

# Asia: Monthly Climate Outlook May to February

**Issued: August 2023**

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# Overview

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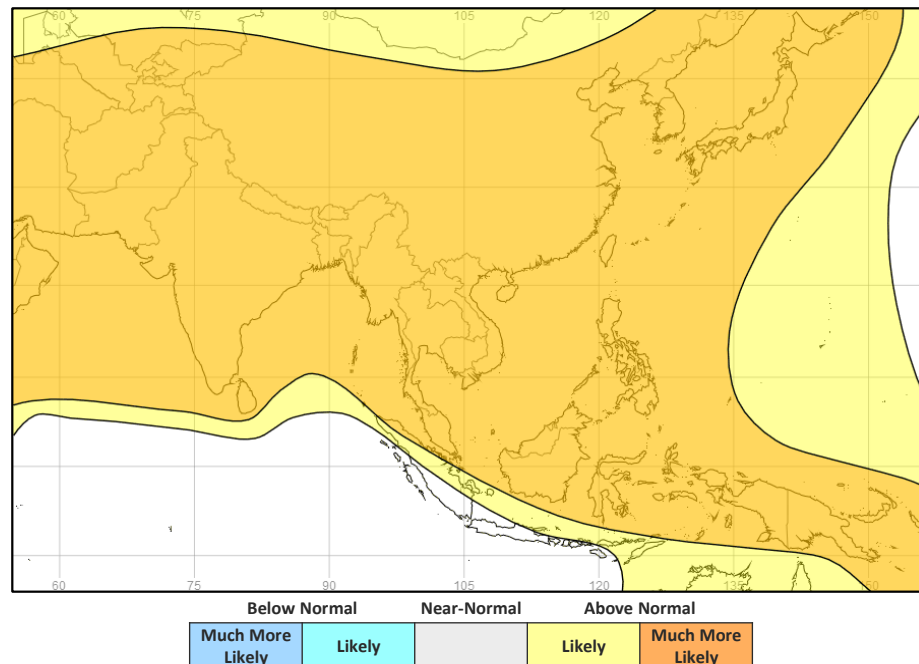
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# Asia Current Status and Outlook - Temperature

**Current Status:** Much of Asia has been warm or hot over the last three months. The exceptions were large parts of India and western China in May where cool or cold conditions were observed; cold conditions were observed in large parts of China in July.

**Outlook:** Warmer than normal conditions are likely or very likely across nearly all of Asia, increasing the risk of heatwaves and related impacts for many parts.

**3-Month Outlook September to November - Temperature**



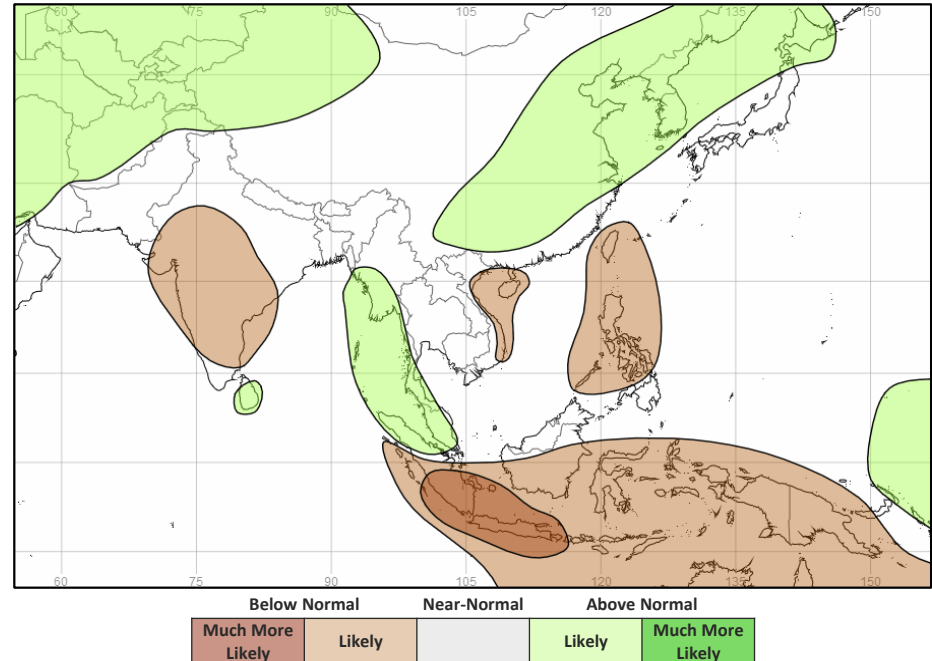
# Asia Current Status and Outlook - Rainfall

