

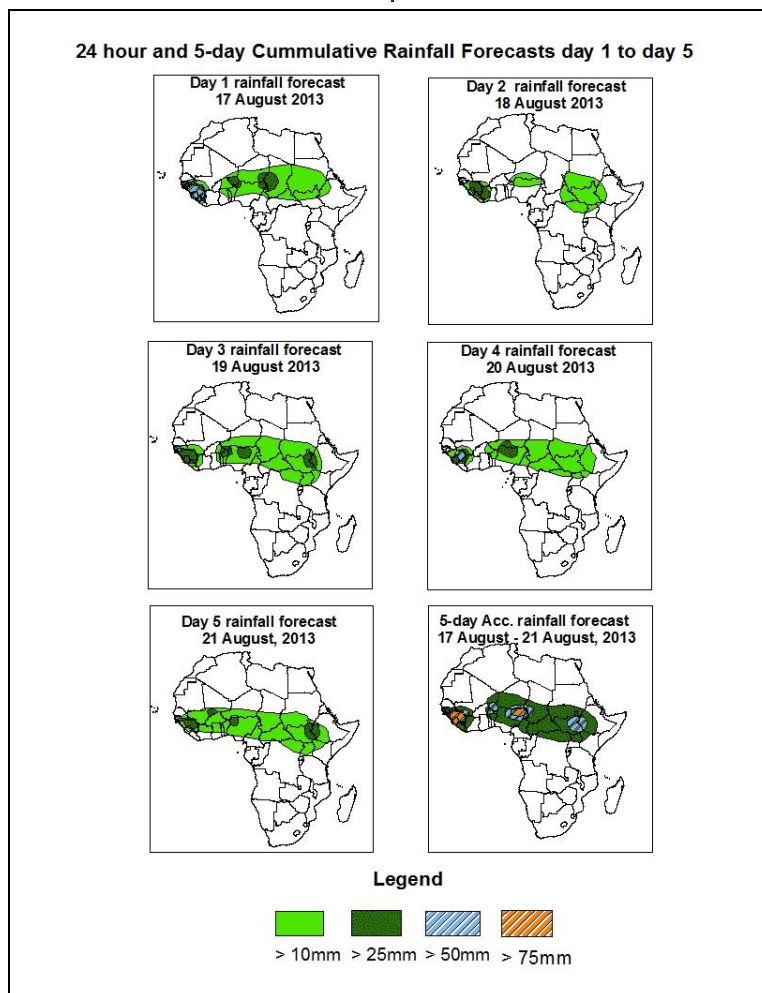


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 17 August – 06Z of 21 August, 2013. (Issued at 1700Z of 16 August 2013)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

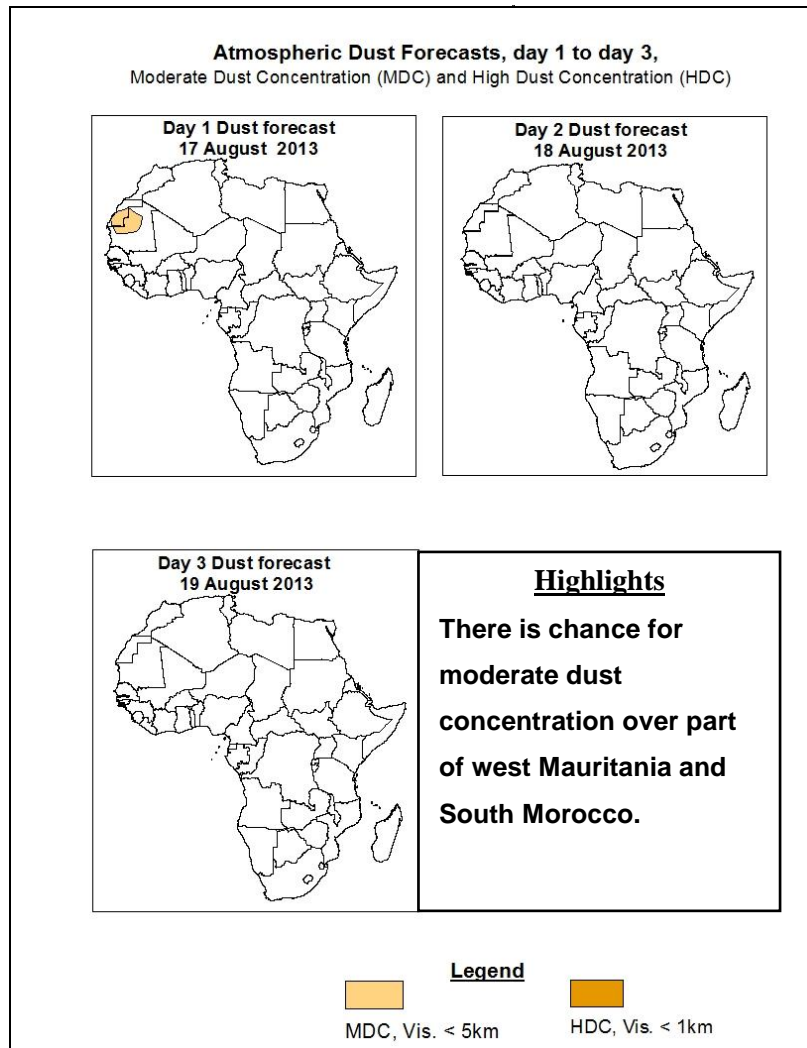
The forecasts are expressed in terms of 75% probability of precipitation (POP) exceeded, based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.



