

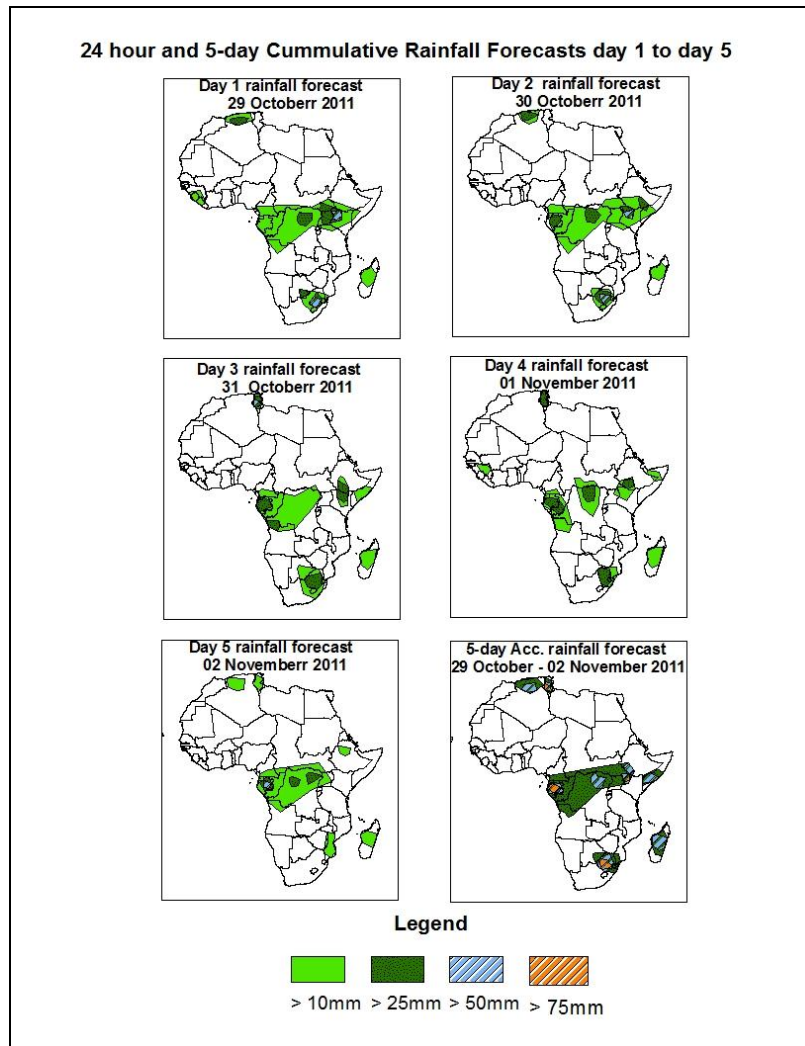


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of 29 October – 06Z of 02 November 2011, (Issued at 15:30Z of 28 October 2011)

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of high 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

In the next five days, the seasonal wind convergences over central African region, the Horn of Africa and Southeast Africa are expected to enhance rainfall in their respective areas. Hence, there is an increased chance for heavy rainfall over Cameroon, Northern Angola, Gabon, Congo Brazzaville, parts of DRC, Southern Somalia, parts of Kenya, Madagascar, Uganda and portions of eastern South Africa. Tunisia and Parts of Algeria are also expected to have enhanced rainfall due to mid-latitude frontal system.

## **1.2. Models Comparison and Discussion-Valid from 00Z of 29 October 2011**

According to the GFS, ECMWF and UKMET models, the monsoon trough with its associated heat lows across the Sahel region is expected to maintain its east-west orientation during the forecast period. The models also indicate series of heat lows and their associated trough across central African countries, extending partly to the South African countries. The heat low near Senegal is expected to fill up, with its mean sea level pressure value increasing from 1008mb to 1009mb through 24 to 96 hours, according to the GFS model and tends to deepen to MSLP value of 1008mb towards end of the forecast period. The heat low over central Africa region is expected to deepen to MSLP value of 1007mb during the forecast period according to the GFS model. This low tends to fill up, with its MSLP value increasing from 1008mb to 1009mb during the forecast period according to the ECMWF model. According to UKMET model, this heat low tends to deepen to MSLP value of 1007 by 72hours and then expected to fill up to 1008mb towards the end of the forecast period. The heat low over Botswana is expected to extend towards Zambia, Angola, Namibia and Zimbabwe, while deepening with its central value pressure decreasing from 1005mb to 1002mb through 24 to 96hours and tends to fill up to MSLP value of 1004mb by 120 hours, according to GFS model. This same low is expected to deepen with its central value pressure decreasing from 1006mb to 1005mb according to ECMWF model through 24 to 96hours and tends to fill up, to MSLP value of 1006mb towards end of the forecast period. According to UKMET model this low is expected to deepen, from 1006mb to 1002mb through 24 to 96hours and tends to fill up to 1005mb towards the end of the forecast period. A localized high pressure over Ethiopia tends to maintain its central pressure value of 1012mb during the forecast period according to GFS model. This same high pressure is expected to extend over Kenya and Tanzania with its central pressure value changing from 1012mb to 1011mb through 24 to 72 hours according to ECMWF model and tends to slightly intensify to MSLP value of 1012mb by 96hours.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to intensify, with its MSLP value increasing from 1028mb to 1032mb during the forecast period according to both ECMWF and GFS models. According to the UKMET model, this same high pressure is expected to maintain its central pressure value of 1032mb through 24 to 96 hours and then tends to weaken to MSLP value of 1028 by 120 hours. The Mascarene high pressure system over southwest Indian Ocean is expected to

