Decadal Agromet Bulletin of Pakistan

Highlights….

❖ Light to moderate rainfall reported from most parts of the Punjab, however light rainfall reported from K.P, G.B, Kashmir & Balochistan. Dry weather reported from Sindh during the last decade.

❖ Highest amount of rainfall recorded as 57.3 mm at Murree during the last decade.

❖ Highest maximum temperature recorded as 44.0°C at Sibbi during the last decade.

❖ Light to moderate rainfall is expected in most parts of the country during the 2nd half of the current decade, while dry weather is expected in Sindh and Kashmir.

❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.

❖ 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 standing crops and vegetables from the damaging effects of varying weather pattern due to monsoon systems.
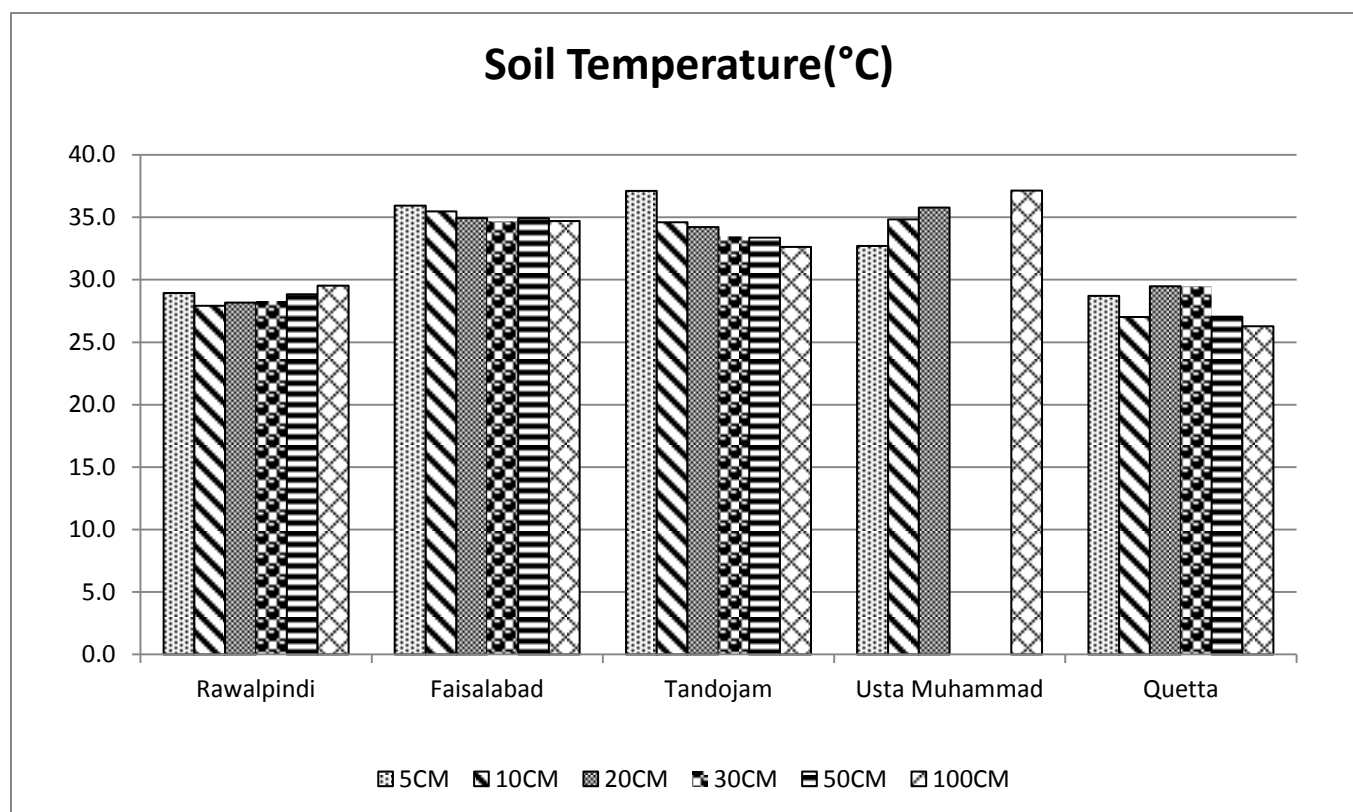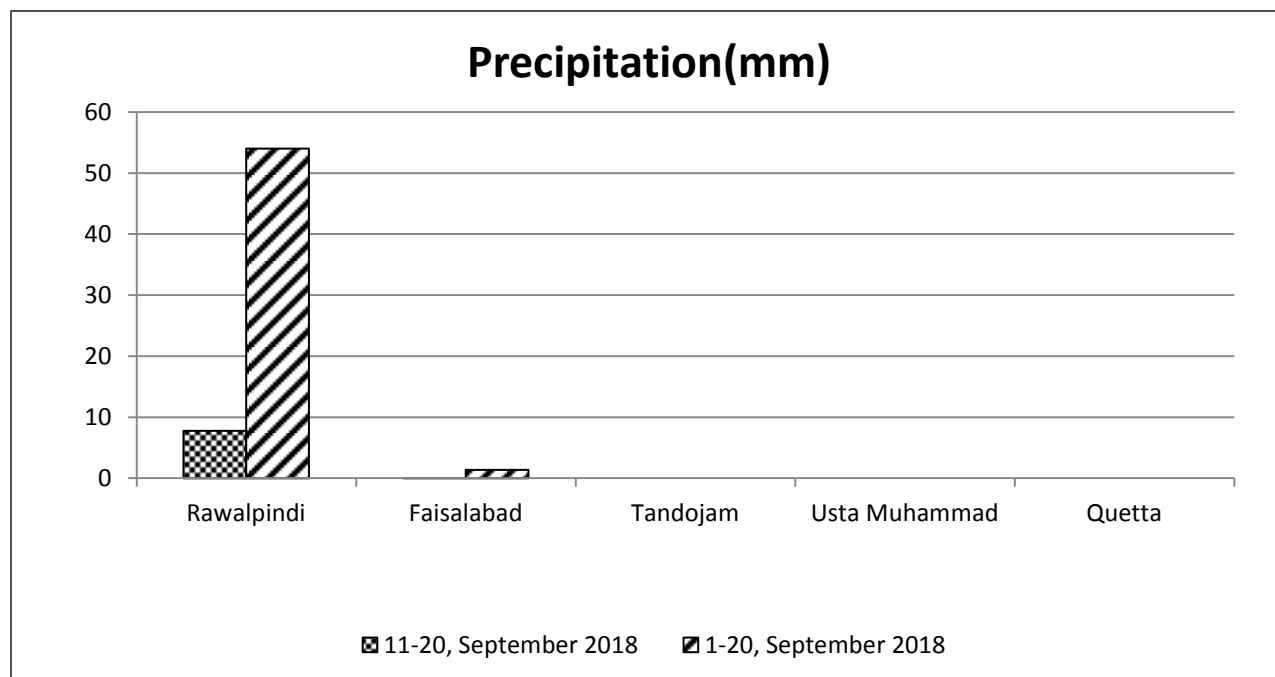
Meteorological Conditions during 2nd Decade of September, 2018

