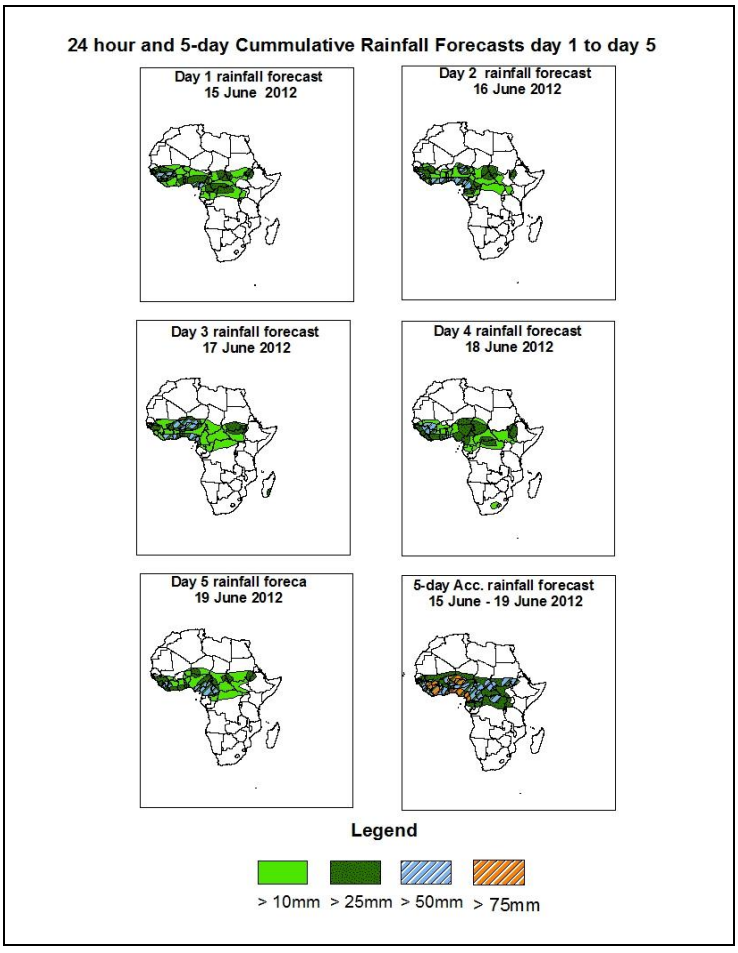
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 15 June – 06Z of 19 June 2012, (Issued at 13:00Z of 14 June 2012)

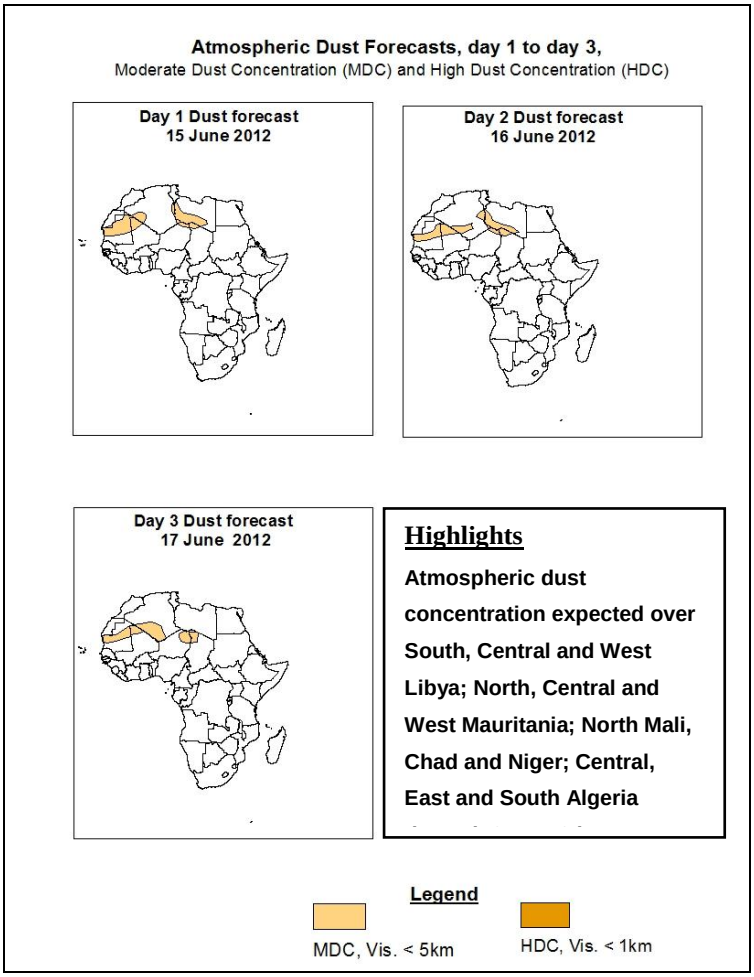
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 shift northwards up to 22^{o}N; therefore, significant monsoon inflow and depth within 24 to 120 hours; Also the establishment TEJ and AEJ associated with AEW propagation, will enhance rainfall activities over Southern Guinea Gulf Countries, Part of Sahel region and Central Africa.



