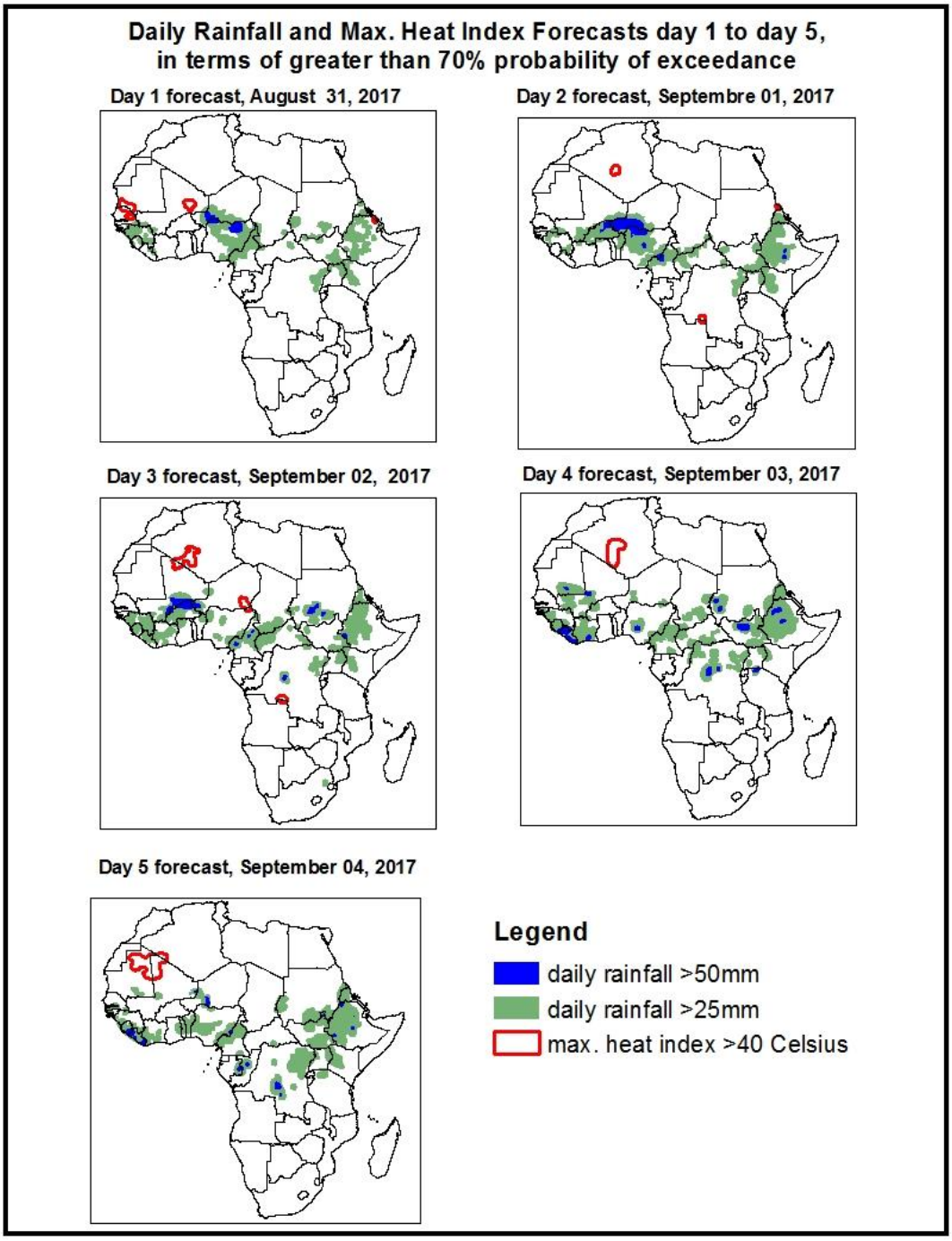
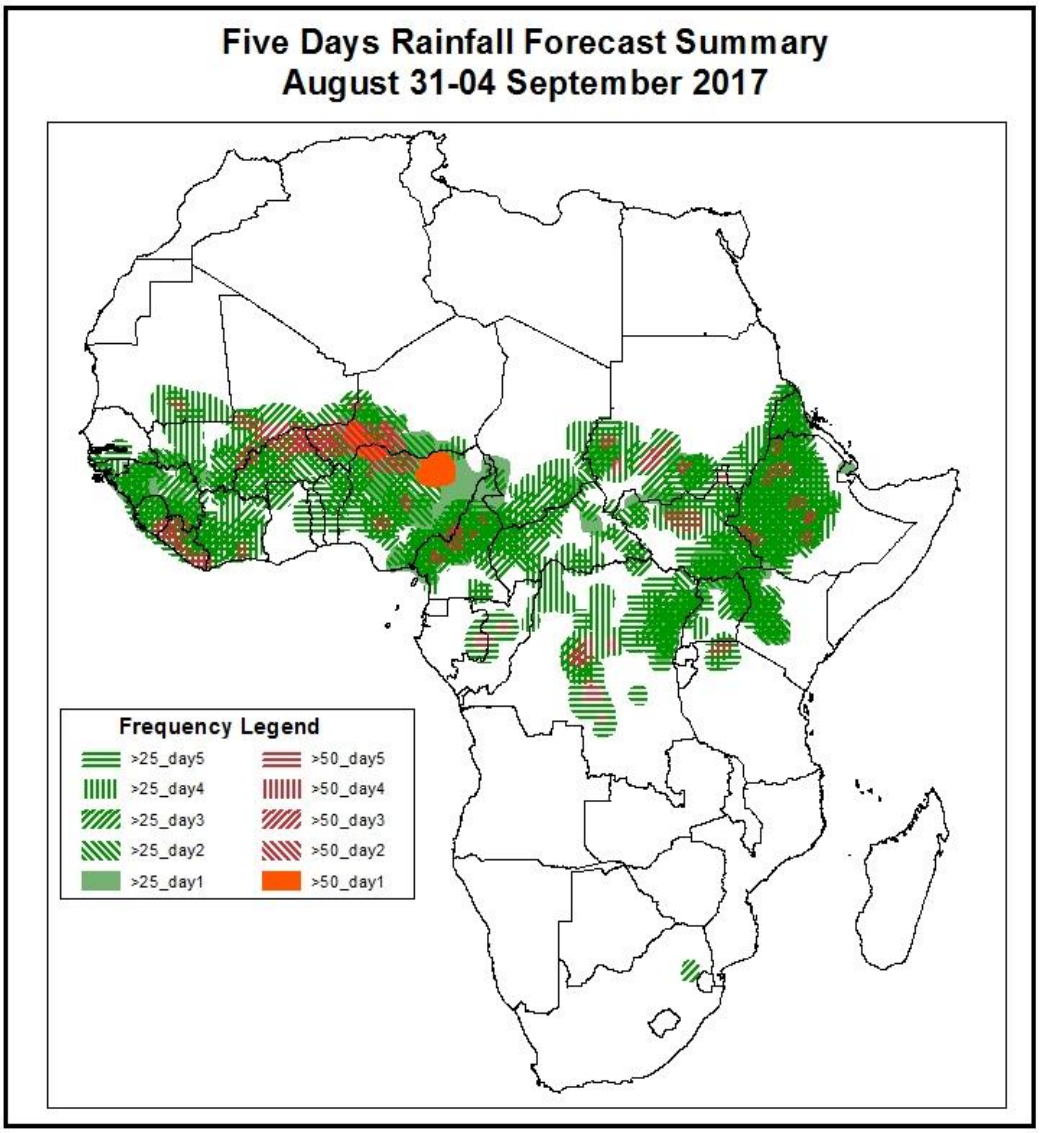
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on August 30, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts *(valid: August 31–04 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.



