

Ten Day Climate Bulletin N° 03 Year 2009

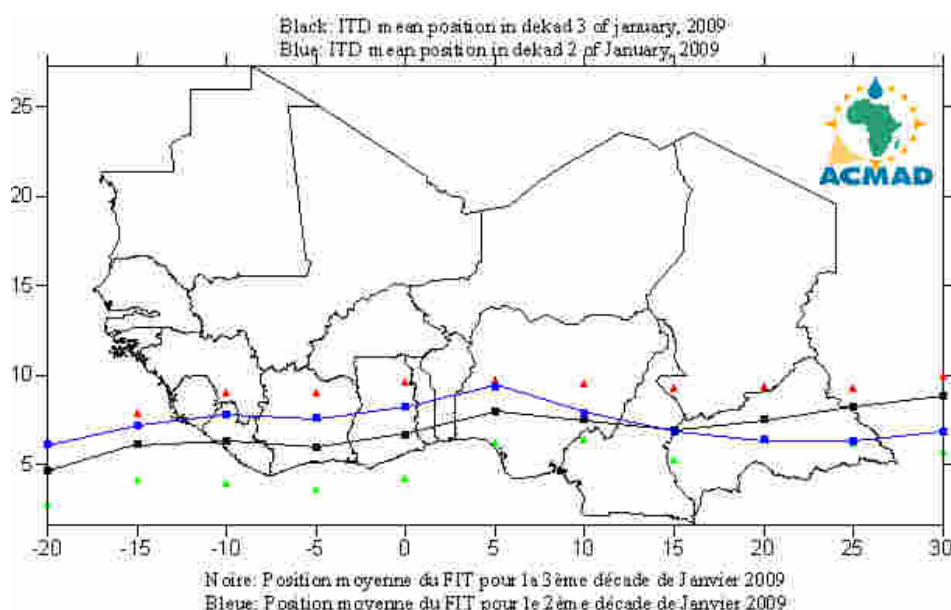
Dekad of 21 to 31 January, 2009

HIGHLIGHT: The dekad was characterized by severe deficits in rainfall over West Africa and North Africa countries.

1. GENERAL SITUATION:

1.1 SURFACE

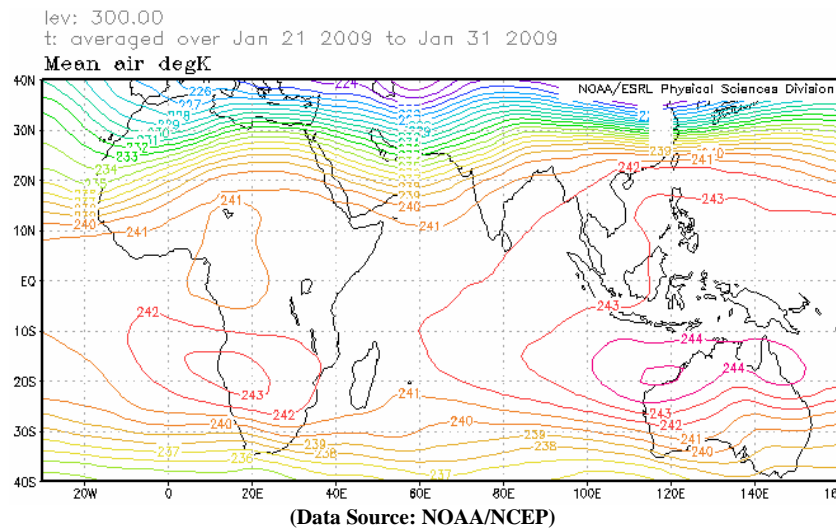
- **Azores high:** Pressure of 1028hPa weakened by 3hPa and shifted south with a mean position at 31°N/26°W extending a ridge over south Moroc, Mauritania and Mali.
- **St. Helena high:** Pressure of 1025hPa weakened by 4hPa and shifted north at 36°S/10°W with an extended ridge over south Atlantic Ocean.
- **Mascarene high:** Pressure of 1021hPa weakened by 3 hPa compared to the past dekad. Its had a mean position at 36°S/59°E with extended ridge over the Indian Ocean.
- **Saharan thermal low:** Pressure at 1009hPa filled up slightly by 1hPa compared to the past dekad and shifted east at 10°N/10°E with an extended trough over central Nigeria, north Cameroon and south Chad.
- **Inter-Tropical Discontinuity (ITD) :** Between the second and the third dekad of January, 2009, the ITD had southward movement over western part of Gulf of Guinea countries and moved towards the north over Central African Republic and south Sudan. It's mean position was observed at 4.7°N and 6.1°N over longitude 20°W and 15°W respectively; at 6.3°N over west Liberia; at 6.0°N over south Côte d'Ivoire; at 6.7°N over southeast Ghana; at 8.0°N and 7.5°N over southwest and southeast Nigeria; at 6.9°N over extreme east Cameroon; at 7.5°N over central part of Central African Republic and at 8.2°C and 8.8°C over southwest and south Sudan respectively.



