

Ten Day Climate Bulletin

N° 05

Dekad 11th to 20th February, 2010

HIGHLIGHT: Large parts of high estimated rainfall amounts were observed over eastern Democratic Republic of Congo, extreme southeastern Tanzania and northern Mozambique. The highest mean maximum temperature was recorded at N'Djamena in Chad while the lowest mean minimum temperature was observed at Alger Dar-El Beida in Algeria.

1. GENERAL SITUATION

Subsection 1.1 provides the strengths of the surface pressure systems, the ITD displacement while the subsection 1.2 on the Troposphere gives a brief on monsoon, thermal index regimes and relative humidity.

1.1 SURFACE

- **Azores high pressure:** of 1016hPa with a W-E axis weakened significantly by 6hPa and shift southwest compared to the past dekad. Its centre was located at about 20°N/40°W extending a ridge over North Atlantic Ocean.
- **Saharan Thermal Low:** Pressure at 1007 hPa centred at about 12°N/02°E, deepened slightly by 1hPa and shifted northwest compared to the past dekad. Its trough was extended over north Burkina Faso, southwest Niger, north Nigeria and south Chad.
- **St. Helena high:** Pressure of 1023 hPa with a W-E axis strengthened slightly by 1 hPa and shifted southeast compared to the previous dekad. Its mean position was at 33°S/15°W, extending a ridge over South Atlantic Ocean.
- **Mascarene high:** Pressure of 1024 hPa strengthened by 4hPa compared to the past dekad and shifted southwest. Its mean position was located at 36°S/65°E with an extended ridge over east Madagascar.

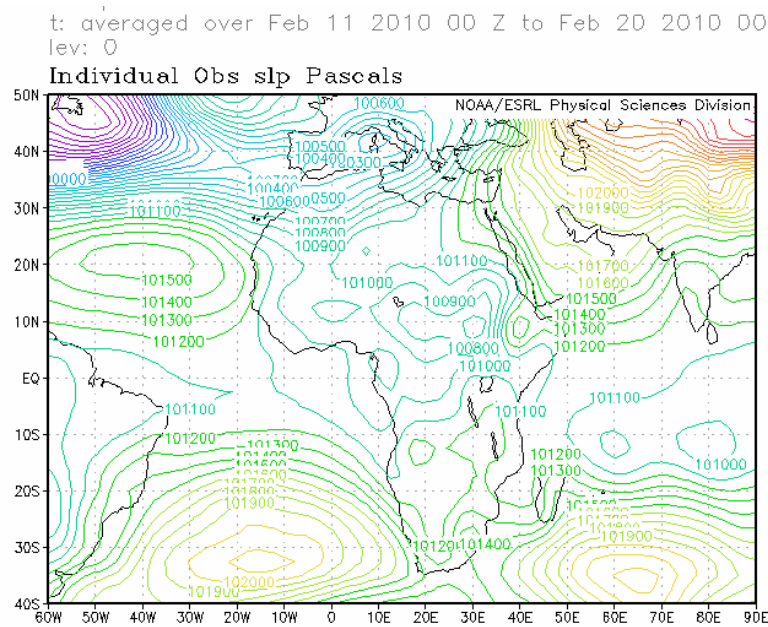


Figure 1: Mean Sea Level Pressure (Source: NOAA/NCEP/ESRL: PSD)

- **Inter-Tropical Discontinuity (ITD)**

Between the first dekad (blue line) and the second dekad (black) of February, 2010, the ITD moved southwards over the extreme west part of the Gulf of Guinea countries while in the rest of the subregion the ITD had northward migration particularly in the central part where the maximum displacement was about 300km (Figure2).

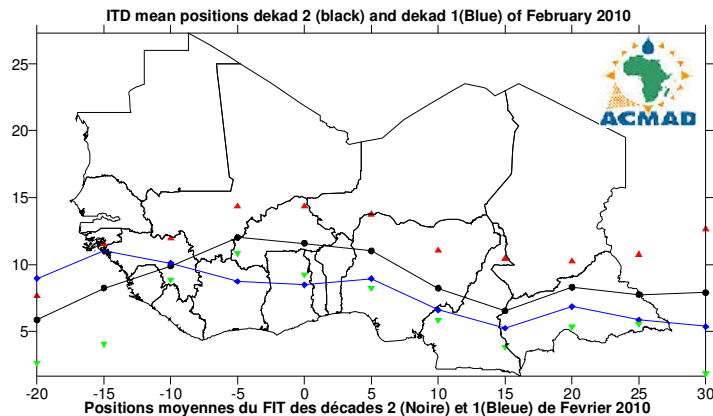


Figure 2: The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

1.2.1 Monsoon

Monsoon influx at 925hPa level was moderate (5,5 to 12,5 m/s) over Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin and south Nigeria during the dekad.

