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

Ten Day Climate Bulletin
N° 04 Year 2009

Dekad of 01 to 10 February, 2009

HIGHLIGHT: The areas with high TI regime above 242°K were characterized by heaviest rainfall ranging between 200mm to 300mm over southern Tanzania, east Zambia, Malawi, north Namibia, north Mozambique and Madagascar.

1. GENERAL SITUATION:

1.1 SURFACE

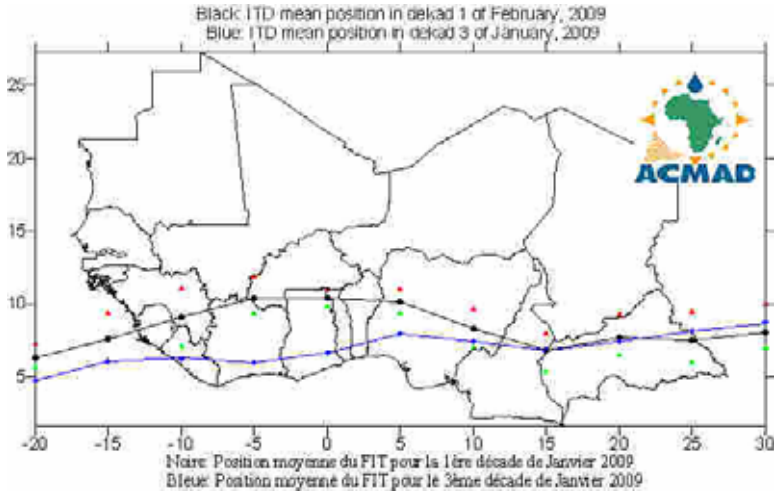
- **Azores high:** Pressure of 1027hPa weakened slightly by 1hPa and shifted northeast with a mean position at 32°N/24°W extending a ridge over south Moroc and Mauritania.

- **St. Helena high:** Pressure of 1027hPa strengthened slightly by 2hPa and shifted southeast at 38°S/06°W with an extended ridge over south Atlantic Ocean.

- **Mascarene high:** Pressure of 1025hPa strengthened significantly by 4hPa compared to the past dekad and shift southeast. Its had a mean position at 40°S/64°E with extended ridge over the Indian Ocean.

- **Equatorial thermal low:** Pressure at 1008hPa deepened slightly by 1hPa compared to the past dekad and shifted northwest at 11°N/05°E with an extended trough over Burkina Faso, north Ghana and Benin, southwest Niger, northwest Nigeria, south Mali and Chad.

- **Inter-Tropical Discontinuity (ITD):** Between the third dekad of January and the first dekad of February, 2009, the ITD had significant northward movement over western part of Gulf of Guinea countries. However, its maintained a quasi-stationary position over central Cameroon, Central African Republic and south Sudan. It's mean position was observed at 6.3°N and 7.6°N over longitude 20°W and 15°W respectively; at 9.1°N over southeast Guinea; at 10.4°N over extreme southwest Burkina Faso and extreme northeast Ghana respectively; at 10.2°N and 8.4°N over west and east Nigeria respectively; at 6.8°N over extreme east Cameroon; at 7.8°N and 7.6°N over central and extreme east of Central African Republic respectively and at 8.1°C over south Sudan.