weaken, with its MSLP value decreasing from 1018mb to 1012mb according to both the GFS and ECMWF models during the forecast period. According to UKMET model, the same high pressure system tends to weaken, with its MSLP value decreasing from 1019mb to 1012mb during the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to dominate the flow over Sudan, parts of Chad and Angola during the forecast period. The seasonal wind convergence across central African countries is expected to remain active during the forecast period extending across DRC. Localized wind convergences are also expected to dominate the flow over portions of Ethiopia, Tanzania, Botswana, Kenya, Zambia, Namibia, Mali, Algeria, Nigeria, Mauritania, Libya, and South Africa during the forecast period.

At 500hpa, eastward propagating trough in the westerly is expected to dominate the flow over Mediterranean Sea during the forecast period; with the low geopotential value of 5820gpm extending to the latitudes of Egypt. There is another trough is expected to propagate over Algeria, Morocco and Tunisia during the forecast period. A mid latitude frontal system is also expected to propagate eastwards across the Southern African countries during the forecast period.

At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 70kts near Egypt and Libya by 24 and then tend to intensify with maximum winds exceeding 90kts towards end of the forecast period. Another zone of maximum wind speed is expected to prevail over Algeria through 24to 72hours with maximum wind speed exceeding 90kts, while extending to Morocco towards the end of forecast period. Wind speed values associated with the southern Hemisphere sub-tropical westerly jet are expected to 90kts towards end of forecast period across South Africa.

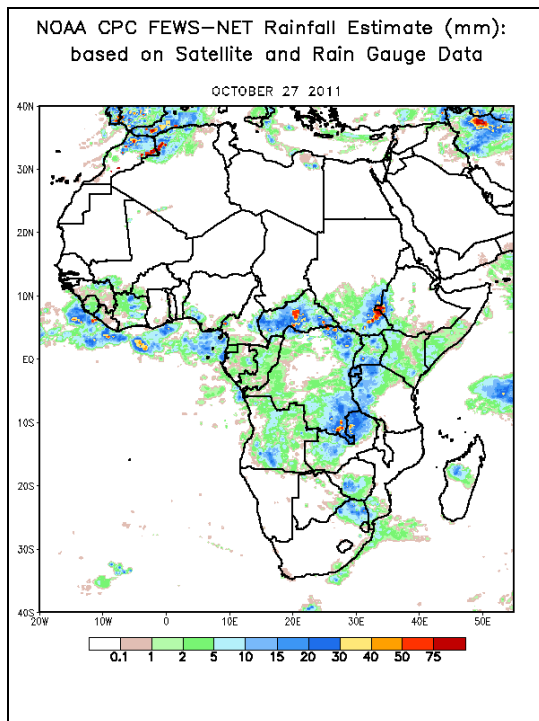
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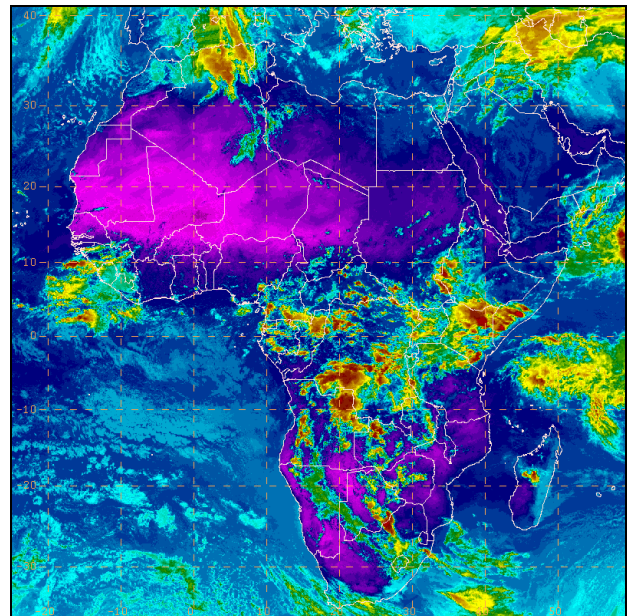
## 2.0. Previous and Current Day Weather Discussion over Africa (27 October - 28 October 2011)

**2.1. Weather assessment for the previous day (27 October 2011):** During the previous day, moderate to locally heavy rainfall was observed over many parts of CAR, southeastern South Sudan Republic and the neighboring areas of Southwest Ethiopia, eastern DRC, parts of Uganda, western Tanzania, and northern Zambia, local areas of southern Angola, Zimbabwe and northeastern South Africa.

**2.2. Weather assessment for the current day (28 October 2011):** Intense clouds are observed over much of central African region, parts of the GHA countries, portions of southern Africa countries and Madagascar.



IR Satellite Image (valid 1500Z of 28 October 2011)



*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*

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