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

Ten Day Climate Bulletin

N° 10 Year 2009

Dekad of 01 to 10 April, 2009

HIGHLIGHT: The areas with high relative humidity were characterized by heavy rainfall over Democratic Republic of Congo, south Sudan, Uganda, south Somalia and Tanzania with the highest observed over Madagascar associated with the tropical cyclone Jade that hit the northeastern Madagascar on 5 April, 2009.

1. GENERAL SITUATION:

1.1 SURFACE

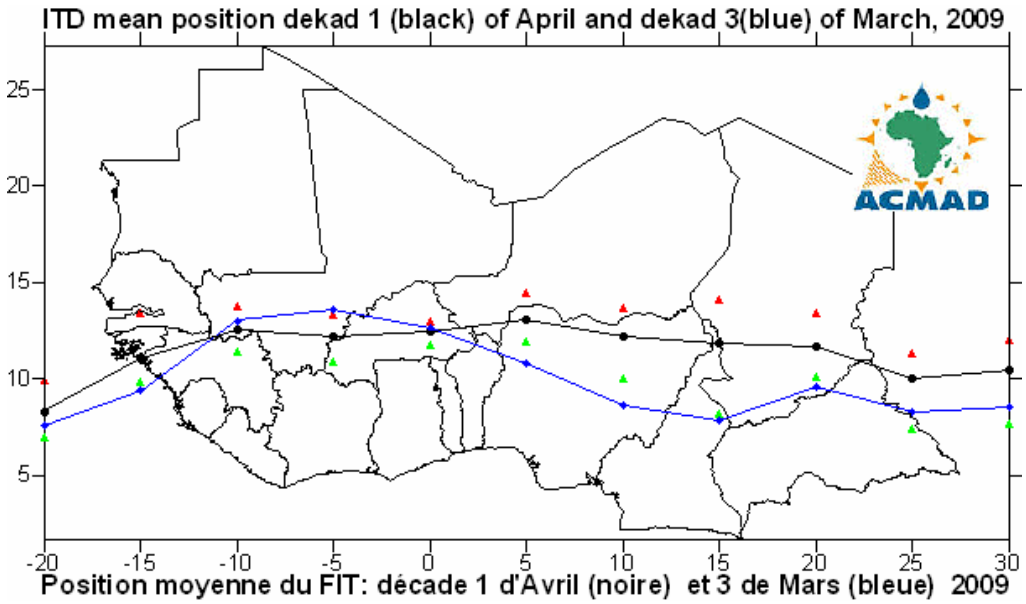
• **Azores high:** Pressure of 1027hPa weakened significantly by 6hPa and shift southeast. Its mean position was located at about 37°N/23°W with extending a ridge over north Morocco.

• **St. Helena high:** Pressure of 1025hPa strengthened slightly by 2hPa and shifted northeast at 35°S/02°W with an extended ridge over South Atlantic Ocean.

• **Mascarene high:** Pressure of 1027hPa maintained its intensity compared to the past dekad and shifted northwest. It's mean position at 38°S/61°E with extended ridge over the Indian Ocean.

• **Equatorial Thermal low:** Pressure at 1004hPa deepened slightly by 1hPa compared to the past dekad and shifted northeast at 13°N/14°E with an extended trough over south Mali, Burkina Faso, north Ghana, north Benin, north Nigeria, south Niger and Chad.

• **Inter-Tropical Discontinuity (ITD):** Between third dekad of March and the first dekad of April, 2009, the ITD continued its northward migration over northern part of Gulf of Guinea countries. However, its had slight southwards movement over south Mali and west Burkina Faso. It's mean position was observed at 8.3°N over longitude 20°W; at 11.1°N over extreme west Guinea; at 12.6°N over southwest Mali; at 12.2°N and 12.4 °N over extreme west and central east Burkina Faso respectively; at 13.0°N and 12.2°N over northwest and north Nigeria respectively; at 11.8°N over extreme north Cameroon; at 11.7°N over southeast Chad; at 10.0°N and 10.4°N over southwest and south Sudan respectively.

