Decadal Agromet Bulletin of Pakistan

Highlights….

- Heavy rainfall reported in the agricultural plains of Punjab. Light to moderate rainfall reported in the agricultural plains of K.P, Sindh, Balochistan, G.B & Kashmir.
- Highest amount of rainfall reported 220.5 mm at Lahore during the last decade.
- Highest Maximum temperature recorded 46.0°C at Turbat during the last decade.
- Rain/thunderstorm is expected in most of the agricultural plains of the country from 1st to 3rd of the decade.
- Pest/viral attacks are expected over cotton and sugarcane crops during hot and humid conditions during monsoon. Farmers should be very careful and take in time precautionary measures in this regard.
- Farmers obtaining crop water through tube wells are advised to schedule the irrigation according to the expected weather mentioned during the decade.
- Farmers are advised to control further weeds growth at the present growing stages to stop any negative impact over the crops. Weeds removing practices should be started soon after expected rains in the mentioned.
- Farmers are advised to take in time precautionary measures to protect their crops, livestock and other property from any expected heavy rains.

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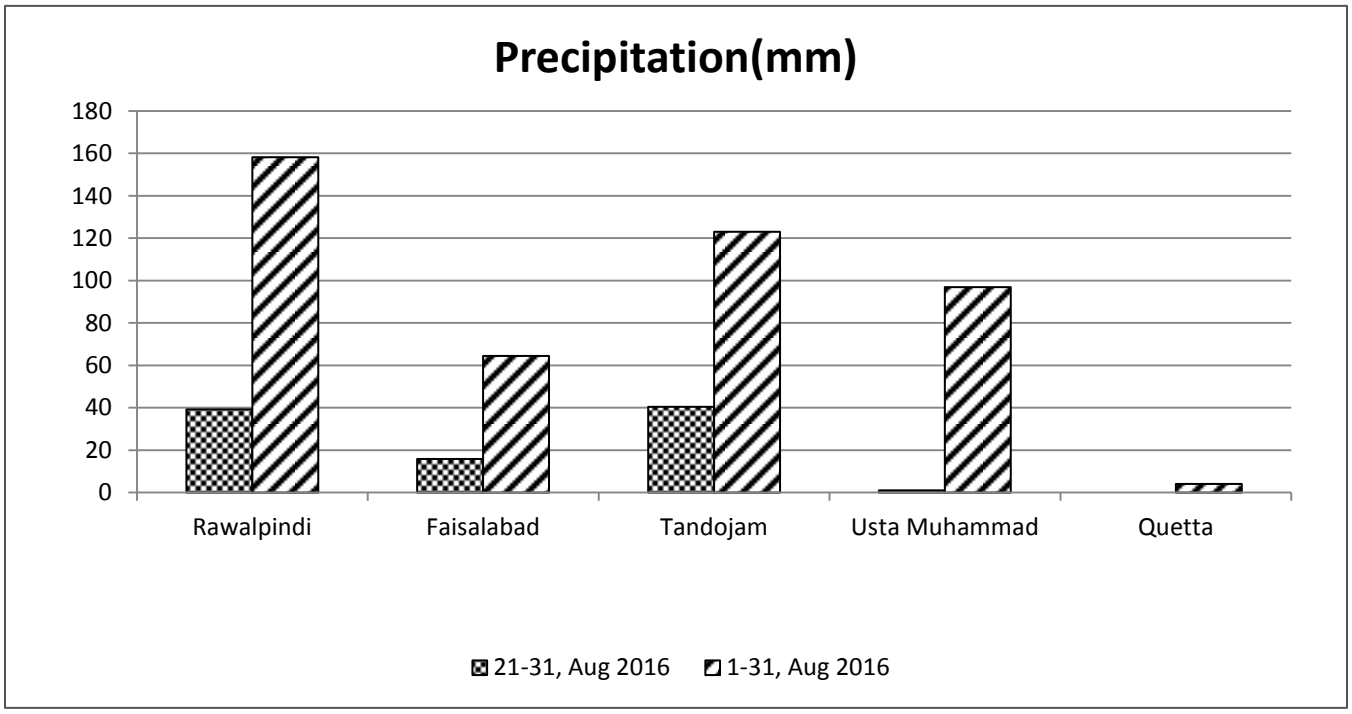
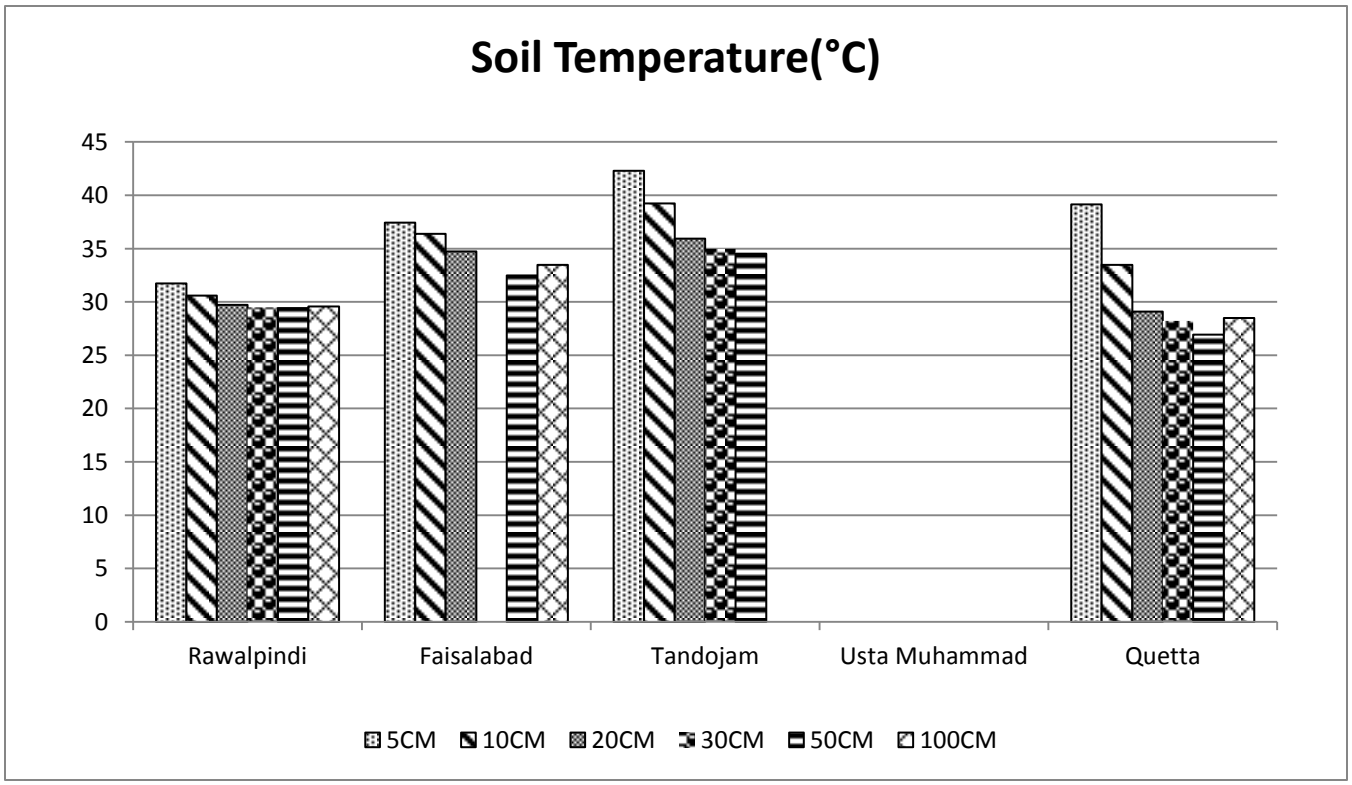
Meteorological conditions during 3rd decade of August, 2016

