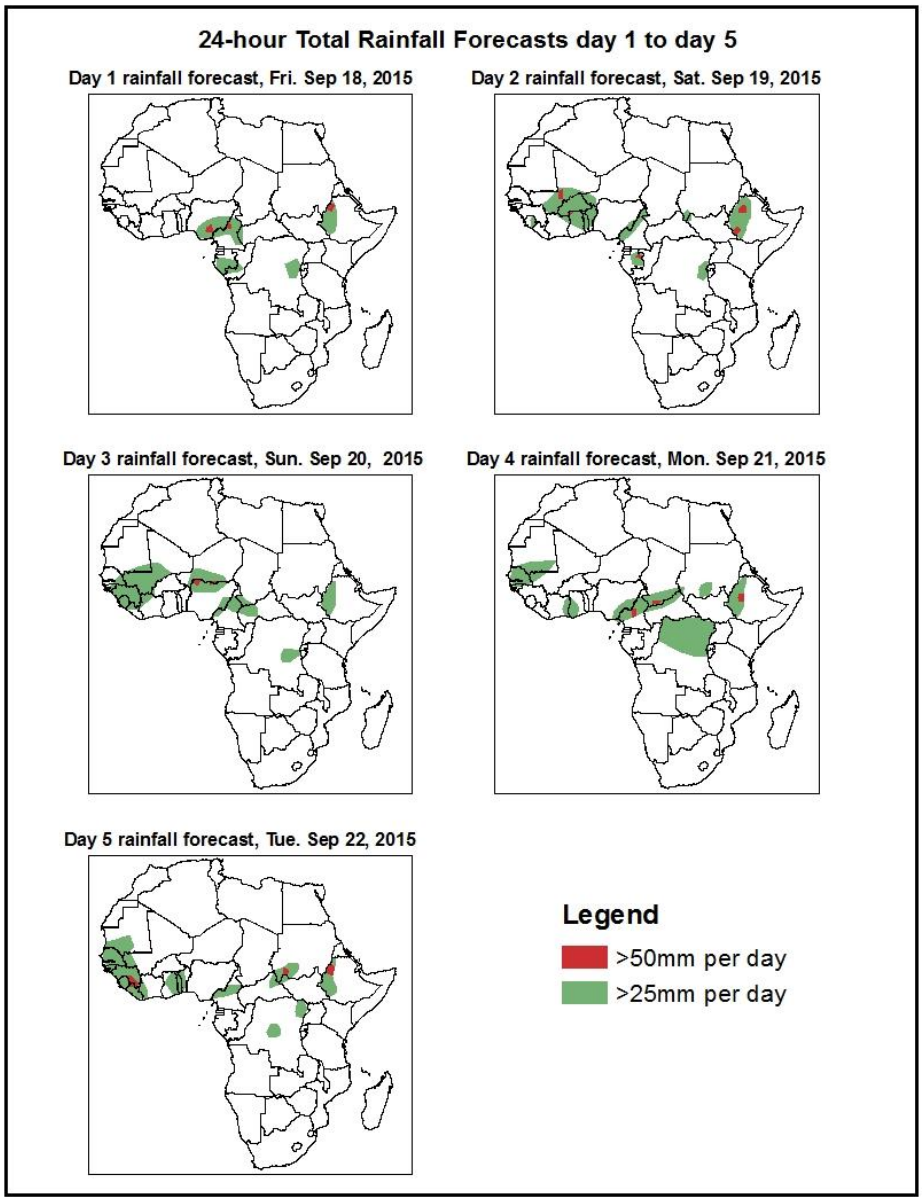
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

