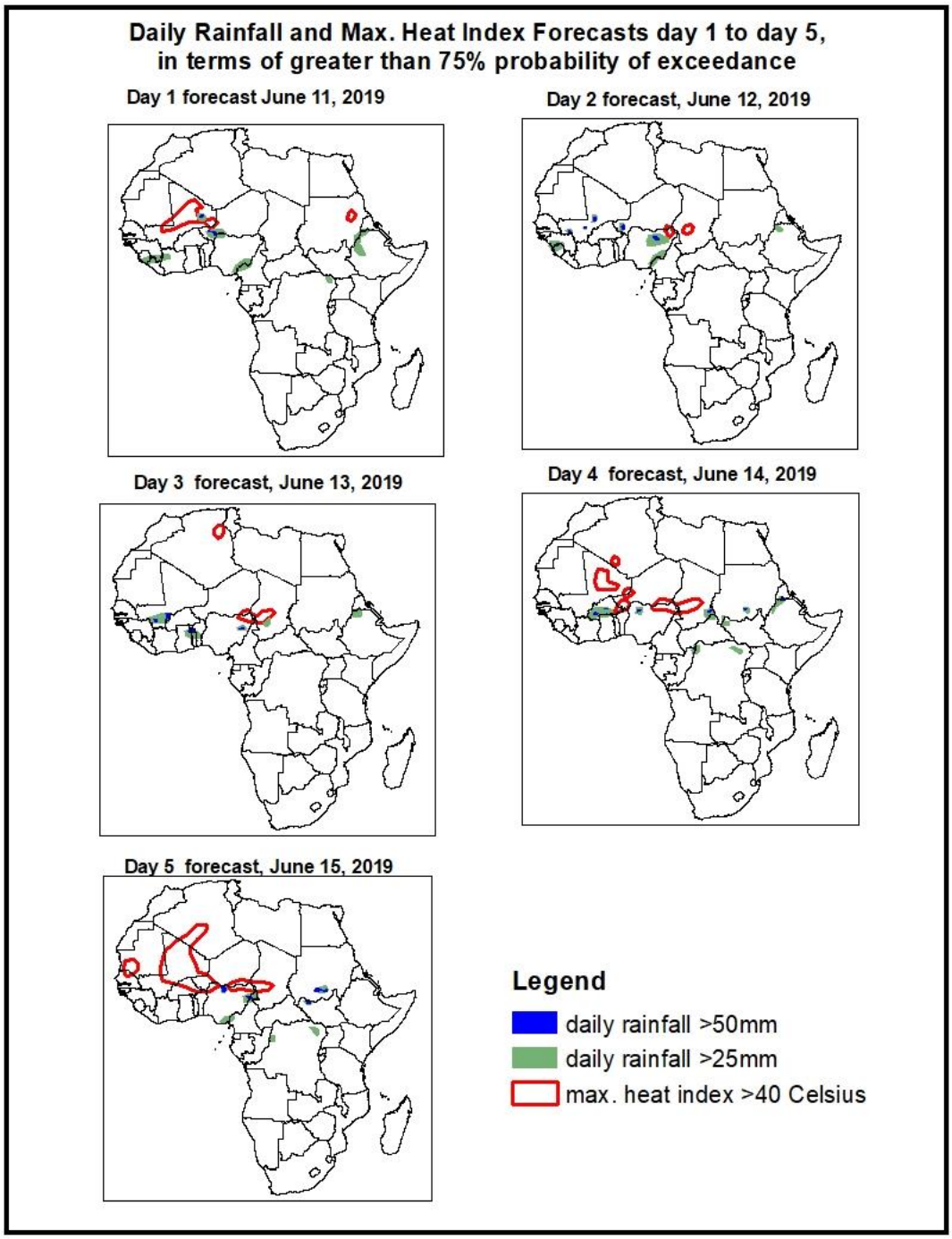
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

