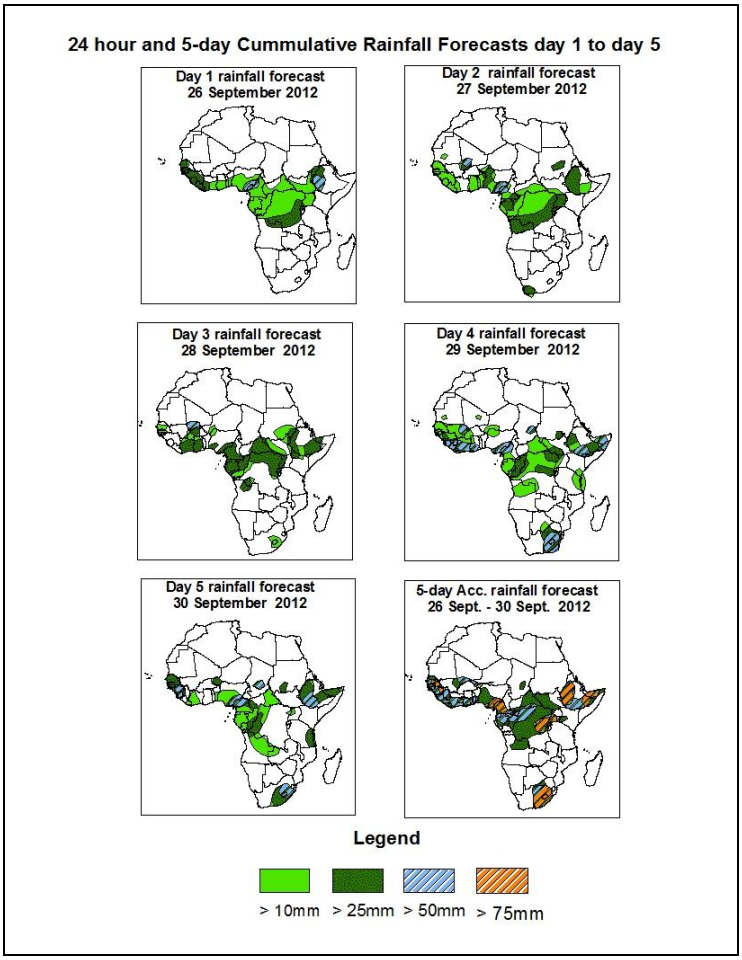
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of September 26th – 06Z of September, 30th 2012. (Issued at 13:00Z of September, 25th 2012)

