Decadal Agromet Bulletin of Pakistan

Highlights…

- Light rainfall reported from Balochistan and Sindh, whereas light to moderate rainfall reported from rest of the agricultural plains of country during the last decade.
- Highest amount of rainfall recorded as 55.0 mm at Kalam during the last decade.
- Highest maximum temperature recorded as 46.0°C at Jacobabad during the last decade.
- Mainly hot and dry weather is expected in most parts of the country. However, dust-thunderstorm/rain is expected at isolated places in Khyber Pakhtunkhwa (Malakand, Hazara, Peshawar, Mardan, Kohat, Bannu, D.I.Khan Divisions), Punjab (Rawalpindi, Gujranwala, Lahore, Sargodha, Faisalabad, Multan divisions), Islamabad, Kashmir and Gilgit-Baltistan during the first half of the current decade.
- Wheat crop is at maturity stages in northern half of the country. Farmers are advised to schedule their harvesting by keeping in view the weather forecast.
- Measures may be taken to preserve the standing crops/orchids from the damaging impacts of extreme weather conditions like thunder/dust storm, gusty winds, hails etc.
- 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.

NATIONAL AGROMET CENTRE (NAMC)
PAKISTAN METEOROLOGICAL DEPARTMENT
SECTOR H-8/2, ISLAMABAD

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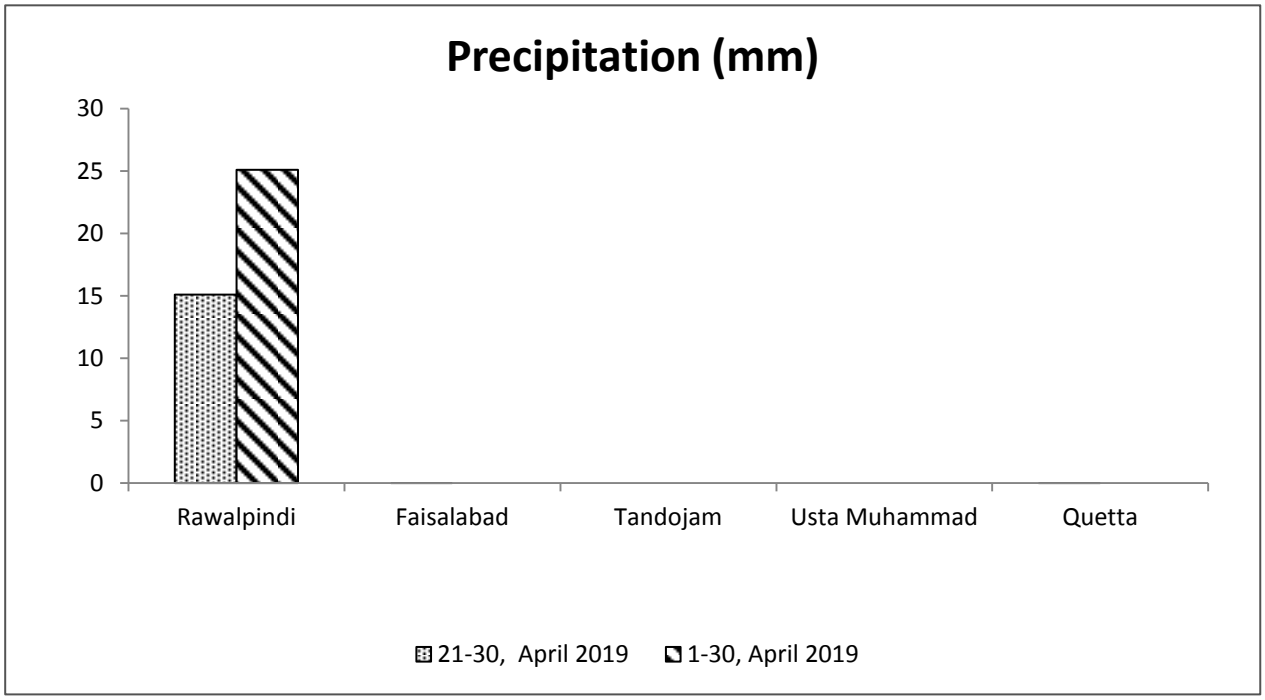
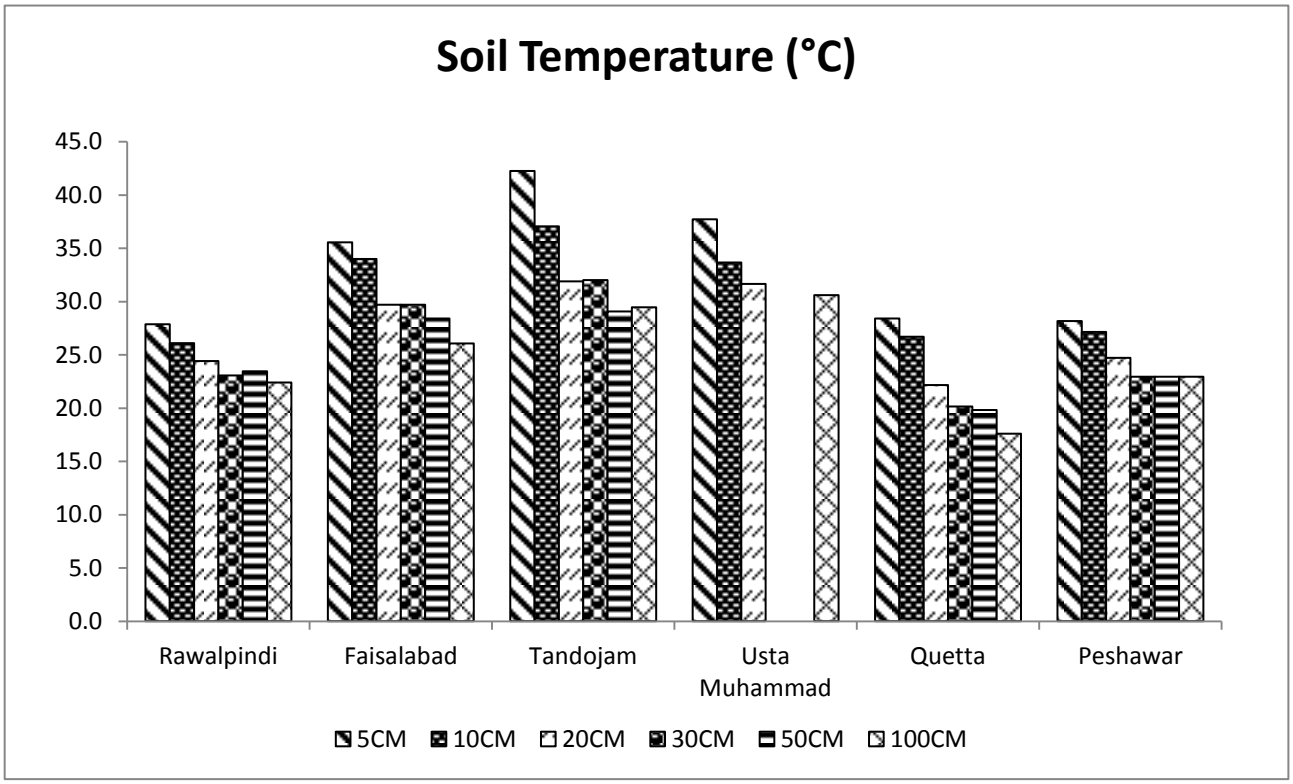
Meteorological Conditions during 3rd Decade of April, 2019