1.2.2 Thermal Index (TI)

In the second dekad of February, 2010, the thermal index (TI) regime at 300hPa in (figure 3), had the threshold value of 243°K extending about 10°N and 20°S covering central Africa, major part of GHA countries, northern part of southern Africa countries and northern Madagascar associated with high conditional instability that triggered heavy rains with floods in areas with high relative humidity shown in Figure 4.

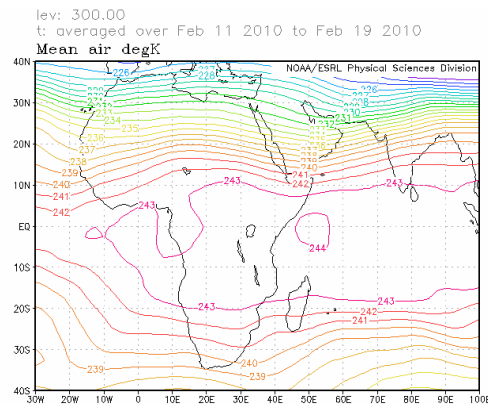


Figure 3: TI at 300hPa (Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH)

The 850hPa (Figure 4) shows high RH (>70%) in the second dekad of February, 2010 over southern part of Central Africa, parts of GHA countries and eastern and northern parts of Southern Africa countries. The Sahara, the Sahel, northern part of Gulf of Guinea countries and western part of southern Africa countries experienced dry conditions characterized by the lowest RH (40%).

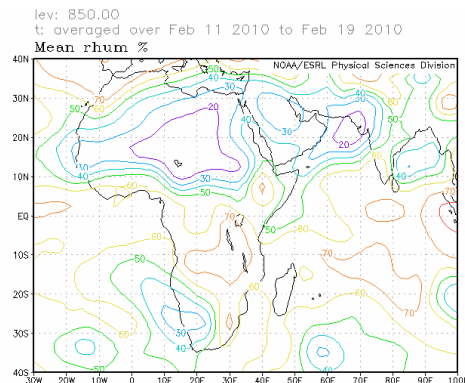


Figure 4 : RH at 850hPa (Source: NOAA/NCEP)

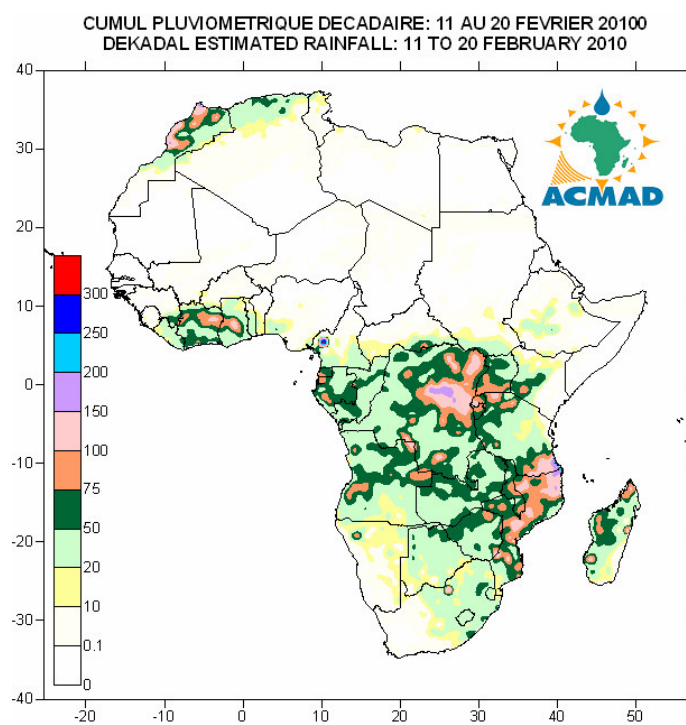
2. RAINFALL AND TEMPERATURE SITUATION

Subsection 2.1 provides a summary on estimated rainfall amounts and distribution while subsection 2.2 provides a Table showing stations' observed rainfall, number of rainy days, mean maximum and mean minimum temperatures.

