Asia: Monthly Climate Outlook January to October

Issued: April 2023

Overview

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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

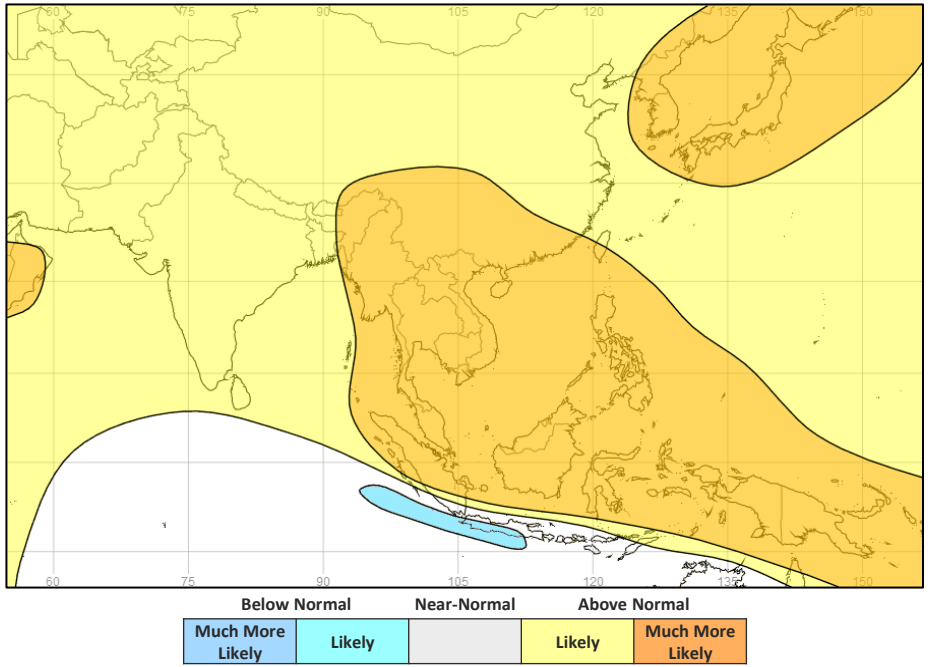
Current Status:

Central Asia was near-normal or cold during January then warm or hot in February and March. Below normal temperatures were also seen in Pakistan and parts of India during January as well as southern Vietnam over the last three months. Otherwise, most areas have been warm or hot.

Outlook:

It is likely to be warmer than normal over most of Asia during the next three months, Eastern China, Korea, Japan and northern parts Indonesia are much more likely to be warmer than normal. There is a possibility of pre-monsoon heatwaves being more intense than usual, especially across southeast and east Asia.

3-Month Outlook May to July - Temperature



Asia Current Status and Outlook - Rainfall

Current Status:

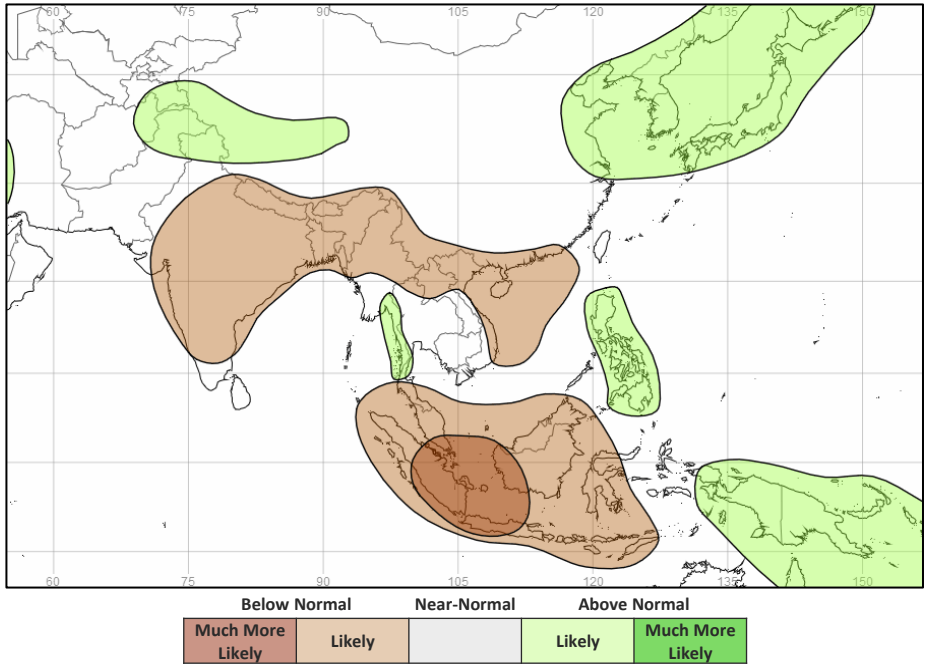
Over the last three months, much of Asia has been either near-normal or wet. An exception to this was much of the Indian sub-continent which was dry during February but then wet or very wet in March.

