

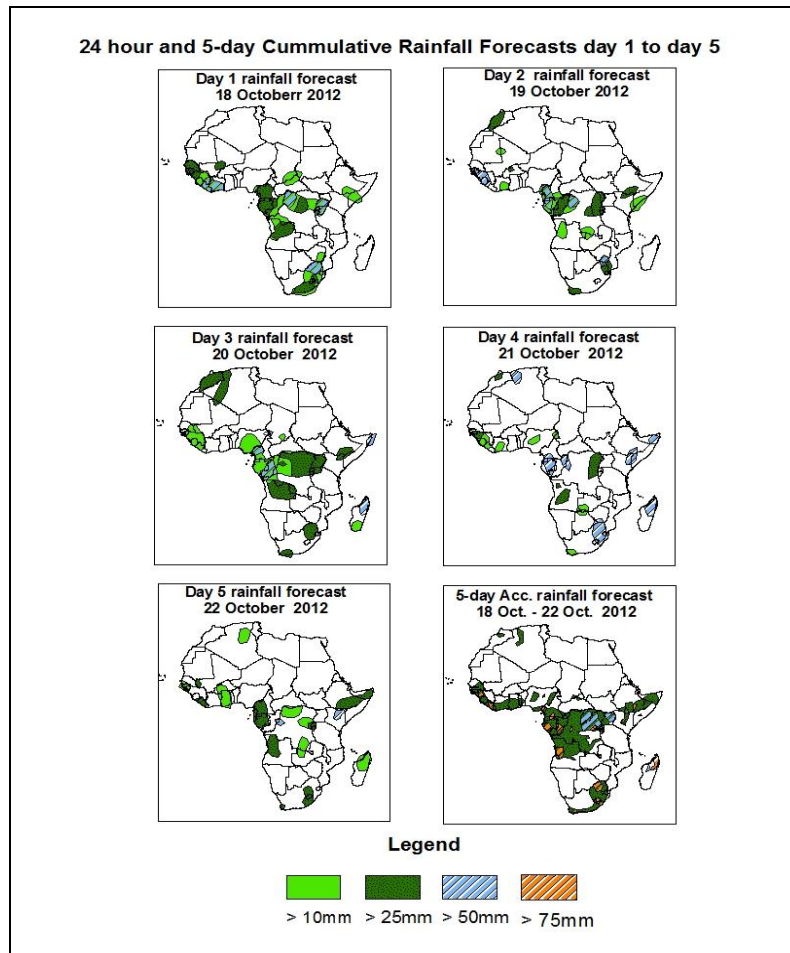


# NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

## 1.0. Rainfall Forecast: Valid 06Z of October 18<sup>th</sup> – 06Z of October, 22<sup>nd</sup> 2012. (Issued at 13:00Z of October, 17<sup>th</sup> 2012)

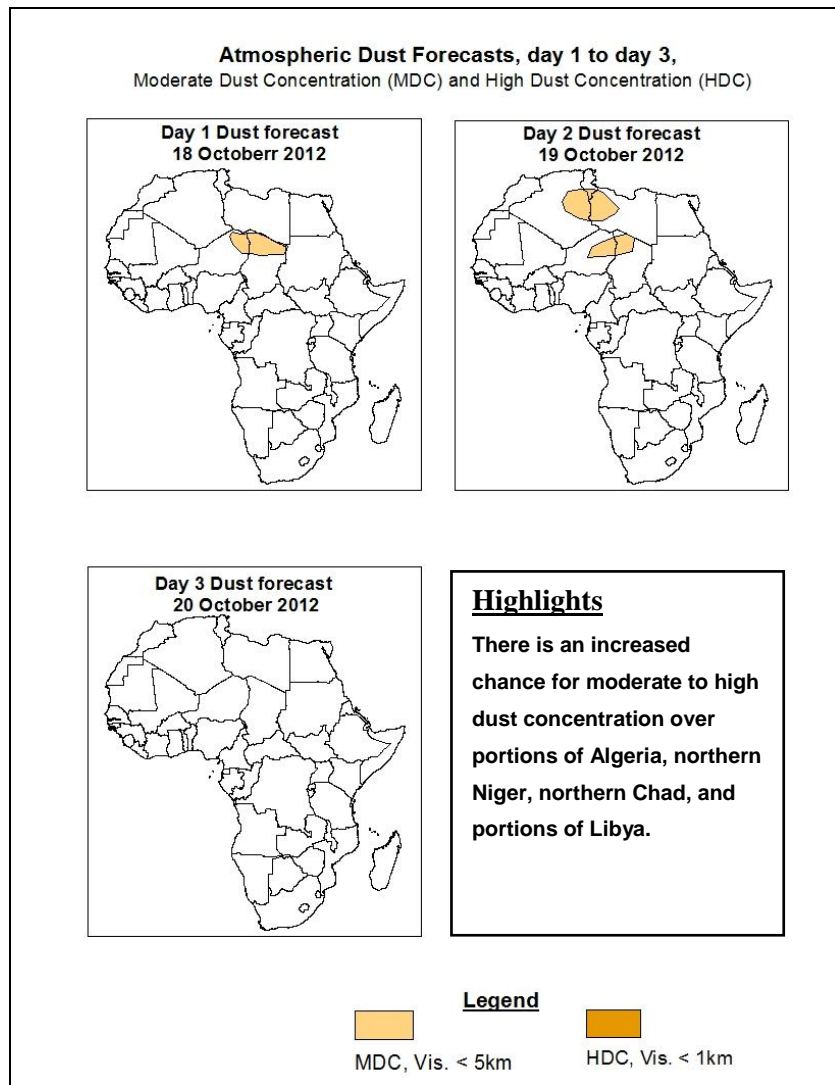
### 1.1. Twenty Four Hour Cumulative Rainfall Forecasts

