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AFRICA: Monthly Climate Outlook September to June

Issued: December 2023

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Overview

Africa Current Status and Outlook – Temperature

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Global Outlook – Rainfall

Africa Current Status and Outlook - Temperature

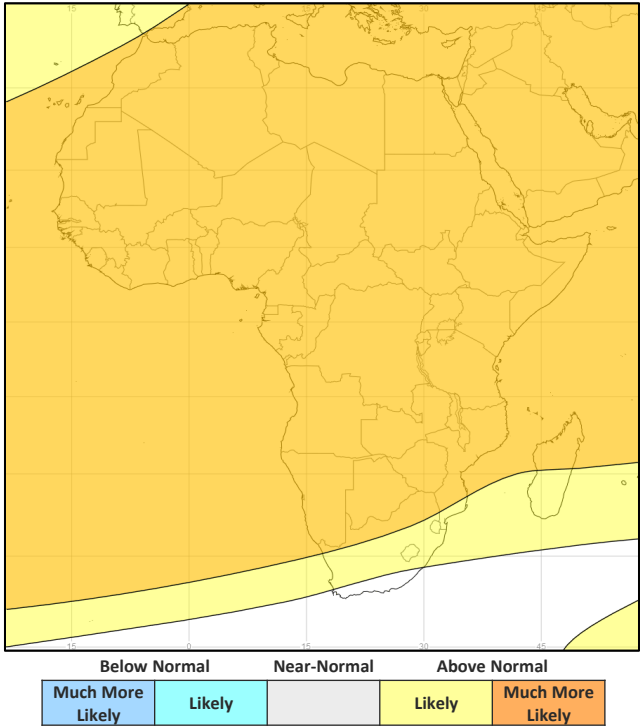
Current Status:

Over the last three months, temperatures were hotter than normal in West Africa. Central and eastern Africa were mostly warm or hot over the last three months, though a few areas in eastern Africa were cool in September and October. In most of Southern Africa in September, temperatures were cool or cold, continuing into October for South Africa, Zambia and Madagascar and into November for South Africa and Madagascar. Zambia and Malawi were hot in November.

Outlook:

Consistent with a warming climate, it is much more likely to be warmer than normal across most of the continent over the next three months.

3-Month Outlook January to March - Temperature



Africa Current Status and Outlook - Rainfall

Current Status:
In September and October, rainfall in West Africa was mostly near-normal, though Cameroon and Nigeria were dry or very dry. In November, rainfall was mostly near-normal, the exceptions being Ghana which was very wet, and Nigeria which was wet.

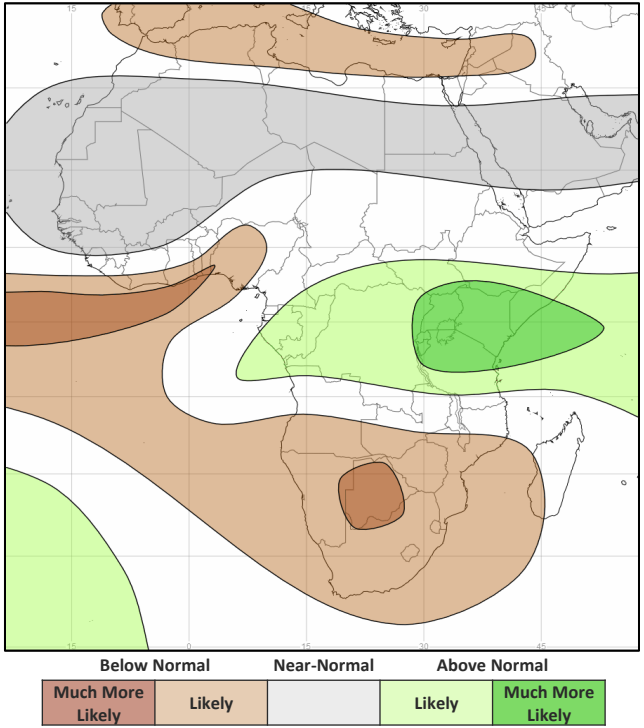
DRC was very dry in September, with a mix of dry and wet conditions in October and November. Chad and Niger were wet in September.

