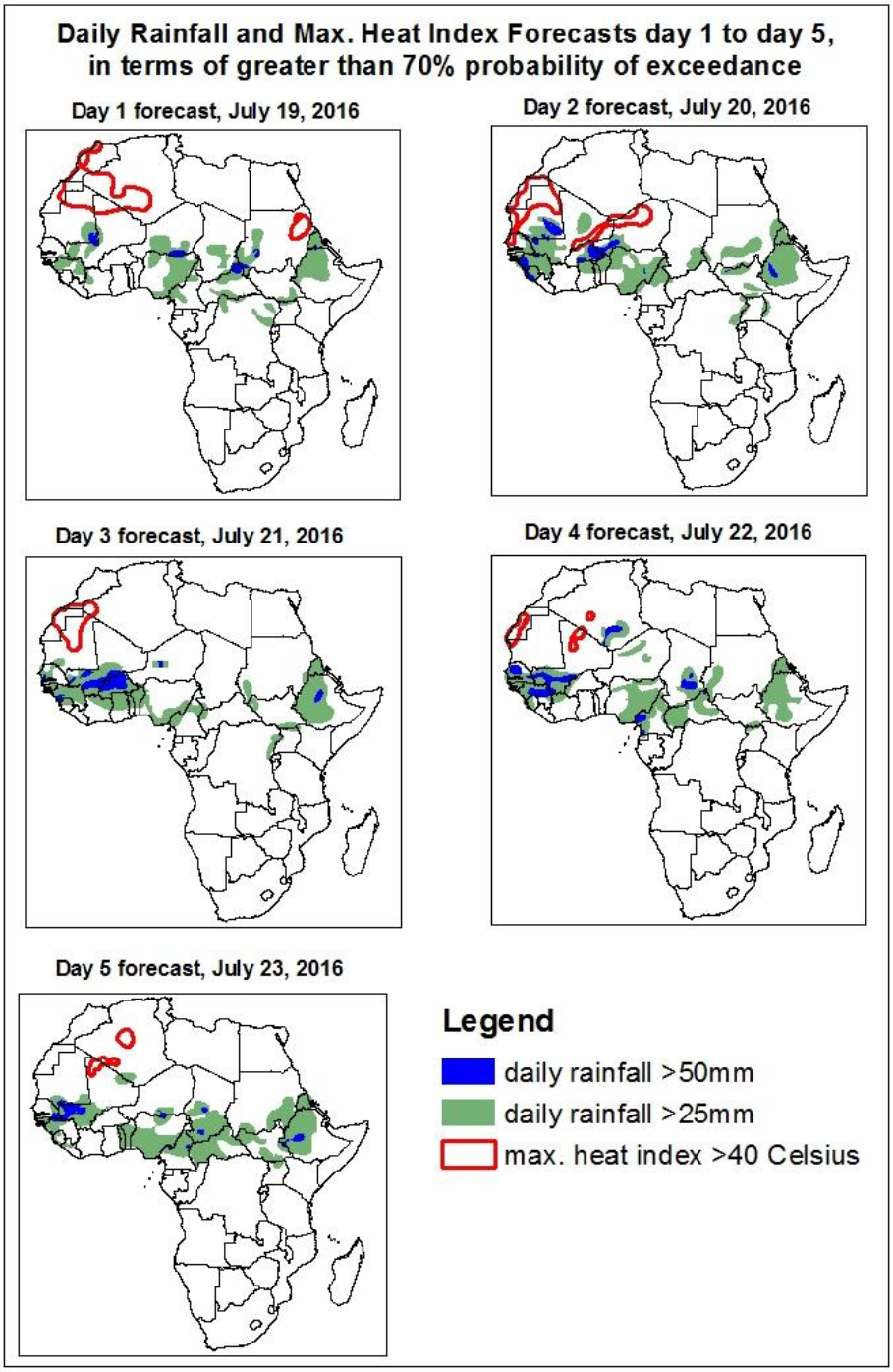
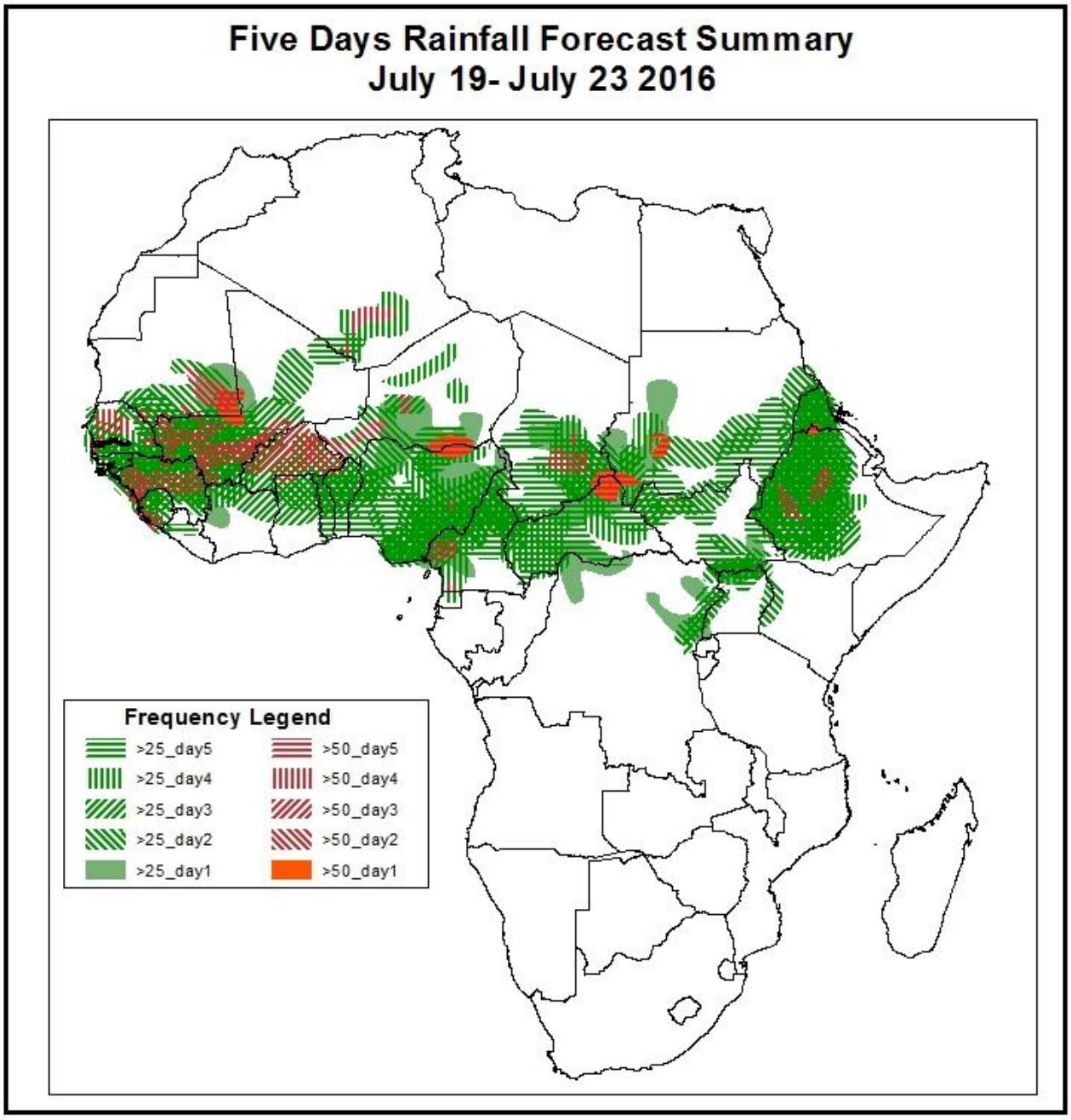
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 18, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 19– July 23 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.



