Government of Pakistan
**Pakistan Meteorological Department**
# Pakistan's Monthly Climate Summary
## November 2023

### In brief

- National rainfall with 9.6mm for the month of November 2023 was excessively above average (+87%).
- The wettest day of the month in the country was November 26 when Pasni (Balochistan) recorded record-breaking rainfall of 94.0mm, making it the wettest place as well with the same amount of rainfall as monthly total.
- The national mean monthly temperature of November 2023 for Pakistan as a whole was 19.10 °C, being 1.24 °C warmer than the average (17.87 °C).
- The daytime (maximum) temperature at the country-level was 26.30 °C, which is 0.37 °C warmer than the country-wide average of 25.92 °C.
- The nighttime (minimum) temperature at country level was 11.91 °C, which is 2.58 °C warmer than the countrywide average of 9.33 °C and ranks as the 2nd warmest average minimum temperature for the month in the past 63 years, with the record being 12.22 °C in 2011.
- The hottest day of the month was observed in Mithi (Sindh) when it recorded a temperature of 39.5 °C on November 02, 2023, coincidentally, the same station was the warmest place with a mean monthly maximum temperature of 33.5 °C.
- The coldest temperature of the month, -5.6°C, was recorded in Skardu (GB) on November 17, 2023. Coincidentally, the same station was the coolest place with a mean monthly minimum temperature of -2.2 °C.
- The Indian Ocean Dipole (IOD) has been tracked in positive phase.
- Central and eastern Pacific Sea surface temperatures (SSTs) have consistently been anomalous with the Aug-Oct 2023 season being +1.47 °C, +1.59 °C for the month of Oct and +1.90 °C for the Nov 2023, indicating that the tropical Pacific is experiencing strong El Niño conditions.

### Table-1: National Weather Extremes during November 2023

| Hottest day | 39.5 °C | at Mithi (Sindh) on the 2nd |
|---|---|---|
| Coldest day | 5.3 °C | at Kalam (KP) on the 30th |
| Coldest night | -5.6 °C | at Skardu (GB) on the 17th |
| Warmest night | 25.0 °C | at Karachi Airport (Sindh) on the 1st |
| Wettest day | 94.0 mm | at Pasni (Balochistan) on the 26th |
| Wettest month | 94.0 mm | at Pasni (Balochistan) |

### Synoptic Summary

Generally, in November, dry continental winds predominantly set across Pakistan. The month started with a westerly trough spotted over upper Khyber Pakhtunkhwa (KP), Gilgit-Baltistan (GB), and adjoining Northern Punjab, which persisted for the following two days. Another westerly wave prevailed over Upper KP, the northern areas of Punjab & Northwest Balochistan, and upper Sindh during 04-11 & 17-18, yielding some moderate rainfall in KP, Punjab, GB, and Kashmir with a few falls in Northwest Balochistan and Upper Sindh. Meanwhile, dry continental air prevailed over the rest of the country. During the last week of the month, a fresh westerly trough entered the northern parts of the country, followed by another westerly system approached South and West Balochistan resulting in isolated very heavy rainfall in South Balochistan while some light rains in Northwest Balochistan and south/southeast Sindh.

## Table-2: Significant wind speeds recorded during the November-2023.

| Date | Station | Max Wind Knots |
|------|---------|----------------|
| 09/2023 | Faisalabad | 31 |
| 09/2023 | Joharabad | 37 |
| 09/2023 | Siakot Airport | 28 |