2.1 RAINFALL

The rainfall estimate based on Satellite and Rain Gauge in Figure 5 below compared to that of the past dekad shows rainfall distribution increase over Northern Africa, Gulf of Guinea countries, Central Africa and GHA and Southern Africa countries. The Sahel countries continued to be under the influence of the Harmattan. In detail:

- **North Africa countries:** had increase in rainfall with amounts ranging between 10mm to 75mm over Morocco, Algeria and Tunisia with localized peaks ranging from about 100mm to 200mm.
- **The Sahel:** continued to experience dry and dusty conditions under the influence of the Harmattan.
- **Gulf of Guinea countries:** experienced significant increase in rainfall distribution and amounts, ranging from 10mm to 100mm with localized peaks of about 150mm intensifying to above 250mm over western Cameroon.
- **Central Africa countries:** had slight rainfall distribution increase with decrease in amounts ranging between 10mm to 100mm intensifying to about 200mm over Democratic Republic of Congo and northeast Angola.
- **GHA countries:** experienced slight increase in rainfall distribution with amounts ranging from 10mm to 150mm intensifying over southern Tanzania with maximum peak of about 250mm.
- **Southern Africa countries:** had rainfall increase with amounts ranging from 10mm to 100mm with peaks ranging from 100mm to 150mm over the northern part intensifying to 250mm over extreme northern Mozambique.



2.2 OBSERVED DATA

The Table below shows moderate cumulative rainfall recorded over Southern and Central Africa countries. The highest mean maximum temperature of 40.4°C recorded at N'Djamena in Chad while the lowest mean minimum temperature of 7.4°C was recorded at Alger Dar-El Beida in Algeria.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	4	2	33,2	26,6
2	Abuja	0	0	37,7	24,1
3	Accra	0	0	32,9	25,3
4	Agadez	0	0	37,6	19,3
5	Alger (Dar El Beida)	24	6	16,2	7,4
6	Antananarivo	6	1	27,9	17,5
7	Antsiranana	25	3	32,2	23,9
8	Bamako-Senou	0	0	38,1	21,8
9	Bangui	3	1	36,1	23,6
10	Banjul	0	0	31,6	18,4
11	Beira	13	2	30,9	25,0
12	Bilma	0	0	37,9	10,7
13	Bissau	0	0	34,2	19,3
14	Bobo Dioulasso	1	1	37,5	23,8
15	Brazzaville	0	0	34,0	24,1
16	Bulawayo	28	2	30,6	18,0
17	Casablanca	74	8	17,9	13,4
18	Conakry	0	0	31,0	24,5
19	Cotonou	2	2	33,4	27,1
20	Dakar-Yoff	0	0	25,2	19,0
21	Dar-es-Salaam	0	0	33,7	25,9
22	Djibouti	0	0	29,4	24,4
23	Dodoma	7	3	31,2	19,7
24	Douala	52	5	32,5	25,1
25	Durban	86	4	30,2	22,7
26	Entebbe	0	0	27,1	20,2
27	Francistown	9	5	31,4	20,0
28	Ghanzi	63	3	32,9	19,6
29	Harare	16	2	28,1	17,8
30	Johannesbourg	11	6	26,9	16,7
31	Khartoum	0	0	36,6	22,8
32	Kigali	0	0	28,2	17,9
33	Kigoma	23	3	30,1	21,1
34	Kinshasa	0	0	33,7	23,6
35	Le Caire	0	0	30,0	17,0
36	Le Cap	7	2	24,4	16,6
37	Libreville	46	3	31,6	23,8
38	Lomé	40	1	33,9	26,7
39	Lusaka	13	3	29,0	18,7
40	Manzini	20	3	29,4	20,0
41	Maputo	10	1	32,9	23,8
42	Maseru	60	5	27,3	15,7
43	Maun	18	4	32,3	20,8
44	Mbeya	30	4	24,5	16,6
45	Monrovia	0	0	31,7	24,0
46	Moroni	0	0	31,9	25,4
47	Nairobi	0	0	27,7	15,5
48	Nampula	41	4	32,6	22,8
49	Ndele (RCA)	0	0	38,6	21,9
50	N'Djamena	0	0	40,4	20,6
51	Niamey-Aéroport	0	0	40,1	22,4
52	Nouakchott	0	0	27,2	17,5
53	Ouagadougou	0	0	39,5	22,3
54	Plaisance	55	8	30,6	24,5
55	Port Elisabeth	4	2	26,8	17,7
56	Pretoria	40	2	29,7	19,6
57	Sal	0	0	26,8	19,9
58	Seretse Khama- Aéro	30	3	33,3	19,3
59	Seychelles	11	5	30,6	26,2
60	Tamanrasset	0	0	26,5	9,2
61	Toalagnaro	2	4	31,4	24,4
62	Tombouctou	0	0	37,1	17,7
63	Tripoli	0	0	24,9	13,0
64	Tunis	10	7	16,7	8,0
65	Windhoek	2	2	32,0	17,8
66	Zinder	0	0	38,8	20,8

