

Asia: Monthly Climate Outlook February to November

Issued: May 2020

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Overview

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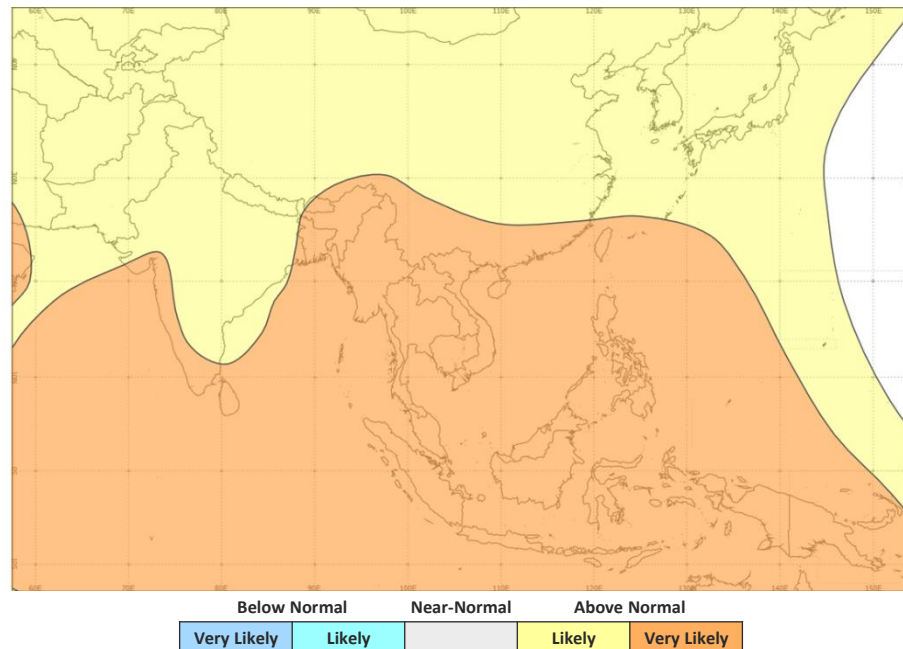
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Asia Current Status and Outlook - Temperature

Current Status: Over the past three months, much of Asia has experienced warmer than normal conditions. The exceptions were parts of Pakistan, India, Nepal and Afghanistan where cooler or colder than normal conditions were experienced at times.

Outlook: Large parts of the continent are expected to be widely warmer than normal; this especially so across southeast Asia, Indonesia, Philippines and Papua New Guinea, where there is an increased incidence of heatwaves and forest fires (severely impacting on air quality in the region).

3-Month Outlook chart for June to August 2020 - Temperature



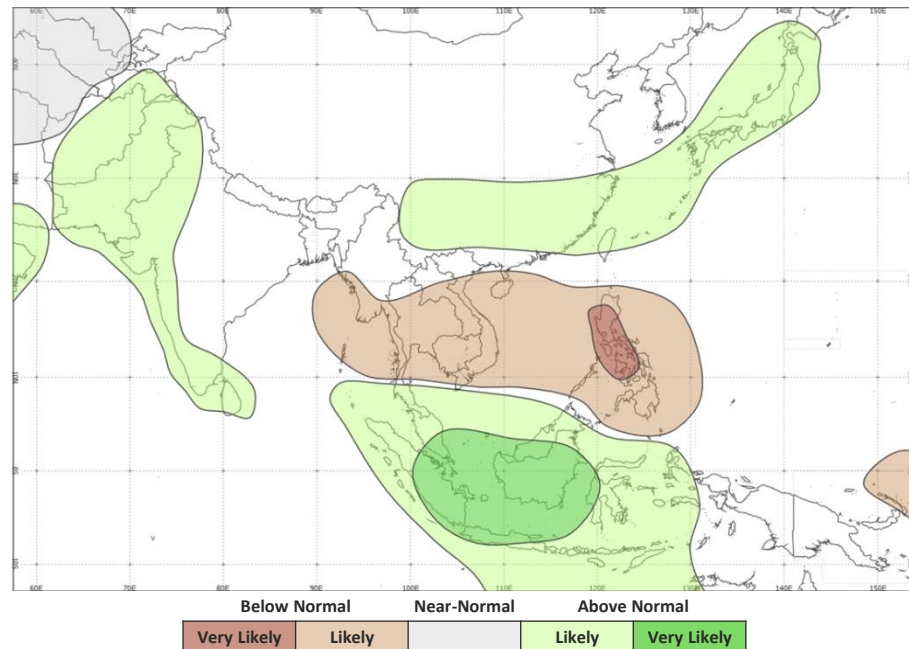
Asia Current Status and Outlook - Rainfall

