Asia: Monthly Climate Outlook
# July to April

Issued: October 2023

Overview

Asia Current Status and Outlook - Temperature

Current Status: In July, mixed conditions were observed across the region. Large parts of southeast Asia were warm or hot, whereas much of China and Nepal were cold. In August and September, the majority of the region has been warmer than normal.

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

3-Month Outlook November to January - Temperature

Below Normal		Near-Normal	Above Normal	
Much More Likely	Likely		Likely	Much More Likely
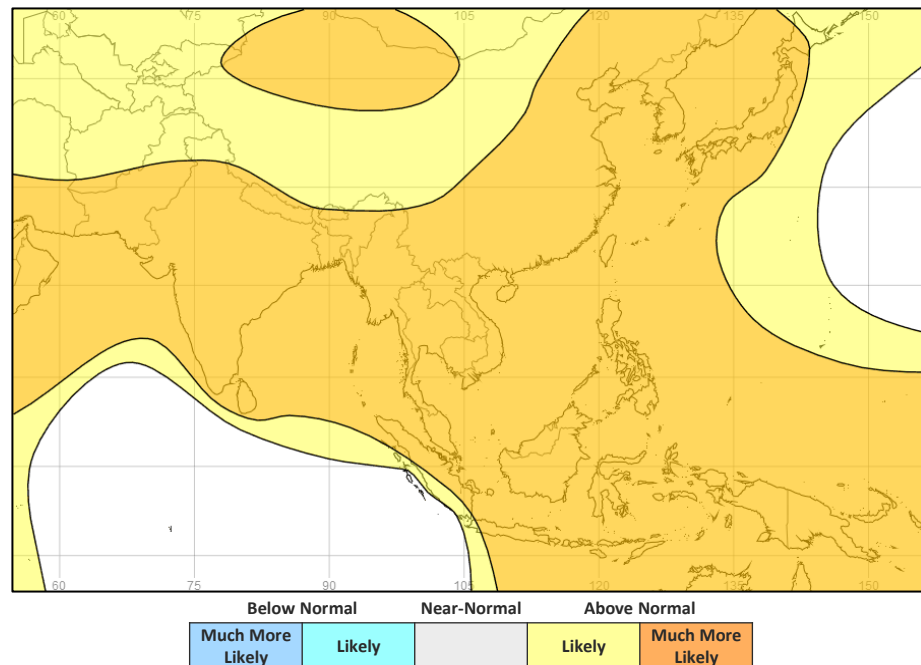
# Asia Current Status and Outlook - Rainfall

Current Status:

In Central Asia rainfall has been mostly normal over the last three months during what is typically a dry season. Exceptions to this were Afghanistan and Pakistan which were very wet in July, and parts of India which was wet in September.

After mixed conditions in July and August, many parts of South and Southeast Asia were wet in September. In July, parts of Indonesia and Papua New Guinea were mostly normal, but dry during August and September.

Outlook:

With the current El Niño event and the positive Indian Ocean Dipole (IOD), rainfall amounts are likely to be lower than normal over many parts of the Philippines, Indonesia and Papua New Guinea. It is likely to be wetter than normal in most of Central Asia, as well as the north and far south of India, Sri Lanka and parts of Nepal over the next three months.

