



Government of Pakistan
Pakistan Meteorological Department
Pakistan's Monthly Climate Summary
August 2023

In brief

- National rainfall for the month of August 2023 was largely below average (-66%) and stands as the 2nd driest August during past 63 years (the driest ever being 16.4mm in 1993).
- For Balochistan it's the driest August, for Khyber Pakhtunkhwa (KP) & Punjab the 2nd driest, for AJK the 3rd driest and for Sindh the 6th driest month.
- The wettest day of the month in the country was 5th August when Gujranwala (Punjab) recorded 102.0 mm rainfall, whereas Lower Dir was the wettest place with monthly total rainfall of 231.0 mm.
- The national mean monthly temperature of August 2023 for Pakistan as a whole was 30.44 °C, being **0.19 °C warmer** than average of 30.25 °C.
- Daytime (maximum) temperature at country-level was 36.34 °C, being **0.44 °C warmer** than the country-average of 35.90 °C.
- Nighttime (minimum) temperature at country-level was 24.50 °C, being **0.20 °C warmer** than the country-average of 24.31 °C.
- The AJK with 32.34°C (**+1.79°C**) observed the highest of mean maximum temperature during past 63 years (the record was 32.03°C in 2009).
- The hottest day of the month was observed in Turbat (Balochistan) when it recorded 46.5 °C temperature on 14th August 2023, whereas Dalbandin being the **warmest** place with 42.6 °C mean monthly maximum temperature.
- The coldest temperature (6.5°C) of the month was recorded at Kalam (KP) on 29th August 2023 and coincidentally, the same station being the **coolest** place with 10.5 °C mean monthly minimum temperature.
- The Indian Ocean Dipole (IOD) has remained in neutral phase during the month.
- Central and eastern Pacific Sea surface temperatures (SSTs) continued to exceed El Niño thresholds and turning to full-blown El Niño.

Table-1: National Weather Extremes during August 2023

Hottest day	46.5 °C	at Turbat (Balochistan) on the 14 th
Coldest day	17.0 °C	at Gupis (GB) on the 26 th
Coldest night	6.5 °C	at Kalam (KP) on the 29 th
Warmest night	32.0 °C	at Nokkundi (Balochistan) on the 3 rd
Wettest day	102.0 mm	at Gujranwala (Punjab) on the 5 th
Wettest month	231.0 mm	at Lower Dir (KP)

Synoptic Summary

A low-pressure developed over the Bay of Bengal (BoB) on 1st August, intensified into a depression and moved northwestward during subsequent two days but confined mostly to the central India. The monsoon trough remained oriented near the foothills of Himalaya, which ultimately confined the inflow of monsoon currents only to north/ northeastern Pakistan particularly during the first week and 21-26 August with westerly trough persisted over Khyber Pakhtunkhwa (KP), Kashmir, Gilgit-Baltistan (GB) and Upper Punjab during the entire month. While the southern provinces (Sindh and Balochistan) saw no significant penetration of monsoon currents during the period except persistent southwest winds' inflow that kept the

temperatures moderate over there. On the other hand, the heat-low prevailed invariably over north-northwest Balochistan with its trough extension to southeast during most of the month. The aforementioned situation produced some good rains in KP, GB, northern Punjab, Kashmir and northeast Balochistan with no significant rain in Sindh and most of Balochistan.

Table-2: Significant wind speeds recorded during the August-2023

Date	Station	Max Wind Knots	Date	Station	Max Wind Knots	Date	Station	Max Wind Knots	Date	Station	Max Wind Knots
07/2023	Islamabad AP	40	29/2023	D I Khan City	40	07/2023	Lahore AP	30	27/2023	Turbat	30
15/2023	Islamabad AP	30	29/2023	D I Khan AP	41	10/2023	Lahore AP	32	31/2023	Moe-Jo-Daro	30
14/2023	Mangla	30	02/2023	Lahore City	32	11/2023	Lahore AP	35	06/2023	Hyderabad	30
19/2023	Mangla	30	26/2023	Lahore City	32	26/2023	Lahore AP	47	07/2023	Hyderabad	30
11/2023	Islamabad ZP	40	28/2023	Lahore City	36	28/2023	Lahore AP	40	12/2023	Thatta	30
03/2023	Sialkot AP	35	02/2023	Lahore AP	55	27/2023	Multan AP	50			
15/2023	Sialkot AP	35	05/2023	Lahore AP	30	29/2023	Kot Addu	30			

