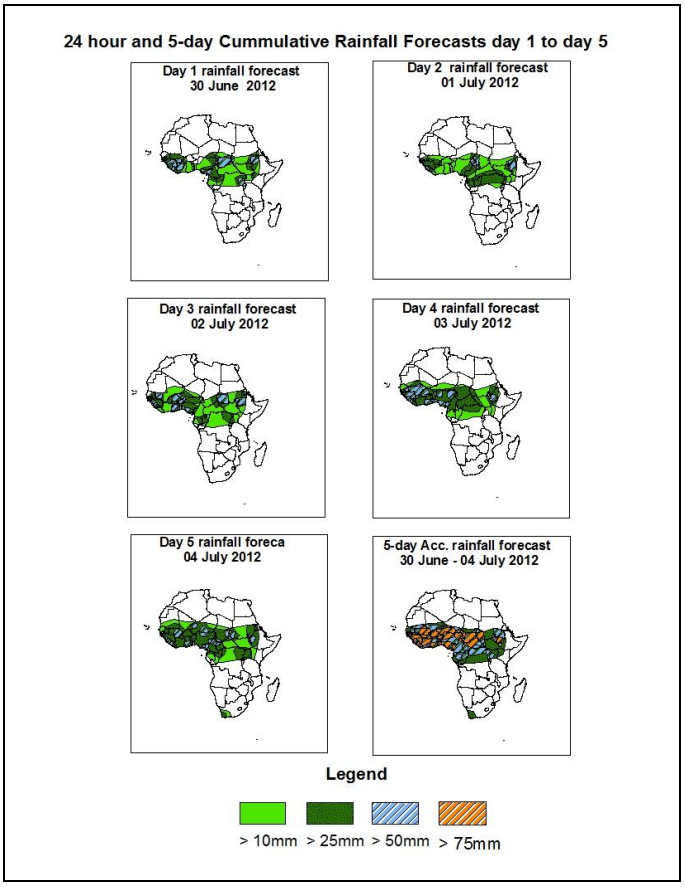
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of June, 30th – 06Z of July, 04th 2012. (Issued at 12:00Z of June, 29th 2012)

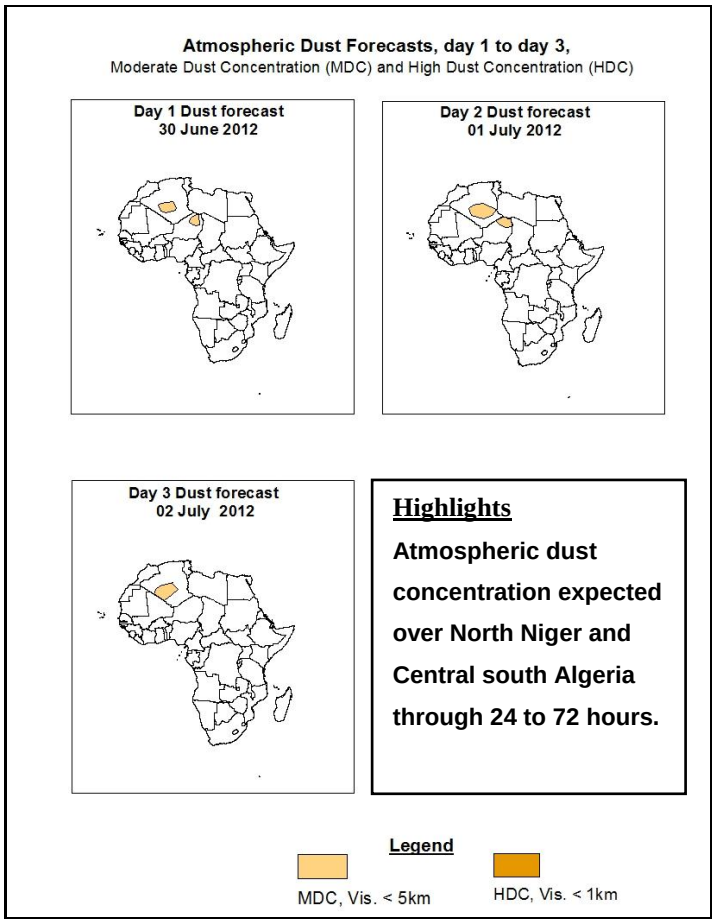
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 16°E and 22°N with moderate to strong monsoon depth within 24 to 120 hours; Also the very active TEJ and the pronounced AEW propagation and 850 to 700hpa vortices are expected to enhance rainfall activities over West Ethiopia; portion of East, West and South Sahel Region; Most part of Guinea Gulf Countries and portion of Central Africa.



1.3. Model Discussion: Valid from 00Z of June, 29th 2012.

According to the GFS, ECMWF and UKMET models the heat lows are expected to deepen through 48 to 120 hours over Algeria, Mali, Niger, and Chad, then maintains almost its core value within 24 to 120 hours over Mauritania and Sudan.

