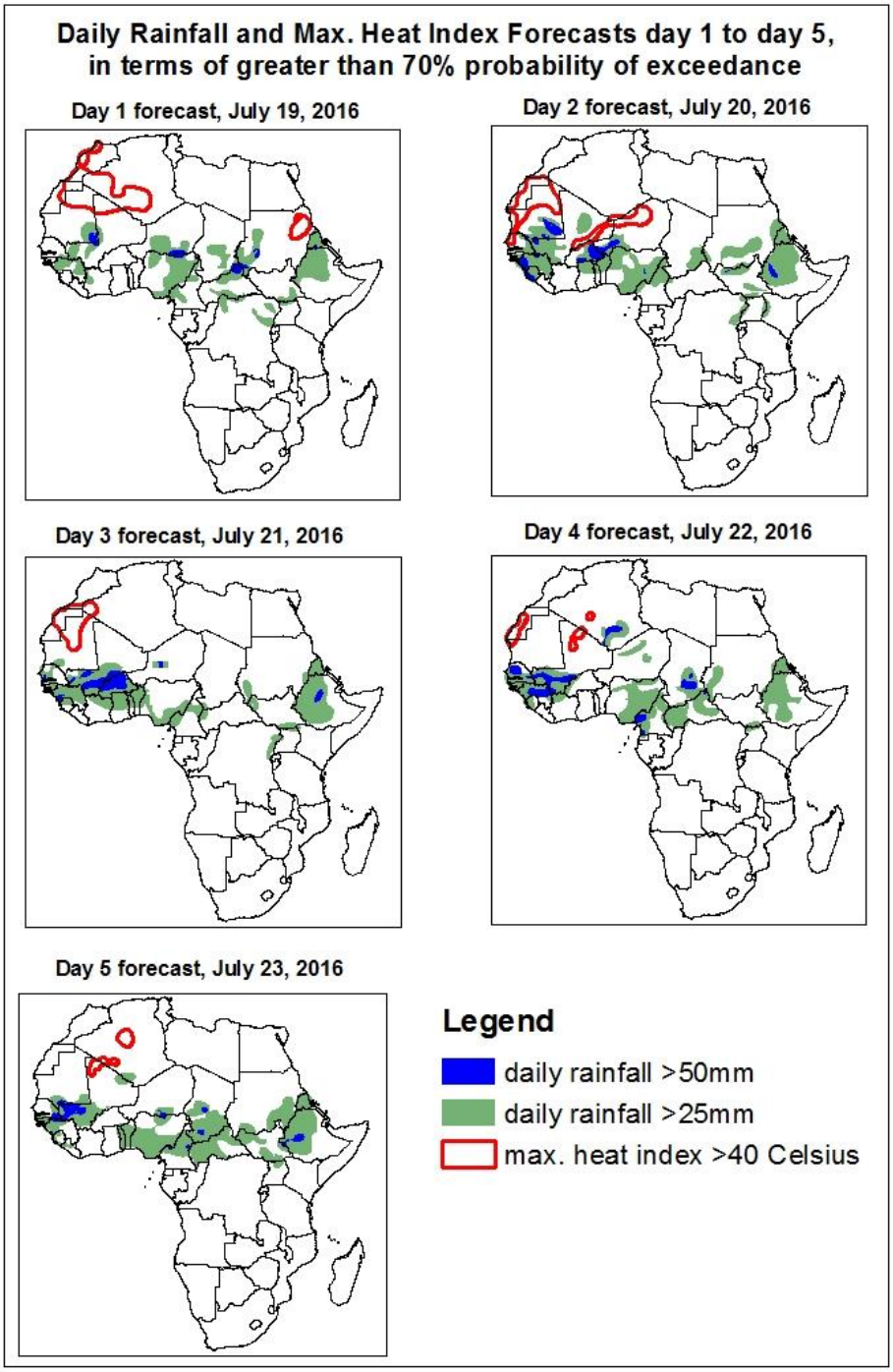
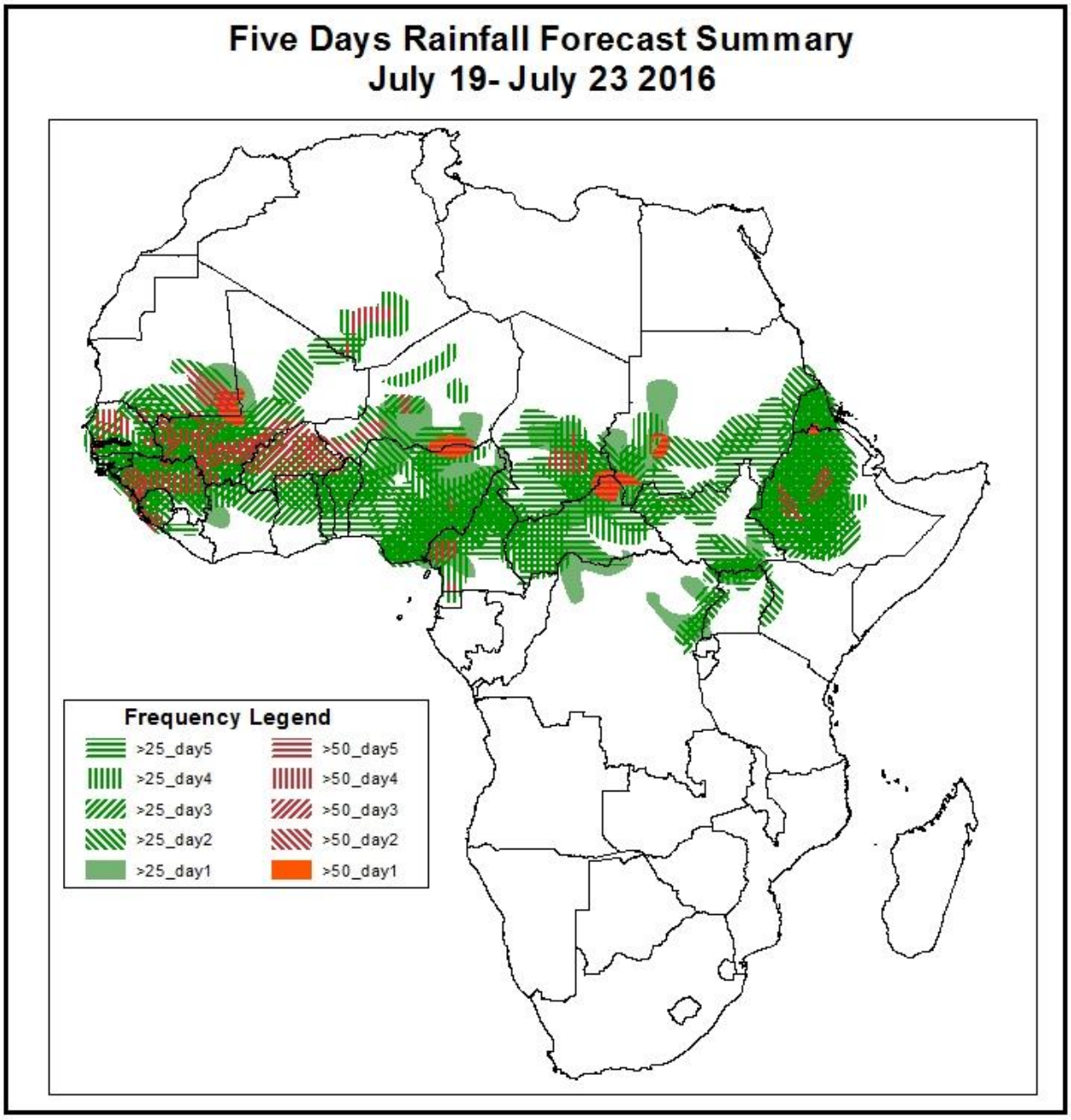
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 19, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 20– July 24 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.



