Asia: Monthly Climate Outlook
# July to April

Issued: October 2024

Overview

Asia Current Status and Outlook - Temperature

Current Status: Warm or hot conditions have dominated over the past three months, although parts of India, Pakistan and China have been nearer normal or cool at times. Cooler conditions extended to Tajikistan and Kyrgyzstan during September.

Outlook: Warmer than normal conditions are likely across most of the continent. The strongest signal over maritime Southeast Asia where it is much more likely to be warmer than normal through to January. Whilst this suggests a reduced risk of prolonged cold across northern parts of the region, cold spells and related impacts remain likely at times.

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

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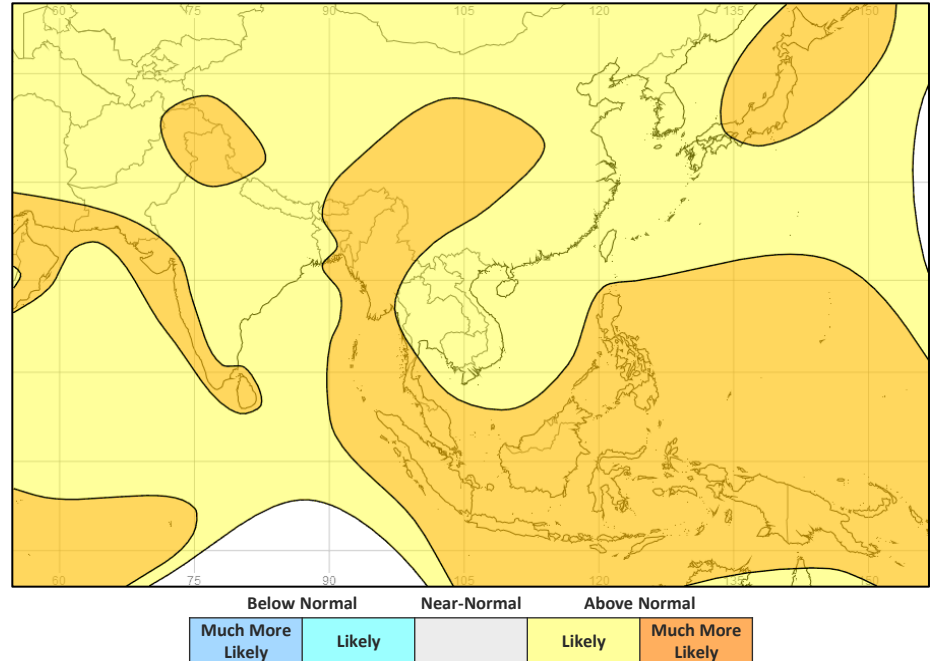
Asia Current Status and Outlook - Rainfall

Current Status: Many parts of Southern Asia were wet or very wet at times between July and September. Mixed conditions have been observed over Southeast Asia. Normal, typically dry, conditions observed over Central Asia.

Outlook: The summer monsoon season has come to an end with tropical rainfall becoming focused over maritime Southeast Asia during this period. Here, wetter than normal is likely. Wetter than normal also likely for southern India, Sri Lanka and southern Vietnam. Across Central Asia, which typically sees an increase in precipitation during this period, drier than normal is likely. Drier than normal also likely for parts of China, Korea and Japan.

Tropical cyclones – Skilful prediction of seasonal activity levels across the North Indian Ocean (including the Bay of Bengal and Arabian Sea) tends to be limited compared to other basins. Whilst cyclones can form anytime from April to December, activity tends to increase between October and December. Tropical cyclones can form throughout the year in the Northwest Pacific basin though activity tends to peak between May and October.

