Decadal Agromet Bulletin of Pakistan

Highlights….

- Moderate to heavy rainfall reported from most parts of the agricultural land of Punjab while light to moderate from K.P, G.B and Kashmir & dry weather was reported from Sindh and Balochistan, during the last decade.
- Highest amount of rainfall recorded as 166.0 mm at Islamabad during the last decade.
- Highest maximum temperature recorded as 45.0°C at Bhakkar during the last decade.
- Light to moderate rain is expected at scattered places of the upper half of the country whereas light rainfall is expected at isolated places of lower half during the current decade.
- 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.
- Farmers of rainfed areas may take measures to preserve rain water for crops and livestock.

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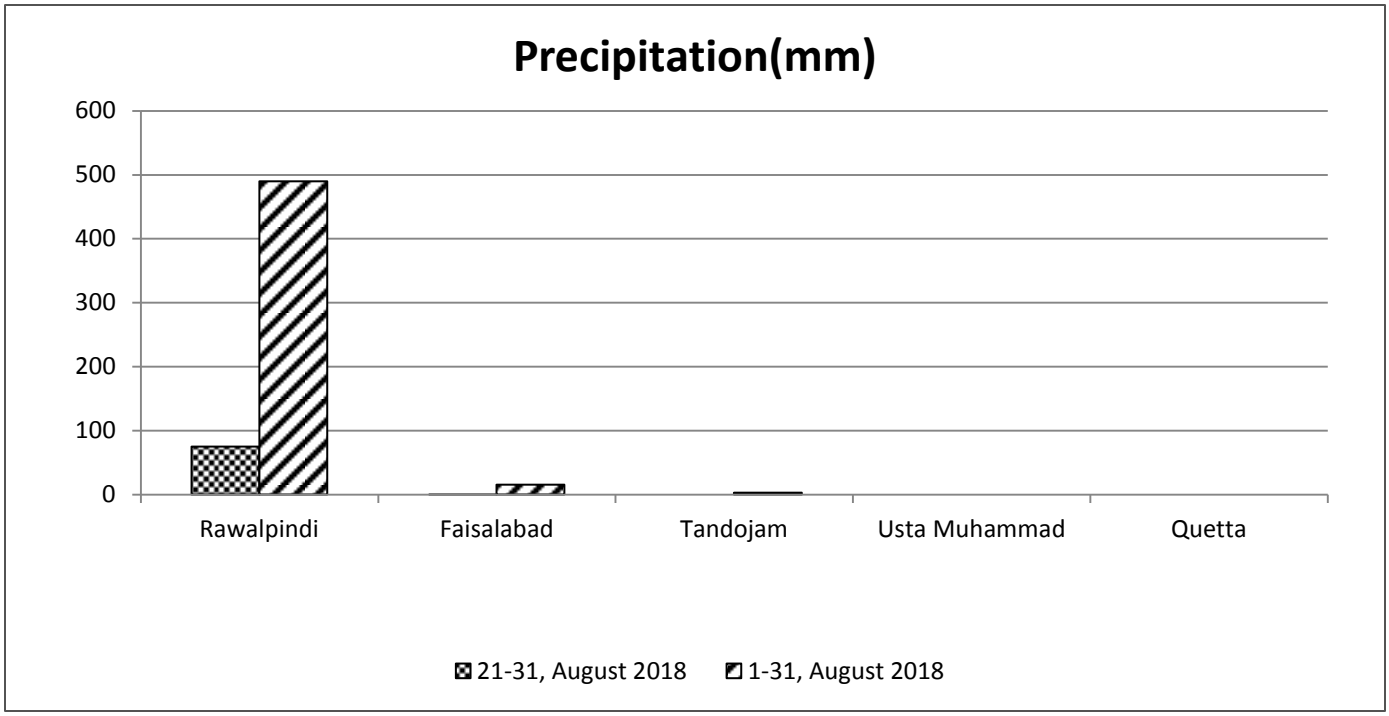
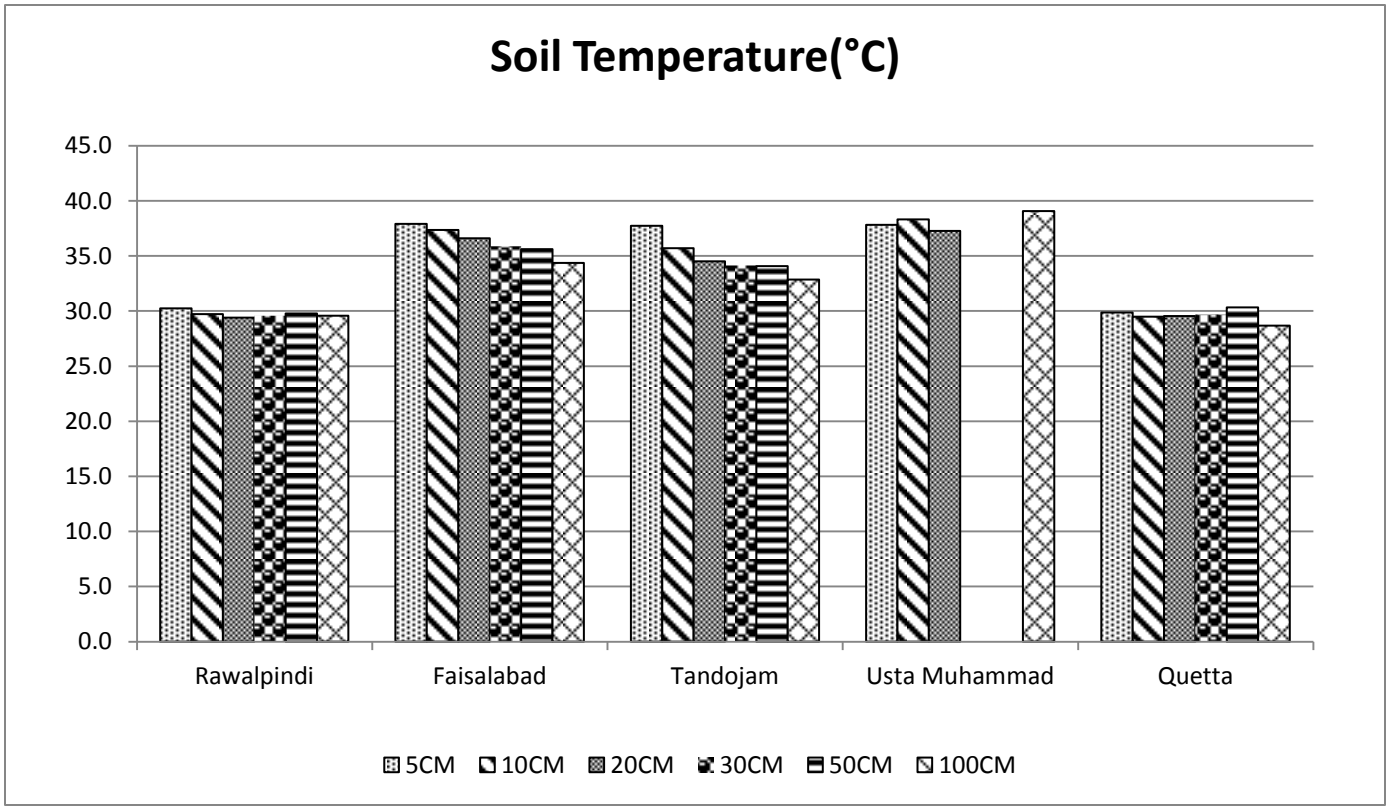
Meteorological Conditions during 3rd Decade of August, 2018

