Decadal Agromet Bulletin of Pakistan

Highlights…

- Light to moderate rainfall reported from Khyber Pakhtunkhwa, Punjab, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Sindh during the last decade.
- Highest amount of rainfall recorded as 80.0 mm at Kotli during the last decade.
- Highest maximum temperature recorded as 50.0°C at Jacobabad during the last decade.
- Mainly hot and dry weather is expected in most parts of the country. However dust-thunderstorm/rain is expected at isolated places in Khyber Pakhtunkhwa, Punjab (Rawalpindi, Sargodha, Gujranwala, Lahore divisions and Islamabad), Kashmir and Gilgit Baltistan. Very hot and dry weather is expected in Sindh and Baluchistan.
- 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. 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.
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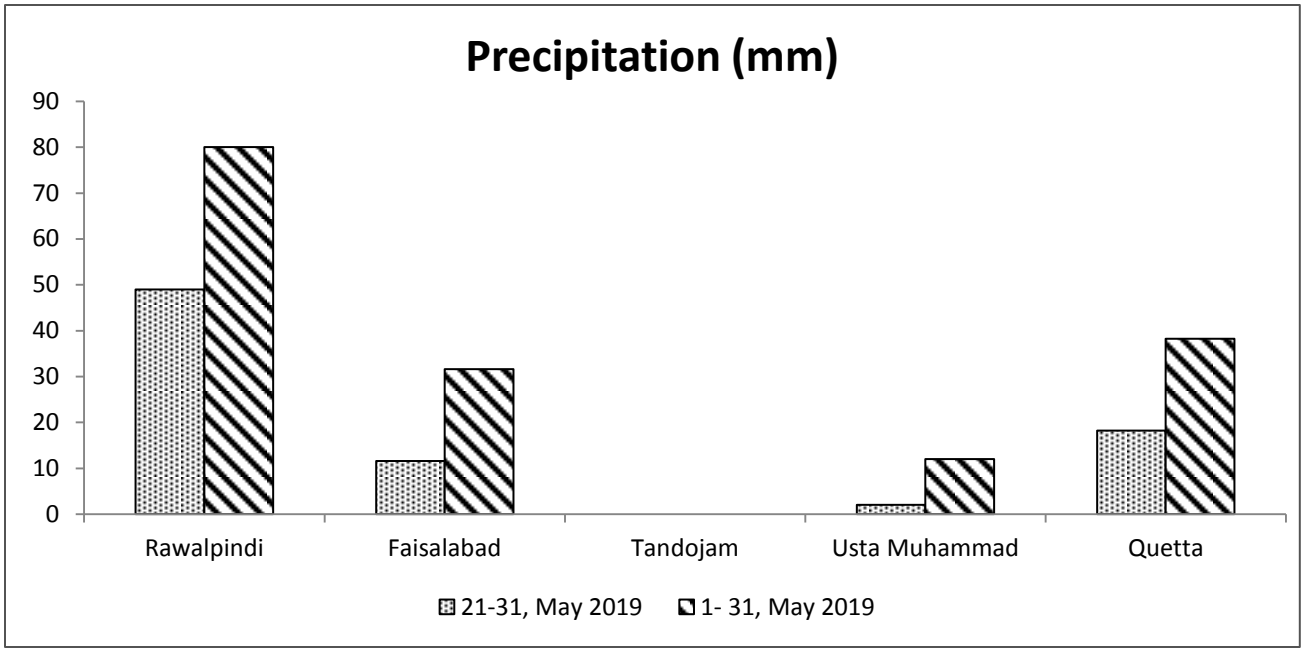
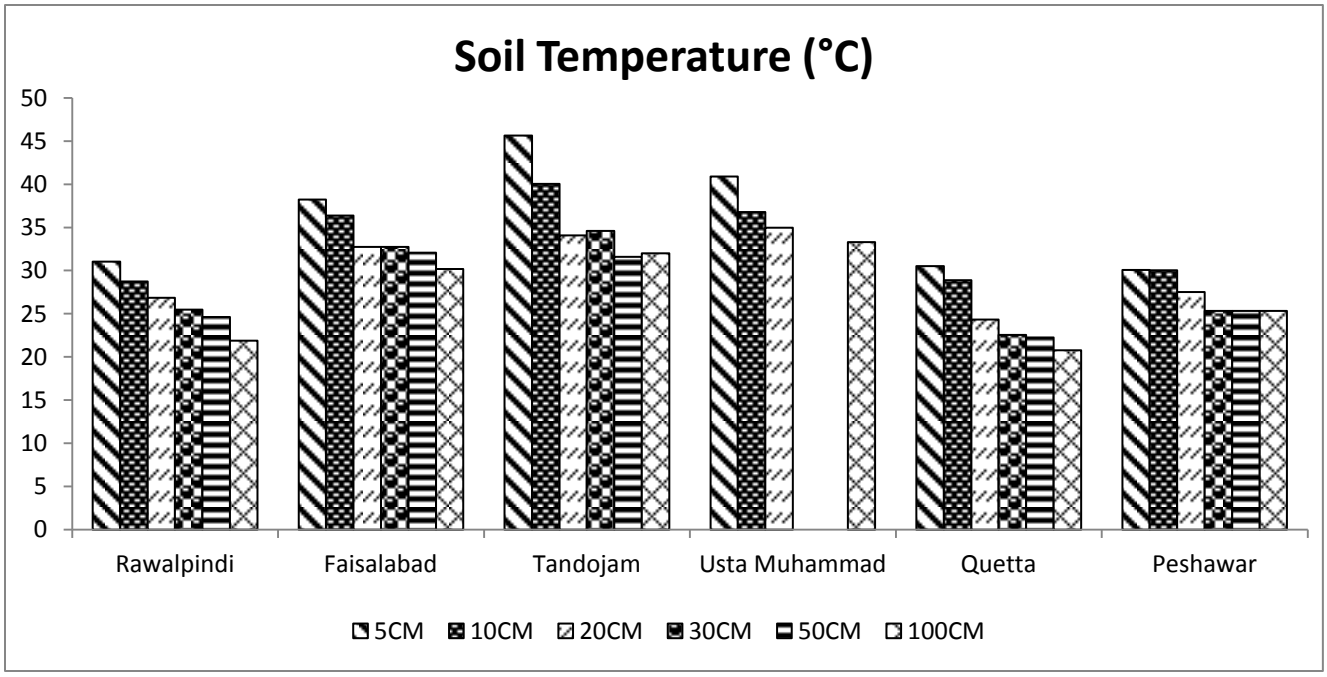
Meteorological Conditions during 3rd Decade of May, 2019

