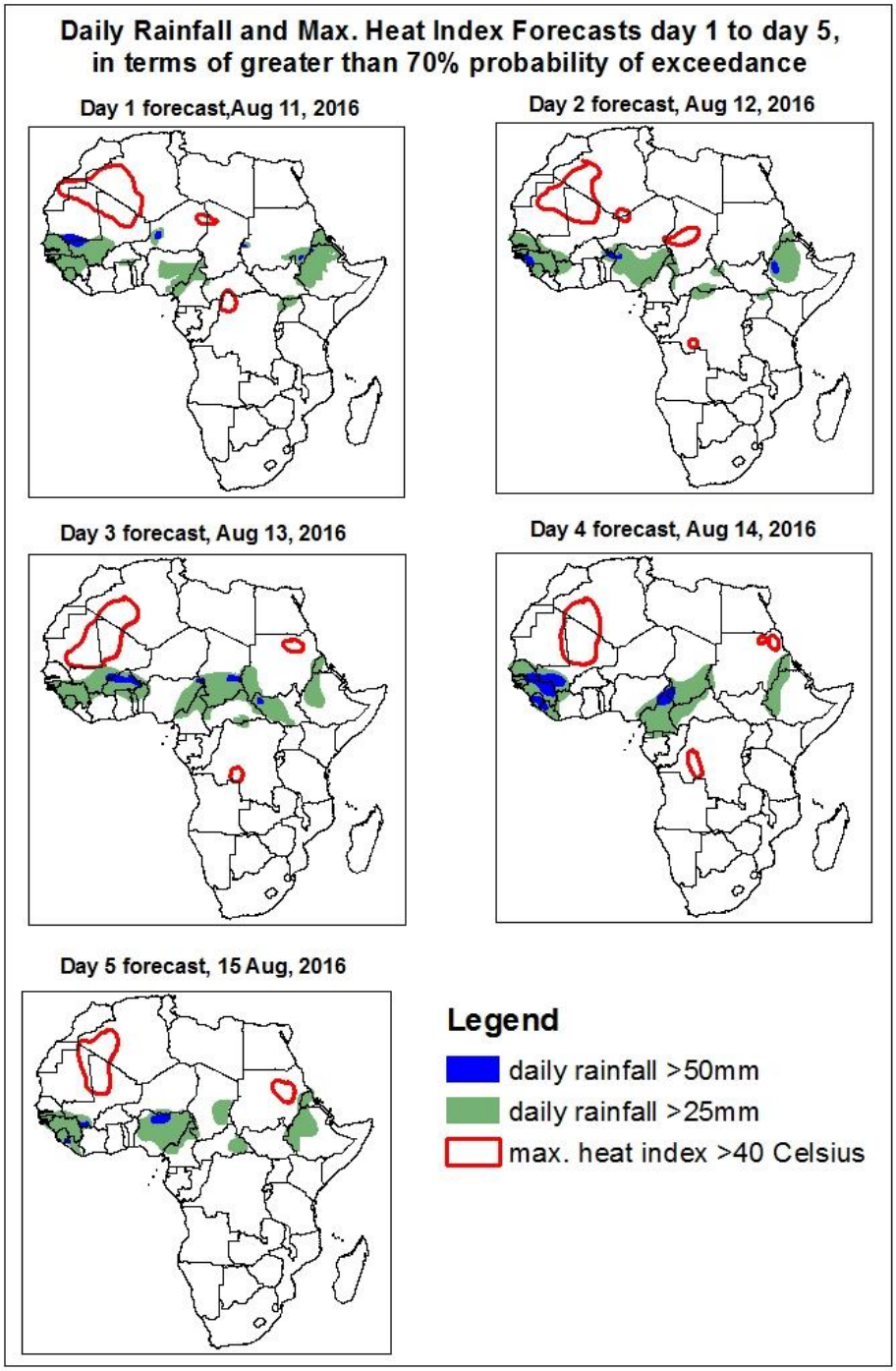
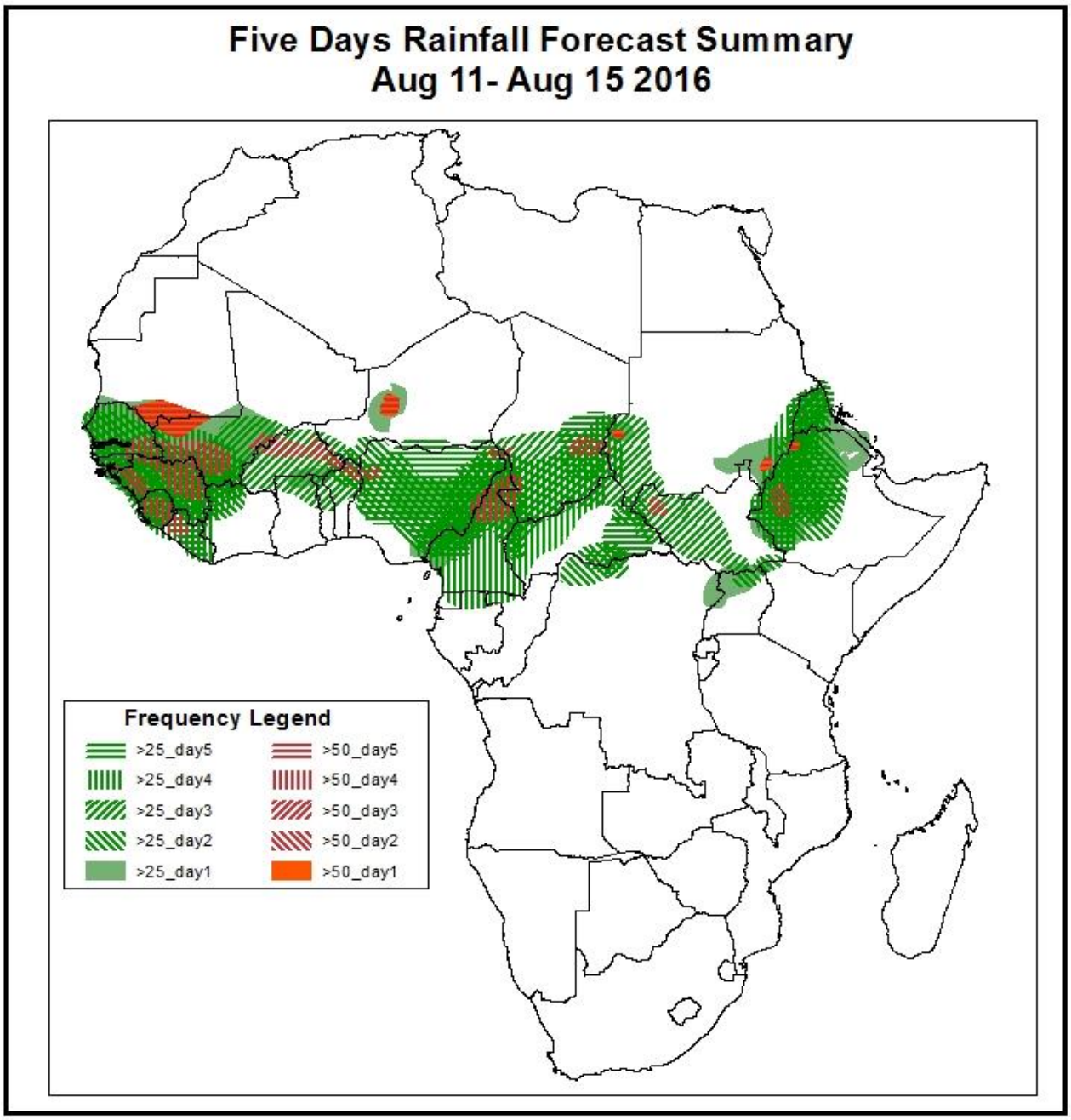
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on Aug 10, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: Aug 11– Aug 15 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.



