AFRICA: Monthly Climate Outlook
October to July

Issued: January 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

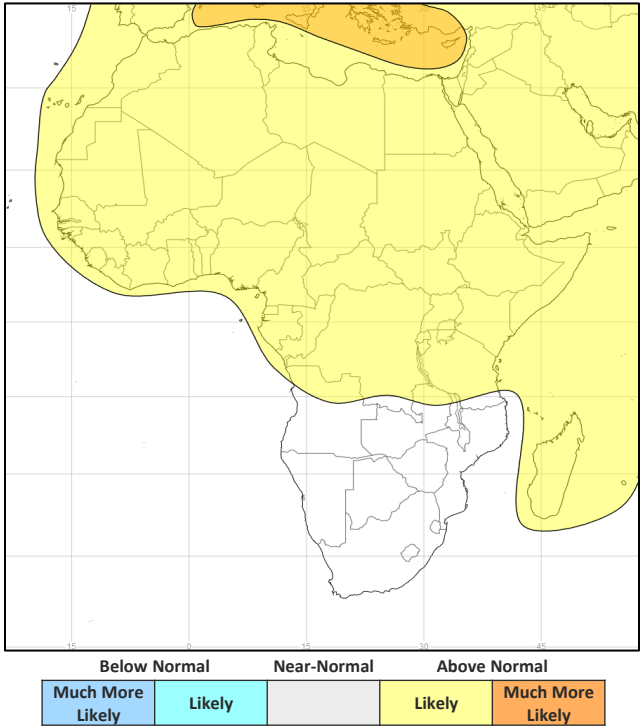
Current Status:

Over the last three months much of West Africa has been warm or hot. Temperatures have been mainly near-normal in Central Africa though DRC was cold in the west and hot in the east during November. In Southern Africa Madagascar was cold during November whilst Malawi and Madagascar were hot.

Outlook:

Over the next three months, many parts of the continent are likely to be warmer than normal, apart from southern Africa where climatological odds are present.

3-Month Outlook February to April - Temperature



Africa Current Status and Outlook - Rainfall

Current Status:

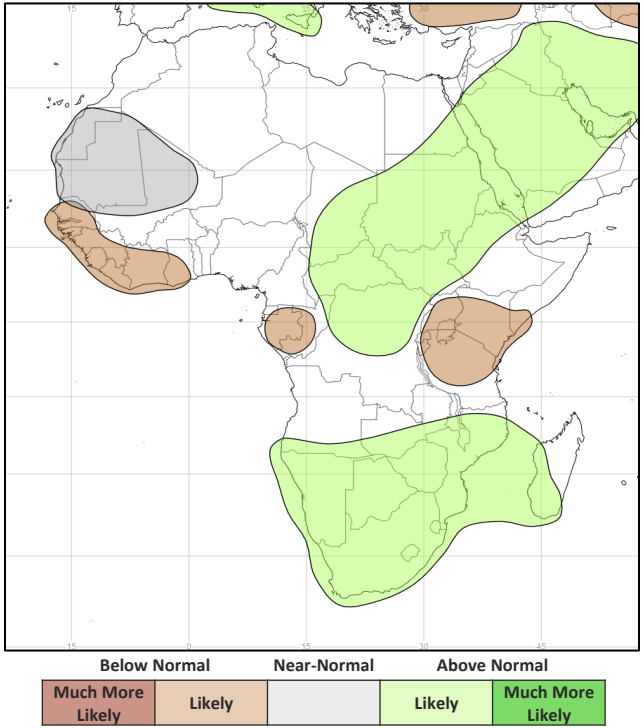
Over the last three months, rainfall across most of West Africa has been near-normal. Conditions have been mixed in Central Africa with the DRC very wet in November. Following very dry conditions across parts of East Africa during October, many parts of the region had near-normal rainfall in November and December. In southern Africa, it was very wet in South Africa, Zimbabwe and Mozambique during November and December.

