



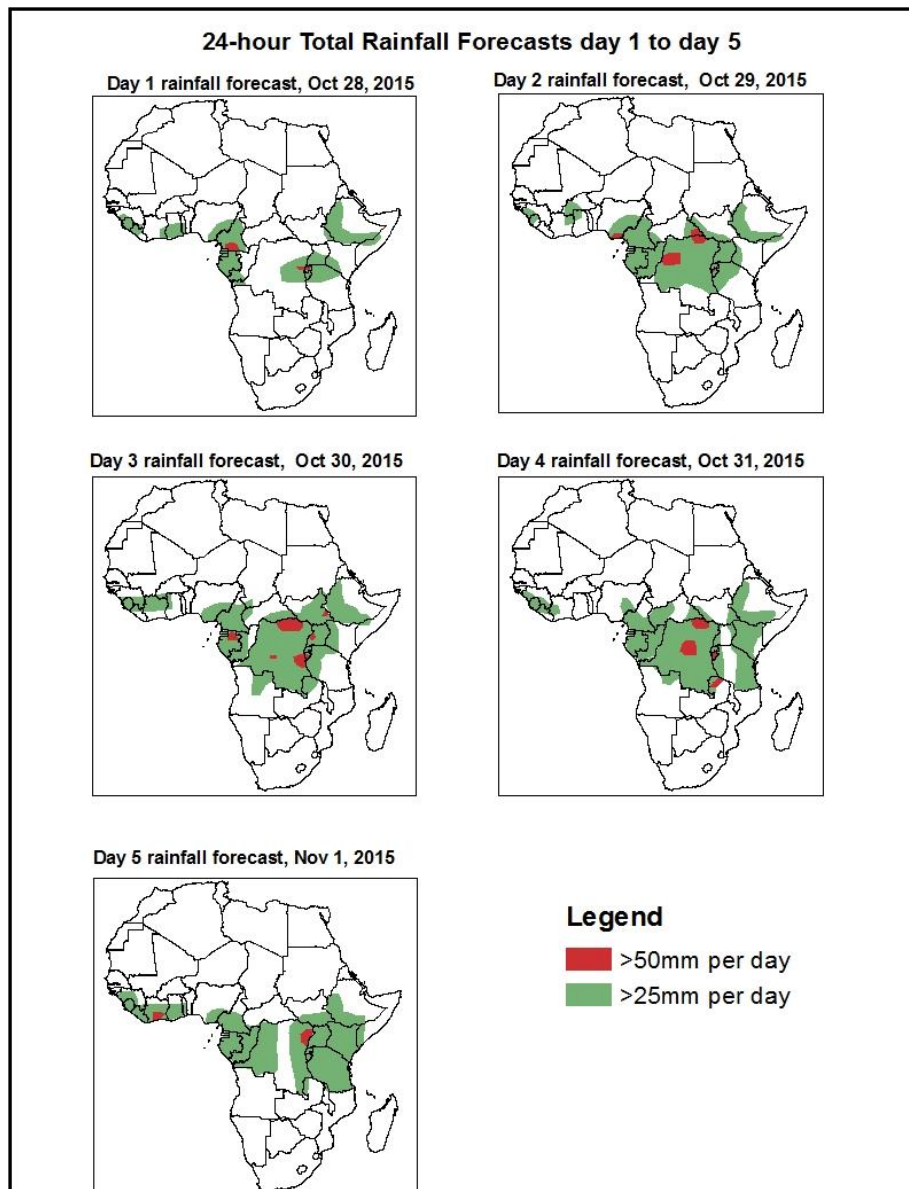
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1. Rainfall and Dust Concentration Forecasts

