Decadal Agromet Bulletin of Pakistan

Highlights…

- ❖ Moderate to heavy rainfall reported from Punjab whereas light to moderate rainfall reported from Khyber Pakhtunkhwa, Gilgit-Baltistan, Azad Jammu & Kashmir. However, light rainfall reported from Sindh and Baluchistan during the last decade.

- ❖ Highest amount of rainfall recorded as 109.0 mm at Gujrat during the last decade.

- ❖ Highest maximum temperature recorded as 48.5℃ at Sibbi 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 1ˢᵗ 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	Tmax Dep	Tmin Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	7.9	48.9	41.0	4.0	3.3	33.7	36.6	34.9	33.2	32.4	31.1	29.5	51	89.3	2.6	5.8
2	Faisalabad	2.9	75.2	72.3	1.8	0.8	33.7	40.0	38.6	37.0	36.1	35.8	34.0	53	84.0	4.9	6.3
3	Jhelum	4.1	86.8	82.7	1.9	0.6	33.2	40.1	38.0	35.6	34.7	34.6	***	48	75.4	5.4	6.2
4	Lahore	4.4	31.7	27.3	4.8	0.6	33.2	36.6	35.9	33.9	33.4	***	31.1	59	59.3	3.2	5.0
5	Sargodha	3.0	2.5	-0.5	2.8	1.2	35.2	42.9	40.2	36.8	35.6	***	31.1	54	75.8	4.8	6.2
6	Multan	1.5	0.0	-1.5	0.2	1.1	35.3	***	***	***	***	***	***	52	71.1	8.6	7.1
7	Khanpur	0.4	0.0	-0.4	1.5	0.4	36.2	***	40.3	42.0	40.1	39.4	37.2	51	96.6	7.0	7.5
8	Tandojam	2.0	0.0	-2.0	0.4	0.6	32.9	42.9	39.2	35.4	35.8	33.7	34.2	63	80.4	17.3	7.9
9	Sakrand ☆	0.4	0.0	-0.4	2.4	0.4	35.5	45.7	***	***	***	***	35.6	43	104.9	15.0	10.5
11	Rohri ☆	0.0	0.0	0.0	1.5	***	43.9	***	***	***	***	***	***	47	97.4	5.8	7.4
12	D.I Khan	2.7	1.0	-1.7	2.7	1.0	34.7	37.4	35.7	34.4	34.0	22.8	***	56	78.5	8.8	7.3
13	Peshawar	1.4	0.0	-1.4	0.8	0.4	33.3	41.7	38.6	34.6	32.7	31.5	27.9	45	85.1	4.2	6.2
14	Usta M.	0.3	0.0	-0.3	0.0	2.3	37.0	42.0	41.4	37.9	***	***	38.3	52	***	5.6	6.8
15	Quetta	0.3	0.0	-0.3	-0.1	-1.5	28.1	38.0	36.5	31.7	30.2	29.5	27.0	20	103.4	5.4	6.7
16	Skardu	0.4	0.0	-0.4	1.8	-1.2	22.9	***	***	***	***	***	***	36	92.0	3.8	5.4
17	Gilgit	0.1	1.2	1.1	0.3	0.8	26.9	***	***	***	***	***	***	39	85.1	2.3	5.0

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 July, 2019

Precipitation(mm)

Legend: ⊠ 01-10, July 2019   ☑ 1- 30, June 2019

Categories: Rawalpindi, Faisalabad, Tandojam, Usta Muhammad, Quetta

Soil Temperature(°C)

