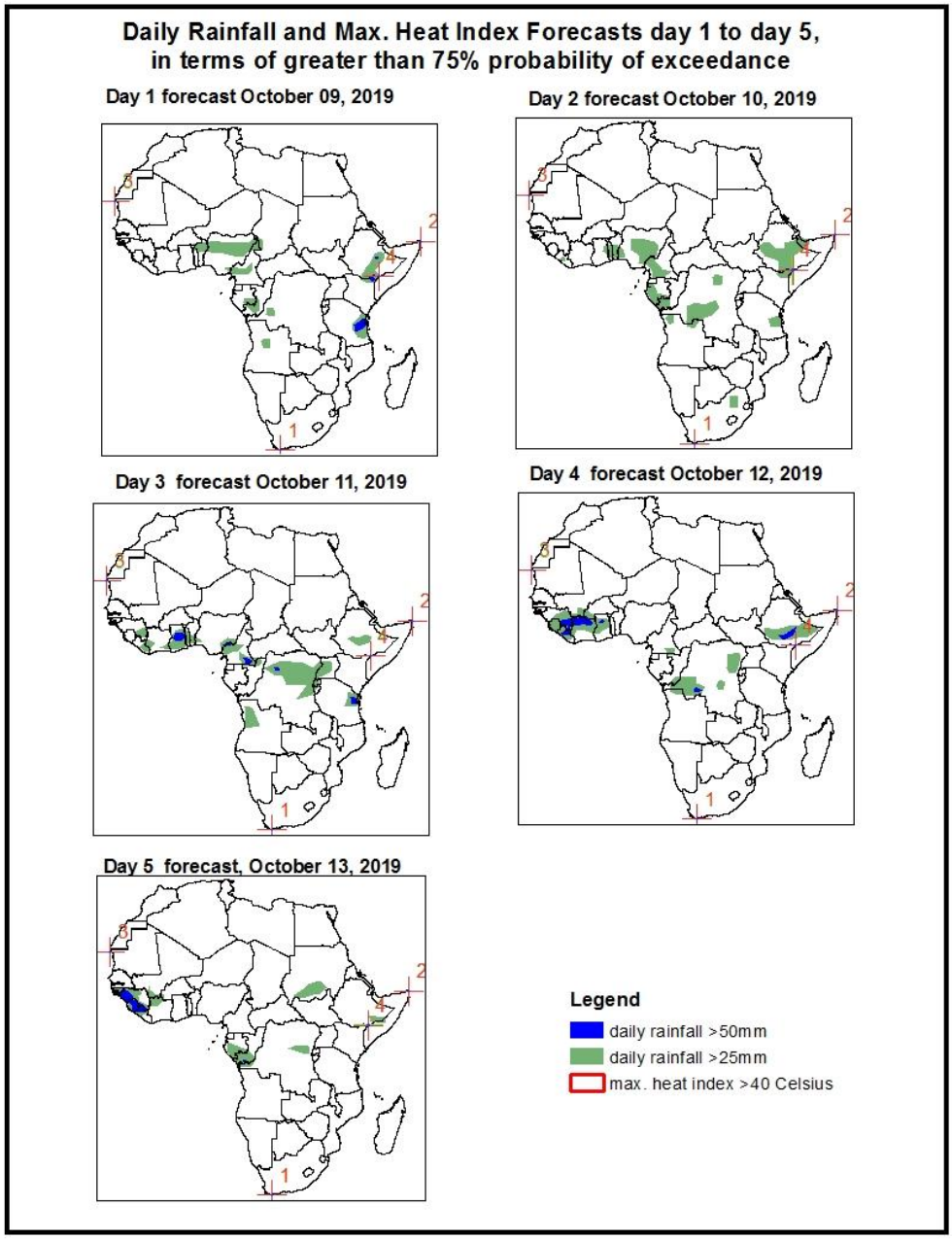
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