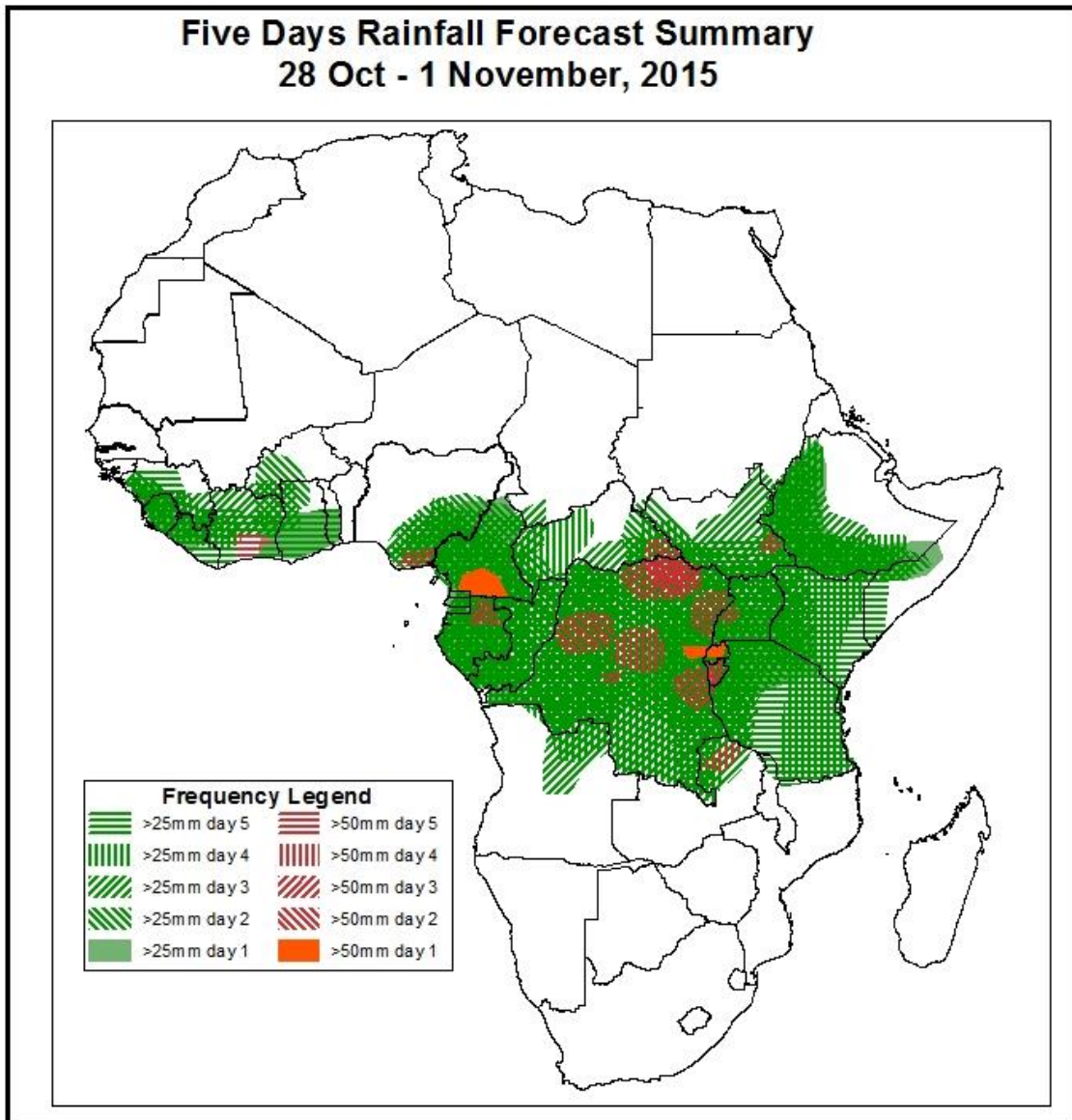
Valid: 06Z of Oct 28 – 06Z of Nov 1, 2015. (Issued on October 27, 2015)

