Decadal Agromet Bulletin of Pakistan

Highlights…

❖ Heavy rainfall reported from Punjab whereas light to moderate rainfall reported from Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir. However, light rainfall reported from Sindh.

❖ Highest amount of rainfall recorded as 339.0 mm at Lukshmi during the last decade.

❖ Highest maximum temperature recorded as 47.0ºC at Nokhundi during the last decade.

❖ Dust-thundershower/rain accompanied by gusty winds is expected at scattered places in Kashmir, Islamabad, Rawalpindi, Gujranwala, Lahore divisions, isolated in Malakand, Hazara, Peshawar, Mardan, Sargodha divisions and Gilgit-Baltistan. Hot and humid weather is expected elsewhere in the country.

❖ The farmers 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 remove the weeds from the standing crops especially Peanut etc.

Meteorological Conditions during 2nd Decade of July, 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	Tmx Dep	Tmin Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	10.2	76.1	65.9	-1.4	1.2	29.7	31.1	30.6	29.8	29.5	29.6	29.2	68	65.6	3.7	4.8
2	Faisalabad	4.9	45.0	40.1	-1.7	-1.4	30.4	34.5	33.9	33.5	33.4	33.3	33.2	69	36.9	5.4	4.4
3	Jhelum	7.3	72.3	65.0	-2.1	-1.8	29.4	33.0	32.2	31.3	30.9	31.4	***	72	55.0	5.6	4.7
4	Lahore	7.2	217.3	210.1	-3.1	-3.3	28.1	32.0	31.9	31.0	30.7	***	28.2	81	48.1	2.9	3.9
5	Sargodha	4.0	71.1	67.1	-2.3	-2.3	30.6	37.3	35.5	33.7	33.2	***	31.2	72	45.8	4.6	4.4
6	Multan	1.4	0.0	-1.4	-1.0	0.1	33.6	***	***	***	***	***	***	58	51.7	8.3	6.0
7	Khanpur	0.6	2.1	1.5	0.2	0.1	34.5	***	40.0	39.8	39.8	39.5	37.5	58	78.6	7.8	6.8
8	Tandojam	1.6	0.0	-1.6	1.5	-0.6	31.7	42.4	39.4	36.4	35.9	33.3	34.2	60	94.8	17.9	8.4
9	Sakrand ☆	2.0	0.0	-2.0	1.8	1.3	34.4	45.6	***	***	***	***	36.4	47	99.3	11.9	8.8
11	Rohri ☆	0.2	0.0	-0.2	0.9	***	42.0	***	***	***	***	***	***	49	73.5	5.6	6.3
12	D.I Khan	1.8	6.0	4.2	0.9	0.2	32.8	36.4	35.2	0.0	34.3	23.0	***	63	63.3	11.2	6.6
13	Peshawar	1.4	12.7	11.3	-0.2	-1.9	31.0	39.7	0.0	0.0	33.4	32.3	28.8	61	67.7	4.0	5.2
14	Usta M.	0.0	10.0	10.0	-1.7	1.9	35.6	41.8	40.6	39.2	***	***	38.8	55	***	4.8	6.0
15	Quetta	0.2	9.2	9.0	-0.1	1.9	29.5	36.1	35.4	31.8	30.5	30.1	32.8	27	93.1	6.0	6.7
16	Skardu	0.3	0.0	-0.3	1.7	-0.8	24.4	***	***	***	***	***	***	32	86.7	4.6	5.7
17	Gilgit	0.3	0.0	-0.3	2.9	1.6	28.6	***	***	***	***	***	***	35	113.5	4.6	6.7

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. **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 July, 2019

Precipitation(mm)

☒ 11-20, July 2019   ☑ 1- 20, July 2019

Soil Temperature(°C)

