

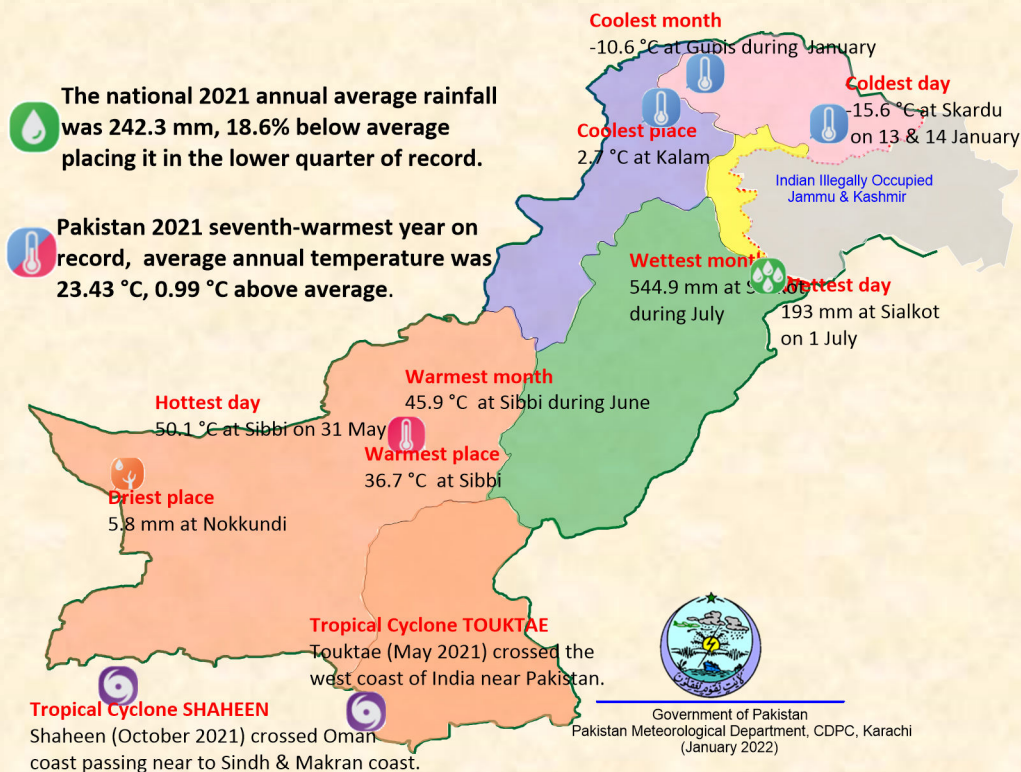


State of Pakistan Climate in 2021

Pakistan Climate in 2021

- The most significant features of the year were the formation of cyclones Tauktae and Shaheen in the north Arabian Sea which crossed the Indian and Oman coasts respectively affecting coastal areas of Pakistan.
- The national 2021 annual average rainfall was 242.3 mm, 18.6% below average placing it in the lower quarter of record.
- The year 2021 remained the seventh-warmest year on record across Pakistan with national average annual temperature 23.43 °C being 0.99 °C above average.
- National rainfall for the winter season (JFM) was largely below average, spring (AMJ) close to average, monsoon (JAS) and post season (OND) slightly lower than average.
- The year commenced with much of country been affected by drought, especially provinces of Sindh & Balochistan saw their driest month on record with no rainfall in the entire month.
- August 2021 saw one of its severe deficient rainfall (-55.5 %) and ranked as the third driest month on record.
- During September and October 2021, national rainfall were largely above averages.
- Indian Ocean Dipole event was mostly neutral throughout the year.
- La Niña weakened through the first half of 2021, reaching an ENSO-neutral state in May.

Significant Climate Events in 2021



Annual area-weighted rainfall

Region	Rank (of 61)	Normal (mm)	Average (mm)	Departure (percent)	Comment
Pakistan	15	297.6	242.3	-18.6	15 th driest
Azad Jammu & Kashmir	4	777.2	610.0	-21.5	4 th driest
Balochistan	16	160.1	113.6	-29.0	----
Gilgit Baltistan	17	213.5	162.2	-24.0	-----
Khyber Pakhtunkhwa	10	736.0	598.8	-18.6	10 th driest
Punjab	22	386.8	350.5	-9.4	----
Sindh	25	172.0	141.1	-18.015	----

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

Annual area-averaged mean temperature

Region	Rank (of 61)	Normal (°C)	Average (°C)	Anomaly (°C)	Comment
Pakistan	55	22.45	23.43	0.99	7 th highest (record 24.03°C in 2002)
Azad Jammu & Kashmir	51	16.67	17.18	0.51	11 th highest (record 18.26 °C in 2002)
Balochistan	52	22.61	23.74	1.13	10 th highest (record 24.75 °C in 1999)
Gilgit Baltistan	28	13.85	13.97	0.12	34 th highest (record 14.97 °C in 1972)
Khyber Pakhtunkhwa	50	20.86	21.30	0.44	12 th highest (record 22.59°C in 1966)
Punjab	50	24.29	25.03	0.74	12 th highest (record 25.46°C in 2016)
Sindh	57	26.57	27.49	0.92	5 th highest (record 27.89°C in 2018)

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

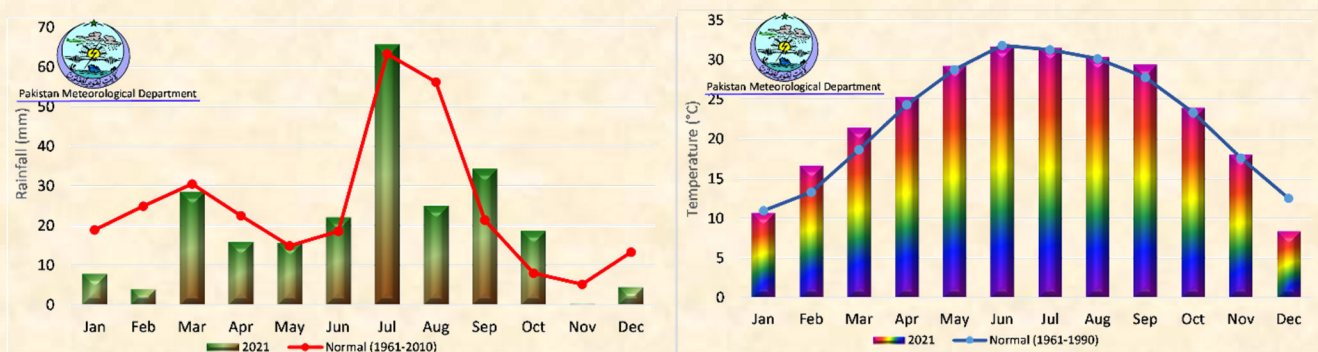


Figure 2. Monthly rainfall (left) and mean temperature (right) in 2021 compared with their corresponding average.

