



**National Disaster
Management Authority**
Government of Pakistan

SAFER PAKISTAN | RESILIENT TOMORROW

PEOPLE
PREPAREDNESS
PARTNERSHIP
RESILIENCE

DISASTER EARLY WARNING 4 2026

DEW - 4 | OCTOBER – DECEMBER 2026

SEASONAL OUTLOOK AND RISK ASSESSMENT
FOR PAKISTAN



SNOWFALL
& AVALANCHES



LANDSLIDES



CYCLONES &
COASTAL HAZARDS



FLOODING
(RESIDUAL)



DROUGHT &
WATER STRESS



FOG, SMOG
& COLD WAVES



PEOPLE



PREPAREDNESS



PARTNERSHIP



RESILIENCE

NATIONAL EMERGENCY OPERATIONS CENTER (NEOC)
NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)
ISLAMABAD, PAKISTAN

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EXECUTIVE SUMMARY

The Disaster Early Warning (DEW-4) Outlook for October–December 2026 indicates a predominantly warm seasonal background, shaped by a high-confidence El Niño state persisting through October–December and a positive Indian Ocean Dipole (IOD) expected to peak near +1.0°C in October. These large-scale climate drivers, together with an active sequence of western disturbances, are expected to influence Pakistan's temperature, precipitation and associated hazard patterns during the quarter.

October and November are likely to experience increased activity of western disturbances over northern Pakistan, with precipitation anomalies of approximately +40 to +70 mm, particularly affecting the northern and northwestern highlands. Activity is expected to weaken in December, while a strengthening Siberian High from late November may increase the likelihood of episodic cold-air outbreaks and accelerate the transition toward winter conditions.

Temperature projections indicate normal to above-normal temperatures across most of Pakistan throughout the quarter, with the strongest positive anomalies expected over western Balochistan, upper Sindh and the Punjab plains. The seasonal transition to cooler autumn and early-winter conditions is likely to be delayed, although increasing cold spells may emerge toward late November and December.

A pronounced north–south precipitation gradient is expected. Northern KP, Gilgit-Baltistan, AJK and Potohar are likely to receive normal to above-normal rainfall during October and November, while northern Balochistan may also experience a wetter signal in November. In contrast, Sindh, southern Punjab and southern Balochistan are expected to remain near normal to slightly below normal, increasing the potential for localized moisture deficits. By December, precipitation is expected to remain near normal nationally, with a modest wet signal concentrated primarily over northern Pakistan.

Overall, the DEW-4 outlook points to a transition from autumn rainfall and rainfall-triggered hazards in the north during October–November toward increasing winter, snow, freeze–thaw and cold-weather risks in December. The combination of above-normal temperatures, episodic western disturbances and subsequent winter transitions warrants continued monitoring of landslides, avalanches, snowfall, road disruption, cold waves, smog/fog, cyclones, drought period and water-resource conditions, particularly across the mountainous north and major transportation corridors.

1. **Large Scale Climate Drivers.** The following climatic drivers generally enhance rainfall over the Bay of Bengal, eastern India, Bangladesh, Nepal, and Sri Lanka, while western South Asia (Pakistan, NW India) shows near normal metrological patterns.

a. **El Niño–La Niña Southern Oscillation (ENSO).** The model ensemble assigns nearly 100% probability to El Niño conditions during OND this therefore represents a high-confidence El Niño background state, with the Niño-3.4 region expected to remain above the neutral threshold (-0.5°C to $+0.5^{\circ}\text{C}$). For Pakistan, this ENSO signal should be treated as an important large-scale climate driver.

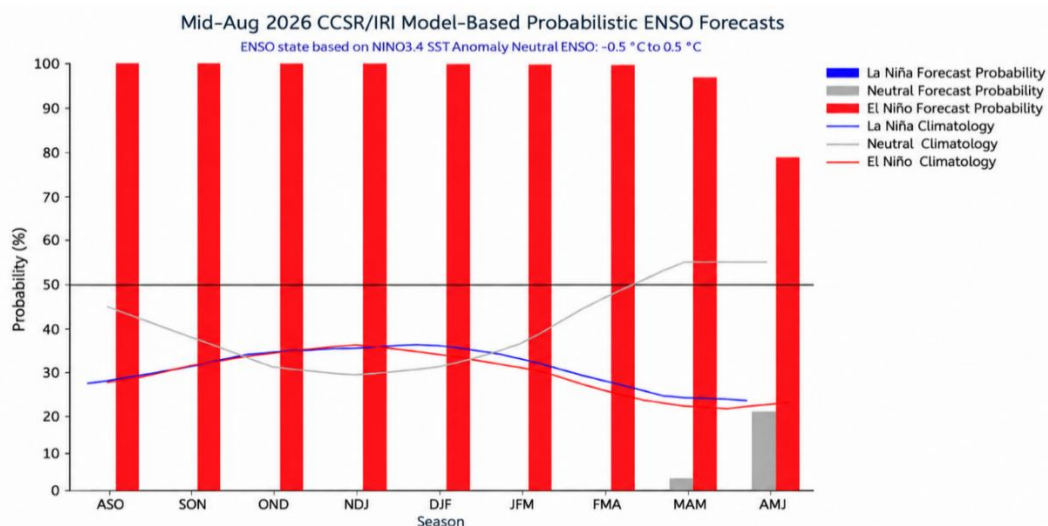


Figure 1. Probabilistic ENSO forecast, showing a near-certain El Niño signal from ASO through AMJ, with the strongest implications for the October–December (OND) 2026 period

Source: International Research Institute for Climate and Society (IRI), Columbia University

b. **Indian Ocean Dipole (IOD).** A positive IOD is expected to develop during the autumn season, with the signal peaking around October at approximately $+1.0^{\circ}\text{C}$. The positive IOD may reinforce the El Niño-related suppression of convection over parts of the eastern Indian Ocean while modifying moisture transport towards the western Indian Ocean and Arabian Sea. For Pakistan, this may contribute to near-normal rainfall overall but enhanced variability, particularly when combined with western disturbances and favourable moisture transport.

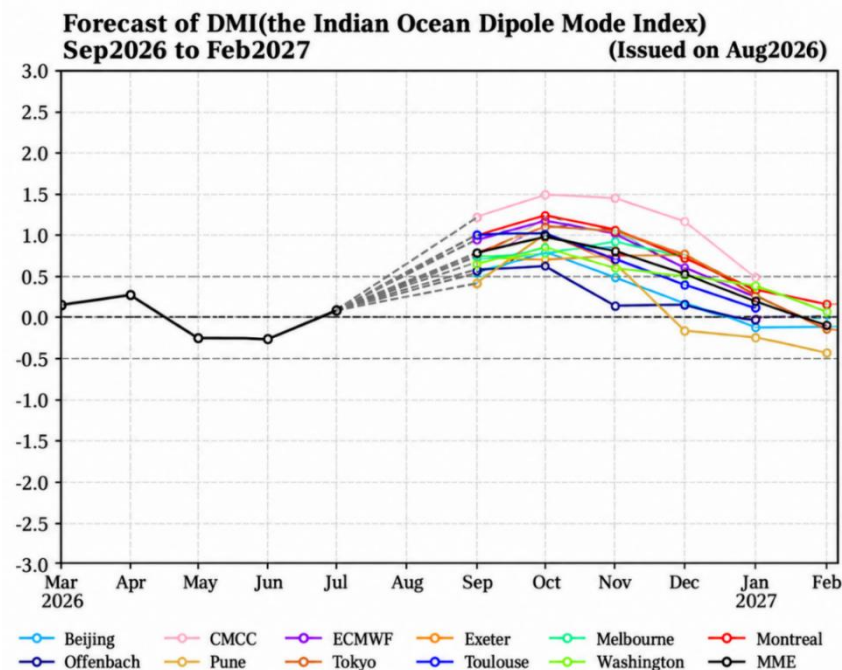


Figure 2. Multi-model forecast of the Indian Ocean Dipole (DMI) for September 2026–February 2027

Source: WMO Lead Centre for Long-Range Forecast Multi-Model Ensemble (LC-LRFMME)

c. **Western Disturbances.** The forecast indicates an active sequence of western disturbances during October–November 2026, associated with substantially above-normal precipitation anomalies of approximately +40 to +70 mm over northern Pakistan. The activity is expected to weaken during December, with anomalies declining to around +5 to +10 mm, suggesting a transition toward near-normal to slightly wetter-than-normal winter precipitation conditions. Overall, the OND outlook points to enhanced precipitation potential in northern Pakistan during October and November, followed by a marked reduction in disturbance-related rainfall during December.

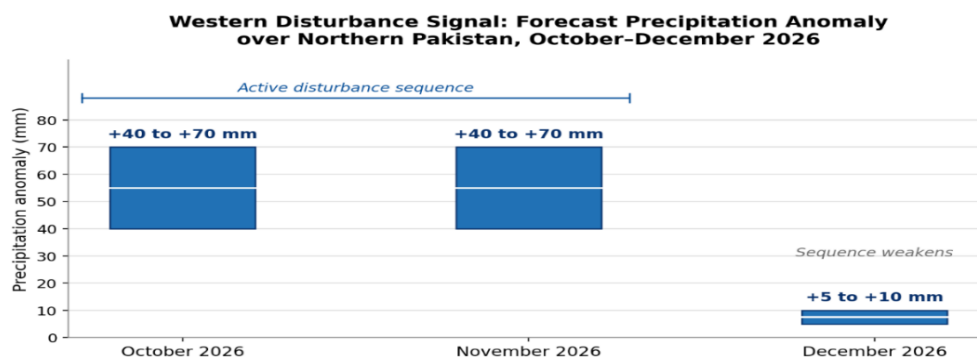


Figure 3. Forecast precipitation anomaly associated with western disturbance activity over northern Pakistan during October–December 2026

Source: National Emergency Operations Centre (NEOC), NDMA (derived from seasonal model anomaly fields)

d. **Siberian High.** The Siberian High is expected to progressively strengthen from late November into December as continental cooling increases across Eurasia. Its strengthening will favour the southward transport of cold continental air into northern and central South Asia. For Pakistan, this may result in sharp but episodic temperature reductions, cold-wave conditions and increased thermal contrasts between continental air and approaching western disturbances, particularly during December.

e. **North Atlantic Oscillation (NAO).** The NAO will remain an important modulator of the European–Eurasian circulation and western-disturbance pathway during late autumn and winter. Variations in the NAO phase can alter the strength, amplitude and southward penetration of the subtropical westerly jet. A favourable negative-NAO/blocked circulation configuration may support more meridional flow and deeper western disturbances into Pakistan, increasing the likelihood of rainfall and snowfall over the Hindu Kush–Karakoram–Himalaya (HKH), northern KP, GB and AJK.

f. **Subtropical Jetstream (STJS).** The Subtropical Westerly Jet Stream will progressively strengthen and shift southward from October into December, increasing the influence of western disturbances over Pakistan and the western Himalaya. During October, residual monsoon circulation may still interact with upper-level westerlies, while during November–December the STJ and western disturbances are expected to become the dominant source of precipitation over northern and western Pakistan.

2. **Global DEW.** During October–December 2026, South Asia's climate is expected to be dominated by a very strong El Niño and positive IOD configuration, with additional modulation from MJO activity, the subtropical westerly jet, western disturbances, NAO and Eurasian continental circulation. The broader regional signal favours above-normal temperatures and comparatively suppressed/variable rainfall across much of South Asia, although significant spatial differences are expected. WMO's latest guidance indicates above-normal temperatures across almost all land areas and a pronounced El Niño-related rainfall pattern. For Pakistan, the model guidance supplied for this assessment indicates a near-normal to slightly below-normal rainfall tendency during October, a more mixed pattern with enhanced rainfall potential over northern Pakistan during November, and generally near-normal rainfall

during December, with precipitation becoming increasingly dependent on western disturbances. The temperature signal is consistently above normal across Pakistan, with the strongest positive anomalies becoming more evident over northern and western parts during November–December in the supplied model guidance.

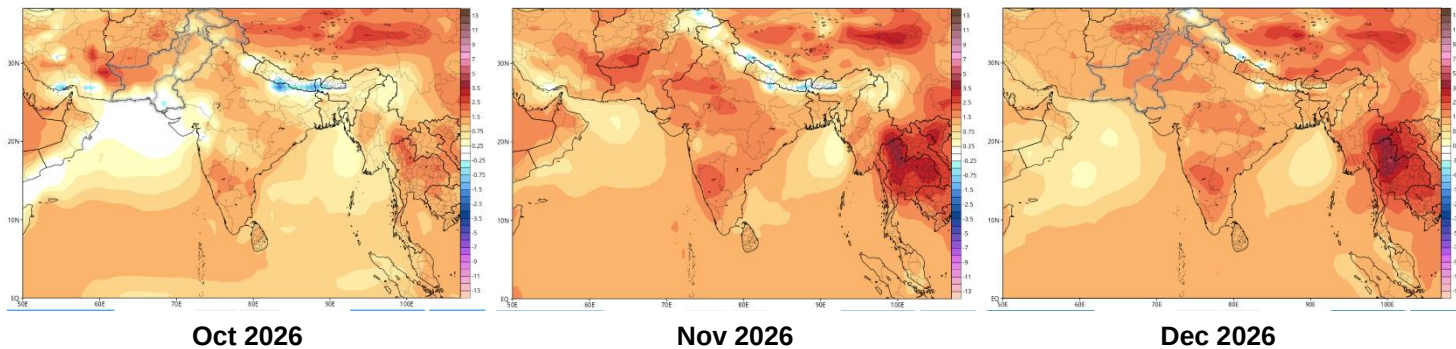


Figure 4. Temperature projections (Oct-Nov-Dec 2026), CFS model

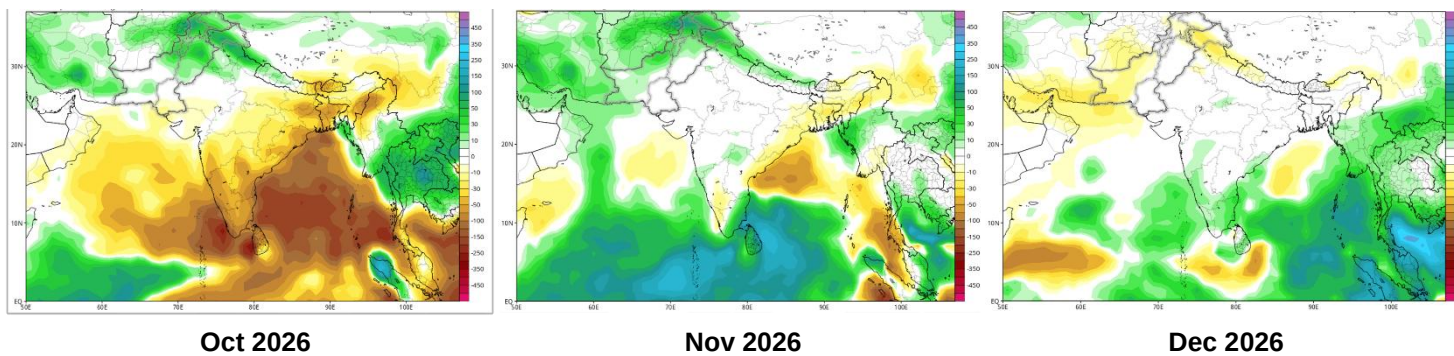


Figure 5. Precipitation projections (Oct-Nov-Dec 2026), CFS model

3. **National Meteorological Outlook October-November-December (OND)**

a. **Historical Analysis Precipitation (October 2020-2025)**

- (1) October marks the transition from the summer monsoon to the winter precipitation regime.
- (2) Northern Pakistan—upper KP, northern Punjab, AJK and GB—receives most rainfall.
- (3) Sindh, southern Punjab most of Balochistan generally remain dry.
- (4) High interannual variability: October 2020 was exceptionally dry, while 2021 was notably wet, with localized totals near 280 mm.
- (5) 2022–2025: rainfall was generally moderate, with northern Pakistan recording localized peaks of 120–140 mm.
- (6) Rainfall is episodic and spatially uneven, with a strong north–south gradient.
- (7) Early October: residual monsoon influence; late October: increasing influence of western disturbances (WDs).

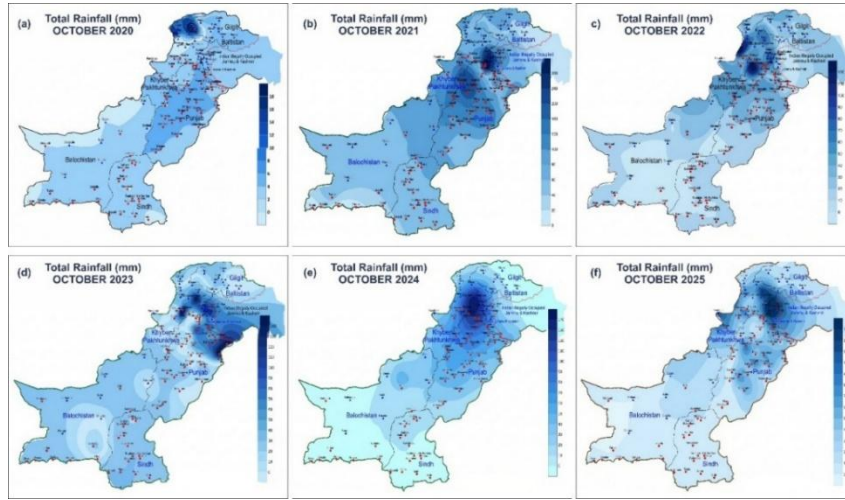


Figure 6. Spatial distribution of total rainfall during October 2020–2025

b. **Historical Analysis Temperature (October 2020-2025)**

- (1) Persistent north–south gradient: Sindh, southern Punjab and southeastern Balochistan remain hottest; northern KP, AJK and GB are much cooler.
- (2) Central Pakistan generally experiences intermediate temperatures.
- (3) High year-to-year variability, but with an overall warming tendency during October.
- (4) 2020–2021: comparatively cooler; 2022–2025: generally warmer.
- (5) October 2024: most pronounced warmth, reaching 36–39°C in parts of Sindh and 30–36°C across parts of Balochistan.
- (6) Post-monsoon cooling is increasingly delayed, particularly across southern Pakistan. This may increase heat and evapotranspiration stress during October.

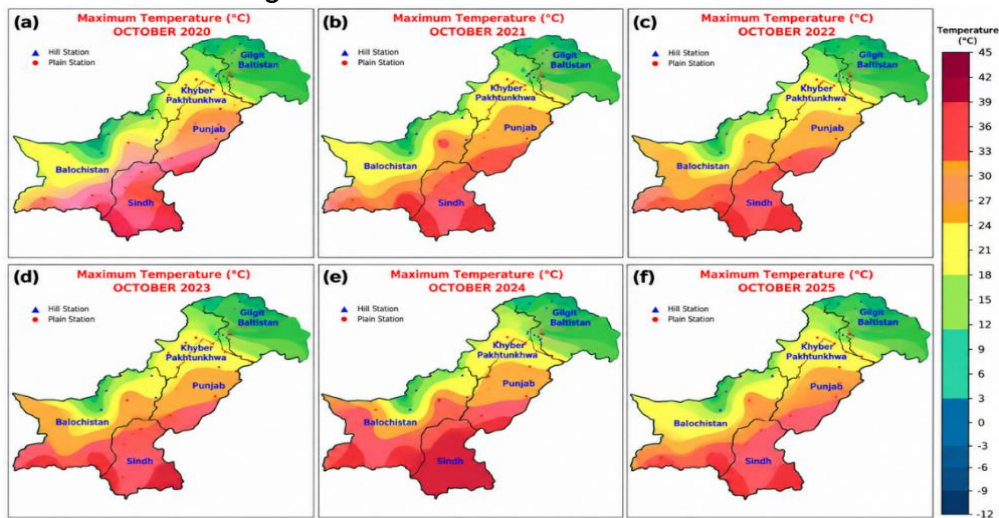
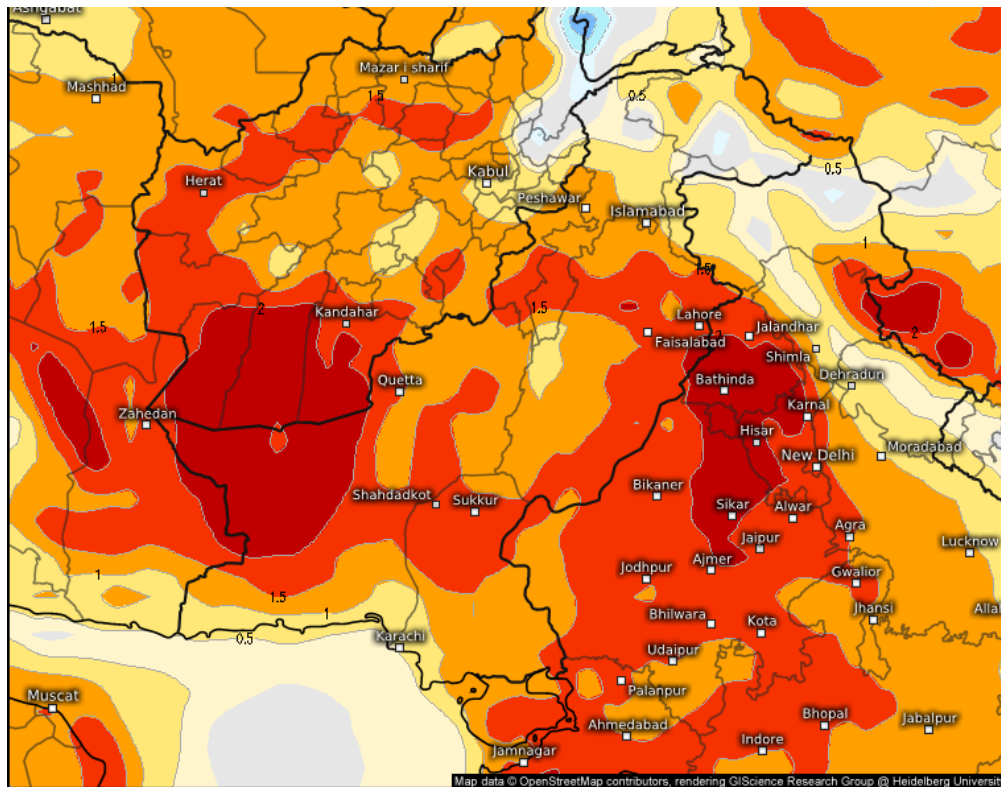


Figure 7. Spatial distribution of maximum temperatures during October 2020–2025

c. **National Meteorological Outlook for October 2026**

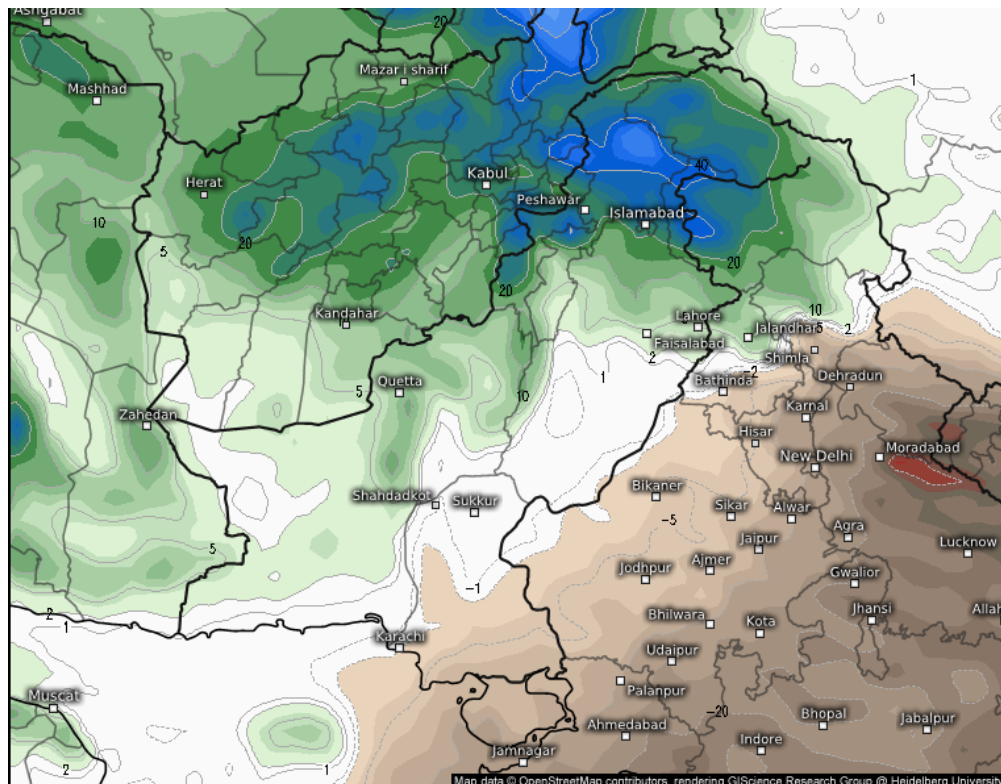
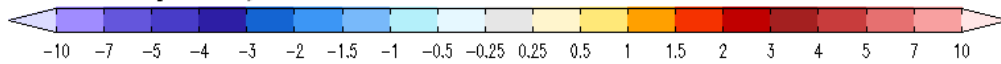
(1) **Temperature.** For October 2026, various model consensus indicates predominantly normal to above-normal conditions, with the strongest positive departures concentrated in western and southern interior regions around Quetta, Sukkur, and adjacent areas near the Afghan border, where anomalies may reach several degrees Celsius above the long-term average. Northern cities including Islamabad, Peshawar, and Lahore are also projected to experience warmer-than-average temperatures, though the signal is somewhat less intense than farther west and southwest. Overall, this points to a normal to slightly above normal October across much of the country, with reduced early-season coolness and potentially elevated daytime heat in the areas of highest anomaly.

