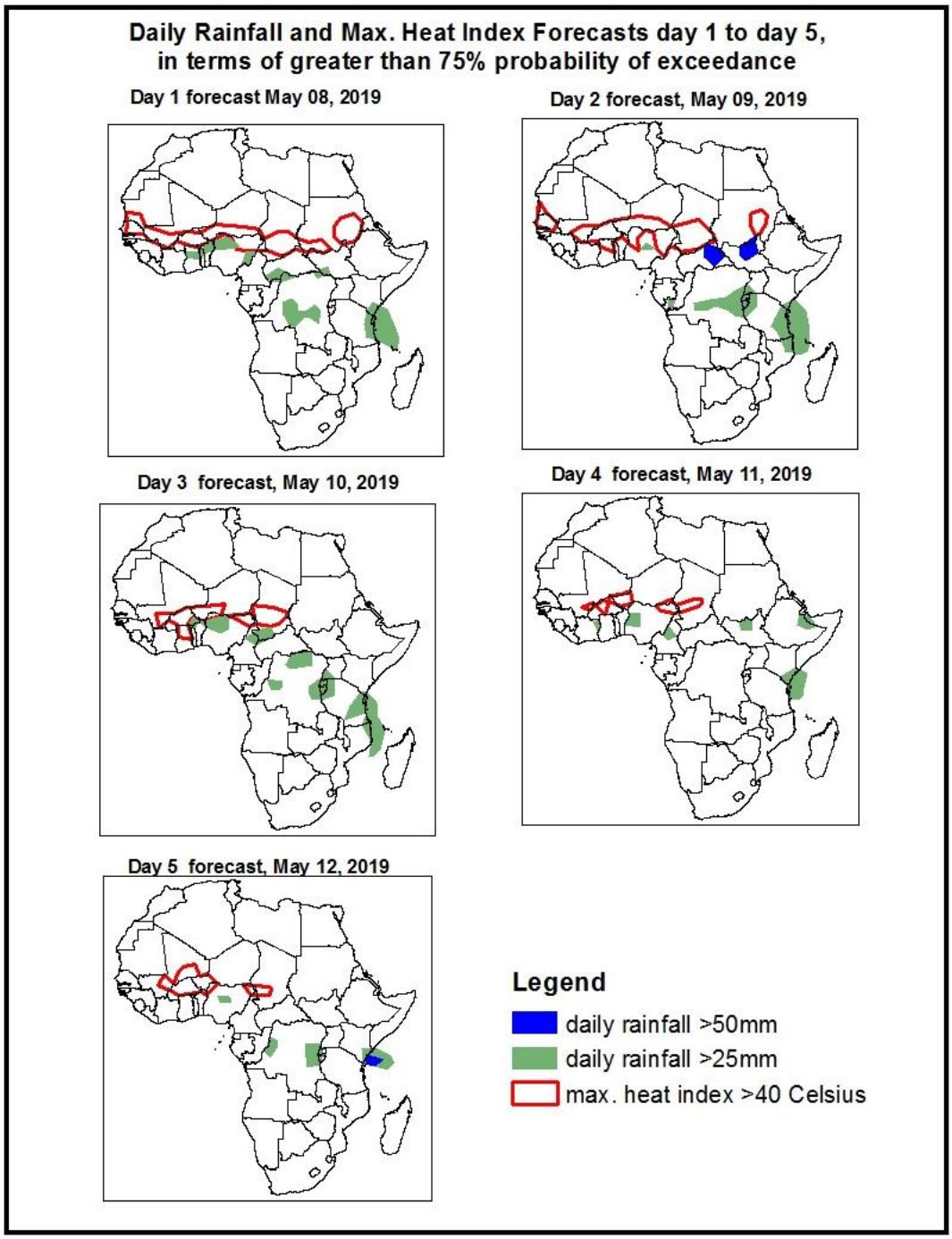
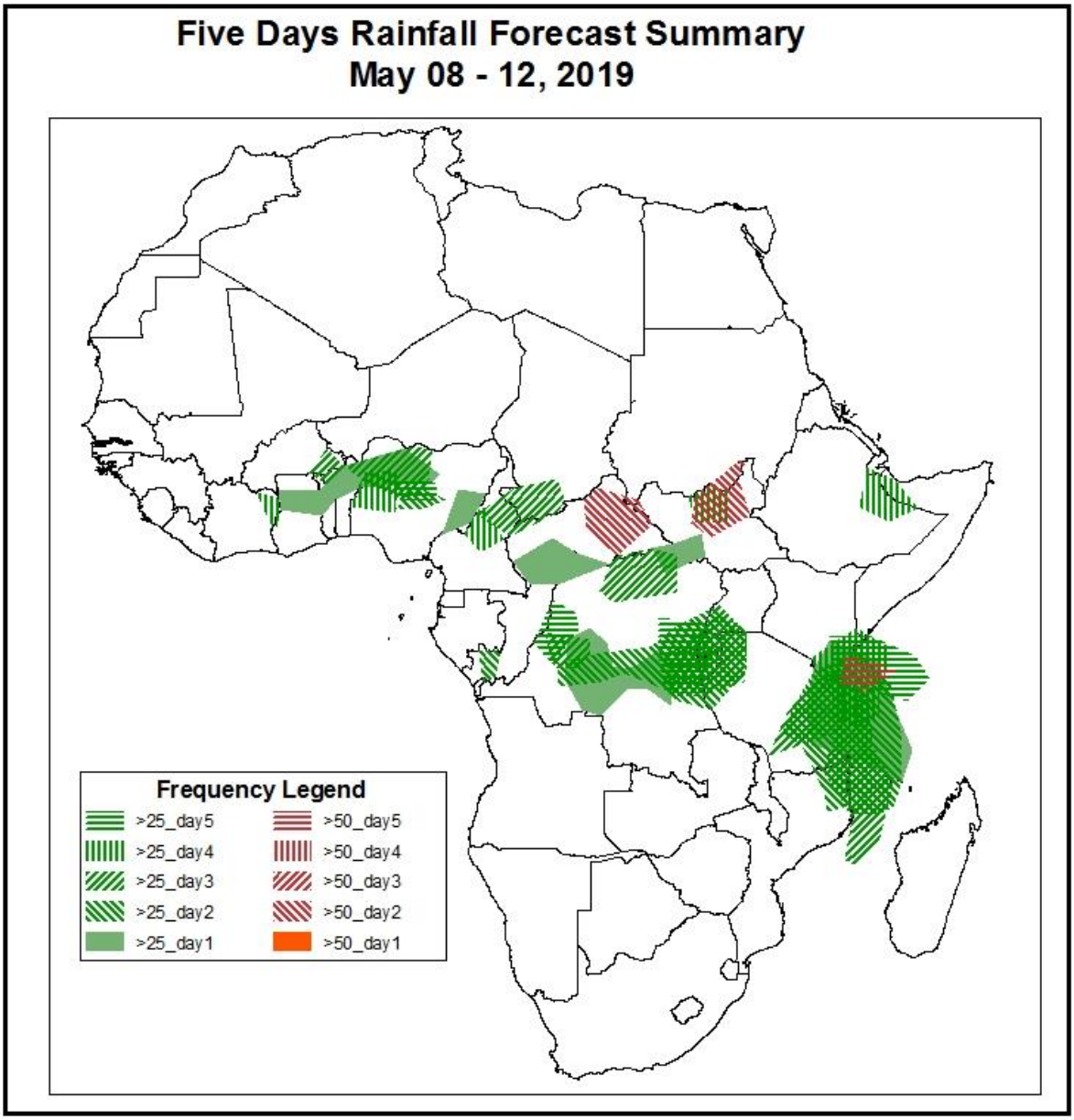
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *May 07*, 2019)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: May 08 – 12, 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°C), based on the NCEP/GFS and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.



