DEW 1
January-March, 2026

National Emergency Operation Center (NEOC)
National Disaster Management Authority (NDMA), Pakistan

Disaster Early Warning 1 (DEW 1) 2026

Jan- Feb- March

The Disaster Early Warning 1 (DEW 1) for January, February and March (JFM) 2026 is developed considering the prevailing large-scale ocean atmosphere circulation patterns that generally influence regional climatic factors over Pakistan.

Based on multi model analysis, it is projected that Pakistan will experience near-normal seasonal mean conditions in the months of Jan, Feb and March. However, higher sub seasonal variability is expected across different regions with major deviation in the north i.e., short cold spells, episodic heavy snow or rain pulses which can lead to winter specific hazards.

A quick snapshot of global and regional climatic variabilities monitored for the DEW-1 include:

a. **El Nino Southern Oscillation (ENSO).** ENSO is currently in weak La Nina, however it is expected to become neutral during the JFM season. This indicates the absence of strong El Niño or La Niña forcing, reducing the likelihood of extreme wet or dry conditions driven by the Pacific Ocean.
b. **Indian Ocean Dipole (IOD).** The Indian Ocean Dipole (IOD) is transitioning from a weakening Negative Phase back towards a Neutral Phase. A neutral IOD typically limits strong moisture transport from the Indian Ocean towards the subcontinent.
c. **Stronger Siberian High.** The Siberian High will be persistently anomalous (very strong or very weak) for the whole Jan–Mar 2026 window. Seasonal products point to a mix of conditions: overall country-scale warmth but with the possibility of episodic Siberian High strengthening and attendant cold surges (short duration) especially in January and February. In short: warmer mean season, but risk of short cold-spell events caused by Siberian High pulses.

d. **North Atlantic Oscillation (NAO).** Several long-range assessments in flagged possible episodes of a negative NAO / weakened polar vortex during winter 2025–26, which would favor transient blocking and cold outbreaks in mid-latitudes including meridional behavior of Jetstream that could bring episodic Western Disturbance in Pakistan during late January and beyond, but the timing and persistence of NAO phases remain uncertain

e. **Overall implication.** Seasonal averages may appear near-normal, but sub-seasonal variability (cold spells, snowfall bursts, rain events) will be high, driven by Western Disturbances, MJO phases, Jetstream variability, and continental pressure systems.

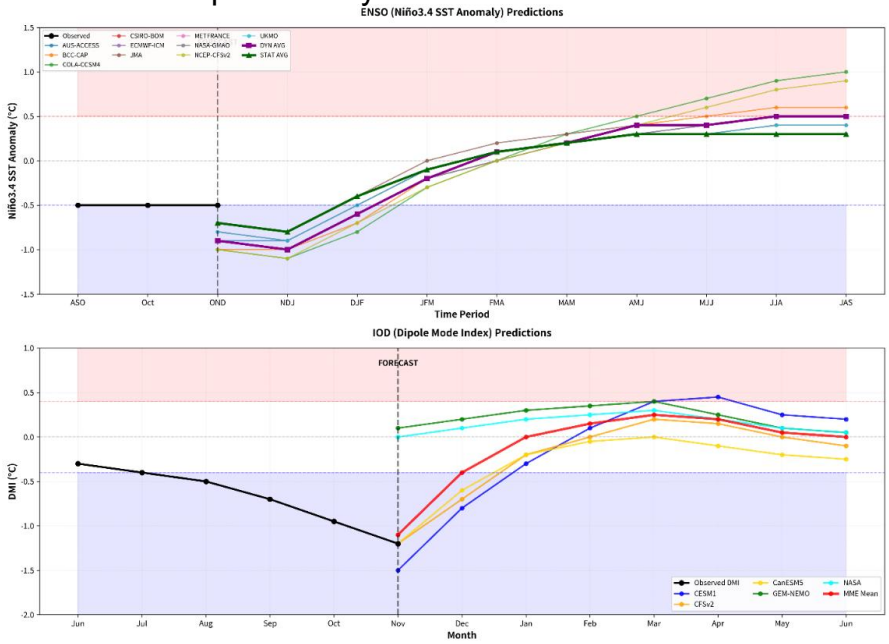


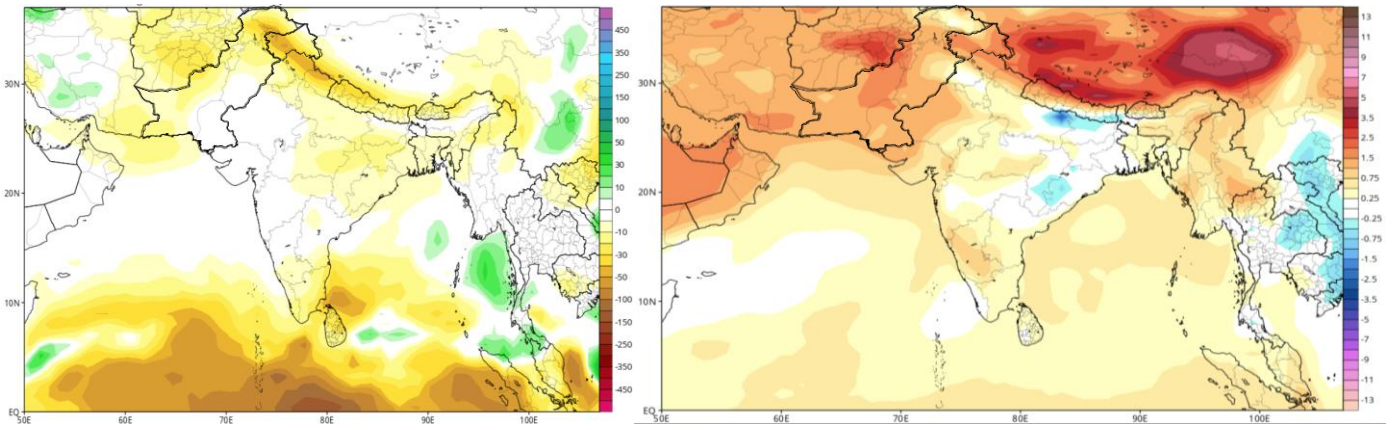
Figure: ENSO and IOD Anomaly

2. **Global DEW .** From January to March 2026, South Asia's climate is expected to be shaped by a transition from weak La Niña conditions toward ENSO-neutral, alongside a neutralizing Indian Ocean Dipole and active mid-latitude circulation. Winter precipitation across the western Himalayan region, including northern Pakistan, northwest India, and Nepal, is likely to be near to slightly above normal at times due to episodic Western Disturbances, while much of central and southern India, Bangladesh, and Sri Lanka may experience near-normal to slightly