Current Status: Over the past three months Afghanistan, Pakistan, northern India and Nepal were often wetter than normal. Elsewhere, with some notable regional variations, near-normal or drier than normal conditions were observed.

Outlook: Wetter than normal conditions are likely across Indonesia and eastern Malaysia, with a weaker signal for the same across the Malay Peninsula. Parts of southern and central China are also likely to be wetter than normal. There is moderate confidence in drier than normal conditions across southeast Asia (Myanmar south-eastwards to Vietnam) and especially across the bulk of the Philippines. Elsewhere, signals are weaker, although across the Korean Peninsula, Japan and Afghanistan wetter than normal conditions are slightly more probable overall.

The lack of clear and strong drivers of predictability means that the skill of the seasonal outlook forecast for the Indian Summer Monsoon is low. There are some weak emerging common themes suggesting wetter than normal conditions are slightly more probable across western and northwest India and Pakistan; otherwise the chances of above and below average rainfall across the region are roughly similar.

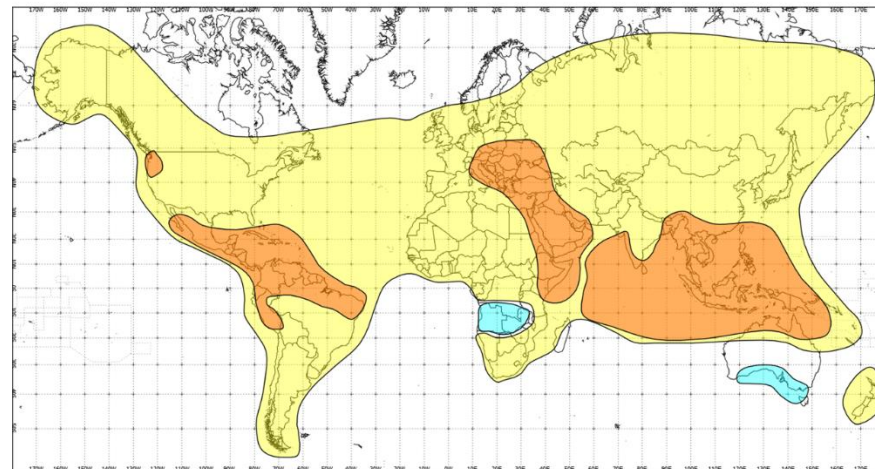
3-Month Outlook chart for June to August 2020 - Rainfall



Global Outlook - Temperature

Outlook: There is an increase in the likelihood of warmer than normal conditions across large parts of the world, with the highest confidence in tropical regions. This is consistent with the warming observed in the past decade.

3-Month Outlook June to August 2020 - Temperature



Global Outlook - Rainfall

Outlook: Large-scale drivers of climate variability, such as the El Niño-Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD) are currently neutral. The implications of this is that predictability, compared to last year when there was a strong positive IOD event, will be lower.