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	39.2	33.3	1.8	0.8	29.1	31.8	30.6	29.8	29.5	29.5	29.6	66	93.0	1.7	4.7
2	Faisalabad	2.9	15.8	12.9	-3.0	-0.1	29.8	37.5	36.4	34.8	***	32.5	33.5	66	70.5	3.1	4.4
3	Jhelum	4.4	76.8	72.4	0.2	-1.0	30.0	34.3	32.8	31.6	31.2	29.8	***	69	76.0	2.6	4.5
4	Lahore	3.7	182.0	178.3	-2.1	-2.6	28.7	31.6	31.5	30.3	29.9	***	30.0	78	43.3	2.4	3.5
5	Sargodha	2.3	60.0	57.7	-1.2	-0.9	30.6	33.8	33.0	31.5	31.1	***	30.6	69	83.7	2.4	4.7
6	Multan	0.7	28.4	27.7	0.1	-0.3	32.2	***	***	***	***	***	***	61	86.9	3.6	5.3
7	Khanpur	0.0	18.4	18.4	0.4	0.2	32.4	***	37.1	36.9	37.1	37.3	35.9	62	91.6	4.9	5.8
8	Tandojam	1.5	40.5	39.0	1.3	-0.1	30.7	42.3	39.3	36.0	35.0	34.6	***	70	76.4	7.0	5.4
9	Sakrand ☆	0.7	4.0	3.3	0.8	1.7	32.0	46.9	41.3	***	***	***	36.4	65	91.5	2.2	5.2
11	Rohri	0.7	35.0	34.3	1.7	***	40.0	***	***	***	***	***	***	53	101.0	2.7	5.0
12	D.I Khan	1.8	37.0	35.2	0.5	0.0	31.5	***	***	***	***	***	***	63	91.4	***	6.0
13	Peshawar	0.8	6.1	5.3	1.3	-0.6	31.0	38.7	35.0	33.5	***	***	***	64	83.4	4.2	5.1
14	Usta .M	0.1	1.0	0.9	-1.3	0.0	32.2	***	***	***	***	***	***	62	***	8.4	5.9
15	Quetta	0.4	0.0	-0.4	-2.1	0.1	25.3	39.2	33.5	29.1	28.3	27.0	28.5	32	117.6	5.3	6.0
16	Skardu	0.4	14.0	13.6	-3.3	-1.2	18.9	***	***	***	***	***	***	63	21.3	0.7	2.4
17	Gilgit	0.4	4.2	3.8	-3.9	2.9	24.3	***	***	***	***	***	***	51	59.7	4.4	4.2

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 years climatic (normal) data for computing departures.

Graph at RAMCs during August, 2016





1 Past Weather (21st to 31st August, 2016)

Heavy rainfall reported in the agricultural plains of Punjab. Light to moderate rainfall reported in the agricultural plains of K.P, Sindh, Balochistan, G.B & Kashmir.

1.1 Punjab

Heavy rainfall reported in the agricultural plains of Punjab. Chief amount of rainfall received in Lahore, Islamabad & Mangla. Decadal maximum dropped below normal by 0.5°C & minimum raised above normal by 0.6°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 67%, 77.9hrs, 3.0km/hr and 4.7mm/day respectively.

1.2 Sindh

Light to moderate rainfall reported in the agricultural plains of Sindh. Chief amount of rainfall received in Dadu, Chorr & Mithi. Decadal maximum and minimum temperature both raised above normal by 1.3°C & 0.8°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 63%, 89.6hrs, 4.0km/hr and 5.2mm/day respectively.

1.3 Khyber Pakhtunkhwa (KP)

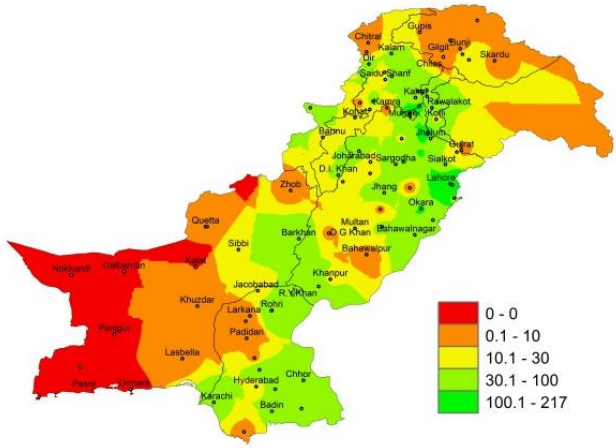
Light to moderate rainfall reported in the agricultural plains of KP. Chief amount of rainfall received in Malam jabba, Parachinar & Dir. Decadal maximum raised above normal by 0.9°C & minimum dropped below normal by 0.3°C, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 64%, 87.4hrs, 4.2km/hr and 5.6mm/day respectively.

