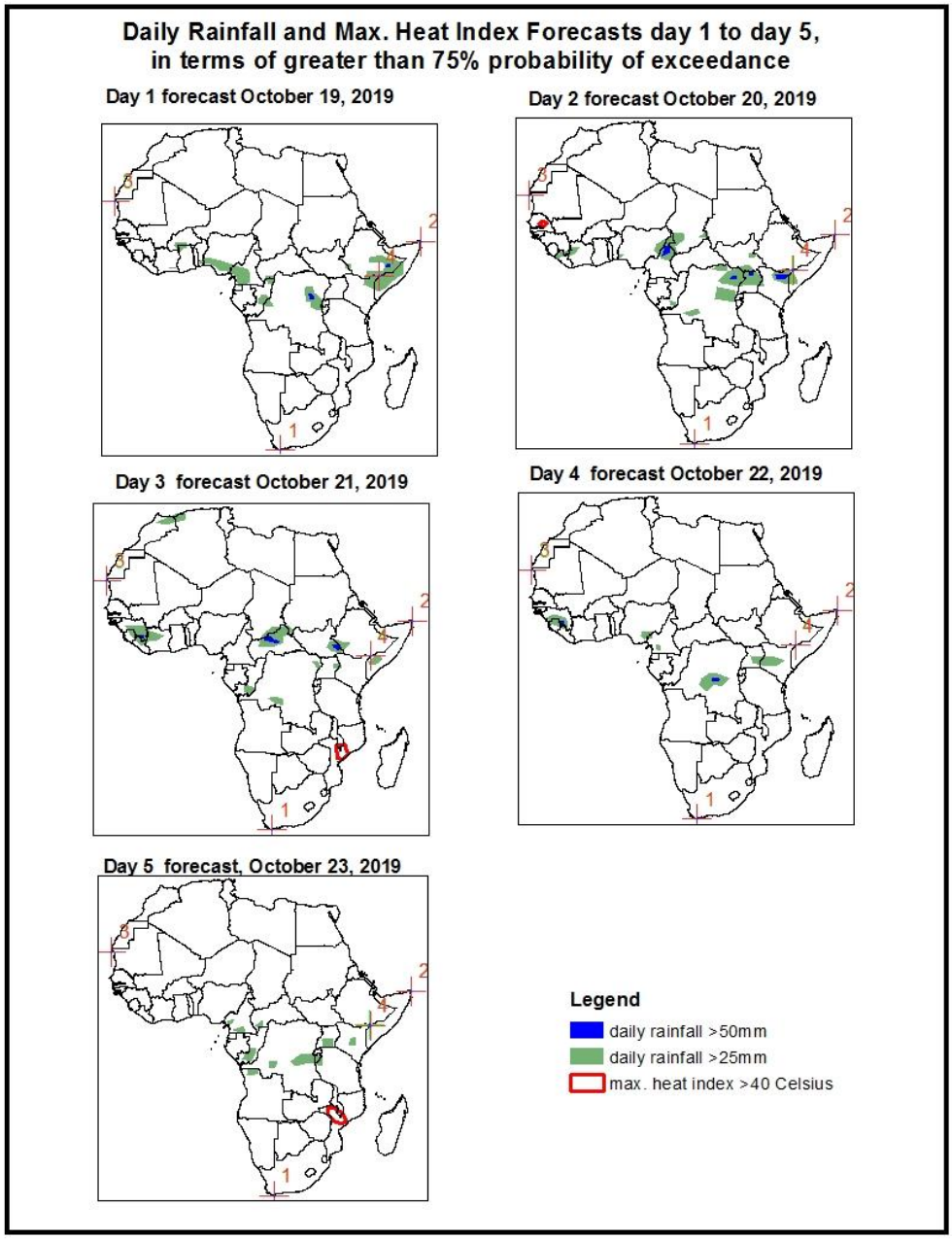
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

