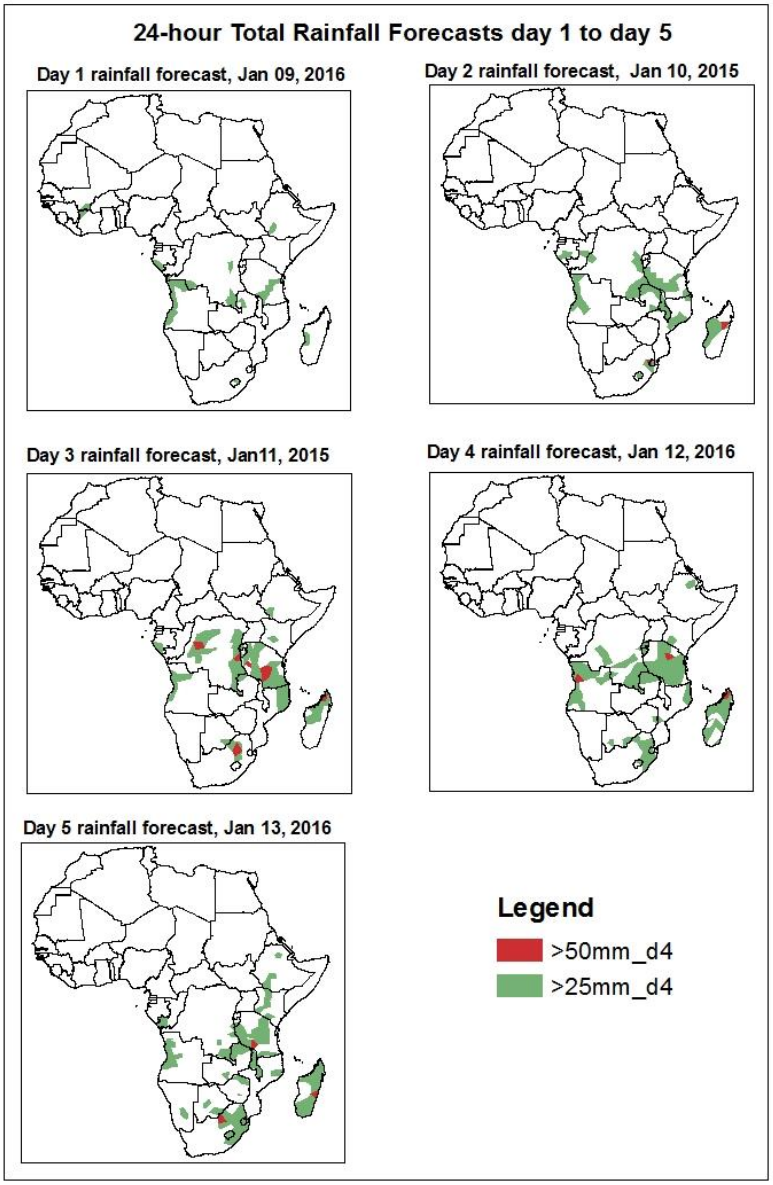
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

