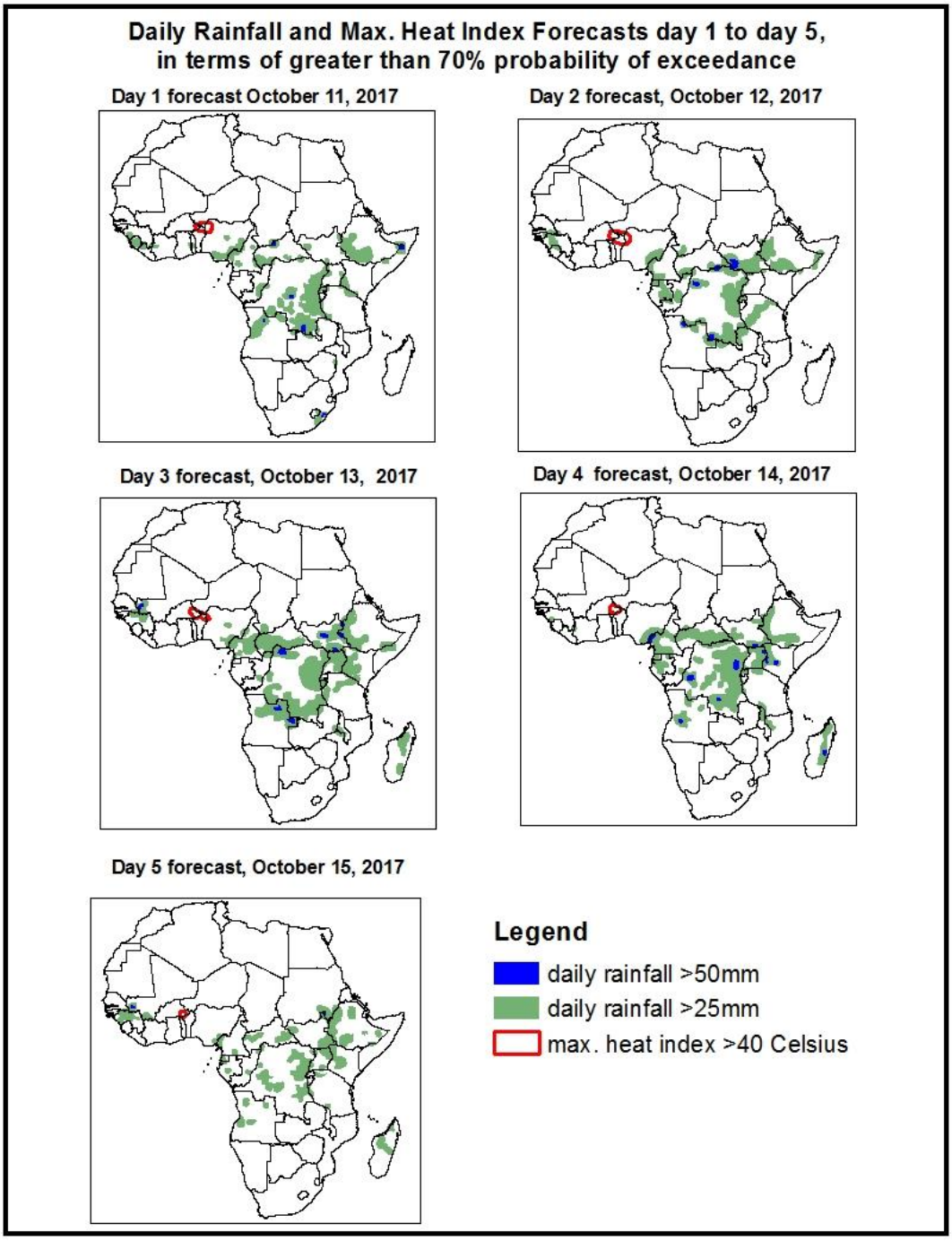
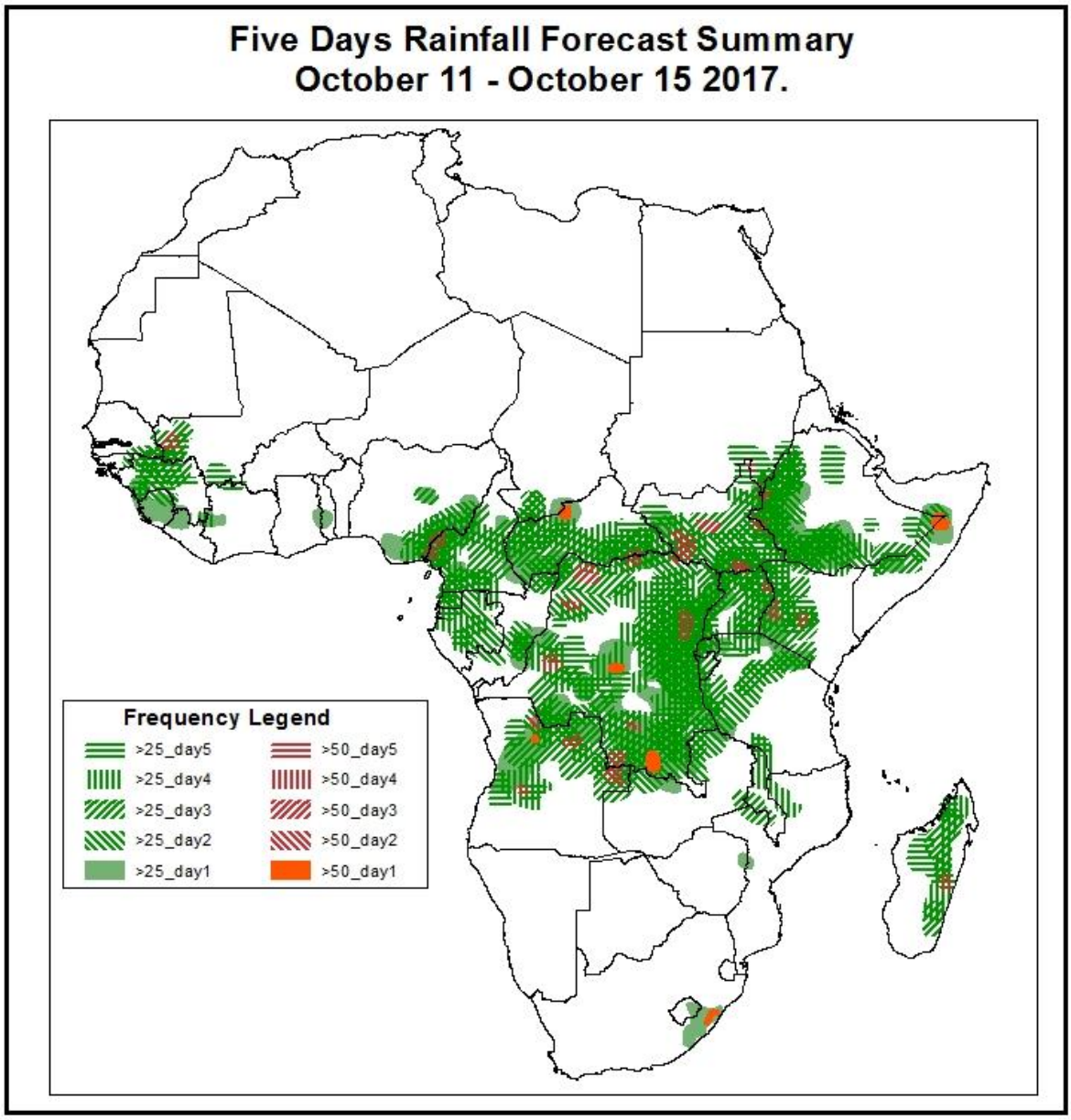
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on *Oct 10*, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: Oct 11, –Oct 15, 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.



