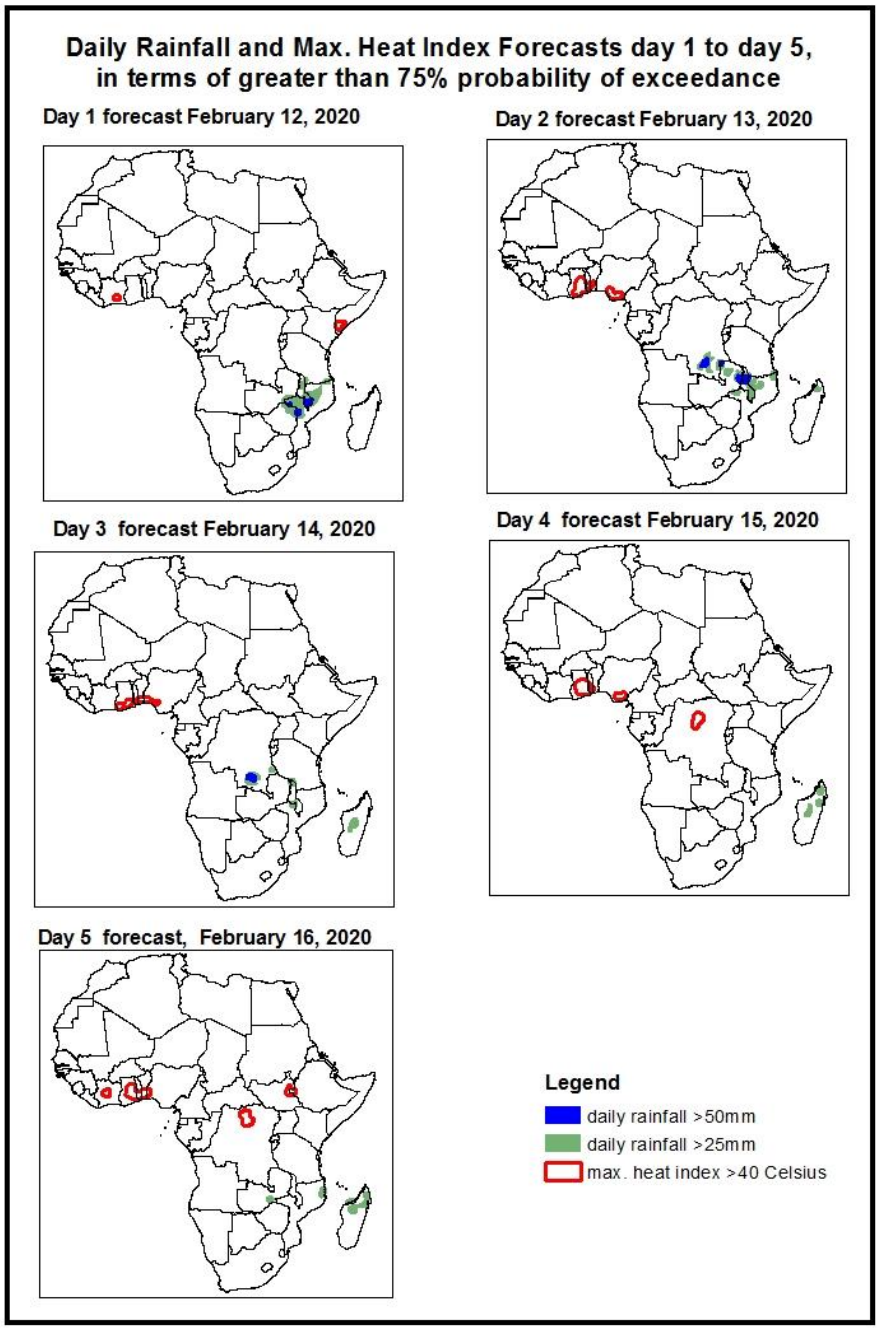
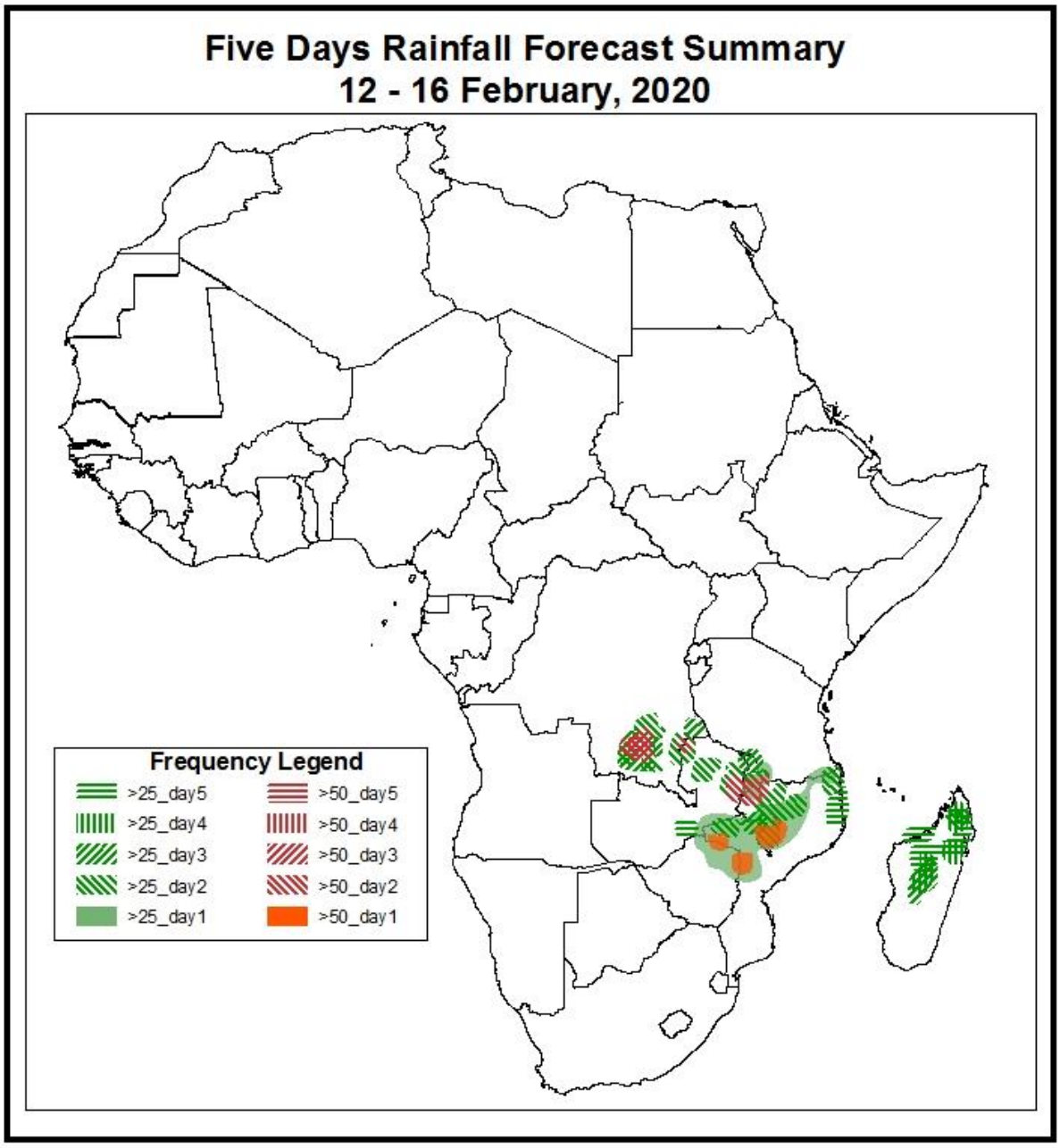
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on February 11, 2020)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: 12 – 16 Feb, 2020)

