Government of Pakistan
Pakistan Meteorological Department
Pakistan Monthly Climate Summary
August 2024

In brief

- National area-weighted rainfall, 138.9mm, of August 2024 was **excessively above average (+147%)** and stands second wettest August during past 64 years (record is 193.2mm in 2022).
- The heaviest one-day rainfall of 337.0 mm occurred at Lahore Airport (Punjab) on 1st August. The same has been the wettest place with monthly total 603.0 mm.
- The national mean monthly temperature of 29.90 °C for Pakistan was cooler (with -0.36 °C anomaly) than country-average of 30.25 °C.
- The daytime (maximum) temperature at country-level was 34.94 °C also cooler by -0.96°C than the country-average of 35.90 °C and stands 5th lowest mean maximum temperature during past 64 years (record is 33.53 °C in 2022).
- The country-level nighttime (minimum) temperature of 24.79 °C was warmer (+0.48°C anomaly) than the countrywide average of 24.31 °C.
- The hottest day of the month was observed at Nokkundi (Balochistan) on 15th when it recorded a maximum temperature of 48.5 °C. Coincidently, the same station found to be the warmest place with a mean monthly maximum temperature of 43.2 °C.
- The coldest night temperature (10.0 °C) of the month was recorded at Bagrote (GB) and Kalam (KP) on 10th. Whereas, Rawalakot (AJ&K) and Malam-Jabba (KP) happened to be the coolest places with mean monthly minimum temperature of 15.2 °C.
- The El Niño–Southern Oscillation (ENSO) has slightly shifted from neutral to La Niña with sea surface temperatures (SSTs) being around -0.4 °C over the central equatorial Pacific Ocean and likely to drop further.
- The Indian Ocean Dipole (IOD) is in neutral phase.

Table-1: National Weather Extremes during August 2024

Hottest day	48.5	Nokkundi (Balochistan) on 15th
Coldest day	14.5	Astore (GB) on 29th
Coldest night	10.0	Bagrote (GB) and Kalam (KP) on 10th
Warmest night	32.5	Bhakkar (Punjab) on 1st and Dalbandin & Sibi (Balochistan) on 2nd & 15th
Wettest day	337.0	at Lahore Airport (Punjab) on the 1st
Wettest month	603.0	at Lahore Airport (Punjab)

Synoptic Summary

The prevalence of monsoon currents across most parts of the country remained a dominant feature of the month. Moderate to strong monsoon currents from the Arabian Sea & Bay of Bengal (BOB) continuously penetrated during most days of the month with occasional westerly also entered in upper parts of the country. Meanwhile, seasonal (Heat) low with monthly average value of 994 hPa, remained oriented mostly over Northwest Balochistan.

Cyclonic Storm, CS (ASNA, اسنی)

Another prominent and a rare feature of the month was a development of Cyclonic Storm, CS (ASNA) on 30th August over the Northeast Arabian Sea off Sindh coast. The CS dates back to 16 August when a monsoon low developed over the Northwest Bay of Bengal and adjoining west Bengal and Bangladesh. It located over South Bangladesh during 17-19 August and North and West Bangladesh during 20-23 August. Moving westward, it concentrated first into a well-marked low over Uttar Pradesh (India) and then into a Depression over Madhya Pradesh (India) on 25 Aug. Moving further west, it further intensified into a Deep Depression (DD) over East Rajasthan (India) on 26 Aug and moved on to north Gujarat (India) on 27 Aug and then over Rann of Kutch (India) and adjoining southeast Tharparker (Pakistan) where it