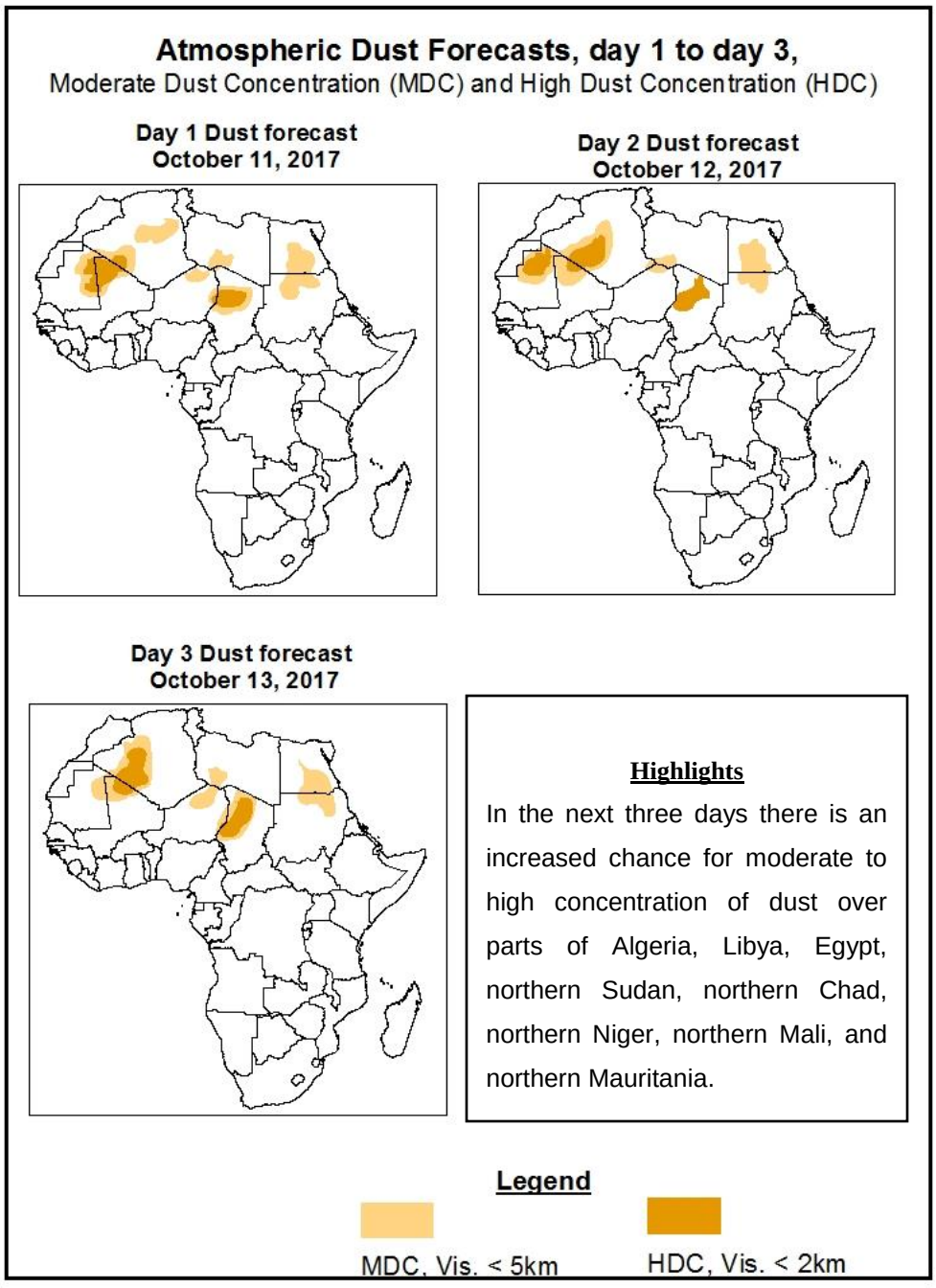


Highlights

In the next five days, active lower-level meridional convergence associated with the Congo air boundary (CAB) between the South Sudan to the southeast DRC and low level wind convergences in the far western Africa, the equatorial Africa and parts of Angola, Ethiopia and Madagascar are expected to enhance rainfall in the respective regions. As a result, there is an increased chance for two or more days of moderate to heavy rainfall over many places in Guinea, southwestern Mali, southeastern Nigeria, central Cameroon, southern CAR, South Sudan, western Ethiopia, western Kenya, Uganda, western Tanzania, Burundi, Rwanda, DRC, Angola, northwestern Zambia, southern South Africa and Madagascar.

1.2. Atmospheric Dust Concentration Forecasts (valid: Oct 11, – Oct 13, 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 11 – Oct 15, 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually intensify from its central pressure value of 1023hpa to 1031hpa towards the end of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to drastically weaken from its central pressure value of 1031hpa to 1021hpa in the next 48hours and then thereafter gradually intensify to 1026hpa 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 1023hpa to 1034hpa in the next 72hours and thereafter weakens to 1032hpa towards the end of the forecast period.

The heat low over western Sahel is expected to gradually fill up from its value of 1008hpa to 1010hpa towards the end of the forecast period.

Over the central Sahel, the heat low is expected to gradually fill up from its value of 1009hpa to 1012hpa towards the end of the forecast period.

Over the Sudan area, the heat low is expected to slightly deepen from its value of 1007hpa to 1006hpa in the next 24hours and then thereafter gradually fill up to 1009hpa towards the end of the forecast period.

