



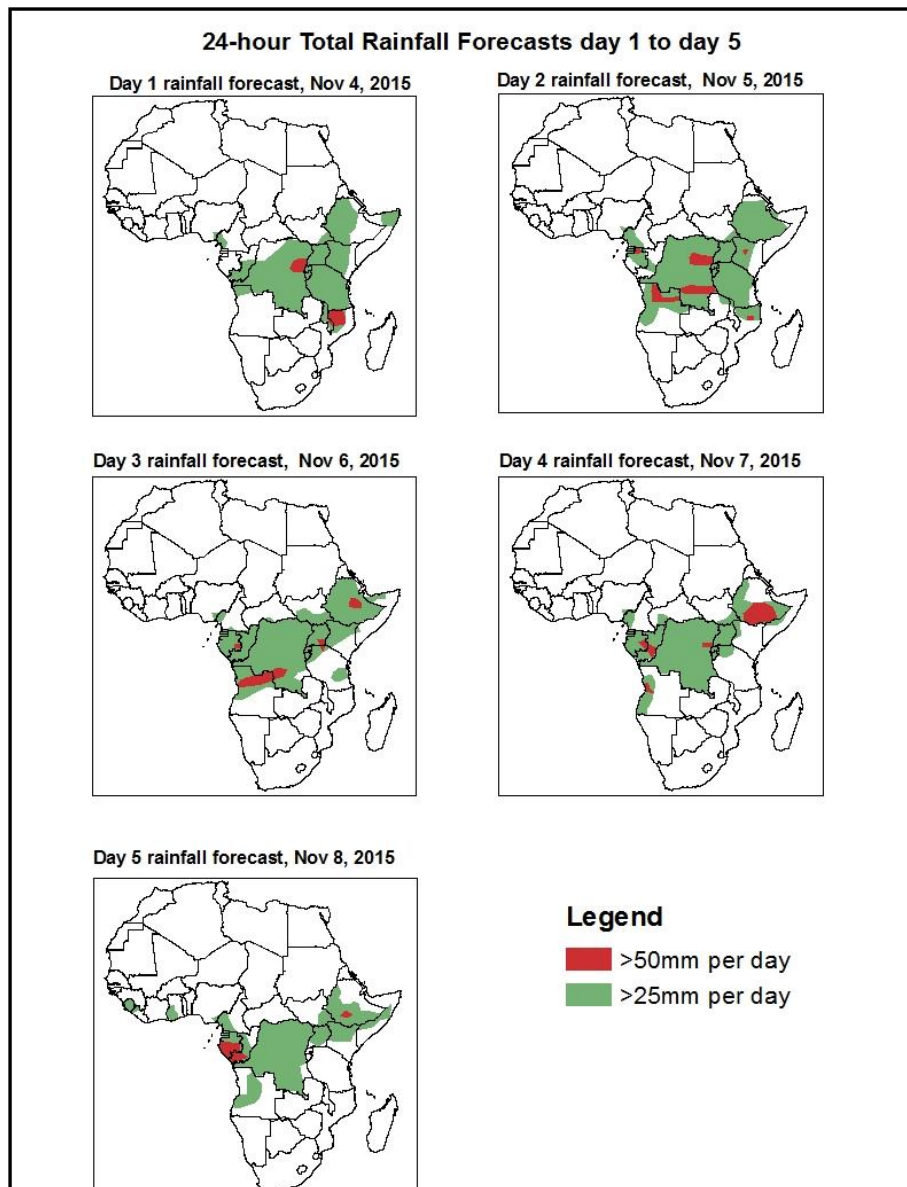
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1. Rainfall and Dust Concentration Forecasts

