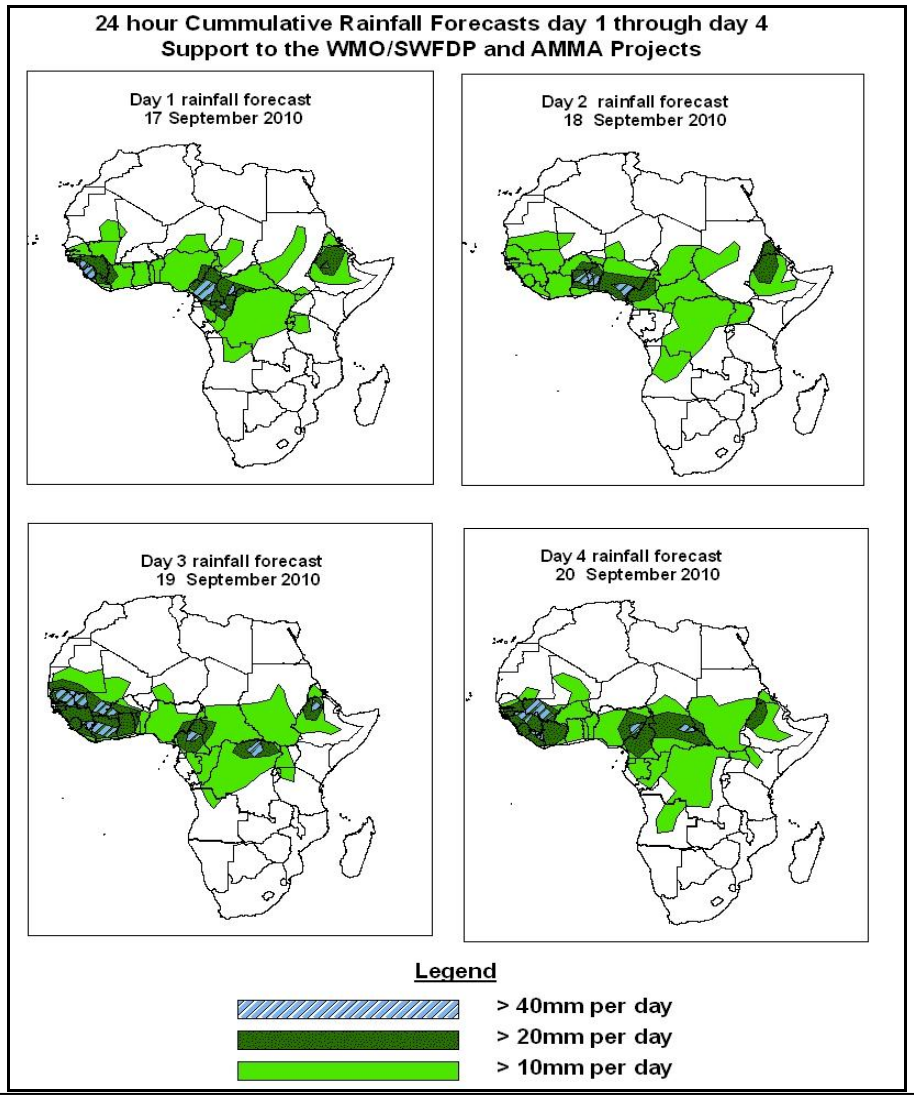
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 17 SEPTEMBER – 06Z of 20 SEPTEMBER 2010, (Issued at 14:00EST of 16 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 westward propagating meso-scale convection systems and the abundant moisture from the West African Monsoon flow are expected to maintain the moderate to the heavy rainfall in parts of central and West African countries. Especially, there is an increased chance for rainfall to exceed 20mm per day in parts of Guinea, Mali, Burkina Faso and Nigeria. Western and central parts of Ethiopia, DRC, CRA and southern Sudan are also expected to receive moderate to heavy rainfall due to active convergence in the vicinity of the CAB regions.