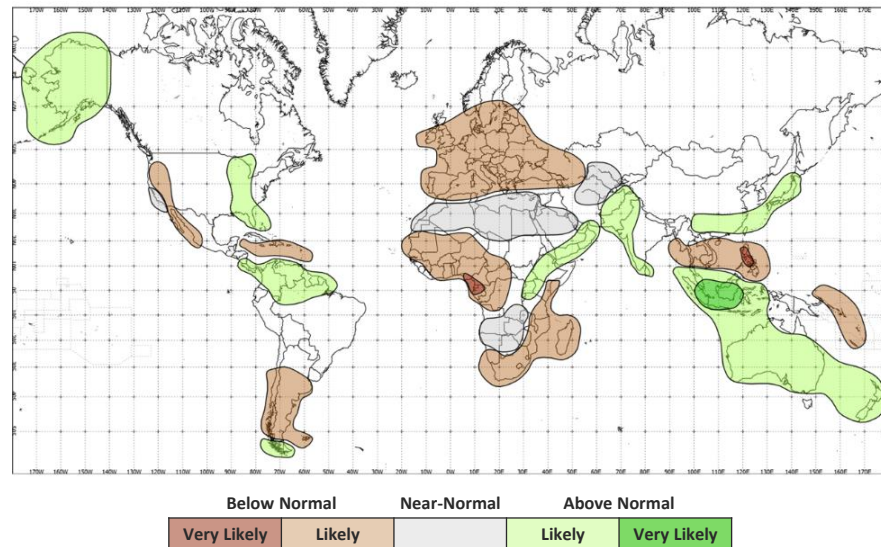
Sea-surface temperatures (SSTs) have been falling in the tropical central and eastern Pacific. Further cooling is possible in the coming months and there is a very small chance of La Niña developing later in boreal summer or autumn. Even if a La Niña-type pattern develops, this is unlikely to have any significant influence on weather patterns during the next three months. The likelihood of La Niña developing by early autumn is currently estimated to be around 45%.

Very broadly, La Niña tends to lead to wetter than normal conditions across land areas in the tropics.

Meanwhile, in the Indian Ocean, there is increasing evidence in model output that a negative IOD pattern could develop later in the boreal summer. Predictions of the behavior of the IOD tend to have lower skill than those of ENSO; therefore, the increased likelihood of negative IOD developing shown in long-range forecasting systems carries low confidence. The negative IOD phase tends to increase the likelihood of wetter than normal conditions across Indonesia, Papua New Guinea and Australia and has been linked to poor performance of the East African Short Rains season (October to December).

For months 1-3, despite the lack of clear drivers of climate variability, models are in fairly good agreement in predicting a slight increase in the likelihood of wetter than normal conditions across central Asia and drier than normal conditions across parts of southeast Asia; however there is an increased likelihood of wetter than normal conditions across parts of Malaysia and much of Indonesia. Meanwhile, large swathes of Africa are more likely to experience drier than normal conditions.

3-Month Outlook June to August 2020 - Rainfall



Current Status

[Current Status maps](#)

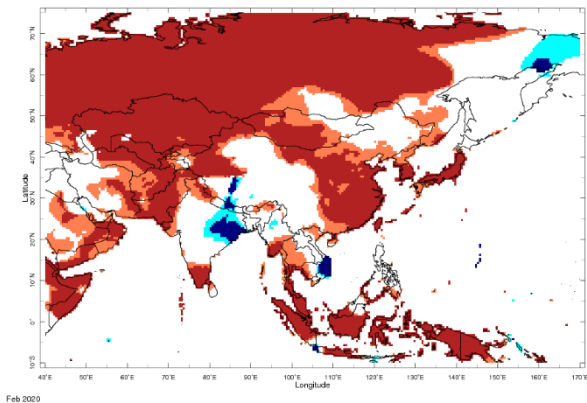
[Central Asia](#)

[Southern Asia](#)

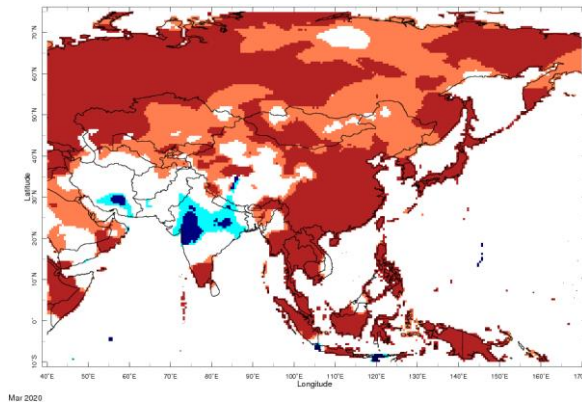
[Southeast Asian Peninsula](#)

