Decadal Agromet Bulletin of Pakistan

Highlights…

- Light to moderate rainfall reported from Khyber Pakhtunkhwa, Punjab, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Sindh and Baluchistan was observed during the last decade.
- Highest amount of rainfall recorded as 80.0 mm at Parachinar during the last decade.
- Highest maximum temperature recorded as 45.0°C at Jacobabad & Shaheed Beinazerabad during the last decade.
- Mainly hot and dry weather is expected in most parts of the country. However dust-thunderstorm/rain is expected at scattered places in Khyber Pakhtunkhwa, Punjab (Bahawalpur, Multan, D.G.Khan, Sahiwal, Sargodha, Faisalabad, Lahore, Gujranwala, Rawalpindi divisions), Islamabad and Kashmir, while at isolated places in Baluchistan (Quetta, Kalat, Zhob divisions) and Gilgit Baltistan
- Measures may be taken to preserve the standing crops/orchids from the damaging impacts of extreme weather conditions like thunder/dust storm, gusty winds, hails etc in particular areas.
- The fields got fallow after the harvesting of wheat may be deeply ploughed and leave empty for a few weeks.
- The farmers of lower half may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.
- Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.

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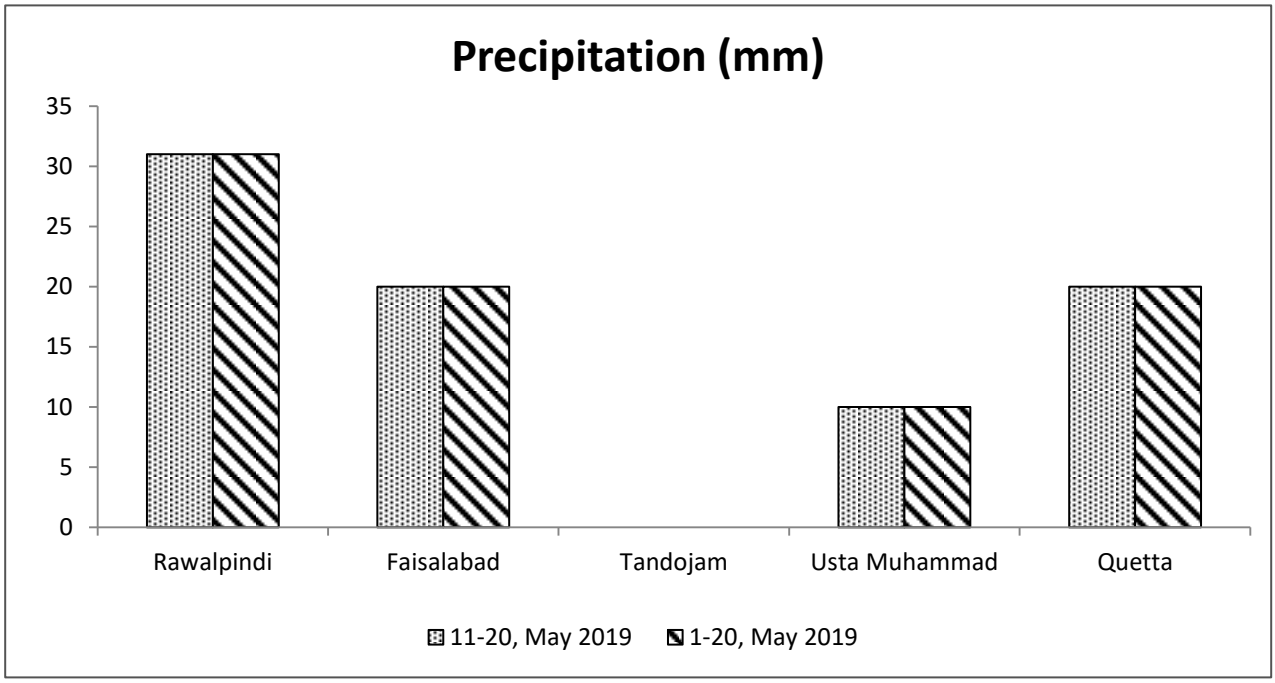
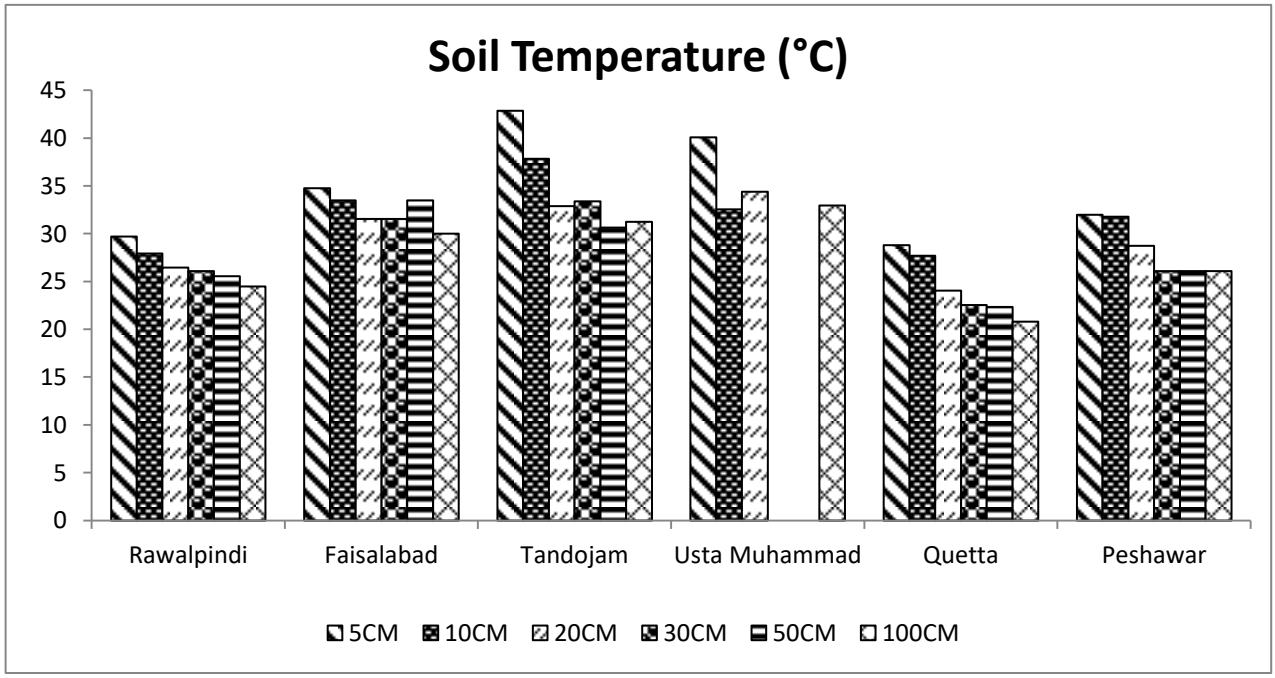
Meteorological Conditions during 2nd Decade of May, 2019

