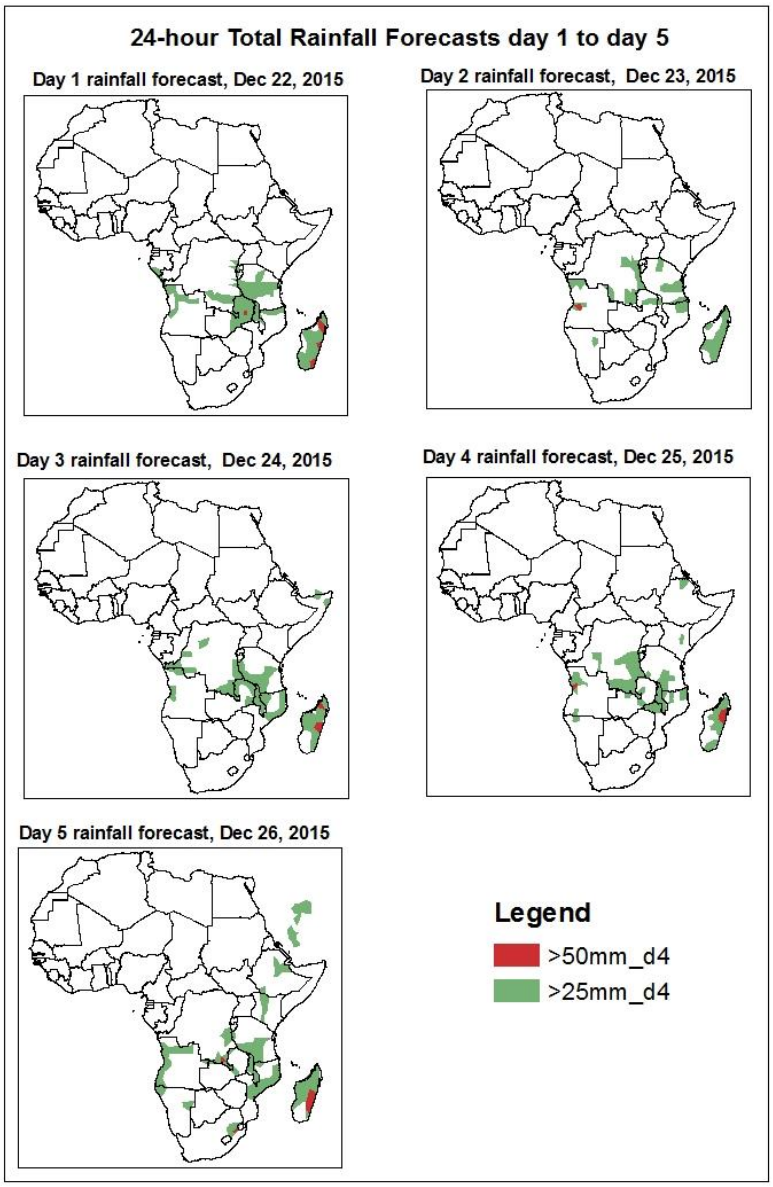
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

