



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

Air quality status of Nepal 2016-2020

Volume VI

Bhasipati air quality monitoring station



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1. Bhasipati Air Quality Monitoring Station

- Address: Bhasipati Lalitpur.
- Location: 27.65311 latitude, 85.302252 longitude
- Establish year: 2020 (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

1 Air Quality Status of Bhasipati Station (2017-2020)

1.1 Air quality status, 2017

1.1.1 Temporal variation of PM₁

Annual average of PM₁

Histogram of hourly average PM₁ is shown in the figure below.

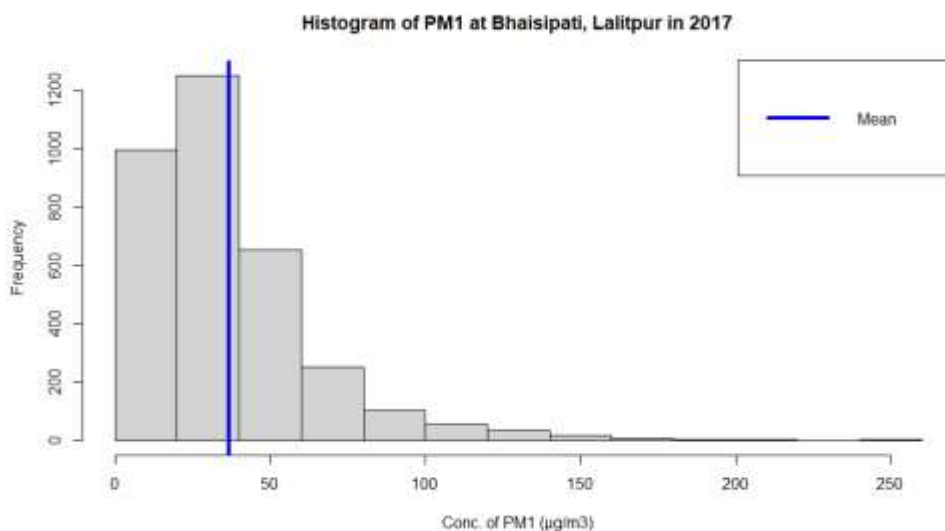


Figure 1 Histogram for the ambient concentration of PM₁

Daily average of PM₁

Daily average concentration of PM₁ was found to be high during December based on the available data.

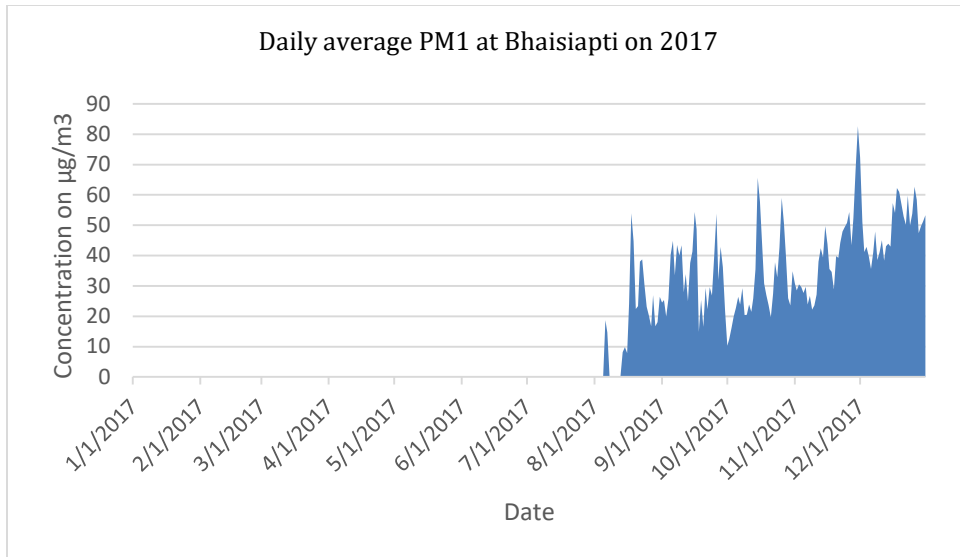


Figure 2 Daily average of PM₁ in 2017

Monthly average of PM₁

The highest and the lowest concentration of PM₁ was found during December ($49.85 \mu\text{g}/\text{m}^3$) and August ($24.15 \mu\text{g}/\text{m}^3$) respectively from the available data.

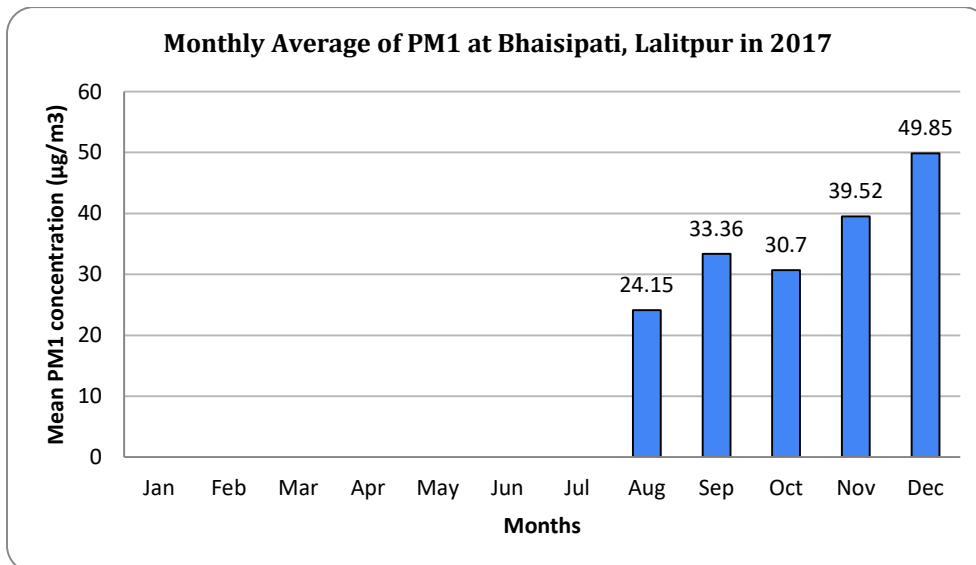


Figure 3 Monthly average of PM₁

Variation in concentration of PM₁ was found more during December whereas low during August.

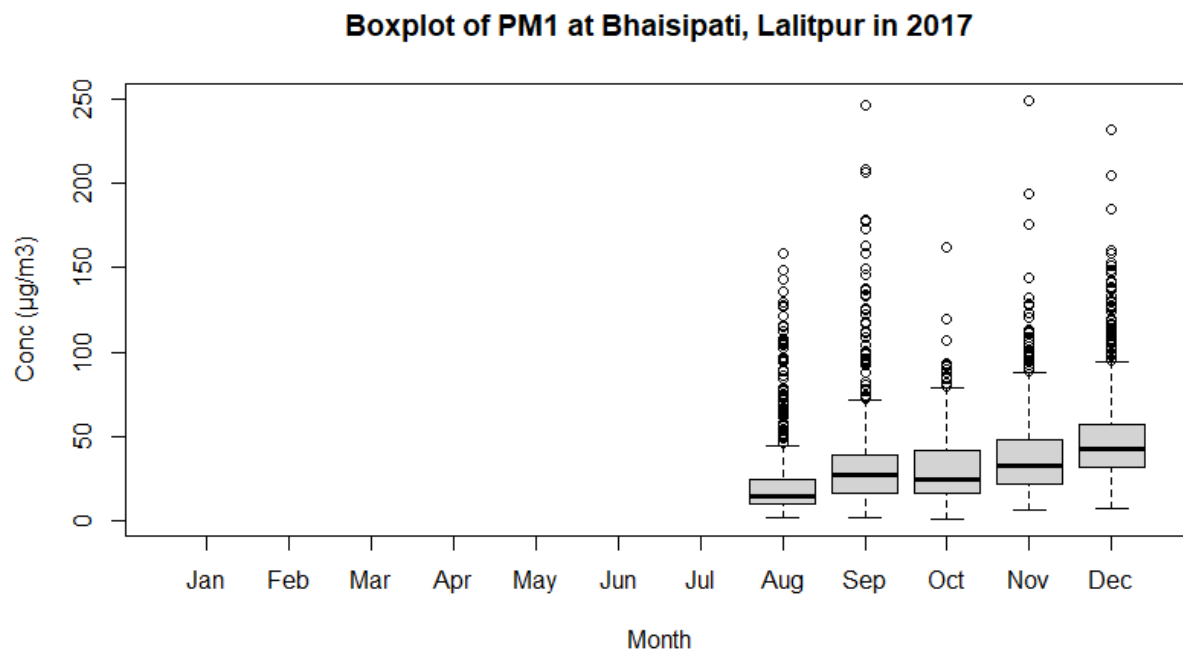


Figure 4: Monthly Variation of PM₁

Diurnal variation of average concentration of PM₁

The diurnal variation of average PM₁ concentration can be shown in the figure below. The variation in PM₁ concentration was higher around 8 and lower around 4 pm.

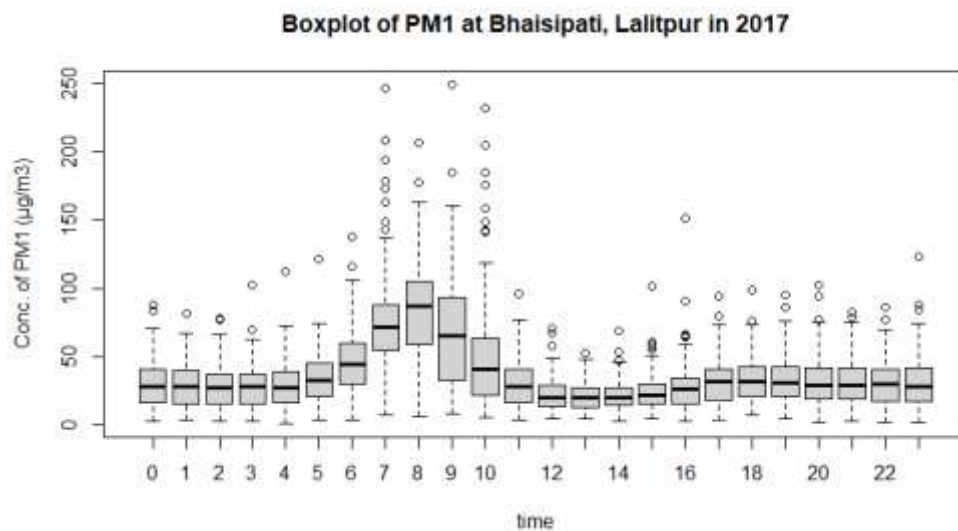


Figure 5: Diurnal variation of average PM₁ concentration

1.1.2 Temporal variation of PM_{2.5}

Annual average of PM_{2.5}

Most of the data for PM_{2.5} was found to be less than the NAAQS

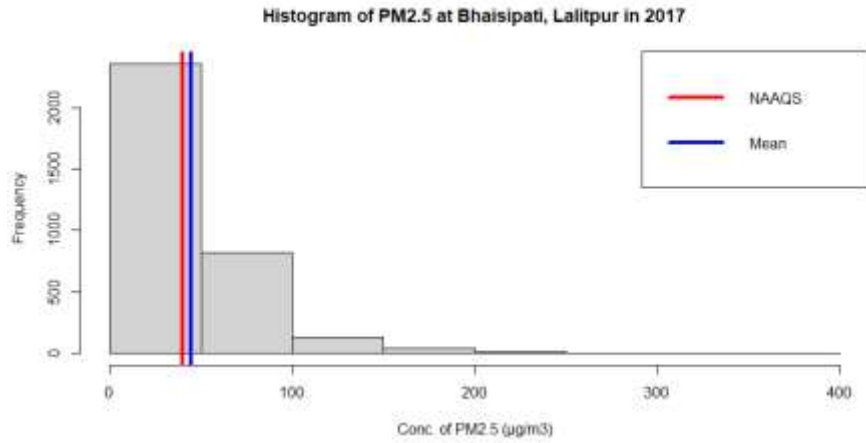


Figure 6: Histogram of PM_{2.5}.

Daily average of PM_{2.5}:

Daily average concentration of PM_{2.5} was higher during December according to the available data.

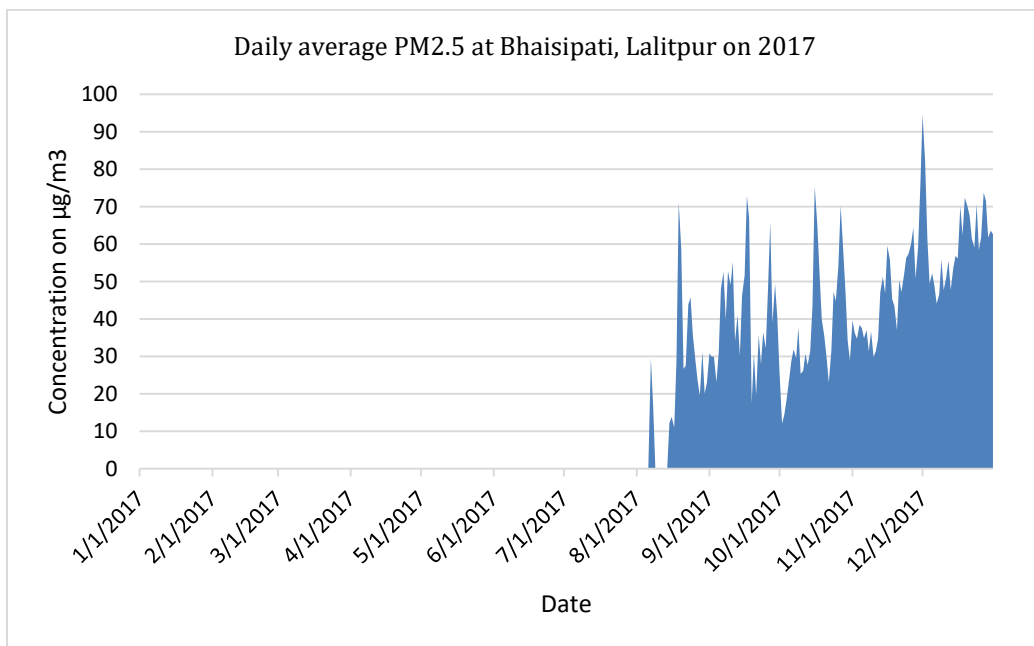


Figure 7: Daily average of PM_{2.5}

Monthly average of PM_{2.5}

The highest and the lowest concentration of PM_{2.5} was found during December and August respectively. The mean value for those months were found to be 59.99 and 29.97 $\mu\text{g}/\text{m}^3$ respectively.

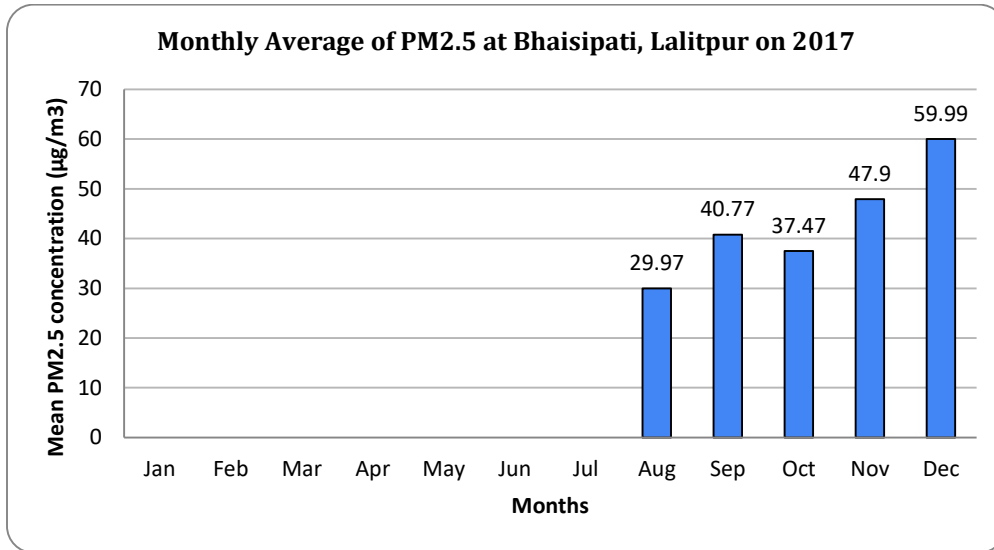


Figure 8: Monthly Average of PM_{2.5}

Variation in concentration of PM_{2.5} was found more during December whereas low during August based on the available data. The mean value of PM_{2.5} was found the highest in during November and the lowest during July.

Boxplot of PM_{2.5} at Bhaishipati, Lalitpur in 2017

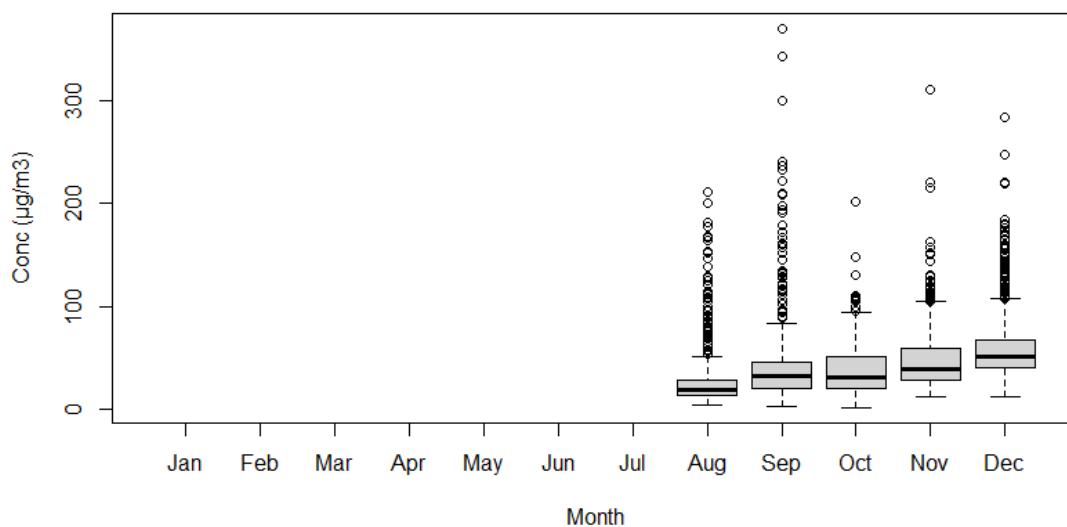


Figure 9: Monthly Variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown below. The variation in PM_{2.5} concentrations was high at around 6 to 8 am and low at 2 to 3 am. Additionally, mean concentration of PM_{2.5} was high and low at 8 am and 1 am respectively

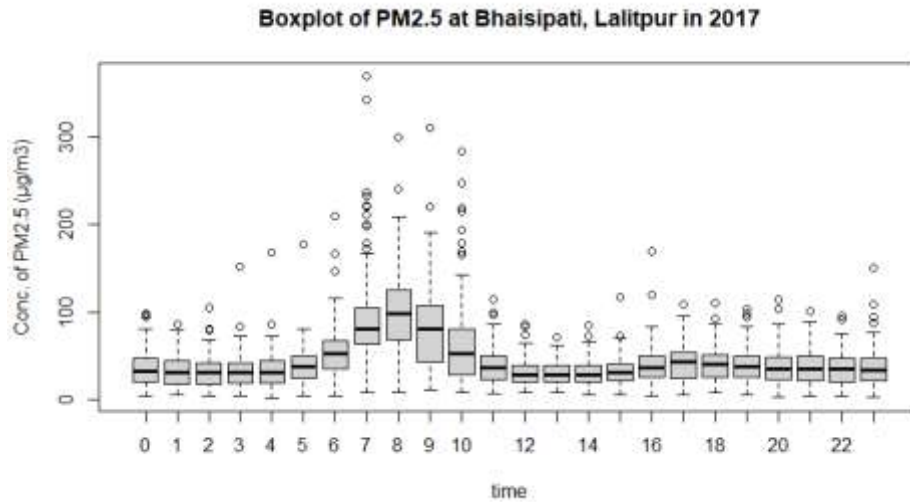


Figure 10: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2017 counts 170, of which 44 days exceed the NAAQS guideline. November and December were the months having maximum number of days exceeding the NAAQS guideline. From June to August, none of the days exceeded NAAQS guideline value.

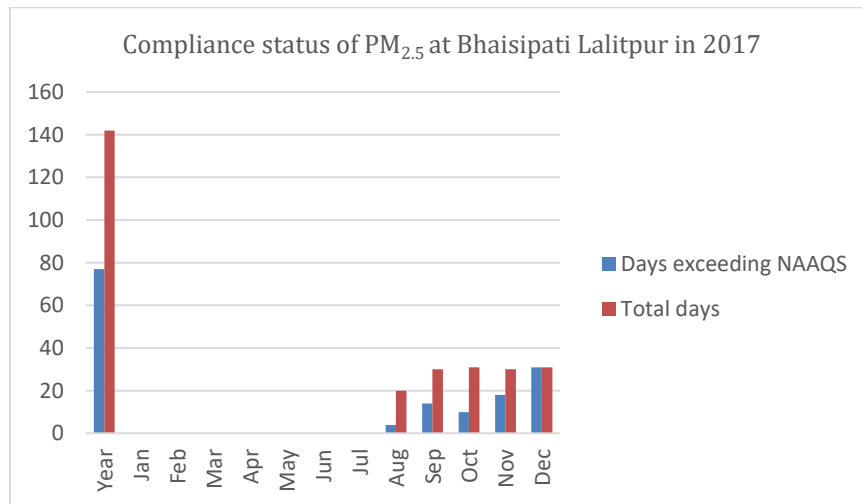


Figure 11: Compliance status of PM_{2.5}

1.1.3 Temporal variation of PM₁₀

Annual average of PM₁₀

Most of the data for PM₁₀ was found to be less than the NAAQS.

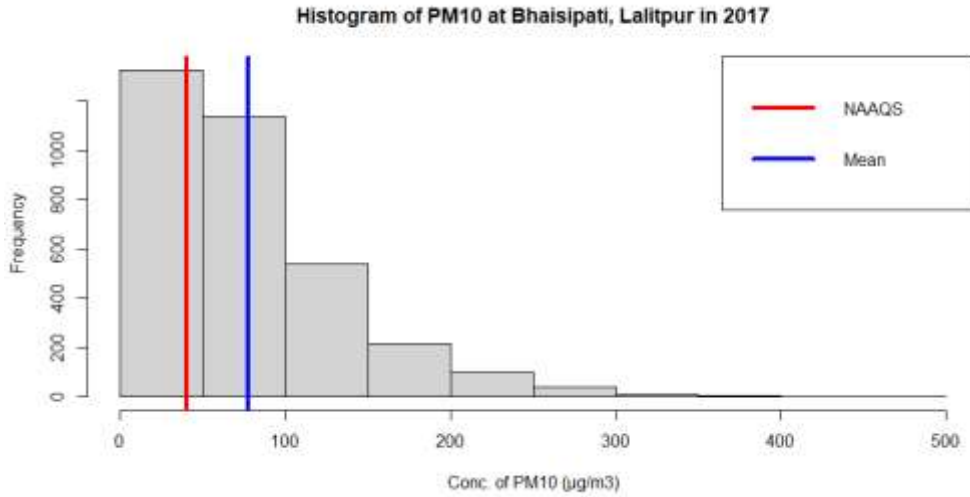


Figure 12: Histogram for the ambient concentration of PM₁₀.

Daily average of PM₁₀:

Daily average concentration of PM₁₀ was high during November and December and was found low during August and September based on the available data.

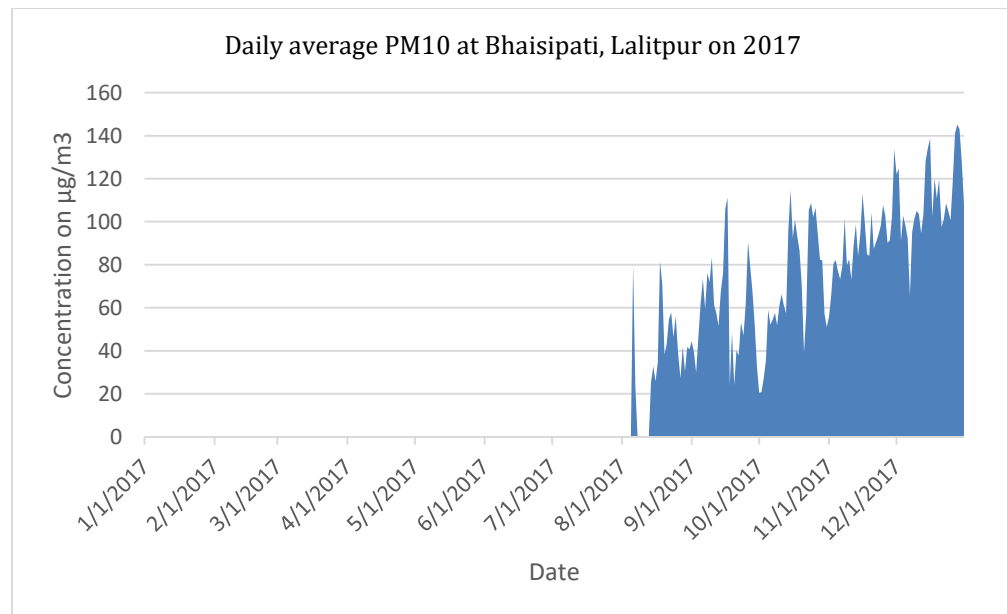


Figure 13: Daily average of PM₁₀

Monthly average of PM₁₀

The highest and the lowest concentration of PM₁₀ was found during November and August respectively. The mean value for those months were found to be 111.33 and 44.57 $\mu\text{g}/\text{m}^3$ respectively.

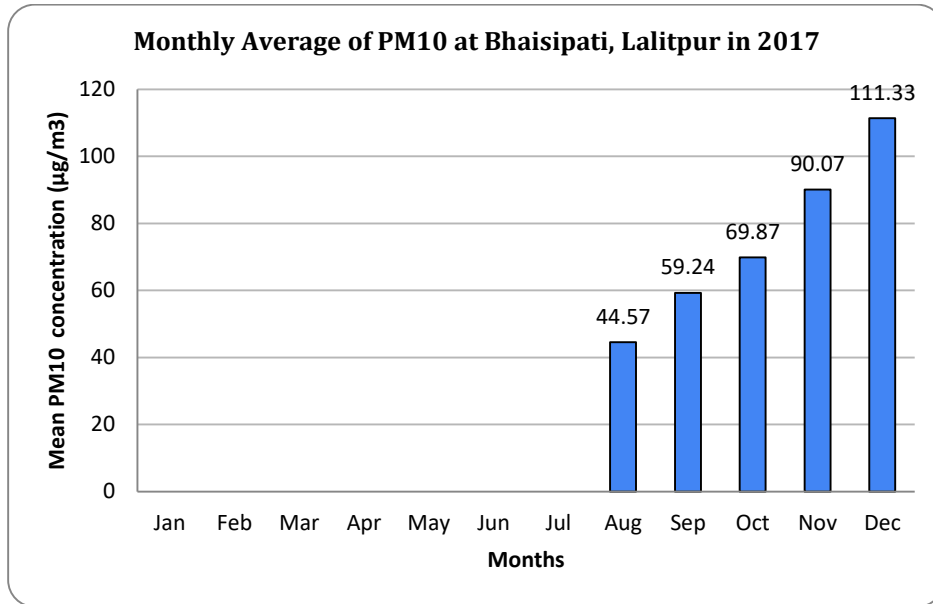


Figure 14: Monthly average of PM₁₀

Variation in concentration of PM₁₀ was found more during November and low during August. The mean value of PM₁₀ was found the highest in December and the lowest in in August.

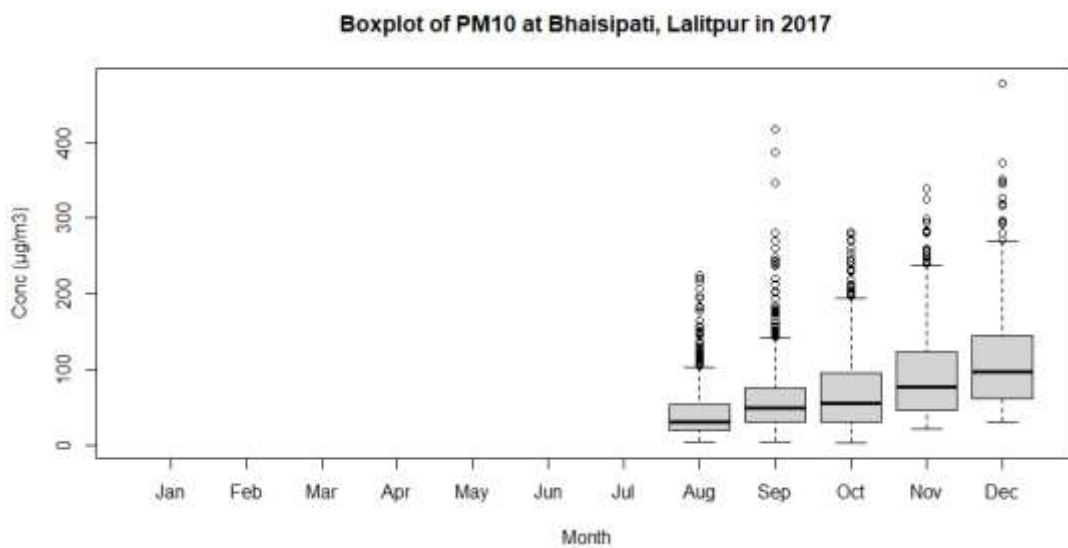


Figure 15: Monthly Variation of PM₁₀

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the figure below. The variation in PM₁₀ concentration was high at around 5 pm and low at 8 am. Additionally, mean concentration of PM₁₀ was high and low around 5 pm and 4 am respectively.

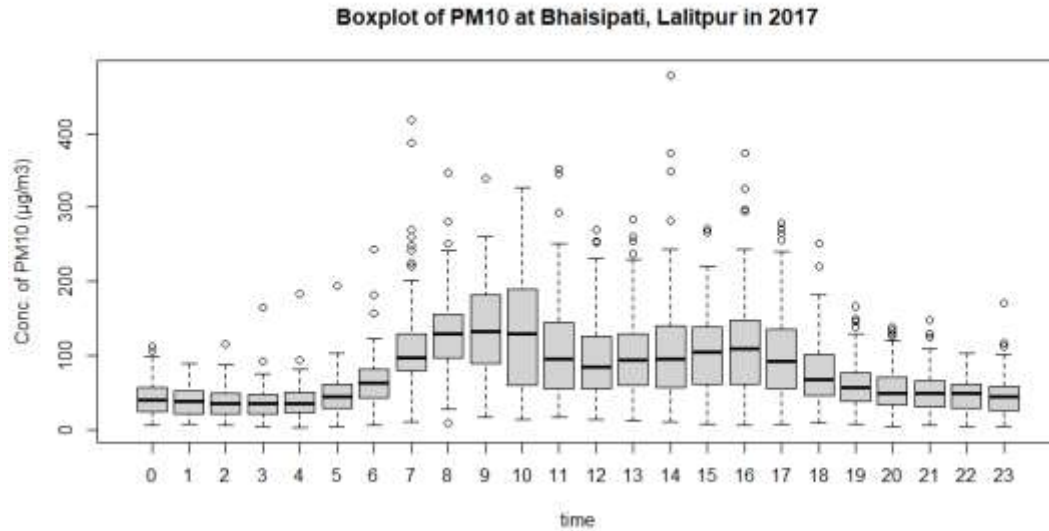


Figure 16: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2017 counts 142 of which 122 days exceed the NAAQS guideline. November and December have maximum number of days exceeding the NAAQS guideline.

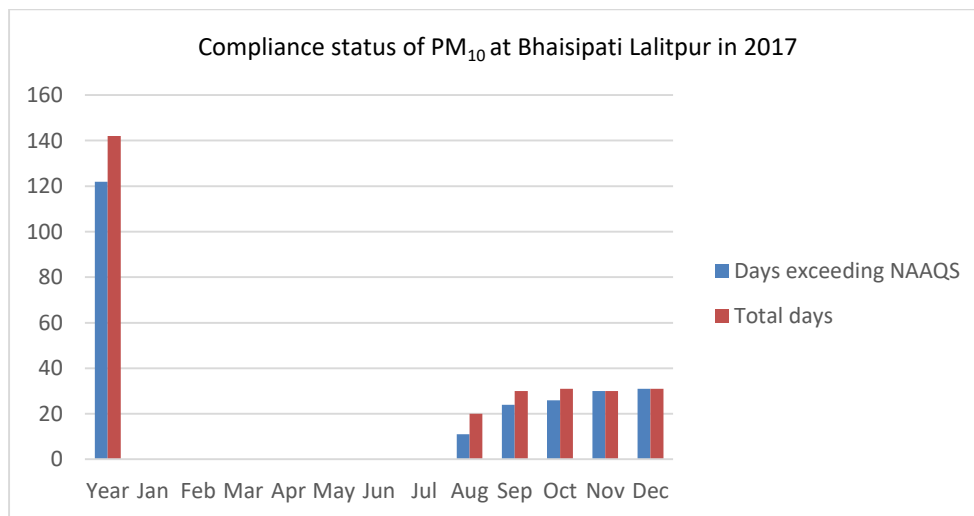


Figure 17: Compliance status of PM₁₀

1.1.4 Temporal variation of TSP

Annual average of TSP

Most of the data for TSP was found to be less than the NAAQS.

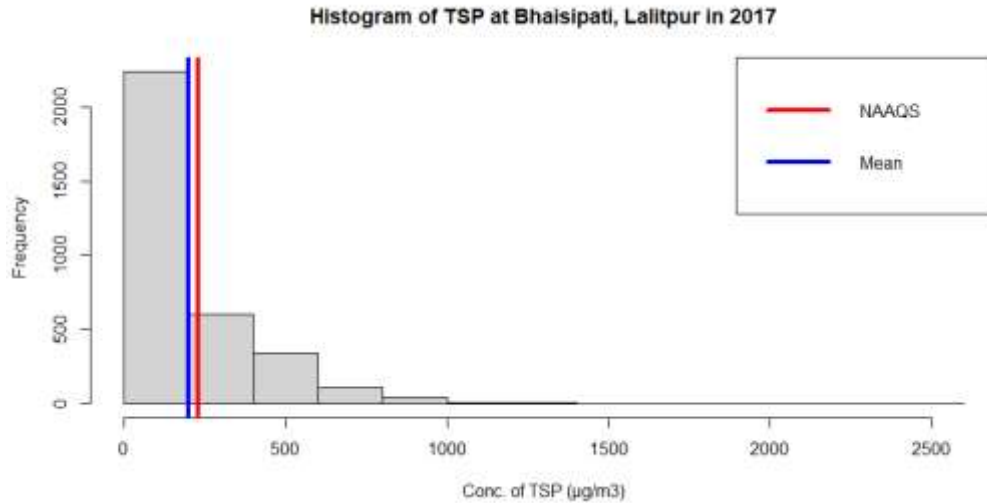


Figure 18 : Histogram for the ambient concentration of TSP

Daily average of TSP:

Daily average concentration of TSP was high during December and was found low during September according to the available data.

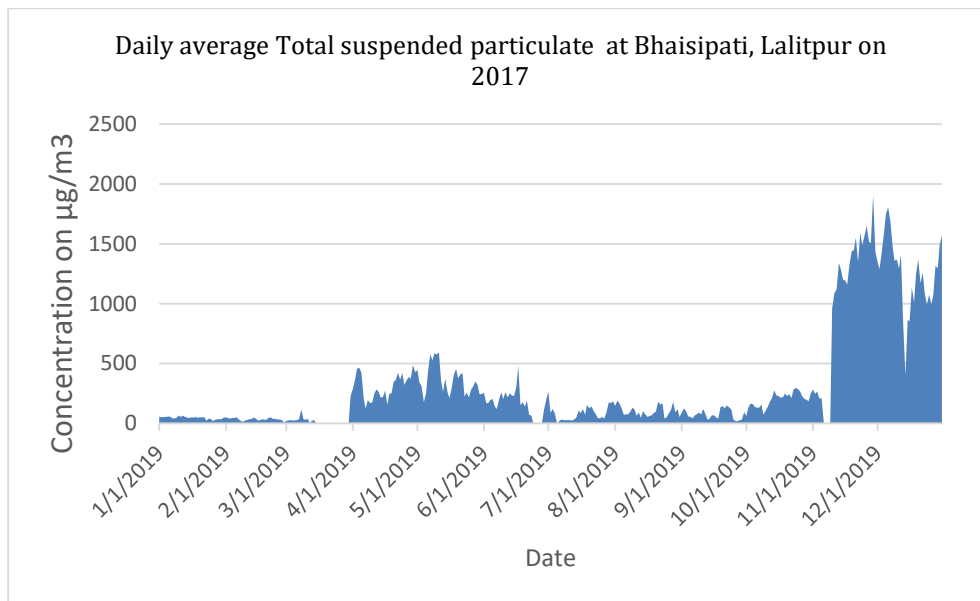


Figure 19: Daily average of TSP

Monthly average of TSP

Based on the available data, the highest and the lowest concentration of TSP was found during December and August respectively. The mean value for those months were found to be 256.52 and 97.33 $\mu\text{g}/\text{m}^3$ respectively.

