

Decadal Agromet Bulletin of Pakistan



Highlights...

- ❖ Moderate to heavy rainfall reported from Khyber Pakhtunkhwa, whereas light to moderate rainfall reported from rest of the agricultural plains of country during the last decade.
- ❖ Highest amount of rainfall recorded as 108.00 mm at Malam Jabba during the last decade.
- ❖ Lowest minimum temperature recorded as -7.0°C at Kalam during the last decade.
- ❖ Mainly cloudy/dry weather is expected. However, rain/thunderstorm is expected at isolated places in Balochistan (Quetta, Zhob, Kalat and Makran division), Khyber Pakhtunkhwa (Kohat, Bannu and D.I.Khan division) and Kashmir during the first half of the current decade.
- ❖ Farmers are advised to schedule the irrigation plans for the Rabi crop in the 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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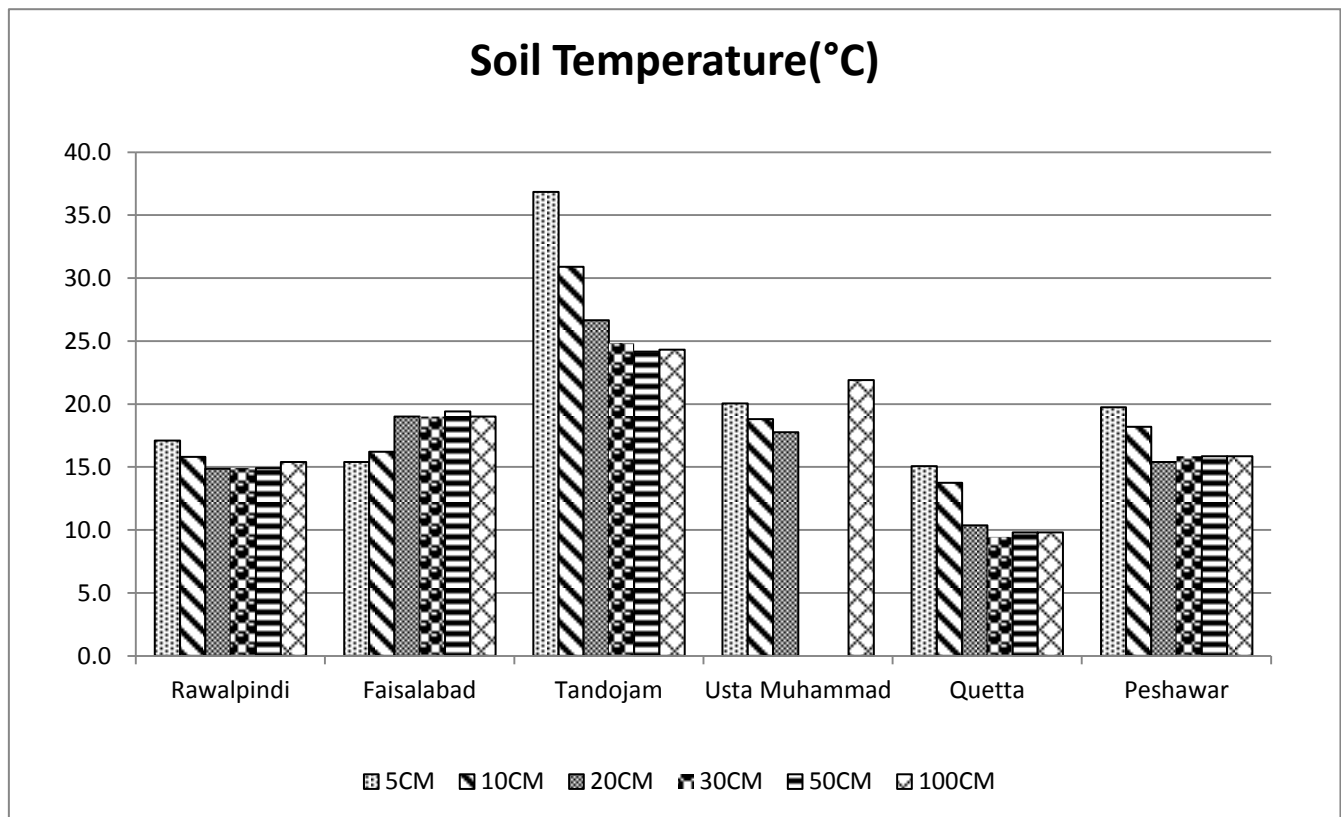
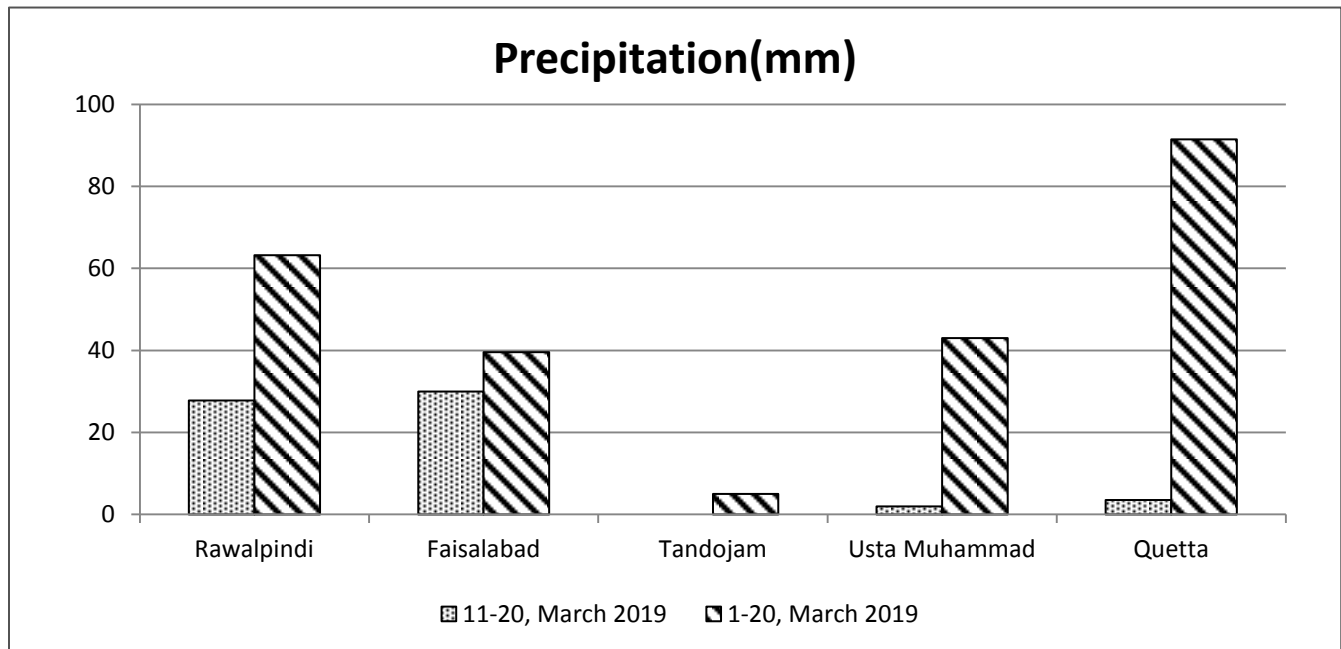
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Meteorological Conditions during 2nd Decade of March, 2019

