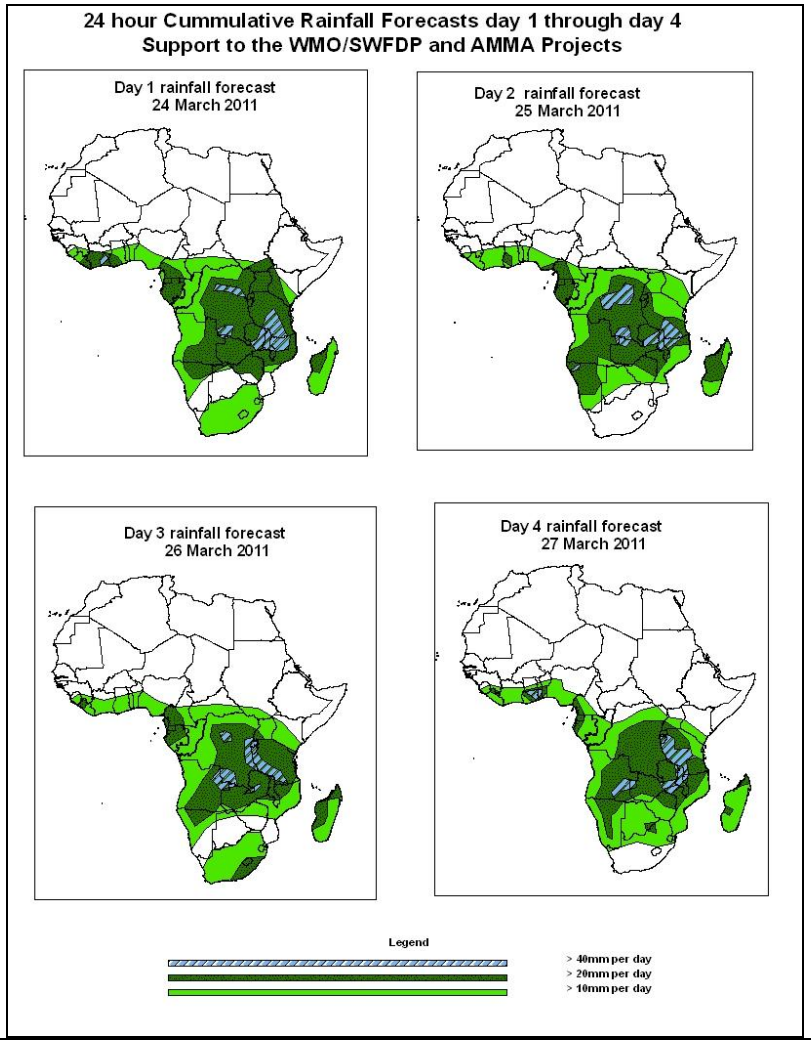
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 24 March – 06Z of 27 March 2011, (Issued at 12:30Z of 23 March 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

There are prospects of a spatiotemporal increase in rainfall within the next four days, with moderate to heavy rainfall expected to continue over the Congo Air boundary (CAB), southern Africa, northern Madagascar and the Gulf of Guinea (G.G) coast. The presence of strong lower and mid-tropospheric level convergence over the CAB region and southern Africa and influx of moisture laden south westerly's, westerly and easterlies over the G.G, Angola and Mozambique respectively will enhance this. Hence, there is an increased chance for rainfall to exceed 20mm per day over coast of G.G, Congo, Uganda, Kenya, Tanzania, DRC, Burundi, Rwanda, Malawi, Tanzania, Mozambique, Zimbabwe, Angola, Namibia, South Africa, Zambia, Madagascar and Botswana.

1.2. Models Comparison and Discussion-Valid from 00Z of 24 March 2011

Within the next four days, the GFS, ECMWF and UKMET models show the persistence of an east-west oriented trough formed by a series of cut off lows over southern Sudan, parts of Central African region and the coast of the Gulf of Guinea. A central pressure value of 1004hpa – 1005hpa is expected along its eastern end (mainly over Central African Republic / Sudan region), and a pressure value of 1007hpa along its western end. The lows associated with the meridional arm of the ITCZ are active. There is a low pressure system over Angola region. There appears to be some level of similarity in pressure patterns as depicted by the GFS, ECMWF and UKMO models.

The St. Helena High pressure system over southeast Atlantic weakens from a central pressure value of 1028hpa to 1024hpa by 72 hours and to 1020hpa by 96 hours. The Mascarene high pressure system over southwest Indian Ocean appears at its climatological position with a central pressure value of 1020hpa by 96 hours.

The east-west oriented convergence line in the region between the coastal areas of the Gulf of Guinea and northeast DRC at 850hpa level, as depicted by the GFS model, is expected to persist. The north-south oriented convergence line persists all through, though filling up slightly. The convergence line over Angola region seems quite active as it persists and deepens progressively.

At the 700hpa level, mostly northeasterly winds dominate across most of western and central African countries with strong lower tropospheric convergence dominating the flow over Angola, DRC, Tanzania, Namibia, Zambia, Malawi, Zimbabwe, Mozambique, Rwanda and Burundi.