Outlook:

Over the next three months, it is likely to be wetter than normal in Japan, eastern China, the Korean Peninsula and the Philippines. It is likely to be drier than normal in western parts of Indonesia, Malaysia, Vietnam and southern China. This suggests an increased likelihood of heatwaves, wildfires and drought for parts of Indonesia and Malaysia in particular.

The South Asian Monsoon usually starts in May over the Bay of Bengal, arriving in the Indian Peninsula by June. It is likely to be drier than normal at the start of this period across the Indian sub-continent, including much of India, Bangladesh and northern Myanmar. The exception to this is across the far northwest of India, northern Pakistan, parts of Afghanistan and northern Thailand where it is likely to be wetter than normal.

3-Month Outlook May to July - Rainfall

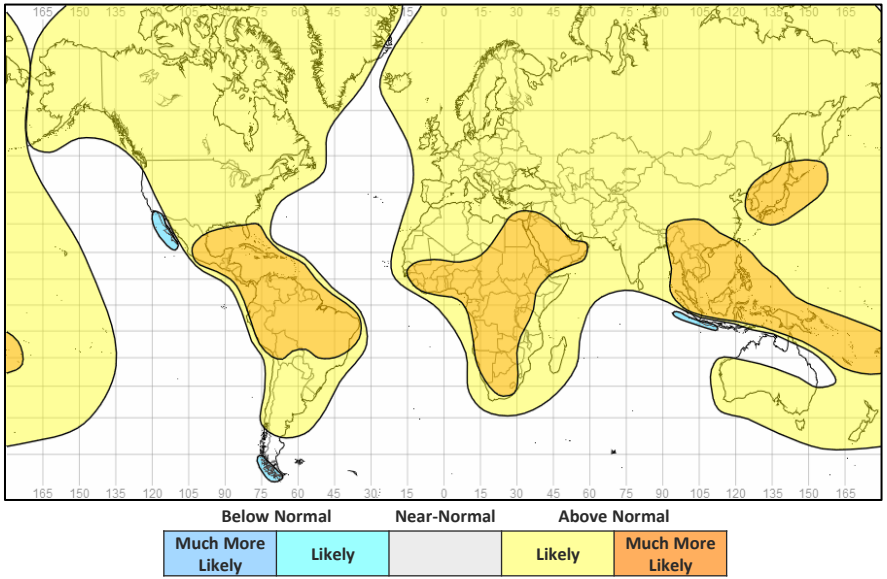


Global Outlook - Temperature

Outlook:

With the backdrop of a warming climate and the loss of the cooling influence of La Niña, most land areas are likely to be warmer than normal over the next few months, with some exceptions, including southern parts of Indonesia, western Mexico and southwest USA where it is likely to be colder than normal.

