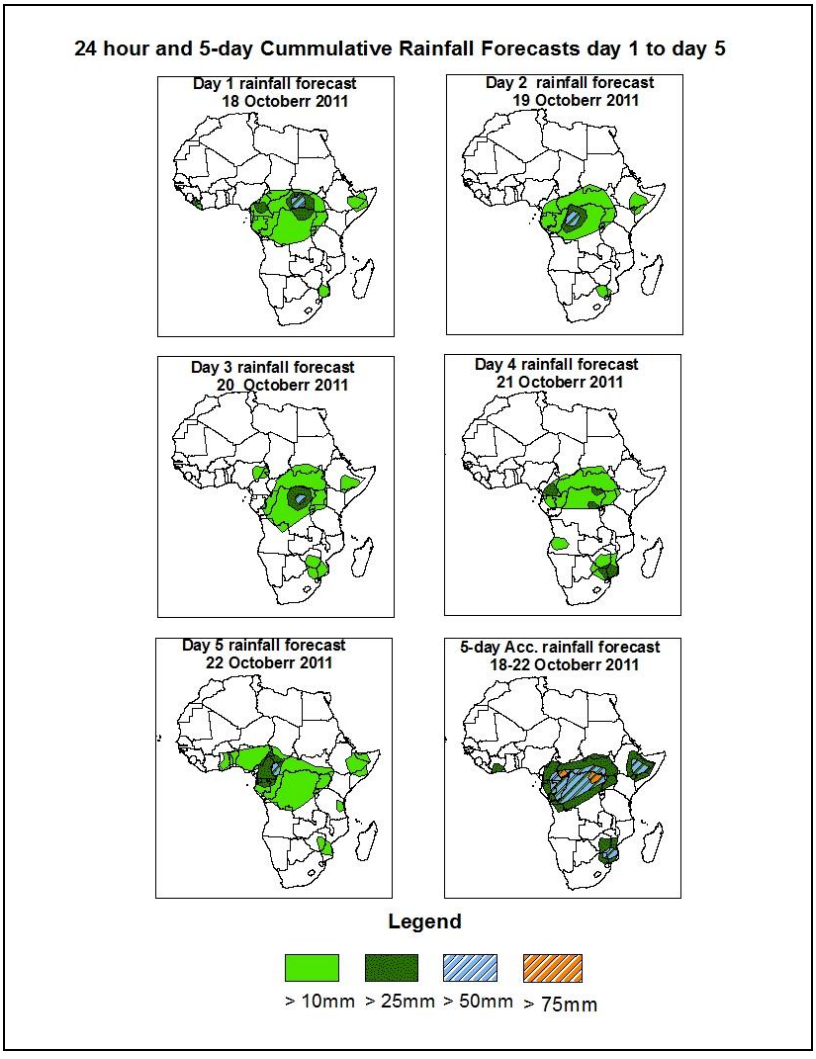
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 18 October – 06Z of 22 October 2011, (Issued at 15:30Z of 17 October 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, the seasonal wind convergences over central African region and Horn of Africa are expected to enhance rainfall in their respective areas. Hence, there is an increased chance for heavy rainfall over Cameroon, CAR, Gabon, Equatorial Guinea, Congo Brazzaville, DRC, CAR, South Sudan Republic, southern Ethiopia, Kenya, Mozambique, Uganda, parts of Somalia and parts of Zimbabwe.

1.2. Models Comparison and Discussion-Valid from 00Z of 18 October 2011

According to the GFS, ECMWF and UKMET models, the monsoon trough with its associated heat lows across the Sahel region is expected to maintain its east-west orientation during the forecast period. The models also indicate series of heat lows and their associated trough across central African countries, extending partly to the South African countries. The heat low along its western end (near Senegal) is expected to deepen, with MSLP values changing from 1009mb to 1008mb through 96 to 120 hours, according to the GFS model. The heat low over central Africa region is expected to deepen, with its central value pressure decreasing from 1006mb to 1005mb, according to the GFS model during the forecast period. This same low tends to fill up from 1006mb to 1007mb, according to the UKMET model through 24 to 48 hours and it tends to deepen from MSLP value of 1007mb to 1006mb towards end of the forecast period. According to the ECMWF model, this low tends to maintain a central MSLP value of 1008mb during the forecast period. A localized high pressure over Ethiopia tends to intensify from MSLP value of 1012mb to 1016mb through 24 to 48 hours according to GFS model and then tends weaken towards end of the forecast period .This same high pressure tends to intensify from MSLP value of 1012mb to 1013mb through 24 to 48 hours according to ECMWF model and then tends weaken towards end of the forecast period to MSLP value 1012mb.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to intensify, with its MSLP value increasing from 1020mb to 1028mb through 24 to 120hours according to GFS model. According to both UKMET and ECMWF models, it tends to intensify, with its MSLP value increasing from 1020mb to 1032mb towards the end of the forecast period. The Mascarene high pressure system over southwest Indian Ocean is expected to weaken, with its MSLP value decreasing from 1020mb to 1016mb according to GFS model through 24 to 72 hours and tends to weaken towards end of forecast period. According to UKMET model, the same high pressure system tends to weaken, with its MSLP value decreasing from 1020mb to 1012mb during the forecast period. This same high pressure tends to intensify according to ECMWF model from MSLP value of 1020mb to 1028mb through the forecast period.

