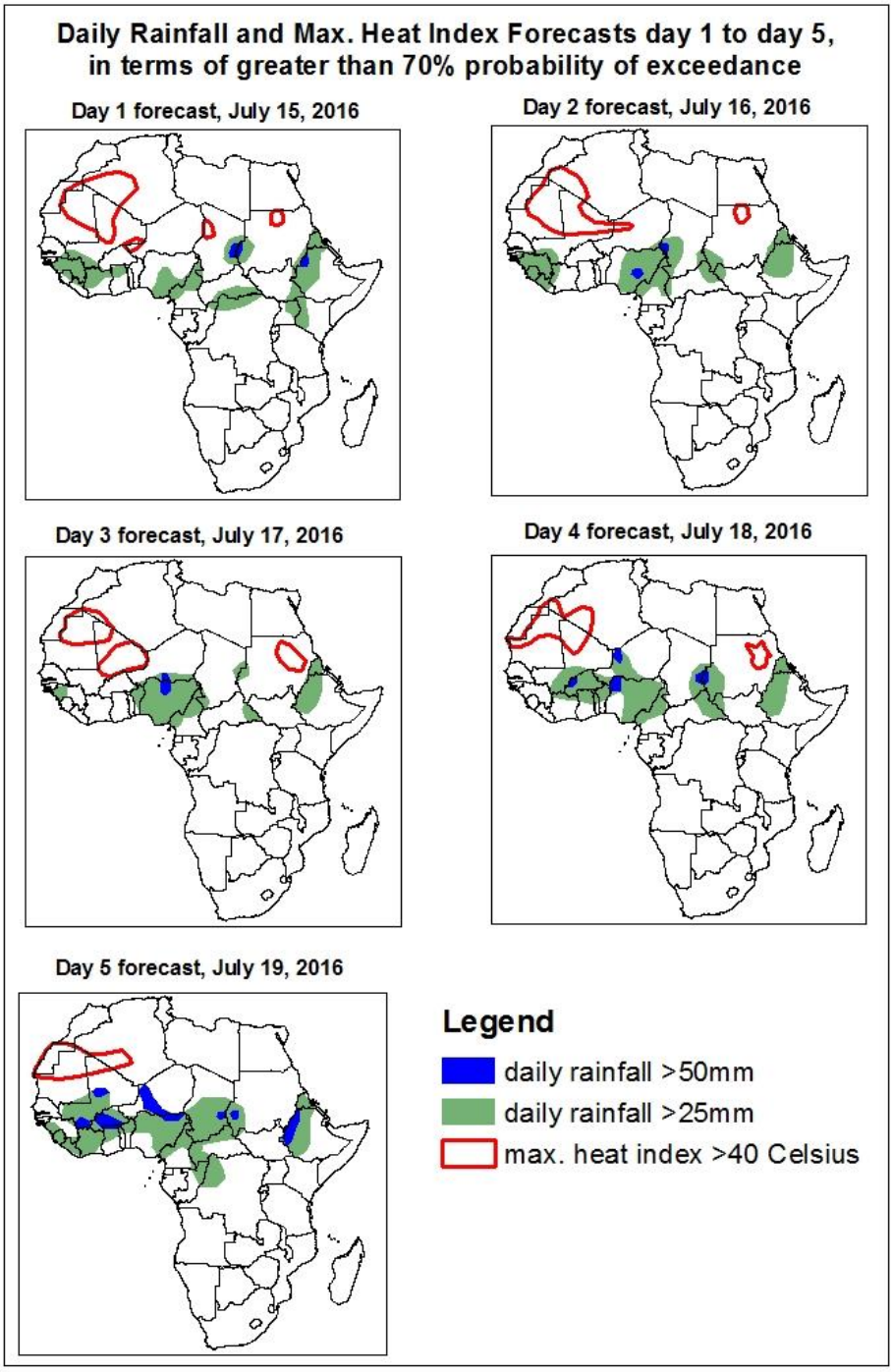
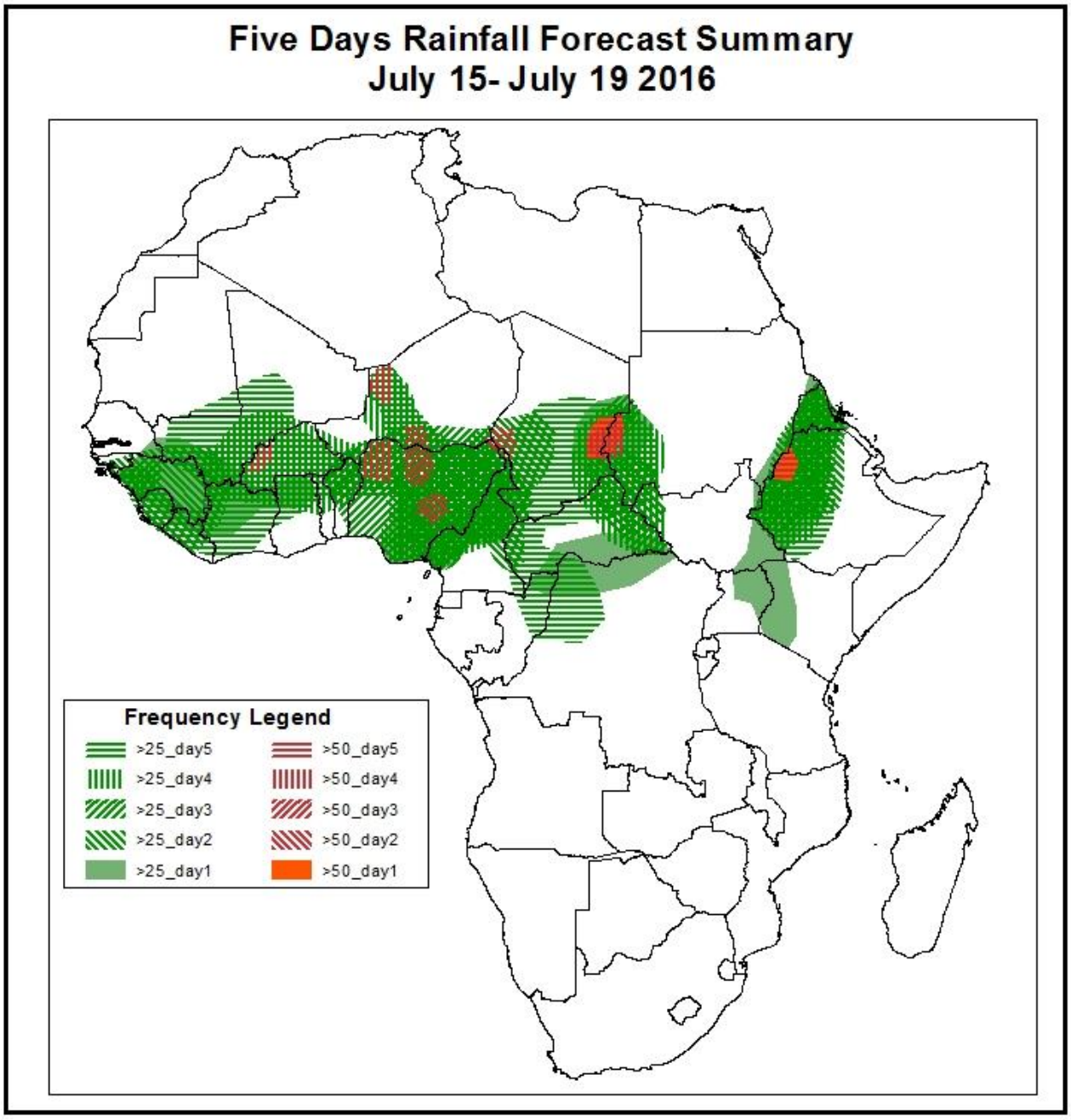
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on July 14, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 15– July 19 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.



