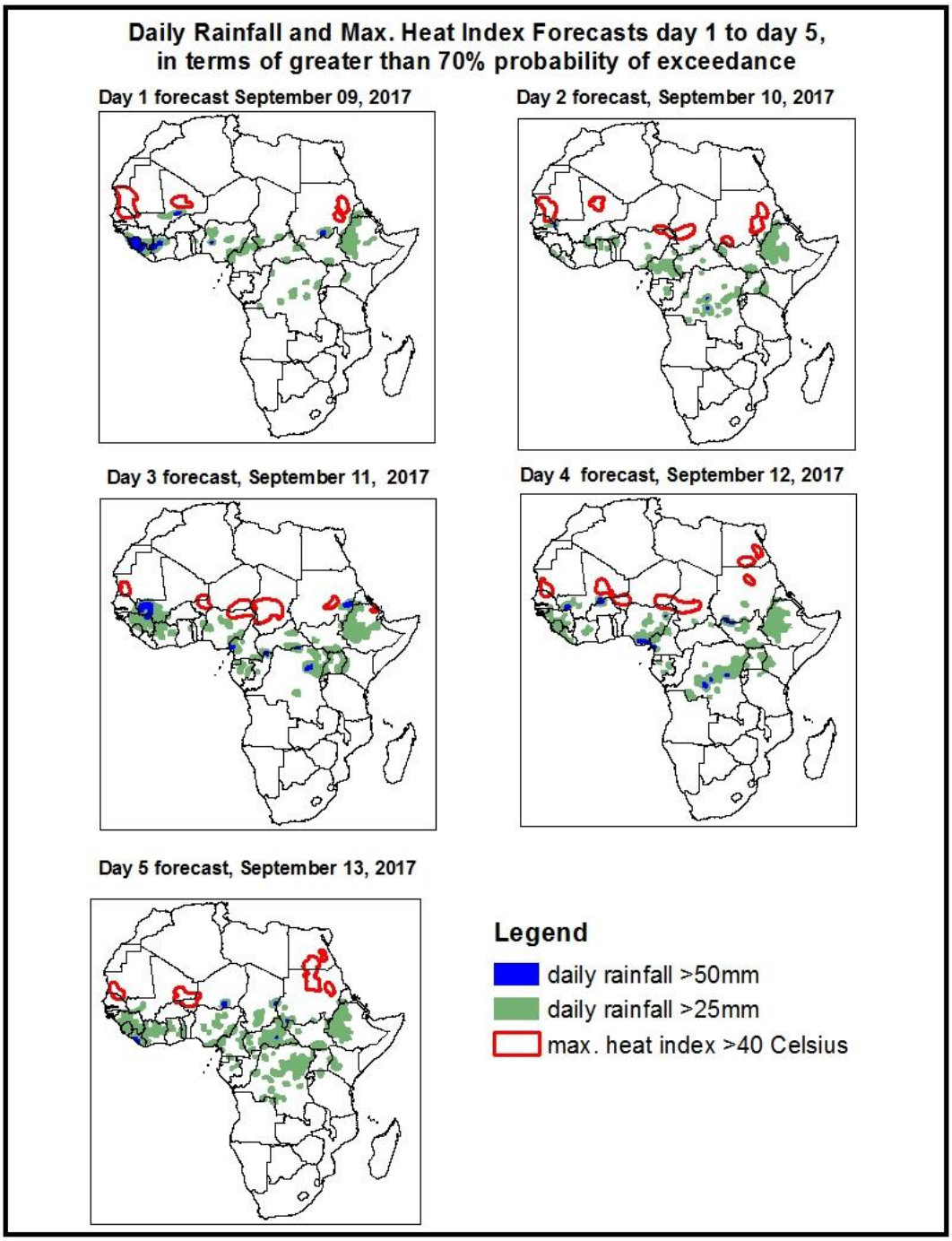
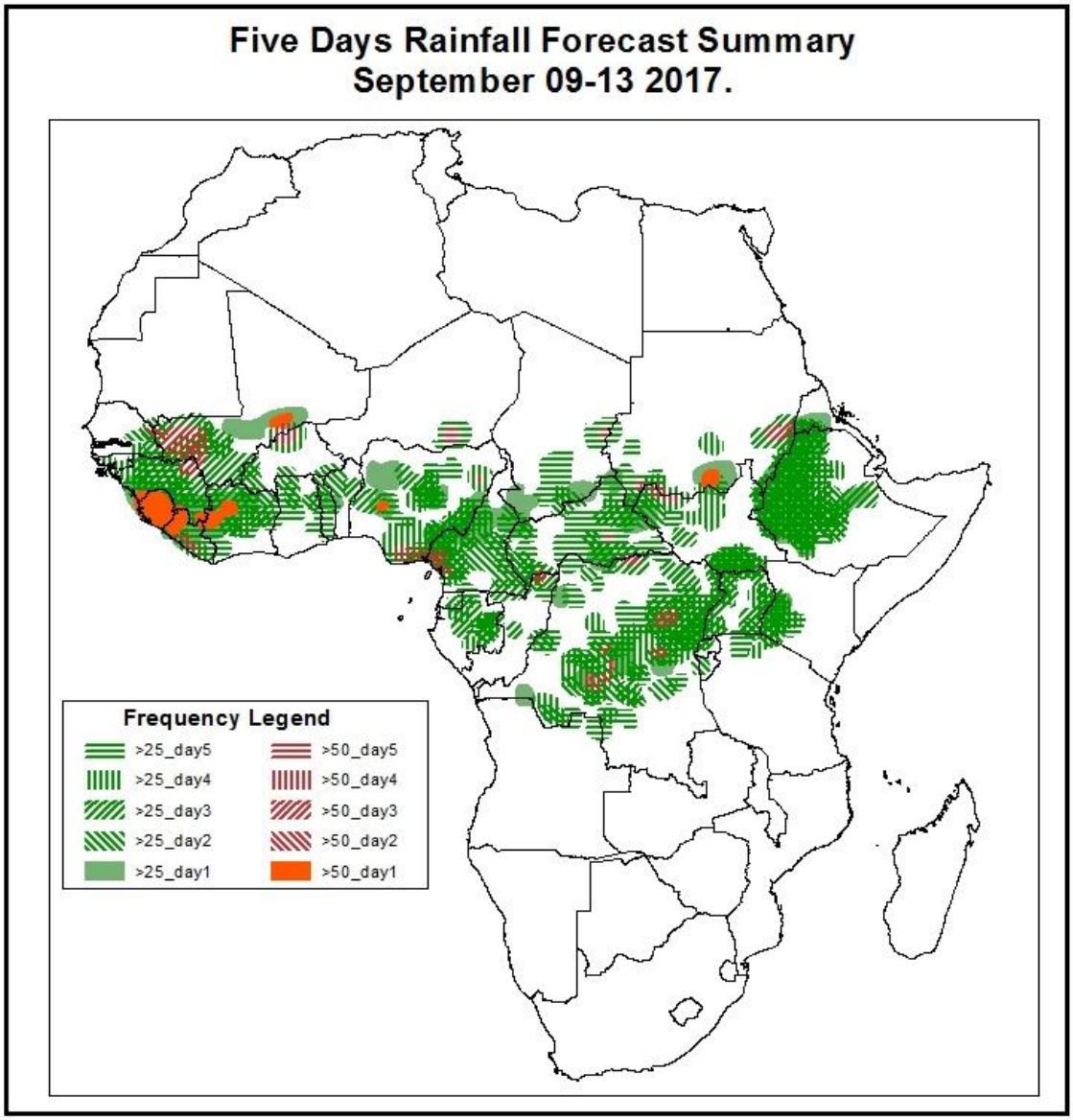
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on September 08, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: September, 09-13 2017)

