface pressure systems, the ITD displacement while the subsection 1.2 on the Troposphere gives a brief on monsoon, thermal index regimes and relative humidity.

1.1 SURFACE

- **Azores high pressure**: of 1028 hPa with a SW-NE axis strengthened by 2 hPa and shifted northeast compared to the past dekad. Its centre was located at about 38°N/18°W extending a ridge over North Atlantic Ocean

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- **Saharan thermal low:** Pressure at 1005 hPa centred at about 13°N/05°W, deepened by 3 hPa and shifted southeast compared to the past dekad. Its trough extended over south Mali, Burkina Faso, north Ghana and Benin, south Niger, north Nigeria and Cameroon and south Chad.

- **St. Helena high:** Pressure of 1025 hPa with a SE-NW axis decreased by 2 hPa and shifted northeast compared to the previous dekad. Its mean position was at 33°S/02°W, extending a ridge over South Atlantic Ocean.

- **Mascarene high:** Pressure of 1026 hPa with a W-E axis decreased by 2 hPa compared to the past dekad and shifted eastwards. Its mean position was located at 35°S/77°E with an extended ridge over east of southern African countries

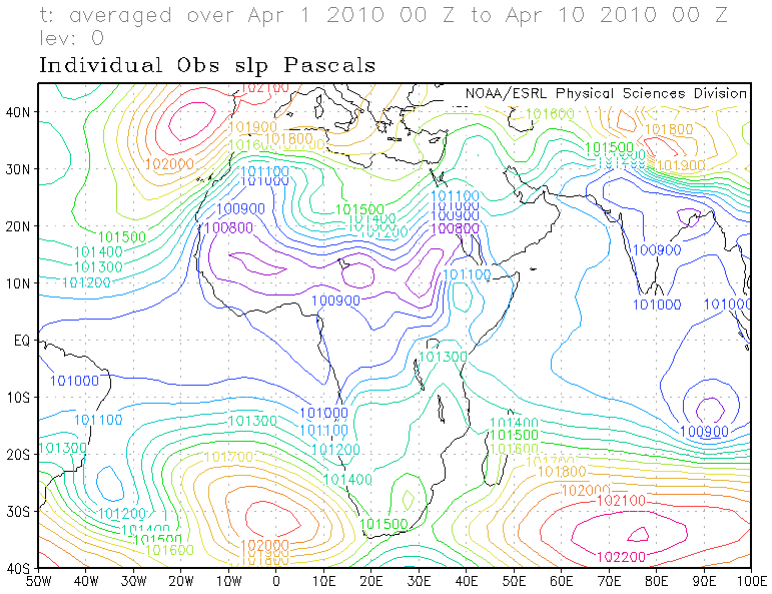

Figure 1: Mean Sea Level Pressure (Source: NOAA/NCEP/ESRL: PSD)

- **Inter-Tropical Discontinuity (ITD)**

Between the third dekad of March (blue line) and the first dekad of April (black line), 2010, the ITD continued its northward migration over the Gulf of Guinea countries including Senegal, Mali and Burkina Faso. (Figure2)

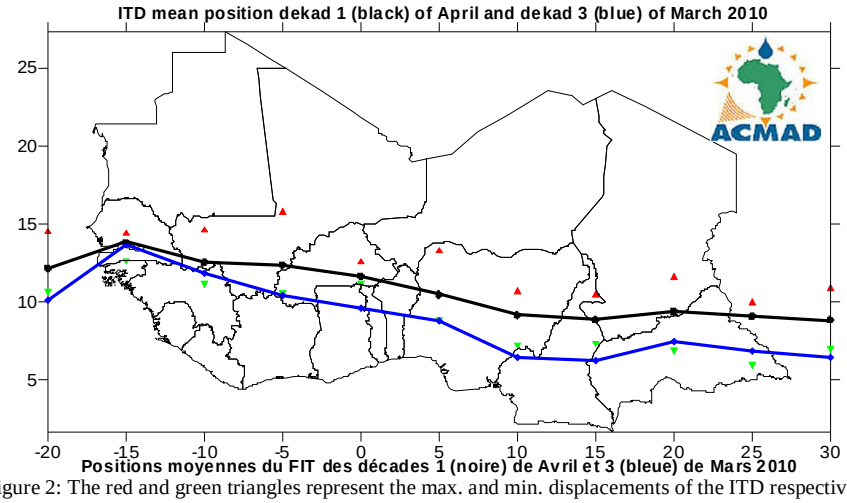

Figure 2: The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

1.2.1 Monsoon

Monsoon influx at 925hPa level was moderate (5,5 to 12,5 m/s) over Sierra Leone, Liberia, Côte d'Ivoire, Ghana and south Nigeria during the dekad.

