African **C**entre of **M**eteorological **A**pplication for **D**evelopment
Centre Africain pour les Applications de la Météorologie au Développement

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Dekad of 01 to 10 March, 2009

HIGHLIGHT: The areas with high TI regime of 242°K experienced heavy rainfall with high rainfall amounts of about 200mm linked to the highest TI regime of 243°K and highest relative humidity. Tropical Africa will experience a general rainfall increase linked to high TI regime of 242°K and relative humidity (>70%).

1. GENERAL SITUATION:

1.1 SURFACE

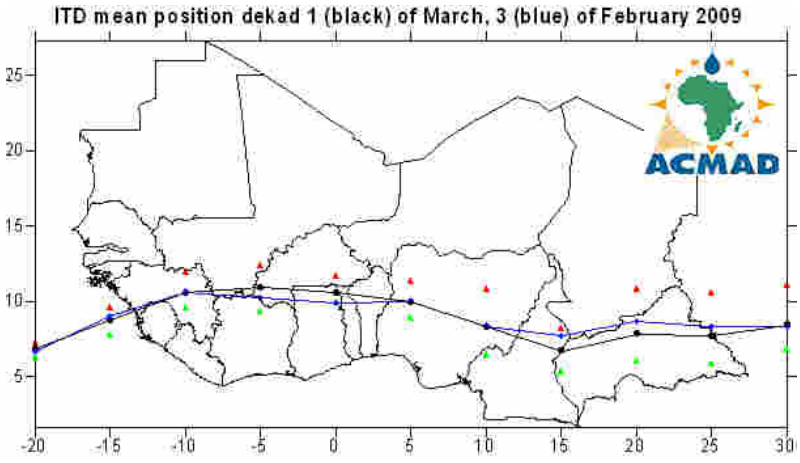
• **Azores high:** Pressure of 1033hPa strengthened slightly by39hPa and shifted southwest with a mean position at 44°N/26°W extending a ridge over south Morocco.

• **St. Helena high:** Pressure of 1026hPa strengthened by 2hPa and shifted east at 38°S/02°W with an extended ridge over South Atlantic Ocean.

• **Mascarene high:** Pressure of 1031hPa strengthened significantly by 7hPa compared to the past dekad and shifted southwest. It's mean position at 42°S/50°E with extended ridge over the Indian Ocean.

• **Thermal low:** Pressure at 1007hPa filled up slightly by 2hPa compared to the past dekad and shifted west at 11°N/04°E with an extended trough over south Mali, Burkina Faso, southwest Niger, north Côte d'Ivoire, Ghana, Benin, Nigeria, Cameroon and south Chad.

• **Inter-Tropical Discontinuity (ITD):** Between the third dekad of February and the first dekad of March, 2009, the ITD continued its northwards migration over central north of Gulf of Guinea countries and moved southwards over Cameroon and Central African Republic. Elsewhere, it remained quasi-stationary. It's mean position was observed at 6.8°N and 8.7°N over longitude 20°W and 15°W respectively; at 10.6°N over east Guinea; at 10.9°N over extreme south Burkina Faso; at 10.6°N over extreme northeast Ghana; at 10.0°N and 8.4°N over west and southeast Nigeria respectively; at 6.7°N over extreme east Cameroon; at 7.9°N over central north of Central African Republic and at 87.7°C and 8.5over extreme southwest and south Sudan respectively.



