Asia: Monthly Climate Outlook
August to May

Issued: November 2021

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

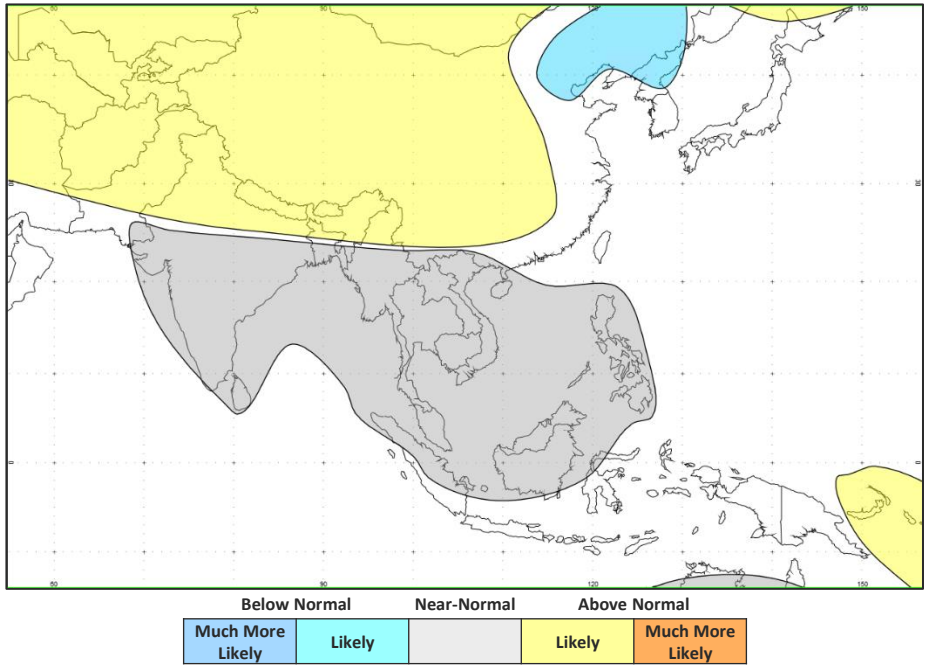
Current Status:

Over the last three months, most places have been warm or hot, although there have been some large variations, particularly in southeast Asia. Vietnam for instance has been cold in the south during October, but hot in the north. Indonesia has experienced similar regional variations.

Outlook:

During the next three months, warmer than normal conditions are likely across large parts of the continent. The main exceptions to this are the Indian subcontinent and parts of Indochina where near-normal conditions are more likely.

3-Month Outlook December to February - Temperature



Asia Current Status and Outlook - Rainfall

Current Status:

Consistent with a typical La Nina, Indonesia experienced wet or very wet conditions in August and September, although this trend did not persist into October.

The Indochina peninsular, Pakistan, Tajikistan and parts of China experienced Very Wet conditions during September and October, as did Nepal in October

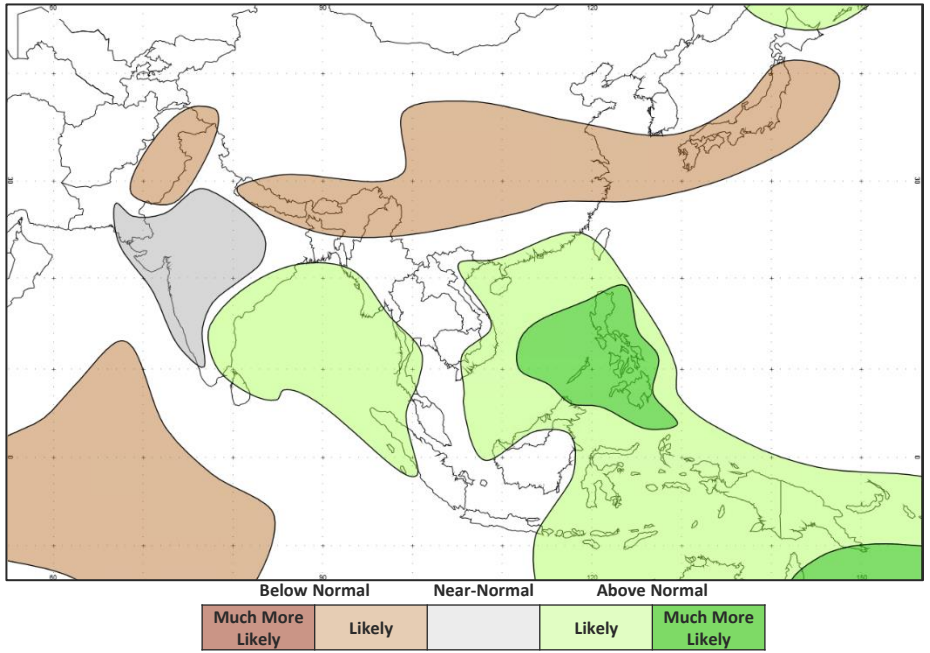
The monsoon withdrew during October, but not before giving locally Wet to Very Wet conditions for parts of central India and Myanmar. Wet or Very Wet conditions have also occurred in eastern China and parts of Indonesia.