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	2.0	27.8	25.8	-5.7	-3.9	14.4	17.1	15.8	14.9	14.9	14.9	15.4	68	49.3	2.4	1.4
2	Faisalabad	0.6	30.0	29.4	-3.8	-2.3	18.7	15.4	16.2	19.0	19.0	19.4	19.0	53	67.9	2.4	1.8
3	Jhelum	1.5	27.9	26.4	-4.4	-2.4	18.1	20.3	18.9	17.7	17.1	17.5	***	58	66.1	4.2	2.0
4	Lahore	0.7	8.7	8.0	-3.2	-3.7	19.7	22.0	21.1	19.2	18.1	***	19.0	59	69.7	2.5	1.8
5	Sargodha	1.1	6.9	5.8	-4.4	-2.4	19.2	24.9	22.5	19.8	19.3	***	18.9	1	67.5	1.9	1.6
6	Multan	0.4	0.0	-0.4	-5.8	-2.1	19.2	***	***	***	***	***	***	58	82.1	5.0	2.8
7	Khanpur	0.4	0.0	-0.4	-5.1	-2.0	20.0	***	20.7	20.6	20.7	20.7	20.9	62	72.7	4.8	2.4
8	Tandojam	0.9	0.0	-0.9	-4.7	-2.7	21.8	36.9	30.9	26.7	24.9	24.2	24.3	47	94.8	4.6	3.3
9	Sakrand ☆	0.8	0.0	-0.8	-3.5	12.2	21.3	36.5	***	***	***	***	24.5	0	102.5	2.7	2.5
11	Rohri ☆	0.0	2.0	2.0	-5.7	-3.8	20.9	***	***	***	***	***	***	54	91.0	2.1	2.2
12	D.I Khan	1.1	5.0	3.9	-4.2	-2.5	18.1	20.1	18.5	17.7	17.9	7.8	***	64	79.1	9.2	2.8
13	Peshawar	2.0	68.4	66.4	-5.2	-4.2	15.7	19.8	18.2	15.4	15.9	15.9	15.9	63	39.1	2.7	1.3
14	Usta .M	0.7	2.0	1.3	-6.1	-2.1	19.7	20.1	18.8	17.8	***	***	21.9	52	***	2.7	2.0
15	Quetta	0.6	3.5	2.9	-7.7	-1.4	9.5	15.1	13.8	10.4	9.5	9.8	9.8	52	75.9	5.6	1.9
16	Skardu	0.8	0.0	-0.8	-14.5	10.2	5.7	***	***	***	***	***	***	34	48.3	1.1	0.9
17	Gilgit	0.4	0.01	-0.4	-2.9	-0.3	11.6	***	***	***	***	***	***	27	41.4	4.7	1.7

