

AFRICA: Monthly Climate Outlook

June to March

Issued: September 2023

[Overview](#)

[Current Status](#)

[Outlooks](#)

[Annex 1 – Supplemental Information](#)

Overview

[Africa Current Status and Outlook – Temperature](#)

[Africa Current Status and Outlook – Rainfall](#)

[Global Outlook – Temperature](#)

[Global Outlook – Rainfall](#)

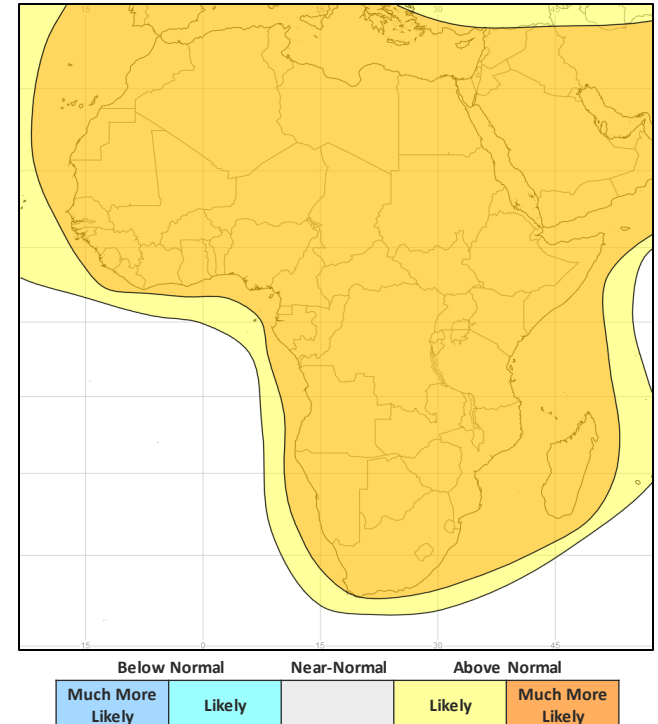
Africa Current Status and Outlook - Temperature

Current Status: Over the last three months, many parts of Central Africa were warm or hot, with the exception being Chad which was cool in June. The majority of West Africa observed cool conditions in June and August, with warm or conditions prevailing in July.

Over the last three months, Sudan observed normal or cold conditions in some parts. While in the majority of Eastern Africa conditions were warm or hot. Most of Southern Africa was hot in June and July, although Madagascar has remained cold during this period. During August most of the region was cold.

Outlook: Consistent with a warming climate, it is much more likely to be warmer than normal across most of the continent.

3-Month Outlook October to December - Temperature



Africa Current Status and Outlook - Rainfall

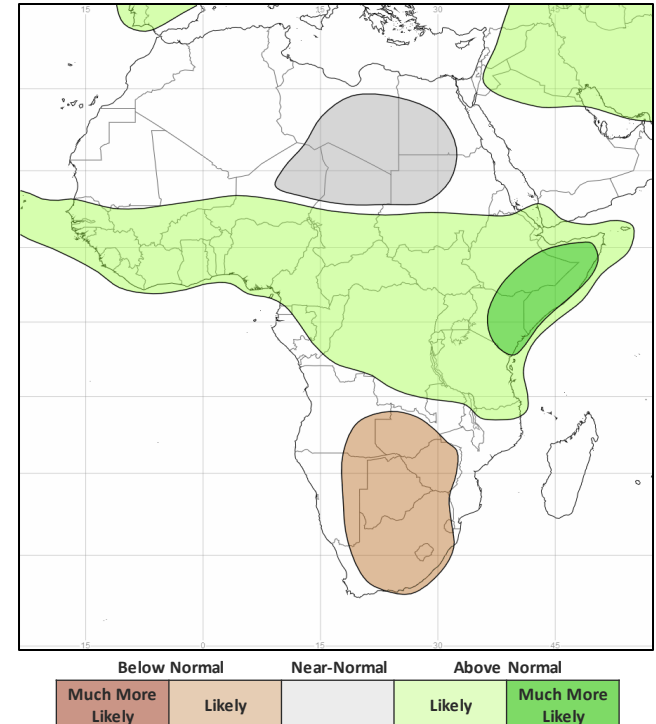
Current Status: During June and July, rainfall has been mostly near-normal or dry across most of West and Central Africa, although wet at times across parts of the Sahel. However, during August most of these regions were dry. During June it was wet or very wet at times across large parts of Eastern Africa. In July and August, much of this region was dry or near-normal, with the exception of Sudan, and some areas of Kenya, which were wet. Many parts of Southern Africa has mixed conditions, although in absolute terms rainfall amounts have been small as it has been the dry season.

