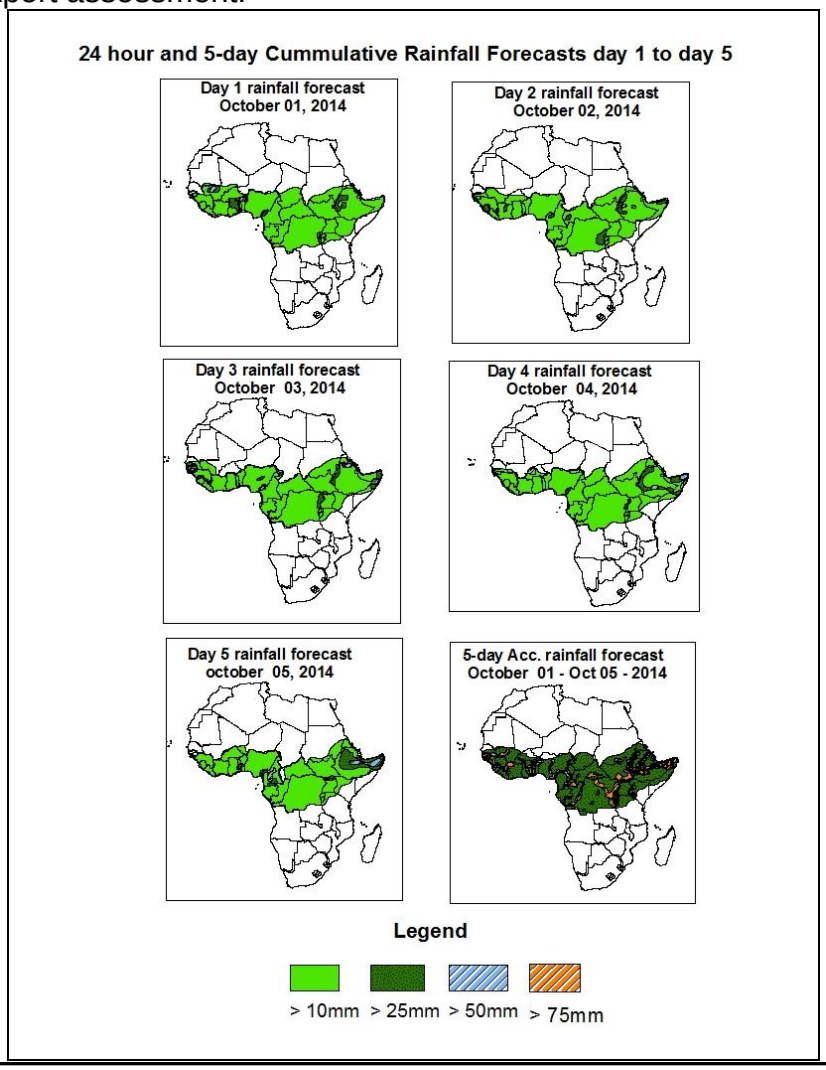
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## *1. Rainfall Forecast: Valid 06Z of September 01 – 06Z of October 05, 2014. (Issued at 1800Z of September 30, 2014)*

### *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/GFS and the NCEP global ensemble forecasts system (GEFS) and expert assessment.