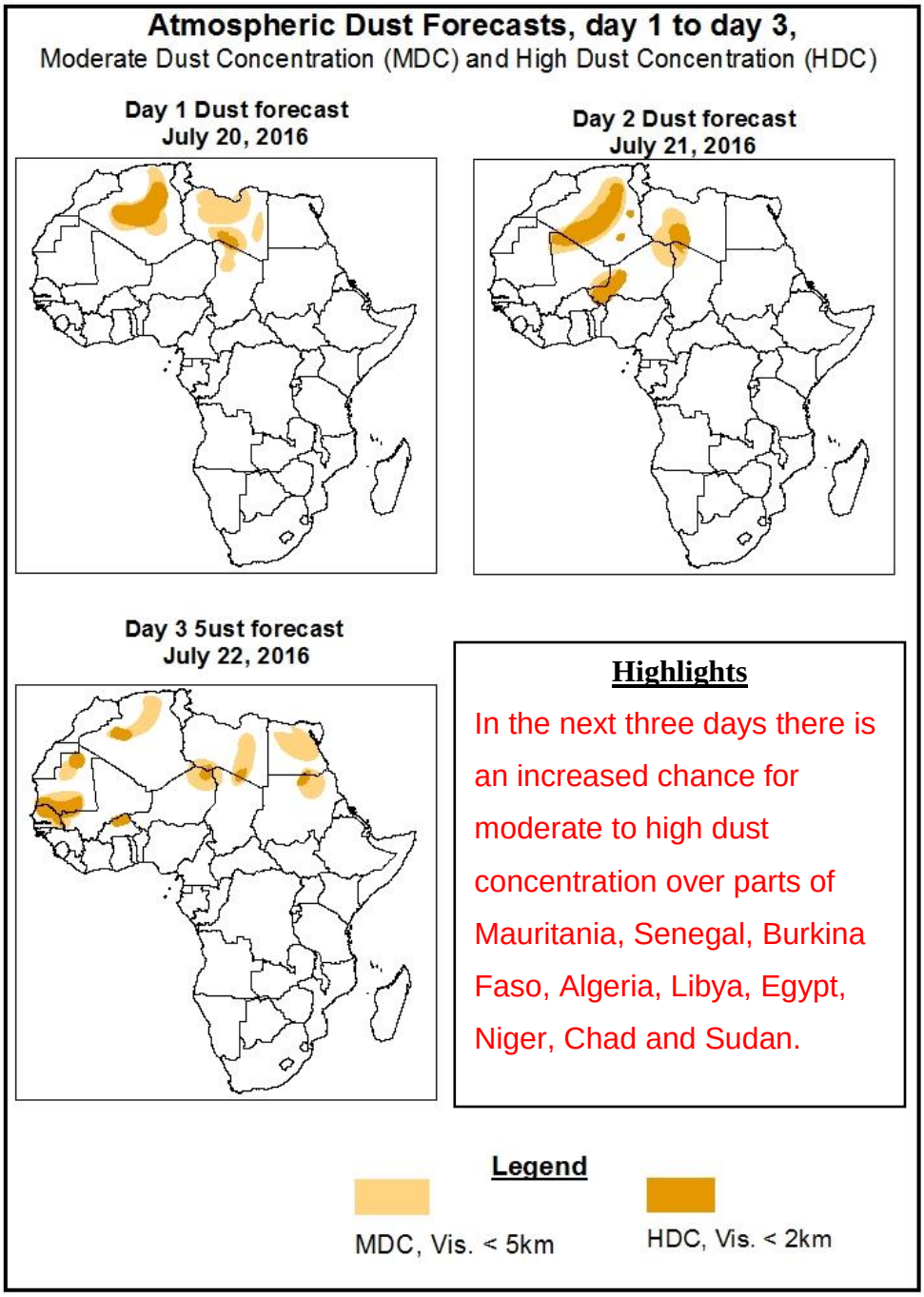


Highlights

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 southern Mauritania, portions of Senegal, Mali, Nigeria and Chad, local areas of southern Algeria, Gambia, Guinea Bissau, Guinea and Sierra Leone, local areas of northern Cote d'Ivoire, Ghana, Togo and Benin, portions of Nigeria, CAR, Sudan and South Sudan, local areas of eastern DRC and northern Uganda, Eritrea and Ethiopia.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 20– July 22, 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 20 –July 24, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to intensify, with its central pressure value increasing from 1016-hPa to 1024-hPa through 24 to 72hours, and tends to intensity, with its central pressure value increasing from 1024-hPa to 1028-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 1025-hPa to 1036-hPa through 48 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected tends to maintain, with its central pressure value 1028-hPa through 48to 72 hours, and tends to weaken, with its central pressure value decreasing from 1028-hPa to 1024-hPa through 96 to 120 hours.

