

Asia: Monthly Climate Outlook September to June

Issued: December 2021

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Overview

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Asia Current Status and Outlook - Temperature

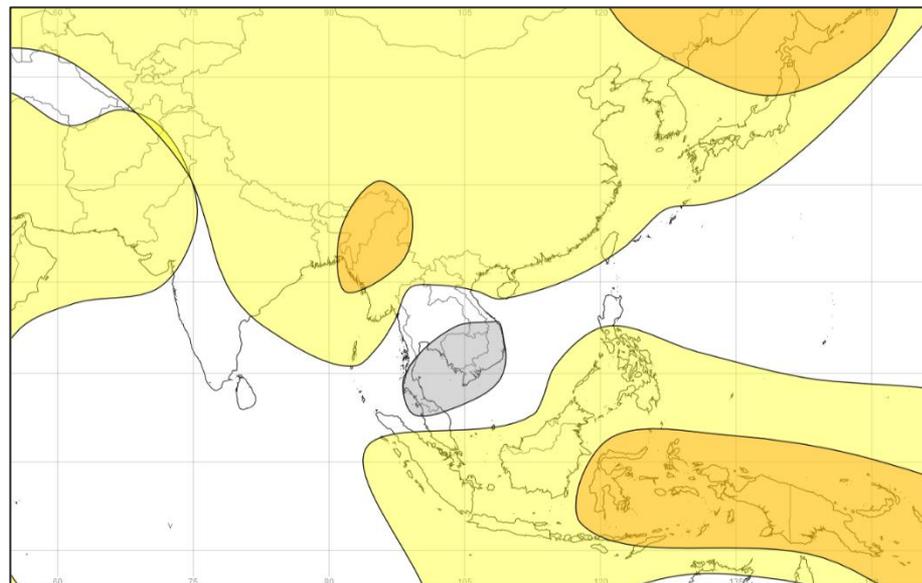
Current Status:

Over the last three months, many parts of Asia have been warm or hot. However, there have been some large variations across countries, especially southeast Asia, where Vietnam for instance, has been colder than normal in the south during October and November. Parts of Central Asia and China were also cold during November.

Outlook:

For the next three months, it is likely to be warmer than normal for large parts of the continent, except for parts of Indochina where it is likely to be near-normal.

3-Month Outlook January to March - Temperature



Asia Current Status and Outlook - Rainfall

Current Status:

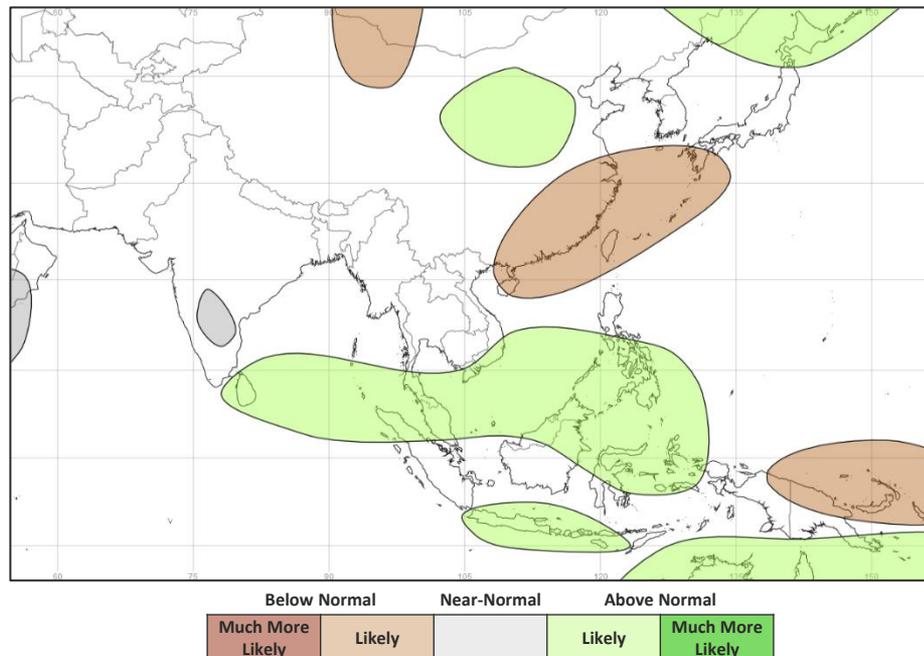
Parts of Afghanistan were very wet in September. Northern Pakistan, Tajikistan and western China were very wet in October. During November, central Asia had near or below normal precipitation.

The end of the South Asian monsoon was wetter than normal with wet or very wet conditions in southern India and Sri Lanka during November. Additionally, many parts of Southeast Asia and parts of China have been wet or very wet over the last three months, which is typical during a La Niña episode.

