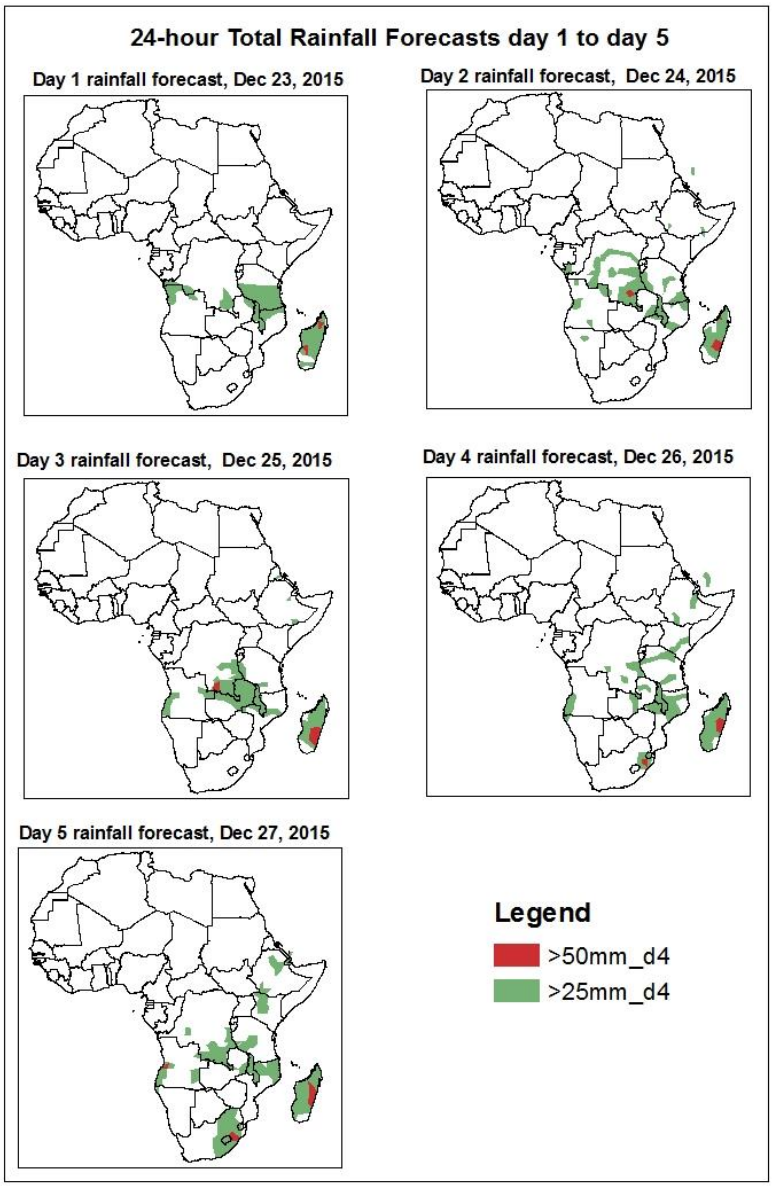
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

