AFRICA: Monthly Climate Outlook
July to April

Issued: October 2022

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Overview

Africa Current Status and Outlook – Temperature

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Global Outlook – Temperature

Global Outlook – Rainfall

Africa Current Status and Outlook - Temperature

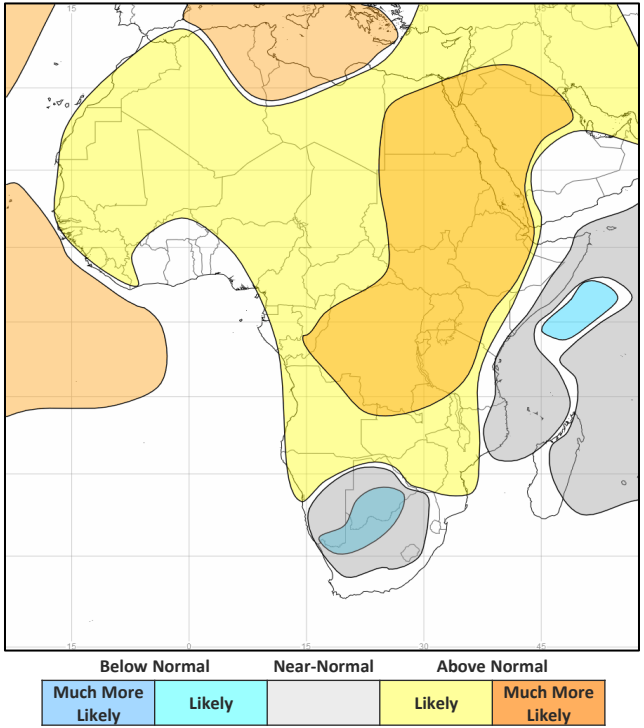
Current Status:

Over the last three months much of West Africa has been hot. In central and eastern Africa conditions were generally normal or hot, with exceptions including Sudan and Chad which were cold in September. Conditions were more mixed across southern Africa, with Madagascar cold in July and August, parts of Namibia and Angola cold in August, but hot in July and September. South Africa was hot in July and September but mixed in August.

Outlook:

Over the next three months, much of the continent is likely, to very likely, to be warmer than normal during this period. The exceptions to this are likely to be parts of west and southern Africa.

3-Month Outlook November to January - Temperature



Africa Current Status and Outlook - Rainfall

Current Status:

The West African Monsoon has been active with above normal rainfall for many areas over the last three months, including in its northern extension into the Sahel during July, August and September. Above normal rainfall was experienced in parts of Rwanda, Uganda, and Kenya in August and in September.

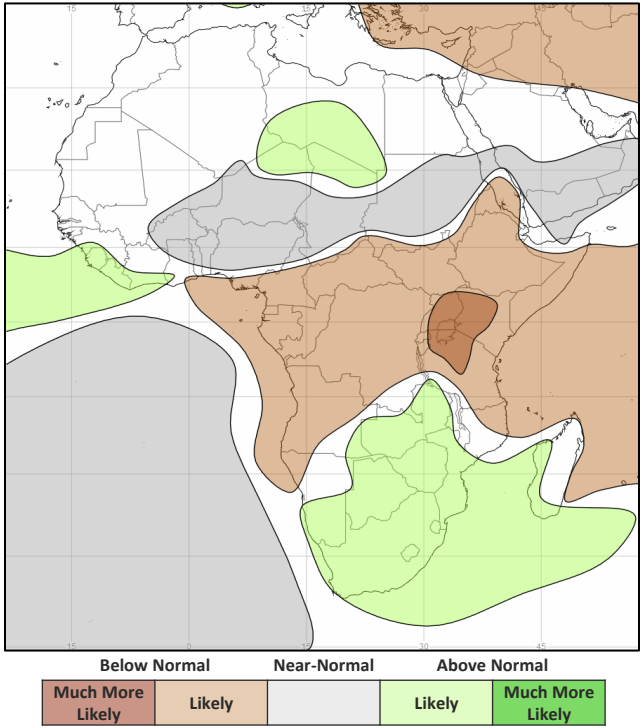
Outlook:

The Food and Agriculture Agency of the United Nations (FAO) released a joint statement from meteorological agencies, including the UK Met Office, and humanitarian partners – "The latest long-lead seasonal forecasts, supported by a broad consensus from meteorological experts, indicate that there is now a concrete risk that the October-December (OND) rainy season could also fail." The full statement can be seen here.

Consistent with this statement, over the next three months, below normal rainfall is likely for much of East Africa during the Short Rains season. Forecasts for concurrent La Niña and negative Indian Ocean Dipole, along with high-level agreement from long-range models support this outlook. This would be the fifth consecutive poor or failed rainy season, further exacerbating the already severe humanitarian emergency in the region.