1.2.2 Thermal lndex (TI)

In the first dekad of April, 2010, the thermal index (TI) regime at 300hPa in (Figure 3), had the threshold value of 243°K extending about 10°N and 10°S covering southern part of the Gulf of Guinea countries, central Africa and GHA countries with maxima TI of 244°K linked to heavy rainfall with floods over areas with high relative humidity shown in Figure 4.

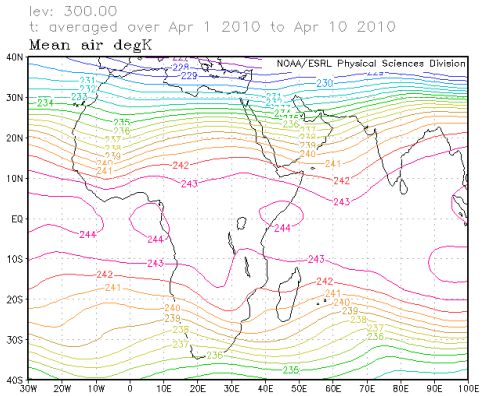

Figure 3: TI at 300hPa (Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH)

The 850hPa (Figure 4) shows high RH (>70%) in the first dekad of April, 2010 over eastern and southern part of the Gulf of Guinea countries, central Africa, GHA and eastern and northern parts of Southern Africa countries. The Sahara, the Sahel and northern part of Gulf of Guinea countries experienced the lowest RH (>40%).

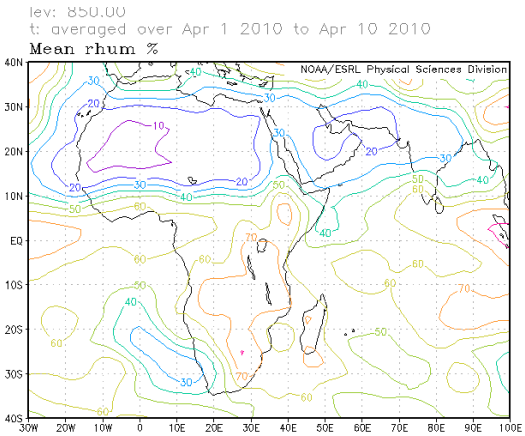

Figure 4 : RH at 850hPa (Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

Subsection 2.1 provides a summary on estimated rainfall amounts and distribution while subsection 2.2 provides a Table showing stations' observed rainfall, number of rainy days, mean maximum and mean minimum temperatures.

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge in Figure 5 below compared to that of the past dekad shows rainfall distribution increase over Gulf of Guinea and Central African countries while GHA and southern Africa countries had slight decrease in distribution. Most of the Sahel countries continued to be under the influence of weak Harmattan. In detail:

- **North Africa countries:** had no significant rainfall in amounts and distribution.
- **The Sahel:** major part remained under the influence of a weak Harmattan characterized by dry and dusty conditions. However, over extreme south of Burkina Faso and Mali observed rainfall amounts ranging from 10mm to 50mm.
- **Gulf of Guinea countries:** experienced significant increase in rainfall distribution and amounts ranging from 10mm to 75mm intensifying to about 150mm over south Côte d'Ivoire, south Nigeria and Cameroon.
- **Central Africa countries:** had rainfall distribution increase observing amounts ranging from 10mm to 150mm with maximum of about 200mm over Democratic Republic of Congo, Equatorial Guinea and Gabon.
- **GHA countries:** experienced slight decrease in rainfall distribution; observing amounts ranging between 10mm to 200mm with a peak of about 250mm over southern Somalia.
- **Southern Africa countries:** had slight rainfall decrease in distribution and amounts ranging from 10mm to 100mm with maximum of about150mm over northeast Mozambique.