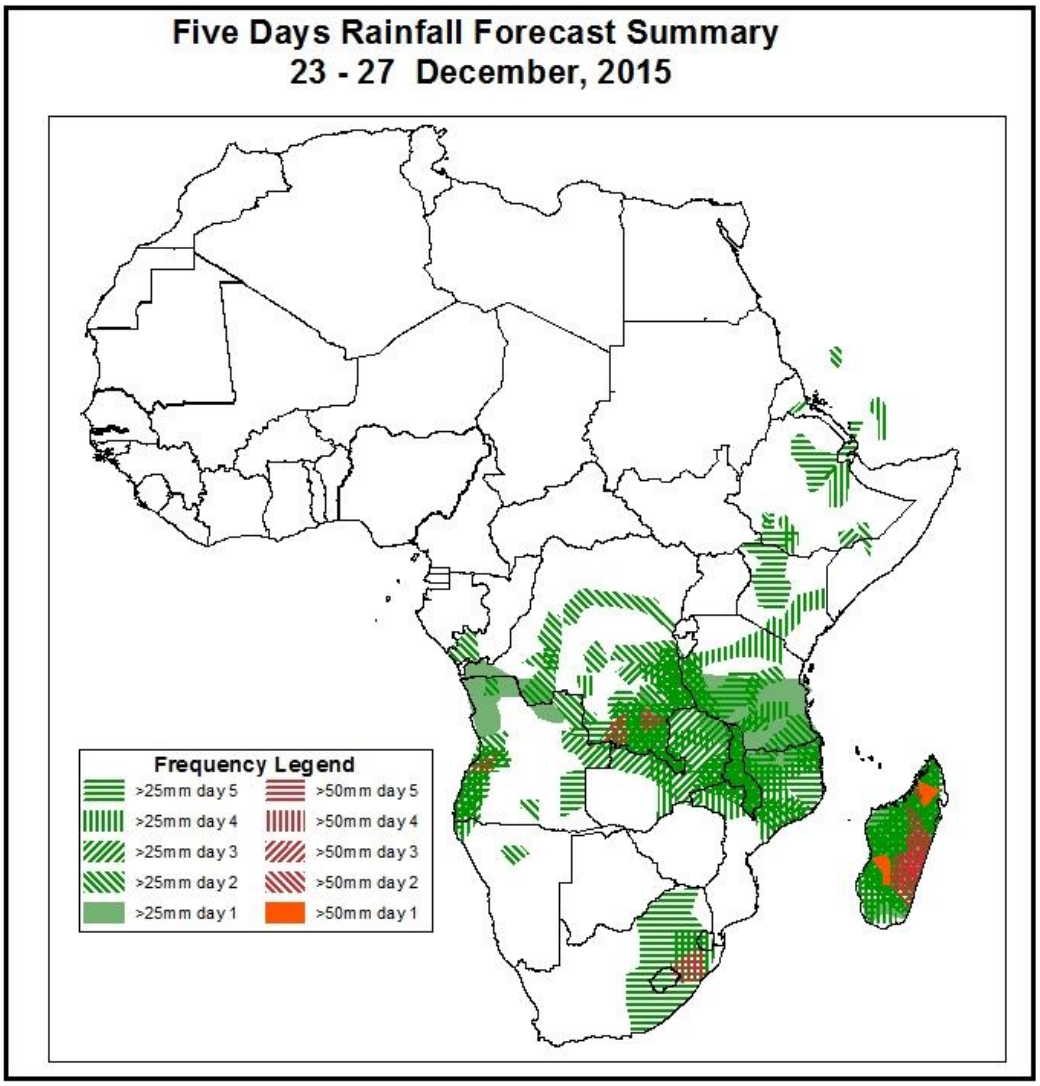
1. Rainfall and Dust Concentration Forecasts

Valid: 06Z of Dec 23 – 06Z of Dec 27, 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.