Wetter than normal conditions are likely for much of southern Africa.

3-Month Outlook November to January - Rainfall



Global Outlook - Temperature

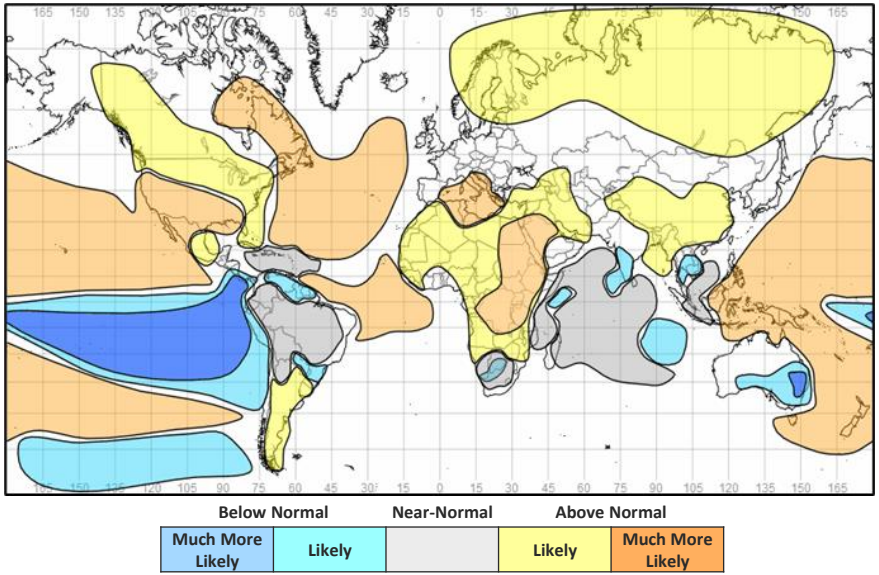
Outlook:

The ongoing La Niña will be the dominant driver of conditions over the next three months and is likely to persist through the Northern Hemisphere winter, albeit within the context of background warming trend. A negative Indian Ocean Dipole will probably have more limited influence but will help to reinforce the effects of La Niña on temperatures around the Indian Ocean and western Pacific.

For many areas above average temperatures are most likely. However, there are exceptions as a result of La Niña and the negative IOD, including northern South America, Australia, mainland Southeast Asia and southwest India where near- or below normal temperatures are more likely.

Northern Hemisphere winter temperatures are likely, or much more likely to be above normal for North America and northern parts of Europe.

3-Month Outlook November to January - Temperature



Global Outlook - Rainfall

Outlook:

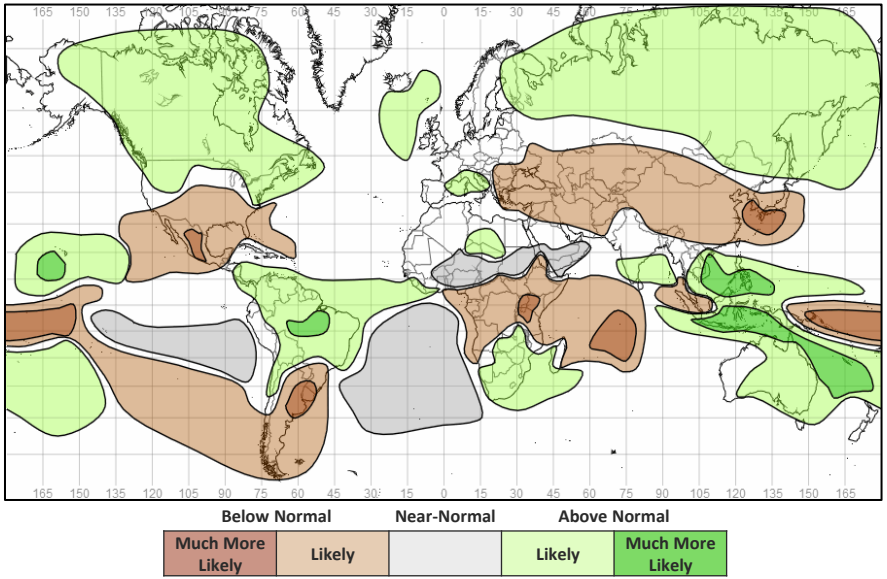
El Niño-Southern Oscillation (ENSO) – The current La Niña event continues in the tropical Pacific Ocean with oceanic and atmospheric indicators showing it has strengthened further over the last month.