(2) **Precipitation.** For October 2026, various model consensus indicates a clear north-south contrast, with northern regions around Peshawar, Islamabad, and the adjacent highlands expected to receive above-normal rainfall, while central and western areas near Quetta show mildly wetter-than-average conditions. In contrast, southern Pakistan, including the lower Indus plains around Sukkur and Karachi, is projected to experience near-normal to slightly below-normal precipitation. Overall, this points to a wetter-than-average October in the north and a predominantly dry or typical autumn pattern farther south.



Anomaly temperature (K=°C)

Valid for
october 2026



Anomaly monthly precipitation (mm)

Valid for
october 2026

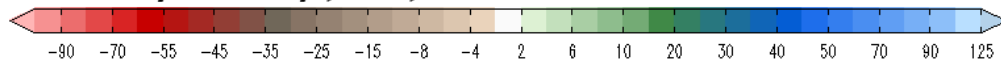
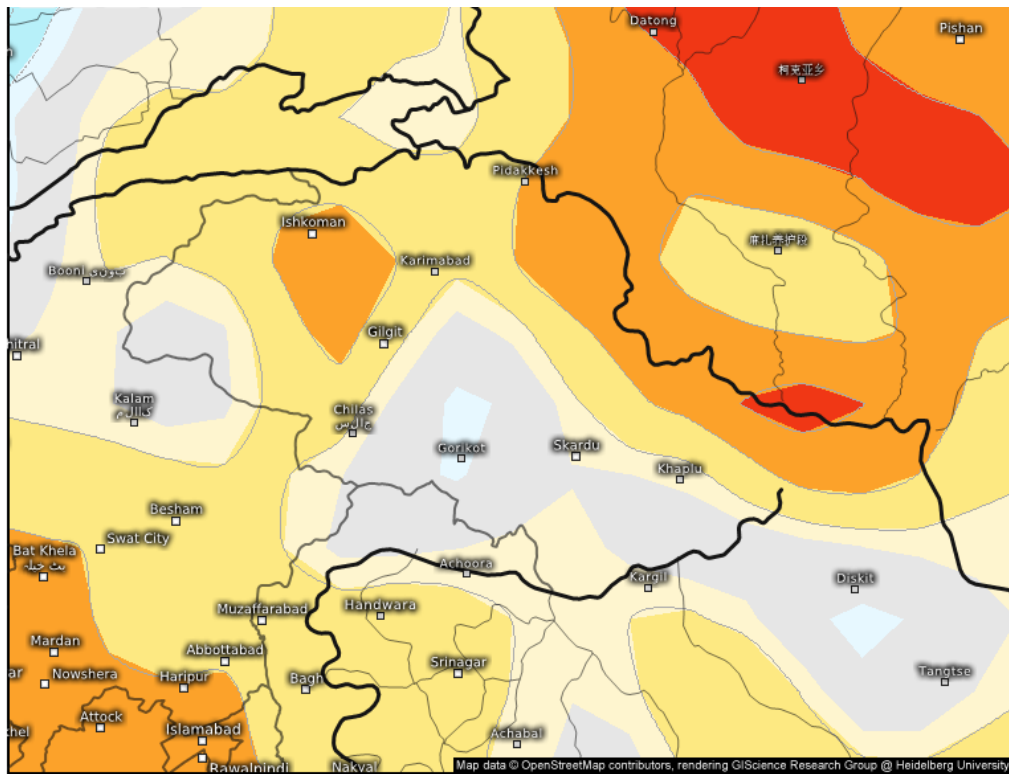


Figure 8. National temperature and precipitation anomalies for October 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(3) **GB & AJK - October 2026**

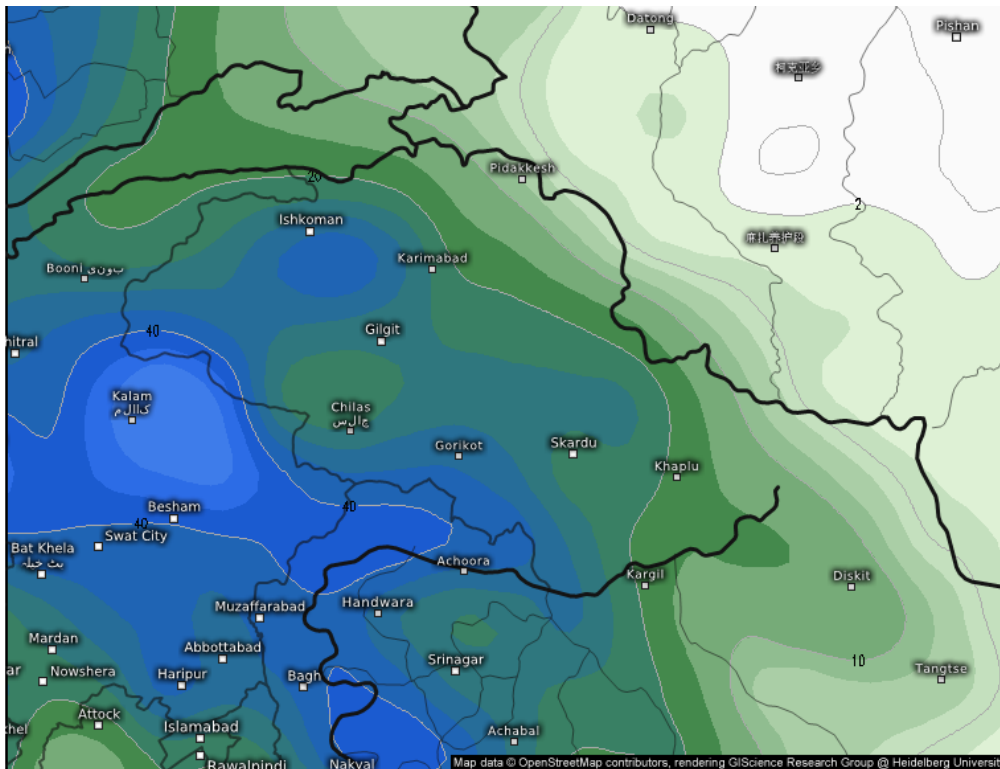
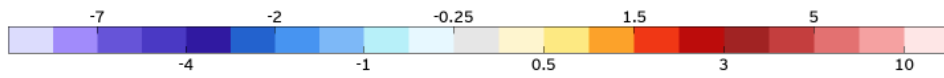
(a) **Temperature.** For Gilgit-Baltistan and Azad Jammu & Kashmir in October 2026, various model consensus indicates normal to milder-than-average conditions, with Gilgit-Baltistan including Diamir, Gilgit, Chilas, and Skardu showing the clearer warm signal of roughly, while in Azad Jammu & Kashmir Muzaffarabad and surrounding areas are projected to remain nearer normal to only slightly above average. Overall, this points to a relatively mild start to autumn across both regions, with reduced early-season coolness in the main valleys compared with the long-term average.

(b) **Precipitation.** For Gilgit-Baltistan and Azad Jammu & Kashmir in October 2026, various model consensus indicates normal to above-normal rainfall across both regions, with the strongest wet signal concentrated over AJK including Neelum Valley, Muzaffarabad, Bagh, Kotli and surrounding districts) and western GB valleys such as Ghanche, Darel, Tangir, and adjoining areas. Overall, this points to a wetter-than-average October for the northern highlands, with enhanced shower activity compared with the typical post-monsoon pattern under the influence of Western Disturbance.



Anomaly temperature (K=°C) ⓘ

Valid for
October 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
October 2026

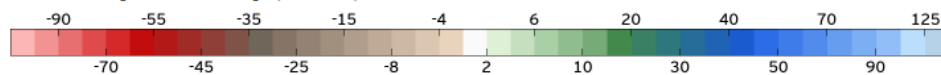
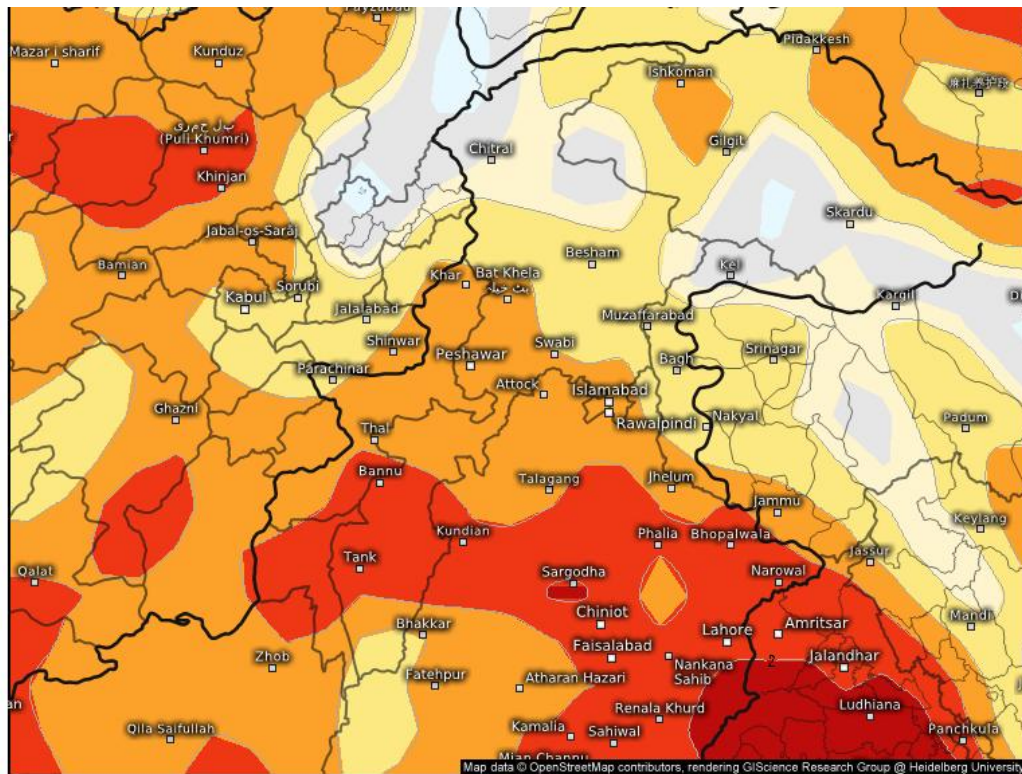


Figure 9. GB & AJK temperature and precipitation anomalies for October 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(4) **KP - October 2026**

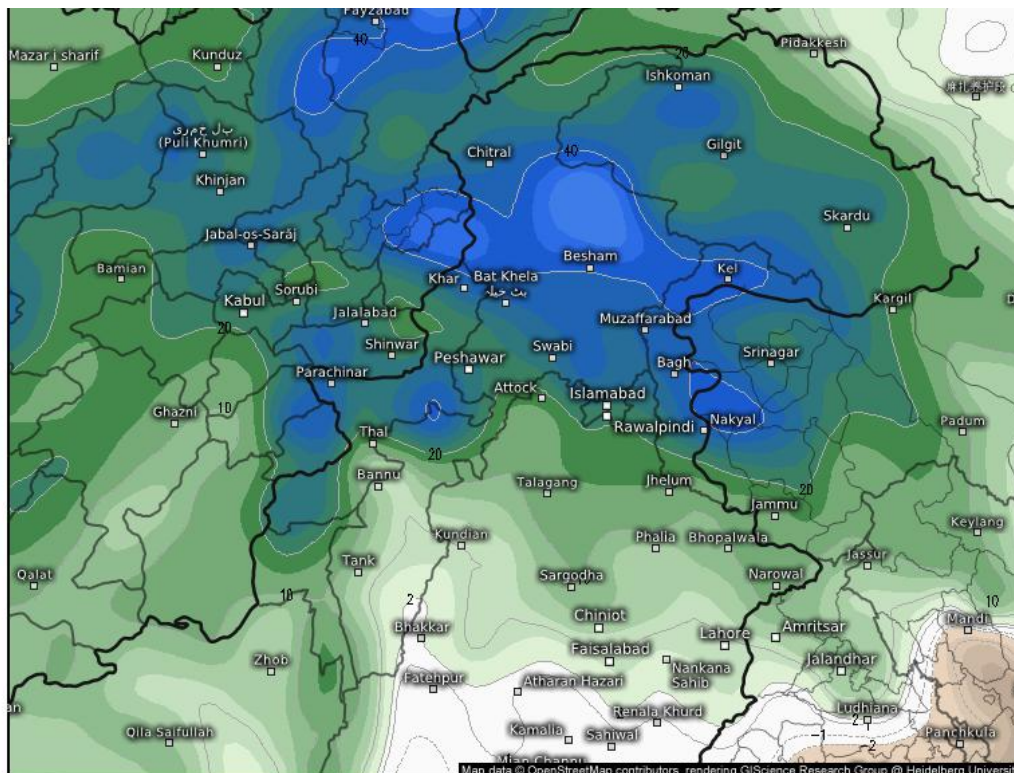
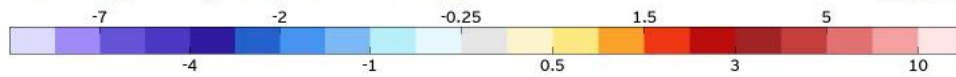
(a) **Temperature.** For Khyber Pakhtunkhwa in October 2026, various model consensus indicates predominantly above-normal conditions, with the strongest warm departures concentrated over the southern districts around Bannu and Tank, moderate positive anomalies over the central plains including Peshawar and Mardan, and milder or near-normal signals in the northern highlands such as Chitral. Overall, this points to a milder-than-average October across the province, with a delayed transition to cooler autumn weather especially in the south and center.

(b) **Precipitation.** In October 2026, various model consensus indicates normal to above-normal rainfall across most of the province, with the strongest wet signal concentrated over the northern and central regions including Chitral, Dir, Swat, and areas around Peshawar, while southern districts such as Bannu and Tank show more moderate positive anomalies. Overall, this points to a wetter-than-average October for KP, with enhanced shower activity compared with the typical post-monsoon pattern under the influence of Western Disturbance.



Anomaly temperature (K=°C)

Valid for
October 2026



Anomaly monthly precipitation (mm)

Valid for
October 2026

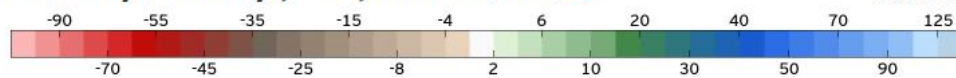
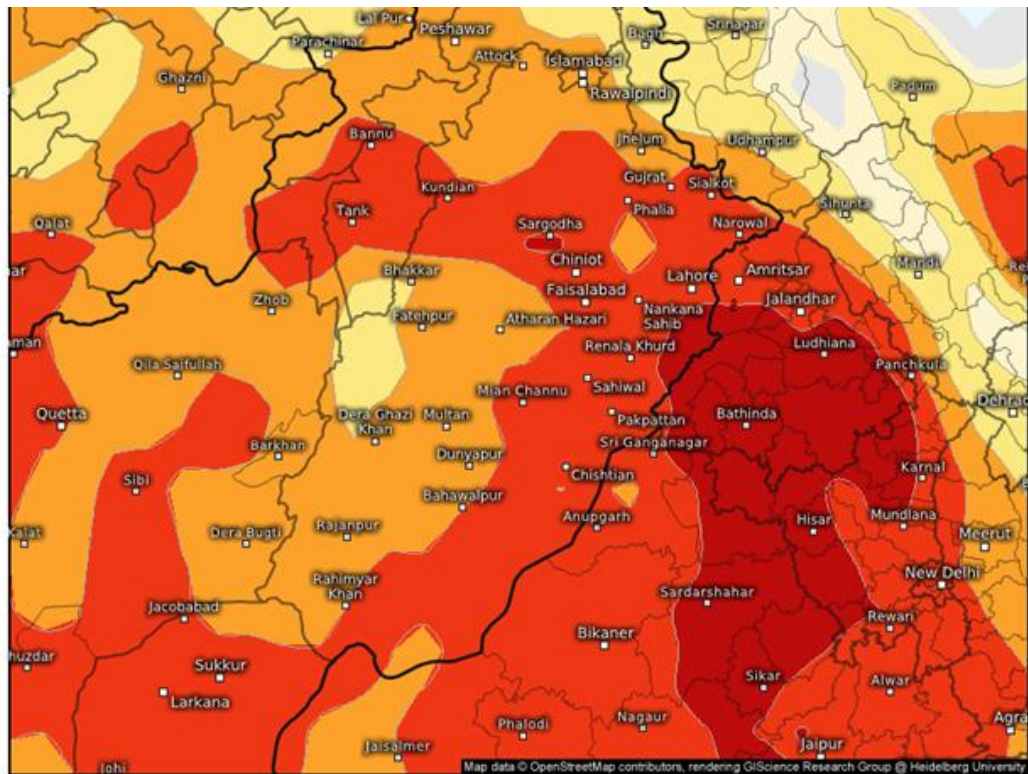


Figure 10. KP temperature and precipitation anomalies for October 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(5) **Punjab - October 2026**

(a) **Temperature.** For Punjab in October 2026, various model consensus indicates predominantly above-normal conditions across the province, with the strongest warm departures concentrated over the central and eastern plains including Lahore, Faisalabad, and Sargodha, while southern and western districts such as Multan, Bahawalpur, and Dera Ghazi Khan also show clear positive anomalies. Overall, this points to a notably milder-than-average October, with a delayed transition to cooler autumn weather across most of Punjab.

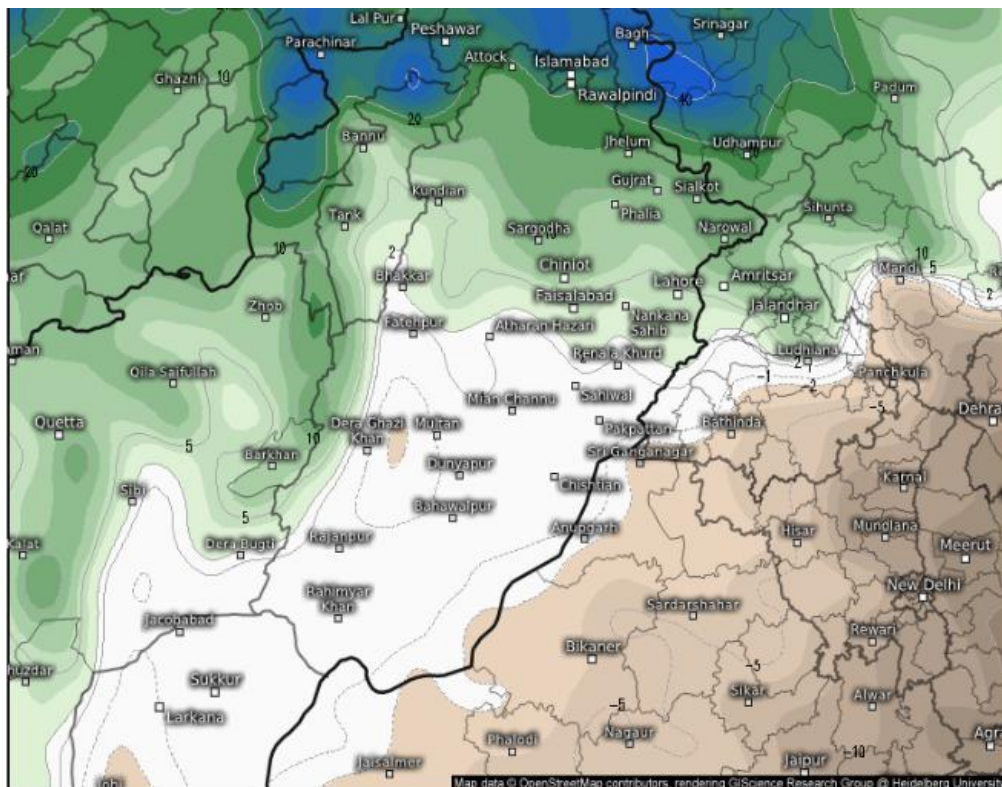
(b) **Precipitation.** For Punjab in October 2026, various model consensus indicates a clear north–south contrast, with northern districts and the Potohar region around Rawalpindi, Islamabad, and Jhelum expected to receive normal to above-normal rainfall, while central and southern plains including Lahore, Faisalabad, Multan, and Bahawalpur are projected to remain near normal. Overall, this points to a relatively typical dry October across most of the province, with enhanced shower activity largely limited to the north.



Anomaly temperature (K=°C)



Valid for
October 2026



Anomaly monthly precipitation (mm)



Valid for
October 2026

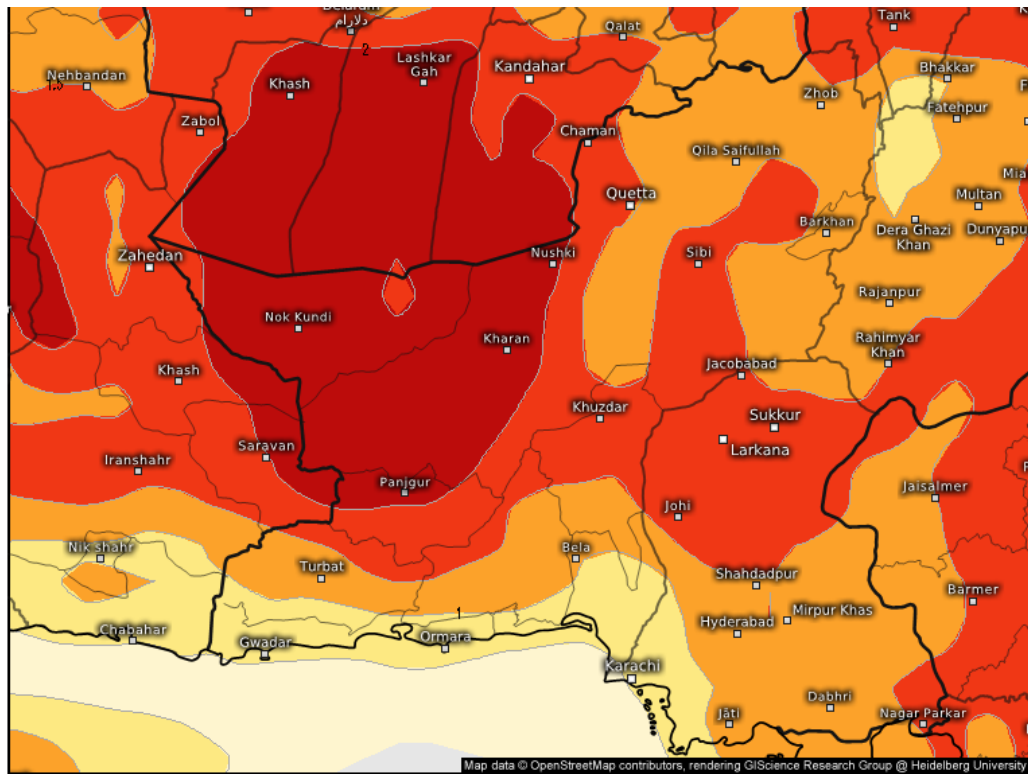


Figure 11. Punjab temperature and precipitation anomalies for October 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(6) **Balochistan - October 2026**

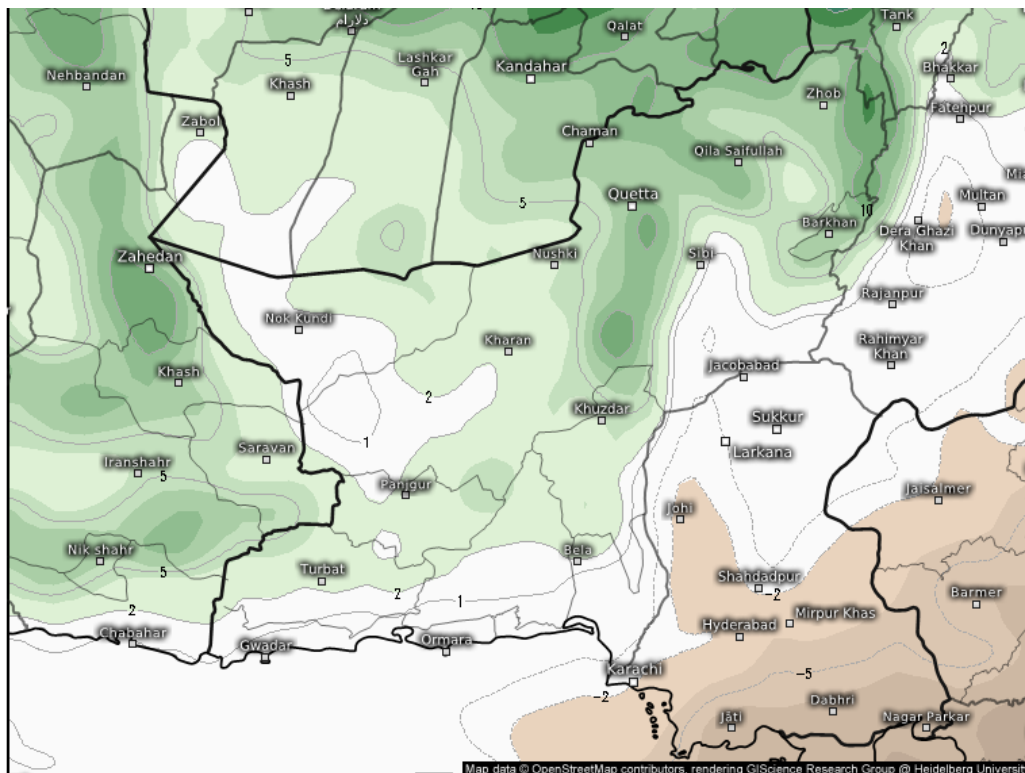
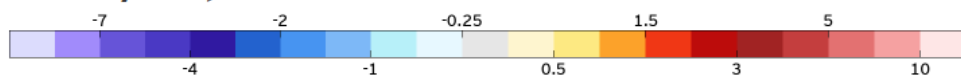
(a) **Temperature.** In October 2026, various model consensus indicates predominantly normal to above-normal conditions, with the strongest warm departures concentrated over the central and western interior including Nok Kundi, Kharan, Dalbandin, and Panjgur, while eastern districts and areas around Quetta also show clear positive anomalies, and the southern coastal belt remains only mildly warmer. Overall, this points to a notably milder-than-average October across most of the province, with a delayed transition to cooler autumn weather especially in the interior.