Fig-1: Track Cyclonic Storm (ASNA, اسنی)

remained stationary for following two days. Having moved southwest and emerging over the Northeast Arabian Sea and meeting favourable environmental conditions (warm SSTs (28-29C), low/moderate vertical wind shear, VWS, and well-organized upper-air outflow) it further intensified into a Cyclone Storm (ASNA, اسنیٰ) off Sindh coast on 30th at 1100PST. Thereafter, the CS (ASNA) kept tracking west-southwest for next two days. Reaching over Northwest Arabian Sea and encountering unfavourable conditions of cooler SSTs, higher VWS and dry air entrainment from Arabian Peninsula it then weakened first into a DD from 1st September night and then into a Depression from 2nd Sep morning (see adjacent Fig-1). Being a rare case of CS development in a month of August, the CS (ASNA) proved to be the only 4th CS in the recorded history (during 1893-2023) of the North Indian Ocean, the previous ones being in 1944, 1966 and 1976.
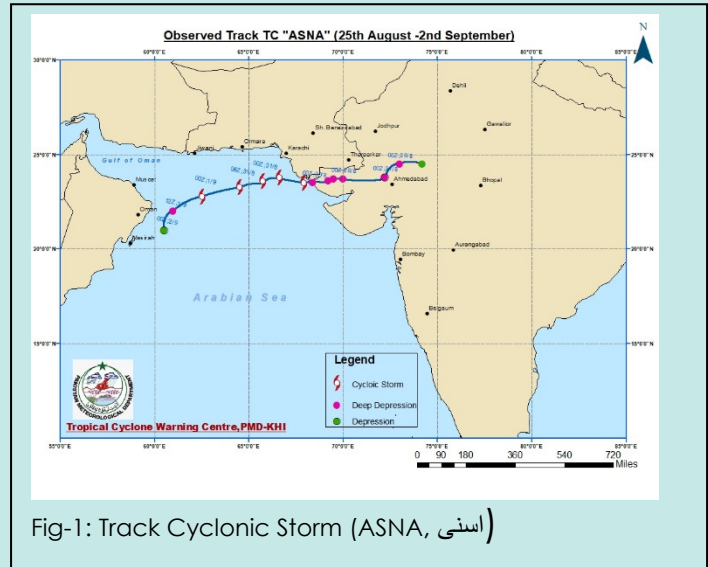
CS (ASNA) impacts over Pakistan coast

On Friday, 31 August the CS induced squally winds of 40-46kts speed over Karachi, Sujawal, Thatta and parts of Badin districts associated with widespread rain/thunderstorm with some extremely heavy falls over Sothern Sindh which uprooted dozen of trees, smashed signboards and blown away loose structures. Apart from this, its induced circulation also produced heavy rains in Balochistan, Khyber Pakhtunkhwa (KP), Punjab, Gilgit Baltistan (GB) and Azad Jammu & Kashmir (AJK) during 25-31 August.

Table-2: New Weather Records Set in August 2024

S No	Stations	Weather Parameters	New Record		Old Record		No of years examined.
			Value	Date	Value	Date	
1	KHUZDAR	Wettest month rainfall(mm)	237.7	Aug-2024	227.1	Aug/2022	61
2	LAHORE AIRPORT	Wettest month rainfall(mm)	603.1	Aug-2024	512.4	Aug/2013	73
3	MIRPUR KHAS	Wettest month rainfall(mm)	384.9	Aug-2024	348.0	Aug/2020	21
4	MULTAN AIRPORT	Wettest month rainfall(mm)	275.6	Aug-2024	217.3	Aug/1992	73
5	RAHIM YAR KHAN	Wettest month rainfall(mm)	258.2	Aug-2024	224.1	Aug/2022	34
6	LAHORE AIRPORT	Heaviest one day Rainfall (mm)	337.0	01/Aug/2024	221.0	13/Aug/2008	73
7	RAHIM YAR KHAN	Heaviest one day Rainfall (mm)	92.2	04/Aug/2024	71.0	02/Aug/2008	34
8	SUKKUR	Heaviest one day Rainfall (mm)	100.0	18/Aug/2024	92.0	04/Aug/2008	28
9	ASTORE	Hottest night Temperature (°C)	22.5	07/Aug/2024	21.7	11/Aug/1969	64
10	DALBANDIN	Hottest night Temperature (°C)	32.5	02/Aug/2024	32.5	01/Aug/2013	64
11	PESHAWAR AIRPORT	Hottest night Temperature (°C)	31.5	09/Aug/2024	30.9	01/Aug/2013	64
12	QUETTA. (SAMUNGLI)	Hottest night Temperature (°C)	26.0	02/Aug/2024	25.4	02/Aug/1982	64
13	NOKKUNDI	Hottest day Temperature (°C)	48.5	15/Jan/2024	48.0	08/Aug/1955	93