Ahead of the Short Rains season in October-December, most parts of East Africa had near-normal rainfall or were dry in September. In October Kenya, Ethiopia and Somalia were wet or very wet and in November most of East Africa was wet or very wet. Rainfall was mostly near-normal in Southern Africa in September. In October, Zambia, Zimbabwe and Mozambique were wet or very wet. In November South Africa, Zambia, Zimbabwe and parts of Mozambique were dry or very dry.

Outlook:
Over the next three months, consistent with both the current El Niño event and a positive Indian Ocean Dipole (IOD), it is likely or much more likely to be wetter than normal in East Africa, the DRC and Nigeria.

In southern Africa, with the exception of Mozambique and northern parts of Zambia, it is likely or much more likely to be drier than normal.

3-Month Outlook January to March - Rainfall

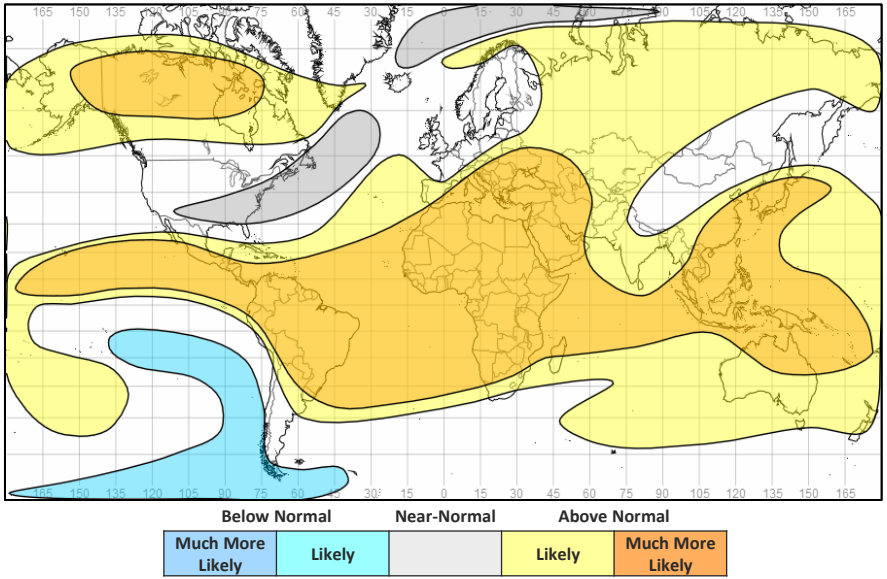


Global Outlook - Temperature

Outlook:

With the backdrop of a warming climate and the current El Niño event, most land areas are likely or much more likely to be warmer than normal over the next few months. Exceptions to this include the southern tip of South America, which is likely to be colder than normal, and parts of North America which are likely to be near-normal.

3-Month Outlook January to March - Temperature



Global Outlook - Rainfall

Outlook:
El Niño-Southern Oscillation (ENSO) – Sea surface temperatures (SSTs) across the equatorial Pacific remain indicative on an ongoing El Niño event. The current El Niño is moderate in strength.

Seasonal prediction models indicate this El Niño event is likely to continue the Northern Hemisphere winter with a transition to ENSO Neutral becoming more likely during April-June 2024 (60% chance).

