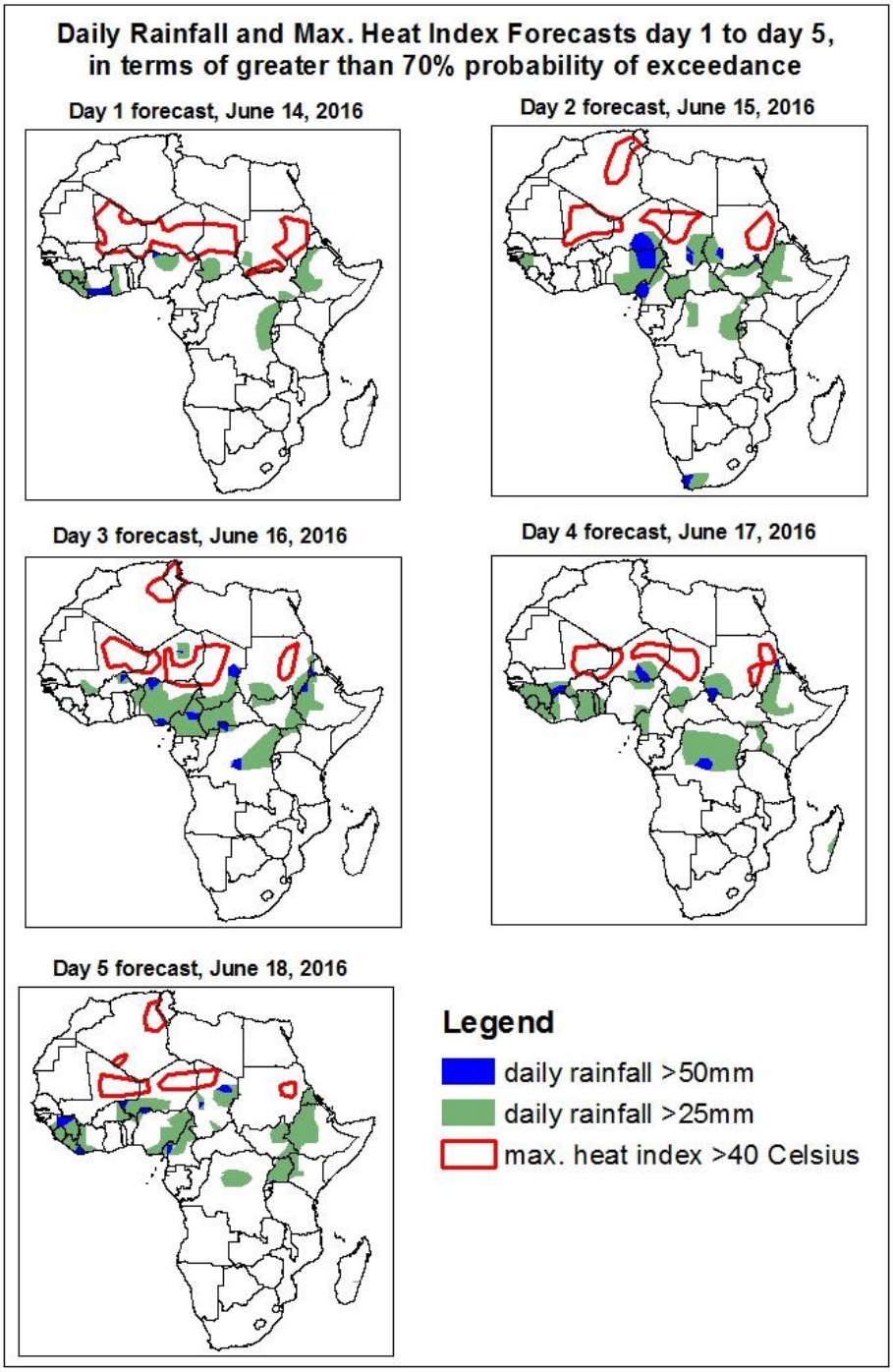
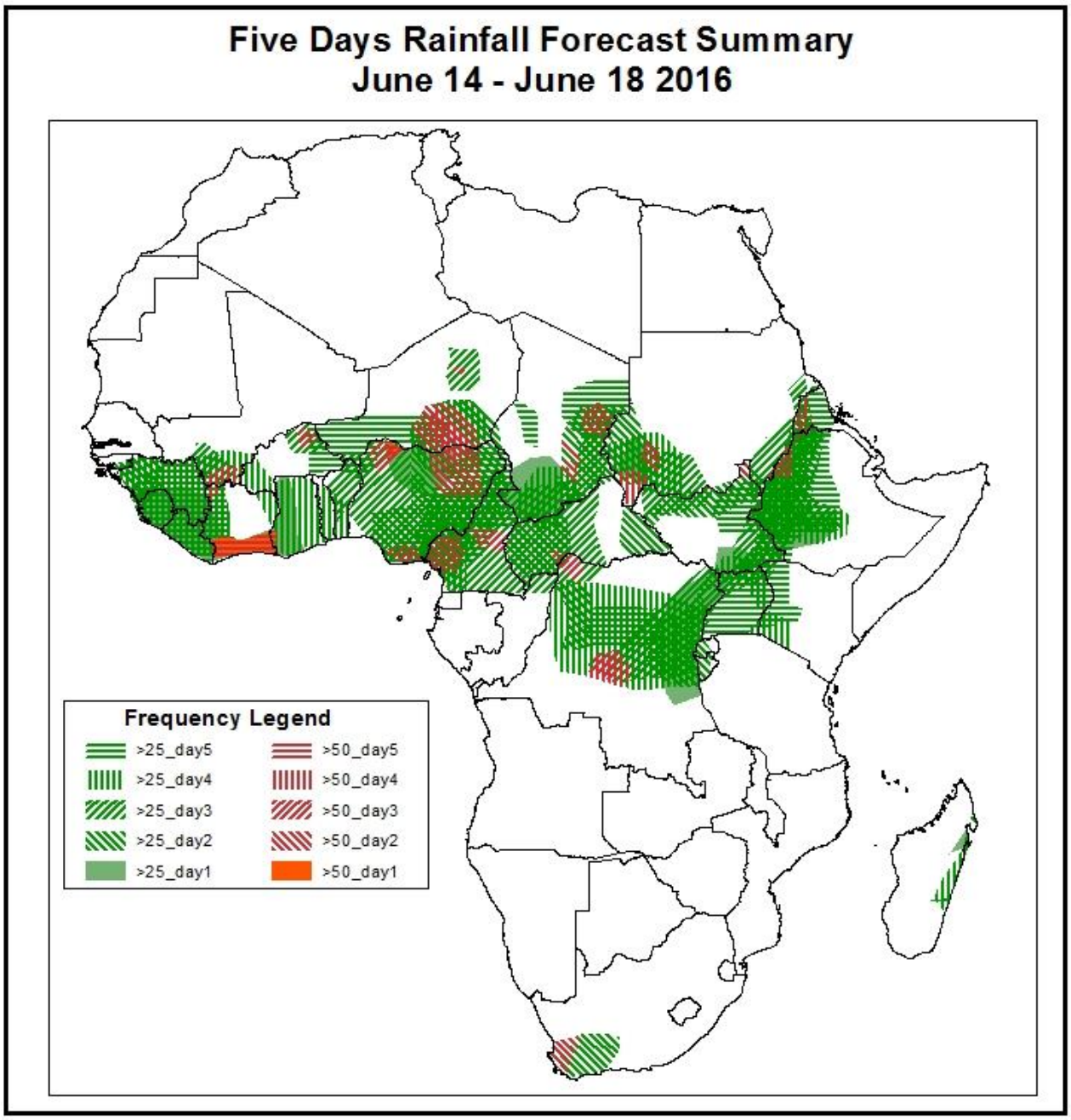
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 13, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 14– June 18, 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.