⊞ 5CM   ◺ 10CM   ▦ 20CM   ⬤ 30CM   ▤ 50CM   ▧ 100CM
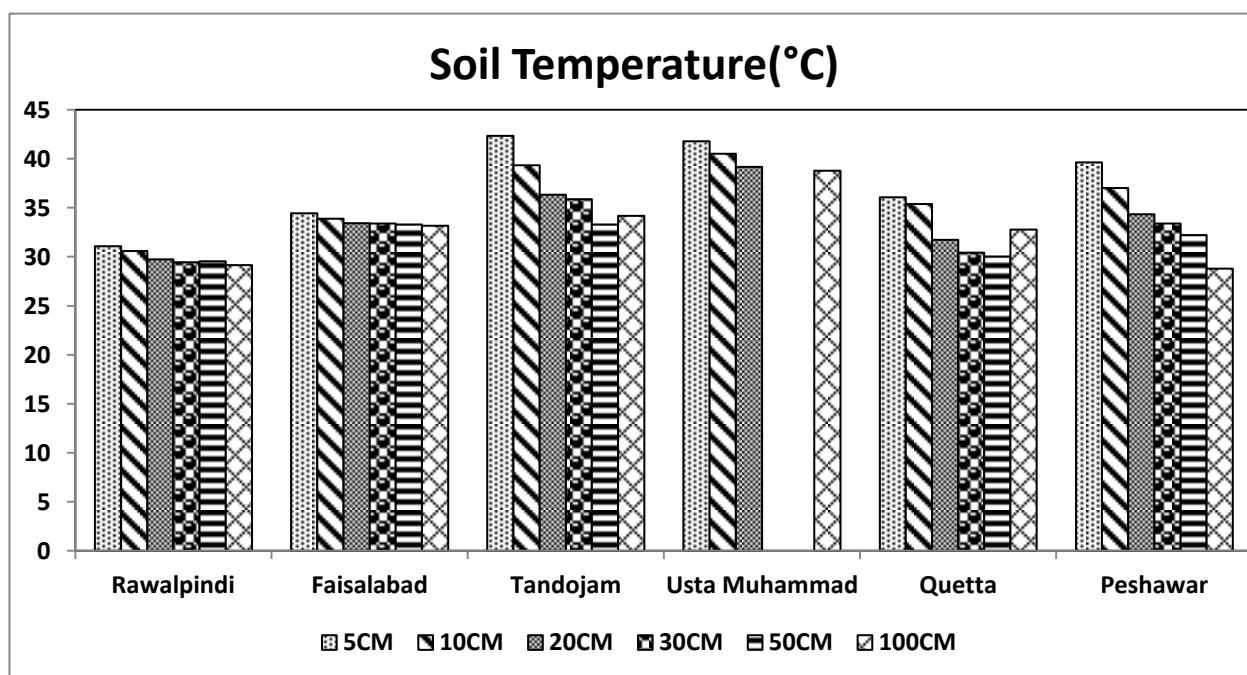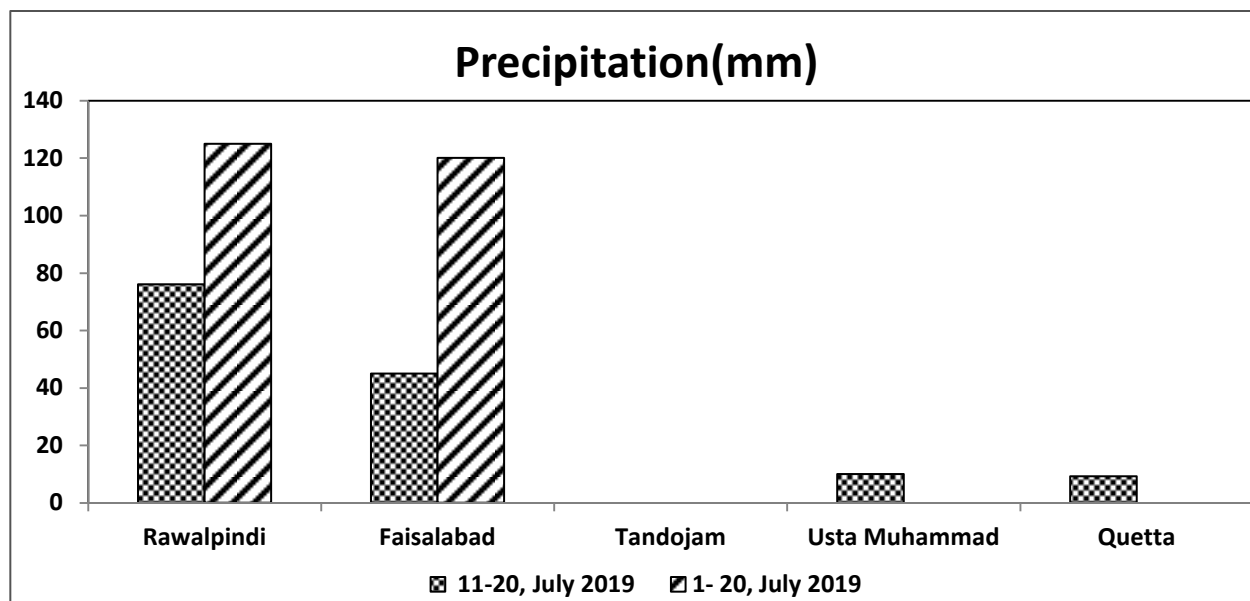
Past Weather (11ᵗʰ to 20ᵗʰ July, 2019)

