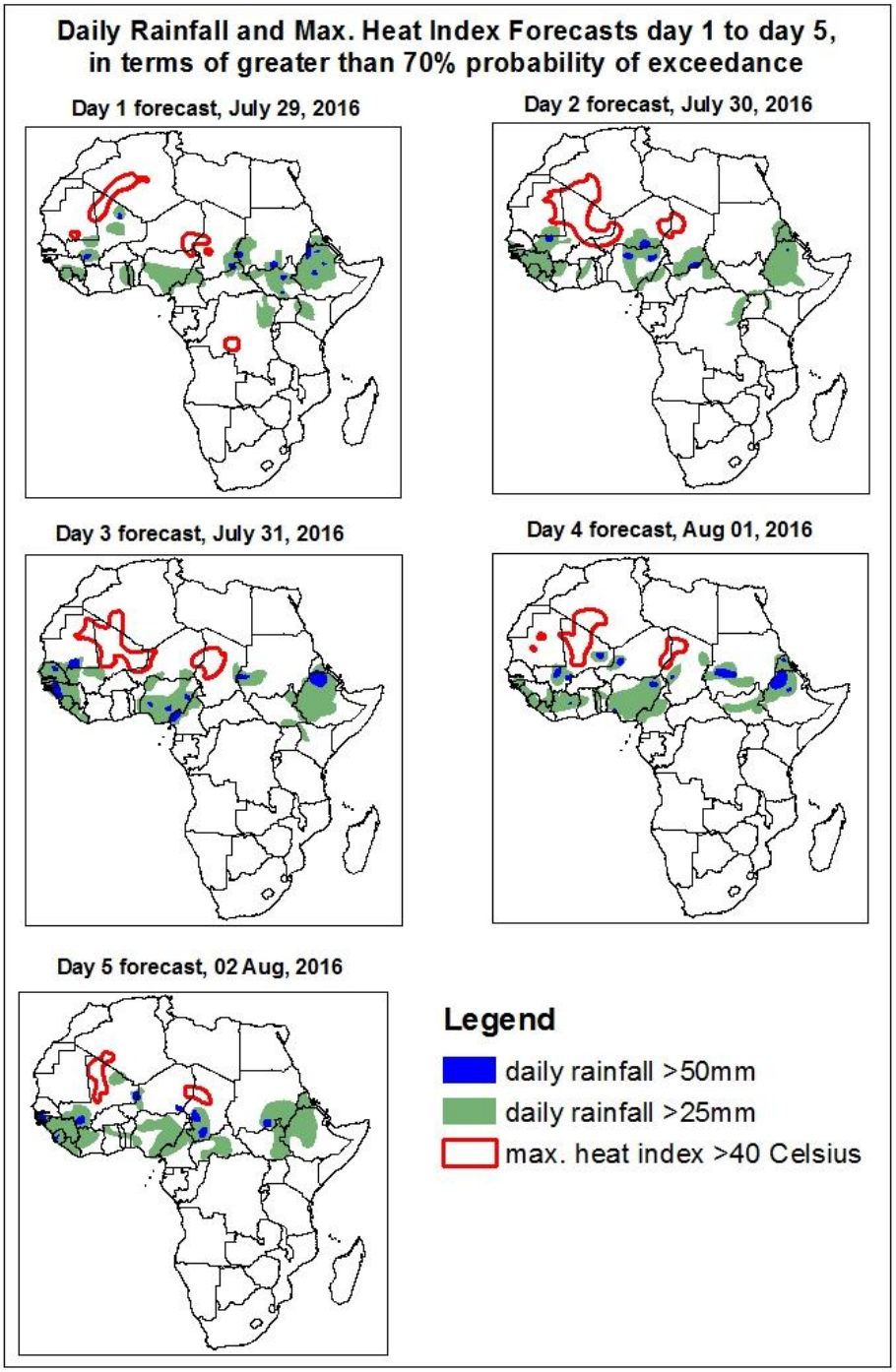
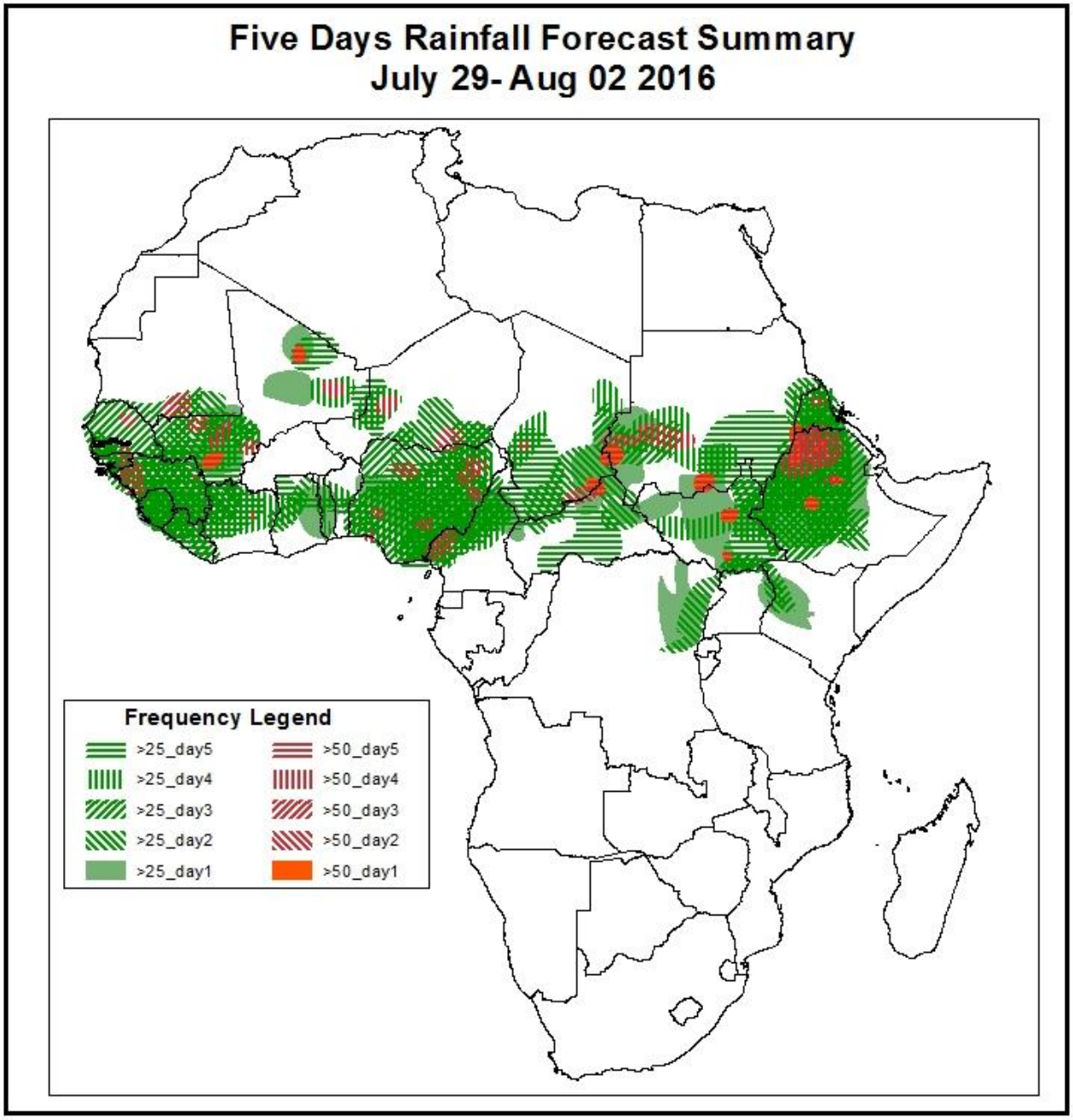
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 28, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 29– Aug 02 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.



