Asia: Monthly Climate Outlook August to January

Issued: July 2023

Overview

Asia Current Status and Outlook - Temperature

Current Status: Much of Asia has been warm or hot over the past three months. The exception being large parts of India and western China which saw cool or cold conditions.

Outlook: Warmer than normal conditions are likely, or very likely, across most of Asia - increasing the risk of heatwaves and related impacts. Southern parts of Indonesia are likely to have near normal temperatures.

3-Month Outlook August to October - Temperature

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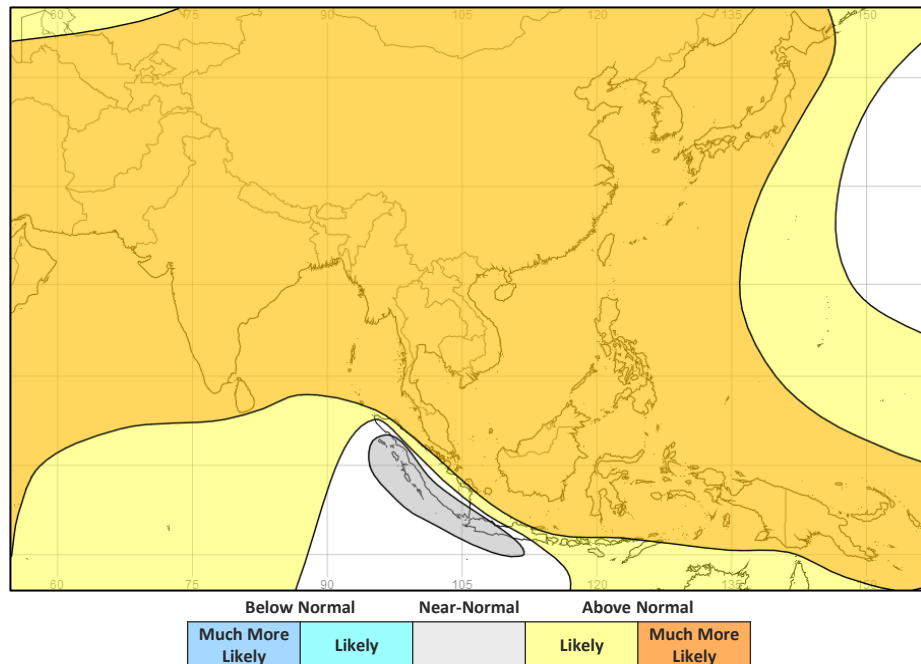
Asia Current Status and Outlook - Rainfall

Current Status: Much of mainland southeast Asia was dry during April and May with near normal rainfall in June. Over the past three months, rainfall across Indonesia was broadly near normal, although there were some large regional variations. Northern and western parts of India, and central China, were wet or very wet over the past three months. Pakistan observed near-normal rainfall in April, while in May and June northern and eastern parts of Pakistan were wet or very wet. Elsewhere rainfall was near normal.

Outlook: Over the next three months, it is likely to be drier than normal across western India and parts of Pakistan. Eastern parts of India and the southern half of Myanmar are more likely to be wetter than normal. Across southeast Asia, much of Indonesia and southern Malaysia it is likely to be drier than normal, whilst further north (Indochina and the Philippines) wetter than normal conditions are more likely. Across eastern China, Japan and the Korean Peninsula conditions are likely to be near normal or wetter than normal.

Indonesia and southern Malaysia are much more likely to be drier than normal – increasing the risk of heatwaves, wildfires and drought.

