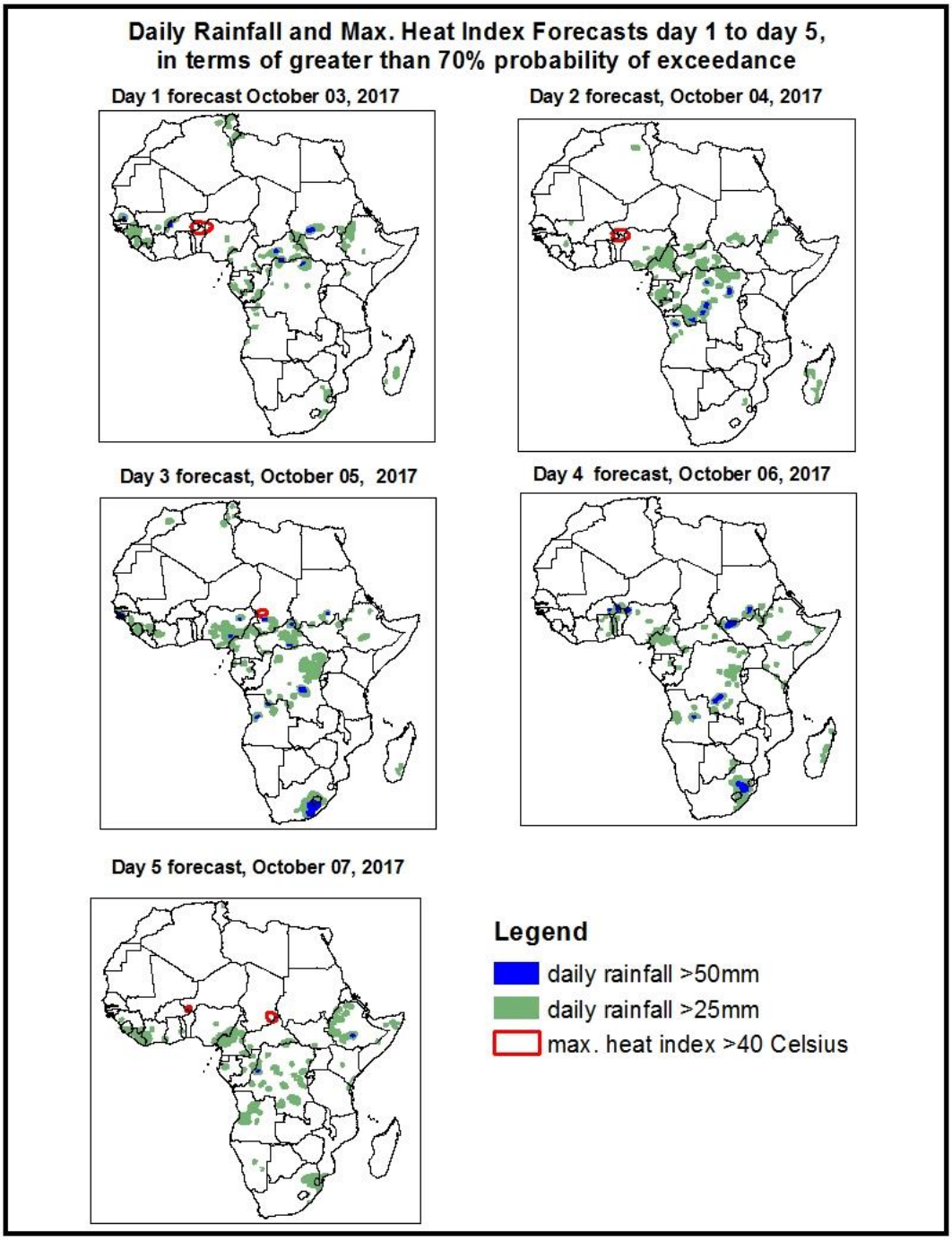
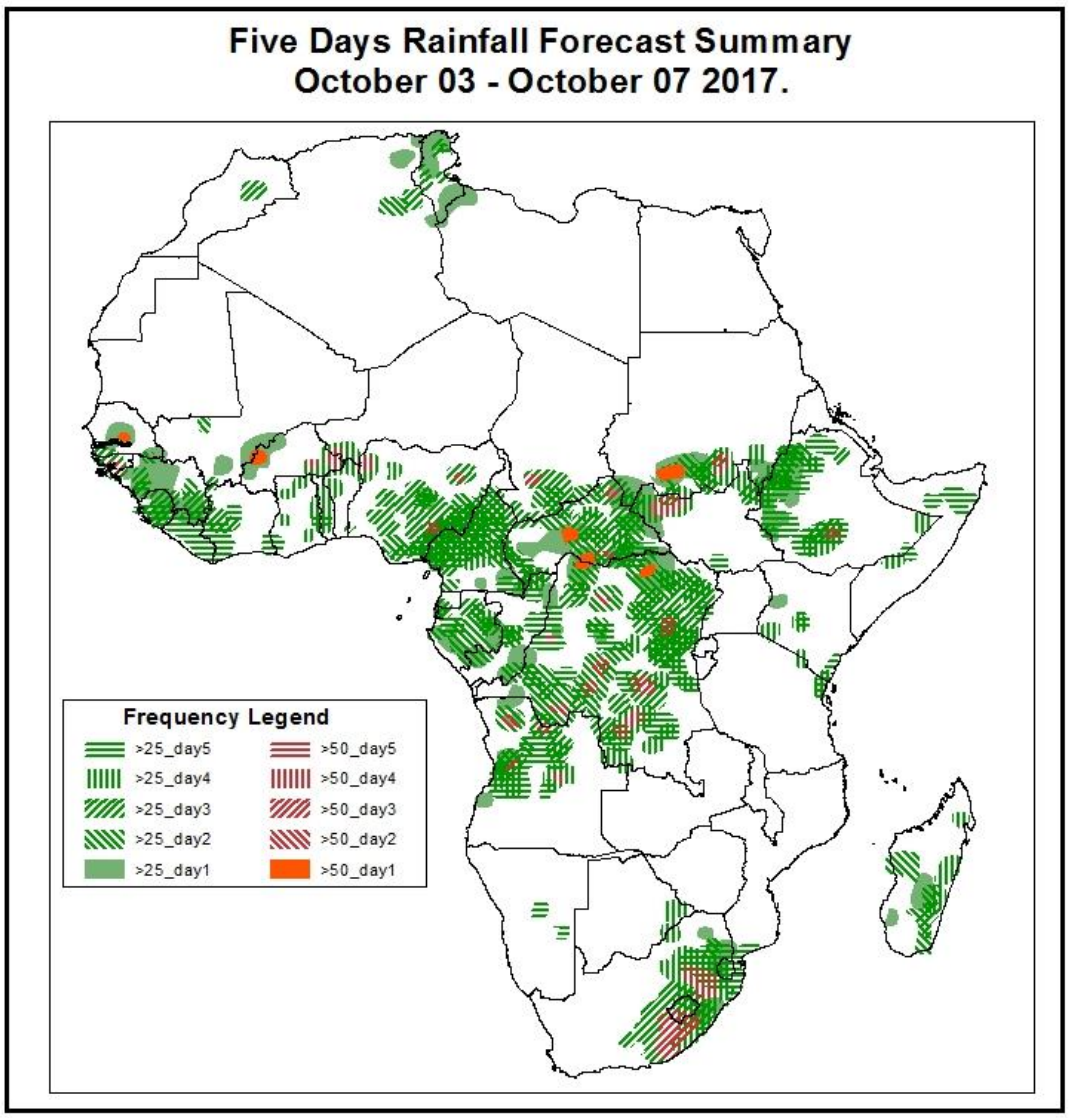
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *Oct* 02, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: Oct 03, –Oct 07, 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.