Rainfall: Largely below-average in the country as a whole

Climatologically, the August rainfall contribution to the national annual total and monsoon (JAS) is 18.9% & 39.9% respectively. During the month, Pakistan experienced 4-5 light to moderate rainfall spells. The area-averaged daily rainfall is shown in Fig.1. August 2023 rainfall remained largely below average (-66%) for Pakistan as a whole and stands 2nd driest August on record (the driest ever being 16.40 mm in 1993). The situation was similar on regional scale too. For Balochistan with 2.40mm (-89%), it stands driest ever (past driest being 3.5mm in 1963). For Punjab with 39.2mm (-58%) & KP with 50.40mm (-51%) both it happened to be the 2nd driest August (driest ever being 28.7mm & 41.1mm respectively in 1993). Sindh with 0.90 (-98%) recorded as the 6th driest August during the past 63 years. GB with 21.40 mm/+28% was the only region to have observed average rainfall (Table-3).

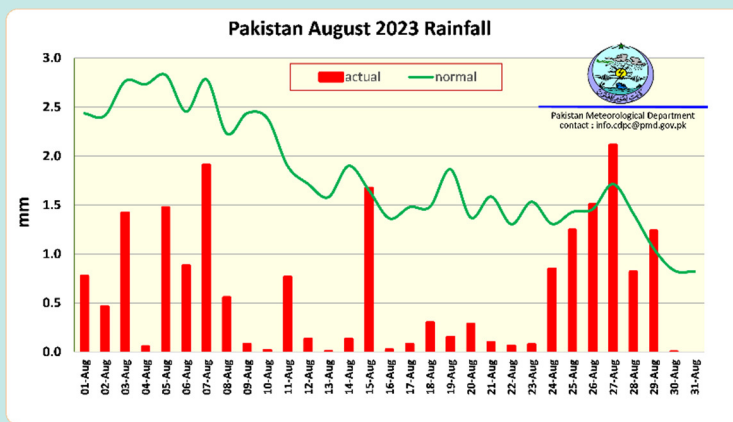


Fig1: Daily Area Weighted Rainfall

The wettest day of the month in the country was 5th August when Gujranwala (Punjab) recorded 102.0 mm of rainfall, whereas Lower Dir (KP) was the wettest place with a monthly total rainfall of 231.0 mm (Table-1).

Table-3: August 2023 Area-Weighted Rainfall

Region	Rank (of 63y)	Normal (mm)	Average (mm)	Departure (percent)	Comment
Pakistan	02	56.20	19.20	-66	2 nd driest (the driest ever being 16.4mm in 1993)
Azad Jammu & Kashmir	03	150.70	68.00	-55	3 rd driest (the driest ever being 51.0mm in 1993)
Balochistan	01	22.50	2.40	-89	1 st driest (the driest ever being 3.5mm in 1963)
Gilgit Baltistan	45	16.70	21.40	28	----
Khyber Pakhtunkhwa	02	103.60	50.40	-51	2 nd driest (driest ever being 41.1mm in 1993)
Punjab	02	93.50	39.20	-58	2 nd driest (driest ever being 28.7mm in 1993)
Sindh	06	53.60	0.90	-98	6 th driest (driest ever is 0.0 mm in 1966)