3-Month Outlook November to January - Rainfall

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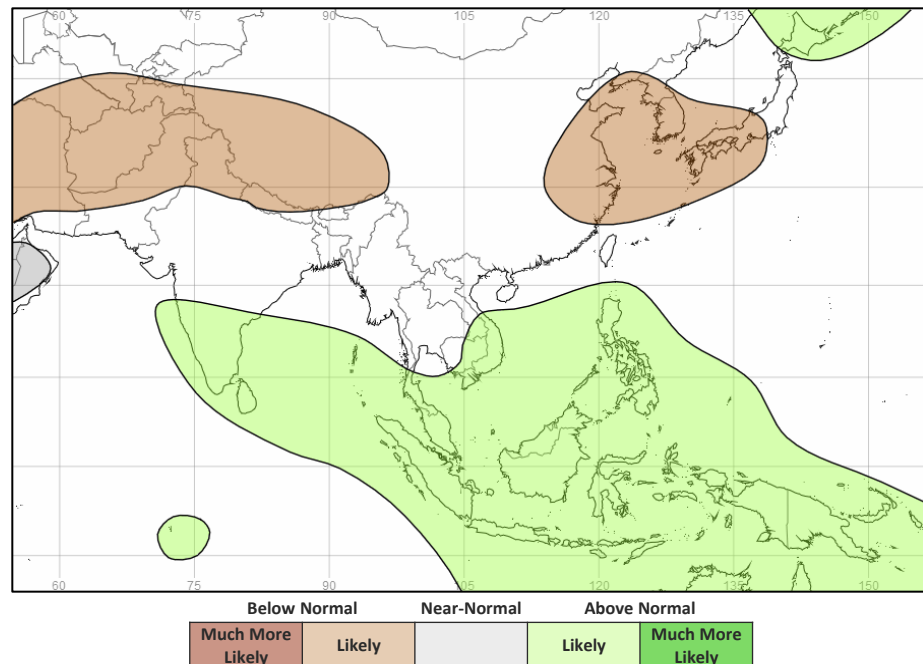
Global Outlook - Temperature

Outlook: Consistent with a warming climate, warmer than normal conditions are likely across most land areas. There are only very limited exceptions, most notably some Pacific coastal districts in the Americas where near normal or colder than normal conditions are more likely – this linked to cooler sea surface temperatures associated with the developing La Niña.

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

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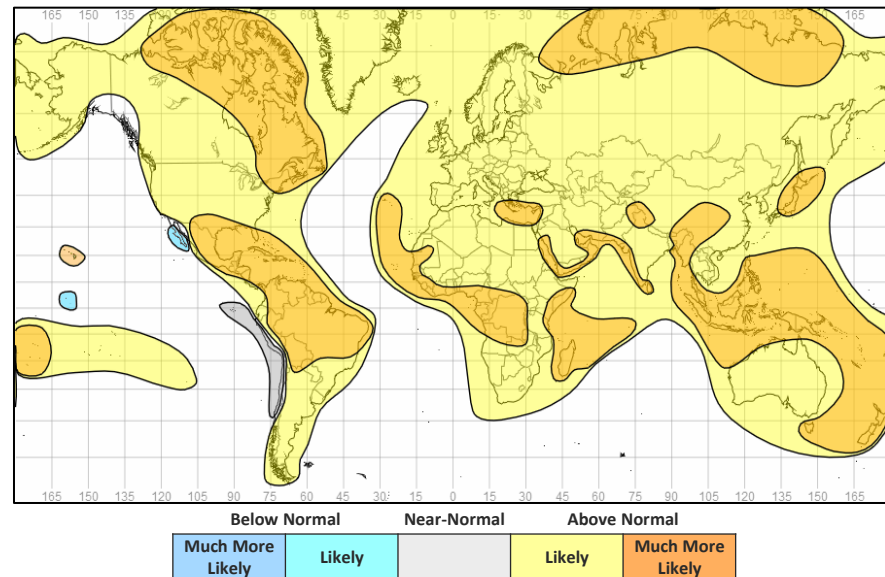
Global Outlook - Rainfall

Outlook:

El Niño-Southern Oscillation (ENSO) – ENSO is currently neutral. Equatorial sea surface temperatures across the central and eastern Pacific are around or below average. Atmospheric indicators have been largely consistent with ENSO neutral. Over the last few weeks, the likelihood of La Niña emerging has declined with a moderate chance (40-60%) of La Niña over the next couple of months. Should La Niña emerge, it would most likely be a weak event. A transition to La Niña would improve the predictability of global weather patterns on seasonal timescales, particularly in the tropics, though its influence may not be as strong as some La Niña events over recent years.