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	0.6	49.0	48.4	-1.5	18	-3.3	31.1	28.8	26.9	25.5	24.7	21.9	46	109.7	1.5	5.3
2	Faisalabad	0.8	11.6	10.8	0.3	23	-1.3	38.3	36.4	32.8	32.8	32.1	30.2	35	125.8	2.7	6.3
3	Jhelum	0.8	16.1	15.3	0.7	22	-3.0	38.1	35.8	32.2	30.4	30.1	***	31	123.6	4.0	6.8
4	Lahore	1.3	17.0	15.7	0.1	25	-1.3	35.0	33.3	31.0	29.7	***	28.0	36	100.4	2.2	5.6
5	Sargodha	2.1	36.6	34.5	-0.7	25	-0.6	39.2	36.4	32.0	30.6	***	27.2	44	116.4	1.6	7.5
6	Multan	0.5	1.0	0.5	-0.9	27	0.3	***	***	***	***	***	***	33	96.0	6.4	7.5
7	Khanpur	0.0	1.0	1.0	-0.1	26	-0.9	***	36.5	35.9	35.5	35.3	33.0	41	117.6	4.8	7.3
8	Tandojam	0.0	0.0	0.0	0.9	26	0.0	45.7	40.1	34.1	34.6	31.6	32.0	53	109.2	10.1	8.4
9	Sakrand ☆	0.0	18.0	18.0	-3.1	27	-0.1	50.3	***	***	***	***	33.2	40	126.8	4.7	7.5
11	Rohri ☆	0.0	0.0	0.0	-0.4	***	***	***	***	***	***	***	***	34	123.2	3.2	7.1
12	D.I Khan	0.3	2.0	1.7	0.4	24	-0.8	35.6	29.2	30.8	30.4	19.3	***	39	112.5	8.5	8.4
13	Peshawar	0.4	7.5	7.1	-0.8	19	-4.9	30.1	30.1	27.6	25.4	25.4	25.4	45	85.5	1.9	4.3
14	Usta M.	0.0	2.0	2.0	-3.1	27	-2.2	40.9	36.8	35.0	***	***	33.3	36	***	3.0	6.8
15	Quetta	0.3	18.2	17.9	-3.9	17	0.6	30.6	28.9	24.4	22.6	22.3	20.8	30	106.2	5.2	5.8
16	Skardu	0.4	0.0	-0.4	-1.1	25	14.4	***	***	***	***	***	***	35	84.2	6.2	5.0
17	Gilgit	1.1	0.00	-1.1	***	0.0	***	***	***	***	***	***	***	43	0.0	0.0	***

