



Government of Nepal
Ministry of Forest and Environment
Department of Environment
Babarmahal, Kathmandu

Air quality status of Nepal 2016-2020

Volume XIII

Jhumka air quality monitoring station



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1 Jhumka Air Quality Monitoring Station

- Address : Ramdhuni, Jhumka, Sunsari, Regional Agriculture Training Centre
- Location: 26.664451 latitude, 87.195171 longitude
- Surrounding of the station
 2. North: Farmland
 3. South: East-West Highway
 4. East: Farmland inside Training Centre
 5. West: Staff Residence
- Establish year: 2017 (2074)
- Brief introduction of the instruments installed in the station (should include- brief specification; number of instrument)
 1. PM instrument- GRIMM EDM 180
 2. Met sensor luffth WS 700
 3. Data logging and data transmission and power backup system

2 Air Quality Status of Jhumka station (2018-2020)

2.1 Air Quality Status, 2018

2.1.1 Annual average of PM₁, PM_{2.5}, PM₁₀ and TSP

The annual average of PM₁, PM_{2.5}, PM₁₀ and TSP of the Jhumka monitoring station was calculated as shown in figure below. As the data is only of December with few days, this is not suitable to calculate the annual average.

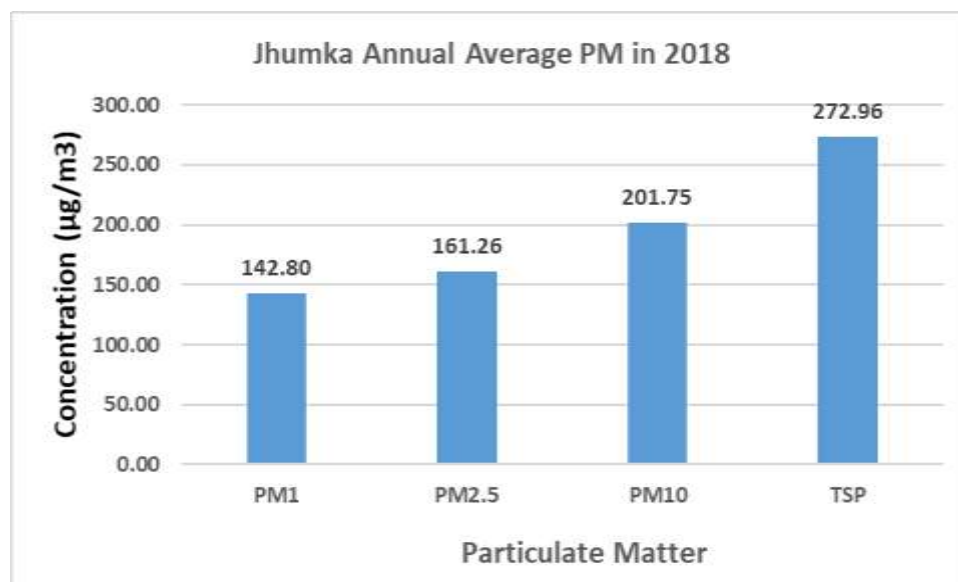


Figure 1: Annual average of PM₁, PM_{2.5}, PM₁₀ and TSP in 2018

2.1.2 Temporal Variation of PM₁

Annual average of PM₁

The annual average of PM₁ at Jhumka station was found to be 142.80 µg/m³. Histogram of hourly average PM₁ is shown in the figure below.

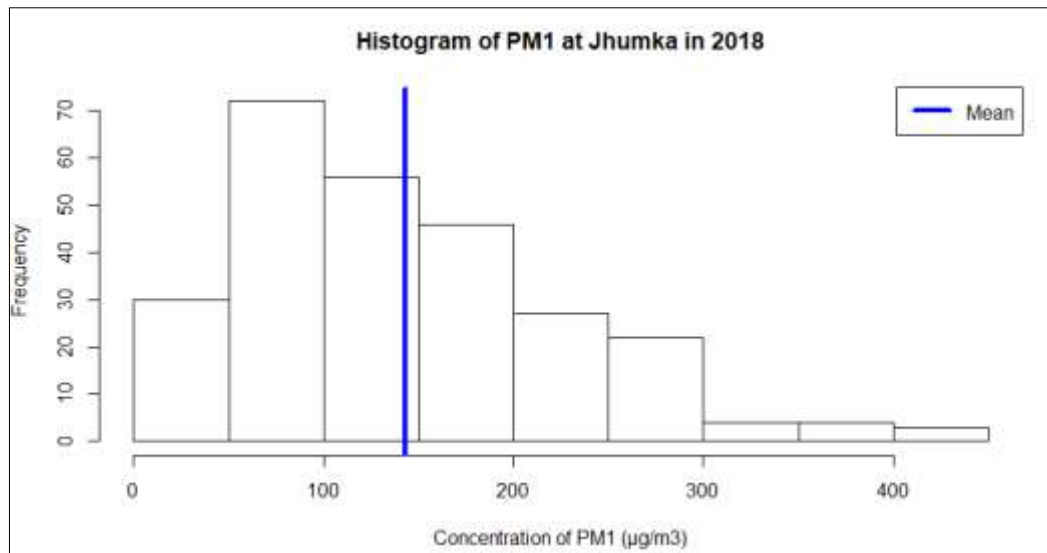


Figure 2: Histogram of PM₁

Daily average of PM₁

Daily average concentration of PM₁ is shown in the figure below.

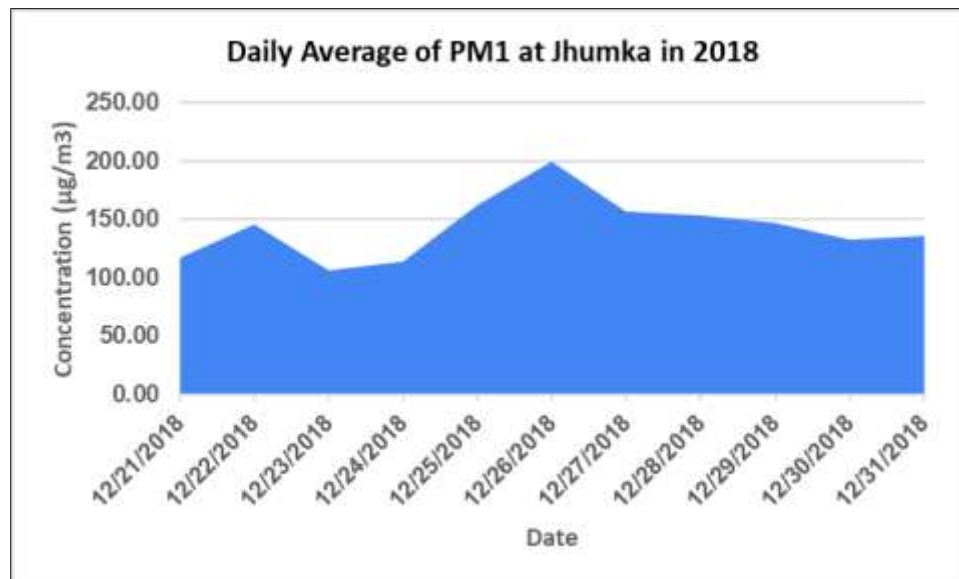


Figure 3: Daily average of PM₁

Monthly data

Monthly average of PM₁

The mean value for December was found to be 142.8 $\mu\text{g}/\text{m}^3$.

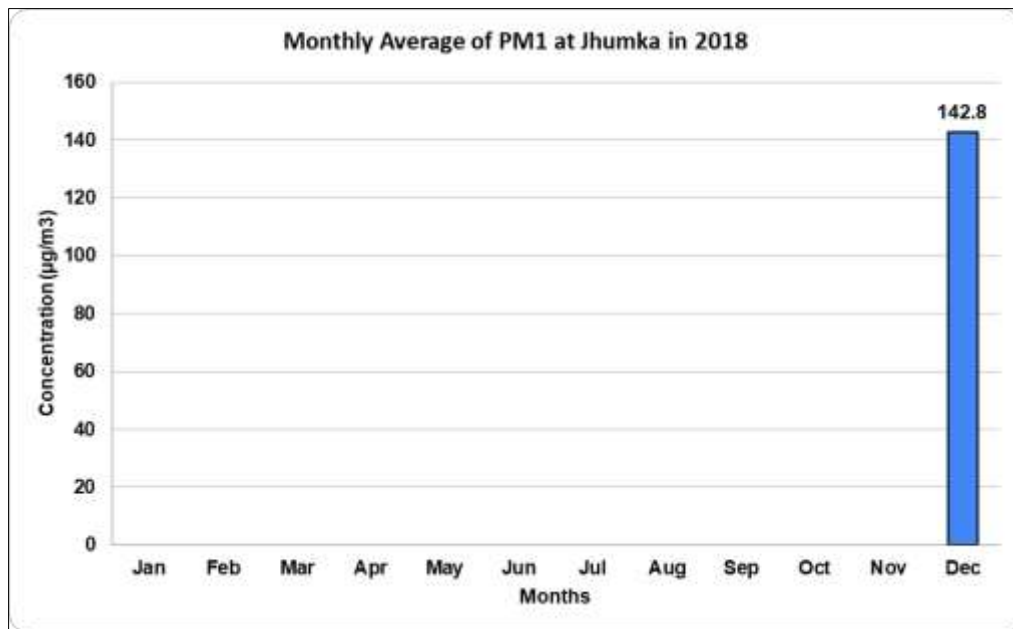


Figure 4: Monthly Average of PM₁

Monthly Variation of PM₁

Variation in concentration of PM₁ was found as follows.

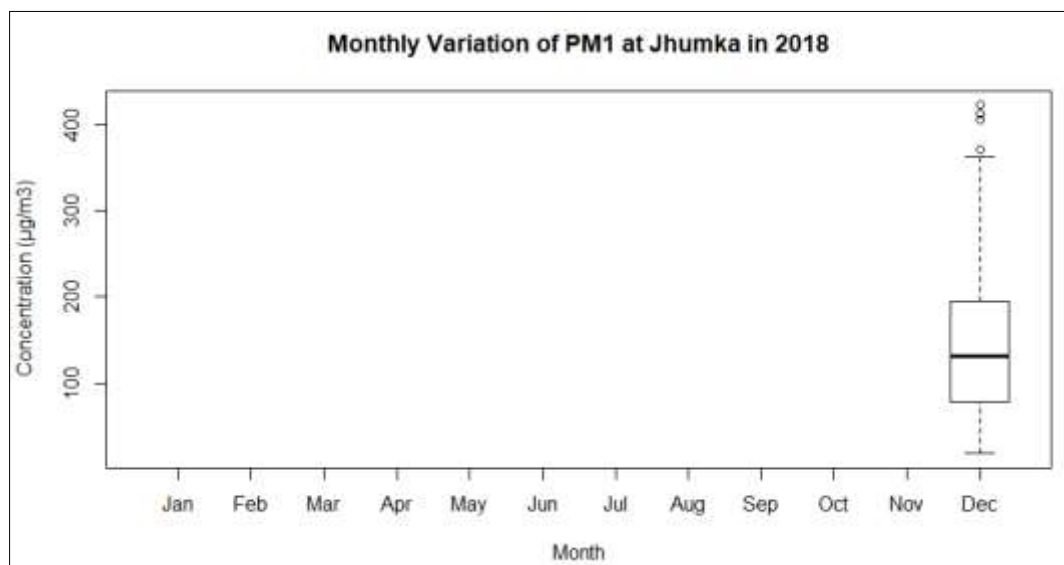


Figure 5: Monthly Variation of PM₁

Seasonal variation of PM₁ concentration

As there is only the data of December, this data is considered in 2019 winter.

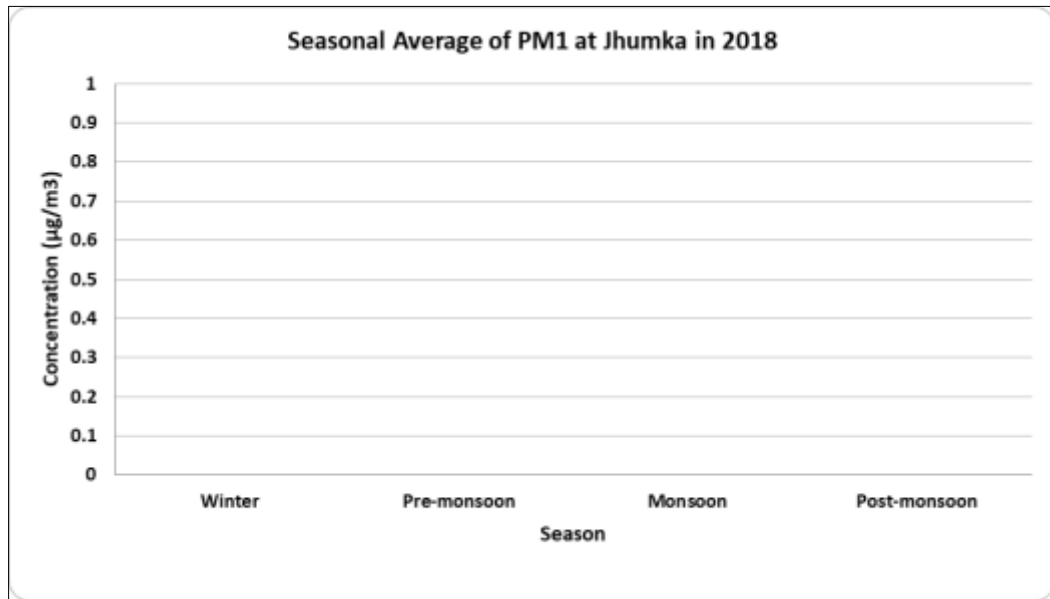


Figure 6: Seasonal variation of PM₁

Diurnal variation of average PM₁ concentration

The diurnal variation of average PM₁ concentrations can be shown in the figure below with two peaks in a day.

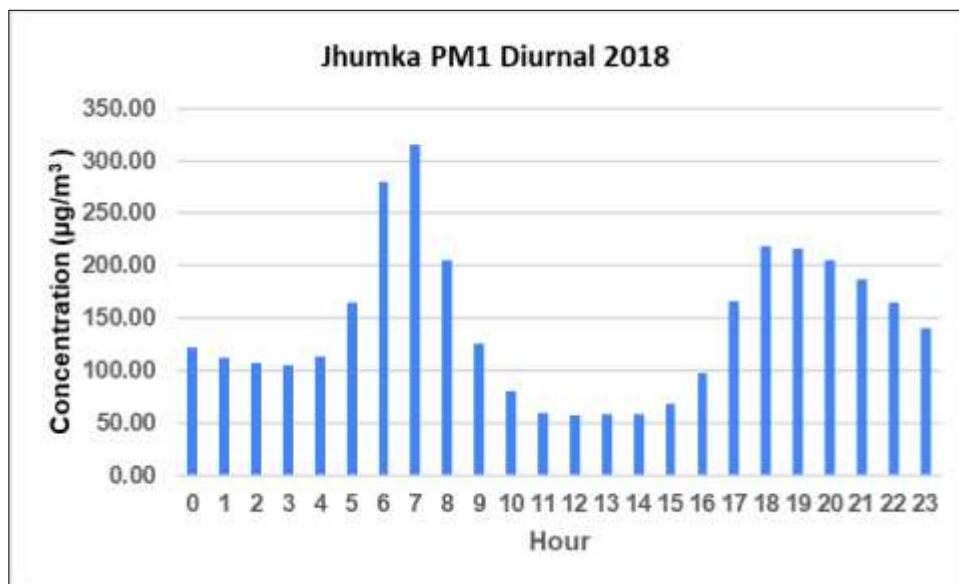


Figure 7: Diurnal variation of PM₁

2.1.3 Temporal Variation of PM_{2.5}

Annual average of PM_{2.5}

The annual average of PM_{2.5} at Jhumka station was found to be 161.26 µg/m³. Histogram of hourly average PM_{2.5} is shown in the figure below.

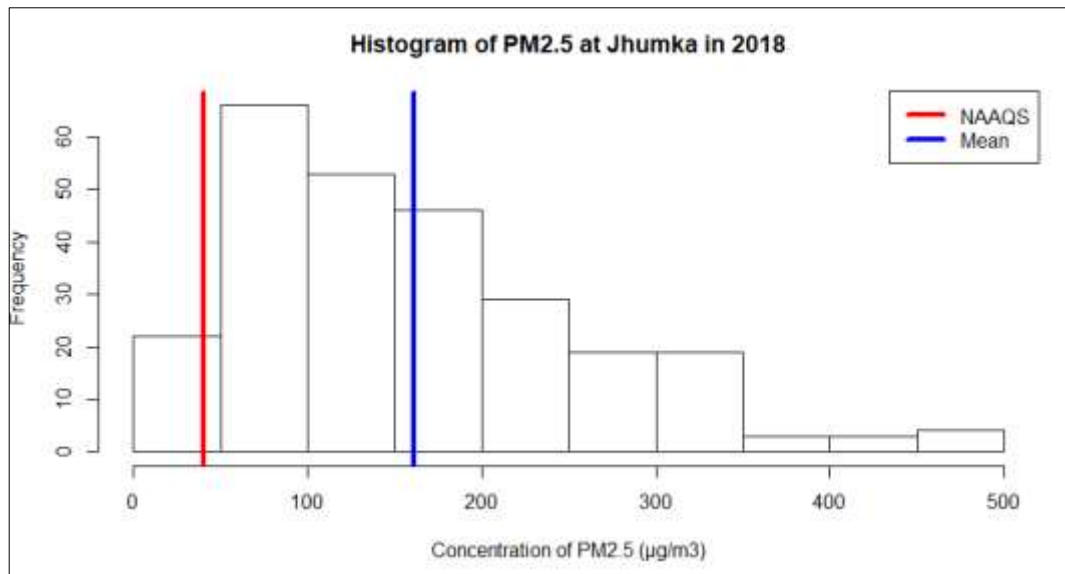


Figure 8: Histogram of PM_{2.5}

Daily average of PM_{2.5}:

Daily average concentration of PM_{2.5} is shown in the figure below.

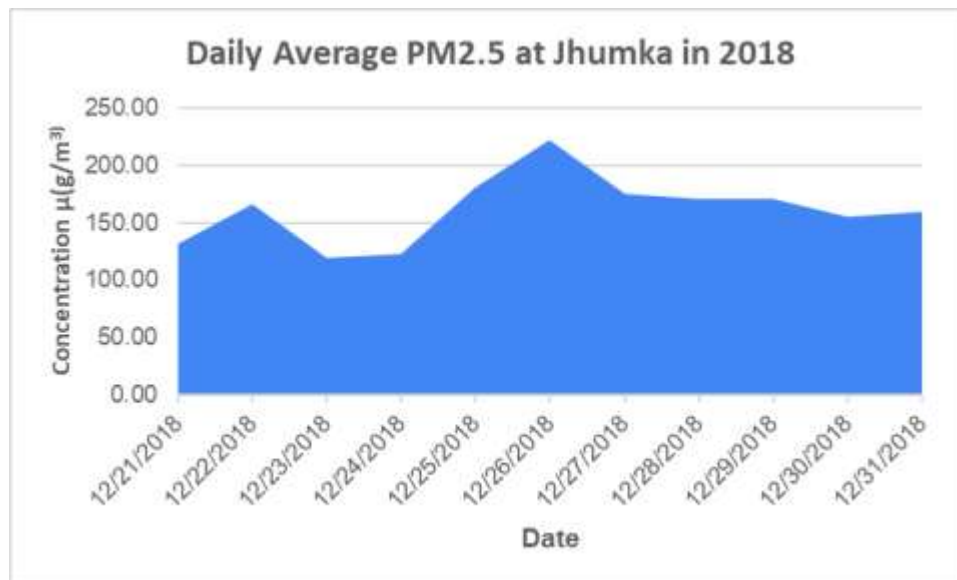


Figure 9: Daily average of PM_{2.5}

Monthly average of PM_{2.5}

The monthly average of December was found to be 161.26 $\mu\text{g}/\text{m}^3$ respectively.

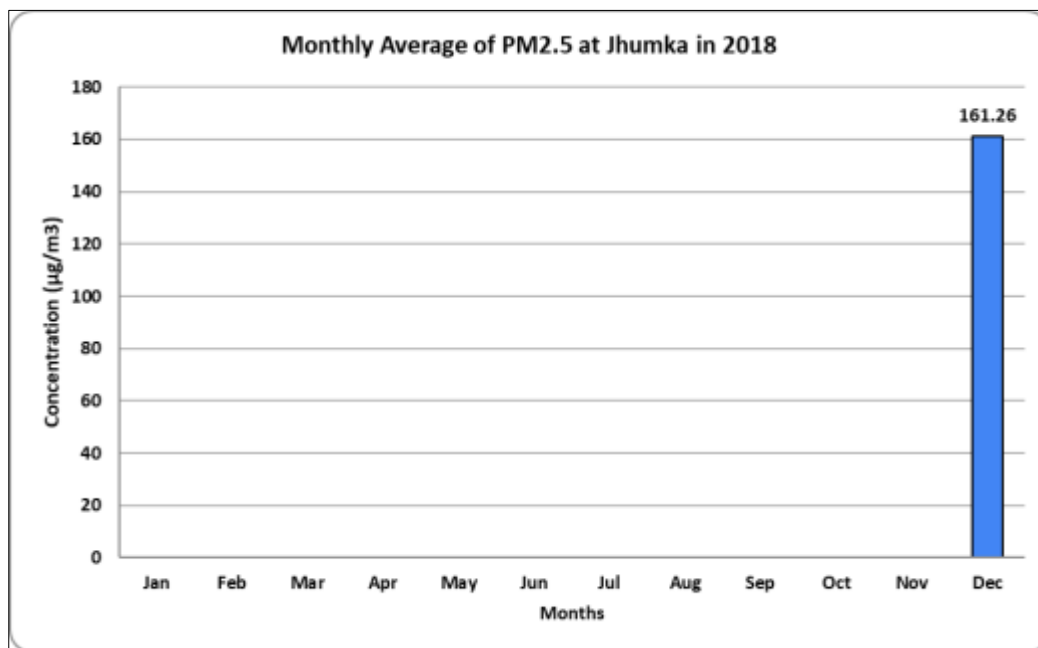


Figure 10: Monthly Average of PM_{2.5}

Monthly Variation of PM_{2.5}

Variation in concentration of PM_{2.5} is as shown in figure.

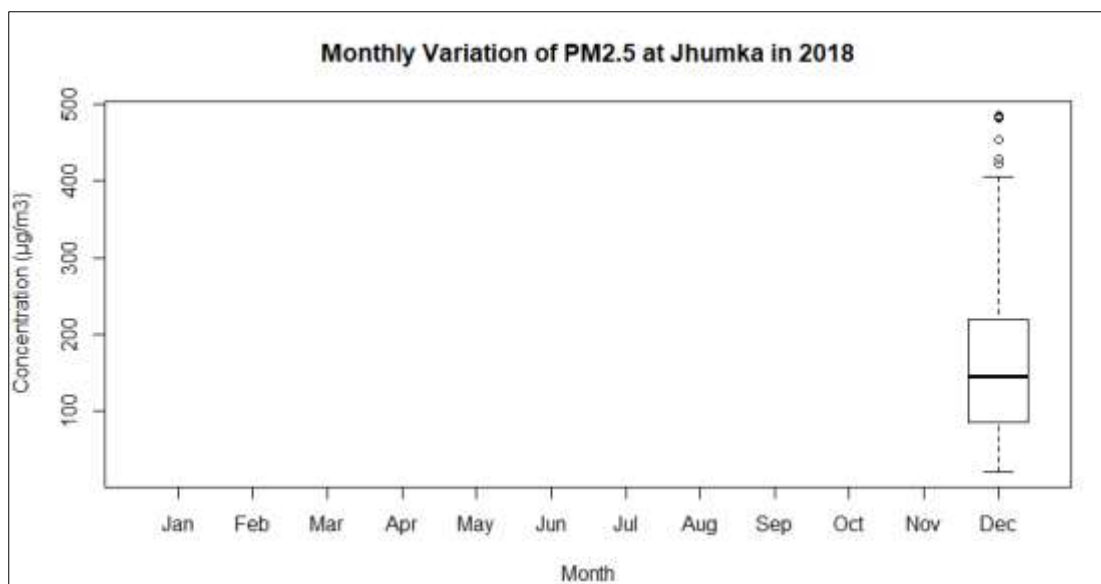


Figure 11: Monthly Variation of PM_{2.5}

Seasonal variation of average PM_{2.5} concentration

As there is only the data of December, this data is considered in 2019 winter.