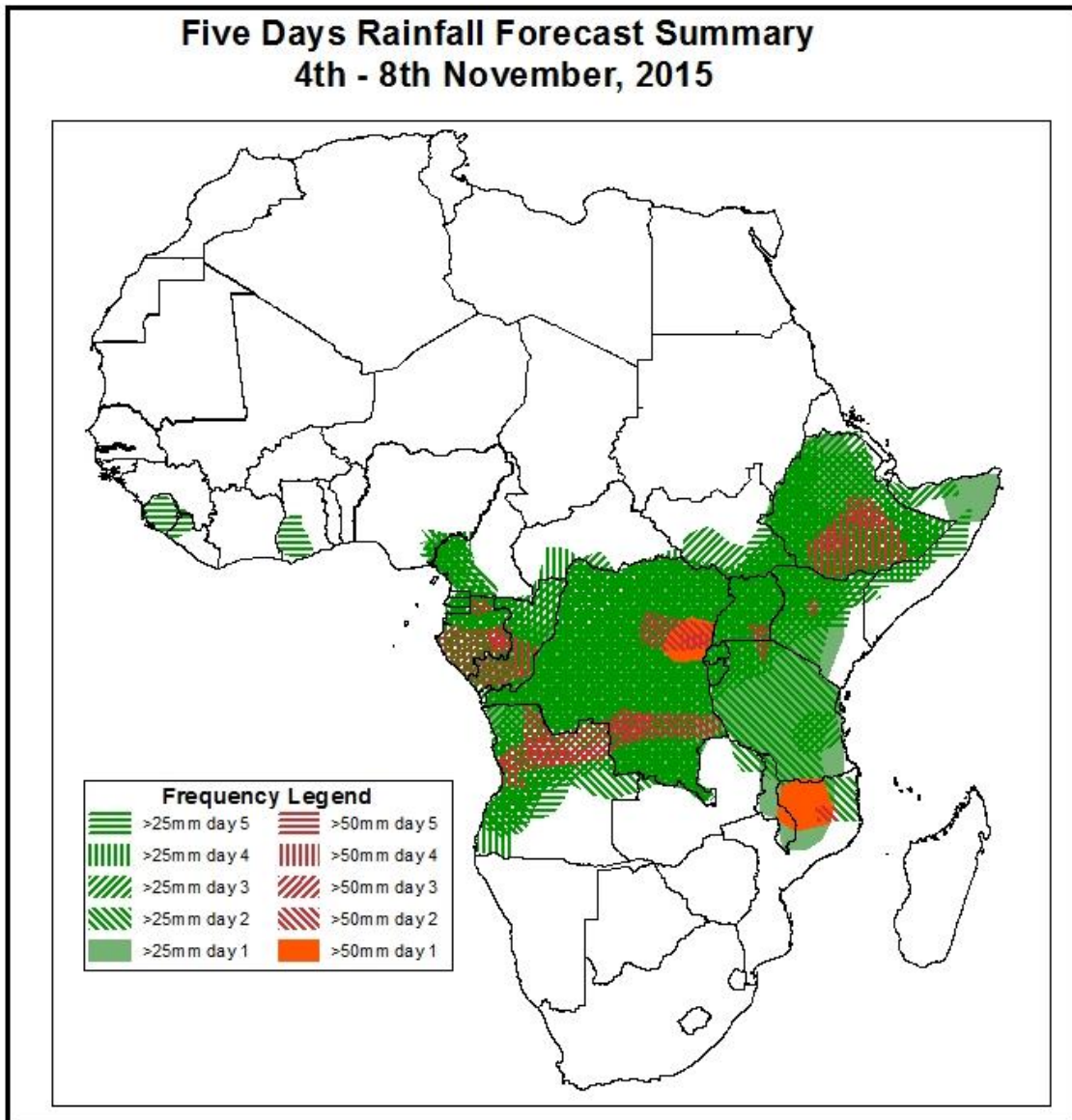
Valid: 06Z of Nov 4 – 06Z of Nov 8, 2015. (Issued on November 3, 2015)