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. **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 (21st to 31st May, 2019)

Light to moderate rainfall reported from Khyber Pakhtunkhwa, Punjab, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Sindh 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 Islamabad old airport, Sargodha airport & Mangla. Decadal maximum and minimum both dropped below the normal by 3.0°C & 1.4°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 38%, 112.8 hrs, 3.3km/hr and 6.6mm/day respectively.

1.2 Sindh

Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Jacobabad, Larkana, Padidan & Jacobabad. Decadal maximum and minimum both dropped below the normal by 0.9°C & 0.5°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 42%, 1197.4hrs, 6.0km/hr and 7.7mm/day respectively.

1.3 Khyber Pakhtunkhwa

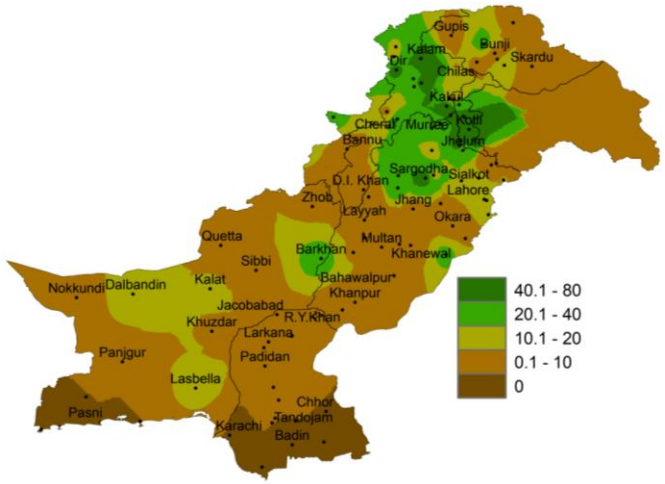
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kakul, Kalam, & Malam Jabba. Decadal maximum and minimum both dropped below the normal by 0.2°C & 2.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 42%, 99.0hrs, 5.2km/hr and 6.4mm/day respectively.

1.4 Baluchistan

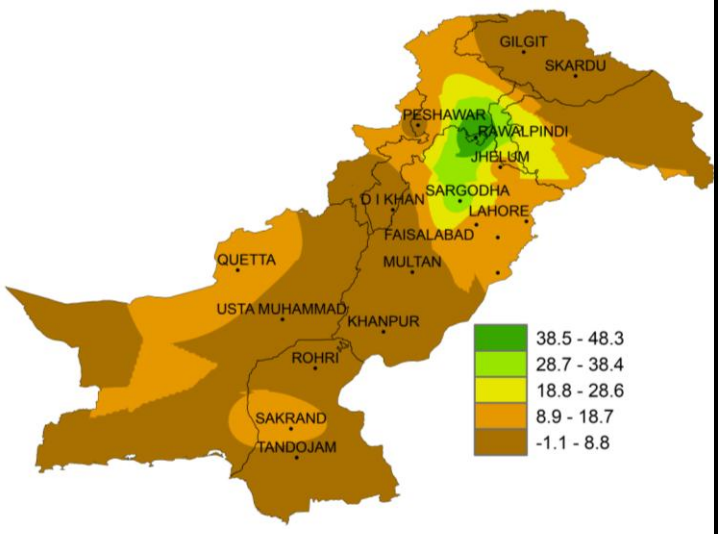
Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Lasbela, Barkhan & Dalbandin. Decadal maximum and minimum both dropped below the normal by 3.5°C & 0.8°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 33%, 106.2hrs, 4.1km/hr and 6.3mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

