Asia: Monthly Climate Outlook
May to February

Issued: August 2020

Overview
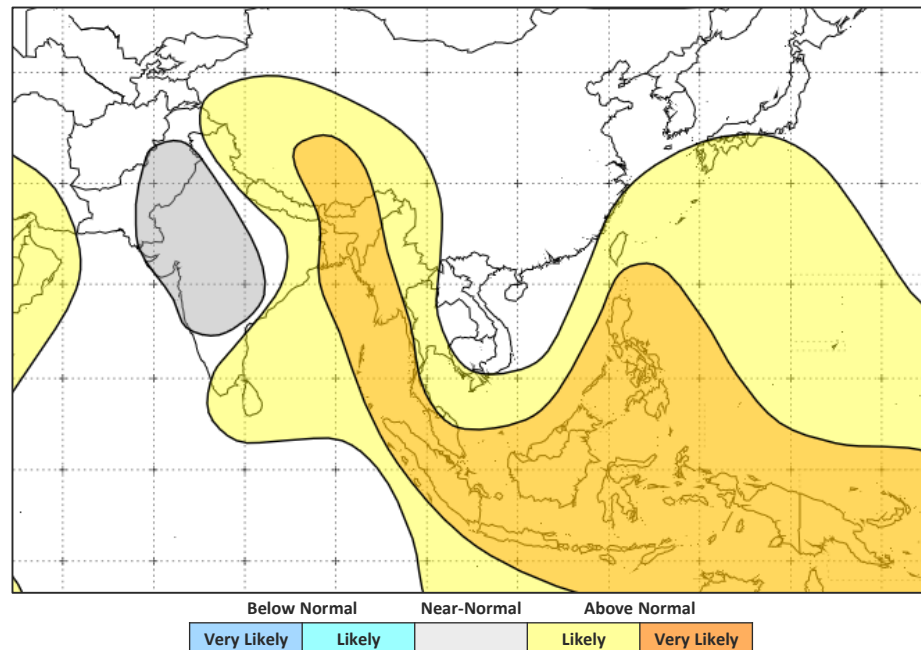
Asia Current Status and Outlook - Temperature

Current Status: May to July, temperatures have been below normal across parts of India as well as northern Pakistan. Elsewhere, warmer than normal conditions have prevailed.

Outlook: For the next three months, large parts of the continent are expected to be well above normal; especially so across Southeast Asia. Some exceptions to this include large parts of China, which are more likely to see temperatures close to normal, along with parts of Pakistan, Afghanistan and India.

**3-Month Outlook chart for September to November 2020 - Temperature**

	Below Normal		Near-Normal	Above Normal	
	Very Likely	Likely		Likely	Very Likely

Asia Current Status and Outlook - Rainfall

Current Status: The summer monsoon has been particularly active across central and southern China along with parts of the Indian sub-continent (mainly Bangladesh, northeast India and Nepal). Conditions in these regions have been very wet, exceptionally so in some places. Across the rest of the Southern Asia, rainfall has been near to slightly above normal.

Outlook: Both El Niño Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) are neutral but trending towards their cool phases, i.e. La Niña and negative IOD – see **Global Outlook** (page 6) for more information. Both increase the likelihood of wetter than normal conditions across large swathes of Southern and Southeast Asia. The next three months is a transitional season across Asia with summer monsoon patterns changing to winter monsoon patterns by the end of the period. Heaviest rainfall is increasingly restricted to tropical regions by December.

For the next three months, most of Southeast Asia is likely to have wetter than normal conditions, with the Philippines, East Malaysia and Indonesia being very likely. For much of India, as well as most of Pakistan, wetter than normal conditions are likely overall. Meanwhile, drier than normal conditions are likely across Afghanistan and northern Pakistan.