Outlook:

Consistent with La Niña, wetter than normal conditions are likely across much of Southeast Asia over the next three months. Wetter than normal conditions are also more likely across parts of China. Southeastern China is likely to be drier than normal, along with southern Japan.

3-Month Outlook January to March - Rainfall



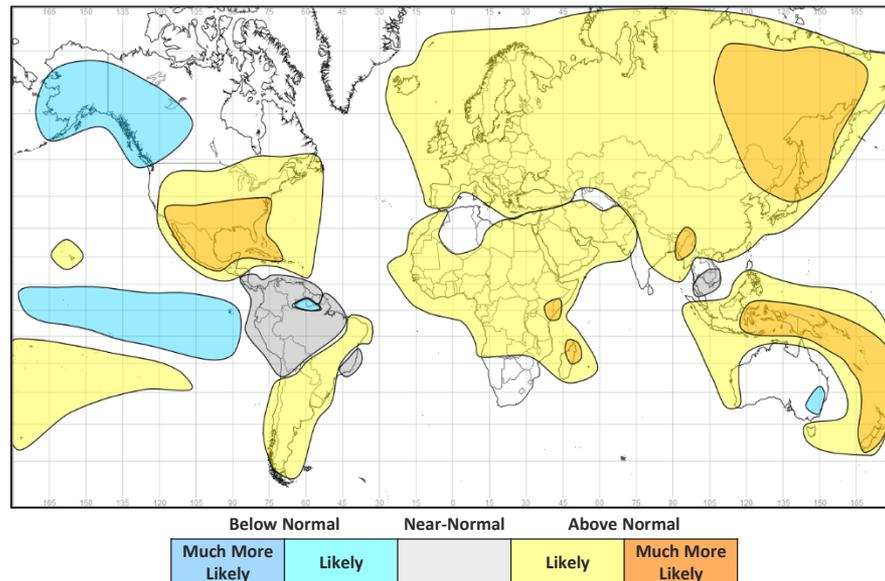
Global Outlook - Temperature

Outlook:

A moderate La Niña event will be the main driver of temperature and rainfall anomalies across the tropics over the next 3 months. La Niña's influence will also extend further north and south (see also the precipitation section).

Consistent with long-term climate change, many parts of the globe are likely to see above normal temperatures over the next three months. However, one of the key characteristics of La Niña is a cooling of the surface seawaters of the central and eastern tropical Pacific Ocean. This means near or below normal temperatures are likely for northern South America, parts of mainland Southeast Asia, southeast Australia and northwest North America.

3-Month Outlook January to March - Temperature



Global Outlook - Rainfall

Outlook:

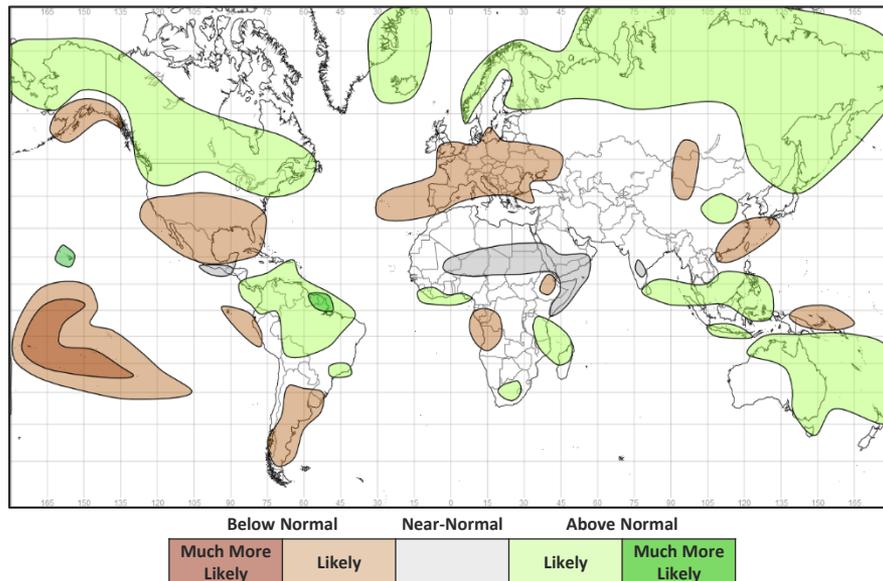
El Niño-Southern Oscillation (ENSO) – A moderate La Niña is ongoing in the tropical Pacific with its influence expected to persist throughout the next three months. It is uncertain how long the current La Niña state will continue, but there are signals that it may end during the austral autumn (March-April-May).