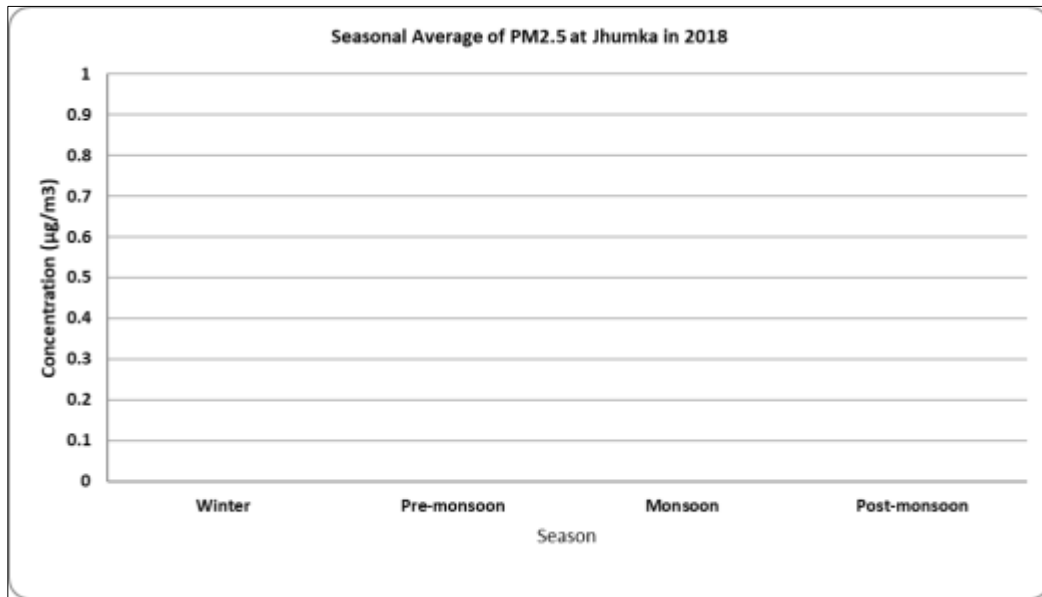


Figure 12: Seasonal variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown in the figure below.

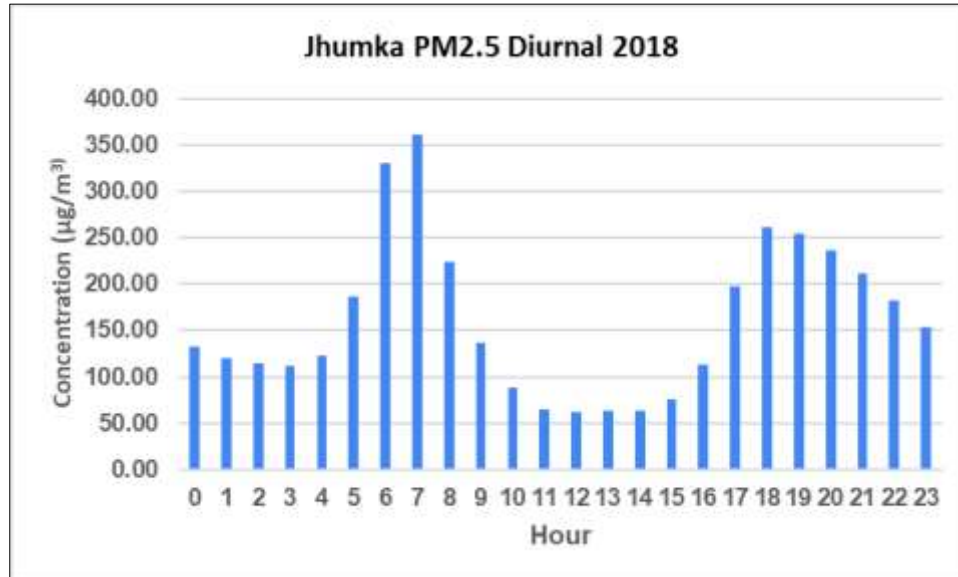


Figure 13: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2018 counts 11, of which 11 days exceed the NAAQS guideline as shown in figure below.

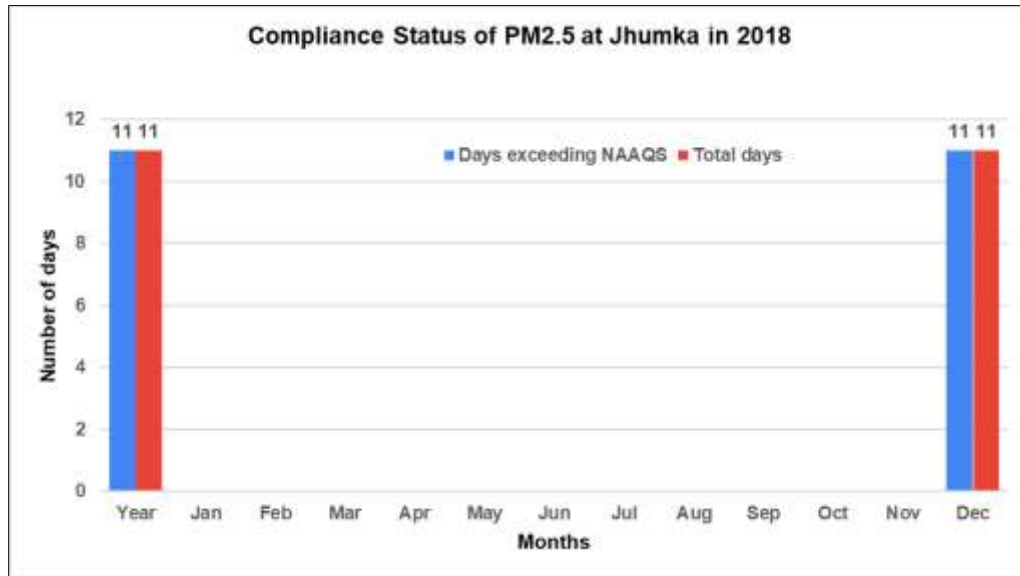


Figure 14: Compliance status of PM_{2.5}

2.1.4 Temporal Variation of PM₁₀

Annual average of PM₁₀

The annual average of PM₁₀ at Jhumka station was found to be 201.75 $\mu\text{g}/\text{m}^3$. Histogram of hourly average PM₁₀ is shown in the figure below.

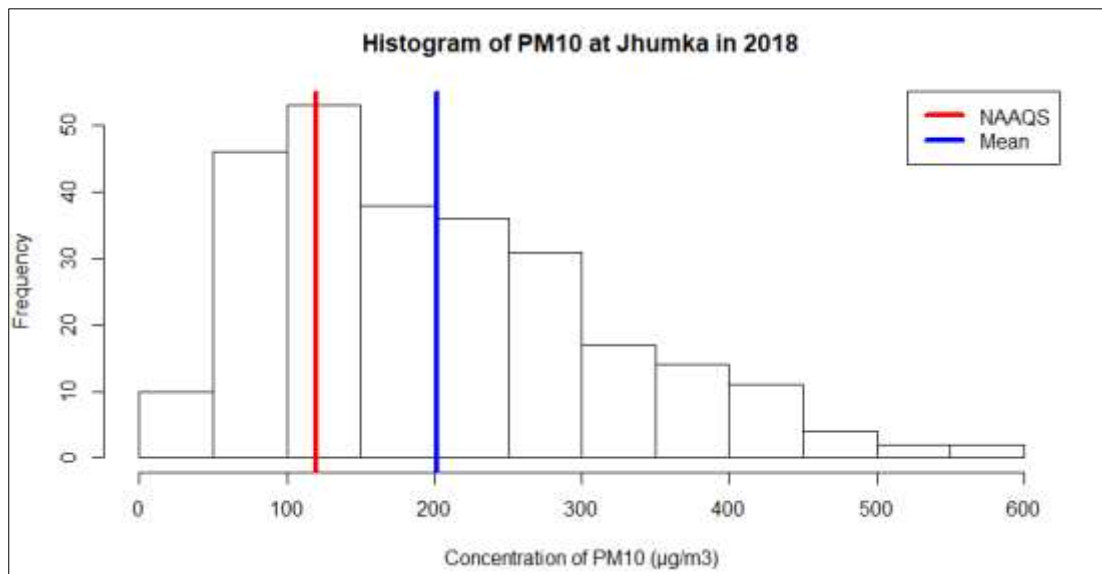


Figure 15: Histogram for the ambient concentration of PM₁₀

Daily average of PM₁₀

Daily average concentration of PM₁₀ is shown in figure as below.

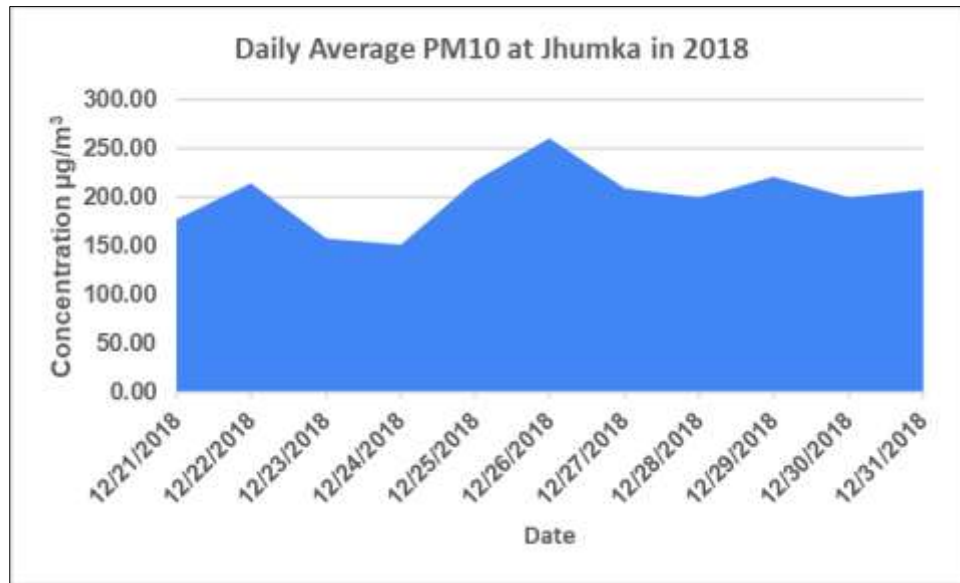


Figure 16: Daily average of PM₁₀

Monthly average of PM₁₀

The monthly average of December was found to be 201.75 µg/m³ respectively.

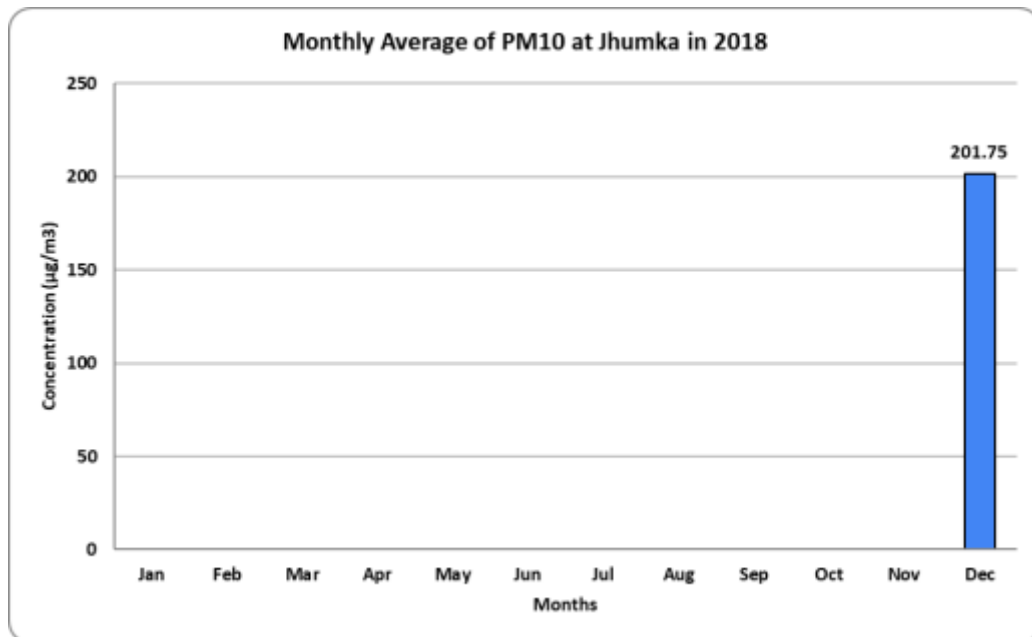


Figure 17: Monthly average of PM₁₀

Monthly Variation of PM₁₀

Variation in concentration of PM₁₀ was as follows.

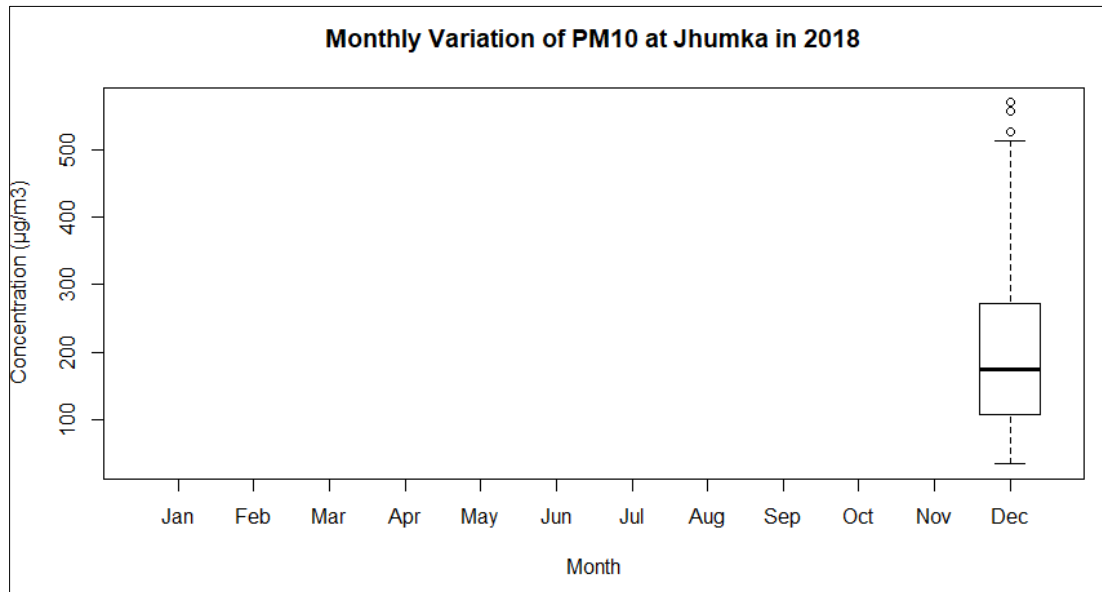


Figure 18: Monthly Variation of PM₁₀

Seasonal variation of average PM₁₀ concentration

As the data was only of December, data is considered for 2019 winter.

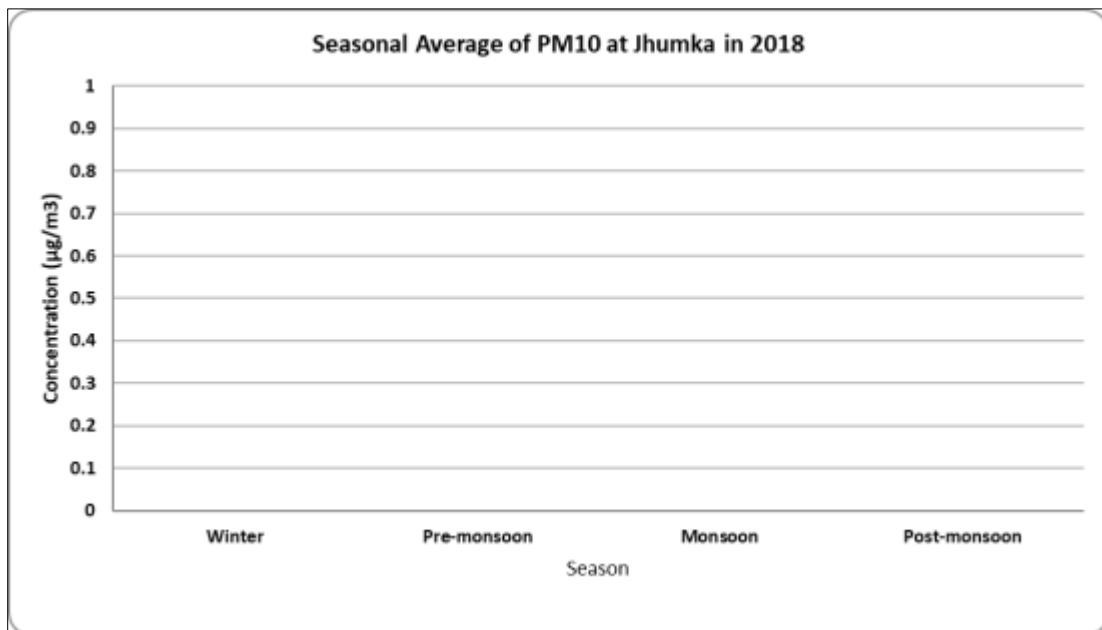


Figure 19: Seasonal variation of PM₁₀

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the figure below.

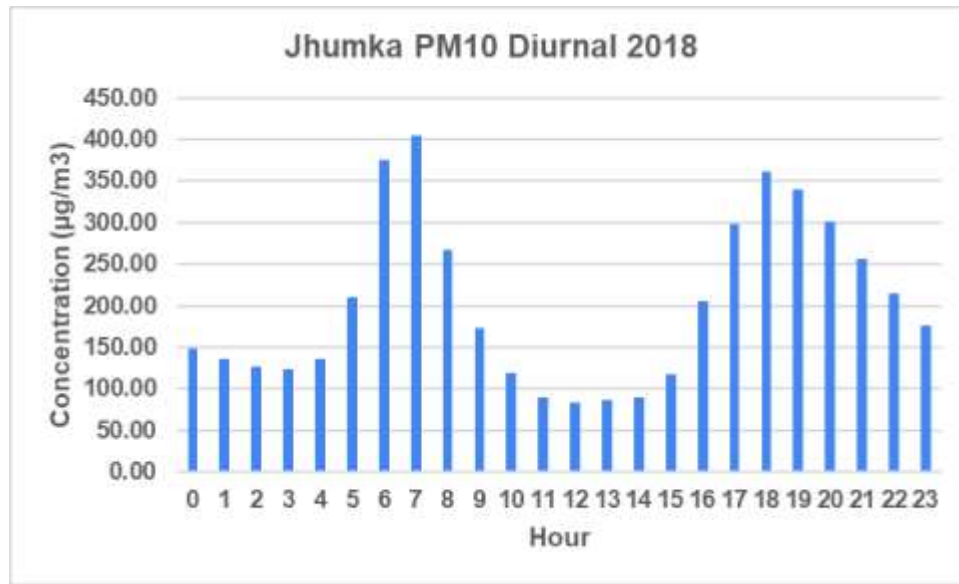


Figure 20: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2018 counts 11; of which 11 days exceed the NAAQS guideline as shown in figure below.

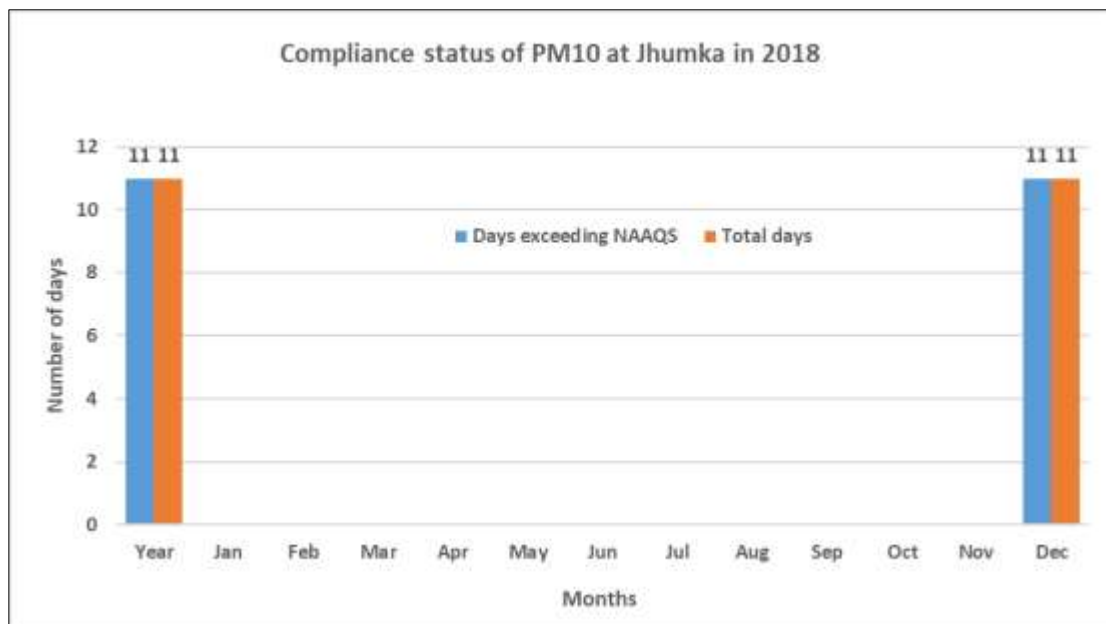


Figure 21: Compliance status of PM₁₀

2.1.5 Temporal Variation of TSP

Annual average of TSP

The annual average of TSP at Jhumka station was found to be 272.96 $\mu\text{g}/\text{m}^3$. Histogram of hourly average TSP is shown in the figure below.

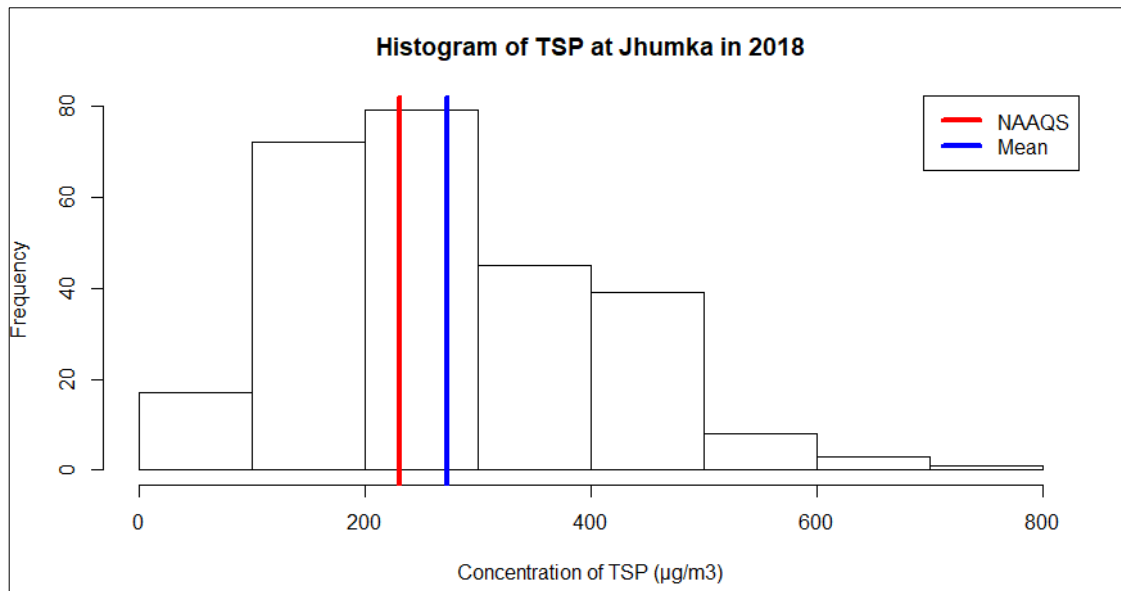


Figure 22: Histogram for the ambient concentration of TSP

Daily average of TSP

Daily average concentration of TSP was high during December and was found low during December (as there was only the date of December).

