Asia: Monthly Climate Outlook December to September

Issued: March 2022

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

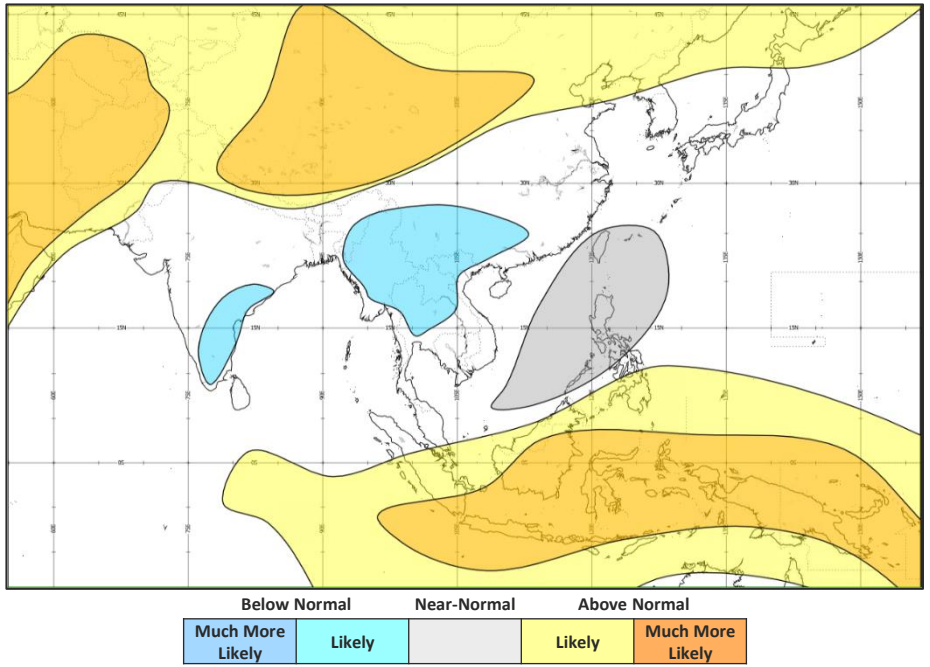
Current Status:

Over the last three months, many areas have been warmer than normal. This has been particularly true for the west of the region. Large variations have been seen across China, where a cold February was followed by a generally mixed December and January. Much of India and Indochina saw a normal to cold January and February.

Outlook:

For much of south and east Asia, near-normal to colder than normal temperatures are likely over the next three months. Elsewhere, warmer than normal conditions are likely or much more likely.

3-Month Outlook April to June - Temperature



Asia Current Status and Outlook - Rainfall

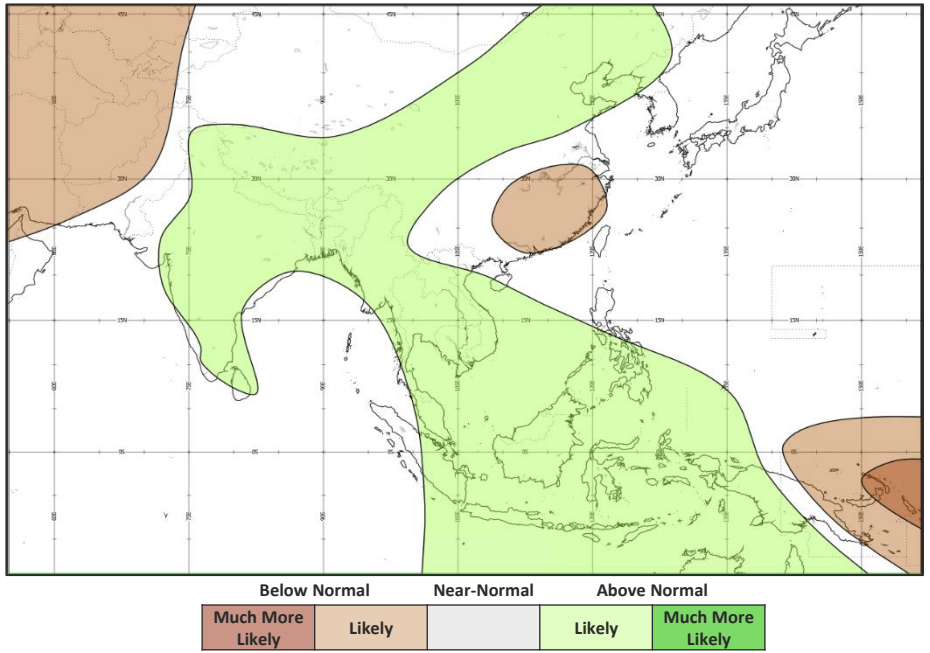
Current Status:
For many parts of Central Asia, after near-normal or drier than normal conditions early in the northern hemisphere winter, wetter than normal conditions were observed during January. Wetter than normal conditions also extended to Afghanistan, Pakistan and northern India during January.