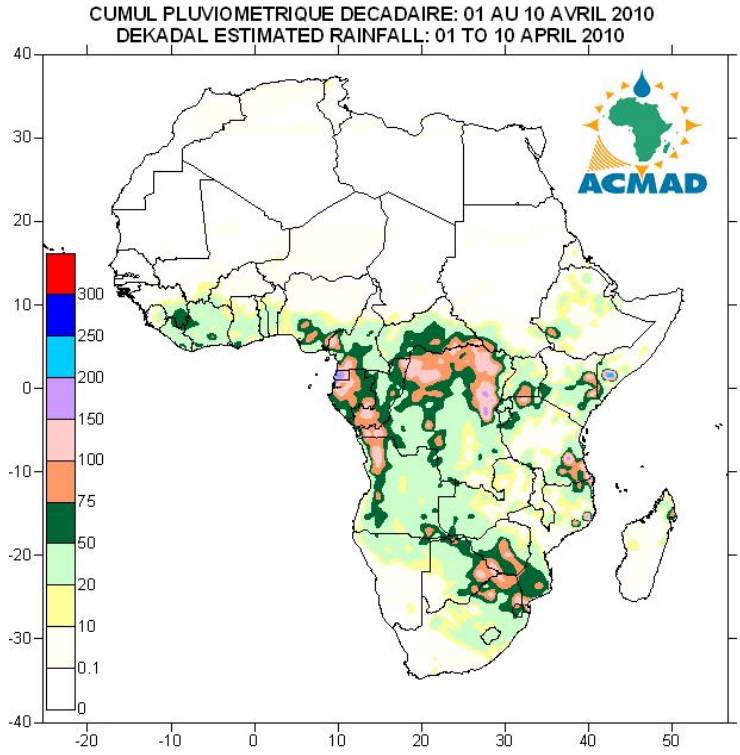

Figure 5 : Estimated precipitations, (Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows that the heavy cumulative rainfall (>100mm) was observed over the Central African countries, Southern countries and over Seychelles. The highest mean maximum temperature of 43.4°C recorded at Tombouctou in Mali while the lowest mean minimum temperature of 9.3°C was recorded at Alger (Dar-El Beida) in Algeria.

N°	STATIONS	Précipitations (mm)	Number of rainy days	Température Max mean (°C)	Température Min mean (°C)
1	Abidjan	46	5	33,7	26,4
2	Abuja	0	0	38,2	26,4
3	Accra	7	2	33,8	26,7
4	Agadez	0	0	38,6	22,9
5	Alger (Dar El Beida)	8	4	20,2	9,3
6	Antananarivo	0	0	26,3	16,0
7	Antsiranana	10	1	31,6	23,4
8	Bamako-Senou	0	0	41,2	25,6
9	Banjul	0	0	29,5	21,0
10	Beira	0	0	32,7	25,2
11	Bilma	0	0	39,0	16,9
12	Bobo Dioulasso	20	1	39,0	27,3
13	Brazzaville	43	5	34,2	23,9
14	Bulawayo	30	5	29,2	16,9
15	Casablanca	0	0	20,0	14,0
16	Cotonou	4	1	33,4	27,7
17	Dakar-Yoff	0	0	26,7	20,8
18	Dar-es-Salaam	28	6	30,1	23,9
19	Dodoma	2	1	29,8	18,9
20	Douala	32	4	32,4	25,0
21	Durban	4	1	28,7	21,5
22	Francistown	52	6	28,7	18,9
23	Ghanzi	2	2	27,8	17,9
24	Harare	31	1	28,1	16,7
25	Johannesbourg	35	7	21,5	14,1
26	Khartoum	0	0	40,3	27,1
27	Kigali	0	0	26,1	17,1
28	Kigoma	36	3	29,5	20,7
29	Kinshasa	26	1	32,9	24,1
30	Le Caire	0	0	28,9	16,5
31	Le Cap	6	1	22,9	15,4
32	Libreville	175	7	30,5	23,8
33	Lilongwe	0	0	-	20,1
34	Lomé	22	2	35,1	27,3
35	Lusaka	0	0	29,0	17,9
36	Manzini	78	5	-	19,2
37	Maputo	167	7	31,1	23,4
38	Maseru	34	2	-	12,0
39	Maun	2	1	-	-
40	Mbeya	4	1	24,5	13,5
41	Monrovia	0	0	31,4	25,0
42	Mtwara	152	6	30,2	23,4
43	Nairobi	14	3	25,3	15,5
44	Nampula	17	2	32,3	22,9
45	N'Djamena	0	0	41,8	26,0
46	Niamey-Aéroport	0	0	41,8	27,0
47	Nouakchott	0	0	31,8	20,1
48	Ouagadougou	0	0	41,2	27,2
49	Plaisance	34	7	30,1	23,9
50	Port Elisabeth	4	4	23,0	16,5
51	Pretoria	12	5	23,8	16,3
52	Sal	0	0	27,0	21,0
53	Seretse Khama- Aéro	46	3	25,3	18,6
54	Seychelles	135	8	31,3	25,5
55	Tamanrasset	0	0	32,0	17,6
56	Toalagnaro	0	0	30,9	23,1
57	Tombouctou	0	0	43,4	21,5
58	Tripoli	0	0	26,7	14,5
59	Tunis	20	6	20,8	12,8
60	Windhoek	9	2	29,7	16,1
61	Zinder	0	0	39,7	26,5

