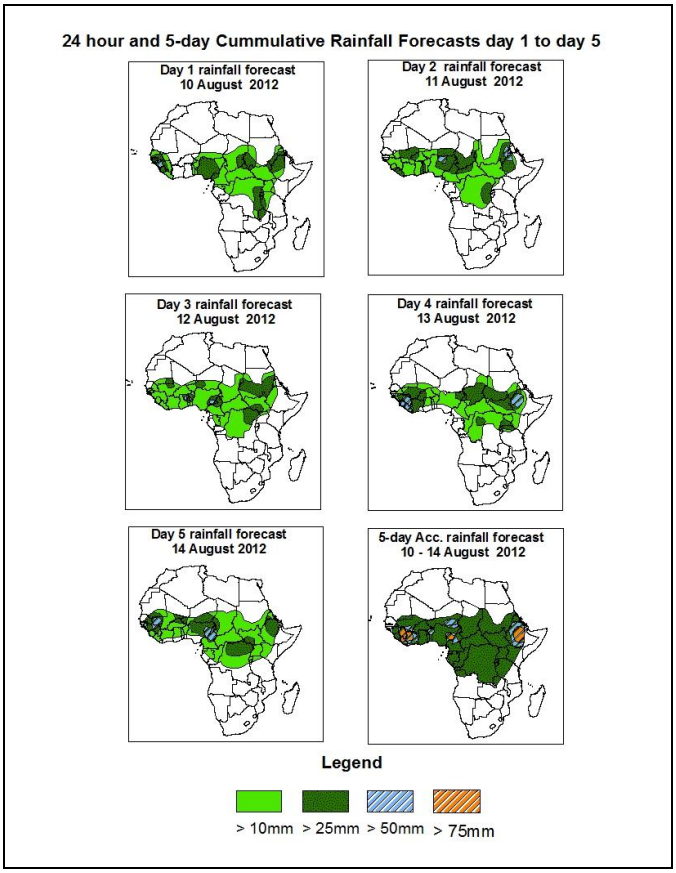
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of August 10th – 06Z of August, 14th 2012. (Issued at 13:00Z of August, 09th 2012)

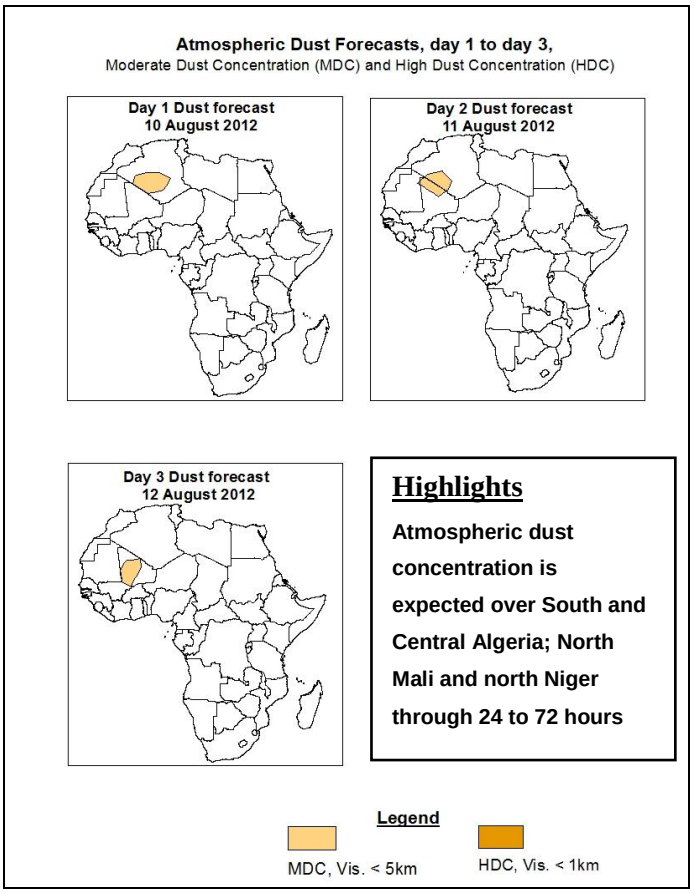
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 20°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 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, 09th 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 the GFS model, a thermal low over North and Central Mauritania (1009hpa) in 24 hours is expected to increase its core value to 1010hpa in 48 hours, and tends to increase from 1006hpa to 1007hpa within 72 to 96 hours, thereafter decrease to 1006hpa in 120 hours. The second low over South Algeria; North Mali (1008hpa) in 24 hours is expected to decrease its core value to 1006hpa through 48 to 72 hours, then slightly increase to 1008hpa in 96 hours, and finally decrease to 1006hpa in 120 hours. The third low over North Chad and Niger (1007hpa) within 24 to 96 hours is expected to decrease its core value to 1006hpa and still drop slightly to 1005hpa in 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to decrease to 1004hpa through 48 to 72 hours, thereafter decrease to 1003hpa within 96 to 120 hours.

