Asia: Monthly Climate Outlook September to June

Issued: December 2022

Overview

Asia Current Status and Outlook – Temperature

Asia Current Status and Outlook – Rainfall

Global Outlook – Temperature

Global Outlook – Rainfall

Asia Current Status and Outlook - Temperature

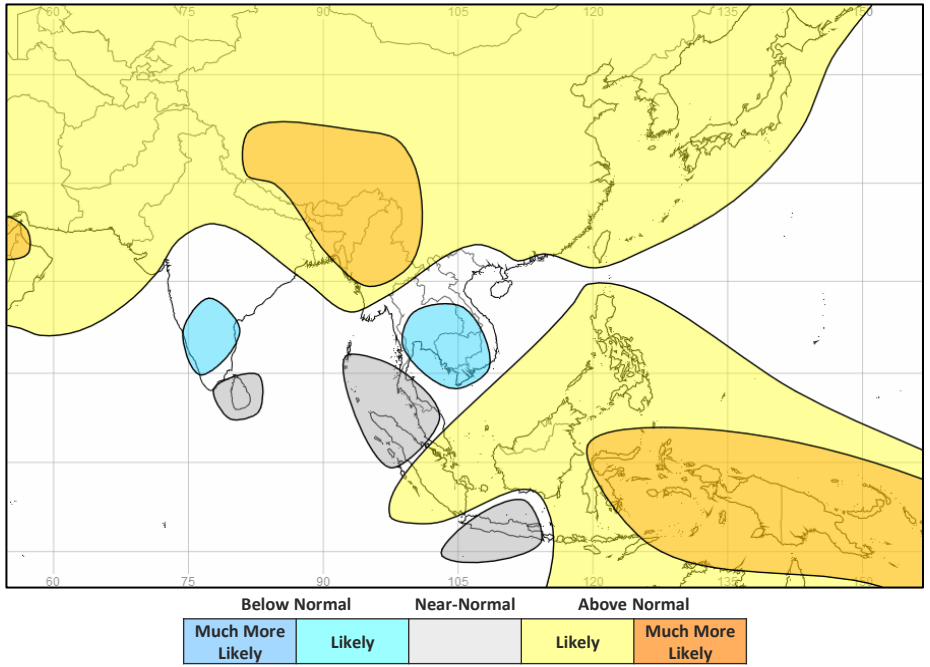
Current Status:

Over the last three months, following a hot September, temperatures have mainly returned to near-normal. The exception to this is Afghanistan which has had more mixed temperatures. In Southern Asia, parts of India and Pakistan have been cold over the last three months while Bangladesh has been hot. After a hot September and October, Sri Lanka was cool in November. Southeast Asia has experienced mainly hot conditions over the last three months, though temperatures were more mixed across Indonesia during November

Outlook:

Over the next three months, many parts of the continent are likely to be warmer than normal, especially for Papua New Guinea and parts of Indonesia. There are a few exceptions - colder than normal conditions are likely over mainland Southeast Asia (parts of Laos, Cambodia and Vietnam) as well southern India.

3-Month Outlook January to March - Temperature



Asia Current Status and Outlook - Rainfall

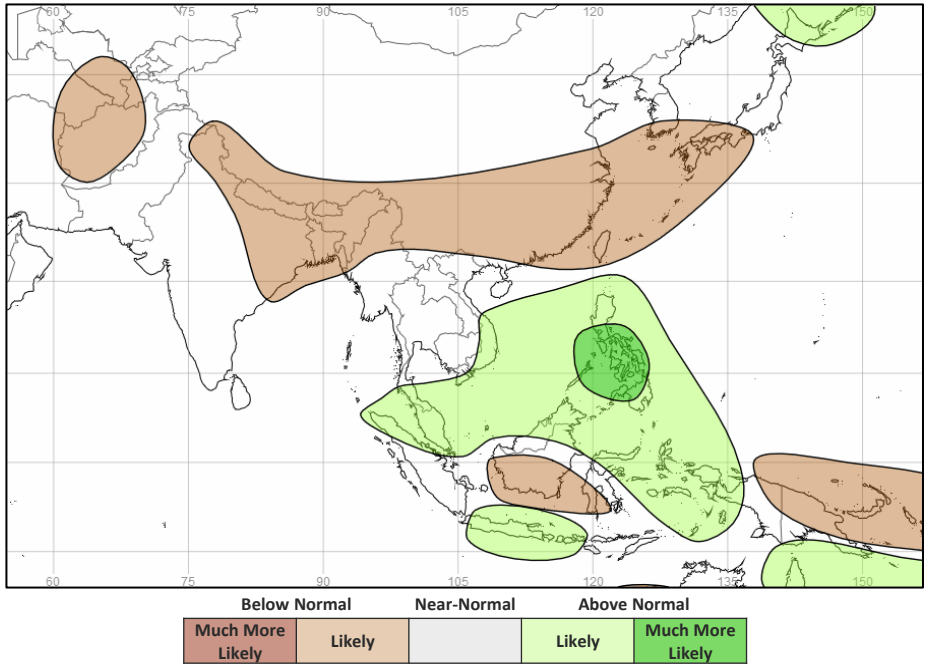
Current Status:

