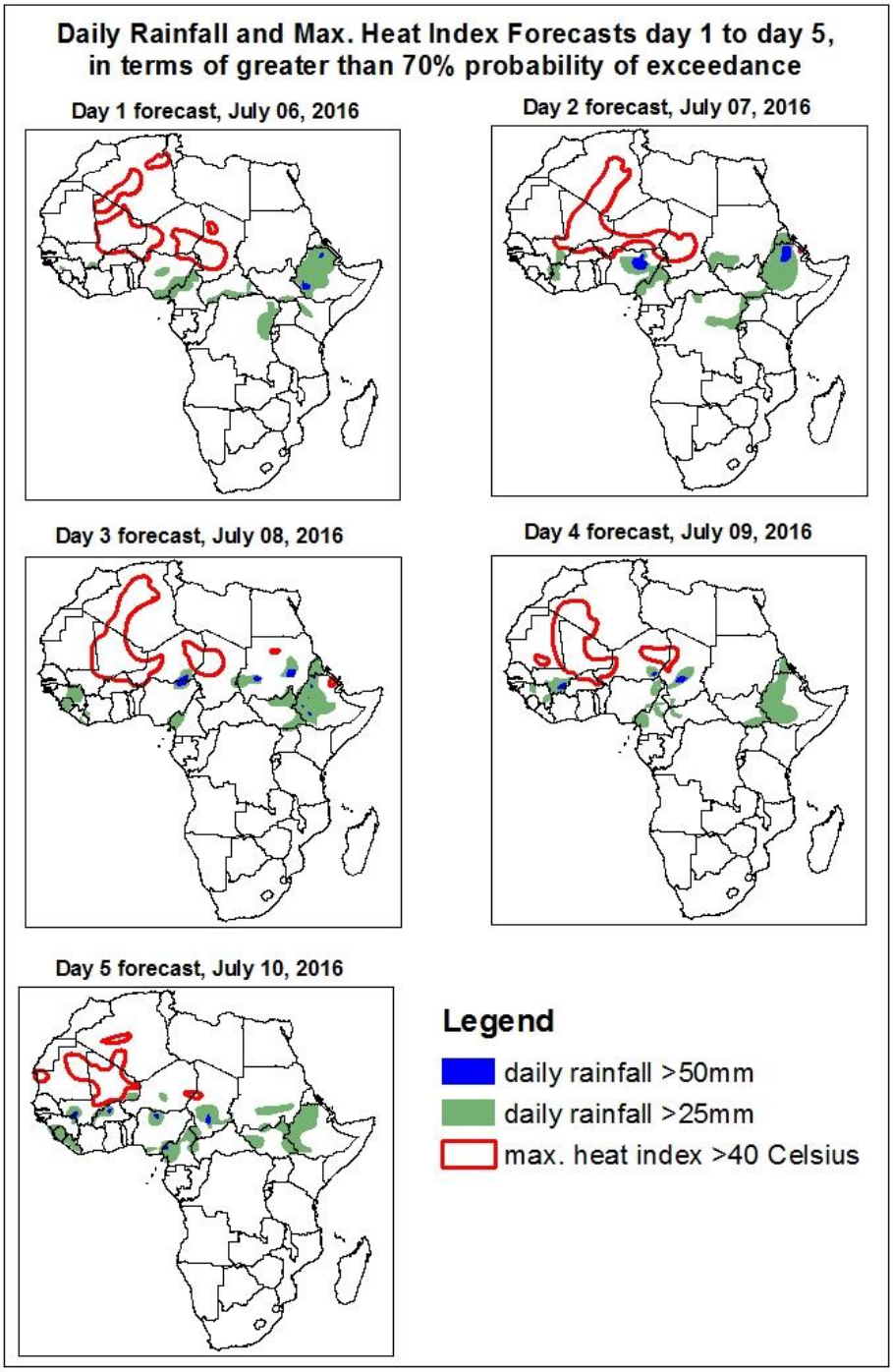
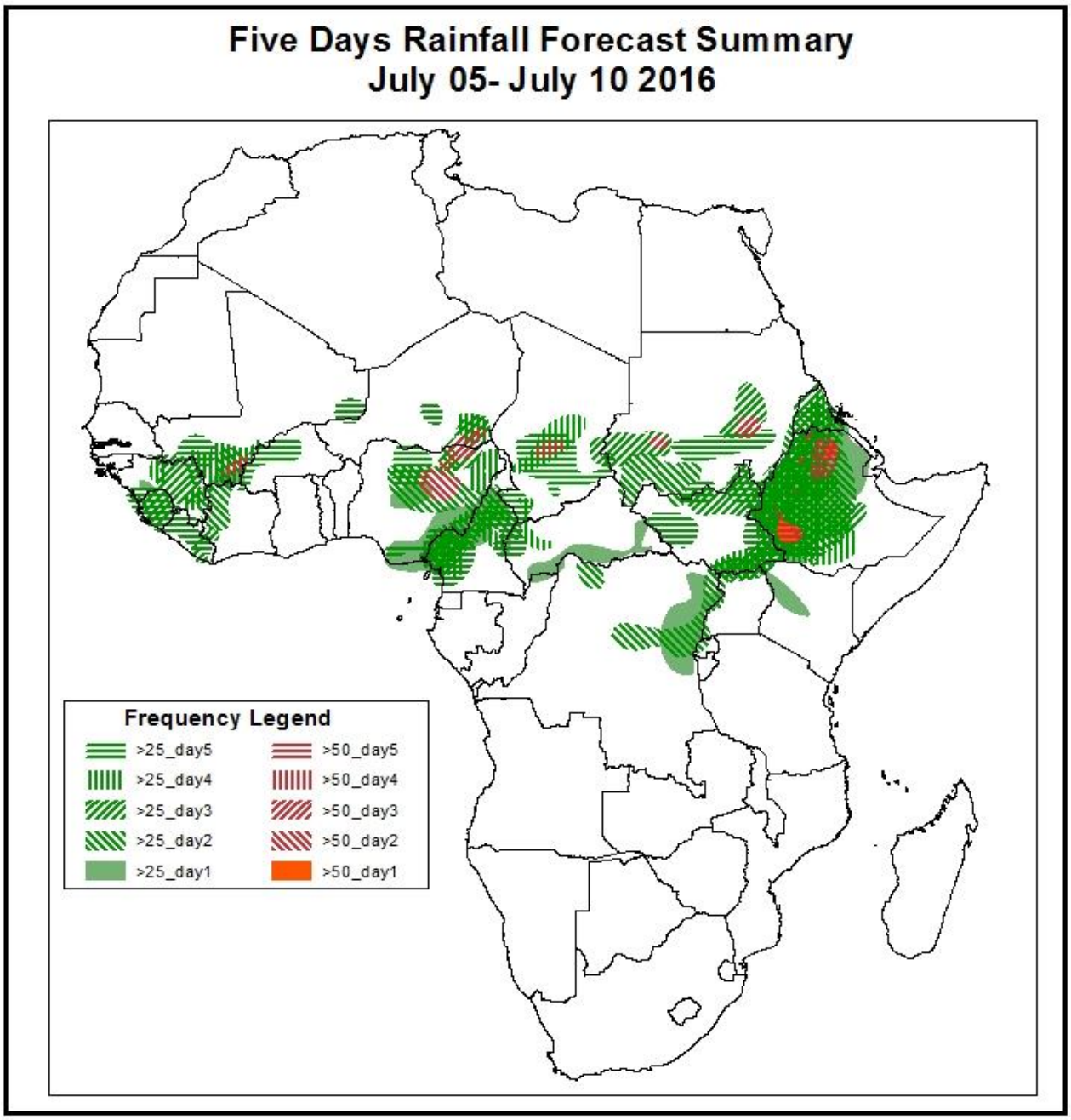
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 05, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 06– July 10 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.



