



Pakistan's Monthly Climate Summary MAY, 2021

Overview

- Formation of Tropical Cyclone "TaukTae" over southeast Arabian Sea on 14th May 2021.
- TC "TaukTae" intensified first into a "SCS", then into a "VSCS" & further into the "ESCS" on 16th May.
- TC crossed Indian South Gujarat around midnight 17 May.
- TC resulted in severe heatwave conditions over Karachi and other lower Sindh areas during 16-18 May, culminating into a dust storm with isolated light rain.
- National rainfall for the month of May 2021 was close to normal (4%).
- Significant deficits of monthly rainfall over AJK (-37.6%), KP (-13.4 %), Sindh (-13.1 %) and GB (-85.1 %) were observed.
- Driest condition over GB was prominent & the month stood 2nd deficient rainfall on record.
- Punjab (43.6 %) & Balochistan (97.4 %) recorded excessively above normal rainfall.
- The national mean monthly temperature was 0.47 °C warmer than average.
- The mean maximum temperature at country-level was 0.12 °C warmer than average.
- The mean minimum temperature was 22.01 °C, being 0.87 °C warmer than average.
- The country hottest day was 30th May at Sibbi with 50.1 °C temperature.
- The Indian Ocean Dipole (IOD) and El Nino-Southern Oscillation (ENSO) both continued to be neutral in May 2021.

National weather extremes during MAY 2021

Hottest day	50.1 °C	at Sibbi (Balochistan) on 30 th
Coldest day	14.0 °C	at Kalam (KP) on 23 rd at Malamjabba (KP) on 5 th
Coldest night	1.5 °C	at Astore (GB) on 15 th
Warmest night	33.0 °C	at Karachi Airport (Sindh) on 18 th
Wettest day	73.0 mm	at Saidu Sharif (KP) on 5 th
Wettest month	157.0 mm	at Rawalakot (GB)

Synoptic Summary

The most significant synoptic situation of the month was formation of Tropical Cyclone "TaukTae" over southeast Arabian Sea on 14th May 2021 morning. Prior to a full-blown tropical cyclone, there was persistent accumulation of strong convective clouds over

east-central Arabian Sea on 12-13th May. The prevailing environmental conditions; sea surface temperature (30-31 °C), low vertical wind shear and strong upper-air outflow persistently contributed in fueling and strengthening the system. The TC “TaukTae” intensified first into a Severe Cyclonic Storm (SCS), then into a Very Severe Cyclonic Storm (VSCS) and further into the Extremely Severe Cyclonic Storm (ESCS) on 16th May. Under the steering factor of a ridge anchored to the east of the system, it kept moving along north/northwest course till 17th May Morning. From thereon it recurved towards northeast and crossed Indian South Gujarat around midnight 17 May. It resulted in severe heatwave conditions over Karachi and other lower Sindh areas for 3 days, 16-18 May, culminating into a dust storm accompanied with isolated light rain on 18th May.

On the other hand, the trough-low see-saw pattern prevailed over GB, KP and North Balochistan for most of the days through the month.

May, 2021 area-weighted rainfall

	Rank (of 60)	Normal (mm)	Average (mm)	Departure (percent)	Comment
Pakistan	33	14.9	15.5	4.3	----
Azad Jammu & Kashmir	15	51.5	32.1	-37.6	----
Balochistan	54	6.0	11.8	97.4	8 th wettest (record 27,3 mm in 1987)
Gilgit Baltistan	02	30.1	4.5	-85.1	2 nd driest (record 1.4 mm in 2006)
Khyber Pakhtunkhwa	29	44.1	38.2	-13.4	----
Punjab	48	15.6	22.4	43.6	----
Sindh	44	2.9	2.5	-13.1	----

Rank ranges from 1 (lowest) to 61 (highest).

