

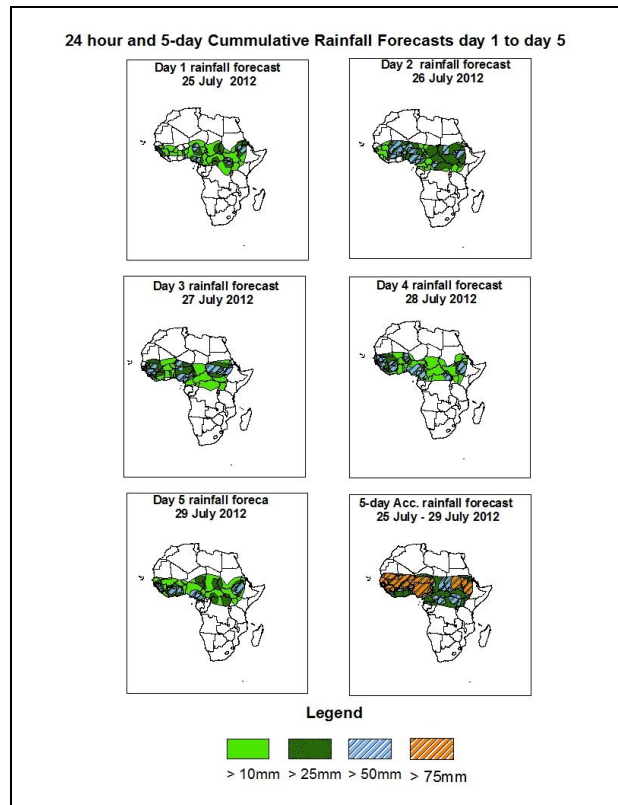


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of July, 25<sup>th</sup> – 06Z of July, 29<sup>th</sup> 2012. (Issued at 14:30Z of July, 24<sup>th</sup> 2012)

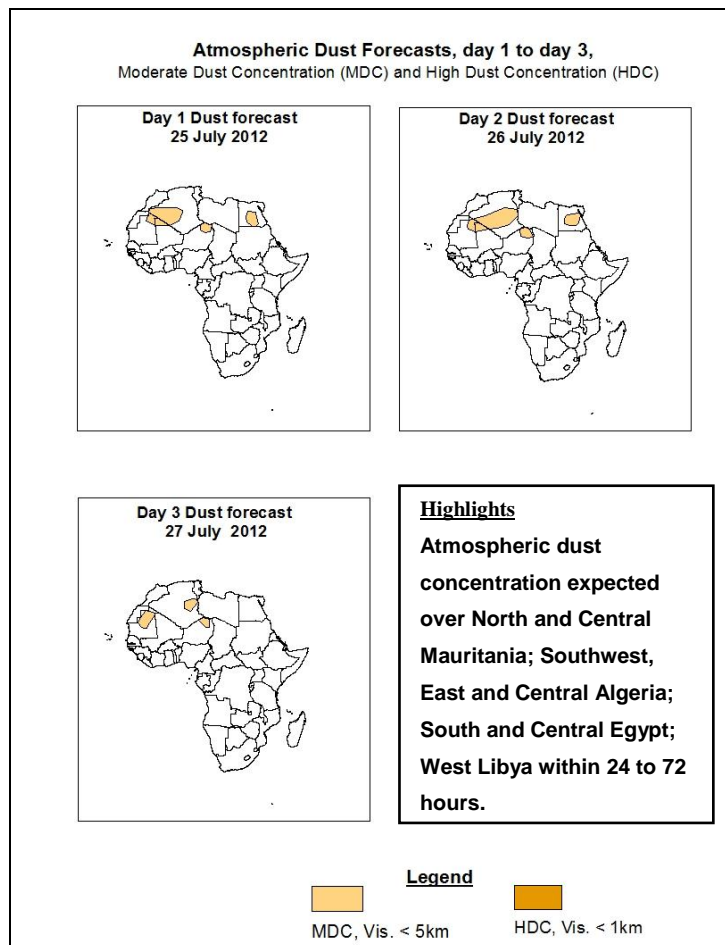
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 75% probability of precipitation (POP) exceeded, based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.



