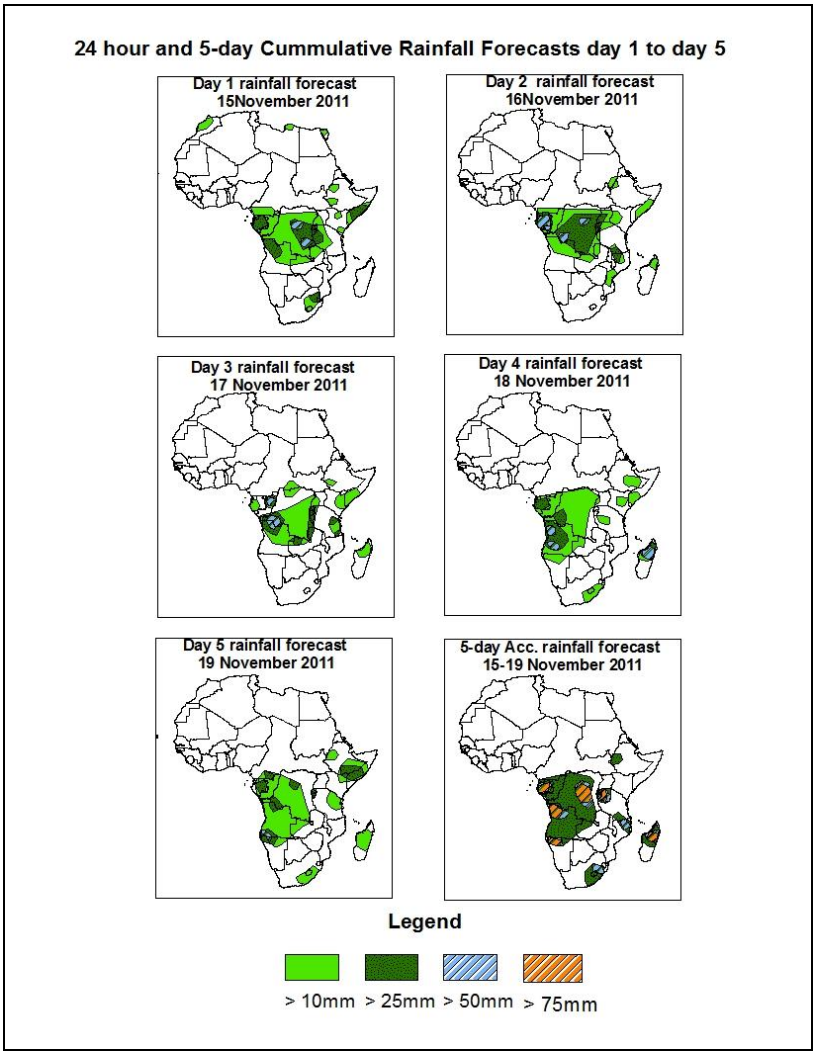
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 15November – 06Z of 19November 2011, (Issued at 16:45Z of 14November 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, seasonal and localized wind convergences are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over north western Ethiopia, Angola, Gabon, Congo Brazzaville, DRC, parts of Tanzania, southern Somalia, northern Namibia, northern Mozambique, parts of Zambia and southern eastern Africa.

1.2. Models Comparison and Discussion-Valid from 00Z of 15November 2011

The GFS, ECMWF and UKMET models indicate series of lows and their associated troughs across central and the South African countries. The low over DRC is expected to fill up, with its mean sea level pressure value increasing from 1008mb to 1009mb through 24 to 48hours and tends to deepen to 1007mb by towards the end of the forecast period according to the GFS model. A low over Tanzania is expected to fill up, with its MSLP value of increasing from 1009mb to 1010mb through 24 to 72hours and then tends to deepen to 1008mb towards the end of the forecast period according to the GFS model. Another low is expected to form extending across Angola, Namibia, Zambia and Botswana and tends to fill up, with its MSLP value increasing from 1005mb to 1008mb through 24 to 72hours and then tends to deepen to 1008mb towards the end of the forecast period according to GFS model. This low is expected to fill up, with its central pressure value increasing from 1006mb to 1010mb through 24 to 96hours and tends to deepen to 1009 by 120hours according to ECMWF model. According to UKMET model, this low is expected to form in the vicinity of Botswana, Angola, Zambia and Namibia and tends to fill up, with its central pressure value increasing from 1002mb to 1008mb through 24 to 96hours and then tends to deepen to 1007mb by 120hours.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to weaken, with its MSLP value decreasing from 1032mb to 1020mb towards the end of the forecast period according to UKMET, ECMWF and the GFS models. The Mascarene high pressure system over southwest Indian Ocean is expected to maintain, its central pressure value of 1016mb during the forecast period according to ECMWF, UKMET and the GFS models.