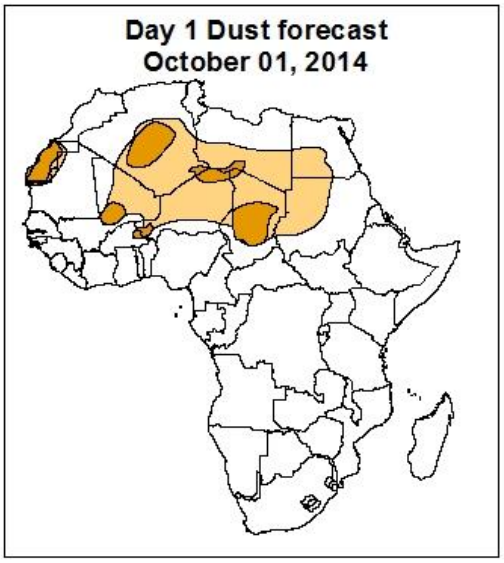


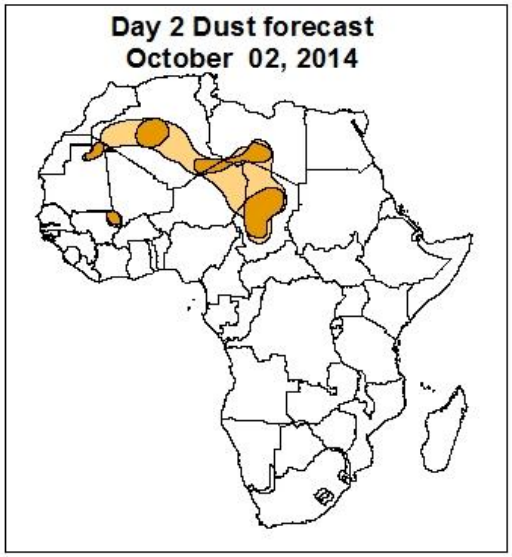
**Summary**

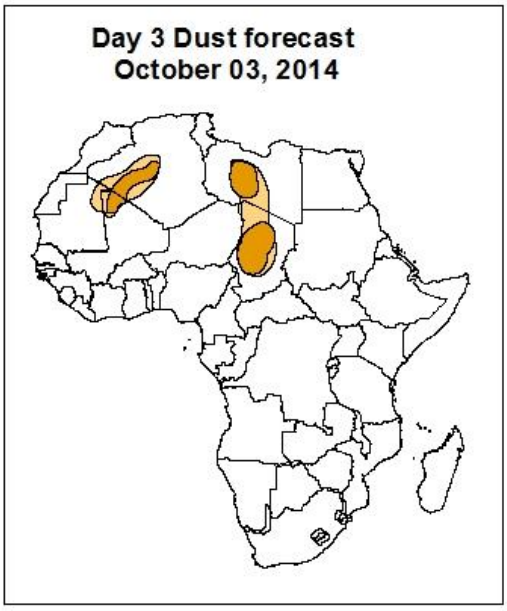
In the next five days, the monsoon flow from the Atlantic Ocean with its associated convergence across the southern Sahel, localized wind convergences over Ethiopia, DRC and Uganda and the neighboring areas, and eastward propagating trough across the Gulf of Guinea region are expected to enhance rainfall in their respective regions. Thus, there is an increased chance for moderate to heavy rainfall over Guinea-Conakry, Liberia, Benin, Togo, Ghana, Ivory Coast, Sierra Leone, Cameroon, CAR, Congo Brazzaville, Gabon, Burundi, Rwanda, Ethiopia and Uganda, portions of Sudan, Nigeria, DRC, Burkina Faso and Mali, western Kenya, northern Tanzania and southern Senegal, Chad and Eritrea.

## Atmospheric Dust Forecasts, day 1 to day 3,

Moderate Dust Concentration (MDC) and High Dust Concentration (HDC)




**Highlights**

**There is an increased chance for moderate to high dust concentration over Western Sahara, Algeria, Libya, Mali, Niger and Chad.**

**Legend**

MDC, Vis. < 5km

HDC, Vis. < 1km

### 1.2. Model Discussion: Valid from 00Z of September 30, 2014

The Azores high pressure system over the Northeast Atlantic Ocean is expected to Maintain from 24 to 48hours, with its central pressure value of about 1029hpa, and it weakens slightly from 48 to 72hours, with its central pressure value decreasing from about 1029hpa in 48 hours to 1028hpa in 72hours, and then it is expected to Maintain again from 72 to 120hours, with its central pressure value of about 1028hpa, according to the GFS model.

The St Helena high pressure system over the Southeast Atlantic Ocean is expected to intensify from 24 to 96 hours, with its central pressure value increasing from about 1032hpa in 24 hours to 1041hpa in 96hours, and then it is expected to weaken from 96 to 120hours, with its central pressure value decreasing from about 1041hpa in 96 hours to 1040hpa in 120hours, according to the GFS model.

The Mascarene high pressure system over the southwestern Indian Ocean is expected to weaken from 24 to 48hours, with its central pressure value decreasing from about 1030hpa in 24 hours to 1029hpa in 48hours, and it Maintains from 48 to 72hours, with its central pressure value of about 1029hpa, and then it is expected to weaken from 72 to 120hours, with its central pressure value decreasing from about 1029hpa in 72 hours to 1026hpa in 120hours, according to the GFS model.

The central pressure value associated with the heat low in the region between western and central Sahel is expected to vary in the range between 1008hpa and 1010hpa during the forecast period. The heat low over Sudan is expected to vary in the range between 1006hpa and 1008hpa from 24 to 120 hours. The heat low across DRC is expected to vary in the range between 1009hpa and 1010hpa during the forecast period, according to the GFS model.

