

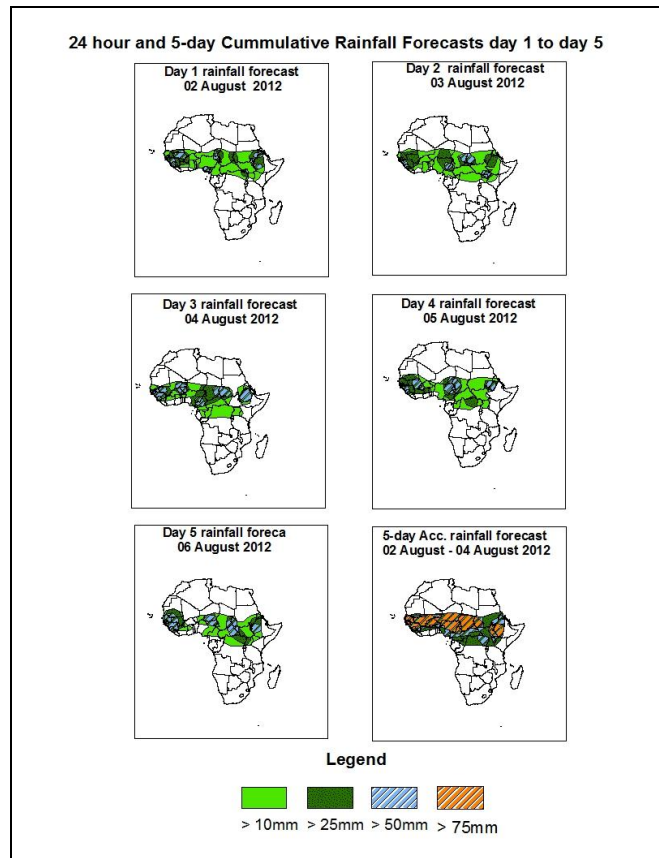


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of August 02<sup>nd</sup> – 06Z of August, 06<sup>th</sup> 2012. (Issued at 13:00Z of August, 01<sup>st</sup> 2012)

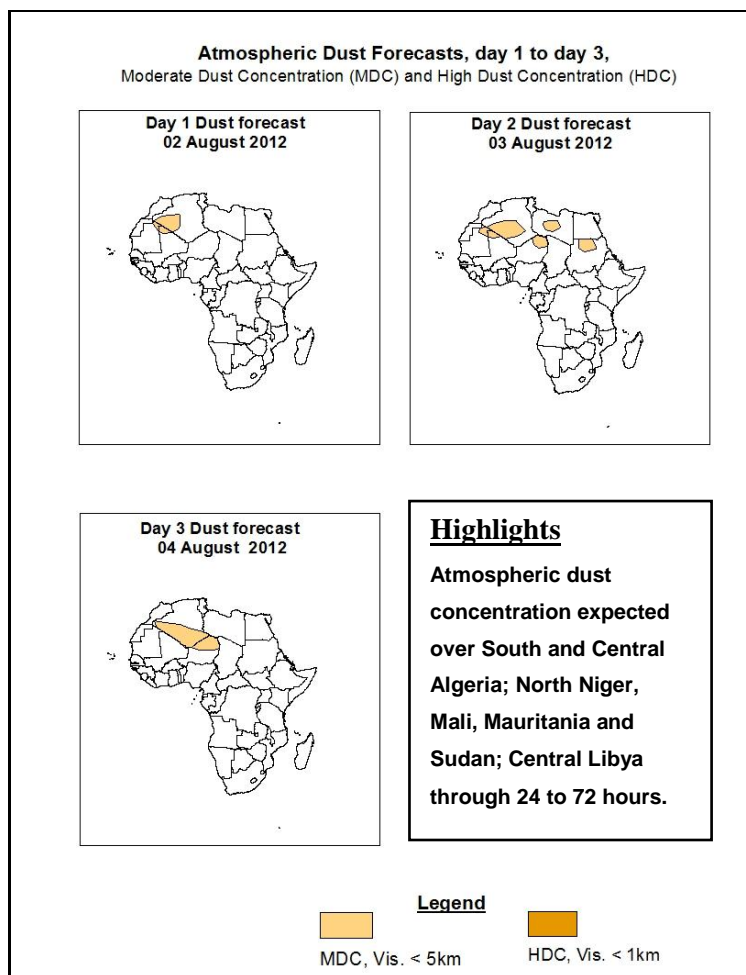
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 15°E and 23°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 East and North South Sudan Republic; South Chad; portion of Nigeria and Cameroon; South Sudan; portion of Sahel Region and Guinea Gulf Countries; North Central African Republic; part of Sierra Leone and Guinea Conakry; West Ethiopia.