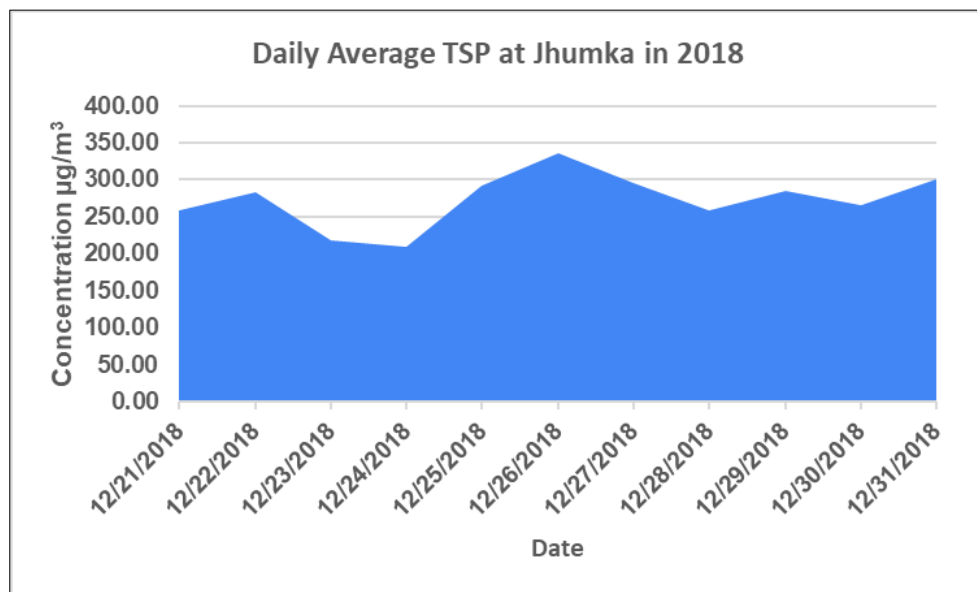


Figure 23: Daily average of TSP

Monthly average of TSP

The mean value for December was found to be 272.96 $\mu\text{g}/\text{m}^3$.

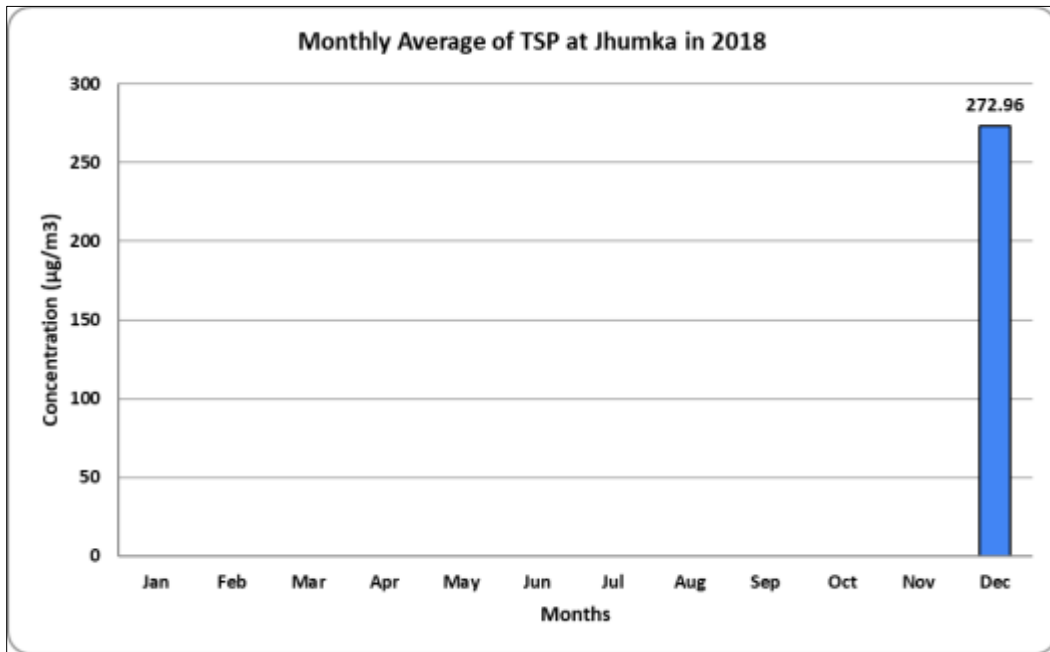


Figure 24: Monthly Average of TSP

Monthly Variation of TSP

Variation in concentration of TSP was as follows.

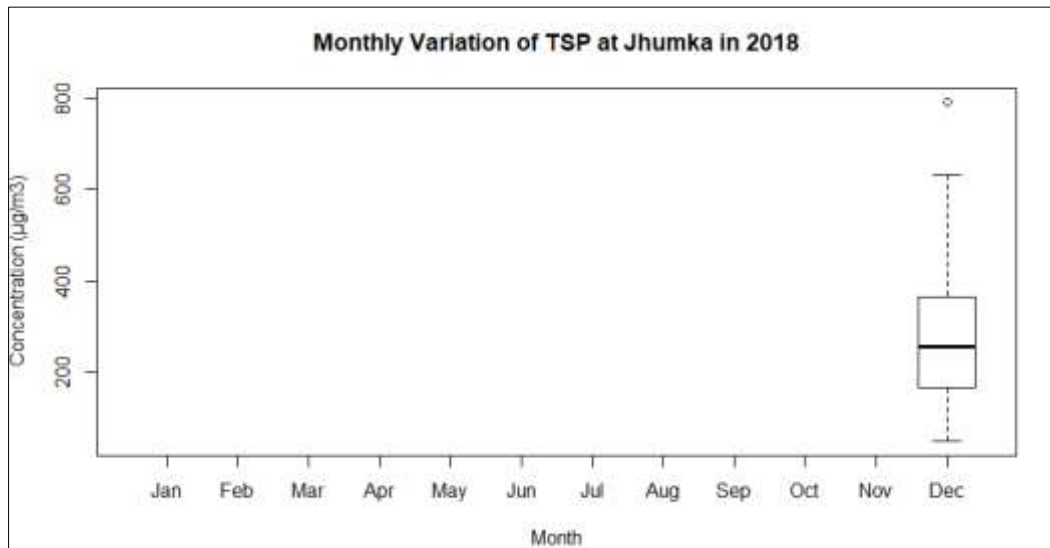


Figure 25: Monthly Variation of TSP

Seasonal variation of average TSP concentration

There was data of only December. So, there is no any data for seasonal graph.

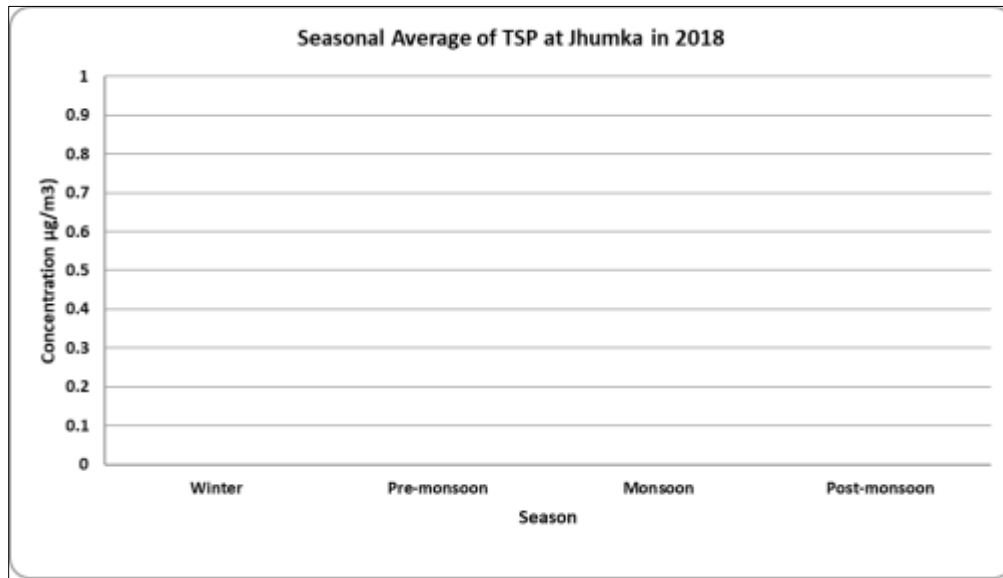


Figure 26: Seasonal variation of TSP

Diurnal variation pf average TSP concentration

The diurnal variation of average TSP concentrations can be shown in the figure below with two peaks in a day.

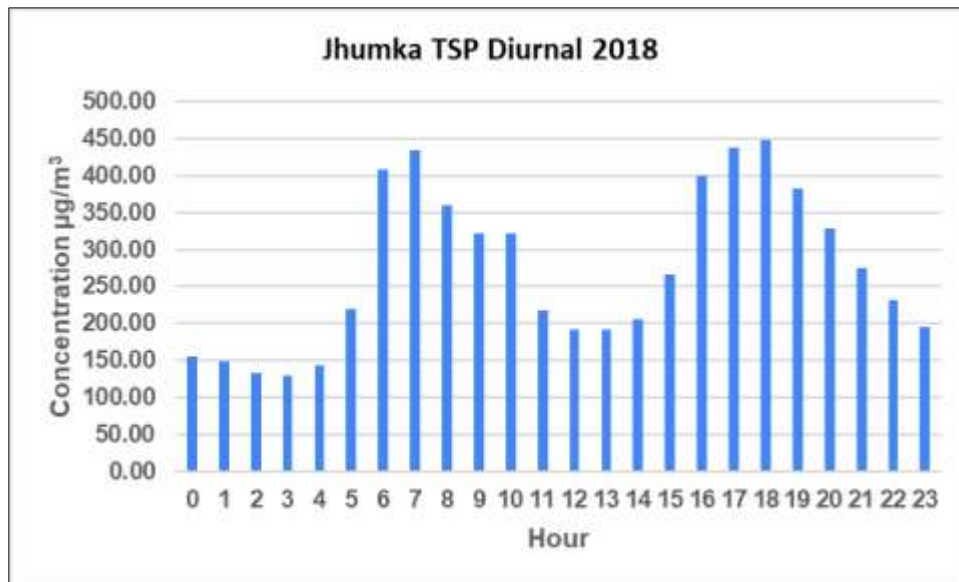


Figure 27: Diurnal Variation of TSP

Compliance status of TSP

The total days of TSP monitored in the year 2018 counts 11 of which 9 days exceed the NAAQS guideline as shown in figure below.

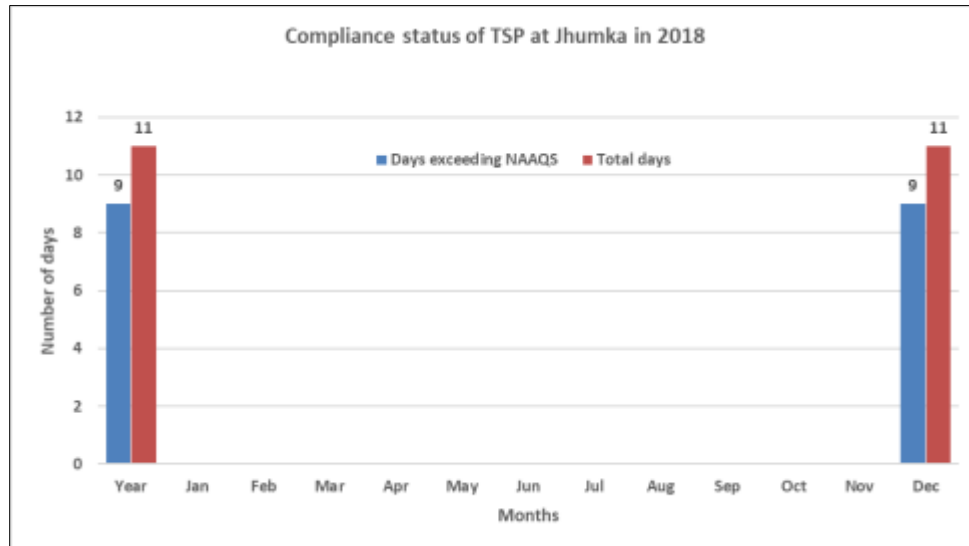


Figure 28: Compliance status of TSP

2.2 Air quality status, 2019

2.2.1 Annual average of PM₁, PM_{2.5}, PM₁₀ and TSP

The annual average of PM₁, PM_{2.5}, PM₁₀ and TSP of the Jhumka monitoring station was calculated as shown in figure below.

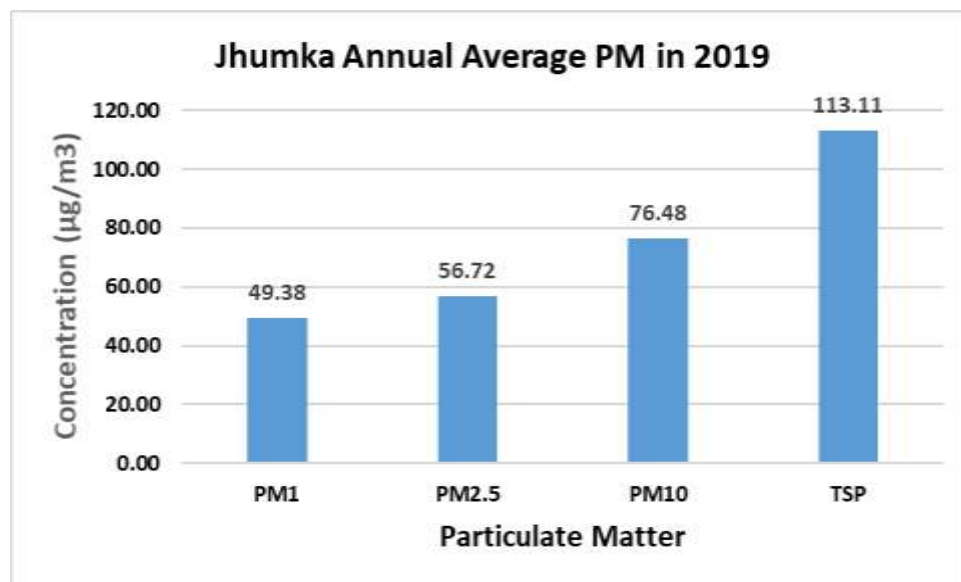


Figure 29: Annual average of PM₁, PM_{2.5}, PM₁₀ and TSP in 2019

2.2.2 Temporal Variation of PM₁

Annual average of PM₁

The annual average of PM₁ at Jhumka station was found to be 49.38 µg/m³. Histogram of hourly average PM₁ is shown in the figure below.

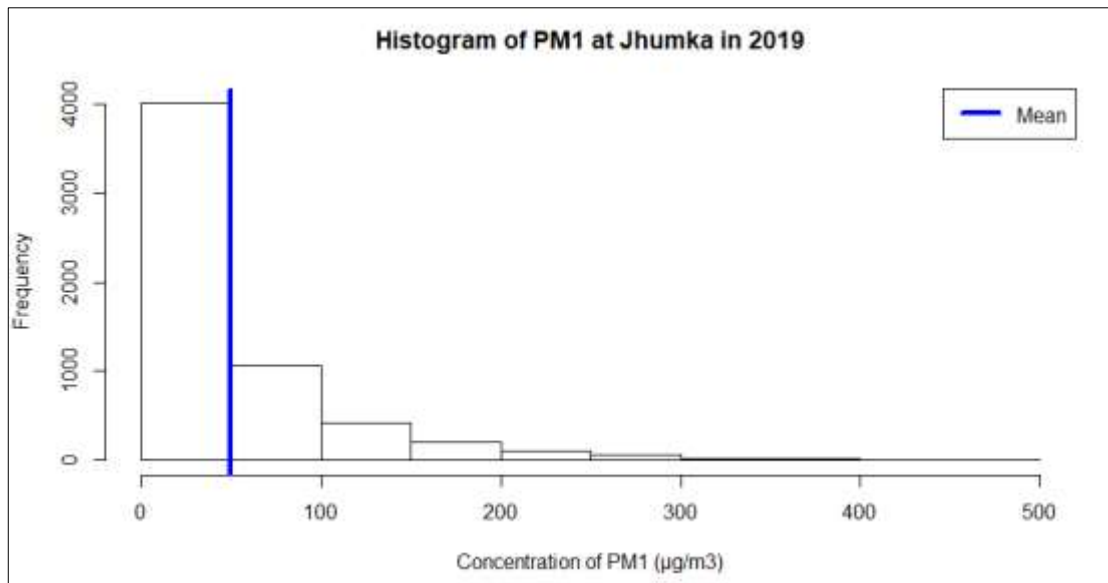


Figure 30: Histogram of PM₁

Daily average of PM₁

Daily average concentration of PM₁ was found to be high during January and low during July.

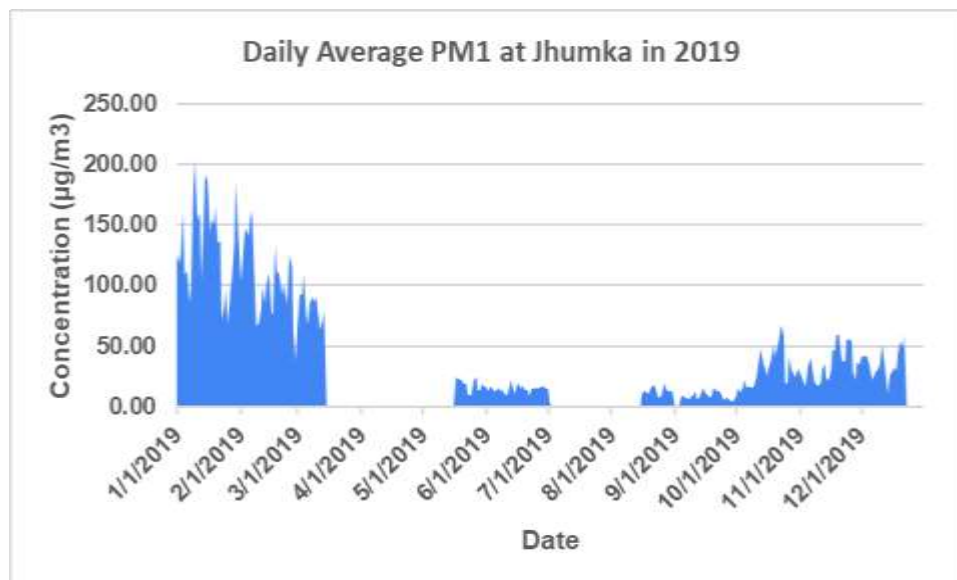


Figure 31: Daily average of PM₁

Monthly average of PM₁

The highest and the lowest concentration of PM₁ was found during January and September respectively. The mean value for those months were found to be 133.41 and 9.3 $\mu\text{g}/\text{m}^3$ respectively.

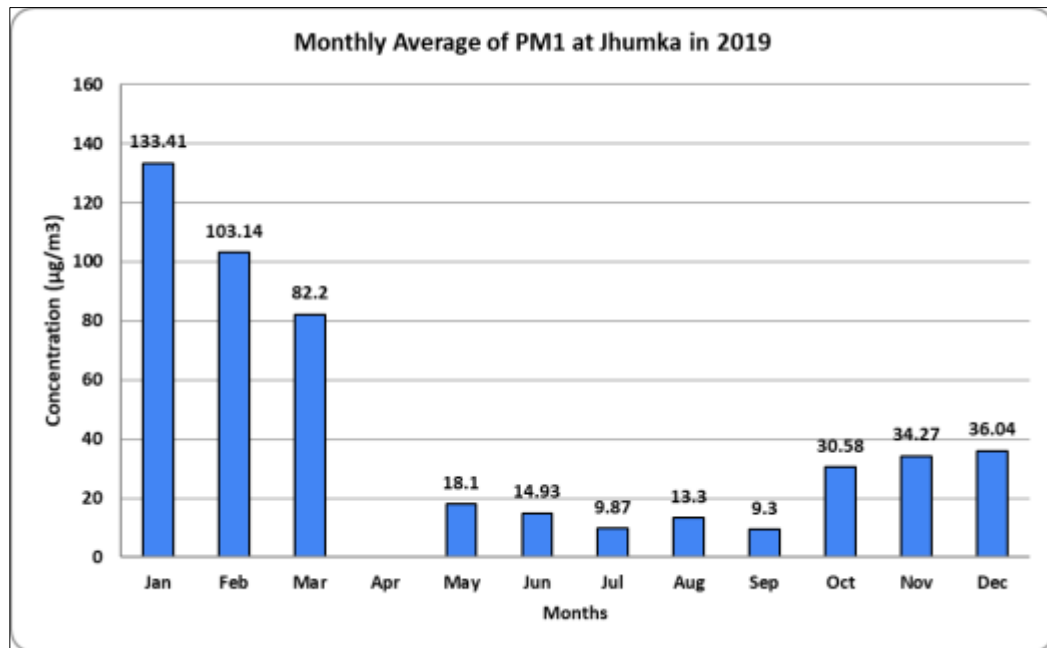


Figure 32: Monthly Average of PM_{2.5}

Monthly Variation of PM₁

Variation in concentration of PM₁ was found as follows.

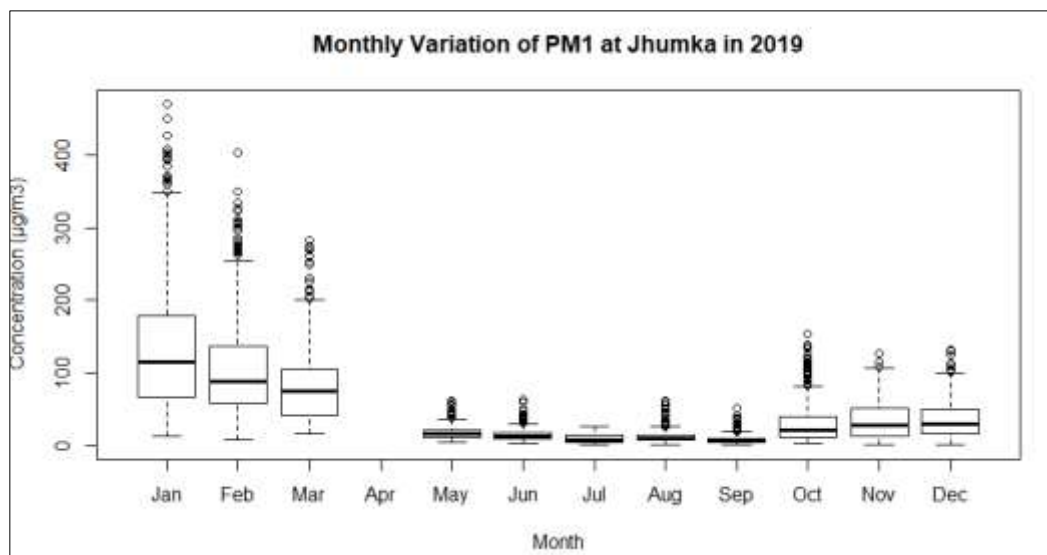


Figure 33: Monthly Variation of PM₁

Seasonal variation of PM₁ concentration

Ambient concentration of average PM₁ can be shown in the figure below. The concentration of PM₁ was found highest during winter (126.45 $\mu\text{g}/\text{m}^3$) and lowest monsoon season (11.85 $\mu\text{g}/\text{m}^3$).

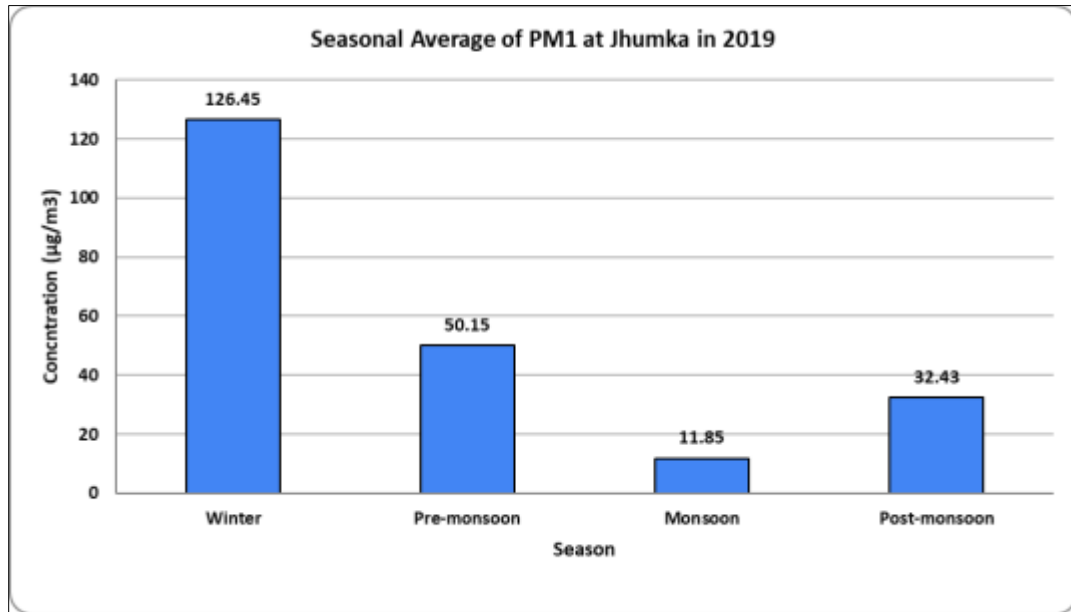


Figure 34: Seasonal variation of PM₁

Diurnal variation of average PM₁ concentration

The diurnal variation of average PM₁ concentrations can be shown in the figure below.

