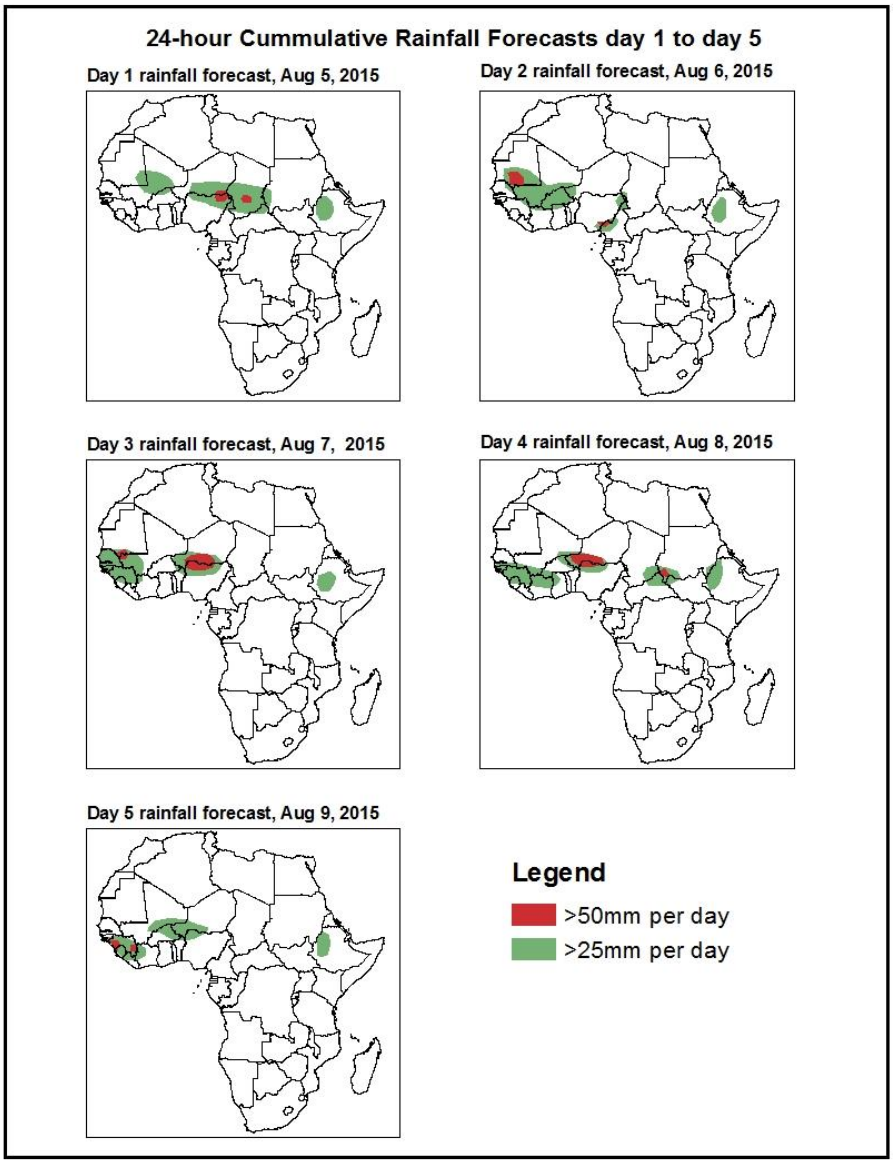
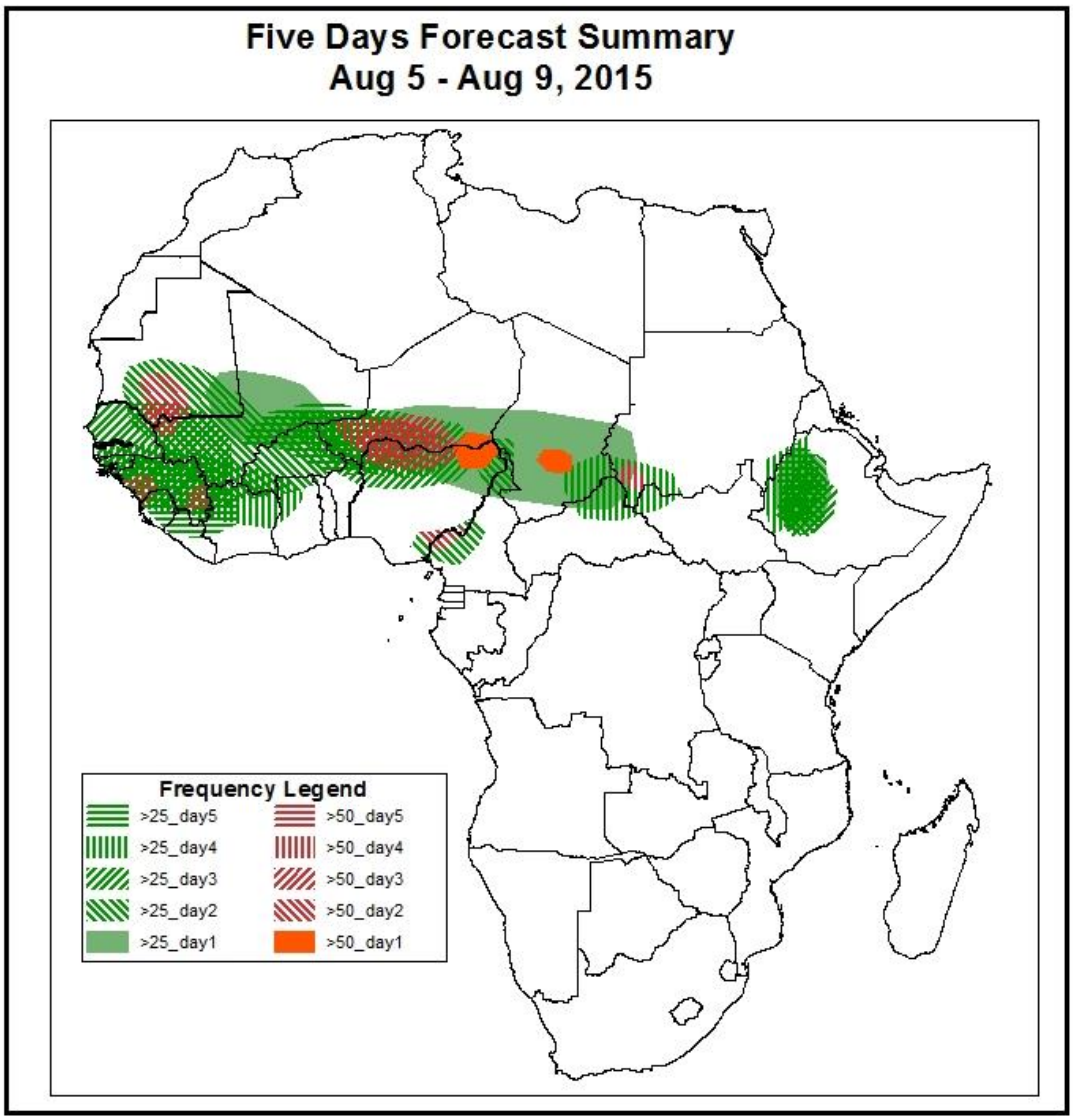
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts:
Valid: 06Z of Aug 5 – 06Z of Aug 9, 2015. (Issued at 1530Z of August 4, 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, ECMWF and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.





