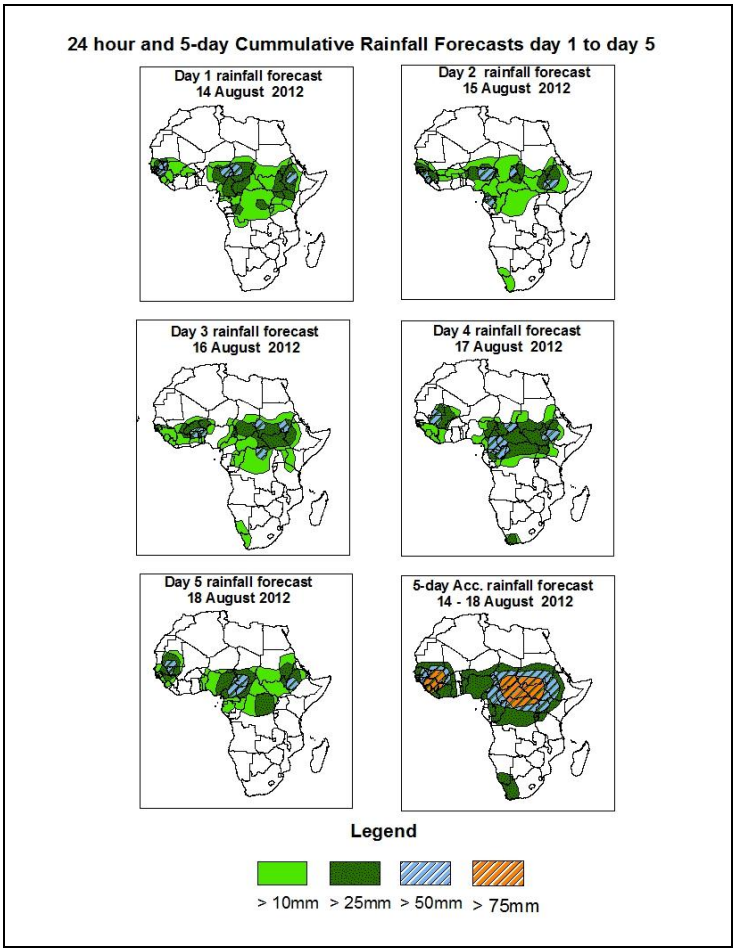
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of August 14th – 06Z of August, 18th 2012. (Issued at 13:00Z of August, 13th 2012)

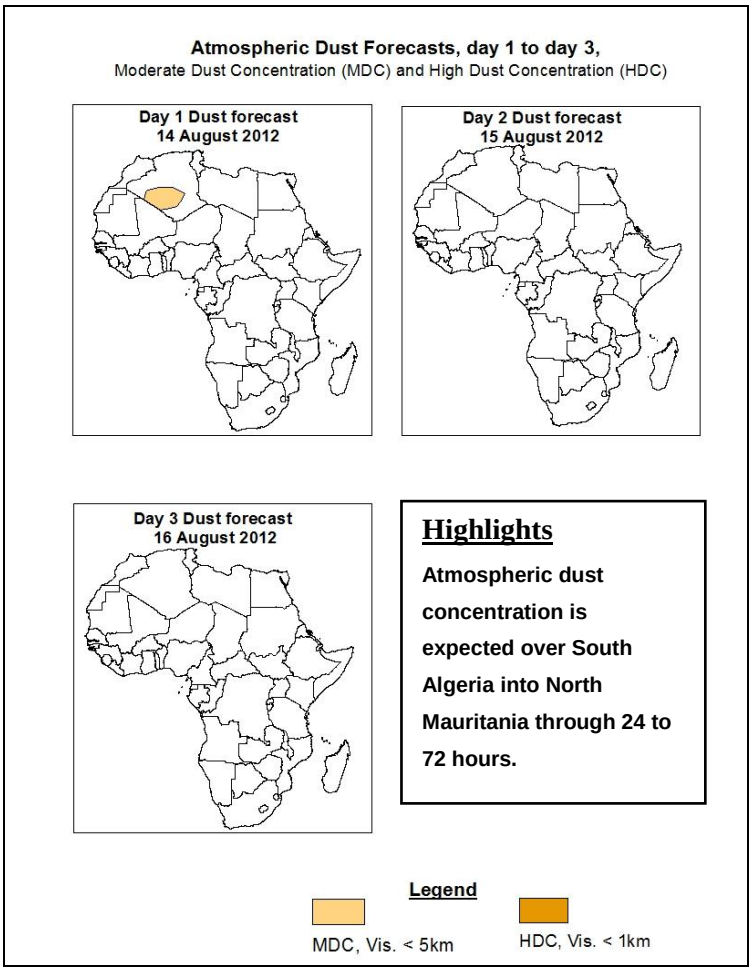
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 10°E and 20°N with moderate to strong monsoon depth within 24 to 120 hours; also the TEJ, AEJ and the AEW propagation with vortices within the 850 to 700hpa pressure level fields are expected to enhance rainfall activities over parts of South Sudan Republic, Cameroon and Nigeria; South Chad; portions of the Sahel Region, Sierra Leone and Guinea Conakry; Northern Guinea Gulf Countries; part of Central African Republic; West and North Ethiopia.



