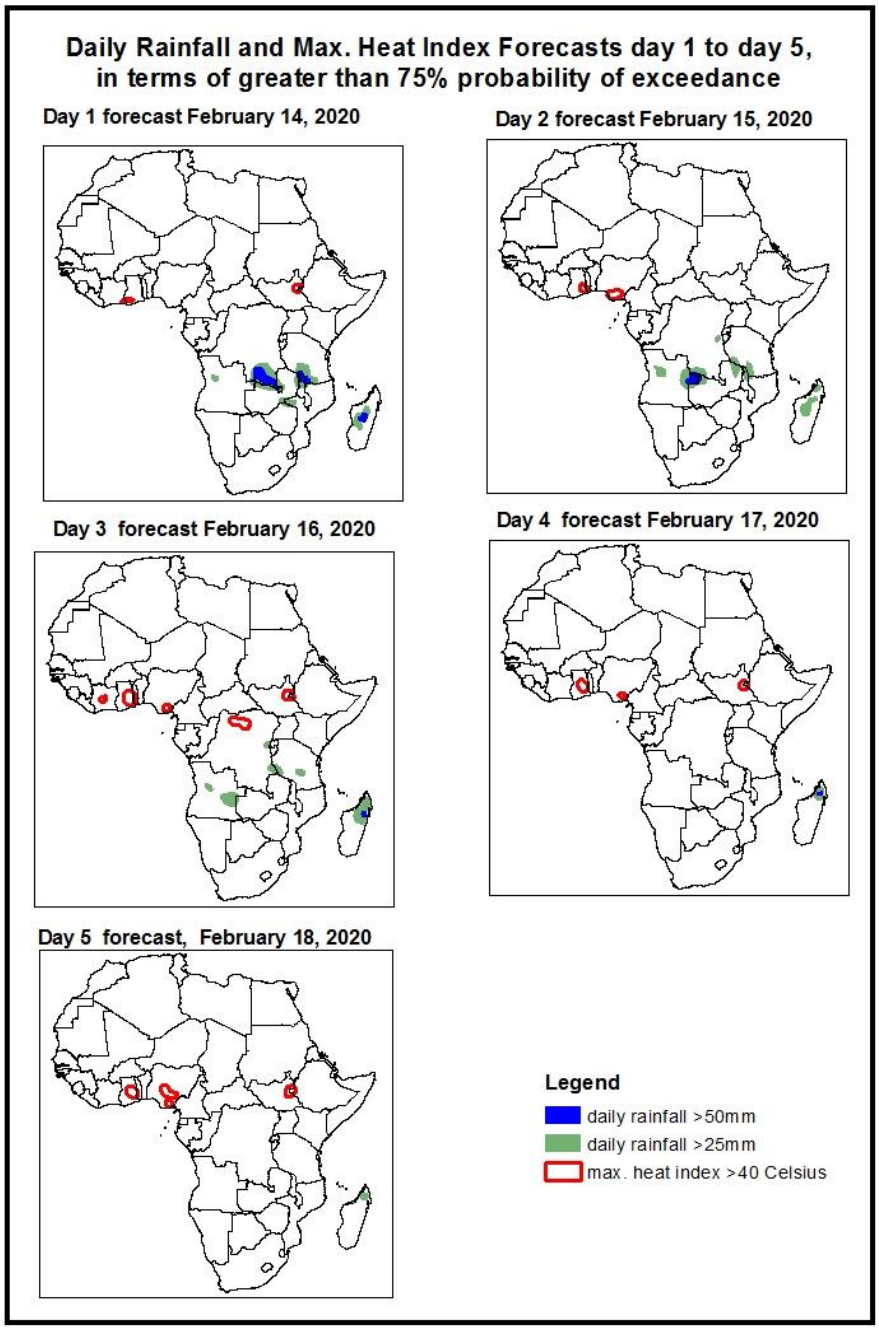
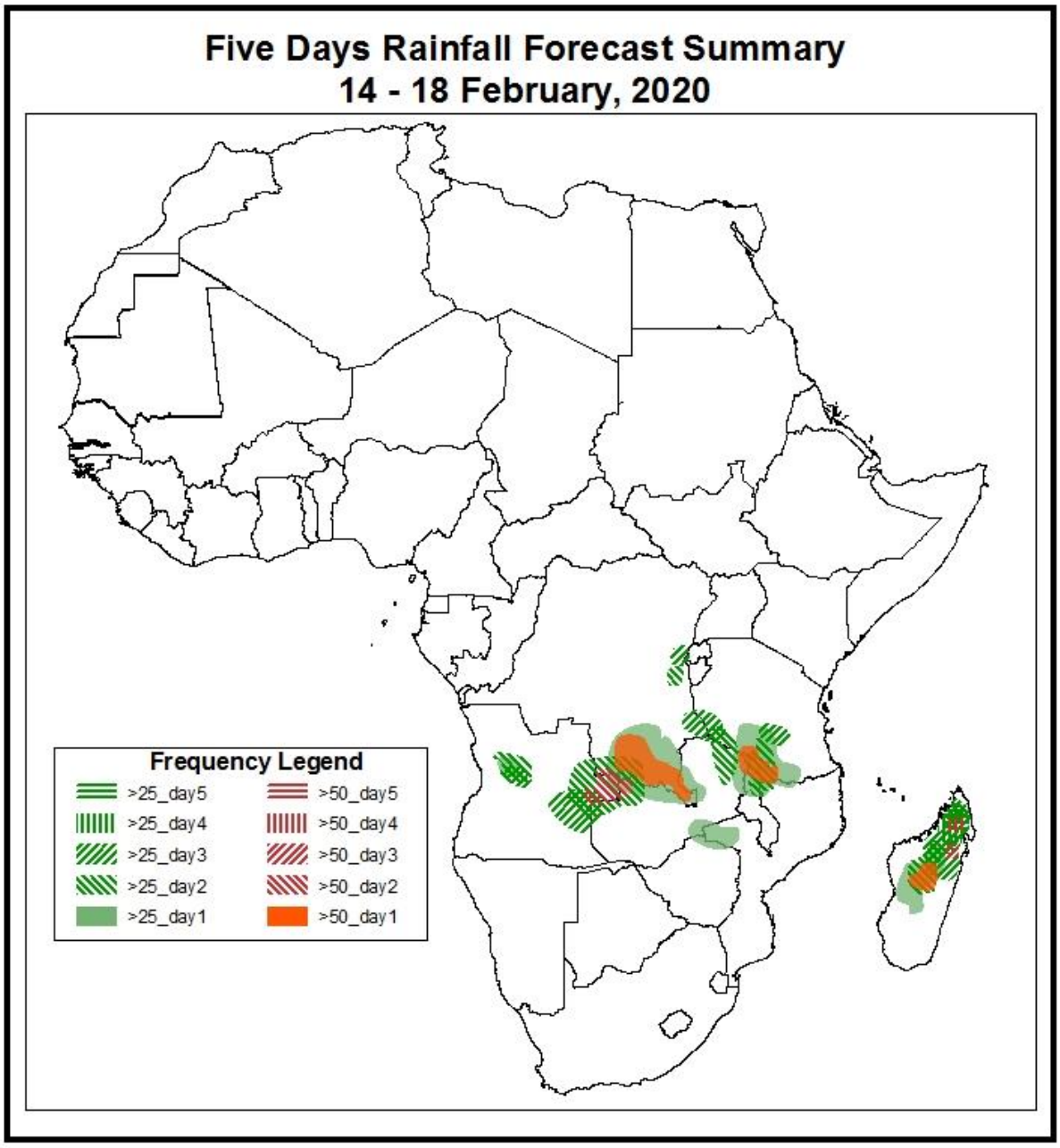
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on February 13, 2020)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: 14 – 18 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.



