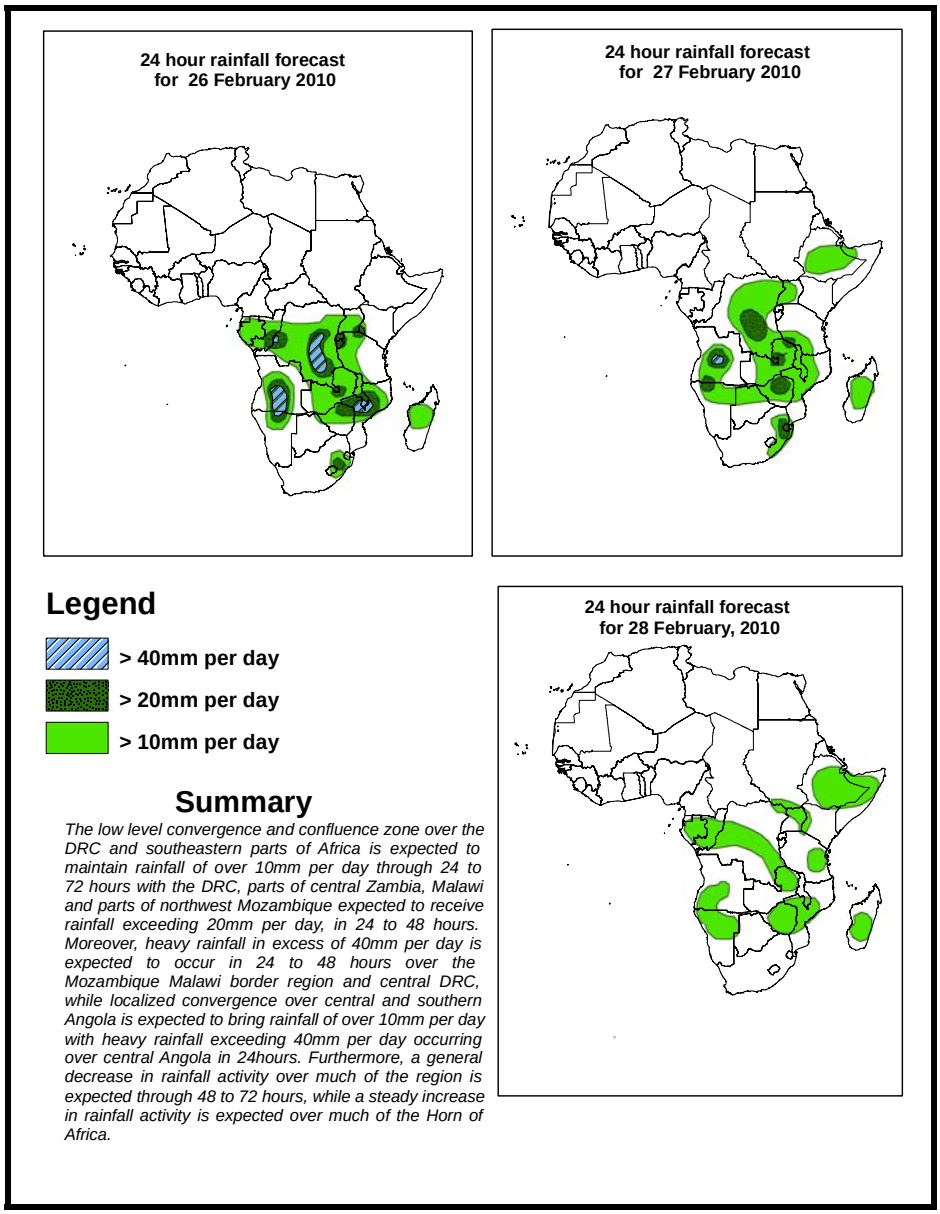
# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## *1.0. Rainfall Forecast: Valid, 06Z of 26 February –06Z of 28 February 2010, (Issued at 14:00EST of 25 February 2010)*

### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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



## 1.2. Models Comparison and Discussion - Valid from 00Z of 26 February 2010

In 24 to 72 hours, much of North Africa and the Mediterranean Sea will be covered by the Saharan high, centered over Libya with pressure values reaching up to 1019mb. The high is expected to strengthen and expands eastwards with its ridges extending to central Arabian Peninsula and southwards up to central Sudan, through 48 to 72 hours. The eastward movement of the high pressure system will tend to suppress the trough, existing over the Arabian Peninsula in 24 to 48 hours, limiting it to the south of the peninsula, the Gulf of Aden the Red sea and the Horn of Africa, in 48 to 72 hours. On the other hand, a mid latitude low pressure system is expected to appear over the coastal areas of northwest, with central pressure values of 989mb, and cover the coastal areas of northwest Africa in 48 to 72 hours.

Much of West Africa will experience a low pressure system with central pressure values ranging from 1006mb over eastern Nigeria up to 1008mb over Senegal. In addition, low pressure zone associated with the equatorial trough is expected to dominate over much of equatorial Africa, in 24 to 72 hours, with central pressure values reaching 1009mb over the Gulf of Guinea, 1006mb over Central Africa Republic, northern DRC, and over southern Sudan. Besides, places over southern Africa are expected to reach pressure values of 1009mb over Botswana, Namibia and South Zambia, while the Mozambique Channel will reach central pressure values of 1011mb. A ridge from the St. Helena high is expected to extend northwards over the eastern part of south Africa and reach the Zimbabwean border in 24 to 72 hours.

At 850mb level, an anticyclonic circulation covering much of North Africa is expected to move eastwards and center over Libya in 24 to 72 hours with its eastern extent pushing and displacing a trough extension, from the mid-latitude cyclonic circulation positioned over the Arabian Peninsula, northeastwards.

In 24 to 72 hours, the seasonal convergence over the CAB region is expected to be maintained. In addition, most parts of east central and southern Africa are expected to be influenced by the strong convergence of the northeasterly to easterly flow, from the east African monsoon, and westerly flow from the Atlantic Ocean through 24 to 72 hours. Localized convergence is expected to remain active over southern Angola and Namibia. The passage of a frontal system will tend to enhance convergence over South Africa through 48 to 72 hours. Furthermore, convergence of the southeasterly to easterly flow from the east African monsoon and the northeasterly flow over Ethiopia and Somalia is expected to persist through 24 to 72 hours.

At 500mb level, much of North Africa is expected to experience a westerly wave flow pattern, in 24 to 72 hours, with a trough extending southwards over Sudan reaching up to $10^0$N. On the other hand, the southern hemisphere is expected to assume a weak wave flow pattern in the sub tropical areas through 24 to 72 hrs.

At 200mb, North Africa will experience a mid-latitude strong wave flow pattern with wind speeds of up to 110 knots, while a narrow stretch from central Arabian peninsula will assume wind speeds of 130 knots, in 24 to 48 hours, tending to shift eastwards over eastern Arabian peninsula, in 48 to 72 hours.

The low level convergence and confluence zone over the DRC and southeastern parts of Africa is expected to maintain rainfall of over 10mm per day through 24 to 72 hours with the DRC, parts of central Zambia, Malawi and parts of northwest Mozambique expected to receive rainfall exceeding 20mm per day, in 24 to 48 hours. Moreover, rainfall in excess of 40mm per day is expected to occur in 24 to 48 hours over the Mozambique Malawi border region and central DRC, while localized convergence over central and southern Angola is expected to bring rainfall of over 10mm per day with heavy rainfall exceeding 40mm per day occurring over central Angola in 24hours. Furthermore, a general decrease in rainfall activity over much of the region is expected through 48 to 72 hours, while a steady increase in rainfall activity is expected over much of the Horn of Africa.

