



# Climate Services for Disaster Risks Reduction in Africa



A project led & implemented by the  
African Centre of Meteorological  
Applications for Development

# THE CLIMATE IN AFRICA 2015



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# Climate Services for Disaster Risks Reduction in Africa



## ACMAD-MESA CLIMATE CHANGE ASSESSMENT Bulletin N° 2, April 2016

### THE CLIMATE IN AFRICA 2015

African Centre of Meteorological Applications for Development – ACMAD –



Climate Services for the African Union

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## 1. INTRODUCTION

The WMO has been publishing a peer reviewed brochure on the WMO statement on the status of the global climate each year since 1993. Based on the success of this publication on climate assessment and its worldwide recognition as an authoritative source on the state of the climate supporting the Global Framework of Climate Services (GFCS) which has a major focus on Africa, the WMO, in consultation with the African Centre of Meteorological Applications for Development (ACMAD) is issuing the annual statement of climate in Africa. The climate assessment reveals trends, variability and shocks enabling the planners and policy makers to develop and implement long term adaptation and mitigation strategies. The ACMAD MESA THEMA Climate Assessment Service has released "*The Climate in Africa 2015*" Report supplemented by separate brief *Summary for Policy Makers* to sensitize and meet the growing need for climate variability and change information products for policy decision makers and planners working at continental, regional, national and local levels. Essentially, this report is critical for planners and decision makers' evidence-based solutions that build climate resilience for sustainable development.

The overall objective of the climate change assessment service in the ACMAD-MESA AU THEMA project is to inform decision-makers in formulating far-sighted long-term policies on climate change adaptation and mitigation strategies to build climate resilient societies and economies over Africa and contribute to the implementation of the Paris Agreement.

This document provides diagnostics related to the observed drought in southern Africa, northern Morocco, northern Ethiopia and Eritrea, and well above average summer precipitation in the Sahel. It also presents information on floods and high temperatures in Africa related to the strong El Niño event recorded in 2015.

## 2. CONTINENTAL CLIMATE ASSESSMENT

### 2.1. Temperature

There is a need to identify the temperature anomalies hot spots to support policy and decision making in the agriculture, water resources, health and energy sectors for timely intervention. The increasing temperature anomalies have caused heat waves resulting in several deaths and energy supply disruption over many parts in Africa.

The year 2015 in Africa ranks as second warmest year (see Figure 1) recorded since 1950 with an anomaly of **+1.7°C** above the 1961-1990 average. However, 2010 was the warmest year for the continent since 1950. The temperature trend for Africa shows an increase of 2°C per century since 1950 which strengthened to about **3°C per century** since 1990 (Figure 2). **Given the significant warming and recent trend for Africa, a strategic objective to limit the all Africa warming well below 2°C is to be proposed during the review of the draft AU Strategy on Climate Change. An all Africa warming well below 2°C would mean a maximum of 1.5°C global warming as mentioned in the Paris Agreement. African negotiators on climate change are encouraged to define mitigation and adaptation policies and plans to keep continental warming below 2°C therefore contributing to limit the global warming between 1° and 1.5°C.**

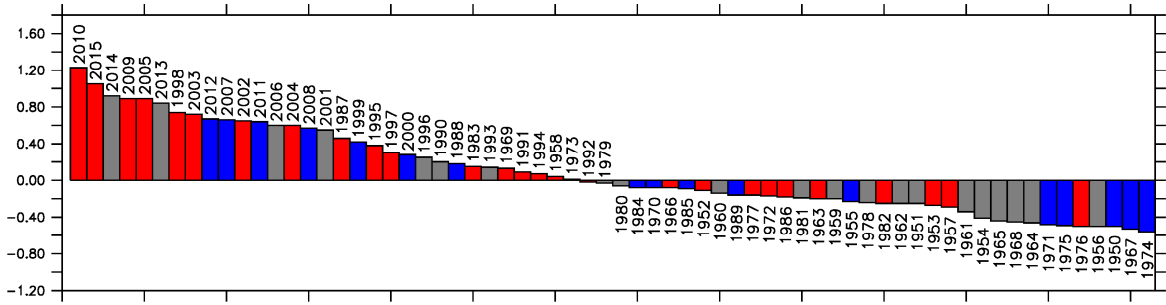


Figure 1: Ranked temperature anomalies (°C) for Africa for 1950-2015 relative to 1961-1990 with strong El Niño years in red, La Niña in blue and neutral years in gray; gridded data based on station observations. Data source: NOAA/NCEP/CPC/ CAMS.

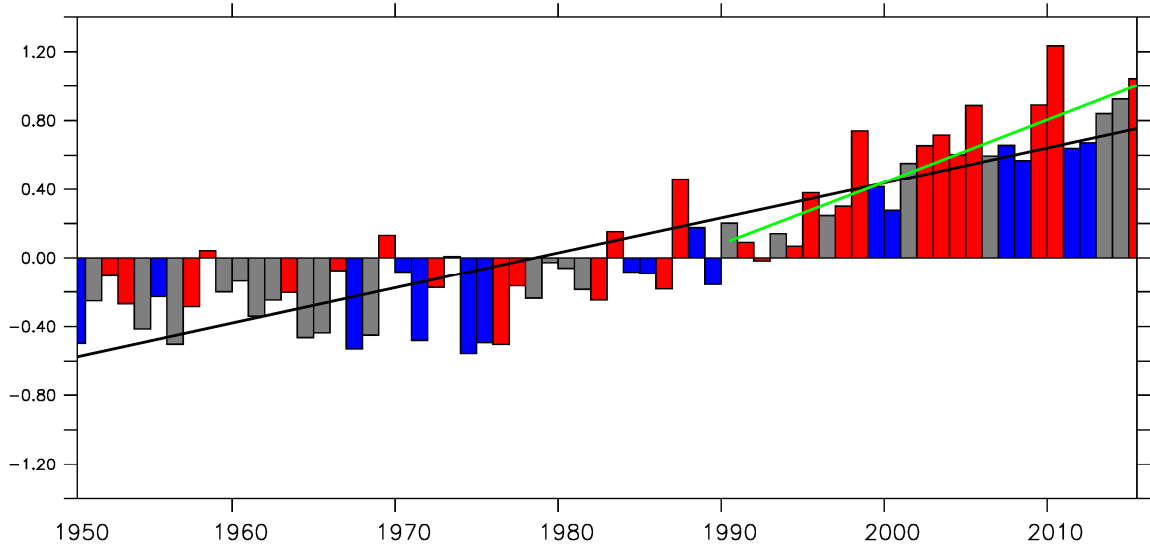


Figure 2: Temperature anomalies (°C) and trends for Africa for 1950-2015 (black) and 1990-2015 (green), relative to the climatology 1961-1990; strong El Niño year are shown in red and La Niña years in blue; gridded data based on station observations. Data source: NOAA/NCEP/CPC/ CAMS.

In 2015, significant temperature anomalies (+3°C and above) were recorded over Eritrea, Eastern Sudan, northern Ethiopia and large part of Southern Africa countries with a peak over southwestern Angola (see Figure 3). Over southern Africa, significant warming recorded was associated with substantial precipitation deficit leading to severe drought with negative hydrological agricultural impacts recorded.