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	1.9	15.1	13.2	-0.6	-0.8	25.0	27.9	26.1	24.4	23.1	23.5	22.4	57	81.8	1.9	1.9
2	Faisalabad	0.5	0.0	-0.5	-0.1	0.6	30.2	35.6	34.0	29.7	29.7	28.4	26.1	38	97.8	2.8	2.8
3	Jhelum	1.0	9.2	8.2	-0.4	-0.7	28.4	32.5	30.4	27.4	25.7	25.5	***	44	89.9	3.8	3.0
4	Lahore	0.3	1.4	1.1	1.1	0.2	31.3	32.4	31.2	28.6	26.7	***	24.9	40	92.7	3.1	3.0
5	Sargodha	0.7	3.3	2.6	-1.6	0.4	29.6	34.1	31.8	27.8	26.8	***	24.4	47	81.8	1.8	2.2
6	Multan	0.2	0.0	-0.2	-1.4	0.8	31.1	***	***	***	***	***	***	37	86.1	5.9	4.1
7	Khanpur	0.1	0.0	-0.1	-0.2	0.9	32.6	***	33.7	33.1	32.8	32.4	30.3	36	94.0	5.6	4.6
8	Tandojam	0.1	0.0	-0.1	0.5	-0.4	31.4	42.3	37.1	31.9	32.0	29.1	29.5	43	107.4	8.7	6.0
9	Sakrand ☆	0.0	0.0	0.0	0.4	1.2	32.9	52.7	***	***	***	***	30.8	37	108.4	4.4	4.3
11	Rohri ☆	0.0	0.0	0.0	0.3	0.0	34.2	***	***	***	***	***	***	29	100.6	3.9	4.0
12	D.I Khan	0.3	0.0	-0.3	-0.3	0.1	29.3	28.9	27.3	26.0	25.8	14.6	***	46	87.8	8.9	4.8
13	Peshawar	1.0	15.6	14.6	-0.8	0.4	26.6	28.2	27.2	24.7	23.0	23.0	23.0	52	70.7	1.4	1.7
14	Usta M.	0.2	0.0	-0.2	-1.1	2.3	33.5	37.7	33.7	31.7	***	***	30.6	32	***	2.2	2.8
15	Quetta	0.3	0.0	-0.3	-2.2	0.8	19.7	28.4	26.7	22.2	20.2	19.8	17.6	30	95.5	6.2	3.2
16	Skardu	0.7	3.4	2.7	2.2	15.7	23.1	***	***	***	***	***	***	22	67.8	8.4	3.0
17	Gilgit	0.7	2.00	1.3	-0.7	3.7	20.2	***	***	***	***	***	***	27	58.9	4.4	2.2

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 year's climatic (normal) data for computing departures.

Graph at RAMCs during April, 2019





Past Weather (21st to 30th April, 2019)

Light rainfall reported from Balochistan and Sindh, whereas light to moderate rainfall reported from rest of the agricultural plains of country during the last decade.

1.1 Punjab

light to moderate rainfall reported from most of the agricultural plains of the Punjab. Highest rainfall reported from Saidpur, Murree & Shamsabad. Decadal maximum dropped below the normal by 0.5°C & minimum raised above the normal by 0.2°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 43%, 89.2 hrs, 3.6km/hr and 3.1mm/day respectively.

1.2 Sindh

Light rainfall reported from most of the agricultural plains of the Sindh. Highest rainfall reported from Padidan & Dadu. Decadal maximum and minimum both raised above the normal by 0.4°C & 0.3°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 36%, 105.5hrs, 5.7km/hr and 4.8mm/day respectively.

1.3 Khyber Pakhtunkhwa

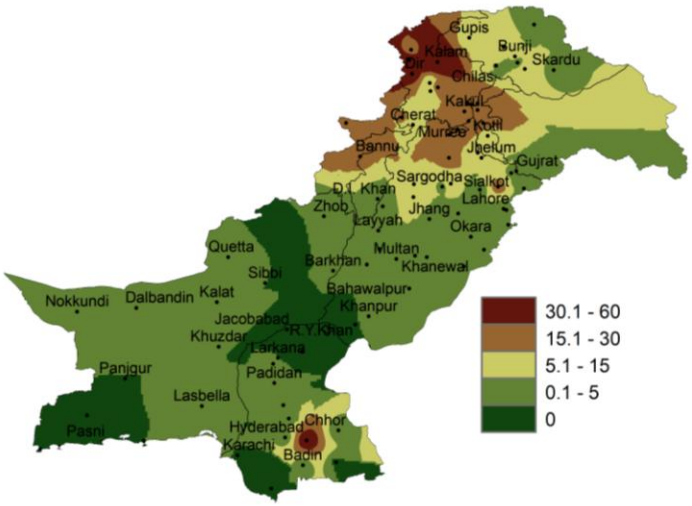
Light to moderate rainfall reported from most of the agricultural plains of Khyber Pakhtunkhwa. Highest rainfall reported from Dir, Mirkhani & Kalam. Decadal maximum dropped below the normal by 0.6°C & minimum raised above the normal by 0.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 49%, 79.3hrs, 5.2km/hr and 3.3mm/day respectively.

