

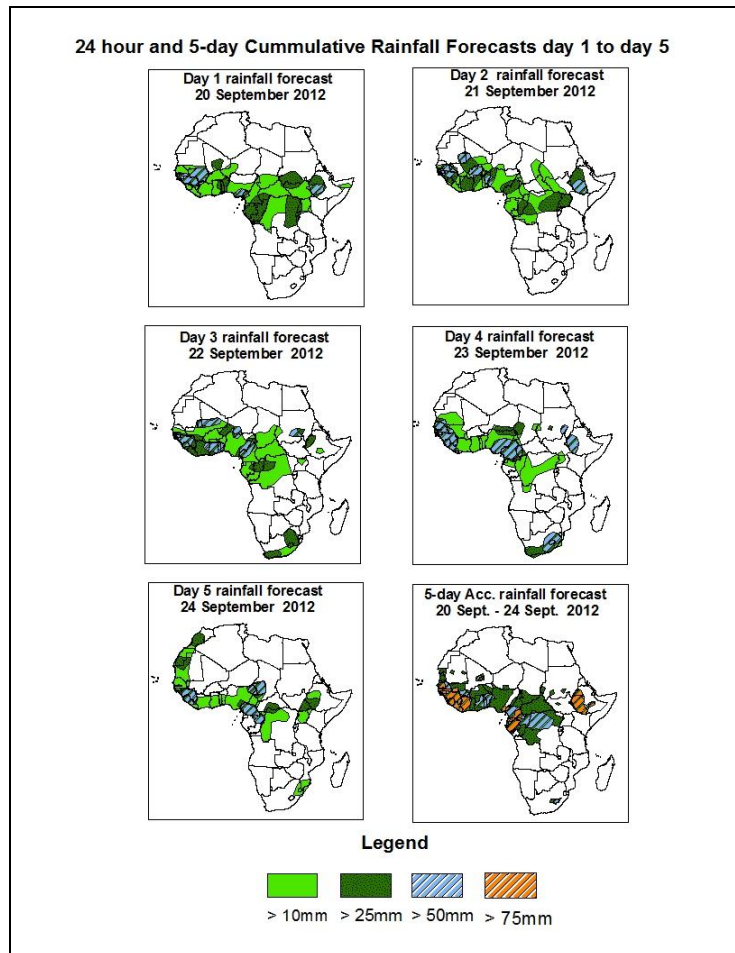


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of September 21<sup>st</sup> – 06Z of September, 25<sup>th</sup> 2012. (Issued at 13:00Z of September, 20<sup>th</sup> 2012)

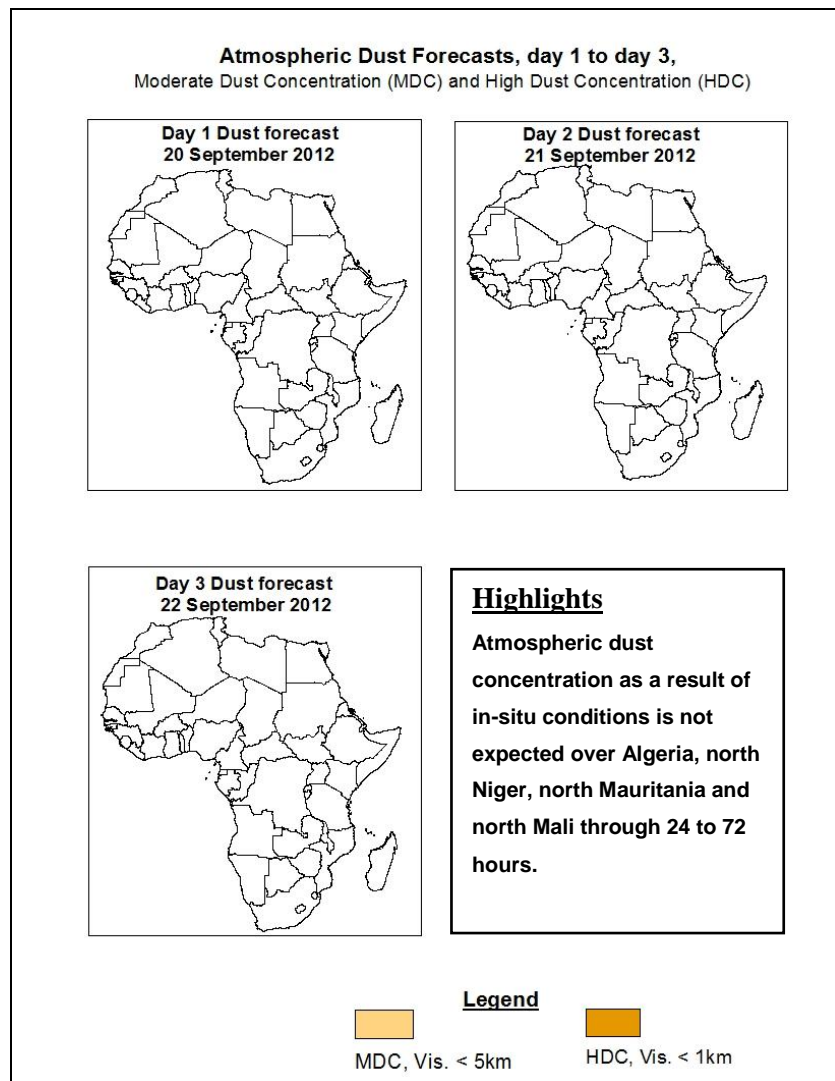
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 10°N and 22°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, 20<sup>th</sup> 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 south-west and coastal Mauritania (1008hpa) in 24 hours is expected to steadily increase its core value to 1010hpa in 72 hours and tends to maintain this core value through 72 to 120 hours especially over the east, south and coastal Mauritania. The second low over south Algeria and Mali (1009hpa) in 24 hours is expected to increase its core value to 1010hpa in 48 hours and tends to gradually decrease to 1007hpa through 72 to 120 hours. The third low over North Chad and Niger (1008hpa) in 24 hours is expected to increase to 1009hpa in 72

