# Global: Monthly Climate Outlook March to December

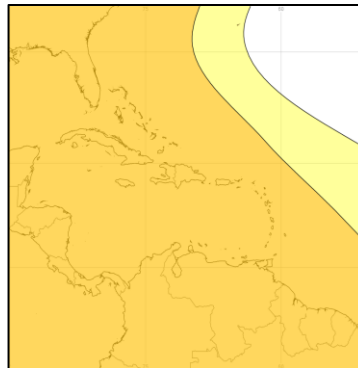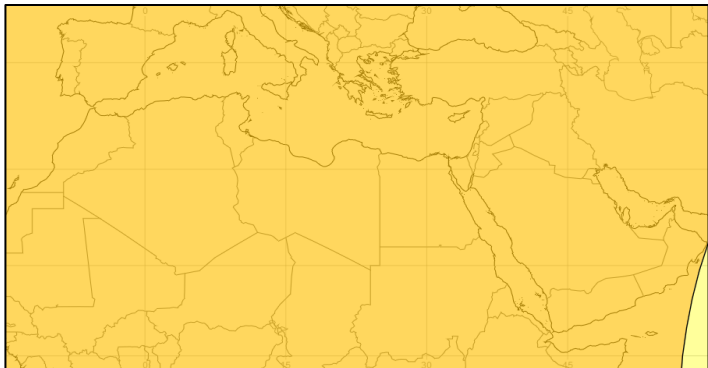## Issued: June 2023

# Overview

# MENA, Caribbean and British Overseas Territories Current Status and Outlook - Temperature

**Current Status:**

Across much of the MENA region, temperatures were warm and hot in March. Whilst parts of North Africa remained hot during April and May, most areas returned to near-normal temperatures. The Caribbean was warm or hot for much of the last three months

**Outlook:**

For the next three months, it is much more likely to be warmer than normal across the MENA and Caribbean regions.



**3-Month Outlook July to September - Temperature**

| Below Normal | | Near-Normal | Above Normal | |
|---|---|---|---|---|
| Much More Likely | Likely | | Likely | Much More Likely |

Left: Middle East and North Africa
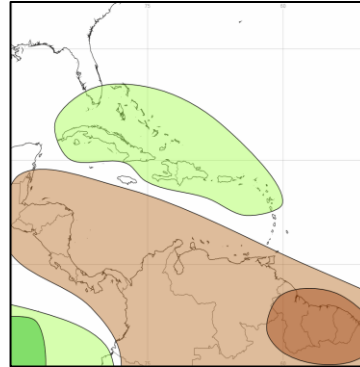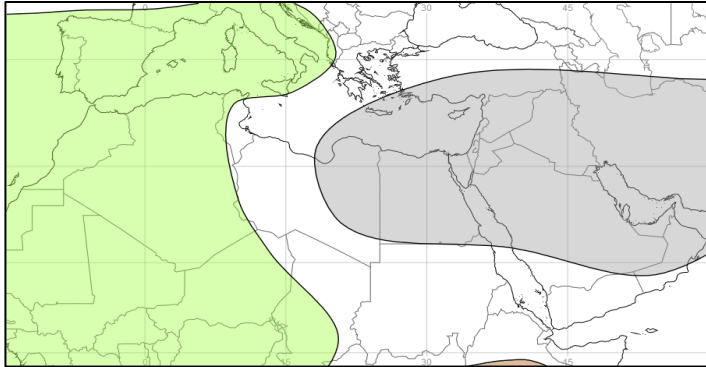Right: Caribbean region

# MENA, Caribbean and British Overseas Territories Current Status and Outlook - Rainfall

**Current Status:**

In the Middle East, Turkey and Iraq were wet in March and April, and Syria and Yemen were also wet in March. Otherwise, rainfall has been near-normal over the last three months. In North Africa, after below normal rainfall in March and April, Tunisia and parts of Algeria and Morocco were wet or very wet in May. In the Caribbean, March and May were dry or very dry, and normal rainfall was observed in April aside from Haiti which was wet.

**Outlook:**

Across much of the MENA region over the next 3 months, near-normal rainfall is likely – although this is typically a dry period. It is likely to be wetter than normal across western areas, including Morocco and northern Algeria. A north/south split is probable across the Caribbean with it likely to be wetter than normal across the Greater Antilles and likely to be drier than normal across the Caribbean Sea.