Outlook:

The East African Long Rains season runs from March until May across most of this region. The start of this season is likely to be drier than normal in Uganda, Kenya, Rwanda and Tanzania, leading to the potential for another poor or failed rainy season with further severe humanitarian impacts. Beyond April, there is limited information currently available for these countries on likely rainfall. In Southern Africa, it is likely to be wetter than normal, increasing the risk of flood events being more widespread and severe than usual.

It is likely to be wetter than normal in a region stretching from DRC across CAR, South Sudan and into parts of Ethiopia and Sudan. It is likely to be drier than normal in the countries bordering the Gulf of Guinea.

3-Month Outlook February to April - Rainfall



Global Outlook - Temperature

Outlook:

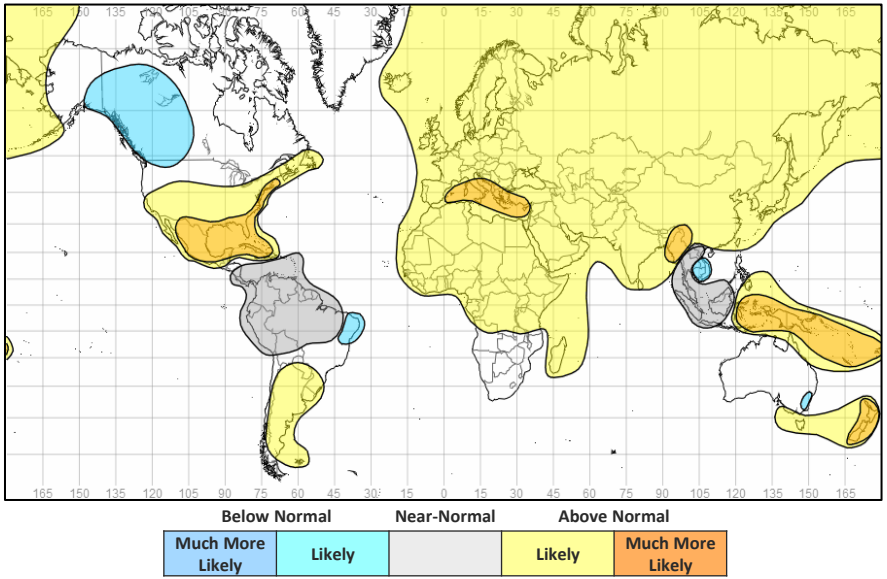
The ongoing La Niña will be the dominant driver of conditions at the start of this forecasting period, albeit within the context of background warming trend. This influence is likely to reduce later in this period as the El Niño Southern Oscillation (ENSO) is expected to become neutral during the northern hemisphere spring.

Over the next three months, many regions are likely to be warmer than normal. However, there are exceptions as a result of La Niña, including mainland Southeast Asia and parts of Canada where near-normal or colder than normal conditions are more likely.

Temperatures are likely, or much more likely, to be warmer than normal for southern parts North America and most of Europe and Asia.

Globally, La Niña acts to cool temperatures and can often suppress rising temperatures due to climate change. Looking further into 2023, early predictions highlight an increased likelihood of El Niño conditions taking hold in the August to October period (51% likelihood in NOAA forecast). While forecasts looking this far ahead are inherently uncertain, particularly when issued at this time of year, there is a consistent message emerging from many international modelling centres.

3-Month Outlook February to April - Temperature



Global Outlook - Rainfall

Outlook:

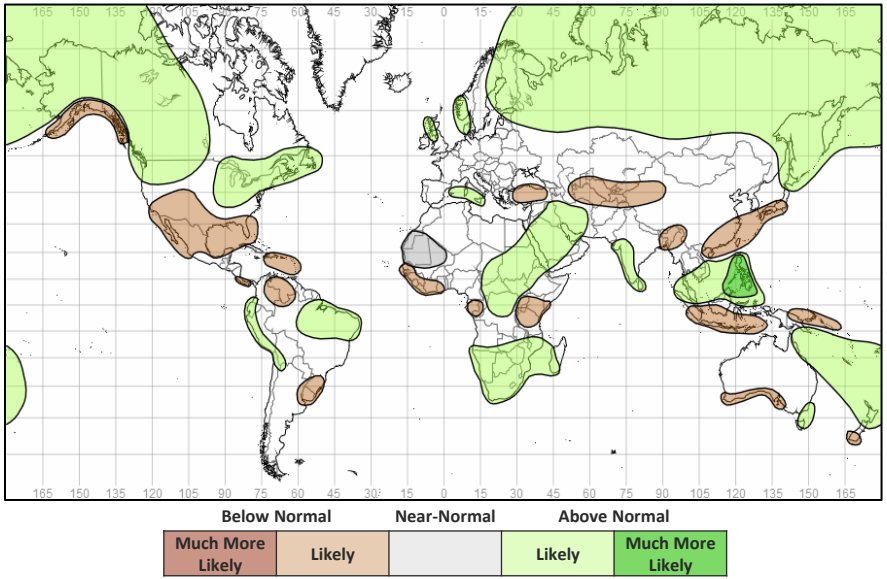
El Niño-Southern Oscillation (ENSO) – The current La Niña event continues and is expected to remain the main global driver of weather patterns at the start of the forecast period. While ongoing, La Niña will continue to increase confidence in predictions on seasonal timescales, more especially in the tropics. Its longevity is still uncertain however, with NOAA suggesting an 82% chance of a return to ENSO-neutral during March-May 2023.

La Niña, very broadly speaking, tends to increase the likelihood of wetter than normal conditions across many land areas of the tropics with a couple of notable exceptions (e.g. East Africa). More information on typical impacts can be found here https://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/el-nino-la-nina/enso-impacts

Looking further ahead there is an increased chance of El Niño developing during the coming northern hemisphere summer – models are currently predicting the likelihood of El Niño developing during the period May to July at ~30% and in the August to October period ~50%. While forecasts looking this far ahead are inherently uncertain, particularly when issued at this time of year, there is a consistent message emerging from many international modelling centres.

Indian Ocean Dipole (IOD) – The Indian Ocean Dipole has returned to neutral conditions and is therefore not expected to be a driver of rainfall patterns around the Indian Ocean basin during this period.

