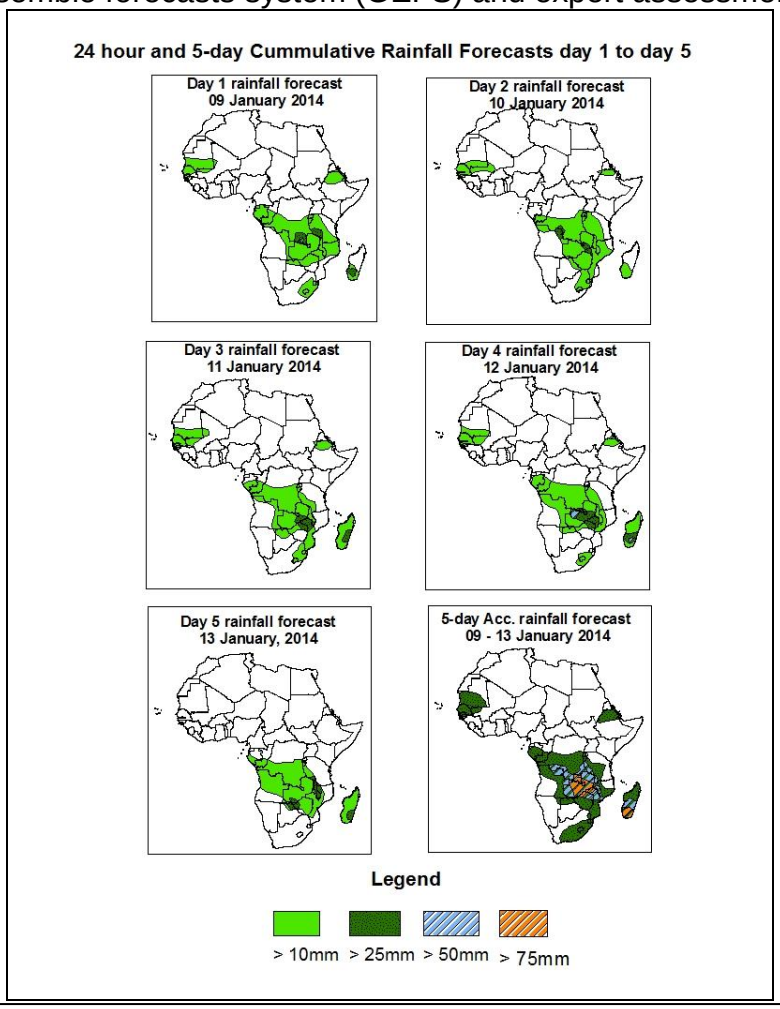
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 09 January – 06Z of 13 January, 2014. (Issued at 1800Z of 8 January 2014)

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.

