

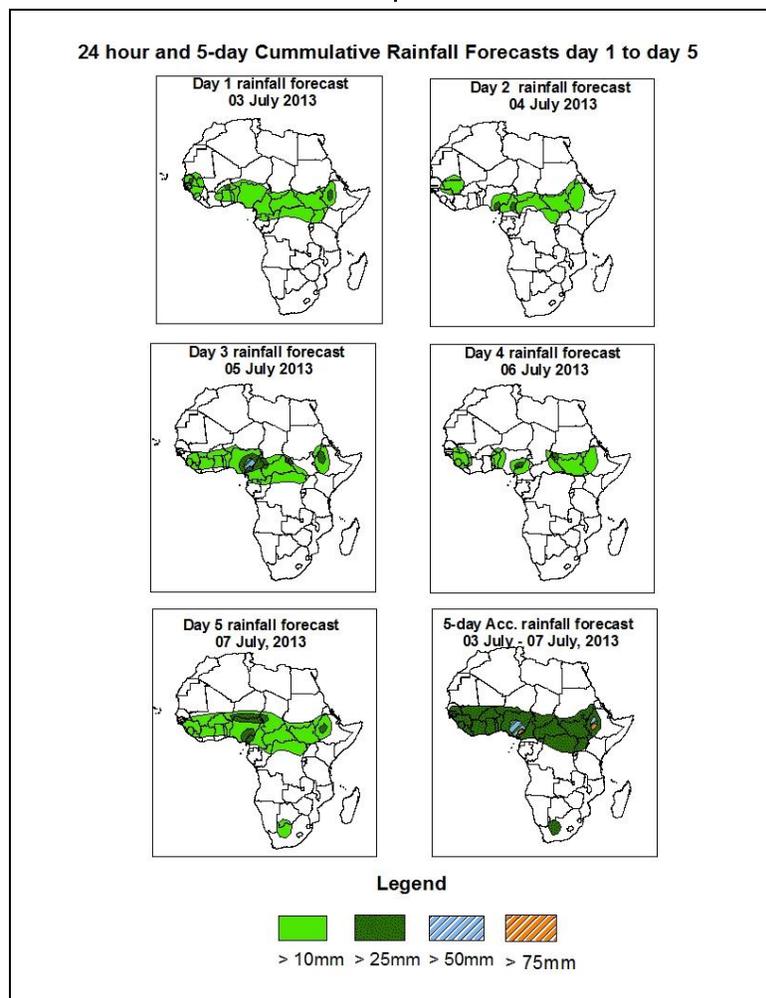


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 03 July – 06Z of 07 July, 2013. (Issued at 1700Z of 02 July 2013)

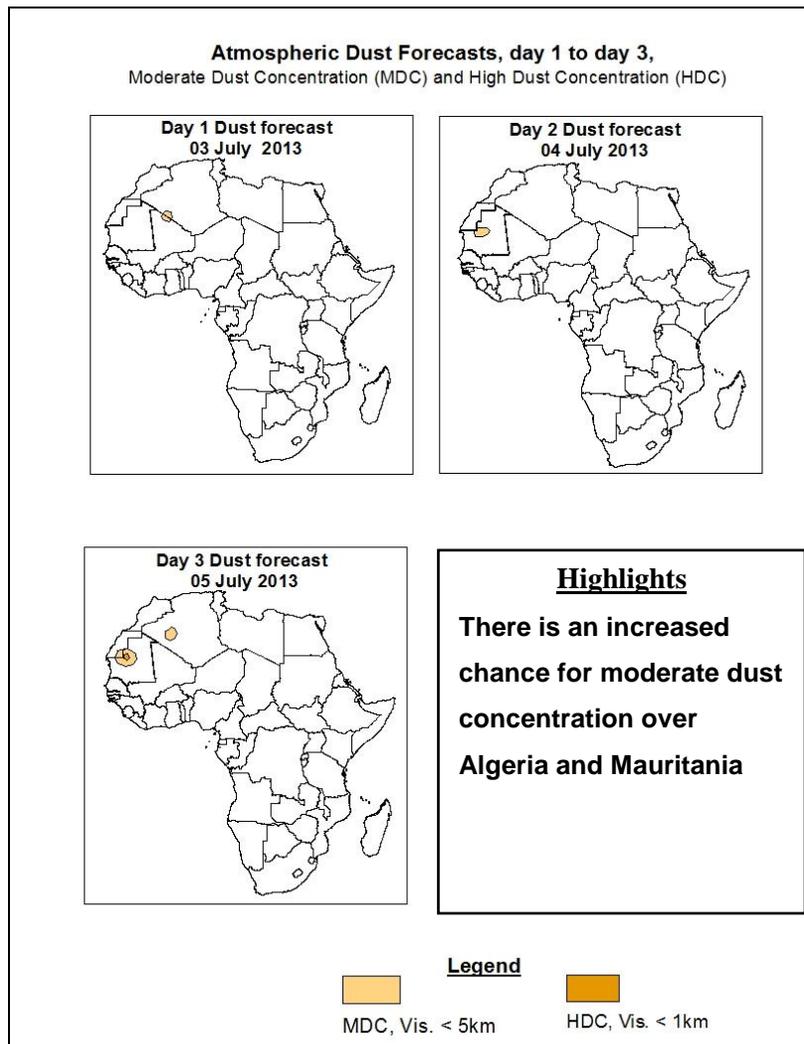
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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, moisture convergence over West Africa, Central Africa regions and the seasonal wind convergence in Congo Air Boundary (CAB) region is generally expected to modulate rainfall in these regions. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to shift rainfall activities slightly northwards over East and West Africa and enhance precipitation in these regions. There is an increased chance for moderate to heavy rainfall over Senegal, Guinea, Sierra Leone, Liberia, Mali, Burkina Faso, Cote d'Ivoire, Togo, Benin Republic, Nigeria, Cameroun, Chad, CAR, southern Sudan, northern DRC, western Ethiopia and Southern Africa.