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 March, 2019



Past Weather (11th to 20th March, 2019)

Moderate to heavy rainfall reported from Khyber Pakhtunkhwa, whereas light to moderate rainfall reported from rest of the agricultural plains of country during the last decade.

1.1 Punjab

Light to moderate rainfall reported from most of the agricultural plains of the Punjab. Highest rainfall reported from Murree, Islamabad & Mandi Bahuddin. Decadal maximum and minimum both dropped below normal by 4.6°C & 2.7°C respectively, in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 60%, 67.9 hrs, 3.3km/hr and 2.0 mm/day respectively.

1.2 Sindh

Light to moderate rainfall reported from most of the agricultural plains of the Sindh. Highest rainfall reported from Larkana, Jacobabad & Moin-jo-daro. Decadal maximum dropped below normal by 4.6°C & minimum raised above normal by 1.9°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 50%, 96.1hrs, 3.1km/hr and 2.7 mm/day respectively.

1.3 Khyber Pakhtunkhwa

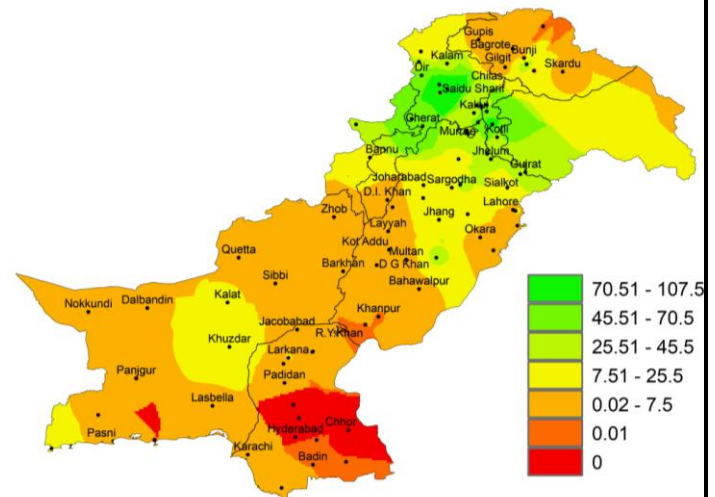
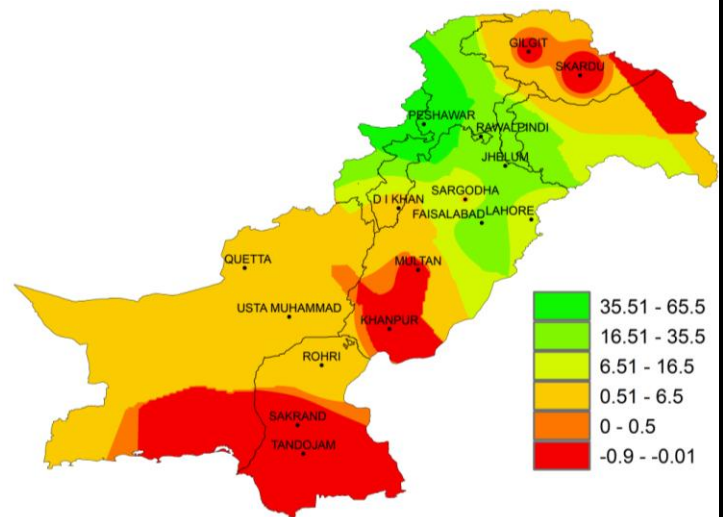
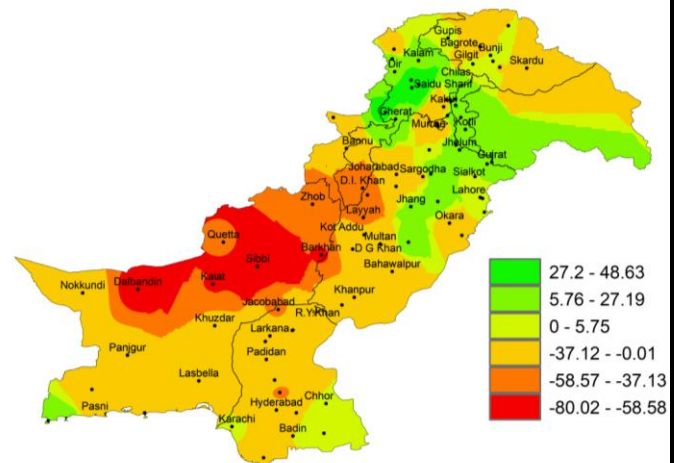
Moderate to heavy rainfall reported from most of the agricultural plains of Khyber Pakhtunkhwa. Highest rainfall reported from Malam Jabba, Lower Dir & Peshawar. Decadal maximum and minimum both dropped below normal by 4.7°C & 3.40°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 64%, 59.1hrs, 6.km/hr and 2.1mm/day respectively.

1.4 Balochistan

Light rainfall reported from most of the place from agricultural plains of the Balochistan. Highest rainfall reported from Khuzdar, Jiwani, Kalat & Gwadar. Decadal maximum and minimum both dropped below normal by 6.9°C & 1.8°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 52%, 75.9hrs, 4.2km/hr and 2.0mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

Light to moderate rainfall reported from most of the agricultural plains G.B & Kashmir. Highest rainfall reported from, Rawalakot, Muzaffarabad & Garhi dopatta. Decadal maximum dropped below normal by 8.7°C & minimum raised above normal by 5.0°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 31%, 44.9hrs, 2.9km/hr and 1.3 mm/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)**

2(a) **Past Weather for Major Agricultural Plains** **(11th to 20th March, 2019)**

2.1 **RAMC, Rawalpindi (Potohar region)**

Rainfall reported as 27.8 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 67.5%. Mean day temperature was 21.4 °C while night temperature recorded as 7.4°C with 49.3 hours bright sunshine duration. Wind speed recorded as 2.4 km/hr with mean wind direction *Westerly*.

2.2 **RAMC, Faisalabad (Central Punjab)**

Rainfall reported as 30.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 25.6°C while night temperature recorded as 10°C with 67.9hours bright sunshine duration. Wind speed recorded as 2.4 km/hr with mean wind direction *westerly*.