3-Month Outlook August to October - Rainfall

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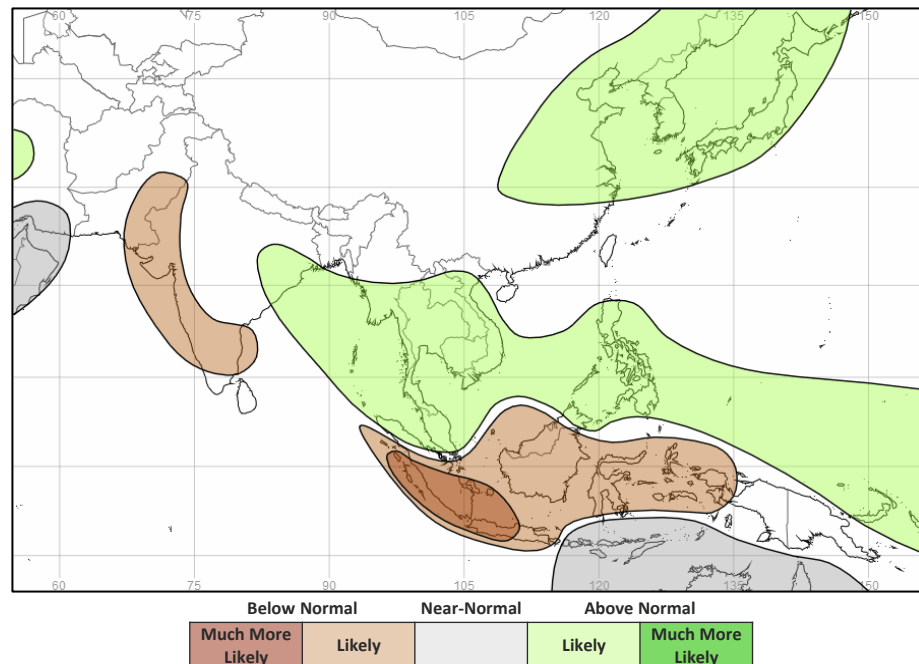
Global Outlook - Temperature

Outlook: With the backdrop of a warming climate and the developing El Nino event, most land areas are likely to be warmer than normal with limited exceptions. These include northern Australia, southern parts of Indonesia and western Mexico/southwest USA where near normal temperatures are most likely

3-Month Outlook August to October - Temperature

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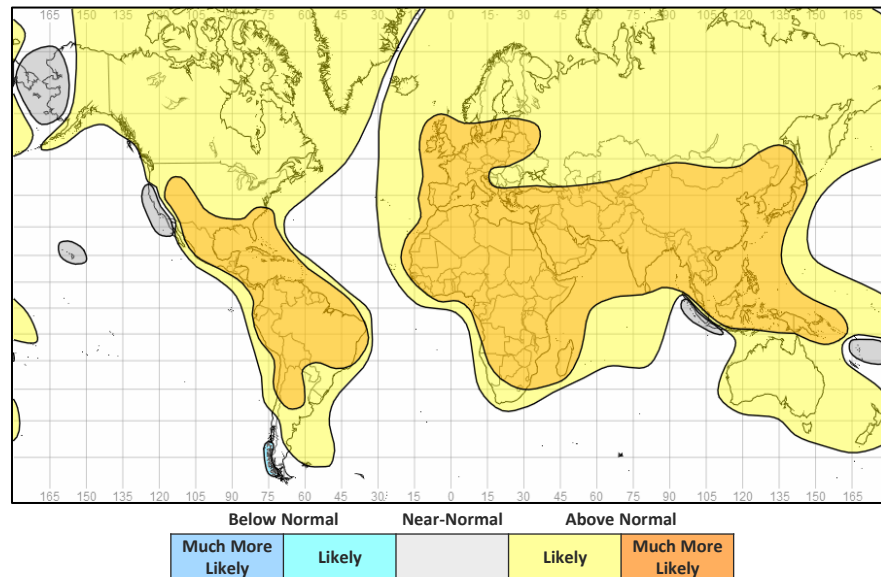
Global Outlook - Rainfall

Outlook:

El Niño-Southern Oscillation (ENSO) – Sea surface temperatures across the equatorial Pacific are above average, in the Nino 3.4 region they are 1C above average. The atmospheric response has been slower but is now consistent with weak El Nino conditions. NOAA have declared El Nino to be underway.