Outlook: Over the next three months, the West African Monsoon will move south. Many areas of Western and Central African are likely to be wetter than normal.

Largely in response to El Niño and the positive IOD, it is likely or much more likely to be wetter than normal across a wide region of East Africa, along with some parts of the central African tropics including DRC.

It is likely to be drier than normal across South Africa and Zimbabwe along with southern parts of Zambia. It is likely to be wetter than normal in the far north of Mozambique, northern Zambia and Malawi.

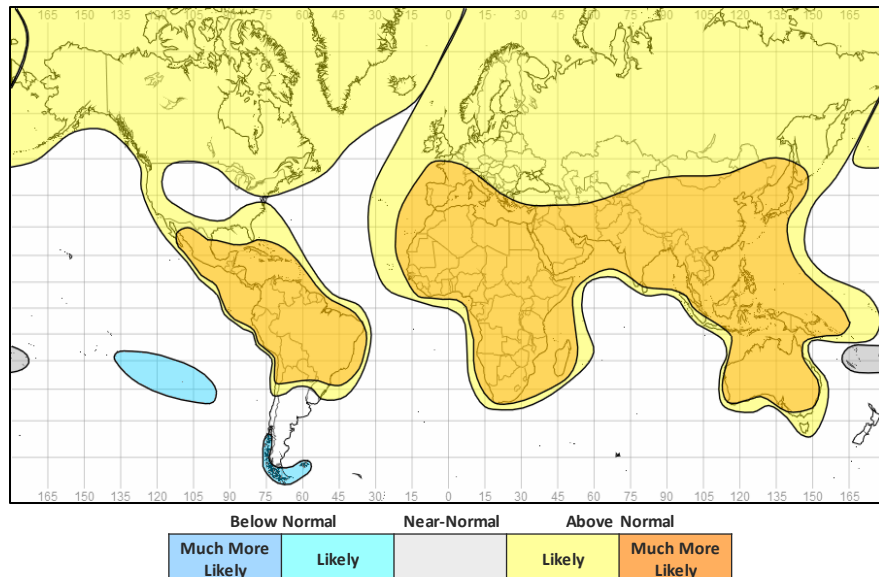
3-Month Outlook October to December - Rainfall



Global Outlook - Temperature

Outlook: With the backdrop of a warming climate and the current El Niño event, most land areas are likely to be warmer than normal with limited exceptions.

3-Month Outlook October to December - Temperature



Global Outlook - Rainfall

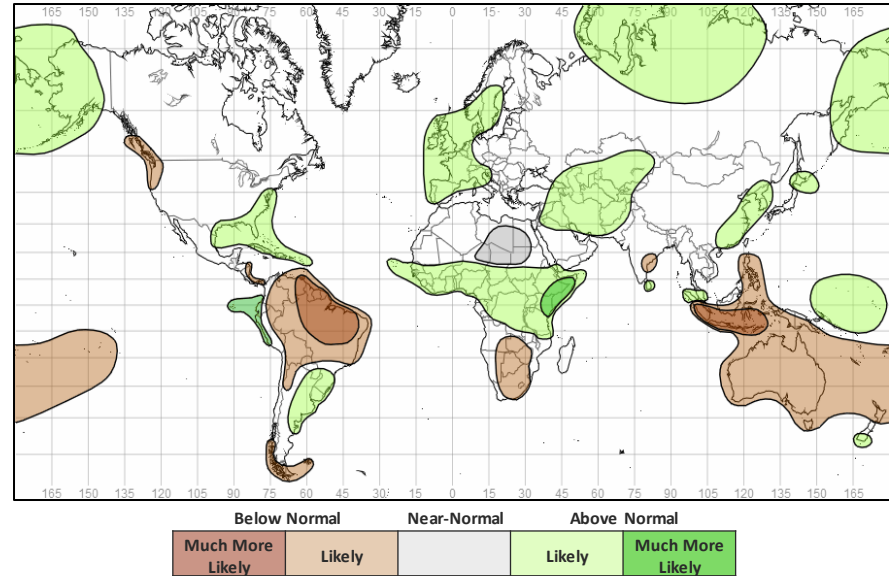
Outlook:

El Niño-Southern Oscillation (ENSO) – Sea surface temperatures across the equatorial Pacific continue to rise indicative of a developing El Niño, with latest sea surface temperatures in the Niño 3.4 region 1.6°C above normal. The atmospheric response has been slower though and is now consistent with El Niño conditions, and both the National Oceanic and Atmospheric Administration (NOAA) and Bureau of Meteorology (BoM) have declared that an El Niño event is now underway. A moderate to strong El Niño is highly likely over the next three months and this event is expected to persist well into the northern hemisphere winter. However, it is worth noting a strong El Niño does not necessarily equate to strong El Niño impacts in any given location.

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) – Sea surface temperatures (SSTs) in the western side of the basin (off the coast of East Africa) continue to rise, increasing the index up to +1.3°C above normal. A positive IOD event was declared by BoM on the 19th September – seasonal forecasts currently suggest this event will persist until the end of year. A positive IOD will act to reinforce the influence of El Niño further increasing the likelihood of drought across southeast Asia (especially Indonesia) and Australia, with heavy rainfall and flooding events across East Africa.

3-Month Outlook October to December - Rainfall



Current Status

[Current Status maps](#)

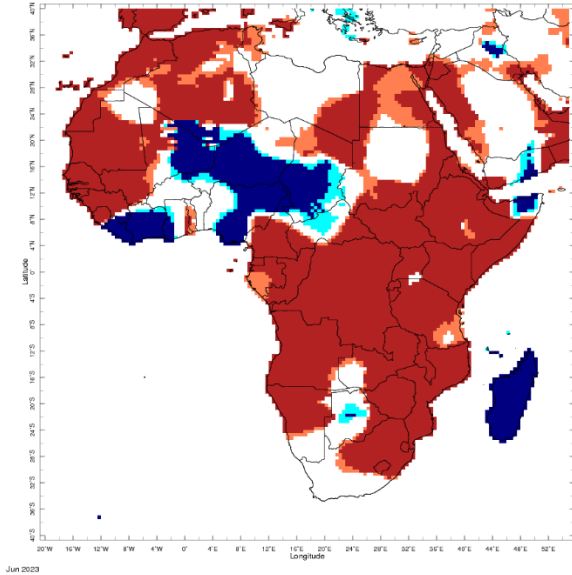
[Western Africa](#)

[Central Africa](#)

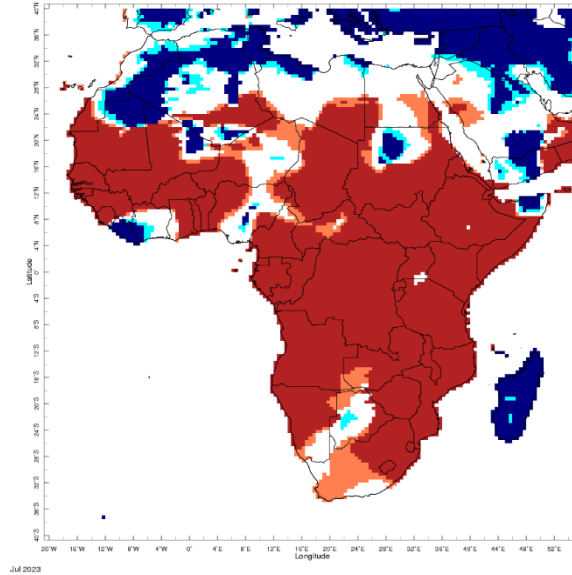
[Eastern Africa](#)