At the 850hpa level, a lower tropospheric wind convergence is expected to dominate the flow over parts of 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, South Africa, Algeria, Tanzania, Congo, CAR, Cameron, Gabon, Zambia, Zimbabwe, Mozambique and Uganda, 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 and Libya by 24hours and expected to propagate over Egypt 48 hours, while it tends to propagate over Egypt and Libya towards the end of the forecast period .Another trough is expected to propagate over Algeria by 48hours and expected to extend over Morocco and Tunisia towards the end of the forecast period.

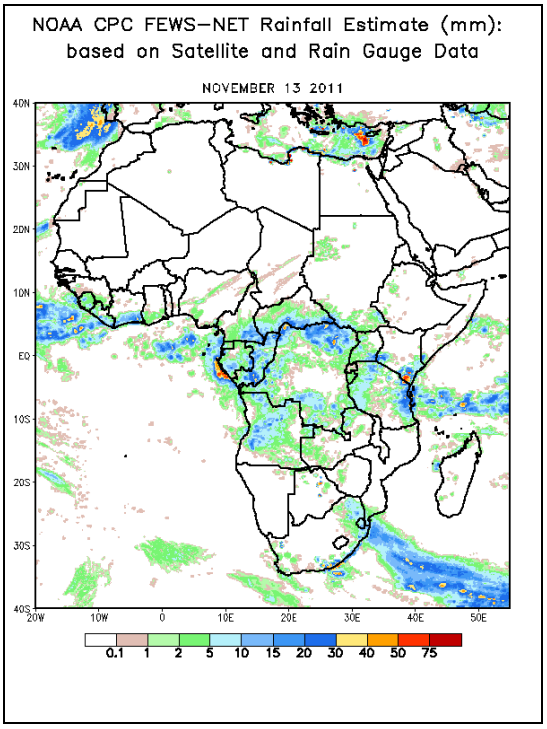
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, during the forecast period. The intensity of the jet is expected to exceed 90kts near Egypt, Libya and Morocco by 24hours and tends to exceed 110kts through 48 over Egypt. By 96hours it is expected to extend over north Africa. This wind is expected to exceed 110kts by 120hours over Egypt and Libya. Wind speed values associated with the southern Hemisphere sub-tropical westerly jet are expected to exceed 70kts, while intensifying towards end of forecast period across South Africa.

In the next five days, seasonal and localized wind convergences are expected to enhance rainfall in their respective regions. Hence, there is an increased chance for heavy rainfall over north western Ethiopia, Angola, Gabon, Congo Brazzaville, DRC, parts of Tanzania, southern Somalia, northern Namibia, northern Mozambique, parts of Zambia and southern eastern Africa.

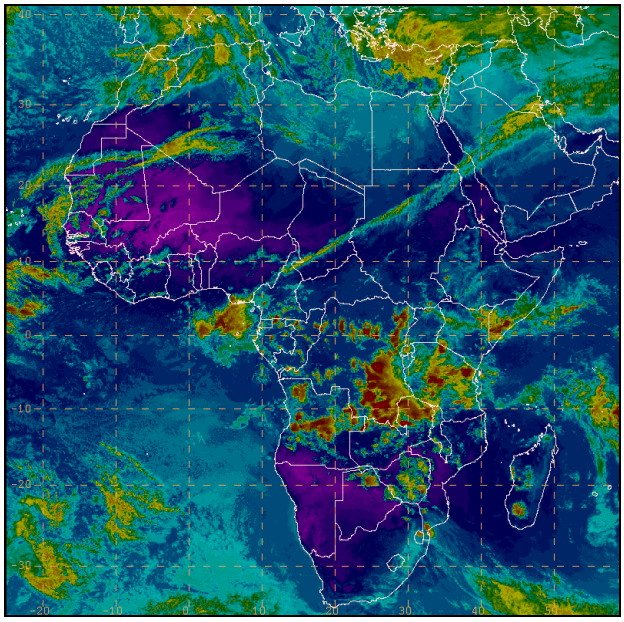
2.0. Previous and Current Day Weather Discussion over Africa (13November - 14November 2011)

2.1. Weather assessment for the previous day (13November 2011): During the previous day, moderate to locally heavy rainfall was observed over parts of Cameron, many parts of DRC, portions of Kenya, eastern Tanzania, southern CAR, southern Cote D'Ivoire and parts of Angola.

2.2. Weather assessment for the current day (14November 2011): Intense clouds are observed over much of DRC, parts of Angola, southern Nigeria, parts of Gabon, parts of Congo, parts of Zambia, many parts of Tanzania, parts of Zimbabwe ,northern Botswana and southern Madagascar.



IR Satellite Image (valid 1622Z of 14November 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

Author(s): Amira Ibrahim (Egyptian Meteorological Authority) / CPC-African Desk), Amira.ibrahim@noaa.gov,
Sadibou Ba (Agence Nationale de la Meteorologie du Senegal) / CPC-African Desk), sadibou.ba@noaa.gov and
Aminata Makalou (Direction Nationale de la Meteorologie du Mali-ASECNA) / CPC-African Desk), aminata.makalou@noaa.gov