The ECMWF model shows a thermal low over North and South Mauritania (1010hpa) in 24 hours is expected to maintain the 1010hpa through 48 to 72 hours, and tends to decrease its core value to 1008hpa in 96 hours, thereafter increase to 1010hpa in 120 hours. The second low over South Algeria; North and Western Mali (1010hpa) in 24 hours is expected to decrease its core value to 1008hpa in 48 hours, and to maintain the 1008hpa within 72 to 120 hours. The third low over North Chad and Niger (1008hpa) through 24 to 96 hours is expected to maintain its core value and increase to 1010hpa 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 East, North, Central and West Mauritania (1008hpa) in 24 hours is expected to slightly increase its core value to 1010hpa in 48 hours, and tends to increase from 1005hpa to 1006hpa within 72 to 120 hours. The second low over South Algeria; North and Central Mali (1007hpa) in 24 hours is expected to decrease its core value to 1006hpa through 48 to 96 hours, and down to 1005hpa in 120 hours. The third low over North Chad and Niger (1007hpa) in 24 hours is expected to slightly decrease to 1006hpa, thereafter tends to maintain its core value at 1006hpa from 48 to 120hours; while the low over North Sudan (1006hpa) in 24 hours is expected to gradually decrease from 1006hpa to 1003hpa, thereafter 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 1032hpa in 24 hours locates at latitude 35^{o}S is expected to decrease its core value to 1029hpa by moving northward to around latitude 30^{o}S in 72 hours, and tends to gradually increase its cores value to 1043hpa by moving southwards from latitude 30^{o}S to 45^{o}S within 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1032hpa in 24 hours locates at latitude 35^{o}S is expected to decrease its core value to 1031hpa by moving northwards to around latitude 30^{o}S in 72 hours, and tends to significantly increase its cores value to 1041hpa by moving southwards from latitude 30^{o}S to 45^{o}S in 96 hours and slightly northwards to latitude 38^{o}S in 120 hours with the same core value of 1041hpa.

Lastly, according to the GFS model, the central pressure value of 1032hpa in 24 hours locates at latitude 35^{o}S is expected to gradually decrease its core value from 1032hpa to 1031hpa by shifting northwards from latitude 35^{o}S to 30^{o}S through 48 to 72 hours before moving southwards to latitude 40 ^{o}S with a core value of 1039hpa.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1024hpa in 24 hours and locates at longitude 50^{o}W is expected to gradually increase its core value from 1024hpa to 1026hpa by shifting eastwards from longitude 50^{o}W to 30^{o}W within 48 to 72 hours, tends to decrease from 1025 to 1024hpa while maintaining its position at longitude 40^{o}W through 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1024hpa in 24 hours and locates at longitude 45^{o}W is expected to gradually increase its core value to 1026hpa while shifting eastwards from longitude 45^{o}W to 33^{o}W within 48 to 72 hours, thereafter decrease its core value from 1025hpa to 1024hpa by moving to the west from longitude 40^{o}W to 45^{o}W through 96 to 120 hours.

Lastly, according to the UKMET model, the central pressure value of 1023hpa within 24 and locates at longitude 45^{o}W is expected to increase its core value to 1026hpa by shifting east to longitude 30^{o}W in 72 hours. Its core value will then decrease from 1027hpa to 1025hpa within 96 to 120 hours while its position will move to the east from longitude 45^{o}W to 40^{o}W.

At 925hpa level, zone of moderate dry northerly and northeasterly winds (20 to 50kts) are expected to prevail over South and Central Algeria and North 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 15^{o}N and 20^{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 central Mali; coastal Senegal; east and central Niger; North-East Chad; and Coastal Mauritania. The

convergence associated with the meridional arm of the ITCZ is expected to oscillate between portion of South Sudan Republic; North and East, 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 South and Central Mali and Mauritania and South Algeria. The African Easterly Waves (AEW) is also expected to propagate westwards affecting parts of Niger, Mali, Mauritania, the coastal areas of Senegal, East and west Chad; West and South Sudan within 24 to 120 hours.

