Ten Day Climate Bulletin
N° 03
Dekad 21st to 31st January, 2010

HIGHLIGHT: The highest cumulative rainfall amounts were recorded over southern Africa countries with highest observed amounts over south Mozambique and northeast Madagascar. The highest mean maximum temperature was recorded at N'Djamena in Chad, while the lowest mean minimum temperature was recorded at Bilma in Nigeria.

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 1026hPa with a SW-NE axis strengthened by 2hPa and shift northwest compared to the past dekad. Its centre was located at about 44°N/18°W extending a ridge over North Atlantic Ocean.

- **Saharan Thermal Low:** Pressure at 1008 hPa centred at about 08°N/18°E, deepened by 3hPa and shifted eastwards compared to the past dekad. Its trough was extended over central Nigeria, north Cameroon and south Chad.

- **St. Helena high:** Pressure of 1026 hPa with a W-E axis strengthened slightly by 1 hPa and shifted southwest compared to the previous dekad. Its mean position was at 36°S/28°W, extending a ridge over South Atlantic Ocean.

- **Mascarene high:** Pressure of 1025 hPa with a W-E axis strengthened slightly by 1hPa compared to the past dekad and shifted westwards. Its mean position was located at 35°S/82°E with an extended ridge over Indian Ocean.

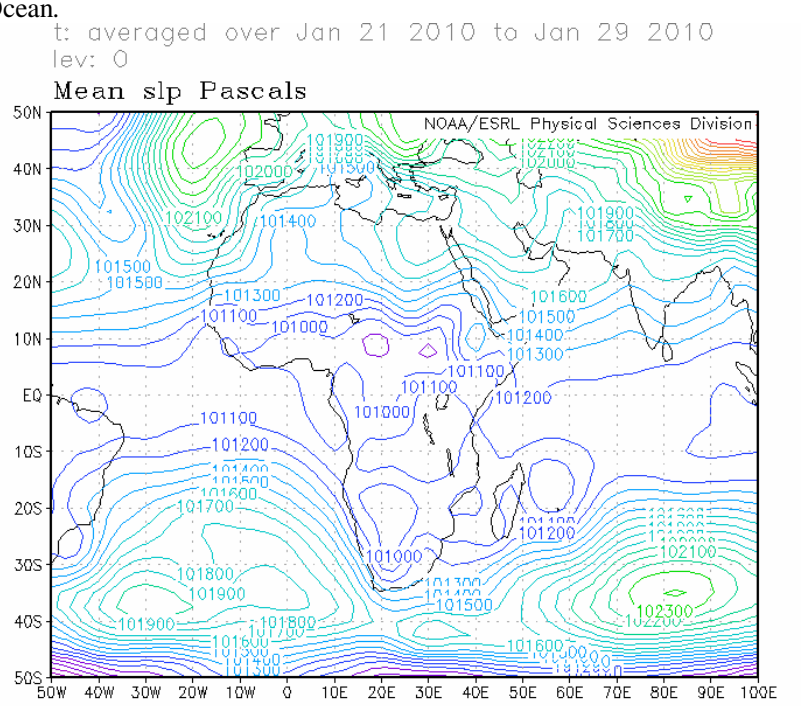

Figure 1: Mean Sea Level Pressure (Source: NOAA/NCEP/ESRL: PSD)

- **Inter-Tropical Discontinuity (ITD):** Between the second (blue line) and the third dekad (black) of January, 2010 in (Figure 2), the ITD moved slightly northwards and particularly over west part of Gulf of Guinea countries where a mean shift of 200km was observed (Figure2).

