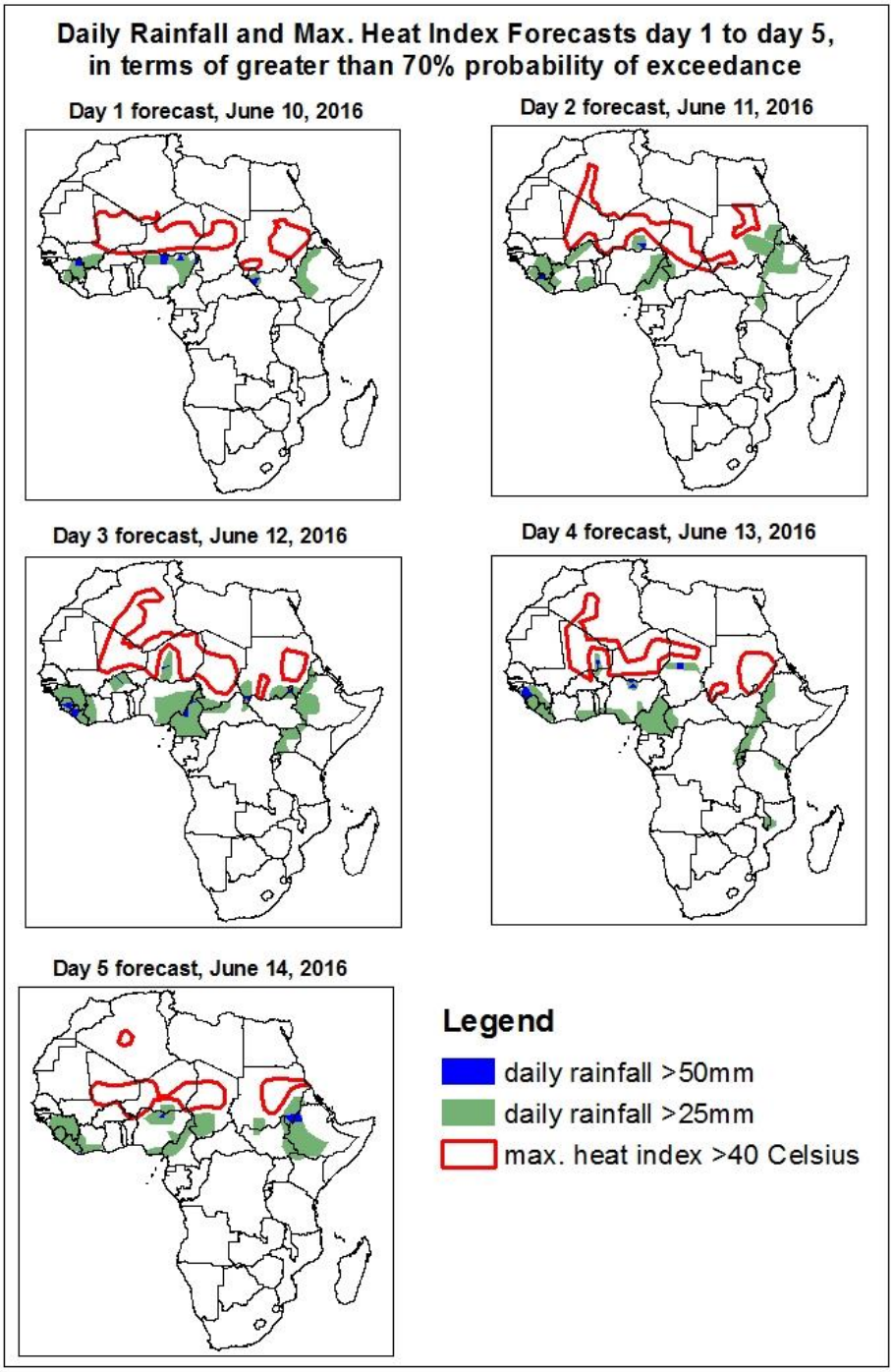
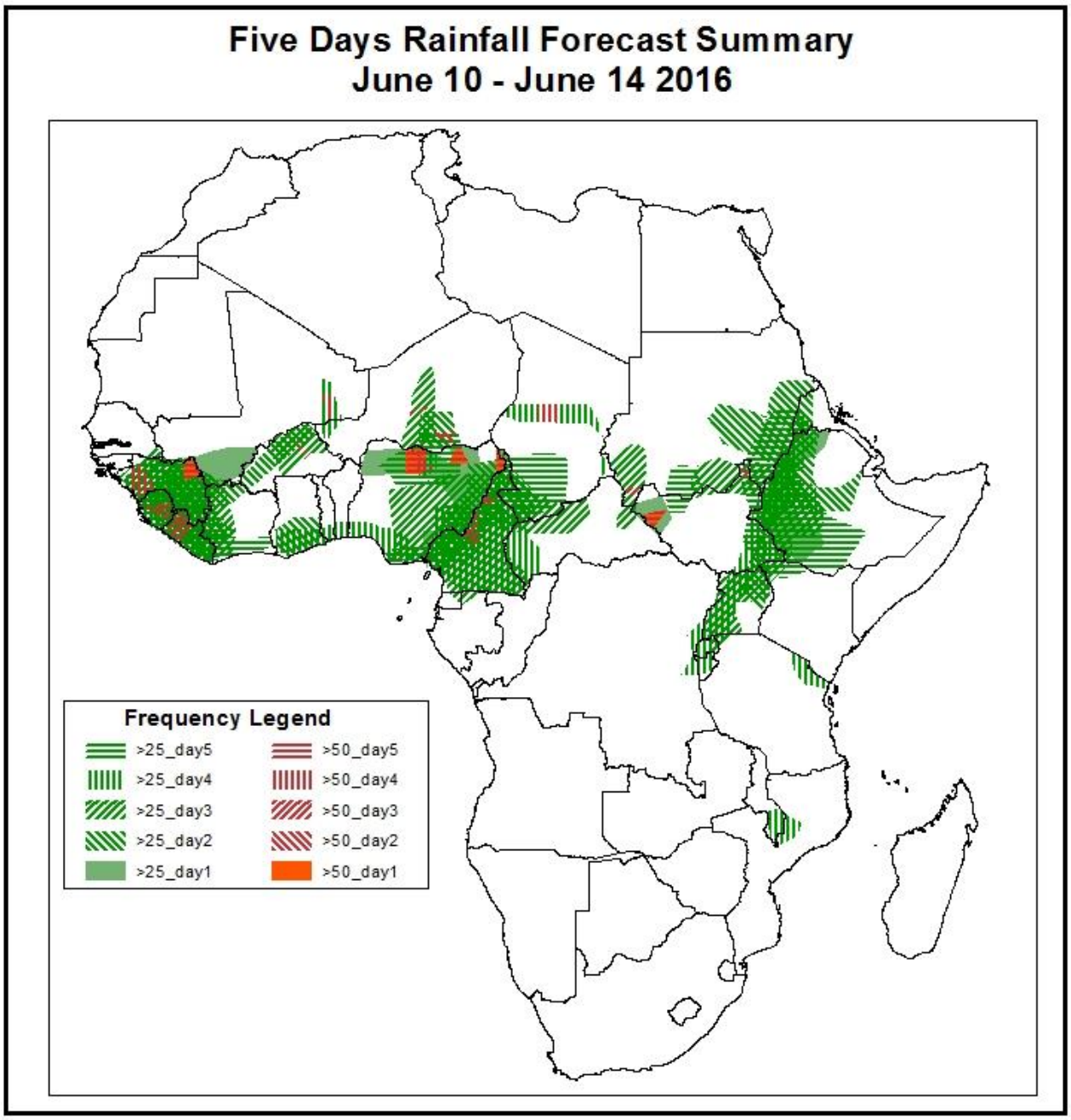
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 09, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 10 – June 14, 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.