(b) **Precipitation.** For Balochistan in October 2026, various model consensus indicates near-normal to mildly above-normal conditions across the province, with slight positive anomalies over the northern and northeastern areas around Quetta and Zhob, while the central interior and southern coastal regions including Nok Kundi, Kharan, Panjgur, Turbat, and Gwadar are projected to remain close to the seasonal average. Overall, this points to a predominantly dry October consistent with typical climatology, with only limited enhancement of rainfall in the north.



Anomaly temperature (K=°C) 

Valid for
October 2026



Anomaly monthly precipitation (mm) 

Valid for
October 2026

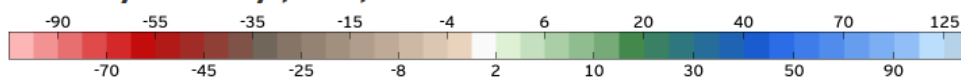
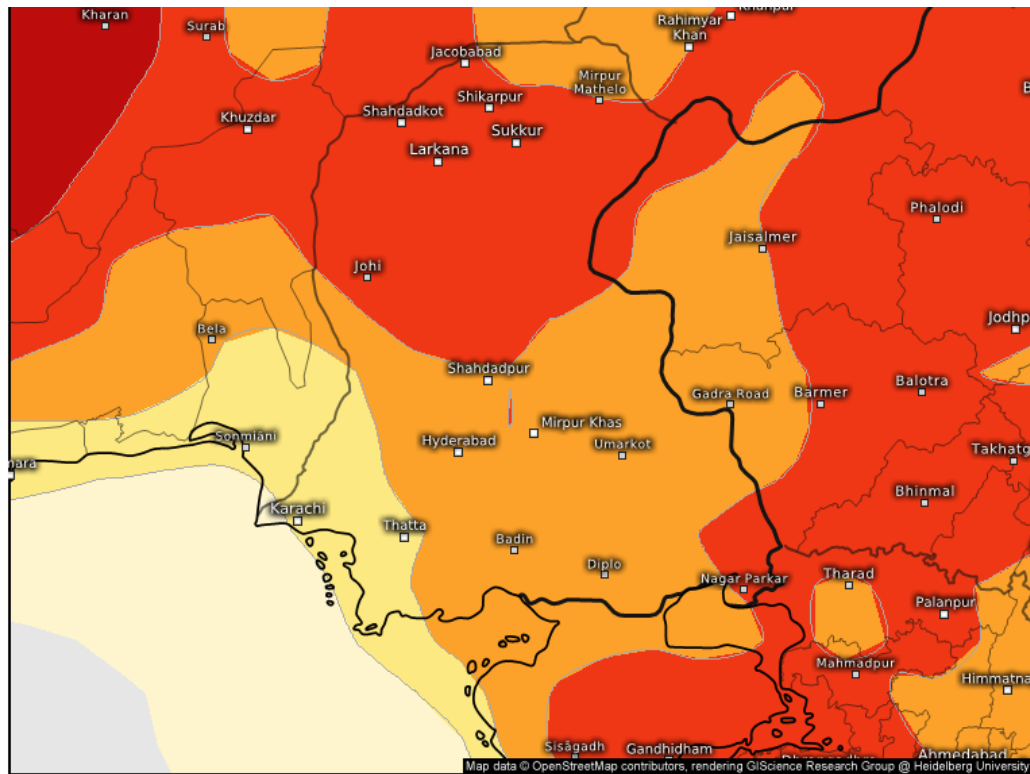


Figure 12. Balochistan temperature and precipitation anomalies for October 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(7) **Sindh - October 2026**

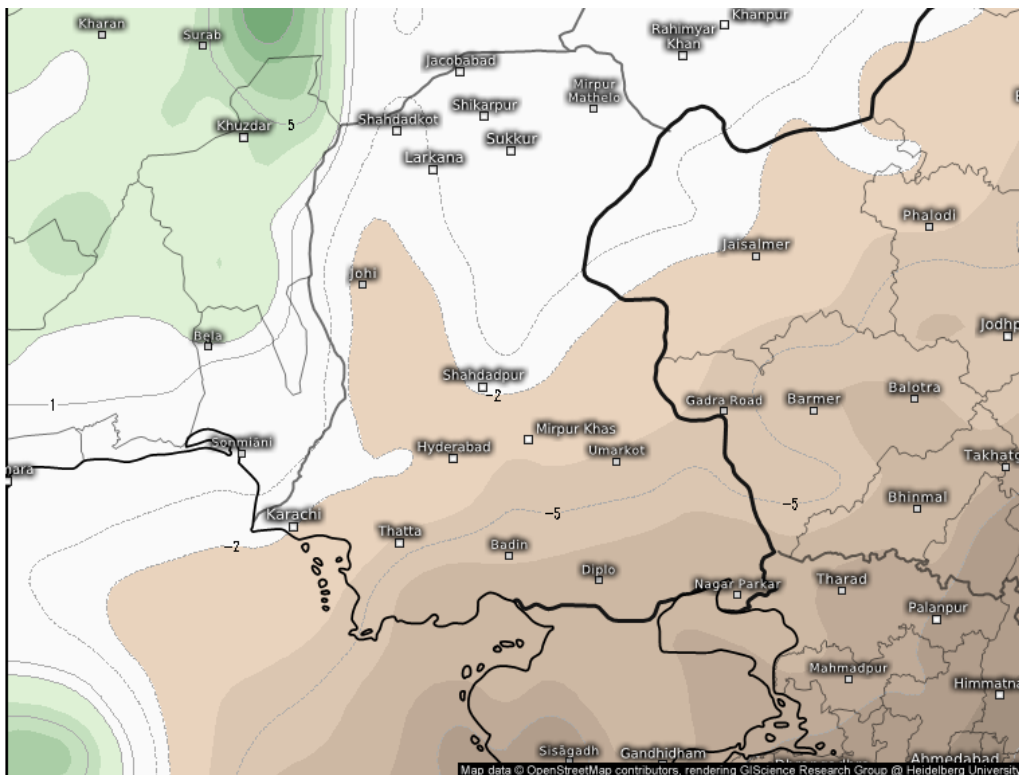
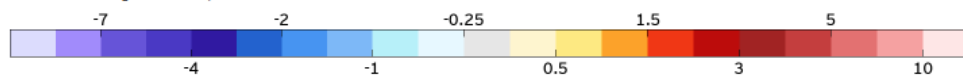
(a) **Temperature.** For Sindh in October 2026, various model consensus indicates predominantly above-normal conditions, with the strongest warm departures concentrated over the northern districts including Jacobabad, Sukkur, and Larkana, moderate positive anomalies across central areas such as Hyderabad and Mirpur Khas, and milder departures along the southern coastal belt around Karachi. Overall, this points to a warmer-than-average October across the province, with a delayed transition to cooler autumn weather especially in the interior and north.

(b) **Precipitation.** For Sindh in October 2026, various model consensus indicates near-normal to slightly below-normal conditions across the province, with most northern and central districts including Jacobabad, Sukkur, Larkana, and Hyderabad projected to remain close to the seasonal average, while southern areas such as Thatta and Badin show mild negative anomalies. Overall, this points to a predominantly dry October consistent with typical post-monsoon climatology, with no significant rainfall enhancement expected.



Anomaly temperature (K=°C) ⓘ

Valid for
October 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
October 2026

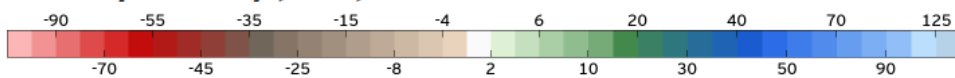


Figure 13. Sindh temperature and precipitation anomalies for October 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

d. **National Meteorological Outlook for November**

(1) **Historical Analysis Precipitation (November 2020-2025)**

(a) Rainfall distribution: November rainfall is concentrated over upper KP, northern Punjab, Potohar, AJK and GB due to Western Disturbances and orographic effects.

(b) Dry regions: Sindh, southern Punjab and most of Balochistan generally receive negligible rainfall.

(c) High variability: November rainfall varies considerably from year to year.

(d) Wettest year: November 2020 recorded localized rainfall exceeding 180 mm over northern KP.

(e) Driest year: November 2021 saw very limited rainfall, with maxima of only 20–25 mm.

(f) Intermediate years: Rainfall maxima generally ranged between 65–150 mm, mainly over upper KP and northern Punjab.

(g) Seasonal significance: November marks the transition to the winter precipitation regime, supporting early snow accumulation and water-resource recharge in northern Pakistan.

(h) Overall trend: Rainfall remains highly localized and strongly dependent on the frequency and intensity of Western Disturbances.

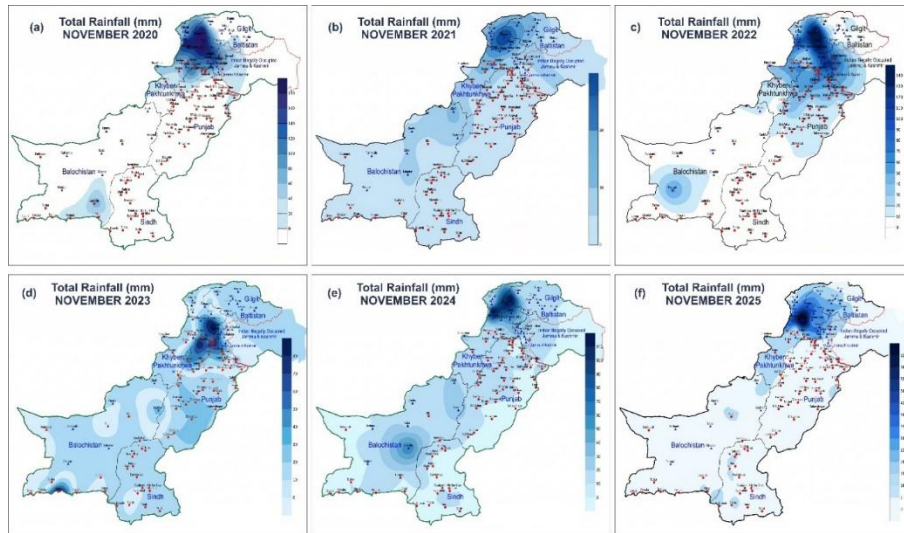


Figure 14. Spatial distribution of total rainfall during November 2020–2025
Source: Pakistan Meteorological Department (PMD) observed data; NEOC, NDMA analysis

(2) **Historical Analysis Temperature (November 2020-2025)**

- (a) Temperature gradient: November maximum temperatures range from 30–36°C in Sindh and southeastern Balochistan to 12–18°C in northern KP and GB.
- (b) Intermediate zones: Central/southern Punjab and interior Balochistan experience moderate temperatures.
- (c) Stable pattern: The north–south gradient is driven by latitude, elevation and seasonal cooling.
- (d) Warming tendency: Southern and central Pakistan showed generally warmer conditions during 2021–2025.
- (e) Warmest year: November 2024 recorded the most extensive warm conditions, with temperatures reaching 33–36°C across much of Sindh.

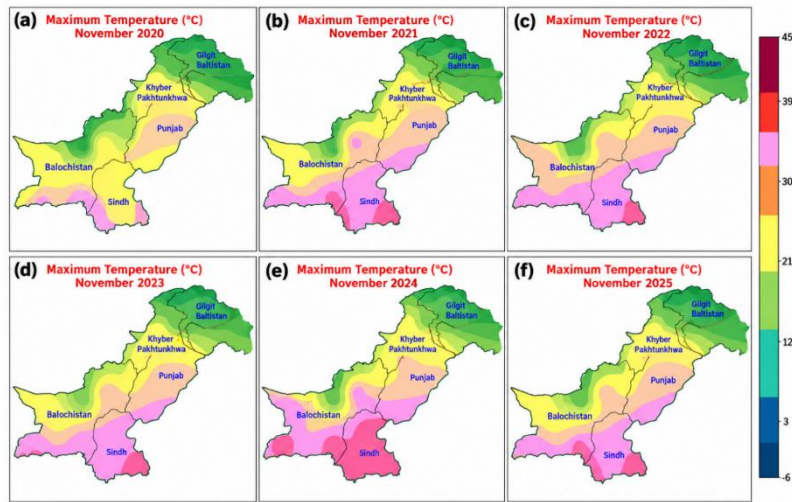


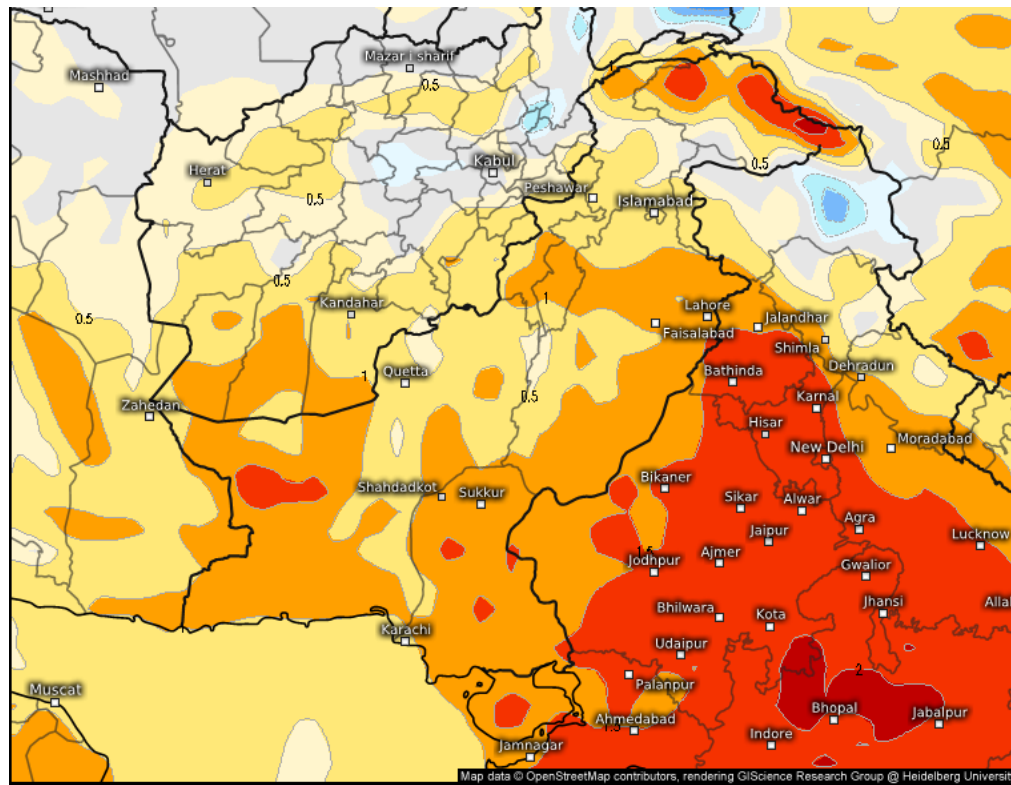
Figure 15. Spatial distribution of maximum temperatures during November 2020–2025

Source: Pakistan Meteorological Department (PMD) observed data; NEOC, NDMA analysis

(3) **National Meteorological Outlook for November 2026**

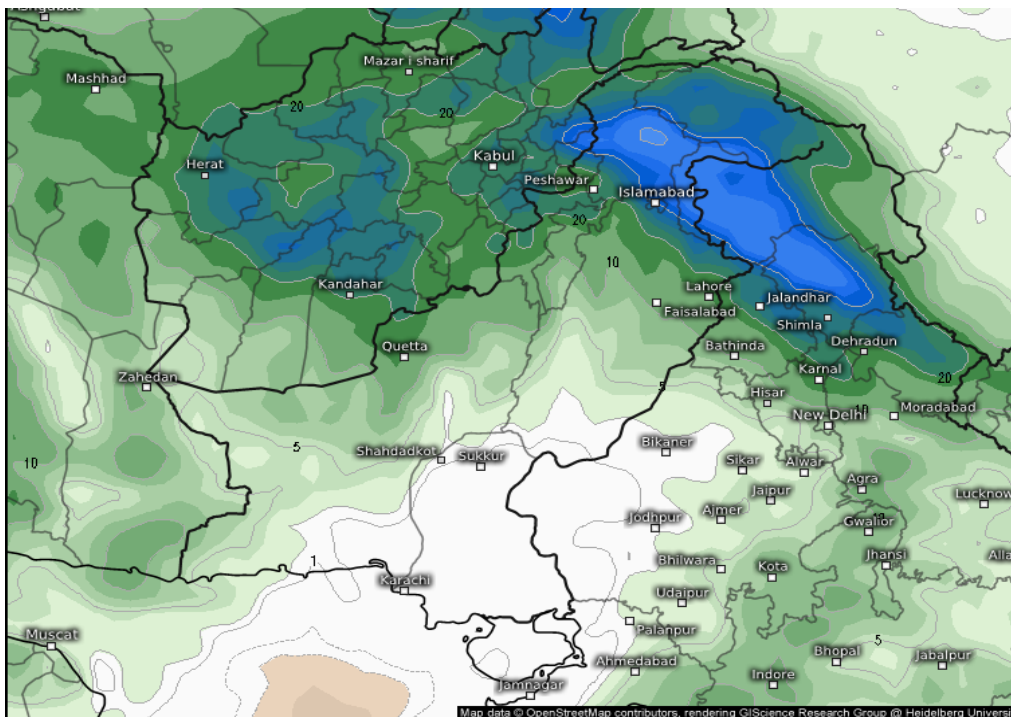
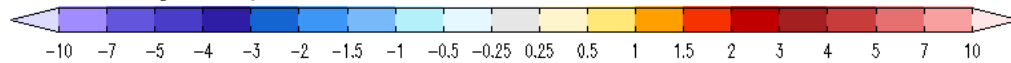
(a) **Temperature.** For November 2026, various model consensus indicates predominantly above-normal conditions, with the strongest warm departures concentrated over the eastern plains around Lahore and Faisalabad. Western and southern regions, including Quetta, Sukkur, Karachi, and surrounding areas are projected to experience milder positive anomalies, remaining closer to the seasonal average. Overall, this points to a normal to milder-than-normal start to the winter season across much of the country, with reduced early-season cooling especially in the east.

(b) **Precipitation.** For November 2026, various model consensus indicates a clear north-south contrast, with northern regions around Islamabad, Peshawar, and the adjacent highlands expected to receive normal to above-normal rainfall. Western and central areas near Quetta indicate normal to mildly wetter-than-average conditions, while southern Pakistan, including the lower Indus plains around Sukkur and Karachi, is projected to remain near normal. Overall, this points to a normal to wetter-than-average November in the north and a predominantly normal to dry pattern farther south.



Anomaly temperature (K=°C)

Valid for
November 2026



Anomaly monthly precipitation (mm)

Valid for
November 2026

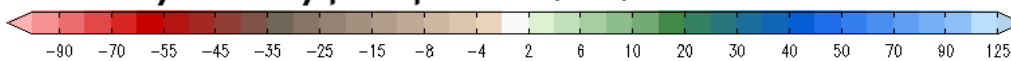


Figure 16. National temperature and precipitation anomalies for November 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(4) **GB & AJK - November 2026**

(a) **Temperature.** For Gilgit-Baltistan and Azad Jammu & Kashmir in November 2026, various model consensus indicates normal to slightly milder-than-average conditions over much of GB, with the strongest warm departures concentrated in the central and eastern valleys around Skardu, Khaplu, and Gilgit, while Azad Jammu & Kashmir is projected to remain near normal to only slightly above average. Overall, this points to a relatively mild start to early winter in GB with reduced coolness in the main valleys, and more typical seasonal cooling across AJK.

