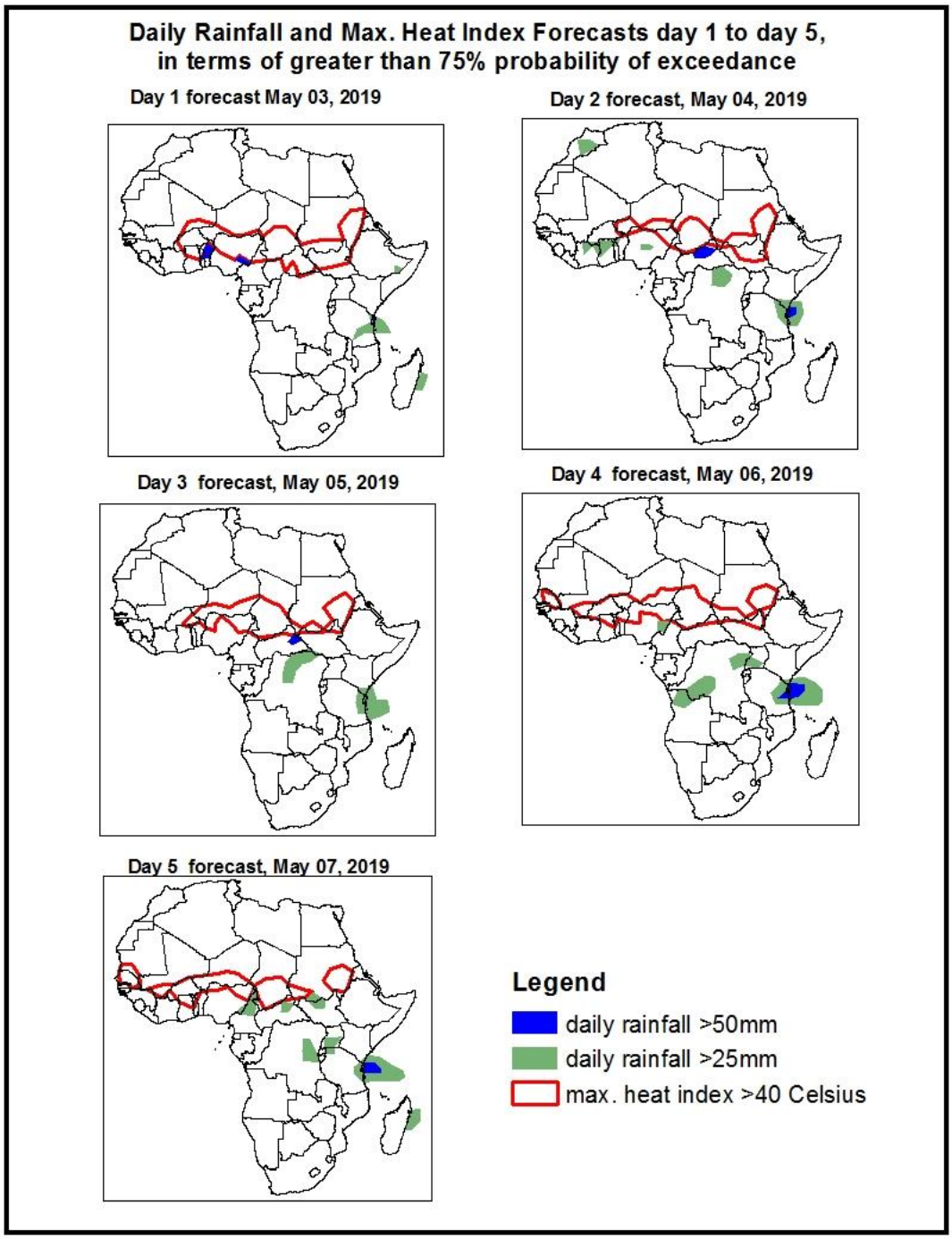
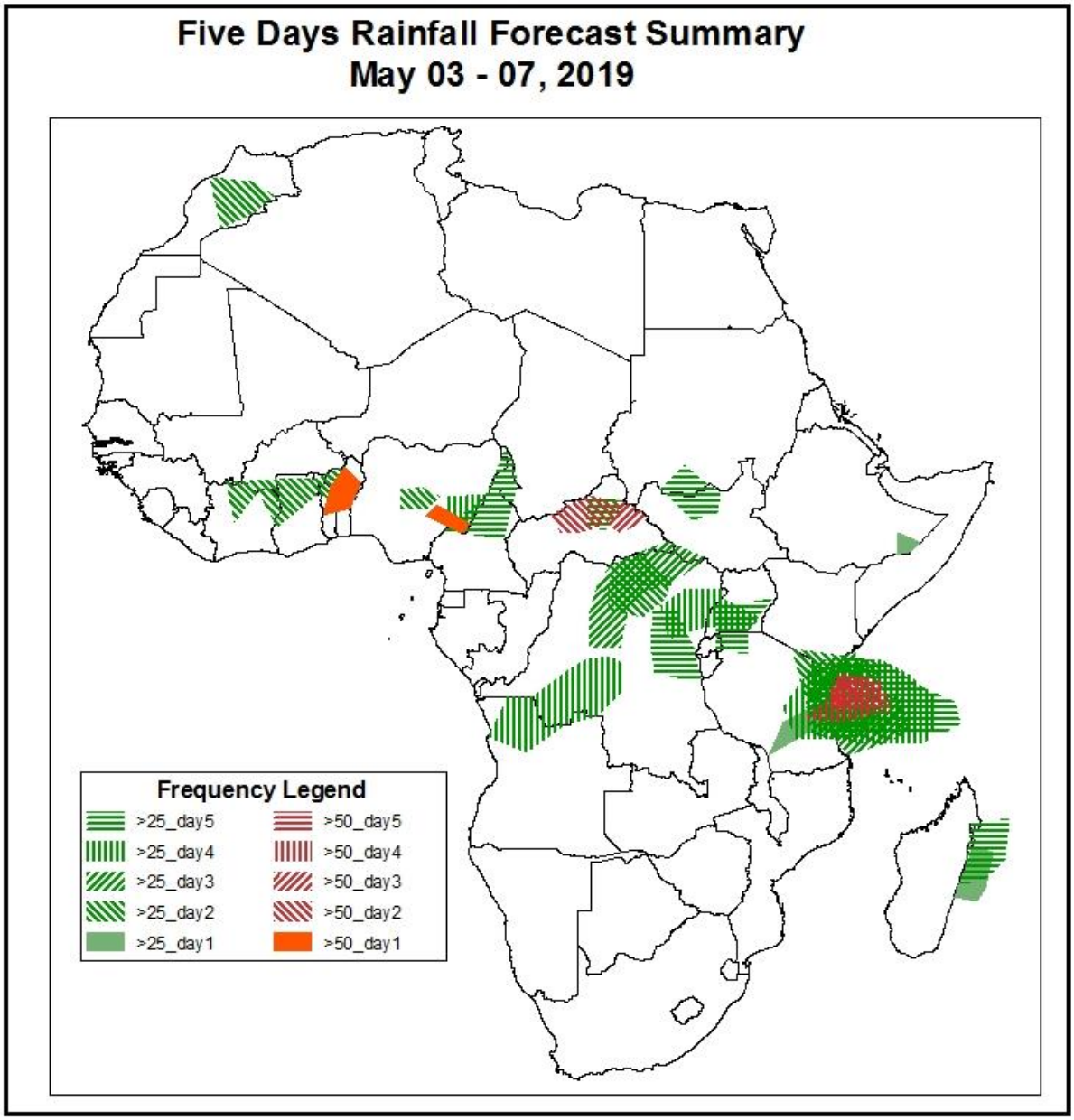
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *May 02*, 2019)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: May 03 – 07, 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.



