

Decadal Agromet Bulletin of Pakistan



Highlights...

- ❖ Moderate to heavy rainfall reported from most of the agricultural plains of Punjab, while light to moderate in rest of the provinces during the last decade.
- ❖ Lowest minimum temperature recorded as -19.6°C at Skardu during the last decade.
- ❖ Light to moderate rainfall with snow over the mountains is expected during the first few days as well as the 2nd half of the decade in Punjab, Khyber Pakhtunkhwa, FATA, Gilgit-Baltistan & Kashmir and some area of western & northern Balochistan; light rainfall is expected at isolated places in eastern Sindh during the current decade.
- ❖ Farmers are advised to schedule the irrigation plans for the Rabi crop in context of ongoing rains.
- ❖ Measures may be taken to preserve the crops/nurseries from the damaging impacts of extreme cold conditions.
- ❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crop. As a result considerable loss in yield occurs every year.

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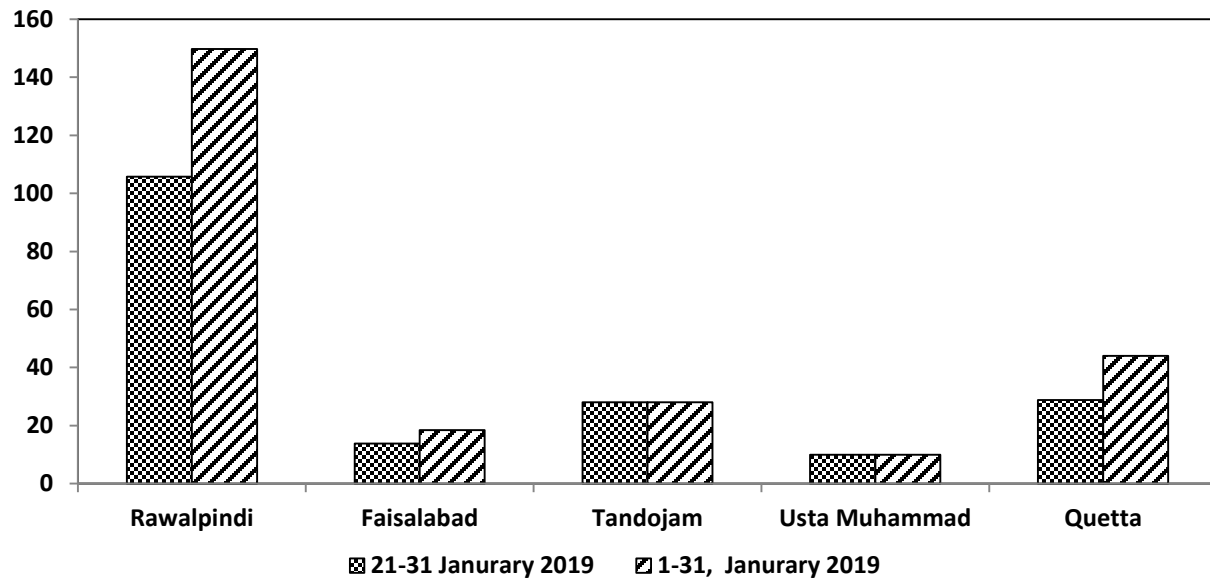
Meteorological Conditions during 3rd Decade of January, 2019

