



Pakistan's Monthly Climate Summary August, 2022

In brief

- National rainfall for the month of August 2022 was excessively (+243%) above average and stands as record wettest August since 1961.
- August 2022 monthly rainfall alone exceeded the total normal monsoon seasonal rainfall by 37%.
- August 2022 rainfall was excessively above average over Balochistan (+590%) & Sindh (+726%) with both ranked to have experienced wettest ever August, while, excessively above average over Gilgit-Baltistan, GB (+233%) ranking 2nd wettest August during past 62 years.
- Monthly rainfall was above average over Punjab (+58%, ranked 10th) & Khyber Pakhtunkhwa, KP (+52%, ranked 4th) and nearly average over Azad Jammu & Kashmir, AJK (-3%).
- The torrential rain caused massive devastating flash floods in Balochistan, Sindh, southwest Punjab and KP inflicting over 1100 deaths & unbearable huge loss of crops and properties.
- The wettest day of the month in the country was 19th August, when Padidan (Sindh) recorded 355.0mm rainfall which also proved to be the wettest place with highest monthly total of 1228.5mm and now stands the heaviest day rainfall & wettest ever month in Sindh.
- Number of rainy days were considerably higher than normal over the country, especially in Sindh and Balochistan.
- The heavy rains contributed to ever recorded August rainfall total, both monthly (21 location) and daily (13 locations) and for some sites over hundred years.
- The national mean monthly temperature of August 2022 for Pakistan as a whole was 28.66 °C, being 1.48°C cooler than monthly-average of 30.14 °C.
- Daytime (maximum) temperature at country-level was 33.53 °C, being 2.4 °C cooler than average of 35.93 °C.
- The nighttime (minimum) temperature was 23.82 °C, being 0.50 °C cooler than country-average of 24.32 °C.
- The hottest day of the month was at Nokkundi (Balochistan) when it recorded 45.5 °C temperature on 9th August 2022.
- Coldest temperature of 6.2 °C of the month was recorded at Kalam (KP) on 30th August 2022.
- The Indian Ocean Dipole (IOD) remained generally in neutral phase but inclining to negative phase during the month.
- The La Niña conditions have been persisting through almost 3rd year, one of the rare phenomena being described as Triple-dip La Niña and is likely to prevail through this summer.

National weather extremes during August 2022

Hottest day	45.5 °C	at Nokkundi (Balochistan) on 9 th .
Coldest day	14.5 °C	at Bagrote (GB) on the 27 th and Hunza (GB) on the 26 th
Coldest night	6.2 °C	at Kalam (KP) on the 30 th
Warmest night	32.0 °C	at Multan AP (Punjab) on 11 th and Sibbi (Balochistan) on the 9 th
Wettest day	355.0 mm	at Padidan (Sindh) on the 19 th
Wettest month	1228.5 mm	at Padidan (Sindh)

Synoptic Summary

The strong monsoon moist currents from the Arabian Sea started penetrating into southern Sindh on 1st August which spread over upper and central parts of the country from 6th August and moist currents from the Bay of Bengal too kept penetrating during the entire month. Meanwhile, the seasonal/heat low, more deepened during 4-24 August, continued to prevail over North/Northwest Balochistan, which resultantly pulled more moist currents towards Balochistan and Sindh.

