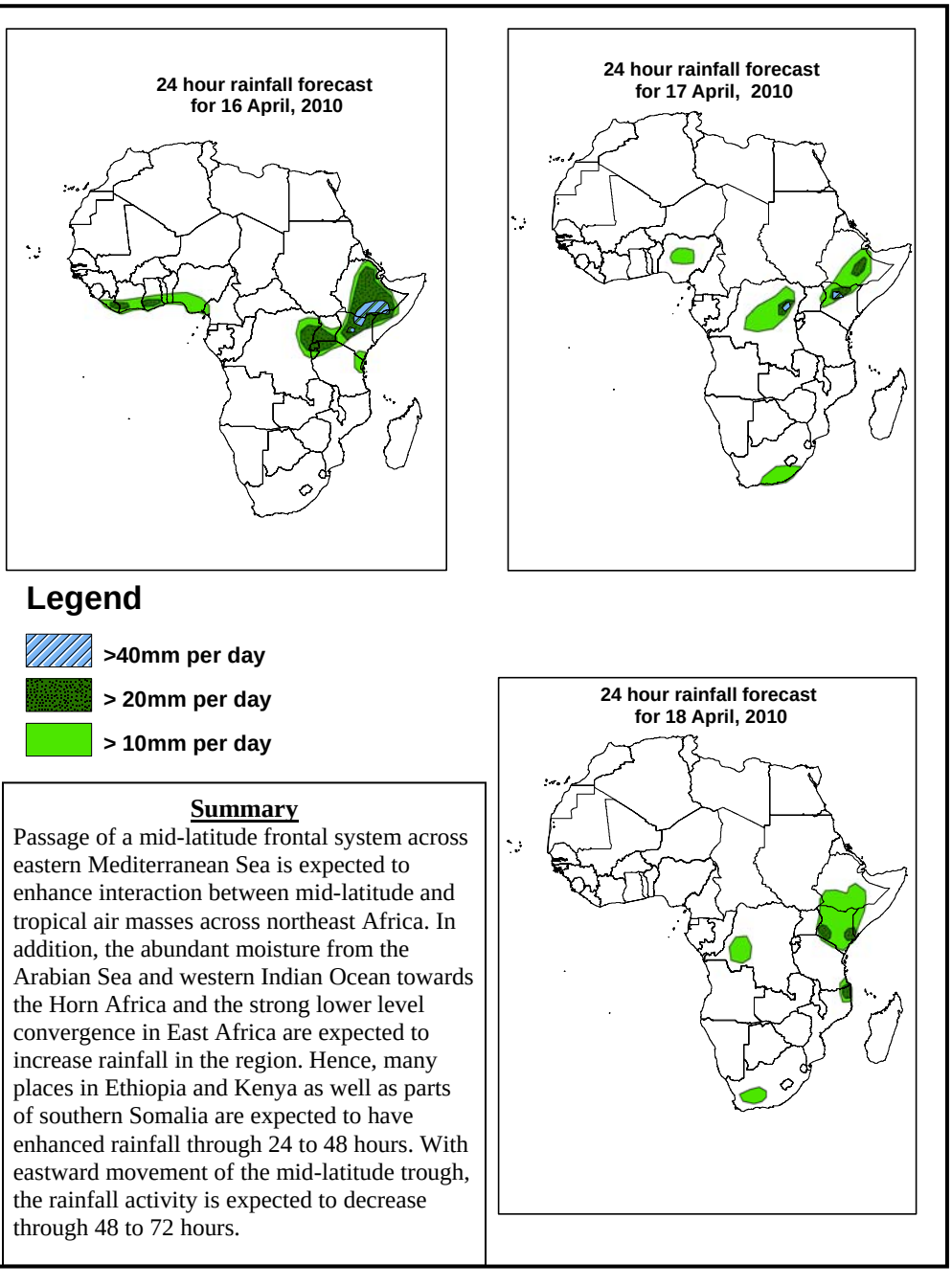
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 16 April –06Z of 18 April 2010, (Issued at 14:00EST of 15 April 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.



1.2. Models Comparison and Discussion - Valid from 00Z of 15 April 2010

A mid latitude low pressure system over northeast Atlantic Ocean is expected to fill up, with its central pressure value changing from 990mb to 1002mb through 24 to 72 hours, in GFS model and from 994mb to 1004mb in the ECMWF model. A stretch of low pressure zone between western Algeria and northwest Libya is also expected to fill up in both GFS and ECMWF models through 24 to 72 hours. The intensity of the Saharan high pressure system is also expected to weaken in the region bordering southern Algeria and northern Niger from central value of 1016mb in 24 hours to 1012mb in 72 hours. Both the GFS and the ECMWF models indicate a gradual filling up of the low the equatorial trough in its eastern end over Sudan and more or less maintaining its intensity in its western end in the Gulf of Guinea regions through 24 to 72 hours. The Mascarene high and its associated East African ridge is expected to weaken through 24 to 72 hours as a mid-latitude frontal system passes across South Africa. In association with the center of the Mascarene high is expected to shift eastwards through 24 to 72 hours.

