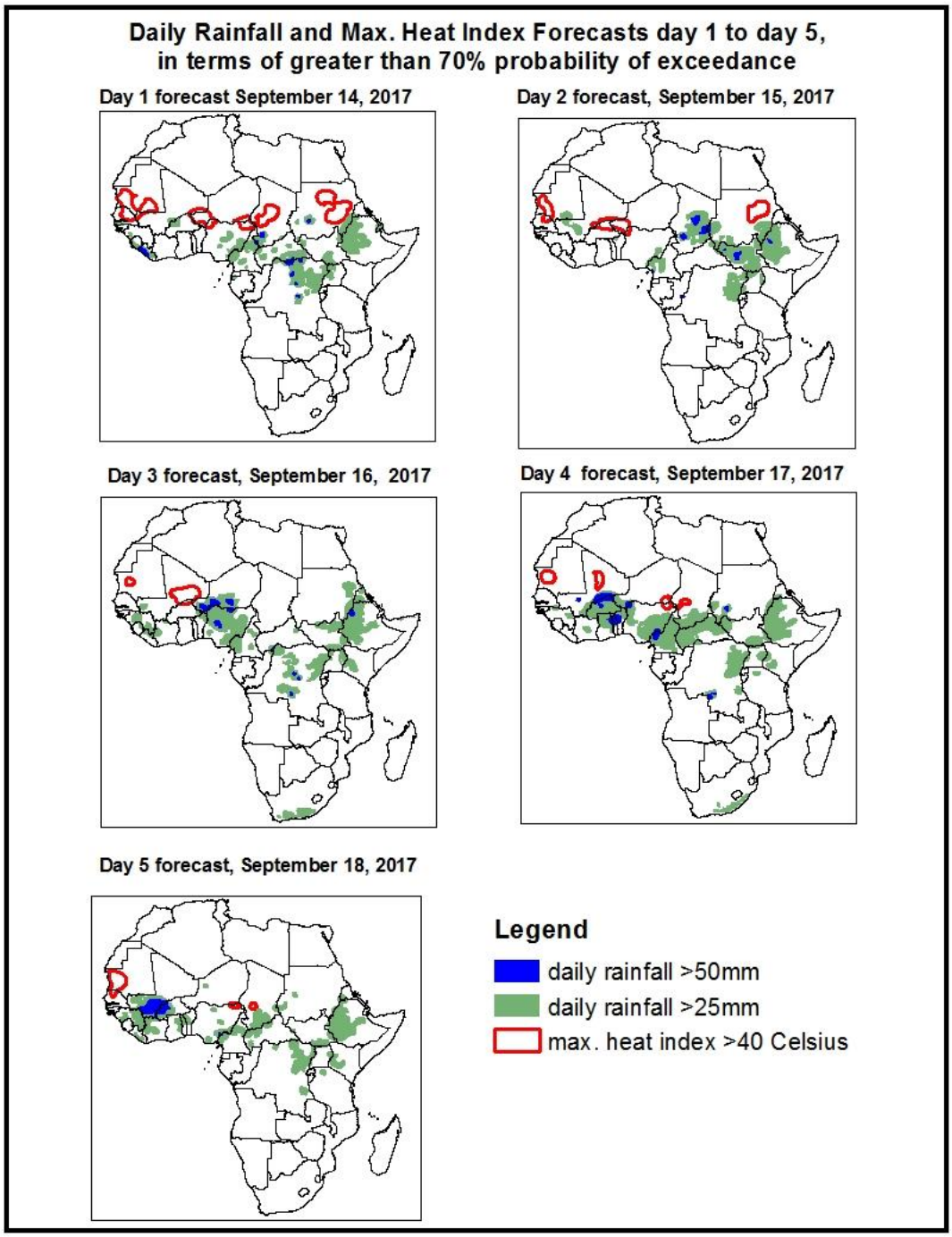
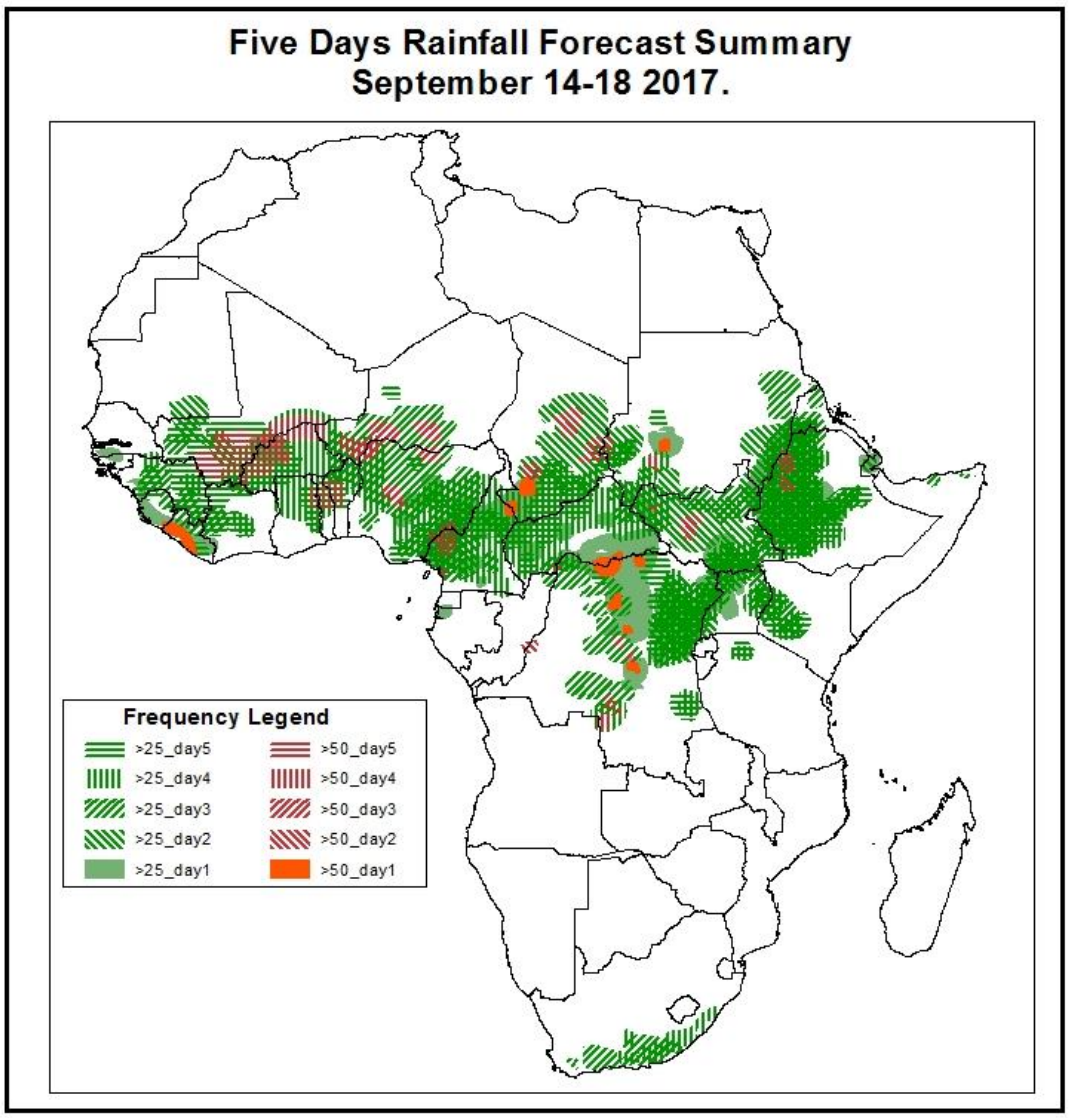
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on September 13, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts *(valid: September, 14-18 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.