Sr. No.	Station	Precipitation (mm)			Air Temperature (°C)			Soil Temperatures (°C)						R.H (%)	Sunshine Duration (hours)	Wind Speed (km/hr)	ET _o (mm/day)
		Normal	Actual	Dep	Tmax Dep	Tmin Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	2.4	105.8	103.4	-1.1	-1.5	9.8	12.9	11.9	11.2	11.7	12.4	15.2	80	56.4	2.5	1.1
2	Faisalabad	0.3	13.8	13.5	-7.3	1.2	12.0	15.6	14.8	13.8	13.8	14.8	17.4	64	56.3	2.5	1.3
3	Jhelum	1.7	43.1	41.4	-3.4	-0.5	11.1	12.5	11.8	11.6	12.0	13.5	***	68	65.4	2.1	1.2
4	Lahore	0.7	29.4	28.7	-2.1	-0.8	12.4	13.3	13.1	13.0	13.1	***	17.0	71	59.9	2.0	1.2
5	Sargodha	1.0	15.3	14.3	-0.9	0.8	12.1	14.6	13.6	13.0	13.6	***	17.4	72	56.5	1.2	1.1
6	Multan	0.2	8.9	8.7	-3.7	1.3	12.2	***	***	***	***	***	***	72	42.7	3.8	1.4
7	Khanpur	0.0	0.4	0.4	-2.9	-0.9	12.6	***	14.2	14.9	15.4	16.4	19.0	66	70.0	3.8	1.8
8	Tandojam	0.0	28.0	28.0	-1.6	-0.8	15.5	23.2	14.7	19.1	18.3	20.3	21.2	62	88.9	3.3	2.3
9	Sakrand ☆	0.0	4.0	4.0	3.5	0.6	15.3	25.6	***	***	***	***	22.5	59	85.5	3.4	2.2
11	Rohri ☆	0.0	18.0	18.0	-2.4	-2.0	14.5	***	***	***	***	***	***	58	81.1	1.8	1.7
12	D.I Khan	0.6	27.0	26.4	-1.7	-0.9	11.3	14.6	14.3	14.6	15.4	0.4	***	65	62.1	7.0	1.9
13	Peshawar	1.7	11.8	10.1	-2.1	-0.8	10.7	14.0	13.0	12.2	12.2	13.6	14.2	59	49.3	2.1	1.2
14	Usta .M	0.3	10.0	9.7	-0.5	-15.7	13.1	19.3	17.3	17.6	***	***	22.9	65	***	2.5	1.6
15	Quetta	0.5	28.8	28.3	-1.9	0.2	4.2	8.3	6.8	5.1	5.7	7.5	10.2	44	93.1	4.1	1.5
16	Skardu	0.8	11.2	10.4	-4.8	-5.2	-6.8	***	***	***	***	***	***	78	28.8	0.2	0.5
17	Gilgit	0.2	2.2	2.0	-3.2	2.2	3.9	***	***	***	***	***	***	63	32.3	4.3	1.0

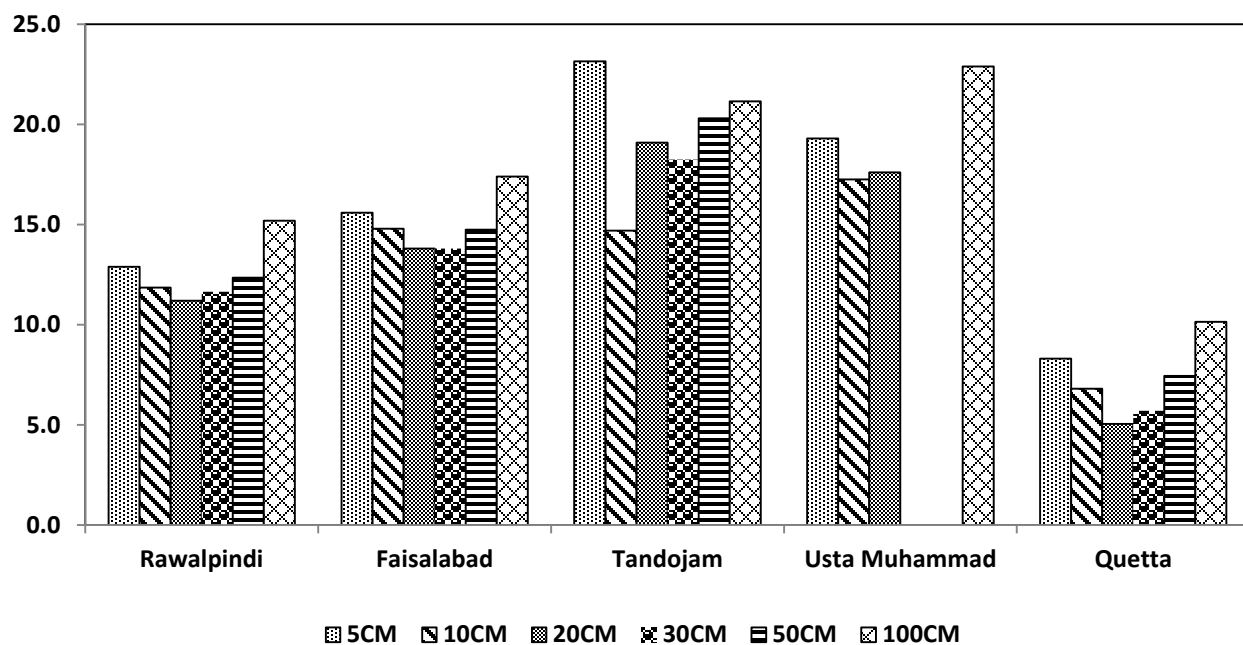
Table-1: Meteorological parameters for selected station of Pakistan. “Dep” in the table stands for difference from climatic normal, i.e. actual value minus normal. And “% Dep” is calculated by the formula; **Dep divided by Normal multiplied by 100**. Tmin & Tmax stands for minimum and maximum temperatures respectively. ET_o stands for reference crop evapotranspiration. *** stands for no data and (☆) indicates the station with five year’s climatic (normal) data for computing departures.