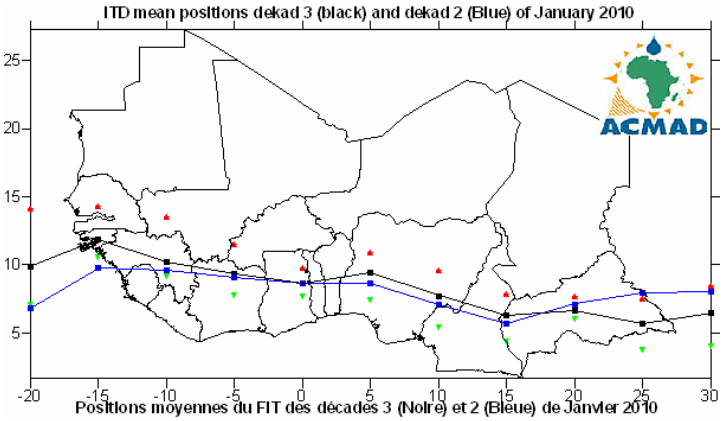

Figure 2: The red and green triangles represent the max. and min. displacements of the ITD respectively

1.2 TROPOSPHERE

1.2.1 Monsoon

Monsoon influx at 925hPa level was weak over Liberia and southwest Cameroon during the dekad.

1.2.2 Thermal Index (TI)

In the third dekad of January, 2010, the thermal index (TI) regime at 300hPa in (figure 3), had isotherm value of 242°K covering extreme southeastern Sahel, southern part of Gulf of Guinea countries, Central Africa, GHA countries and northern part of Southern Africa countries. The threshold value of 243°K covered extreme western parts of Central, Eastern and southern Africa countries with highest threshold value of 244°K over southern part of Central Africa/northern part of Southern Africa countries and was associated with heavy rains and floods over the areas characterized by high relative humidity in Figure 4.

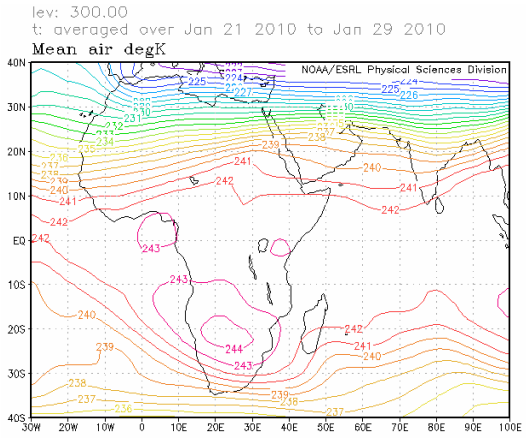

Figure 3: TI at 300hPa (Source: NOAA/NCEP)

1.2.3 Relative Humidity (RH)

The 850hPa (Figure 4) shows high RH (>70%) in the third dekad of January, 2010 over western, eastern and southern part of Central Africa, parts of GHA countries and eastern and northern parts of Southern Africa. 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%).

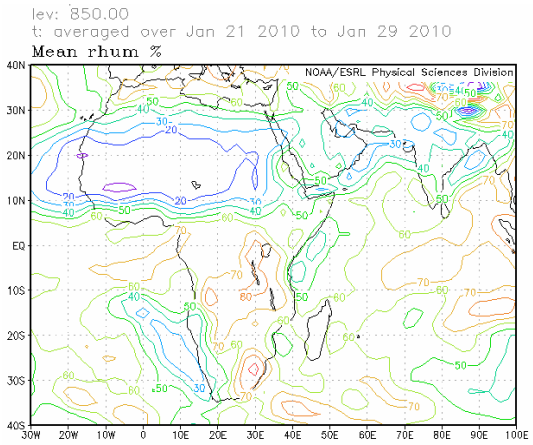

Figure 4 : RH at 850hPa (Source: NOAA/NCEP)

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 slight rainfall distribution decrease over Northern Africa, GHA while over Gulf of Guinea, and Southern Africa countries observed slight increases in rainfall pattern. In detail:

- **North Africa countries:** had decrease in rainfall distribution amounts ranging between 10mm to 75mm were northern Morocco and Algeria with localized peaks ranging from about 100mm.
- **The Sahel:** continued to experience dry and dusty conditions under the influence of the Harmattan.
- **Gulf of Guinea countries:** experienced localized rainfall with amounts ranging from 10mm to 50mm over southern Cote d'Ivoire, Ghana south-eastern Nigeria and Cameroon.
- **Central Africa countries:** had rainfall amounts ranging between 10mm to 150mm intensifying to about 200mm over South Gabon/Congo.
- **GHA countries:** experienced slight decrease in rainfall distribution with amounts ranging from 10mm to 100mm with a localized peak ranging from 100mm to 200mm over Tanzania.
- **Southern Africa countries:** had slight rainfall distribution increase with amounts ranging from 10mm to 200mm and heaviest amounts of about 250 mm over Mozambique and Madagascar.

