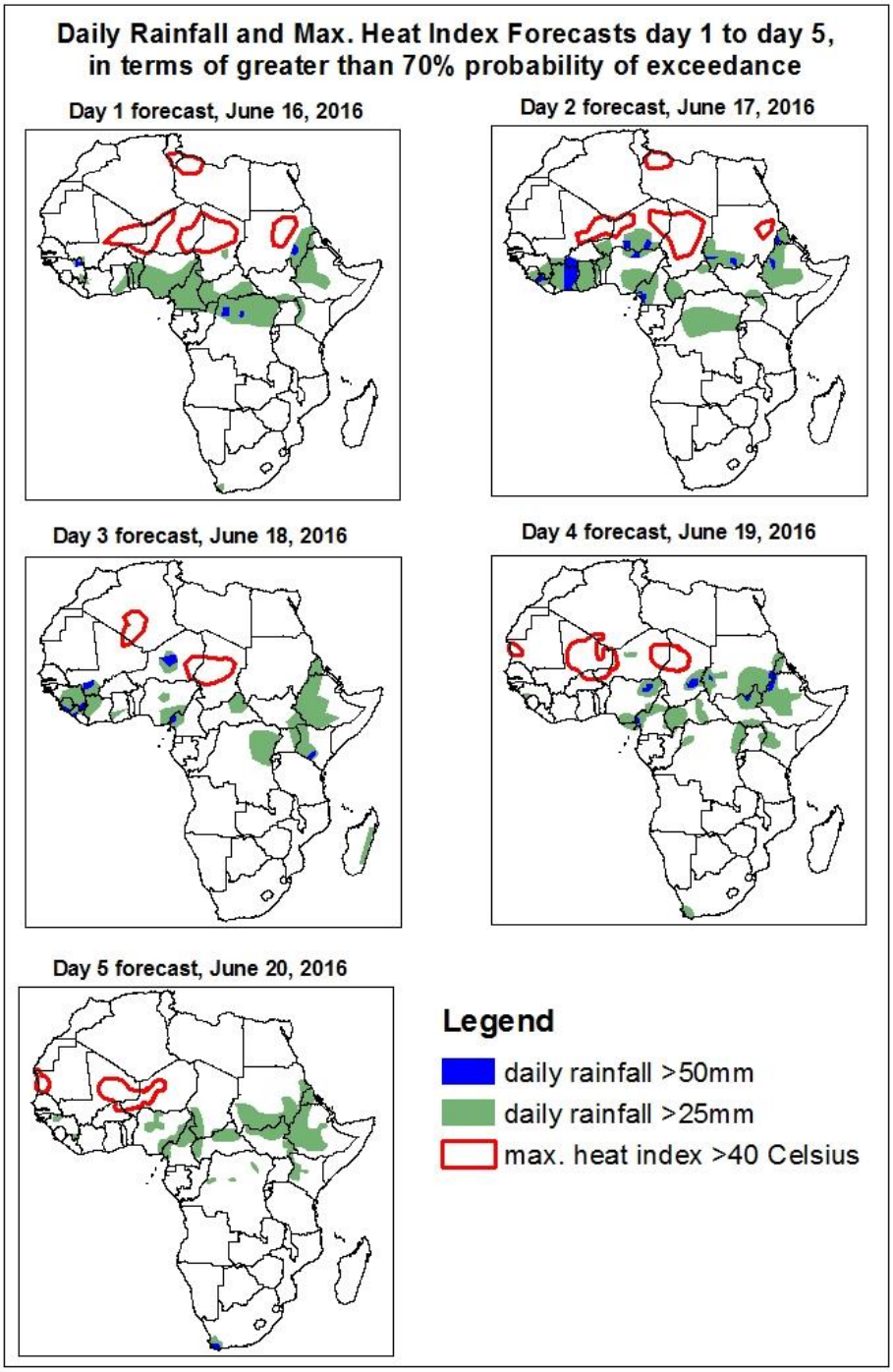
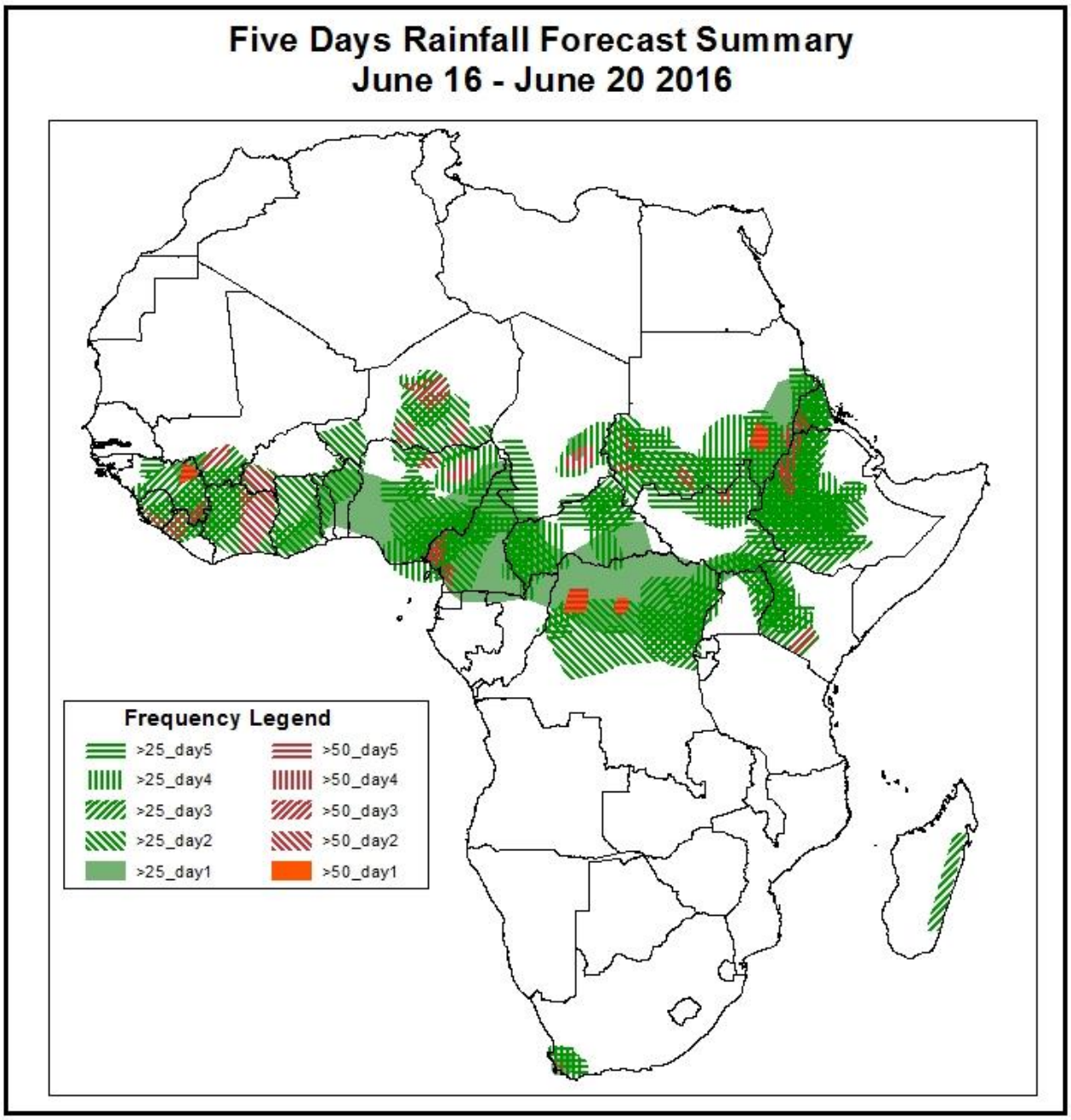
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 15, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 16– June 20, 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.



