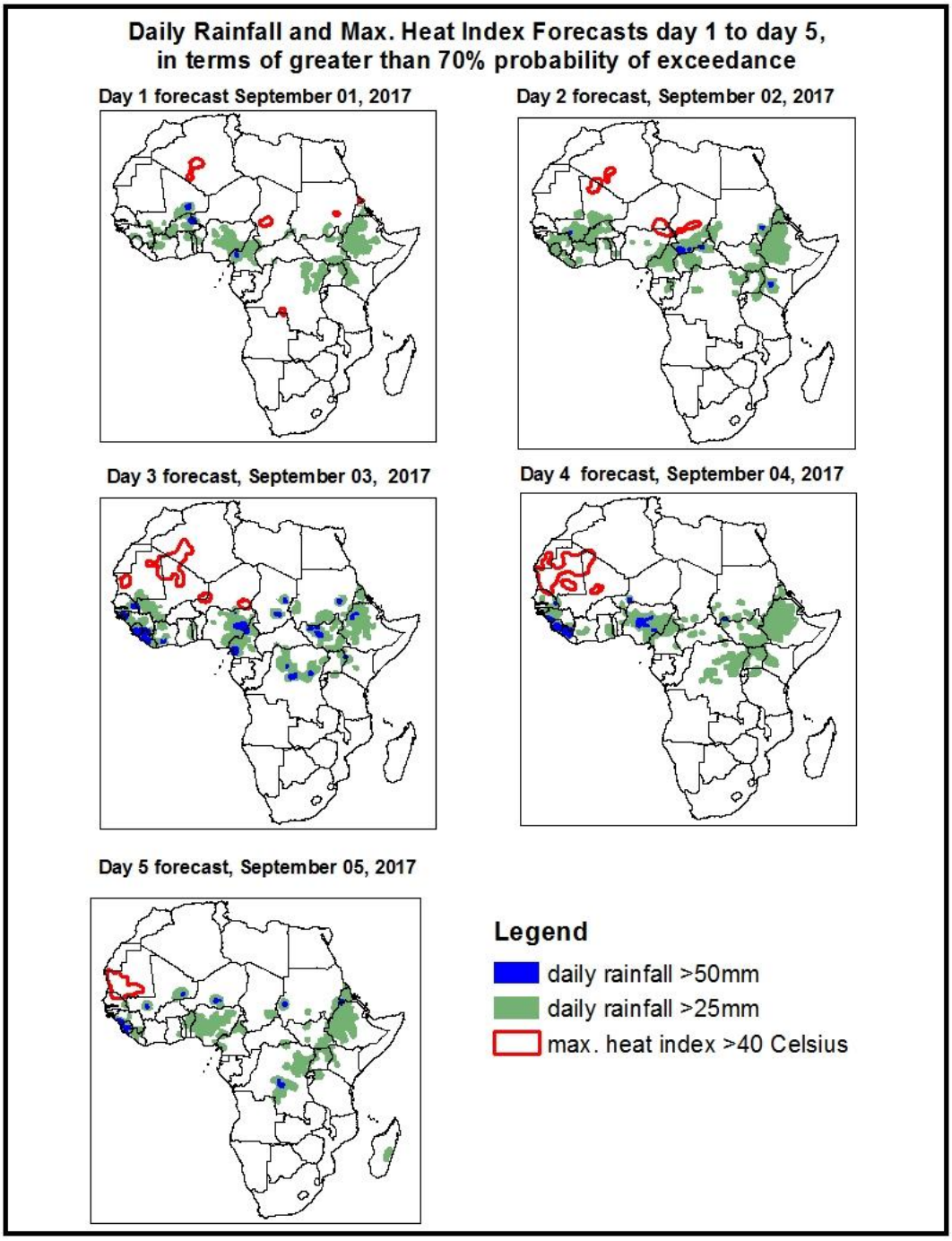
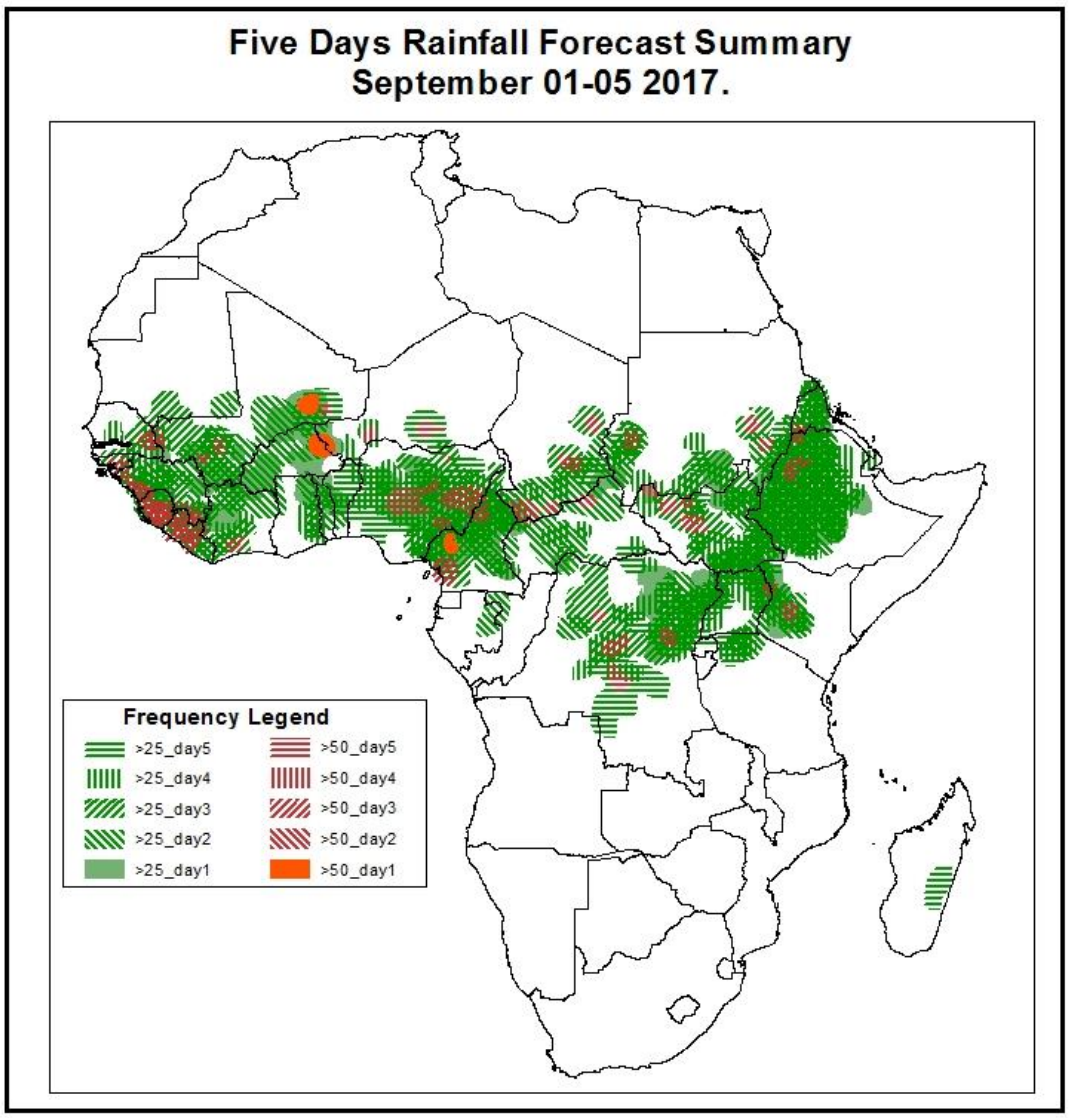
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1. Rainfall, Heat Index and Dust Concentration Forecasts, (Issued on August 31, 2017)