(b) **Precipitation.** For Gilgit-Baltistan and Azad Jammu & Kashmir in November 2026, various model consensus indicates substantially normal to above-normal rainfall across both regions, with the strongest wet signal concentrated over AJK including Muzaffarabad and surrounding districts and western GB valleys such as Chilas, while central and eastern GB including Gilgit, Skardu, and surrounding areas also show clear positive anomalies. Overall, this points to a notably wetter-than-average November for the northern highlands, with enhanced shower activity compared with the typical dry late-autumn pattern under the influence of Western Disturbance

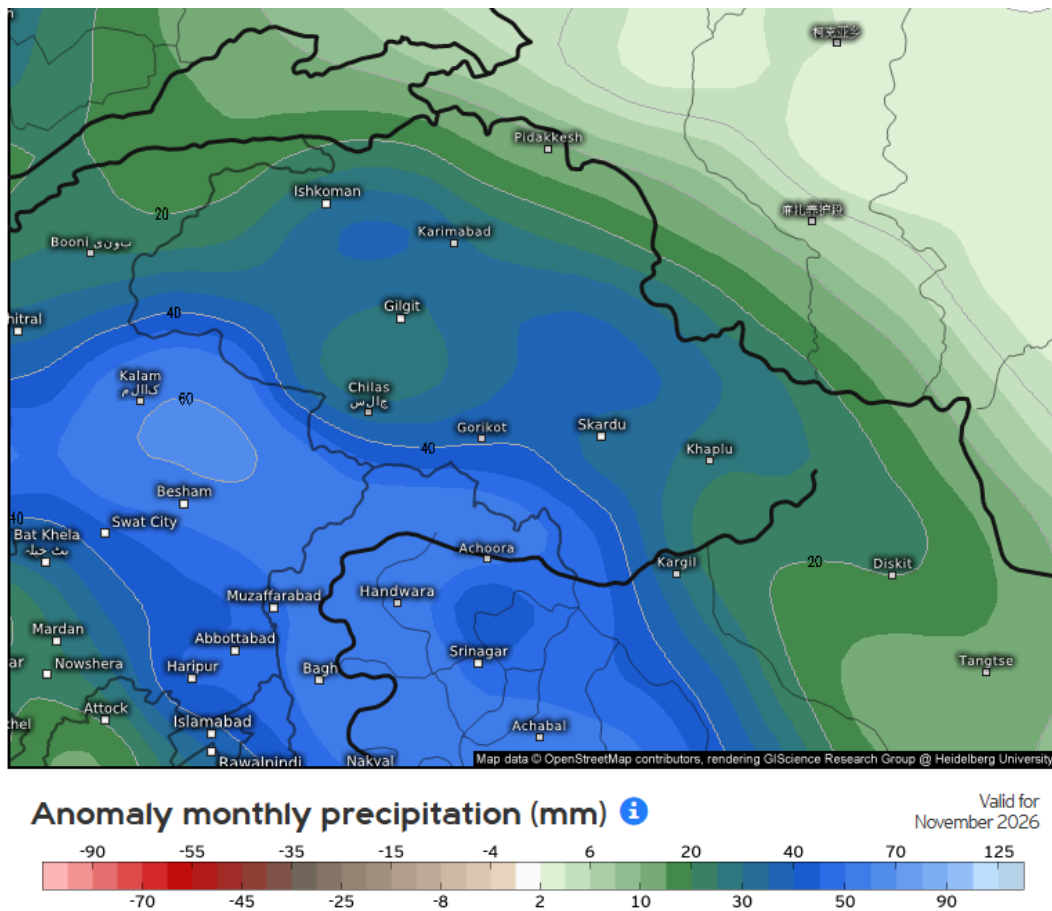
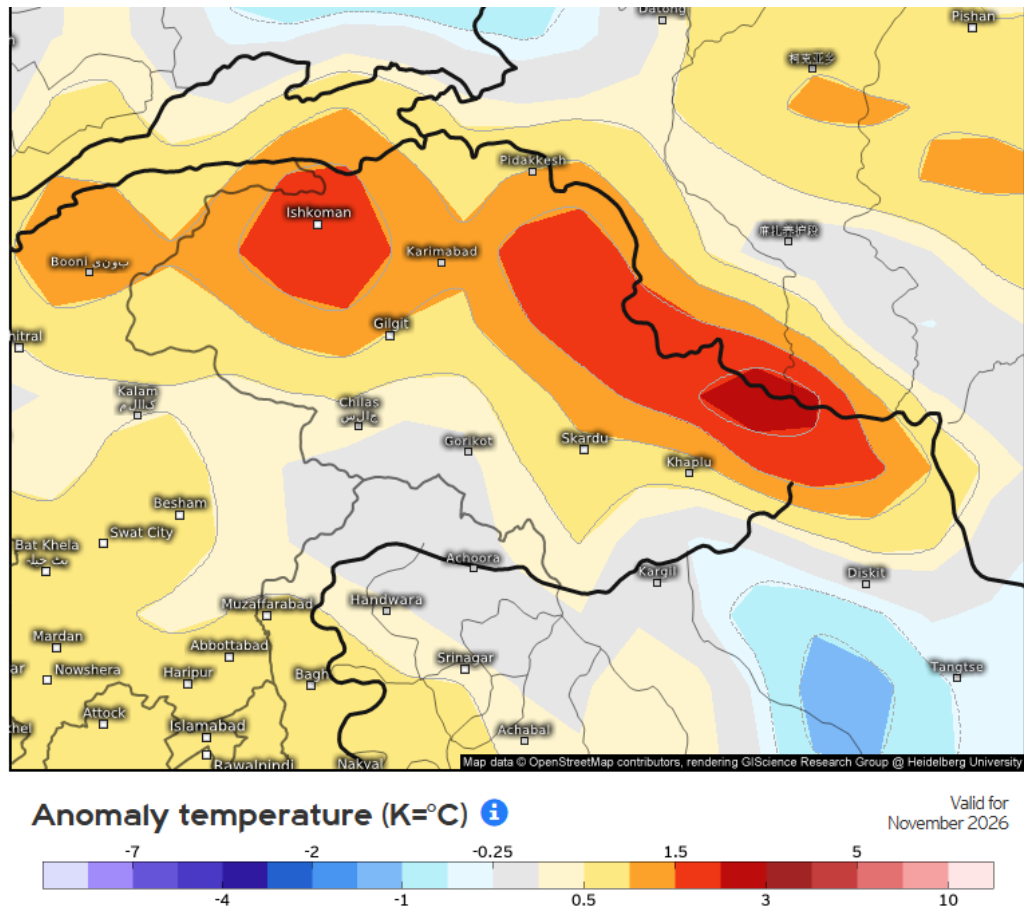


Figure 17. GB & AJK temperature and precipitation anomalies for November 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(5) **KP - November 2026**

(a) **Temperature.** For Khyber Pakhtunkhwa in November 2026, various model consensus indicates mildly to moderately above-normal conditions across most of the province, with positive departures of roughly over the central and southern districts including Peshawar, Mardan, Bannu, and Tank, while northern highland areas around Chitral remain closer to normal. Overall, this points to a relatively mild start to early winter, with less intense cold than the long-term average across much of KP.

(b) **Precipitation.** For Khyber Pakhtunkhwa in November 2026, various model consensus indicates above-normal rainfall across most of the province, with the strongest wet signal concentrated over the northern and eastern regions including Chitral, Dir, Swat, and surrounding areas, while central and southern districts such as Peshawar, Bannu, and Tank show more moderate positive anomalies. Overall, this points to a wetter-than-average November for KP, with enhanced shower activity compared with the typical dry late-autumn pattern.

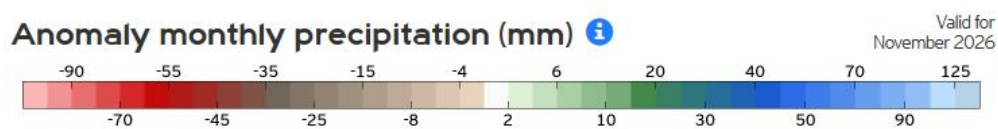
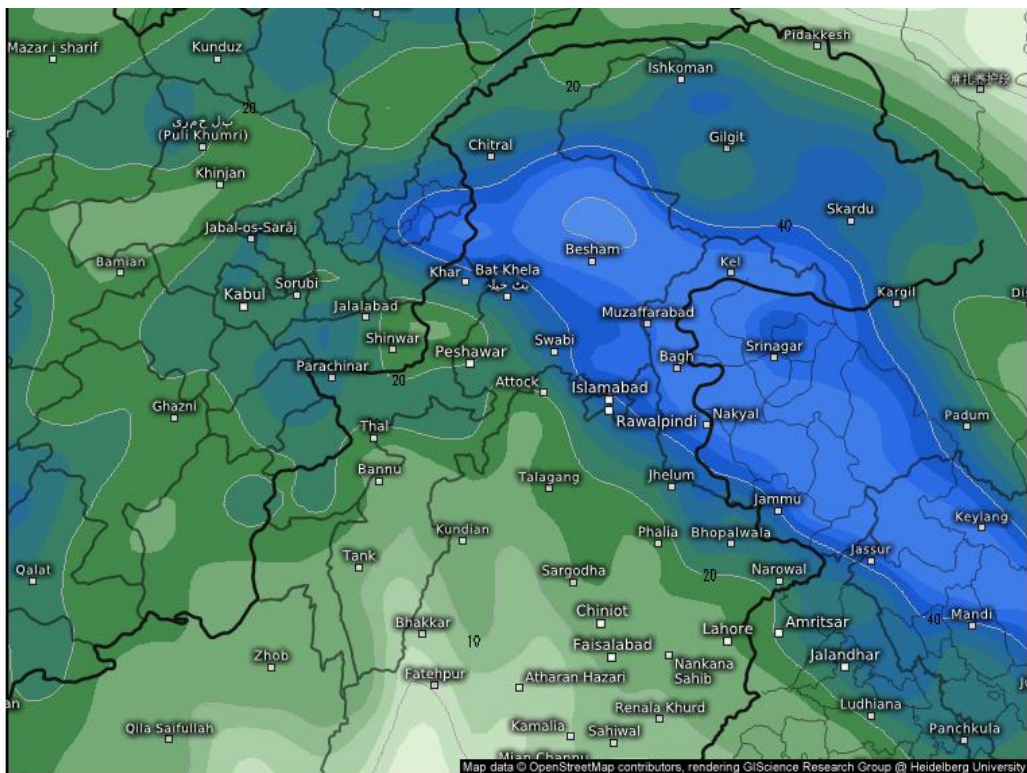
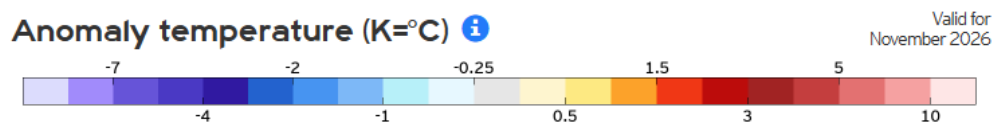
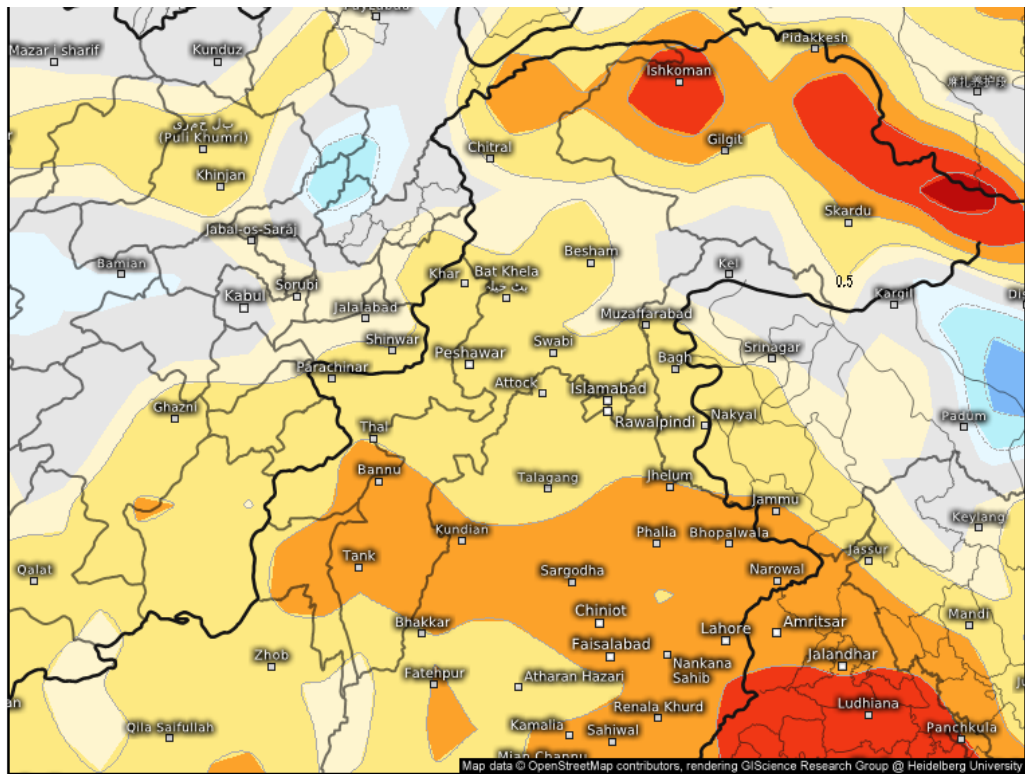
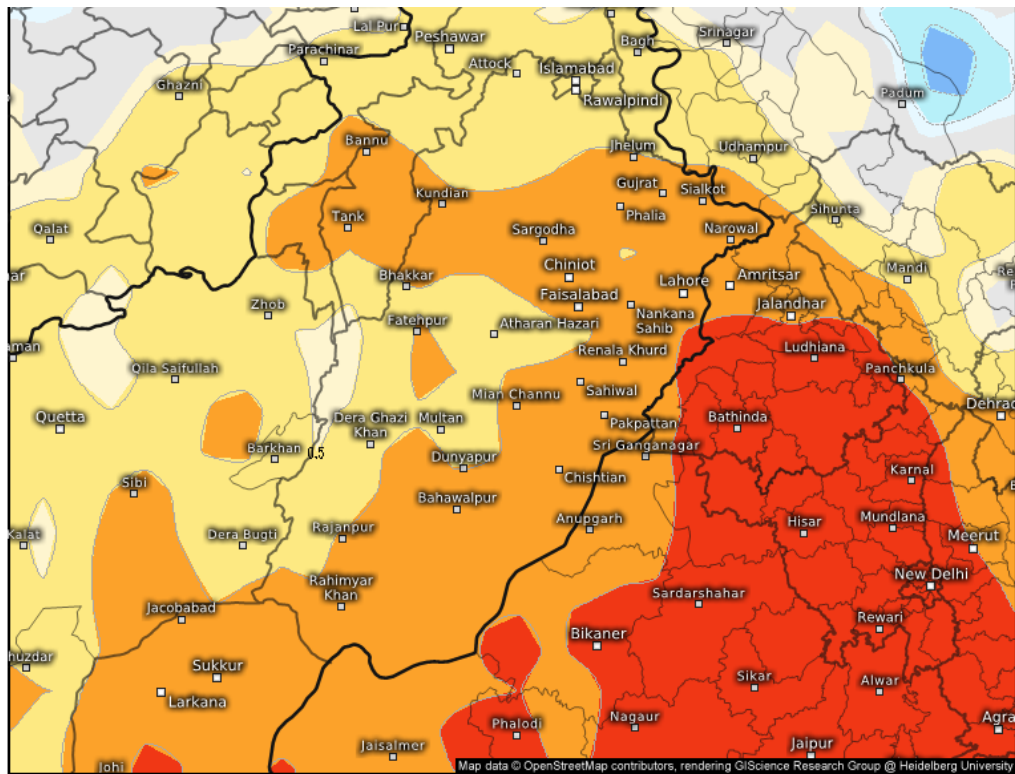


Figure 18. KP temperature and precipitation anomalies for November 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(6) **Punjab - November 2026**

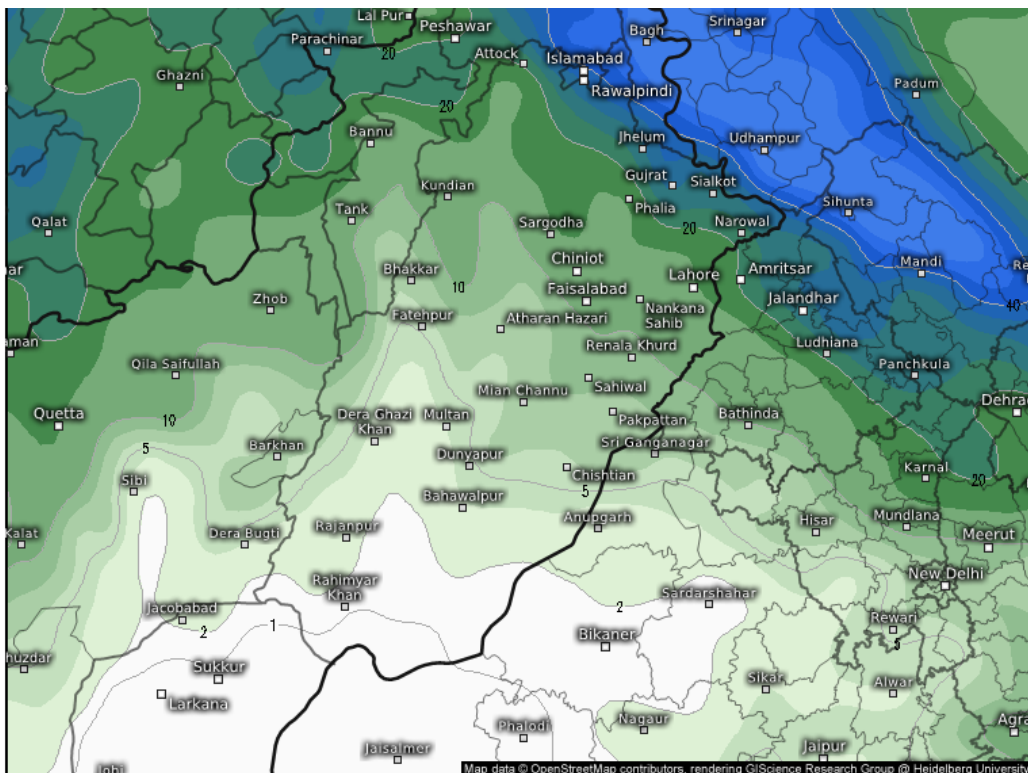
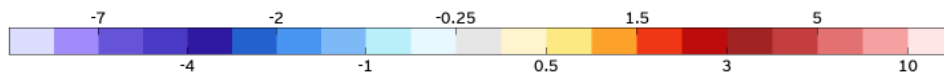
(a) **Temperature.** For Punjab in November 2026, various model consensus indicates mildly to moderately above-normal conditions across the province, with positive departures over the central and eastern plains including Lahore, Faisalabad, and Sargodha, and lesser variation in the northern and southern districts. Overall, this points to a relatively mild start to early winter, with less intense cold than the long-term average across most of Punjab.

(b) **Precipitation.** For Punjab in November 2026, various model consensus indicates normal to above-normal rainfall across most of the province, with the strongest wet signal concentrated over the eastern and northern regions including Lahore, Sialkot, Narowal, and the Rawalpindi fringe, while central districts such as Faisalabad, Multan and Sahiwal show moderate positive anomalies and the far south around Bahawalpur remains closer to normal. Overall, this points to a wetter-than-average November for Punjab, with enhanced shower activity compared with the typical dry late-autumn pattern.



Anomaly temperature (K=°C) ⓘ

Valid for
November 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
November 2026

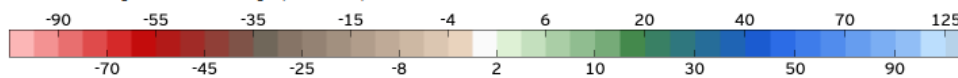
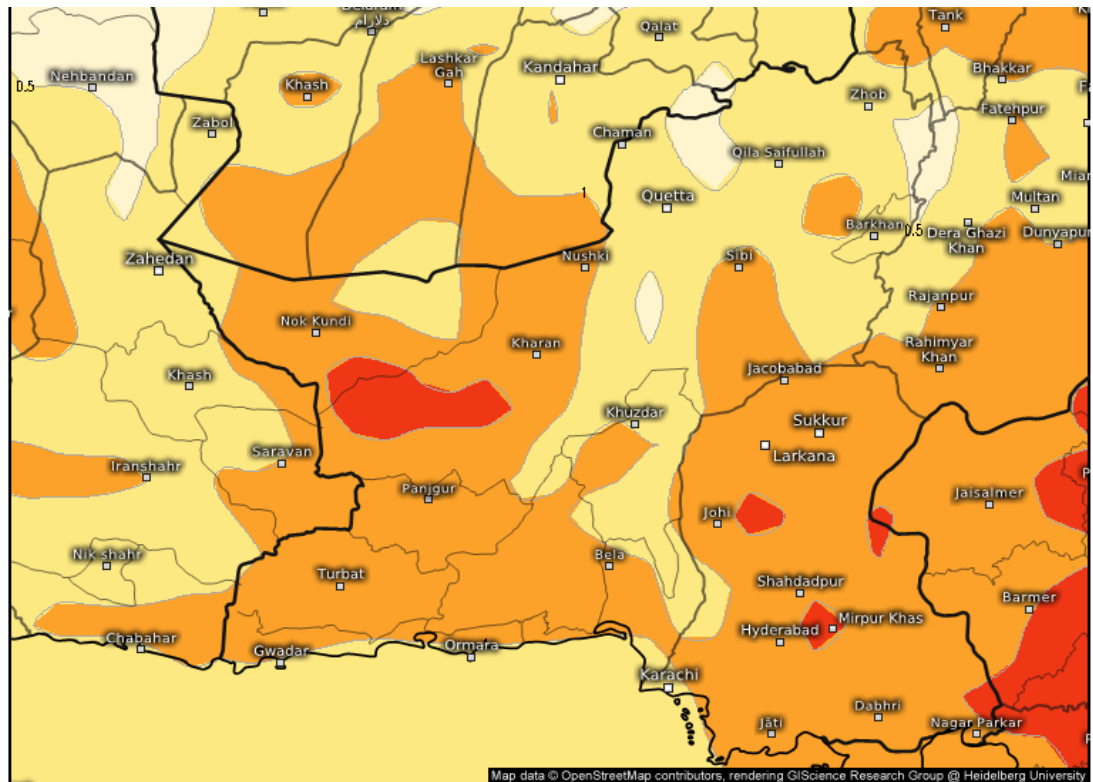


Figure 19. Punjab temperature and precipitation anomalies for November 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(7) **Balochistan - November 2026**

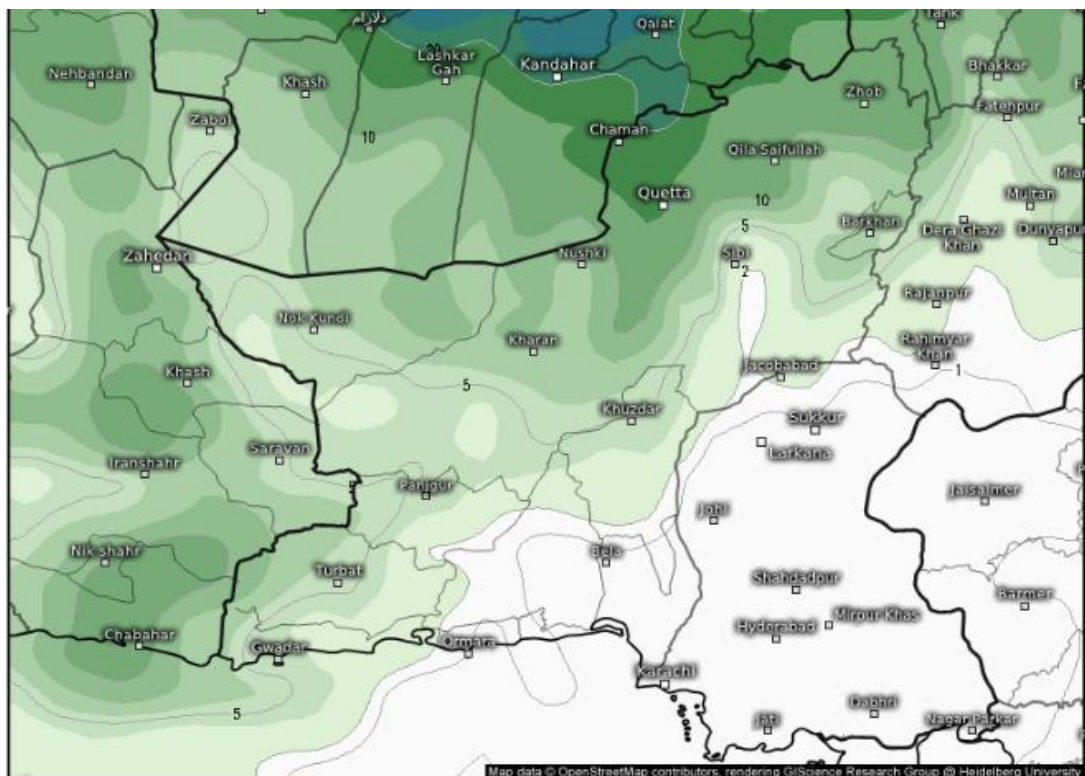
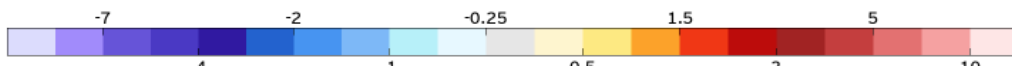
(a) **Temperature.** For Balochistan in November 2026, various model consensus indicates normal to above-normal temperatures across most of the province, with the strongest warming signal concentrated over the western and central regions including Nok Kundi, Kharan and surrounding desert areas, while northern districts around Quetta and the southern coastal belt show more moderate positive anomalies. Overall, this points to a warmer-than-average November for Balochistan, with reduced daytime cooling compared with the typical late-autumn pattern.

(b) **Precipitation.** For Balochistan in November 2026, various model consensus indicates above-normal rainfall across most of the province, with the strongest wet signal concentrated over the northern regions including Quetta, Chaman and Zhob, while central, western and southern coastal districts show more moderate positive anomalies. Overall, this points to a wetter-than-average November for Balochistan, with enhanced shower activity compared with the typical dry late-autumn pattern.