[Southeastern Asia / Indonesia](#)

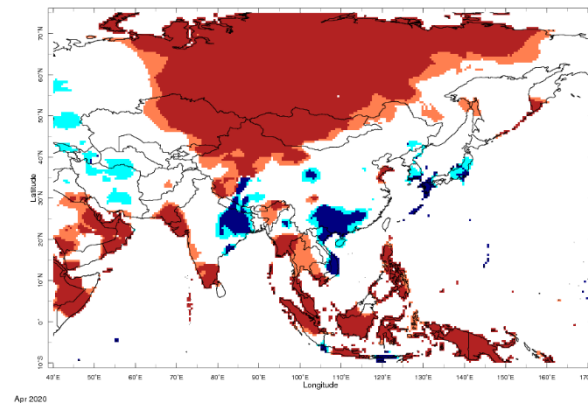
Current Status – Temperature percentiles



February 2020



March 2020



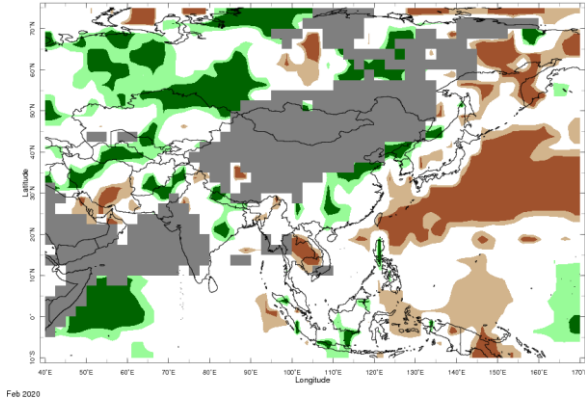
April 2020

Temperature Percentiles (BLUE below 20th and RED above 80th)

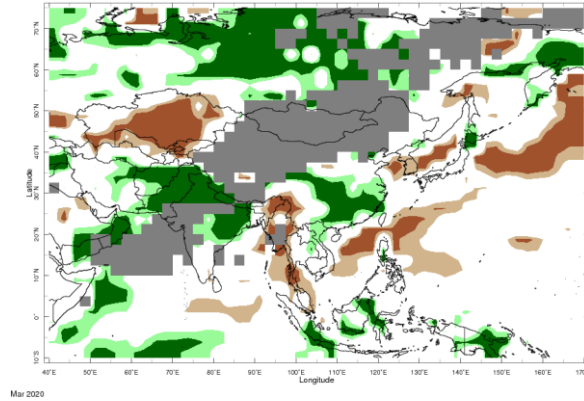


Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions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

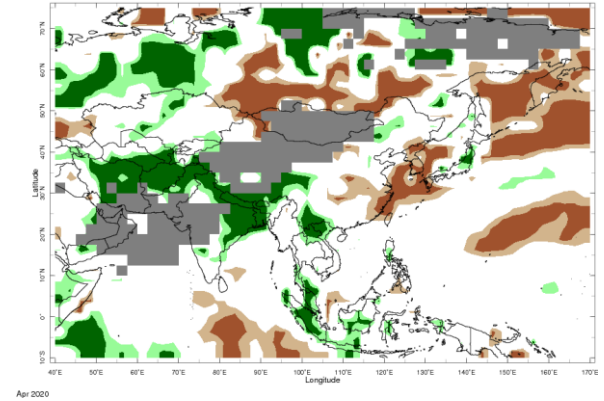
Current Status – Precipitation percentiles



February 2020



March 2020



April 2020



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

	February	March	April
Afghanistan	Warm	Normal	Normal
Tajikistan	Hot	Warm	Normal
Kyrgyzstan	Hot	Warm	Normal

