

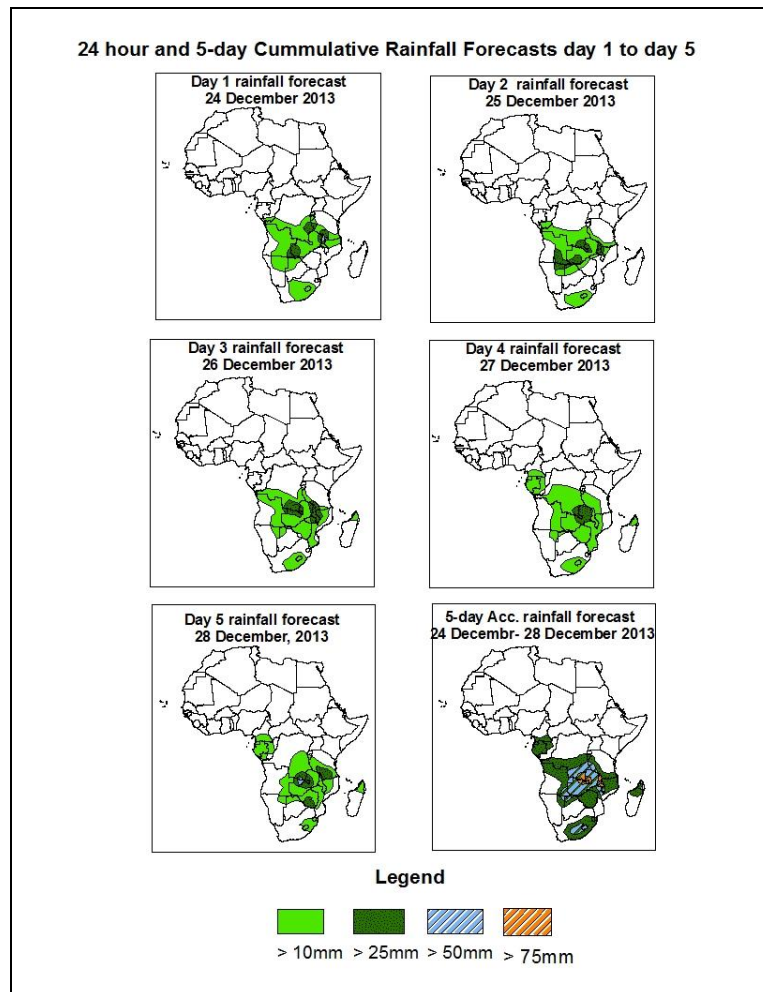


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 24 December – 06Z of 28 December, 2013. (Issued at 1800Z of 23 December 2013)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 75% probability of precipitation (POP) exceeded, based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.

