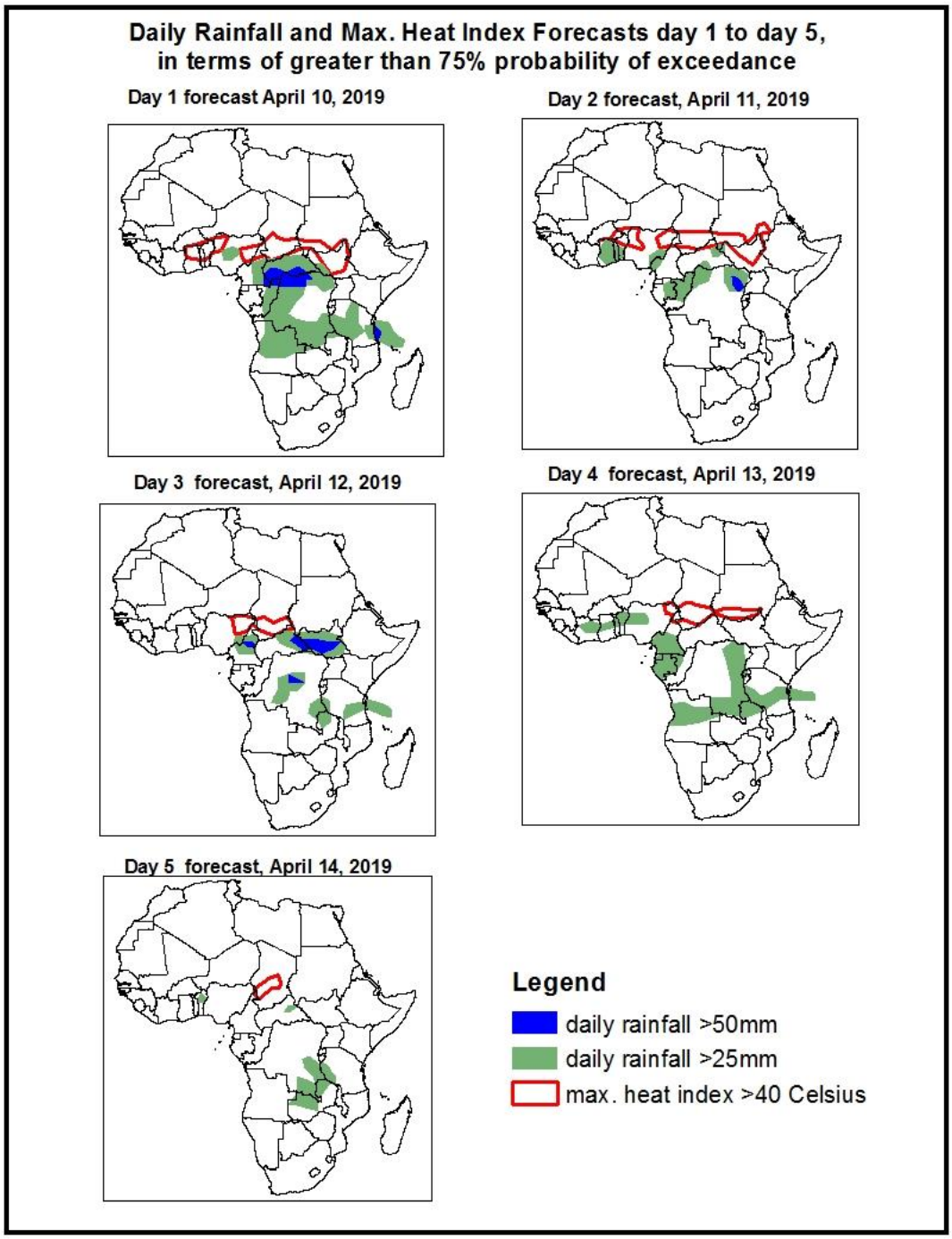
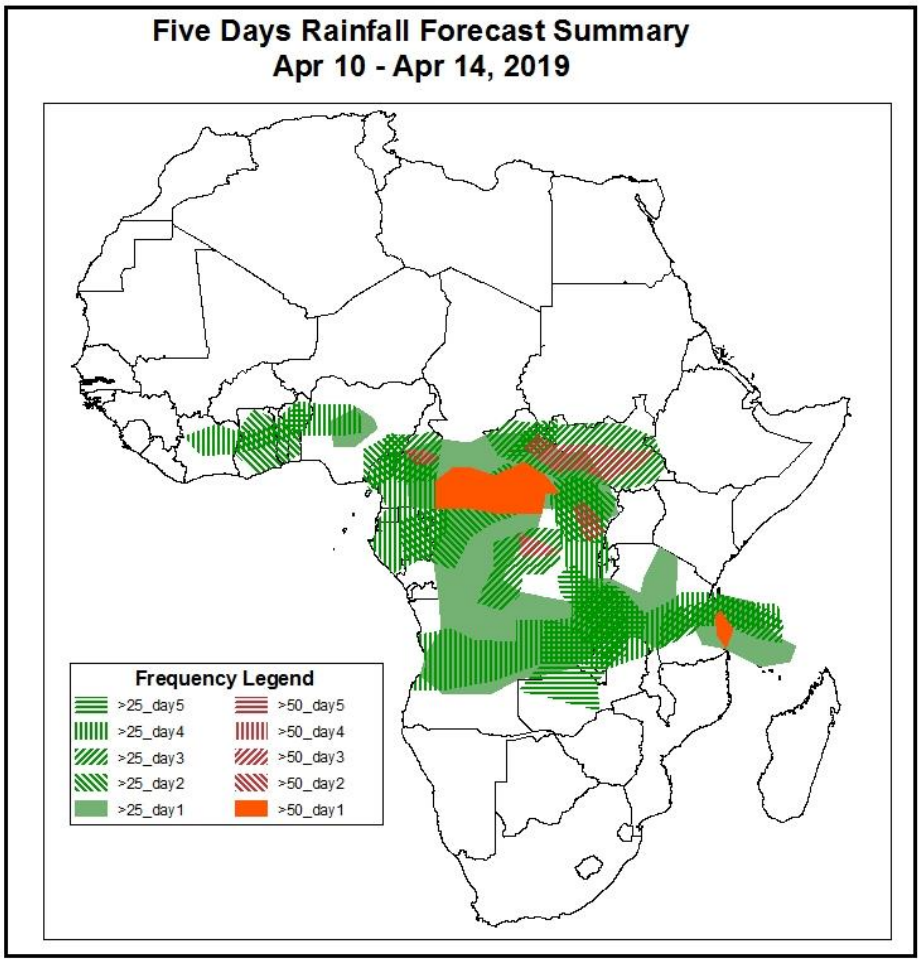
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *April 09*, 2019)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: 10 – 14 April, 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.