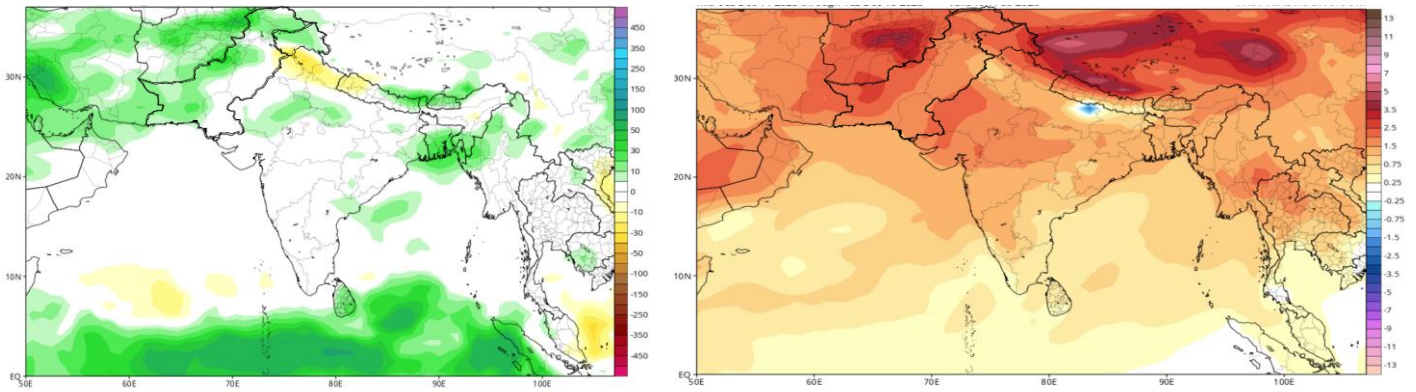
drier conditions. Temperatures are expected to be cooler than average during January across northern Pakistan, northern India, and Himalayan foothills, driven by cold air incursions associated with the Siberian High, before gradually shifting to near-normal in February and above-normal by March across most of the region. Overall, the season indicates low to moderate climate-related risks, with potential impacts including cold waves, dense fog and air-quality deterioration over the Indo-Gangetic Plain during mid-winter, localized flooding and landslides in mountainous areas during active Western Disturbance episodes, and increasing heat stress and early snowmelt concerns toward March, particularly across lowland and urban regions of South Asia.

Monthly Maps of DEW-1 (a) Precipitation, and (b) Temperature

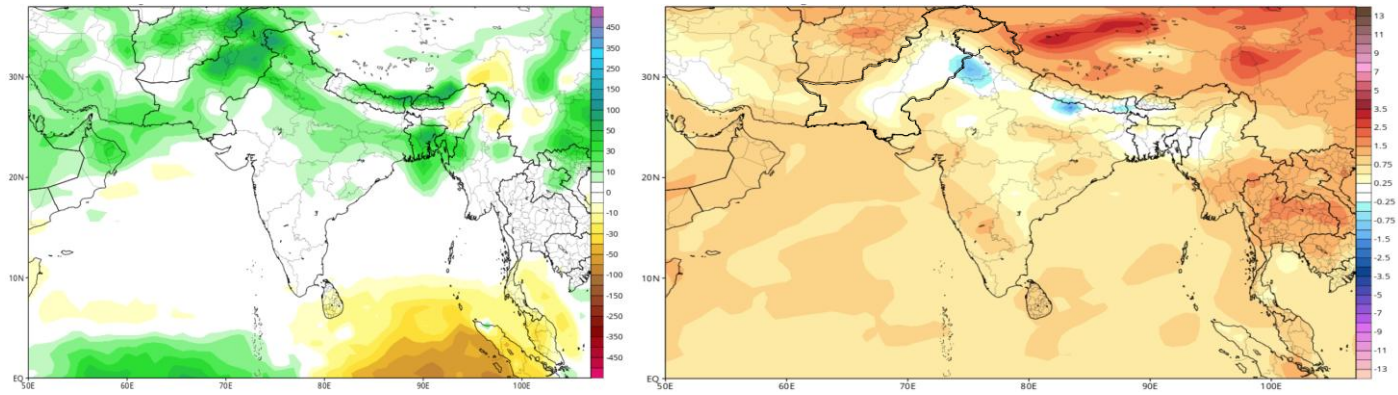
January 2026



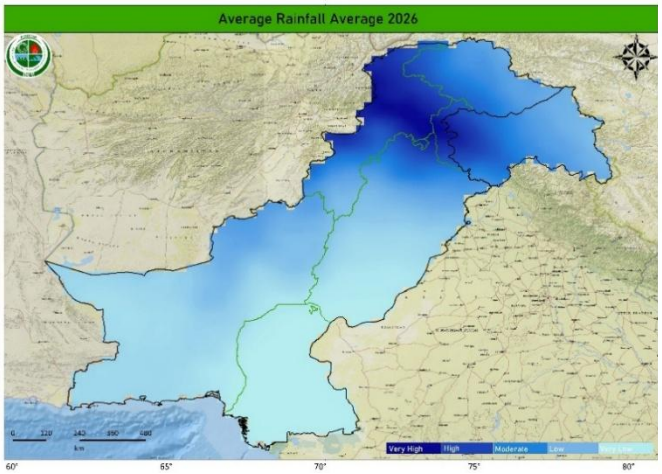
February 2026



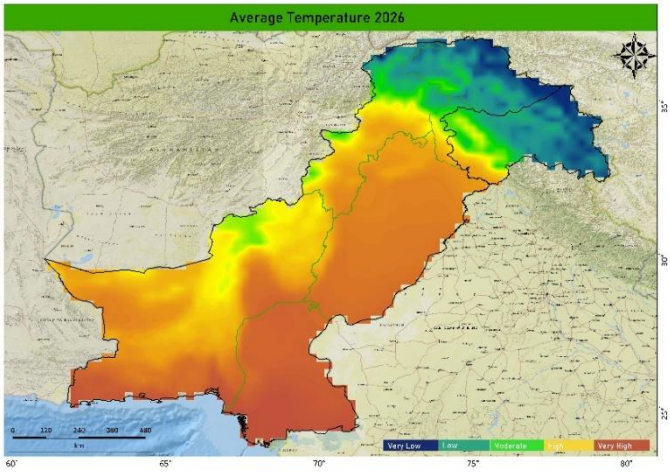
March 2026 ```



3. **<u>Pakistan Meteorological Outlook.</u>** With both ENSO and IOD remaining neutral, no strong large scale wet conditions are anticipated. Seasonal rainfall over Pakistan during JFM 2026 will therefore mainly depend on:
    - **a.** The frequency and intensity of western weather systems
    - **b.** Local and regional atmospheric circulation patterns
    - **c.** As a result, rainfall is expected to remain below normal during early January in northern regions, followed by a gradual improvement to near-normal conditions during late January and February, while temperatures are likely to remain above normal across most parts of the Country.



Average Rainfall (JFM-2026)



Average Temperature (JFM-2026)

d. Province-wise Meteorological Outlook (JFM) 2026

(1) **Punjab**. The precipitation and temperature outlook for Punjab from Jan-Mar 2026 shows that: the **Northern Punjab** will experience Below normal rainfall is expected during early January, with a return to near-normal rainfall during late January and February. For **Southern Punjab** rainfall is expected to remain near normal overall while the temperatures are expected to remain above normal across the province.