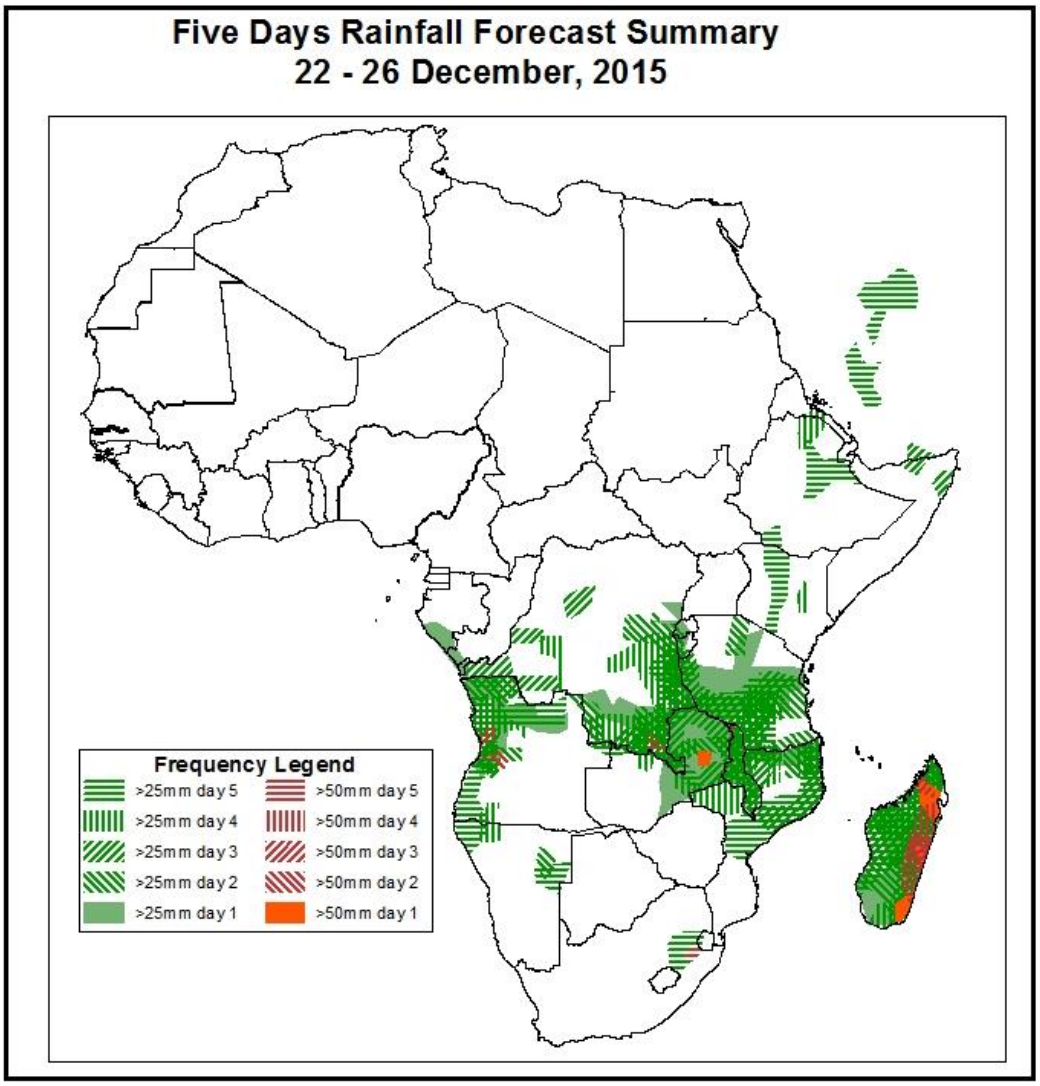
1. Rainfall and Dust Concentration Forecasts

Valid: 06Z of Dec 22 – 06Z of Dec 26, 2015. (Issued on December 21, 2015)