In Southeast Asia, most areas had near-normal conditions in December and January. However, some areas were wet or very wet during February, with other areas experiencing near-normal to dry conditions.

Outlook:

Over the next three months, consistent with La Niña, wetter than normal conditions are likely across much of Southeast Asia, with the area of highest rainfall tending to shift northwards through this period. Wetter than normal conditions are also likely for much of India, Nepal and Bangladesh, indicative of a possible early onset and/or more intense South Asian Monsoon. Much of Pakistan, Afghanistan and southeast China are likely to be drier than normal.

3-Month Outlook April to June - Rainfall



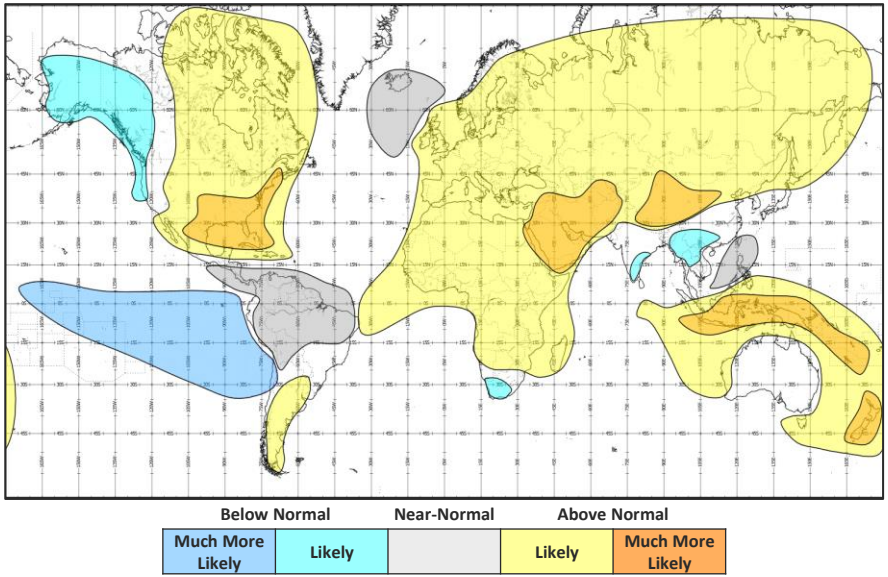
Global Outlook - Temperature

Outlook:

La Niña is ongoing across the tropical Pacific, persisting longer than originally anticipated. La Niña will remain the main driver of temperature anomalies across the tropics over the next three months, this despite La Niña's expected weakening through this period.

As is typical due to climate change, many parts of the globe are likely to see above normal temperatures. However, there are some notable exceptions. Consistent with La Niña, near- to below normal temperatures are most likely for some northern and western parts of South America, Australia and northwest North America. Near- to below normal temperatures are also likely for parts of southern and southeast Asia.

