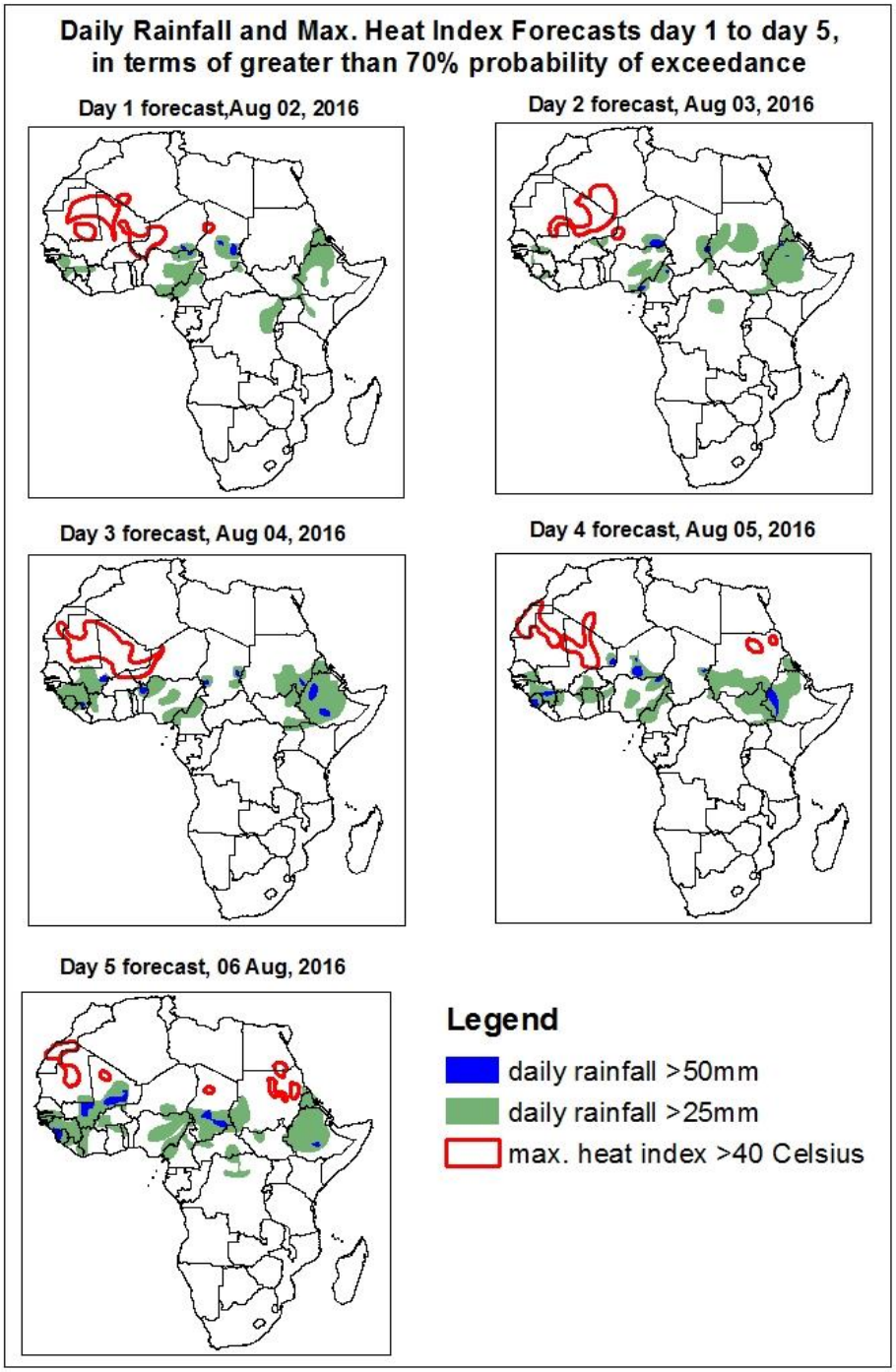
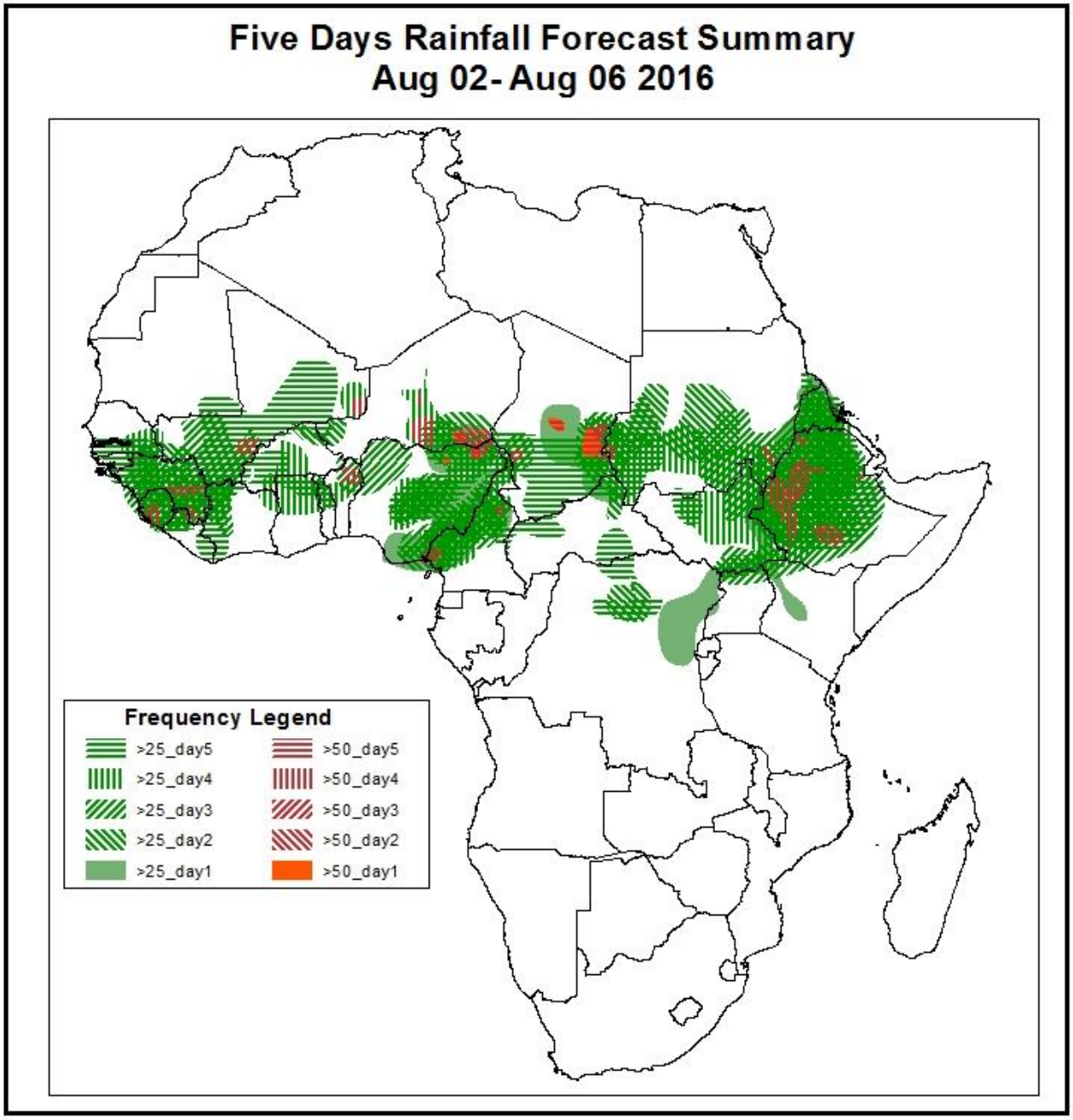
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on Aug 01, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: Aug 02– Aug 06 2016)*