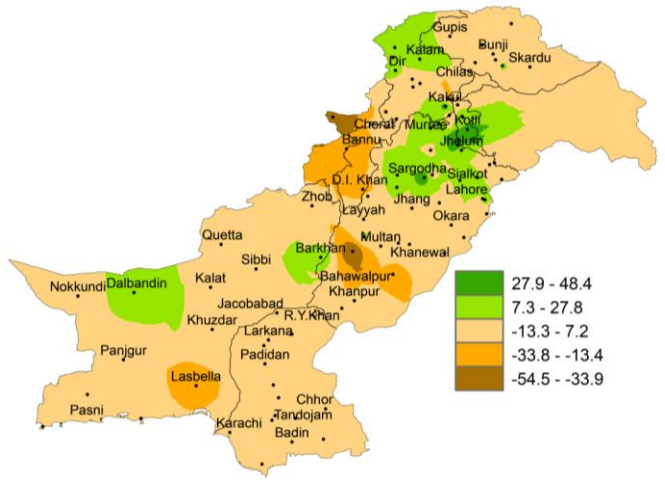
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kotli, Rawalakot & Bagrote. Decadal maximum dropped below the normal by 0.6°C & minimum raised above the normal by 7.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 39%, 42.1hrs, 3.1km/hr and 5.0mm/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 (21st to 31st May, 2019)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 49.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 36.3°C while night temperature recorded as 18.2°C with 109.7hours bright sunshine duration. Wind speed recorded as 1.5km/hr with mean wind direction *Westerly.*

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 11.6 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 40.1°C while night temperature recorded as 23.3°C with 125.8hours bright sunshine duration. Wind speed recorded as 2.7km/hr with mean wind direction *southerly*.
Cotton: Very Good, 3rd True Leaf stage.

2.3 RAMC, Tandojam (Lower Sindh)

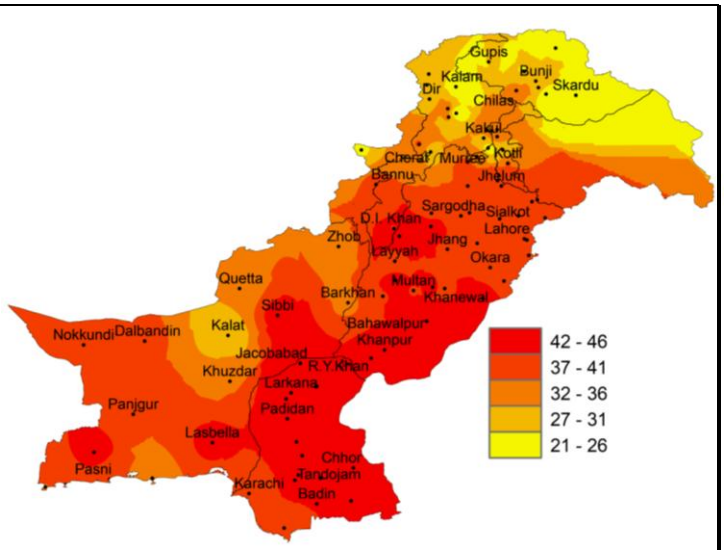
Dry weather reported during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 41.5°C while night temperature recorded as 26.1°C with 109.2 hours bright sunshine duration. Wind speed recorded as 10.1km/h with mean wind direction *South Westerly.*
Cotton: Good, 3rd True Leaf stage.

2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

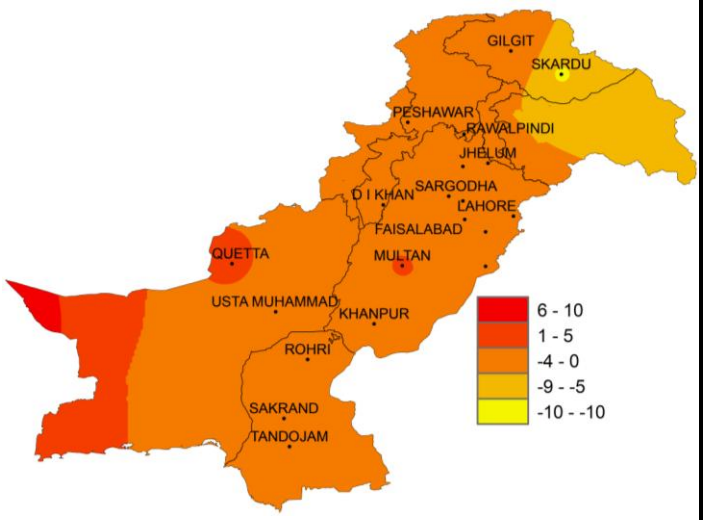
Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 36%. Mean day temperature was 44.7°C while night temperature recorded as 26.7°C & Wind speed recorded as 3.0km/h with mean wind direction *North easterly.*
Rice: Good, Paneri in process.