1.2. Models Comparison and Discussion-Valid from 00Z of 16 September 2010

A low pressure system situated over central Mali is expected to shift towards northern Mauritania while deepening. Its central pressure value is expected to change from 1008 to 1007hPa through 24 to 72hours according to the GFS model and it tends to maintain its central pressure value of 1009hPa according to the ECMWF model and 1007hpa according to the UKMET model through 24 to 72hours. This low pressure system is expected to shift further to north towards southern Algeria trough 72 to 96hours. A low pressure system located over western Niger is expected to move towards northern Mali. Its central pressure value is expected to change from 1008 to 1006hPa through 24 to 96hours according to the GFS model, 1009 to 1010hPa to the ECMWF model. Another low pressure system located over central Chad is expected to move towards western Chad through 24 to 48hours. Its central pressure value is expected to change between 1008 to 1005hPa through 24 to 72hours according to the GFS model, 1010 to 1009hPa on the ECMWF model and 1007 to 1006hPa according to the UKMET model. A low pressure system located over southern Sudan is expected to move towards western Sudan, while deepening. Its central pressure value is expected to change from 1009 to 1007hPa on the GFS model through 72 to 96hours. A weak high pressure system situated over central Libya is expected to intensify slightly. Its central pressure value is expected to change from 1016 to 1017hPa through 48 to 72hours. The seasonal low pressure system located over southern DRC is expected to change from central pressure value of 1009 to 1007hPa according to the GFS model, 1010 to 1009hPa according to the UKMET model and tends to maintain central pressure value of 1010hPa according to the ECMWF model and 1007hPa according to UKMET model. A weak high pressure system situated over Cote-d'Ivoire and Nigeria is expected to maintain its position and its central pressure value of 1014hpa through 24 to 48hours and 1015hPa trough 48 to 72hours.

In general, the Inter-Tropical Front (ITF) is expected to remain between 18^{o}N and 20^{o}N latitudes across West African countries west of the Prime Meridian through 24 to 48 hours and its position is expected to shift towards the region between 20oN and 22^{o}N, while it is expected to stay between 17^{o}N and 19^{o}N latitudes east of the Prime Meridian.

The Azores high-pressure system is expected to relax from central pressure value of 1028 to 1021hPa through 48 to 96hours, while extending its ridge over northern African countries. The St. Helena high, situated over southern Atlantic Ocean is expected to relax slightly from central pressure values of 1034 to 1032hPa through 48 to 96hours.

Moreover, the Mascarene high pressure system is expected to relax from central pressure value of 1040 to 1037hPa through 24 to 96hours.

At 850hpa, a cyclonic circulation situated over central Mali is expected to move towards northern Mauritania through 24 to 48hours and continue moving towards southern Algeria through 48 to 96hours. Another cyclonic circulation located over central Chad is expected to move towards eastern Niger through 24 to 96hours. A cyclonic circulation situated in area bordering Cameroon and Nigeria is expected to move towards the area bordering Ghana and Cote-d'Ivoire through 24 to 48hours and to move further towards Guinea across Mali through 48 to 96hours. Another cyclonic circulation over eastern Sudan is expected to maintain its position through 24 to 72hours. The convergence associated with the CAB is expected to remain active across eastern Namibia, Angola, DRC, southwest Soudan and southwest Ethiopia through 24 to 96 hours.

At 700Hpa, a trough associated with the African Easterly wave is expected to move between the longitudes of Cameroun/Nigeria and Togo/Burkina Faso through 24 to 48hours. This trough is expected to propagate to move towards the longitudes of RCI/Mali through 48 and 72hours and across the longitudes of Guinea/Senegal through 72 to 96hours.

At 500hpa, higher wind speeds associated with the African Easterly Jet are expected to exceed 30Kts in the vicinity of southern Niger, Burkina Faso and southern Mali while the core of the jet is propagating westwards through 24 to 72 hours.

