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

Ten Day Climate Bulletin

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Dekad of 11 to 20 April, 2009

HIGHLIGHT: The eastern Democratic Republic of Congo and parts of GHA countries characterized by the highest thermal index regime of 243°K and high relative humidity received the heaviest rainfall.

1. GENERAL SITUATION:

1.1 SURFACE

• **Azores high:** Pressure of 1028hPa strengthened slightly by 1hPa and shift southwest. Its mean position was located at about 32°N/27°W extending a ridge over Morocco and north Algeria.

• **St. Helena high:** Pressure of 1027hPa strengthened slightly by 2hPa and shifted southeast at 37°S/01°W with an extended ridge over South Atlantic Ocean.

• **Mascarene high:** Pressure of 1026hPa weakened slightly by 1hPa compared to the past dekad and shifted northwest. Its mean position was at 35°S/50°E with an extended ridge over east of South Africa, Mozambique and south Zimbabwe.

• **Saharan Thermal low:** Pressure at 1005hPa filled up slightly by 1hPa compared to the past dekad and shifted northeast at 15°N/16°E with an extended trough over east Mali, north Nigeria, south Niger and Chad.

• **Inter -Tropical Discontinuity (ITD):** Between first and second dekad of April, 2009, the ITD continued its northward migration over southern part of the Sahel countries. However, it had slight southward displacement over Guinea. It's mean position was observed at 8.1°N and 10.1°N over longitude 20°W and 10°W respectively; at 12.2°N over extreme north Guinea; at 13.4°N over south Mali; at 14.1°N over north Burkina Faso; at 14.0°N and 13.2°N over south and southeast Niger respectively; at 13.9°N and 14.2°N over west and central Chad respectively; at 12.9°N and 13.2°N over west and central Sudan respectively.

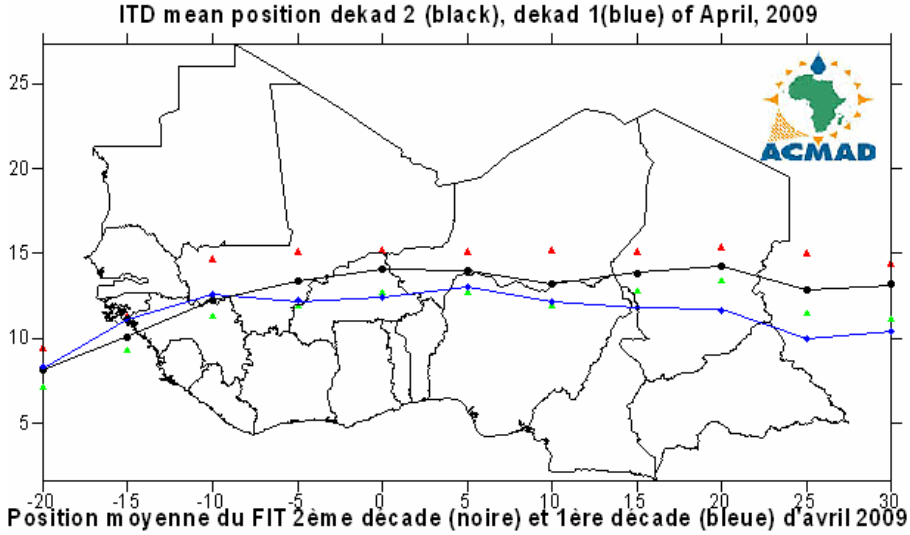

Figure 1 : The red and green triangles represent the max. and min. displacements of the ITD respectively

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1.2 TROPOSPHERE

• **Monsoon:** Monsoon influx at 925hPa level was weak (1 to 5m/s) over south Cameroon and moderate (5.5 to 11.5m/s) over south Burkina Faso, Togo, south Benin, Nigeria and north Cameroon.

• **Thermal Index (TI):** In second dekad of April, 2009, the thermal index (TI) regime at 300hPa, map shown below (figure 2), had TI regime value of 242°K over parts of Gulf of Guinea, central Africa and extreme northern parts of southern Africa countries resulting in heavy rainfall over some of the parts characterized by high relative humidity as observed below. The highest thermal index regime of 243°K characterized by heavy rainfall with floods was located over GHA and extreme eastern part of central Africa countries.