1.3. Model Discussion: Valid from 00Z of August, 13th 2012.

The heat lows over Mauritania, Mali, Algeria, Niger, Chad and Sudan are expected to fluctuate in their positions while deepening and filling up, vice versa, through 24 to 120 hours, according to the GFS, ECMWF and UKMET models.

According to the GFS model, a thermal low over North and Central Mauritania (1006hpa) in 24 hours is expected to maintain the 1006hpa in 48 hours, and tends to decrease its core value to 1004hpa within 72 hours, thereafter steadily increase from 1005hpa to 1006hpa within 96 to 120 hours. The second low over South Algeria; North Mali (1007hpa) in 24 hours is expected to decrease its core value over South and Western Mali to 1004hpa through 48 to 72 hours, then significantly increase to 1010hpa in 96 hours, and maintain this core value in 120 hours. The third low over North Chad and Niger (1007hpa) within 24 to 120 hours is expected to fluctuate up to 1010hpa and

steadily down to 1004hpa in 120 hours; while the low over North Sudan (1004hpa) in 24 hours is expected to increase to 1006hpa within 48 hours and thereafter maintain its core value at 1003hpa within 72 to 120 hours.

The ECMWF model shows a thermal low over North and Central Mauritania (1010hpa) in 24 hours is expected to decrease to 1007hpa pressure value from 48 to 96 hours, thereafter slightly increase to 1009hpa in 120 hours. The second low over South Algeria and North Mali (1008hpa) in 24 hours is expected to decrease its core value to 1007hpa in 72 hours, and then significantly increase to 1010hpa within 96 to 120 hours. The third low over North Chad and Niger (1010hpa) in 24 hours is expected to maintain the same core value up to 96 hours; before a decrease in its core value to 1006hpa in 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 and Central Mauritania (1007hpa) in 24 hours is expected to slightly decrease its core value to 1006hpa in 48 hours, and is expected to maintain almost the same core value through 72 to 120 hours. The second low over South Algeria and North Mali (1007hpa) in 24 hours is expected to decrease its core value to 1006hpa through 48 to 96 hours, and down to 1003hpa in 120 hours. The third low over North Chad and Niger (1007hpa) in 24 hours is expected to increase to 1008hpa in 48 hours before a steady decrease from 1007hpa to 1003hpa through 72 to 120hours; while the low over North Sudan (1003hpa) in 24 hours is expected to maintain its core value at 1003hpa 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 1041hpa in 24 hours locates at latitude 40^{o}S is expected to decrease its core value to 1038hpa by moving northward to around latitude 35^{o}S in 96 hours, and tends to significantly increase its cores value to 1044hpa by moving slightly southwards from latitude 35^{o}S to 40^{o}S in 120 hours.

