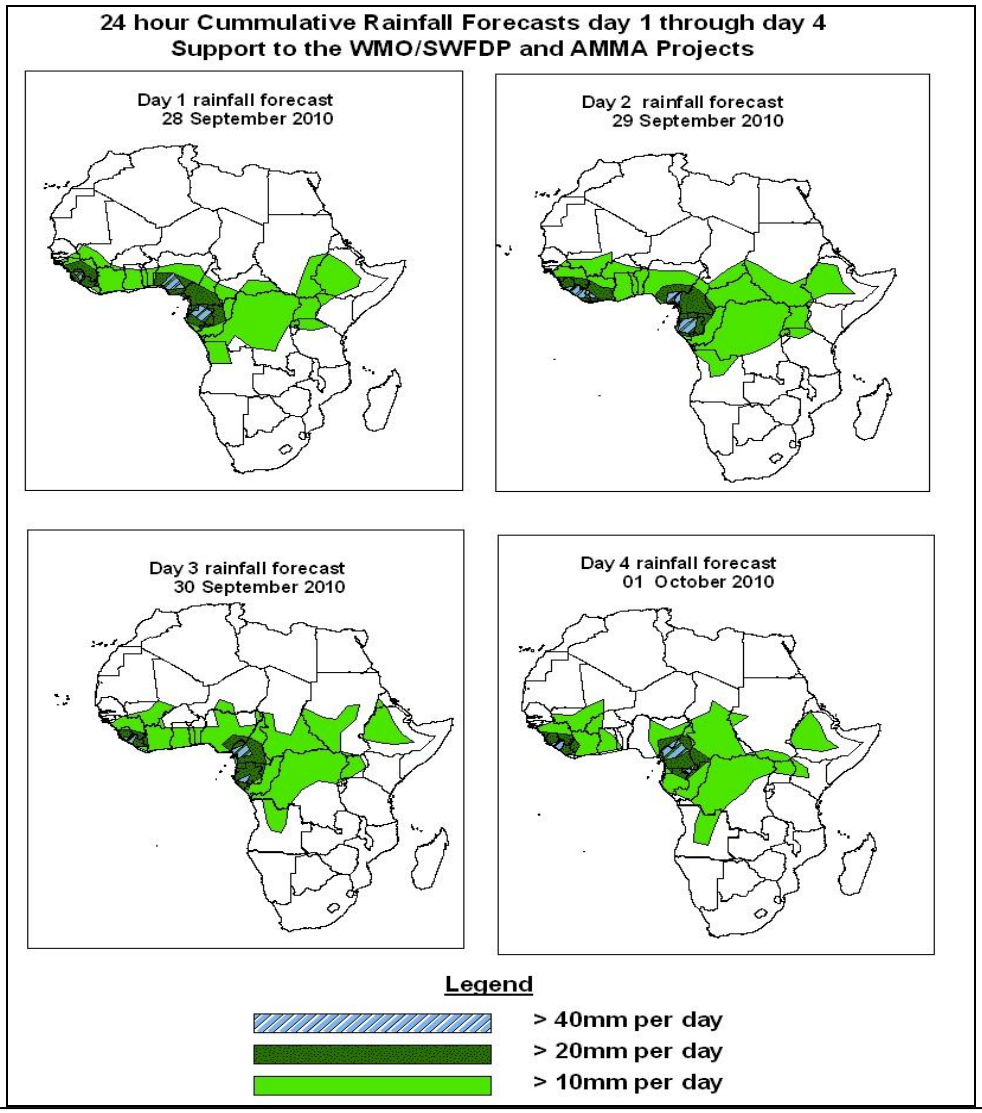
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 28 SEPTEMBER – 06Z of 01 OCTOBER 2010, (Issued at 14:00Z of 27 SEPTEMBER 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.



