



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

# Air quality status of Nepal 2016-2020

Volume XII

Dang air quality monitoring station



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# 1 Dang Air Quality Monitoring Station

- Address: Ghorahi Sub-Metropolitan City, ward no. 2 office premise
- Location: 27.9914 latitude, 82.5346 longitude
- Surrounding of the station
  - East: Rampur Shivalaya Temple
  - West: Agricultural Land
  - North: Ghorahi-Rampur Road
  - South: Agricultural Land
- Establish year: 2018 (2075)
- Brief introduction of the instruments installed in the station
  1. PM instrument- GRIMM EDM 180
  2. Met sensor luffth WS 700
  3. Data logging and data transmission and power backup system

## 2 Air Quality Status of Dang Station (2018-2020)

### 2.1 Air Quality Status, 2018

#### 2.1.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP

Since the data were generated from September 2018, the annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP for Dang Station could not be calculated **Error! Reference source not found..**

#### 2.1.2 Temporal variation of PM<sub>1</sub>

##### **Annual average of PM<sub>1</sub>**

Since, the data of three-months data are only available, the annual average could not be calculated.

##### **Daily average of PM<sub>1</sub>**

Daily average concentration of PM<sub>1</sub> was high during November and low during October.



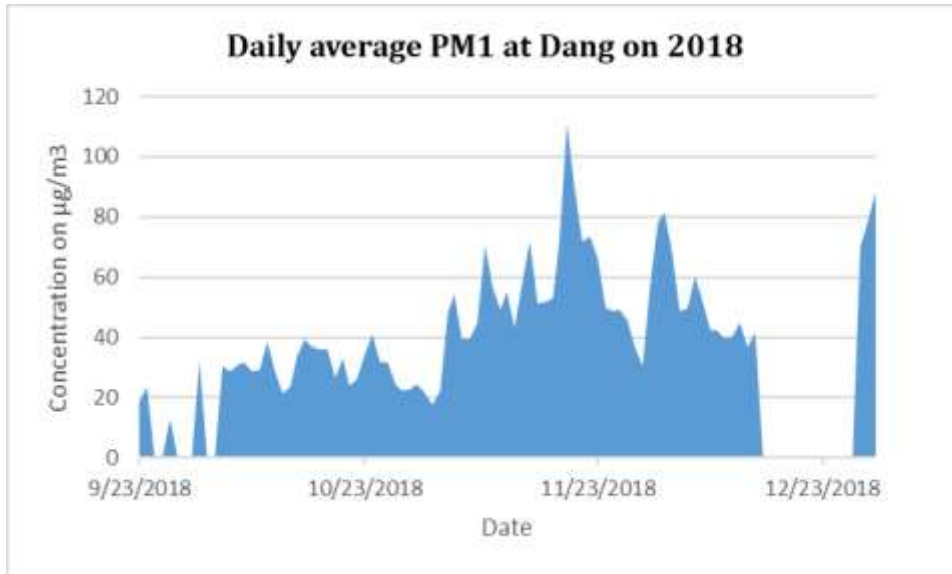


Figure 1: Daily average of PM<sub>1</sub>

**Monthly average of PM<sub>1</sub>**

The highest and the lowest monthly average of PM<sub>1</sub> was found during December (56.46 µg/m<sup>3</sup>) and October (29.98 µg/m<sup>3</sup>) respectively. Since, data were generated from 22<sup>nd</sup> September, the 9-days average was found to be 18.29 µg/m<sup>3</sup>.