1.4 Balochistan

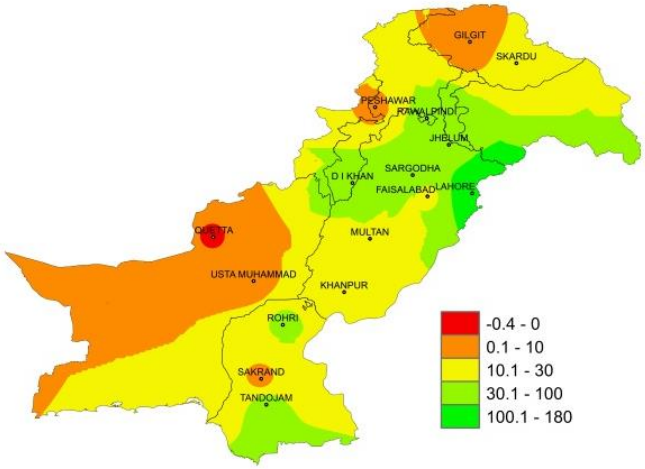
Light to moderate rainfall reported in few agricultural plains of Balochistan. Chief amount of rainfall received in Barkhan Sibbi & Khuzdar. Decadal maximum dropped below normal by 1.7°C & minimum temperature remained normal, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 47%, 117.6hrs, 6.9km/hr and 6.0mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

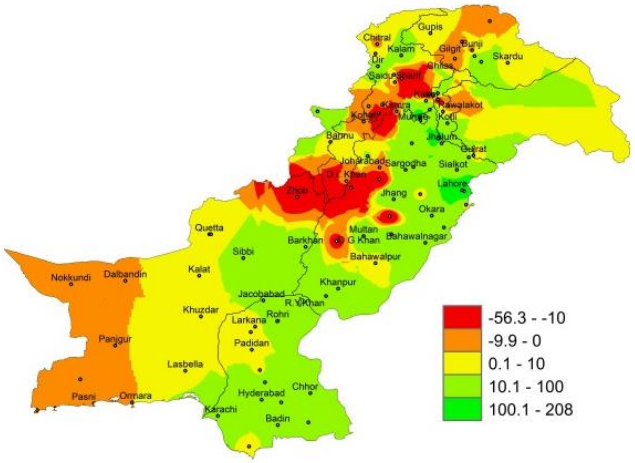
Light to moderate rainfall reported in the agricultural plains of GB & Kashmir. Chief amount of rainfall received Garhi dopatta, Muzaffarabad & Rawalakot. Decadal maximum dropped below normal by 4.0°C & minimum temperature raised above normal by 0.9°C in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 57%, 40.5hrs, 2.6km/hr and 3.3mm/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 in "mm"

2(a) Past Weather for Major Agricultural Plains (21st to 31st August, 2016)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 39.2mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 66%. Mean day temperature was 34.4°C while night temperature recorded as 23.8°C with 93.0hours bright sunshine duration. Wind speed recorded as 1.7km/hr with mean wind direction *westerly*
Maiz Agaiti 2002*: Good condition, 9th leaf stage.*

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 15.8mm during the decade; however weather remained cloudy for 09days. Average relative humidity recorded as 66%. Mean day temperature was 33.3°C while night temperature recorded as 26.2°C with 70.45hours bright sunshine duration. Wind speed recorded as 3.1km/hr with mean wind direction *south easterly.*
Cotton: Very good condition, boll opening stage.