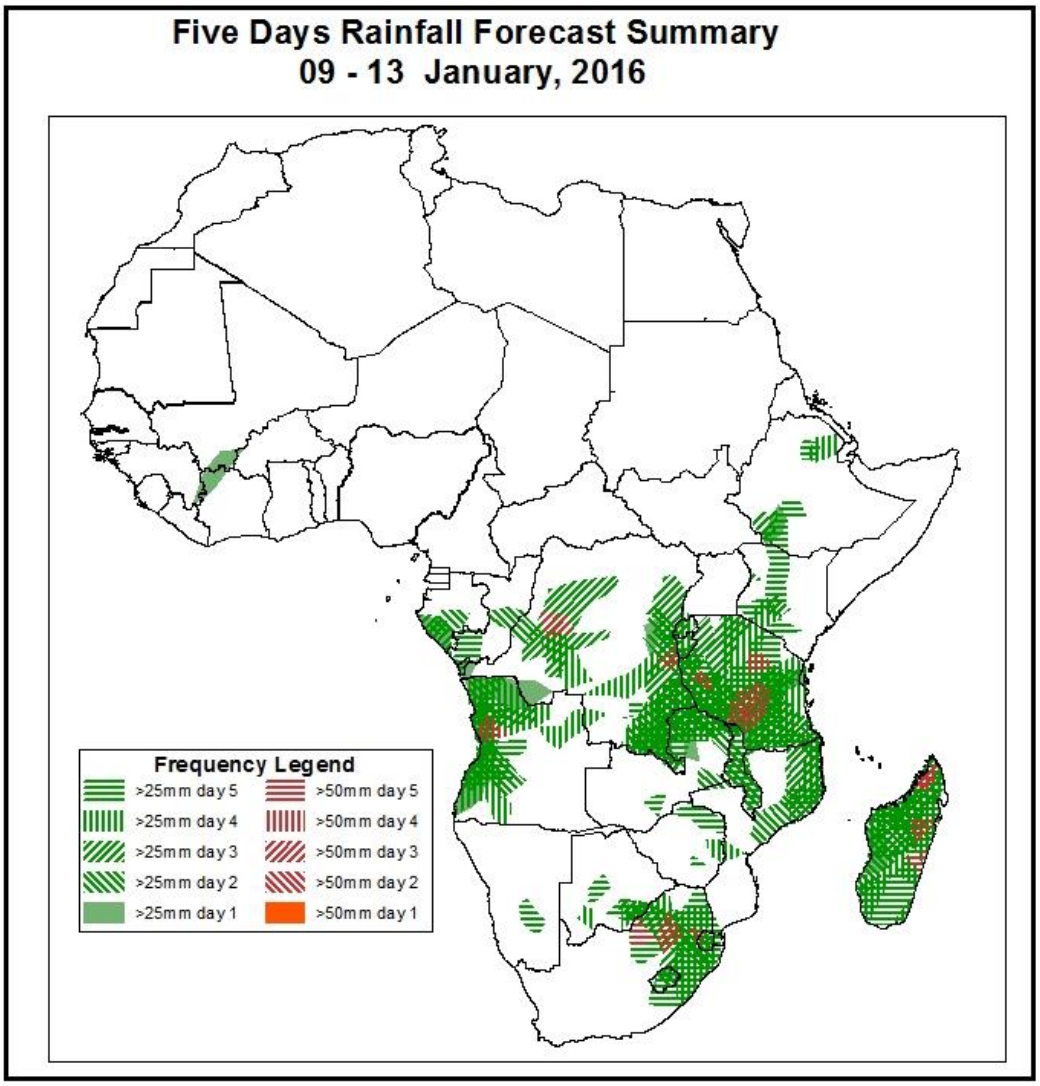
1. Rainfall and Dust Concentration Forecasts

Valid: 06Z of Jan 09 - 06Z of Jan 13, 2016. (Issued on January 08, 2016)

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.