Heavy rainfall reported from Punjab whereas light to moderate rainfall reported from Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir. However, light rainfall reported from Sindh.

1.1   Punjab

Heavy rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Lukshmi, Misri Shah, & Shahi Qilla. Decadal maximum & minimum both dropped below the normal by 1.6°C & 1.1°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 68%, 54.5 hrs, 5.5 km/hr and 5.0 mm/day respectively.

1.2   Sindh

Light rainfall reported from few of the agricultural plains of the province. Highest rainfall reported from Jacobabad and Mithi. Decadal maximum & minimum both raised above the normal by 1.4°C & 0.5°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 52%, 89.2 hrs, 11.8 km/hr and 7.8 mm/day respectively.

1.3   Khyber Pakhtunkhwa

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Balakot, Chirat and Risalpur. Decadal maximum raised above the normal by 0.3°C & minimum dropped below the normal by 0.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 65.5 hrs, 7.6 km/hr and 5.9 mm/day respectively.

1.4   Baluchistan

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported From Khuzdar, Zhob and Barkhan. Decadal maximum dropped below the normal by 0.9°C & minimum raised above the normal by 1.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 41%, 93.1 hrs, 5.4 km/hr and 6.4 mm/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 Garhi Dupatta, Rawalakot & Muzaffarabad. Decadal maximum & minimum both raised above the normal by 2.3°C & 0.4°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 34%, 100.1 hrs, 4.6 km/hr and 6.2 mm/day respectively.
