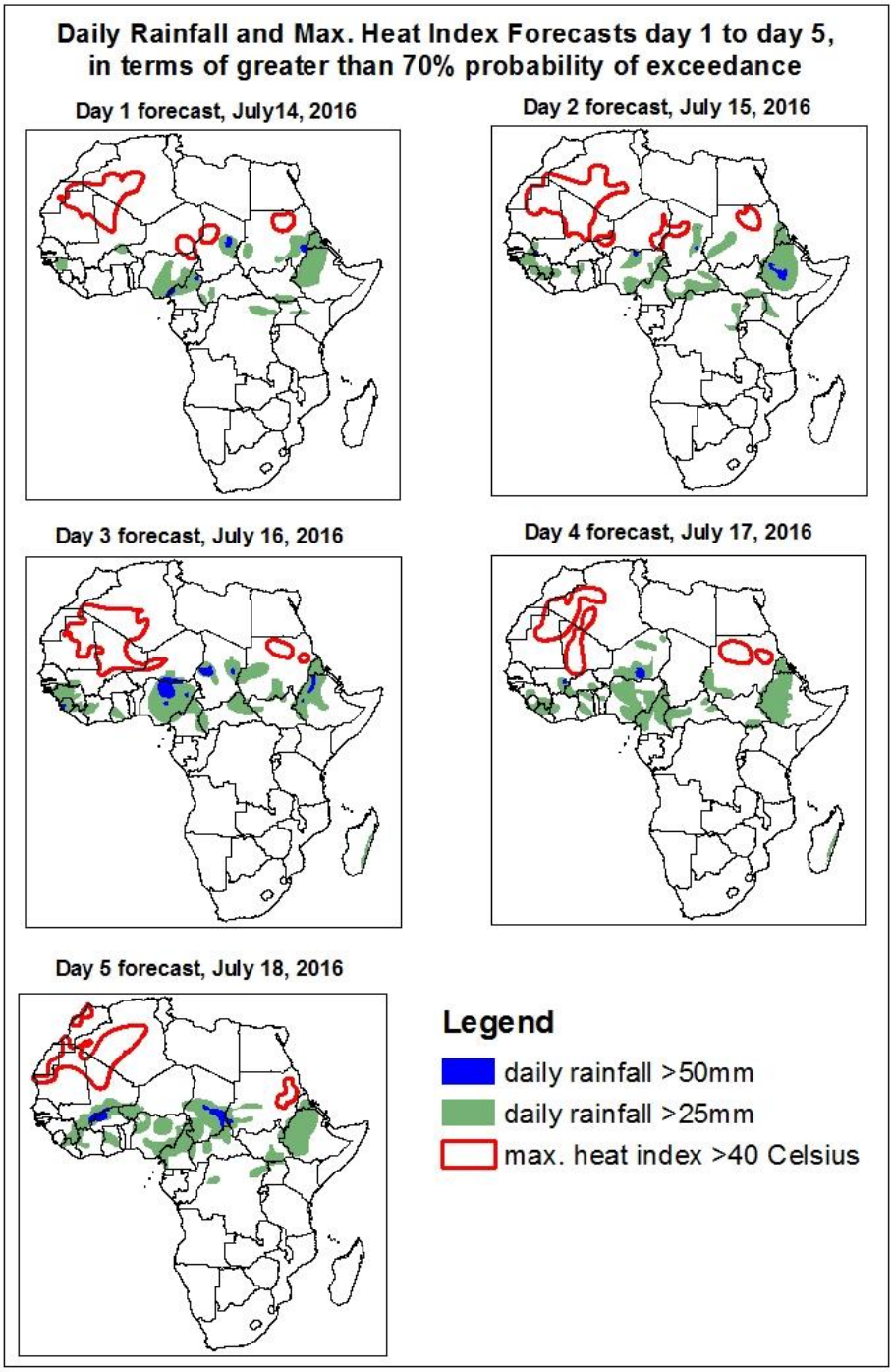
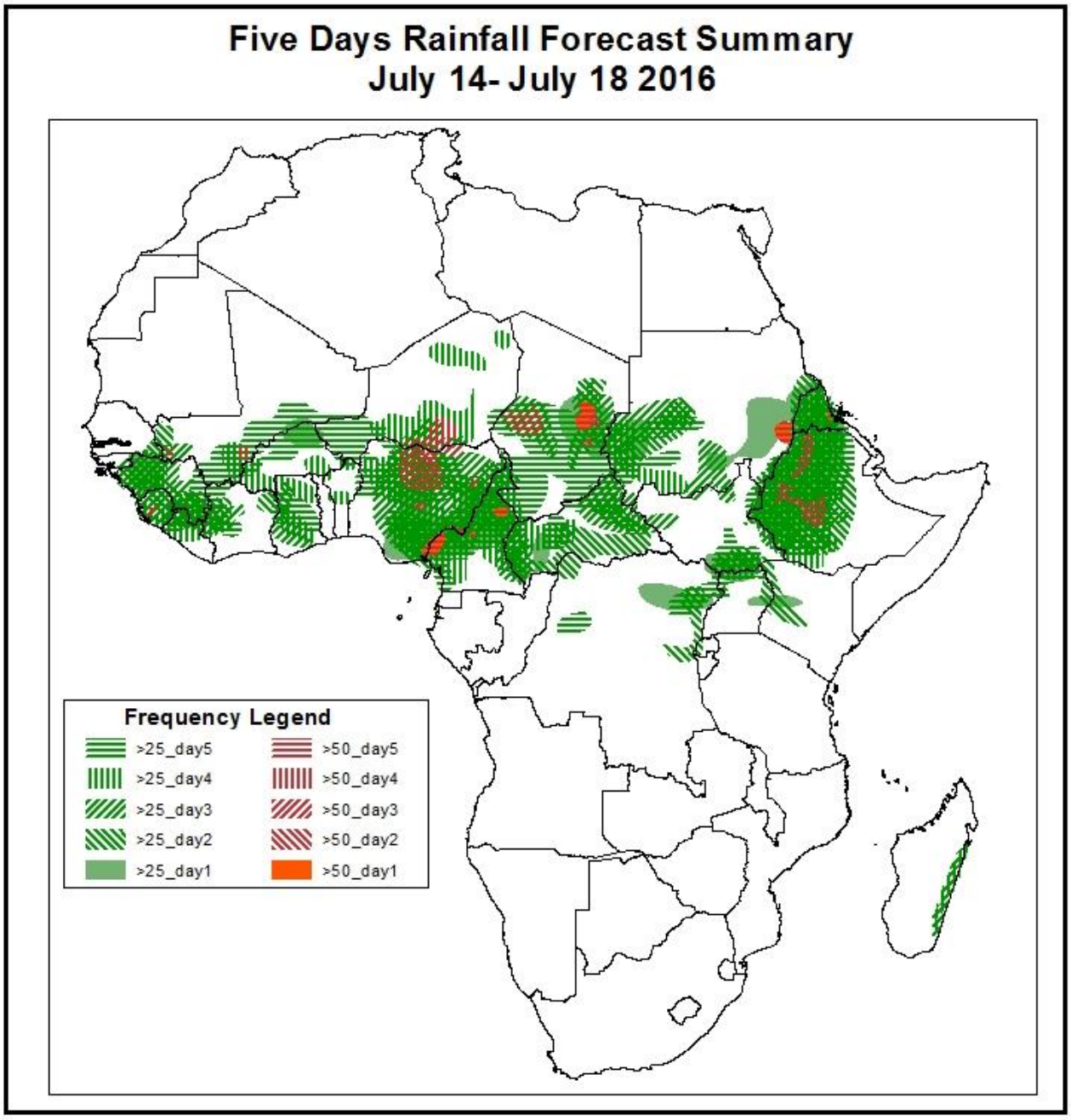
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 13, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 14– July 18 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.



