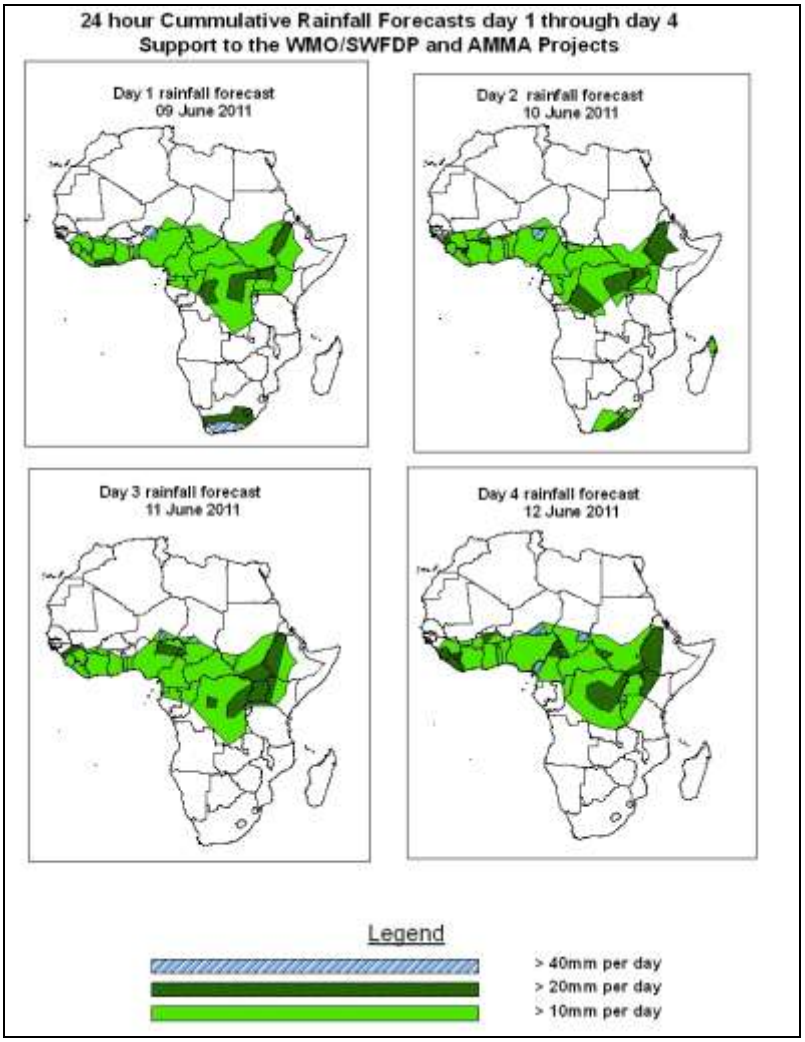
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid 06Z of 09 June– 06Z of 12 June 2011, (Issued at 11:00 Z of 07 June 2011)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 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 four days, there is an increased chance for heavy rainfall over northeastern DRC, parts of Uganda, western Kenya, southern Sudan, Rwanda and Burundi, due to active lower tropospheric convergence in the CAB region. Moreover, moist cross equatorial flow across the Horn of Africa is expected to maintain moderate to heavy rainfall over western Ethiopia.

1.2. Models Comparison and Discussion-Valid from 00Z of 08 June 2011

According the GFS, ECMWF and UKMET models, the east-west oriented trough, associated with heat lows across the Sahel region, Sudan and Iberian Peninsula is expected to have pressure values varying from 1001 and 1008hpa during the forecast period. On the other hand, the East African ridge is expected to remain active across East Africa with its northern extent reaching the latitudes of Ethiopia during the forecast period.

The St. Helena High pressure system over southeast Atlantic Ocean is expected to maintain a central pressure value of 1024hpa through 24 to 48 hours and intensifying to 1028 through 72 to 96 hours. The Mascarene high pressure system over the southwest Indian Ocean is expected to maintain central pressure value of 1024hpa in 24 to 48hours and tends to intensify to 1028hpa in 72 hours and to 1032hpa by 96 hours.

At the 850hpa level, the GFS model maintains strong convergence between in the CAB region between westerly winds from the Atlantic Ocean and easterly winds from the Indian Ocean. This convergence is expected more strong over northeast DRC through 48 hours and it tends to shift northward into southern Sudan through 72 hours and restores back to northeast DRC through 96 hours. Moreover, the seasonal southeasterly moist wind from Indian Ocean across East Africa turning into southwesterly flow as it passes across the Horn of Africa, partly converging into Ethiopia. On the other hand, dry northeasterly winds are expected to continue dominating the flow over northern and portions of central Sudan. The seasonal convergence between moist winds from the Atlantic Ocean and dry winds from northern Africa is expected to be more active over central and eastern parts of the Gulf of Guinea.