**Current Status:** Much of mainland southeast Asia was dry during May, with rainfall in June and July near-normal. Over the last three months, rainfall across Indonesia was near-normal, although there were large regional variations. Northern and western parts of India, parts of China and, at times, Pakistan were wet or very wet.

**Outlook:** Over the next three months, drier than normal conditions are likely across central and western India while wetter than normal conditions are likely in southern and western Myanmar. This is consistent with the forecast for the Indian Monsoon.

Across Southeast Asia, much of Indonesia and Vietnam drier than normal conditions are likely, and it is likely to be wetter than normal across northern Sumatra. It is likely to be wetter than normal across eastern China. Much of Central Asia is also likely to be wetter than normal.

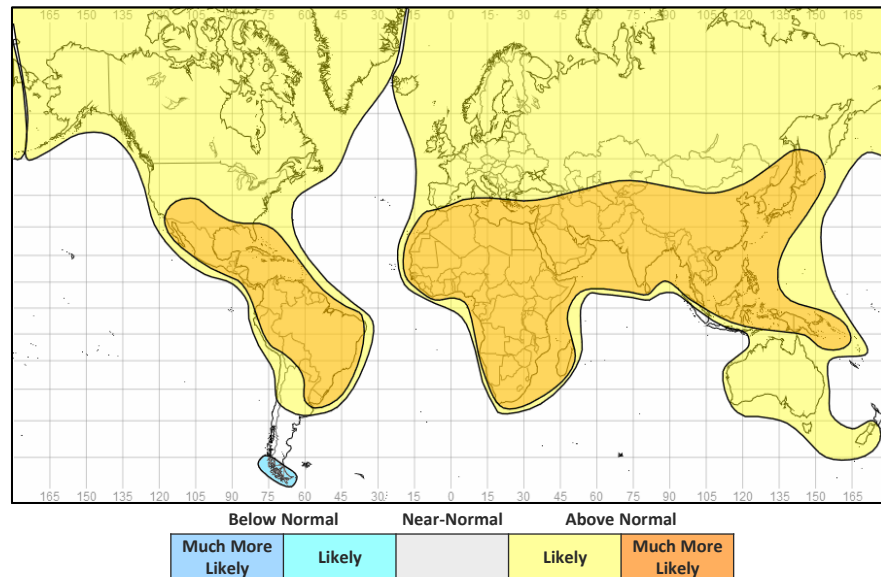
**3-Month Outlook September to November - Rainfall**



