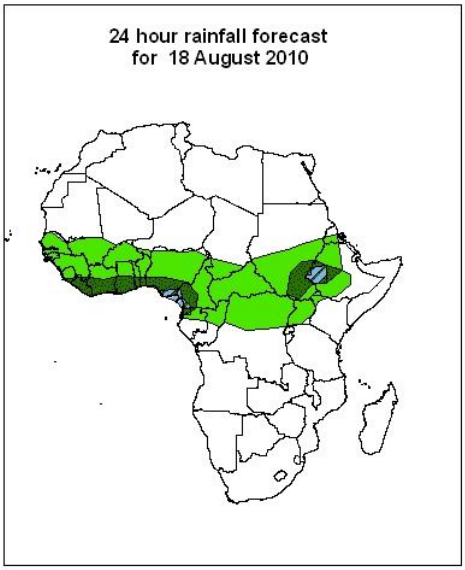
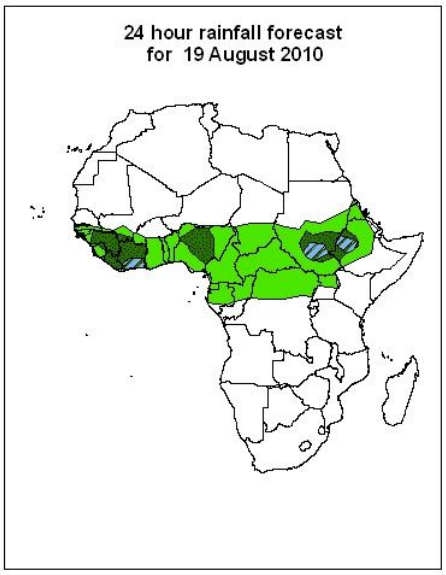
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 18 August – 06Z of 20 August 2010, (Issued at 14:00EST of 13 August 2010)

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.



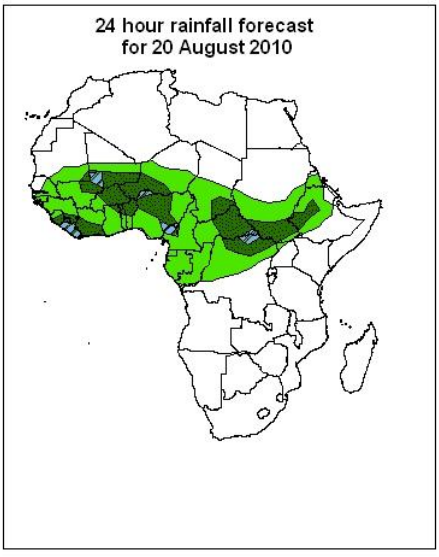


Legend

> 40mm per day

> 20mm per day

> 10mm per day



Summary

In the coming three days, the combined effect of the monsoon flow from the Atlantic Ocean, the seasonal heat lows across the Sahel countries and westward propagating MCS is expected to maintain the moderate to heavy rainfall in the region. Thus, there is an increased chance for rainfall to exceed 20mm per day over parts of Sierra Leone, Liberia, and Cote d'Ivoire, parts of Ghana, northern Mali, northern Benin, Togo and Nigeria. The active lower level convergence in the Congo Air Boundary region and the persistent cross equatorial flow from the Indian Ocean are also expected to continue enhancing rainfall in parts of DRC, southern Sudan, Uganda and Ethiopia.

1.2. Models Comparison and Discussion - Valid from 00Z of 17 August 2010

An east-west oriented thermal extends in the region between Mauritania and eastern Sudan across the Sahel countries. The embedded individual heat lows tend to shift slightly to the west through 24 to 72 hours. The thermal low over northern Mali is expected to maintain its intensity through 24 to 72 hours, while the thermal low over northern Chad is expected to deepen slightly, from central pressure value of 1006mb to 1005mb in 72 hours. The heat lows over northeast Sudan and Oman are expected to fill up slightly, from mean sea level pressure values of 999mb and 996mb in 24 hours to 1001mb and 998mb in 72 hours, respectively. The subtropical high pressure system situated over South Africa is expected to weaken gradually with the approach a mid-latitude frontal system across southeast Atlantic Ocean. The east African ridge, associated with this high pressure system, is expected to extend in the region between the eastern parts of South Africa and the highlands of Ethiopia, with a slight eastward shift through 24 to 72 hours. In general, the UKMET Office model tends to indicate deeper thermal lows and more intense high pressure systems than the pressure systems indicated by the GFS model. On the other hand, the heat lows and subtropical high pressure systems indicated by the ECMWF model are more or less weaker than the systems indicated by the GFS and UKMET models.