3-Month Outlook February to April - Rainfall



Current Status

Current Status maps

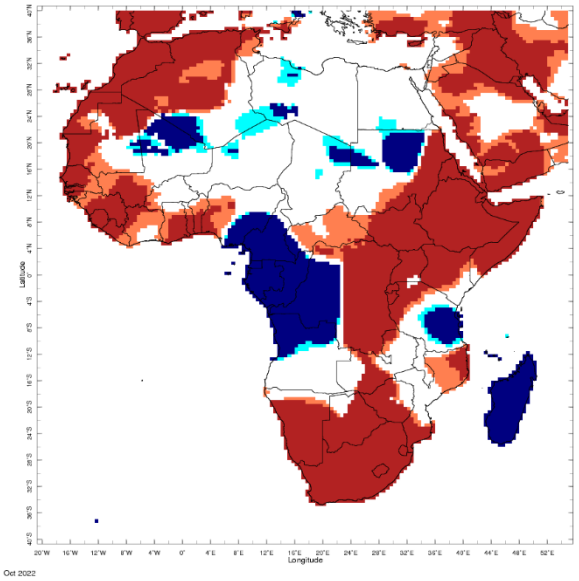
Western Africa

Central Africa

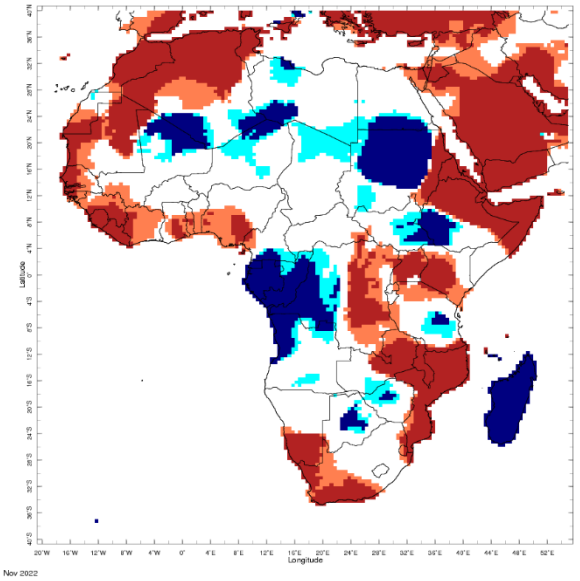
Eastern Africa

Southern Africa

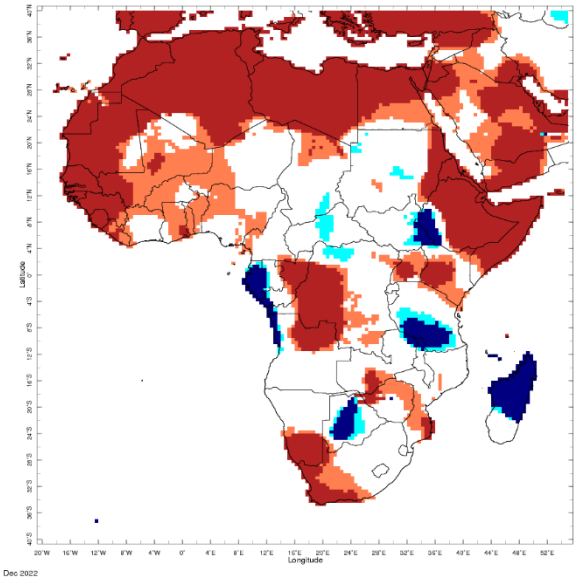
Current Status – Temperature percentiles



October



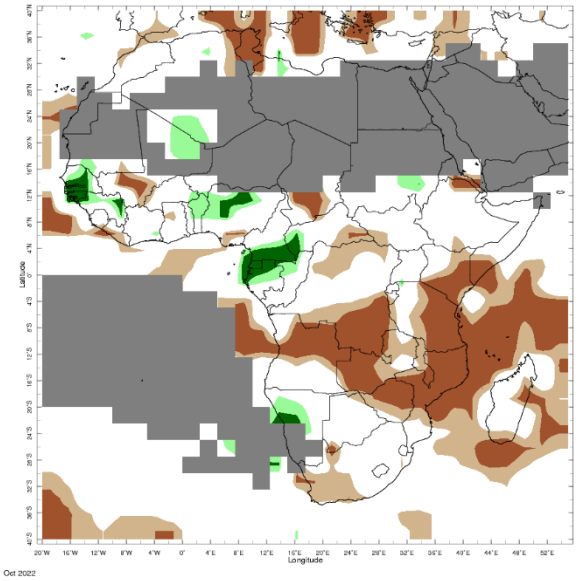
November



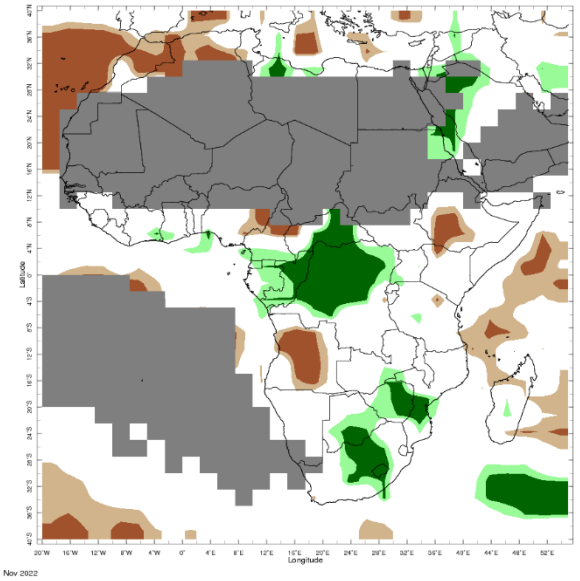
December

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.