Indian Ocean Dipole (IOD) – The IOD is currently neutral. Recent sea surface temperatures patterns across the Indian Ocean are suggestive of a negative IOD but haven't been prolonged enough to meet the threshold for an event to be declared. Most forecasts suggest the IOD will remain neutral or weakly negative over the next couple of months thus providing only limited signals for seasonal predictions. Skilful prediction of the IOD at this time of year tends to be limited beyond a couple of months ahead.

3-Month Outlook November to January - Rainfall

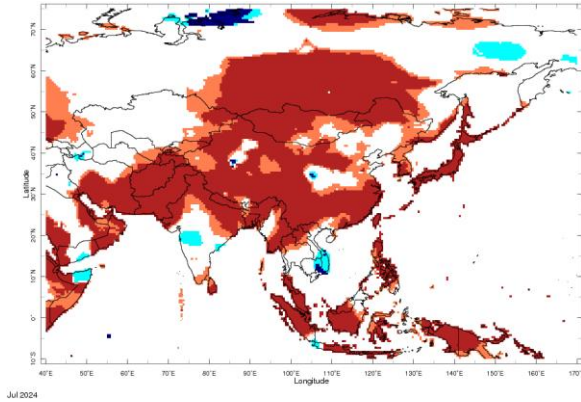| Below Normal		Near-Normal	Above Normal	
Much More Likely	Likely		Likely	Much More Likely
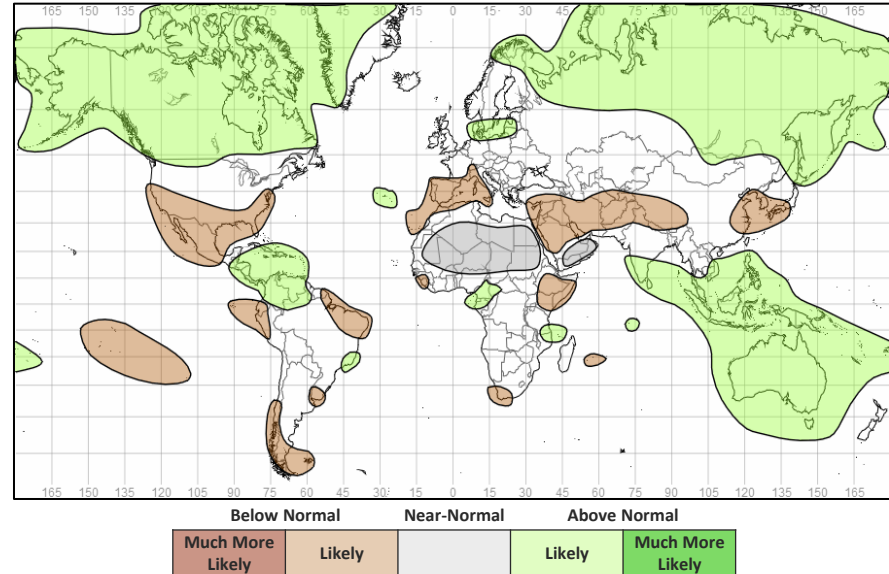
Current Status