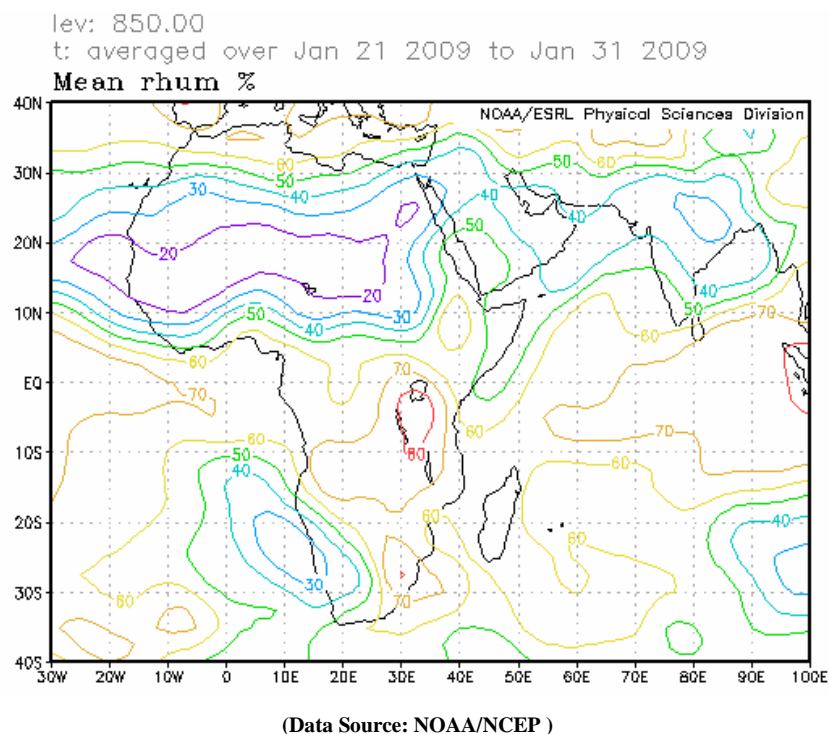
The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

- **Monsoon:** Monsoon influx was weak (1 to 5 m/s) at 925hPa level over south Cameroon.
- **Thermal Index (TI):** In the third dekad of January, 2009, the thermal index (TI) regime at 300hPa, map shown below, had TI regime value of 242°K over extreme southern part of central Africa 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 characterized by high relative humidity as observed below. The thermal index regime maximum value of 243°K and above, associated with heavy rainfall with floods is located over south Angola, north Namibia, Botswana, eastern Asia, Japan and northern Australia.



