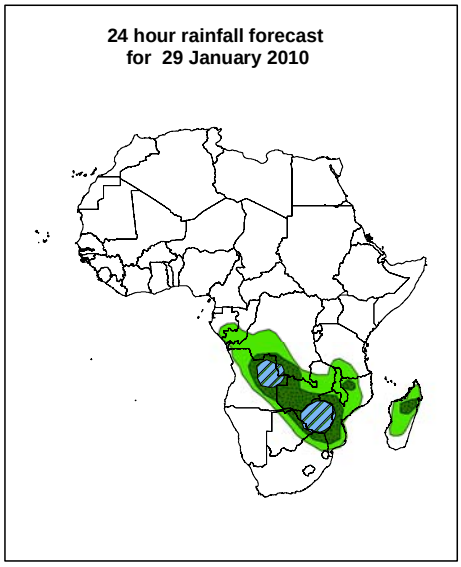
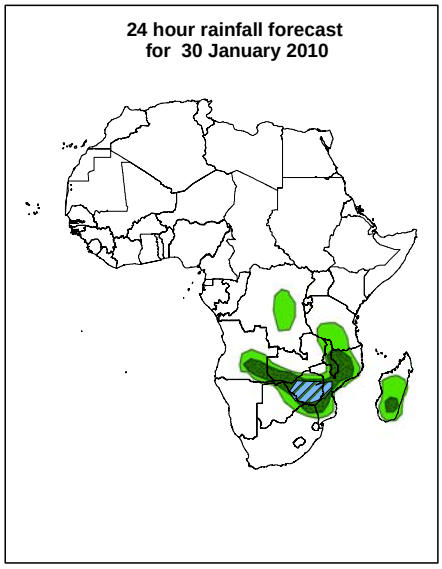
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 29 January –06Z of 31 January 2010, (Issued at 14:00EST of 28 January 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

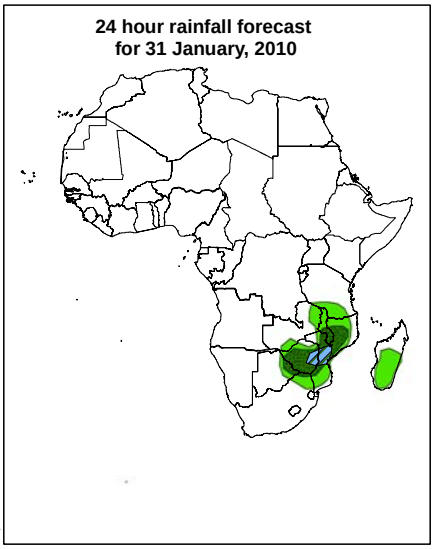
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

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



Summary

The low level convergence over the CAB region and southeastern parts of Africa is expected to maintain rainfall of over 10mm per day in many places through 24 to 48 hours. However, rainfall activity will gradually subside over much of the western parts of central and southern Africa while most places over Zimbabwe and central Mozambique will see enhanced rainfall activity with places receiving over 40mm per day of rainfall through 24 to 72 hours. The convergence associated with the East African monsoon flow is expected to maintain rainfall of about 10mm per day over much of Madagascar.

1.2. Models Comparison and Discussion - Valid from 00Z of 29 January 2010

A ridge from the Azores high is expected to move eastwards forming the Saharan high, merging with the Arabian high, and cutting off the interaction between the low pressure system over southern Europe and the tropics in 24 to 72 hours. This high pressure system is expected to cover much of North African countries, extending southwards up to 15^0N. Furthermore, a ridge extension from the Arabian high is expected to cover much of East Africa, northern Mozambique, southeast DRC, and northern Zambia up to central Angola in 48 to 72 hours.

The equatorial trough is expected to persist with places generally attaining central pressure values of 1009mb over the Gulf of Guinea, northern DRC, southern Sudan southern Chad and Central African Republic. Moreover, places over southern Africa are expected to reach pressure values of 1011mb over Namibia, Botswana, and South Africa, 1009mb south central Mozambique and the Mozambique Channel. The low pressure system off the east coast Madagascar is expected to deepen and move pole wards, reaching central pressure values of 1000mb in 24 to 72 hours. A ridge from St. Helena high is expected to penetrate the east coast of South Africa extending northwards towards the Zimbabwe border in 48 to 72 hours.

At 850mb level, the mid-latitude cyclonic circulation is expected to cover much of North African region, extending southwards up to about 20^0N in 24 to 72 hours. However, the eastern extent of the cyclonic circulation is expected to retreat westwards from about 46^0E to about 42^0E in 24 to 72 hours due to the strengthening of the Arabian anticyclone.