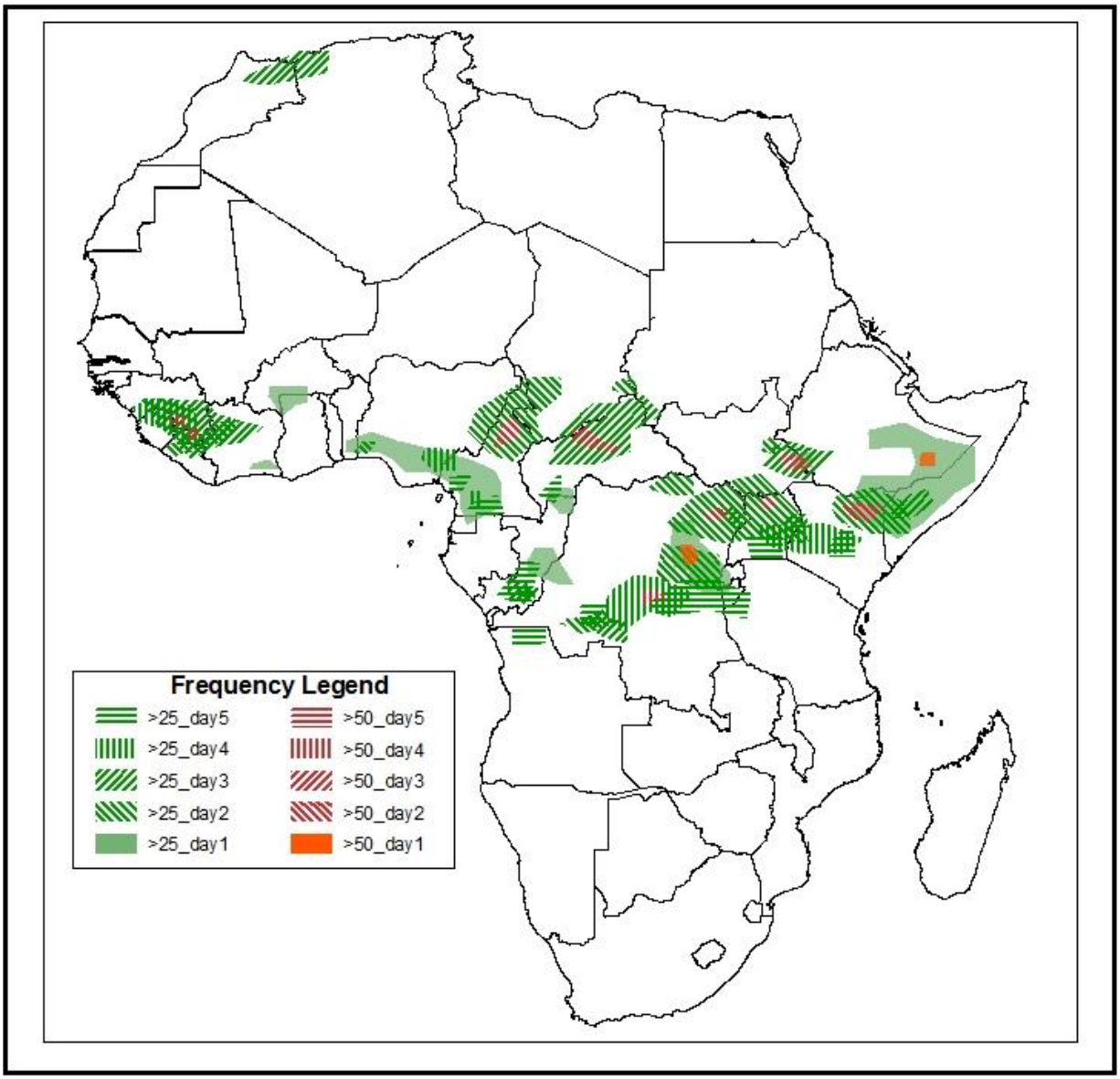
1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on October 18, 2019)

1.1. Daily Rainfall and Maximum Heat Index Forecasts *(valid: 19 October – 23 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 19 - October 23, 2019