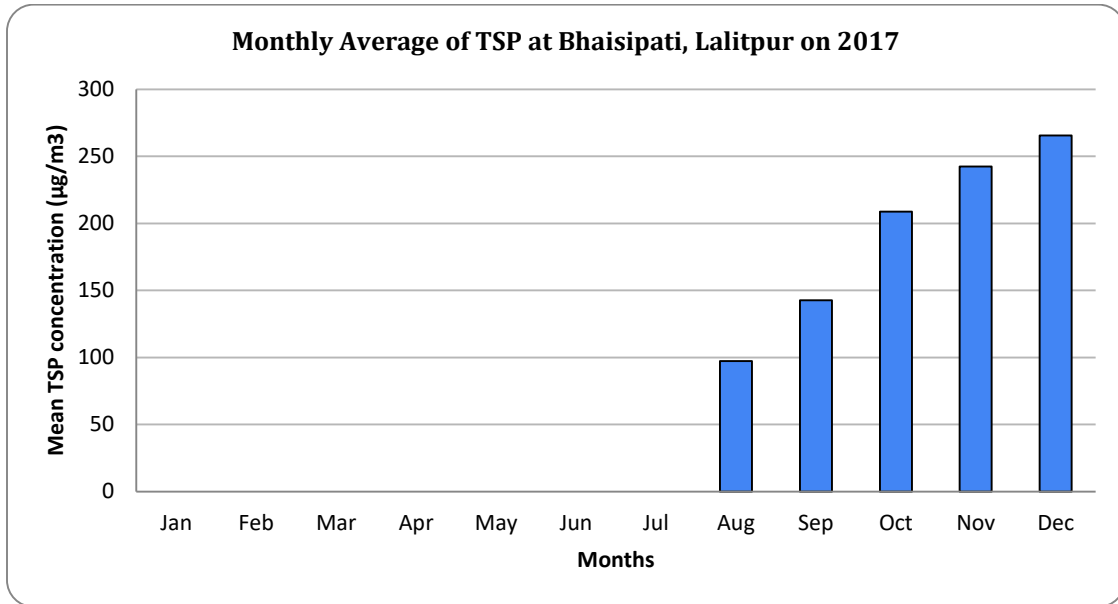


Figure 20: Monthly Average of TSP

Variation in concentration of TSP was found more during December and low during August. The mean value of TSP was found the highest in December and the lowest in August.

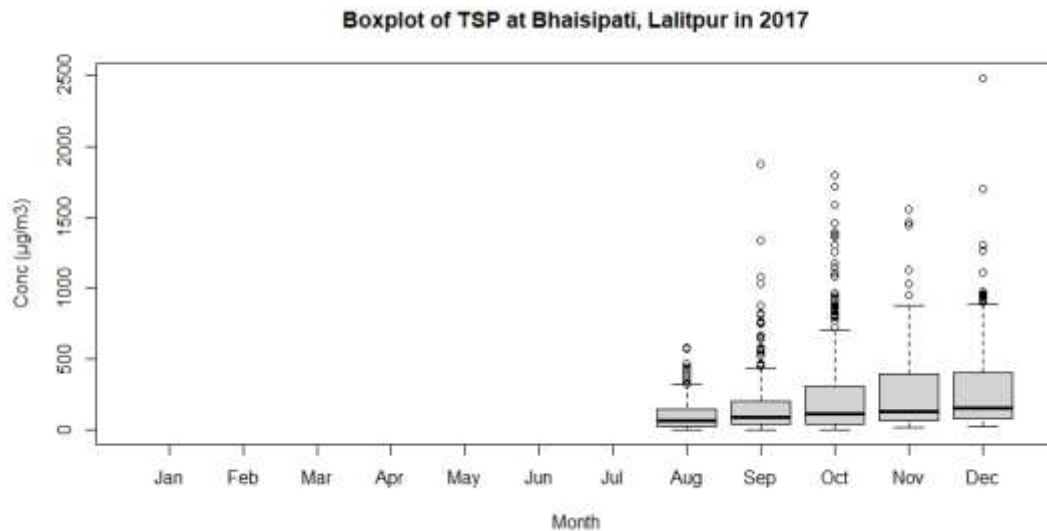


Figure 21: Monthly variation of TSP.

Diurnal variation of average TSP concentration

The diurnal variation of average TSP concentrations can be shown in the figure below. The variation in TSP concentration was high at around 1 pm and low at 12 am. Additionally, mean concentration of TSP was high and low at 2 pm and 2 am respectively.

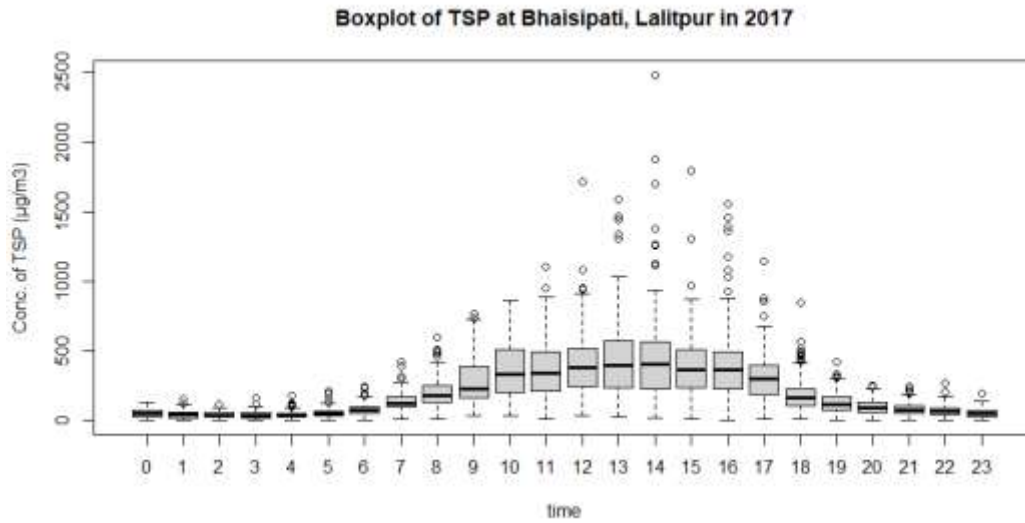


Figure 22: Diurnal Variation of TSP

Compliance status of TSP

The total days of TSP monitored in the year 2017 counts 142 of which 142 of the days exceed the NAAQS guideline.

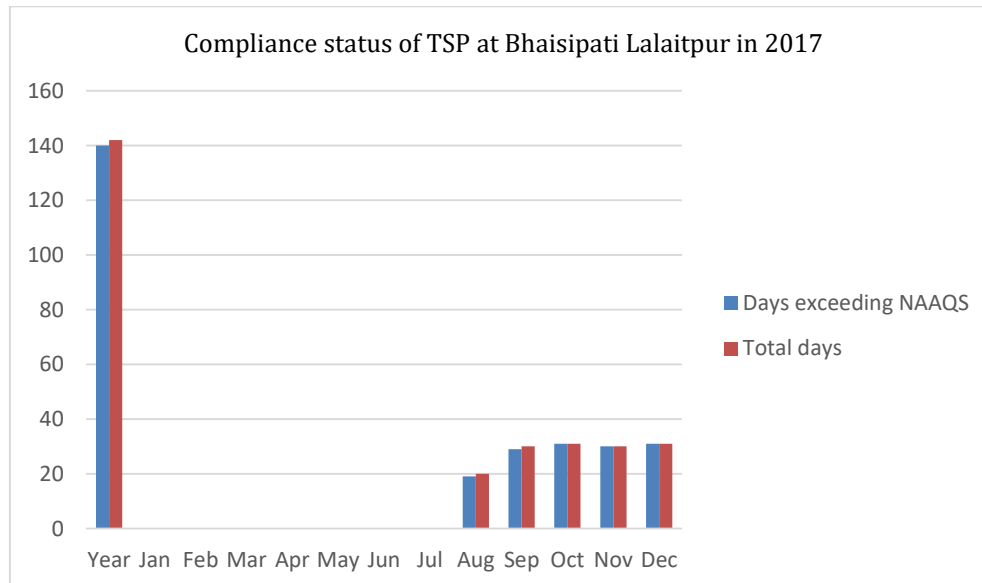


Figure 23: Compliance status of TSP

1.2 Air quality status, 2018

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

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

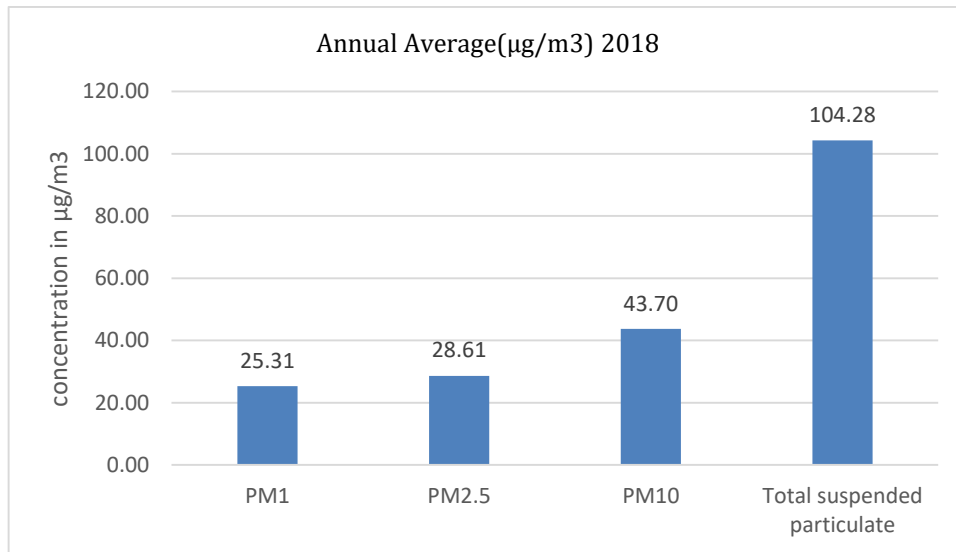


Figure 24: Annual average of PM_{2.5}, PM₁₀ and TSP in 2018

1.2.2 Temporal variation of PM₁

Annual average of PM₁

Histogram of hourly average PM₁ is shown below.

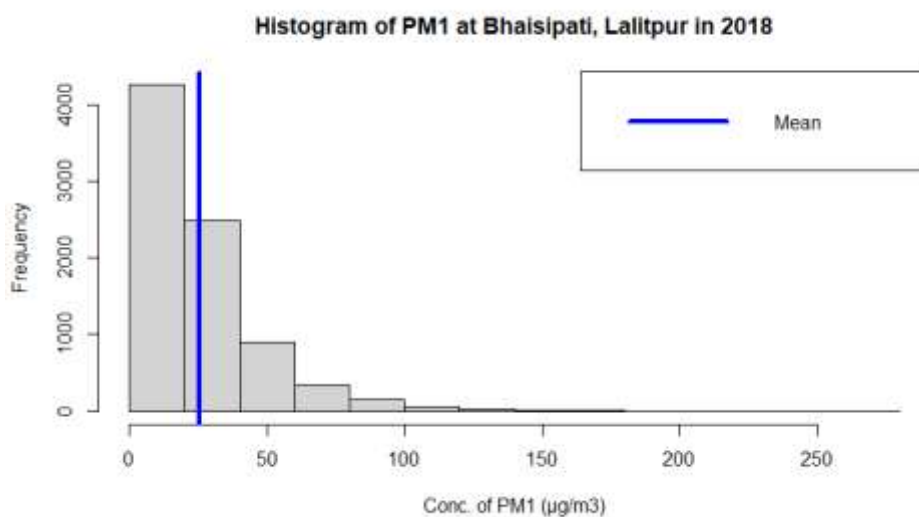


Figure 25: Histogram for the ambient concentration of PM₁

Daily average of PM1

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

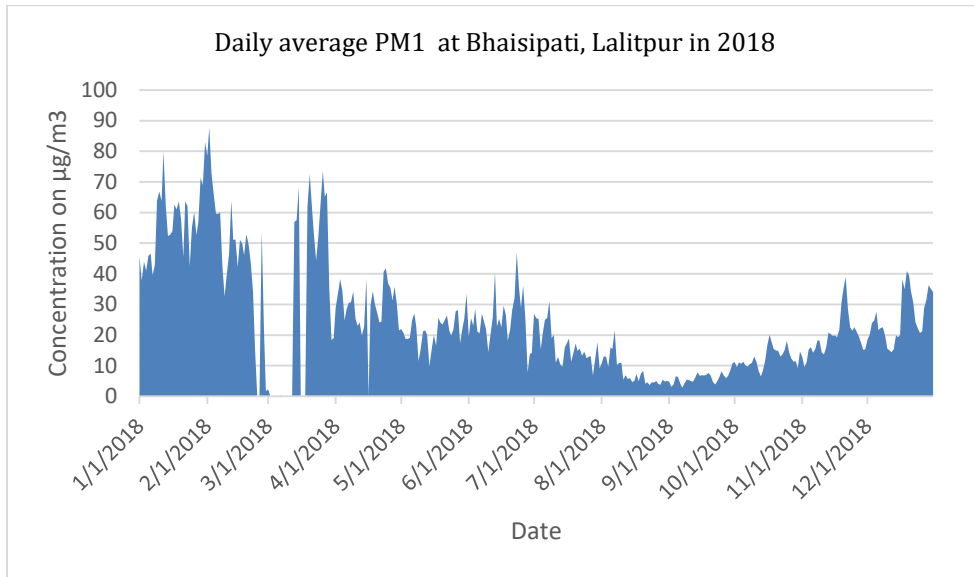


Figure 26: Daily average of PM₁

Monthly average of PM1

The highest and the lowest concentration of PM₁ was found during January (56.33 µg/m³) and September (5.95 µg/m³) respectively from the available data.

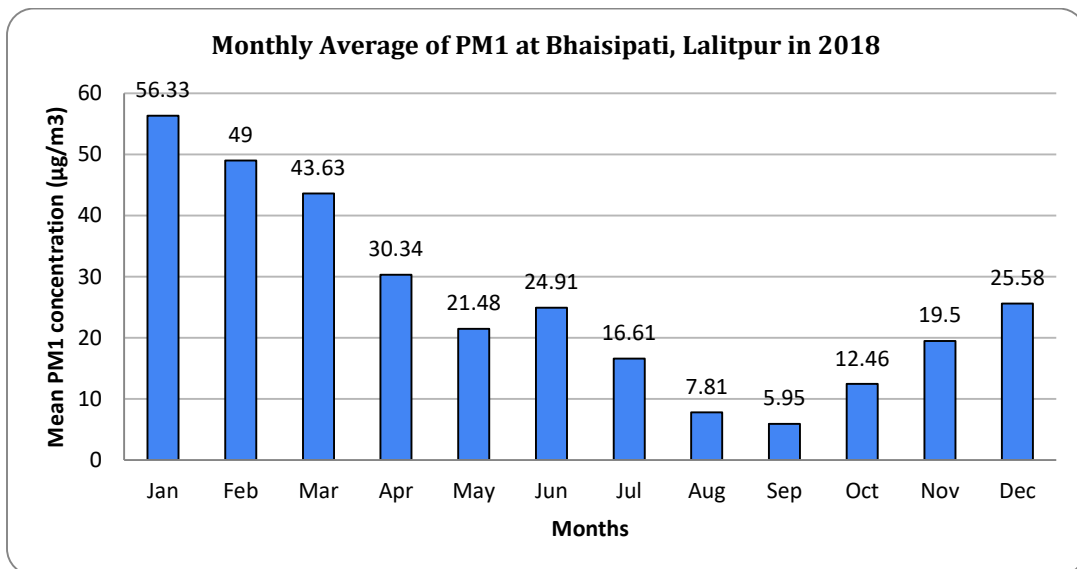


Figure 27: Monthly average of PM₁

Variation in concentration of PM₁ was found more during February whereas low during September.

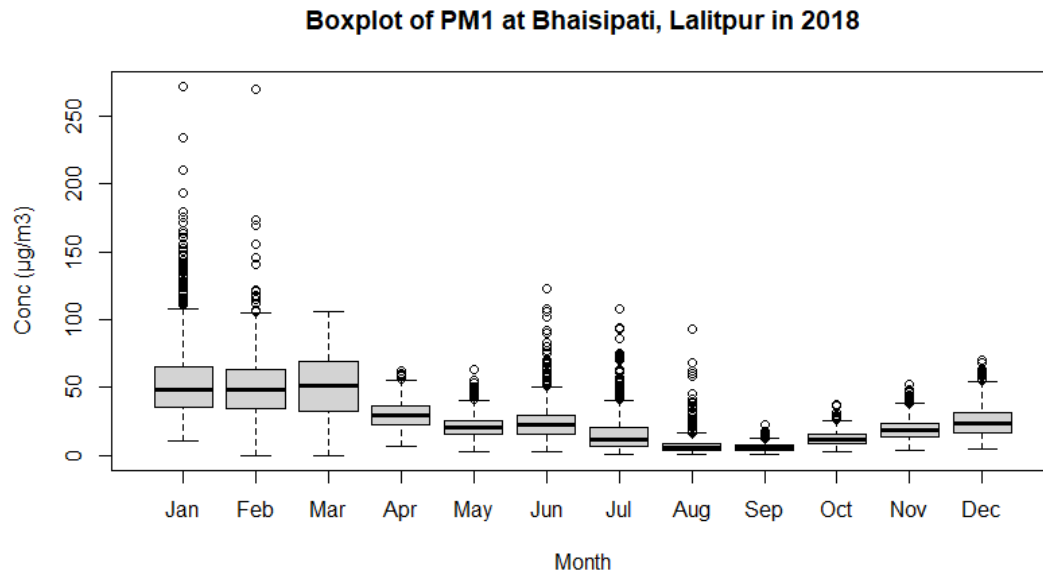


Figure 28: Monthly Variation of PM₁

1.3.2 Seasonal variation of PM₁

Ambient concentration of average PM_{2.5} during Pre monsoon (March-May), monsoon (June-September), and post-monsoon (October-November), winter (Dec- Feb) can be shown below. The concentration of PM_{2.5} was found highest during winter (51.84 µg/m³) and lowest during monsoon season (16.44 µg/m³) Figure 35: Seasonal variation of PM_{2.5}.

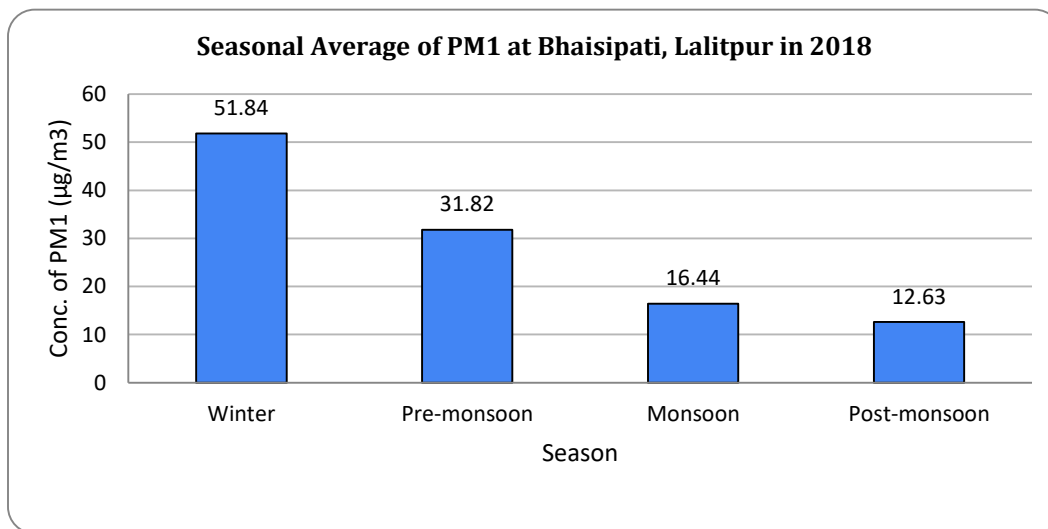


Figure 29: Seasonal variation of PM₁

Diurnal variation of average concentration of PM₁

The diurnal variation of average PM₁ concentration can be shown in the figure 7. The variation in PM₁ concentration was higher around 8 am and lower around 1 pm.

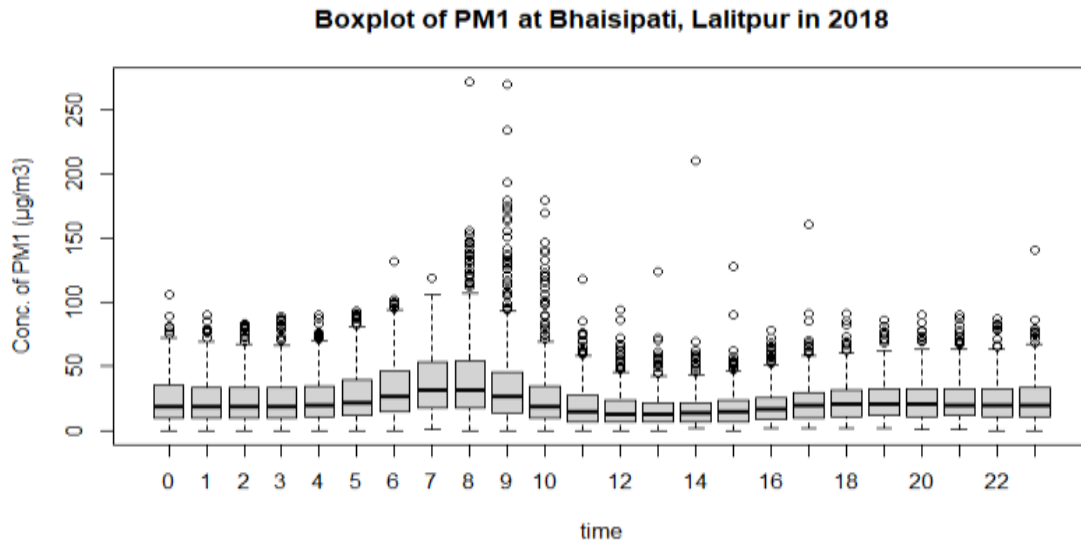


Figure 30: Diurnal variation of average PM₁ concentration

1.2.3 Temporal variation of PM_{2.5}

Annual average of PM_{2.5}

Most of the data for PM_{2.5} was found to be less than the NAAQS.

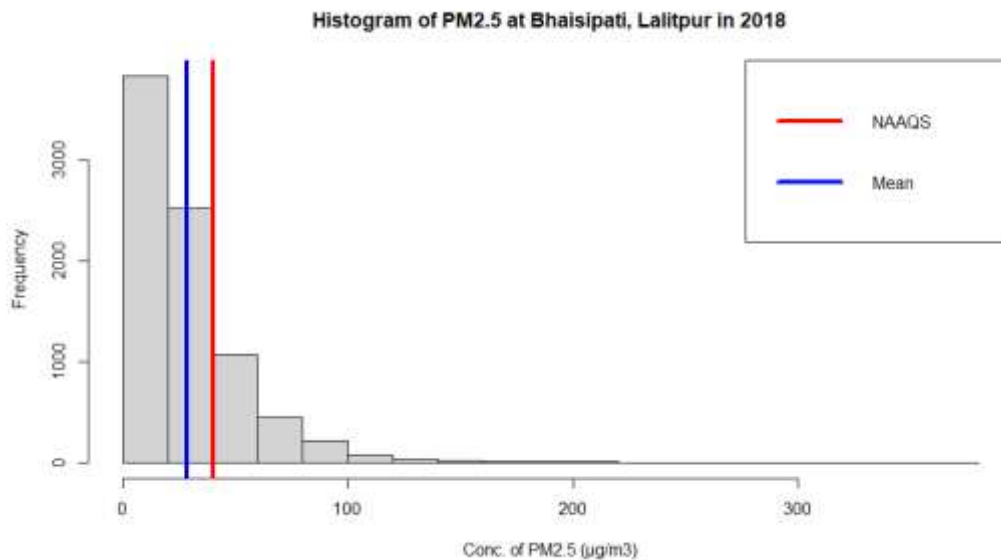


Figure 31: Histogram of PM_{2.5}.

Daily average of PM_{2.5}:

Daily average concentration of PM_{2.5} was high during January and was found low during September. PM_{2.5} was unexpectedly high for few days on September.

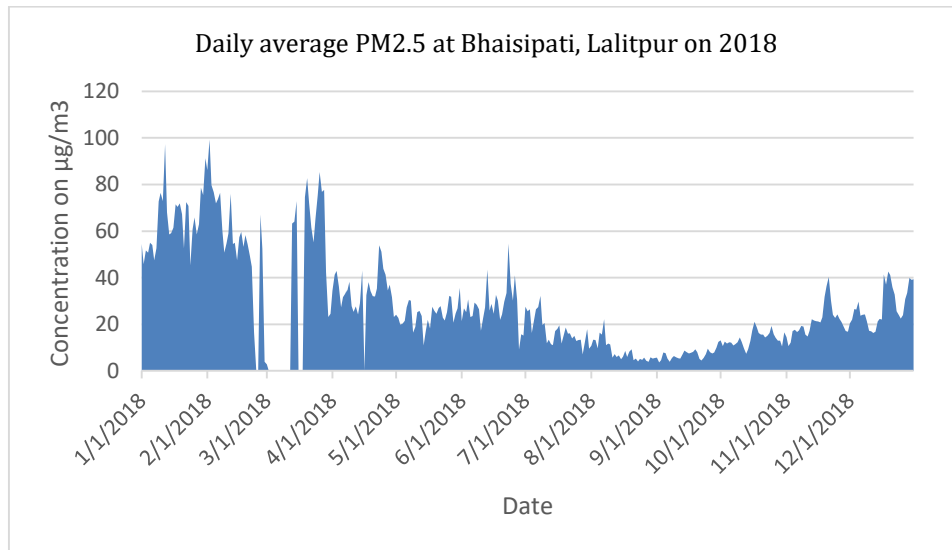


Figure 32: Daily average of PM_{2.5}

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 64.44 and 7.04 µg/m³ respectively.

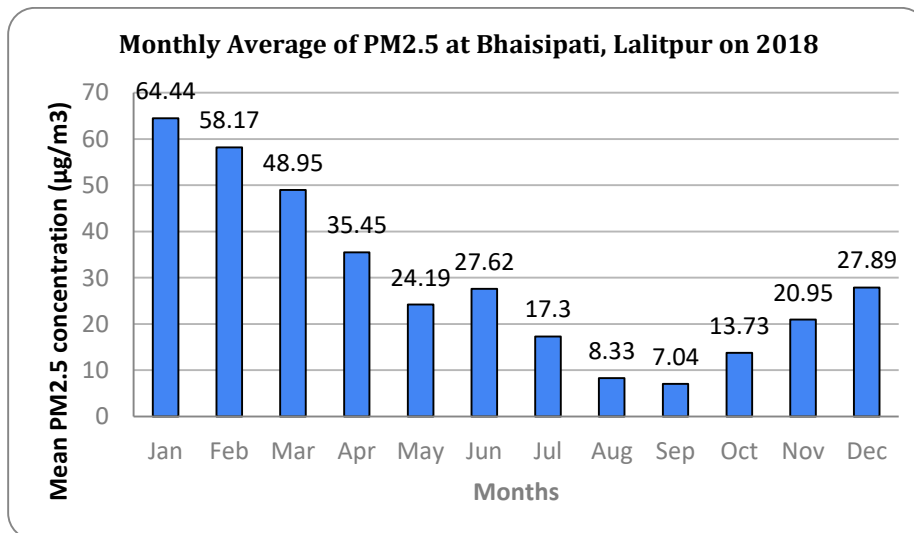


Figure 33: Monthly Average of PM_{2.5}

Variation in concentration of PM_{2.5} was found more during March whereas low during May. The mean value of PM_{2.5} was found the highest in during March and the lowest during September.

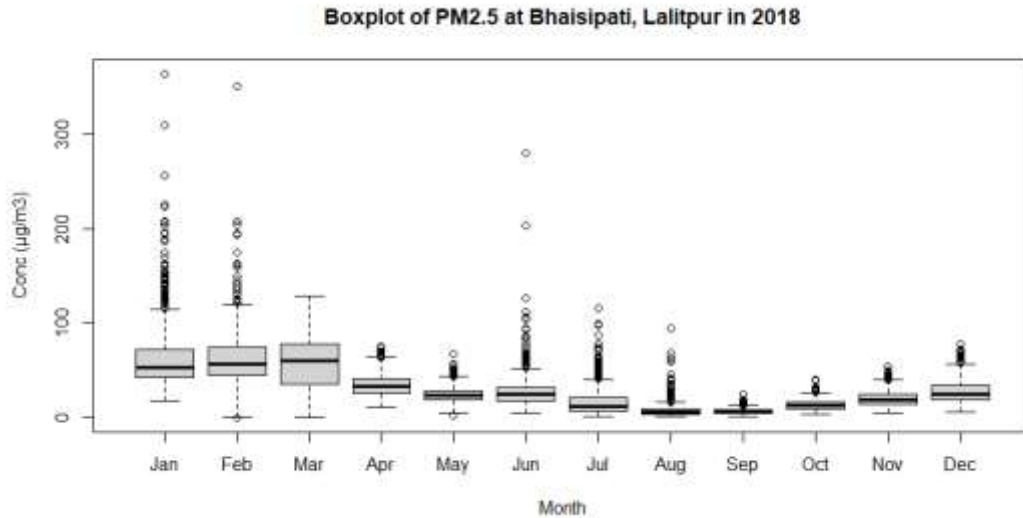


Figure 34: Monthly Variation of PM_{2.5}

Seasonal variation of average PM_{2.5} concentration

Ambient concentration of average PM_{2.5} during Premonsoon (March-May), monsoon (June-September), and post-monsoon (October-November), winter (Dec-Feb) can be shown in the Figure 35 below. The concentration of PM_{2.5} was found highest during winter (58.46 µg/m³) and lowest during monsoon season (7.7 µg/m³) Figure 35: Seasonal variation of PM_{2.5}.

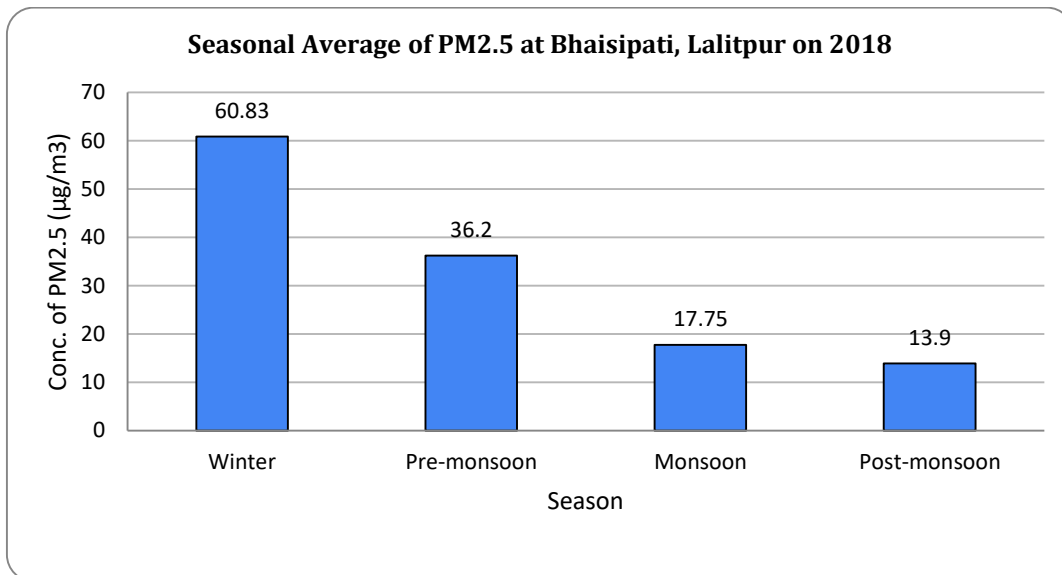


Figure 35: Seasonal variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown in the figure below. The variation in PM_{2.5} concentration was high at around 7 to 8 am and low at 12 to 2 pm. Additionally, mean concentration of PM_{2.5} was high and low at 7 am and 12 pm respectively.

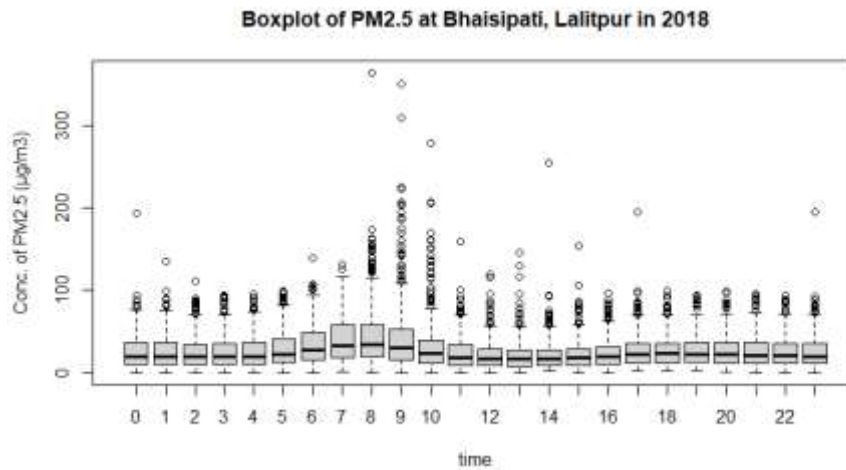


Figure 36: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2018 counts 352, of which 80 days exceed the NAAQS guideline. January and February were the months having maximum number of days exceeding the NAAQS guideline. From May to November, none of the days exceeded NAAQS guideline value.

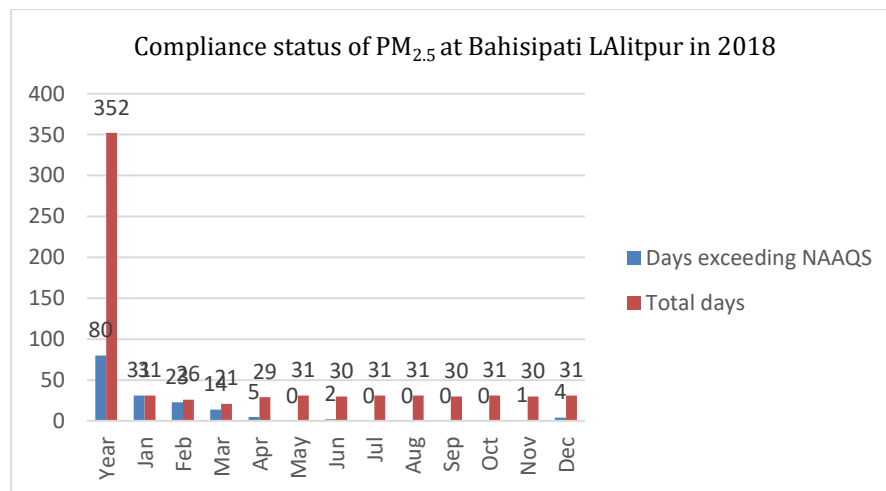


Figure 37: Compliance status of PM_{2.5}

1.2.4 Temporal variation of PM₁₀

Annual average of PM₁₀

Most of the data for PM₁₀ was found to be less than the NAAQS.

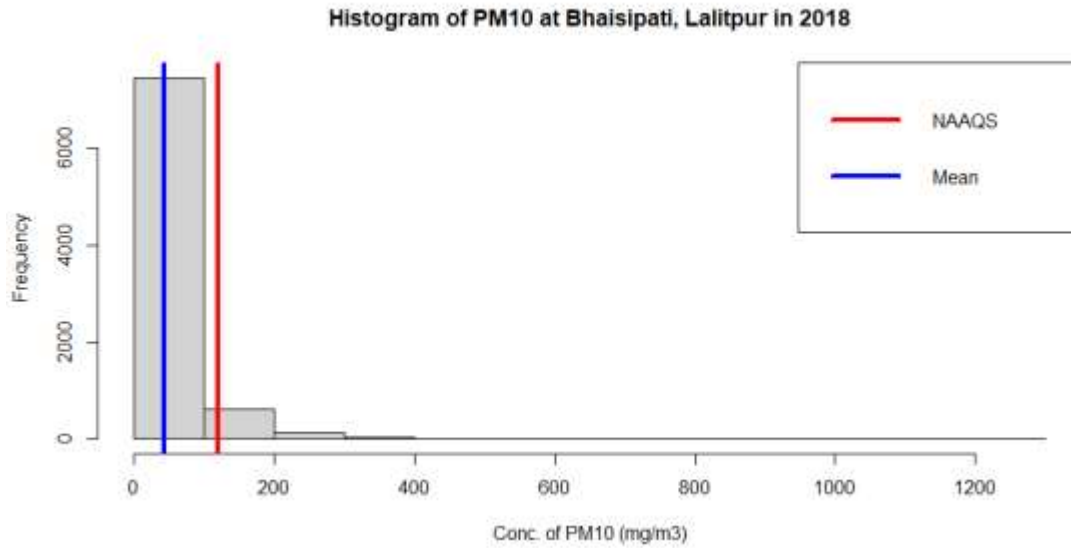


Figure 38 : Histogram for the ambient concentration of PM₁₀.

Daily average of PM₁₀:

Daily average concentration of PM₁₀ was high during February and was found low during August and September. The concentration of PM₁₀ was seen to be unprecedentedly high during September.

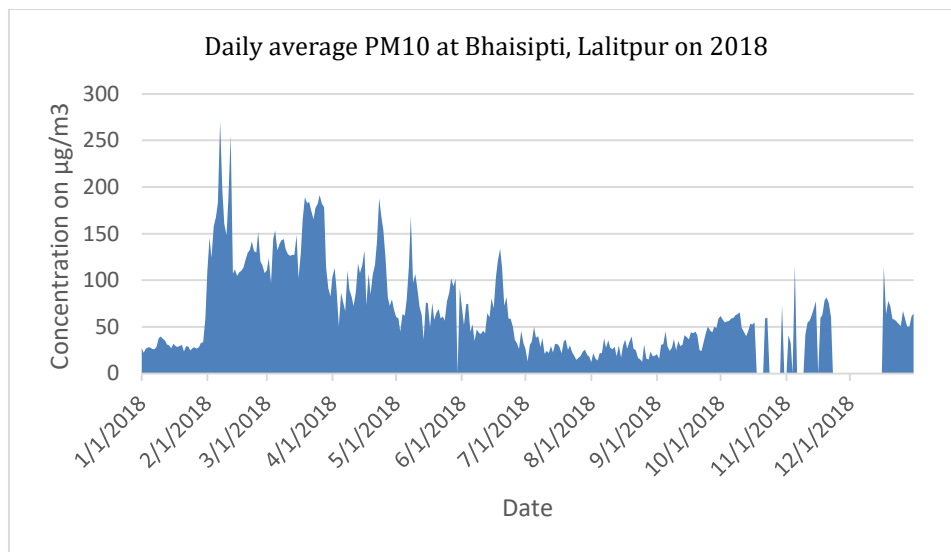


Figure 39: Daily average of PM₁₀

Monthly average of PM₁₀

The highest and the lowest concentration of PM₁₀ was found during December and August respectively. The mean value for those months were found to be 113.64 and 2.09 $\mu\text{g}/\text{m}^3$ respectively.