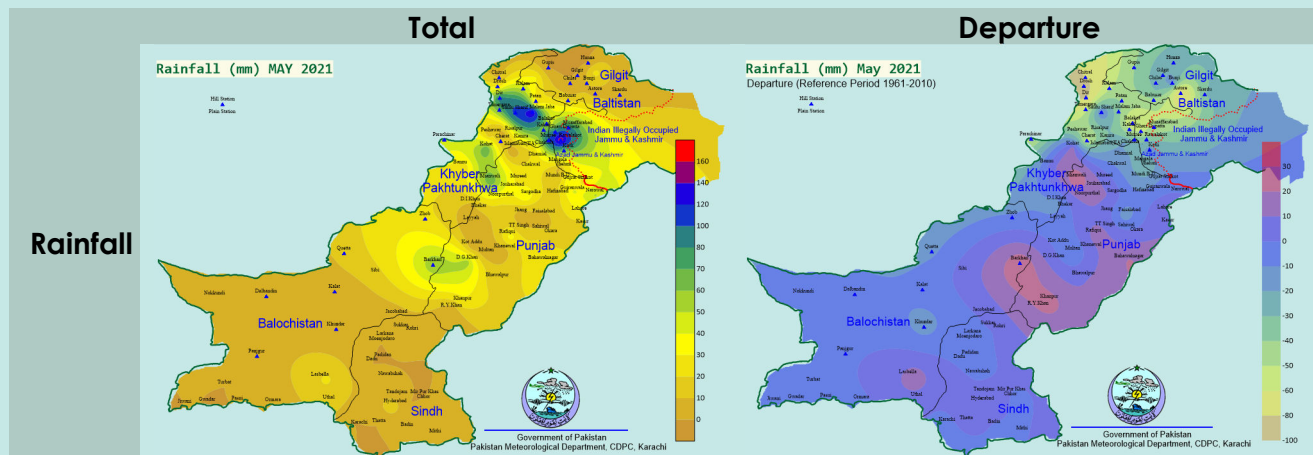
Rainfall – Close to normal rainfall over country

During May 2021, although no major rainfall had occurred but still some persistent intermittent rainfall was observed throughout the first two decades of the month. The significant spells of the month were on and around 1st, 5th, 7th, 10th and 17th day of the month. The month of May normally happens to be one of the driest month in the country. On average, it has rainfall contribution of the order of 27% and 5% to the seasonal (AMJ) and annual rainfall respectively. May 2021 National rainfall was 15.5 mm against its normal rain of 14.9 mm being 4% above normal.

On regional scale, deficiency in monthly rainfall were observed over AJ&K (-37.6%), KP (-13.4 %), Sindh (-13.1 %) and GB (-85.1 %). The driest condition over GB was prominent and as such the month stood 2nd deficient rainfall on record while 2006 was the driest on record. The Punjab (43.6 %) and Balochistan (97.4 %) regions have recorded excessively above normal rainfall. For Balochistan, May was the 8th wettest month on record with 1987 being the heaviest on record. The wettest day of the

month in country was 5th May, when Saidu Sharif (KP) recorded 73 mm of rain and Rawalakot (GB) was the wettest place recording 157 mm of total rainfall during the month. The other chief amounts of month's rainfall were: Malam Jabba (141 mm), Saidu Sharif (110 mm), Murree (97 mm) and Dir (85.6 mm).

MAY 2021 rainfall maps



Temperatures – Abnormal warming

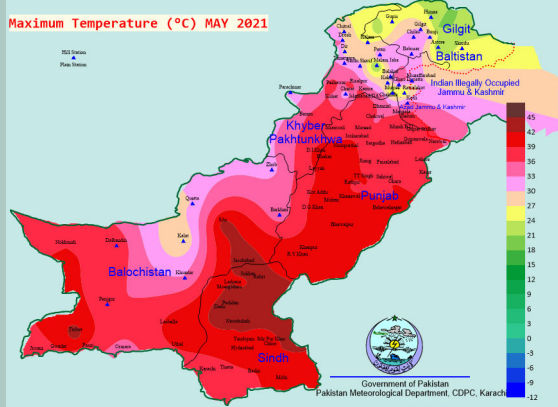
The national mean monthly temperature of May 2021 for Pakistan as a whole was 29.23 °C, being 0.47 °C warmer than monthly-average, placing it the 28th warmest month on record. The mean maximum (day) temperature at country-level was 36.45 °C, being 0.12 °C warmer than average of 36.33 °C. The night (minimum) temperature was 22.01 °C, being 0.87 °C warmer than country-average of 21.14 °C. On regional basis, all provinces recorded significantly warmer than normal monthly mean temperatures. The mean temperature anomalies of May were ± 2 °C over major parts of the country except central parts of Sindh where it was plus 3-4 °C.