(2) **Sindh.** Rainfall is expected to remain near normal throughout the JFM season whereas, above-normal temperatures are expected, particularly over southern Sindh.

(3) **Khyber Pakhtunkhwa (KP)** Below-normal rainfall is expected during early January, followed by near-normal rainfall during late January and February in **Northern KP** whereas, for **Southern KP** rainfall is expected to remain near normal. Temperatures are expected to remain above normal, with higher anomalies over northern KP.

(4) **Balochistan.** Rainfall across most parts of Balochistan is expected to remain near normal whereas, above-normal temperatures are expected, especially over southern Balochistan.

(5) **Gilgit-Baltistan (GB).** Below-normal precipitation (Rainfall / Snowfall) is expected during early January whereas, conditions are likely to improve to near normal during late January and February. Above-normal temperatures with relatively higher positive anomalies are expected.

(6) **Azad Jammu & Kashmir (AJ&K).** Below-normal rainfall is expected during early January, followed by near-normal rainfall during late January and February. Whereas, temperatures are expected to remain above normal.

e. **<u>Summary.</u>** Overall, the JFM 2026 climate outlook indicates:

(1) A drier start to the season, particularly in northern regions

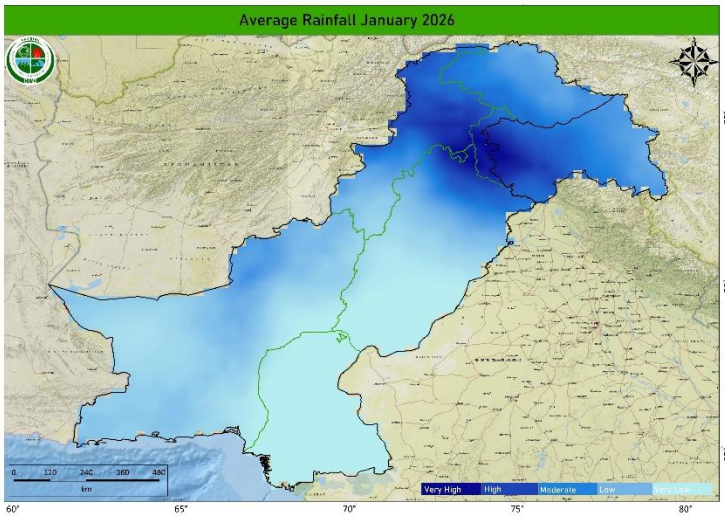
(2) Gradual improvement in rainfall during late January and February

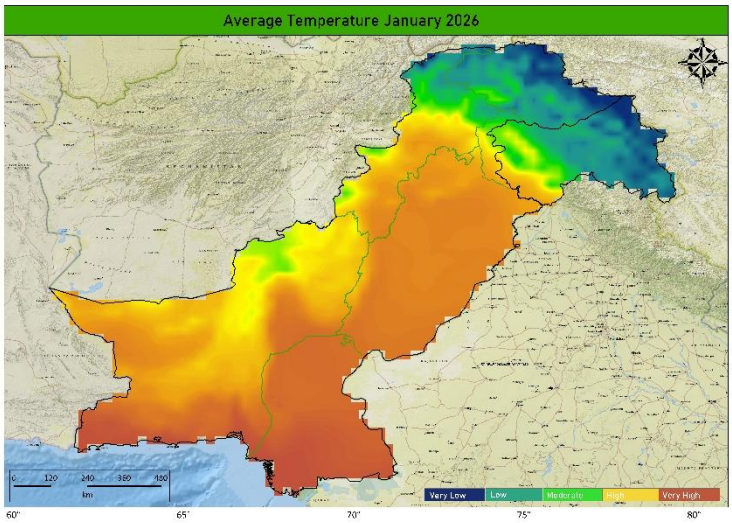
(3) Above-normal temperatures nationwide

(4) Climate variability driven mainly by western disturbances, rather than large-scale oceanic forcing