The forecasts are expressed in terms of high probability of precipitation (POP) and high probability of maximum heat index, based on the NCEP/GFS, ECMWF and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.



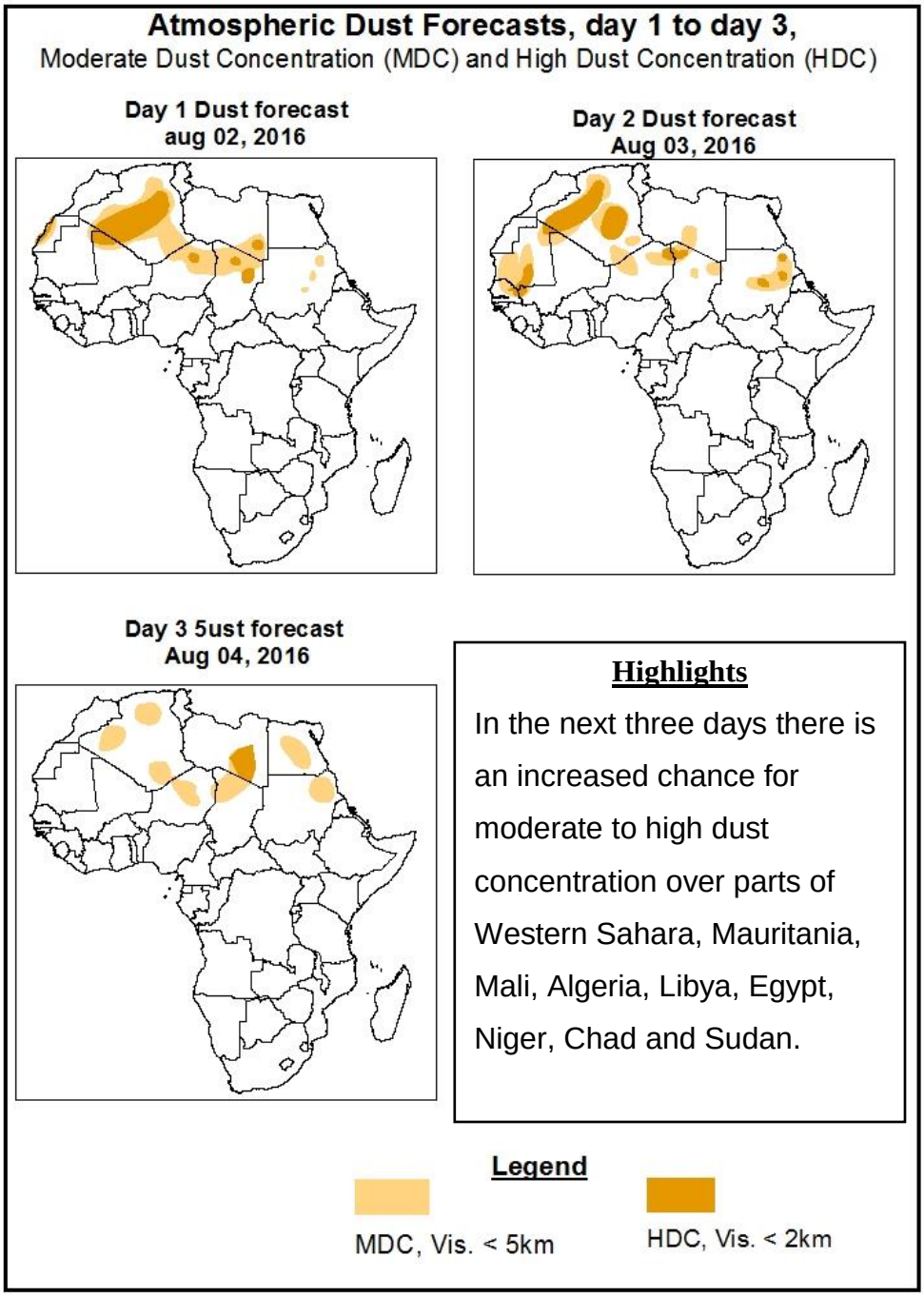


Highlights

In the next five days, westward propagating lower-level cyclonic systems across West Africa and lower level wind convergences across the central and eastern Sahel, Sudan and Ethiopia are expected to enhance rainfall in their respective regions. Therefore, there is an increased chance for two or more days of moderate to heavy rainfall over local areas of southern Senegal, portions of Mali, Gambia, Guinea and Sierra Leone, northern Liberia, local areas northern of Cote d'Ivoire, Ghana, Togo and Benin, portions of Burkina Faso, Niger, Nigeria, Chad, Cameroon, Sudan and South Sudan, local areas of northern DRC and Uganda, portions of Ethiopia and Eritrea.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: Aug 02– Aug 04, 2016****)***

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 Discussion, *Valid: Aug 02 –Aug 06, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to maintain an average central pressure value of 1024-hPa through 24 to 72 hours, and tends to intensity, with its central pressure value increasing from 1024-hPa to 1028-hPa though 72 to 120 hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to weaken, with its central pressure value decreasing from 1024-hPa to 1020-hPa though 24 to 72 hours, and tends to intensity, with its central pressure value increasing from 1020-hPa to 1029-hPa though 72 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to intensity, with its central pressure value decreasing from 1018-hPa to 1032-hPa though 48 to 120 hours.

The 1016mb isobar, associated with the East African ridge is expected to remain near the latitudes of Kenya during the forecast period.

The central pressure values associated with the heat low in western Sahel is expected remain in the range between 1004hPa and 1007hPa during the forecast period, while the central pressure value associated with the heat low over the central Sahel is expected remain in the range between 1005hPa and 1006hPa during the forecast period. The central pressure value associated with the heat low across Sudan is expected remain in the range between 1003hPa and 1006hPa during the forecast period.

At 925hPa an anticyclonic circulation and its associated ridge is expected to prevail across Libya while expanding westward into neighboring regions during the forecast period. Strong wind associated with this system may lead to moderate to high dust concentration across portions of Western Sahara, Mauritania, Mali, Algeria, Libya, Egypt, Niger, Chad and Sudan.