Mean Maximum temperatures' anomalies were ± 1 °C over major parts of the country, importantly being of relatively higher order around 3 °C and more prominent over GB and parts of Sindh, specially over Karachi Metropolitan area. The mean minimum temperature anomalies for the month were ± 2 °C over major parts of country with anomalies over Sindh & Western Balochistan regions being much higher than remaining parts of country. The hottest day of the month was at Sibbi (Balochistan) when it recorded 50.1 °C temperature on 30th May 2021. The coldest temperature of 1.5 °C of the month was recorded at Astore (GB) on 15th May 2021.

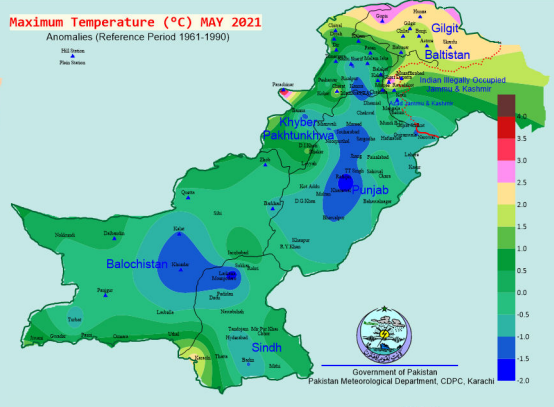
MAY 2021 Temperature maps

Maximum Temperature

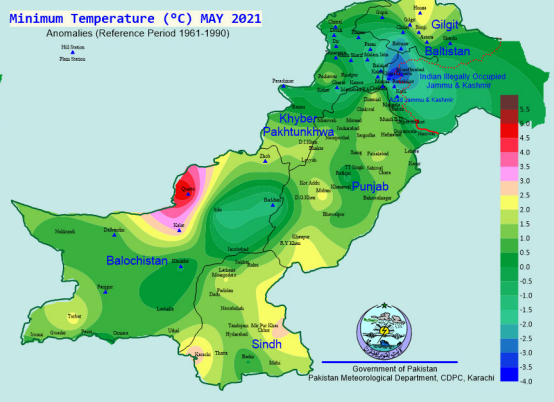
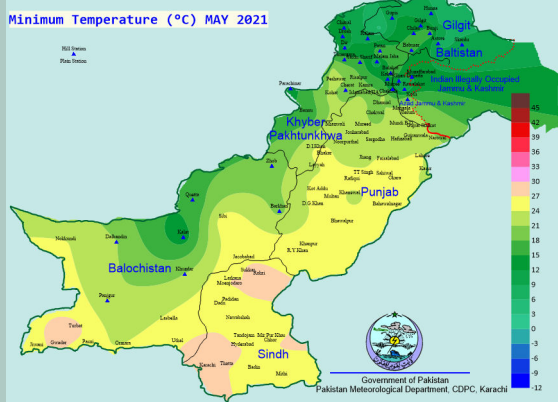
Mean