### 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 28 Oct - 1 November, 2015

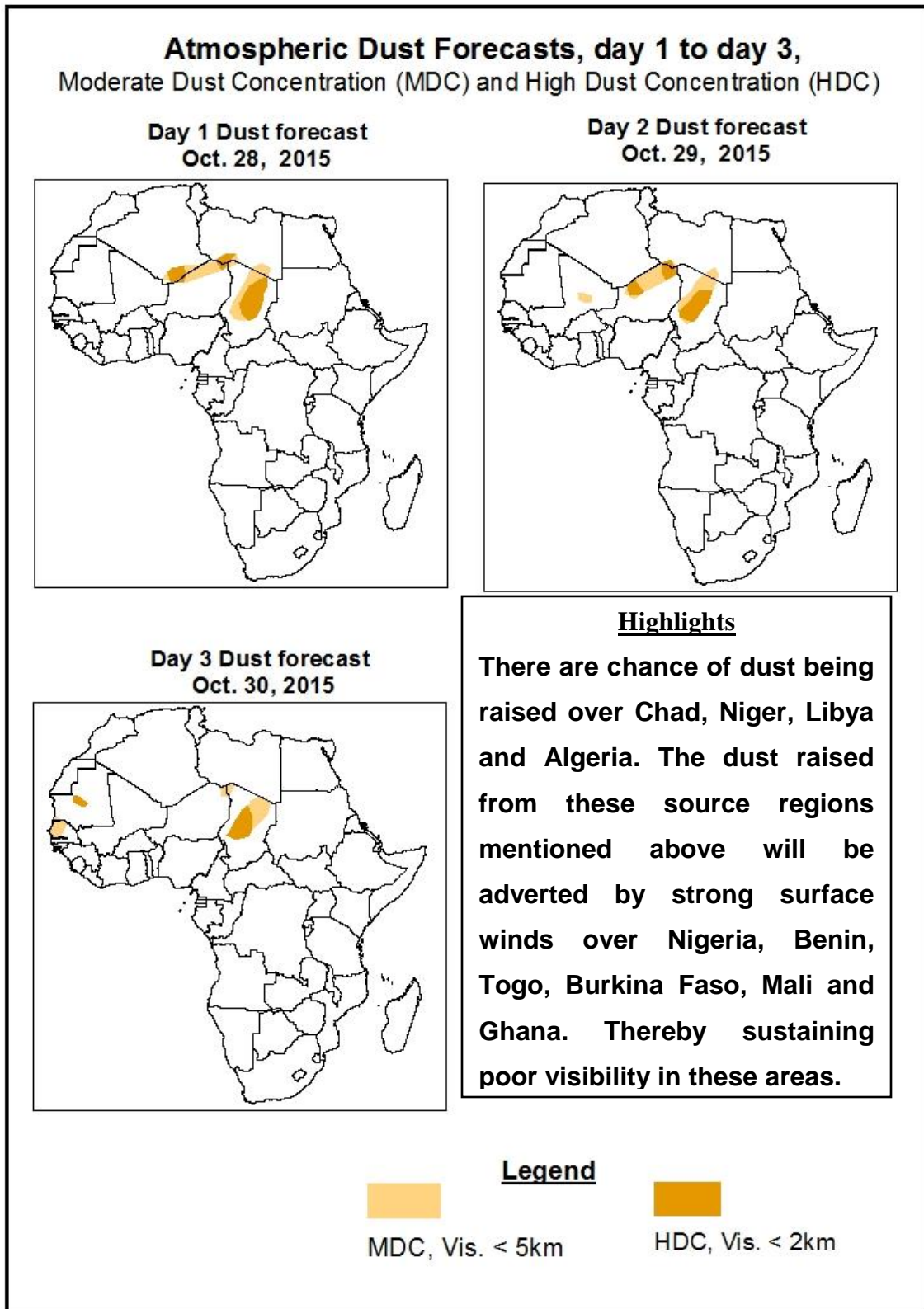


The five days rainfall forecast assessment for the upcoming five days shows that the Intertropical Discontinuity (ITD), which is the maritime southwesterly wind flow from the Atlantic Ocean with its associated convergence with Northeasterly trade wind across West Africa, is expected to propagate between 10 and 12 degree North of the Equator. As a result of this occurrence, weather activities are still expected to be limited to the coastal regions, mountain ranges or elevated highlands over the West African region. The meridional convergence over DRC and the East African monsoon over the Horn of Africa are still dynamic, so there influence is expected to enhance rainfall in their respective regions. Therefore the following places are expected to have moderate to heavy rainfall. Guinea, Sierra Leone, Liberia, Ghana, Togo and Nigeria. Also Cameroun and Congo, Equatorial Guinea, Gabon, CAR, DRC in Central Africa and South Sudan .Kenya, Uganda, Rwanda, Tanzania, in East Africa and Ethiopia and Somalia in the horns of

## 1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Oct 28– 12Z of Oct 30, 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: 28– 1 November, 2015**

The Azores high pressure system is expected to weaken during the next 48 hours, its center value decreasing by 3 mb from 1025 to 1022 mb. The High pressure system will intensify in its central pressure value in the next 72 hours by 5 mb there by having a central value of 1027 mb and intensifying 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 maintained its position over Libya, with its associated 1016 isobar crossing the 20 degree north of the equator. This is mostly an indication that more dust may be raised over the dust source regions of West and Northern Africa, This also shows that active weather activities will soon move over to the southern hemisphere.

