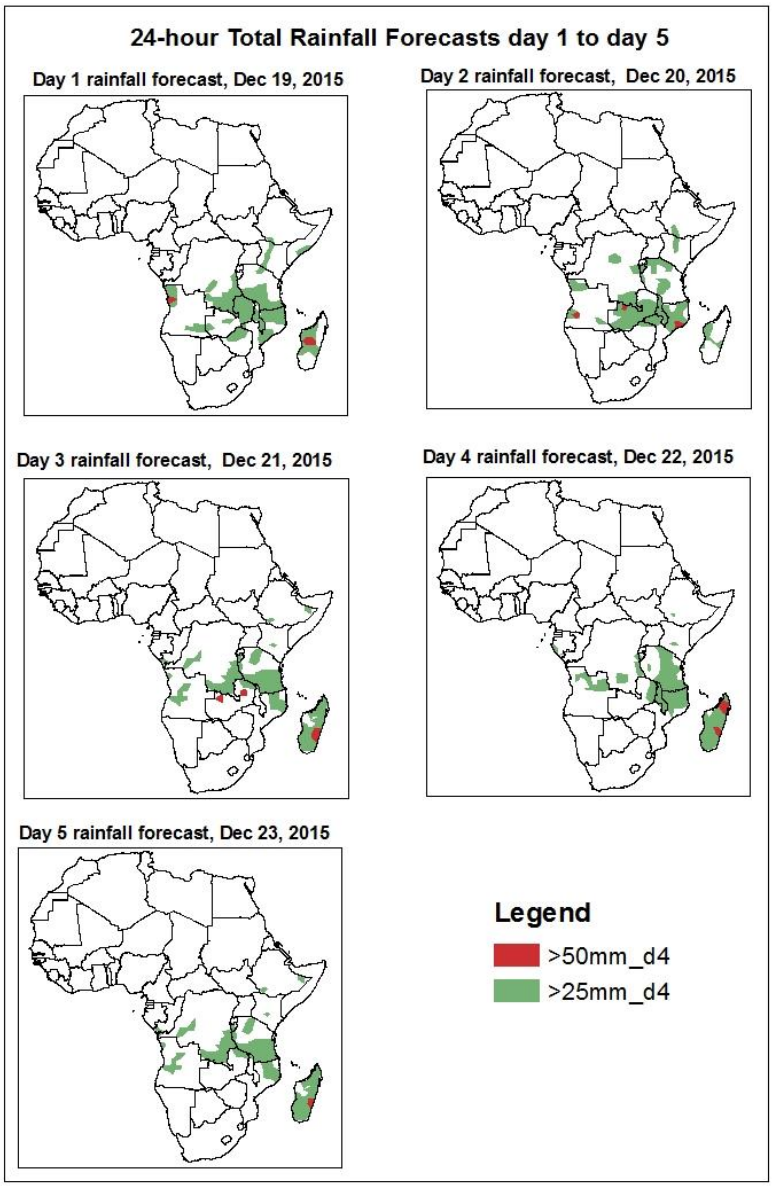
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

