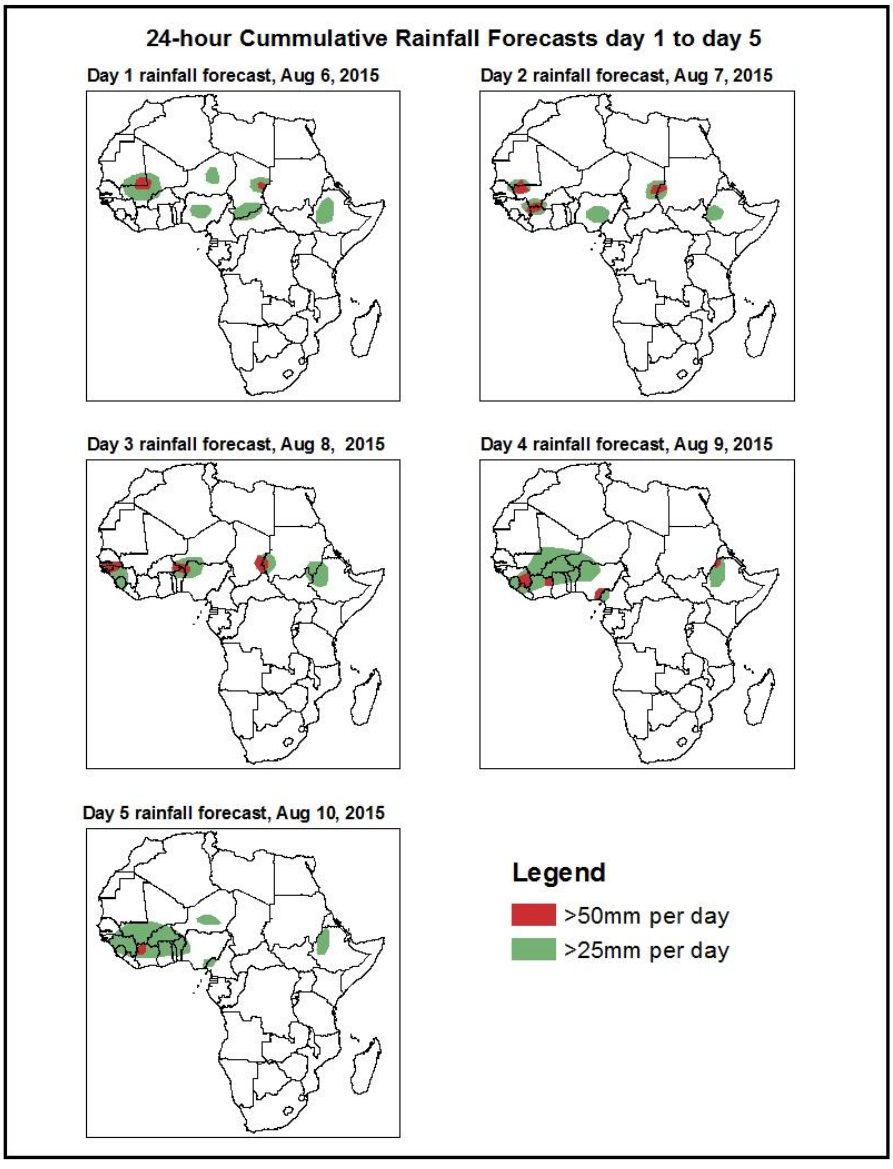
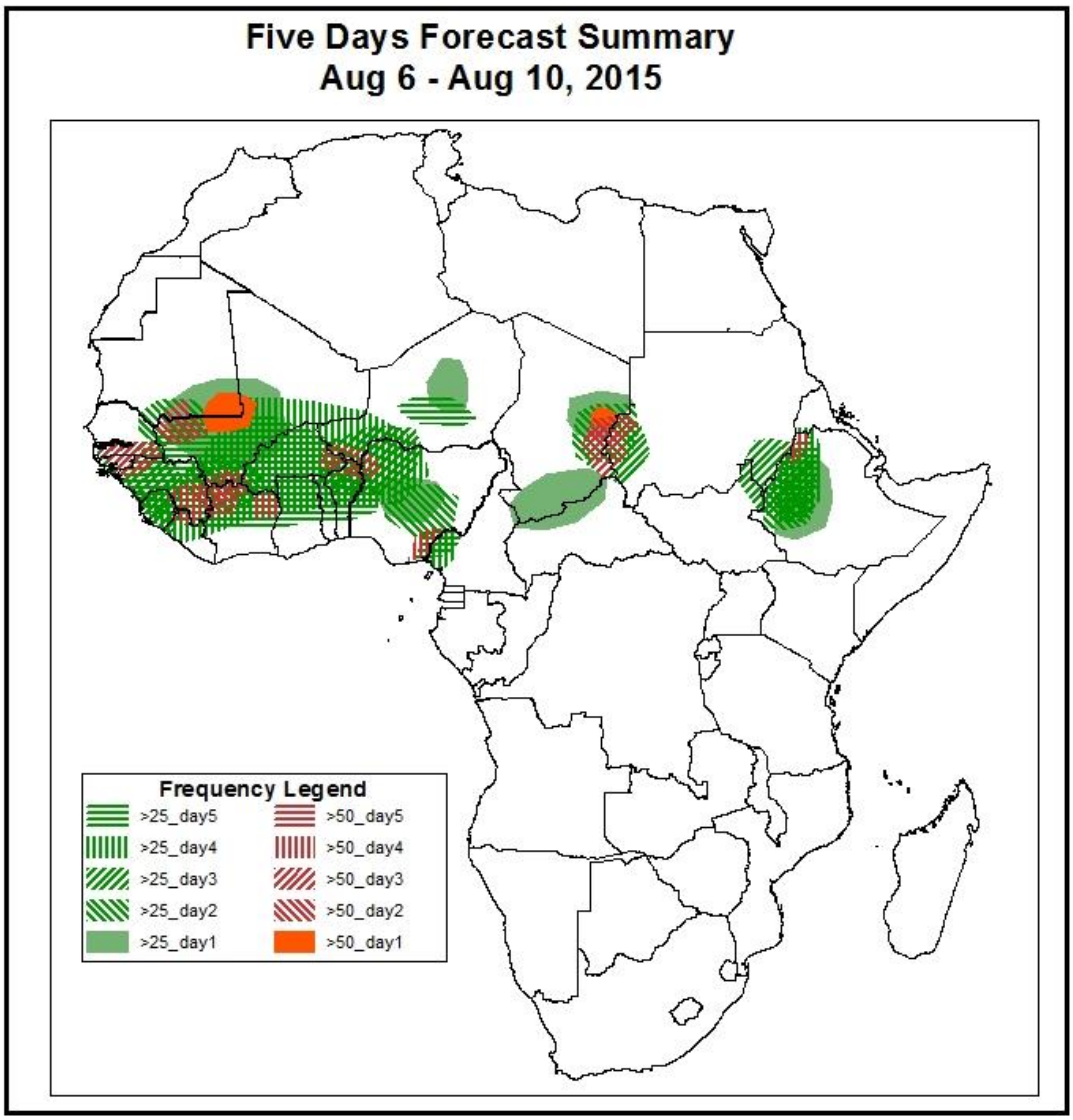
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall and Dust Concentration Forecasts: Valid: 06Z of Aug 6 – 06Z of Aug 10 2015. (Issued at 1500Z of August 10, 2015)