## Table-3: New Weather (rain & temperature) Records Set in November 2023

| S No | Stations | Weather Parameters | New Record Value | New Record Date | Old Record Value | Old Record Date | No of years examined. |
|------|----------|--------------------|--------|------|--------|------|------------|
| 1 | PASNI | Coldest day Temperature (°C) | 21.5 | 25/2023 | 22.2 | 25/1963 | 63 |
| 2 | BARKHAN | Wettest month Rainfall (mm) | 36.0 | 2023 | 27.0 | 2019 | 57 |
| 3 | MIANWALI AIRBASE | Wettest month Rainfall (mm) | 47.0 | 2023 | 36.7 | 1979 | 57 |
| 4 | MIRPUR KHAS | Wettest month Rainfall (mm) | 4.0 | 2023 | 1.0 | 2019 | 20 |
| 3 | PASNI | Wettest month Rainfall (mm) | 94.0 | 2023 | 79.0 | 2019 | 63 |
| 4 | BARKHAN | Heaviest day Rainfall (mm) | 31.0 | 07/2023 | 23.0 | 07/2013 | 57 |
| 5 | CHAKLALA AIRBASE | Heaviest day Rainfall (mm) | 83.0 | 10/2023 | 79.7 | 16/1982 | 70 |
| 6 | ISLAMABAD,ZEROPOINT | Heaviest day Rainfall (mm) | 43.9 | 10/2023 | 40.5 | 20/1992 | 41 |
| 7 | MIANWALI AIRBASE | Heaviest day Rainfall (mm) | 47.0 | 10/2023 | 25.4 | 08/1979 | 62 |
| 8 | MIRPUR KHAS | Heaviest day Rainfall (mm) | 3.0 | 26/2023 | 1.0 | 02/2019 | 20 |
| 9 | PASNI | Heaviest day Rainfall (mm) | 94.0 | 26/2023 | 76.0 | 22/2019 | 63 |
| 10 | BAHAWALNAGAR | Hottest night Temperature (°C) | 20.5 | 01/2023 | 19.7 | 02/2001 | 63 |
| 11 | D.I.KHAN(City) | Hottest night Temperature (°C) | 20.5 | 01/2023 | 20.0 | 01/2019 | 65 |
| 12 | DADU | Hottest night Temperature (°C) | 22.0 | (1-3)/2023 | 21.8 | 01/2018 | 22 |
| 13 | FAISALABAD | Hottest night Temperature (°C) | 20.5 | 02/2023 | 19.3 | 02/2018 | 65 |
| 14 | LARKANA | Hottest night Temperature (°C) | 22.5 | 01/2023 | 22.5 | 02/2022 | 38 |
| 15 | RAHIM YAR KHAN | Hottest night Temperature (°C) | 19.9 | 07/2023 | 19.5 | 05/2011 | 24 |

## Rainfall: Excessively above average in the country as a whole

Climatologically, the November rainfall contribution to the national annual total and Post-monsoon (OND) is 1.7% & 19.5%, respectively. During the month, Pakistan experienced 2-3 light to moderate rainfall spells. The area-averaged daily rainfall is shown in Fig-1. November 2023 rainfall was excessively above average, with 9.6mm mm (+87%), for Pakistan as a whole. On regional scale: Punjab with 11.4mm (+173%) observed the 7th highest November rainfall (record is 22.5mm in 1982); Balochistan with 8.1mm (+214%) also observed the 7th highest November



*Fig1: Daily Area Weighted Rainfall*

rainfall (record is 25.8mm in 2019); Sindh with 4.1mm (+156%) observed the 8th highest November rainfall (record is 25.9mm in 2019). The KP with 20.6mm (+17%) recoded slightly above average rainfall. The AJK with 21.8mm (-2%) exhibited average rainfall. In contrast to all the GB with 2.2mm (-50%) was the only region that recorded below-average rainfall (Table-4).
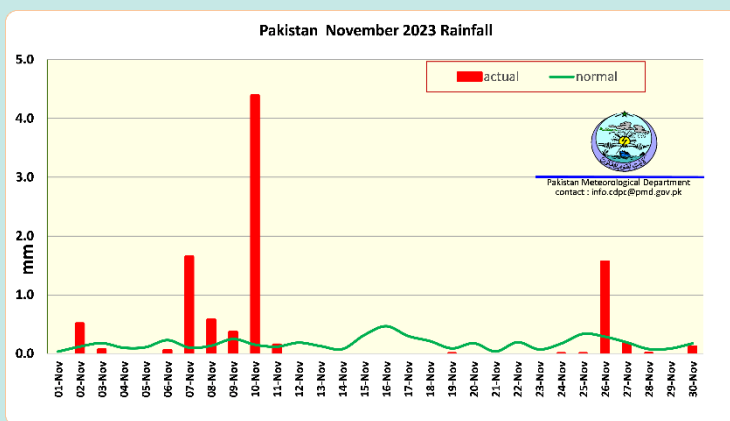
## Table-4: November 2023 Area-Weighted Rainfall

