AFRICA: Monthly Climate Outlook December to September

Issued: March 2024

Overview

Africa Current Status and Outlook – Temperature

Africa Current Status and Outlook – Rainfall

Global Outlook – Temperature

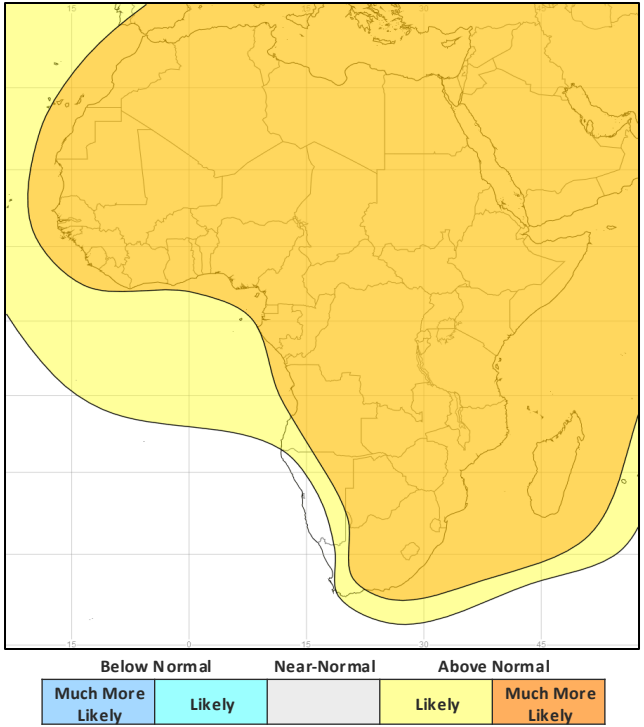
Global Outlook – Rainfall

Africa Current Status and Outlook - Temperature

Current Status:
Most of Africa was hot in December, except for parts of East Africa and Madagascar which were cold. This pattern became more mixed through January and February with areas of southern and western Africa experiencing cool or cold conditions.

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 April to June - Temperature



Africa Current Status and Outlook - Rainfall

Current Status:
In western Africa many places were normal or dry over the last three months. In central Africa rainfall has been mostly near-normal though conditions across DRC have been more been mixed.

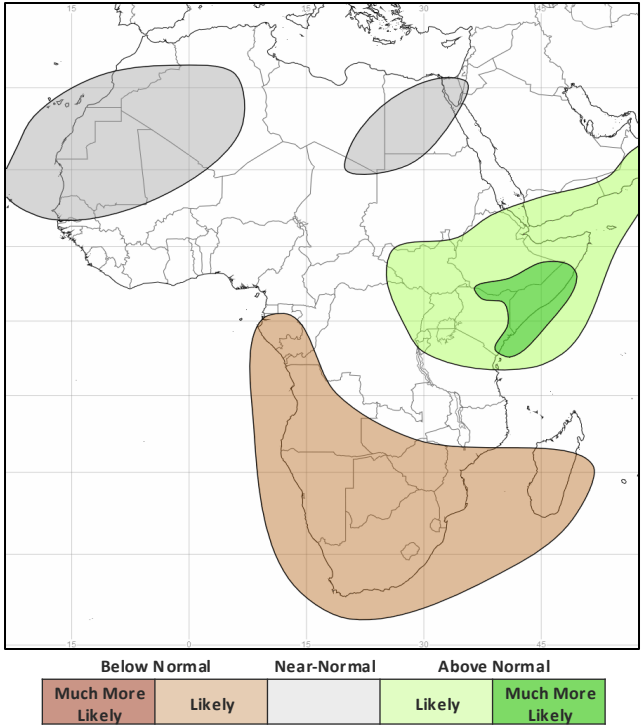
In East Africa, December was mostly normal while January and February were wetter than normal in many areas.

Dry conditions were experienced for large parts of southern Africa in the last three months except for eastern South Africa, southern Zimbabwe, southern Mozambique and Eswatini which were wet in December.

