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 21 to 28 February, 2009

HIGHLIGHT: The areas with high TI regime of 242°K experienced heavy rainfall with highest rainfall amounts of above 200mm over south Angola and northern Namibia linked to the highest TI regime of 243°K and supported by the highest relative humidity.

1. GENERAL SITUATION:

1.1 SURFACE

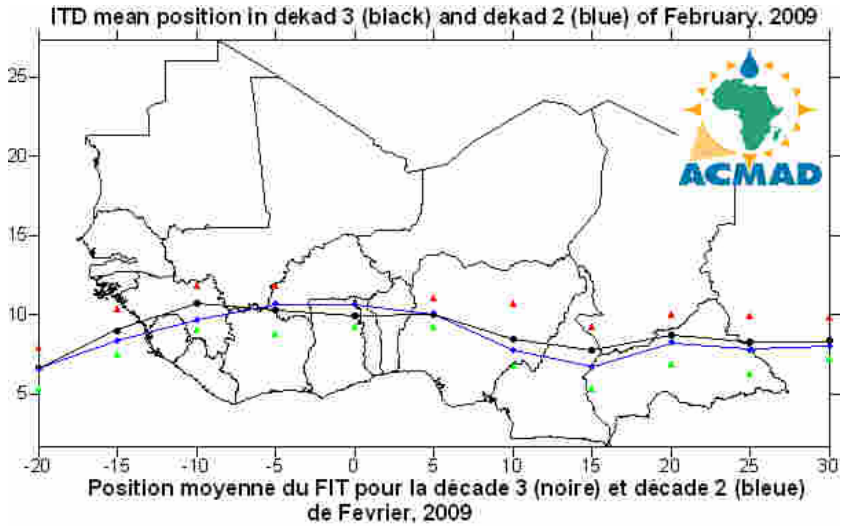
• **Azores high:** Pressure of 1031hPa strengthened slightly by 1hPa and shifted southwest with a mean position at 44°N/18°W extending a ridge over north Mali and south Algeria.

• **St. Helena high:** Pressure of 1024hPa weakened by 3hPa and shifted southeast at 38°S/09°W with an extended ridge over South Atlantic Ocean.

• **Mascarene high:** Pressure of 1024hPa weakened by 3hPa compared to the past dekad and shifted southeast. It's mean position at 40°S/65°E with extended ridge over the Indian Ocean.

• **Equatorial thermal low:** Pressure at 1005hPa deepened slightly by 1hPa compared to the past dekad and shifted east at 11°N/08°E with an extended trough over Mali, Burkina Faso, southwest Niger, north Ghana, Benin, Nigeria, Cameroon and south Chad.

• **Inter-Tropical Discontinuity (ITD):** Between the second dekad and third dekad of February, 2009, the ITD had a slight northward movement over Gulf of Guinea countries and central Atlantic Ocean. However, it had a slight southward migration over the central part. It's mean position was observed at 6.6°N and 9.0°N over longitude 20°W and 15°W respectively; at 10.7°N over east Guinea; at 10.3°N over extreme north Côte d'Ivoire; at 9.9°N over extreme northeast Ghana; at 10.0°N and 8.4°N over west and southeast Nigeria respectively; at 7.8°N over extreme east Cameroon; at 8.7°N over north of Central African Republic and at 8.3°C and 8.4over southwest and south Sudan respectively.