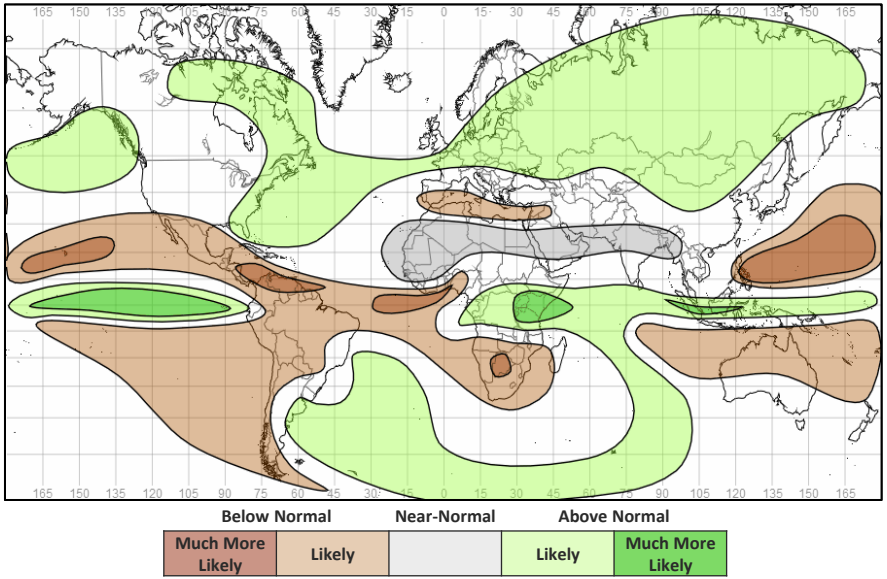
El Niño impacts regional weather patterns around the world, leading to some regions experiencing wetter than normal conditions and other regions drier than normal conditions. During El Niño, temperatures around the globe are likely or much more likely to be higher than normal, and this is reflected in the current outlooks.

Indian Ocean Dipole (IOD) – The positive Indian Ocean Dipole event remains active but is steadily weakening.

Seasonal prediction systems currently suggest that this event will return to neutral conditions early in 2024

This will reinforce the influence of El Niño, further increasing the likelihood of drought across Southeast Asia (especially Indonesia) and Australia, with above normal rainfall across East Africa, increasing the risk of floods.