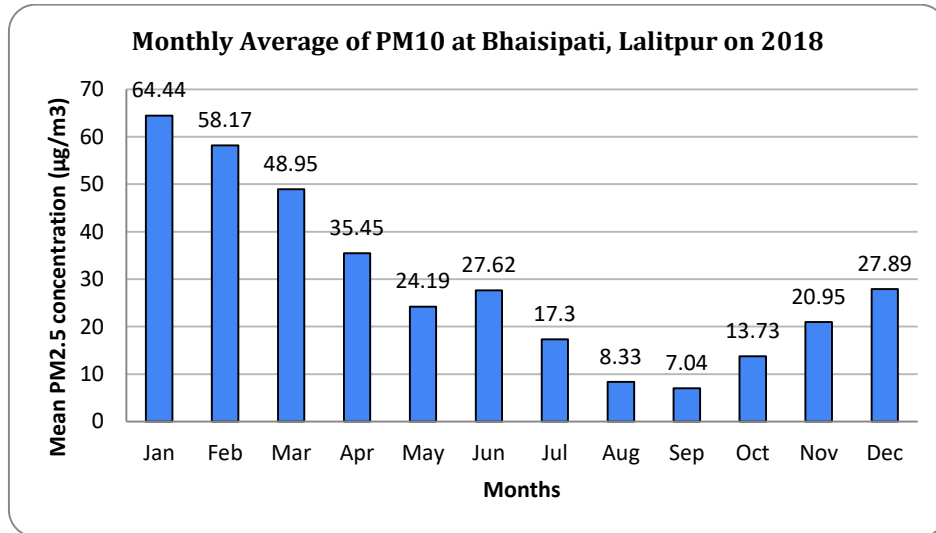


Figure 40: Monthly average of PM₁₀

Variation in concentration of PM₁₀ was found more during March and low during September. The mean value of PM₁₀ was found the highest in February and the lowest in August.

Boxplot of PM₁₀ at Bhaishipati, Lalitpur in 2018

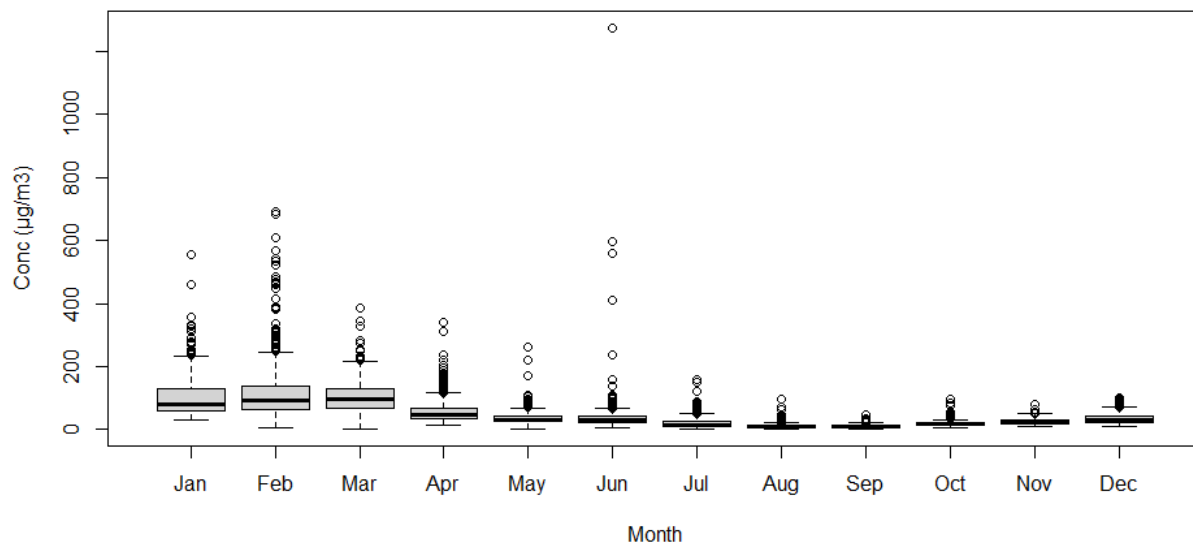


Figure 41: Monthly Variation of PM₁₀

Seasonal variation of average PM₁₀ concentration:

Ambient concentration of average PM₁₀ during pre monsoon (March -May), monsoon (June-September), post-monsoon (October-November) and winter (December-February) can be shown in the figure below. The concentration of PM₁₀ was found highest during winter (80.2 $\mu\text{g}/\text{m}^3$) and lowest at premonsoon season (10.78 $\mu\text{g}/\text{m}^3$).

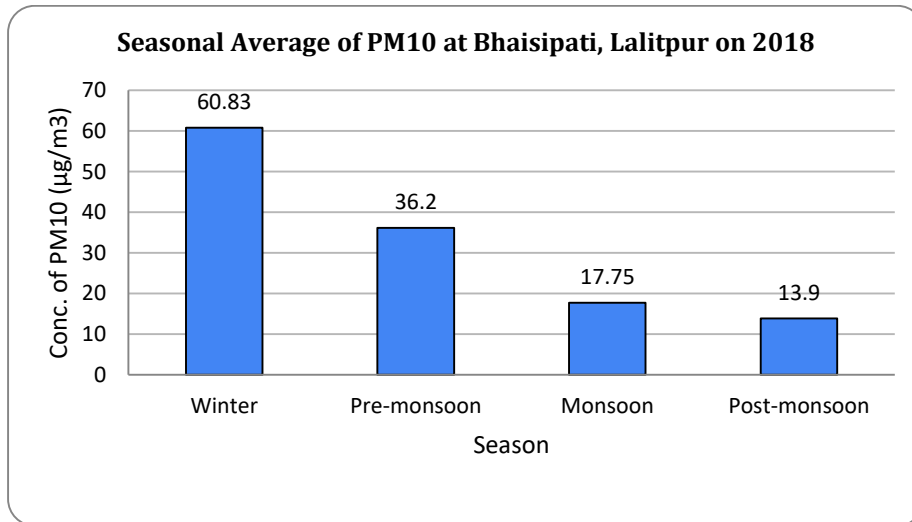


Figure 42: Seasonal variation of PM₁₀.

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the Figure 43 below. The variation in PM₁₀ concentration was high at around 1AM and low at 12 to 1 AM. Additionally, mean concentration of PM₁₀ was high and low at 6 AM and 3 PM respectively.

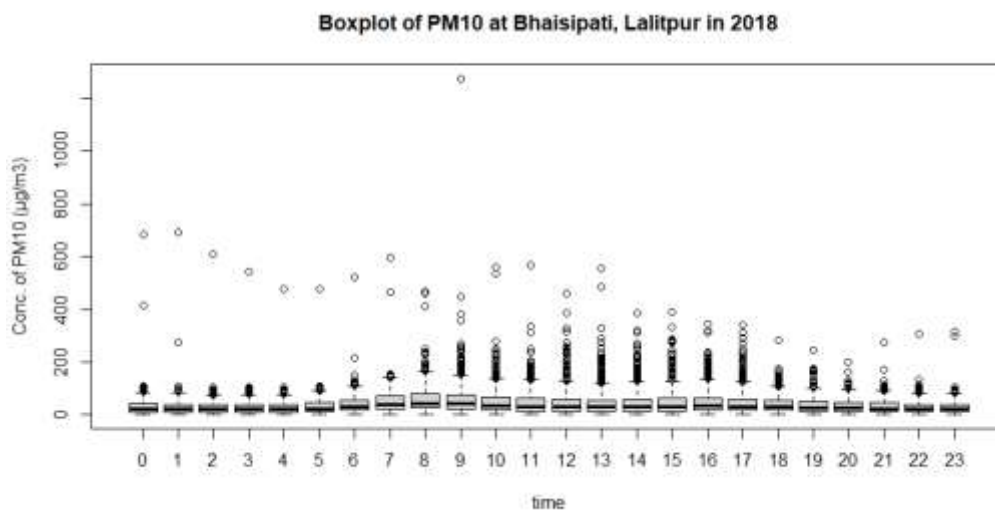


Figure 43: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2019 counts 352 of which 79 days exceed the NAAQS guideline. January and February have maximum number of days exceeding the NAAQS guideline as shown in . From June to September, none of the days exceeded NAAQS guideline value as shown in figure below.

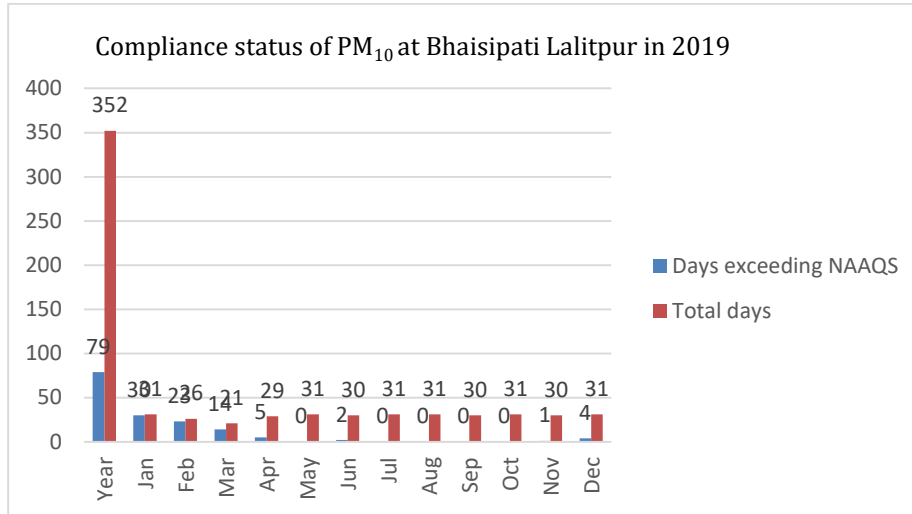


Figure 44: Compliance status of PM₁₀

1.2.5 Temporal variation of TSP

Annual average of TSP

Most of the data for TSP was found to be less than the NAAQS.

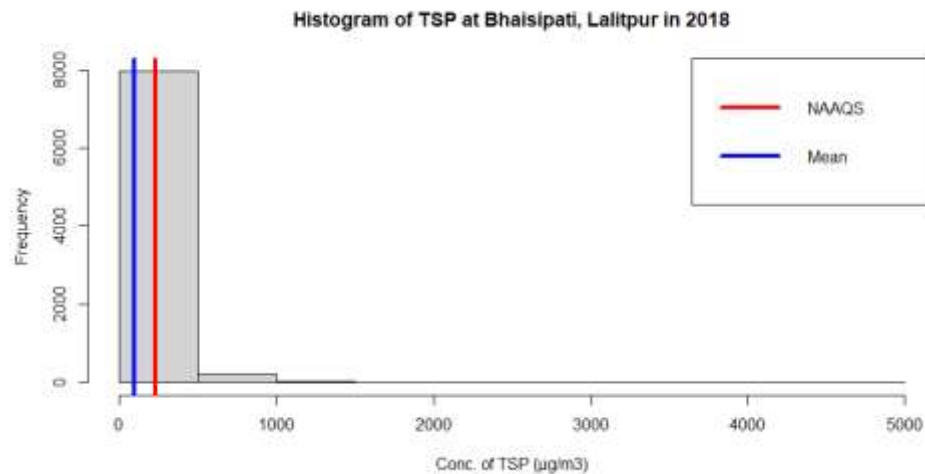


Figure 45 : Histogram for the ambient concentration of TSP

Daily average of TSP:

Daily average concentration of TSP was high during January and February and was found low during July and August.

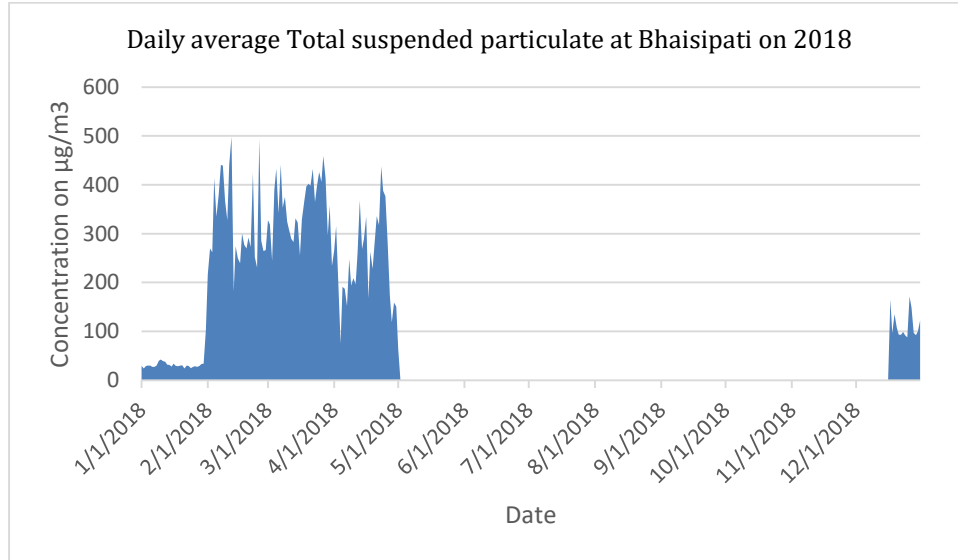


Figure 46: Daily average of TSP

Monthly average of TSP

The highest and the lowest concentration of TSP was found during February and August respectively. The mean value for those months were found to be 1239.9 and 3.23 $\mu\text{g}/\text{m}^3$ respectively.

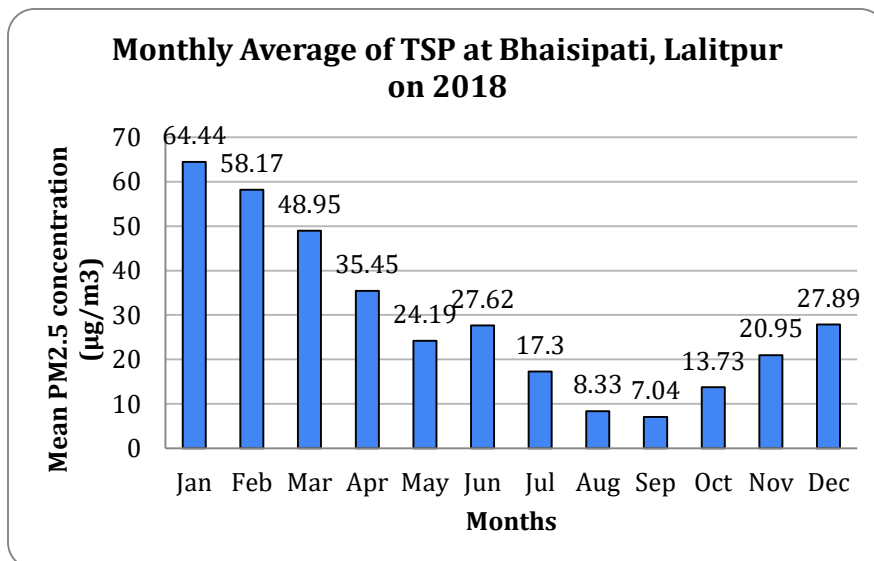


Figure 47: Monthly Average of TSP

Variation in concentration of TSP was found more during February and low during August. The mean value of TSP was found the highest in February and the lowest in August.

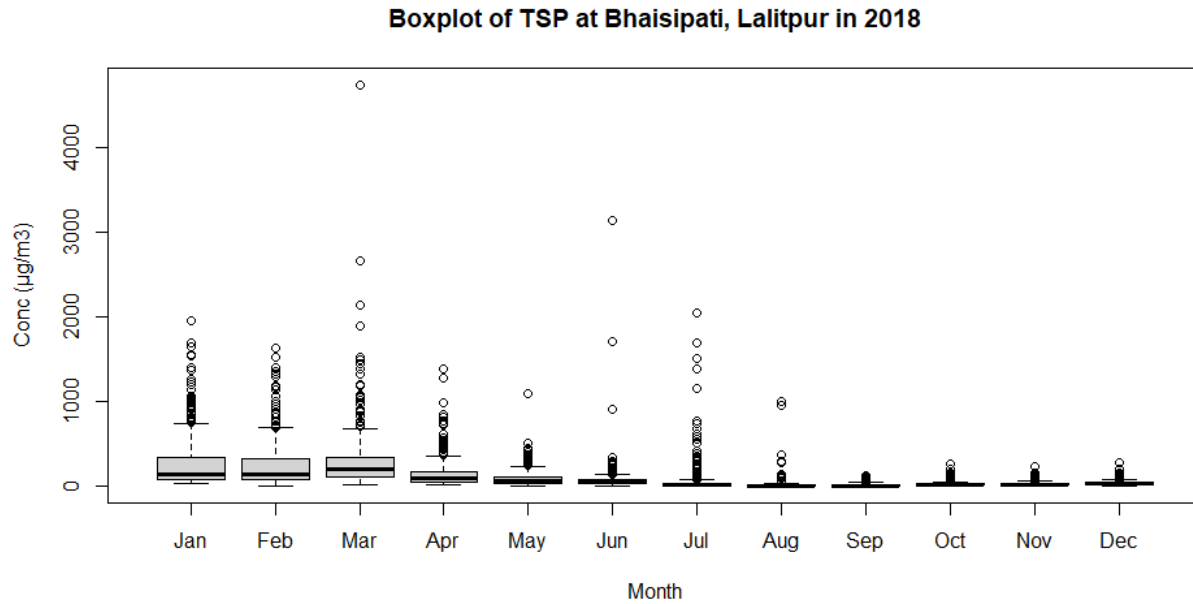


Figure 48: Monthly Variation of TSP.

Seasonal variation of average TSP concentration

Ambient concentration of average TSP during (March -May), monsoon (June-September), post-monsoon (October-November) and winter (December-February) can be shown in the Figure 49 below. The concentration of TSP was found highest during winter ($129.53 \mu\text{g}/\text{m}^3$) and lowest during monsoon ($13.9 \mu\text{g}/\text{m}^3$).

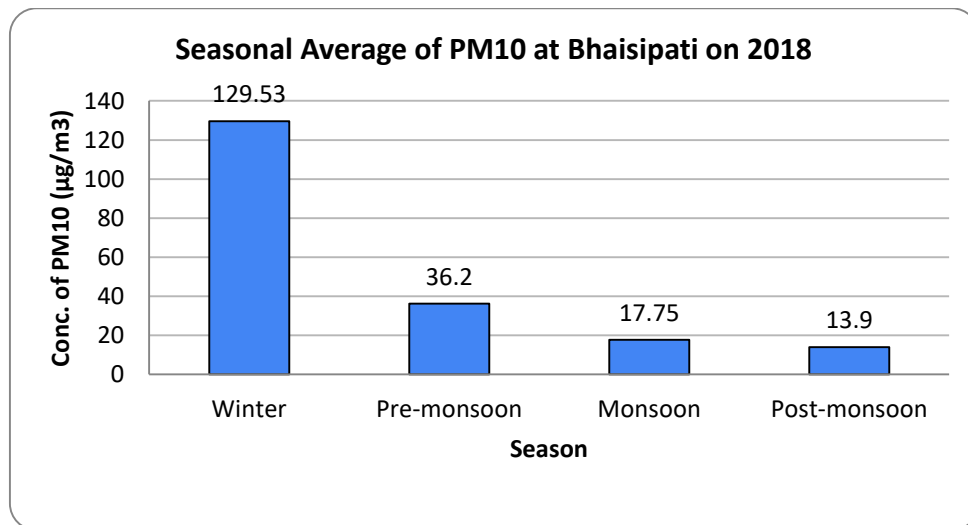


Figure 49: Seasonal variation of TSP

Diurnal variation of average TSP concentration

The diurnal variation of average TSP concentrations can be shown in the figure below. The variation in TSP concentration was high at around 1 pm and low at 12 am. Additionally, mean concentration of TSP was high and low at 2 pm and 2 am respectively.

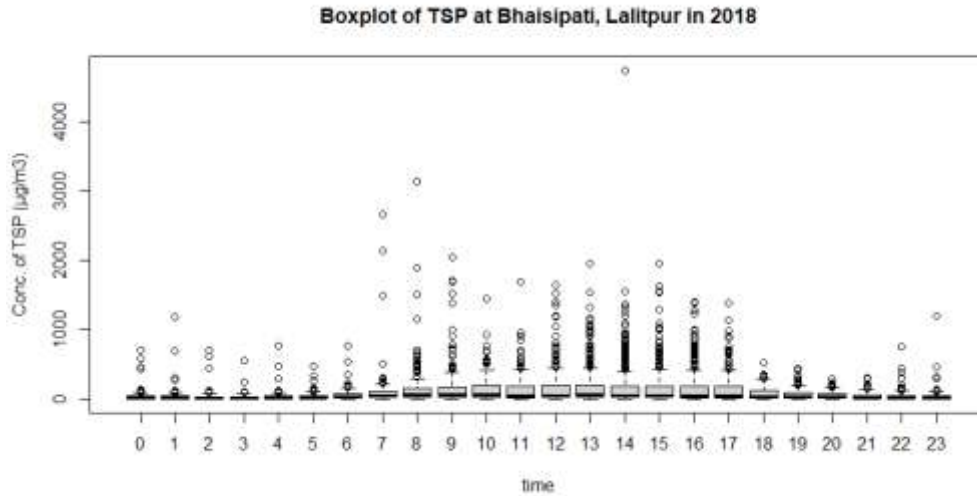


Figure 50: Diurnal Variation of TSP

Compliance status of TSP

The total days of TSP monitored in the year 2018 counts 352 of which 79 days exceed the NAAQS guideline. October months have maximum number of days exceeding the NAAQS guideline as shown below. From June to September, none of the days exceeded NAAQS guideline value.

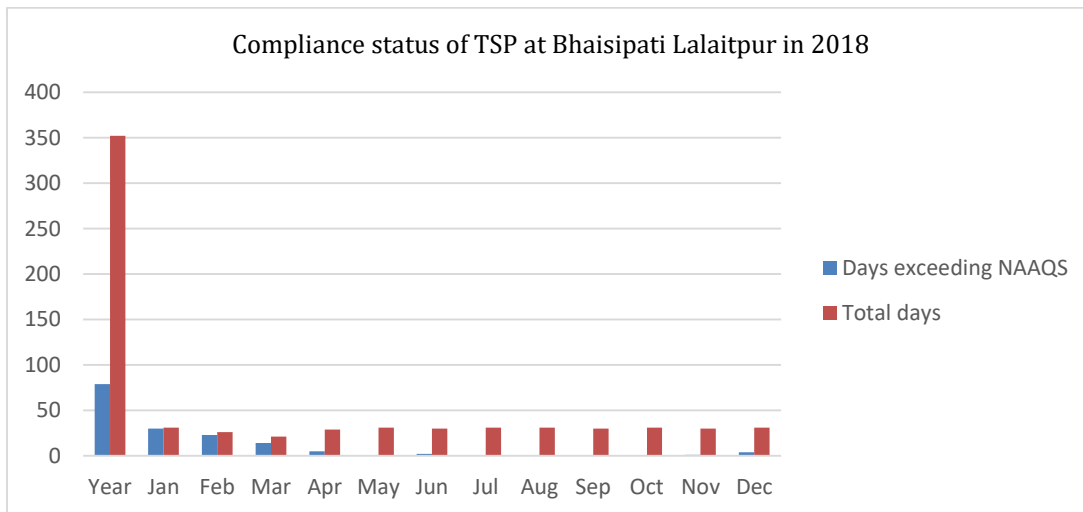


Figure 51: Compliance status of TSP

1.3 Air quality status, 2019

1.3.1 Annual average of PM₁, PM_{2.5} and PM₁₀

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

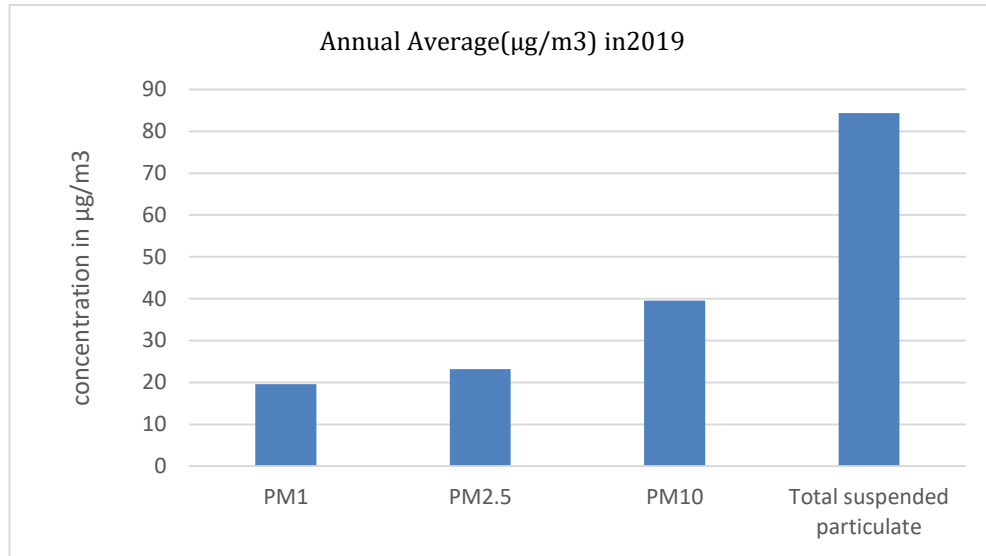


Figure 52: Annual average of PM_{2.5}, PM₁₀ and TSP in 2019

1.3.2 Temporal variation of PM₁

Annual average of PM₁

Histogram of hourly average PM₁ is shown in the figure below.

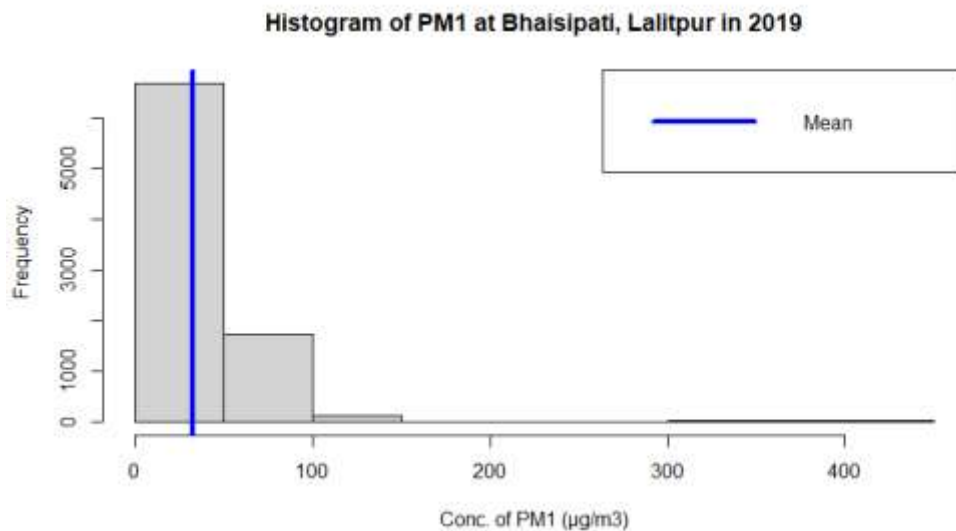


Figure 53: Histogram for the ambient concentration of PM₁

Daily average of PM1

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

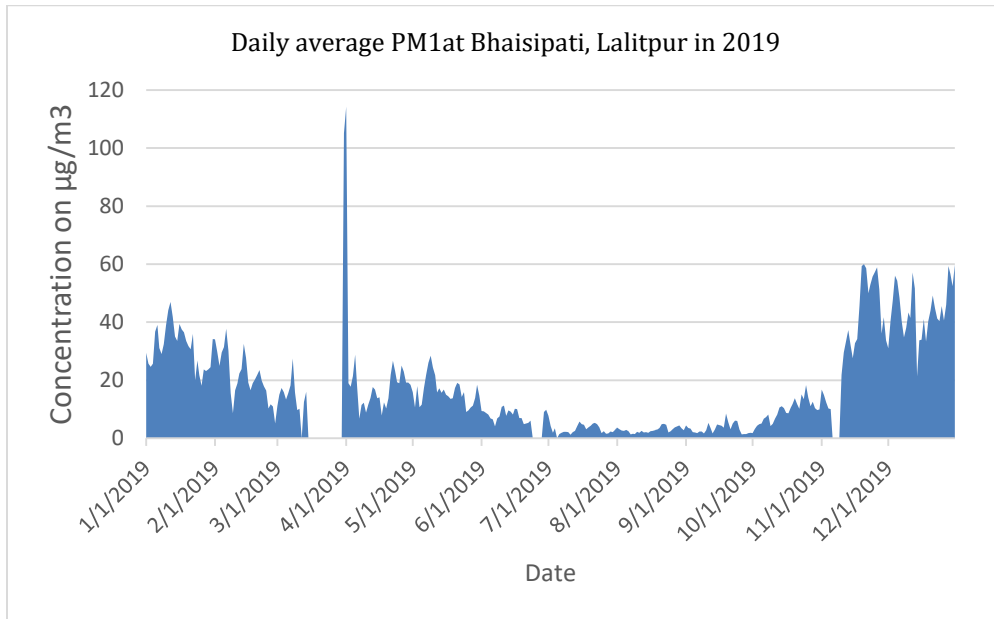


Figure 54: Daily average of PM₁ in 2019

Monthly average of PM1

The highest and the lowest concentration of PM₁ was found during December (44.12 µg/m³) and August (3.26 µg/m³) respectively from the available data.

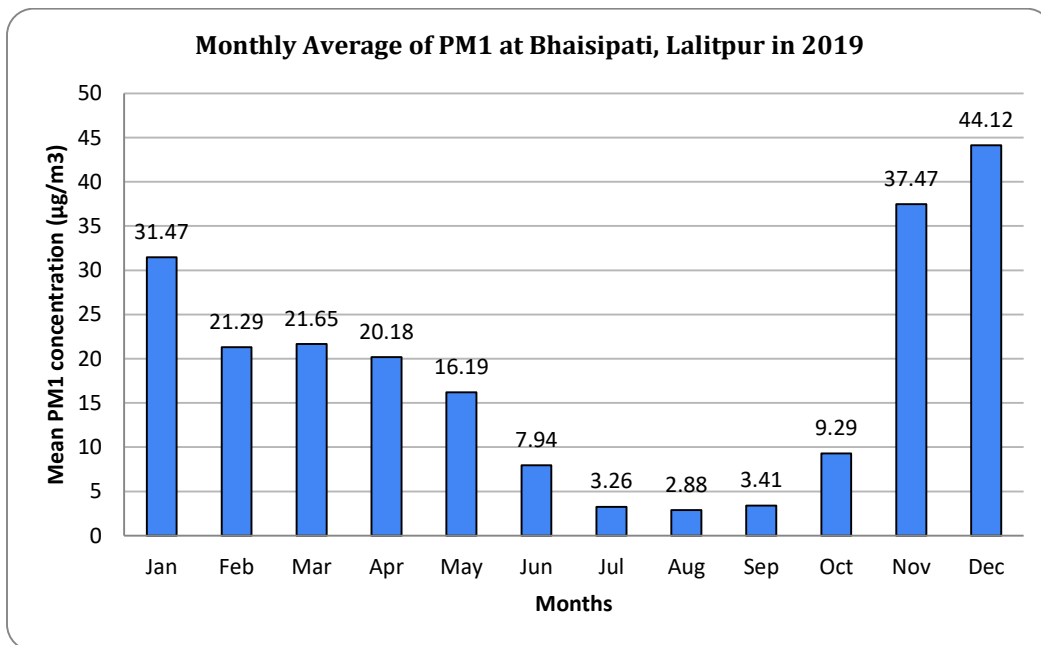


Figure 55: Monthly average of PM₁ in 2019

Variation in concentration of PM₁ was found more during December whereas low during August.

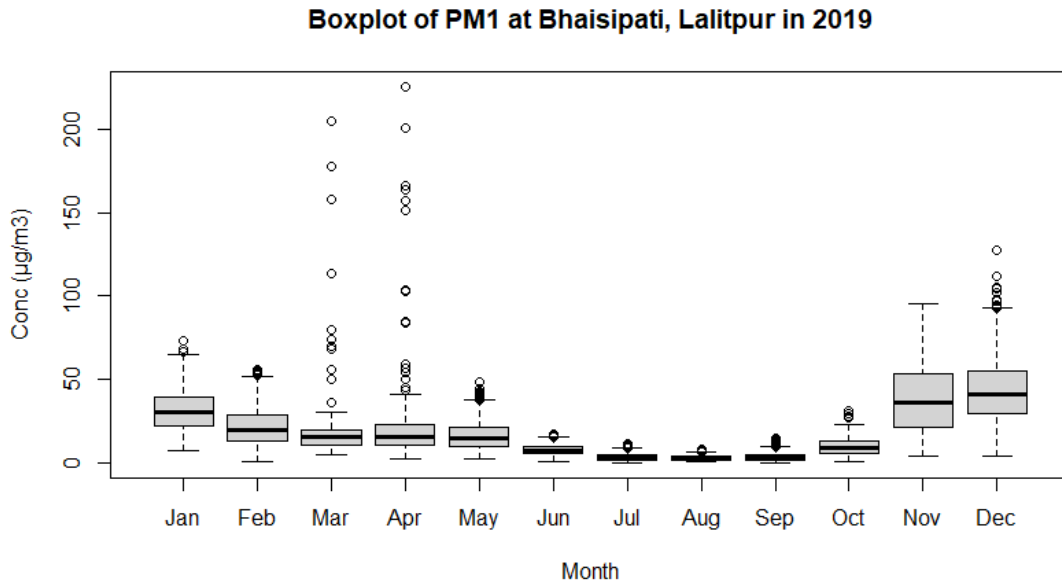


Figure 56: Monthly Variation of PM₁ in 2018

1.3.2 Seasonal variation of PM₁

Ambient concentration of average TSP during (March -May), monsoon (June-September), post-monsoon (October-November) and winter (December-February) can be shown below. The concentration of TSP was found highest during winter (28.94 µg/m³) and lowest during monsoon (4.69µg/m³).

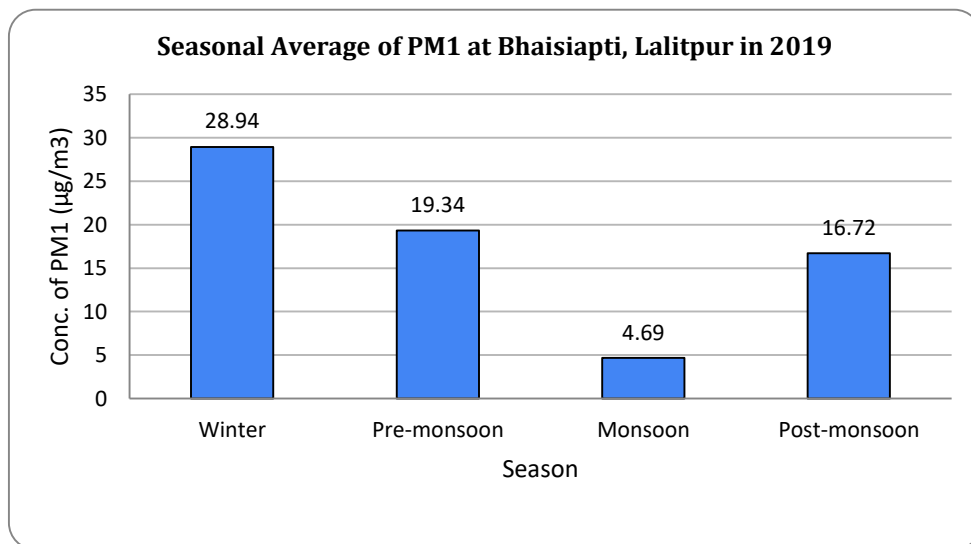


Figure 57: Seasonal variation of PM₁ in 2019

Diurnal variation of average concentration of PM₁

The diurnal variation of average PM₁ concentration can be shown below. The variation in PM₁ concentration was higher around 9 am and lower around 12 pm.

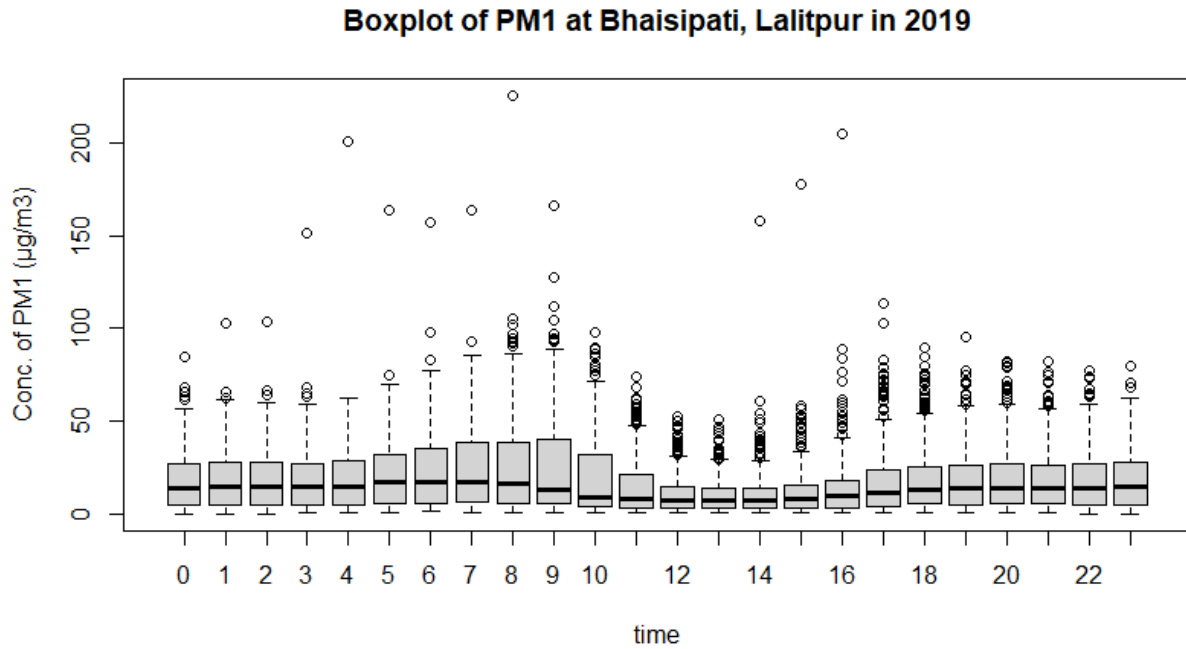


Figure 58: Diurnal variation of average PM₁ concentration

1.3.3 Temporal variation of PM_{2.5}

Annual average of PM_{2.5}

Most of the data for PM_{2.5} was found to be less than the NAAQS .