### Summary

In the next five days, ITD is expected to fluctuate between 16°E and 22°N with moderate to strong monsoon depth within 24 to 120 hours; Also the TEJ, AEJ and the AEW propagation with 850 to 700hpa vortices are expected to enhance rainfall activities over South Sudan; East, West and South Chad; West, North and Southwest Cameroon; part of Nigeria; North South Sudan Republic; Part of Central, West and South Sahel; portion of North Guinea Gulf Countries, Sierra Leone, Central African Republic and Guinea Conakry; West Ethiopia.



### 1.3. Model Discussion: Valid from 00Z of July, 24<sup>th</sup> 2012.

According to the GFS, ECMWF and UKMET models the heat lows are expected to deepen, remain quasi-stationary, and then fill up and vice versa through 24 to 120 hours over Mauritania, Mali, Algeria, Niger, Chad and Sudan.

According to GFS model, a thermal low over North Mauritania (1006hpa) in 24 hours is expected to increase its core value to 1010hpa in 48 hours and tends to gradually decrease from 1007hpa to 1004hpa within 72 to 96 hours, and then slightly increase to 1005hpa in 120 hours. The second low over North Mali and South Algeria (1005hpa) in 24 hours is expected to decrease its core value to 1003hpa in 48 hours, and increase to 1007hpa in 72 hours, thereafter tends to decrease to 1004hpa through 96 to 120 hours. The third low over North Chad and Niger (1007hpa) within 24 to 48 hours is expected to decrease its core value from 1006hpa to 1004hpa through 72 96 to 120 hours; while the low over North Sudan (1006hpa) within 24 to 72 hours is expected to decrease its core value to 1004hpa through 96 to 120 hours.

The ECMWF model shows a thermal low over North Mauritania (1005hpa) in 24 hours is expected to increase its core value to 1010hpa within 48 to 96 hours and tends to decrease to 1008hpa in 120 hours. The second low over North Mali and South Algeria (1005hpa) in 24 hours is expected to slightly increase its core value to 1006hpa through 48 to 96 hours, and tends to decrease to 1004hpa in 120 hours. The third low over North Chad and Niger (1010hpa) in 24 hours is expected to gradually decrease its core value from 1008hpa to 1006hpa within 48 to 120 hours; while the low over North Sudan (1006hpa) through 24 to 96 hours is expected to decrease its core value to 1004hpa in 120 hours.

The UKMET model shows a thermal low over North Mauritania (1006hpa) in 24 hours is expected to gradually increase its core value from 1008hpa to 1010hpa within 48 to 72 hours; thereafter tends to decrease from 1008hpa to 1006hpa through 96 to 120 hours. The second low over North Mali and South Algeria (1004hpa) within 24 to 72 hours is expected to decrease its core value from 1002hpa to 1001hpa through 96 to 120 hours. The third low over North Chad and Niger (1006hpa) in 24 hours is expected is expected to maintain almost its core value within 48 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to decrease its core value to 1004hpa through 48 to 120 hours.

According to the UKMET model, the St. Helena High pressure system over South Atlantic Ocean with a core value of 1026hpa in 24 hours locates at latitude 30°S is expected to gradually increase from 1029hpa to 1035hpa within 48 to 72 hours by shifting southwards from latitude 35°S to 40°S and tends to decrease its core value from 1032hpa to 1028hpa by moving to the north from latitude 40°S to 35°S through 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1025hpa in 24 hours locates at latitude 30°S is expected to gradually increase from 1028hpa to 1032hpa within 48 to 72 hours by shifting southwards from latitude 35°S to 40°S and tends to decrease its core value from 1030hpa to 1028hpa by moving to the north from latitude 40°S to 35°S through 96 to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1056hpa in 24 hours locates at latitude 30°S is expected to gradually increase from 1029hpa to 1034hpa within 48 to 72 hours by shifting southwards from latitude 35°S to 40°S and tends to decrease its core value from 1032hpa to 1026hpa by moving to the north from latitude 40°S to 30°S through 96 to 120 hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1025hpa in 24 hours and locates at longitude 30°W is expected to gradually increase its core value from 1028hpa to 1031hpa within 48 to 120 hours by maintaining almost the same position around longitude 30°W.