3-Month Outlook January to March - Rainfall



Current Status

Current Status maps

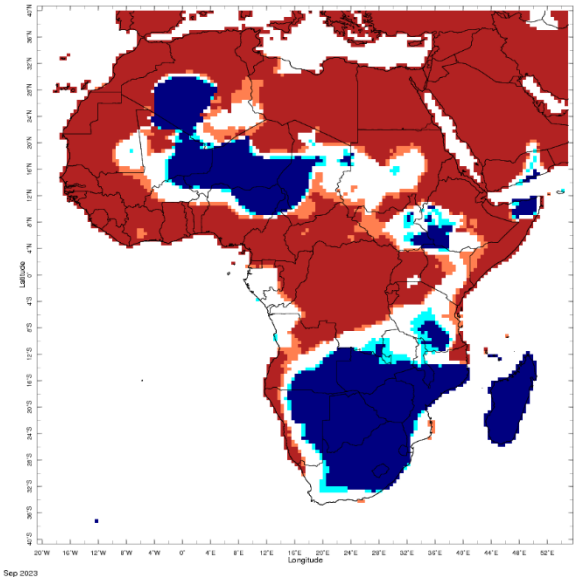
Western Africa

Central Africa

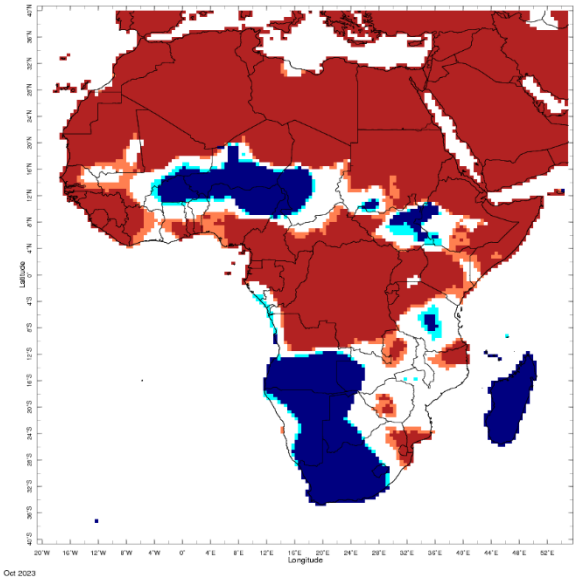
Eastern Africa

Southern Africa

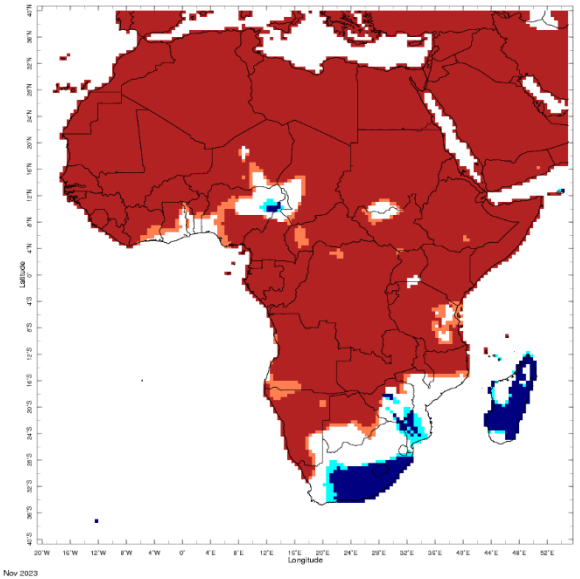
Current Status – Temperature percentiles



September



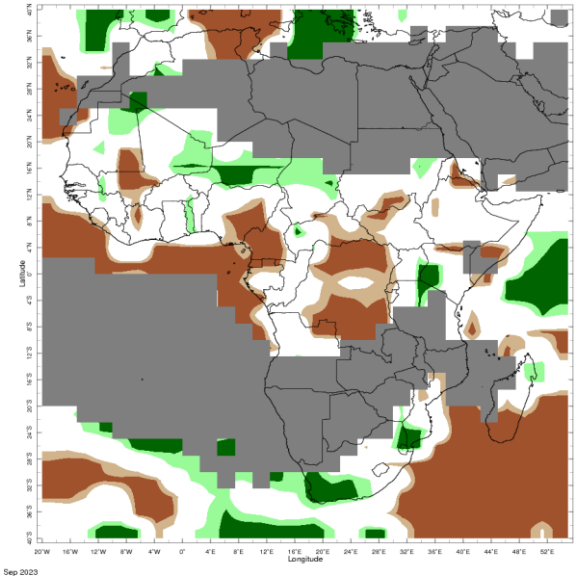
October



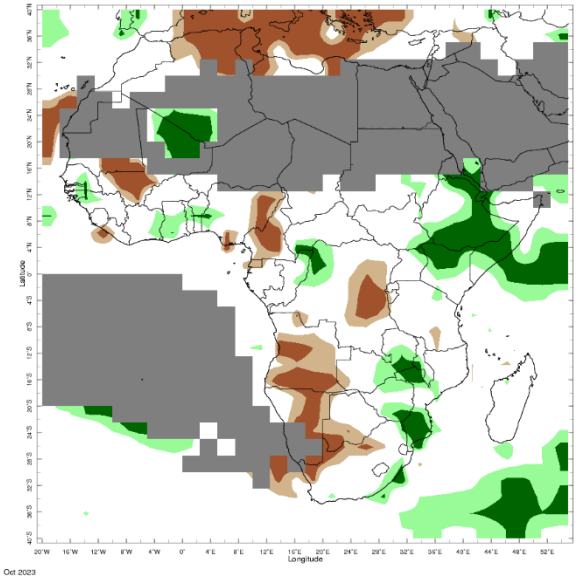
November

Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions shaded in light and dark blue indicate values below the 20th (Cool) and 10th (Cold) percentile, with respect to the 1981-2010 climatology. The data used in this map are from the NOAA Climate Prediction Center.

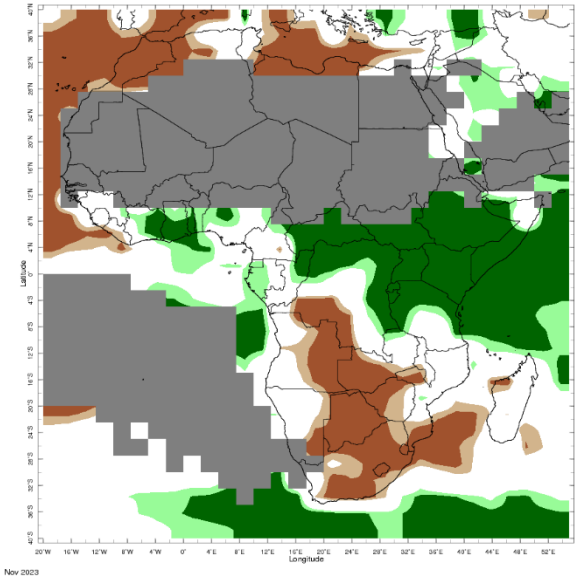
Current Status – Precipitation percentiles