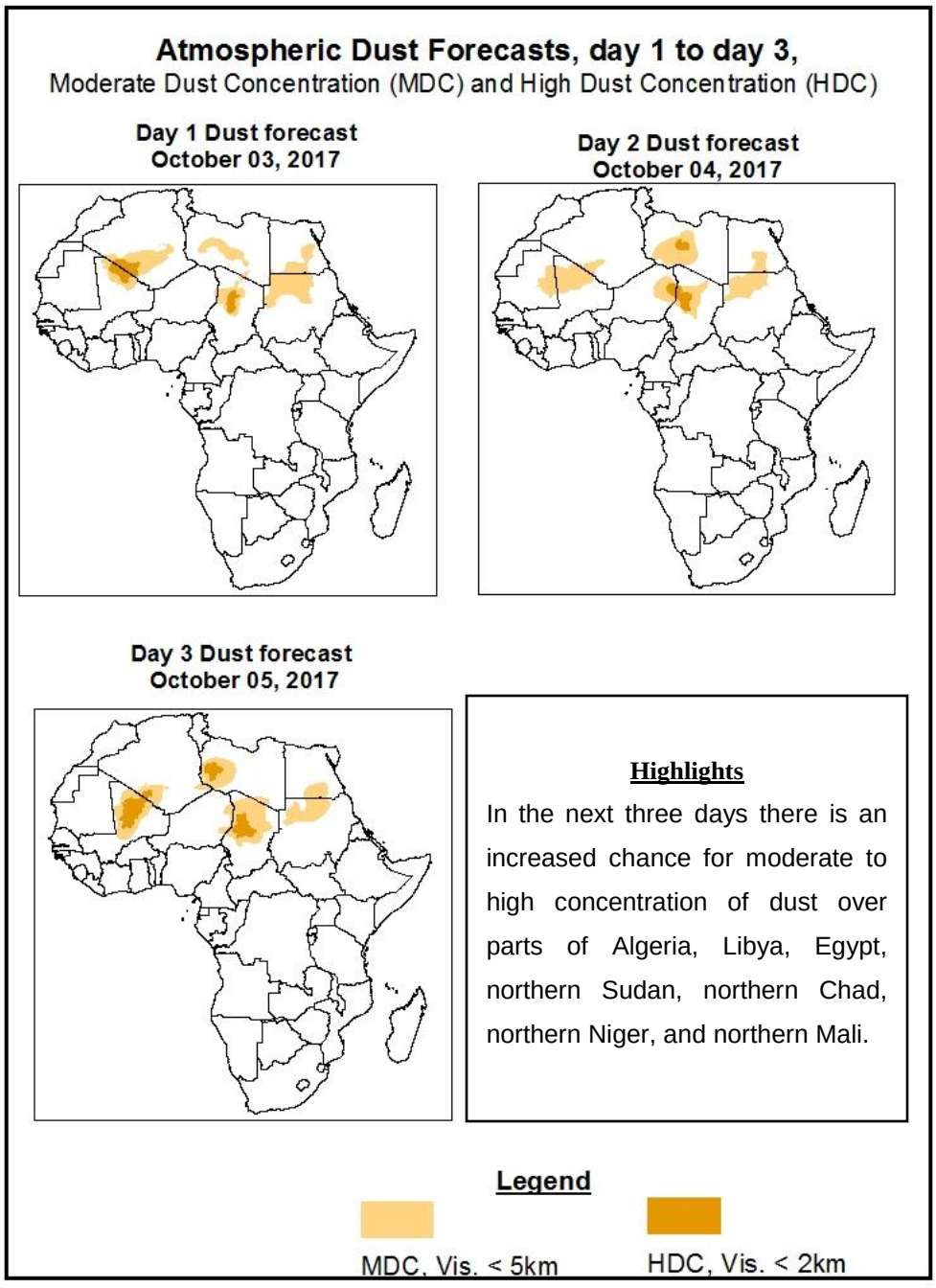


Highlights

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 Sierra Leone, Liberia, eastern Burkina Faso, parts of Nigeria, Cameroon, parts of Gabon, parts of Congo, CAR, DRC, southern Sudan, northern South Sudan, northern Angola, Lesotho, Swaziland, north eastern South Africa, western Ethiopia northern Somalia and parts of Madagascar.

1.2. Atmospheric Dust Concentration Forecasts (valid: Oct 03. – Oct 05, 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: Oct 03 – Oct 07, 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to weaken from its central pressure value of 1029hpa to 1025hpa in the next 24hours and then slightly intensify to 1032hpa in the next 72hours and then weaken back to 1025hpa 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 1030hpa to 1035hpa in the next 72hours and then later weaken to 1033hpa towards the end of the forecast period.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to intensify from its central pressure value of 1030hpa to 1042hpa in the next 48hours and the weaken to 1033hpa 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 48hours to 1009hpa and then deepen to 1006hpa towards the end of the forecast period.

