



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

In brief

- National rainfall for the month of July 2023 was above average (+70%) and stands 9th wettest rainfall in July during past 63 years (the record is 177.80 mm in 2022).
- The wettest day of the month in the country was 23rd July when Lahore (Punjab) recorded 206.0 mm rainfall, interestingly this exceptional rainfall also made Lahore the wettest place with monthly total rainfall of 668.7 mm.
- The national mean monthly temperature of July 2023 for Pakistan was 30.70 °C, being **-0.52 °C cooler** than average of 31.22 °C.
- Daytime (maximum) temperature at country-level was 36.25 °C, being **-1.01 °C cooler** than the country-average of 37.26 °C.
- Nighttime (minimum) temperature at country-level was 25.08 °C, being **-0.06 °C cooler** than the country-average of 25.13 °C.
- The hottest day of the month was recorded in Dalbandin (Balochistan) on 2nd July and in Nokkundi (Balochistan) during 1st to 3rd July, when it reached 47.5°C. Nokkundi, with a mean monthly maximum temperature of 43.6°C, was the **warmest** place during that month.
- The coldest temperature (6.5°C) of the month was recorded at Bagrote (GB) on 8th July 2023 whereas the Kalam being the **coldest** place with 11.4 °C in 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 July 2023

Hottest day	47.5 °C	at Dalbandin (Balochistan) on the 2 nd at Nokkundi (Balochistan) on the 1 st , 2 nd & 3 rd
Coldest day	13.5 °C	at Bagrote (GB) on the 7 th
Coldest night	6.5 °C	at Bagrote (GB) on the 8 th
Warmest night	32.8 °C	at Multan Airport (Punjab) on the 4 th
Wettest day	206.0 mm	at Lahore Airport (Punjab) on the 23 rd
Wettest month	668.72 mm	at Lahore Airport (Punjab)

Synoptic Summary

A significant synoptic feature of the month was the monsoon-2023 onset in the country on 3rd July, which incidentally coincided with the already prevailing pre-monsoon rains spell. From

2nd July, strong monsoon currents from the North Arabian Sea & Bay of Bengal started penetrating into central and upper parts of the country, which lasted through to 10th July (with few gaps) bringing heavy wet spell in most parts of the country. Meanwhile, westerly wave also passed over from Khyber Pakhtunkhwa (KP), Gilgit-Baltistan (GB) & Kashmir with the heat (seasonal) low-pressure area (with monthly-averaged value of 992 hPa) remained oriented over northwest Balochistan most of the time. The monsoon currents kept converging over the country at regular intervals during 11-16 July, 17-20 July, 21-26 July and 27-end July which resulted in widespread very heavy rainfall (extremely heavy at places) across most parts of the country. The monsoon axis (a line stretching from the seasonal low's center to the Bay of Bengal in the east) remained around its normal position.

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

Date	Station	Max Wind Knots	Date	Station	Max Wind Knots	Date	Station	Max Wind Knots	Date	Station	Max Wind Knots
03/2023	Islamabad AP	34	06/2023	Lahore AP	40	29/2023	Padidan	30	28/2023	Quetta AP	36
07/2023	Islamabad AP	36	02/2023	Lahore City	46	25/2023	Peshawar	34	26/2023	Rawalpindi	30
19/2023	Islamabad AP	33	03/2023	Mangla	32	04/2023	Quetta AP	36	28/2023	Rawalpindi	35
22/2023	Islamabad AP	33	06/2023	Moenjodaro	30	22/2023	Quetta AP	30	03/2023	SialkotAP	45
03/2023	Kasur	30	31/2023	Moenjodaro	30	22/2023	Quetta AP	34			
03/2023	Lahore AP	55	19/2023	Multan	35	27/2023	Quetta AP	32			