Synoptic Features of 2021

January 2021 saw the 1st low-pressure area developed over Gilgit-Baltistan (GB) on 3rd day which persisted over there through the following four days. Besides this, two other low-pressure areas prevailed over Khyber Pakhtunkhwa (KP) and Northeast Balochistan during 5-7 January 2021. February 5-7 witnessed a low-pressure area over GB which then weakened into trough, lasted till 22nd February and again turned into a low-pressure area on 23rd February which persisted till 27th and brought some precipitation. With the start of March, the prevalent trough over GB strengthened into a low-pressure area and persisted till 10th March with another low-pressure area

prevailed over Northeast Balochistan. The trough-low see-saw pattern prevailed till March 23rd followed by dry continental air over most parts of the country which resulted into heat-wave like conditions in plains of the country. April witnessed the troughs over KP & southeast Balochistan which turned into the lows for short span and again filling into troughs over there. May's most significant synoptic feature was a formation of a tropical cyclone "TAUKTAE" over southeast Arabian Sea on 14th May which subsequently 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. TC "TaukTae" moved initially northwestward, then recurved towards northeast and crossed Indian Gujarat coast on 18th May. It brought heat-wave culminating in dust-storm/light rain in Karachi and lower Sindh. June started with the heat (seasonal) low developing over North Balochistan and adjoining Sindh. The seasonal low invariably persisted over the area till 11th June and then 12th June onwards its trough stretched southeastward. It caused moist currents' inflow from the North Arabian Sea converging over northeast Punjab which caused first widespread pre-monsoon rain-thunderstorm accompanied with some severe dust-storms over plains of the country for about a week.

The month of July saw the first monsoon low developed over Northeast Arabian Sea and adjoining Indian Gujarat on 12th July, persisted till 14th July and produced first monsoon showers in Karachi and other scattered places of Sindh. Another monsoon low formed over eastern Sindh which brought 2nd rainy spell in Tharparker, Umerkot and Badin districts on 23-24 July. The monsoon lows continued to form over Bay of Bengal sending persistent monsoon currents into upper half of the country through the following days that consequently produced significant rains in Punjab, KP, GB & Kashmir. August, apart from the heat-low, saw monsoon axis oriented in southeast-northwest direction (from Bay of Bengal to northern parts of India to the northeastern parts of Pakistan) which caused strong moist monsoon currents flow in northeastern parts of the country during first week of the month and on 27-31. Another monsoon-low developed over the Bay of Bengal on 26th August which moved first over central India and then over Rajasthan on 31st August with its trough stretching over southeast Sindh and adjoining Northeast Arabian Sea which ultimately set the path for monsoon currents' inflow over southern Sindh. September started with the monsoon low-pressure area prevailing over west Rajasthan (India) and adjoining eastern Sindh which induced strong monsoon currents' penetration all along eastern parts of the country which yielded good rains in lower Sindh and upper half of the country. On 12th September, a depression formed over Bay of Bengal, moved over eastern and central India and caused strong monsoon currents' incursion over eastern parts of Pakistan. While, the persistent trough over Indian Rajasthan-Gujarat accentuated into a low over there on 22nd September, shifted over southeast Sindh the next day and resulted in rain-thunderstorms in southern Sindh during 23-25 September.

Comes October, the most significant synoptic situation was the formation of a Cyclonic Storm (CS), SHAHEEN, over the Northeast Arabian Sea, at a distance of about 280 km southwest of Karachi which intensified further into a Severe Cyclonic Storm (SCS) by the evening. The SCS "SHAHEEN" tracked west-northwestward till 3rd October afternoon, recurved in west direction towards the Oman coast and crossed Oman north coast as a Severe Cyclonic Storm by 3rd October midnight. It caused fairly widespread heavy rainfall accompanied with very strong winds along Makran coast with some moderate rains reported from Karachi and other parts of lower Sindh. Whereas, the monsoon currents continued to penetrate in north/northeast of the country till 5th October owing to the southwest flow setup by cyclone SHAHEEN and its predecessor depression which produced some heavy rainfall. Monsoon withdrew from the country on 6th October. November is the month when the dry continental winds predominantly set up across Pakistan,

however, over upper KP & GB, a westerly trough persisted through the first 4 days. The low-trough see-saw pattern over KP & GB prevailed till 9th November followed by dry continental air dominating across whole of Pakistan till the month's end. The dry continental air remained a predominant feature over the country during December except western disturbance-induced low-pressure area formed over west Balochistan during first and last weeks of the month. The low-pressure area formed in last week of December induced a marked trough over the North Arabian Sea and adjoining Sindh-Balochistan coast, which produced winter's first rain in Karachi and other cities of lower Sindh on 27th-28th December apart from giving rainfall over northern areas of the country during last days of the month. The same low produced very heavy rains in southern Balochistan.

Rainfall: Below average annual rainfall

Pakistan annual rainfall in 2021 was lower than average over major parts of the country except some areas of Punjab were it was near to average. The national total rainfall (242.3 mm) for the year 2021 was 18.6% lower than the 1961–2010 average (297.6 mm). This made 2021 the fifteenth driest year since 1961. The province of Balochistan experienced largely below average (-29.0%) while provinces of Sindh (-18.0%), KP (-18.6%), AJK (-21.5%) and GB (-24.0%) recorded moderately below average while annual rainfall over Punjab (-9.4%) was almost close to its average.