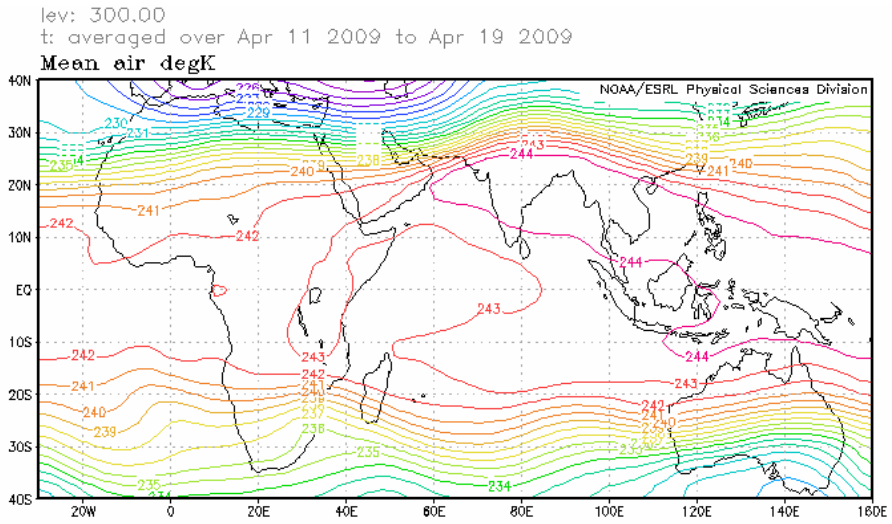

Figure 2: Air temperature at 300hPa, (Data Source: NOAA/NCEP)

• **Relative Humidity (RH):** The 850hPa map below (Figure 3) shows high RH (>70%) in the second dekad of April, 2009 over extreme eastern part of Democratic Republic of Congo, GHA countries and Madagascar. The Sahara, the Sahel countries and western part of Southern Africa countries experienced dry conditions characterized by the lowest RH (<40%).

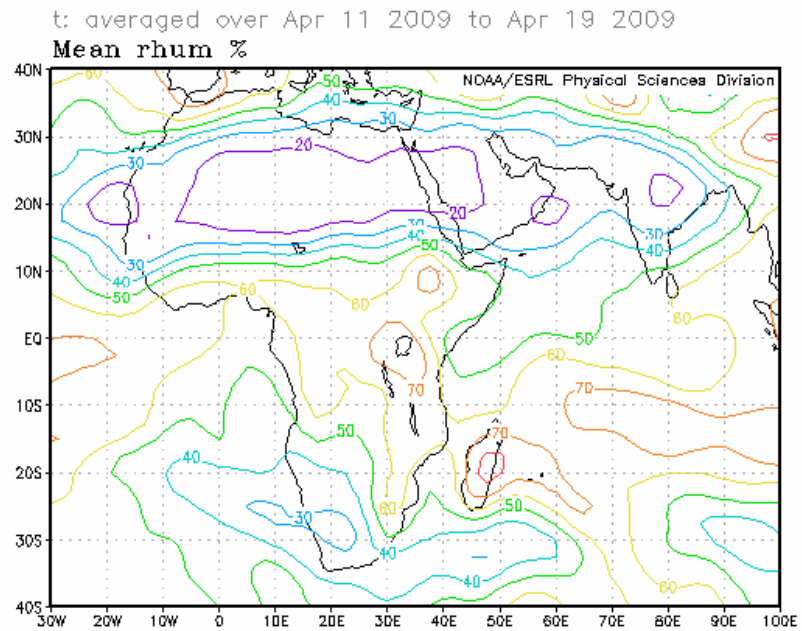

Figure 3: Relative Humidity at 850hPa, (Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below (Figure 4) for the second dekad of April, 2009 shows rainfall amounts increase over the Sahel, Gulf of Guinea, Central Africa and GHA countries, while southern Africa countries experienced significant rainfall decrease. In summary:

- **North Africa countries:** recorded rainfall amounts ranging from 10mm to 100mm over extreme north Morocco and Algeria intensifying to about 150mm over north Tunisia.

- **The Sahel:** had spatial and amounts of rainfall increase recording amounts ranging from 10 to 75mm over the extreme southern part.

- **Gulf of Guinea countries:** experienced spatial and amounts of rainfall increase recording amounts ranging from 10mm to 100mm with peaks ranging from 100mm to 200mm over south Togo, central and eastern Nigeria and south Cameroon.

