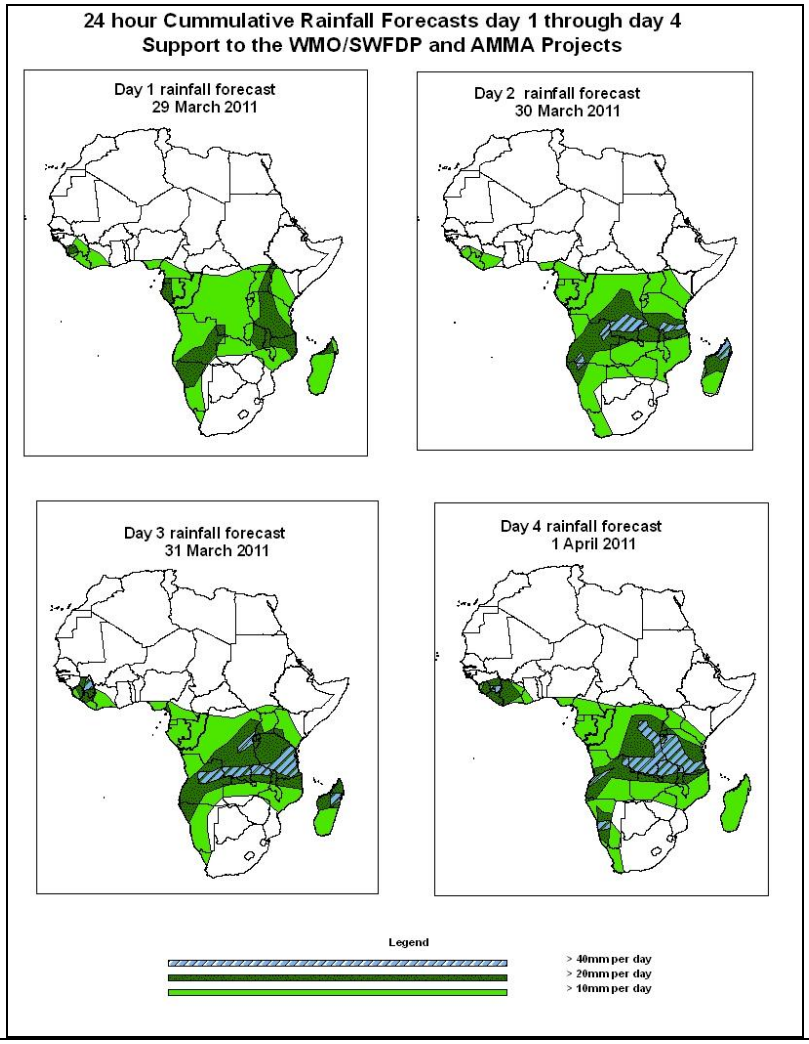
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 29 March – 06Z of 01April 2011, (Issued at 13:20Z of 28 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

Within the next four days, there is a chance of increased rainfall over the Gulf of Guinea and extending into its inland areas, aided by the activity of mid-latitude westerly waves. Moderate to heavy rainfall will continue over southern Africa with its concentration over the Mozambique, Zambia and Angola axis. The Congo Air Boundary will witness Moderate to heavy rains as well. These will be aided by lower level convergence and moist easterlies from the Indian Ocean. Hence, there is an increased chance for rainfall to exceed 20mm per day over Guinea, Eq. Guinea, Gabon, Cameroun, Uganda, Kenya, Tanzania, DRC, Burundi, Rwanda, Malawi, Mozambique, Angola, Namibia, Zambia, Madagascar, southern Sudan and Ethiopia.

1.2. Models Comparison and Discussion-Valid from 00Z of 29 March 2011

A series of cut off lows over southern Sudan, parts of Central African region and the coast of the Gulf of Guinea forms an east-west oriented trough. This trough as presented by the GFS, ECMWF and UKMET models will persist through the next four days with a central pressure value of 1004hpa expected along its eastern end (mainly over Central African Republic / Sudan region), and a pressure value of 1008hpa along its western end. The lows associated with the meridional arm of the ITCZ are active. The low pressure system over Angola region appears shallow, as the UKMET model shows a central value of 1011hpa by 24 hours and it fills up from 48 through 96 hour period. The ECMWF equally agrees with this pattern, only the GFS shows it deepening to 1009hpa and maintaining that value for 72 to 96 hour period. The low over the Mozambique Channel re-establishes after a long period of absence. There appears to be some level of disparity in the presentation of pressure values by the ECMWF, GFS and UKMO models.

The St. Helena High pressure system over southeast Atlantic is absent from its climatological position for 24 and 48 hours but shows up with a central value of 1020hpa by 72 hours and intensifies to about 1023hpa by 96 hours. The Mascarene high pressure system over southwest Indian Ocean with a central value of 1020hpa by 24 hours disappears from its climatological position from 48 through 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, and the north-south oriented convergence line as depicted by the GFS model, are expected to fill by 24 hour then deepen progressively from 48 through 96 hours. The convergence line over Angola region and that over the Mozambique Channel should both deepen and persist, filling 96 hours.

