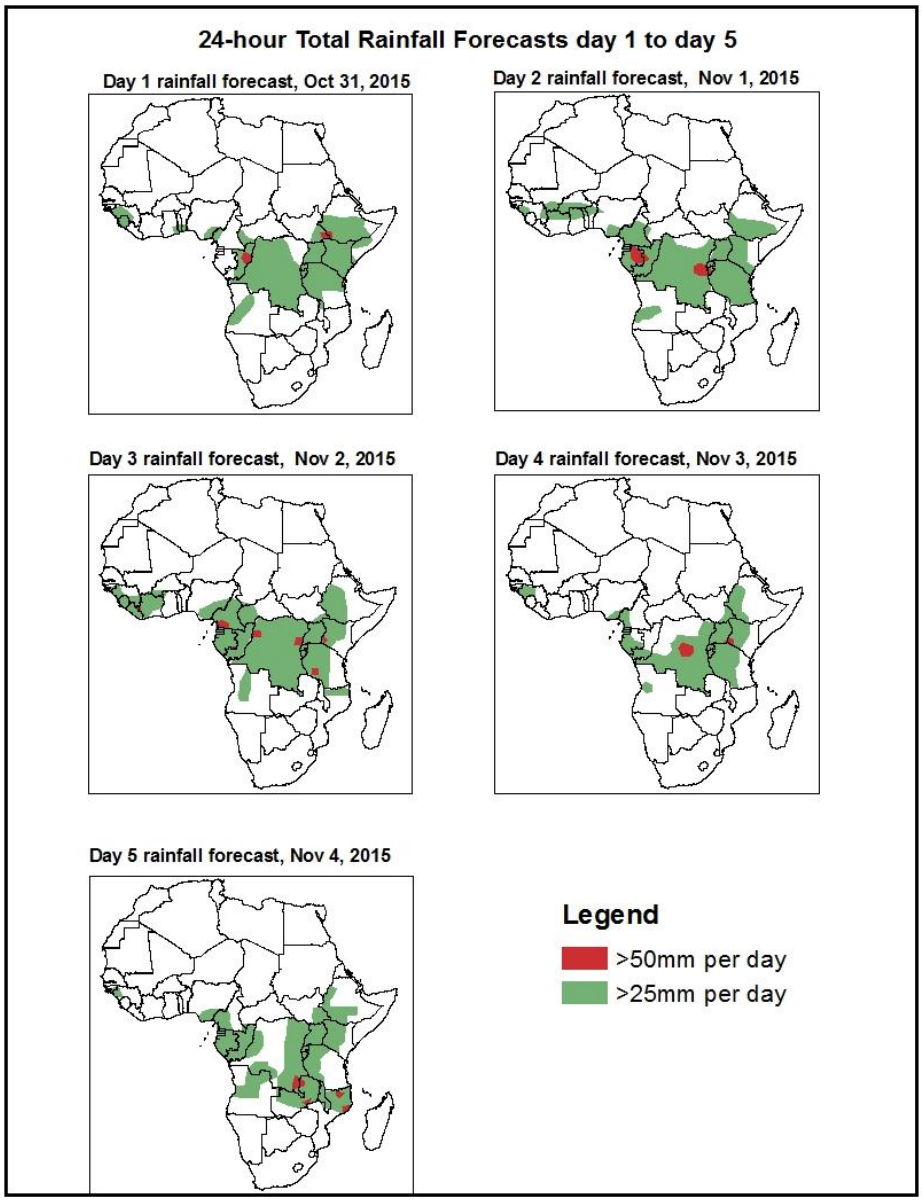
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