Wheat: *Very good condition, Flowering.*

2.3 **RAMC, Tandojam (Lower Sindh)**

Dry weather reported during the decade; however weather remained cloudy for 04 day during the decade. Average relative humidity recorded as 47%. Mean day temperature was 30.2°C while night temperature recorded as 13.3°C with 94.8 hours bright sunshine duration. Wind speed recorded as 4.6 km/h with mean wind direction *Northerly*.

Wheat: *Crop is harvested on 17-03-2019.*

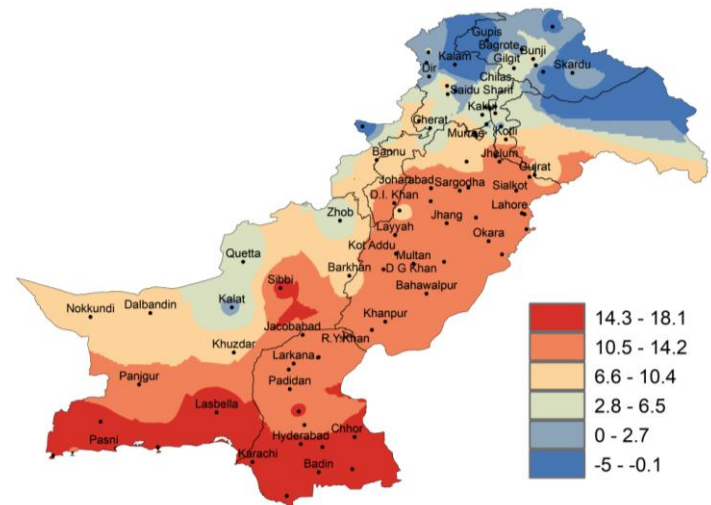
2.4 **RAMC, Usta Muhammad (Eastern Baluchistan)**

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 25.6°C while night temperature recorded as 12.5°C. Wind speed recorded as 2.7 km/h with mean wind direction *North easterly*.

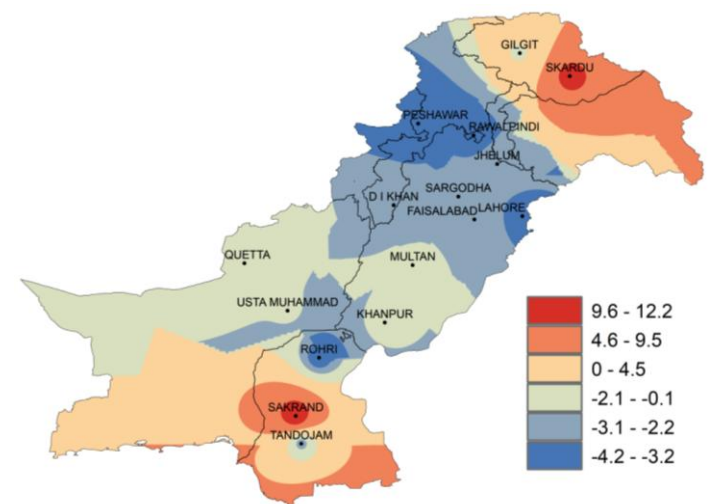
Wheat: *Good condition, Shooting stage.*

2.5 **RAMC, Quetta (Northern Baluchistan)**

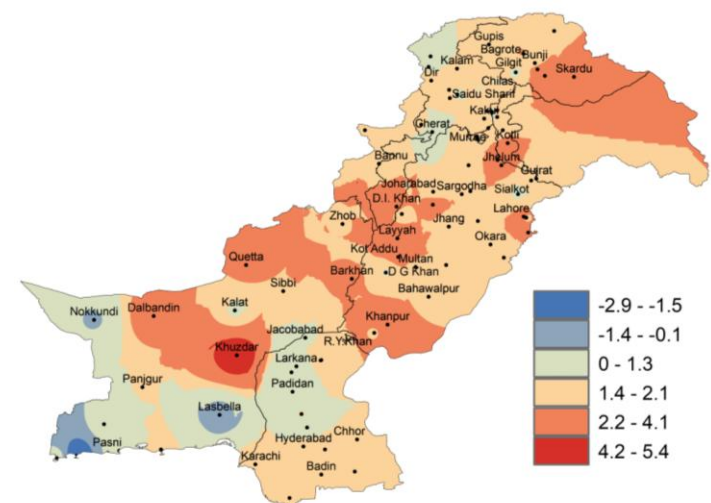
Rainfall reported as 3.5 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 14.1°C while night temperature recorded as 4.8°C with 75.9hours bright sunshine duration. Wind speed recorded as 5.6km/hr with 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 (11th to 20th March, 2019)