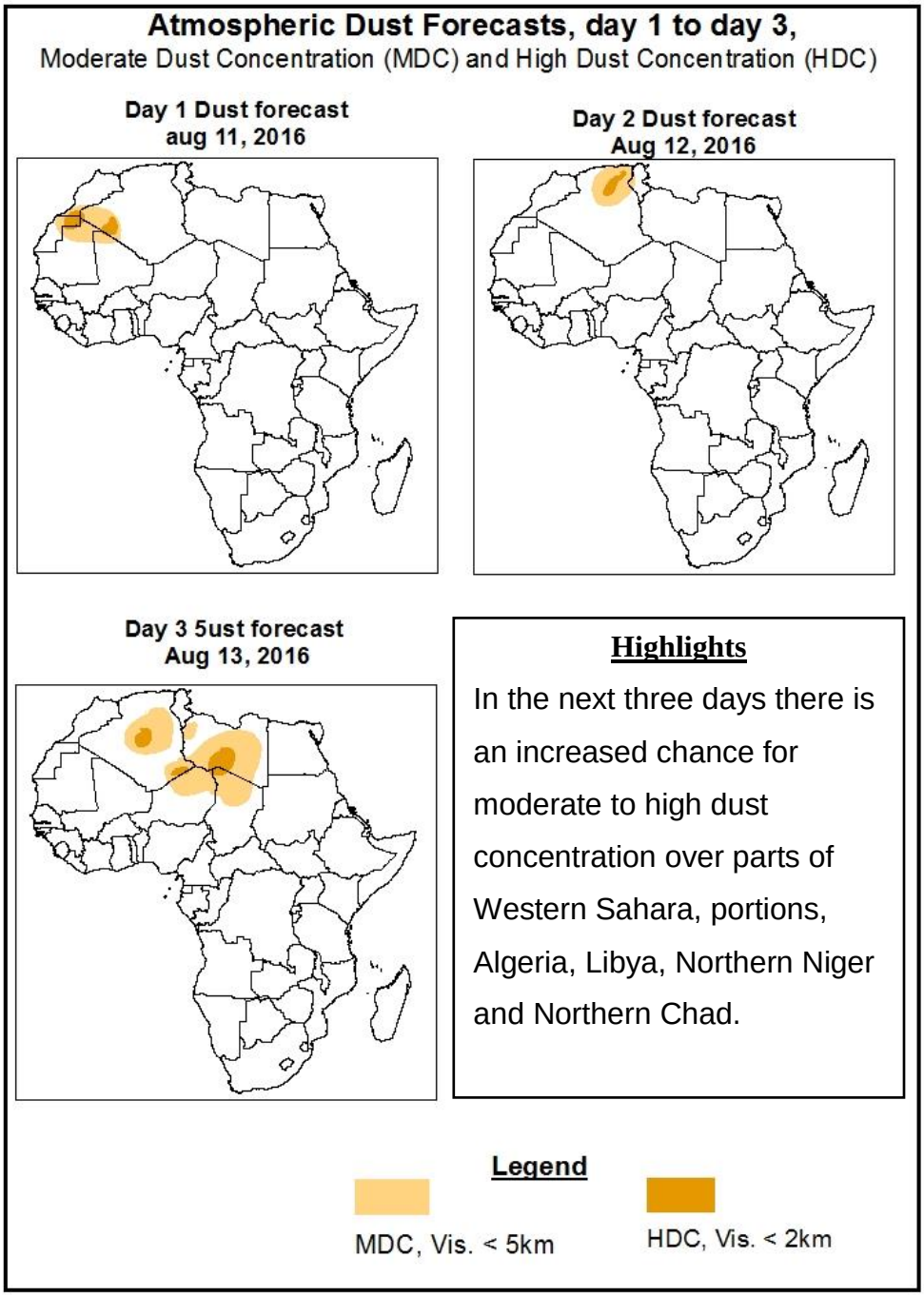


Highlights

In the next five days, westward propagating lower-level cyclonic systems across West Africa and central Sahel and lower level wind convergences across the Greater Horn of Africa 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 much of Senegal, Guinea Bissau, Guinea, Sierra Leone and Liberia, portions of Mali, northwestern Cote d'Ivoire, portions of Burkina Faso, Chad, Cameroon, local areas of Sudan, portions of Ethiopia and Eritrea.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: Aug 11– Aug 15 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: Aug 11 –Aug 15, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to weaken, with its central pressure value decreasing from 1031 hPa to 1025 hPa during the forecast period.

The St. Helena high-pressure system over the Southeast Atlantic Ocean is expected to weaken, with its central pressure value decreasing from 1027 hPa to 1024 hPa from 24 hours to 72 hours and tends to intensify, with its value of central pressure increasing 1026 hPa to 1028 hPa between 72 hours to 120 hours.

The Mascarene High pressure system over the Southeast Atlantic Ocean is expected to weaken, with its value of the central pressure value decreasing from 1035hPa at 1031 hPa 24 hours through 72 hours and tends to intensify, with its central pressure value increasing from 1026 hPa to 1028 hPa within 72 hours 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 heat low over Western Sahel is expected to deepen, with its central pressure value decreasing from 1008 hPa to 1004 hPa between 24 and 96 hours, and tends to fill up, with its central pressure value increasing to 1007 hPa towards end of the forecast period. The heat low over Central Sahel is expected to deepen, with its central pressure value decreasing from 1009 hPa to 1006 hPa between 24 and 72 hours, and tends to fill up, with its central pressure value increasing to 1010 hPa towards end of the forecast period. The heat low over Sudan is expected to maintain an average central pressure value of 1008hPa during the forecast period.