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

S No	Stations	Weather Parameters	New Record		Old Record		No of years examined.
			Value	Date	Value	Date	
1	Mirpurkhas	Heaviest one day Rainfall (mm)	72.0	24/2023	61.0	24/2009	20
2	Padidan	Heaviest one day Rainfall (mm)	163.6	26/2023	138.0	31/1992	83
3	Sibbi	Heaviest one day Rainfall (mm)	127.0	26/2023	88.9	25/1969	98
4	Sukkur	Heaviest one day Rainfall (mm)	90.0	25/2023	64.0	26/2015	27
5	Astore	Wettest Month Rainfall (mm)	93.6	2023	89.3	1978	63
6	Lahore Airport	Wettest Month Rainfall (mm)	668.7	2023	665.4	1980	70
7	Mirpurkhas	Wettest Month Rainfall (mm)	133.0	2023	125.0	2022	20
8	Sibbi	Wettest Month Rainfall (mm)	241.0	2023	159.0	2022	98
9	Chilas	Coldest night Temperature (°C)	12.0	07/2023	15.0	23/2010	63
10	Islamabad ZeroPoint	Coldest night Temperature (°C)	18.0	09/2023	18.0	11/2019	41
11	Lahore Airport	Coldest day Temperature (°C)	25.0	May-23	25.0	18/1978	63
12	Shorekot (Rafiqui)	Coldest day Temperature (°C)	27.0	23/2023	27.0	12/1976	63

Rainfall: above average in the country as a whole

Climatologically, the July rainfall contribution to the national annual total and monsoon (JAS) is 21.3% & 44.9% respectively. During July 2023, Pakistan experienced 4-5 widespread heavy/very heavy rainfall spells. July 2023 rainfall was largely above average (70%) for Pakistan as a whole and stands 9th wettest July on record (the record being 177.80 mm in 2022). The situation was similar on regional scale too. GB recording largely above average (44.30 mm/+233%) saw the wettest ever July during past 63 years (record was 44.20 mm in 1993), while, for Balochistan with 62.70 mm/+111% (record is 163.30 mm in 2022) and Sindh 146.0 mm/+143% (record is 245.40 mm in 2022) the month ranked 7th and 9th wettest July during past 63 years respectively. Punjab with 152.80 mm/+47%, AJK with 27.70 mm/+31% and KP with 127.30 mm/+19% also observed above normal rainfall.

The wettest day of the month in the country was 23rd July when Lahore (Punjab) recorded 206.0 mm of rainfall, and incidentally the same site been the wettest place with monthly total rainfall of 668.7 mm (Table-1).