Anomaly temperature (K=°C) ⓘ

Valid for
November 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
November 2026

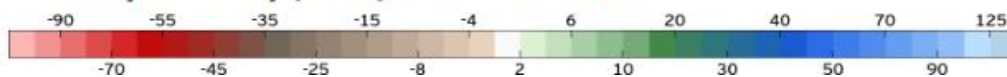
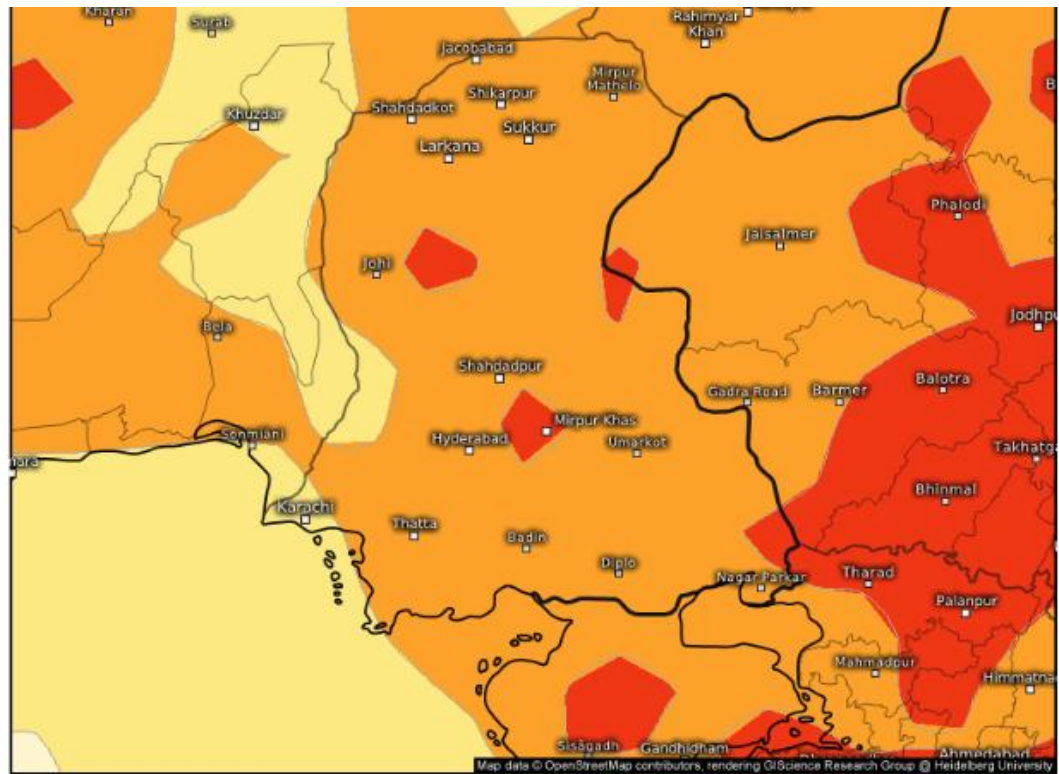


Figure 20. Balochistan temperature and precipitation anomalies for November 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(8) **Sindh - November 2026**

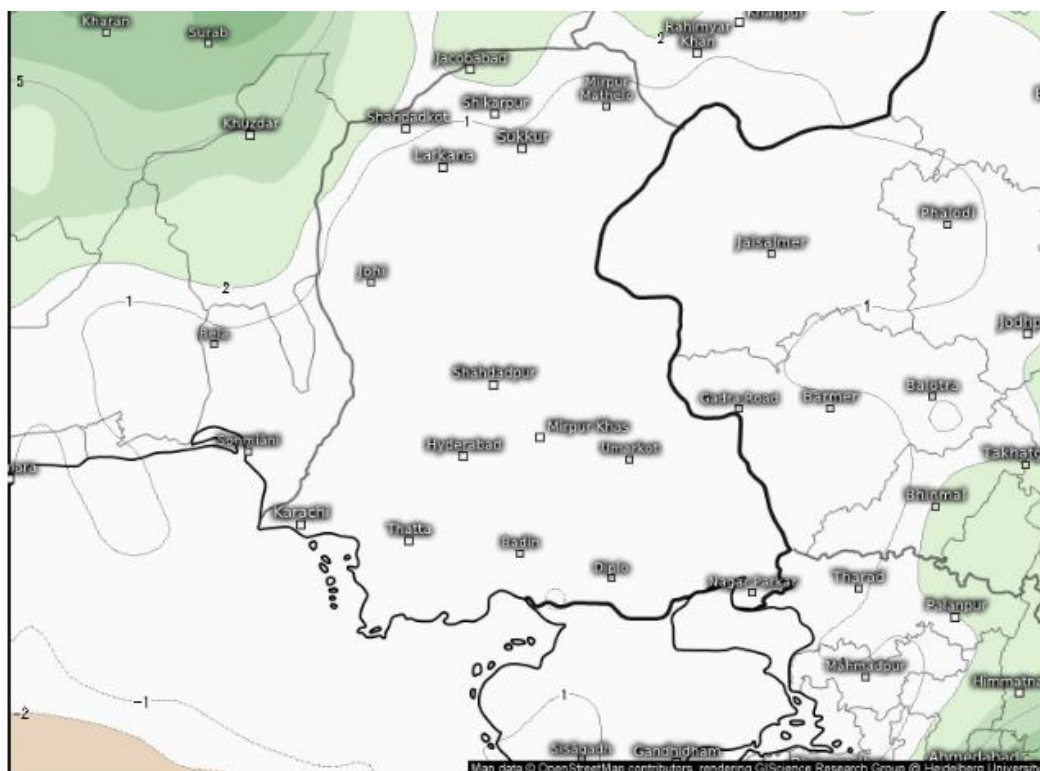
(a) **Temperature.** Various model consensus indicates normal to above-normal temperatures across the entire province, with the strongest warming signal concentrated over northern and central districts including Sukkur, Larkana and Johi, while southern and coastal areas such as Hyderabad, Karachi and Thatta show more moderate but still clearly positive anomalies. This points to a warmer-than-average November for Sindh, with reduced daytime cooling compared with the typical late-autumn pattern.

(b) **Precipitation.** Various model consensus indicates near-normal to slightly below-normal rainfall across most of the province, with only weak positive signals limited to the far northwestern fringe near Jacobabad and Shahdadkot, while the central, southern and coastal districts including Hyderabad, Karachi, Thatta and Mirpur Khas remain close to average or marginally drier, leading to a typical dry November for Sindh, with little enhancement in shower activity compared with the long-term late-autumn pattern.



Anomaly temperature (K=°C) ⓘ

Valid for
November 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
November 2026

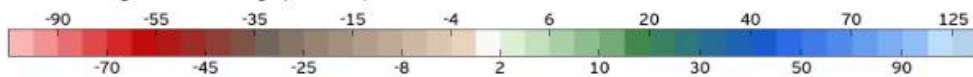


Figure 21. Sindh temperature and precipitation anomalies for November 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

e. **National Meteorological Outlook for December**

(1) **Historical Analysis Precipitation (December 2020-2025)**

- (a) Rainfall distribution: Highest rainfall occurs over upper KP, AJK, northern Punjab and GB.
- (b) Dry regions: Sindh, southern Punjab and most of Balochistan generally receive light, scattered rainfall.
- (c) Main driver: Western Disturbances produce localized orographic rainfall and snowfall.
- (d) Wettest year: December 2020, with localized totals exceeding 100 mm over upper KP and AJK.
- (e) Drier years: December 2023–2024 recorded peak accumulations of approximately 35–38 mm.
- (f) Intermediate years: Rainfall maxima generally ranged between 50–70 mm over northern Pakistan.
- (g) Overall pattern: December rainfall is highly variable and depends on the frequency and trajectory of Western Disturbances.
- (h) Hydrological significance: Northern rainfall and snowfall support water-resource recharge, while southern Pakistan remains relatively dry.

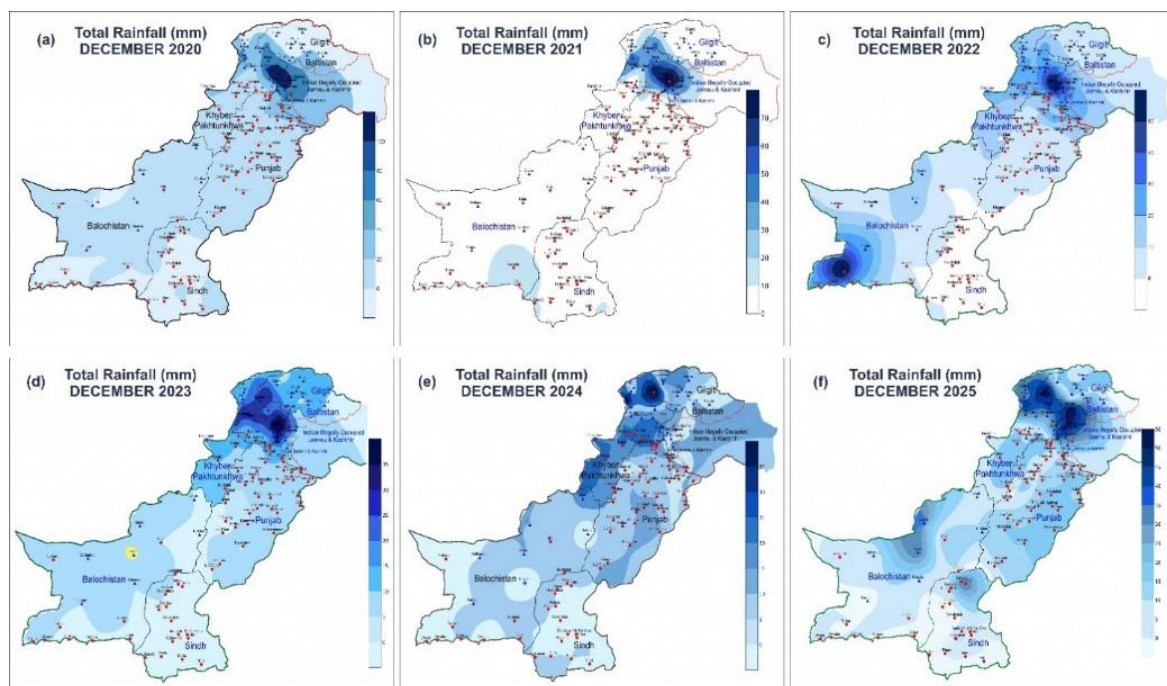


Figure 22. Spatial distribution of total rainfall during December 2020–2025
Source: Pakistan Meteorological Department (PMD) observed data; NEOC, NDMA analysis

(2) **Historical Analysis Temperature (December 2020-2025)**

- (a) Temperature gradient: Highest temperatures occur over Sindh and southern Balochistan, while northern KP and GB remain coldest.

- (b) Intermediate zones: Central Punjab and interior Balochistan experience moderate temperatures.
- (c) Seasonal pattern: Winter cooling becomes well established across northern Pakistan.
- (d) Interannual variability: December temperatures varied modestly, with relatively warmer conditions during 2022–2024.
- (e) Warmest year: December 2025 was particularly warm over southeastern Pakistan, with localized temperatures exceeding 30°C near Mithi.
- (f) Overall trend: Southern Pakistan shows persistent winter warming, while northern areas retain a stable cold pattern.

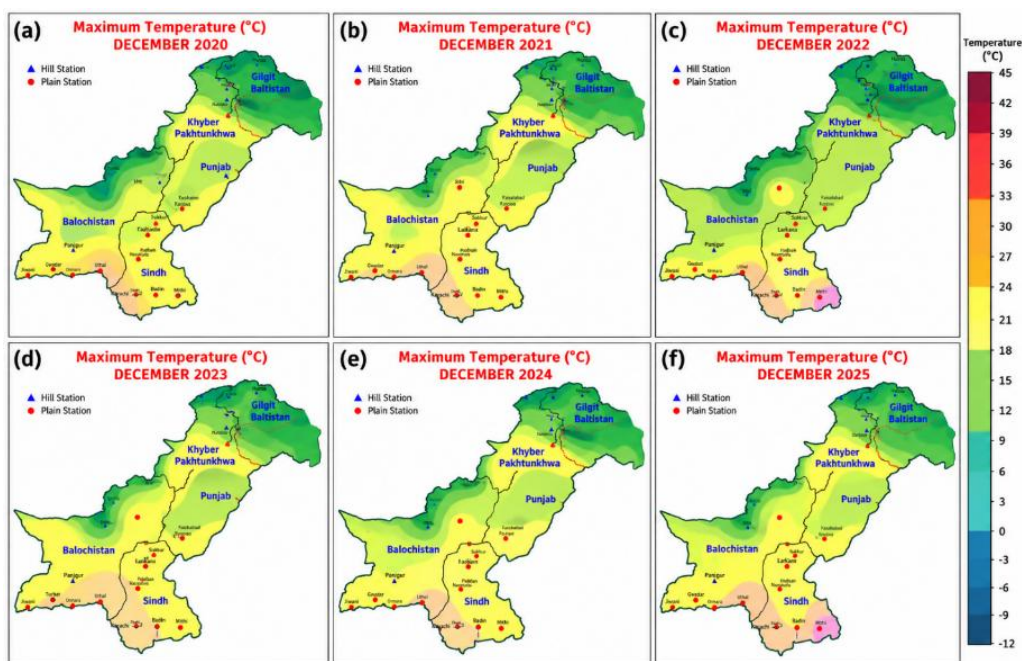


Figure 23. Spatial distribution of maximum temperatures during December 2020–2025
Source: Pakistan Meteorological Department (PMD) observed data; NEOC, NDMA analysis

(3) National Meteorological Outlook for December 2026

- (a) Temperature. For December 2026, various model consensus indicates predominantly near-normal to mildly above-normal conditions across most of the country, with modest positive departures over the plains including Lahore, Islamabad, Sukkur, Karachi, and adjacent areas as well as western areas around Quetta. Limited cooler pockets are anticipated only in the far northern highlands. Overall, this points to a relatively mild early

winter with less intense cold than the long-term average in many regions.

(b) **Precipitation.** For December 2026, various model consensus indicates normal to mildly above-normal rainfall over northern regions around Islamabad, Peshawar, and the adjacent highlands, while central, western, and southern areas including Quetta, Lahore, Sukkur, Karachi, and surrounding areas are projected to remain near normal. Overall, models point to a fairly typical dry early-winter pattern across most of the country, with only a modest wet bias limited to the north.

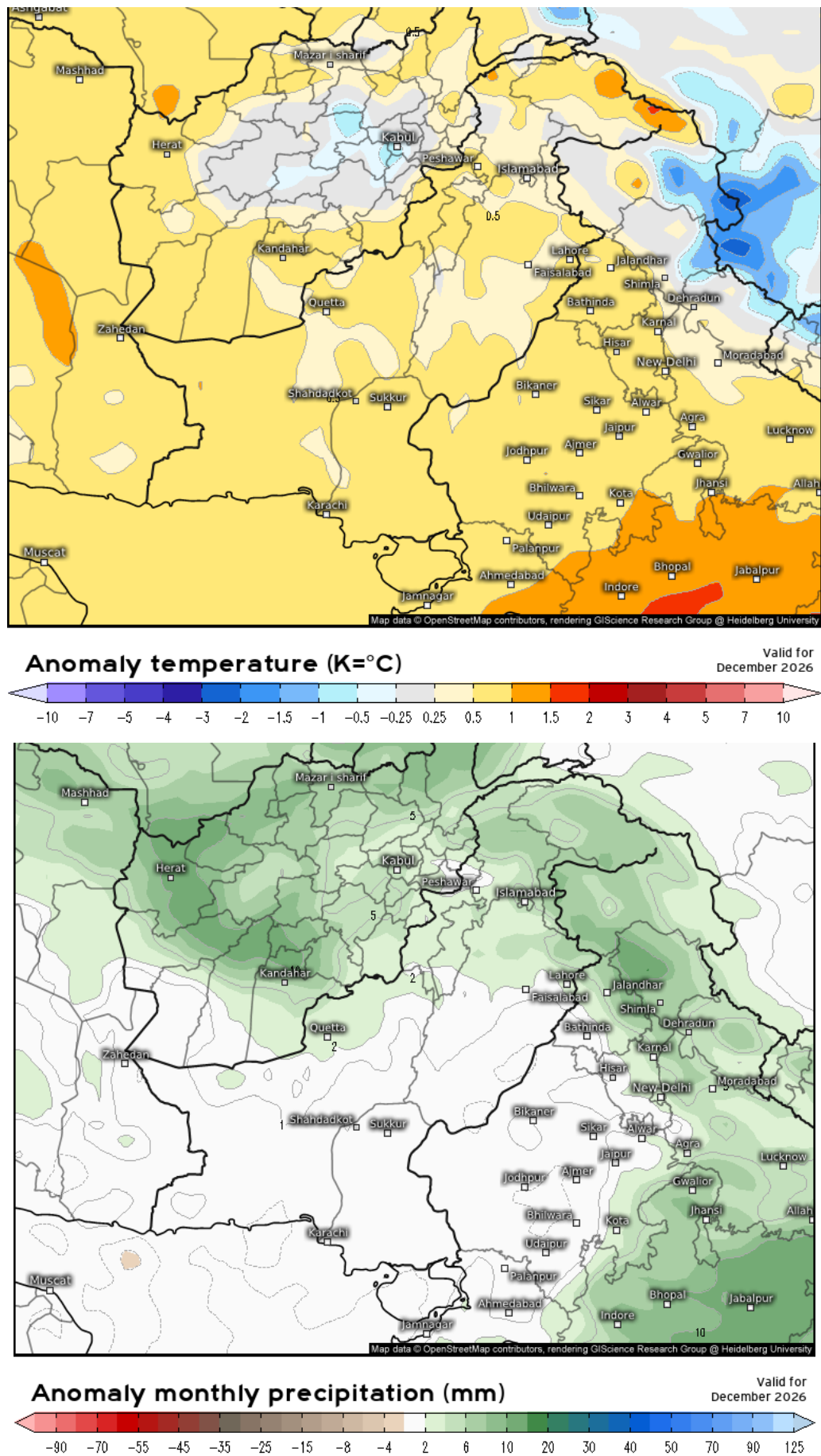


Figure 24. National temperature and precipitation anomalies for December 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(4) **GB & AJK - December 2026**

(a) **Temperature.** For Gilgit-Baltistan and Azad Jammu & Kashmir in December 2026, various model consensus indicates above-normal temperatures across most of both regions, with the strongest warming signal concentrated over eastern Gilgit-Baltistan including the Skardu–Khaplu belt, while the rest of GB and most of AJK including Muzaffarabad, Bagh and surrounding areas show milder positive anomalies. Overall, this points to a warmer-than-average December for GB and AJK, with reduced daytime cooling compared with the typical early-winter pattern.

(b) **Precipitation.** For Gilgit-Baltistan and Azad Jammu & Kashmir in December 2026, various model consensus indicates above-normal rainfall across most of both regions, with positive anomalies over Gilgit-Baltistan including Gilgit, Skardu, Khaplu and surrounding areas and somewhat stronger wet signals over AJK including Muzaffarabad, Bagh, and surrounding areas. Overall, this points to a wetter-than-average December for GB and AJK, with enhanced shower and snowfall activity compared with the typical early-winter pattern.

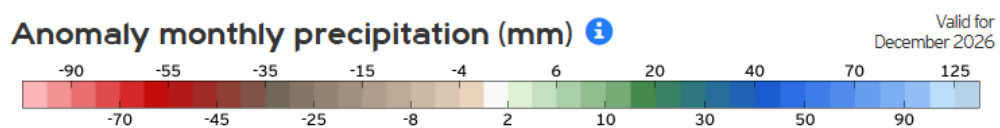
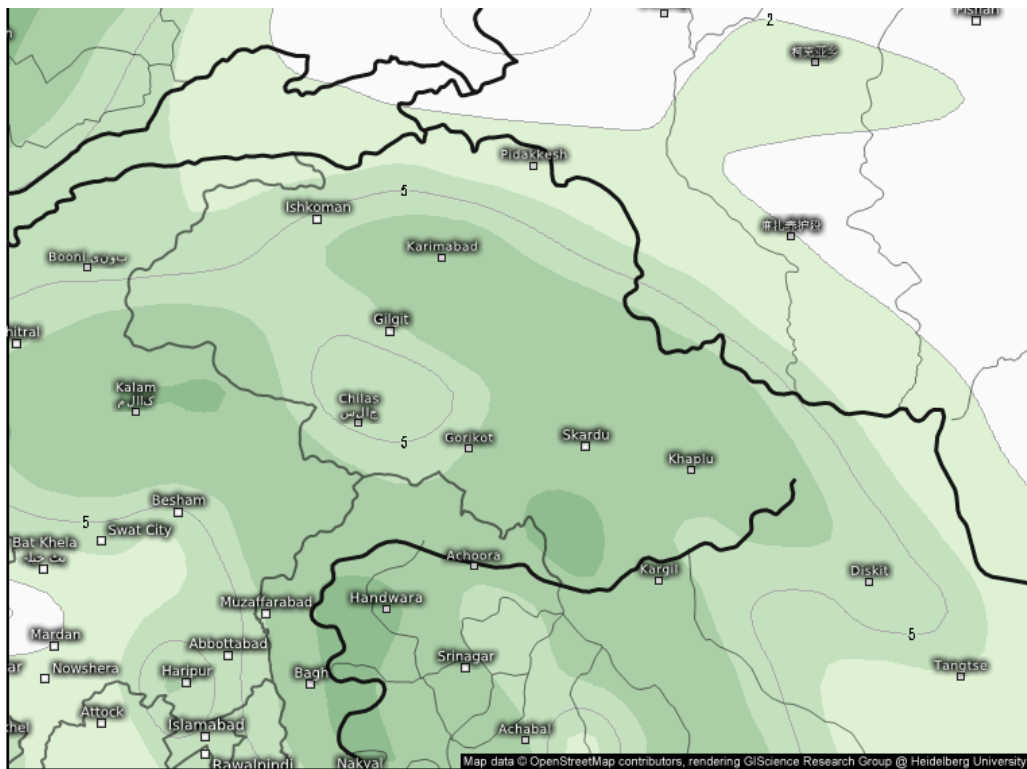
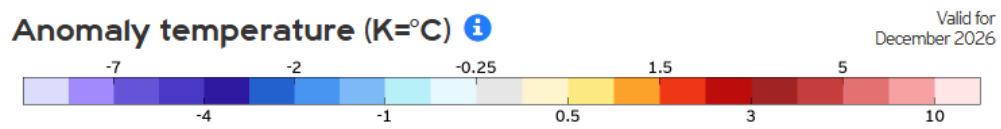
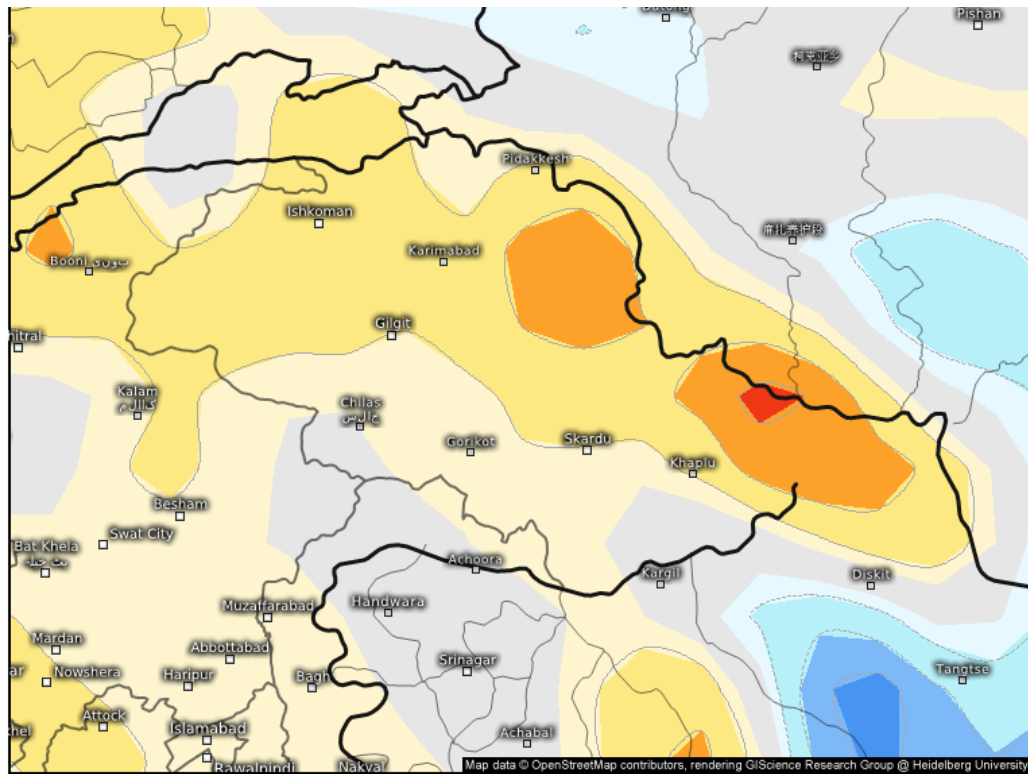
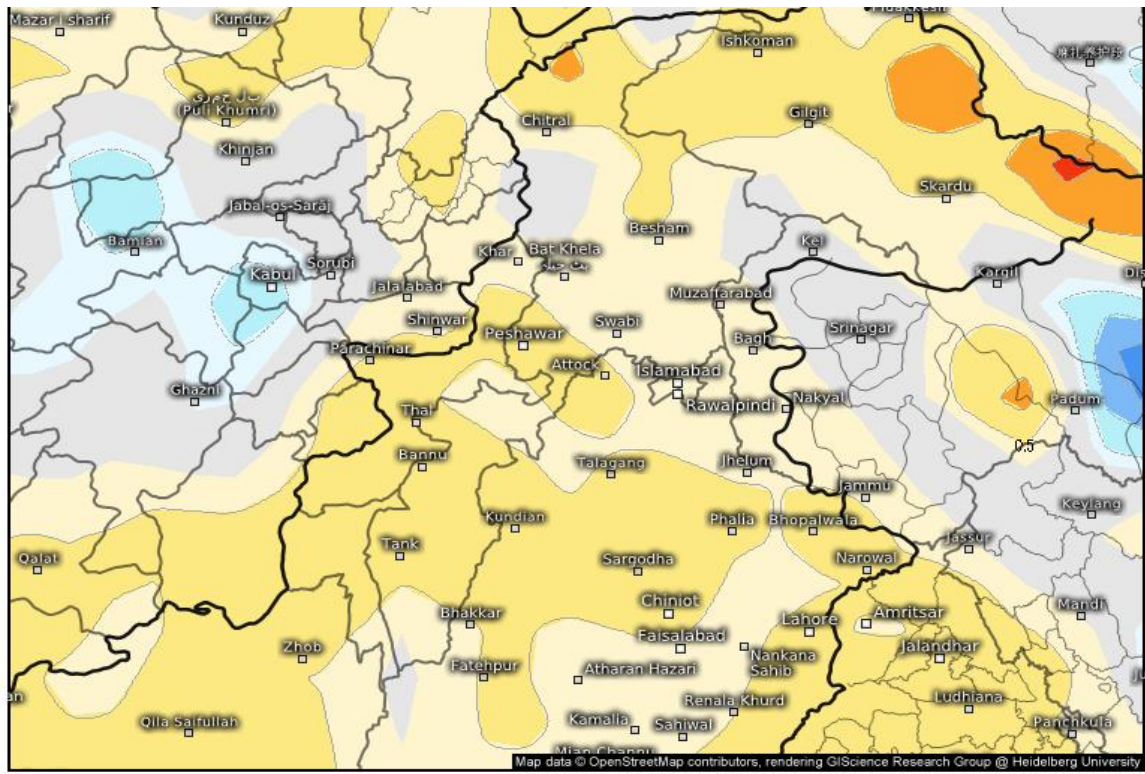