Whilst La Niña is present and likely to last through the Northern Hemisphere winter, there is some uncertainty with respect to its longevity; The latest ENSO outlook issued by NOAA states that there is a 75% chance of La Niña persisting during the Northern Hemisphere winter (December-February) 2022-23, with a 54% chance for a change to ENSO-neutral in February-April 2023.

La Niña will remain the most dominant driver of global weather patterns over the next few months at least, more especially for tropical regions. With a couple of notable exceptions (e.g. East Africa) La Niña, very broadly speaking, tends to increase the likelihood of wetter than normal conditions across many land areas of the tropics. 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

Indian Ocean Dipole (IOD) – The IOD index is negative and is expected to remain so for at least the next two months before returning to neutral around the turn of the year. When concurrent with a La Niña, a negative IOD can enhance wetter than normal conditions in parts of Australia and Asia, and drier than normal conditions in East Africa.

3-Month Outlook November to January - Rainfall



Current Status

Current Status maps

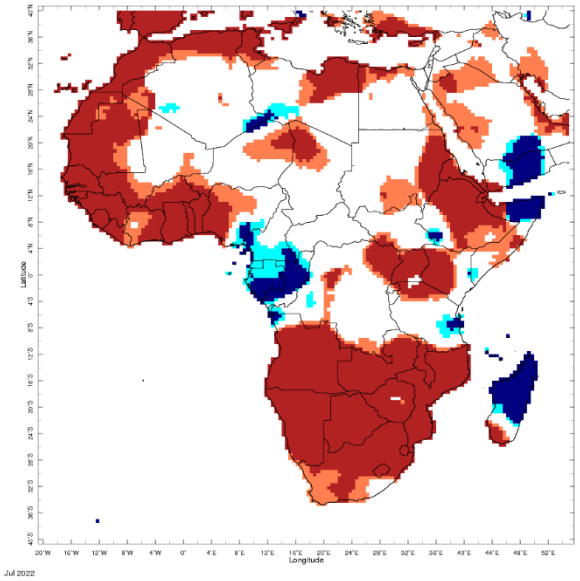
Western Africa

Central Africa

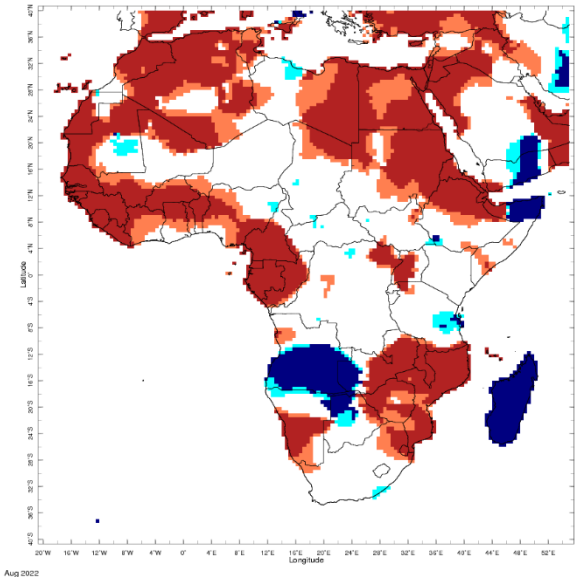
Eastern Africa

Southern Africa

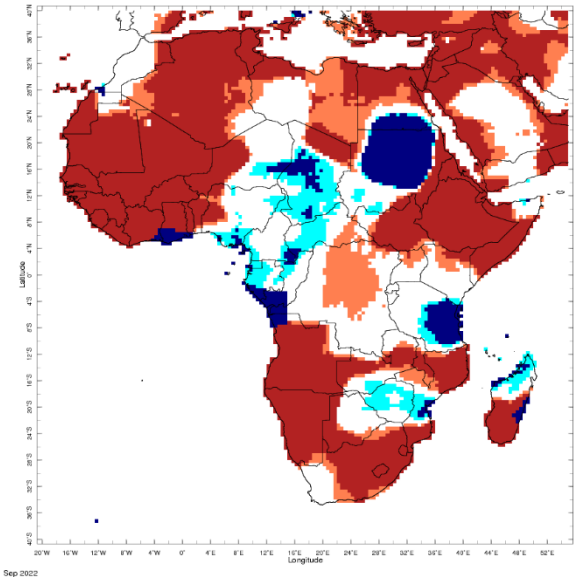
Current Status – Temperature percentiles



