

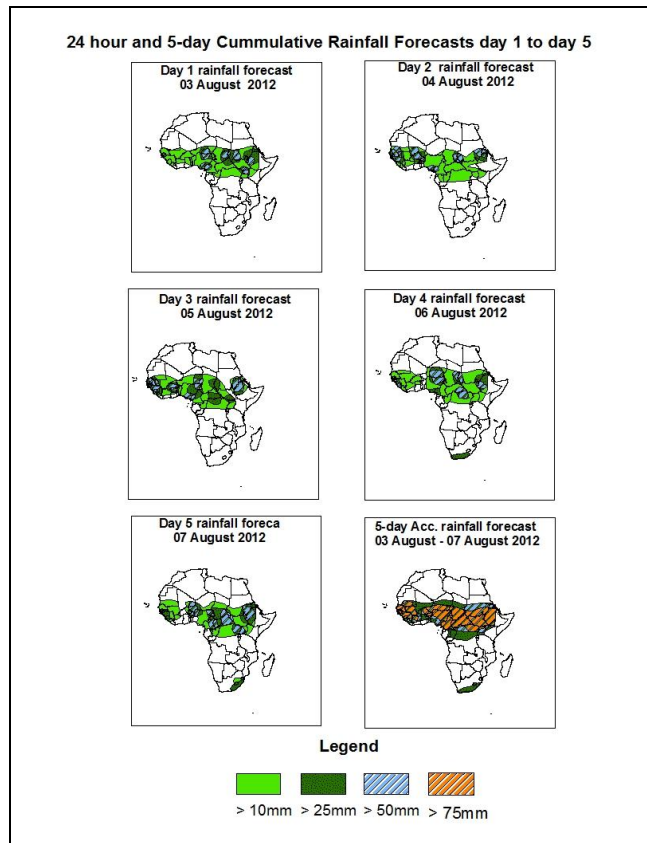


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of August 03<sup>rd</sup> – 06Z of August, 07<sup>th</sup> 2012. (Issued at 13:00Z of August, 02<sup>nd</sup> 2012)

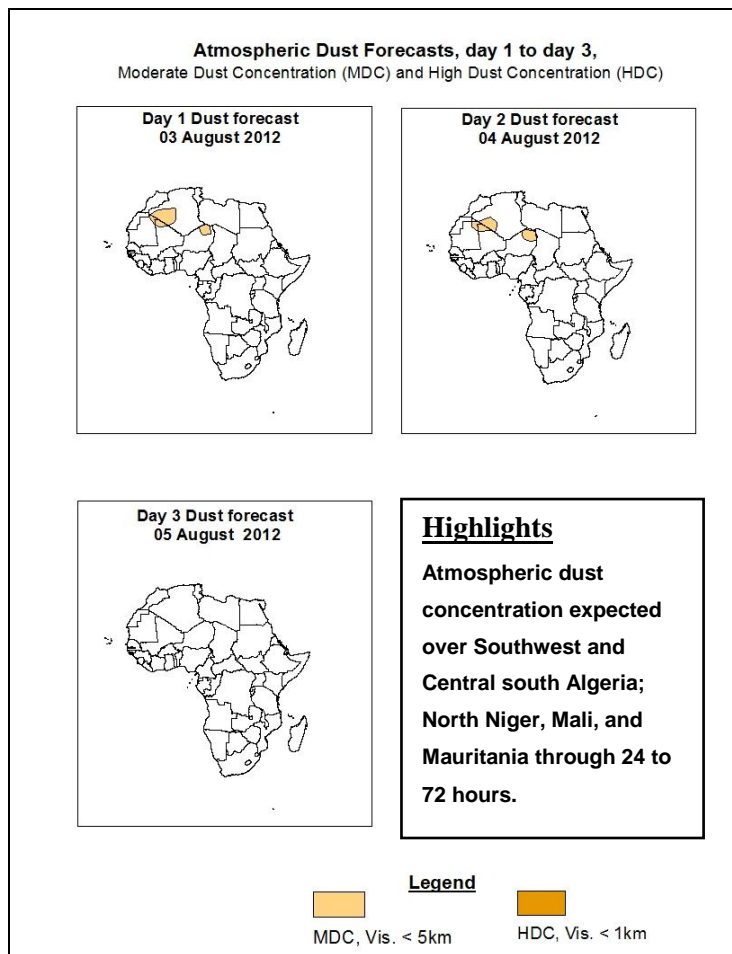
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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



### 1.3. Model Discussion: Valid from 00Z of August, 02<sup>nd</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 (1007hpa) in 24 hours is expected to increase its core value to 1010hpa in 48 hours, and decrease to 1005hpa in 72 hours, then tends to slightly increase to 1006hpa within 96 to 120 hours. The second low over North Mali and South Algeria (1007hpa) in 24 hours is expected to gradually decrease its core value from 1006hpa to 1004hpa through 48 to 120 hours. The third low over North Chad and Niger (100hpa) within 24 to 48 hours is expected to gradually increase its core value from 1005hpa to 1008hpa through 72 to 120 hours; while the low over North Sudan (1005hpa) in 24 hours is expected to slightly increase its core value to 1006hpa within 48 to 96 hours and tends to decrease to 1004hpa in 120 hours.

