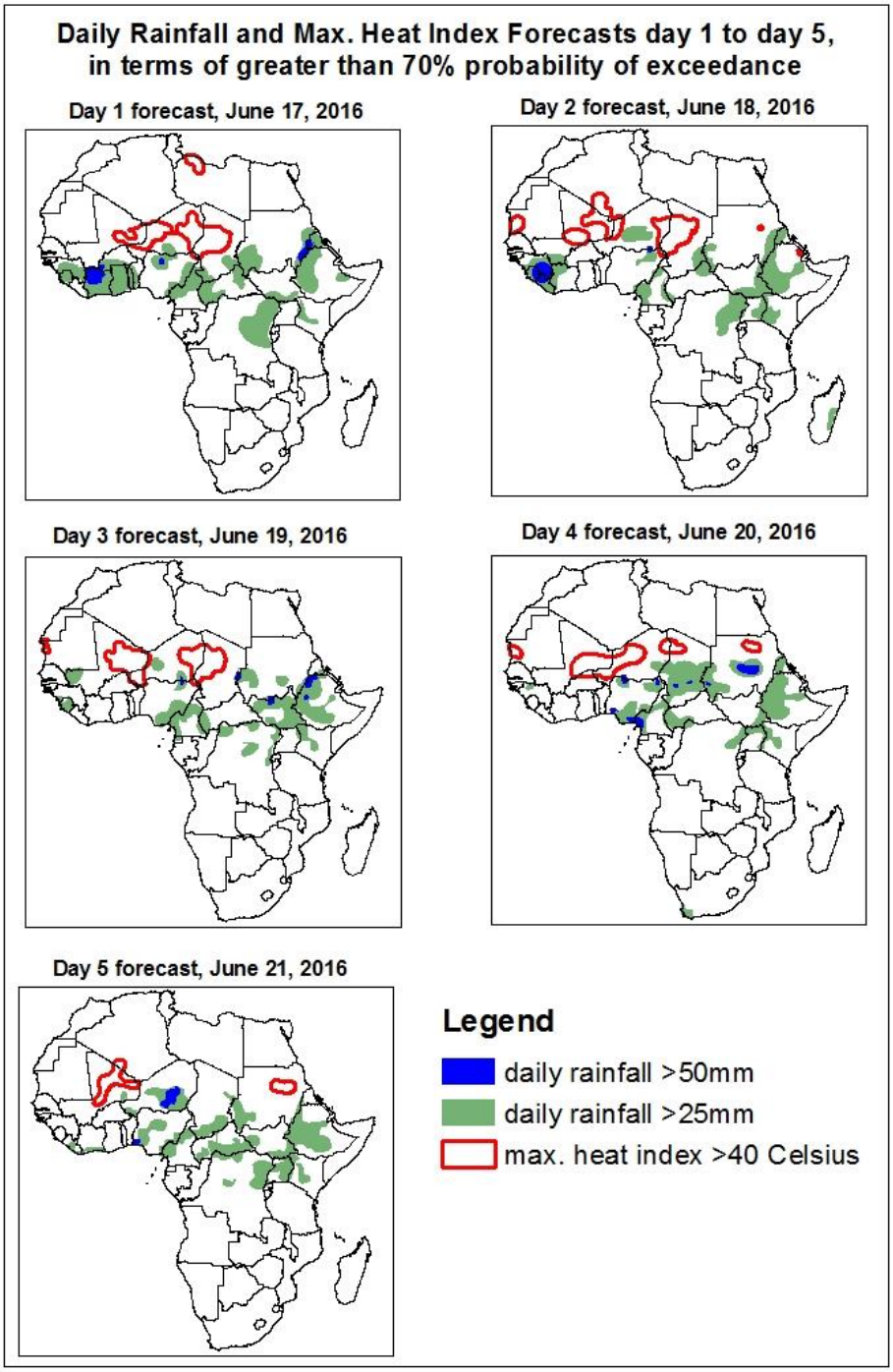
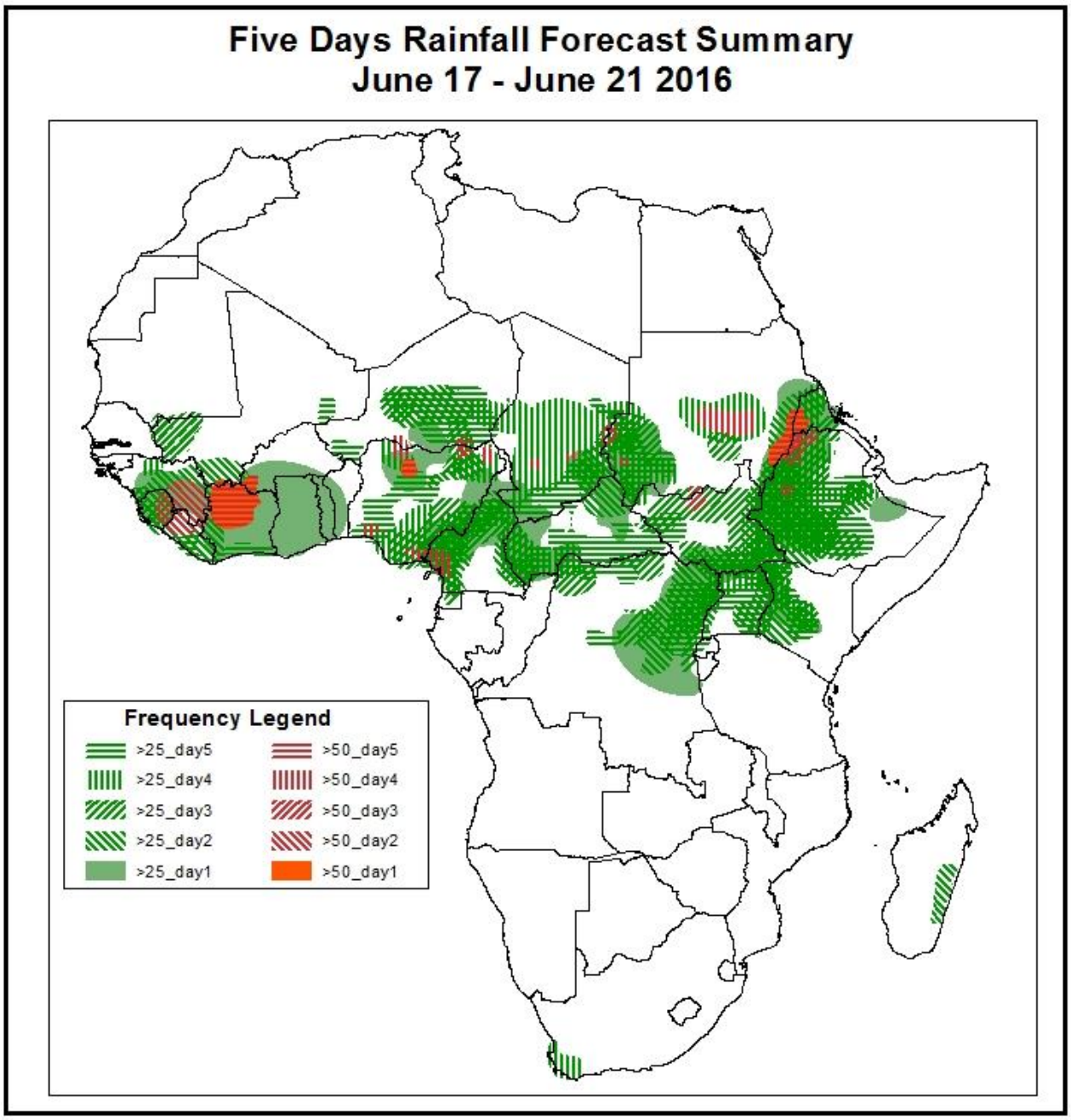
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 16, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 17– June 21, 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.



