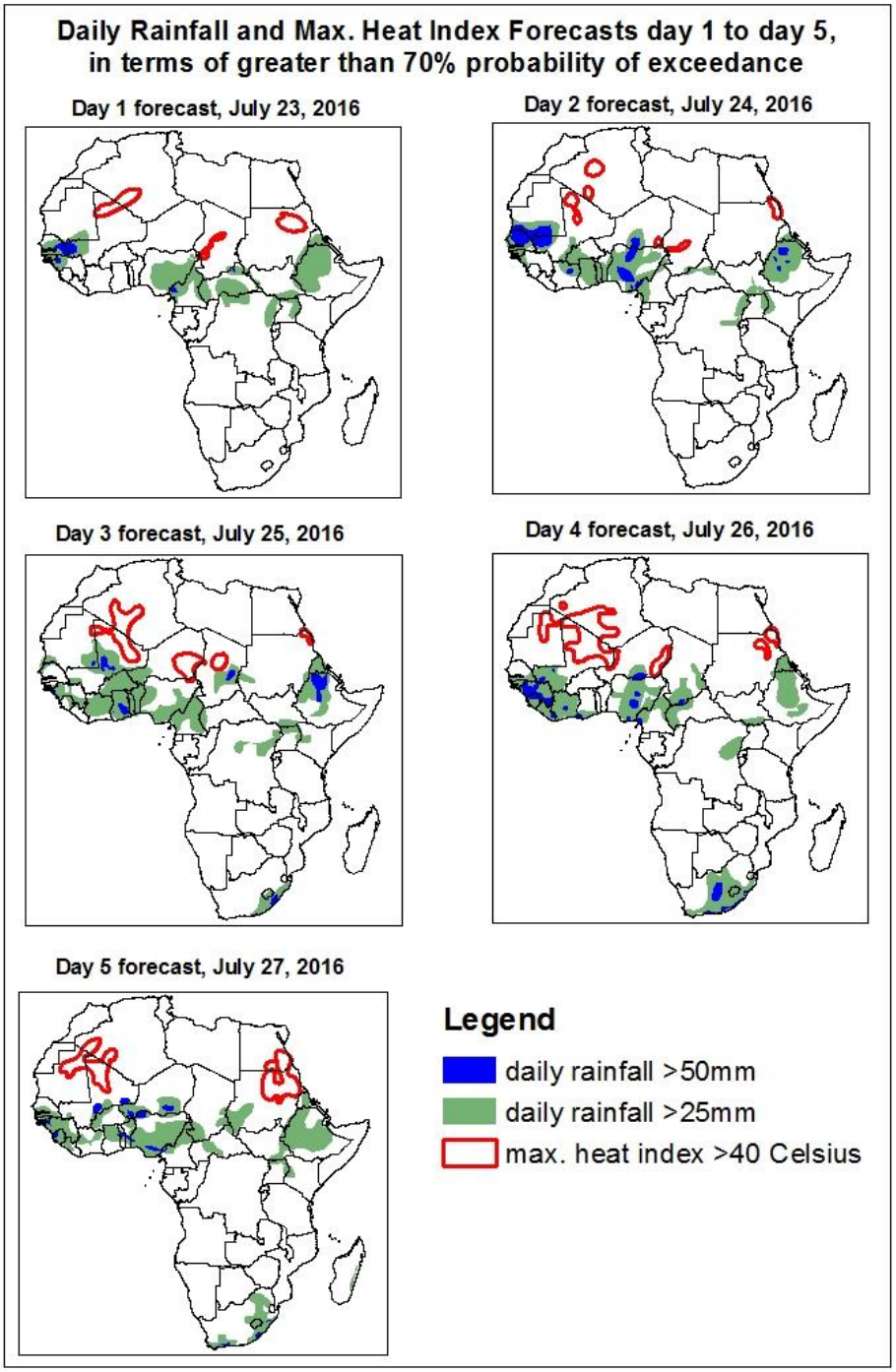
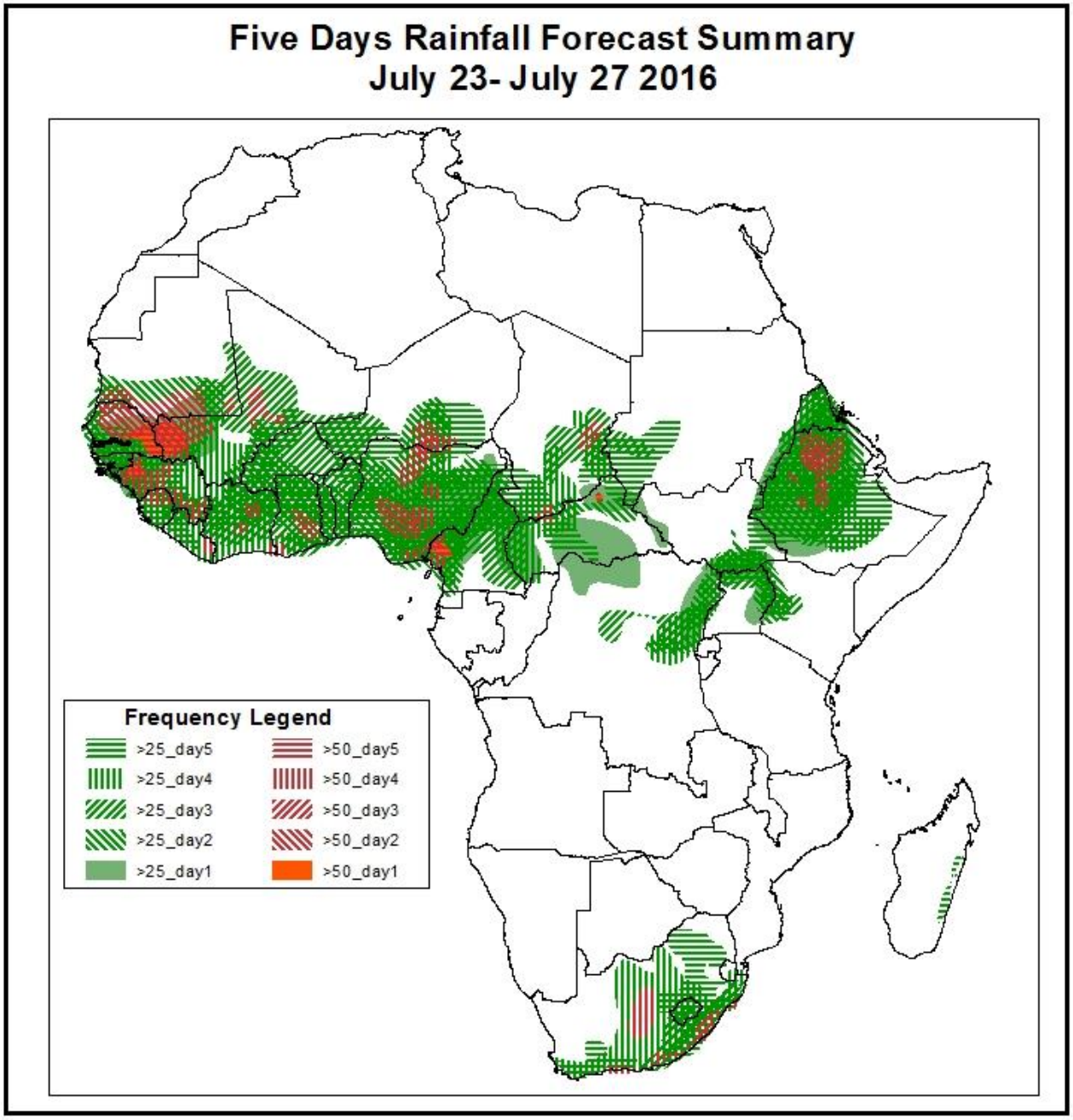
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 22, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 23– July 27 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.