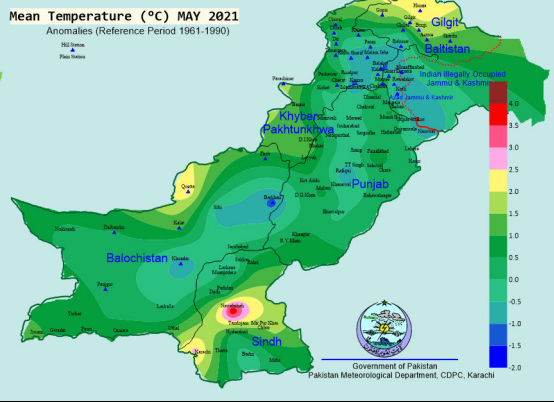
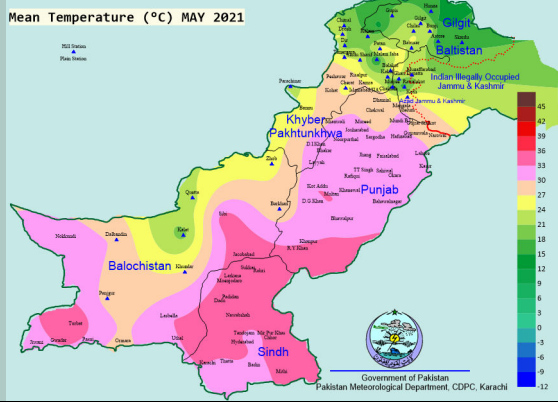
Anomaly



Minimum Temperature



Mean Temperature



Tropical Cyclone TAUKTAE

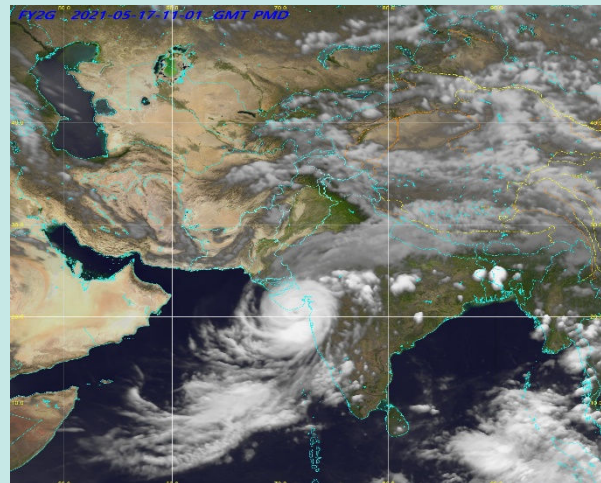
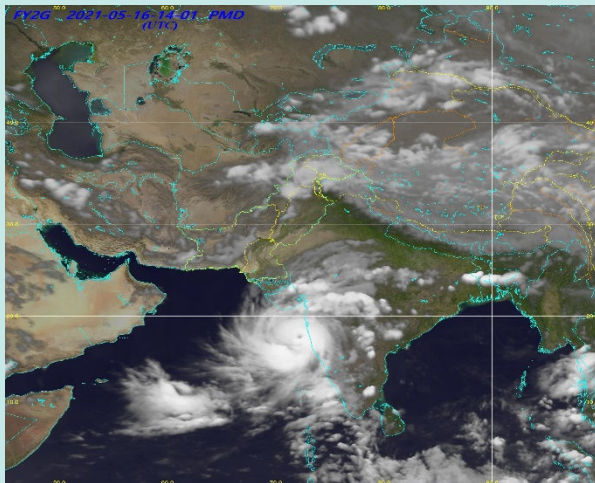
Cyclonic Storm Tauktae (pronounced as Tau'Te) is the fifth name used from the new World Meteorological (WMO) list and the name was suggested by Myanmar.

I. TC DEVELOPMENT

On 12th May 2021, an area of convection formed at 9° 24'N latitude & 67° 12'E longitude with maximum wind speed of 25 knots. On 13th May, 2021, the area of convection moved near 10° 5'N & 71° 14'E with maximum wind of speed of 30 knots. On 14th May, 2021, due to favorable environmental conditions, the convection converted into Cyclonic Storm (CS) near 11° 24'N & 73° 0' E having maximum wind speed of 40 knots.