At 850mb, the zone of lower tropospheric wind discontinuity will continue to dominate the flow over the southern parts of the Sahel region. A localized cyclonic circulation in the vicinity of Sierra Leone and Liberia is expected to shift southwards into the Atlantic Ocean through 24 to 48 hours. The zone of wind discontinuity between northern Mali and Burkina Faso is expected to extend towards Senegal through 24 to 72 hours. Another zone of wind discontinuity, in the region between northeast Niger and northern Eritrea is expected to shift slightly to the south, from latitudinal position of about 17^{o}N to 16^{o}N through 24 to 72hours. The lower level wind discontinuity in the region between southwest Ethiopia and central DRC is expected to remain active through 24 to 72 hours.

At 700hPa, a northeast-southwest oriented trough, associated with the African Easterly Wave, is expected to propagate southeastwards from the vicinity of northeastern Nigeria into the Gulf of Guinea through 24 to 72 hours.

At 500HPa, strong winds in excess of 30Kts, which are associated with the African Easterly Jet, are expected in the vicinity of southern Senegal, western Mali, southern Chad, and western Sudan through 24 to 72 hours.

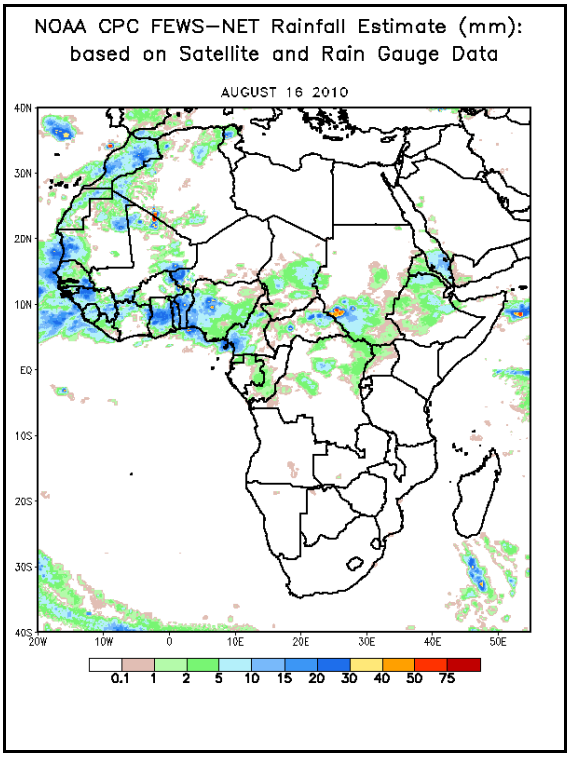
At 200hPa, the mid-latitude westerly flow over southern Mauritania is expected to retreat northwards through 24 to 72 hours, with the gradual intensification the seasonal ridge across the sub-tropical regions of Africa. Associated with this, the subtropical westerly jet is expected to assume a zonal orientation over northwestern Africa and the neighboring areas of the Mediterranean Sea.

In the coming three days, the combined effect of the monsoon flow from the Atlantic Ocean, the seasonal heat lows across the Sahel countries and westward propagating MCS is expected to maintain the moderate to heavy rainfall in the region. In particular, there is an increased chance for rainfall to exceed 20mm per day over parts of Sierra Leone, Liberia, and Cote d'Ivoire, parts of Ghana, northern Mali, northern Benin, Togo and Nigeria. The active lower level convergence in the Congo Air Boundary region and the persistent cross equatorial flow from the Indian Ocean are also expected to continue enhancing rainfall in parts of DRC, southern Sudan, Uganda and Ethiopia.

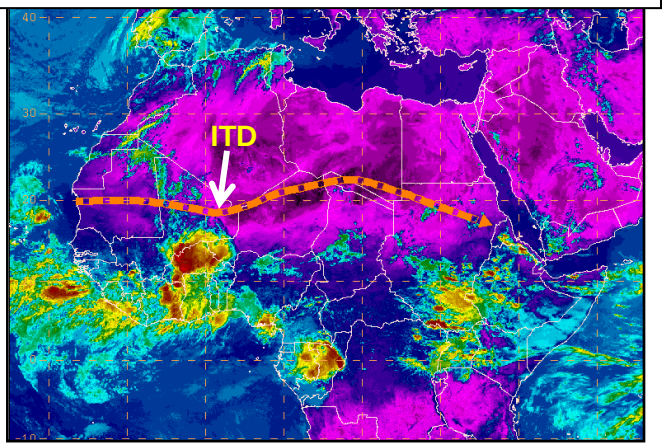
2.0. Previous and Current Day Weather Discussion over Africa (16 August 2010 – 17 August 2010)

2.1. Weather assessment for the previous day (16 August 2010): During the previous day, moderate to heavy rainfall was observed over parts of Mauritania, Senegal, Guinea, Ghana, Togo, and Benin, parts of Nigeria, southwest Cameroon and southwest Sudan.

2.2. Weather assessment for the current day (17 August 2010): Intense clouds are observed over Burkina Faso, parts of Cote d'Ivoire, Ghana, southern Nigeria, southern Sudan Uganda, Eritrean and western Ethiopia.



IR Satellite Image, Valid 1200Z, August 17, 2010 and position of ITD (based on 1200Z observation)



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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