| Region | Rank (of 63y) | Normal (mm) | Average (mm) | Departure (percent) | Comment |
|--------|---------------|-------------|--------------|---------------------|---------|
| Pakistan | 53 | 5.2 | 9.6 | 87 | --- |
| Azad Jammu & Kashmir | 40 | 22.1 | 21.8 | -2 | --- |
| Balochistan | 57 | 2.6 | 8.1 | 214 | 07th highest (record 25.8 mm in 2019) |
| Gilgit Baltistan | 33 | 4.3 | 2.2 | -50 | --- |
| Khyber Pakhtunkhwa | 37 | 17.6 | 20.6 | 17 | --- |
| Punjab | 57 | 4.2 | 11.4 | 173 | 07th highest (record 22.5 mm in 1982) |
| Sindh | 56 | 1.6 | 4.1 | 156 | 08th highest (record 25.9 mm in 2019) |

**[RANK RANGES FROM 1 (LOWEST) TO 63 (HIGHEST) IN TERMS OF YEARS FROM 1961]**

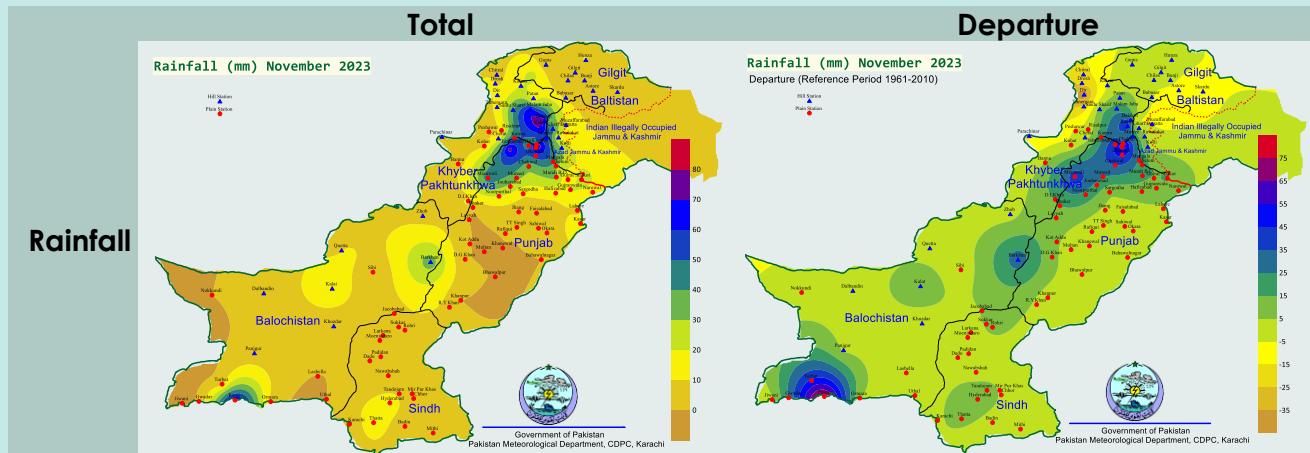## November 2023 Rainfall maps



Fig. 2.  November spatial rainfall distribution and departure from normal

The other significant rainfalls were recorded at Chaklala Airbase 83.0 mm, Attock 75.0mm, Balakot 74.0mm, Kakul 72.0mm, Malamjabba 68.0mm and Murree 57.0mm. The stations: Bahawalnagar, Bahawalpur, Khanpur, Kot Addu, Khanewal, Skardu, Gawadar, Jiwani, Lasbela, Sibbi, PAF Faisal base (Karachi) and PAF Masroor base (Karachi) remained dry with no rain during the month. The stations: Bhakkar, Layyah, Multan, Gilgit, Sukkur, Dadu, Sakrand and Nokkundi however recorded only traces of rainfall during the month.