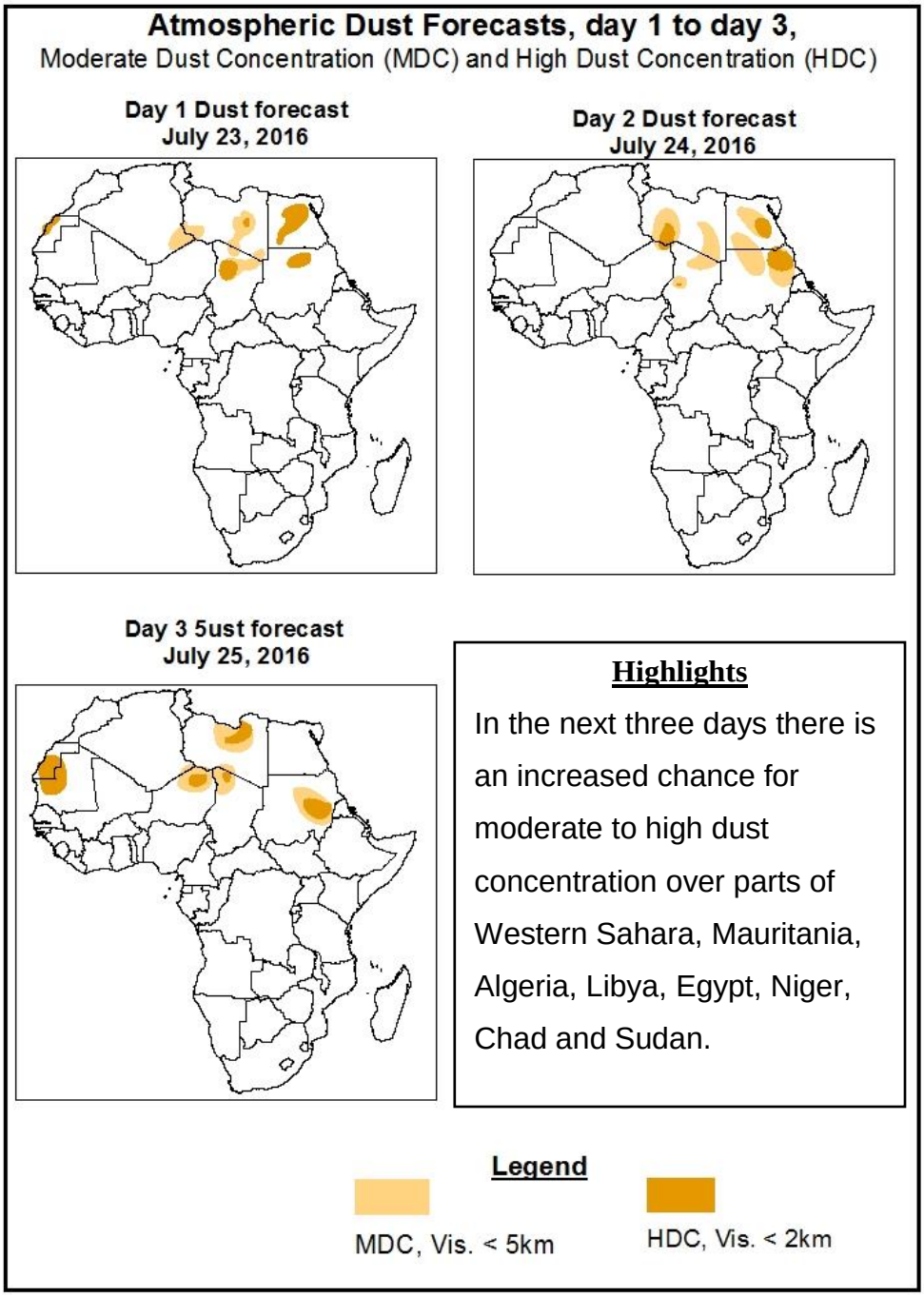


Highlights

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 portions of Mauritania and Mali, Guinea, Gambia, Guinea Bissau, Guinea, portions of Sierra, Leone, Liberia, Cote d'Ivoire and Ghana, Togo, Benin and Nigeria, portions of Burkina Faso, Niger, Chad, Cameroon, South Sudan, Uganda and South Africa, eastern DRC, potions of Ethiopia and Eritrea.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 23– July 25, 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: July 23 –July 27, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to intensify, with its central pressure value increasing from 1024-hPa to 1028-hPa through 48 to 72 hours, and tends to maintain average central pressure value of 1024-hPa through 96 to 120 hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from 1028-hPa to 1036-hPa through 24 to 72 hours, and it tends to weaken, with its central pressure value decreasing from 1036-hPa to 1032-hPa through 96 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to weaken, with its central pressure value increasing from 1028-hPa to 1024-hPa through 48 to 72 hours, and tends to maintain central pressure value 1024-hPa through 72 to 120 hours.

The 1016mb isobar, associated with the East African ridge is expected to remain near the latitudes of Kenya during through 24 to 96 hours.