Tajikistan and Kyrgyzstan were wet or very wet in October and November, with the wetter conditions extending into the far north of Afghanistan during November. Nepal and Bangladesh returned to normal in November after being wet or very wet in September and October. Indonesia remained wet or very wet while Papua New Guinea transitioned from dry to wet over the last three months.

Outlook:

Over the next three months, above normal rainfall is much more likely for the Philippines and likely for many parts of Indonesia and Malaysia. Exceptions to this are some central areas (parts of Borneo and Sulawesi) which are likely to be drier than normal. Drier than normal is also likely for Afghanistan, Nepal, Bangladesh, Papua New Guinea and a large part of southern and eastern China.

3-Month Outlook January to March - Rainfall



Global Outlook - Temperature

Outlook:

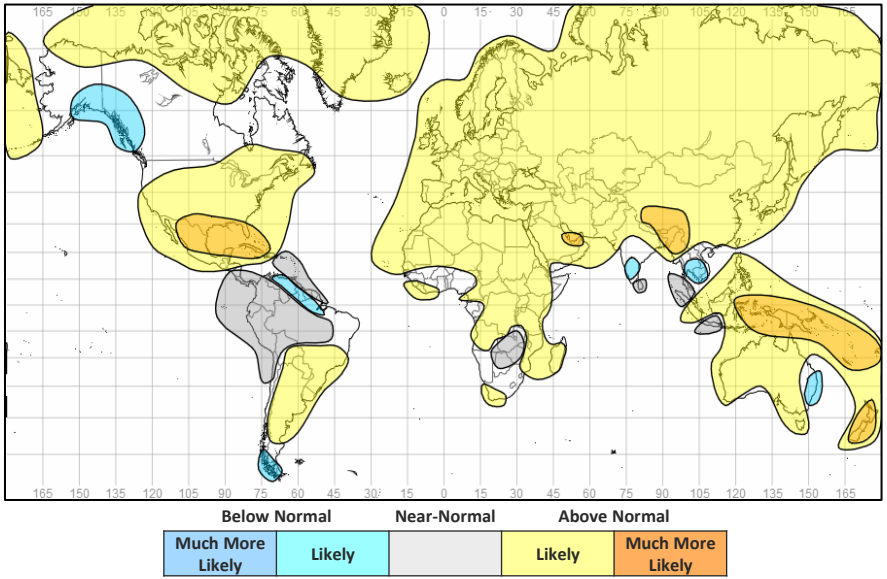
The ongoing La Niña will be the dominant driver of conditions through this period, albeit within the context of background warming trend.

Over the next three months, many regions are likely to be warmer than normal. However, there are exceptions as a result of La Niña, these include northern South America, eastern Australia, mainland Southeast Asia, parts of southern Africa and southern India where near-normal or colder than normal conditions are more likely.

Northern hemisphere winter temperatures are likely to be warmer than normal across Eurasia. Warmer than normal is likely or much more likely for much of North America with the main exception being Southwest Canada where it is likely to be colder than normal. Despite it being likely to be warmer than normal overall in Europe for the next three months, impacts from cold weather remain likely and it is likely to be colder than normal early in this period.

Globally, La Nina acts to cool temperatures and can often suppress rising temperatures due to climate change. With a return to neutral conditions in 2023, it is likely that temperatures will be more extreme in the coming year.