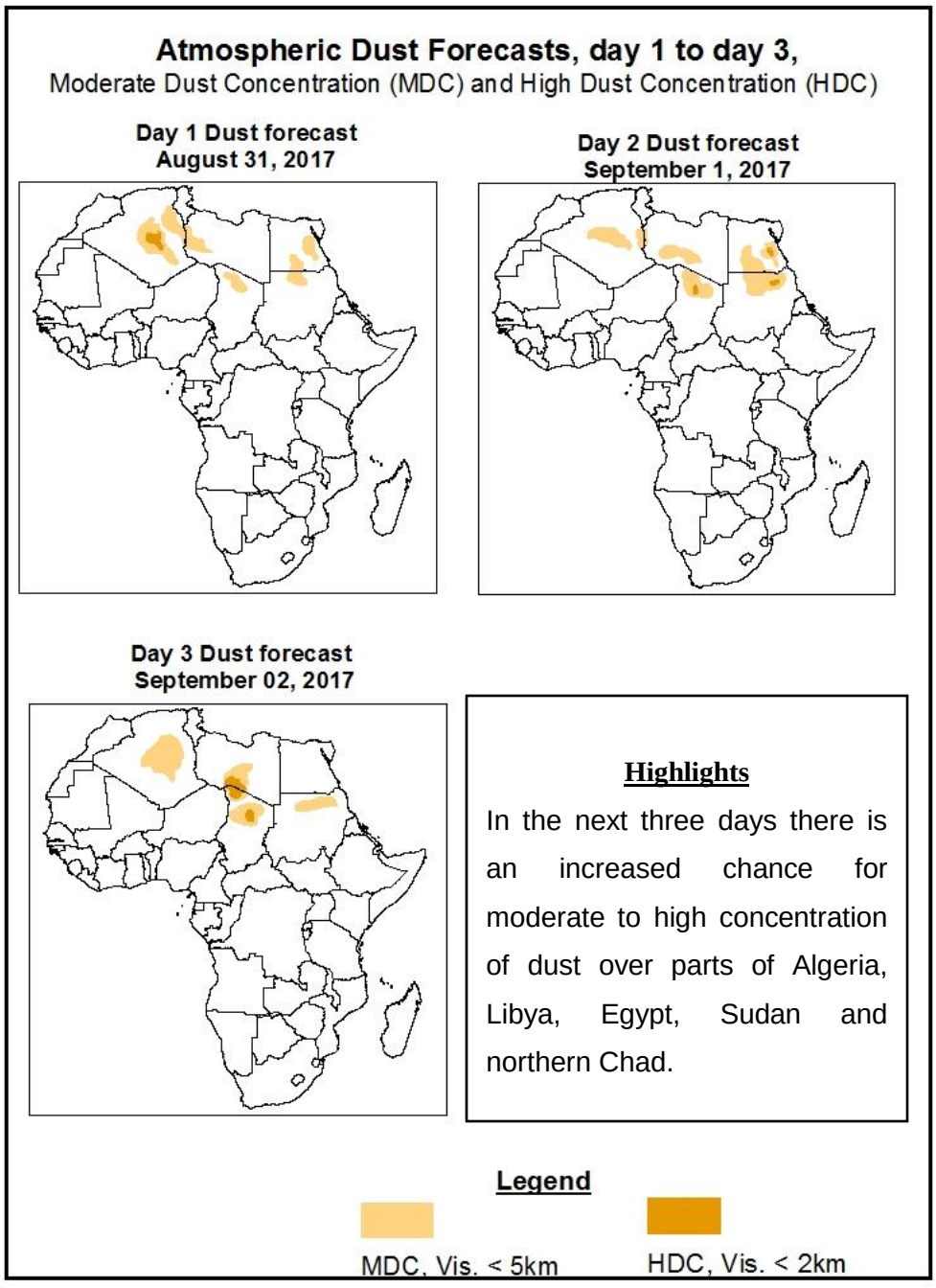


Highlights

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 southern DRC, northern Tanzania and the Lake Victoria region towards Kenya 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 Guinea Bissau, Guinea, Sierra Leone, Liberia, southern Mali, Cote D'Ivoire, Burkina Faso, northern (Ghana, Togo and Benin), south western Niger, Nigeria, Cameroon, southern Chad, CAR, parts of Gabon and the Republic of Congo, DRC, southern Sudan, South Sudan, Uganda, northern Tanzania, Kenya, Ethiopia and Eritrea.

1.2. Atmospheric Dust Concentration Forecasts (valid: August 31-02 Sept.,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 31-04 September 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually weaken from its central pressure value of 1028hpa to 1022hpa towards the end of the forecast period.

The St. Helena High Pressure system over the Southeast Atlantic Ocean is expected to intensify from its central pressure value of 1028hpa to 1036hpa in the next 48hours and then thereafter, gradually weakens to 1033hpa 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 1038hpa to 1032hpa towards the end of the forecast period with its center gradually moving eastward.

The heat low over western Sahel is expected to fill up from its value of 1005hpa to 1008hpa in the next 72hours and then deepens back to its initial value of 1005hpa towards the end of the forecast period.
Over the central Sahel, the heat low is expected to gradually deepen up from 1010hpa to 1007hpa towards the end of the forecast period.
Over the Sudan area, the heat low is expected to maintain its value of 1008hpa in the next 72hours and then deepen to 1006hpa towards the end of the forecast period.