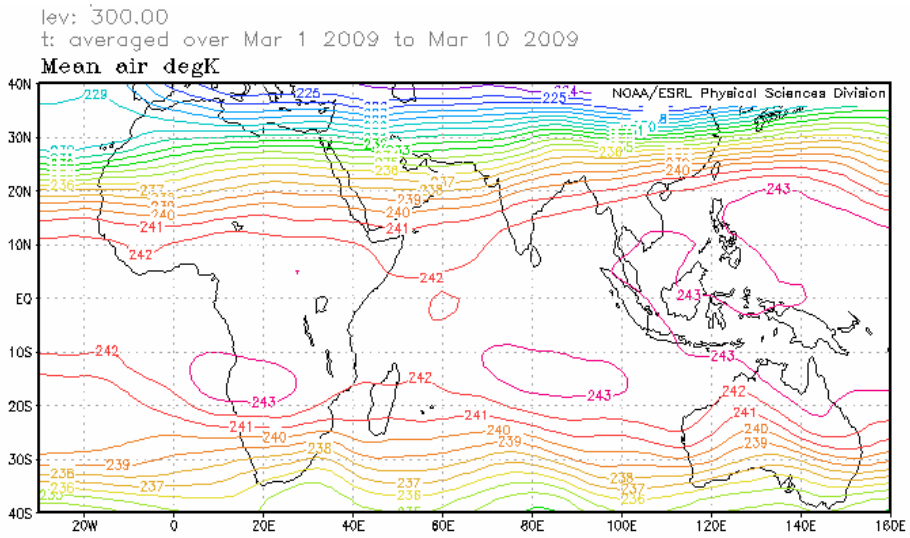
Position moyenne du FIT pour la 1ère décade (noire) de Mars et 3ème décade de Février 2009

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

1.2 TROPOSPHERE

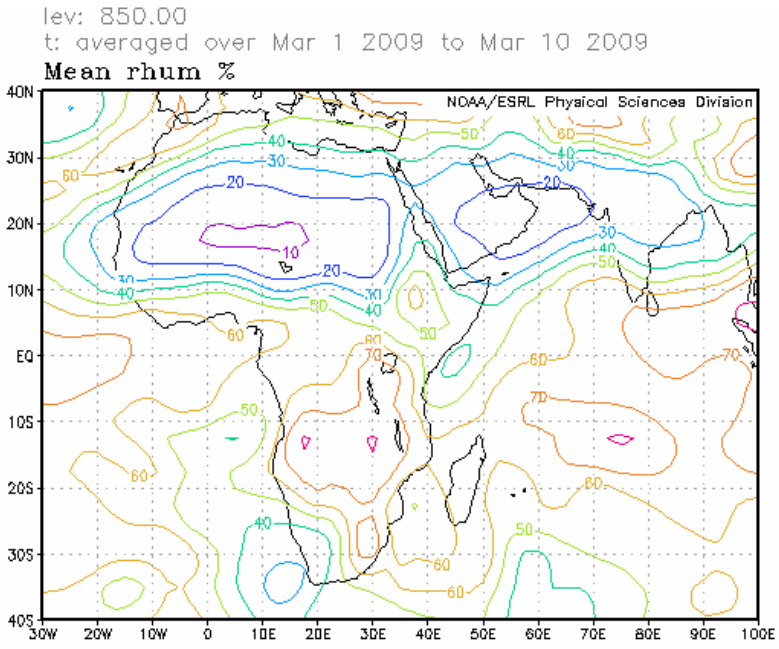
- **Monsoon:** Monsoon influx at 925hPa level was weak (1 to 5m/s) over south Cameroon.

- **Thermal Index (TI):** In first dekad of March, 2009, the thermal index (TI) regime at 300hPa, map shown below, had TI regime value of 242°K over Gulf of Guinea countries, central Africa countries, most part of GHA countries and northern parts of southern Africa countries associated with heavy rainfall that intensified into floods over areas covered by TI regime threshold value of 243°K also characterized by high relative humidity as observed below. The TI regime maximum value of 243°K and above, associated with heavy rainfall with floods was located over south Angola, north Namibia, eastern Asia, part of Japan and northeastern Australia.



(Data Source: NOAA/NCEP)

- **Relative Humidity (RH):** The 850hPa map below shows high RH (>70%) in the first dekad of March, 2009 over western part of Gulf of Guinea, southern parts of central Africa countries, western parts of GHA and northeastern part of southern Africa countries. The Sahara, the Sahel countries, and extreme northern part of Gulf of Guinea countries, the extreme southwestern 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 March, 2009 shows rainfall activities increase over the Gulf of Guinea countries, Central Africa countries and northern Africa countries, while GHA and Southern Africa countries experienced spatial rainfall decrease. In summary:

- **North Africa countries:** experienced slight spatial rainfall increase recording amounts ranging from 10mm to 50mm with localized peaks of about 75mm over northern Algeria.