2.5 RAMC, Quetta (Northern Baluchistan)

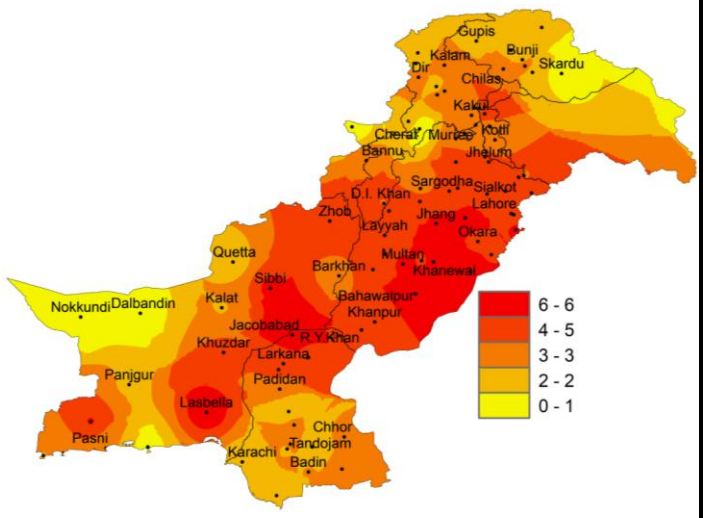
Rainfall reported as 18.2 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 30%. Mean day temperature was 28.5°C while night temperature recorded as 16.6°C with 106.2 hours bright sunshine duration. Wind speed recorded as 5.2 km/hr with mean wind direction *North easterly.*



I. Actual max-temp



II. Departure of max-temp from Normal



III. Departure of max-temp from Previous Decade

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

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

2.6 Jhelum

Rainfall reported as 16.1 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 31%. Mean day temperature was 40.2°C while night temperature recorded as 22.1°C with 123.6 hours bright sunshine duration. Wind speed recorded as 4.0km/hr with mean wind direction *North easterly*.

2.7 Lahore

Rainfall reported as 17.0 mm during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 36%. Mean day temperature was 39.2°C while night temperature recorded as 25.2°C with 100.4 hours bright sunshine duration. Wind speed recorded as 2.2km/hr with mean wind direction *Westerly*.

2.8 Sargodha

Rainfall reported as 36.6 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 44%. Mean day temperature was 39.4°C while night temperature recorded as 25.1°C with 116.4 hours bright sunshine duration. Wind speed recorded 1.6 km/hr with mean wind direction *Variable.*

2.9 Multan

Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 33%. Mean day temperature was 40.8°C while night temperature recorded as 27.1°C with 96.0 hours bright sunshine duration. Wind speed recorded 6.4km/hr with mean wind direction *Westerly*.

2.10 Khanpur

Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 41%. Mean day temperature was 42.3°C while night temperature recorded as 25.9°C with 117.6hours bright sunshine duration. Wind speed recorded 4.8km/hr with mean wind direction *Variable.*

2.11 Sakrand

Rainfall reported as 18.0 mm during the decade; however weather remained cleared throughout the decade .Average humidity recorded as 40%. Mean day temperature was 41.5°C while night temperature recorded as 26.5°C with 126.8 hours bright sunshine duration. Wind speed recorded 4.7km/hr with wind direction *south easterly*.

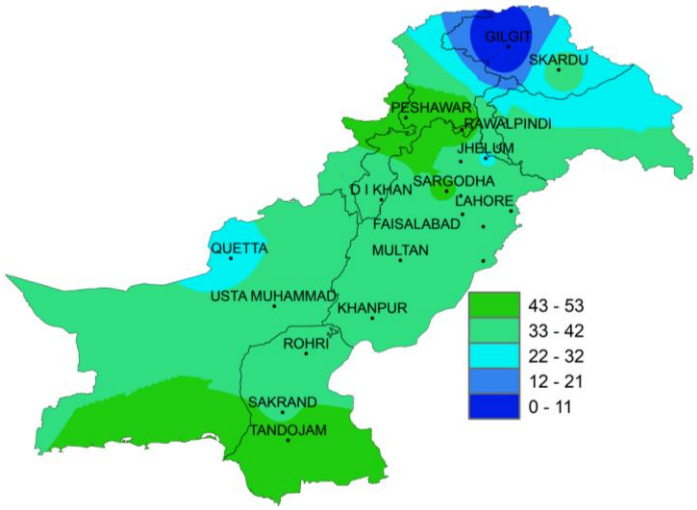


Figure.3: Relative Humidity in Percentage (%)