Outlook:
Over the next three months, consistent with the current El Niño, it is likely to be wetter than normal in East Africa and much more likely to be wetter than normal in some coastal regions with the remainder of the long rains (April – May) expected to be more active than normal.

In much of southern Africa as well as parts of western Africa, it is likely to continue to be drier than normal. .

3-Month Outlook April to June - Rainfall

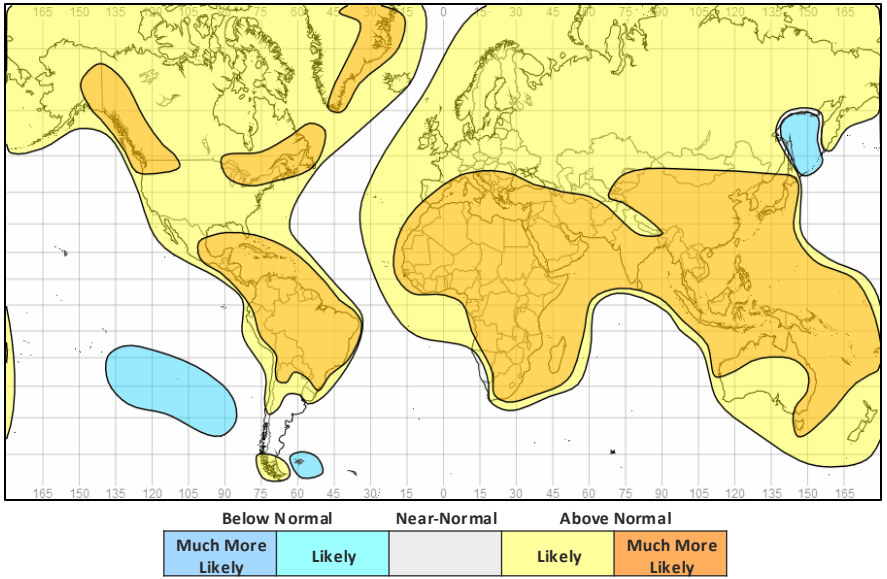


Global Outlook - Temperature

Outlook:

With the backdrop of a warming climate and the current ongoing (though weakening) El Niño event, the vast majority of land areas are likely or much more likely to be warmer than normal during April, May and June. The main exception to this being the southeast Pacific region and far southwest Atlantic, where colder conditions are likely. This is result of colder than normal sea surface temperatures in this area due to El Niño.

3-Month Outlook April to June - Temperature



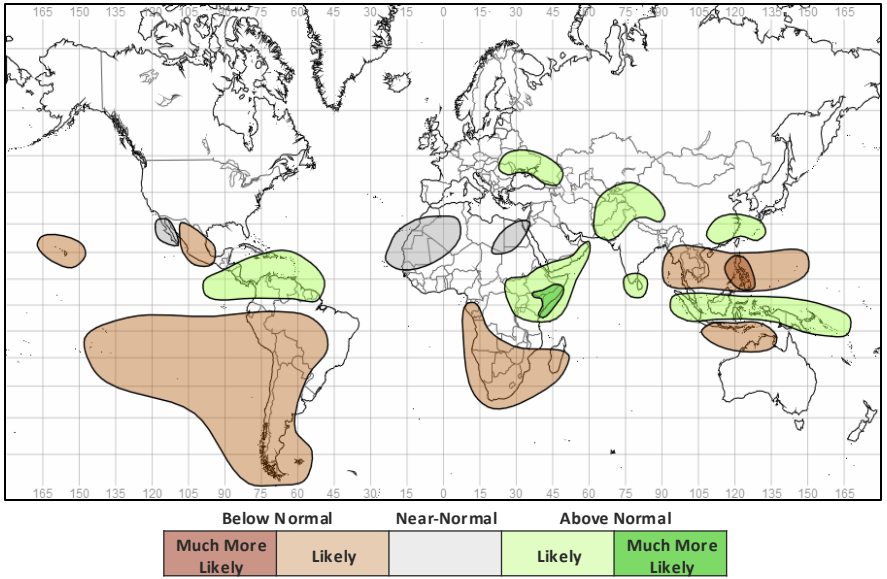
Global Outlook - Rainfall

Outlook:

El Niño-Southern Oscillation (ENSO) – Although now declining, sea surface temperatures (SSTs) across the equatorial Pacific remain indicative on an ongoing El Niño event. Now past its peak, the current El Niño event is likely to weaken further with a transition to ENSO-neutral very likely (83%) April-June. There is an increasing chance (62%) of a transition to La Niña in June-August.

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. Its influence tends to be most dominant across the tropics and although weakening and perhaps becoming less of a driver in mid-latitudes, El Niño will continue to impact weather patterns over the next few months, especially across the tropics.

3-Month Outlook April to June - Rainfall



Current Status

Current Status maps

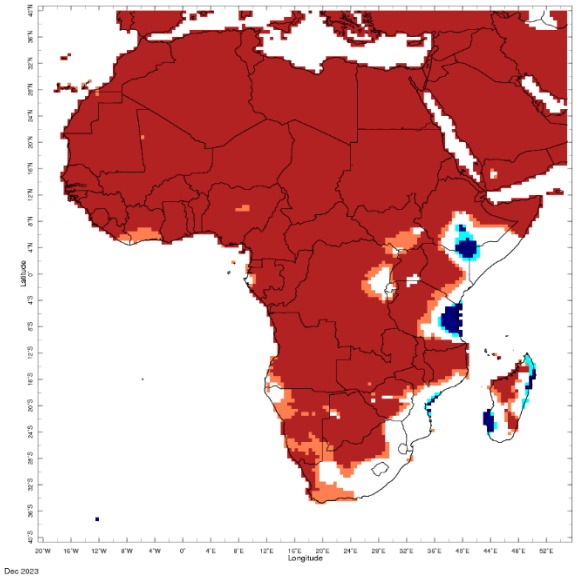
Western Africa

Central Africa

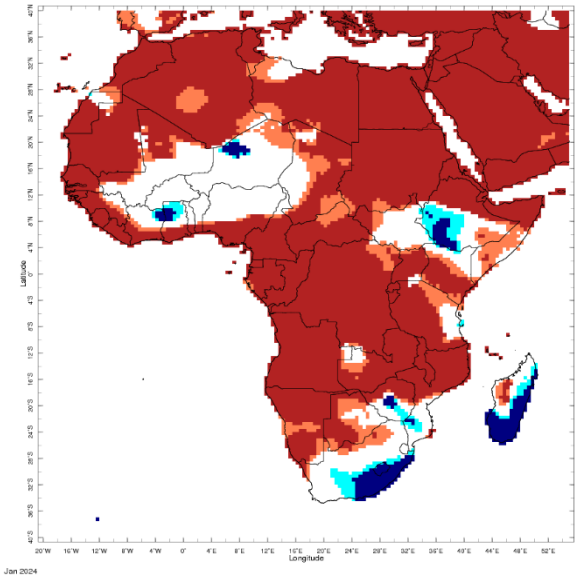
Eastern Africa

Southern Africa

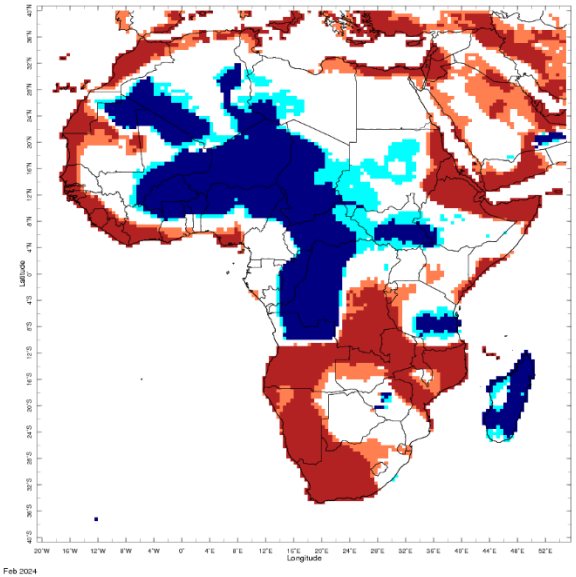
Current Status – Temperature percentiles



