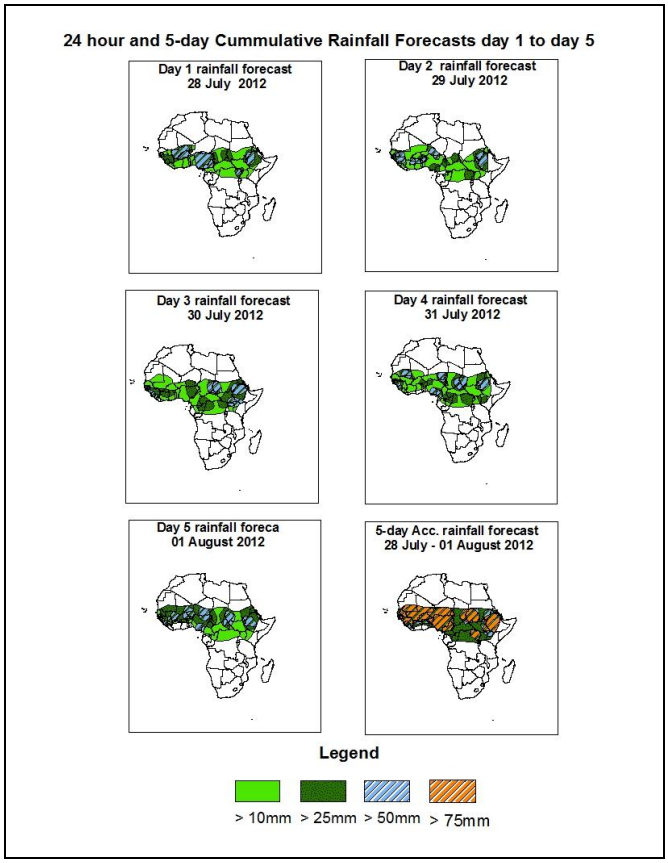
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of July, 28th – 06Z of August, 01st 2012. (Issued at 13:00Z of July, 27th 2012)

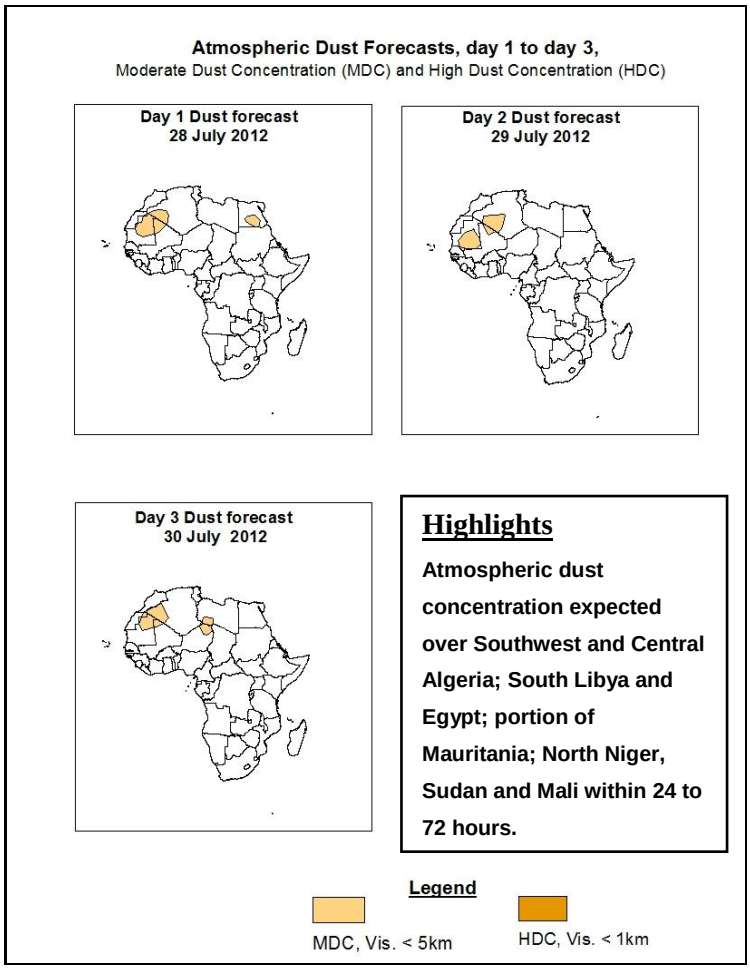
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 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 portion of South Sudan Republic; South Chad; part of Nigeria and Cameroon; South Sudan; 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, 27th 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 (1005hpa) in 24 hours is expected to slightly increase its core value to 1006hpa within 48 to 120 hours. The second low over North Mali and South Algeria (1004hpa) in 24 hours is expected to decrease its core value to 1003hpa in 48 hours, and increase to 1006hpa in 72 hours, then tends to decrease from 1005hpa to 1004hpa through 96 to 120 hours. The third low over North Chad and Niger (1005hpa) within 24 to 48 hours is expected to gradually decrease its core value from 1004hpa to 1002hpa through 72 to 96 hours, thereafter slightly increase to 1003hpa in 120 hours; while the low over North Sudan (1004hpa) in 24 hours is to maintain almost its core value within 48 to 96 hours and tends to decrease to 1001hpa in 120 hours.

