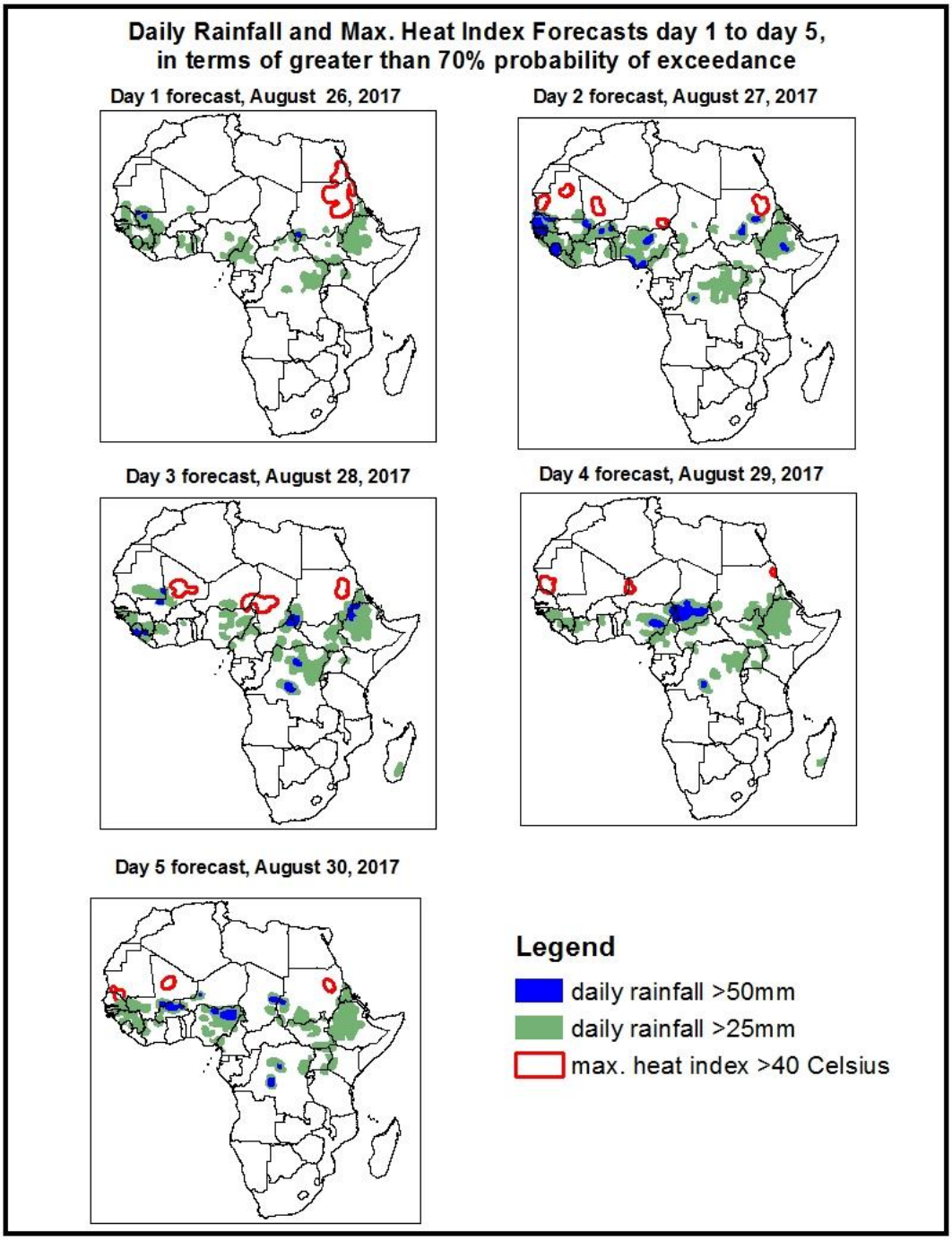
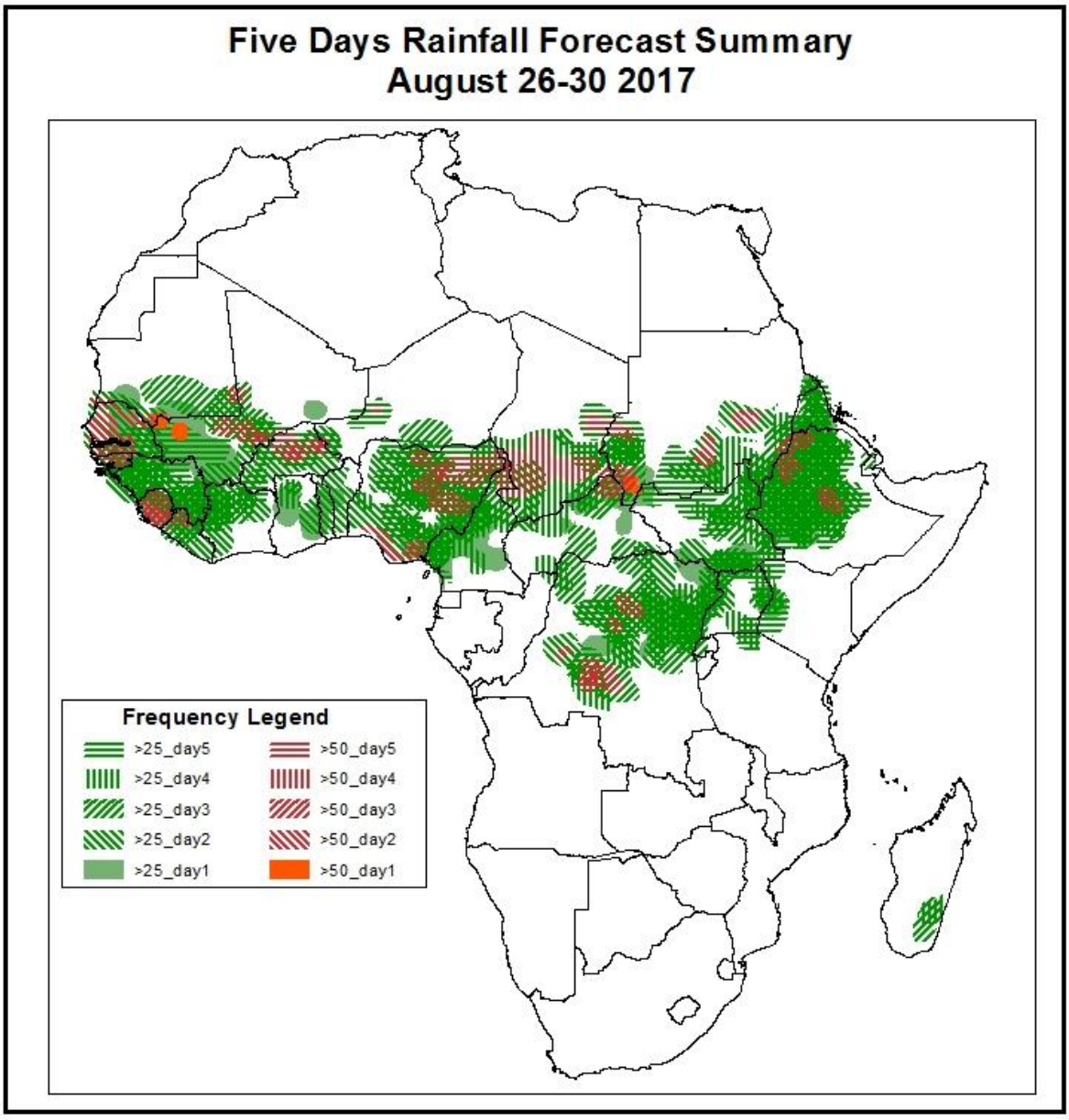
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on August 25, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts *(valid: August 26–30 August, 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.

