



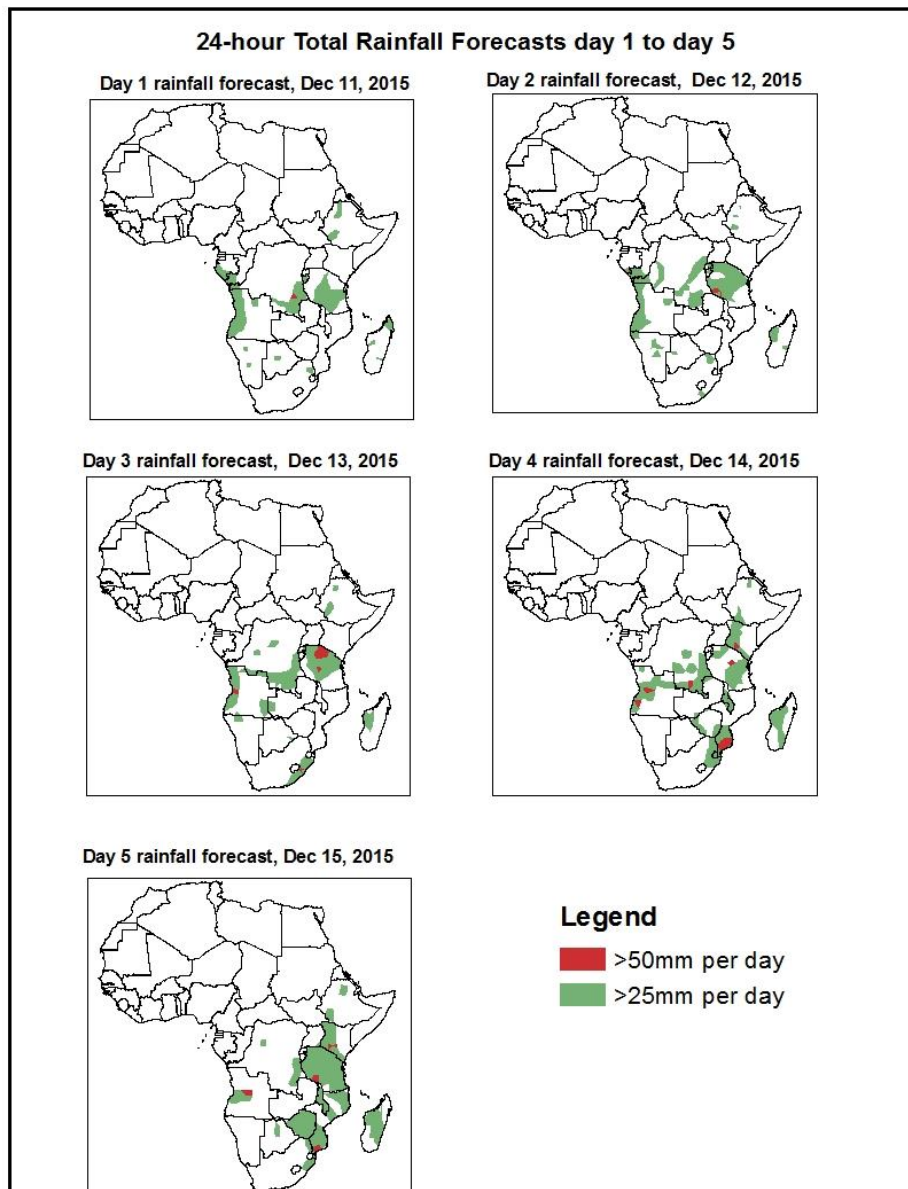
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall and Dust Concentration Forecasts