Legend: 5CM   10CM   20CM   30CM   50CM   100CM

Categories: Rawalpindi, Faisalabad, Tandojam, Usta Muhammad, Quetta, Peshawar
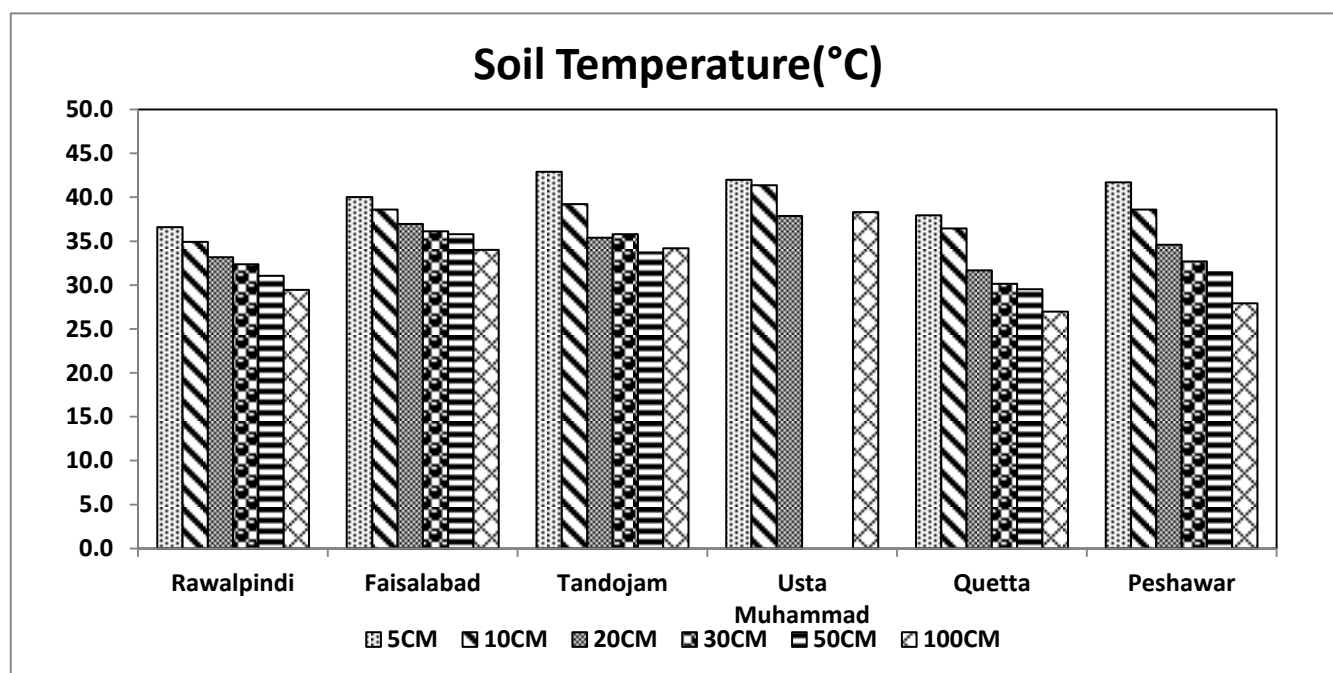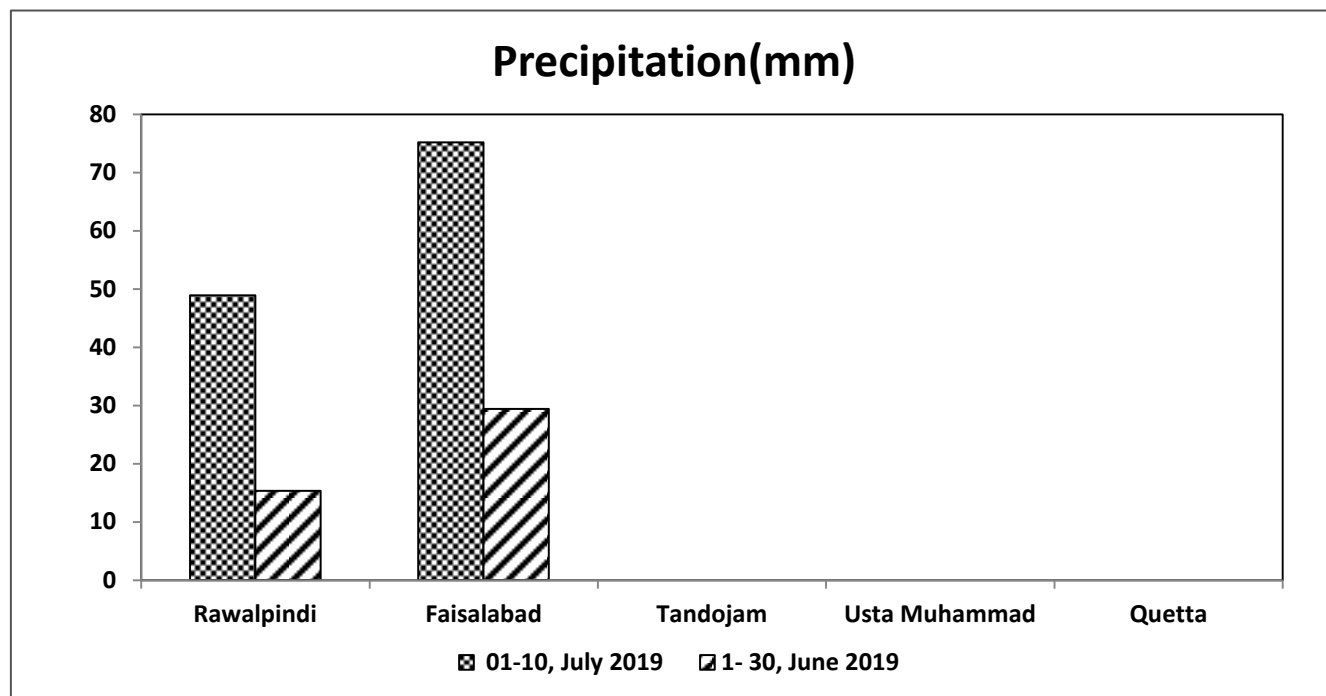
Past Weather (1st to 10th July, 2019)