The forecasts are expressed in terms of high probability of precipitation (POP) and high probability of maximum heat index, based on the NCEP/GFS, ECMWF and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.



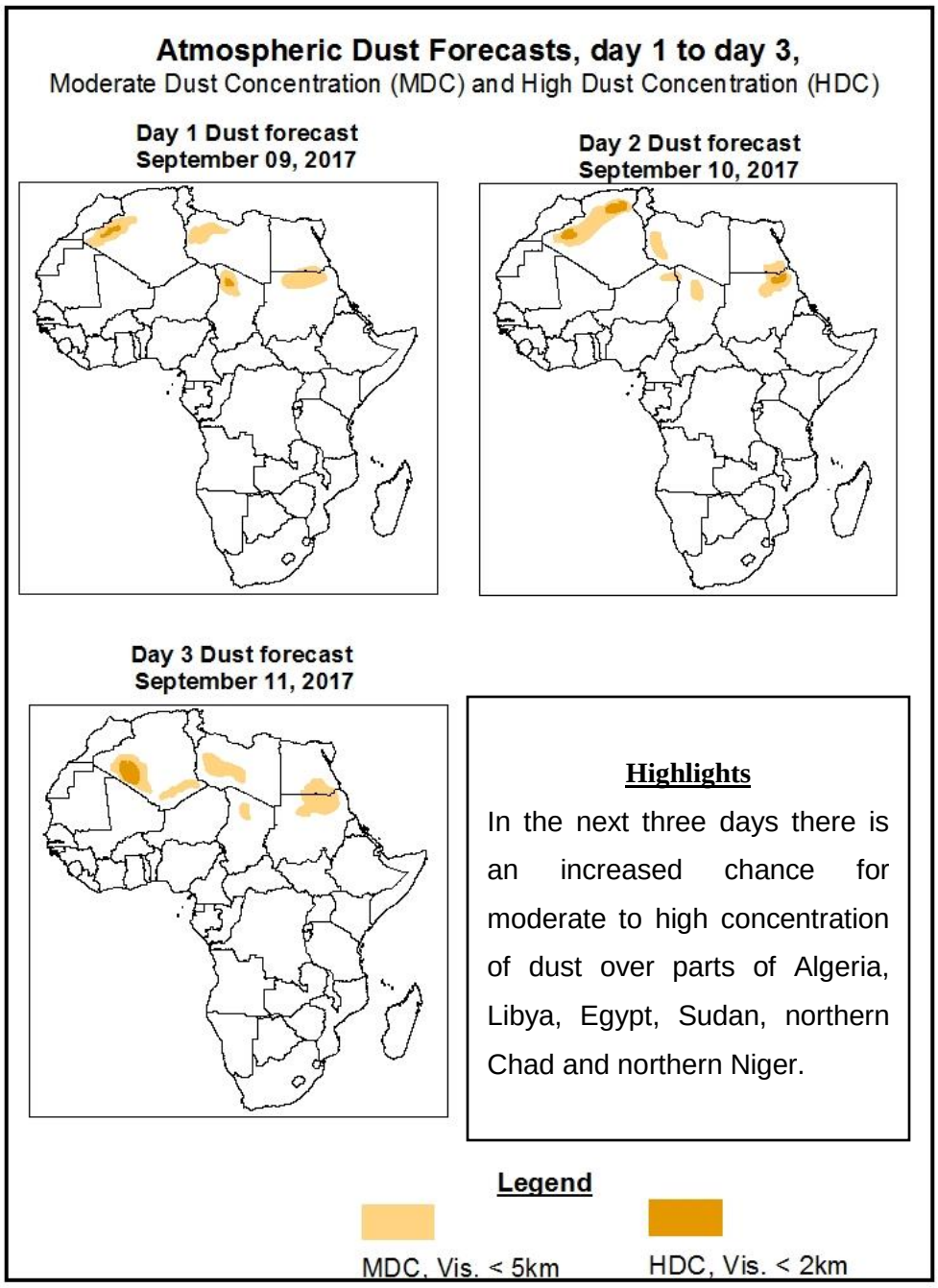


Highlights

In the next five days, a monsoon flow from the Atlantic Ocean across West and Central Africa combined with a lower-level cyclonic circulation propagating across the Sahel countries coupled with upper level divergence is expected to enhance rainfall over many places in West and Central African countries. Active lower-level convergence over DRC which traverse and extends northeastwards to Uganda is also expected to enhance rainfall in the region. As a result, there is an increased chance for two or more days of moderate to heavy rainfall over many places in Guinea, Sierra Leone, Liberia, southern Mali, northern Cote D'Ivoire, northern (Ghana, Togo and Benin), Nigeria, southern Niger, Cameroon, southern Chad, Gabon, CAR, DRC, northern Congo, Uganda, western Kenya southern Sudan, South Sudan, Rwanda, Burundi and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts (valid: September 09-11 2017)

The forecasts are expressed in terms of high probability of dust concentration, based on the Navy Aerosol Analysis and Prediction System, NCEP/GFS lower-level wind forecasts and expert assessment.



1.3. Model Discussion, *Valid: September 09-13 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually weaken from its central pressure value of 1031hpa to 1026hpa towards the end of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to maintain its central pressure value of 1036hpa in the next 48hours and then weaken to 1034hpa towards the end of the forecast period.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to gradually weaken from its central pressure value of 1034hpa to 1025hpa towards the end of the forecast period.

The heat low over western Sahel is expected to slightly deepen from its value of 1007hpa to 1006hpa in the next 48hours and then later fill up back to its initial value of 1007hpa towards the end of the forecast period.
Over the central Sahel, the heat low is expected to deepen from its value of 1008hpa to 1005hpa in the next 72hours and then thereafter fill up to 1006hpa towards the end of the forecast period.
Over the Sudan area, the heat low is expected to slightly fill up from its value of 1005hpa in the next 48hours to 1006hpa and maintain the value towards the end of the forecast period.

At 925hPa, there is a convergence which is dominated by the continental winds over the Sudan area, central Sahel and the west Sahel regions with a low pressure system established over the Sudan area with a slight movement westward in the next of 72 hours. Over west Sahel region, the maritime winds will dominate the circulation after 48hours to the end of the forecast period.
Another strong convergence is established over the southern DRC and traversing through western Tanzania, Burundi, Rwanda, and Uganda and to the South Sudan with a slight movement eastward towards the end of the forecast period.