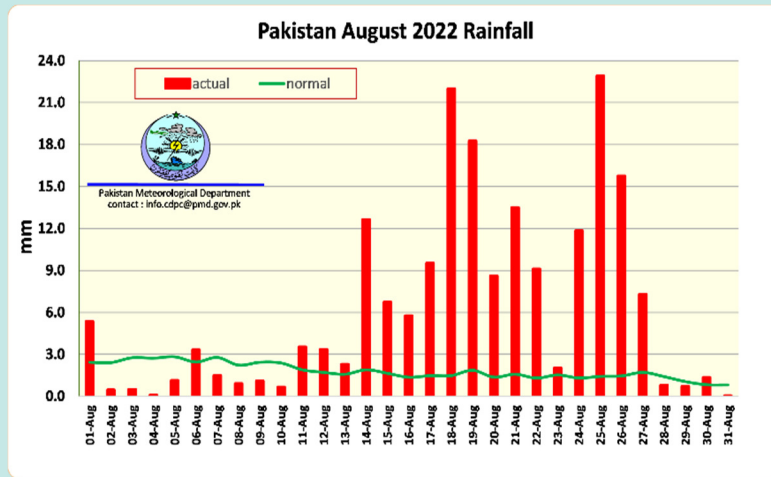
On 8th August, another monsoon low developed over Kutch, India and adjoining Northeast Arabian Sea which subsequently strengthened into a depression on 12th. Having moved northwestward, the depression first reduced to a well-marked low over North Arabian Sea after two days and then into a low-pressure area on 15th August. Then a fresh low-pressure area formed over the Bay of Bengal on 13th which also converted into a depression the next day. Moving towards central India first and then to west Rajasthan, the depression reduced to a well-marked low over west Rajasthan (India) and adjoining eastern Sindh the next day. Meanwhile, another depression developed over the Bay of Bengal on 19th, intensified further into a deep depression and moved westward towards central India which ultimately got weakened into a well-marked low when reached east Rajasthan (India) and persisted for the following two days. This low-pressure then moved over Sindh on 25th, persisted over central & upper Sindh before merging with the Seasonal low over Northwest of Balochistan on 26th August that produced very heavy (with some extremely heavy) rains over entire Sindh leading to urban/flash flooding in Sindh's most districts and northeast Balochistan.

RECORD BREAKING RAINFALL IN COUNTRY, ESPECIALLY IN SIND AND BALOCHISTAN

During August 2022, about four widespread rainy spells were experienced. The incessant intense rains across large swaths of Sindh and Balochistan during 11-27 August proved to be one of the most significant on record. Climatologically, the August is a fairly wet month of the year but being 243% above than average rainfall, August 2022 happened to be an extremely excessive-rain month with 192.7mm (area-weighted) rain against its normal of 56.2mm and stood as the record wettest August since 1961. On average, the August rainfall contribution is of the order of 40% and 19% to the monsoon (JAS) and annual rainfall respectively. It is pertinent to mention that on regional scale, Sindh (442.8mm/+726%), Balochistan (154.9mm/+590%) & GB (55.7mm/+233%) all witnessed extremely above average rain during the month. For former two regions, August 2022 now ranks as the wettest ever month, while, for GB it's the 2nd wettest month (record is 89.1mm in 1997) during past 62 years. It was largely above average over KP (163.9mm/+58%) & Punjab (141.7mm/+52%) too with ranking as the 4th wettest August for KP since 1961. The AJK with (146.1mm/-3%) was the only region having near to normal rain.

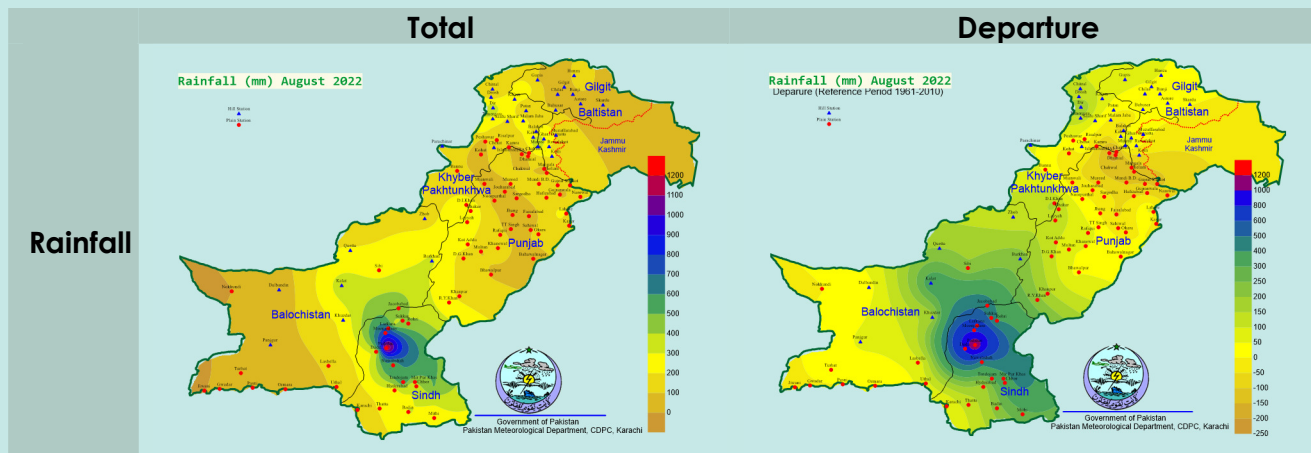
During the month number of rainy days were considerably higher than normal over the country, especially in Sindh and Balochistan. On average Sindh & Eastern-Balochistan have experienced the 15 and 9 rainy days respectively against 2 normal rainy days in the month. The wettest day of the month in the country was 19th August when Padidan (Sindh) recorded

