WMO Third Pole RCC Network
(In Demonstration Phase)

Seasonal Climate Bulletin in the Third Pole Region
Autumn (SON) 2025

Issued: 22 December 2025

Highlights

- In autumn 2025, most areas of the Third Pole (TP) region experienced above-normal surface air temperatures (SAT), with pronounced positive anomalies over the Third Pole Core Region (TPCR[1]), while slightly below-normal SATs were observed in some northeastern and southwestern sectors of the TP.

- Precipitation across the northwestern and central-western TP was markedly below normal. In contrast, the northeastern and southwestern TP region experienced significantly above-normal precipitation, with totals in some areas exceeding the normal by 50% or reaching up to twice the climatological amount.

- The autumn snow cover extent (SCE) over the region as a whole was close to the 2005-2020 average, but with distinct spatial heterogeneity. The northwestern TP region and the central TPCR maintained fewer days with snow cover, while in the northeastern TP region, as well as the southern and southwestern TPCR, the number of snow cover days was greater than normal.

- During the early and mid-autumn, the northern India and Nepal were struck by torrential rains and flooding. In mid-to-late autumn, cold air events and snowstorms affected regions including Nepal, Mongolia, and Kazakhstan.

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[1] TPCR refers to the region with elevation above 2000 m within the TPRCC-Network service domain, i.e. the region within black contour in Figures 1-6.

1. Seasonal Overview

1.1 Temperature

In autumn 2025, most areas of the TP region experienced above-normal surface air temperatures (SAT), with pronounced positive anomalies over the TPCR, while the SATs in the northeastern and southwestern parts were slightly below-normal (Figure 1).

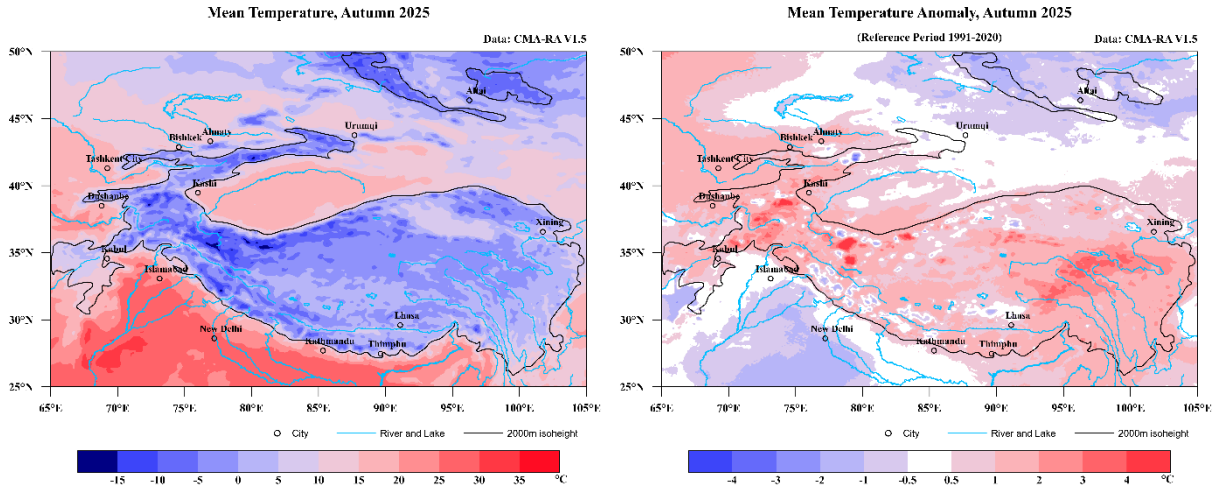

Figure 1 Seasonal mean surface air temperature (left) and anomalies (right, relative to 1991-2020) in autumn (SON) 2025
Data source: CRA1.5

The distributions of SAT anomalies over the TP region were generally similar between September and October, with positive anomalies over the TPCR as well as the western and the southeastern TP region, and negative anomalies occurred over the southwestern TP region. However, the northern TP area showed a marked difference between these two months, experiencing 2-4 °C colder than normal in October while near or warmer than normal in September. In November, the northwestern TP region exhibited significantly positive anomalies, whereas the southwestern region continued the colder mode as it in the preceding months, characterized by an expansion of the cold anomalies in both spatial extent and intensity, with parts of the region being 2-3°C colder than normal (Figure 2).

