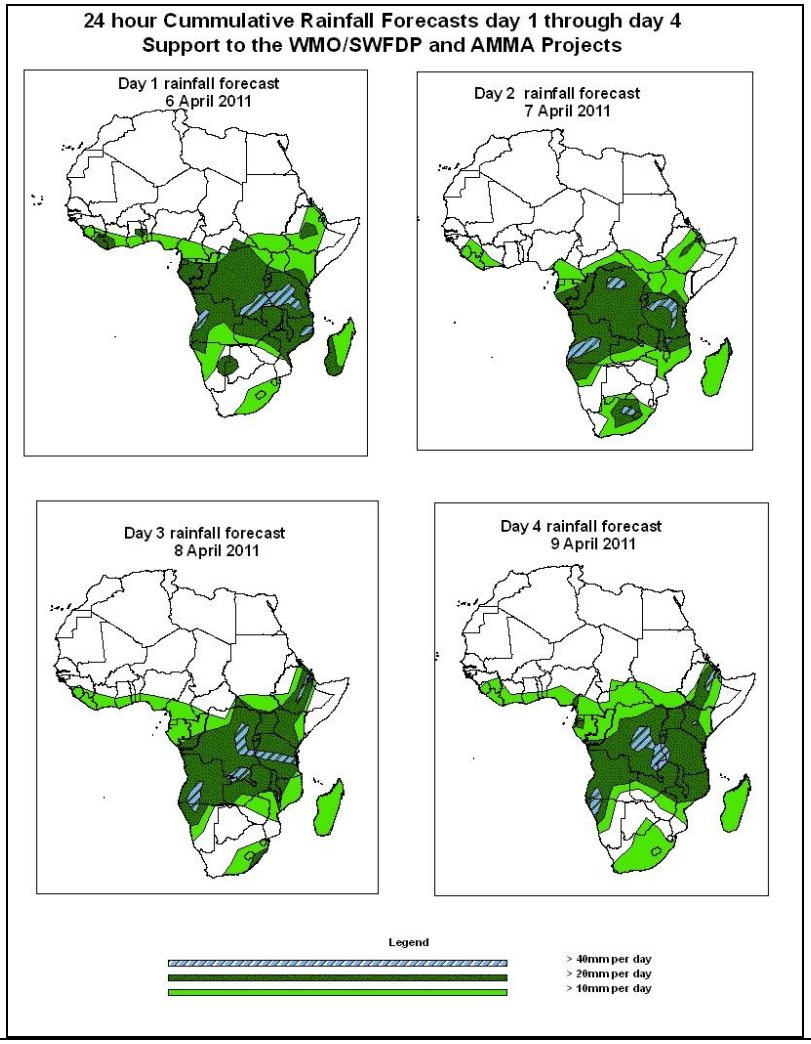
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 06 April – 06Z of 09 April 2011, (Issued at 12:00Z of 05 April 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 rainfall should continue over southern Africa. Lower level convergence and the influx of moisture laden easterly's over the eastern coast of Africa, and the presence of a mid-latitude trough over northeast Africa should enhance moderate to heavy rainfall over southern Africa, the Congo Air Boundary (CAB) and the vicinity of the Greater Horn of Africa, with a slight decrease in intensity over the Gulf of Guinea coast.. South Africa will also witness moderate to heavy rainfall aided by the presence of a mid- latitude front. Hence, there is an increased chance for rainfall to exceed 20mm per day over Gulf of Guinea coast, Congo, DRC, CAR, Sudan, Ethiopia, Kenya, Uganda, Burundi, Rwanda, Angola, Namibia, Zambia, Malawi, Mozambique, Madagascar, South Africa, Zimbabwe, Tanzania and Botswana.

1.2. Models Comparison and Discussion-Valid from 00Z of 6 April 2011

The GFS, ECMWF and UKMET models show the persistence of an east-west oriented trough within the next four days, 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 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 over southern DRC and the vicinity of Lake Victoria with a central pressure value between 1008 to 1009hpa. The low pressure system over Angola region maintains a central pressure value between 1009 - 1010hpa. While the low pressure system over the Mozambique Channel has a value of 1011hpa by 24hours, 1010hpa by 96 hours but absent for the other days. The three models; ECMWF, GFS and UKMET show some level of similarity in their presentation of pressure patterns.

The St. Helena High pressure system over southeast Atlantic intensifies from 1024hpa by 24 hour period to 1028hpa by 48 hours. A single celled pressure system is noticed by 72 hours with an east-west oriented ridge and a central pressure value of 1028hpa extending to the Mascarene vicinity. The Mascarene high pressure system over southwest Indian Ocean shows a similar pressure pattern as the St. Helena.

At the 850hpa level, the GFS model shows the east-west oriented convergence line in the region between the coastal areas of the Gulf of Guinea and northeast DRC fills by 48 and 96hours, while deepening by 24 and 72 hours period. The north-south oriented convergence line persists all through, active mostly over DRC and Uganda to northern Tanzania. The convergence line over Angola region persists, and fills by 96 hour period. The convergence line over the Mozambique Channel deepens from 24, fills up by 48 and resurfaces by 72 hour period.