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	3.4	7.8	4.4	0.5	-1.9	26.7	28.9	27.9	28.2	28.3	28.8	29.5	67	89.4	2.4	2.2
2	Faisalabad	1.2	0.0	-1.2	1.6	0.9	30.7	35.9	35.5	34.9	34.7	34.9	34.7	55	89.5	3.1	2.9
3	Jhelum	1.3	26.0	24.7	-12.3	10.8	28.7	31.7	30.0	28.9	27.7	30.3	***	60	86.8	2.3	2.4
4	Lahore	1.4	0.0	-1.4	1.7	-0.1	30.4	30.7	30.8	30.0	30.0	***	30.5	62	80.3	1.8	2.3
5	Sargodha	2.0	18.0	16.0	1.1	0.3	30.9	34.7	34.1	32.5	32.7	***	31.6	57	78.2	1.9	2.3
6	Multan	0.8	0.0	-0.8	0.1	1.1	31.4	***	***	***	***	***	***	54	82.6	7.6	4.2
7	Khanpur	0.0	0.0	0.0	0.8	-0.2	31.2	***	35.1	35.3	35.7	36.2	35.1	56	91.3	5.2	3.8
8	Tandojam	0.0	0.0	0.0	0.7	-1.8	29.4	37.1	34.6	34.2	33.5	33.4	32.6	63	78.1	14.2	5.4
9	Sakrand ☆	0.0	0.0	0.0	0.6	0.7	30.9	41.0	***	***	***	***	35.5	53	107.0	7.4	6.5
11	Rohri	0.1	0.0	-0.1	1.0	-1.8	32.2	***	***	***	***	***	***	50	99.2	1.9	3.0
12	D.I Khan	2.3	0.0	-2.3	2.4	0.7	31.3	0.0	34.6	34.7	34.7	24.1	***	55	95.3	9.2	4.8
13	Peshawar	1.1	2.0	0.9	0.8	-2.4	28.4	32.2	31.7	30.9	30.5	30.7	30.8	58	79.8	2.0	2.1
14	Usta .M	0.0	0.0	0.0	-2.5	0.3	30.9	32.7	34.8	35.8	***	***	37.1	66	***	2.9	2.6
15	Quetta	0.0	0.0	0.0	-0.1	2.9	23.6	28.7	27.0	29.5	29.5	27.0	26.3	16	111.1	4.9	3.3
16	Skardu	0.2	3.0	2.8	-1.3	-2.7	16.6	***	***	***	***	***	***	44	56.8	1.2	1.2
17	Gilgit	0.1	3.2	3.1	-0.1	0.4	20.9	***	***	***	***	***	***	47	80.9	1.8	1.5

