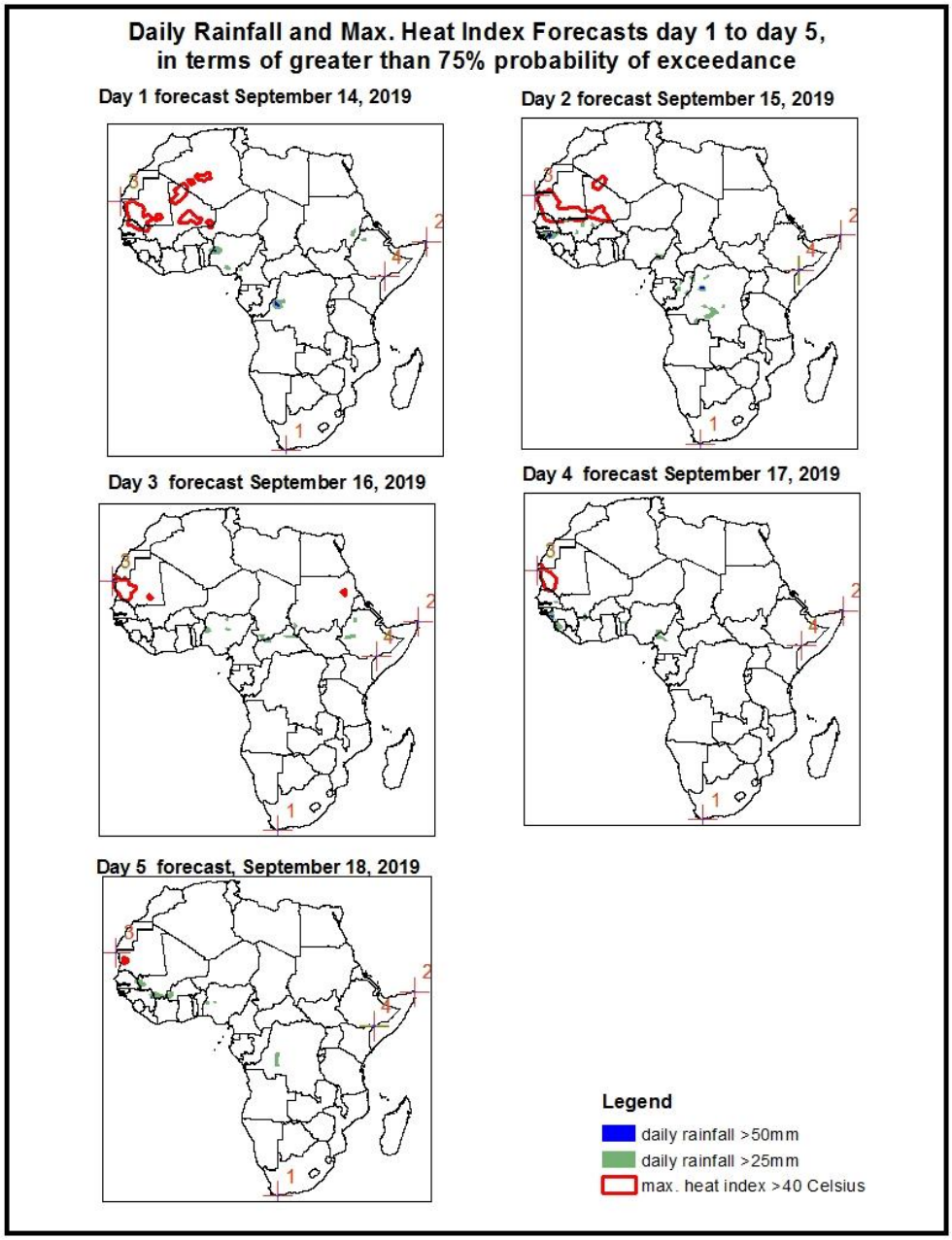
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