II. TC COURSE

Next day, the CS started gaining more strength while positioning around 12° 24'N & 73° 5'E. On 16th May, 2021 the TC converted into Severe Cyclonic Storm (SCS) at 15° 54'N & 72° 47'E with maximum wind speed of 75 knots and was situated at 1260 km in southeast (150°) of Karachi. On 16th May, 2021, the SCS moved to 15° 54'N & 72° 47'E with maximum wind speed of 90 knots. On 17th May, 2021 SCS converted into Extremely Severe Cyclonic Storm (ESCS) at location around 18° 23'N & 71° 47'E having maximum wind speed of 120 knots at 890 km in southeast (145°) of Karachi.



SATELLITE IMAGERIES ON 16 & 17 MAY, 2021

III. TC LANDFALL

Keeping on its course east-northeastwards with speed of 10 knots per hour, on 17th May, 2021 at 1200 UTC, it was centered on 20°N & 71° 17'E. In the mid-night of 17th

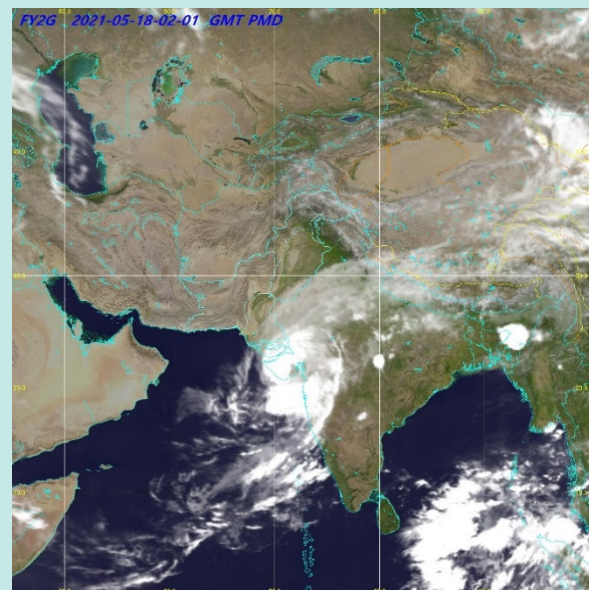
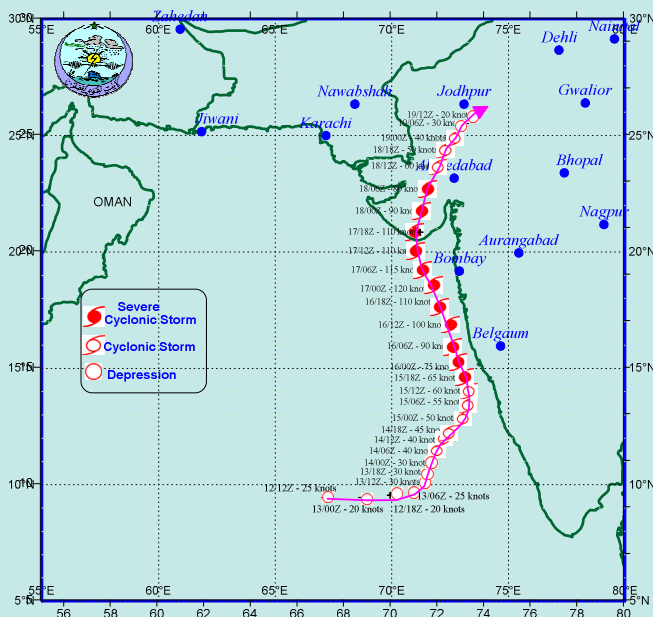
May, 2021, finally TC Tauktae made landfall with maximum wind 110 knots at about 20° 46'N & 71° 17'E around 1800 UTC over Jafarabad, Indian Gujarat coast at a distance of 625 km in southeast (134°) of Karachi and 250 km north-northwest (338°) of Mumbai-India.

IV. TC IMPACTS

None of the Pakistan coastal area was directly impacted by the cyclone itself, but however, indirect impacts were felt in Karachi, Badin, Thatta, Tharparker districts in the form of Heatwave-like conditions due to persistent suspension of sea breeze and finally dust storm (with maximum winds 48 knots recorded at Masroor-base) in the Karachi city occurred on 18 May with isolated light rain. Due to influence of TC, the sea conditions of North Arabian Sea were rough to very rough, which forced the Sindh's fishermen to suspend their activities during 16-18 May, 2021. During its week long course, the TC Tauktae affected India's west coast, causing severe damages in the states of Kerala, Karnataka, Goa and Maharashtra.