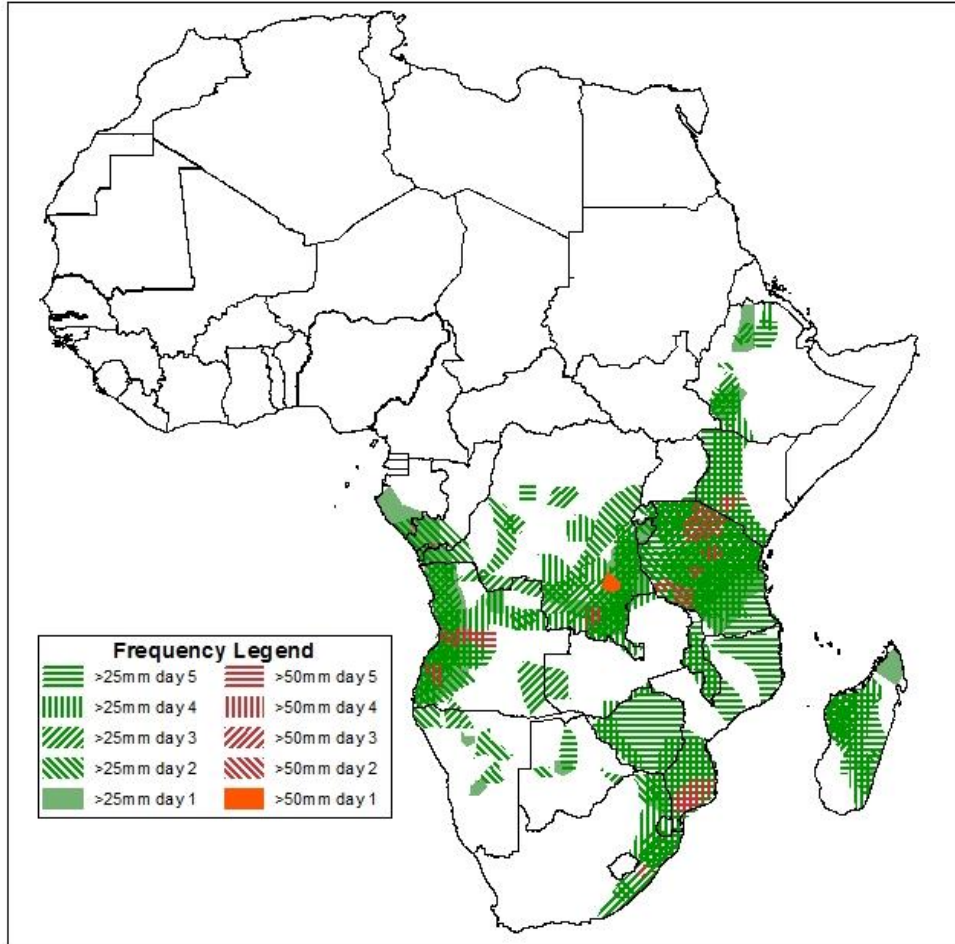
Valid: 06Z of Dec 11 – 06Z of Dec 15, 2015. (Issued on December 10, 2015)

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.



