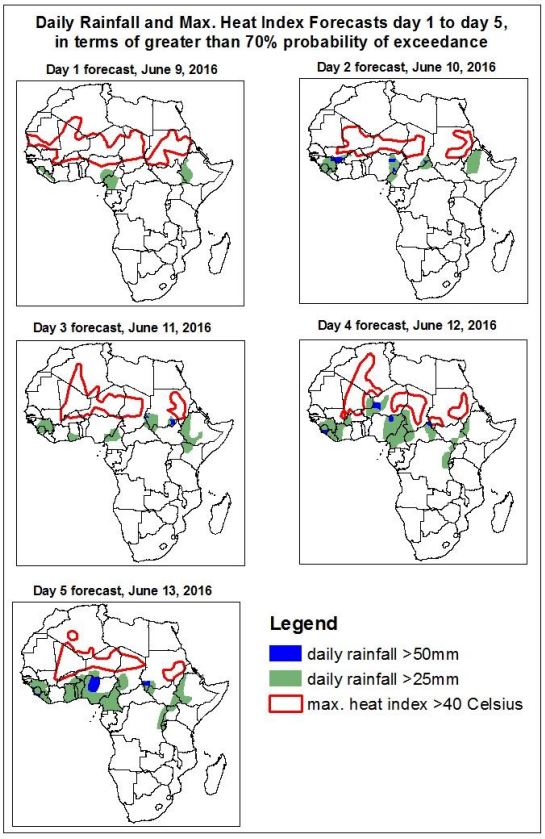
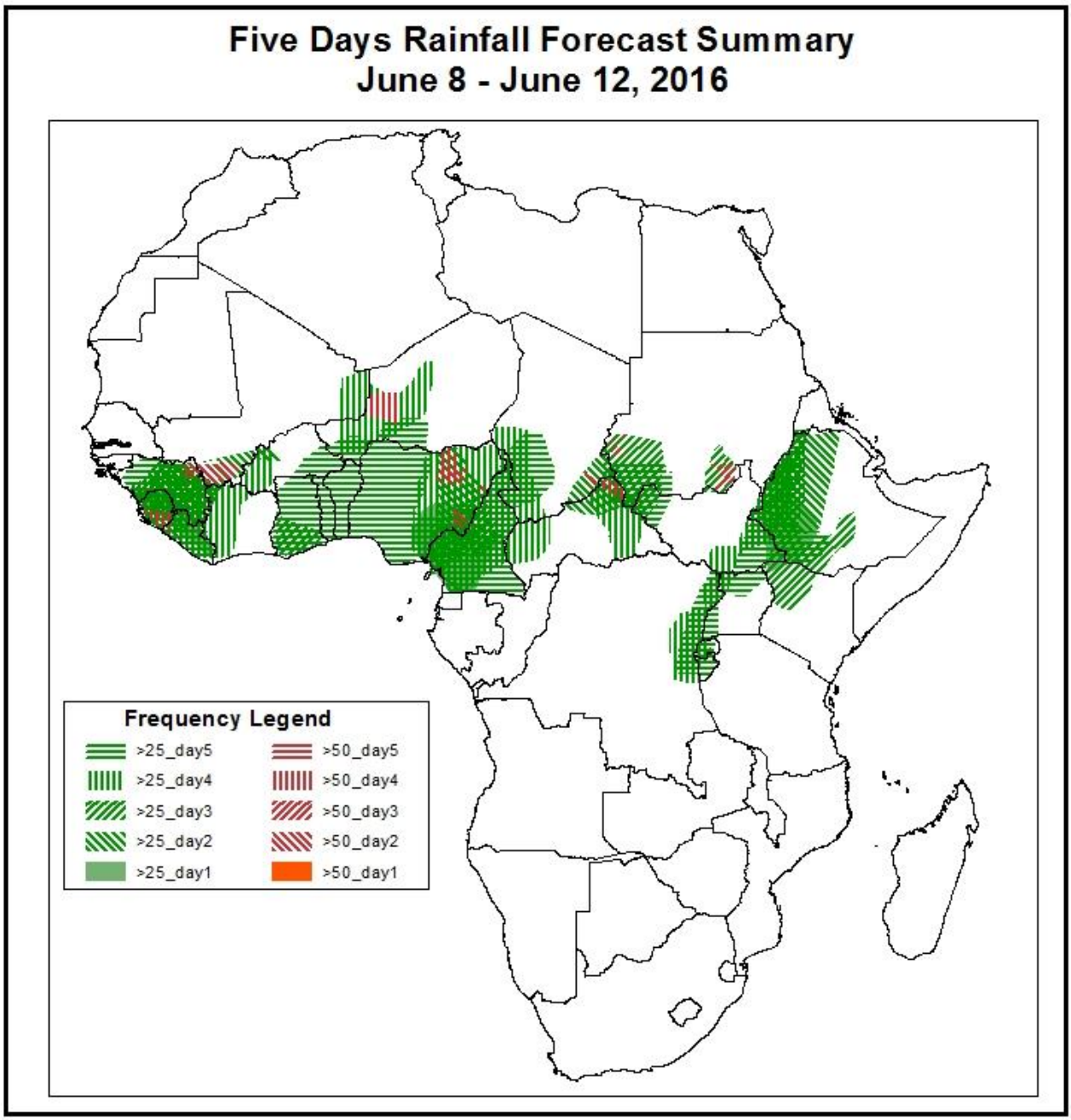
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on June 08, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: June 9 – June 13, 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.



