WMO Third Pole RCC Network
(In Demonstration Phase)

Seasonal Climate Bulletin in the Third Pole Region
Summer (JJA) 2025

Issued: 20 September 2025

Highlights

- Most of the Third Pole (TP) region recorded above normal surface air temperature (SAT), while the SAT in the southern and southwestern TP sub-region was near or below normal. The lower-than-normal SAT observed in the southwestern TP region and higher-than-normal SAT in the western TPCR[1] persisted throughout the summer.

- Summer precipitation in the TP region exhibited strikingly abnormal and uneven distribution characteristics. The precipitation in some areas of the southwestern TP region and parts of the southwest TPCR exceeded the normal amount by twice. Conversely, some areas in the western and northern TP region experienced a 20%–50% precipitation deficit relative to the normal level, with specific areas in the western regions reporting a precipitation deficiency of over 80%.

- The snow cover extent (SCE) over the TP region in summer was concentrated in high-elevation areas. For the season, substantial spatial heterogeneity and marked intra-seasonal variability were observed, with SCE in July ranking the fifth least since 2004.

- Due to the unusually early and intense South Asian monsoon this summer, several countries in the TP region has been affected significantly by floods, landslides, and debris flows resulting from monsoon precipitation. Although the monsoon advanced into Nepal on 29 May, rainfall deficits persisted six weeks later, leading to a severe water crisis and drought conditions in the southern part of the country. Throughout the summer, the southeastern Central Asia and the northern Pakistan have been affected by intense heatwaves.

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

1. Seasonal Overview

1.1 Temperature

In the summer (JJA) of 2025, most of the TP region recorded above normal surface air temperature (SAT) (with respect to 1991-2020), with particularly significant positive anomalies of 2–4 ℃ in the western TPCR. In contrast, the SAT in the southwestern TP region was near or below normal, with parts of the region 1–3 ℃ colder than normal (Figure 1).

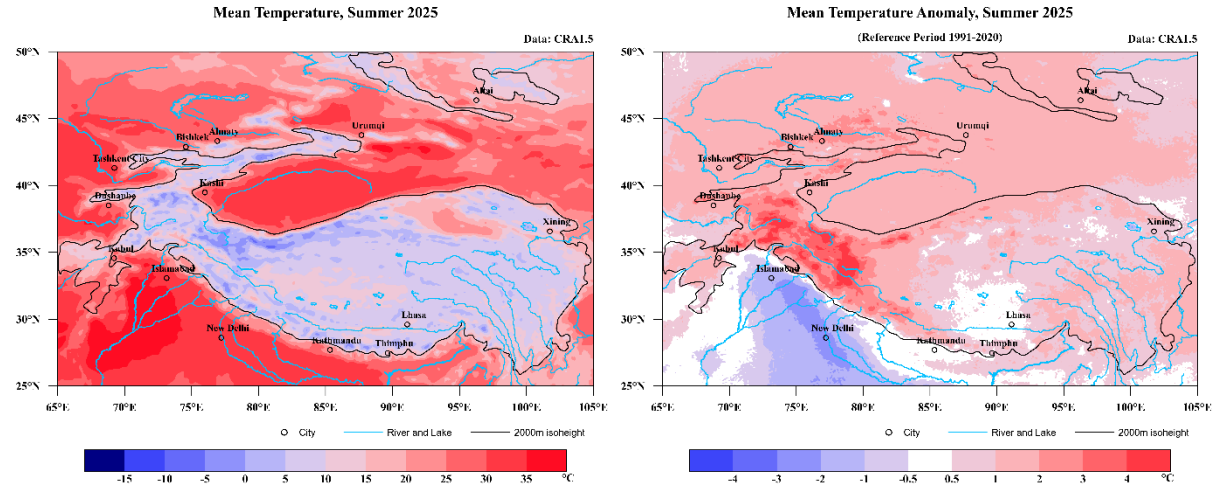


Figure 1 Seasonal mean surface air temperature (left) and anomalies in summer (JJA) 2025 (relative to 1991-2020, right).
Data source: CRA1.5

For individual months, the spatial pattern of SAT anomalies over the Third Pole region was in line with that for the entire season. However, in August, the SAT over northwest of TP region were colder than normal, which differs from the pattern in other summer months. Notably, the lower-than-normal SAT observed in the southwestern TPCR and the higher-than-normal SAT in the western TPCR persisted throughout the summer (Figure 2).