[Southern Africa](#)

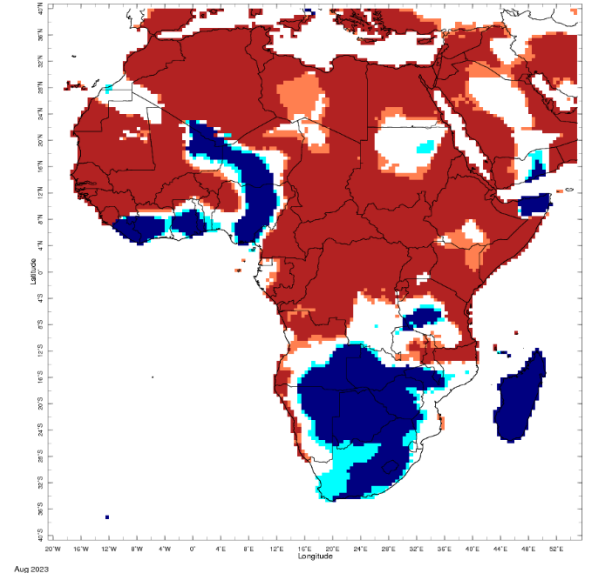
Current Status – Temperature percentiles



June



July

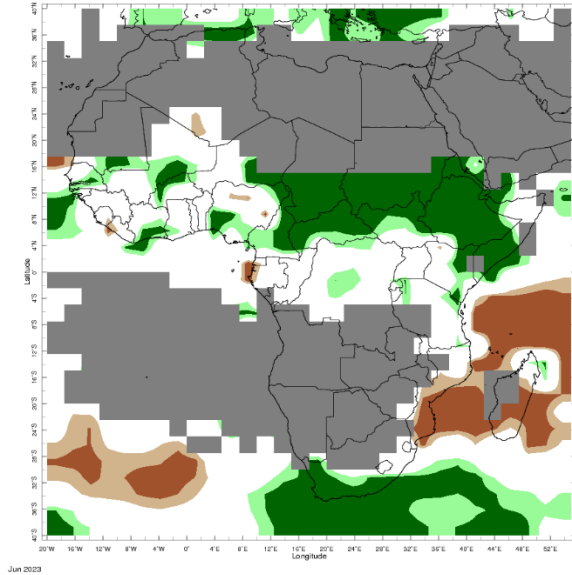


August

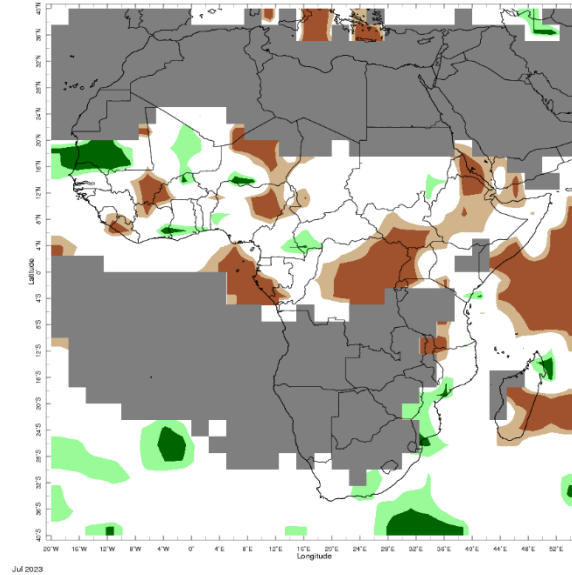


Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions 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.

