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

Ten Day Climate Bulletin
N° 05 Year 2009

Dekad of 11 to 20 February, 2009

HIGHLIGHT: The areas with high TI regime above 242°K experienced heavy rainfall with highest of about 200mm over Namibia linked to the highest TI regime of 243°K, a threshold value for heavy rains with floods.

1. GENERAL SITUATION:

1.1 SURFACE

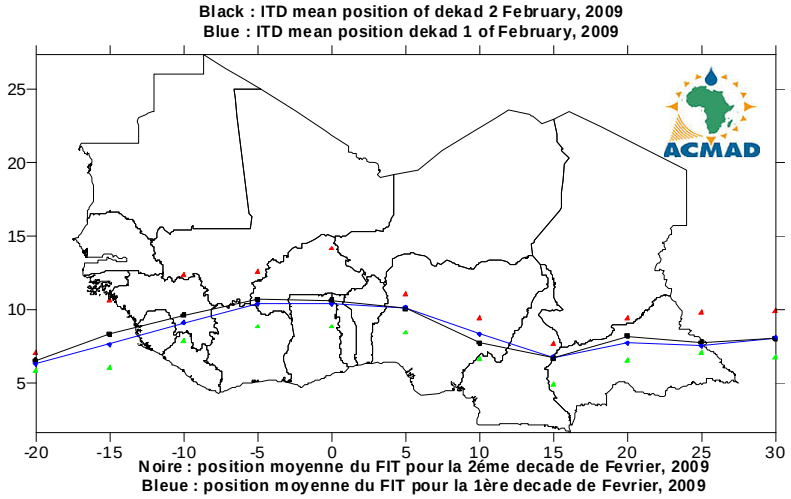
• **Azores high:** Pressure of 1030hPa strengthened by 3hPa and shifted northeast with a mean position at 45°N/15°W extending a ridge over north Atlantic Ocean.

• **St. Helena high:** Pressure of 1027hPa maintained its intensity and shifted northwest at 36°S/14°W with an extended ridge over south Atlantic Ocean.

• **Mascarene high:** Pressure of 1027hPa strengthened slightly by 2hPa compared to the past dekad and shift northwest. Its had a mean position at 39°S/60°E with extended ridge over the Indian Ocean.

• **Equatorial thermal low:** Pressure at 1006hPa deepened slightly by 2hPa compared to the past dekad and shifted east at 11°N/06°E with an extended trough over Mali, Burkina Faso, northwest Nigeria and south Chad.

• **Inter-Tropical Discontinuity (ITD):** Between the first dekad and second dekad of February, 2009, the ITD had a slight northward movement over western part of Gulf of Guinea countries. However, it maintained a quasi-stationary position over the eastern portion. It's mean position was observed at 6.6°N and 8.4°N over longitude 20°W and 15°W respectively; at 9.6°N over southeast Guinea; at 10.7°N over extreme southwest Burkina Faso and extreme northeast Ghana respectively; at 10.1°N and 7.8°N over west and southeast Nigeria respectively; at 6.7°N over extreme east Cameroon; at 8.2°N and 7.8°N over central north and extreme east of Central African Republic respectively and at 8.1°C over south Sudan.



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

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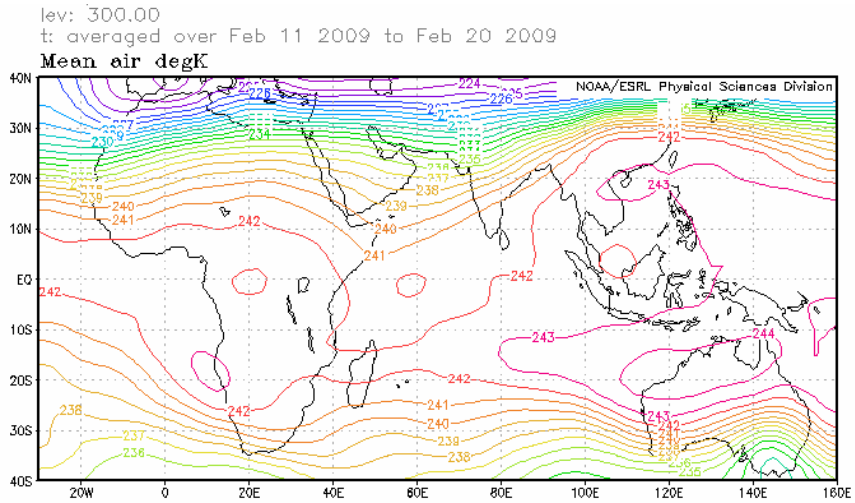
1.2 TROPOSPHERE