Sr. No.	Station	Precipitation (mm)			Air Temperature (°C)			Soil Temperatures (°C)						R.H (%)	Sunshine Duration(hours)	Wind Speed (km/hr)	ETo (mm/day)
		Normal	Actual	Dep	Tmax Dep	Tmin Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	1.5	31.0	29.5	-3.1	-3.2	26.3	29.7	28.0	26.5	26.1	25.6	24.5	47	79.0	2.6	4.7
2	Faisalabad	0.2	20.0	19.8	-5.7	-2.4	29.1	34.8	33.5	31.6	31.6	33.5	30.0	47	75.0	3.2	5.1
3	Jhelum	0.9	9.6	8.7	-4.0	-2.4	29.2	35.1	33.0	30.3	28.9	28.8	***	43	77.3	3.6	5.3
4	Lahore	0.2	6.1	5.9	-5.1	-3.0	29.2	31.3	30.8	29.3	28.4	***	27.0	47	58.4	1.9	4.2
5	Sargodha	0.6	10.6	10.0	-5.6	-2.3	29.8	36.7	34.0	30.6	29.8	***	26.8	53	78.2	2.2	4.9
6	Multan	0.0	7.9	7.9	-6.9	-2.5	30.3	***	***	***	***	***	***	44	74.5	7.2	6.4
7	Khanpur	0.0	12.6	12.6	-3.7	-1.6	31.6	***	34.7	34.7	34.7	34.7	32.8	46	81.3	6.2	6.4
8	Tandojam	0.0	0.0	0.0	-2.0	-0.3	32.4	42.9	37.9	32.9	33.4	30.7	31.3	53	102.1	11.4	8.2
9	Sakrand ☆	0.0	6.0	6.0	-3.5	-2.2	32.4	50.6	***	***	***	***	32.7	39	101.8	6.7	7.6
11	Rohri ☆	0.0	0.0	0.0	-5.2	-11.4	28.6	***	***	***	***	***	***	46	88.4	3.8	5.9
12	D.I Khan	0.4	22.0	21.6	-3.9	-2.2	29.7	33.4	29.2	29.4	29.0	18.2	***	54	84.4	11.5	5.1
13	Peshawar	0.4	28.0	27.6	-3.7	-2.7	27.8	32.0	31.8	28.8	26.1	26.1	26.1	50	63.8	3.7	4.8
14	Usta M.	0.0	10.0	10.0	-10.0	-1.7	31.0	40.1	32.6	34.4	***	***	33.0	39	***	4.4	5.6
15	Quetta	0.1	20.0	19.9	-5.0	-1.6	20.7	28.8	27.7	24.1	22.6	22.4	20.8	35	82.3	5.9	5.3
16	Skardu	0.3	0.4	0.1	-2.7	14.1	24.1	***	***	***	***	***	***	35	63.0	7.1	4.8
17	Gilgit	0.2	4.80	4.6	-4.6	1.7	21.1	***	***	***	***	***	***	43	60.8	3.6	4.3

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. **ETo** 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 May, 2019





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

Light to moderate rainfall reported from Khyber Pakhtunkhwa, Punjab, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Sindh and Baluchistan was observed during the last decade.

1.1 Punjab

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from D.G Khan, Murree & Kamra. Decadal maximum and minimum both dropped below the normal by 4.9°C & 2.5°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 47%, 74.8 hrs, 3.8km/hr and 5.3mm/day respectively.

1.2 Sindh

Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Jacobabad, Larkana & Dadu. Decadal maximum and minimum both dropped below the normal by 3.6°C & 4.6°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 46%, 97.4hrs, 7.3km/hr and 7.2mm/day respectively.

1.3 Khyber Pakhtunkhwa

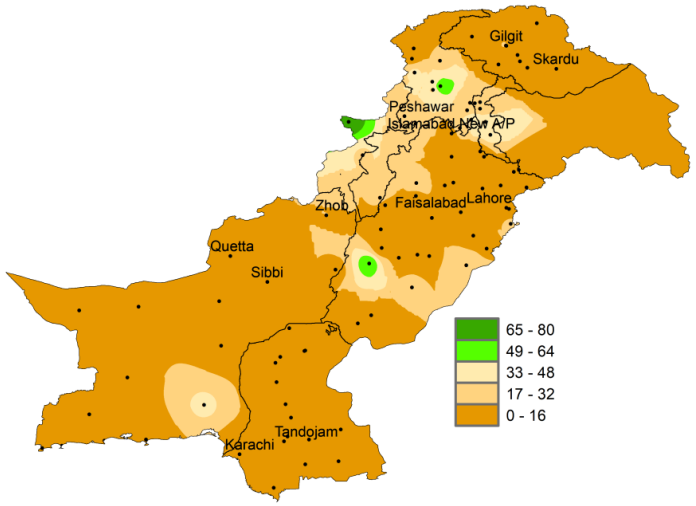
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Parachinar, Kohat, & Dir. Decadal maximum and minimum both dropped below the normal by 3.8°C & 2.5°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 52%, 74.1hrs, 7.6km/hr and 5.0mm/day respectively.