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 and Tanzania, Burundi and Rwanda.

A mid-latitude front traverses the coast of South Africa. A mid-latitude trough dominating most of northeast Africa propagates from latitude 20°E by 24 hours to about 33°E by 96 hours.

At 500HPa, zones of strong wind in excess of 50Kts, which are associated with the African Easterly Jet, increasing to excess of 90Kts by 48 hours are expected in the vicinity of Egypt, Morocco, the north Atlantic and Mediterranean. Similar strong winds in excess of 50Kts are expected over the Indian Ocean, the south Atlantic and off the coast of South Africa.

A zone of strong wind (>130Kts) at 200hpa level associated with the Sub Tropical westerly Jet is expected in the vicinity of Libya, Egypt and the mid-east and expected to be wavy and increasing in strength (>150Kts) by 96 hours.

Similarly, strong winds (>90Kts) associated with the Sub-Tropical Westerly Jet in the Sub Tropical region of South Africa, south Atlantic and the Indian Ocean is expected to be wavy all through.

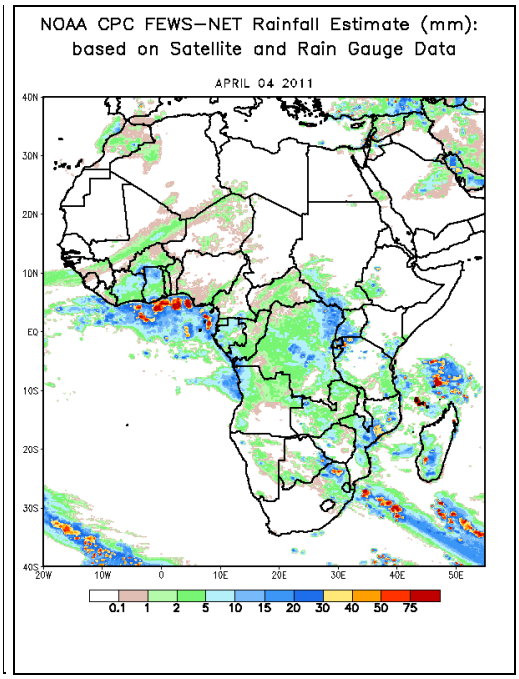
Within the next four days rainfall should continue over southern Africa. Lower level convergence and the influx of moisture laden easterly's over the eastern coast of Africa, and the presence of a mid-latitude trough over northeast Africa should enhance moderate to heavy rainfall over southern Africa, the Congo Air Boundary (CAB) and the vicinity of the Greater Horn of Africa, with a slight decrease in intensity over the Gulf of Guinea coast.. South Africa will also witness moderate to heavy rainfall aided by the presence of a mid- latitude front. Hence, there is an increased chance for rainfall to exceed 20mm per day over Gulf of Guinea coast, Congo, DRC, CAR, Sudan, Ethiopia, Kenya, Uganda, Burundi, Rwanda, Angola, Namibia, Zambia, Malawi, Mozambique, Madagascar, South Africa, Zimbabwe, Tanzania and Botswana.

2.0. Previous and Current Day Weather Discussion over Africa (04 April – 05 April 2011)

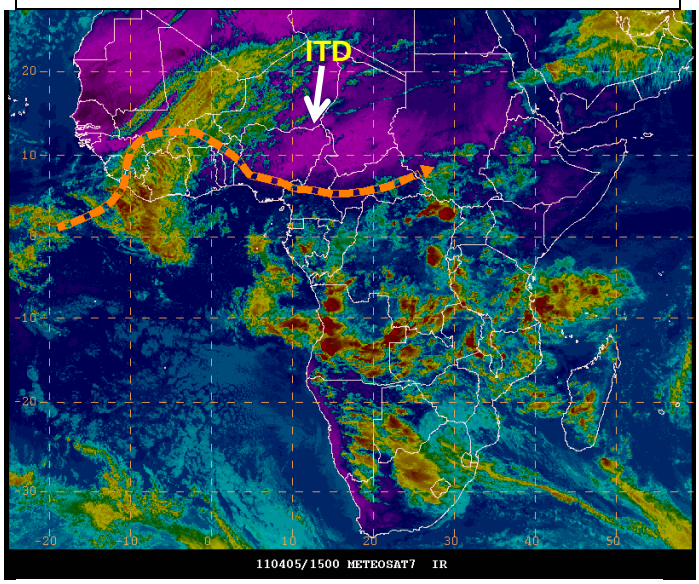
2.1. Weather assessment for the previous day (04 April 2011):

During the previous day, a combination of moderate and heavy rainfall was observed over Gulf of Guinea coast, DRC, Congo, Angola, Botswana, South Africa, Tanzania, Kenya, Ethiopia, Madagascar, Mozambique, Malawi, Uganda, Zambia, Rwanda and Sudan.

2.2. Weather assessment for the current day (05 April 2011): Intense clouds are observed over Liberia, Gabon, Congo, DRC, Angola, Zambia, Mozambique, Tanzania, Namibia, Botswana, Burundi, South Africa and Madagascar.



IR Satellite Image (valid 1500Z) and position of ITD, based on 12Z Surface Analysis; 05 April 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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