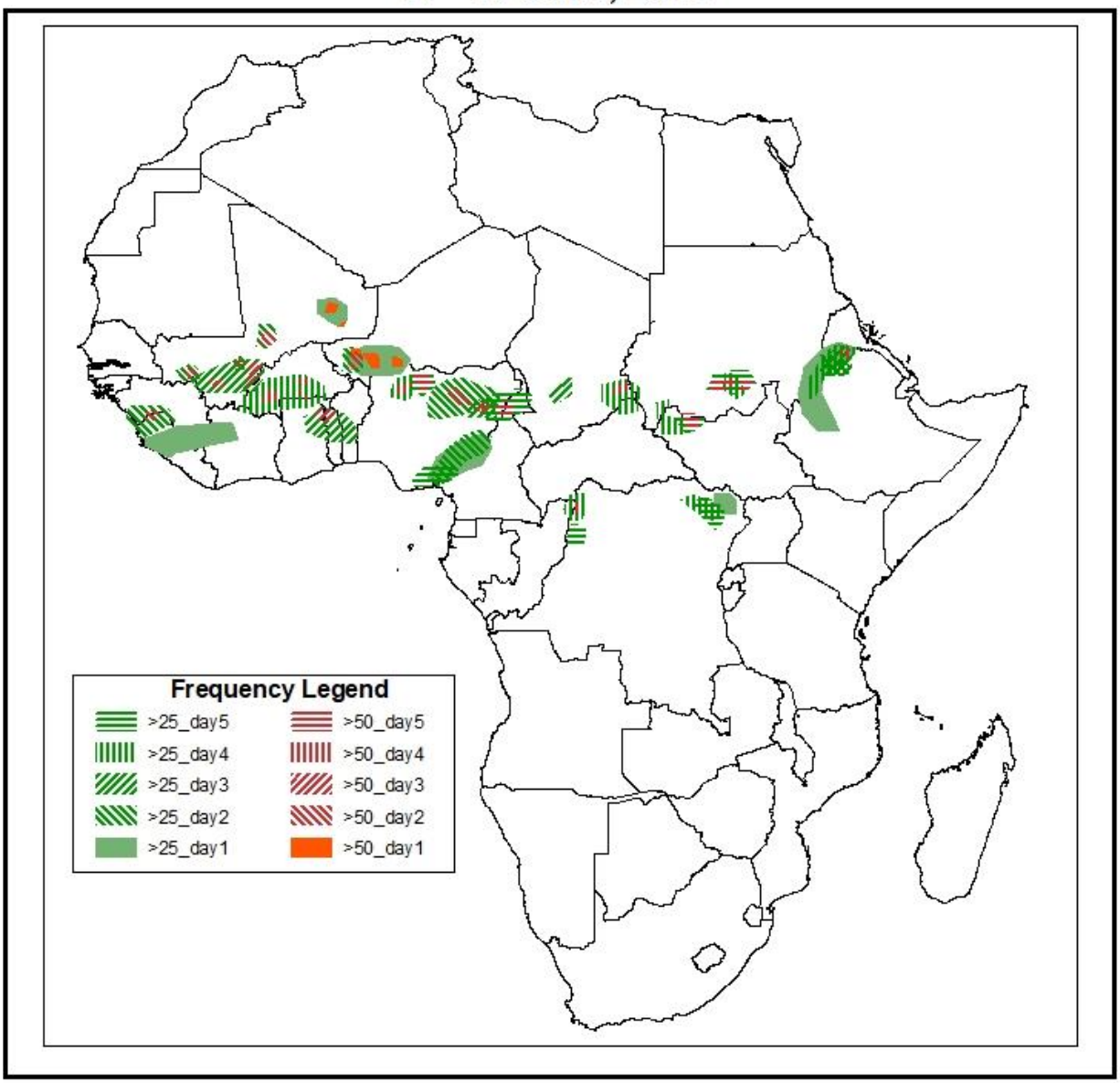
## 1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *June 10,* 2019)

### *1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: 11 – 15 June, 2019)*

The forecasts are expressed in terms of high probability of precipitation (POP), valid 06Z to 06Z, and exceedance probability of maximum heat index (>40ºC), based on the NCEP/GFS and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.