3-Month Outlook chart for September to November 2020 - Rainfall

Below Normal		Near-Normal	Above Normal	
Very Likely	Likely		Likely	Very Likely
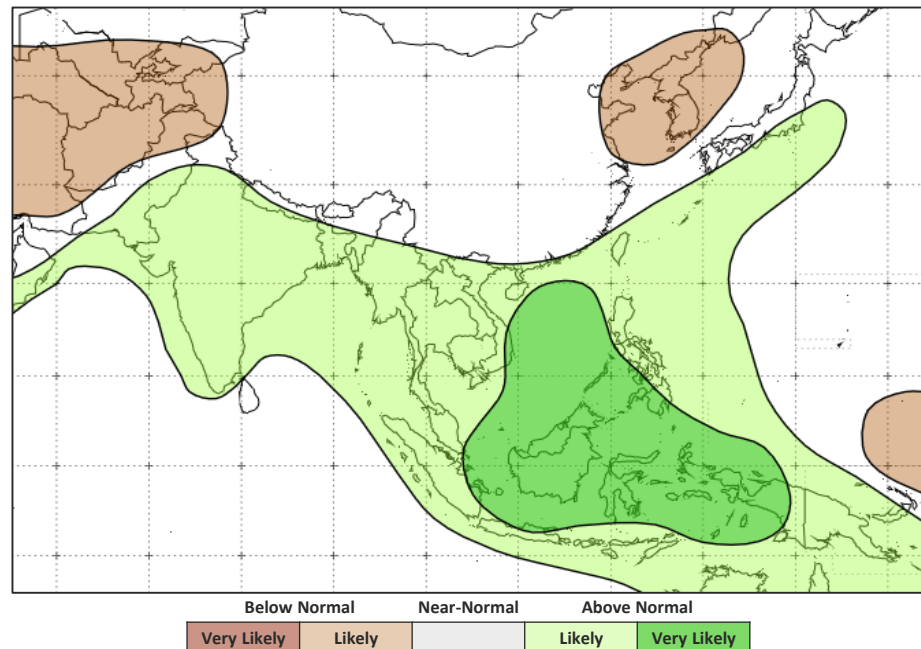
Global Outlook - Temperature

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 September to November 2020 - Temperature

| Below Normal		Near-Normal	Above Normal	
Very Likely	Likely		Likely	Very Likely
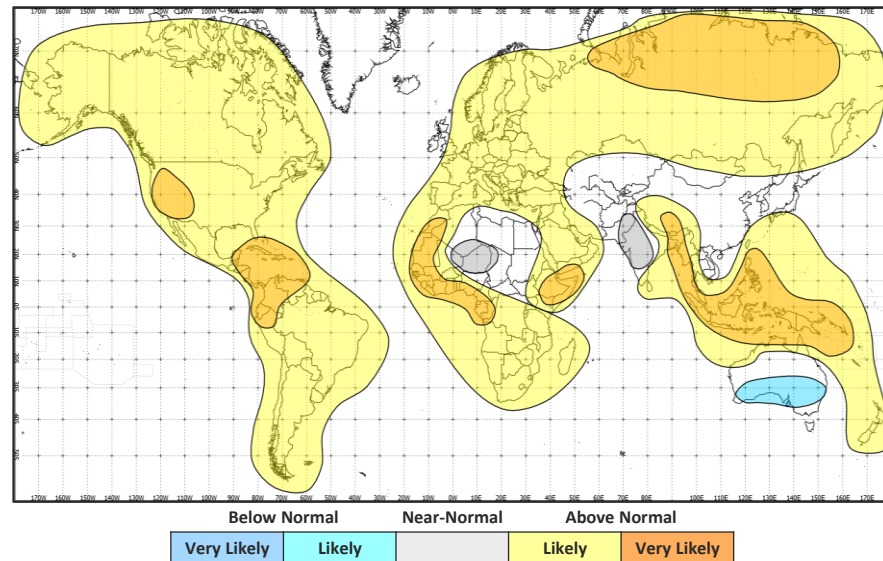
Global Outlook - Rainfall

Outlook:

El Niño-Southern Oscillation (ENSO) – There is a 60% to 70% likelihood of La Niña developing over the next three months. ENSO indicators, such as sea-surface temperatures (SSTs) in the tropical Pacific Ocean, trade wind strength and cloudiness near the Date Line are consistent with the early stages of La Niña development. Long-range forecast models are in good agreement in predicting further cooling of the tropical Pacific Ocean to take place in the coming weeks and months. Should La Niña develop then impacts would be far reaching. With a couple of notable exceptions (e.g. East Arica) 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 here
https://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/el-nino-la-nina/enso-impacts

Indian Ocean Dipole (IOD) – In the western Indian Ocean, particularly off the Horn of Africa, sea-surface temperatures (SSTs) are beginning to reduce more than normal. Further cooling of this part of the Indian Ocean is possible in the coming weeks and months, such that a negative Indian Ocean Dipole (IOD) develops; however, confidence of this pattern developing is lower than predictions for ENSO. Should a negative IOD establish then wetter than normal conditions become more likely across Australia and Southern Asia; drier than normal conditions in East Africa for the Short Rains season (October-November-December).

