# Earth System Science Organization (ESSO)
# Ministry of Earth Sciences (MoES)
# India Meteorological Department
## WMO Regional Climate Centre
## Pune, India

## SEASONAL CLIMATE OUTLOOK FOR SOUTH ASIA
## (June to September 2026)

**Highlights**

- Currently, El Niño conditions are present over the equatorial Pacific Ocean and are expected to strengthen further during the Southwest Monsoon season. The atmosphere has responded to the warming sea surface temperatures, and the coupled ocean–atmosphere system now exhibits characteristics consistent with El Niño conditions. Forecasts from the Monsoon Mission Coupled Forecast System (MMCFS) indicate a further strengthening of El Niño conditions during the Southwest Monsoon season.
- At present, neutral Indian Ocean Dipole (IOD) conditions prevail over the Indian Ocean. Forecasts from the Monsoon Mission Coupled Forecast System (MMCFS) indicate that neutral IOD conditions are likely to persist through the Southwest Monsoon season.
- The Precipitation probability forecasts indicate an enhanced probability of below-normal precipitation over most parts of South Asia during both JJA and JAS seasons. However, some regions over the extreme northwest, northeast, and southeast parts of South Asia are likely to experience above-normal precipitation.
- In June, the country averaged monthly precipitation is likely to be normal to above normal for all countries except India, Maldives, Nepal and Sri Lanka. In July, the country averaged monthly precipitation is likely to be normal to above normal for all countries except India, Pakistan and Sri Lanka where it is likely to be below normal. In August, it is likely to be normal to above normal for all countries except Bangladesh, India Nepal, Pakistan and Sri Lanka where it is likely to be below normal. In September, it is likely to be normal to above normal for all countries except India, Nepal, Pakistan and Sri Lanka where it is likely to be below normal.
- Temperature probability forecast indicate an enhanced probability of above-normal temperature over most parts of South Asia during both JJA and JAS seasons. However, some regions over the northwest and extreme north of South Asia are likely to experience below-normal temperature.
- The country averaged monthly temperatures during June to August is likely to be normal to above normal for all the countries. In September, it is likely to be normal to above normal for all the countries except Bhutan and Pakistan where it is likely to be above normal.

## 1. Important Global Climate Factors

### *1.1 Sea Surface Temperatures over the Pacific Ocean*

During May 2026, sea surface temperatures (SSTs) were generally above average across the equatorial central and eastern Pacific Ocean (Fig. 1a). Positive SST anomalies persisted over the far eastern Pacific, the Maritime Continent, and parts of the western Pacific. Above average SSTs were also observed across the tropical and extratropical regions of both the North and South Pacific Oceans (Fig. 1a). Compared to April 2026, SST anomalies increased across much of the equatorial Pacific and the far western Pacific during May 2026, indicating a general warming of the tropical Pacific Ocean (Fig. 1b). Currently, El Niño conditions are present over the equatorial Pacific Ocean and are expected to strengthen further during the Southwest Monsoon season. The atmosphere has responded to the warming sea surface temperatures, and the coupled ocean–atmosphere system now exhibits characteristics consistent with El Niño conditions. Forecasts from the Monsoon Mission Coupled Forecast System (MMCFS) indicate a further strengthening of El Niño conditions during the Southwest Monsoon season (Fig. 2).

### *1.2 Sea Surface Temperatures over Indian Ocean*

In the Indian Ocean, SSTs were above average in the western and eastern basin, including regions near the Maritime Continent in May 2026 (Fig. 1a). Above-average SSTs were also observed over the Arabian Sea and the Bay of Bengal. Compared with April 2026, predominantly positive SST anomalies were evident across the eastern Indian Ocean, the northern Arabian Sea, and the northern Bay of Bengal in May 2026 (Fig. 1b). At present, neutral Indian Ocean Dipole (IOD) conditions prevail over the Indian Ocean. Forecasts from the Monsoon Mission Coupled Forecast System (MMCFS) indicate that neutral IOD conditions are likely to persist through the Southwest Monsoon season (Fig. 3).