3-Month Outlook November to January - Rainfall

Below Normal		Near-Normal	Above Normal	
Much More Likely	Likely		Likely	Much More Likely
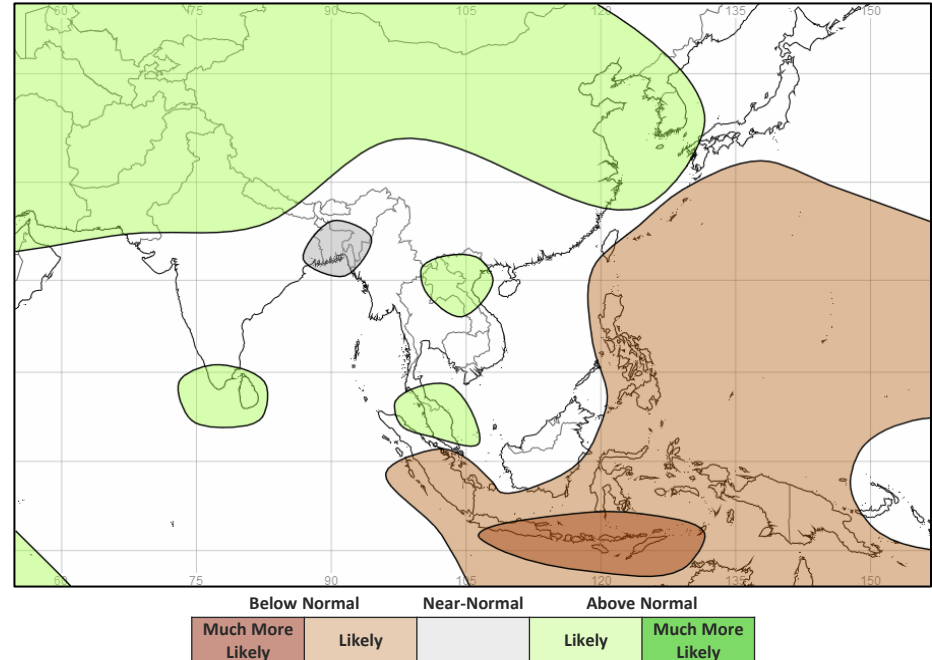
Global Outlook - Temperature

Outlook:

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

3-Month Outlook November to January - Temperature

Below Normal		Near-Normal	Above Normal	
Much More Likely	Likely		Likely	Much More Likely
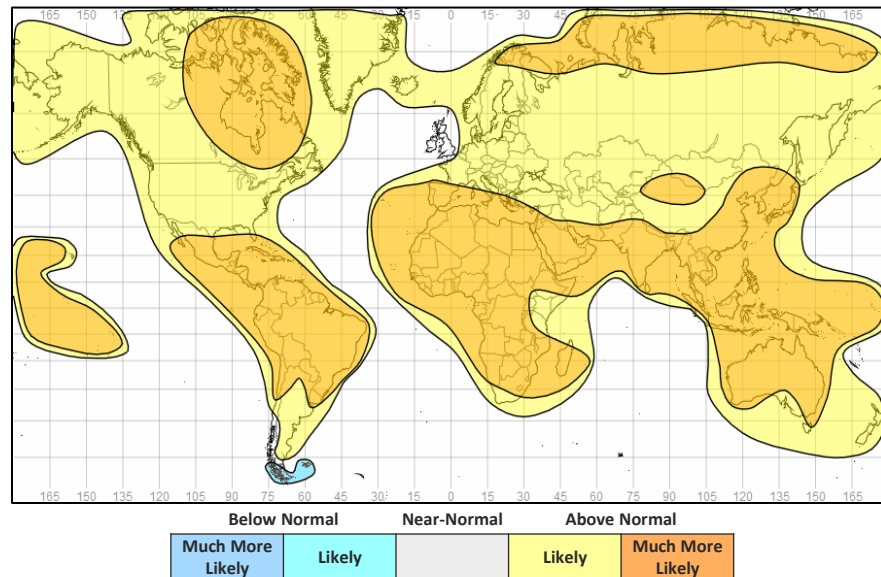
Global Outlook - Rainfall

Outlook:

El Niño-Southern Oscillation (ENSO) – Sea surface temperatures (SSTs) across the equatorial Pacific remain indicative on an ongoing El Niño event. In the Niño 3.4 region SSTs are currently 1.4°C above normal and the atmospheric response is now consistent with El Niño conditions. The current El Niño is moderate in strength.

Seasonal prediction models indicate a moderate or strong El Niño is highly likely to continue through to the Northern Hemisphere spring (80% chance during March-May 2024).

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

Indian Ocean Dipole (IOD) – The Indian Ocean Dipole is currently positive. Continued warming in the western Indian Ocean has increased the index to +1.85C above normal.

Seasonal forecasts currently suggest that this event will persist until the end of year before returning to neutral conditions early in 2024.