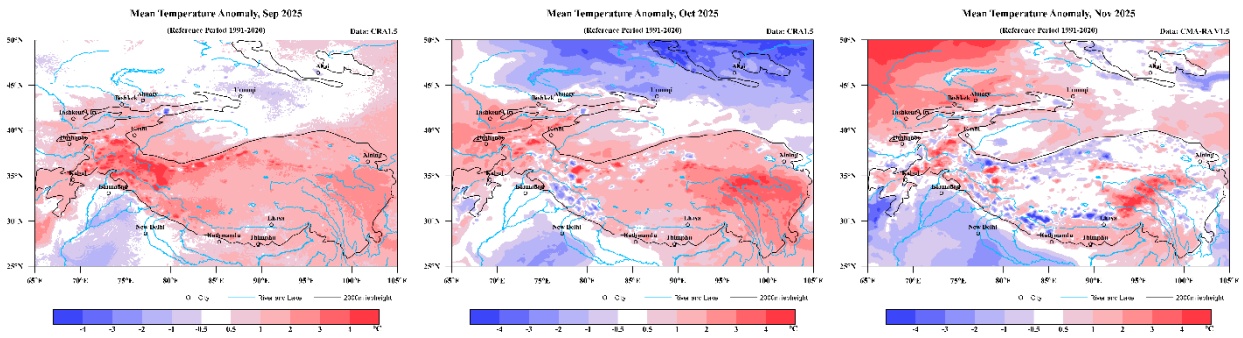

Figure 2 Monthly mean surface air temperature anomalies (relative to 1991-2020) in September (left), October (middle) and November (right) of 2025.
Data source: CRA1.5

1.2 Precipitation

During autumn 2025, precipitation across the northwestern and central-western TP region was

markedly below normal, with parts of southeastern Central Asia and most of the Tarim Basin recording deficits in excess of 80% and some areas receiving little to no precipitation (Figure 3). In contrast, the northeastern and southwestern TP region experienced significantly above-normal precipitation, with totals in some areas exceeding the normal by 50% or reaching up to twice the climatological amount.

