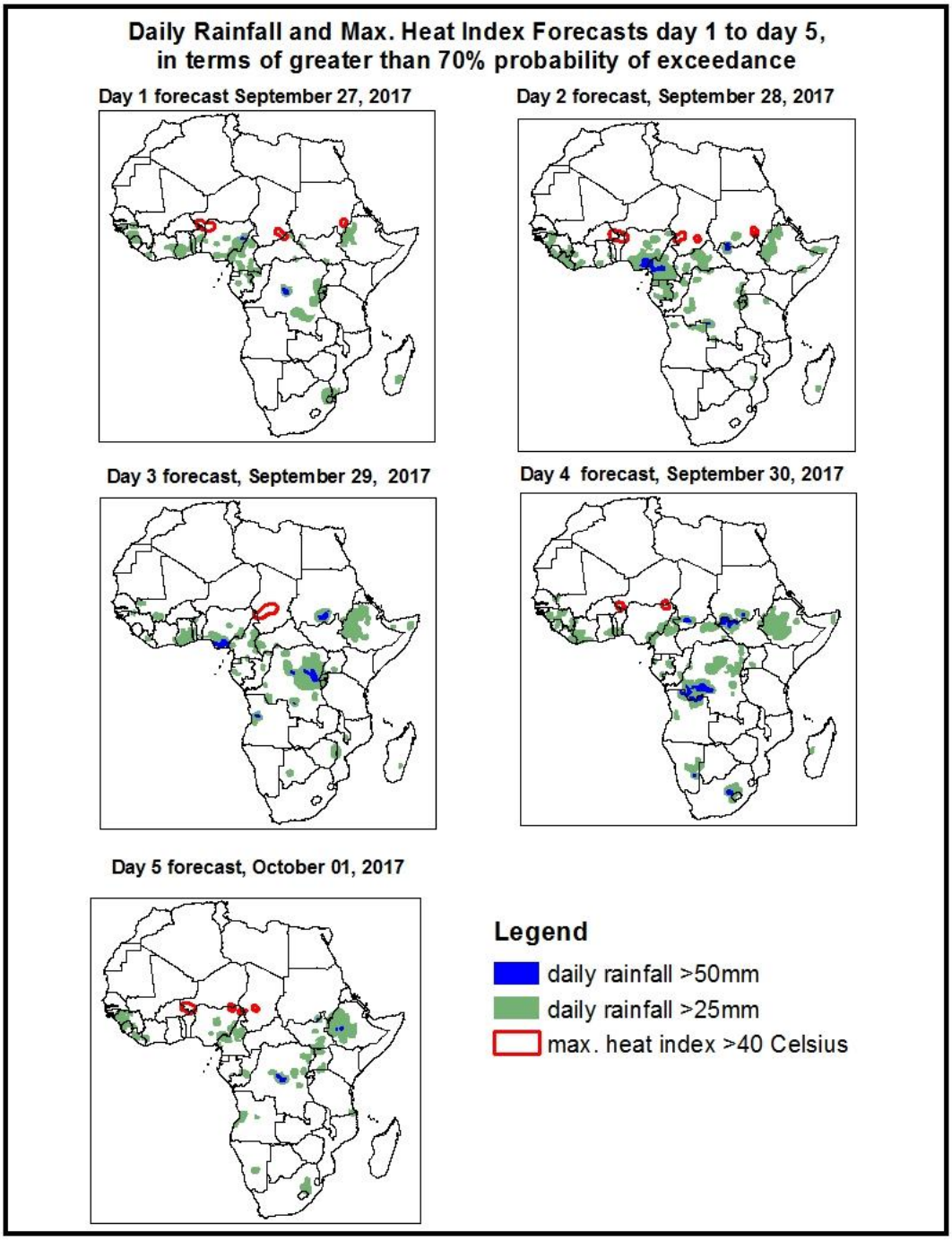
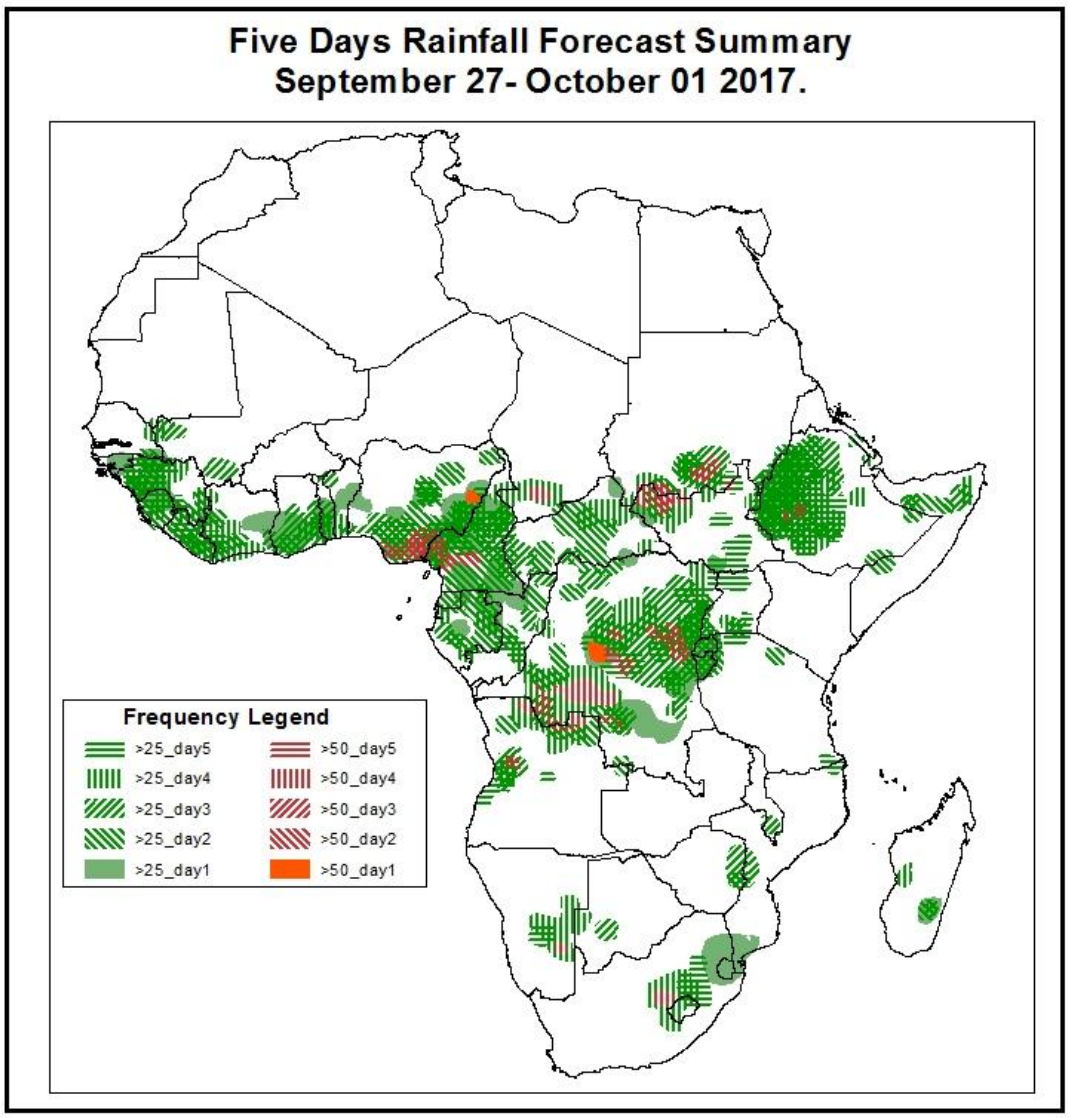
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on Sept. 26, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: Sept., 27 - October 01, 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.