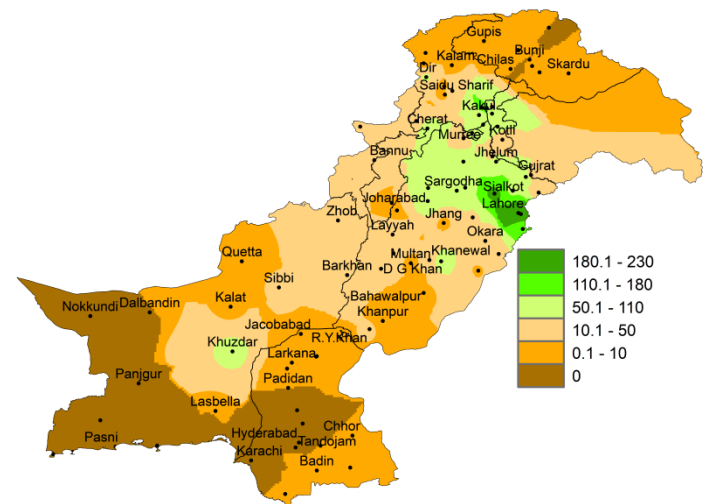
I.   **Actual rainfall**
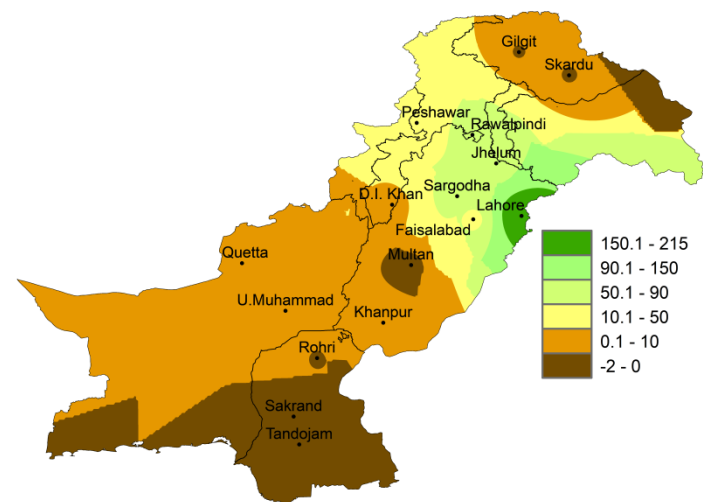
II.   **Departure of rainfall from Normal**
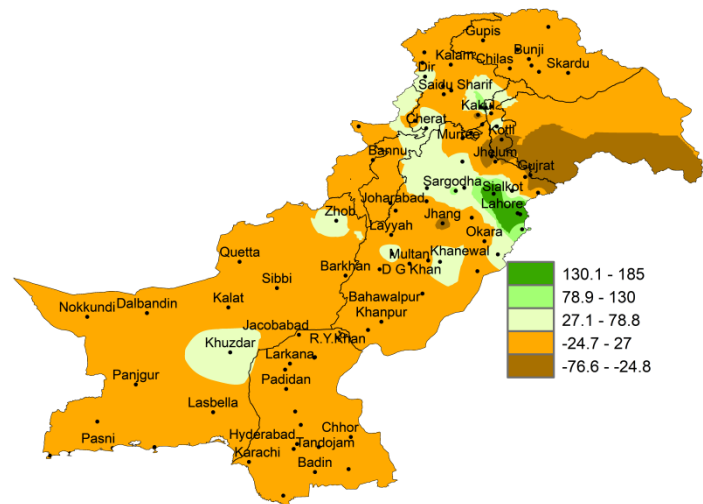
III.   **Departure of rainfall from Previous Decade**

Figure.1: Rainfall distribution during previous decade (mm)

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

2.1   RAMC, Rawalpindi (Potohar region)

Rainfall reported as 76.1 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 68%. Mean day temperature was 34.4°C while night temperature recorded as 25.0°C with 65.6 hours bright sunshine duration. Wind speed recorded as 3.7 km/hr with mean wind direction *Variable*.

2.2   RAMC, Faisalabad (Central Punjab)

Rainfall reported as 45.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 69%. Mean day temperature was 35.6°C while night temperature recorded as 25.1°C with 36.9 hours bright sunshine duration. Wind speed recorded as 5.4 km/hr with mean wind direction *south easterly*.
Cotton: V.*Good, Flowering stage completed.*

2.3   RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 37.6°C while night temperature recorded as 25.8°C with 94.8 hours bright sunshine duration. Wind speed recorded as 17.9 km/h with mean wind direction *south westerly*.
**Cotton (Shahbaz-95):** *Good, Flowering stage.*