NOTE: **0** means no rain;
- means no temperature data available

Data Source: ACMAD / GTS

3. OUTLOOK FOR DEKAD (21st – 30th APRIL, 2010)

3.1 RAINFALL

The ITD will be expected to move northward while the dry and dusty conditions will continue under the influence of the Harmattan. The rainfall will intensify over southern part of the Gulf of Guinea, central Africa and GHA Africa countries. In detail**:**

- **North Africa countries:** will experience dry condition.
- **The Sahel:** will continue to experience high temperature with dry and dusty conditions under the influence of the Harmattan. However, the southern parts will experience slight rainfall increase amounts ranging from 10mm to 75mm.
- **Gulf of Guinea countries:** will experience rainfall increase observing amounts ranging from 10mm to 100mm with peaks ranging from about 150mm to 200mm.
- **Central Africa countries:** will experience rainfall increase with amounts ranging from 20mm to 150mm with peaks ranging from about 200mm to 300mm resulting in flooding.
- **GHA countries:** will have rainfall increase with amounts ranging from 10mm to 200mm intensifying over some parts with amounts ranging from about 250mm to 300mm resulting in severe flooding.
- **Southern Africa countries:** will experience rainfall decrease with amounts ranging from 10mm to 75mm with peaks of about 100mm.

3.2 TEMPERATURE

The forecast in Figure 7, shows high temperature in parts of Gulf of Guinea, the Sahel, northern central Africa and parts of GHA countries. The high temperatures ranging from 20°C to 35°C will cover more than 75% of the Continent.

3.3 SOIL MOISTURE

The outlook on soil moisture change, maps shown in Figure 8 include 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 significant soil moisture change increase include Gulf of Guinea countries, central Africa countries and GHA countries while significant soil moisture change deficits will dominate southern parts of central Africa and northern part of southern Africa countries.

3.4 IMPACTS

Health: The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy period. The temperatures in the range of 18°C to 32°C with high rainfall and relative humidity (>60%) 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. Some parts of the Gulf of Guinea, central Africa, GHA and northern parts of southern Africa countries with high humidity/rainfall coupled with prevailing conducive temperatures will support the survival of parasite resulting in higher incidences of malaria including other climate related diseases. The weak Harmattan dust will result in reduced cases of meningitis and other dust related ailments over the southern Sahel and northern parts of the Gulf of Guinea countries. The health authorities and Agencies need to continue the healthcare and humanitarian services to protect lives of the vulnerable communities.

Agriculture and food security: The integration of climate prediction products and information into agricultural production and food security is of crucial importance. We emphasize on the importance of suitable planting dates, seasonal rainfall onset, rainfall amounts and length of the season including monitoring of the phenological stages of crops for crop yield assessments in the countries. It is imperative to carry out cost benefit analysis on applications of appropriate planting dates and suitable seed variety 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 crop 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 of seasonal climate consensus forecasts, for example those issued by regional climate outlook forums (RCOFs), the GHACOF, PRESAO, PRESAC, and SARCOF for Greater Horn of Africa (GHA) countries, West Africa countries/Chad/Cameroon, central Africa and southern Africa countries respectively. The GHACOF25 has issued the seasonal climate consensus forecast for March-April-May, (MAM), 2010 for GHA countries available at ICPAC website.