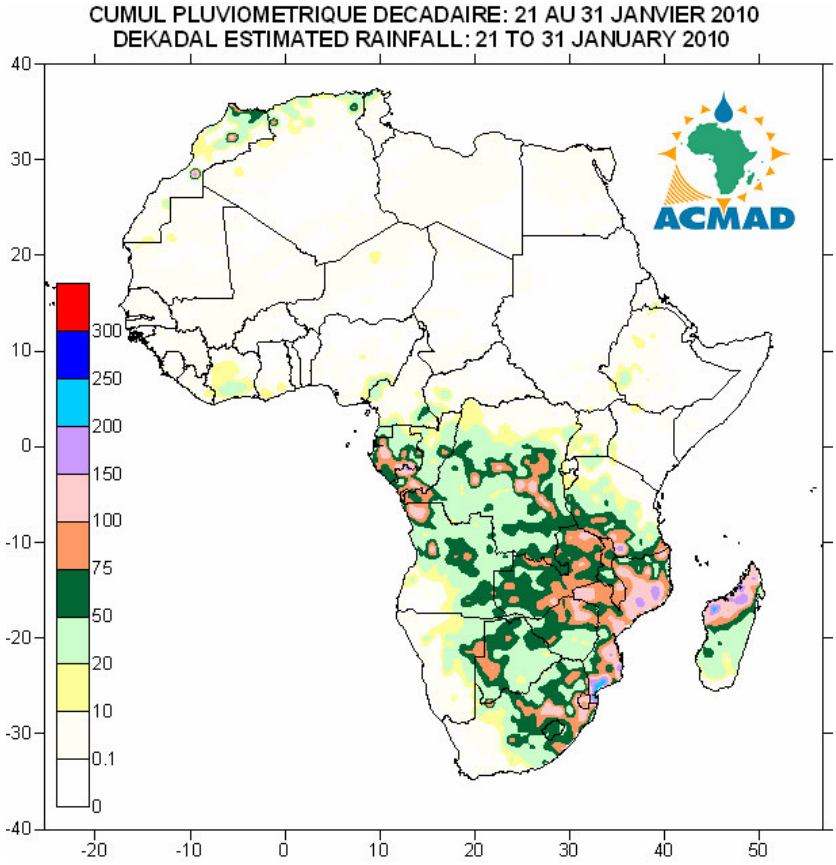

Figure 5 : Estimated precipitations, (Data Source: NOAA/NCEP)

2.2 OBSERVED DATA

The Table below shows maximum cumulative rainfall recorded (above 100mm) over Southern Africa countries. The highest mean maximum temperature of 37,9°C at N'Djamena in Chad while the lowest mean minimum temperature of 3.6°C was recorded at Bilma in Niger.