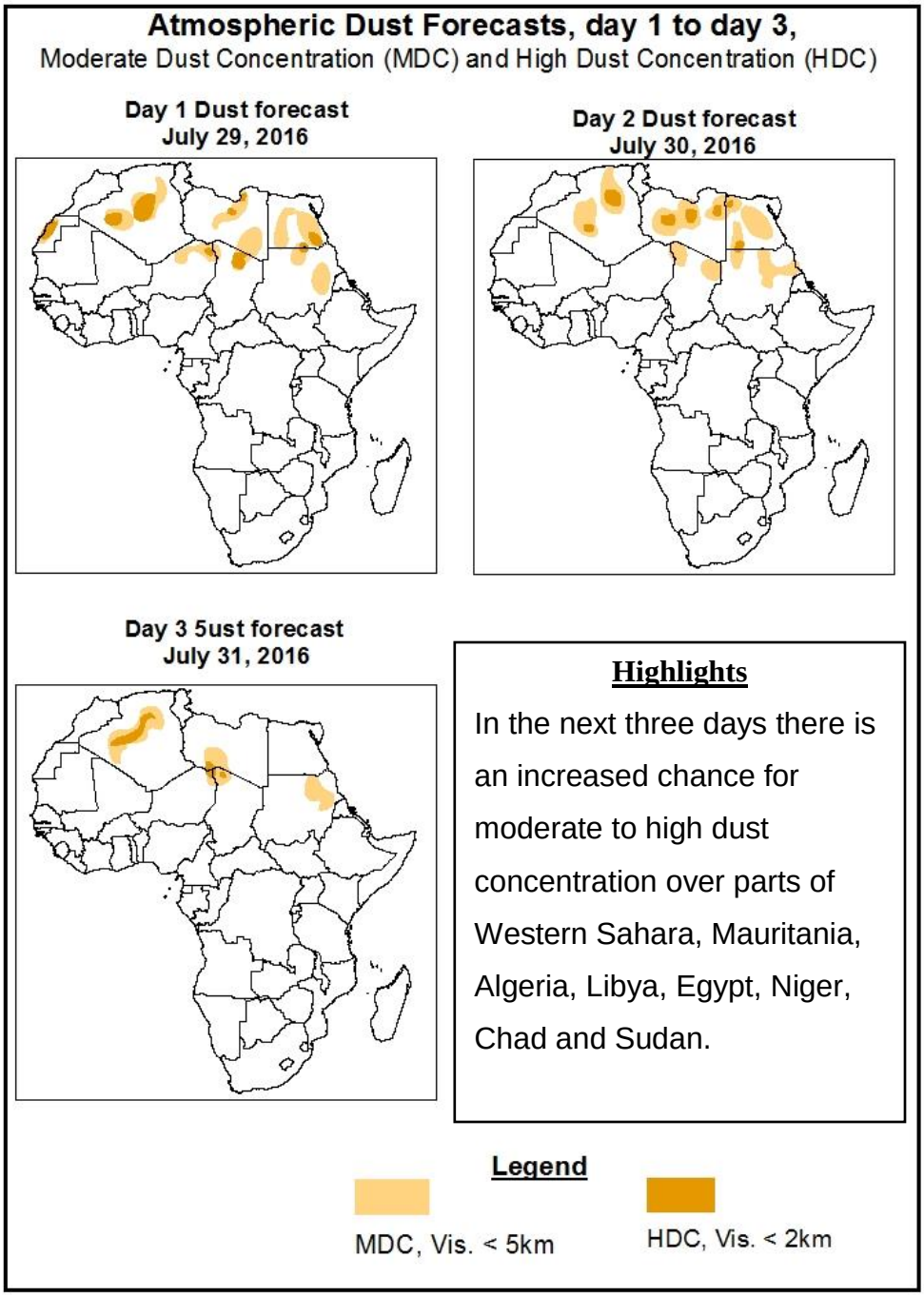


Highlights

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 local areas of southern Mauritania, portions of Mali and Senegal, Gambia, Guinea, Sierra Leone and Liberia, portions of Cote d'Ivoire, Ghana and Togo, central Benin, portions of Niger, Nigeria, Cameroon, Chad, CAR, Sudan and South Sudan, local areas of eastern DRC and western Kenya, portions of Ethiopia and Eritrea.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 29 – Aug 01, 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 29 –Aug 02, 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 24 to 72 hours, and tends to maintain an 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 weaken, with its central pressure value decreasing from 1032-hPa to 1023-hPa during the forecast period.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to maintain, with its central pressure value 1032-hPa through 24 to 48 hours, and tends to weaken, with its central pressure value decreasing from 1032-hPa to 1020-hPa tough 72 to 120 hours.