# Five Days Rainfall Forecast Summary
# 11 - 15 June, 2019

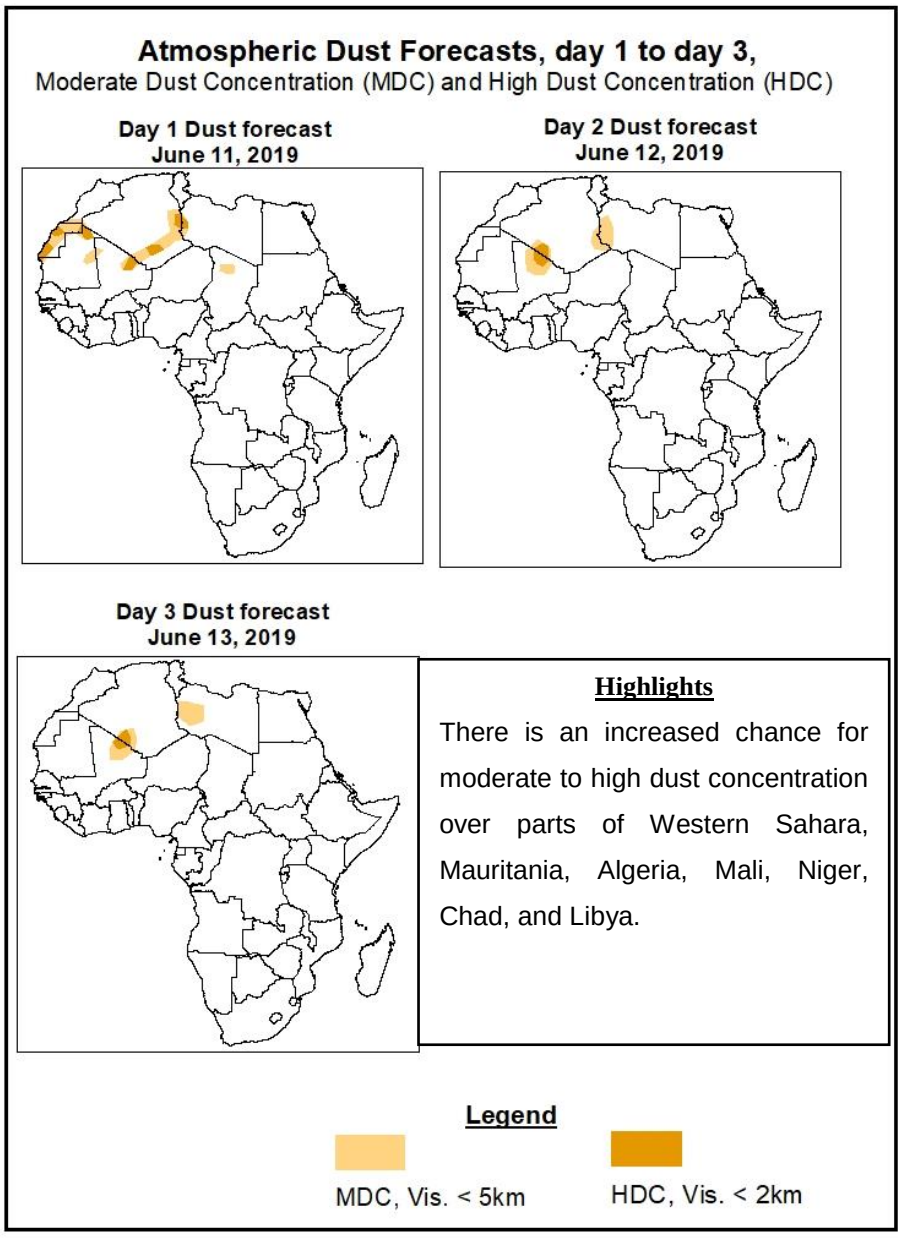



***Highlights***

- The monsoon flow from the Atlantic Ocean with its associated lower-level convergence, and westward propagating lower-level cyclonic circulation is expected to enhance rainfall over portions of the Sahel region.
- Lower-level wind convergences are expected to enhance rainfall across portions of the Greater Horn of Africa.
- At least 25mm for two or more days is likely over portions of the Gulf of Guinea, Sahel, and portions of the Greater Horn of Africa. There is an increased chance for daily rainfall to exceed 50mm over portions of Mali, Burkina Faso, Niger, Nigeria, Cameroon, Chad, and Sudan.
- There is an increased chance for daily maximum heat index to exceed 40$^{o}$C over portions of the Sahel region.