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

The UKMET model shows a thermal low over North Mauritania (1006hpa) within 24 to 48 hours is expected to decrease its core value to 1003hpa in 72 hours, then increase to 1006hpa in 96 hours and tends to decrease to 1004hpa in 120 hours. The second low over North Mali and South Algeria (1004hpa) in 24 hours is expected to gradually decrease its core value from 1003hpa to 1001hpa through 48 to 120 hours. The third low over North Chad and Niger (1006hpa) within 24 to 48 hours is expected to slightly decrease its core value to 1005hpa in 72 hours, then increase to 1006hpa in 96 hours, and tends to decrease to 1004hpa in 120 hours; while the low over North Sudan (1004hpa) 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 1034hpa in 24 hours locates at latitude 40^{o}S is expected to decrease to 1027hpa by shifting northwards from latitude 40^{o}S to 35^{o}S in 48 hours, then gradually increase from 1034 to 1040hpa by moving to the south from latitude 35^{o}S to 40^{o}S within 72 to 120 hours.

According to the ECMWF model, the central pressure value of 1033hpa in 24 hours locates at latitude 40^{o}S is expected to decrease to 1030hpa by maintaining almost the same position around latitude 40^{o}S in 48 hours, then gradually increase from 1033 to 1040hpa by shifting northwards around latitude 35^{o}S in 72 hours and maintaining almost the same position around latitude 40^{o}S through 96 to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1034hpa in 24 hours locates at latitude 40°S is expected to decrease to 1027hpa by shifting to the north around latitude 35°S in 48 hours, then gradually increase from 1033 to 1040hpa by maintaining almost the same position around latitude 35°S in 72 hours and shifting southwards around latitude 40°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 1031hpa in 24 hours and locates at longitude 30°W is expected to gradually decrease its core value from 1027hpa to 1024hpa by maintaining almost the same position around longitude 30°W in 48 hours, moving eastwards at latitude 20°W in 72 hours and shifting westwards from longitude 20°W to 35°W through 96 to 120 hours.

According to the ECMWF model, the central pressure value of 1030hpa in 24 hours and locates at longitude 30°W is expected to gradually decrease its core value from 1026hpa to 1024hpa by maintaining almost the same position around longitude 30°W in 48 hours, then shift eastwards from longitude 30°W to 20°W in 72 hours, and finally move to the west within 96 to 120 hours from longitude 35°W to 40°W.

Lastly, according to the UKMET model, the central pressure value of 1031hpa in 24 hours and locates at longitude 30°W is expected to gradually decrease its core value from 1027hpa to 1024hpa by maintaining almost the same position around longitude 30°W in 48 hours, then shift eastwards from longitude 30°W to 20°W in 72 hours, and finally move to the west within 96 to 120 hours from longitude 30°W to 35°W.