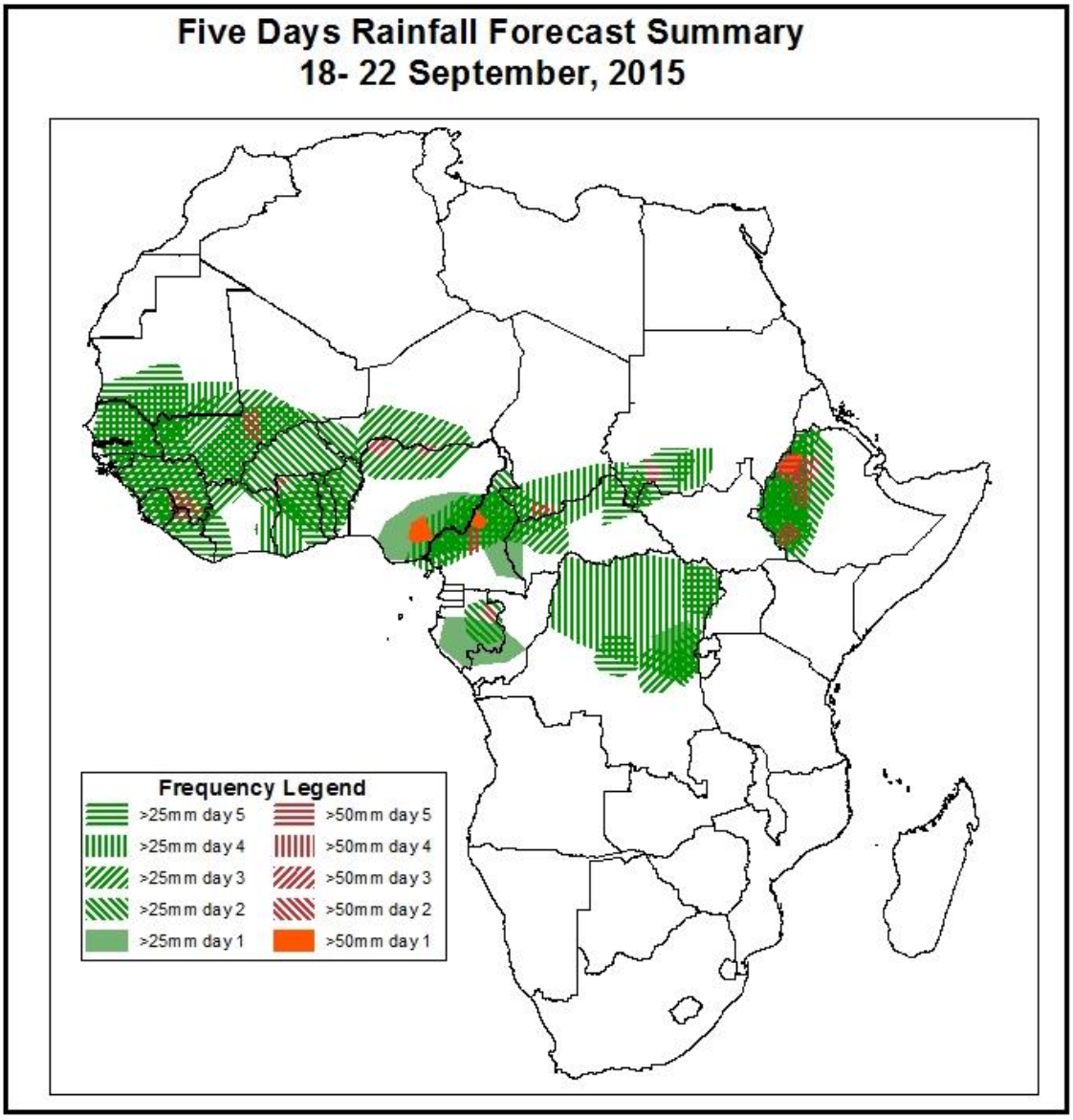
1. Rainfall and Dust Concentration Forecasts

Valid: 06Z of Sep 18 – 06Z of Sep 22 2015. (Issued on September 17, 2015)

1.1. 24-hour Cumulative Rainfall Forecasts

The forecasts are expressed in terms of high probability of precipitation (POP), based on the NCEP/GFS, ECMWF and the NCEP Global Ensemble Forecasts System (GEFS) and expert assessment.