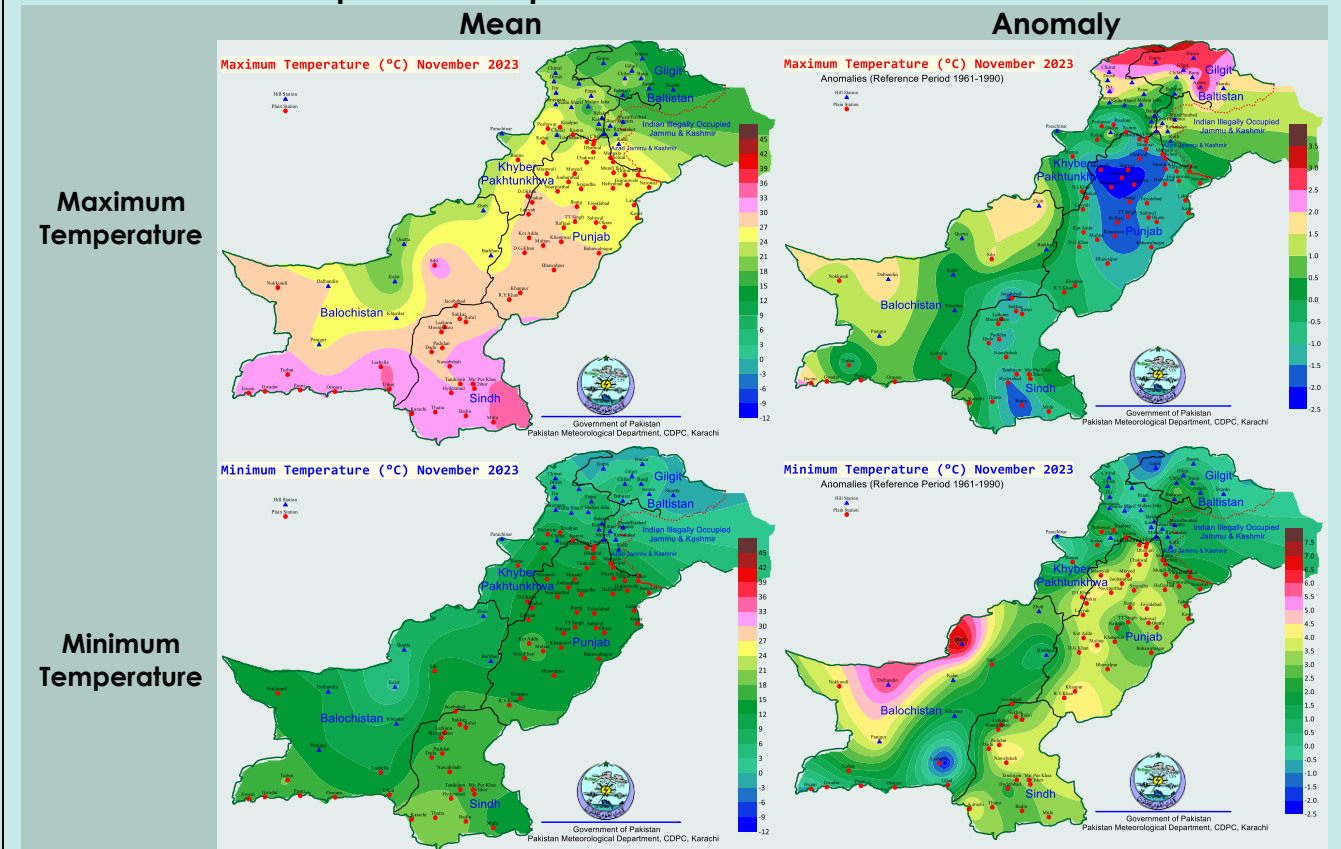## Table 5: Temperatures: Warmer than average in most parts the country

| Area Average Temperatures (°C) statistics in November 2023 | | | | | | |
|---|---|---|---|---|---|---|
| Regions | Maximum Temperature | | Minimum Temperature | | Mean Temperature | |
| | Actual | Anomaly | Actual | Anomaly | Actual | Anomaly |
| Pakistan | 26.30 | 0.37 | 11.91 | 2.58 | 19.10 | 1.24 |
| Azad Jammu & Kashmir | 19.75 | 1.14 | 5.96 | 1.43 | 12.87 | 1.27 |
| Balochistan | 27.21 | 1.20 | 11.79 | 2.58 | 19.47 | 1.53 |
| Gilgit-Baltistan | 17.10 | 1.86 | 1.23 | 0.24 | 9.19 | 1.04 |
| Khyber Pakhtunkhwa | 22.80 | 0.45 | 8.58 | 1.37 | 15.70 | 0.92 |
| Punjab | 26.72 | -1.01 | 13.90 | 3.38 | 20.35 | 0.87 |
| Sindh | 30.84 | -0.76 | 17.14 | 3.26 | 24.01 | 1.30 |