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 September, 2018

Precipitation(mm)

Legend: ⊠ 11-20, September 2018　　☑ 1-20, September 2018

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

Soil Temperature(°C)

Legend: ⊞ 5CM　◪ 10CM　▧ 20CM　▨ 30CM　⊟ 50CM　☑ 100CM

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

Past Weather (11th to 20th September, 2018)

Light to moderate rainfall reported from most parts of the Punjab, however light rainfall reported from K.P, G.B, Kashmir & Balochistan. Dry weather reported from Sindh during the last decade.

1.1   Punjab

Light to moderate rainfall reported from agricultural plains of Punjab. Chief amount of rainfall received at Murree, Mangla & Jhang. Decadal maximum dropped below normal by 0.9°C & minimum temperature raised above normal by 1.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 59%, 85.4hrs, 3.5km/hr and 2.9mm/day respectively.

1.1   Sindh

Trace (Non measureable) rainfall reported from one place of Sindh i.e., Karachi. Decadal maximum raised above normal by 0.8°C & minimum temperature dropped below normal by 1.0°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 55%, 94.8hrs, 7.8km/hr and 5.0mm/day respectively.

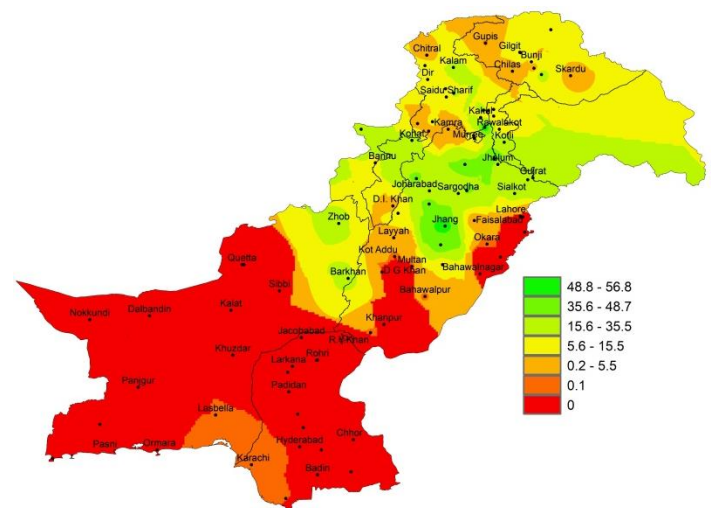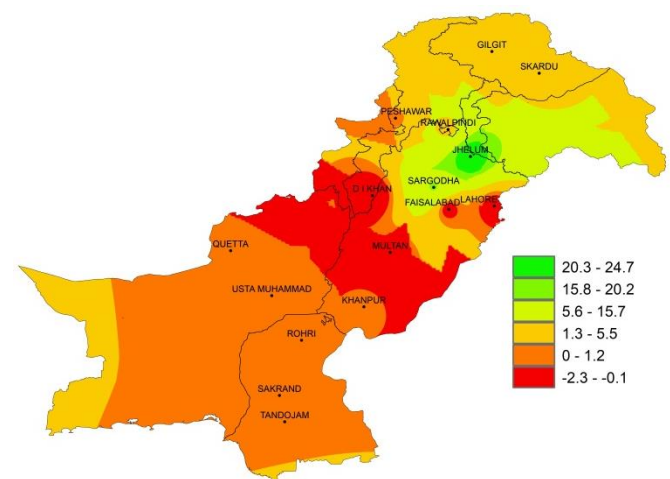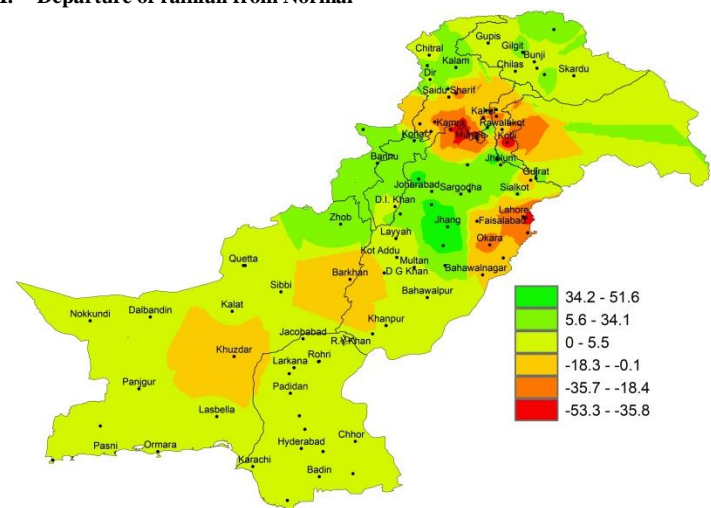### 1.2   Khyber Pakhtunkhwa (KP)

Light rainfall reported from agricultural plains of Khyber Pakhtunkhwa. Chief amount of rainfall received at Kohat, Balakot & Kalam. Decadal maximum raised above normal by 1.6°C & minimum temperature dropped below normal by 0.9°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 57%, 87.6hrs, 5.6 km/hr and 3.5mm/day respectively.

1.3   Balochistan

Rainfall reported from only two places from agricultural plains of Balochistan i.e., Barkhan & Zhob. Decadal maximum dropped below normal by 1.3°C & minimum temperature raised above normal by 1.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 41%, 111.1hrs, 3.9km/hr and 3.0mm/day respectively.

1.4   Gilgit-Baltistan and Azad Jammu & Kashmir

Light rainfall reported from agricultural plains of Gilgit-Baltistan and Azad Jammu & Kashmir. Chief amount of rainfall received at Astore, Bagrote & Muzaffarabad. Decadal maximum & minimum temperature both dropped below normal by 0.7°C & 1.2°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 46%, 68.9hrs, 1.5km/hr and 1.4mm/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 September, 2018)**

2.1   RAMC, Rawalpindi (Potohar region)

Rainfall reported as 7.8mm during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 67%. Mean day temperature was 33.9°C while night temperature recorded as 19.5°C with 89.4hours bright sunshine duration. Wind speed recorded as 2.4km/hr with mean wind direction *Variable*
Maize: *good condition, 9th leaf stage.*

2.2   RAMC, Faisalabad (Central Punjab)

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 06days. Average relative humidity recorded as 55%. Mean day temperature was 36.9°C while night temperature recorded as 24.5°C with 89.5hours bright sunshine duration. Wind speed recorded as 3.1km/hr with mean wind direction *southerly.*
Cotton: *Very good condition, Full maturity.*