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



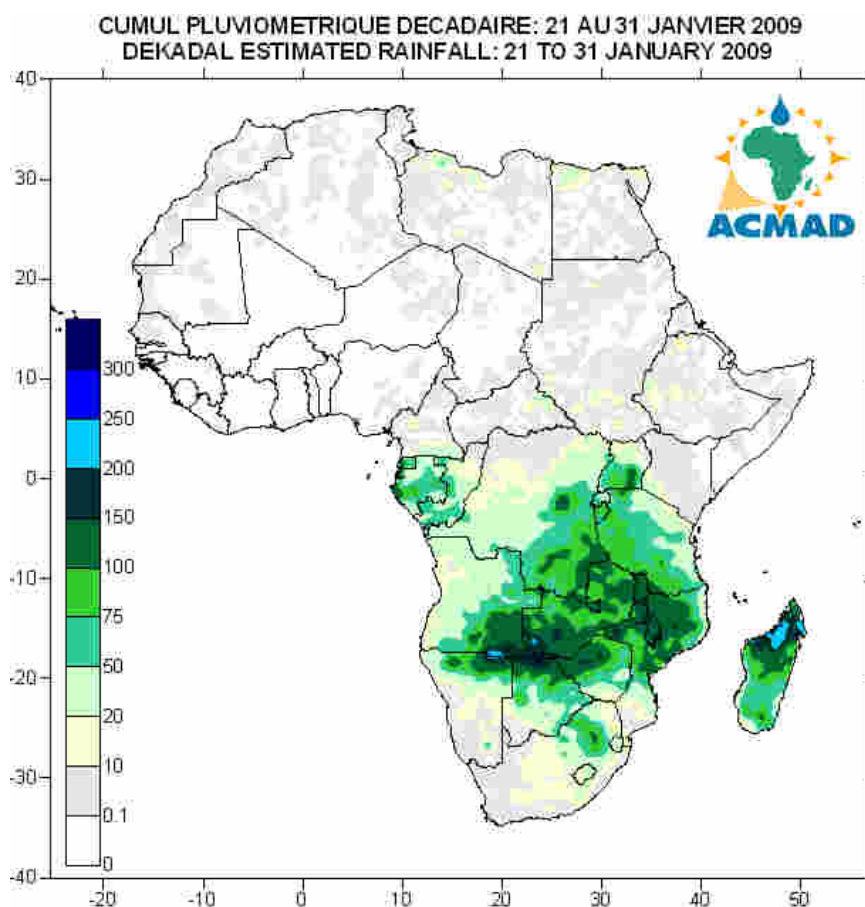
2. RAINFALL AND TEMPERATURE SITUATION

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge on the map below for the third dekad of January, 2009 shows spatial rainfall increase over GHA countries and southern Africa countries, while, northern Africa countries and central Africa countries experienced spatial rainfall decrease. Over the Sahel and Gulf of Guinea countries there is no significant change in weather conditions.

In summary:

- **North Africa countries** : experienced significant spatial and intensity of rainfall decrease recording amounts ranging from 10mm to 50mm over extreme north Libya and Egypt.
- **The Sahel:** countries were dominated by the effects of Harmattan winds with localized dusty conditions.
- **Gulf of Guinea countries** : there is no significant change in weather condition compared to the past dekad. Most of the countries are under Harmattan winds.
- **Central Africa countries:** had spatial rainfall increase recording amounts ranging from 10mm to 150mm intensifying to about 250mm over south Angola/north Namibia.
- **GHA countries:** experienced slight spatial and intensity of rainfall increase recording amounts ranging from 10 to 150mm with localized peaks.
- **Southern Africa countries:** had slight spatial rainfall increase recording amounts ranging from 10 to 200mm with heaviest amounts ranging between 200 to 250mm over extreme southwest Zambia and north Madagascar.



(Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows moderate rainfall recorded over Libreville in Gabon. The lowest temperature of 8.5°C was recorded at Alger (Dar-El-Baida) in Algeria while the highest temperature of 34.9°C was recorded at Khartoum in Sudan.