1.1. 24-hour Cumulative Rainfall Forecasts

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



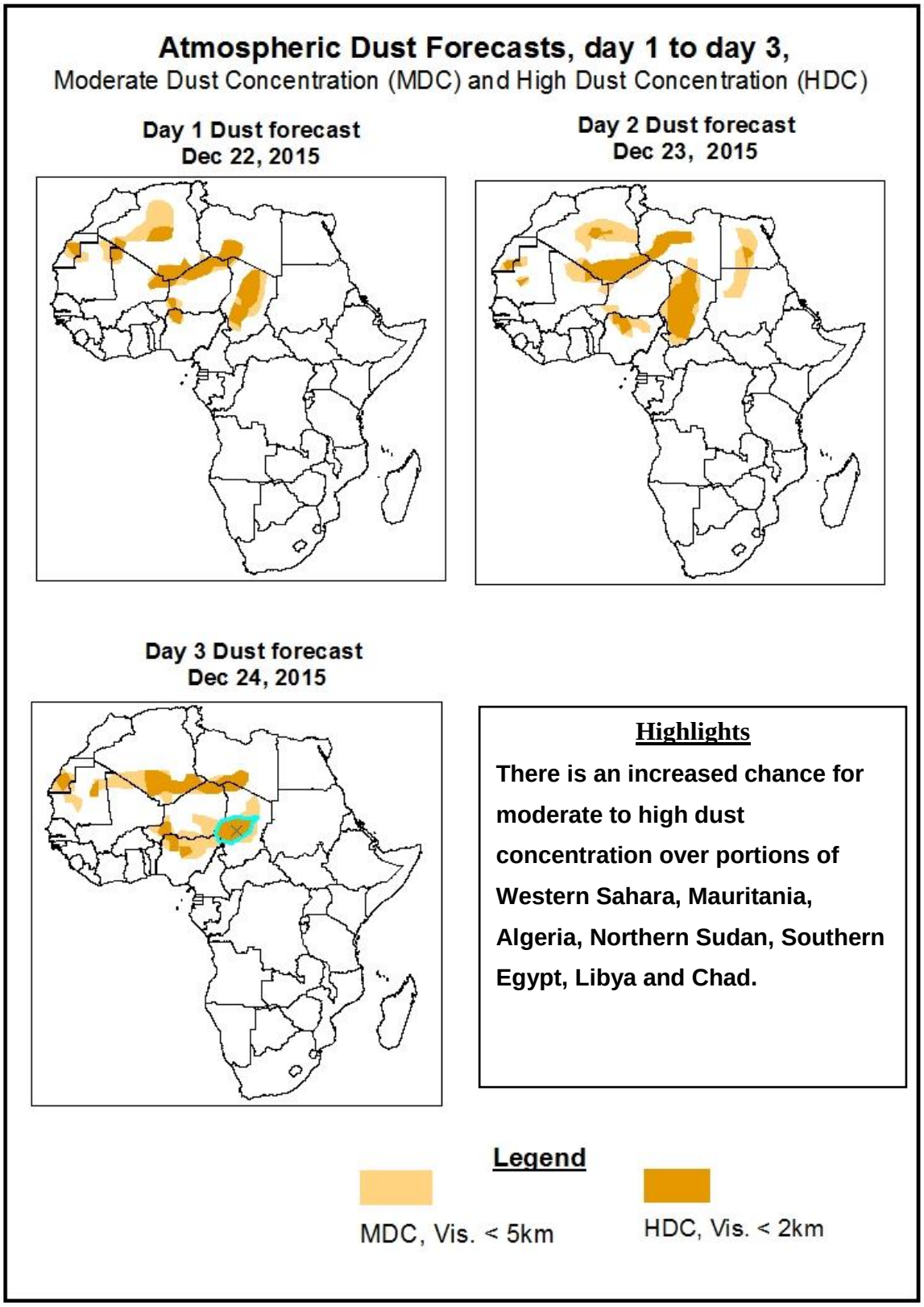


In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over most parts of Madagascar, Northern Mozambique, Malawi, Eastern Zambia, Southern Tanzania, Southern DRC and western Angola, with high probability of heavy rainfall over western Madagascar and Zambia.

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Dec 22– 12Z of Dec 24, 2015

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: 22 – 26 December, 2015

The Extension of Azores high pressure system over Sahara is expected to weaken in to 1033mb in 24 hours' time from its central value 1034mb and to intensify in to 1035mb in 48 hours' time. This pressure system is also expected to weaken in to 1034mb and in to 1032mb in 72 and 96 hours' time respectively. By the end of the forecast, this system is expected to intensify in to 1033mb.During the forecast period, the spatial position of this pressure system tends to shift in to East direction, slight.

The Siberian high pressure system is expected to attain its central value of 1032mb for about 24 hours and intensify into 1035mb in 48 hours' time. This high pressure system is also expected to intensify in to 1031mb and in to 1033mb in 72 and 96 hours' time respectively and to weaken back to 1031mb in 120 hours' time. During the forecast period, the spatial position of this system is expected to make slight shift in to the North direction and interact with sub-tropical systems to bring unseasonal rainfall over NE Ethiopia.

The St Helena high pressure system over South East Atlantic Ocean is expected to weaken in to 1021mb from its central value of 1023mb. This pressure system is also expected to intensify in to 1030mb and in to 1032mb in 48 and 72 hours' time respectively and to weaken back in to 1029mb and in to 1026mb in 96 and 120 hours' time respectively. During the forecast period, the spatial position of this pressure system tends to make slight shift in to the west and back to the center.

The Mascarene high pressure system over Southwest Indian Ocean is expected to intensify in to 1024mb and in to 1026mb in 24 and 48 hours' time respectively from its central value of 1022mb. This high pressure system is also expected to weaken in to 10 21md in 72 hours' time and intensify in to 1024mb in 72 and 96 hours' time respectively. By the end of the forecast period, this pressure system will be weaken in to 1021mb.

.

