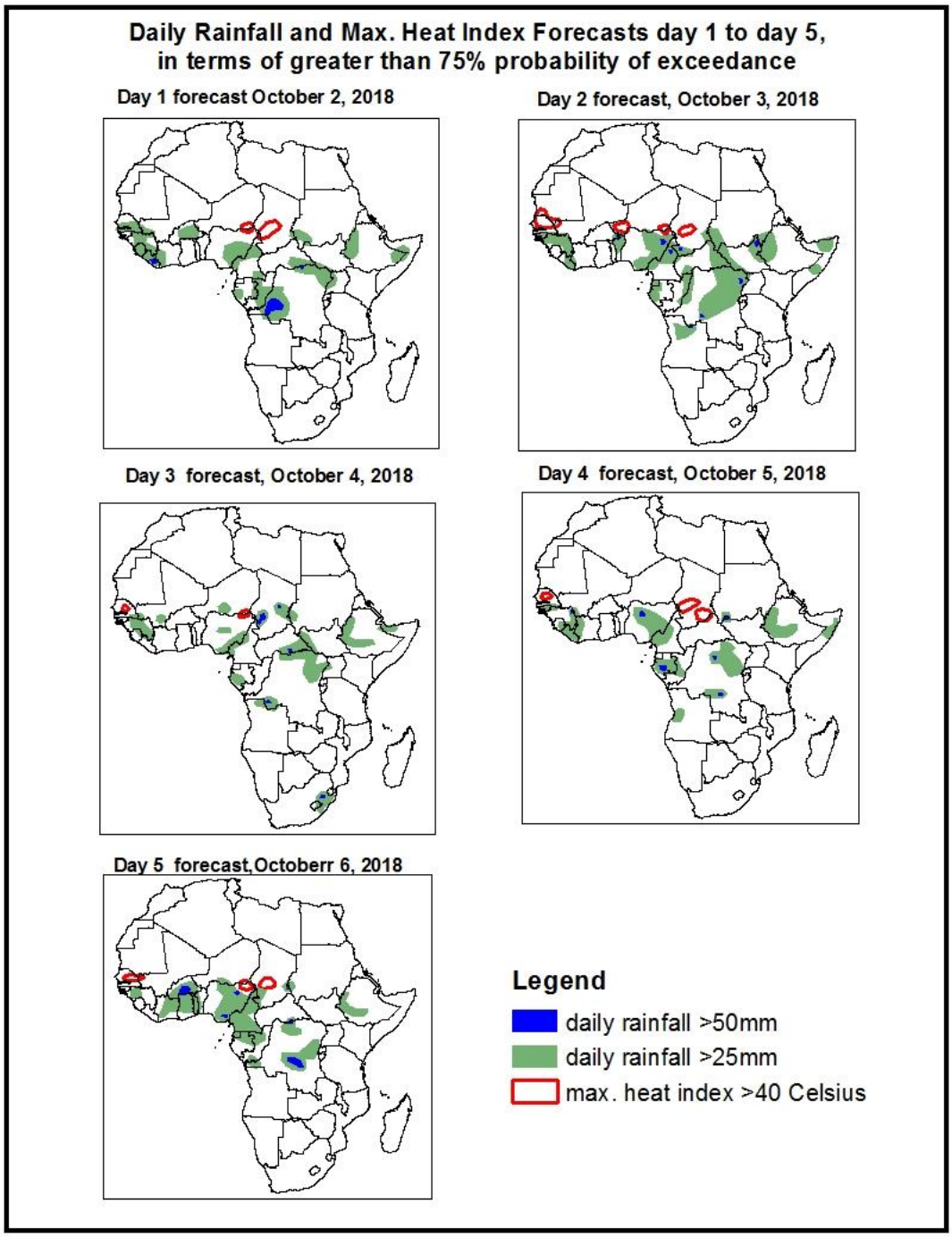
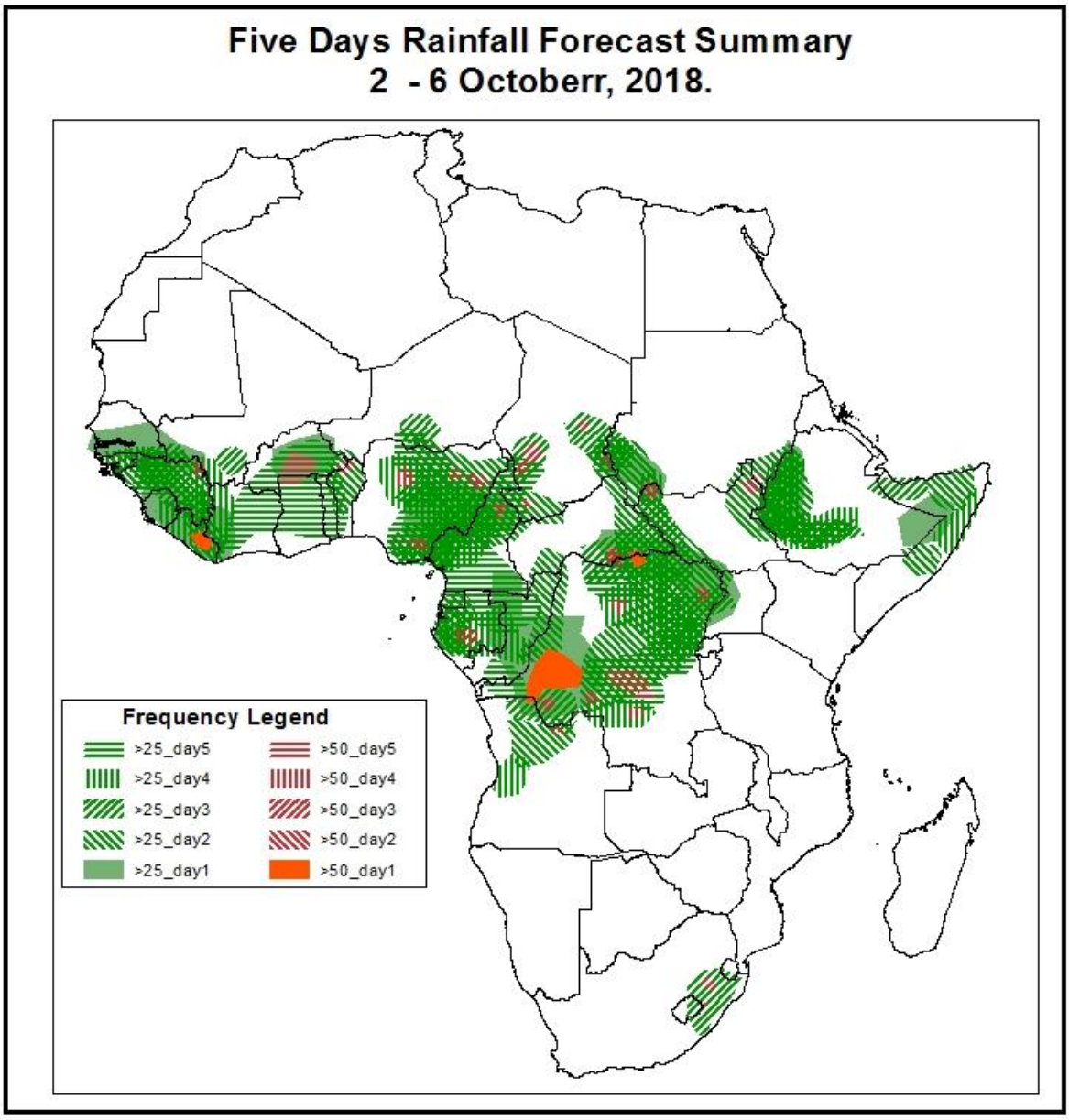
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *October 1*, 2018)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: Oct 2, –Oct 6, 2018)