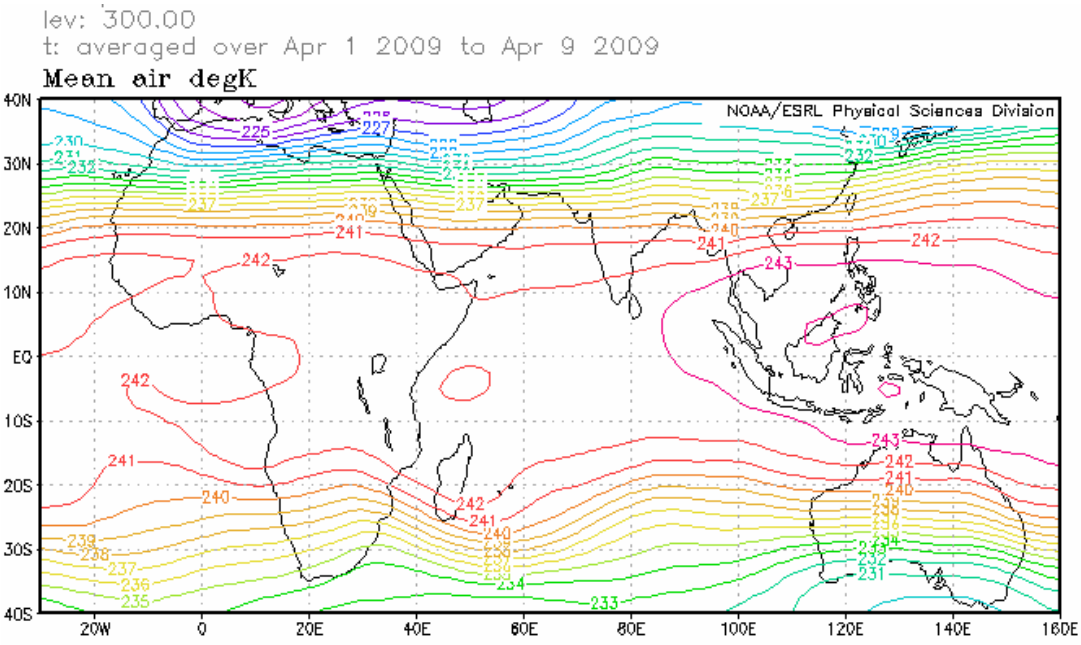


The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

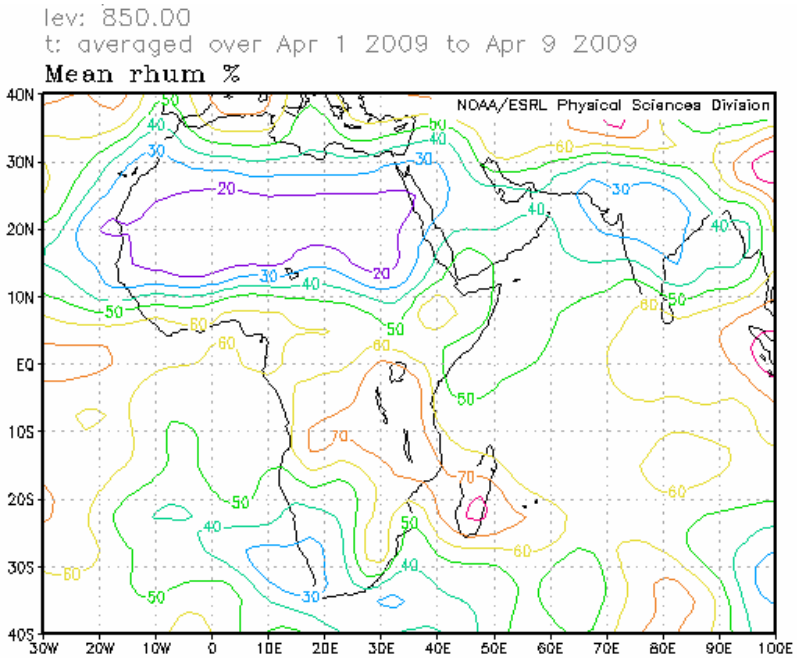
- **Monsoon:** Monsoon influx at 925hPa level was weak (1 to 5m/s) over south Cameroon and moderate (5.5 to 11.5m/s) over south Burkina Faso, Ghana, Togo and Nigeria.

- **Thermal Index (TI):** In first dekad of April, 2009, the thermal index (TI) regime at 300hPa, map shown below, had TI regime value of 242°K over southern Sahel, Gulf of Guinea, central Africa countries, GHA and northern parts of southern Africa countries resulting in heavy rainfall over some parts characterized by high relative humidity as observed below.