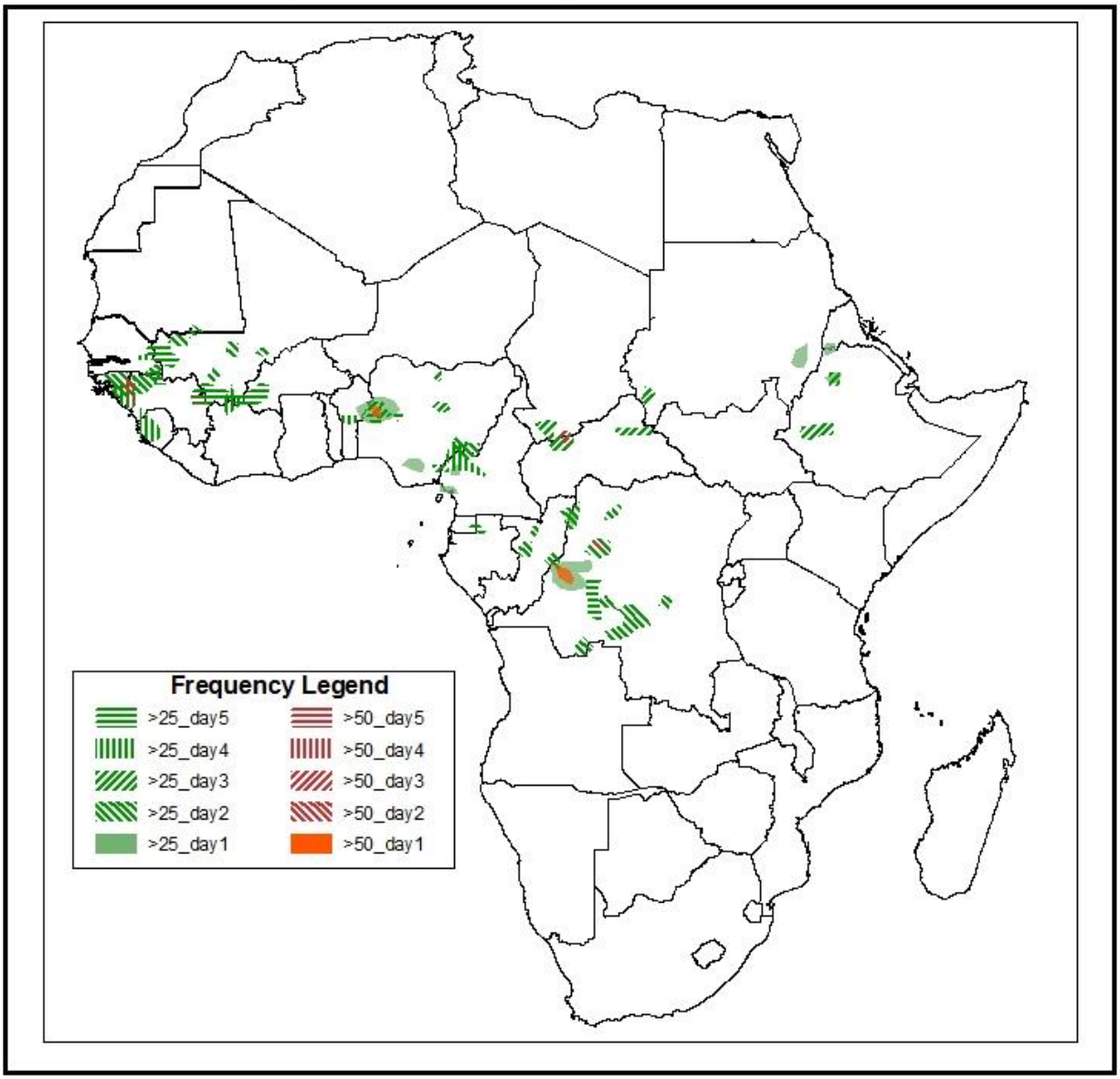
1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on September 13, 2019)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: 14 – 18 September, 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
September 14 - September 18, 2019