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

1.1   Punjab

Moderate to heavy rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Gujrat, Mangla, & Murree. Decadal maximum & minimum both raised above the normal by 2.4°C & 1.1°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 53%, 78.8 hrs, 5.2 km/hr and 6.3 mm/day respectively.

1.2   Sindh

Light rainfall reported from the agricultural plains of the province. Highest rainfall reported From Badin. 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 51%, 94.2 hrs, 12.7 km/hr and 8.6 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 Kakul, Malamjabba & Bannu. Decadal maximum & minimum both raised above the normal by 1.8°C & 0.7°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 51%, 81.8 hrs, 6.5 km/hr and 6.8 mm/day respectively.

1.4   Baluchistan

Light rainfall reported from the agricultural plains of the province. Highest rainfall reported from Khuzdar. Decadal maximum & minimum both raised above the normal by 0.0°C & 0.4°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 36%, 103.4 hrs, 5.5 km/hr and 6.8 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, Kotli & Muzaffarabad. Decadal maximum raised above the normal by 1.1°C & minimum dropped below the normal by 0.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 38%, 88.6 hrs, 3.1 km/hr and 5.2 mm/day respectively.
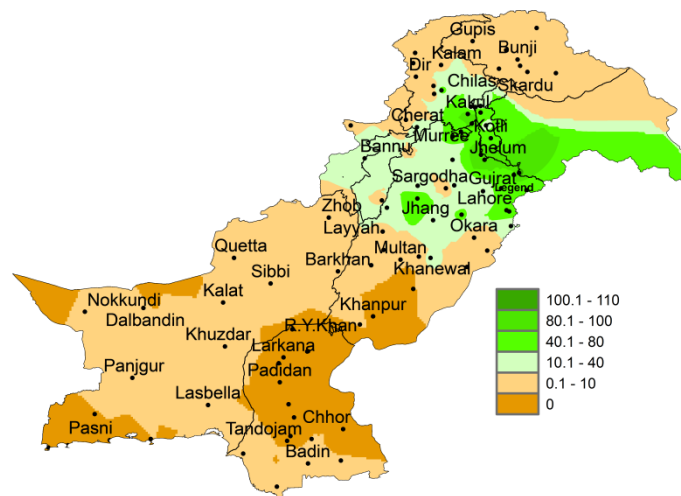
I.   **Actual rainfall**
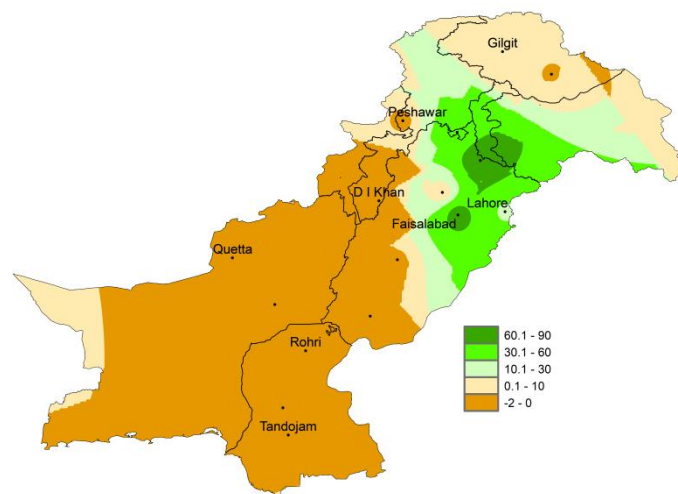
II.   **Departure of rainfall from Normal**
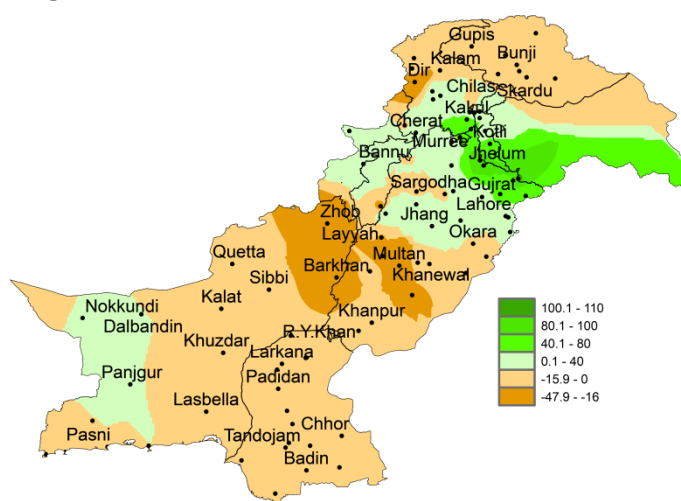
III.   **Departure of rainfall from Previous Decade**

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

2(a)   Past Weather for Major Agricultural Plains (1st to 10th July, 2019)

2.1   RAMC, Rawalpindi (Potohar region)

Rainfall reported as 48.9 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 51%. Mean day temperature was 40.4°C while night temperature recorded as 26.9°C with 89.3 hours bright sunshine duration. Wind speed recorded as 2.6 km/hr with mean wind direction *Westerly*.

2.2   RAMC, Faisalabad (Central Punjab)

Rainfall reported as 75.2 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 39.6°C while night temperature recorded as 27.8°C with 84 hours bright sunshine duration. Wind speed recorded as 4.9 km/hr with mean wind direction *south easterly*.
Cotton: V.*Good, Flowering.*

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 57%. Mean day temperature was 38.2°C while night temperature recorded as 27.6°C with 80.4 hours bright sunshine duration. Wind speed recorded as 17.3 km/h with mean wind direction *south westerly*.
*Cotton (Shahbaz-95): Good, Flowering.*