Figure 25. GB & AJK temperature and precipitation anomalies for December 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(5) **KP - December 2026**

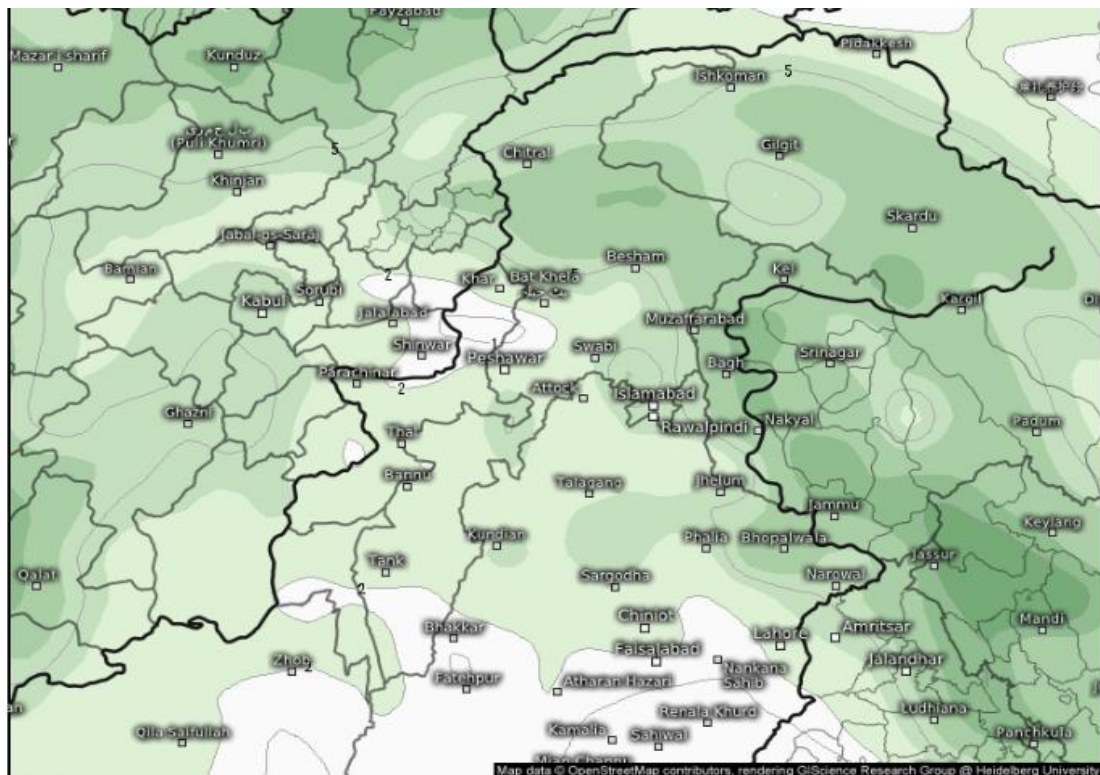
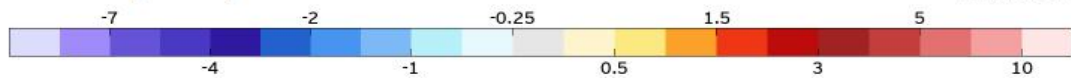
(a) **Temperature.** For Khyber Pakhtunkhwa in December 2026, various model consensus indicates near-normal to slightly above-normal temperatures across most of the province, with mild positive anomalies of over both northern districts including Chitral, Swat and central-southern areas including Peshawar, Bannu, Dera Ismail Khan, and surrounding areas. Overall, this points to a mildly warmer-than-average December for KP, with reduced daytime cooling compared with the typical early-winter pattern.

(b) **Precipitation.** For Khyber Pakhtunkhwa in December 2026, various model consensus indicates normal to above-normal rainfall across most of the province, with the strongest wet signal concentrated over the northern districts including Chitral, Swat and Kohistan, while central areas such as Peshawar and Mardan show moderate positive anomalies and southern districts remain closer to normal. Overall, this points to a wetter-than-average December for KP, with enhanced shower and snowfall activity compared with the typical early-winter pattern.



Anomaly temperature (K=°C) ⓘ

Valid for
December 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
December 2026

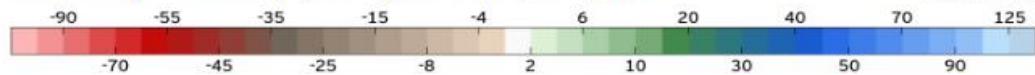


Figure 26. KP temperature and precipitation anomalies for December 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(6) **Punjab - December 2026**

(a) **Temperature.** Various model consensus indicates near-normal to slightly above-normal temperatures across the entire province, with mild positive anomalies over northern, central and southern districts alike. Overall, this points to a mildly warmer-than-average December for Punjab, with reduced daytime cooling compared with the typical early-winter pattern.

(b) **Precipitation.** Various model consensus indicates near-normal to above-normal rainfall mainly over the northern districts including Rawalpindi, Jhelum and Sialkot, while central areas such as Lahore and Faisalabad remain near normal and southern districts stay close to average or marginally drier. Overall, this points to a slightly wetter-than-average December for northern Punjab, with limited enhancement in shower activity across the rest of the province compared with the typical early-winter pattern.

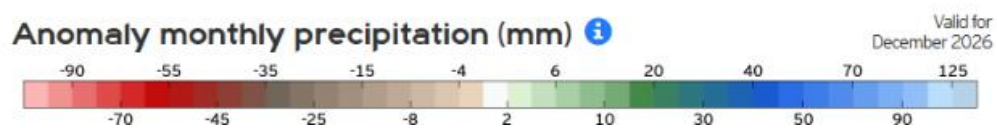
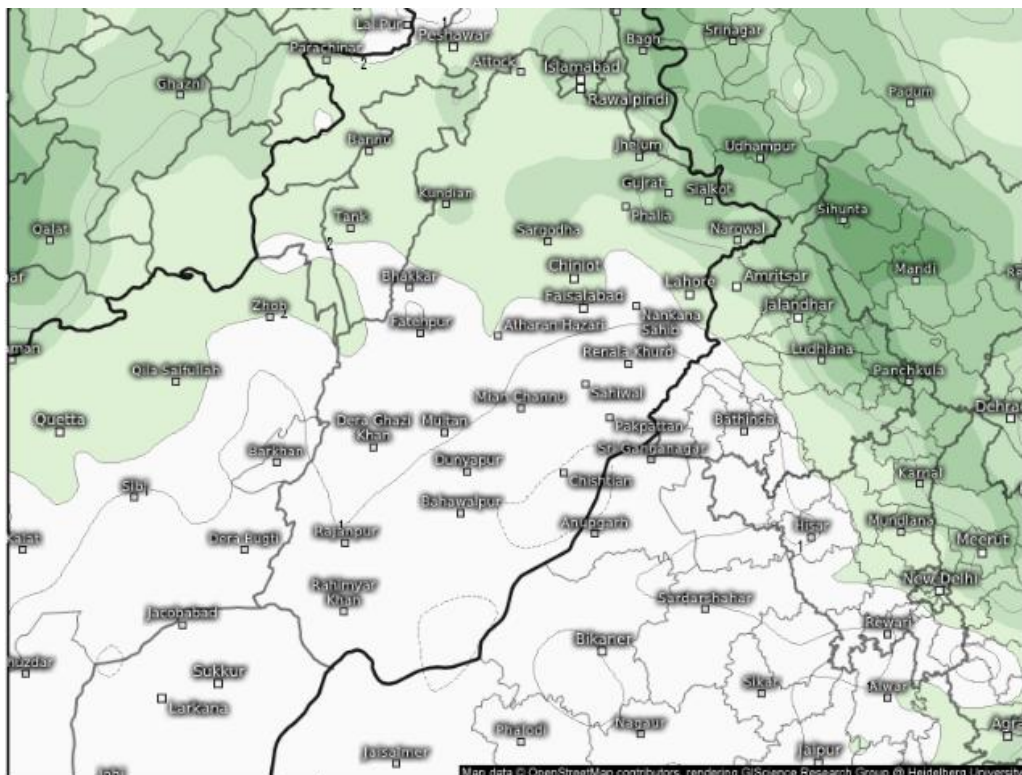
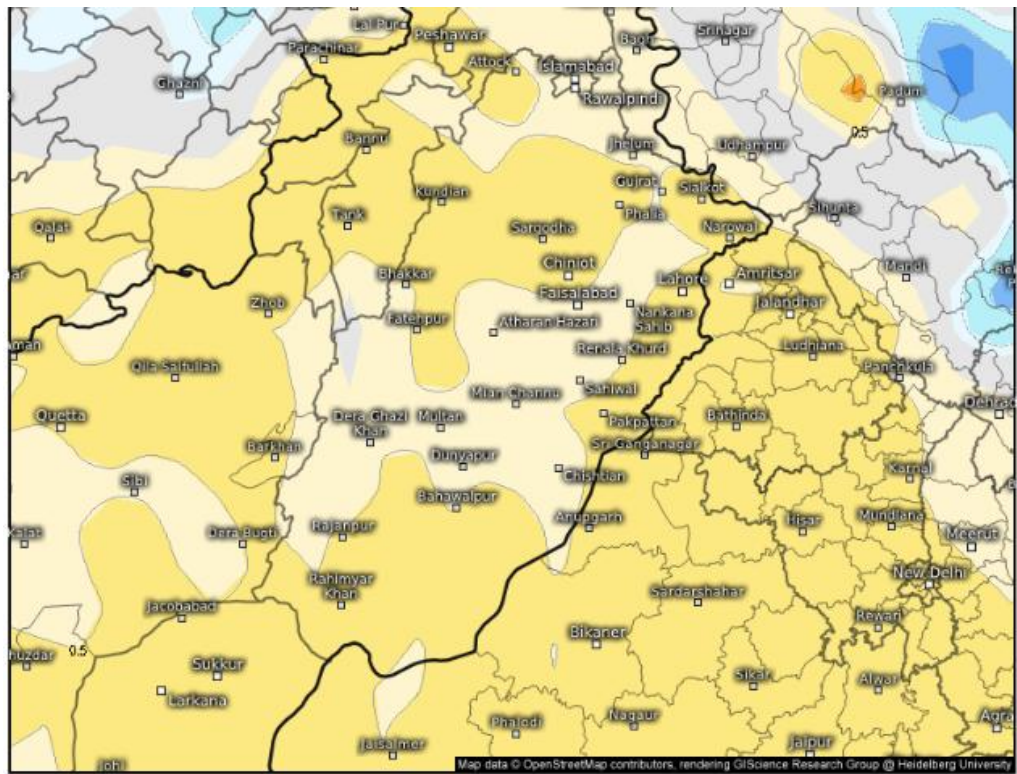
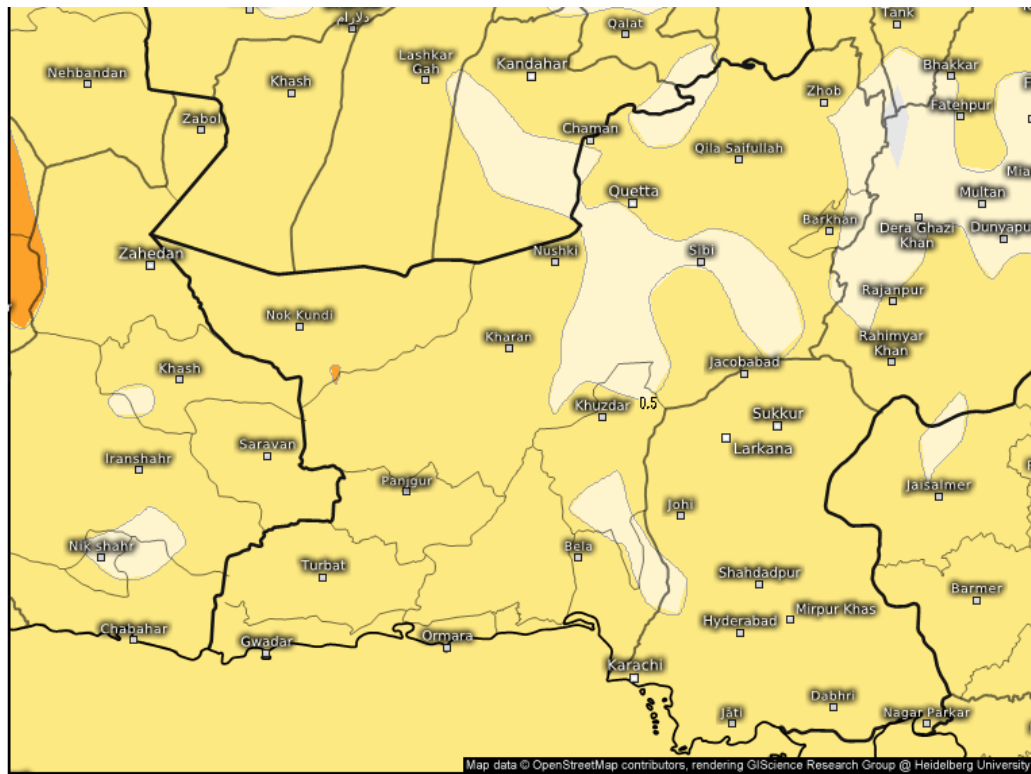


Figure 27. Punjab temperature and precipitation anomalies for December 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(7) **Balochistan - December 2026**

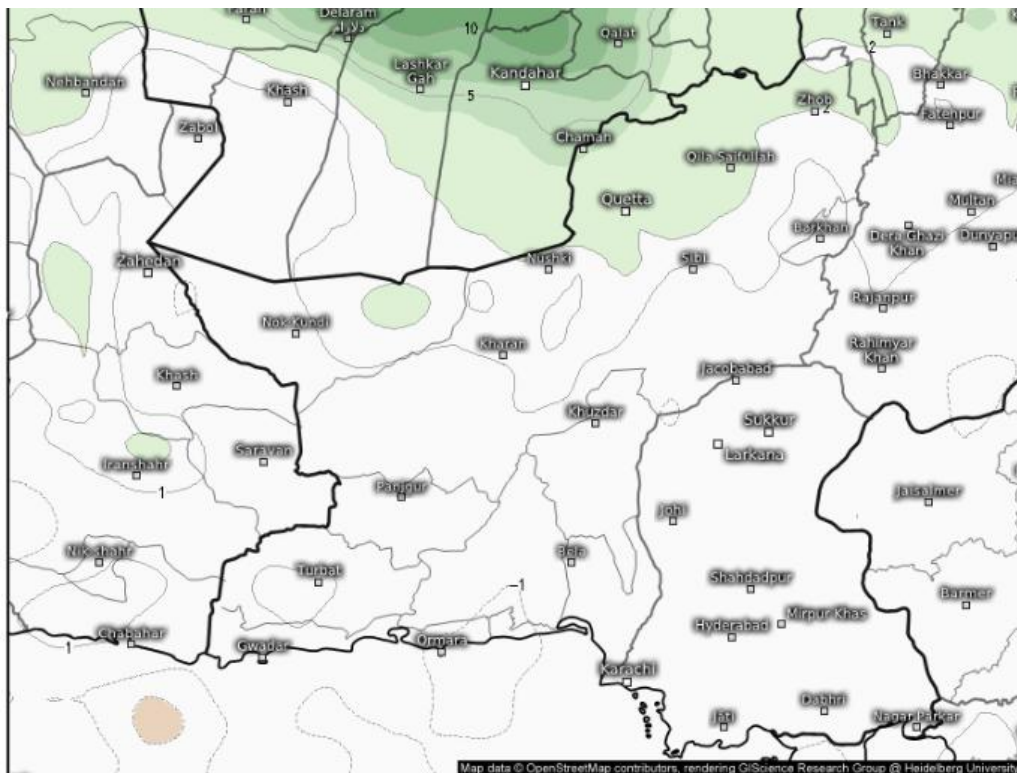
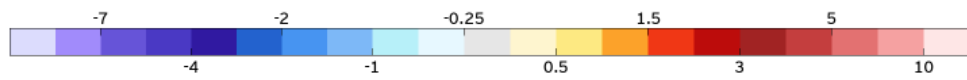
(a) **Temperature.** For Balochistan in December 2026, various model consensus indicates near-normal to slightly above-normal temperatures across most of the province, with mild positive anomalies northern, central and southern districts alike. Overall, this points to a mildly warmer-than-average December for Balochistan, with reduced daytime cooling compared with the typical early-winter pattern.

(b) **Precipitation.** For Balochistan in December 2026, various model consensus indicates near-normal rainfall across most of the province, with only mild positive anomalies over the northern districts including Quetta, Chaman and Zhob, while central, western and southern coastal areas remain close to average. Overall, this points to a typical dry December for Balochistan, with limited enhancement in shower activity compared with the long-term early-winter pattern.



Anomaly temperature (K=°C) ⓘ

Valid for
December 2026



Anomaly monthly precipitation (mm) ⓘ

Valid for
December 2026

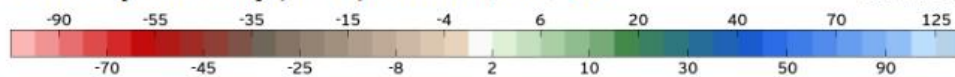
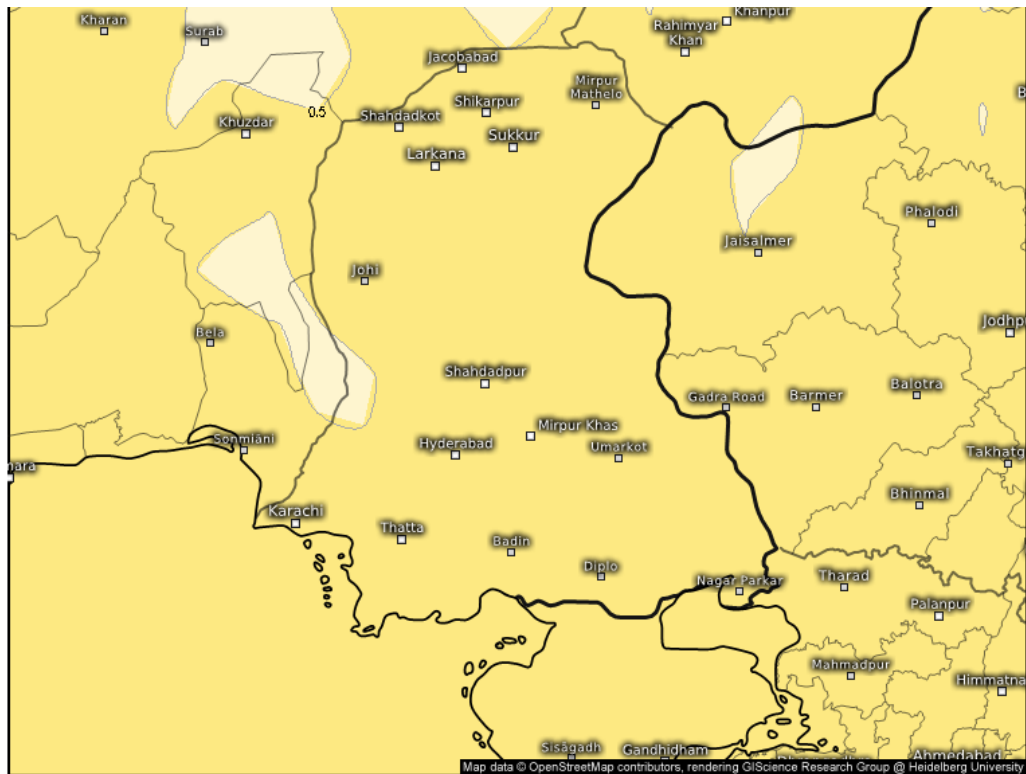


Figure 28. Balochistan temperature and precipitation anomalies for December 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

(8) **Sindh – December 2026**

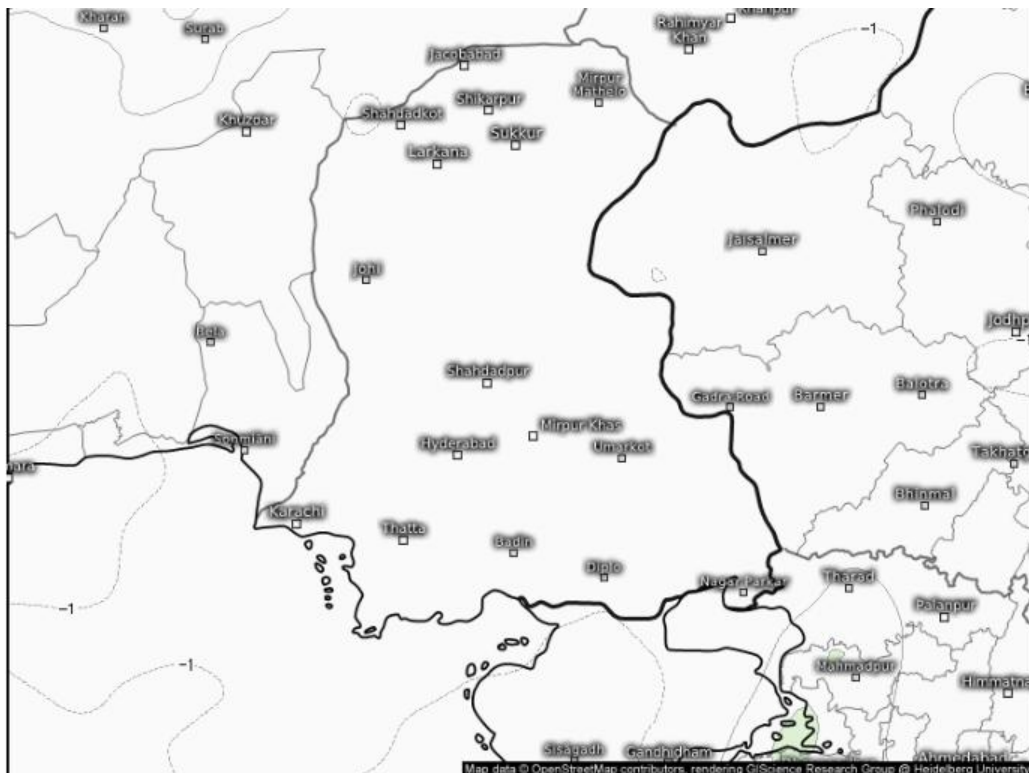
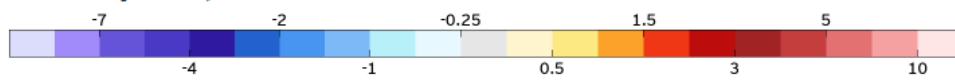
(a) **Temperature.** For Sindh in December 2026, various model consensus indicates near-normal to slightly above-normal temperatures across the entire province, with mild positive anomalies over northern, central and southern districts alike. Overall, this points to a mildly warmer-than-average December for Sindh, with reduced daytime cooling compared with the typical early-winter pattern.

(b) **Precipitation.** For Sindh in December 2026, various model consensus indicates near-normal to slightly below-normal rainfall across most of the province, with only weak negative anomalies over parts of central and northern Sindh, while southern and coastal areas remain close to average. Overall, this points to a typical dry December for Sindh, with no significant province-wide enhancement or suppression of rainfall compared with the long-term early-winter pattern.