- **Central Africa countries:** had some spatial rainfall decrease recording amounts ranging from 10mm to 150mm, but intensification over eastern Democratic Republic of Congo, extreme north Angola with peaks ranging from 150mm to 300mm and above.

- **GHA countries:** experienced spatial rainfall decrease recording amounts ranging from 10mm to 100mm with peaks ranging above 100mm to 250mm over Ethiopia/Sudan, Uganda and western Tanzania.

- **Southern Africa countries:** experienced significant spatial and amounts of rainfall decrease recording amounts ranging from 10mm to 50mm over south of South Africa with highest amounts of about 150mm over northern part of Madagascar.

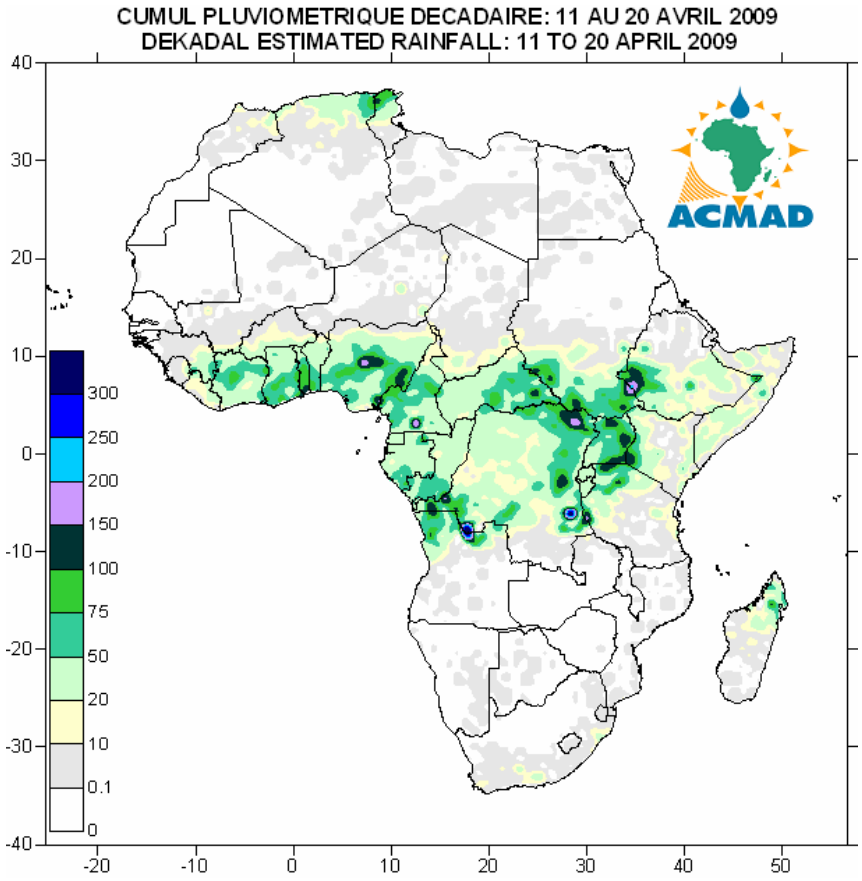

Figure 4: Estimated precipitations, (Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heaviest rainfall recorded over Lomé in Togo and Brazaville in Congo. The lowest temperature of 8.1°C was recorded at Maseru in Lesotho while the highest temperature of 43.9°C was recorded at Khartoum in Sudan.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	29	3	32,0	24,8
2	Accra	0	0	31,9	24,5
3	Agadez	0	0	42,6	28,3
4	Alger(Dar El Beida)	21	4	18,7	8,2
5	Antananarivo	2	1	24,4	16,0
6	Antsiranana	1	1	31,7	22,6
7	Bamako-Senou	0	0	39,8	26,4
8	Bangui	48	4	32,2	22,2
9	Banjul	0	0	33,2	19,1
10	Beira	42	4	28,3	20,9
11	Bilma	0	0	42,2	22,8
12	Bobo Dioulasso	3	1	37,1	25,8
13	Brazzaville	99	6	33,1	23,0
14	Bujumbura	5	2	-	-
15	Cotonou	65	4	30,6	25,7
16	Dakar-Yoff	0	0	23,9	17,9
17	Dar-es-Salaam	17	2	31,5	23,4
18	Douala	46	4	32,9	24,3
19	Durban	14	2	25,6	17,2
20	Entebbe	25	2	26,4	19,0
21	Francistown	0	0	28,4	9,4
22	Harare	0	0	25,1	9,2
23	Johannesbourg	0	0	24,0	12,7
24	Khartoum	0	0	43,9	27,0
25	Kigali	32	2	25,1	15,8
26	Kigoma	72	2	28,4	20,3
27	Le Caire	0	0	29,3	16,9
28	Le Cap	5	1	20,4	13,7
29	Libreville	42	6	30,8	24,7
30	Lomé	132	4	32,3	24,5
31	Lusaka	0	0	25,8	11,5
32	Manzini	2	1	27,8	14,9
33	Maputo	0	0	30,0	18,6
34	Maseru	0	0	24,3	8,1
35	Maun	0	0	30,5	14,2
36	Mbeya	0	0	23,4	9,8
37	Nairobi	6	1	27,2	15,9
38	Nampula	0	0	28,6	19,0
39	N'Djamena	6	1	42,9	27,9
40	Niamey-Aéroport	0	0	42,5	28,8
41	Nouakchott	1	1	33,7	17,8
42	Ouagadougou	4	1	39,5	28,1
43	Plaisance	25	7	29,5	23,0
44	Sal	0	0	24,1	19,1
45	Seretse-Khama Airport	0	0	28,4	11,2
46	Seychelles	63	7	32,1	25,8
47	Tamanrasset	0	0	30,3	13,8
48	Toalagnaro	6	6	27,1	19,4
49	Tombouctou	1	1	39,3	22,9
50	Tripoli	0	0	26,4	14,1
51	Tunis	79	5	19,2	11,9
52	Windhoek	0	0	27,9	13,3
53	Zinder	0	0	41,8	26,7

NOTE: **0** means no rain;
- means no temperature data available Data Source: ACMAD / GTS

3.OUTLOOK FOR DEKAD (01st – 10th MAY, 2009)

3.1 RAINFALL