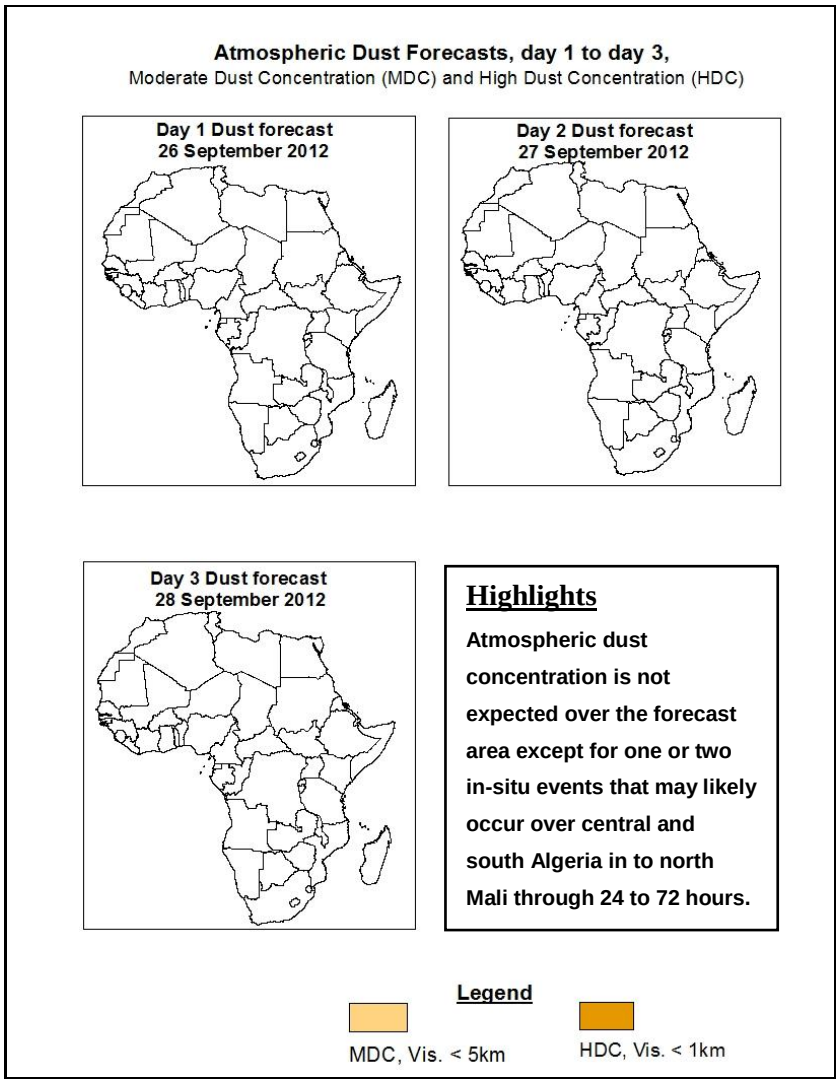
1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 08°N and 15°N with moderate to strong monsoon depth within 24 to 120 hours; also the TEJ, AEJ and the AEW propagation with vortices within the 850 to 700hpa pressure level fields are expected to enhance rainfall activities over parts of South Sudan Republic, Cameroon and Nigeria; South Chad; portions of the Sahel Region, Sierra Leone and Guinea Conakry; Northern Guinea Gulf Countries; part of Central African Republic; West and North Ethiopia.



1.3. Model Discussion: Valid from 00Z of September, 25th 2012.

The heat lows over Mauritania, Mali, Algeria, Niger, Chad and Sudan are expected to fluctuate in their positions while deepening and filling up and vice versa, through 24 to 120 hours, according to the GFS, ECMWF and UKMET models.

According to the GFS model, a thermal low over east Mauritania (1010hpa) in 24 hours is expected to maintain this core value through 48 to 72 hours and tends to increase to 1011hpa in 96 hours and decreases to 1010hpa in 120 hours especially over the east of Mauritania. The second low over south Algeria and Mali (1008hpa) in 24 hours is expected to gradually increase its core value to 1010hpa through 48 to 96 hours and tends to decrease to 1008hpa in 120 hours. The third low over North Chad and Niger (1007hpa) in 24 hours is expected to increase to 1008hpa in 48 hours and tends to

maintain this central value through 48 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to increase to 1007hpa in 96 hours and tends to decrease to1005hpa in 120 hours.

The ECMWF model shows a thermal low over the east Mauritania (1010hpa) in 24 hours that is expected to maintain this central value through 48 to 120 hours over Mauritania. The second low over South Algeria and North Mali (1008hpa) in 24 hours is expected to increase its central value to 1011hpa in 72 hours and tends to decrease to 1010 through 96 to 120 hours. The third low over North Chad and Niger (1009hpa) in 24 hours is expected to increase in its core value to 1010hpa in 72 hours and tends to decrease its central value to 1009hpa through 96 to 120 hours; while the low over North Sudan (1007hpa) in 24 hours is expected to fluctuate between 1007hpa and 1008hpa through 48 to 120 hours.