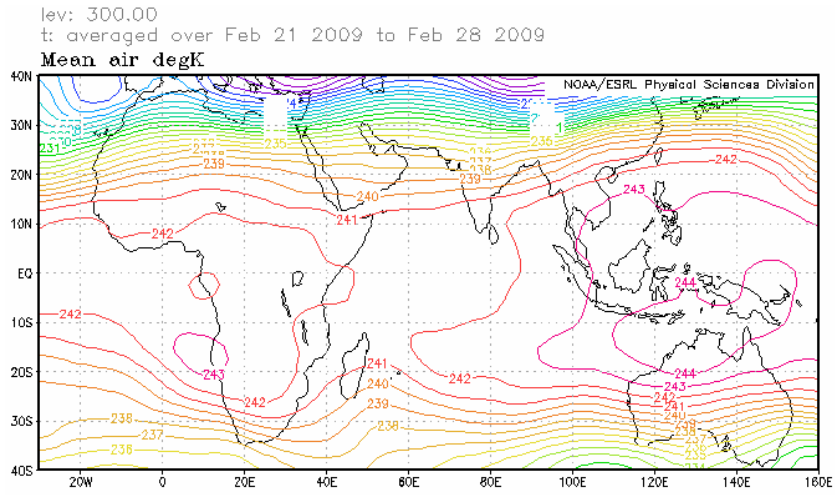


The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

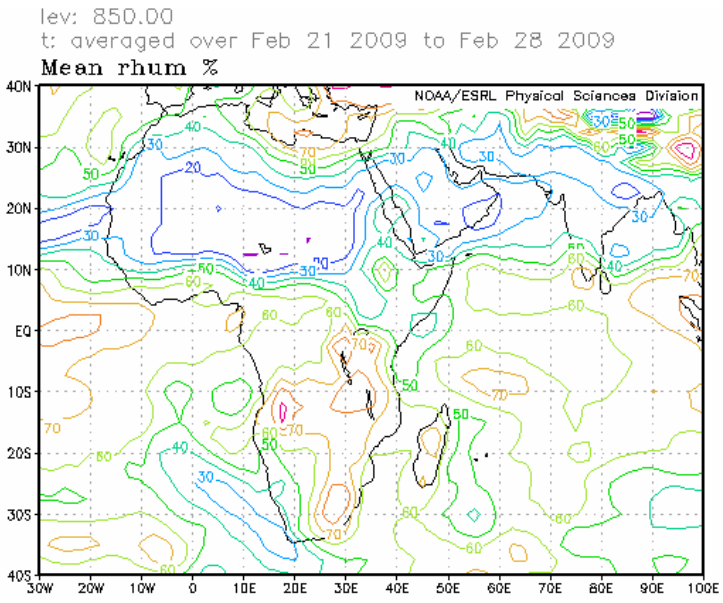
- **Monsoon:** Monsoon influx at 925hPa level was weak (1 to 5m/s) over south Cameroon and was moderate (5.5 to 12.5m/s) over south Togo, Benin and Nigeria.

- **Thermal Index (TI):** In the third dekad of February, 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, western 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, Japan and Australia.



(Data Source: NOAA/NCEP)

- **Relative Humidity (RH):** The 850hPa map below shows high RH (>70%) in the third dekad of February, 2009 over western part of Gulf of Guinea and extreme west of Cameroon, southern parts of central Africa countries, western parts of GHA and eastern part of southern Africa countries including southern and central Madagascar. The Sahara, the Sahel countries, northern part of Gulf of Guinea countries, the extreme western part of southern Africa countries experienced dry conditions characterized by the lowest RH (<40%).