The ITD will migrate northward leading to an increase in moisture influx and rainfall over Gulf of Guinea countries and southern part of the Sahel countries. The rainfall will also increase over central Africa, parts of GHA with significant decrease over southern Africa countries (Figure 5). In summary**:**

- **North Africa countries:** expected to experience rainfall decrease with amounts ranging from 10mm to 75mm.
- **The Sahel:** will continue to experience increasing temperatures with rainfall increase recording amounts ranging from 10mm to 75mm over southern parts of the Sahel countries with significant reduction of the Harmattan winds and associated dust episodes.
- **Gulf of Guinea countries:** will experience spatial and amounts of rainfall increase recording amounts ranging from 10mm to 200mm with isolated peaks of about 250mm.
- **Central Africa countries:** will experience rainfall increase recording amounts ranging from 10mm to 200mm with peaks ranging from about 250mm to 300mm and above.
- **GHA countries:** will record spatial rainfall increase with amounts ranging from 10mm to 150mm with peaks of about 200mm to 250mm.
- **Southern Africa countries:** will experience spatial rainfall decrease recording amounts ranging from 10mm to 50mm with peaks of about 100mm over north Mozambique and Madagascar.

3.2 TEMPERATURE

The forecast map below (Figure 6) shows that the mean surface temperature will increase over northern part of Gulf of Guinea countries, the Sahel, central Africa and GHA countries. The highest forecast temperatures range from 25°C to 35°C in orange and red colours respectively with more than 75% of the Continent recording 20°C and above.

3.3 SOIL MOISTURE

The outlook on soil moisture change, map shown below (Figure 7) 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 include parts of Gulf of Guinea and 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 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, central Africa, GHA and limited northern parts of southern Africa countries and Madagascar with high humidity/rainfall coupled with the prevailing conducive temperatures supporting the survival of parasite will experience higher incidences of vector borne diseases including malaria. The health authorities and Agencies need to continue the health care and humanitarian 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 dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop yield assessments in our countries. It is imperative 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 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 forecast, for example those issued by regional climate outlook fora (RCOF), the GHACOF, PRESAO, PRESAC, and SARCOF for Greater Horn of Africa, West Africa, central Africa, and southern Africa countries respectively.

