

Asia: Monthly Climate Outlook October to July

Issued: January 2023

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Overview

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Asia Current Status and Outlook - Temperature

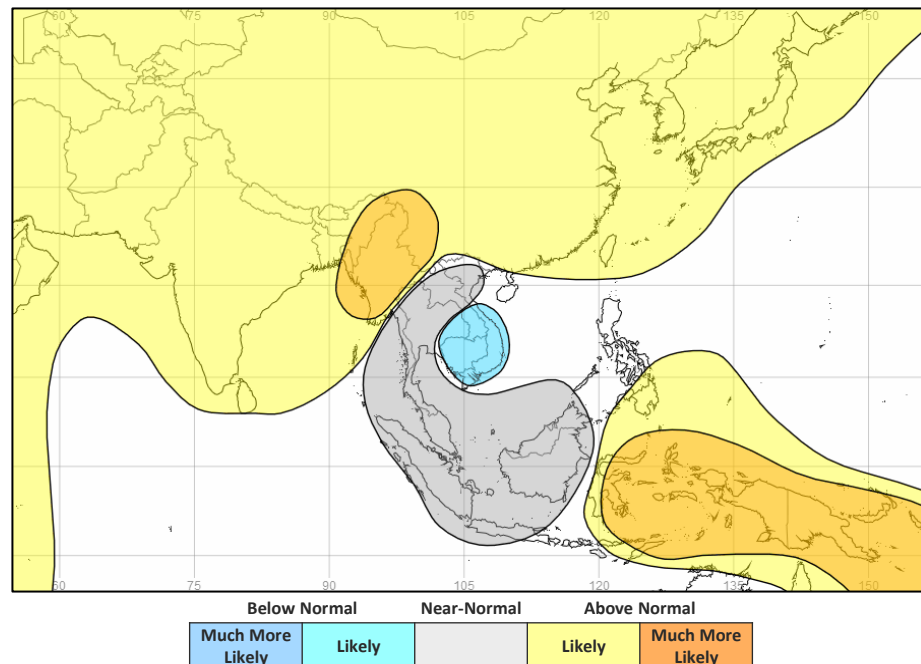
Current Status:

Over the last three months, conditions have either been warm or hot across most of Asia, although large parts of the Indian sub-continent and western Asia have been near-normal. During December much of Central Asia was cold along with northern and eastern parts of China.

Outlook:

Over the next three months, it is likely to be warmer than normal across many parts of the continent and much more likely to be warmer than normal for eastern parts of Indonesia. Near-normal conditions are likely over parts of mainland Southeast Asia, with colder than normal conditions likely over parts of Laos, Cambodia and Vietnam.

3-Month Outlook February to April - Temperature



Asia Current Status and Outlook - Rainfall

Current Status:

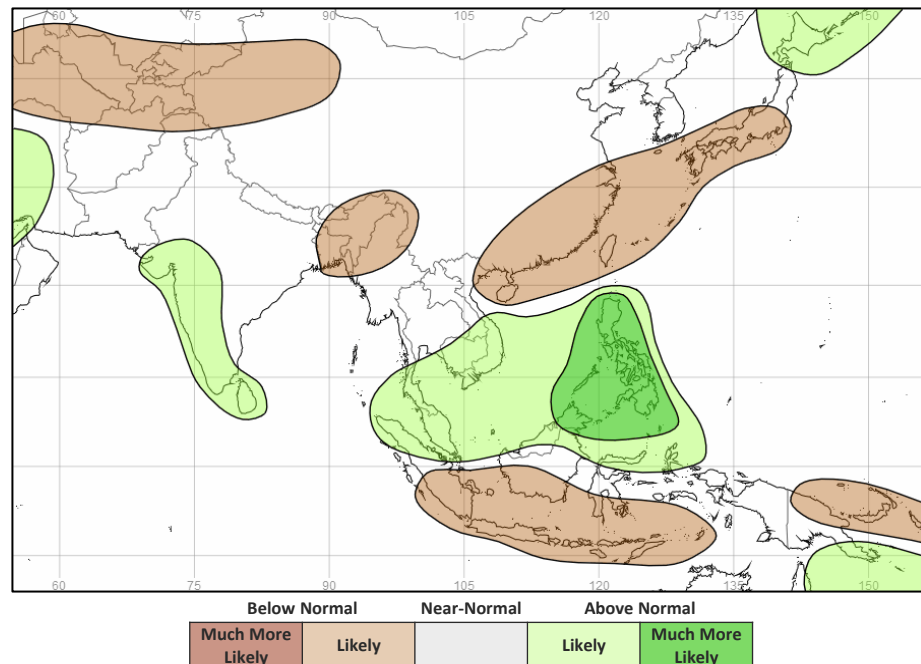
There have been large regional variations over the last three months. Southern Asia has been wet or very wet in many parts, whilst Central Asia has experienced near-normal to drier than normal conditions. The exception was that in November, large parts of Central Asia were also wet.

