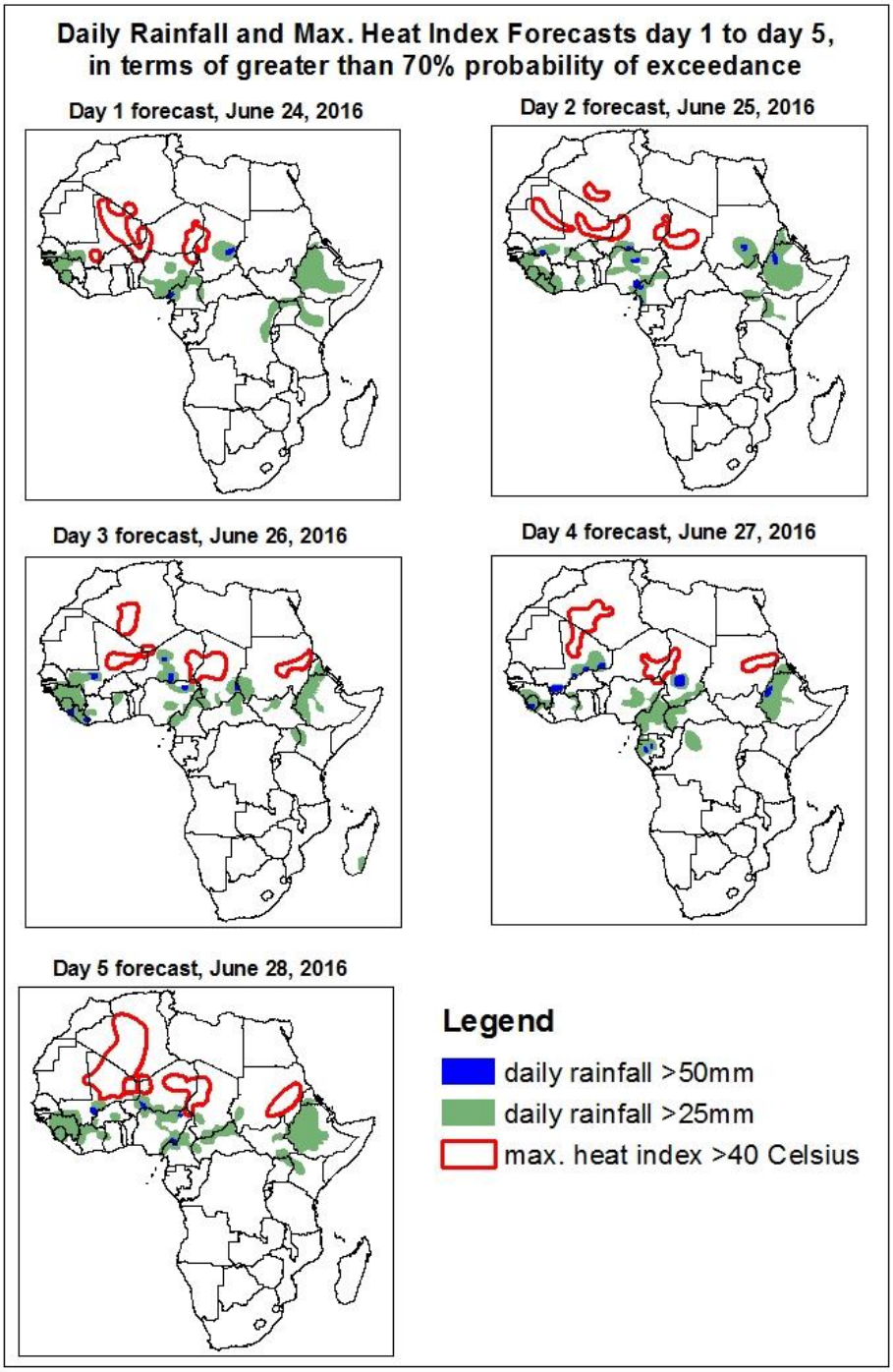
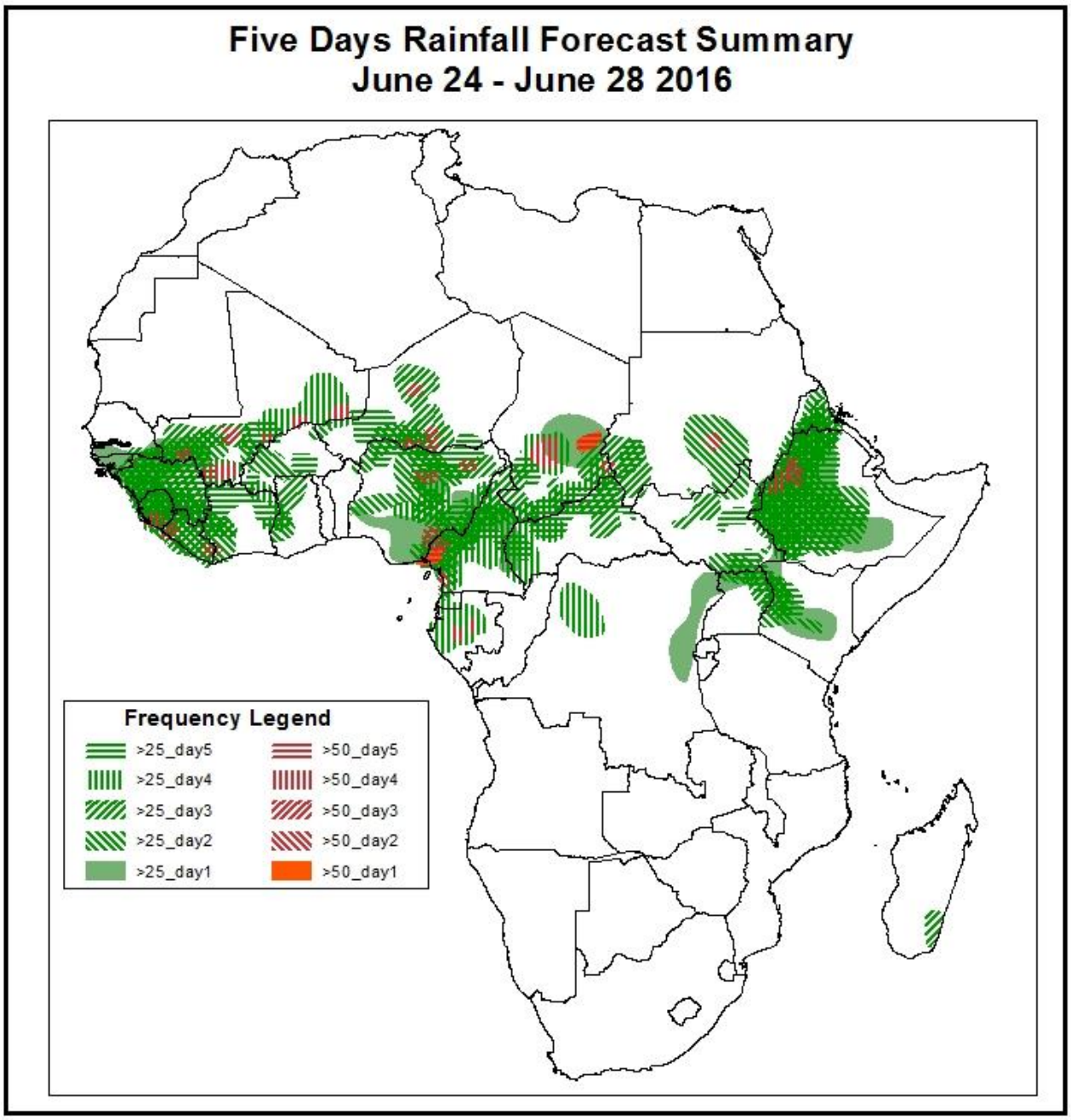
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 23, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 24– June 28 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.