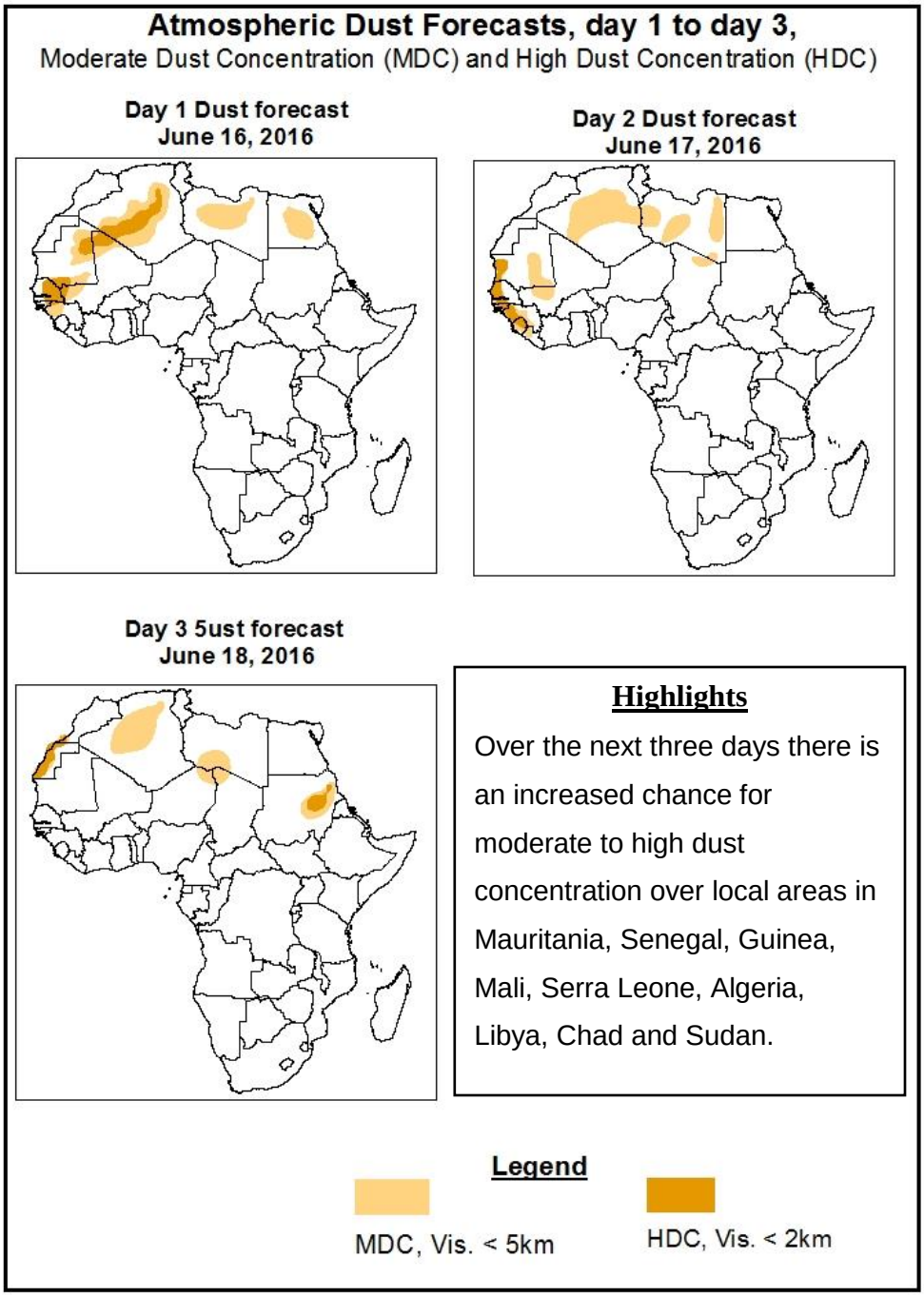


Highlights

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, southern Mali, portions of Sierra Leona, portions of Cote d'Ivoire, Togo, Benin, southern Niger, portions of Nigeria, Cameroon, local areas in eastern Chad, portions of CAR, northern DRC, southern and eastern Sudan, portions of South Sudan, western Kenya, and portions of Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 16 – June 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: June 16–June 20 2016

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 1006hPa and 1010hPa 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 1005hPa and 1006hPa at 72 to 120 hours. The central pressure value associated with the heat low across Sudan is expected to vary in the range between 1005hPa and 1008hPa at 24 to 72 hours, and expected to vary in the range between 1005hPa and 1008hPa for the remainder of the forecast.