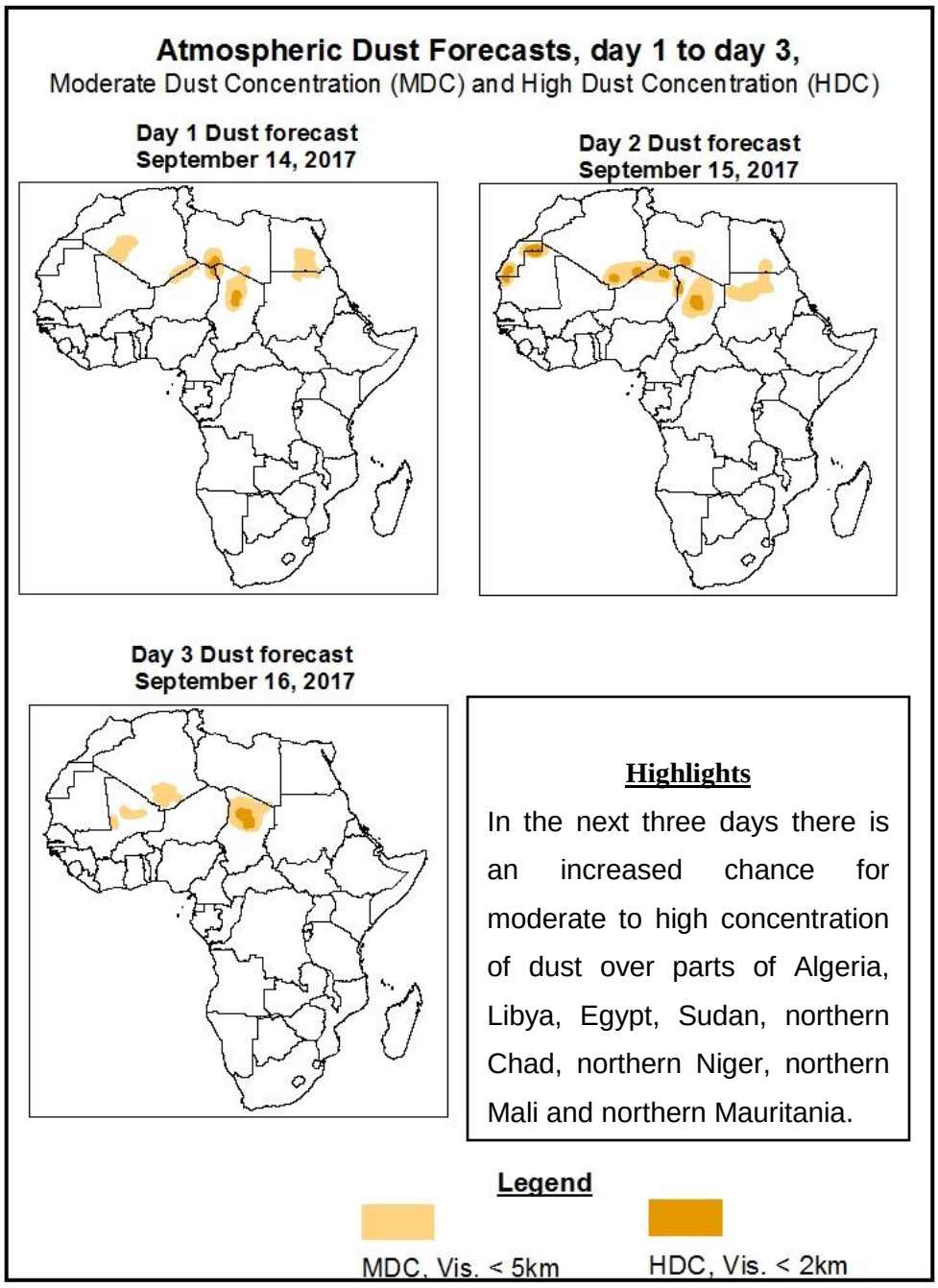


Highlights

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 northeast Angola to southern DRC which traverse and extends to Uganda and 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 Guinea, southern Mali, western Cote D`Ivoire Burkina Faso, northern (Ghana, Togo, Benin), southern Niger, Nigeria, Cameroon, southern Chad, CAR, parts of DRC, northern Uganda, western Kenya, southern Sudan, South Sudan, Ethiopia and Djibouti.

1.2. Atmospheric Dust Concentration Forecasts (valid: September 14-16 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 14-18 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to weaken from its central pressure value of 1030hpa to 1024hpa in the next 72hours and thereafter intensify to 1027hpa 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 1033hpa in the next 48hours then intensify to 1036hpa towards the end of the forecast period.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to slightly weaken from its central pressure value of 1022hpa to 1021hpa in the next 48 hours then intensify to 1026hpa towards the end of the forecast period.