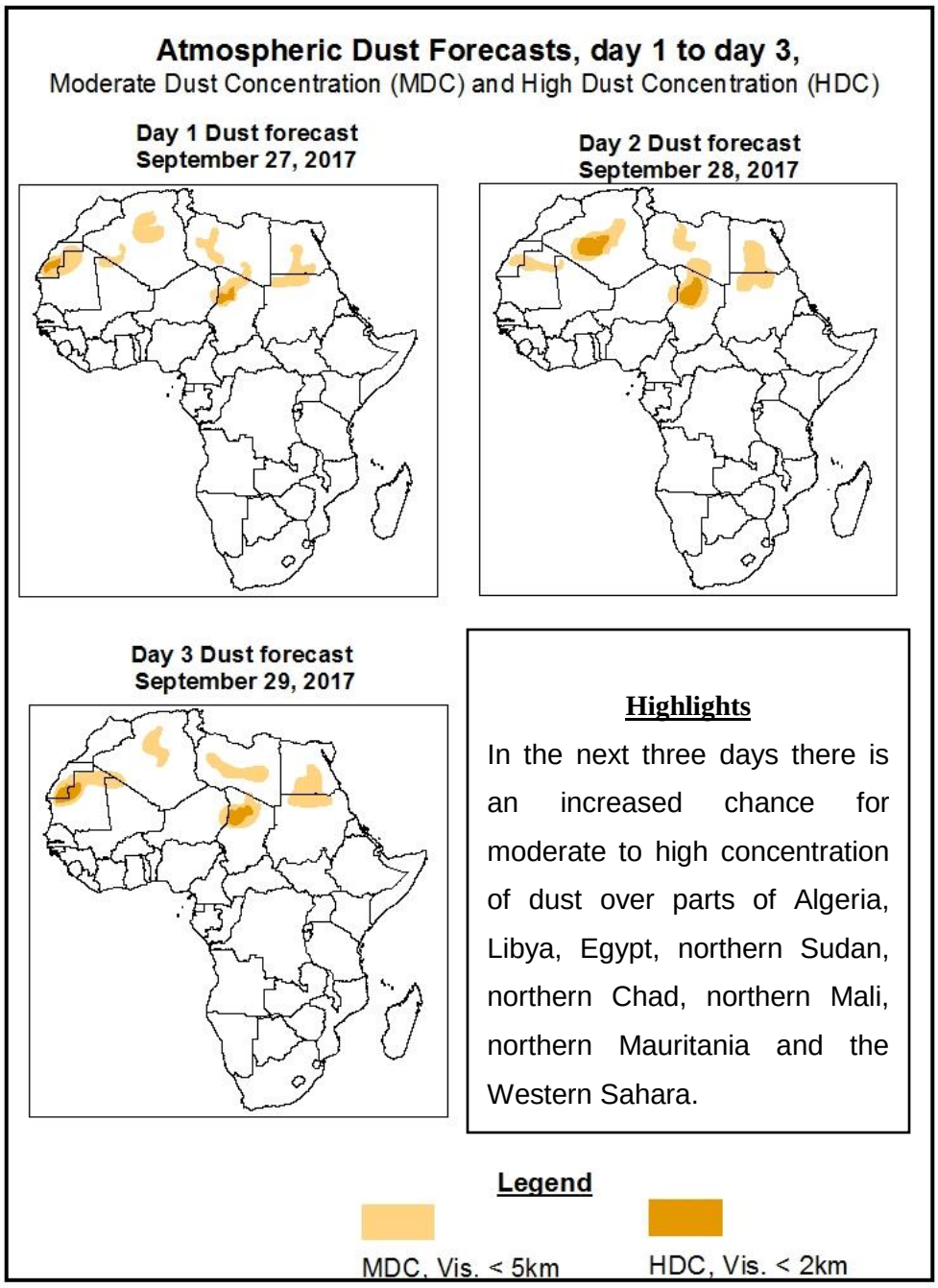


Highlights

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 Angola to DRC and traversing through Uganda then to the 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 Guinea, Sierra Leone, Liberia, southwestern Cote D`Ivoire, southern (Ghana, Togo and Benin), Nigeria, Cameroon, southern Chad, Equatorial Guinea, Gabon, central Congo, CAR, DRC, Burundi, Rwanda, Uganda, southern Sudan, South Sudan, parts of Namibia, parts of South Africa, Ethiopia and northern Somalia.

1.2. Atmospheric Dust Concentration Forecasts (valid: September 27-29 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 27- October 01 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually intensify from its central pressure value of 1021hpa to 1028hpa towards the end of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to slightly intensify from its central pressure value of 1027hpa to 1028hpa in the next 48hours and then later weaken to 1023hpa 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 1038hpa to 1032hpa towards the end of the forecast period.

The heat low over western Sahel is expected to fill up from its value of 1007hpa in the next 24hours to 1009hpa and then gradually deepen back to 1007hpa towards the end of the forecast period.
Over the central Sahel, the heat low is expected to slightly deepen from its value of 1009hpa in the next 48hours to 1008hpa and then maintain this value towards the end of the forecast period.
Over the Sudan area, the heat low is expected to slightly deepen from its value of 1008hpa in the next 24hours to 1007hpa and then maintain the value for 48hours. It fills up back to its initial value of 1008hpa towards the end of the forecast period.