At 925hPa, there is a convergence over West Africa and the Sudan area with some vortices developing over the west Sahel and the Sudan area which are dominated by the continental winds and are moving westward towards the end of the forecast period.
Another strong convergence is established over Angola to the DRC which traverse and extends to northern Zambia, western Tanzania, Burundi, Rwanda and then to Uganda and moves slightly to east direction towards the end of the forecast period. Also, another low pressure system is established over Namibia 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, northern Mali and northern Mauritania.

At 850hPa, there is a convergence flow over West Africa and the Sudan area with a low pressure system developing over the Sudan area which is dominated by the continental winds and is propagating westward to the end of the forecast period.
There is another strong convergence over the southeastern DRC which traverse and extends to western Tanzania, Burundi, Rwanda and then to Uganda and is quasi-stationary towards the end of the forecast period.

At the 200hpa, there is a strong subtropical westerly jet of 90 knots and above with the core of the jet expected to shift to the south towards the end of the forecast period.

In the next five days, active lower-level meridional convergence associated with the Congo air boundary (CAB) between the South Sudan to the southeast DRC and low level wind convergences in the far western Africa, the equatorial Africa and parts of Angola, Ethiopia and Madagascar are expected to enhance rainfall in the respective regions. As a result, there is an increased chance for two or more days of moderate to heavy rainfall over many places in Guinea, southwestern Mali, southeastern Nigeria, central Cameroon, southern CAR, South Sudan, western Ethiopia, western Kenya, Uganda, western Tanzania, Burundi, Rwanda, DRC, Angola, northwestern Zambia, southern South Africa and Madagascar.

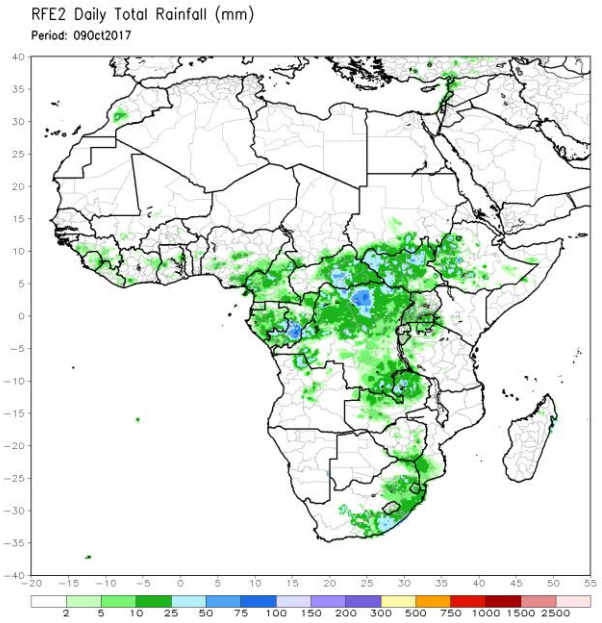
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (October 09, 2017)

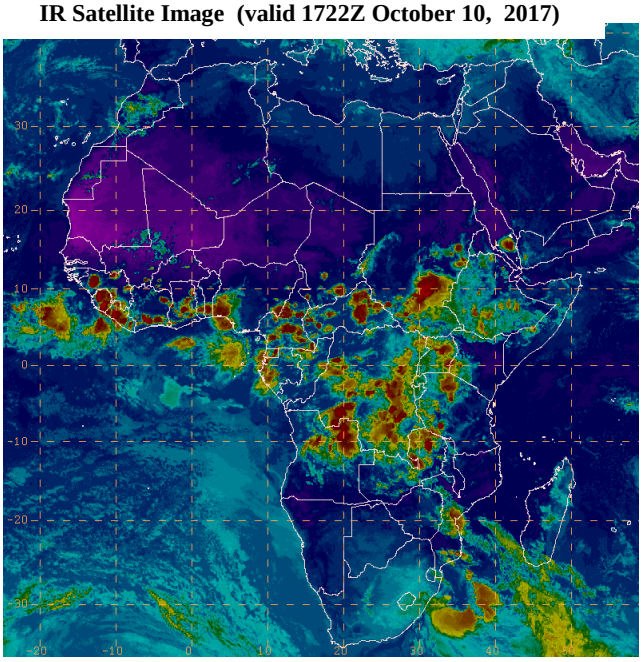
Moderate to locally heavy rainfall was observed over western Cameroon, CAR, South Sudan western Ethiopia, DRC, western Uganda, northern Zambia, Congo, Gabon and parts of South Africa.

2.2. Weather assessment for the current day (October 10, 2017)

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



IR Satellite Image (valid 1722Z October 10, 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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