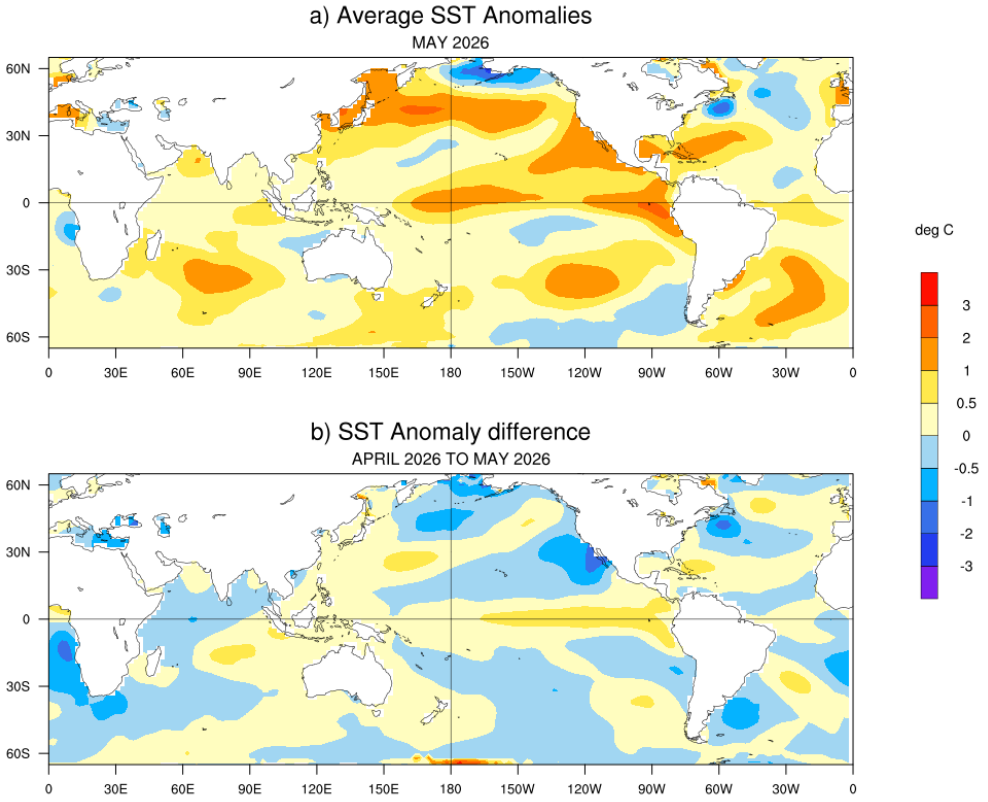


Fig.1: (a) Sea surface temperature (SST) anomalies ($^0$C) during May 2026 and (b) changes in the SST anomalies ($^0$C) from April to May 2026. SSTs are based on the ERSSTv5, from NOAA, and anomalies are computed with respect to 30-year (1991-2020) long term mean.

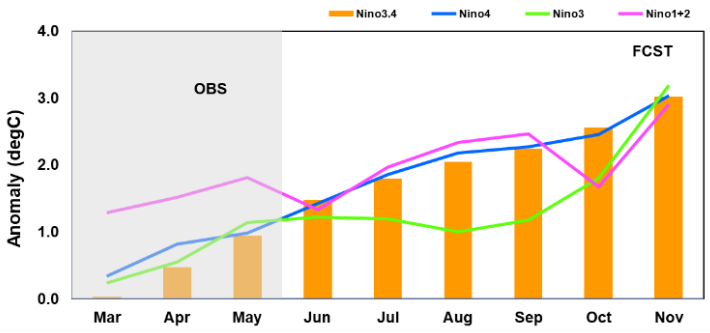


**Fig.2:** Time series of monthly area-averaged SST anomalies (°C) in the 4 Niño regions. ERSSTv5 observed anomaly for the last 3 months and MMCFS model PDF corrected anomaly forecast for the next 6 months.