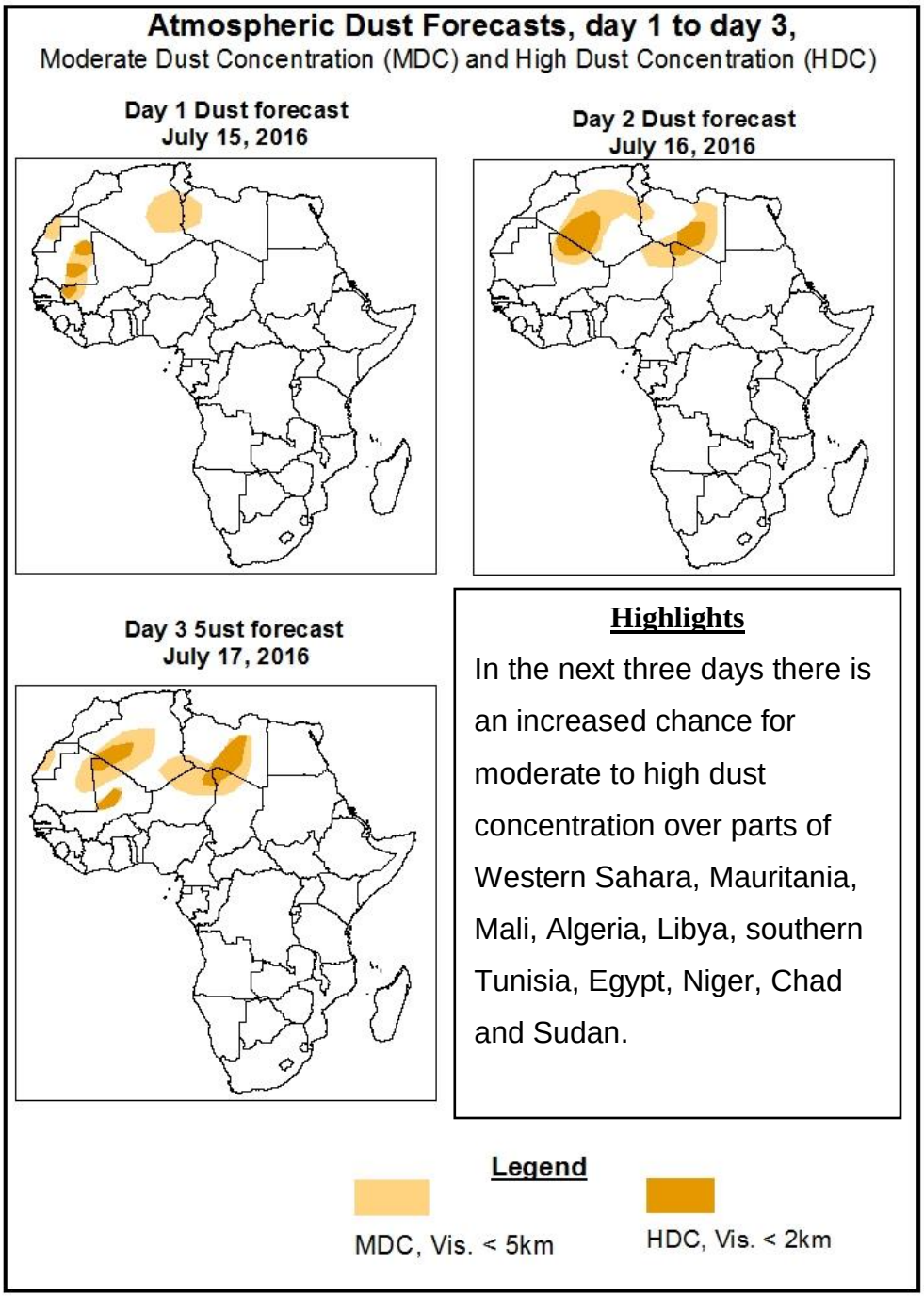


Highlights

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 Guinea, portions of Mali, Burkina Faso, Sierra Leone, Liberia, western and northern Cote d'Ivoire, portions of Ghana and Niger, northern Benin, Nigeria, portions of Chad, Cameroon, CAR, portions of Sudan and South Sudan, Eritrea and western Ethiopia.

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 15–July 19, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to strengthen, with its central pressure value increasing from 1027-hPa to 1032-hPa 24 through 96 hours..

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from 1032-hPa to 1036-hPa through 24 to 72 hours, and it is expected to shift towards the Southwest Indian Ocean towards end of the forecast period.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to intensify while shifting eastwards, with its central pressure value increasing from 1032-hPa to 1042-hPa through 24 to 72 hours.

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

The heat low in the western Sahel is expected deepen slightly, with its central pressure value decreasing from 1004-hPa to 1003-hPa through 24 to 96 hours, while the heat low over central Sahel is expected to fill up slightly, with its central pressure increasing from about 1006-hPa to 1010-hPa during the forecast period.

At 925hPa level, a cyclonic circulation is expected to propagate westwards between Niger and Mauritania during the forecast period. Dry northerly to northeasterly wind is expected to prevail across portions of Northwest Africa.