African Ecosystems: While noting that forests serve as rainfall catchment areas, the destruction of forests has been blamed for the declining water levels in the African lakes, rivers and the drying wetlands. We have to rehabilitate our presently degraded rainfall catchment areas and natural ecosystems through enhanced national policies and environmental reclamation strategies. Good practices in ecosystems rehabilitation and management include national tree planting during rainy season and soil conservation to minimize soil loss during rainy seasons due to heavy runoff**.** Enhanced national strategies and policies for adaptation to Climate Change are of highest priority for States' enhanced economic growth and the achievement of the United Nations millennium development goals (MDGs) for sustainable development. The countries have to invest in environmental conservation now for better tomorrow**.**

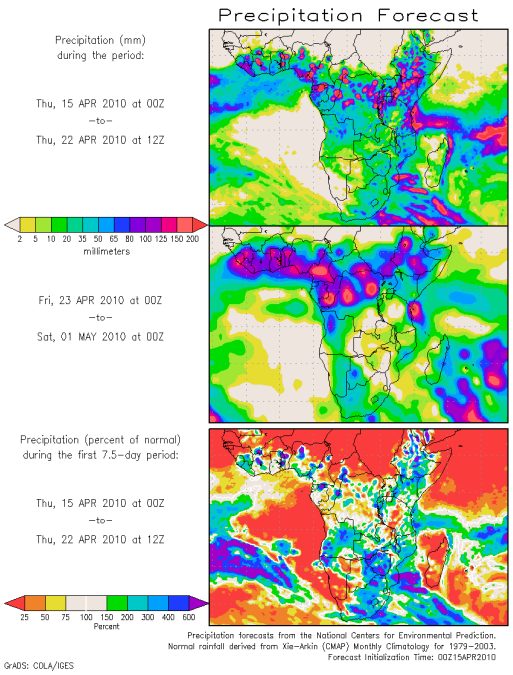

Figure 6 : Precipitation forecast, Source : COLA

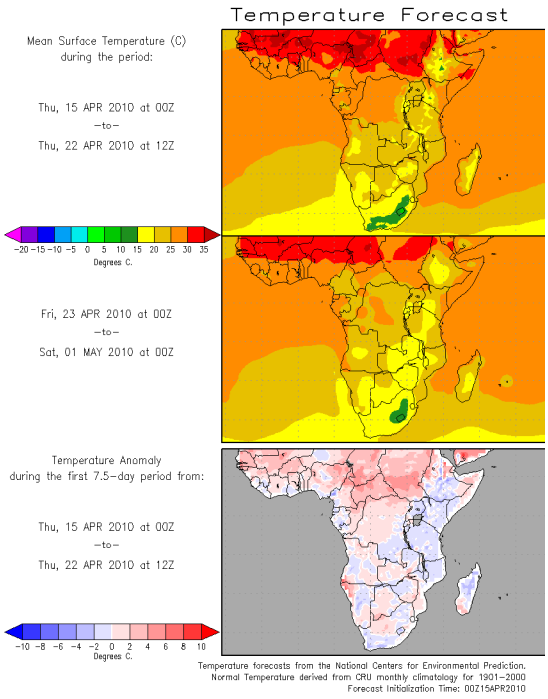

Figure 7 : Temperature forecast Source : COLA

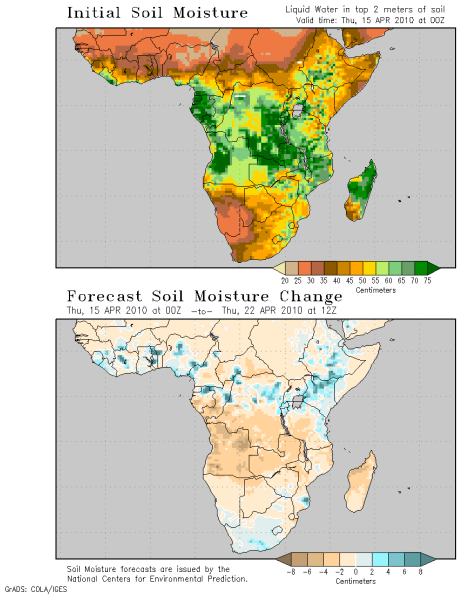

Figure 8 : Soil moisture forecast, Source: COLA

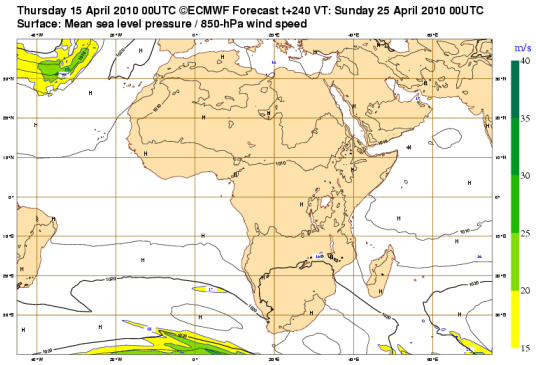

Figure 9 : Mean Sea Level pressure forecast
Source: ECMWF