### 3-Month Outlook July to September - Rainfall

| Below Normal | | Near-Normal | Above Normal | |
|---|---|---|---|---|
| Much More Likely | Likely | | Likely | Much More Likely |

Left:  Middle East and North Africa
Right:  Caribbean region

# Global Outlook - Temperature

**Outlook:**

With the backdrop of a warming climate and the emerging El Niño, most land areas are likely to be warmer than normal with limited exceptions. These exceptions include northern Australia, small parts of southwest Indonesia and western Mexico/southwest USA where it is likely to be colder than normal.

**3-Month Outlook July to September - Temperature**



| Below Normal | | Near-Normal | Above Normal | |
|---|---|---|---|---|
| Much More Likely | Likely | | Likely | Much More Likely |
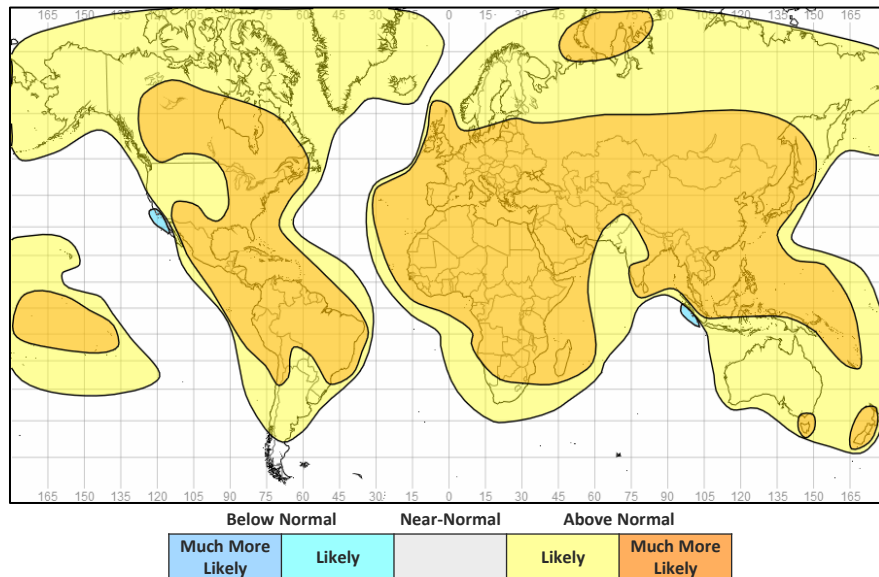
# Global Outlook - Rainfall

**Outlook: El Niño-Southern Oscillation (ENSO)** – Sea surface temperatures across the equatorial Pacific are above average across the east-central and eastern Pacific Ocean. The atmospheric response has been slower but is now consistent with weak El Niño conditions and NOAA have declared El Niño to be underway.

These El Niño conditions are expected to gradually strengthen into the Northern Hemisphere winter, with a moderate chance (~50%) of a strong El Niño.

ENSO impacts regional weather patterns around the world, leading to some regions experiencing wetter than normal conditions and other regions drier than normal conditions.

With the development of El Niño, the chance of heatwaves, drought and wildfire increases across parts of southern and southeast Asia and Australia, and wetter than normal conditions may be experienced across parts of East Africa, central Asia and the Middle East.

**Indian Ocean Dipole (IOD)** – The Indian Ocean Dipole is currently neutral and is not influencing regional conditions. All forecasts currently suggest development of a positive IOD phase during the Northern Hemisphere summer. Should this occur, this would help reinforce the influence of El Niño over southeast Asia and Australia. This would also be a factor in a potential above normal "Short Rains" season over East Africa (which peaks in October and November).

**3-Month Outlook July to September - Rainfall**



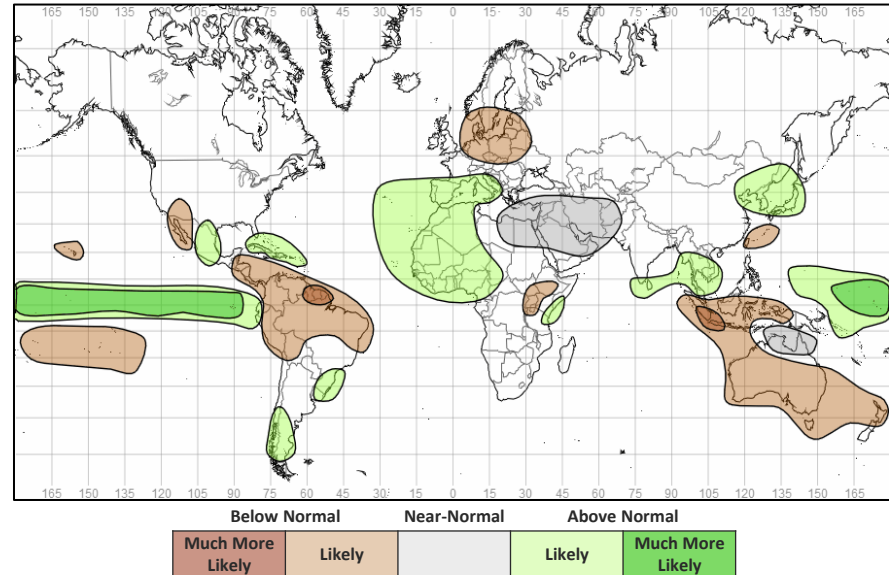| Below Normal | | Near-Normal | Above Normal | |
|---|---|---|---|---|
| Much More Likely | Likely | | Likely | Much More Likely |