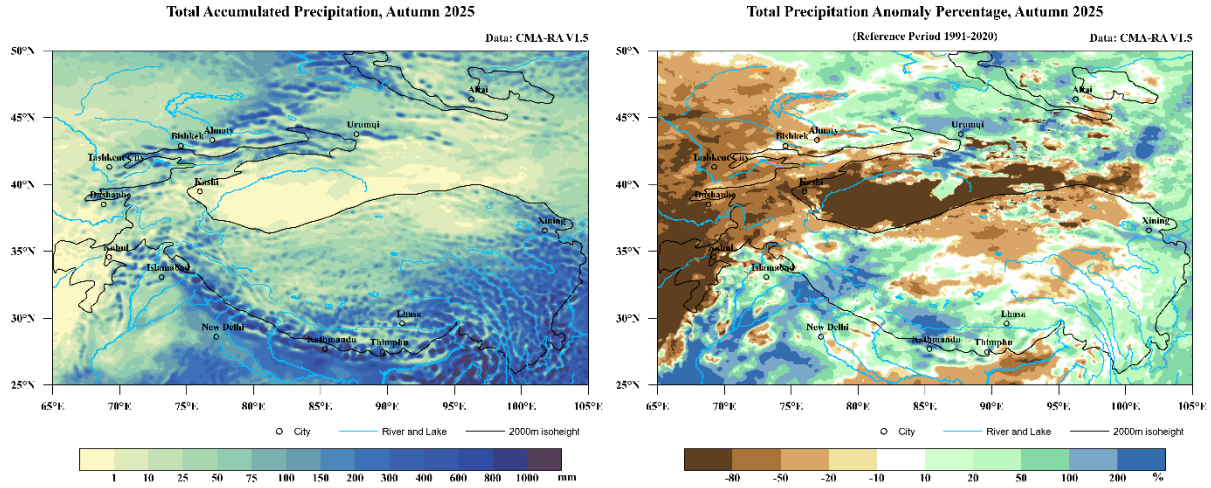

Figure 3 Seasonal precipitation totals (left) and anomalies by percentage (right, relative to 1991-2020) in autumn (SON) 2025.
Data source: CRA1.5

In September, the spatial pattern of total precipitation anomaly percentage showed an "above- normal, below-normal, above-normal" distribution from north to south over the TP region, with precipitation above normal in the northern, southwestern, and southeastern parts, but far below normal in the central area. In October, the TP region featured significant deficits in the western, northern, and central regions of the TP, whereas the southwestern and eastern areas experienced substantial surpluses. Specifically, large portions of the western and central TP exhibited precipitation reductions exceeding 80%, while the southwestern region and the southern part of the TPCR saw marked increases, with anomalies exceeding 200%. In November, most of the TP region experienced significantly less precipitation compared to normal, except for the northeastern and southeastern parts. Specifically, precipitation deficits exceeding 80% were observed in the southwestern TP region, central and western portions of the TPCR (Figure 4).

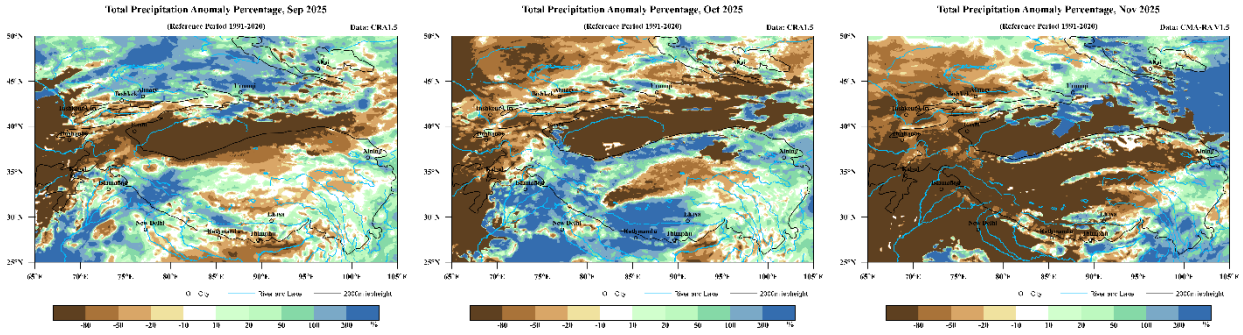

Figure 4 Monthly precipitation anomalies by percentage (relative to 1991-2020) in September (left), October (middle) and November (right) of 2025.
Data source: CRA1.5

1.3 Snow Cover

For the boreal autumn of 2025, the snow cover extent (SCE) over the region was approximately 401.4×10^3 km^2, which was close to 2005-2020 average (with an anomaly of −2.9%). Spatially, the number of snow cover days (NSCD) in the northwestern TP region, the area ranging from the western Tianshan Mountains to the Pamir Plateau, and the northeastern and central parts of the TPCR was below the 2005-2020 average, with some local areas experiencing more than 20 days less NSCD. In contrast, the northeastern TP region, the eastern Tianshan Mountains, and the southern and southwestern TPCR had more NSCD. In some areas, the NSCD exceeded the normal by more than 20 days (Figure 5).