The heat low over western Sahel is expected to gradually deepen from its value of 1007hpa in the next 48hours to 1004hpa and then later fill up to 1007hpa towards the end of the forecast period.
Over the central Sahel, the heat low is expected to gradually fill up from its value of 1007hpa to 1010hpa in the next 72hours then slightly deepen to 1009hpa towards the end of the forecast period.
Over the Sudan area, the heat low is expected to fill up from its value of 1004hpa in the next 48hours to 1008hpa and then 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 a low pressure system develops in the next 24hours moving westwards. Over the central Sahel and the west Sahel regions a series of vortices are developing and sustained with a slight movement westward throughout the forecast period. The maritime winds will dominate the west Sahel region and retard the continental winds towards the end of the forecast period.
Another convergence is established over the southern Angola to south eastern DRC and traversing through Uganda and then 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 spreading and transporting the Saharan dust over Algeria, Libya, Egypt, Sudan, northern Chad, northern Niger, northern Mali, northern Mauritania and the Western Sahara.

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 northeast
erly 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 northeast Angola to southern DRC which traverse and extends to Uganda and 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 Guinea, southern Mali, western Cote D`Ivoire Burkina Faso, northern (Ghana, Togo, Benin), southern Niger, Nigeria, Cameroon, southern Chad, CAR, parts of DRC, northern Uganda, western Kenya, southern Sudan, South Sudan, Ethiopia and Djibouti.

2.0. Previous and Current Day Weather over Africa

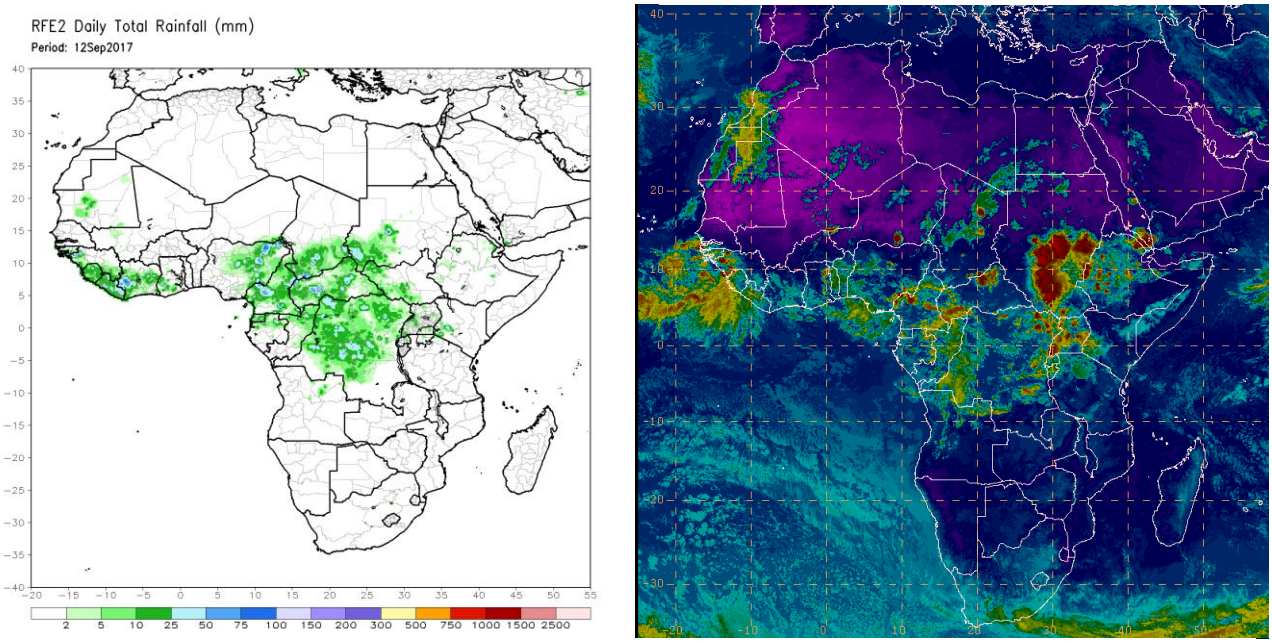
2.1. Weather assessment for the previous day (September 12, 2017)

Moderate to locally heavy rainfall was observed over western Guinea, Sierra Leone, Liberia, Cote D'Ivoire, some parts of Nigeria, Equatorial Guinea, southern Chad, CAR, northern Congo, DRC, southern Sudan, and western South Sudan.

2.2. Weather assessment for the current day (September 13, 2017)

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

IR Satellite Image (valid 1722Z September 13 , 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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