2.4   RAMC, Usta Muhammad (Eastern Baluchistan)

Rainfall reported as 10.0 mm during the decade; however weather remained cloudy for 07 day during the decade. Average relative humidity recorded as 55%. Mean day temperature was 40.7°C while night temperature recorded as 30.5°C & Wind speed recorded as 4.8 km/h with mean wind direction *south easterly*.
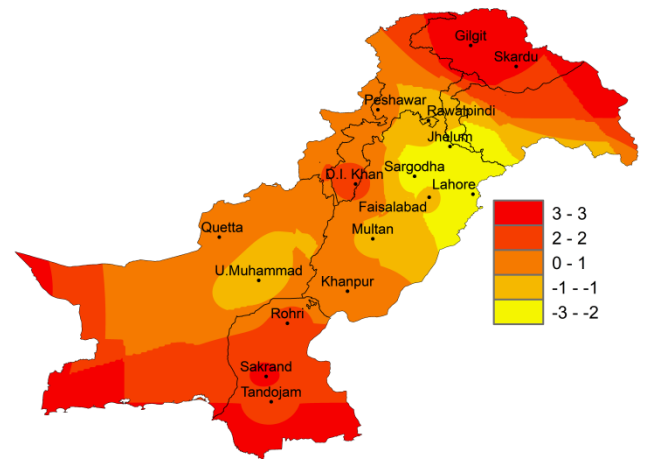**Rice:** *Good, Germination emergence.*
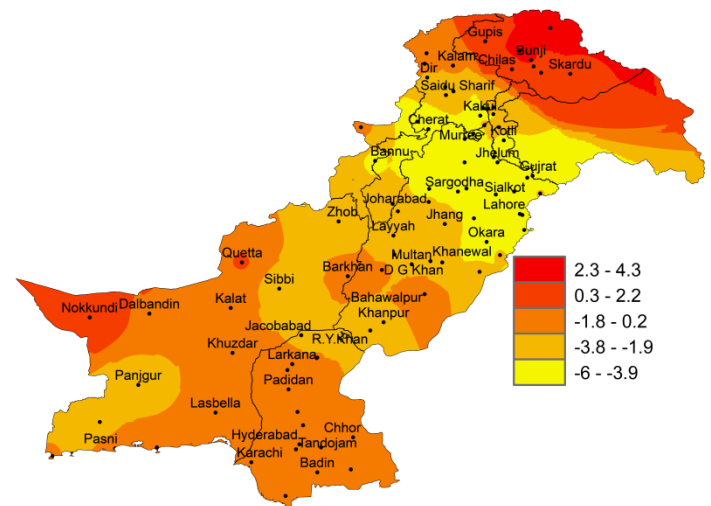
2.5   RAMC, Quetta (Northern Baluchistan)

Rainfall reported as 9.2 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 27%. Mean day temperature was 36.0°C while night temperature recorded as 23.0°C with 93.1 hours bright sunshine duration. Wind speed recorded as 6.0 km/hr with mean wind direction *Southerly*.
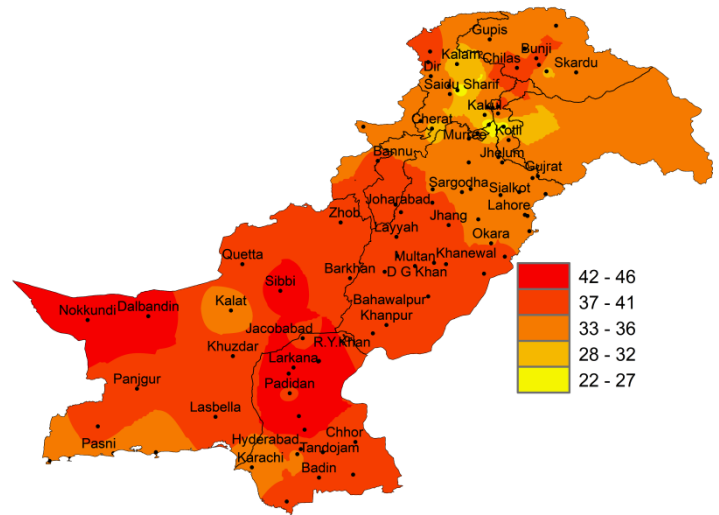
I.   **Actual max-temp**

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 (11ᵗʰ to 20ᵗʰ July, 2019)

2.6   Jhelum

Rainfall reported as 72.3 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 72%. Mean day temperature was 34.1°C while night temperature recorded as 24.6°C with 55.0 hours bright sunshine duration. Wind speed recorded as 5.6 km/hr with mean wind direction *South Westerly.*