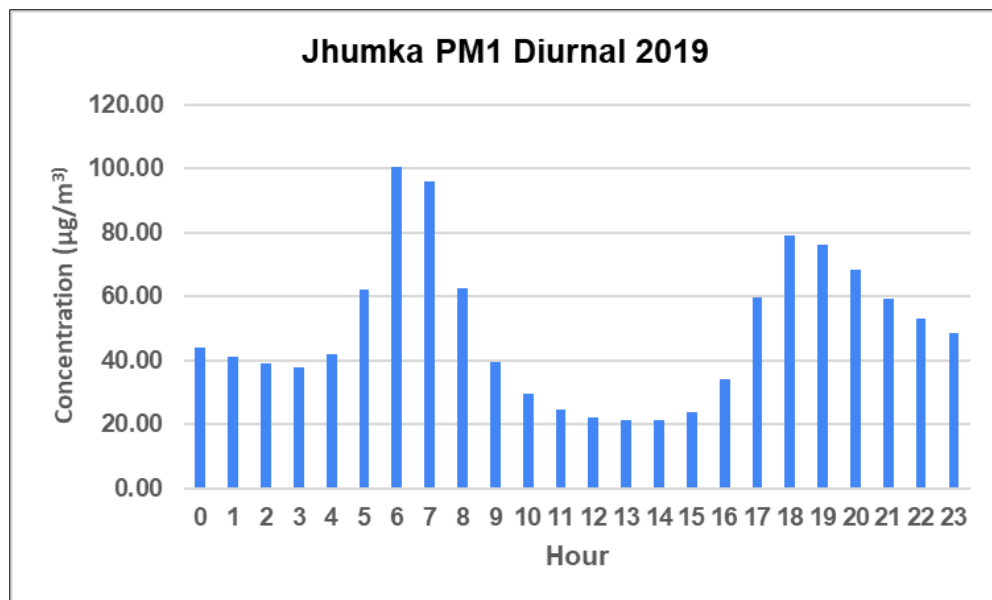


Figure 35: Diurnal variation of PM₁

2.2.3 Temporal variation of PM_{2.5}

Annual average of PM_{2.5}

The annual average of PM_{2.5} at Jhumka station was found to be 56.72 µg/m³. Histogram of hourly average PM_{2.5} is shown in the figure below.

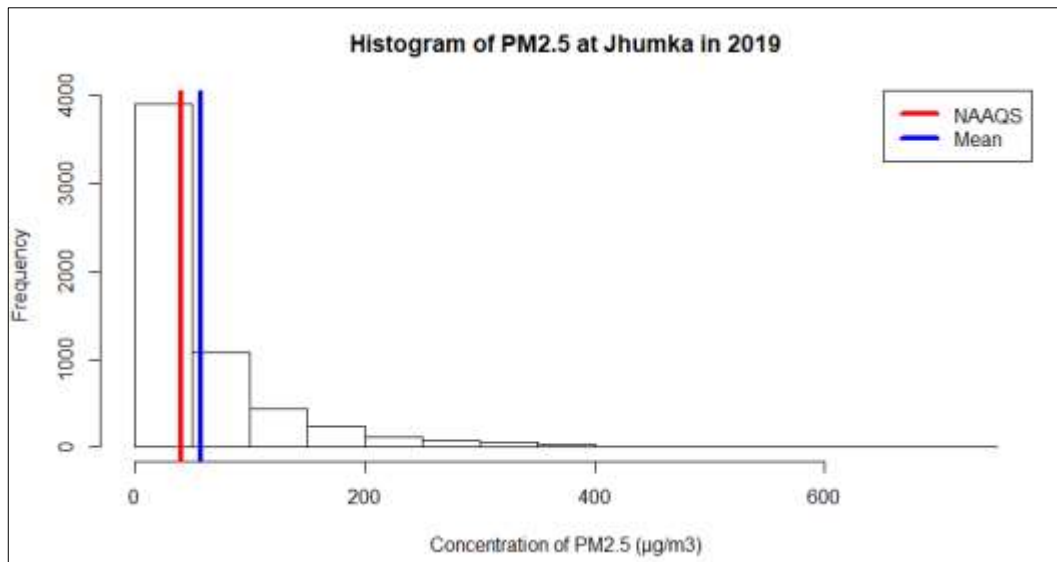


Figure 36: Histogram of PM_{2.5}

Daily average of PM_{2.5}

Daily average concentration of PM_{2.5} was high during January and was found low during September.

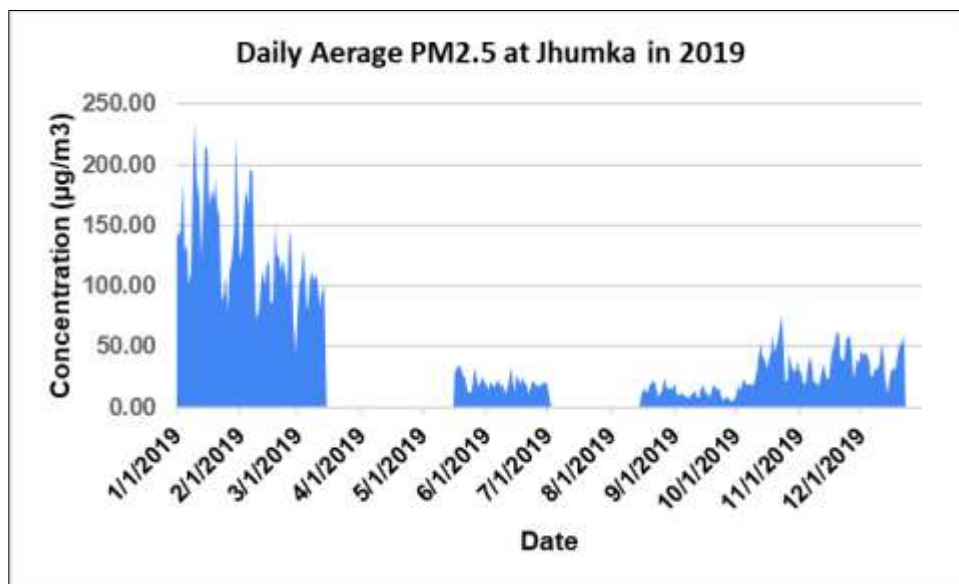


Figure 37: Daily average of PM_{2.5}

Monthly average of PM_{2.5}

The highest and the lowest concentration of PM_{2.5} was found during January and September respectively. The mean value for those months were found to be 154.54 and 11.14 µg/m³ respectively.

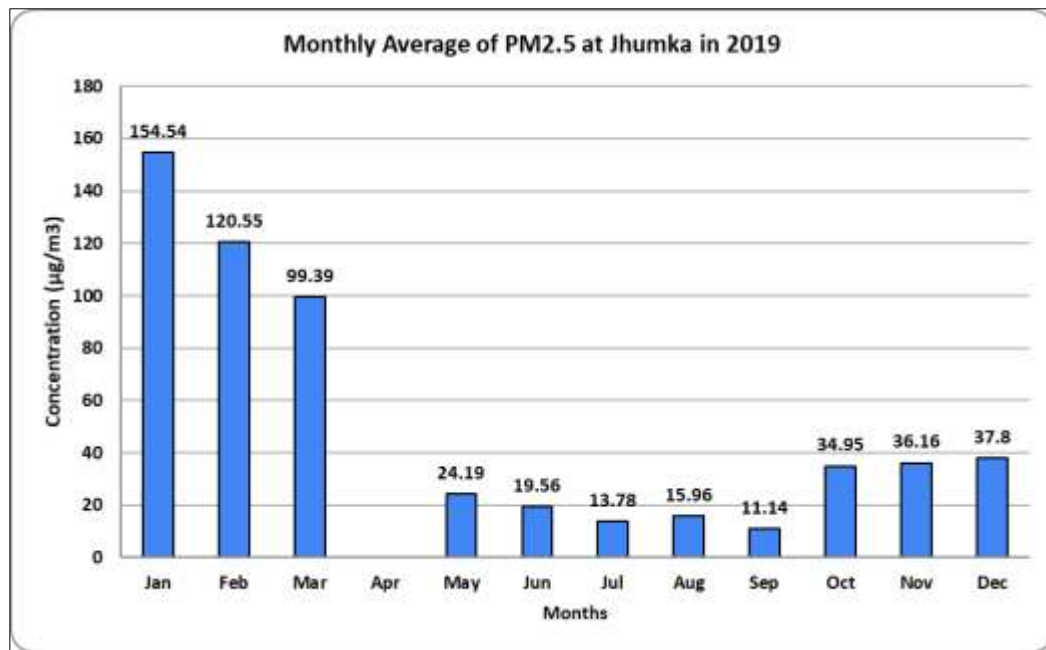


Figure 38: Monthly Average of PM_{2.5}

Monthly Variation of PM_{2.5}

Variation in concentration of PM_{2.5} was found as follows.

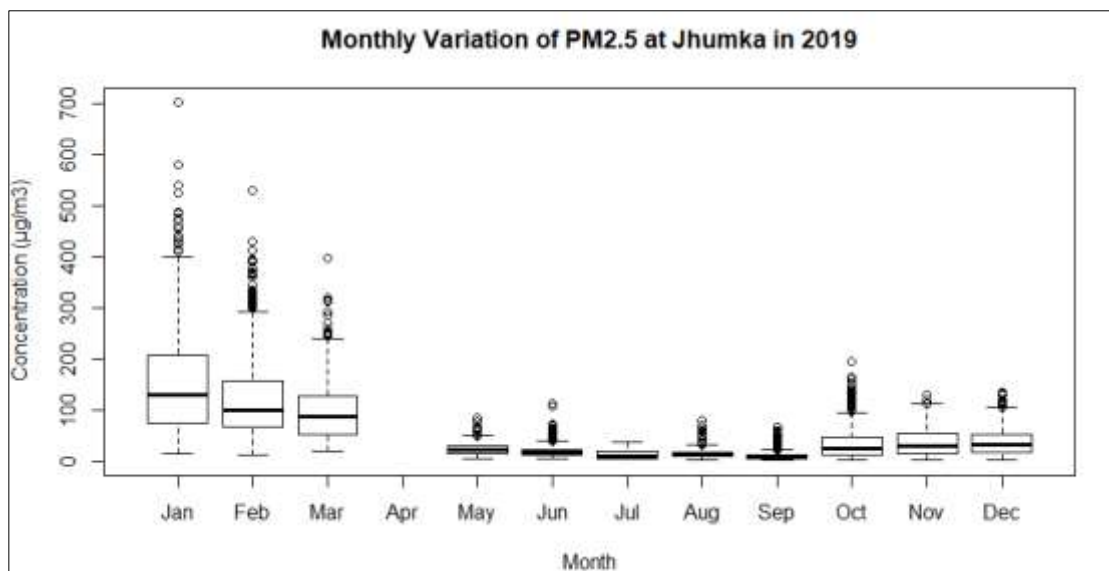


Figure 39: Monthly Variation of PM_{2.5}

Seasonal variation of average PM_{2.5} concentration

Ambient concentration of average PM_{2.5} can be shown in the figure below. The concentration of PM_{2.5} was found higher in winter (135.83 $\mu\text{g}/\text{m}^3$) and lowest in monsoon season (15.11 $\mu\text{g}/\text{m}^3$).

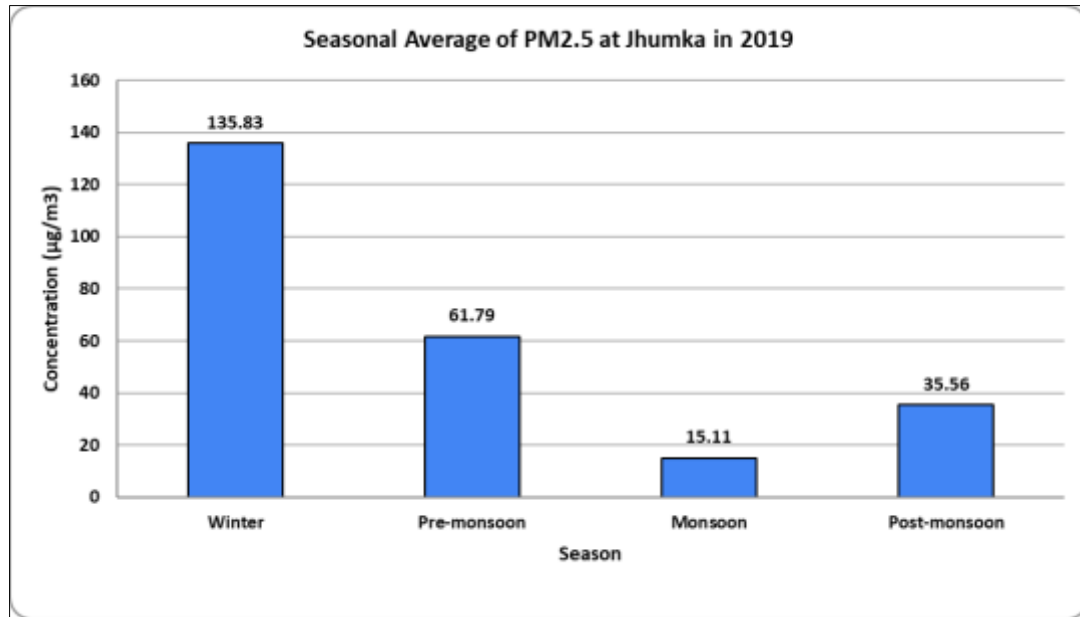


Figure 40: Seasonal variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown in the figure below.

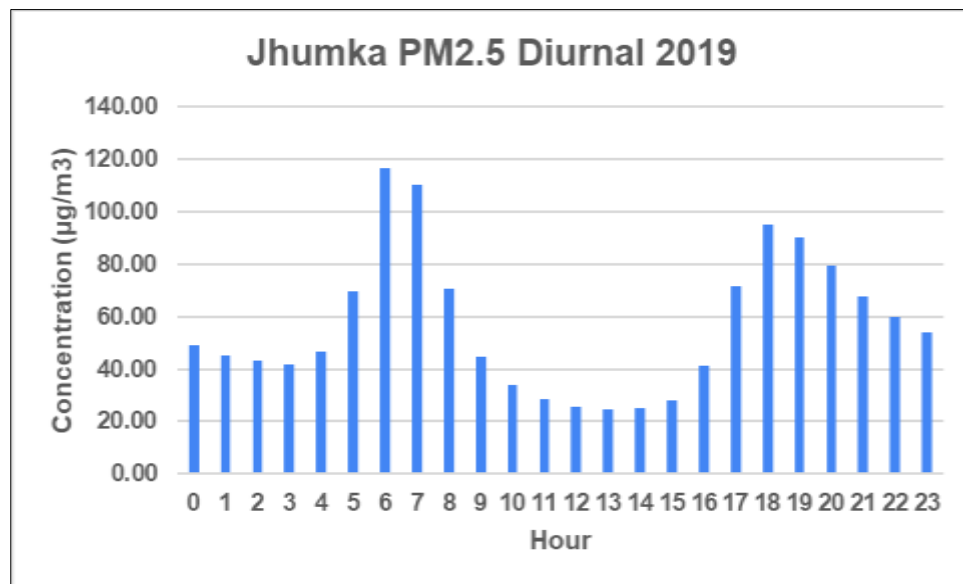


Figure 41: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2019 counts 249; of which 103 days exceeded the NAAQS guideline as shown below.

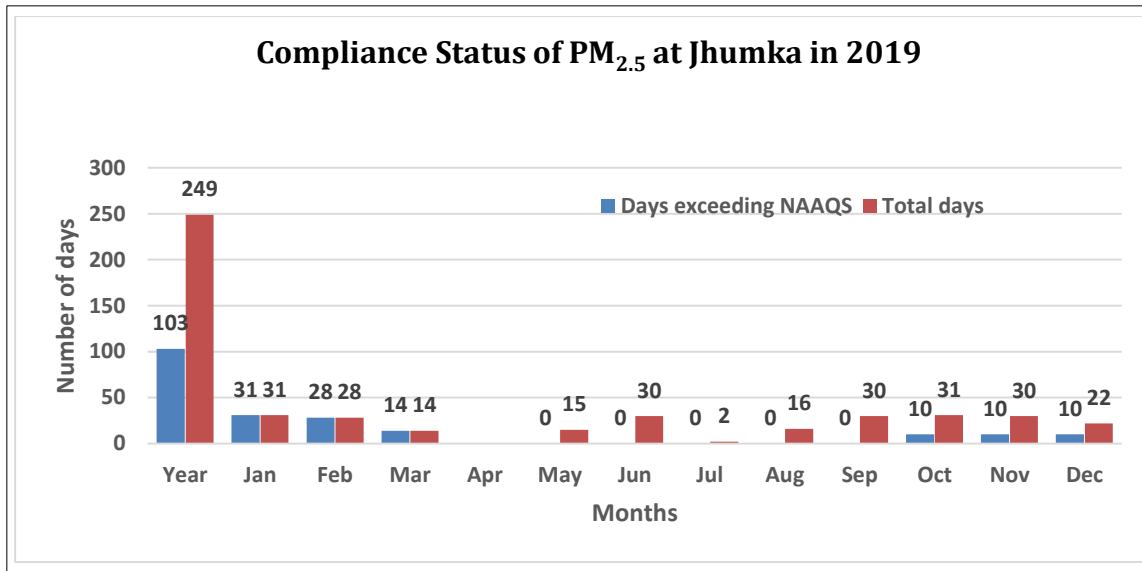


Figure 42: Compliance status of PM_{2.5}

2.2.4 Temporal variation of PM₁₀

Annual average of PM₁₀

The annual average of PM₁₀ at Jhumka station was found to be 76.48 µg/m³. Histogram of hourly average PM₁₀ is shown in the figure below.

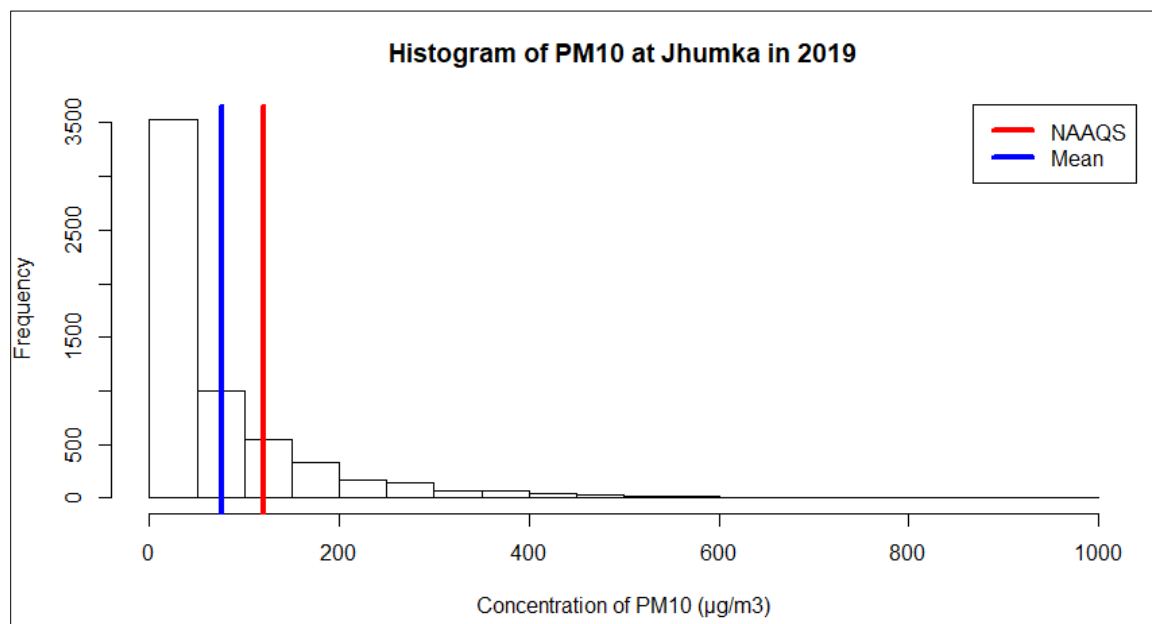


Figure 43: Histogram for the ambient concentration of PM₁₀

Daily average of PM₁₀

Daily average concentration of PM₁₀ was found to be high during January and low during September.

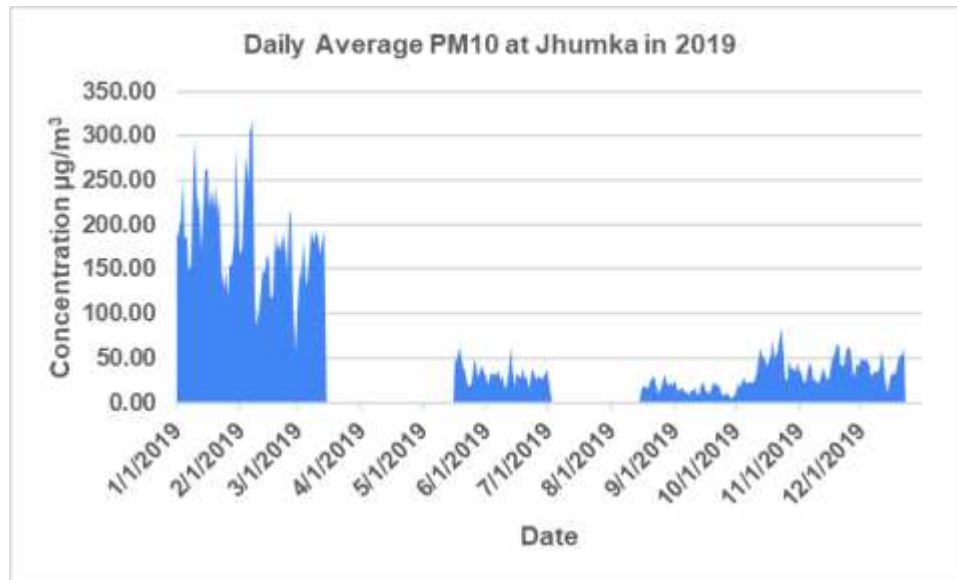


Figure 44: Daily average of PM₁₀

Monthly average of PM₁₀

The highest and the lowest concentration of PM₁₀ was found during January and September respectively. The mean value for those months were found to be 204.15 and 13.65 µg/m³ respectively.

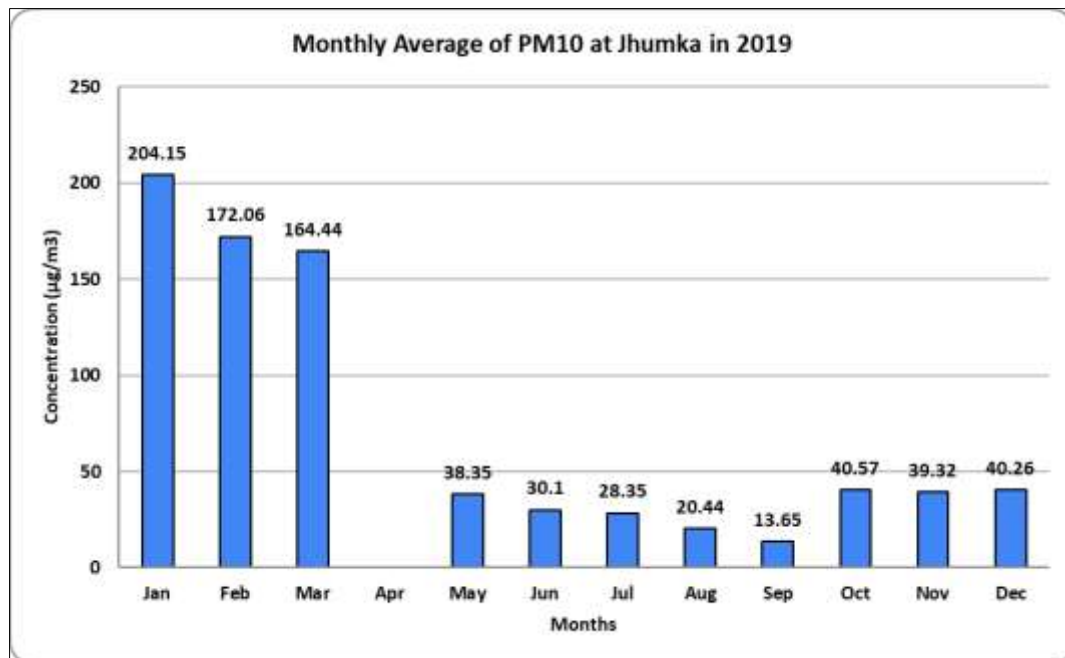


Figure 45: Monthly average of PM₁₀

Monthly Variation of PM₁₀

Variation in concentration of PM₁₀ was as follows.