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	5.9	75.0	69.1	1.4	1.3	29.2	30.2	29.7	29.4	29.6	29.8	29.6	72	82.4	3.3	2.4
2	Faisalabad	2.9	0.0	-2.9	1.9	1.9	33.2	37.9	37.4	36.6	35.9	35.6	34.4	57	88.5	4.0	3.3
3	Jhelum	4.4	94.0	89.6	1.4	0.3	31.2	33.3	32.7	32.2	31.8	31.9	***	70	98.0	2.2	2.7
4	Lahore	3.7	2.2	-1.5	1.6	1.4	32.5	33.2	33.1	32.3	31.7	***	30.9	67	74.2	1.4	2.4
5	Sargodha	2.3	0.0	-2.3	2.0	2.2	33.7	37.9	36.8	35.1	35.6	***	31.6	64	81.6	2.2	2.8
6	Multan	0.7	25.0	24.3	0.4	1.4	33.2	***	***	***	***	***	***	60	65.6	7.5	4.0
7	Khanpur	0.0	0.0	0.0	1.7	-0.3	32.8	***	36.5	36.6	37.1	37.2	35.7	61	86.3	6.2	4.1
8	Tandojam	1.5	0.0	-1.5	0.9	-1.9	29.6	37.7	35.7	34.5	34.1	34.1	32.9	65	61.9	14.9	5.1
9	Sakrand ☆	0.7	0.0	-0.7	2.1	1.1	32.4	41.1	***	***	***	***	36.3	52	112.9	7.0	4.8
11	Rohri	0.7	0.0	-0.7	1.7	-2.0	33.0	***	***	***	***	***	***	51	66.6	3.2	3.3
12	D.I Khan	1.8	0.0	-1.8	3.4	2.5	34.2	38.1	37.0	36.4	36.2	25.2	***	62	90.3	11.3	5.2
13	Peshawar	0.8	0.0	-0.8	1.1	-0.6	30.9	33.2	32.9	32.0	31.7	31.2	30.3	70	76.2	1.8	2.4
14	Usta .M	0.1	0.0	-0.1	0.1	1.2	33.5	37.8	38.3	37.3	***	***	39.1	67	***	5.1	3.4
15	Quetta	0.4	0.0	-0.4	-0.1	0.4	26.4	29.9	29.5	29.5	29.7	30.3	28.7	22	101.9	4.7	3.3
16	Skardu	0.4	0.0	-0.4	4.0	0.5	23.4	***	***	***	***	***	***	44	49.8	1.9	1.6
17	Gilgit	0.4	1.9	1.5	1.9	3.4	27.4	***	***	***	***	***	***	44	92.9	1.9	1.8