Summary

In the coming four days, the convergence in the CAB region is expected to remain weak, resulting in reduced rainfall activity. On the other hand, the West African monsoon and the associated meso-scale convective activities are expected to remain active across the coastal areas of the Gulf of Guinea countries. Hence, southern Nigeria, Sera Leone, Liberia, Cote-d'Ivoire and Cameroun will have higher chances of getting rainfall in excess of 20mm per day.

1.2. Models Comparison and Discussion-Valid from 00Z of 27 September 2010

A low pressure system situated over central Mali is expected to shift towards western Mauritania while filling up. Its central pressure value is expected to change from 1007 to 1009hPa through 24 to 96hours according to the GFS model. Another low pressure system located over central Chad is expected to move slightly to the west while deepening. Its central pressure value is expected to change from 1006 to 1005hPa on the GFS model through 24 to 96hours, 1008 to 1006hPa on the ECMWF model and 1006 to 1005hPa on the UKMET model. A low pressure system situated over western Niger is expected to change its central pressure value from 1006 to 1005hPa according to the GFS model trough 48 to 96hours, 1007 to 1005hPa on the UKMET trough 24 to 96hours. Another low pressure system located over eastern Sudan is expected to move towards central Sudan while deepening. Its central pressure is expected to change from 1007 to 1005hPa through 24 to 72hours according to the GFS model, 1006 to 1005hPa on the ECMWF model and 1005 to 1004hPa on the UKMET model. A low pressure system situated over southern Sudan is expected to maintain its position, while deepening. Its central pressure value is expected to change from 1009 to 1007hPa on the GFS model trough 24 to 72hours. The seasonal low pressure system located over southern DRC is expected to change its central pressure value from 1008 to 1006hPa through 24 to 96 hours according to the GFS model, 1008 to 1009hPa according to the ECMWF model and 1006 to 1007hPa through 24 to 96hours according to the UKMET model. Two week high pressure systems are expected to maintain their positions and central pressure values in the vicinity of Cote-d'Ivoire (1013hPa) and Central African Republic (1012hPa) trough 24 to 72hours. In general, the Inter-Tropical Front (ITF) is expected to remain between 17^{o}N and 20^{o}N latitudes across West African countries (west of the Prime Meridian) through 24 to 48, while its expected to stay between 15^{o}N and 18^{o}N latitudes east of the Prime Meridian.

The Azores high-pressure system situated over the northern Atlantic Ocean is expected to intensify while extending its ridge across northern African countries. Its central pressure value is expected to change from 1021 to 1031hPa through 24 to 72hours. The St. Helena high, situated over southern Atlantic Ocean is expected to relax from central pressure values of 1030 to 1029hPa through 24 to 48 hours and regain its intensity 72 hours later. On the other hand, the Mascarene high pressure system is expected to intensify from central pressure values of 1027 to 1035hPa through 24 to 72 hours.

At 850hpa, the cyclonic circulation in the vicinity Mali is expected to shift slightly to the west through 24 to 72hours. Another cyclonic circulation located over central Chad is expected to move toward southern Niger through 48 to 72hours. A cyclonic circulation situated over central Sudan is expected to move towards western Sudan through 24 to 72hours. A cyclonic circulation located over southern Sudan is expected to maintain its position through 48 to 72 hours. The convergence associated with the CAB is expected to remain weak across much of the CAB region.

At 700Hpa**,** the African Easterly wave is expected to remain weak across the West African countries. However, weak trough in the easterlies is expected to dominate the flow across the coastal areas of the Gulf of Guinea countries.

At 500hpa, the African Easterly Jet is expected to remain weak with its associated wind speeds remaining below 30Kts in many areas of western and central African regions.