3-Month Outlook September to November 2020 - Rainfall

Below Normal		Near-Normal	Above Normal	
Very Likely	Likely		Likely	Very Likely
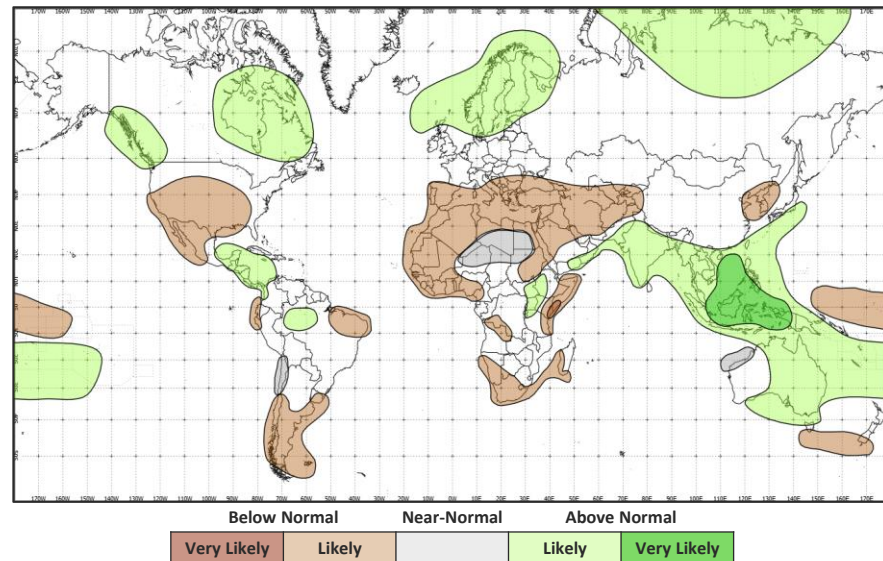
Current Status

Current Status – Temperature percentiles

May 2020
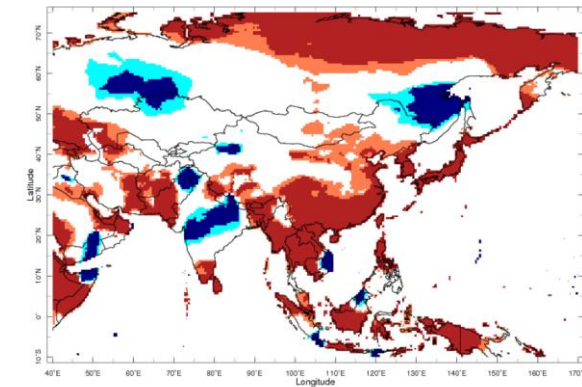
June 2020

July 2020

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 |
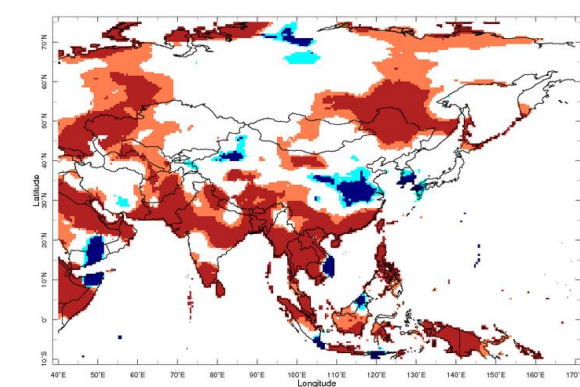
Notes: The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions 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
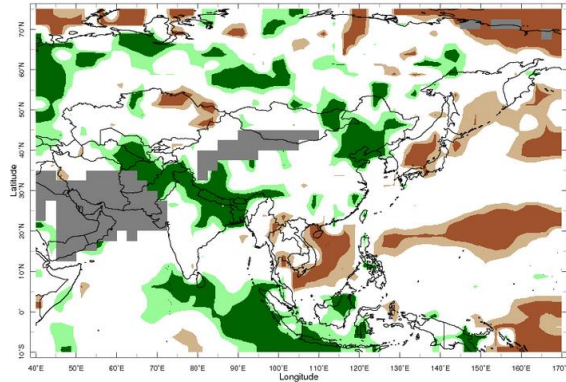
May 2020

June 2020

July 2020

Rainfall Percentiles (BROWN below 20th and GREEN above 80th)

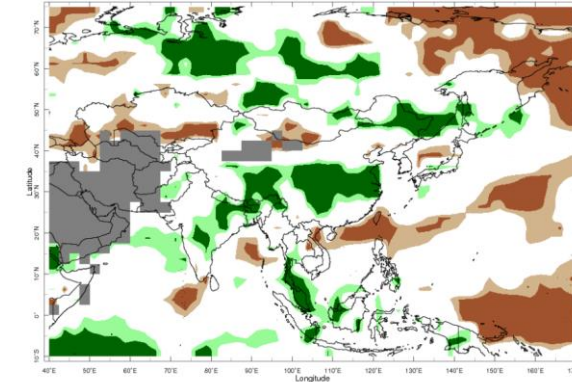| 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
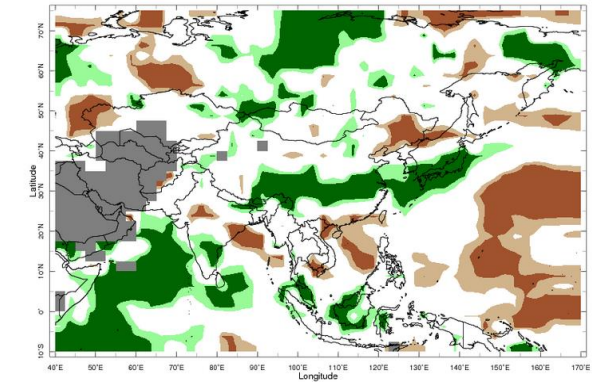
Notes: The percentiles shown in the map indicate a ranking of rainfall, with the 0th percentile being the driest and the 100th percentile being the wettest in the 1981-2010 climatology. Green and dark green shading represent values above the 80th (Wet) and 90th (Very Wet) percentile, respectively; regions 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		
	May	**June**	**July**	**May**	**June**	**July**
Afghanistan	Normal	Hot^	Warm	Very Wet	Mixed	Normal*
Tajikistan	Normal	Normal	Normal	Wet	Normal	Normal
Kyrgyzstan	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:

Note: ^ North-east Afghanistan saw temperatures close to, locally below normal. This area was also the wettest part of the country.

Current Status: Temperature			
	May	June	July
Pakistan	Normal	Mixed^	Hot^
India	Mixed^^	Mixed^^	Hot^^
Nepal	Cold	Cold	Normal
Bangladesh	Warm	Warm	Hot

Current Status: Rainfall			
	May	June	July
Pakistan	Very Wet	Wet	Normal
India	Very Wet^^^	Mixed^^^	Normal
Nepal	Very Wet	Very Wet	Wet
Bangladesh	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:

^Note: Southern Pakistan was Hot through June, whilst the north of the country was cold. In July, the south was hot and normal temperatures were observed in the north.

^^Note: In May and June, southwest India was hot and northern India cold. Much of country was hot in July except for central regions.

^^^Note: During May and June areas of northern India were wet.

Current Status – Southeast Asian Peninsula

Current Status: Temperature			
	May	**June**	**July**
China	Normal	Hot	Mixed
Myanmar	Warm	Hot	Hot
Vietnam	Cold	Hot	Hot

Current Status: Rainfall			
	May	**June**	**July**
China	Normal	Very Wet	Wet^
Myanmar	Normal	Normal	Normal
Vietnam	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:

^Note: Rainfall was normal across the far north and south of China during July.

Current Status – Southeastern Asia / Indonesia

Current Status: Temperature		
May	**June**	**July**

	May	June	July
Indonesia	Hot	Hot	Warm
Papua New Guinea	Hot	Hot	Hot

Current Status: Rainfall		
May	**June**	**July**

	May	June	July
Indonesia	Very Wet	Mixed^	Normal
Papua New Guinea	Wet	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: Rainfall was concentrated across parts of Borneo and southern Sumatra, whilst much of the rest of Indonesia had near normal rainfall.

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: September to November – Central Asia

		Forecast summary		
		September	September to November	December to February
Afghanistan	*Temperature*	Likely to be warmer than normal	Climatological odds – see note	Climatological odds – see note
	Rainfall	Likely to be wetter than normal	Likely to be drier than normal	Climatological odds – see note
Tajikistan	*Temperature*	Likely to be warmer than normal	Climatological odds – see note	Climatological odds – see note
	Rainfall	Climatological odds – see note	Likely to be drier than normal	Climatological odds – see note
Kyrgyzstan	*Temperature*	Likely to be warmer than normal	Climatological odds – see note	Climatological odds – see note
	Rainfall	Climatological odds – see note	Likely to be drier 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: September to November – Southern Asia

		September	September to November	December to February
		Forecast summary		
Pakistan	*Temperature*	Likely to be warmer than normal	Likely to be near-normal	Climatological odds – see note
	Rainfall	Likely to be wetter than normal	Likely to be drier than normal in the northwest and likely to be wetter than normal in the southeast	Climatological odds – see note
India	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal in the east and likely to be near-normal elsewhere	Climatological odds – see note
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds – see note
Nepal	*Temperature*	Much more likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds – see note
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	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds – see note

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Outlook: September to November – SE Asian Peninsula

		Forecast summary		
		September	September to November	December to February
China	*Temperature*	Likely to be warmer than normal	Climatological odds – see note	Climatological odds – see note
	Rainfall	Climatological odds – see note	Climatological odds – see note	Climatological odds – see note
Myanmar	*Temperature*	Much more likely to be warmer than normal	Likely to be warmer than normal	Climatological odds – see note
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds – see note
Vietnam	*Temperature*	Much more likely to be warmer than normal	Climatological odds – see note	Climatological odds – see note
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Likely to be wetter than normal

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Outlooks

Climate Outlook
Asia: May to February

Outlook: September to November – SE Asia / Indonesia

		Forecast summary		
		September	September to November	December to February
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	Much more 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	Likely to be wetter than normal	Likely to be wetter than normal	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.

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/SASCOF17/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)

Enquiries

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