July



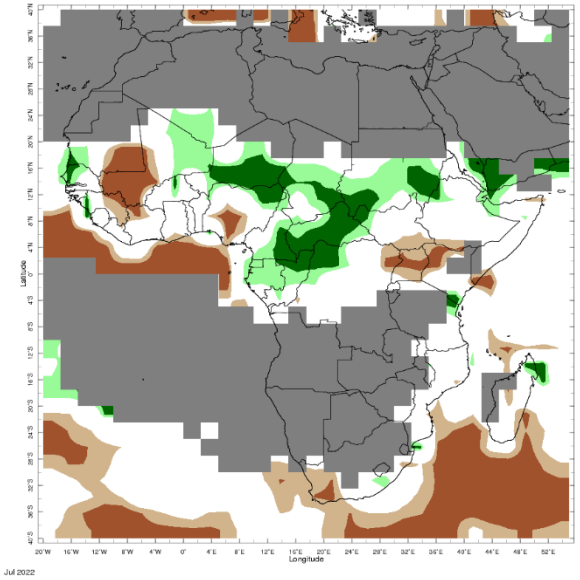
August



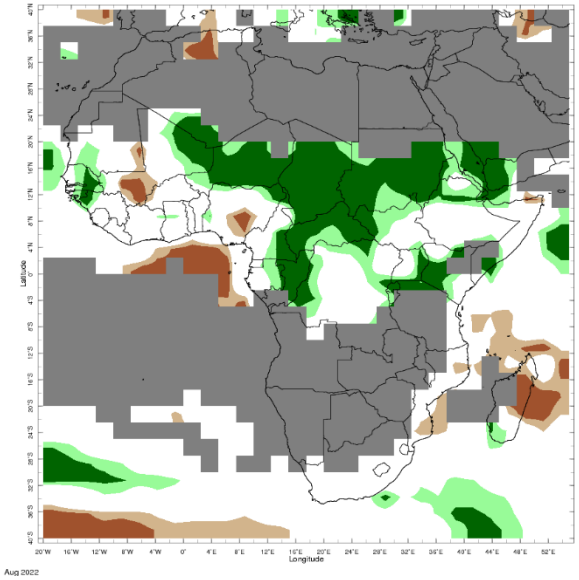
September

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.

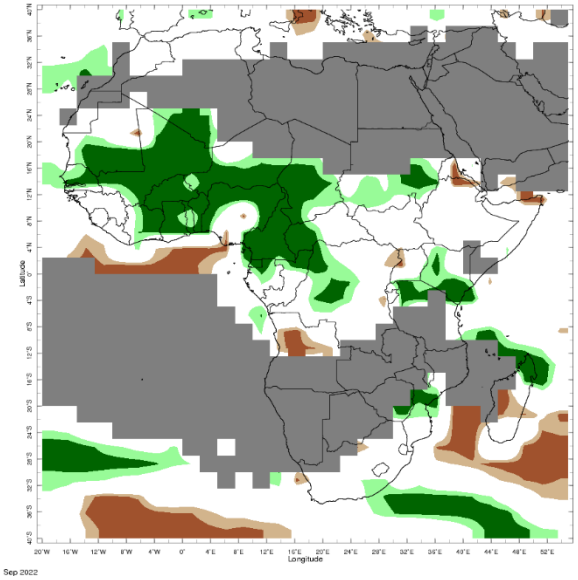
Current Status – Precipitation percentiles



July



August



September

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		
	July	August	September	July	August	September
Sierra Leone	Hot	Hot	Hot	Normal	Normal	Normal
Liberia	Hot	Hot	Hot	Normal	Normal	Normal
Mali	Normal (1)	Hot	Hot	Mixed (4)	Mixed (4)	Very Wet
Ghana	Hot	Warm	Mixed (7)	Normal	Normal	Wet
Nigeria	Mixed (1)	Warm	Mixed (1)	Mixed (4)	Mixed (4)	Mixed (5)
Cameroon	Normal	Hot	Normal	Wet	Wet	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:

Additional Information:
(1) Note: Hot in the west, normal elsewhere
(2) Note: Very wet in north, normal in south
(3) Note: Very wet in north, very dry in parts of the south.
(4) Note: Wet in the northeast, dry in the southwest
(5) Note: Very wet in far north, normal elsewhere
(6) Note: Normal in the west, wet or very wet in the east
(7) Note: Cold in the South, normal elsewhere

Current Status – Central Africa

	Current Status: Temperature			Current Status: Rainfall		
	July	August	September	July	August	September
Niger	Mixed (4)	Normal	Mixed (1)	Wet	Very Wet	Very Wet
Chad	Normal (2)	Normal (2)	Cold	Normal* (3)	Very Wet	Very Wet
DRC	Normal	Normal	Warm	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: Warm in the south, normal in the north.
(2) Note: Hot in the far northwest, normal elsewhere
(3) Note: Very wet in central.
(4) Note: Warm in the northeast, normal elsewhere.

