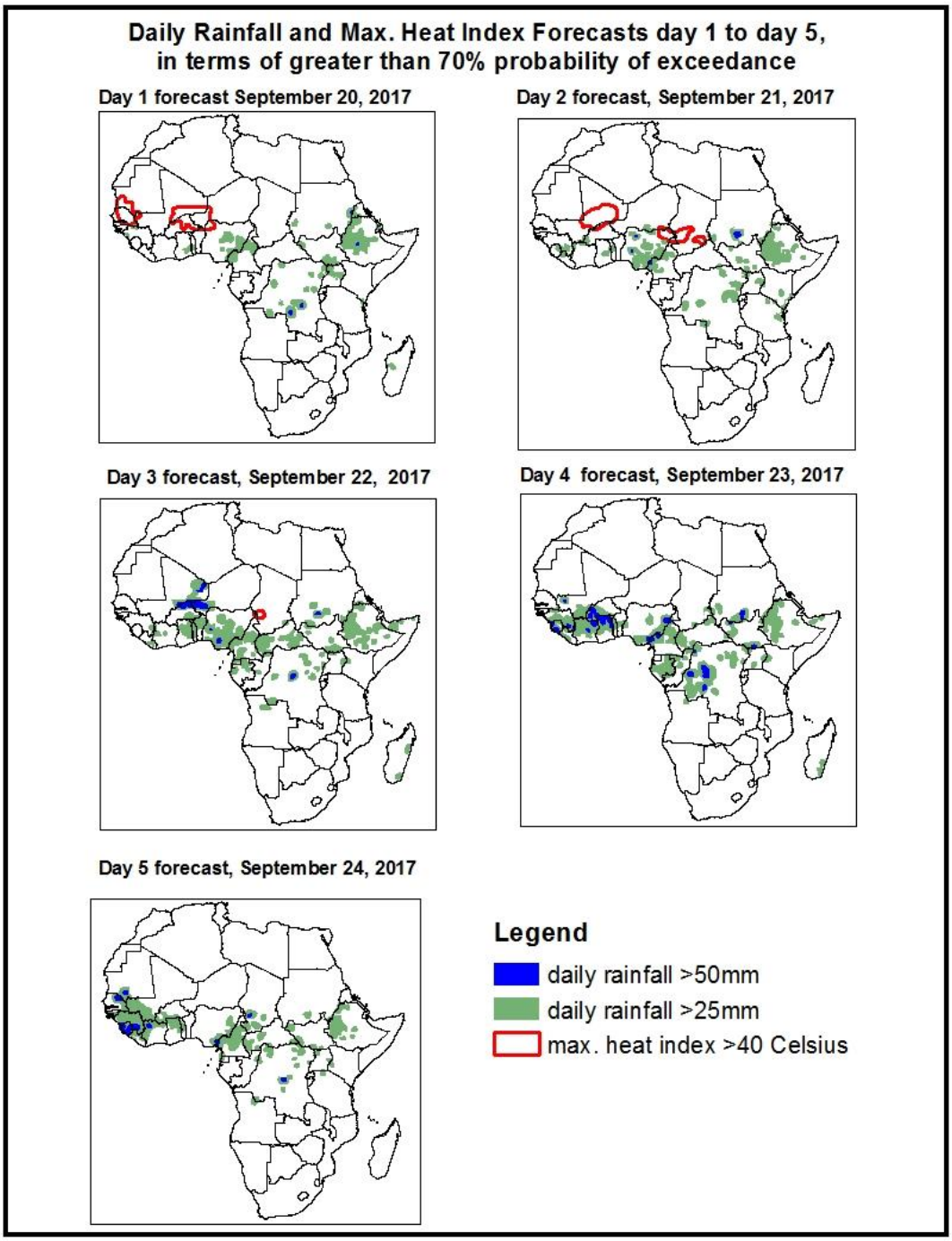
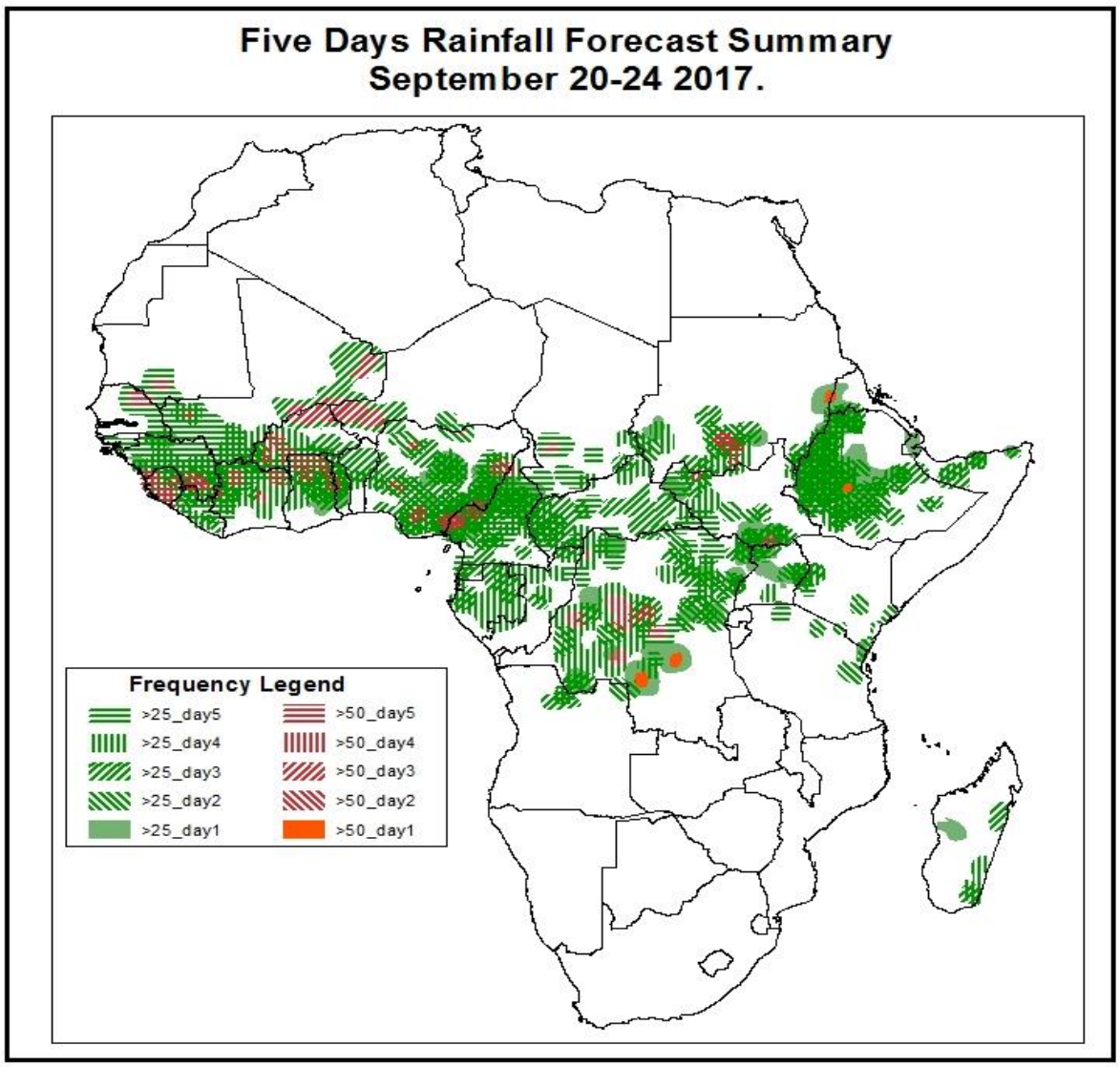
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on September 19, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: September, 20-24 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.