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

The central pressure values associated with the heat low in western Sahel and the central pressure value associated with the heat low across Sudan is expected tends to maintain, with central pressure value 1008-hPa during the forecast period. The central pressure associated with low heat on the central Sahel to remain in the range of 1008hPa to 1012hPa and 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 Mauritania, Senegal, Burkina Faso, Algeria, Libya, Egypt, Niger, Chad and Sudan.

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 southern Mauritania, portions of Senegal, Mali, Nigeria and Chad, local areas of southern Algeria, Gambia, Guinea Bissau, Guinea and Sierra Leone, local areas of northern Cote d'Ivoire, Ghana, Togo and Benin, portions of Nigeria, CAR, Sudan and South Sudan, local areas of eastern DRC and northern Uganda, Eritrea and Ethiopia.

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

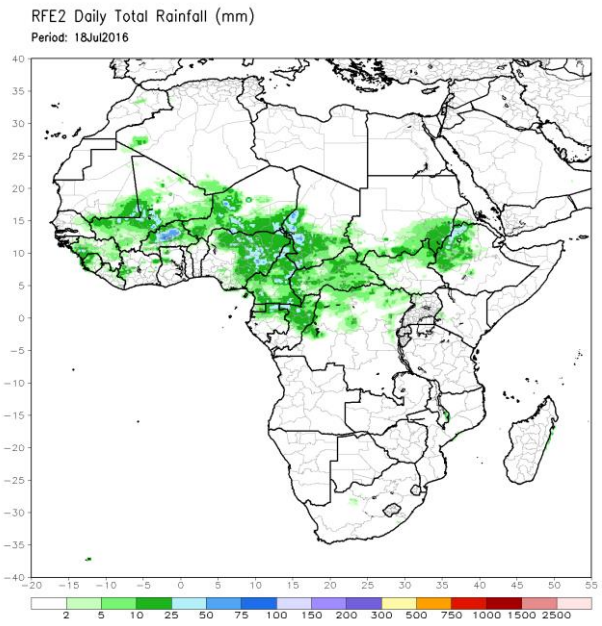
2.0. Previous and Current Day Weather over Africa

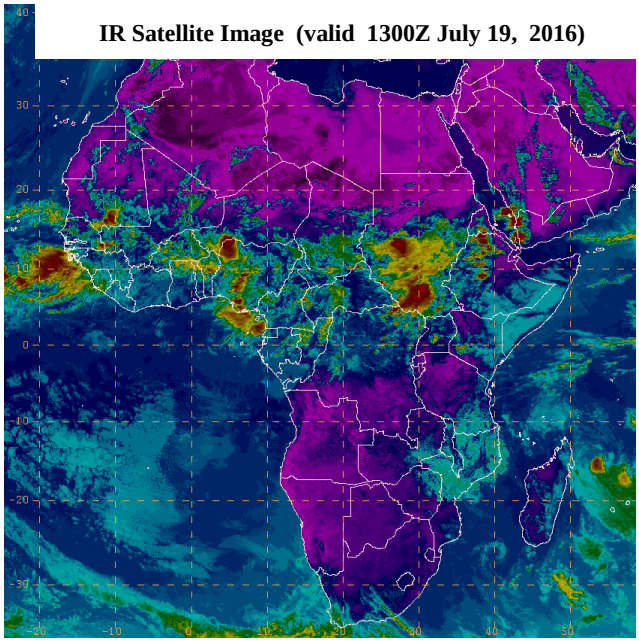
2.1. Weather assessment for the previous day (July 18, 2016)

Moderate to locally heavy rainfall was observed over southern Mauritania, local areas of northern Senegal, portions of Guinea, Mali, Niger, Sierra Leone, Liberia and Cote d'Ivoire, local areas of Ghana, portions of Nigeria, Chad and Sudan, Cameroon, Equatorial Guinea, and CAR, northern Gabon and Congo, portions of DRC, South Sudan and Ethiopia.

2.2. Weather assessment for the current day (July 19, 2016**)**

Intense convective clouds are observed over local areas in southern Mauritania and eastern Senegal, portions of Mali, local areas of southern Niger and central Benin, portions of Nigeria, CAR,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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