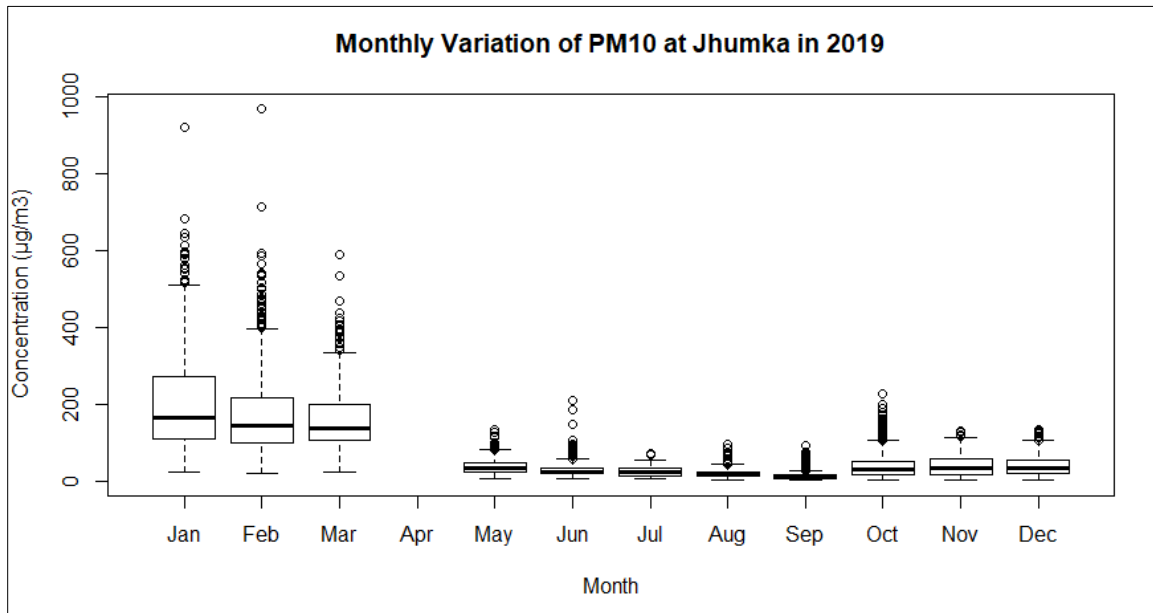


Figure 46: Monthly Variation of PM₁₀

Seasonal variation of average PM₁₀ concentration:

Ambient concentration of average PM₁₀ can be shown in the figure below. The concentration of PM₁₀ was found higher during winter (192.65 µg/m³) than monsoon season (23.14 µg/m³).

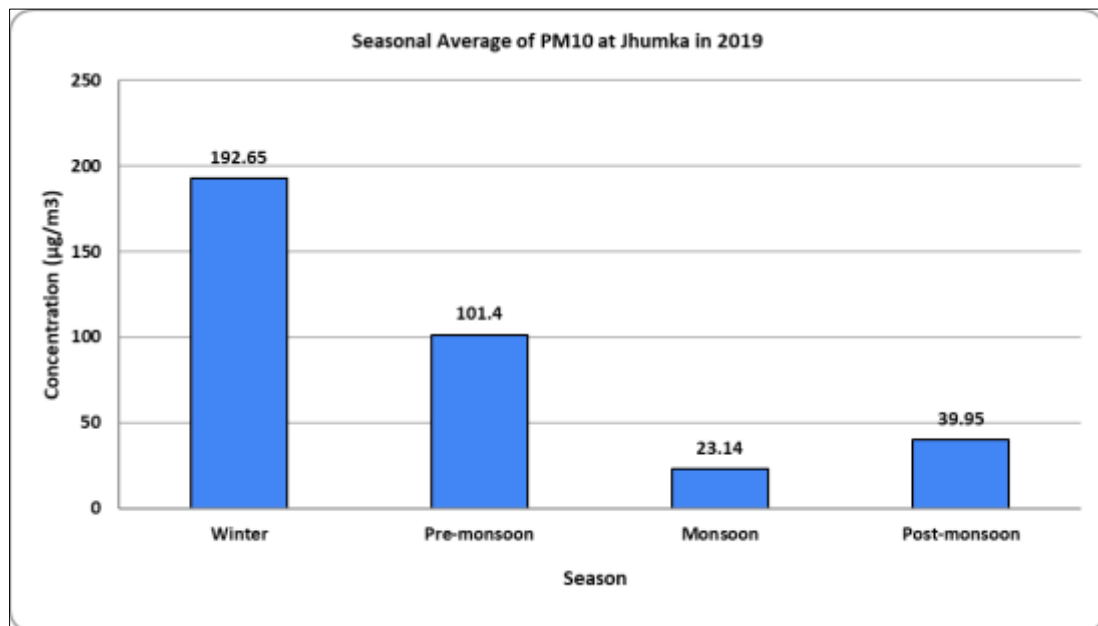


Figure 47: Seasonal variation of PM₁₀

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the figure below.

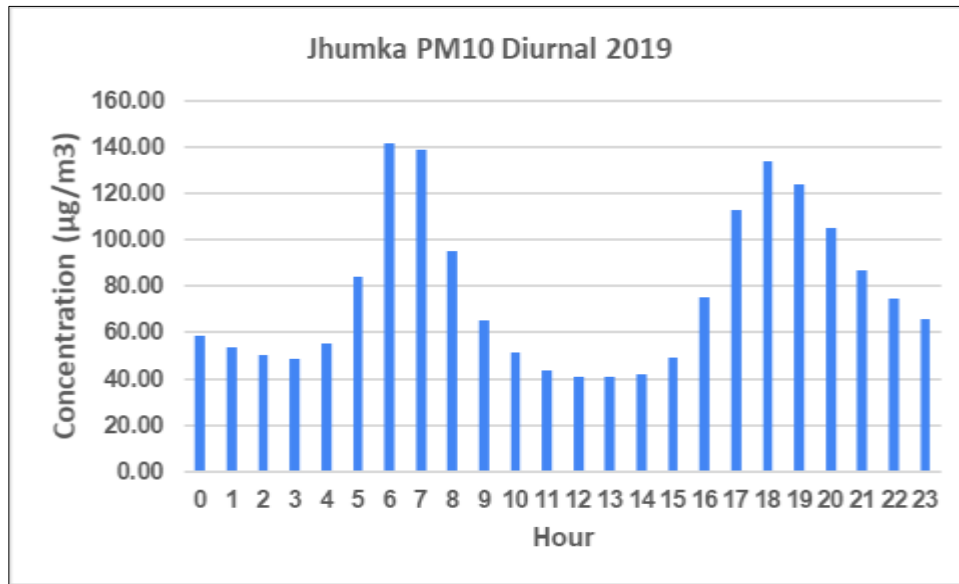


Figure 48: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2019 counts 249; of which 64 days exceed the NAAQS guideline as shown in figure below.

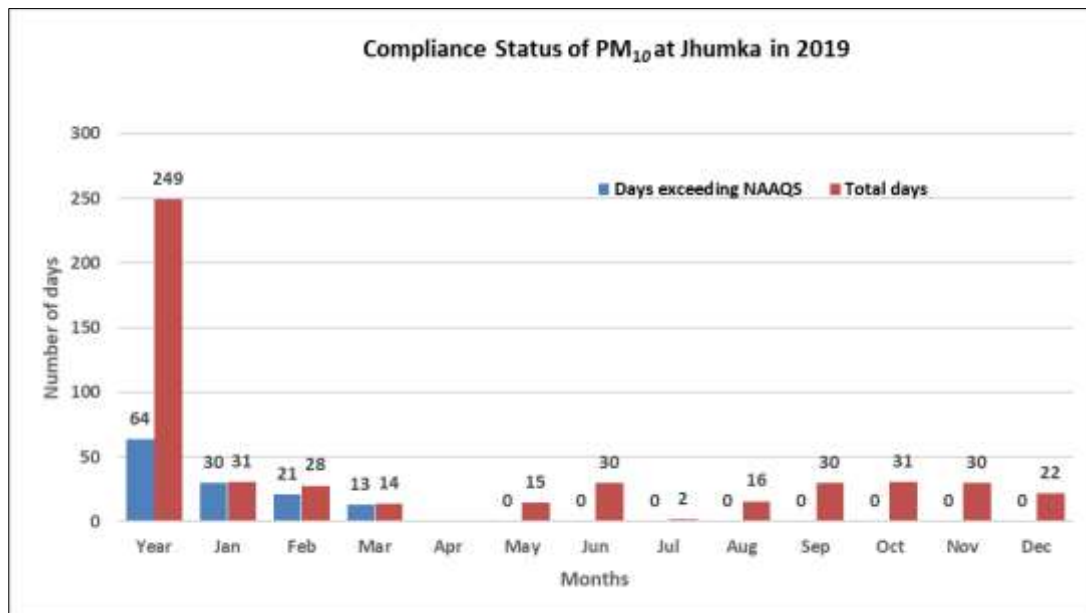


Figure 49: Compliance status of PM₁₀

2.2.5 Temporal variation of TSP

Annual average of TSP

The annual average of TSP at Jhumka station was found to be 113.11 $\mu\text{g}/\text{m}^3$. Histogram of hourly average TSP is shown in the figure below.

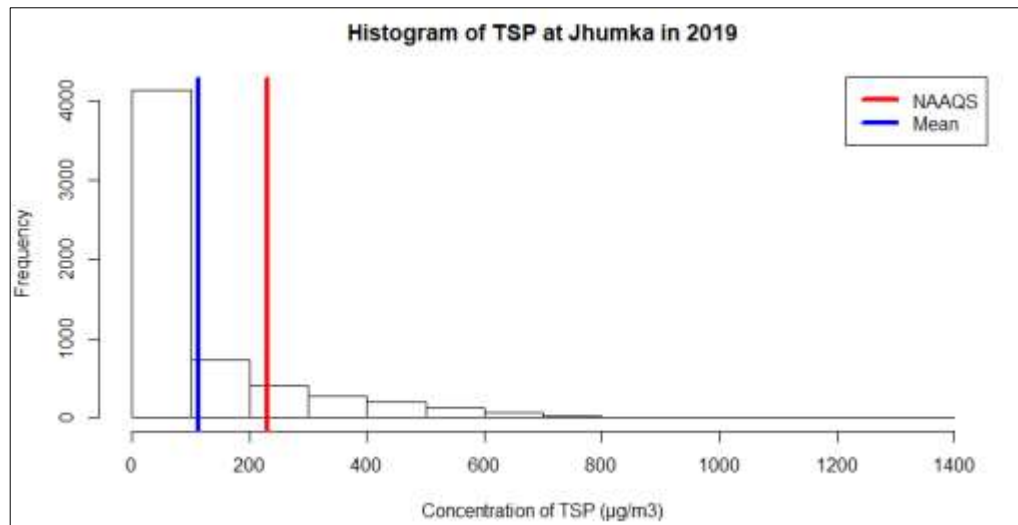


Figure 50: Histogram for the ambient concentration of TSP

Daily average of TSP:

Daily average concentration of TSP was high during February and was found low during September.

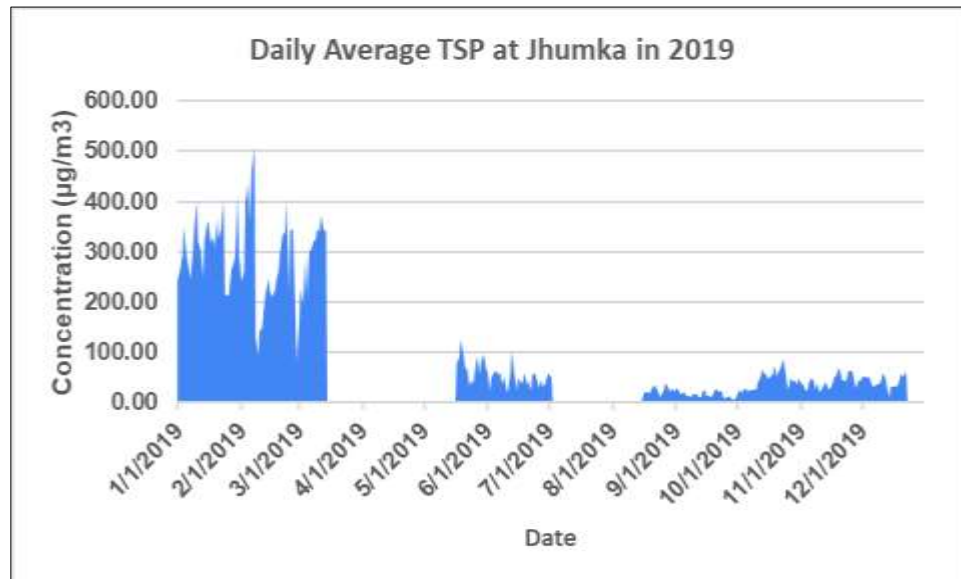


Figure 51: Daily average of TSP

Monthly average of TSP

The highest and the lowest concentration of TSP was found during January and September respectively. The mean value for those months were found to be 306.5 and 16.09 $\mu\text{g}/\text{m}^3$ respectively.

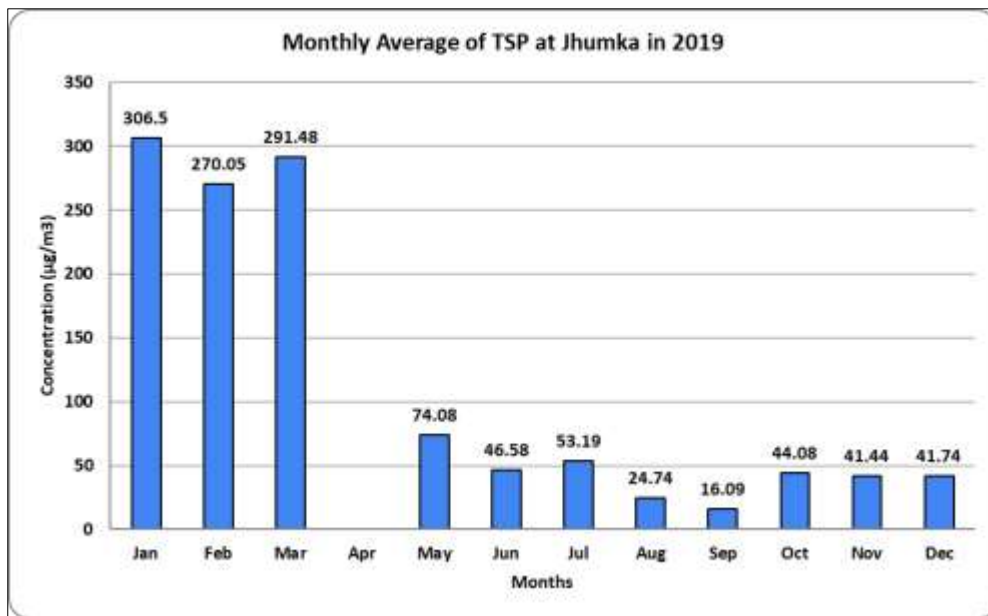


Figure 52: Monthly Average of TSP

Monthly Variation of TSP

Variation in concentration of TSP was as follows.

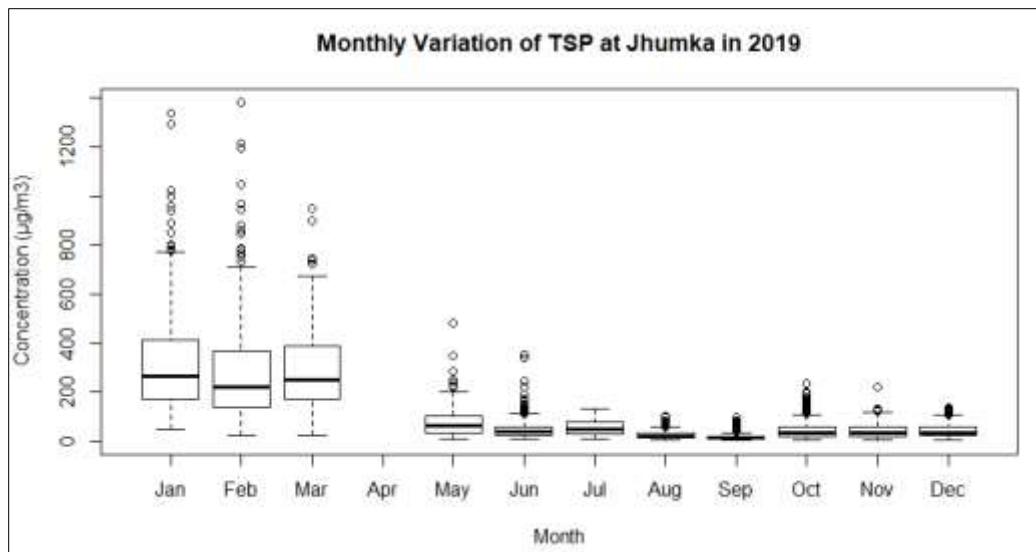


Figure 53: Monthly Variation of TSP

Seasonal variation of average TSP concentration

Ambient concentration of average TSP can be shown in the figure below. The concentration of TSP was found higher during winter ($283.17 \mu\text{g}/\text{m}^3$) than monsoon season ($35.15 \mu\text{g}/\text{m}^3$).

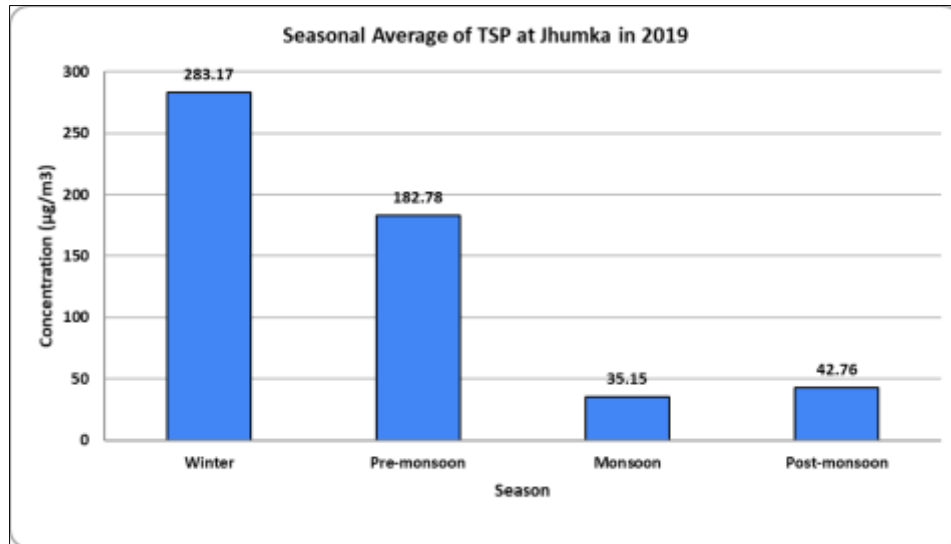


Figure 54: Seasonal variation of TSP

Diurnal variation of average TSP concentration

The diurnal variation of average TSP concentrations can be shown in the figure below.

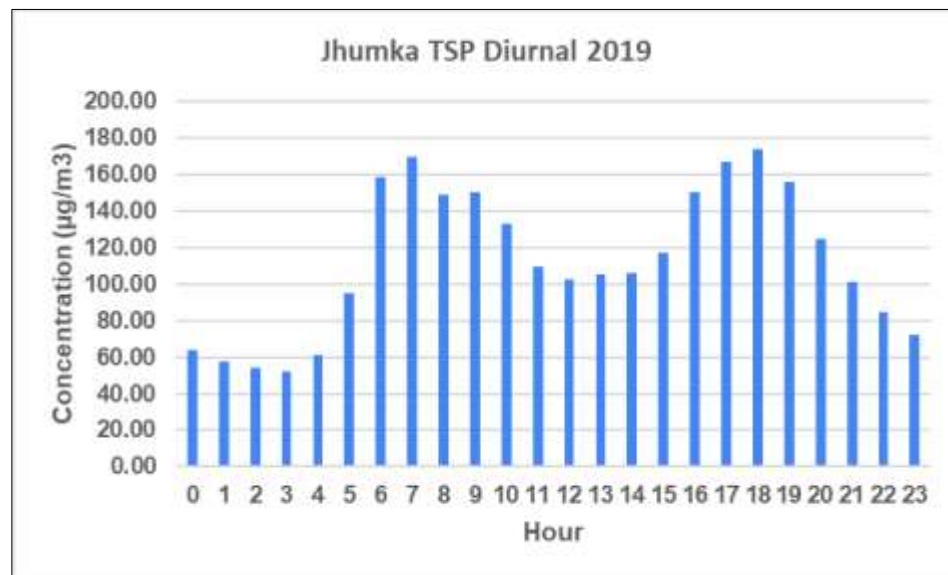


Figure 55: Diurnal Variation of TSP

Compliance status of TSP

The total days of TSP monitored in the year 2019 counts 249; of which 54 days exceed the NAAQS guideline as shown in figure below.

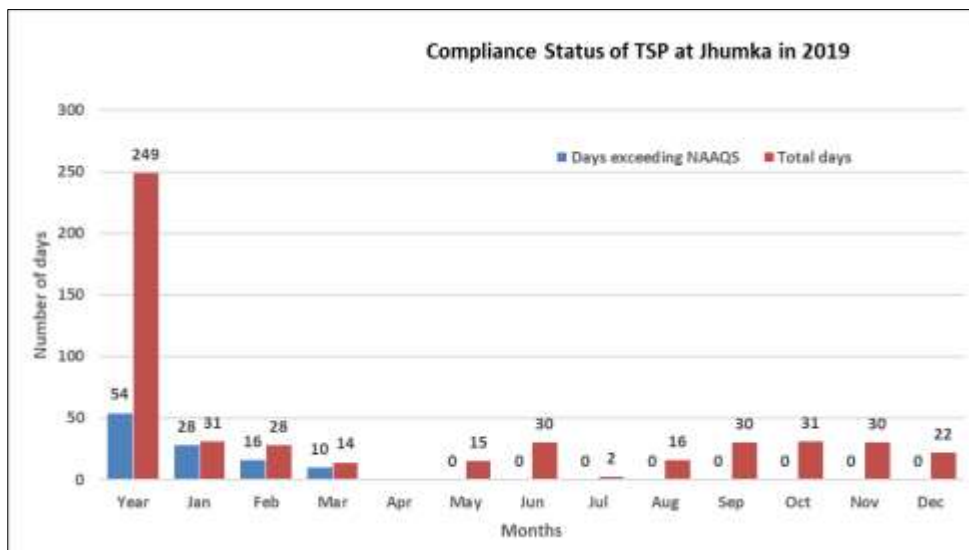


Figure 56: Compliance status of TSP

2.3 Air quality status, 2020

2.3.1 Annual average of PM₁, PM_{2.5}, PM₁₀ and TSP

The annual average of PM₁, PM_{2.5}, PM₁₀ and TSP of the Jhumka monitoring station was calculated as shown in figure below. As the data is only of January and February with few days, this is not suitable to calculate the annual average.

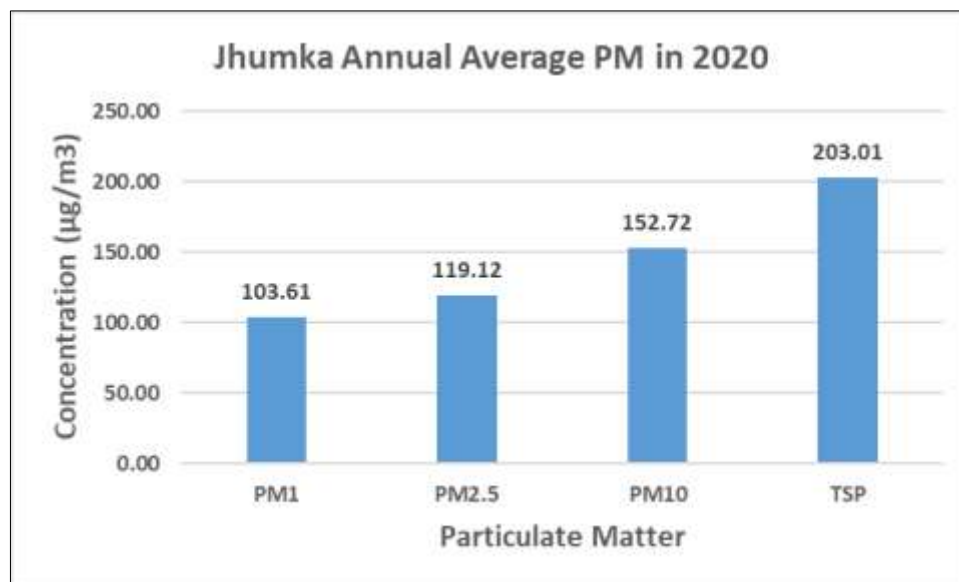


Figure 57: Annual average of PM₁, PM_{2.5}, PM₁₀ and TSP in 2020

2.3.2 Temporal variation of PM₁

Annual average of PM₁

The annual average of PM₁ at Jhumka station was found to be 103.61 $\mu\text{g}/\text{m}^3$. Histogram of hourly average PM₁ is shown in the figure below.