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 western Equatorial Africa, lower level moist easterly flow from northern Indian Ocean and its associated convergence over the Horn of Africa, the eastward propagating mid-latitude frontal systems across South Africa and the track of tropical storm Anais towards Madagascar are expected to enhance rainfall in their respective regions. Thus, there is an increased chance for heavy rainfall over southern Cameroon, Gabon, portions of DRC, Uganda, Kenya, southeastern Ethiopia, southern Somalia, northeastern South Africa and portions of Madagascar. Anais is forecast to continue tracking to the west-southwest toward Madagascar, while weakening.



## 1.2. Model Discussion: Valid from 00Z of October, 17<sup>th</sup> 2012.

*Model comparison (Valid from 00Z; October, 17<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 Angola and DRC, the eastward propagating frontal systems across Libya and Egypt, and also across southeastern Africa, and the building up of the St. Helena anticyclone and the tropical storm east of Madagascar. However, the models show differences in terms of central pressure values.*

According to the GFS model the St. Helena High pressure system over southeast Atlantic Ocean is expected to intensify, with its MSLP value increasing from 1037hpa to 1039hpa in 48 hours, and to weaken significantly to 1031hpa, towards the end of the forecast period. According to the ECMWF model, this same high pressure system is expected to increase its central pressure value of 1036hpa to 1038hpa in 72 hours and

then tends to decrease to pressure value of 1030hpa towards the end of the forecast period. According to the UKMET model, the high pressure system is expected to intensify, with its central pressure value increasing from about 1037hpa in 24 hours to 1039hpa in 48 hours, and tends to weaken slightly to pressure values of 1031hpa towards the end of the forecast period.

The Mascarene high pressure system over southwestern Indian Ocean is expected to weaken gradually, from central pressure value of 1032hpa in 24 hours to 1025hpa in 120 hours while shifting eastwards, according to the UKMET model. This high pressure system is expected to intensify slightly, with its central pressure value increasing from 1031hpa to 1033hpa through 24 to 48 hours, and it tends to weaken, while moving eastward towards end of the forecast hour according to the ECMWF and GFS models.

The seasonal lows across Angola and DRC tend to deepen, with their pressure values decreasing from about 1009mb to 1004mb through 24 to 72 hours, and they tend to fill up gradually towards end of the forecast period according to all the three models. The low associated with tropical storm Anais is still expected to continue shifting towards Madagascar while filling up, through 24 to 72 hours. The East African ridge across Southeast and East Africa is expected to remain weak due to eastward shift of the Mascarene high pressure system.

At the 850hpa level, a lower level wind convergence is expected to remain more or less active across western parts of Equatorial Africa, near southern Cameroon, Gabon, Congo and northwestern DRC. The seasonal wind convergence over the CAB region is expected to remain active across its southern end through 24 to 120hours. This northeast-southwest oriented wind convergence is expected to remain active between eastern Angola and the Lake Victoria region. The lower level wind convergence over the Horn of Africa, near Somalia is expected to weaken slightly through 24 to 72 hours and to re-strengthen towards end of the forecast period. A cyclonic circulation associated with tropical storm Anais is on a west-southwest shift towards Madagascar with wind speeds of about 9knots. NASA's TRMM satellite shows the tropical Storm on Oct. 16 at 0654 UTC had light to moderate rainfall occurring southeast of its center and falling at a rate between 20 to 40 mm per hour. There no areas of heavy rainfall, indicating that the storm had weakened since the previous day.

At 500hpa, a trough associated with the Northern Hemisphere mid-latitude system is expected to remain more or less stationary across eastern Mediterranean Sea and the neighboring areas of Northeast Africa while deepening through 24 to 96 hours. A strong and deep mid latitude trough is expected to propagate eastwards across South Africa within 48 to 120 hours.