At 500hpa level, a wave is expected to affect parts of Niger, Mali, Mauritania, Senegal and Chad, through 24 to 120 hours with vortices over Niger, Sudan, Mauritania and south-west Chad.

At 150mb, the Tropical Easterly Jet with a maximum core of 35 to 60 Knots will affect portion of South Sudan Republic and South Guinea Gulf Countries; parts of Ethiopia 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 15^{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 850 to 700hpa vortices 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 and Central Algeria; North Mali and north Niger through 24 to 72 hours.

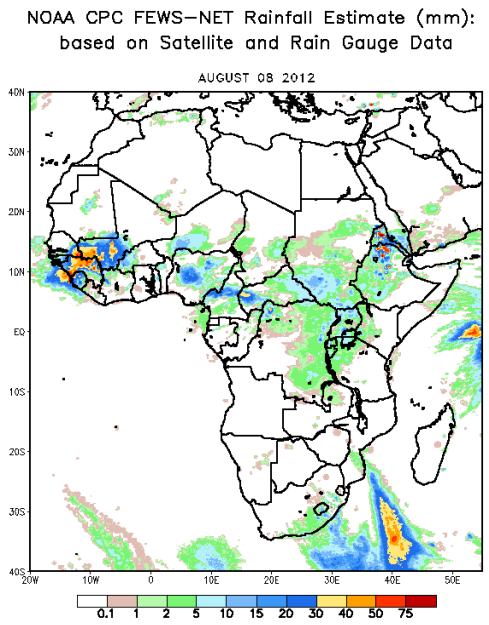
2.0. Previous and Current Day Weather Discussion over Africa (August, 08th 2012– August, 09th 2012)

2.1. Weather assessment for the previous day (August, 08th 2012)

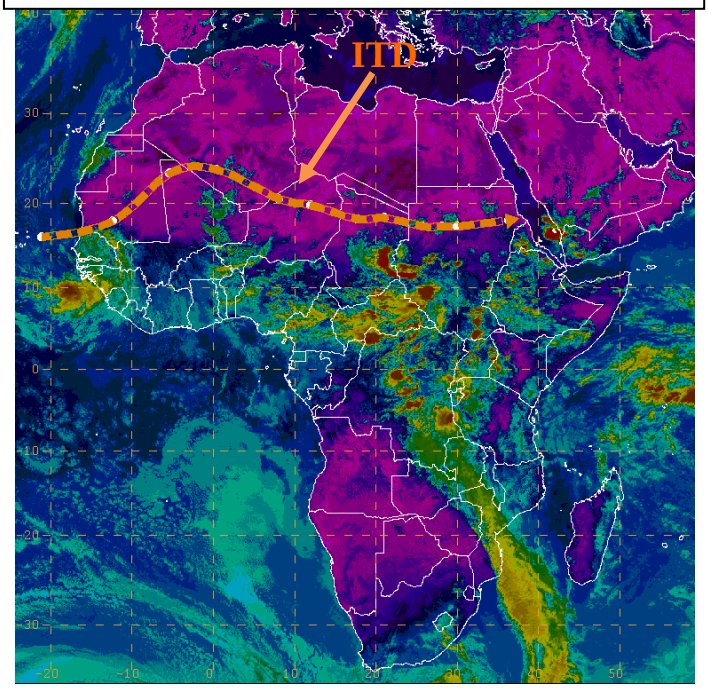
During the previous day, moderate to heavy rainfall was observed over North West and South Guinea Conakry; south-west Burkina Faso and south Niger; parts of Chad; North East and Central Nigeria; North Cameroon; eastern Democratic Republic of Congo; portions of Central African Republic and South Sudan Republic; West Ethiopia; Uganda; South-East Coast of South Africa.

2.2. Weather assessment for the current day (August, 09th 2012)

Convective activities observed across South-West Niger; Burkina Faso; east, west and central Nigeria; west and south Chad; east and central Democratic Republic of Congo; parts of Cameroon; central and southern Sudan Republic; northern Ethiopia; Uganda; Northwest Tanzania; Kenya; Mozambique; Coastal Guinea Conakry and Senegal.



ITD Position and IR Satellite Image (valid 1200Z of August, 09th 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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