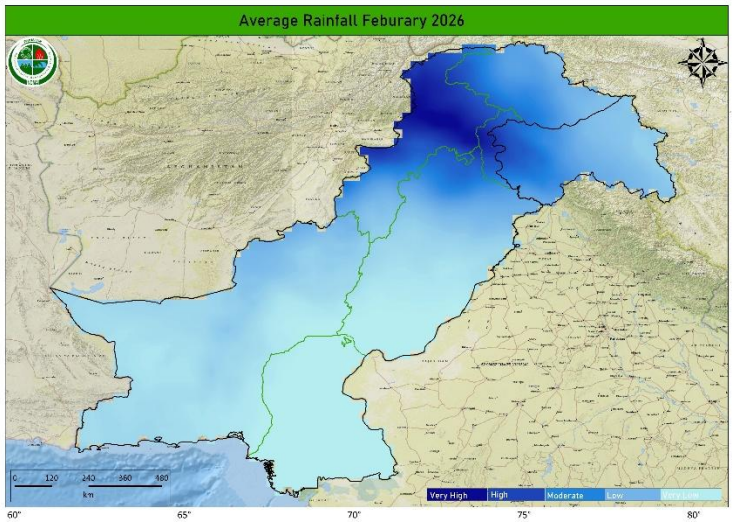
Monthly Maps of DEW-1

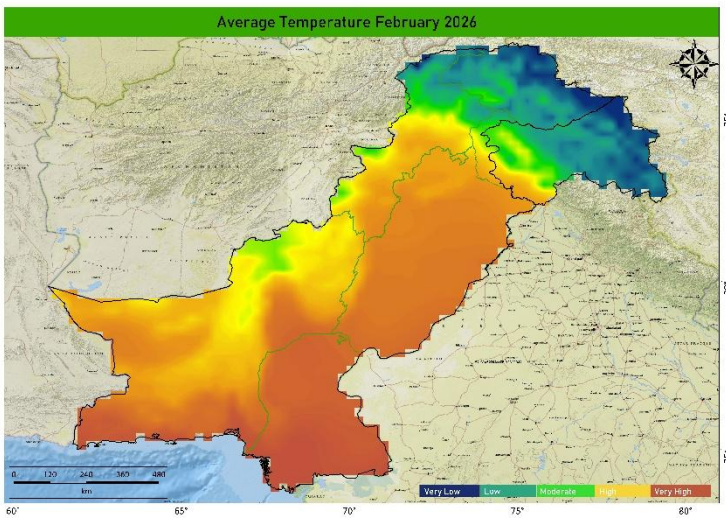
January



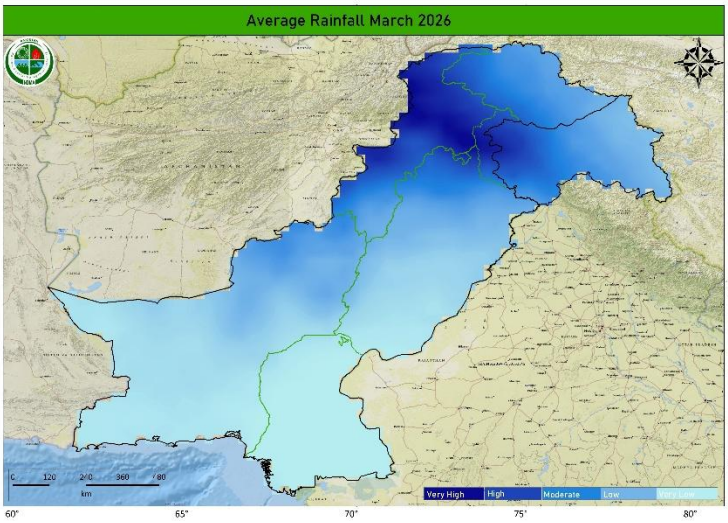


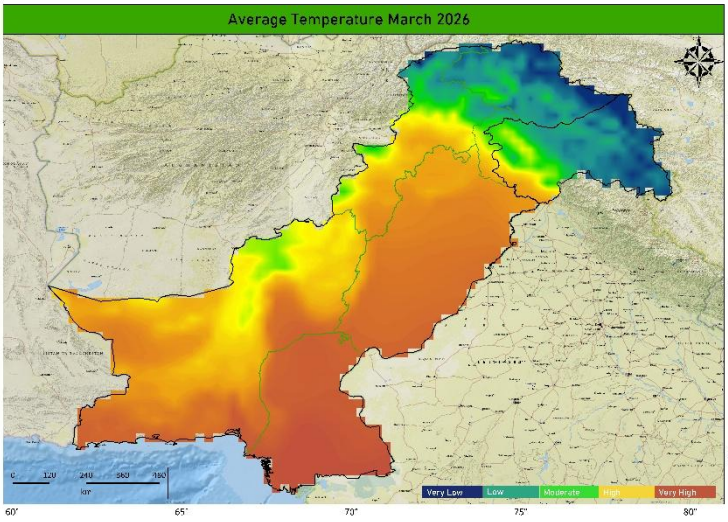
February





March





4. **<u>Snow and Avalanches.</u>** From January to March 2026, northern Pakistan is expected to experience a progressive evolution of snow cover and associated avalanche risk, driven by winter Western Disturbances and seasonal temperature changes.

   a. **<u>January 2026.</u>** In January 2026, snowfall is projected across the upper and western parts of Gilgit-Baltistan, upper Khyber Pakhtunkhwa, AJK, and the western Himalaya, reflecting peak winter accumulation. The maps indicate dense and widespread snowpack across high-altitude districts such as Hunza, Nagar, Ghizer, Skardu, Astore, Chitral, Upper Kohistan, and Neelum Valley, extending into parts of Indian Illegally Occupied Jammu & Kashmir. Lower elevations of KP and northern Punjab remain largely snow-free, highlighting strong elevation control. This pattern suggests frequent Western Disturbances combined with sustained cold conditions, increasing risks of avalanches, road blockages, and prolonged isolation of high-mountain communities during mid-winter.

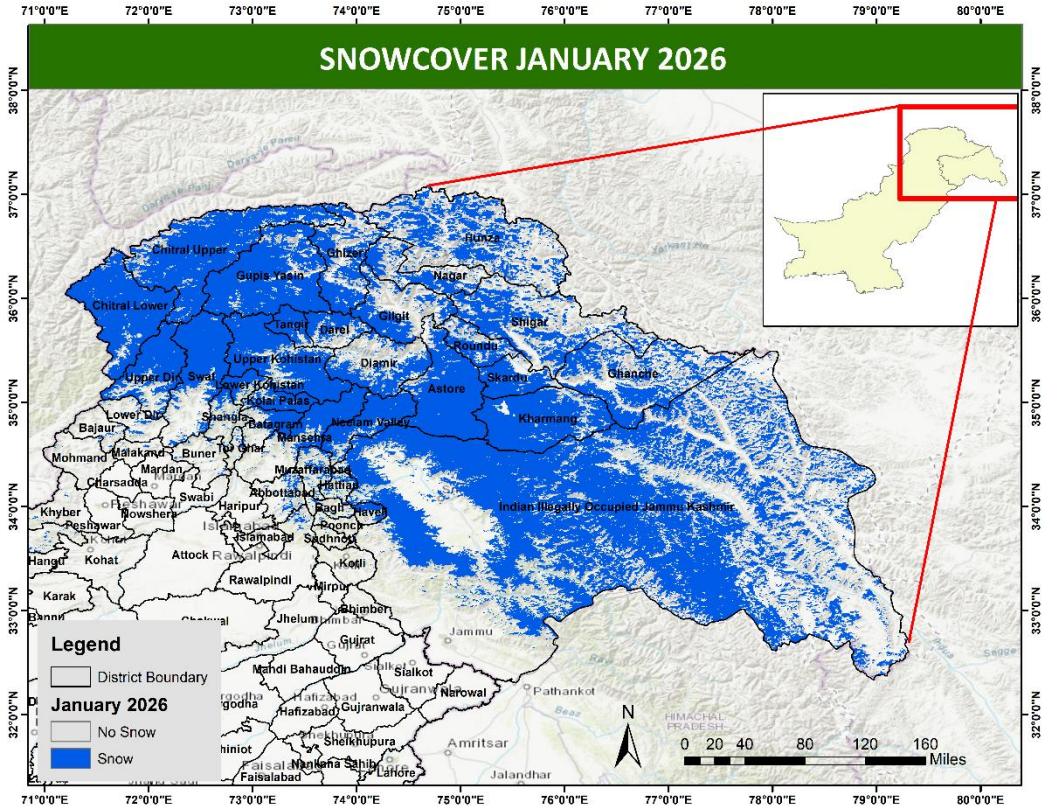


Figure: Snow Projection – January 2026

b. **<u>February 2025.</u>** By February 2026, snow cover remains substantial but shows early signs of spatial fragmentation, particularly at mid-elevations. High-altitude zones of central and eastern Gilgit-Baltistan, upper AJK, and the Karakoram Himalayan belt continue to retain deep snowpack, while western and lower-elevation valleys show partial snow loss, likely driven by intermittent warming and rain-on-snow events. The maps suggest continued snow replenishment during active Western Disturbance episodes, especially when enhanced by moisture surges, but with increasing variability. This transition phase heightens the risk of avalanches, landslides, and localized flooding, as accumulated snow becomes more sensitive to temperature fluctuations.