1.4 Balochistan

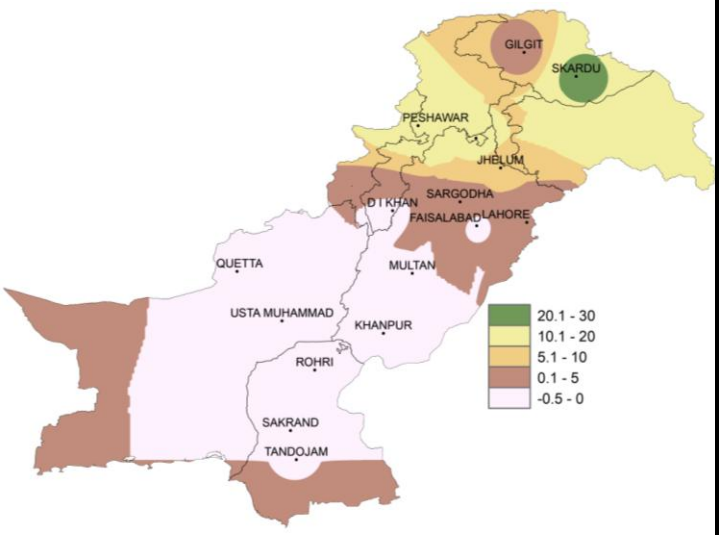
Light rainfall reported from most of the agricultural plains of Balochistan. Highest rainfall reported from Lasbela, Dir & Mirkhani. Decadal maximum dropped below the normal by 1.7°C & minimum raised above the normal by 2.6°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 31%, 95.5hrs, 4.2km/hr and 3.0mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

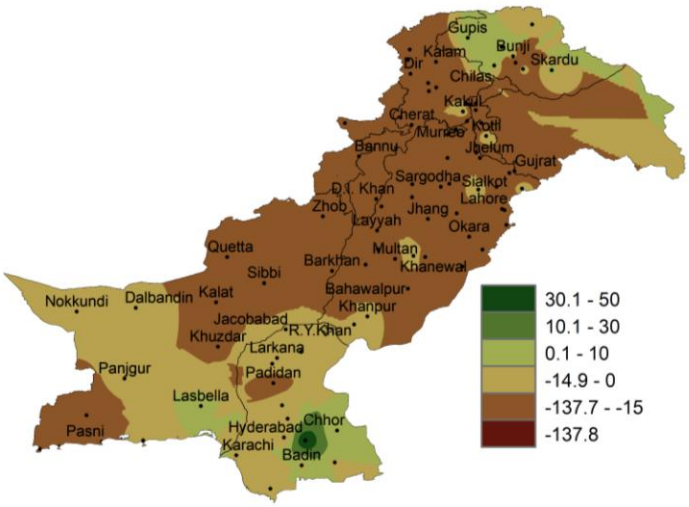
Light to moderate rainfall reported from most of the agricultural plains G.B & Kashmir. Highest rainfall reported from Bagrote, Rawalakot & Garhi Dopatta. Decadal maximum and minimum both raised above the normal by 0.8°C & 9.7°C respectively, in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 25%, 63.4hrs, 6.4km/hr and 2.6 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 (21st to 30th April, 2019)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 15.1 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 57%. Mean day temperature was 33.0°C while night temperature recorded as 16.9°C with 81.8hours bright sunshine duration. Wind speed recorded as 1.9 km/hr with mean wind direction *Westerly*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 38%. Mean day temperature was 38.1°C while night temperature recorded as 22.2°C with 97.8 hours bright sunshine duration. Wind speed recorded as 2.8 km/hr with mean wind direction *Southerly*.

Wheat: *Very good condition, Full Maturity completed.*

2.3 RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained clear during the decade. Average relative humidity recorded as 43%. Mean day temperature was 41.1°C while night temperature recorded as 21.7°C with 107.4 hours bright sunshine duration. Wind speed recorded as 8.7km/h with mean wind direction *South Westerly*.