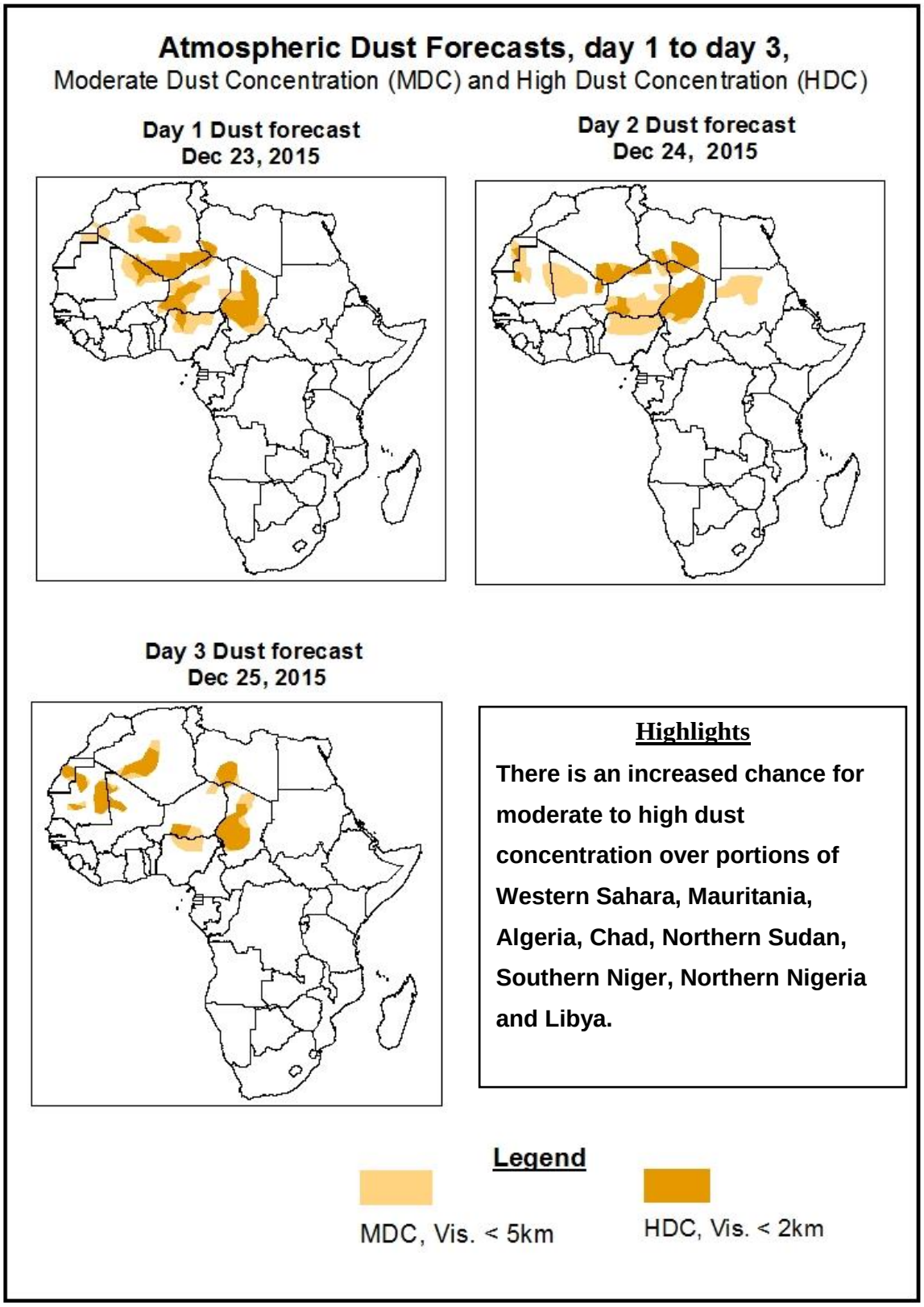


In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over most parts of Madagascar, Lesotho, Swaziland, Northern Mozambique, Malawi, Eastern Zambia, Southern Tanzania, Southern DRC, Northern South Africa and western Angola, with high probability of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

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Dec 23– 12Z of Dec 25, 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: 23 – 27 December, 2015

The Extension of Azores high pressure system over Sahara is expected to attain its central value of 1035mb for about 48 hours. As a result of this, the concentration of dust will continue to prevail like the previous days over Western Sahara, Mauritania, Algeria, Northern Sudan, Southern Egypt, Libya and Chad. But due to the strong anticyclonic activity over central Sahara region, the dust concentration is expected to be wide spread further over the region.
In 72 hours' time this high pressure system is expected to attain 1034mb and intensify in to 1035mb in 96 hours' time and weaken in to relatively minimum value of 1034mb in 120 hours' time. During the forecast period, the spatial position of this high pressure system is expected not to make significant shift.

The Siberian high pressure system is expected to weaken in to 1032mb and in to 1030mb in 24 and 48 hours' time respectively from its central value of 1035mb. This pressure system is also expected to intensify in to 1034mb and into 1035mb in 72 and 96 hours' time relatively and to attain this central value up to the end of the forecast period. During the forecast period, this high pressure system is expected to interact with sub-tropical systems and bring unseasonal rainfall over isolated parts of NE Ethiopia.

The St Helena high pressure system over South East Atlantic Ocean is expected to intensify in to 1030mb and in to 1031mb in 24 and 48 hours' time respectively and to weaken in to 1029mb in 72 hours' time. This high pressure system is also expected to further weaken in to 1025mb and in to 1023mb in 96 and 120 hours' time.
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 weaken in to 1020mb in 24 hours' time from its central value of 1026mb and to intensify in to 1021mb and 1023mb in 48 and 72 hours' time respectively.

