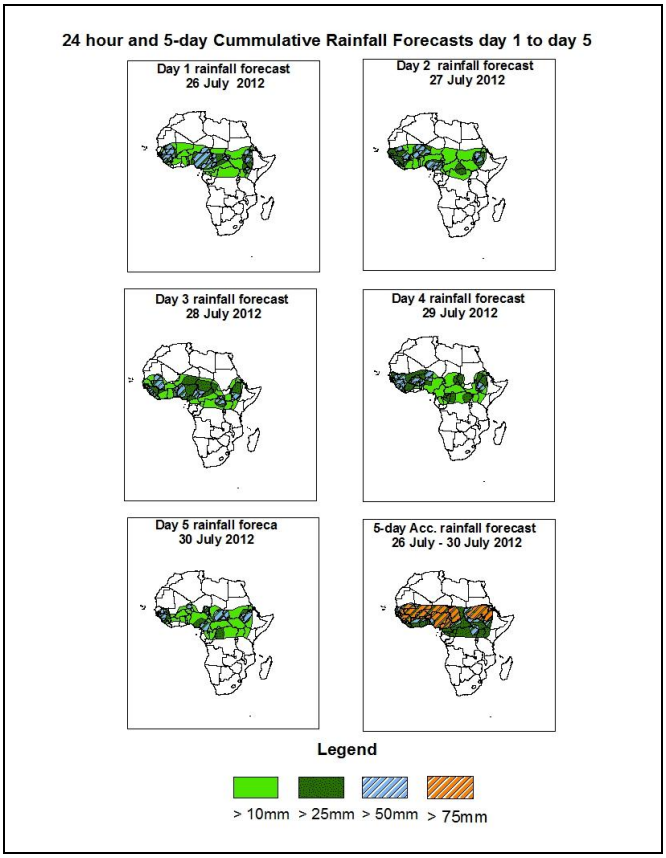
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of July, 26th – 06Z of July, 30th 2012. (Issued at 12:00Z of July, 25th 2012)

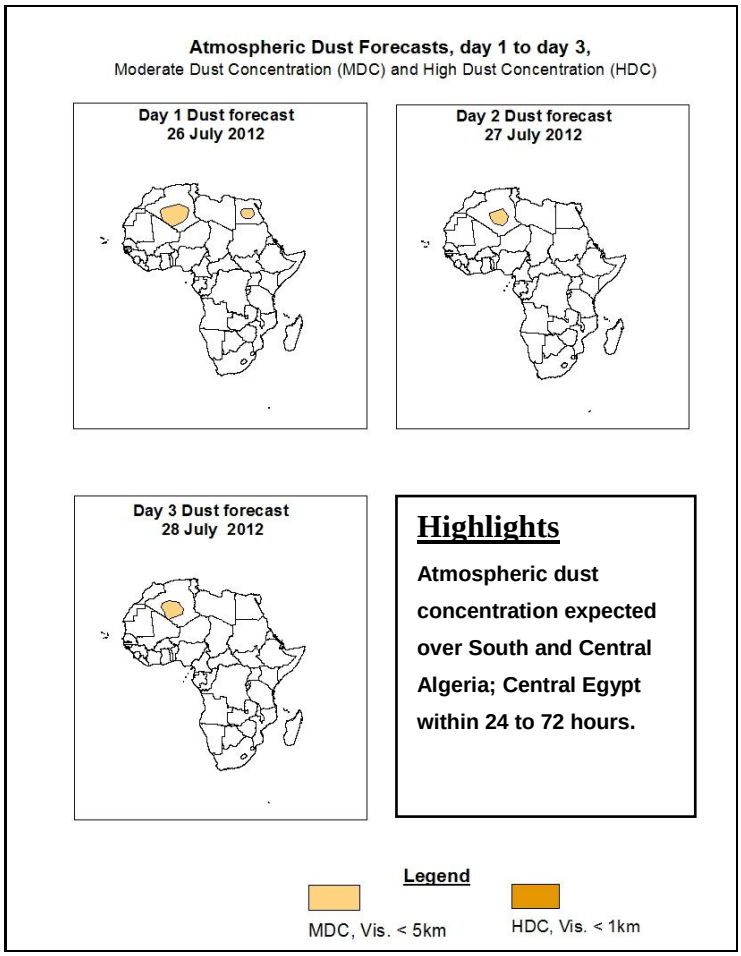
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 17°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 South Sudan; South Chad; part of Nigeria and Cameroon; North, West and East South Sudan Republic; Portion of Sahel Region, Central African Republic and Guinea Gulf Countries; part of Sierra Leone and Guinea Conakry; West Ethiopia.