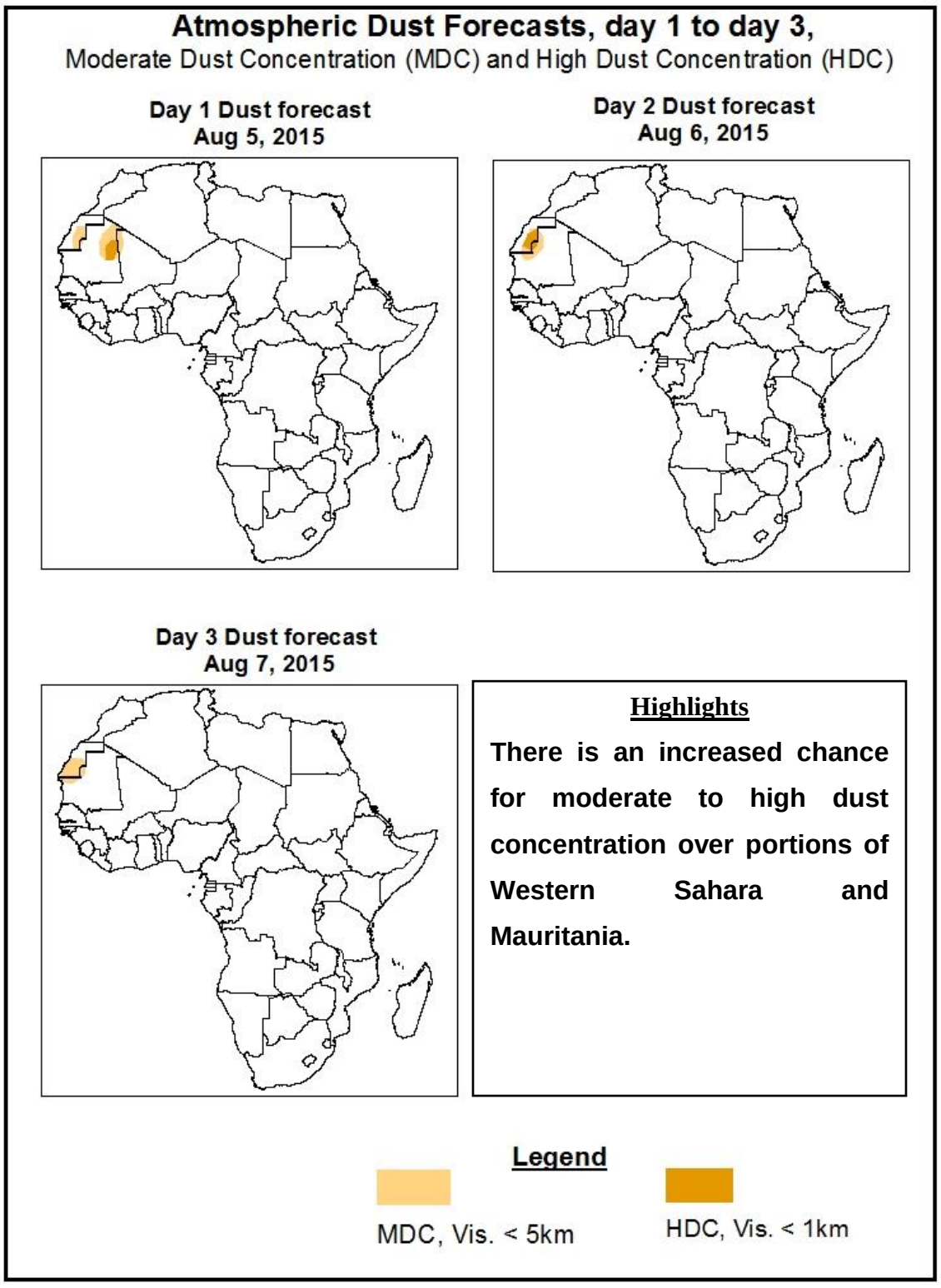
Summary

In the next five days, the monsoon flow from the Atlantic Ocean and its associated lower-level 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 parts of the Greater Horn of Africa are expected to enhance rainfall in their respective regions.

There is an increased a chance for frequent moderate to heavy rainfall over many places in West Africa,and portions of the Central Africa countries.

1.2. Atmospheric Dust Concentration Forecasts: *Valid: 12Z of Aug 5 – 12Z of Aug 7, 2015*

The forecasts are expressed in terms of high probability of dust concentration, based on the Navy Aerosol Analysis and Prediction System, NCEP/GFS lower-level wind forecasts and expert assessment.



1.3. Model Discussions, Valid: Aug 5 – Aug 9, 2015

The Azores high pressure system over Northeast Atlantic Ocean is expected to intensify with its central pressure value increasing from about 1026hpa to 1030hpa during the forecast period, according to the GFS model.

The St Helena high pressure system over the Southeast Atlantic Ocean is expected to intensify, with its central pressure value is increasing from about 1035hpa to 1044hpa while shifting to the east during the forecast period.

The Mascarene high pressure system the Southwest Indian Ocean is expected to intensify, with its central pressure value increasing from 1029hpa to 1030 while shifting eastwards during the forecast period, according to the GFS model.

The heat low over norther Mauritania border is expected to maintain an average central pressure value of 1005hpa during the forecast period. The heat low over northern Niger is expected to shift towards northern Mali through 24 to 72 hours, while maintaining an average central pressure value of 1005hpa. The heat low over northern Chad is also expected to shift towards northern Niger while maintaining central pressure value of 1006hpa. On the other hand, the heat low over northern Sudan is expected to maintain an average central pressure value of 1006hpa, while average central value of the low over Red is expected to remain quasi-stationary, with an average central pressure value of 11004hpa, during the forecast period.

The East African ridge across Southeast and East Africa is expected to strengthen along with the intensification of the Mascarene high pressure system during the forecast period.