### Summary

In the next five days, favorable conditions are expected to continue modulating rainfall activities over central and eastern part of West Africa while the extreme west of West Africa is expected to be under suppressed conditions with slight or no rainfall. Suppressed conditions are also expected to continue along the Gulf of Guinea coast. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to increase rainfall over East Africa. Thus, there is an increased chance for moderate to heavy rainfall over Conakry Guinea, Bissau Guinea, Sierra Leone, Liberia, south *Niger*, *South Chad*, *Sudan*, and *West Ethiopia*.

## 1.2. Atmospheric Dust Forecasts: Valid 17 - 19 August 2012



## 1.2. Model Discussion: Valid from 00Z of 16 August 2013

*Model comparison (Valid from 00Z; 16 August, 2013) shows all the three models are in general agreement in terms of depicting positions of the northern and southern hemisphere sub-tropical highs, while they showed slight differences in depicting their intensity.*

The Azores High Pressure System over Northeast Atlantic Ocean is expected to slightly weaken during 24 to 96 hours. Its central pressure value is expected to decrease from

about 1026hpa to 1024hpa according to the GFS model and ECMWF models and from about 1027hpa to 1023hpa according to the UKMET model.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to intensify during the forecast period; its central pressure value is expected to increase from about 1026hpa to 1036hpa according to GFS models, about 1027hpa to 1036hpa according to the ECMWF and UKMET model.

The Mascarene high pressure system over southwestern Indian Ocean is expected to weaken significantly during 24 to 72 hours. Its central pressure value is expected to decrease from 1025hpa to 1020hpa according to GFS model, ECMWF model and UKMET model.

The heat lows over the central Sahel and neighboring areas are expected remain stationary from 24 to 72 hours especially over Mali and Mauritania according to the ECMWF and UKMET models. Its value is expected to be 1007hpa according to ECMWF model, 1005hpa according to UKMET model. The seasonal lows across the red sea and its neighboring areas are expected to maintain its positions during the forecast period. The pressure values are likely to be 1000hpa according to the GFS model, 1002hpa according to the ECMWF and according to UKMET model.

At the 850hPa level, monsoon wind flow continues to dominate flow across West Africa. The inter-tropical front is also expected to shift slightly to the south to have an average position of latitude 21°N, while meridional wind convergence will dominate flow across East Africa. Suppressed rainfall along Guinea Gulf coast is expected to persist as wind and surface pressure conditions gradually improve over the area during the forecast period. The frequency in number of vortices at this level and wind convergence over the region is expected to be maintained over the region with high to moderate rainfall over Western Sahel.

At 700hpa level, wind flow maintains northeasterly to easterly flow pattern between. Few vortices and trough lines also are expected to occur from East to west and likely to facilitate westward propagation of systems across the region during the period.

At 500hpa level, winds associated with mid-tropospheric easterly jet are generally weak with common speeds of 30kts over Sahel.