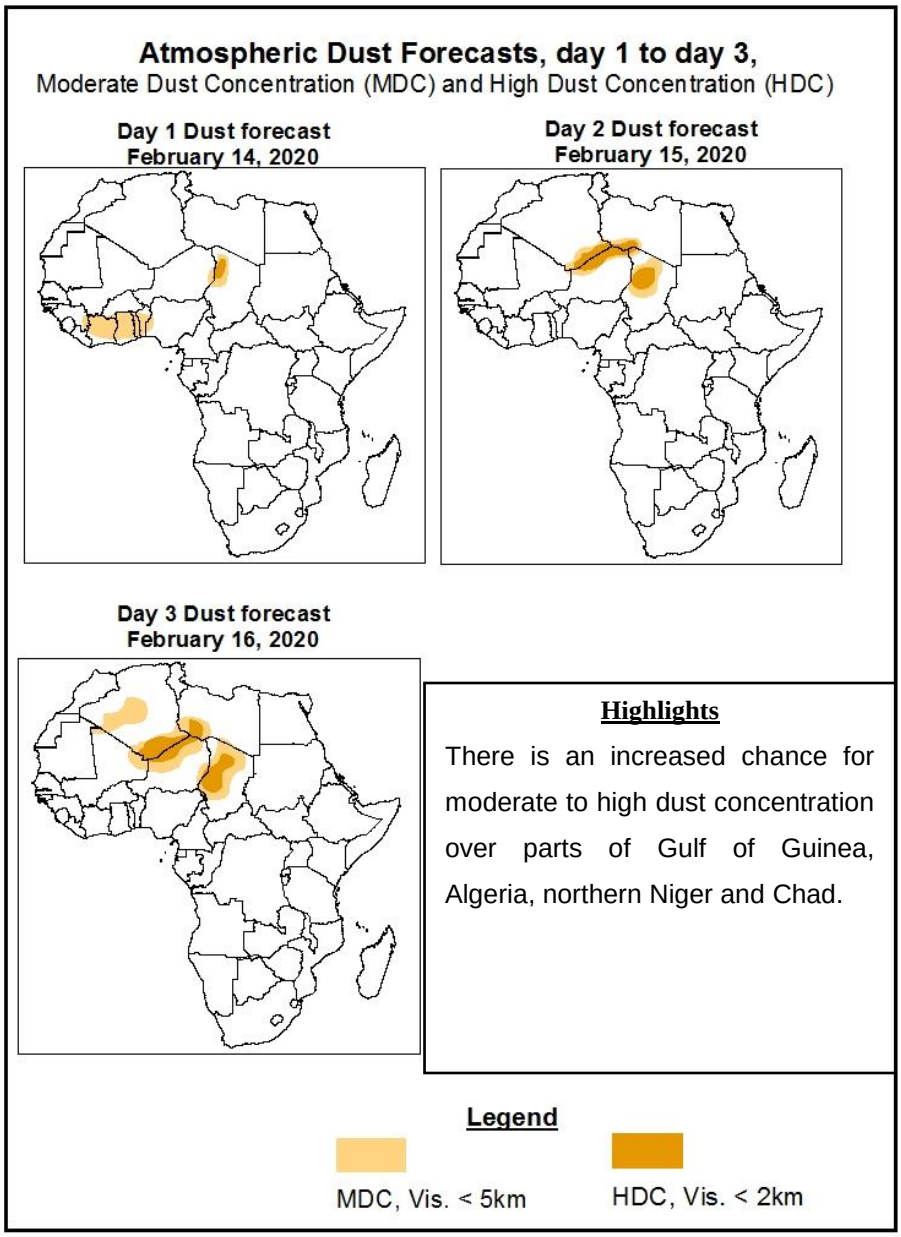


Highlights

- Cyclonic troughs and convergence winds at low and mid-level atmosphere are expected to enhance rainfall over the northern portions of Southern Africa, mostly across Angola, DRC, Zambia, Zimbabwe, Malawi, Mozambique, Tanzania and Madagascar.
- At least 25mm for two or more days is likely over local areas in northern and eastern Angola, southern Zambia and northern Zimbabwe with an increased chance for rainfall to exceed 50mm over southern DRC, northern Zambia, northern Malawi, and southern Tanzania and over Northern and central Madagascar.
- 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: 14 – 16 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: 14 – 18 February 2020*

The Azores High Pressure system over Northeast Atlantic and neighboring areas is expected to intensify significantly with its central pressure value increasing from 1025hPa to 1040hPa during the forecast period.

