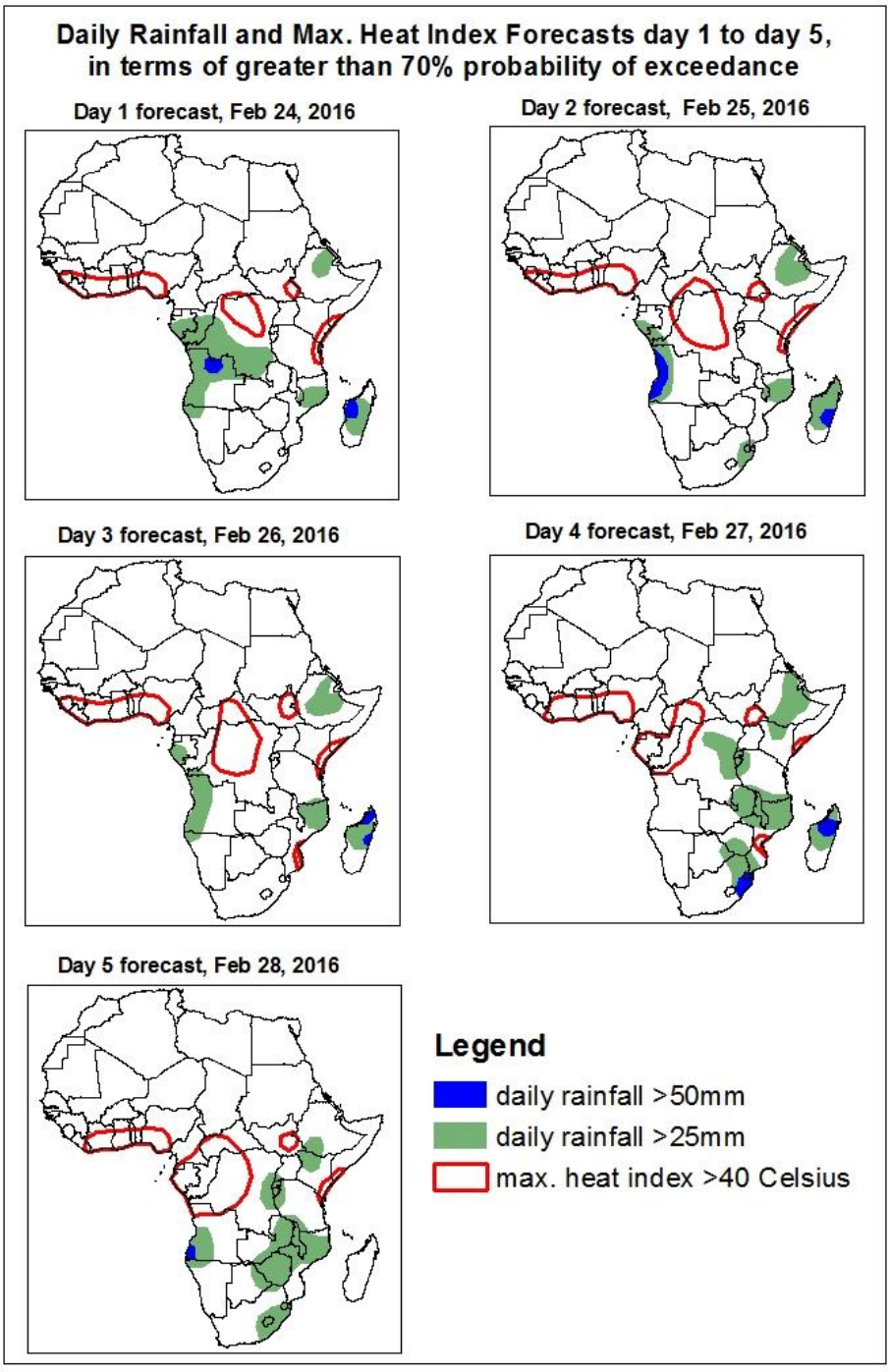
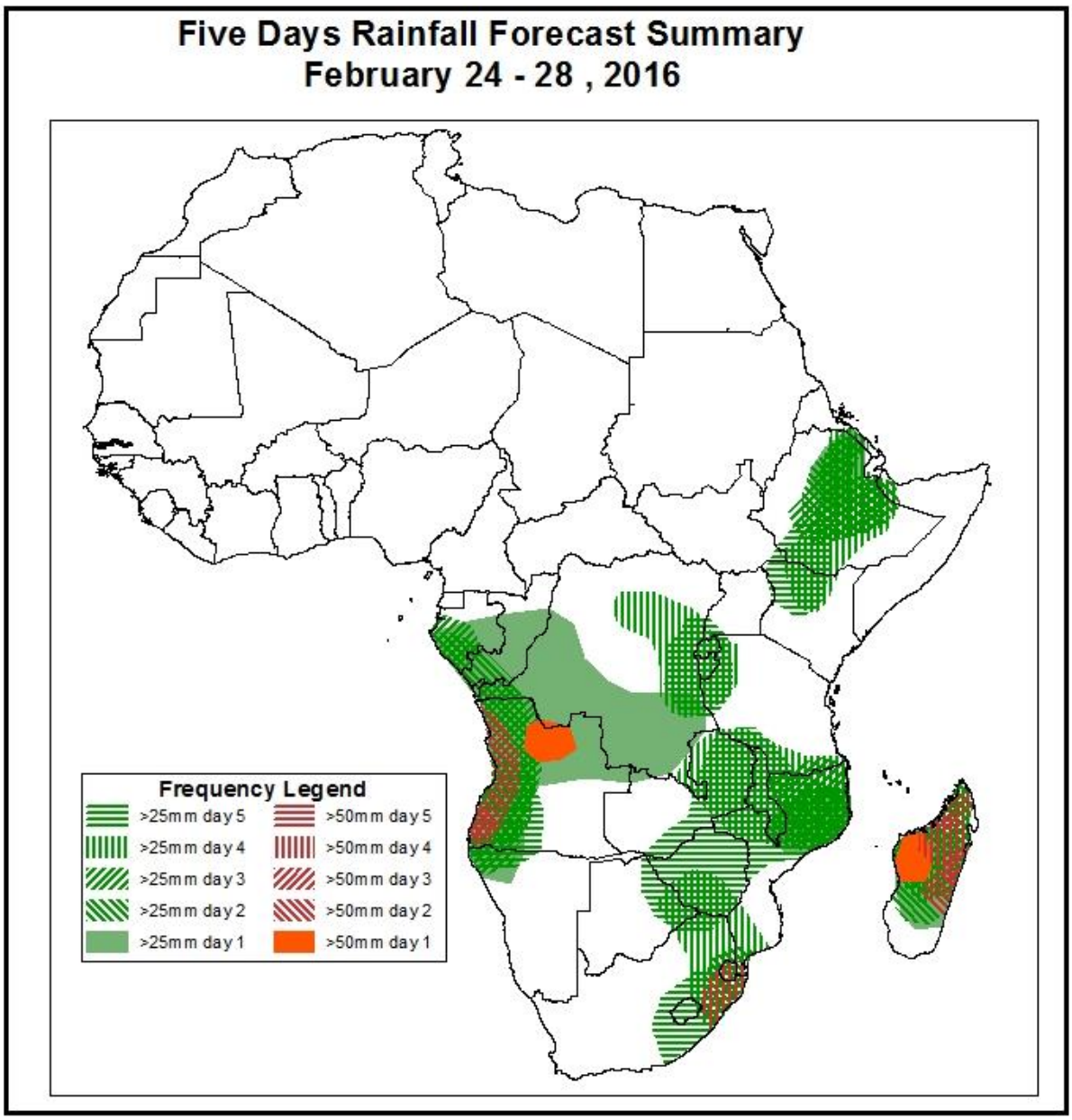
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on February 23, 2016)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (*valid: Feb 24 – Feb 28, 2016)*