Table-3: Significant Winds recorded in August 2024

Date	Station	Max Wind Knots	Date	Station	Max Wind Knots	Date	Station	Max Wind Knots	Date	Station	Max Wind Knots
03/2024	Peshawar AP	30	26/2024	Islamabad AP	40	11/2024	Lahore AP	35	30/2024	Quetta Samungli	30
20/2024	Rawalpindi	46	10/2024	Mangla	35	18/2024	Lahore AP	35	15/2024	Layyah	30
10/2024	Islamabad AP	44	19/2024	Islamabad ZP	35	19/2024	Lahore AP	30	16/2024	Layyah	34
16/2024	Islamabad AP	34	15/2024	D-I-Khan AP	70	21/2024	Lahore AP	40	27/2024	Multan AP	35
19/2024	Islamabad AP	34	01/2024	Lahore AP	36	27/2024	Lahore AP	30	27/2024	Sh.Benzirabad	45
20/2024	Islamabad AP	32	04/2024	Lahore AP	30	29/2024	Lahore AP	35	15/2024	Moin Jo Daro	40

Rainfall: excessively above average in most parts of the country.

Climatologically, August is considered as a good rainy month of the year with rainfall contribution to the annual national total and monsoon (JAS) being 18.9% and 39.9%, respectively. During the month, Pakistan experienced four moderate to heavy/ very heavy rain spells. The daily area-averaged rainfall is shown in Fig-2. August 2024 rainfall was excessively above average with 138.9 mm (+147%) for Pakistan as a whole and stands second wettest August in Pakistan (record is 193.2 mm in 2022, earlier second wettest being 116.7 mm in 2020). However, situation varied on regional scale with four of the provinces/regions recorded excessively above average rainfall

Fig-2: Daily Area Average Rainfall (mm) in Pakistan

while two of the provinces recorded slightly above-average rainfall, i.e. for Sindh with 234.0 mm (+337%) & the Balochistan with 82.2 mm (+266%) both it ranked as 3rd wettest August during past 64 years (record is 443.6 mm & 154.9 mm in Aug-2022 respectively), Punjab with 200.7 mm (+115%) observed 4th wettest August (record is 282.6 mm in 1973) and GB with 30.9 mm (+85%) the 6th wettest August (record is 89.1 in 1997). The KP with 133.6 mm (+29%) and AJ&K with 170.5 mm (13%) both exhibited above average rainfall (Table-4). The wettest day of the month in the country was 1st August when 337.0mm rainfall was recorded at Lahore Airport (Punjab) and incidentally the same station found being the wettest place with a monthly total rainfall of 603.2 mm (Table-1).
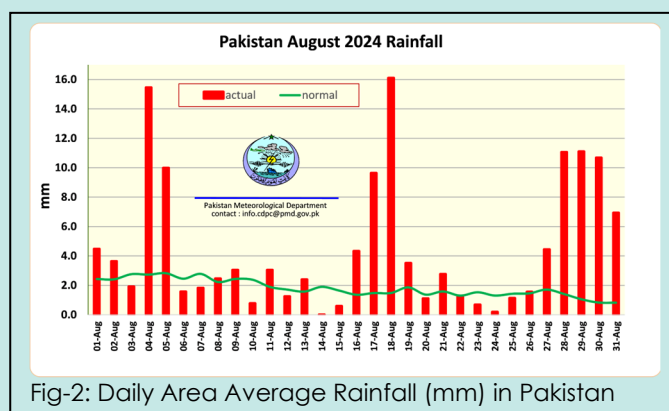
Table-4: August 2024 Area-Weighted Rainfall