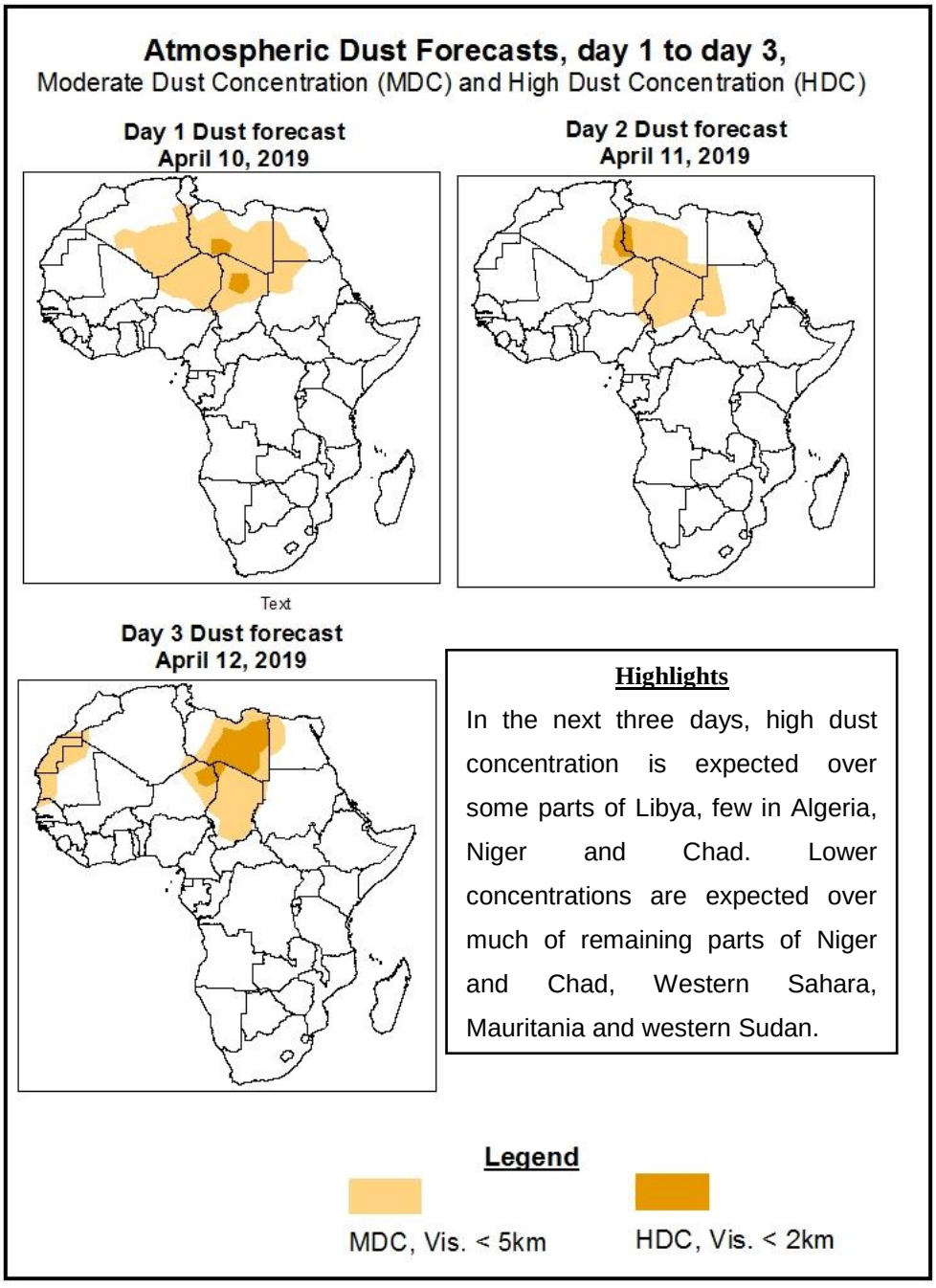


Highlights

- Monsoon wind pattern favors mainly moderate precipitation along the Gulf of Guinea. However, over few areas, isolated enhanced precipitation is likely.
- Persistent lower-level wind convergences are likely to maintain significant precipitation over some areas across the Equatorial Africa as well as those in East Africa.
- At least 25mm for two or more days is likely over the Gulf of Guinea, central Africa, southern parts of East Africa. Heavier precipitation is likely over some parts of central Africa and East Africa coast.
- There is an increased chance for daily maximum heat index to exceed 40^{o}C across portions of the Sahel region as well as South Sudan and southern Sudan.

1.2. Atmospheric Dust Concentration Forecasts (valid: 10 – 12 April 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: 10 – 14 April 2019*

Quite significant change of scenario is expected where the heat lows are expected to erode the Azores High Pressure system over the North of Atlantic, keeping it at around 1024hPa and further West.

During the first half of the forecast period, the St. Helena High Pressure system over Southeast Atlantic Ocean is expected to remain weak at 1016hPa due erosion from the frontal system. However, during the second half of the period, the system is expected to rebuild significantly to as high as 1034hPa.

The Mascarene High Pressure system over Southwest Indian Ocean is expected to progressively intensify from 1028hPa to as high as 1034hPa towards the end of the forecast period.

At 925hPa, zone with dry northerly to northeasterly winds speeds (>35) starting over Chad and then migrating Northwest towards Libya is likely to maintain highest dust concentration over there. Along the East African coast and central Africa, persistent converging winds are likely to cause enhanced to heavy precipitation over some parts of these regions.

At 850hPa, convergent wind patterns over the Gulf of Guinea, East and central Africa are likely to maintain moderate to isolated cases of enhanced precipitation over there. Over eastern DRC and coast of East Africa, heavy precipitation is likely due to marked moist converging winds from the Indian Ocean. Despite limited model signals, Uganda is also likely to benefit from these converging winds.