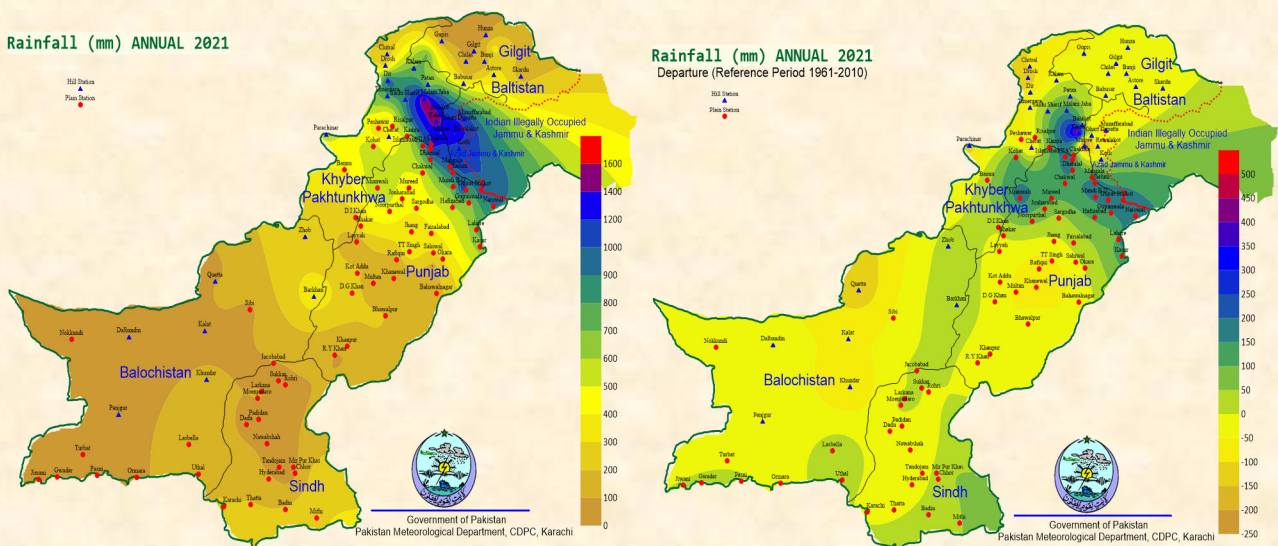


Figure 3. Pakistan spatial distribution of 2021 annual rainfall

January 2021 National rainfall was 59% below normal. On regional scale, AJ&K, KP & Punjab provinces recorded close to average rainfall with Sindh & Balochistan saw their one of the driest month in the history with no rainfall in the entire month. It is pertinent to note that January 2021 ranked as 1st driest month together with 2018 for Balochistan, while, for Sindh it ranked as 1st lowest along with 14 other years. National rainfall for February was only 4.0 mm against its normal rain of 24.9 mm being 84% below normal making it the 3rd driest February since 1961. February 1985 was the driest month on record. On regional scale, all six administrative regions experienced their record deficient monthly rainfall. Sindh and Punjab saw their driest month in the history while for Balochistan it ranked the 2nd driest month on record during last sixty one years. AJK and KP also experienced one of the driest month and ranked 5th rain-deficient month on record for both. March 2021 National rainfall was only 28.5 mm against its normal of 30.5 mm being 6% below

normal. On regional scale, large variability of monthly rainfall was observed over all six administrative regions. Sindh (-42%) & Balochistan (-41%) recorded below normal rainfall and GB (-1%) & KP (+3%) got close to normal whereas Punjab (+12%) & AJK (+20%) got above normal rains. Pakistan rainfall, for the country as whole, for the entire winter season (1-January to 31-March) 2021 was 46% below average. During the whole winter season all the regions experienced below normal rainfall but the deficiency over Sindh (-79%) and Balochistan (-77%) were more prominent. The winter season 2021 rainfall is ranked as fifth deficient season on record since 1961.

April 2021 National rainfall was 15.9 mm against its normal of 22.5 mm being 29.4% below normal. On regional scale, large deficit of monthly rainfall were observed over all six administrative regions. 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%). Punjab (43.6 %) and Balochistan (97.4 %) regions have recorded excessively above normal rainfall. June 2021 National rainfall was 22.1 mm against its normal rain of 18.6 mm being 19% above normal. On regional scale, deficiency in monthly rainfall were observed over AJ&K (-23.4%), KP (-17.9 %), and GB

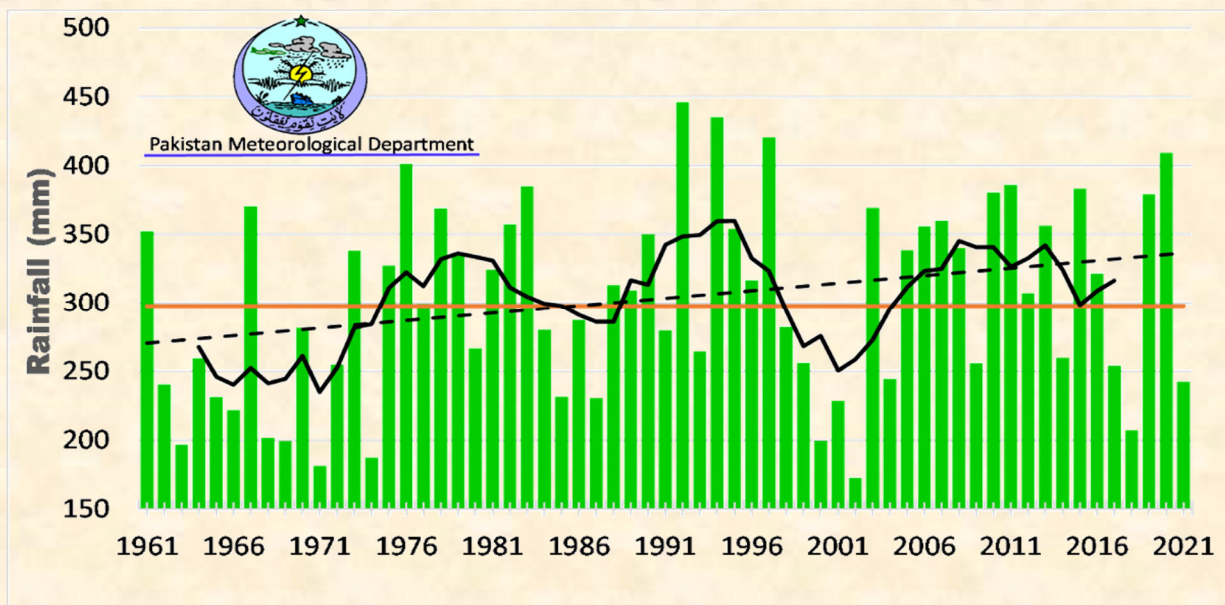


Figure 4. Pakistan annual rainfall for the period 1961-2021. The black line indicates the 7-year moving average. The value for 7-year average is positioned over the middle year of each 7-year block. The red straight line shows the national annual long-term average (1961-2010). The black dotted line shows the trend over the period.