Graph at RAMCs during January, 2019

Precipitation(mm)



Soil Temperature(°C)



Past Weather (21st to 31st January, 2019)

Moderate to heavy rainfall reported from most of the agricultural plains of Punjab, while light to moderate rest of provinces during the last decade.

1.1 Punjab

Moderate to heavy rainfall reported from most of the agricultural plains of the Punjab. Highest rainfall reported from Murree, Islamabad & Sialkot. Decadal maximum and minimum both dropped below normal by 3.1°C & 0.1°C respectively, in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 70%, 58.2hrs, 2.6km/hr and 1.3mm/day respectively.

1.2 Sindh

Light to moderate rainfall reported from most of the agricultural plains of the Sindh. Highest rainfall reported from Karachi airport, Padidan & Rohri. Decadal maximum and minimum both dropped below normal by 0.2°C & 0.7°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 60%, 85.2hrs, 2.8km/hr and 2.1mm/day respectively.

1.3 Khyber Pakhtunkhwa

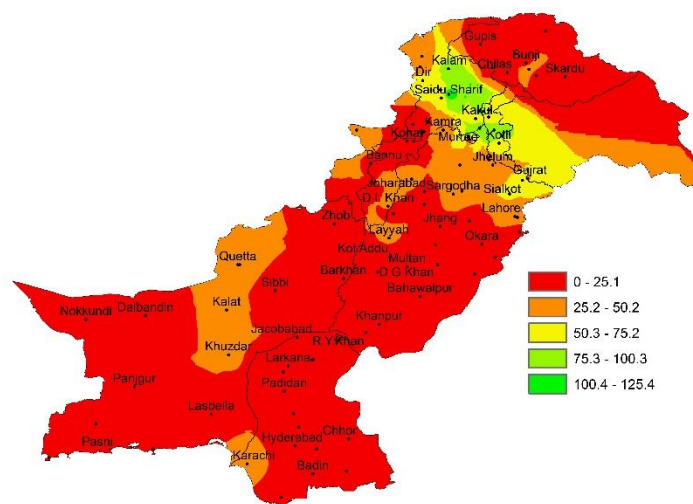
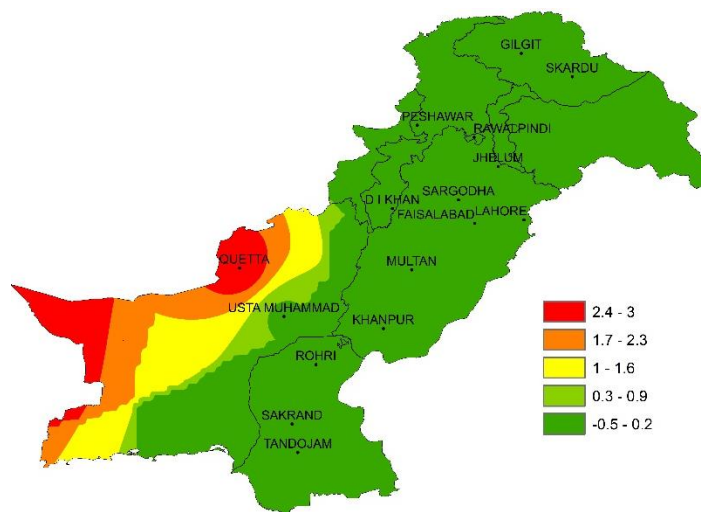
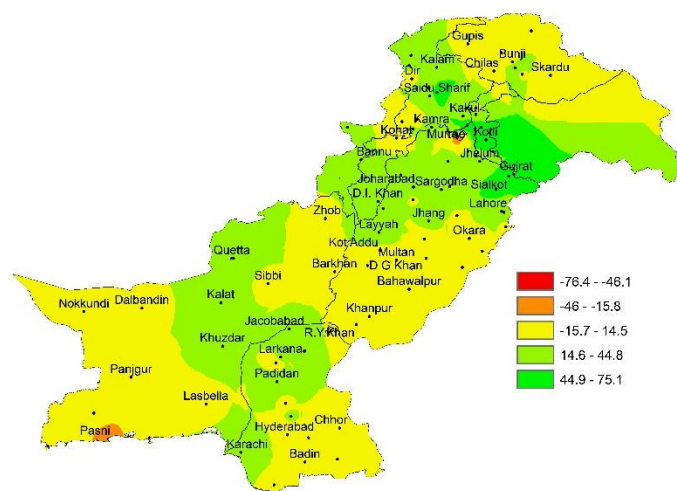
Light to moderate rainfall reported from most of the agricultural plains of Khyber Pakhtunkhwa. Highest rainfall reported from Kalam, Balakot & Kakul. Decadal maximum and minimum both dropped below normal by 1.9°C & 0.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 55.7hrs, 4.6km/hr and 1.6mm/day respectively.