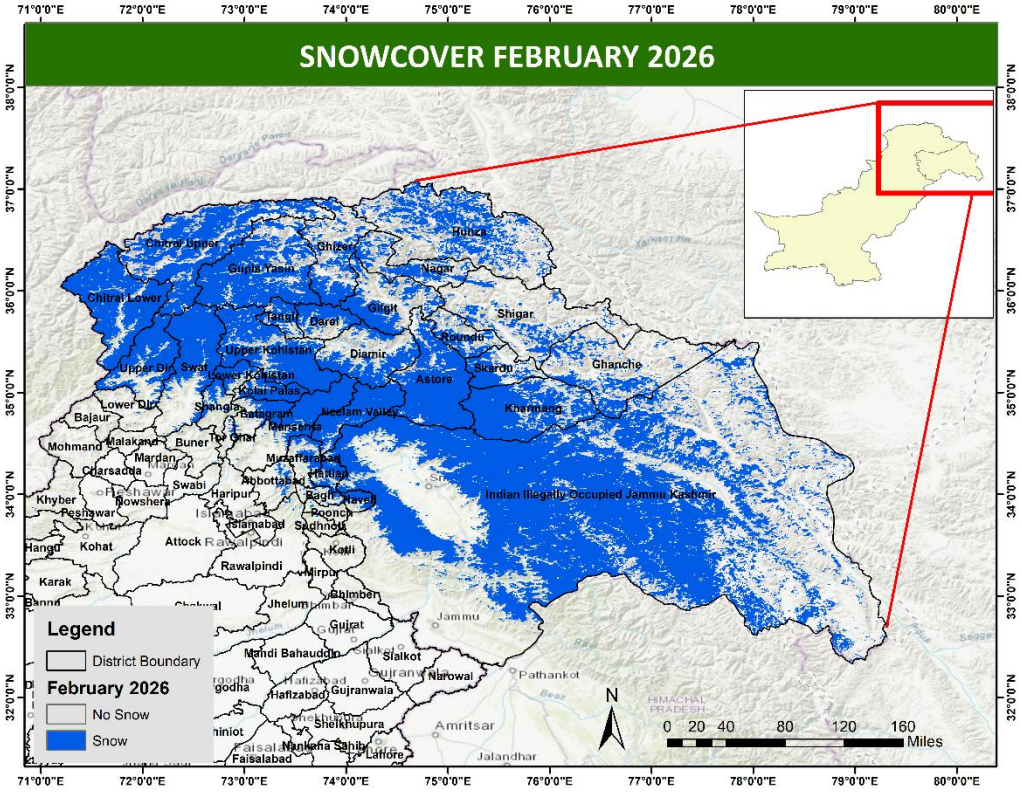


Figure: Snow Projection – February 2026

c. **<u>March 2026.</u>** In March 2026, a clear reduction and retreat of snow cover is evident across much of the region, with snow becoming increasingly confined to higher elevations of Gilgit-Baltistan, eastern AJK, and the upper Karakoram ranges. Mid-altitude districts display significant snow depletion, indicating the onset of seasonal melt under rising temperatures and reduced frequency of Western Disturbances. However, persistent snow cover over the highest terrain suggests continued contribution to spring and early summer meltwater. This evolving pattern points to greater variability in river inflows, increased risk of early snowmelt-driven runoff, and localized flooding in downstream catchments if late-season precipitation coincides with warming conditions.

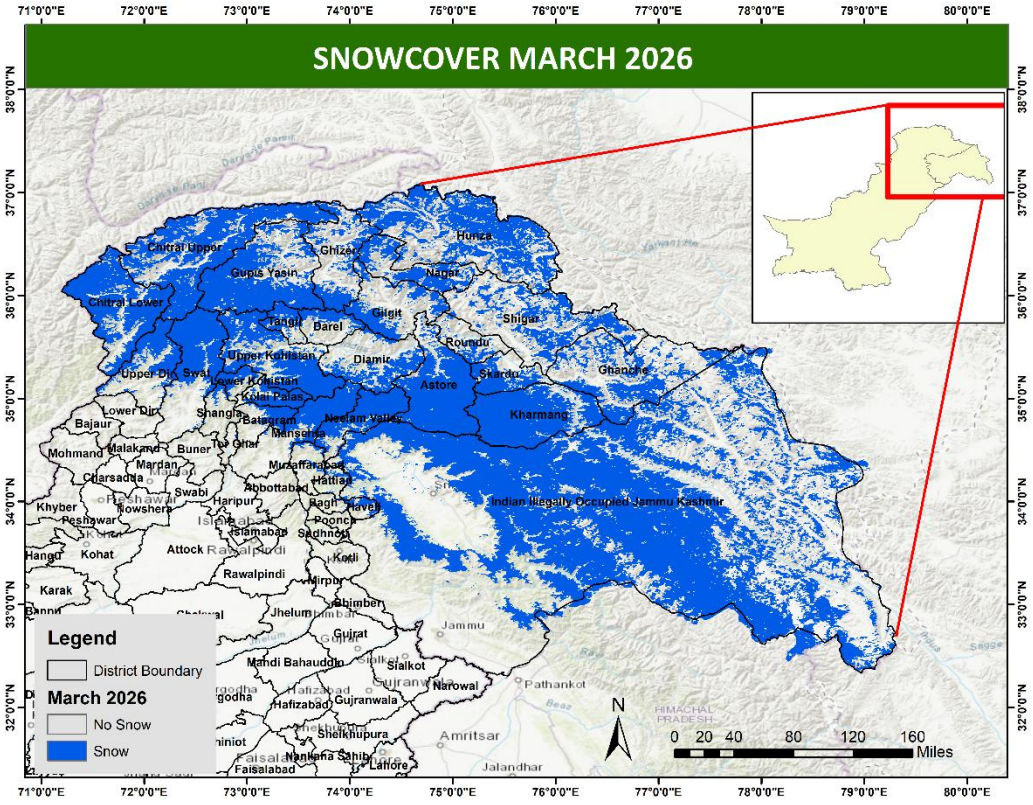


Figure: Snow Projection – March 2026

d. **<u>Avalanche Vulnerability 2026.</u>** During January and February, temperatures in northern mountainous regions of Pakistan remain relatively low, which helps maintain the stability of the snowpack. The cold conditions prevent rapid melting and keep the snow layers compact, reducing the immediate risk of avalanches. However, as temperatures begin to rise in late winter and early spring, the snowpack becomes increasingly unstable. The melting of lower layers, combined with weak bonding between snow layers, creates conditions that can easily trigger avalanches. This seasonal shift in temperature plays a critical role in avalanche formation, making periods of warming particularly hazardous for communities, infrastructure, and travelers in the high-altitude areas of northern Pakistan. The areas of Northern Pakistan that are vulnerable to avalanche are shown in the avalanche vulnerability map.