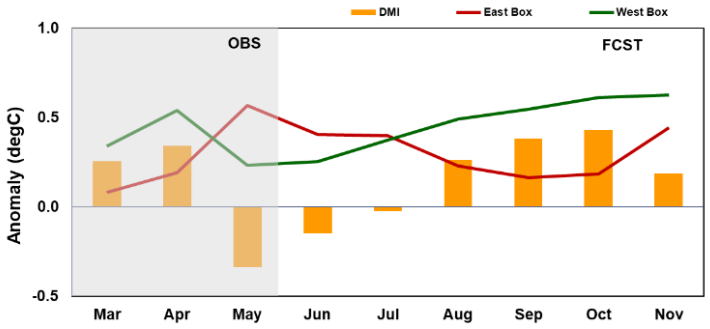


**Fig.3:** The time series of the monthly area-averaged SST anomaly Indices (°C) over west equatorial Indian Ocean (WEI) & east equatorial Indian Ocean (EEI) along with Dipole Mode Index (DMI=WEI-EEI) representing Indian Ocean Dipole (IOD). ERSSTv5 observed anomaly for the last 3 months and MMCFS model PDF corrected anomaly forecast for the next 6 months.

## *1.3 Convection (OLR Anomaly) Pattern over the Asia Pacific Region*

The Outgoing Longwave Radiation (OLR) anomaly during May 2026 is shown in Fig. 4. Negative OLR anomalies (enhanced convection; blue shading) were observed over central tropical Pacific Ocean, parts of north Indian Ocean (both Arabian and Bay of Bengal), eastern parts of south Indian Ocean, maritime continent, extreme southern region of Southeast Asia, parts of Australia and north America. Positive OLR anomalies (suppressed convection; orange/red shading) were observed over western tropical Pacific Ocean, eastern tropical Pacific Ocean, south tropical Pacific Ocean, Head Arabian Sea, parts of Africa, central India, Pakistan and Afghanistan.

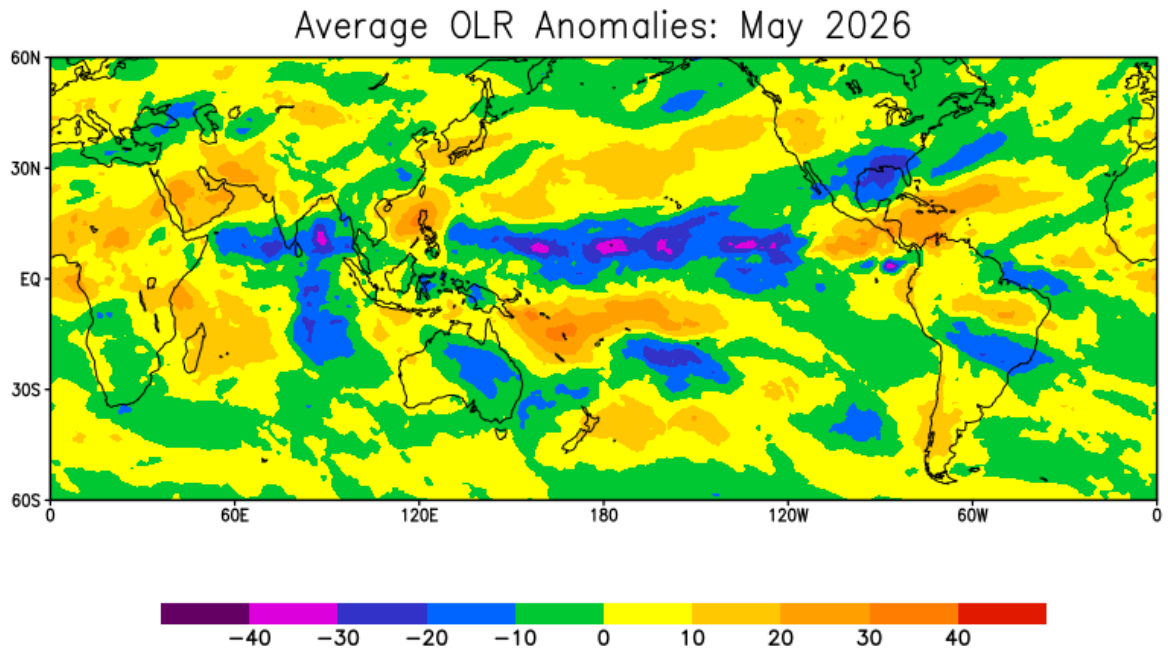


**Fig.4:** Outgoing Long Wave Radiation (OLR) Anomaly (W/m$^2$) for May 2026 (Data source: NCEP-NOAA)

### *1.4 Snow Cover Area over the Northern Hemisphere (NH)*

During May 2026, the NH snow cover area (17.89 million Sq. km) was less than the 1991- 2020 normal by 0.33 million Sq. km (Fig. 5). Eurasian Snow cover area (8.79 million Sq. km) was 0.39 million Sq. km less than the 1991-2020 normal. North America snow cover area of 9.1 million sq. km was more by 0.063 million Sq. Km with respect to 1991-2020 normal.