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

August 2023 Rainfall maps

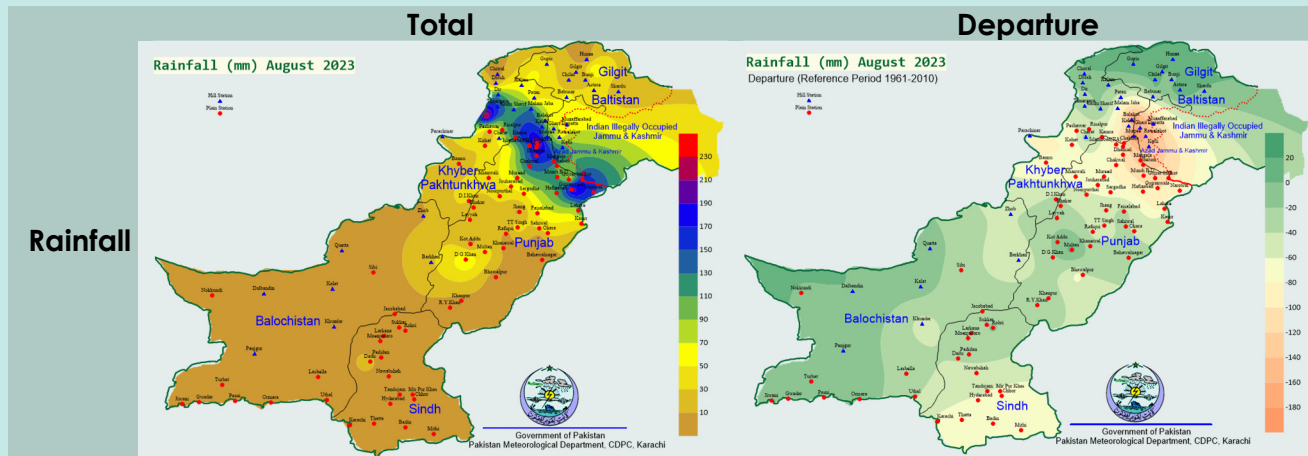


Fig. 2. August spatial rainfall distribution and departure from normal

The other significant rainfalls were Islamabad (Zero-Point) 216.8 mm, Rawalpindi 214.0 mm, Gujranwala 203.3 mm, Sialkot Cantt 166.7 mm, Narowal 153.6 mm, Islamabad-Airport 152.5 mm, Mangla 145.6 mm, Kamra 142.1 mm, Kakul 141.0 mm, Chakwal 140.7 mm, Malam-Jabba 133.0 mm and Lahore-Airport 125.0 mm (Fig. 2). The stations Bahawalnagar, Bahawalpur (Airport), Hunza, Chhor, Hyderabad, Jacobabad, Mithi, Sh. Benazirabad, Padidan, Moen-Jo-Daro, Thatta, Mirpurkhas, Sakrand, Khairpur, Dalbandin, Gawadar, Jiwani, Kalat, Lasbela, Nokkundi, Panjgur, Quetta, Sibbi, Turbat, Karachi (Faisal & Masroor Bases) remained absolutely dry with no rain during the month. The stations Rahim Yar Khan, Sahiwal, Badin, Karachi A/P, Larkana, Sukkur and Tando Jam recorded only traces of rainfall during the month.

Table 4: Temperatures: Warmer than average in the country Except GB and Sindh.

Area Average Temperatures (°C) statistics in August 2023						
Regions	Maximum Temperature		Minimum Temperature		Mean Temperature	
	Actual	Anomaly	Actual	Anomaly	Actual	Anomaly
Pakistan	36.34	0.44	24.50	0.20	30.44	0.19
Azad Jammu & Kashmir	32.34	1.79	20.12	0.59	26.25	1.19
Balochistan	37.24	0.25	24.09	0.01	30.69	0.00
Gilgit-Baltistan	32.86	-0.32	17.89	-0.90	25.39	-0.63
Khyber Pakhtunkhwa	35.26	1.41	22.79	0.23	29.06	0.87
Punjab	37.46	0.80	27.22	0.85	32.36	0.59
Sindh	35.44	-0.46	26.36	0.09	30.91	-0.28

August 2023 was **0.19°C, warmer** than average with national mean monthly temperature being 30.44°C against the average of 30.25 °C. So was the situation in some regions; AJK with 26.25°C (**+1.19°C**) observed the highest monthly mean (the record being 26.12°C in 1984), KP with 29.06 °C (**+0.87°C**) observed the 6th highest mean (the record being 29.48°C in 2009), and Punjab with 32.36°C (**+0.59°C**) warmer than average. Balochistan with 30.69°C (**0.00°C**) exhibited normal temperature. Whereas, GB with 25.39 (**-0.63°C**) and Sindh with 30.91°C (**-0.28°C**) were the two regions that exhibited **cooler** than average temperature (Table-4, Fig. 3, bottom panel).