Outlook:

Consistent with La Niña the Philippines, parts of Indonesia, and southern Indochina are likely to much more likely to be wetter than normal in the next three months. Wetter than normal conditions are likely across northern Sri Lanka and eastern India.

Southern and eastern China are likely to be drier than normal, along with much of Japan. Large parts of central Asia, including Pakistan and Nepal are likely to be drier than normal.

3-Month Outlook December to February - Rainfall



Global Outlook - Temperature

Outlook:

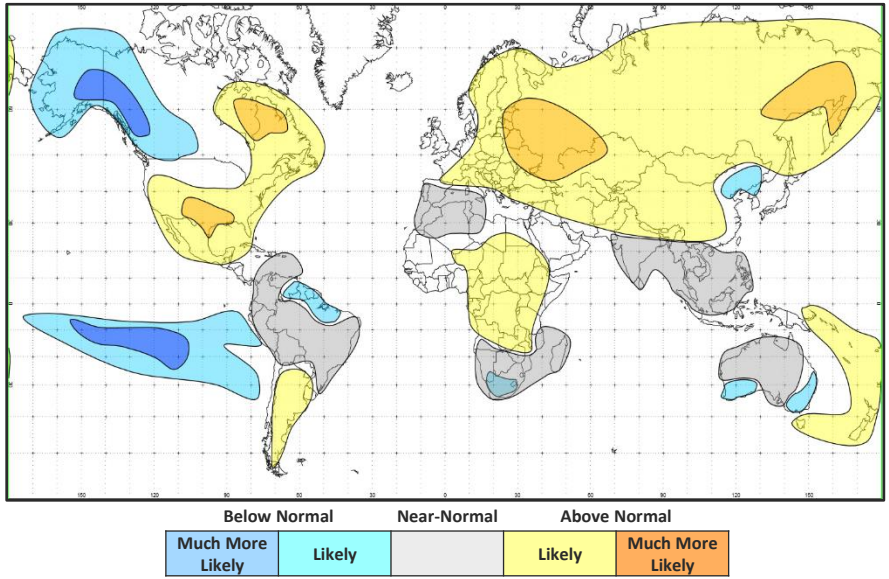
Consistent with the gradual warming of the climate, many parts of the globe are likely to see warmer than normal conditions through the next three months.

However, sea surface temperatures in the tropical Pacific Ocean are cooler than average at present - a phenomenon known as La Niña. This can influence climatic conditions on a global scale.

With La Niña conditions expected to persist into 2022, parts of Australia, southern Africa, the northern half of South America and parts of north-eastern North America are likely to be colder than normal.

La Niña is not the only driver of global weather and its effects on global weather vary each time it occurs. This means for many parts of Africa, Europe and Asia, mixed or conflicting signals from seasonal models are apparent.

