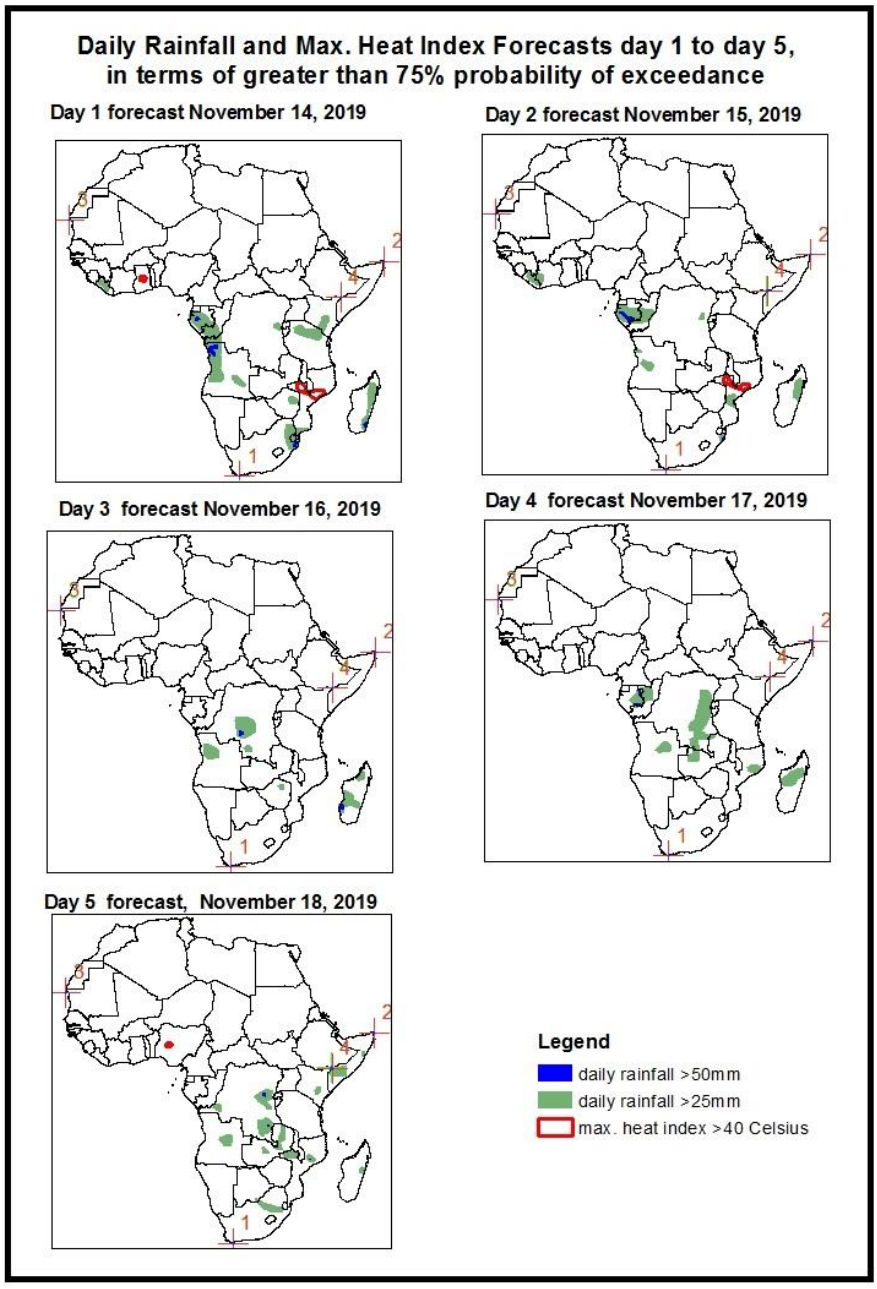
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