The St Helena high pressure system over the Atlantic Ocean is expected to intensify in the next 72 hours, by 5 mb with its central pressure value increasing from 1022 to 1027 mb. It will later intensify further from 1027 to 1033 mb in the next 96 hours. This high pressure system intensified remarkably being compared to previous days but its impact was felt mostly by few countries in West Africa like Ghana, Togo, Benin and Nigeria and most countries over Central African Republic like, Cameroun, Congo, Equatorial Guinea, CAR and DRC.

The Mascarene high pressure system is expected to weaken within the next 72 hours with central pressure values varying from 1038 mb to 1029 mb, then weaken in the next 96 hours by 3 mb, with the pressure value decreasing to 1026 mb. It further weakens to 1025 mb at the end of the forecast period according to the GFS model. The influence of this high pressure system is expected to retreat back into the Indian Ocean thereby giving way for convection and convective clouds to form over Southern Africa.

The Equatorial low pressure system was observed over West, Central and East Africa. Extending from East Africa through Central Africa up to Liberia in Western Africa. Its central pressure values filled from 1008 mb to 1010 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, Maritime winds from the Atlantic Ocean were observed streaming over few countries in West Africa namely Ghana, Togo, Benin Republic, and Nigeria. This flow pattern was also observed over Cameroun and Gabon and into the inlands of central Africa like Congo, central Africa Republic and DRC. Also an Anticyclone was observed

over the Indian Ocean pushing maritime wind 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 Mali, Chad, Niger and Sudan.

At 850 mb level, an anticyclone was observed during the forecast period over Mauritania thereby inducing an anticyclonic flow over most of west Africa namely Senegal, Burkina Faso, Guinea and Sierra Leone, whereas maritime wind flow patterns were observed streaming into Congo, CAR and DRC in Central Africa and Kenya. Uganda, Ethiopia and Somalia in East Africa. A low pressure System was observed during the forecast period over Southern Nigeria, Congo and Northeastern DRC, thereby establishing a strong Meridional flow. The winds at this level were predominantly easterlies,

At 700 mb level, a high pressure system was observed over Mali, establishing an anticyclonic flow over most places in West Africa like Guinea, Liberia, Burkina Faso and Northern Nigeria. A persistent easterly jets is also expected to propagate westwards in the region between central Sudan toward the gulf of Guinea during the forecast period.

At 250 mb level, Strong Meridional wind flow was observed over West and Eastern Africa. These flows pattern was made of Jets of wind speeds ranging from 30 to 50 Knots. Divergent Flow patterns were observed over East, Central and most part of West Africa.

The five days rainfall forecast assessment for the upcoming five days shows that the Intertropical Discontinuity (ITD), which is the maritime southwesterly wind flow from the Atlantic Ocean with its associated convergence with Northeasterly trade wind across West Africa, is expected to propagate between 10 and 12 degree North of the Equator. As a result of this occurrence, weather activities are still expected to be limited to the coastal regions, mountain ranges or elevated highlands over the West African region. The meridional convergence over DRC and the East African monsoon over the Horn of Africa are still dynamic, so there influence is expected to enhance rainfall in their respective regions. Therefore the following places are expected to have moderate to heavy rainfall. Guinea, Sierra Leone, Liberia, Ghana, Togo and Nigeria. Also Cameroun and Congo, Equatorial Guinea, Gabon, CAR, DRC in Central Africa and South Sudan, Kenya, Uganda, Rwanda, Tanzania, in East Africa and Ethiopia and Somalia in the horns of Africa.



## 2.0. Previous and Current Day Weather over Africa

### 2.1. Weather assessment for the previous day (October 26, 2015)

Moderate to locally heavy rainfall was observed over Guinea, Sierra Leone, Burkina Faso, Ivory Coast, Ghana, Benin, Nigeria, Cameroun, Chad, Congo, CAR, DRC, Uganda, Kenya, Tanzania, Rwanda, South Sudan, Ethiopia and Somalia.

### 2.2. Weather assessment for the current day (October 27, 2015)

Convective clouds containing small and large ice particles observed over most parts of West Africa, Central and East Africa, namely Guinea, Sierra Leone, Ivory Coast, Burkina Faso, Ghana, Togo, Benin and Nigeria in West Africa and Cameroon, Southern Chad, Gabon, Congo, Angola. CAR, DRC in central Africa and Sudan, South Sudan, Kenya, Uganda, Rwanda, Tanzania, Somalia, Ethiopia in East Africa. Dust plume observed over Algeria, Mali, Northern Burkina Faso, Niger, Northern Nigeria and Chad.