2.3 RAMC, Tandojam (Lower Sindh)

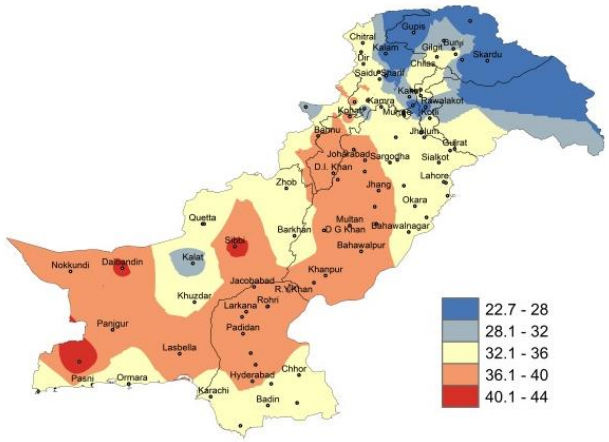
Rainfall reported as 40.5mm during the decade; however weather remained cloudy for 08days. Average relative humidity recorded as 70%. Mean day temperature was 36.4°C while night temperature recorded as 25.0°C with 76.4hours bright sunshine duration. Wind speed recorded as 7.0km/h with mean wind direction *southerly.*
Cotton (Star-2): Good condition, Boll opening stage.

2.4 RAMC, Usta Muhammad (Eastern Balochistan)

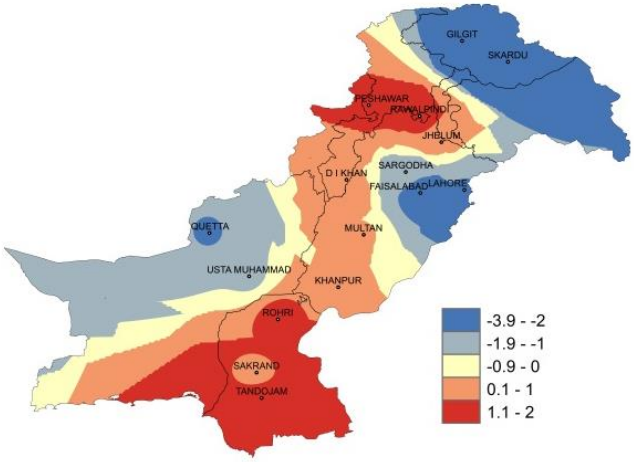
Rainfall reported as 1mm during the decade; however weather remained cloudy for 05days. Average relative humidity recorded as 62%. Mean day temperature was 37.8°C while night temperature recorded as 26.6°C. Wind speed recorded as 8.4km/h with mean wind direction *south easterly*
Rice: Third leaf complete.

2.5 RAMC, Quetta (Northern Balochistan)

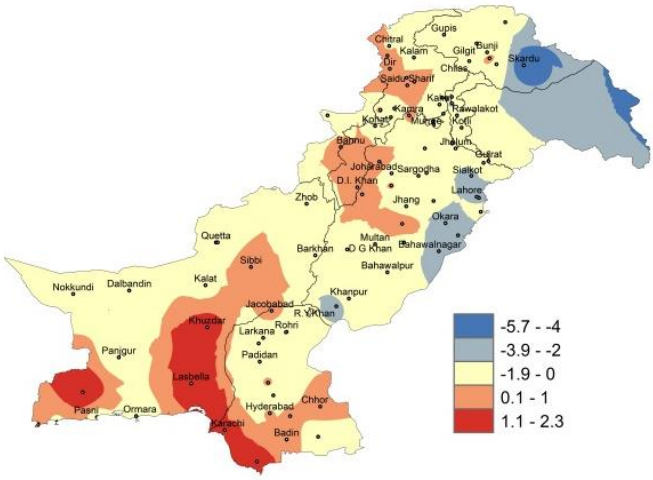
Dry weather reported during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 32%. Mean day temperature was 32.3°C while night temperature recorded as 18.2°C with 117.6hours bright sunshine duration. Wind speed recorded as 5.3km/hr with mean wind direction *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 in "°C"

2(b) Past Weather for Sub-Regional Agricultural Plains (21st to 31st August, 2016)

2.6 Jhelum

Rainfall reported as 76.8mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 69%. Mean day temperature was 35.3°C while night temperature recorded as 24.6°C with 76.0hours bright sunshine duration. Wind speed recorded 2.0km/hr with wind direction *south easterly*.