2.3   RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained cloudy for 04day. Average relative humidity recorded as 63%. Mean day temperature was 36.3°C while night temperature recorded as 22.5°C with 78.1hours bright sunshine duration. Wind speed recorded as 14.2km/h with mean wind direction *south westerly.*
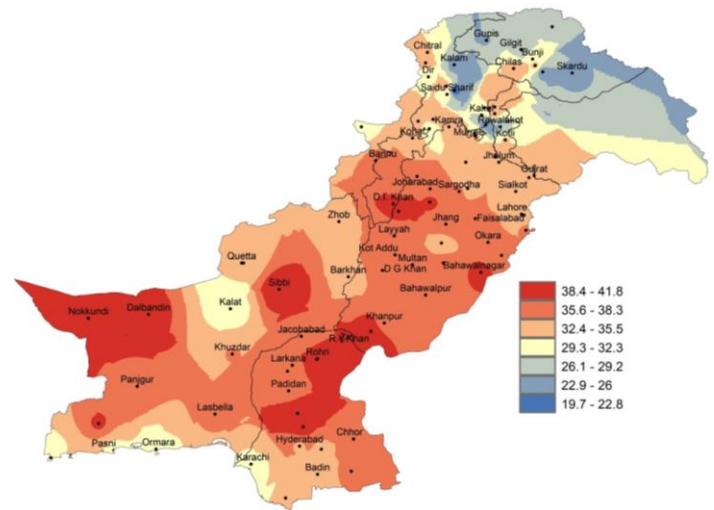**Cotton CIM-6.2:** *Good condition, Maturity.*

2.4   RAMC, Usta Muhammad (Eastern Balochistan)

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 66%. Mean day temperature was 36.1°C while night temperature recorded as 25.6°C. Wind speed recorded as 2.9km/h with mean wind direction *southeasterly.*
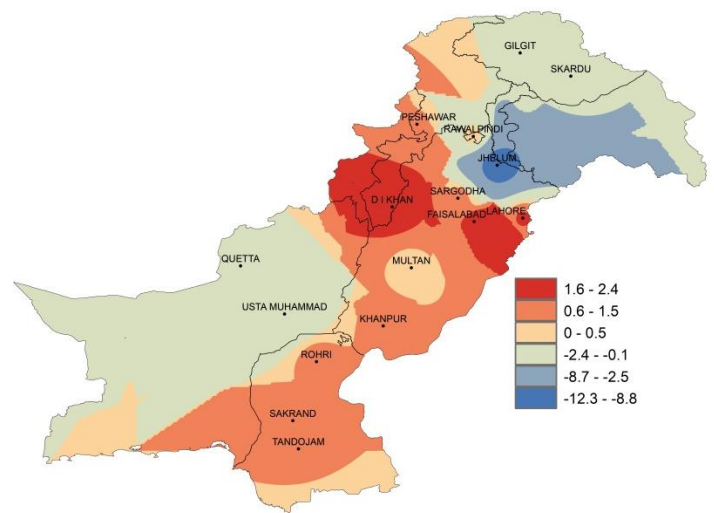**Rice:** *Good condition, flowering stage.*

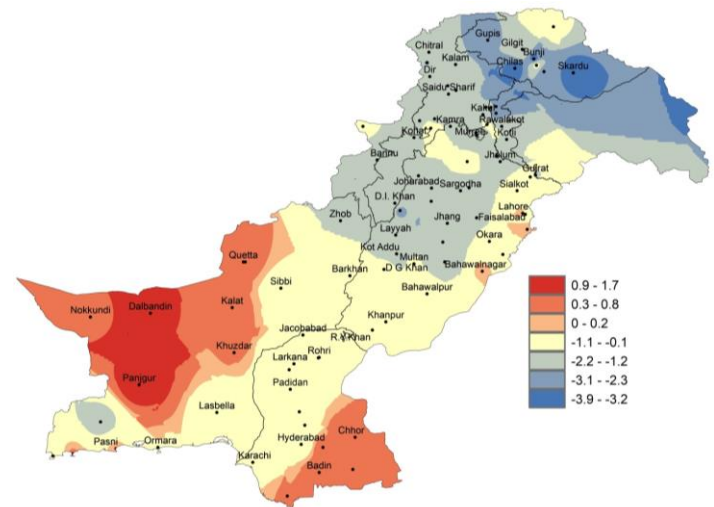### 2.5   RAMC, Quetta (Northern Balochistan)

Dry weather reported during the decade; however weather remained cloudy for 03days. Average relative humidity recorded as 16%. Mean day temperature was 31.6°C while night temperature recorded as 15.5°C with 111.1hours bright sunshine duration. Wind speed recorded as 4.9km/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 (11th to 20th September, 2018)

2.6   Jhelum

Rainfall reported as 26.0mm during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 65%. Mean day temperature was35.0°C while night temperature recorded as 22.4°C with 86.8hours bright sunshine duration. Wind speed recorded as 2.3km/hr with mean wind direction *south easterly*.