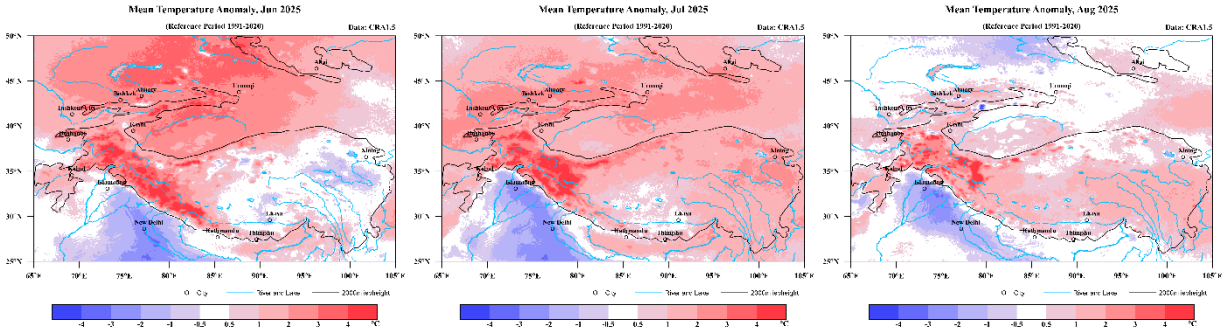


Figure 2 Monthly mean surface air temperature anomalies (relative to 1991-2020) in June (left), July (middle) and August (right) of 2025.
Data source: CRA1.5

1.2 Precipitation

For the season, the distribution of precipitation anomalies reveals a “below-normal, above-normal, below-normal” pattern from southeast to northwest of the region (Figure 3). The precipitation in some

areas of the southwestern TP region and parts of the southwest TPCR exceeded the normal amount by twice. Conversely, some areas in the western and northern TP region, as well as central section along the southern periphery, experienced precipitation deficits of 20%–50% relative to the normal level, with specific areas in the western regions recording a precipitation deficiency of over 80%.

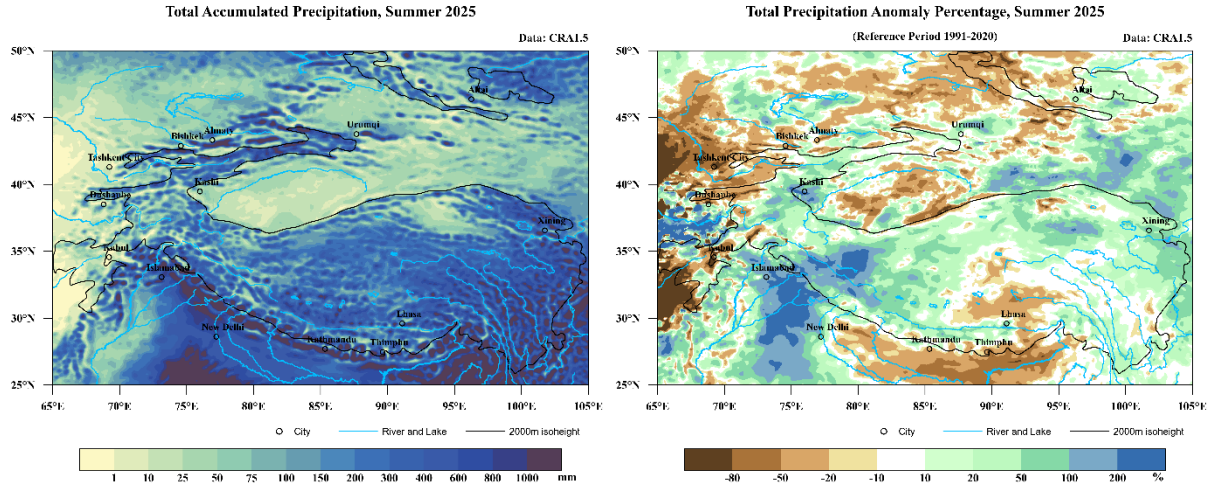


Figure 3 Seasonal precipitation totals (left) and anomalies by percentage in summer (JJA) 2025 (relative to 1991-2020, right).
Data source: CRA1.5