At 925hPa, there is a convergence over Sudan which is dominated by the north easterlies but moving to the central and west Sahel the south westerlies dominated the cyclonic circulation during the forecast period. Therefore, the undulation of the trough line tilts more to the north in central and the west Sahel region.
Another convergence is established over southern DRC with the trough line extending to Tanzania and Kenya towards Lake Victoria moving to 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, Sudan and northern

Chad. The south westerlies dominate the flow over the Central and West Sahel during the forecast period.

At 850hPa, there is a cyclonic circulation over West Africa with a low pressure system which is dominated by a maritime flow established over the Western Sahel region and extending to its coasts with its development sustained for the next 72hours as a result weakening the subtropical high pressure system. But towards the end of the forecast period the continental winds retards and dominate the flow over the region.
Over the central Sahel and the Sudan area the vortices are dominated by continental flow.
The convergence zone over central and some parts of east Africa is intensifying and continually developing with a slight propagation to the south eastern direction towards the end of 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.

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 southern DRC, northern Tanzania and the Lake Victoria region towards Kenya 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 Guinea Bissau, Guinea, Sierra Leone, Liberia, southern Mali, Cote D'Ivoire, Burkina Faso, northern (Ghana, Togo and Benin), south western Niger, Nigeria, Cameroon, southern Chad, CAR, parts of Gabon and the Republic of Congo, DRC, southern Sudan, South Sudan, Uganda, northern Tanzania, Kenya, Ethiopia and Eritrea.

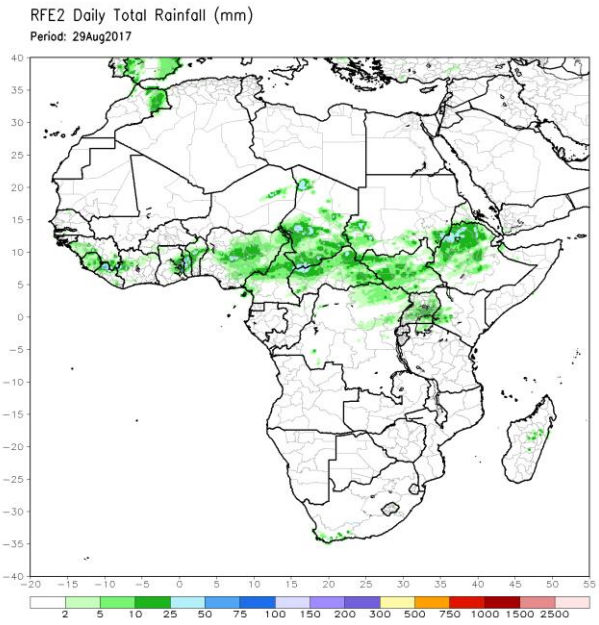
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (August 29, 2017)

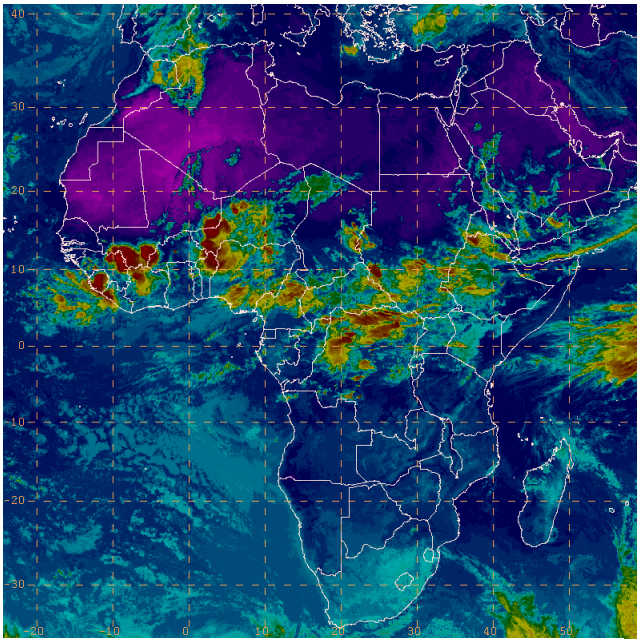
Moderate to locally heavy rainfall was observed over parts of Guinea, Guinea Bissau, Sierra Leone, Liberia, northern Cote D'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon, southern Chad, CAR, southern Sudan, South Sudan, Uganda and Ethiopia.

2.2. Weather assessment for the current day (August 30, 2017)

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



IR Satellite Image (valid 1722 August 30 , 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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