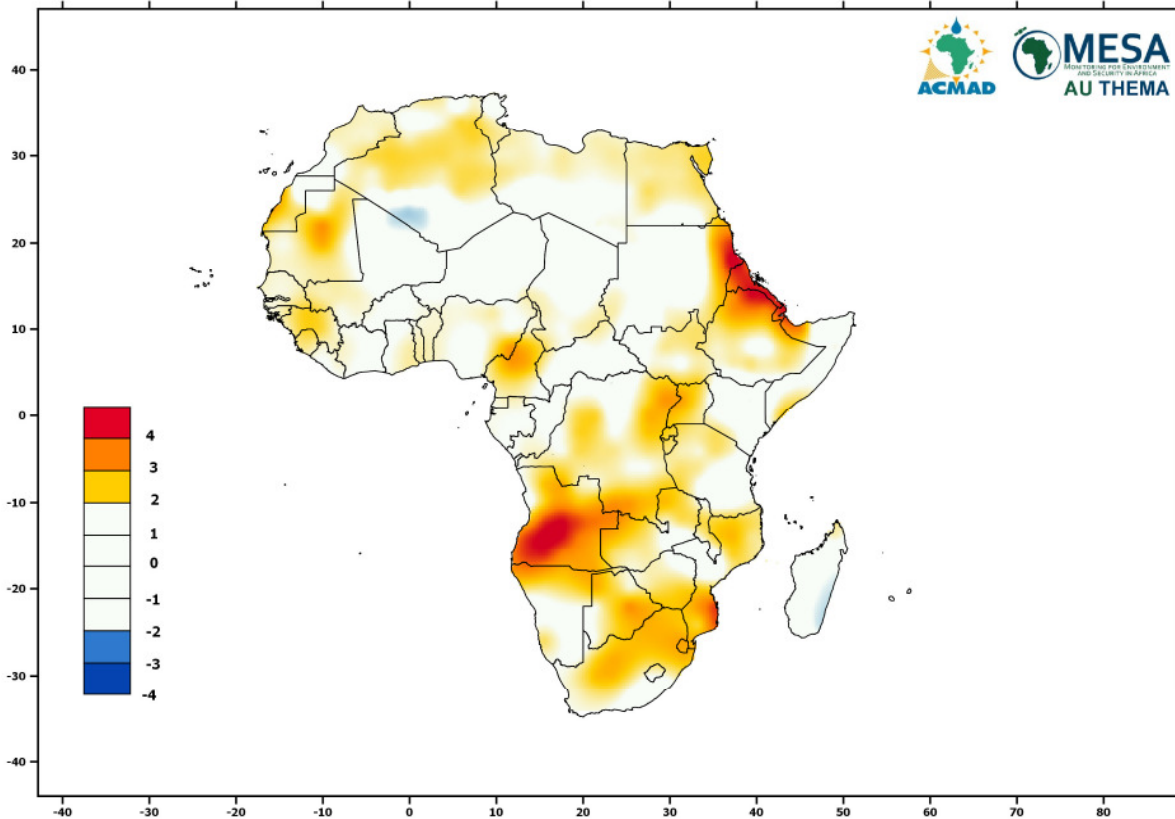


Figure 3: Annual temperature anomalies ( $^{\circ}\text{C}$ ) for Africa in 2015 relative to climatology 1961-1990; gridded data based on station observations. Data source: NOAA/NCEP/CPC/ CAMS.

The year 2015 temperature anomalies bear the unmistakable fingerprint of climate change, with high temperature anomalies recorded in many parts of the continent.

The summer 2015 was characterized by high temperatures over North Africa with temperature anomalies of  $+3^{\circ}\text{C}$  or more from July to September 2015 across the region. The warmer than average summer temperatures have been proven to strengthen the African summer monsoon.

In May 2015 a peak of  $+4^{\circ}\text{C}$  was recorded over North African countries covering Morocco, Algeria, southern Tunisia and  $+3^{\circ}\text{C}$  over part of Angola, South Africa, southern Mozambique, eastern Sudan, northern Ethiopia and northern Eritrea persisting through July to October (Figure 4a, b, c).

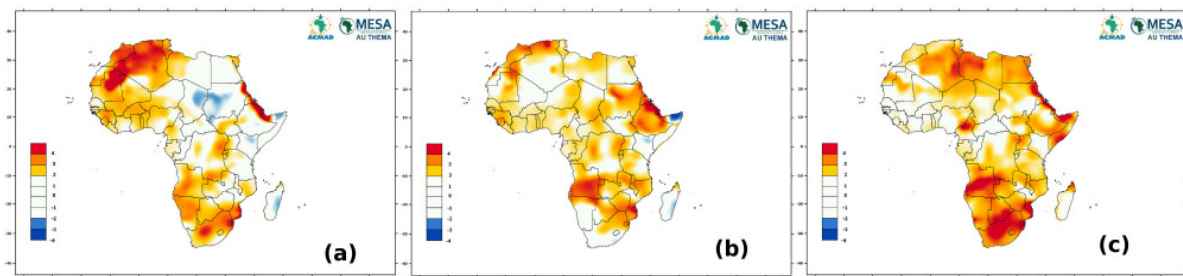


Figure 4: Monthly temperature anomalies ( $^{\circ}\text{C}$ ) for Africa in May (a), July (b) and October (c), 2015; gridded data based on station observations. Data source: NOAA/NCEP/CPC/CAMS.

The seasonal temperature anomalies peaked in May-June-July (MJJ) 2015 season with the highest anomalies over western North Africa with values above 3.5°C over southern Morocco and Southern Africa countries including over southern Namibia, Botswana and northern part of South Africa, Figure 5 (a). In August-September-October (ASO) 2015 season high temperature anomalies prevailed over southern Egypt, northern Sudan with the highest peak above 3.5°C over south-eastern Egypt (Figure 5(b)). In October-November-December (OND) 2015 season, high temperature anomalies of about 3°C persisted over northern Ethiopia and Eritrea with southern Angola and South Africa recording the highest anomalies for the season above 3.5°C (Figure 5(c)).

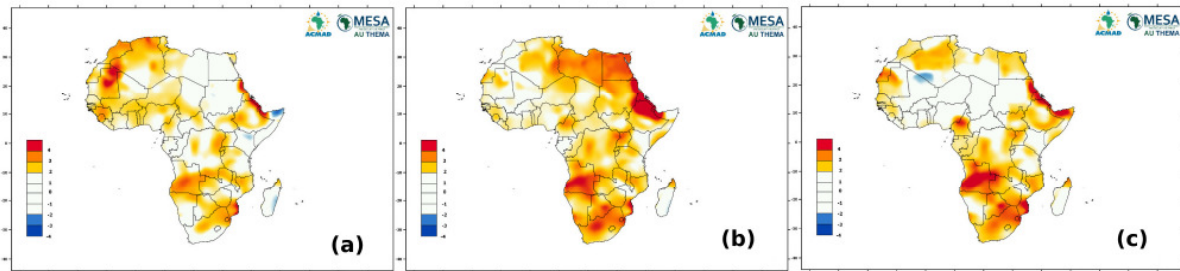


Figure 5: Seasonal temperature anomalies (°C) for Africa in MJJ (a), ASO (b) and OND (c), 2015; gridded data based on station observations. Data source: NOAA/NCEP/CPC/ CAMS.

## 2.2 Precipitation

The precipitation deficits led to moderate to severe droughts that hit most of Southern Africa countries, extreme northern Ethiopia, Eritrea and northern Morocco.

Above to well above average precipitation was recorded over the Sahel from Senegal to Western Niger and over southern part of Sudan (Figure 6).