355.0mm, which also proved to be wettest ever place in the region with a total of 1228.5mm. The heavy rains contributed to record August rainfall total (monthly and daily) in many locations over hundred years. Single-day as well as monthly rainfall totals during the month were very significant, when 13 PMD stations broke their 24-hours rainfall record and 21 stations set a new monthly total rainfall record.



The unrelenting very heavy rainfall triggered widespread devastating flooding across Sindh, South Punjab and Eastern Balochistan which resulted in significant human and livestock casualties besides damaging the private homes and public infrastructure, especially in Balochistan and Sindh provinces, as per report of Humanitarian Advisory Team of United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA). The National Disaster Management Authority (NDMA) reported that some 33 million people in Pakistan were affected, 1,191 people killed and 3,641 injured from 14 June to 31 August. Over 372,823 houses have been destroyed and a further 733,536 damaged since 14 June, more than 731,818 livestock heavily impacted beside millions of acres of crops and orchards had also been impacted.

August 2022 Rainfall maps



The other significant monthly-total rains recorded at Moen Jo Daro 779.5mm, Larkana 738.3mm, Sakrand 617mm, Khairpur 606.3mm, Tando Jam 598.0mm, Chhor 503.9mm, Jacobabad 493mm, Sh.Benazirabad 488.2mm, Rohri 371.4mm, Murree 402.5mm, Sukkur 379.0mm, Dir 361mm, Kalat 361mm, Dadu 337mm, Barkhan 312mm, Badin 307.5mm, Mirpur Khas 304mm, Kakul 297mm, Muzaffarabad Airport 289.3mm, Bhakkar 284.2mm, Garhi Dupatta 278.3mm, Lower Dir 278mm, Mithi 275mm, Muzaffarabad City 272.9mm, Kalam 268.1mm And Malamjabba 256mm. The Jiwani and Nokkundi were the only two stations which remained dry with no rain at all during the month.

August, 2022 Area-Weighted Rainfall

	Rank (of 62)	Normal (mm)	Average (mm)	Departure (percent)	Comment
Pakistan	62	56.2	192.7	243	1 st highest (previous record 116.7 mm in 2020)
Azad Jammu & Kashmir	34	150.7	146.1	-3	29 th highest (record 308.2 mm in 1997)
Balochistan	62	22.4	154.9	590	1 st highest (previous record 83.3 mm in 2020)
Gilgit Baltistan	61	16.7	55.7	233	2 nd highest (record 89.1 mm in 1997)
Khyber Pakhtunkhwa	59	103.6	163.9	58	4 th highest (record 225.4 mm in 2010)
Punjab	53	93.3	141.7	52	10 th highest (record 282.6 mm in 1973)
Sindh	62	53.6	442.8	726	1 st highest (previous record 247.9 mm in 2020)

[RANK RANGES FROM 1 (LOWEST) TO 62 (HIGHEST)]

Temperatures: Cooler than Normal temperatures observed over the country.

The national mean monthly temperature of Aug 2022 for Pakistan as a whole was 28.66 °C, being 1.48 °C cooler than average of 30.14 °C. Similarly on regional scale, AJK recorded 24.83 °C, Balochistan 28.69 °C, GB 23.83 °C, KP 26.54 °C, Punjab 30.74 °C and Sindh 29.77 °C. The mean temperature anomalies; AJK (-0.28 °C), Balochistan (-1.94 °C), GB (-2.16 °C), Punjab, (-0.80 °C), KP (-1.87°C) and Sindh (-1.31 °C) all recorded cooler than average temperatures owing mainly to persistently cloudy & rainy weather. The extent of the cooling can be gauged from the fact that 14 PMD stations, mostly located in Sindh and Eastern-Balochistan, broke their lowest recorded day temperatures.