2.7 Lahore

Rainfall reported as 182.0mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 78%. Mean day temperature was 32.8°C while night temperature recorded as 24.5°C with 43.3hours bright sunshine duration. Wind speed recorded as 2.4km/hr with mean wind direction *north easterly*.

2.8 Sargodha

Rainfall reported as 60.0mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 69%. Mean day temperature was 35.3°C while night temperature recorded as 25.8°C with 83.7hours bright sunshine duration. Wind speed recorded 2.4km/hr with mean wind direction *north easterly*.

2.9 Multan

Rainfall reported as 28.4mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 61%. Mean day temperature was 37.0°C while night temperature recorded as 27.3°C with 86.9hours bright sunshine duration. Wind speed recorded 3.6km/hr with mean wind direction *north easterly*.

2.10 Khanpur

Rainfall reported as 18.4mm during the decade. However sky remained cloudy for 11days. Average relative humidity recorded as 62%. Mean day temperature was 37.5°C while night temperature recorded as 27.3°C with 91.6hours bright sunshine duration. Wind speed recorded 4.9km/hr with mean wind direction *variable*.

2.11 Sakrand

Rainfall reported as 4.0mm during the decade; however weather remains cloudy for 09days. Average relative humidity recorded as 65%. Mean day temperature was 37.2°C while night temperature recorded as 26.8°C with 91.5hours bright sunshine duration. Wind speed recorded 2.22km/hr with wind direction *south easterly*.

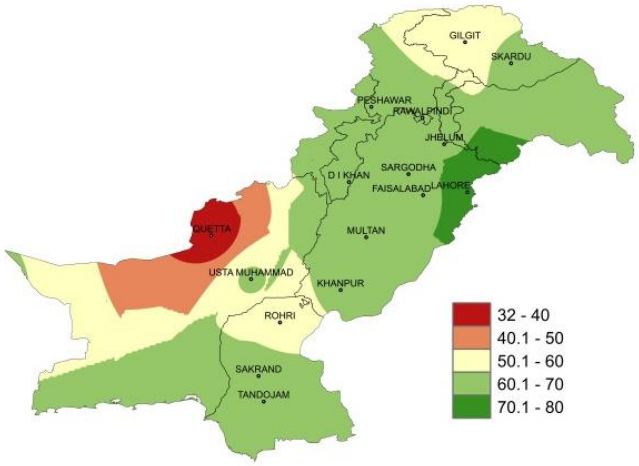


Figure.3: Relative Humidity in Percentage (%)