1.4 Baluchistan

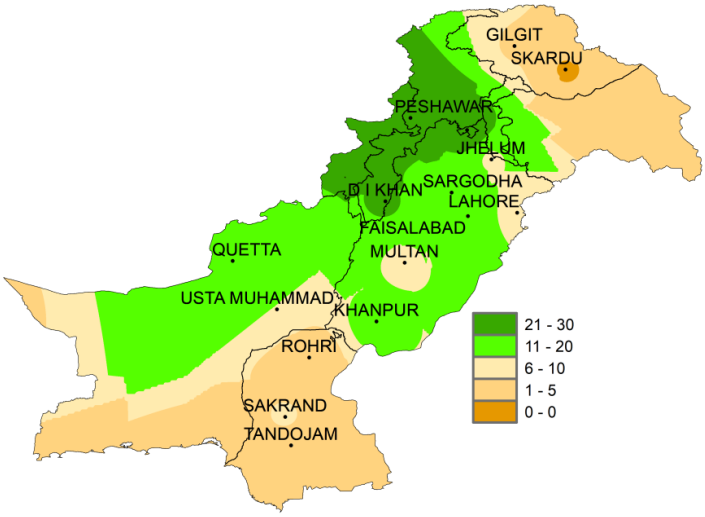
Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Lasbela & Zhob. Decadal maximum and minimum both dropped below the normal by 7.5°C & 1.7°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 37%, 82.3hrs, 5.2km/hr and 5.5mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

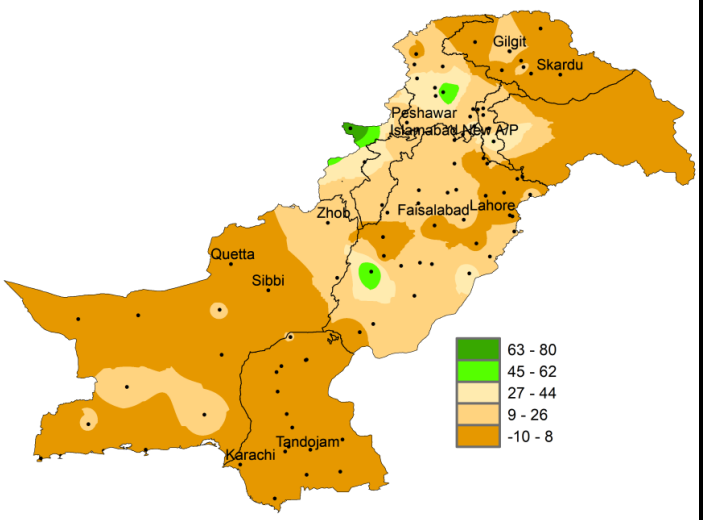
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kotli, Rawalakot & Bagrote. Decadal maximum dropped below the normal by 3.7°C & minimum raised above the normal by 7.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 39%, 61.9hrs, 5.4km/hr and 4.6mm/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 May, 2019)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 31.0mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 47%. Mean day temperature was 34.5°C while night temperature recorded as 18.0°C with 79.0hours bright sunshine duration. Wind speed recorded as 2.6km/hr with mean wind direction *Westerly.*

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 20.0mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 47%. Mean day temperature was 35.5°C while night temperature recorded as 22.6°C with 75.0 hours bright sunshine duration. Wind speed recorded as 3.2 km/hr with mean wind direction *Variable*.