Seasonal convergence over the CAB region is expected to persist through 24 to 72 hrs. Moreover, northeasterly to easterly flow, from the east African monsoon, and westerly flow from the Atlantic Ocean is expected to converge over most parts of east central and southern Africa through 24 to 72 hrs. Localized convergence over southern Angola and northern Namibia is expected to persist through 24 to 48 hours with a significant weakening in 48 to 72 hours over the area. A cyclonic system is expected off the southeast coast of Madagascar in 24 hours tending to move pole wards in 48 to 72 hours.

At 500mb level, much of North Africa is expected to have zonal flow in the westerly in 24 to 48 hours, tending to be slightly wavy in 48 to 72 hours. On the other hand, the southern hemisphere is expected to have a weak wavy pattern in the sub tropical areas through 24 to 72 hrs.

At 200mb, most parts of North Africa will experience mid-latitude zonal flow with wind speeds of up to 110 knots in 24 hours while a narrow zone will develop in 48 hours over northern Libya covering the southeast of Mediterranean Sea up to Egypt with wind

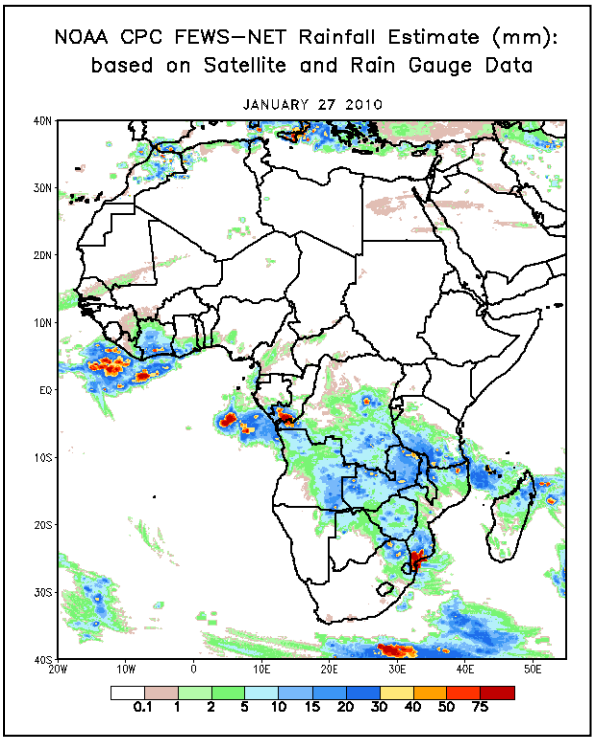
speeds of up to 130 knots. In 72 hours, the mid latitude flow over most parts of North Africa is expected to assume a weak wavy pattern with wind speeds of 110 knots.

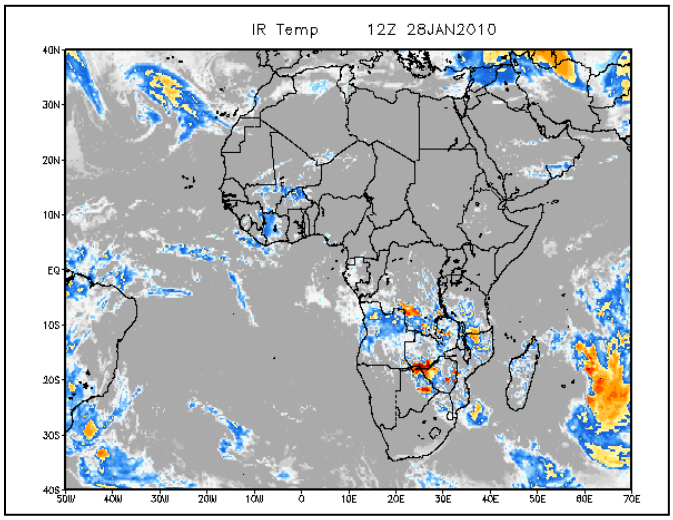
The low level convergence over the CAB region and southeastern parts of Africa is expected to maintain rainfall of over 10mm per day in many places through 24 to 48 hours. However, rainfall activity will gradually subside over much of the western parts of central and southern Africa while most places over Zimbabwe and central Mozambique will see enhanced rainfall activity with places receiving over 40mm per day of rainfall through 24 to 72 hours. The convergence associated with the East African monsoon flow is expected to maintain rainfall of about 10mm per day over much of Madagascar.

2. 0. Previous and Current Day Weather Discussion over Africa (27 –28 January 2010)

2.1. Weather assessment for the previous day (27 January 2010): During the previous day, moderate to heavy rainfall events were observed over South Africa, southern Mozambique, and southwest Congo.

2.2. Weather assessment for the current day (28 January 2010): Intense cloud patches are observed over parts of Zambia, Zimbabwe, DRC, Namibia, Mozambique and Angola.





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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