3-Month Outlook May to July - Temperature



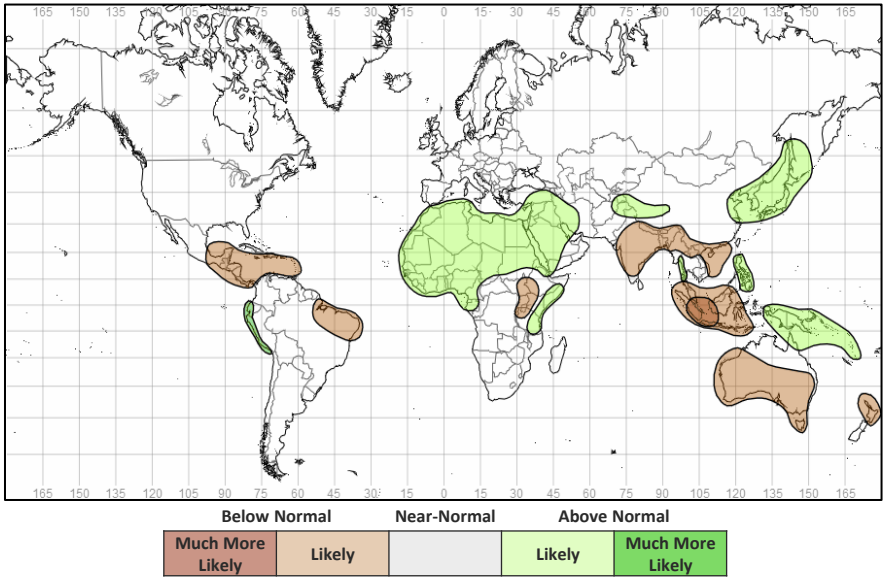
Global Outlook - Rainfall

Outlook: El Niño-Southern Oscillation (ENSO) – Sea surface temperatures (SSTs) in the tropical Pacific Ocean continue to slowly rise and are approaching El Niño thresholds, even exceeding in eastern parts of the basin. The atmosphere, however, remains in ENSO-neutral state. With ENSO-neutral conditions likely to continue through the Northern Hemisphere late spring and early summer, predictability on seasonal timescales is expected to be lower than in recent years when ENSO has been active.

Over the coming months, SSTs are likely to continue to rise and there is an increased likelihood (62% during May to July) that an El Niño will develop. Over longer lead times, the chances of El Niño increase through the Northern Hemisphere and autumn and winter (greater than 80% from August to October onwards).

Indian Ocean Dipole (IOD) – The Indian Ocean Dipole is currently neutral and therefore won't provide any predictive influence for this period. There is early indication that a positive IOD phase will develop during the northern hemisphere summer. However, these forecasts for IOD are showing a high level of uncertainty.

