Rainfall and Temperature Forecast of Bhutan
for
Winter Monsoon
(December 2025 – January 2026)

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Royal Government of Bhutan
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1. Background

Seasonal forecasting and climate prediction are key adaptation measures for addressing climate variability and climate change. To support these efforts, Regional Climate Outlook Forums (RCOFs) were established to bring together countries with similar climatological characteristics and to produce joint assessments of regional climate conditions. In this context, the South Asian Climate Outlook Forum (SASCOF) was initiated in 2010 with a specific focus on the information needs of countries influenced by the South Asian monsoon.

Seasonal forecasts typically provide an outlook of precipitation and temperature for a defined region and period. For Bhutan, the seasonal forecast is developed using inputs from global and regional prediction centres, national climate datasets, and the consensus outlook of SASCOF. Additional guidance is drawn from products issued by the World Meteorological Organization (WMO) Global Producing Centres (GPCs) for Long-Range Forecasts, various international sources, and the prevailing global climate drivers such as the El Niño–Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD), which influence monsoon behaviour.

The summer monsoon outlook should be used in conjunction with extended-range, medium-range, and daily weather forecasts, as well as other advisories issued by the Centre, to support effective decision-making and risk management.

2. SASCOF-33 consensus on prevailing conditions

2.1 ENSO Conditions over the Pacific Ocean

The El Niño–Southern Oscillation (ENSO) is a major global climate phenomenon that significantly influences the year-to-year variability of winter precipitation and surface temperatures across South Asia. At present, weak La Niña conditions prevail over the equatorial Pacific region. The latest forecasts from global climate models indicate a moderate to fairly high likelihood (around 62%) of La Niña conditions persisting through the DJF 2025/26 season, with a probable transition to neutral ENSO conditions thereafter.

2.2 Conditions over the Indian Ocean

In addition to ENSO conditions over the Pacific, other factors such as Indian Ocean sea surface temperatures also influence the region's climate variability. Currently, negative Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. Forecasts from global climate models indicate that these negative IOD conditions are likely to weaken, with an increasing probability of a transition to neutral conditions during the DJF season and thereafter.

3. SASCOF-33 Outlook for DJF 2025/26 Winter Monsoon over South Asia

A consensus outlook for the December 2025 to February 2026 (DJF) rainfall over South Asia has been developed based on expert assessment of prevailing large-scale climate drivers and long-range forecasts from global statistical and dynamical models. Although these forecasts consider key indicators such as ENSO, the Indian Ocean Dipole (IOD), and other basin-wide sea surface temperature patterns, winter precipitation predictions for the region remain highly uncertain due to strong day-to-day atmospheric variability.

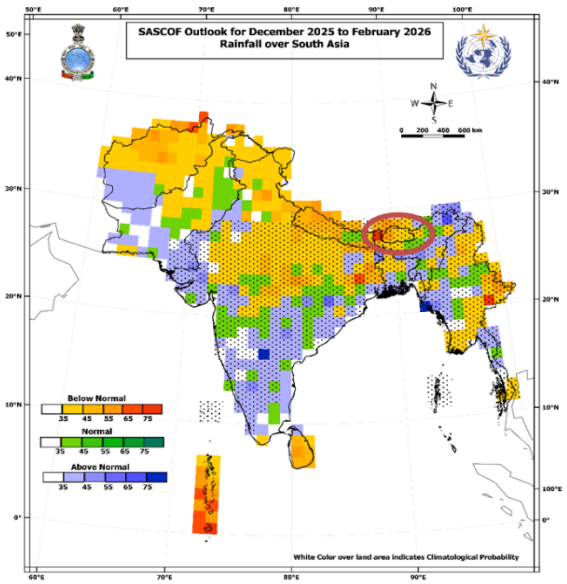


Figure 1: Consensus outlook for the winter season (DJF 2025/26) precipitation over South Asia. The dotted area shown in the map climatologically receives very low rainfall and experiences dry weather during the DJF season.