With a couple of notable exceptions (including East Africa) La Niña, very broadly speaking, tends to increase the likelihood of wetter than normal conditions across many land areas of the tropics. More information on typical impacts can be found at <https://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/el-nino-la-nina/enso-impacts>

For the next three month, the outlook for North America and Eurasia is also broadly consistent with the typical influence of La Niña, with northern parts of both continents likely to see wetter than normal conditions. Parts of East Africa, Mexico, the south of the USA, western and southern Europe and parts of southern Eurasia are likely to be drier than normal

Indian Ocean Dipole (IOD) – The IOD returned to a neutral state during early November and is expected to remain neutral throughout January to March and will have little effect on global climate during this period.

3-Month Outlook January to March - Rainfall



Current Status

[Current Status maps](#)

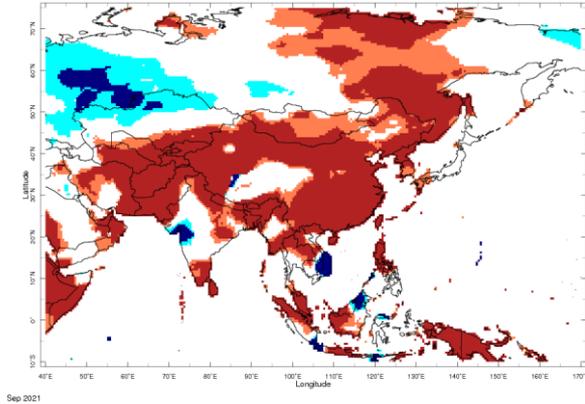
[Central Asia](#)

[Southern Asia](#)

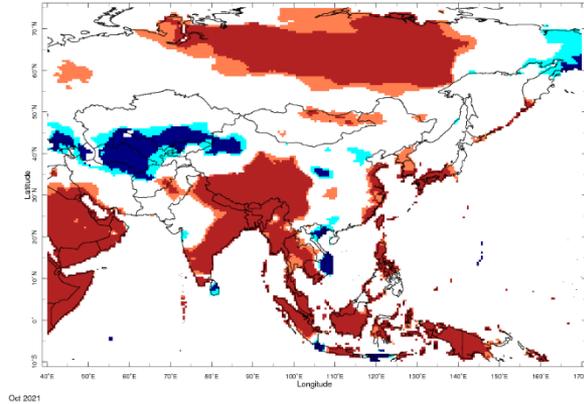
[Southeast Asian Peninsula](#)

[Southeastern Asia / Indonesia](#)

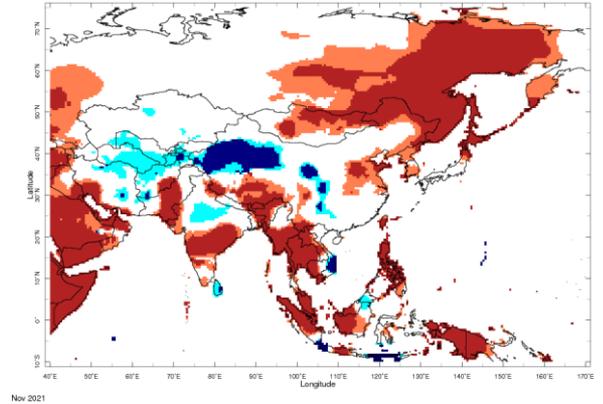
Current Status – Temperature percentiles



September



October

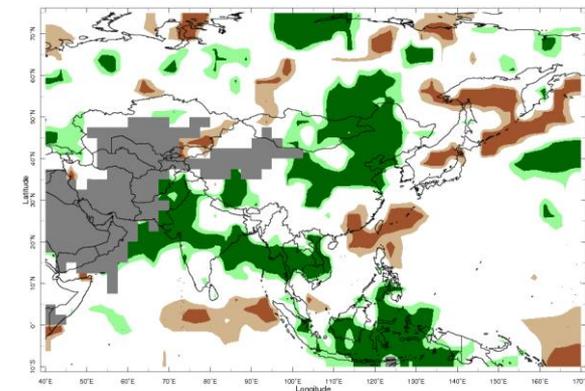


November



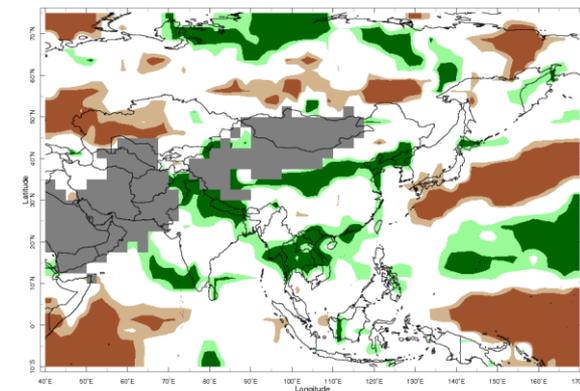
Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions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