## 1.2. Model Discussion: Valid from 00Z of 02 July 2013

*Model comparison (Valid from 00Z;02 July, 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 weaken during the forecast period. Its central pressure value is expected to decrease from 1029hPa to 1022hPa during the forecast period according to the GFS model, 1028hpa to 1024hPa according to the ECMWF model, 1029hPa 1023hPa according to the UKMET model.

The St. Helena High Pressure System over southeast Atlantic Ocean is expected to intensify through 24 to 72 hours and weaken thereafter. Its central pressure value is expected to be increase from 1031hPa to 1032hPa through 24 to 72 hours according to the GFS model, 1030hPa to 1032hPa according to the ECMWF model, 1031hPa to 1032hPa according to UKMET model and then decrease through 96 to 120 hours.

The Mascarene high pressure system over southwestern Indian Ocean is also expected to intensify slightly during through 24 to 72 hours and decrease thereafter. Its central value is expected to increase from 1020hPa to 1032hPa according to the GFS model, 1025hPa to 1031hPa according to the ECMWF model, 1025hPa to 1034hPa according to the UKMETF model.

The heat lows over the central Sahel and neighboring areas are expected to deepen slightly through the forecast period especially in Mali. The lowest central pressure value is expected to vary between 1004hPa to 1008hPa during the forecast period according to the GFS and ECMWF models and 1002hPa to 1007hpa according to the UKMET model. The seasonal lows across the Red sea and its neighboring areas are expected to deepen slightly with values varying from 1000hPa to 1003hPa according to the GFS model, 1002hPa to 1003hPa according to ECMWF model, 1001hPa to 1002hPa according to the UKMET model.

At the 850hPa level, zonal monsoon wind convergence is expected to dominate the flow across western and central parts of the Sahel South of latitude 16°N, while meridional wind convergence will dominate flow across Sudan, eastern DRC and Ethiopia. Rainfall along the coast of Togo, Ghana, Cote d'Ivoire is expected to be variable as the flow pattern over these areas change occasionally during the forecast period. The increase in number of vortices at this level coupled with the predominant Moist southwesterly to westerly flow over West Africa and its associated convergence over western Ethiopia is expected to maintain moderate to heavy rainfall over the region.

At 700hPa level, intensification of the broad subtropical anticyclone located at about latitude 30°N and a weakening of the southern hemisphere subtropical anticyclone is expected to favour northeasterly to easterly flow over West and central Africa during the period.

At 500hpa level, wind speed associated with mid-tropospheric easterly jet are still weak and show common speeds of 30kts only around isolated places in Mali, Mauritania, Niger and Senegal during the forecast period.

The zone of maximum wind is expected to gradually shift westwards during the forecast period.