A moderate El Niño is likely over the next three months and this event is expected to persist throughout the rest of the year and into the northern hemisphere winter. There is a small chance (~20%) chance of this El Nino becoming a strong event, with similar or larger impacts than the 1997-98 and 2015-16 later this year.

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 and is not influencing regional conditions. All seasonal forecasts currently suggest a positive IOD will develop over the next couple of months. Should this occur, this would help reinforce the influence of El Niño over southeast Asia, Africa and Australia.

3-Month Outlook August to October - Rainfall

Below Normal		Near-Normal	Above Normal	
Much More Likely	Likely		Likely	Much More Likely
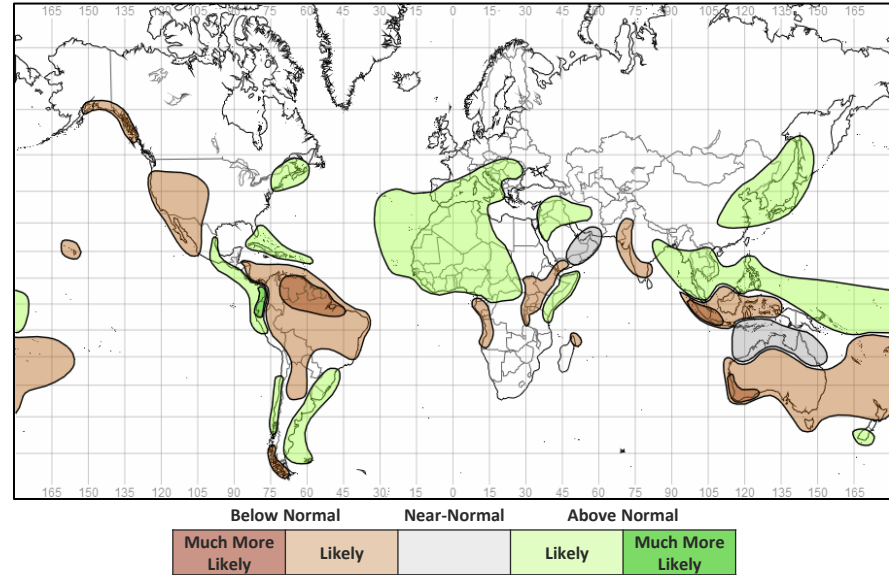
Current Status
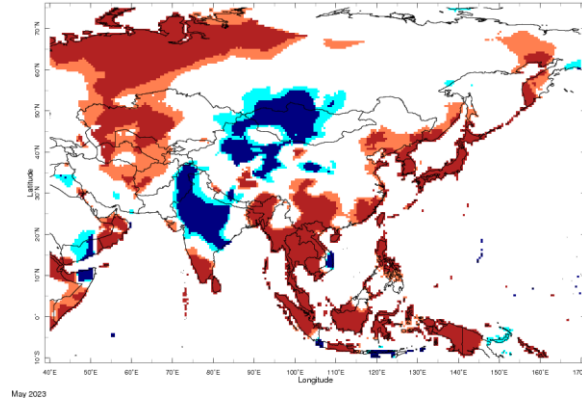
Current Status – Temperature percentiles

In the absence of IRI's update, the June map has been created in-house at Met Office, using the same underpinning GHCN CAMS 2-metre temperature dataset processed into the identical quintile categories as shown for April and May.