Anomaly temperature (K=°C)

Valid for
December 2026



Anomaly monthly precipitation (mm)

Valid for
December 2026

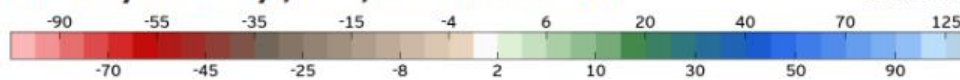


Figure 29. Sindh temperature and precipitation anomalies for December 2026
Source: ECMWF SEAS5 seasonal forecast, via weather.us

4. **Implications.**

a. **Snowfall.** Snow cover across Northern Pakistan during October–December 2026 is projected to expand seasonally from the high-altitude Hindu Kush, Karakoram, and western Himalayan ranges toward more extensive mountain terrain, as indicated by the supplied snow-cover maps. The principal areas affected include Gilgit-Baltistan, Upper Chitral, the high-elevation ranges of Khyber Pakhtunkhwa, and the elevated terrain of Azad Jammu & Kashmir. October is expected to represent the onset of seasonal snowpack establishment, followed by more persistent snow cover during November and December. Western Disturbances, modulated by the Subtropical Westerly Jet Stream and broader midlatitude circulation, will remain the principal synoptic systems responsible for major winter snowfall episodes over northern Pakistan. The seasonal snowpack will remain an important component of water storage in the Upper Indus Basin, with potential implications for downstream water availability during the pre-monsoon and early summer period of 2027. However, the magnitude and timing of this contribution will depend on snow-water equivalent, accumulation and ablation processes, temperature conditions, and subsequent melt dynamics. Episodic heavy snowfall, wind-driven snow redistribution, and fluctuations in the rain–snow transition may increase localized avalanche exposure and cause road blockages, access disruption, and community isolation across vulnerable high-altitude corridors. Snowfall on slopes affected by monsoon-related erosion may also aggravate localized slope-instability risks during subsequent precipitation events.

(1) **October 2026 (Onset of Seasonal Snow Cover).** The projected snow-cover distribution indicates the establishment of seasonal snow cover across the high-altitude Hindu Kush, Karakoram, and western Himalayan terrain, particularly in Upper Chitral, Ghizer, Gupis-Yasin, Hunza, Nagar, Shigar, Ghanche, and the Deosai–Astora highlands. Snow remains largely confined to elevated terrain, while lower valleys and adjoining plains are predominantly snow-free in the displayed classification. Western Disturbances, steered by the Subtropical Westerly Jet Stream, will remain the principal synoptic mechanism for significant snowfall episodes. Cold-air intrusions associated with continental circulation may influence the elevation of the snowline.

Episodic snowfall, wind redistribution, and rain–snow transitions may cause localized avalanche exposure, temporary road closures, and access disruption along high-altitude corridors, including Babusar, Shandur, Deosai, Shounter, and the Chitral mountain routes. Areas affected by monsoon-related slope degradation may also remain susceptible to rainfall-induced slope failures during relatively warm disturbances. Relevant authorities should complete pre-winter logistics and establish route-specific snowfall and accessibility monitoring arrangements before sustained winter conditions develop.

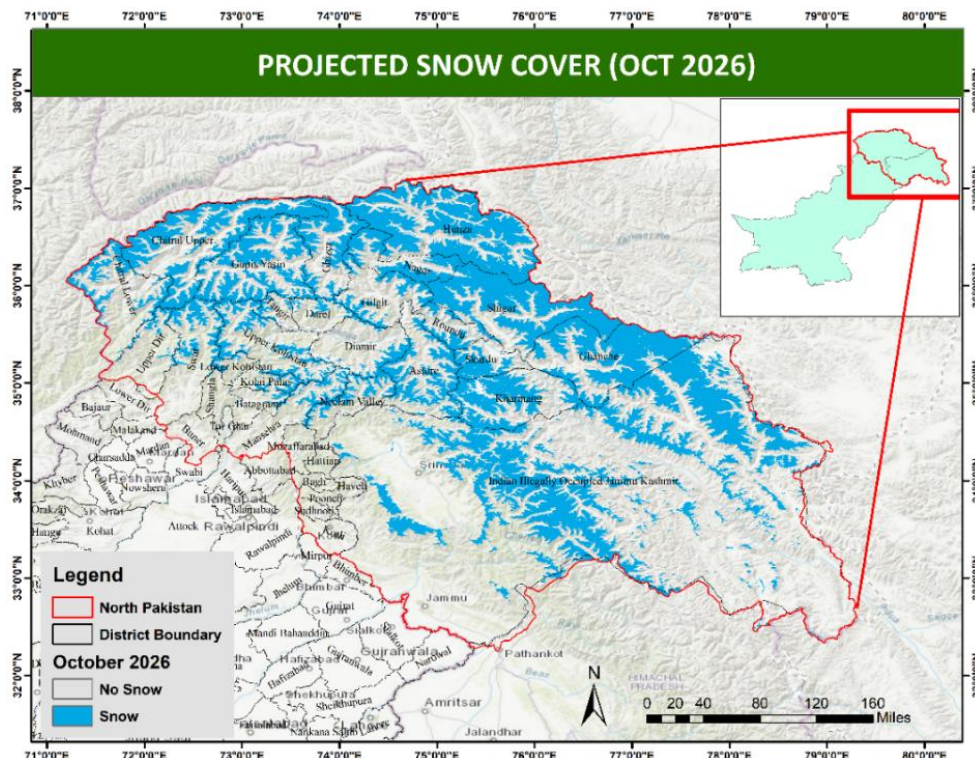


Figure 30. Projected snow cover, October 2026

Source: National Emergency Operations Centre (NEOC), NDMA

(2) **November 2026 (Establishment of the Snowpack).** The projected snow-cover distribution indicates extensive and persistent snow cover across the high-altitude regions of Gilgit-Baltistan and Upper Chitral, with substantial snow presence across the elevated mountain terrain of northern KP and AJK. The seasonal strengthening of continental high pressure may support colder air masses, while Western Disturbances propagating along the Subtropical Westerly Jet Stream may generate episodic snowfall and additional snow loading. ENSO, IOD, and NAO may influence the broader atmospheric circulation and moisture pathways, although their district-level impacts on snowfall

remain uncertain. Repeated snowfall and wind-driven snow redistribution may increase localized avalanche exposure and contribute to road blockages, disrupted connectivity, and isolation of remote communities. High-altitude transport corridors and settlements in Upper Chitral, Astore, Hunza, Ghanche, Ishkoman, Yasin, and elevated areas of northern KP and AJK should be prioritized for winter preparedness. Snow-clearing capacity, essential supplies, and communications redundancy should be established before major snowfall episodes.

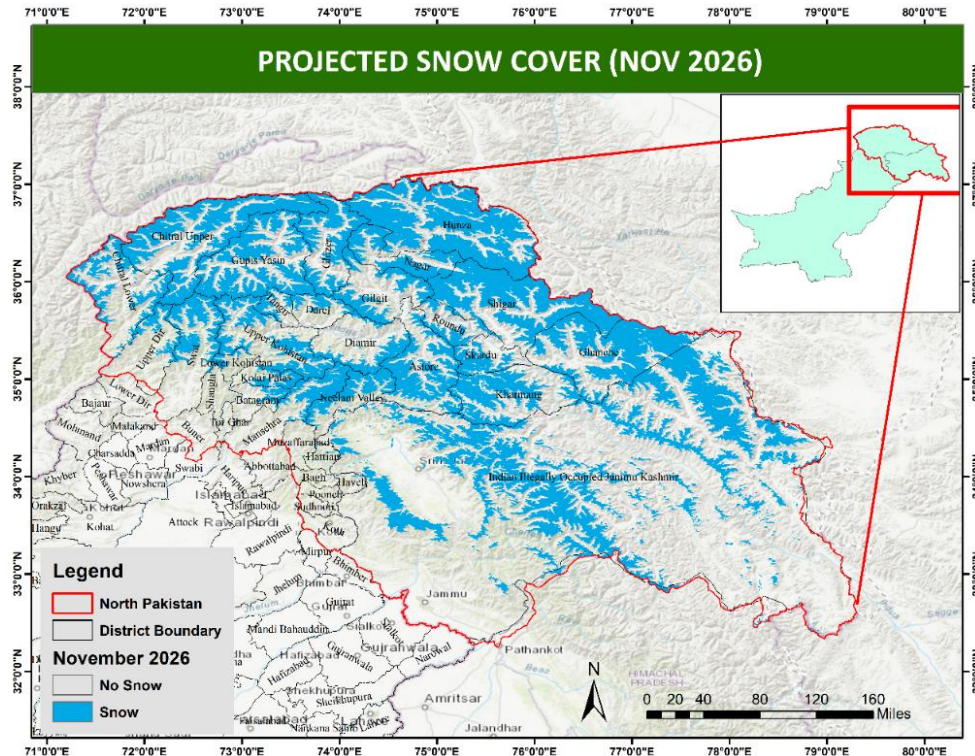


Figure 31. Projected snow cover, November 2026

Source: National Emergency Operations Centre (NEOC), NDMA

(3) **December 2026 (Persistent Winter Snowpack).** The projected snow-cover distribution indicates persistent and extensive snow cover across the high-altitude regions of Gilgit-Baltistan, Upper Chitral, northern KP, and AJK. Western Disturbances, interacting with the Subtropical Jet Stream and prevailing midlatitude circulation, will remain the principal synoptic mechanism for significant snowfall episodes. Continental cold-air intrusions associated with the Siberian High may lower freezing levels under favourable circulation conditions, while ENSO, IOD, and NAO may modulate the broader circulation and moisture environment. The projected snow presence does not, by itself, establish snowfall intensity or avalanche danger. However, successive

snowfall events, wind-driven snow accumulation, and persistent freezing conditions may increase the potential for localized avalanches, prolonged road closures, community isolation, and cold-weather emergencies. Warm interludes may produce rain–snow transitions and localized rain-on-snow runoff where temperature and precipitation conditions permit. Emergency authorities should maintain winter response readiness, pre-position essential supplies, and integrate event-specific snowfall, temperature, wind, and snowpack information into operational alerts for vulnerable mountain corridors and isolated settlements.

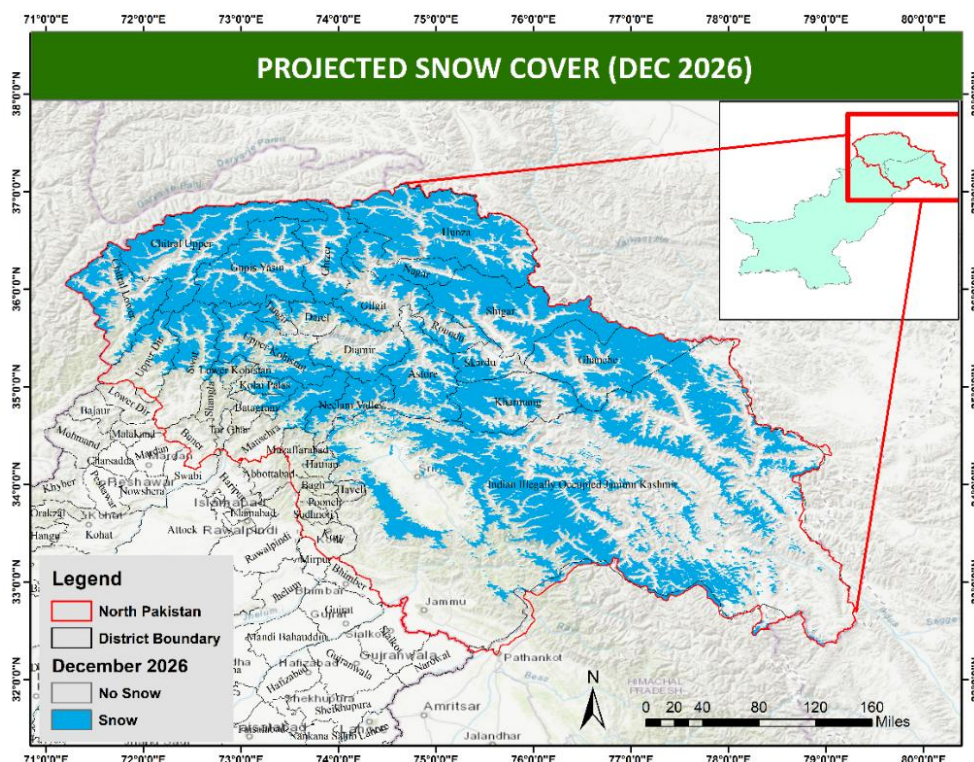


Figure 32. Projected snow cover, December 2026

Source: National Emergency Operations Centre (NEOC), NDMA

b. **Landslide.** Northern Pakistan, encompassing the mountainous regions of **Khyber Pakhtunkhwa (KP)**, **Gilgit-Baltistan (GB)**, and **Azad Jammu & Kashmir (AJK)**, is highly susceptible to landslides due to its rugged topography, steep slopes, fragile geology, and active tectonic setting along the Himalaya–Karakoram–Hindukush ranges. Seasonal **monsoon rains**, **snowmelt**, and **glacial processes** contribute to soil saturation and slope instability, while frequent seismic activity further aggravates vulnerability. Expanding infrastructure, such as roads, hydropower projects, and settlements

along river valleys, also increases human exposure to landslide hazards. As a result, this region remains one of the most landslide-prone areas in South Asia, where even **moderate rainfall or seismic triggers** can cause significant slope failures, blocking highways, damaging property, and threatening lives.

(1) **October 2026.** During October 2026, landslide susceptibility across the mountainous regions of Khyber Pakhtunkhwa (KP), Azad Jammu & Kashmir (AJK), and Gilgit-Baltistan (GB) is expected to remain generally lower than during the monsoon season, but localized rainfall, antecedent moisture, steep terrain, and the transition toward colder conditions may maintain Moderate to Very High hazard along selected mountain roads and valley sectors. Rainfall remains an important short-term trigger, while cooling at higher elevations increasingly introduces rain-snow transition, freeze-thaw weathering, snowmelt, rockfall, and localized snow-slide/avalanche processes.

Within Khyber Pakhtunkhwa, the main October hotspots are concentrated in Chitral, Swat, Upper and Lower Dir, and Kohistan. Very Heavy hazard is indicated around Lotkoh and Mulkhaw in Upper Chitral and along the Bahrain–Kalam section of N-95, while Chitral and Drosh remain important along the N-45 Chitral–Lowari–Drosh corridor. Dir and Kalkot are also priority areas along the N-45 and adjoining mountain roads, while Khwaza Khela and Matta Kharirai retain Heavy hazard. The combination of steep road cuts, confined valleys, rainfall, rockfall, and emerging cold-season processes makes these corridors important for October monitoring.

Within Gilgit-Baltistan, the main focus is on the Astore, Diamer, Hunza/Gojal, Nagar, Darel, Tangir, Gupis–Yasin, and Rondu/Skardu corridors. Astore, Chilas, Gojal, Nagar, and Rondu are among the principal Very Heavy hazard areas because of steep relief, road-cut instability, debris-flow and rockfall exposure, and increasing snow-related processes at higher elevations. The KKH through Chilas and Gojal requires particular attention, especially steep Indus-valley cuts and the Hunza–Gojal–Passu–Sost–Khunjerab corridor. Rondu along the Jaglot–Skardu Road remains a major hotspot, while Darel, Tangir, and

Yasin require focused monitoring of steep valley roads and localized debris-flow channels.

Within Azad Jammu & Kashmir, October hazard is more localized and is concentrated mainly in the Neelum and Leepa mountain corridors. Sharda is assessed at Very Heavy hazard along the Athmuqam–Sharda–Kel corridor, while Athmuqam and Leepa remain important Heavy-hazard areas along the Muzaffarabad–Athmuqam/Neelum Valley and Leepa Valley roads. Steep road cuts, rainfall-triggered landslides, rockfall, and increasing snow-related processes become more relevant toward the higher elevations. Naseerabad remains a comparatively lower-priority Moderate area along the Jhelum Valley network.

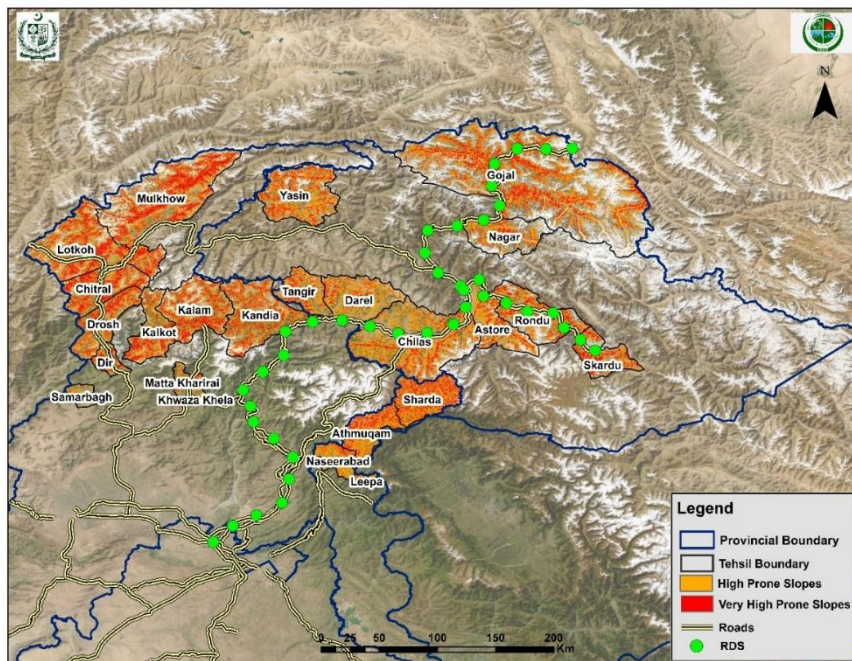


Figure 33. Landslide probability, October 2026

Source: National Emergency Operations Centre (NEOC), NDMA

(2) **November 2026.** During November 2026, landslide susceptibility across the mountainous regions of Khyber Pakhtunkhwa (KP), Azad Jammu & Kashmir (AJK), and Gilgit-Baltistan (GB) is expected to become more localized than during the monsoon months. Rainfall will remain the main short-term trigger at lower and middle elevations, while colder conditions at higher elevations will increasingly introduce rain-snow transition and freeze-thaw weathering as additional factors affecting slope stability.

In Khyber Pakhtunkhwa, the main November hotspots are concentrated in Chitral, Swat, and Kohistan. Very High susceptibility is expected around Lotkoh along N-145, Chitral along N-45 and N-140, and Bahrain along N-95, where steep road cuts and confined valleys increase the potential for localized slope failures. The KKH through Pattan and Upper Kohistan (RD200–RD260) remains a High-priority corridor because exposed road cuts and debris-prone slopes can reactivate following rainfall.

In Gilgit-Baltistan, the main focus is the Ghizer–Diamer transport belt, particularly Phandar and Gupis along N-140, Yasin, and Ishkoman, where Very High susceptibility coincides with steep terrain and exposed roads. These western GB areas are also sensitive to the transition between rainfall and colder conditions. Darel, together with the KKH through Harban/Basha and Chilas (RD240–RD340), remains a High-priority corridor for localized landslides, rockfall, and debris movement.

In AJK, the highest concern is concentrated around the Muzaffarabad–Hattian Bala–Leepa and Neelum Valley Road network. Very High susceptibility is indicated along S-2 Kohala–Muzaffarabad, S-3 Muzaffarabad–Chakothi, Pir Chinasi Road, Hattian Bala–Bani Hafiz, and Leepa Road, while Athmuqam and Sharda remain important high-susceptibility areas along the Neelum Valley roads. Cold-season rain-snow transitions may further affect already steep and exposed road cuts in the higher-elevation sectors.

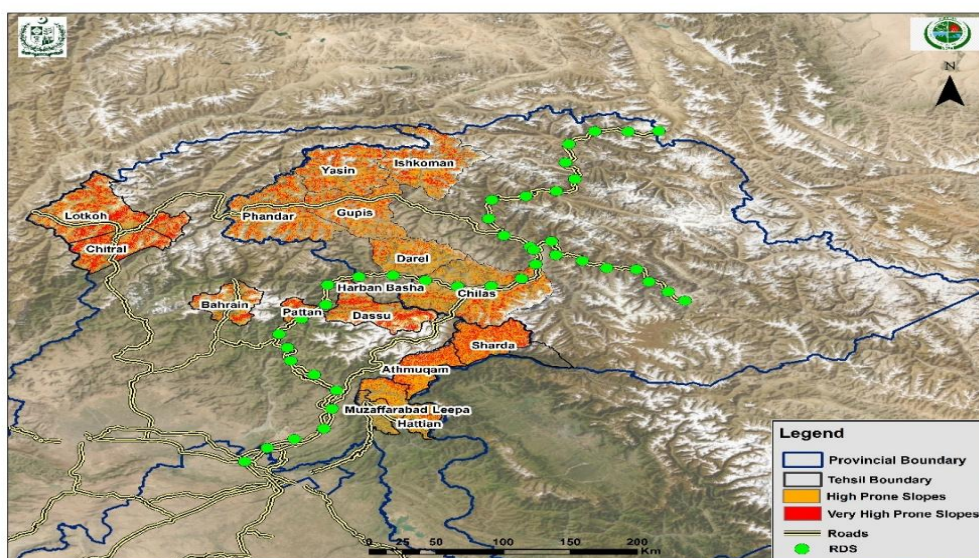


Figure 34. Landslide probability, November 2026

Source: National Emergency Operations Centre (NEOC), NDMA

(3) **December 2026.** During December 2026, landslide susceptibility across the mountainous regions of Khyber Pakhtunkhwa (KP), Azad Jammu & Kashmir (AJK), and Gilgit-Baltistan (GB) is expected to become more localized and generally lower than in November as rainfall-driven slope activity declines and colder winter conditions establish across northern Pakistan. However, steep terrain, fractured geology, exposed road cuts, and existing unstable slopes will continue to support localized landslides, rockfall, and debris movement, particularly along major mountain road corridors.

December represents the transition into the colder winter season, with rainfall remaining a short-term trigger at lower- and mid-elevations, while colder conditions increasingly limit widespread rainfall-induced failures at higher elevations. At locations where temperatures fluctuate around freezing, freeze–thaw weathering can weaken fractured rock, steep road cuts, and exposed slopes. This process is expected to be particularly relevant across higher-elevation GB and Upper Chitral, where winter cooling is more pronounced.

Within Gilgit-Baltistan, the main monitoring focus should remain on the Ghizer–Gilgit–Diamer road network and selected eastern GB corridors. Phandar, Gupis, Yasin, and Ishkoman remain important because of steep valley terrain and road exposure, particularly along the N-140 and connected Yasin–Ishkoman roads. The Karakoram Highway through Darel, Harban/Basha, and Chilas should also be monitored at specific susceptible sections, including the RD240–RD340 corridor, where localized rockfall, debris movement, and road-cut instability may occur following precipitation or temperature fluctuations. The Astore–Skardu corridor, particularly around Astore, Roundu, and the Skardu approach, also warrants focused monitoring rather than a blanket high-risk classification.

In Khyber Pakhtunkhwa, December landslide activity is expected to be more limited than during the wetter autumn period, but Chitral and Lotkoh along the N-45/N-145 corridors remain relevant because of steep terrain and the stronger western precipitation influence. The Madyan–Bahrain–Kalam section of N-95 also requires localized monitoring for slope instability and rockfall. In AJK, attention should remain on selected

mountain roads around Muzaffarabad, Hattian Bala, Athmuqam, and Sharda, particularly sections of the S-2, S-3, and Neelum Valley road network where precipitation coincides with steep road cuts.