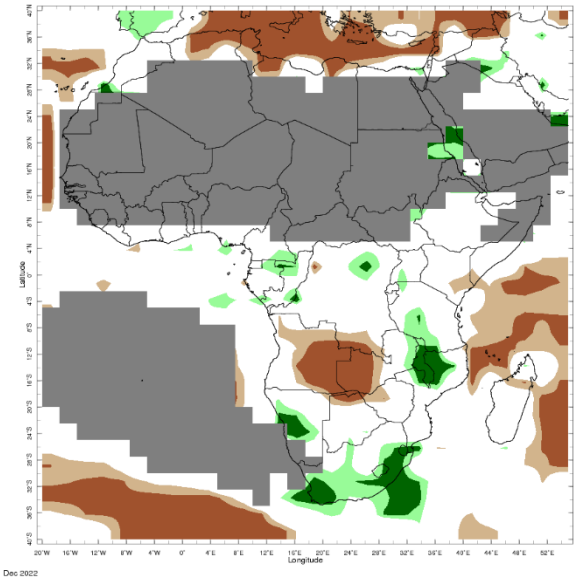
Current Status – Precipitation percentiles



October



November



December

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		
	October	November	December	October	November	December
Sierra Leone	Hot	Hot	Hot	Normal	Normal	Normal
Liberia	Hot	Hot	Warm	Dry	Normal	Normal
Mali	Mixed (3)	Mixed (3)	Warm	Mixed (1)	Normal*	Normal*
Ghana	Hot	Warm	Warm	Normal	Normal	Normal
Nigeria	Mixed (4)	Warm	Warm	Mixed (2)	Normal	Normal
Cameroon	Cold	Mixed (5)	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:

(1) Note: Wet in the northeast, dry in the southwest
(2) Note: Wet in the northwest, dry near the coast, normal elsewhere
(3) Note: Warm or hot in the southwest, cool in the north.
(4) Note: Warm in the west, cold in the southeast
(5) Note: Large variations across the country

Current Status – Central Africa

	Current Status: Temperature			Current Status: Rainfall		
	October	November	December	October	November	December
Niger	Normal	Mixed (1)	Mixed (2)	Normal	Normal*	Normal*
Chad	Normal	Normal	Normal	Dry	Normal*	Normal*
DRC	Mixed (3)	Mixed (3)	Normal (5)	Mixed (4)	Very Wet	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: Cool/cold in the north , normal elsewhere
(2) Note: Warm in the west, normal elsewhere
(3) Note: Cold in the west, Hot in the east
(4) Note: Very Dry in the south; normal elsewhere
(5) Note: Hot in the west

Current Status – Eastern Africa (1)

	Current Status: Temperature			Current Status: Rainfall		
	October	November	December	October	November	December
Sudan	Mixed (1)	Cold	Normal	Normal	Normal*	Normal*
South Sudan	Hot	Normal	Normal	Normal	Normal	Normal
Uganda	Hot	Hot	Warm	Normal	Normal	Normal
Rwanda	Hot	Warm	Normal	Normal	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 northwest; Hot in the southeast

Current Status – Eastern Africa (2)

	Current Status: Temperature			Current Status: Rainfall		
	October	November	December	October	November	December
Tanzania	Mixed (1)	Mixed (1)	Mixed (1)	Very Dry	Normal	Normal
Ethiopia	Hot	Mixed (4)	Mixed (4)	Normal	Normal	Normal
Kenya	Hot	Hot	Warm	Very Dry	Normal	Normal
Somalia	Hot	Mixed (5)	Hot	Normal (3)	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 southeast, warm or hot in the northwest
(2) Note: Cold in the southwest, warm in the north
(3) Note: Very Dry in the south
(4) Note: Hot in northeast, cold in southwest
(5) Note: Normal far south, otherwise hot