NOTE: 0 means no rain;

- means no temperature data available

Data Source: ACMAD / GTS

3. OUTLOOK FOR DEKAD (01st – 10th MARCH, 2010)

3.1 RAINFALL

The ITD will be expected to move significantly northward while the dry and dusty conditions will continue while the Harmattan will decline over the Sahel and northern parts of the Gulf of Guinea countries with rainfall intensification over southern part of the Gulf of Guinea, central Africa, parts of GHA and northern parts of southern Africa countries. In detail:

- **North Africa countries:** will experience some increase in rainfall amounts ranging from 10mm to 100mm with maximum ranging from 150 to 200mm.
- **The Sahel:** will continue to experience high temperature with dry conditions with the decline of the Harmattan dust.
- **Gulf of Guinea countries:** will experience rainfall increase observing amounts ranging from 10mm to 100mm with peaks of about 150mm to 250mm over the coastal zone.
- **Central Africa countries:** will experience rainfall increase with amounts ranging from 10mm to 150mm with maximum peaks ranging from about 200mm to 300mm.
- **GHA countries:** will have rainfall increase with amounts ranging from 10mm to 100mm intensifying over western parts with amounts ranging from about 150mm to 300mm.
- **Southern Africa countries:** will experience significant rainfall increase over northern parts with amounts ranging from 10mm to 100mm with peaks ranging from 150mm to 250mm.

3.2 TEMPERATURE

The forecast in Figure 7, shows high temperature in parts of the Sahel, Gulf of Guinea, northern central Africa, parts of GHA and parts of southern Africa countries. The high temperatures ranging from 20°C to 35°C will cover more than 75% of the Continent.

3.3 SOIL MOISTURE

The outlook on soil moisture change, maps shown in Figure 8 include 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 change increase include central Africa, parts of GHA and southern Africa countries while significant soil moisture change deficits will dominate western part of central Africa and southeastern part of GHA countries.

3.4 IMPACTS

Health: The incidences of malaria and other climate related diseases are higher in areas with high temperatures during rainy period. The temperatures in the range of 18°C to 32°C with high rainfall and relative humidity (>60%) 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. Some parts of the Gulf of Guinea, central Africa, GHA and parts of southern Africa countries with high humidity/rainfall coupled with prevailing conducive temperatures will support the survival of parasite resulting in higher incidences of malaria including other climate related diseases. The decline in Harmattan dust will result in decreased cases of meningitis and other dust related ailments over the Sahel and parts of the Gulf of Guinea countries and limited parts of central Africa countries. The health authorities and Agencies need to continue the healthcare and humanitarian services to protect lives of the vulnerable communities.

Agriculture and food security: The integration of climate prediction products and information into agricultural production and food security is of crucial importance. We emphasize on the importance of suitable planting dates, seasonal rainfall onset, rainfall performance and duration including monitoring of the phenological stages of crops for crop yield assessments in the countries. It is imperative to carry out cost benefit analysis on 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 forecasts, for example those issued by regional climate outlook forums (RCOFs), the GHACOF, PRESAO, PRESAC, and SARCOF for Greater Horn of Africa (GHA) countries, West Africa countries/Chad/Cameroon, central Africa and southern Africa countries respectively.