3-Month Outlook May to July - Rainfall



Current Status

Current Status maps

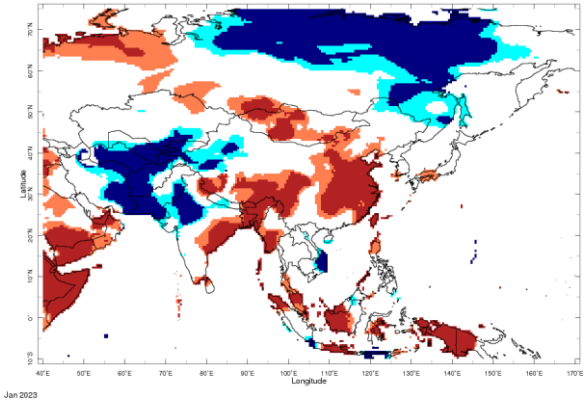
Central Asia

Southern Asia

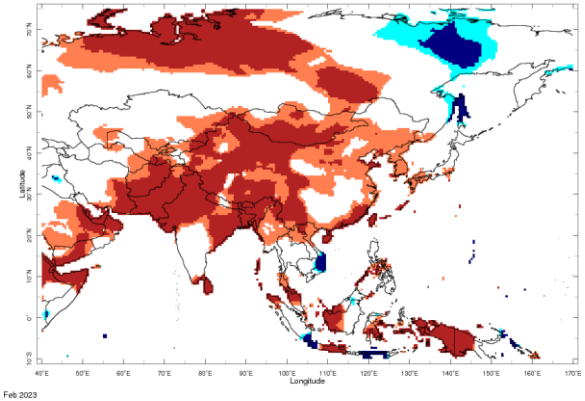
Southeast Asian Peninsula

Southeastern Asia / Indonesia

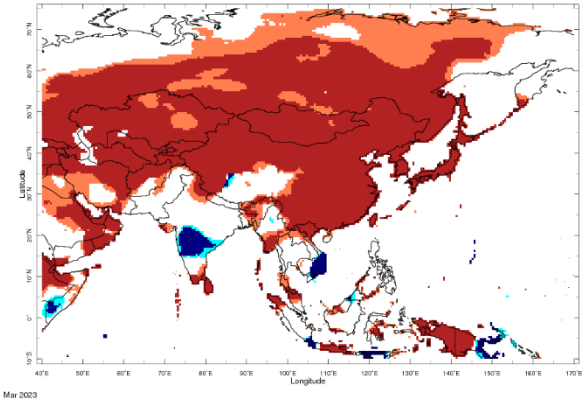
Current Status – Temperature percentiles



January



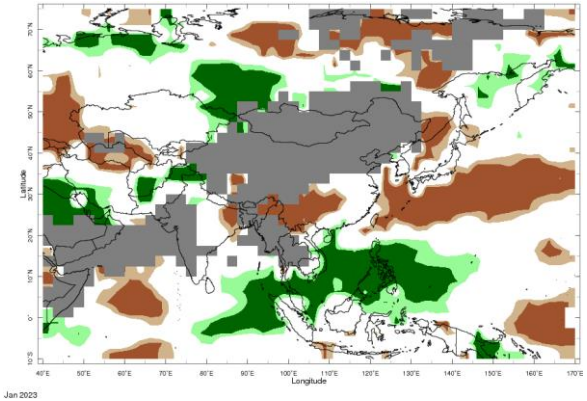
February



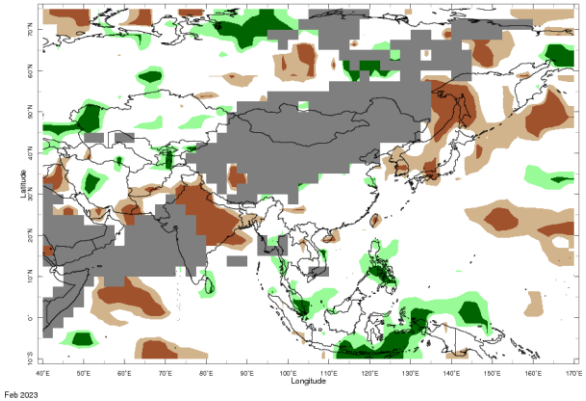
March

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.

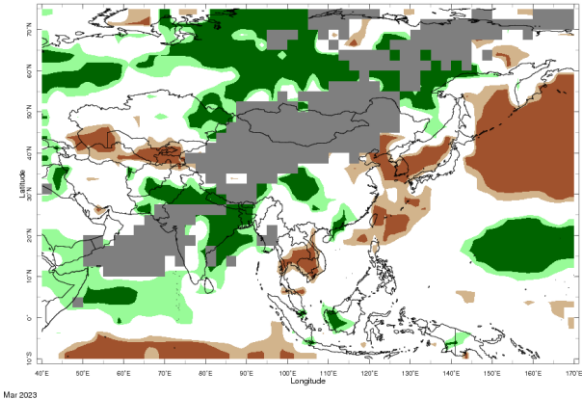
Current Status – Precipitation percentiles



January



February



March

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		
	January	February	March
Afghanistan	Cold	Hot	Hot
Tajikistan	Cold	Warm	Hot
Kyrgyzstan	Cold	Warm	Hot

	Current Status: Rainfall		
	January	February	March
Afghanistan	Wet	Mixed (1)	Normal (2)
Tajikistan	Normal	Wet	Very Dry
Kyrgyzstan	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: Dry in the far south, wet in the far north, normal elsewhere
(2) Note: Very wet in the south.