September



October



November

Notes: The percentiles shown in the map indicate a ranking of rainfall, with the 0th percentile being the driest and the 100th percentile being the wettest in the 1981-2010 climatology. Green and dark green shading represent values above the 80th (Wet) and 90th (Very Wet) percentile, respectively; regions shaded in light and dark brown indicate rainfall below the 20th (Dry) and 10th (Very Dry) percentile, with respect to the 1981-2010 climatology. Grey areas on the map mask out regions that receive less than 10 mm/month of rainfall on normal in the 1981-2010 climatology for the month. The data used in this map are from the NOAA Climate Prediction Center.

Current Status – Western Africa

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Sierra Leone	Hot	Hot	Hot	Normal	Normal	Normal
Liberia	Hot	Hot	Hot	Normal	Normal	Normal
Mali	Mixed (1)	Hot	Hot	Mixed (2)	Mixed (2)	Normal*
Ghana	Hot	Warm	Hot	Normal	Normal	Very Wet
Nigeria	Mixed (1)	Warm	Mixed (3)	Dry	Dry	Wet
Cameroon	Hot	Hot	Hot	Very Dry	Very Dry	Normal

Notes:

The table gives an assessment of whether temperature and rainfall across each country have been above normal, normal or below normal over the past three months, using data from the NOAA Climate Prediction Center and the IRI Map Room: http://iridl.ldeo.columbia.edu/maproom/.

* Region usually experiences less than 10mm/month rainfall during the month (dry season).

Additional Information:

(1) Note: Cold in northeast, hot in the southwest
(2) Note: Dry in the southwest, wet in the northeast
(3) Note: Hot in the southwest, normal in the northeast

Current Status – Central Africa

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Niger	Cold	Mixed (1)	Hot	Wet	Normal*	Normal*
Chad	Mixed	Mixed (1)	Hot	Wet	Normal*	Normal*
DRC	Hot	Hot	Hot	Very Dry	Mixed (2)	Mixed (3)

Notes:

The table gives an assessment of whether temperature and rainfall across each country have been above normal, normal or below normal over the past three months, using data from the NOAA Climate Prediction Center and the IRI Map Room: http://iridl.ldeo.columbia.edu/maproom/.

* Region usually experiences less than 10mm/month rainfall during the month (dry season).

Additional Information:

(1) **Note:** Cold in the south, hot in the north
(2) **Note:** Dry in the east, wet in the northwest and normal elsewhere
(3) **Note:** Very Wet in the north and east, very dry in the south and west

Current Status – Eastern Africa (1)

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Sudan	Normal	Hot	Hot	Normal	Normal	Normal*
South Sudan	Mixed	Normal	Hot	Dry	Normal	Very Wet
Uganda	Hot	Hot	Hot	Normal	Normal	Very Wet
Rwanda	Hot	Hot	Hot	Dry	Normal	Very Wet

Notes:

The table gives an assessment of whether temperature and rainfall across each country have been above normal, normal or below normal over the past three months, using data from the NOAA Climate Prediction Center and the IRI Map Room: http://iridl.ldeo.columbia.edu/maproom/.

* Region usually experiences less than 10mm/month rainfall during the month (dry season).

Additional Information:

Current Status – Eastern Africa (2)

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Tanzania	Mixed (2)	Normal	Hot	Normal*	Normal	Normal (5)
Ethiopia	Mixed (3)	Mixed (3)	Hot	Normal	Very Wet (4)	Very Wet
Kenya	Warm	Warm	Hot	Normal	Wet	Very Wet
Somalia	Hot (1)	Hot	Hot	Normal	Wet	Very Wet

Notes:

The table gives an assessment of whether temperature and rainfall across each country have been above normal, normal or below normal over the past three months, using data from the NOAA Climate Prediction Center and the IRI Map Room: http://iridl.ldeo.columbia.edu/maproom/.

* Region usually experiences less than 10mm/month rainfall during the month (dry season).