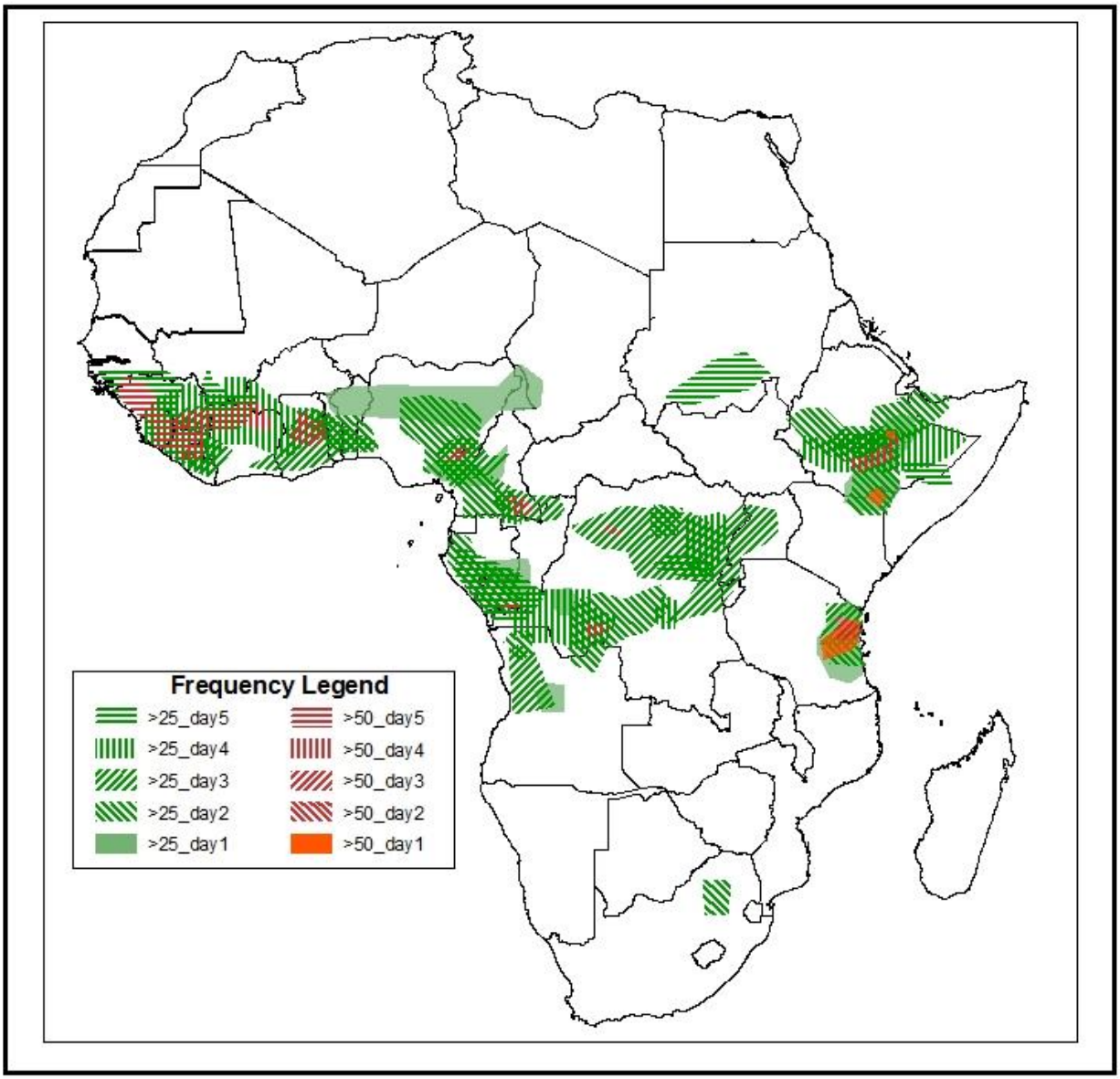
1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on October 08, 2019)