N°	STATIONS	Précipitations (mm)	Number of rainy days	Température Max mean (°C)	Température min mean (°C)
1	Abidjan	0	0	32,5	22,4
2	Abuja	0	0	34,0	21,7
3	Accra	0	0	32,7	24,2
4	Addis Abéba	1	1	-	-
5	Alger(Dar El Beida)	44	4	15,7	8,5
6	Antananarivo	0	0	28,1	16,5
7	Bamako-Senou	0	0	31,9	16,3
8	Bangui	4	2	33,8	21,5
9	Banjul	0	0	29,6	16,2
10	Bissau	0	0	32,4	-
11	Brazzaville	31	1	31,1	22,6
12	Bujumbura	4	1	-	-
13	Casablanca	2	1	-	-
14	Conakry	0	0	29,8	-
15	Cotonou	0	0	31,7	23,4
16	Dakar-Yoff	0	0	23,5	17,1
17	Dar-es-Salaam	8	1	33,2	24,0
18	Douala	34	2	32,3	24,2
19	Entebbe	1	1	25,0	18,2
20	Harare	0	0	26,2	-
21	Khartoum	0	0	34,9	20,7
22	Kigali	8	2	25,5	15,5
23	Kinshasa	39	1	31,6	21,8
24	Le Caire	0	0	22,2	14,0
25	Libreville	68	4	30,0	23,1
26	Lilongwe	14	2	-	17,3
27	Lomé	0	0	33,2	22,8
28	Lusaka	31	2	27,2	18,7
29	Manzini	45	3	-	-
30	Maputo	4	1	31,5	24,3
31	Maseru	28	3	-	15,0
32	Monrovia	0	0	32,1	-
33	Nairobi	0	0	27,5	15,2
34	N'Djamena	0	0	34,6	17,4
35	Niamey-Aéroport	0	0	32,5	15,7
36	Nouakchott	0	0	27,6	14,3
37	Ouagadougou	0	0	32,5	16,3
38	Plaisance	8	4	31,8	24,4
39	Sal	0	0	23,2	18,1
40	Seychelles	0	0	30,3	24,4
41	Tripoli	1	1	18,6	9,2
42	Tunis	12	3	15,7	8,8
43	Windhoek	5	2	29,9	16,4

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 northward specially over the western Africa leading to light tending moderate rainfall activities over coastal part of Gulf of Guinea countries. The rainfall activities will increase over central and southern Africa countries. However, rainfall will decrease over Northern part of Gulf of Guinea countries, northern Africa countries, including southern Tanzania. In summary:

- **North Africa countries:** expected to increase in rainfall with amounts ranging from 10mm to 75mm over extreme north Morocco, Algeria and Tunisia.
- **The Sahel:** will continue to experience Harmattan conditions with localized dusty episodes.
- **Gulf of Guinea countries:** will experience slight spatial and intensity of rainfall increase recording rainfall amounts ranging from 10mm to 50mm with maximum of about 75mm over coastal zone.
- **Central Africa countries:** will experience slight spatial rainfall increase recording amounts ranging from 10mm to 200mm with peaks of above 250mm over Gabon, south Congo and South Angola.
- **GHA countries:** will record spatial rainfall decrease with amounts ranging from 10mm to 100mm with isolated peaks of about 150mm over extreme south Kenya, Tanzania and Great Lakes countries.
- **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 Zambia, Malawi, 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 will its will decrease over most part of central Africa countries and northern part of Southern Africa countries. The highest temperature above 35°C is expected over south Sudan will the lowest temperature of about 5°C is expected over north Morocco and north Algeria.

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 south of Equator where the highest soil moisture increase is expected in parts of Angola, Namibia, Botswana, Great Lakes countries, Zambia, Mozambique, Madagascar and South Africa.

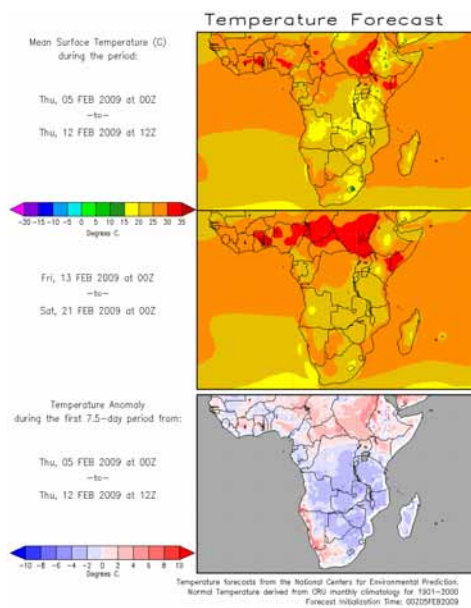
3.4 IMPACTS

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, Zambia, 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.