Region	Rank (of 64y)	Normal (mm)	Average (mm)	Departure (percent)	Comment
Pakistan	63	56.2	138.9	147	2nd wettest (record 193.2 mm in 2022)
Azad Jammu & Kashmir	48	150.7	170.5	13	----
Balochistan	62	22.5	82.2	266	3rd wettest (record 154.9 mm in 2022)
Gilgit Baltistan	59	16.7	30.9	85	6th wettest (record 89.1 mm in 1997)
Khyber Pakhtunkhwa	54	103.6	133.6	29	----
Punjab	61	93.5	200.7	115	4th wettest (record 282.6 mm in 1973)
Sindh	62	53.6	234.0	337	3rd wettest (record 443.6 mm in 2022)

[RANK RANGES FROM 1 (LOWEST) TO 64 (HIGHEST) IN TERMS OF YEARS FROM 1961]

The other significant rainfalls recorded in the month were Kakul 461.0 mm, Narowal 436.7 mm, Islamabad Zeropoint 424.1 mm, Mirpurkhas 384.9 mm, Chaklala Airbase 359.0 mm, Jhelum 356.6 mm, Gujranwala 353.5 mm, Balakot 351.0 mm, Mandibahauddin 321.3 mm, Mangla 320.3 mm, Khairpur 303.0 mm, Mithi 296.5 mm, Lahore City 290.7 mm, Sialkot Airport 284.0 mm, Jacobabad 281.0 mm, Multan Airport 275.6 mm, Hafizabad 273.8 mm, Murree 264.0 mm, Muzaffarabad Airport

258.5 mm, Rahim Yar Khan 258.2 mm, Sukkur 255.0 mm, Rohri 252.0 mm and Gujrat 251.0 mm. The Nokkundi was the only station remained absolutely dry with no rain during the month.
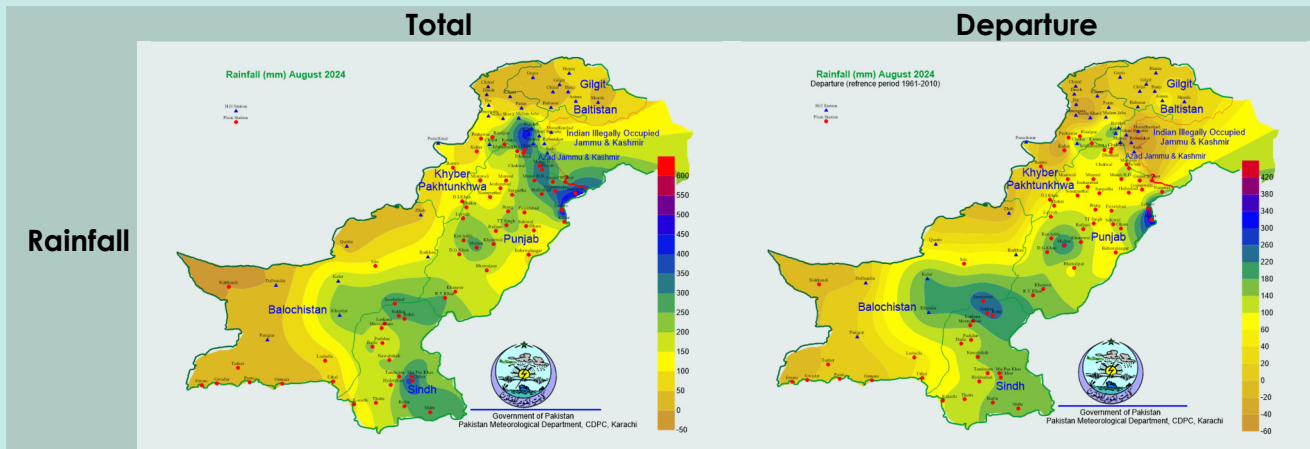
August 2024 Rainfall maps

Fig. 3. August-2024 spatial rainfall distribution and departure from normal

Table 5: Cooler than average Temperatures observed in most part of the country.

