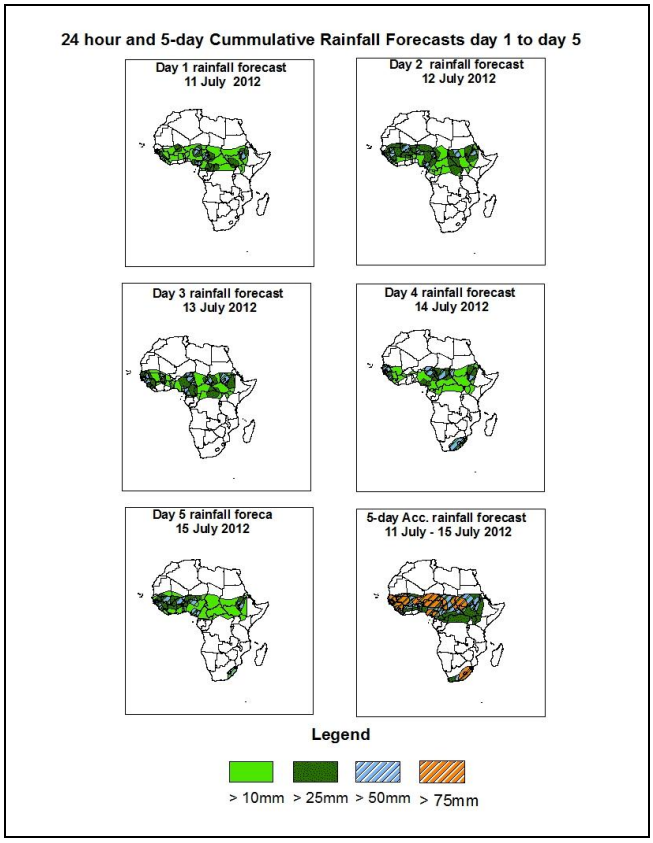
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of July, 11th – 06Z of July, 15th 2012. (Issued at 13:00Z of July, 10th 2012)

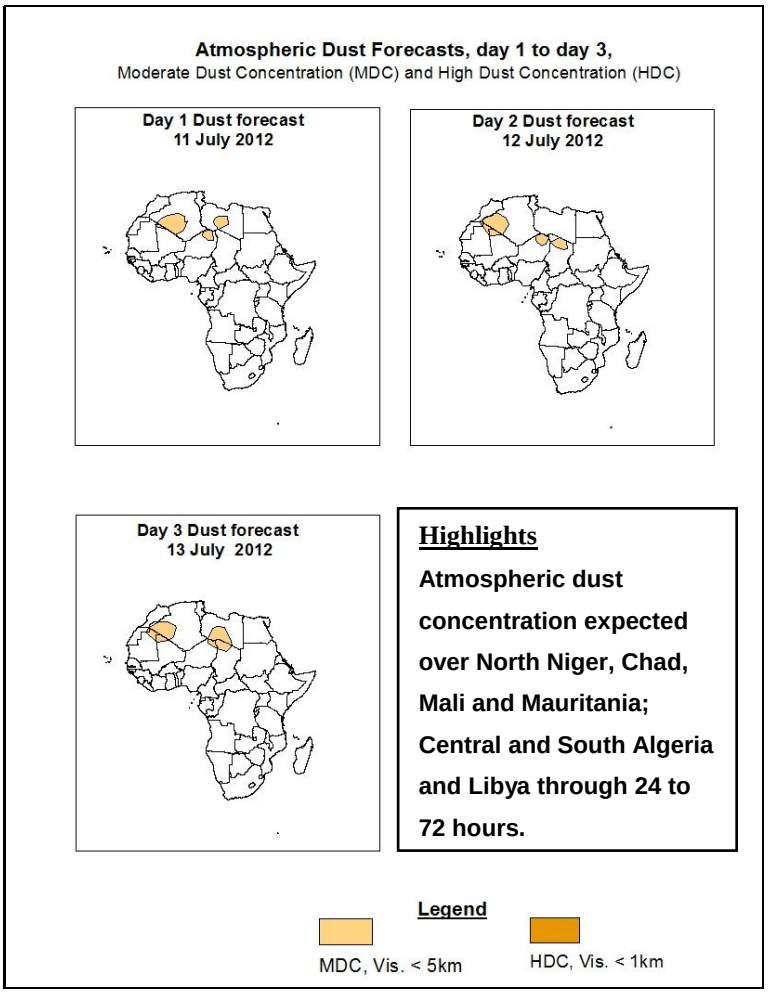
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 22°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 South Sudan; East and South Chad; North and Southwest Cameroon; North and Southeast Nigeria; Portion Central and South Sahel; North Guinea Gulf Countries; Part of Western Sahel, Sierra Leone and Guinea Conakry.