April

May

June

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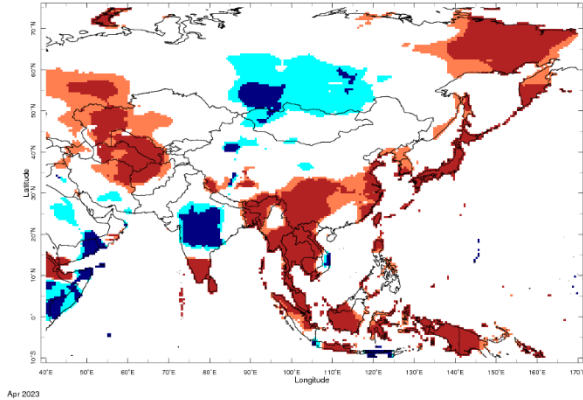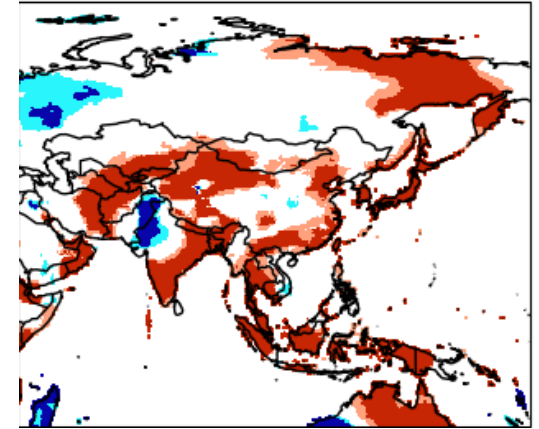
Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions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

April

May

June

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

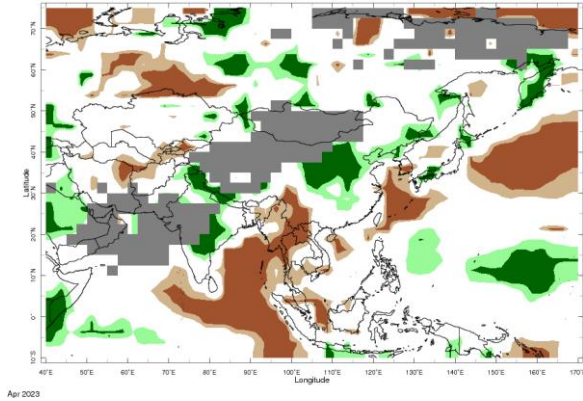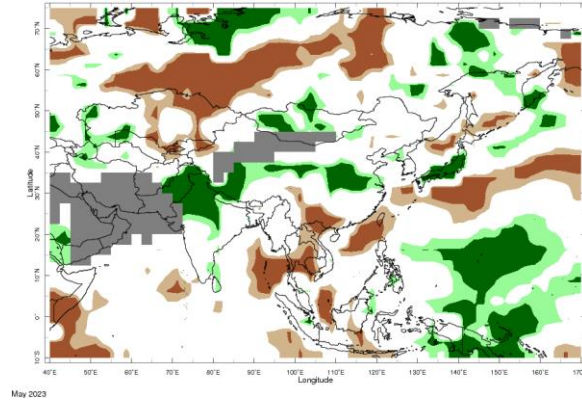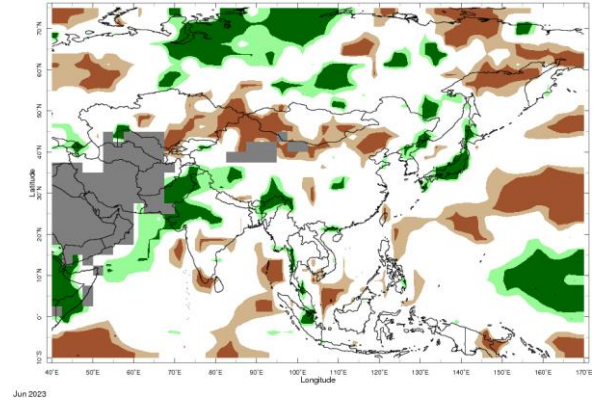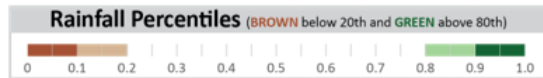**Notes:** The percentiles shown in the map indicate a ranking of rainfall, with the 0th percentile being the driest and the 100th percentile being the wettest in the 1981-2010 climatology. Green and dark green shading represent values above the 80th (Wet) and 90th (Very Wet) percentile, respectively; 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		
	April	May	June	April	May	June
Afghanistan	Warm (1)	Normal (2)	Hot	Dry	Normal	Normal*
Tajikistan	Normal	Normal	Hot (2)	Dry	Normal	Normal
Kyrgyzstan	Normal	Normal	Hot	Dry	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:** Hot in the northwest, normal elsewhere
(2) **Note:** Warm in the west
(3) **Note**: Hot in the West, normal in the east