This pressure system is also expected to weaken in to 2020mb in 96 hours' time and to intensify in to the relatively maximum value of 1027mb in 120 hours' time.

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At 925mb level, North Easterly wind is stile dominant over North Africa to bring high probability of dust to prevail over Western Sahara and Mauritania, Algeria, Mali, Niger and Chad. Unlike the previous days anticyclonic activity is expected to be strong over central Sahara region to extended dust concentration up to Northern Nigeria, Southern Niger and Northern Sudan.

At 850mb level, Normally North-south oriented meridional component of ITCZ that have been located between Southern Ethiopia and Northern South Africa, is expected to attain diagonal position crossing Gabon, Congo, DRC Zambia, Malawi, Mozambique and Madagascar. Strong and moist 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. Dominant low level North easterly winds coming from interactive subtropical system in to eastern Ethiopia is expected to provide isolated unseasonal rainfall over Central and NE of Ethiopia.

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, Lesotho, Swaziland, Northern Mozambique, Malawi, Eastern Zambia, Southern Tanzania, Southern DRC, Northern South Africa and western Angola, with high probability of heavy rainfall over western Madagascar, Lesotho and southern DRC.

2.0. Previous and Current Day Weather over Africa

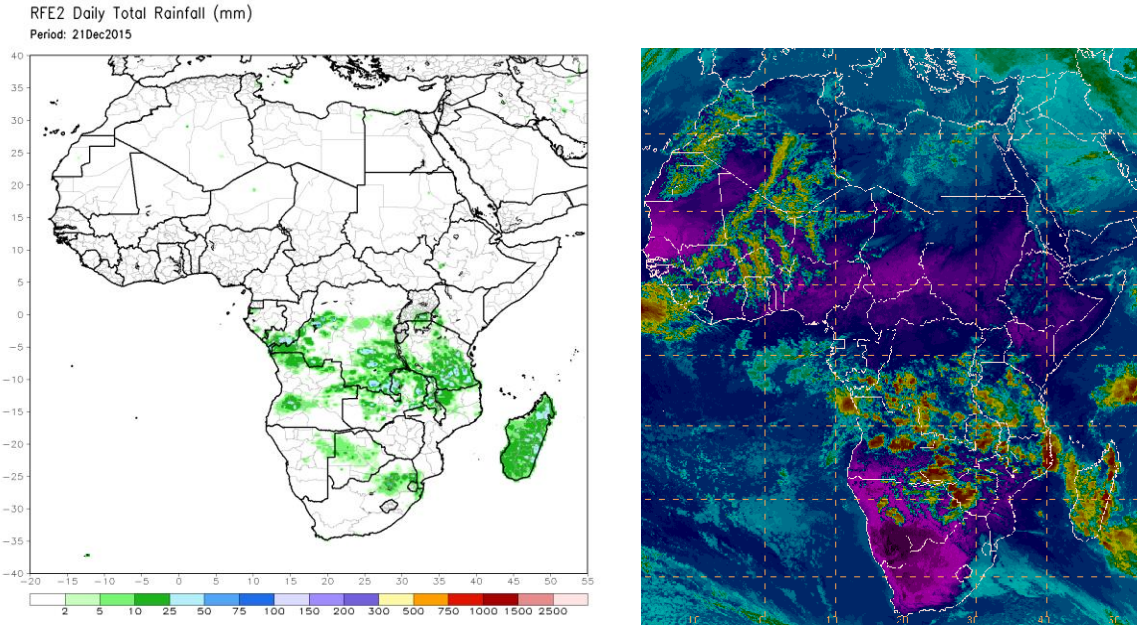
2.1. Weather assessment for the previous day (December 21, 2015)

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

2.2. Weather assessment for the current day (December 22, 2015)

Intense convective clouds are observed across many places over Namibia, most parts of Madagascar, Botswana, Southern Zimbabwe, Malawi, Southern Tanzania, DRC, Zambia, and Angola.

IR Satellite Image (valid 1830z of December 22, 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

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