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 August, 2018





Past Weather (21st to 31st August, 2018)

Moderate to heavy rainfall reported from most parts of the agricultural land of Punjab while light to moderate from K.P and G.B & Kashmir and dry from Sindh and Balochistan, during the last decade.

1.1 Punjab

Moderate to heavy rainfall reported from agricultural plains of Punjab. Chief amount of rainfall received at Islamabad, Mangla & Chakwal. Decadal maximum minimum temperature both raised above normal by 1.5°C & 1.2°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 64%, 82.4hrs, 3.8km/hr and 3.1mm/day respectively.

1.1 Sindh

Dry weather reported from most agricultural plains of Sindh except trace (non measureable) rainfall reported from a single station Karachi. Decadal maximum temperature 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 56%, 80.5hrs, 8.4km/hr and 4.4 mm/day respectively.

1.2 Khyber Pakhtunkhwa (KP)

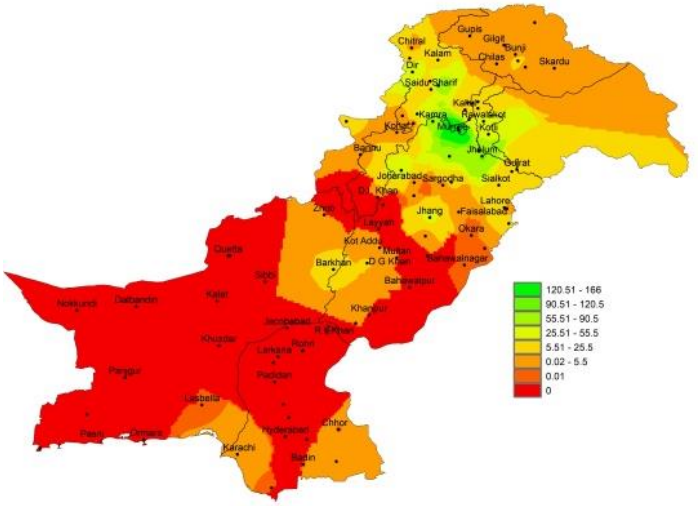
Light to moderate rainfall reported from agricultural plains of KP. Chief amount of rainfall received at Malam Jabba, Dir & Risalpur. Decadal maximum & minimum temperature both raised above normal by 2.3°C & 0.9°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 66%, 83.3hrs, 6.6km/hr and 3.8mm/day respectively.