Outlook:

Over the next three months, it is likely to be drier than normal in southern Japan, southeast China, Bangladesh, Bhutan and northern Myanmar though it is typically the drier part of the year in these areas. It is also likely to be drier than normal conditions across many parts of Central Asia, including northern parts of Afghanistan and northern Pakistan.

It is much more likely to be wetter than normal in the Philippines, and likely to be wetter than normal in Vietnam, Malaysia and northern parts of Indonesia. Southern and eastern Indonesia are likely to be drier than normal.

3-Month Outlook February to April - Rainfall



Global Outlook - Temperature

Outlook:

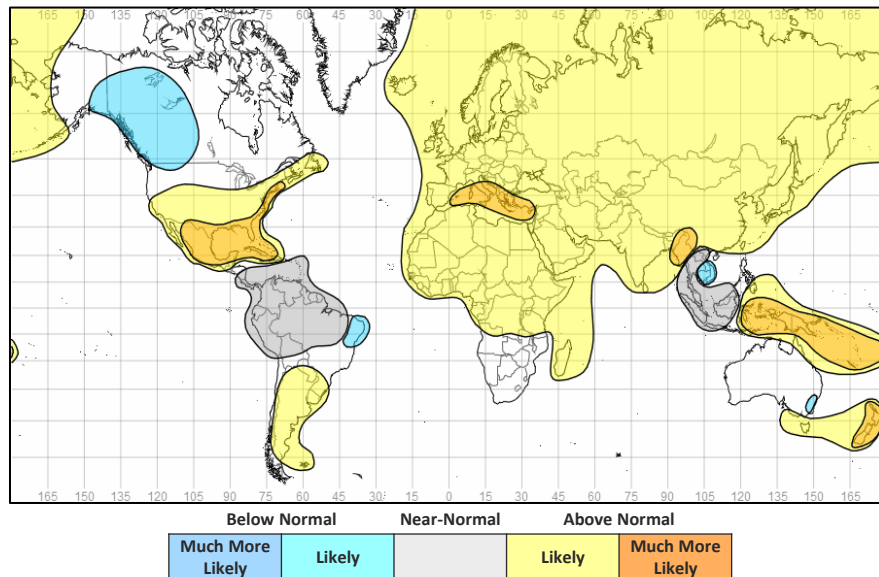
The ongoing La Niña will be the dominant driver of conditions at the start of this forecasting period, albeit within the context of background warming trend. This influence is likely to reduce later in this period as the El Niño Southern Oscillation (ENSO) is expected to become neutral during the northern hemisphere spring.

Over the next three months, many regions are likely to be warmer than normal. However, there are exceptions as a result of La Niña, including mainland Southeast Asia and parts of Canada where near-normal or colder than normal conditions are more likely.

Temperatures are likely, or much more likely, to be warmer than normal for southern parts North America and most of Europe and Asia.

Globally, La Niña acts to cool temperatures and can often suppress rising temperatures due to climate change. Looking further into 2023, early predictions highlight an increased likelihood of El Niño conditions taking hold in the August to October period (51% likelihood in NOAA forecast). While forecasts looking this far ahead are inherently uncertain, particularly when issued at this time of year, there is a consistent message emerging from many international modelling centres.