Current Status – Eastern Africa (1)

	Current Status: Temperature			Current Status: Rainfall		
	July	August	September	July	August	September
Sudan	Mixed (1)	Hot	Cold	Mixed (2)	Mixed (2)	Mixed (2)
South Sudan	Normal	Normal	Hot	Normal	Wet	Normal
Uganda	Hot	Hot	Normal	Dry	Mixed (3)	Normal
Rwanda	Hot	Normal	Normal	Normal	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: Hot in the east. Normal in the west.
(2) Note: Normal* in the north, wet/very wet in the south.
(3) Note: Wet to the East. Normal elsewhere.

Current Status – Eastern Africa (2)

	Current Status: Temperature			Current Status: Rainfall		
	July	August	September	July	August	September
Tanzania	Normal	Normal	Cold	Normal	Normal	Normal
Ethiopia	Hot	Mixed (1)	Hot	Normal	Mixed (2)	Normal
Kenya	Hot	Normal	Normal	Dry	Wet	Wet
Somalia	Mixed (4)	Mixed (4)	Hot	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, normal elsewhere
(2) Note: Wet in the north, normal elsewhere
(3) Note: Hot in the east, normal elsewhere
(4) Note: Cold in the North and warm to the South.

Current Status – Southern Africa

	Current Status: Temperature			Current Status: Rainfall		
	July	August	September	July	August	September
South Africa	Hot	Normal	Hot	Normal	Normal	Normal
Zambia	Hot	Hot	Hot	Normal*	Normal*	Normal*
Zimbabwe	Hot	Hot	Cold	Normal*	Normal*	Normal*
Mozambique	Hot	Hot	Mixed (1)	Normal	Normal	Normal*
Malawi	Hot	Hot	Hot	Normal*	Normal*	Normal*
Madagascar	Cold	Cold	Mixed (2)	Normal	Dry	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: Hot in the north, more variable elsewhere.
(2) Note: Hot in south, cold in the north
(3) Note: Wet in the far north, normal to dry elsewhere.

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: November to April – Western Africa (1)

		Forecast summary		
		November	November to January	February to April
Sierra Leone	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be wetter than normal
Liberia	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be wetter than normal
Mali	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
Ghana	*Temperature*	Climatological odds	Climatological odds	Climatological odds
	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: November to April – Western Africa (2)

		Forecast summary		
		November	November to January	February to April
Nigeria	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be near-normal	Likely to be near-normal	Climatological odds
Cameroon	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be drier than normal	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: November to April – Central Africa

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

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Outlook: November to April – Eastern Africa (1)

		Forecast summary		
		November	November to January	February to April
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 near-normal	Likely to be near-normal	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	Much more 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
Uganda	*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	Much more likely to be drier than normal	Much more likely to be drier than normal	Much more likely to be drier than normal
Rwanda	*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	Much more likely to be drier than normal	Much more likely to be drier than normal	Much more 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: November to April – Eastern Africa (2)

		Forecast summary		
		November	November to January	February to April
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 drier than normal	Likely to be drier than normal	Much more likely to be drier than normal
Ethiopia	*Temperature*	**Much more likely to be warmer than normal**	**Much more likely to be warmer than normal**	Climatological odds
	Rainfall	Likely to be drier than normal	Likely to be drier than normal	Likely to be drier than normal
Kenya	*Temperature*	**Much more 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	**Much more likely to be drier than normal**	Likely to be drier than normal
Somalia	*Temperature*	Climatological odds	Climatological odds	Climatological odds
	Rainfall	Likely to be drier than normal	Likely to be drier than normal	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: November to April – Southern Africa (1)

		Forecast summary		
		November	November to January	February to April
South Africa	*Temperature*	Likely to be near-normal	Likely to be colder than normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be wetter than normal
Zambia	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be wetter than normal
Zimbabwe	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be near-normal
Mozambique	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	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: November to April – Southern Africa (1)

		Forecast summary		
		November	November to January	February to April
Malawi	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be wetter than normal
Madagascar	*Temperature*	Likely to be near-normal	Likely to be near-normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal in the southwest; Likely to be drier than normal in the northeast	Likely to be wetter than normal in the southwest; Likely to be drier than normal in the northeast	Likely to be wetter than normal in the southwest; Likely to be drier than normal in the northeast

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.ncdc.noaa.gov/teleconnections/enso/indicators

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) - http://www.acmad.net/new/NEWSITEACMAD/wp-content/uploads/2021/10/SWIOCOF-10_Statement-EN.pdf (October 2021)

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),
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- GPC Washington (NCEP)

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