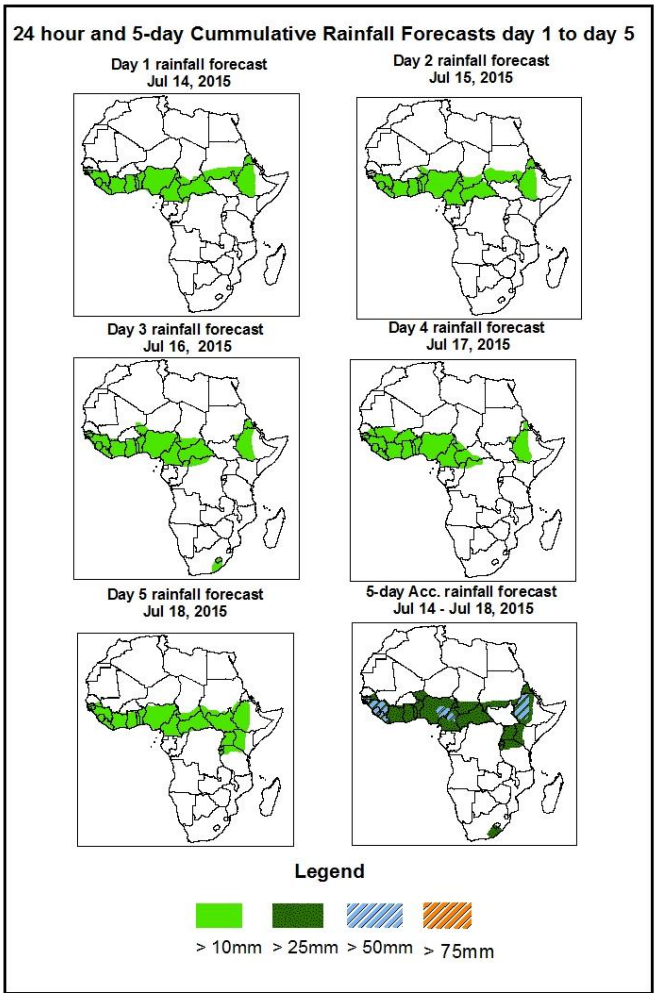
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## *1. Rainfall Forecast: Valid 06Z of July 14 – 06Z of July 18, 2015. (Issued at 1530Z of July 13, 2015)*

### *1.1. Twenty Four Hour Cumulative Rainfall Forecasts*

The forecasts are expressed in terms of high probability of precipitation (POP), based on the NCEP/GFS and the NCEP global ensemble forecasts system (GEFS) and expert assessment.





**Summary**

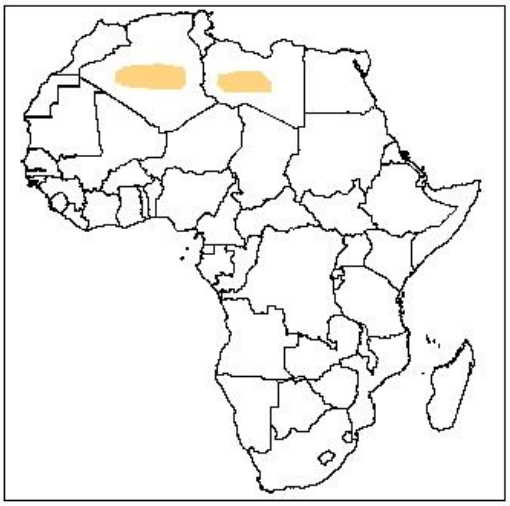
In the next five days, the monsoon flow from the Atlantic Ocean and its associated convergence across West and Central Africa, combined with westward propagating convective systems across the central Africa, southern Sahel, and the Gulf of Guinea countries, and active lower level wind convergences across northern DRC and parts of the Greater Horn of Africa are expected to enhance rainfall in their respective regions. Thus, there is an increased a chance for heavy rainfall over Guinea Conakry, Sierra Leon, Mali, Nigeria, CAR, DRC, Burkina Faso, Chad, Sudan, and Ethiopia.

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

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

**Day 1 Dust forecast**
**Jul 14, 2015**

**Day 2 Dust forecast**
**Jul 15 , 2015**



**Day 3 Dust forecast**
**Jul 16, 2015**

**Highlights**

**There is an increased chance for moderate to high dust concentration over some parts of the Sahel and North African countries.**

**Legend**

MDC, Vis. < 5km

HDC, Vis. < 1km

### 1.2. Model Discussion, Valid: July 14 – July 18, 2015

The Azores high pressure system over Northeast Atlantic Ocean is expected to relax with its central pressure value decreasing from 1025hpa to 1022hpa during the forecast period, according to the GFS model.

The St Helena high pressure system over the Southeast Atlantic Ocean is expected to relax, with its central pressure value is decreasing from about 1035hpa to 1032hpa during the forecast period.

The Mascarene high pressure system the Southwest Indian Ocean is expected to intensify, with its central pressure value decreasing from 1032hpa to 1039hpa during the forecast period, according to the GFS model.