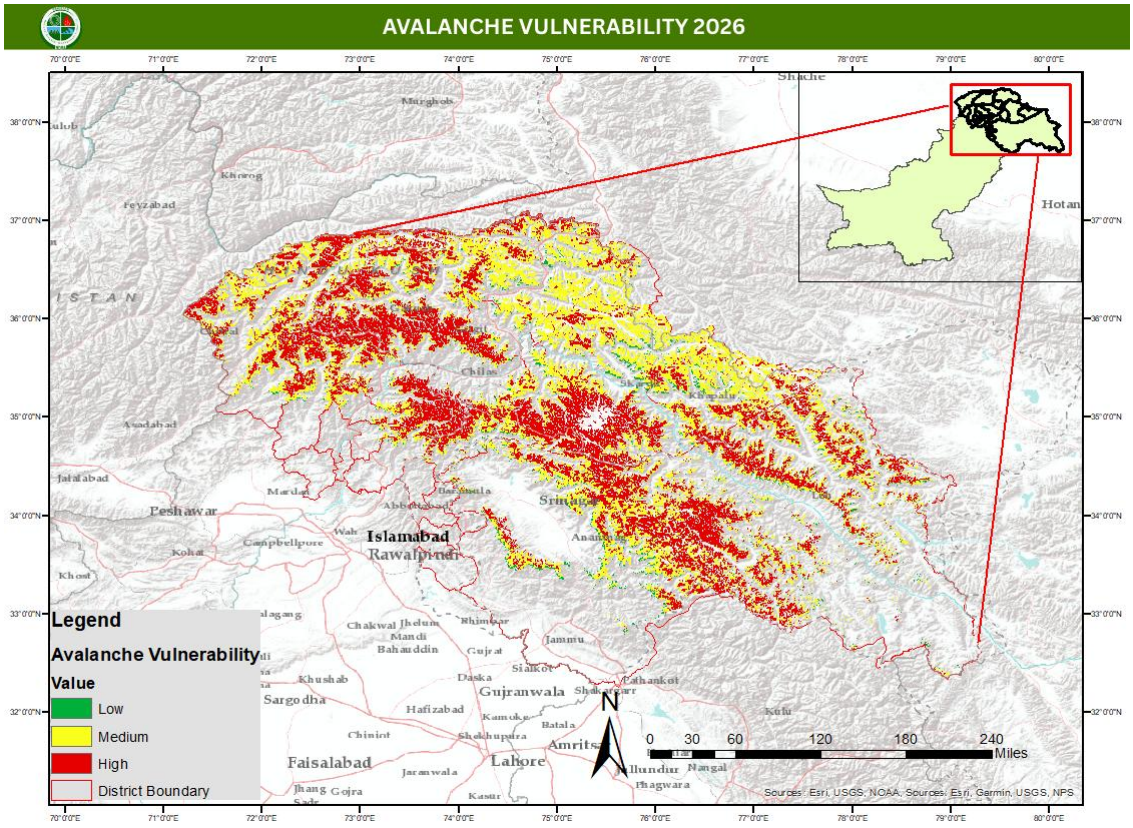


Figure: Avalanche Vulnerability in Northern Pakistan

5. **<u>Landslides.</u>** 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.

a. **<u>January-February 2026.</u>** During January and February, slopes in northern Pakistan are largely stabilized by cold winter conditions. January will experience near-normal precipitation, keeping soil and rock mostly dry and frozen, which limits slope failures. February has slightly higher precipitation, particularly in northern mountainous areas, which can locally increase soil moisture and reduce stability in vulnerable slopes. Widespread or large landslides remain unlikely because snow cover and frozen ground prevent significant water infiltration, but small, localized landslides may still occur in steep, weak terrain, particularly in **Upper Kohistan, Mansehra, and Nagar**. However, key mechanisms include freeze-thaw cycles, where water in cracks freezes and expands, gradually weakening rock and soil; limited snowmelt or rainfall infiltration, which can trigger slides on fragile slopes; and topographic or human modifications, such as steep slopes, loose debris, and road cuts, which create points of localized instability.

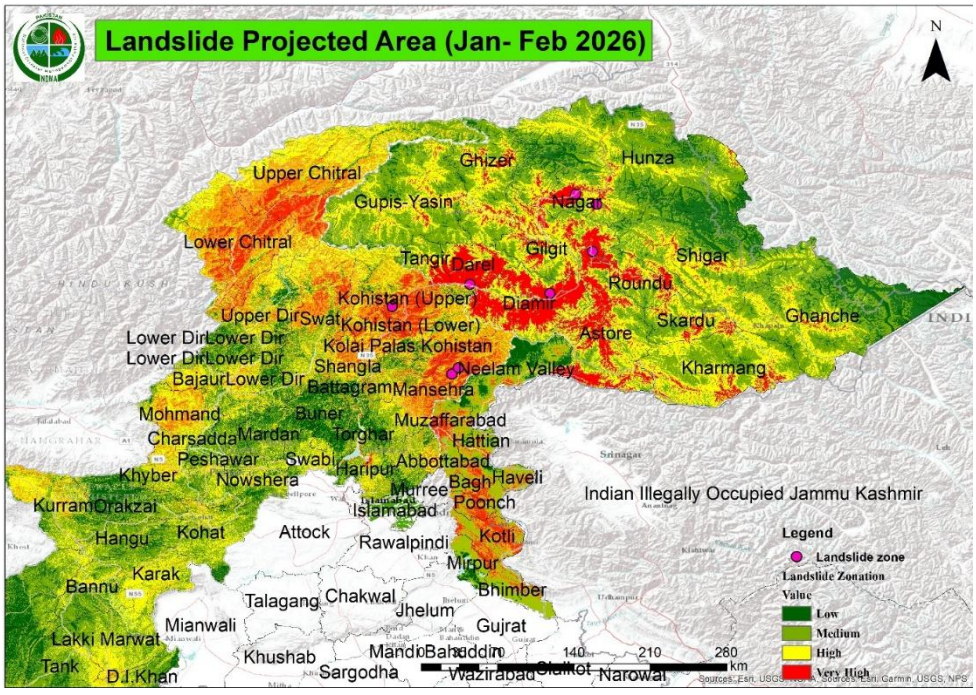


Figure: Landslide Projection – Jan-Feb 2026

b. **<u>March 2026.</u>** In March, northern Pakistan experiences a notable increase in precipitation, particularly in high-elevation districts such as **Gilgit-Baltistan, Upper Kohistan, Diamir, and Chitral**. This rise in moisture, combined with ongoing snowmelt during late winter, increases soil saturation on steep and structurally weak slopes, creating favorable conditions for landslides. March's precipitation enhances infiltration and reduces slope stability, particularly along roads and areas with loose debris. Consequently, localized and potentially larger landslides are more likely in vulnerable terrain. The primary triggers include a combination of snowmelt-induced moisture, rainfall infiltration, and ongoing freeze–thaw weakening of rocks and soils. Therefore, March represents a transitional period where winter slope stabilization decreases, and precipitation-driven landslide risks begin to emerge prominently in northern Pakistan.