At 150hPa level, tropical easterly jets are stronger over East Africa than over Sahel during forecast period. Speeds of 30 to 65kts are common over West and East Africa. However, speeds exceeding 70kts are observed over Ethiopia, eastern Sudan and Somalia during the forecast period.

In the next five days, favorable conditions are expected to continue modulating rainfall activities over central and eastern part of West Africa while the extreme west of West Africa is expected to be under suppressed conditions with slight or no rainfall. Suppressed conditions are also expected to continue along the Gulf of Guinea coast. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to increase rainfall over East Africa. Thus, there is an increased chance for moderate to heavy rainfall over Conakry Guinea, Bissau Guinea, Sierra Leone, Liberia, south Niger, South Chad, Sudan, and West Ethiopia

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

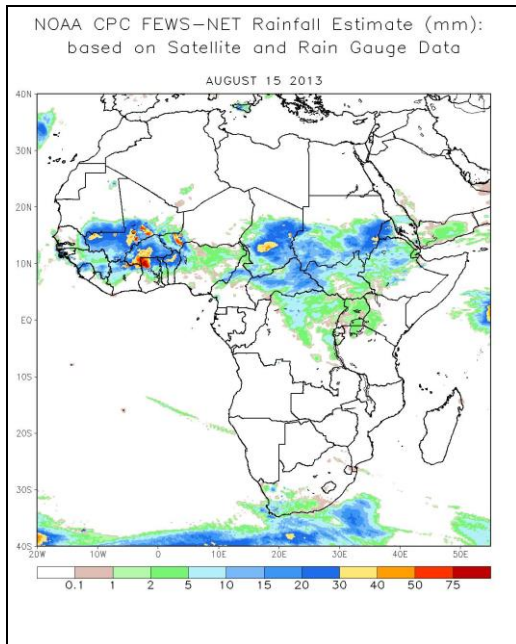
(15 August 2013 – 16 August 2013)

### 2.1. Weather assessment for the previous day (15 August 2013)

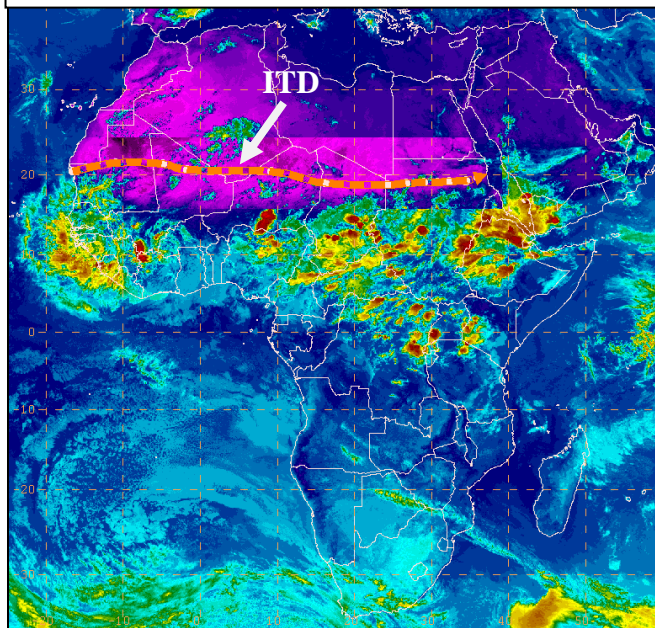
During the previous day, moderate to locally heavy rainfall was observed over North West Niger, Mali, Conakry Guinea, Burkina Faso, north Benin, North Togo, Sudan, Chad and Ethiopia.

### 2.2. Weather assessment for the current day (16 August 2013)

Intense clouds were observed over Ethiopia, Sudan, north Cameroun, North Nigeria, Chad, Niger West Burkina Faso, South West Mali, Conakry Guinea, and Bissau Guinea. The ITD is located at an average position of latitude 21°N over Africa.



IR Satellite Image (valid 1630Z of 16 August 2013)



*Previous day rainfall condition over Africa (top Left) based on the NCEP CPCE/RFE and current day cloud cover (top right) based on IR Satellite image*

**Author:** Kassimou Abdou, (ACMAD / CPC-African Desk); [kassimou.abdou@noaa.gov](mailto:kassimou.abdou@noaa.gov)