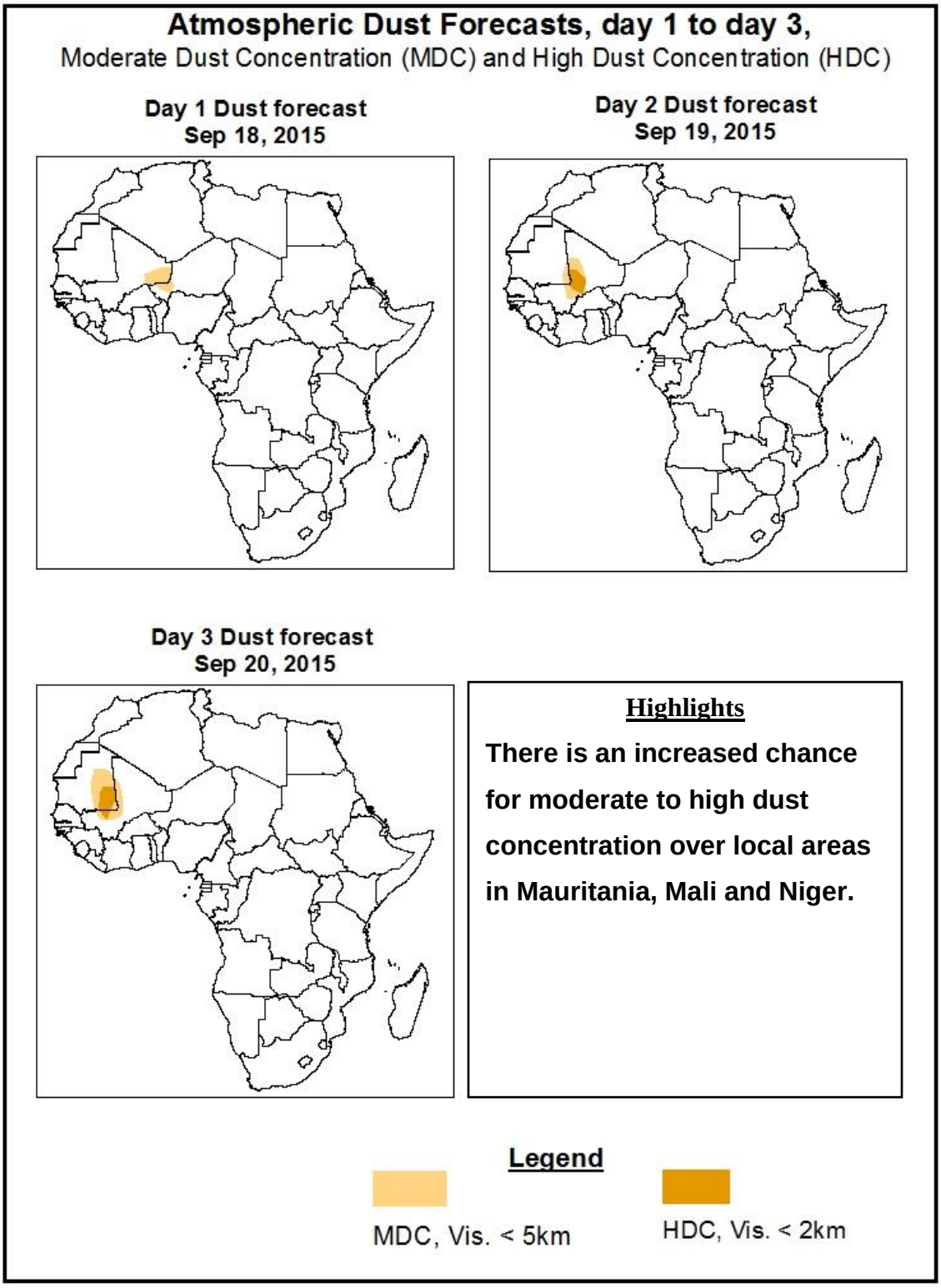
Summary

In the coming five days, monsoon flow from the Atlantic Ocean with its associated convergence across West and Central Africa will continue enhancing rainfall over southern Senegal, Guinea-Bissau, Guinea-Conakry, Sierra Leone, Liberia, southwestern Mali, western Cote d'Ivoire, northern Ghana, Nigeria, western and northern Cameroon, portions of Chad and south western Sudan. Seasonally moderate to heavy rainfall is also expected to continue across western Ethiopia and North eastern DRC.

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Sep 18– 12Z of Sep 20, 2015

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: 18 – 22 September, 2015

The Azores high pressure system over Northeast Atlantic Ocean is expected to strengthen gradually moving Eastward then returning to its climatological position, with its central pressure value increasing from about 1019hpa to 1028hpa during the forecast period, according to the GFS model.

The ridge associated with the St Helena high pressure system over the Southeast Atlantic Ocean is expected to extend into southwestern Indian Ocean, while breaking into two high pressure systems in 96 hours with low pressure area with a central value of 1003hpa between the two high pressure cells before the subtropical high pressure systems resume their climatological position towards the end of the forecast period. The first pressure cell associated with St Helena high pressure system is expected to slightly intensify in 24 hours from 1035hpa up to 1036hpa, then weakening while moving eastward with its central pressure values decreasing from 1032hpa to 1021hpa at the end of the forecast period.

The second high pressure cell broken from the St Helena High takes position of the Mascarene high pressure system while relaxing gradually with a central pressure value of 1033hpa at the end of the forecast period.

A thermal low over Niger is expected to propagate westward towards coastal Mauritania Mali covering large part of West Africa through 24 to 120 hours, while slightly filling up. Its central pressure value is expected to increase from 1008hpa in 24 hours to 1010hpa through 24 to 72 hours, and it tends weakened towards the end of the forecast period with values raging between 1006hpa to 1009hpa.