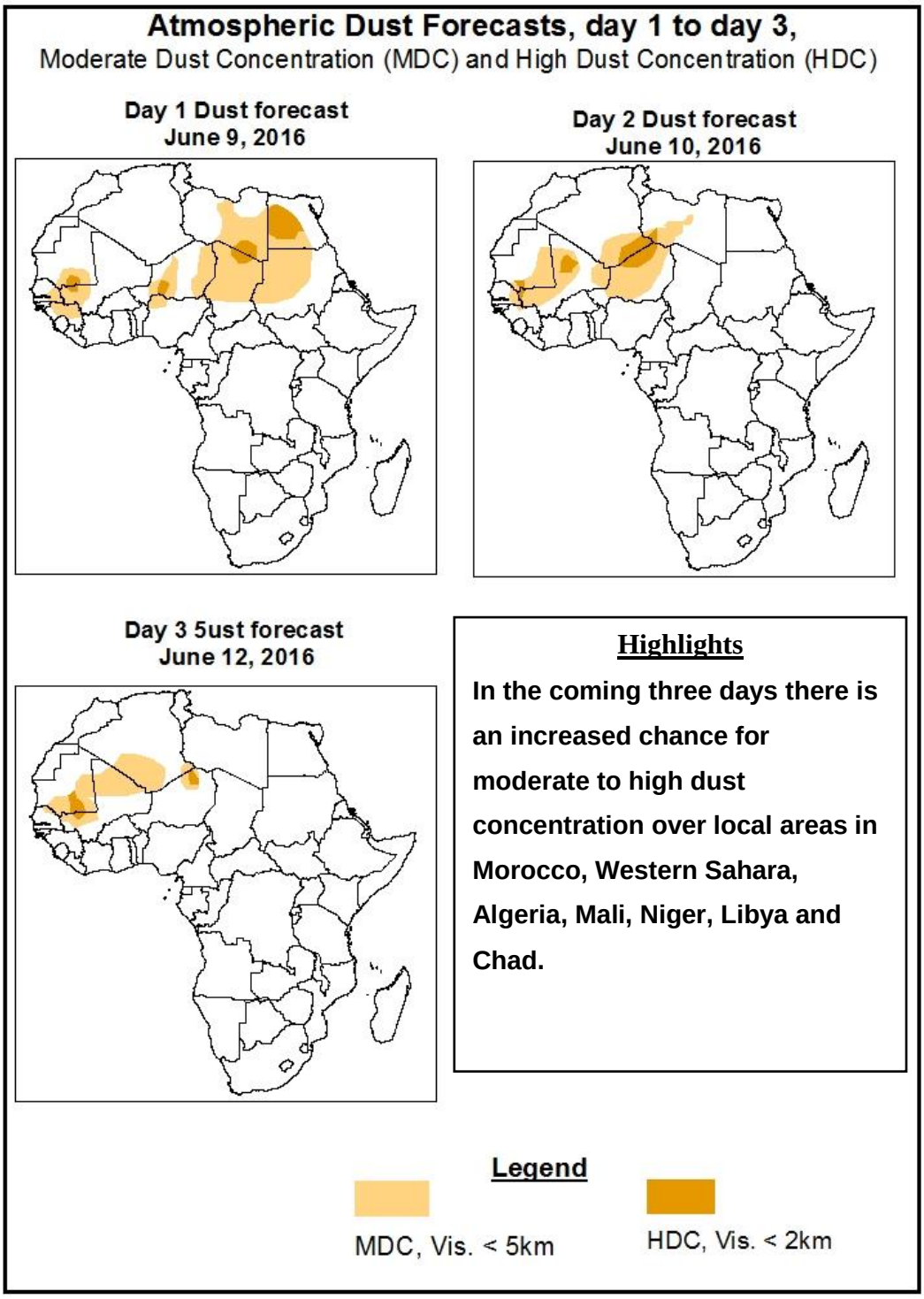


Highlights

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 across eastern DRC, Rwanda, Burundi and western Ethiopia. Therefore, there is an increased chance for two or more days of moderate to heavy rainfall over Guinea, Sierra Leona, Liberia, southern Ghana, western Niger, eastern Nigeria, Cameroon, CAR, western Soudan, eastern DRC and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts **(valid: June 8 – 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 9 –June 13, 2016

The Azores high pressure system over the Northeast Atlantic Ocean is expected to intensify, with its central pressure value increasing from about 1023hPa to 1026hPa during the forecast period.