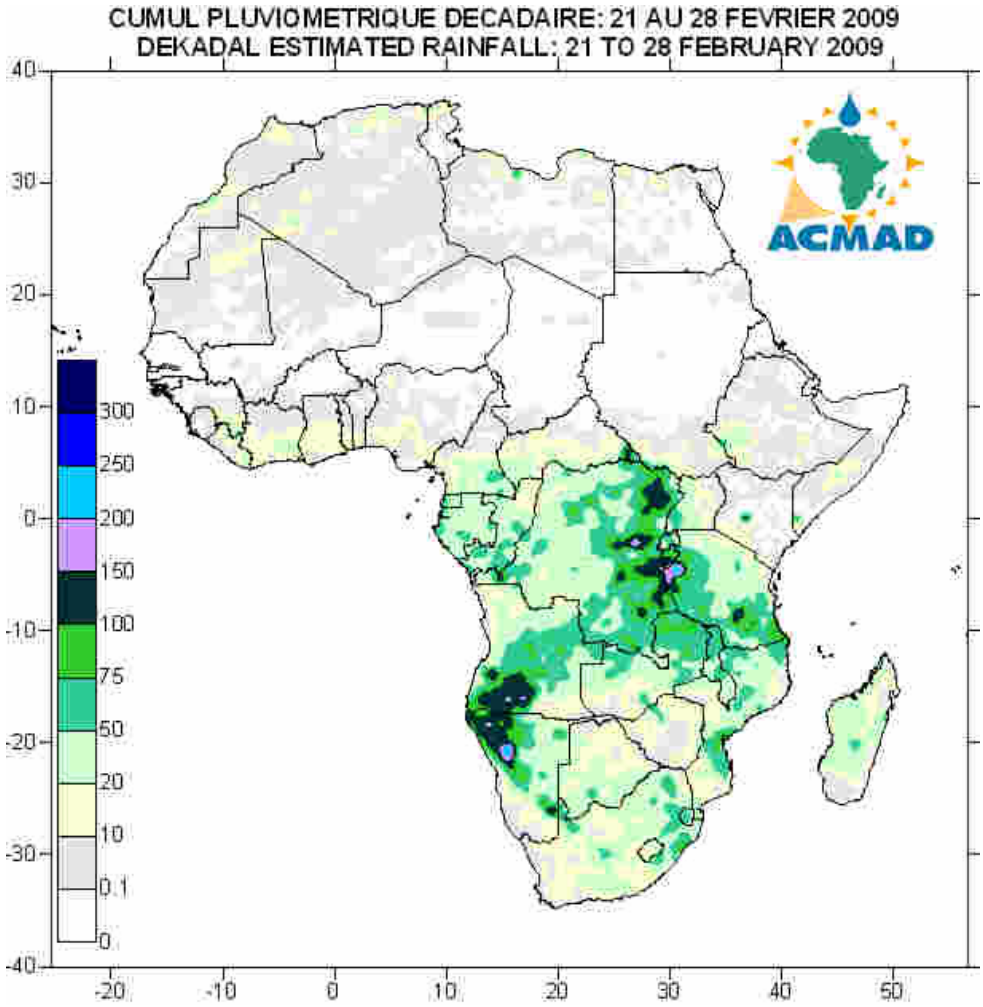
(Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the third dekad of February, 2009 shows rainfall activities increase over southern Africa countries, central Africa countries and GHA countries, while Gulf of Guinea countries experienced spatial rainfall decrease. In summary:

- **North Africa countries:** experienced localized rainfall amounts ranging from 10mm to 50mm over northern Morocco, Algeria, Tunisia and Libya.
- **The Sahel:** countries were dominated by the effects of Harmattan winds with widespread dust episodes.
- **Gulf of Guinea countries :** spatial and intensity of rainfall decrease recording amounts ranging from 10mm to 50mm intensifying over southern Cameroon to about 75mm.
- **Central Africa countries:** had rainfall intensity increase recording amounts ranging from 10mm to 150mm with localized peaks between 150mm to 250mm over eastern Democratic Republic of Congo and southern Angola.
- **GHA countries:** experienced slight spatial and intensity of rainfall increase recording amounts ranging from 10mm to 150mm with heaviest amounts between 150 to 250mm over Tanzania.
- **Southern Africa countries:** experienced spatial rainfall increase recording rainfall amounts ranging from 10mm to 100mm with heaviest amounts ranging between 100mm to 250mm over northern Namibia.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Beira in Mozambique and Kigoma in Tanzania. The lowest temperature of 2.0°C was recorded at Alger (Dar-El-Bieida) in Algeria while the highest temperature of 38.9°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	0	0	31,6	25,3
2	Abuja	0	0	37,1	24,0
3	Accra	0	0	33,0	26,3
4	Addis Abéba	0	0	27,2	9,4
5	Agadez	0	0	33,5	19,8
6	Alger(Dar El Beida)	1	1	17,4	2,0
7	Antananarivo	8	2	27,2	16,5
8	Bamako-Senou	0	0	37,2	24,9
9	Bangui	2	1	33,5	23,0
10	Banjul	0	0	30,6	18,0
11	Beira	102	4	31,0	24,7
12	Bilma	0	0	29,9	14,1
13	Bobo Dioulasso	0	0	37,9	25,2
14	Brazzaville	71	5	30,6	22,6
15	Bujumbura	1	1	-	-
16	Casablanca	0	0	19,9	9,9
17	Conakry	0	0	30,9	-
18	Cotonou	0	0	32,4	27,8
19	Dakar-Yoff	0	0	22,5	17,4
20	Dar-es-Salaam	21	3	32,7	23,8
21	Djibouti	0	0	30,0	-
22	Douala	1	1	32,3	24,4
23	Durban	82	4	28,2	22,1
24	Entebbe	19	2	26,9	20,1
25	Francistown	23	2	28,1	17,4
26	Johannesbourg	44	6	24,2	15,5
27	Khartoum	0	0	36,2	21,3
28	Kigali	69	5	25,6	15,9
29	Kigoma	229	6	28,3	19,5
30	Kinshasa	81	4	30,8	23,0
31	Le Caire	1	1	19,5	11,8
32	Le Cap	0	0	26,9	16,8
33	Libreville	76	6	30,5	23,4
34	Lilongwe	34	2	-	17,8
35	Lomé	22	1	33,4	26,1
36	Lusaka	19	4	28,2	18,0
37	Manzini	54	2	-	20,0
38	Maputo	15	2	32,6	23,8
39	Maseru	30	4	24,6	14,7
40	Maun	1	1	32,6	19,5
41	Mbeya	26	5	24,3	14,0
42	Nairobi	25	1	28,9	14,3
43	Nampula	3	1	-	22,5
44	N'Djamena	0	0	38,2	21,4
45	Niamey-Aéroport	0	0	38,6	23,4
46	Nouakchott	0	0	26,8	16,9
47	Ouagadougou	0	0	38,9	24,2
48	Plaisance	21	6	30,2	24,3
49	Sal	0	0	23,4	18,3
50	Seretse-Khama Airport	37	4	28,6	18,3
51	Seychelles	0	0	30,9	25,7
52	Tamanrasset	0	0	24,2	9,3
53	Toalagnaro	1	1	31,6	-
54	Tombouctou	0	0	36,6	20,2
55	Tripoli	18	5	15,9	5,4
56	Tunis	26	5	14,9	6,8
57	Windhoek	48	7	25,4	15,6
58	Zinder	0	0	35,0	20,9

NOTE: **0** means no rain;

- means no temperature data available Data Source: ACMAD / GTS

3.OUTLOOK FOR DEKAD (11th – 20th 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 southern Africa countries. In summary:

- **North Africa countries:** expected to experience rainfall decrease with amounts ranging from 10mm to 75mm over north Africa.

- **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.

- **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 isolated peaks of about 150mm to 250mm over some parts.

- **Southern Africa countries:** will maintain spatial distrution of rainfall recording amounts ranging from 10mm to 100mm with peaks of about 150mm and above over Zambia, Zimbabwe, Malawi, 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, extreme southern part of the Sahel, parts of central Africa and GHA countries including Namibia, Botswana and northern part of South Africa. 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, Namibia, Botswana, Zambia, Malawi, Zimbabwe, Mozambique, eastern South Africa and Madagascar.

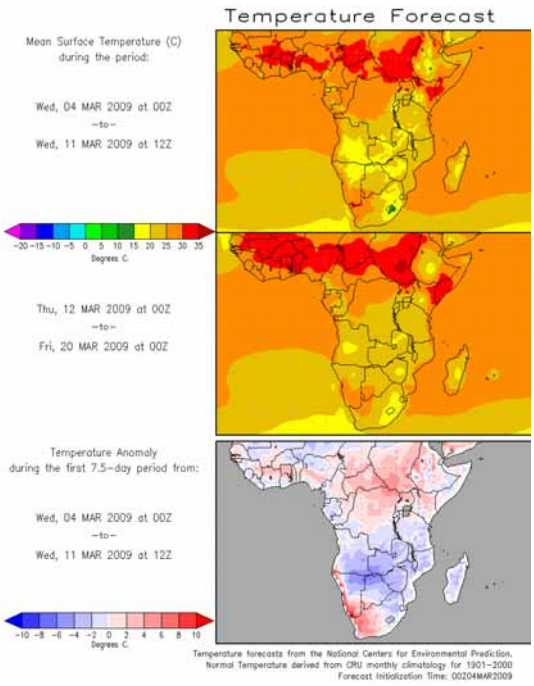
3.4 IMPACTS

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 with 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.