The ECMWF model shows a thermal low over North Mauritania (1008hpa) in 24 hours is expected to increase its core value to 1010hpa in 48 hours, and decrease from 1006hpa to 1005hpa through 72 to 96 hours, then tends to slightly increase to 1006hpa in 120 hours. The second low over North Mali and South Algeria (1010hpa) in 24 hours is expected to gradually decrease its core value from 1007hpa to 10045pa within 48 to 96 hours, and then slightly increase to 1006hpa in 120 hours. The third low over North Chad and Niger (1007hpa) in 24 hours is expected to gradually increase its core value from 1008hpa to 1010hpa through 48 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to almost the same core value within 48 to 120 hours.

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

According to the UKMET model, the St. Helena High pressure system over South Atlantic Ocean with a core value of 1031hpa in 24 hours locates at latitude 35°S is expected to gradually decrease its core value from 1029hpa to 1028hpa by shifting northwards from latitude 35°S to 30°S within 48 to 72 hours, then increase from 1036hpa to 1040hpa by moving southwards from latitude 30°S to 40°S through 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1031hpa in 24 hours locates at latitude 35°S is expected to gradually decrease its core value from 1029hpa to 1027hpa by shifting northwards from latitude 35°S to 30°S within 48 to 72 hours, and tends to increase from 1032hpa to 1034hpa by moving southwards from latitude 30°S to 40°S through 96 to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1032hpa in 24 hours locates at latitude 35°S is expected to gradually decrease its core value from 1030hpa to 1028hpa by moving northwards from latitude 35°S to 30°S within 48 to 72 hours, then increase from 1035hpa to 1036hpa by moving southwards from latitude 30°S to 40°S in 96 hours and northwards from latitude 40°S to 35°S in 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 40°W is expected to slightly increase its core value to 1026hpa by shifting eastwards from longitude 40°W to 30°W through 48 to 72 hours, and tends to slightly decrease to 1025hpa by moving to the east from longitude 30°W to 25°W in 96 hours and to the west from longitude 25°W to 35°W in 120 hours.

According to the ECMWF model, the central pressure value of 1025hpa in 24 hours and locates at longitude 40°W is expected to increase its core value to 1027hpa by shifting eastwards from longitude 35°W to 30°W through 48 to 72 hours and westwards from longitude 30°W to 45°W in 96 hours, then to decrease to 1025hpa in 120 hours by moving to the east from longitude 45°W to 40°W.

Lastly, according to the UKMET model, the central pressure value of 1025hpa in 24 hours and locates at longitude 40°W is expected to increase its core value to 1027hpa in 48 hours by shifting eastwards from longitude 40°W to 35°W in 48 72 hours and tends to decrease from 1027hpa to 1024hpa by moving to the east from longitude 35°W to 30°W in 72 hours and westwards from longitude 45°W to 40°W within 96 to 120 hours.

At 925hpa level, zone of moderate dry northerly and northeasterly winds (20 to 50kts) are expected to prevail over Southwest and Central south Algeria; North Niger, Mali, and Mauritania 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 12°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 East, West

and Coastal Mauritania; South and Northwest Mali; West, South, 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 60 knots is expected to affect; South Senegal; West Sudan; East and West Chad; Southeast Mali; East, Central and West Niger. The African Easterly Waves (AEW) is also expected to propagate westwards waves to affect South Mauritania; East and West Mali; Central and West Cameroon; East Nigeria; West Chad; portion of Guinea Gulf Countries within 24 to 120 hours.

At 500hpa level, a wave is expected to affect portion of Burkina Faso and Ghana; South Mauritania; Central Chad; South, East and West Niger; North and Central Nigeria; East, West and South Mali; South Senegal; North Guinea Conakry; portion of Gambia, Guinea Bissau and Cote d'Ivoire through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 35 to 65 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 portion South Sudan Republic, Chad, Cameroon and Nigeria; South, East and West Sudan; portion of Sahel Region and Guinea Gulf Countries; part of Central African Republic, Sierra Leone and Guinea Conakry; West Ethiopia.