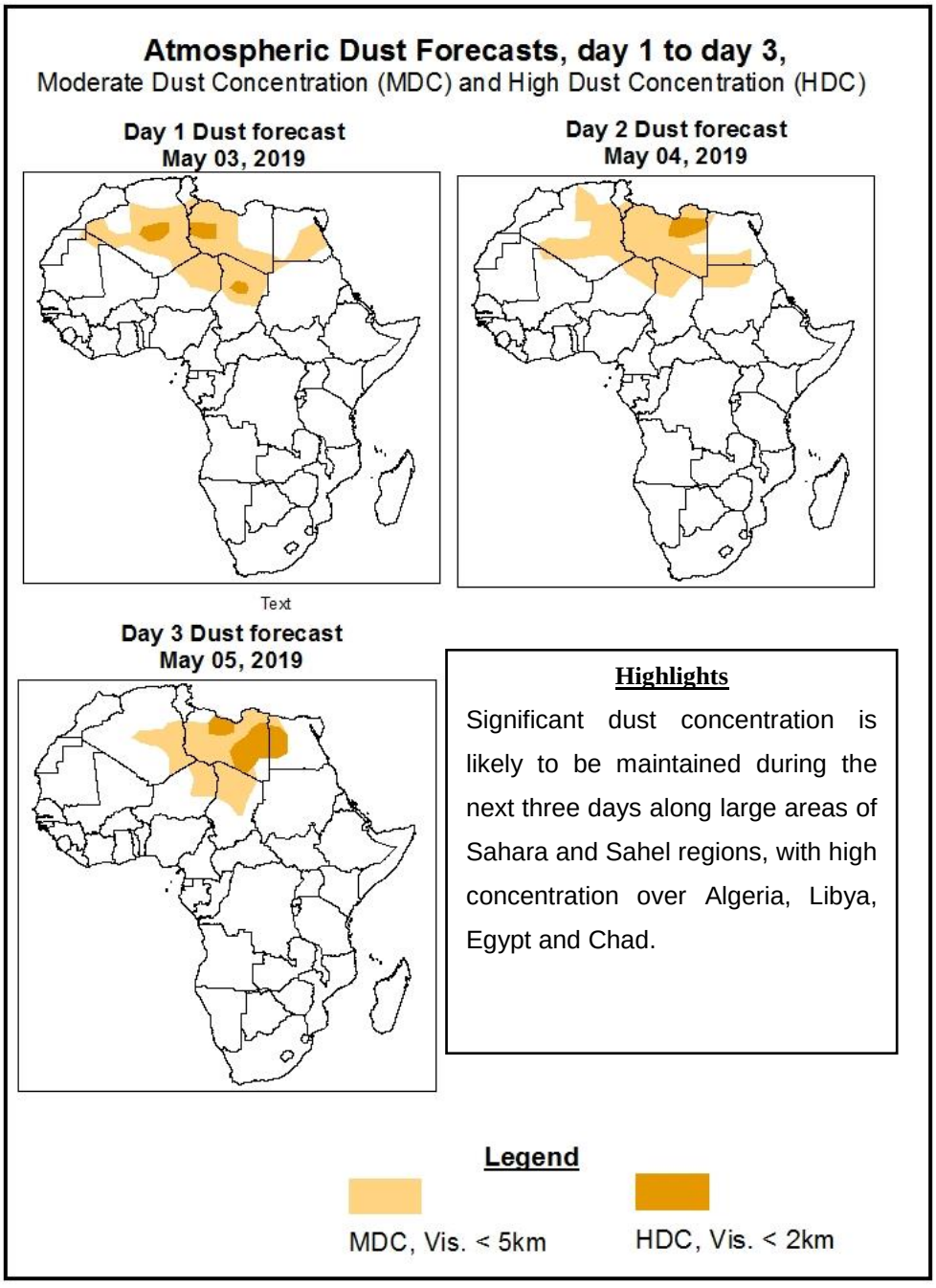


Highlights

- The Monsoon wind pattern over the Gulf of Guinea is expected to keep significant to enhanced scattered precipitation.
- The converging winds are likely to cause moderate to enhanced precipitation over some areas in central Africa (CAR and DRC) and few in South Sudan towards southern Sudan.
- The ITCZ across the coast of east Africa is likely to keep enhanced to heavy precipitation over some parts of the east African coast, particularly Tanzania. South coast of Kenya can benefit from this system as well though the chances are rather low.
- At least 25mm for two or more days is likely over some areas over east Africa, particularly along the coastal areas of Tanzania, and over central Africa (northeast DRC and northern Uganda).
- 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 the Gulf of Guinea, CAR, southern Sudan and South Sudan.

1.2. Atmospheric Dust Concentration Forecasts *(valid: May 03 – 05 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 03 – 07 2019*

During the first half of the forecast period, the Azores High Pressure system over the North of Atlantic is expected to maintain at around 1021hPa before strengthening to 1024hPa and migrate towards the northwest Africa during the second half of the period.

During the first half of the forecast period, the St. Helena High Pressure system over Southeast Atlantic Ocean is expected to intensify from 1028hPa to 1033hPa but, due to the intrusion of the frontal low from west, relax significantly to 1021hPa during the second half of the period.

Despite the passage of the frontal low in the south, the Mascarene High Pressure system over Southwest Indian Ocean is expected to generally be maintained at around 1026hPa during the first half of the forecast period, then migrating towards east while intensifying to as high as 1029hPa during mid period. Towards the end of the period the frontal low is likely to erode it significantly decrease its influence on east African coastal precipitation which will then be under the influence of the frontal low and associated ridging high from southeast Africa.

At 925hPa, winds are expected to be stronger, particularly during the mid-period, over parts of Algeria, Libya, Egypt, Chad and Sudan, enhancing Atmospheric dust concentrations over there. Further south over the Gulf of Guinea, Monsoon winds are only likely to influence localized enhanced precipitation over few areas. Meanwhile, moist southeasterly winds towards the East African coast are likely to keep moderate to enhanced precipitation over there.