1.3 Balochistan

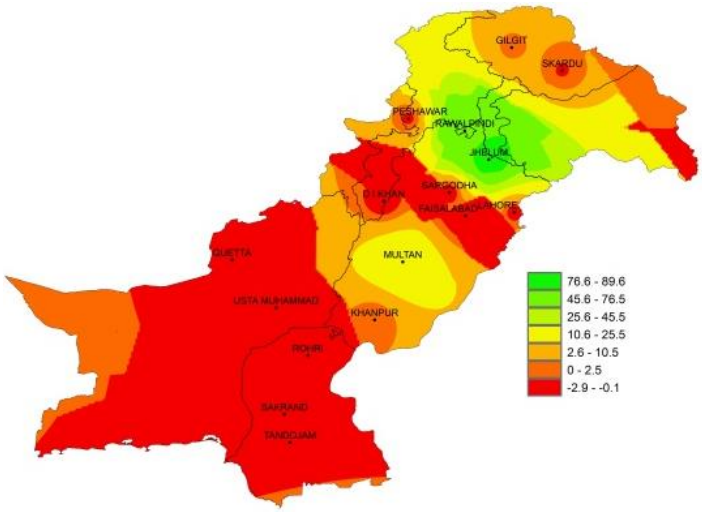
Dry weather reported from most agricultural plains of Balochistan except from a single place Barkhan. Decadal maximum remain normal & minimum temperature raised above normal by 0.8°C in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 101.9hrs, 4.9km/hr and 3.4mm/day respectively.

1.4 Gilgit-Baltistan and Azad Jammu & Kashmir

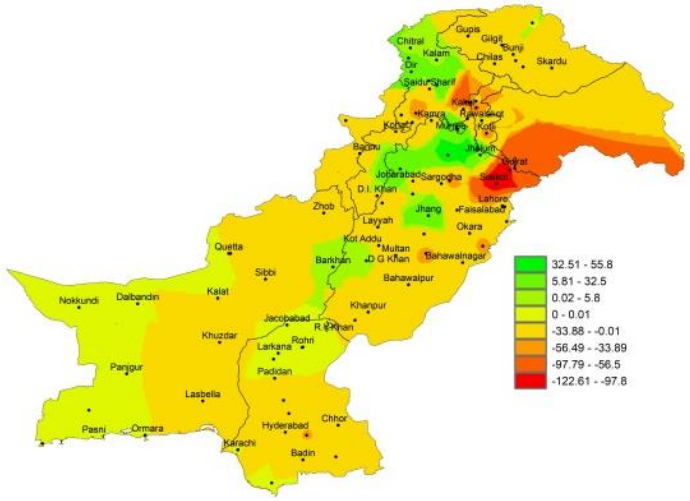
Light to moderate rainfall reported from agricultural plains of GB & Kashmir. Chief amount of rainfall received at Kotli, Rawalakot & Garhi Dopatta. Decadal maximum minimum temperature both raised above normal by 3.0°C & 2.0°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 44%, 71.4hrs, 1.9km/hr and 1.7mm/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 August, 2018)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 75.0mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 72%. Mean day temperature was 34.0°C while night temperature recorded as 24.3°C with 82.4hours bright sunshine duration. Wind speed recorded as 3.3km/hr with mean wind direction *westerly.*
Maize: *good condition, Emergence stage.*

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as Trace (non measureable) during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 57%. Mean day temperature was 38.2°C while night temperature recorded as 28.2°C with 88.5hours bright sunshine duration. Wind speed recorded as 4.0km/hr with mean wind direction *southerly.*
Cotton: *Very good condition, boll opening stage.*