Area Averaged Temperatures (°C) in August 2024 and anomalies from normal 1961-1990						
Regions	Maximum Temperature		Minimum Temperature		Mean Temperature	
	Actual	Anomaly	Actual	Anomaly	Actual	Anomaly
Pakistan	34.94	-0.96	24.79	+0.48	29.90	-0.36
Azad Jammu & Kashmir	30.97	+0.42	20.58	+1.05	25.79	+0.73
Balochistan	35.97	-1.02	24.39	+0.31	30.22	-0.47
Gilgit-Baltistan	33.14	-0.04	19.35	+0.56	26.26	+0.25
Khyber Pakhtunkhwa	33.26	-0.58	23.21	+0.65	28.25	+0.05
Punjab	35.19	-1.46	26.81	+0.43	31.03	-0.74
Sindh	34.62	-1.27	26.97	+0.71	30.84	-0.36

The August 2024 national mean temperature of 29.90 °C was -0.36 °C cooler than the country-average of 30.25 °C. Similar trend prevailed at regional scale too: Punjab with 31.03°C (-0.74°C), Balochistan with 30.22 °C (-0.47 °C) and Sindh with 30.84 °C (-0.36 °C) all experienced cooler than average temperatures in the month. In contrast, the AJ&K with 25.79 °C (+0.73 °C) observed 9th warmest mean temperature in August (record is 26.25 °C in 2023), the GB with 26.26 °C (+0.25 °C) and KP with 28.25.84 °C (+0.05 °C) experienced warmer than average mean temperatures.

The August 2024 mean-maximum (daytime) temperature of 34.94 °C at country-level was negatively anomalous (-0.96 °C) than the country average of 35.90 °C and ranked as the 5th lowest mean maximum temperature in August (the record is 33.53 °C in 2022). The Punjab with 35.19 °C (-1.46 °C) recorded the 5th lowest average maximum temperature in August (record is 34.47°C in 1976), Sindh with 34.62°C (-1.27°C) & Balochistan with 35.97°C (-1.02°C) both ranking as 7th lowest average maximum temperatures (records are 33.46°C & 34.13°C in 2022 respectively) and KP with 33.26°C (-0.58°C) all exhibited cooler than average temperatures. The GB with 30.97° (+0.42) was the only region having positive average maximum temperature anomaly (Table-5, Fig. 3 upper panel). The Mean maximum temperature anomalies were ranged -4.0 to +2.2 °C in the country with those being considerably higher over GB & adjoining AJ&K and western Balochistan.