2.6 Jhelum

Rainfall reported as 27.9 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 24.6°C while night temperature recorded as 11.6°C with 66.1 hours bright sunshine duration. Wind speed recorded as 4.2km/hr with mean wind direction *South westerly*.

2.7 Lahore

Rainfall reported as 8.7 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 25.6 °C while night temperature recorded as 23.8°C with 69.7 hours bright sunshine duration. Wind speed recorded as 2.5 km/hr with mean wind direction *Westerly*.

2.8 Sargodha

Rainfall reported as 6.7 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 25.6°C while night temperature recorded as 12.7°C with 67.5 hours bright sunshine duration. Wind speed recorded 1.9 km/hr with mean wind direction *Easterly*.

2.9 Multan

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 24.9°C while night temperature recorded as 13.4°C with 49.9 hours bright sunshine duration. Wind speed recorded 5.0km/hr with mean wind direction *North easterly*.

2.10 Khanpur

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 26.4 °C while night temperature recorded as 13.5°C with 72.7 hours bright sunshine duration. Wind speed recorded 4.8 km/hr with mean wind direction *North easterly*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 04 days during the decade. Average humidity recorded as 48%. Mean day temperature was 27.1°C while night temperature recorded as 13.4°C with 102.5 hours bright sunshine duration. Wind speed recorded 2.7km/hr with wind direction *Northerly*.

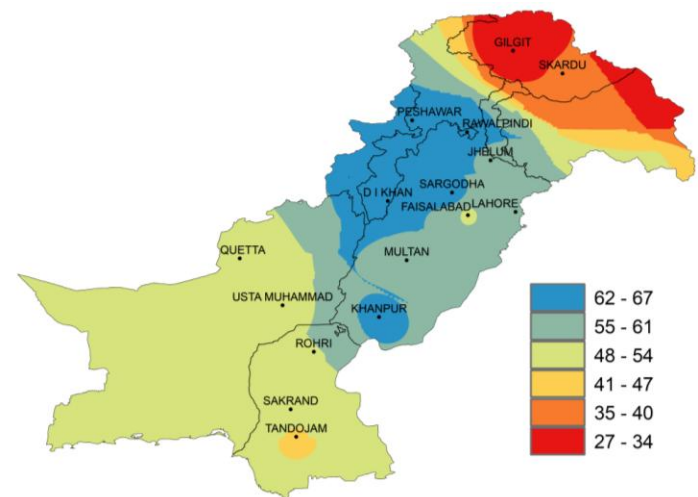


Figure.3: Relative Humidity in Percentage (%)