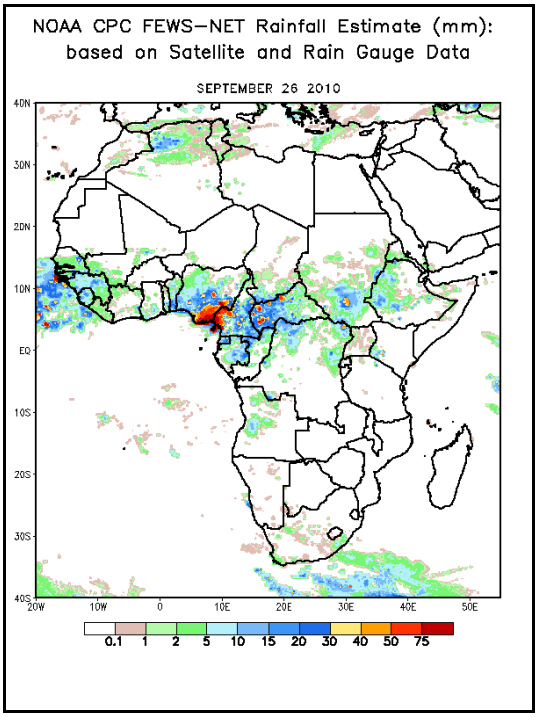
At 200hPa, zone of strong wind (>50Kts) is expected to dominate the flow in the vicinity of northern Algeria and eastern Mediterranean Sea. Meanwhile, high wind speed values, associated with the TEJ, are expected to dominate the flow in the vicinity of eastern Ethiopia, Sudan and the neighboring areas of Somalia.

In the coming four days, the convergence in the CAB region is expected to remain weak, resulting in reduced rainfall activity. On the other hand, the West African monsoon and the associated meso-scale convective activities are expected to remain active across the coastal areas of the Gulf of Guinea countries. Hence, southern Nigeria, Sera Leone, Liberia, Cote-d'Ivoire and Cameroun will have higher chances of getting rainfall in excess of 20mm per day.

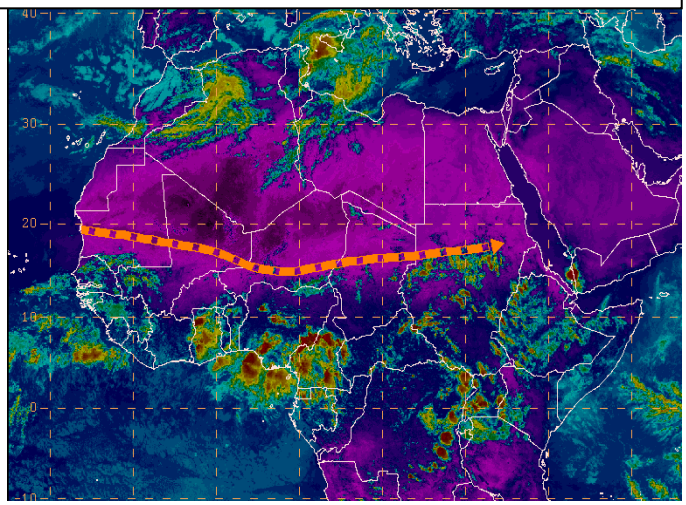
2.0. Previous and Current Day Weather Discussion over Africa (26 - 27 September 2010)

2.1. Weather assessment for the previous day (26 September 2010): During the previous day, moderate to heavy rainfall was observed over southern and southeastern Nigeria, parts of Cameroon, western CAR, portions of southern Sudan and southwest Ethiopia.

2.2. Weather assessment for the current day (27 September 2010): Intense clouds are observed over Ghana, Nigeria, Cameroon and CAR, parts of southern Sudan, Uganda, DRC and Ethiopia, while dust storm is observed across southern Algeria and northern Mauritania, Mali, Niger and Chad.



IR Satellite Image, Valid 1352Z, September 24, 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

Author(s): *Diakaria Drame (Centre Meteorologique Principal de Bamako-Mali) / CPC-African Desk)*

Disclaimer: ***This bulletin is for training purposes only and should be used as guidance. NOAA does not make forecasts for areas outside of the United States.***