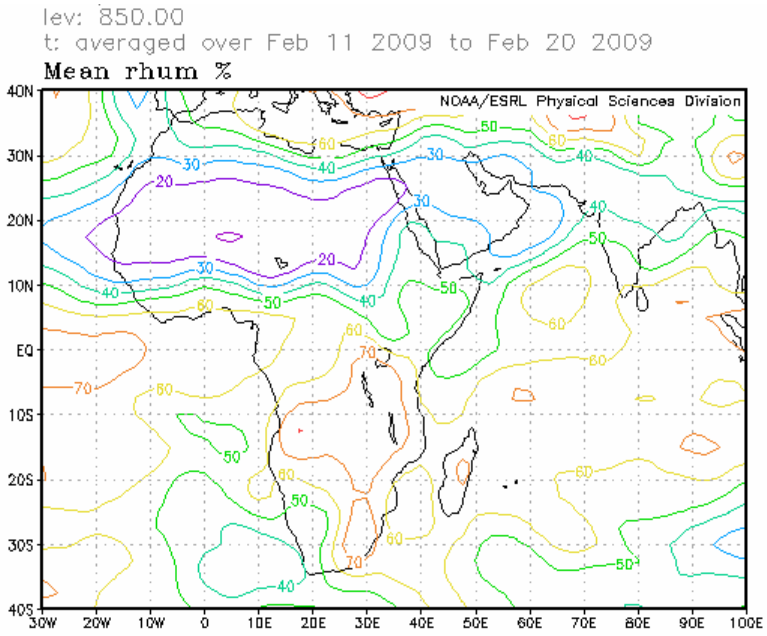
- **Monsoon:** Monsoon influx was moderate (5.5 to 12.5m/s) at 925hPa level over south Togo, Benin and Nigeria.

- **Thermal Index (TI):** In the second 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, 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 second dekad of February, 2009 over western part of Gulf of Guinea countries, southern parts of central Africa countries, western parts of GHA and eastern part of southern Africa countries including central Madagascar. The Sahara, the Sahel countries, northern part of Gulf of Guinea countries, the 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 second dekad of February, 2009 shows rainfall activities increase over southern Sahel countries, Gulf of Guinea countries, southern Africa countries and central Africa countries, while GHA and northern Africa countries experienced spatial rainfall decrease. In summary:

- **North Africa countries :** experienced spatial and intensity of rainfall decrease recording localized amounts ranging from 10mm to 75mm over central Morocco and extreme north Tunisia.