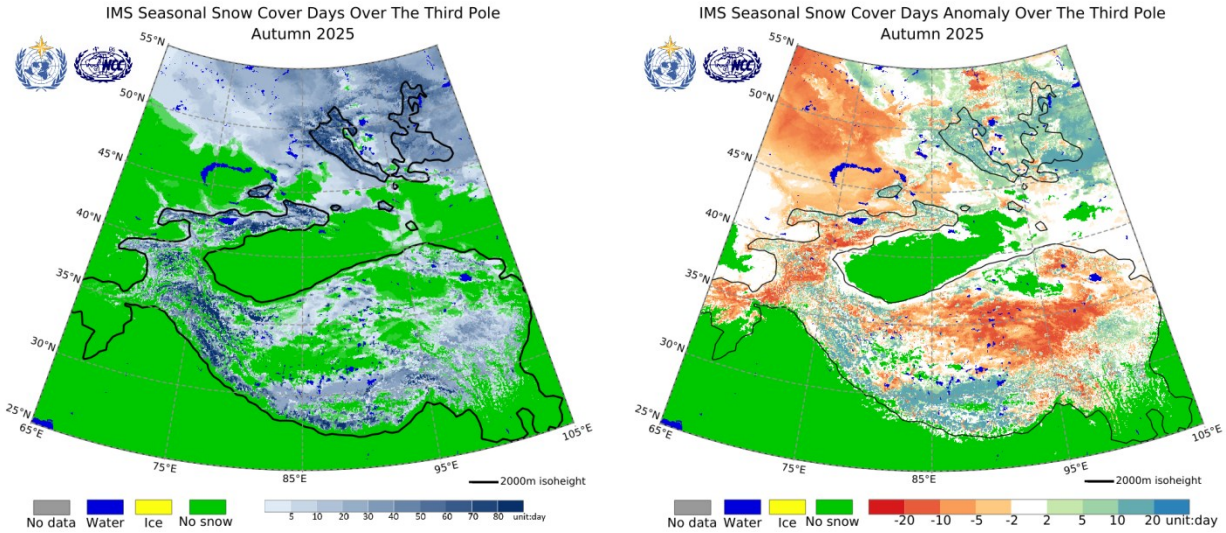

Figure 5 The Number of Snow Cover Days (left) and its anomalies (right, relative to 2005-2020) in autumn (SON) of 2025.
Data source: IMS/NSIDC

From a monthly perspective, the SCEs in September, October, and November of 2025 were 109.7×10^3 km^2, 378.9×10^3 km^2 and 716.6×10^3 km^2, respectively, with the anomaly percentages of −3.5%, 7.3%, and −7.7%. Spatially, snow cover in the northeastern TP region expanded rapidly starting October, leading to above-normal snow cover for the entire season. The above-normal snow cover in the southern and southwestern TPCR for the season was mainly due to a sudden increase of NSCD in November and a persistent higher-than-normal NSCD in September and October, respectively. In the northwestern TP region and the central TPCR, snow cover expanded slowly with time. Consequently, the NSCDs there were significantly below normal in both October and November (Figure 6).