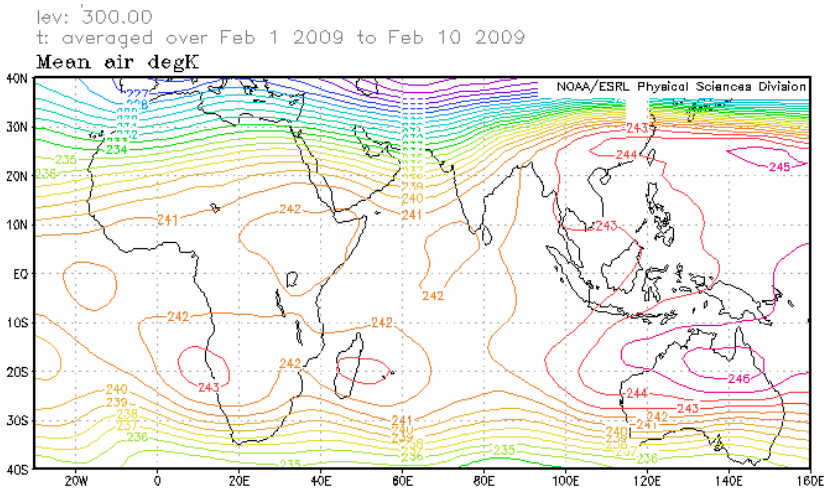


The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

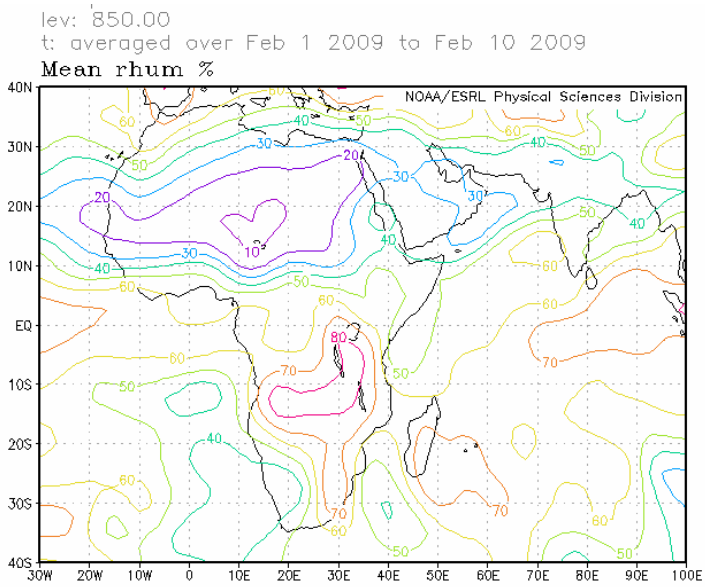
- **Monsoon:** Monsoon influx was weak (1 to 5 m/s) at 925hPa level over south Liberia, Côte d'Ivoire and Cameroon and moderate (5.5 to 12.5m/s) over south Togo, Benin and Nigeria.

- **Thermal Index (TI):** In the first dekad of February, 2009, the thermal index (TI) regime at 300hPa, map shown below, had TI regime value of 242°K over GHA countries, extreme southern and northern part parts of central Africa countries and 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 is located over south Angola, north Namibia, central Madagascar, eastern Asia, Japan and Australia.



(Data Source: NOAA/NCEP)

- **Relative Humidity (RH):** The 850hPa map below shows high RH (>70%) in the first dekad of February, 2009 over southern parts of central Africa, western parts of GHA countries, and eastern part of southern Africa countries. 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%).



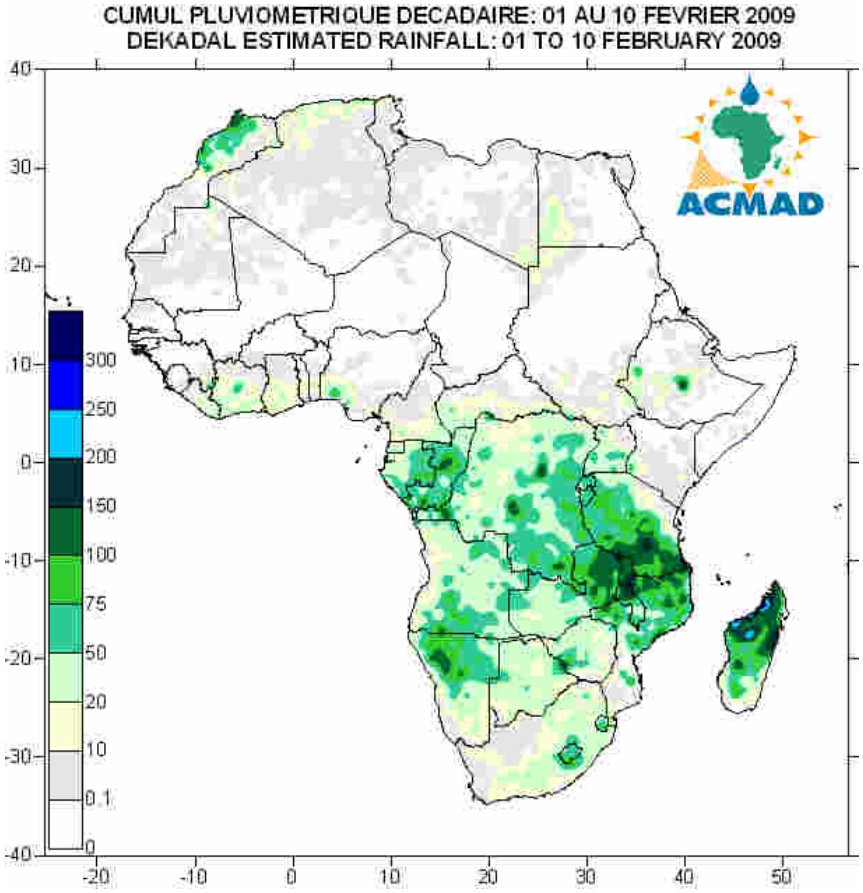
(Data Source: NOAA/NCEP)