The mean monthly maximum (daytime) temperature (36.34°C) recorded at country-level was also **+0.44°C warmer** than average of 35.90°C (Fig. 3, upper panel). Similarly, the country-level night (minimum) temperature of 25.08 °C was **+0.20°C** was also (slightly) **warmer** than average of 24.31°C (Table-4, Fig. 3, middle panel). The mean temperature anomalies ranged from -2.3 to +4.3°C while the mean maximum temperature anomalies were from -1.8 to +3.9°C in the country, being considerably higher in AJK. The hottest day of the month was recorded at Turbat (Balochistan) on 14th August (Table-1). Dalbandin, with a mean monthly maximum temperature of 42.6°C, was the warmest place during the month. Kalam (KP) recorded the month's **coldest** night temperature of 6.5°C on 29th August (Table-1), which also has been the **coolest** place with 10.5°C average minimum temperature.

August 2023 Temperature maps

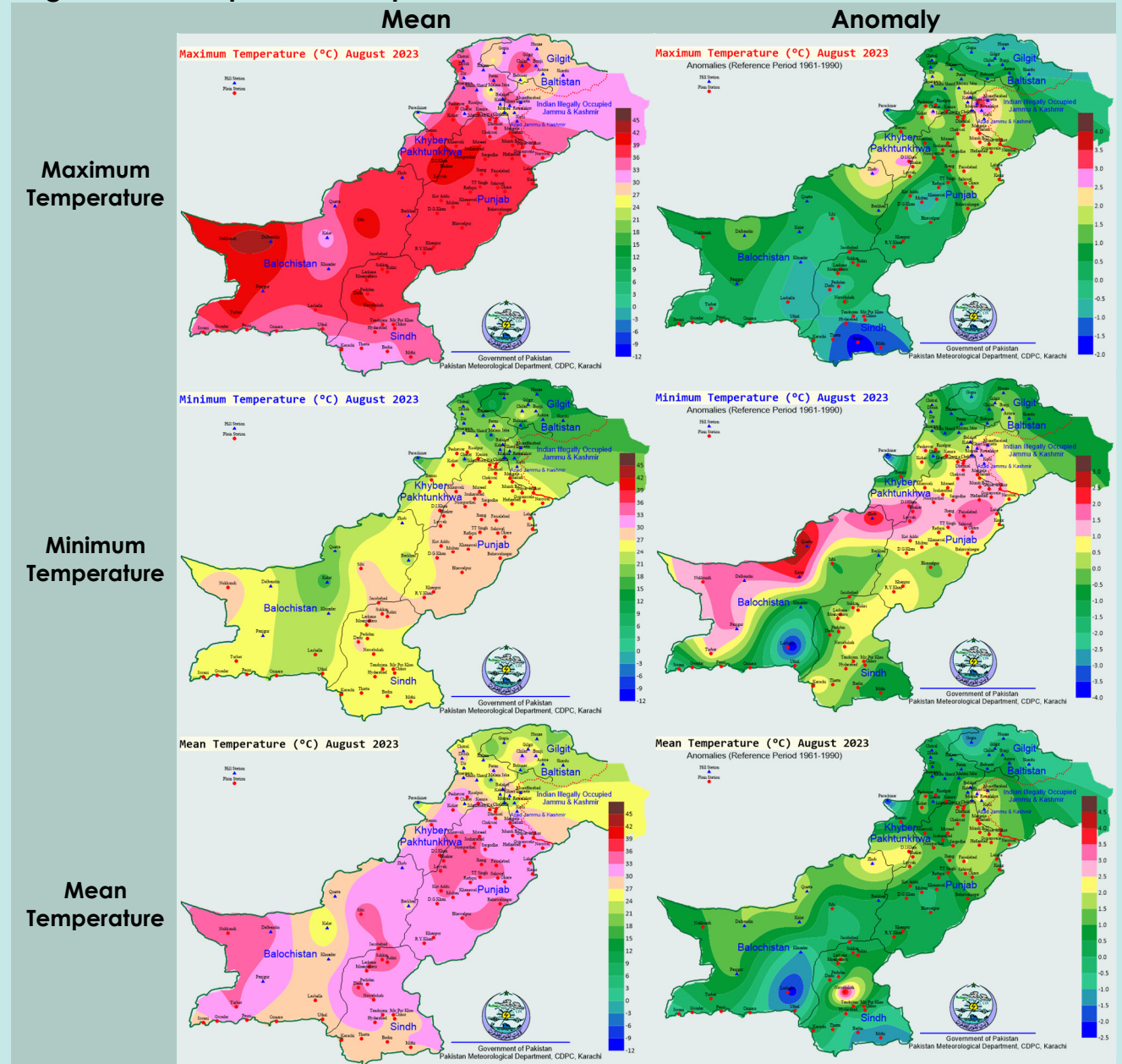


Fig. 3. August-23 Temperatures (Mean, Maximum and Minimum) and their anomalies

Table 5: August 2023 Monthly Averages & Normal

Station	Pressure (mb)		Temperature (°C)			Vapour (mb)	Precipitation	
	Station Level	Sea Level	Mean	Maximum	Minimum	Pressure	Total (mm)	Days
Drosh	845.5	1416.3	29.2	36.3	22.1	16.3	10.8	4
	845.9	1420.8	29.0	35.9	23.3	15.8	20.0	4.7
Peshawar	963.5	999.4	31.9	37.2	26.0	31.8	4.0	2
	958.9	997.9	30.8	36.0	26.5	29.2	72.6	7.7
Parachinar	824.2	1459.0	21.6	28.2	15.1	17.3	17.0	3
	822.4	1437.8	23.0	28.8	18.2	18.4	97.4	12.5
Rawalpindi	945.3	1000.4	29.8	34.6	24.4	27.5	214.0	12
	944.0	999.2	27.9	33.4	24.2	28.5	348.1	16.7
Sargodha	978.8	998.7	33.7	39.1	27.3	33.6	34.7	2
	978.6	999.3	31.6	36.5	27.2	31.4	131.7	8.9
Jhelum	973.3	998.9	31.6	36.9	25.7	35.0	102.7	9