Over the central Sahel, the heat low is expected to fill up from its value of 1006hpa in the next 48hours and then thereafter gradually 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 1007hpa in the next 24hours to 1009hpa and then deepen to 1008hpa and maintain this value 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 Niger, and northern Mali.

At 850hPa, there is a convergence flow over West Africa and the Sudan area with pockets of vortices spreading over the regions 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 Angola to the DRC which traverse and extends to Burundi, Rwanda, Uganda and then to the South Sudan and moves slightly to east direction towards the end of the forecast period. Also, another low pressure system is established over southern Malawi to Swaziland with propagation towards the southwest 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 the 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 Sierra Leone, Liberia, eastern Burkina Faso, parts of Nigeria, Cameroon, parts of Gabon, parts of Congo, CAR, DRC, southern Sudan, northern South Sudan, northern Angola, Lesotho, Swaziland, north eastern South Africa, western Ethiopia northern Somalia and parts of Madagascar.

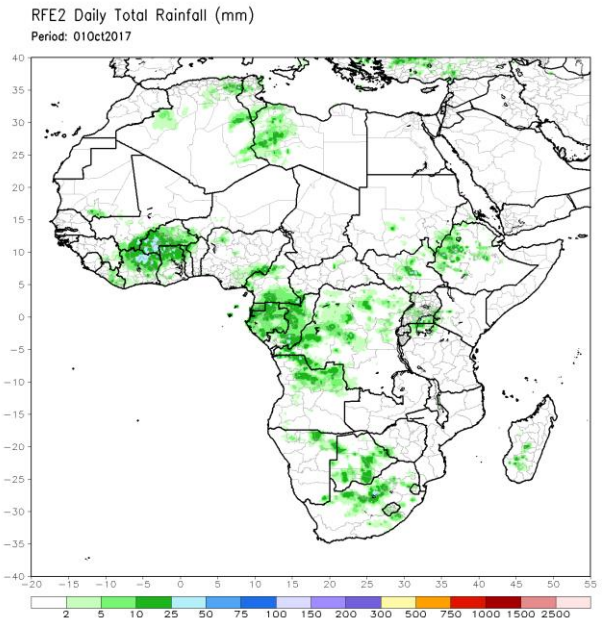
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (October 01, 2017)

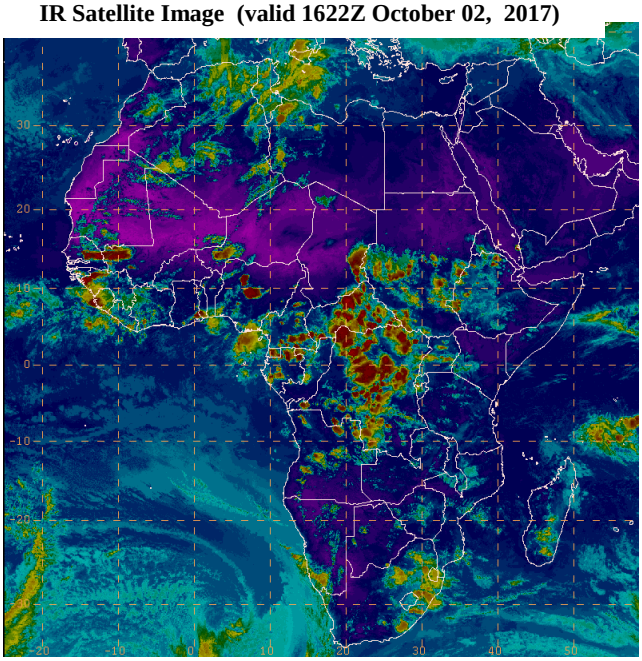
Moderate to locally heavy rainfall was observed over southern Liberia, northern COTE d`Ivoir, Burkina-Faso, northern (Ghana, Togo), southern Cameroon, Equatorial Guinea, Gabon, Congo, parts of DRC, parts of South Sudan, northern Angola, northern Namibia, parts of Zimbabwe, parts of South Africa and western Ethiopia.

2.2. Weather assessment for the current day (October 02, 2017)

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



IR Satellite Image (valid 1622Z October 02, 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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