The distribution of precipitation anomalies across most areas of the Third Pole region in individual months exhibits similar characteristics, with rainfall concentrated more heavily in the southwestern region and reduced in the western and northern regions. It is noteworthy that persistent excessive precipitation occurred in both the southwestern area and the southwestern TPCR, while continuous deficiency was observed in the western and north-central regions of TP region. This deficiency was particularly pronounced in the western region. In July, the areas with deficient precipitation in the western and northern TP region were more widespread. The western region experienced a significant shortfall of exceeding 80%, while many areas in northern TPCR demonstrated significant deficiencies ranging from 20% to 80% (Figure 4).

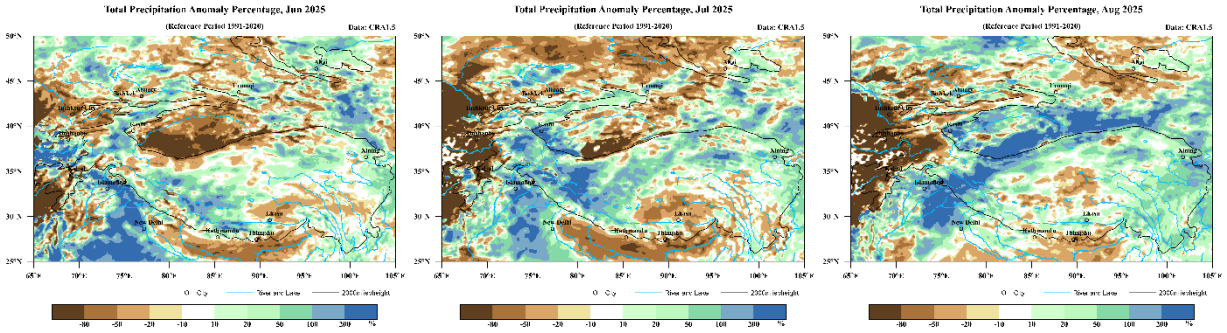


Figure 4 Monthly precipitation anomalies by percentage (relative to 1991-2020) in June (left), July (middle) and August (right) of 2025.
Data source: CRA1.5

1.3 Snow Cover

For the summer of 2025, the snow cover extent (SCE) over the region was around 114.8×10^3 km^2, which was 6.8% lower than the normal (relative to 2005-2020). Spatially, snow cover concentrated in high-elevation areas, mainly distributed along the Tangshan Mountains, the Pamirs, the Kunlun Mountains, the Qilian Mountains, the Nyainqentangglha Mountains, the Gangliest Mountains, and the Himalayas The number of snow cover days (NSCD) exhibited below normal along most of the aforementioned mountains, except in the eastern Kunlun Mountains where NSCD was close to normal (Figure 5).