Current Status: Rainfall

	February	March	April
Afghanistan	Normal	Very Wet	Very Wet
Tajikistan	Normal	Dry	Wet
Kyrgyzstan	Normal	Very 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:

^Note: In February, southern Afghanistan was Wet

Current Status – Southern Asia

Current Status: Temperature

	February	March	April
Pakistan	Hot	Normal	Normal
India	Mixed^^	Mixed^^	Mixed^^
Nepal	Cool	Cool	Cool
Bangladesh	Normal	Normal	Cool

Current Status: Rainfall

	February	March	April
	Wet	Very Wet	Very Wet
	Normal^	Wet^	Very Wet^
	Very Wet	Very Wet	Very Wet
	Normal	Normal	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:

^Note: In February, March and April areas of northern India were Wet.

^^Note: In February and April, northeast India was Cold and southern India Hot. In March, northern India was Cool and southern Indian Hot. Elsewhere, temperatures were near-normal for the three months.

Current Status – Southeast Asian Peninsula

Current Status: Temperature

	February	March	April
China	Hot	Hot	Normal
Myanmar	Hot^^	Hot^^	Warm^^
Vietnam	Normal	Hot	Cold

Current Status: Rainfall

	February	March	April
China	Normal^	Normal^	Normal^
Myanmar	Normal	Dry	Normal
Vietnam	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:

^Note: In February, across central China, conditions were Very Wet in central parts of the country; elsewhere rainfall was normal. In March, southern China was Very Wet. In April, eastern China was Very Dry.

^^Note: Temperatures were near-normal across the north of Myanmar throughout.

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	February	March	April	February	March	April
Indonesia	Hot	Hot	Hot	Normal [^]	Normal ^{^^}	Wet
Papua New Guinea	Hot	Hot	Hot	Normal	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:

[^]Note: In February, Java was Wet and West Papua Dry

^{^^}Note: In March, Borneo, Sumatra and West Java were 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: June to November – Central Asia

		Forecast summary		
		June	June to August	September to November
Afghanistan	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be near-normal	Likely to be wetter than normal	Climatological odds – see note
Tajikistan	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be near-normal	Likely to be wetter than normal	Climatological odds – see note
Kyrgyzstan	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be near-normal	Likely to be wetter than normal	Climatological odds – see note

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		
		June	June to August	September to November
Pakistan	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be near-normal	Likely to be wetter than normal	Climatological odds – see note
India	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Climatological odds – see note	Likely to be wetter than normal in the north and west of the country with Climatological odds elsewhere – see note	Climatological odds – see note
Nepal	Temperature	Likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Climatological odds – see note	Likely to be wetter than normal	Climatological odds – see note
Bangladesh	Temperature	Likely to be warmer than normal	Much more likely to be warmer than normal	Likely to be warmer than normal
	Rainfall	Climatological odds – see note	Climatological odds – see note	Climatological odds – see note

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		
		June	June to August	September to November
China	Temperature	Likely to be warmer than normal	Much more likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be wetter than normal in southern parts of the country with Climatological odds elsewhere – see note	Likely to be wetter than normal in southern parts of the country with Climatological odds elsewhere – see note	Climatological odds – see note
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 drier than normal	Likely to be drier than normal	Climatological odds – see note
Vietnam	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	Likely to be drier than normal	Climatological odds – see note

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Outlook: June to November – SE Asia / Indonesia

		Forecast summary		
		June	June to August	September to November
Indonesia	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	Much more likely to be wetter than normal	Likely to be wetter 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 – see note	Climatological odds – see note	Climatological odds – see note

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

Regional Climate Outlook Forums (RCOF)

Climate Outlook Forums (<https://public.wmo.int/en/our-mandate/climate/regional-climate-outlook-products>):

The South Asian Climate Outlook Forum (SASCOF)

Latest Output - <http://rcc.imdpune.gov.in/SASCOF16/concensus.html>

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

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 near-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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