# Current Status

Current Status maps

MENA – Middle East

MENA – North Africa

Caribbean

British Overseas Territories

# Current Status – Temperature percentiles



**March**



**April**



May 2023

**May**

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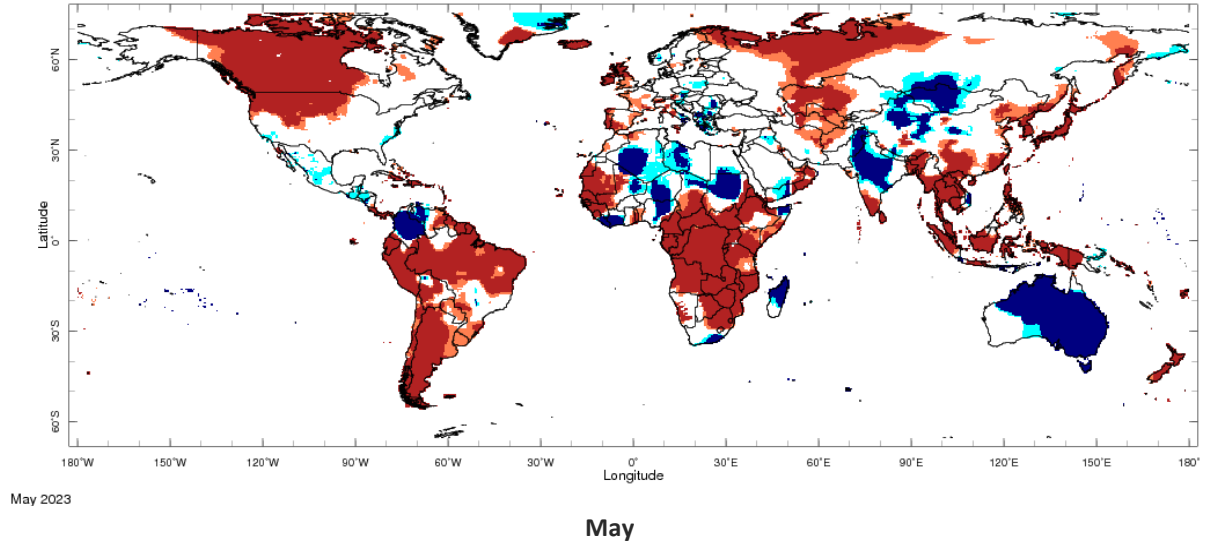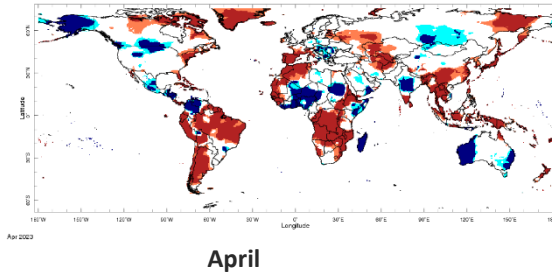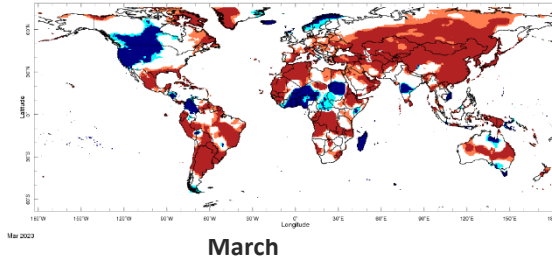
**Notes:** The percentiles shown in the map indicate a ranking of temperature, with the 0th percentile being the coolest and the 100th percentile being the warmest in the 1981-2010 climatology. Orange and red shading represent values above the 80th (Warm) and 90th (Hot) percentile, respectively; regions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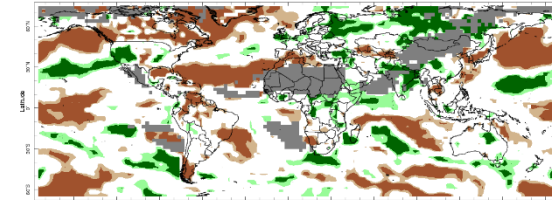