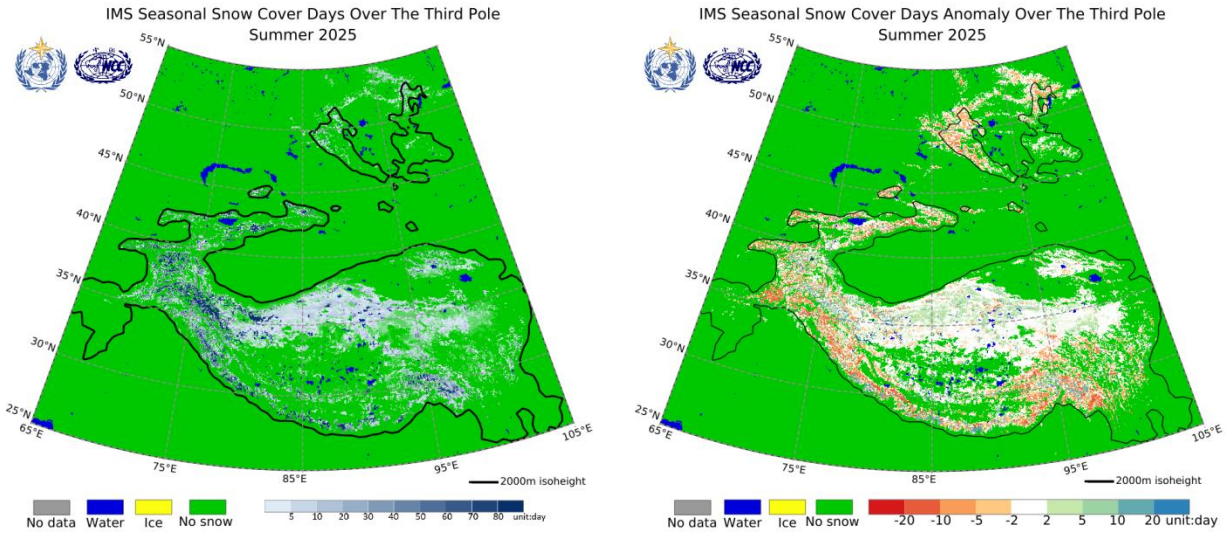
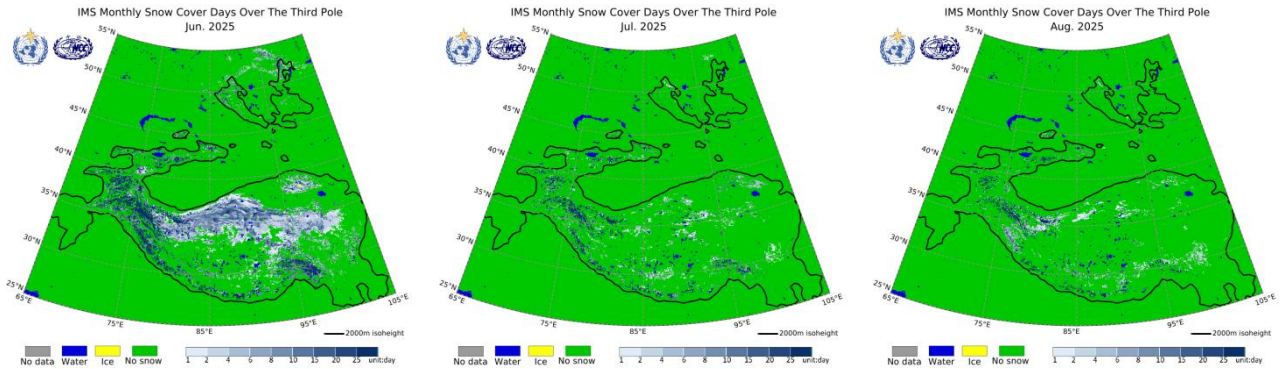


Figure 5 The Number of Snow Cover Days (left) and its anomalies (right, relative to 2005-2020) for the summer (JJA) of 2025.
Data source: IMS/NSIDC

From a monthly perspective, SCEs in June, July, and August of 2025 were 214.2×10^3 km^2, 75.4×10^3 km^2 and 58.3×10^3 km^2, respectively, with SCE anomalies of −20.6% in July and close to normal in June (−3.0%) and August (2.0%). In June, the slightly positive anomalies of NSCD were observed across the vast central TPCR, which offset the negative anomalies in the western, northern and southern TPCR. In July and August, the snow cover vanished in most areas of TPCR. In July, the NSCD in the Himalayas and the Pamirs was below the normal, making the NSCD the fifth lowest since 2004 (Figure 6).