### 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 4th - 8th November, 2015

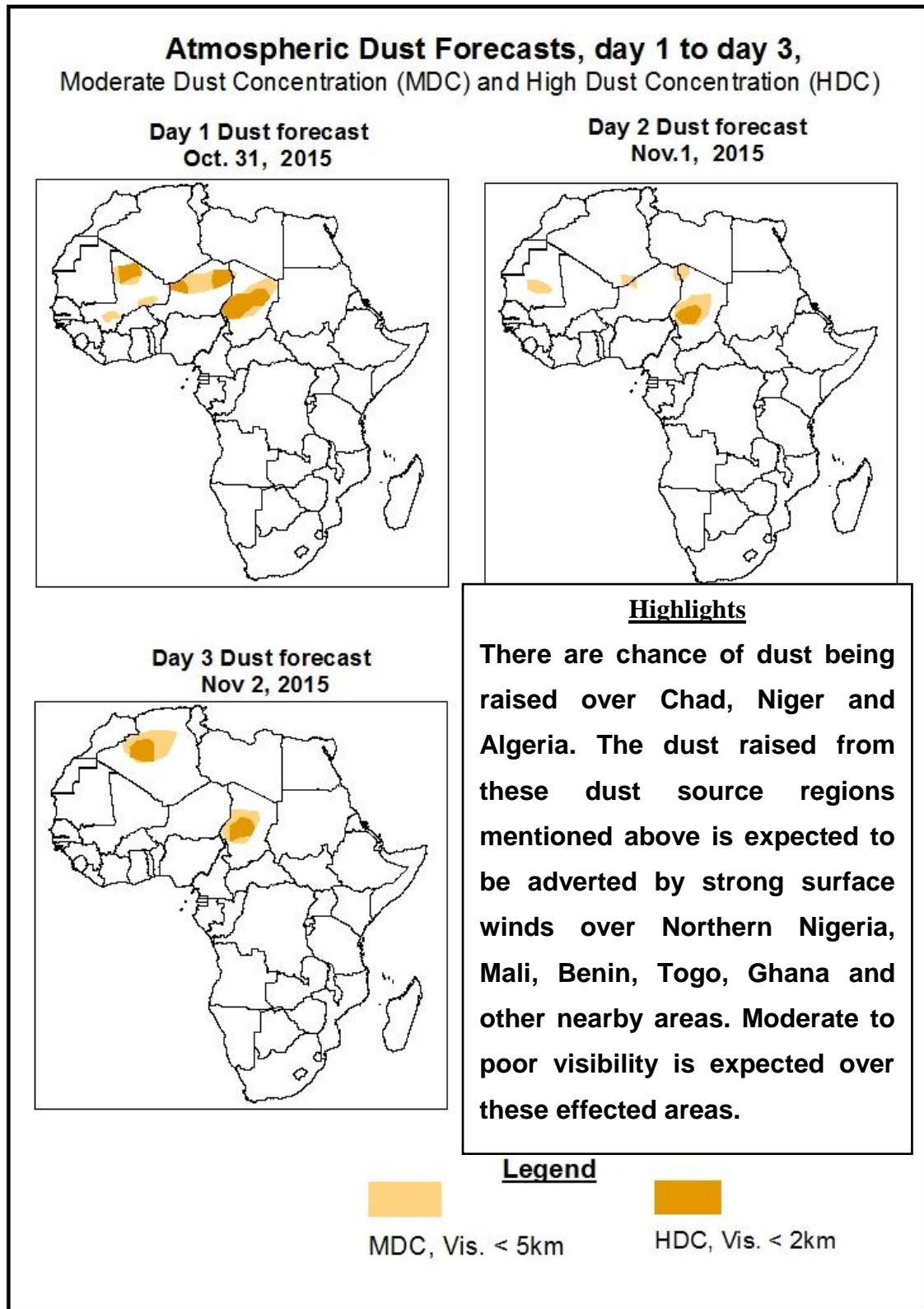


Rainfall Forecast summary for the next five days over West, central and Eastern Africa shows that the Intertropical Discontinuity (ITD), is expected to propagate further southwards, positioning itself between 8 and 10 degree north of the Equator. Therefore Weather activities will occur southwards of the ITD, limiting weather occurrence only to the coastal regions, mountain ranges, elevated highlands and other weather high trigger zones over the West African region. The meridional convergence over DRC and the East African monsoon are expected to intensify further and remain very active; therefore enhance rainfall is expected to continue over central, East and the Horn of Africa. The following places are expected to have moderate to heavy rainfall. Guinea, Sierra Leone, Ghana, Nigeria. Cameroun, Congo, Equatorial Guinea, CAR, DRC in Central Africa and South Sudan ,Kenya, Uganda, Rwanda, Burundi, Tanzania and Angola in East Africa and Ethiopia and Somalia in the horns of Africa. Also Zambia and Malawi.

## 1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Nov 4– 12Z of Nov 8, 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: 4 – 8 November, 2015**

The Azores high pressure system is expected to intensify during the next 48 hours, its center value increasing by 2 mb from 1020 to 1022 mb. The High pressure system will continue to intensify in its central pressure value in the next 96 hours by 5 mb, thereby having a central pressure value of 1027 mb and still intensify further to 1028 mb at the end of the forecast period according to GFS models.