V. TC DAMAGES

According to PDMA and News Papers reports, four people killed and two were injured besides damage of seven houses due to roof collapse incidents after a dust storm followed by light rain hit parts of Karachi on the evening of 18th May, 2021.



Observed track of TC "Tauktae" 12-19 May 2021 (left) & Satellite image of 18 May, 2021

MAY 2021 Monthly Averages & Normals

Station	Pressure (mb)		Temperature (°C)			Vapour (mb)	Precipitation	
	Station Level	Sea Level	Mean	Maximum	Minimum	Pressure	Total (mm)	Days
Drosh	850.1	1464.3	22.0	29.8	14.1	10.1	23.2	3
	852.0	1472.7	21.8	29.4	15.4	9.1	67.0	10.2
Peshawar	967.7	1003.8	29.3	37.2	21.5	19.9	9.2	2
	962.7	1002.0	29.1	36.6	21.5	16.1	23.8	7.2
Parachinar	829.0	1508.8	20.4	30.2	13.6	17.4	48.0	8
	827.0	1466.1	20.4	26.6	12.9	9.6	73.5	11.9
Rawalpindi	948.7	1004.4	27.8	34.7	21.6	14.2	37.7	4
	946.6	1002.2	28.1	35.6	20.1	14.5	34.1	8.3
Sargodha	980.1	1000.3	31.4	38.5	24.3	21.5	18.0	4
	981.3	1001.8	31.7	39.7	23.5	17.3	19.1	6.1
Jhelum	977.0	1002.9	30.4	38.4	23.0	19.0	7.2	3
	975.4	1001.5	30.4	38.4	22.6	16.0	27.3	7
Sialkot	975.2	1003.5	28.8	36.9	21.2	18.6	25.9	5
	973.8	1001.8	30.1	37.9	22.1	15.8	25.7	5.8
Zhob	853.9	1445.3	25.9	32.1	19.5	10.8	23.0	5
	853.8	1433.8	26.0	32.8	18.2	9.4	16.9	1.7
D.I.Khan	983.2	1002.1	32.1	39.8	24.7	21.5	9.0	3
	982.4	1001.0	31.0	39.0	23.4	17.7	17.0	3.4
Lahore	979.5	1003.2	31.3	37.6	25.0	17.8	29.4	5
	977.6	1001.2	31.8	38.9	24.5	16.7	20.8	5.7
Quetta	839.3	1478.5	24.0	30.2	16.6	5.7	13.0	3
	837.8	1466.3	22.8	30.8	12.4	9.9	5.5	2.8
Multan	988.7	1002.9	33.1	39.4	26.7	18.8	3.4	2
	987.4	1000.9	32.8	40.8	24.8	17.9	11.5	2.5
Barkhan	884.9	1450.8	27.3	34.4	20.3	11.0	58.0	7
	885.4	1459.3	28.7	35.1	22.1	11.4	20.3	2.4
Nokkundi	927.7	1000.2	32.3	39.0	24.2	6.8	2.0	2
	928.6	1001.4	32.3	39.4	24.0	11.5	0.3	0.2
Dalbandin	911.9	1470.9	31.8	38.3	21.1	9.9	1.0	1
	912.1	1473.0	30.9	37.7	19.2	8.5	1.6	0.8
Jacobabad	995.3	1001.4	35.7	43.7	26.5	20.6	4.0	2
	994.4	1000.7	35.8	43.4	26.9	18.2	3.1	0.8
Khanpur	991.7	1001.5	33.1	40.7	25.8	23.5	27.0	6
	991.1	1000.8	33.2	41.7	23.6	19.0	4.9	1.2
Panjgur	898.1	1465.7	29.7	36.1	21.5	11.9	6.0	2
	899.4	1476.4	29.6	36.5	21.3	8.1	2.5	0.3
Khuzdar	873.2	1468.7	28.1	33.3	21.1	6.4	0.1	0
	871.5	1450.3	28.8	35.0	20.6	4.5	13.2	1.5
Nawabshah	998.4	1001.7	34.6	43.3	25.8	22.8	1.0	1
	998.3	1001.9	34.2	43.7	24.5	23.9	1.5	0.4
Jiwani	997.7	1004.0	30.9	35.3	25.9	31.7	0.0	0
	998.1	1004.4	29.6	34.2	25.1	28.4	0.2	0.1
Pasni	1003.2	1003.7	30.2	36.2	24.0	30.4	0.0	0
	1002.9	1003.6	29.8	35.4	24.3	27.6	0.7	0.1
Hyderabad	997.5	1002.3	33.3	40.7	27.4	23.6	15.2	2
	998.6	1002.5	32.9	41.4	26.1	24.5	4.6	0.5
Chhor	1001.8	1002.5	34.2	42.0	27.1	26.5	1.0	1
	1001.7	1002.3	33.1	41.8	24.6	23.5	7.2	0.5
Karachi	1000.9	1003.6	32.6	37.4	28.9	29.8	0.0	0
	1001.8	1004.3	30.3	35.3	26.2	28.4	0.2	0.1