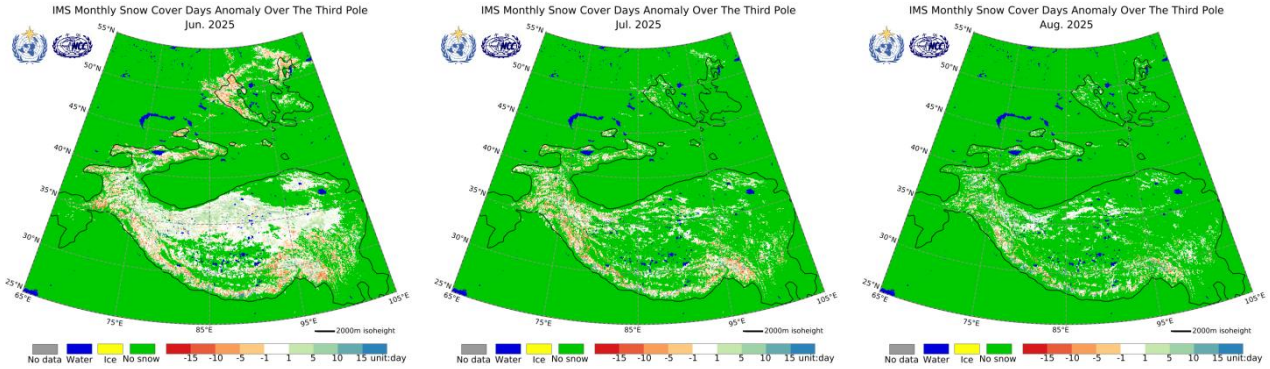


Figure 6 same as Figure 5, but for June (left), July (middle) and August (right) of 2025
Data source: IMS/NSIDC

2. High-impact Climate Events

2.1 Unusual early and intense summer monsoon

After an early onset in Kerala on 24 May 2025, the South Asian monsoon progressed rapidly through southern and western India. The southwest monsoon covered the entire India nearly two weeks ahead of schedule. Heavy rainfall from late May continued into early June, causing widespread flooding and landslides in the northeastern and eastern India. At least 50 people were killed and nearly 15000 hectares of crops were damaged across the region, according to a report by humanitarian coalition Sphere India. In August, India continued to be affected by heavy rain and floods again. On 14 August, violent cloudburst struck Kishtwar district, triggering flash floods and concomitant mudslides. The event destroyed residential structures, roadways, and community infrastructure, resulting in 61 fatalities and 300 injuries.

Between late June and mid-August 2025, Pakistan endured one of the most destructive monsoon seasons in recent decades. Heavy monsoon rains since 26 June persisting into early July triggered flash floods across Pakistan, particularly affecting Balochistan, Khyber Pakhtunkhwa, Punjab, and Sindh provinces. Due to flash floods, 79 people lost their lives and 140 others were injured nationwide. Heavy rainfall damaged at least 189 homes and resulted in the loss of around 100 head of livestock. Over 15 to19 August, a flash flood event across Khyber Pakhtunkhwa province resulted in 469 fatalities, 280 injured people, and more than 2100 damaged houses. A flood event in Sindh province over 19 to 20 August caused 52 fatalities, 52 injured people, and 87 damaged houses. Since the beginning of the monsoon season, as of 27 August, 804 fatalities, 1088 injuries, 1680 destroyed houses and 5785 damaged houses have been reported by the National Disaster Management Authority (NDMA) across the country.

2.2 Drought

The southwest monsoon reached Nepal on 29 May, approximately two weeks earlier than climatological norm. However, six weeks after its onset, large parts of Madhesh Province continued

to experience significant rainfall deficits. The lack of rainfall led to a water crisis, and the province faced an unexpected drought. Water sources dried up and the groundwater table was depleted, creating a critical shortage of drinking water and affecting agricultural irrigation. As a result of these water shortages, farmers were unable to transplant paddy saplings. The drought left seedbeds dry and paddy saplings withered, raising fears of an impending food shortage in Nepal's primary rice-producing region. According to a decision made by the Federal Government on 23 July 2025, all 136 municipalities across the eight districts of Madhesh Province were officially declared drought-affected areas.

2.3 Heatwave

Monitoring data indicate that in June, persistent high-temperatures affected eastern and southern Central Asia, and northern South Asia. The number of days with daily maximum temperatures at or above 40 ℃ ranged from 10 to 20, with some areas experiencing over 25 such days. In July, prolonged high-temperature weather was noted across southern Central Asia and northern Pakistan. In August, elevated temperatures persisted in southern Central Asia and Pakistan, with daily maximum temperatures exceeding 40 ℃ in many locations and locally surpassing 45 ℃.

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