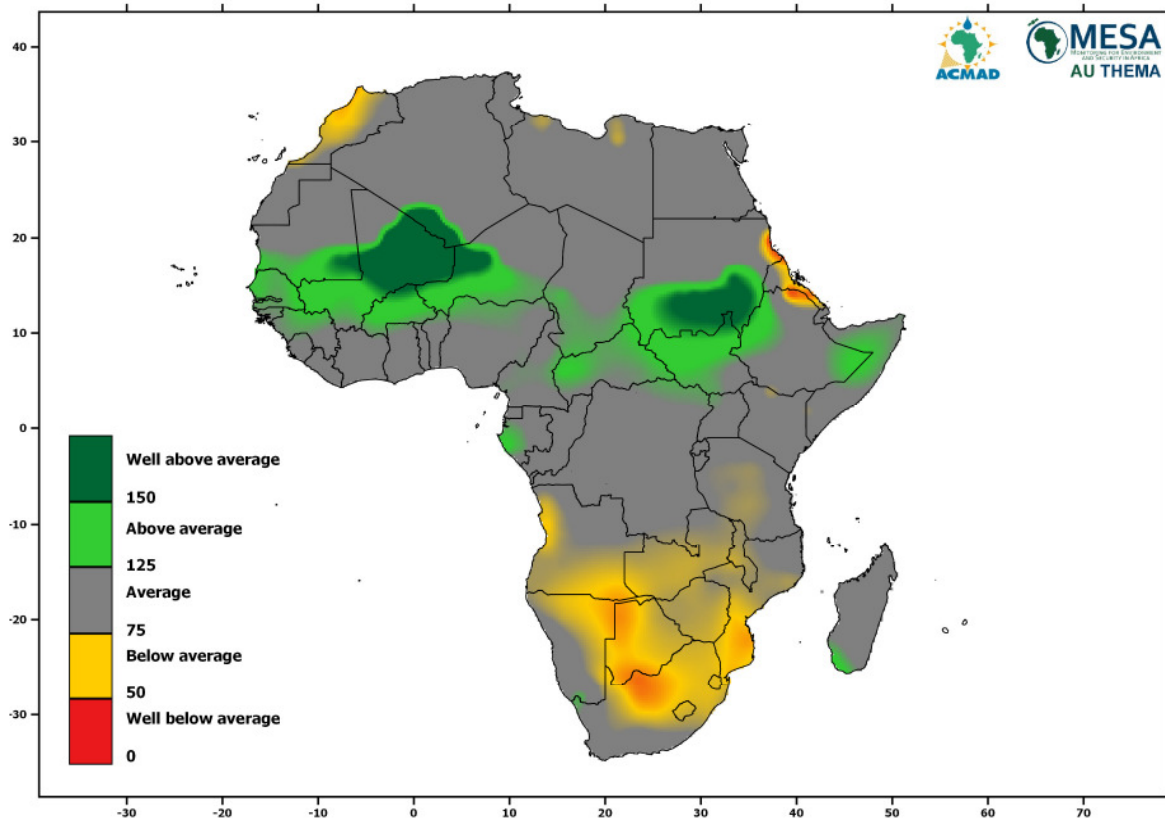


Figure 6: African annual precipitation in percentage of average for 2015; gridded data based on precipitation estimates from rain gauge and satellite data analysis with respect to 1981-2010.  
Data source: NOAA/NCEP/CPC/CAMS-OPI.

### At monthly timescales,

The southern Africa peak precipitation month which is February was in 2015 marked by below to well below average precipitation that prevailed over Southern Africa countries covering southern Angola and eastern part of southern Africa (Figure 7a). However, the following month of March, 2015 was marked by flash floods over Angola and Tanzania that left several deaths and displacements (Table of extreme events).

The month of August which is the peak precipitation month over the Sahel zone countries was characterized by above to well above average precipitation over the zone, while southern Gulf of Guinea sectors experienced below average precipitation, Figure 7c.

November, which is part of the OND season in Eastern Africa featured well above average precipitation associated with floods over parts of Tanzania, Uganda and adjacent areas in the region. **Eastern part of Southern Africa recorded below to well below average precipitation.** Figure 7d.

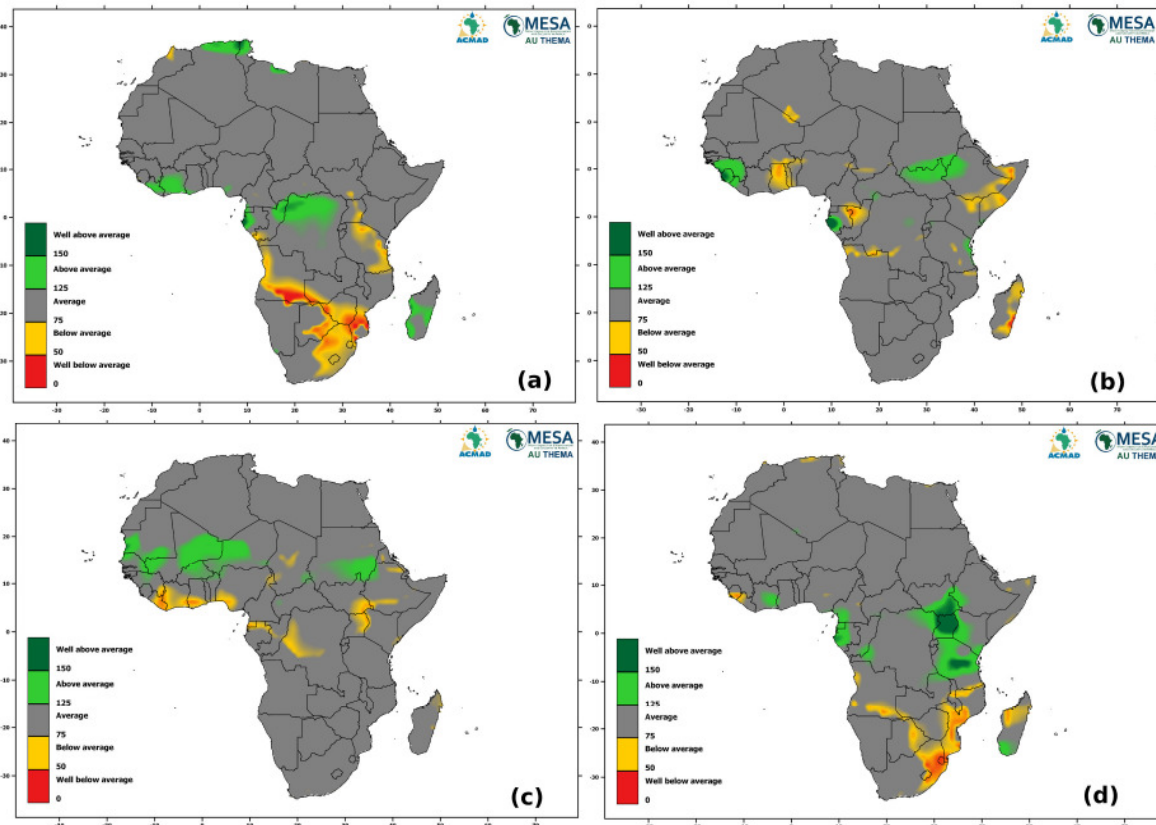


Figure 7: Monthly Precipitation in percentage for February (a), May (b), August (c) and November (d) 2015.  
Source: NOAA/NCEP.