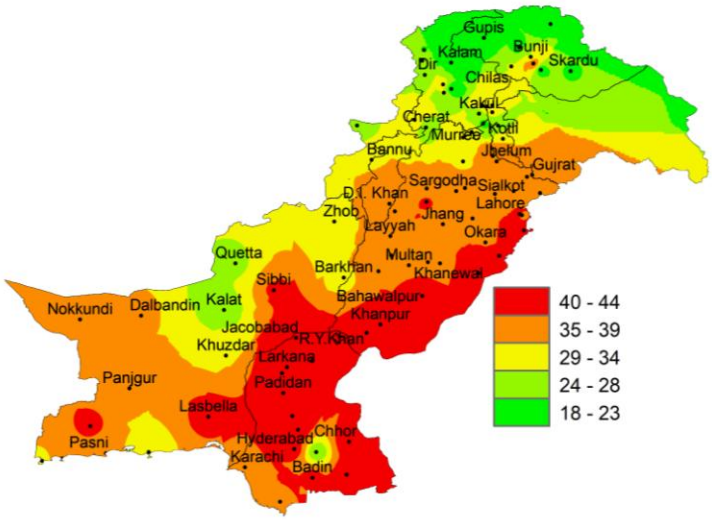
2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

Dry weather reported during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 32%. Mean day temperature was 42.1°C while night temperature recorded as 24.9°C. Wind speed recorded as 2.2 km/h with mean wind direction *North easterly.*

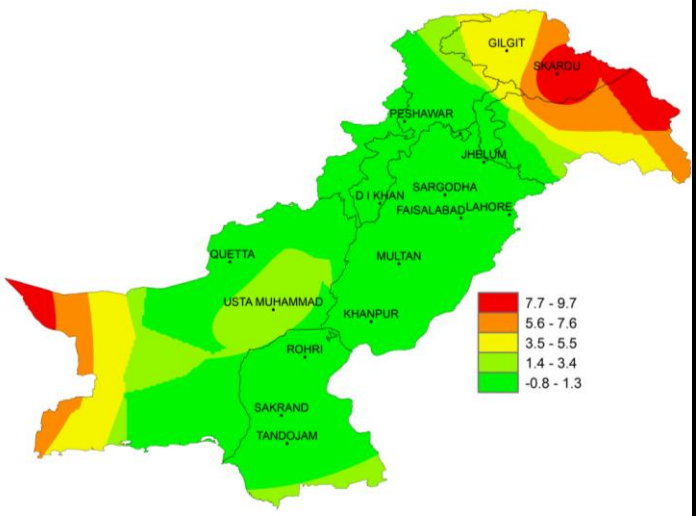
Wheat: *Good condition, Wax maturity.*

2.5 RAMC, Quetta (Northern Baluchistan)

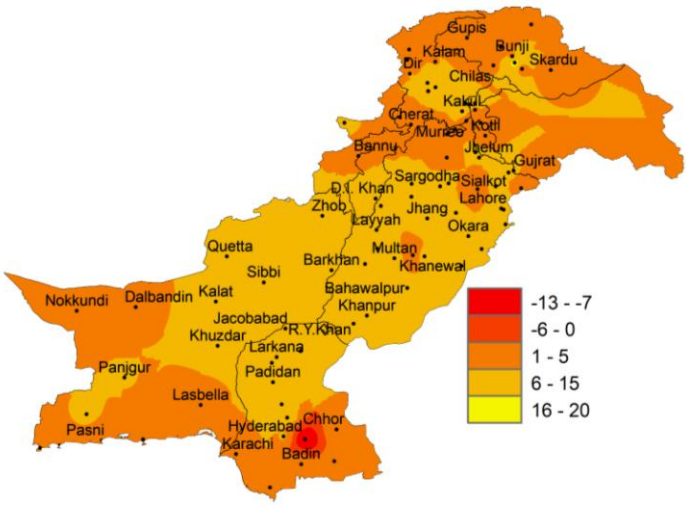
Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 30.3%. Mean day temperature was 26.6°C while night temperature recorded as 12.7°C with 95.5 hours bright sunshine duration. Wind speed recorded as 6.2 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 (21st to 30th April, 2019)