Mostly northeasterly winds dominate across most of western and central African countries at the 700hpa level with strong lower tropospheric convergence dominating the flow over Angola, DRC, Mozambique, Tanzania, Malawi and Zimbabwe.

There is also the presence of the mid-latitude wave over much of the northern Sahel region.

At 500HPa, zones of strong wind in excess of 50Kts, which are associated with the African Easterly Jet, are expected in the vicinity of the Mid –East by 24 hours and over north Africa from 48 to 96 hours. Similar strong winds in excess of 90Kts are expected over the south Atlantic.

A zone of strong wind (>130Kts) at 200hpa level associated with the Sub Tropical westerly Jet in the sub-tropical region of North Africa and south west Asia 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 is expected to wavy all through, increasing in strength (>130Kts) by 48 hours then decreasing (>90Kts) by 96 hours.

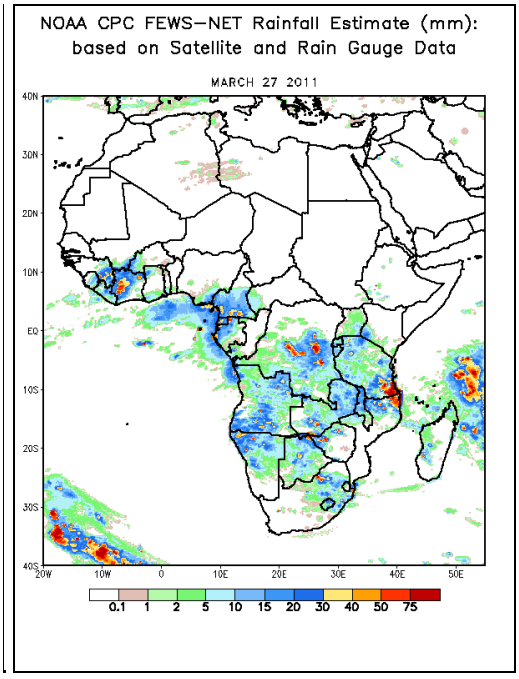
Within the next four days, there is a chance of increased rainfall over the Gulf of Guinea and extending into its inland areas, aided by the activity of mid-latitude westerly waves. Moderate to heavy rainfall will continue over southern Africa with its concentration over the Mozambique, Zambia and Angola axis. The Congo Air Boundary will witness Moderate to heavy rains as well. These will be aided by lower level convergence and moist easterlies from the Indian Ocean. Hence, there is an increased chance for rainfall to exceed 20mm per day over Guinea, Eq. Guinea, Gabon, Cameroun, Uganda, Kenya, Tanzania, DRC, Burundi, Rwanda, Malawi, Mozambique, Angola, Namibia, Zambia, Madagascar, southern Sudan and Ethiopia.

2.0. Previous and Current Day Weather Discussion over Africa (27 March – 28 March 2011)

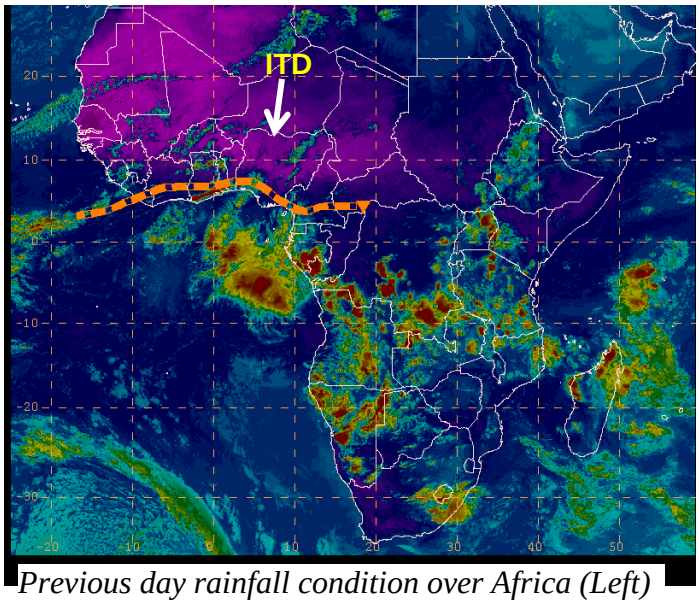
2.1. Weather assessment for the previous day (27 March 2011):

During the previous day, a combination of moderate and heavy rainfall was observed over Gulf of Guinea coast, Congo, Tanzania, Angola, Namibia, Zimbabwe, Mozambique, Madagascar, DRC, Zambia, Kenya, Rwanda, Burundi, Ethiopia and Botswana.

2.2. Weather assessment for the current day (28 March 2011): Intense clouds are observed over Ghana, Togo, Gabon, Congo, DRC, Uganda, Kenya, Tanzania, Mozambique, Zambia, Botswana, Angola, Namibia, Madagascar and northern South Africa.



IR Satellite Image (valid 1622Z) and position of ITD, based on 12Z Surface Analysis; 28 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

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