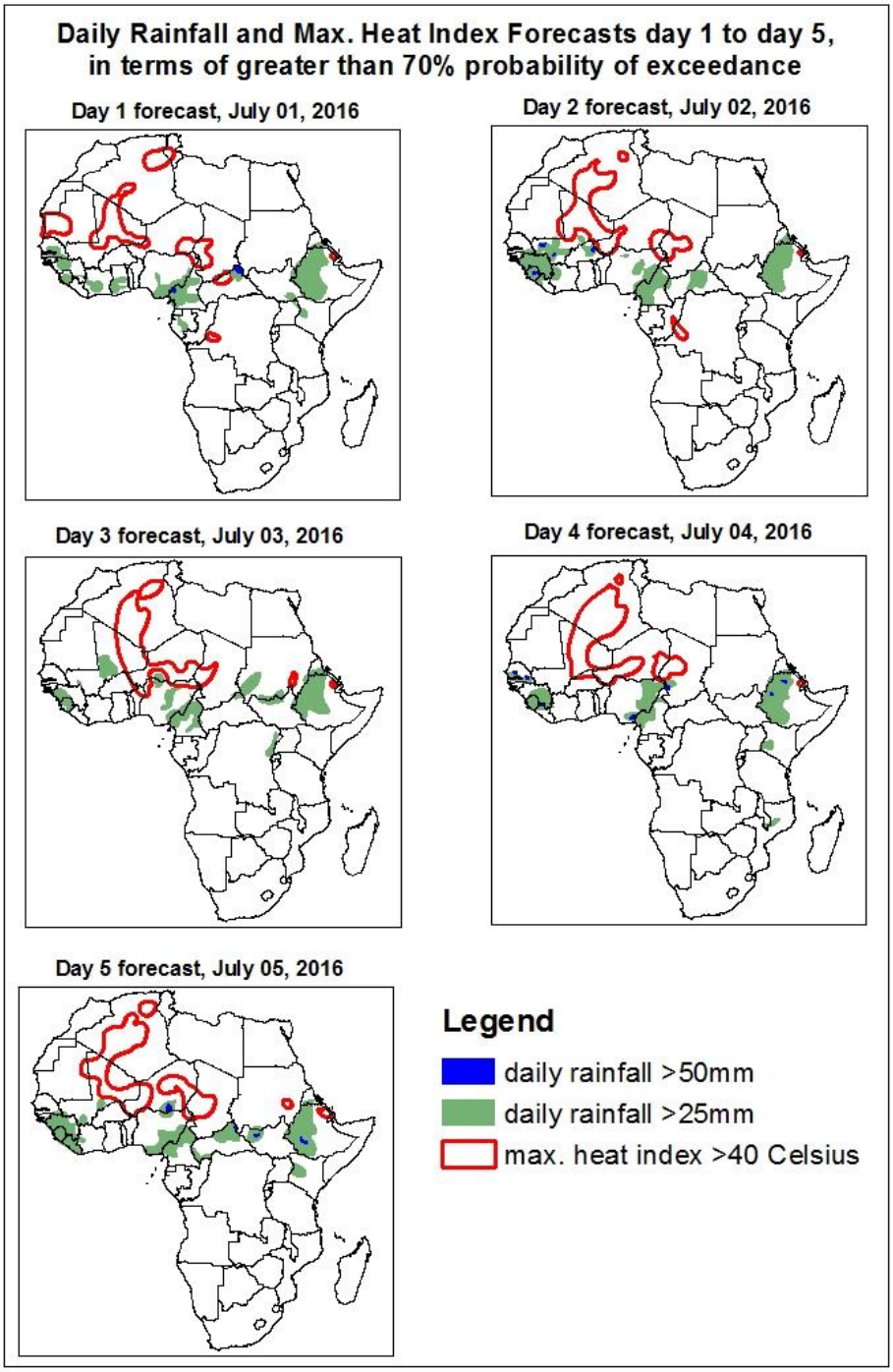
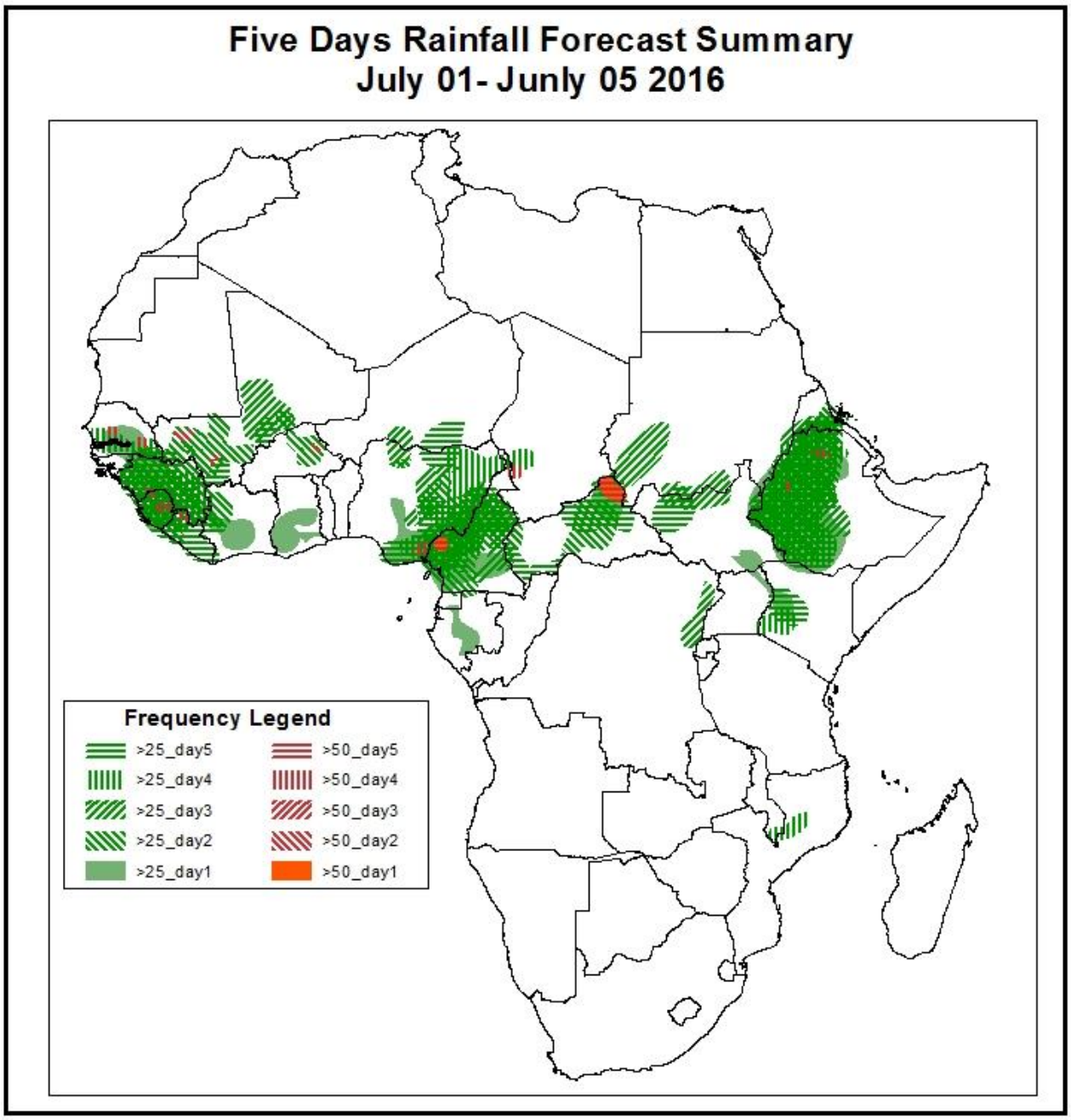
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 30, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: July 01– July 05 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.