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

3-Month Outlook November to January - Rainfall

Below Normal		Near-Normal	Above Normal	
Much More Likely	Likely		Likely	Much More Likely
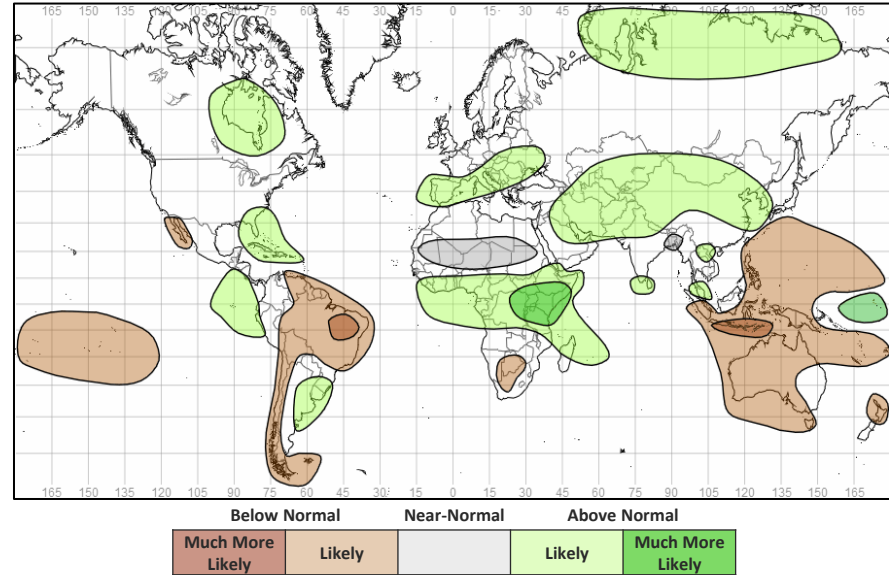
Current Status

Current Status – Temperature percentiles

| July | August | September |

Temperature Percentiles (**BLUE** below 20th and **RED** above 80th)

0   0.1   0.2   0.3   0.4   0.5   0.6   0.7   0.8   0.9   1.0
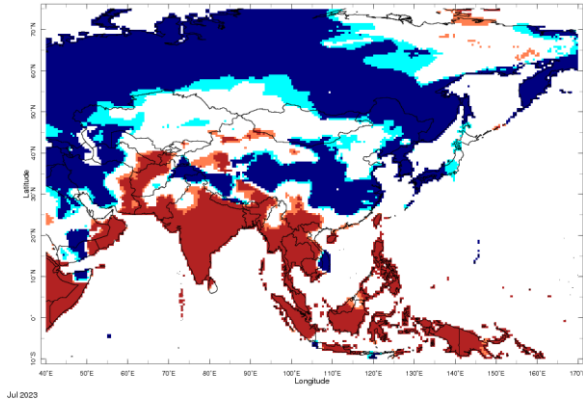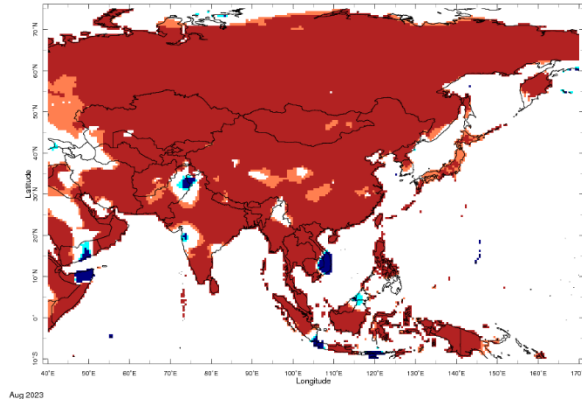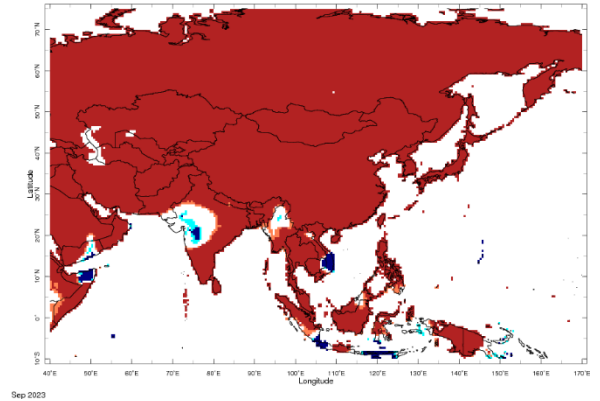
Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions 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