### At seasonal timescales,

The January-February-March (JFM) season had well above average precipitation over North Africa covering northern Algeria, Tunisia, north-western Libya, coastal parts of Gulf of Guinea countries and northern parts of Central Africa countries while well below average precipitation dominated northern Morocco and most of Southern Africa and the Greater Horn of Africa countries, Figure 8a.

The April-May-June (AMJ) season had above to well above average precipitation over parts of Gulf of Guinea countries and southern Sahel. Late onset of the precipitation season characterized this region Figure 8b.

The Sahel rainy season, July-August-September (JAS) in 2015 observed above to well above average precipitation over south-eastern Mauritania, southern Algeria, Mali, northern Burkina Faso and western Niger extending over south-eastern Sudan. However, below to well below average precipitation with severe deficits and drought dominated parts of the Gulf of Guinea countries, parts of Central Africa covering western Gabon and DRC, and parts of Eastern Africa with worst hit being northern Ethiopia, Eritrea including south-eastern Madagascar, Figure 8c.

The October-November-December (OND) season in 2015 modulated by El Niño, observed above to well above average precipitation over Gulf of Guinea and Central Africa countries and most of Eastern Africa countries including southern and northern Madagascar. However, below to well below average precipitation was observed over northern Morocco, most of Southern Africa

region covering western and southern Angola, northern Namibia, Botswana, South Africa and parts of Mozambique, Figure 8d.

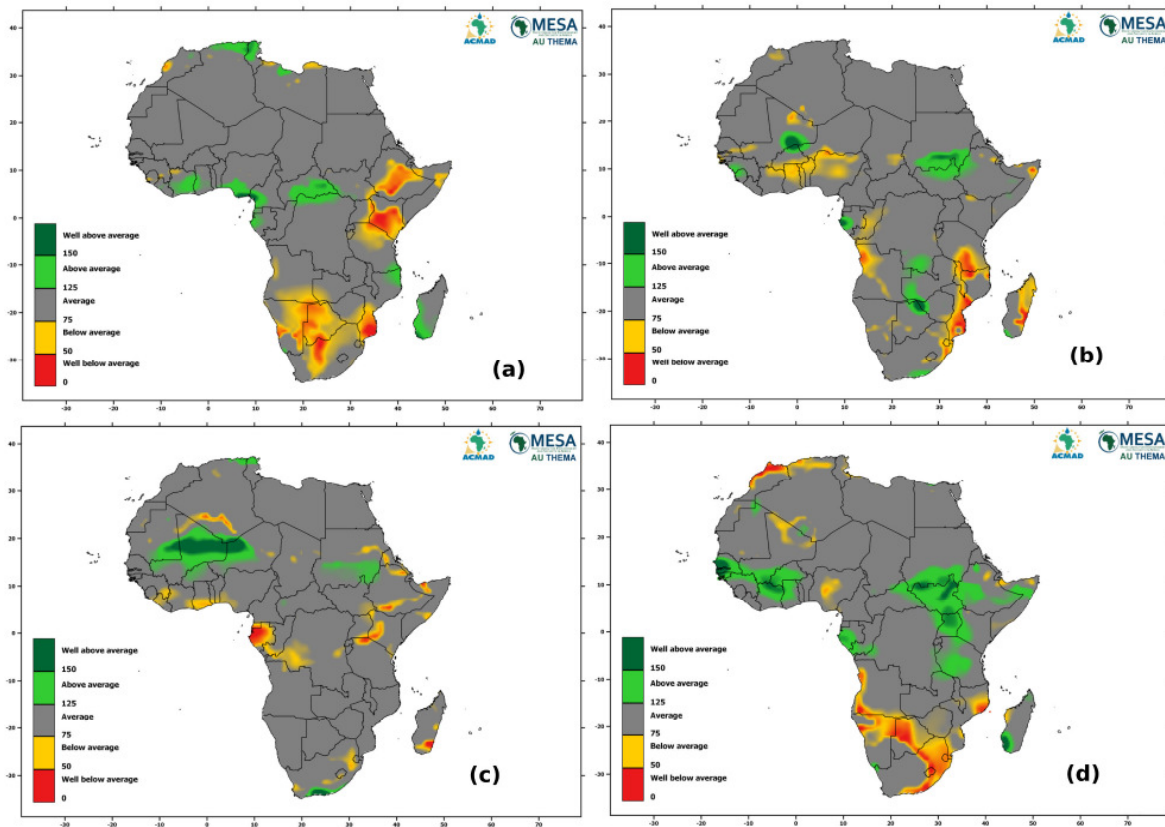


Figure 8: Seasonal precipitation for JFM (a), AMJ (b), JAS (c) and OND (d) 2015. Source: NOAA/NCEP).

### 3. REGIONAL CLIMATE ASSESSMENT

#### 3.1 Temperature

For this assessment the continent of Africa was divided into six sub-regions: Southern Africa, Central Africa, West Africa, Eastern Africa, North Africa and Indian Ocean countries. In Figure 9, temperature anomalies rankings for all regions are shown.

2015 was the warmest year in record since 1950 over Central and Southern Africa regions. Over Eastern Africa, 2015 was the fourth warmest year on record since 1950 (Figure 9).

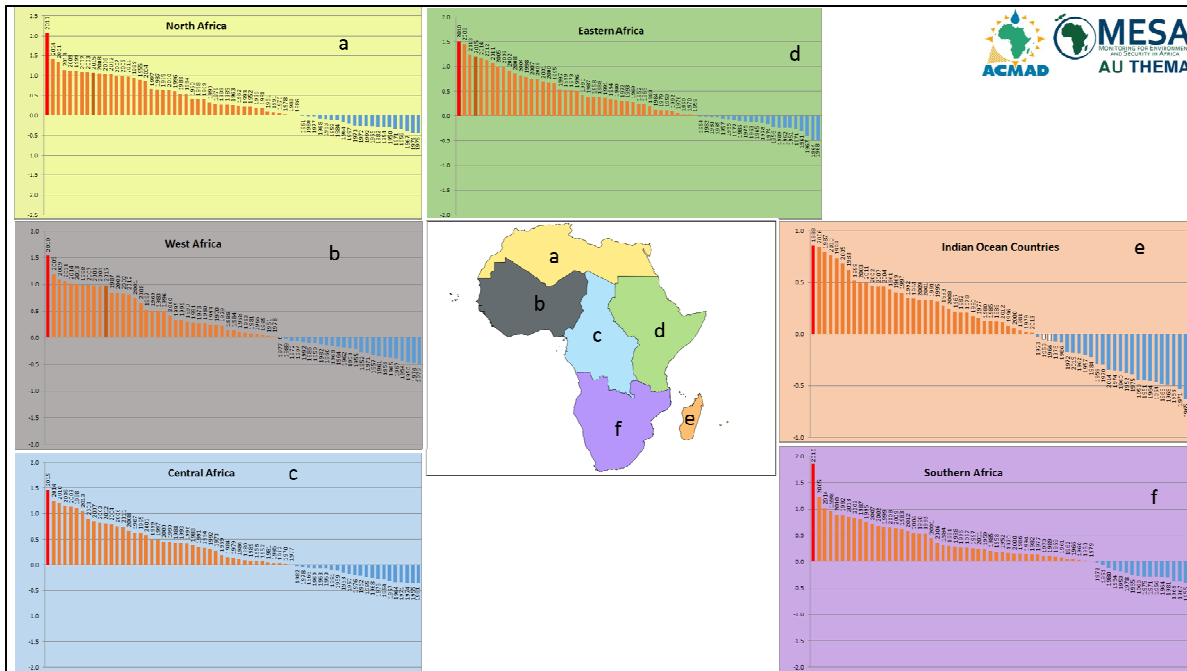


Figure 9: Ranked sub-regional temperature anomalies ( $^{\circ}\text{C}$ ) for 1950-2015 relative to 1961-1990 base period; gridded data based on station observations. Data source: NOAA/NCEP/CPC/CAMS.