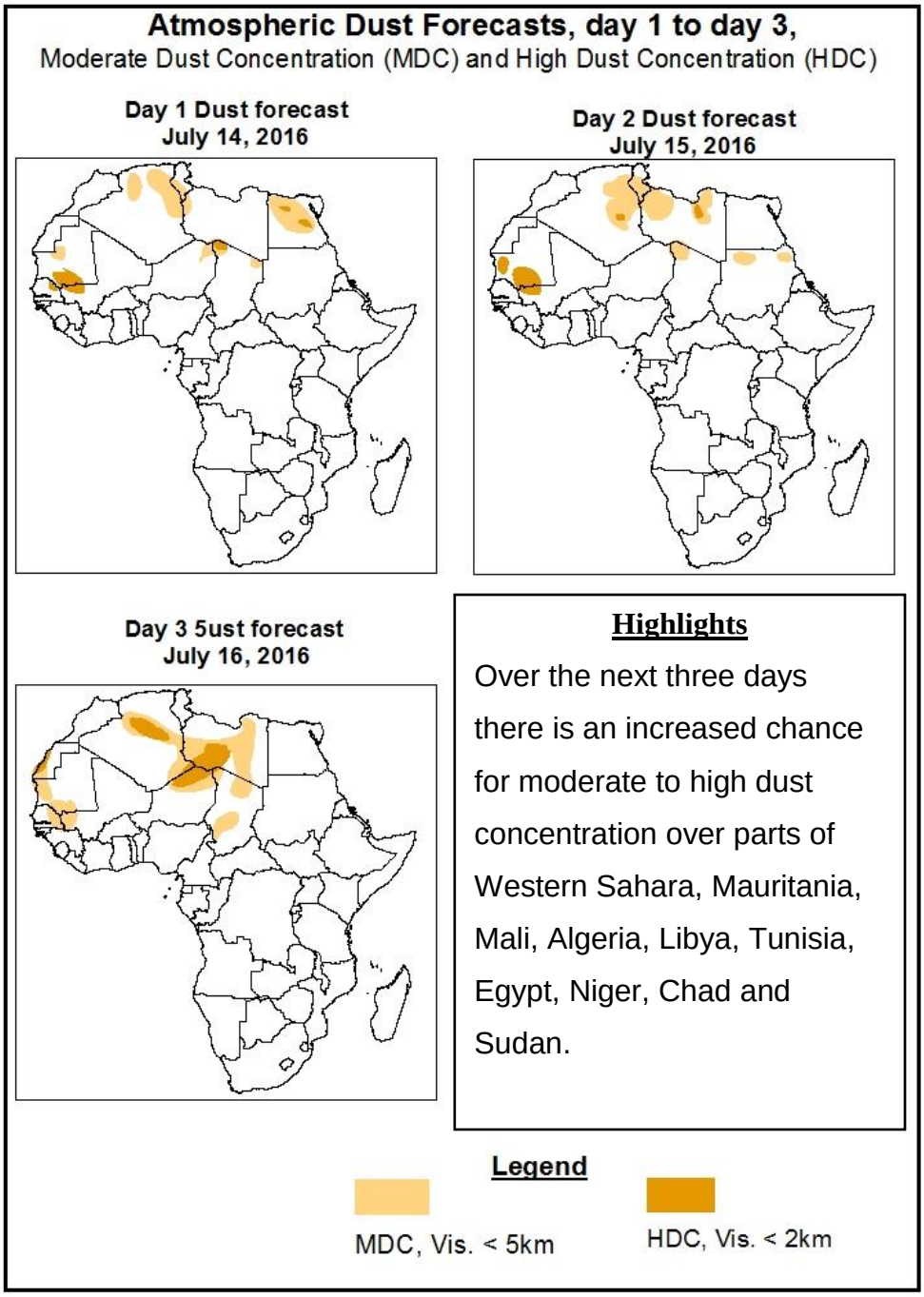


Highlights

Over the next five days, onshore winds with their associated lower-level convergence are 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 portions of Guinea, Mali AND Burkina Faso, Sierra Leone, western Liberia and Cote d'Ivoire, portions of Ghana, local areas of southern Niger, portions of Nigeria, Chad, Cameroon, CAR, Sudan, South Sudan and Ethiopia, local areas of northern DRC, eastern and Northern Uganda, and eastern Madagascar, and Eritrea.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 14– July 16, 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 14–July 18, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to weaken, with its central pressure value increasing from 1024-hPa to 1020-hPa through 48 to 96 hours, and it tends to maintain average central pressure value of 1020-hPa through 96 to 120 hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to maintain average central pressure value of 1025-hPa through 24 to 48 hours, and it tends to weaken, with its central pressure value increasing from 1025-hPa to 1023-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 decreasing from 1027-hPa to 1024h- through 24 to 48 hours, and it tends to intensity, with its central pressure value decreasing from 1024-hPa to 1032-hPa through 72 to 96 hours.