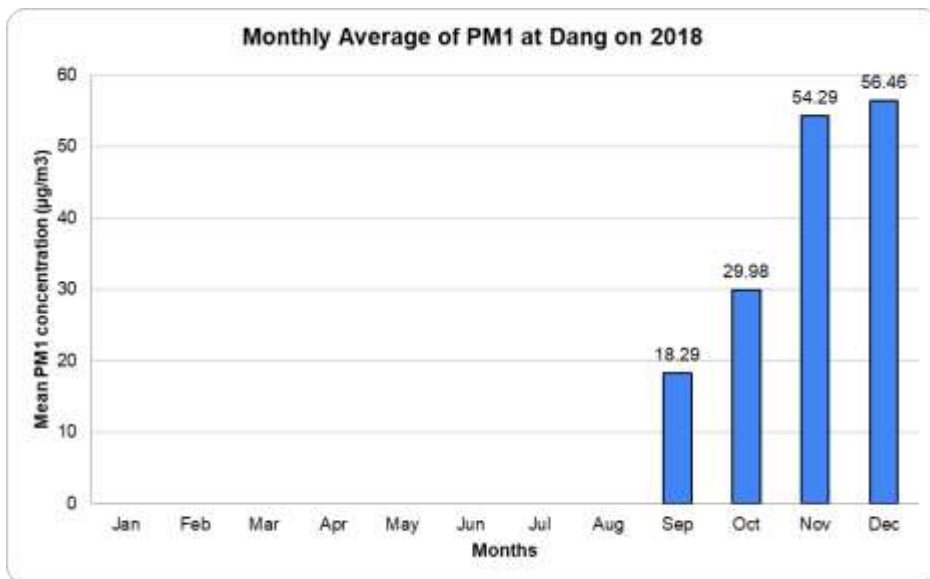
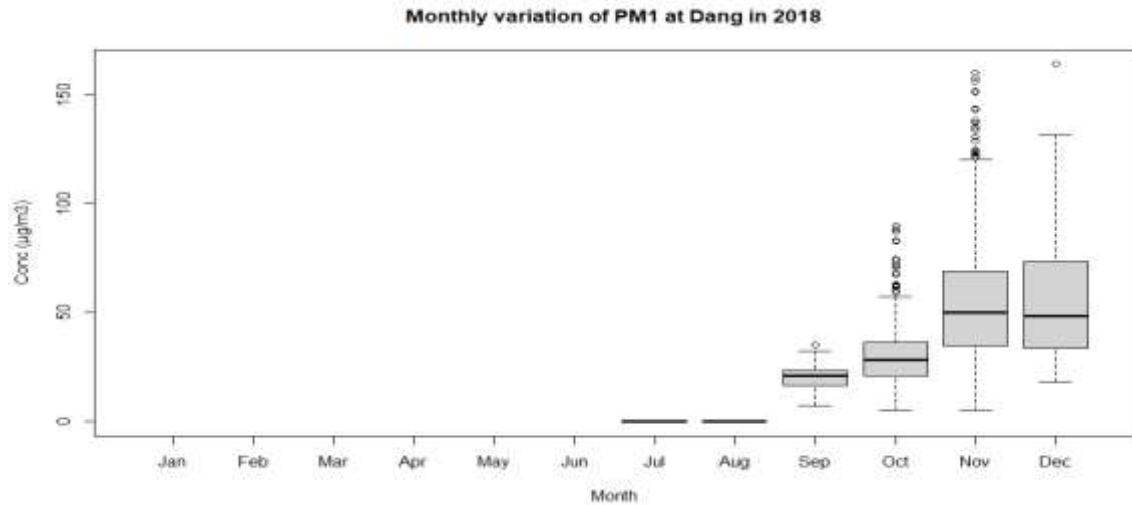


Figure 2: Monthly Average of PM<sub>1</sub>

### Monthly variation of PM<sub>1</sub>

Variation in concentration of PM<sub>1</sub> was found more in December and low in October.



### Seasonal variation of PM<sub>1</sub>

Figure 3: Monthly Variation of PM<sub>1</sub>

Due to the lack of enough data, the seasonal variation of PM<sub>1</sub> could not be calculated.

### Diurnal variation of PM<sub>1</sub> concentration

The diurnal variation of average PM<sub>1</sub> concentration can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 7 am and low at 2 pm.