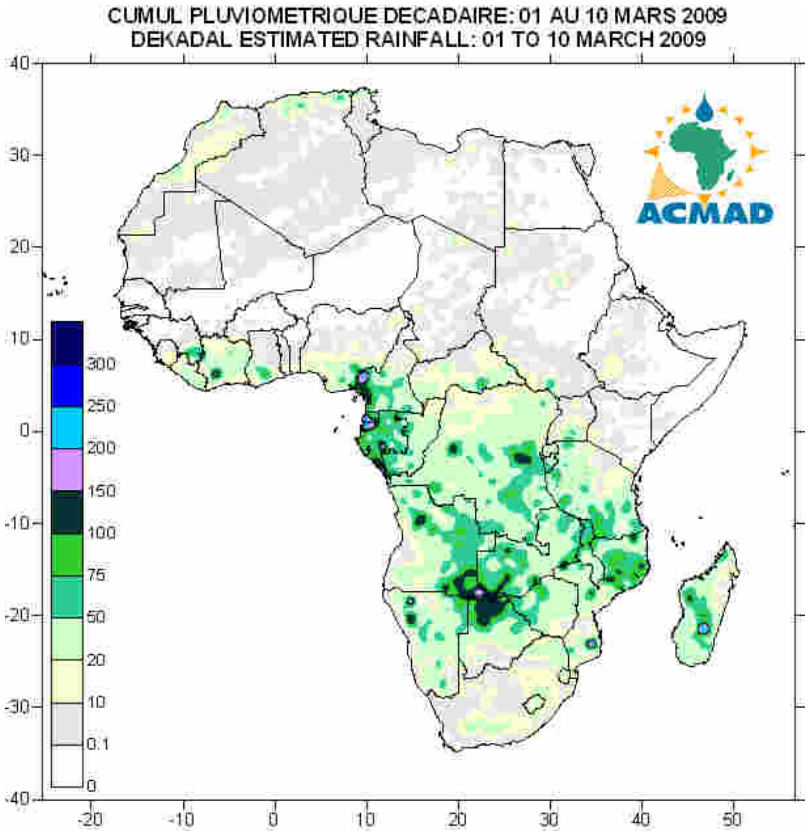
- **The Sahel:** countries were dominated by the effects of Harmattan winds with widespread dust episodes.

- **Gulf of Guinea countries :** spatial and intensity of rainfall increase recording amounts ranging from 10mm to 100mm with maximum of about 100mm to 200mm over Côte d'Ivoire intensifying to about 250mm over southeast Nigeria and Cameroon.

- **Central Africa countries:** had slight spatial rainfall increase recording amounts ranging from 10mm to 150mm with localized peaks ranging 150mm to 250mm over Gabon, Equatorial Guinea and Angola.

- **GHA countries:** experienced slight spatial and intensity of rainfall decrease recording amounts ranging from 10mm to 100mm.