	973.8	999.0	29.9	34.4	25.9	31.1	251.6	14.8
Sialkot	971.9	1000.0	30.6	35.1	25.2	33.7	166.7	7
	971.6	999.6	29.0	33.2	25.2	31.8	323.5	14.2
Zhob	851.5	1420.8	31.5	37.9	23.4	16.5	8.0	1
	850.5	1410.3	28.9	35.4	23.1	17.7	49.7	3.7
D.I.Khan	979.1	997.8	34.3	40.2	27.2	35.7	28.0	2
	979.4	997.4	31.6	37.3	26.6	31.3	61.7	5.6
Lahore	976.7	1000.3	32.2	36.4	26.4	33.0	77.6	5
	975.5	999.1	30.7	34.9	26.8	31.5	194.5	12.7
Quetta	837.1	1453.5	28.0	35.1	23.1	6.4	0.0	0
	834.3	1423.2	26.6	35.0	20.3	12.5	13.2	1.5
Multan	985.3	998.8	32.9	37.0	28.9	33.2	45.0	1
	984.6	998.3	32.4	37.6	28.7	30.8	36.4	3.5
Barkhan	883.2	1436.3	29.4	35.8	22.8	23.7	27.0	4
	882.8	1428.6	28.9	34.5	23.8	22.2	87.7	4.8
Nokkundi	924.6	996.3	35.0	42.0	30.1	5.2	0.0	0
	923.7	995.1	33.5	41.7	28.6	11.7	0.4	0.1
Dalbandin	909.2	1450.5	34.0	42.6	28.7	11.6	0.0	0
	907.0	1433.4	32.4	40.8	24.9	9.3	0.3	0.1
Jacobabad	993.0	999.2	33.0	38.2	29.0	35.7	0.0	0
	991.8	997.9	33.0	37.8	29.1	32.2	35.4	1.3
Khanpur	989.6	999.4	33.0	38.7	28.7	33.5	3.0	1
	988.3	998.2	32.0	38.1	27.0	30.4	17.4	1.8
Panjgur	896.1	1449.9	31.8	38.7	25.7	12.2	0.0	0
	895.9	1437.3	30.7	38.1	24.8	10.1	7.4	0.5
Khuzdar	870.1	1437.5	28.2	34.8	22.9	8.5	3.4	1
	868.5	1411.7	30.4	35.7	24.1	9.0	57.4	3.4
Sh. Benazirabad	996.0	999.3	33.3	39.4	28.0	32.4	0.0	0
	995.1	998.9	32.3	38.6	27.4	31.8	46.3	1.6
Jiwani	996.0	1002.4	27.6	31.8	24.9	29.9	0.0	0
	994.5	1000.8	28.3	31.0	26.8	29.2	2.1	0.5
Pasni	1002.2	1002.7	29.0	33.3	26.8	30.8	1.0	1
	1000.0	1000.8	28.2	32.2	27.2	30.1	11.5	0.2
Hyderabad	996.3	1001.1	31.1	35.1	28.3	29.0	0.0	0
	995.6	999.6	31.3	36.0	27.7	29.1	63.1	2.4
Chhor	1001.0	1001.7	29.4	33.7	26.3	32.1	0.0	0
	999.1	992.1	30.0	34.7	26.4	30.2	69.3	3.2
Karachi	1000.3	1003.0	29.2	31.4	28.9	30.6	0.0	0
	998.6	1001.2	29.0	31.9	27.5	29.8	60.1	2.8