2.3 RAMC, Tandojam (Lower Sindh)

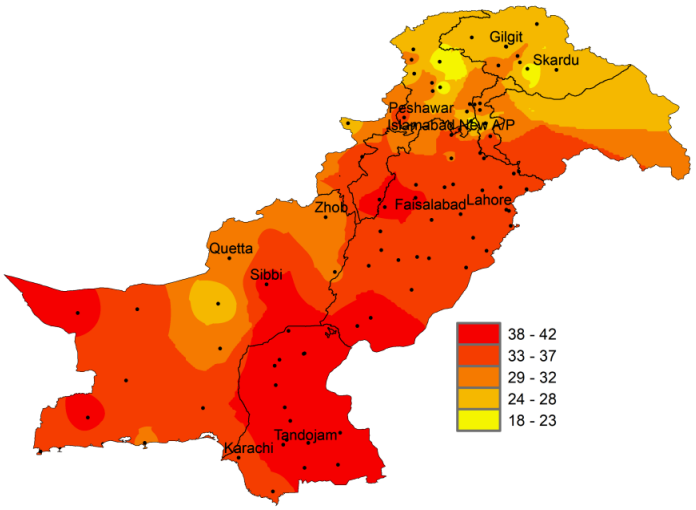
Dry weather reported during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 39.3°C while night temperature recorded as 25.4°C with 105.6 hours bright sunshine duration. Wind speed recorded as 11.4km/h with mean wind direction *South Westerly.*
Cotton: *Good Condition, 3rd True Leaf satge.*

2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

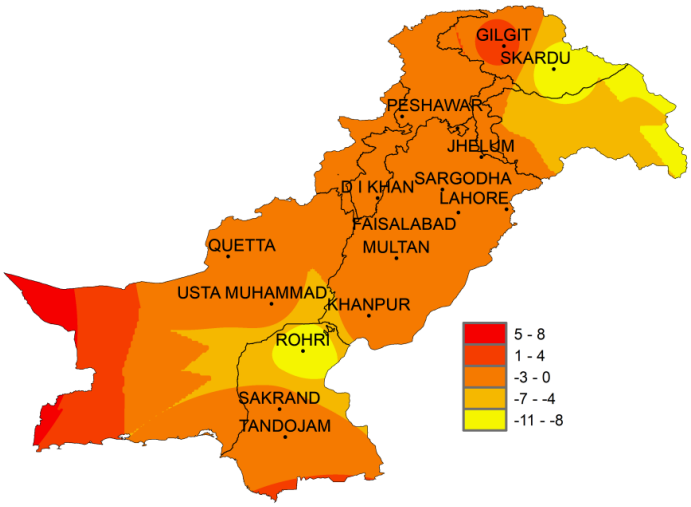
Rainfall reported as 10.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 39%. Mean day temperature was 36.3°C while night temperature recorded as 25.6°C & Wind speed recorded as 4.4km/h with mean wind direction *North easterly.*
Wheat: *Harvested.*

2.5 RAMC, Quetta (Northern Baluchistan)

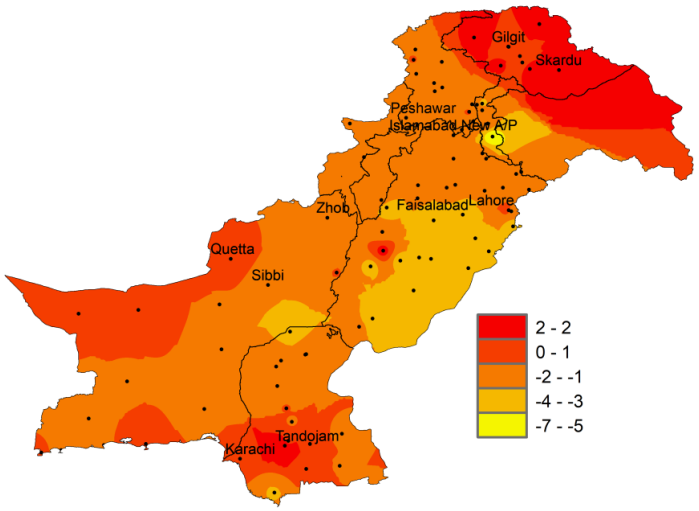
Rainfall reported as 20.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 27.5°C while night temperature recorded as 13.8°C with 82.3 hours bright sunshine duration. Wind speed recorded as 5.9 km/hr with mean wind direction *southerly.*



I. **Actual mix-temp**



II. **Departure of max-temp from Normal**



III. **Departure of mix-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 May, 2019)

2.6 Jhelum

Rainfall reported as 9.6 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 43%. Mean day temperature was 36.3°C while night temperature recorded as 22.1°C with 77.3 hours bright sunshine duration. Wind speed recorded as 3.6km/hr with mean wind direction *southerly.*