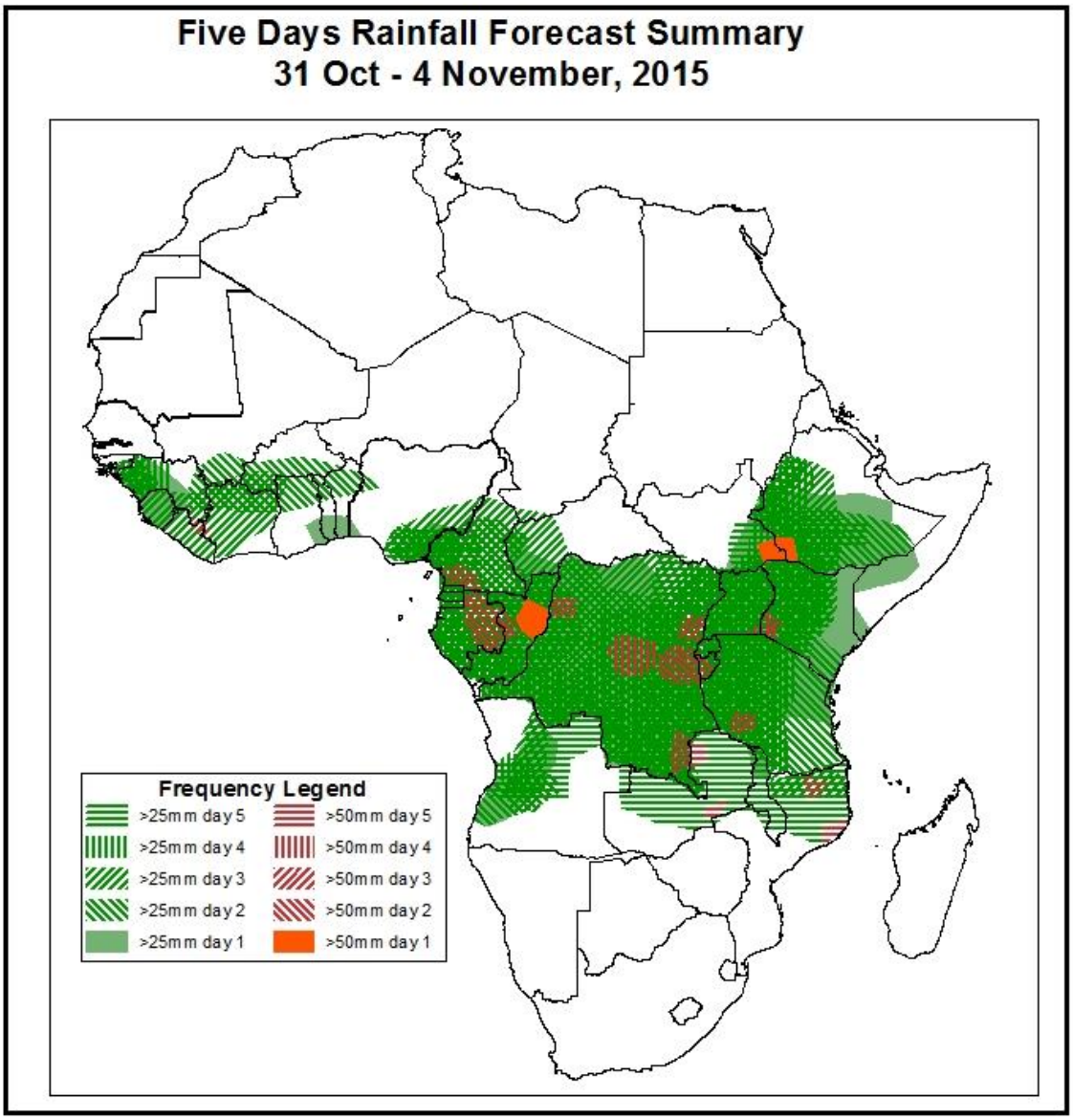
1. Rainfall and Dust Concentration Forecasts

Valid: 06Z of Oct 31 – 06Z of Nov 4, 2015. (Issued on October 30, 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.