1.4 Balochistan

Light to moderate rainfall reported from most of the place from agricultural plains of the Balochistan. Highest rainfall reported from Quetta, Kalat & Khuzdar. Decadal maximum and minimum both dropped below normal by 1.2°C & 7.8°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 55%, 93.1hrs, 3.3km/hr and 0.8mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

Light to moderate rainfall reported from most of the agricultural plains G.B and Kashmir. Highest rainfall reported from Muzaffarabad, Rawalakot & Kotli. Decadal maximum and minimum both dropped below normal by 4.0°C & 1.5°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 71%, 30.6hrs, 2.3km/hr and 0.8mm/day respectively.

**I. Actual rainfall****II. Departure of rainfall from Normal****III. Departure of rainfall from Previous Decade****Figure.1: Rainfall distribution during previous decade (mm)**

(a) **Past Weather for Major Agricultural Plains**
(21st to 31st January, 2019)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 105.8 mm during the decade; however weather remained cloudy for 7 days during the decade. Average relative humidity recorded as 80%. Mean day temperature was 17.6°C while night temperature recorded as 2.0°C with 56.4 hours bright sunshine duration. Wind speed recorded as 2.5 km/hr with mean wind direction *Westerly*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 13.8 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 17.8°C while night temperature recorded as 6.1°C with 56.3 hours bright sunshine duration. Wind speed recorded as 2.5 km/hr with mean wind direction *South westerly*.

Wheat: *Very good condition, tillering stage completed.*

2.3 RAMC, Tandojam (Lower Sindh)

Rainfall reported as 28.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 23.5°C while night temperature recorded as 7.5°C with 88.9 hours bright sunshine duration. Wind speed recorded as 3.3 km/h with mean wind direction *Northerly*.

Wheat (TJ-83): *Good condition, Milk maturity*

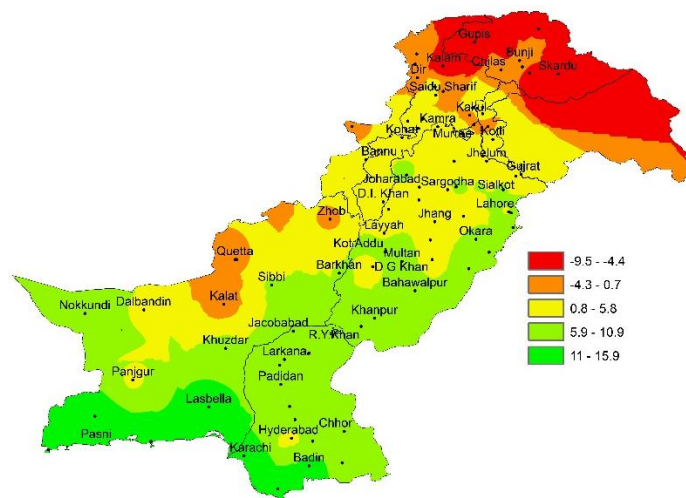
2.4 RAMC, Usta Muhammad (Eastern Balochistan)

Rainfall reported as 10.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 20.7°C while night temperature recorded as 5.5°C. Wind speed recorded as 2.5 km/h with mean wind direction *North westerly*.