1.1. Daily Rainfall and Maximum Heat Index Forecasts *(valid: 09 October – 13 October, 2019)*

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



Five Days Rainfall Forecast Summary
October 09 - October 13, 2019

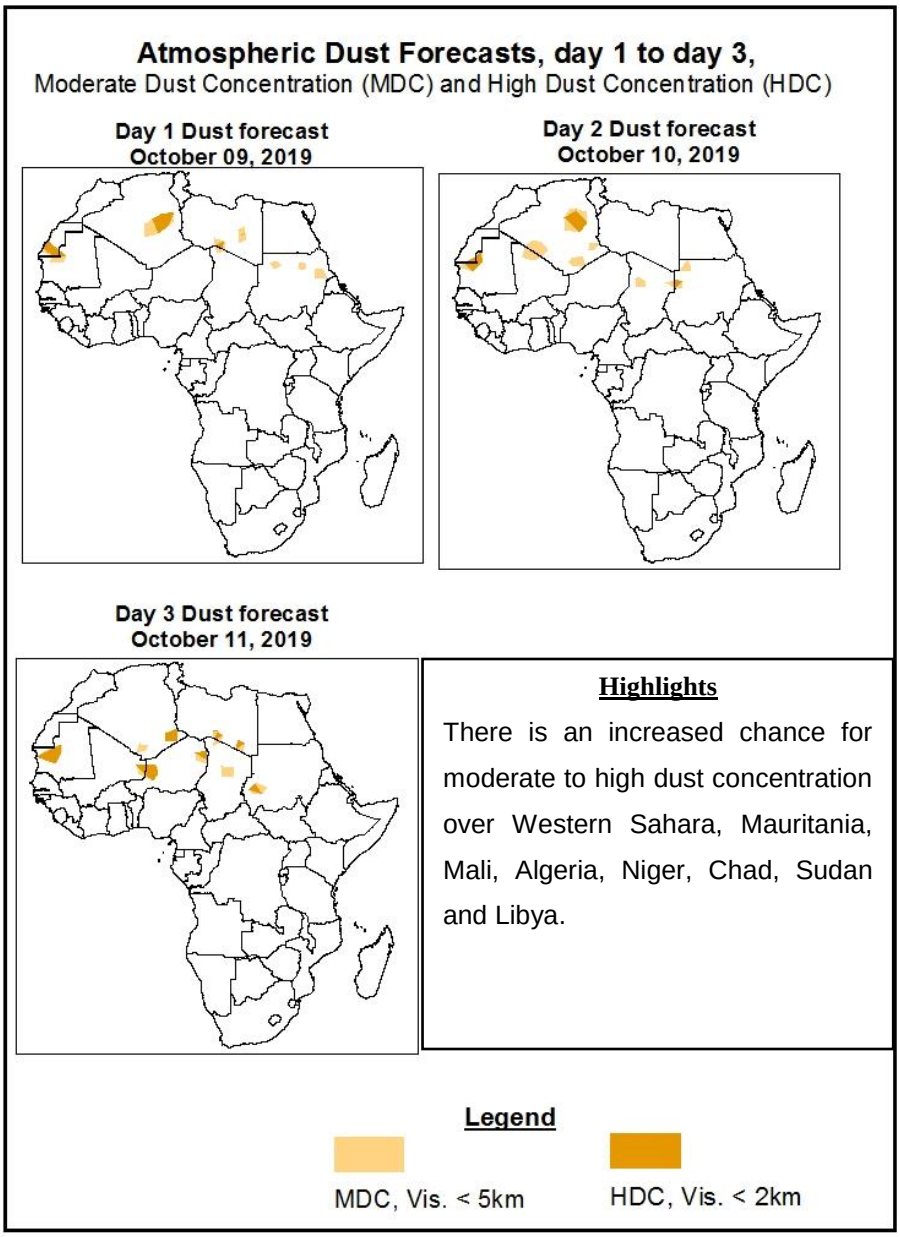


Highlights

- The monsoon flow from the Atlantic Ocean with its associated lower-level convergence is expected to enhance rainfall over portions of West and Central Africa. Onshore flow from the Indian Ocean with it associated lower-level convergence is also expected to enhance rainfall over parts of the Greater Horn of Africa.
- At least 25mm for two or more days is likely over portions of Guinea-Bissau, Guinea, Sierra-Leone, Liberia, Southern Mali, Cote D'Ivoire, Ghana, Togo, Benin, Southwestern Burkina Faso, Nigeria, Cameroon, DRC, Republic of Congo, Gabon, Rwanda, Burundi, Eastern Tanzania, Southern South Sudan, Uganda, Somalia, Ethiopia and Northern South Africa.
- There is an increased chance for daily rainfall to exceed 50mm over southwestern Guinea, Liberia, Sierra-Leone, northern Cote D'Ivoire, Ghana, Nigeria, Cameroon, Gabon, DRC, Tanzania and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts *(valid: 09 Oct – 11 Oct 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: 09 October –13 October 2019*

The Azores High Pressure system over the Northeast Atlantic is expected to weaken with its central pressure value decreasing from 1033hPa to 1020hPa in the first half part of the forecast period and then decreasing from 1020hPa to 1033hPa during the second part of the forecast period.

The St. Helena High Pressure system over Southeast Atlantic Ocean expected to weaken, with its central pressure value decreasing from 1030hPa to 1022hPa during the forecast period.

The Mascarene High Pressure system over Southwest Indian Ocean is expected to weaken while shifting eastward, with its central pressure value decreases from 1031hPa to 1025hPa during the forecast period.

Thermal low across the Sahel region is expected to slightly deepen with its central pressure value decreasing while shifting westward from 1006hPa to 1004hPa during the forecast period.

At 925-hPa level, strong dry northerly flow is expected to prevail across Northwest Africa. In other hand, moist southwesterly flow from the Atlantic Ocean is expected to prevail across the Gulf of Guinea and the Sahel regions, the neighboring areas of Central Africa and southeastern part of Great Horn of Africa.

At 850-hPa, meridional wind convergence is expected to remain active in the Lake Victoria region and neighboring areas and the neighboring areas of Central Africa during the forecast period. Converging winds over coastal areas of East Africa (Tanzania and Kenya) are likely to maintain occasional enhanced to heavy precipitation over these areas. Otherwise, dry northeasterly flow from North Africa is expected to prevail across southwestern Sahel region that will be reducing precipitations in this area.