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



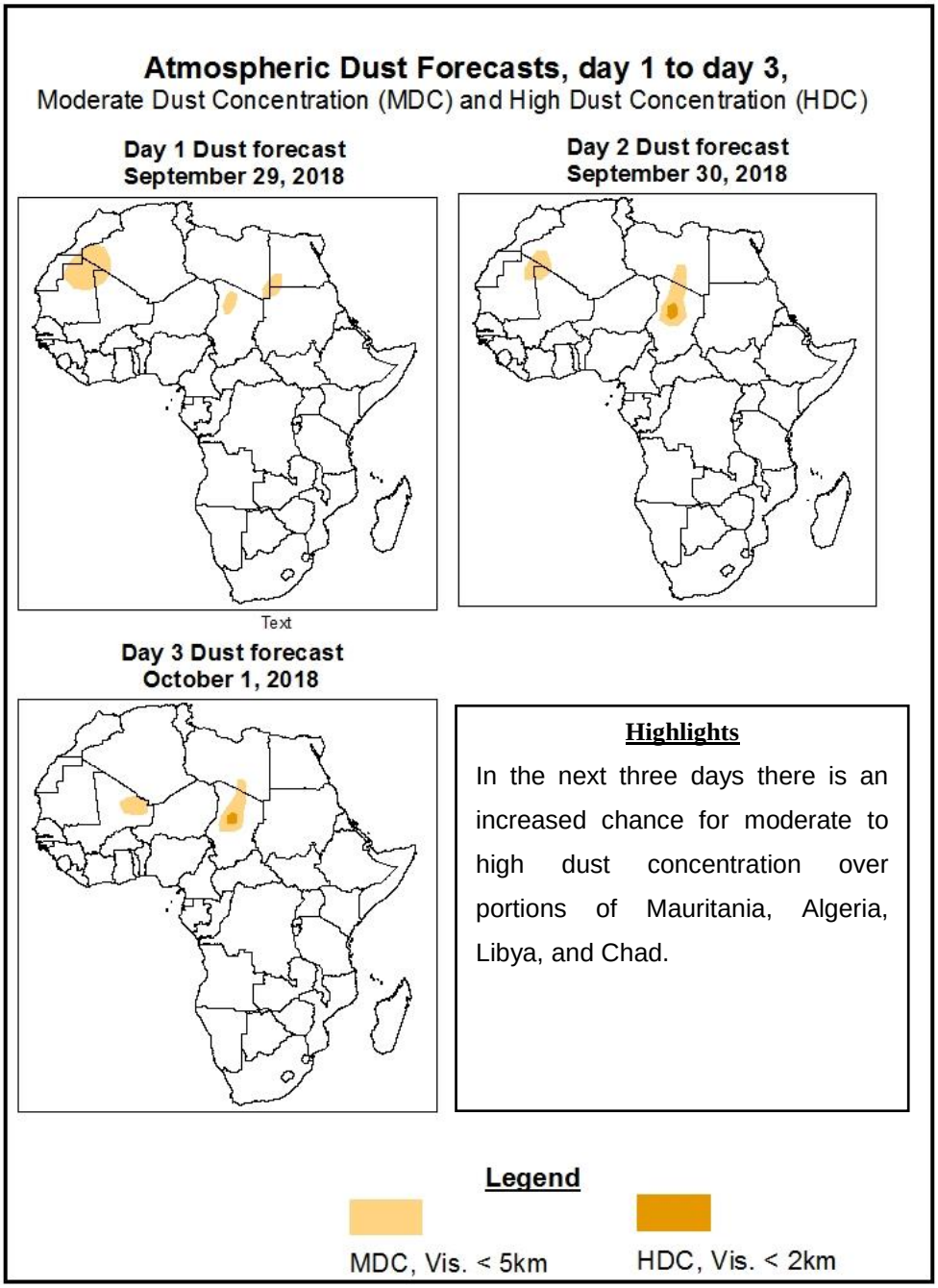


Highlights

- In the next five days, lower-level cyclonic systems across the Gulf of Guinea region and localized lower-level wind convergences over parts of the Sahel region, active lower-level wind convergences in the Congo Basin, Sudan, Ethiopia and Somalia are expected to enhance rainfall.
- There is an increased chance for 2 or more days of moderate to heavy rainfall over Guinea-Conakry, Sierra Leone, Liberia, Burkina Faso, parts of Nigeria and Cameroon, Gabon, Congo-Brazzaville, many parts of DRC, eastern CAR, parts of Sudan, and western Ethiopia.
- There is an increased chance for temperature heat index values to exceed 40^0C over local areas in Senegal, Niger, Nigeria, and Chad.

1.2. Atmospheric Dust Concentration Forecasts *(valid: Oct 2 – October 4, 2018)*

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: October 2 – October 6, 2018*

The Azores High Pressure system over the North Atlantic Ocean is expected to weaken slightly. Its central pressure value is expected to decrease from 10331hPa to 1031hPa during the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to weaken. Its central pressure value is expected to decrease from 1040hPa to 1036hPa through 120 hours.

.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to intensify gradually. Its central pressure value is expected to increase from 1024hPa to 1028hPa.

Thermal low across Angola and DRC is expected to maintain an average central pressure value of 1011hPa during the forecast the first half of the forecast period.

At 925hPa, dry strong northeasterly to easterly flow is expected to prevail over Western Sahara, Mauritania, northern Mali, parts of Algeria, Chad, Libya, northern Niger, and portions of Egypt and Sudan. In contrast, moist southwesterly to westerly monsoon flow from the Atlantic Ocean is expected to remain active across the Gulf of Guinea countries. Active East African monsoon flow from the Indian Ocean, with its associated lower-level convergence across equatorial eastern Africa is expected to prevail during the forecast period.