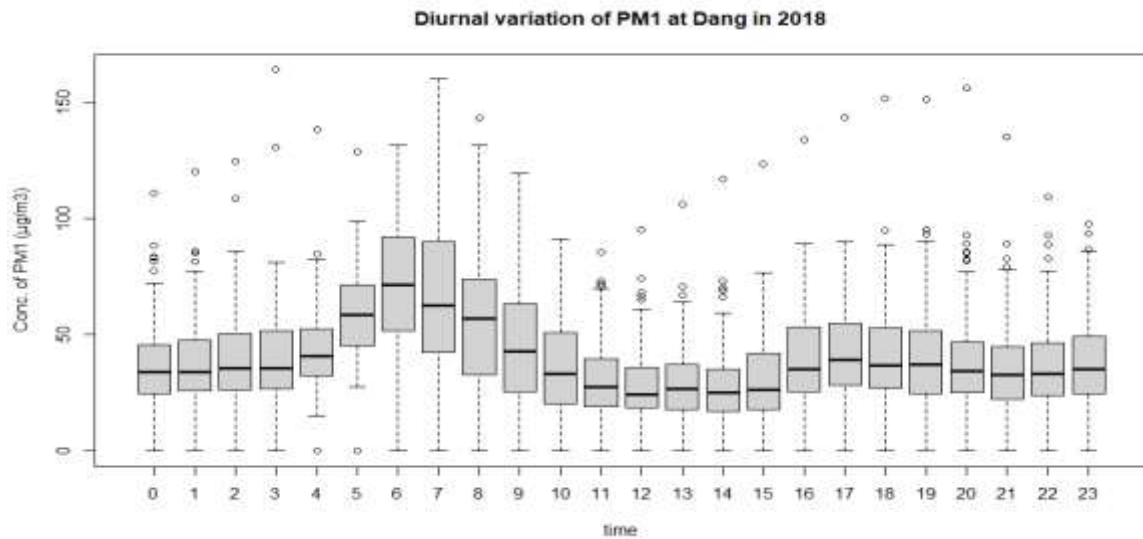


Figure 4: Diurnal Variation of PM<sub>1</sub>

### 2.1.3 Temporal Variation of PM<sub>2.5</sub>

#### Annual average of PM<sub>2.5</sub>

Due to lack of data, annual average of PM<sub>2.5</sub> could not be calculated.

#### Daily average of PM<sub>2.5</sub>

Daily average concentration of PM<sub>2.5</sub> was high during November and was found low during September.

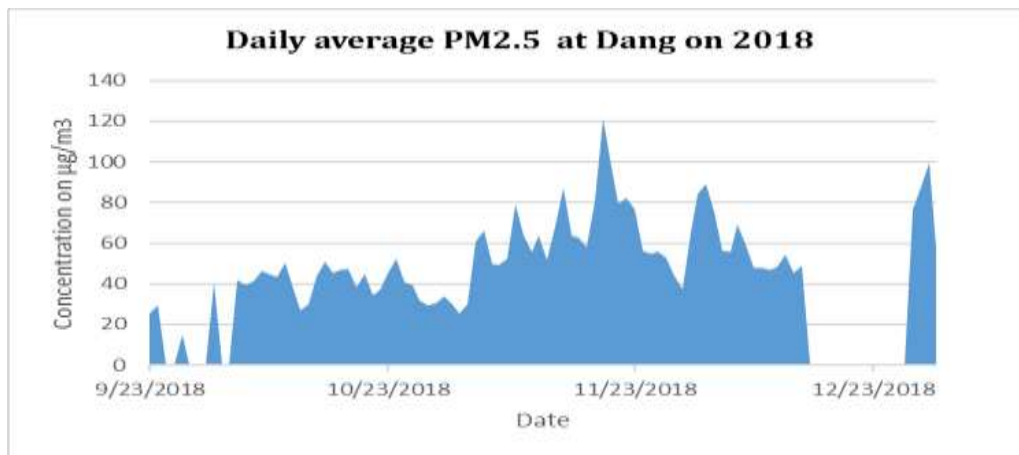


Figure 5: Daily average of PM<sub>2.5</sub>

#### Monthly average of PM<sub>2.5</sub>

The highest and the lowest concentration of PM<sub>2.5</sub> was found during December (63.88 µg/m<sup>3</sup>) and October (40.11 µg/m<sup>3</sup>) respectively. Since, data were generated from 22<sup>nd</sup> September, the 9-days average was found to be 23.27 µg/m<sup>3</sup>.