3-Month Outlook February to April - Temperature



Global Outlook - Rainfall

Outlook:

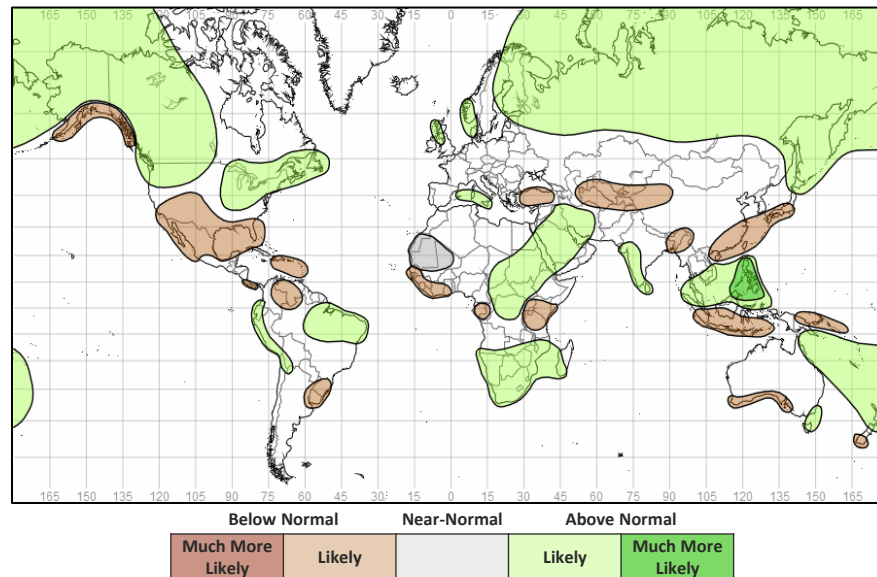
El Niño-Southern Oscillation (ENSO) – The current La Niña event continues and is expected to remain the main global driver of weather patterns at the start of the forecast period. While ongoing, La Niña will continue to increase confidence in predictions on seasonal timescales, more especially in the tropics. Its longevity is still uncertain however, with NOAA suggesting an 82% chance of a return to ENSO-neutral during March-May 2023.

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>

Looking further ahead there is an increased chance of El Niño developing during the coming northern hemisphere summer – models are currently predicting the likelihood of El Niño developing during the period May to July at ~30% and in the August to October period ~50%. While forecasts looking this far ahead are inherently uncertain, particularly when issued at this time of year, there is a consistent message emerging from many international modelling centres.

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 February to April - Rainfall



Current Status

[Current Status maps](#)

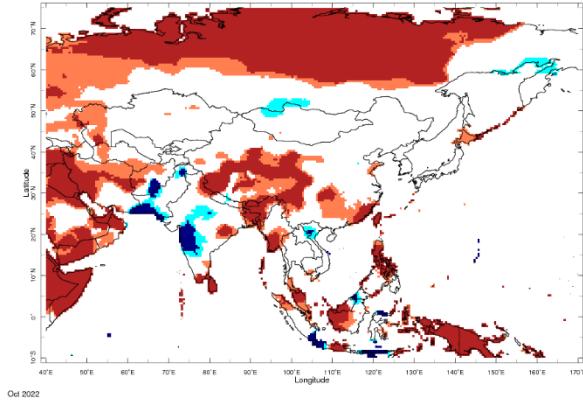
[Central Asia](#)

[Southern Asia](#)

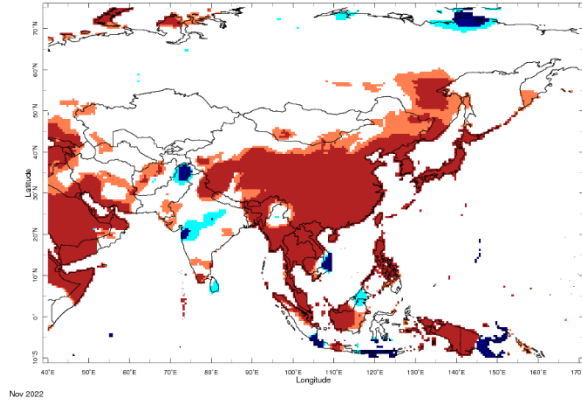
[Southeast Asian Peninsula](#)