The forecasts are expressed in terms of high probability of precipitation (POP) and high probability of maximum heat index, based on the NCEP/GFS, ECMWF and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.



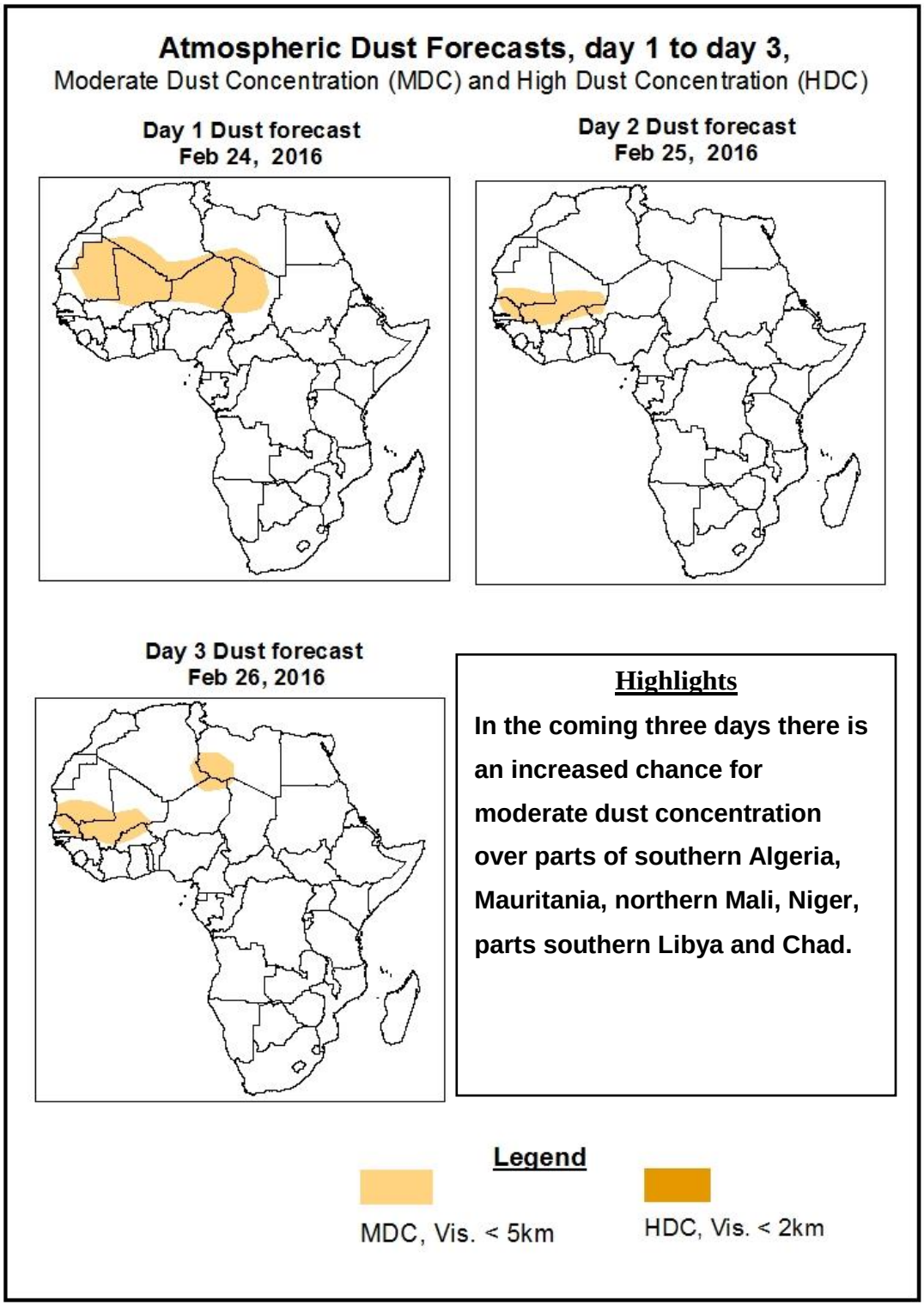


Highlights

In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over portions of Gabon, southern Congo-Brazzaville, parts of eastern DRC, Rwanda, Burundi, western and southern Tanzania, portions of Ethiopia and northern Kenya, western Angola, eastern Zambia, Malawi, northern Mozambique, southern Zimbabwe, eastern South Africa, and Madagascar.

1.2. Atmospheric Dust Concentration Forecasts *(valid: Feb 24 – Feb 26, 2016)*

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: Feb 24 – Feb 28, 2016

The Azores high pressure system over Northeast Atlantic is expected to to weaken gradually, with its central pressure value decreasing from about 1039 hPa to 1034 hPa during the forecast period.

The St Helena high pressure system over the Southeast Atlantic Ocean is expected to maintain an average central pressure value of 1021 hPa during the forecast period.

The Mascarene high pressure system over the Southwest Indian Ocean is expected to intensify gradually during the forecast period, with its central pressure value increasing from about 1022 hPa in 24 hours to 1027 hPa in 120 hours.