December



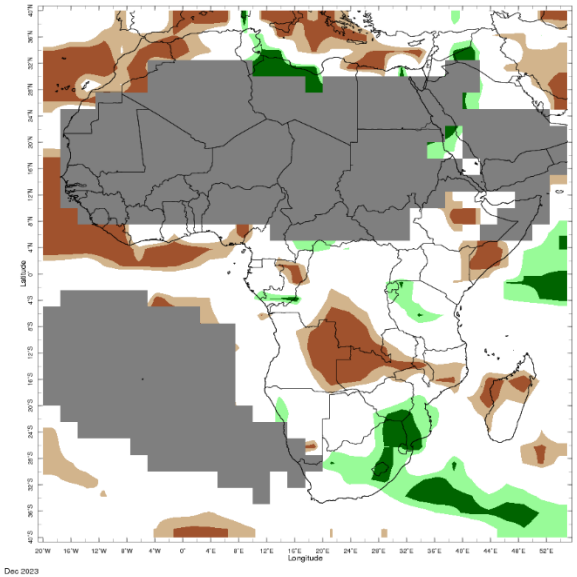
January



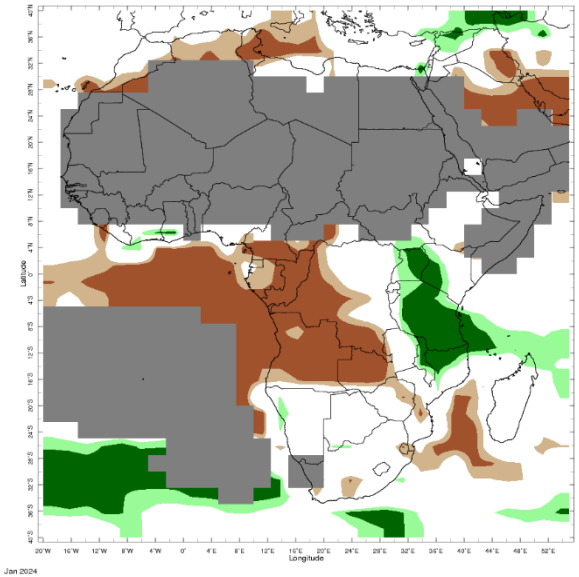
February

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.

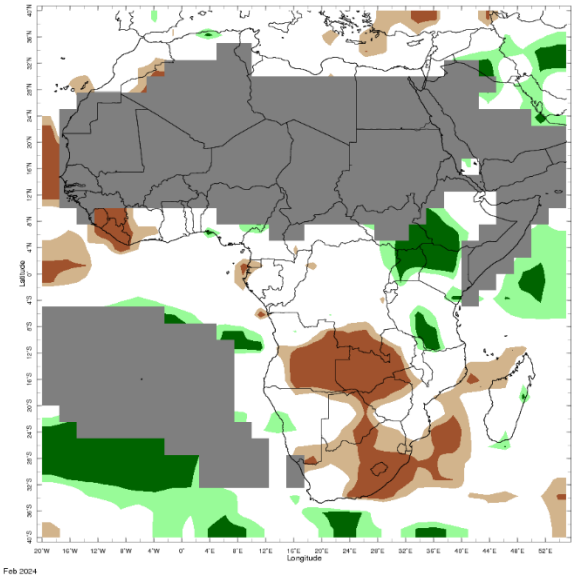
Current Status – Precipitation percentiles