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.



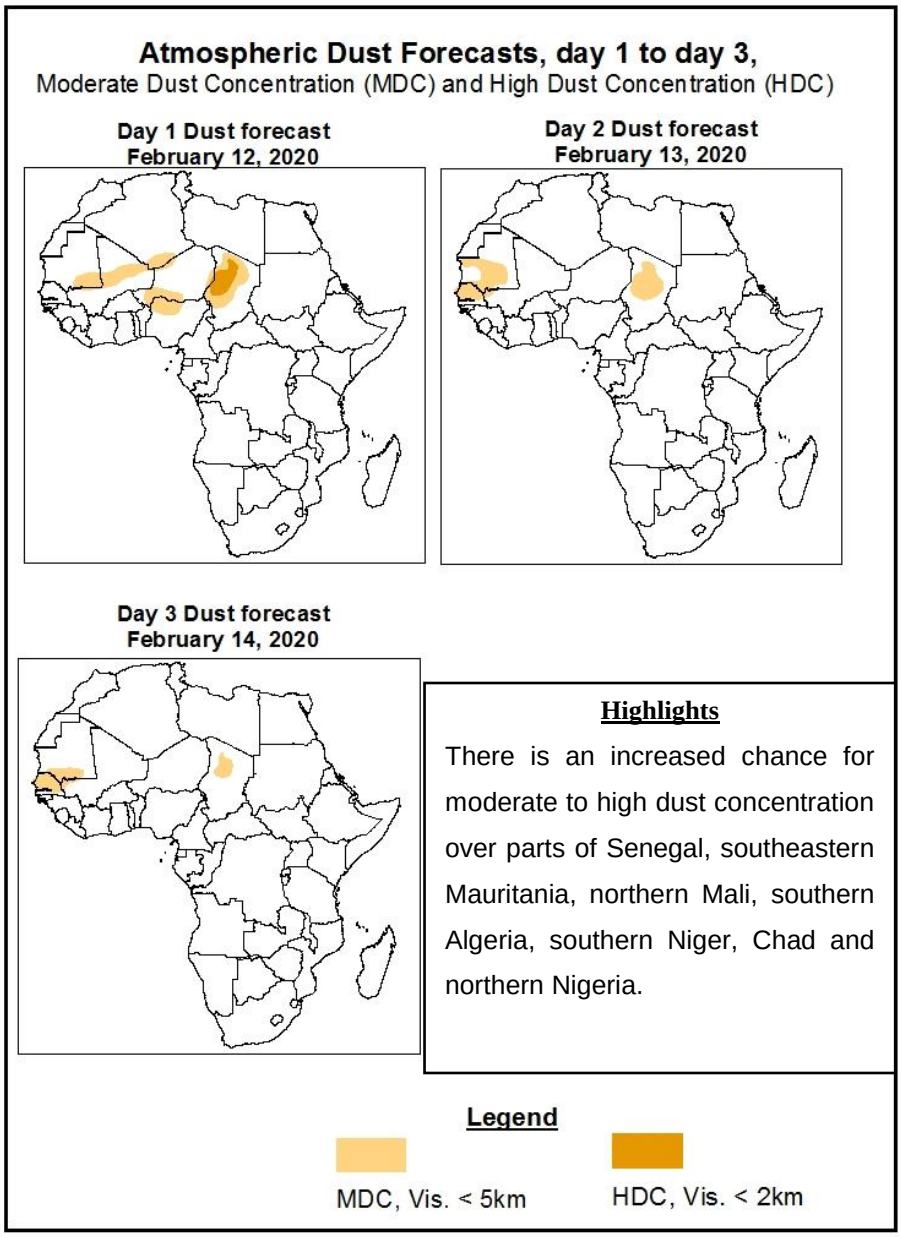


Highlights

- Cyclonic troughs at low and mid-level atmosphere are expected to enhance rainfall over portions of southeastern Africa, mostly between Zimbabwe, Mozambique, Malawi, Zambia and southeastern DRC.
- At least 25mm for two or more days is likely over local areas in southeastern DRC, eastern Zambia, Malawi, northern Mozambique, northeastern Zimbabwe and northern Madagascar, with a an increased chance of rainfall in excess of 50mm over local areas in DRC, Zambia, Malawi, Zimbabwe and Mozambique.
- There is an increased chance for daily maximum heat index to exceed 40^{o}C over local areas in the Gulf of Guinea region, northern DRC and eastern South Sudan.

1.2. Atmospheric Dust Concentration Forecasts *(valid: 12 – 14 Feb, 2020)*

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: 12 – 16 February 2020*

The Azores High Pressure system over Northeast Atlantic and over the Maghreb is expected to weaken significantly, with its central pressure value decreasing from 1030hPa to 1023hPa through 96hours.

The St. Helena High Pressure system over the South Atlantic Ocean is expected to intensify with his central pressure value increasing from 1022hPa to 1032hPa through 72 hours, and it tends to weaken towards end of the forecast period due to a depression approaching the area.

The Mascarene High Pressure system over Southwest of Indian Ocean is expected to maintain an average central pressure value of 1025hPa during the forecast period.

The Arabian Ridge across the northern part of the Greater Horn of Africa is expected to slightly weaken while maintaining its position over the area through 72 hours, and it tends to move northeastwards along with eastward propagating frontal system towards end of the forecast period.