2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the first dekad of February, 2009 shows rainfall activities increase over northern Africa countries, Gulf of Guinea countries, southern Africa countries and central Africa countries, while GHA countries experienced spatial rainfall decrease. Over the Sahel and there is no significant change. In summary:

- **North Africa countries :** experienced spatial and intensity of rainfall increase recording amounts ranging from 10mm to 100mm with peaks of 100mm to 150mm over north Morocco.
- **The Sahel:** countries were dominated by the effects of Harmattan winds with localized dusty conditions.
- **Gulf of Guinea countries :** spatial and intensity of rainfall increase recording amounts ranging 10mm to 75mm with localized peaks of about 100mm over central Côte d'Ivoire and southwest Nigeria.
- **Central Africa countries:** had spatial rainfall increase recording amounts ranging from 10mm to 150mm with localised peaks between 150mm to 200mm.
- **GHA countries:** experienced slight spatial rainfall decrease recording amounts ranging from 10mm to 100mm with localized peaks ranging between 100mm to 200mm over southern Tanzania and central Ethiopia.
- **Southern Africa countries:** had slight spatial rainfall increase recording amounts ranging from 10mm to 200mm with heaviest amounts ranging between 200 to 300mm over east Zambia, Malawi, Namibia, Mozambique and Madagascar.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows moderate rainfall recorded over Kinshasa in Democratic Republic of Congo, Brazzaville in Congo and Kigali in Rwanda. The lowest temperature of 7.8°C was recorded at Alger (Dar-El-Bieida) in Algeria while the highest temperature of 38.5°C was recorded at Niamey in Niger.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	1	1	31,8	25,2
2	Abuja	0	0	36,5	22,9
3	Accra	2	1	32,4	25,6
4	Addis Abéba	0	0	23,9	8,6
5	Alger(Dar El Beida)	21	4	18,0	7,8
6	Antananarivo	0	0	28,0	17,7
7	Bamako-Senou	0	0	36,0	21,7
8	Bangui	7	1	34,1	22,5
9	Banjul	0	0	31,4	17,2
10	Beira	4	1	-	-
11	Bissau	0	0	33,7	-
12	Brazzaville	47	3	31,7	22,2
13	Bujumbura	4	2	-	-
14	Bulawayo	12	1		
15	Casablanca	12	1	-	-
16	Conakry	0	0	31,0	-
17	Cotonou	0	0	32,3	27,3
18	Dakar-Yoff	0	0	22,8	16,7
19	Dar-es-Salaam	10	1	33,6	25,5
20	Douala	0	0	32,7	24,9
21	Entebbe	1	1	25,8	18,6
22	Francistown	24	1	-	-
23	Harare	5	1	-	16,7
24	Khartoum	0	0	35,5	20,9
25	Kigali	46	2	25,3	16,5
26	Kinshasa	56	2	31,8	22,1
27	Le Caire	0	0	24,2	13,2
28	Libreville	20	2	30,0	24,4
29	Lilongwe	14	2	-	17,3
30	Lomé	0	0	32,9	26,0
31	Lusaka	21	5	27,4	17,4
32	Manzini	38	4	-	-
33	Maseru	35	2	26,8	-
34	Mbeya	10	1	-	-
35	Monrovia	0	0	32,4	-
36	Nairobi	0	0	26,9	14,1
37	N'Djamena	0	0	37,5	17,2
38	Niamey-Aéroport	0	0	38,5	19,9
39	Nouakchott	0	0	27,8	15,4
40	Ouagadougou	0	0	38,0	21,1
41	Plaisance	38	3	31,4	24,2
42	Sal	0	0	23,1	18,2
43	Seretse-Khama Airport	19	1	-	-
44	Seychelles	19	1	30,6	25,7
45	Tripoli	0	0	23,3	8,8
46	Tunis	3	3	17,8	9,3
47	Windhoek	35	3	28,1	17,0

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

3.OUTLOOK FOR DEKAD (21st – 28th FEBRUARY, 2009)

3.1 RAINFALL

The ITD will migrate slightly northward leading to an increase in rainfall in rainfall over Gulf of Guinea countries. The rainfall will 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 localized 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 over coastal zone.

- **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:** 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, northern South Africa, north Mozambique and north 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 high soil moisture increase are mostly south of Equator where the highest soil moisture increase is expected in parts of Angola, Namibia, Botswana, Great Lakes countries, Tanzania, Zambia, Mozambique, Madagascar and northern South Africa.