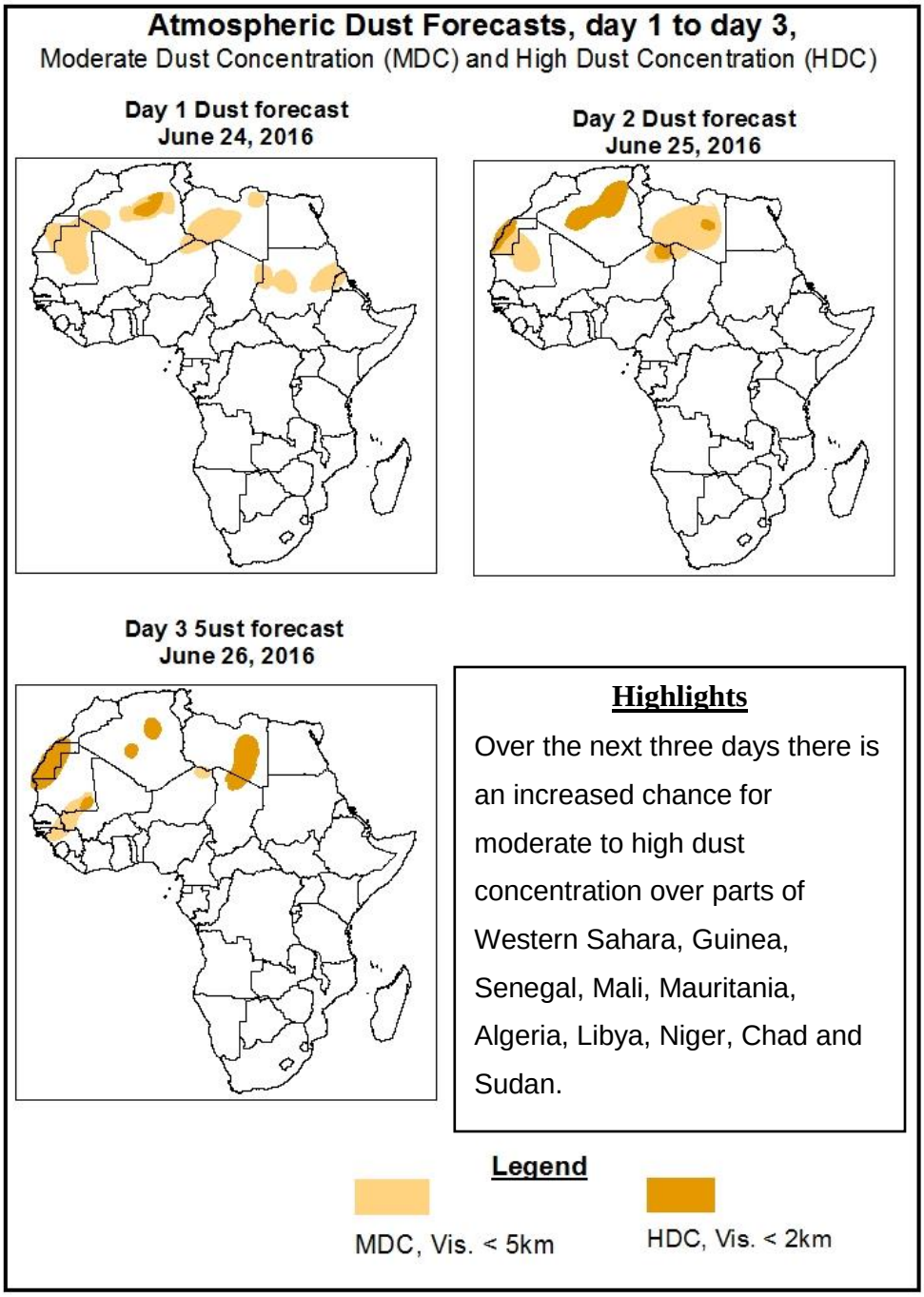


Highlights

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 Guinea Conakry, Sierra Leona, Liberia, portions of Mali, western Cote d'Ivoire, portions of Nigeria, western and northern Cameroon, southern Niger, portions of Chad, northern and western CAR, local areas Sudan, local areas in South Sudan, northern and eastern Uganda, western Kenya, Eritrea and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 24 – June 26 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 24–June 28 2016

The Azores high pressure system over the Northeast Atlantic is expected to intensify, with its central pressure value increasing from 1024hPa to 1028hPa through 24 to 48 hours, and then it tends to maintain an average central pressure value of 1032hPa through 96 to 120hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from 1024hPa to 1030hPa through 24 to 48 hours, and then it tends to maintain an average central pressure value of 1032hPa through 72 to 120hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to maintain an average central pressure value of 1032hPa through 24 to 72hours, and then it tends to weaken, with its central pressure value decreasing from 1032hPa to 1028hPa through 96 to 120 hours.