1.1. Daily Rainfall and Maximum Heat Index Forecasts (valid: September, 01-05 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.



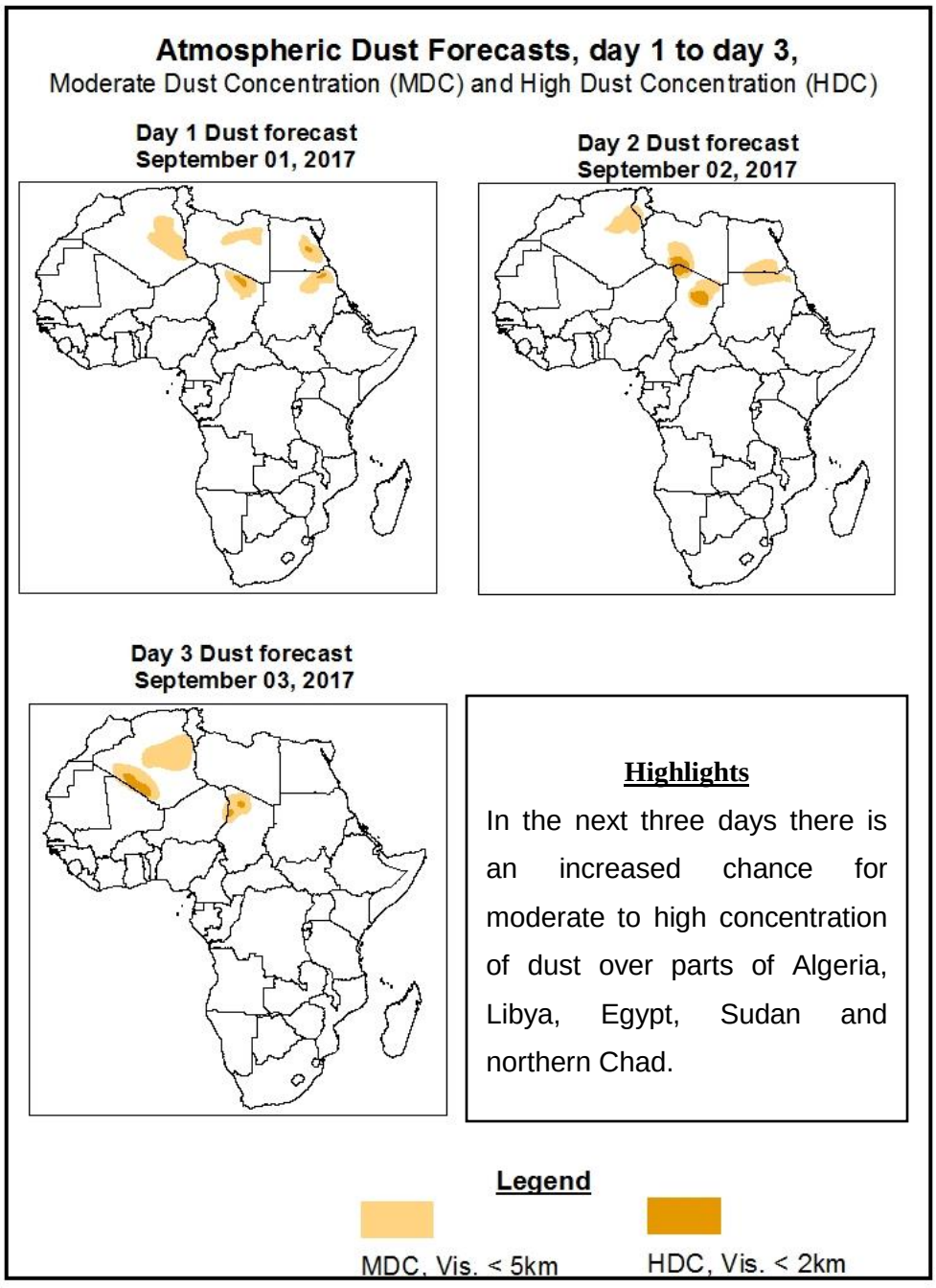


Highlights

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 DRC towards the Lake Victoria 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, Liberia, southern Mali, Cote D'Ivoire, Burkina Faso, Ghana, Togo, Benin, southern Niger, Nigeria, Cameroon, southern Chad, CAR, DRC, southern Sudan, South Sudan, Uganda, Kenya, Ethiopia and Eritrea.

1.2. Atmospheric Dust Concentration Forecasts (valid: September 01-03 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: September 01-05 2017*

The Azores High Pressure system over the North Atlantic Ocean is expected to gradually weaken from its central pressure value of 1028hpa to 1021hpa in the next 72hours. Thereafter, it slightly intensifies to 1024hpa 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 1034hpa to 1038hpa in the next 24hours and then thereafter, gradually weakens to 1031hpa 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 1037hpa to 1026hpa towards the end of the forecast period with its center gradually moving eastward.

The heat low over western Sahel is expected to slightly fill up from its value of 1008hpa to 1009hpa in the next 48hours and later deepens to 1004hpa towards the end of the forecast period.
Over the central Sahel, the heat low is expected to deepen up from 1009hpa to 1007hpa in the next 48hours and later fill up to 1011hpa 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 fill up to 1012hpa towards the end of the forecast period.