Current Status – Southern Asia

	Current Status: Temperature			Current Status: Rainfall		
	January	February	March	January	February	March
Pakistan	Cool	Hot	Normal	Mixed (1)	Dry	Wet
India	Mixed (2)	Mixed (3)	Mixed (4)	Normal	Very Dry	Very Wet
Nepal	Normal	Hot	Normal	Normal*	Normal	Very Wet
Bangladesh	Hot	Hot	Normal	Normal*	Dry	Very Wet
Sri Lanka	Normal	Hot	Hot	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: Very wet in the far north, normal* elsewhere
(2) Note: Cold in the northwest, hot in the east and northeast, normal elsewhere
(3) Note: Hot in the north and far south, normal elsewhere
(4) Note: Hot in the far south, cold in central regions and normal elsewhere

Current Status – Southeast Asian Peninsula

	Current Status: Temperature			Current Status: Rainfall		
	January	February	March	January	February	March
China	Mixed (2)	Warm	Hot (4)	Mixed (1)	Normal	Normal (6)
Myanmar	Warm	Warm	Normal	Normal*	Normal	Normal
Vietnam	Mixed (3)	Mixed (3)	Mixed (5)	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: Very Dry in central and western regions, normal elsewhere
(2) Note: Warm/Hot in central and eastern areas, cool in the northwest, normal elsewhere
(3) Note: Normal in the north, cold in the south
(4) Note: Normal in Tibet, otherwise hot
(5) Note: Cold in the south, hot in the north
(6) Note: Wet/very wet in some western and southern regions

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	January	February	March	January	February	March
Indonesia	Mixed (1)	Mixed (1)	Mixed (1)	Normal	Mixed (2)	Normal
Papua New Guinea	Hot	Hot	Mixed (3)	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 variations across the country
(2) Note: Large variations but many areas wet or very wet
(3) Note: Hot in the west, cold in the east

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: May to October – Central Asia

		Forecast summary		
		May	May to July	August to October
Afghanistan	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal in the northeast; Climatological odds elsewhere	Climatological odds
Tajikistan	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal	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: May to October – Southern Asia (1)

		Forecast summary		
		May	May to July	August to October
Pakistan	*Temperature*	Climatological odds	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 elsewhere	Climatological odds
India	*Temperature*	Climatological odds	Likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal in the north; Likely to be drier than normal elsewhere	Likely to be drier than normal
Nepal	*Temperature*	Climatological odds	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.

Outlook: May to October – Southern Asia (2)

		Forecast summary		
		May	May to July	August to October
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 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.

Outlook: May to October – SE Asian Peninsula

		Forecast summary		
		May	May to July	August to October
China	*Temperature*	Likely to be warmer than normal	**Much more likely to be warmer than normal** in the south; Likely to be warmer than normal elsewhere	Likely to be warmer than normal
	Rainfall	Climatological odds	Likely to be wetter than normal in Tibet and the far east; Likely to be drier than normal in the far 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 drier than normal	Climatological odds in the far south; Likely to be drier than normal elsewhere	Climatological odds
Vietnam	*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	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: May to October – SE Asia / Indonesia

		Forecast summary		
		May	May to July	August to October
Indonesia	*Temperature*	Likely to be warmer than normal	Likely to be colder than normal in southern Java; **Much more likely to be warmer than normal** elsewhere	Likely to be warmer than normal
	Rainfall	Likely to be drier than normal in the west; Likely to be wetter than normal in the east	**Much more likely to be drier than normal** in South Sumatra and western Java; Likely to be wetter than normal in Papua; Likely to be drier 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**	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.

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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