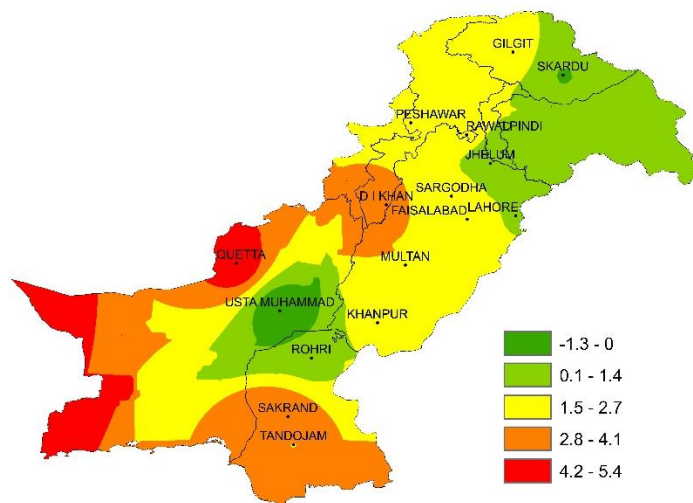
Wheat: *Good condition, Tillering stage.*

2.5 RAMC, Quetta (Northern Balochistan)

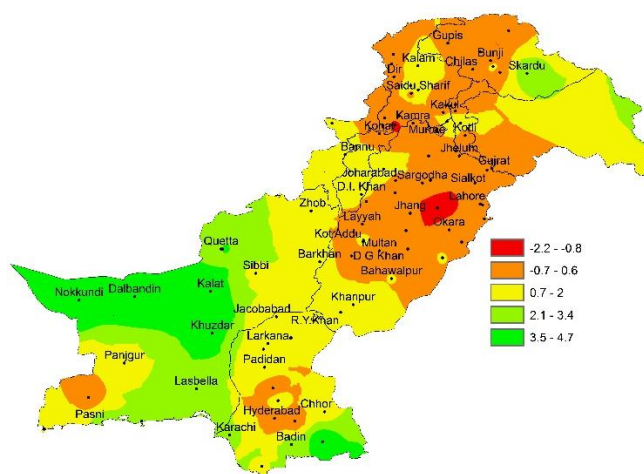
Rainfall reported as 28.8 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 44%. Mean day temperature was 9.2°C while night temperature recorded as -0.9°C with 93.1 hours bright sunshine duration. Wind speed recorded as 4.1 km/hr with mean wind direction *North westerly*.



I. Actual min-temp



II. Departure of min-temp from Normal



III. Departure of min-temp from Previous Decade

Figure.2: Minimum Temperature distribution during previous decade (°C)

2(b) Past Weather for Sub-Regional Agricultural Plains (21st to 31st January, 2019)

2.6 Jhelum

Rainfall reported as 43.1 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 19.0°C while night temperature recorded as 5.5°C with 45.7 hours bright sunshine duration. Wind speed recorded as 1.1km/hr with mean wind direction *North westerly*.

2.7 Lahore

Rainfall reported as 29.4 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 71%. Mean day temperature was 17.2°C while night temperature recorded as 7.5°C with 59.9hours bright sunshine duration. Wind speed recorded as 2.0 km/hr with mean wind direction *Westerly*.

2.8 Sargodha

Rainfall reported as 15.3 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 72%. Mean day temperature was 17.7°C while night temperature recorded as 6.4°C with 56.5hours bright sunshine duration. Wind speed recorded 1.2km/hr with mean wind direction *Easterly*.

2.9 Multan

Rainfall reported as 8.9 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 78%. Mean day temperature was 17.2°C while night temperature recorded as 7.1°C with 42.7 hours bright sunshine duration. Wind speed recorded 3.8km/hr with mean wind direction *Northerly*.

2.10 Khanpur

Rainfall reported as 0.4 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 66%. Mean day temperature was 19.6°C while night temperature recorded as 5.5°C with 70.0 hours bright sunshine duration. Wind speed recorded 3.8km/hr with mean wind direction *Variable*.