# Global Outlook - Temperature

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

## 3-Month Outlook September to November - Temperature



# Global Outlook - Rainfall

## Outlook:

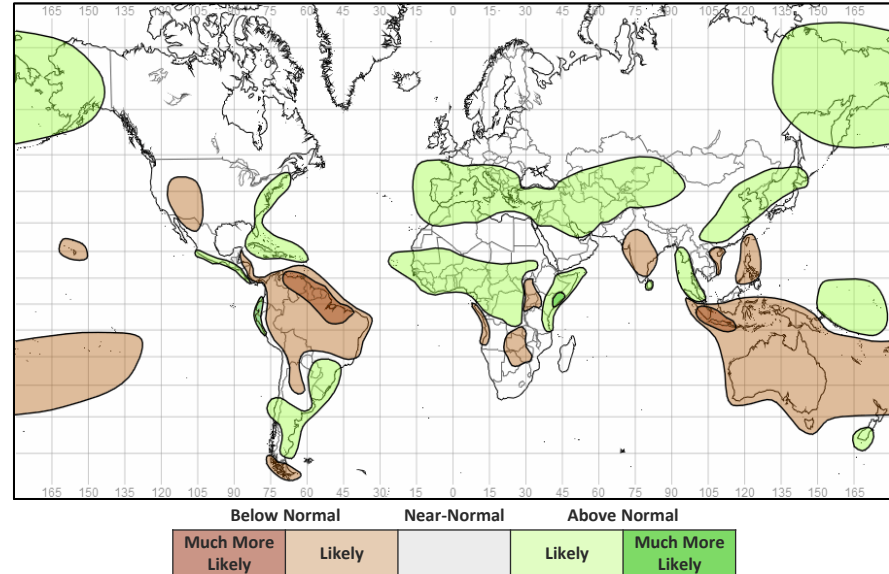
**El Niño-Southern Oscillation (ENSO)** – Sea surface temperatures across the equatorial Pacific are above average, in the Niño 3.4 region they are 1.3°C above average. The atmospheric response has been slower though is now consistent with El Niño conditions, and NOAA have declared El Niño to be underway.

This moderate El Niño is expected to persist into the northern hemisphere winter. The latest information from most of the seasonal prediction models now suggests a strong or very strong event peaking this Northern Hemisphere winter. However, there is a spread in model outputs at this range. A strong El Niño does not necessarily equate to large 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)** – The Indian Ocean Dipole is currently neutral. Recent warming of the western side of the basin in the past few weeks has increased the index to +0.8°C above normal – seasonal forecasts currently suggest this will persist and a positive IOD will develop over the next couple of months.

## 3-Month Outlook September to November - Rainfall



# Current Status

[Current Status maps](#)

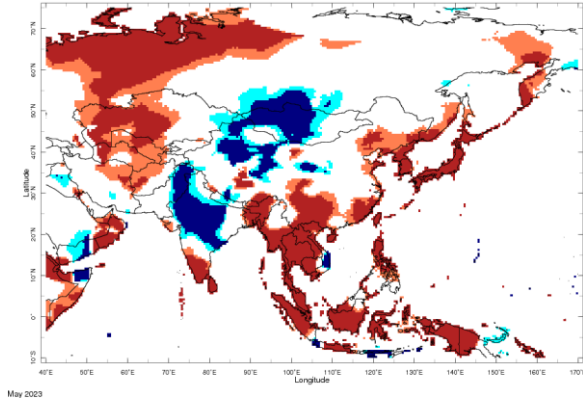
[Central Asia](#)

[Southern Asia](#)

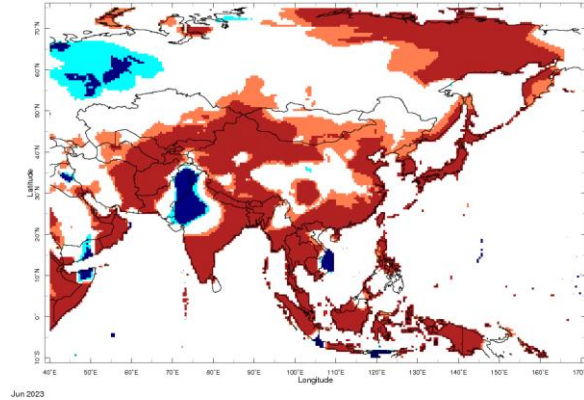
[Southeast Asian Peninsula](#)

[Southeastern Asia / Indonesia](#)