**March**



**April**



May 2023

**May**

**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 |
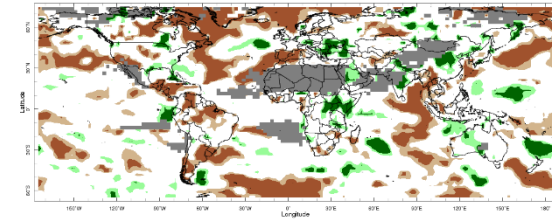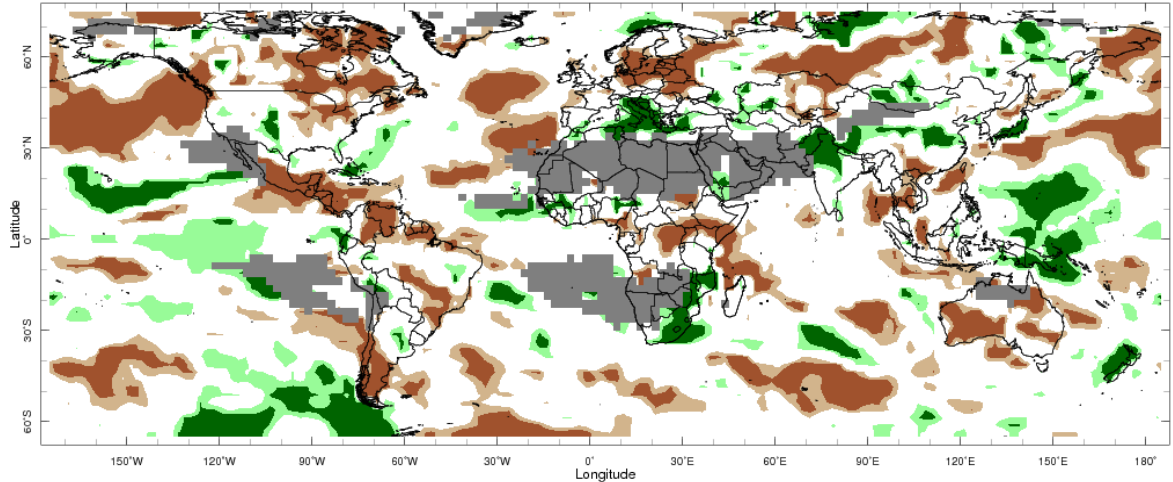
**Notes:** The percentiles shown in the map indicate a ranking of rainfall, with the 0th percentile being the driest and the 100th percentile being the wettest in the 1981-2010 climatology. Green and dark green shading represent values above the 80th (Wet) and 90th (Very Wet) percentile, respectively; 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 – MENA – Middle East

| | Current Status: Temperature | | | | Current Status: Rainfall | | |
|---|---|---|---|---|---|---|---|
| | **March** | **April** | **May** | | **March** | **April** | **May** |
| Turkey | Hot | Normal | Normal | | Wet | Wet | Normal (2) |
| Palestine | Hot | Normal | Normal | | Normal | Normal | Normal* |
| Lebanon | Warm | Normal | Normal | | Normal | Normal | Normal* |
| Jordan | Warm | Normal | Normal | | Normal | Normal | Normal* |
| Syria | Warm | Normal | Normal | | Wet | Normal | Normal* |
| Iraq | Warm | Normal | Normal | | Wet | Wet | Normal* |
| Yemen | Normal | Cold | Mixed (1) | | Wet | Normal | Normal (3) |

**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 southwest and far east, cool or cold for central areas
**(2) Note:** Wet or very wet in the west
**(3) Note:** Wet in the far west