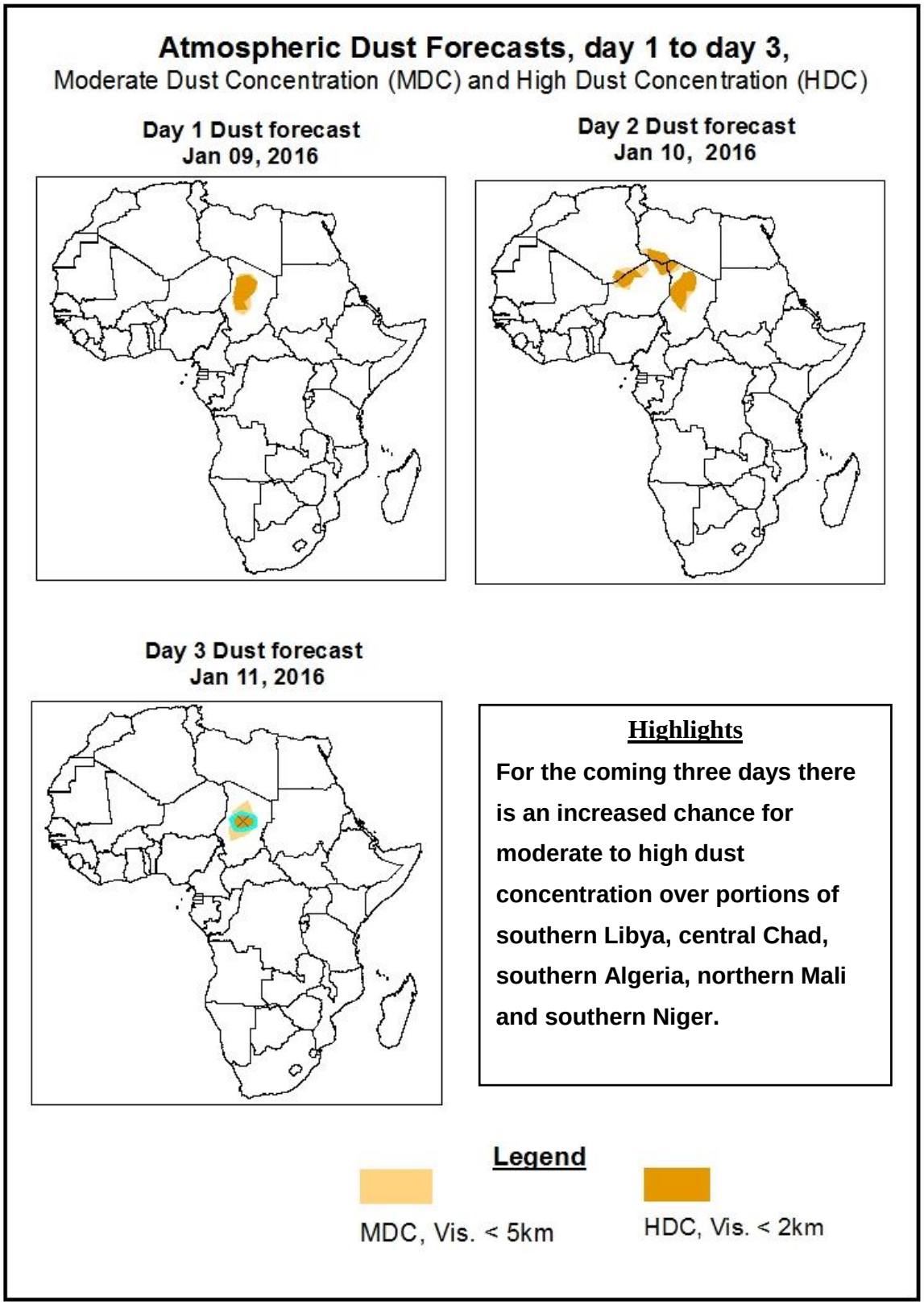


In the coming five days, there is an increased chance for two or more days of moderate to heavy rainfall over North east Mozambique, most parts of Madagascar, western Angola, south eastern DRC, eastern Zambia, most parts of Tanzania, Lesotho, Malawi, Swaziland and north eastern south Africa with high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

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Jan 09 – 12Z of Jan 11, 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: 09 - 13 January, 2016

The Extension of Azores high pressure system over Sahara is expected to weaken into 1023mb from its central value of 1024mb and attain this central value for about 48 hours. This high pressure system is also expected to intensify in to 1028mb I 96 hours' time and weaken back to 1024mb by the end of the forecast period. And in to 1026mb in 96 and 120 hours' time. The low pressure system developed over north western coastal of Africa, is expected to reverse the direction of the dominant north easterly wind in to south westerly hence there is high probability of unseasonal moisture incursion towards north western Africa from northern Atlantic Ocean. Following the slight displacement of this system to ward north east direction, Dust concentration is also expected to expand in to the north east direction. For the coming three days there is an increased chance for moderate to high dust concentration over portions of southern Libya, central Chad, southern Algeria, northern Mali and southern Niger**.** with high probability of visibility less than 2km over parts of Chad.

The Arabian high pressure system is expected to weaken in to 1018mb in 24 hours' time from its central value of 1019mb and intensify in to 1024mb and in to 1025mb in 48 and 72 hours' time respectively. This pressure system is also expected to weaken further in to 1024mb and 1019mb in 96 and 120 hours' time respectively. The intensification of middle latitude low pressure system around this pressure system enhance the formation of low level convergence over Ethiopia which intern facilitate the moisture incursion from Indian Ocean. In association to this system the daily minimum temperature is expected to increase from the normally expected amount.

The St Helena high pressure system over South East Atlantic Ocean is expected to weaken in to 1030mb, in to 1026mb and in to 1024mb in 24, 48, and 72 hours' time respectively. This high pressure system is also expected to intensify in to 1026mb and 1034mb in 96 and 120 hours' time respectively.