Rainfall Percentiles (BROWN below 20th and GREEN above 80th)

| 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |

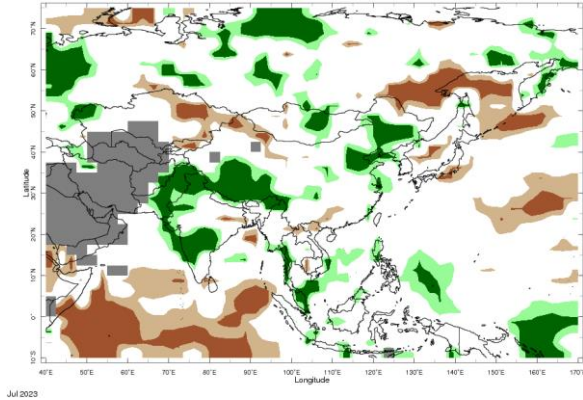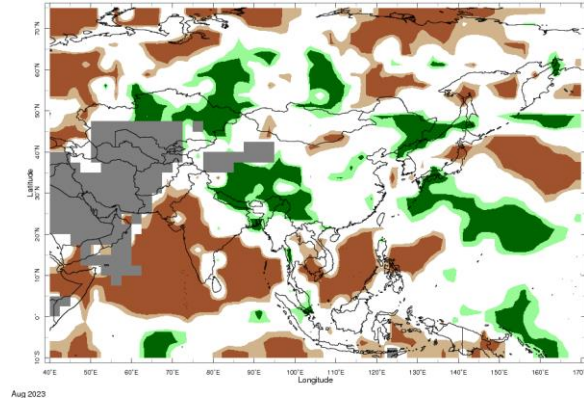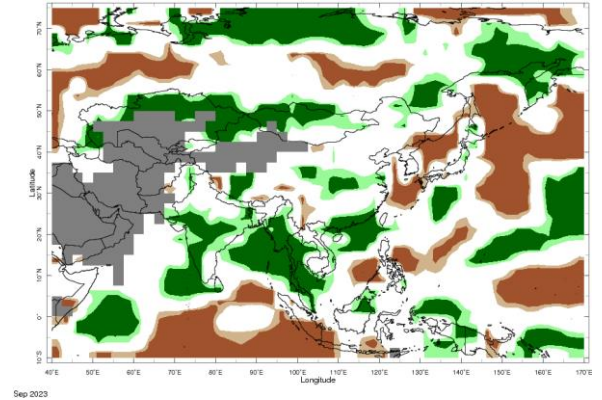**Notes:** The percentiles shown in the map indicate a ranking of rainfall, with the 0th percentile being the driest and the 100th percentile being the wettest in the 1981-2010 climatology. Green and dark green shading represent values above the 80th (Wet) and 90th (Very Wet) percentile, respectively; 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 – Central Asia

	Current Status: Temperature		
	July	**August**	**September**
Afghanistan	Hot	Hot	Hot
Tajikistan	Mixed (1)	Hot	Hot
Kyrgyzstan	Normal	Hot	Hot

	Current Status: Rainfall		
	July	**August**	**September**
Afghanistan	Very Wet	Normal*	Normal*
Tajikistan	Normal	Normal*	Normal*
Kyrgyzstan	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: Hot in the west, cold in the east

Current Status – Southern Asia

	Current Status: Temperature		
	July	August	September
Pakistan	Mixed (1)	Mixed (1)	Hot
India	Hot	Hot (3)	Mixed (6)
Nepal	Hot	Hot	Hot
Bangladesh	Hot	Hot	Hot
Sri Lanka	Hot	Hot	Hot