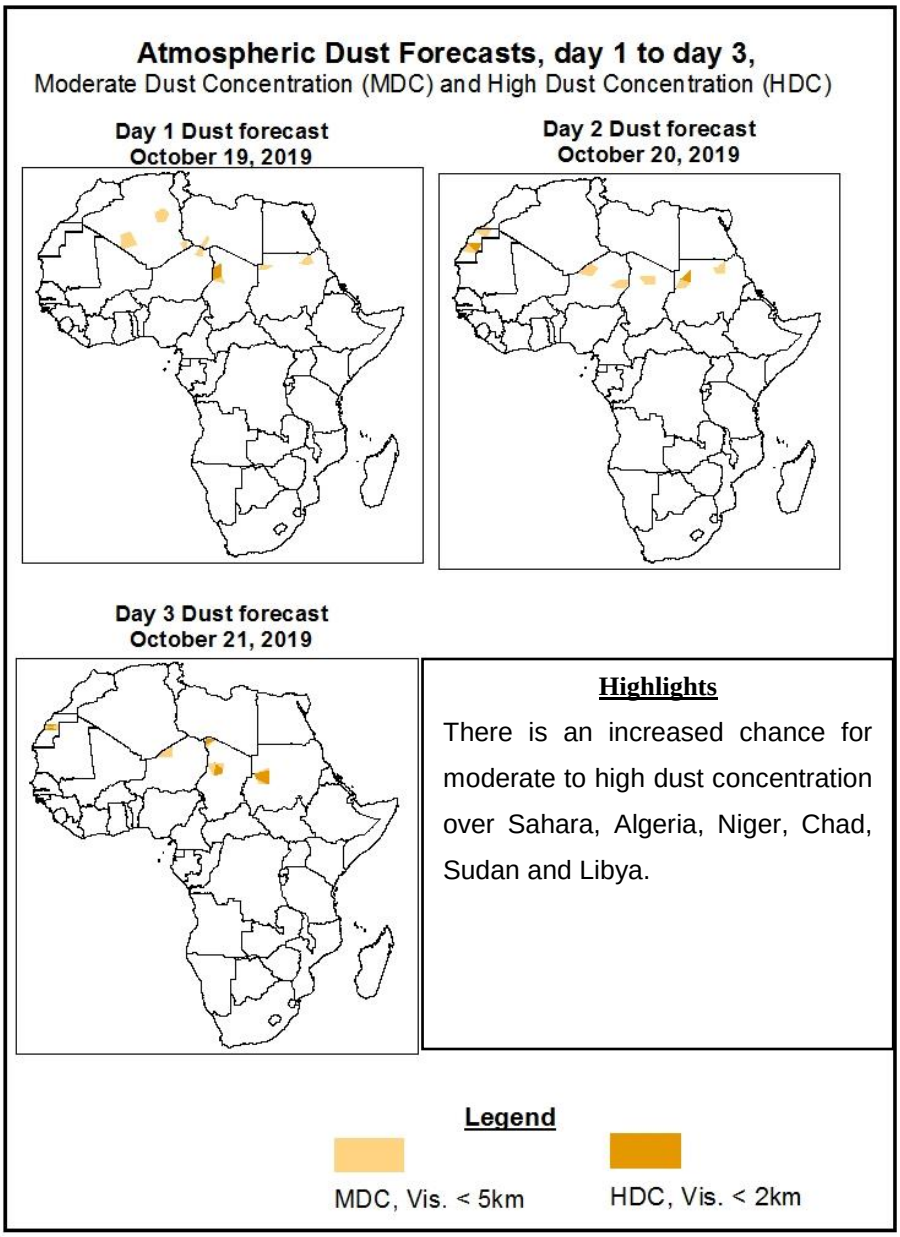


Highlights

- The monsoon flow from the Atlantic Ocean with its associated lower-level convergence is expected to enhance rainfall over eastern Gulf of Guinea and Central Africa countries. Onshore flow from the Indian Ocean with its 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, Liberia, Sierra-Leone, Cote D'Ivoire, Nigeria, Cameroon, DRC, Republic of Congo, CAR, southern Chad, Uganda, northern Tanzania, northern Kenya, southwestern Somalia, eastern Ethiopia, southern South Sudan, southern Sudan and Angola.
- There is an increased chance for daily rainfall to exceed 50mm over Guinea, DRC, CAR, Cameroon, Kenya, Uganda and South Sudan.
- There is an increased chance for daily maximum heat index to exceed 40^{o}C over Senegal, Mozambique and Malawi.

1.2. Atmospheric Dust Concentration Forecasts *(valid: 19 Oct – 21 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: 19 October –23 October 2019*

The Azores High Pressure system over the Northeast Atlantic is expected to strengthen with its central pressure value increasing from 1025hPa to 1029hPa during the forecast period.

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The St. Helena High Pressure system over Southeast Atlantic Ocean expected to weaken while shifting eastward, with its central pressure value decreases from 1029hPa to 1021hPa during the forecast period.

The Mascarene High Pressure system over Southwest Indian Ocean is expected to strengthen while shifting eastward, with its central pressure value increases from 1024hPa to 1026hPa during the forecast period.

Thermal low across the Sahel region is expected to slightly deepen with its central pressure value decreasing from 1008hPa to 1006hPa while shifting westward during the forecast period.

At 925-hPa level, strong dry northerly flow is expected remain active and prevail across southern Sahel. On the other hand, moist southwesterly flow from the Atlantic Ocean is expected to prevail across the Gulf of Guinea and the southern Sahel regions, the neighboring areas of Central Africa, eastern part of Great Horn of Africa and eastern coast South Africa regions.

At 850-hPa, meridional wind convergence is expected to remain active in the Lake Victoria region and the neighboring areas of Central Africa, over DRC, Angola, southern Chad during the forecast period. Again, no pronounced convergent wind patterns are expected over southern Sahel and hence the likelihood of decreased convective activities over there.