### 3.2 Precipitation

#### SOUTHERN AFRICA

In January 2015, severe drought characterized by below to well below average precipitation affected western Angola, eastern Namibia, Botswana, southern Zimbabwe, central South Africa and southern Mozambique, while northern Mozambique received above to well above average precipitation (see Figure 10a). In January-February-March (JFM) which is the second half of the main rainy season featured below to well below average precipitation continued during the first half of the next precipitation season from October to December 2015 (see Figure 10c).

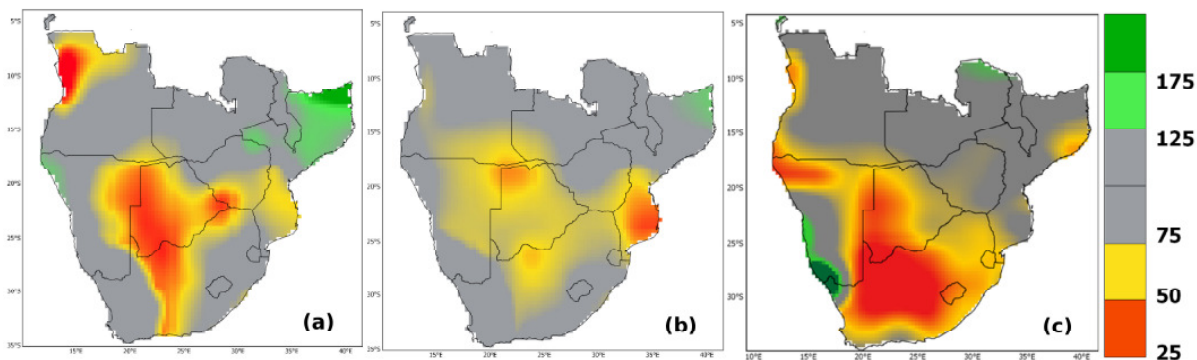


Figure 10: Southern African precipitation in percent of average for January (a), JFM 2015 (b) and OND 2015 (c) using the 1981-2010 base period; gridded data based on precipitation estimates from rain gauge and satellite data. Data source: NOAA/NCEP/CPC/CAMS/OP.

## INDIAN OCEAN COUNTRIES

The south-western Madagascar had above average precipitation during the last quarter of 2015. Drought was recorded over the south-eastern part of the country during the first quarter of 2015 (Figure 11).

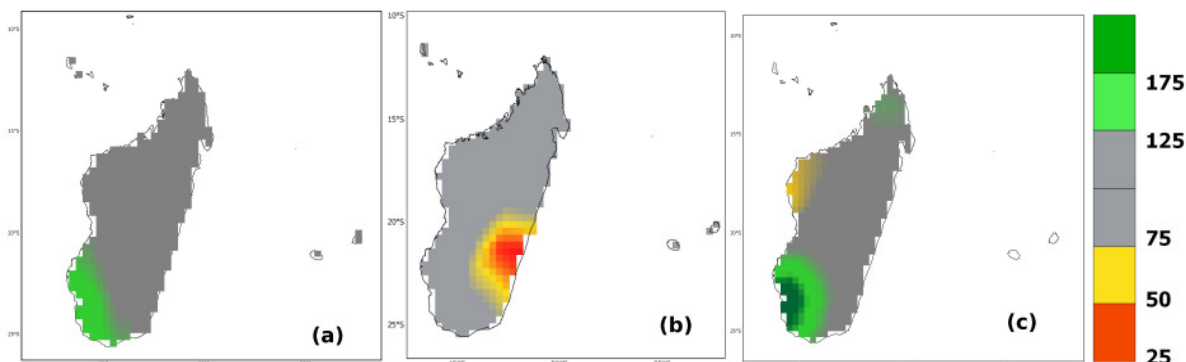


Figure 11: Percentage of average precipitation over the Indian Ocean region for 2015 (a), JFM (b) and OND (c) 2015 with respect to 1981-2010 base period; gridded data based on precipitation estimates from rain gauge and satellite data. Data source: NOAA/NCEP/CPC/CAMSOP1.

## CENTRAL AFRICA

At seasonal timescales no substantial anomalies was noted on precipitation over the region (Figure 12). However, floods hit parts of the region during the year (section 4).

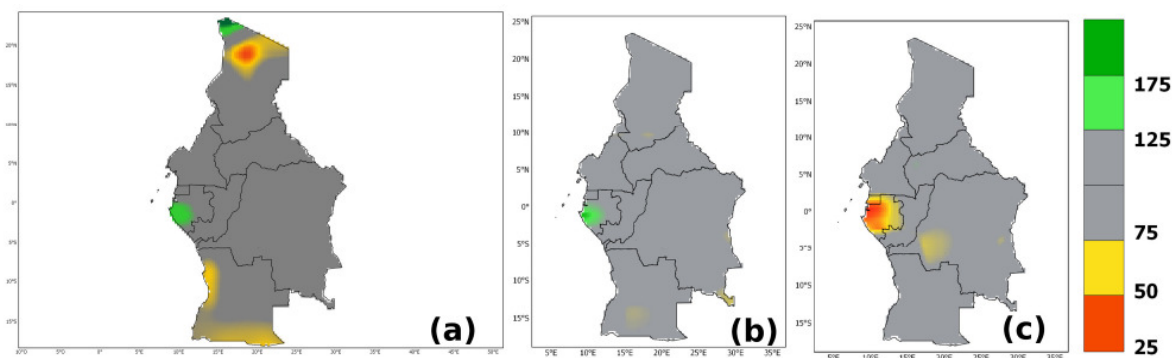


Figure 12: Percentage of average precipitation over the Central Africa for 2015 (a), MAM (b), JAS (c) 2015 with respect to 1981-2010 base period; gridded data based on precipitation estimates from rain gauge and satellite data. Data source: NOAA/NCEP/CPC/CAMSOP1.

## EASTERN AFRICA

In 2015, March-April-May (MAM) season recorded well above average precipitation over southern Sudan. Northernmost part of Ethiopia and Eritrea experienced well below average precipitation leading to severe drought extended in the June to September 2015 (Figure 13). Great relief for drought stricken countries observed in October-November-December (OND) season with above to well above average precipitation recorded over southern Sudan, Ethiopia, Eritrea, South Sudan, Uganda, western Kenya and Tanzania.