At 925 hPa level, strong dry northeasterly to easterly flow is expected to prevail across many places in the Sahel countries, leading to increased chance for moderate to high dust concentration through 24 to 72 hours.

At 850 hPa level, a mid-latitude cyclonic circulation is expected to prevail across the northern portions of Arabian Peninsula, with its associated trough extending southwards into the Greater Horn of Africa, leading to increased rainfall activity over Ethiopia during the forecast period. An area of cyclonic circulation and its associated trough is expected to prevail over the Mozambique Channel and the neighboring areas during the forecast period. Seasonal wind convergences are expected to enhance rainfall over portions of DRC, the Lake Victoria region, and Angola.

At 500 hPa level, a deep trough associated with mid-latitude cyclonic circulation is expected to prevail over the Arabian Peninsula and the neighboring areas of Northeast Africa through 24 to 72 hours.

In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over portions of Gabon, southern Congo-Brazzaville, parts of eastern DRC, Rwanda, Burundi, western and southern Tanzania, portions of Ethiopia and northern Kenya,

western Angola, eastern Zambia, Malawi, northern Mozambique, southern Zimbabwe, eastern South Africa, and Madagascar.

There is also an increased chance for maximum heat index values to exceed 40^{o}C portions of the Gulf of Guinea countries, parts of DRC and CAR, eastern South Sudan Republic, and coastal East Africa and coastal Mozambique.

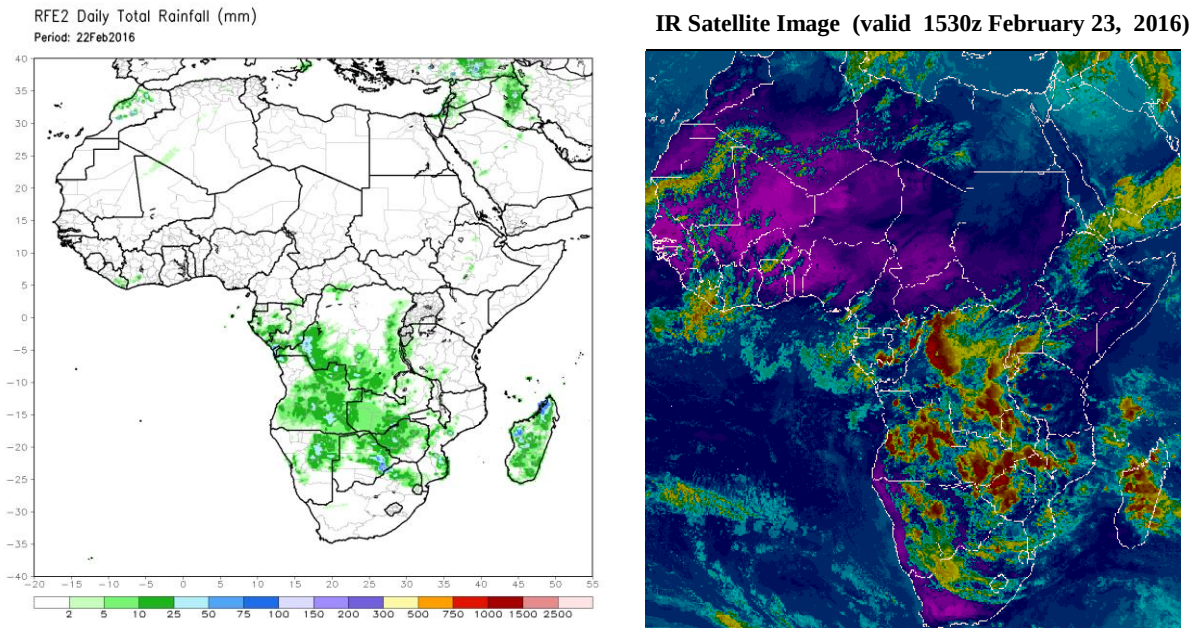
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (February 22, 2016)

Moderate to locally heavy rainfall was observed over portions of central DRC, Madagascar, western Zambia, north eastern Namibia and northern Zimbabwe.

2.2. Weather assessment for the current day (February 23, 2015**)**

Intense convective clouds are observed across portions of central Angola, DRC, Zimbabwe and central Madagascar.



Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (right) based on IR Satellite image

Author: Zerihun Hailemariam (Ethiopian National Meteorological Agency) / CPC-African Desk); zerihun.tessema@noaa.gov