At 925hPa, there is a convergence which is dominated by the continental winds over central Sahel and Sudan area in the next 72hours but after that the maritime winds gradually start to retard the continental winds towards the end of the forecast period.
Over the west Sahel, the maritime winds dominated the cyclonic circulation over the region during the forecast period. Therefore, the undulation of the trough line tilts more to the north in the west Sahel region.
Another convergence is established over DRC with the trough line extending 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 72hours 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 West Sahel during the forecast period.

At 850hPa, there is a cyclonic circulation over West Africa with series of vortices which are mostly dominated by a maritime flow established over the central Sahel and the Western Sahel region moving westward and extending to the coasts towards the end of the forecast period.
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 into the region thereby creating a series of cut-off low over the region.
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 DRC towards the Lake Victoria 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, Liberia, southern Mali, Cote D'Ivoire, Burkina Faso, Ghana, Togo, Benin, southern Niger, Nigeria, Cameroon, southern Chad, CAR, DRC, southern Sudan, South Sudan, Uganda, Kenya, Ethiopia and Eritrea.

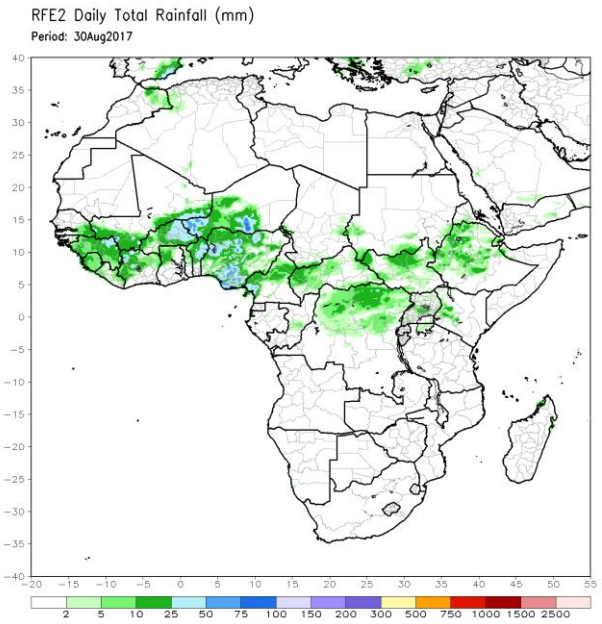
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (August 30, 2017)

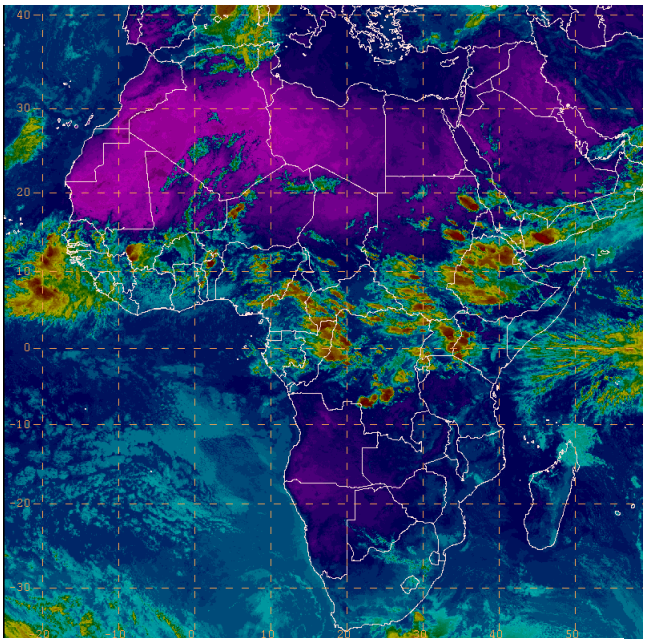
Moderate to locally heavy rainfall was observed over parts of western Senegal, Guinea, Sierra Leone, parts of Liberia, parts of Mali, northern Cote D'Ivoire, Burkina Faso, northern (Ghana, Togo, Benin), Nigeria, Cameroon, parts of CAR, northern DRC, parts of South Sudan, Uganda, Kenya and Ethiopia.

2.2. Weather assessment for the current day (August 31, 2017)

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



IR Satellite Image (valid 1552 August 31 , 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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