Throughout the forecast period, the extension of the Azores high relatively known as the Libyan high pressure system, still maintained its position over Libya like the previous days. The 1016 isobar associated with this high was still positioned across 20 degree north of the equator. As a result of this, more dust is expected to be raised in the upcoming days over the dust source regions of West and Northern Africa. This dust will be propagated towards surrounding areas, this is a strong indication that active weather activities is moving over to the southern hemisphere.

The St Helena high pressure system over the Atlantic Ocean is expected to weaken in the next 48 hours, by 6 mb with its central pressure value decreasing from 1024 to 1019 mb. It will later intensify from 1019 to 1022 mb at the end of the forecast period according to GFS Models. This high pressure system like other days weakened remarkably and merged with Mascarene High pressure system over southern Africa in the next 48 hours.

The Mascarene high pressure system is expected to intensify within the next 72 hours with central pressure values varying from 1025 mb to 1031 mb, and then weaken in the next 96 hours by 3 mb, having a center pressure value of 1028 mb. At the end of the forecast period, the pressure center is expected to further weaken to 1027 mb, according to the GFS model. This high pressure system is expected to merge with St Helena high pressure system forming a board high pressure system in the next 48 hours.

The Equatorial low pressure system was observed over West, Central and East Africa. Extending from Eastern Africa through Central Africa up to Liberia in Western Africa. Its central pressure values deepen from 1010 mb to 1006 mb over East and Western Africa. At the end of the forecast period the center pressure values this broad thermal low was observed to fill to 1010 mb at the end of the forecast period.

At 925 mb, at this level, Maritime winds from the Atlantic Ocean were still observed streaming over some countries in West Africa namely Ivory Coast, Ghana, Togo, Benin Republic, and Southern Nigeria. Maritime winds were also observed over Cameroun, Equatorial Guinea, and Gabon and into the inlands of central Africa like Congo, central Africa Republic, Angola, and DRC. Maritime wind flow pattern from the Indian Ocean was observed streaming into the inlands of Kenya, Uganda, Somalia, South Sudan and Ethiopia thereby establishing the Congo boundary convergence. Whereas The Northeasterly continental wind flow pattern was predominantly over Senegal, Guinea, Burkina Faso, Mali, Chad, Niger, Northern Nigeria, and Sudan.

At 850 mb level, continental flows, predominant North easterly trade winds was observed over most parts of West Africa namely Senegal, Sierra Leone, Liberia, Burkina Faso, Ghana, Togo, Benin and Northern Nigeria. A high pressure system was also observed over the Indian Ocean this induced maritime wind flows patterns to stream into Congo, CAR and DRC in Central Africa and Kenya. Uganda, Ethiopia and Somalia in East Africa. Maritime winds were also observed over Cameroun, Equatorial Guinea and Gabon.

At 700 mb level, Jet streams were observed over the coastal areas of western Africa. High pressure systems were observed over Algeria and central Sudan, establishing anticyclonic flow patterns over Algeria, Mauritania, Southern chad, Niger and Northern Nigeria. The easterly jets are expected to propagate westwards from central 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 level, Strong Meridional wind flow was observed over West and Eastern Africa. The jets associated with this meridional flow had speeds ranging from 30 to 50 Knots. Divergent Flow patterns were observed over East, Central and most part of West Africa.

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## **2.0. Previous and Current Day Weather over Africa**

### **2.1. Weather assessment for the previous day (November 2, 2015)**

Moderate to locally heavy rainfall was observed over Guinea, Southern Mali, Sierra-Leone, Ivory Coast, Liberia, Ghana, Southern Nigeria, Cameroun, Congo, Gabon, CAR, DRC, Uganda, Burundi, Kenya, Tanzania, Rwanda, Zambia, Tanzania, South Sudan, and Ethiopia.

### **2.2. Weather assessment for the current day (November 3, 2015)**

Convective clouds with small and large ice particles observed over most of Central and Eastern Africa, namely Cameroon, Equatorial Guinea, Gabon, Congo, Angola. CAR and DRC in central Africa and South Sudan, Kenya, Uganda, Rwanda, Burundi, Tanzania, Somalia, Ethiopia in East Africa. Dust plume observed over Algeria, Mali, Northern Burkina Faso, Niger, Benin, Togo, Ghana, Northern Nigeria, Chad and Sudan.