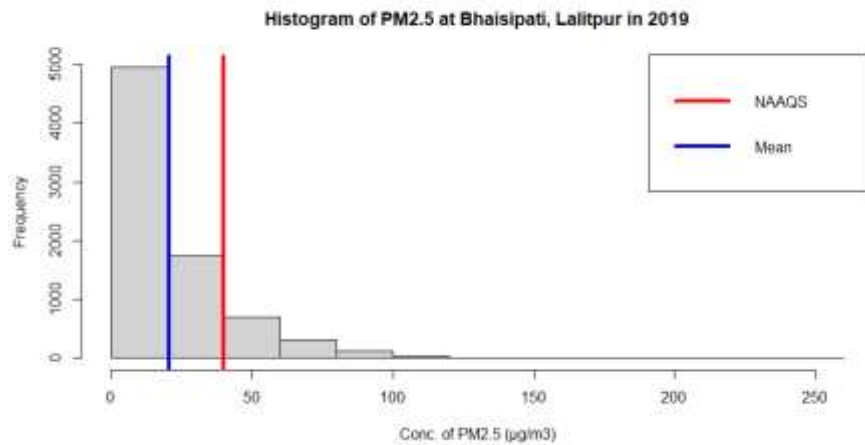


Figure 59 : Histogram of PM_{2.5}.

Daily average of PM_{2.5}:

Daily average concentration of PM_{2.5} was high during December and was found low during August and September. PM_{2.5} was unexpectedly high for few days on September.

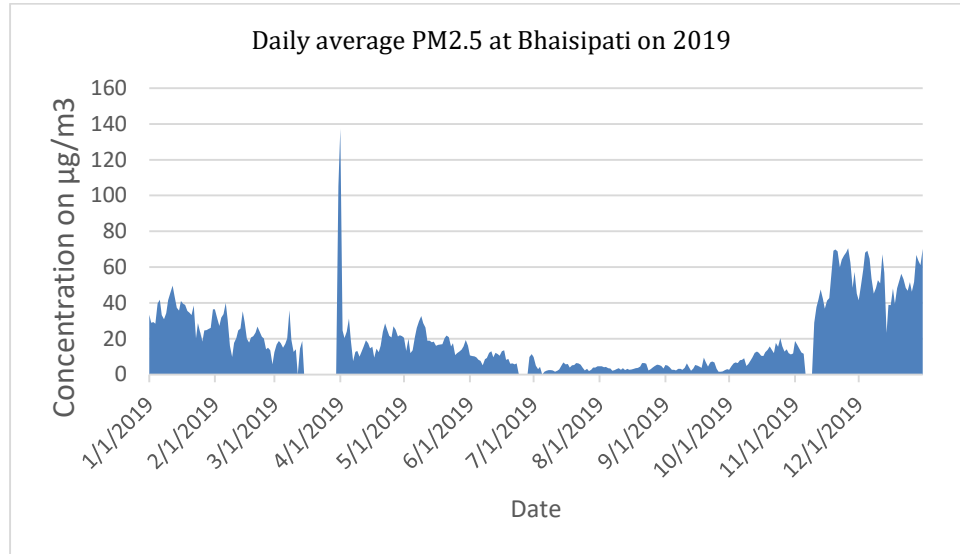


Figure 60: Daily average of PM_{2.5}

Monthly average of PM_{2.5}

The highest and the lowest concentration of PM_{2.5} was found during December and August respectively. The mean value for those months were found to be 52.65 and 3.88 µg/m³ respectively.

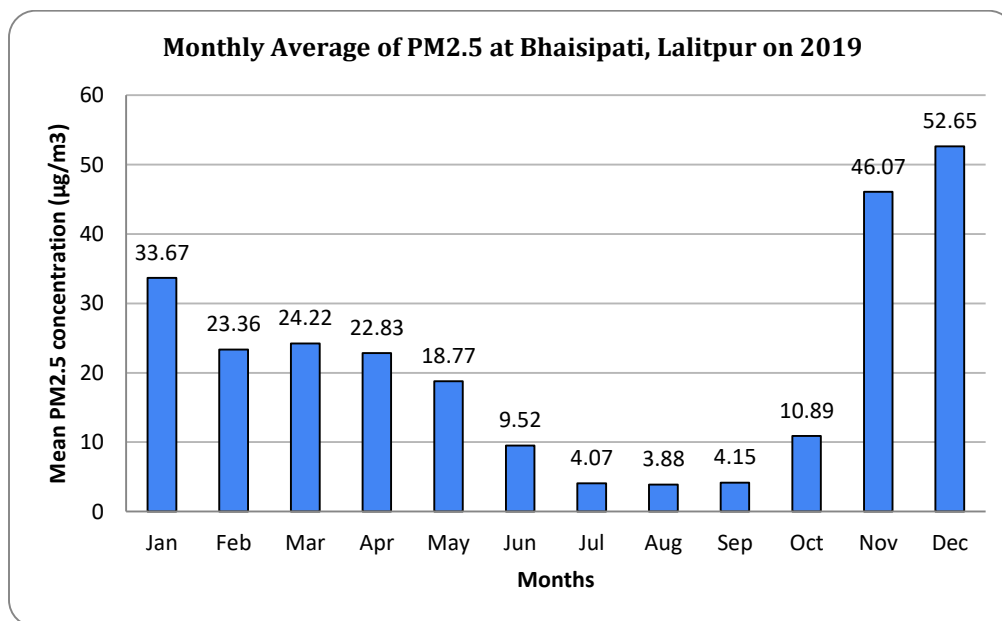


Figure 61: Monthly Average of PM_{2.5}

Variation in concentration of PM_{2.5} was found more during November and November whereas low during August. The mean value of PM_{2.5} was found the highest in during November and the lowest during August.

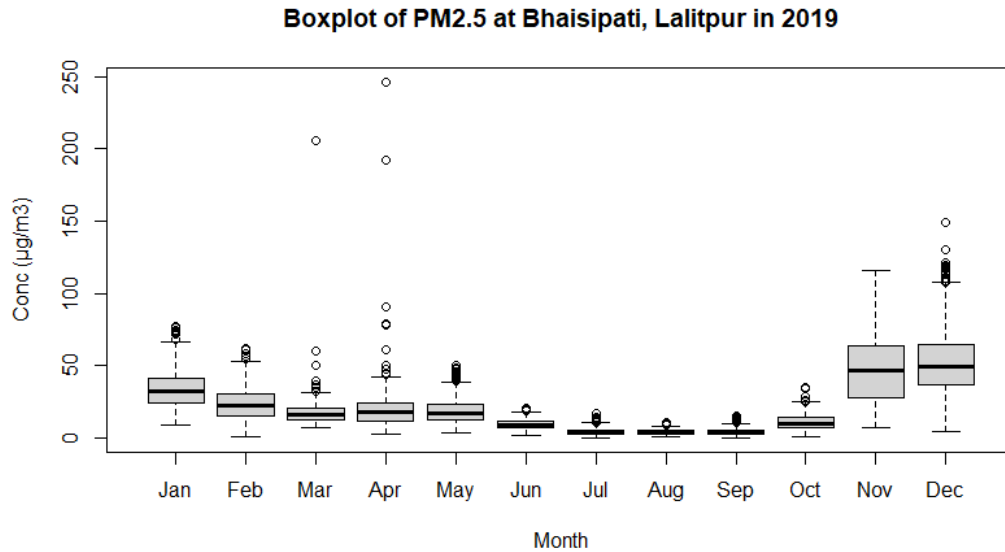


Figure 62: Monthly Variation of PM_{2.5}

Seasonal variation of average PM_{2.5} concentration

Ambient concentration of average PM_{2.5} during Premonsoon (March-May), monsoon (June-September), and post-monsoon (October-November), winter (Dec- Feb) can be shown below. The concentration of PM_{2.5} was found highest during winter (28.27 µg/m³) and lowest during monsoon season (5.82 µg/m³) Figure 35: Seasonal variation of PM_{2.5}.

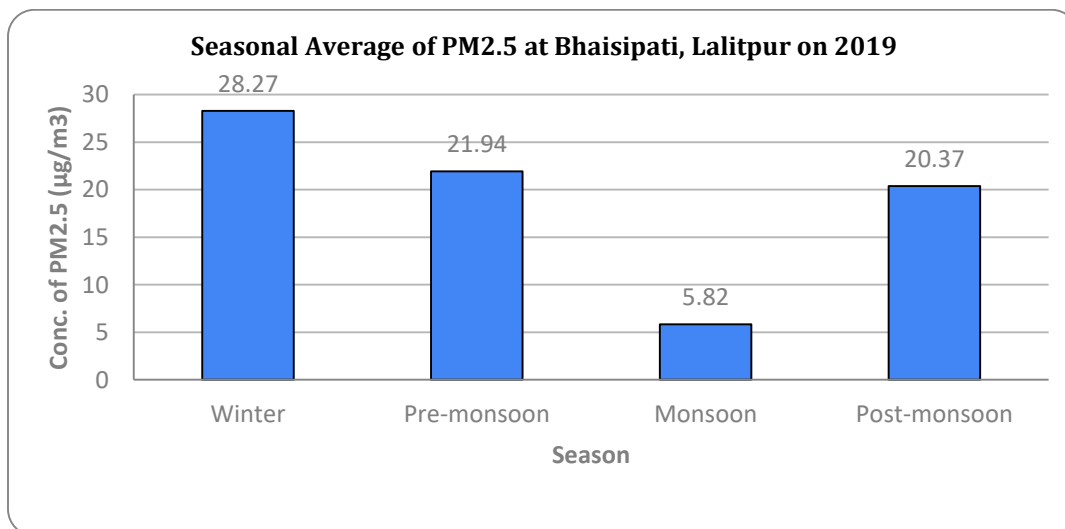


Figure 63: Seasonal variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown in the Figure 36 below. The variation in PM_{2.5} concentration was high at around 9 am and low at 12 to 2 pm. Additionally, mean concentration of PM_{2.5} was high and low at 6 pm and 1pm respectively.

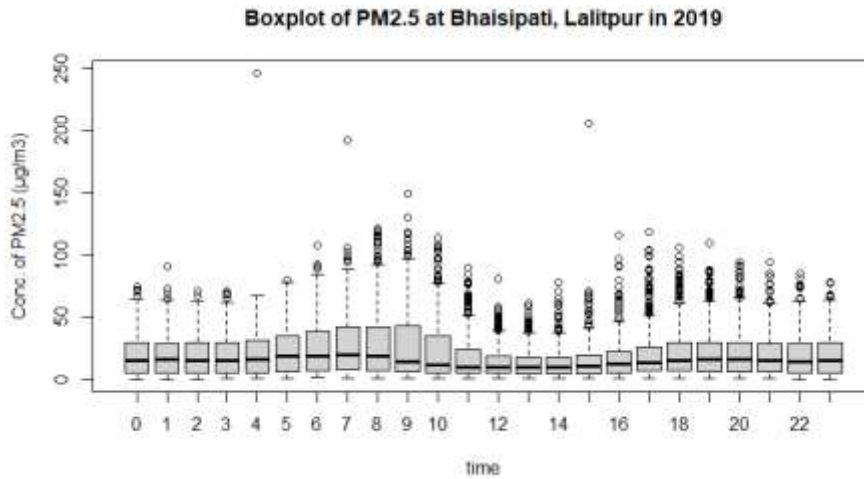


Figure 64: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2019 counts 338, of which 54 days exceed the NAAQS guideline. November and December were the months having maximum number of days exceeding the NAAQS guideline. From June to October, none of the days exceeded NAAQS guideline value.

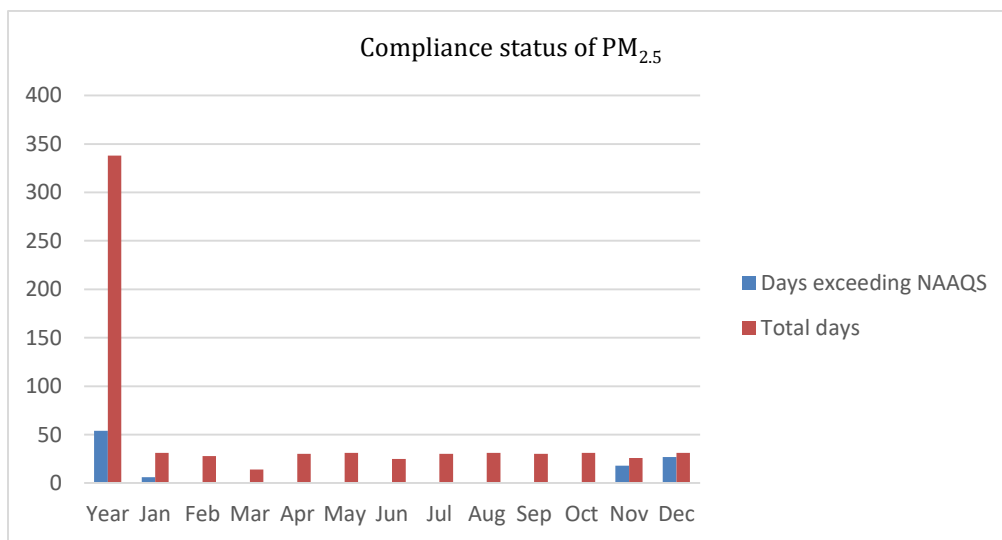


Figure 65: Compliance status of PM_{2.5}

1.3.4 Temporal variation of PM10

Annual average of PM₁₀

Most of the data for PM₁₀ was found to be less than the NAAQS .

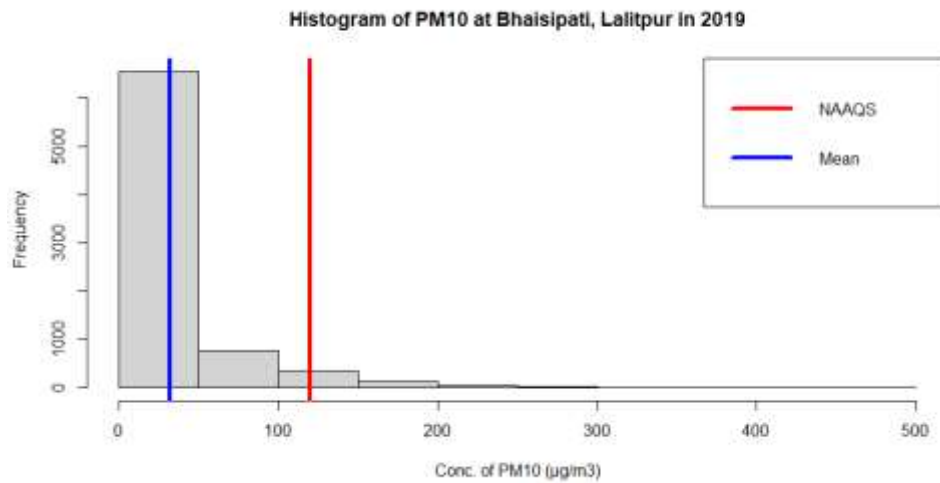


Figure 66 : Histogram for the ambient concentration of PM₁₀.

Daily average of PM₁₀:

Daily average concentration of PM₁₀ was high during November and December and was found low during July and August. The concentration of PM₁₀ was seen to be unprecedentedly high for few days in during April.

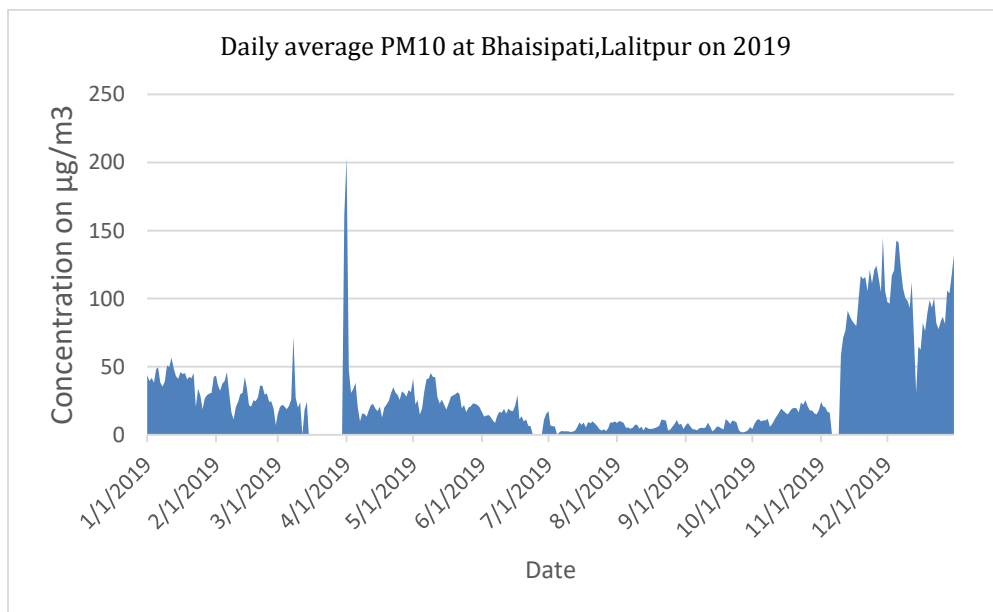


Figure 67: Daily average of PM₁₀

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 64.44 and 7.04 $\mu\text{g}/\text{m}^3$ respectively.

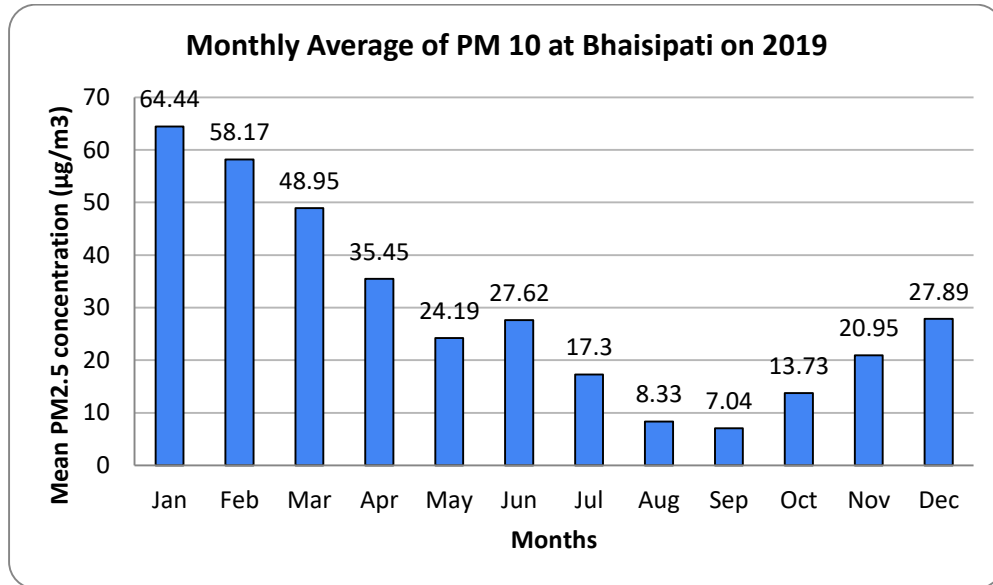


Figure 68: Monthly average of PM₁₀

Variation in concentration of PM₁₀ was found more during November and December and low during July. The mean value of PM₁₀ was found the highest in December and the lowest in August.

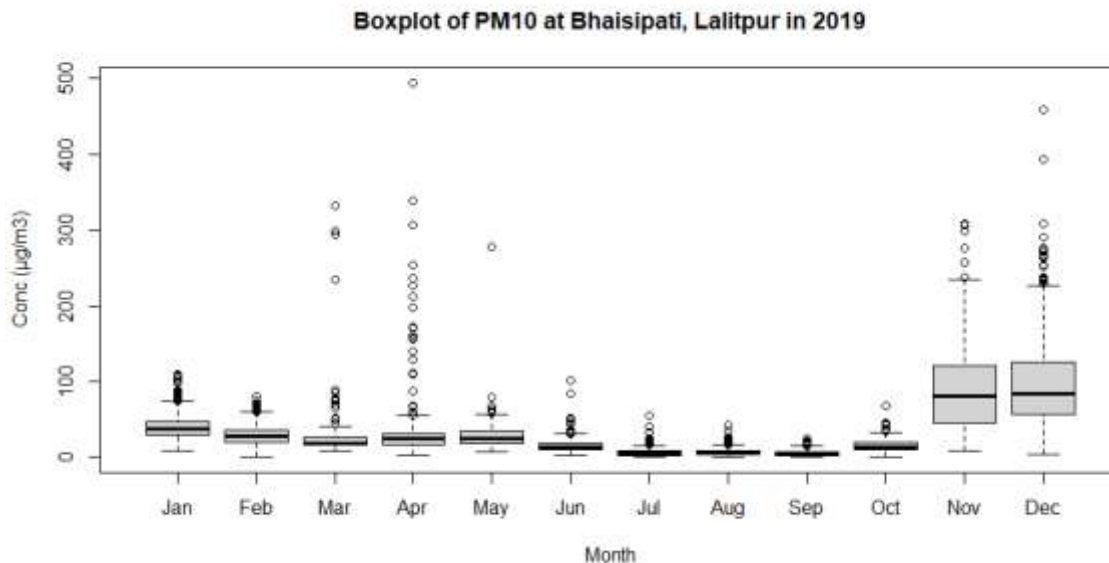


Figure 69: Monthly Variation of PM₁₀

Seasonal variation of average PM₁₀ concentration:

Ambient concentration of average PM₁₀ during pre monsoon (March -May), monsoon (June-September), post-monsoon (October-November) and winter (December-February) can be shown in the figure below. The concentration of PM₁₀ was found highest during winter (52.52 µg/m³) and lowest in pre monsoon season (13.9 µg/m³).

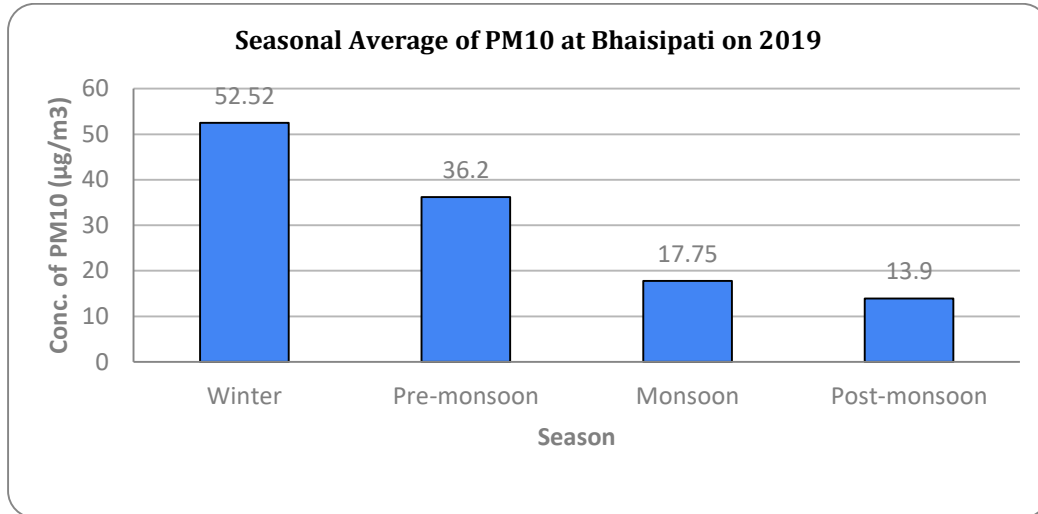


Figure 70: Seasonal variation of PM₁₀.

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the figure below. The variation in PM₁₀ concentration was high at around 9 am and low at 12 to 1 am. Additionally, mean concentration of PM₁₀ was high and low at 7 am and 1 am respectively.

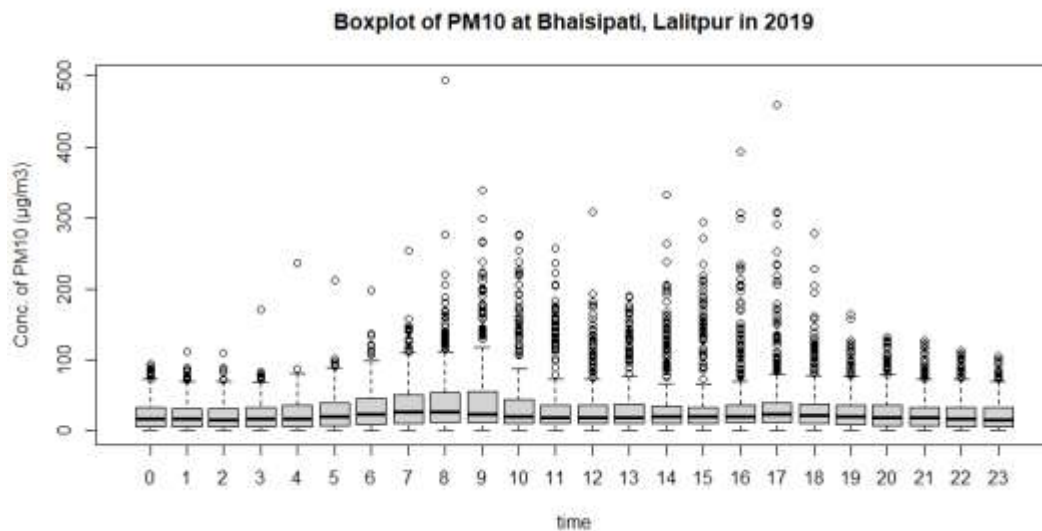


Figure 71: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2019 counts 352 of which 79 days exceed the NAAQS guideline. December months have maximum number of days exceeding the NAAQS guideline. From May to October, none of the days exceeded NAAQS guideline except on June.

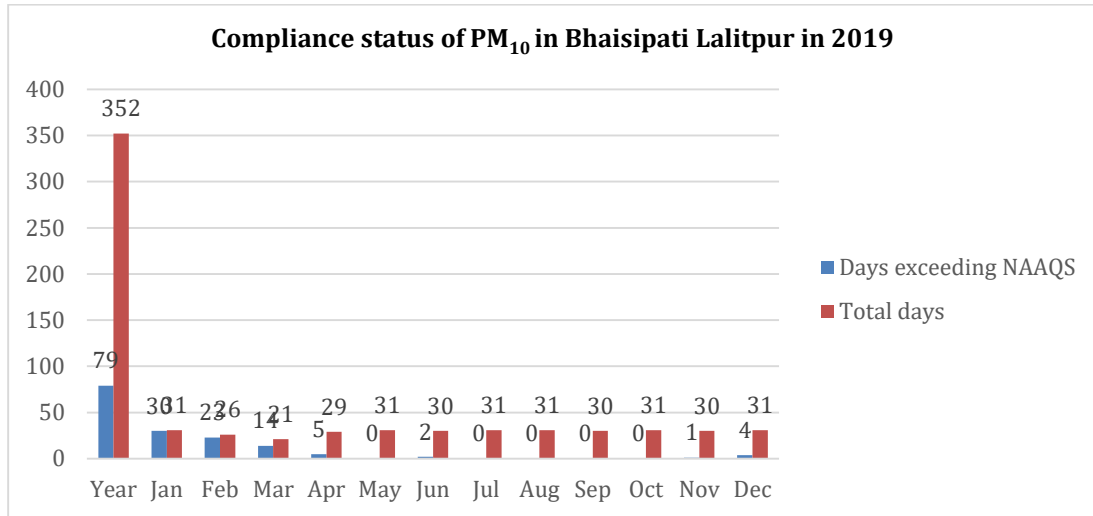


Figure 72 Compliance status of PM₁₀

1.4 Air quality status 2020

1.4.1 Annual average of PM₁, PM_{2.5} and PM₁₀

The annual average of PM₁, PM_{2.5}, PM₁₀ and TSP of the Bhaishipati monitoring station was calculated.

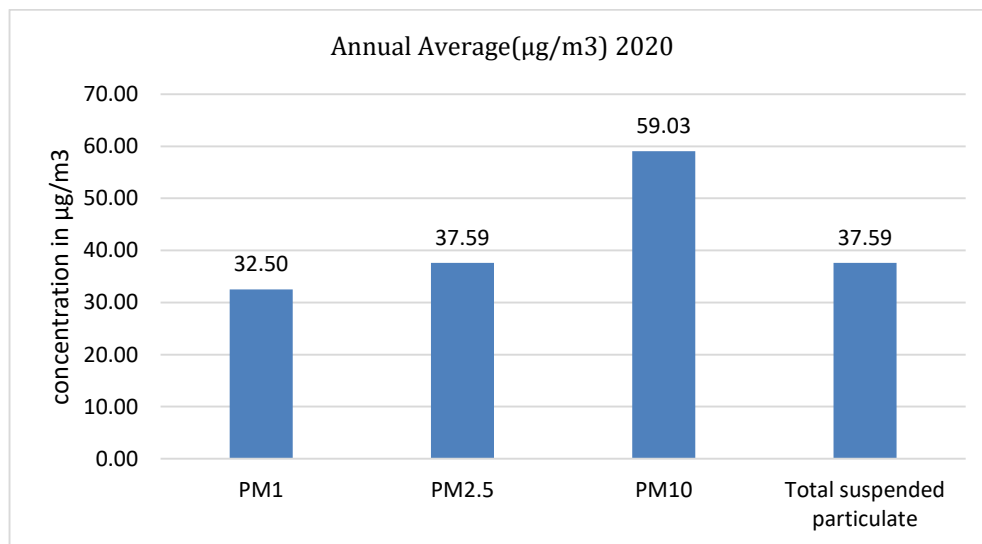


Figure 73: Annual average of PM_{2.5}, PM₁₀ and TSP

1.4.2 Temporal variation of PM₁

Annual average of PM₁

Histogram of hourly average PM₁ is shown in figure.

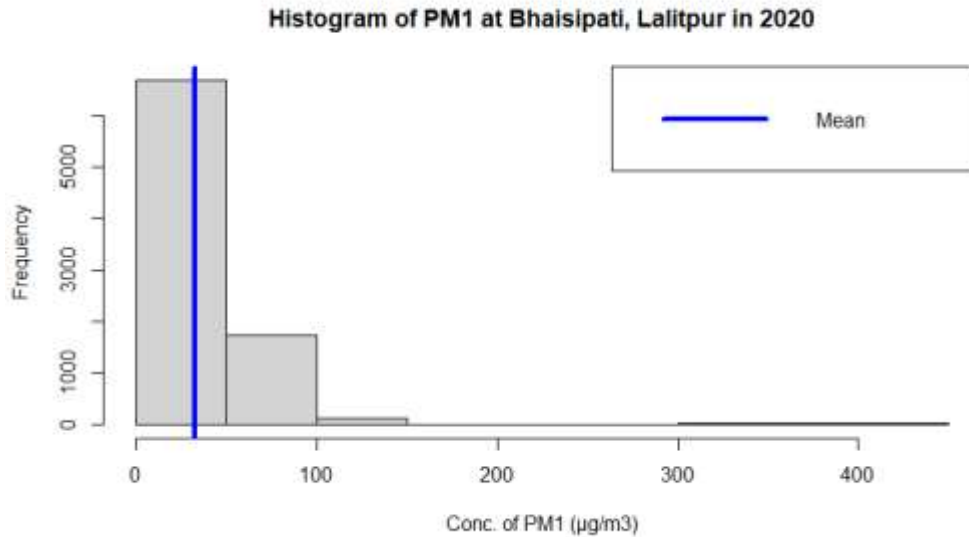


Figure 74: Histogram for the ambient concentration of PM₁

Daily average of PM₁

Daily average concentration of PM₁ was found to be high around December and low around September.

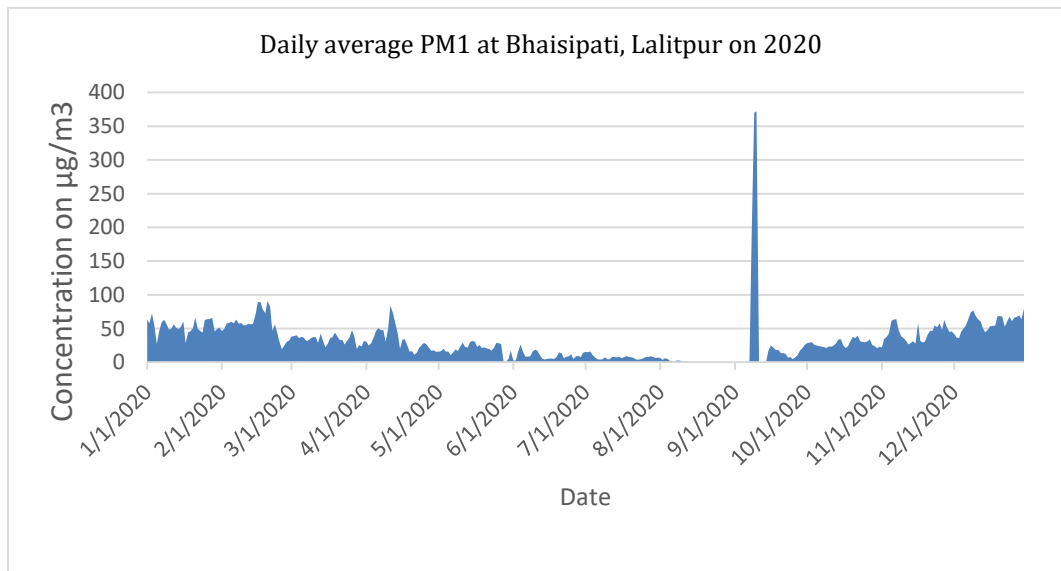


Figure 75: Daily average of PM₁

Monthly average of PM₁

The highest and the lowest concentration of PM₁ was found during February (59.92 µg/m³) and August (1.25 µg/m³) respectively from the available data.

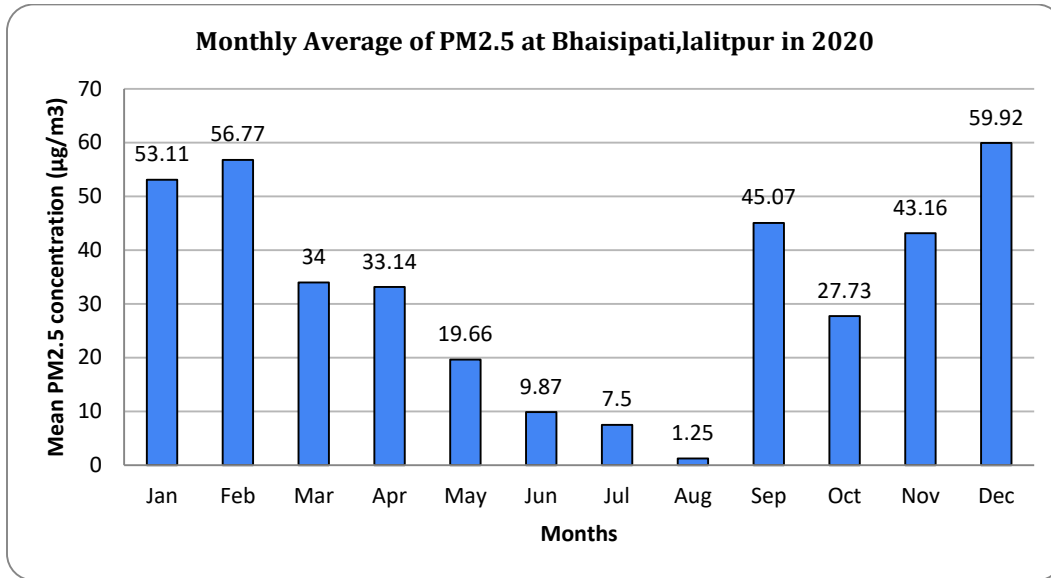


Figure 76: Monthly average of PM₁

Variation in concentration of PM₁ was found more during February whereas low during August.

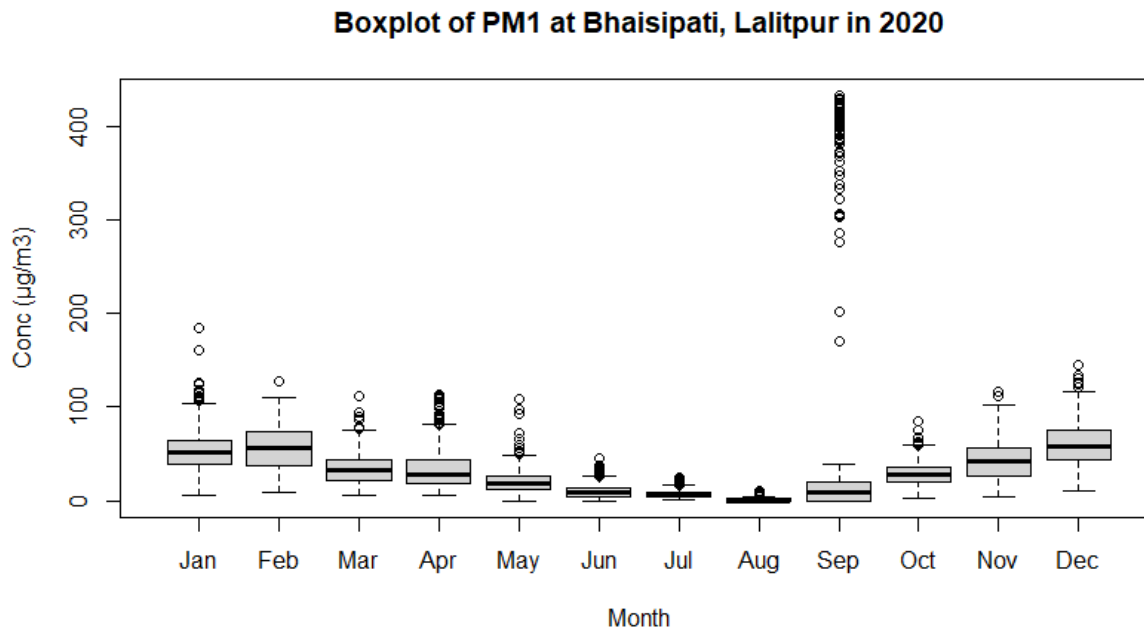


Figure 77: Monthly Variation of PM₁ in 2020

Seasonal variation of PM₁

Ambient concentration of average PM₁ during Pre monsoon (March-May), monsoon (June-September), and post-monsoon (October-November), winter(Dec- Feb) can be shown below. The concentration of PM₁ was found highest during winter (54.18 µg/m³) and lowest during monsoon season (6.21 µg/m³) Figure 35: Seasonal variation of PM_{2.5}.