Converging winds over coastal areas of East Africa (Tanzania, Kenya, Uganda and Ethiopia) are likely to maintain occasional enhanced to heavy precipitation over these areas.

At 700-hPa, a broad area of anticyclonic circulation is expect to remain while shifting westward over Northwestern Africa. Mainly easterly flow is expected to continue steer convective activities over central Africa regions. Meridional wind divergence is expected to remain active over southern Nigeria, Cameroon, Gabon; this is likely to be advecting convective activities towards west.

The monsoon flow from the Atlantic Ocean with its associated lower-level convergence is expected to enhance rainfall over eastern Gulf of Guinea and Central Africa countries. Onshore flow from the Indian Ocean with its 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, Liberia, Sierra-Leone, Cote D'Ivoire, Nigeria, Cameroon, DRC, Republic of Congo, CAR, southern Chad, Uganda, northern Tanzania, northern Kenya, southwestern Somalia, eastern Ethiopia, southern South Sudan, southern Sudan and Angola. There is an increased chance for daily rainfall to exceed 50mm over Guinea, DRC, CAR, Cameroon, Kenya, Uganda and South Sudan.

There is an increased chance for daily maximum heat index to exceed 40oC over Senegal, Mozambique and Malawi.

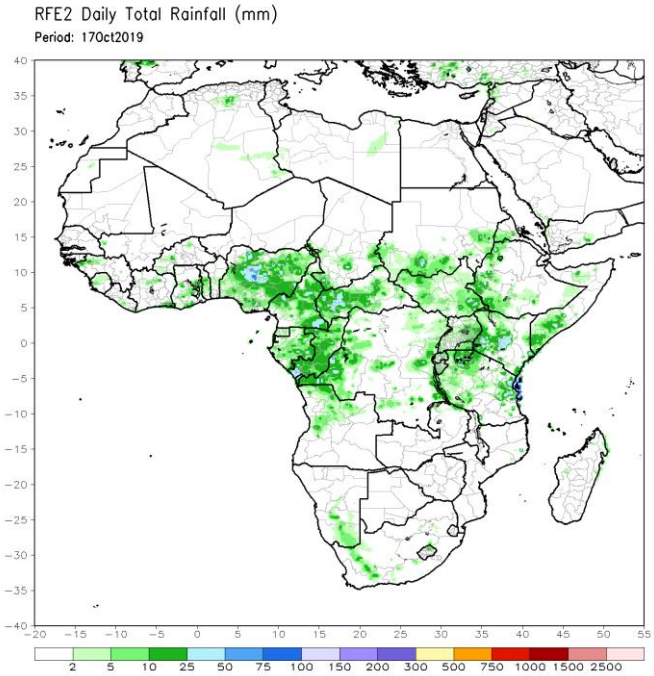
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (Oct 17, 2019)

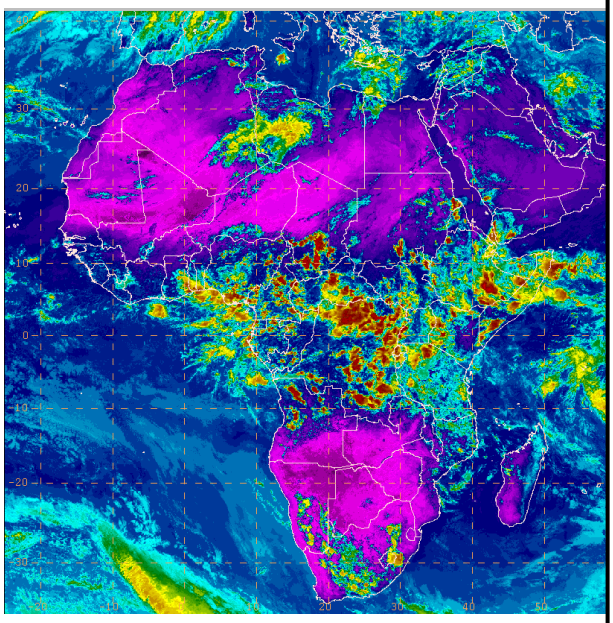
Daily rainfall amount exceeded 25mm over Nigeria, Cameroon, Central African Republic, Republic of Congo, Democratic Republic of Congo, Chad, Sudan, South Sudan, Kenya and Tanzania and exceeded 50mm over Nigeria and eastern Coast of Tanzania.

2.2. Weather assessment for the current day (Oct 18, 2019)

Deep convective clouds are observed over portions of West Africa, Central Africa, eastern Africa and portions of South Africa.



IR Satellite Image (valid 1352 October 18, 2019)



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