	Current Status: Rainfall		
	July	August	September
Pakistan	Very Wet	Very Dry (4)	Normal
India	Normal (2)	Mixed (5)	Wet
Nepal	Wet	Very Wet	Wet
Bangladesh	Normal	Wet	Wet
Sri Lanka	Normal	Normal	Wet

Notes:

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

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

Additional Information:

(1) **Note:** Hot in the southwest, cold in the northeast
(2) **Note:** Very wet in the northwest and far northeast, dry across some central and southern regions.
(3) **Note:** Normal in central regions.
(4) **Note:** Normal in the north
(5) **Note:** Very dry in south and west, wet in the northeast and normal elsewhere
(6) **Note:** Mainly hot but cool in the west

Current Status – Southeast Asian Peninsula

	Current Status: Temperature				Current Status: Rainfall		
	July	**August**	**September**		**July**	**August**	**September**
China	Mixed	Hot	Hot	China	Mixed (3)	Mixed (3)	Mixed
Myanmar	Hot	Hot	Hot	Myanmar	Normal (2)	Normal (4)	Very Wet
Vietnam	Mixed (1)	Mixed (1)	Mixed (1)	Vietnam	Normal (2)	Normal	Wet

Notes:

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

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

Additional Information:

(1) Note: Cold in the south, hot in the north
(2) Note: Wet/very wet in the south
(3) Note: Very wet in the northeast and southwest, normal elsewhere
(4) Note: Very wet in the north and coastal regions

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature				Current Status: Rainfall		
	July	**August**	**September**		**July**	**August**	**September**
Indonesia	Hot	Hot	Mixed (3)		Normal	Normal (2)	Normal (4)
Papua New Guinea	Hot	Mixed (1)	Mixed (1)		Normal	Dry	Mixed

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 west, normal in the east
(2) **Note:** Dry in the east
(3) **Note:** Most areas hot but cold in parts of the south
(4) **Note:** Very dry for South Sumatra and West Java

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: November to April – Central Asia

		Forecast summary		
		November	November to January	February to April
Afghanistan	*Temperature*	Likely to be warmer than normal	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
Tajikistan	*Temperature*	Likely to be warmer than normal	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
Kyrgyzstan	*Temperature*	Likely to be warmer than normal	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.

Outlooks

Outlook: November to April – Southern Asia (1)

		Forecast summary		
		November	November to January	February to April
Pakistan	*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	Likely to be wetter than normal
India	*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	Likely to be wetter than normal in the far north; Climatological odds elsewhere	Likely to be wetter than normal
Nepal	*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	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 Asia (2)

		Forecast summary		
		November	November to January	February to April
Bangladesh	*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	Climatological odds
Sri Lanka	*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 wetter than normal	Likely to be wetter 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 – SE Asian Peninsula

		Forecast summary		
		November	November to January	February to April
China	*Temperature*	Likely to be warmer than normal	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
Myanmar	*Temperature*	Much more likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be near-normal	Climatological odds	Climatological odds
Vietnam	*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	Likely to be wetter than normal in the north; Climatological odds 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.

Outlooks

Outlook: November to April – SE Asia / Indonesia

		Forecast summary		
		November	**November to January**	**February to April**
Indonesia	*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 wetter than normal in the north; **Much more likely to be wetter than normal** in the south	Likely to be wetter than normal in the north; **Much more likely to be wetter than normal** in the south	Climatological odds
Papua New Guinea	*Temperature*	Likely to be warmer than normal	Much more likely to be warmer than normal	Much more likely to be warmer than normal
	Rainfall	Likely to be drier than normal	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.

Annex 1 – Supplemental Information

For further information

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

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

The South Asian Climate Outlook Forum (SASCOF) http://www.imdpune.gov.in/Clim_RCC_LRF/Index.html
      Latest Output (September 2023) - https://rcc.imdpune.gov.in/SASCOF/sascof26/SASCOF26_outlook_statement_Oct_Dec_2023.pdf

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