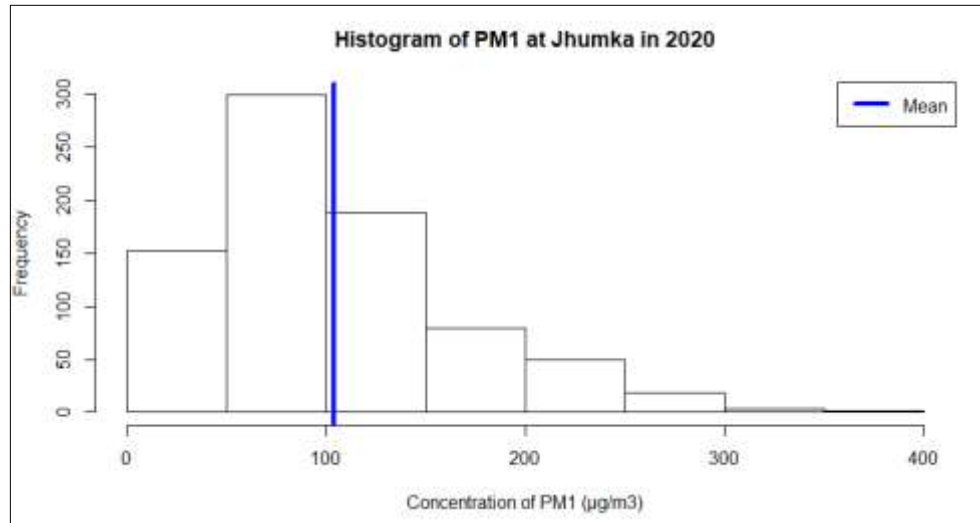


Figure 58: Histogram of PM₁

Daily average of PM₁:

Daily average concentration of PM₁ was high during January and was found low during February.

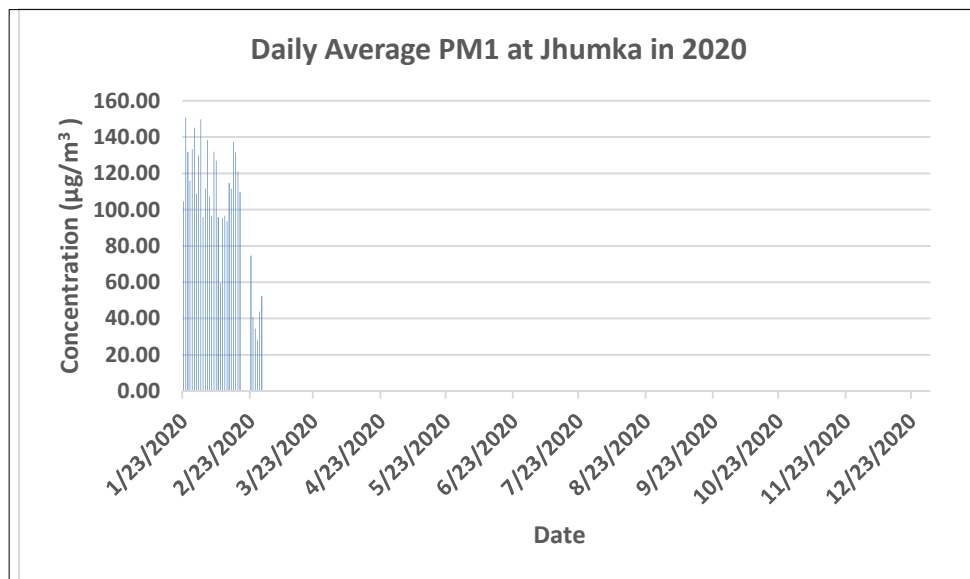


Figure 59: Daily average of PM₁

Monthly average of PM₁

The highest and the lowest concentration of PM₁ was found during January and February respectively. The mean value for those months were found to be 129.98 and 93.73 $\mu\text{g}/\text{m}^3$ respectively.

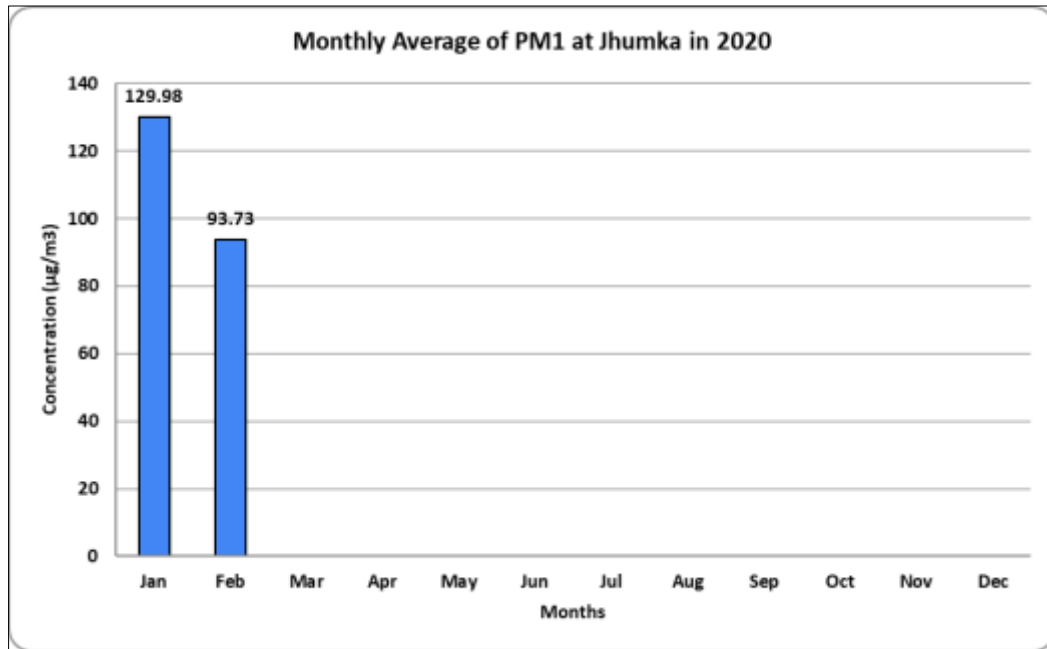


Figure 60: Monthly Average of PM₁

Monthly Variation of PM₁

Variation in concentration of PM₁ was found as shown in figure below.

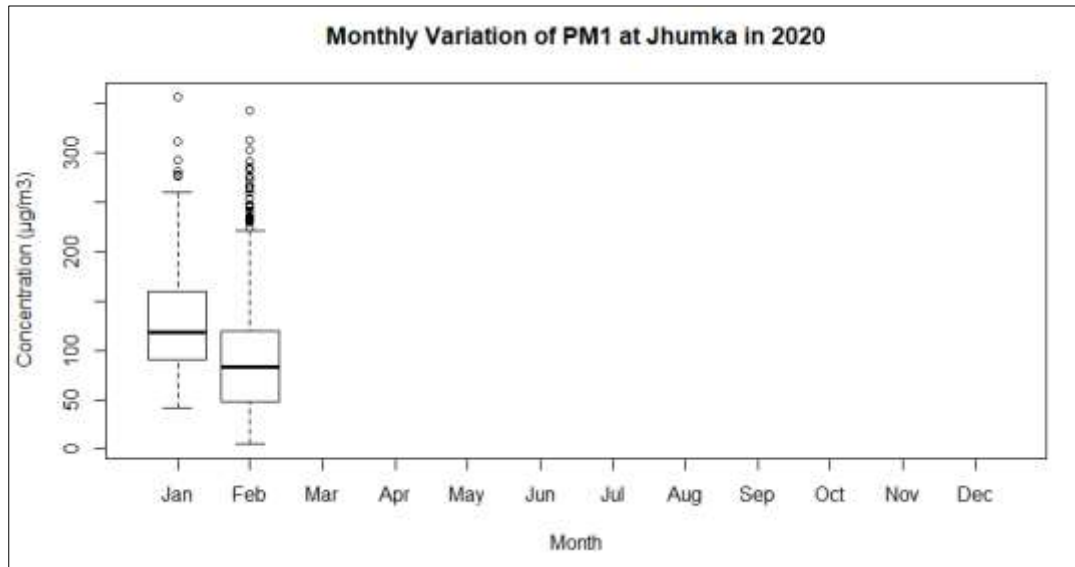


Figure 61: Monthly Variation of PM₁

Seasonal variation of average PM₁ concentration

The concentration of PM₁ was found 86.58 µg/m³ during winter.

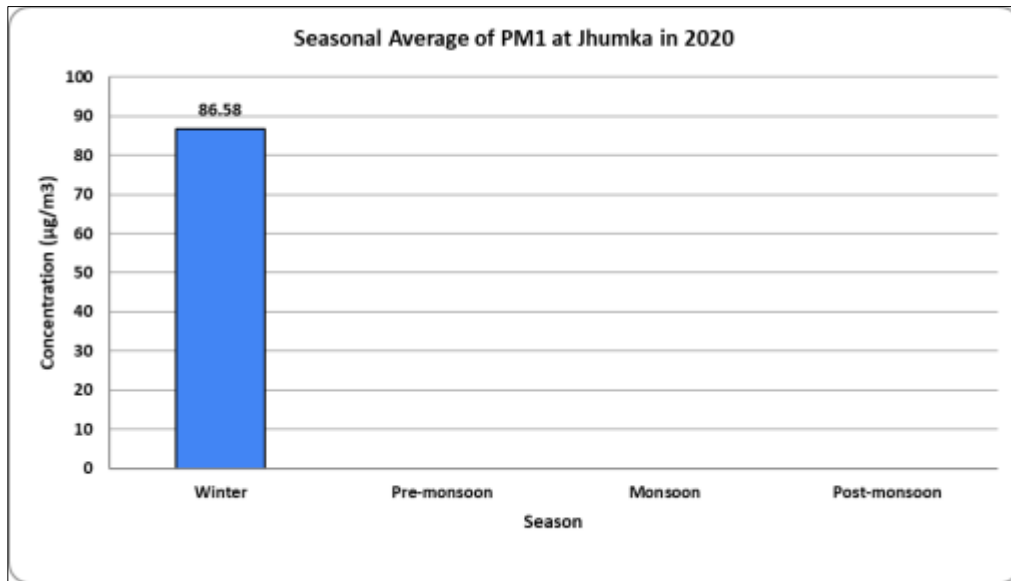


Figure 62: Seasonal variation of PM₁

Diurnal variation of average PM₁ concentration

The diurnal variation of average PM₁ concentrations can be shown in the figure below.

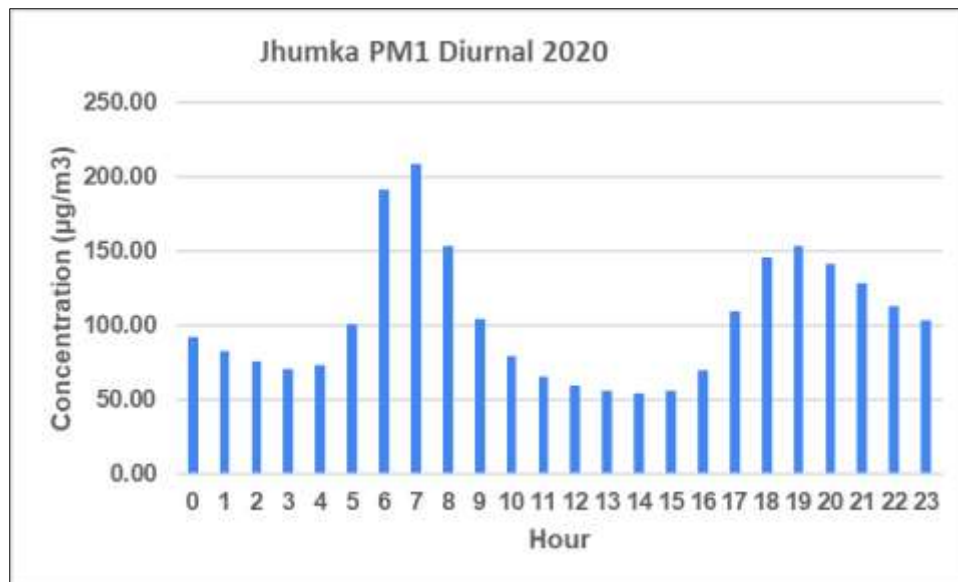


Figure 63: Diurnal variation of PM₁

2.3.3 Temporal Variation of PM_{2.5}

Annual average of PM_{2.5}

The annual average of PM_{2.5} at Jhumka station was found to be 119.12 µg/m³. Histogram of hourly average PM_{2.5} is shown in the figure below.

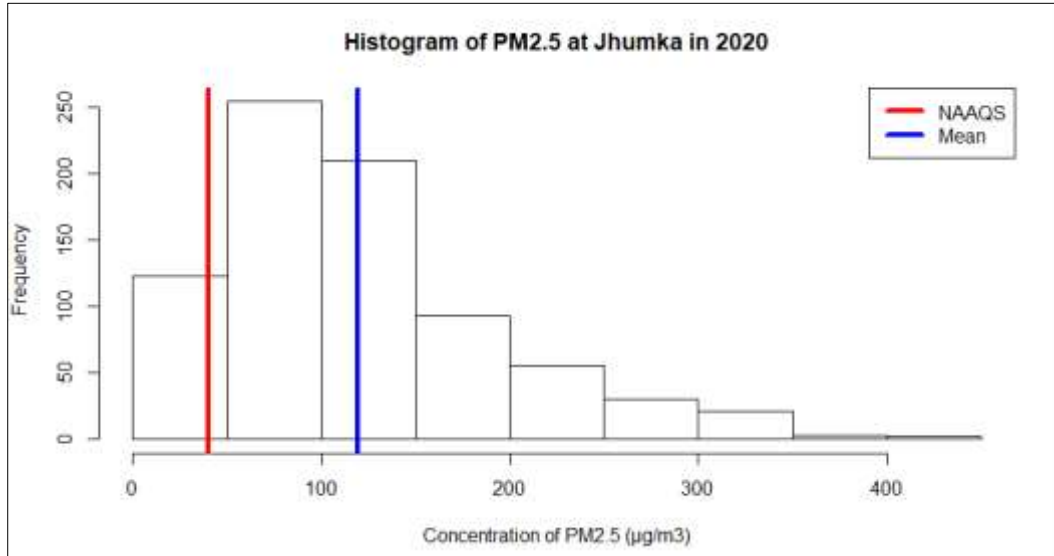


Figure 64: Histogram of PM_{2.5}

Daily average of PM_{2.5}

Daily average concentration of PM_{2.5} was high during January and was found low during February.

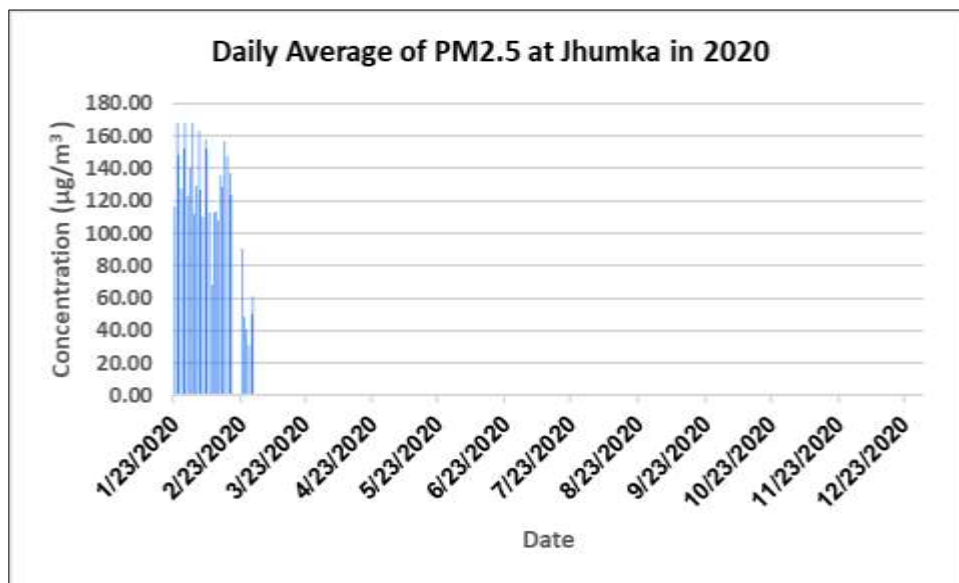


Figure 65: Daily average of PM_{2.5}

Monthly average of PM_{2.5}

The highest and the lowest concentration of PM_{2.5} was found during January and February respectively. The mean value for those months were found to be 145.77 and 109.13 $\mu\text{g}/\text{m}^3$ respectively.

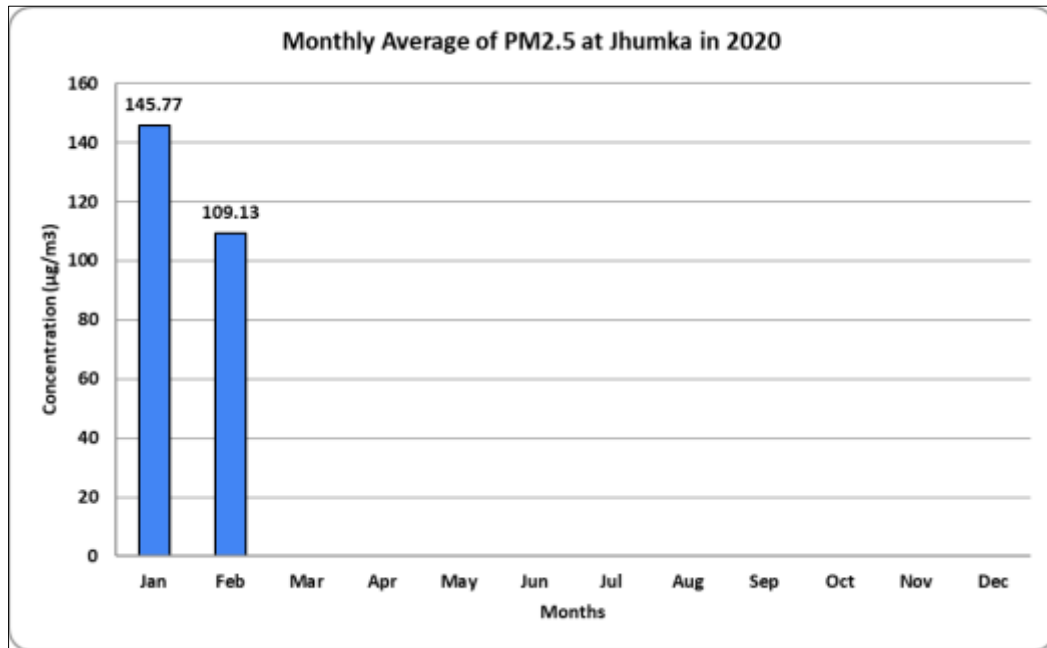


Figure 66: Monthly Average of PM_{2.5}

Monthly Variation of PM_{2.5}

Variation in concentration of PM_{2.5} was found higher in January than February.

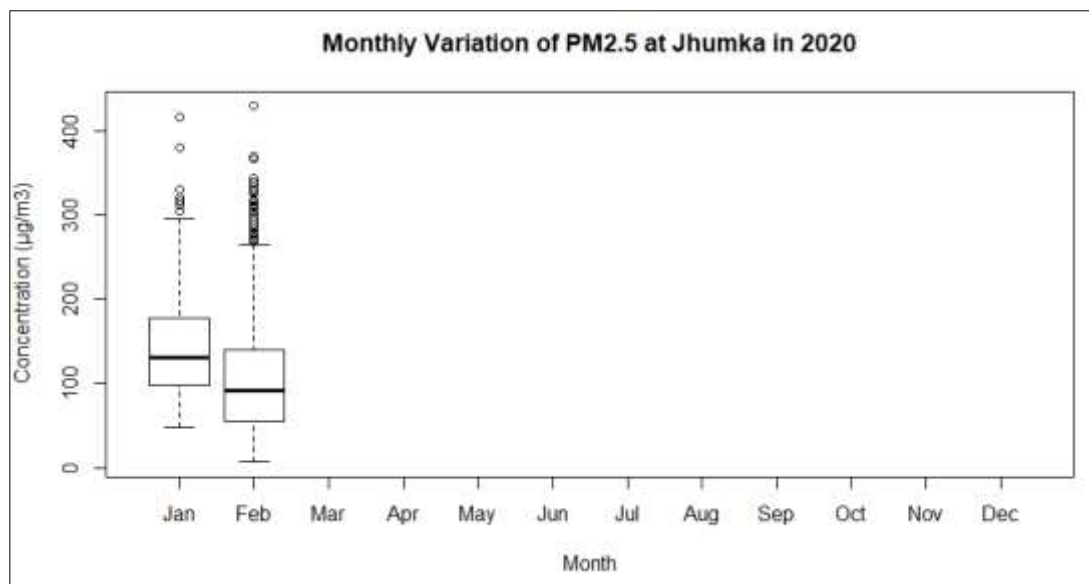


Figure 67: Monthly Variation of PM_{2.5}

Seasonal variation of average PM_{2.5} concentration

The concentration of PM_{2.5} was found 127.45 during winter.

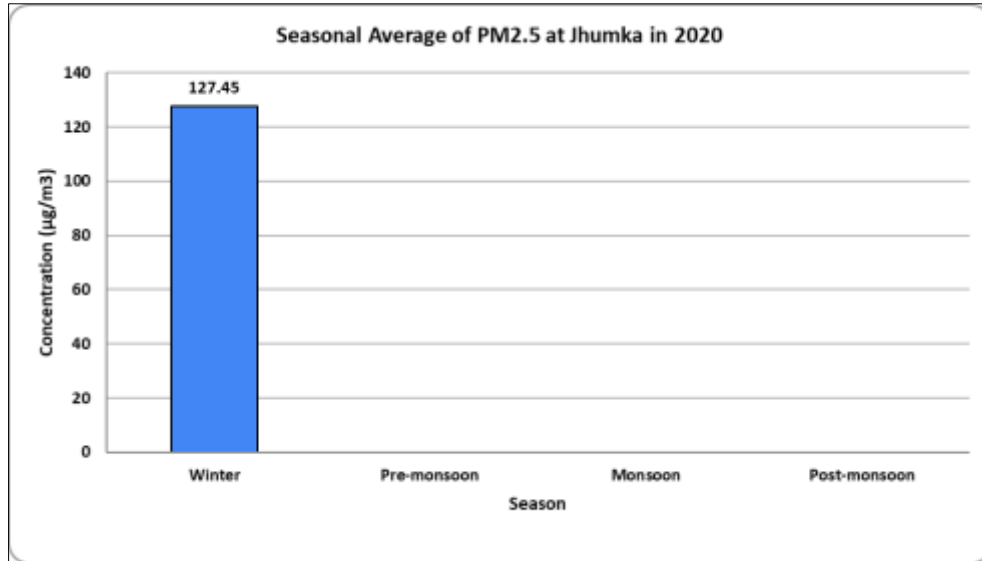


Figure 68: Seasonal variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown in the figure below.