3-Month Outlook December to February - Temperature



Global Outlook - Rainfall

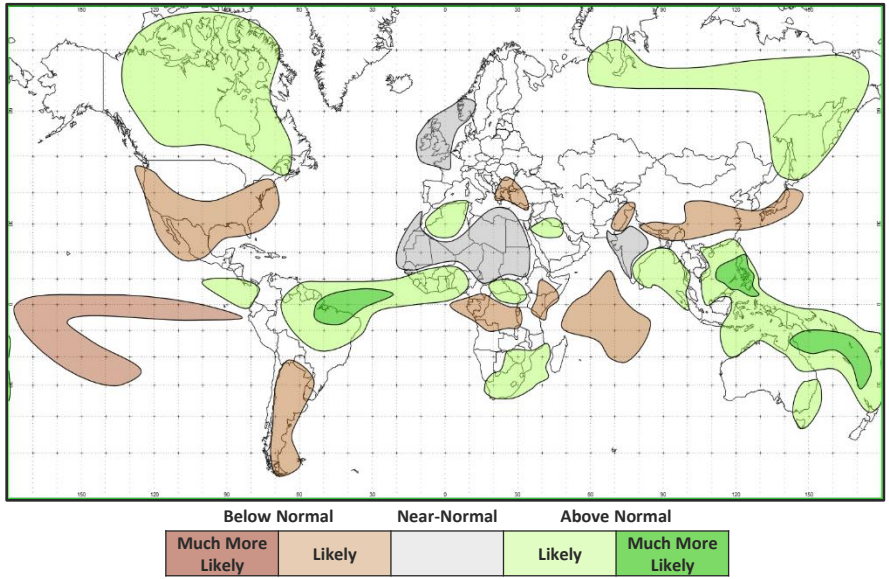
Outlook:

La Niña has a strong influence on global rainfall patterns. In broad terms it tends to increase rainfall totals in many land areas of the tropics, with reduced rainfall to the north and south of this. 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 .

For the next three months and consistent with a typical La Niña influence, Asia, southern Africa and northern parts of South America are likely to be wetter than normal. Conversely, conditions are likely to be drier than normal for southern North America, southern South America and eastern China.

For areas where the link between rainfall patterns and La Nina is less apparent, such as parts of central and north Africa, Europe and Asia, seasonal models are showing mixed or conflicting signals. Only significant seasonal trends away from normal have been identified.