[Southeastern Asia / Indonesia](#)

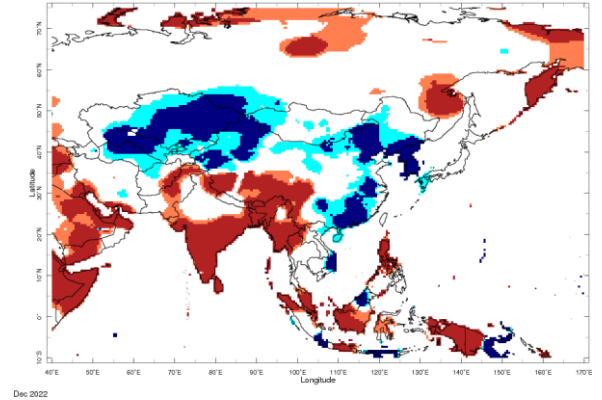
Current Status – Temperature percentiles



October



November

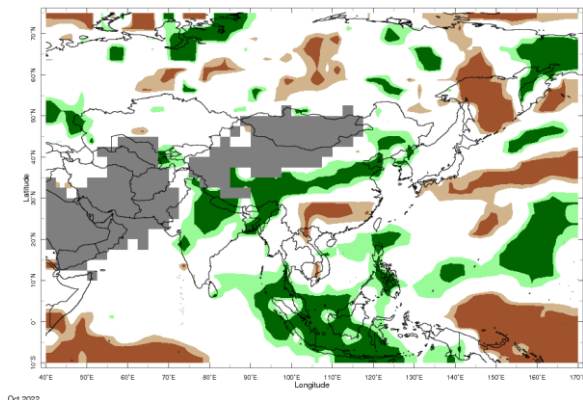


December

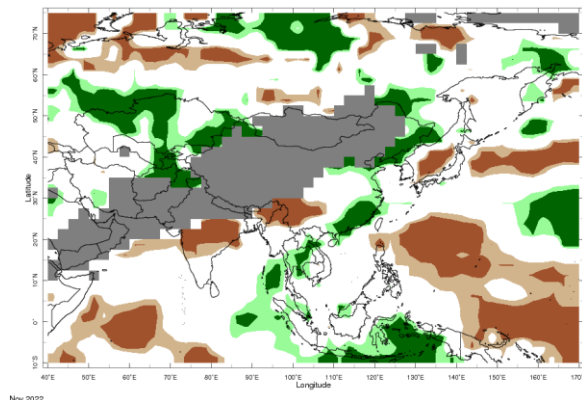


Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions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

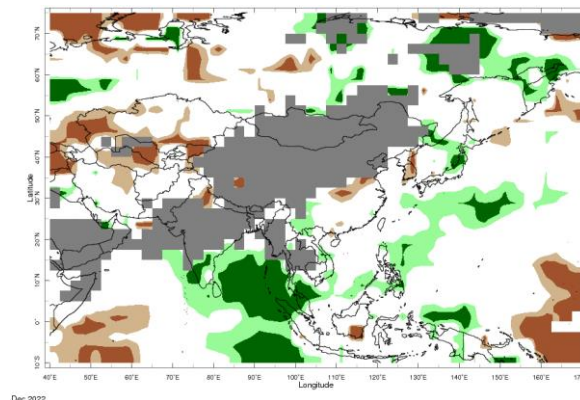
Current Status – Precipitation percentiles



October



November



December



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

	October	November	December
Afghanistan	Mixed (1)	Mixed (2)	Normal
Tajikistan	Normal	Normal	Normal
Kyrgyzstan	Normal	Normal	Cool