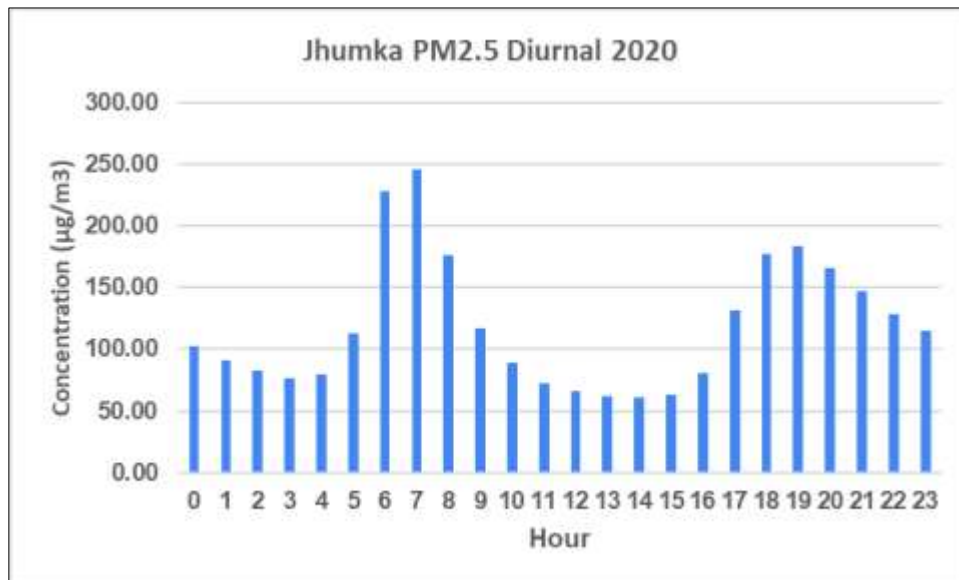


Figure 69: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2020 counts 33; of which 32 days exceed the NAAQS guideline as shown in figure below.

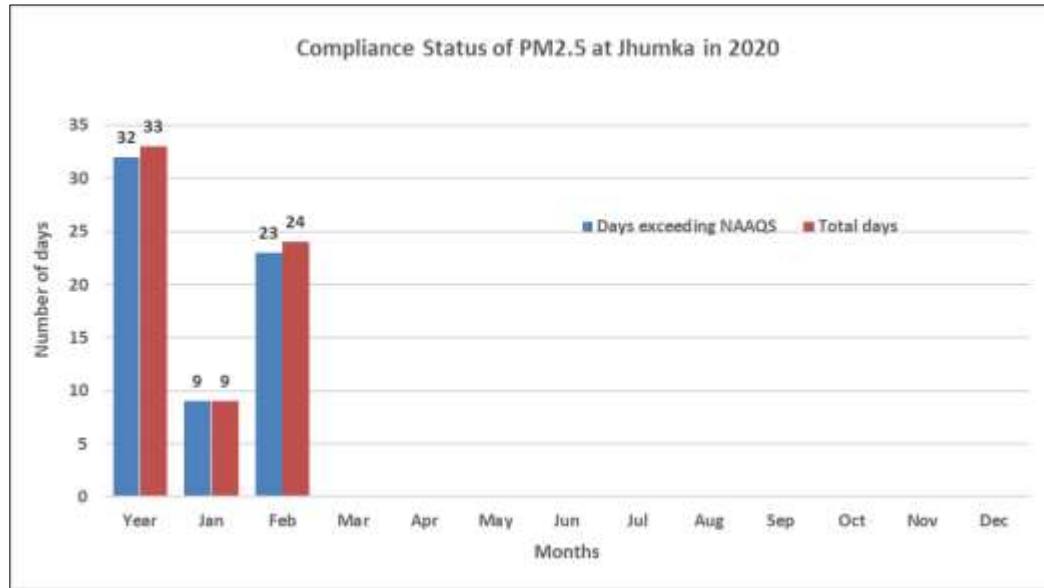


Figure 70: Compliance status of PM_{2.5}

2.3.4 Temporal variation of PM₁₀

Annual average of PM₁₀

The annual average of PM₁₀ at Jhumka station was found to be 152.72 µg/m³. Histogram of hourly average PM₁₀ is shown in the figure below.

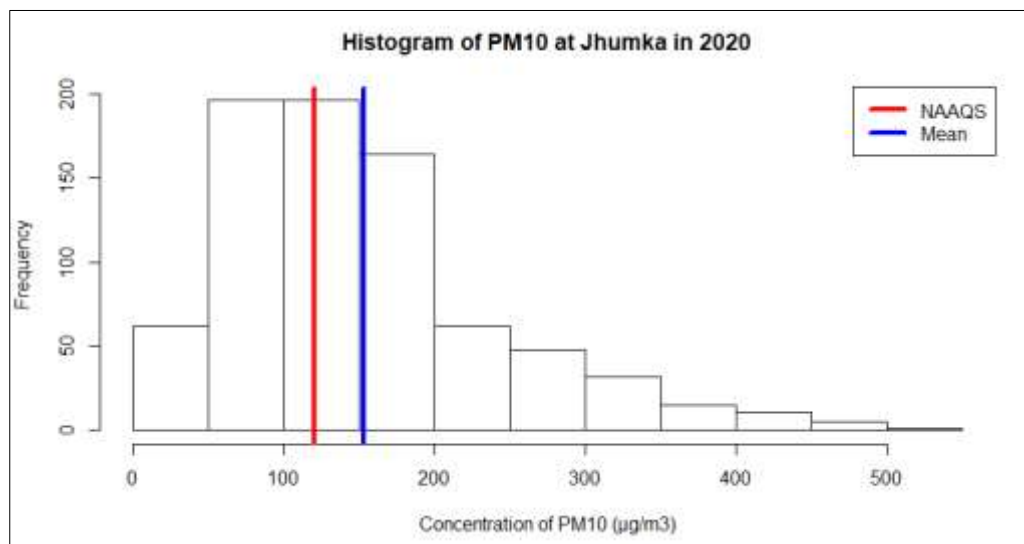


Figure 71: Histogram for the ambient concentration of PM₁₀

Daily average of PM₁₀

Daily average concentration of PM₁₀ was high during February and was found low during February.

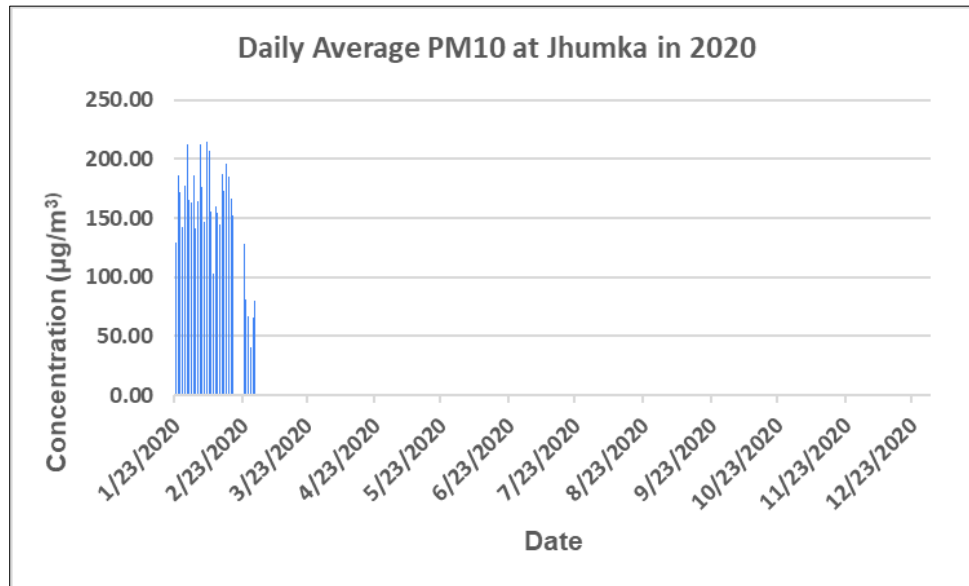


Figure 72: Daily average of PM₁₀

Monthly average of PM₁₀

The highest and the lowest concentration of PM_{2.5} was found during January and February respectively. The mean value for those months were found to be 170.68 and 145.99 µg/m³ respectively.

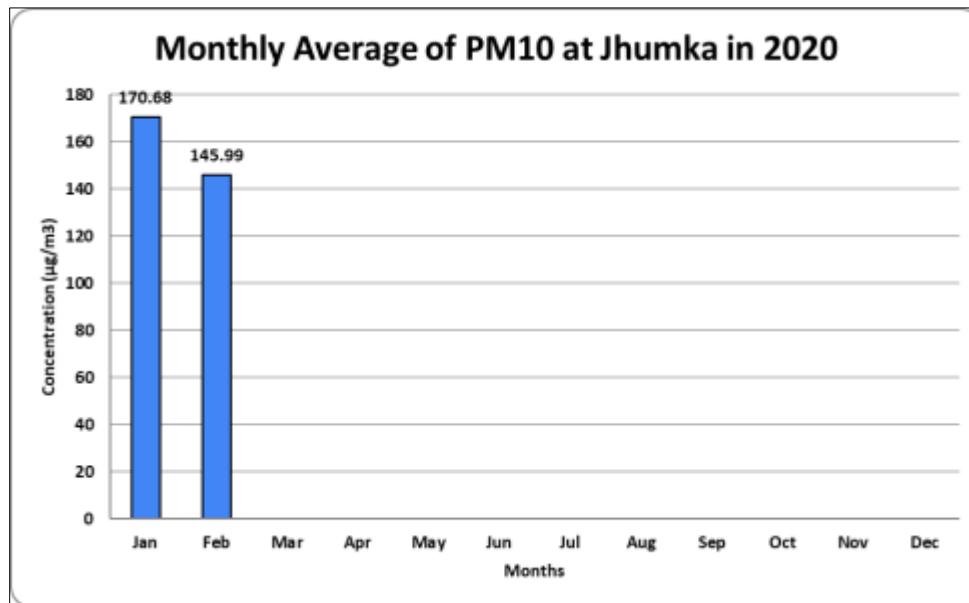


Figure 73: Monthly average of PM₁₀

Monthly Variation of PM₁₀

Variation in concentration of PM₁₀ was found as follows.

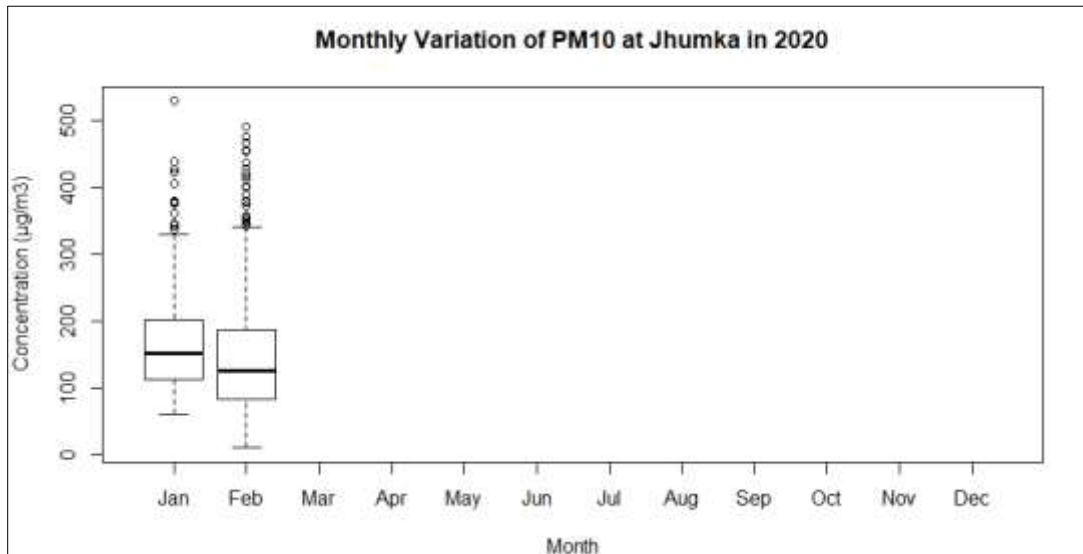


Figure 74: Monthly Variation of PM₁₀

Seasonal variation of average PM₁₀ concentration:

The concentration of PM₁₀ was found 118.98 µg/m³ during winter.

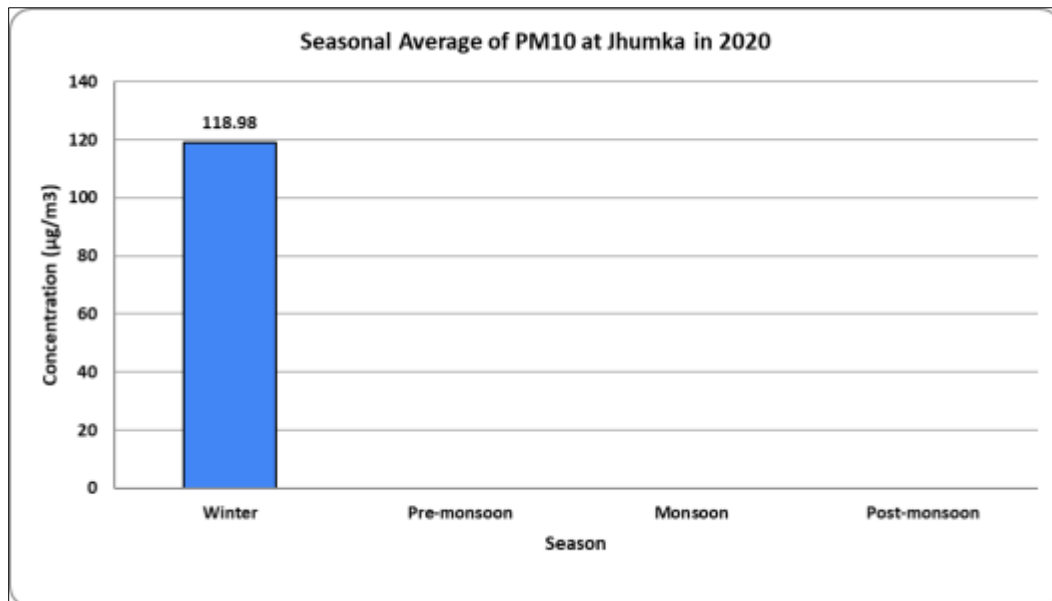


Figure 75: Seasonal variation of PM₁₀

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the figure below.

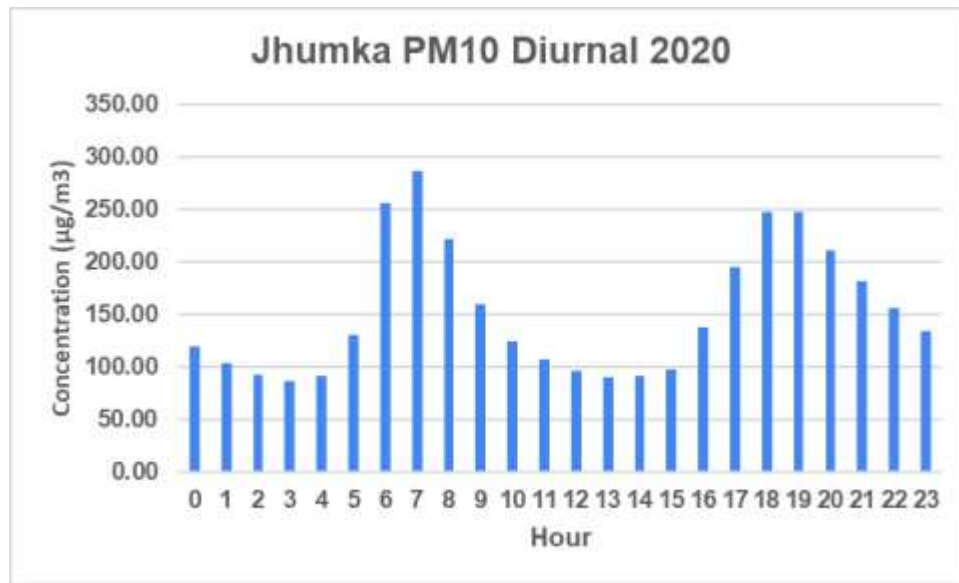


Figure 76: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2020 counts 33; of which 27 of the days exceed the NAAQS guideline as shown in figure below.

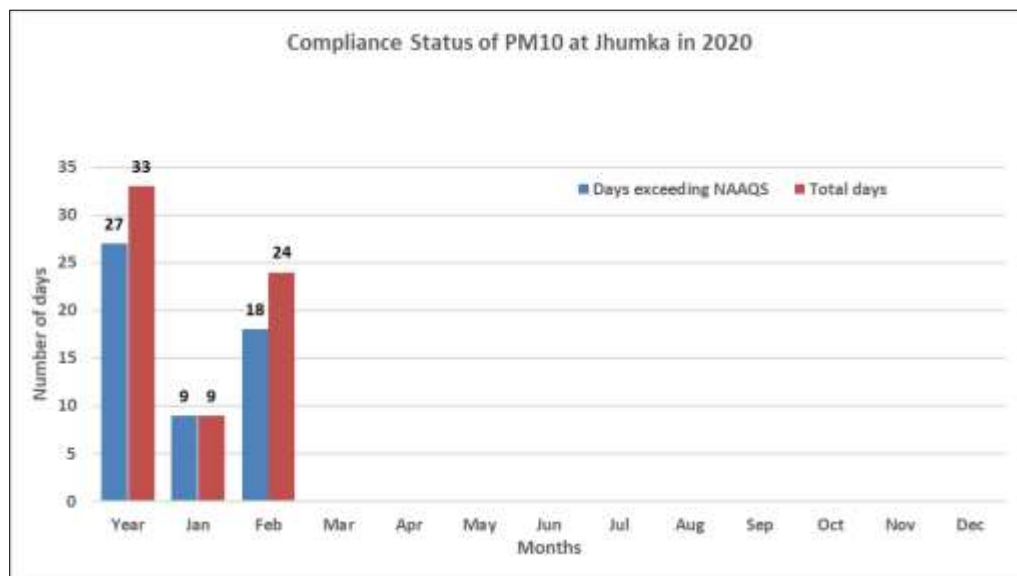


Figure 77: Compliance status of PM₁₀

2.3.5 Temporal variation of TSP

Annual average of TSP

The annual average of TSP at Jhumka station was found to be 203.01 $\mu\text{g}/\text{m}^3$. Histogram of hourly average TSP is shown in the figure below.

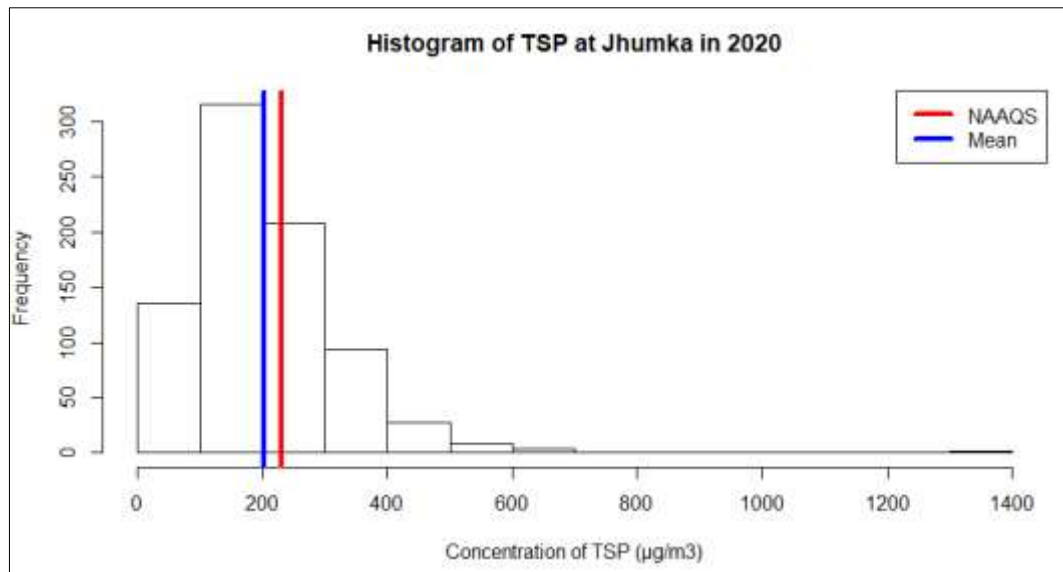


Figure 78: Histogram for the ambient concentration of TSP

Daily average of TSP

Daily average concentration of TSP was found to be high during February and was found low during February.

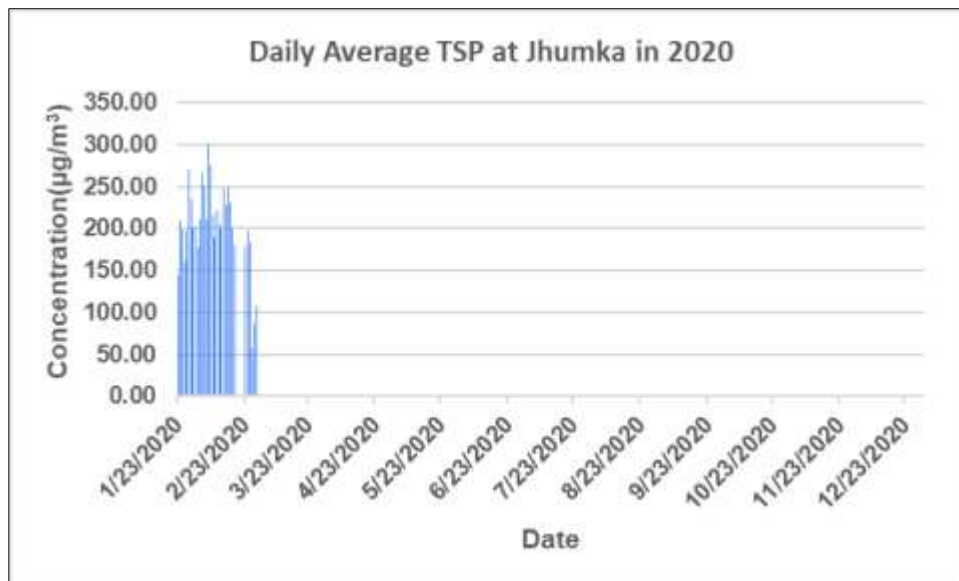


Figure 79: Daily average of TSP

Monthly average of TSP

The highest and the lowest concentration of TSP was found during February and January respectively. The mean value for those months were found to be 203.22 and 202.43 $\mu\text{g}/\text{m}^3$ respectively.

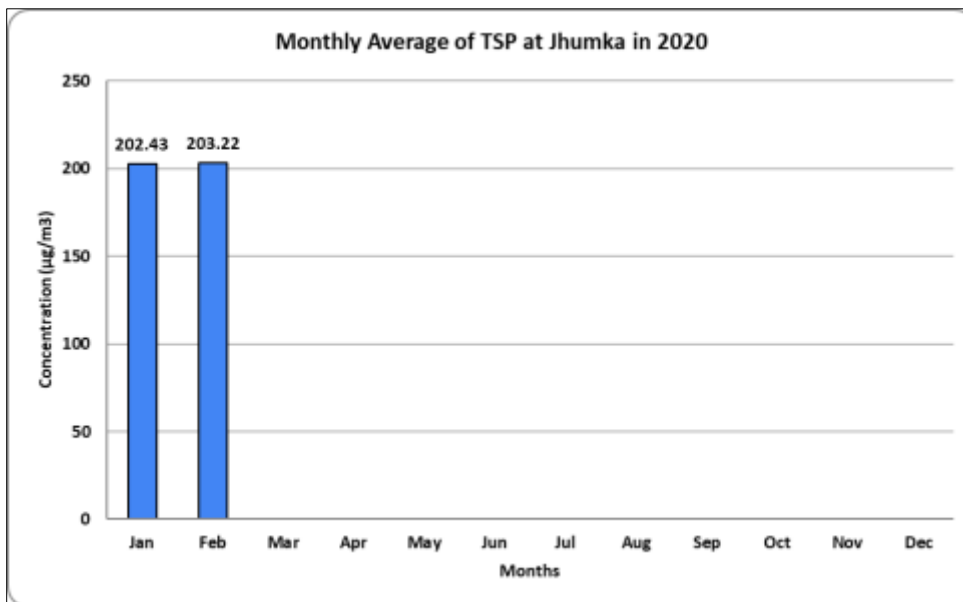


Figure 80: Monthly Average of TSP

Monthly Variation of TSP

Variation in concentration of TSP was found as follows.

