

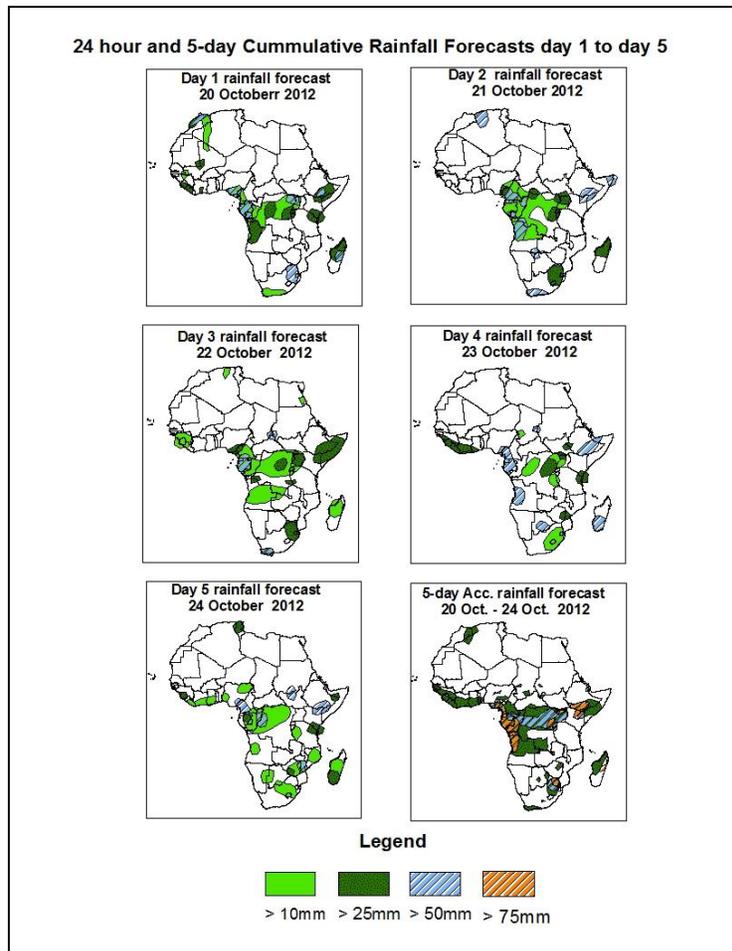


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of October 20<sup>th</sup> – 06Z of October, 24<sup>th</sup> 2012. (Issued at 13:00Z of October, 19<sup>th</sup> 2012)

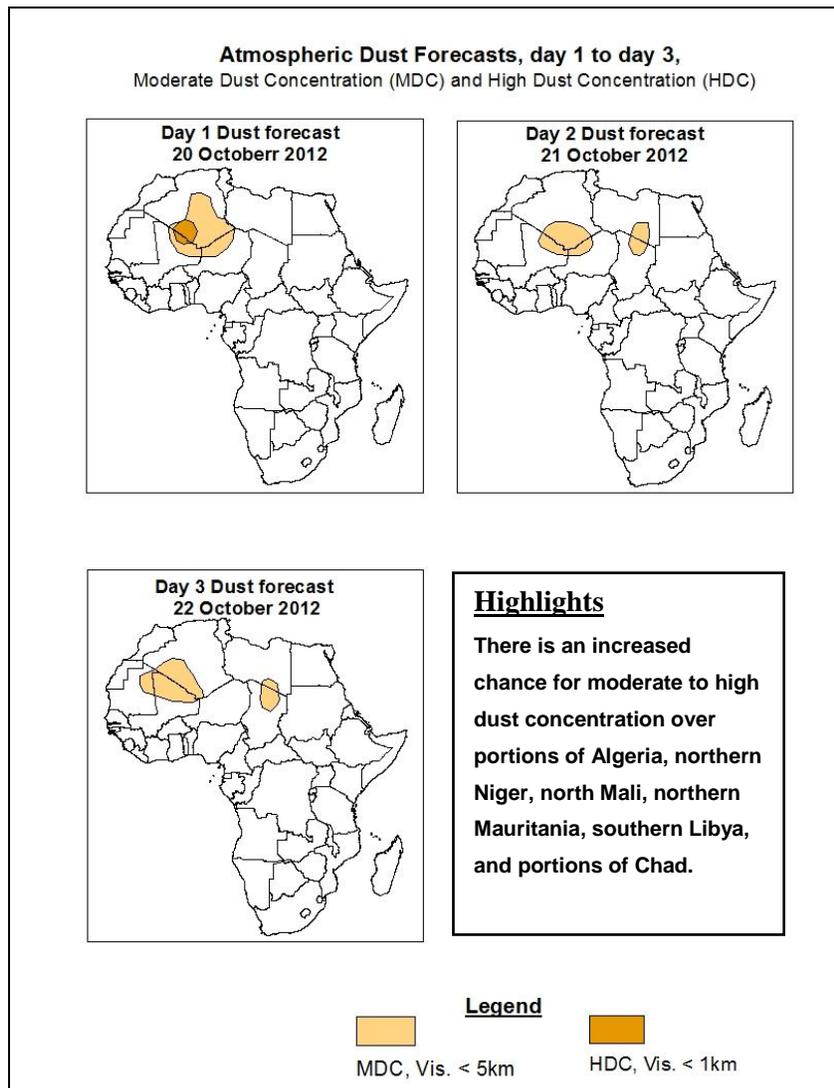
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of 75% 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 five days, the seasonal low level wind convergences near the Congo Air Boundary (CAB) region, persistent lower level wind convergences associated with the monsoon flow over coastal Gulf of Guinea and western Equatorial Africa, lower level moist easterly flow from northern Indian Ocean and its associated convergence over the Horn of Africa, remnants of tropical storm Anais near Madagascar and mid-latitude frontal systems South Africa are expected to enhance rainfall in their respective regions. Thus, there is an increased chance for heavy rainfall southeastern Nigeria, portions of Cameroon, Gabon, Angola, portions of the Lake Victoria region, southern Ethiopia and the neighboring areas of Kenya, eastern South Africa and portions of Madagascar.