1.1. 24-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.





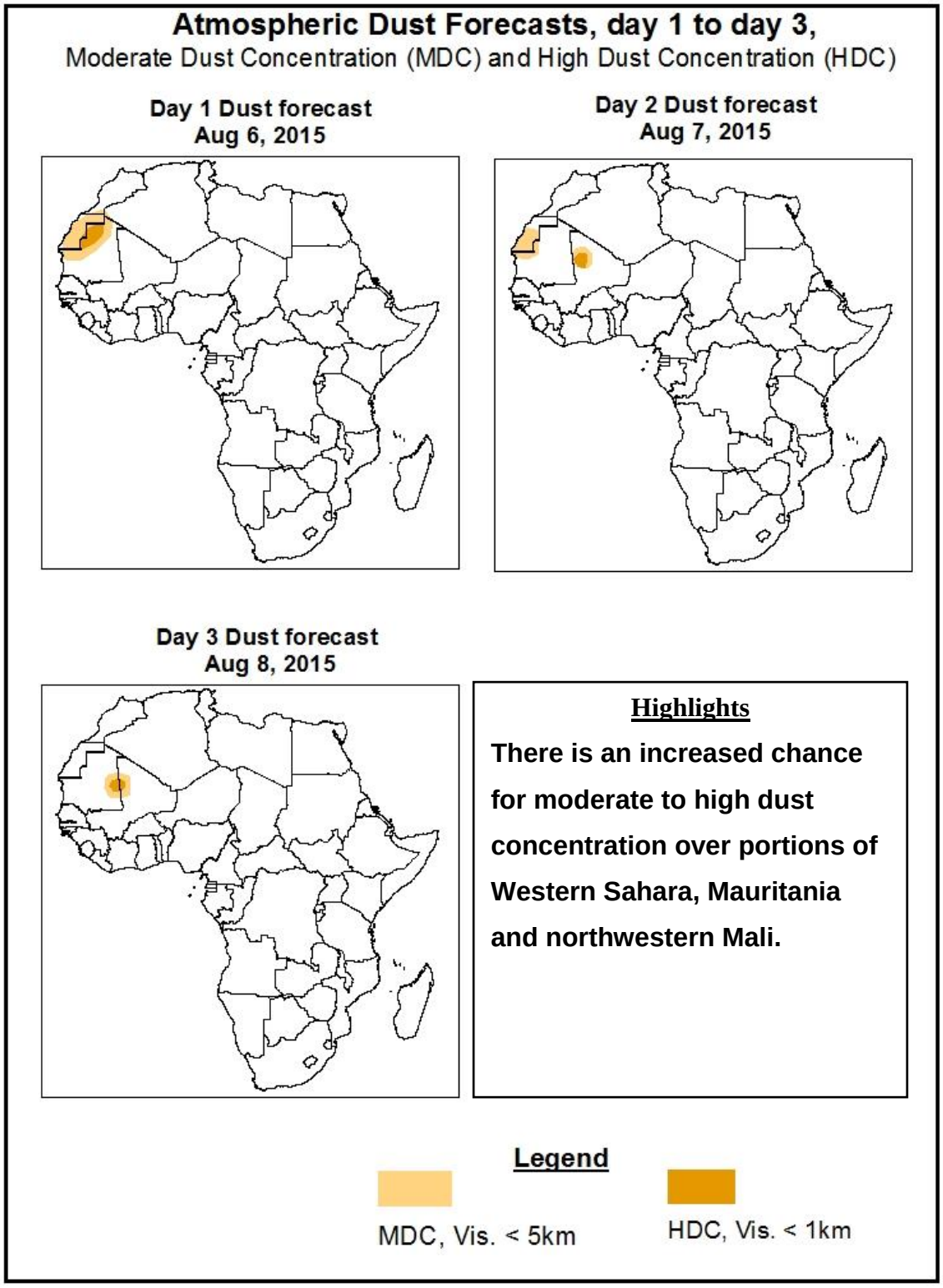
Summary

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 Sahel and western Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts: *Valid: 12Z of Aug 6 – 12Z of Aug 8, 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 6 – Aug 10, 2015

The Azores high pressure system over Northeast Atlantic Ocean is expected to intensify with its central pressure value increasing from about 1025hpa to 1030hpa through 24 to 72 hours, and it tends to relax towards end of the forecast period with its central pressure value decreasing to 1028hpa, 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 1036hpa to 1044hpa through 24 to 96hours, according to the GFS model.

The Mascarene high pressure system across Southern Africa and the neighboring areas of Southwest Indian Ocean is expected to relax, with its central pressure value decreasing from 1029hpa to 1025 during the forecast period, according to the GFS model.

The heat low over northern Mauritania is expected to maintain an average central pressure value of 1004hpa while shifting westward into coastal Mauritania through 24 to 96hours. The heat low over northern Niger is expected to shift towards northern Mali through 24 to 96 hours, while maintaining an average central pressure value of 1006hpa. 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 the low over the Red is expected to remain quasi-stationary, with an average central pressure value of 1004hpa, during the forecast period.