N°	STATIONS	Précipitations (mm)	Nombre de jours de pluie	Température maxi moyenne (°C)	Température mini moyenne (°C)
1	Abidjan	13	1	32,8	26,8
2	Accra	3	1	32,8	26,0
3	Agadez	0	0	32,5	16,7
4	Alger (Dar El Beida)	10	3	16,1	6,7
5	Antananarivo	31	5	27,8	17,9
6	Antsiranana	99	5	30,6	22,8
7	Bamako-Senou	0	0	35,3	18,4
8	Bangui	0	0	35,5	19,8
9	Banjul	0	0	33,8	16,4
10	Beira	3	2	32,5	25,5
11	Bilma	0	0	30,2	3,6
12	Bobo Dioulasso	0	0	35,4	21,3
13	Brazzaville	74	4	32,6	23,0
14	Bulawayo	86	5	30,0	18,3
15	Casablanca	30	3	17,6	11,1
16	Cotonou	0	0	32,2	27,0
17	Dakar-Yoff	0	0	26,2	18,9
18	Dar-es-Salaam	0	0	33,2	26,3
19	Dodoma	21	2	30,8	19,6
20	Douala	0	0	33,7	25,2
21	Durban	101	4	28,9	22,3
22	Francistown	25	3	30,9	20,3
23	Ghanzi	67	4	29,5	19,9
24	Harare	98	7	28,8	18,0
25	Johannesbourg	88	6	24,6	16,2
26	Khartoum	0	0	33,4	18,9
27	Kigali	0	0	29,5	16,0
28	Kigoma	0	0	29,9	20,9
29	Kinshasa	0	0	32,6	22,2
30	Le Caire	0	0	20,8	12,5
31	Le Cap	0	0	24,6	17,0
32	Libreville	19	4	30,4	24,1
33	Lomé	0	0	34,0	25,9
34	Lusaka	3	1	-	-
35	Manzini	146	5	-	19,6
36	Maputo	329	8	31,1	23,8
37	Maseru	39	4	-	14,9
38	Maun	61	2	32,7	21,7
39	Mbeya	38	3	25,5	14,8
40	Nairobi	0	0	27,8	13,4
41	Nampula	70	2	33,3	22,8
42	Ndele (RCA)	0	0	37,7	22,6
43	N'Djamena	0	0	37,9	18,8
44	Niamey-Aéroport	0	0	35,3	18,0
45	Nouakchott	0	0	33,5	16,9
46	Ouagadougou	0	0	34,8	17,9
47	Plaisance	230	8	30,9	23,8
48	Port Elisabeth	1	1	25,3	18,3
49	Pretoria	1	1	26,9	19,4
50	Sal	0	0	26,2	-
51	Seretse Khama- Aéro	6	3	30,7	-
52	Seychelles	127	4	30,5	25,4
53	Tamanrasset	0	0	23,1	5,0
54	Toalagnaro	8	4	30,4	24,0
55	Tombouctou	0	0	32,2	13,4
56	Tripoli	0	0	18,3	8,4
57	Tunis	6	6	16,6	10,3
58	Windhoek	33	7	28,8	16,3
59	Zinder	0	0	34,6	17,2

NOTE: **0** means no rain;
- means no temperature data available

Data Source: ACMAD / GTS

3. OUTLOOK FOR DEKAD (11th – 20th FEBRUARY, 2010)

3.1 RAINFALL

The ITD will be expected to move northward, but the dry and dusty conditions with intensified harmattan will persist over the Sahel, most of Gulf of Guinea and northern central Africa countries with rainfall intensification over southern parts of central Africa, extreme southern parts of GHA and southern Africa countries. In detail**:**

- **North Africa countries:** will experience some decrease in rainfall amounts ranging from 10mm to 75mm with isolated peaks of about 100mm.
- **The Sahel:** will continue to experience dry and dusty conditions under the influence of harmattan.
- **Gulf of Guinea countries:** will continue to experience rainfall deficits recording amounts ranging from 10mm to 50mm with localized peaks of about 75 mm over the coastal zone.
- **Central Africa countries:** will experience significant rainfall decrease over northern parts with amounts ranging from 10mm to 100mm intensifying over southern parts with amounts ranging from about 150mm to 200mm.
- **GHA countries:** will have rainfall decrease over northern sector intensifying over extreme southern parts amounts ranging from 10mm to 150mm.
- **Southern Africa countries:** will experience significant rainfall increase recording amounts ranging from 10mm to 150mm with peaks of about 200mm to 300mm.

3.2 TEMPERATURE

The forecast in Figure 7, shows high temperature in the Gulf of Guinea, northern central Africa, northern 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 southern Africa countries while central Africa and parts of GHA countries will experience significant soil moisture change decrease.