## 1.2. Model Discussion: Valid from 00Z of October, 19<sup>th</sup> 2012.

*Model comparison (Valid from 00Z; October, 19<sup>th</sup> 2012) shows all the three models are in general agreement with respect to positioning of synoptic scale features, such as, seasonal lows across Central and Southern Africa countries, the eastward propagating mid-latitude systems across Northeast Africa, and also across southern Africa, and the gradual weakening of the southern hemisphere sub-tropical highs (St. Helena and Mascarene). However, the models show differences in terms of central pressure values.*

According to the ECMWF model the St. Helena High pressure system over southeast Atlantic Ocean is expected to weaken gradually, with its MSLP value decreasing from 1037hpa to 1031hpa through 24 to 120 hours. According to the UKMET model, this pressure is expected to decrease its central pressure value from about 1039hpa in 24 hours to 1025hpa in 120 hours. The St Helena's high pressure system is also expected

to decrease its central pressure value of 1038hpa to 1030hpa in 96 hours, according to the GFS model.

The Mascarene high pressure system over southwestern Indian Ocean is expected to weaken gradually, from central pressure value of 1029hpa in 24 hours to 1019hpa in 72 hours while shifting eastwards, according to the UKMET model. This high pressure system is expected to weaken, with its central pressure value decreasing from 1030hpa to 1023hpa through 24 to 48 hours according to the ECMWF model, and from 1029hpa to 1019hpa in 72 hours according to the GFS model.

The seasonal lows across Botswana, Zimbabwe, Zambia and Mozambique are expected to fill up gradually, with their pressure values increasing from about 1006hpa to 1009mb through 24 to 120 hours, according to the ECMWF model, from 1003hpa to 1007hpa according to the UKMET model, and from 1005hpa to 1007hpa according to the GFS model.

At the 850hpa level, a strong lower level wind convergence across southern Nigeria is expected to weaken through 24 to 72 hours. A lower level wind convergence across southern Cameroon, Gabon and Angola is expected to remain more or less active during the forecast period. The north south oriented seasonal wind convergence near the CAB region is also expected to remain active through 24 to 72 hours, and to slightly weaken towards end of the forecast period. Lower level wind convergences, with their interactions with mid-latitude systems are expected to become active through 24 to 48 hours across eastern South Africa and the neighboring areas. Moist easterly winds from the Indian Ocean and their associated convergences across the Horn of Africa are expected to continue enhancing rainfall in the region. Lower level circulations associated with remnants of tropical storm Anais are expected to dominate the flow over Madagascar and the neighboring areas of the Mozambique Channel through 24 to 48 72 hours.

At 500hpa, a trough associated with the Northern Hemisphere mid-latitude system is expected to remain more or less stationary across Northeast Africa while expanding southwestward into northern Chad during the forecast period. A slow moving mid latitude trough is also expected to leave the East coast of South Africa in 72 hours.

At 200hpa, zone of strong winds (>70kts), associated with the northern Hemisphere sub-tropical westerly jet is expected to propagate 23°N latitude between while intensifying as it approaches the northern Red Sea area. In the southern hemisphere, the subtropical system is expected to remain active, with the core of strong winds (>90kts), propagating between South Africa and Indian Ocean during the forecast period.

In the next five days, the seasonal low level wind convergences near the Congo Air Boundary (CAB) region, persistent lower level wind convergences associated with the monsoon flow over coastal Gulf of Guinea and western Equatorial Africa, lower level moist easterly flow from northern Indian Ocean and its associated convergence over the Horn of Africa, remnants of tropical storm Anais near Madagascar and mid-latitude frontal systems South Africa are expected to enhance rainfall in their respective regions. Thus, there is an increased chance for heavy rainfall southeastern Nigeria, portions of Cameroon, Gabon, Angola, portions of the Lake Victoria region, southern Ethiopia and the neighboring areas of Kenya, eastern South Africa and portions of Madagascar.