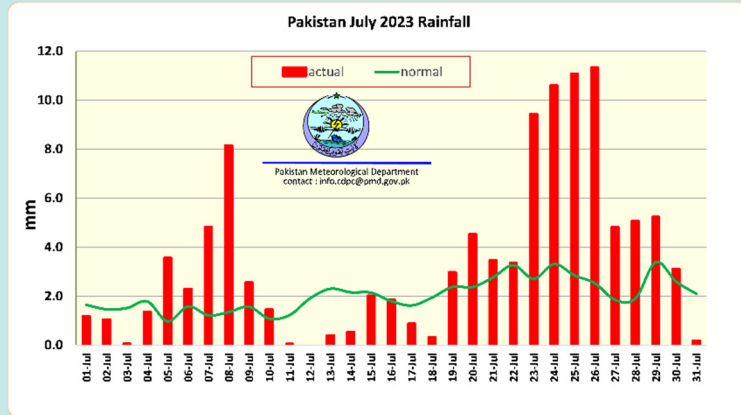


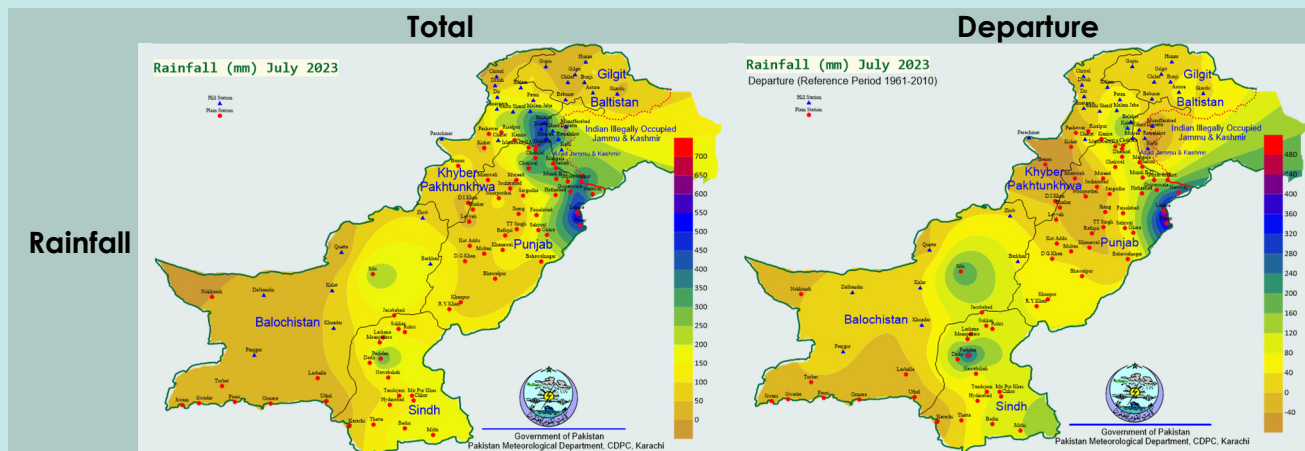
Fig1: Daily Area Weighted Rainfall

TABLE-4: JULY 2023 AREA-WEIGHTED RAINFALL

Region	Rank (of 63y)	Normal (mm)	Average (mm)	Departure (percent)	Comment
Pakistan	55	63.30	107.50	70	9th highest (record 177.80 mm in 2022)
Azad Jammu & Kashmir	50	173.90	227.70	31	-----
Balochistan	57	29.70	62.70	111	7th highest (record 163.30 mm in 2022)
Gilgit-Baltistan	63	13.30	44.30	233	1st highest (record 44.20 mm in 1993)
Khyber Pakhtunkhwa	44	106.70	127.30	19	-----
Punjab	52	104.10	152.80	47	-----
Sindh	55	60.10	146.00	143	9th highest (record 245.40 mm in 2022)

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

July 2023 Rainfall maps



The other significant rains were: Balakot 477.0 mm, Lahore-PBO 468.0 mm, Islamabad Zero Point 453.9 mm , Kasur 442.0 mm, Kakul 427.0 mm , Sialkot Cantt 422.4 mm, Murree 415.5 mm, Rawalpindi 408.0 mm, Rawlakot 400.9 mm, Muzaffarabad Airport 392.1 mm, Gujranwala Cantt 386.5 mm, Muzaffarabad City 379.0 mm, Chakwal 365.9 mm, Jhelum 346.4 mm, Padidan 327.6 mm, Malam Jabba 319.0 mm, Mandi-Bahauddin 296.0 mm. Nokkundi was the only station which remained absolutely dry with no rain during the month.

Table 5: Temperatures: Cooler than average in the country Except Sindh.

Area Average Temperatures (°C) statistics in July 2023						
Regions	Maximum Temperature		Minimum Temperature		Mean Temperature	
	Actual	Anomaly	Actual	Anomaly	Actual	Anomaly
Pakistan	36.25	-1.01	25.08	-0.06	30.70	-0.52
Azad Jammu & Kashmir	30.42	-0.92	19.48	0.02	25.00	-0.42
Balochistan	37.67	-0.66	25.41	-0.02	31.57	-0.31
Gilgit-Baltistan	30.78	-2.90	17.28	-1.03	24.06	-1.96
Khyber Pakhtunkhwa	33.95	-1.35	22.29	-0.42	28.14	-0.86
Punjab	36.45	-1.43	27.00	-0.12	31.75	-0.77
Sindh	37.39	-0.37	27.67	0.50	32.56	0.05

July 2023 was **-0.52 °C**, cooler than average with national mean monthly temperature being 30.70 °C against the average of 31.22 °C. The situation was almost similar on the regional scale too; GB with 24.06 °C (**-1.96 °C**), KP with 28.14 °C (**-0.86 °C**), Punjab with 31.75 °C (**-0.77 °C**), AJK 25.00 °C (**-0.42 °C**), and Balochistan with 31.57 °C (**-0.31 °C**) all recorded cooler than average temperatures. Sindh with 32.56 °C (**0.05 °C**) was the only region that exhibited slightly warmer than average temperature (Table-5)