2.7   Lahore

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 62%. Mean day temperature was 35.4°C while night temperature recorded as25.4°C with 80.3hours bright sunshine duration. Wind speed recorded as 1.8km/hr with mean wind direction *westerly*.

2.8   Sargodha

Rainfall reported as 18.0mm during the decade; however weather remained cloudy for 07days. Average relative humidity recorded as 57%. Mean day temperature was 36.7°C while night temperature recorded as 25.0°C with 78.2 hours bright sunshine duration. Wind speed recorded 1.9km/hr with mean wind direction *variable*.

2.9   Multan

Dry weather reported during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 54%. Mean day temperature was 36.1°C while night temperature recorded as 26.6°C with 82.6hours bright sunshine duration. Wind speed recorded 7.6km/hr with mean wind direction *south westerly*.

2.10   Khanpur

Dry weather reported during the decade; however weather remained cloudy for one day during the decade. Average relative humidity recorded as 56%. Mean day temperature was 37.6°C while night temperature recorded as 24.7°C with 91.3hours bright sunshine duration. Wind speed recorded 5.2km/hr with mean wind direction *south westerly*.

2.11   Sakrand

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 53%. Mean day temperature was 37.5°C while night temperature recorded as 24.3°C with 107.0hours bright sunshine duration. Wind speed recorded 7.4km/hr with wind direction *southerly*.
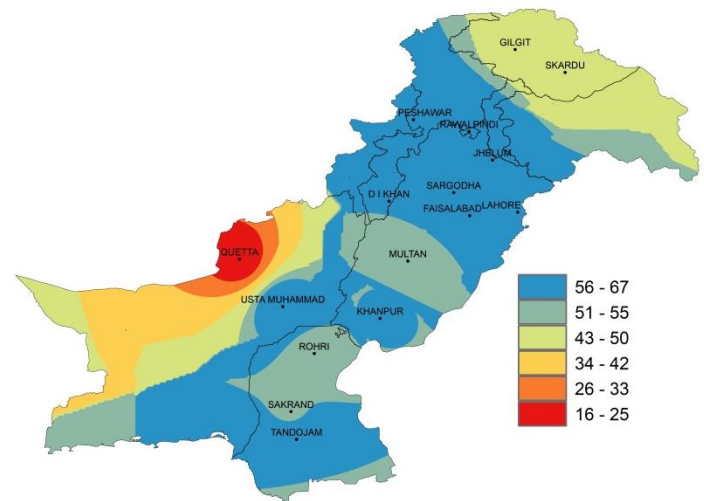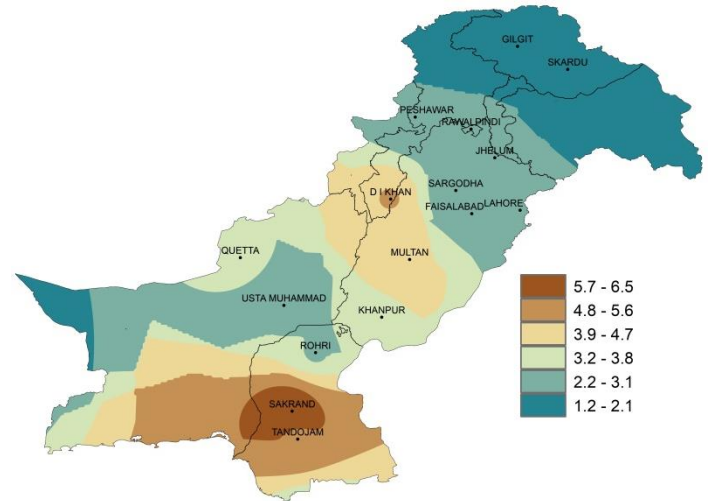