December



January



February

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 10mm/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		
	December	January	February	December	January	February
Sierra Leone	Hot	Hot	Hot	Normal*	Normal*	Very Dry
Liberia	Hot	Hot	Hot	Very Dry	Normal	Very Dry
Mali	Hot	Normal (1)	Cold	Normal*	Normal*	Normal*
Ghana	Hot	Mixed (2)	Mixed (2)	Normal	Normal	Normal
Nigeria	Hot	Hot (3)	Mixed (2)	Normal	Normal	Normal
Cameroon	Hot	Hot	Normal	Normal	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: Hot in the north
(2) Note: Hot in the south, cold in the north
(3) Note: Normal in the north

Current Status – Central Africa

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
Niger	Hot	Normal	Cold	Normal*	Normal*	Normal*
Chad	Hot	Hot (1)	Cold	Normal*	Normal*	Normal*
DRC	Hot	Hot	Mixed (4)	Normal (2)	Mixed (3)	Normal (2)

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:** Normal in the west
(2) **Note:** Very dry in far south
(3) **Note:** Normal in the east, very dry in the west
(4) **Note:** Cold in the west, hot in the east

Current Status – Eastern Africa (1)

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
Sudan	Hot	Hot	Cool	Normal*	Normal*	Normal*
South Sudan	Hot	Normal	Cool	Normal*	Normal*	Normal*
Uganda	Hot	Hot	Normal	Normal	Wet	Very Wet
Rwanda	Warm	Hot	Normal	Wet	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:

Current Status – Eastern Africa (2)

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
Tanzania	Hot (1)	Hot (6)	Mixed	Normal (4)	Very Wet	Normal (10)
Ethiopia	Hot (2)	Mixed (7)	Mixed (7)	Normal	Normal	Normal (10)
Kenya	Hot	Mixed (8)	Normal	Normal	Normal (9)	Very Wet
Somalia	Hot (3)	Hot	Hot (3)	Normal (5)	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: Cold in the far east
(2) Note: Cold in the southeast
(3) Note: Normal in the south
(4) Note: Wet in the northwest
(5) Note: Very dry in the far south
(6) Note: Normal in the east
(7) Note: Hot in northeast, cold in the southwest
(8) Note: Hot in the north, warm in the south
(9) Note: Very wet in the west
(10) Note: Very wet in the southwest

Current Status – Southern Africa

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
South Africa	Warm (1)	Mixed	Hot (1)	Wet (3)	Normal	Dry
Zambia	Hot	Hot	Hot	Dry	Mixed (5)	Very Dry
Zimbabwe	Hot	Mixed (6)	Normal	Normal (4)	Normal	Dry
Mozambique	Hot (2)	Hot (2)	Hot (2)	Mixed (5)	Normal	Normal
Malawi	Hot	Hot	Hot	Dry	Wet	Normal
Madagascar	Mixed	Mixed (7)	Cold	Dry	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: Normal in the east
(2) Note: Normal in the south
(3) Note: Normal in the southwest
(4) Note: Wet in the southeast
(5) Note: Dry in the north, wet or very wet in the south
(6) Note: Warm in the far north, cold in the southeast, normal elsewhere
(7) Note: Cold in the south

Outlooks

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: April to September – Western Africa (1)

		Forecast summary		
		April	April to June	July to September
Sierra Leone	*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 drier than normal**	Climatological odds	Climatological odds
Liberia	*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 drier than normal**	Climatological odds	Likely to be drier than normal
Mali	*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 in the north; Likely to be warmer than normal in the south
	Rainfall	**Likely to be near-normal**	Climatological odds	Climatological odds
Ghana	*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	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: April to September – Western Africa (2)

		Forecast summary		
		April	April to June	July to September
Nigeria	*Temperature*	**Much more likely to be warmer than normal**	**Much more likely to be warmer than normal**	Likely to be warmer than normal in the far north; Much more likely to be warmer than normal elsewhere
	Rainfall	Climatological odds	Climatological odds	Likely to be drier than normal in the south, Likely to be wetter than normal in the north
Cameroon	*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	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: April to September – Central Africa