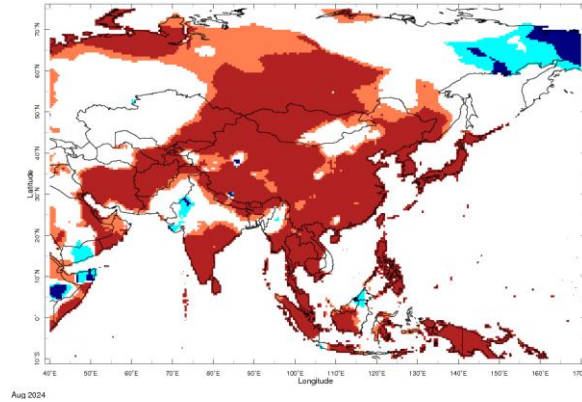Current Status maps

Central Asia

Southern Asia

Southeast Asian Peninsula

Southeastern Asia / Indonesia

Current Status – Temperature percentiles

July

August

September

Temperature Percentiles (BLUE below 20th and RED above 80th)
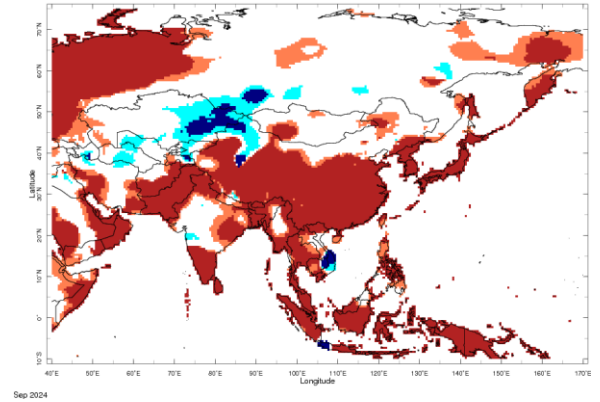
Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions 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 |

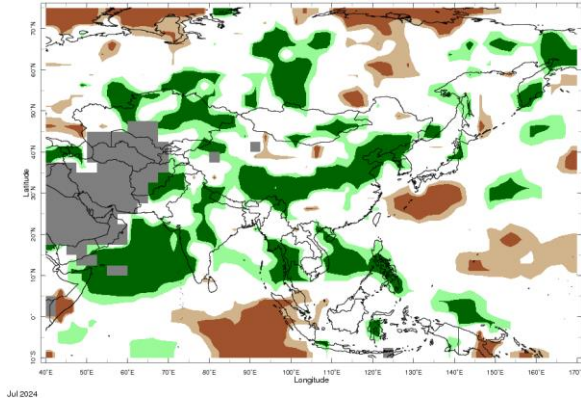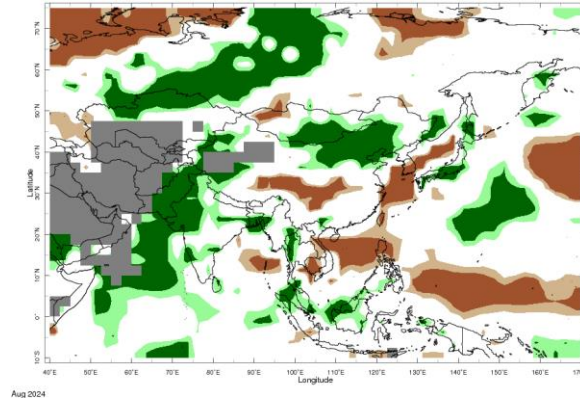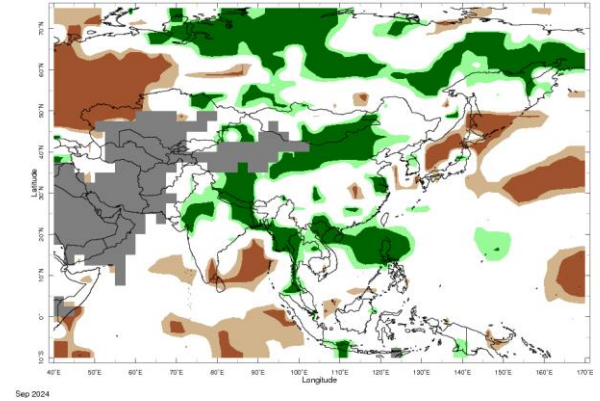**Notes:** The percentiles shown in the map indicate a ranking of rainfall, with the 0th percentile being the driest and the 100th percentile being the wettest in the 1981-2010 climatology. Green and dark green shading represent values above the 80th (Wet) and 90th (Very Wet) percentile, respectively; 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				Current Status: Rainfall		
	July	**August**	**September**		**July**	**August**	**September**
Afghanistan	Hot	Hot	Hot		Normal* (1)	Normal* (1)	Normal*
Tajikistan	Hot	Hot	Mixed (2)		Normal	Normal	Normal*
Kyrgyzstan	Warm	Hot	Cool		Normal (1)	Normal (1)	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: Very wet in parts of the far east.
(2) Note: Hot in the south, cool in the north.