1.3. Model Discussion: Valid from 00Z of July, 10th 2012.

According to the GFS, ECMWF and UKMET models the heat lows are expected to fill up through 24 to 120 hours over Mauritania and deepen over Mali; while maintaining almost its core value over Algeria, Niger, Chad and Sudan.

According to GFS model, a thermal low over West, Central and North Mauritania (1004hpa) in 24 hours is expected to gradually increase its core value from 1005hpa to 1006hpa within 48 to 120 hours. The second low over North Mali and South Algeria (1006hpa) through 24 to 72 hours is expected to decrease its core value from 1005hpa to 1004hpa within 96 to 120 hours. The third low over North Chad and Niger (1005hpa) in 24 hours is expected to maintain almost its core value through 48 to 120 hours; while the low over North Sudan (1005hpa) in 24 hours is also expected to maintain almost its core value through 48 to 120 hours.

The ECMWF model shows a thermal low over West, Central and North Mauritania (1006hpa) in 24 hours is expected to increase its core value to 1007hpa within 48 to 120 hours. The second low over North Mali and South Algeria (1007hpa) in 24 hours is also expected to increase its core value to 1006hpa through 48 to 120 hours. The third low over North Chad and Niger (1006hpa) within 24 to 48 hours is expected to maintain almost its core value within 48 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is also expected to maintain almost its core value through 48 to 120 hours.

The UKMET model shows a thermal low over West, Central and North Mauritania (1003hpa) within 24 to 48 hours is expected to increase its core value from 1004hpa to 1005hpa through 72 to 120 hours. The second low over North Mali and South Algeria (1005hpa) in 24 hours is expected to maintain almost its core value within 48 to 120 hours. The third low over North Chad and Niger (1005hpa) in 24 hours is also expected to maintain almost its core value through 48 to 120 hours; while the low over North Sudan (1004hpa) in 24 hours is expected to maintain almost its core value within 48 to 120 hours.

According to the UKMET model, the St. Helena High pressure system over South Atlantic Ocean with a core value of 1035hpa in 24 hours locates at latitude 40^{o}S is expected to gradually increase from 1041hpa to 1045hpa through 48 to 72 hours by maintaining almost the same position and tends to decrease its value from 1044hpa to 1041hpa by shifting northwards from latitude 40^{o}S to 35^{o}S within 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1034hpa in 24 hours locates at latitude 40^{o}S is expected to gradually increase from 1040hpa to 1044hpa through 48 to 72 hours by maintaining almost the same position and tends to decrease its value from 1043hpa to 1041hpa by shifting northwards from latitude 40^{o}S to 35^{o}S within 96 to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1034hpa in 24 hours locates at latitude 40^{o}S is expected to gradually increase from 1041hpa to 1044hpa through 48 to 72 hours by maintaining almost the same position and tends to decrease

its value from 1043hpa to 1038hpa by shifting northwards from latitude 40°S to 35°S within 96 to 120 hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1032hpa in 24 hours and locates at longitude 35°W is expected to slightly increase its core value to 1033hpa through 48 to 72 hours by moving westwards from longitude 35°W to 40°W, then tends to gradually decrease from 1032hpa to 1030hpa within 96 to 120 hours by shifting eastwards from longitude 40°W to 25°W.

According to the ECMWF model, the central pressure value of 1031hpa in 24 hours and locates at longitude 35°W is expected to slightly increase its core value to 1032hpa through 48 to 72 hours by moving westwards from longitude 35°W to 40°W and tends to gradually decrease from 1031hpa to 1028hpa within 96 to 120 hours by shifting eastwards from longitude 40°W to 30°W.

Lastly, according to the UKMET model, the central pressure value of 1032hpa through 24 to 96 hours and locates between longitude 45°W and 40°W is expected to decrease to 1029hpa in 120 hours by shifting eastwards from longitude 40°W to 30°W

At 925hpa level, zone of moderate dry Northerly and Northeasterly winds (20 to 50kts) are expected to prevail over North Niger, Chad, Mali and Mauritania; Central and South Algeria and Libya through 24 to 120 hours.

At the 850hpa level, a lower tropospheric wind convergence associated with significant West African Monsoon inflow and depth between latitude 12°N 20°N is expected to prevail over parts of Sudan, Cameroon, Chad, Central African Republic and Western Africa within 24 hours to 120 hours. Vortices are expected over Coastal guinea Conakry and Sierra Leone; Part of Mauritania, Gambia, Central African Republic, Guinea Bissau; Central north Niger; South Mali and Chad; North Cameroon. The convergence associated with the meridional arm of the ITCZ is located over part of South Sudan Republic; North Democratic Republic of Congo; West Uganda; East and South Central African Republic through 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) is expected to affect Western Sahel and the African Easterly Waves(AEW) is also expected to propagate westwards waves to affect part of Central Africa; Portion of Sahel Region and Guinea Gulf Countries within 24 to 120 hours.