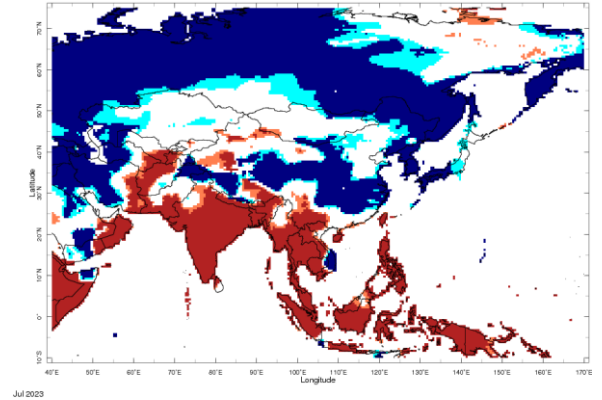
# Current Status – Temperature percentiles



May



June



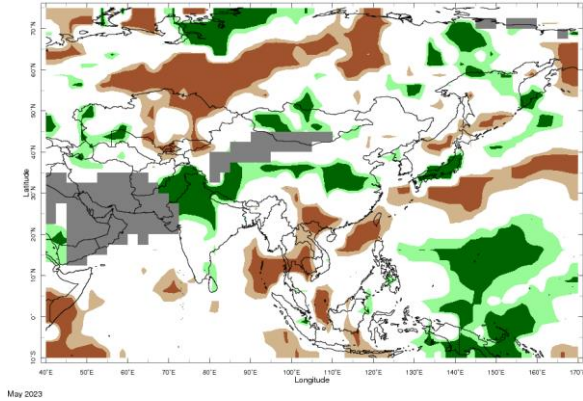
July



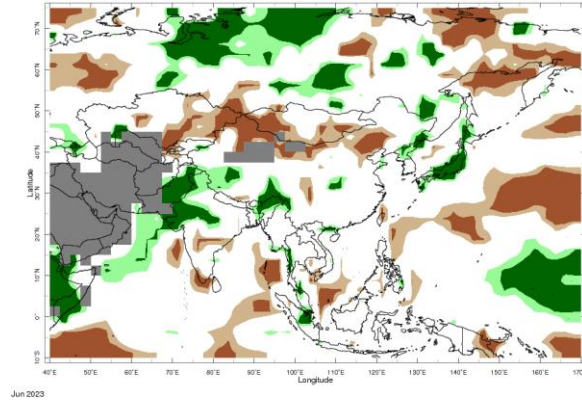
**Notes:** The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions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



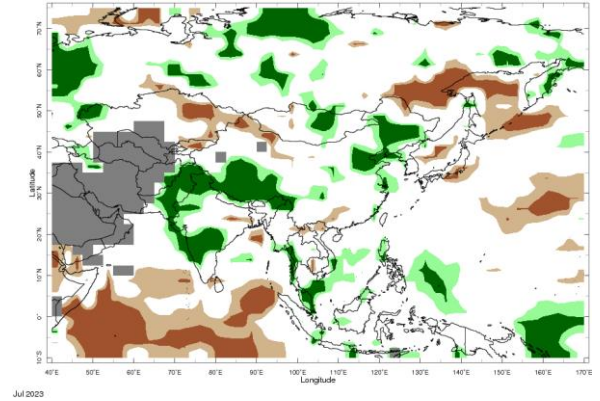
# Current Status – Precipitation percentiles



May



June



July



**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

	May	June	July
Afghanistan	Normal (1)	Hot	Hot
Tajikistan	Normal	Hot	Mixed (2)
Kyrgyzstan	Normal	Hot	Normal

## Current Status: Rainfall

May	June	July
Normal	Normal*	Very Wet
Normal	Normal	Normal
Dry	Normal	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:** Warm in the west

**(2) Note:** Hot in the west, cold in the east

## Current Status – Southern Asia

Current Status: Temperature

	May	June	July
Pakistan	Mixed (4)	Mixed (4)	Mixed (4)
India	Mixed (1)	Mixed (6)	Hot
Nepal	Normal	Hot	Hot
Bangladesh	Hot	Hot	Hot
Sri Lanka	Hot	Normal	Hot

