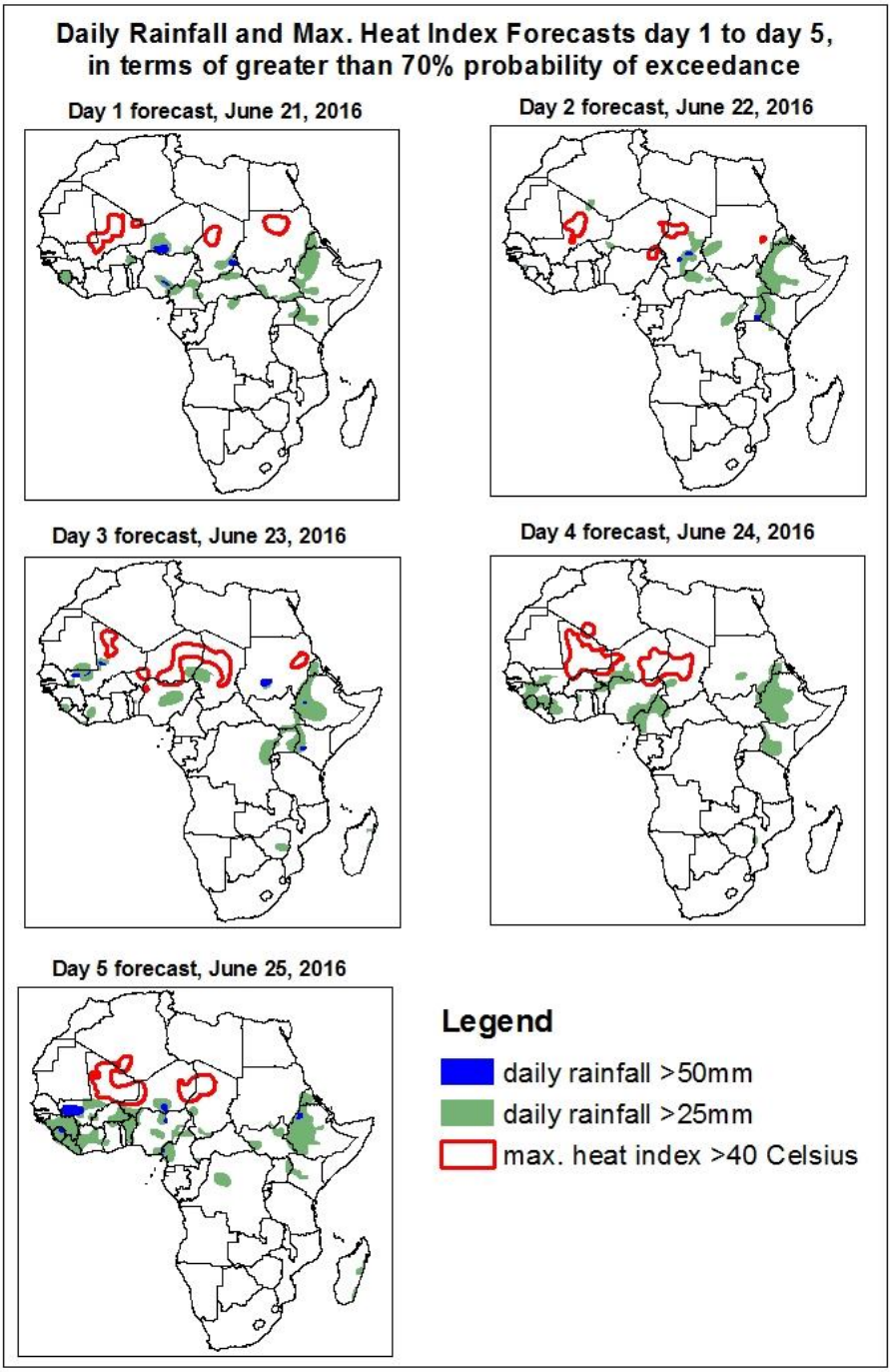
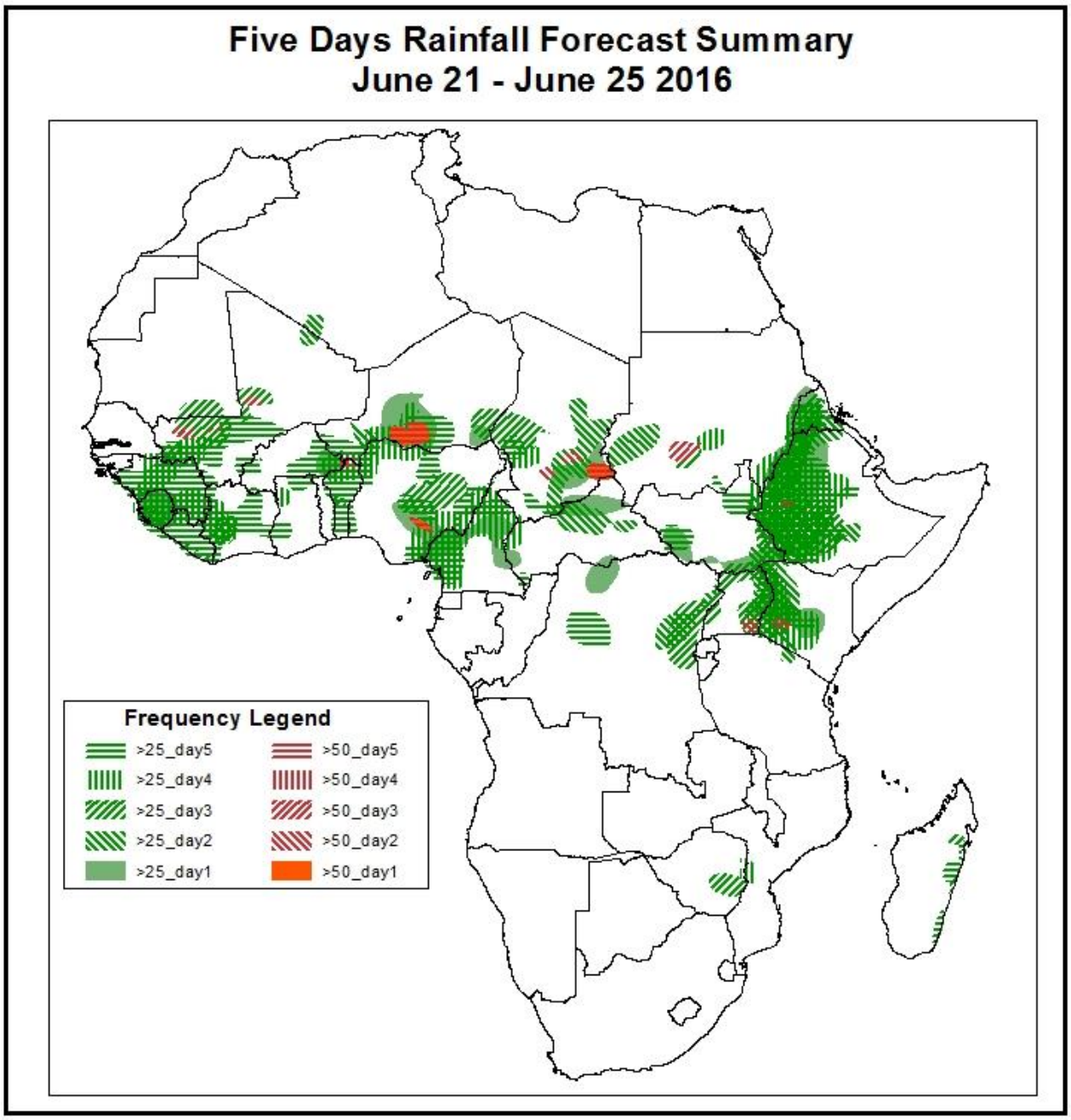
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 20, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 20– June 25 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.