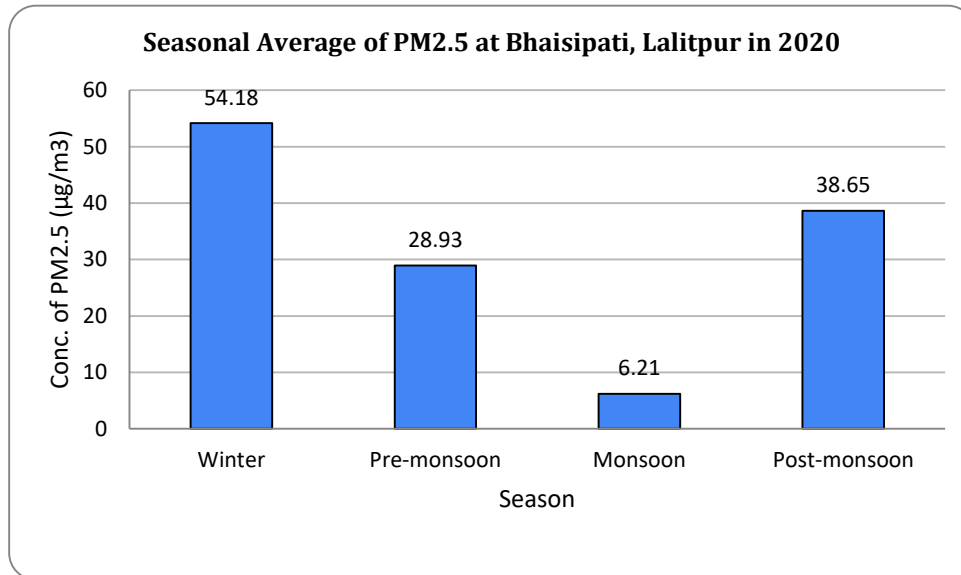


Figure 78: Seasonal variation of PM₁ in 2020

Diurnal variation of average concentration of PM₁

The diurnal variation of average PM₁ concentration can be shown in the. The variation in PM₁ concentration was higher around 8 am and lower around 1 pm.

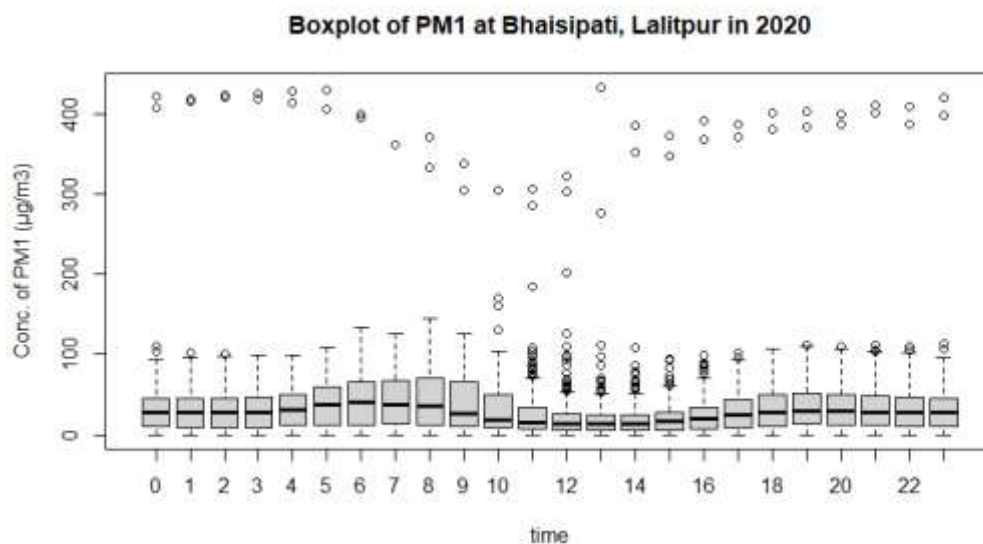


Figure 79: Diurnal variation of average PM₁ concentration

1.4.3 Temporal variation of PM_{2.5}

Annual average of PM_{2.5}

Most of the data for PM_{2.5} was found to be less than the NAAQS

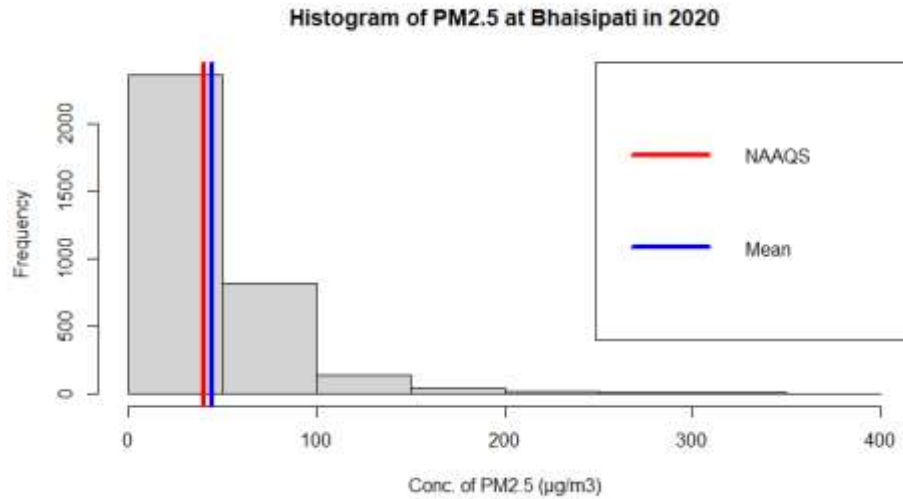


Figure 80 : Histogram of PM_{2.5}.

Daily average of PM_{2.5}:

Daily average concentration of PM_{2.5} was high during December and was found low during monsoon. PM_{2.5} was unexpectedly high for few days on September.

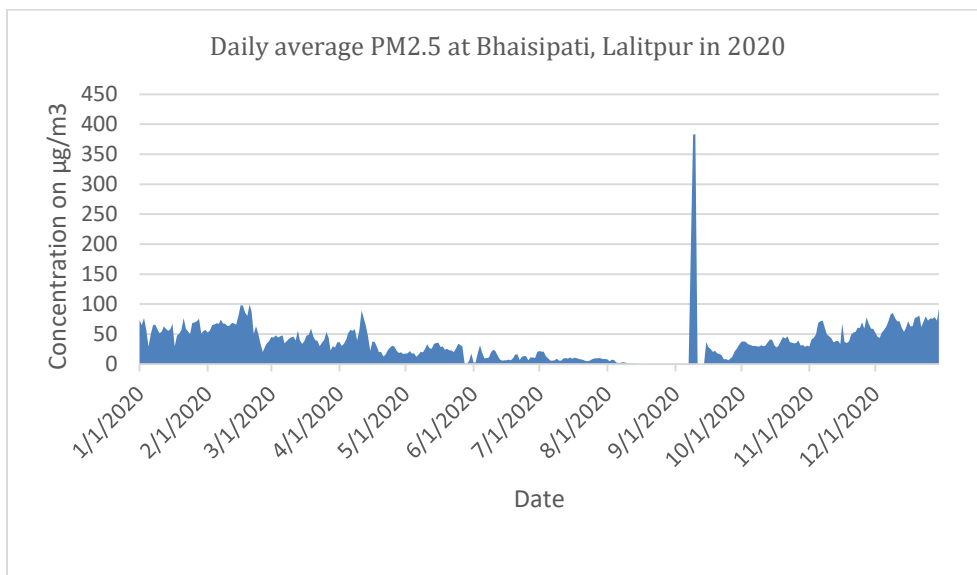


Figure 81: Daily average of PM_{2.5}

Monthly average of PM_{2.5}

The highest and the lowest concentration of PM_{2.5} was found during December and June respectively. The mean value for those months were found to be 69.63 and 1.5 µg/m³ respectively.

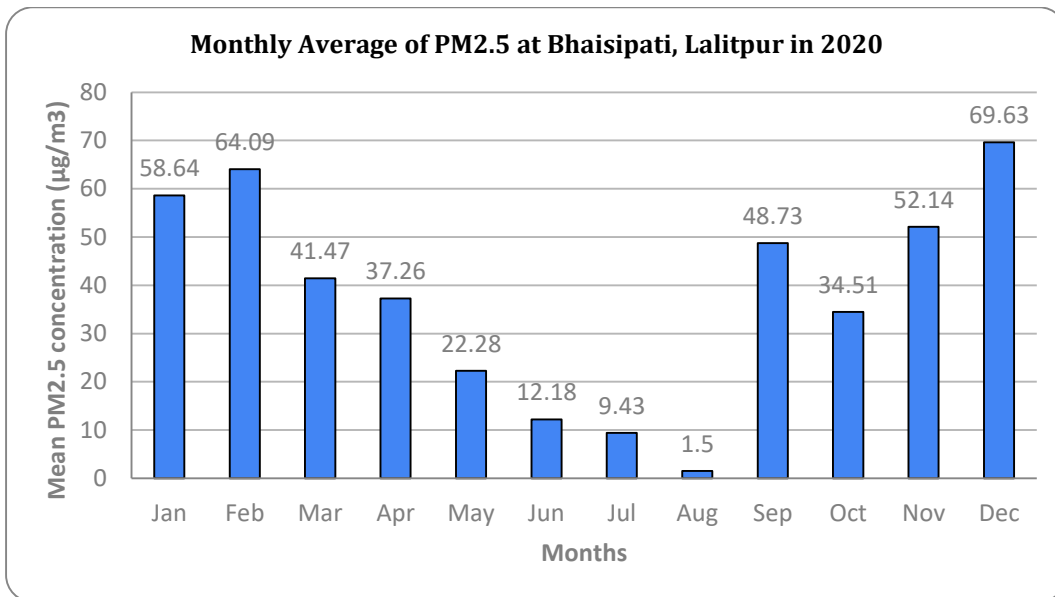


Figure 82: Monthly Average of PM_{2.5}

Variation in concentration of PM_{2.5} was found more during November and December whereas low during June. The mean value of PM_{2.5} was found the highest in during December and the lowest during June.

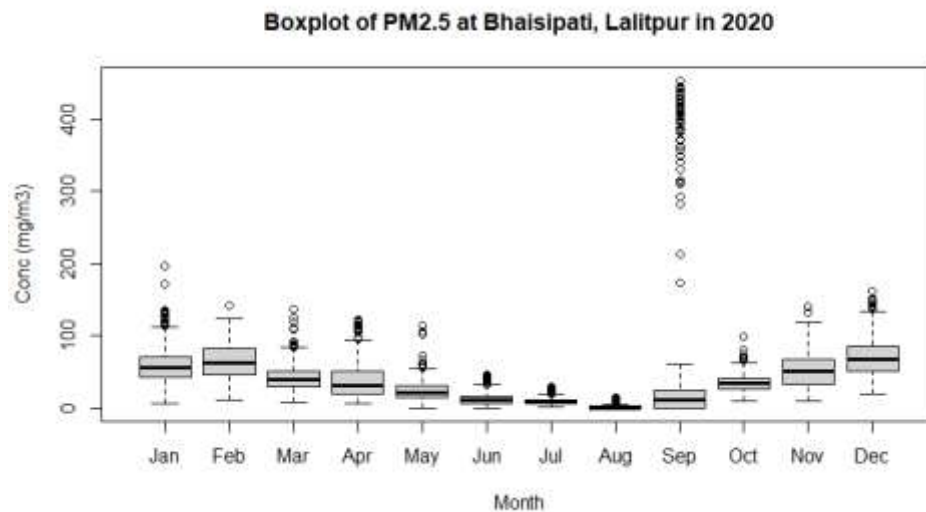


Figure 83: Monthly Variation of PM_{2.5}

Seasonal variation of average PM_{2.5} concentration

Ambient concentration of average PM_{2.5} during Premonsoon (March-May), monsoon (June-September), and post-monsoon (October-November), winter(Dec- Feb) can be shown below. The concentration of PM_{2.5} was found highest during winter (58.46 µg/m³) and lowest during monsoon season (7.7 µg/m³) Figure 35: Seasonal variation of PM_{2.5}.

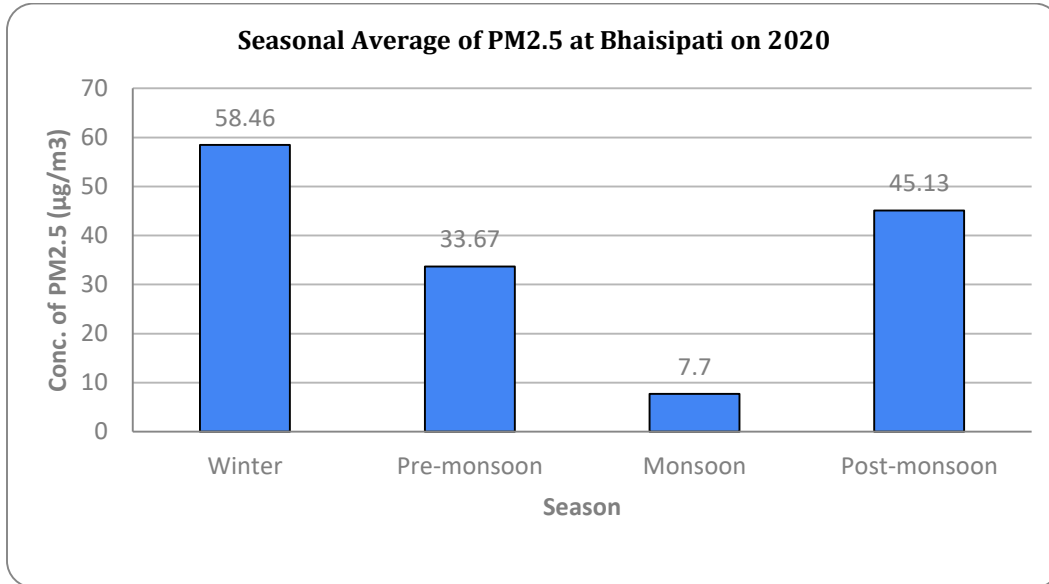


Figure 84: Seasonal variation of PM_{2.5}

Diurnal variation of average PM_{2.5} concentration

The diurnal variation of average PM_{2.5} concentrations can be shown in the Figure 36 below. The variation in PM_{2.5} concentration was high at around 6 pm and low at 12 to 2 pm. Additionally, mean concentration of PM_{2.5} was high and low at 6 pm and 1pm respectively.

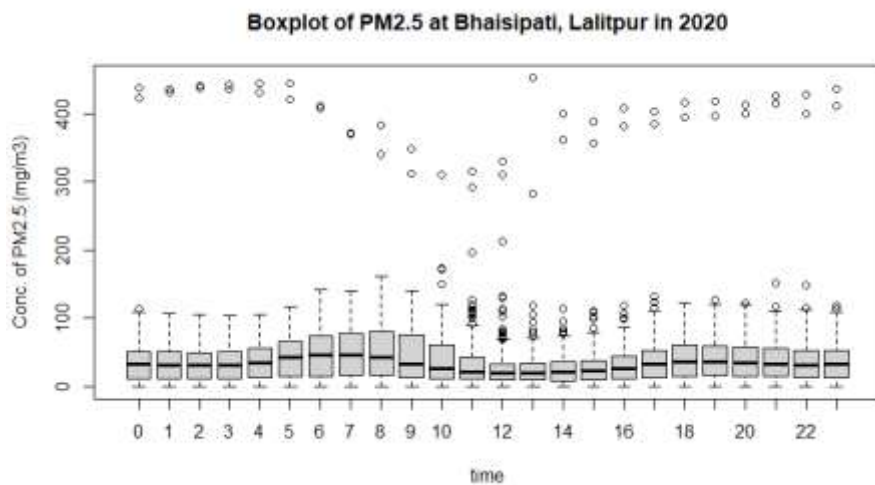


Figure 85: Diurnal variation of PM_{2.5}

Compliance status of PM_{2.5}

The total days of PM_{2.5} monitored in the year 2020 counts 359, of which 140 days exceed the NAAQS guideline. January and December were the months having maximum number of days exceeding the NAAQS guideline. From May to August, none of the days exceeded NAAQS guideline value.

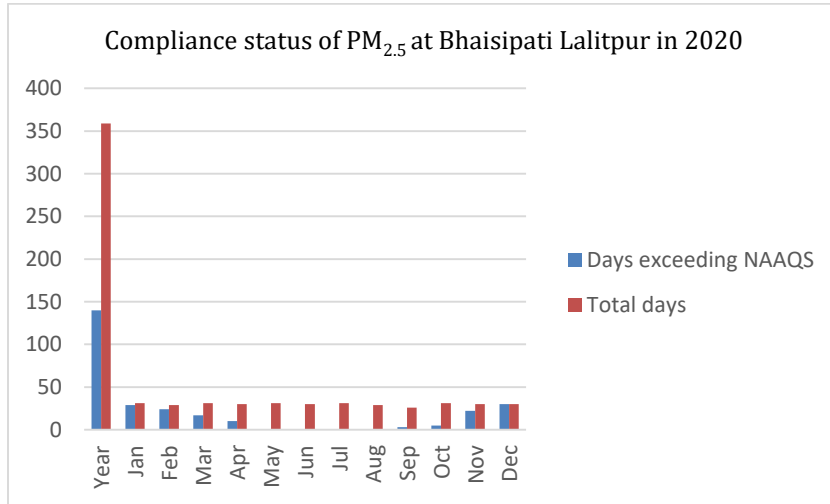


Figure 86: Compliance status of PM_{2.5}

1.4.4 Temporal variation of PM₁₀

Annual average of PM₁₀

Most of the data for PM_{2.5} was found to be less than the NAAQS.

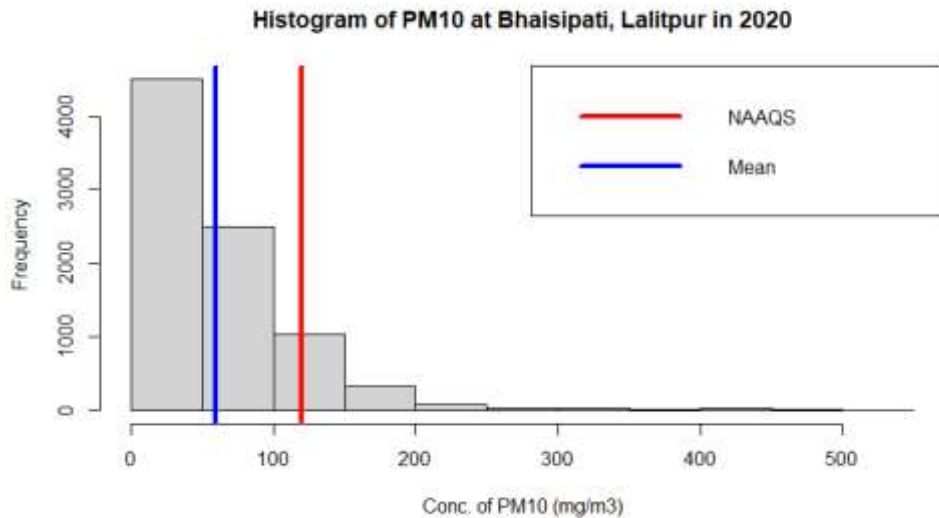


Figure 87 : Histogram for the ambient concentration of PM₁₀.

Daily average of PM₁₀:

Daily average concentration of PM₁₀ was high during November and December and was found low during July and August. The concentration of PM₁₀ was seen to be unprecedentedly high during September.

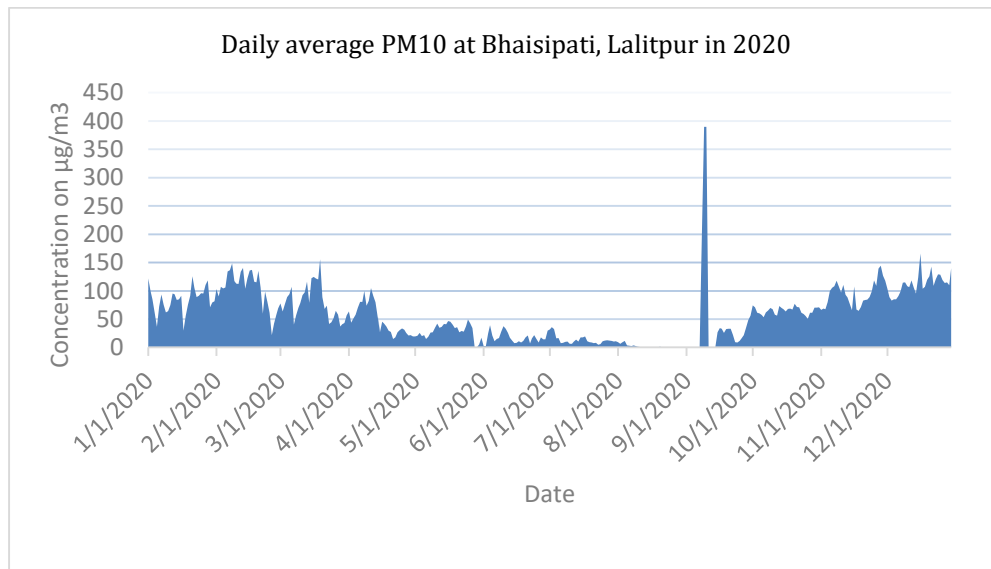


Figure 88: Daily average of PM₁₀

Monthly average of PM₁₀

The highest and the lowest concentration of PM₁₀ was found during December and August respectively. The mean value for those months were found to be 113.64 and 2.09 $\mu\text{g}/\text{m}^3$ respectively.

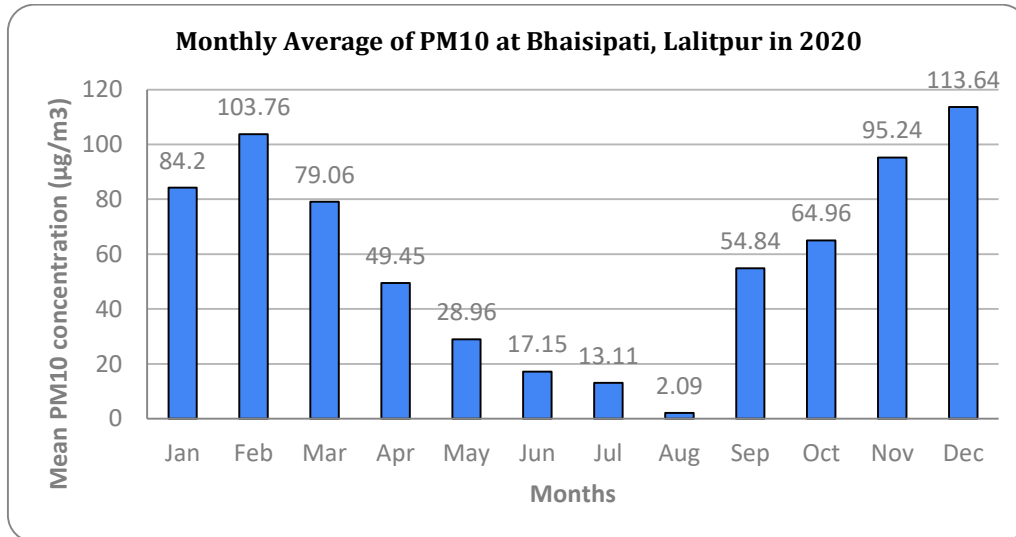


Figure 89: Monthly average of PM₁₀

Variation in concentration of PM₁₀ was found more during March and low during June. The mean value of PM₁₀ was found the highest in December and the lowest in August.

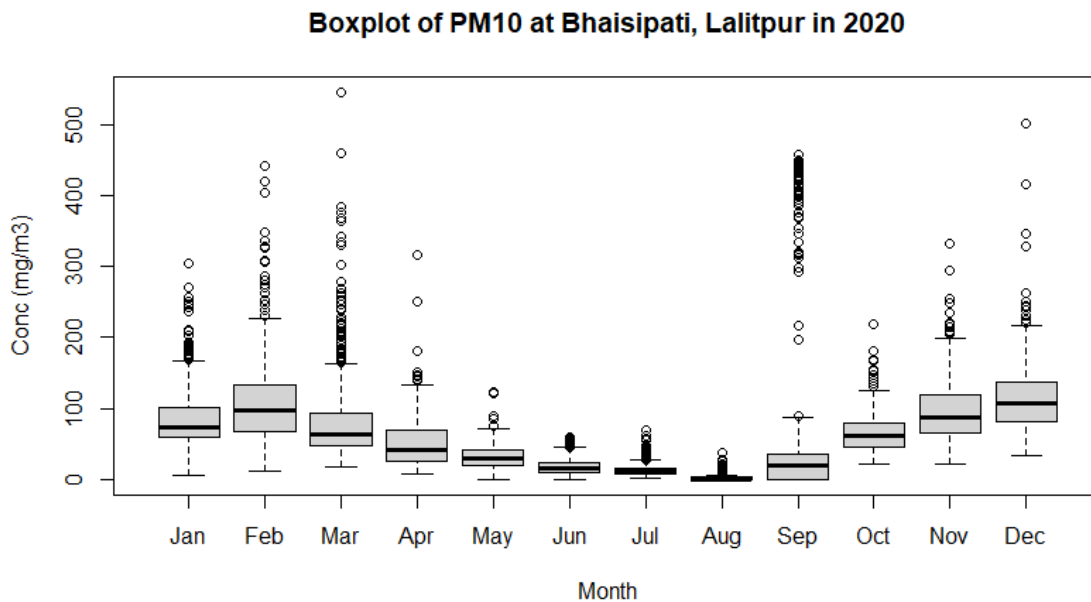


Figure 90: Monthly Variation of PM₁₀

Seasonal variation of average PM₁₀ concentration:

Ambient concentration of average PM₁₀ during pre monsoon (March -May), monsoon (June-September), post-monsoon (October-November) and winter (December-February) can be shown in the figure below. The concentration of PM₁₀ was found higher during winter (80.2 $\mu\text{g}/\text{m}^3$) than monsoon season (10.78 $\mu\text{g}/\text{m}^3$).

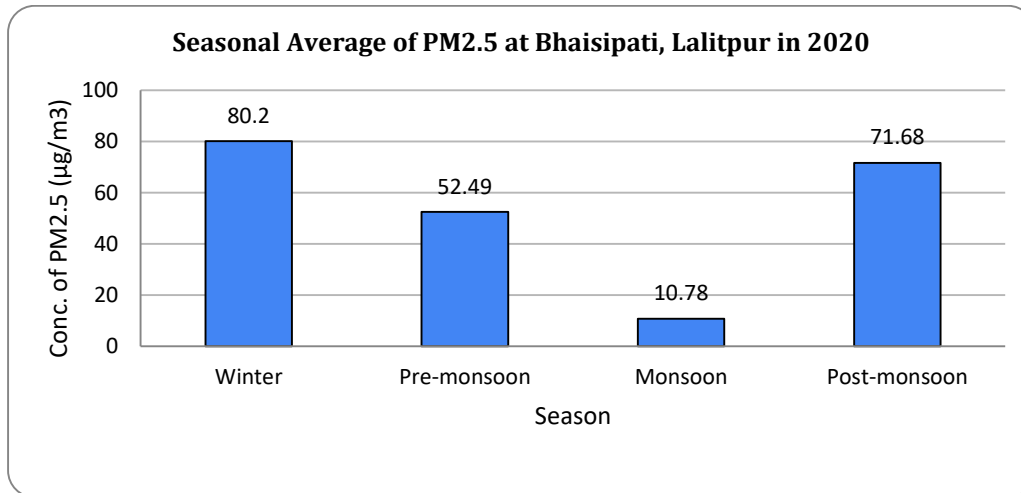


Figure 91: Seasonal variation of PM₁₀.

Diurnal variation of average PM₁₀ concentration

The diurnal variation of average PM₁₀ concentrations can be shown in the figure below. The variation in PM₁₀ concentration was high at around 1AM and low at 12 to 1 AM. Additionally, mean concentration of PM₁₀ was high and low at 6 AM and 3 PM respectively.

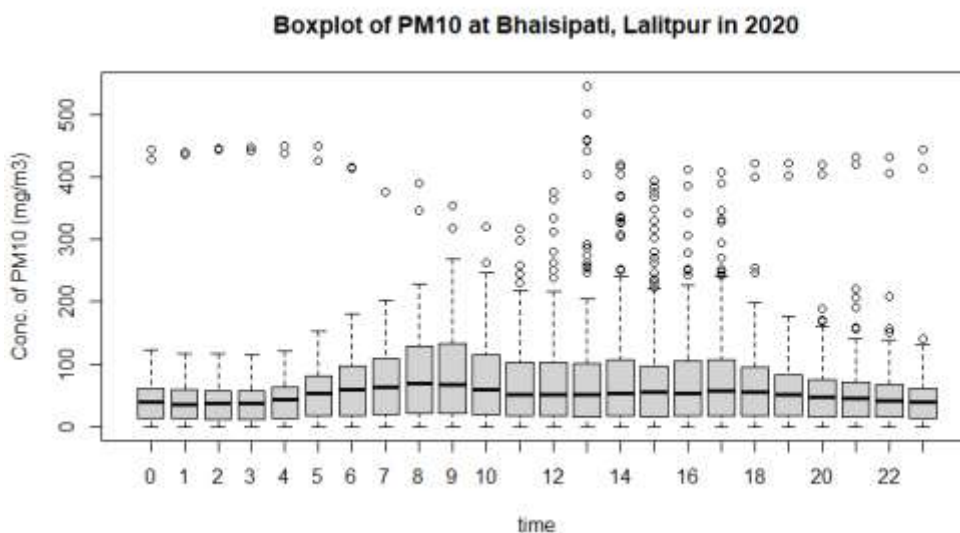


Figure 92: Diurnal variation of PM₁₀ concentration

Compliance status of PM₁₀

The total days of PM₁₀ monitored in the year 2020 counts 359 of which 29 days exceed the NAAQS guideline. In February, March and December, few days exceeded the NAAQS guideline from April to November, none of the days exceeded NAAQS guideline.

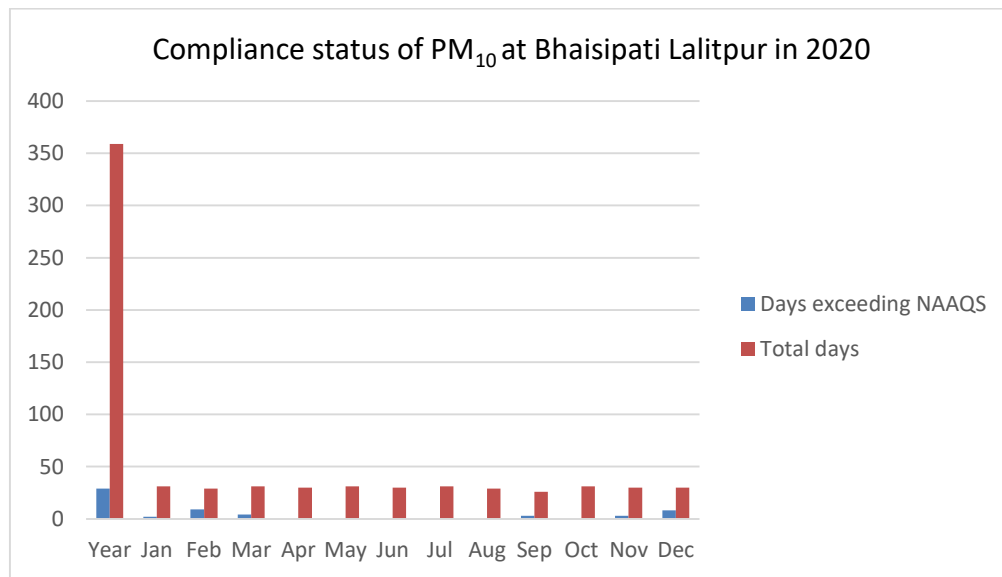


Figure 93: Compliance status of PM₁₀

Annex

PM₁

date	value	date	value	date	value	date	value
1/1/2017		1/1/2018	45.78	1/1/2019	29.47	1/1/2020	63.46
1/2/2017		1/2/2018	37.77	1/2/2019	25.74	1/2/2020	57.56
1/3/2017		1/3/2018	43.84	1/3/2019	24.58	1/3/2020	72.48
1/4/2017		1/4/2018	41.06	1/4/2019	25.73	1/4/2020	55.65
1/5/2017		1/5/2018	45.87	1/5/2019	36.73	1/5/2020	27.33
1/6/2017		1/6/2018	46.63	1/6/2019	39.02	1/6/2020	44.78
1/7/2017		1/7/2018	39.52	1/7/2019	31.16	1/7/2020	58.85
1/8/2017		1/8/2018	42.91	1/8/2019	28.98	1/8/2020	62.82
1/9/2017		1/9/2018	63.89	1/9/2019	32.42	1/9/2020	57.03
1/10/2017		1/10/2018	66.82	1/10/2019	38.90	1/10/2020	48.64
1/11/2017		1/11/2018	63.72	1/11/2019	44.14	1/11/2020	49.78
1/12/2017		1/12/2018	79.90	1/12/2019	46.94	1/12/2020	56.44

1/13/2017		1/13/2018	62.37	1/13/2019	41.80	1/13/2020	51.65
1/14/2017		1/14/2018	52.37	1/14/2019	35.13	1/14/2020	49.13
1/15/2017		1/15/2018	52.81	1/15/2019	33.57	1/15/2020	52.25
1/16/2017		1/16/2018	54.04	1/16/2019	39.33	1/16/2020	60.55
1/17/2017		1/17/2018	62.54	1/17/2019	37.52	1/17/2020	28.20
1/18/2017		1/18/2018	61.01	1/18/2019	36.46	1/18/2020	44.44
1/19/2017		1/19/2018	63.61	1/19/2019	33.58	1/19/2020	45.67
1/20/2017		1/20/2018	57.79	1/20/2019	31.80	1/20/2020	50.37
1/21/2017		1/21/2018	45.49	1/21/2019	30.71	1/21/2020	66.26
1/22/2017		1/22/2018	63.64	1/22/2019	35.94	1/22/2020	49.70
1/23/2017		1/23/2018	62.20	1/23/2019	19.97	1/23/2020	46.52
1/24/2017		1/24/2018	42.51	1/24/2019	26.83	1/24/2020	43.91
1/25/2017		1/25/2018	55.21	1/25/2019	21.69	1/25/2020	63.05
1/26/2017		1/26/2018	60.16	1/26/2019	18.16	1/26/2020	63.64
1/27/2017		1/27/2018	52.66	1/27/2019	23.72	1/27/2020	64.13
1/28/2017		1/28/2018	56.82	1/28/2019	23.20	1/28/2020	65.71
1/29/2017		1/29/2018	71.39	1/29/2019	23.72	1/29/2020	45.60
1/30/2017		1/30/2018	68.91	1/30/2019	24.53	1/30/2020	49.20
1/31/2017		1/31/2018	82.93	1/31/2019	34.17	1/31/2020	51.63
2/1/2017		2/1/2018	78.58	2/1/2019	34.11	2/1/2020	46.15
2/2/2017		2/2/2018	87.78	2/2/2019	29.78	2/2/2020	49.69
2/3/2017		2/3/2018	72.79	2/3/2019	24.98	2/3/2020	57.27
2/4/2017		2/4/2018	65.90	2/4/2019	29.52	2/4/2020	58.75
2/5/2017		2/5/2018	59.63	2/5/2019	31.40	2/5/2020	60.21
2/6/2017		2/6/2018	59.56	2/6/2019	37.68	2/6/2020	57.66
2/7/2017		2/7/2018	60.06	2/7/2019	30.09	2/7/2020	63.41
2/8/2017		2/8/2018	42.70	2/8/2019	15.52	2/8/2020	57.32
2/9/2017		2/9/2018	32.61	2/9/2019	8.62	2/9/2020	58.28
2/10/2017		2/10/2018	39.87	2/10/2019	16.53	2/10/2020	54.61
2/11/2017		2/11/2018	46.41	2/11/2019	18.88	2/11/2020	54.57
2/12/2017		2/12/2018	63.89	2/12/2019	22.34	2/12/2020	57.24
2/13/2017		2/13/2018	51.04	2/13/2019	23.80	2/13/2020	56.39
2/14/2017		2/14/2018	51.21	2/14/2019	32.51	2/14/2020	57.38
2/15/2017		2/15/2018	42.18	2/15/2019	27.64	2/15/2020	71.83
2/16/2017		2/16/2018	51.12	2/16/2019	19.19	2/16/2020	89.46
2/17/2017		2/17/2018	49.80	2/17/2019	16.61	2/17/2020	88.89
2/18/2017		2/18/2018	46.10	2/18/2019	18.99	2/18/2020	78.34
2/19/2017		2/19/2018	52.97	2/19/2019	20.27	2/19/2020	72.92
2/20/2017		2/20/2018	49.49	2/20/2019	21.85	2/20/2020	91.01
2/21/2017		2/21/2018	43.50	2/21/2019	23.53	2/21/2020	82.13
2/22/2017		2/22/2018	33.79	2/22/2019	19.83	2/22/2020	46.70
2/23/2017		2/23/2018	15.65	2/23/2019	17.89	2/23/2020	56.05
2/24/2017		2/24/2018		2/24/2019	16.45	2/24/2020	44.22