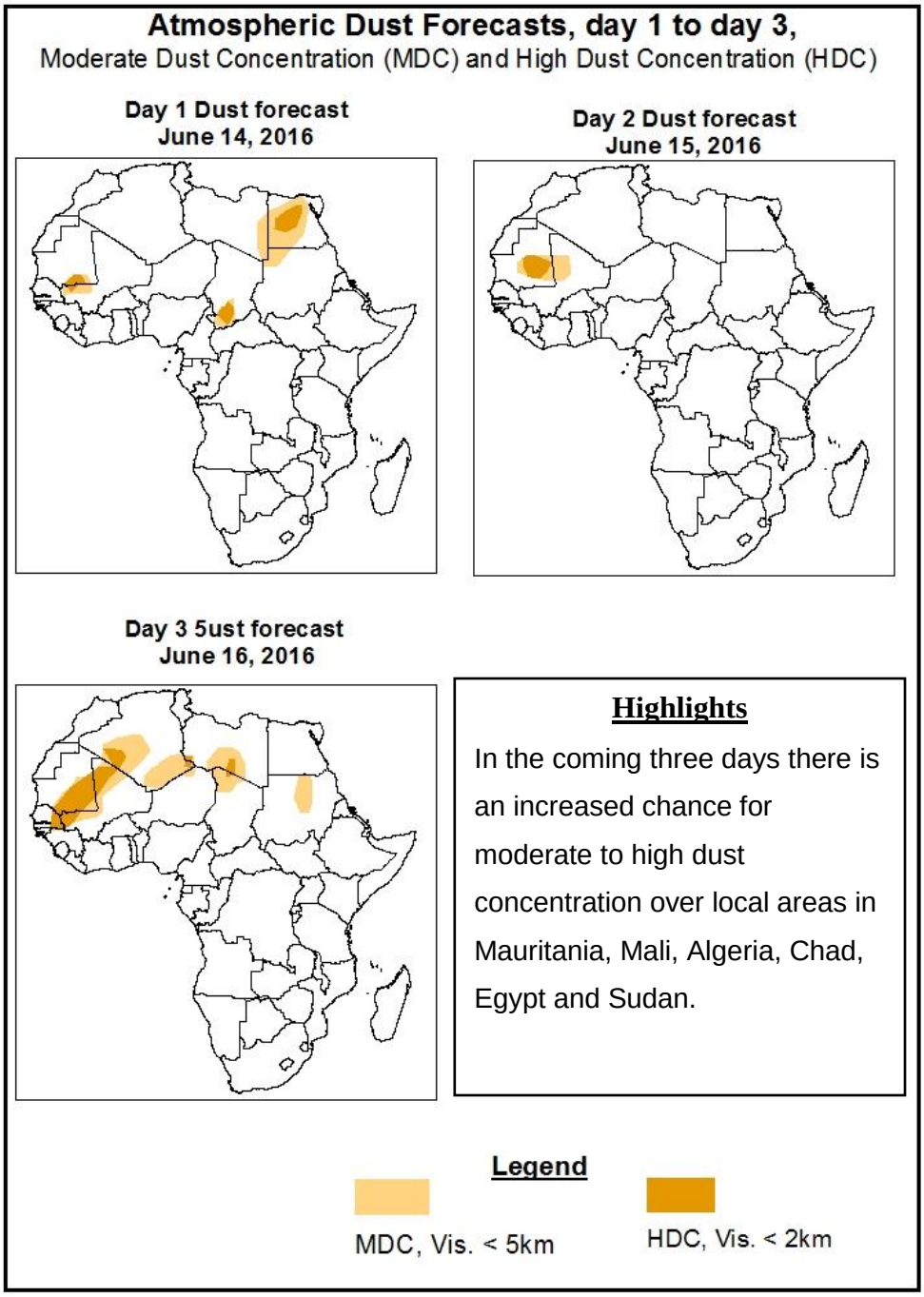


Highlights

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 Conakry, southern Mali, Sierra Leona, portions of Cote d'Ivoire, northern Burkina Faso, western Ghana, southern Niger, portions of Nigeria, portions of Cameroon, portions of Chad, western Sudan, western CAR, portion of DRC, portions of South Sudan, Eritrea, and portions of Kenya and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 14 – June 15 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 14–June 18, 2016

The Azores high pressure system over the Northeast Atlantic tends to maintain an average central pressure value of 1024hPa through 48to 120 hours.

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 1020hPa to 1025hPa through 24 to 48 hours, and it tends to maintain an average central pressure value of 1025hPa through 48 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to intensify, with its central pressure value increasing from 1024hPa to 1037hPa through 24 to 48 hours, and it tends to weaken towards end of the forecast period, with central pressure decreasing from 1032hPa to 1024hPa.