At 925mb level, unlike the previous day's Easterly wind is dominant over North Africa to bring high probability of dust to prevail over Western Sahara and Mauritania and Algeria. The Extension of Azores high pressure system is expected to stay long over central Sahara leading to the attainment of the maximum dust concentration over chad.

At 850mb level, North-south oriented meridional component of ITCZ that have been located between Southern Ethiopia and Northern South Africa, is expected to extend its convergence zone up to Northern Ethiopia. This convergence zone is also expected to extend down to central South Africa, to attain its south most extreme spatial position. Strong low level convergence over central and Northern Ethiopia is expected to provide isolated unseasonal rainfall over Central and NE of Ethiopia. Like the previous days north westerly wind coming from Indian Ocean continuous to bring enhance rainfall over south eastern Africa that covers Tanzania, Mozambique, Malawi, DRC and Zambia and most parts of Madagascar. And heavy rainfall of more than 50mm per day is expected over western Madagascar and Zambia.
The south westerlies coming from Southern Mediterranean Ocean, is also converges to bring enhance rainfall over South western Africa that covers western Gabon, Southern Congo, western Angola and parts of Namibia.

In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over most parts of Madagascar, Northern Mozambique, Malawi, Eastern Zambia, Southern Tanzania, Southern DRC and western Angola, with high probability of heavy rainfall over western Madagascar and Zambia.

2.0. Previous and Current Day Weather over Africa

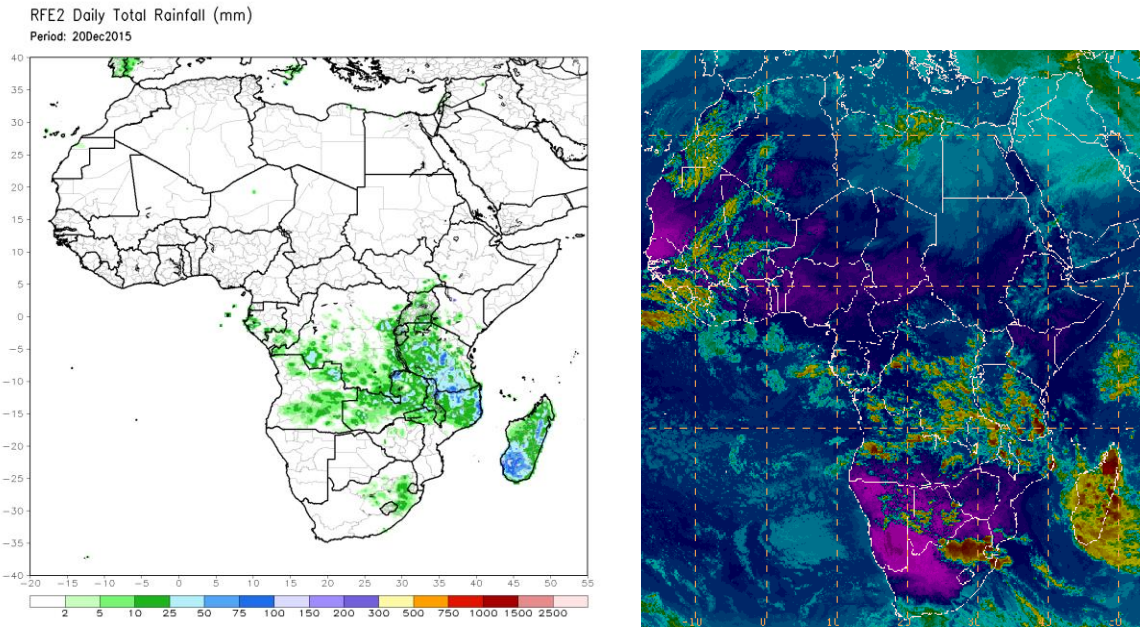
2.1. Weather assessment for the previous day (December 20, 2015)

Moderate to heavy rainfall was observed over local areas in most parts of Madagascar, Malawi, Tanzania, Swaziland, Northern South Africa, Eastern DRC, Eastern Zambia and Central Angola.

2.2. Weather assessment for the current day (December 24, 2015)

Intense convective clouds are observed across many places over Namibia, most parts of Madagascar, Malawi, Tanzania, Swaziland, South Africa, DRC, Zambia, and Angola.

IR Satellite Image (valid 1830z of December 21, 2015)



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

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