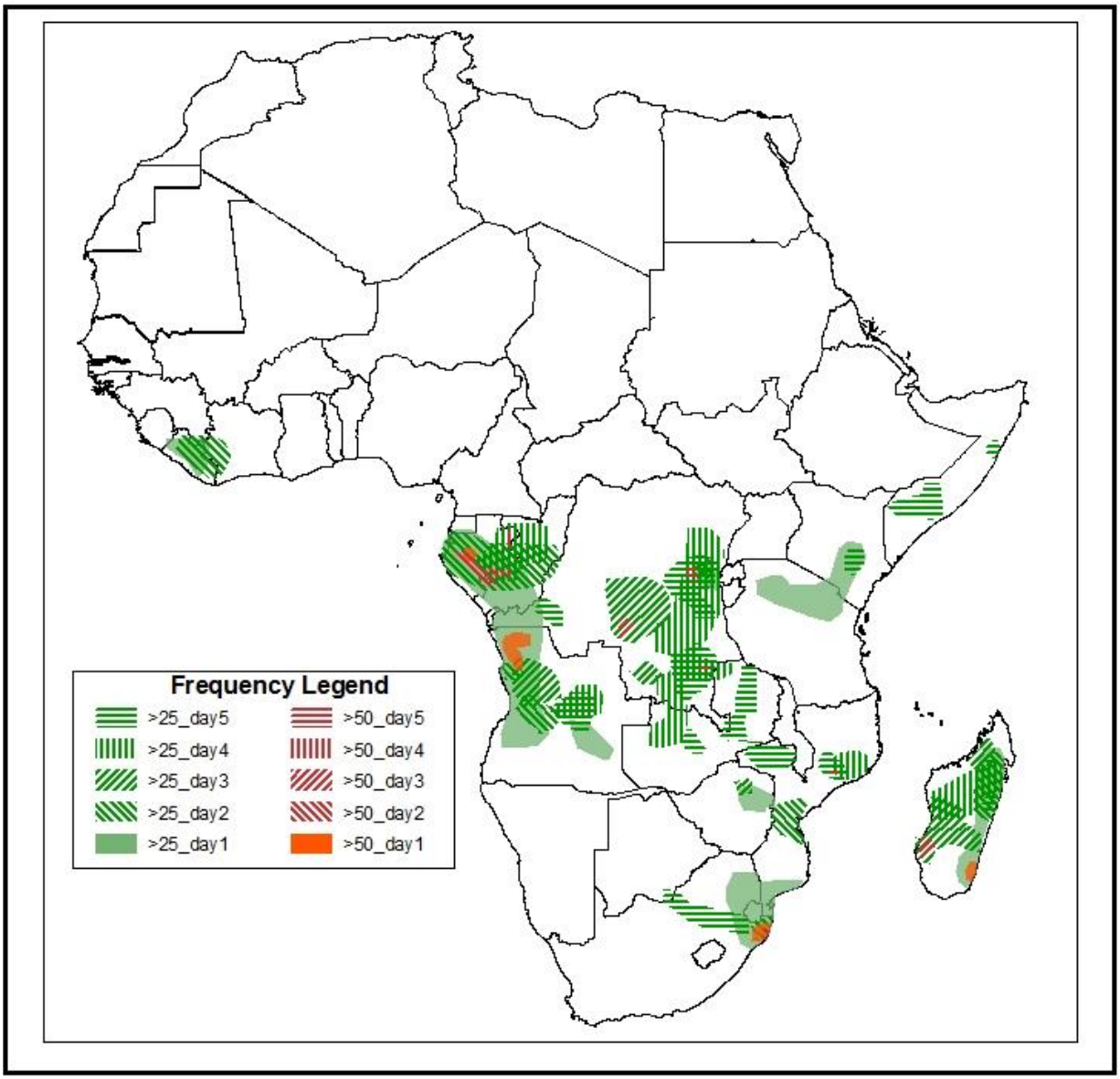
1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on November 13, 2019)

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



Highlights

- Westerly flow from the Atlantic Ocean with its associated lower-level convergence is expected to enhance rainfall over the western portions of equatorial Africa. Onshore flow from the Indian Ocean with its associated lower-level convergence is expected to enhance rainfall across portions of Southeast Africa.
- At least 25mm for two or more days is likely over portions of Liberia, Cote D'ivoire, Gabon, Republic of Congo, DRC, Angola, Kenya, Somalia, Zambia, Zimbabwe, Mozambique, Madagascar, Botswana, Eswatini and South Africa.
- There is an increased likelihood for daily rainfall to exceed 50mm over local areas in Gabon, Republic of Congo, Angola, DRC, Mozambique, South Africa and Madagascar.
- There is an increased chance for daily maximum heat index to exceed 40^{o}C over Nigeria, Ghana and Mozambique.