### 1.3. Model Discussion: Valid from 00Z of August, 01<sup>st</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, Central and West Mauritania (1005hpa) in 24 hours is expected to gradually increase its core value from 1006 to 1010hpa within 48 to 72 hours, and decrease to 1005hpa in 96 hours, then tends to increase to 1006hpa in 120 hours. The second low over North Mali and South Algeria (1006hpa) through 24 to 48 hours is expected to decrease its core value from 1005hpa to 1004hpa within 72 to 96 hours, and then increase to 1006hpa in 120 hours. The third low over North Chad and Niger (1006hpa) in 24 hours is expected to decrease its core value from 1005hpa to 1004hpa through 48 to 72 hours, thereafter increase to 1006hpa

within 120 hours; while the low over North Sudan (1004hpa) in 24 hours is expected to gradually increase its core value from 1005hpa to 1006hpa through 48 to 120 hours.

The ECMWF model shows a thermal low over North, Central and West Mauritania (1006hpa) in 24 hours is expected to gradually increase its core value from 1007 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 (1006hpa) in 24 hours is expected to increase its core value to 1010hpa through 48 to 72 hours, and then increase to 1006hpa within 96 to 120 hours. The third low over North Chad and Niger (1007hpa) through 24 to 72 hours is expected to increase its core value to 1010hpa within 96 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to maintain almost the same core value through 48 to 120 hours.

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

According to the UKMET model, the St. Helena High pressure system over South Atlantic Ocean with a core value of 1036hpa in 24 hours locates at latitude 35°S is expected to gradually decrease its core value from 1031hpa to 1028hpa by shifting northwards from latitude 35°S to 30°S through 48 to 96 hours, then increase to 1032hpa by moving southwards from latitude 30°S to 40°S in 120 hours.

According to the ECMWF model, the central pressure value of 1035hpa in 24 hours locates at latitude 35°S is also expected to gradually decrease its core value from 1031hpa to 1027hpa by shifting northwards from latitude 35°S to 30°S through 48 to 96

hours, then increase to 1032hpa by moving to the south from latitude 30°S to 35°S in 120 hours.

Lastly, according to the GFS model, the central pressure value of 1036hpa in 24 hours locates at latitude 35°S is expected to gradually decrease its core value from 1031hpa to 1026hpa by shifting to the north from latitude 35°S to 30°S through 48 to 96 hours, and tends to increase to 1032hpa by moving southwards from latitude 30°S to 40°S in 120 hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1024hpa within 24 to 48 hours and locates between longitude 40°W and 25°W is expected to gradually increase its core value from 1025hpa to 1027hpa by shifting westwards from longitude 30°W to 50°W through 72 to 120 hours.

According to the ECMWF model, the central pressure value of 1024hpa within 24 to 48 hours and locates between longitude 40°W and 50°W is expected to gradually increase its core value from 1025hpa to 1027hpa by maintaining almost the same position around longitude 50°W through 72 to 120 hours.

Lastly, according to the UKMET model, the central pressure value of 1024hpa within 24 to 48 hours and locates between longitude 35°W and 50°W is also expected to increase its core value to 1027hpa by maintaining almost the same position around longitude 50°W in 72 hours and tends to slightly decrease it to 1026hpa through 96 to 120 hours.

At 925hpa level, zone of moderate dry northerly and northeasterly winds (20 to 50kts) are expected to prevail over South and Central Algeria; North Niger, Mali, Mauritania and Sudan; Central Libya through 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 through 24 hours to 120 hours. Vortices are expected over Central, West and Coastal Mauritania; West, Central and South Mali; West, South, East and Central Niger; Southwest Sudan; West Chad; Northeast Guinea Conakry. The

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

At 700hpa level, the AEJ with a core value between 25 and 50 knots is expected to affect portion of Gambia and Guinea Bissau; South Senegal; West and South Sudan; East and west Chad; West Mali; East and North Niger. The African Easterly Waves (AEW) is also expected to propagate westwards waves to affect portion of Togo, Ghana, Ghana, Burkina Faso and Cote d'Ivoire; South Mauritania; South and West Mali; East and West Chad; East, Central and North Niger within 24 to 120 hours.

At 500hpa level, a wave is expected to affect portion of Sahel Region and Guinea Gulf Countries; part of Chad; Southwest Sudan through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 35 to 80 Knots will affect portion of South Sudan Republic and Guinea Gulf Countries; Part of Ethiopia and Central African Republic; Easterly winds flow will also continue to affect most part of West Africa, Chad and Sudan through 24 to 120 Hours..

In the next five days, ITD is expected to fluctuate between 15°E and 23°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 East and North South Sudan Republic; South Chad; portion of Nigeria and Cameroon; South Sudan; portion of Sahel Region and Guinea Gulf Countries; North Central African Republic; part of Sierra Leone and Guinea Conakry; West Ethiopia.

Atmospheric dust concentration expected over South and Central Algeria; North Niger, Mali, Mauritania and Sudan; Central Libya through 24 to 72 hours.