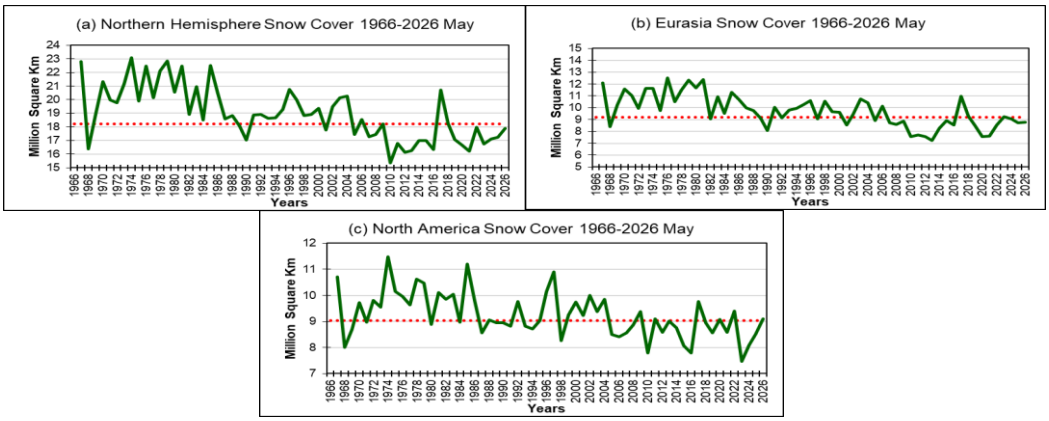


**Fig 5:** Snow cover area (million Sq. km) for the month of May during the period 1966-2026 (green solid lines) and normal value (1991-2020) (red dotted line) for (a) Northern Hemisphere (b) Eurasia and (c) North America. (Data Source: Rutgers University Snow Lab).

### *1.5. Madden Julian Oscillation (MJO)*

During May 2026, the Madden–Julian Oscillation (MJO) propagated eastward from Phase 2 (Indian Ocean) to Phase 4 (Maritime Continent) with an amplitude greater than 1 during the first 3 weeks of the month, indicating strong MJO activity. Subsequently, the MJO shifted toward Phase 6 (Western Pacific) with amplitude less than 1 during the 4$^{th}$ week, suggesting relatively suppressed activity. In the 5$^{th}$ week it moved to phase 7 (Western Pacific) with amplitude greater than 1. The MJO phase diagram illustrates the evolution and eastward propagation of the MJO through different phases, which correspond to convective activity over different regions along the equator around the globe.

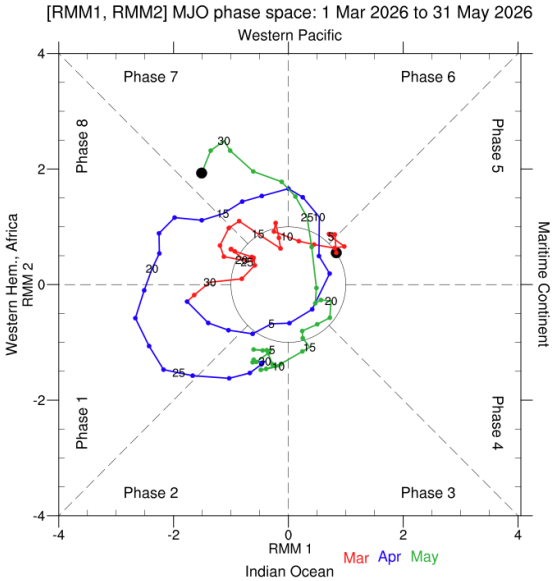


**Fig.6.** RMM phase diagram for Madden Julian Oscillation (MJO) for the period March to May 2026. (Data Source: http://www.bom.gov.au/climate/mjo/).