(-37.7%). The Punjab (55.7%) and Sindh (90.1%) regions have recorded excessively above normal rainfall, whereas Balochistan (-8.2%) recorded close to normal rainfall. Pakistan rainfall (-4.3%) for the season (AMJ) was close to average. The overall season rainfall was below average over AJK (-30.2%), KP (-20.3%) and GB (-52.9%) while close to average over Balochistan and moderately-highly above average over Punjab (+24.5%) and Sindh (+45.3%) respectively.

July 2021 National rainfall was 65.7 mm against its normal rain of 63.3 mm being 4% above normal. On regional scale, higher than normal monthly rainfalls were observed over Balochistan (+22%), GB (+86 %), and KP (+28 %). Punjab (+1 %) and AJK (-4.0 %) regions have recorded close to normal rainfall, whereas, Sindh (-47 %) recorded deficient rainfall. August 2021 saw one

of its exceptional deficient rainfall (-55.5 %) and ranked as third driest month on record during past 61 years. On regional scale, severe dry conditions prevailed over all regions during the month. AJK (-60.5%) and Punjab (-57.7%) were the worst hit regions with both having experienced their second driest month on record. So were the regions of KP (-34.3%) & Sindh (-89.2%) with large rain deficit and ranked among ten driest months on record. The situation over Balochistan (-48.6%) and GB (-12.8%) was not different as well. September 2021 rainfall was 60% above average for Pakistan as a whole and stood thirteenth highest on record for the country during 1961-2021. Rainfall for the month was above average across much of the country, and largely above average in most parts of south Pakistan and areas of Punjab province. On regional scale, all the regions/provinces except KP & GB witnessed more than average monthly rainfall. AJK (+17.7%), Punjab (+44.6%), Balochistan (+63.5%) and Sindh (+234.9%) were wettest regions, with Sindh experienced its ninth heaviest rainfall on record. Pakistan rainfall, for the country as whole, for the Monsoon season 2021 was slightly below average (-11.3 %). On regional scale, seasonal rainfall was more than average over GB (+18.6 %), close to average over Balochistan (-0.5 %) & KP (-2.5 %) and below average over AJK (-22.1 %), Punjab (-16.1 %) & Sindh (-21.8 %).

October 2021 saw just opposite to its normal behavior with above average rainfall (134.3%). On regional scale, all the regions/provinces witnessed more than average monthly rainfall. AJK (+109.4%), Balochistan (+261.3%), GB (+83.3%), Punjab (+216.2%) and Sindh (+47.2%) all experienced among tenth heaviest rainfall on record except KP (+64.7 %) where it was ranked thirteenth wettest. November 2021 rainfall was 94.4% below average for Pakistan as a whole and stood sixth-driest November on record for the country during 1961-2021. On regional scale, all the regions/provinces witnessed extremely driest condition. The worst deficient rainfall hit were the provinces of Balochistan and Sindh, which did not receive any rainfall in whole month and both ranked as first-driest November on record equaling the previous sixteen and twenty-nine driest years on record respectively. Dry conditions on other regions were not very different. AJK (-94.1%), GB (-99.5%), KP (-90.8%) & Punjab (-92.0%) all experienced among tenth driest month on record except Punjab which stood twelfth driest month on record. December 2021 rainfall was 66.3% below average for Pakistan as a whole. On regional scale, almost all the regions/provinces witnessed considerably driest conditions. The most deficient rainfall occurred in the province of Punjab (-86.4%). Dry conditions on other regions were not very different. AJK (-54.2%), Balochistan (-70.6%), GB (-77.2%) & KP (-60.5%) all experienced mostly dry month, except Sindh which observed slightly above normal (+14.4%) rain. The rainfall for the season (OND) was slightly below average for country as whole. Provinces of AJK (-13.3%), Balochistan (-21.2%), GB (-26.8%) & KP (-23.5%) all experienced below average seasonal rainfall while Punjab (+21.5%) & Sindh (+10.0%) received above average seasonal rainfall.

Sea surface temperatures in the Indian Ocean were close to average during most of the period. Indian Ocean Dipole event was neutral throughout the year 2021. La Niña conditions emerged in mid-2020 and peaked during October - December at moderate strength, with average sea surface temperatures 1.3 °C below the 1991–2020 normal. The La Niña weakened through the first half of 2021, reaching an ENSO-neutral state (temperatures within 0.5 °C of normal) in May, according to both oceanic and atmospheric indicators. However, sea surface temperatures cooled after mid-year, approaching La Niña thresholds once again by October (WMO-State of the Global Climate 2021).