At the 700hPa level, zone of strong easterly flow is expected to propagate across the Gulf of Guinea between central African region and the west coast of West Africa through 24 to 96 hours

At 500hpa, easterly winds with moderate intensity (10 to 25knots) are expected to dominate the flow over Sudan, central African and the Gulf of Guinea and southern Sahel region, with the stronger winds associated with the African easterly Jet are

expected over Chad, Niger, Nigeria, Burkina-Faso, Ghana, Sierra Leon, western Togo, Mali and Guinea during the forecast period.

A zone of strong wind (>70Kts) at 200hpa level associated with the Sub Tropical westerly Jet is expected to propagate eastwards across Algeria, Tunisia, Libya and Mediterranean through 24 hours and tend to weaken to (>70Kts) in 48 to 72 hours and back to (>90Kts) by 96 hours. On the other hand, strong winds (>130Kts) associated with the Sub-Tropical Westerly Jet is expected in the southern hemisphere across Atlantic and Indian Ocean, Southern Africa , Namibia, Lesotho and Swaziland through 24 to 72 hours and tends to intensifying to (>130Kts) by 96 hours.

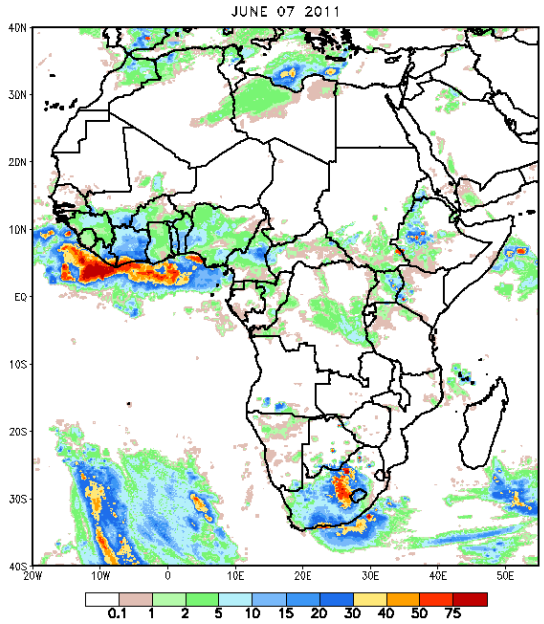
In the next four days, there is an increased chance for heavy rainfall over northeastern DRC, parts of Uganda, western Kenya, southern Sudan, Rwanda and Burundi, due to active lower tropospheric convergence in the CAB region. Moreover, moist cross equatorial flow across the Horn of Africa is expected to maintain moderate to heavy rainfall over western Ethiopia.

2.0. Previous and Current Day Weather Discussion over Africa (07 – 08 June 2011)

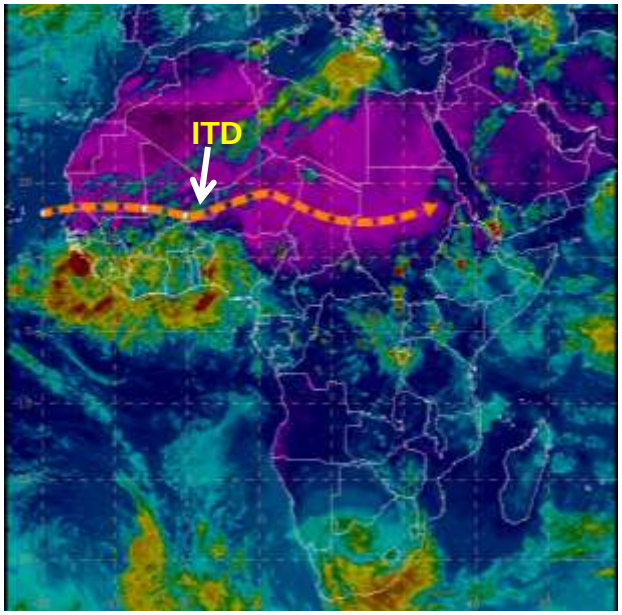
2.1. Weather assessment for the previous day (07 June 2011): During the previous day, a combination of moderate and heavy rainfall was observed along the coast of Gulf of Guinea, parts of Uganda, Ethiopia and Southern Africa.

2.2. Weather assessment for the current day (08 June 2011): Intense clouds are observed across the coast of Gulf of Guinea, parts of DRC, western Ethiopia parts of Sudan and Southern Africa.

NOAA CPC FEWS–NET Rainfall Estimate (mm): based on Satellite and Rain Gauge Data



IR Satellite Image (valid 1500Z) and position of ITD, based on 1200Z Surface Analysis; 07 June 2011



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

Author(s): Orlando Mendes (Direcção Geral da Meteorologia Nacional da Guiné-Bissau) / CPC-African Desk), orlando.mendes@noaa.gov and

Albert M. Sherman (Liberian Meteorological Agency) / CPC-African Desk), albert.sherman@noaa.gov

---