## 2. Seasonal Outlook for South Asia

The seasonal outlook was prepared based on the forecast from Monsoon Mission Coupled Forecasting System (MMCFS). The model is a fully coupled ocean-atmosphere-land model. The atmospheric component of CFSv2 is Global Forecast System (GFS) with spectral resolution of T382 (approximately 38 km) and 64 hybrid vertical levels and the ocean component is Geophysical Fluid Dynamics Laboratory (GFDL) Flexible Modelling System (FMS) Modular Ocean Model version.

### 2.1. Precipitation Probability Forecast:

The probability forecasts for precipitation for the June–August 2026 (JJA) and July–September 2026 (JAS) seasons are shown in Figures 7a and 7b, respectively. These forecasts were prepared using the May initial conditions. The forecasts indicate an enhanced probability of below-normal precipitation over most parts of South Asia during both JJA and JAS seasons. However, some regions over the extreme northwest, northeast and southeast parts of South Asia are likely to experience above-normal precipitation.

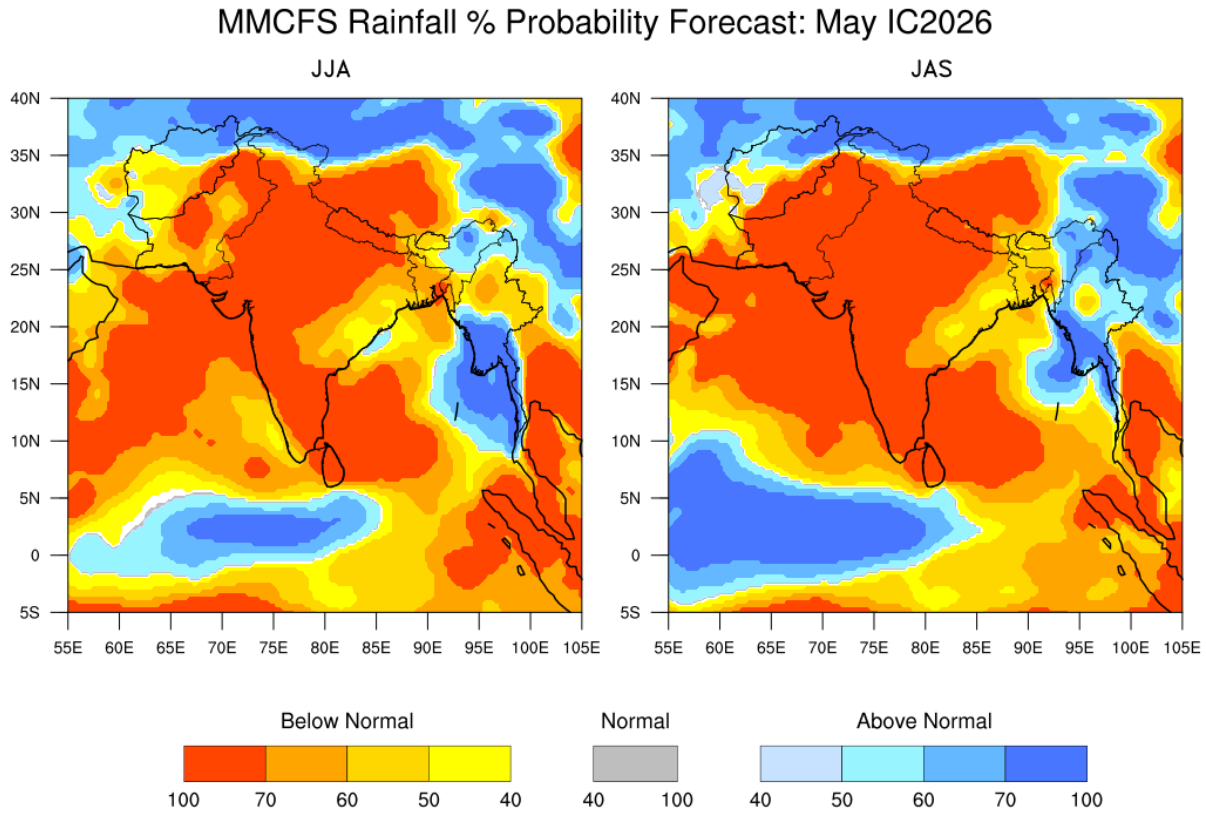


**Fig.7:** Seasonal probability (%) forecasts of precipitation for (a) JJA 2026 (left) and (b) JAS 2026 (right) based on initial conditions of May 2026.The white color indicates climatological probability.