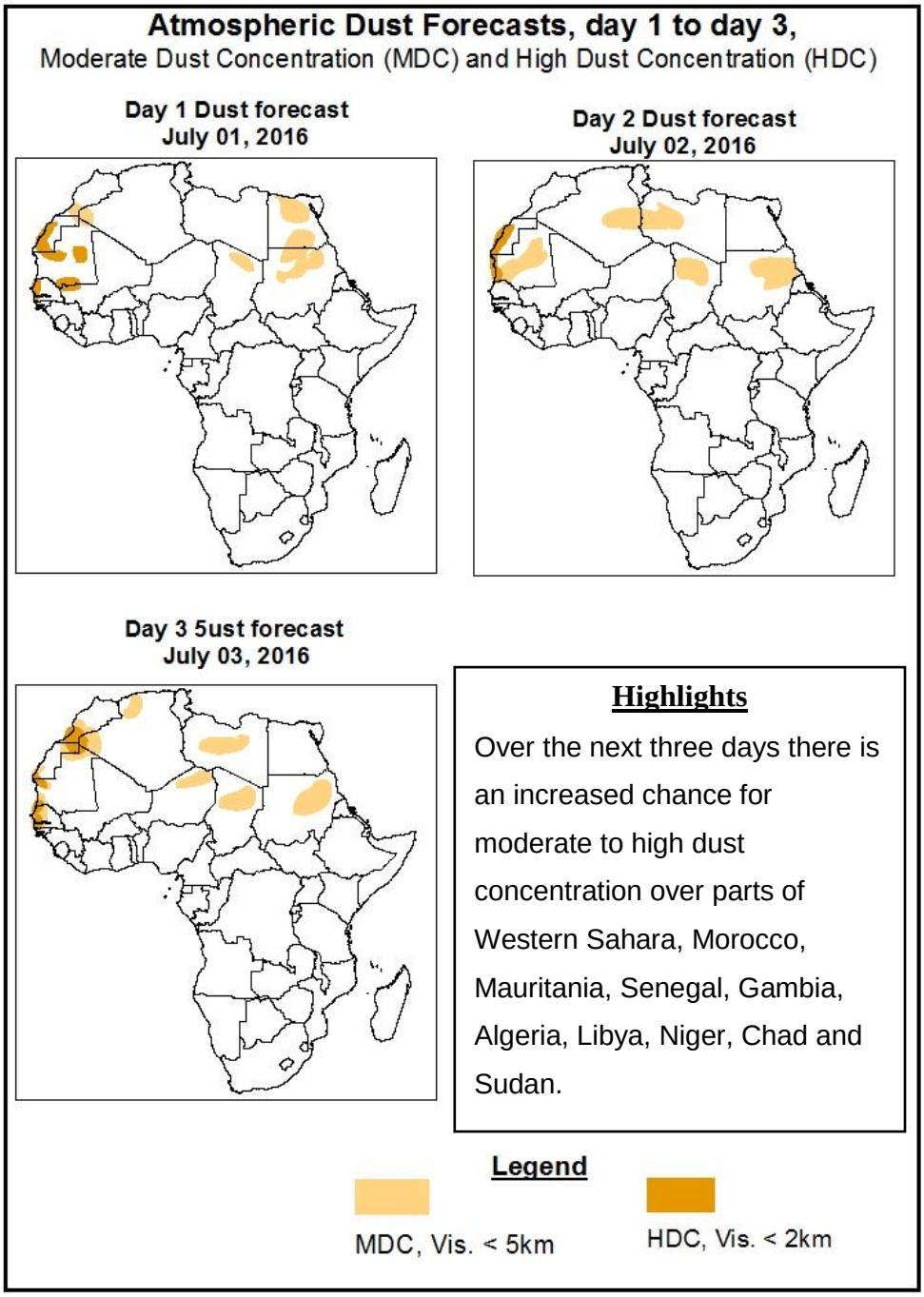


Highlights

Over the next five days, lower level-wind convergence associated with the West African monsoon flow, combined with westward propagating convective systems across Central and West Africa are expected to enhance rainfall in the regions. Local wind convergences across the Horn of Africa are also 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 Senegal, Gambia, Guinea Conakry, Sierra Leona, portions of Mali, western Liberia, local areas of western Cote d'Ivoire, local areas of eastern Burkina Faso, portions of Nigeria, Cameroon, local areas of northern CAR and South Sudan, southern Eritrea, western Kenya, and Ethiopia.

1.2. ***Atmospheric Dust Concentration Forecasts (****valid: July 01– July 03, 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 01–July 05, 2016*

The Azores high pressure system over the Northeast Atlantic is expected to weaken, with its central pressure value decreasing from 1032hPa to 1028hPa through 24 to 48 hours, and then it tends to maintain an average central pressure value of 1028hPa through 48 to 120hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to weaken, with its central pressure value decreasing from 1036hPa to 1032hPa through 24 to 48 hours, and then it tends to maintain an average central pressure value of 1032hPa through 72 to 96 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to weaken, with its central pressure value decreasing from 1028hPa to 1024hPa through 24 to 120 hours.

The 1016hPa isobar, associated with the East African ridge is expected to extend northwards up to Ethiopia through 24 to 120hours. The anticyclonic ridge associated with the St. Helena high pressure system is expected to extend northwards across the Atlantic Ocean, with the 1016hPa isobar reaching the Gulf of Guinea coast during the forecast period. This may help to maintain enhanced rainfall across portions of West Africa.

The central pressure values associated with the heat low in western Sahel is expected remain in the range between 1006hPa and 1008hPa during the forecast period, while the heat low over the central Sahel is expected to remain in the range between 1006hPa and 1009hPa though 24 to 48 hours and to maintain an average central pressure value of 1008hPa through 72 to 96 hours. The central pressure value associated with the heat low across Sudan is expected remain in the range between 1006hPa and 1008hPa during the forecast period.

At 925HPa level an anticyclonic circulation and its associated ridge is expected to prevail across Libya and the neighboring areas during the forecast period. Strong wind may lead to

moderate to high dust concentration across portions of Western Sahara, Morocco, Mauritania, Senegal, Gambia, Algeria, Libya, Niger, Chad and Sudan.