At 700-hPa, a broad area of anticyclonic circulation is expect to remain while shifting westward over North Africa. Quite significant divergence over central and Great Horn of

Africa underscores the depth of the convergent wind system over. The convergence is likely to favor deep convection over these areas.

At 500-hpa, wind speed associated with easterly flow is expected to exceed 30kts across the Northern Africa, Sahel and West Africa region during the forecast period.

The monsoon flow from the Atlantic Ocean with its associated lower-level convergence is expected to enhance rainfall over portions of West and Central Africa. Onshore flow from the Indian Ocean with it associated lower-level convergence is also expected to enhance rainfall over parts of the Greater Horn of Africa. At least 25mm for two or more days is likely over portions of Guinea-Bissau, Guinea, Sierra-Leone, Liberia, Southern Mali, Cote D'Ivoire, Ghana, Togo, Benin, Southwestern Burkina Faso, Nigeria, Cameroon, DRC, Republic of Congo, Gabon, Rwanda, Burundi, Eastern Tanzania, Southern South Sudan, Uganda, Somalia, Ethiopia and Northern South Africa. There is an increased chance for daily rainfall to exceed 50mm over southwestern Guinea, Liberia, Sierra-Leone, northern Cote D'Ivoire, Ghana, Nigeria, Cameroon, Gabon, DRC, Tanzania and Ethiopia.

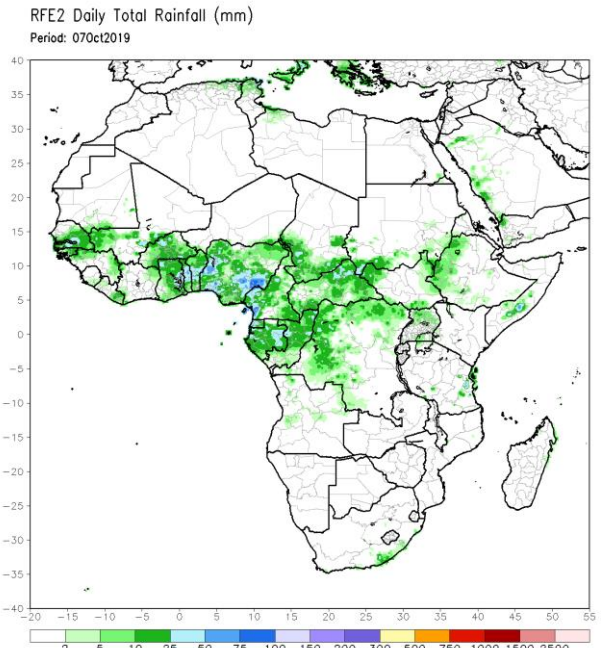
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (Oct 07, 2019)

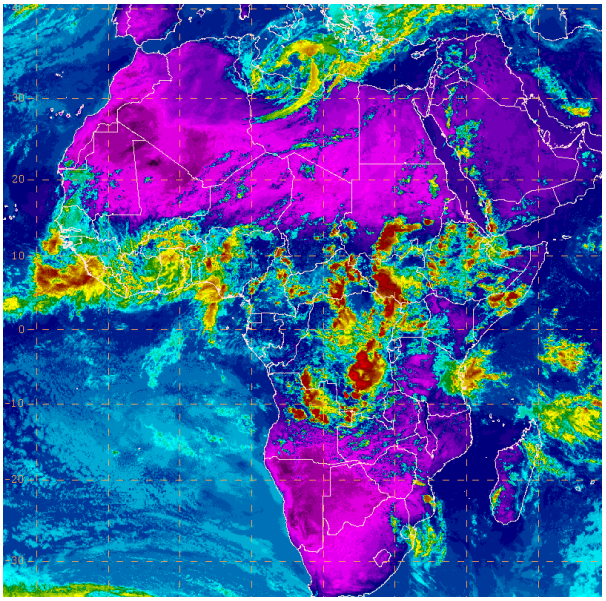
Daily rainfall amount exceeded 25mm over Southeastern Mali, Central of Senegal, Ghana, Togo, Benin, Nigeria, Cameroon, Gabon, Republic of Congo, CAR, Southern Sudan and Ethiopia and exceeded 50mm over Nigeria and Cameroon.

2.2. Weather assessment for the current day (Oct 08, 2019)

Deep convective clouds are observed over far West Africa region, Central Africa countries and local areas in the Greater Horn of Africa.



IR Satellite Image (valid 1352 October 08, 2019)



Author: DIALLO Ahmadou Al. (CPC-African Desk/Guinea Meteorological Service /DNM)