Current Status: Rainfall

	May	June	July
	Normal (2)	Very Wet	Very Wet
	Normal (3)	Normal (5)	Normal (5)
	Wet	Normal	Wet
	Normal	Normal	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:** Hot in the far south, cold in central regions and normal elsewhere
- (2) **Note:** Wet or very wet in the north
- (3) **Note:** Very wet in the far northwest and some central regions
- (4) **Note:** Normal in the southwest (hot in June and July), cold in the northeast
- (5) **Note:** Very wet in the northwest and far northeast, dry across some central and southern regions.
- (6) **Note:** Hot in the south and east, cold in the northwest and normal elsewhere

# Current Status – Southeast Asian Peninsula

## Current Status: Temperature

	May	June	July
China	Mixed	Mixed	Mixed
Myanmar	Hot	Hot	Hot
Vietnam	Mixed (1)	Mixed (1)	Mixed (1)

## Current Status: Rainfall

	May	June	July
	Mixed (3)	Mixed (4)	Mixed (6)
	Normal (2)	Normal (5)	Normal (5)
	Dry	Normal	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://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:** Dry/very dry in the south
- (3) Note:** Large variations, dry or very dry in parts of the southeast
- (4) Note:** Very dry in the north and wet/very wet in parts of the southwest, normal elsewhere
- (5) Note:** Wet/very wet in the south
- (6) Note:** Very wet in the northeast and southwest, normal elsewhere

## Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	May	June	July	May	June	July
Indonesia	Mixed (1)	Mixed (1)	Hot	Normal	Normal	Normal
Papua New Guinea	Warm	Hot	Hot	Very Wet	Dry	Normal

### Notes:

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

<http://iridl.ldeo.columbia.edu/maproom/>.

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

### Additional Information:

**(1) Note:** Large variations but hot for many areas

# Outlooks

[Outlooks – Notes for use](#)

[Central Asia](#)

[Southern Asia](#)

[Southeast Asian Peninsula](#)

[Southeastern Asia / Indonesia](#)

# 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: September to February – Central Asia

		Forecast summary		
		September	September to November	December to February
Afghanistan	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 in the south; Climatological odds elsewhere	Likely to be wetter than normal	Likely to be wetter than normal
Tajikistan	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
Kyrgyzstan	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

**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: September to February – Southern Asia (1)

		Forecast summary		
		September	September to November	December to February
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 drier than normal in the south; Climatological odds elsewhere	Likely to be wetter than normal in the far north; Climatological odds elsewhere	Climatological odds
India	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 in the north and west; Climatological odds elsewhere	Likely to be drier than normal in central and western regions; Climatological odds elsewhere	Climatological odds
Nepal	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

**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: September to February – Southern Asia (2)

		Forecast summary		
		September	September to November	December to February
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	Climatological odds	Climatological odds	Climatological odds
Sri Lanka	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: September to February – SE Asian Peninsula

		Forecast summary		
		September	September to November	December to February
China	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 in the east; Climatological odds elsewhere	Likely to be wetter than normal in the south and east; Climatological odds elsewhere	Likely to be wetter than normal in the southeast; Climatological odds elsewhere
Myanmar	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	Climatological odds in the north; Likely to be wetter than normal elsewhere	Climatological odds
Vietnam	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 south; Climatological odds elsewhere	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: September to February – SE Asia / Indonesia

		Forecast summary		
		September	September to November	December to February
Indonesia	Temperature	Likely to be warmer than normal	Climatological odds in Java; <b>Much more likely to be warmer than normal</b> elsewhere	Likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Likely to be drier than normal overall, though <b>Much more likely to be drier than normal</b> in Java and southern Sumatra; <b>Likely to be wetter than normal</b> in northern Sumatra	Likely to be drier than normal
Papua New Guinea	Temperature	<b>Much more likely to be warmer than normal</b>	<b>Much more likely to be warmer than normal</b>	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

**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](http://www.imdpune.gov.in/Clim_RCC_LRF/Index.html)

Latest Output (September 2022) - <http://sahfhydromet.rimes.int/wp-content/uploads/2022/10/Enhanced-SCOS-SASCOF-23-JJAS.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

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