At 200hpa, zone of strong winds (>70kts), associated with the northern Hemisphere sub-tropical westerly jet is expected to propagate between northeastern Niger/Libya and the Persian Gulf. In the southern hemisphere, the subtropical system is expected to remain active, with the core of strong winds (>90kts), propagating between the Atlantic and Indian Oceans across southern Africa 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 western Equatorial Africa, lower level moist easterly flow from northern Indian Ocean and its associated convergence over the Horn of Africa, the eastward propagating mid-latitude frontal systems across South Africa and the track of tropical storm Anais towards Madagascar are expected to enhance rainfall in their respective regions. Thus, there is an increased chance for heavy rainfall over southern Cameroon, Gabon, portions of DRC, Uganda, Kenya, southeastern Ethiopia, southern Somalia, northeastern South Africa and portions of Madagascar. The tropical storm Anais is forecast to continue tracking to the west-southwest toward Madagascar, while weakening.

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

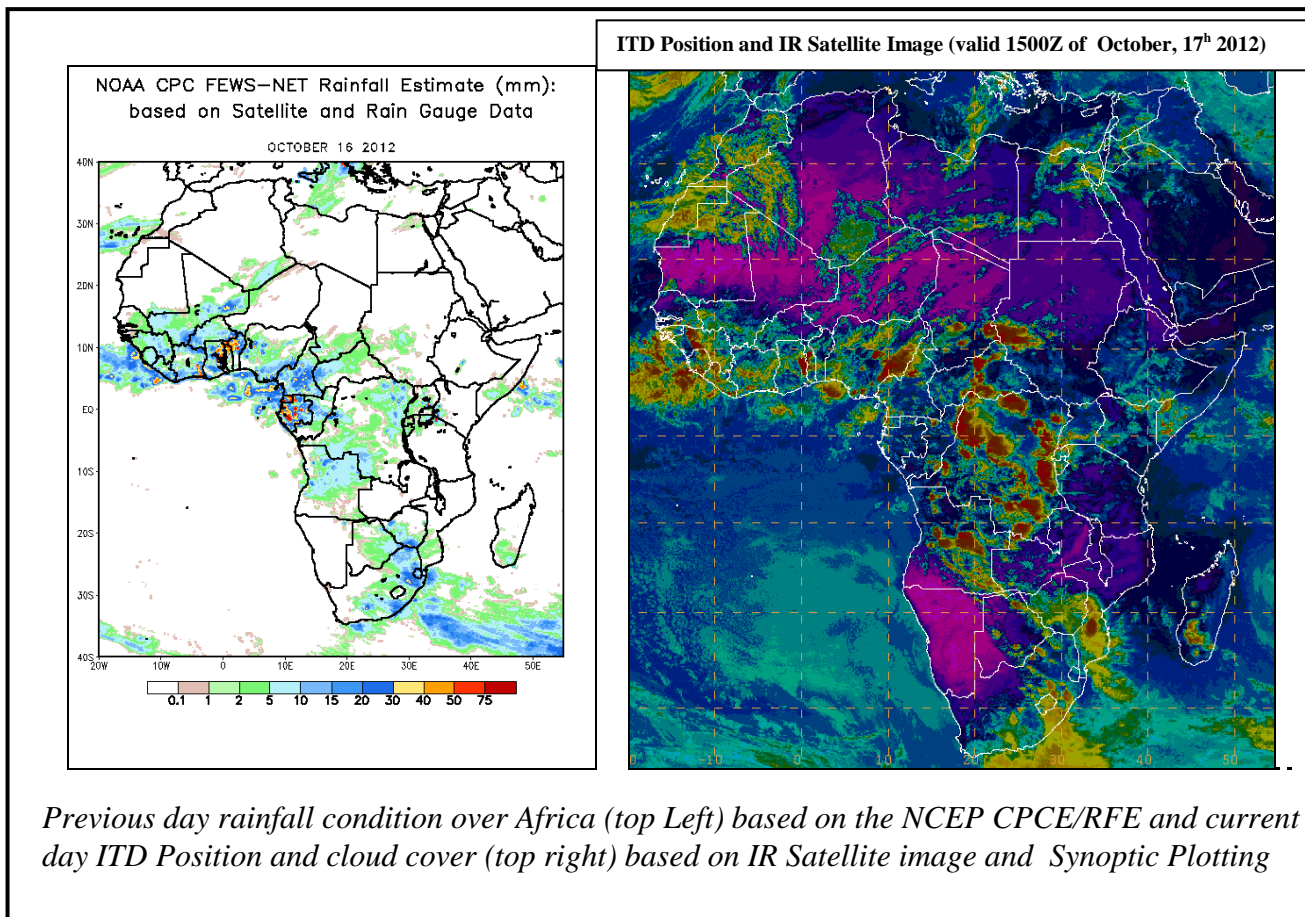
(October, 16<sup>th</sup> 2012 – October, 17<sup>th</sup> 2012)

### 2.1. Weather assessment for the previous day (October, 16<sup>h</sup> 2012)

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

### 2.2. Weather assessment for the current day (October, 17<sup>h</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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