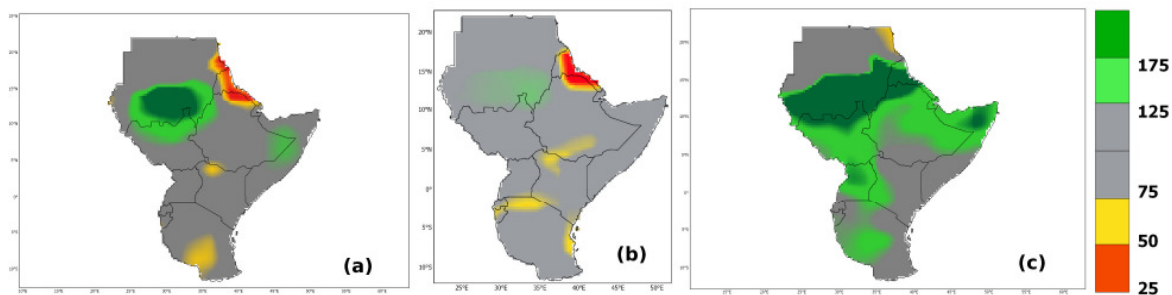


Figure 13: Percentage of average precipitation over the Eastern Africa for MAM (a), JJAS (b) and OND (c), 2015 with respect to 1981-2010 base period; gridded data based on precipitation estimates from rain gauge and satellite data. Data source: NOAA/NCEP/CPC/CAMSOP1.

## WEST AFRICA

In March-April-May (MAM), 2015, below average precipitation caused moderate drought with delays of seasonal rains onset over northern Côte d’Ivoire, Ghana, Togo and southern Burkina Faso (Figure 14a). The moderate drought extended over northern Nigeria and Benin in April-May-June (AMJ), 2015 (Figure 14b). The situation was linked to a late onset of rainy season over the region that was earlier predicted by ACMAD-MESA seasonal climate forecasts.

In July-August-September (JAS), 2015 northern Mali, south-eastern Mauritania, northern Burkina Faso and western Niger experienced above to well above average precipitation while Liberia, eastern Guinea, western and south-eastern Côte d’Ivoire, southern Ghana, Togo and Benin recorded a moderate drought (Figure 14c).

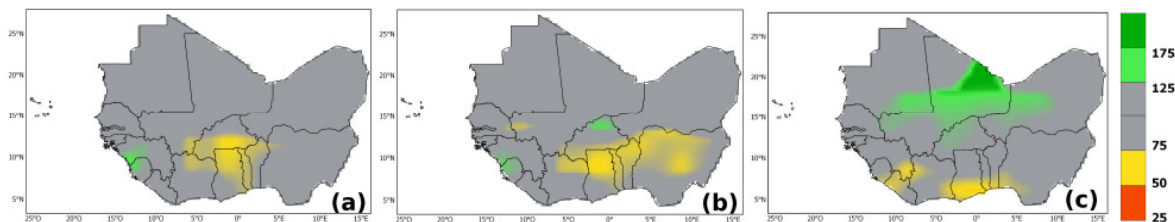


Figure 14: Percentage of average precipitation over Western Africa for MAM (a), AMJ (b) and JAS (c) 2015 with respect to 1981-2010 base period; gridded data based on precipitation estimates from rain gauge and satellite data. Data source: NOAA/NCEP/CPC/CAMSOP1.

### 3.3 Tropical Cyclone Season over the Southwest Indian Ocean Region

The south-west Indian Ocean tropical cyclone season was very active in 2014-2015 (see Figure 15a). The less active season in the 2015-2016 was modulated by the strong 2015/16 El Niño (see Figure 15b).

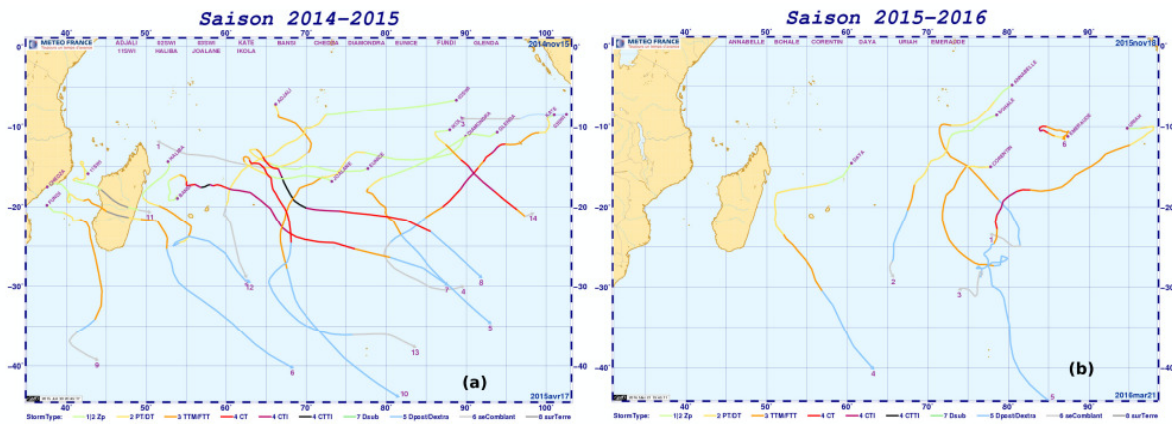
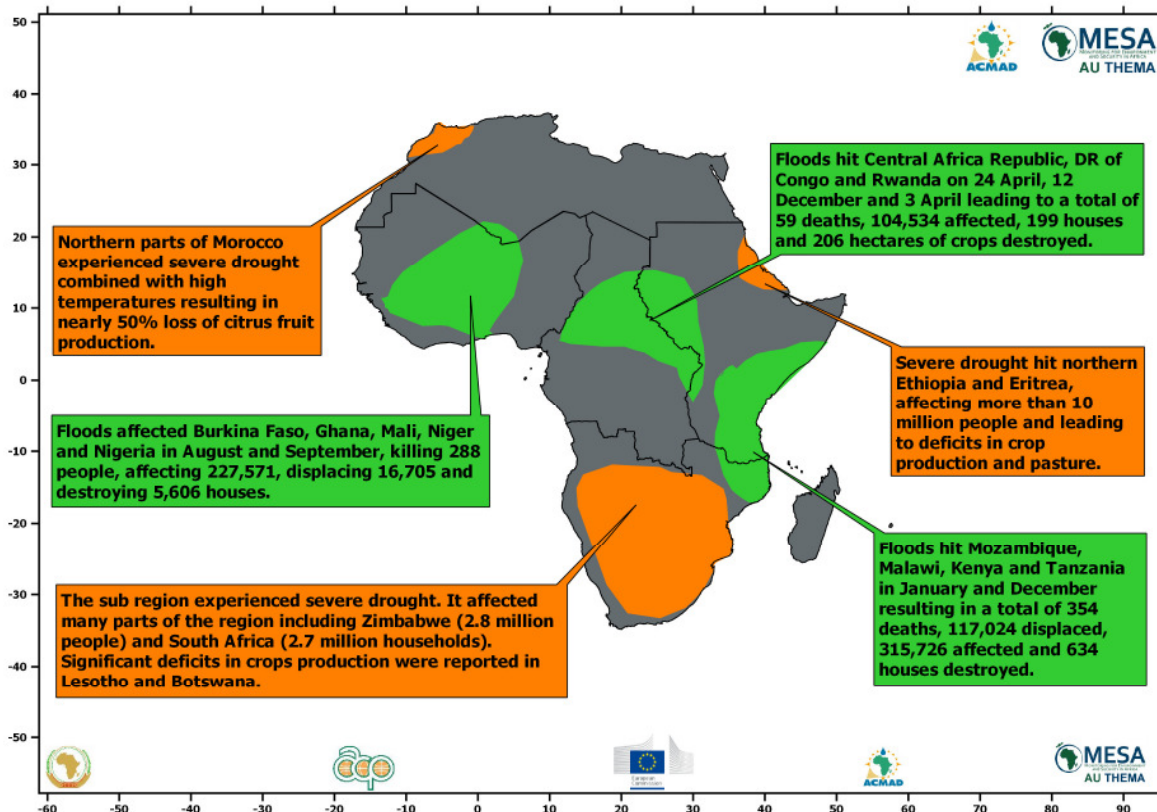


Figure15a: Very active cyclone season 2014-15 (a) and less active cyclone season 2015-16 modulated by the strong 2015/16 El Niño (b).