**Five Days Rainfall Forecast Summary
11 - 15 December, 2015**

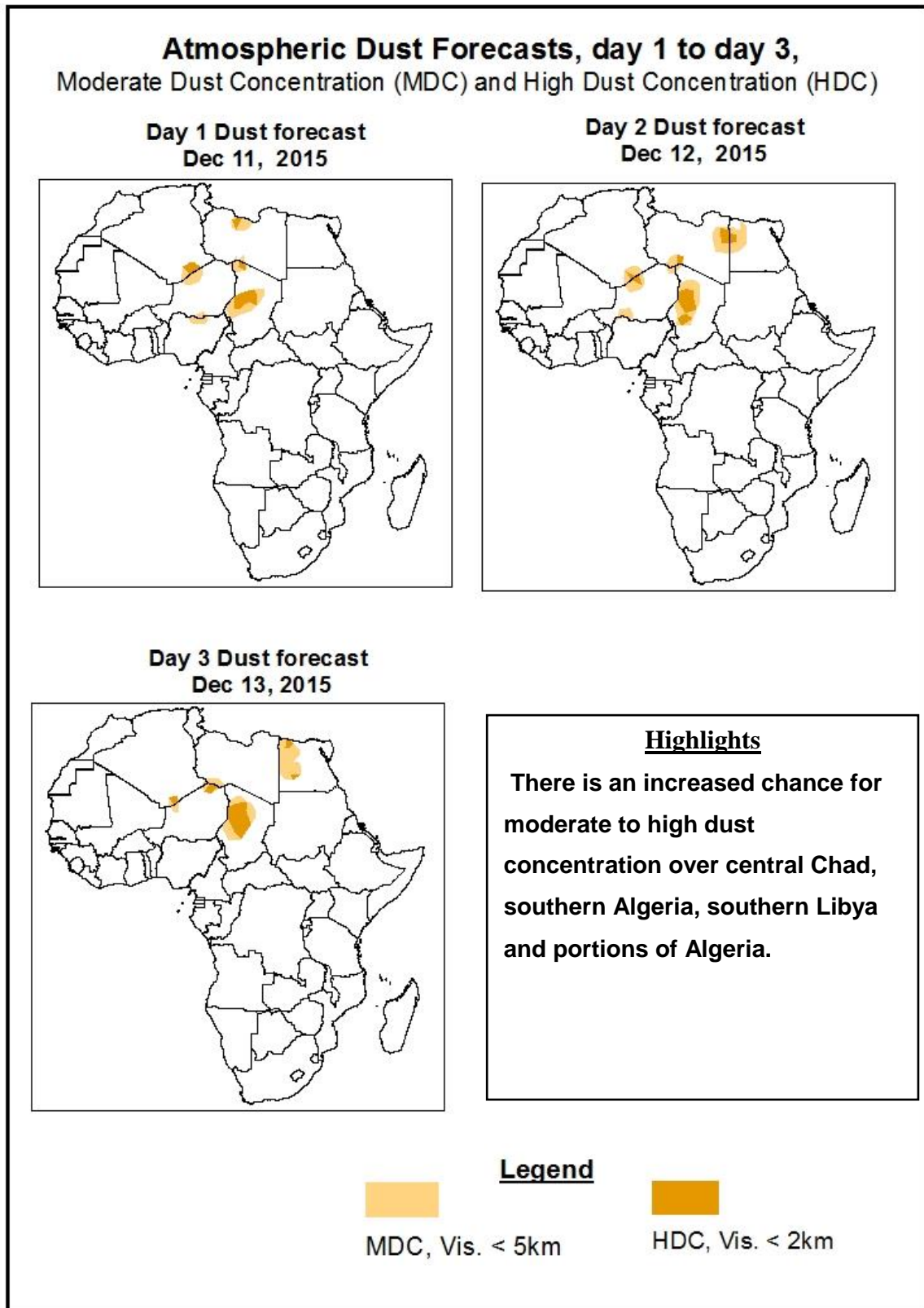


Over south western Africa, western parts of Namibia, Angola, DRC and Gabon are expected to have an increased chance for two or more days of moderate to heavy rainfall. Part of Western Ethiopia, Rwanda, Burundi, western Kenya, much of Tanzania, SW DRC, much of Mozambique and central Madagascar are expected to have moderate to heavy rainfall. Heavy rainfall more than 50mm per day is expected over part of Tanzania, Swaziland and Angola.

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Dec 11– 12Z of Dec 15, 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: 11 – 15 December, 2015

The Azores high pressure system is expected to be weakened from its central value of 1035mb to 1034mb by the next 24 hours. By continuous weakening, this High pressure system attains its minimum value of 1026mb by the next 96 hours and then it will intensify to 1030mb by the end of the forecast period.

Even if this high pressure system is expected to be weakened from its central value which is 1035mb to 1026mb in day time, as its central spatial position is slightly shifted into the dust source regions, like the previous days, there is a high probability of wide spread dust over parts of Chad and Libya.

The Siberian high pressure system is expected to be weakened from its central value of 1044mb to 1043mb in the next 24 hours. By continuous weakening, its central value decreases again to 1038mb in 48 hours time. After two days from the beginning of the forecast time this high pressure system will intensify from its central value of 1041mb to 1043mb, by 3mb in 24 hours time. This High pressure system by continuous intensification its central value reaches 1044mb by the end of the forecast period..

The St Helena high pressure system at the beginning of the forecast period had a central pressure value of 1020mb. This high pressure system is expected to persist as it is for 24 hours and expected to be weakened by 1mb by the next 24 hours. Again the new central value will persist for the next 24 hours. Like the previous days the central value of this pressure system will start weakening to 1019mb by the next 24 hours and attain this minimum value up to the next 24 hours. In general this High pressure system will weaken from 1022mb to 1019mb during the forecast period.

St Helena high pressure system was also observed not to make significant change in terms of position and magnitude.

The Mascarene high pressure system is expected to be intensified from its central value of 1020mb to 1023mb by the next 24 hours and by continuing its intensification its central value is expected to be 1026mb in 48 hours' time. Unlike the previous days, in 72 hours from the beginning of the forecast time, its central value is expected to start

weakening in to 1025mb in 24 hours' time and in to 1022mb by the end of the forecast period.