hours and tends to decrease to 1006hpa through 96 to 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to maintain this central value through 48 to 72 hours and tends to decrease to 1004hpa in 120 hours.

The ECMWF model shows a thermal low over the coast and south-west Mauritania (1009hpa) in 24 hours that is expected to increase to 1010hpa in 48 hours and tends to maintain this central value through 48 to 120 hours over Mauritania. The second low over South Algeria and North Mali (1010hpa) in 24 hours is expected to maintain this central value through 48 to 96 hours and tends to decrease to 1009hpa in 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 1008hpa in 120 hours; while the low over North Sudan (1006hpa) in 24 hours is expected to maintain almost the same core value through 48 to 120 hours.

The UKMET model shows a thermal low over north and central Mauritania (1009hpa) in 24 hours is expected to increase its core value to 1011hpa in 48 hours, and tends to decrease to 1010hpa in 72 hours and maintains this core value through 72 to 120 hours. The second low over south Algeria and north Mali (1009hpa) in 24 hours is expected to increase its core value to 1010hpa in 48 hours and to decrease to 1007hpa through 96 to 120 hours. The third low over North Chad and Niger (1008hpa) in 24 hours is expected to maintain this core value through 24 to 72 hours and tends to decrease to 1007hpa through 96 to 120hours; while the low over North Sudan (1005hpa) in 24 hours is expected to increase to 1006hpa and tends to maintain this core value at 1006hpa 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 1025hpa in 24 hours locates at latitude 30°S is expected to increase its core value to 1029hpa in 72 hours and tends to decrease in its core value to 1025hpa while remaining quasi-stationary at the same latitudinal position of 30°S in 120 hours.

According to the ECMWF model, the central pressure value of 1024hpa in 24 hours locates at latitude 30°S is expected to increase its core value to 1028hpa in 72 hours

and tends to fluctuate from 1027hpa to 1028hpa central value while remaining quasi-stationary at the same latitudinal position of 30°S through 96 to 120 hours.

Lastly, according to the GFS model, the central pressure value of 1025hpa in 24 hours locates at latitude 30°S is expected to increase its core value to 1029hpa in 72 hours and tends to decrease in its core value to 1027hpa while moving southward to latitude 40°S in 120 hours.

According to the GFS model, the Azores high pressure system over North Atlantic Ocean with its central pressure value of 1033hpa in 24 hours and locates at longitude 45°W is expected to increase its core value to 1035hpa in 48 hours and tends to steadily decrease to 1030hpa through 72 to 120 hours while shifting eastwards to longitude 40°W.

According to the ECMWF model, the central pressure value of 1033hpa in 24 hours and locates at longitude 45°W is expected to increase its core value to 1035hpa in 48 hours and tends to steadily decrease to 1030hpa through 72 to 120 hours while shifting eastwards to longitude 40°W.

Lastly, according to the UKMET model, the central pressure value of 1034hpa in 24 hours and locates at longitude 45°W is expected to increase its core value to 1036hpa in 48 hours and tends to steadily decrease to 1030hpa through 72 to 120 hours while moving eastwards to longitude 35°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°N and 22°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 south-east Nigeria; Guinea Bissau; Central Africa Republic; Guinea-Conakry; north Ghana and south-east Senegal. 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 AEJs seem to be disappearing as no significant jets were observed on the weather charts. The African Easterly Waves (AEW) is also expected to propagate westwards affecting parts of Guinea-Conakry, Cote d'Ivoire, Ghana, Cameroon, Central African Republic, Togo, Benin Republic, South Sudan Republic, Sierra Leone, Mali, Nigeria, Senegal, Mauritania and Niger within 24 to 120 hours. Vortices are expected over north Sudan, Guinea-Conakry, and Guinea-Bissau.

At 500hpa level, a wave is expected to affect parts of Mauritania, Mali, Nigeria, Niger, Cameroon, Central Africa Republic, Senegal, Sierra Leone, Chad, South Sudan Republic and Gambia, through 24 to 120 hours with vortices expected over Guinea-Conakry/Senegal border within 24 to 120 hours.