3-Month Outlook January to March - Temperature



Global Outlook - Rainfall

Outlook:

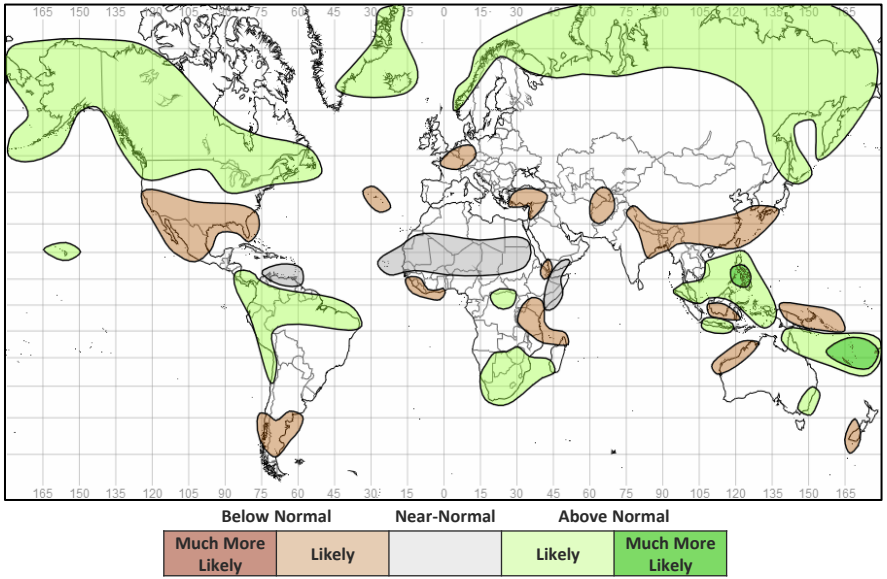
El Niño-Southern Oscillation (ENSO) – The current La Niña event continues in the tropical Pacific Ocean with oceanic and atmospheric indicators consistent with an ongoing event. As La Niña is established and it is such a major driver of global weather patterns, this increases confidence in predictions on seasonal timescales, particularly in the tropics.

Whilst La Niña is present and likely to continue into early 2023 there are some uncertainties regarding its longevity. NOAA suggest a 71% chance of a return to ENSO-neutral during February to April 2023.

This means La Niña will remain the most dominant driver of global weather patterns in early 2023, especially for tropical regions. La Niña, very broadly speaking, tends to increase the likelihood of wetter than normal conditions across many land areas of the tropics with a couple of notable exceptions (e.g. East Africa). More information on typical impacts can be found here https://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/el-nino-la-nina/enso-impacts