Current Status – Southern Asia

	Current Status: Temperature				Current Status: Rainfall		
	April	May	June		April	May	June
Pakistan	Normal	Mixed (4)	Mixed (6)		Normal (2)	Normal (2)	Very Wet
India	Mixed (1)	Mixed (1)	Mixed (7)		Normal (3)	Normal (3)	Normal (5)
Nepal	Normal	Normal	Hot		Wet	Wet	Normal
Bangladesh	Hot	Hot	Hot		Normal	Normal	Normal
Sri Lanka	Warm	Hot	Normal		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:** 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, 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 West, normal in central, and Cold in the North East.
(7) Note: Hot in the South and East, Cold in the North West and normal elsewhere.

Current Status – Southeast Asian Peninsula

	Current Status: Temperature				Current Status: Rainfall		
	April	May	June		April	May	June
China	Mixed	Mixed	Mixed	China	Mixed (2)	Mixed (4)	Mixed (5)
Myanmar	Warm	Hot	Warm	Myanmar	Normal (3)	Normal (3)	Normal (6)
Vietnam	Warm	Mixed (1)	Mixed (7)	Vietnam	Normal (3)	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: Cold in the south, Hot in the north
(2) Note: Wet/Very Wet in central and northeastern regions, dry in the southwest, normal elsewhere
(3) Note: Dry/Very Dry in the south
(4) Note: Large variations, Dry or Very Dry in parts of the southeast
(5) Note: Very Dry in the north and wet/very wet in parts of the southwest, normal elsewhere
(6) Note: Wet/Very Wet in the south
(7) Note: Cold in the central areas, normal elsewhere.

Current Status – South eastern Asia / Indonesia

Current Status: Temperature			
	April	**May**	**June**
Indonesia	Mixed (1)	Mixed (3)	Hot
Papua New Guinea	Warm	Warm	Mixed (4)

Current Status: Rainfall			
	April	**May**	**June**
Indonesia	Normal	Normal	Normal
Papua New Guinea	Normal (2)	Very 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: Large variations across the country
(2) Note: Wet in the east
(3) Note: Large variations but hot for many areas
(4) Note: Hot in the West normal in the East.

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: August to January – Central Asia

		Forecast summary		
		August	August to October	November to January
Afghanistan	*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	Climatological odds	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 near-normal	Climatological odds	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 near-normal	Climatological odds	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: August to January – Southern Asia (1)

		Forecast summary		
		August	August to October	November to January
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	Likely to be drier than normal in the southeast, 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 southwest, Likely to be wetter than normal in the east, Climatological odds elsewhere	Likely to be drier than normal in the west, Likely to be wetter than normal in the east, 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: August to January – Southern Asia (2)

		Forecast summary		
		August	August to October	November to January
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	Much more likely to be warmer than normal
	Rainfall	Likely to be drier 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: August to January – SE Asian Peninsula

		Forecast summary		
		August	August to October	November to January
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 drier than normal in the north and east, Climatological odds elsewhere	Likely to be drier than normal in the north and east, Climatological odds elsewhere	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 wetter than normal in the south and west, Climatological odds elsewhere	Likely to be wetter than normal but Climatological odds in the far north	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 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: August to January – SE Asia / Indonesia

		Forecast summary		
		August	August to October	November to January
Indonesia	*Temperature*	Likely to be warmer than normal	Likely to be near-normal in the southwest, 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 near-normal elsewhere	Likely to be near-normal in the southeast, Much more likely to be drier than normal in the southwest, 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	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.

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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