The dry north easterlies propagating from the subtropical high pressure over North Africa are intensifying and will result to sustained spreading and transport of the Saharan dust over Algeria, Libya, Egypt, Sudan, northern Chad and northern Niger.

At 850hPa, there is a cyclonic circulation over West Africa with pockets of vortices spread over the region and the Sudan area which are predominated by the continental winds with a westward propagation all through the forecast period.
There is a convergence zone over the southern DRC which traverse and extends northeastwards to Uganda with a slight movement in the eastward direction to the end of the forecast period.

At 700hPa, there is the divergence of a northeasterly to easterly flow from the subtropical high pressure system over the north and West Africa to its coasts towards the end of the forecast period.
Divergence over central, eastern and the southern part of Africa predominate and persist over regions towards the end of the forecast period.

In the next five days, a monsoon flow from the Atlantic Ocean across West and Central Africa combined with a lower-level cyclonic circulation propagating across the Sahel countries coupled with upper level divergence is expected to enhance rainfall over many places in West and Central African countries. Active lower-level convergence over DRC which traverse and extends northeastwards to Uganda is also expected to enhance rainfall in the region. As a result, there is an increased chance for two or more days of moderate to heavy rainfall over many places in Guinea, Sierra Leone, Liberia, southern Mali, northern Cote D'Ivoire, northern (Ghana, Togo and Benin), Nigeria, southern Niger, Cameroon, southern Chad, Gabon, CAR, DRC, northern Congo, Uganda, western Kenya southern Sudan, South Sudan, Rwanda, Burundi and Ethiopia.

2.0. Previous and Current Day Weather over Africa

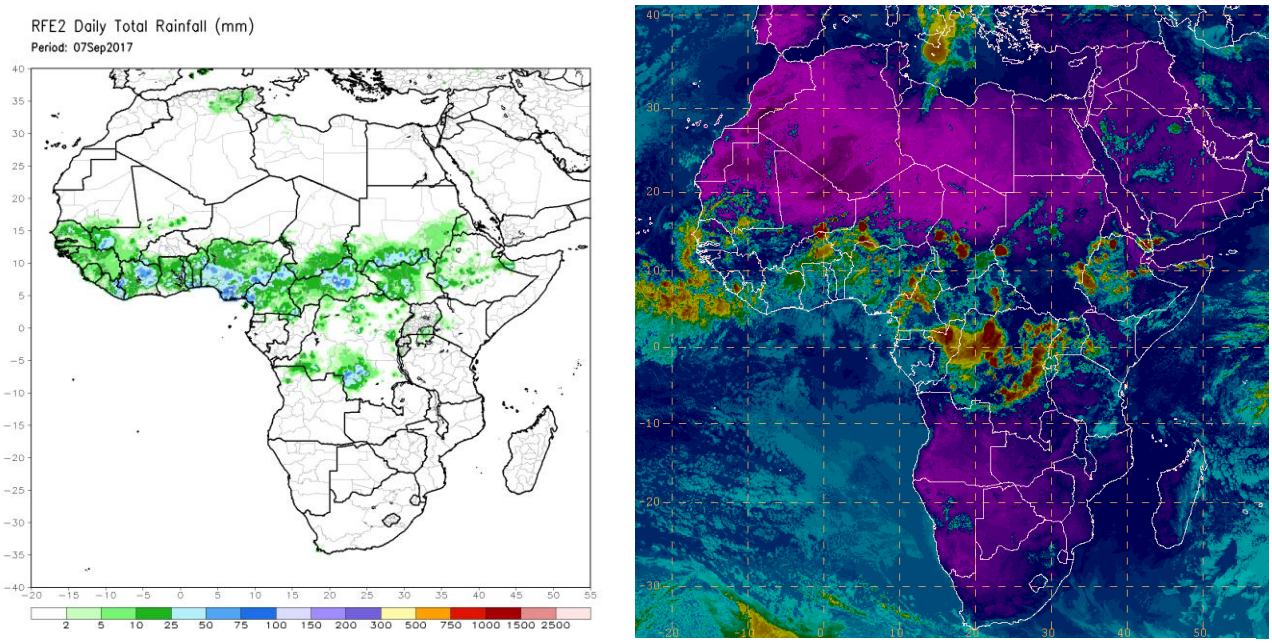
2.1. Weather assessment for the previous day (September 07, 2017)

Moderate to locally heavy rainfall was observed over parts of Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia, Cote D`Ivoire, western Burkina-Faso, southern Mali, Ghana, Togo, Benin, Nigeria, Cameroon, southern Chad, CAR, parts of DRC, southern Sudan, South Sudan, and western Ethiopia.

2.2. Weather assessment for the current day (September 08, 2017)

Intense convective clouds are observed over portions of West, Central and East Africa.

IR Satellite Image (valid 1500 September 08 , 2017)



Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (right) based on IR Satellite image.

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