![Met Office]

Current Status – Southern Asia

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

Current Status: Rainfall		
July	August	September
Very Wet	Very Wet	Normal
Normal (2)	Mixed (4)	Mixed (5)
Wet	Normal	Very Wet
Normal	Very Wet	Very Wet
Normal	Wet	Dry

Notes:

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

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

Additional Information:

(1) **Note:** Normal or cool in central regions.
(2) **Note:** Wet or very wet in some northern, western and central regions.
(3) **Note:** Hot in south and far north and northeast, normal elsewhere
(4) **Note:** Very wet in the west as well as parts of the south and east
(5) **Note:** Very wet in parts of the north, dry in the far south, normal elsewhere

Current Status – Southeast Asian Peninsula

	Current Status: Temperature				Current Status: Rainfall		
	July	**August**	**September**		**July**	**August**	**September**
China	Hot	Hot	Hot		Normal (4)	Mixed (6)	Mixed (8)
Myanmar	Hot	Hot	Hot		Mixed (2)	Mixed (2)	Very Wet
Vietnam	Mixed (1)	Mixed (4)	Mixed (1)		Wet	Mixed (7)	Mixed (9)

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).

(1) Note: Cold in the south, normal or hot elsewhere
(2) Note: Very wet in the south and far north, normal elsewhere
(3) Note: Hot in the north and south, cold or normal elsewhere
(4) Note: Very wet in central and northeastern regions
(5) Note: Hot in the north and south, normal elsewhere
(6) Note: Very wet in some northern and western areas, very dry in some central parts, normal elsewhere
(7) Note: Very wet in parts of the far north, very dry in some central areas, normal elsewhere
(8) Note: Normal in central and eastern areas, otherwise wet or very wet
(9) Note: Very Wet in the north, normal in the south

Current Status – Southeastern Asia / Indonesia

Current Status: Temperature				Current Status: Rainfall		
	July	August	September	July	August	September
Indonesia	Hot	Hot	Hot	Normal (2)	Normal (3)	Normal (4)
Papua New Guinea	Hot	Hot	Hot	Normal (1)	Normal	Normal
Timor-Leste	Warm	Hot	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: Very dry in the east
(2) Note: Dry or very dry in Sumatra
(3) Note: Wet or very wet over northern parts of Sumatra and Borneo
(4) Note: Wet over much of 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 drier than normal	Likely to be drier than normal	Likely to be drier 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 drier than normal	Likely to be drier than normal	Climatological odds
Kyrgyzstan	*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.

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** in the far north and far south, elsewhere Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be drier than normal	Likely to be drier than normal
India	*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 south, else Climatological odds	Likely to be wetter than normal in the far south, Likely to be drier than normal in the far north, otherwise Climatological odds	Likely to be wetter than normal in the south, Climatological odds north
Nepal	*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 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.

Outlooks

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	Much more likely to be warmer than normal
	Rainfall	Likely to be near-normal	Climatological odds	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	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 – 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	Likely to be drier than normal in parts of west and far east, else Climatological odds	Likely to be drier than normal in parts of west and far east, else Climatological odds	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	Climatological odds	Climatological odds	Likely to be wetter than normal
Vietnam	*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 south, Climatological odds in the north	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 – 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	Likely to be wetter than normal	Climatological odds
Papua New Guinea	*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	Climatological odds
Timor-Leste	*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 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.

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 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)

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