At the 850hpa level, a lower tropospheric wind convergence is expected to dominate the flow over Sudan, parts of Chad and 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, Cameron, Gabon and Congo. Localized wind convergences are also expected to dominate the flow over portions of Uganda, Kenya, Ethiopia, Namibia, Tanzania, Zambia, Mozambique, Burkina Faso, Equatorial Guinea and southern Africa during the forecast period.

At 500hpa, eastward propagating trough in the westerly is expected to dominate the flow over Mediterranean Sea and coastal North Africa during the forecast period, with the low geopotential value of 5820gpm extending to the latitudes of Tunisia, Algeria, Morocco, Libya and Egypt. A mid latitude frontal system is expected to propagate eastwards across the South African tip during the forecast period.

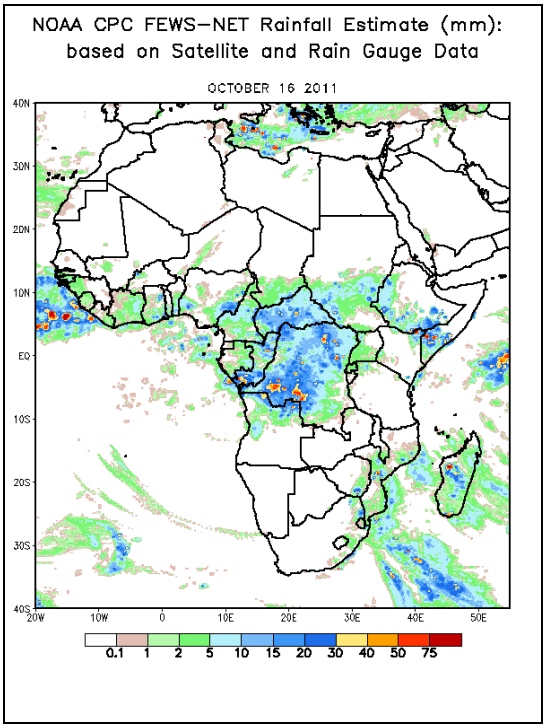
At 200mb, strong winds associated with Sub-Tropical Westerly Jet are expected to dominate the flow over northern Africa, while weakening gradually during the forecast period. The intensity of the jet is expected to exceed 130 kts near Libya and Egypt by 24 hours. The southern Hemisphere sub-tropical westerly jet is also expected to weakening gradually across South Africa through of the forecast period.

In the next five days, the seasonal wind convergences over central African region and Horn of Africa are expected to enhance rainfall in their respective areas. Hence, there is an increased chance for heavy rainfall over Cameroon, CAR, Gabon, Equatorial Guinea, Congo Brazzaville, DRC, CAR, South Sudan Republic, southern Ethiopia, Kenya, Mozambique, Uganda, parts of Somalia and parts of Zimbabwe.

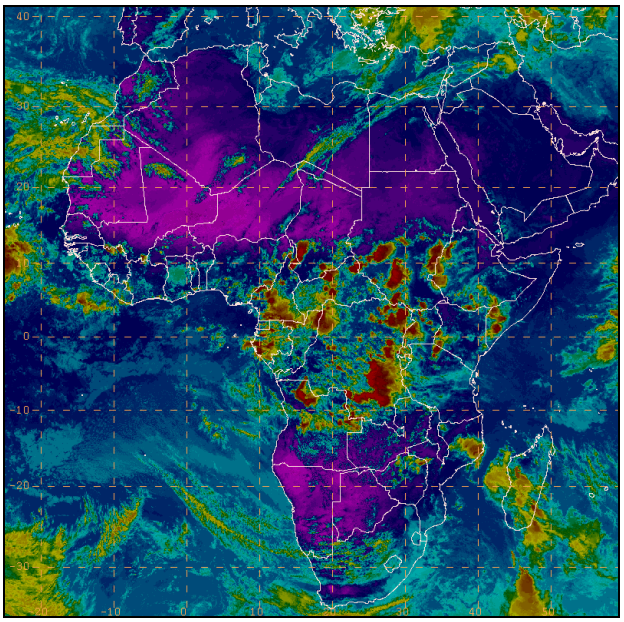
2.0. Previous and Current Day Weather Discussion over Africa (16October - 17 October 2011)

2.1. Weather assessment for the previous day (16 October 2011): During the previous day, moderate to heavy rainfall was observed over southern Somalia, portions of southern Ethiopia, much of CAR, parts of Sudan Republic, eastern Nigeria, much of DRC and parts of Congo.

2.2. Weather assessment for the current day (17 October 2011): Intense clouds are observed over much of central Africa and GHA countries, parts of Sudan Republic and Southeast Africa.



IR Satellite Image (valid 1500Z of 17 October 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