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 1022hPa to 1039hPa through 24 to 72 hours, and it tends to weaken through 72 to 120 hours.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to intensify while shifting eastwards, with its central pressure value increasing from about 1030hPa to 1034hPa through 24 to 48 hours, and it tends to weaken through 48 to 120 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.

Central pressure values associated with heat lows across the western Sahel is expected to deepen, with its central pressure decreasing from 1007hPa to 1004hPa through 24 to 72 hours, whereas central pressure value over the central Sahel is expected to increase from about 1008hPa to 1010hPa through 24 to 96 hours. The heat low over Sudan is expected to maintain an average central pressure value of 1006hPa during the forecast period.

At 925HPa level, the anticyclonic circulation and its associated ridge across Algeria is expected to shift towards Libya and the neighboring areas, while intensifying during the forecast period. Strong dry northeasterly to easterly winds associated with this anticyclone are expected to prevail across Egypt, Sudan, Libya, Algeria, and northern Chad. Dry northerly flow is also expected to prevail across, Morocco, Western Sahara, Mauritania, and Senegal northern Mali.

At 850hPa level, a zonal wind convergence is expected to prevail in the region between northern Mali and Sudan across Niger and Chad through 24 to 72 hours. A cyclonic trough is expected to prevail across Mali and Mauritania through 48 to 96 hours. Dry northerly flow is expected to prevail across the western end of West Africa. A broad area of southeasterly flow is expected to prevail across eastern and central Africa.

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 across eastern DRC, Rwanda, Burundi and western Ethiopia. Therefore, there is an increased chance for two or more days of moderate to heavy rainfall over Guinea, Sierra Leona, Liberia, southern Ghana, western Niger, eastern Nigeria, Cameroon, CAR, western Soudan, eastern DRC and Ethiopia.

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

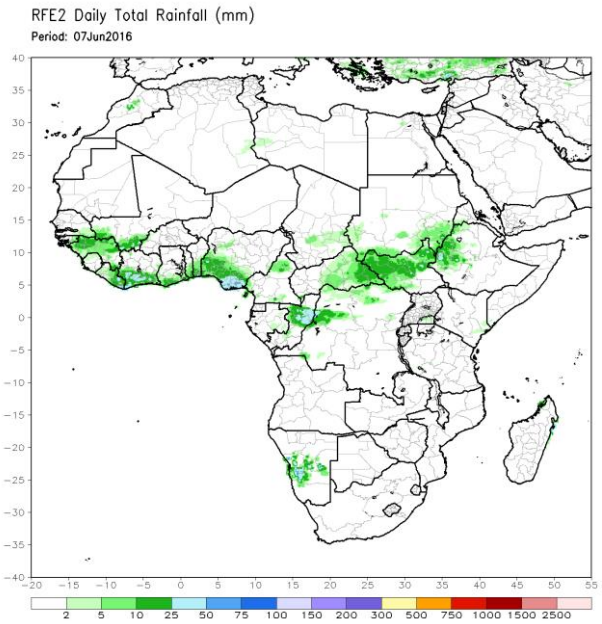
2.0. Previous and Current Day Weather over Africa

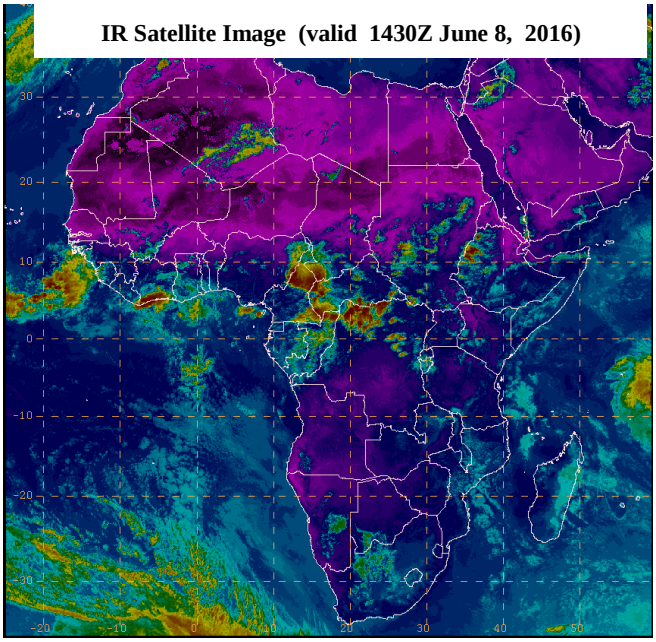
2.1. Weather assessment for the previous day (June 7, 2016)

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

2.2. Weather assessment for the current day (June 8, 2016**)**

Intense convective clouds are observed over Southern Cote d'Ivoire, Cameroon, Southern Chad, C.A.R, Northern D.R.C 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

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