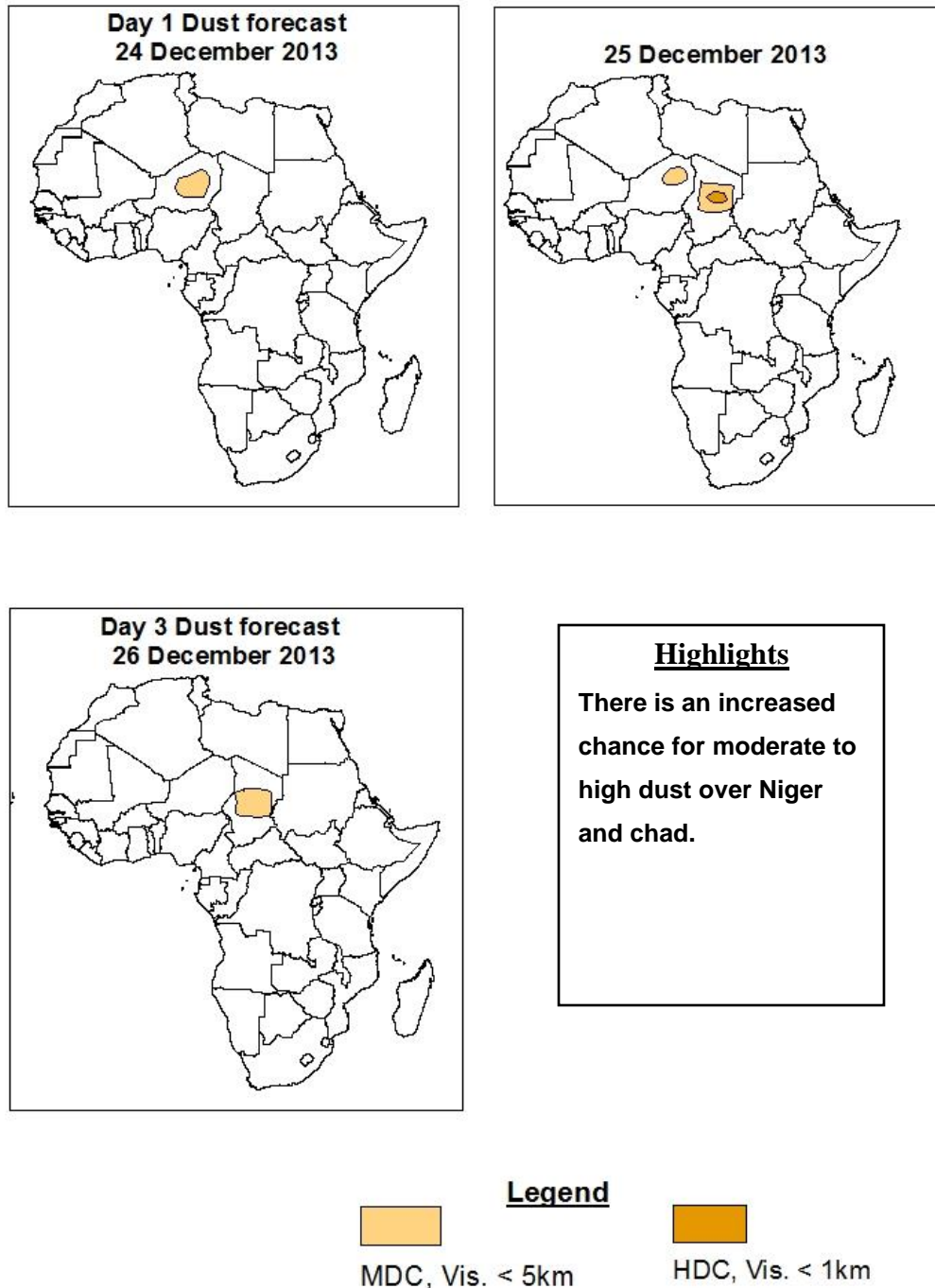


### Summary

Mascarene anticyclone is expected to slightly intensify and propagate eastward pushing more moisture to the continent. This will result in increase of rainfall in the southern parts of Mozambique, Zimbabwe and South Africa. The St Helena Anticyclone is expected to remain west of the Atlantic and hence some rains expected over areas of South Africa, Northern Botswana and Eastern Namibia. The Arabian ridge and the Azores anticyclones are expected to remain active. However, with the expected eastward movement of the northern hemisphere frontal system, the anticyclones are anticipated to relax during the forecast period and slightly shift the rain belt northward benefiting Parts of northern Tanzania and DR Congo. Areas of Senegal, Gambia and Guinea are expected to receive some rainfall due to the strong extra-tropical- Tropical interactions towards the end of the forecast period.

## 1.2. Atmospheric Dust Forecasts: Valid 24 December- 26 December 2013

### Atmospheric Dust Forecasts, day 1 to day 3, Moderate Dust Concentration (MDC) and High Dust Concentration (HDC)



## 1.2. Model Discussion: Valid from 00Z of 23 December 2013

*Model comparison (Valid from 00Z: 23 December 2013) shows all the two models are in general agreement in terms of depicting positions of the northern and southern hemisphere sub-tropical highs, while they showed slight differences in depicting their intensity.*

According to both the GFS model and the UKMET model, St. Helena High Pressure System over southeast Atlantic Ocean is still expected to be moderate with its central pressure value at between 1023 hpa and 1019 hpa during the forecast period. The system is however quite west of the east Atlantic coast and therefore areas of South Africa, Northern Botswana and Eastern Namibia are expected to receive some rains. The system is expected to move eastwards towards the end of the forecast period and hence reducing the rainfall over Namibia, parts of South Africa as well as Angola.

According to both the GFS model and the UKMET model, the Mascarene high pressure system over southwestern Indian Ocean is expected to intensify with its central pressure changing from 1021hpa and 1028hpa. The system is expected to propagate eastward diffuence over the West Indian coast but at the same time push more moisture to the continent. This will result in rain belt shifting southward increasing rainfall in the southern parts of Mozambique, Zimbabwe and South Africa. The low pressure system north of Madagascar that is expected to persist throughout the forecast period will reduce rainfall over Northern Mozambique and Tanzania.

In the Northern hemisphere, both the Arabian ridge and the Azores anticyclones are expected to remain active. However, with the expected eastward movement of the northern hemisphere frontal system, the anticyclones are anticipated to relax during the forecast period and slightly shift the rain belt northward benefiting Parts of northern Tanzania and DRC.

At 500hpa level, troughs associated with mid-latitude frontal system extending over Algeria, Mauritania, chad, Libya and Egypt are persistence during the forecast period. These interactions are expected to result to rains over Senegal, Gambia and Guinea.