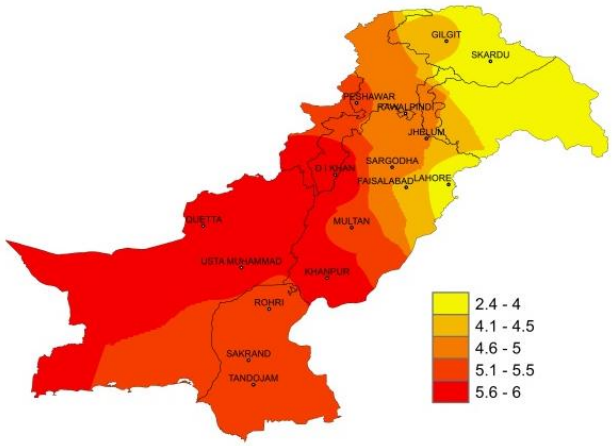


Figure.4: Reference Crop Evapotranspiration "ETo" in mm/day

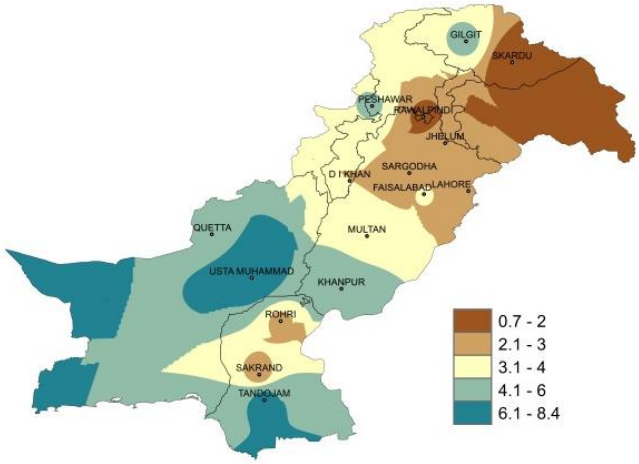


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 35.0mm during the decade; however weather remained cloudy for 06days. Average relative humidity recorded as 53%. Mean day temperature was recorded as 40.0°C with 101.0hours bright sunshine duration. Wind speed recorded as 2.7km/hr with mean wind direction *north easterly*.

2.13 D.I. Khan

Rainfall reported as 37.0mm during the decade; however weather remains cloudy for 03days. Average relative humidity recorded as 63%. Mean day temperature was 37.5°C while night temperature recorded as 25.5°C with 91.4hours bright sunshine duration.

2.14 Peshawar

Rainfall reported as 6.1mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 64%. Mean day temperature was 36.8°C while night temperature recorded as 25.2°C with 83.4hours bright sunshine duration. Wind speed recorded as 4.1km/hr with mean wind direction *north easterly*.

2.15 Skardu

Rainfall reported as 14.0mm during the decade; however weather remained cloudy for 10days. Average relative humidity recorded as 63%. Mean day temperature was 24.4°C while night temperature recorded as 13.3°C with 21.3hours bright sunshine duration. Wind speed recorded as 0.7km/hr with mean wind direction *south easterly*.

2.16 Gilgit

Rainfall reported as 4.2mm during the decade; however weather remained cloudy for 11days. Average relative humidity recorded as 51%. Mean day temperature was 30.5°C while night temperature recorded as 18.0°C with 59.7hours bright sunshine duration. Wind speed recorded as 4.4km/hr with mean wind direction *south easterly*.

3 Ten Days Weather Advisory for Farmers (1st to 10th September, 2016)

3.1 Temperature Forecast

Temperatures are likely to be 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.

3.3 Rain Forecast

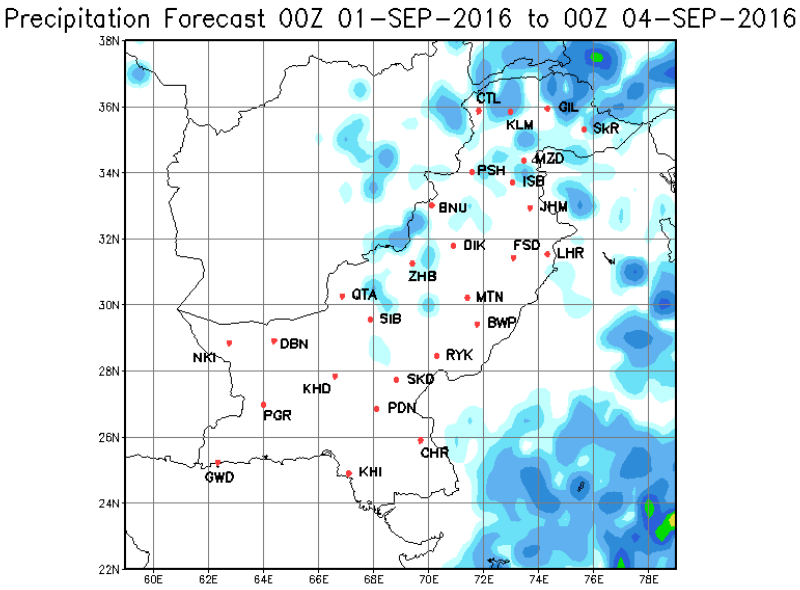
- **Punjab**: Rain-thunderstorm is expected at isolated places in upper Punjab, Rawalpindi, Gujranwala, Sargodha, and Faisalabad from 1st to 3rd of the decade.
- **Khyber Pakhtunkhwa**: Rain-thunderstorm is expected at scattered places in Khyber-Pakhtunkhwa, Mardan, Malakand, Hazara and Peshawar Division from 1st to 3rd of the decade.
- **Sindh:** Mainly hot and dry weather is expected in most parts of the province with the possibility of light rain along Sindh coastal belt. Light rainfall is expected at isolated places including Hyderabad, Karachi, Mirpur Khas and Larkana divisions from 1st to 2nd and 8th to 10th of the decade.
- **Balochistan:** Mainly hot and dry weather is expected in most parts of Balochistan, however light rainfall is expected at isolated places in Quetta, Kalat, Sibbi & Zhob divisions from 1st to 2nd of the decade.
- **Gilgit Baltistan:** Rain-thunderstorm is expected at isolated places in GB during the decade.
- **Kashmir:** Rain-thunderstorm is expected at isolated places including Muzaffarabad, Kotli, Neelum & Rawalakot during the decade.