2.7 Lahore

Rainfall reported as 217.3 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 81%. Mean day temperature was 32.4°C while night temperature recorded as 23.7°C with 48.1 hours bright sunshine duration. Wind speed recorded as 2.9 km/hr with mean wind direction *South easterly.*

2.8   Sargodha

Rainfall reported as 71.1 mm during the decade; however weather remained cloudy for 10 day during the decade. Average relative humidity recorded as 72%. Mean day temperature was 35.6°C while night temperature recorded as 40.0°C with 45.8 hours bright sunshine duration. Wind speed recorded 2.5 km/hr with mean wind direction *Easterly.*

2.9   Multan

Dry weather reported during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 37.9°C while night temperature recorded as 29.3°C with 51.7 hours bright sunshine duration. Wind speed recorded 8.3 km/hr with mean wind direction *south Westerly.*

2.10   Khanpur

Rainfall reported as 2.1 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 39.8°C while night temperature recorded as 29.1°C with 78.6 hours bright sunshine duration. Wind speed recorded 7.8 km/hr with mean wind direction *south westerly.*

2.11   Sakrand

Dry weather reported during the decade; however weather remained cloudy for 04 day during the decade. Average humidity recorded as 47%. Mean day temperature was 40.7°C while night temperature recorded as 28.0°C with 99.3 hours bright sunshine duration. Wind speed recorded 11.9 km/hr with wind direction *southerly.*
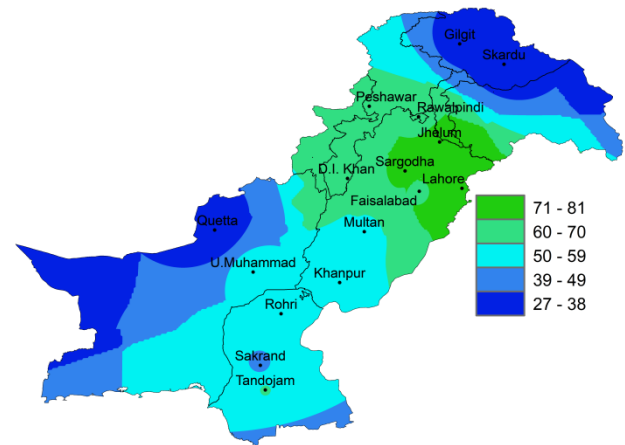
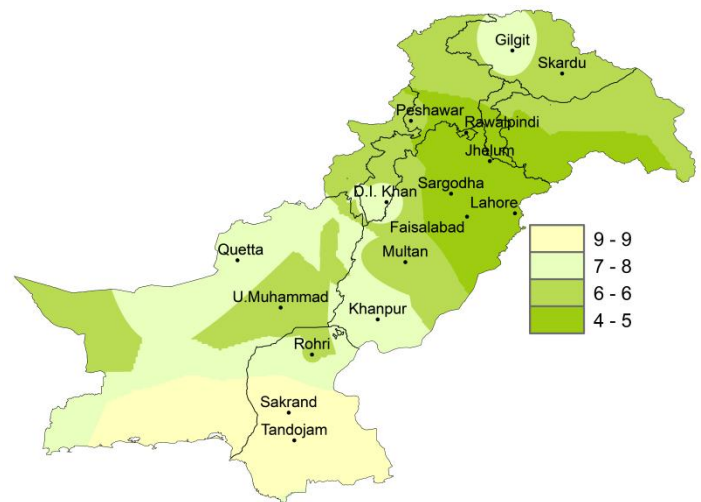

Figure.3: Relative Humidity in Percentage (%)