November 2023 remained 1.24 °C, warmer than average with national mean monthly temperature being 19.10°C against the average of 17.87 °C and ranks as 8th warmest November (record is 19.87 °C in 2011). So was the situation in the regions: AJK with 12.87 °C (+1.27°C) recorded the 7th highest (record is 13.32 °C in 1977);  GB with 9.19 °C (+1.04 °C) observed the 8th highest (record is 9.94°C in 2002); Balochistan with 19.47 (+1.53) observed the 9th highest (record is 20.27 °C in 1999) and KP with 15.70 °C (+0.92°C) observed the 9th highest (record is 16.18 °C in 1977) mean November temperatures. Sindh with 24.01°C (+1.30°C) and Punjab with 20.35 °C (+0.87°C) also exhibited warmer than average temperatures (Table-5).

The mean monthly maximum (daytime) temperature (26.30 °C) recorded at country-level was also +0.37 °C warmer than average of 25.92 °C (Table-5, Fig. 3-upper panel).  Whereas,

the country-level night (minimum) temperature of 11.91 °C was significantly warmer (+2.58 °C) than average of 9.33 °C and stands as the 2nd warmest night-time (minimum) temperature in the month (record was 12.22 °C in 2011). Sindh and Punjab both also recorded the 2nd highest with +3.26 °C and +3.38 °C warmer than average respectively (record is 14.23°C & 18.58°C in 2011). KP with 8.58°C (+1.37 °C) observed the 4th (highest record is 9.26°C in 1977), Balochistan with 11.79°C (+2.58 °C) observed the 5th (record is 11.98 °C in 1963), AJK with 5.96°C (+1.43 °C) observed the 7th (record is 6.52 °C in 1977) highest minimum (nighttime) temperatures in November. Whereas, GB with 1.23°C (+0.24 °C) observed slightly warmer than average minimum temperature (Table-5, Fig.3- middle panel). The mean temperature anomalies ranged from -1.3 to +3.9 °C, while, that of mean minimum temperature ranged -2.3 to +7.3°C in the country, being considerably higher in western Balochistan. The hottest day of the month was observed at Mithi (Sindh) when it recorded a temperature of 39.5 °C on 2nd November (Table-1) with same station being coincidentally the warmest place with a mean monthly maximum temperature of 33.5 °C. Skardu (GB) recorded the month's coldest night temperature of -5.6°C on 17th November (Table-1), which also proved to be the coolest place during the month with -2.2 °C average minimum temperature.
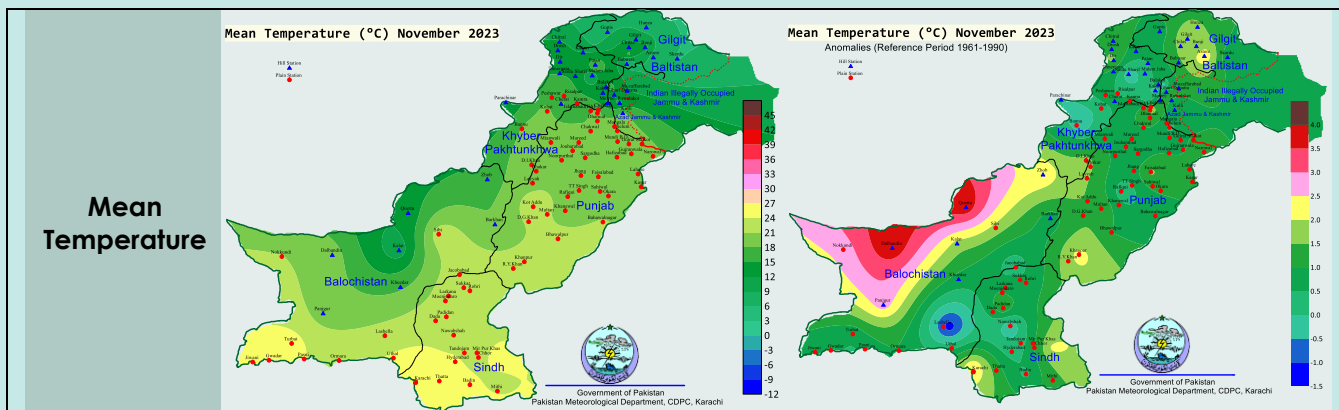
## November 2023 Temperature maps