#### 4. HAZARDS AND IMPACTS IN 2015

The hazards and impacts due to extreme events in 2015 over Africa were modulated by the 2015/2016 strong El Niño that enhanced the precipitation over Eastern Africa region causing floods while Southern Africa region experienced precipitation deficits leading to severe drought. Parts of Greater Horn of Africa covering north-eastern Sudan, northern Ethiopia and Eritrea, northern Morocco also experienced severe precipitation deficits and drought. Map 1 below provides an overview on significant events and impacts over the continent in 2015. Detailed information on significant events and impacts as per region and country is given with Table 1 and the following Photo Gallery visualizing 2015 flood events.



Map 1: Overview on significant events, hazards and impacts over Africa in 2015.

Table 1: Detailed information on significant events, hazards and impacts given per region and country.

WESTERN AFRICA		
<b>Niger</b>	<b>Early September</b> , floods affected seven central and southern regions.	Killed 22, affected 52,000 people, left 7,450 displaced people and 5,019 buildings destroyed. ( <a href="#">OCHA, 2 Sep 2015</a> )
<b>Nigeria</b>	In <b>August and September 2015</b> , heavy rains, compounded by the breakdown of dams in some states, have caused floods in 11 states across Nigeria.	53 people died, and 100,420 have been displaced. ( <a href="#">OCHA, 10 Nov 2015</a> )
<b>Burkina Faso</b>	As of <b>early September 2015</b> , floods and strong winds affected Ouagadougou and neighbourhoods areas	8 people have been killed, 54 wounded and 28,781 people affected, More than 2,428 people displaced from their homes are being sheltered in schools. ( <a href="#">OCHA, 28 Sep 2015</a> )
<b>Ghana</b>	Torrential rains started on <b>3 June 2015</b> and continued until the next day	The floods resulted in the loss of over 200 lives, displacement, and loss of property and livelihoods. Up to 46,370 people were affected and 9,255 people have been displaced by the floods. ( <a href="#">IFRC, 11 Jun 2015</a> )
<b>Mali</b>	On <b>8 August 2015</b> , heavy rains reportedly affected north-eastern	As of <b>9 August 2015</b> media reported 5 people dead and 400 houses damaged.



	Mali, triggering flooding in the town of Menaka over southern Gao Region.	The town's water wells have also been affected, contaminating the water. (ECHO Daily map, World Events, 12 Aug 2015,) <a href="http://reliefweb.int/sites/reliefweb.int/files/resources/ECDM_20150812_World_events.pdf">http://reliefweb.int/sites/reliefweb.int/files/resources/ECDM_20150812_World_events.pdf</a>
<b>Guinea Conakry</b>	Between <b>24 July and 3 August 2015</b> , it rained heavily in the capital of Guinea Conakry and in several areas of the country (Télimélé, Macenta, Siguri, Beyla, Forécariah and Coyah) causing serious floods. Over 450mm of rain was recorded In other regions, specifically the northwest, 200mm fell during this time.	Around 1,700 people have been affected by the violent storms and the heavy rains. These people have lost their dwellings. In addition 29 people have been seriously injured and 2 people died as a consequence of their injuries. (IFRC, 15 August 2015)
<b>NORTHERN AFRICA</b>		
<b>Morocco</b>	Alhoceima received 206 mm, of which 88 mm fell in 24 hours on 18 February 2015. Normal monthly rainfall is 36 mm. Marrakech received 35.9 mm of rain in one hour <b>in August 2015</b> , over 13 times the monthly normal.	Maroc Météo, 2015
<b>Algeria</b>	<b>Mid October 2015</b> , heavy rains and flooding caused widespread damage to five camps of refugees in south-west Algeria's arid Tindouf region.	90,000 vulnerable, houses damaged and destroyed.(UNHCR, 23 Oct 2015)
<b>Libya</b>	Heavy rain affected western coastal region <b>in September 2015</b> , with more than 90 mm falling in 24 hours at Sorman (monthly average is 8 mm).	Libyan Meteorological Center, 2015
<b>CENTRAL AFRICA</b>		
<b>Central African Republic</b>	On <b>24 April 2015</b> continuous storms resulted in extensive flooding, destruction of houses and loss of household belongings in several districts of Berbérati in south-western Central African Republic.	210 households (1,109 people) were affected and 199 houses were destroyed. In addition, water and sanitation infrastructures had been submerged and contaminated, increasing the risk of spread of waterborne diseases. (IFRC, 14 May 2015)
<b>Democratic Republic of Congo</b>	Between <b>6 and 7 December 2015</b> Bukavu received 136.9 mm of rainfall.	At least 18 people died during the event(AFP, 12 Dec 2015)

<b>Angola</b>	<b>In March 2015</b> massive flash floods caused by torrential rains hit the Angolan city of Lobito. The state-run news agency reported that the flood water had reached three meters in some areas of the city since the rain started Wednesday, March 11, 2015.	At least 62 people died and dozens of homes and city structures destroyed, according to initial reports from local authorities. <a href="http://thewatchers.adorraeli.com/2015/03/13/massive-flash-floods-hit-angolan-city-of-lobito/">http://thewatchers.adorraeli.com/2015/03/13/massive-flash-floods-hit-angolan-city-of-lobito/</a>
<b>EASTERN AFRICA</b>		
<b>Tanzania</b>	On <b>3 March 2015</b> hail storms accompanied by strong winds and heavy rainfall hit the villages of Mwakata, Magung'unhwa and Nhumbi in Msalala district, in Tanzania's northwestern Shinyanga region.	47 people died, up to 5,000 people have been affected, and including 3,500 people who were displaced after the storms damaged or destroyed 634 houses. ( <a href="#">IFRC, 10 Mar 2015</a> )
<b>Somalia</b>	On <b>7 October</b> , parts of northern Somalia and areas along the Juba and Shabelle River basins in Somalia have experienced heavy rains following the start of the Deyr rains.	90,000 people have been affected; an estimated 42,000 people have been displaced. ( <a href="#">OCHA, 11 Nov 2015</a> )
<b>Burundi</b>	On <b>29 March 2015</b> heavy rains caused floods and landslides in Muhuta, a commune of Bujumbura Rural Province, in Western Burundi on the edge of Lake Tanganyika.	349 houses destroyed as well as a health center and two schools. Two bridges were also destroyed together with 5 km of the national road number 5 between Bujumbura and Rumonge. Heavy rocks, weighing up to 2 tonnes each, blocked the roads and therefore preventing all commercial activities for the affected population. ( <a href="#">IFRC, 7 April 2015</a> )
<b>Rwanda</b>	On <b>3 April 2015</b> heavy rainfall caused flooding and landslides in Nyamasheke and Rubavu districts in Rwanda's Western Province.	3,425 people (685 households) had been affected; and were being accommodated in nearby communities after their homes were damaged. It has been reported that 206 hectares of crops were inundated, and household items washed away. ( <a href="#">IFRC, 21 April 2015</a> )
<b>Kenya</b>		<b>On 19 November 2015</b> BBC reported Kenyans stuck in '50 km' traffic jam on Nairobi-Mombasa road due to heavy rain. Only the traffic heading to Nairobi has been affected. This affected disruptions in international exchange of goods, including commodities between Kenya and other countries of the Greater Horn of Africa. ( <a href="#">BBC News, 19 November 2015</a> ).
<b>Uganda</b>	Heavy rainfall <b>in November 2015</b> has caused damage to assets and infrastructure, including roads in different areas.	Department of Relief, Disaster Preparedness and Management estimates that 100,000 people remain at risk of landslides in the Mt. Elgon and Rwenzori sub-regions. ( <a href="http://www.fews.net/east-africa/uganda/food-security-outlook-update/november-2015">http://www.fews.net/east-africa/uganda/food-security-outlook-update/november-2015</a> )