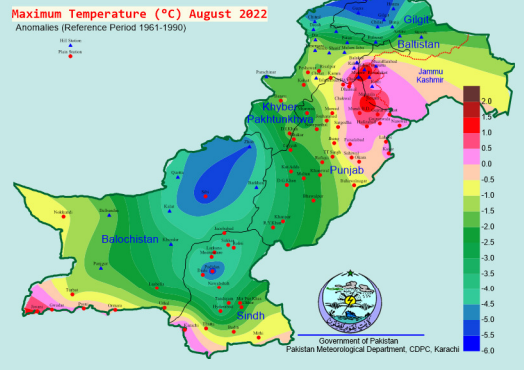
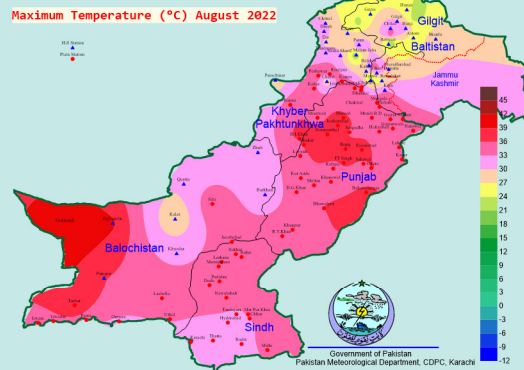
August 2022 mean maximum (daytime) temperature of 33.53 °C was recorded at country-level being 2.4 °C cooler than average of 35.93°C. The average night (minimum) temperature of 23.82 °C, being 0.50 °C cooler than country-average of 24.32 °C, during the month. The mean temperature anomalies of August 2022 range between +2.0 to -4.5 °C in the country. The Mean Maximum temperature anomalies were +2.0 to -5.5 °C in the country. The maximum temperature anomalies over AJK and upper Punjab were considerably higher. The hottest day of the month was at Nokkundi (Balochistan) when it recorded 45.5 °C temperature on 9th August. The coldest temperature of 6.2 °C of the month was recorded at Kalam (KP) on 30th August

August 2022 Temperature maps

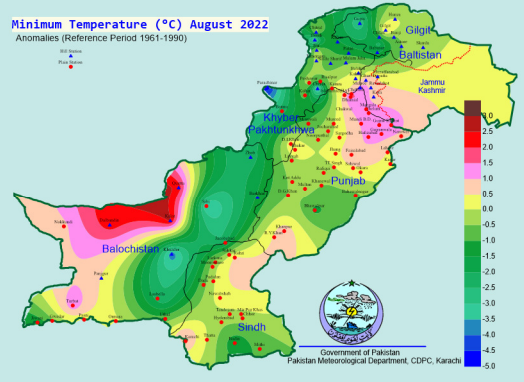
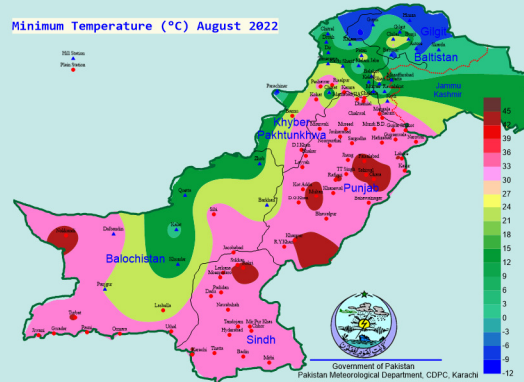
Maximum Temperature

Mean

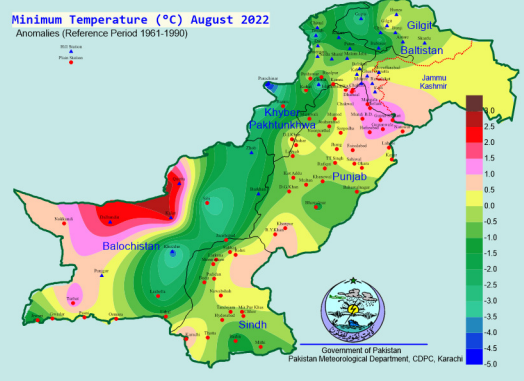
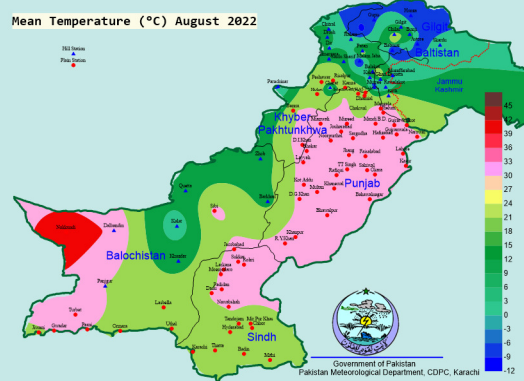
Anomaly