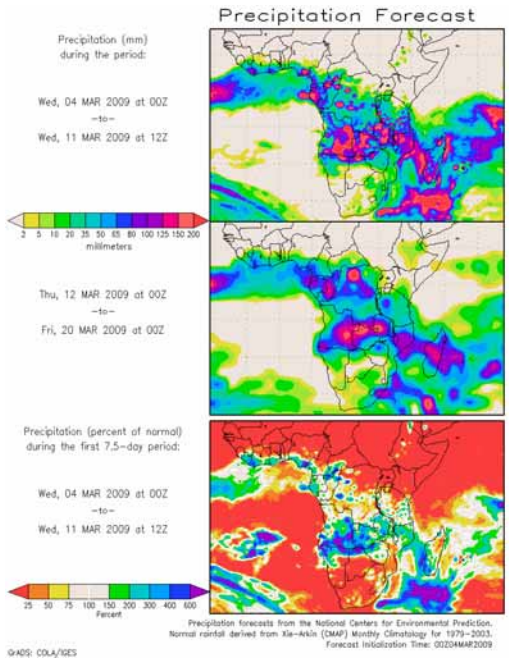
Agriculture and food security: The applications of climate information in agricultural production are of crucial importance. We often emphasize on the importance of well documented onset dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop yield assessments in 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 countries' strategies for adaptation to Climate Change are vital.



Source : COLA



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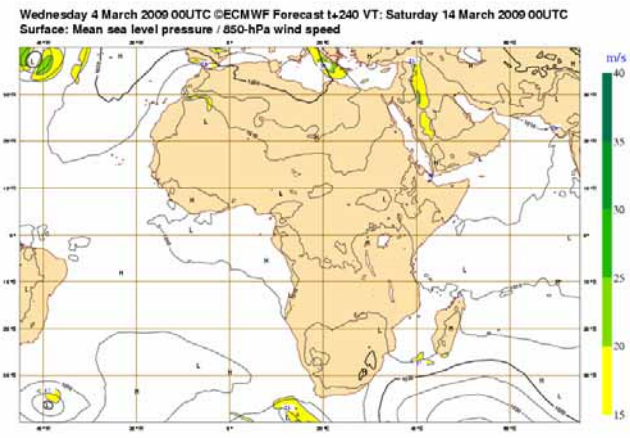
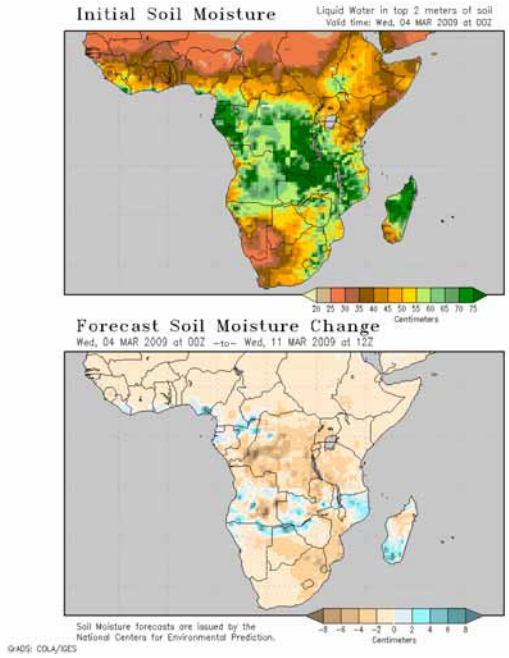


Source: ECMWF



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