2.11 Sakrand

Rainfall reported as 4.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 23.1°C while night temperature recorded as 7.5°C with 85.5 hours bright sunshine duration. Wind speed recorded 3.4km/hr with wind direction *northerly*.

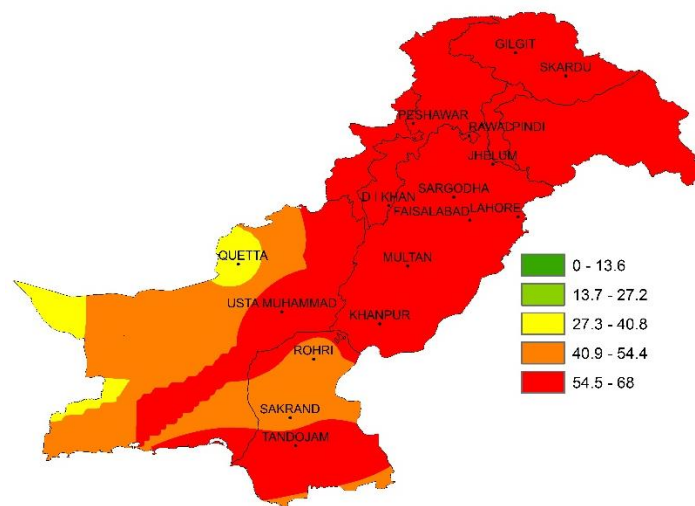


Figure.3: Relative Humidity in Percentage (%)

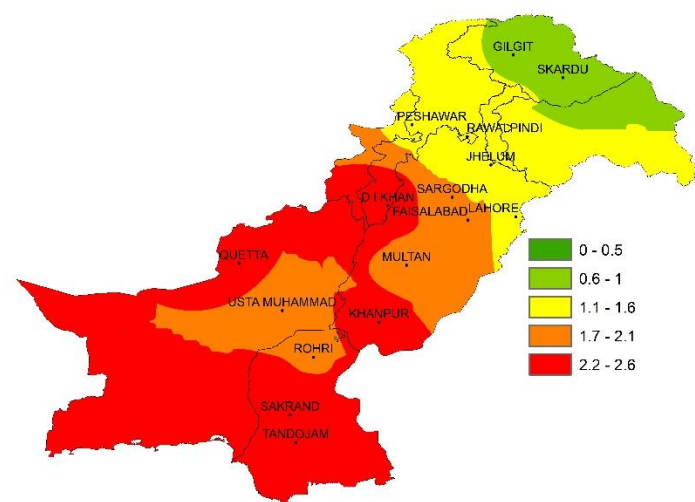


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

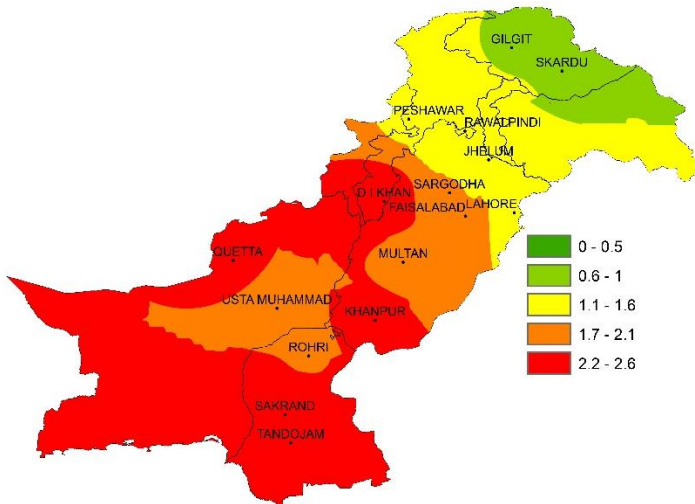


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 18.0mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 21.0°C while night temperature recorded as 7.9°C with 81.1 hours bright sunshine duration. Wind speed recorded 1.8 km/hr with wind direction *North easterly*.

2.13 D.I. Khan

Rainfall reported as 27.0 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 18.4°C while night temperature recorded as 4.1°C with 62.1 hours bright sunshine duration. Wind speed recorded as 7.0km/hr with mean wind direction *Northerly*.