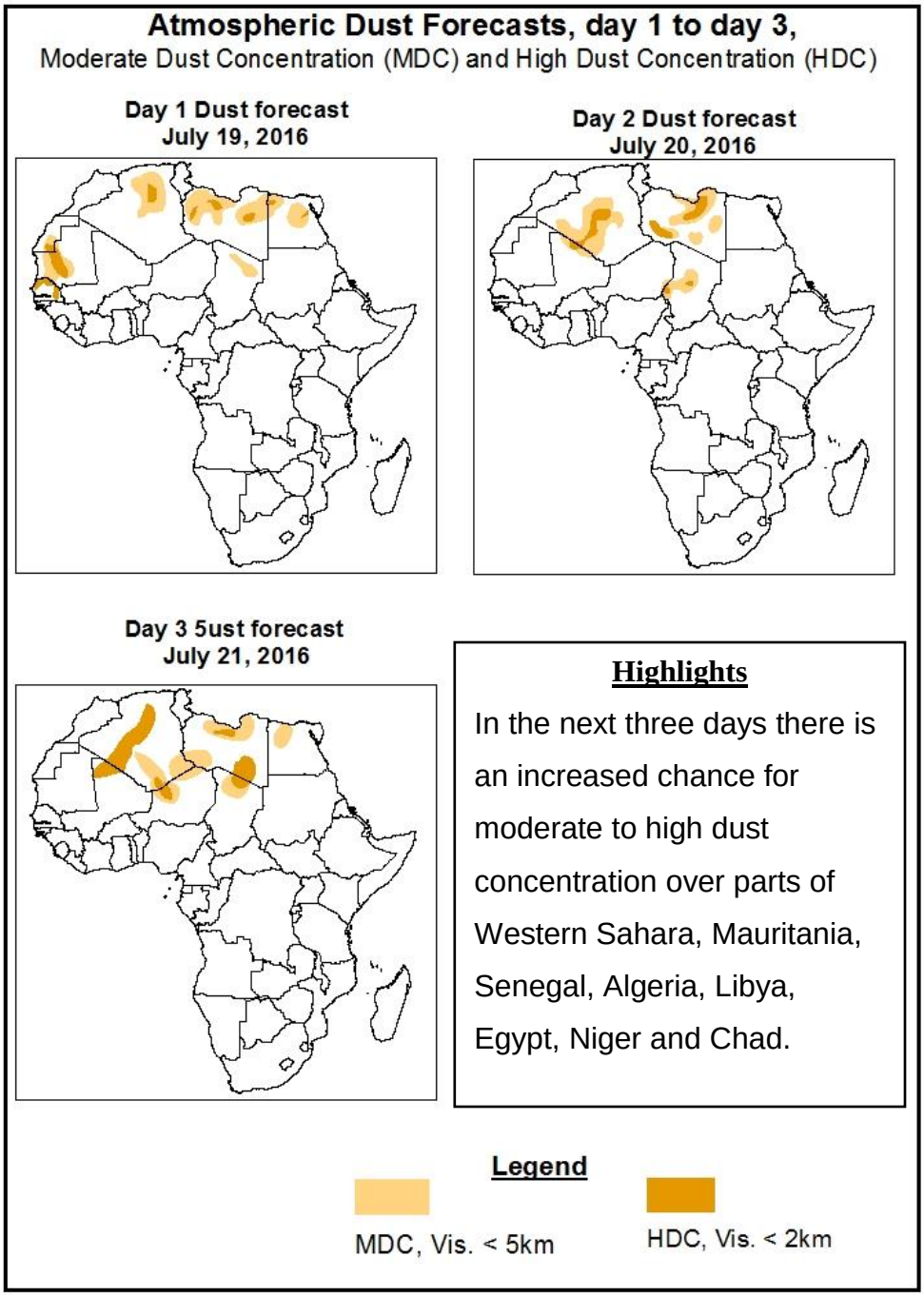


Highlights

In the next five days, westward propagating lower-level cyclonic circulation and cyclonic trough 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 Gambia, Guinea Bissau, Guinea, Liberia, Sierra Leone, portions of Senegal, Mauritania and Mali, Burkina Faso, local areas of northern Cote d'Ivoire, northern Ghana, Togo and Benin, portions of Niger, Nigeria, Cameroon, Chad, CAR, Sudan, South Sudan and Ethiopia, local areas of eastern DRC and Northern Uganda, and Eritrea.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 15– July 17, 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 19–July 23, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to strengthen, with its central pressure value increasing from 1024-hPa to 1028-hPa during the forecast period.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from 1022-hPa to 1032-hPa during the forecast period.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to weaken, with its central pressure value decreasing from 1026-hPa to 1024-hPa through 48 to 72 hours, and tends to intensity, with its central pressure value increasing from 1023-hPa to 1028-hPa through 96 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 1005hPa and 1008hPa during the forecast period, while the central pressure associated with the heat low over the central Sahel is expected to deepen, with itc central pressure value decreasing from 1010-hPa to 1005-hPa through 24 to 96 hours. The central pressure value associated with the heat low across Sudan is expected remain in the range between 1005hPa and 1008hPa during the forecast period.