The central pressure values associated with the heat low in western Sahel and central pressure value associated with the heat low over Sudan is expected to maintain central pressure value 1008-hPa during the forecast period. The central pressure associated with heat low over the central Sahel is expected to maintain average central pressure value of 1008-hPa through 24to 72 hours, and to stay in the range between1008hPa to 1004hPa through 72to 120 hours.

At 925hPa provided 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, 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. A zonal wind convergence is expected to prevail in the region between chad and Sudan during the forecast period.

At 700-hPa level, a deep trough in the easterly flow is expected to propagate across the Gulf of Guinea region 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 portions of Mauritania and Mali, Guinea, Gambia, Guinea Bissau, Guinea, portions of Sierra, Leone, Liberia, Cote d'Ivoire and Ghana, Togo, Benin and Nigeria, portions of Burkina Faso, Niger, Chad, Cameroon, South Sudan, Uganda and South Africa, eastern DRC, potions of Ethiopia and Eritrea.

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

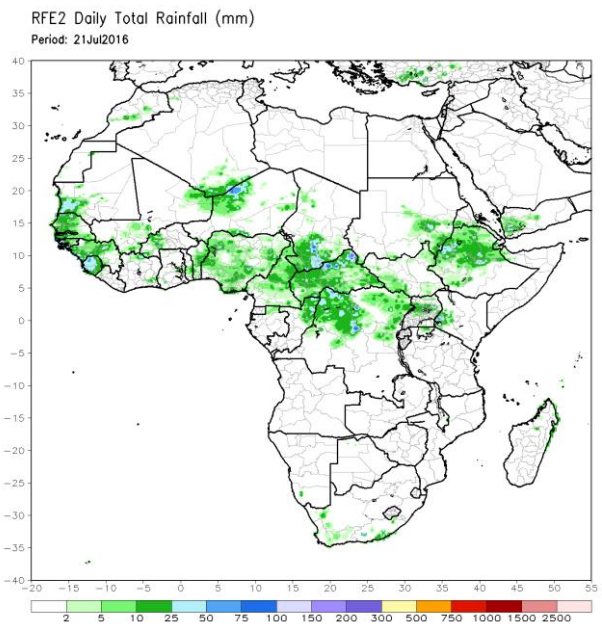
2.0. Previous and Current Day Weather over Africa

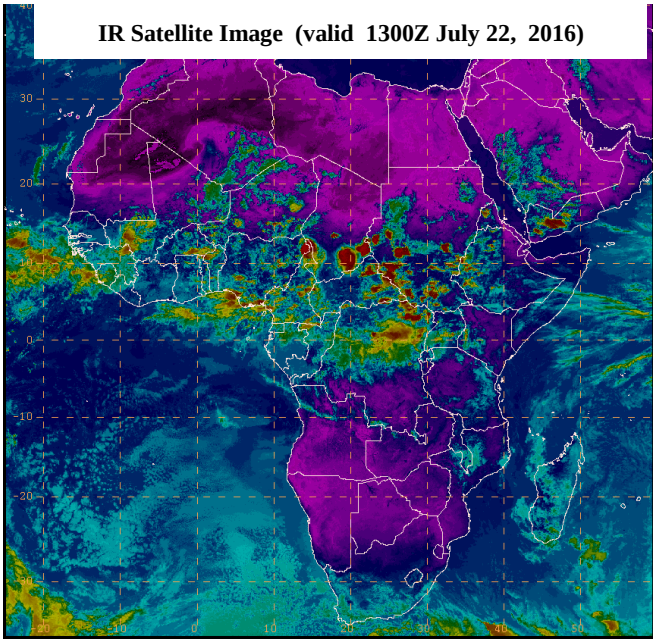
2.1. Weather assessment for the previous day (July 21, 2016)

Moderate to locally heavy rainfall was observed over portions of Mauritania, Senegal, Mali, Niger, Chad and Sudan, Gambia and Guinea Bissau, portions of Guinea and Burkina Faso, Sierra Leona, local areas of northern and southern Cote d'Ivoire and southern Togo, portions of Benin, Nigeria and Cameroon, northern of Congo, portions of CAR, DRC, South Sudan, Uganda and Ethiopia, western Kenya and southern Eritrea.

2.2. Weather assessment for the current day (July 22, 2016**)**

Intense convective clouds are observed portions of Mali, local areas of northern Guinea, southern Burkina Faso, northern Togo and northern Benin, portions of Niger, Nigeria, Cameroon, CAR, Chad, Sudan, South Sudan, DRC, Uganda, 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