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

MAY 2021 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	29.0	30	16.2	5	38.4	30	9.5	24	8.0	5	15	8*
Peshawar	33.4	29	25.0	5	43.0	29	19.0	6*	8.2	5	10	20
Parachinar	26.8	25	14.9	14	35.0	30	9.5	15	12.0	5	7	24
Rawalpindi	33.1	28	23.8	13	41.7	29	18.3	15	24.4	11	26	31
Sargodha	37.3	28	24.6	13	44.3	27	18.5	13	6.2	13	12	10
Jhelum	35.4	29	26.0	13	44.8	27	20.0	11*	5.2	11	10	4*
Sialkot	33.1	27	23.4	13	43.0	27	17.7	13	17.5	13	10	6
Zhob	31.3	30	18.9	3	37.5	31	15.0	5	7.0	4*	13	28
D.I.Khan	37.5	29	26.6	22	45.5	29	19.5	23	6.0	23	10	4
Lahore	36.6	27	24.3	13	43.2	27	19.6	13	11.0	13	14	20
Quetta	28.8	28	17.1	2	35.5	31	13.0	2*	8.0	3	26	20*
Multan	37.9	29	28.8	23	45.0	29	22.0	23	1.8	5	16	14*
Barkhan	33.5	27	22.1	6	40.0	28*	16.5	16	20.0	16	6	3
Nokkundi	37.6	27	26.9	3*	44.0	27*	19.5	7	1.0	3*	22	21
Dalbandin	36.0	27	26.1	2	43.5	27*	15.0	23	1.0	3	12	10
Jacobabad	39.5	27	27.6	6	50.0	27	21.0	7	2.0	6*	18	22
Khanpur	36.4	28	27.5	6	45.5	27	21.5	7*	11.1	23	22	6
Panjgur	33.8	28	24.3	3	41.0	27	17.5	4*	4.0	1	28	21
Khuzdar	32.6	28	23.9	2	38.5	28	17.5	3	0.1	3	8	3*
Nawabshah	37.3	26	31.1	23	47.5	26	22.0	3	1.0	3	14	28*
Jiwani	33.9	27	28.4	3	39.5	27	22.0	4	0.0	0	12	12*
Pasni	33.4	22	27.1	3	42.0	22	20.0	1*	0.0	0	16	11*
Hyderabad	36.3	17	31.5	23	46.2	26	25.0	3*	10.2	6	34	16
Chhor	37.1	17	31.9	18	45.0	17	24.0	19	1.0	17	16	31
Karachi	38.3	17	31.0	12	43.5	17	26.5	3	0.0	0	30	18

* 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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