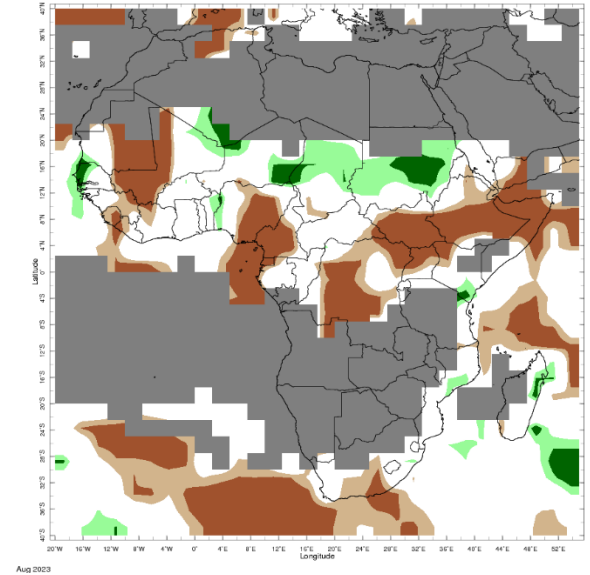
Current Status – Precipitation percentiles



June



July



August



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		
	June	July	August
Sierra Leone	Hot	Hot	Hot
Liberia	Cold	Cold	Cold
Mali	Mixed (1)	Hot	Hot
Ghana	Normal	Hot	Cold
Nigeria	Cold	Normal (3)	Cold
Cameroon	Hot	Hot	Warm

	Current Status: Rainfall		
	June	July	August
	Normal	Normal	Dry
	Normal	Dry	Normal
	Normal (2)	Normal (4)	Very Dry (6)
	Normal	Normal	Normal
	Normal (2)	Normal (5)	Very Dry
	Wet	Normal	Very Dry

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 east, Warm or Hot in the southwest
- (2) Note: Wet in the south
- (3) Note: Hot in the west
- (4) Note: Wet in the north, Very Dry in the south
- (5) Note: Very Dry in the east
- (6) Note: Normal in the east

Current Status – Central Africa

Current Status: Temperature

	June	July	August
Niger	Cold	Normal (3)	Mixed (4)
Chad	Mixed (1)	Hot	Hot
DRC	Hot (2)	Hot	Hot (2)

Current Status: Rainfall

	June	July	August
Niger	Very Wet (1)	Dry	Normal
Chad	Very Wet	Normal	Wet
DRC	Normal	Very Dry	Very Dry

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:** Cold in the south, hot in the north
- (3) **Note:** Hot in the west
- (4) **Note:** Cold in central regions, Hot elsewhere

Current Status – Eastern Africa (1)

Current Status: Temperature

	June	July	August
Sudan	Normal (2)	Normal (2)	Mixed (3)
South Sudan	Hot	Hot	Hot
Uganda	Hot	Hot	Hot
Rwanda	Hot	Hot	Warm

Current Status: Rainfall

	June	July	August
	Very Wet	Normal	Wet
	Very Wet (1)	Dry	Very Dry
	Normal	Dry	Very Dry
	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://iri.ldeo.columbia.edu/maproom/>.

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

Additional Information:

- (1) **Note:** Normal in the south
- (2) **Note:** Hot in the south and east
- (3) **Note:** Cold in the north, Hot in the south

Current Status – Eastern Africa (2)

	Current Status: Temperature		
	June	July	August
Tanzania	Hot	Hot	Mixed (5)
Ethiopia	Hot	Hot	Hot
Kenya	Hot	Hot	Warm
Somalia	Hot (3)	Hot (3)	Warm

	Current Status: Rainfall		
	June	July	August
Tanzania	Normal	Normal	Normal*
Ethiopia	Very Wet	Dry	Very Dry
Kenya	Very Wet (2)	Normal	Mixed (6)
Somalia	Wet (1)	Normal (4)	Very Dry

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://iri.ldeo.columbia.edu/maproom/>.