In contrast with mean and maximum temperatures, the night-time (minimum) temperature of 24.79 °C (with +0.48 °C anomaly) was warmer than average of 24.79 °C during the month at Ausgust-2024. A similar trend was found across all the regions: For AJ&K with 20.58°C (+1.05 °C) it ranked 3rd warmest (record is 20.78°C in 1994), KP with 23.21 °C (+0.65 °C) ranked 7th warmest (record is 23.88°C in 1970), Sindh with 26.97°C (+0.71 °C) ranked 9th warmest, all exhibited warmer than average night (minimum) temperatures in August (Table-5, Fig-4, middle panel). The hottest day of the month was 48.5 °C recorded at Nokkundi (Balochistan) on 15thAugust. Coincidentally the same place happened to be the warmest place with 43.2 °C average maximum temperature during the month. The lowest night (minimum) temperature of the month was 10.0 °C recorded at Bagrote (GB) on 10th August. Whereas, Rawalakot was the coolest place with 15.2 °C average night (minimum) temperature.
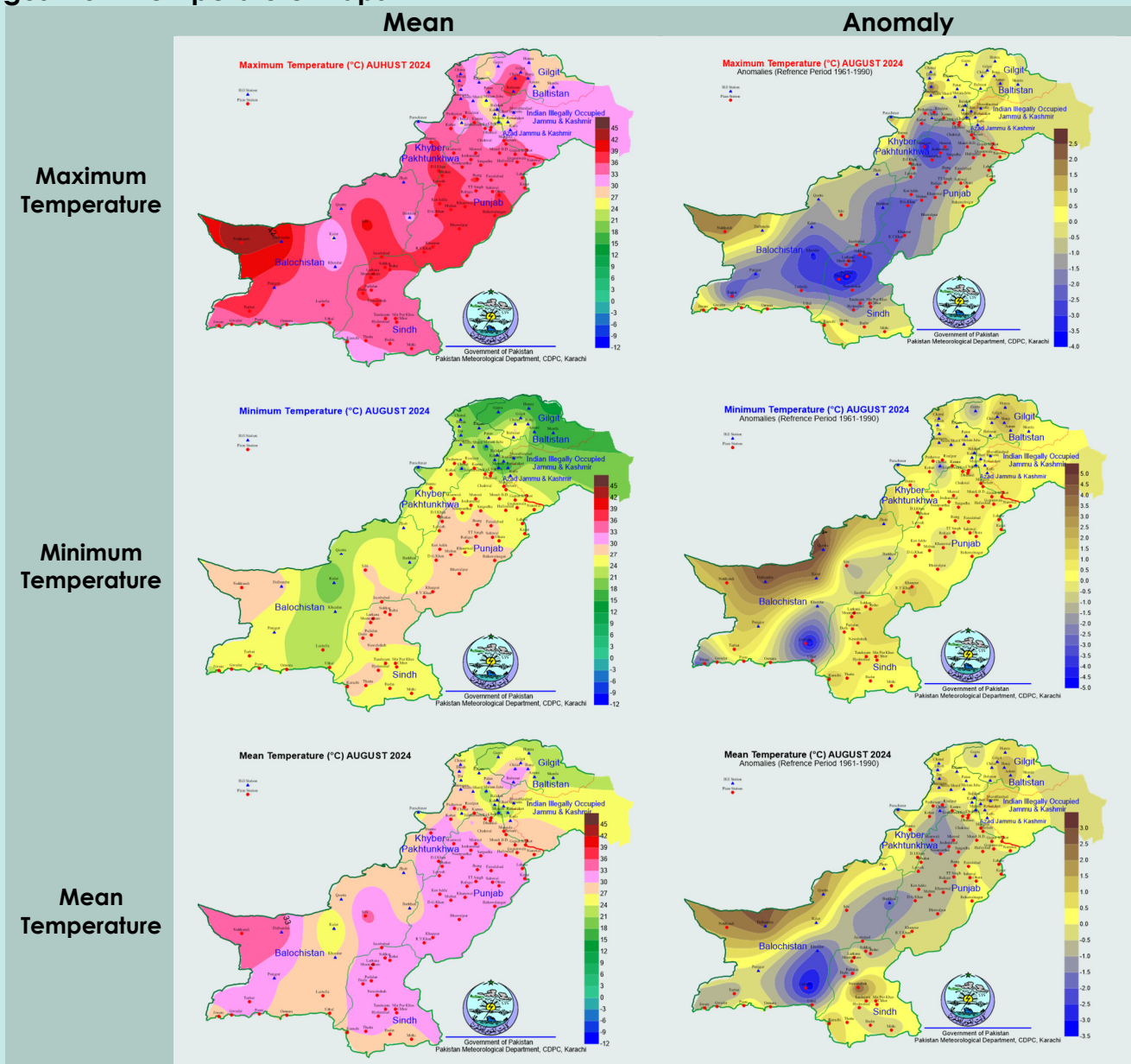
August 2024 Temperature maps

Fig. 4. August-2024 Temperatures (Maximum, Minimum & Mean) and their anomalies.

