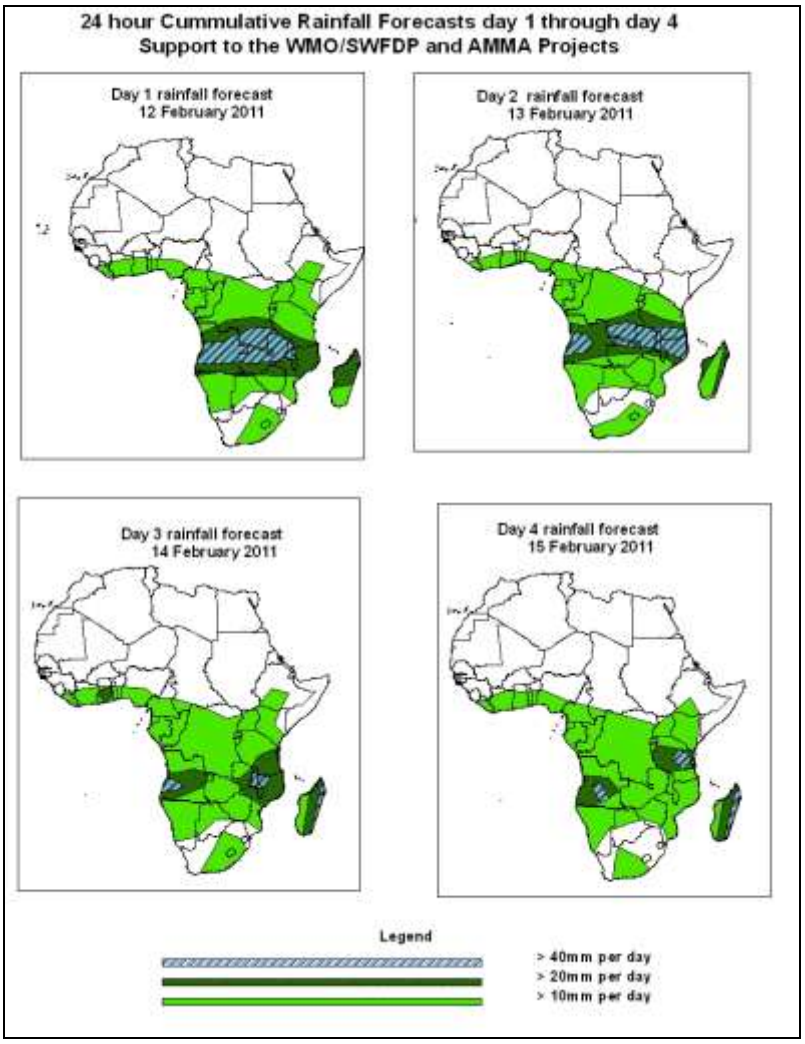
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## *1.0. Rainfall Forecast: Valid, 06Z of 12 February – 06Z of 15 February 2011, (Issued at 12:00Z of 11 February 2011)*

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 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 coming four days, moderate to heavy rainfall is expected to continue over Tanzania, Zambia, southern DRC, Malawi, Angola, and Mozambique due to the persistent lower level convergence in the region and cyclonic circulation in the vicinity of Mozambique Channel. Moderate to heavy rains are expected over Madagascar as a result of a tropical cyclone; Bingiza, which is expected to make landfall by 48 to 72 hour period. Hence, there is an increased chance for rainfall to exceed 20mm per day over Madagascar, Zambia, Angola, Malawi, southeastern DRC, Mozambique and Tanzania.

### 1.2. Models Comparison and Discussion-Valid from 00Z of 12 February 2011

From the GFS, ECMWF and UKMET models, a series of cut off lows over the southern parts of the Gulf of Guinea, parts of central African region and southern Sudan should form an east-west oriented trough. In the coming four days, this trough is expected to remain quasi-stationary with a central value of about 1004hpa in its eastern end (mainly over Central African Republic / Sudan region) and a central value of 1008hpa along its western end. The lows associated with the meridional arm of the ITCZ are hardly active except for 96 hour period. A low pressure system in the vicinity of Mozambique Channel and Madagascar is expected to maintain its position and persist throughout the period in consideration. In general, there appears to be some level of similarity in pressure patterns as depicted by the GFS, ECMWF and UKMO models.

According to the GFS, ECMWF and UKMET models, St. Helena High pressure system is expected to maintain a central value of 1021hpa through 24 to 48 hours and then weaken to 1019hpa. The Mascarene high pressure system over southwest Indian Ocean should remain quasi-stationary through the four (4) day period with a central value of 1020hpa.