3-Month Outlook April to June - Temperature



Global Outlook - Rainfall

Outlook:

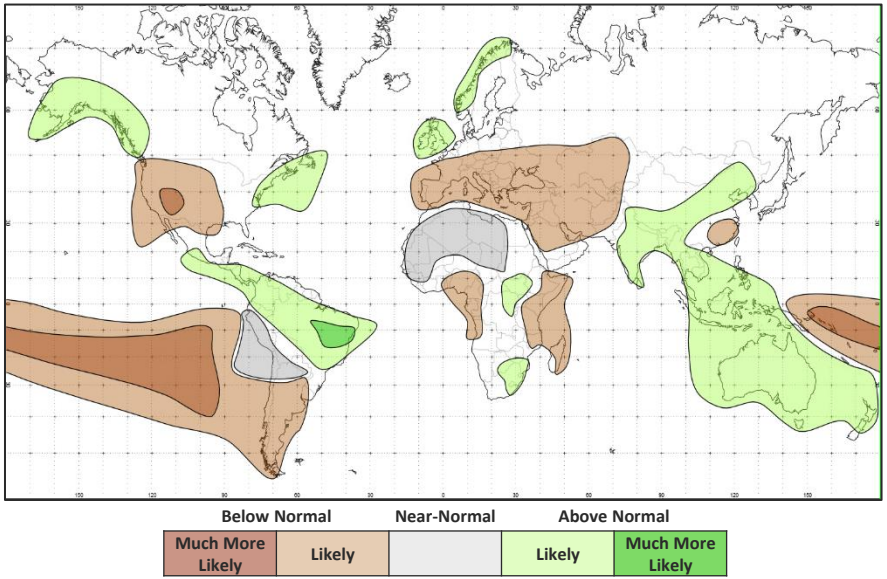
El Niño-Southern Oscillation (ENSO) – La Niña persists with sea surface temperatures and atmospheric conditions across the Pacific basin indicative of a weak ongoing event. The event has peaked and, according to NOAA, whilst La Niña is likely to continue into the Northern Hemisphere early summer (53% chance of lasting June-August 2022, and a 40-50% chance of La Niña or ENSO-neutral thereafter). The effects of La Niña are likely to remain wide-reaching during the rest of the Boreal spring and into the summer.

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 here https://www.metoffice.gov.uk/research/climate/seasonal-to-decadal/gpc-outlooks/el-nino-la-nina/enso-impacts

For the next three months, wetter than normal conditions are likely across much of south and southeast Asia, as well as Australia. Wetter than normal conditions are also likely for parts of southeast Africa, as well as central Africa (northeast DRC and South Sudan in particular), as well as the western and eastern coastal areas of North America. Parts of the north of South America are also likely to be wetter than normal. Drier than normal conditions are likely in large parts of Europe, the Middle East and Central Asia.