African Ecosystems: While noting that forests serve as rainfall catchment areas, the destruction of forests has been blamed for the declining water levels in the African lakes, rivers and the drying wetlands. We have to rehabilitate our presently degraded rainfall catchment areas and natural ecosystems through enhanced national policies and environmental reclamation strategies. Good practices in ecosystems rehabilitation and management include national tree planting during rainy season and soil conservation to minimize soil loss during rainy seasons due to heavy runoff. Enhanced national strategies and policies for adaptation to Climate Change are of highest priority for States' enhanced economic growth and the achievement of the United Nations millennium development goals (MDGs) for sustainable development. The countries have to invest in environmental conservation now for better tomorrow.

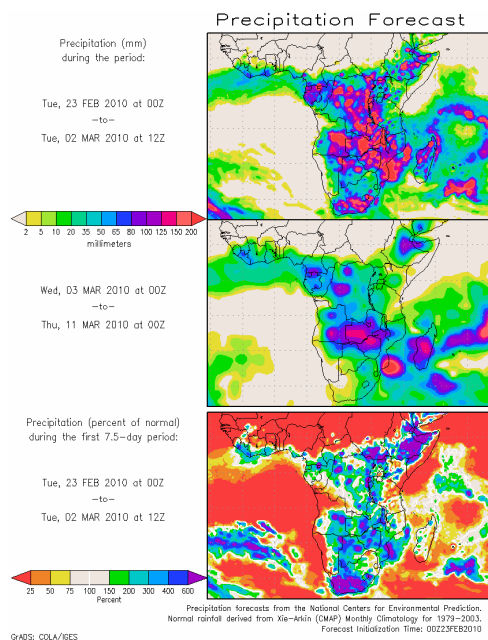


Figure 6 : Precipitation forecast, Source : COLA

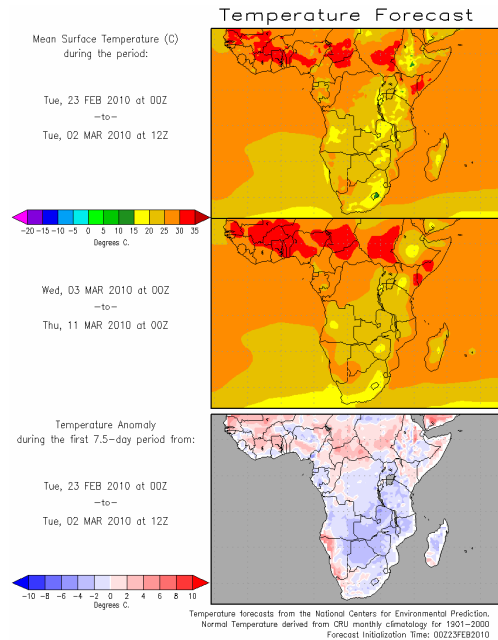


Figure 7 : Temperature forecast Source : COLA

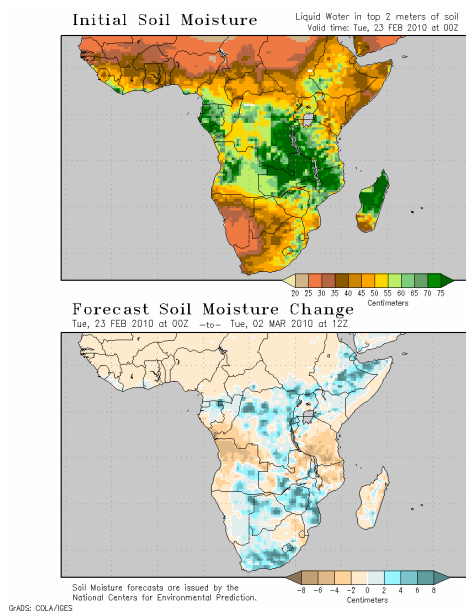


Figure 8 : Soil moisture forecast, Source: COLA

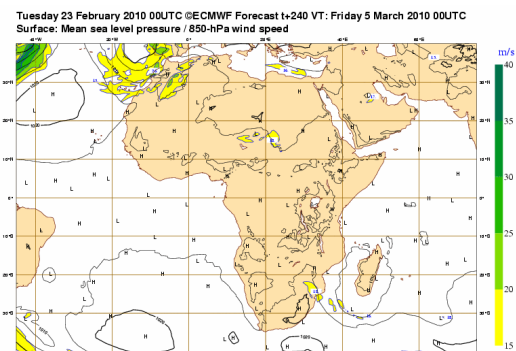


Figure 9 : Mean Sea Level pressure forecast
Source: ECMWF