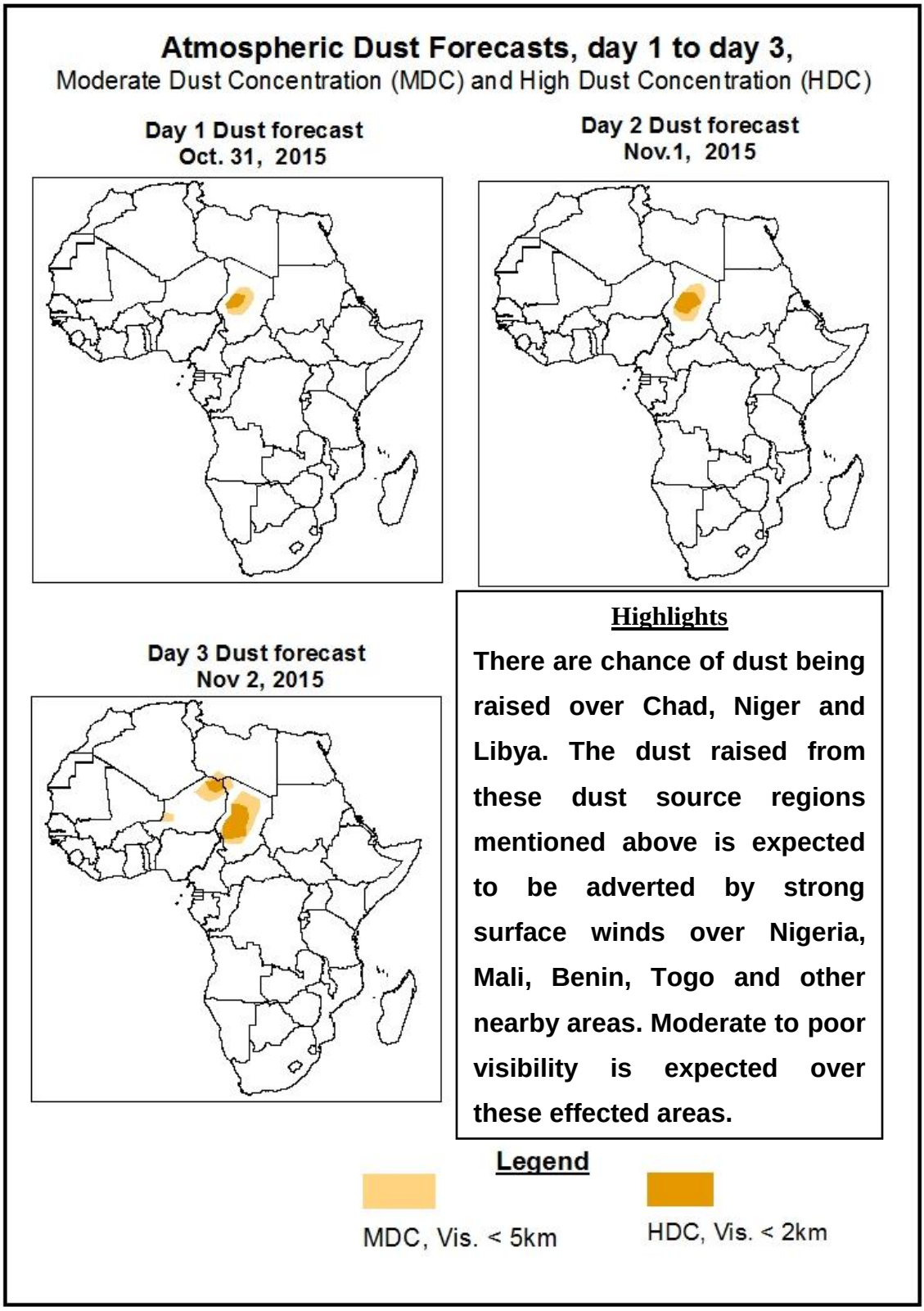


Recent assessment of rainfall occurrence for the next five days over West, central and Eastern Africa reviews that the Intertropical Discontinuity (ITD), is expected to propagate between 9 and 11 degree north of the Equator. Therefore Weather activities will occur southwards of the ITD, thereby limiting weather occurrence mostly to the coastal regions, mountain ranges, elevated highlands and other weather high trigger zones over the West African region. The meridional convergence over DRC and the East African monsoon over the Horn of Africa will still remain active; therefore enhance rainfall is expected to continue over central, East and the Horn of Africa. Therefore the following places are expected to have moderate to heavy rainfall. Guinea, Sierra Leone, Liberia, Burkina Faso, Ghana, Togo, Benin, and Nigeria. Cameroun, Congo, Equatorial Guinea, CAR, DRC in Central Africa and South Sudan ,Kenya, Uganda, Rwanda, Burundi, Tanzania, in East Africa and Ethiopia and Somalia in the horns of Africa. Also Zambia and Malawi.

1.2. Atmospheric Dust Concentration Forecasts

Valid: 12Z of Oct 31– 12Z of Nov2, 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: 31 Oct – 4 November, 2015

The Azores high pressure system is expected to weaken during the next 48 hours, its center value increasing by 2 mb from 1028 to 1026 mb. The High pressure system will continue to weaken in its central pressure value in the next 72 hours by 3 mb, thereby having a central pressure value of 1023 mb and weaken further to 1021 mb at the end of the forecast period according to GFS models.

Throughout the forecast period, the extension of the Azores high relatively known as the Libyan high pressure system, still maintained its position over Libya like the previous days. The 1016 isobar associated with this high was still positioned across 20 degree north of the equator. As a result of this, dust have been raised in these past few days over the dust source regions of West and Northern Africa and propagated towards surrounding areas, This is an indication that active weather activities will soon move over to the southern hemisphere.

The St Helena high pressure system over the Atlantic Ocean is expected to intensify in the next 48 hours, by 5 mb with its central pressure value increasing from 1031 to 1036 mb. It will later weaken from 1036 to 1023 mb at the end of the forecast period according to GFS Models. This high pressure system unlike yesterday weakens remarkably and moved over southern Africa in the next 48 hours. This high pressure system merger with Mascarene high pressure system in the next 72 hours to form a broad high pressure system.