At 150mb, the Tropical Easterly Jet with a maximum core of 10 to 35 Knots will affect portions of South Sudan Republic and the South Guinea Gulf Countries; parts of Ethiopia, Cameroon, Kenya and Central African Republic, with a slight north-easterly orientation to the wind flow, will also continue to affect most parts of West Africa, Chad, Cameroon and Sudan through 24 to 120 Hours.

In the next five days, ITD is expected to fluctuate between 10°N and 22°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 as a result of in-situ conditions is not expected over Algeria, north Niger, north Mauritania and north Mali through 24 to 72 hours.

## 2.0. Previous and Current Day Weather Discussion over Africa

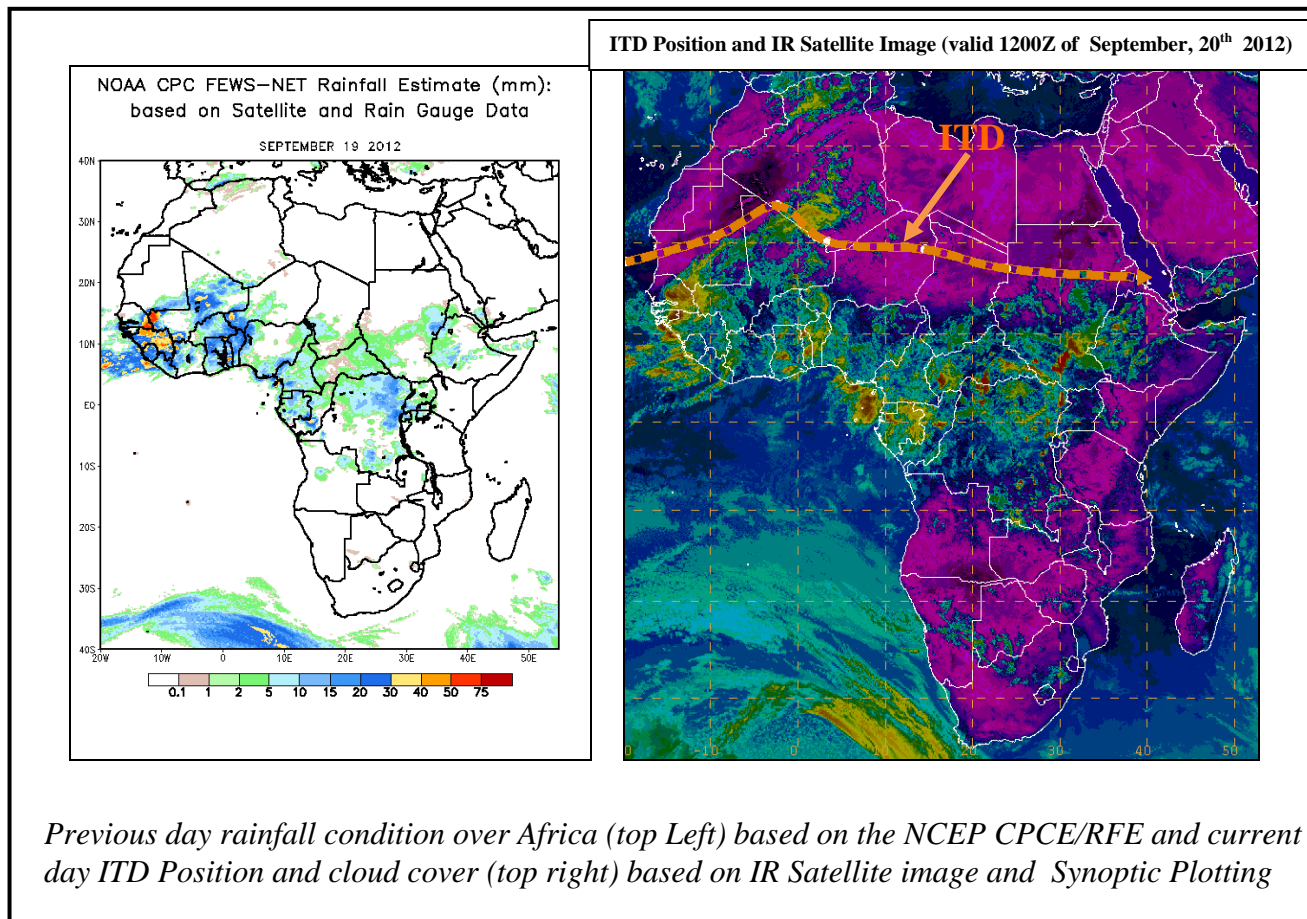
(September, 19<sup>th</sup> 2012 – September, 20<sup>th</sup> 2012)

### 2.1. Weather assessment for the previous day (September, 19<sup>th</sup> 2012)

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

### 2.2. Weather assessment for the current day (September, 20<sup>th</sup> 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; Botswana; Namibia; Gabon and Central African Republic.



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