At 925Hpa level, a zonal wind convergence is expected to prevail in the region between Mauritania and Sudan through 24 to 120 hours. Dry northeasterly winds are expected to prevail over parts of Western Sahara, Algeria, Libya, Mauritania, Mali, Niger and Chad. Local wind convergences are also expected over DRC, Tanzania, Uganda, Kenya and Ethiopia during the forecast period**.**

At 850Hpa level, a cyclonic circulation with its associated trough is expected to propagate westwards between Nigeria and Guinea-Conakry through 24 to 120 hours. Local wind convergences are expected to remain active over DRC, Uganda, Tanzania, Rwanda, Burundi, Eritrea and Ethiopia during the forecast period.

At 700hpa level, a trough in the easterly flow is expected to propagate westwards between Nigeria and southern Senegal through 24 to 120 hours.

At 500hpa level, a zone of moderate wind (>30kt) associated with African easterly jet is expected to propagate across Nigeria and Mali, propagating farther into the Atlantic ocean toward start of the forecast.

In the next five days, the monsoon flow from the Atlantic Ocean with its associated convergence across the southern Sahel, localized wind convergences over Ethiopia, DRC and Uganda and the neighboring areas, and eastward propagating trough across the Gulf of Guinea region are expected to enhance rainfall in their respective regions. Thus, there is an increased chance for moderate to heavy rainfall over Guinea-Conakry, Liberia, Benin, Togo, Ghana, Ivory Coast, Sierra Leone, Cameroon, CAR, Congo Brazzaville, Gabon, Burundi, Rwanda, Ethiopia and Uganda, portions of Sudan, Nigeria, DRC, Burkina Faso and Mali, western Kenya, northern Tanzania and southern Senegal, Chad and Eritrea.

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

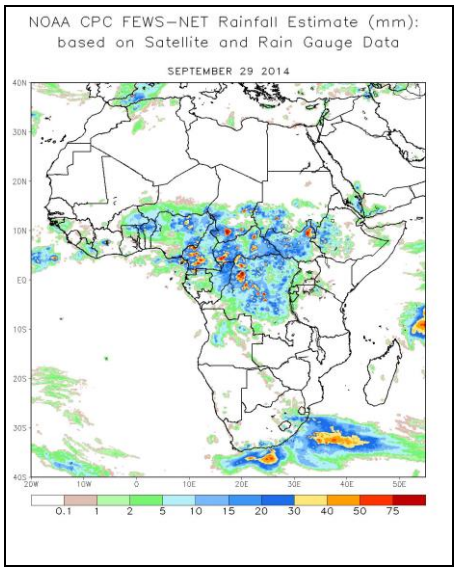
**(September 29, 2014 – September 30, 2014)**

### 2.1. Weather assessment for the previous day (September 29, 2014)

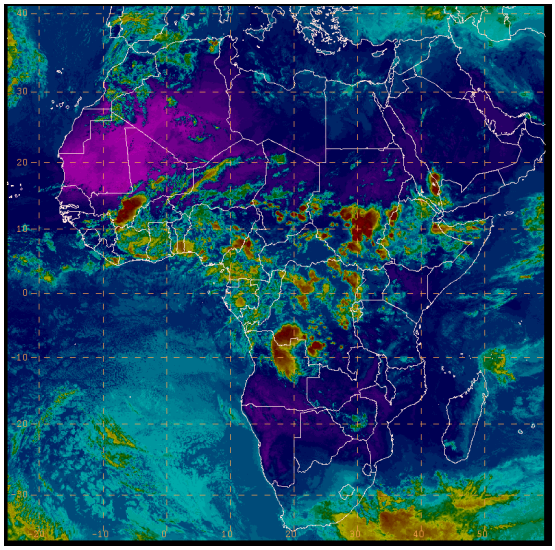
During the previous day, moderate to heavy rainfall was observed over CAR, Liberia, Nigeria, Cameroon, Burundi, Rwanda, portions of Guinea-Conakry, Burkina Faso, Niger, Benin, Togo, Uganda, DRC, Gabon, Congo Brazzaville, Chad, Ethiopia and Sudan, local areas in Ivory Coast, Mali and Ghana, northern Tanzania, western Kenya and southeastern Mauritania.

### 2.2. Weather assessment for the current day (September 30, 2014)

Intense clouds are observed over portions of Mali and Sudan, local areas in Nigeria, Ethiopia, DRC, Cameroon, Uganda, CAR, Chad, Niger, Ivory Coast, Burundi and Rwanda, southern Liberia, Benin, Togo and Togo, western Kenya.




**IR Satellite Image (valid 1622 Z of September 30, 2014)**



*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*

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