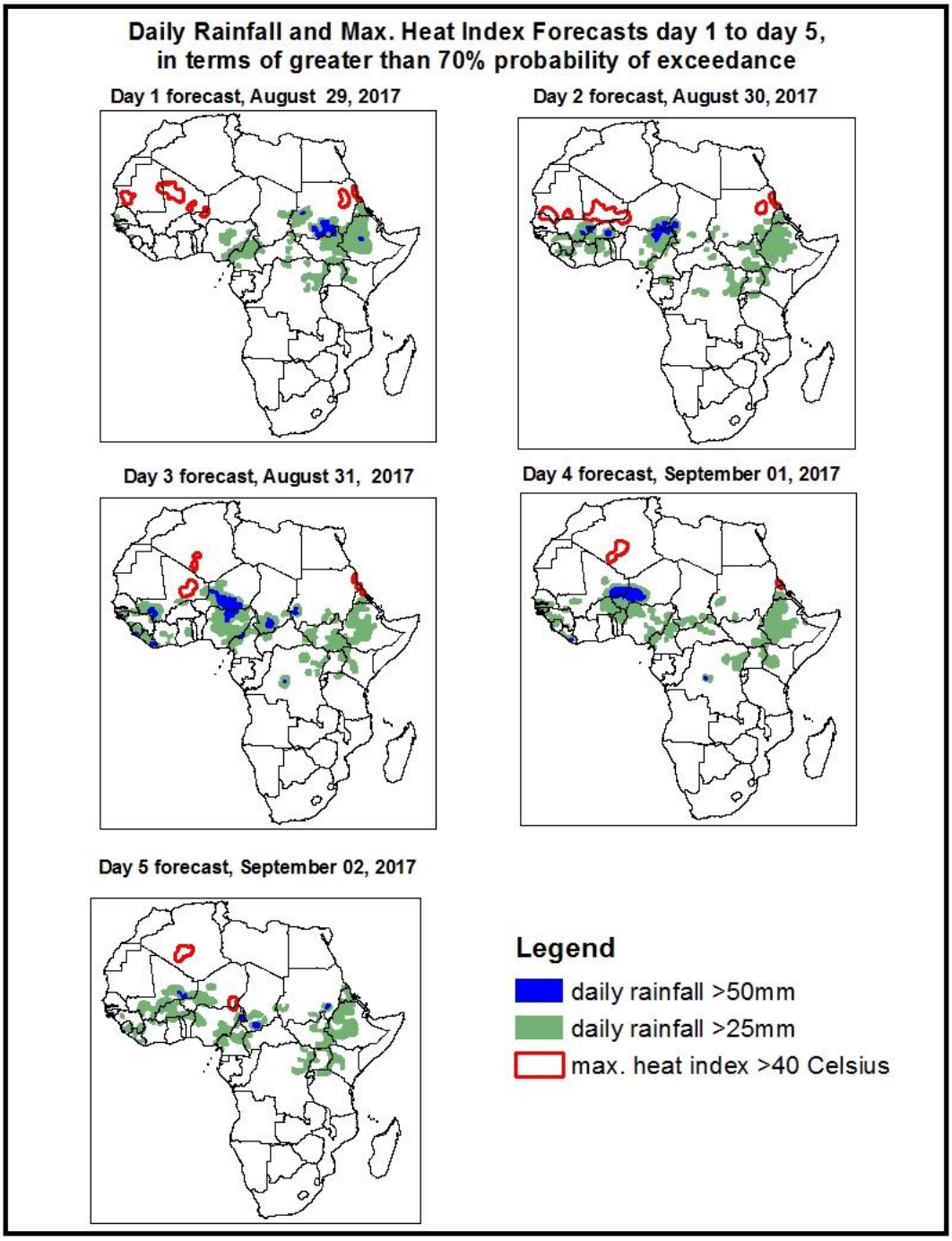
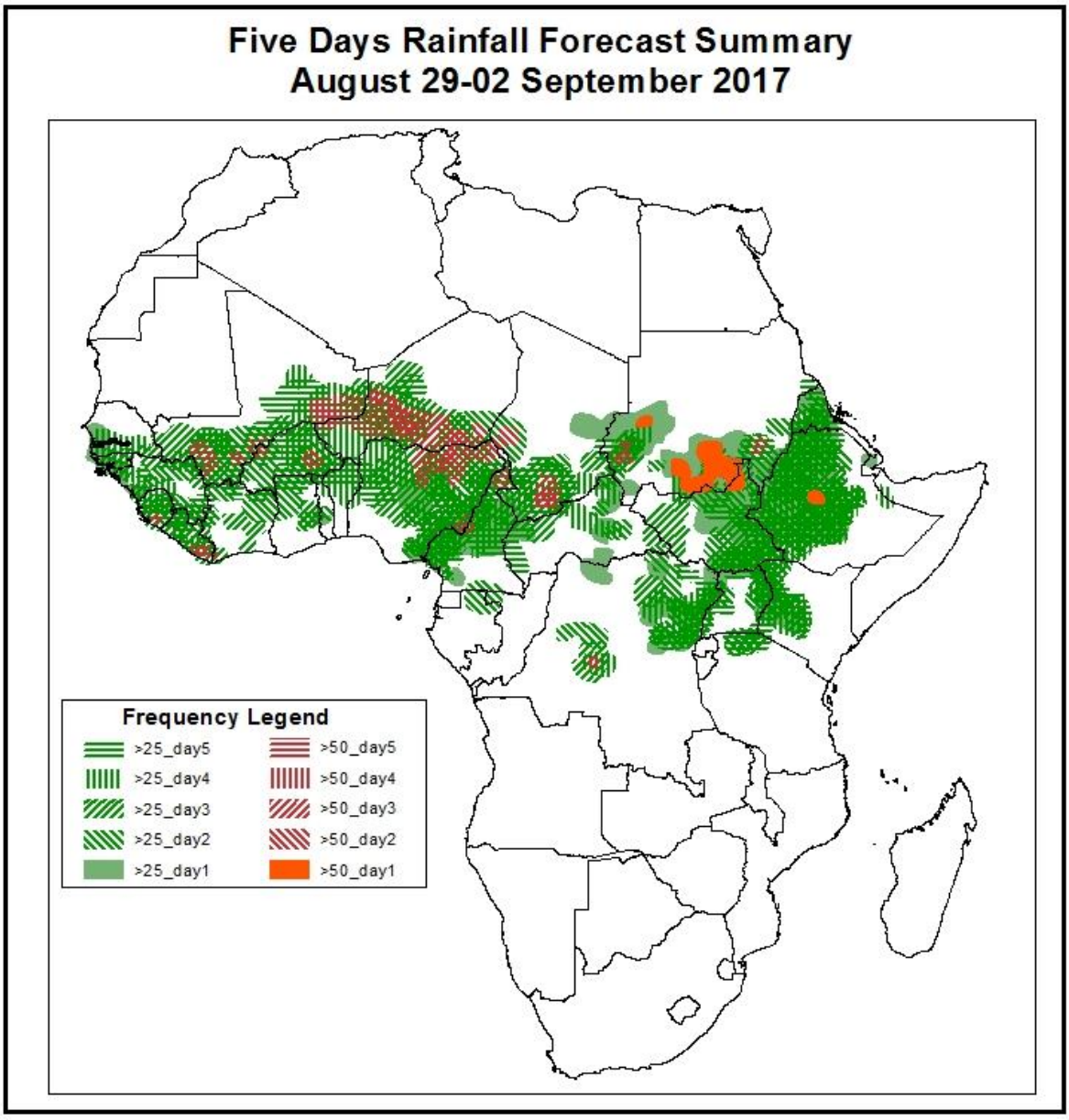
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on August 28, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts *(valid: August 29–02 September,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.