According to the ECMWF model, the central pressure value of 1040hpa in 24 hours locates at latitude 38^{o}S is expected to decrease its core value to 1039hpa by moving slightly northwards to around latitude 35^{o}S in 72 hours, and tends to gradually increase its core value to 1041hpa while moving southwards to latitude 48^{o}S in 96 hours and

thereafter increase its core value to 1044hpa as it moves northwards to latitude 40^{o}S in 120 hours.

Lastly, according to the GFS model, the central pressure value of 1041hpa in 24 hours locates at latitude 40^{o}S is expected to gradually decrease its core value to 1038hpa by shifting northwards to latitude 35^{o}S through 48 to 72 hours before moving southwards to latitude 40^{o}S with a core value of 1046hpa 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 45^{o}W is expected to gradually decrease its core value to 1024hpa while still maintaining its position at longitude 45^{o}W in 72 hours, and continues to steadily decrease to 1021hpa at the same position through 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1025hpa in 24 hours and locates at longitude 48^{o}W is expected to gradually decrease its core value to 1023hpa while moving slightly to longitude 45^{o}W in 72 hours, thereafter continue to decrease its core value to 1021hpa by moving to the west from longitude 45^{o}W to 50^{o}W through 96 to 120 hours.

Lastly, according to the UKMET model, the central pressure value of 1024hpa within 24 and locates at longitude 45^{o}W is expected to maintain its core value at 1024hpa while also maintaining its position in 48 hours. Its core value will then decrease from 1023hpa to 1021hpa within 72 to 120 hours while its position will remain at the same longitude 45^{o}W.

At 925hpa level, a zone of moderate dry northerly and northeasterly winds (25 to 50kts) is expected to prevail over South Algeria, South Libya, North Niger and Chad and South-West 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^{o}N and 21^{o}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 South Mali;

north, central and coastal of Mauritania; north, south, east and central Niger; south Chad and portions of Sudan. The convergence associated with the meridional arm of the ITCZ is expected to oscillate between portions of South Sudan Republic; North and Central Democratic Republic of Congo; West and North Uganda; South and East Central African Republic; Great Lake Countries through 24 hours to 120 hours.

At 700hpa level, the AEJ with a core value between 30 and 50 knots is expected to affect Burkina Faso, north Mali, south Niger and north and coastal Mauritania. The African Easterly Waves (AEW) is also expected to propagate westwards affecting parts of Niger, Mali, Chad, Sudan, Central African Republic and Mauritania within 24 to 120 hours.

At 500hpa level, a wave is expected to affect parts of Mali, Mauritania, Sudan, Togo, Niger, Benin, Cameroon and Chad, through 24 to 120 hours with no noticeable vortices over its area of influence within the forecast period.

At 150mb, the Tropical Easterly Jet with a maximum core of 25 to 65 Knots will affect portions of South Sudan Republic and South Guinea Gulf Countries; parts of Ethiopia, Cameroon and Central African Republic; Easterly wind flow will also continue to affect most part of West Africa, Chad, Cameroon and Sudan through 24 to 120 Hours.

In the next five days, ITD is expected to fluctuate between 10^{o}E and 20^{o}N with moderate to strong monsoon depth within 24 to 120 hours; also the TEJ, AEJ and the AEW propagation with vortices within the 850 to 700hpa pressure level fields are expected to enhance rainfall activities over parts of South Sudan Republic, Cameroon and Nigeria; South Chad; portions of the Sahel Region, Sierra Leone and Guinea Conakry; Northern Guinea Gulf Countries; part of Central African Republic; West and North Ethiopia.

Atmospheric dust concentration is expected over South Algeria into North Mauritania through 24 to 72 hours.