At 925HPa level, the anticyclonic circulation and its associated ridge across Algeria is expected to shift towards Egypt and the neighboring areas, while intensifying during the

forecast period. Strong wind may lead to moderate to high dust concentration across portions of Mauritania, Senegal, Guinea, Mali, Serra Leone, Algeria, Libya, Chad and Sudan.

At 850hPa level, a 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 48 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, southern Mali, portions of Sierra Leona, portions of Cote d'Ivoire, Togo, Benin, southern Niger, portions of Nigeria, Cameroon, local areas in eastern Chad, portions of CAR, northern DRC, southern and eastern Sudan, portions of 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, Algeria, Tunisia and of Sudan.

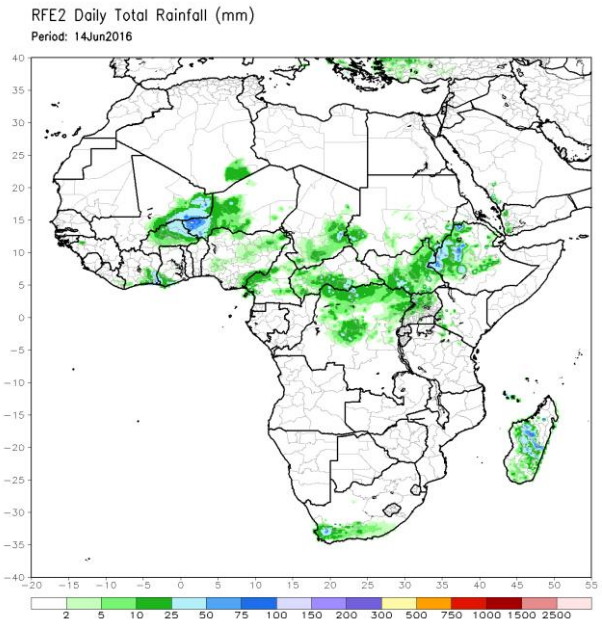
2.0. Previous and Current Day Weather over Africa

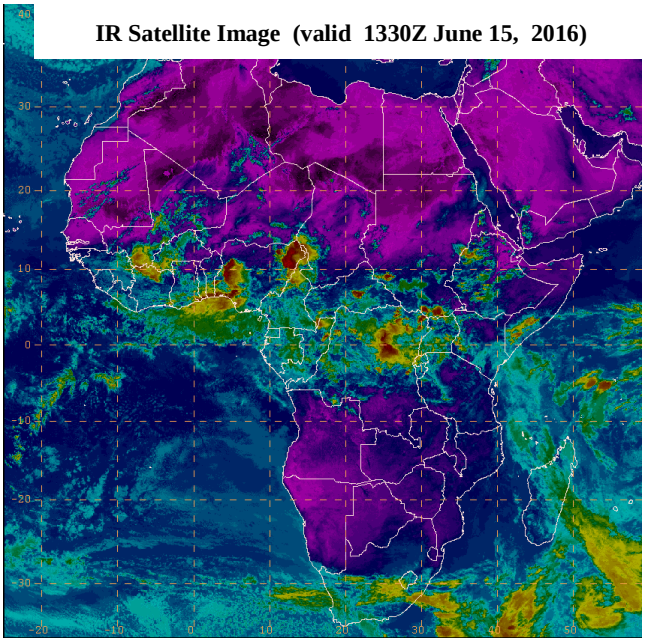
2.1. Weather assessment for the previous day (June 14, 2016)

Moderate to locally heavy rainfall was observed over southern Cote d'Ivoire, southwest Ghana, northeast Mali, south Algeria, portions of Burkina, portions of Niger, southern Chad, portions of CAR, northern DRC, portions of South Sudan, northern Uganda, portions of Ethiopia, southern South Africa and portions of Madagascar.

2.2. Weather assessment for the current day (June 15, 2016**)**

Intense convective clouds are observed over northern Cote d'Ivoire, western Burkina, portions of Nigeria, northeast DRC, and local areas in South Sudan.





Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (right) based on IR Satellite image

Author: Fatoumata Sangho, (Mali-Meteo) / CPC-African Desk); fatoumata.sangho@noaa.gov