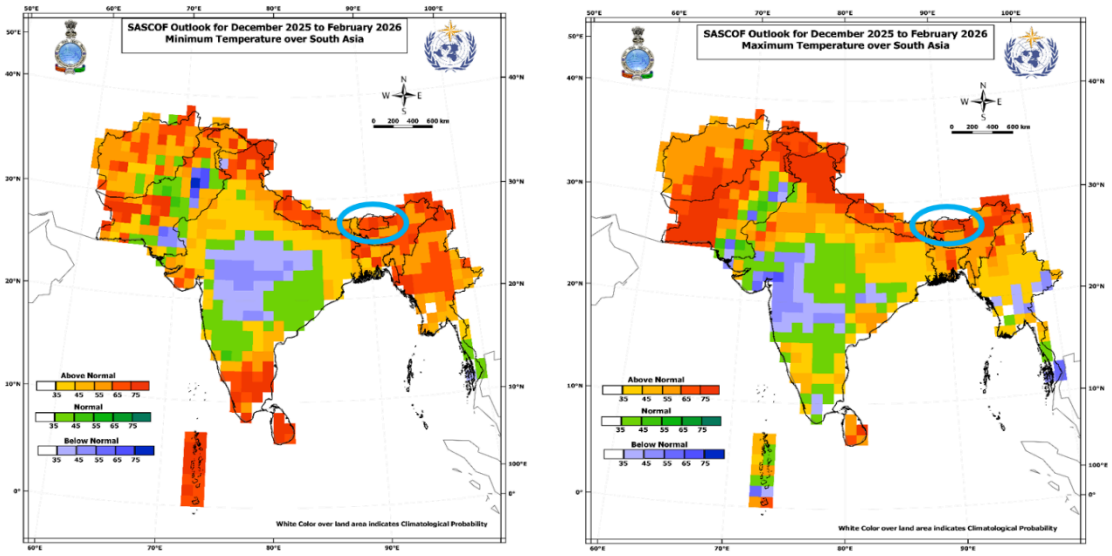


Figure 2: Consensus outlook for minimum (left) and maximum (right) temperatures for the winter season (DJF 2025/26) over South Asia.

Figure 1 presents the grid-wise most likely tercile probability category for each 1°×1° grid. For the winter season DJF 2025/26, the outlook indicates that rainfall is most likely to be below normal over many parts of South Asia, particularly across the northern, northwestern, northeastern regions and along the Himalayan foothills. Areas in the western sector and localized regions in the northwest, northeast, and southern parts of South Asia are expected to receive above-normal rainfall. The remaining areas are likely to experience normal rainfall or climatological probabilities.

For minimum temperatures during DJF 2025/26, the outlook suggests near-normal conditions over most of South Asia, with some deviations over parts of the northern Himalayan region.

The maximum temperature outlook indicates above-normal temperatures across much of the region, except in parts of the north, northwest, south, northeast, and the Himalayan belt. Below-normal maximum temperatures are likely over some central areas and along sections of the Himalayan foothills.

Given the strong intra-seasonal variability in winter rainfall and temperature, it is recommended that users complement the seasonal outlook with extended-range and medium-range forecasts to support more effective planning and decision-making.

4. Winter Seasonal Outlook from International and Regional Climate Centres

4.1 WMO Lead Centres

Probabilistic multi-model ensemble forecasts of all the GPCs of WMO forecast show below normal rainfall and above normal temperature during DJF 2024/25 over Bhutan.

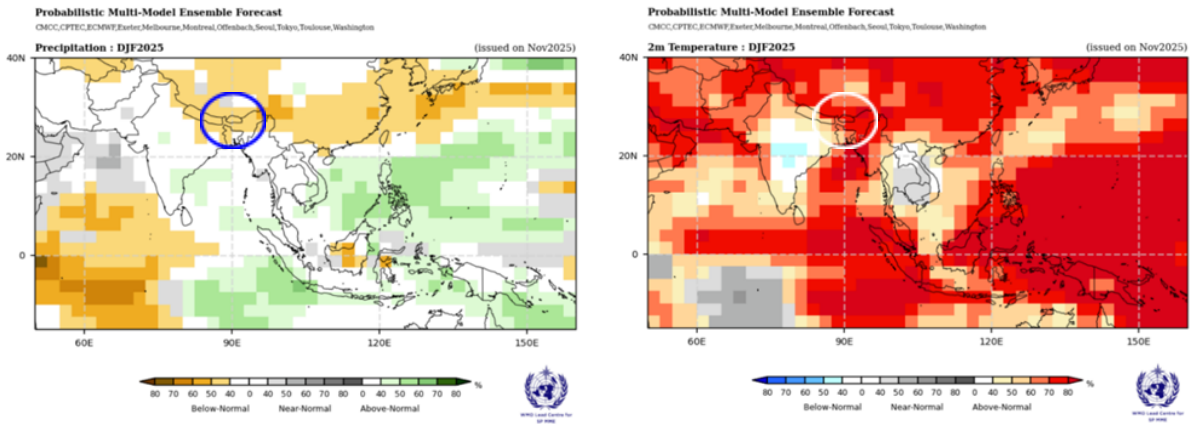


Figure 3: DJF 2025/26 precipitation (left) and temperature (right) forecast from WMO GPCs

4.2 International Research Institute for Climate and Society (IRI)

The IRI forecast indicates below normal rainfall and above normal temperature during DJF 2024/25 over Bhutan.