1.3. Model Discussion: Valid from 00Z of June, 14th 2012.

According to the GFS, ECMWF and UKMET models the heat lows are expected to maintain them core values through 24 to 48 hours over Mauritania, Algeria, Mali, Niger, Chad and Sudan thereafter deepens within 72 to 96 hours; and finally fill up over in 120 hours.

According to GFS model, a thermal low over East and South Mauritania (1006hpa) in 24 hours is expected to maintain its core value in 48 hours and decrease to 1003hpa in 72 hours, then tends to increase from 1004hpa to 1006hpa through 96 to 120 hours. The second low over North Mali and Niger with a core value of 1004hpa in 24 hours is expected to almost maintain its core value in 48 hours and tends to increase from 1005hpa to 1007hpa within 72 to 120 hours. Third low over North Chad (1003hpa) is expected to gradually increase its core value from 1007hpa through 48 to 120 hours;

while the low over North Sudan and with a core value of 1004hpa within 24 to 96 hours is expected to decrease its core value to 1000hpa in 120 hours.
The ECMWF model shows a thermal low over East and North Mauritania (1008hpa) in 24 is expected to decrease from 1005hpa to 1004hpa through 48 to 72 hours and tends to increase to 1006hpa within 96 to 120 hours. The second low over South Algeria; North Mali, Niger and Chad (1005hpa) through 24 to 72 hours is expected to gradually increase from 1006hpa to 1007hpa within 96 to 120 hours. The third low over North Sudan (1004hpa) is expected to maintain almost its core value through 24 to 120 hours.

The UKMET model shows a thermal low over East and North Mauritania (1006hpa) in 24 hours is expected to decrease from 1004hpa to 1003hpa through 48 to 96 hours and tends to increase to 1005hpa in 120 hours. The second low over South Algeria; North Mali, Niger and Chad (1006hpa) in 24 hours is expected to decrease from 1004hpa to 1003hpa within 48 to 96 hours and tends to increase its core value to 1005hpa in 120 hours. The third low over North Sudan (1004hpa) is expected to maintain almost its core value through 24 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 is expected to decrease from 1032hpa to 1031hpa through 48 to 72 hours and tends to increase its core value from 1032hpa to 1033hpa within 96 to 120 hours. According to the ECMWF model, the central pressure value of 1033hpa in 24 hours is expected to decrease to 1031hpa through in 48 to 120 hours. According to the GFS model, the central pressure value of 1034hpa in 24 hours is expected to decrease from 1031hpa to 1029 within 48 to 72 hours and tends to increase its core value from 1031hpa to 1034hpa through 96 to 120 hours.

According to the GFS model, the Mascarene high pressure system over South Indian Ocean with its central pressure value of 1033hpa in 24 hours locate at longitude 40^{o}E is expected to slightly decrease to 1032hpa through 48 to 72 hours by shifting Eastwards (from 50^{o}E to 60^{o}E) and gradually increases from 1035hpa to 1036hpa within 96 to 120 hours by shifting Eastwards (from 60^{o}E to 80^{o}E). According to the ECMWF model, the central pressure value of 1032hpa through 24 to 72 hours locates between longitudes 40^{o}E to 60^{o}E is expected to increase its core value to 1036hpa in 96 hours by maintain almost its position and tends to decrease to 1034hpa by shifting eastwards (from 60^{o}E

to 70^{o}E). Lastly, according to the UKMET model of the Mascarene high pressure system over South Indian Ocean with its central pressure value of 1033hpa in 24 hours and locates at longitude 40^{o}E is expected to decrease to 1032hpa through 48 to 72 hours by shifting Eastwards (from 50^{o}E to 60^{o}E) and tends to increase its core value to 1036hpa from 96 to 120 hours by shifting Eastwards (from 60^{o}E to 70^{o}E).

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

At the 850hpa level, a lower tropospheric wind convergence associated with significant West African Monsoon inflow and depth is expected to prevail over parts of Cameroon, Chad, Central African Republic and Western Africa up latitude 22^{o}N through 24 hours to 120 hours. The convergence associated with the meridional arm of the ITCZ is located over Western part of South Sudan Republic; East and South Central African Republic, West Uganda and North Democratic Republic of Congo 24 hours to 120 hours.