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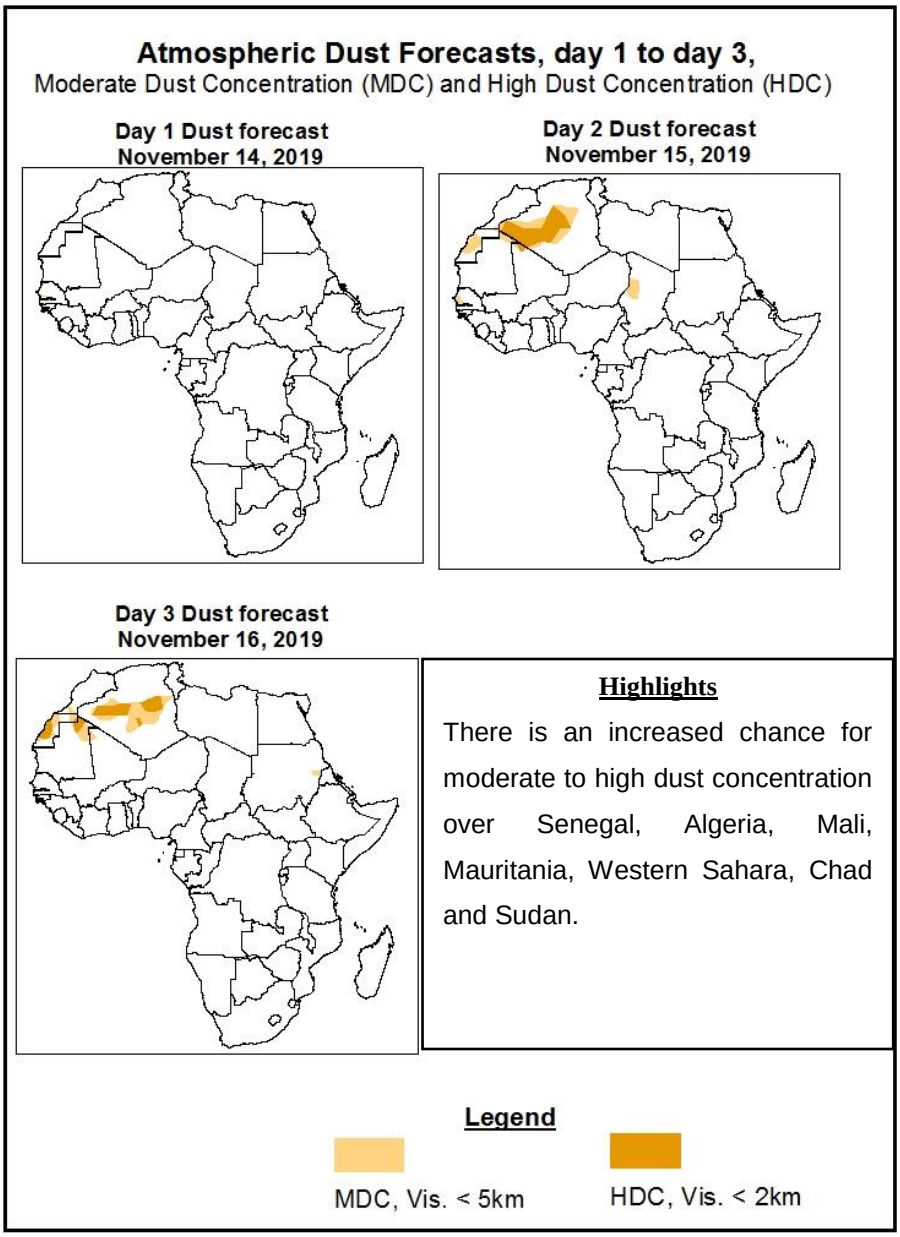
1.2. Atmospheric Dust Concentration Forecasts (valid: 14 Nov – 16 Nov 2019)

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 November –18 November 2019*

The Azores High Pressure system over the Northeast Atlantic is expected to remain constant with its central pressure value at 1034hPa during the first two days of the forecast period and then it is expected to weaken with its central pressure value decreasing from 1034hPa to 1027hPa during the remainder of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to intensify while shifting eastwards with its central pressure value increasing from 1026hPa to 1033hPa for the first three days of the forecast period and then it is expected to slightly weaken from 1033hPa to 1029hPa during the rest of the forecast period.

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The Mascarene High Pressure system over Southwest Indian Ocean is expected to weaken while shifting eastwards with its central pressure value decreasing from 1037hPa to 1023hPa for the first three days of the forecast period and then it is expected to strengthen from 1023hPa to 1028hPa during the remainder of the forecast period.

At 925-hPa level, moist southwesterly flow from the Atlantic Ocean is expected to prevail across the Gulf of Guinea, southern Sahel regions and the neighboring areas of Central Africa. On the other hand, easterly flow from the Indian Ocean with its low-level convergence is expected to prevail across the Great Horn of Africa and parts of Central Africa while the northeasterly flow is expected to prevail across the eastern parts of southern Africa. Similarly, the southeasterly flow from the southern Atlantic Ocean with its low-level convergence is expected to prevail across the western parts of southern Africa.