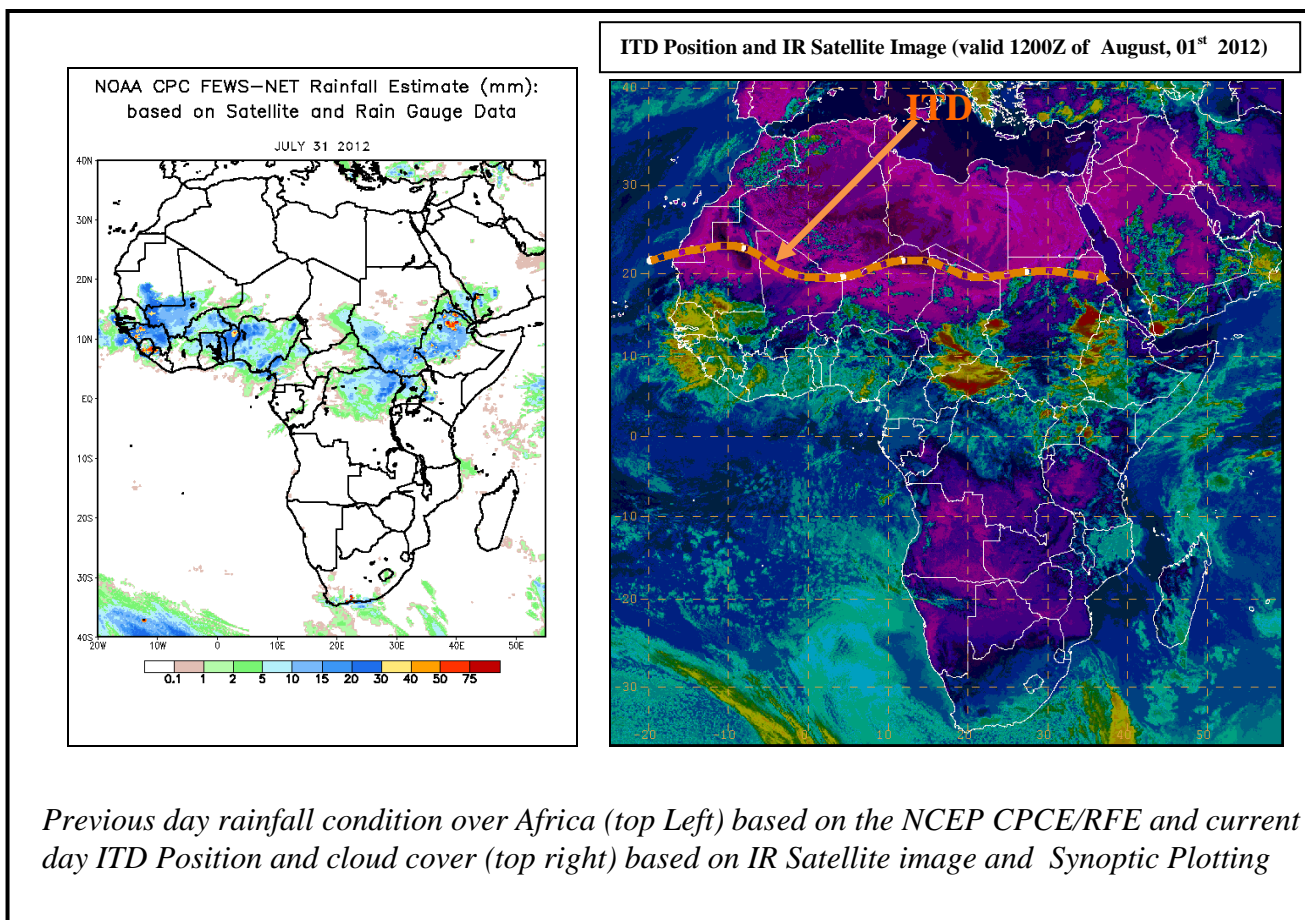
## **2.0. Previous and Current Day Weather Discussion over Africa (July, 31<sup>st</sup> 2012– August, 01<sup>st</sup> 2012)**

## 2.1. Weather assessment for the previous day (July, 31<sup>st</sup> 2012)

During the previous day, moderate to heavy rainfall was observed over South Mauritania; West Mali; Part of Guinea Conakry; East and Coastal Sierra Leone; East and West Burkina Faso; portion of Benin, Nigeria and Togo; North Democratic Republic of Congo; Southeast Central African Republic; portion of South Sudan Republic; Central, West and North Ethiopia; West Uganda; Southwest Sudan.

## 2.2. Weather assessment for the current day (August, 01<sup>st</sup> 2012)

Convective activities observed across South Mauritania; portion of Senegal; South Chad; portion of Central African Republic; East and West Sudan; Northeast Democratic Republic of Congo; West Kenya; West Ethiopia; East Uganda.



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