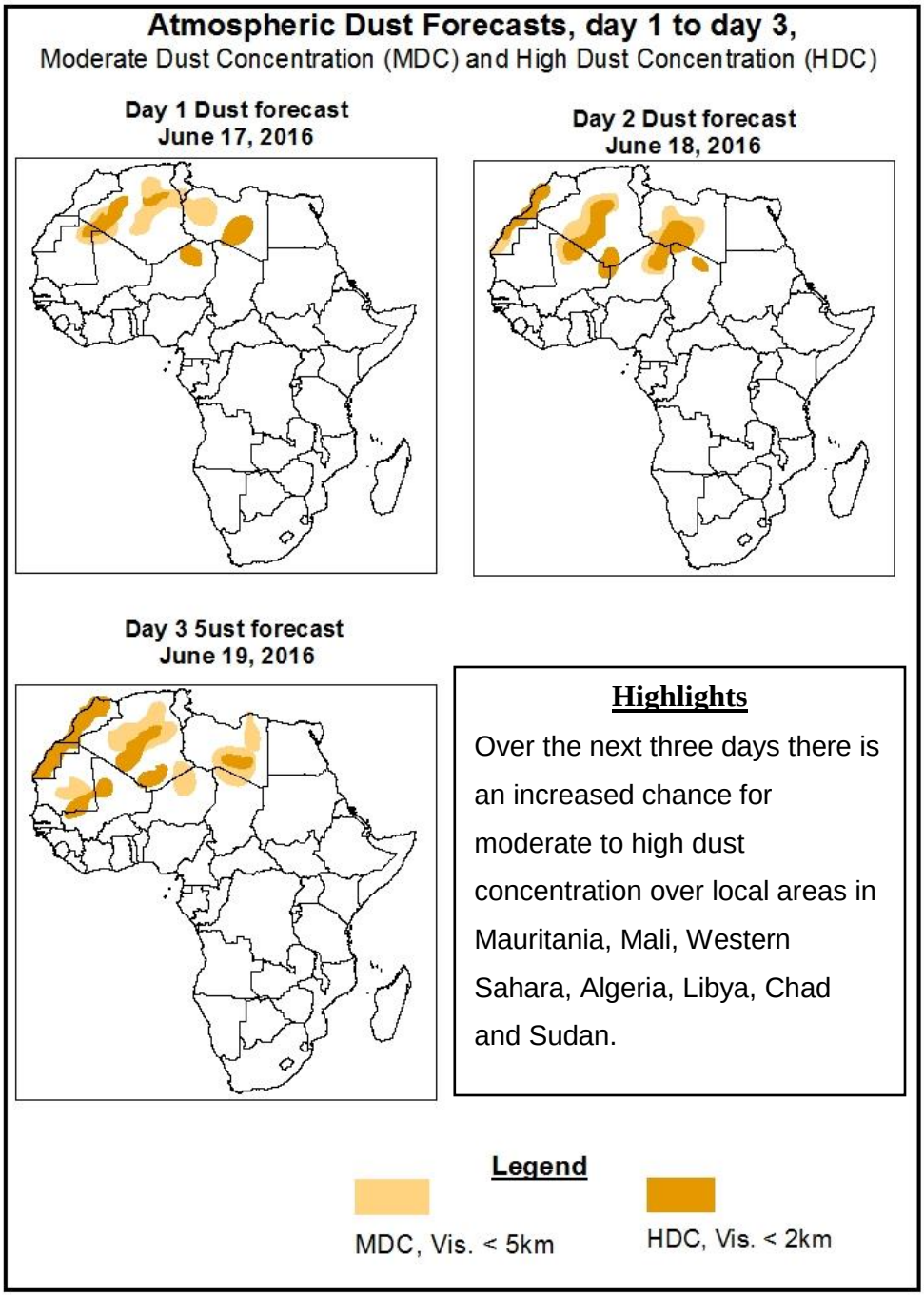


Highlights

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. Active Congo Air Boundary (CAB) in the Lake Victoria region and 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 portions of Guinea Conakry, Sierra Leona, Liberia, northern Cote d'Ivoire, southern Niger, portions of Nigeria, portions of Cameroon, southern Chad, portions of CAR, northern and eastern DRC, portions of Sudan and South Sudan, western Kenya, and portions of Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 17 – June 18 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: June 17–June 212016

The Azores high pressure system over the Northeast Atlantic tends to maintain an average central pressure value of 1024hPa through 24 to 72 hours, and is expected to intensify, with its central pressure value increasing from 1024hPa to 1032hPa through 72 to 120 hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean tends to maintain an average central pressure value of 1028hPa through 24 to 48hours, and is expected to intensify, with its central pressure value increasing from 1025hPa to 1029hPa through 72 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to weaken while shifting eastwards; with its central pressure value, decreasing from 1036hPa to 1028hPa from 24 to 72 hours. It tends to maintain a central pressure of 1032 during the rest of the forecast period.