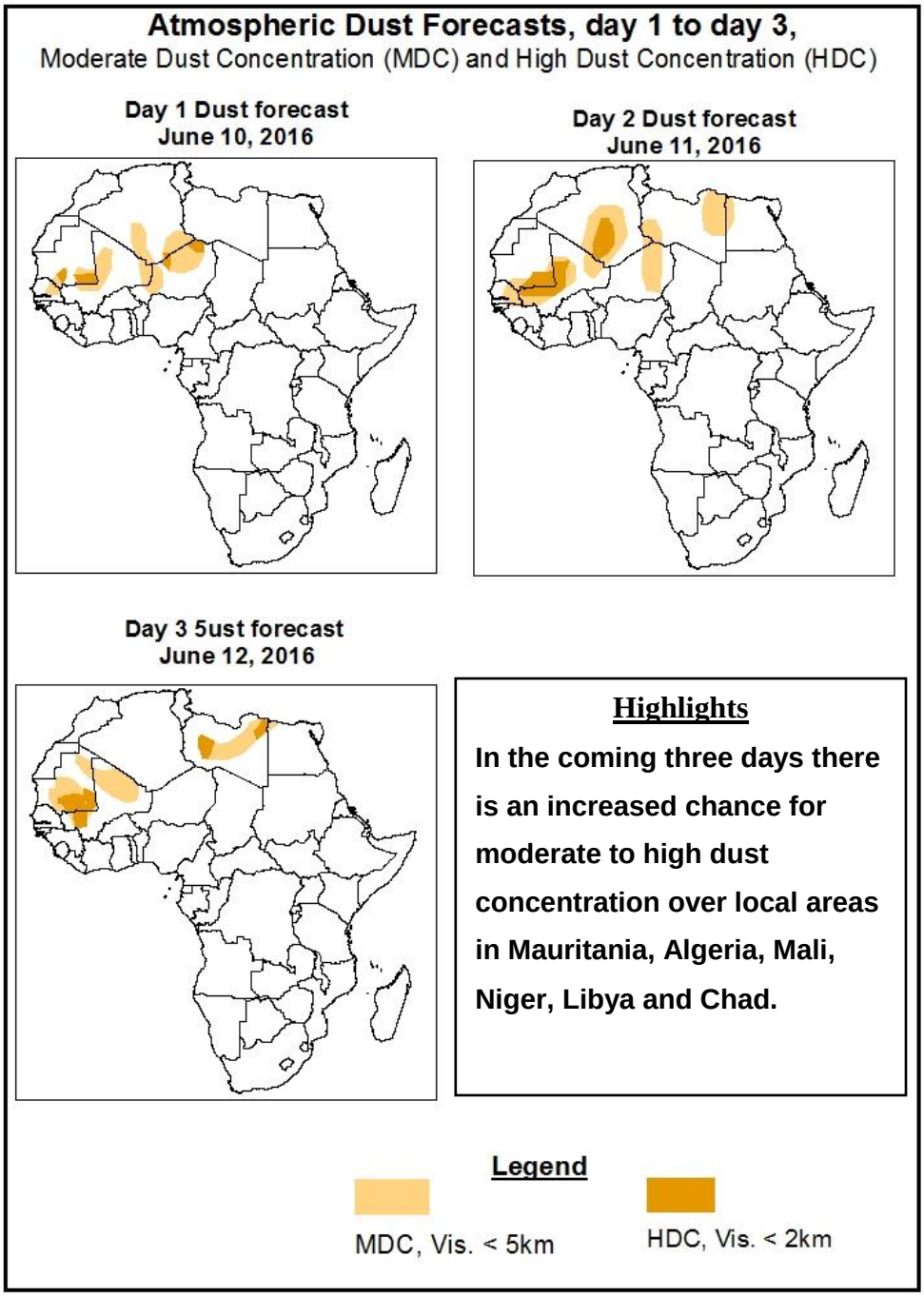


Highlights

In the coming five days, lower level-wind convergences 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 region. Active Congo Air Boundary (CAB) in the Lake Victoria region and local wind convergences 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 Guinea, portions of Burkina Faso, Sierra Leona, Liberia, western Cote d'Ivoire, southern Ghana, southern Niger, portions of Nigeria, Cameroon, southern Chad, portions of Sudan, Uganda, and western Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 9 – June 10 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 10–June 14, 2016

The Azores high pressure system over the Northeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from about 1024hPa to 1027hPa during 24 to 96hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensify while shifting eastwards, with its central pressure value increasing from 1031hPa to 1038hPa through 24 to 72 hours, and it tends to weaken through 72 to 120 hours.

The Mascarene high pressure system over the Indian Ocean Southwest expected to weaken while shifting to the east, with its central pressure value decreasing from about 1032hPa 1033hPa during 24 to 96 hours.

The 1016hPa isobar, associated with 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 by 120 hours. This may lead to increase in rainfall across portions of West Africa.