At 150hPa level, tropical easterly jets are still weak but building up gradually showing mostly wind speeds of 50kts over East Africa and 30kts over West Africa during the forecast period. However, wind speeds exceeding 70kts are common over Ethiopia, Somalia and Sudan during 48 to 120 hours period.

In the next five days, moisture convergence over West Africa, Central Africa regions and the seasonal wind convergence in Congo Air Boundary (CAB) region is generally expected to modulate rainfall in these regions. Strong cross equatorial flow, with its associated convergence over the Horn of Africa is expected to shift rainfall activities slightly northwards over East and West Africa and enhance precipitation in these regions. There is an increased chance for moderate to heavy rainfall over Senegal, Guinea, Sierra Leone, Liberia, Mali, Burkina Faso, Cote d'Ivoire, Togo, Benin Republic, Nigeria, Cameroun, Chad, CAR, southern Sudan, northern DRC, western Ethiopia and Southern Africa.

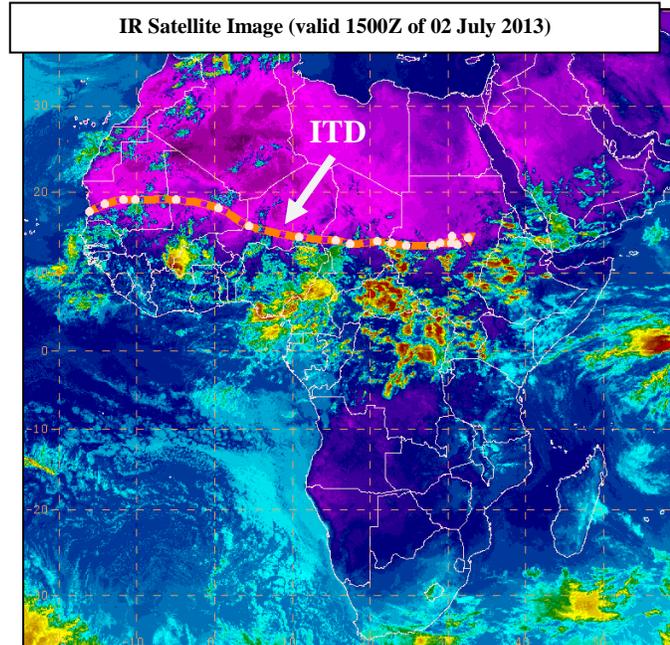
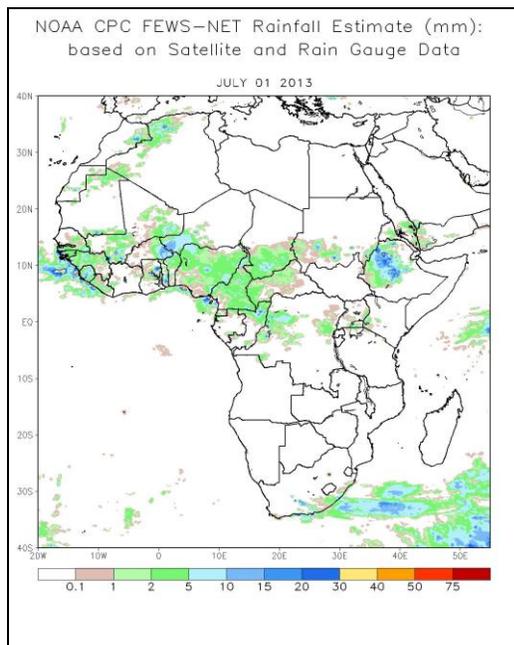
## 2.0. Previous and Current Day Weather Discussion over Africa (01 July 2013 – 02 July 2013)

### 2.1. Weather assessment for the previous day (01 July 2013)

During the previous day, moderate to locally heavy rainfall was observed over western Ethiopia, Southern Sudan, Chad, northern DRC, Nigeria, southwestern Niger, Togo, Ghana, Burkina Faso, Mali, Guinea, Sierra Leone, northern Algeria and northeast Morocco.

### 2.2. Weather assessment for the current day (02 July, 2013)

Intense clouds were observed over Ethiopia, Sudan, CAR, northern DRC, Uganda, Cameroun, Nigeria, southern Chad, Mali and Burkina Faso. The ITD is located at an average position of latitude 16°N over Africa.



*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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