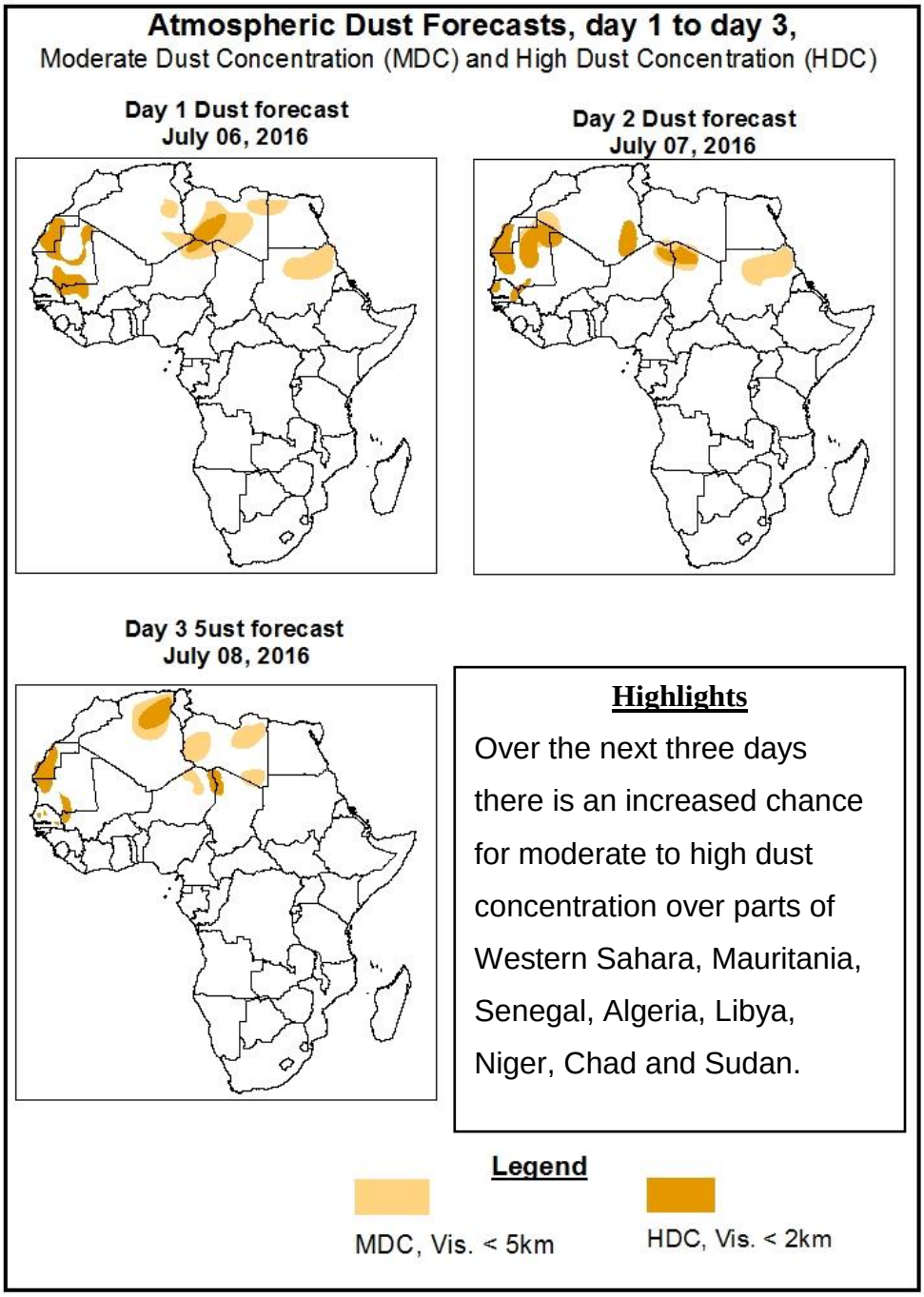


Highlights

Over the next five days, onshore winds and their associated lower-level convergence is expected to enhance rainfall across the southwestern portion of Wes Africa. Lower-level wind convergences are also expected to enhance rainfall across the Central and eastern Sahel countries, and portions of the Greater Horn of Africa. Therefore, there is an increased chance for two or more days of moderate to heavy rainfall over local areas of Guinea Conakry, southern Mali, Sierra Leone, portions of Nigeria and Cameroon, local areas of central Chad, local areas of western of eastern Sudan, portions of South Sudan, eastern DRC, Eritrea and Ethiopia.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 06– July 08, 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 06–July 10, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to maintain average central pressure value of 1024-hPa during the forecast period.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensity slightly, with its central pressure value increasing from 1034-hPa to 1035-hPa through 24 to 48 hours, and it tends to weaken, with its central pressure value decreasing from 1032-hPa to 1019-hPa through 72 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to weaken, with its central pressure value decreasing from 1032-hPa to 1028h-Pa through 24 to 48 hours, and it tends to weaken, with its central pressure value decreasing from 1032-hPa to 1027-hPa through 72 to 96 hours.

The 1016mb isobar, associated with the East African ridge is expected to remain near the latitudes of Ethiopia 24 to 120hours. The anticyclonic ridge associated with the St. Helena high pressure system is expected to extend northwards across the Atlantic Ocean, with the 1016hPa isobar remaining near the Gulf of Guinea coast during the forecast period. This may help to maintain enhanced rainfall across portions of West Africa.

The central pressure values associated with the heat low in western Sahel is expected remain in the range between 1004-hPa and 1007-hPa during the forecast period, while the heat low over the central Sahel is expected to remain in the range between 1006-hPa and 1008-hPa though 48 to 120 hours .The central pressure value associated with the heat low across Sudan is expected remain in the range between 1004-hPa and 1006-hPa during the forecast period.