Fig. 3. November-2023 Temperatures (Mean, Maximum and Minimum) and their anomalies

## Table 6: November 2023 Monthly Averages & Normals

| Station | Pressure (mb) | | Temperature (°C) | | | Vapour (mb) | Precipitation | |
|---|---|---|---|---|---|---|---|---|
| | Station Level | Sea Level | Mean | Maximum | Minimum | Pressure | Total (mm) | Days |
| Drosh | 857.9 | 1541.8 | 14.0 | 20.4 | 7.5 | 6.2 | 8.3 | 1 |
| | 857.8 | 1540.5 | 13.0 | 19.6 | 6.5 | 4.7 | 26.8 | 3.8 |
| Peshawar | 979.8 | 1018.1 | 17.9 | 25.4 | 10.3 | 14.6 | 7.7 | 2 |
| | 974.1 | 1015.8 | 17.9 | 26.2 | 9.5 | 11.3 | 11.4 | 2.3 |
| Parachinar | 831.5 | 1542.5 | 11.4 | 18.3 | 4.5 | 6.6 | 4.0 | 1 |
| | 830.5 | 1531.4 | 11.1 | 18.5 | 3.8 | 5.1 | 16.5 | 3.3 |
| Rawalpindi | 959.6 | 1017.9 | 18.3 | 24.3 | 12.3 | 12.2 | 83.0 | 1 |
| | 957.2 | 1015.8 | 16.9 | 25.9 | 7.9 | 10.6 | 15.6 | 2.6 |
| Sargodha | 994.6 | 1016.1 | 20.3 | 26.4 | 14.2 | 17.7 | 12.2 | 1 |
| | 993.5 | 1015.3 | 19.2 | 27.9 | 10.6 | 13.5 | 6.7 | 1.4 |
| Jhelum | 988.9 | 1016.1 | 19.1 | 25.9 | 12.3 | 16.4 | 29.3 | 1 |
| | 987.8 | 1015.0 | 19.0 | 27.7 | 10.4 | 12.9 | 10.0 | 1.7 |
| Sialkot | 986.8 | 1016.3 | 19.0 | 26.0 | 12.0 | 16.6 | 25.0 | 1 |
| | 985.7 | 1015.3 | 18.0 | 26.1 | 9.9 | 13.5 | 9.5 | 1.6 |
| Zhob | 860.5 | 1508.5 | 16.0 | 23.4 | 8.6 | 7.0 | 6.0 | 1 |
| | 860.9 | 1511.8 | 14.0 | 22.4 | 6.0 | 5.9 | 3.5 | 0.3 |
| D.I.Khan | 995.9 | 1015.9 | 20.8 | 27.0 | 14.6 | 17.8 | 18.0 | 1 |
| | 986.6 | 1014.7 | 19.4 | 28.0 | 10.7 | 13.1 | 2.2 | 0.8 |
| Lahore | 991.6 | 1016.5 | 20.5 | 26.4 | 14.5 | 16.8 | 8.8 | 3 |
| | 990.0 | 1014.9 | 20.1 | 27.7 | 12.4 | 13.6 | 6.5 | 1.8 |
| Quetta | 846.7 | 1556.7 | 13.1 | 19.8 | 6.3 | 5.7 | 6.0 | 3 |
| | 844.6 | 1534.9 | 9.9 | 19.7 | 0.1 | 5.1 | 4.5 | 1.3 |
| Multan | 1001.5 | 1015.8 | 21.2 | 27.1 | 15.3 | 17.2 | 0.0 | 0 |
| | 1000.8 | 1015.3 | 20.1 | 28.8 | 11.4 | 13.9 | 2.3 | 0.8 |
| Barkhan | 893.8 | 1524.5 | 18.0 | 24.8 | 11.1 | 9.2 | 36.0 | 2 |
| | 893.6 | 1520.8 | 17.4 | 24.3 | 10.5 | 6.9 | 5.0 | 0.4 |
| Nokkundi | 937.3 | 1013.2 | 21.1 | 28.2 | 14.0 | 7.4 | 0.0 | 0 |
| | 938.7 | 1015.4 | 18.8 | 27.3 | 10.3 | 7.4 | 0.3 | 0.3 |
| Dalbandin | 921.8 | 1536.7 | 19.5 | 27.2 | 11.6 | 8.3 | 3.5 | 2 |
| | 921.6 | 1530.9 | 16.2 | 24.8 | 5.1 | 5.5 | 0.4 | 0.3 |
| Jacobabad | 1009.2 | 1015.6 | 22.3 | 28.4 | 16.2 | 17.8 | 6.0 | 1 |
| | 1008.0 | 1014.6 | 22.2 | 30.2 | 14.1 | 13.4 | 1.3 | 0.1 |
| Khanpur | 1005.2 | 1015.5 | 21.9 | 29.1 | 14.6 | 17.7 | 0.0 | 0 |
| | 1004.1 | 1014.4 | 20.1 | 29.7 | 10.5 | 13.2 | 0.5 | 0.3 |
| Panjgur | 907.2 | 1535.8 | 19.4 | 26.2 | 12.6 | 12.1 | 5.0 | 1 |
| | 907.7 | 1529.5 | 17.1 | 25.1 | 9.0 | 4.3 | 1.9 | 0.3 |
| Khuzdar | 881.2 | 1538.1 | 17.5 | 25.2 | 9.8 | 6.6 | 3.4 | 1 |
| | 879.4 | 1511.0 | 16.6 | 25.0 | 8.3 | 3.2 | 5.1 | 0.3 |