The 1016mb isobar, associated with the East African ridge is expected to remain in the region between Kenya and Mozambique 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 1006hPa during the forecast period, while the central pressure value associated with the heat low over the central Sahel is expected remain in the range between 1006hPa and 1008hPa during the forecast period. The central pressure value associated with the heat low across Sudan is expected to weaken, with its central pressure value decreasing from 1005-hPa to 1003-hPa though 48 to 120 hours.

At 925hPa 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.

At 700hPa level, a cyclonic trough in the easterly flow is expected to propagate westwards across the Gulf of Guinea countries 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 local areas of southern Mauritania, portions of Mali and Senegal, Gambia, Guinea, Sierra Leone and Liberia, portions of Cote d'Ivoire, Ghana and Togo, central Benin, portions of Niger, Nigeria, Cameroon, Chad, CAR, Sudan and South Sudan, local areas of eastern DRC and western Kenya, portions 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, Chad, DRC and Sudan.

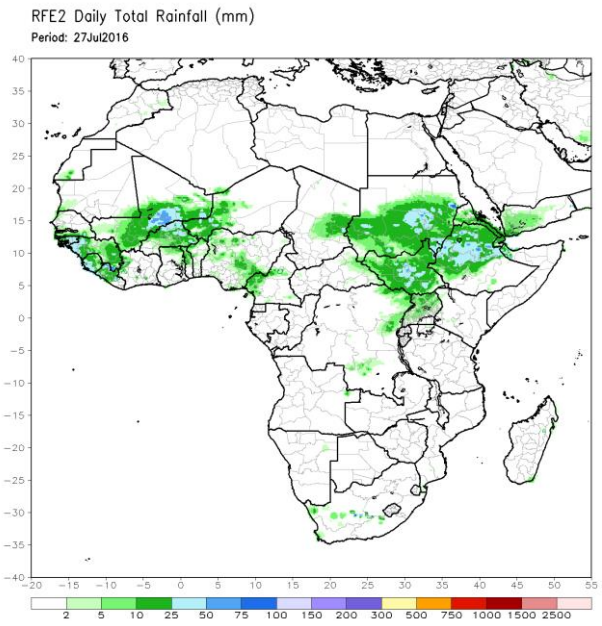
2.0. Previous and Current Day Weather over Africa

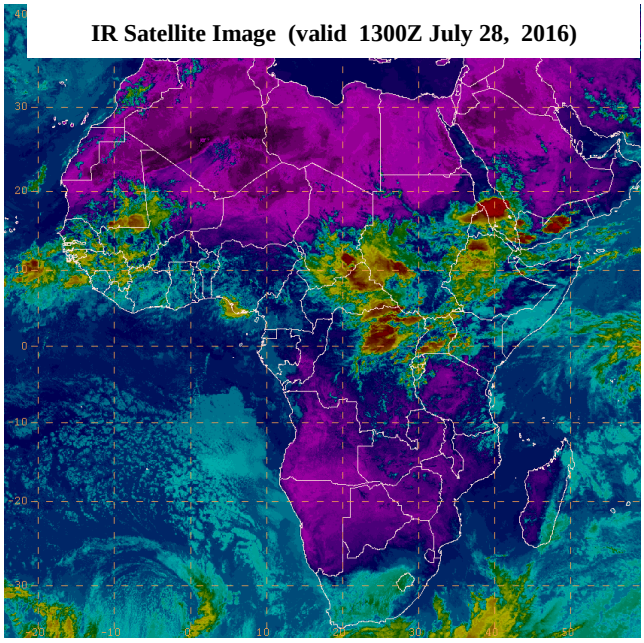
2.1. Weather assessment for the previous day (July 26, 2016)

Moderate to locally heavy rainfall was observed over portions of Senegal, Mali, and Niger, Gambia, Guinea Bissau, Guinea and Sierra Leone, portions of Liberia and Cote d'Ivoire, northern Ghana and Togo, portions of Benin, Niger, Nigeria, and Cameroon, eastern Chad, portions of Sudan South Sudan, DRC, Uganda, Eritrea and Ethiopia.

2.2. Weather assessment for the current day (July 27, 2016**)**

Intense convective clouds are observed over local areas of southern Mauritania, Chad, and western Sudan, portions of CAR, DRC, Uganda, Kenya, South Sudan, Ethiopia and Eritrea.





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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