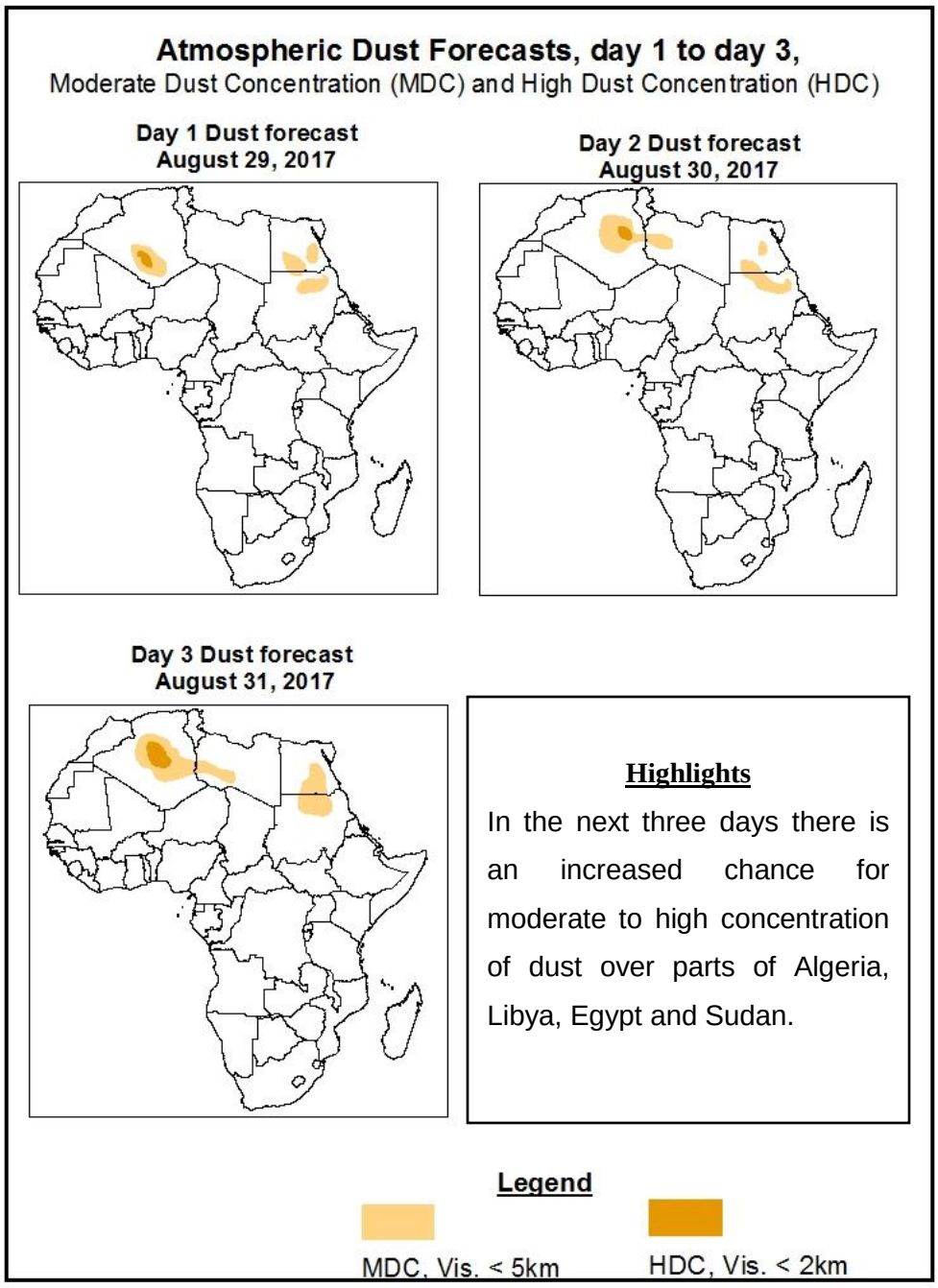




Highlights

In the next five days, a strong 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 southern DRC and the Lake Victoria region 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 southern Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia, southern Mali, Northern Cote D'Ivoire, Burkina Faso, northern (Ghana, Togo and Benin), southern Niger, Nigeria, Cameroon, southern Chad, parts of CAR, parts of DRC, southern Sudan, South Sudan, western Kenya and Ethiopia.

1.2. Atmospheric Dust Concentration Forecasts (*valid: August 29-31, 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: August 29-02 September 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to intensify from its central pressure value of 1027hpa to 1030hpa in the next 72hours and then weaken to 1028hpa 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 1028hpa in the next 96hours and thereafter weaken to 1026hpa 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 1039hpa to 1034hpa towards the end of the forecast period with its center gradually moving eastward.

The heat low over western Sahel is expected to deepen from its value of 1005hpa in the next 24hours to 1003hpa and then gradually fill up to 1009hpa towards the end of the forecast period. Over the central Sahel, the heat low is expected to fill up from its value of 1006hpa to 1010hpa in the next 48hours and then deepen to 1008hpa towards the end of the forecast period. Over the Sudan area, the heat low is expected to fill up from its value of 1004hpa to 1006hpa towards the end of the forecast period.

At 925hPa, there is a low pressure system established over Sudan and propagating westwards. The convergence over the Sudan area and the central Sahel is dominated by the north easterlies but moving to the west Sahel the south westerlies dominated the cyclonic circulation. Therefore, the undulation of the trough line tilts more to the north in the west Sahel region.