| Station | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Sh. Benazirabad | 1011.8 | 1015.1 | 23.5 | 30.8 | 16.3 | 17.2 | 1.3 | 1 |
| | 1011.1 | 1015.0 | 22.1 | 32.0 | 12.3 | 15.0 | 1.5 | 0.1 |
| Jiwani | 1008.6 | 1015.1 | 24.5 | 31.7 | 17.2 | 21.9 | 0.0 | 0 |
| | 1009.2 | 1014.9 | 23.8 | 29.7 | 17.9 | 18.2 | 3.9 | 0.4 |
| Pasni | 1014.5 | 1015.1 | 23.9 | 31.4 | 16.4 | 19.7 | 94.0 | 1 |
| | 1013.4 | 1013.9 | 23.3 | 31.0 | 16.0 | 17.4 | 1.0 | 0.1 |
| Hyderabad | 1009.7 | 1014.6 | 24.9 | 30.3 | 19.5 | 15.5 | 17.0 | 2 |
| | 1009.9 | 1014.3 | 24.8 | 31.8 | 17.4 | 14.1 | 2.3 | 0.2 |
| Chhor | 1013.7 | 1014.4 | 24.5 | 33.4 | 15.5 | 17.4 | 3.0 | 2 |
| | 1013.0 | 1013.7 | 22.5 | 33.5 | 11.8 | 12.9 | 3.6 | 0.3 |
| Karachi | 1012.0 | 1014.7 | 26.4 | 32.7 | 20.0 | 15.2 | 5.5 | 1 |
| | 1012.1 | 1014.4 | 24.2 | 32.2 | 16.3 | 14.8 | 0.9 | 0.2 |

Note: The first row against each station contains the actual values while second row for normal values