July 2023 mean maximum (daytime) temperature of 36.25 °C recorded at country-level was also **-1.01 °C** cooler than average of 37.26 °C. Similarly, the country-level night (minimum) temperature of 25.08 °C was **-0.06 °C** (slightly) cooler than average of 25.13 °C (Table-5). The mean temperature anomalies ranged from -5.1 to +1.8 °C while the mean maximum temperature anomalies were from -4.1 to +1.8 °C in the country, being considerably higher in lower Sindh. The hottest day of the month was recorded at Dalbandin (Balochistan) on 2nd July and also in Nokkundi (Balochistan) consecutively on 1st, 2nd, and 3rd July 2023 with

temperature of 47.5°C (Table-1). Nokkundi, with a mean monthly maximum temperature of 43.6°C, was the warmest place during that period. Bagrote (GB) recorded the month's coldest night temperature of 6.5 °C on 8th July (Table-1) and Kalam (KP) has been the coolest place with 11.4 °C average minimum temperature.

July 2023 Temperature maps

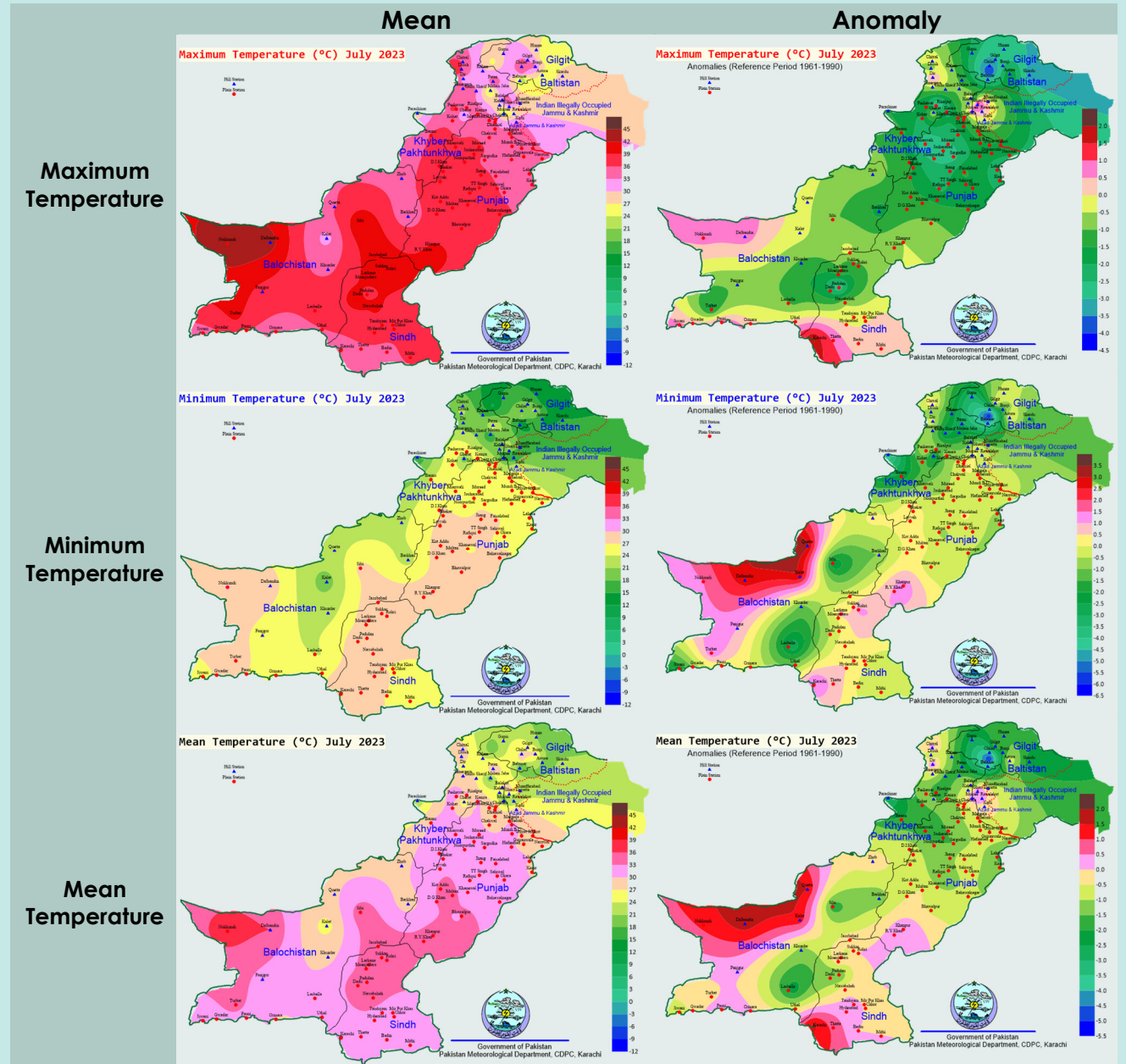


Table 6: July 2023 Monthly Averages & Normal

Station	Pressure (mb)		Temperature (°C)			Vapour (mb) Pressure	Precipitation	
	Station Level	Sea Level	Mean	Maximum	Minimum		Total (mm)	Days
Drosh	845.7	1419.1	29.0	35.9	22.1	17.0	16.8	6
	844.3	1404.2	30.1	36.9	23.3	14.9	22.1	5.4
Peshawar	964.0	1000.0	31.4	36.7	26.0	30.8	90.2	4
	956.5	995.3	32.1	37.7	26.5	27.9	46.1	6.9
Parachinar	824.1	1458.2	21.6	28.1	15.1	17.1	49.0	9
	821.2	1424.4	24.0	29.8	18.2	17.6	99.4	11.9
Rawalpindi	945.8	1001.1	28.9	33.5	24.4	26.0	408.0	13
	941.9	996.9	28.8	34.8	24.2	27.3	305.3	15.6
Sargodha	979.1	999.3	31.5	35.7	27.3	33.2	115.1	9
	976.7	996.7	32.5	37.9	27.2	30.3	113.6	9.5
Jhelum	973.7	999.4	30.2	34.6	25.7	34.0	346.4	12