According to the ECMWF model, the central pressure value of 1024hpa in 24 hours and locates at longitude 30°W is expected to gradually increase its core value from 1027hpa to 1032hpa through 48 to 96 hours by maintaining almost the same position around longitude 30°W, then tends to decrease to 1030hpa by shifting eastwards from longitude 30°W to 25°W.

Lastly, according to the UKMET model, the central pressure value of 1024hpa in 24 hours and locates at longitude 30°W is expected to gradually increase its core value from 1028hpa to 1030hpa within 48 to 72 hours by maintaining almost the same position around longitude 30°W, then tends to decrease from 1027 to 1024hpa by shifting westwards from longitude 30°W to 50°W.

At 925hpa level, zone of moderate dry northerly and northeasterly winds (20 to 50kts) are expected to prevail over North and Central Mauritania; Southwest, East and Central Algeria; South and Central Egypt; West Libya within 24 to 72 hours.

At the 850hpa level, a lower tropospheric wind convergence associated with strong and significant West African Monsoon inflow and depth between latitude 13°N 21°N is expected to prevail over parts of Sudan, Cameroon, Chad, Central African Republic and Western Africa within 24 hours to 120 hours. Vortices are expected over South Mauritania; West, North and Central Niger; Part of Gambia and Guinea Bissau; South Chad; North and West Mali; North and East Guinea Conakry; North Benin, Ghana and Togo; Northwest Nigeria; East and South Senegal and Burkina Faso. The convergence

associated with the meridional arm of the ITCZ is expected to oscillate between part of South Sudan Republic; North Democratic Republic of Congo; West Uganda through 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) is expected to affect West Niger; Part of Senegal and Burkina Faso; Central and South Mauritania; North Ghana; The African Easterly Waves (AEW) is also expected to propagate westwards waves to affect part of Guinea Gulf Countries and West Africa within 24 to 120 hours.

At 500hpa level, a wave is expected to affect part of Sahel Region, Guinea Gulf Countries and Central African Republic; West Sudan; East, West and South Chad through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 35 to 70 Knots will affect Southern Chad and Sudan; Part of Ethiopia, Guinea Gulf Countries and Central African Republic through 24 to 120 Hours. Easterly winds flow will also continue to affect most part of West Africa.

In the next five days, ITD is expected to fluctuate between 16°E and 22°N with moderate to strong monsoon depth within 24 to 120 hours; Also the TEJ, AEJ and the AEW propagation with 850 to 700hpa vortices are expected to enhance rainfall activities over South Sudan; East, West and South Chad; West, North and Southwest Cameroon; part of Nigeria; North South Sudan Republic; Part of Central, West and South Sahel; portion of North Guinea Gulf Countries, Sierra Leone, Central African Republic and Guinea Conakry; West Ethiopia.

Atmospheric dust concentration expected over North and Central Mauritania; Southwest, East and Central Algeria; South and Central Egypt; West Libya within 24 to 72 hours.