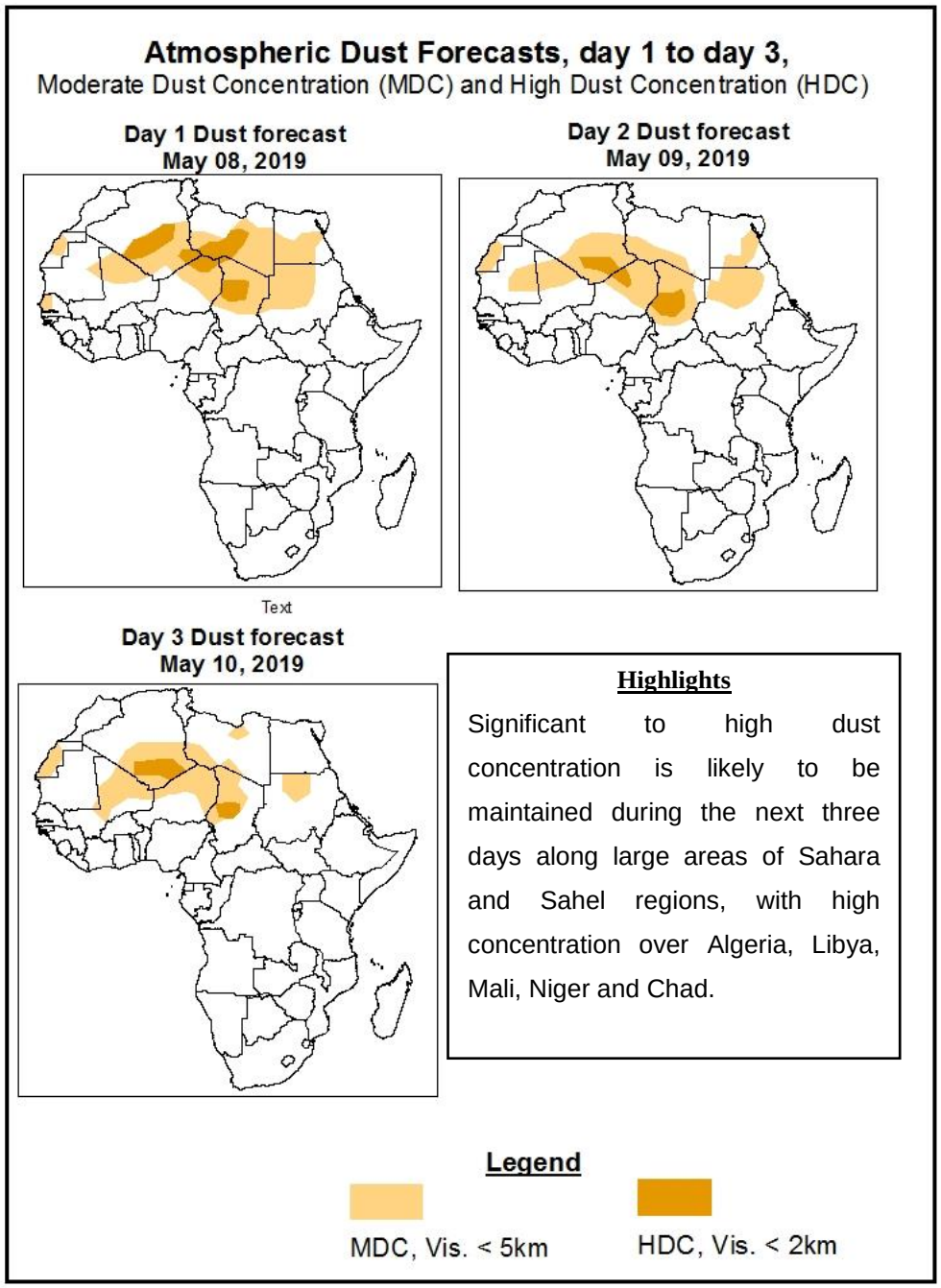


Highlights

- The Monsoon wind pattern over the Gulf of Guinea is expected to be maintained keeping isolated significant to enhanced precipitation over few areas.
- The low level converging winds are likely to cause moderate to enhanced precipitation over some areas in central Africa (CAR and DRC), few areas in South Sudan towards southern Sudan and some areas along the East African coast.
- The ITCZ across the coast of east Africa is likely to keep enhanced to heavy precipitation over some parts of the east African coastal areas, particularly in northern Tanzania and southern Kenya.
- At least 25mm for two or more days is likely over some areas over east Africa, particularly along the coastal areas of Tanzania and Kenya and over central Africa (DRC)
- There is an increased chance for daily maximum heat index to exceed 40^{o}C across some areas in the Sahel region as well as few in southern Sudan and South Sudan.

1.2. Atmospheric Dust Concentration Forecasts *(valid: May 08 – 10 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: May 08 – 12 2019*

During the first half of the period, the Azores High Pressure system over the North of Atlantic is expected to maintain a central pressure of around 1023hPa. From the mid period onwards, the system is likely to relax due to the frontal low from west. It influence on weather over Africa is rather limited.

During the first half of the forecast period, the St. Helena High Pressure system over Southeast Atlantic Ocean is expected to relax to 1020hPa as a result of the frontal low from west. However, during the second half of the period, it is likely to rebuild significantly to around 1030hPa. Its influence on precipitation over southwest Africa is minimal as frontal lows dominate.

During the first half of the forecast period, the Mascarene High Pressure system over Southwest Indian Ocean is expected to maintain a central pressure of around 1032hPa. From the mid period onwards, the system is likely to relax due to the frontal low from west and therefore its influence on southwesterly winds towards the east African coast is expected to diminish.

At 925hPa level, winds are expected to peak up during the first half of the period, especially over Egypt, Sudan and Chad and then over Algeria during the second half of the period. This translates to enhanced Atmospheric dust concentrations over these areas, during the period. In the Gulf of Guinea, Monsoon winds pattern has remained the same and is likely to be maintained during the forecast period. This favors localized enhanced precipitation over few areas. Meanwhile, converging, moist southeasterly winds towards East Africa are likely to keep moderate to enhanced precipitation over there, particularly along the Tanzanian coast and, during the end of the period, the Kenyan coast.