At 850hPa, a trough from the Indian Ocean, associated with the zonal component of the ITCZ, is expected to shift further north affecting extreme southern parts of Kenyan coast in addition to that of Tanzania. Moderate to enhanced, with chances of heavy, falls exist over there. Further north, over parts of DRC, CAR and northern Uganda, occasional converging wind patterns are expected to cause moderate to enhanced precipitation.

700hPa mainly easterly wind pattern is expected to be maintained, converging over CAR, northern and central DRC as well as central Tanzania. This is likely to keep convective precipitation over these areas while advecting it towards west.

Mainly easterly 500hPa wind pattern is expected to help propagating activities generally towards west over central and east Africa.

During the period, a Subtropical Westerly Jet at 200hPa is expected to be fairly strong with winds (>130kts) expected to occasionally occur over North Africa. A significant bending, expected during the second half of the forecast period, is likely to have some impact on precipitation over the GHA, particularly over South Sudan.

The Monsoon wind pattern over the Gulf of Guinea is expected to keep significant to enhanced scattered precipitation. The converging winds are likely to cause moderate to enhanced precipitation over some areas in central Africa (CAR and DRC) and few in South Sudan towards southern Sudan. The ITCZ across the coast of east Africa is likely to keep enhanced to heavy precipitation over some parts of the east African coast, particularly Tanzania. South coast of Kenya can benefit from this system as well though the chances are rather low. At least 25mm for two or more days is likely over some areas over east Africa, particularly along the coastal areas of Tanzania, and over central Africa (northeast DRC and northern Uganda). There is an increased chance for daily maximum heat index to exceed 40oC across some areas in the Sahel region as well as few in the Gulf of Guinea, CAR, southern Sudan and South Sudan.

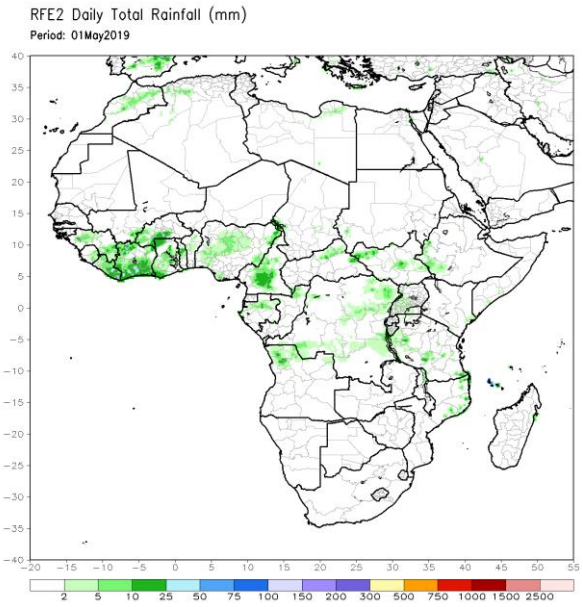
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (May 01, 2019)

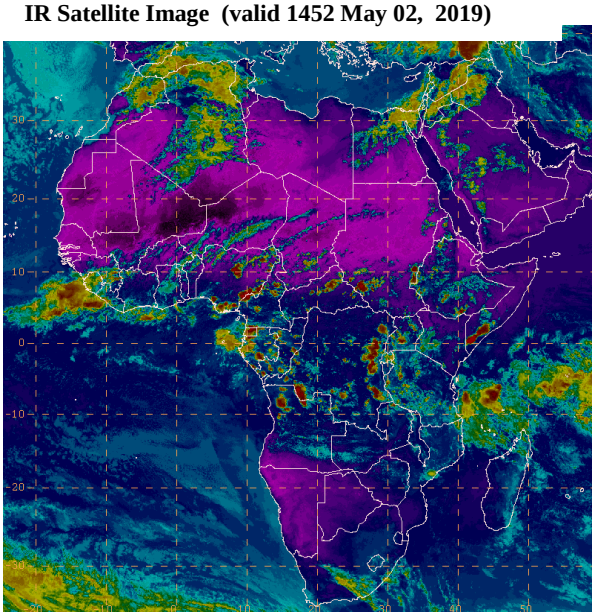
Daily rainfall totals exceeding 25mm is observed localized over parts of Ivory Coast and Liberia.

2.2. Weather assessment for the current day (*May 02,* 2019)

Very isolated convection is observed over eastern parts of DRC and along the Gulf of Guinea particularly in coastal areas.



IR Satellite Image (valid 1452 May 02, 2019)



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