# Current Status – MENA – North Africa

| Current Status: Temperature | | | | Current Status: Rainfall | | |
|---|---|---|---|---|---|---|
| | **March** | **April** | **May** | **March** | **April** | **May** |
| Mauritania | Hot | Hot | Hot | Normal* | Normal* | Normal* |
| Morocco | Hot | Hot | Normal | Very Dry | Very Dry | Normal (3) |
| Algeria | Hot | Hot (2) | Normal (4) | Very Dry | Very Dry | Normal (3) |
| Tunisia | Hot | Hot | Normal | Very Dry | Normal | Very Wet |
| Libya | Normal | Normal | Normal (5) | Dry | Normal | Normal* |
| Egypt | Mixed (1) | Normal (2) | Normal | Normal* | Normal* | Normal* |
| Eritrea | Hot | Hot | Hot | Wet | 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:** Warm in the north, cold in the far south, normal elsewhere
**(2) Note:** Cold in the far south
**(3) Note:** Wet or very wet in some northern areas
**(4) Note:** Cool or cold in the south
**(5) Note:** Cool or cold in the west

# Current Status – Caribbean

| Current Status: Temperature | | | |
|---|---|---|---|
| | **March** | **April** | **May** |
| **Caribbean Region** | Hot | Hot | Hot |
| **Haiti** | Hot | Hot | Hot |
| **Guyana** | Warm | Hot | Hot |

| Current Status: Rainfall | | | |
|---|---|---|---|
| | **March** | **April** | **May** |
| **Caribbean Region** | Very Dry | Normal | Dry |
| **Haiti** | Very Dry | Wet | Dry |
| **Guyana** | 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 – British Overseas Territories

| Current Status: Temperature | | | |
|---|---|---|---|
| | **March** | **April** | **May** |
| **Southern Europe** | Hot | Hot | Hot |
| **Central Indian Ocean** | Hot | Hot | Normal |
| **Central Pacific** | Cold | Cool | Cool |

| Current Status: Rainfall | | | |
|---|---|---|---|
| | **March** | **April** | **May** |
| **Southern Europe** | Dry | Very Dry | Normal |
| **Central Indian Ocean** | Wet | Wet | Normal |
| **Central Pacific** | 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:**

# 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: March to August – MENA – Middle East (1)

| | | Forecast summary | | |
|---|---|---|---|---|
| | | July | July to September | October to December |
| **Turkey** | *Temperature* | 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 near-normal | Likely to be wetter than normal |
| **Palestine** | *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 near-normal | Likely to be near-normal | Likely to be wetter than normal |
| **Lebanon** | *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 near-normal | Likely to be near-normal | Likely to be wetter than normal |
| **Jordan** | *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 near-normal | Likely to be near-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: March to August – MENA – Middle East (2)

| | | Forecast summary | | |
|---|---|---|---|---|
| | | July | July to September | October to December |
| **Syria** | *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 near-normal | Likely to be near-normal | Likely to be wetter than normal |
| **Iraq** | *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 near-normal | Likely to be near-normal | Likely to be wetter than normal |
| **Yemen** | *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 near-normal | 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: March to August – MENA – North Africa(1)

| Forecast summary | | | |
|---|---|---|---|
| | **July** | **July to September** | **October to December** |
| **Mauritania** 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 | Likely to be wetter than normal |
| **Morocco** 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 | Likely to be wetter than normal |
| **Algeria** 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 | Likely to be wetter than normal |
| **Tunisia** Temperature | Likely to be warmer than normal | Much more likely to be warmer than normal | Much more likely to be warmer than normal |
| Rainfall | Climatological odds | 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: March to August – MENA – North Africa(2)

| | | Forecast summary | | |
|---|---|---|---|---|
| | | July | July to September | October to December |
| **Libya** | *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 near-normal | Likely to be near-normal | Likely to be wetter than normal |
| **Egypt** | *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 near-normal | Likely to be near-normal | Likely to be wetter than normal |
| **Eritrea** | *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* | 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: March to August – Caribbean

| | | Forecast summary | | |
|---|---|---|---|---|
| | | July | July to September | October to December |
| **Caribbean Region** | *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 in the north; Likely to be drier than normal in the south | Likely to be wetter than normal in the north; Likely to be drier than normal in the south | Likely to be wetter than normal in the north; Likely to be drier than normal in the south |
| **Haiti** | *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 | Climatological odds |
| **Guyana** | *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 drier than normal | Likely to be drier 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: March to August – British Overseas Territories

| | | **Forecast summary** | | |
|---|---|---|---|---|
| | | July | July to September | October to December |
| **Southern Europe** | *Temperature* | Likely to be warmer than normal | **Much more likely to be warmer than normal** | Likely to be warmer than normal |
| | *Rainfall* | Climatological odds | Climatological odds | Climatological odds |
| **Central Indian Ocean** | *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 | Likely to be drier than normal | Likely to be drier than normal |
| **Central Pacific** | *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 | 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.

# 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

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

# 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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