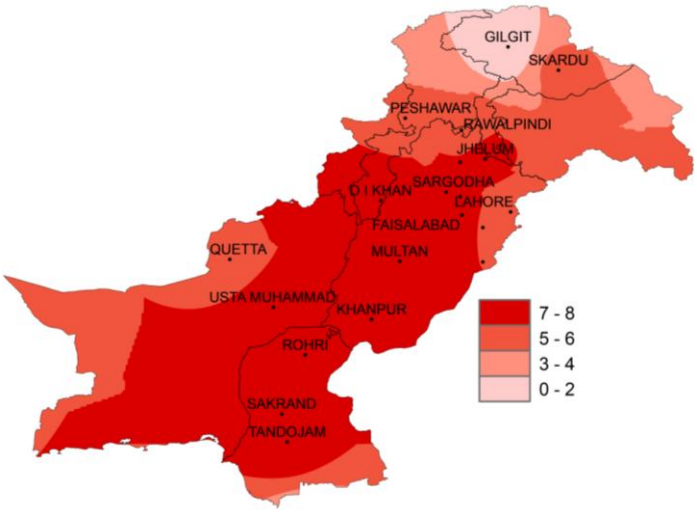


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

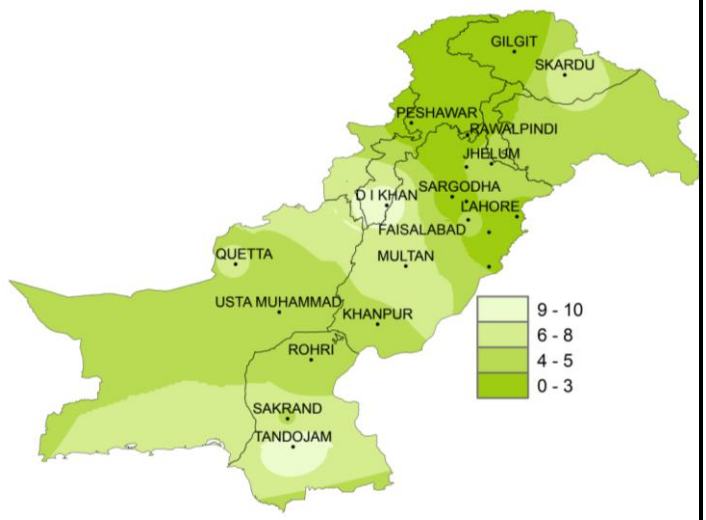


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 34%. Mean day temperature was 44.2°C while night temperature recorded as Nil with 123.2 hours bright sunshine duration. Wind speed recorded 3.2km/hr with wind direction *south easterly.*

2.13 D.I. Khan

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 39%. Mean day temperature was 40.7°C while night temperature recorded as 23.6°C with 79.4 hours bright sunshine duration. Wind speed recorded as 8.5km/hr with mean wind direction *easterly.*

2.14 Peshawar

Rainfall reported as 7.5 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 37.0°C while night temperature recorded as 19.1°C with 85.8 hours bright sunshine duration. Wind speed recorded as 1.9km/hr with mean wind direction *North westerly.*

2.15 Skardu

Rainfall reported as Trace (Not measurable) during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 24.6ºC while night temperature recorded as 9.0ºC with 84.2 hours bright sunshine duration. Wind speed recorded as 6.2km/hr with mean wind direction *south-south easterly.*

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.*

Eight Days Weather Advisory for Farmers (3rd to 10th June, 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