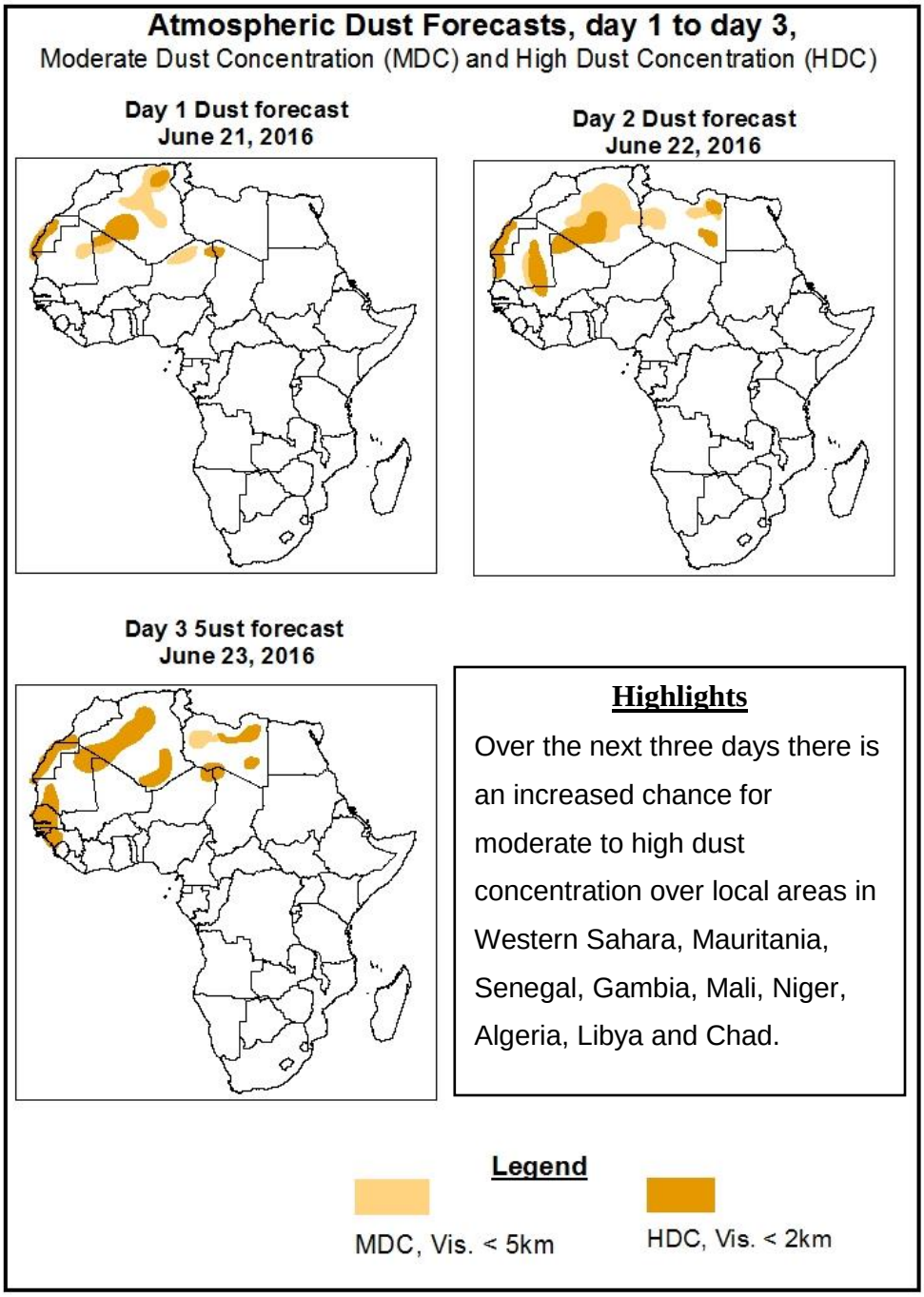


Highlights

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, northern Liberia, western Mali, western Cote d'Ivoire, eastern Burkina Faso, portions of Benin, southern Niger, eastern Chad, local areas CAR, southern South Sudan, western Kenya, eastern Uganda and western Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 20 – June 21 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 21–June 25 2016

The Azores high pressure system over the Northeast Atlantic is expected to intensify, with its central pressure value increasing from 1028hPa to 1034hPa through 24 to 48 hours, and then it tends to weaken, with its central pressure value decreasing from 1032hPa to 1020hPa through 72 to 120 hours.

The St. Helena High pressure system over the Southeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from 1021hPa to 1030hPa through 24 to 72 hours, and then it tends to weaken, with its central pressure value decreasing from 1023hPa to 1020hPa through 96 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to intensify, with its central pressure value increasing from 1028hPa to 1032hPa through 24 to 48 hours, and then it tends to maintain an average central pressure value of 1028hPa through 72 to 96hours.