Current Status: Rainfall

	October	November	December
	Normal	Mixed (3)	Normal
	Wet	Very Wet	Normal
	Wet	Wet	Very 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:** Hot in the west, cold in the east
- (2) **Note:** Warm in the west, normal in the east
- (3) **Note:** Very wet in north, normal* elsewhere

Current Status – Southern Asia

	Current Status: Temperature		
	October	November	December
Pakistan	Mixed (1)	Mixed (4)	Warm
India	Mixed (2)	Mixed (5)	Mixed (7)
Nepal	Normal	Normal	Normal
Bangladesh	Hot	Hot	Hot
Sri Lanka	Hot	Cool	Hot

	Current Status: Rainfall		
	October	November	December
Pakistan	Normal	Mixed (6)	Normal
India	Mixed (3)	Mixed (5)	Mixed (5)
Nepal	Very Wet	Normal*	Normal*
Bangladesh	Very Wet	Normal	Normal*
Sri Lanka	Wet	Normal	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:** Cold in the south, normal elsewhere
- (2) **Note:** Cold in the west, 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:** Large variations
- (6) **Note:** Very wet in the far north, normal elsewhere*
- (7) **Note:** Hot in central and southern regions; normal elsewhere

Current Status – Southeast Asian Peninsula

Current Status: Temperature

	October	November	December
China	Normal (3)	Hot	Mixed (5)
Myanmar	Hot	Hot	Hot
Vietnam	Normal	Mixed (1)	Cool

Current Status: Rainfall

	October	November	December
China	Mixed (2)	Mixed (4)	Normal
Myanmar	Normal	Normal	Normal*
Vietnam	Normal	Normal	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:** Large variation; hot in the north, mainly cold in the south
- (2) Note:** Dry in the south, wet in the north and west, normal elsewhere
- (3) Note:** Hot in the south and west
- (4) Note:** Large variations; dry in the far south, wet in the far east
- (5) Note:** Cool/Cold in the north and east; hot in the southwest and normal elsewhere

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	October	November	December	October	November	December
Indonesia	Mixed (1)	Mixed (1)	Mixed (1)	Very Wet	Wet	Normal
Papua New Guinea	Hot	Mixed (2)	Mixed (2)	Normal	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: Large variations across the country

(2) 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: February to July – Central Asia

		Forecast summary		
		February	February to April	May to July
Afghanistan	Temperature	Climatological odds	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 north; Climatological odds elsewhere	Climatological odds
Tajikistan	Temperature	Climatological odds	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	Climatological odds	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: February to July – Southern Asia (1)

		Forecast summary		
		February	February to April	May to July
Pakistan	Temperature	Climatological odds	Likely to be warmer than normal	Climatological odds
	Rainfall	Climatological odds	Likely to be drier than normal in the far north; Climatological odds elsewhere	Climatological odds
India	Temperature	Climatological odds	Likely to be warmer than normal	Climatological odds
	Rainfall	Likely to be near-normal in the west; Likely to be drier than normal in the east; Climatological odds elsewhere	Likely to be wetter than normal in the west and south; Likely to be drier than normal in the far northeast; Climatological odds elsewhere	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	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: February to July – Southern Asia (2)

		Forecast summary		
		February	February to April	May to July
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 colder than normal	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	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: February to July – SE Asian Peninsula

		Forecast summary		
		February	February to April	May to July
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 the south; Climatological odds in the north	Likely to be drier than normal in the southeast and the far northwest; Climatological odds elsewhere	Climatological odds
Myanmar	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	Likely to be drier than normal in the north; Climatological odds elsewhere	Climatological odds
Vietnam	Temperature	Likely to be colder than normal	Likely to be colder than normal	Climatological odds
	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	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: February to July – SE Asia / Indonesia

		Forecast summary		
		February	February to April	May to July
Indonesia	Temperature	Likely to be near-normal in the west; Likely to be warmer than normal in the east	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 wetter than normal in the north; Likely to be drier than normal in the south	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	Likely to be drier than normal in the north; Likely to be wetter than normal in the south	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>

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 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 CPTC (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

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