According to GFS model, a thermal low over West, Central and North Mauritania (1008hpa) in 24 hours is expected to decrease its core value from 1006hpa to 1004hpa through 48 to 120 hours. The second low over North Mali and South Algeria (1005hpa) in 24 hours is expected to gradually decrease from 1004hpa to 1002hpa within 48 to 72 hours and tends to increase to 1004hpa in 96 hours, then decreases to 1002hpa in 120 hours. The third low over North Chad and Niger (1004hpa) in 24 hours is expected to gradually decrease from 1003hpa to 1002hpa within 48 to 72 hours and tends to increase to 1004hpa in 96 hours, then slightly decreases to 1003hpa in 120 hours; while the low over North Sudan (1004hpa) in 24 hours is expected to is expected to maintain almost its core value a through 48 to 120 hours.

The ECMWF model shows a thermal low over West, Central and North Mauritania (1008hpa) in 24 hours is expected to maintain almost its core value within 48 to 120 hours. The second low over South Algeria and North Mali (1006hpa) in 24 hours is expected to gradually decrease from 1005hpa to 1003hpa through 48 to 96 hours and tends to slightly increase to 1004hpa in 120 hours. The third low over North Niger and Chad (1006hpa) in 24 hours is also expected to gradually decrease from 1005hpa to 1004hpa within 48 to 72 hours and tends to increase to 1007hpa through 96 to 120 hours; while the low over North Sudan (100hpa) in 24 hours is expected to maintain almost its core value a within 48 to 120 hours.

The UKMET model shows a thermal low over West, Central and North Mauritania (1006hpa) through 24 to 48 hours is expected to decrease its core value to 1006hpa in 72 hours, then increases to 1008hpa within 96 to 120 hours. The second low over South Algeria and North Mali (1004hpa) in 24 hours is expected to gradually decrease from 1002hpa to 1000hpa through 48 to 120 hours. The third low over North Niger and Chad (1005hpa) in 24 hours is also expected to gradually decrease from 1004hpa to 1000hpa through 48 to 120 hours; while the low over North Sudan (1004hpa) in 24 hours is expected to maintain almost its core value a 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 1026hpa in 24 hours locates at latitude 30^{o}S is expected to maintain almost the core value through 48 to 120 hours by keeping its position around latitude 30^{o}S. According to the ECMWF model, the central pressure value of 1026hpa within 24 to 48 hours and locate at latitude 30^{o}S is expected to slightly decrease its core value to 1025hpa through 72 to 96 hours by shifting northwards (from 30^{o}S to 25^{o}S) and tends to slightly increase to 1026hpa in 120 hours. Lastly, according to the GFS model, the central pressure value of 1026hpa within 24 to 48 hours and locates at latitude 30^{o}S is expected to decrease its core value from 1025hpa to 1024hpa through 72 to 96 hours by shifting northwards (from 30^{o}S to 25^{o}S) and tends to slightly increase to 1025hpa in 120 hours by moving to the south (from 25^{o}S to 30^{o}S).

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1030hpa in 24 hours and locates at longitude 35^{o}W is expected to slightly increase its core value to 1031hpa in 48 hours by shifting eastwards (from 35^{o}W to 30^{o}W) and tends to decrease from 1029hpa to 1027hpa within 72 to 96 hours by shifting westwards (from 30^{o}W to 35^{o}W), then increases its core value to 1028hpa in 120 hours by moving to the west (from 35^{o}W to 40^{o}W).

According to the ECMWF model, the central pressure value of 1030hpa through 24 to 48 hours and locates between longitude (35^{o}W and 30^{o}W) is expected to decrease its core value from 1029hpa to 1027hpa within 72 to 96 hours by shifting westwards (from 30^{o}W to 35^{o}W), then slightly increases its core value to 1028hpa in in 120 hours by moving to the west (from 35^{o}W to 40^{o}W).

Lastly, according to the UKMET model, the central pressure value of 1030hpa in 24 hours and locates at longitude 35^{o}W is expected to increase its core value to 1032hpa in 48 hours by keeping its position around longitude 35^{o}W, then decreases its core value from 1030hpa to 1028hpa through 72 to 96 hours by shifting (eastwards to 30^{o}W and westwards to 35^{o}W) respectively and tends to slightly increase its core value to 1029hpa in 120 hours by moving to the west (from 35^{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 North Niger and Central south Algeria 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 14^{o}N 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 and South Niger; East, Central and South Mauritania; off coast Senegal; West Sudan; East Chad and part of Central African Republic. 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 within 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) with a core of 20 to 40 knots is expected over part of Guinea Conakry; the Gambia; Guinea Bissau and Southwest Senegal. Also a very pronounce African Easterly Waves propagating westwards is expect to affect most part of Guinea Gulf Countries; portion of Central African Republic and Sahel Region through 24 to 120 hours.