2.3 RAMC, Tandojam (Lower Sindh)

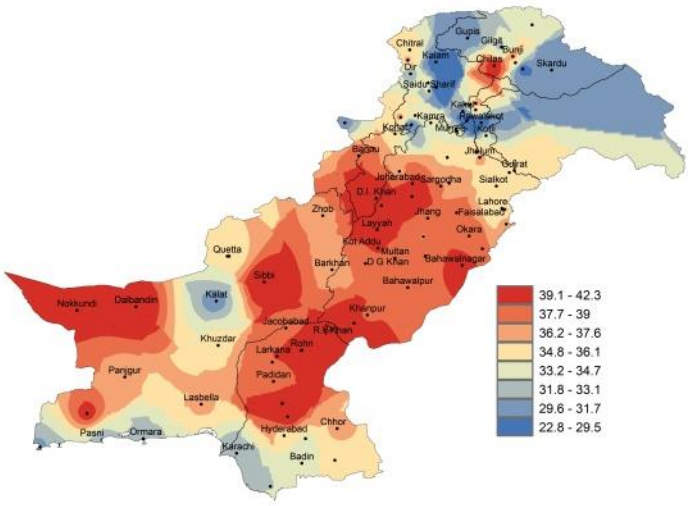
Dry weather reported during the decade; however weather remained cloudy for 08days. Average relative humidity recorded as 65%. Mean day temperature was 36.0°C while night temperature recorded as 23.2°C with 61.9hours bright sunshine duration. Wind speed recorded as 14.9km/h with mean wind direction *south westerly.*
Cotton CIM-602: *Good condition, boll opening stage.*

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

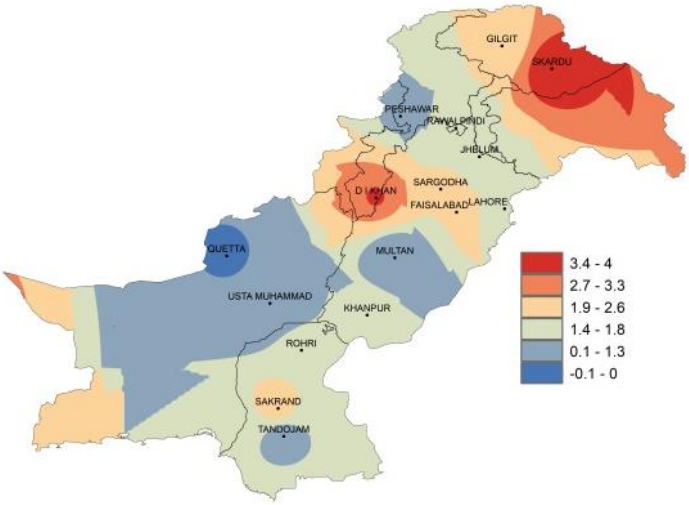
Dry weather reported during the decade; however weather remained cloudy for 06days. Average relative humidity recorded as 67%. Mean day temperature was 39.2°C while night temperature recorded as 27.8°C. Wind speed recorded as 5.1km/h with mean wind direction *southeasterly.*
Rice: *Good condition, Tillering stage.*

2.5 RAMC, Quetta (Northern Balochistan)

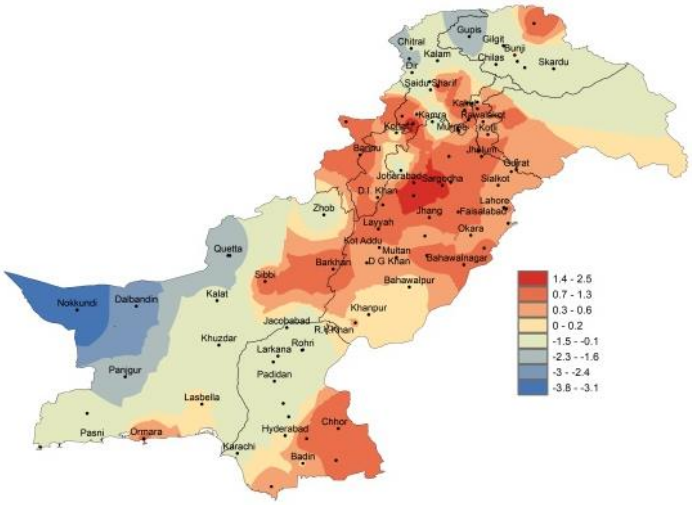
Dry weather reported during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 22%. Mean day temperature was 34.3°C while night temperature recorded as18.5°C with 101.9 hours bright sunshine duration. Wind speed recorded as 4.7km/hr with mean wind direction *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 (21st to 31st August, 2018)

2.6 Jhelum

Rainfall reported as 94.0mm during the decade; however weather remained cloudy for 09 days. Average relative humidity recorded as 70%. Mean day temperature was36.5°C while night temperature recorded as 25.9°C with 98.0hours bright sunshine duration. Wind speed recorded as 2.2km/hr with mean wind direction *southerly*.