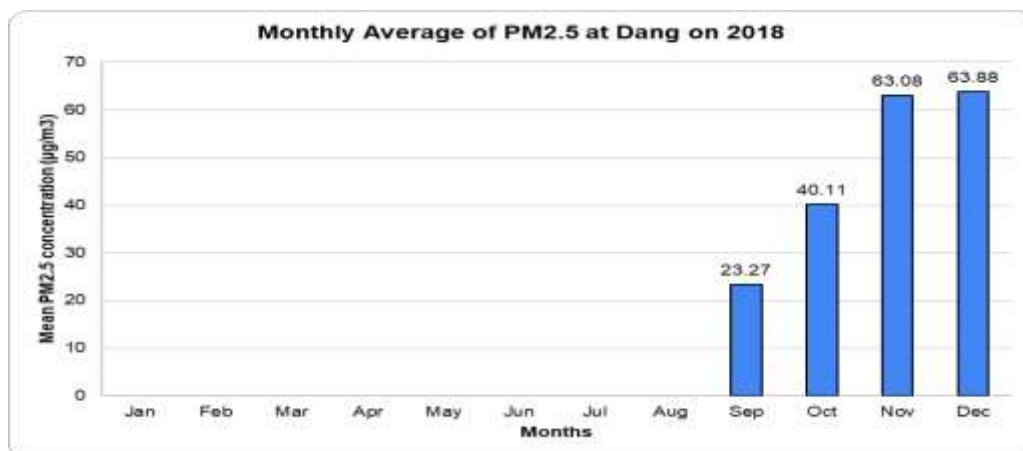


Figure 6: Monthly Average of PM<sub>2.5</sub>

### Monthly variation of PM<sub>2.5</sub>

Variation in concentration of PM<sub>2.5</sub> was found more during December and low during October.

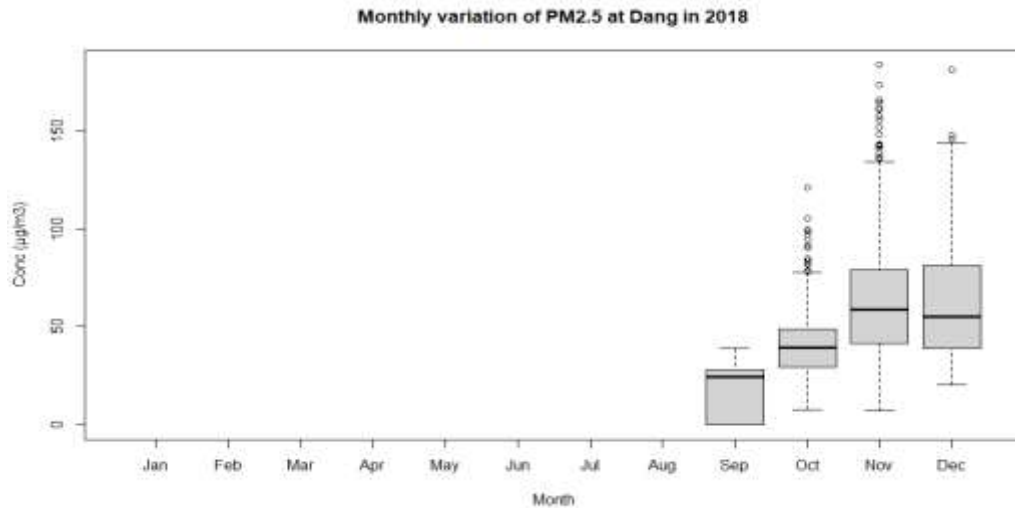


Figure 7: Monthly Variation of PM<sub>2.5</sub>

### Seasonal variation of average PM<sub>2.5</sub>

Due to the lack of enough data, the seasonal variation of PM<sub>2.5</sub> could not be calculated.

### Diurnal variation of PM<sub>2.5</sub> concentration

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below. The variation in PM<sub>2.5</sub> concentrations was high at around 7 am and low at 12pm and 2pm.