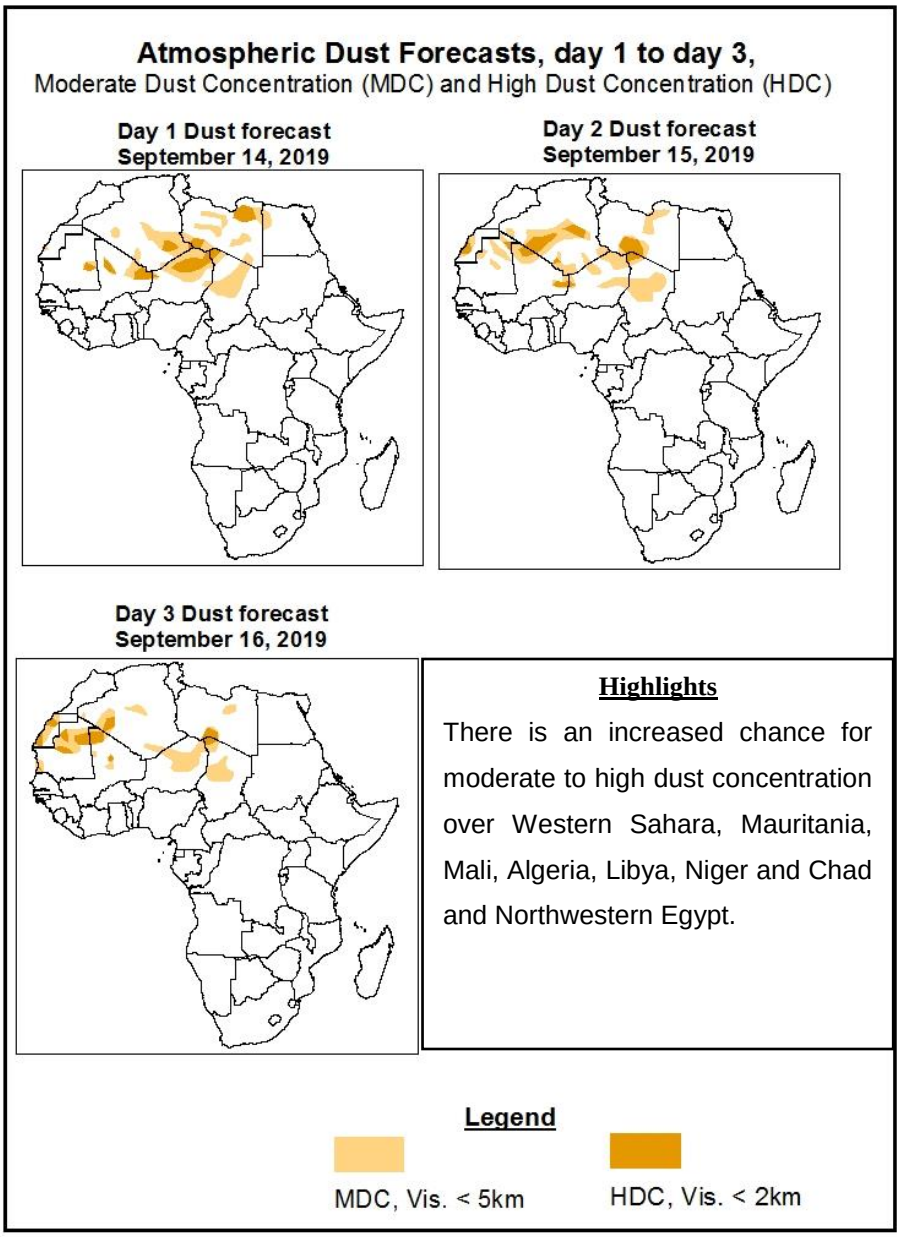


Highlights

- The monsoon flow from the Atlantic Ocean with its associated lower-level convergence, and westward propagating meso-scale convective systems are expected to enhance rainfall over portions of Western Africa and Central Africa countries.
- At least 25mm for two or more days is likely over portions of Southeast Senegal, Mali, eastern and Northwestern Guinea, Sierra Leone, Southwest Burkina Faso, some portion of northern Cote d'Ivoire, Benin, Nigeria, northern Cameroon, Chad, Eastern Sudan, Ethiopia, CAR, RC, DRC. There is an increased chance for daily rainfall to exceed 50mm over Western Guinea, Western Nigeria, Northern CAR and Western RDC.
- There is an increased chance for daily maximum heat index to exceed 40^{o}C over Northern Senegal, Mauritania, Algeria, Mali, portion of Western Niger and Southern Western Sahara.

1.2. Atmospheric Dust Concentration Forecasts *(valid: 14 Sept – 16 Sept 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: 14 September – 18 September 2019*

The Azores High Pressure system over the Northeast Atlantic is expected to weaken with its central pressure value decreasing from 1036hPa to 1019hPa 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 1021hPa to 1036hPa during the forecast period.

The Mascarene High Pressure system over Southwest Indian Ocean is expected to strengthen with its central pressure value increasing from 1024hPa to 1031hPa during the forecast period.

Thermal low across the Sahel region is expected to deepen with its central pressure value decreasing from 1009hPa to 1007hPa.

At 925-hPa level, Northeasterly winds is expected to strengthen across Northwest Africa, and Monsoon southwesterly winds are expect to maintain their influence in the area of Gulf of Guinea and covering much of West Africa and the Sahel regions, the neighboring areas of Central Africa characterized by isolated moderate to enhanced precipitation.