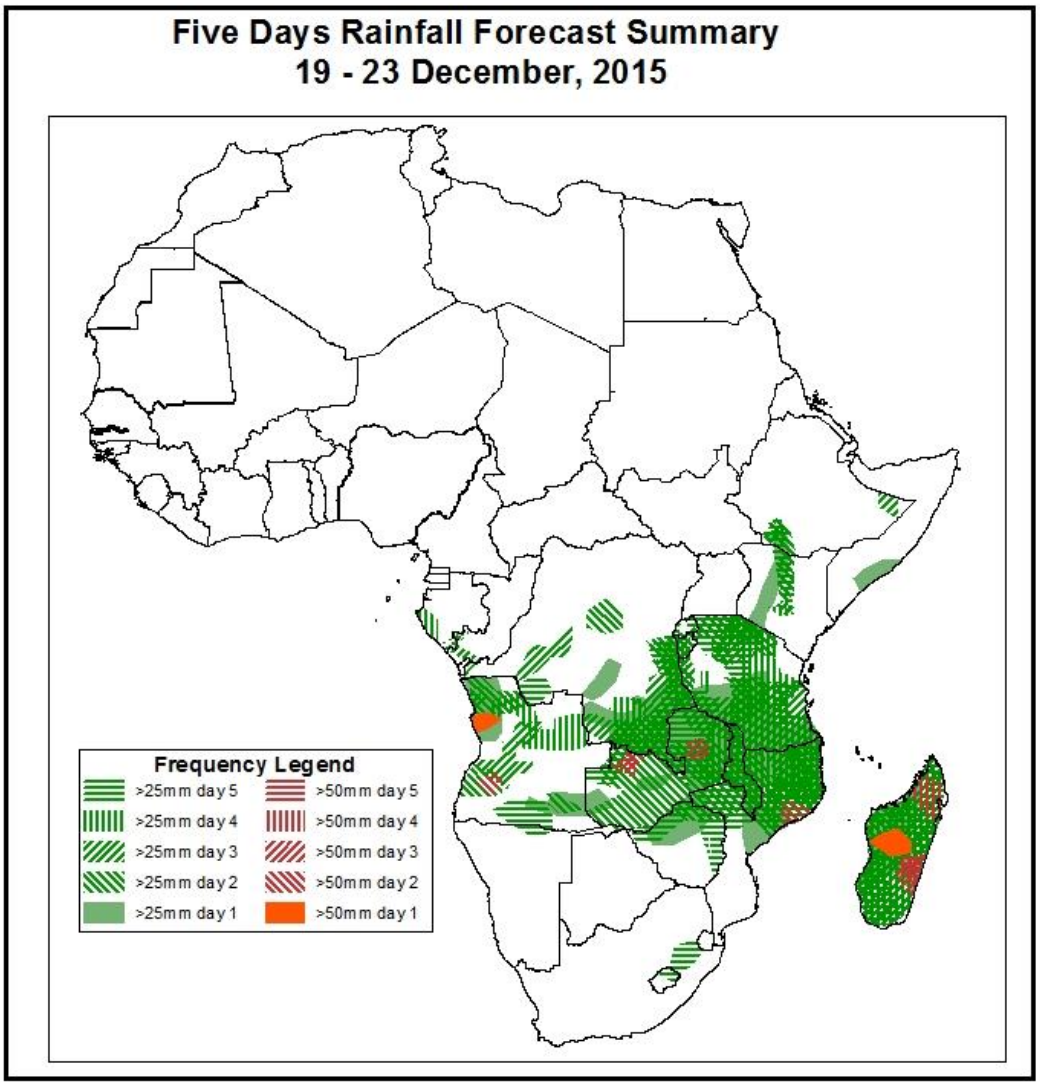
1. Rainfall and Dust Concentration Forecasts

Valid: 06Z of Dec 19 – 06Z of Dec 23, 2015. (Issued on December 18, 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.