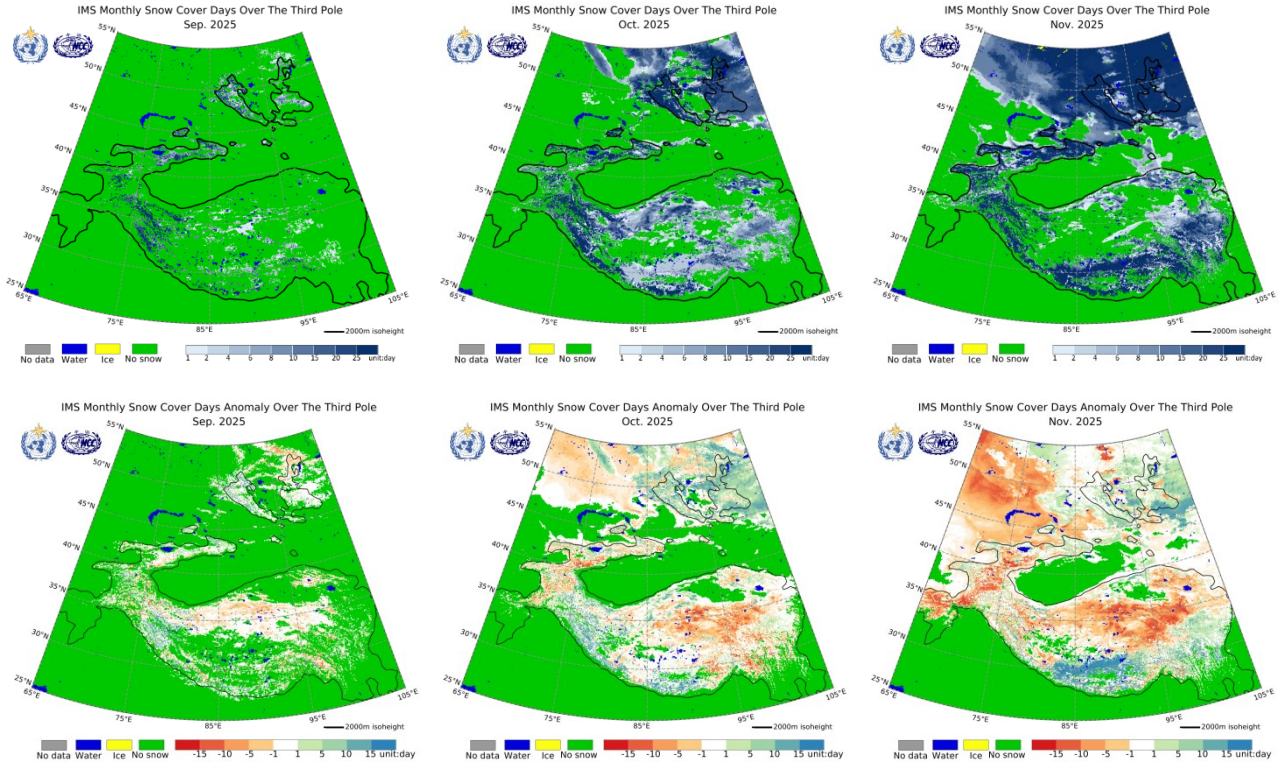

Figure 6 same as Figure 5, but for September (left), October (middle) and November (right) of 2025
Data source: IMS/NSIDC

2. High-impact Climate Events

Heavy rainfall

The Indian monsoon season, spanning from June to September, was characterized by frequent heavy rainfall, often triggering hazards such as floods, landslides, and debris flows.

From 15 to 18 September, persistent heavy precipitation in the northwestern India triggered severe floods and landslides. These disasters led to river overflows, the collapse of bridges and buildings, and widespread power and communication outages, resulting in 20 fatalities, 23 people missing, and over 900 individuals trapped by the flood. Heavy rainfall occurred across Nepal from 3 to 7 October, triggering flash floods and landslides in several areas, which resulted in 51 fatalities, 47 injuries, and 6 people missing.

Cold air activities and heavy snow events

During autumn, cold air activities gradually intensified, particularly in late autumn. This autumn, the TP region was impacted by frequent cold air events and snowstorms.

Since 30 October, heavy rainfall had been battering various parts of Nepal, with heavy snowfall occurring in high-altitude areas. Due to the severe weather, Lukla Airport had been forced to suspend operations for three consecutive days, leaving a large number of tourists stranded.

From 5 to 8 November, a severe cold wave accompanied by snowfall swept eastward across the

Mongolian Plateau, bringing fresh snow accumulations of 5–10 cm in some areas, with local snow depths exceeding 14 cm. Subsequently, from 10 to 13 November, a weather system of rain- snow-cooling moved eastward across Kazakhstan and the western Mongolia, accompanied by localized gusts reaching Force 9–10 on the Beaufort scale.

Acknowledgements: We acknowledge contributions from the National Meteorological and Hydrological Services and from other organizations, institutes, or agencies with similar roles for their inputs and feedbacks.