- **Southern Africa countries:** experienced slight spatial rainfall decrease recording rainfall amounts ranging from 10mm to 150mm with heaviest amounts ranging 150mm to 300mm over north Namibia, southeast Angola, northern Botswana, Mozambique and Madagascar.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Kinshasa in Democratic Republic of Congo and Libreville in Gabon. The lowest temperature of 7.2°C was recorded at Alger (Dar-El-Bieida) in Algeria while the highest temperature of 39.5°C was recorded at Ouagadougou in Burkina Faso.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	34	4	32,4	25,8
2	Abuja	0	0	37,5	24,6
3	Accra	37	1	32,6	25,9
4	Agadez	0	0	34,5	18,7
5	Alger(Dar El Beida)	29	3	18,5	7,2
6	Antananarivo	8	2	27,9	17,0
7	Antsiranana	20	1	32,5	22,4
8	Bamako-Senou	0	0	38,4	23,6
9	Bangui	15	1	36,2	23,2
10	Banjul	0	0	32,9	19,4
11	Beira	32	5	30,9	24,2
12	Bilma	0	0	33,2	12,8
13	Bobo Dioulasso	0	0	38,7	25,1
14	Brazzaville	40	5	32,3	22,9
15	Casablanca	0	0	19,9	9,9
16	Conakry	0	0	31,1	-
17	Cotonou	0	0	32,5	27,8
18	Dakar-Yoff	0	0	23,3	17,4
19	Dar-es-Salaam	32	5	33,6	23,7
20	Douala	7	3	32,7	25,3
21	Durban	23	3	27,4	20,5
22	Entebbe	46	2	-	-
23	Francistown	43	3	25,9	17,1
24	Johannesbourg	6	1	24,3	13,3
25	Khartoum	0	0	35,7	18,6
26	Kigali	18	2	26,9	15,9
27	Kigoma	55	4	28,1	19,0
28	Kinshasa	99	1	31,7	20,8
29	Le Caire	0	0	24,9	14,3
30	Le Cap	0	0	28,2	18,7
31	Libreville	248	7	31,0	24,3
32	Lilongwe	35	2	-	17,1
33	Lomé	1	1	33,1	26,9
34	Lusaka	43	5	26,8	17,8
35	Manzini	50	5	-	18,5
36	Maputo	28	4	31,4	22,6
37	Maseru	0	0	26,0	12,6
38	Maun	75	5	26,8	19,6
39	Mbeya	41	2	24,5	14,0
40	Nairobi	14	2	28,9	14,4
41	Nampula	75	3	32,0	21,9
42	N'Djamena	0	0	39,0	20,9
43	Niamey-Aéroport	0	0	39,0	22,3
44	Nouakchott	0	0	29,3	17,7
45	Ouagadougou	0	0	39,5	23,4
46	Plaisance	47	8	30,2	24,0
47	Sal	0	0	23,5	18,3
48	Seretse-Khama Airport	0	0	28,0	17,0
49	Seychelles	3	2	32,5	25,5
50	Tamanrasset	0	0	27,0	11,8
51	Toalagnaro	69	4	30,2	23,5
52	Tombouctou	0	0	36,5	20,3
53	Tripoli	0	0	20,7	9,9
54	Tunis	35	4	17,5	9,7
55	Windhoek	39	4	26,0	14,9
56	Zinder	0	0	36,5	20,6

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

3.OUTLOOK FOR DEKAD (21st – 31st MARCH, 2009)

3.1 RAINFALL

The ITD will migrate slightly northward leading to an increase in rainfall over Gulf of Guinea countries. The rainfall will also increase over central Africa, parts of GHA and northern parts of southern Africa countries. In summary:

- **North Africa countries:** expected to experience rainfall increase with amounts ranging from 10mm to 75mm.
- **The Sahel:** will continue to experience increased temperatures characterized by Harmattan conditions with widespread dust episodes.
- **Gulf of Guinea countries:** will experience spatial rainfall increase recording rainfall amounts ranging from 10mm to 100mm with isolated peaks of about 150mm to 200mm
- **Central Africa countries:** will experience spatial 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 100mm with peaks of about 150mm to 250mm.
- **Southern Africa countries:** will experience spatial rainfall decrease recording amounts ranging from 10mm to 100mm with peaks of about 150mm and above over Zambia, Zimbabwe, Malawi 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 including Namibia, and Botswana. The highest forecast temperatures 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 include parts of central and south Africa countries particularly Democratic Republic of Congo, Angola, Zambia, Malawi, Zimbabwe, parts of Mozambique, eastern South Africa and Madagascar.