1.3. Model Discussion: Valid from 00Z of July, 25th 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, Central and West Mauritania (1010hpa) within 24 to 48 hours is expected to decrease its core value to 1006hpa through 72 to 120 hours. The second low over North Mali and South Algeria (1006hpa) within 24 to 48 hours is expected to decrease its core value to 1003hpa in 72 hours, and increase to 1006hpa in 96 hours, thereafter tends to decrease to 1005hpa in 120 hours. The third low over North Chad and Niger (1007hpa) in 24 hours is expected to decrease its core value from 1006hpa to 1004hpa through 48 to 72 hours, and tends to slightly increase to 1005hpa in 96 hours, then decrease to 1004hpa in 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to decrease its core value from 1004hpa to 1000hpa within 48 to 96 hours, and increase to 1004hpa in 120 hours.

The ECMWF model shows a thermal low over North, Central and West Mauritania (1010hpa) in 24 hours is expected to maintain almost its core value through 48 to 120 hours. The second low over North Mali and South Algeria (1007hpa) within 24 to 48 hours is expected to decrease its core value from 1005hpa to 1004hpa through 72 to 96 hours, and increase to 1006hpa in 120 hours. The third low over North Chad and Niger (1008hpa) within 24 to 48 hours is expected to decrease its core value from 1007hpa to 1006hpa through 72 to 120 hours; while the low over North Sudan (1006hpa) within 24 to 48 hours is expected to decrease its core value to 1004hpa through 72 to 96 hours, and increase to 100hpa in 120 hours.

The UKMET model shows a thermal low over North Mauritania (1010hpa) within 24 to 48 hours is expected to gradually decrease its core value from 1008hpa to 1006hpa through 72 to 120 hours. The second low over North Mali and South Algeria (1005hpa) within 24 to 48hours is expected to decrease its core value from 1003hpa to 1002hpa through 72 to 120 hours. The third low over North Chad and Niger (1007hpa) in 24 hours is expected is expected to gradually decrease its core value from 1006hpa to 1004hpa within 48 to 120 hours; while the low over North Sudan (10064pa) in 24 hours is expected to maintain almost its core value 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 1028hpa in 24 hours locates at latitude 35^{o}S is expected to gradually increase from 1035hpa to 1036hpa within 48 to 72 hours by shifting southwards from latitude 35^{o}S to 40^{o}S and tends to decrease its core value to 1027hpa by moving to the north from latitude 40^{o}S to 35^{o}S in 96 hours, thereafter increase to 1034hpa by shifting southwards from latitude 35^{o}S to 40^{o}S in 120 hours.

According to the ECMWF model, the central pressure value of 1027hpa in 24 hours locates at latitude 35^{o}S is expected to gradually increase from 1033hpa to 1034hpa within 48 to 72 hours by shifting southwards from latitude 35^{o}S to 40^{o}S and tends to decrease its core value to 1028hpa by moving to the north from latitude 40^{o}S to 35^{o}S in 96 hours, thereafter increase to 1033hpa by maintaining almost the same position around latitude 35^{o}S in 120 hours.

Lastly, according to the GFS model, the central pressure value of 1028hpa in 24 hours locates at latitude 30^{o}S is expected to gradually increase from 1033hpa to 1034hpa within 48 to 72 hours by shifting southwards from latitude 30^{o}S to 40^{o}S and tends to decrease its core value to 1029hpa by moving to the north from latitude 40^{o}S to 35^{o}S in 96 hours, thereafter increase to 1032hpa by maintaining almost the same position around latitude 35^{o}S in 120 hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1028hpa in 24 hours and locates at longitude 30^{o}W is expected to increase its core value to 1031hpa by maintaining almost the same position around longitude 30^{o}W in 48 hours and tends to decrease gradually from 1028hpa to 1024hpa through 72 to 120 hours by shifting eastwards from longitude 30^{o}W to 25^{o}W.

According to the ECMWF model, the central pressure value of 1027hpa in 24 hours and locates at longitude 30^{o}W is expected to increase its core value to 1031hpa by maintaining almost the same position around longitude 30^{o}W in 48 hours and tends to decrease gradually from 1029hpa to 1025hpa through 72 to 120 hours by shifting eastwards from longitude 30^{o}W to 25^{o}W.

Lastly, according to the UKMET model, the central pressure value of 1028hpa in 24 hours and locates at longitude 30^{o}W is expected to increase its core value to 1035hpa by maintaining almost the same position around longitude 30^{o}W in 48 hours and tends to decrease gradually from 1029hpa to 1023hpa by shifting eastwards from longitude 30^{o}W to 25^{o}W through 72 to 96 hours and westwards from longitude 25^{o}W to 30^{o}W in 120 hours.