2.6 Jhelum

Rainfall reported as 9.2 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 44%. Mean day temperature was 36.6°C while night temperature recorded as 20.2°C with 89.9 hours bright sunshine duration. Wind speed recorded as 3.8km/hr with mean wind direction *Northerly.*

2.7 Lahore

Rainfall reported as 1.4 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 40%. Mean day temperature was 38.2°C while night temperature recorded as 24.3°C with 92.7 hours bright sunshine duration. Wind speed recorded as 3.1km/hr with mean wind direction *Westerly.*

2.8 Sargodha

Rainfall reported as 3.3 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 47%. Mean day temperature was 36.5°C while night temperature recorded as 22.7°C with 81.8 hours bright sunshine duration. Wind speed recorded 1.8 km/hr with mean wind direction *Variable.*

2.9 Multan

Rainfall reported as 19.9 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 31.7°C while night temperature recorded as 19.4°C with 73.6 hours bright sunshine duration. Wind speed recorded 7.2 km/hr with mean wind direction *North-easterly*.

2.10 Khanpur

Dry weather reported during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 36%. Mean day temperature was 41.4°C while night temperature recorded as 24.0°C with 94.0 hours bright sunshine duration. Wind speed recorded 5.6km/hr with mean wind direction *North easterly.*

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 01 day during the decade Average humidity recorded as 37%. Mean day temperature was 42.2°C while night temperature recorded as 23.6°C with 108.4 hours bright sunshine duration. Wind speed recorded 4.4km/hr with wind direction *Southerly*.

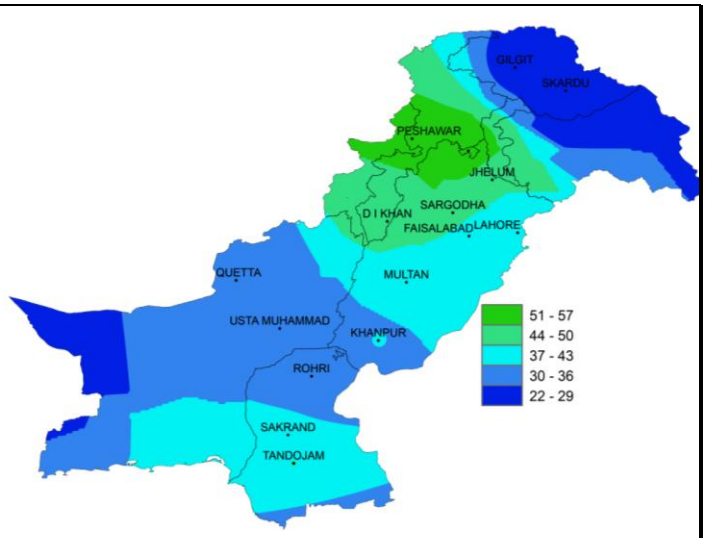


Figure.3: Relative Humidity in Percentage (%)