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. The parts of 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 prevailing Harmattan dust will result in increased cases of meningitis and other ailments over the Sahel and Gulf of Guinea countries and few 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), 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 to sustainable development and the achievement of the United Nations millennium development goals (MDGs). The countries have to invest in environmental conservation now for better tomorrow**.**

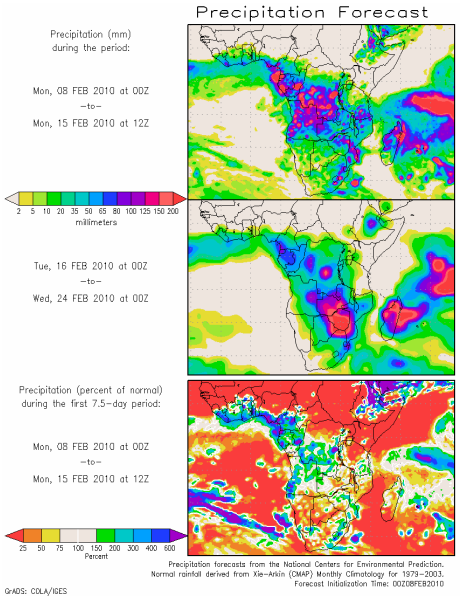

Figure 6 : Precipitation forecast, Source : COLA

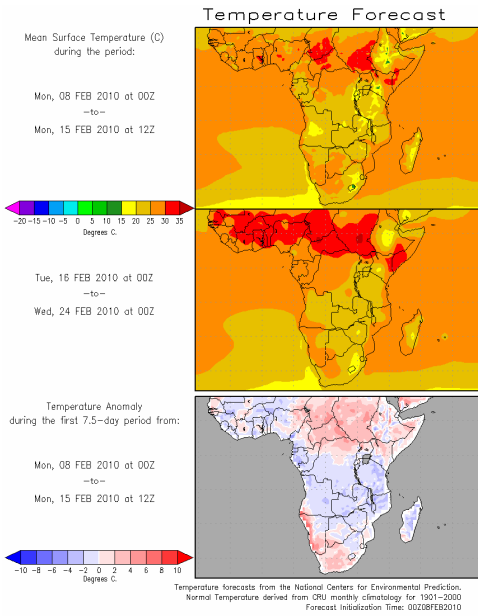

Figure 7 : Temperature forecast Source : COLA

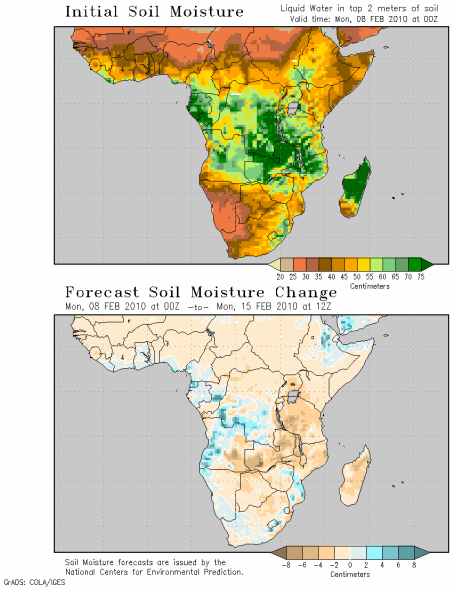

Figure 8 : Soil moisture forecast, Source: COLA

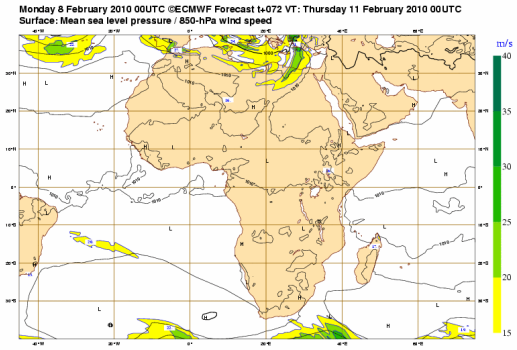

Figure 9 : Mean Sea Level pressure forecast Source : ECMWF