2/25/2017		2/25/2018		2/25/2019	10.32	2/25/2020	29.08
2/26/2017		2/26/2018	53.95	2/26/2019	11.75	2/26/2020	19.00
2/27/2017		2/27/2018	21.79	2/27/2019	10.97	2/27/2020	25.51
2/28/2017		2/28/2018	1.68	2/28/2019	5.08	2/28/2020	29.89
3/1/2017		3/1/2018	2.28	3/1/2019	11.11	2/29/2020	32.27
3/2/2017		3/2/2018		3/2/2019	15.04	3/1/2020	38.12
3/3/2017		3/3/2018		3/3/2019	17.29	3/2/2020	38.48
3/4/2017		3/4/2018		3/4/2019	15.88	3/3/2020	40.14
3/5/2017		3/5/2018	0.12	3/5/2019	13.31	3/4/2020	35.62
3/6/2017		3/6/2018	0.11	3/6/2019	15.55	3/5/2020	37.47
3/7/2017		3/7/2018	0.21	3/7/2019	18.24	3/6/2020	36.75
3/8/2017		3/8/2018		3/8/2019	27.47	3/7/2020	31.65
3/9/2017		3/9/2018		3/9/2019	15.74	3/8/2020	32.46
3/10/2017		3/10/2018		3/10/2019	9.69	3/9/2020	35.61
3/11/2017		3/11/2018		3/11/2019	10.19	3/10/2020	37.46
3/12/2017		3/12/2018		3/12/2019		3/11/2020	37.02
3/13/2017		3/13/2018	56.94	3/13/2019	12.50	3/12/2020	28.49
3/14/2017		3/14/2018	57.48	3/14/2019	16.02	3/13/2020	42.32
3/15/2017		3/15/2018	68.33	3/15/2019		3/14/2020	32.43
3/16/2017		3/16/2018		3/16/2019		3/15/2020	21.95
3/17/2017		3/17/2018		3/17/2019		3/16/2020	27.17
3/18/2017		3/18/2018		3/18/2019		3/17/2020	35.69
3/19/2017		3/19/2018	62.00	3/19/2019		3/18/2020	37.21
3/20/2017		3/20/2018	72.55	3/20/2019		3/19/2020	43.86
3/21/2017		3/21/2018	61.65	3/21/2019		3/20/2020	37.80
3/22/2017		3/22/2018	52.91	3/22/2019		3/21/2020	32.98
3/23/2017		3/23/2018	44.42	3/23/2019		3/22/2020	32.75
3/24/2017		3/24/2018	52.14	3/24/2019		3/23/2020	26.25
3/25/2017		3/25/2018	63.03	3/25/2019		3/24/2020	31.96
3/26/2017		3/26/2018	73.56	3/26/2019		3/25/2020	36.16
3/27/2017		3/27/2018	65.19	3/27/2019		3/26/2020	47.68
3/28/2017		3/28/2018	66.55	3/28/2019		3/27/2020	38.63
3/29/2017		3/29/2018	35.66	3/29/2019		3/28/2020	19.77
3/30/2017		3/30/2018	18.37	3/30/2019		3/29/2020	25.50
3/31/2017		3/31/2018	19.04	3/31/2019	105.10	3/30/2020	23.38
4/1/2017		4/1/2018	28.85	4/1/2019	114.20	3/31/2020	31.36
4/2/2017		4/2/2018	33.28	4/2/2019	19.04	4/1/2020	30.70
4/3/2017		4/3/2018	38.25	4/3/2019	17.72	4/2/2020	24.86
4/4/2017		4/4/2018	34.45	4/4/2019	21.45	4/3/2020	28.26
4/5/2017		4/5/2018	24.71	4/5/2019	28.80	4/4/2020	35.88
4/6/2017		4/6/2018	28.31	4/6/2019	17.96	4/5/2020	46.18
4/7/2017		4/7/2018	30.48	4/7/2019	6.71	4/6/2020	50.53
4/8/2017		4/8/2018	30.74	4/8/2019	11.47	4/7/2020	47.72

4/9/2017		4/9/2018	34.24	4/9/2019	12.25	4/8/2020	47.82
4/10/2017		4/10/2018	25.36	4/10/2019	8.86	4/9/2020	30.75
4/11/2017		4/11/2018	23.03	4/11/2019	11.65	4/10/2020	50.25
4/12/2017		4/12/2018	24.18	4/12/2019	13.95	4/11/2020	84.22
4/13/2017		4/13/2018	19.87	4/13/2019	17.65	4/12/2020	72.92
4/14/2017		4/14/2018	22.65	4/14/2019	16.81	4/13/2020	58.60
4/15/2017		4/15/2018	38.45	4/15/2019	13.80	4/14/2020	42.56
4/16/2017		4/16/2018		4/16/2019	14.12	4/15/2020	19.92
4/17/2017		4/17/2018	29.68	4/17/2019	7.91	4/16/2020	33.80
4/18/2017		4/18/2018	34.28	4/18/2019	12.42	4/17/2020	33.73
4/19/2017		4/19/2018	29.95	4/19/2019	10.26	4/18/2020	24.69
4/20/2017		4/20/2018	27.19	4/20/2019	13.76	4/19/2020	15.97
4/21/2017		4/21/2018	24.10	4/21/2019	21.90	4/20/2020	16.41
4/22/2017		4/22/2018	24.32	4/22/2019	26.65	4/21/2020	11.01
4/23/2017		4/23/2018	40.64	4/23/2019	23.10	4/22/2020	14.21
4/24/2017		4/24/2018	41.74	4/24/2019	19.33	4/23/2020	21.41
4/25/2017		4/25/2018	36.88	4/25/2019	18.94	4/24/2020	25.47
4/26/2017		4/26/2018	35.39	4/26/2019	25.08	4/25/2020	28.77
4/27/2017		4/27/2018	31.28	4/27/2019	22.91	4/26/2020	26.43
4/28/2017		4/28/2018	35.76	4/28/2019	19.21	4/27/2020	21.17
4/29/2017		4/29/2018	30.38	4/29/2019	19.21	4/28/2020	16.64
4/30/2017		4/30/2018	21.52	4/30/2019	18.44	4/29/2020	17.96
5/1/2017		5/1/2018	21.90	5/1/2019	15.87	4/30/2020	15.27
5/2/2017		5/2/2018	20.72	5/2/2019	10.62	5/1/2020	15.86
5/3/2017		5/3/2018	18.76	5/3/2019	18.02	5/2/2020	16.37
5/4/2017		5/4/2018	18.74	5/4/2019	10.77	5/3/2020	19.99
5/5/2017		5/5/2018	19.10	5/5/2019	11.55	5/4/2020	15.65
5/6/2017		5/6/2018	24.82	5/6/2019	17.32	5/5/2020	16.10
5/7/2017		5/7/2018	27.01	5/7/2019	22.01	5/6/2020	10.73
5/8/2017		5/8/2018	22.69	5/8/2019	26.03	5/7/2020	14.40
5/9/2017		5/9/2018	11.50	5/9/2019	28.41	5/8/2020	18.63
5/10/2017		5/10/2018	15.53	5/10/2019	24.36	5/9/2020	16.77
5/11/2017		5/11/2018	21.22	5/11/2019	21.77	5/10/2020	23.10
5/12/2017		5/12/2018	21.56	5/12/2019	15.83	5/11/2020	29.18
5/13/2017		5/13/2018	19.94	5/13/2019	17.26	5/12/2020	22.87
5/14/2017		5/14/2018	9.66	5/14/2019	15.66	5/13/2020	21.36
5/15/2017		5/15/2018	15.27	5/15/2019	16.76	5/14/2020	29.56
5/16/2017		5/16/2018	19.96	5/16/2019	15.02	5/15/2020	31.46
5/17/2017		5/17/2018	16.51	5/17/2019	14.48	5/16/2020	30.58
5/18/2017		5/18/2018	25.73	5/18/2019	13.61	5/17/2020	22.80
5/19/2017		5/19/2018	24.18	5/19/2019	13.84	5/18/2020	25.17
5/20/2017		5/20/2018	23.44	5/20/2019	17.31	5/19/2020	20.91
5/21/2017		5/21/2018	24.84	5/21/2019	19.06	5/20/2020	21.97

5/22/2017		5/22/2018	26.28	5/22/2019	18.50	5/21/2020	20.85
5/23/2017		5/23/2018	21.51	5/23/2019	14.27	5/22/2020	19.88
5/24/2017		5/24/2018	19.85	5/24/2019	15.86	5/23/2020	17.52
5/25/2017		5/25/2018	21.76	5/25/2019	9.10	5/24/2020	21.59
5/26/2017		5/26/2018	27.64	5/26/2019	9.59	5/25/2020	28.51
5/27/2017		5/27/2018	28.23	5/27/2019	10.63	5/26/2020	28.35
5/28/2017		5/28/2018	17.31	5/28/2019	11.22	5/27/2020	26.89
5/29/2017		5/29/2018	21.41	5/29/2019	13.92	5/28/2020	0.11
5/30/2017		5/30/2018	25.23	5/30/2019	18.45	5/29/2020	0.11
5/31/2017		5/31/2018	33.47	5/31/2019	14.74	5/30/2020	4.98
6/1/2017		6/1/2018	19.47	6/1/2019	9.38	5/31/2020	17.30
6/2/2017		6/2/2018	25.44	6/2/2019	9.27	6/1/2020	2.52
6/3/2017		6/3/2018	23.07	6/3/2019	8.73	6/2/2020	2.64
6/4/2017		6/4/2018	28.55	6/4/2019	8.14	6/3/2020	15.23
6/5/2017		6/5/2018	21.11	6/5/2019	6.81	6/4/2020	26.32
6/6/2017		6/6/2018	20.56	6/6/2019	6.55	6/5/2020	15.95
6/7/2017		6/7/2018	26.94	6/7/2019	4.09	6/6/2020	8.28
6/8/2017		6/8/2018	24.20	6/8/2019	6.89	6/7/2020	8.17
6/9/2017		6/9/2018	21.98	6/9/2019	7.50	6/8/2020	8.86
6/10/2017		6/10/2018	14.38	6/10/2019	10.79	6/9/2020	15.28
6/11/2017		6/11/2018	20.16	6/11/2019	11.28	6/10/2020	18.71
6/12/2017		6/12/2018	25.72	6/12/2019	7.70	6/11/2020	17.43
6/13/2017		6/13/2018	40.48	6/13/2019	9.59	6/12/2020	10.73
6/14/2017		6/14/2018	22.82	6/14/2019	9.22	6/13/2020	5.48
6/15/2017		6/15/2018	25.32	6/15/2019	8.16	6/14/2020	4.01
6/16/2017		6/16/2018	22.58	6/16/2019	10.16	6/15/2020	4.95
6/17/2017		6/17/2018	29.60	6/17/2019	10.05	6/16/2020	5.25
6/18/2017		6/18/2018	26.56	6/18/2019	6.95	6/17/2020	5.43
6/19/2017		6/19/2018	18.19	6/19/2019	6.94	6/18/2020	5.14
6/20/2017		6/20/2018	21.63	6/20/2019	4.91	6/19/2020	8.46
6/21/2017		6/21/2018	28.33	6/21/2019	5.07	6/20/2020	14.29
6/22/2017		6/22/2018	32.01	6/22/2019	5.33	6/21/2020	13.60
6/23/2017		6/23/2018	46.88	6/23/2019	6.13	6/22/2020	5.74
6/24/2017		6/24/2018	35.36	6/24/2019		6/23/2020	8.39
6/25/2017		6/25/2018	28.97	6/25/2019		6/24/2020	8.89
6/26/2017		6/26/2018	36.09	6/26/2019		6/25/2020	11.67
6/27/2017		6/27/2018	25.04	6/27/2019		6/26/2020	5.01
6/28/2017		6/28/2018	7.76	6/28/2019		6/27/2020	8.53
6/29/2017		6/29/2018	13.94	6/29/2019	9.03	6/28/2020	9.33
6/30/2017		6/30/2018	14.11	6/30/2019	9.87	6/29/2020	7.82
7/1/2017		7/1/2018	27.00	7/1/2019	7.75	6/30/2020	13.97
7/2/2017		7/2/2018	25.44	7/2/2019	4.17	7/1/2020	15.52
7/3/2017		7/3/2018	25.27	7/3/2019	1.94	7/2/2020	14.75

7/4/2017		7/4/2018	15.33	7/4/2019	3.43	7/3/2020	15.84
7/5/2017		7/5/2018	20.35	7/5/2019		7/4/2020	10.87
7/6/2017		7/6/2018	24.94	7/6/2019	1.42	7/5/2020	6.62
7/7/2017		7/7/2018	25.60	7/7/2019	1.87	7/6/2020	4.69
7/8/2017		7/8/2018	30.99	7/8/2019	2.19	7/7/2020	4.20
7/9/2017		7/9/2018	19.04	7/9/2019	2.25	7/8/2020	4.37
7/10/2017		7/10/2018	20.03	7/10/2019	2.17	7/9/2020	7.32
7/11/2017		7/11/2018	11.01	7/11/2019	1.22	7/10/2020	4.70
7/12/2017		7/12/2018	12.85	7/12/2019	2.12	7/11/2020	4.55
7/13/2017		7/13/2018	10.45	7/13/2019	2.61	7/12/2020	8.01
7/14/2017		7/14/2018	9.70	7/14/2019	4.20	7/13/2020	7.93
7/15/2017		7/15/2018	15.92	7/15/2019	5.72	7/14/2020	7.10
7/16/2017		7/16/2018	17.28	7/16/2019	4.86	7/15/2020	7.81
7/17/2017		7/17/2018	18.77	7/17/2019	4.64	7/16/2020	6.19
7/18/2017		7/18/2018	11.25	7/18/2019	3.16	7/17/2020	7.45
7/19/2017		7/19/2018	14.14	7/19/2019	3.79	7/18/2020	9.14
7/20/2017		7/20/2018	17.21	7/20/2019	4.30	7/19/2020	7.59
7/21/2017		7/21/2018	14.78	7/21/2019	5.13	7/20/2020	7.27
7/22/2017		7/22/2018	15.53	7/22/2019	5.29	7/21/2020	6.15
7/23/2017		7/23/2018	13.26	7/23/2019	4.91	7/22/2020	4.09
7/24/2017		7/24/2018	14.64	7/24/2019	3.78	7/23/2020	3.97
7/25/2017		7/25/2018	12.47	7/25/2019	1.83	7/24/2020	4.66
7/26/2017		7/26/2018	12.86	7/26/2019	2.44	7/25/2020	6.03
7/27/2017		7/27/2018	13.14	7/27/2019	1.53	7/26/2020	7.82
7/28/2017		7/28/2018	6.82	7/28/2019	1.65	7/27/2020	7.58
7/29/2017		7/29/2018	12.07	7/29/2019	2.35	7/28/2020	8.62
7/30/2017		7/30/2018	17.61	7/30/2019	2.12	7/29/2020	8.02
7/31/2017		7/31/2018	9.13	7/31/2019	2.89	7/30/2020	6.57
8/1/2017		8/1/2018	10.60	8/1/2019	3.70	7/31/2020	6.93
8/2/2017		8/2/2018	13.02	8/2/2019	3.10	8/1/2020	6.46
8/3/2017		8/3/2018	12.98	8/3/2019	2.69	8/2/2020	3.68
8/4/2017		8/4/2018	9.59	8/4/2019	2.61	8/3/2020	5.70
8/5/2017		8/5/2018	15.97	8/5/2019	2.86	8/4/2020	4.84
8/6/2017	18.66936	8/6/2018	15.45	8/6/2019	2.43	8/5/2020	2.13
8/7/2017	14.66847	8/7/2018	21.54	8/7/2019	1.38	8/6/2020	1.62
8/8/2017		8/8/2018	10.27	8/8/2019	1.57	8/7/2020	1.44
8/9/2017		8/9/2018	10.86	8/9/2019	1.43	8/8/2020	2.71
8/10/2017		8/10/2018	10.99	8/10/2019	2.25	8/9/2020	2.47
8/11/2017		8/11/2018	5.40	8/11/2019	1.86	8/10/2020	1.40
8/12/2017		8/12/2018	6.87	8/12/2019	2.52	8/11/2020	0.76
8/13/2017		8/13/2018	5.64	8/13/2019	1.95	8/12/2020	0.89
8/14/2017	8.181156	8/14/2018	5.99	8/14/2019	2.13	8/13/2020	0.55
8/15/2017	9.898471	8/15/2018	4.57	8/15/2019	1.86	8/14/2020	0.11

8/16/2017	7.867601	8/16/2018	5.14	8/16/2019	2.42	8/15/2020	0.10
8/17/2017	24.06519	8/17/2018	7.30	8/17/2019	2.52	8/16/2020	0.11
8/18/2017	53.95506	8/18/2018	4.93	8/18/2019	2.81	8/17/2020	0.10
8/19/2017	44.78404	8/19/2018	7.38	8/19/2019	2.97	8/18/2020	
8/20/2017	22.41374	8/20/2018	8.22	8/20/2019	3.58	8/19/2020	
8/21/2017	23.38286	8/21/2018	4.03	8/21/2019	4.91	8/20/2020	0.11
8/22/2017	37.97785	8/22/2018	4.60	8/22/2019	4.93	8/21/2020	0.11
8/23/2017	38.73507	8/23/2018	3.70	8/23/2019	4.65	8/22/2020	0.11
8/24/2017	30.36986	8/24/2018	4.61	8/24/2019	1.97	8/23/2020	0.11
8/25/2017	23.11382	8/25/2018	4.50	8/25/2019	2.46	8/24/2020	0.11
8/26/2017	20.21989	8/26/2018	5.02	8/26/2019	3.11	8/25/2020	0.10
8/27/2017	16.74978	8/27/2018	4.06	8/27/2019	3.74	8/26/2020	0.11
8/28/2017	26.89024	8/28/2018	3.75	8/28/2019	4.13	8/27/2020	0.10
8/29/2017	16.7274	8/29/2018	5.46	8/29/2019	4.43	8/28/2020	0.10
8/30/2017	18.05231	8/30/2018	4.81	8/30/2019	3.43	8/29/2020	0.11
8/31/2017	26.36769	8/31/2018	4.98	8/31/2019	2.81	8/30/2020	0.11
9/1/2017	24.53399	9/1/2018	4.78	9/1/2019	4.39	8/31/2020	0.11
9/2/2017	25.32056	9/2/2018	3.15	9/2/2019	3.59	9/1/2020	0.10
9/3/2017	19.91301	9/3/2018	3.91	9/3/2019	3.38	9/2/2020	0.11
9/4/2017	25.77043	9/4/2018	6.57	9/4/2019	2.06	9/3/2020	0.11
9/5/2017	40.30634	9/5/2018	6.25	9/5/2019	1.95	9/4/2020	0.11
9/6/2017	44.82914	9/6/2018	4.21	9/6/2019	1.84	9/5/2020	0.11
9/7/2017	33.51317	9/7/2018	2.82	9/7/2019	2.39	9/6/2020	0.11
9/8/2017	43.46745	9/8/2018	4.16	9/8/2019	2.31	9/7/2020	0.11
9/9/2017	40.00428	9/9/2018	5.44	9/9/2019	1.65	9/8/2020	188.31
9/10/2017	43.37942	9/10/2018	5.31	9/10/2019	2.75	9/9/2020	370.02
9/11/2017	27.93324	9/11/2018	4.94	9/11/2019	5.36	9/10/2020	372.23
9/12/2017	33.91993	9/12/2018	4.82	9/12/2019	3.46	9/11/2020	
9/13/2017	24.90724	9/13/2018	6.14	9/13/2019	1.70	9/12/2020	
9/14/2017	37.60547	9/14/2018	7.82	9/14/2019	2.98	9/13/2020	
9/15/2017	41.37268	9/15/2018	6.69	9/15/2019	4.77	9/14/2020	
9/16/2017	54.34754	9/16/2018	6.86	9/16/2019	4.52	9/15/2020	18.32
9/17/2017	48.63135	9/17/2018	6.82	9/17/2019	4.31	9/16/2020	25.06
9/18/2017	14.83372	9/18/2018	7.04	9/18/2019	3.62	9/17/2020	21.64
9/19/2017	25.35804	9/19/2018	7.66	9/19/2019	8.46	9/18/2020	17.85
9/20/2017	16.5095	9/20/2018	6.84	9/20/2019	5.54	9/19/2020	18.52
9/21/2017	29.31646	9/21/2018	4.68	9/21/2019	3.08	9/20/2020	13.32
9/22/2017	22.31946	9/22/2018	3.82	9/22/2019	5.14	9/21/2020	13.27
9/23/2017	29.61324	9/23/2018	4.78	9/23/2019	6.11	9/22/2020	12.50
9/24/2017	26.87299	9/24/2018	6.29	9/24/2019	5.94	9/23/2020	6.99
9/25/2017	39.77607	9/25/2018	8.18	9/25/2019	2.95	9/24/2020	7.64
9/26/2017	53.82525	9/26/2018	6.81	9/26/2019	1.37	9/25/2020	4.33
9/27/2017	31.90151	9/27/2018	5.98	9/27/2019	1.45	9/26/2020	7.12

9/28/2017	42.85624	9/28/2018	6.53	9/28/2019	1.41	9/27/2020	10.17
9/29/2017	36.17053	9/29/2018	8.38	9/29/2019	1.83	9/28/2020	17.28
9/30/2017	21.72589	9/30/2018	10.77	9/30/2019	1.88	9/29/2020	20.81
10/1/2017	10.24899	10/1/2018	11.21	10/1/2019	1.81	9/30/2020	25.69
10/2/2017	12.52743	10/2/2018	9.45	10/2/2019	3.20	10/1/2020	28.06
10/3/2017	16.02667	10/3/2018	11.06	10/3/2019	4.33	10/2/2020	29.25
10/4/2017	19.93428	10/4/2018	10.68	10/4/2019	4.91	10/3/2020	29.60
10/5/2017	22.87656	10/5/2018	11.30	10/5/2019	5.15	10/4/2020	26.06
10/6/2017	26.41565	10/6/2018	10.03	10/6/2019	6.76	10/5/2020	25.07
10/7/2017	23.89222	10/7/2018	9.73	10/7/2019	7.26	10/6/2020	24.02
10/8/2017	29.24973	10/8/2018	10.43	10/8/2019	8.14	10/7/2020	23.07
10/9/2017	20.40972	10/9/2018	10.95	10/9/2019	4.25	10/8/2020	22.37
10/10/2017	20.52869	10/10/2018	12.96	10/10/2019	4.93	10/9/2020	21.24
10/11/2017	23.87222	10/11/2018	11.29	10/11/2019	6.78	10/10/2020	23.28
10/12/2017	21.41664	10/12/2018	8.27	10/12/2019	8.22	10/11/2020	22.93
10/13/2017	25.88124	10/13/2018	6.49	10/13/2019	10.60	10/12/2020	24.75
10/14/2017	35.51192	10/14/2018	8.34	10/14/2019	11.06	10/13/2020	28.18
10/15/2017	65.67848	10/15/2018	11.49	10/15/2019	10.37	10/14/2020	33.76
10/16/2017	57.71138	10/16/2018	16.59	10/16/2019	8.73	10/15/2020	34.00
10/17/2017	43.22619	10/17/2018	20.05	10/17/2019	8.57	10/16/2020	24.87
10/18/2017	30.88381	10/18/2018	17.57	10/18/2019	10.55	10/17/2020	20.87
10/19/2017	26.97783	10/19/2018	15.51	10/19/2019	11.81	10/18/2020	23.90
10/20/2017	23.7202	10/20/2018	14.90	10/20/2019	13.77	10/19/2020	31.59
10/21/2017	19.70298	10/21/2018	14.87	10/21/2019	11.80	10/20/2020	37.68
10/22/2017	27.37614	10/22/2018	12.92	10/22/2019	10.18	10/21/2020	35.80
10/23/2017	37.75156	10/23/2018	13.78	10/23/2019	15.11	10/22/2020	39.48
10/24/2017	32.83252	10/24/2018	15.00	10/24/2019	13.52	10/23/2020	30.95
10/25/2017	42.73838	10/25/2018	18.04	10/25/2019	18.28	10/24/2020	30.21
10/26/2017	59.03463	10/26/2018	14.37	10/26/2019	14.04	10/25/2020	29.56
10/27/2017	50.60385	10/27/2018	12.32	10/27/2019	11.09	10/26/2020	31.10
10/28/2017	40.12605	10/28/2018	11.30	10/28/2019	12.63	10/27/2020	34.09
10/29/2017	26.00372	10/29/2018	11.46	10/29/2019	10.33	10/28/2020	25.44
10/30/2017	23.60496	10/30/2018	9.19	10/30/2019	9.70	10/29/2020	24.60
10/31/2017	34.85943	10/31/2018	14.64	10/31/2019	9.99	10/30/2020	20.71
11/1/2017	30.80491	11/1/2018	12.94	11/1/2019	16.83	10/31/2020	23.08
11/2/2017	28.53942	11/2/2018	9.50	11/2/2019	14.90	11/1/2020	21.93
11/3/2017	30.56955	11/3/2018	11.16	11/3/2019	12.33	11/2/2020	34.39
11/4/2017	29.71443	11/4/2018	15.18	11/4/2019	10.32	11/3/2020	37.81
11/5/2017	27.63056	11/5/2018	16.04	11/5/2019	10.09	11/4/2020	43.09
11/6/2017	29.65464	11/6/2018	14.21	11/6/2019		11/5/2020	61.22
11/7/2017	23.83795	11/7/2018	15.46	11/7/2019		11/6/2020	63.40
11/8/2017	26.7244	11/8/2018	18.30	11/8/2019		11/7/2020	63.60
11/9/2017	22.16984	11/9/2018	18.16	11/9/2019		11/8/2020	48.23

11/10/2017	23.58265	11/10/2018	14.26	11/10/2019	21.81	11/9/2020	38.66
11/11/2017	27.16186	11/11/2018	13.64	11/11/2019	29.54	11/10/2020	36.38
11/12/2017	38.00853	11/12/2018	16.00	11/12/2019	33.45	11/11/2020	31.78
11/13/2017	42.46521	11/13/2018	20.76	11/13/2019	37.30	11/12/2020	26.11
11/14/2017	39.40069	11/14/2018	20.39	11/14/2019	32.17	11/13/2020	28.60
11/15/2017	49.72289	11/15/2018	19.76	11/15/2019	27.56	11/14/2020	31.28
11/16/2017	43.85327	11/16/2018	19.90	11/16/2019	32.80	11/15/2020	27.57
11/17/2017	35.61218	11/17/2018	19.31	11/17/2019	34.17	11/16/2020	57.98
11/18/2017	34.63042	11/18/2018	21.73	11/18/2019	45.61	11/17/2020	31.67
11/19/2017	28.86348	11/19/2018	30.66	11/19/2019	59.29	11/18/2020	29.29
11/20/2017	39.79153	11/20/2018	35.13	11/20/2019	60.01	11/19/2020	31.05
11/21/2017	39.28639	11/21/2018	38.92	11/21/2019	58.62	11/20/2020	41.00
11/22/2017	44.24771	11/22/2018	28.40	11/22/2019	49.94	11/21/2020	46.01
11/23/2017	47.955	11/23/2018	22.47	11/23/2019	52.89	11/22/2020	46.68
11/24/2017	49.39194	11/24/2018	21.44	11/24/2019	55.65	11/23/2020	54.08
11/25/2017	50.71903	11/25/2018	22.61	11/25/2019	57.22	11/24/2020	51.95
11/26/2017	54.32313	11/26/2018	21.07	11/26/2019	58.91	11/25/2020	57.78
11/27/2017	43.41743	11/27/2018	19.52	11/27/2019	51.24	11/26/2020	48.14
11/28/2017	52.39401	11/28/2018	17.43	11/28/2019	36.06	11/27/2020	62.66
11/29/2017	68.52076	11/29/2018	15.20	11/29/2019	41.67	11/28/2020	51.89
11/30/2017	82.63472	11/30/2018	15.34	11/30/2019	33.80	11/29/2020	44.92
12/1/2017	72.25167	12/1/2018	18.48	12/1/2019	31.00	11/30/2020	45.78
12/2/2017	51.13472	12/2/2018	20.05	12/2/2019	40.43	12/1/2020	41.91
12/3/2017	41.17292	12/3/2018	23.96	12/3/2019	47.43	12/2/2020	36.93
12/4/2017	42.82021	12/4/2018	24.77	12/4/2019	56.00	12/3/2020	35.58
12/5/2017	39.77208	12/5/2018	27.53	12/5/2019	54.26	12/4/2020	45.67
12/6/2017	35.56653	12/6/2018	21.64	12/6/2019	48.46	12/5/2020	50.47
12/7/2017	41.1084	12/7/2018	22.25	12/7/2019	40.23	12/6/2020	55.34
12/8/2017	47.88243	12/8/2018	22.55	12/8/2019	34.75	12/7/2020	65.06
12/9/2017	38.58965	12/9/2018	19.86	12/9/2019	38.02	12/8/2020	74.39
12/10/2017	41.14521	12/10/2018	15.57	12/10/2019	43.36	12/9/2020	76.83
12/11/2017	45.03243	12/11/2018	15.06	12/11/2019	41.43	12/10/2020	68.76
12/12/2017	38.29625	12/12/2018	14.46	12/12/2019	57.14	12/11/2020	63.36
12/13/2017	43.10215	12/13/2018	15.34	12/13/2019	51.64	12/12/2020	61.15
12/14/2017	43.9691	12/14/2018	19.80	12/14/2019	21.31	12/13/2020	50.01
12/15/2017	42.96683	12/15/2018	19.35	12/15/2019	33.78	12/14/2020	44.46
12/16/2017	57.2675	12/16/2018	20.08	12/16/2019	34.00	12/15/2020	48.05
12/17/2017	54.08597	12/17/2018	38.23	12/17/2019	41.07	12/16/2020	53.45
12/18/2017	62.2525	12/18/2018	34.92	12/18/2019	33.31	12/17/2020	53.67
12/19/2017	60.97333	12/19/2018	40.83	12/19/2019	40.42	12/18/2020	54.28
12/20/2017	57.00993	12/20/2018	39.51	12/20/2019	43.98	12/19/2020	68.28
12/21/2017	52.92132	12/21/2018	34.31	12/21/2019	49.20	12/20/2020	68.45
12/22/2017	50.14632	12/22/2018	30.59	12/22/2019	44.74	12/21/2020	67.52

12/23/2017	59.72646	12/23/2018	24.17	12/23/2019	41.29	12/22/2020	52.37
12/24/2017	49.90292	12/24/2018	22.24	12/24/2019	40.33	12/23/2020	60.20
12/25/2017	53.79257	12/25/2018	20.63	12/25/2019	45.51	12/24/2020	67.40
12/26/2017	62.64958	12/26/2018	21.23	12/26/2019	40.55	12/25/2020	61.17
12/27/2017	58.34097	12/27/2018	28.80	12/27/2019	45.97	12/26/2020	66.36
12/28/2017	47.38296	12/28/2018	31.39	12/28/2019	59.36	12/27/2020	66.88
12/29/2017	49.57626	12/29/2018	36.29	12/29/2019	56.67	12/28/2020	69.60
12/30/2017	51.27618	12/30/2018	35.15	12/30/2019	52.37	12/29/2020	63.66
12/31/2017	53.30458	12/31/2018	34.03	12/31/2019	59.83	12/30/2020	79.47
						12/31/2016	86.72

PM_{2.5}

date	value	date	value	date	value	date	value
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1/3/2017		1/3/2018	51.74	1/3/2019	29.29	1/3/2020	76.58
1/4/2017		1/4/2018	50.68	1/4/2019	28.38	1/4/2020	57.46
1/5/2017		1/5/2018	54.94	1/5/2019	39.73	1/5/2020	29.05
1/6/2017		1/6/2018	54.00	1/6/2019	41.83	1/6/2020	49.03
1/7/2017		1/7/2018	47.48	1/7/2019	33.18	1/7/2020	64.43
1/8/2017		1/8/2018	52.71	1/8/2019	30.94	1/8/2020	65.95
1/9/2017		1/9/2018	72.66	1/9/2019	34.34	1/9/2020	58.93
1/10/2017		1/10/2018	76.39	1/10/2019	41.59	1/10/2020	51.63
1/11/2017		1/11/2018	72.88	1/11/2019	45.71	1/11/2020	53.90
1/12/2017		1/12/2018	97.29	1/12/2019	49.74	1/12/2020	62.77
1/13/2017		1/13/2018	68.11	1/13/2019	43.70	1/13/2020	58.61
1/14/2017		1/14/2018	58.61	1/14/2019	37.31	1/14/2020	55.19
1/15/2017		1/15/2018	59.12	1/15/2019	35.81	1/15/2020	58.29
1/16/2017		1/16/2018	61.39	1/16/2019	41.18	1/16/2020	66.80
1/17/2017		1/17/2018	71.52	1/17/2019	39.53	1/17/2020	28.95
1/18/2017		1/18/2018	70.35	1/18/2019	38.91	1/18/2020	47.16
1/19/2017		1/19/2018	71.94	1/19/2019	35.53	1/19/2020	50.64
1/20/2017		1/20/2018	67.16	1/20/2019	34.49	1/20/2020	57.06
1/21/2017		1/21/2018	52.47	1/21/2019	33.23	1/21/2020	76.51
1/22/2017		1/22/2018	72.44	1/22/2019	38.57	1/22/2020	58.31
1/23/2017		1/23/2018	70.78	1/23/2019	20.19	1/23/2020	54.76
1/24/2017		1/24/2018	45.18	1/24/2019	28.74	1/24/2020	50.09
1/25/2017		1/25/2018	60.71	1/25/2019	23.53	1/25/2020	68.85
1/26/2017		1/26/2018	65.86	1/26/2019	18.38	1/26/2020	69.40
1/27/2017		1/27/2018	58.61	1/27/2019	24.65	1/27/2020	71.25

1/28/2017		1/28/2018	63.01	1/28/2019	24.84	1/28/2020	75.67
1/29/2017		1/29/2018	78.58	1/29/2019	25.46	1/29/2020	50.60
1/30/2017		1/30/2018	75.52	1/30/2019	26.16	1/30/2020	54.60
1/31/2017		1/31/2018	91.28	1/31/2019	36.48	1/31/2020	56.87
2/1/2017		2/1/2018	86.20	2/1/2019	36.52	2/1/2020	52.62
2/2/2017		2/2/2018	99.20	2/2/2019	31.64	2/2/2020	55.71
2/3/2017		2/3/2018	79.72	2/3/2019	27.16	2/3/2020	65.09
2/4/2017		2/4/2018	76.69	2/4/2019	31.72	2/4/2020	66.12
2/5/2017		2/5/2018	71.89	2/5/2019	33.71	2/5/2020	67.86
2/6/2017		2/6/2018	73.67	2/6/2019	40.09	2/6/2020	66.79
2/7/2017		2/7/2018	76.39	2/7/2019	30.51	2/7/2020	73.81
2/8/2017		2/8/2018	60.25	2/8/2019	16.05	2/8/2020	67.65
2/9/2017		2/9/2018	50.77	2/9/2019	9.73	2/9/2020	66.87
2/10/2017		2/10/2018	54.72	2/10/2019	17.77	2/10/2020	63.28
2/11/2017		2/11/2018	59.00	2/11/2019	20.32	2/11/2020	64.27
2/12/2017		2/12/2018	76.00	2/12/2019	24.61	2/12/2020	68.74
2/13/2017		2/13/2018	54.45	2/13/2019	25.67	2/13/2020	67.43
2/14/2017		2/14/2018	54.95	2/14/2019	35.32	2/14/2020	65.29
2/15/2017		2/15/2018	47.48	2/15/2019	29.26	2/15/2020	79.67
2/16/2017		2/16/2018	57.32	2/16/2019	20.01	2/16/2020	97.91
2/17/2017		2/17/2018	59.72	2/17/2019	17.91	2/17/2020	97.23
2/18/2017		2/18/2018	53.25	2/18/2019	20.68	2/18/2020	85.64
2/19/2017		2/19/2018	58.33	2/19/2019	21.46	2/19/2020	80.14
2/20/2017		2/20/2018	54.37	2/20/2019	23.49	2/20/2020	99.26
2/21/2017		2/21/2018	49.36	2/21/2019	26.82	2/21/2020	87.83
2/22/2017		2/22/2018	44.65	2/22/2019	24.01	2/22/2020	49.77
2/23/2017		2/23/2018	16.55	2/23/2019	21.15	2/23/2020	63.52
2/24/2017		2/24/2018		2/24/2019	20.13	2/24/2020	50.41
2/25/2017		2/25/2018		2/25/2019	14.03	2/25/2020	34.49
2/26/2017		2/26/2018	67.11	2/26/2019	15.07	2/26/2020	19.98
2/27/2017		2/27/2018	52.44	2/27/2019	13.56	2/27/2020	28.61
2/28/2017		2/28/2018	3.90	2/28/2019	5.76	2/28/2020	34.50
3/1/2017		3/1/2018	2.85	3/1/2019	12.53	2/29/2020	38.12
3/2/2017		3/2/2018		3/2/2019	16.83	3/1/2020	45.21
3/3/2017		3/3/2018		3/3/2019	18.83	3/2/2020	44.25
3/4/2017		3/4/2018	0.10	3/4/2019	17.56	3/3/2020	47.68
3/5/2017		3/5/2018	0.18	3/5/2019	15.07	3/4/2020	44.33
3/6/2017		3/6/2018	0.15	3/6/2019	17.15	3/5/2020	46.11
3/7/2017		3/7/2018	0.31	3/7/2019	20.24	3/6/2020	47.61
3/8/2017		3/8/2018		3/8/2019	35.91	3/7/2020	34.62
3/9/2017		3/9/2018		3/9/2019	19.50	3/8/2020	38.04
3/10/2017		3/10/2018		3/10/2019	12.76	3/9/2020	41.94
3/11/2017		3/11/2018		3/11/2019	14.05	3/10/2020	44.57