At 700hpa level, the African Easterly Jet (AEJ) with a core of 30 to 50 knots is expected to strength and locates over Between Southern and Western Sahel, South Chad and Part of Guinea Gulf Countries within 24 to 120 hours. An African Easterly Waves propagating westwards will be affecting part of Guinea Gulf Countries, South and West Sahel; West Central African Republic through 24 to 120 hours.

At 500hpa level, a wave is expected to affect West and South Mali, Burkina Faso and Niger; part of Senegal, The Gambia, Guinea Bissau, Guinea Conakry, Sierra Leone and Nigeria; South Central African Republic and Mauritania within 24 to 120 hours.

At 150mb, the Sub-Tropical Westerly Jet is only expected over North Mauritania and West Algeria in 24 hours and part of Libya in 120 hours. However, the Tropical Easterly Jet with a maximum core of 30 to 50 Knots will affect Southern Chad and Part of Guinea Gulf Countries through 24 to 120 Hours.

In the next five days, ITD is expected to shift northwards up to 22^{o}N; therefore, significant monsoon inflow and depth within 24 to 120 hours; Also the establishment TEJ and AEJ associated with AEW propagation, will enhance rainfall activities over Southern Guinea Gulf Countries, Part of Sahel region and Central Africa.

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

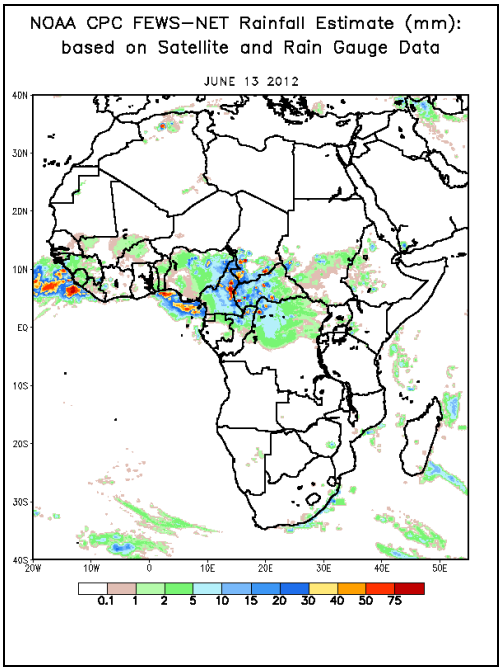
2.0. Previous and Current Day Weather Discussion over Africa (June, 13th 2012– June, 14th 2012)

2.1. Weather assessment for the previous day (June, 13th 2012)

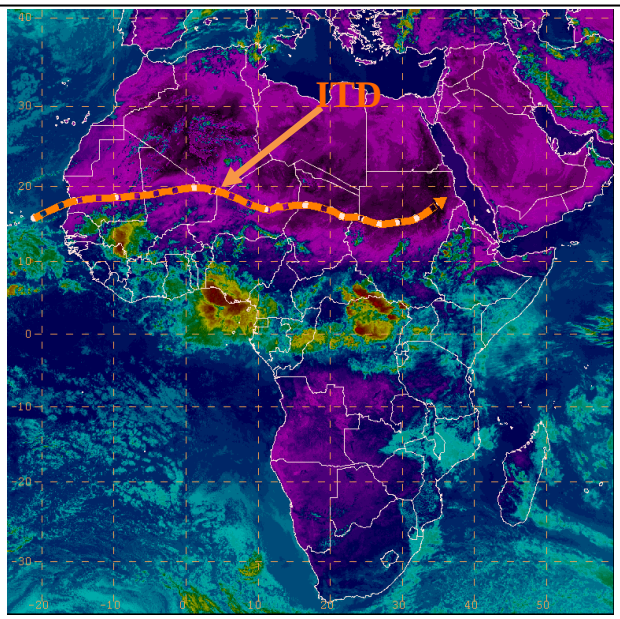
During the previous day, moderate to heavy rainfall was observed over Coastal Guinea Conakry, Sierra Leone and Liberia; South Togo and Benin; Part of Cameroon and Central African Republic; North, East and South Nigeria; South Chad; North Cong and Northwest Democratic Republic of Congo.

2.2. Weather assessment for the current day (June, 14th 2012)

Convective activities observed across West Mali; Northeast Guinea Conakry; South Nigeria and Benin; East Congo; Southwest Cameroon; South Central African Republic and North Democratic Republic of Congo.



ITD Position and IR Satellite Image (valid 1200Z of June, 14th 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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