2.14 Peshawar

Rainfall reported as 11.8 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 16.7°C while night temperature recorded as 4.6°C with 49.3 hours bright sunshine duration. Wind speed recorded as 2.1km/hr with mean wind direction *North easterly*.

2.15 Skardu

Precipitation reported as 11.2 cm (snowfall) during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 78%. Mean day temperature was -0.2C while night temperature recorded as -13.3C with 28.8 hours bright sunshine duration. Wind speed recorded as 0.2km/hr with mean wind direction *North easterly*.

2.16 Gilgit

Rainfall reported as 2.2mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 63%. Mean day temperature was 7.8°C while night temperature recorded as -0.1°C with 32.3 hours bright sunshine duration. Wind speed recorded as 4.3km/hr with mean wind direction *Westerly*.

Ten Days Weather Advisory for Farmers (1st to 10th February, 2019)

3.1 Temperature Forecast

Both day and night temperatures are likely to below normal in most of the plains of the country during the decade.

3.2 Wind Forecast

Normal wind pattern may prevail in most of the agricultural plains of the country during the decade.

3.3 Rain Forecast

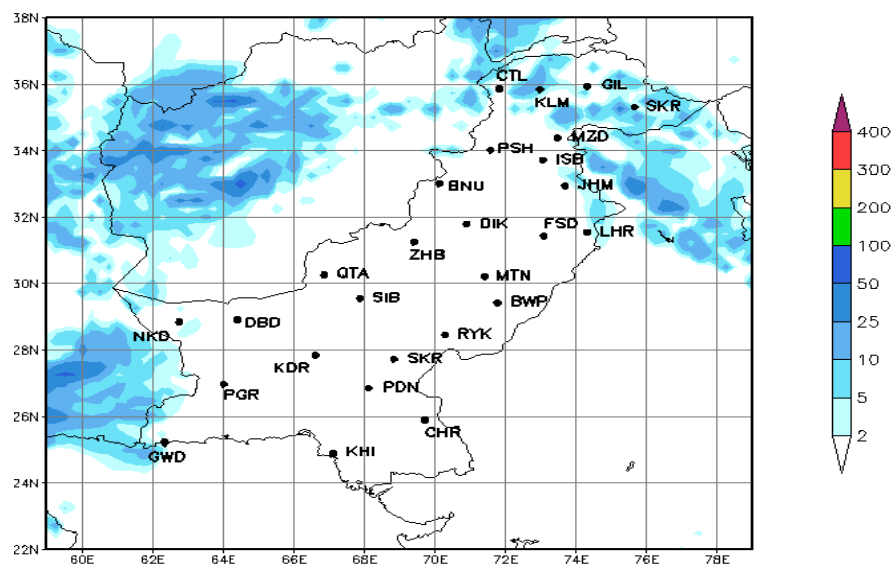
- ❖ **Punjab:** Rain (with snowfall over the hills) is expected from 5th to 7th February the province. Foggy conditions are expected at a few places in plain areas as well during evening/night.
- ❖ **Khyber Pakhtunkhwa:** Rain (with snowfall over the hills) is expected from time to time with snow over hill during the decade.
- ❖ **Sindh:** Mainly cold and dry weather is expected. However, light rain/drizzle at few places is also expected in upper Sindh during the 2nd half of the decade. Foggy conditions are expected in upper Sindh at a few places in plain areas as well during evening/night.
- ❖ **Baluchistan:** Rainfall is expected at scattered places in Zhob division; however, cold and dry weather is expected in most parts of the province.
- ❖ **Gilgit-Baltistan:** Rain (with snowfall over the hills) is expected during the current decade.
- ❖ **Kashmir:** Light rain-thunderstorm is expected during the current decade.

3.4 Advisory for Farmers

- ❖ Farmers are advised to schedule the irrigation plans for the Rabi crop in context of ongoing rains.
- ❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crop. As a result considerable loss in yield occurs every year.
- ❖ Measures may be taken to preserve the crops/nurseries from the damaging impacts of extreme cold conditions.