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

3-Month Outlook April to June - Rainfall



Current Status

Current Status maps

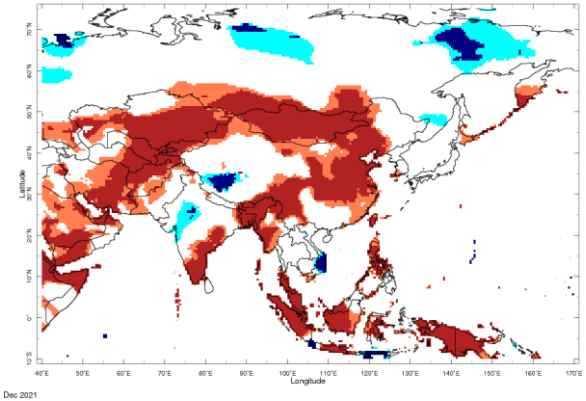
Central Asia

Southern Asia

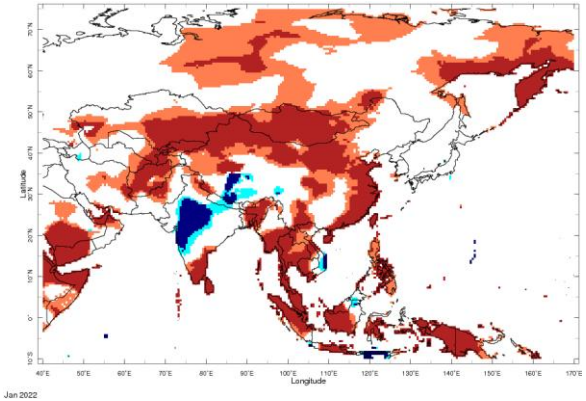
Southeast Asian Peninsula

Southeastern Asia / Indonesia

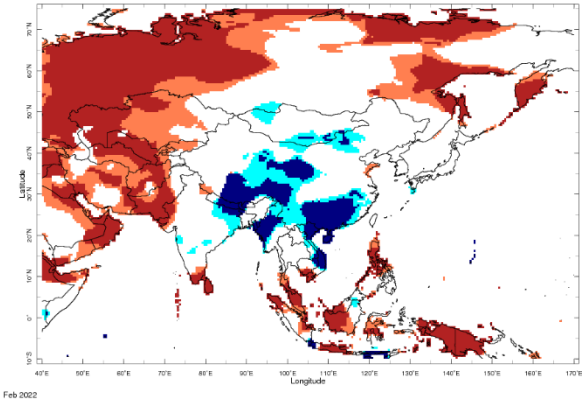
Current Status – Temperature percentiles



December



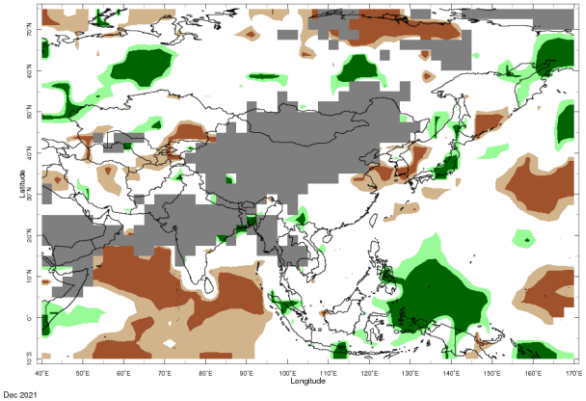
January



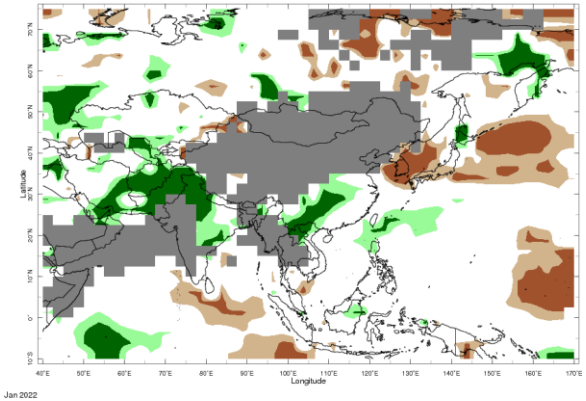
February

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.

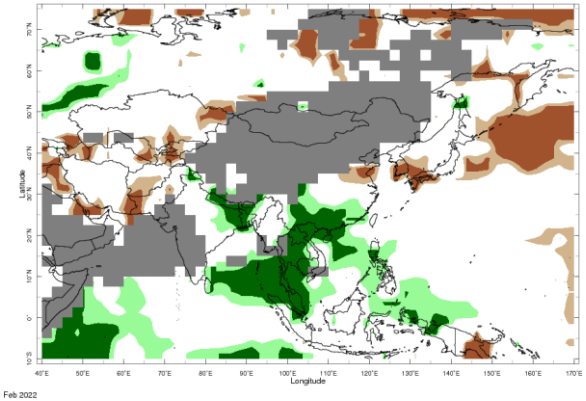
Current Status – Precipitation percentiles