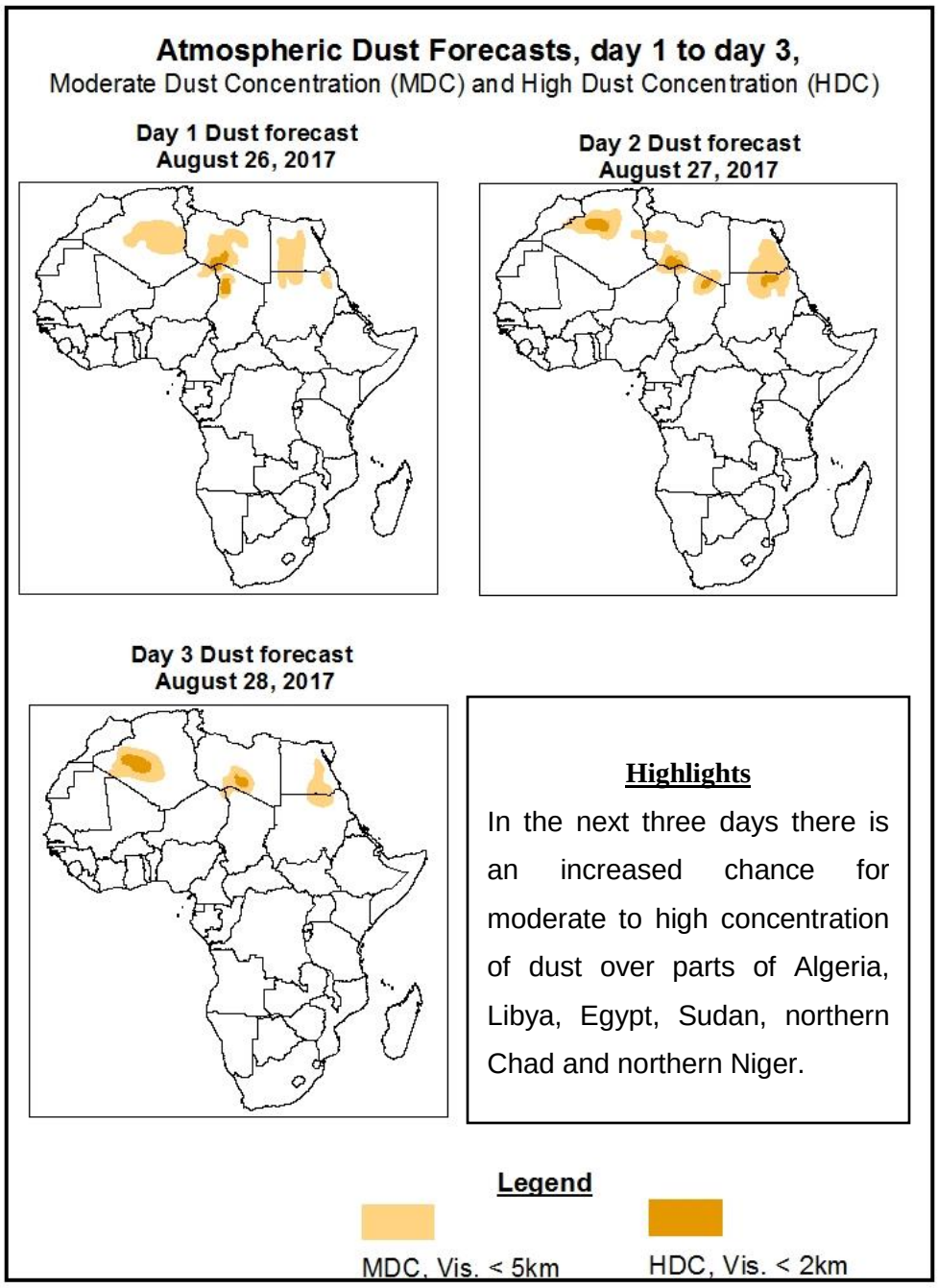




Highlights

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 northern Angola to southern DRC, the Lake Victoria region and Ethiopia 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 Senegal, Guinea Bissau, Guinea, Sierra Leone, Northern Cote D'Ivoire, Burkina Faso, southern Mauritania, Mali, southern Niger, northern (Ghana, Togo and Benin), Nigeria, southern Chad, Cameroon, CAR, northern DRC, South Sudan, Ethiopia and Eritrea.

1.2. Atmospheric Dust Concentration Forecasts (*valid: August 26-28, 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 26-30 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually weaken from its central pressure value of 1028hpa to 1025hpa towards the end of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to gradually weaken from its central pressure value of 1035hpa to 1026hpa towards the end of the forecast period.

The Mascarene High Pressure system over the Southwest Indian Ocean is expected to maintain its central pressure value of 1035hpa in the next 48hours and then intensifies to 1041hpa with its center gradually moving westward to the African continent towards the end of the forecast period.