The Mascarene high pressure system is expected to weaken within the next 72 hours with central pressure values varying from 1029 mb to 1023 mb, and then intensifying in the next 96 hours by 8 mb, having a center pressure value of 1031 mb. At the end of the forecast period, the pressure center is expected to weaken to 1029 mb, according to the GFS model. This high pressure system is expected to merge with St Helena high pressure system forming a board high pressure system in the next 72 hours.

The Equatorial low pressure system was observed over West, Central and East Africa. Extending from Eastern Africa through Central Africa up to Liberia in Western Africa. Its central pressure values deepen from 1010 mb to 1008 mb over East and Western Africa. At the end of the forecast period the center pressure values this broad thermal low was observed to fill to 1010 mb at the end of the forecast period.

At 925 mb, at this level, Maritime winds from the Atlantic Ocean were still observed streaming over most countries in West Africa namely Guinea, Sierra Leone, Ghana, Togo, Benin Republic, and Nigeria. Maritime winds were also observed over Cameroun and Gabon and into the inlands of central Africa like Congo, central Africa Republic and DRC. An Anticyclone was observed over the Indian Ocean pushing maritime wind into the inlands of Kenya, Uganda, Somalia, South Sudan and Ethiopia thereby establishing the Congo boundary convergence. Whereas The Northeasterly continental wind flow pattern was predominantly over Mali, Chad, Niger and Sudan.

At 850 mb level, an anticyclone was observed during the forecast period over Burkina Faso, thereby inducing an anticyclonic flow over some parts of West Africa namely Senegal, Burkina Faso, Ghana, Togo and Benin. A high pressure system was also observed over the Indian Ocean this induced maritime wind flows patterns to stream into Congo, CAR and DRC in Central Africa and Kenya. Uganda, Ethiopia and Somalia in East Africa. The winds at this level were predominantly easterlies,

At 700 mb level, Jet streams were observed over the coastal areas of western Africa. High pressure systems were observed over Algeria and central Sudan, establishing anticyclonic flow patterns over Algeria, Mauritania, Southern chad, Niger and Northern Nigeria. The easterly jets are expected to propagate westwards from central Sudan toward the gulf of Guinea during the forecast period and Maritime winds were also observed streaming into East and central Africa from the Indian Ocean.