At 850-hPa, Monsoon winds are expected to continue converging along the Gulf of Guinea as well as over parts of West Africa, Central Africa, and neighboring countries, influencing isolated to scattered precipitation over these areas. Converging winds are likely to be maintained over the Eastern Africa.

At 700-hPa, a broad area of anticyclonic flow is expected to prevail across much of Northwest and West Africa during the forecast period.

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

The monsoon flow from the Atlantic Ocean with its associated lower-level convergence, and westward propagating meso-scale convective systems are expected to enhance rainfall over portions of Western Africa and Central Africa countries. At least 25mm for two or more days is likely over portions of Southeast Senegal, Mali, eastern and Northwestern Guinea, Sierra Leone, Southwest Burkina Faso, some portion of northern Cote d'Ivoire, Benin, Nigeria, northern Cameroon, Chad, Eastern Sudan, Ethiopia, CAR, RC, and DRC. There is an increased chance for daily rainfall to exceed 50mm over Western Guinea, Western Nigeria, Northern CAR and Western RDC. There is an increased chance for daily maximum heat index to exceed 40^{o}C over Northern Senegal, Mauritania, Algeria, Mali, portion of Western Niger and Southern Western Sahara.

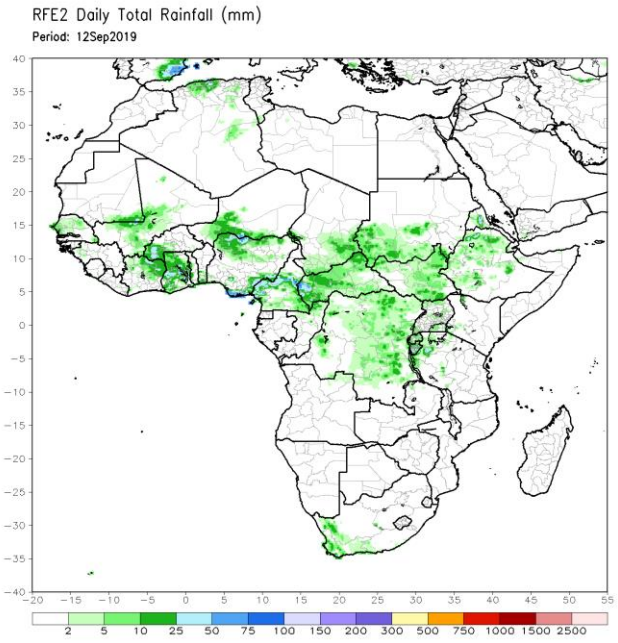
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (Sept 12, 2019)

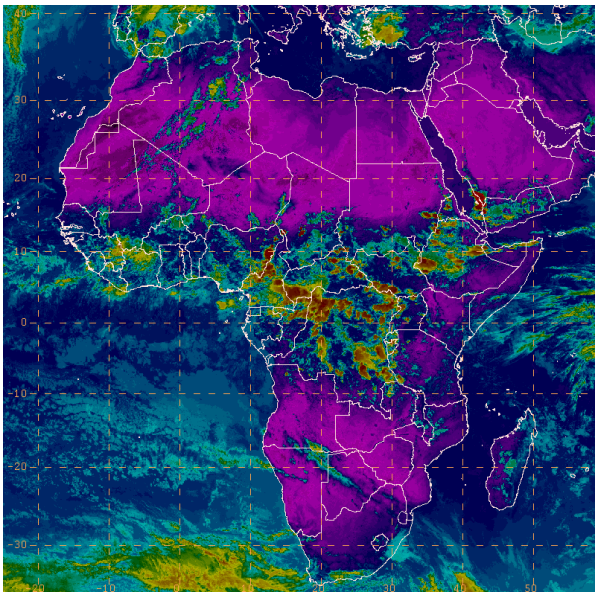
Daily rainfall amount exceeded 25mm over Northern Algeria, Mali, Cote d'Ivoire, Southern Niger, Northern and Southern Nigeria, Cameroon, Western CAR and exceeded 50mm over Northern and Southern Nigeria, Cameroon, Western CAR.

2.2. Weather assessment for the current day (Sept 13, 2019)

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



IR Satellite Image (valid 1352 September 13, 2019)



Author: Denise de Pina (CPC-African Desk/ Cabo Verde Meteorological Service /INMG)