Minimum Temperature



Mean Temperature



New weather Record Set in August 2022

S No	STATION	Weather Paramter	New Record		Old Record	
			Value	date	Value	Date
1	Chhor	Wettest Monthly rain (mm)	503.9	2022	356.1	1990
2	Dadu	Coldest Day temperature (°C)	26.0	25/2022	27.5	07/2006
		Wettest Monthly rain (mm)	337.0	2022	180	2020
3	Jacobabad	Coldest Day temperature (°C)	26.0	19/2022	30.0	27/2020
		Wettest Monthly rain (mm)	493.0	2022	241.2	2013
4	Larkana	Coldest Day temperature (°C)	27.0	25/2022	27.0	02/1994
		Wettest Monthly rain (mm)	738.3	2022	207.0	2010
		Heaviest Rainfall in 24 hours (mm)	157.3	22/2022	131.0	05/2010
5	Moen-Jo-Daro	Coldest Day temperature (°C)	26.5	25/2022	28.5	02/1994
		Wettest Monthly rain (mm)	779.5	2022	281.0	2020
		Heaviest Rainfall in 24 hours (mm)	125.0	21/2022	119.6	21/1994
6	Shaheed Benazirabad	Coldest Day temperature (°C)	26.5	24/2022	27.2	16/1970
		Wettest Monthly rain (mm)	488.2	2022	274.1	2011
		Heaviest Rainfall in 24 hours (mm)	123.0	25/2022	117.1	14/1955
7	Padidan	Coldest Day temperature (°C)	26.0	25/2022	27.0	01/1992
		Wettest Monthly rain (mm)	1228.5	2022	300.1	1992
		Heaviest Rainfall in 24 hours (mm)	355.0	19/2022	238.0	31/2011
8	Rohri	Wettest Monthly rain (mm)	371.4	2022	142.2	1933
9	Sakrand	Coldest Day temperature (°C)	26.5	24/2022	28.0	30/2019
		Wettest Monthly rain (mm)	617.0	2022	125.0	2020
		Heaviest Rainfall in 24 hours (mm)	220.0	25/2022	56.0	26/2020
10	Sukkur Airport	Coldest Day temperature (°C)	26.5	19/2022	26.5	04/2010
		Wettest Monthly rain (mm)	379.0	2022	130.0	2008
11	Tandojam	Coldest Day temperature (°C)	25.5	25/2022	27.5	26/2020
		Coldest Night temperature (°C)	21.5	(3)/2022	21.5	26/2018
		Wettest Monthly rain (mm)	598.0	2022	181.4	2011
		Heaviest Rainfall in 24 hours (mm)	129.0	17/2022	107.6	11/2011
12	Barkhan	Coldest Day temperature (°C)	23.0	20/2022	24.4	05/1990
		Wettest Monthly rain (mm)	312.0	2022	294.3	1984
		Heaviest Rainfall in 24 hours (mm)	110.0	14/2022	104.2	23/1984
13	Kalat	Wettest Monthly rain (mm)	361.0	2022	77.7	1953
		Heaviest Rainfall in 24 hours (mm)	132.0	26/2022	46.2	08/1953
14	Khuzdar	Wettest Monthly rain (mm)	227.1	2022	222.9	1984
		Heaviest Rainfall in 24 hours (mm)	87.1	25/2022	60.2	06/1984
15	Quetta Sh.Manda	Coldest Day temperature (°C)	20.5	26/2022	27.0	08/2020
		Wettest Monthly rain (mm)	207.0	2022	43.0	2006
		Heaviest Rainfall in 24 hours (mm)	91.0	26/2022	19.0	02/2006
16	Quetta Samungali	Wettest Monthly rain (mm)	208.0	2022	173.0	1983
17	Sibi	Wettest Monthly rain (mm)	243.0	2022	212.0	2020
18	Turbat	Hottest Night temperature (°C)	30.5	11/2022	30.0	06/2020
19	Zhob	Coldest Day temperature (°C)	20.0	21/2022	24.0	04/2010
20	Chitral	Coldest Day temperature (°C)	17.8	27/2022	19.0	27/2010
		Wettest Monthly rain (mm)	110.0	2022	41.2	2015
		Heaviest Rainfall in 24 hours (mm)	31.6	26/2022	17.0	16/2014
21	Dir	Wettest Monthly rain (mm)	361.0	2022	296.0	1983
		Heaviest Rainfall in 24 hours (mm)	90.0	26/2022	81.8	19/1983
22	Drosh	Wettest Monthly rain (mm)	142.3	2022	115.6	1941
23	Rahim Yar Khan	Wettest Monthly rain (mm)	224.4	2022	177.4	2010
24	Saidu Sharif	Coldest Day temperature (°C)	20.0	26/2022	20.0	01/1976
25	Muzaffarabad City	Heaviest Rainfall in 24 hours (mm)	163.0	01/2022	160.0	20/2012