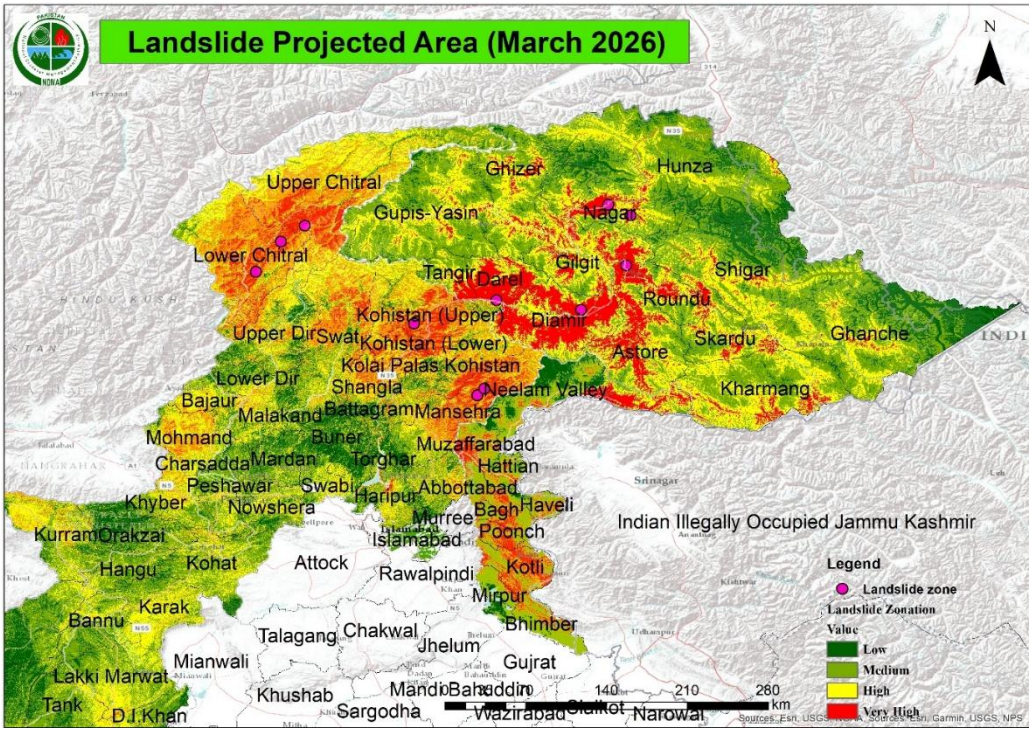


Figure: Landslide Projection – Mar 2026

c. **Overall Assessment.** During January and February, landslide risk in northern Pakistan remains generally low, as cold temperatures, frozen ground, and snow cover limit water infiltration and slope movement. However, localized instability may occur on steep and geologically weak slopes due to freeze-thaw processes and occasional winter precipitation, particularly in Upper Kohistan, Mansehra, Nagar, and similar high-risk corridors. In March, rising precipitation combined with early snowmelt increases soil moisture and reduces slope stability, marking a transition toward higher landslide susceptibility. Consequently, localized to moderate landslides become more likely in northern mountainous areas, especially in Gilgit-Baltistan, Chitral, Diamir, and Upper Kohistan, warranting increased monitoring and preparedness.

6. **Smog/Fog Outlook (January-February).** The smog/fog outlook for January and February indicates a moderate to high risk of combined air quality and visibility hazards, particularly during January, driven by below-normal rainfall in early winter, weak large-scale circulation, and strong temperature inversions. With ENSO and IOD remaining largely neutral, the seasonal variability will be governed primarily by the frequency and intensity of western weather systems, which are expected to increase gradually from late January onward. As a result, January is assessed as the month with the likelihood of moderate to dense smog and fog episodes, while February is expected to show a noticeable improvement in atmospheric dispersion. Punjab remains the vulnerable province, particularly its central and northern districts, including Lahore, Sheikhupura, Kasur, Gujranwala, Faisalabad, Sialkot, and adjoining areas. During January, the region is likely to experience persistent dense fog during nighttime and early morning hours, followed by pronounced daytime smog, primarily due to strong and sustained temperature inversions coupled with weak atmospheric ventilation. Consequently, air quality is expected to deteriorate to very unhealthy range, accompanied by significant visibility reduction, especially along major transport corridors and urban centers. In southern Punjab, fog is expected to be moderate-dense in intensity and largely confined to nocturnal and early-morning hours, while smog episodes are anticipated to remain localized and comparatively less intense than northern

Punjab. During February, smog and fog conditions across Punjab are projected to become more intermittent, with progressive improvement in dispersion following the passage of western disturbances.

In Khyber Pakhtunkhwa, moderate fog is expected particularly across the Peshawar Valley, including Peshawar, Nowshera, Mardan, and Charsadda. January is likely to witness moderate fog during night and morning hours. Southern KP districts are expected to experience only occasional shallow-moderate fog. During February, fog occurrences are projected to become shorter-lived and more localized as atmospheric conditions improve.