3.4 Advisory for Farmers

- Pest/viral attacks are expected over cotton and sugarcane crops during hot and humid conditions during monsoon. Farmers should be very careful and take in time precautionary measures in this regard.
- Farmers obtaining crop water through tube wells are advised to schedule the irrigation according to the expected weather mentioned during the decade.
- Farmers are advised to control further weeds growth at the present growing stages to stop any negative impact over the crops. Weeds removing practices should be started soon after expected rains in the mentioned.
- Farmers are advised to take in time precautionary measures to protect their crops, livestock and other property from any expected heavy rains.
- Farmers of upper half of the country are advised to complete sowing of Kharif crops in time to utilize fully the present soil moisture especially growers of maize crop in rainfed areas.
- Farmers of cotton belt are advised to be aware of the adverse effects of stagnant water in the fields. Mechanism for drainage of stagnant water from fields should be evolved on priority basis and necessary requirement in this regard should be taken.

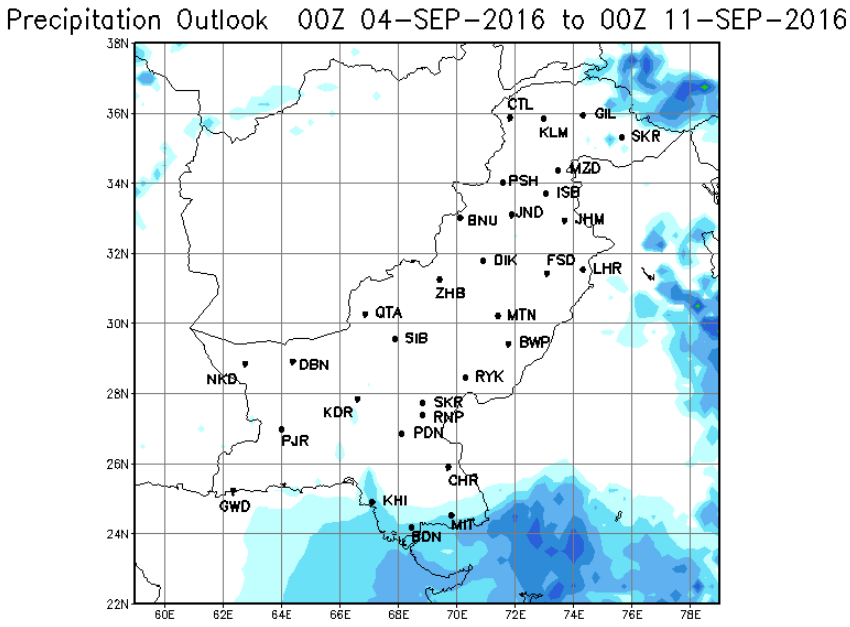
4.1 Precipitation Forecast (1st to 3rd September, 2016)

The forecast for the 1st three days of 1st decade of September 2016 shows that normal to slightly below normal rainfall is expected in the monsoon dominated regions of Punjab, Khyber Pakhtoonkhwa, Baluchistan and Azad Jammu and Kashmir.



4.2 Precipitation Outlook (4th to 10th September, 2016)

The outlook for the 1st decade of September 2016 shows that normal to slightly below normal rainfall is expected in the monsoon dominated regions of Punjab, Khyber Pakhtoonkhwa and Azad Jammu and Kashmir. Sindh and adjoining areas of Baluchistan (the coastal belt) may get normal rainfall.



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)