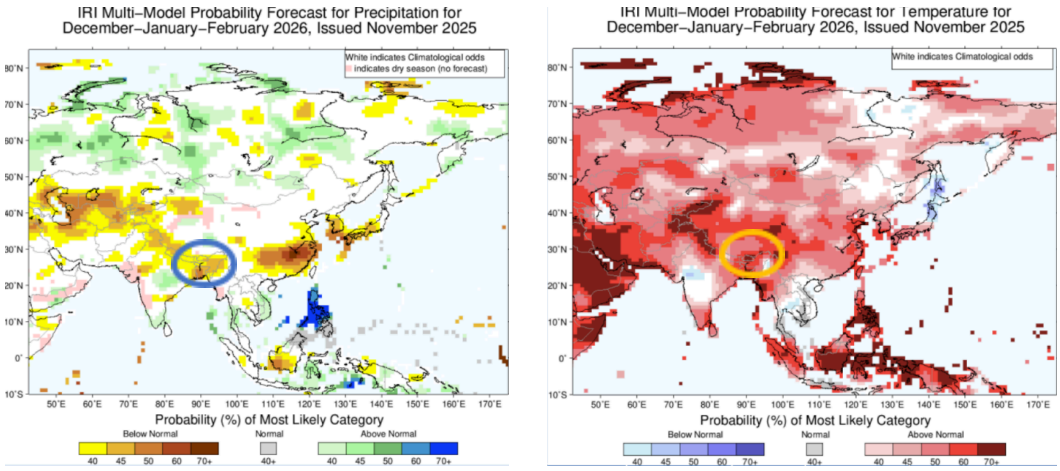


Figure 4: DJF 2025/26 precipitation (left) and temperature (right) forecast from WMO GPCs

4.3 Copernicus Climate Change Service (C3S)

According to the C3S forecast, there is below normal rainfall and above normal temperature during DJF 2024/25 over Bhutan.

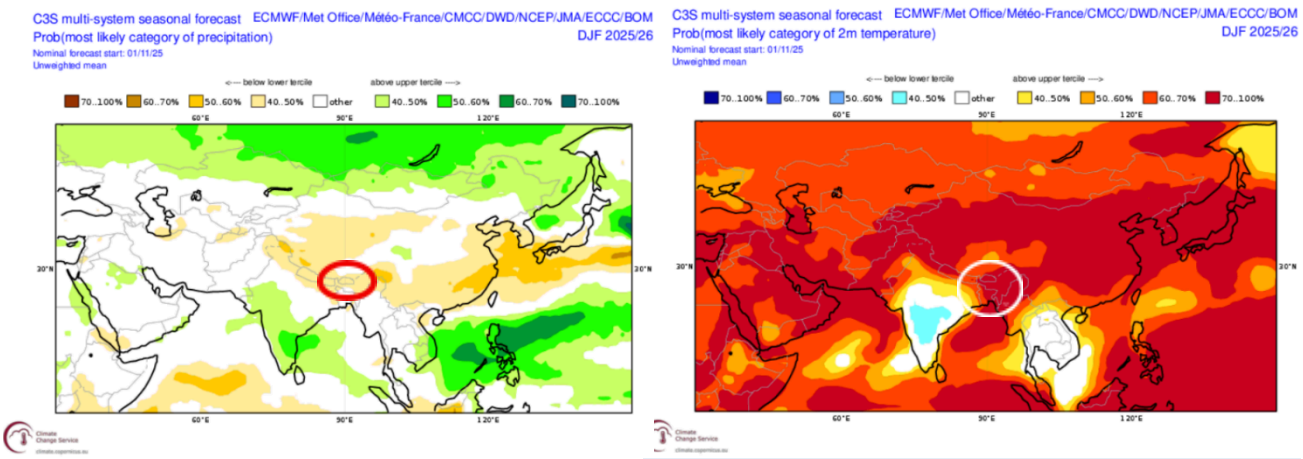


Figure 5: DJF 2025/26 precipitation (left) and temperature (right) forecast from IRI

4.4 Japan Meteorological Agency (JMA) forecast

The JMA forecast indicates below normal rainfall during DJF 2024/25 over Bhutan.