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

3-Month Outlook January to March - Rainfall



Current Status

Current Status maps

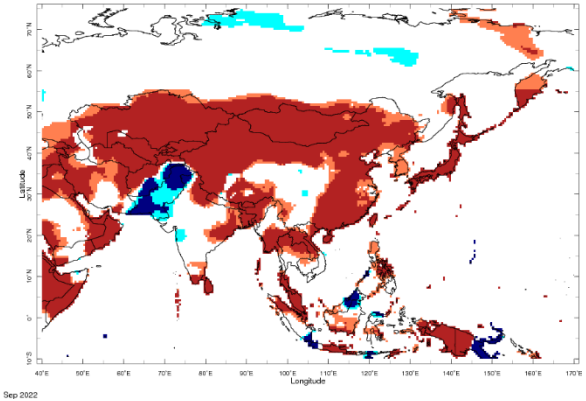
Central Asia

Southern Asia

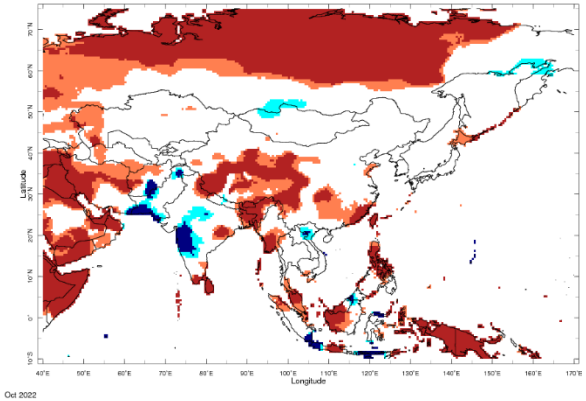
Southeast Asian Peninsula

Southeastern Asia / Indonesia

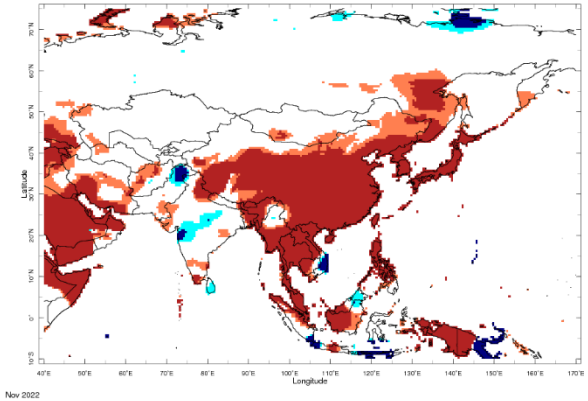
Current Status – Temperature percentiles



September



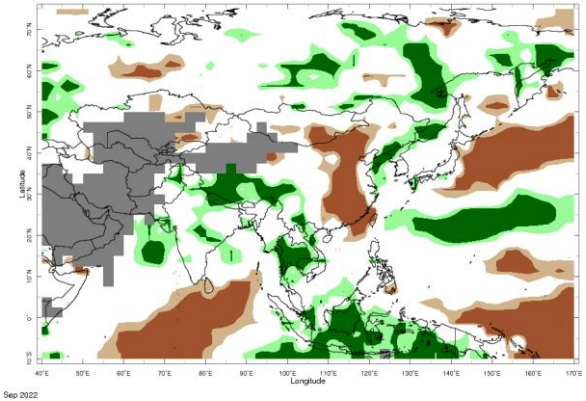
October



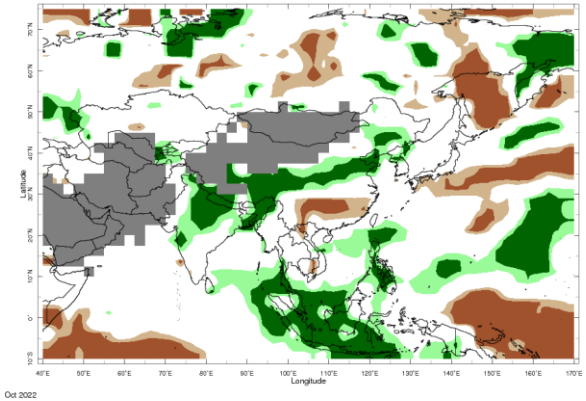
November

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.

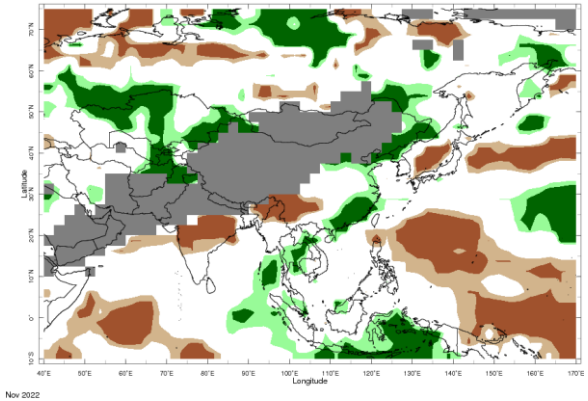
Current Status – Precipitation percentiles



September



October



November

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		
	September	October	November	September	October	November
Afghanistan	Mixed (1)	Mixed (1)	Mixed (2)	Normal	Normal	Mixed (3)
Tajikistan	Hot	Normal	Normal	Normal	Wet	Very Wet
Kyrgyzstan	Hot	Normal	Normal	Normal	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:

(1) Note: Hot in the west, cold in the east
(2) Note: Warm in the west, normal in the east
(3) Note: Very wet in the north, normal* elsewhere