Figure.3: Relative Humidity in Percentage (%)

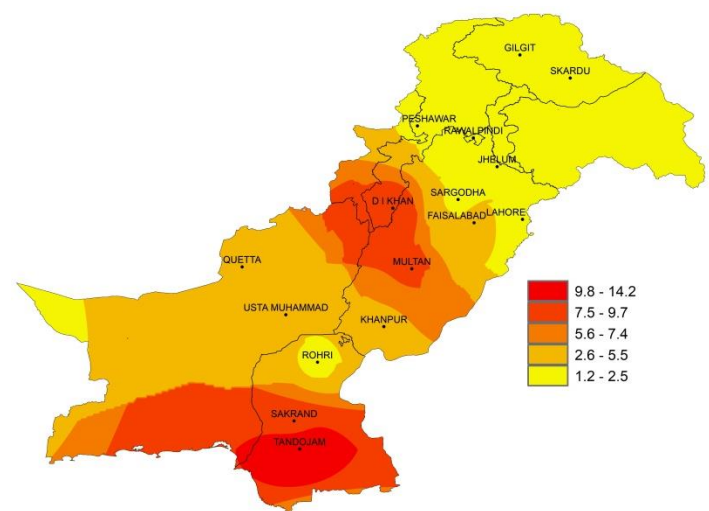*Figure.4:   Reference   Crop   Evapotranspiration   ETo (mm/day)*

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

2.12   Rohri

Dry weather reported during the decade; however weather remained clear throughout the decade. Average relative humidity recorded as 50%. Mean day temperature was 39.1°C while night temperature recorded as 25.3°C with 99.2hours bright sunshine duration. Wind speed recorded 1.9km/hr with wind direction *southeasterly*.

2.13   D.I. Khan

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 55%. Mean day temperature was 38.4°C while night temperature recorded as 24.2°C with 95.3hours bright sunshine duration. Wind speed recorded as 9.2km/hr with mean wind direction *south easterly*.

2.14   Peshawar

Rainfall reported as 2.0mm during the decade; however weather remained cloudy for 04days. Average relative humidity recorded as 58%. Mean day temperature was 35.4°C while night temperature recorded as 21.4°C with 79.8hours bright sunshine duration. Wind speed recorded as 2.0km/hr with mean wind direction *Northly*.

2.15   Skardu

Rainfall reported as 3.0mm during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 44%. Mean day temperature was 25.5°C while night temperature recorded as 7.7°C with 56.8hours bright sunshine duration. Wind speed recorded as 1.2km/hr with mean wind direction *North- easterly*.

2.16   Gilgit

Rainfall reported as 3.2mm during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 47%. Mean day temperature was 31.2°C while night temperature recorded as 10.6°C with 80.9 hours bright sunshine duration. Wind speed recorded as 1.8km/hr with mean wind direction *South- easterly*.

Ten Days Weather Advisory for Farmers
(21st to 30th September, 2018)

3.1   Temperature Forecast
Day temperatures are expected slightly normal in most parts of the country, however night temperature are expected 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 during the decade; however dust/sand storms may occur in southern Punjab and upper Sindh.
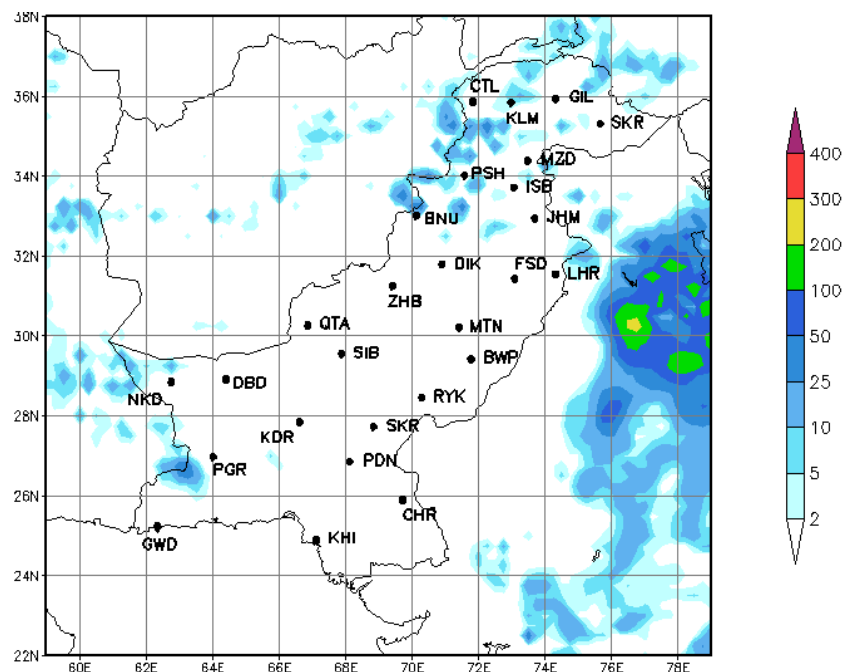
3.3   Rain Forecast

