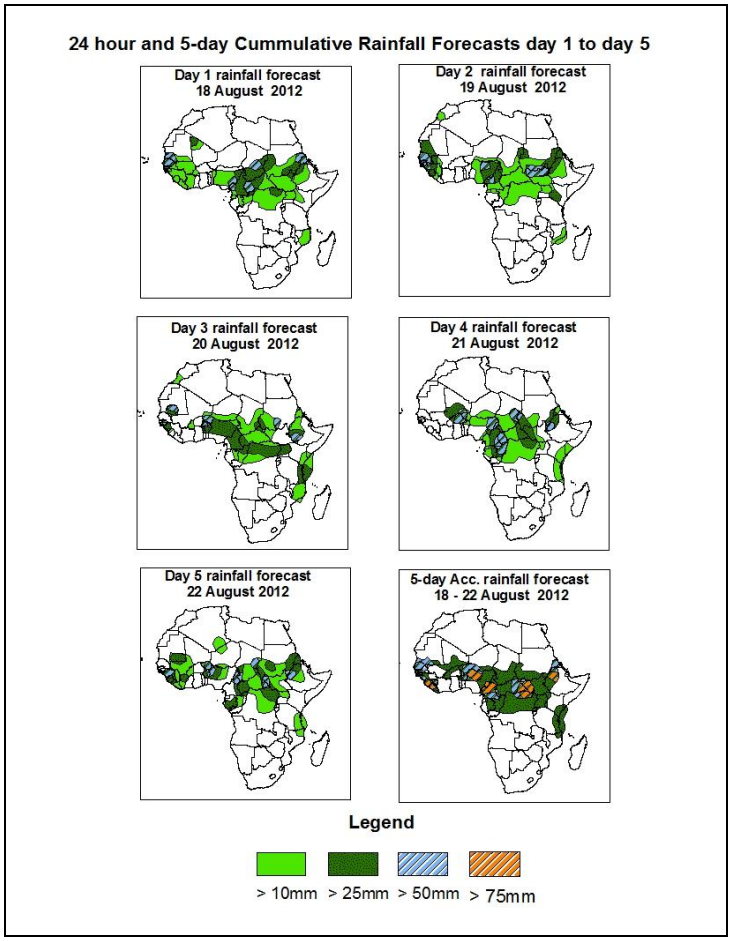
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of August 18th – 06Z of August, 22th 2012. (Issued at 13:00Z of August, 17th 2012)

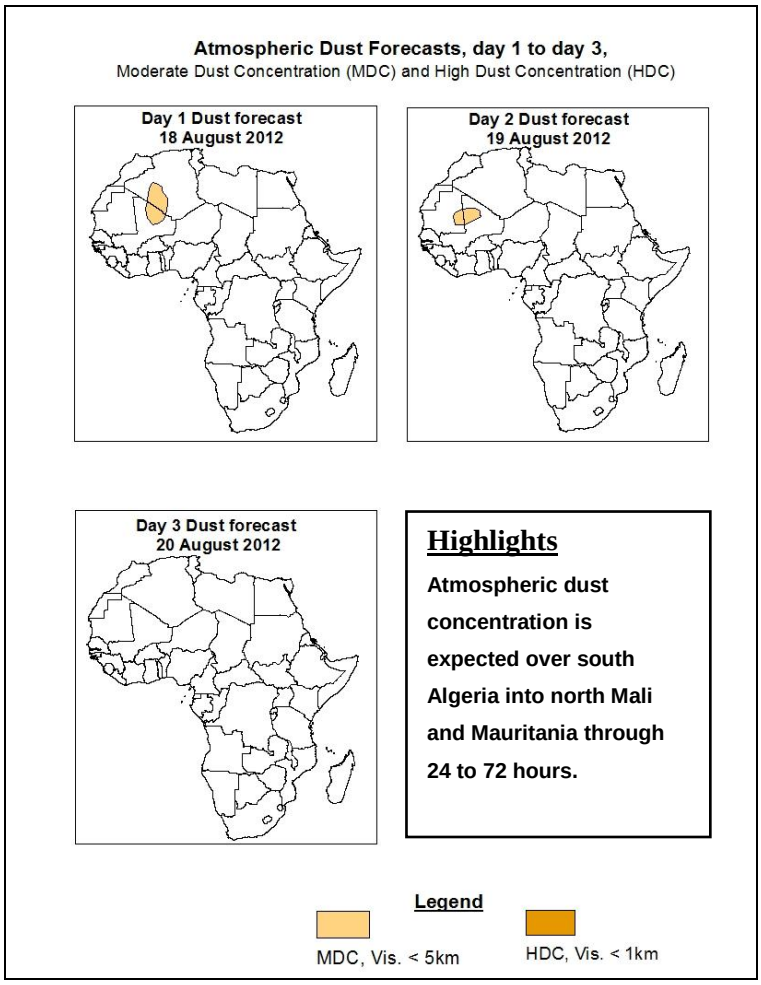
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 12°N and 21°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, 17th 2012.