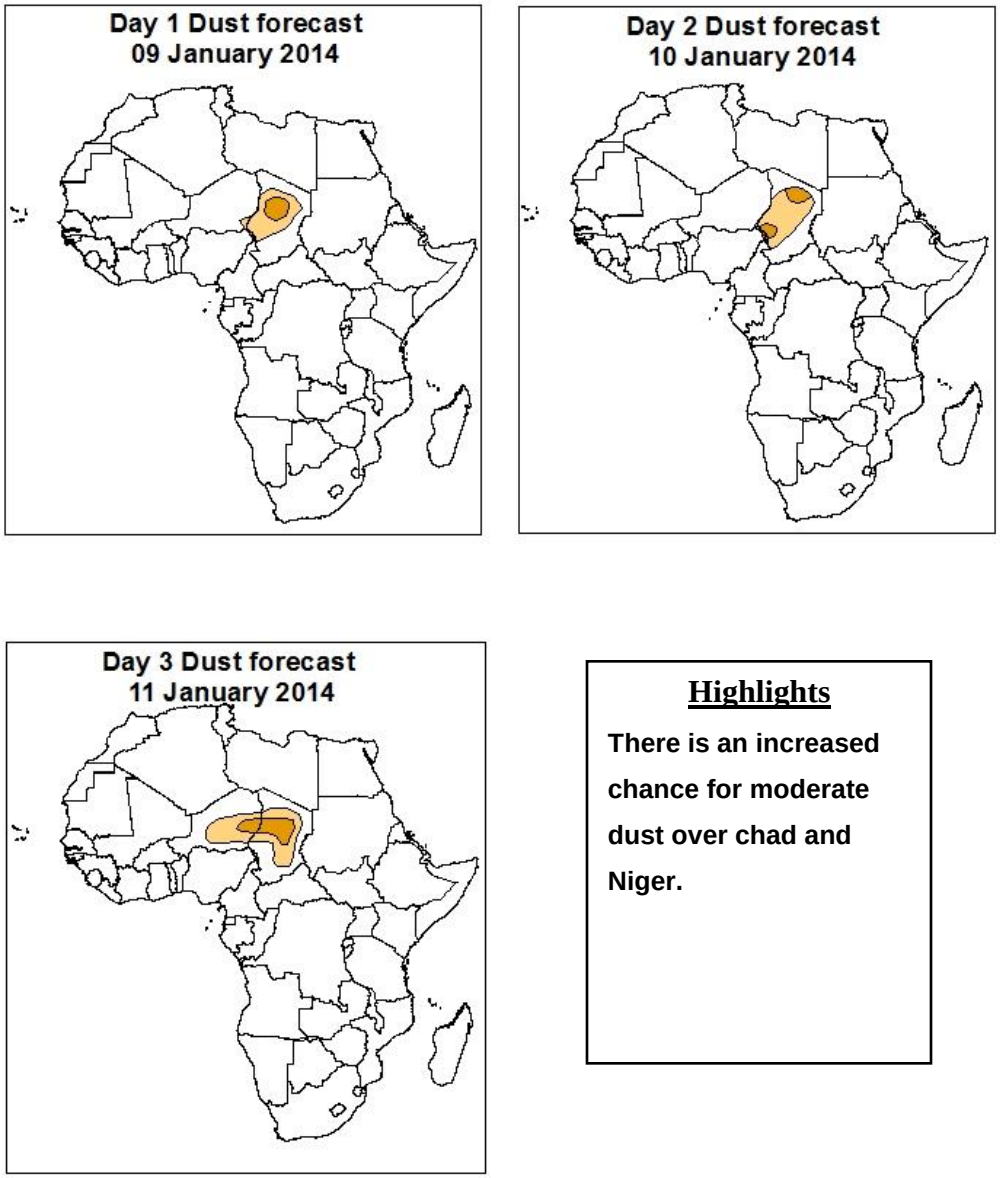


Summary

Mascarene anticyclone is expected to weaken and propagate eastward resulting to diffuse rains over most areas with significant reduction in Tanzania and Mozambique. St. Helena High Pressure System is expected to gradually weaken its central pressure value from 1028 hpa to 1025 hpa but intensify towards the end of the forecast period. It is therefore expected it will continue pushing moisture inland but minimizing rains over Namibia, South Angola, Botswana and the Western coast of South Africa due to its diffuence effect. In the Northern hemisphere, the frontal systems are active and persistent throughout the forecast period occasionally weakening the northern anti cyclones and consequently shifting the rains north benefiting areas of Uganda, North DRC, Burundi and Rwanda during the forecast period. Parts of Senegal, Mauritania, Mali, Guinea and Gambia and slightly over Northern Ethiopia are expected to receive some rainfall due to strong extra-tropical- Tropical interactions.

1.2. Atmospheric Dust Forecasts: Valid 09 January - 11 January 2014

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



Highlights

There is an increased chance for moderate dust over chad and Niger.

Legend

MDC, Vis. < 5km

HDC, Vis. < 1km

1.2. Model Discussion: Valid from 00Z of 08 January 2014

Model comparison (GFS and UKMET Valid from 00Z: 08 January 2014) shows 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 is expected to gradually weaken in its central pressure value from 1028 hpa to 1025 hpa but intensify again to 1029 hpa at the end of the forecast period. It is therefore expected to continue pushing moisture inland but minimizing rains over Namibia, South Angola, Botswana and the Western coast of South Africa .However in the initial period of the forecast and as it weakens, parts of South Africa and Botswana get some rains.

According to both the GFS model and the UKMET model, the Mascarene high pressure system over southwestern Indian Ocean is expected to weaken with its central pressure decreasing from 1028 hpa and 1020hpa. It is also expected to propagate eastward leaving pressure falls over the Mozambique Channel. The pressure falls will result to diffuse weather over most of the areas and significant reduction in Tanzania and Mozambique.

In the Northern hemisphere, the frontal systems are active and persistent throughout the forecast period occasionally weakening northern anti cyclones and consequently shifting the rains north and benefiting areas of Uganda, North DRC, Burundi and Rwanda during the forecast period.

At 850hpa level, strong convergence is expected in Democratic Republic of Congo (DRC), Gabon, Congo Brazzaville, Uganda Burundi, Rwanda, Zambia, Botswana Mozambique, Angola, Tanzania, Zimbabwe, Malawi, Madagascar, and South Africa. During the forecast period, moderate to severe weather is expected over these areas as shown by the rainfall map above.