Table 6: August 2024 Monthly Averages & Normals

Station	Pressure (mb)		Temperature (°C)			Vapour (mb)	Precipitation	
	Station Level	Sea Level	Mean	Maximum	Minimum	Pressure	Total (mm)	Days
Drosh	846.9	1431.0	28.1	34.8	21.3	17.2	8.8	2.0
	845.9	1420.8	29.0	35.9	22.3	15.8	20.0	4.7
Peshawar	966.0	1002.1	30.5	35.5	25.3	32.9	84.0	5.0
	958.9	997.9	30.8	36.0	25.7	29.2	72.6	7.7
Parachinar	824.1	1454.3	24.8	29.9	19.7	20.2	138.0	10.0
	822.4	1437.8	23.0	28.8	17.2	18.4	97.4	12.5
Rawalpindi	947.3	1002.7	28.4	32.1	24.7	27.9	359	12.0
	944.0	999.2	27.9	33.4	23.6	28.5	348.1	16.7
Sargodha	980.6	1000.8	31.4	35.3	27.5	35.7	182.3	8.0
	978.6	999.3	31.6	36.5	26.6	31.4	131.7	8.9
Jhelum	975.4	1001.3	29.4	33.2	25.6	35.1	356.6	17.0
	973.8	999.0	29.9	34.4	25.3	31.1	251.6	14.8
Sialkot	973.3	1001.5	29.4	33.0	25.8	34.3	244.9	17.0
	971.6	999.6	29.0	33.2	24.8	31.8	323.5	14.2
Zhob	851.3	1418.4	29.3	34.4	24.2	20.3	35.0	6.0
	850.5	1410.3	28.9	35.4	22.4	17.7	49.7	3.7
D.I.Khan	981.5	1000.5	31.7	36.5	26.9	34.8	123.6	8.0
	979.4	997.4	31.6	37.3	26.0	31.3	61.7	5.6
Lahore	977.9	1001.6	30.5	34.4	26.4	33.9	290.7	13.0
	975.5	999.1	30.7	34.9	26.5	31.5	194.5	12.7
Quetta	836.7	1449.4	28.1	33.8	22.4	16.3	46.0	6.0
	834.3	1423.2	26.6	35.0	18.3	12.5	13.2	1.5
Multan	986.7	1000.3	32.1	36.0	28.1	34.9	275.6	10.0
	984.6	998.3	32.4	37.6	27.9	30.8	36.4	3.5
Barkhan	883.6	1437.5	27.3	32.2	22.4	25.1	143.0	17.0
	882.8	1428.6	28.9	34.5	23.2	22.2	87.7	4.8
Nokkundi	922.4	993.3	36.0	43.2	28.8	8.6	0.0	0.0
	923.7	995.1	33.5	41.7	26.7	11.7	0.4	0.1
Dalbandin	907.5	1436.7	35.1	42.1	28.0	14.2	4.0	1.0
	907.0	1433.4	32.4	40.8	22.4	9.3	0.3	0.1
Jacobabad	993.8	1000	32.2	36.9	27.6	35.7	281	8.0
	991.8	997.9	33.0	37.8	28.2	32.2	35.4	1.3
Khanpur	990.0	999.8	32.2	36.4	28.0	36.3	188.8	12.0
	988.3	998.2	32.0	38.1	25.9	30.4	17.4	1.8
Panjgur	894.6	1432.6	30.4	36.0	24.8	18.5	26.0	7.0
	895.9	1437.3	30.7	38.1	23.4	10.1	7.4	0.5
Khuzdar	870.3	1438.5	27.2	32.4	21.9	7.6	237.7	15.0
	868.5	1411.7	30.4	35.7	22.9	9.0	57.4	3.4
Sh. Benaziraba	996.7	1000.0	31.8	36.4	27.1	35.9	194.8	11.0
	995.1	998.9	32.3	38.6	26.0	31.8	46.3	1.6
Jiwani	994.7	1001.0	27.6	32.3	22.8	30.5	5.0	1.0
	994.5	1000.8	28.3	31.0	25.6	29.2	2.1	0.5
Pasni	1001.0	1001.5	29.9	34.1	25.5	33.0	10.0	1.0
	1000.0	1000.8	28.2	32.2	25.9	30.1	11.5	0.2
Hyderabad	995.5	1000.3	31.1	34.6	27.6	32.6	165.2	11.0
	995.6	999.6	31.3	36.0	26.6	29.1	63.1	2.4
Chhor	999.8	1000.5	30.2	34.0	26.3	35.4	228.3	10.0
	999.1	992.1	30.0	34.7	25.4	30.2	69.3	3.2
Karachi	998.8	1001.5	30.0	32.4	27.5	33.4	159.4	13.0
	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