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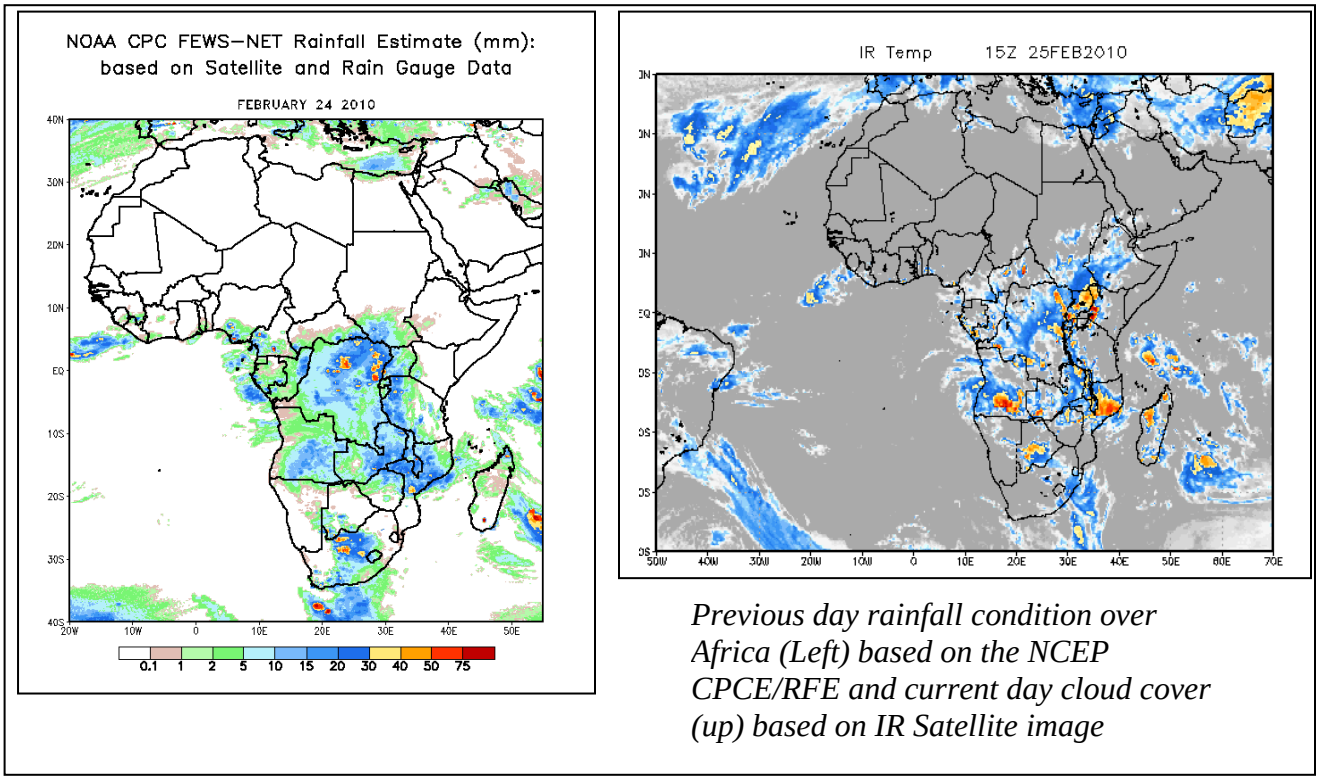
## *2. 0. Previous and Current Day Weather Discussion over Africa (24-25 February 2010)*

**2.1. Weather assessment for the previous day (24 February 2010):** During the previous day, moderate to heavy rainfall events were observed over the DRC, parts of South Africa, Zambia, Mozambique Malawi and parts of western Tanzania.

**2.2. Weather assessment for the current day (25 February 2010):** Intense cloud patches are observed over eastern and central DRC, parts of northern Zambia, southern Angola, southern Botswana, north central Mozambique, Uganda, western Kenya and north western Madagascar.




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

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