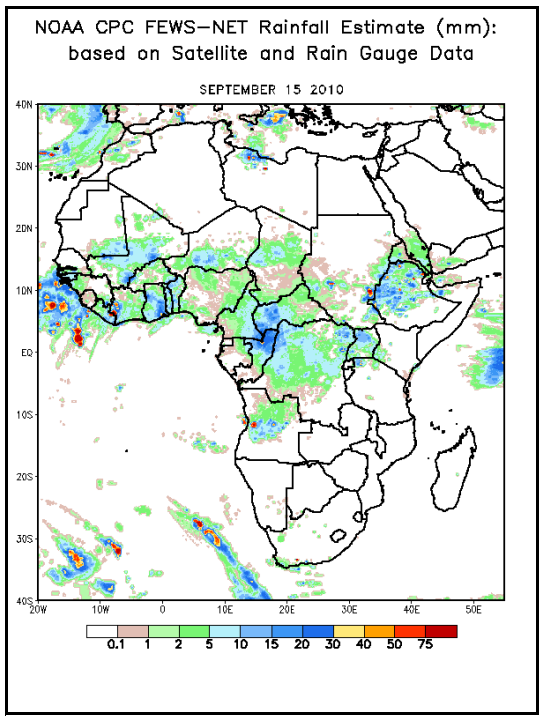
At 200hPa, zone of strong wind (>50Kts) is expected to dominate the flow in the vicinity of central and eastern Mediterranean Sea and the adjoining areas of northern Africa. Meanwhile, strong upper Tropical Easterly Jet (>35Kts) is expected to dominate the flow across southern Ethiopia and southern Sudan through 24 to 48hours.

In the coming four days, the westward propagating meso-scale convection systems and the abundant moisture from the West African Monsoon flow are expected to maintain the moderate to the heavy rainfall in parts of central and West African countries. Especially, there is an increased chance for rainfall to exceed 20mm per day in parts of Guinea, Mali, Burkina Faso and Nigeria. Western and central parts of Ethiopia, DRC, CRA and southern Sudan are also expected to receive moderate to heavy rainfall due to active convergence in the vicinity of the CAB regions.

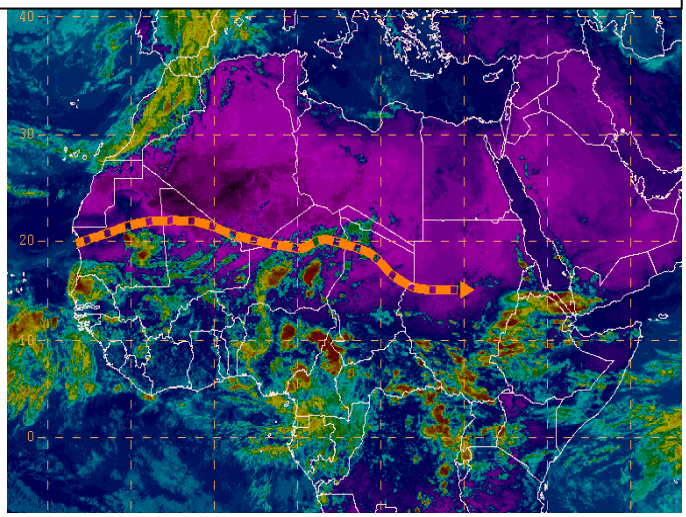
2.0. Previous and Current Day Weather Discussion over Africa (15 - 16 September 2010)

2.1. Weather assessment for the previous day (15 September 2010): During the previous day, moderate to heavy rainfall was observed over western Cote D'Ivoire, southeast Ghana, northern Congo, western CAR, parts of Uganda, eastern Sudan and Ethiopia.

2.2. Weather assessment for the current day (16 September 2010): Intense clouds are observed over much of Mauritania, Mali, Senegal, Niger, Nigeria, Cameroun and parts of CRA, DRC southern Sudan and Ethiopia.



IR Satellite Image, Valid 1352Z, September 16, 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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