At 850hPa level, a cyclonic circulation is expected to propagate westwards in the region between Niger and Mauritania during the forecast period.

At 700hPa level, a cyclonic trough in the easterly flow is expected to propagate westwards across the Gulf of Guinea countries during the forecast period.

In the next five days, westward propagating lower-level cyclonic systems across West Africa and lower level wind convergences across the central and eastern Sahel, Sudan and Ethiopia are expected to enhance rainfall in their respective regions. Therefore, there is an increased chance for two or more days of moderate to heavy rainfall over local areas of southern Senegal, portions of Mali, Gambia, Guinea and Sierra Leone, northern Liberia, local areas northern of Cote d'Ivoire, Ghana, Togo and Benin, portions of Burkina Faso, Niger, Nigeria, Chad, Cameroon, Sudan and South Sudan, local areas of northern DRC and Uganda, portions of Ethiopia and Eritrea.

There is an increased chance for maximum heat index to exceed 40^{o}C over portions of Western Sahara, Mauritania, Mali and Niger, local areas in Chad, DRC and Sudan.

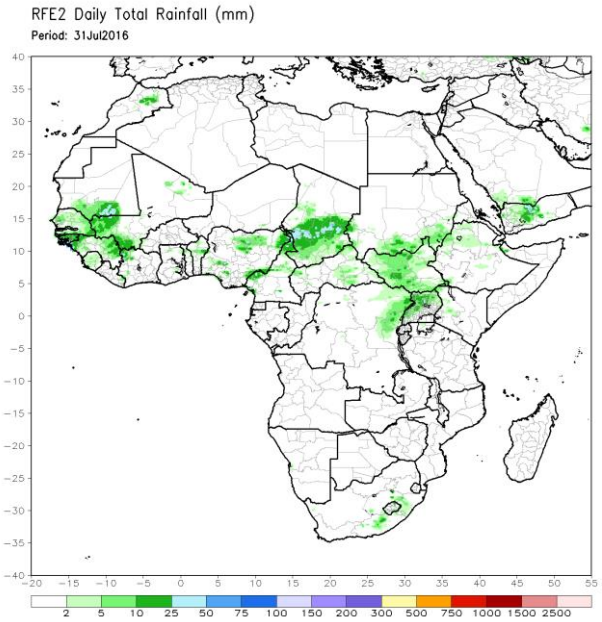
2.0. Previous and Current Day Weather over Africa

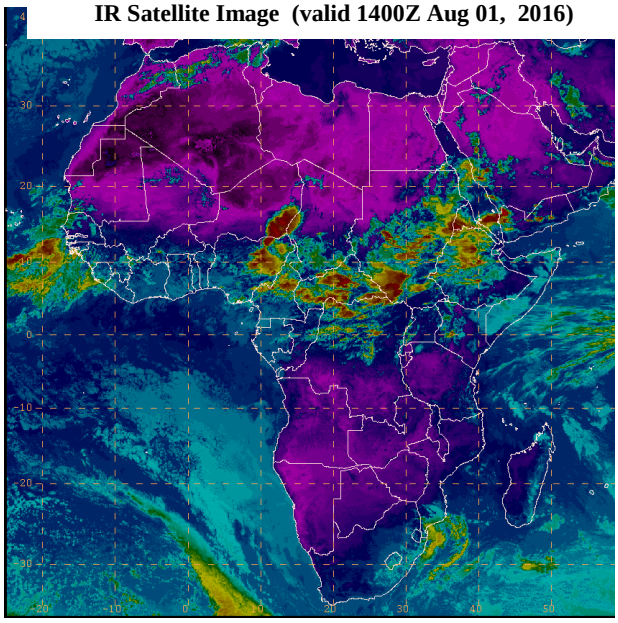
2.1. Weather assessment for the previous day (July 31, 2016)

Moderate to locally heavy rainfall was observed over local areas in southern Mauritania, portions of Senegal and Mali, Guinea Bissau, portions Guinea, Sierra Leone, local areas of northern Cote d'Ivoire and Togo, portions of Nigeria, Cameroon, Chad, CAR, Sudan, South Sudan, eastern DRC and portions of Uganda.

2.2. Weather assessment for the current day (Aug 01, 2016**)**

Intense convective clouds are observed over local areas of southern Niger, portions of Nigeria, Cameroon, CAR, DRC, Sudan and South Sudan, local areas of western Kenya, portions of Eritrea and Ethiopia.





Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (right) based on IR Satellite image.

Author: Fatoumata Sangho, (Mali-Meteo) / CPC-African Desk); fatoumata.sangho@noaa.gov