The Mascarene high pressure system over Southwest Indian Ocean is expected to intensify in to 1027mb in 24 hours' time from 1025mb and attain this central value for about 24 hours and weaken back to 1025mb in 72 hours' time. This high pressure system is also expected to intensify in to 1028 in 96 hours' time and weaken in to 1025mb in 120 hours' time. The development of low pressure system over central Indian Ocean is expected to depress the amount of moisture supposed to incur from south western Indian Ocean in to south eastern Africa and Madagascar.
The low level anticyclonic activity supposed to develop over northern Africa enhances the dust concentration over southern Libya, central Chad, southern Algeria, northern Mali and southern Niger.

North-South oriented meridional component of ITCZ that have been vertically cross western DRC Angola and Northern Namibia, will attain its previous day location. The low pressure systems developed over central Atlantic Ocean and south western Indian Ocean are expected to influence the moisture incursion towards south western and south eastern Africa. Middle latitude low pressure system is expected to extend down to south between the two tropical high pressure systems, In relation to this interaction north easterly moist wind from northern Indian Ocean converges over central Ethiopia ,leading to isolated rainfall over the region. By the same mechanism extended low level convergence is expected over coastal line of north western Africa leading to rainfall over south western Mali and nearby region.

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

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2.0. Previous and Current Day Weather over Africa

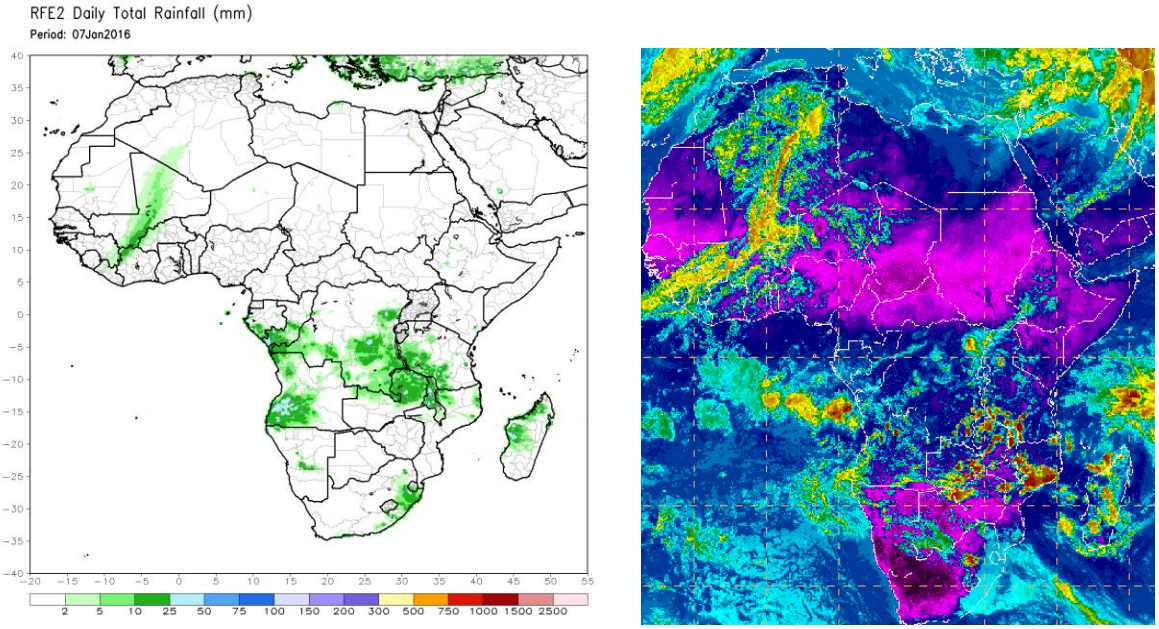
2.1. Weather assessment for the previous day (January 07, 2016)

Moderate to heavy rainfall was observed over local areas in north western Madagascar, north western Mozambique, eastern Zambia, western Angola, south eastern DRC, south western Mali and western Congo.

2.2. Weather assessment for the current day (January 08, 2015)

Intense convective clouds are observed across many places over parts of central Madagascar, north east Mozambique, south western Tanzania, Zambia, south western Mali, Guinea and Serra Leon.

IR Satellite Image (valid 1830z January 08, 2016)



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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