Another convergence is established over Angola and southern DRC with the trough line extending to Lake Victoria towards the north east direction during the forecast period.

The dry north easterlies propagating from the subtropical high pressure over North Africa will suppress the south westerlies over the Sudan area in the next 48hours which will result to sustained spreading and transport of the dust over Algeria, Libya, Egypt and Sudan. The south westerlies dominate the flow over the Central and West Sahel during the forecast period.

At 850hPa, the cyclonic circulation over West Africa is gradually dominated by the north easterlies as a result of the intensification of the subtropical high pressure system into the region with pockets of vortices developing over the region and moving westward during the forecast period.
The convergence zone over central and some parts of east Africa is intensifying and continually developing all through the forecast period.

At 700hPa, there is the divergence of an easterly flow from the subtropical high pressure system over West Africa to its coasts in the next 72hours but towards the end of the forecast period, the subtropical high pressure system is weakened with the intrusion of the mid latitude trough.
Divergence over central, eastern and the southern part of Africa predominate and persist over regions all through the end of the forecast period.

In the next five days, a strong 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 southern DRC and the Lake Victoria region 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 southern Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone, Liberia, southern Mali, Northern Cote D'Ivoire, Burkina Faso, northern (Ghana, Togo and Benin), southern Niger, Nigeria, Cameroon, southern Chad, parts of CAR, parts of DRC, southern Sudan, South Sudan, western Kenya and Ethiopia.

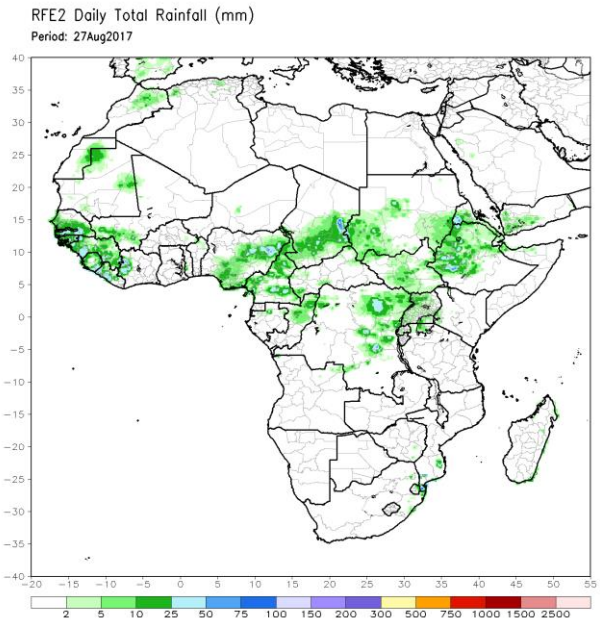
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (August 27, 2017)

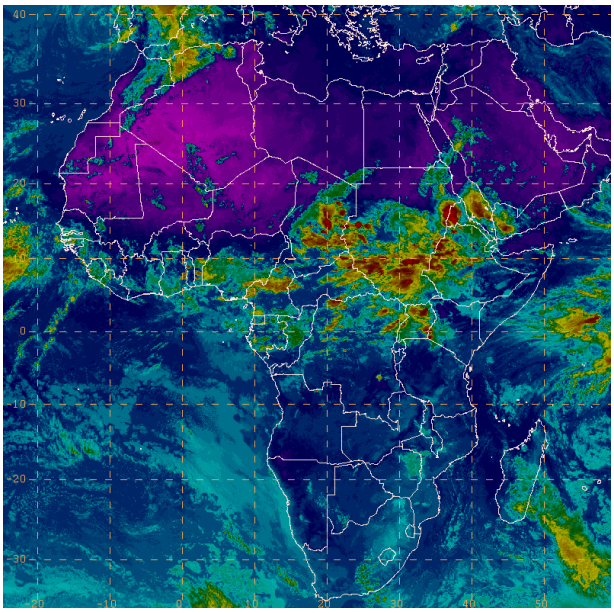
Moderate to locally heavy rainfall was observed over parts of southern Senegal, Gambia, Guinea, Guinea Bissau, Sierra Leone, Liberia, western Cote D'Ivoire, many parts of Nigeria, Cameroon, southern Chad, northern Republic of the Congo, western DRC, southern Sudan, parts of South Sudan, Uganda, Ethiopia and Eritrea.

2.2. Weather assessment for the current day (August 28, 2017)

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



IR Satellite Image (valid 1652 August 28 , 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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