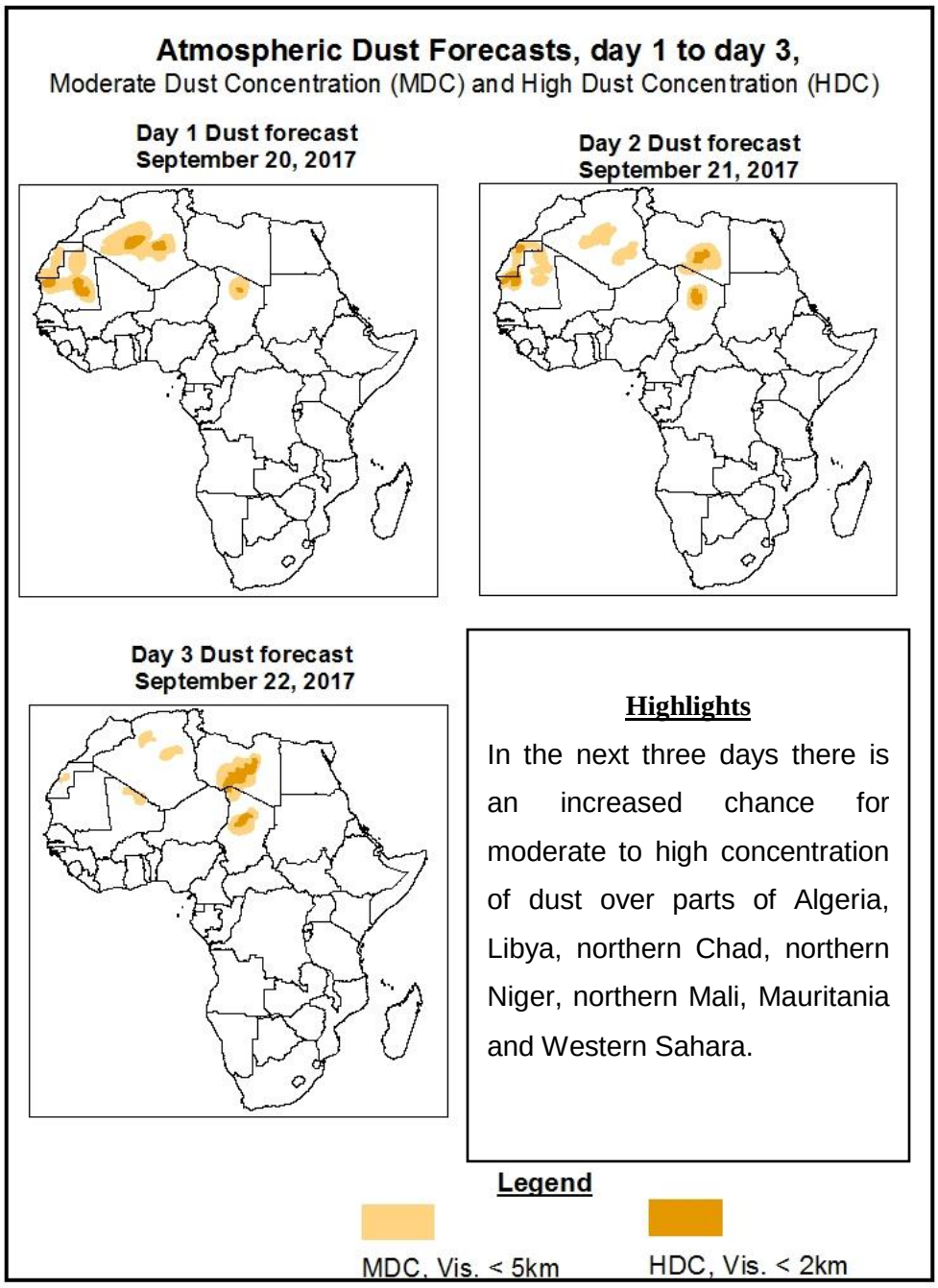


Highlights

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 southern Angola to south eastern DRC and traversing through Burundi, Rwanda, Uganda, Kenya to South Sudan 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 western Senegal, Guinea, Sierra Leone, Liberia, southern Mali, northern Cote D`Ivoire, Burkina Faso, northern (Ghana, Togo, Benin), southern Niger, Nigeria, Cameroon, southwestern Chad, CAR, Equatorial Guinea, northern Gabon, northern Congo, DRC, some parts of Uganda, western Kenya, southern Sudan, South Sudan, northern Somalia and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts (valid: September 20-22 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 20-24 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually weaken from its central pressure value of 1033hpa to 1023hpa towards the end of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to weaken from its central pressure value of 1032hpa to 1028hpa in the next 24hours then maintain this value towards the end of the forecast period.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to gradually intensify from its central pressure value of 1031hpa to 1040hpa in the next 72hours then weaken to 1037hpa towards the end of the forecast period.

The heat low over western Sahel is expected to deepen from its value of 1006hpa in the next 48hours to 1005hpa and then thereafter fill up back to 1010hpa towards the end of the forecast period.
Over the central Sahel, the heat low is expected to deepen from its value of 1010hpa to 1008hpa in the next 48hours and then fill up back to 1010hpa towards the end of the forecast period.
Over the Sudan area, the heat low is expected to deepen from its value of 1009hpa in the next 48hours to 1007hpa and then thereafter maintain this 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 and across the central and west Sahel in the next 48hours. Thereafter, in the west Sahel region a big vortex dominated by maritime winds develops with a sustained movement towards the northwest direction to the end of the forecast period.
Another convergence is established over the southern Angola to southeastern DRC and traversing through Burundi, Rwanda, Uganda and northwestern Kenya to South Sudan which remains quasi-stationary towards the end of the forecast period.