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 1004hPa and 1009hPa during the forecast period, while the heat low over the central Sahel is expected remain in the range between 1005hPa and 1008hPa though 24 to 72 hours, and then it tends to maintain an average central pressure value of 1008hPa over the next 96 to 120 hours. The central pressure value associated with the heat low across Sudan to maintain an average central pressure value of 1004hPa over the next 48 to 72 hours and to maintain an average central pressure value of 1007hPa over the next 96 to 120 hours.

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, Mauritania, Senegal, Gambia, Mali, Niger, Algeria, Libya and Chad.

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 48to 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, northern Liberia, western Mali, western Cote d'Ivoire, eastern Burkina Faso, portions of Benin, southern Niger, eastern Chad, local areas CAR, southern South Sudan, western Kenya, eastern Uganda and western Ethiopia.

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

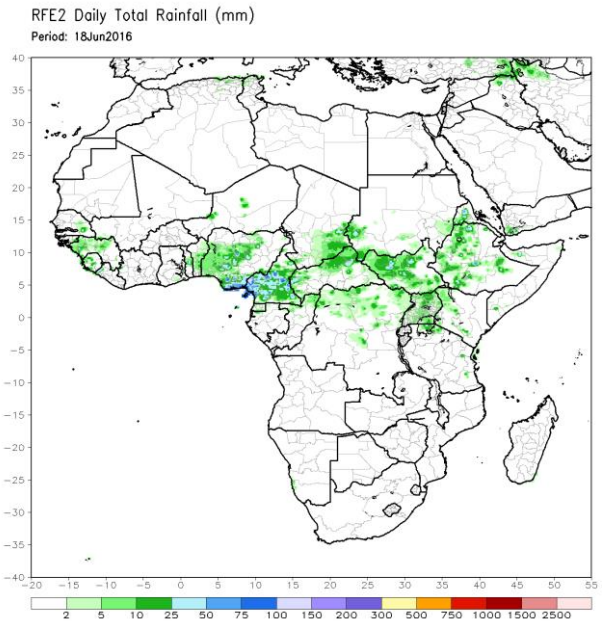
2.0. Previous and Current Day Weather over Africa

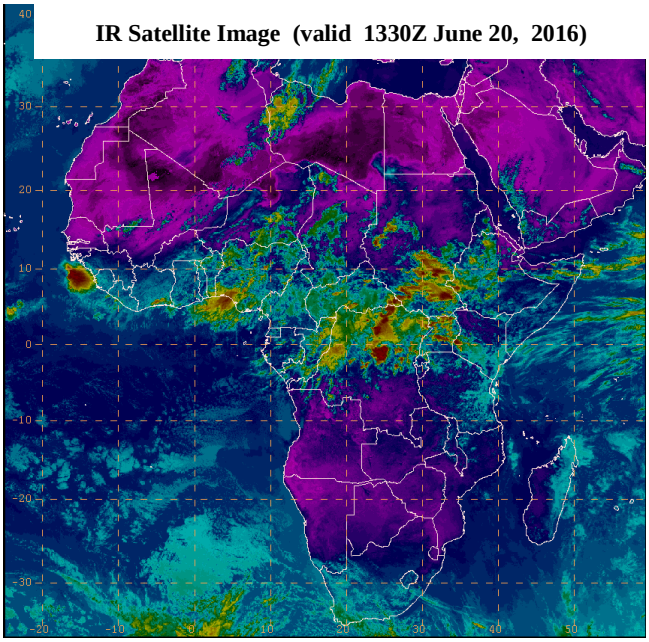
2.1. Weather assessment for the previous day (June 19, 2016)

Moderate to locally heavy rainfall was observed over portions of Guinea, portions of Sierra Leone, Togo, portions of Nigeria, Cameroon, eastern Chad, northern and western CAR, South Sudan, Uganda, local areas of northern DRC, and portions of Ethiopia.

2.2. Weather assessment for the current day (June 20, 2016**)**

Intense convective clouds are observed over southern Nigeria, eastern CAR, local areas of northern DRC, portions of Uganda and Southern 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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