At 925Hpa, a cyclonic circulation over Niger is expected to propagate towards coastal area of Senegal across Mali through 24 to 120 hours. Zonal wind convergence is expected to prevail in the region between Chad and Sudan during the forecast period. Meridional wind convergence is expected to remain active in the region between Sudan and Northeast DRC towards western coast of Ethiopian region during the forecast period.

At 850Hpa level, a cyclonic circulation over Niger is expected to propagate towards coastal Senegal during the forecast period.

At 700hpa level, a trough in easterlies near the coast of the Gulf of Guinea is expected to propagate northwestward into the western parts of Gulf of Guinea countries while deepening towards end of the forecast period.

Summary

In the coming five days, monsoon flow from the Atlantic Ocean with its associated convergence across West and Central Africa will continue enhancing rainfall over southern Senegal, Guinea-Bissau, Guinea-Conakry, Sierra Leone, Liberia, southwestern Mali, western Cote d'Ivoire, northern Ghana, Nigeria, western and northern Cameroon, portions of Chad and south western Sudan. Seasonally moderate to heavy rainfall is also expected to continue across western Ethiopia and North eastern DRC.

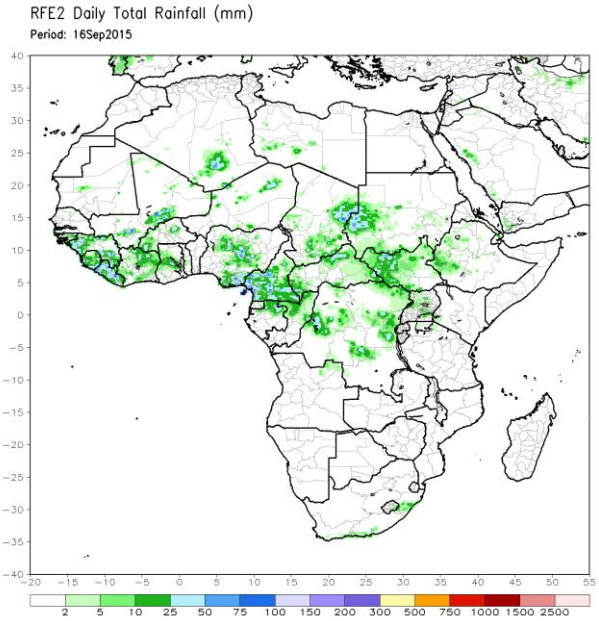
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (September 16, 2015)

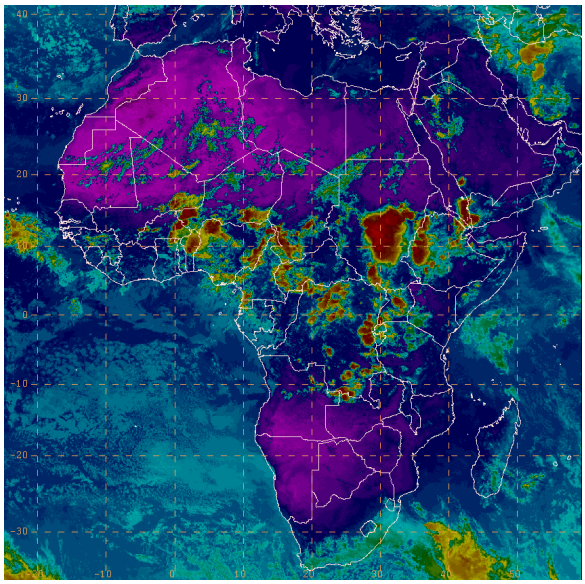
Moderate to locally heavy rainfall was observed over southern western Burkina Faso, northern Cote d'Ivoire and central Ghana, southwestern Cameroon, Eastern Chad bordering Sudan, western CAR, local areas of Ethiopia and central DRC.

2.2. Weather assessment for the current day (September 17, 2015)

Intense clouds are observed portions of West Africa, in south Sudan and central Sudan, west part of Ethiopia, many places of Central Africa countries: East of DRC, Burundi and Rwanda.



IR Satellite Image (valid 1530 of September 17, 2015)



Previous day rainfall condition over Africa (top Left) based on the NCEP CPCE/RFE and current day cloud cover (top right) based on IR Satellite image

Author: Innocent Dudu (Burundi Hydro-meteorological Department / CPC-African Desk); innocent.dudu@noaa.gov