At 850hPa level, a cyclonic circulation is expected to propagate westwards between Niger and Mauritania during the forecast period. A zonal wind convergence is expected to prevail in the region between Nigeria and Sudan during the forecast period.

At 700-hPa level, a trough in the easterly flow is expected to propagate across the Gulf of guinea region between Cameroon and Guinea during the forecast period.

At 200-hPa level, a strong easterly wind, associated with the Tropical Easterly Jet is expected to prevail across northwestern Indian Ocean and the parts of the Greater Horn of Africa region.

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 Guinea, portions of Mali, Burkina Faso, Sierra Leone, Liberia, western and northern Cote d'Ivoire, portions of Ghana and Niger, northern Benin, Nigeria, portions of Chad, Cameroon, CAR, portions of Sudan and South Sudan, Eritrea and western Ethiopia.

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

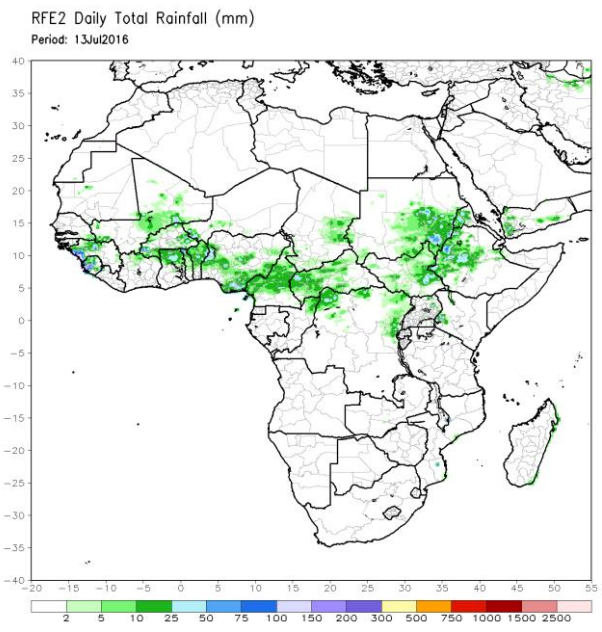
2.0. Previous and Current Day Weather over Africa

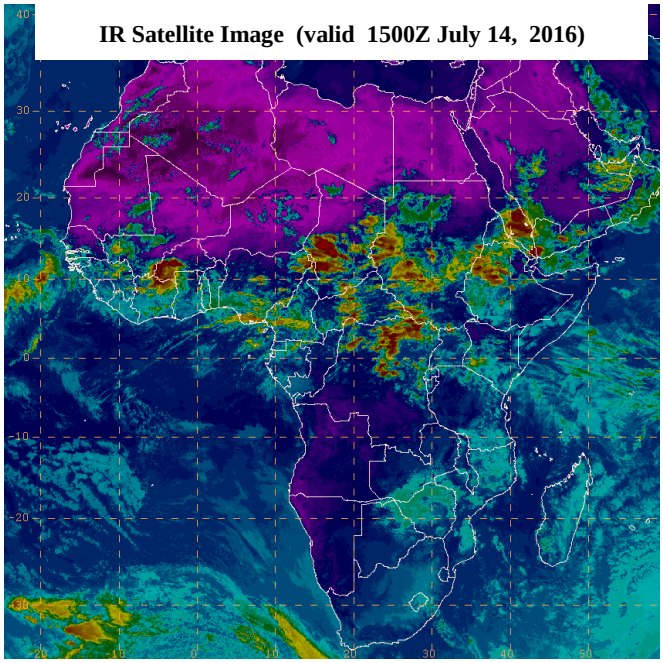
2.1. Weather assessment for the previous day (July 13, 2016)

Moderate to locally heavy rainfall was observed over Guinea and Sierra Leone, portions of Mali and Burkina Faso, northern Ghana, northern Togo, northern Benin, portions of Nigeria, Cameroon, CAR, northern Congo-Brazzaville, northern DRC, CAR, eastern Chad, eastern Sudan, portions of South Sudan, Eritrea, western and central Ethiopia, and local areas in western Kenya.

2.2. Weather assessment for the current day (July 14, 2016**)**

Intense convective clouds are observed over local areas in the Gulf of Guinea region, Central Sahel, northern DRC, 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.

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