At 850hPa level, the GFS model indicates east-west oriented convergence line in the region between the coastal areas of the Gulf of Guinea and northeast DRC. The convergence is expected to persist all through the period. The north-south oriented convergence line is over Uganda 96 hour period and inactive for the other days. Another convergence line is expected over the Angola region, while a localized cyclone is expected to extend into South Africa. The cyclonic circulation near Madagascar is also expected to persist throughout the period in consideration. The strong cyclonic circulation over the Eastern coast of Madagascar equally persists and deepens.

At 700hPa level, mostly northeasterly to easterly winds dominate across western and central African countries. A strong lower tropospheric convergence is expected to dominate the flow over Angola, DRC, Malawi, Tanzania, Mozambique and Zambia within 24 to 96 hours. The cyclonic circulation in the Mozambique Channel is expected to persist while that over the Indian Ocean adjoining Madagascar deepens through 24 to 96 hour period.

At 200hPa, a zone of strong wind (>150Kts) associated with the Sub Tropical westerly Jet in the sub-tropical region of northern Africa is expected to attain a wavy pattern through 24 to 96 hour. Similarly, strong winds (>70Kts) associated with the Sub-Tropical Westerly Jet in the Sub Tropical region of southern Africa is expected to appear as pockets all through 24 to 96 hour period.

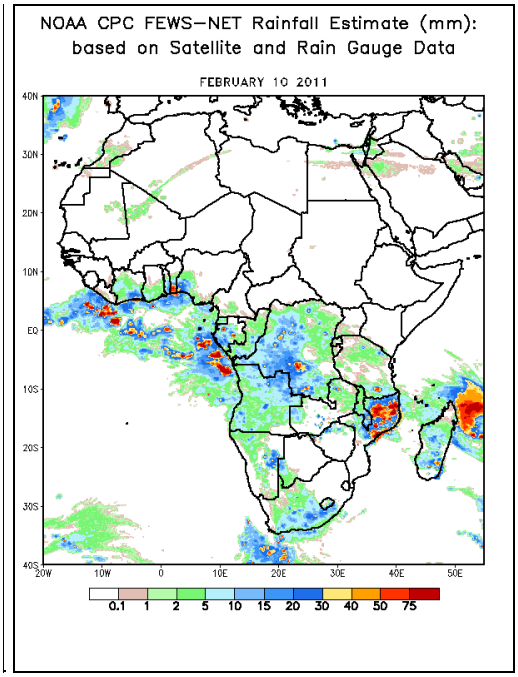
In the coming four days, moderate to heavy rainfall is expected to continue over Tanzania, Zambia, southern DRC, Malawi, Angola, and Mozambique due to the persistent lower level convergence in the region and cyclonic circulation in the vicinity of Mozambique Channel. Moderate to heavy rains are expected over Madagascar as a result of a tropical cyclone; Bingiza, which is expected to make landfall by 48 to 72 hour period. Hence, there is an increased chance for rainfall to exceed 20mm per day over Madagascar, Zambia, Angola, Malawi, southeastern DRC, Mozambique and Tanzania.

## *2.0. Previous and Current Day Weather Discussion over Africa (10 – 11 February 2011)*

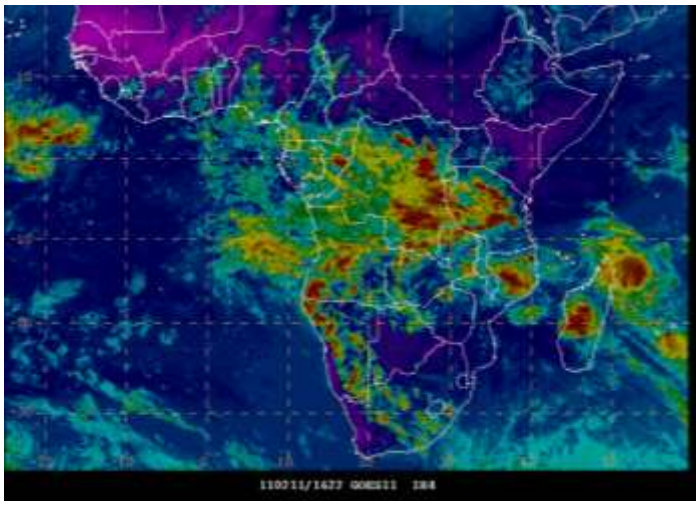
**2.1. Weather assessment for the previous day (10 February 2011):**

During the previous day, a combination of moderate and heavy rainfall was observed over western parts of Gulf of Guinea, Eq. Guinea, Congo, DRC, Gabon, Angola, Namibia, Tanzania, Zambia, Mozambique, and Madagascar, Parts of Zimbabwe, Botswana and South Africa.

**2.2. Weather assessment for the current day (11 February 2011):** Intense clouds are observed over Madagascar, Tanzania, Malawi, Burundi, Zambia, Namibia, Angola, DRC, northern Mozambique, Congo and South Africa.




IR Satellite Image, Valid 1622Z, February 11, 2011



*Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (top) based on IR Satellite image*

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