3-Month Outlook December to February - Rainfall



Current Status

Current Status maps

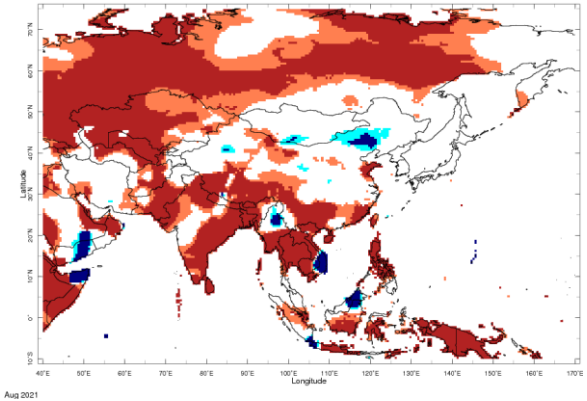
Central Asia

Southern Asia

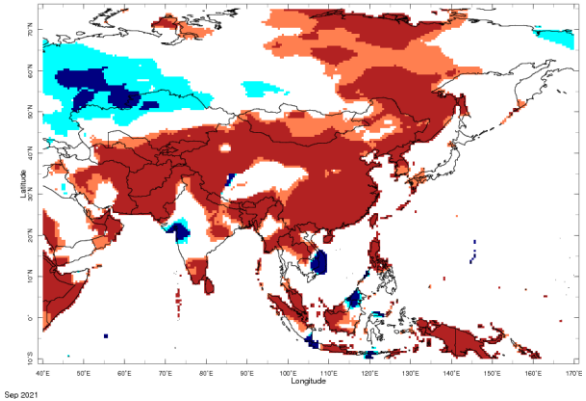
Southeast Asian Peninsula

Southeastern Asia / Indonesia

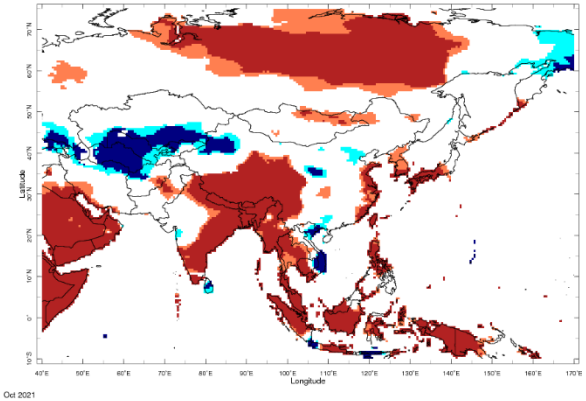
Current Status – Temperature percentiles



August



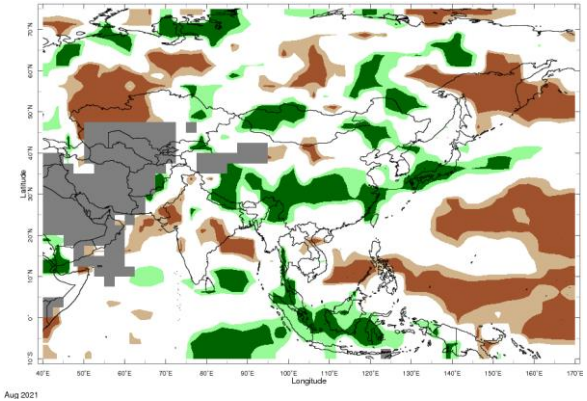
September



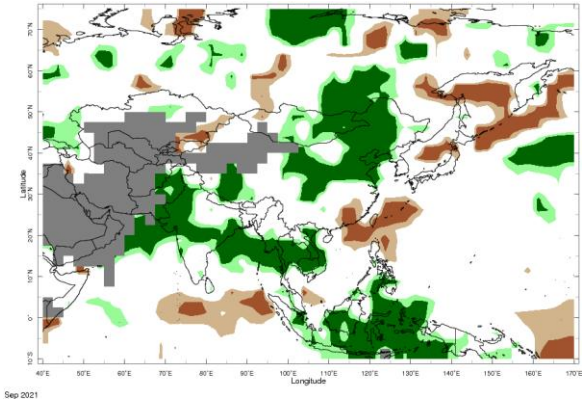
October

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.

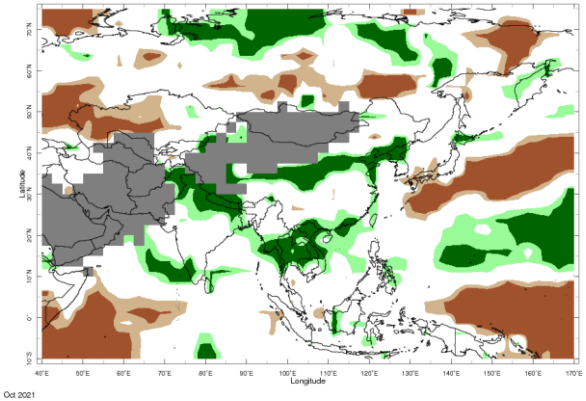
Current Status – Precipitation percentiles



August



September



October

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		
	August	September	October	August	September	October
Afghanistan	Warm	Hot	Mixed (1)	Mixed (2)	Mixed (2)	Normal
Tajikistan	Normal	Hot	Normal	Normal*	Normal	Normal
Kyrgyzstan	Normal	Hot	Cold	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: Cold in the west
(2) Note: Normal* widely, but Very Wet in the far east

Current Status – Southern Asia

	Current Status: Temperature		
	August	September	October
Pakistan	Warm	Hot	Mixed (2)
India	Hot	Mixed (1)	Mixed (3)
Nepal	Hot	Hot	Hot
Bangladesh	Hot	Hot	Hot

	Current Status: Rainfall		
	August	September	October
Pakistan	Normal	Very Wet	Normal (6)
India	Mixed (4)	Mixed (5)	Normal (7)
Nepal	Very Wet	Wet	Very Wet
Bangladesh	Wet	Normal	Normal

Notes:

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

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

Additional Information:

(1) Note: Hot in the north and far south; Normal elsewhere
(2) Note: Hot across central parts; Normal elsewhere
(3) Note: Hot across many eastern and northern areas. Normal elsewhere
(4) Note: Locally dry
(5) Note: Wet in the north and central regions; normal elsewhere
(6) Note: Very Wet in the north; normal elsewhere
(7) Note: Very Wet in the north and far southeast; normal elsewhere

Current Status – Southeast Asian Peninsula

	Current Status: Temperature			Current Status: Rainfall		
	August	September	October	August	September	October
China	Mixed (1)	Hot	Mixed (4)	Mixed (5)	Mixed (6)	Mixed (8)
Myanmar	Mixed (2)	Hot	Hot	Wet	Mixed (7)	Very Wet
Vietnam	Mixed (3)	Mixed (3)	Cold	Normal	Very Wet	Very 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 far south, mainly normal elsewhere
(2) Note: Hot in the south, normal to cold in the north.
(3) Note: Cold in central parts, hot elsewhere.
(4) Note: Hot in the southwest and far east; normal elsewhere
(5) Note: Very Wet across central parts, Normal elsewhere
(6) Note: Very Wet in northern and central regions; Dry in the far south; Normal elsewhere
(7) Note: Very Wet in central regions; Normal elsewhere
(8) Note: Very mixed across the country, with large regional variations

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	August	September	October	August	September	October
Indonesia	Hot	Hot	Hot	Wet	Wet	Normal
Papua New Guinea	Hot	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:

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: June to November – Central Asia

		Forecast summary		
		December	December to February	March to May
Afghanistan	*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
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*	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: June to November – Southern Asia

		Forecast summary		
		December	December to February	March to May
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	Likely to be drier than normal	Likely to be drier than normal
India	*Temperature*	Likely to be warmer than normal in the far north; Likely to be near-normal elsewhere	Likely to be warmer than normal in the far north; Likely to be near-normal elsewhere	Climatological odds
	Rainfall	Likely to be wetter than normal in the east, Likely to be drier than normal in the northwest; Likely to be near-normal elsewhere	Likely to be wetter than normal in the east, Likely to be drier than normal in the northwest; Likely to be near-normal elsewhere	Climatological odds
Nepal	*Temperature*	Likely to be near-normal	Likely to be near-normal	Likely to be warmer than normal
	Rainfall	Likely to be drier than normal	Likely to be drier than normal	Likely to be near-normal
Bangladesh	*Temperature*	Likely to be near-normal	Likely to be near-normal	Likely to be near-normal
	Rainfall	Climatological odds	Climatological odds	Likely to be near-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: June to November – SE Asian Peninsula

		Forecast summary		
		December	December to February	March to May
China	*Temperature*	Mainly Likely to be warmer than normal, but Likely to be colder than normal in the northeast	Mainly Likely to be warmer than normal, but Likely to be colder than normal in the northeast	Likely to be warmer than normal
	Rainfall	Likely to be near-normal	Likely to be drier than normal for much of the south and east	Climatological odds
Myanmar	*Temperature*	Likely to be near-normal	Likely to be near-normal	Likely to be colder than normal
	Rainfall	Likely to be near-normal for much of the country; but Likely to be wetter than normal in the south	Likely to be near-normal for much of the country; but Likely to be wetter than normal in the south	Likely to be wetter than normal
Vietnam	*Temperature*	Likely to be near-normal	Likely to be near-normal	Likely to be colder than normal
	Rainfall	Likely to be drier than normal in the north; Likely to be wetter than normal in the south	Likely to be drier than normal in the north; Likely to be wetter than normal in the south	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: June to November – SE Asia / Indonesia

		Forecast summary		
		December	December to February	March to May
Indonesia	*Temperature*	Likely to be near-normal	Likely to be near-normal	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*	Climatological odds	Climatological odds	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.ncdc.noaa.gov/teleconnections/enso/indicators/sst.php

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 2021) - https://imdpune.gov.in/Climate_Outlook_Statement_OND2021_SASCOF20_30_SEP_2021.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 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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