(Data Source: NOAA/NCEP)

- **Relative Humidity (RH):** The 850hPa map below shows high RH (>70%) in the first dekad of April, 2009 over parts of central Africa countries and southwestern parts of GHA countries. The Sahara, the Sahel countries and western part of Southern Africa countries experienced dry conditions characterized by the lowest RH (<40%).



(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 April, 2009 shows rainfall activities increase over Gulf of Guinea, Central Africa and GHA countries, while northern and southern Africa countries experienced significant rainfall decrease. In summary:

- **North Africa countries:** experienced significant spatial rainfall decrease recording amounts ranging from 10mm to 100mm over north Algeria and Tunisia with localized peak of about 150mm over northeast Morocco.

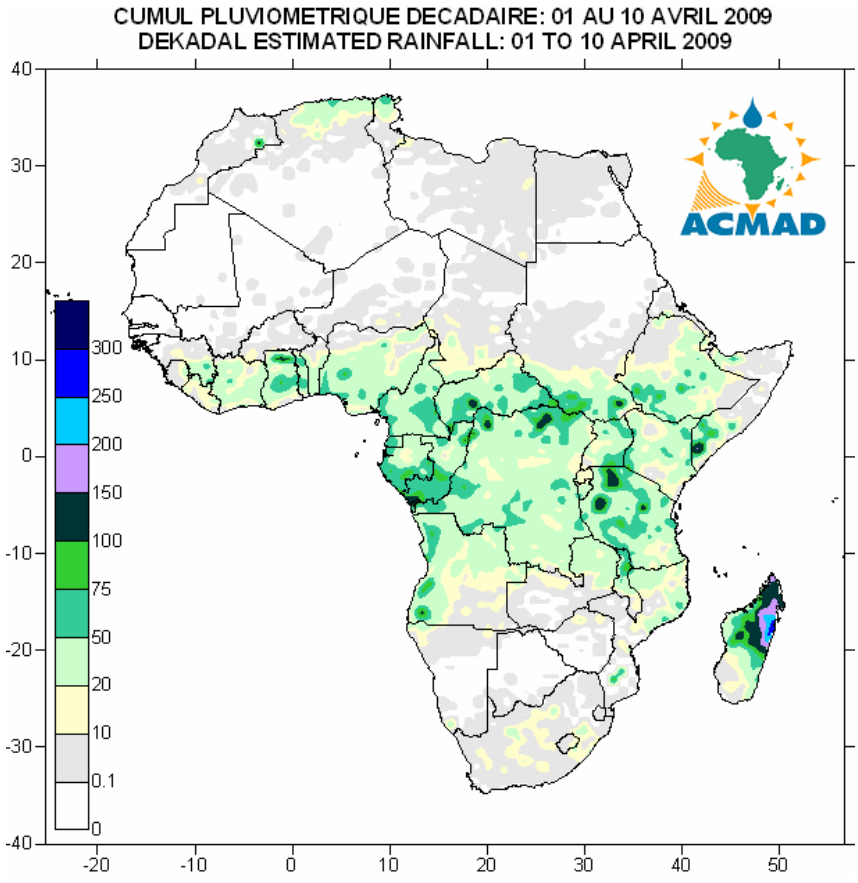
- **The Sahel:** had spatial and intensity of rainfall decrease recording amounts ranging from 10 to 50mm over extreme south Burkina Faso and Chad.

- **Gulf of Guinea countries:** experienced spatial rainfall increase recording amounts ranging from 10mm to 100mm with heaviest amount of about 150mm over north Ghana.

- **Central Africa countries:** had spatial rainfall increase recording amounts ranging from 10mm to 100mm with peaks ranging above 100mm to 150mm over Democratic Republic of Congo, Central African Republic and south Congo.

- **GHA countries:** experienced significant spatial rainfall increase recording amounts ranging from 10mm to 100mm with peaks ranging above 100mm to 200mm over south Somalia, south Sudan, and Tanzania.