<b>SOUTHERN AFRICA</b>		
<b>Malawi</b>	<p><b>Floods:</b> As of <b>27 January 2015</b> heavy rains caused flooding in 15 of the 28 districts in Malawi, most of which are located in the southern part of the country.</p> <p><b>Drought:</b> Severe drought led to hunger crisis spreading across much of the country</p>	<p>70,000 people affected by floods, leaving them without food, clean water or access to health care. From dozens to more than 170 people died. (<a href="#">CNN, 18 January 2015 at 15 GMT</a>)</p> <p>The President declared a state of disaster on 13 January 2015. (<a href="#">IFRC, 17 July 2015</a>)</p> <p>Almost 3 million people were in danger of facing hunger and severe shortage of food supply in Malawi in southeast Africa as the country faced its most severe food crisis in the last 10 years. (<a href="#">Christian Aid reported on September 30, 2015</a>)</p>
<b>Zimbabwe</b>	<p><b>Floods:</b> In <b>January 2015</b> Zimbabwe was affected by floods with the worst affected provinces including Manicaland, Mashonaland Central, Mashonaland East, Mashonaland West and Midlands.</p> <p><b>Drought:</b> On <b>4 February 2016</b> the President of the Republic of Zimbabwe, declared a State of Drought Disaster following the impact of El Niño induced erratic rainfall.</p>	<p>Approximately 6,000 people (1,200 households) have been affected, of which 2,500 people (500 households) are in urgent need of assistance. (<a href="#">IFRC, 13 Jan 2015</a>)</p> <p>2.8 million people are affected by drought (<a href="#">WFP, 31 March 2016</a>)</p>
<b>Lesotho</b>	<p><b>Drought:</b> On <b>22<sup>nd</sup> December 2015</b>, the Government of Lesotho declared a state of drought emergency and appealed for assistance from the international community.</p>	<p>The prolonged dry spells and drought not only affected maize production, but other crops such as sorghum, beans, peas and wheat have also been affected, and harvests are down and low yields are therefore expected. (<a href="#">IFRC, 6th April 2016</a>)</p>
<b>Mozambique</b>	<p><b>Floods:</b> <b>January 2015</b> a major highway in Mozambique has split after two bridges collapsed as a result of heavy flooding.</p> <p><b>Drought:</b> The Ministry of Agriculture, based on the crop lost area, estimated that 323,000 farmers are currently affected by drought.</p>	<p>25 people died and tens of thousands are displaced in the country. (<a href="#">BBC news, 14th January 2015</a>)</p> <p>The UN system mobilized about US\$ 4.7 million through CERF. (<a href="#">UN Resident Coordinator for Mozambique, 03rd March 2016</a>)</p>
<b>South Africa</b>	<p><b>Floods:</b> Springs, a city in Johannesburg's East Rand, Gauteng province of South Africa, recorded around 33 mm of rain <b>on 17 December 2015</b>.</p> <p><b>Drought:</b> South Africa was affected by the worst drought in 30 years.</p>	<p>The floods have caused major traffic problems. There have been numerous stranded cars and collisions as a result of the flooding. (<a href="#">Floodlist News in Africa, 18th December 2015</a>).</p> <p>Many farmers have been struggling to find water and fodder for their livestock. Some are forced to sell as many of their livestock as soon possible to avoid further losses. (<a href="#">BBC News, 30 November 2015</a>)</p>

<b>Botswana</b>	<b>Drought:</b> Botswana was tackled by the worst drought in 30 years.	Botswana has allocated emergency funds in response to the worst drought conditions in 30 years with agricultural land badly hit by the lack of irrigation. ( <a href="#">AFP, 30th July 2015</a> )
<b>INDIAN OCEAN COUNTRIES</b>		
<b>Madagascar</b>	<p><b>Floods:</b> <i>On 16 January 2015</i> tropical storm Chedza made landfall over Madagascar and weakened into a tropical depression as it crossed the island.</p> <p><b>Drought:</b> Severe drought hits southern Madagascar. <a href="http://www.globalpost.com/article/6672205/2015/10/20/severe-drought-hits-southern-madagascar">http://www.globalpost.com/article/6672205/2015/10/20/severe-drought-hits-southern-madagascar</a></p>	<p>Up to 68 people died as a result of floods. As of 30 January an estimated 80,000 people were affected, with more than 20,000 living in temporary shelters through the country, including over 16,000 in Antananarivo. (<a href="#">IFRC, 2 Feb 2015</a>)</p> <p>On <b>22 March 2015</b> the Government of Madagascar has declared a state of emergency for southern Madagascar. (<a href="#">European Commission Humanitarian Aid Office, 30 March 2016</a>)</p>
<b>Reunion</b>	<p><b>Floods:</b> <i>On 9-10 March 2015</i> tropical storm Haliba affected La Reunion. The island recorded heaviest rainfall of over 181 mm (7.1 inches) in one hour. <a href="http://www.nasa.gov/content/goddard/haliba-southern-indian-ocean/#.VylxmXpoNyQ">http://www.nasa.gov/content/goddard/haliba-southern-indian-ocean/#.VylxmXpoNyQ</a></p>	Roads have been cut and submerged by waves. Schools were closed for precaution. ( <a href="#">France tv info, 09 March 2016 at 16:05</a> )
<b>Mauritius</b>	<p><b>Floods:</b> <i>On 9-10 March 2015,</i> tropical storm Haliba affected Mauritius and caused floods and landslides. <a href="http://www.nasa.gov/content/goddard/haliba-southern-indian-ocean/#.VylxmXpoNyQ">http://www.nasa.gov/content/goddard/haliba-southern-indian-ocean/#.VylxmXpoNyQ</a></p>	Schools were closed for two days and around 10 families displaced. ( <a href="#">LINFO.RE, 11 March 2015 at 22h23</a> )

## Photo Gallery



*Traders surrounded by water wait for it to subside after flash floods swept through Kisii town's Daraja Mbili market [Photo: Denish Ochieng/standard media]  
[www.standard.co.ke](http://www.standard.co.ke)*



*Residents of Turkana Central watch a truck that was swept by the floods at Kawalase bridge [PHOTO|PETER|WARUTUM|NATION MEDIA GROUP]  
[www.nation.co.ke](http://www.nation.co.ke)*



Residents of Ombeyi Village in Ahero carry their their belongings from their flooded homes on November 17, 2015 [PHOTO | TONNY OMONDI | NATION MEDIA GROUP]  
[www.nation.co.ke](http://www.nation.co.ke)



Floods left more than 1,700 people stranded in Bate sub location, Magarini sub county when the Sabaki River broke its banks due to heavy rains on 1-21 December, 2015 [Nation media]  
[www.nation.co.ke](http://www.nation.co.ke)





# Climate Services for Disaster Risks Reduction in Africa



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