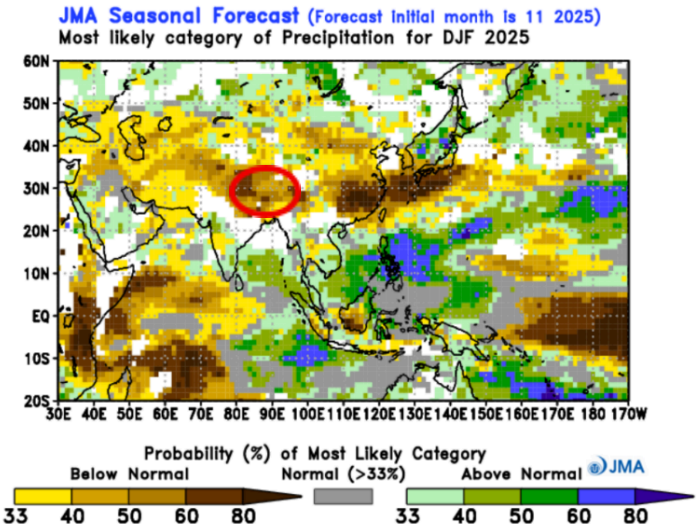


Figure 6: DJF 2025/26 precipitation forecast from JMA

4.5 North American Multi Model Ensemble (NMME) forecast

The NMME forecast indicates below normal rainfall during DJF 2024/25 over Bhutan.

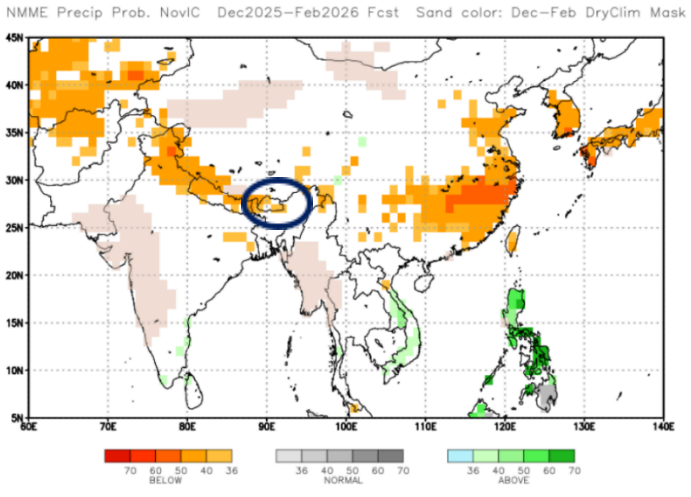


Figure 7: DJF 2025/26 precipitation forecast from NMME

4.6 Forecast from NCHM using Climate Predictability Tool (CPT)

The CPT forecast indicates normal rainfall, above normal maximum temperature and normal minimum temperature during DJF 2025/26.

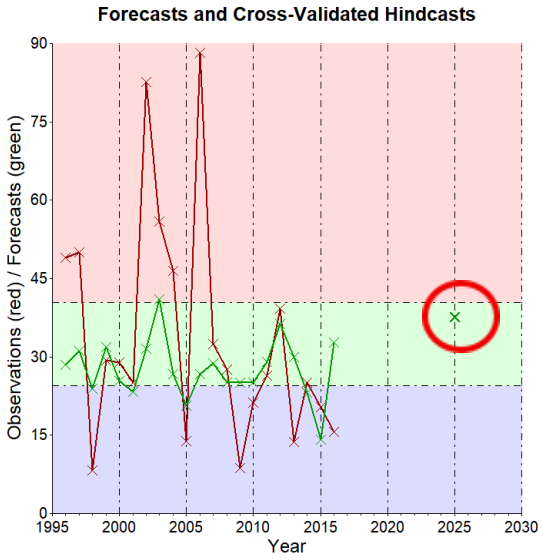
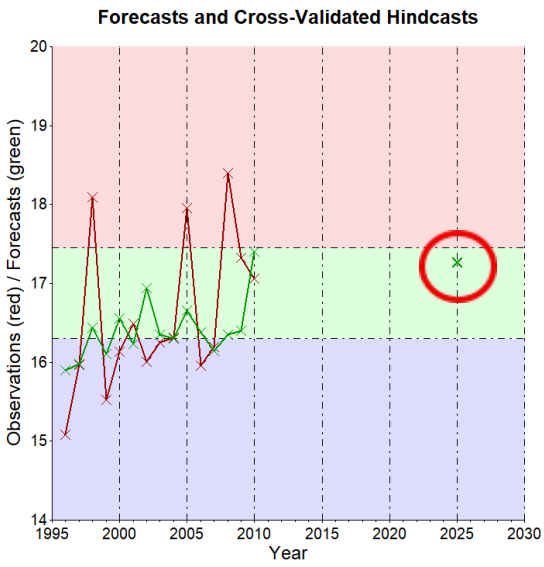