Temperature – Pakistan seventh warmest year on record

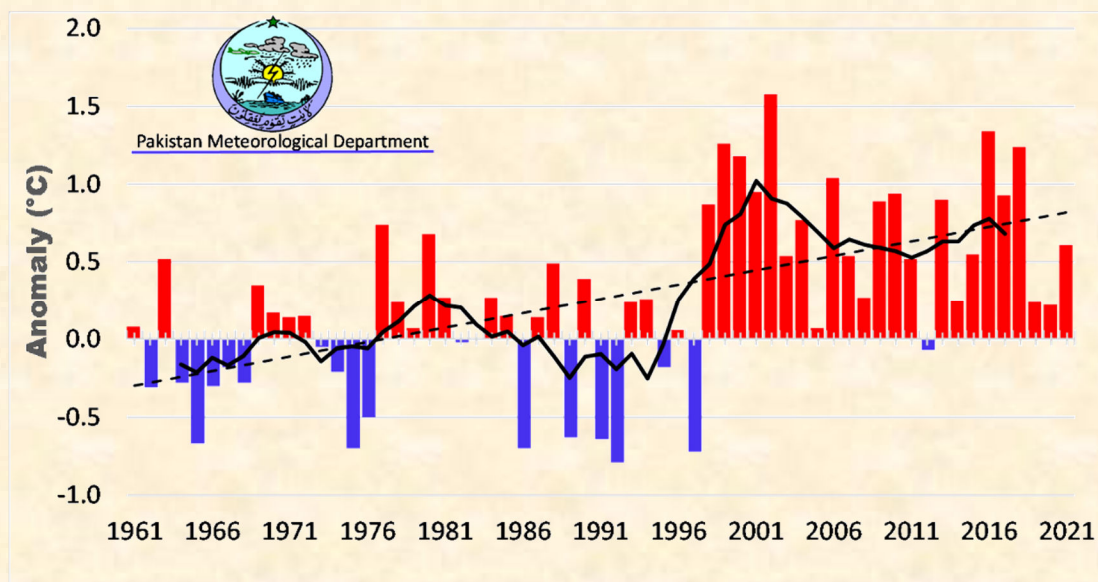


Figure 5. Pakistan annual mean temperature anomalies (with 1961-1990 the base period) for the period 1961-2021. The black line indicates the 7-year moving average. The value for 7-year average is positioned over the middle year of each 7-year block. The black dotted line shows the trend over the period.

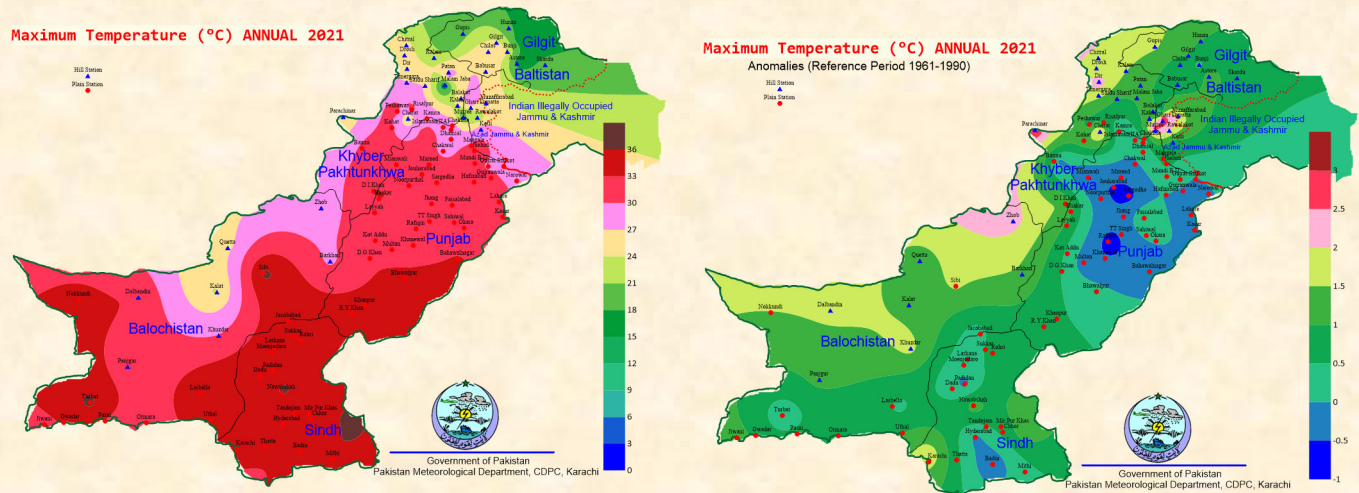
Pakistan 2021 annual mean land surface air temperature was 23.43 °C, which was 0.99 °C above than the 1961–1990 average, making 2021 the seventh warmest year since 1961. Anomalies in the mean temperature over provinces of Sindh (+0.92 °C), Balochistan (+1.13 °C), and AJK (+0.51 °C) were significantly higher and all stood among top ten hottest years. KP (+0.44 °C) and Punjab (+0.74 °C) both stood 12th warmest year on record while GB anomaly was +0.12 °C. The 2021 mean annual maximum temperature at country-level was 30.75 °C being 1.06 °C warmer than average of 29.69 °C and the mean annual minimum temperature was 16.24 °C being 0.94 °C warmer than country average of 15.30 °C.

January 2021 national mean monthly temperature for Pakistan as a whole was 0.26 °C cooler than average. The mean maximum temperature at country-level was 0.62 °C warmer than average. The night temperature 1.18 °C lower than country average. February 2021 was one of the warmest month on record. The national mean monthly temperature for Pakistan as a whole was 16.67 °C, being 3.35 °C warmer than monthly-average. The mean maximum temperature at country-level was 25.06 °C, being 4.58 °C warmer than average of 20.48 °C. The mean minimum temperature was 8.28 °C, being 2.09 °C warmer than country-average of 6.19 °C. Like preceding month, March 2021 was also another warmest month on record. The national mean monthly temperature for Pakistan as a whole was 21.48 °C, being 2.52 °C warmer than monthly-average, placing it 5th warmest month on record. The mean maximum (day) temperature at country-level was 29.11 °C, being 2.91 °C warmer than average of 26.21 °C. The night (minimum) temperature was 13.86 °C, being 2.13 °C warmer than country-average of 11.73 °C.

The national mean monthly temperature of April 2021 for Pakistan as a whole was 0.69 °C warmer than monthly-average, placing it the 20th warmest month on record. The mean maximum (day) temperature at country-level was 0.76 °C warmer than average. The night (minimum) temperature was 0.64 °C warmer than country-average. 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. The national mean monthly temperature of June 2021 for Pakistan as a whole was 0.12 °C lower than monthly-average. The mean maximum temperature at country-level was 0.37 °C lower than average. The minimum temperature was 0.20 °C warmer than country-average.