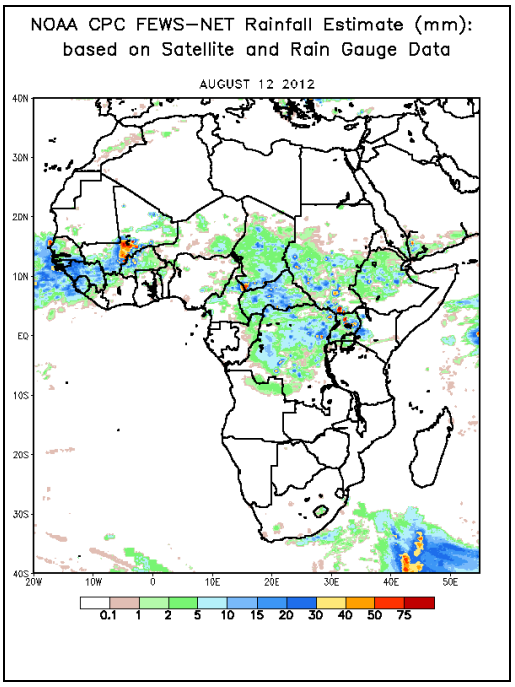
2.0. Previous and Current Day Weather Discussion over Africa (August, 12th 2012– August, 13th 2012)

2.1. Weather assessment for the previous day (August, 12th 2012)

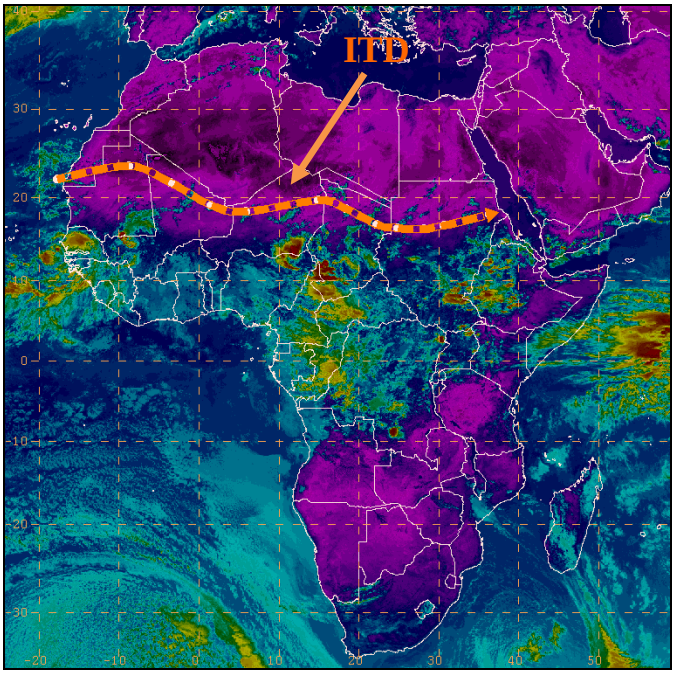
During the previous day, moderate to heavy rainfall was observed over north and west Guinea Conakry; coastal Senegal; south Mali and south Niger; south and central Chad; North Cameroon; Democratic Republic of Congo; Central African Republic and South Sudan Republic; West Ethiopia; Uganda; north Congo and west Kenya.

2.2. Weather assessment for the current day (August, 13th 2012)

Convective activities observed across South-East Niger; Burkina Faso; north-east and coastal Nigeria; south Chad; Democratic Republic of Congo; Cameroon; Congo; east of South Sudan Republic; western and central Ethiopia; Uganda; Somalia; south east Mauritania; Senegal; Guinea-Conakry; Sierra Leone; Kenya; and Central African Republic.



ITD Position and IR Satellite Image (valid 1200Z of August, 13th 2012)



Previous day rainfall condition over Africa (top Left) based on the NCEP CPCE/RFE and current day ITD Position and cloud cover (top right) based on IR Satellite image and Synoptic Plotting

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