2.7 Lahore

Rainfall reported as 6.1 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 47%. Mean day temperature was 35.1°C while night temperature recorded as 23.2°C with 68.4 hours bright sunshine duration. Wind speed recorded as 1.9km/hr with mean wind direction *Westerly.*

2.8 Sargodha

Rainfall reported as 10.6 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 36.2°C while night temperature recorded as 23.3°C with 78.2 hours bright sunshine duration. Wind speed recorded 2.2 km/hr with mean wind direction *Variable.*

2.9 Multan

Rainfall reported as 7.9 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 44%. Mean day temperature was 36.0°C while night temperature recorded as 24.6°C with 74.5 hours bright sunshine duration. Wind speed recorded 7.2km/hr with mean wind direction *South Westerly*.

2.10 Khanpur

Rainfall reported as 12.6 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 38.4°C while night temperature recorded as 24.8°C with 81.3 hours bright sunshine duration. Wind speed recorded 6.2km/hr with mean wind direction *North easterly*.

2.11 Sakrand

Rainfall reported as 6.0 mm during the decade; however weather remained cleared throughout the decade .Average humidity recorded as 39%. Mean day temperature was 41.0°C while night temperature recorded as 23.7°C with 101.8 hours bright sunshine duration. Wind speed recorded 6.7km/hr with wind direction *southerly*.

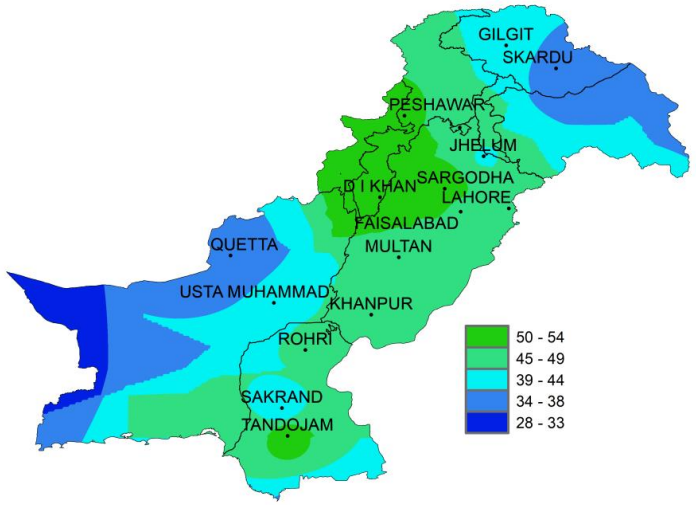


Figure.3: Relative Humidity in Percentage (%)