- **Southern Africa countries:** experienced significant spatial rainfall decrease recording amounts ranging from 10mm to 75mm with intensification of rainfall over Madagascar recording heaviest amounts above 300mm.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Toalagnaro and Antsiranana in Madagascar, and Plaisance in Mauritius. The lowest temperature of 7.6°C was recorded at Alger (Dar-El-Beida) in Algeria while the highest temperature of 42.0°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	13	2	31,4	25,0
2	Abuja	17	1	34,2	25,4
3	Accra	0	0	33,2	26,5
4	Agadez	0	0	41,1	24,7
5	Addis Abéba	3	1	-	-
6	Alger(Dar El Beida)	39	8	19,2	7,6
7	Antananarivo	98	5	25,1	18,1
8	Antsiranana	154	2	31,6	22,1
9	Bamako-Senou	0	0	39,2	25,5
10	Bangui	30	2	33,4	22,4
11	Banjul	0	0	32,7	19,1
12	Beira	49	6	29,5	23,2
13	Bilma	0	0	41,6	20,6
14	Bobo Dioulasso	5	2	37,3	25,3
15	Brazzaville	65	5	31,4	22,2
16	Cotonou	8	1	31,4	27,0
17	Dakar-Yoff	0	0	24,0	18,5
18	Dar-es-Salaam	75	5	31,9	23,5
19	Douala	56	4	31,6	24,1
20	Durban	23	2	27,1	19,4
21	Entebbe	2	1	25,6	-
22	Francistown	0	0	27,1	12,7
23	Johannesbourg	0	0	23,8	12,2
24	Khartoum	0	0	40,8	23,6
25	Kigali	11	2	25,6	16,1
26	Kigoma	67	2	27,8	20,9
27	Kinshasa	31	1	32,0	23,0
28	Le Caire	0	0	26,8	16,2
30	Le Cap	0	0	24,8	15,8
31	Libreville	72	4	31,0	24,2
32	Lomé	0	0	32,6	26,3
33	Lusaka	0	0	25,2	14,6
34	Manzini	0	0	26,8	16,5
35	Maputo	0	0	30,3	20,9
36	Maseru	6	2	25,3	11,1
37	Maun	4	1	30,9	15,6
38	Mbeya	21	3	23,4	13,7
39	Nairobi	1	1	27,4	15,2
40	Nampula	61	7	28,6	21,4
41	N'Djamena	0	0	42,0	26,2
42	Niamey-Aéroport	0	0	41,5	25,8
43	Nouakchott	0	0	30,0	17,5
44	Ouagadougou	0	0	40,2	26,4
45	Plaisance	108	8	29,9	24,4
46	Sal	0	0	24,3	19,2
47	Seretse-Khama Airport	0	0	28,2	14,2
48	Seychelles	61	4	31,9	25,7
49	Tamanrasset	0	0	28,7	12,9
50	Toalagnaro	120	8	27,2	22,6
51	Tombouctou	0	0	37,8	21,2
52	Tripoli	4	2	24,2	11,1
53	Tunis	47	5	20,0	11,3
54	Windhoek	0	0	28,4	14,0
55	Zinder	0	0	41,3	23,3

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

3.OUTLOOK FOR DEKAD (21st – 30th APRIL, 2009)

3.1 RAINFALL

The ITD will migrate northward leading to an increase in moisture influx and rainfall over Gulf of Guinea countries. The rainfall will also increase over central Africa, parts of GHA with a significant decrease over southern Africa countries. In summary:

- **North Africa countries:** expected to experience rainfall increase with amounts ranging from 10mm to 100mm.

- **The Sahel:** will continue to experience increasing temperatures with rainfall increase recording amounts ranging from 10 to 75mm over southern and western parts of the Sahel countries with significant reduction of the Harmattan winds and associated dust episodes.

- **Gulf of Guinea countries:** will experience spatial and intensity 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 of about 250mm 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 75mm with peaks of about 100mm over north Mozambique and Madagascar.

3.2 TEMPERATURE

The forecast map below shows that the mean surface temperature will increase over northern part of Gulf of Guinea countries, southern part of the Sahel, parts of 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 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 southern Africa countries, southern and western parts of GHA countries, central Africa countries spreading into Gulf of Guinea countries.