Table 7: August 2024 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	32.3	4	22.0	15	39.6	4	15.8	16	5.6	30	14	29
Peshawar	36.0	3	26.8	7	44.0	3	19.5	7	28.0	18	22	15
Parachinar	30.9	3	22.5	19	37.0	3	17.0	19	63.0	19	12	7
Rawalpindi	35.5	3	25.2	23	40.5	3	17.7	12	81.0	30	28	5
Sargodha	39.8	3	27.5	6	45.1	3	22.7	13	58.0	13	14	5
Jhelum	36.0	3	26.9	6	40.5	3	19.8	13	54.4	6	20	18
Sialkot	33.5	3	27.0	6	38.5	16	23.2	7*	69.0	23	8	12
Zhob	34.3	3	27.3	6	42.0	3	22.0	9*	20.0	15	13	29
D.I.Khan	38.0	3	29.0	7	44.5	3	24.0	7	28.4	7	12	23
Lahore	35.0	17	24.4	6	39.5	11	20.3	6	69.3	13	10	12*
Quetta	33.5	4	27.8	30	41.0	4	22.5	7	0.0	0	24	13
Multan	37.8*	2	29.4	7	42.2	2*	25.5	7	48.4	7	18	2
Barkhan	34.0	3	26.3	13	41.0	3	19.5	13*	43.0	13	4	4*
Nokkundi	40.5*	4	35.8	24	49.0	4	25.5	24	0.0	0	18	6*
Dalbandin	40.5*	5	35.5	14	49.0	4	28.5	14	0.0	0	10	5*
Jacobabad	39.5	10	33.5	30	47.0	10	26.0	30	15.0	30	8	3*
Khanpur	37.7	10	31.4	7	44.4	11	26.2	13	18.4	30	8	5*
Panjgur	38.0*	3	29.5	30	45.0	3*	24.0	30	15.7	30	60	31
Khuzdar	33.8	4	27.8	31	42.0	3*	23.0	12*	5.2	30	6	4
Sh.Benazirabad	37.0*	1	33.0	31	44.0	1	26.5	18	17.0	31	22	20
Jiwani	31.5	7	27.8	12	36.5	1*	22.5	12	0.0	0	16	1*
Pasni	33.8*	17	30.5	12	40.0	22	26.0	1*	0.0	0	20	12
Hyderabad	36.8	16	31.0	19	42.5	16	24.5	19	24.0	19	26	1*
Chhor	36.3	21	30.1	30	41.5	1*	24.7	16	58.0	30	16	2*
Karachi	36.3	17	30.8	31	40.5	17*	27.0	10	38.3	10	16	1*

* 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

Dr. Muhammad Hasan Ali Baig, Director, Climate Data Processing Centre, Pakistan Meteorological Dept
Meteorological Complex, Gulistan e Jauhar, Block #5, Karachi-75290
Webpage: http://www.pmd.gov.pk/cdpc/home.htm; Email: info.cdpc@pmd.gov.pk

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