The St. Helena High Pressure system over the Southwest Atlantic Ocean is expected to move slightly northeastwards while weakening with his central pressure value decreasing from 1030hPa to 1025hPa during the forecast period.

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

The Arabian Ridge across the northern part of the Greater Horn of Africa is expected to weaken and moves northeastwards from 72 hours to the end of forecast period.

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

At 850-hPa level, a cyclone trough is expected to remain active across Madagascar and southern Africa; it's linked to lower level-wind convergence over central Africa, in particular over DRC, RC and Gabon.

At 700-hPa level, a cyclonic trough is expected to propagate over Madagascar, southern and portions of central Africa. 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.

Cyclonic troughs and convergence winds at low and mid-level atmosphere are expected to enhance rainfall over the northern portions of Southern Africa, mostly across Angola, DRC, Zambia, Zimbabwe, Malawi, Mozambique, Tanzania and Madagascar. At least 25mm for two

or more days is likely over local areas in northern and eastern Angola, southern Zambia and northern Zimbabwe with an increased chance for rainfall to exceed 50mm over southern DRC, northern Zambia, northern Malawi, southern Tanzania and over Northern and central Madagascar. 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.

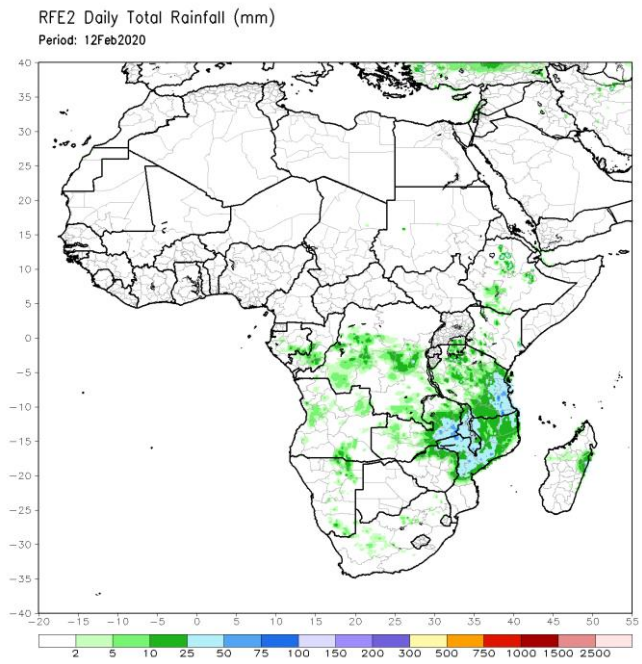
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (*February 12, 2020*)

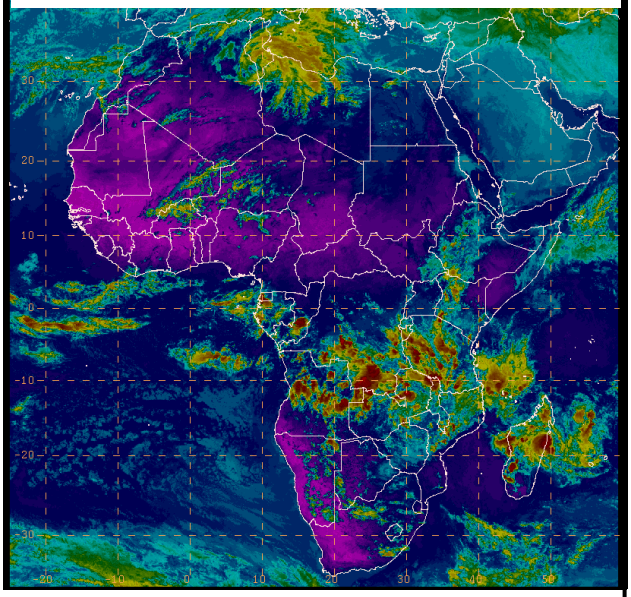
Daily rainfall amount exceeded 25 mm over Zambia, Malawi, Mozambique and Tanzania with rainfall amount in excess of 50 mm in some of these areas.

2.2. Weather assessment for the current day (*February 13, 2020*)

Convective clouds are observed over many places in the northern portions of Southern Africa.



IR Satellite Image (valid 1500 February 13, 2020)



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