### 2.2. Temperature Probability Forecast*:*

The probability forecasts for temperature for June–August 2026 (JJA) and July–September 2026 (JAS) seasons are shown in the Figures 8a and 8b, respectively. These forecasts were prepared using the May initial conditions. The forecasts indicate an enhanced probability of above-normal temperature over most parts of South Asia during both JJA and JAS seasons. However, some regions over the northwest and extreme north of South Asia are likely to experience below-normal temperature.

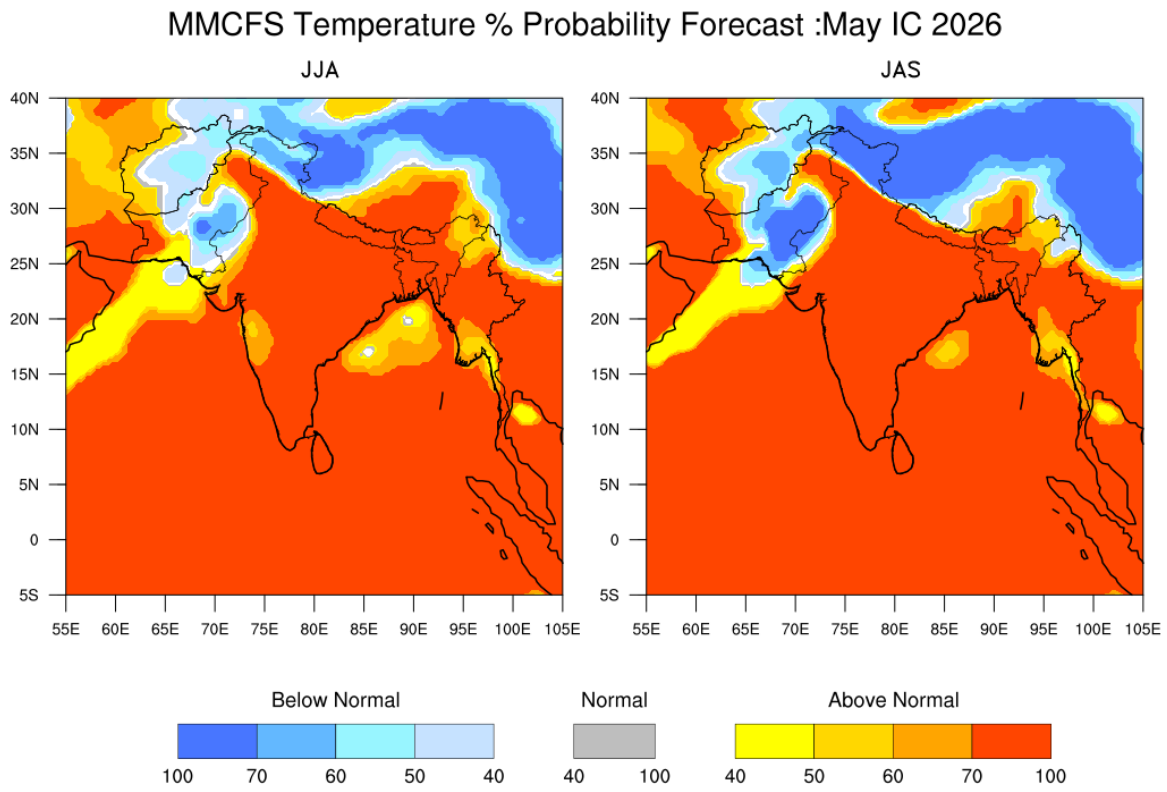


**Fig. 8:** Probability (%) forecast for the seasonal mean temperature for (a) JJA 2026 (left) and (b) JAS 2026 (right) based on initial conditions of May 2026. The white color indicates climatological probability.