At 925hPa provided an anticyclonic circulation and its associated edge to prevail across Libya and is expected to expand 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, Senegal, Algeria, Libya, Egypt, Niger and Chad.

At 850hPa level, two cyclonic circulations are expected to propagate westward across the Sahel region between western Chad and Senegal 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 circulation and cyclonic trough 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 Gambia, Guinea Bissau, Guinea, Liberia, Sierra Leone, portions of Senegal, Mauritania and Mali, Burkina Faso, local areas of northern Cote d'Ivoire, northern Ghana, Togo and Benin, portions of Niger, Nigeria, Cameroon, Chad, CAR, Sudan, South Sudan and Ethiopia, local areas of eastern DRC and Northern Uganda, and Eritrea.

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

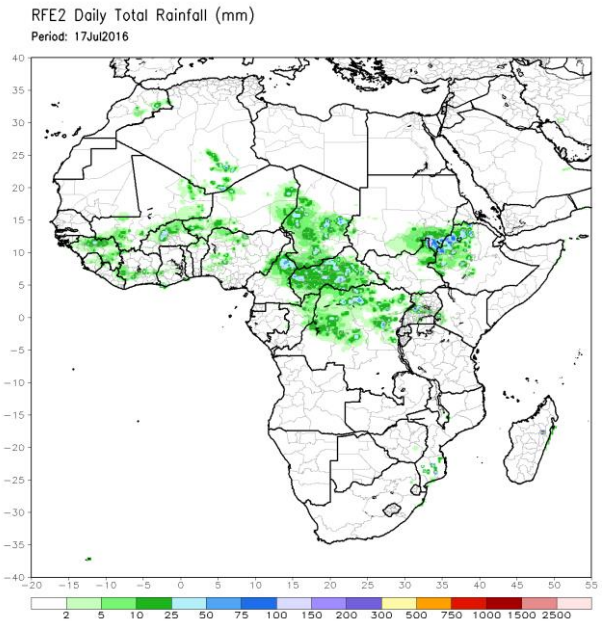
2.0. Previous and Current Day Weather over Africa

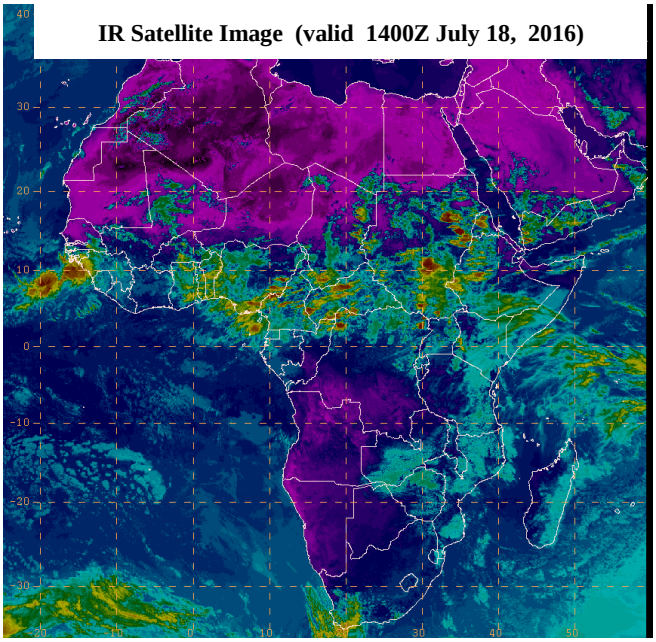
2.1. Weather assessment for the previous day (July 17, 2016)

Moderate to locally heavy rainfall was observed over portions of Guinea, Mali, Sierra Leone, Cote d'Ivoire and Ghana, local areas of northern Benin, northern Morocco, and southern Algeria, portions of Niger, Nigeria and Chad, norther Cameroon and Congo, CAR, portions of DRC, Sudan, Uganda and Ethiopia.

2.2. Weather assessment for the current day (July 18, 2016**)**

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





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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