At 200 mb level, Strong Meridional wind flow was observed over West and Eastern Africa. The jets associated with this meridional flow had speeds ranging from 30 to 50 Knots. Divergent Flow patterns were observed over East, Central and most part of West Africa.

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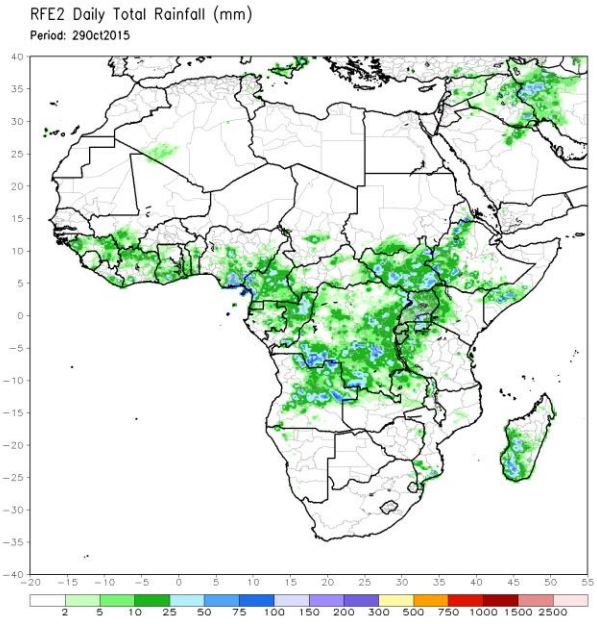
2.0. Previous and Current Day Weather over Africa

2.1. Weather assessment for the previous day (October 29, 2015)

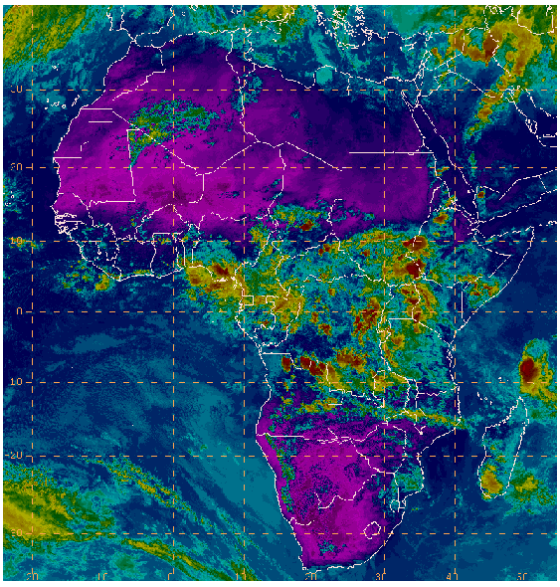
Moderate to locally heavy rainfall was observed over Guinea, Sierra-Leone, Ivory Coast, Liberia, Ghana, Benin, Nigeria, Cameroun, Congo, Gabon, Chad, CAR, DRC, Uganda, Burundi, Kenya, Tanzania, Rwanda, Kenya, Tanzania, South Sudan, Ethiopia and Somalia.

2.2. Weather assessment for the current day (October 30, 2015)

Convective clouds with small and large ice particles observed over most parts of West Africa, Central and East Africa, namely Guinea, Sierra-Leone, Ivory Coast, Burkina Faso, Ghana, Togo, Benin and Nigeria in West Africa and Cameroon, Chad, Gabon, Congo, Angola. CAR, DRC in central Africa and South Sudan, Kenya, Uganda, Rwanda, Tanzania, Somalia, Ethiopia in East Africa. Dust plume observed over Algeria, Mali, Northern Burkina Faso, Niger, Northern Nigeria, Chad and Sudan.



IR Satellite Image (valid 1600z of October 30, 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

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