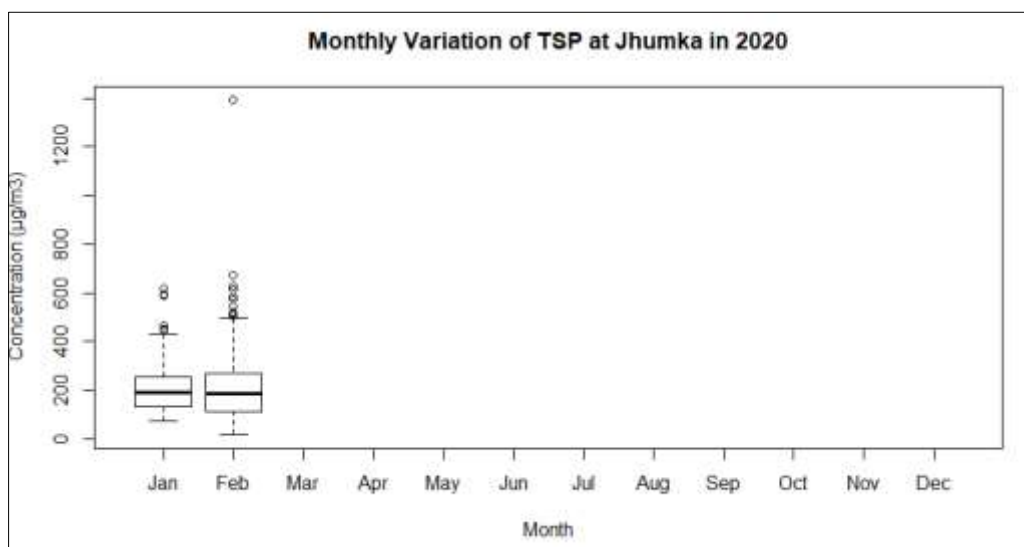


Figure 81: Monthly Variation of TSP

Seasonal variation of average TSP concentration

The concentration of TSP was 149.13 $\mu\text{g}/\text{m}^3$ during winter.

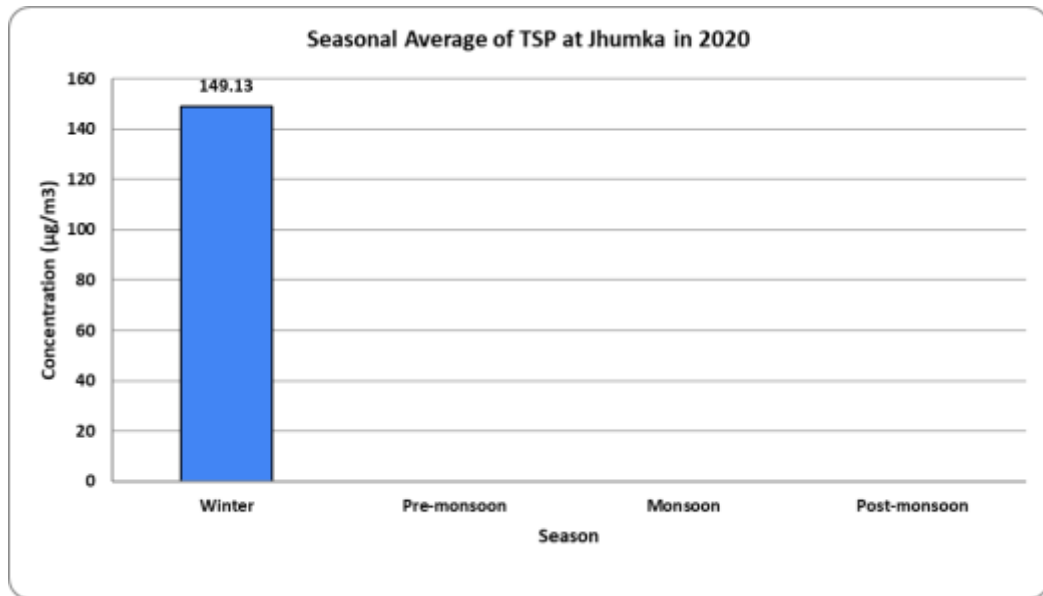


Figure 82: Seasonal variation of TSP

Diurnal variation of average TSP concentration

The diurnal variation of average TSP concentrations can be shown in the figure below.

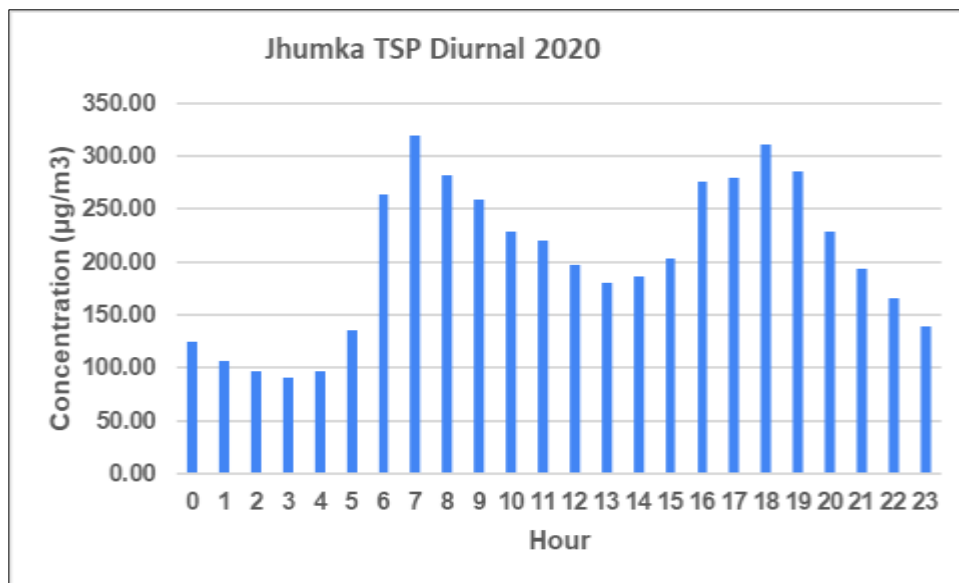


Figure 83: Diurnal Variation of TSP

Compliance status of TSP

The total days of TSP monitored in the year 2020 counts 33; of which 9 of the days exceed the NAAQS guideline as shown in figure below.

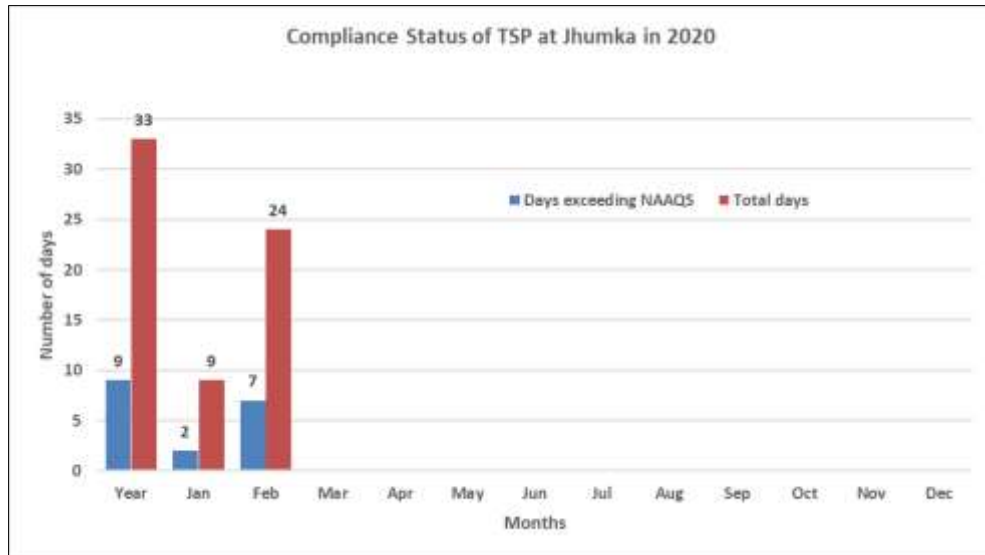


Figure 84: Compliance status of TSP

Annex

Daily PM₁, PM_{2.5}, PM₁₀, TSP (µg/m³)

Date	PM ₁ (µg/m ³)	PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)	TSP (µg/m ³)
1/1/2018				
1/2/2018				
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12/21/2018	117.48	131.47	177.76	259.42
12/22/2018	145.55	166.35	214.92	282.60
12/23/2018	106.35	119.06	158.09	218.29
12/24/2018	113.46	123.14	151.44	209.54
12/25/2018	162.43	180.81	216.76	291.44
12/26/2018	199.32	221.88	260.41	336.63
12/27/2018	157.22	174.78	209.19	295.32
12/28/2018	153.43	170.97	200.32	258.15
12/29/2018	146.95	170.88	221.42	285.08
12/30/2018	132.26	154.60	200.47	265.86
12/31/2018	136.33	159.94	208.42	300.20

Date	PM1($\mu\text{g}/\text{m}^3$)	PM2.5($\mu\text{g}/\text{m}^3$)	PM10($\mu\text{g}/\text{m}^3$)	TSP($\mu\text{g}/\text{m}^3$)
1/1/2019	125.39	146.66	185.32	242.30
1/2/2019	117.93	140.69	189.37	263.49
1/3/2019	125.28	145.55	203.78	296.15
1/4/2019	160.76	188.05	250.63	350.92
1/5/2019	108.94	128.57	185.77	294.34
1/6/2019	111.79	134.26	186.12	278.09
1/7/2019	85.40	101.41	147.83	245.30
1/8/2019	97.27	111.16	155.28	299.50
1/9/2019	181.09	204.60	259.66	344.57
1/10/2019	204.02	234.81	295.33	401.40
1/11/2019	154.20	174.27	216.28	321.55
1/12/2019	159.41	187.65	233.82	305.20
1/13/2019	105.22	123.41	170.67	248.89
1/14/2019	153.75	175.01	226.08	319.46
1/15/2019	191.07	215.04	261.87	355.37
1/16/2019	185.71	211.77	262.33	361.43
1/17/2019	141.56	164.78	218.56	318.59
1/18/2019	154.86	179.92	237.87	329.90
1/19/2019	149.87	171.40	217.85	306.35
1/20/2019	164.93	188.63	245.89	366.12
1/21/2019	135.26	157.82	210.49	325.28
1/22/2019	136.53	163.80	231.05	344.45
1/23/2019	72.19	87.24	146.27	403.57
1/24/2019	82.97	94.98	127.22	212.56
1/25/2019	96.27	110.07	150.05	214.04
1/26/2019	67.66	77.98	117.61	212.94
1/27/2019	97.18	111.17	153.69	263.42
1/28/2019	105.45	122.34	156.37	280.06
1/29/2019	136.16	150.05	187.52	290.86
1/30/2019	184.84	223.98	287.68	411.14
1/31/2019	142.81	163.67	210.28	294.17
2/1/2019	103.66	122.38	165.87	240.68
2/2/2019	114.35	132.08	174.21	261.10
2/3/2019	143.26	171.37	250.84	398.10
2/4/2019	147.34	179.93	277.97	435.86
2/5/2019	140.37	165.37	244.82	360.33
2/6/2019	161.36	197.65	302.50	465.68

2/7/2019	154.69	193.52	317.24	507.81
2/8/2019	93.32	101.31	115.73	130.73
2/9/2019	66.54	73.04	85.17	92.77
2/10/2019	69.01	79.27	101.63	140.00
2/11/2019	81.73	91.91	114.42	148.10
2/12/2019	99.38	114.11	149.72	200.86
2/13/2019	85.92	100.70	145.80	221.19
2/14/2019	101.22	115.64	166.34	248.58
2/15/2019	109.47	121.07	158.60	222.81
2/16/2019	75.99	85.75	116.71	210.91
2/17/2019	77.02	87.40	120.18	221.70
2/18/2019	133.46	153.01	193.85	241.85
2/19/2019	112.45	126.82	171.29	263.93
2/20/2019	108.46	123.84	181.08	295.80
2/21/2019	92.36	111.50	168.74	332.66
2/22/2019	101.82	122.02	190.35	341.29
2/23/2019	91.04	107.51	171.24	404.12
2/24/2019	84.87	98.48	146.51	221.69
2/25/2019	124.76	146.39	215.72	342.85
2/26/2019	114.82	138.08	212.00	345.30
2/27/2019	61.20	70.90	102.54	185.12
2/28/2019	38.12	44.32	56.57	79.62
3/1/2019	63.59	72.23	101.64	155.43
3/2/2019	91.75	105.24	147.03	227.98
3/3/2019	93.57	104.45	138.82	198.41
3/4/2019	110.44	131.90	181.58	289.72
3/5/2019	76.00	88.24	131.76	211.71
3/6/2019	67.45	79.53	135.43	302.35
3/7/2019	85.48	104.31	174.31	301.06
3/8/2019	91.38	113.02	194.02	320.52
3/9/2019	86.31	104.72	179.39	325.25
3/10/2019	89.62	110.63	193.59	346.65
3/11/2019	79.50	101.33	188.48	341.30
3/12/2019	63.91	81.82	166.27	372.62
3/13/2019	72.33	92.53	174.81	346.11
3/14/2019	79.48	101.51	195.08	341.65
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5/17/2019	22.82	28.75	43.60	78.34
5/18/2019	24.61	33.54	50.77	89.73
5/19/2019	22.76	34.64	63.01	124.86
5/20/2019	22.24	31.80	51.49	99.33
5/21/2019	19.00	25.18	37.45	60.84
5/22/2019	19.39	25.10	37.69	73.24
5/23/2019	10.42	13.06	18.49	31.78
5/24/2019	9.69	12.63	20.54	43.25
5/25/2019	9.70	12.29	19.26	38.95
5/26/2019	22.68	28.66	44.70	77.98
5/27/2019	24.80	32.01	48.99	91.88
5/28/2019	13.99	18.25	27.89	57.66
5/29/2019	14.20	19.95	36.37	79.17
5/30/2019	18.79	26.21	43.14	96.94
5/31/2019	16.48	20.83	31.88	67.26

6/1/2019	15.91	20.43	32.58	61.47
6/2/2019	12.51	14.88	18.77	24.49
6/3/2019	17.08	21.43	32.17	48.78
6/4/2019	15.58	19.88	32.45	59.22
6/5/2019	12.55	17.02	32.11	64.63
6/6/2019	14.17	19.04	29.66	53.52
6/7/2019	16.25	22.68	36.45	61.77
6/8/2019	12.71	16.34	23.99	37.38
6/9/2019	15.32	20.12	31.70	52.52
6/10/2019	10.77	13.51	18.05	23.78
6/11/2019	9.05	10.95	14.62	22.03
6/12/2019	14.02	20.36	33.69	62.07
6/13/2019	21.99	33.96	62.88	103.11
6/14/2019	17.01	23.32	38.86	56.50
6/15/2019	10.37	12.94	16.71	23.48
6/16/2019	20.55	25.77	33.72	48.79
6/17/2019	17.93	22.83	29.48	42.02
6/18/2019	14.85	19.27	27.97	35.81
6/19/2019	17.74	25.52	39.90	59.79
6/20/2019	14.28	19.37	27.00	35.25
6/21/2019	13.59	18.50	29.75	44.24
6/22/2019	8.68	11.48	15.77	22.78
6/23/2019	14.58	19.75	33.94	54.14
6/24/2019	14.99	21.79	38.19	59.11
6/25/2019	15.77	20.27	28.39	40.48
6/26/2019	14.34	17.40	24.77	29.57
6/27/2019	15.74	18.05	31.48	45.86
6/28/2019	16.35	19.30	25.29	31.61
6/29/2019	18.00	20.95	28.77	36.48
6/30/2019	15.24	19.69	34.03	56.85
7/1/2019	15.33	20.78	37.05	56.94
7/2/2019	4.40	6.77	19.65	49.44
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8/16/2019	9.53	11.66	14.90	17.36
8/17/2019	13.69	15.85	19.32	21.95
8/18/2019	12.27	14.47	18.20	22.21
8/19/2019	11.11	12.82	15.42	17.62
8/20/2019	15.30	18.16	22.47	26.90
8/21/2019	17.42	21.02	26.89	32.87
8/22/2019	17.70	22.14	29.71	34.94
8/23/2019	14.73	17.22	20.69	24.50
8/24/2019	7.10	8.63	10.55	11.85
8/25/2019	8.03	9.89	12.71	15.16
8/26/2019	11.89	14.75	20.78	27.58
8/27/2019	20.52	24.82	31.99	38.50
8/28/2019	15.32	18.38	24.67	32.28
8/29/2019	12.65	14.68	17.68	20.66
8/30/2019	12.38	15.62	21.84	29.22
8/31/2019	13.23	15.27	19.18	22.28
9/1/2019		19.60	25.54	29.11
9/2/2019		12.41	18.45	25.83
9/3/2019		9.17	12.30	16.54
9/4/2019	8.59	10.95	14.88	19.31
9/5/2019	9.61	11.81	15.99	21.37
9/6/2019	7.12	8.82	10.98	13.30
9/7/2019	7.58	9.30	11.59	14.81
9/8/2019	6.06	7.11	8.52	9.93
9/9/2019	8.50	10.09	12.17	14.94
9/10/2019	9.83	11.49	13.90	17.16
9/11/2019	12.66	14.25	16.16	17.76
9/12/2019	6.54	7.75	9.11	11.77
9/13/2019	7.46	8.64	9.71	10.57
9/14/2019	12.95	14.91	18.13	20.05
9/15/2019	16.41	19.30	23.60	27.01
9/16/2019	10.80	11.82	12.80	13.48
9/17/2019	10.70	12.38	14.06	14.78
9/18/2019	7.64	8.75	9.62	9.89
9/19/2019	9.61	11.60	14.25	16.68
9/20/2019	15.91	18.46	22.01	25.13
9/21/2019	14.01	16.43	21.17	25.89
9/22/2019	12.28	14.10	17.73	21.31

9/23/2019	13.16	15.20	19.21	22.81
9/24/2019	8.62	9.58	11.06	11.92
9/25/2019	5.49	6.45	7.70	8.48
9/26/2019	6.95	8.04	9.64	11.18
9/27/2019	7.78	9.14	10.96	12.74
9/28/2019	5.17	5.77	6.22	6.32
9/29/2019	4.45	4.97	5.29	5.33
9/30/2019	5.17	6.04	6.88	7.26
10/1/2019	9.13	10.79	13.03	16.32
10/2/2019	16.25	18.56	22.82	26.71
10/3/2019	11.60	13.45	16.25	18.98
10/4/2019	15.71	17.82	22.39	26.71
10/5/2019	22.29	24.50	28.20	30.09
10/6/2019	16.06	17.49	19.68	20.67
10/7/2019	17.32	19.75	23.83	25.88
10/8/2019	16.11	18.64	22.76	25.05
10/9/2019	15.52	18.24	22.79	25.93
10/10/2019	17.88	20.44	24.27	26.03
10/11/2019	26.58	30.59	35.96	39.17
10/12/2019	35.13	39.80	46.81	49.46
10/13/2019	47.46	54.04	62.50	66.86
10/14/2019	35.99	43.50	53.70	58.51
10/15/2019	33.08	39.81	48.90	53.74
10/16/2019	25.54	31.53	41.27	46.61
10/17/2019	31.58	37.82	45.73	51.20
10/18/2019	38.54	44.99	52.48	56.07
10/19/2019	51.60	60.43	70.72	75.47
10/20/2019	41.08	45.58	50.32	52.41
10/21/2019	49.25	53.63	57.62	59.88
10/22/2019	54.45	60.09	65.66	69.46
10/23/2019	67.80	76.09	84.21	88.24
10/24/2019	58.21	63.77	69.55	72.50
10/25/2019	19.17	21.60	26.26	37.51
10/26/2019	19.81	21.98	24.63	27.10
10/27/2019	41.60	45.37	48.34	50.12
10/28/2019	30.63	34.33	38.90	40.96
10/29/2019	26.10	31.15	37.59	43.20
10/30/2019	24.20	29.08	34.76	36.76

10/31/2019	32.21	38.69	45.88	48.97
11/1/2019	27.88	31.61	36.27	38.88
11/2/2019	24.25	27.36	31.87	33.76
11/3/2019	19.06	20.98	24.68	26.55
11/4/2019	16.88	18.57	21.72	22.93
11/5/2019	33.90	35.46	37.65	38.89
11/6/2019	40.49	42.16	45.97	49.22
11/7/2019	32.86	34.71	37.99	40.50
11/8/2019	19.68	21.01	23.52	25.27
11/9/2019	18.64	20.62	26.68	39.84
11/10/2019	16.49	17.84	20.79	22.48
11/11/2019	20.12	21.38	23.85	25.20
11/12/2019	30.31	31.97	35.11	36.46
11/13/2019	35.54	37.26	40.17	42.28
11/14/2019	24.38	25.62	27.93	29.19
11/15/2019	21.68	22.77	24.82	25.92
11/16/2019	30.30	31.44	33.73	35.10
11/17/2019	46.36	47.97	50.62	51.84
11/18/2019	46.66	48.31	51.37	52.95
11/19/2019	59.71	61.35	63.92	66.03
11/20/2019	59.47	62.02	65.82	68.13
11/21/2019	40.20	41.59	43.60	44.71
11/22/2019	37.13	38.90	41.40	42.93
11/23/2019	37.61	39.23	41.44	42.62
11/24/2019	55.06	57.22	60.29	61.65
11/25/2019	56.35	58.60	62.11	64.24
11/26/2019	53.85	56.37	59.67	62.09
11/27/2019	28.73	30.93	34.58	36.12
11/28/2019	22.38	24.31	27.60	29.12
11/29/2019	37.28	40.05	43.98	45.93
11/30/2019	34.99	37.24	40.53	42.42
12/1/2019	42.70	45.83	49.57	50.67
12/2/2019	41.59	44.26	48.41	51.41
12/3/2019	42.22	44.26	47.14	48.60
12/4/2019	41.18	44.07	47.95	51.26
12/5/2019	34.23	37.00	41.45	43.41
12/6/2019	22.72	25.07	29.25	31.04
12/7/2019	24.62	27.73	32.54	34.86

12/8/2019	29.18	31.65	35.01	36.56
12/9/2019	29.89	31.90	34.36	35.54
12/10/2019	34.47	36.62	39.81	42.76
12/11/2019	51.32	54.20	57.94	60.25
12/12/2019	40.79	42.32	44.50	46.11
12/13/2019	22.58	23.74	25.96	28.23
12/14/2019	10.47	10.92	11.53	12.13
12/15/2019	26.61	27.48	28.83	31.21
12/16/2019	29.80	30.46	31.55	32.35
12/17/2019	33.29	33.82	34.50	34.83
12/18/2019	29.84	30.68	31.50	31.74
12/19/2019	43.04	44.07	45.39	45.95
12/20/2019	53.93	55.15	56.10	56.25
12/21/2019	49.05	50.13	51.31	51.65
12/22/2019	59.33	60.23	61.17	61.52
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Date	PM1($\mu\text{g}/\text{m}^3$)	PM2.5($\mu\text{g}/\text{m}^3$)	PM10($\mu\text{g}/\text{m}^3$)	TSP($\mu\text{g}/\text{m}^3$)
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1/21/2020				
1/22/2020				
1/23/2020	104.57	116.61	129.34	144.63
1/24/2020	150.71	167.67	186.68	210.49
1/25/2020	131.79	148.20	172.29	199.80
1/26/2020	115.82	127.42	142.62	160.42
1/27/2020	133.42	152.54	177.30	197.67
1/28/2020	145.13	167.96	212.50	271.28
1/29/2020	108.87	123.26	165.51	235.73
1/30/2020	129.77	140.58	163.17	199.82
1/31/2020	149.77	167.70	186.70	202.06
2/1/2020	95.80	111.92	140.98	177.57
2/2/2020	111.73	129.14	164.17	211.15
2/3/2020	138.21	163.12	212.70	265.98
2/4/2020	107.31	126.49	176.70	250.47
2/5/2020	96.74	110.57	146.54	211.48
2/6/2020	131.86	157.35	215.15	301.28

2/7/2020	126.92	152.56	207.38	275.17
2/8/2020	95.79	112.78	155.26	215.90
2/9/2020	59.67	68.43	102.73	190.59
2/10/2020	95.21	112.86	159.88	221.30
2/11/2020	96.59	113.12	153.96	205.06
2/12/2020	93.60	108.02	145.03	199.18
2/13/2020	114.57	135.92	187.76	248.52
2/14/2020	111.41	128.81	172.58	227.71
2/15/2020	137.37	156.82	196.55	250.12
2/16/2020	131.59	147.48	185.28	231.69
2/17/2020	121.02	136.81	166.93	201.14
2/18/2020	109.63	123.77	152.23	180.65
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2/23/2020	74.69	90.74	128.42	179.00
2/24/2020	40.99	48.74	80.73	198.06
2/25/2020	34.49	40.61	66.74	183.44
2/26/2020	27.96	31.20	40.05	57.04
2/27/2020	43.79	50.41	65.80	87.23
2/28/2020	52.46	61.50	80.18	107.69
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