Additional Information:

(1) Note: Cold in the far north
(2) Note: Hot in coastal regions, cold in the west, normal elsewhere
(3) Note: Hot in northeast, cold in the southwest
(4) Note: Normal in the northwest
(5) Note: Very Wet in the north and west

Current Status – Southern Africa

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
South Africa	Cold	Cold	Cold (3)	Wet	Normal (2)	Very Dry
Zambia	Cold	Cool	Hot	Normal*	Wet	Dry
Zimbabwe	Cold	Warm	Normal	Normal*	Wet	Very Dry
Mozambique	Cold	Normal	Mixed (4)	Normal	Very Wet (3)	Normal (5)
Malawi	Cool	Normal	Hot	Normal*	Normal	Normal
Madagascar	Cold	Cold	Cold	Normal (1)	Normal	Normal

Notes:

The table gives an assessment of whether temperature and rainfall across each country have been above normal, normal or below normal over the past three months, using data from the NOAA Climate Prediction Center and the IRI Map Room: http://iridl.ldeo.columbia.edu/maproom/.

* Region usually experiences less than 10mm/month rainfall during the month (dry season).

Additional Information:

(1) Note: Very dry in the south
(2) Note: Wet in coastal regions of the south and east
(3) Note: Normal in the north
(4) Note: Cold in the south, Hot in the north, normal elsewhere
(5) Note: Very Dry in the far south.

Outlooks

Notes for use

Western Africa

Central Africa

Eastern Africa

Southern Africa

Outlooks: Notes for use

Outlooks for months 4 to 6:

As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range.

Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Climatological odds:

A forecast is only provided in the outlooks where there is information in the model data about likely outcomes. Therefore, where the likelihoods for above, near and below normal conditions are evenly balanced the phrase 'climatological odds' will be used. This means the outcome could fall anywhere within the possible climatological range. Near-normal conditions should not necessarily be assumed, and users should update with shorter-term forecasts when available.

Outlook: January to June – Western Africa (1)

		Forecast summary		
		January	January to March	April to June
Sierra Leone	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Much more likely to be wetter than normal	Climatological odds
Liberia	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Much more likely to be wetter than normal	Climatological odds
Mali	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be near-normal	Climatological odds
Ghana	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Climatological odds	Climatological odds

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Outlook: January to June – Western Africa (2)

		Forecast summary		
		January	January to March	April to June
Nigeria	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be wetter than normal	Climatological odds
Cameroon	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Climatological odds	Likely to be drier than normal

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Outlook: January to June – Central Africa

		Forecast summary		
		January	January to March	April to June
Niger	*Temperature*	Likely to be warmer than normal	**Much more likely to be warmer than normal**	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be near-normal	Likely to be drier than normal
Chad	*Temperature*	Likely to be warmer than normal	**Much more likely to be warmer than normal**	Much more likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be near-normal	Much more likely to be drier than normal
Democratic Republic of Congo	*Temperature*	Likely to be warmer than normal	**Much more likely to be warmer than normal**	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be near-normal	Climatological odds

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Outlook: January to June – Eastern Africa (1)

		Forecast summary		
		January	January to March	April to June
Sudan	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be near-normal	Climatological odds
South Sudan	*Temperature*	Much more likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be near-normal	Much more likely to be wetter than normal	Likely to be wetter than normal
Uganda	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds
Rwanda	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Much more likely to be wetter than normal	Climatological odds

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Outlook: January to June – Eastern Africa (2)

		Forecast summary		
		January	January to March	April to June
Tanzania	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds
Ethiopia	*Temperature*	Much more likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds
Kenya	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Much more likely to be wetter than normal	Likely to be wetter than normal
Somalia	*Temperature*	Much more likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be wetter than normal	Likely to be wetter than normal

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Outlook: January to June – Southern Africa (1)

		Forecast summary		
		January	January to March	April to June
South Africa	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Likely to be drier than normal	Likely to be near-normal
Zambia	*Temperature*	Much more likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Likely to be drier than normal	Likely to be drier than normal
Zimbabwe	*Temperature*	Much more likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Climatological odds	Much more likely to be drier than normal	Likely to be drier than normal
Mozambique	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Climatological odds	Likely to be drier than normal

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Outlook: January to June – Southern Africa (1)