At 500HPa, zones of strong wind in excess of 70Kts, which are associated with the African Easterly Jet, are expected in the vicinity of north east Africa and the Mid –East all through 24 to 96 hours. Similar strong winds in excess of 50Kts are expected over the south Atlantic and the coast of South Africa.

A zone of strong wind (>110Kts) at 200hpa level associated with the Sub Tropical westerly Jet in the sub-tropical region of north east Africa and the Mid -East is expected to be wavy all through.

Similarly, strong winds (>110Kts) associated with the Sub-Tropical Westerly Jet in the Sub Tropical region of the southern Atlantic and the coast of South Africa is expected to be zonal, later becoming wavy and increasing in strength (>130Kts) by 48 hours but decreasing (>90Kts) thereafter.

There are prospects of a spatiotemporal increase in rainfall within the next four days, with moderate to heavy rainfall expected to continue over the Congo Air boundary (CAB), southern Africa, northern Madagascar and the Gulf of Guinea (G.G) coast. The presence of strong lower and mid-tropospheric level convergence over the CAB region and southern Africa and influx of moisture laden south westerly's, westerly and easterlies over the G.G, Angola and Mozambique respectively will enhance this. Hence, there is an increased chance for rainfall to exceed 20mm per day over coast of G.G, Congo, Uganda, Kenya, Tanzania, DRC, Burundi, Rwanda, Malawi, Tanzania, Mozambique, Zimbabwe, Angola, Namibia, South Africa, Zambia, Madagascar and Botswana.

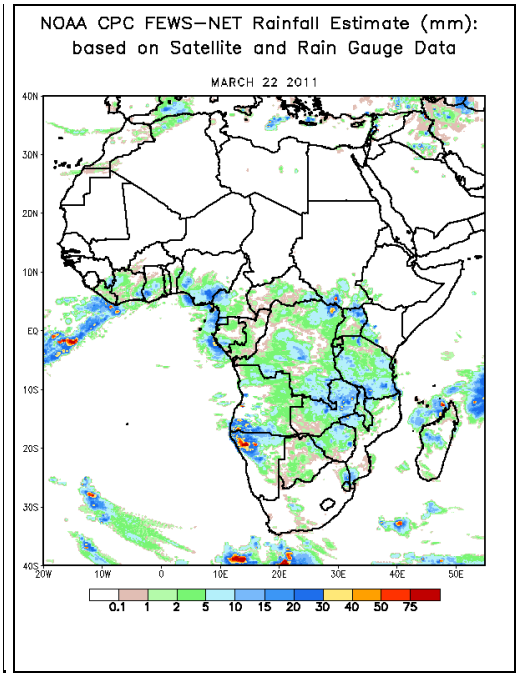
2.0. Previous and Current Day Weather Discussion over Africa (22 March – 23 March 2011)

2.1. Weather assessment for the previous day (22 March 2011):

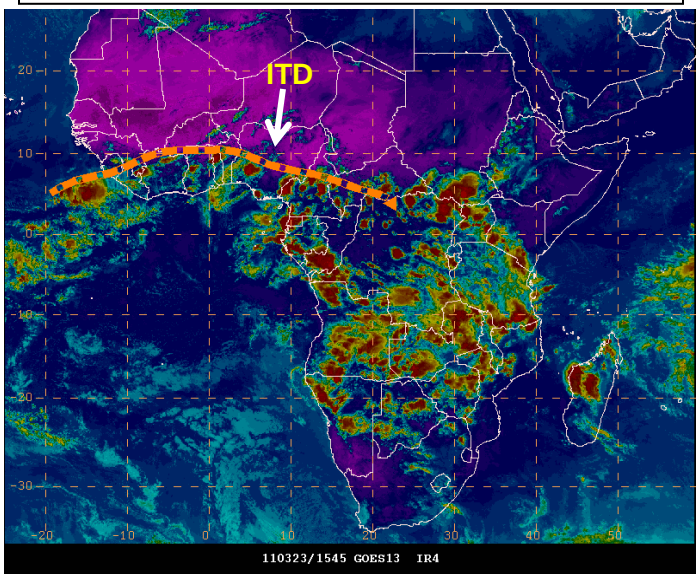
During the previous day, a combination of moderate and heavy rainfall was observed over Gulf of Guinea coast, DRC, Kenya, Uganda, Tanzania, Angola, Namibia, Zambia, southern Sudan, Zimbabwe, Mozambique, South Africa and northern Madagascar.

2.2. Weather assessment for the current day (23 March 2011):

Intense clouds are observed over Gulf of Guinea coast, CAR, southern Sudan, Uganda, Kenya, DRC, Burundi, Tanzania, Mozambique, Zambia, Zimbabwe, Botswana, Angola, Namibia, Madagascar, Congo, Malawi and northern South Africa.



IR Satellite Image (valid 1545Z) and position of ITD, based on 12Z Surface Analysis; 23 Mar 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): Onyilo Desmond Onyilo (Nigerian Meteorological Agency) / CPC-African Desk), Desmond.Onyilo@noaa.gov

---

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.