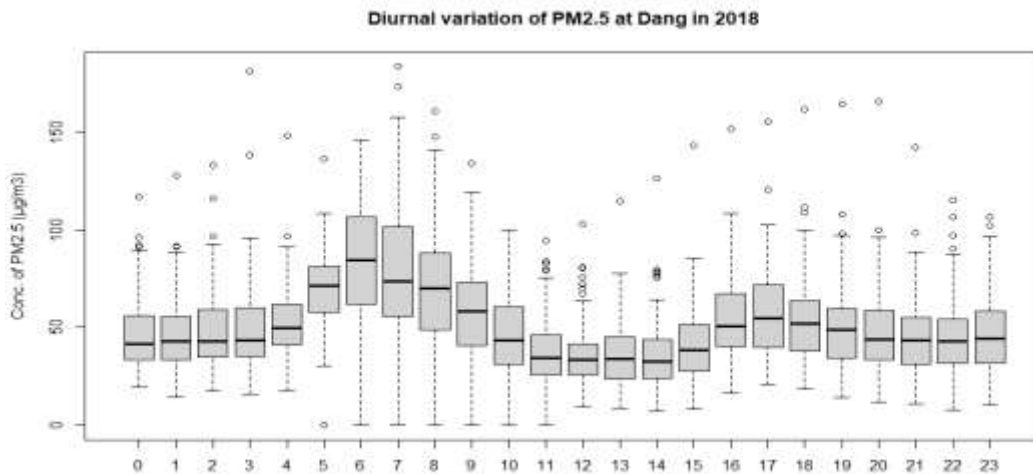


Figure 8: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2018 counts 80, of which 61 days exceeded the NAAQS guideline.

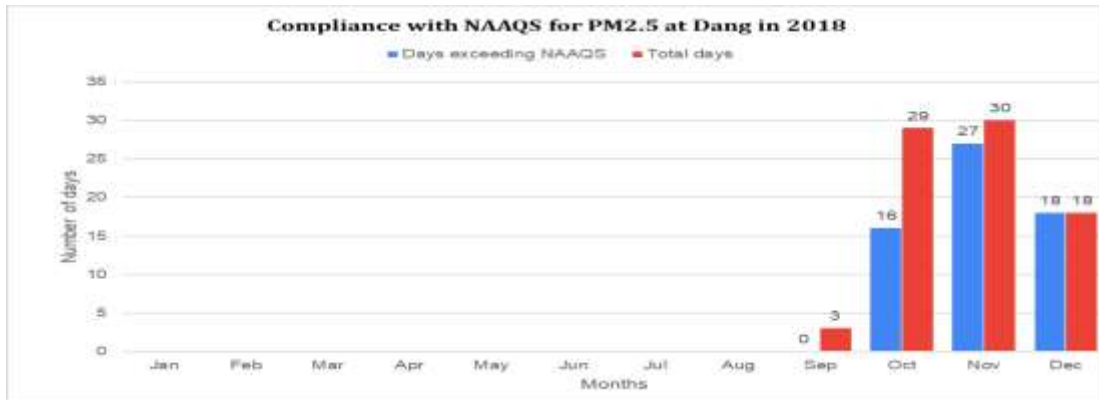


Figure 9: Compliance status of PM<sub>2.5</sub>

#### 2.1.4 Temporal Variation of PM<sub>10</sub>

##### Annual average of PM<sub>10</sub>

Due to lack of data annual average of PM<sub>10</sub> for Dang Station for the year 2018 could not be calculated.

##### Daily average of PM<sub>10</sub>

Daily average concentration of PM<sub>10</sub> was high during November and lower during October.

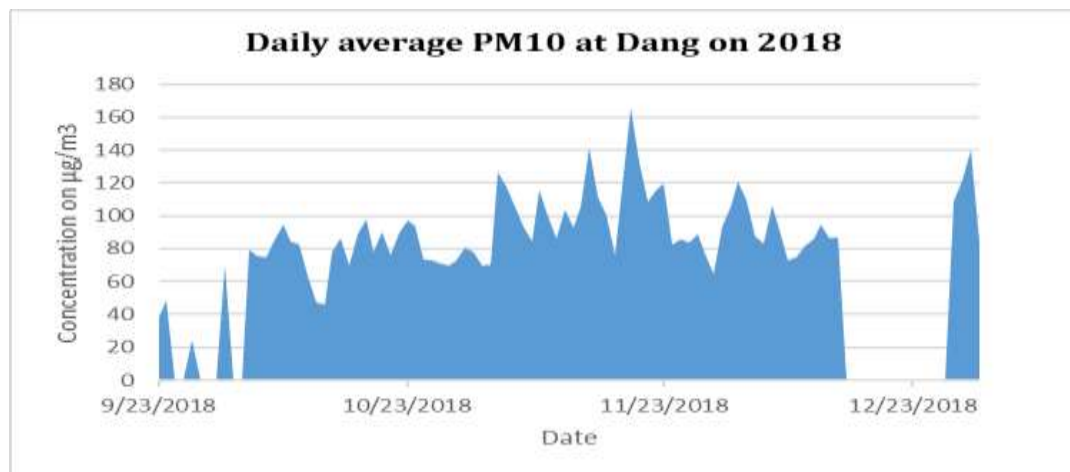


Figure 10: Daily average of PM<sub>10</sub>

### Monthly average of PM<sub>10</sub>

The highest and the lowest average of PM<sub>10</sub> was found during November (101.25  $\mu\text{g}/\text{m}^3$ ) and October (78.19  $\mu\text{g}/\text{m}^3$ ) respectively. Since, the data was generated from 22<sup>nd</sup> September, the nine-days average for the month September was found to be 37.15  $\mu\text{g}/\text{m}^3$ .