The UKMET model shows a thermal low over north and central Mauritania (1008hpa) in 24 hours is expected to increase to 1010hpa in 48 hours and tends to maintain this core value through 48 to 120 hours. The second low over south Algeria and north Mali (1007hpa) in 24 hours is expected to decrease its core value to 1006hpa in 48 hours and tends to increase significantly to 1010hpa in 96hours and maintains this central value through to 120 hours. The third low over North Chad and Niger (1008hpa) in 24 hours is expected to increase in its core value to 1010hpa in 48 hours and tends to decrease to 1008hpa through 72 to 120hours; while the low over North Sudan (1005hpa) in 24 hours is expected to increase in value to 1006hpa in 48 hours and tends to maintains this central 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 1035hpa in 24 hours locates at latitude 40^{o}S is expected to increase its core value to 1036hpa in 48 hours and tends to decrease in its core value to 1026hpa while moving northwards to latitude 30^{o}S through 48 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 increase its core value to 1035hpa in 48 hours

and tends to decrease in its core value to 1025hpa while moving northwards to latitude 30^{o}S through 48 to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1035hpa in 24 hours locates at latitude 40^{o}S is expected to increase its core value to 1037hpa in 48 hours and tends to decrease in its core value to 1035hpa while fluctuating between latitudes 30^{o}S and 40^{o}S through 48 to 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 40^{o}W is expected to increase in its core value to 1029hpa in 72 hours and tends to maintain this central value through 72 to 120 hours while moving eastwards to longitude 25^{o}W.

According to the ECMWF model, the central pressure value of 1027hpa in 24 hours and locates at longitude 40^{o}W is expected to increase in its core value to 1028hpa in 48 hours and tends to maintain this core value through to 96 hours before a decrease to 1027hpa in 120 hours while moving eastwards to longitude 25^{o}W.

Lastly, according to the UKMET model, the central pressure value of 1028hpa in 24 hours and locates at longitude 40^{o}W is expected to maintain this core value through 48 to 72 hours and tends to increase to 1029hpa through 96 to 120 hours while moving eastwards to longitude 25^{o}W.

At 925hpa level, a zone of moderate dry northerly and northeasterly winds (25kts) is expected to prevail over central Algeria, north Chad, north Mauritania, north Mali and north east Niger through 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 10^{o}N and 15^{o}N is expected to prevail over parts of Mauritania, Mali, Niger, Sudan, Chad and Western Africa through 24 hours to 120 hours. Vortices are expected over the south Central African Republic and north Sudan. The convergence associated with the meridional arm of the ITCZ is expected to oscillate between portions of South Sudan Republic; North

and Central Democratic Republic of Congo; West and North Uganda; South and East Central African Republic and the Great Lake Countries through 24 hours to 120 hours.

At 700hpa level, the level of AEJs, no significant jets were observed on the weather charts through 24 to 120 hours. The African Easterly Waves (AEW) is also expected to propagate westwards affecting parts of Chad, Democratic Republic of Congo, Guinea-Conakry, Cote d'Ivoire, Ghana, Cameroon, Togo, Benin Republic, Central African Republic, South Sudan Republic, Sierra Leone, Mali, Nigeria, Senegal, Mauritania and Niger within 24 to 120 hours. Vortices are expected over north Democratic Republic of Congo and the Gabon/Cameroon border.

At 500hpa level, a wave is expected to affect parts of Ethiopia, Sudan, Liberia, Guinea-Conakry, Mauritania, Mali, Nigeria, Niger, Cameroon, Central Africa Republic, Senegal, Ghana, Togo, Benin Republic, Cote d'Ivoire, Democratic Republic of Congo, Chad, South Sudan Republic and Gambia, through 24 to 120 hours with no vortices expected over the forecast area within 24 to 120 hours.

At 150mb, the Tropical Easterly Jets are getting weaker with a maximum core of 05 to 15 Knots and no easterly orientation to the wind flow, but will continue to affect most parts of West Africa, Chad, Cameroon, South Sudan Republic, the South Guinea Gulf Countries; parts of Ethiopia, Kenya and Central African Republic, and North Sudan through 24 to 120 Hours.

In the next five days, ITD is expected to fluctuate between 08^{o}N and 15^{o}N with moderate to strong monsoon depth within 24 to 120 hours; also the TEJ, AEJ and the AEW propagation with vortices within the 850 to 700hpa pressure level fields are expected to enhance rainfall activities over parts of South Sudan Republic, Cameroon and Nigeria; South Chad; portions of the Sahel Region, Sierra Leone and Guinea Conakry; Northern Guinea Gulf Countries; part of Central African Republic; West and North Ethiopia.