Figure 8: DJF 2025/26 Precipitation forecast from CPT



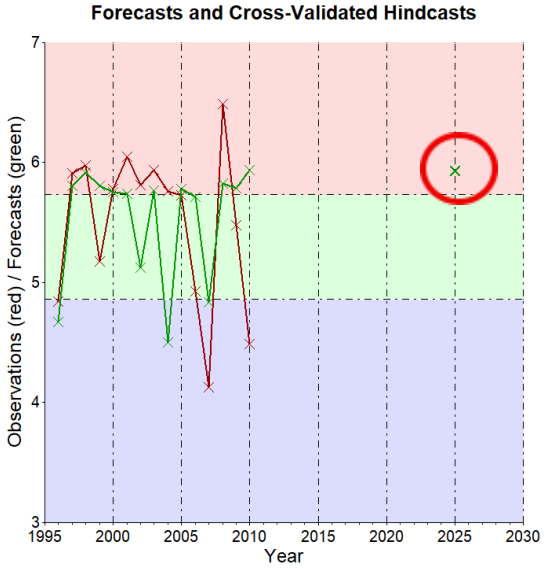


Figure 9: DJF 2025/26 minimum (left) and maximum temperature (right) forecast from CPT

5. ENSO and IOD outlook DJF 2025/26

ENSO Neutral and neutral IOD conditions are likely to prevail during this upcoming season.

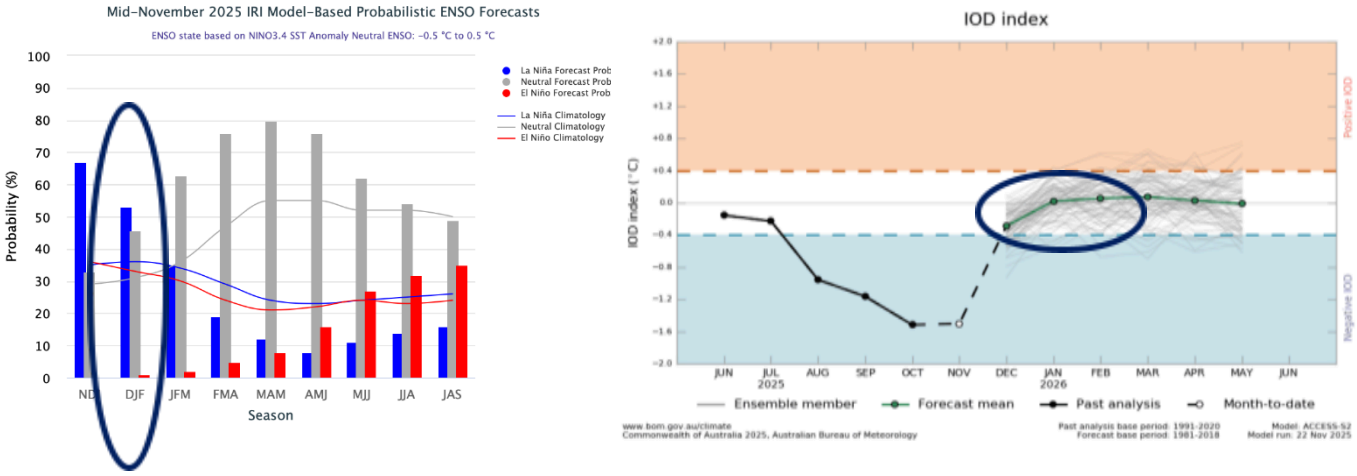


Figure 10: El Nino condition (left) and IOD condition (right)

The final outlook of winter season DJF 2025/26 over Bhutan is based on the forecast products from various sources.

Sl No.	Indicators	Precipitation	Maximum Temperature	Minimum Temperature
1	CPT	Normal	Above Normal	Normal
2	GPCs	Below Normal	Above Normal	
3	IRI	Below Normal	Above Normal	
4	C3S	Below Normal	Above Normal	
5	JMA	Below Normal		
6	NMME	Below Normal		
7	SASCOF	Below Normal	Above Normal	Above Normal
8	ENSO	Neutral		
9	IOD	Neutral		

Table 1: Summary of results from various sources