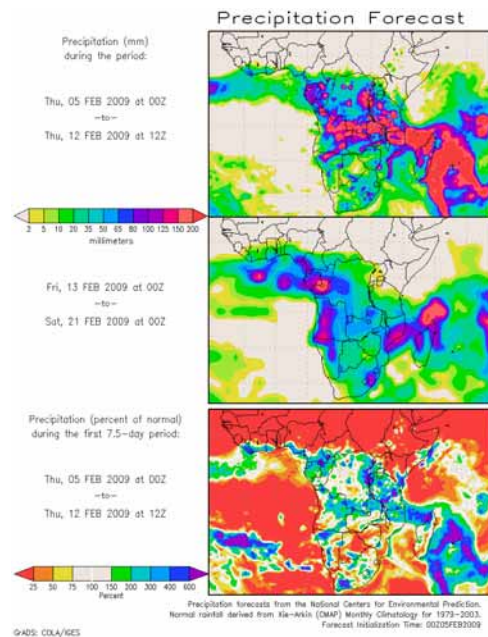
- **Agriculture and food security:** The applications of climate information in agricultural production are of crucial importance. We often emphasize on the importance of well documented onset and cessation dates of seasonal rainfall as well as monitoring of the phenological stages of crops for crop 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 issued by regional climate outlook forum (RCOF) such as the PRESAO, PRESAC, GHACOF or SARCOF for West Africa, central Africa, Greater Horn of Africa and southern Africa countries respectively.

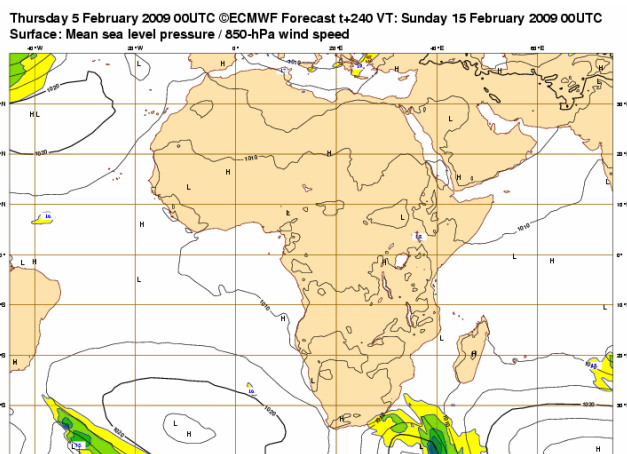
• **African Natural Ecosystems:** There is a need to invest in the rehabilitation of our presently degraded rainfall catchments areas within our natural ecosystems through enhanced national conservation strategies such as national tree planting, afforestation and soil conservation programmes during rainy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



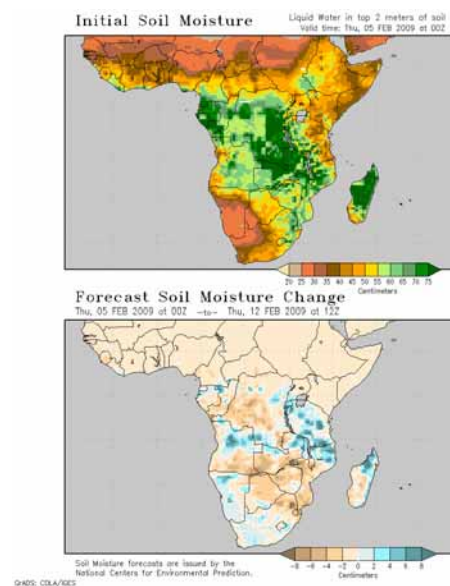
Source : COLA



Source : COLA



Source: ECMWF



Source: COLA