At 850hPa, a trough from the Indian Ocean, associated with the zonal component of the ITCZ, is expected to continue influencing precipitation over East. Moderate to enhanced falls are expected to be maintained over there. The system is also expected to influence further interior as far as DRC. Some convergence of winds at this level over DRC and CAR is likely to cause moderate to enhanced localized precipitation over there.

700hPa mainly easterly wind pattern is expected to be maintained, converging over Ethiopia, CAR, DRC as well as Uganda and Kenya. This is likely to favor some deep convection over these areas.

Mainly easterly 500hPa wind pattern is likely to help propagating activities generally towards west over central and east Africa. However, during the mid-period, the pattern is not well organized.

During the period, a Subtropical Westerly Jet at 200hPa is expected to be rather weak, with only occasional winds (>130kts). Also, no bending is likely and therefore the GHA region is likely to remain calm.

The Monsoon wind pattern over the Gulf of Guinea is expected to be maintained keeping isolated significant to enhanced precipitation over few areas. The low level converging winds are likely to cause moderate to enhanced precipitation over some areas in central Africa (CAR and DRC), few areas in South Sudan towards southern Sudan and some areas along the East African coast. The ITCZ across the coast of east Africa is likely to keep enhanced to heavy precipitation over some parts of the east African coastal areas, particularly in northern Tanzania and southern Kenya. At least 25mm for two or more days is likely over some areas over east Africa, particularly along the coastal areas of Tanzania and Kenya and over central Africa (DRC). There is an increased chance for daily maximum heat index to exceed 40^0C across some areas in the Sahel region as well as few in southern Sudan and South Sudan.

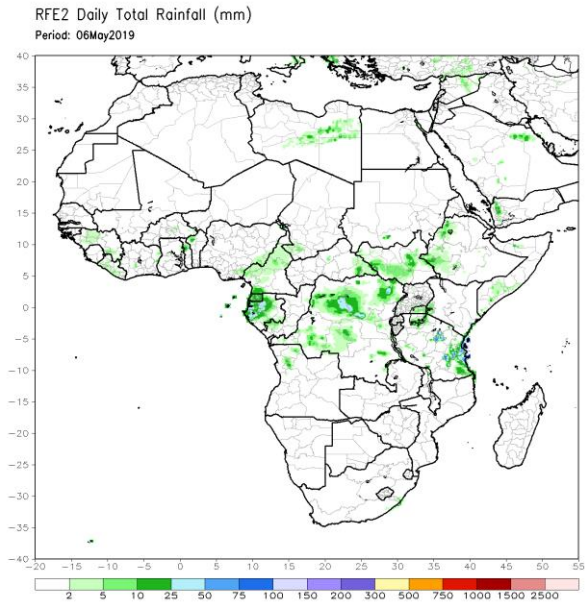
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (May 06, 2019)

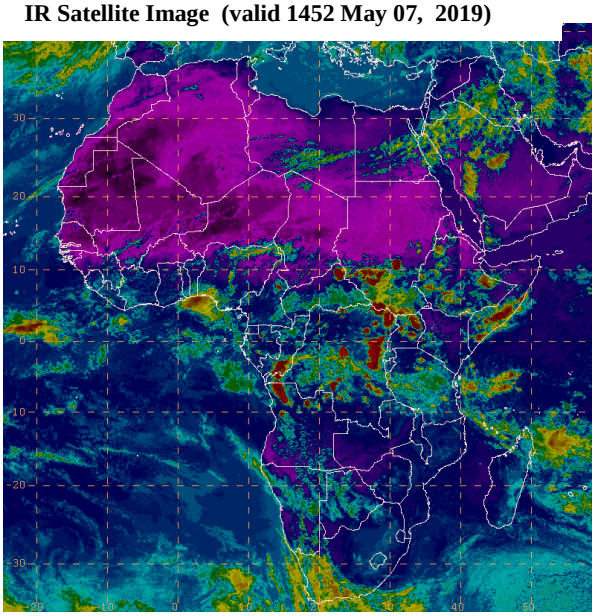
Daily rainfall totals exceeding 25mm have been observed over some areas in central (DRC, Gabon) and east Africa (Tanzania).

2.2. Weather assessment for the current day (*May 07,* 2019)

Significant convection is observed over few areas in DRC and northern Uganda.



IR Satellite Image (valid 1452 May 07, 2019)



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