At 500hpa level, a wave is expected to affect most part of Guinea Gulf Countries; South and West Niger, Chad and Mali; portion of Central African Republic and Burkina Faso; South Mauritania through 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 30 to 60 Knots will affect Southern Chad and Sudan; Part of Guinea Gulf Countries and Central African Republic through 24 to 120 Hours. Easterly winds flow will also affect most part of Sahel Region.

In the next five days, ITD is expected to fluctuate between 16^{o}E and 22^{o}N with moderate to strong monsoon depth within 24 to 120 hours; Also the very active TEJ and the pronounced AEW propagation and 850 to 700hpa vortices are expected to enhance rainfall activities over West Ethiopia; portion of East, West and South Sahel Region; Most part of Guinea Gulf Countries and portion of Central Africa.

Atmospheric dust concentration expected over North Niger and Central south Algeria through 24 to 72 hours.

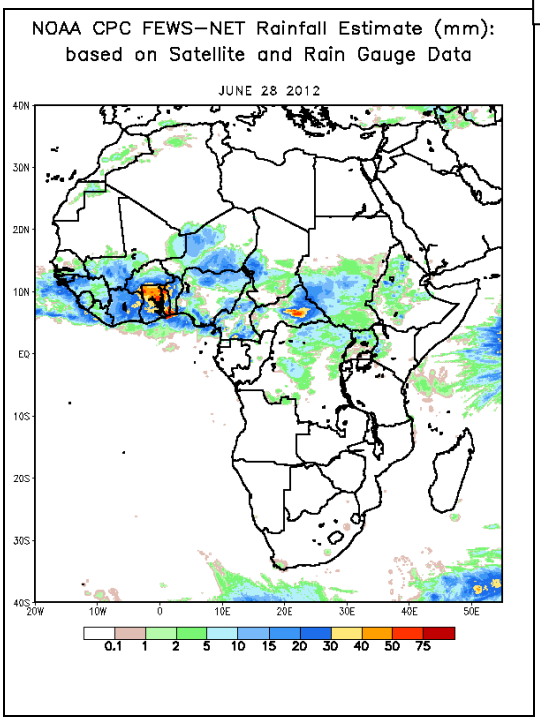
2.0. Previous and Current Day Weather Discussion over Africa (June, 28th 2012– June, 29th 2012)

2.1. Weather assessment for the previous day (June, 28th 2012)

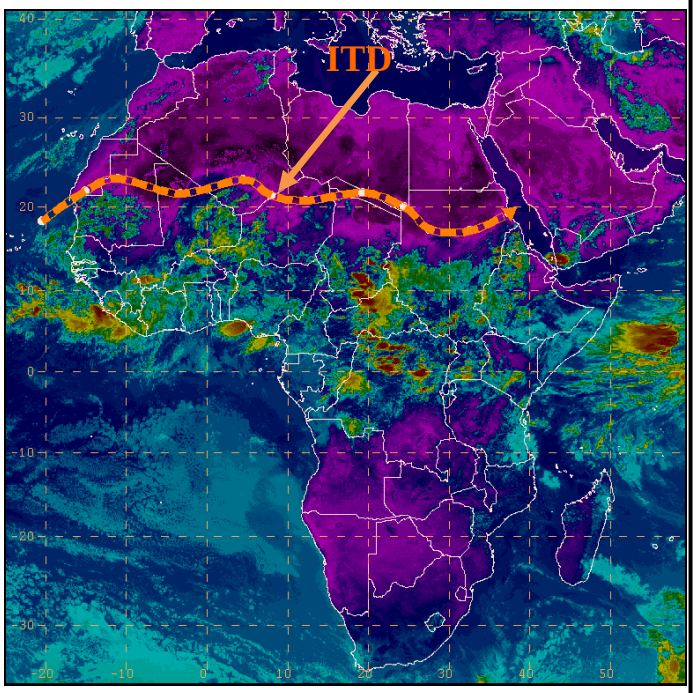
During the previous day, moderate to heavy rainfall was observed over part of Guinea Bissau; North and Coast Guinea Conakry; East Liberia; West Mali; part of Togo, Ghana, Cote d`Ivoire, Benin; West and South Burkina Faso; South, Central and Northwest Niger; North, east and South Nigeria; North, Central and South Cameroon; West Chad; East, Central and South Central African Republic; North and West South Sudan Republic; North and Central west Democratic Republic of Congo; Southwest Kenya; South Sudan; North Uganda and North and West Ethiopia.

2.2. Weather assessment for the current day (June, 29th 2012)

Convective activities observed across Coast Liberia and Sierra Leone; East Guinea Conakry; Southwest Mali; South Nigeria and Chad; part of Central African Republic; Southwest Sudan; South of South Sudan Republic; South Uganda; North, East and West Democratic Republic of Congo; North Ethiopia.



ITD Position and IR Satellite Image (valid 1200Z of June, 29th 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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