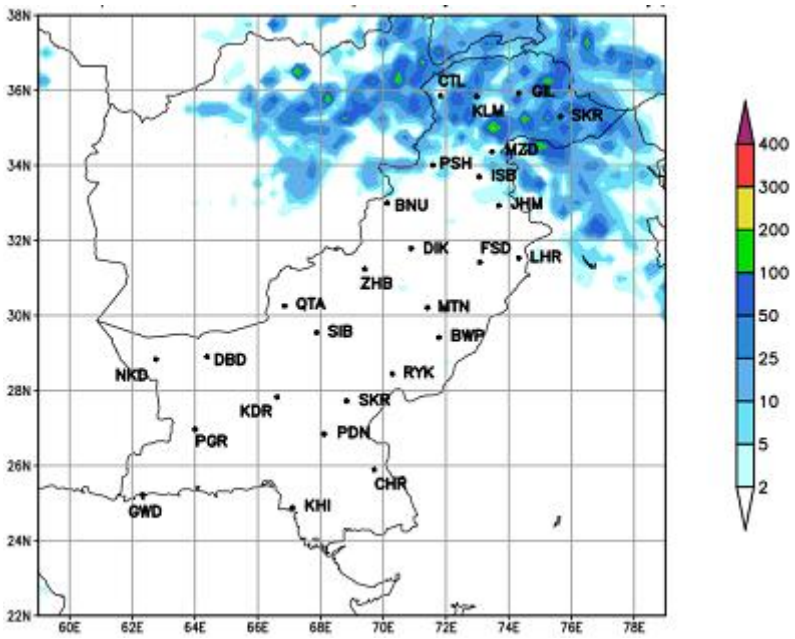
- **Punjab:** Mainly hot and dry weather is expected in central/southern Punjab. However, dust-thunderstorm / rain is expected at isolated places in Rawalpindi, Sargodha, Gujranwala, Lahore divisions and Islamabad during the first half of the current decade.
- **Khyber Pakhtunkhwa:** Dust-thunderstorm/rain is expected at isolated places of Malakand, Hazara, Peshawar, Mardan, Kohat divisions during the first half of the current decade.
- **Sindh:** Very hot and dry weather is expected during the current decade.
- **Baluchistan:** Very hot and dry weather is expected during the current decade.
- **Gilgit-Baltistan:** Dust-thunderstorm/rain is expected at scattered places in the province during the current decade.
- **Kashmir:** Dust-thunderstorm/rain is expected at isolated places in the province during the current decade.

3.4 Advisory for Farmers

- Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.
- 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.

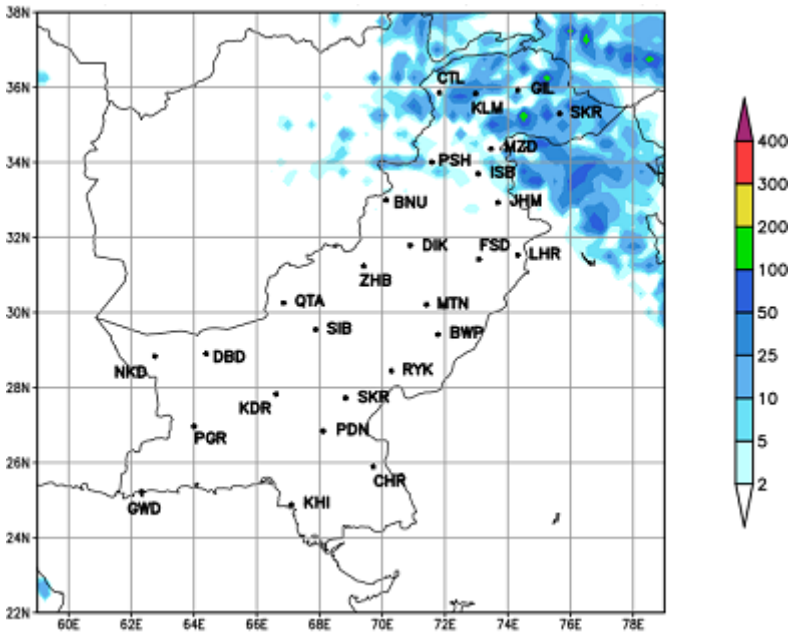
4.1 Precipitation Outlook (3rd to 5th June, 2019)

The forecast for the first three days (3rd to 5th) of the 1st decade of June, 2019 shows that light to moderate rainfall is expected in GB, upper KP, Kashmir and some areas of Potohar region in Punjab. However, dry weather is expected in rest of the country.



4.2 Precipitation Outlook (6th to 10th June, 2019)

The forecast for the last Five days (6th to 10th) of the 1st decade of June, 2019 shows that light to moderate rainfall is expected at scattered places in GB, upper KP, Kashmir and Potohar region 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)