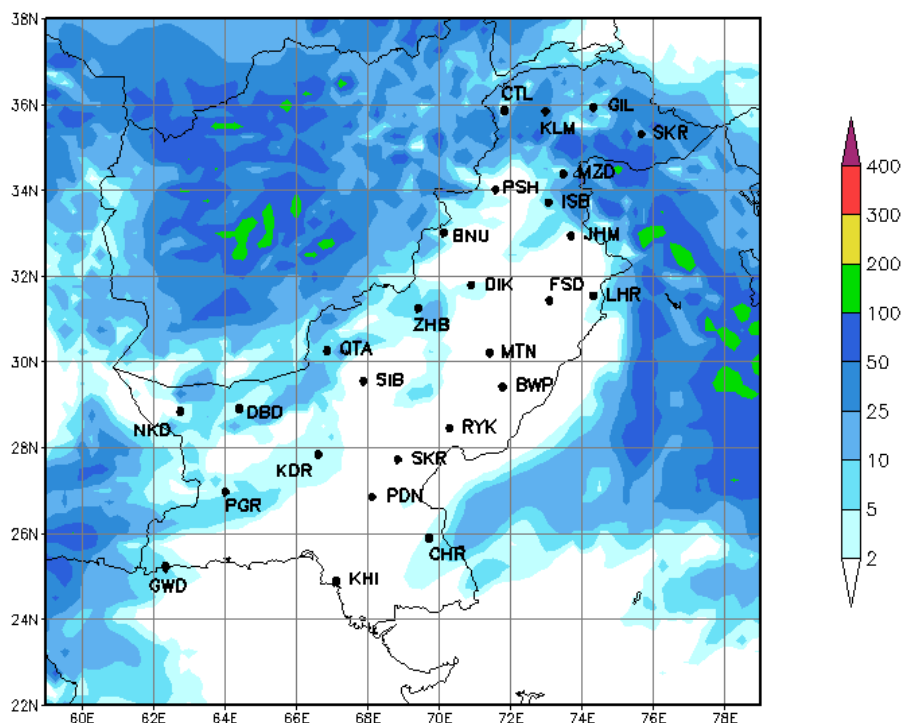
4.1 Precipitation Outlook (1st to 3rd February, 2019)

The forecast for the first three days (1st to 3rd) of the 1st decade of February, 2019 shows that light to moderate rainfall is expected at isolated places of upper KP, G.B, Potohar region and Kashmir & its adjoining areas. However, cold and dry weather may prevail in rest of the country.



4.2 Precipitation Outlook 4th to 10th February, 2019)

The outlook for the last seven days (4th to 10th) of the 1st decade of February, 2019 shows that light to moderate rainfall is expected in KP, GB, FATA, Kashmir, Balochistan and some areas of northern & central Punjab with light rainfall in eastern parts of Sindh.



Findings of AgMIP Pakistan, University of Agriculture, Faisalabad

- ❖ There would be significant increase in temperature i.e., 2.8°C in day and 2.2°C in the night during mid-century (2040-2069)
- ❖ There would be significant variability in rainfall patterns (about 25% increase in summer & 12% decrease in winter during 2040-2069)
- ❖ Climate Change will affect the crop yields negatively (about 17% for rice and 14 % for wheat)
- ❖ If there will be no adaptation to Climate Change, majority of farmers would be the economic losers
- ❖ With Adaptation to Climate Change (through technology and management), there would be significant decrease in poverty and improvement in the livelihood of farming community.

(Agricultural Model Inter-comparison and Improvement Project (AgMIP) Pakistan 2012-2014)

- 1- سال 2040-69 کے دوران درجہ حرارت میں قابل ذکر اضافہ ہو سکتا ہے۔ جو کہ دن کے وقت 2.8°C اور رات کو 2.2°C تک ہوگا۔
- 2- گرمیوں کی بارش میں 25 فیصد اضافہ اور سردیوں کی بارش میں 12 فیصد تک کمی کا امکان ہے۔
- 3- مندرجہ بالا موسمی تغیرات کی وجہ سے دھان کی پیداوار میں 17 فیصد اور گندم کی پیداوار میں 14 فیصد تک کمی ہو سکتی ہے۔
- 4- اگر موسمی تغیرات کا مناسب بندوبست نہ کیا گیا۔ تو کسانوں کی اکثریت کو معاشی نقصان کا سامنا کرنا پڑے گا۔
- 5- موسمی تغیرات کے سدباب (بذریعہ نئی ٹیکنالوجی کا استعمال اور بہتر نظم و نسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2012-2014)