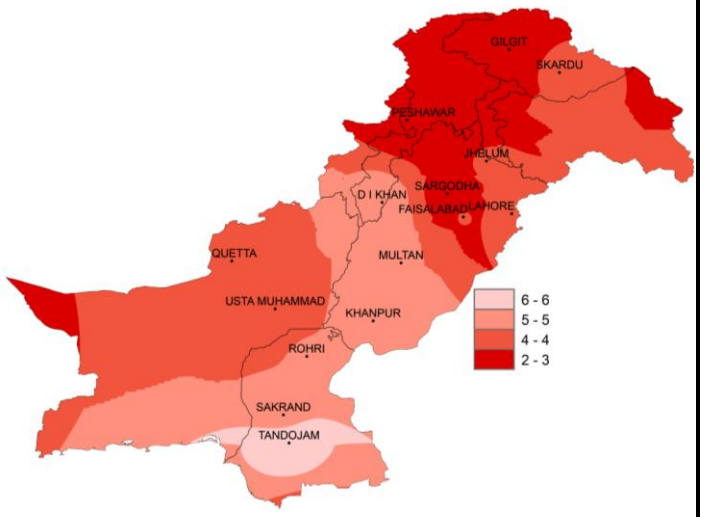


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

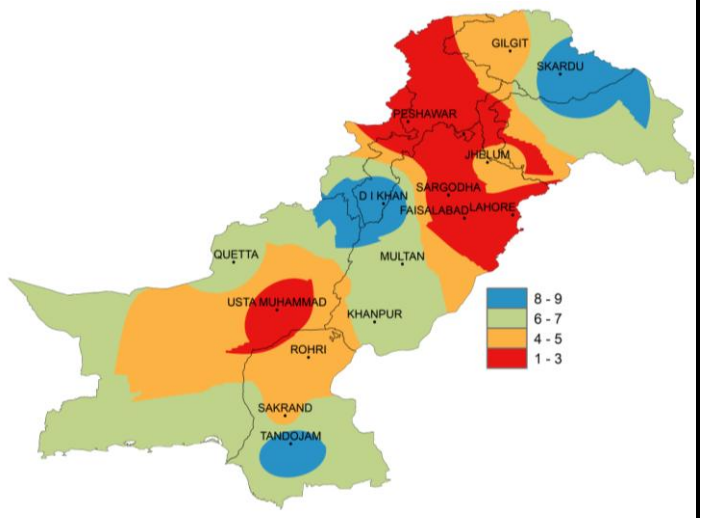


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather reported during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 29%. Mean day temperature was 42.3°C while night temperature recorded as 26.1°C with 100.6 hours bright sunshine duration. Wind speed recorded 3.9km/hr with wind direction *South Westerly.*

2.13 D.I. Khan

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 37.2°C while night temperature recorded as 21.4°C with 87.8 hours bright sunshine duration. Wind speed recorded as 8.9 km/hr with mean wind direction. *North easterly.*

2.14 Peshawar

Rainfall reported as 15.6 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 28.4°C while night temperature recorded as 32.9°C with 20.2 hours bright sunshine duration. Wind speed recorded as 1.4km/hr with mean wind direction *North westerly.*

2.15 Skardu

Rainfall reported as 3.4 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 33%. Mean day temperature was 23.1ºC while night temperature recorded as 9.1ºC with 67.8 hours bright sunshine duration. Wind speed recorded as 8.4km/hr with mean wind direction *east southerly.*

2.16 Gilgit

Rainfall reported as 2.6 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 40%. Mean day temperature was 27.1°C while night temperature recorded as 13.3°C with 58.9 hours bright sunshine duration. Wind speed recorded as 4.4km/hr with mean wind direction *Variable.*

Nine Days Weather Advisory for Farmers (2nd to 10th May, 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 is expected in Baluchistan, Sindh and southern Punjab during the start of the decade.

3.3 Rain Forecast

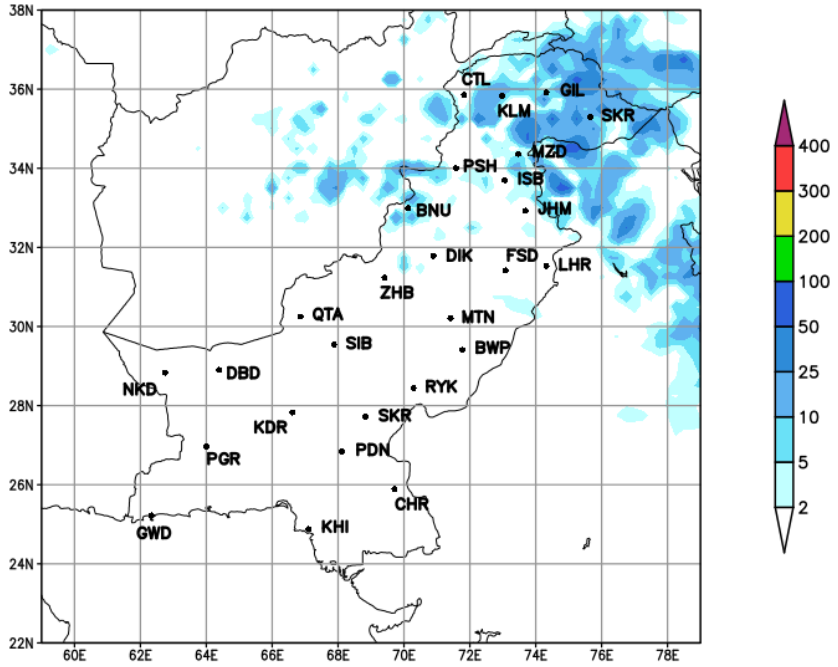
- **Punjab:** Mainly dry weather is expected. However, Dust-thunderstorm / rain is expected at isolated places in Rawalpindi, Gujranwala, Lahore, Sargodha, Faisalabad, Multan divisions and Islamabad during the first half of the current decade.
- **Khyber Pakhtunkhwa:** Dust-thunderstorm / rain is expected at isolated places in Malakand, Hazara, Peshawar, Mardan, Kohat, Bannu, D.I.Khan divisions during the first half of the current decade.
- **Sindh:** Mainly hot and dry weather is expected during the current decade.
- **Baluchistan:** Mainly hot and dry weather is expected during the current decade.
- **Gilgit-Baltistan:** Rain/thunderstorm is expected at scattered places in the province during the first half of the current decade.
- **Kashmir:** Rain / Thunderstorm is expected at scattered places in the province during the first half of the current decade.