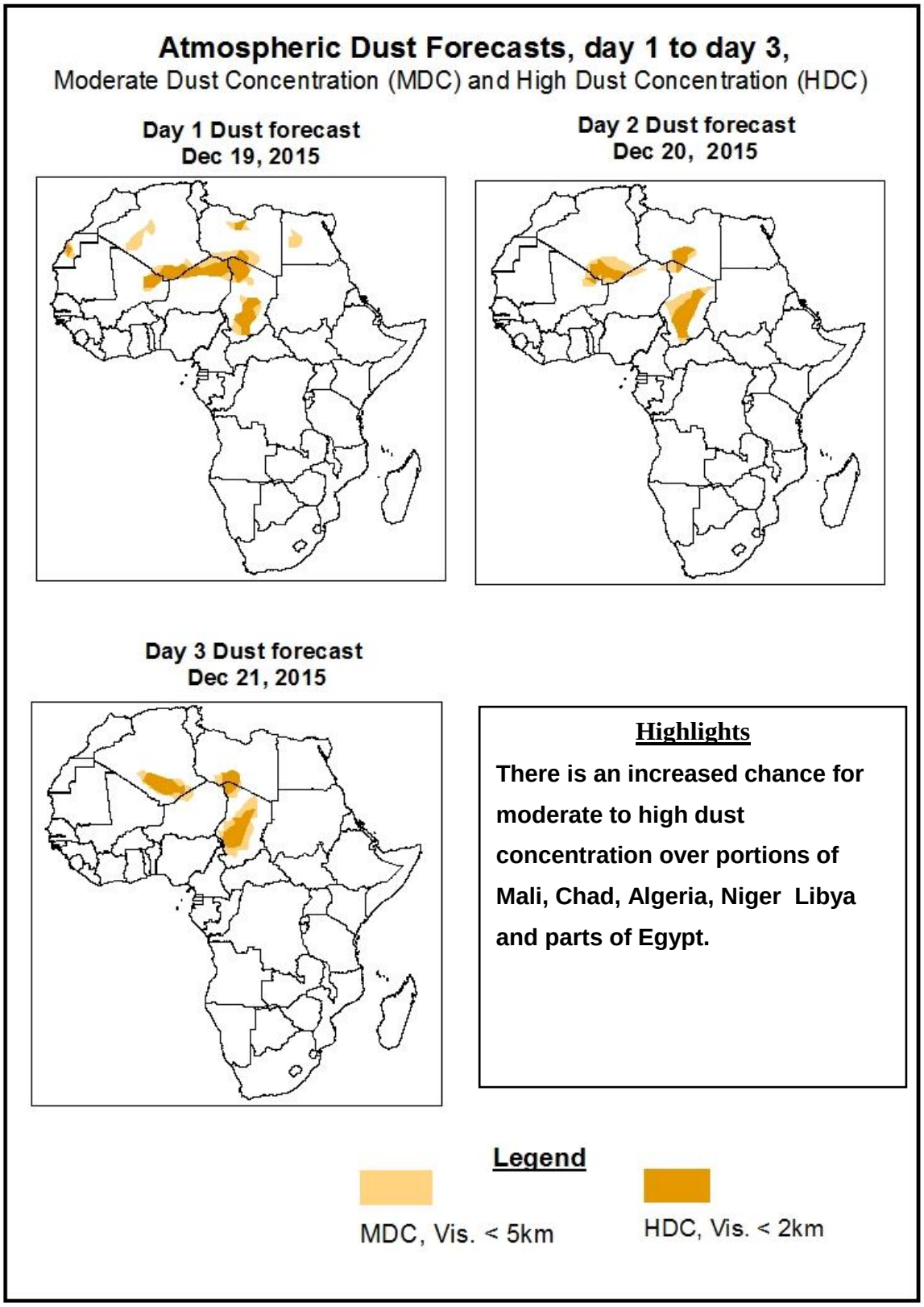


In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over parts of Tanzania, Madagascar, Zambia, Zimbabwe, Angola and DRC, with heavier rainfall events expected over Madagascar, Zambia and Western Angola.

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Dec 19– 12Z of Dec 21, 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: 19 – 23 December, 2015

The Extension of Azores high pressure system over Sahara is expected to intensify in to 1031mb, in to 1035mb and in to 1036mb in 24, 48 and 72 hours' time respectively from its central value of 1030mb and attain this value for about 96 hours. The spatial position of this pressure system tends to shift in to the South East direction for the first 48 hours and tends back to the initial position during the last 48 hours of the forecast time.

The Siberian high pressure system is expected to intensify in to 1032mb and in to 1035mb in 24 and 48 hours' time respectively from its central value of 1031mb and attain this value for about 72 hours. This pressure system is also expected to intensify further to attain relatively maximum value of 1040mb by the end of the forecast period. During the forecast period, the spatial position of this system is expected to make slight shift in to the North West direction.

The St Helena high pressure system over South East Atlantic Ocean is expected to intensify in to 1027mb from the central value of 1026mb in 24 hours' time, and start to weaken in to 1025mb and in to 1023mb in 48 and 72 hours' time relatively. This pressure system is also expected to intensify in to 1026mb in 96 hours' time and in to the relative maximum value of 1028mb by the end of the forecast period. During the forecast period, the spatial position of this pressure system tends to make slight shift in to the west direction and back to the initial position.

The Mascarene high pressure system over Southwest Indian Ocean is expected to intensify in to 1024mb from its central value of 1021mb and attain this value for about 48 hours. In 72 hours' time, this pressure system is expected to weaken in to 1023mb and start intensification in to 1030mb in 96 hours' time. By the end of the forecast period, this high pressure system is expected to weaken in to 1025mb.During the forecast period, the spatial position of this system is expected not to make significant change.