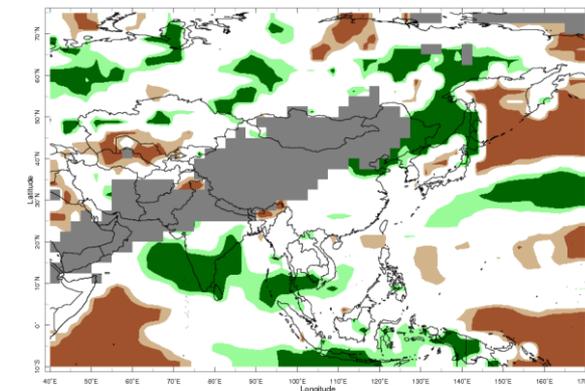
Sep 2021

September



Oct 2021

October



Nov 2021

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

	September	October	November
Afghanistan	Hot	Mixed (1)	Mixed (3)
Tajikistan	Hot	Normal	Cold
Kyrgyzstan	Hot	Cold	Cold

Current Status: Rainfall

	September	October	November
	Mixed (2)	Normal	Normal
	Normal	Normal	Normal
	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

(3) Note: Cold in northwest, hot in southeast

Current Status – Southern Asia

Current Status: Temperature

	September	October	November
Pakistan	Hot	Mixed (2)	Mixed (7)
India	Mixed (1)	Mixed (3)	Mixed (8)
Nepal	Hot	Hot	Normal
Bangladesh	Hot	Hot	Hot

Current Status: Rainfall

	September	October	November
	Very Wet	Normal (5)	Normal
	Mixed (4)	Normal (6)	Mixed (9)
	Wet	Very Wet	Normal
	Normal	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:** 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:** Wet in the north and central regions; normal elsewhere
- (5) Note:** Very Wet in the north; normal elsewhere
- (6) Note:** Very Wet in the north and far southeast; normal elsewhere
- (7) Note:** Hot in central/southeastern areas, else near normal
- (8) Note:** Variable but generally hot in south, cold in north
- (9) Note:** Very wet in south, elsewhere normal

Current Status – Southeast Asian Peninsula

Current Status: Temperature

	September	October	November
China	Hot	Mixed (2)	Mixed (5)
Myanmar	Hot	Hot	Hot
Vietnam	Mixed (1)	Cold	Mixed (1)

Current Status: Rainfall

	September	October	November
	Mixed (3)	Mixed (5)	Mixed (6)
	Mixed (4)	Very Wet	Normal
	Very Wet	Very 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 central parts, hot elsewhere.
- (2) Note:** Hot in the southwest and far east; normal elsewhere
- (3) Note:** Very Wet in northern and central regions; Dry in the far south; Normal elsewhere
- (4) Note:** Very Wet in central regions; Normal elsewhere
- (5) Note:** Very mixed across the country, with large regional variations
- (6) Note:** Wet in far northeast, otherwise normal

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	September	October	November	September	October	November
Indonesia	Hot	Hot	Hot	Wet	Normal	Mixed (1)
Papua New Guinea	Hot	Hot	Hot	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: Variable but many areas wet or very wet

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 wetter than normal	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	Likely to be wetter than normal	Climatological odds	Likely to be drier than normal
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	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: January to June – Southern Asia

		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 wetter than normal	Climatological odds	Climatological odds
India	Temperature	Likely to be warmer than normal in the north; Likely to be colder than normal in the south	Likely to be warmer than normal in the north; Likely to be colder than normal in the south	Climatological odds
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
Nepal	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
Bangladesh	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds
	Rainfall	Climatological odds	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: 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	Climatological odds	Mixed; likely to be drier than normal in the southeast	Mixed; likely to be drier than normal in the southeast
Myanmar	Temperature	Likely to be warmer than normal	Much more likely to be warmer than normal	Climatological odds
	Rainfall	Climatological odds	Climatological odds	Likely to be wetter than normal
Vietnam	Temperature	Likely to be near-normal	Likely to be near-normal	Climatological odds
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal in the south; Climatological odds in the north	Climatological odds

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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 warmer than normal	Likely to be warmer than normal
	Rainfall	Likely to be wetter than normal in the north; Climatological odds in the south	Likely to be wetter than normal	Climatological odds
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 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 drier than normal in the north; Likely to be wetter than normal in the south

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.

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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 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)

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