The 1016hPa isobar, associated with the East African ridge is expected to extend northwards up to northern Ethiopia during the forecast period. 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 lead to increase in 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 1002hPa and 1008hPa during the forecast period, while the heat low over the central Sahel is expected to maintain an average central pressure value of 1006hPa over the next 24 to 48 hours, and expected to vary in the range between 1006hPa and 1008hPa at 72 to 120 hours. The central pressure value associated with the heat low across Sudan is expected remain in the range between 1005hPa 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 Mauritania, Mali, Western Sahara, Algeria, Libya, 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, northeasterly to easterly flow is expected to prevail across much of the Gulf of Guinea region, with wind speed occasionally exceeding 30kts over local areas in the Gulf of Guinea region during the forecast period. This will help to propagate convective activities southwestward into the western portions of the Gulf of Guinea region.

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. Active Congo Air Boundary (CAB) in the Lake Victoria region and 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 portions of Guinea Conakry, Sierra Leona, Liberia, northern Cote d'Ivoire, southern Niger, portions of Nigeria, portions of Cameroon, southern Chad, portions of CAR, northern and eastern DRC, portions of Sudan and South Sudan, western Kenya, and portions of Ethiopia.

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

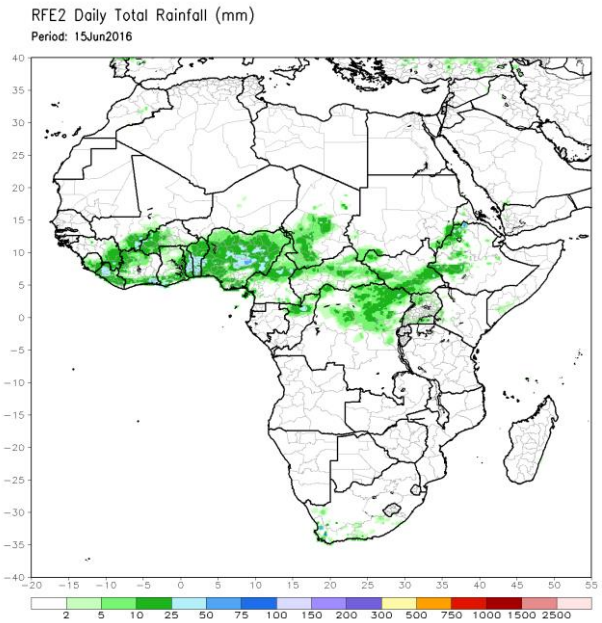
2.0. Previous and Current Day Weather over Africa

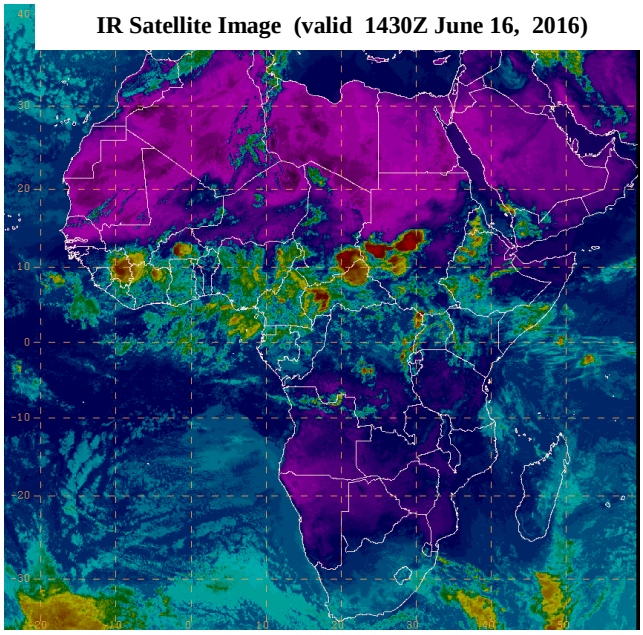
2.1. Weather assessment for the previous day (June 15, 2016)

Moderate to locally heavy rainfall was observed over eastern Guinea, southern Sierra Leone, Liberia, southern Mali, portions of cote d'Ivoire, Togo, Benin, Nigeria, northern Cameroon, southwestern Chad, portions of CAR, portions of South Sudan, northern DRC, and western Ethiopia.

2.2. Weather assessment for the current day (June 16, 2016**)**

Intense convective clouds are observed over southwest Mali, southern Burkina, southeast Guinea, northern Cote d'Ivoire, portions of CAR, southeast Chad, southwest Sudan, and local areas in northern 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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