At 500hpa level, troughs associated with mid-latitude frontal system extending over Mauritania, Libya and Egypt are persistence during the forecast period. These

interactions are expected to result to rains over Senegal, Mauritania, Mali, Guinea and Gambia and slightly over Northern Ethiopia.

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, 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 though in rare times of the forecast period over South Africa, Namibia and the Indian Ocean.

Therefore, Mascarene anticyclone is expected to weaken and propagate eastward resulting to diffuse rains over most of the areas with significant reduction in Tanzania and Mozambique. St. Helena High Pressure System is expected to gradually weaken its central pressure value from 1028 hpa to 1025 hpa but intensify again to 1029 hpa towards the end of the forecast period. It is therefore expected to continue pushing moisture inland but minimizing rains over Namibia, South Angola, Botswana and the Western coast of South Africa. In the Northern hemisphere, the frontal systems are active and persistent throughout the forecast period occasionally weakening the northern anti cyclones and consequently shifting the rains north benefiting areas of Uganda, North DRC, Burundi and Rwanda during the forecast period. Parts of Senegal, Mauritania, Mali, Guinea and Gambia and slightly over Northern Ethiopia are expected to receive some rainfall due to strong extra-tropical- Tropical interactions.

.

2.0. Previous and Current Day Weather Discussion over Africa

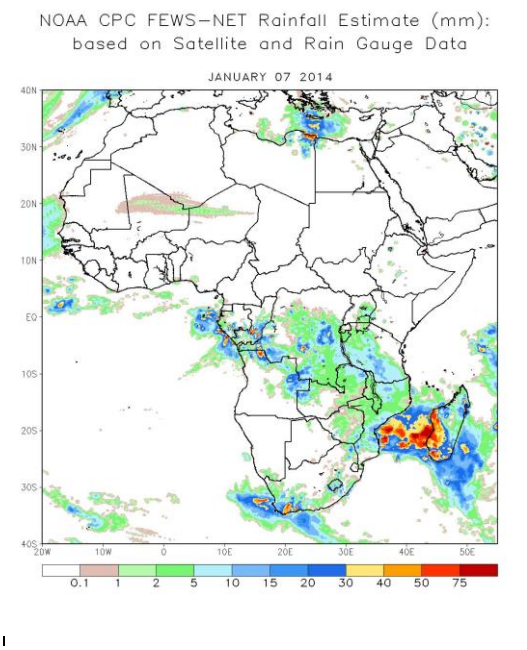
(07 January 2014– 08 January 2014)

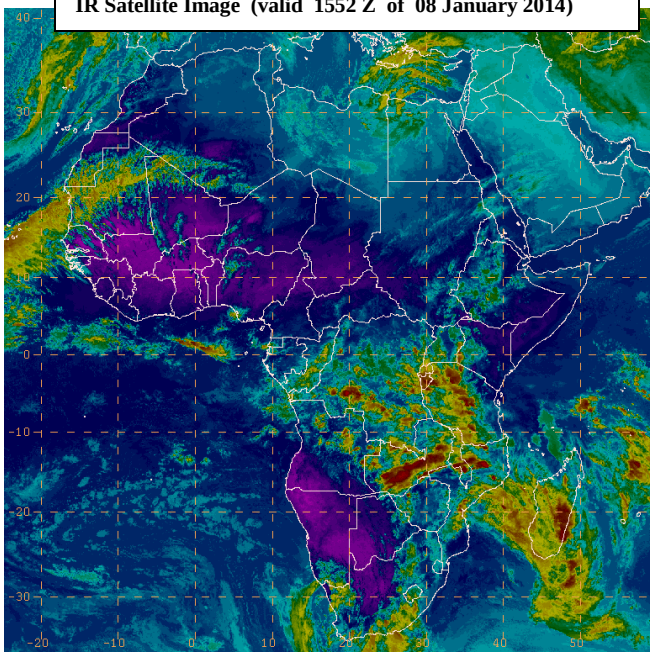
2.1. Weather assessment for the previous day (07 January 2014)

During the previous day, moderate to heavy rainfall was observed over Gabon Congo Brazzaville, DRC, Angola, Uganda, Zambia, Malawi, Mozambique, Madagascar, South Africa and Tanzania.

2.2. Weather assessment for the current day (08 January 2014)

Intense clouds were observed over Congo Brazzaville, Angola, DRC, Mozambique, Malawi, Zimbabwe Tanzania, Zambia and Madagascar.





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