December



January



February

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		
	December	January	February	December	January	February
Afghanistan	Warm	Hot	Hot	Normal	Very Wet	Normal
Tajikistan	Hot	Hot	Hot	Dry	Normal	Dry
Kyrgyzstan	Hot	Hot	Hot	Dry	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:

Current Status – Southern Asia

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
Pakistan	Normal	Mixed (1)	Hot (3)	Normal	Very Wet	Normal
India	Mixed (2)	Mixed (2)	Normal	Normal*	Mixed (4)	Mixed (5)
Nepal	Normal	Cold	Cold	Normal*	Normal	Very Wet
Bangladesh	Hot	Hot	Cold	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:

(1) Note: Hot in central/southeastern areas, elsewhere normal
(2) Note: Variable but generally hot in the south, cold in the north
(3) Note: Normal in the far north
(4) Note: Very wet in the south, elsewhere normal
(5) Note: Very wet in the far northeast

Current Status – Southeast Asian Peninsula

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
China	Mixed (1)	Mixed (1)	Mixed (1)	Normal	Mixed (4)	Mixed (4)
Myanmar	Warm	Hot	Cold	Normal*	Normal*	Very Wet
Vietnam	Mixed (2)	Mixed (3)	Cold	Normal	Normal	Mixed (5)

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 regional variations. Cold in central parts, normal elsewhere.
(2) Note: Cold in the south; normal elsewhere
(3) Note: Wet in the far northeast, otherwise normal
(4) Note: Wet or very wet in parts of the southeast, otherwise mostly normal*
(5) Note: Very wet in the north; normal elsewhere.

Current Status – Southeastern Asia / Indonesia

	Current Status: Temperature			Current Status: Rainfall		
	December	January	February	December	January	February
Indonesia	Hot	Hot	Hot	Normal	Normal	Normal
Papua New Guinea	Hot	Hot	Hot	Normal	Normal	Normal (1)

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: Dry 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: April to September – Central Asia

		Forecast summary		
		April	April to June	July to September
Afghanistan	*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
Tajikistan	*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
Kyrgyzstan	*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

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: April to September – Southern Asia

		Forecast summary		
		April	April to June	July to September
Pakistan	*Temperature*	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 east and northeast. Climatological odds elsewhere	Likely to be drier than normal in the east and northeast. Climatological odds elsewhere	Climatological odds
India	*Temperature*	Likely to be colder than normal or likely to be near-normal generally; likely to be warmer than normal in the far north.	Likely to be colder than normal or likely to be near-normal generally; likely to be warmer than normal in the far north.	Likely to be colder than normal or likely to be near-normal generally; likely to be warmer than normal in the far north.
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds
Nepal	*Temperature*	Likely to be near-normal	Likely to be warmer than normal	Likely to be near-normal
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Climatological odds
Bangladesh	*Temperature*	Likely to be near-normal	Likely to be near-normal	Much more 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.

Outlook: April to September – SE Asian Peninsula

		Forecast summary		
		April	April to June	July to September
China	*Temperature*	Likely to be warmer than normal	Likely to be warmer than normal in the south-east; elsewhere **Much more likely to be warmer than normal**	Much more likely to be warmer than normal
	Rainfall	Likely to be drier than normal in the south-east; elsewhere likely to be wetter than normal or climatological odds	Likely to be drier than normal in the south-east; elsewhere likely to be wetter than normal or climatological odds	Climatological odds
Myanmar	*Temperature*	Likely to be colder than normal	Likely to be colder than normal	Much more 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
Vietnam	*Temperature*	Likely to be near-normal	Likely to be near-normal	Much more 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.

Outlook: April to September – SE Asia / Indonesia

		Forecast summary		
		April	April to June	July to September
Indonesia	*Temperature*	Likely to be warmer than normal	**Much more likely to be warmer than normal**	Much more likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Much more 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**	Much more likely to be warmer than normal
	Rainfall	Likely to be wetter than normal	Likely to be wetter than normal	Much more 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

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 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

Email: internationaldevelopment@metoffice.gov.uk

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