July 2021 national mean monthly temperature for Pakistan as a whole was 0.22 °C warmer than monthly-average. The mean maximum and minimum temperatures at country-level were 0.47



°C Figure 6. Pakistan spatial distribution of 2021 annual maximum temperature

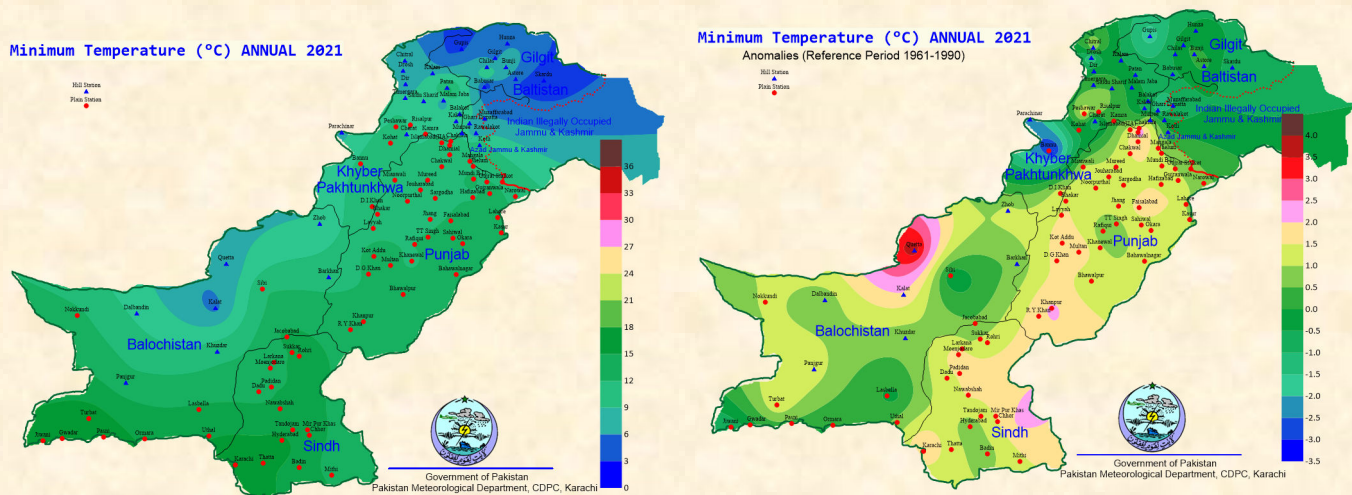


Figure 7. Pakistan spatial distribution of 2021 annual minimum temperature

and 0.43 °C warmer than country-average respectively. The national mean monthly temperature of August 2021 for Pakistan as a whole was 0.21 °C warmer than monthly-average. The mean maximum temperature at country-level was 0.46 °C warmer than average. The minimum temperature was 0.10 °C lower than country-average. During September 2021 country mean monthly temperature was 1.62 °C warmer than monthly-average. This makes the September mean temperature as the third warmest month on record during period 1961-2021, while 2019 temperature of 29.79 °C is the highest on record.

The national mean monthly temperature of October 2021 was 0.60 °C warmer than monthly-average. The mean maximum temperature at country-level was 0.27 °C lower than average. The night temperature was 1.41 °C warmer than country-average. In November 2021 country mean monthly temperature was 0.42 °C warmer than monthly-average. The mean maximum (day) temperature at country-level was 0.43 °C lower than average. The minimum temperature was 0.43 °C warmer than country-average. The national mean monthly temperature of December 2021 for Pakistan as a whole was 0.44°C warmer than average. The mean maximum and minimum temperatures in December 2021 at country-level were 0.30°C and 0.57 C warmer than average respectively.

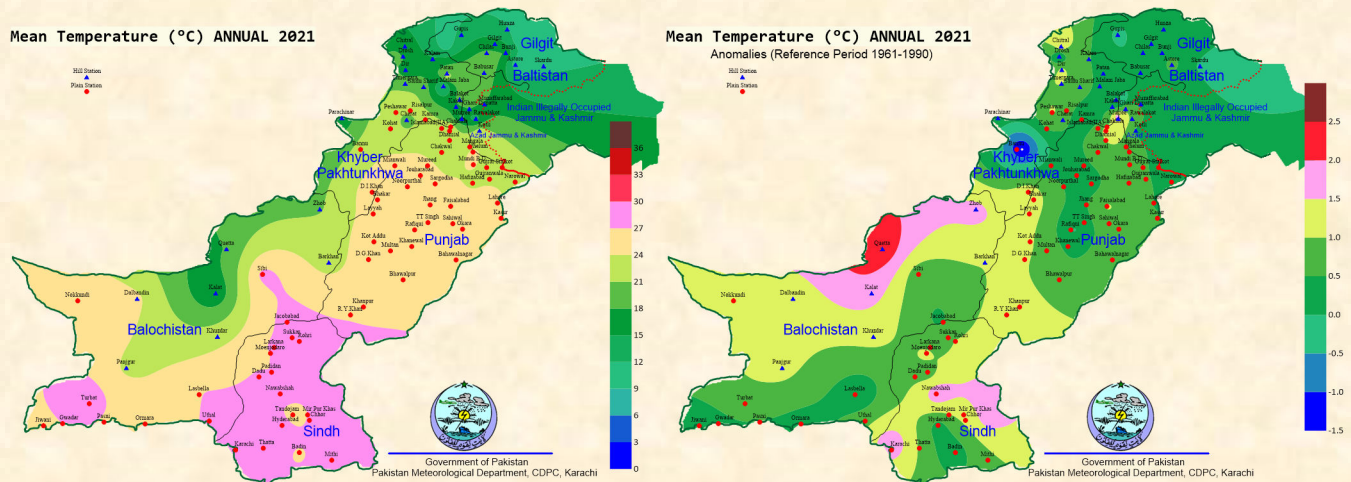


Figure 8. Pakistan spatial distribution of 2021 annual mean temperature

Tropical Cyclone TAUKTAE

The Cyclonic Storm Tauktae (pronounced as Tau'Te), formed over the North Arabian Sea, was the first tropical cyclone of 2021 in the area. On 12th May 2021, an area of convection formed at latitude 9° 24'N & longitude 67° 12'E 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.