2.7 Lahore

Rainfall reported as 2.2 mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 67%. Mean day temperature was 36.5°C while night temperature recorded as 28.5°C with 74.2hours bright sunshine duration. Wind speed recorded as 1.4km/hr with mean wind direction *south westerly*.

2.8 Sargodha

Dry weather reported during the decade; however weather remained cloudy for 09 days. Average relative humidity recorded as 60%. Mean day temperature was 37.3°C while night temperature recorded as 29.0°C with 65.6hours bright sunshine duration. Wind speed recorded 7.5km/hr with mean wind direction *south westerly*.

2.9 Multan

Rainfall reported as 25.0 mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 62%. Mean day temperature was 36.6°C while night temperature recorded as 28.7°C with 70.0hours bright sunshine duration. Wind speed recorded 7.2km/hr with mean wind direction *south westerly*.

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 08day. Average relative humidity recorded as 61%. Mean day temperature was 38.8°C while night temperature recorded as 26.8°C with 86.3hours bright sunshine duration. Wind speed recorded 6.2km/hr with mean wind direction *south westerly*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 04days. Average relative humidity recorded as 52%. Mean day temperature was 38.5°C while night temperature recorded as 26.2°C with 112.9hours bright sunshine duration. Wind speed recorded 7.0km/hr with wind direction *south easterly*.

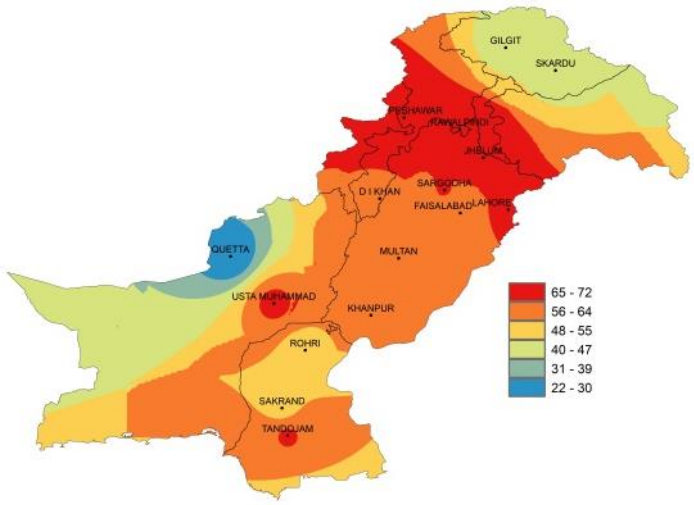


Figure.3: Relative Humidity in Percentage (%)