		Forecast summary		
		April	April to June	July to September
Niger	*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 in the north; Likely to be warmer than normal in the south
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
Chad	*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 in the north; Likely to be warmer than normal in the south
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
Democratic Republic of Congo	*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 drier than normal** in the east; Climatological odds elsewhere	**Likely to be drier than normal** in the far west; **Likely to be wetter than normal** in the far east; Climatological odds elsewhere	Likely to be drier than normal in the far west; Likely to be wetter than normal in the far east; Climatological odds elsewhere

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: April to September – Eastern Africa (1)

		Forecast summary		
		April	April to June	July to September
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 in the north; Climatological odds in the south
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
South Sudan	*Temperature*	**Much more likely to be warmer than normal**	**Much more likely to be warmer than normal**	Climatological odds
	Rainfall	**Likely to be wetter than normal** in the east; Climatological odds elsewhere	**Likely to be wetter than normal**	Likely to be wetter than normal
Uganda	*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**	Likely to be wetter than normal
Rwanda	*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**	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: April to September – Eastern Africa (2)

		Forecast summary		
		April	April to June	July to September
Tanzania	*Temperature*	Likely to be warmer than normal in the North; **Much more likely to be warmer than normal** elsewhere	**Much more likely to be warmer than normal**	Likely to be warmer than normal in the north-west; climatological odds elsewhere
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal in the north; climatological odds elsewhere	Likely to be wetter than normal in the north and east; Climatological odds elsewhere
Ethiopia	*Temperature*	Likely to be warmer than normal in the south; **Much more likely to be warmer than normal** elsewhere	**Much more likely to be warmer than normal**	Much more likely to be warmer than normal in the south; Climatological odds in the north-west
	Rainfall	Climatological odds in the north, Likely to be wetter than normal in the south	**Much more likely to be wetter than normal** in the south; Likely to be wetter than normal elsewhere	Much more 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: April to September – Eastern Africa (3)

		Forecast summary		
		April	April to June	July to September
Kenya	*Temperature*	Likely to be warmer than normal in the north; **Much more likely to be warmer than normal** elsewhere	**Much more likely to be warmer than normal**	Much more likely to be warmer than normal in the south-east, Likely to be warmer than normal in the north-east
	Rainfall	Likely to be wetter than normal	**Much more likely to be wetter than normal** in the north and west; Likely to be wetter than normal elsewhere	Much more likely to be wetter than normal in the north and west; Likely to be wetter than normal elsewhere
Somalia	*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 in the south-east; Likely to be warmer than normal in the north-west
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal in the north; **Much more likely to be wetter than normal** in the south	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: April to September – Southern Africa (1)

		Forecast summary		
		April	April to June	July to September
South Africa	*Temperature*	Likely to be warmer than normal in the west; **Much more likely to be warmer than normal** elsewhere	Likely to be warmer than normal in the west; **Much more likely to be warmer than normal** elsewhere	Much more likely to be warmer than normal in the east; Likely to be warmer than normal elsewhere
	Rainfall	Likely to be drier than normal	Likely to be drier than normal	Likely to be drier than 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	Climatological odds	Climatological odds in the north-east; Likely to be drier than normal in the south-west	Likely to be near-normal
Zimbabwe	*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
Mozambique	*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	Climatological odds in the north; Likely to be drier than normal in the south	Likely to be drier than normal in the south; climatological odds elsewhere

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: April to September – Southern Africa (1)

		Forecast summary		
		April	April to June	July to September
Malawi	*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	Climatological odds	Likely to be near-normal
Madagascar	*Temperature*	**Much more likely to be warmer than normal**	**Much more likely to be warmer than normal**	Likely to be warmer than normal in the south; Much more likely to be warmer than normal elsewhere
	Rainfall	**Likely to be drier than normal**	Climatological odds in the north; **Likely to be drier than normal** in the south	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.

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 66 Statement (Feb 2024)
- 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)

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