At 925mb streamlines; as expected, maritime winds from the Atlantic Ocean were still observed streaming into southern parts of some countries in West Africa namely Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin Republic, and Southern part of Nigeria within the forecast period. Maritime winds were also observed streaming into Southern Cameroun, Equatorial Guinea, Gabon and into the inlands of central Africa like, Angola, CAR and DRC. Maritime wind flow patterns from the Indian Ocean were also observed streaming into the inlands of Kenya, Uganda, Tanzania, Malawi, Zambia, thereby instituting the Congo boundary convergence. Indian Ocean monsoon, just like the previous days, was also observed over Mozambique, Malawi, Botswana, Swaziland and Lesotho in Southern Africa. Whereas The Northeasterly continental wind flow pattern was observed over Senegal, Guinea, Burkina Faso, Mali, Chad, Niger, Northern and central Nigeria, Northern Cameroun, Central African Republic and Sudan.

At 850 mb streamlines; continental flows, predominant North easterly trade winds were still observed over most parts of West Africa namely Senegal, Gambia, Mauritania, Sierra Leone, Liberia, Burkina Faso, Ghana, Togo, Niger, Chad, Nigeria, CAR and Cameroun. Maritime winds were also still observed converging over DRC, Angola, Namibia and Zambia. Also maritime wind flows were also observed over Congo, Angola, in Central Africa and Kenya. Burundi, Rwanda, Uganda, Ethiopia and Somalia in East Africa. Maritime winds from the Indian Ocean and Atlantic Ocean were observed streaming into Southern Africa.

At 700mb streamlines; a high pressure system was still observed over South Africa throughout the forecast period thereby inducing an anticyclonic flow over Namibia, Botswana, Zimbabwe, Mozambique, Swaziland and South Africa. This feature has persisted for a couple of days. Another high pressure system was still observed over Mauritania and Northern chad, establishing an anticyclonic flow patterns over Mauritania, Senegal, Guinea, Sierra Leone, Ghana, Benin, Burkina Faso, chad, Niger, Nigeria, Sudan, and Central African Republic, just like the previous days. Maritime winds were observed at this level streaming into East Africa, DRC, Angola and parts of Namibia. The easterly jets are still expected to propagate westwards from Sudan toward

the gulf of Guinea during the forecast period. Strong maritime winds flow pattern were also observed streaming into East and central Africa from the Indian Ocean.

At 200 mb streamlines; Divergent flow patterns were observed over most of West Africa namely Ivory Coast, Ghana, Togo, Benin, and Nigeria. Divergent flow patterns were also observed over central and Eastern Africa especially Namibia, Angola, Zambia and Africa. Over South Africa Divergent flow patterns were current observed but is expected to be replaced by zonal flow patterns within the next 48 hours. The jets associated with this flow pattern had moderate to strong wind speeds.

For the next five days rainfall is expected to extent and spread over South West and south east covering almost the whole parts of Tanzania and Zimbabwe up to South Africa. Parts of NW Ethiopia is expected to have unseasonal rainfall which might not be as such important for harvesting period. Over Tanzania, Western Angola, Western DRC and western Gabon rainfall is expected to continue for three to five consecutive days with heavy fall (more than 50mm/day) in some parts of Angola, Tanzania and Mozambique . As the ITCZ is getting its south most extreme, dry and cold air from Siberia will penetrating north eastern Africa as result of this the minimum temperature may intensify over high land areas. The North east trade wind is expected to still remain dominant over its counterpart the south west trade wind over all the countries with exception of a few in West Africa, Cameroun, Niger, CAR and Sudan. Over East, Central Africa and the Horn of Africa, the meridional convergence over DRC and the East African monsoon are expected to remain active

Over south western Africa, western parts of Namibia, Angola, DRC and Gabon are expected to have an increased chance for two or more days of moderate to heavy rainfall. Part of Western Ethiopia, Rwanda, Burundi, western Kenya, much of Tanzania, SW DRC, much of Mozambique and central Madagascar are expected to have moderate to heavy rainfall. Heavy rainfall more than 50mm per day is expected over part of Tanzania, Swaziland and Angola..

2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (December 09, 2015)

Over Southern Democratic Republic of Congo, central Tanzania, Zimbabwe and parts of Madagascar heavy amount of rainfall were observed. Over Namibia, Uganda, Angola and parts of NW Ethiopia moderate rainfall were observed.

2.2. Weather assessment for the current day (December 10, 2015)

Convective, dense clouds observed over Zambia, Namibia, Angola, central Tanzania, Zimbabwe and central Madagascar.