The 1016hPa isobar, associated with the East African ridge is expected to extend northwards up to northern Kenya 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 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 1005hPa and 1009hPa during the forecast period, while the heat low over the central Sahel is expected remain in the range between 1004hPa and 1008hPa though 48 to 72 hours and then it tends to maintain an average central pressure value of 1005hPa through 96 to 120hours. The central pressure value associated with the heat low across Sudan is expected remain in the range between 1004hPa and 1007hPa 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 in Western Sahara, Guinea, Senegal, Mali, Mauritania, 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 72to 120 hours.

At 700hPa level, northeasterly to easterly flow is expected to prevail across much of the Gulf of Guinea region and southern Sahel, with wind speed occasionally exceeding 30kts over local areas in the region during the forecast period. This will help to enhance westward propagate convective activities across West Africa

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

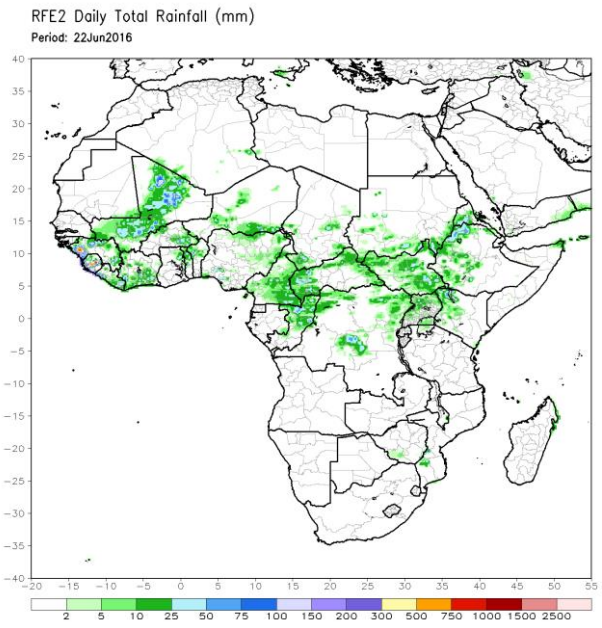
2.0. Previous and Current Day Weather over Africa

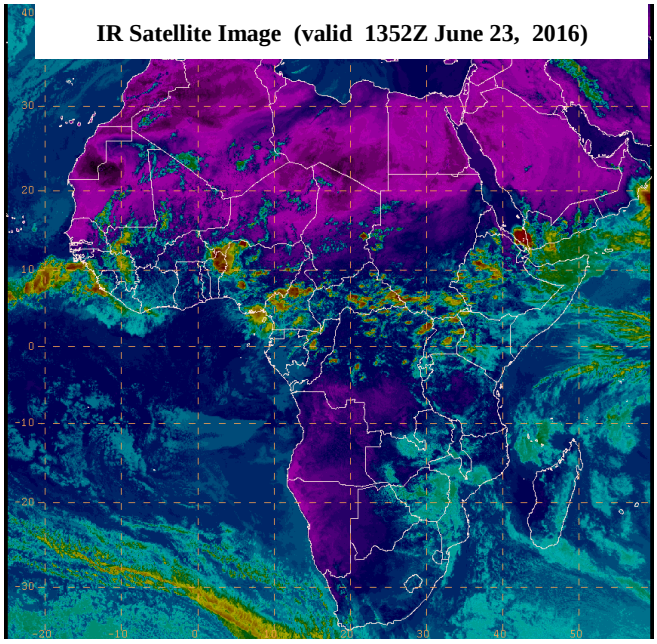
2.1. Weather assessment for the previous day (June 22, 2016)

Moderate to locally heavy rainfall was observed portions of Guinea, Sierra Leone, Liberia, portions of Mali, portions of Cote d'Ivoire, eastern Burkina Faso and Benin, northern Togo, local areas in Niger and Chad, portions ok Cameroon, CAR and South Sudan, local areas of Sudan, northern Congo, portions of Uganda, western Kenya and Ethiopia.

2.2. Weather assessment for the current day (June 23, 2016**)**

Intense convective clouds are observed over northern Benin, local areas of western Niger and Nigeria, Cameron, CAR and Uganda, local areas of southern 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