At 500hpa level, a wave is expected to affect South and East Chad and Senegal; South Mauritania; Central and North Guinea Gulf Countries; Part of Central African Republic, Cameroon, Guinea Conakry, Gambia, Guinea Bissau, Nigeria, Sierra Leone; West Mali; Central, South and West Niger, East and South Burkina Faso through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 30 to 55 Knots will affect Southern Chad and Sudan; Part of Ethiopia, Guinea Gulf Countries and Central African Republic through 24 to 120 Hours. Easterly winds flow will also continue to affect most part of West Africa.

In the next five days, ITD is expected to fluctuate between 15^{o}E and 22^{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 South Sudan; East and South Chad; North and Southwest Cameroon; North and Southeast Nigeria; Portion Central and South Sahel; North Guinea Gulf Countries; Part of Western Sahel, Sierra Leone and Guinea Conakry.

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

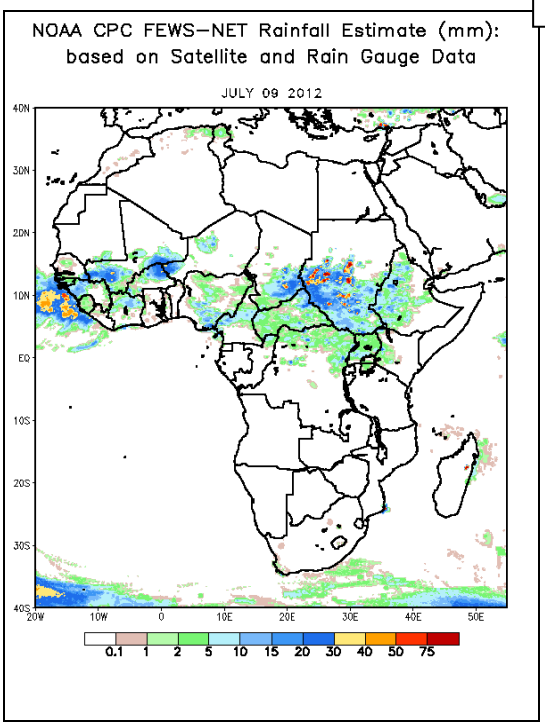
2.0. Previous and Current Day Weather Discussion over Africa (July, 09th 2012– July, 10th 2012)

2.1. Weather assessment for the previous day (July, 09th 2012)

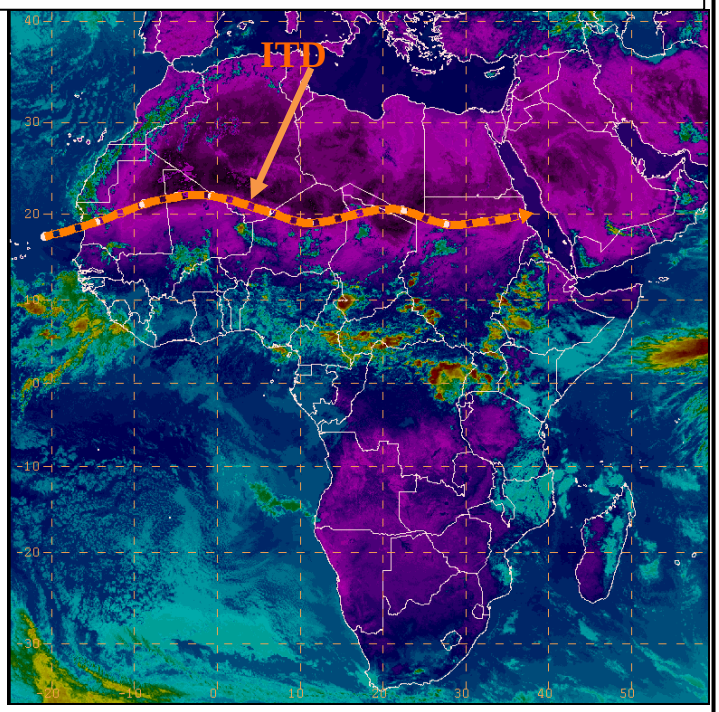
During the previous day, moderate to heavy rainfall was observed over West Mali; Northeast Burkina Faso; North Ghana; West Niger; Southeast Nigeria; South Chad and Sudan; North, Central and West South Sudan Republic; West Ethiopia.

2.2. Weather assessment for the current day (July, 10th 2012)

Convective activities observed across North and East Cameroon; East, South and West Central African Republic; South and West Uganda and South Sudan Republic; West Ethiopia; Southwest Sudan; North Democratic Republic of Congo; West Ethiopia.



ITD Position and IR Satellite Image (valid 1200Z of July, 10th 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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