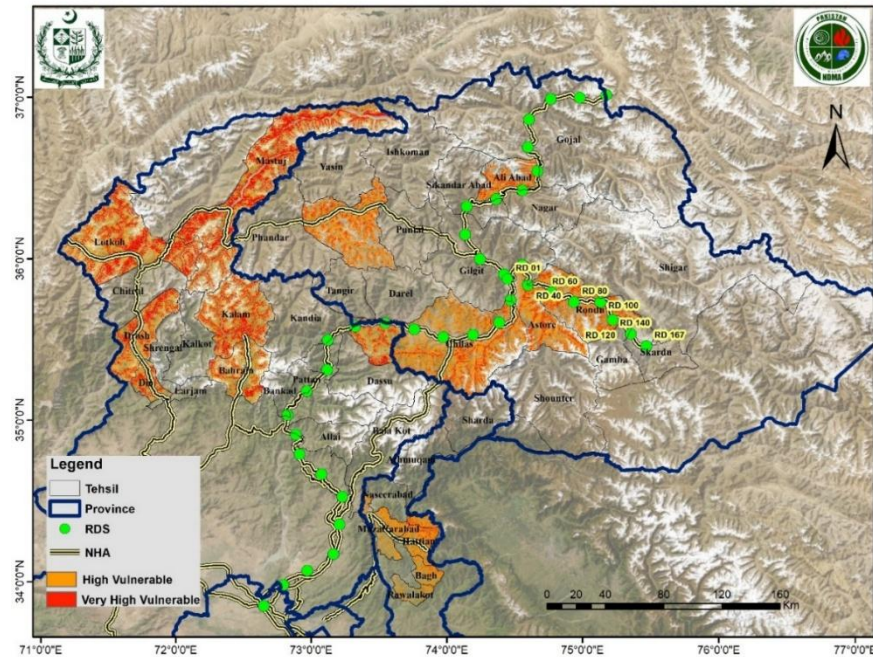


Figure 35. Landslide probability, December 2026
Source: National Emergency Operations Centre (NEOC), NDMA

(4) **Overall Assessment.** Across October to December 2026, landslide hazard across KP, GB, and AJK is expected to progressively shift from localized rainfall-triggered instability in October toward a more concentrated winter-related hazard pattern by December. Rainfall and antecedent moisture remain the principal short-term triggers during October and November, particularly across Chitral, Swat–Kalam, Kohistan, western GB, and northern AJK. By December, rainfall-driven activity is expected to decline, while rain-snow transition, freeze-thaw weathering, rockfall, and snow-related slope instability become more important at higher elevations. Authorities should maintain targeted monitoring along N-45/N-140, N-95, N-145, selected KKH sections, Astore–Skardu, and key Neelum–Leepa corridors.

c. **Meteorological Drought.** The projections are based on climate models, historical rainfall patterns, groundwater and temperature data, as well as the Palmer Drought Severity Index (PDSI). These insights aim to support policymakers, provincial and district disaster management authorities along with local communities in preparing for possible rainfall shortages and their

impacts on water availability and livelihoods during the period October-December 2026. As per Meteorological projection of Tech EW, in the coming months (i.e., October – December 2026), Pakistan is expected to experience normal to above-normal rainfall over most parts of the country, particularly across the northern and central regions. Gilgit-Baltistan, Kashmir, Khyber Pakhtunkhwa and upper Punjab are expected to receive normal to above-normal rainfall. Meanwhile, near-normal to slightly below-normal rainfall is expected over Sindh, southern Punjab and Balochistan. Met projections coupled with the reservoir level due to rainfall in monsoon indicate less likelihood of drought. However, the south-western part of Balochistan and some parts of Sindh, which are already classified as arid climate zones, may experience mild meteorological drought. In addition, the Palmer Drought Severity Index (PDSI) indicates mild drought in some northern regions of Pakistan, although this is primarily linked to snow cover rather than rainfall deficit.

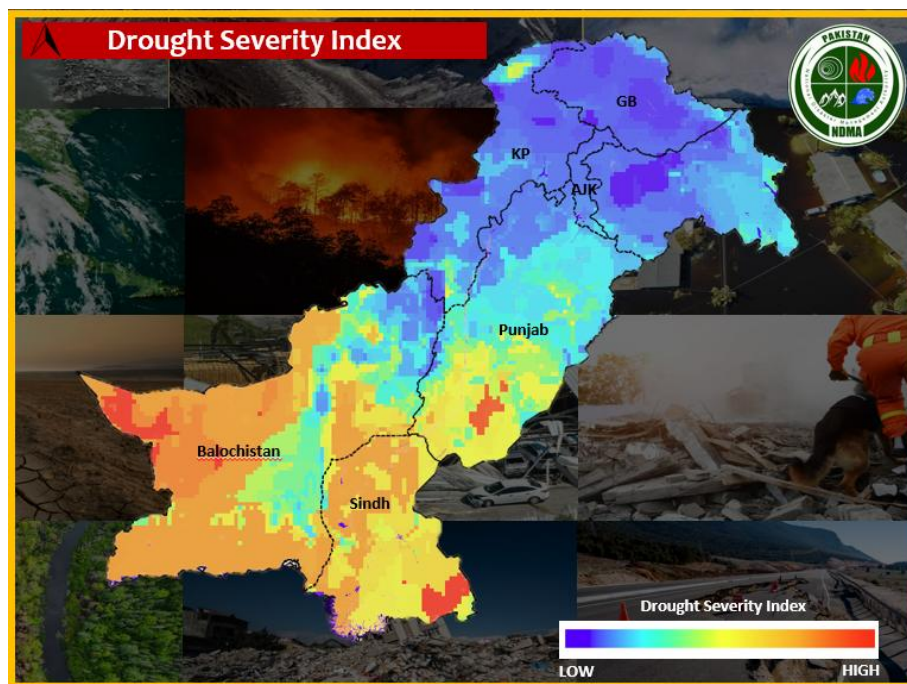


Figure 36. Drought projections (October–December 2026)
Source: National Emergency Operations Centre (NEOC), NDMA

(1) **Regional Drought Assessment**

- (a) **Balochistan.** The province is expected to experience near-normal to slightly below-normal rainfall, while above-normal temperatures are anticipated in Balochistan. The combination of

below-normal rainfall tendencies and elevated temperatures may increase soil moisture deficits and water stress, particularly in rainfed and arid areas. If dry conditions persist, localized meteorological drought conditions may develop or intensify.

Mild Drought: the districts include Killa Saifullah; Kharan, Awaran, Kalat, Zhob, Mastung. Moderate Drought: the districts include Chagai, Washuk, Nushki, Panjgur, Parts of Gwadar

(b) **Sindh.** Much of Sindh is expected to experience near normal rainfall, while southeastern Sindh may experience slightly below normal rainfall. Above normal temperatures, particularly over western Sindh, may further increase evaporative demand and soil-moisture losses. Persistent rainfall deficits in southeastern areas may contribute to developing moisture stress, affecting agriculture, water availability and livelihoods.

(2) **Overall Assessment.** The NEOC seasonal outlook for October–December 2026 indicates normal to above normal rainfall across most northern and central parts of Pakistan, reducing the likelihood of widespread rainfall-deficit conditions during the season. However, localized rainfall deficits and above-normal temperatures over southeastern Sindh, southern Punjab and parts of Balochistan may lead to increasing moisture stress and localized drought risks, particularly in rainfed areas. Proactive preparedness measures, including timely agricultural advisories, protection of standing crops, improved water management and localized drought monitoring, will be important to minimize potential impacts on agriculture, livelihoods and water resources.

d. **Smog**

(1) A toxic mixture of air pollutants, mainly fine particulate matter (PM_{2.5}), nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), volatile organic compounds (VOCs), and secondary aerosols trapped near the surface. It causes severe health impacts (respiratory and cardiovascular diseases), reduces visibility, affects transport, and disrupts economic activities. In Pakistan, it forms primarily (October–December) due to:

(a) **Meteorological Conditions**. Temperature inversion, low wind speed, low precipitation, and high relative humidity.

(b) **Emission Sources**. Crop residue burning, vehicular emissions (especially motorcycles and old diesel vehicles), industrial smoke (brick kilns, steel, cement), and power generation from coal/furnace oil.

(c) **Geography**. The Indo-Gangetic Plain (Punjab and Eastern KP) traps pollutants between the Himalayas, worsening smog intensity.

(d) **Climate Pattern**. Cool nights and reduced diurnal temperature variation trap emissions near the surface.

(2) **Smog Projections**. Based on the projected meteorological Outlook for October–December 2026, the risk of smog and haze is expected to gradually increase from mid-late November through December in line with the seasonal transition towards cooler and more stable atmospheric conditions

(a) In **October 2026, normal to above-normal rainfall over northern and central Pakistan** is expected to provide relatively better atmospheric cleansing compared with prolonged dry conditions. Periodic rainfall can remove suspended particulate matter through wet deposition and temporarily improve visibility and air quality. Therefore, the overall smog/haze potential during October 2026 is expected to remain **low** although localized light episodes of smog may occur over central and southern Punjab during dry intervals. Compared with October 2025, the anticipated wetter conditions over parts of northern and central Pakistan may provide **better intermittent pollutant removal and dispersion**, potentially resulting in a lower persistence of widespread smog episodes.

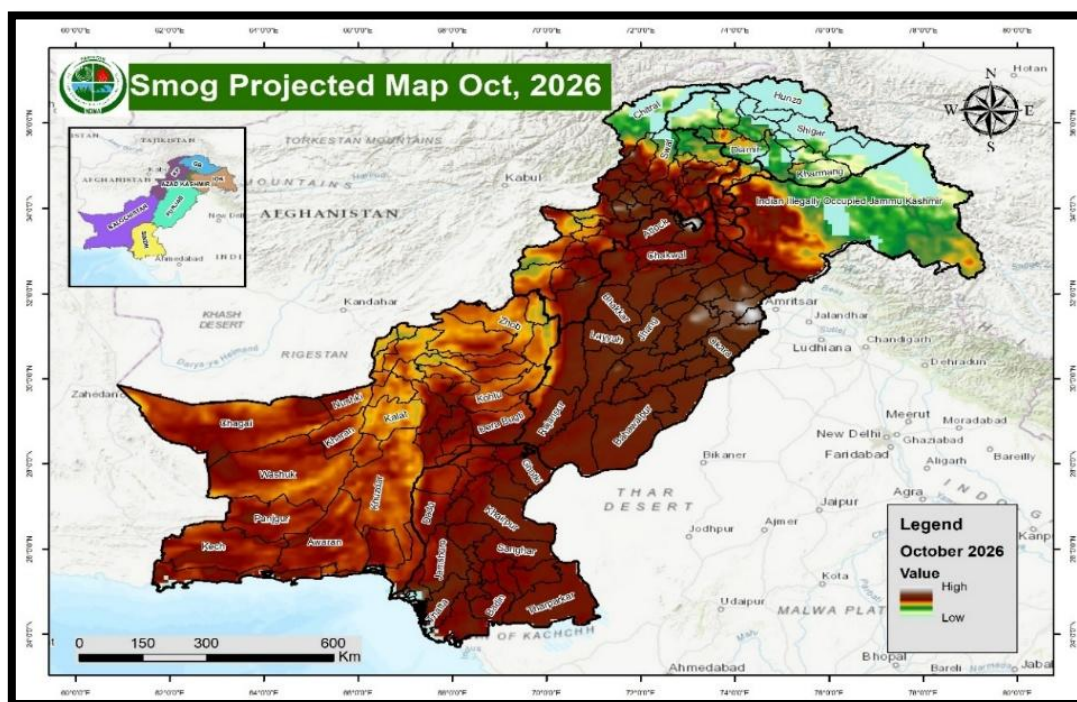


Figure 37. Projected smog hazard map, October 2026
Source: National Emergency Operations Centre (NEOC), NDMA

(b) In **November 2026**, Rainfall is expected to remain **near-normal to above-normal over northern Pakistan**, with relatively wetter conditions possible over **Khyber Pakhtunkhwa, Kashmir and upper Punjab**. Central and southern Punjab may remain near normal, whereas **Sindh and southern Balochistan** could experience near-normal to below-normal rainfall. The relatively wetter conditions over northern and upper Punjab may provide intermittent **atmospheric cleansing and pollutant washout**, particularly during rainfall spells, while comparatively drier conditions over central and southern Punjab may allow pollutants to accumulate during prolonged rainfall-free periods.

During November, the risk of smog and haze is expected to remain low to moderate in plains of Punjab. Therefore, compared with last year, the projected occurrence of more frequent rainfall spells over parts of upper Punjab and Khyber Pakhtunkhwa may help reduce the persistence and overall severity of smog episodes, although localized moderate smog episodes may still develop during prolonged dry and stagnant conditions.

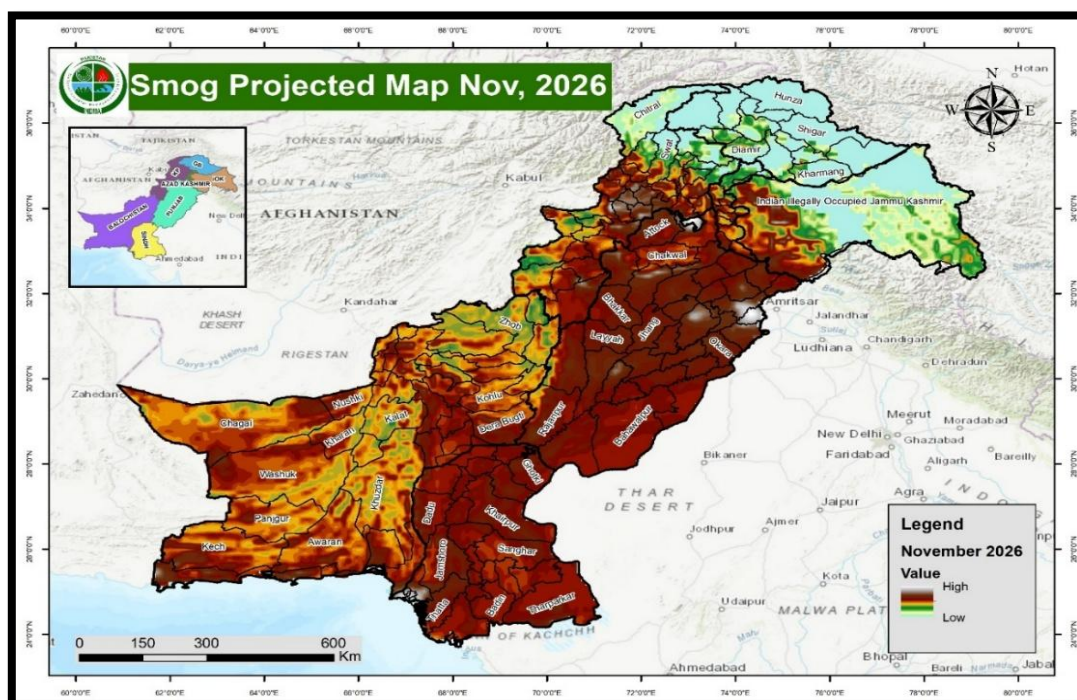


Figure 38. Projected smog hazard map, November 2026
Source: National Emergency Operations Centre (NEOC), NDMA

(c) **December 2026**, the overall rainfall regime is expected to become comparatively drier over much of Pakistan, while temperatures continue to decline. These conditions are expected to provide a more favourable environment for **persistent haze and smog formation**, particularly over the Punjab plains. The combination of **low temperatures, weak winds, reduced rainfall, high atmospheric stability and shallow boundary-layer mixing** can significantly restrict the vertical and horizontal dispersion of pollutants. During **December**, the comparatively drier rainfall regime, further decrease in temperatures and increased frequency of stable atmospheric conditions are expected to provide the most favourable environment for **persistent smog and haze formation**. Weak winds and shallow boundary-layer conditions may substantially reduce horizontal and vertical pollutant dispersion, allowing pollutants to remain concentrated near the surface for several consecutive days. Consequently, December is expected to have **period of Moderate-High smog/haze** during the OND season, particularly across central and northern Punjab, major urban and industrial corridors, and the Peshawar Valley.

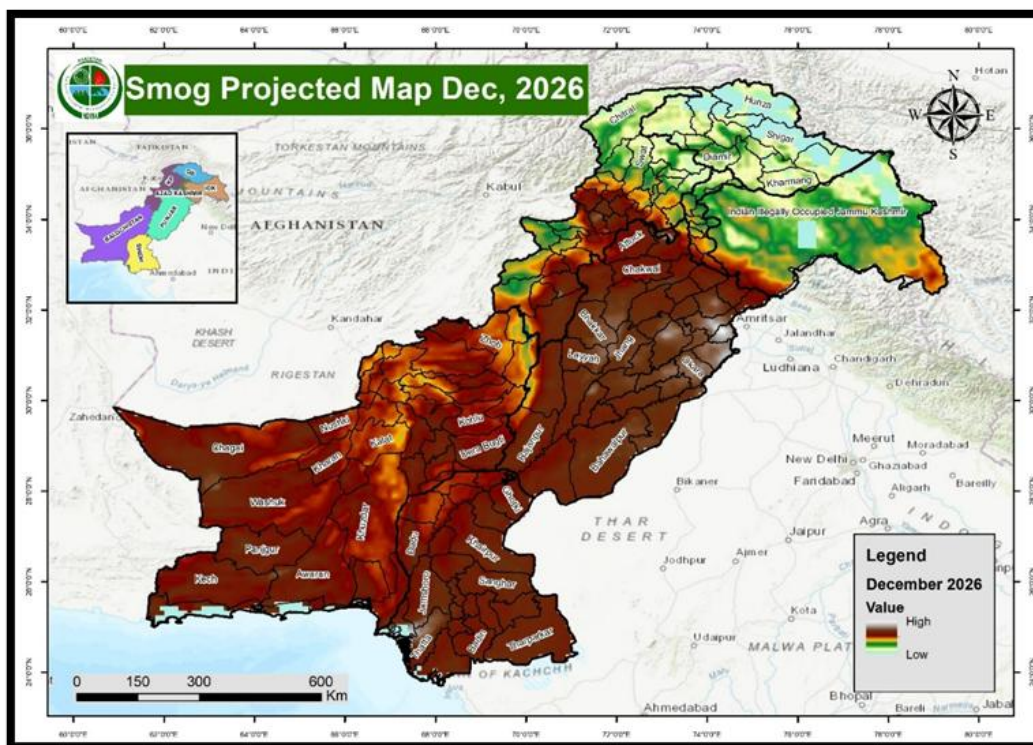


Figure 39. Projected smog hazard map, December 2026
Source: National Emergency Operations Centre (NEOC), NDMA

e. **Cyclone.** The Arabian Sea is expected to remain relatively warm during the October–December 2026 period, with above-normal sea surface temperatures across portions of the central and southern Arabian Sea. These conditions may provide some environmental support for tropical cyclone development; however, cyclone formation also depends on atmospheric conditions that can change considerably over time. The current outlook indicates a low direct tropical cyclone landfall risk for the Pakistani coastline, while portions of the central Arabian Sea warrant continued monitoring.

(1) **October 2026.** October is identified as the primary period of interest for tropical cyclone activity over the Arabian Sea. Forecast conditions indicate warmer-than-normal waters over parts of the central Arabian Sea, while atmospheric conditions along the Pakistani coast remain generally less supportive of direct cyclone development the probability of tropical cyclone activity over portions of the central Arabian Sea is assessed as moderate, with the supplied forecast indicating a 5–10% weekly strike probability in parts of the central Arabian Sea.

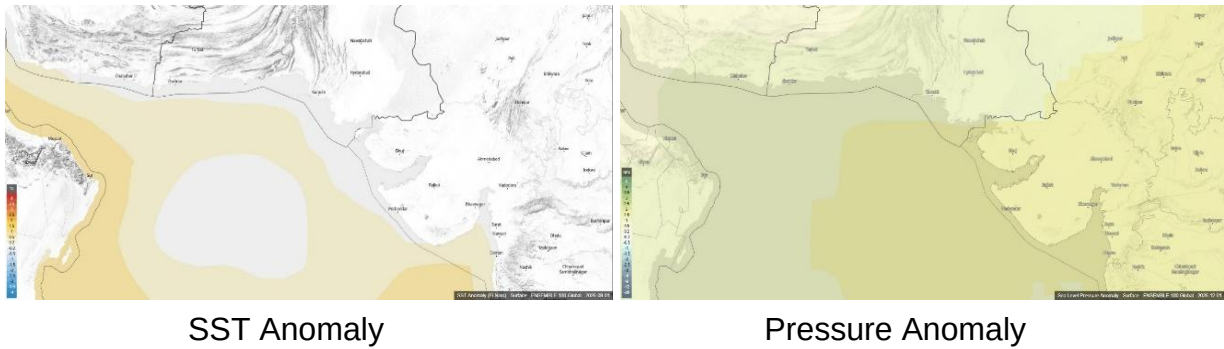


Figure 40. Sea surface temperature (SST) and pressure anomalies over the Arabian Sea, October 2026

Source: meteoblue (ECMWF-based seasonal forecast)

(2) **November 2026.** During November, warmer-than-normal sea surface temperatures are expected to persist over parts of the Arabian Sea, including areas extending toward the Pakistani coast. While these oceanic conditions may remain favorable for tropical development, the formation and movement of any cyclone will depend on the prevailing atmospheric environment. No specific significant cyclone threat to the Pakistani coastline is indicated at this stage.

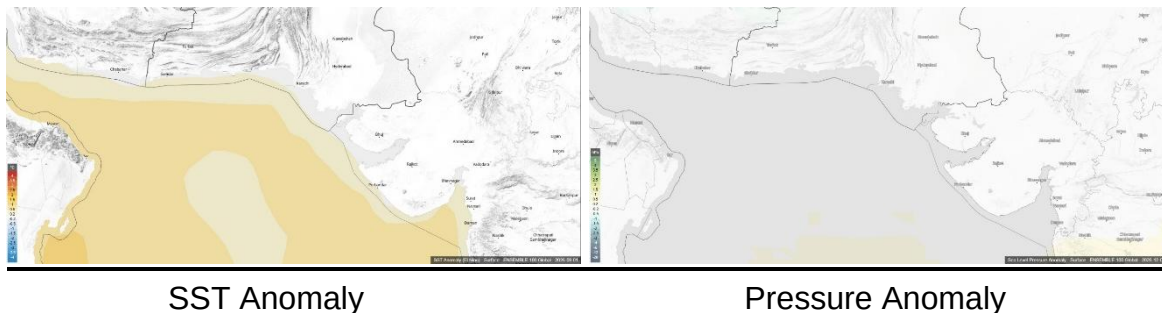
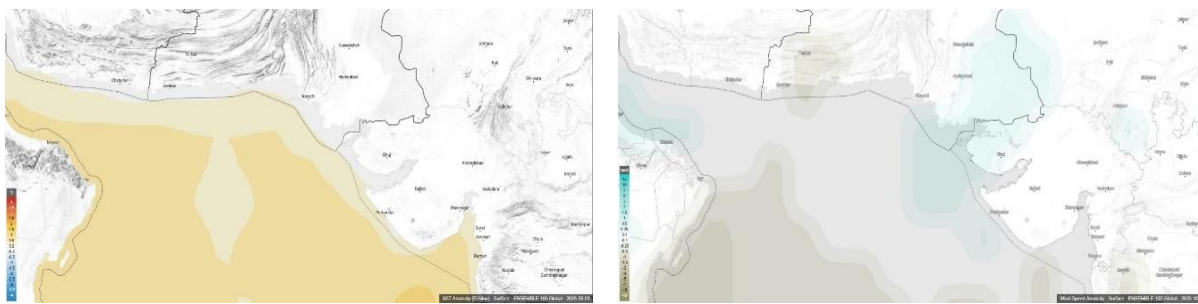


Figure 41. Sea surface temperature (SST) and pressure anomalies over the Arabian Sea, November 2026

Source: meteoblue (ECMWF-based seasonal forecast)

(3) **December 2026.** During December, above-normal sea surface temperatures may continue over portions of the open Arabian Sea, while conditions along the Pakistani coastline are expected to remain closer to normal. The current outlook does not indicate a specific significant tropical cyclone threat to Pakistan during this period. Nevertheless, coastal and maritime authorities should continue routine monitoring as tropical weather systems can develop or change their movement with relatively short lead times.



SST Anomaly

Pressure Anomaly

Figure 42. Sea surface temperature (SST) and pressure anomalies over the Arabian Sea, December 2026

Source: meteoblue (ECMWF-based seasonal forecast)

5. **Conclusion.** Pakistan's DEW-4 period (October–December 2026) is expected to mark a progressive transition from monsoon-related hazards to a more diverse and regionally differentiated multi-hazard risk environment. The evolving risk profile requires a shift from predominantly monsoon-focused operations toward integrated, impact-based preparedness and anticipatory action. During October, residual rainfall, flash floods and landslides may continue to affect vulnerable areas, while tropical cyclones and associated coastal hazards remain a conditional concern along the Sindh and Balochistan coasts. As the season advances, the focus will increasingly shift toward snowfall, avalanches, cold waves and related disruptions in northern Pakistan, alongside fog, smog and reduced visibility across the plains, particularly Punjab. At the same time, below-normal precipitation and prolonged dry spells may contribute to increasing drought and water-stress conditions in vulnerable agricultural and arid regions, depending on observed rainfall and hydrological trends. These overlapping risks highlight the need for continuous monitoring and timely reassessment throughout the quarter.



Figure 43. Province-wise vulnerability scan

Source: National Emergency Operations Centre (NEOC), NDMA

The strategic priority for DEW-4 is to ensure timely, location-specific early warnings are translated into practical preparedness measures, including pre-positioning of emergency resources, winter and cyclone contingency planning, drought-risk monitoring, protection of critical infrastructure and targeted support for vulnerable communities. Effective coordination among agencies, provincial authorities and relevant sectoral agencies will be essential to minimize the impacts of emerging hazards on lives, livelihoods, public health, agriculture, water resources and essential services.