The heat lows near the Mali/Algeria border is expected to maintain an average central value of 1006hpa during the forecast period.

The northern limit of the 1020hpa isobar associated with the East African ridge is expected to extend northwards up to the latitudes of Ethiopia during the forecast period.

At 925Hpa level, the monsoon flow from the Atlantic Ocean is expected to prevail across much of the Gulf of Guinea countries, and the neighboring areas of the Southern Sahel and Central African countries. A zone of wind convergence is expected to prevail across the Sahel region, with a feeble circulation propagating westward between Chad and Mauritania.

At 850Hpa level, east-west oriented wind convergence is expected to remain active across the Sahel region, with a feeble cyclonic circulation propagating westward between Chad and Mauritania during the forecast period. On the other hand, strong lower level wind associated with the Somali Jet is expected to remain along the East Africa coast and the neighboring areas of northwestern Indian Ocean and the Arabian Sea.

At 700hpa level, easterly flow is expected to prevail across the Gulf of Guinea and Central Africa countries.

At 500Hpa level, a zone of strong easterly flow (>30kts) is expected to prevail in the region between Niger and Senegal during the forecast period.

In the next five days, the monsoon flow from the Atlantic Ocean and its associated convergence across West and Central Africa, combined with westward propagating convective systems across the central Africa, southern Sahel, and the Gulf of Guinea countries, and active lower level wind convergences across northern DRC and parts of the Greater Horn of Africa are expected to enhance rainfall in their respective regions. Thus, there is an increased a chance for heavy rainfall over Senegal, Guinea Conakry, Sierra Leon, Mali, Ivory Coast, Burkina Faso, Niger, Nigeria, CAR, DRC, Burkina Faso, Chad, South Sudan, Sudan, and Ethiopia.

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

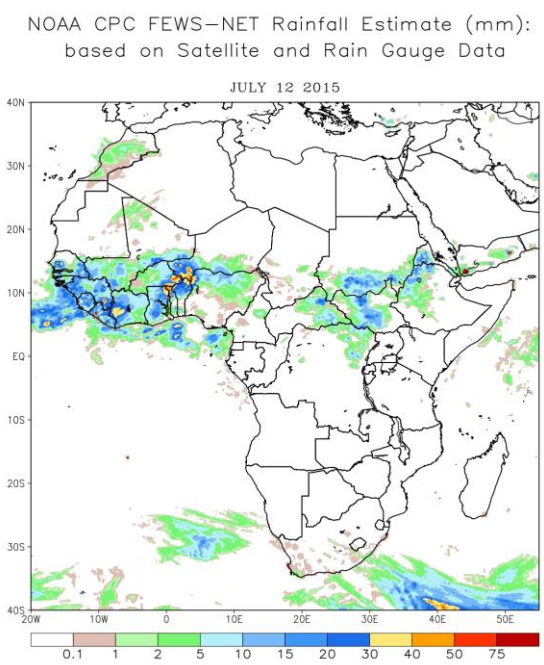
**(12 July – 13 July, 2015)**

### 2.1. Weather assessment for the previous day (July 12, 2015)

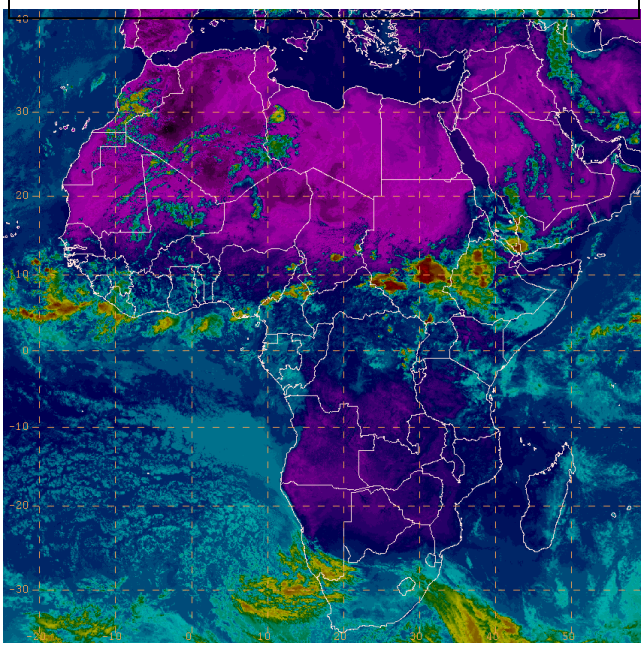
Moderate to heavy rainfall were observed across Senegal, Guinea Conakry, Sierra Leon, Liberia, Ivory Coast, Ghana, Benin, Togo, Mali, Burkina Faso, Niger, Nigeria, CAR, Chad, South Sudan, Sudan, and Ethiopia.

### 2.2. Weather assessment for the current day (July 13, 2015)

Intense convective deep clouds are observed over Cameroon, Namibia, South Africa, Chad, South Sudan, Sudan, and Ethiopia.




**IR Satellite Image (valid 1430Z of July 13, 2015)**



*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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