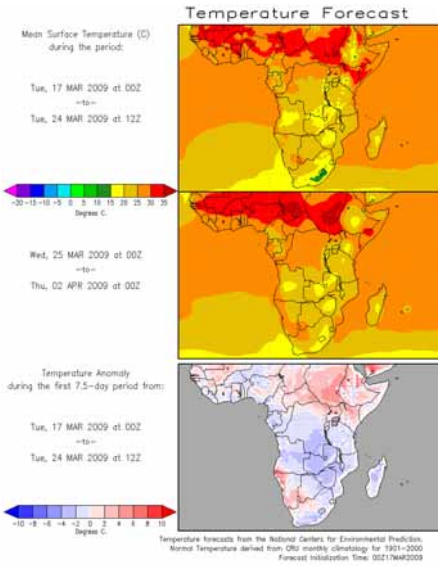
3.4 IMPACTS

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 Gulf of Guinea, central Africa, GHA and southern Africa countries and Madagascar with high humidity/rainfall coupled with the prevailing conducive temperatures support the survival of parasite 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.

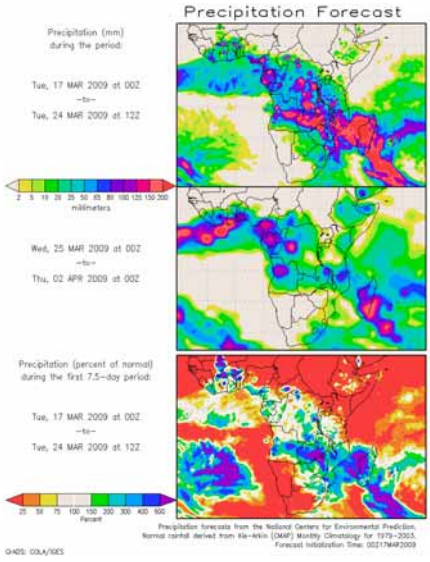
Agriculture and food security: The applications of climate information in agricultural production are of crucial importance. We often emphasize on the importance of well documented onset dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop yield assessments in our countries. 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 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 PRESAO, PRESAC, GHACOF and SARCOF for West Africa, central Africa, Greater Horn of 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 strategies such as national tree planting, afforestation and soil conservation programmes 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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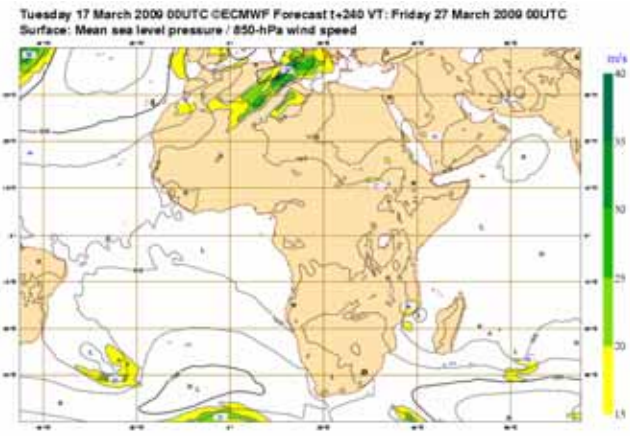
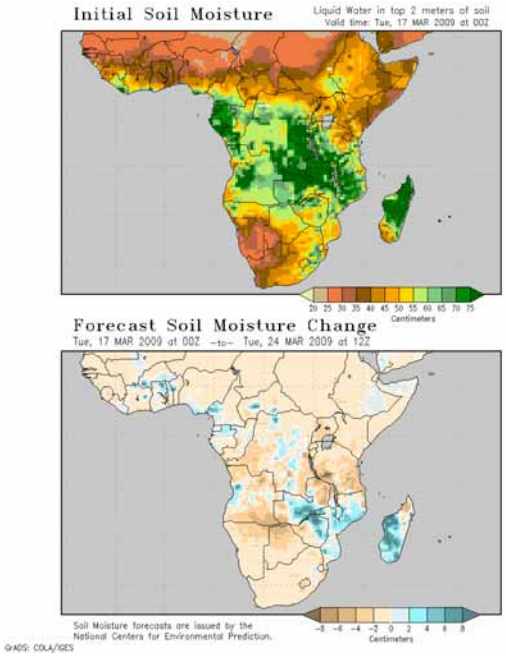


Source: ECMWF



Source: COLA