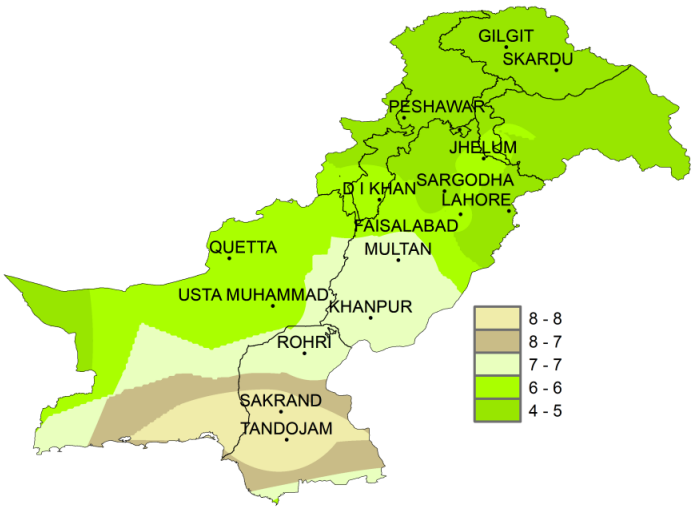


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

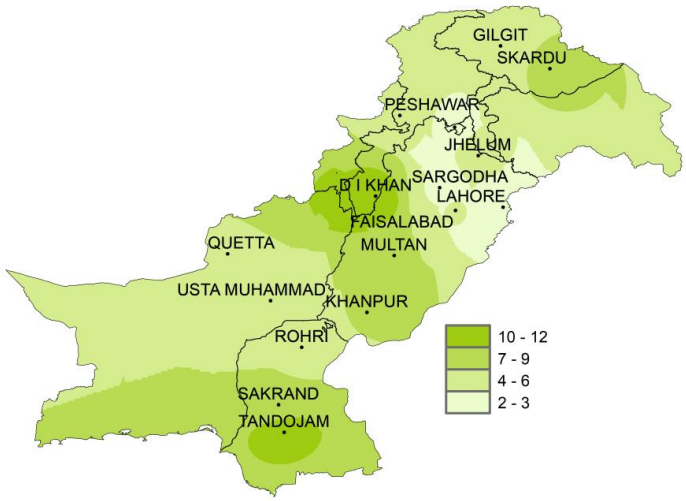


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 39.7°C while night temperature recorded as 17.5°C with 88.4 hours bright sunshine duration. Wind speed recorded 3.8km/hr with wind direction *North easterly.*

2.13 D.I. Khan

Rainfall reported as 22.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 37.3°C while night temperature recorded as 22.0°C with 84.4 hours bright sunshine duration. Wind speed recorded as 11.5km/hr with mean wind direction *South easterly.*

2.14 Peshawar

Rainfall reported as 28.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 34.6°C while night temperature recorded as 20.9°C with 63.8 hours bright sunshine duration. Wind speed recorded as 3.7km/hr with mean wind direction *North westerly.*

2.15 Skardu

Rainfall reported as 0.4 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 24.1ºC while night temperature recorded as 9.5ºC with 63.0 hours bright sunshine duration. Wind speed recorded as 7.1km/hr with mean wind direction *south Westerly.*

2.16 Gilgit

Rainfall reported as 5.7 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 43%. Mean day temperature was 28.5°C while night temperature recorded as 13.6°C with 60.8hours bright sunshine duration. Wind speed recorded as 3.6km/hr with mean wind direction *Easterly.*

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

3.1 Temperature Forecast

Both day and night temperatures are likely to be above 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 are expected in Baluchistan, Sindh and southern Punjab during the start of the decade.

3.3 Rain Forecast

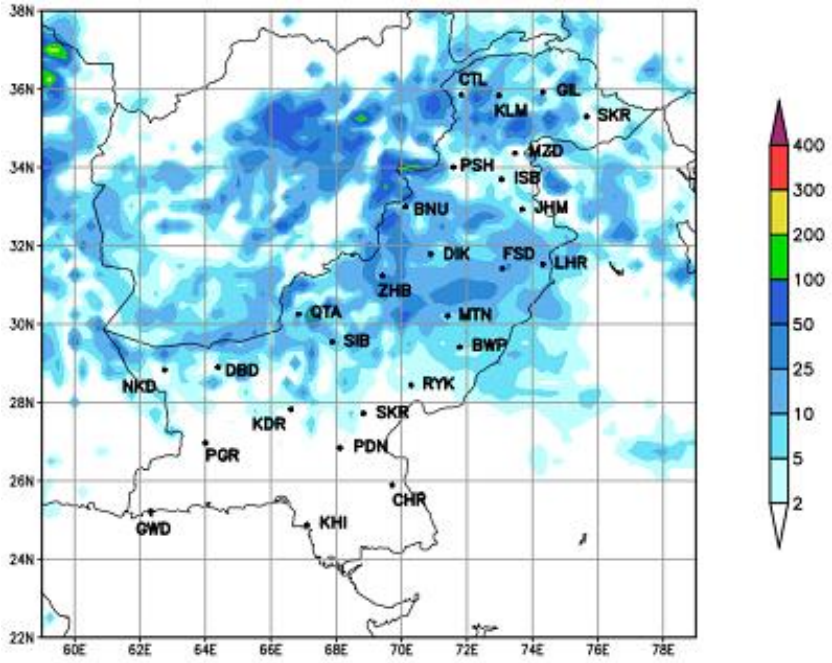
- **Punjab:** Light to moderate is expected in most parts of the province. However, rain/thunderstorm is expected at isolated places in Bahawalpur, Multan, D.G.Khan, Sahiwal, Sargodha, Faisalabad, Lahore, Gujranwala, Rawalpindi divisions and Islamabad during the first half of the current decade.
- **Khyber Pakhtunkhwa:** Rain/thunderstorm is expected at scattered places of Malakand, Hazara, Peshawar, Mardan, Kohat divisions during the first half of the current decade.
- **Sindh:** Mainly hot and dry weather is expected during the current decade.
- **Baluchistan:** Mainly dry weather is expected. However, rain/thunderstorm is expected at isolated places of Quetta, Kalat and Zhob divisions during the first half of the current decade.
- **Gilgit-Baltistan:** Rain/thunderstorm is expected at scattered places in the province during the first half of the current decade.
- **Kashmir:** Rain/thunderstorm is expected at scattered places in the province during the first half of the current decade.

