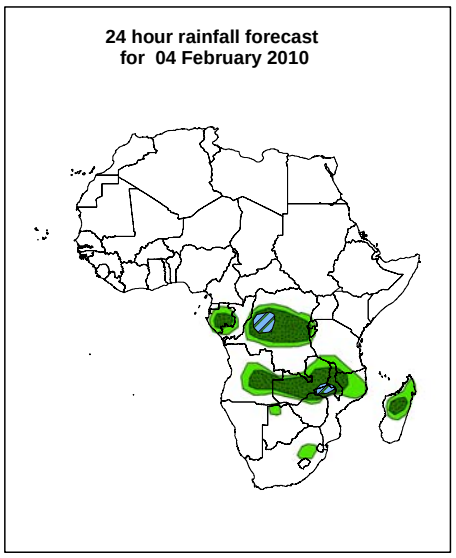
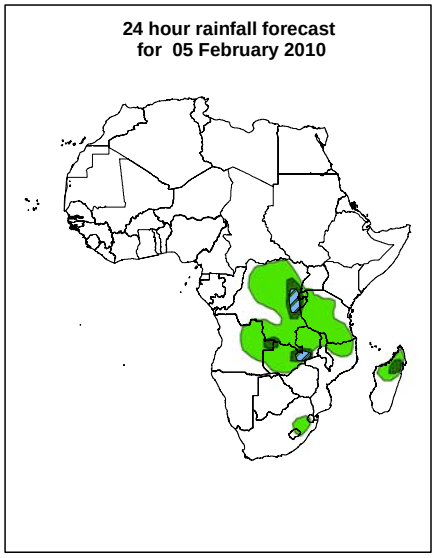
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 04 February –06Z of 06 February 2010, (Issued at 14:00EST of 03 February 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

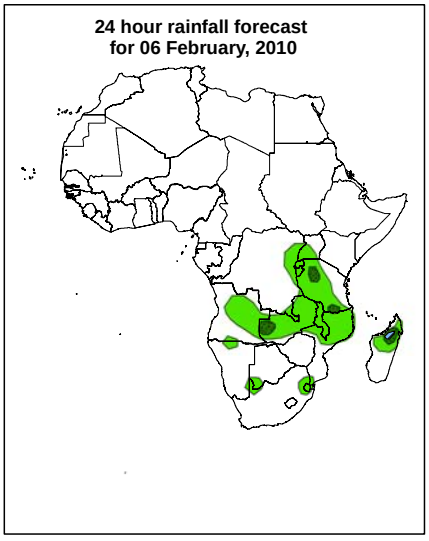
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

- > 40mm per day
- > 20mm per day
- > 10mm per day



Summary

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

1.2. Models Comparison and Discussion - Valid from 00Z of 04 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. 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, and limit 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, a mid latitude low pressure system is expected to develop and cover central Mediterranean Sea towards north Africa with its centre over southern Europe.

Much of equatorial African is expected to be dominated by the equatorial trough, in 24 to 72 hours, with central pressure values reaching 1010mb over the Gulf of Guinea, 1007mb over Central Africa Republic, northern DRC, and 1006mb over southern Sudan. Besides, places over southern Africa are expected to reach pressure values of 1006mb over Botswana, Namibia and South Zambia, while the Mozambique Channel will reach central pressure values of 1008mb.

At 850mb level, an anticyclonic circulation associated with the subtropical high pressure system moving eastwards from the northeast Atlantic Ocean will tend to push a mid-latitude cyclonic system off the coast of Morocco northeastwards towards southern Europe in 24 to 72 hours. On the other hand, the anticyclonic system centered over Libya is expected to shift westwards up to western Algeria, in 24 to 72 hours, while maintaining but slightly weakening its eastward ridge extension. This shift will allow the mid-latitude trough moving eastwards to cover most of the Arabian Peninsula in 24 to 48 hours, while significantly reducing its southward extent, in 48 to 72 hours, due to the strengthening of the Arabian anticyclonic circulation south of the Arabian Peninsula.

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.

At 500mb level, much of North Africa is expected to assume a weak wave flow, in 24 hours, becoming wavy in 48 to 72 hours, with a trough extending southwards up to 8^0N over the central African republic, in 48 to 72 hours. On the other hand, the southern hemisphere is expected to a wave flow pattern in the sub tropical areas through 24 to 72 hrs.