At 925hPa, an anticyclonic circulation and its associated ridge is expected to prevail across Libya and the neighboring areas. Strong dry northeasterly to easterly winds may lead to moderate to high dust concentration in parts of the Western Sahara, portions of Algeria, Libya, Niger and Chad.

At 850hPa level, a cyclonic circulation is expected to propagate westwards in the region between Chad and Senegal during the forecast period, while lower-level wind convergence is expected to prevail across the Greater Horn of Africa.

At 700 hPa, easterly flow, with occasional strong winds and feeble trough in the easterlies is expected to prevail across West Africa during the forecast period.

At 500 hPa, a zone of strong wind (>35kts), associated with AEJ is expected to propagate westwards across West Africa in the region between Niger / Nigeria border to Senegal.

At 150 hPa a strong wind (>70kts), associated with the TEJ is expected to prevail across the Greater Horn of Africa 24 hours through 48 hours, and the jet tends to weaken towards end of the forecast period..

In the next five days, westward propagating lower-level cyclonic systems across West Africa and central Sahel and lower level wind convergences across the Greater Horn of Africa 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 much of Senegal, Guinea Bissau, Guinea, Sierra Leone and Liberia, portions of Mali, northwestern Cote d'Ivoire, portions of Burkina Faso, Chad, Cameroon, local areas of Sudan, portions of Ethiopia and Eritrea.

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

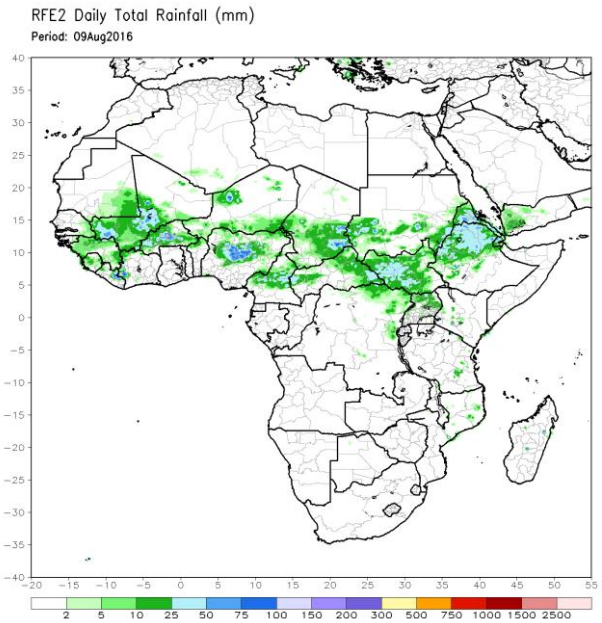
2.0. Previous and Current Day Weather over Africa

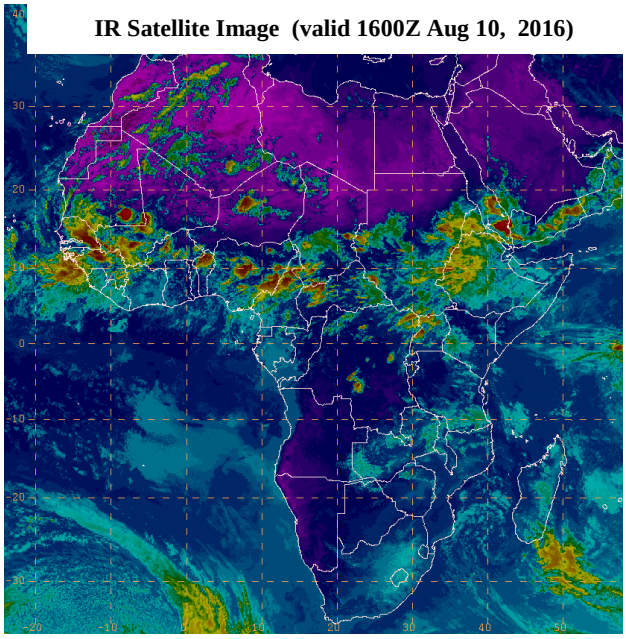
2.1. Weather assessment for the previous day (Aug 09, 2016)

Moderate to locally heavy rainfall was observed over portions of Mali, Burkina Faso, Guinea, and Nigeria, local areas in Cameroon, eastern Chad, eastern CAR, South Sudan, Ethiopia and Eritrea.

2.2. Weather assessment for the current day (Aug 10, 2016**)**

Intense convective clouds are observed over portions of West Africa and the Greater Horn of Africa.





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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