Current Status – Southern Africa

	Current Status: Temperature			Current Status: Rainfall		
	October	November	December	October	November	December
South Africa	Hot	Mixed (3)	Mixed (3)	Normal (2)	Mixed (5)	Wet
Zambia	Normal	Mixed (4)	Normal (7)	Very Dry	Normal	Mixed (9)
Zimbabwe	Hot	Normal	Warm	Very Dry	Wet	Normal
Mozambique	Mixed (1)	Hot	Normal (8)	Very Dry	Mixed (6)	Normal
Malawi	Normal	Hot	Normal	Very Dry	Normal	Very Wet
Madagascar	Cold	Cold	Cold	Normal	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: Hot in the north, more variable elsewhere.
(2) Note: Dry in the south
(3) Note: Hot in southwest and far northeast, else normal
(4) Note: Hot in northeast, normal in southwest
(5) Note: Wet or very wet in central areas, else normal
(6) Note: Wet in south, normal in north
(7) Note: Hot in the southwest
(8) Note: Warm in the far south
(9) Note: Very Dry in the west; 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: February to July – Western Africa (1)

		Forecast summary		
		February	February to April	May to July
Sierra Leone	*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	Climatological odds
Liberia	*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	Climatological odds
Mali	*Temperature*	Climatological odds	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 near-normal	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be drier than normal in the southwest; 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: February to July – Western Africa (2)

		Forecast summary		
		February	February to April	May to July
Nigeria	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Climatological odds	Climatological odds
Cameroon	*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.

Outlook: February to July – Central Africa

		Forecast summary		
		February	February to April	May to July
Niger	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Climatological odds	Climatological odds
Chad	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be wetter than normal in the south and east; Climatological odds elsewhere	Likely to be wetter than normal
Democratic Republic of Congo	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal in the north; Climatological odds 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: February to July – Eastern Africa (1)

		Forecast summary		
		February	February to April	May to July
Sudan	*Temperature*	Likely to be warmer than normal	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
South Sudan	*Temperature*	Likely to be warmer than normal	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
Uganda	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be drier than normal	Climatological odds
Rwanda	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be drier 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: February to July – Eastern Africa (2)

		Forecast summary		
		February	February to April	May to July
Tanzania	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be drier than normal	Climatological odds
Ethiopia	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be wetter than normal in the northwest; Climatological odds elsewhere	Climatological odds
Kenya	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be drier than normal	Climatological odds
Somalia	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be drier than normal in the far south; 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: February to July – Southern Africa (1)

		Forecast summary		
		February	February to April	May to July
South Africa	*Temperature*	Climatological odds	Climatological odds	Climatological odds
	Rainfall	**Likely to be wetter than normal**	**Likely to be wetter than normal**	Climatological odds
Zambia	*Temperature*	Climatological odds	Climatological odds	Likely to be warmer than normal
	Rainfall	Climatological odds	**Likely to be wetter than normal** in the south; Climatological odds in the north	Climatological odds
Zimbabwe	*Temperature*	Climatological odds	Climatological odds	Likely to be warmer than normal
	Rainfall	Climatological odds	**Likely to be wetter than normal**	Climatological odds
Mozambique	*Temperature*	Climatological odds	Climatological odds	Likely to be warmer than normal
	Rainfall	Climatological odds	**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: February to July – Southern Africa (1)

		Forecast summary		
		February	February to April	May to July
Malawi	*Temperature*	Climatological odds	Climatological odds	Likely to be warmer than normal
	Rainfall	Climatological odds	**Likely to be wetter than normal**	Climatological odds
Madagascar	*Temperature*	Climatological odds	**Likely to be warmer than normal**	Likely to be warmer than normal
	Rainfall	Climatological odds	**Likely to be wetter than normal** in the west; Climatological odds in the east	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

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 62 Statement (August 2022 – Google Drive)
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): http://acmad.net/rcc/presagg.php (February 2022)
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