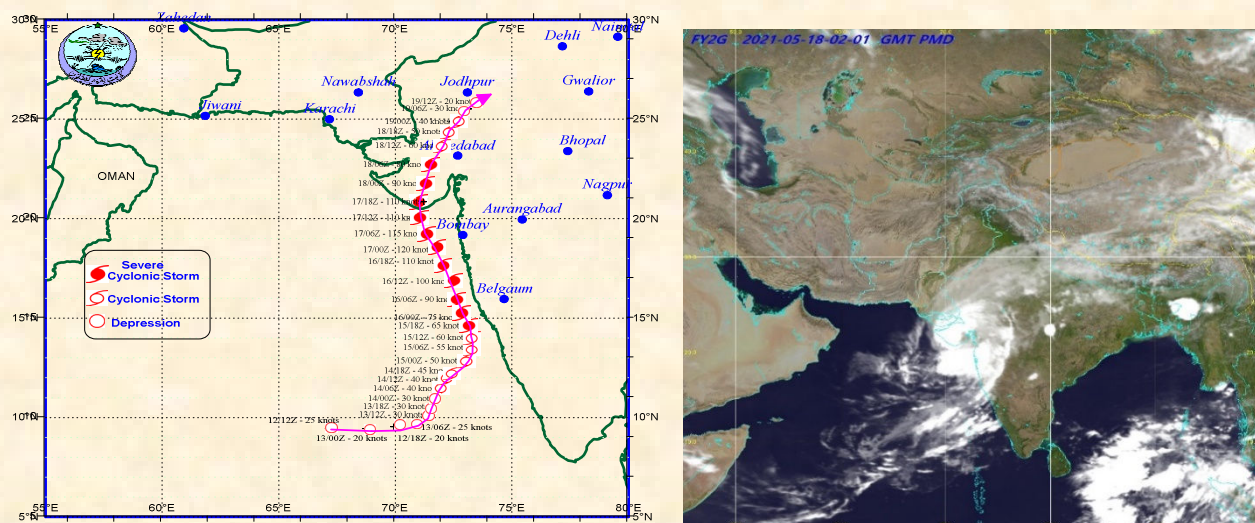


Figure 9. Observed track of TC “Tauktae” 12-19 May 2021 (left) & Satellite image of 18 May

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. 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 located 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, the 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.

Keeping on its course east-northeastwards with speed of 10 knots per hour, on 17th May, 2021 at 1200 UTC, it was centered on 20.0 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. 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. According to PDMA and Newspapers 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.

Tropical Cyclones GULAB & SHAHEEN

Cyclonic Storms Gulab and Shaheen were two related and consecutive cyclonic storms originated from the Bay of Bengal and North Arabian Sea respectively. A low-pressure area formed over the west-central Bay of Bengal on 24th September, strengthened into a depression and further intensified into a Cyclonic Storm, CS (Gulab) on 25th September. Cyclone Gulab crossed the

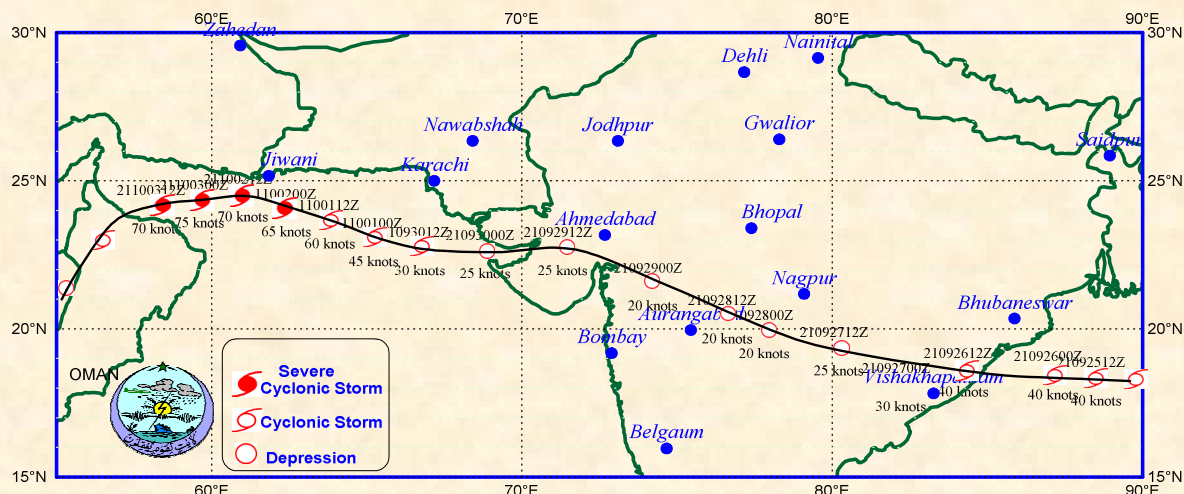


Figure 10. Observed track of TCs “Gulab & Shaheen” 25 September-3 October 2021

eastern coast of India from the Bay of Bengal in late September and the remnant system crossed Indian mainland as a low-pressure area before emerging and re-intensifying in the Arabian Sea, where it was renamed as Shaheen. The CS, Gulab moved westward and crossed the Andhra Pradesh-Odisha coast, India on 26th September night. After crossing over the coast, the system first turned into a depression and then a low-pressure and moved towards Indian Gujarat. The system then emerged as a well-marked low over Northeast Arabian Sea, intensified into a Depression on 29th September and Deep Depression the subsequent day which pushed strong monsoon currents in Sindh and again resulted in rain-thunderstorms in southern Sindh during 28-30 September. On 30th September, the deep depression formed over the Northeast Arabian Sea, at a distance of about 280 km southwest of Karachi. The Cyclonic Storm (*Shaheen*) then formed owing to intensification of a deep depression which was actually caused by a low-pressure area having moved in from the Indian mainland.