At 925-hPa level, an area of strong dry northerly to northeasterly flow is expected to enhance atmospheric dust concentration over the Sahel region, and North Africa. Zonal wind convergences are expected to remain active in the equatorial Africa region.

At 850-hPa level, an area of lower level-wind convergence and cyclone trough are expected to remain active across southeastern Africa and over Madagascar.

At 700-hPa level, a trough associated with mid-latitude frontal system is expected to propagate eastward across the Middle-East region, and is likely to cause increased in cloudiness across Sudan and Ethiopia during the forecast period. A cyclonic trough is also expected to propagate over southeastern Africa and Madagascar. Otherwise an anticyclonic circulation appears over the Tanzania coast and becomes strong during the forecast period.

Cyclonic troughs at low and mid-level atmosphere are expected to enhance rainfall over portions of southeastern Africa, mostly between Zimbabwe, Mozambique, Malawi, Zambia and southeastern DRC. At least 25mm for two or more days is likely over local areas in southeastern DRC, eastern Zambia, Malawi, northern Mozambique, northeastern Zimbabwe and northern Madagascar, with a an increased chance of rainfall in excess of 50mm over local areas in DRC, Zambia, Malawi, Zimbabwe and Mozambique. There is an increased chance for daily maximum heat index to exceed 40^{o}C over local areas in the Gulf of Guinea region, northern DRC and eastern South Sudan.

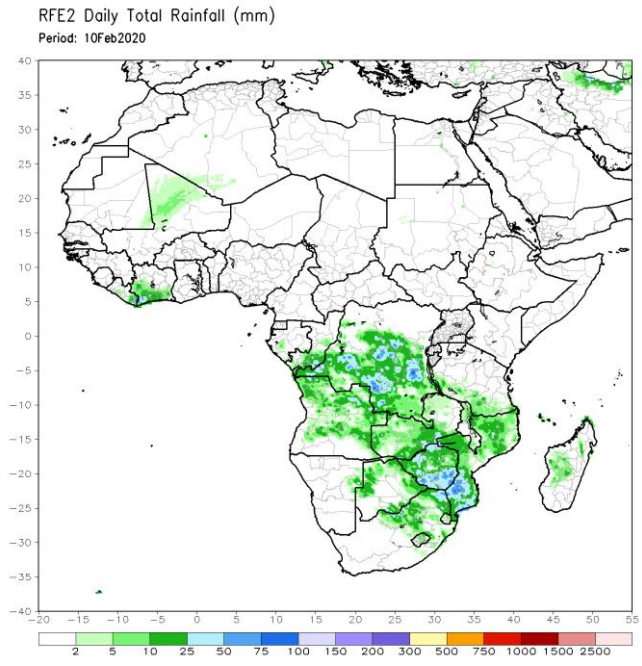
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (*February 10, 2020*)

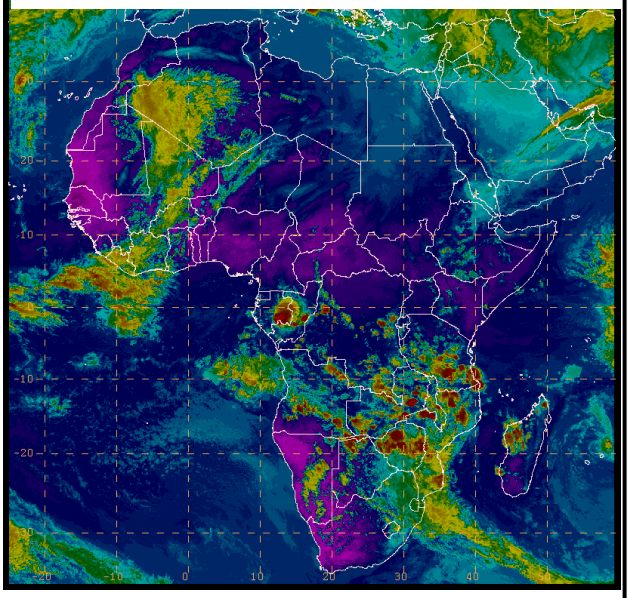
Daily rainfall amount exceeded 25 mm over southern Zimbabwe and southern Mozambique, over DRC with rainfall amount in excess of 50 mm in some of these areas..

2.2. Weather assessment for the current day (*February 11, 2020*)

Convective clouds are observed over many places in Southern Africa.



IR Satellite Image (valid 1610 February 10, 2020)



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