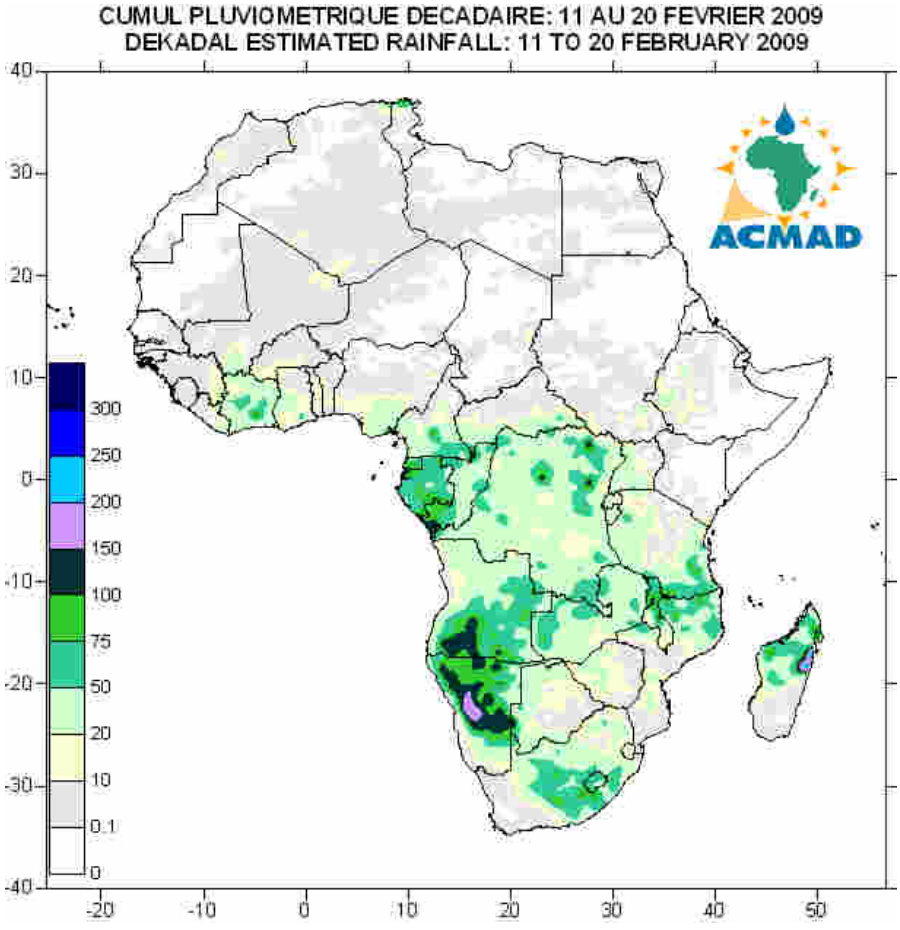
- **The Sahel:** countries were dominated by the effects of Harmattan winds with localized dusty conditions. Some slight rainfall activities were observed over south Mali and Burkina Faso ranging from 10mm to 50mm.

- **Gulf of Guinea countries :** spatial and intensity of rainfall increase recording amounts ranging from 10mm to 100mm with localized peaks of about 150mm over Côte d'Ivoire and Ghana.

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

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

- **Southern Africa countries:** recorded rainfall amounts ranging from 10mm to 100mm with heaviest amounts ranging between 100mm to 250mm over Namibia and Madagascar.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows heavy rainfall recorded over Libreville in Gabon and Seychelles in Seychelles. The lowest temperature of 2.8°C was recorded at Alger (Dar-El-Bieida) in Algeria while the highest temperature of 38.4°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	0	0	31,8	24,7
2	Abuja	0	0	36,1	23,7
3	Accra	12	1	32,7	25,5
4	Addis Abéba	0	0	-	10,3
5	Agadez	0	0	34,0	19,3
6	Alger(Dar El Beida)	0	0	15,5	2,8
7	Antananarivo	0	0	25,6	16,9
8	Bamako-Senou	0	0	34,5	22,1
9	Bangui	29	5	33,6	22,3
10	Banjul	0	0	31,8	17,0
11	Beira	13	2	-	24,4
12	Bilma	0	0	33,7	13,1
13	Bobo Dioulasso	0	0	35,4	24,0
14	Brazzaville	84	4	30,9	22,5
15	Casablanca	0	0	16,8	10,0
16	Conakry	4	1	31,1	-
17	Cotonou	0	0	32,1	26,7
18	Dakar-Yoff	0	0	23,1	17,3
19	Dar-es-Salaam	29	4	33,8	23,3
20	Douala	37	2	31,7	24,3
21	Durban	19	5	27,4	21,2
22	Entebbe	7	2	27,4	19,7
23	Francistown	8	2	29,9	17,8
24	Johannesbourg	59	2	25,3	15,7
25	Khartoum	0	0	35,7	20,1
26	Kigali	19	3	26,4	16,0
27	Kigoma	14	4	29,4	19,9
28	Kinshasa	15	2	31,1	22,5
29	Le Caire	0	0	21,9	13,0
30	Le Cap	0	0	24,8	15,8
31	Libreville	103	4	30,4	23,6
32	Lilongwe	6	1	-	-
33	Lomé	7	1	32,8	26,1
34	Lusaka	9	3	28,5	17,3
35	Manzini	14	3	-	19,9
36	Maputo	19	2	32,0	23,4
37	Maseru	47	6	25,3	13,5
38	Maun	16	3	32,6	20,3
39	Mbeya	29	2	23,7	13,8
40	Monrovia	0	0	32,0	-
41	Nairobi	0	0	28,6	14,1
42	Nampula	69	4	31,9	21,4
43	N'Djamena	0	0	38,4	20,6
44	Niamey-Aéroport	0	0	37,6	23,3
45	Nouakchott	0	0	28,7	16,2
46	Ouagadougou	1	1	35,5	23,9
47	Plaisance	60	10	30,8	24,9
48	Sal	0	0	23,2	18,5
49	Seretse-Khama Airport	0	0	30,6	18,5
50	Seychelles	135	7	29,7	24,7
51	Tamanrasset	0	0	23,9	9,8
52	Tombouctou	0	0	33,7	19,0
53	Tripoli	0	0	16,3	4,7
54	Tunis	58	8	12,7	7,0
55	Windhoek	70	5	26,9	15,4
56	Zinder	0	0	34,7	20,0