Dates in parenthesis are number of occurrence.

August 2022 Monthly Averages & Normals

Station	Pressure (mb)		Temperature (°C)			Vapour (mb)	Precipitation	
	Station Level	Sea Level	Mean	Maximum	Minimum	Pressure	Total (mm)	Days
Drosh	847.5	1437.4	25.1	31.4	18.7	17.0	142.3	13
	845.9	1420.8	29.0	35.9	22.3	15.8	20.0	4.7
Peshawar	965.4	1001.5	30.0	35.6	24.5	31.8	56.2	6
	958.9	997.9	30.8	36.0	25.7	29.2	72.6	7.7
Parachinar	824.1	1458.4	20.4	26.9	13.8	15.9	166.1	12
	822.4	1437.8	23.0	28.8	17.2	18.4	97.4	12.5
Rawalpindi	946.4	1001.7	29.3	33.5	25.1	25.8	143.1	9
	944.0	999.2	27.9	33.4	23.6	28.5	348.1	16.7
Sargodha	980.0	1000.2	32.0	36.7	27.2	33.8	98.1	6
	978.6	999.3	31.6	36.5	26.6	31.4	131.7	8.9
Jhelum	974.3	1000.0	31.2	35.9	26.5	34.2	96.0	6
	973.8	999.0	29.9	34.4	25.3	31.1	251.6	14.8
Sialkot	972.8	1000.9	30.0	33.9	26.1	33.5	158.2	10
	971.6	999.6	29.0	33.2	24.8	31.8	323.5	14.2
Zhob	853.0	1435.5	25.1	30.4	19.8	20.3	161.0	9
	850.5	1410.3	28.9	35.4	22.4	17.7	49.7	3.7
D.I.Khan	981.1	1000.1	31.2	35.7	26.7	34.0	223.0	10
	979.4	997.4	31.6	37.3	26.0	31.3	61.7	5.6
Lahore	977.4	1001.0	30.9	34.7	27.1	33.2	240.9	10
	975.5	999.1	30.7	34.9	26.5	31.5	194.5	12.7
Quetta	836.3	1446.9	25.4	30.5	20.2	15.0	208.0	11
	834.3	1423.2	26.6	35.0	18.3	12.5	13.2	1.5
Multan	986.4	1000.1	31.7	35.6	27.7	32.6	94.4	5
	984.6	998.3	32.4	37.6	27.9	30.8	36.4	3.5
Barkhan	883.0	1430.8	26.1	30.4	21.8	23.7	312.0	15
	882.8	1428.6	28.9	34.5	23.2	22.2	87.7	4.8
Nokkundi	922.9	994.5	34.0	40.6	27.4	6.4	0.0	0
	923.7	995.1	33.5	41.7	26.7	11.7	0.4	0.1
Dalbandin	906.7	1421.9	32.8	39.6	26.0	13.1	33.0	1
	907.0	1433.4	32.4	40.8	22.4	9.3	0.3	0.1
Jacobabad	992.8	999.1	30.3	34.6	25.9	33.6	493.0	14
	991.8	997.9	33.0	37.8	28.2	32.2	35.4	1.3
Khanpur	989.3	999.1	31.3	35.3	27.2	35.0	189.8	11
	988.3	998.2	32.0	38.1	25.9	30.4	17.4	1.8
Panjgur	894.0	1426.8	30.0	36.2	23.8	13.5	69.0	4
	895.9	1437.3	30.7	38.1	23.4	10.1	7.4	0.5
Khuzdar	869.6	1430.6	25.7	32.1	19.4	10.5	227.1	8
	868.5	1411.7	30.4	35.7	22.9	9.0	57.4	3.4
Sh,B,abad	994.4	997.7	30.8	35.0	26.5	33.8	448.2	15
	995.1	998.9	32.3	38.6	26.0	31.8	46.3	1.6
Jiwani	994.0	1000.3	28.4	32.5	24.3	31.3	0.0	0
	994.5	1000.8	28.3	31.0	25.6	29.2	2.1	0.5
Pasni	999.0	999.5	29.2	32.9	25.4	33.4	5.0	1
	1000.0	1000.8	28.2	32.2	25.9	30.1	11.5	0.2
Hyderabad	994.9	999.7	29.5	32.7	26.3	33.4	243.0	13
	995.6	999.6	31.3	36.0	26.6	29.1	63.1	2.4
Chhor	998.8	999.5	29.4	33.2	25.6	34.2	503.9	16
	999.1	992.1	30.0	34.7	25.4	30.2	69.3	3.2
Karachi	997.8	1000.5	29.6	32.1	27.1	34.4	127.9	12
	998.6	1001.2	29.0	31.9	26.2	29.8	60.1	2.8