At 200hpa level, the sub-tropical Westerly Jet mainly (with wind speed >70kts and <150 kts), extending between Mauritania, Algeria, Guinea, Senegal, and Egypt, and across, Mali, Burkina Faso, Gambia, Niger, Chad, Libya and Northern Sudan persist during the forecast period. In the south, the sub-tropical westerly Jet (with 70 to 90kts wind speed) is expected to be mainly over South Africa and the western Indian Ocean.

Therefore, Mascarene anticyclone is expected to slightly intensify but propagate eastward relaxing its influence on the weather on the south Western Indian Ocean but pushing more moisture to the continent. This will result in the rain belt slightly shifting southward increasing rainfall in the southern parts of Mozambique, Zimbabwe and South Africa. The St Helena Anticyclone is expected to remain west of the Atlantic resulting to minimal influence effect on the Atlantic east coast and hence some rains expected over areas of South Africa, Northern Botswana and Eastern Namibia. The Arabian ridge and the Azores anticyclones are expected to remain active. However, with the expected eastward movement of the northern hemisphere frontal systems, the anticyclones are anticipated to relax during the forecast period and slightly shift the rain belt northward benefiting Parts of northern Tanzania and DRC. Areas of Senegal, Gambia and Guinea are expected to receive some rainfall due to the strong extra-tropical- Tropical interactions towards the end of the forecast period

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

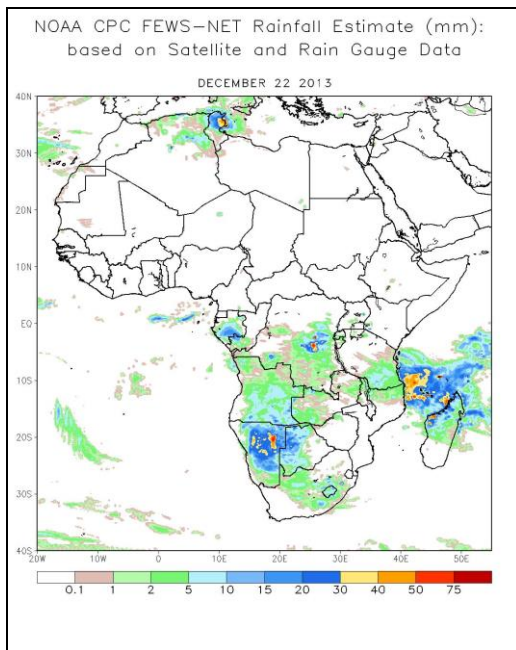
(22 December 2013 – 23 December 2013)

### 2.1. Weather assessment for the previous day (22 December 2013)

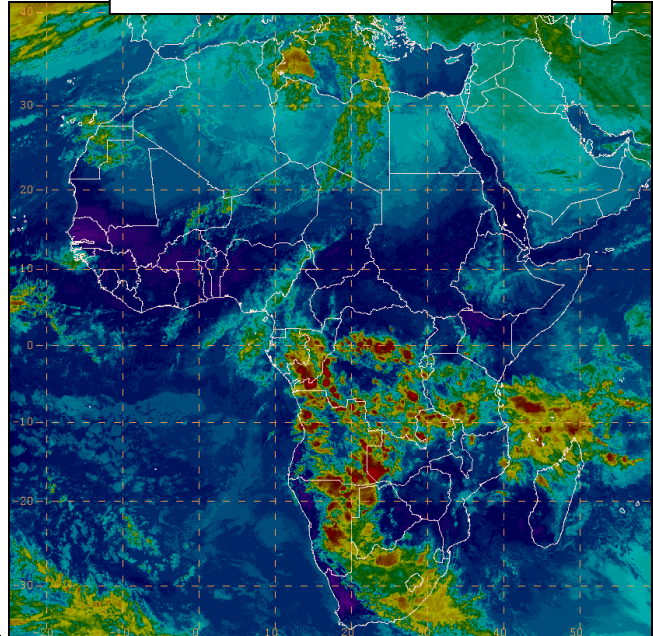
During the previous day, moderate to locally heavy rainfall was observed over Gabon Congo, DRC Angola, Zambia, Namibia, South Africa Botswana Tanzania and Madagascar.

### 2.2. Weather assessment for the current day (23 December 2013)

Intense clouds were observed over Angola, DRC, Tanzania, Zambia, Namibia, and South Africa.



IR Satellite Image (valid 1722 Z of 23)



*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*

**Author: Samuel N Muchiri**, (Kenya Meteorological Services / CPC-African Desk); [Samuel.muchiri@noaa.gov](mailto:Samuel.muchiri@noaa.gov)