2.4   RAMC, Usta Muhammad (Eastern Baluchistan)

Dry weather reported during the decade; however weather remained cloudy for 01 day during the decade. Average relative humidity recorded as 52%. Mean day temperature was 42.7°C while night temperature recorded as 31.3°C & Wind speed recorded as 5.6 km/h with mean wind direction *Variable.*
*Rice: Good, Germination emergence.*

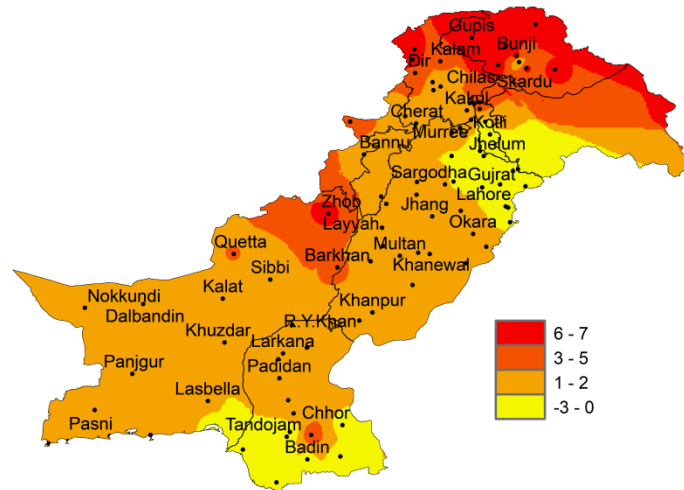### 2.5   RAMC, Quetta (Northern Baluchistan)

Dry weather reported during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 20%. Mean day temperature was 36.2 C while night temperature recorded as 20.0°C with 103.4 hours bright sunshine duration. Wind speed recorded as 5.4 km/hr with mean wind direction *North westerly*.
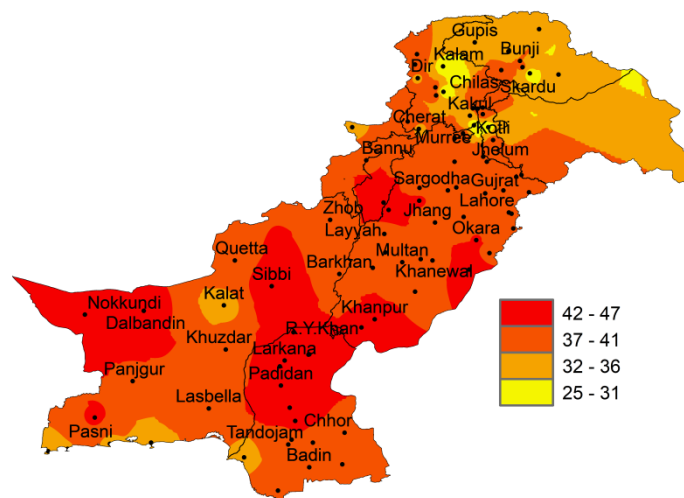
I.   **Actual max-temp**
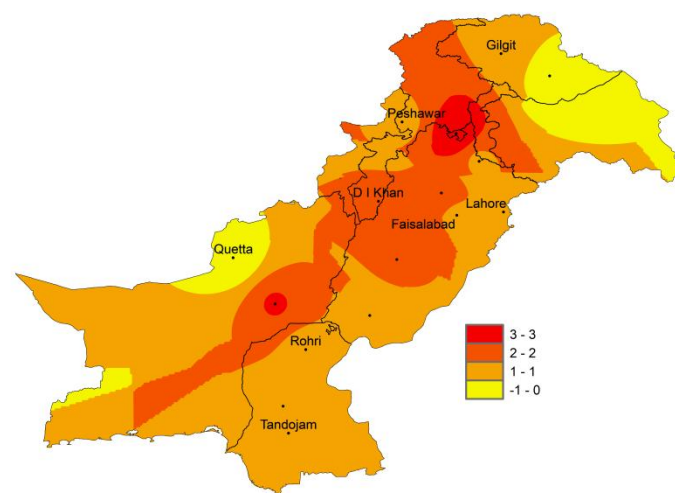
II.   **Departure of max-temp from Normal**