❖ **Punjab:** Light rainfall with thundershower is expected at scattered in the province during the 2nd half of the decade.
❖ **Khyber Pakhtunkhwa:** Light to moderate rainfall is expected at scattered places in the province during the decade.
❖ **Sindh:** Dry weather is expected in the province during the current decade.
❖ **Balochistan:** Light rainfall with thundershower is expected at isolated places in northeastern parts during the 2nd half of the decade.
❖ **Gilgit-Baltistan:** Light to moderate rainfall with thundershower is expected at isolated places of Gilgit-Baltistan during the decade.
❖ **Kashmir**: Dry weather is expected in Kashmir during the current decade.

3.4 Advisory for Farmers

❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.
❖ 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.
❖ Accumulation of stagnant water in the fields due to heavy rains is fatal for standing crops like cotton etc. Farmers may take suitable measures to resolve the issue.
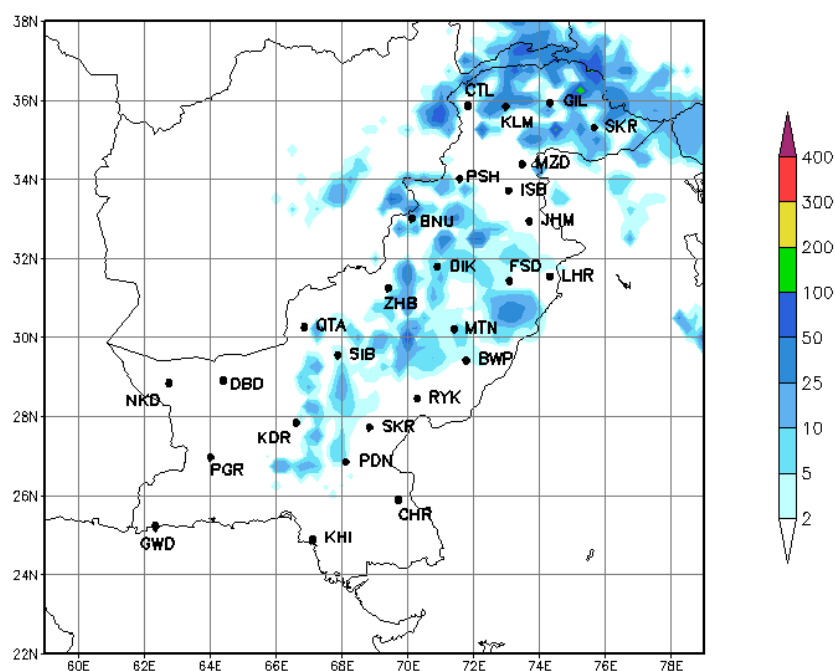
4.1 Precipitation Outlook (24th to 26th September, 2018)

The forecast for the days (24th to 26th) of the third decade of September 2018 shows that mainly dry weather may prevail in most parts of the country. However, light rainfall is expected at scattered places in KP, GB and parts of western Balochistan.

4.2 Precipitation Outlook (27th to 30th September, 2018)

The outlook for the last four days (27th to 30th) of the third decade of September 2018 shows that light to moderate rainfall is expected at scattered places of the KP, FATA, GB, Punjab, parts of north eastern Balochistan and north western Sindh.

Findings of AgMIP Paksitan, 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 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 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 ونسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جا سکتی ہے۔

(ایگمپ پاکستان 2012-2014)