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

Table 6: August 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	31.8	2	26.0	8*	39.4	1	18.0	8	4.8	7	16	14
Peshawar	34.5	13	29.5	28	40.0	13	23.5	28	2.0	1*	6	3*
Parachinar	23.5	16	19.3	5	31.0	16	12.5	3*	12.0	18	4	5*
Rawalpindi	33.0	22	26.6	28	37.8	22	20.2	28	68.0	15	24	25
Sargodha	37.4	22	29.2	26	43.0	22	23.6	7	30.0	26	8	7
Jhelum	34.6	22	27.4	28	39.0	2*	20.7	28	27.5	3	10	12*
Sialkot	32.8	2	26.9	28	37.0	1*	21.8	28	46.0	15	15	2*
Zhob	33.8	13	28.0	26	41.0	13	21.5	27	8.0	11	11	26
D.I.Khan	36.5	22	28.0	29	43.0	22	20.5	29	27.0	29	8	20
Lahore	34.5	22	29.4	26	38.5	22	24.2	26	33.8	26	10	25
Quetta	30.3	5	25.5	17*	38.0	2	17.5	18*	0.0	0	24	27
Multan	36.1	22	28.7	27	40.4	22	22.2	27	45.0	27	16	13*
Barkhan	31.8	23	26.3	27	38.5	23	19.5	27	19.0	27	4	6*
Nokkundi	38.3	2	31.5	16	45.5	2	23.5	16	0.0	0	20	7*
Dalbandin	37.5	3	29.8	17	45.5	2	19.0	17*	0.0	0	8	3*
Jacobabad	34.8	22	31.0	29	40.5	22	27.0	1*	0.0	0	4	2*
Khanpur	34.5	20*	31.1	24	40.2	20*	25.3	24	3.0	21	8	2*
Panjgur	34.3	4	29.8	18*	42.0	3	21.5	19	0.0	0	20	24*
Khuzdar	29.8	13*	26.0	6	37.0	23	19.0	1*	3.4	2	4	20
Sh.Benazirabad	34.8	1	30.8	15	40.5	1*	25.0	20*	0.0	0	16	22*
Jiwani	29.0	14	26.5	19	33.5	14	22.0	19*	0.0	0	12	4*
Pasni	30.8	3*	28.0	23*	36.0	3*	23.0	25	1.0	1	16	23
Hyderabad	32.9	21	29.9	23	39.0	21	26.0	19*	0.0	0	30	6
Chhor	30.8	21	28.0	16*	37.0	21	23.2	31	0.0	0	22	7*
Karachi	31.1	5	28.0	23	33.7	5	25.9	16	0.0	0	16	6*

* mean value observed multiple times

Note

Monthly Climate Summary is produced by Pakistan Meteorological Department, Climate Data Processing Centre, Karachi to provide the main features of weather events occurred in the country during the month. The summary contains detailed data information of 25 climate stations of Pakistan. The extremes & analysis is based on 110 numbers of stations. The information in the summary is based on real time data and/or electronic reports, therefore, the above results can be considered only preliminary. Climate Summaries are usually published in the first week of each month. Long term average for rainfall is for 1961-2010 (50 years) while normal period for temperature is 1961-1990 (30 years).

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