	971.1	996.8	30.7	35.6	25.9	30.1	263.2	15.3
Sialkot	972.2	1000.4	29.3	33.3	25.2	32.4	422.4	15
	969.4	997.4	29.8	34.4	25.2	30.6	304.1	15.1
Zhob	852.1	1426.4	29.3	35.2	23.4	19.6	97.0	8
	848.3	1395.1	29.5	35.9	23.1	17.5	61.1	5.1
D.I.Khan	979.8	998.7	32.1	37.1	27.2	34.5	64.0	5
	976.7	995.5	32.5	38.4	26.6	30.6	60.5	5.9
Lahore	976.9	1000.6	30.2	33.9	26.4	33.1	468.0	14
	973.2	996.6	31.3	35.7	26.8	30.7	212.1	13.1
Quetta	835.8	1439.4	29.4	35.5	23.1	13.4	7.0	3
	832.6	1408.0	28.0	36.1	20.3	14.3	16.3	1.9
Multan	985.1	998.7	33.4	37.9	28.9	33.0	71.0	4
	982.3	995.7	33.8	39.0	28.7	30.4	60.3	4.4
Barkhan	882.6	1429.1	28.3	33.8	22.8	23.6	171.0	10
	880.7	1410.9	29.7	35.5	23.8	22.2	109.3	7.7
Nokkundi	921.9	993.3	36.9	43.6	30.1	7.5	0.0	0
	921.5	992.2	35.1	43.1	28.6	13.4	2.0	0.2
Dalbandin	906.5	1425.6	36.0	43.3	28.7	12.0	20.0	2
	904.7	1397.2	34.3	42.1	24.9	10.4	7.2	0.2
Jacobabad	991.9	998.0	34.6	40.3	29.0	34.8	145.0	7
	989.2	995.2	34.6	40.2	29.1	31.4	42.8	2.1
Khanpur	988.7	998.4	34.1	39.4	28.7	35.4	83.4	5
	985.9	995.7	33.3	39.6	27.0	29.9	25.8	2.6
Panjgur	894.2	1430.6	31.8	37.9	25.7	18.0	23.0	3
	893.6	1419.9	31.8	38.9	24.8	10.7	21.2	1.7
Khuzdar	868.8	1424.0	29.1	35.3	22.9	8.1	62.0	9
	863.3	1394.2	30.3	36.5	24.1	8.9	60.5	5
Sh. Benazirabad	994.9	998.2	33.9	39.8	28.0	34.1	120.0	7
	992.6	996.3	34.0	40.5	27.4	33.0	50.9	1.3
Jiwani	993.9	1000.2	29.2	33.5	24.9	31.9	5.0	1
	991.9	998.2	29.5	32.4	26.8	31.1	8.6	0.2
Pasni	999.6	1000.1	31.0	35.2	26.8	34.7	4.0	2
	997.1	997.7	29.2	33.3	27.2	31.0	5.0	0.5
Hyderabad	994.7	999.5	32.8	37.4	28.3	31.8	113.0	6
	993.3	996.8	32.5	37.3	27.7	30.2	45.5	2
Chhor	998.7	999.4	31.4	36.4	26.3	36.0	195.5	8
	996.8	997.4	31.4	36.4	26.4	31.1	79.3	3.3
Karachi	997.9	1000.6	31.9	34.9	28.9	34.3	40.4	6
	996.2	998.9	30.3	33.1	27.5	31.3	66.3	3.4