The dry north easterlies to easterly winds propagating from the subtropical high pressure system over North Africa are spreading and transporting the Saharan dust over Algeria, Libya, northern Chad, northern Niger, northern Mali, Mauritania and Western Sahara.

At 850hPa, there is a convergence flow over West Africa and the Sudan area with vortices spreading over the regions which are dominated by the continental winds with a westward propagation. In the next 72 hours the west Sahel area will be dominated by the maritime winds.
There is another strong convergence over the southern DRC which traverse and extends northeastwards to Uganda and another one over the Central Africa Republic which are quasi-stationary towards 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 southern Angola to south eastern DRC and traversing through Burundi, Rwanda, Uganda, Kenya to South Sudan 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 western Senegal, Guinea, Sierra Leone, Liberia, southern Mali, northern Cote D`Ivoire, Burkina Faso, northern (Ghana, Togo, Benin), southern Niger, Nigeria, Cameroon, southwestern Chad, CAR, Equatorial Guinea, northern Gabon, northern Congo, DRC, some parts of Uganda, western Kenya, southern Sudan, South Sudan, northern Somalia and Ethiopia.

2.0. Previous and Current Day Weather over Africa

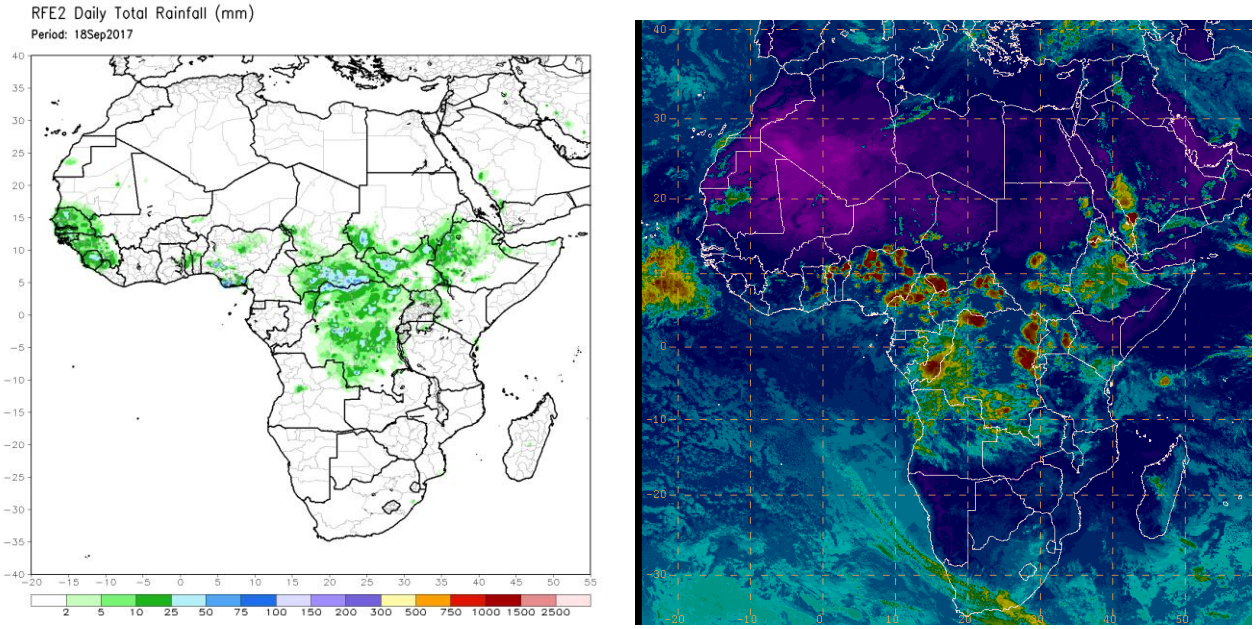
2.1. Weather assessment for the previous day (September 18, 2017)

Moderate to locally heavy rainfall was observed over Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, central (Togo and Benin), parts of Nigeria, CAR, DRC, northern Congo, southern Sudan, South Sudan, northern Uganda, western Kenya, western Ethiopia and some parts of Djibouti and Somalia.

2.2. Weather assessment for the current day (September 19, 2017)

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

IR Satellite Image (valid 1722Z September 19 , 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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