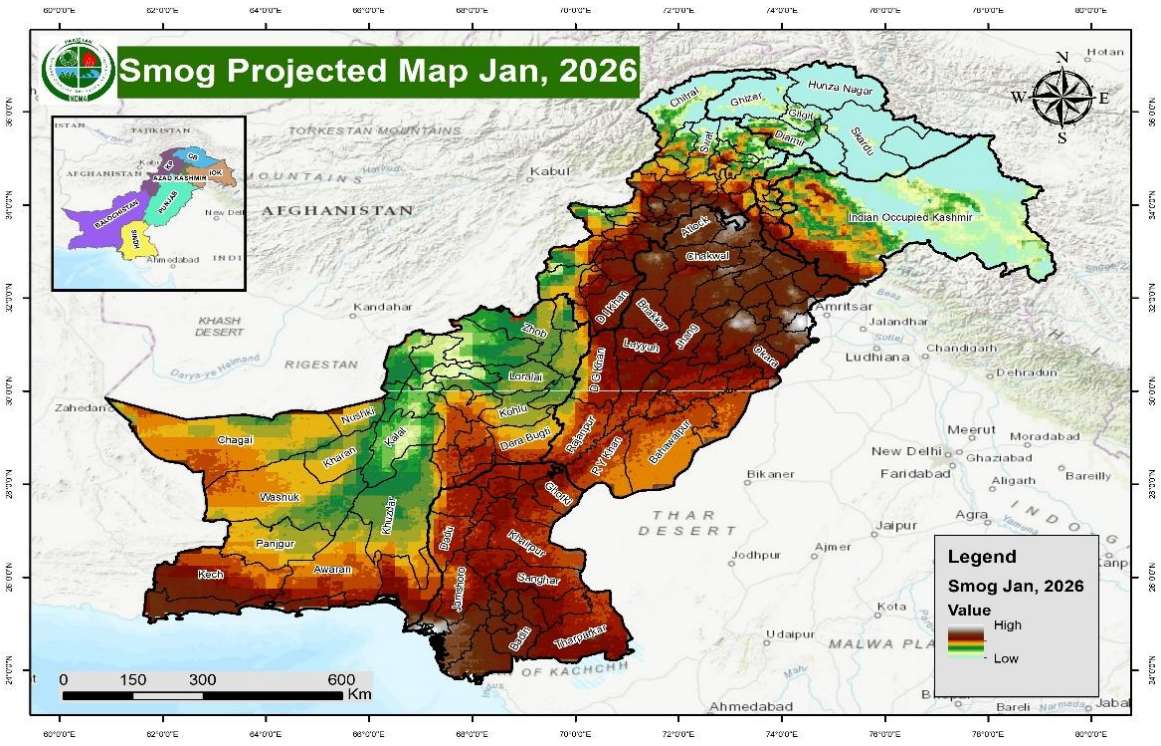


Figure: Smog Projection – Jan 2026

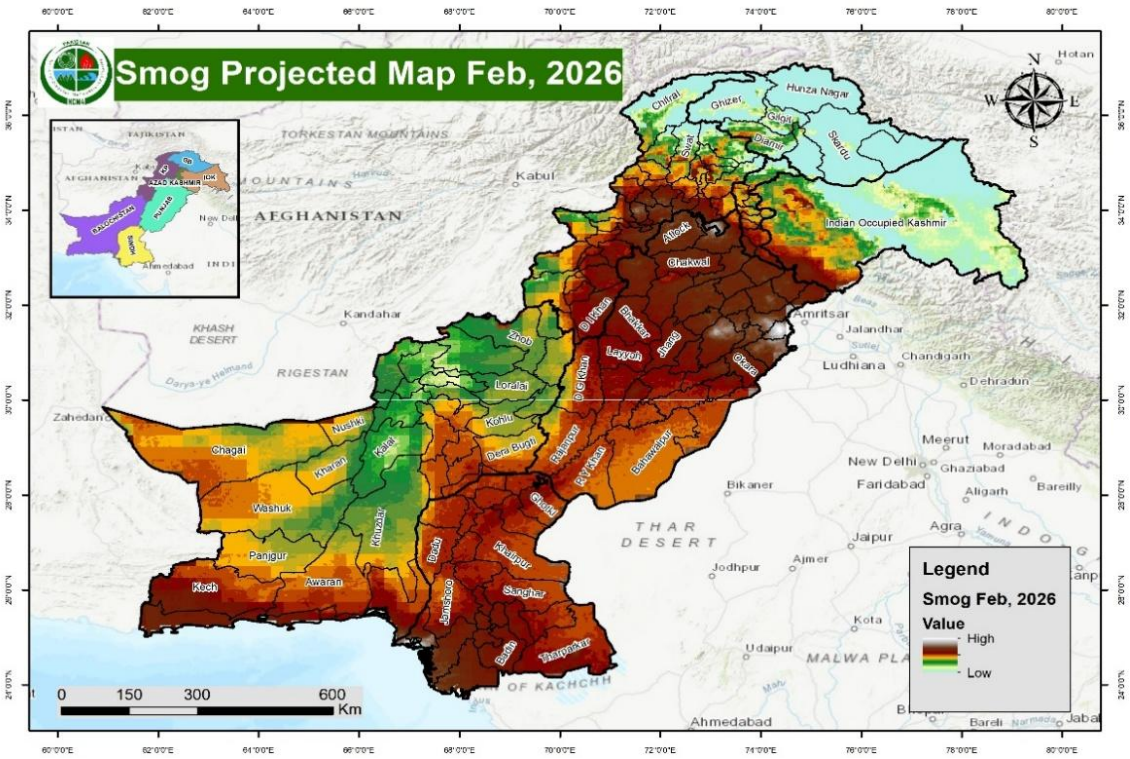


Figure: Smog Projection – Feb 2026

7. **<u>Meteorological Drought.</u>** It refers specifically to below-average precipitation levels c*ompared with long-term climatological norms.* 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 January-March 2026.

a. Outlook (January to March 2026). As per Meteorological projection of Tech EW, in the coming months (i.e., January – March 2026), Pakistan will experience near normal precipitation and above normal temperature in the south west parts of Balochistan and south eastern part of Sindh. Met projections coupled with the reservoir level due to above normal rainfall in monsoon 2025 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, will experience mild meteorological drought conditions. 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.

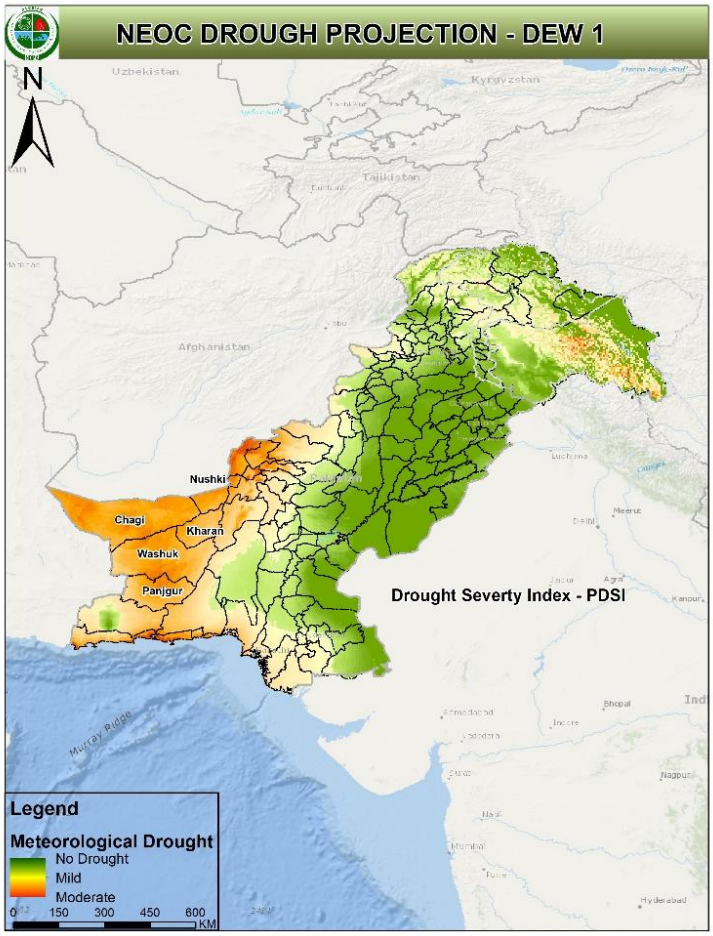


Figure: Smog Projection – Jan-Mar 2026

b. Regional Drought Assessment

(1) Balochistan. The province remains the most affected province in the forecast. Several districts are projected to experience meteorological drought of mild intensity. The persistence of

meteorological drought in these districts is linked to their reliance on groundwater, sparse rainfall, and the limited capacity of local infrastructure to store excess water from wet years. **Mild Drought:** the districts include Mastung, Chagai, Washuk, Nushki, Panjgur, and Parts of Gwadar

(2) **Sindh.** Sindh remains in near-normal conditions, the districts in the **southern and eastern parts** like Thatta, Badin, Tharparkar are expected to show **mild meteorological drought tendencies**. These localized impacts highlight the importance of continuous monitoring of rainfall and irrigation flows in the province.

(3) **Overall Assessment**. The NEOC drought outlook for January–March 2026 indicates that **Pakistan will likely avoid a nationwide meteorological drought crisis** due to near-normal rains in the country and also hydrological drought because of the current reservoir levels. However, **localized mild meteorological drought** conditions in parts of **Balochistan and Sindh** demand focused attention. Proactive planning, combined with community-level awareness and preparedness, will be crucial in mitigating the impacts on agriculture, livelihoods, and water resources. The findings underscore the need for **short-term and long-term drought resilience strategies**, including investment in water storage infrastructure, groundwater management, and climate-smart agriculture practices, to reduce vulnerability in the most drought-prone regions.