At 850-hPa level, strong dry northerly flow is expected remain active and prevail across southern Sahel countries. On the other hand, meridional and seasonal wind convergence is expected to remain active across the Lake Victoria region, Congo Basin and the neighboring areas of Central Africa, Cameroon, Gabon, Angola, CAR and Sudan during the forecast period. Converging winds over Kenya, Tanzania, Uganda, Ethiopia, South Sudan, Mozambique, Malawi, Zimbabwe, Zambia, Namibia, Botswana, Madagascar and South Africa; these are likely to maintain the occasional enhanced to moderate precipitation over these areas.

Westerly flow from the Atlantic Ocean with its associated lower-level convergence is expected to enhance rainfall over the western portions of equatorial Africa. Onshore flow from the Indian Ocean with its associated lower-level convergence is expected to enhance rainfall across portions of Southeast Africa. At least 25mm for two or more days is likely over portions of Liberia, Cote D'ivoire, Gabon, Republic of Congo, DRC, Angola, Kenya, Somalia, Zambia, Zimbabwe, Mozambique, Madagascar, Botswana, Eswatini and South Africa. There is an increased likelihood for daily rainfall to exceed 50mm over local areas in Gabon, Republic of Congo, Angola, DRC, Mozambique, South Africa and Madagascar. There is an increased chance for daily maximum heat index to exceed 40^{o}C over Nigeria, Ghana and Mozambique.

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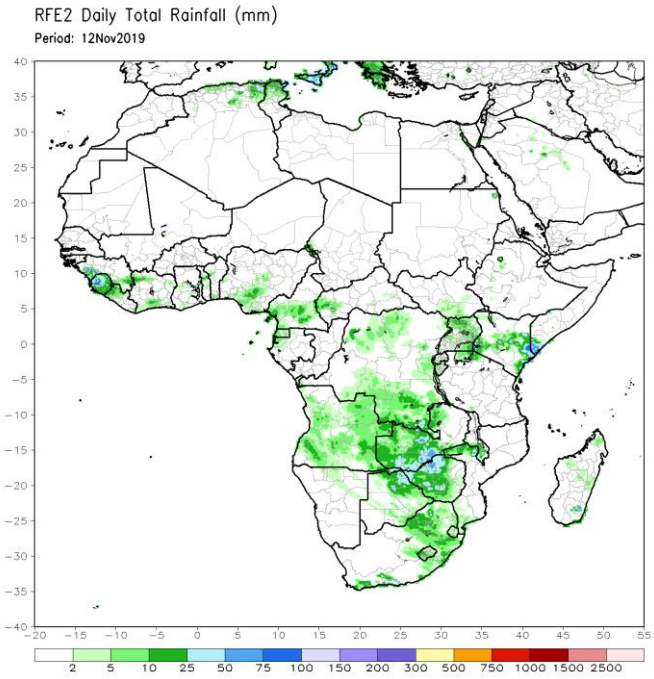
2.0. Previous and Current Day Weather over Africa

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

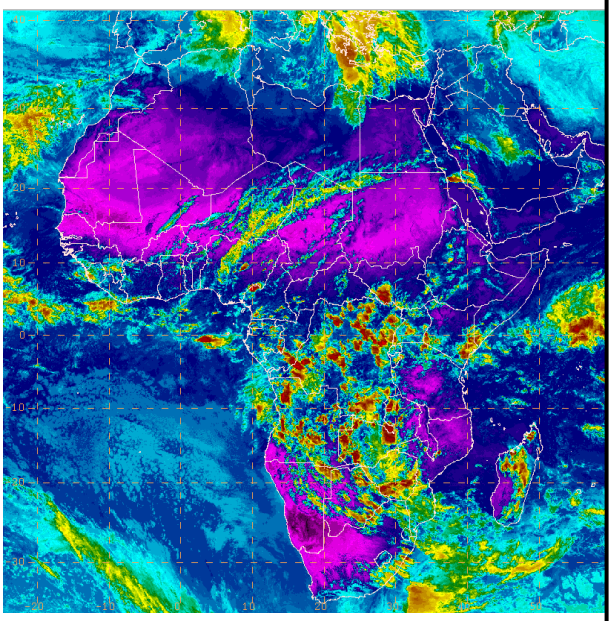
Daily rainfall amount exceeded 25mm over Algeria, Tunisia, Guinea, Sierra Leone, CAR, DRC, Tanzania, Kenya, Somalia, Sudan, Zambia, Angola, Zimbabwe, Mozambique, Malawi, Botswana, South Africa and Madagascar; and exceeded 50mm over Guinea, Sierra Leone, DRC, Zambia, Zimbabwe, Mozambique, Kenya, Somalia, Sudan, South Africa and Madagascar.

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

Deep convective clouds are observed over many places in Central Africa, the Greater Horn of Africa and portions of southern Africa.



IR Satellite Image (valid 1352 November 13, 2019)



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