At 850hPa level, a strong zonal wind convergence is expected to prevail in the region between Mali and Sudan, while a dry northerly flow is expected to prevail across the western end of West Africa at 24 to 120 hours.

At 700hPa level, a trough in the easterlies, associated with the African easterly wave, is expected to propagate westwards in the region between western Nigeria and Guinea, leaving the West Africa coast by 72 hours. This will help to enhance westward propagate convective activities across parts of West Africa.

Over the next five days, lower level-wind convergence associated with the West African monsoon flow, combined with westward propagating convective systems across Central and West Africa are expected to enhance rainfall in the regions. Local wind convergences across the Horn of Africa are also 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 Senegal, Gambia, Guinea Conakry, Sierra Leona, portions of Mali, western Liberia, local areas of western Cote d'Ivoire, local areas of eastern Burkina Faso, portions of Nigeria, Cameroon, local areas of northern CAR and South Sudan, southern Eritrea, western Kenya, and Ethiopia.

There is an increased chance for maximum heat index to exceed 40^{o}C over local areas in Mauritania, Mali, Algeria, Tunisia, Niger, Chad, CAR, local areas in DRC, Sudan and northeastern Ethiopia.

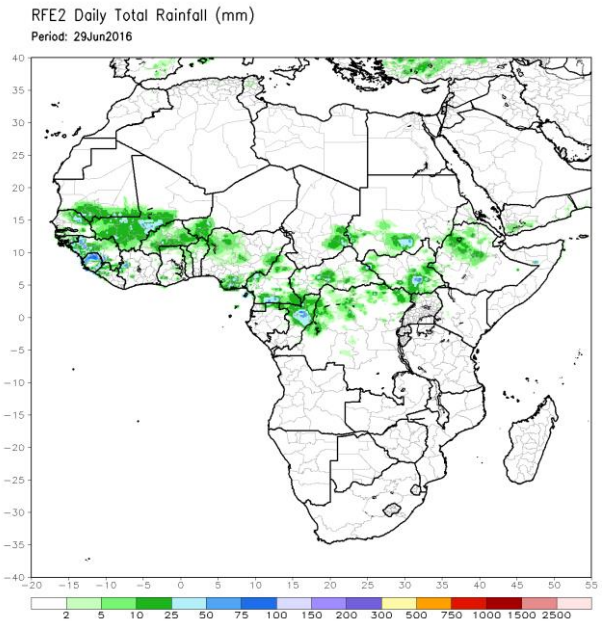
2.0. Previous and Current Day Weather over Africa

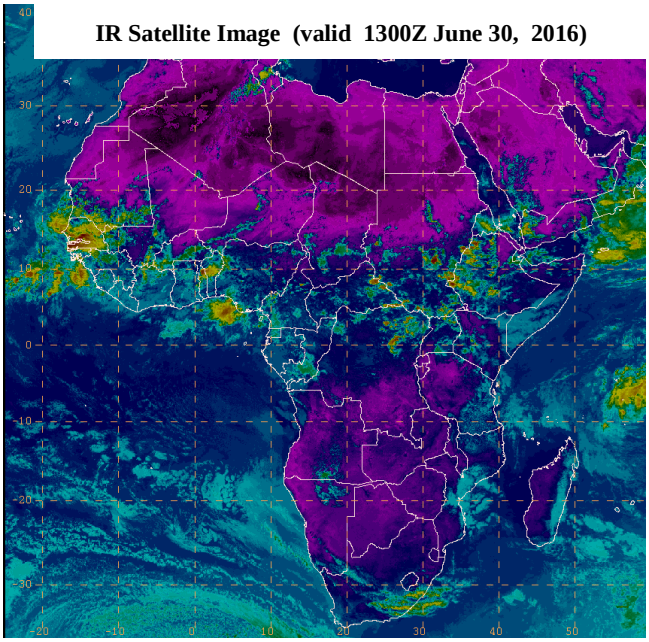
2.1. Weather assessment for the previous day (June 29, 2016)

Moderate to locally heavy rainfall was observed over southern Mauritania and Mali, portions of Senegal, Gambia, Guinea and Serra Leone, Burkina Faso, western Niger, eastern Chad, local areas of southern Sudan, local areas of Cote d'Ivoire, Togo, Benin, Nigeria, Cameroon and South Sudan, local areas of northern DRC, and portions of Ethiopia.

2.2. Weather assessment for the current day (June 30, 2016**)**

Intense convective clouds are observed over portions of Senegal, Gambia, local areas of Togo and CAR, local areas local areas of northeast DRC, of South 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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