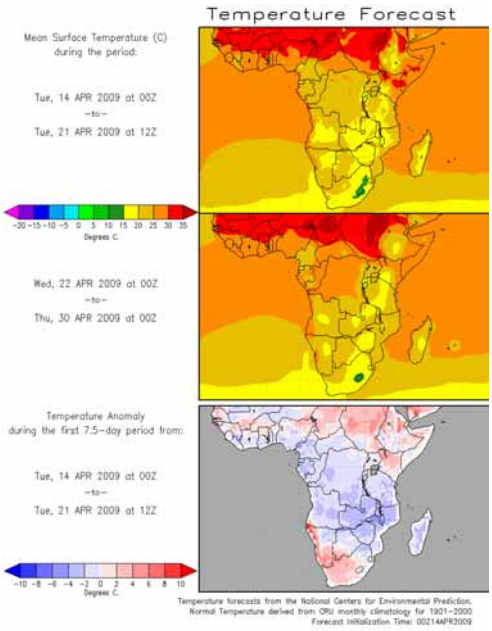
3.4 IMPACTS

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 northern parts of southern Africa countries and Madagascar with high humidity/rainfall coupled with the prevailing conducive temperatures supporting the survival of parasite will resulting in 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.

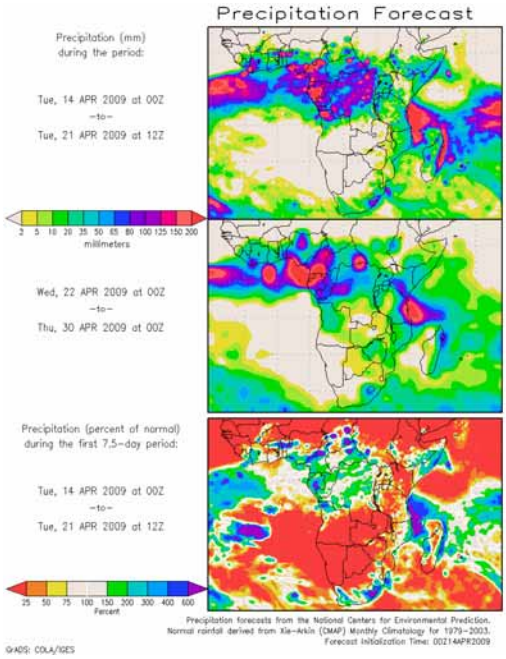
Agriculture and food security: The applications of climate information in agricultural production are of crucial importance. We often emphasize on the importance of well documented onset dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop yield assessments in 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: There is a need to invest in the rehabilitation of our presently degraded rainfall catchments areas within our 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.



Source : COLA



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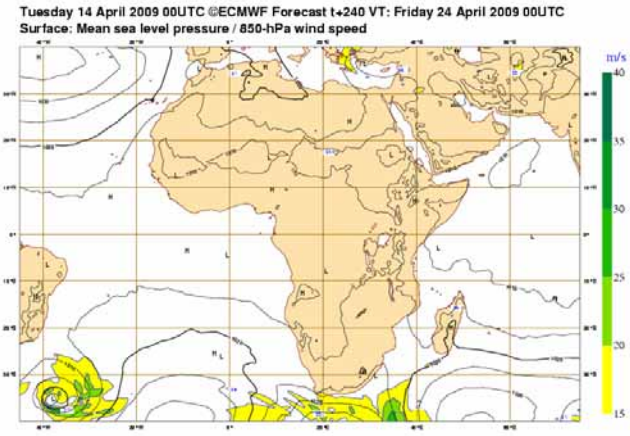
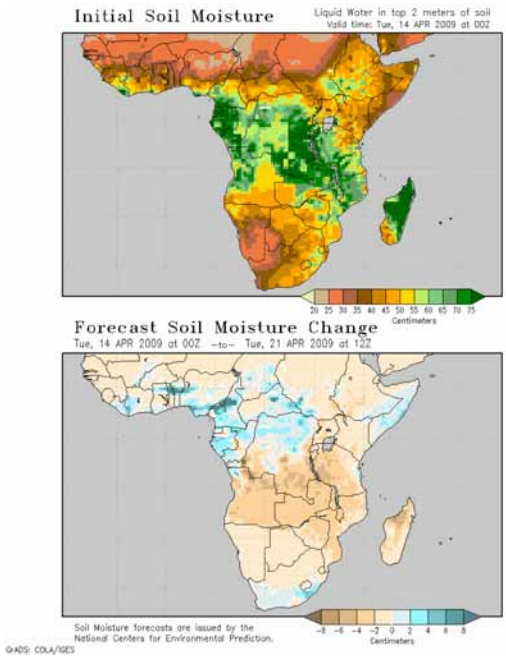


Source : ECMWF



Source: COLA