3.4 Advisory for Farmers

- Wheat crop is at maturity stages in northern half of the country. Farmers are advised to schedule their harvesting by keeping in view the weather forecast.
- Measures may be taken to preserve the standing crops/orchids from the damaging impacts of extreme weather conditions like thunder/dust storm, gusty winds, hails etc.
- 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.

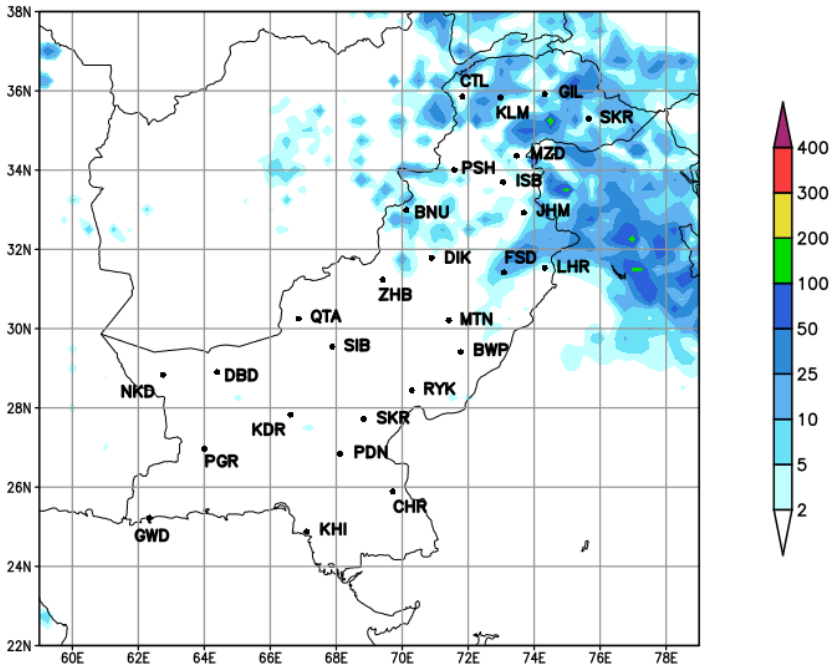
4.1 Precipitation Outlook (2nd to 4th May, 2019)

The forecast for the first three days (2nd to 4th) of the 1st decade of May, 2019 shows that light to moderate rainfall is expected at isolated places in northern Punjab, Islamabad, GB, KP and Kashmir. However, hot and dry weather is expected in the rest of the country.



4.2 Precipitation Outlook (5th to 10th April, 2019)

The forecast for the last six days (5th to 10th) of the 1st decade of May, 2019 shows that light to moderate rainfall is expected at scattered places in GB, KP, Kashmir, Potohar region and central Punjab. However, hot and dry weather is expected elsewhere in the country.



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)

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 سدِّباب (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)