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

3.OUTLOOK FOR DEKAD (01st – 10th 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 southern Africa countries. In summary:

- **North Africa countries:** expected to experience rainfall increase with amounts ranging from 10mm to 100mm over north Morocco, Algeria and Tunisia.

- **The Sahel:** will continue to experience increased temperatures characterized by Harmattan conditions with dusty episodes.

- **Gulf of Guinea countries:** will experience spatial and intensity of rainfall increase recording rainfall amounts ranging from 10mm to 100mm with maximum of about 150mm and above.

- **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 over some parts.

- **Southern Africa countries:** northern parts will experience significant increase in spatial and intensity of rainfall recording amounts ranging from 10mm to 200mm with peaks of about 300mm and above over Namibia, Botswana, 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 northern part of Southern Africa 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 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, Namibia, Botswana, Zambia, Zimbabwe, Mozambique and Madagascar.

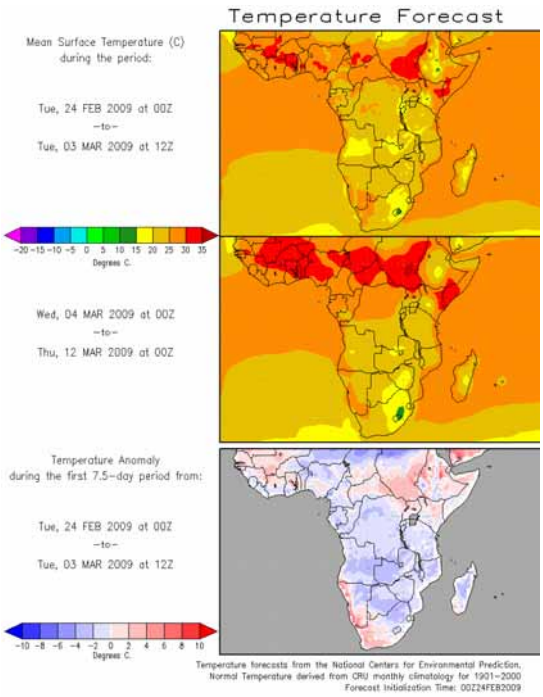
3.4 IMPACTS

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 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 southern Africa countries namely Angola, Namibia, Zambia, Malawi, Zimbabwe, eastern South Africa, Mozambique and Madagascar are expected to continue getting heavy rainfall associated with floods and increased risk on outbreak of water borne diseases such as cholera. The health authorities need to continue the health care services to protect lives of the vulnerable communities.