The 1016mb isobar, associated with the East African ridge is expected to remain near the latitudes of Ethiopia during the forecast period. 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 heat low in the western Sahel is expected remain in the range between 1006hPa and 1004hPa through 24 to 48 hours, and is expected to deepen gradually, with its central pressure value decreasing from 1005-hPa to 1003-hPa through 72 hours at 120. The heat low in the central Sahel is expected to maintain average central pressure value of 1005-hPa through 48 to 72 hours, and remain in the range between 1007-hPa and 1008-hPa through 96 hours at 120.The central pressure value associated with the heat low across Sudan is expected remain in the range between 1004-hPa and 1008-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, Mali, Algeria, Libya, Tunisia, Egypt, 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.

Over the next five days, onshore winds with their associated lower-level convergence are 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 portions of Guinea, Mali AND Burkina Faso, Sierra Leone, western Liberia and Cote d'Ivoire, portions of Ghana, local areas of southern Niger, portions of Nigeria, Chad, Cameroon, CAR, Sudan, South Sudan and Ethiopia, local areas of northern DRC, eastern and Northern Uganda, and eastern Madagascar, and Eritrea.

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

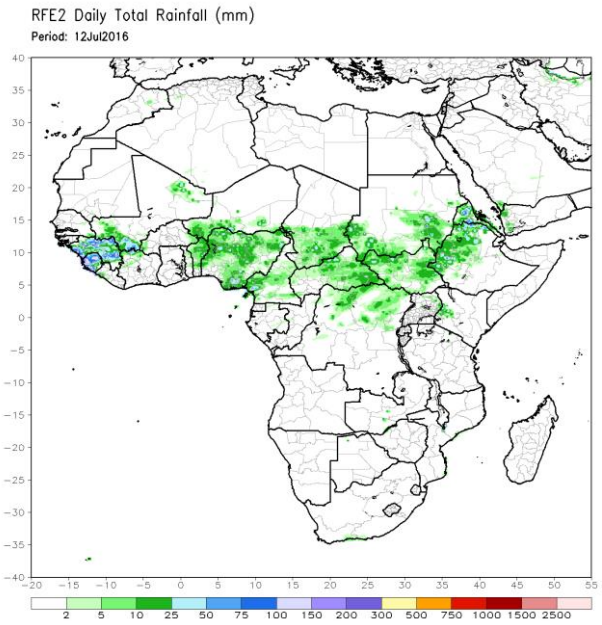
2.0. Previous and Current Day Weather over Africa

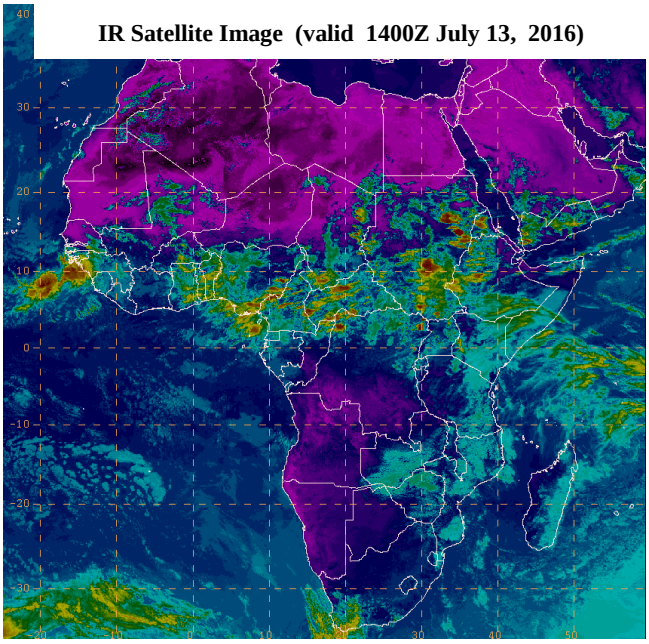
2.1. Weather assessment for the previous day (July 12, 2016)

Moderate to locally heavy rainfall was observed over Guinea and Sierra Leone, portions of Mali, Niger, Benin, Nigeria and Cameroon, southern Chad, portions of Sudan, South Sudan, DRC, Uganda and Ethiopia, western Kenya, and Eritrea.

2.2. Weather assessment for the current day (July 13, 2016**)**

Intense convective clouds are observed over local areas of western Guinea, portions of Nigeria, Cameroon, Chad, CAR, Chad, DRC, Sudan, South Sudan, 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.

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