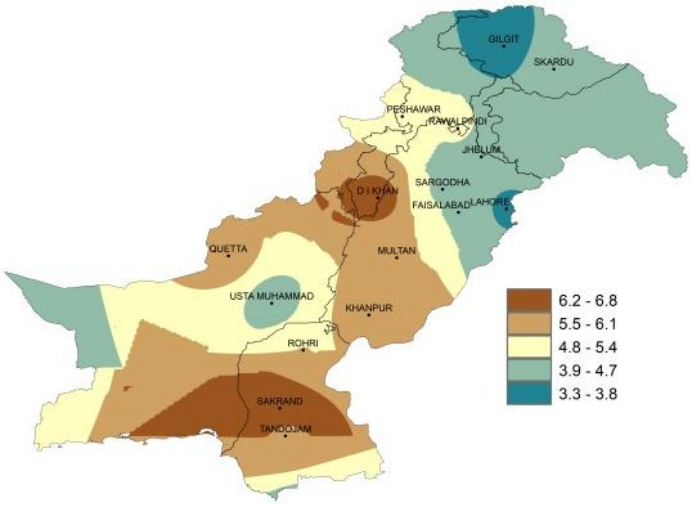


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

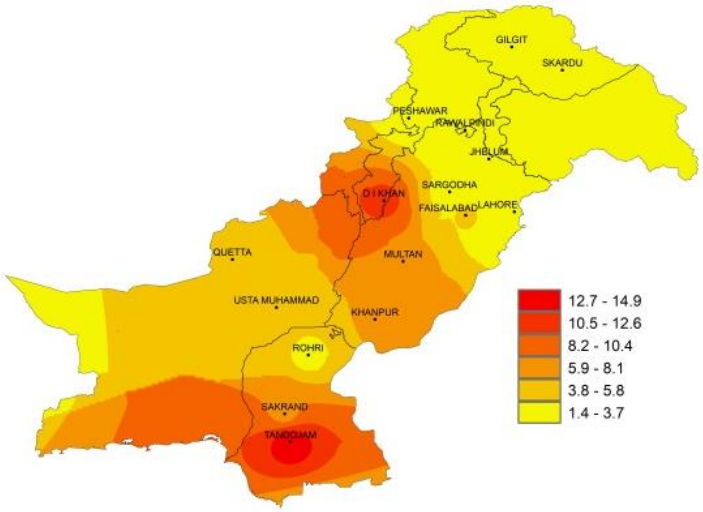


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 01days. Average relative humidity recorded as 51%. Mean day temperature was 40.0°C while night temperature recorded as 26.0°C with 66.6hours bright sunshine duration. Wind speed recorded 3.2km/hr with wind direction *south easterly*.

2.13 D.I. Khan

Dry weather reported during the decade; however weather remained cloudy for 02days. Average relative humidity recorded as 62%. Mean day temperature was 40.4°C while night temperature recorded as 28.0°C with 90.3hours bright sunshine duration. Wind speed recorded as 11.3 km/hr with mean wind direction *north easterly*.

2.14 Peshawar

Rainfall reported as Trace (non measureable) during the decade; however weather remained cloudy for10days. Average relative humidity recorded as 72%. Mean day temperature was 36.6°C while night temperature recorded as 25.2°C with 76.2 hours bright sunshine duration. Wind speed recorded as 1.8km/hr with mean wind direction *north easterly*.

2.15 Skardu

Rainfall reported as Trace (not measureable) during the decade; however weather remained cloudy for 07days. Average relative humidity recorded as 44%. Mean day temperature was 31.7°C while night temperature recorded as 11.4°C with 49.8hours bright sunshine duration. Wind speed recorded as 1.9km/hr with mean wind direction *south easterly*.

2.16 Gilgit

Rainfall reported as 1.9 mm during the decade; however weather remained cloudy for 07days. Average relative humidity recorded as 46%. Mean day temperature was 33.1°C while night temperature recorded as 15.9°C with 88.0hours bright sunshine duration. Wind speed recorded as 2.9km/hr with mean wind direction *south easterly*.

Ten Days Weather Advisory for Farmers (3th to 10th 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 parts of the 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

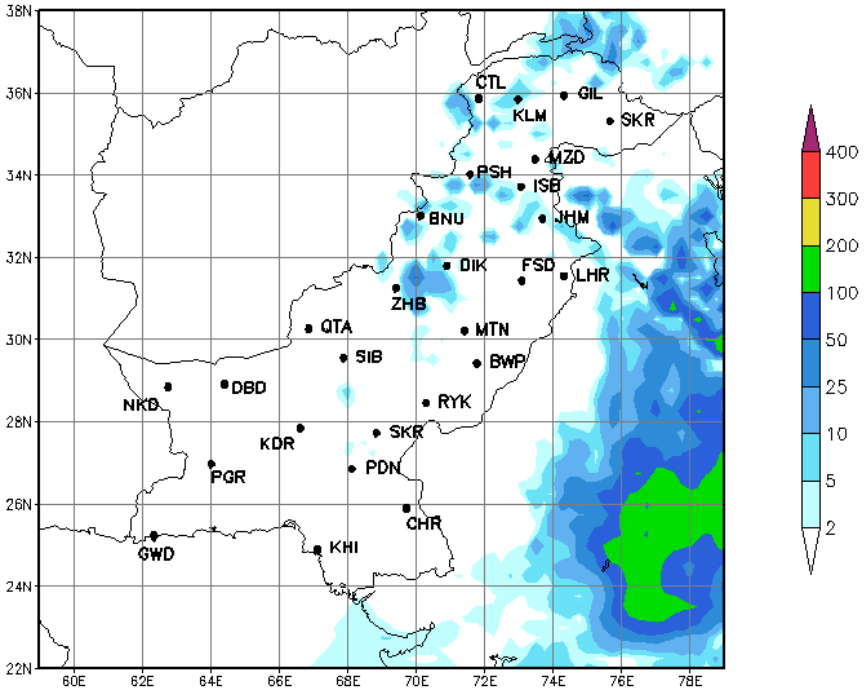
- **Punjab:** Mainly hot and humid weather is expected in most parts of the country. However, rain-thundershower with gusty winds is expected at isolated places, Rawalpindi divisions, Islamabad, Gujranwala, and Lahore.
- **Khyber Pakhtunkhwa:** Mainly hot and humid weather is expected in most parts of the country. However, rain-thundershower with gusty winds is expected at isolated places in Malakand, Peshawar, Kohat, D.I khan, during the current decade.
- **Balochistan:** Dry weather is expected at most places of Balochistan during the current decade.
- **Sindh:** Dry weather is expected at most places of Sindh during the current decade.
- **Gilgit-Baltistan:** Mainly hot and humid weather is expected in most parts of the province. However, rain-thundershower with gusty winds is expected at isolated places in Gilgit-Baltistan.
- **Kashmir**: Light to moderate rainfall is expected in most parts of Kashmir during the current decade.