		Forecast summary		
		January	January to March	April to June
Malawi	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be drier than normal	Likely to be drier than normal
Madagascar	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Climatological odds	Climatological odds

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Annex 1 – Supplemental Information

For further information

WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble (LC-LRFMME)
https://www.wmolc.org/seasonPmmeUI/plot_PMME

International Research Institute for Climate and Society (IRI)
http://iridl.ldeo.columbia.edu/maproom/

NOAA El Niño technical info
https://www.ncei.noaa.gov/access/monitoring/enso/

Met Office
https://www.metoffice.gov.uk/services/government/international-development

For further information

Climate Outlook Fora (https://public.wmo.int/en/our-mandate/climate/regional-climate-outlook-products), including:

- Greater Horn of Africa Climate Outlook Forum (GHACOF): GHACOF 65 Statement (August 2023)
- PRÉvisions climatiques Saisonnières en Afrique Soudano-Sahélienne (PRESASS): http://acmad.net/rcc/presassS.php (April 2022)
- Southern African Regional Climate Outlook Forum (SARCOF): https://www.sadc.int/sites/default/files/2023-09/SARCOF-27%20STATEMENT.pdf (September 2023)
- PRÉvisions climatiques Saisonnières en Afrique, pays du Golfe de Guinée (PRESAGG): https://agrhymet.cilss.int/doss/tocharg/2023/02/COMMUNIQUE-FINAL_PRESAGG_2023_VF_Engl.pdf (February 2023)
- South-West Indian Ocean Climate Outlook Forum (SWIOCOF) - https://www.commissionoceanindien.org/wp-content/uploads/2022/10/SWIOCOF11_Statement-EN-final.pdf (September 2022)

Technical notes

The WMO lead centre for long-range forecast multi-model ensemble (LC-LRFMME) produce a probabilistic multi-model mean forecast product in which the multi-model mean is based on uncalibrated model output with a model weighting system that accounts for errors in both the forecast probability and ensemble mean. The method used by LC-LRFMME separately computes a probabilistic forecast and calculates tercile probabilities with respect to climatology for each individual model, before creating the weighted multi-model mean. In seasonal prediction, shifts in the tercile probabilities are always closely associated with the shifts in the probability of extremes, and we can use the probability of terciles to provide information on the likelihood of above- or below- normal conditions. The thresholds used in the forecast summaries are defined below.

Seasonal forecasts rely on the aspects of the global weather and climate system that are more predictable, such as tropical sea-surface temperatures or the El Niño–Southern Oscillation (ENSO). However, whilst such forecasts may be able to show what is more or less likely to occur, they acknowledge that other outcomes are possible.

In addition, forecast uncertainty generally increases with longer range so the 6-month outlook is less reliable. It is also based on less information, because not all models are available to this range. Therefore the information presented here should be used to raise early awareness of potential hazards, and should be updated with the 3-month outlook when available.

In the report and tables precipitation is referred to as rainfall but in fact encompasses any form of water, liquid or solid, falling from the sky. Temperatures are the (2 metre) near-surface temperature.

Description	Definition
Much more likely to be below normal	When probability of lower tercile > 70%
More likely to be below normal	When probability of lower tercile is 40-70%
Likely to be near-normal	When probability of middle tercile is 40-70%
Much more likely to be near-normal	When probability of middle tercile > 70%
Likely to be above normal	When probability of upper tercile is 40-70%
Much more likely to be above normal	When probability of upper tercile > 70%
Climatological odds	When probabilities for all categories are roughly 33%

Global Producing Centres (GPC) forecasts used by WMO LC-LRFMME:

- GPC CPTEC (INPE),
- GPC ECMWF,
- GPC Exeter (Met Office),
- GPC Melbourne (BOM),
- GPC Montreal (CMC),
- GPC Moscow (Hydromet Centre of Russia),
- GPC Offenbach (DWD),
- GPC Pretoria (SAWS),
- GPC Seoul (KMA),
- GPC Tokyo (JMA),
- GPC Toulouse (Meteo France),
- GPC Washington (NCEP)

Enquiries

Email: internationaldevelopment@metoffice.gov.uk

Web: https://www.metoffice.gov.uk/services/government/international-development