3/12/2017		3/12/2018		3/12/2019		3/11/2020	45.62
3/13/2017		3/13/2018	63.30	3/13/2019	14.47	3/12/2020	39.23
3/14/2017		3/14/2018	64.12	3/14/2019	18.80	3/13/2020	55.92
3/15/2017		3/15/2018	72.88	3/15/2019		3/14/2020	39.90
3/16/2017		3/16/2018		3/16/2019		3/15/2020	33.40
3/17/2017		3/17/2018		3/17/2019		3/16/2020	38.11
3/18/2017		3/18/2018		3/18/2019		3/17/2020	47.50
3/19/2017		3/19/2018	74.44	3/19/2019		3/18/2020	49.12
3/20/2017		3/20/2018	82.77	3/20/2019		3/19/2020	59.02
3/21/2017		3/21/2018	72.21	3/21/2019		3/20/2020	46.11
3/22/2017		3/22/2018	61.57	3/22/2019		3/21/2020	40.06
3/23/2017		3/23/2018	55.17	3/23/2019		3/22/2020	38.86
3/24/2017		3/24/2018	65.31	3/24/2019		3/23/2020	29.89
3/25/2017		3/25/2018	75.28	3/25/2019		3/24/2020	35.41
3/26/2017		3/26/2018	85.29	3/26/2019		3/25/2020	39.78
3/27/2017		3/27/2018	76.79	3/27/2019		3/26/2020	53.24
3/28/2017		3/28/2018	77.62	3/28/2019		3/27/2020	43.81
3/29/2017		3/29/2018	42.37	3/29/2019		3/28/2020	22.86
3/30/2017		3/30/2018	23.09	3/30/2019		3/29/2020	29.83
3/31/2017		3/31/2018	24.55	3/31/2019	105.33	3/30/2020	27.33
4/1/2017		4/1/2018	34.46	4/1/2019	137.20	3/31/2020	36.27
4/2/2017		4/2/2018	41.33	4/2/2019	24.71	4/1/2020	36.41
4/3/2017		4/3/2018	42.90	4/3/2019	20.29	4/2/2020	30.00
4/4/2017		4/4/2018	36.33	4/4/2019	24.01	4/3/2020	34.06
4/5/2017		4/5/2018	27.26	4/5/2019	31.31	4/4/2020	41.10
4/6/2017		4/6/2018	31.61	4/6/2019	18.84	4/5/2020	51.64
4/7/2017		4/7/2018	33.12	4/7/2019	7.57	4/6/2020	57.12
4/8/2017		4/8/2018	34.68	4/8/2019	12.60	4/7/2020	55.38
4/9/2017		4/9/2018	38.23	4/9/2019	13.14	4/8/2020	58.16
4/10/2017		4/10/2018	27.87	4/10/2019	9.91	4/9/2020	39.34
4/11/2017		4/11/2018	25.36	4/11/2019	13.08	4/10/2020	56.61
4/12/2017		4/12/2018	27.62	4/12/2019	15.73	4/11/2020	89.70
4/13/2017		4/13/2018	24.22	4/13/2019	19.12	4/12/2020	77.88
4/14/2017		4/14/2018	29.03	4/14/2019	17.58	4/13/2020	64.25
4/15/2017		4/15/2018	43.12	4/15/2019	14.67	4/14/2020	45.95
4/16/2017		4/16/2018		4/16/2019	15.58	4/15/2020	22.08
4/17/2017		4/17/2018	32.52	4/17/2019	9.50	4/16/2020	37.44
4/18/2017		4/18/2018	38.16	4/18/2019	14.42	4/17/2020	36.69
4/19/2017		4/19/2018	34.32	4/19/2019	12.50	4/18/2020	28.39
4/20/2017		4/20/2018	32.06	4/20/2019	16.07	4/19/2020	20.17
4/21/2017		4/21/2018	31.95	4/21/2019	23.99	4/20/2020	20.13
4/22/2017		4/22/2018	35.40	4/22/2019	28.67	4/21/2020	12.52
4/23/2017		4/23/2018	53.86	4/23/2019	25.22	4/22/2020	15.52

4/24/2017		4/24/2018	51.18	4/24/2019	21.54	4/23/2020	23.31
4/25/2017		4/25/2018	43.82	4/25/2019	20.67	4/24/2020	27.45
4/26/2017		4/26/2018	41.31	4/26/2019	27.06	4/25/2020	30.77
4/27/2017		4/27/2018	34.54	4/27/2019	24.92	4/26/2020	28.44
4/28/2017		4/28/2018	37.07	4/28/2019	21.34	4/27/2020	22.85
4/29/2017		4/29/2018	31.65	4/29/2019	22.02	4/28/2020	18.27
4/30/2017		4/30/2018	23.08	4/30/2019	21.49	4/29/2020	19.34
5/1/2017		5/1/2018	24.11	5/1/2019	20.47	4/30/2020	16.82
5/2/2017		5/2/2018	22.73	5/2/2019	13.22	5/1/2020	17.19
5/3/2017		5/3/2018	19.87	5/3/2019	19.92	5/2/2020	17.85
5/4/2017		5/4/2018	20.28	5/4/2019	12.04	5/3/2020	21.84
5/5/2017		5/5/2018	21.52	5/5/2019	13.50	5/4/2020	17.29
5/6/2017		5/6/2018	27.25	5/6/2019	20.95	5/5/2020	17.96
5/7/2017		5/7/2018	30.38	5/7/2019	26.17	5/6/2020	12.28
5/8/2017		5/8/2018	30.15	5/8/2019	29.81	5/7/2020	15.88
5/9/2017		5/9/2018	16.34	5/9/2019	32.74	5/8/2020	20.79
5/10/2017		5/10/2018	18.93	5/10/2019	28.71	5/9/2020	19.44
5/11/2017		5/11/2018	25.20	5/11/2019	26.27	5/10/2020	26.00
5/12/2017		5/12/2018	25.71	5/12/2019	18.92	5/11/2020	32.88
5/13/2017		5/13/2018	23.54	5/13/2019	18.95	5/12/2020	26.27
5/14/2017		5/14/2018	10.97	5/14/2019	18.06	5/13/2020	25.33
5/15/2017		5/15/2018	17.39	5/15/2019	18.34	5/14/2020	33.60
5/16/2017		5/16/2018	21.90	5/16/2019	16.00	5/15/2020	34.91
5/17/2017		5/17/2018	18.14	5/17/2019	16.69	5/16/2020	35.46
5/18/2017		5/18/2018	27.51	5/18/2019	16.87	5/17/2020	28.10
5/19/2017		5/19/2018	25.87	5/19/2019	17.04	5/18/2020	29.53
5/20/2017		5/20/2018	24.57	5/20/2019	20.41	5/19/2020	24.03
5/21/2017		5/21/2018	26.92	5/21/2019	21.76	5/20/2020	25.39
5/22/2017		5/22/2018	27.83	5/22/2019	20.96	5/21/2020	22.83
5/23/2017		5/23/2018	22.90	5/23/2019	15.72	5/22/2020	22.66
5/24/2017		5/24/2018	21.63	5/24/2019	17.53	5/23/2020	20.11
5/25/2017		5/25/2018	25.23	5/25/2019	10.86	5/24/2020	25.83
5/26/2017		5/26/2018	32.19	5/26/2019	12.02	5/25/2020	33.72
5/27/2017		5/27/2018	31.81	5/27/2019	12.93	5/26/2020	31.76
5/28/2017		5/28/2018	20.68	5/28/2019	13.93	5/27/2020	29.31
5/29/2017		5/29/2018	24.71	5/29/2019	15.76	5/28/2020	0.11
5/30/2017		5/30/2018	26.91	5/30/2019	19.29	5/29/2020	0.11
5/31/2017		5/31/2018	35.59	5/31/2019	15.99	5/30/2020	5.01
6/1/2017		6/1/2018	21.34	6/1/2019	10.65	5/31/2020	17.32
6/2/2017		6/2/2018	26.90	6/2/2019	10.29	6/1/2020	2.53
6/3/2017		6/3/2018	25.25	6/3/2019	10.19	6/2/2020	2.64
6/4/2017		6/4/2018	30.71	6/4/2019	9.65	6/3/2020	18.11
6/5/2017		6/5/2018	23.08	6/5/2019	8.17	6/4/2020	31.32

6/6/2017		6/6/2018	23.58	6/6/2019	7.61	6/5/2020	18.23
6/7/2017		6/7/2018	29.32	6/7/2019	5.21	6/6/2020	9.43
6/8/2017		6/8/2018	28.42	6/8/2019	8.58	6/7/2020	9.96
6/9/2017		6/9/2018	26.49	6/9/2019	9.34	6/8/2020	10.84
6/10/2017		6/10/2018	17.17	6/10/2019	12.15	6/9/2020	19.11
6/11/2017		6/11/2018	22.74	6/11/2019	12.97	6/10/2020	23.70
6/12/2017		6/12/2018	27.31	6/12/2019	9.60	6/11/2020	21.39
6/13/2017		6/13/2018	43.40	6/13/2019	12.09	6/12/2020	13.92
6/14/2017		6/14/2018	25.82	6/14/2019	11.48	6/13/2020	7.54
6/15/2017		6/15/2018	28.71	6/15/2019	10.59	6/14/2020	5.77
6/16/2017		6/16/2018	24.57	6/16/2019	13.04	6/15/2020	6.22
6/17/2017		6/17/2018	32.57	6/17/2019	13.53	6/16/2020	6.26
6/18/2017		6/18/2018	30.12	6/18/2019	8.20	6/17/2020	7.06
6/19/2017		6/19/2018	21.90	6/19/2019	8.81	6/18/2020	6.36
6/20/2017		6/20/2018	24.21	6/20/2019	6.09	6/19/2020	9.63
6/21/2017		6/21/2018	29.79	6/21/2019	6.30	6/20/2020	16.02
6/22/2017		6/22/2018	33.45	6/22/2019	5.79	6/21/2020	16.39
6/23/2017		6/23/2018	54.57	6/23/2019	6.23	6/22/2020	6.51
6/24/2017		6/24/2018	37.45	6/24/2019		6/23/2020	11.89
6/25/2017		6/25/2018	30.14	6/25/2019		6/24/2020	13.15
6/26/2017		6/26/2018	40.97	6/26/2019		6/25/2020	13.12
6/27/2017		6/27/2018	30.75	6/27/2019		6/26/2020	6.33
6/28/2017		6/28/2018	9.13	6/28/2019		6/27/2020	10.96
6/29/2017		6/29/2018	15.70	6/29/2019	9.87	6/28/2020	11.19
6/30/2017		6/30/2018	15.21	6/30/2019	11.45	6/29/2020	10.04
7/1/2017		7/1/2018	27.47	7/1/2019	9.81	6/30/2020	19.79
7/2/2017		7/2/2018	25.62	7/2/2019	5.02	7/1/2020	21.47
7/3/2017		7/3/2018	26.47	7/3/2019	2.94	7/2/2020	20.56
7/4/2017		7/4/2018	16.22	7/4/2019	4.26	7/3/2020	20.82
7/5/2017		7/5/2018	21.76	7/5/2019		7/4/2020	13.20
7/6/2017		7/6/2018	26.48	7/6/2019	1.61	7/5/2020	9.48
7/7/2017		7/7/2018	27.35	7/7/2019	2.22	7/6/2020	5.78
7/8/2017		7/8/2018	32.24	7/8/2019	2.43	7/7/2020	5.72
7/9/2017		7/9/2018	19.71	7/9/2019	2.47	7/8/2020	6.22
7/10/2017		7/10/2018	20.53	7/10/2019	2.36	7/9/2020	8.75
7/11/2017		7/11/2018	11.84	7/11/2019	1.62	7/10/2020	5.49
7/12/2017		7/12/2018	13.41	7/12/2019	2.20	7/11/2020	5.51
7/13/2017		7/13/2018	11.41	7/13/2019	2.80	7/12/2020	9.37
7/14/2017		7/14/2018	11.07	7/14/2019	5.01	7/13/2020	9.99
7/15/2017		7/15/2018	17.07	7/15/2019	6.83	7/14/2020	8.62
7/16/2017		7/16/2018	17.99	7/16/2019	5.67	7/15/2020	10.71
7/17/2017		7/17/2018	19.62	7/17/2019	5.93	7/16/2020	8.98
7/18/2017		7/18/2018	11.67	7/18/2019	3.90	7/17/2020	10.58

7/19/2017		7/19/2018	15.48	7/19/2019	5.20	7/18/2020	10.11
7/20/2017		7/20/2018	18.65	7/20/2019	5.26	7/19/2020	8.46
7/21/2017		7/21/2018	16.05	7/21/2019	6.42	7/20/2020	8.02
7/22/2017		7/22/2018	16.07	7/22/2019	6.20	7/21/2020	6.79
7/23/2017		7/23/2018	13.88	7/23/2019	5.49	7/22/2020	5.29
7/24/2017		7/24/2018	15.04	7/24/2019	3.94	7/23/2020	4.51
7/25/2017		7/25/2018	12.84	7/25/2019	2.34	7/24/2020	5.44
7/26/2017		7/26/2018	13.23	7/26/2019	3.14	7/25/2020	7.64
7/27/2017		7/27/2018	13.38	7/27/2019	1.96	7/26/2020	9.50
7/28/2017		7/28/2018	7.12	7/28/2019	2.61	7/27/2020	9.28
7/29/2017		7/29/2018	12.41	7/29/2019	4.00	7/28/2020	10.12
7/30/2017		7/30/2018	17.88	7/30/2019	3.96	7/29/2020	9.45
7/31/2017		7/31/2018	9.54	7/31/2019	4.59	7/30/2020	8.19
8/1/2017		8/1/2018	10.76	8/1/2019	4.71	7/31/2020	8.45
8/2/2017		8/2/2018	13.38	8/2/2019	4.63	8/1/2020	7.51
8/3/2017		8/3/2018	13.20	8/3/2019	4.16	8/2/2020	4.70
8/4/2017		8/4/2018	9.74	8/4/2019	4.20	8/3/2020	7.05
8/5/2017		8/5/2018	16.34	8/5/2019	3.47	8/4/2020	6.52
8/6/2017		8/6/2018	15.61	8/6/2019	3.29	8/5/2020	2.63
8/7/2017	29.54	8/7/2018	22.21	8/7/2019	2.20	8/6/2020	2.15
8/8/2017	16.90	8/8/2018	10.99	8/8/2019	2.57	8/7/2020	1.83
8/9/2017		8/9/2018	11.75	8/9/2019	3.09	8/8/2020	3.01
8/10/2017		8/10/2018	11.35	8/10/2019	3.65	8/9/2020	2.51
8/11/2017		8/11/2018	5.76	8/11/2019	2.69	8/10/2020	1.43
8/12/2017		8/12/2018	7.18	8/12/2019	3.51	8/11/2020	0.76
8/13/2017		8/13/2018	6.00	8/13/2019	2.40	8/12/2020	0.90
8/14/2017		8/14/2018	6.63	8/14/2019	3.19	8/13/2020	0.56
8/15/2017	12.25	8/15/2018	5.05	8/15/2019	2.61	8/14/2020	0.12
8/16/2017	13.84	8/16/2018	6.07	8/16/2019	2.91	8/15/2020	0.11
8/17/2017	10.96	8/17/2018	8.62	8/17/2019	3.18	8/16/2020	0.12
8/18/2017	29.00	8/18/2018	5.95	8/18/2019	3.56	8/17/2020	0.10
8/19/2017	71.24	8/19/2018	8.28	8/19/2019	3.73	8/18/2020	
8/20/2017	58.57	8/20/2018	9.25	8/20/2019	4.41	8/19/2020	
8/21/2017	26.66	8/21/2018	4.65	8/21/2019	6.44	8/20/2020	0.14
8/22/2017	27.55	8/22/2018	5.29	8/22/2019	6.44	8/21/2020	0.13
8/23/2017	43.90	8/23/2018	4.10	8/23/2019	6.12	8/22/2020	0.13
8/24/2017	45.77	8/24/2018	5.12	8/24/2019	2.32	8/23/2020	0.13
8/25/2017	35.88	8/25/2018	4.73	8/25/2019	2.95	8/24/2020	0.11
8/26/2017	29.06	8/26/2018	5.74	8/26/2019	3.89	8/25/2020	0.11
8/27/2017	23.63	8/27/2018	4.31	8/27/2019	4.89	8/26/2020	0.14
8/28/2017	19.48	8/28/2018	3.96	8/28/2019	5.56	8/27/2020	0.11
8/29/2017	31.39	8/29/2018	5.84	8/29/2019	5.42	8/28/2020	0.11
8/30/2017	20.11	8/30/2018	5.29	8/30/2019	4.80	8/29/2020	0.12

8/31/2017	22.89	8/31/2018	5.57	8/31/2019	3.32	8/30/2020	0.12
9/1/2017	30.77	9/1/2018	5.74	9/1/2019	5.32	8/31/2020	0.12
9/2/2017	29.97	9/2/2018	3.57	9/2/2019	4.91	9/1/2020	0.11
9/3/2017	29.94	9/3/2018	4.60	9/3/2019	4.09	9/2/2020	0.13
9/4/2017	23.13	9/4/2018	7.93	9/4/2019	2.71	9/3/2020	0.13
9/5/2017	30.99	9/5/2018	7.65	9/5/2019	2.69	9/4/2020	0.12
9/6/2017	48.10	9/6/2018	5.23	9/6/2019	2.31	9/5/2020	0.11
9/7/2017	52.57	9/7/2018	3.88	9/7/2019	3.13	9/6/2020	0.11
9/8/2017	39.73	9/8/2018	5.51	9/8/2019	3.13	9/7/2020	0.11
9/9/2017	52.83	9/9/2018	6.37	9/9/2019	2.61	9/8/2020	195.71
9/10/2017	49.08	9/10/2018	5.85	9/10/2019	3.68	9/9/2020	382.47
9/11/2017	55.21	9/11/2018	5.35	9/11/2019	6.16	9/10/2020	383.71
9/12/2017	34.11	9/12/2018	5.29	9/12/2019	4.35	9/11/2020	
9/13/2017	41.00	9/13/2018	7.11	9/13/2019	2.13	9/12/2020	
9/14/2017	30.21	9/14/2018	8.69	9/14/2019	3.40	9/13/2020	
9/15/2017	46.35	9/15/2018	7.97	9/15/2019	5.31	9/14/2020	
9/16/2017	51.61	9/16/2018	7.48	9/16/2019	5.03	9/15/2020	36.46
9/17/2017	72.90	9/17/2018	7.76	9/17/2019	4.52	9/16/2020	27.87
9/18/2017	66.95	9/18/2018	8.15	9/18/2019	3.76	9/17/2020	24.73
9/19/2017	17.35	9/19/2018	9.33	9/19/2019	9.37	9/18/2020	20.22
9/20/2017	30.75	9/20/2018	8.04	9/20/2019	6.89	9/19/2020	21.96
9/21/2017	19.58	9/21/2018	5.09	9/21/2019	4.44	9/20/2020	17.67
9/22/2017	35.73	9/22/2018	4.53	9/22/2019	6.74	9/21/2020	17.11
9/23/2017	27.94	9/23/2018	5.54	9/23/2019	7.33	9/22/2020	14.96
9/24/2017	36.52	9/24/2018	7.26	9/24/2019	6.82	9/23/2020	7.88
9/25/2017	32.12	9/25/2018	9.57	9/25/2019	3.15	9/24/2020	8.27
9/26/2017	48.00	9/26/2018	7.96	9/26/2019	1.56	9/25/2020	6.03
9/27/2017	65.84	9/27/2018	7.47	9/27/2019	1.61	9/26/2020	9.09
9/28/2017	38.92	9/28/2018	7.86	9/28/2019	1.85	9/27/2020	12.59
9/29/2017	49.31	9/29/2018	9.95	9/29/2019	2.56	9/28/2020	20.90
9/30/2017	40.62	9/30/2018	12.40	9/30/2019	2.98	9/29/2020	26.12
10/1/2017	25.77	10/1/2018	13.09	10/1/2019	2.64	9/30/2020	32.41
10/2/2017	12.06	10/2/2018	10.63	10/2/2019	4.67	10/1/2020	37.11
10/3/2017	14.45	10/3/2018	12.56	10/3/2019	6.31	10/2/2020	37.84
10/4/2017	18.42	10/4/2018	11.75	10/4/2019	6.75	10/3/2020	37.33
10/5/2017	23.82	10/5/2018	12.25	10/5/2019	6.51	10/4/2020	33.32
10/6/2017	28.78	10/6/2018	12.08	10/6/2019	7.96	10/5/2020	31.76
10/7/2017	31.94	10/7/2018	10.94	10/7/2019	8.26	10/6/2020	30.00
10/8/2017	29.47	10/8/2018	11.46	10/8/2019	9.16	10/7/2020	29.97
10/9/2017	37.72	10/9/2018	12.30	10/9/2019	4.83	10/8/2020	29.87
10/10/2017	25.34	10/10/2018	14.34	10/10/2019	5.93	10/9/2020	29.16
10/11/2017	26.13	10/11/2018	12.39	10/11/2019	7.92	10/10/2020	31.19
10/12/2017	30.74	10/12/2018	9.68	10/12/2019	9.60	10/11/2020	29.43

10/13/2017	27.69	10/13/2018	7.30	10/13/2019	12.14	10/12/2020	30.84
10/14/2017	31.48	10/14/2018	9.28	10/14/2019	12.89	10/13/2020	36.14
10/15/2017	43.63	10/15/2018	12.84	10/15/2019	12.20	10/14/2020	40.70
10/16/2017	75.41	10/16/2018	17.42	10/16/2019	10.51	10/15/2020	40.39
10/17/2017	65.33	10/17/2018	21.11	10/17/2019	10.32	10/16/2020	31.37
10/18/2017	52.37	10/18/2018	18.70	10/18/2019	12.42	10/17/2020	27.71
10/19/2017	39.89	10/19/2018	16.24	10/19/2019	13.75	10/18/2020	30.68
10/20/2017	35.37	10/20/2018	15.56	10/20/2019	15.67	10/19/2020	38.37
10/21/2017	29.76	10/21/2018	15.55	10/21/2019	13.88	10/20/2020	45.02
10/22/2017	23.02	10/22/2018	14.30	10/22/2019	11.87	10/21/2020	42.71
10/23/2017	31.55	10/23/2018	15.06	10/23/2019	17.73	10/22/2020	46.14
10/24/2017	47.30	10/24/2018	16.28	10/24/2019	15.60	10/23/2020	36.75
10/25/2017	44.78	10/25/2018	19.33	10/25/2019	20.38	10/24/2020	35.29
10/26/2017	54.32	10/26/2018	15.74	10/26/2019	15.86	10/25/2020	34.24
10/27/2017	70.31	10/27/2018	14.23	10/27/2019	12.90	10/26/2020	35.20
10/28/2017	59.96	10/28/2018	12.97	10/28/2019	14.10	10/27/2020	39.24
10/29/2017	47.58	10/29/2018	13.03	10/29/2019	11.91	10/28/2020	30.77
10/30/2017	34.25	10/30/2018	10.53	10/30/2019	11.23	10/29/2020	31.83
10/31/2017	28.87	10/31/2018	16.51	10/31/2019	11.71	10/30/2020	28.59
11/1/2017	39.69	11/1/2018	14.49	11/1/2019	18.74	10/31/2020	30.98
11/2/2017	36.29	11/2/2018	10.68	11/2/2019	16.57	11/1/2020	29.39
11/3/2017	34.69	11/3/2018	12.21	11/3/2019	14.31	11/2/2020	41.11
11/4/2017	38.40	11/4/2018	17.08	11/4/2019	12.26	11/3/2020	43.37
11/5/2017	37.63	11/5/2018	17.67	11/5/2019	11.57	11/4/2020	49.32
11/6/2017	34.89	11/6/2018	16.63	11/6/2019		11/5/2020	68.40
11/7/2017	37.06	11/7/2018	17.32	11/7/2019		11/6/2020	71.12
11/8/2017	31.40	11/8/2018	19.29	11/8/2019		11/7/2020	72.45
11/9/2017	36.72	11/9/2018	19.05	11/9/2019		11/8/2020	59.69
11/10/2017	29.81	11/10/2018	15.53	11/10/2019	28.93	11/9/2020	49.50
11/11/2017	31.46	11/11/2018	14.78	11/11/2019	37.76	11/10/2020	46.03
11/12/2017	34.73	11/12/2018	17.28	11/12/2019	41.73	11/11/2020	43.06
11/13/2017	47.24	11/13/2018	22.14	11/13/2019	47.46	11/12/2020	35.92
11/14/2017	51.34	11/14/2018	21.60	11/14/2019	42.27	11/13/2020	38.11
11/15/2017	46.89	11/15/2018	21.39	11/15/2019	36.80	11/14/2020	38.56
11/16/2017	59.48	11/16/2018	21.22	11/16/2019	41.28	11/15/2020	33.55
11/17/2017	55.85	11/17/2018	20.81	11/17/2019	42.69	11/16/2020	67.60
11/18/2017	45.32	11/18/2018	22.98	11/18/2019	54.86	11/17/2020	37.29
11/19/2017	43.46	11/19/2018	31.85	11/19/2019	69.19	11/18/2020	35.18
11/20/2017	37.04	11/20/2018	36.27	11/20/2019	69.82	11/19/2020	37.55
11/21/2017	50.37	11/21/2018	40.32	11/21/2019	68.82	11/20/2020	48.85
11/22/2017	47.18	11/22/2018	30.12	11/22/2019	59.92	11/21/2020	52.45
11/23/2017	51.70	11/23/2018	24.07	11/23/2019	64.10	11/22/2020	53.78
11/24/2017	56.32	11/24/2018	22.66	11/24/2019	66.41	11/23/2020	60.72

11/25/2017	57.41	11/25/2018	24.25	11/25/2019	68.21	11/24/2020	60.00
11/26/2017	59.91	11/26/2018	22.44	11/26/2019	70.58	11/25/2020	69.49
11/27/2017	64.38	11/27/2018	20.98	11/27/2019	62.49	11/26/2020	59.23
11/28/2017	50.89	11/28/2018	19.22	11/28/2019	48.49	11/27/2020	77.64
11/29/2017	59.07	11/29/2018	17.04	11/29/2019	57.29	11/28/2020	67.24
11/30/2017	75.35	11/30/2018	16.88	11/30/2019	45.23	11/29/2020	59.12
12/1/2017	94.61	12/1/2018	20.43	12/1/2019	41.39	11/30/2020	58.55
12/2/2017	82.02	12/2/2018	22.05	12/2/2019	49.69	12/1/2020	52.38
12/3/2017	61.60	12/3/2018	26.51	12/3/2019	58.52	12/2/2020	45.94
12/4/2017	49.44	12/4/2018	26.27	12/4/2019	68.07	12/3/2020	43.67
12/5/2017	52.22	12/5/2018	29.66	12/5/2019	69.11	12/4/2020	52.84
12/6/2017	48.88	12/6/2018	23.73	12/6/2019	64.72	12/5/2020	56.63
12/7/2017	44.13	12/7/2018	24.13	12/7/2019	53.54	12/6/2020	62.73
12/8/2017	46.53	12/8/2018	24.25	12/8/2019	45.18	12/7/2020	72.18
12/9/2017	55.93	12/9/2018	21.41	12/9/2019	48.46	12/8/2020	82.54
12/10/2017	47.70	12/10/2018	17.24	12/10/2019	52.64	12/9/2020	85.05
12/11/2017	51.12	12/11/2018	16.93	12/11/2019	50.96	12/10/2020	76.89
12/12/2017	55.55	12/12/2018	16.23	12/12/2019	67.23	12/11/2020	71.49
12/13/2017	47.68	12/13/2018	16.77	12/13/2019	56.76	12/12/2020	71.08
12/14/2017	53.64	12/14/2018	21.25	12/14/2019	23.17	12/13/2020	60.70
12/15/2017	56.89	12/15/2018	22.38	12/15/2019	39.03	12/14/2020	53.72
12/16/2017	56.22	12/16/2018	22.07	12/16/2019	38.84	12/15/2020	60.02
12/17/2017	70.09	12/17/2018	41.42	12/17/2019	48.14	12/16/2020	71.13
12/18/2017	62.41	12/18/2018	37.07	12/18/2019	39.41	12/17/2020	62.92
12/19/2017	72.42	12/19/2018	42.63	12/19/2019	48.28	12/18/2020	63.15
12/20/2017	70.19	12/20/2018	41.15	12/20/2019	52.49	12/19/2020	76.96
12/21/2017	67.63	12/21/2018	35.90	12/21/2019	56.27	12/20/2020	77.99
12/22/2017	61.47	12/22/2018	32.69	12/22/2019	53.21	12/21/2020	80.97
12/23/2017	59.04	12/23/2018	25.64	12/23/2019	48.40	12/22/2020	61.81
12/24/2017	70.68	12/24/2018	23.94	12/24/2019	46.88	12/23/2020	70.91
12/25/2017	58.50	12/25/2018	22.46	12/25/2019	51.69	12/24/2020	79.42
12/26/2017	61.81	12/26/2018	23.97	12/26/2019	46.25	12/25/2020	72.30
12/27/2017	73.81	12/27/2018	30.82	12/27/2019	51.60	12/26/2020	76.07
12/28/2017	71.59	12/28/2018	33.42	12/28/2019	66.86	12/27/2020	75.71
12/29/2017	61.70	12/29/2018	39.93	12/29/2019	63.89	12/28/2020	78.21
12/30/2017	63.63	12/30/2018	39.02	12/30/2019	61.19	12/29/2020	72.14
12/31/2017	62.65	12/31/2018	39.36	12/31/2019	70.21	12/30/2020	92.33

PM₁₀

date	value	date	value	date	value	date	value
1/1/2017		1/1/2018	111.81	1/1/2019	43.87	1/1/2020	121.642

1/2/2017		1/2/2018	97.72	1/2/2019	39.33	1/2/2020	99.943
1/3/2017		1/3/2018	94.67	1/3/2019	41.86	1/3/2020	85.187
1/4/2017		1/4/2018	118.22	1/4/2019	38.15	1/4/2020	61.215
1/5/2017		1/5/2018	109.54	1/5/2019	47.99	1/5/2020	36.689
1/6/2017		1/6/2018	93.17	1/6/2019	49.50	1/6/2020	71.880
1/7/2017		1/7/2018	93.11	1/7/2019	38.33	1/7/2020	93.344
1/8/2017		1/8/2018	120.19	1/8/2019	35.49	1/8/2020	75.213
1/9/2017		1/9/2018	114.22	1/9/2019	39.03	1/9/2020	61.814
1/10/2017		1/10/2018	119.06	1/10/2019	50.96	1/10/2020	64.320
1/11/2017		1/11/2018	121.57	1/11/2019	49.83	1/11/2020	74.768
1/12/2017		1/12/2018	136.65	1/12/2019	56.65	1/12/2020	94.968
1/13/2017		1/13/2018	93.68	1/13/2019	48.64	1/13/2020	94.026
1/14/2017		1/14/2018	88.73	1/14/2019	42.87	1/14/2020	83.979
1/15/2017		1/15/2018	90.60	1/15/2019	41.11	1/15/2020	84.997
1/16/2017		1/16/2018	100.25	1/16/2019	46.05	1/16/2020	91.386
1/17/2017		1/17/2018	104.20	1/17/2019	44.66	1/17/2020	29.408
1/18/2017		1/18/2018	115.30	1/18/2019	45.37	1/18/2020	55.445
1/19/2017		1/19/2018	107.34	1/19/2019	40.53	1/19/2020	75.352
1/20/2017		1/20/2018	121.68	1/20/2019	42.50	1/20/2020	91.353
1/21/2017		1/21/2018	94.14	1/21/2019	41.62	1/21/2020	125.841
1/22/2017		1/22/2018	109.11	1/22/2019	45.16	1/22/2020	105.365
1/23/2017		1/23/2018	107.76	1/23/2019	20.39	1/23/2020	88.798
1/24/2017		1/24/2018	53.08	1/24/2019	33.79	1/24/2020	91.264
1/25/2017		1/25/2018	73.96	1/25/2019	28.92	1/25/2020	95.996
1/26/2017		1/26/2018	81.68	1/26/2019	18.64	1/26/2020	95.082
1/27/2017		1/27/2018	88.20	1/27/2019	26.72	1/27/2020	110.320
1/28/2017		1/28/2018	90.78	1/28/2019	29.14	1/28/2020	118.373
1/29/2017		1/29/2018	98.66	1/29/2019	30.15	1/29/2020	71.162
1/30/2017		1/30/2018	99.10	1/30/2019	30.60	1/30/2020	79.401
1/31/2017		1/31/2018	112.25	1/31/2019	42.50	1/31/2020	81.707
2/1/2017		2/1/2018	105.94	2/1/2019	43.44	2/1/2020	103.269
2/2/2017		2/2/2018	123.70	2/2/2019	36.31	2/2/2020	89.866
2/3/2017		2/3/2018	102.86	2/3/2019	32.42	2/3/2020	107.326
2/4/2017		2/4/2018	118.89	2/4/2019	37.49	2/4/2020	104.474
2/5/2017		2/5/2018	115.56	2/5/2019	39.46	2/5/2020	105.837
2/6/2017		2/6/2018	134.67	2/6/2019	45.93	2/6/2020	134.133
2/7/2017		2/7/2018	141.01	2/7/2019	30.92	2/7/2020	136.575
2/8/2017		2/8/2018	156.54	2/8/2019	16.55	2/8/2020	148.513
2/9/2017		2/9/2018	144.81	2/9/2019	11.21	2/9/2020	117.470
2/10/2017		2/10/2018	129.25	2/10/2019	20.43	2/10/2020	112.592
2/11/2017		2/11/2018	116.42	2/11/2019	24.01	2/11/2020	112.377
2/12/2017		2/12/2018	127.65	2/12/2019	29.66	2/12/2020	133.695
2/13/2017		2/13/2018	66.02	2/13/2019	30.65	2/13/2020	140.601

2/14/2017		2/14/2018	69.26	2/14/2019	42.51	2/14/2020	103.484
2/15/2017		2/15/2018	72.20	2/15/2019	33.19	2/15/2020	122.477
2/16/2017		2/16/2018	87.58	2/16/2019	21.67	2/16/2020	135.969
2/17/2017		2/17/2018	122.38	2/17/2019	20.66	2/17/2020	137.266
2/18/2017		2/18/2018	92.25	2/18/2019	25.34	2/18/2020	116.202
2/19/2017		2/19/2018	84.89	2/19/2019	24.61	2/19/2020	114.909
2/20/2017		2/20/2018	77.76	2/20/2019	27.51	2/20/2020	135.473
2/21/2017		2/21/2018	74.17	2/21/2019	36.07	2/21/2020	105.931
2/22/2017		2/22/2018	89.10	2/22/2019	35.94	2/22/2020	59.771
2/23/2017		2/23/2018	17.89	2/23/2019	29.60	2/23/2020	98.428
2/24/2017		2/24/2018		2/24/2019	30.20	2/24/2020	81.039
2/25/2017		2/25/2018		2/25/2019	24.35	2/25/2020	61.443
2/26/2017		2/26/2018	118.21	2/26/2019	24.35	2/26/2020	21.644
2/27/2017		2/27/2018	362.55	2/27/2019	19.17	2/27/2020	41.920
2/28/2017		2/28/2018	122.17	2/28/2019	7.02	2/28/2020	57.071
3/1/2017		3/1/2018	13.05	3/1/2019	15.30	2/29/2020	69.265
3/2/2017		3/2/2018		3/2/2019	20.34	3/1/2020	77.934
3/3/2017		3/3/2018		3/3/2019	22.00	3/2/2020	63.446
3/4/2017		3/4/2018	0.10	3/4/2019	20.73	3/3/2020	76.811
3/5/2017		3/5/2018	0.18	3/5/2019	18.74	3/4/2020	89.250
3/6/2017		3/6/2018	0.16	3/6/2019	21.06	3/5/2020	94.243
3/7/2017		3/7/2018	0.32	3/7/2019	25.88	3/6/2020	107.154
3/8/2017		3/8/2018		3/8/2019	72.31	3/7/2020	40.243
3/9/2017		3/9/2018		3/9/2019	27.14	3/8/2020	56.601
3/10/2017		3/10/2018		3/10/2019	19.83	3/9/2020	69.484
3/11/2017		3/11/2018		3/11/2019	23.80	3/10/2020	78.127
3/12/2017		3/12/2018		3/12/2019		3/11/2020	92.164
3/13/2017		3/13/2018	85.09	3/13/2019	18.55	3/12/2020	97.314
3/14/2017		3/14/2018	94.62	3/14/2019	24.21	3/13/2020	115.960
3/15/2017		3/15/2018	79.86	3/15/2019		3/14/2020	79.050
3/16/2017		3/16/2018		3/16/2019		3/15/2020	122.157
3/17/2017		3/17/2018		3/17/2019		3/16/2020	124.334
3/18/2017		3/18/2018		3/18/2019		3/17/2020	122.023
3/19/2017		3/19/2018	153.30	3/19/2019		3/18/2020	119.970
3/20/2017		3/20/2018	135.34	3/20/2019		3/19/2020	155.443
3/21/2017		3/21/2018	129.76	3/21/2019		3/20/2020	89.180
3/22/2017		3/22/2018	106.36	3/22/2019		3/21/2020	68.263
3/23/2017		3/23/2018	110.34	3/23/2019		3/22/2020	73.880
3/24/2017		3/24/2018	128.02	3/24/2019		3/23/2020	41.727
3/25/2017		3/25/2018	140.34	3/25/2019		3/24/2020	44.556
3/26/2017		3/26/2018	136.74	3/26/2019		3/25/2020	51.897
3/27/2017		3/27/2018	143.55	3/27/2019		3/26/2020	64.744
3/28/2017		3/28/2018	137.72	3/28/2019		3/27/2020	57.755