At 925HPa level an anticyclonic circulation and its associated ridge is expected to prevail across Libya and the neighboring areas during the forecast period. Strong wind may lead to moderate to high dust concentration across portions of Western Sahara, Mauritania, Senegal, Algeria, Libya, Niger, Chad and Sudan.

At 850hPa level, a strong zonal wind convergence is expected to prevail in the region between Mali and Sudan, while a dry northerly flow is expected to prevail across the western end of West Africa at 24 to 120 hours.

At 700hPa level, a trough in the easterlies, associated with the African easterly wave, is expected to propagate westwards in the region between western Nigeria and Guinea.

Over the next five days, onshore winds and their associated lower-level convergence is expected to enhance rainfall across the southwestern portion of Wes Africa. Lower-level wind convergences are also expected to enhance rainfall across the Central and eastern Sahel countries, and portions of the Greater Horn of Africa. Therefore, there is an increased chance for two or more days of moderate to heavy rainfall over local areas of Guinea Conakry, southern Mali, Sierra Leone, portions of Nigeria and Cameroon, local areas of central Chad, local areas of western of eastern Sudan, portions of South Sudan, eastern DRC, Eritrea and Ethiopia.

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

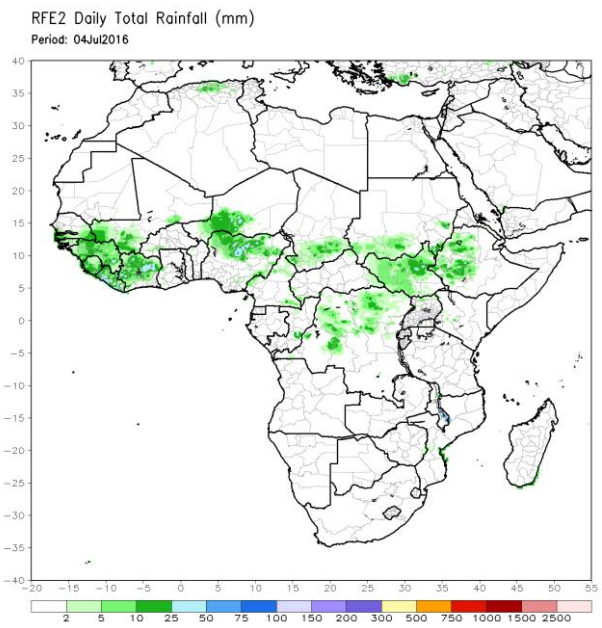
2.0. Previous and Current Day Weather over Africa

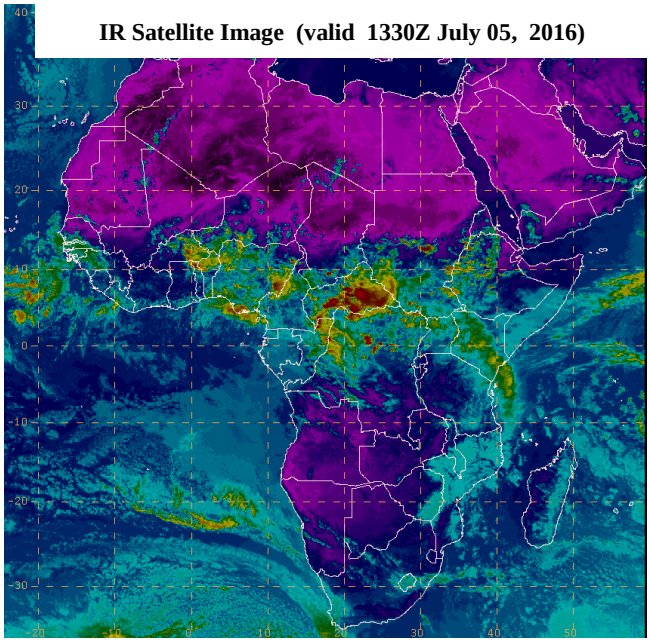
2.1. Weather assessment for the previous day (July 04, 2016)

Moderate to locally heavy rainfall was observed over southern Senegal, Gambia, portions of Mali, Guinea, Sierra Leone, Liberia, local areas of northern Algeria and western Niger, portions of Nigeria, Sothern Chad, local areas of Cameroon and Congo, portions of South Sudan, DRC and Ethiopia.

2.2. Weather assessment for the current day (July 05, 2016**)**

Intense convective clouds are observed over local areas of eastern Burkina Faso, northern Togo and Benin, potions of Nigeria and CAR, local areas of southern Chad and Sudan, portions of DRC, South Sudan 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