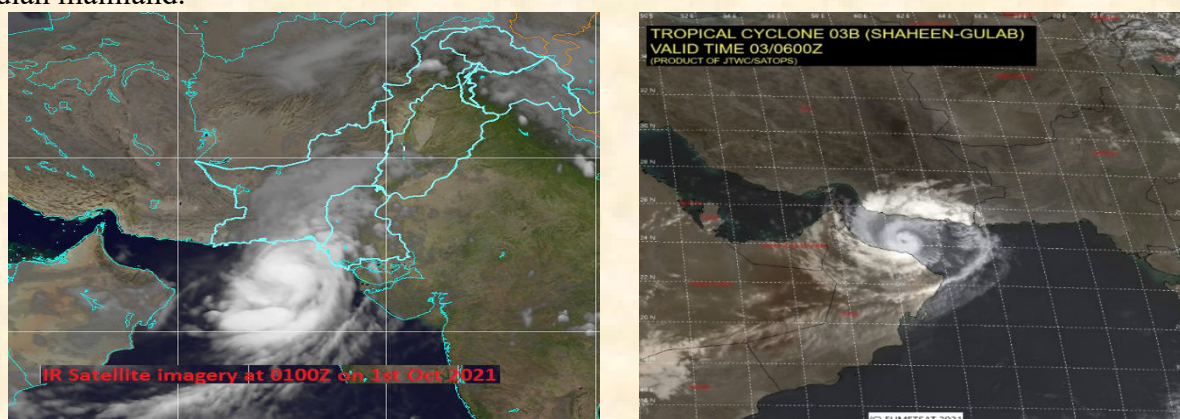


Figure 11. “Shaheen” depicted by IR Satellite imagery, at 0100Z, 1 Oct (left) and 3 Oct (right) 2021

Moving in west-northwest direction, the system intensified further into a *Severe Cyclonic Storm (SCS)* by evening of 1st October. The SCS “*Shaheen*” kept tracking west-northwestward till 3rd October afternoon and from thereon it recurved westward towards the Oman coast under steering of the 200hPa anticyclonic flow. Shaheen made landfall at about midnight of 3rd October on the northern Oman coast northwest of Muscat, the first cyclone since 1890 to make landfall in this area. Al Suwaiq, Oman recorded 294 mm rain in 24 hours, about three times the region’s annual average rainfall. Under its influence fairly widespread heavy rainfall with very strong winds lashed the Makran coastal belt with some scattered moderate rains reported from Karachi and other parts of lower Sindh.

Seasonal area-weighted rainfall

	Region	Pakistan	AJK	Balochistan	GB	KP	Punjab	Sindh
Jan-Mar	Normal (mm)	74.3	218.3	57.5	68.3	212.2	66.8	12.7
	Observed (mm)	40.3	181.7	13.0	57.3	132.1	46.9	2.7
	Departure (%)	-45.8	-16.8	-77.5	-16.0	-37.8	-29.8	-78.9
Apr-Jun	Normal (mm)	56.0	179.7	25.9	77.8	158.2	65.6	16.3
	Observed (mm)	53.6	125.4	28.1	36.6	126	81.6	23.6
	Departure (%)	-4.3	-30.2	8.6	-52.9	-20.3	24.5	45.3
Jul-Sep	Normal (mm)	140.9	294.2	58.3	41.6	290.6	231.9	133.7
	Observed (mm)	125.0	229.2	58.0	49.4	283.3	194.7	104.5
	Departure (%)	-11.3	-22.1	-0.5	18.6	-2.5	-16.1	-21.8
Oct-Dec	Normal (mm)	26.4	85.0	18.4	25.8	75.0	22.5	9.3
	Observed (mm)	23.5	73.6	14.5	18.9	57.3	27.3	10.3
	Departure (%)	-11.2	-13.3	-21.2	-26.8	-23.5	21.5	10.0

Normal period 1961-2010

New extreme weather records of 2021

New Extreme weather records of 2021						
SN	STATIONS	New Record		Previous Record		Years of record
		Amount	Date	Amount	Date	
Record highest 24-hours rainfall (mm)						
1	Faisalabad	48.0	5 January 2021	36.8	8 January 1942	79
2	Jhelum	57.0	6 January 2021	51.6	29 January 1961	60
3	Lahore Airport	56.6	6 January 2021	38.4	30 January 1961	60
4	Kakul	180.0	12 July 2021	157.0	6 July 1978	43
5	Ormara	54.0	2 October 2021	39.0	31 October 1980	41
6	Khanpur	14.7	2 October 2021	13.0	18 October 1982	39
7	Larkana	50.0	27 Jun 2021	45.0	21 Jun 1997	24
8	Mangla	51.2	6 January 2021	50.0	7 January 1999	22
9	Gawadar	35.0	15 July 2021	9.8	18 July 2003	18
10	Quetta	55.0	23 March 2021	52.0	17 February 2003	18
11	Thatta	13.0	28 December 2021	11.4	4 December 2006	15
Record Total Monthly rainfall (mm)						
12	Faisalabad	65.5	January 2021	63.5	January 1957	64
13	Ormara	56.0	October 2021	39.0	October 1980	41
14	Pasni	77.0	October 2021	56.5	October 1980	41
15	Gawadar	39.0	July 2021	12.8	July 2003	18
Record highest Maximum Temperature (°C)						
16	Zhob	43.0	11 Jun 2021	42.8	10 Jun 1973	48
17	Quetta	38.0	9 September 2021	37.5	(3) September 2001	20
18	Quetta	23.0	22 January 2021	23.0	13 January 2002	19
19	Kalat	29.0	28 March 2021	29.0	9 March 2004	17
20	Nawabshah	38.3	27 February 2021	38.0	26 February 2004	17
Record Lowest Minimum Temperature (°C)						
21	Grahi Dupatta	7.5	2 Jun 2021	5.0	1 June 1988	33
21	Grahi Dupatta	7.5	(3) May 2021	8.1	9 May 1997	24
22	Mangla	20.0	14 August 2021	20.0	21 August 2003	18
23	Mangla	9.4	3 April 2021	9.4	13 April 2006	15

The State of Pakistan's Climate in 2021 is produced by Pakistan Meteorological Department, Climate Data Processing Centre, Karachi to provide informative overview of the temperatures, rainfall and significant weather events in Pakistan for the year. Some of the information is based on real time data and/or electronic reports therefore, the results contained above can be considered only preliminary. If you have any comments or suggestions, please contact us:

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Published on 27th January 2022