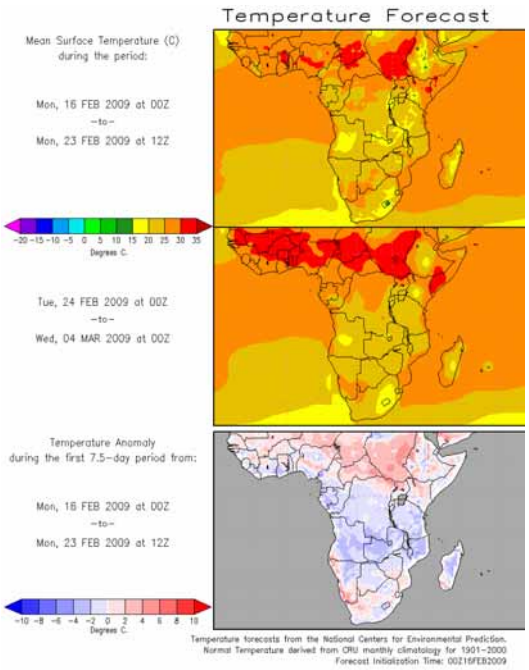
3.4 IMPACTS

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 central Africa countries, GHA countries and southern Africa countries with high humidity/rainfall and 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 get 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.

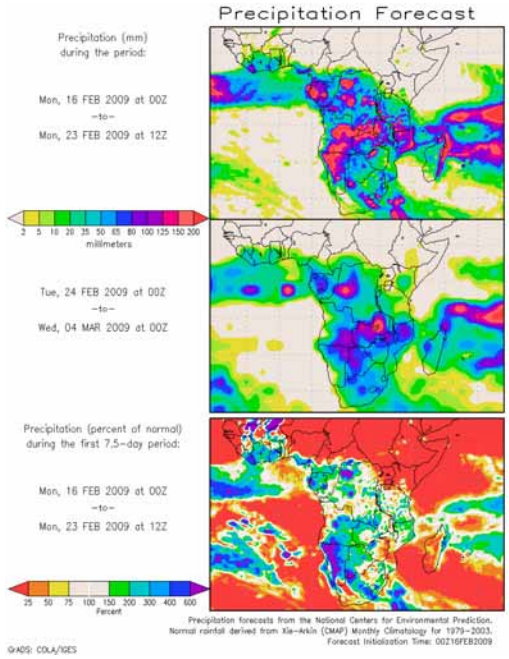
- **Agriculture and food security:** The applications of climate information in agricultural production are of crucial importance. We often emphasize on the importance of well documented onset and cessation dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop 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.



Source : COLA



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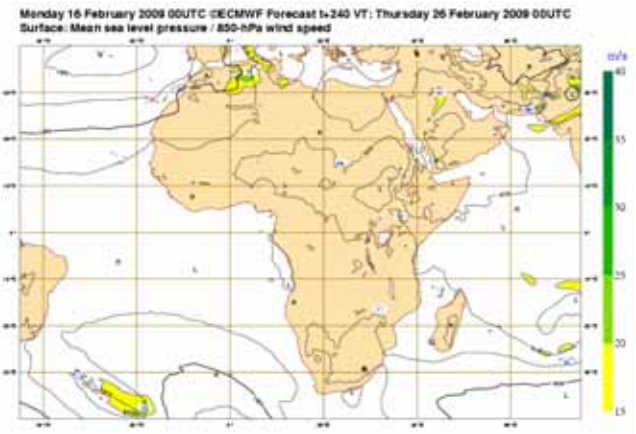
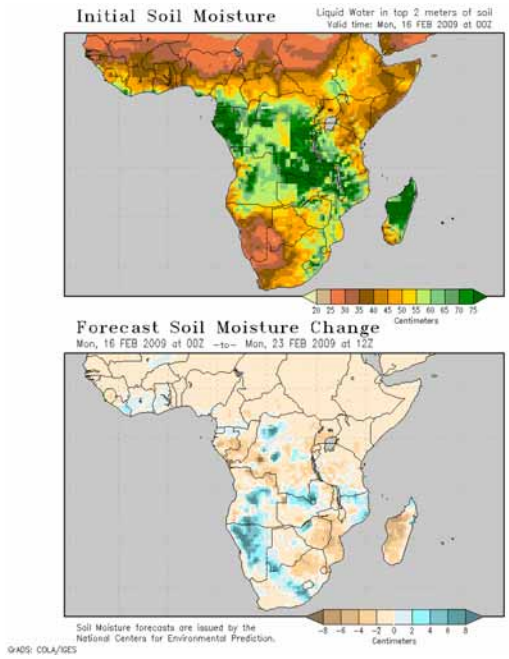


Source: ECMWF



Source: COLA