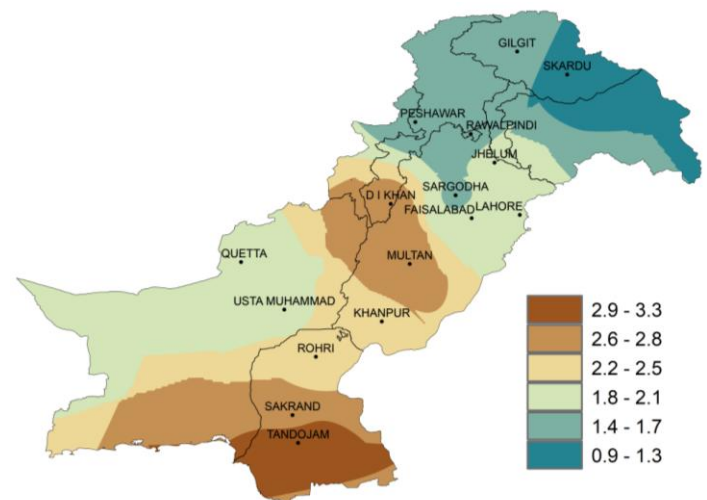


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

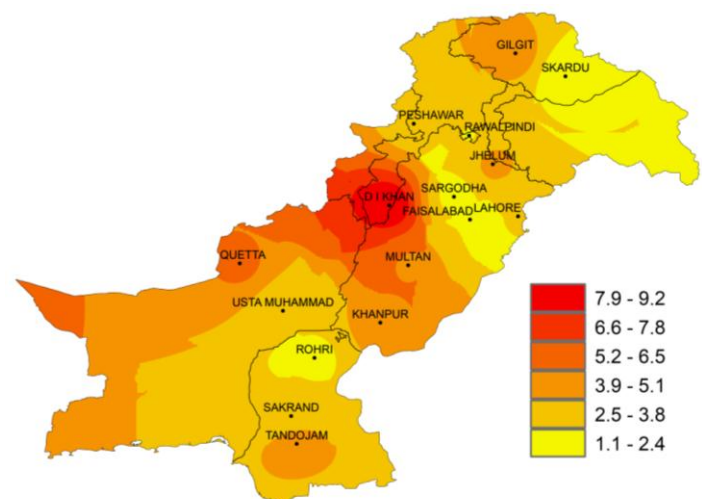


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 27.3°C while night temperature recorded as 14.5°C with 91.0 hours bright sunshine duration. Wind speed recorded 2.1 km/hr with wind direction *North easterly*.

2.13 D.I. Khan

Rainfall reported as 5.0 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 24.5°C while night temperature recorded as 11.7°C with 79.1 hours bright sunshine duration. Wind speed recorded as 9.2 km/hr with mean wind direction *Easterly*.

2.14 Peshawar

Rainfall reported as 68.4 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 63%. Mean day temperature was 21.8°C while night temperature recorded as 9.6°C with 39.1 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *North westerly*.

2.15 Skardu

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 56%. Mean day temperature was 11.4°C while night temperature recorded as 0.1 °C with 48.3 hours bright sunshine duration. Wind speed recorded as 2.0 km/hr with mean wind direction *South Easterly*.

2.16 Gilgit

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 17.6°C while night temperature recorded as 5.5 °C with 41.45 hours bright sunshine duration. Wind speed recorded as 4.4 km/hr with mean wind direction *Westerly*.

Ten Days Weather Advisory for Farmers (21st to 31th March, 2019)

3.1 Temperature Forecast

Both day and night temperatures are likely to be below normal in most of the agricultural 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 however strong winds is expected in Baluchistan, Sindh and southern Punjab during the start of the decade.