3/29/2017		3/29/2018	72.19	3/29/2019		3/28/2020	36.798
3/30/2017		3/30/2018	50.67	3/30/2019		3/29/2020	40.658
3/31/2017		3/31/2018	57.38	3/31/2019	161.61	3/30/2020	42.949
4/1/2017		4/1/2018	62.80	4/1/2019	203.64	3/31/2020	56.672
4/2/2017		4/2/2018	95.32	4/2/2019	47.96	4/1/2020	63.353
4/3/2017		4/3/2018	62.70	4/3/2019	30.72	4/2/2020	43.915
4/4/2017		4/4/2018	41.12	4/4/2019	33.59	4/3/2020	51.255
4/5/2017		4/5/2018	39.98	4/5/2019	38.20	4/4/2020	57.826
4/6/2017		4/6/2018	47.41	4/6/2019	20.17	4/5/2020	70.516
4/7/2017		4/7/2018	42.52	4/7/2019	9.78	4/6/2020	80.526
4/8/2017		4/8/2018	51.40	4/8/2019	15.73	4/7/2020	80.475
4/9/2017		4/9/2018	53.15	4/9/2019	15.10	4/8/2020	99.440
4/10/2017		4/10/2018	38.22	4/10/2019	13.22	4/9/2020	73.448
4/11/2017		4/11/2018	36.42	4/11/2019	17.58	4/10/2020	81.965
4/12/2017		4/12/2018	43.44	4/12/2019	21.68	4/11/2020	104.718
4/13/2017		4/13/2018	46.96	4/13/2019	22.58	4/12/2020	91.117
4/14/2017		4/14/2018	59.73	4/14/2019	19.28	4/13/2020	79.733
4/15/2017		4/15/2018	58.01	4/15/2019	17.39	4/14/2020	53.279
4/16/2017		4/16/2018		4/16/2019	20.58	4/15/2020	26.701
4/17/2017		4/17/2018	41.21	4/17/2019	12.62	4/16/2020	45.623
4/18/2017		4/18/2018	53.33	4/18/2019	19.83	4/17/2020	41.861
4/19/2017		4/19/2018	61.73	4/19/2019	22.20	4/18/2020	37.118
4/20/2017		4/20/2018	51.37	4/20/2019	24.80	4/19/2020	29.608
4/21/2017		4/21/2018	69.76	4/21/2019	30.56	4/20/2020	27.500
4/22/2017		4/22/2018	90.67	4/22/2019	34.95	4/21/2020	14.703
4/23/2017		4/23/2018	110.50	4/23/2019	30.97	4/22/2020	17.771
4/24/2017		4/24/2018	90.79	4/24/2019	29.06	4/23/2020	26.720
4/25/2017		4/25/2018	75.74	4/25/2019	25.55	4/24/2020	30.694
4/26/2017		4/26/2018	64.21	4/26/2019	31.98	4/25/2020	33.481
4/27/2017		4/27/2018	41.28	4/27/2019	30.44	4/26/2020	31.417
4/28/2017		4/28/2018	39.88	4/28/2019	27.84	4/27/2020	25.920
4/29/2017		4/29/2018	36.92	4/29/2019	32.82	4/28/2020	21.110
4/30/2017		4/30/2018	28.65	4/30/2019	31.14	4/29/2020	21.910
5/1/2017		5/1/2018	33.74	5/1/2019	41.20	4/30/2020	19.662
5/2/2017		5/2/2018	31.15	5/2/2019	22.23	5/1/2020	19.182
5/3/2017		5/3/2018	23.17	5/3/2019	25.37	5/2/2020	20.739
5/4/2017		5/4/2018	25.47	5/4/2019	14.65	5/3/2020	25.479
5/5/2017		5/5/2018	31.50	5/5/2019	19.32	5/4/2020	20.109
5/6/2017		5/6/2018	37.03	5/6/2019	31.87	5/5/2020	21.619
5/7/2017		5/7/2018	44.80	5/7/2019	40.76	5/6/2020	15.169
5/8/2017		5/8/2018	63.19	5/8/2019	41.24	5/7/2020	18.658
5/9/2017		5/9/2018	34.74	5/9/2019	45.28	5/8/2020	26.314
5/10/2017		5/10/2018	31.50	5/10/2019	42.49	5/9/2020	26.685

5/11/2017		5/11/2018	43.19	5/11/2019	42.31	5/10/2020	34.614
5/12/2017		5/12/2018	46.83	5/12/2019	27.60	5/11/2020	42.247
5/13/2017		5/13/2018	37.60	5/13/2019	22.91	5/12/2020	34.458
5/14/2017		5/14/2018	14.41	5/14/2019	25.87	5/13/2020	36.178
5/15/2017		5/15/2018	25.43	5/15/2019	21.92	5/14/2020	41.692
5/16/2017		5/16/2018	28.94	5/16/2019	18.42	5/15/2020	41.183
5/17/2017		5/17/2018	24.12	5/17/2019	22.88	5/16/2020	46.555
5/18/2017		5/18/2018	33.18	5/18/2019	27.85	5/17/2020	45.698
5/19/2017		5/19/2018	32.15	5/19/2019	28.83	5/18/2020	40.648
5/20/2017		5/20/2018	27.64	5/20/2019	29.68	5/19/2020	34.308
5/21/2017		5/21/2018	35.58	5/21/2019	31.19	5/20/2020	35.577
5/22/2017		5/22/2018	35.03	5/22/2019	29.87	5/21/2020	26.859
5/23/2017		5/23/2018	27.85	5/23/2019	19.38	5/22/2020	29.004
5/24/2017		5/24/2018	29.15	5/24/2019	21.68	5/23/2020	28.174
5/25/2017		5/25/2018	42.34	5/25/2019	16.51	5/24/2020	37.794
5/26/2017		5/26/2018	62.10	5/26/2019	19.85	5/25/2020	49.315
5/27/2017		5/27/2018	49.89	5/27/2019	20.93	5/26/2020	42.559
5/28/2017		5/28/2018	37.35	5/28/2019	22.96	5/27/2020	34.223
5/29/2017		5/29/2018	39.30	5/29/2019	22.79	5/28/2020	0.111
5/30/2017		5/30/2018	31.56	5/30/2019	21.66	5/29/2020	0.108
5/31/2017		5/31/2018	43.11	5/31/2019	20.22	5/30/2020	5.163
6/1/2017		6/1/2018	27.20	6/1/2019	16.62	5/31/2020	17.350
6/2/2017		6/2/2018	31.15	6/2/2019	13.35	6/1/2020	2.532
6/3/2017		6/3/2018	32.52	6/3/2019	13.91	6/2/2020	2.636
6/4/2017		6/4/2018	39.47	6/4/2019	14.56	6/3/2020	24.545
6/5/2017		6/5/2018	29.55	6/5/2019	13.07	6/4/2020	39.190
6/6/2017		6/6/2018	29.75	6/6/2019	10.59	6/5/2020	20.883
6/7/2017		6/7/2018	37.58	6/7/2019	8.59	6/6/2020	11.079
6/8/2017		6/8/2018	40.71	6/8/2019	13.97	6/7/2020	14.944
6/9/2017		6/9/2018	42.62	6/9/2019	16.78	6/8/2020	16.427
6/10/2017		6/10/2018	32.50	6/10/2019	16.06	6/9/2020	28.070
6/11/2017		6/11/2018	31.80	6/11/2019	18.96	6/10/2020	37.595
6/12/2017		6/12/2018	31.70	6/12/2019	15.45	6/11/2020	32.786
6/13/2017		6/13/2018	50.46	6/13/2019	19.13	6/12/2020	25.486
6/14/2017		6/14/2018	33.97	6/14/2019	17.65	6/13/2020	16.947
6/15/2017		6/15/2018	39.42	6/15/2019	17.35	6/14/2020	12.199
6/16/2017		6/16/2018	27.92	6/16/2019	21.48	6/15/2020	7.774
6/17/2017		6/17/2018	38.85	6/17/2019	29.14	6/16/2020	8.027
6/18/2017		6/18/2018	38.49	6/18/2019	11.53	6/17/2020	10.757
6/19/2017		6/19/2018	33.42	6/19/2019	13.50	6/18/2020	8.722
6/20/2017		6/20/2018	33.50	6/20/2019	9.68	6/19/2020	11.328
6/21/2017		6/21/2018	33.29	6/21/2019	11.18	6/20/2020	17.741
6/22/2017		6/22/2018	37.57	6/22/2019	6.51	6/21/2020	20.978

6/23/2017		6/23/2018	69.86	6/23/2019	6.26	6/22/2020	7.232
6/24/2017		6/24/2018	44.15	6/24/2019		6/23/2020	15.848
6/25/2017		6/25/2018	33.06	6/25/2019		6/24/2020	21.563
6/26/2017		6/26/2018	87.92	6/26/2019		6/25/2020	14.848
6/27/2017		6/27/2018	68.16	6/27/2019		6/26/2020	8.522
6/28/2017		6/28/2018	14.25	6/28/2019		6/27/2020	17.640
6/29/2017		6/29/2018	20.97	6/29/2019	11.02	6/28/2020	14.631
6/30/2017		6/30/2018	18.32	6/30/2019	15.36	6/29/2020	14.159
7/1/2017		7/1/2018	28.05	7/1/2019	17.19	6/30/2020	29.381
7/2/2017		7/2/2018	25.66	7/2/2019	6.74	7/1/2020	31.820
7/3/2017		7/3/2018	29.99	7/3/2019	6.31	7/2/2020	35.654
7/4/2017		7/4/2018	18.90	7/4/2019	5.92	7/3/2020	32.193
7/5/2017		7/5/2018	27.22	7/5/2019		7/4/2020	16.266
7/6/2017		7/6/2018	32.29	7/6/2019	1.71	7/5/2020	16.757
7/7/2017		7/7/2018	34.96	7/7/2019	2.74	7/6/2020	7.830
7/8/2017		7/8/2018	36.88	7/8/2019	2.58	7/7/2020	8.163
7/9/2017		7/9/2018	21.88	7/9/2019	2.60	7/8/2020	9.914
7/10/2017		7/10/2018	21.31	7/10/2019	2.49	7/9/2020	10.303
7/11/2017		7/11/2018	14.13	7/11/2019	2.02	7/10/2020	6.254
7/12/2017		7/12/2018	15.14	7/12/2019	2.25	7/11/2020	6.361
7/13/2017		7/13/2018	15.05	7/13/2019	2.93	7/12/2020	10.497
7/14/2017		7/14/2018	15.41	7/14/2019	5.47	7/13/2020	13.903
7/15/2017		7/15/2018	21.88	7/15/2019	8.97	7/14/2020	10.379
7/16/2017		7/16/2018	21.10	7/16/2019	7.10	7/15/2020	17.508
7/17/2017		7/17/2018	22.99	7/17/2019	8.74	7/16/2020	17.859
7/18/2017		7/18/2018	12.78	7/18/2019	5.32	7/17/2020	19.244
7/19/2017		7/19/2018	20.51	7/19/2019	9.22	7/18/2020	11.038
7/20/2017		7/20/2018	24.67	7/20/2019	8.28	7/19/2020	9.086
7/21/2017		7/21/2018	21.36	7/21/2019	9.75	7/20/2020	8.452
7/22/2017		7/22/2018	17.84	7/22/2019	8.11	7/21/2020	7.417
7/23/2017		7/23/2018	17.18	7/23/2019	6.44	7/22/2020	7.931
7/24/2017		7/24/2018	16.33	7/24/2019	4.03	7/23/2020	4.893
7/25/2017		7/25/2018	13.44	7/25/2019	3.08	7/24/2020	6.115
7/26/2017		7/26/2018	14.00	7/26/2019	3.95	7/25/2020	10.965
7/27/2017		7/27/2018	13.74	7/27/2019	2.75	7/26/2020	12.078
7/28/2017		7/28/2018	7.68	7/28/2019	4.82	7/27/2020	12.406
7/29/2017		7/29/2018	13.17	7/29/2019	9.07	7/28/2020	12.065
7/30/2017		7/30/2018	18.05	7/30/2019	8.82	7/29/2020	11.453
7/31/2017		7/31/2018	10.54	7/31/2019	9.85	7/30/2020	10.501
8/1/2017		8/1/2018	10.84	8/1/2019	8.55	7/31/2020	11.084
8/2/2017		8/2/2018	13.92	8/2/2019	10.05	8/1/2020	9.035
8/3/2017		8/3/2018	13.44	8/3/2019	9.54	8/2/2020	6.563
8/4/2017		8/4/2018	9.88	8/4/2019	8.50	8/3/2020	9.488

8/5/2017		8/5/2018	17.29	8/5/2019	5.08	8/4/2020	11.720
8/6/2017	79.74995	8/6/2018	16.03	8/6/2019	5.28	8/5/2020	3.496
8/7/2017	23.35322	8/7/2018	24.08	8/7/2019	4.33	8/6/2020	3.194
8/8/2017		8/8/2018	13.42	8/8/2019	5.09	8/7/2020	2.518
8/9/2017		8/9/2018	14.95	8/9/2019	7.21	8/8/2020	3.417
8/10/2017		8/10/2018	12.10	8/10/2019	7.34	8/9/2020	2.553
8/11/2017		8/11/2018	7.00	8/11/2019	4.48	8/10/2020	1.488
8/12/2017		8/12/2018	7.81	8/12/2019	6.00	8/11/2020	0.769
8/13/2017		8/13/2018	6.84	8/13/2019	3.23	8/12/2020	0.909
8/14/2017	25.61603	8/14/2018	8.38	8/14/2019	5.83	8/13/2020	0.860
8/15/2017	32.86049	8/15/2018	6.34	8/15/2019	4.51	8/14/2020	0.417
8/16/2017	25.91808	8/16/2018	8.87	8/16/2019	4.06	8/15/2020	0.140
8/17/2017	34.40833	8/17/2018	13.49	8/17/2019	4.43	8/16/2020	0.193
8/18/2017	81.57381	8/18/2018	8.89	8/18/2019	4.79	8/17/2020	0.100
8/19/2017	71.20773	8/19/2018	10.88	8/19/2019	5.56	8/18/2020	
8/20/2017	38.40573	8/20/2018	12.59	8/20/2019	6.44	8/19/2020	
8/21/2017	43.3314	8/21/2018	6.11	8/21/2019	11.14	8/20/2020	1.242
8/22/2017	54.67063	8/22/2018	7.21	8/22/2019	10.78	8/21/2020	0.283
8/23/2017	57.80708	8/23/2018	5.13	8/23/2019	10.21	8/22/2020	0.280
8/24/2017	46.4609	8/24/2018	6.55	8/24/2019	3.04	8/23/2020	0.134
8/25/2017	56.10499	8/25/2018	5.10	8/25/2019	3.92	8/24/2020	0.316
8/26/2017	38.19681	8/26/2018	7.01	8/26/2019	5.86	8/25/2020	0.116
8/27/2017	27.19849	8/27/2018	4.81	8/27/2019	7.80	8/26/2020	0.588
8/28/2017	41.80045	8/28/2018	4.32	8/28/2019	10.76	8/27/2020	0.114
8/29/2017	30.26559	8/29/2018	6.69	8/29/2019	7.38	8/28/2020	0.152
8/30/2017	41.73214	8/30/2018	6.38	8/30/2019	7.98	8/29/2020	0.155
8/31/2017	40.69366	8/31/2018	7.20	8/31/2019	4.25	8/30/2020	0.139
9/1/2017	44.5271	9/1/2018	9.45	9/1/2019	6.97	8/31/2020	0.124
9/2/2017	39.61296	9/2/2018	4.95	9/2/2019	8.52	9/1/2020	0.122
9/3/2017	29.85615	9/3/2018	6.97	9/3/2019	6.33	9/2/2020	0.404
9/4/2017	46.57133	9/4/2018	13.07	9/4/2019	4.11	9/3/2020	0.143
9/5/2017	62.12363	9/5/2018	12.22	9/5/2019	3.98	9/4/2020	0.151
9/6/2017	73.44686	9/6/2018	7.28	9/6/2019	3.14	9/5/2020	0.115
9/7/2017	59.45647	9/7/2018	6.75	9/7/2019	4.60	9/6/2020	0.116
9/8/2017	76.06846	9/8/2018	10.77	9/8/2019	5.01	9/7/2020	0.157
9/9/2017	72.00175	9/9/2018	8.64	9/9/2019	4.90	9/8/2020	198.539
9/10/2017	83.4761	9/10/2018	7.35	9/10/2019	5.24	9/9/2020	389.703
9/11/2017	61.39202	9/11/2018	6.14	9/11/2019	8.72	9/10/2020	389.767
9/12/2017	57.53086	9/12/2018	5.96	9/12/2019	5.95	9/11/2020	
9/13/2017	51.56091	9/13/2018	10.10	9/13/2019	2.45	9/12/2020	
9/14/2017	67.49536	9/14/2018	10.52	9/14/2019	3.74	9/13/2020	
9/15/2017	75.97864	9/15/2018	12.38	9/15/2019	6.04	9/14/2020	
9/16/2017	105.9707	9/16/2018	8.80	9/16/2019	5.84	9/15/2020	26.800

9/17/2017	111.1585	9/17/2018	10.37	9/17/2019	4.62	9/16/2020	34.193
9/18/2017	23.78409	9/18/2018	11.15	9/18/2019	3.82	9/17/2020	33.017
9/19/2017	48.67924	9/19/2018	15.61	9/19/2019	11.37	9/18/2020	25.603
9/20/2017	24.02095	9/20/2018	11.47	9/20/2019	10.04	9/19/2020	32.546
9/21/2017	40.12929	9/21/2018	5.88	9/21/2019	7.90	9/20/2020	32.954
9/22/2017	37.88695	9/22/2018	6.56	9/22/2019	10.36	9/21/2020	32.843
9/23/2017	53.20822	9/23/2018	7.40	9/23/2019	9.95	9/22/2020	22.428
9/24/2017	47.12348	9/24/2018	9.70	9/24/2019	8.77	9/23/2020	9.068
9/25/2017	62.1187	9/25/2018	14.94	9/25/2019	3.29	9/24/2020	8.853
9/26/2017	90.84443	9/26/2018	11.10	9/26/2019	1.72	9/25/2020	11.548
9/27/2017	78.90468	9/27/2018	11.76	9/27/2019	1.69	9/26/2020	15.945
9/28/2017	67.51878	9/28/2018	11.40	9/28/2019	2.18	9/27/2020	21.801
9/29/2017	51.97227	9/29/2018	14.54	9/29/2019	3.13	9/28/2020	34.720
9/30/2017	32.74361	9/30/2018	17.72	9/30/2019	5.48	9/29/2020	48.104
10/1/2017	20.5774	10/1/2018	19.38	10/1/2019	4.13	9/30/2020	56.269
10/2/2017	20.84623	10/2/2018	13.98	10/2/2019	8.18	10/1/2020	74.368
10/3/2017	27.17604	10/3/2018	17.69	10/3/2019	10.68	10/2/2020	70.976
10/4/2017	35.55281	10/4/2018	14.37	10/4/2019	11.31	10/3/2020	61.507
10/5/2017	58.99562	10/5/2018	14.48	10/5/2019	9.83	10/4/2020	59.968
10/6/2017	52.23414	10/6/2018	23.77	10/6/2019	10.53	10/5/2020	57.234
10/7/2017	54.35675	10/7/2018	14.92	10/7/2019	10.39	10/6/2020	53.191
10/8/2017	57.62982	10/8/2018	14.26	10/8/2019	11.68	10/7/2020	61.950
10/9/2017	51.85449	10/9/2018	17.64	10/9/2019	5.89	10/8/2020	65.320
10/10/2017	60.90491	10/10/2018	19.05	10/10/2019	7.98	10/9/2020	69.548
10/11/2017	66.36186	10/11/2018	16.33	10/11/2019	10.76	10/10/2020	67.477
10/12/2017	61.17188	10/12/2018	14.35	10/12/2019	13.61	10/11/2020	58.125
10/13/2017	57.46001	10/13/2018	9.45	10/13/2019	16.20	10/12/2020	55.948
10/14/2017	95.88072	10/14/2018	12.34	10/14/2019	19.24	10/13/2020	73.373
10/15/2017	114.6887	10/15/2018	16.94	10/15/2019	17.42	10/14/2020	69.974
10/16/2017	92.59815	10/16/2018	19.75	10/16/2019	15.88	10/15/2020	67.629
10/17/2017	100.8744	10/17/2018	23.83	10/17/2019	15.05	10/16/2020	63.297
10/18/2017	93.23257	10/18/2018	23.20	10/18/2019	17.36	10/17/2020	68.041
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10/21/2017	39.15782	10/21/2018	17.13	10/21/2019	19.38	10/20/2020	76.989
10/22/2017	57.47672	10/22/2018	19.59	10/22/2019	16.36	10/21/2020	71.675
10/23/2017	105.453	10/23/2018	18.33	10/23/2019	23.74	10/22/2020	70.778
10/24/2017	108.6357	10/24/2018	20.55	10/24/2019	21.90	10/23/2020	61.376
10/25/2017	102.1449	10/25/2018	22.93	10/25/2019	25.27	10/24/2020	58.775
10/26/2017	106.5243	10/26/2018	19.43	10/26/2019	20.78	10/25/2020	55.910
10/27/2017	94.30761	10/27/2018	20.80	10/27/2019	17.74	10/26/2020	50.328
10/28/2017	82.34578	10/28/2018	18.74	10/28/2019	17.83	10/27/2020	61.450
10/29/2017	82.11393	10/29/2018	17.41	10/29/2019	15.61	10/28/2020	61.130

10/30/2017	57.27353	10/30/2018	14.08	10/30/2019	14.91	10/29/2020	70.269
10/31/2017	51.02778	10/31/2018	21.68	10/31/2019	17.98	10/30/2020	70.260
11/1/2017	55.60142	11/1/2018	18.48	11/1/2019	24.08	10/31/2020	70.999
11/2/2017	65.65887	11/2/2018	13.86	11/2/2019	20.89	11/1/2020	66.173
11/3/2017	80.51523	11/3/2018	14.87	11/3/2019	20.19	11/2/2020	68.395
11/4/2017	82.29212	11/4/2018	23.50	11/4/2019	16.94	11/3/2020	67.222
11/5/2017	77.20406	11/5/2018	22.98	11/5/2019	16.22	11/4/2020	79.665
11/6/2017	73.24452	11/6/2018	25.08	11/6/2019		11/5/2020	99.868
11/7/2017	79.65191	11/7/2018	24.34	11/7/2019		11/6/2020	105.098
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11/21/2017	87.46174	11/21/2018	44.49	11/21/2019	115.84	11/20/2020	83.008
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11/24/2017	98.15903	11/24/2018	26.15	11/24/2019	111.11	11/23/2020	89.143
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11/26/2017	102.9361	11/26/2018	26.26	11/26/2019	124.32	11/25/2020	118.188
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12/2/2017	124.7705	12/2/2018	29.44	12/2/2019	96.18	12/1/2020	103.315
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12/7/2017	65.40944	12/7/2018	30.26	12/7/2019	122.13	12/6/2020	90.407
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12/27/2017	141.0905	12/27/2018	37.21	12/27/2019	81.54	12/26/2020	119.048
12/28/2017	145.1729	12/28/2018	39.38	12/28/2019	106.04	12/27/2020	113.575
12/29/2017	143.0588	12/29/2018	50.48	12/29/2019	103.79	12/28/2020	115.202
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date	value	date	value	date	value	date	value
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5/17/2017		5/17/2018		5/17/2019	292.70	5/16/2020	92.36026
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5/20/2017		5/20/2018		5/20/2019	375.51	5/19/2020	77.98049
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5/26/2017		5/26/2018		5/26/2019	281.90	5/25/2020	97.68356
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5/30/2017		5/30/2018		5/30/2019	242.90	5/29/2020	0.107701
5/31/2017		5/31/2018		5/31/2019	244.97	5/30/2020	5.16484
6/1/2017		6/1/2018		6/1/2019	251.77	5/31/2020	17.39958
6/2/2017		6/2/2018		6/2/2019	171.37	6/1/2020	2.533194
6/3/2017		6/3/2018		6/3/2019	168.76	6/2/2020	2.636283
6/4/2017		6/4/2018		6/4/2019	194.47	6/3/2020	41.38205
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6/6/2017		6/6/2018		6/6/2019	138.26	6/5/2020	21.72785
6/7/2017		6/7/2018		6/7/2019	118.12	6/6/2020	15.35354
6/8/2017		6/8/2018		6/8/2019	197.23	6/7/2020	34.95299
6/9/2017		6/9/2018		6/9/2019	257.13	6/8/2020	35.67417
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6/15/2017		6/15/2018		6/15/2019	228.74	6/14/2020	42.49708
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6/17/2017		6/17/2018		6/17/2019	478.87	6/16/2020	15.09847
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7/1/2017		7/1/2018		7/1/2019	264.08	6/30/2020	75.42729
7/2/2017		7/2/2018		7/2/2019	86.98	7/1/2020	55.05743
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7/19/2017		7/19/2018		7/19/2019	153.26	7/18/2020	11.60813
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7/21/2017		7/21/2018		7/21/2019	140.47	7/20/2020	8.501945
7/22/2017		7/22/2018		7/22/2019	99.80	7/21/2020	8.101736
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7/24/2017		7/24/2018		7/24/2019	40.71	7/23/2020	4.974514
7/25/2017		7/25/2018		7/25/2019	41.96	7/24/2020	6.943056
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7/29/2017		7/29/2018		7/29/2019	175.27	7/28/2020	14.47222
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7/31/2017		7/31/2018		7/31/2019	184.44	7/30/2020	14.80181
8/1/2017		8/1/2018		8/1/2019	144.99	7/31/2020	14.86742
8/2/2017		8/2/2018		8/2/2019	188.12	8/1/2020	10.91917
8/3/2017		8/3/2018		8/3/2019	167.49	8/2/2020	9.785556
8/4/2017		8/4/2018		8/4/2019	125.50	8/3/2020	12.79757
8/5/2017		8/5/2018		8/5/2019	71.25	8/4/2020	20.00486
8/6/2017		8/6/2018		8/6/2019	73.31	8/5/2020	5.645695
8/7/2017	123.9552	8/7/2018		8/7/2019	73.19	8/6/2020	7.047239
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8/9/2017		8/9/2018		8/9/2019	130.48	8/8/2020	4.47
8/10/2017		8/10/2018		8/10/2019	115.78	8/9/2020	2.957834
8/11/2017		8/11/2018		8/11/2019	62.30	8/10/2020	1.640784
8/12/2017		8/12/2018		8/12/2019	89.69	8/11/2020	0.76985
8/13/2017		8/13/2018		8/13/2019	43.89	8/12/2020	0.913704
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8/16/2017	94.13457	8/16/2018		8/16/2019	52.75	8/15/2020	0.182915
8/17/2017	134.4708	8/17/2018		8/17/2019	59.90	8/16/2020	0.215495
8/18/2017	57.23951	8/18/2018		8/18/2019	66.84	8/17/2020	0.1

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8/21/2017	84.1046	8/21/2018		8/21/2019	178.42	8/20/2020	2.503751
8/22/2017	100.3157	8/22/2018		8/22/2019	158.01	8/21/2020	0.370981
8/23/2017	80.86306	8/23/2018		8/23/2019	165.86	8/22/2020	1.646912
8/24/2017	102.3705	8/24/2018		8/24/2019	39.44	8/23/2020	0.136347
8/25/2017	87.47031	8/25/2018		8/25/2019	50.44	8/24/2020	0.994711
8/26/2017	144.2928	8/26/2018		8/26/2019	84.58	8/25/2020	0.115519
8/27/2017	127.8985	8/27/2018		8/27/2019	109.19	8/26/2020	1.204922
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8/29/2017	86.16049	8/29/2018		8/29/2019	92.65	8/28/2020	1.535667
8/30/2017	126.6793	8/30/2018		8/30/2019	117.14	8/29/2020	0.41978
8/31/2017	128.3134	8/31/2018		8/31/2019	53.69	8/30/2020	0.14007
9/1/2017	72.56136	9/1/2018		9/1/2019	85.96	8/31/2020	0.130692
9/2/2017	99.40924	9/2/2018		9/2/2019	124.02	9/1/2020	0.122378
9/3/2017	85.5466	9/3/2018		9/3/2019	97.54	9/2/2020	0.565035
9/4/2017	55.94318	9/4/2018		9/4/2019	58.14	9/3/2020	0.148584
9/5/2017	109.6967	9/5/2018		9/5/2019	53.50	9/4/2020	0.150989
9/6/2017	139.4997	9/6/2018		9/6/2019	42.09	9/5/2020	0.11733
9/7/2017	154.9406	9/7/2018		9/7/2019	64.05	9/6/2020	0.117579
9/8/2017	135.7991	9/8/2018		9/8/2019	77.80	9/7/2020	0.198191
9/9/2017	152.1182	9/9/2018		9/9/2019	87.94	9/8/2020	396.1779
9/10/2017	153.7426	9/10/2018		9/10/2019	74.52	9/9/2020	832.1499
9/11/2017	206.1807	9/11/2018		9/11/2019	119.43	9/10/2020	844.5749
9/12/2017	215.8075	9/12/2018		9/12/2019	76.22	9/11/2020	
9/13/2017	119.2618	9/13/2018		9/13/2019	28.52	9/12/2020	
9/14/2017	138.8271	9/14/2018		9/14/2019	39.68	9/13/2020	
9/15/2017	152.5166	9/15/2018		9/15/2019	66.40	9/14/2020	
9/16/2017	157.7225	9/16/2018		9/16/2019	66.21	9/15/2020	236.5676
9/17/2017	206.1361	9/17/2018		9/17/2019	46.30	9/16/2020	38.40139
9/18/2017	295.9298	9/18/2018		9/18/2019	38.33	9/17/2020	48.50327
9/19/2017	60.01319	9/19/2018		9/19/2019	132.53	9/18/2020	31.62479
9/20/2017	119.7741	9/20/2018		9/20/2019	143.72	9/19/2020	59.43229
9/21/2017	38.2684	9/21/2018		9/21/2019	124.25	9/20/2020	76.40278
9/22/2017	54.31399	9/22/2018		9/22/2019	149.80	9/21/2020	91.11771
9/23/2017	82.65901	9/23/2018		9/23/2019	132.70	9/22/2020	39.59306
9/24/2017	112.5376	9/24/2018		9/24/2019	114.63	9/23/2020	9.445139
9/25/2017	140.2164	9/25/2018		9/25/2019	33.78	9/24/2020	8.902153
9/26/2017	148.3581	9/26/2018		9/26/2019	18.99	9/25/2020	42.83042
9/27/2017	234.7344	9/27/2018		9/27/2019	17.24	9/26/2020	42.38104
9/28/2017	374.7429	9/28/2018		9/28/2019	25.23	9/27/2020	49.75549
9/29/2017	133.3331	9/29/2018		9/29/2019	32.33	9/28/2020	72.44722
9/30/2017	127.6928	9/30/2018		9/30/2019	93.06	9/29/2020	122.2369

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10/2/2017	69.26557	10/2/2018		10/2/2019	130.54	10/1/2020	217.5773
10/3/2017	57.58178	10/3/2018		10/3/2019	164.85	10/2/2020	188.2162
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10/6/2017	252.8274	10/6/2018		10/6/2019	130.72	10/5/2020	130.6926
10/7/2017	177.1697	10/7/2018		10/7/2019	128.75	10/6/2020	112.6443
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10/10/2017	204.3733	10/10/2018		10/10/2019	102.88	10/9/2020	155.2942
10/11/2017	286.6293	10/11/2018		10/11/2019	138.20	10/10/2020	158.8367
10/12/2017	214.2756	10/12/2018		10/12/2019	183.04	10/11/2020	135.062
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10/14/2017	171.253	10/14/2018		10/14/2019	274.99	10/13/2020	205.2499
10/15/2017	415.4582	10/15/2018		10/15/2019	231.87	10/14/2020	148.9037
10/16/2017	286.0647	10/16/2018		10/16/2019	228.03	10/15/2020	140.3291
10/17/2017	214.1107	10/17/2018		10/17/2019	213.51	10/16/2020	147.0805
10/18/2017	261.5671	10/18/2018		10/18/2019	219.46	10/17/2020	197.1918
10/19/2017	256.8741	10/19/2018		10/19/2019	248.21	10/18/2020	196.9589
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10/21/2017	269.2576	10/21/2018		10/21/2019	243.52	10/20/2020	179.8656
10/22/2017	126.5745	10/22/2018		10/22/2019	209.15	10/21/2020	144.6865
10/23/2017	239.3159	10/23/2018		10/23/2019	280.31	10/22/2020	124.0678
10/24/2017	327.0519	10/24/2018		10/24/2019	296.32	10/23/2020	132.5903
10/25/2017	265.3626	10/25/2018		10/25/2019	284.80	10/24/2020	122.5817
10/26/2017	250.0928	10/26/2018		10/26/2019	266.50	10/25/2020	105.0406
10/27/2017	226.5592	10/27/2018		10/27/2019	226.06	10/26/2020	85.79799
10/28/2017	205.0163	10/28/2018		10/28/2019	205.51	10/27/2020	117.4924
10/29/2017	266.8653	10/29/2018		10/29/2019	193.66	10/28/2020	159.2178
10/30/2017	217.9489	10/30/2018		10/30/2019	184.30	10/29/2020	151.2647
10/31/2017	182.0314	10/31/2018		10/31/2019	247.36	10/30/2020	155.6574
11/1/2017	92.7997	11/1/2018		11/1/2019	283.46	10/31/2020	162.8969
11/2/2017	144.0912	11/2/2018		11/2/2019	244.90	11/1/2020	155.7518
11/3/2017	193.3618	11/3/2018		11/3/2019	265.88	11/2/2020	128.7951
11/4/2017	240.9729	11/4/2018		11/4/2019	208.66	11/3/2020	124.8288
11/5/2017	247.8132	11/5/2018		11/5/2019	208.80	11/4/2020	203.4927
11/6/2017	249.0154	11/6/2018		11/6/2019		11/5/2020	197.2731
11/7/2017	199.5168	11/7/2018		11/7/2019		11/6/2020	209.4474
11/8/2017	263.5686	11/8/2018		11/8/2019		11/7/2020	183.3822
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11/11/2017	290.413	11/11/2018		11/11/2019	1087.40	11/10/2020	188.8565
11/12/2017	218.3204	11/12/2018		11/12/2019	1121.11	11/11/2020	267.9079

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11/14/2017	271.2417	11/14/2018		11/14/2019	1288.91	11/13/2020	199.7136
11/15/2017	227.9697	11/15/2018		11/15/2019	1199.59	11/14/2020	167.048
11/16/2017	215.1948	11/16/2018		11/16/2019	1192.33	11/15/2020	135.6365
11/17/2017	314.9437	11/17/2018		11/17/2019	1156.01	11/16/2020	162.1807
11/18/2017	295.0696	11/18/2018		11/18/2019	1322.33	11/17/2020	137.5038
11/19/2017	222.7731	11/19/2018		11/19/2019	1435.98	11/18/2020	124.9639
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11/21/2017	264.8542	11/21/2018		11/21/2019	1551.55	11/20/2020	164.9447
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11/23/2017	208.244	11/23/2018		11/23/2019	1593.12	11/22/2020	153.3479
11/24/2017	223.534	11/24/2018		11/24/2019	1485.22	11/23/2020	148.5201
11/25/2017	226.5542	11/25/2018		11/25/2019	1565.70	11/24/2020	205.8591
11/26/2017	259.5188	11/26/2018		11/26/2019	1650.45	11/25/2020	214.8665
11/27/2017	237.0753	11/27/2018		11/27/2019	1517.26	11/26/2020	200.5869
11/28/2017	267.3545	11/28/2018		11/28/2019	1504.04	11/27/2020	223.7784
11/29/2017	236.6155	11/29/2018		11/29/2019	1906.36	11/28/2020	287.1844
11/30/2017	196.5098	11/30/2018		11/30/2019	1436.32	11/29/2020	240.7193
12/1/2017	278.0765	12/1/2018		12/1/2019	1346.87	11/30/2020	223.3419
12/2/2017	266.6931	12/2/2018		12/2/2019	1289.42	12/1/2020	188.6783
12/3/2017	330.8329	12/3/2018		12/3/2019	1429.90	12/2/2020	176.3487
12/4/2017	220.294	12/4/2018		12/4/2019	1589.63	12/3/2020	169.7925
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12/6/2017	244.8512	12/6/2018		12/6/2019	1804.19	12/5/2020	133.7214
12/7/2017	270.0329	12/7/2018		12/7/2019	1686.94	12/6/2020	145.5447
12/8/2017	132.5926	12/8/2018		12/8/2019	1475.25	12/7/2020	152.7357
12/9/2017	300.102	12/9/2018		12/9/2019	1356.91	12/8/2020	176.9329
12/10/2017	249.3203	12/10/2018		12/10/2019	1367.35	12/9/2020	171.8351
12/11/2017	239.434	12/11/2018		12/11/2019	1292.61	12/10/2020	173.9601
12/12/2017	226.7249	12/12/2018		12/12/2019	1407.70	12/11/2020	188.2141
12/13/2017	232.4962	12/13/2018		12/13/2019	832.03	12/12/2020	232.0982
12/14/2017	267.1465	12/14/2018		12/14/2019	398.58	12/13/2020	200.3114
12/15/2017	328.9827	12/15/2018		12/15/2019	863.95	12/14/2020	183.3812
12/16/2017	335.5616	12/16/2018		12/16/2019	851.95	12/15/2020	246.3084
12/17/2017	312.9488	12/17/2018		12/17/2019	1134.93	12/16/2020	381.089
12/18/2017	226.5047	12/18/2018		12/18/2019	1010.75	12/17/2020	183.2756
12/19/2017	274.6669	12/19/2018		12/19/2019	1242.91	12/18/2020	197.7349
12/20/2017	261.8984	12/20/2018		12/20/2019	1368.31	12/19/2020	239.7329
12/21/2017	262.9953	12/21/2018		12/21/2019	1169.80	12/20/2020	238.3108
12/22/2017	209.8082	12/22/2018		12/22/2019	1258.52	12/21/2020	272.1394
12/23/2017	220.4116	12/23/2018		12/23/2019	1091.65	12/22/2020	213.5558
12/24/2017	261.9559	12/24/2018		12/24/2019	991.00	12/23/2020	212.2702
12/25/2017	277.41	12/25/2018		12/25/2019	1073.36	12/24/2020	225.3256

12/26/2017	236.2973	12/26/2018		12/26/2019	995.14	12/25/2020	266.7484
12/27/2017	280.3792	12/27/2018		12/27/2019	1071.50	12/26/2020	199.7251
12/28/2017	307.2677	12/28/2018		12/28/2019	1318.86	12/27/2020	178.9179
12/29/2017	357.4012	12/29/2018		12/29/2019	1293.81	12/28/2020	188.8732
12/30/2017	322.9987	12/30/2018		12/30/2019	1489.58	12/29/2020	185.3263
12/31/2017	277.6355	12/31/2018		12/31/2019	1572.98	12/30/2020	216.4626
						12/31/2020	248.0702