At 850hPa, a cyclonic trough is expected to prevail along the Gulf of Guinea coast during the forecast period. Localized lower-level wind Convergence across portions of the Sahel region, Sudan and Ethiopia and seasonal wind convergence in the Congo Basin are expected to remain active during the forecast period.

In the next five days, lower-level cyclonic systems across the Gulf of Guinea region and localized lower-level wind convergences over parts of the Sahel region, active lower-level wind convergences in the Congo Basin, Sudan, Ethiopia and Somalia are expected to enhance rainfall. There is an increased chance for 2 or more days of moderate to heavy rainfall over Guinea-

Conakry, Sierra Leone, Liberia, Burkina Faso, parts of Nigeria and Cameroon, Gabon, Congo-Brazzaville, many parts of DRC, eastern CAR, parts of Sudan, and western Ethiopia. There is an increased chance for temperature heat index values to exceed 40^0C over local areas in Senegal, Niger, Nigeria, and Chad.

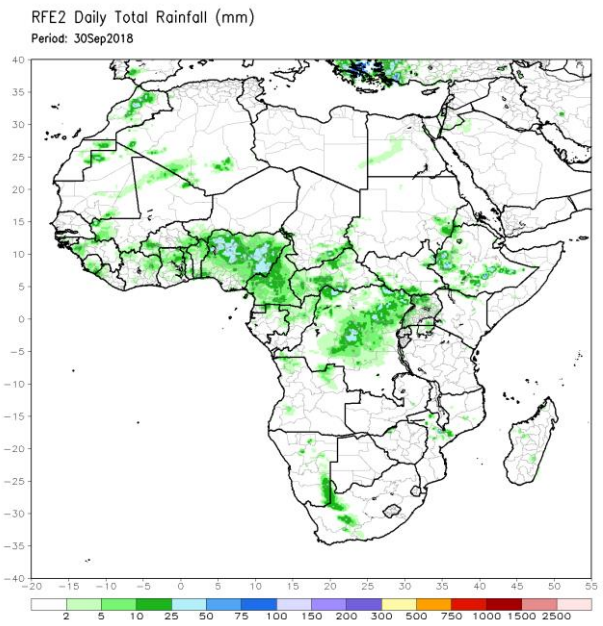
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (September 30, 2018)

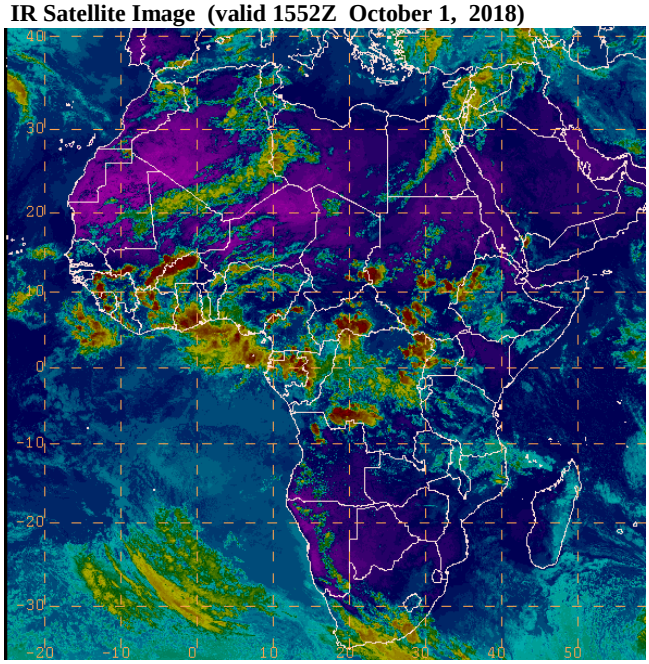
Daily rainfall totals exceeded 25mm over local over many parts of Nigeria, and local areas in DRC and Ethiopia.

2.2. Weather assessment for the current day (*October 1*, 2018)

Intense convective clouds are observed over portions of the Gulf of Guinea and Central Africa countries.



IR Satellite Image (valid 1552Z October 1, 2018)



Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover and ITD (right) based on IR Satellite image and 925hPa wind.

Authors: Nicholas Jacob Eigege (Nigerian Meteorological Agency —NiMet) / CPC-African Desk;*Nicholas.jacob@noaa.gov*