At 925hPa, there is a convergence over West Africa and the Sudan area with vortices developing and spreading over the regions which are dominated by the continental winds and are moving westward towards the end of the forecast period.
Another convergence is established over the Angola traversing through the DRC 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 sustained the spreading and transportation of the Saharan dust over Algeria, Libya, Egypt, northern Sudan, northern Chad, northern Mali, northern Mauritania and the Western Sahara.

At 850hPa, there is a convergence flow over West Africa and the Sudan area with pockets vortices spreading over the central Sahel and the Sudan areas which are dominated by the continental winds and are in continuous development with a westward propagation to the end of the forecast period.
There is another strong convergence over the north eastern Angola to the DRC which traverse and extends to Burundi, Rwanda, Uganda and then to the South Sudan and moves slightly to the northeast direction 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 Angola to DRC and traversing through Uganda then to the 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 Guinea, Sierra Leone, Liberia, southwestern Cote D`Ivoire, southern (Ghana, Togo and Benin), Nigeria, Cameroon, southern Chad, Equatorial Guinea, Gabon, central Congo, CAR, DRC, Burundi, Rwanda, Uganda, southern Sudan, South Sudan, parts of Namibia, parts of South Africa, Ethiopia and northern Somalia.

2.0. Previous and Current Day Weather over Africa

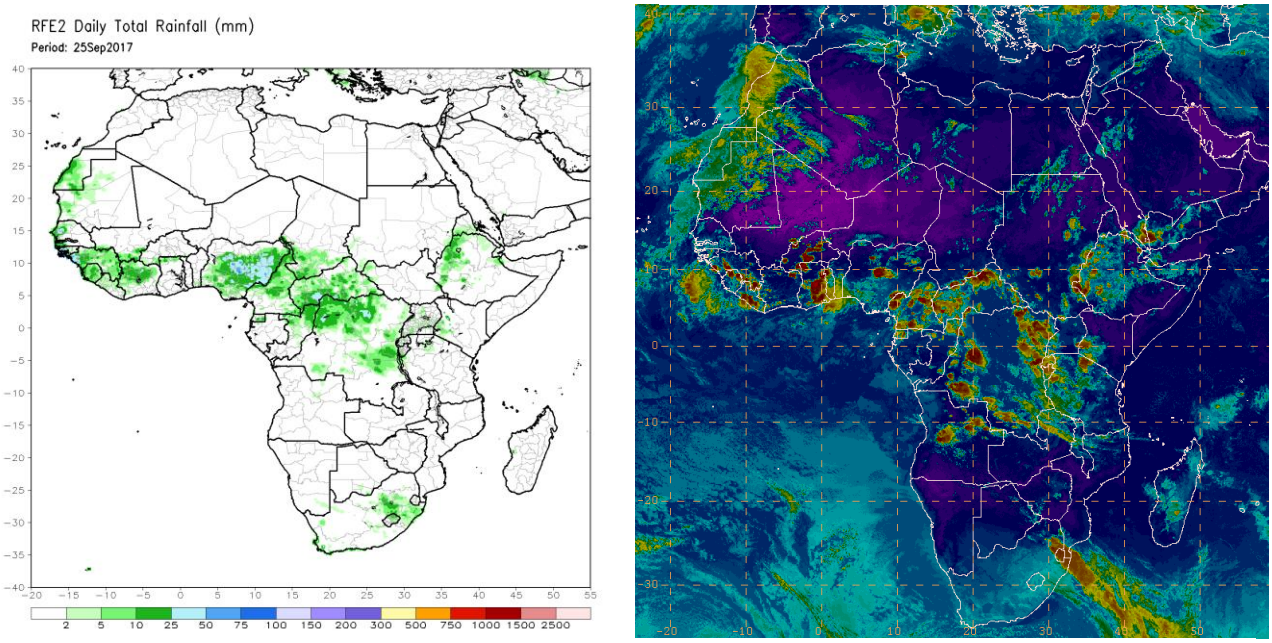
2.1. Weather assessment for the previous day (September 25, 2017)

Moderate to locally heavy rainfall was observed over northwestern Senegal, Guinea, Sierra Leone, northern Liberia, northern Cote D`Ivoire, Nigeria, northern Cameroon, southern Chad, CAR, northern DRC and western Ethiopia.

2.2. Weather assessment for the current day (September 26, 2017)

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

IR Satellite Image (valid 1652Z September 26 , 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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