At 925hpa level, zone of moderate dry northerly and northeasterly winds (20 to 50kts) are expected to prevail over South and Central Algeria; Central Egypt within 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 14^{o}N 21^{o}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 East and South Mauritania; North and East Niger; Part of Mali, Gambia and Guinea Bissau; South and East Chad; part of Guinea Conakry; North Benin, Cote d`Ivoire and Togo; South Senegal; North and West Burkina Faso; West Sudan. The convergence associated with the meridional arm of the ITCZ is expected to oscillate between part of South Sudan Republic; North Democratic Republic of Congo; West Uganda through 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) is expected to affect Southwest Chad; North Guinea Conakry; Southeast, West Niger; Northeast Nigeria; South Mauritania; West and South Mali; Part of Senegal, Burkina Faso, Guinea Bissau and Gambia; Central and South Mauritania; The African Easterly Waves (AEW) is also expected to propagate westwards waves to affect part of Guinea Gulf Countries and West Africa, portion of Central Africa within 24 to 120 hours.

At 500hpa level, a wave is expected to affect portion of Sahel Region and Guinea Gulf Countries through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 35 to 60 Knots will affect Southern Chad and South 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, Chad and Sudan.

In the next five days, ITD is expected to fluctuate between 17^{o}E and 23^{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; South Chad;; part of Nigeria and Cameroon; North, West and East South Sudan Republic; Portion of Sahel Region, Central African Republic and Guinea Gulf Countries; part of Sierra Leone and Guinea Conakry; West Ethiopia.

Atmospheric dust concentration expected over South and Central Algeria; Central Egypt within 24 to 72 hours.

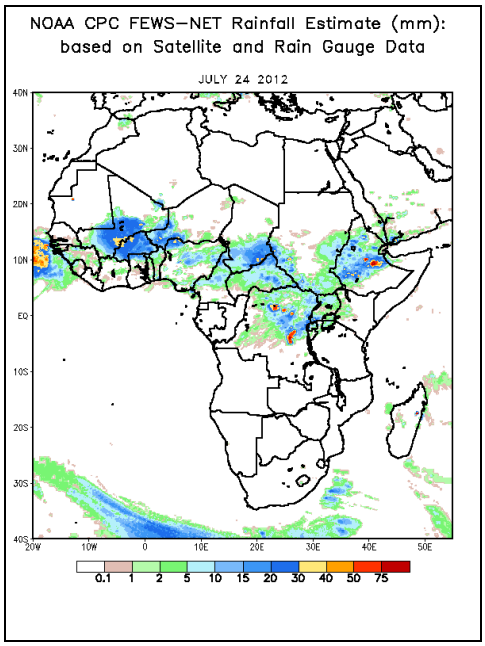
2.0. Previous and Current Day Weather Discussion over Africa (July, 24th 2012– July, 25th 2012)

2.1. Weather assessment for the previous day (July, 24th 2012)

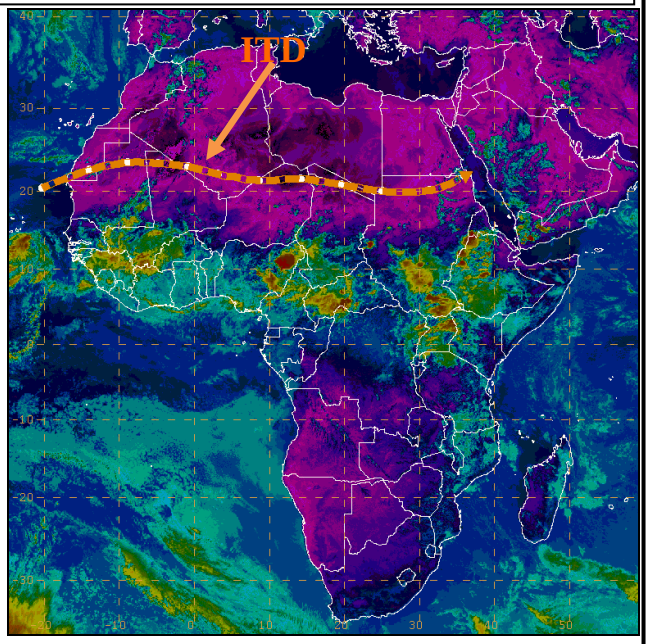
During the previous day, moderate to heavy rainfall was observed over Southeast Mauritania; West and South Mali; part of Burkina Faso; West Niger; Central and Northwest Nigeria; South Chad; Central and North Cameroon; Northeast, Central and South Central African Republic; North and East Democratic Republic of Congo; West South Sudan Republic; portion of Ethiopia, Southeast and Southwest Sudan.

2.2. Weather assessment for the current day (July, 25th 2012)

Convective activities observed across East and North Guinea Conakry; West Mali; North Cote d`Ivoire; East Nigeria; South and West Central African Republic; North Uganda; portion of South Sudan Republic; Northwest Ethiopia and South Sudan.



ITD Position and IR Satellite Image (valid 1200Z of July, 25th 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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