At 850mb level, the easterly to southeasterly winds from the periphery of Arabian Anticyclone is expected to carrying moisture towards a strong lower level convergence in East Africa through 24 to 48 hours. In addition, the strong interaction between a mid-latitude frontal and tropical system along the 40^{o}E longitude in the vicinity of Ethiopia is expected to increase rainfall in the Horn of Africa through 24 to 48 hours. The strong peripheral winds from the Mascarene and St. Helena anticyclones are expected to maintain the east-west oriented wind convergence along 12oN latitude in the region between coastal West Africa and western Sudan. On the other hand, a feeble trough in the mid-latitude westerly flow is expected to cross the southern parts of South Africa through 24 to 48 hours.

At 500mb level, consistent with the lower tropospheric flow, a mid tropospheric westerly trough is expected to move between 40^{0}E and 45^{0}E longitudes, enhancing the lower level convergence in the Horn Africa through 24 to 72 48 hours. On the other hand, a northeast-southwest oriented trough in the westerlies is expected to propagate east wards across the southern African regions through 24 to 48 hours. With the weakening of the mid-latitude frontal systems, the flow in the sub-tropical regions of both hemispheres is expected to become zonal through 48 to 72 hours.

At 200mb, a mid-latitude westerly trough located near 35^{o} longitude is expected to move slightly eastwards, with its southern extent dominating the flow over much of Sudan and the adjacent areas of Ethiopia and Central African Republic through 24 to 72 hours. In the southern hemisphere the wavy pattern that dominates the flow over the subtropical regions is expected to weaken gradually and attain a more or less zonal pattern through 24 to 72 hours. In the northern hemisphere, the maximum wind speed associated with this flow is expected to exceed 130 knots in the region bordering Algeria and Libya through 24 hours. The speed of the jet wind is expected to weaken through 48 hours

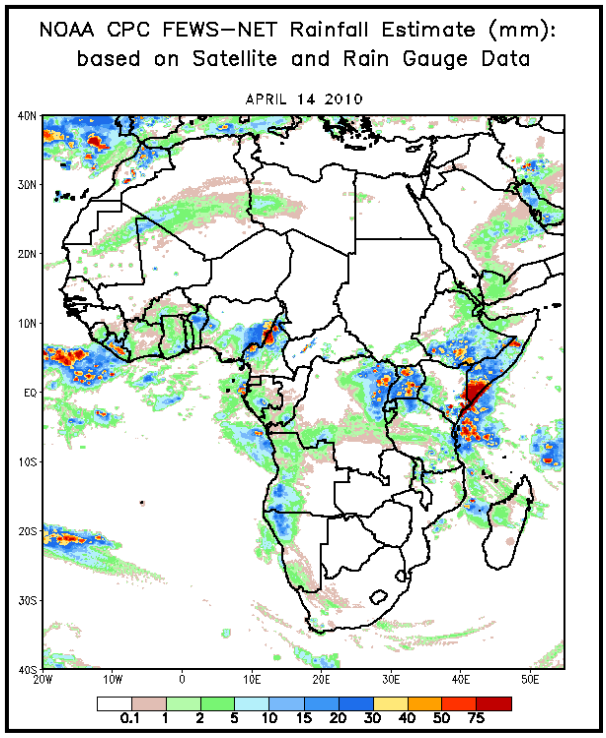
and will attain its strength through 48 to 72 hours in association with an east ward propagating wave.

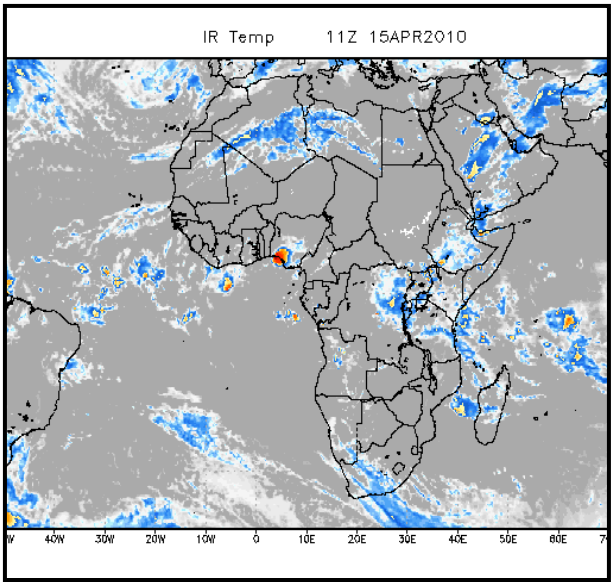
Passage of a mid-latitude frontal system across eastern Mediterranean Sea is expected to enhance interaction between the mid-latitude and tropical air masses across northeast Africa. In addition, the abundant moisture from the Arabian Sea and western Indian Ocean towards the Horn Africa and the strong lower level convergence in East Africa are expected to increase rainfall in the region. Hence, many places in Ethiopia and Kenya as well as parts of southern Somalia are expected to have enhanced rainfall through 24 to 48 hours. With eastward movement of the mid-latitude trough, the rainfall activity is expected to decrease through 48 to 72 hours.

2.0. Previous and Current Day Weather Discussion over Africa (14 April 2010 – 14 April 2010)

2.1. Weather assessment for the previous day (14 April 2010): During the previous day, heavy rains were observed over the horn of Africa, especially, in parts of southern Somalia, southern Ethiopia and coastal areas of Kenya. Uganda and the adjacent areas of northest DRC also received moderate to heavy rainfall.

2.2. Weather assessment for the current day (15 April 2010): isolated intense clouds are observed over southern Nigeria. The cloudiness also continues over much of the Horn of Africa countries.





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

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