3.4 Advisory for Farmers

- 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.
- 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.
- Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.
- Measures may be taken to preserve the standing crops and vegetables from the damaging effects of varying weather pattern due to monsoon systems.
- Farmers of rainfed areas may take measures to preserve rain water for crops and livestock.

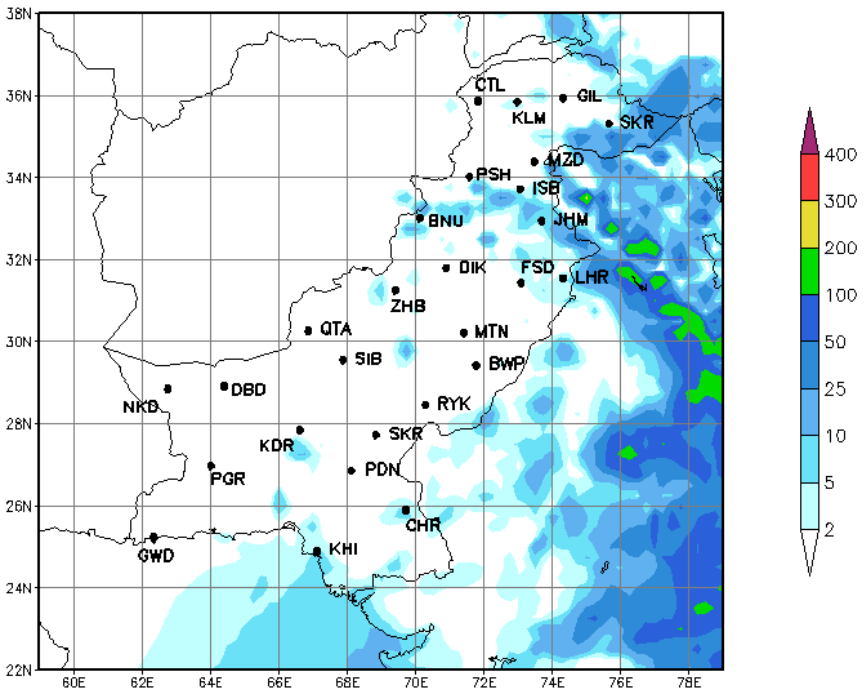
4.1 Precipitation Outlook (3rd to 5th September, 2018)

The forecast for the next three days (3rd to 5th) of the first decade of September 2018 shows that mainly cloudy weather with light to moderate rainfall is expected at isolated places in KP, G.B, Kashmir, Upper Punjab and Eastern Baluchistan. However, dry weather may prevail in rest parts of the country.



4.2 Precipitation Outlook (6th to 10th September, 2018)

The outlook for the last 5 days (6th to 10th) of the first decade of September 2018 shows that light to moderate rainfall is expected at scattered places in lower KP, GB, upper Punjab, coastal areas of Sindh. However, dry weather may prevail in rest parts of the country.



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)

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)