Atmospheric dust concentration is not expected over the forecast area except for one or two in-situ events that may likely occur over central and south Algeria in to north Mali through 24 to 72 hours.

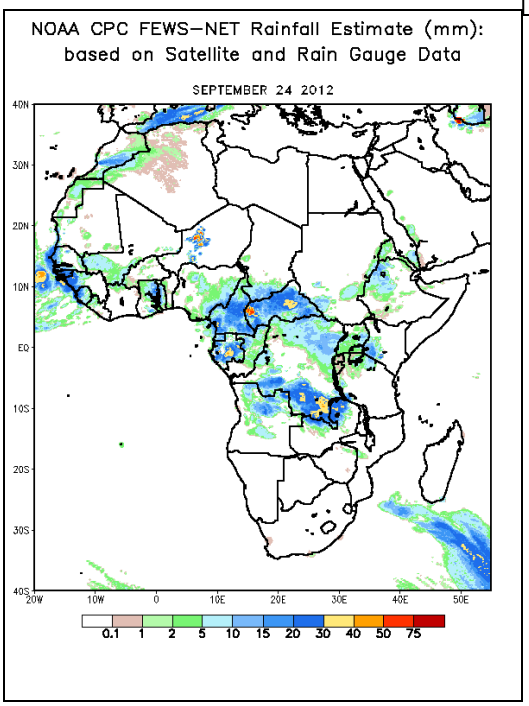
2.0. Previous and Current Day Weather Discussion over Africa (September, 24th 2012 – September, 25th 2012)

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

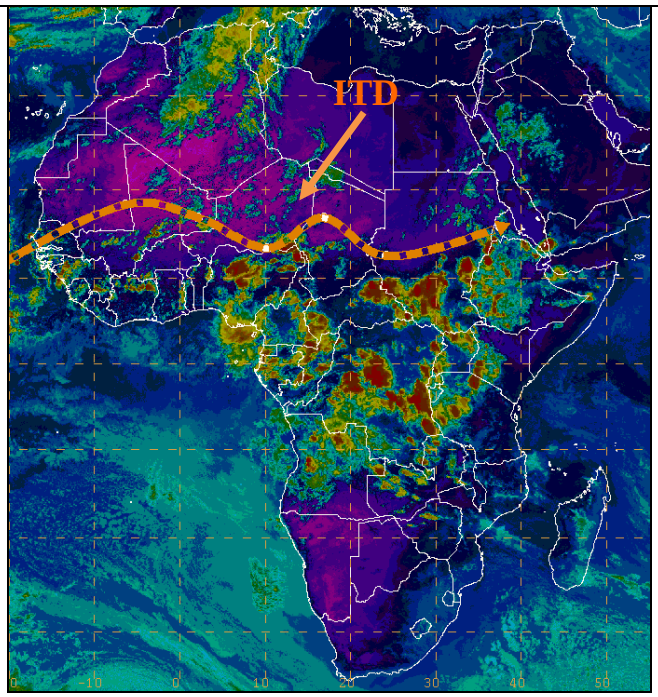
During the previous day, moderate to heavy rainfall was observed over parts of Mauritania; Togo; Algeria; Guinea Conakry; Cote d'Ivoire; Congo; Gabon; Sierra Leone; Mali; Niger; Nigeria; Chad; Cameroon; Democratic Republic of Congo; Central African Republic; South Sudan Republic; Ethiopia; Angola; Ghana; Burkina Faso and Gambia.

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

Convective activities observed across parts of Mali; Niger; Burkina Faso; Nigeria; Chad; Democratic Republic of Congo; Cameroon; Congo; South Sudan Republic; Ethiopia; Uganda; Somalia; Mauritania; Senegal; Guinea-Conakry; Sierra Leone; Ghana; Togo; Kenya; Tanzania; Gabon; Angola and Central African Republic.



ITD Position and IR Satellite Image (valid 1200Z of September, 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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