## 2.0. Previous and Current Day Weather Discussion over Africa

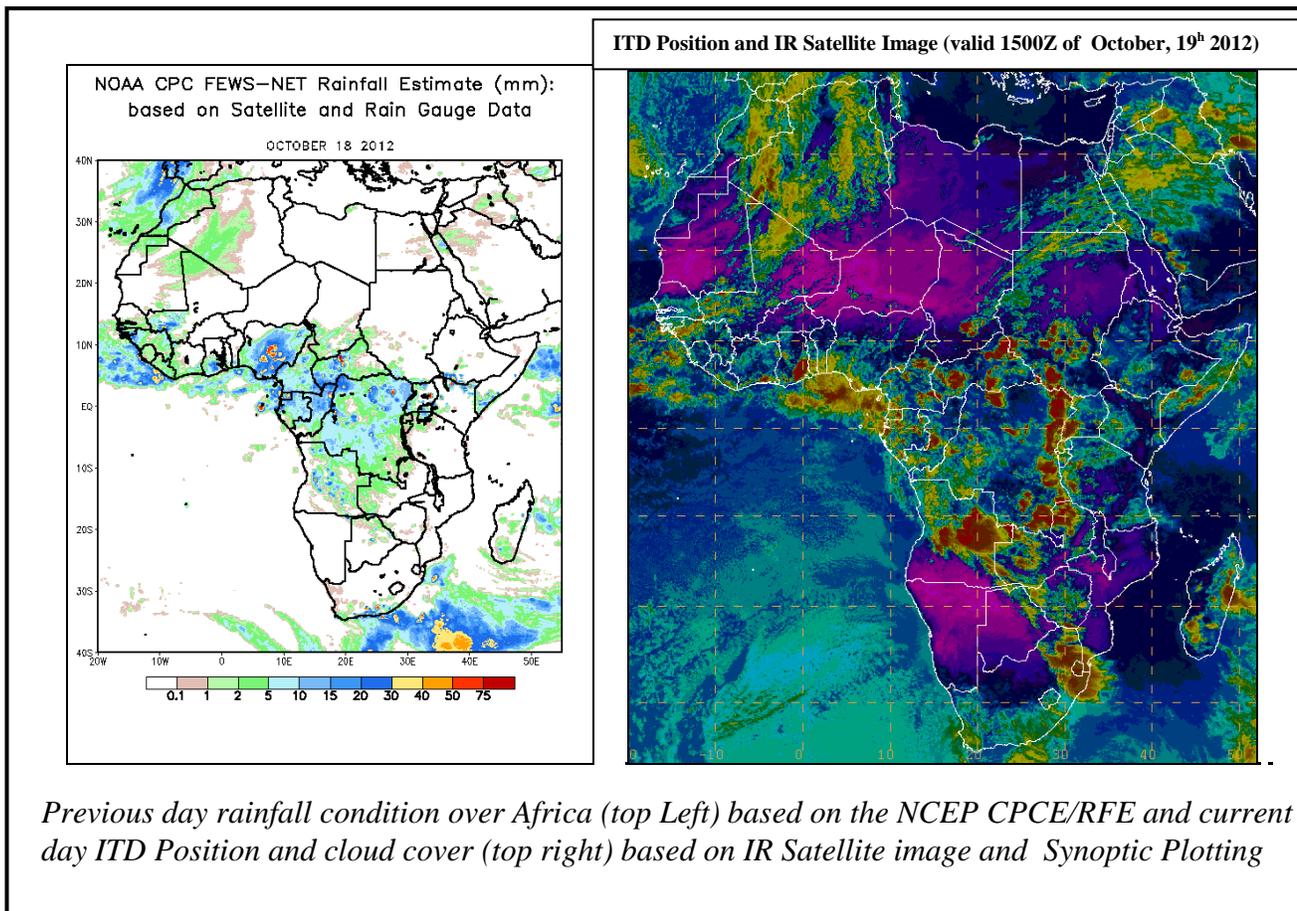
(October, 18<sup>th</sup> 2012 – October, 19<sup>th</sup> 2012)

### 2.1. Weather assessment for the previous day (October, 18<sup>th</sup> 2012)

During the previous day, light rains were observed over parts of Mauritania; Mali; Morocco; Algeria; Chad; Egypt and South Africa with moderate to heavy rainfall over parts of Togo; Sierra Leone; Nigeria; Gabon; Cameroon; Congo Brazzaville; Democratic Republic of Congo; Central African Republic; South Sudan Republic; Ethiopia; Ghana and Angola.

### 2.2. Weather assessment for the current day (October, 19<sup>th</sup> 2012)

Convective clouds are observed across parts of Algeria; Libya; Mali; Mauritania; Nigeria; Chad; Democratic Republic of Congo; Cameroon; Sudan; Congo Brazzaville; South Sudan Republic; Ethiopia; Uganda; Somalia; Malawi; Zimbabwe; Algeria; Libya; Egypt; Sudan; Guinea-Conakry; Sierra Leone; Gambia; Togo; Kenya; Gabon; Angola; South Africa and Central African Republic.



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