## *1.2. Atmospheric Dust Concentration Forecasts (valid: 11 – 13 June 2019)*

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: 11 – 15 June, 2019*

The Azores High Pressure system over the Northeast Atlantic is expected to weaken with its central pressure value decreasing from about 1034hpa to 1032hpa and stay just northwest of West Africa during the forecast period.

The St. Helena High Pressure system over Southeast Atlantic Ocean is expected to strengthen, with its central pressure value increasing from 1029hPa to 1032hPa through 96 hours.

The Mascarene High Pressure system over Southwest Indian Ocean is expected to weaken with its central pressure value decreasing from 1034hPa to 1029hPa during the forecast period.

At 925hPa level, strong dry northeasterly flow is expected to prevail across Northwest Africa. In contrast, moist westerly flow from the Atlantic Ocean is expected to prevail across the Gulf of Guinea region, and the neighboring areas of Central Africa.

At 850hPa, lower-level wind convergences are expected to remain over much of the Sahel region. A cyclonic circulation over Chad is expected to propagate westwards into Mali.

At 700hPa, strong easterly flow (>30kts) is expected to prevail across portions of the Gulf of Guinea region during the forecast period.

At 500hpa, wind speed associated with easterly flow is expected to exceed 30kts across many places in West Africa towards end of the forecast period.

The monsoon flow from the Atlantic Ocean with its associated lower-level convergence, and westward propagating lower-level cyclonic circulation is expected to enhance rainfall over portions of the Sahel region. Lower-level wind convergences are expected to enhance rainfall across portions of the Greater Horn of Africa. At least 25mm for two or more days is likely over portions of the Gulf of Guinea, Sahel, and portions of the Greater Horn of Africa. There is an increased chance for daily rainfall to exceed 50mm over portions of Mali, Burkina Faso,

Niger, Nigeria, Cameroon, Chad, and Sudan. There is an increased chance for daily maximum heat index to exceed 40$^{o}$C over portions of the Sahel region.

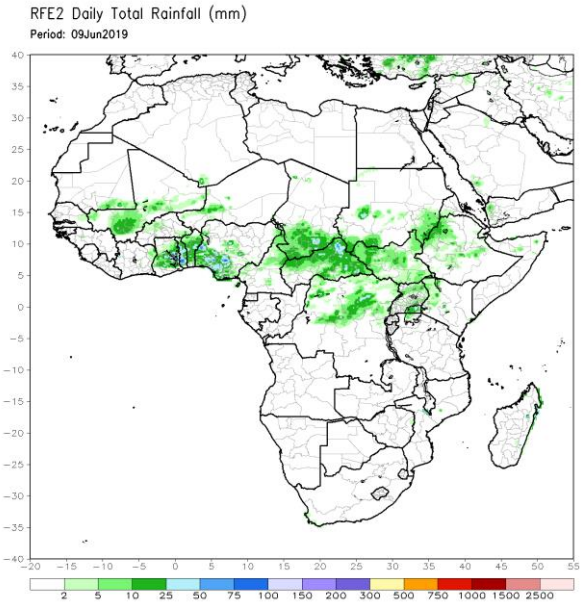
## 2.0. Previous and Current Day Weather over Africa

### *2.1. Weather assessment for the previous day* (June 9, 2019)

Daily rainfall exceeded 50mm over local areas in Togo, Nigeria and CAR.

### *2.2. Weather assessment for the current day* (*June 10,* 2019)

Deep convective clouds are observed over the far western West Africa, and portions of central and the Greater Horn of Africa.




**IR Satellite Image (valid 1452 June 10, 2019)**