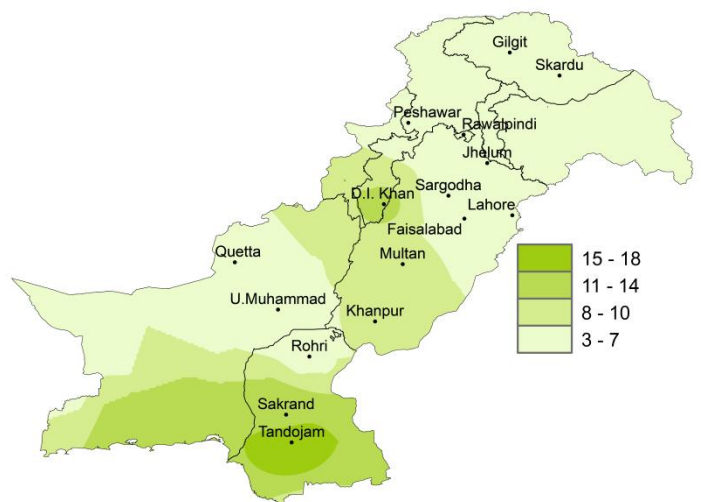*Figure.4:   Reference   Crop   Evapotranspiration   ETo (mm/day)*

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 04 day during the decade. Average relative humidity recorded as 49%. Mean day temperature was 42.0°C with 73.5 hours bright sunshine duration. Wind speed recorded 5.6 km/hr with wind direction *South easterly.*

2.13   D.I. Khan

Rainfall reported as 6.0 mm during the decade; however weather remained cloudy for 09 day during the decade. Average relative humidity recorded as 63%. Mean day temperature was 38.9°C while night temperature recorded as 26.7°C with 63.3 hours bright sunshine duration. Wind speed recorded as 11.2 km/hr with mean wind direction *North easterly.*

2.14   Peshawar

Rainfall reported as 12.7 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 37.0°C while night temperature recorded as 25.0°C with 67.7 hours bright sunshine duration. Wind speed recorded as 4.0 km/hr with mean wind direction *North easterly.*

2.15   Skardu

Dry weather reported during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 32%. Mean day temperature was 33.5 ℃ while night temperature recorded as 15.2 ℃ with 86.7 hours bright sunshine duration. Wind speed recorded as 4.6 km/hr with mean wind direction *East south easterly.*

2.16   Gilgit

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 35%. Mean day temperature was 38.9°C while night temperature recorded as 18.3°C with 113.5hours bright sunshine duration. Wind speed recorded as 4.6 km/hr with mean wind direction *Easterly.*

Ten Days Weather Advisory for Farmers (21st to 31st July, 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:** Dust-thundershower/rain accompanied by gusty winds in most parts of the province. However, thunder storm is expected at isolated places of Islamabad, Rawalpindi, Gujranwala, Lahore and Sargodha divisions during the current decade.

❖ **Khyber Pakhtunkhwa:** Dust-thundershower/rain accompanied by gusty winds in most parts of the province during the current decade.

❖ **Sindh:** Mainly Hot and humid weather is expected during the current decade.

❖ **Baluchistan:** Mainly Hot and humid weather is expected during the current decade while rains/wind-thunderstorm is expected at isolated places of the upper part of the province.

❖ **Gilgit-Baltistan:** Dust-thundershower/rain is expected at isolated places in the province during the first half of the current decade.

❖ **Kashmir:** Dust-thundershower/rain accompanied by gusty winds in most parts during the current decade.

3.4   Advisory for Farmers

❖ The farmers may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.

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

❖ Measures may be taken to remove the weeds from the standing crops especially Peanut etc.

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)

۱۔ سال 2040-69 کے دوران درجہ حرارت میں قابل ذکر اضافہ ہوسکتا ہے۔ جو کہ دن کے وقت c°2.8 اور رات کو c°2.2 تک ہوگا۔

۲۔ گرمیوں کی بارش میں 25 فیصد اضافہ اور سردیوں کی بارش میں 12 فیصد تک کمی کا امکان ہے۔

۳۔ 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۔

۴۔ اگر موسمی تغیرات کا مناسب بندوبست نہ کیا گیا۔ تو کسانوں کی اکثریت کو معاشی نقصان کا سامنا کرنا پڑے گا۔

۵۔ موسمی تغیرات کے سدِّ باب (بذریعہ نئی ٹیکنالوجی کا استعمال اور بہتر نظم و نسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جا سکتی ہے۔

(ایگمپ پاکستان 2012-2014)