African Natural Ecosystems: Call for rehabilitation of our presently degraded rainfall catchments areas within Africa's natural ecosystems through enhanced national conservation programmes such as national tree planting, afforestation and soil conservation during rainy seasons to minimize soil loss due to heavy runoff. Enhanced national strategies for adaptation to Climate Change are of high priority.

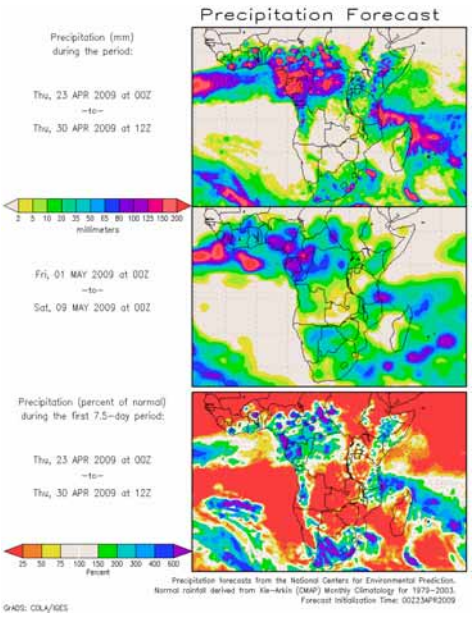

Figure 5: Precipitation forecast, Source : COLA

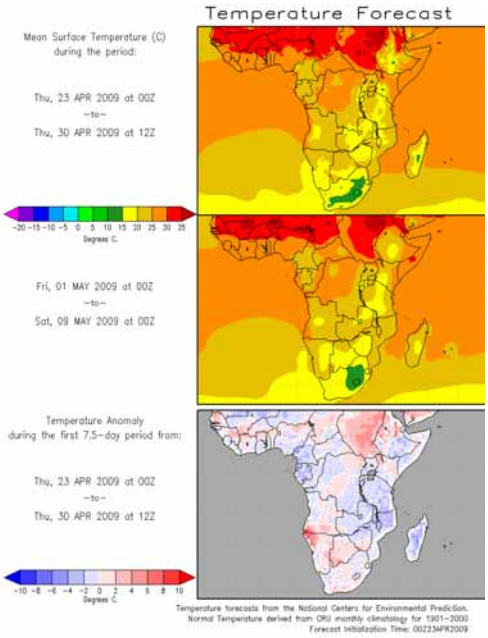

Figure 6 : Temperature forecast Source : COLA

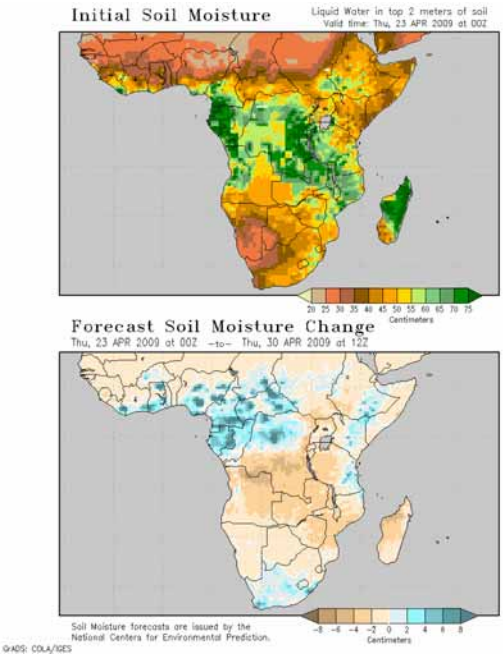

Figure 7 : Soil moisture forecast, Source: COLA

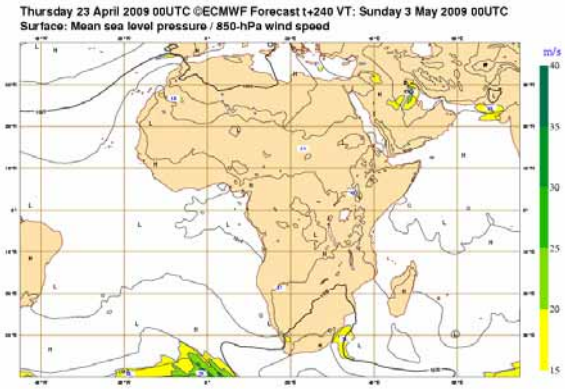

Figure 8 : Mean sea Level pressure forecast

Source : ECMWF