The heat low over western Sahel is expected to maintain its value of 1005hpa in the next 48hours and then later on deepens to 1003hpa towards the end of the forecast period. Over the central Sahel, the heat low is expected to maintain its value of 1006hpa in the next 72hours and then fill up to 1008hpa towards the end of the forecast period. Over the Sudan area, the heat low is expected to maintain its value of 1004hpa 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 northern 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 and the central of West Africa in the next 72hours which will result to the increased spreading and transport of the dust over Algeria, Libya, Egypt, Sudan and the northern parts of Chad and Niger. Thereafter, the south westerlies will gradually start to dominate towards the end of 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 Sudan area and the central Sahel moving westward in the next 72hours, thereafter the mid latitude trough gradually intrudes and starts to weaken the subtropical high pressure system towards the end of the forecast period. The convergence zone over central and some parts of east Africa is intensifying and continually developing resulting from the passage of the mid latitude trough 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 is predominant but over the central to the east Africa, some cut-off lows are developing towards the end of the forecast period resulting from the intrusion of the mid latitude trough.

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 northern Angola to southern DRC, the Lake Victoria region and Ethiopia 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 Senegal, Guinea Bissau, Guinea, Sierra Leone, Northern Cote D'Ivoire, Burkina Faso, southern Mauritania, Mali, southern Niger, northern (Ghana, Togo and Benin), Nigeria, southern Chad, Cameroon, CAR, northern DRC, South Sudan, Ethiopia and Eritrea.

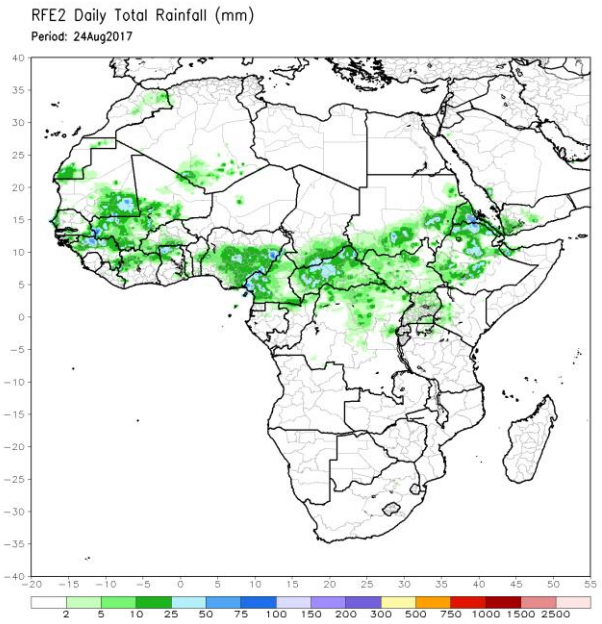
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (August 24, 2017)

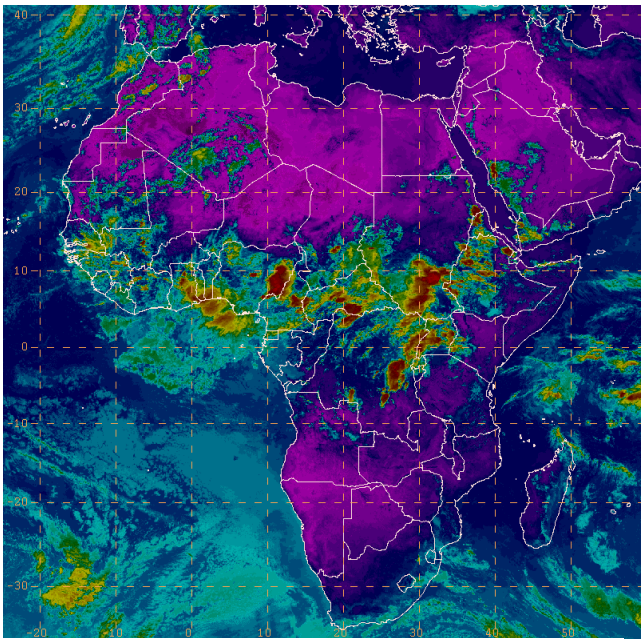
Moderate to locally heavy rainfall was observed over parts of southern Senegal, Guinea, Guinea Bissau, Northern Cote D'Ivoire, southern Burkina Faso, southern Mauritania, southern Mali, northern Ghana, many parts of Nigeria, Cameroon, southern Chad, CAR, northern DRC, southern Sudan, South Sudan, Ethiopia and Eritrea.

2.2. Weather assessment for the current day (August 25, 2017)

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



IR Satellite Image (valid 1422 August 25 , 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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