At 700hPa, Northerly to Northeasterly wind pattern is expected throughout the forecast period. This, together with 500hPa pattern below, is likely to be advecting convective activities towards Southwest. Over the East African coast, the flow is favorable for enhanced to heavy precipitation over there.

At 500hPa, a quite organized Easterly wind flow is likely to be maintained over the Gulf of Guinea, central and East Africa, helping advecting convective activities towards West.

At 200hPa, strong wind (>130kts), associated with the Subtropical Westerly Jet, is expected to be maintained across northern Africa throughout the forecast period. However, no signs of bending (trough) are seen over northeast Africa. This is likely to reduce precipitation over there.

Monsoon wind pattern favors mainly moderate precipitation along the Gulf of Guinea. However, over few areas, isolated enhanced precipitation is likely. Persistent lower-level wind convergences are likely to maintain significant precipitation over some areas across the Equatorial Africa as well as those in East Africa. At least 25mm for two or more days is likely over the Gulf of Guinea, central Africa, southern parts of East Africa. Heavier precipitation is likely over some parts of central Africa and East Africa coast. There is an increased chance for daily maximum heat index to exceed 40^{o}C across portions of the Sahel region as well as South Sudan and southern Sudan.

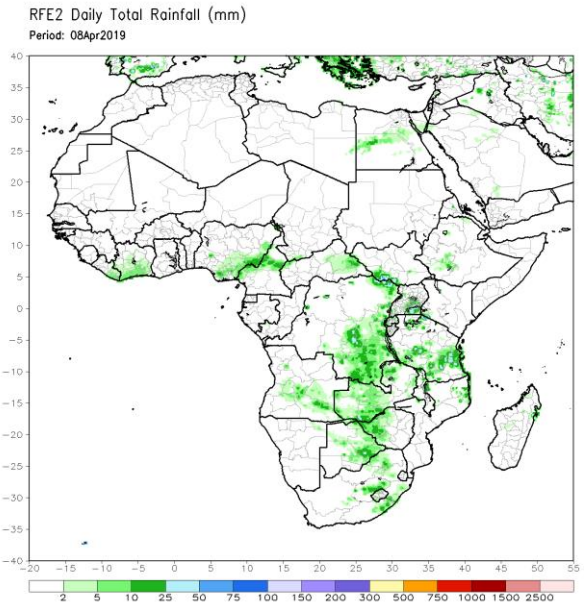
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (April 8, 2019)

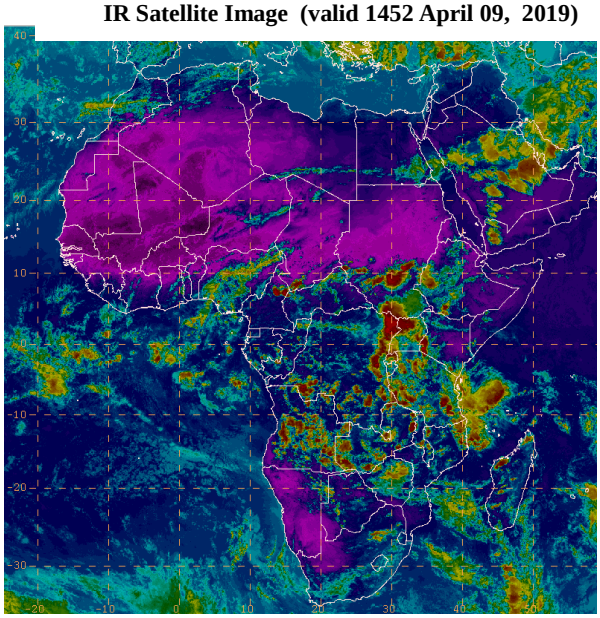
There is no evidence of daily rainfall totals exceeding 25mm.

2.2. Weather assessment for the current day (*April 9,* 2019)

Enhanced convective clouds are observed over eastern DRC, western Uganda and South Sudan. Along the coast of Tanzania moderate convection is also observed.



IR Satellite Image (valid 1452 April 09, 2019)



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