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 during the forecast period. 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 remain in the range between 1004hPa and 1006hPa during the forecast period, while the heat low over the central Sahel is expected to maintain an average central pressure value of 1007hPa during 24 to 120 hours. The central pressure values associated with the heat low across Sudan is expected to vary in the range between 1004hPa and 1006hPa during 72 to 120 hours.

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 winds may lead to moderate to high dust concentration across portions of in Mauritania, Mali, Algeria, Chad, Egypt and Soudan.

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

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 Conakry, southern Mali, Sierra Leona, portions of Cote d'Ivoire, northern Burkina Faso, western Ghana, southern Niger, portions of Nigeria, portions of Cameroon, portions of Chad, western Sudan, western CAR, portion of DRC, portions of South Sudan, Eritrea, and portions of Kenya and 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 and portions of Sudan.

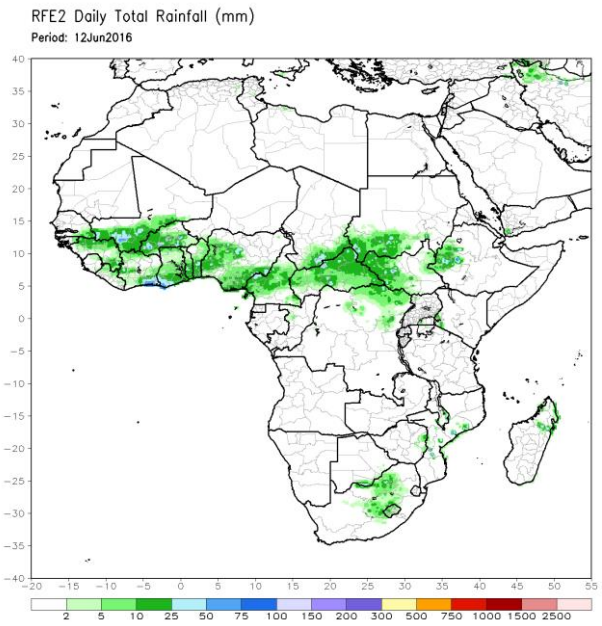
2.0. Previous and Current Day Weather over Africa

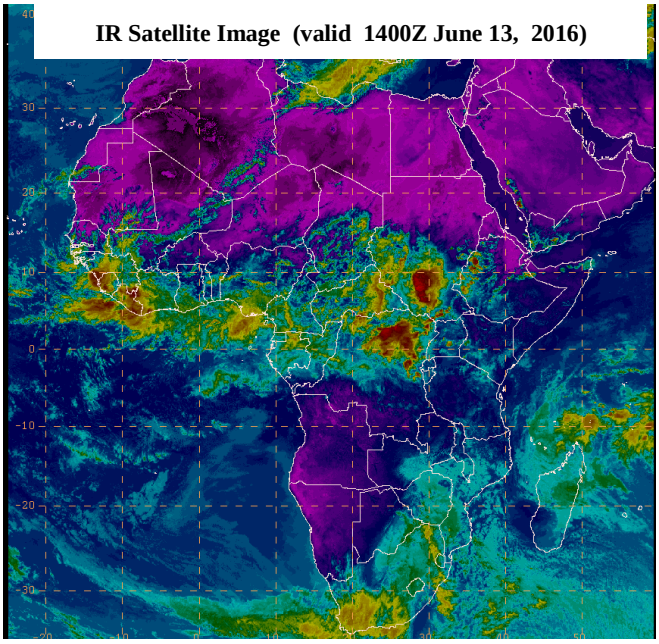
2.1. Weather assessment for the previous day (June 12, 2016)

Moderate to locally heavy rainfall was observed over portions of Guinea, southern Mali, portions of Cote d'Ivoire, Ghana, Togo, Benin, portions of Nigeria, southern chad, portions of CAR and Cameroon, southern Sudan, northern DRC, western Ethiopia, and local areas in South Africa.

2.2. Weather assessment for the current day (June 13, 2016**)**

Intense convective clouds are observed over Sierra Leone, Liberia, northern DRC and 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

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