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

Table 7: July 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	31.9	4	23.5	7	39.4	14	16.0	8	6.0	7	15	11
Peshawar	34.6	3	26.8	7	40.5	11	21.0	7	52.0	15	16	25
Parachinar	24.3	1	20.0	11	31.0	1*	12.5	17	10.0	10*	6	15
Rawalpindi	32.8	3	24.7	7	37.4	12	18.7	7	110.0	19	35	28
Sargodha	36.8	3	28.0	5	42.8	3	24.8	6*	31.0	21	8	5*
Jhelum	34.3	3	25.5	5	39.8	2*	22.8	4	98.7	23	12	18*
Sialkot	32.9	3	25.2	5	38.4	3	22.7	9	98.0	19	8	7
Zhob	35.0	4	23.8	8	42.0	4	16.5	8	24.0	25	11	1*
D.I.Khan	35.8	18	28.0	1	41.5	18	22.0	1	33.0	1	25	1
Lahore	34.7	3	25.0	8	39.0	3	23.0	5*	106.0	23	10	8
Quetta	31.8	3*	25.5	24	39.5	3	20.0	28	4.0	24	36	4*
Multan	37.0	4	29.6	25	41.2	3*	25.0	25	57.2	25	20	4
Barkhan	31.3	12*	25.3	8	37.5	3*	19.5	2*	66.0	26	6	11*
Nokkundi	39.3	3	33.5	5*	47.5	1*	27.0	7*	0.0	0	28	7
Dalbandin	38.8	2*	32.0	27	47.5	2	24.0	27	10.0	27*	22	22
Jacobabad	38.3	4	29.8	30	45.0	3*	24.5	8*	47.0	8	8	8
Khanpur	36.9	4	30.6	24	43.5	4	25.6	24	41.8	24	12	29
Panjgur	35.3	20	26.3	26	42.5	13*	21.5	26*	11.0	24	22	5
Khuzdar	31.8	5	23.8	27*	38.0	4*	18.0	28	19.0	28	6	7*
Sh.Benazirabad	35.9	4	28.8	25	43.0	1*	25.0	23	56.0	23	16	19
Jiwani	30.8	7	28.0	30	35.5	3	23.5	26*	5.0	30	12	1*
Pasni	32.3	3*	29.3	25	37.0	7*	25.0	31	3.0	24	14	8
Hyderabad	35.0	7	29.5	24*	40.5	6	26.5	24	69.0	25	24	4*
Chhor	33.5	3	29.5	20	39.0	6	23.0	20	57.0	8	12	5*
Karachi	34.5	7	28.9	25	38.5	7	26.0	9	22.7	25	16	12*

* mean value occurred 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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