At 925hpa level, zone of moderate dry northerly and northeasterly winds (20 to 50kts) are expected to prevail over Southwest and Central Algeria; South Libya and Egypt; portion of Mauritania; North Niger, Sudan and Mali 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 12°N 21°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 West and South Mali; South and North Mauritania; West Burkina Faso; West Niger and Sudan;

North Cote d`Ivoire; North and East Chad; Coastal Guinea Conakry, Gambia and Guinea Bissau. The convergence associated with the meridional arm of the ITCZ is expected to oscillate between part of South Sudan Republic; North, East and Central Democratic Republic of Congo; West Uganda through 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) (25 to 50 Knots) is expected to affect South and West Mali; portion of Senegal; South Chad; South and Central Burkina Faso; 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 part of Sahel Region and Guinea Gulf Countries; part of Central African Republic; West and South Sudan; portion of South Sudan Republic through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 35 to 65 Knots will affect portion of South Sudan Republic and Guinea Gulf Countries; Part of Ethiopia 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 15^{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 portion of South Sudan Republic; South Chad; part of Nigeria and Cameroon; South Sudan; 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 Southwest and Central Algeria; South Libya and Egypt; portion of Mauritania; North Niger, Sudan and Mali within 24 to 72 hours.

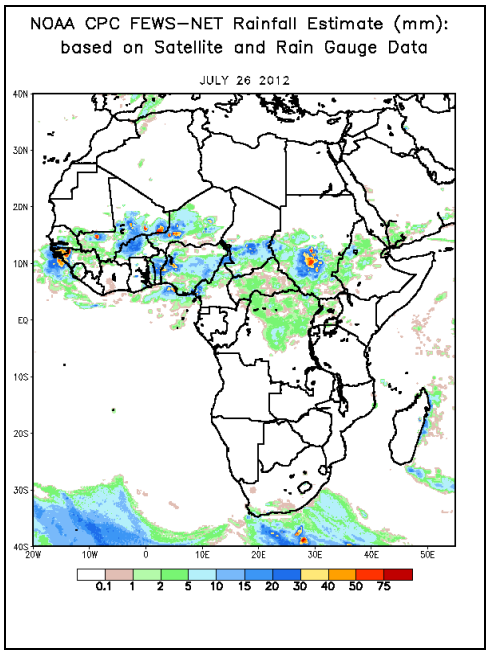
2.0. Previous and Current Day Weather Discussion over Africa (July, 26th 2012– July, 27th 2012)

2.1. Weather assessment for the previous day (July, 26th 2012)

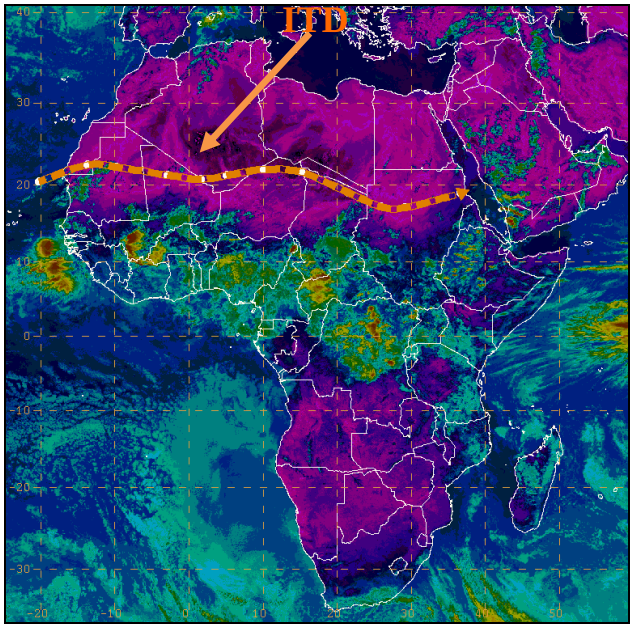
During the previous day, moderate to heavy rainfall was observed over South Senegal; West Guinea Conakry; portion of Guinea Bissau; West, Central and South Mali; portion of Niger and Nigeria; East and Central Benin; North and Southwest Cameroon; South Sudan; South Chad; North Cameroon; North South Sudan Republic.

2.2. Weather assessment for the current day (July, 27th 2012)

Convective activities observed across West Mali and Burkina Faso; North Cote d`Ivoire; Northeast Nigeria; Southwest Chad; West Central African Republic; East, Central and North Democratic Republic of Congo.



ITD Position and IR Satellite Image (valid 1200Z of July, 27th 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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