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

At 925Hpa level, a broad area of southwesterly monsoon flow is expected to prevail across much of the Gulf of Guinea countries and southern Sahel during the forecast period. A cyclonic circulation over northern Mali is expected to shift westwards, leaving the Mauritania coast in 96 hours. Another cyclonic circulation is expected to shift

westwards between northern Chad and northern Mali. A feeble cyclonic circulation is expected to prevail across northern Sudan during the forecast period.

At 850Hpa level, a cyclonic circulation is expected to propagate westwards between northern Mali and coastal Western Sahara through 24 to 96 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, an easterly wave axis near Benin is expected to propagate westwards, leaving the West Africa coast in 96 hours. Another trough is expected to propagate westwards between Gabon and Ghana during 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 Sahel and western Ethiopia.

2.0. Previous and Current Day Weather over Africa

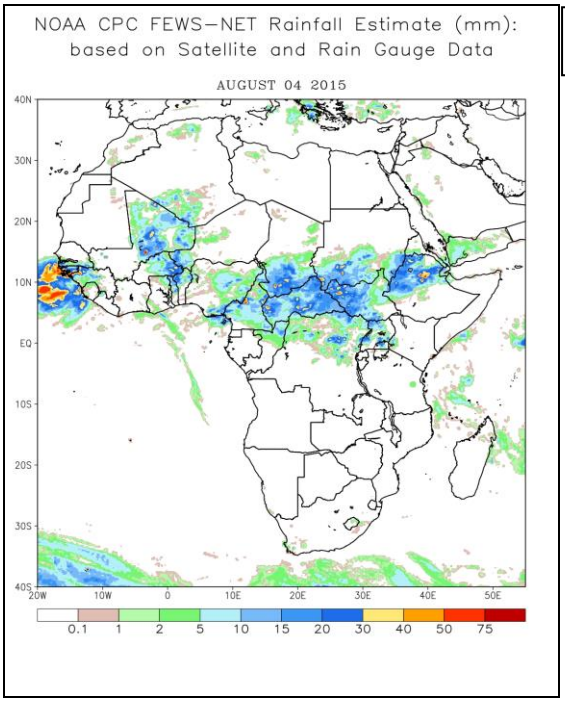
(4 – 5 August, 2015)

2.1. Weather assessment for the previous day (August 4, 2015)

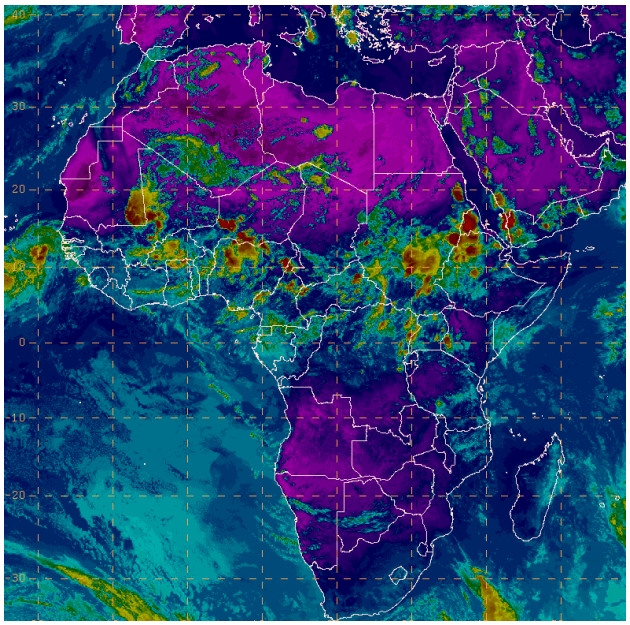
Moderate to heavy rainfall was observed over portions of northern Mali, coastal Guinea, southern Chad, local areas in Cameroon, CAR, southern Sudan, western South Sudan Republic, and northern Ethiopia.

2.2. Weather assessment for the current day (August 5, 2015)

Intense clouds were observed across portions of the Sahel region, Sudan Republic, southern Sudan, northern Ethiopia and Eritrea.



IR Satellite Image (valid 1430Z of August 5, 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