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

Additional Information:

- (1) **Note:** Very Wet in the south and normal in the north
- (2) **Note:** Normal in the Highlands.
- (3) **Note:** Cold in the far north
- (4) **Note:** Very Dry in the south
- (5) **Note:** Hot in coastal regions, cold in the west, normal elsewhere
- (6) **Note:** Very Dry in the northwest, wet in the southeast, normal elsewhere

Current Status – Southern Africa

Current Status: Temperature

	June	July	August
South Africa	Mixed (1)	Warm	Cold
Zambia	Hot	Hot	Cold (4)
Zimbabwe	Hot	Hot	Cold
Mozambique	Hot	Hot	Mixed
Malawi	Hot	Hot	Normal
Madagascar	Cold	Cold	Cold

Current Status: Rainfall

June	July	August
Normal (2)	Normal	Dry
Normal*	Normal*	Normal*
Normal*	Normal*	Normal*
Very Dry	Wet	Normal*
Normal*	Normal*	Normal*
Very Dry	Very Dry (3)	Normal (5)

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://iri.ldeo.columbia.edu/maproom/>.

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

Additional Information:

- (1) Note: Hot in northeast, Cold far south in May, else normal
- (2) Note: Very Wet in the south
- (3) Note: Wet in the far northeast
- (4) Note: Normal in the east
- (5) Note: Wet in the east

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: October to March – Western Africa (1)

		Forecast summary		
		October	October to December	January to March
Sierra Leone	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
Liberia	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
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 wetter than normal	Likely to be wetter than normal in the south, Climatological odds in the north	Climatological odds
Ghana	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

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: October to March – Western Africa (2)

		Forecast summary		
		October	October to December	January to March
Nigeria	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
Cameroon	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

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Outlook: October to March – Central Africa

		Forecast summary		
		October	October to December	January to March
Niger	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 in the south; Likely to be near-normal in the north	Climatological odds
Chad	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 in the south; Likely to be near-normal in the north	Climatological odds
Democratic Republic of Congo	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 in the north, Likely to be drier than normal in the south	Likely to be wetter than normal	Climatological odds

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Outlook: October to March – Eastern Africa (1)

		Forecast summary		
		October	October to December	January to March
Sudan	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
South Sudan	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 in the northwest; Likely to be drier than normal in the southeast	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 drier 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 drier than normal	Likely to be wetter than normal	Likely to be wetter than normal

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Outlook: October to March – Eastern Africa (2)

		Forecast summary		
		October	October to December	January to March
Tanzania	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 in the west; Likely to be wetter than normal near the coast; Climatological odds elsewhere	Likely to be wetter than normal	Likely to be wetter than normal
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	Much more likely to be wetter than normal in the southeast; Likely to be wetter than normal elsewhere	Likely to be wetter than normal
Kenya	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 in the Highlands; Likely to be wetter than normal along the Coastal Plain; Climatological odds elsewhere	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 wetter than normal	Much more likely to be wetter than normal	Likely to be wetter than normal

Outlook: October to March – Southern Africa (1)

		Forecast summary		
		October	October to December	January to March
South Africa	Temperature	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be drier than normal	Likely to be drier than normal
Zambia	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	Likely to be wetter than normal in the south; Likely to be drier than normal in the north	Climatological odds
Zimbabwe	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	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	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal in the far north; Climatological odds elsewhere	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: October to March – Southern Africa (1)

		Forecast summary		
		October	October to December	January to March
Malawi	Temperature	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal	Climatological odds
Madagascar	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	Climatological odds

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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>

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_64 Statement](#) (May 2023)

PRÉvisions climatiques Saisonnières en Afrique Soudano-Sahélienne (PRESASS): <http://acmad.net/rcc/presassS.php> (April 2022)

Southern African Regional Climate Outlook Forum (SARCOF): <http://csc.sadc.int/en/news-and-events/338-the-twenty-sixth-southern-africa-regional-climate-outlook-forum-sarcof-26> (August 2022)

PRÉvisions climatiques Saisonnières en Afrique, pays du Golfe de Guinée (PRESAGG): https://agrhytmet.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 a 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>