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 (1st to 10th July, 2019)

2.6   Jhelum

Rainfall reported as 86.8 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 38%. Mean day temperature was 39.1°C while night temperature recorded as 27.3°C with 75.4 hours bright sunshine duration. Wind speed recorded as 5.4 km/hr with mean wind direction *South Westerly.*

2.7 Lahore

Rainfall reported as 31.7 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 38.1°C while night temperature recorded as 28.3°C with 80.7 hours bright sunshine duration. Wind speed recorded as 3.2 km/hr with mean wind direction *South easterly.*

2.8   Sargodha

Rainfall reported as 2.5 mm during the decade; however weather remained cloudy for 07 day during the decade. Average relative humidity recorded as 54%. Mean day temperature was 41.3°C while night temperature recorded as 29.1°C with 75.8 hours bright sunshine duration. Wind speed recorded 2.6 km/hr with mean wind direction *Easterly.*

2.9   Multan

Dry weather reported during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 40.1°C while night temperature recorded as 30.5°C with 71.1 hours bright sunshine duration. Wind speed recorded 8.6 km/hr with mean wind direction *south Wasterly.*

2.10   Khanpur

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 51%. Mean day temperature was 42.3°C while night temperature recorded as 30.0°C with 96.6 hours bright sunshine duration. Wind speed recorded 7.0 km/hr with mean wind direction *south westerly.*

2.11   Sakrand

Dry weather reported during the decade; however weather remained cloudy for 01 day during the decade. Average humidity recorded as 43%. Mean day temperature was 42.9°C while night temperature recorded as 28°C with 104.9 hours bright sunshine duration. Wind speed recorded 15.0 km/hr with wind direction *southerly.*
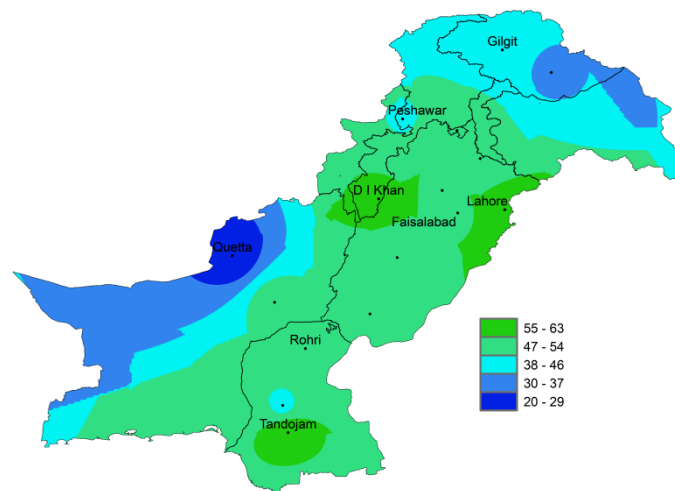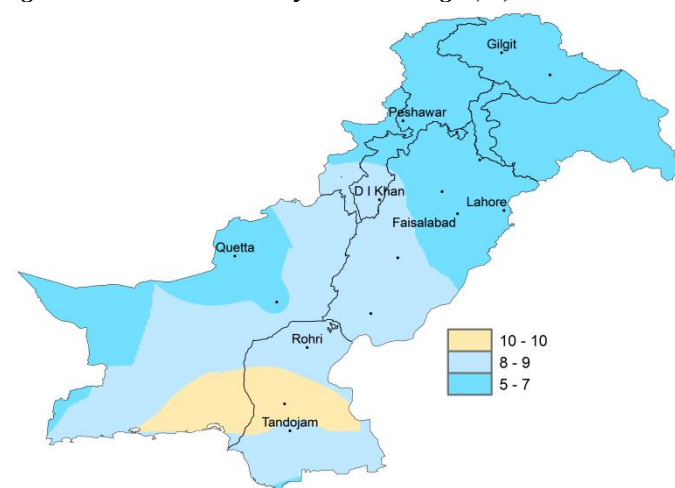