## 3. Forecast Outlook for the Country Averaged Monthly Precipitation and Temperature

The MMCFS model forecast for monthly precipitation and temperature for the next four months (from June to September 2026) averaged over the 9 south Asian countries viz., Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka were shown in the Figures 9. The monthly rainfall anomaly is expressed as percentage departure from Long Period Model Average (LPMA) and monthly temperature anomaly is expressed in degree Celsius.

In June, the country averaged monthly precipitation is likely to be normal to above normal for all countries except India, Maldives, Nepal and Sri Lanka. In July, the country averaged monthly precipitation is likely to be normal to above normal for all countries except India, Pakistan and Sri Lanka where it is likely to be below normal. In August, it is likely to be normal to above normal for all countries except Bangladesh, India Nepal, Pakistan and Sri Lanka where it is likely to be below normal. In September, it is likely to be normal to above normal for all countries except India, Nepal, Pakistan and Sri Lanka where it is likely to be below normal.

The country averaged monthly temperatures during June to August is likely to be normal to above normal for all the countries. In September, it is likely to be normal to above normal for all the countries except Bhutan and Pakistan where it is likely to be above normal.

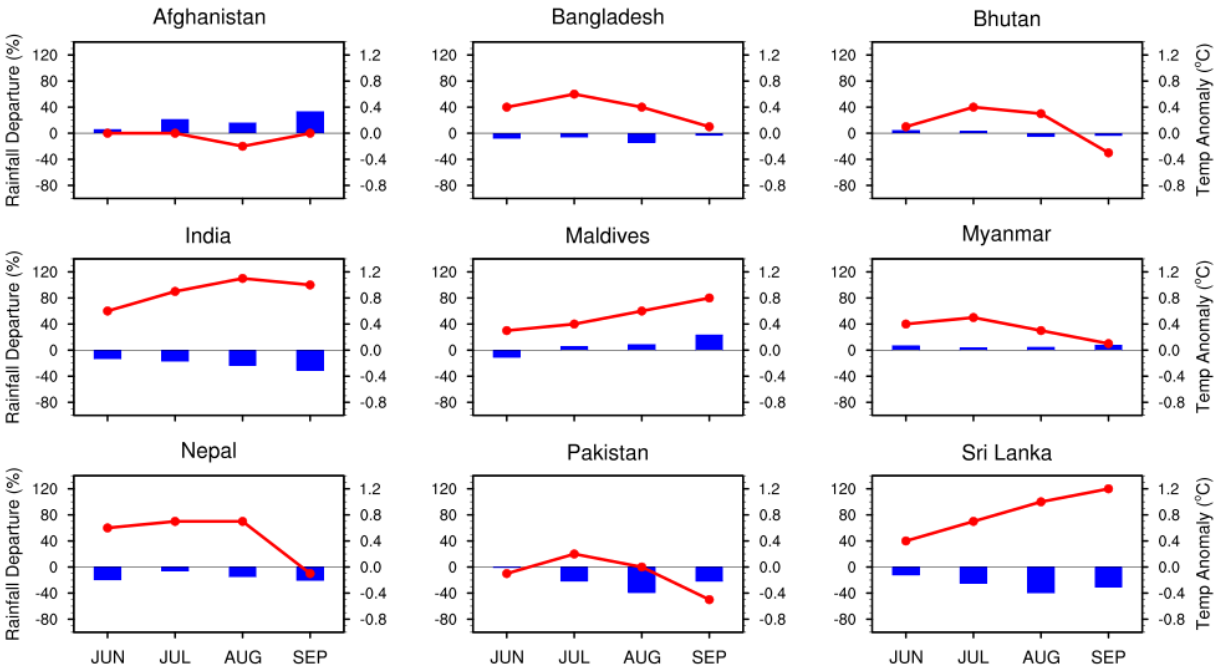


**Fig. 9:** Monthly country averaged rainfall forecast expressed as percentage departures (%) and monthly country averaged temperature anomaly (°C) forecast during June to September 2026. Here, the normal range for country averaged monthly precipitation is taken as -10% to +10% (Left Vertical Axis Scale for Precipitation indicated in blue shaded bars) and the normal range for country averaged monthly temperature is taken -0.25°C to +0.25°C (Right Vertical Axis Scale for Temperature indicated in red colored lines).