The central pressure values associated with heat lows throughout the western Sahel is expected fill up, with its central pressure increasing from 1005hPa to 1007hPa during 24 to 72 hours, while the heat low over the central Sahel is expected to maintain an average central pressure value of 1009hPa during 24 to 120 hours. The central pressure values associated with the heat low across Sudan is expected to vary in the range between 1008hPa and 1009hPa during the forecast period.

At 925HPa level, the anticyclonic circulation and its associated ridge across Libya is expected to shift towards Egypt and the neighboring areas, while intensifying during the forecast period. Strong winds may lead to moderate to high dust concentration across portions of Mauritania, Algeria, Mali, Niger, Libya and Chad.

At 850hPa level, a zonal wind convergence is expected to prevail in the region between Niger and Sudan, while a cyclonic trough is expected to prevail across Mali and the neighboring areas during 24 to 96 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 parts of 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.

In the coming five days, lower level-wind convergences 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 region. Active Congo Air Boundary (CAB) in the Lake Victoria region and local wind convergences 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 Guinea, portions of Burkina Faso, Sierra Leona, Liberia, western Cote d'Ivoire, southern Ghana, southern Niger, portions of Nigeria, Cameroon, southern Chad, portions of Sudan, Uganda, and western Ethiopia.

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

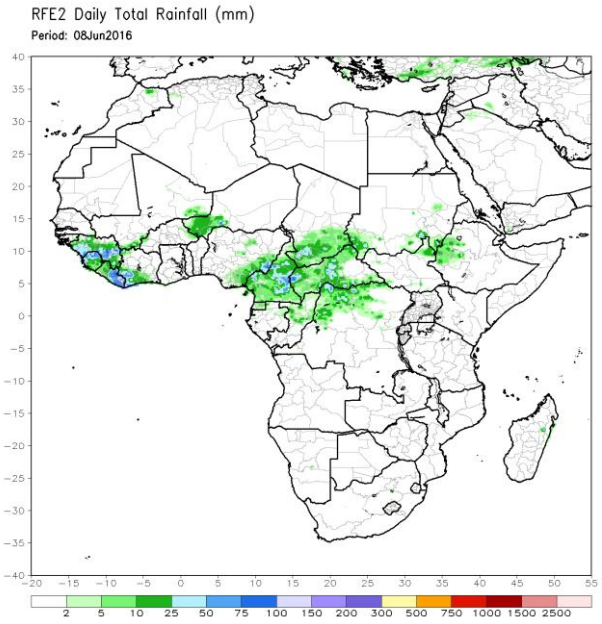
2.0. Previous and Current Day Weather over Africa

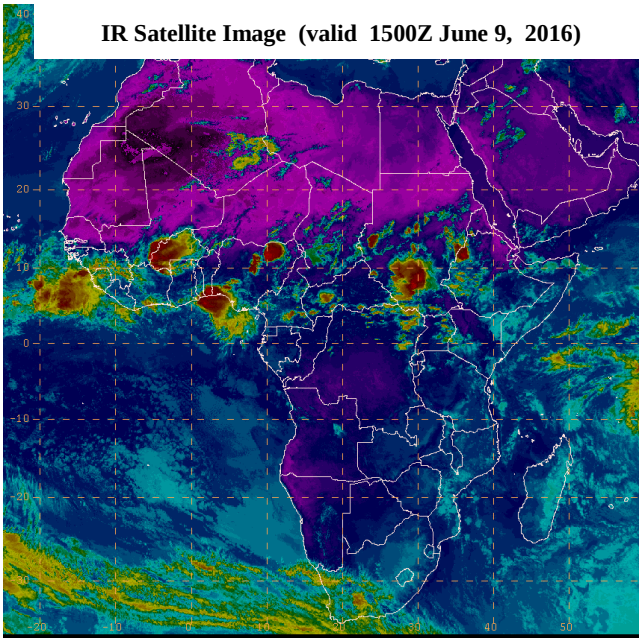
2.1. Weather assessment for the previous day (June 8, 2016)

Moderate to locally heavy rainfall was observed over Guinea, local areas in Mali, Sierra Leone, Liberia, southern Cote d'Ivoire, southwestern Niger, eastern Nigeria, much Cameroon and CAR, Southern Chad, northern DRC and western Ethiopia.

2.2. Weather assessment for the current day (June 9, 2016**)**

Intense convective clouds are observed over Burkina Faso, southern Togo, southern Benin, Northern Nigeria, South Sudan and western 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

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