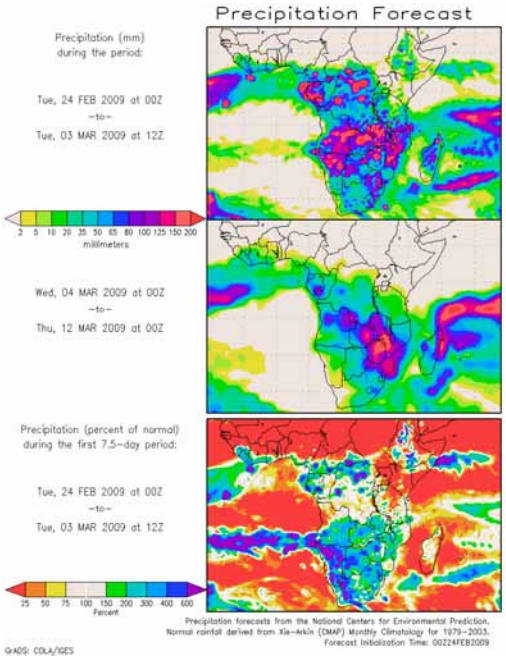
Agriculture and food security: The applications of climate information in agricultural production are of crucial importance. We often emphasize on the importance of well documented onset dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop yield assessments in 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 seasons. The drought-tolerant crops can be grown in zones where the prevailing soil moisture is the major climate constraint on 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.

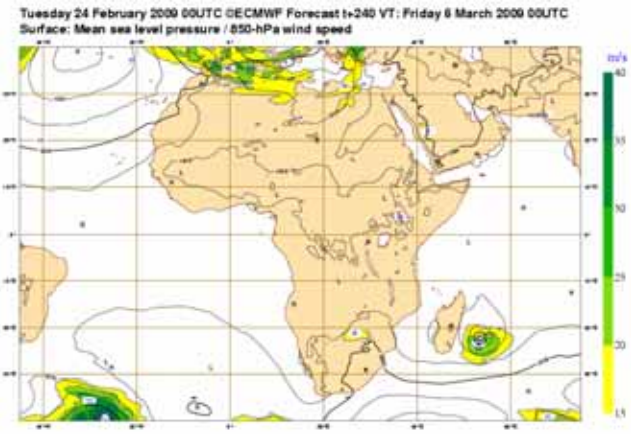
African Natural Ecosystems: There is a need to invest in the rehabilitation of our presently degraded rainfall catchments areas within our natural ecosystems through enhanced national conservation strategies such as national tree planting, afforestation and soil conservation programmes during rainy seasons to minimize soil loss due to heavy runoff. Countries' programmes for adaptation to Climate Change are vital.



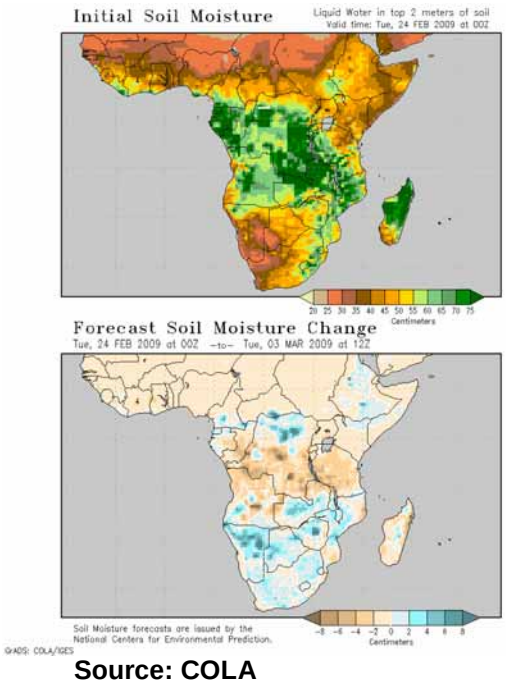
Source : COLA



Source : COLA



Source: ECMWF



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