At 200mb, North Africa will experience a mid-latitude zonal flow with wind speeds of up to 110 knots, while a narrow stretch from central Libya to western Arabian peninsula will assume wind speeds of 130 knots, in 24 to 48 hours, tending to shift eastwards over eastern Libya and eastern Arabian peninsula, in 48 to 72 hours. In addition, a narrow zone of winds exceeding 150 knots is expected over Libya, in 24 to 48 hours, moving eastwards over central Arabian Peninsula up to the Persian Gulf in 48 to 72 hours.

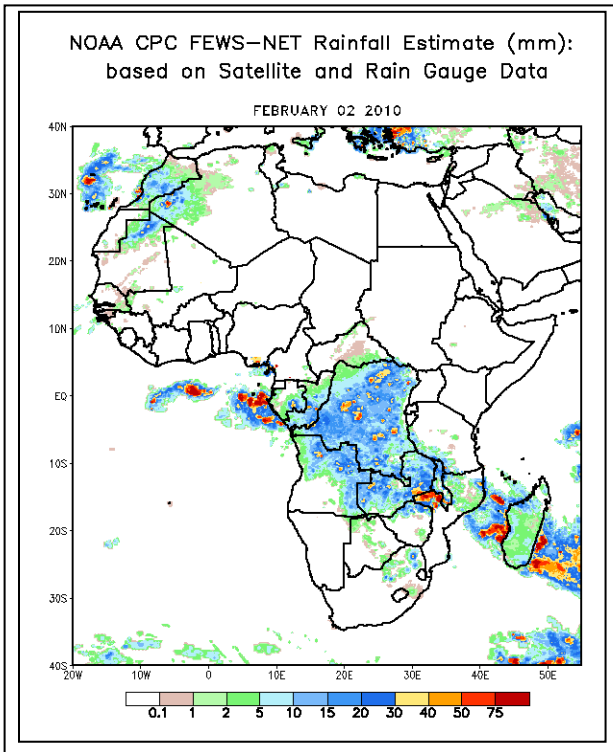
The persistent low level convergence and confluence zone over the DRC and southeastern parts of Africa is expected to maintain rainfall of over 10mm per day in many places through 24 to 72 hours with central DRC, central Zambia, central Malawi and parts of northwest Mozambique expected to receive rainfall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

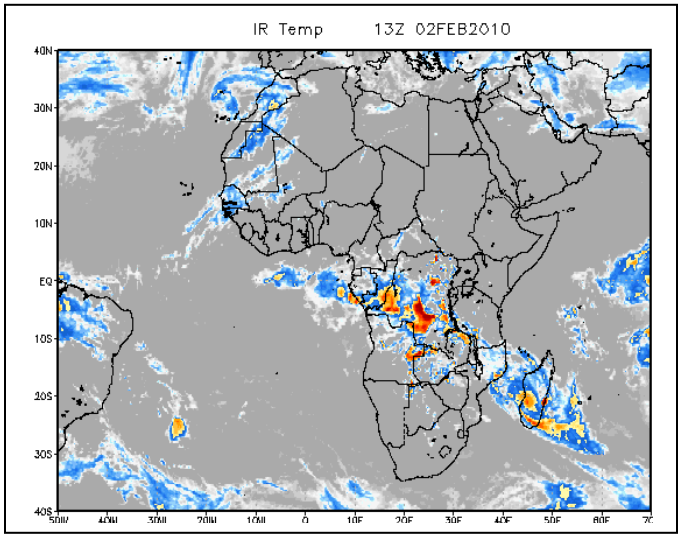
.

2. 0. Previous and Current Day Weather Discussion over Africa (02-03 February 2010)

2.1. Weather assessment for the previous day (02 February 2010): During the previous day, moderate to heavy rainfall events were observed over the Zambia Mozambique border as well as over the DRC.

2.2. Weather assessment for the current day (03 February 2010): Intense cloud patches are observed over DRC, parts of northern Zambia, eastern Angola and western Congo Brazzaville and south central 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

Author(s): *Edson Nkonde (Zambia Meteorological Department / CPC-African Desk)*

Disclaimer: ***This bulletin is for training purposes only and should be used as guidance. NOAA does not make forecasts for areas outside of the United States.***