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

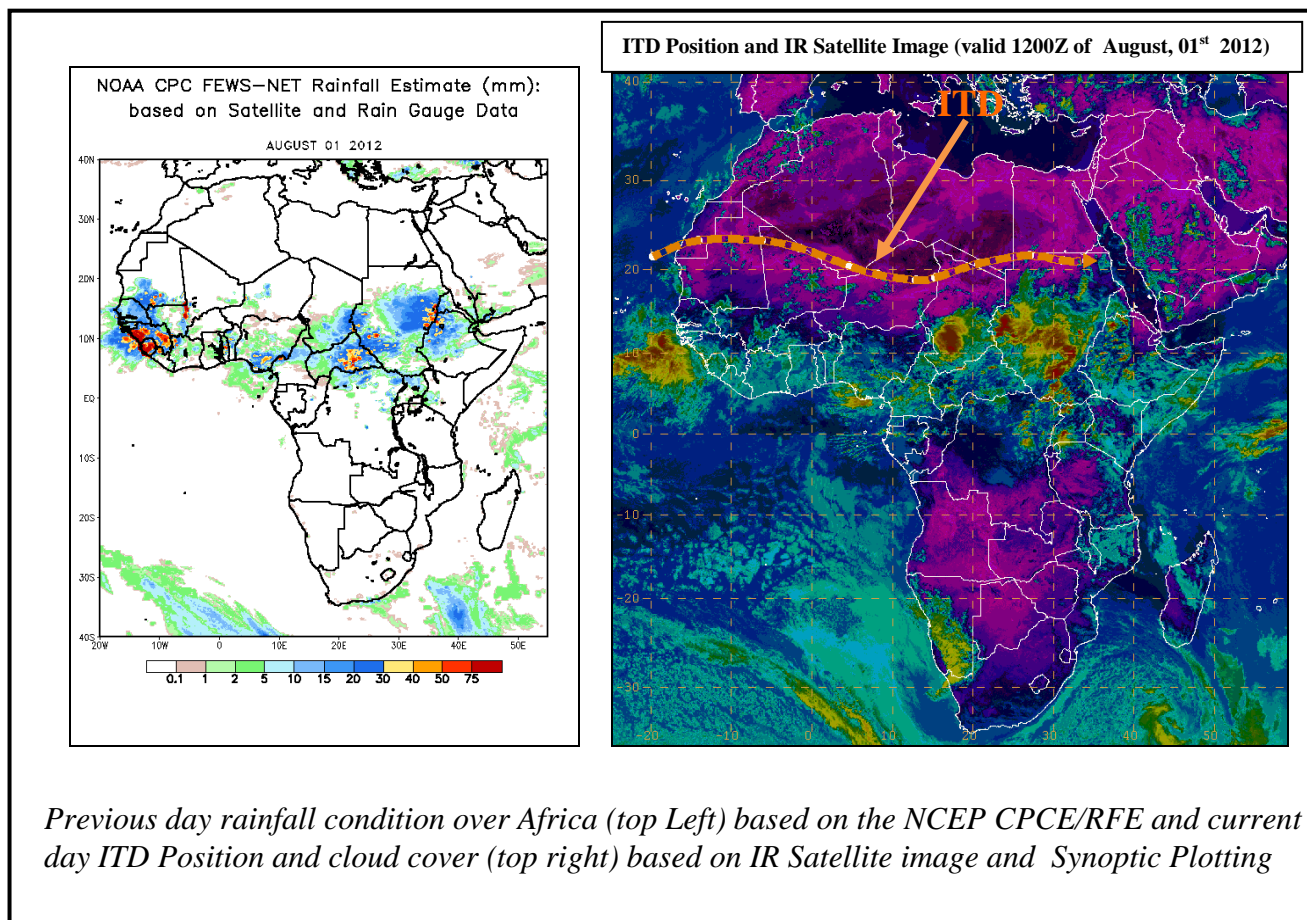
## 2.0. Previous and Current Day Weather Discussion over Africa (August, 01<sup>st</sup> 2012– August, 02<sup>nd</sup> 2012)

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

During the previous day, moderate to heavy rainfall was observed over South Mauritania; East Senegal; West Mali; Part of Guinea Conakry and Sierra Leone; Northwest Liberia and Cote d'Ivoire; Central Togo; West Benin; South Nigeria; West Cameroon; South Chad; North Democratic Republic of Congo; portion Central African Republic; northwest South Sudan Republic; West Ethiopia; East Southwest Sudan.

### 2.2. Weather assessment for the current day (August, 02<sup>nd</sup> 2012)

Convective activities observed across South Nigeria and Chad; Northeast Cameroon; South Sudan; West Ethiopia and portion of South Sudan Republic; West Uganda.



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