3.3 Rain Forecast

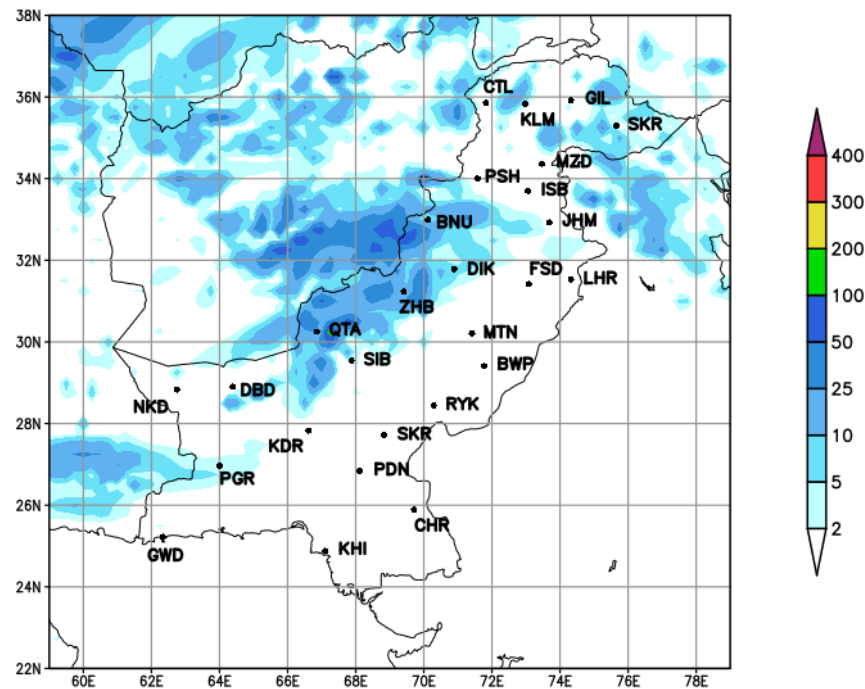
- ❖ **Punjab:** Mainly cold and dry weather is expected in the province during the decade.
- ❖ **Khyber Pakhtunkhwa:** Mainly cloudy/dry weather is expected. However, rain/thunderstorm is expected at isolated places in Kohat, Bannu and D.I.Khan division on 22nd and 23rd March of the current decade.
- ❖ **Sindh:** Mainly cold and dry weather is expected in the province during the decade.
- ❖ **Baluchistan:** Mainly cloudy/dry weather is expected. However, rain/thunderstorm is expected at isolated places in Quetta, Zhob, Kalat and Makran division during the first half of the current decade.
- ❖ **Gilgit-Baltistan:** Mainly cold and dry weather is expected in the province during the decade.
- ❖ **Kashmir:** Mainly cloudy/dry weather is expected. However, rain/thunderstorm is expected at isolated places on 23rd March of 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.

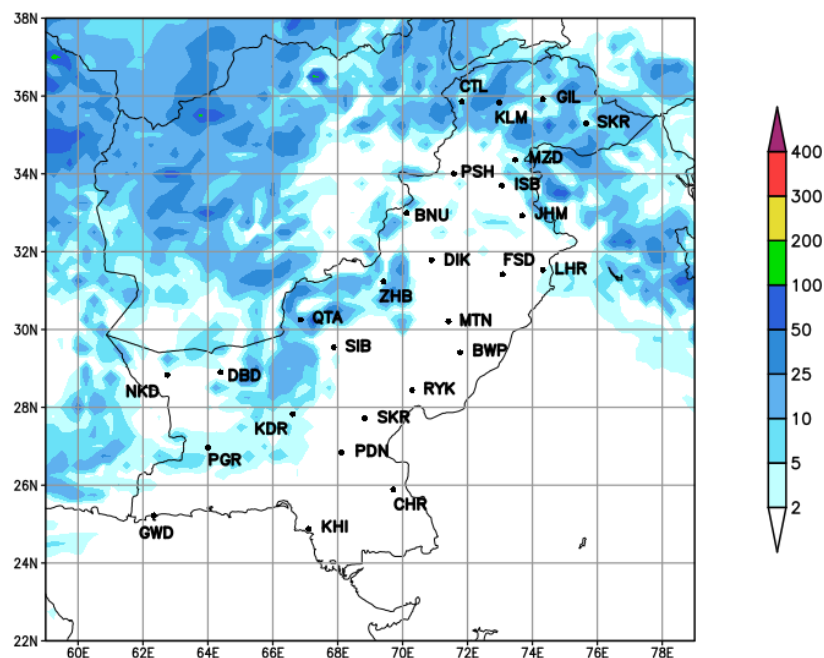
4.1 Precipitation Outlook (21st to 23rd March, 2019)

The forecast for the first three days (21st to 23rd) of the 3rd decade of March, 2019 shows that light to moderate rainfall is expected at isolated places in GB, Kashmir, lower KP, northern Balochistan. Cold and dry weather may prevail in rest of the country.



4.2 Precipitation Outlook (24th to 31st March, 2019)

The forecast for the last eight days (24th to 31st) of the 3rd decade of March, 2019 shows that light to moderate rainfall is expected at scattered places in GB, Kashmir, upper KP, central & northern Balochistan. However, cold/dry weather may prevail in rest of the country.



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)