Figure.3: Relative Humidity in Percentage (%)

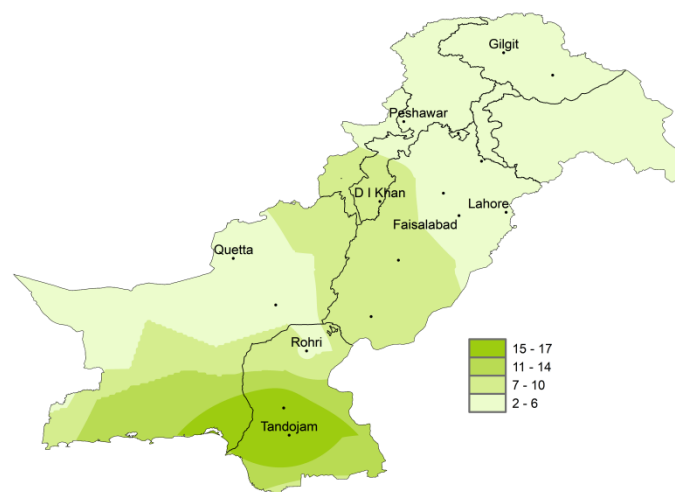*Figure.4: Reference Crop Evapotranspiration ETo (mm/day)*

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

2.12   Rohri

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 47%. Mean day temperature was 43.9°C with 97.4 hours bright sunshine duration. Wind speed recorded 5.8 km/hr with wind direction *South easterly.*

2.13   D.I. Khan

Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 05 day during the decade. Average relative humidity recorded as 56%. Mean day temperature was 41.8°C while night temperature recorded as 27.5°C with 78.5 hours bright sunshine duration. Wind speed recorded as 8.8 km/hr with mean wind direction *North easterly.*

2.14   Peshawar

Dry weather reported during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 39.0°C while night temperature recorded as 27.5°C with 85.1 hours bright sunshine duration. Wind speed recorded as 4.2 km/hr with mean wind direction *North easterly.*

2.15   Skardu

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 36%. Mean day temperature was 31.7 °C while night temperature recorded as 14.1 °C with 92.0 hours bright sunshine duration. Wind speed recorded as 3.8 km/hr with mean wind direction *South southerly Weasterly.*

2.16   Gilgit

Rainfall reported as 1.2 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 39%. Mean day temperature was 36.3°C while night temperature recorded as 17.4°C with 85.1 hours bright sunshine duration. Wind speed recorded as 2.3 km/hr with mean wind direction *Easterly.*

Ten Days Weather Advisory for Farmers (11th to 20th July, 2019)

2.8   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.

2.9   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.

2.10 Rain Forecast

- ❖ **Punjab:** Dust-thundershower/rain accompanied by gusty winds in most parts of the country. However, Islamabad, Rawalpindi, Gujranwala, Lahore divisions and Sargodha divisions the current decade.
- ❖ **Khyber   Pakhtunkhwa:**   Dust-thundershower/rain accompanied by gusty winds in most parts of the country 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.
- ❖ **Gilgit-Baltistan:** Dust-thundershower/rain is expected at isolated places in the province during the current decade.
- ❖ **Kashmir:** Dust-thundershower/rain accompanied by gusty winds at scattered places during the current decade.

2.11 Advisory for Farmers

- ❖ 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.

4.1

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 قابلِ ذکر اضافہ ہوسکتا ہے۔ جو کہ دن کے وقت 2.8°c اور رات کو 2.2°c 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 ہوسکتی 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 ونسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2014-2012)