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At 925mb level, like the previous day's Northerly wind is dominant over North Africa, but over the central Africa dominant North easterly trade winds continue to bring high probability of dust to prevail over Algeria, Libya, Northern Mali and Chad. Relative to the previous days, the concentration of dust over Western Sahara and Mauritania is expected to be minimalized. The low level Easterly wind is expected to be intensified over North western Indian Ocean and bring moisture towards east Africa.

At 850mb level, strong low-level wind convergence is located over the seasonal north-south oriented meridional component of the ITCZ, which is currently between Southern Ethiopia and South Africa. This convergence normally known to bring enhance rainfall in to the region.

South westerly and North easterly trend winds, coming from Indian Ocean, converges significantly over the north-south oriented meridional component of the ITCZ to bring enhance rainfall over South eastern Africa that covers Tanzania, Mozambique, Malawi, Zimbabwe, DRC and Zambia.

The south westerlies coming from Southern Mediterranean Ocean, also converges to bring enhance rainfall over South western Africa that covers western Gabon, Southern Congo and western Angola. North easterly winds from Northern Indian Ocean are also expected to intensify in to the west direction leading to unseasonal rainfall over western Somalia and south eastern Ethiopia low lands.

In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over parts of Tanzania, Madagascar, Zambia, Zimbabwe, Angola and DRC, with heavier rainfall events expected over Madagascar, Zambia and Western Angola.

2.0. Previous and Current Day Weather over Africa

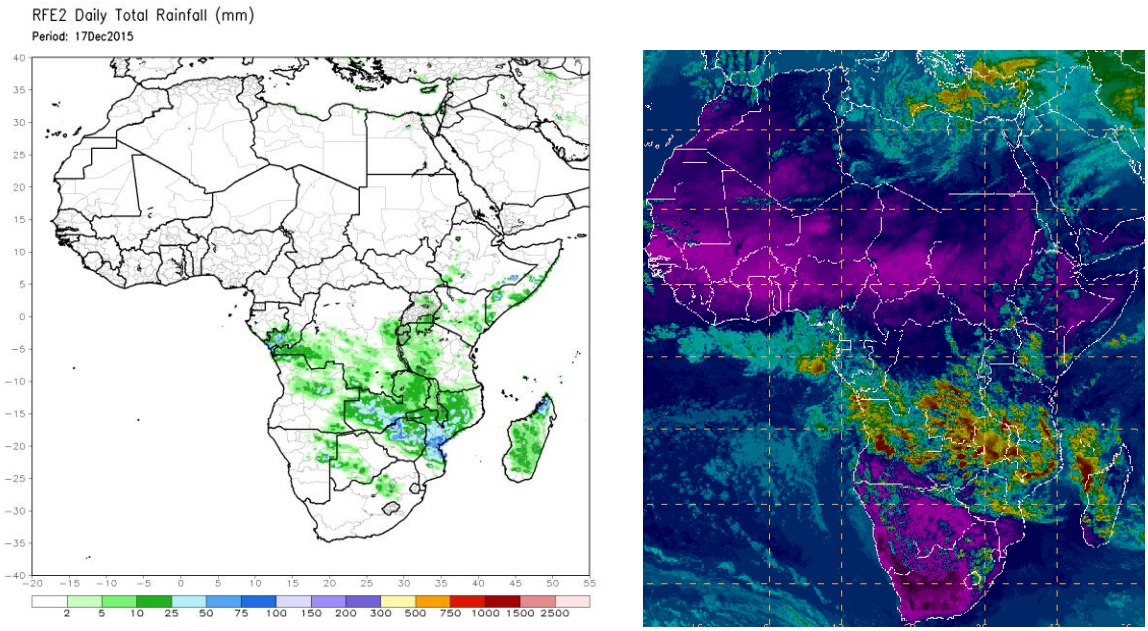
2.1. Weather assessment for the previous day (December 17, 2015)

Moderate to heavy rainfall was observed over local areas in Madagascar, Mozambique, Zimbabwe, Zambia, western Congo, SE Ethiopia and SE Somalia.

2.2. Weather assessment for the current day (December 18, 2015)

Intense convective clouds are observed across many places over Malawi, Zambia, central Angola, Southern and Southern DRC, Western Kenya and SW Somalia.

IR Satellite Image (valid 1830z of December 18, 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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