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

According to the GFS model, a thermal low over coastal Mauritania (1009hpa) in 24 hours is expected to steadily decrease to 1004hpa through 48 hours to 72 hours, especially over the west and tends to gradually increase its core value to 1008hpa in 120 hours over the south and the coast of Mauritania. The second low over south Algeria and Mali (1004hpa) in 24 hours is expected to significantly decrease its core value to 1003hpa in 48 hours over central Mali, and tends to increase its core value to 1007hpa through 96 to 120 hours. The third low over North Chad and Niger (1006hpa) in 24 hours is expected to increase to 1009hpa through 48 to 72 hours and decrease to

1006hpa in 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to gradually decrease in value to 1004hpa through 48 to 72 hours before increasing to 1006hpa in 120 hours.

The ECMWF model shows a thermal low over eastern Mauritania (1010hpa) in 24 hours is expected to decrease in value to 1007hpa in 72 hours, thereafter gradually increase to 1010hpa through 96 to 120 hours over east and central Mauritania. The second low over South Algeria and North Mali (1005hpa) in 24 hours is expected to gradually increase its core value to 1007hpa through 48 to 72 hours, and then continue to increase to 1010hpa in 120 hours. The third low over North Chad and Niger (1005hpa) in 24 hours is expected to increase in its core value to 1010hpa through 48 to 72 hours before increasing to 1008hpa through 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 and central Mauritania (1009hpa) in 24 hours is expected to steadily decrease its core value to 1006hpa through 48 to 120 hours. The second low over south Algeria and north Mali (1006hpa) in 24 hours is expected to decrease its core value to 1004hpa in 24 hours, increase to 1006hpa through 72 to 96 hours before dropping in value to 1004hpa in 120 hours. The third low over North Chad and Niger (1004hpa) in 24 hours is expected to increase to 1006hpa in 48 hours and tends to maintain this core value of 1006hpa 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 1046hpa in 24 hours locates at latitude 45^{o}S is expected to gradually decrease its core value to 1033hpa by steadily moving northward to around latitude 30^{o}S through 48 hours to 120 hours.

According to the ECMWF model, the central pressure value of 1045hpa in 24 hours locates at latitude 45^{o}S is expected to gradually decrease its core value to 1034hpa by steadily moving northward to around latitude 30^{o}S through 48 hours to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1045hpa in 24 hours locates at latitude 45^{o}S is expected to gradually decrease its core value to 1036hpa by steadily moving northward to around latitude 30^{o}S through 48 hours to 96 hours, and tends to maintain the same core value and latitudinal position in 120 hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1021hpa in 24 hours and locates at longitude 50^{o}W is expected to gradually decrease its core value to 1020hpa while shifting eastwards to longitude 15^{o}W in 72 hours, before a significant increase to 1029hpa while moving west to longitude 30^{o}W in 120 hours.

According to the ECMWF model, the central pressure value of 1021hpa in 24 hours and locates at longitude 50^{o}W is expected to gradually decrease its core value to 1020hpa while moving to the west from longitude 50^{o}W to 55^{o}W in 48 hours, before increasing to 1027hpa in 120 hours as it shifts east to longitude 30^{o}W.

Lastly, according to the UKMET model, the central pressure value of 1021hpa within 24 and locates at longitude 50^{o}W is expected to decrease to 1020hpa in 48 hours while its position will move westwards to longitude 55^{o}W; through 72 to 120 hours its core value will tend to increase to 1025hpa as it moves east to longitude 30^{o}W.

At 925hpa level, a zone of moderate dry northerly and northeasterly winds (20 to 35kts) is expected to prevail over central Libya, south Algeria, south Niger, north 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^{o}N and 21^{o}N is expected to prevail over parts of Mauritania, Mali, Niger, Sudan, Cameroon, Central African Republic, Chad and Western Africa through 24 hours to 120 hours. Vortices are expected over north-west Mali, south-central Niger; east; along the Chad/Sudan border; western and south-east Mauritania. 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 and the 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 parts of Algeria, Chad, Niger, Nigeria, Sudan, Central African Republic and Mali. Vortices are expected over parts of Sudan, Mali, Ethiopia, Mauritania, Nigeria, Central African Republic and Niger. The African Easterly Waves (AEW) is also expected to propagate westwards affecting parts of Algeria, Niger, Mali, Chad, Burkina Faso, Nigeria and Mauritania within 24 to 120 hours.