3.4 Advisory for Farmers

- Measures may be taken to preserve the standing crops/orchids from the damaging impacts of extreme weather conditions like thunder/dust storm, gusty winds, hails etc in particular areas.
- The fields got fallow after the harvesting of wheat may be deeply ploughed and leave empty for a few weeks.
- The farmers of lower half may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.
- Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.

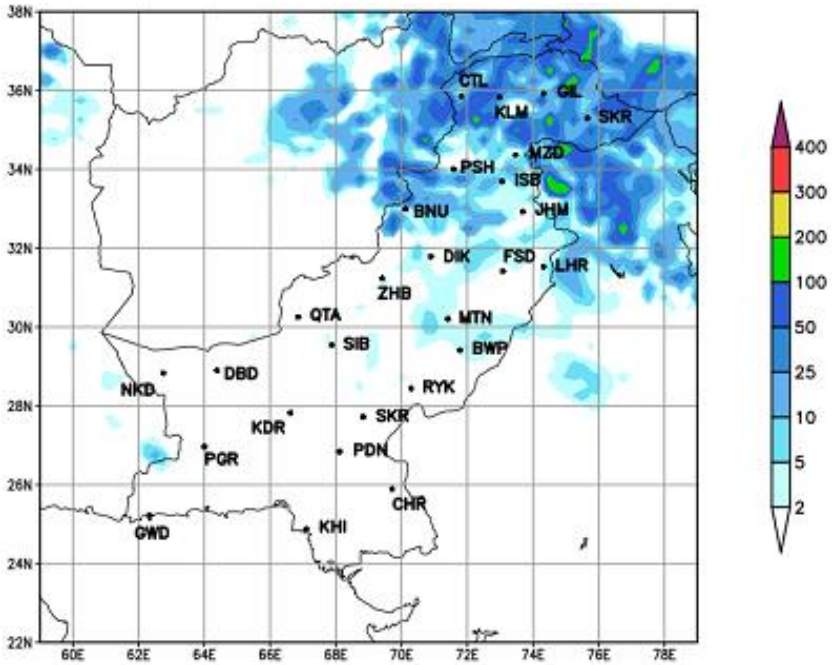
4.1 Precipitation Outlook (21st to 23rd May, 2019)

The forecast for the first three days (21st to 23rd) of the 3rd decade of May, 2019 shows that light to moderate rainfall is expected in GB, KP, Kashmir, Punjab and Baluchistan. However, dry weather is expected in Sindh.



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

The forecast for the last Eight days (24th to 31st) of the 3rd decade of May, 2019 shows that light to moderate rainfall is expected in GB, KP, Kashmir, Potohar region and isolated areas of Punjab. However, hot and dry weather is expected elsewhere in 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 ہوسکتا 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 ہوسکتی 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 سدِّ باب (بذریعہ نئی ٹیکنالوجی کا استعمال اور بہتر نظم ونسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2012-2014)