## Table 7: November 2023 extreme values

| STATION | Mean Temperature (°C) | | | | Temperature (°C) | | | | Highest (mm & knots) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Highest | Date | Lowest | Date | Highest | Date | Lowest | Date | Rain | Date | Wind Speed | Date |
| Drosh | 17.4 | 4 | 10.1 | 30 | 26.0 | 4 | 4.5 | 25 | 8.0 | 10 | 12 | 2* |
| Peshawar | 21.9 | 3 | 13.8 | 23 | 30.2 | 3 | 6.5 | 22 | 6.4 | 10 | 4 | 1* |
| Parachinar | 14.8 | 19 | 9.0 | 12 | 22.5 | 19 | 2.0 | 12 | 4.0 | 10 | 5 | 13 |
| Rawalpindi | 23.0 | 1 | 15.9 | 23 | 28.2 | 4 | 9.4 | 22 | 83.0 | 10 | 20 | 10 |
| Sargodha | 24.8 | 1* | 16.9 | 30 | 30.5 | 4 | 10.5 | 22 | 12.2 | 10 | 4 | 10 |
| Jhelum | 23.5 | 1 | 16.1 | 26 | 29.5 | 3* | 9.0 | 25 | 29.3 | 10 | 10 | 10 |
| Sialkot | 23.0 | 1 | 15.6 | 30 | 30.0 | 1* | 9.5 | 23 | 25.0 | 10 | 4 | 10* |
| Zhob | 19.5 | 1 | 12.0 | 28* | 26.5 | 6 | 4.5 | 30 | 6.0 | 8 | 7 | 7* |
| D.I.Khan | 25.0 | 1* | 17.5 | 23 | 30.5 | 3 | 10.5 | 28 | 18.0 | 10 | 14 | 9 |
| Lahore | 24.8 | 1 | 17.2 | 27 | 30.2 | 1 | 11.2 | 26 | 3.8 | 10 | 12 | 30 |
| Quetta | 17.3 | 1 | 10.0 | 30 | 24.5 | 1 | 3.0 | 12* | 4.0 | 7 | 22 | 6 |
| Multan | 26.2 | 1 | 17.9 | 28 | 31.0 | 1 | 11.8 | 12* | 0.0 | 0 | 8 | 9 |
| Barkhan | 22.5 | 2 | 15.0 | 28* | 29.5 | 2 | 8.0 | 30 | 31.0 | 7 | 4 | 2* |
| Nokkundi | 26.5 | 5 | 15.3 | 24 | 33.0 | 5 | 8.5 | 24 | 0.0 | 0 | 14 | 23 |
| Dalbandin | 23.8 | 5* | 15.8 | 24 | 32.5 | 5 | 7.5 | 24 | 2.5 | 7 | 6 | 1* |
| Jacobabad | 27.0 | 2 | 19.3 | 29 | 33.0 | 1* | 12.5 | 29* | 6.0 | 8 | 4 | 10 |
| Khanpur | 26.6 | 1 | 18.5 | 26 | 34.6 | 2 | 11.6 | 16 | 0.0 | 0 | 6 | 10* |
| Panjgur | 24.3 | 1 | 13.8 | 25 | 31.5 | 4 | 7.5 | 24* | 5.0 | 26 | 14 | 9 |
| Khuzdar | 21.3 | 1 | 11.2 | 29 | 29.0 | 1* | 0.8 | 29 | 2.6 | 7 | 4 | 2* |
| Sh.Benazirabad | 29.5 | 2 | 19.9 | 29 | 38.0 | 3 | 13.0 | 19 | 1.3 | 27 | 10 | 29 |
| Jiwani | 27.5 | 1* | 21.0 | 25* | 36.0 | 1 | 12.0 | 26 | 0.0 | 0 | 12 | 25 |
| Pasni | 28.3 | 2 | 18.3 | 26 | 37.0 | 2 | 8.0 | 26 | 94.0 | 26 | 10 | 23 |
| Hyderabad | 30.6 | 3 | 19.3 | 26 | 37.5 | 3 | 15.8 | 27 | 12.0 | 26 | 14 | 1 |
| Chhor | 30.0 | 2 | 20.0 | 28 | 39.0 | 1* | 12.0 | 12* | 2.0 | 26 | 16 | 26 |
| Karachi | 31.5 | 1 | 22.6 | 30 | 38.2 | 2 | 15.6 | 30 | 5.5 | 26 | 12 | 14* |

* Means value occurred multiple times