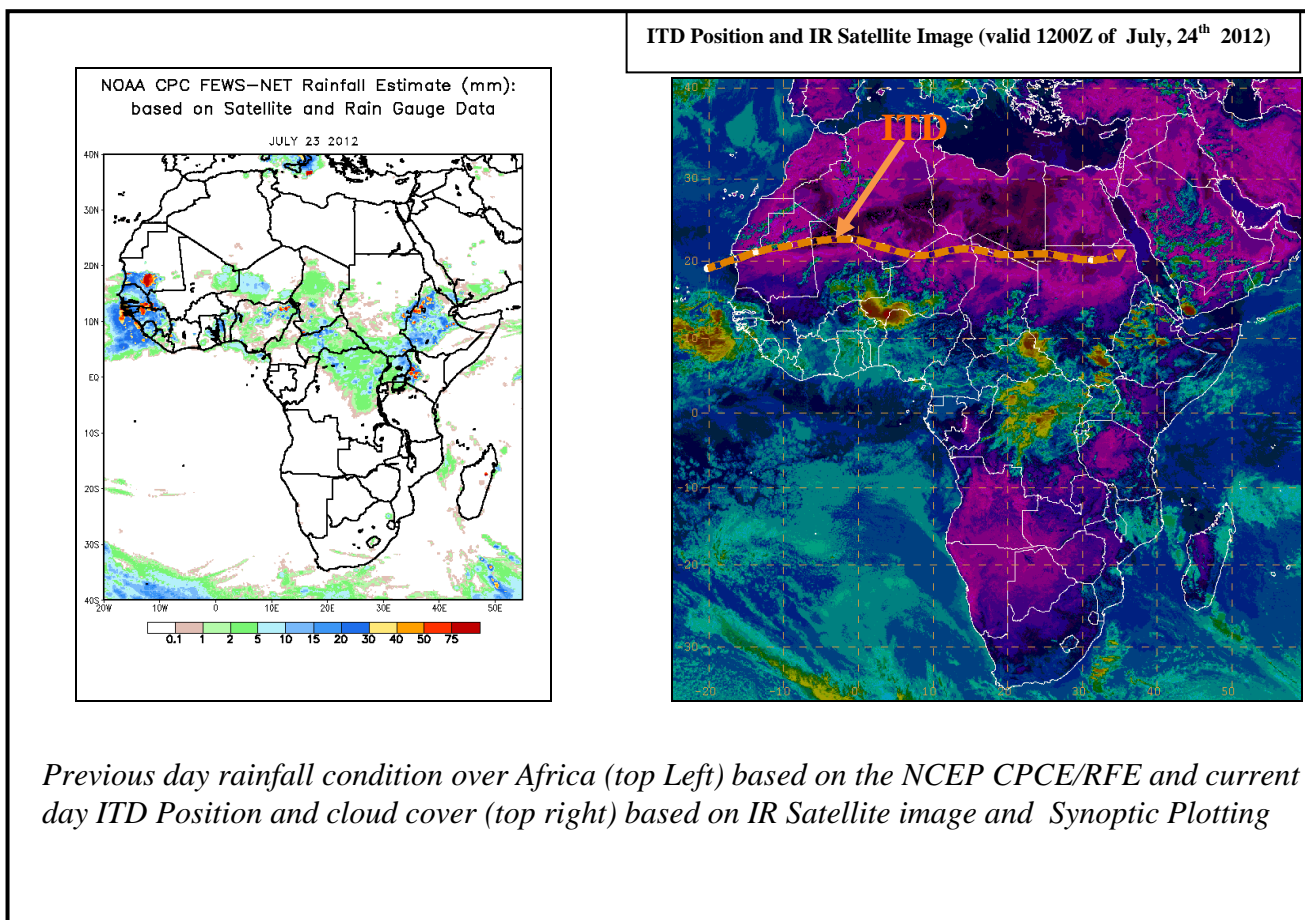
## 2.0. Previous and Current Day Weather Discussion over Africa (July, 23<sup>rd</sup> 2012– July, 24<sup>th</sup> 2012)

### 2.1. Weather assessment for the previous day (July, 23<sup>rd</sup> 2012)

During the previous day, moderate to heavy rainfall was observed over South Mauritania; North, East and South Senegal; portion of Guinea Conakry and Guinea Bissau; Coastal and North Sierra Leone; South Chad; Central Niger; North Nigeria; North and West Central African Republic; North and East Democratic Republic of Congo; Southeast South Sudan Republic; East and North Uganda; West Kenya; portion of Ethiopia.

### 2.2. Weather assessment for the current day (July, 24<sup>th</sup> 2012)

Convective activities observed across West Niger; Northwest Nigeria; Southeast Mali; East Burkina Faso and Central African Republic; North Democratic Republic of Congo; Southern South Sudan Republic; Central and North Ethiopia.



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