Current Status – Southern Asia

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Pakistan	Cold	Mixed (1)	Mixed (4)	Normal	Normal	Mixed (6)
India	Mixed (2)	Mixed (2)	Mixed (5)	Mixed (3)	Mixed (3)	Mixed (7)
Nepal	Hot	Normal	Normal	Very Wet	Very Wet	Normal*
Bangladesh	Hot	Hot	Hot	Wet	Very Wet	Normal
Sri Lanka	Hot	Hot	Cool	Dry	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:** Cold in the south and parts of the north, normal elsewhere
(2) **Note:** Cold in the northwest, hot in the northeast, variable elsewhere
(3) **Note:** Wet/Very Wet for parts of the north, as well as parts of central India
(4) **Note:** Cold in the far north, warm in the far southeast, normal elsewhere
(5) **Note**: Very dry in central India, normal* in the north and south
(6) **Note:** Very wet in the far north, normal* elsewhere
(7) **Note:** Large variations across the country

Current Status – Southeast Asian Peninsula

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
China	Hot	Normal (4)	Hot	Mixed (2)	Mixed (3)	Mixed (5)
Myanmar	Hot	Hot	Hot	Normal	Normal	Normal
Vietnam	Mixed (1)	Normal	Mixed (1)	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: Large variation; hot in north, mainly cold in south
(2) Note: Large variations, very dry in parts of the east
(3) Note: Dry in the south, wet in the north and west, normal elsewhere
(4) Note: Hot in the south and west
(5) Note: Large variations; dry in the far south, wet in the far east

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Indonesia	Hot	Mixed (1)	Mixed (1)	Wet	Very Wet	Wet
Papua New Guinea	Mixed (2)	Hot	Mixed (2)	Wet	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: Large variations across the country
(2) Note: Cold in the east, hot elsewhere

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: January to June – Central Asia

		Forecast summary		
		January	January to March	April to June
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	Climatological odds
Tajikistan	*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
Kyrgyzstan	*Temperature*	Climatological odds	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: January to June – Southern Asia (1)

		Forecast summary		
		January	January to March	April to June
Pakistan	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be near-normal in the south; Likely to be drier than normal in the north	Climatological odds	Climatological odds
India	*Temperature*	Climatological odds in the north; Likely to be colder than normal in the south	Climatological odds in the north; Likely to be colder than normal in the south	Likely to be warmer than normal
	Rainfall	Likely to be near-normal in the southwest; Likely to be drier than normal in the northeast	Climatological odds in the west; Likely to be drier than normal in the east	Climatological odds
Nepal	*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

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: January to June – Southern Asia (2)

		Forecast summary		
		January	January to March	April to June
Bangladesh	*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
Sri Lanka	*Temperature*	Likely to be near-normal	Likely to be near-normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	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: January to June – SE Asian Peninsula

		Forecast summary		
		January	January to March	April to June
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	Likely to be drier than normal in the south; Climatological odds elsewhere	Climatological odds
Myanmar	*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 near-normal in the north; Likely to be drier than normal in the south	Likely to be drier than normal in the north; Climatological odds in the south	Climatological odds
Vietnam	*Temperature*	Climatological odds	Likely to be colder than normal in the south; Climatological odds in the north	Likely to be near-normal
	Rainfall	Climatological odds in the far north; Likely to be wetter than normal elsewhere	Climatological odds in the far north; Likely to be wetter than normal elsewhere	Climatological odds

Outlooks for months 4 to 6: As forecast uncertainty generally increases with longer range **the 4-6-month outlook is less reliable than the 1-3 month outlook**. Outlook information will only be provided when the model data signals likely outcomes. Additionally, the longer range outlook utilises fewer models because not all seasonal models are available for the extended range. Information provided in this presentation should be used to raise early awareness of potential hazards only and should be updated with the 3-month outlook when available.

Outlook: January to June – SE Asia / Indonesia

		Forecast summary		
		January	January to March	April to June
Indonesia	*Temperature*	Likely to be warmer than normal	Likely to be near-normal in the west; **Much more likely to be warmer than normal** in the east	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Likely to be drier than normal in the central parts; Likely to be wetter than normal elsewhere	Likely to be drier than normal
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	Climatological odds	Likely to be wetter than normal in the south; Likely to be drier than normal in the north	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 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

Email: internationaldevelopment@metoffice.gov.uk

Web: https://www.metoffice.gov.uk/services/government/international-development