At 925Hpa level, a broad area of southwesterly flow (monsoon flow) is expected to prevail across much of the Gulf of Guinea countries and southern Sahel during the forecast period. A cyclonic circulation is expected to propagate westwards between Mali/Mauritania border and Western Sahara. Another cyclonic circulation is expected to shift westwards between northern Chad and northern Mali.

At 850Hpa level, a cyclonic circulation is expected to propagate westwards between northern Mali and Western Sahara through 24 to 72 hours. Zonal wind convergence is expected to remain active between central chad Eritrea across Sudan. Meridional wind convergence is expected to prevail across southern Sudan, South Sudan Republic and Uganda, whereas local wind convergences to remain active across portions of Ethiopia 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 through 24 to 48 hours, and the flow is expected to attain a wavy pattern with two trough axes (near Guinea/ Mali and southern Chad) towards end of the forecast period.

In the next five days, the monsoon flow from the Atlantic Ocean and its associated lower-level 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 parts of the Greater Horn of Africa are expected to enhance rainfall in their respective regions. There is an increased a chance for frequent moderate to heavy rainfall over many places in West Africa, and portions of the Central Africa countries.

2.0. Previous and Current Day Weather over Africa

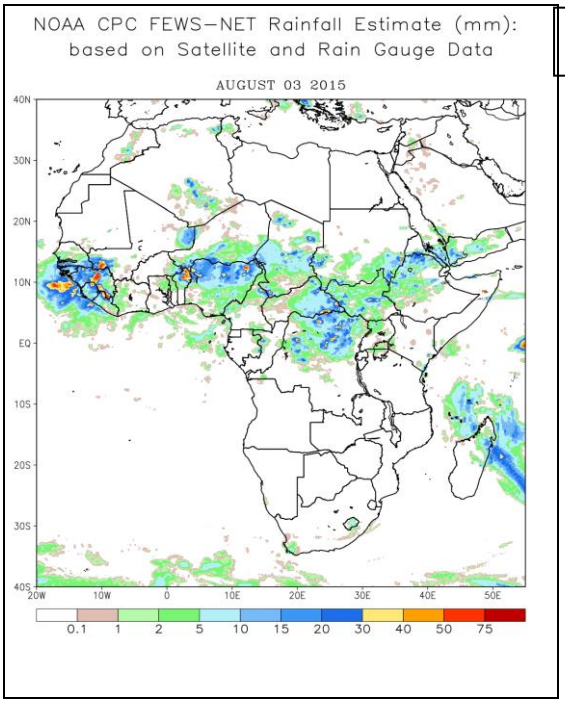
(3 – 4 August, 2015)

2.1. Weather assessment for the previous day (August 3, 2015)

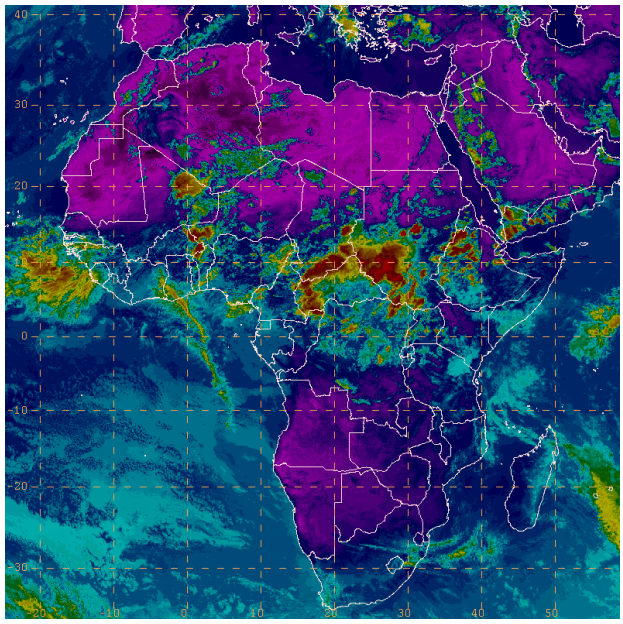
Moderate to heavy rainfall was observed Guinea, portions of southern Mali, Sierra Leone, northern Benin, northern Nigeria, eastern Chad, northern DRC, and local areas in South Sudan and Ethiopia.

2.2. Weather assessment for the current day (August 4, 2015)

A broad area of intense clouds was observed across the central Africa countries. Convective clouds are also observed over portions of Mali, western Niger, Burkina Faso, and western Ethiopia.



IR Satellite Image (valid 1422Z of August 4, 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