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

August 2022 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	40.4	13	13.2	29	40.4	13	13.2	29	42.8	26	14	6*
Peshawar	39.4	13	21.0	27	39.4	13	21.0	27	25.0	18	4	2*
Parachinar	30.5	11	11.5	5*	30.5	11	11.5	5*	35.0	27	6	4*
Rawalpindi	36.3	10	22.8	15*	36.3	10	22.8	15*	59.0	15	17	9
Sargodha	40.4	10	23.8	12	40.4	10	23.8	12	42.0	12	8	15
Jhelum	39.0	10*	23.6	1	39.0	10*	23.6	1	47.0	24	8	24*
Sialkot	36.5	10	23.4	16	36.5	10	23.4	16	47.0	15	10	11
Zhob	36.0	7	14.5	22*	36.0	7	14.5	22*	39.0	27	13	4
D.I.Khan	40.2	11	24.0	18*	40.2	11	24.0	18*	67.6	25	6	11
Lahore	37.5	10	24.0	29	37.5	10	24.0	29	71.0	29	10	11
Quetta	37.0	8	14.5	29	37.0	8	14.5	29	86.0	26	30	12
Multan	39.2	10	25.4	26	39.2	10	25.4	26	32.2	26	20	15
Barkhan	34.5	5*	18.0	30	34.5	5*	18.0	30	110.0	14	6	5*
Nokkundi	45.5	9	22.0	23	45.5	9	22.0	23	0.0	0	22	11
Dalbandin	44.5	9	21.0	21*	44.5	9	21.0	21*	15.0	20	18	14
Jacobabad	41.0	5*	23.0	25*	41.0	5*	23.0	25*	110.0	25	26	9
Khanpur	39.5	11	24.7	21	39.5	11	24.7	21	56.2	14	8	3*
Panjgur	41.0	9	20.0	29	41.0	9	20.0	29	38.0	17	18	24
Khuzdar	35.5	4*	16.0	26	35.5	4*	16.0	26	87.1	25	6	3*
Sh,B.abad	40.0	1	24.5	25	40.0	1	24.5	25	123.0	25	16	17*
Jiwani	35.0	10*	22.5	23*	35.0	10*	22.5	23*	0.0	0	14	17
Pasni	35.5	10	25.0	1*	35.5	10	25.0	11*	5.0	14	14	24
Hyderabad	36.7	10	24.6	25	36.7	10	24.6	25	56.0	24	16	19*
Chhor	40.0	10	23.8	19	40.0	10	23.8	19	130.9	18	14	10*
Karachi	36.5	9	25.5	14	36.5	9	25.5	14	35.5	11	14	12

* means 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).

Contact

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