At 500hpa level, a wave is expected to affect parts of Mali, Mauritania, Nigeria, Liberia, Togo, Niger, Benin, Ethiopia, Cameroon, Guinea-Conakry, Sudan, Sierra Leone, Ghana, Cote D'Ivoire, Burkina Faso and Chad, through 24 to 120 hours with vortices over south-east Mauritania in 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 25 to 55 Knots will affect portions of South Sudan Republic and the South Guinea Gulf Countries; parts of Ethiopia, Cameroon, Kenya and Central African Republic; Easterly wind flow will also continue to affect most parts of West Africa, Chad, Cameroon and Sudan through 24 to 120 Hours.

In the next five days, ITD is expected to fluctuate between 12^{o}N and 21^{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 Mali and Mauritania through 24 to 72 hours.

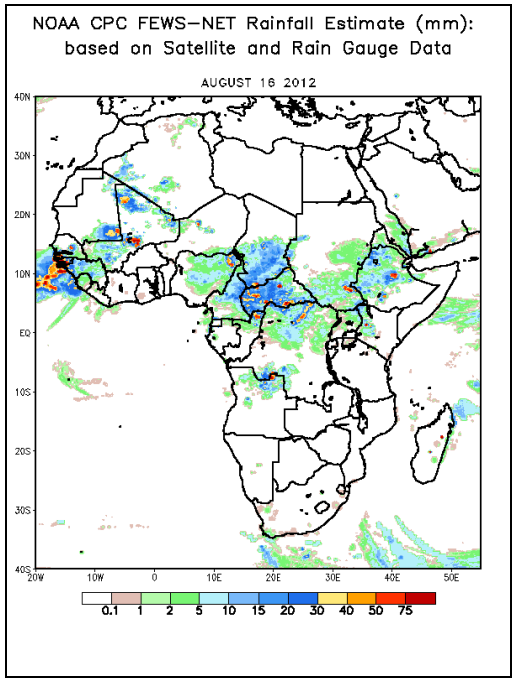
2.0. Previous and Current Day Weather Discussion over Africa (August, 16th 2012– August, 17th 2012)

2.1. Weather assessment for the previous day (August, 16th 2012)

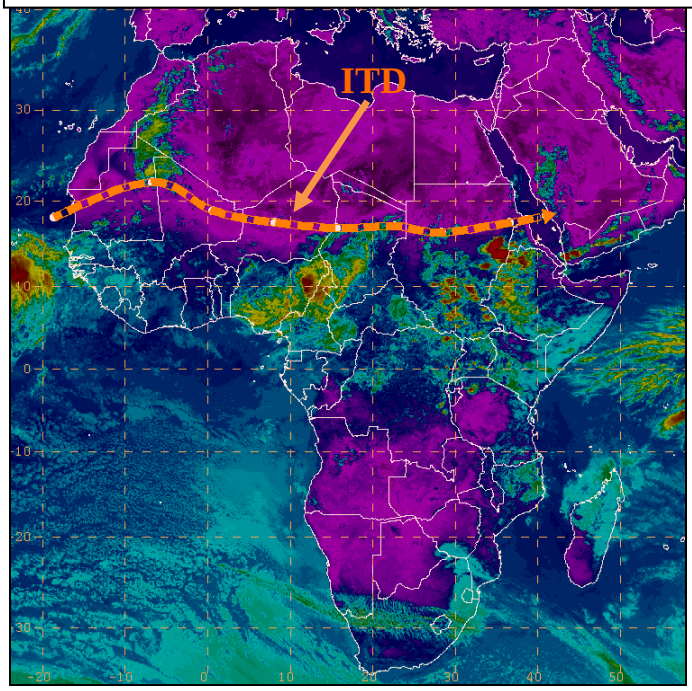
During the previous day, moderate to heavy rainfall was observed over parts of Guinea Conakry; Senegal; Sierra Leone; north and south Mauritania; north and south Mali; north-west Niger; north and central Nigeria; south and central Chad; Cameroon; Democratic Republic of Congo; Central African Republic and South Sudan Republic and West Ethiopia.

2.2. Weather assessment for the current day (August, 17th 2012)

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



ITD Position and IR Satellite Image (valid 1200Z of August, 17th 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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