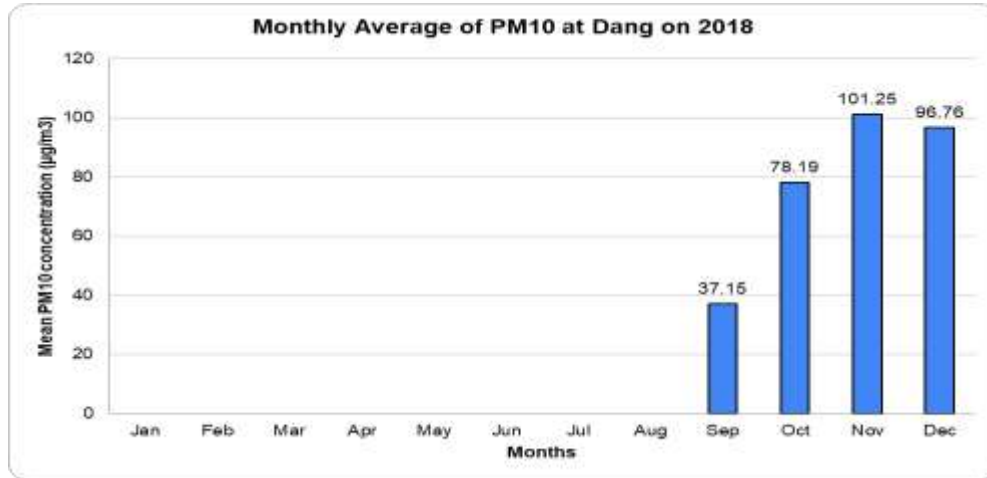


Figure 11: Monthly average of PM<sub>10</sub>

### Monthly variation of PM<sub>10</sub>

Variation in concentration of PM<sub>10</sub> was found more in November and low in October. The mean value of PM<sub>10</sub> was found the highest in November and lowest in October.

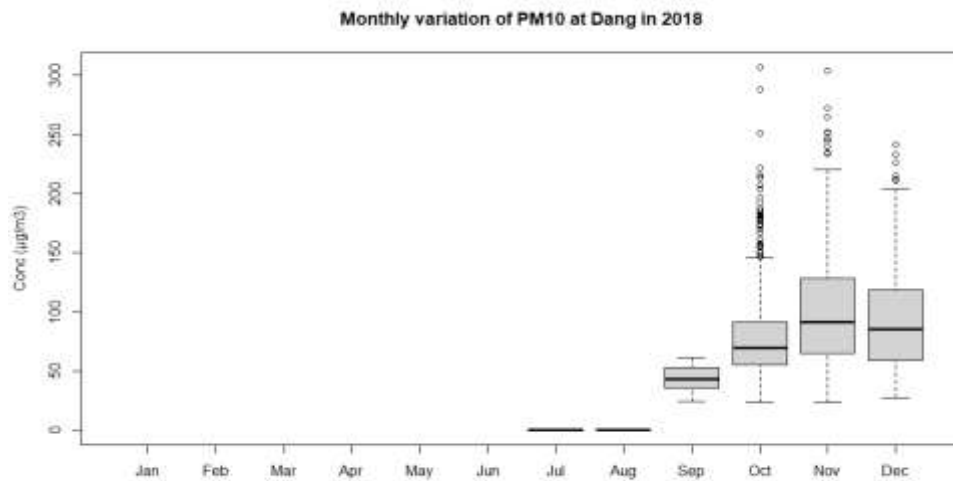


Figure 12: Monthly Variation of PM<sub>10</sub>

### Seasonal variation of PM<sub>10</sub>

Due to lack of data, seasonal variation of PM<sub>10</sub> for the Dang Station for the year 2018 could not be calculated.

### Diurnal variation of PM<sub>10</sub> concentration

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below. The variation in PM<sub>10</sub> concentration was high at around 8 am and 4 pm and low at 2 am and 12 pm.

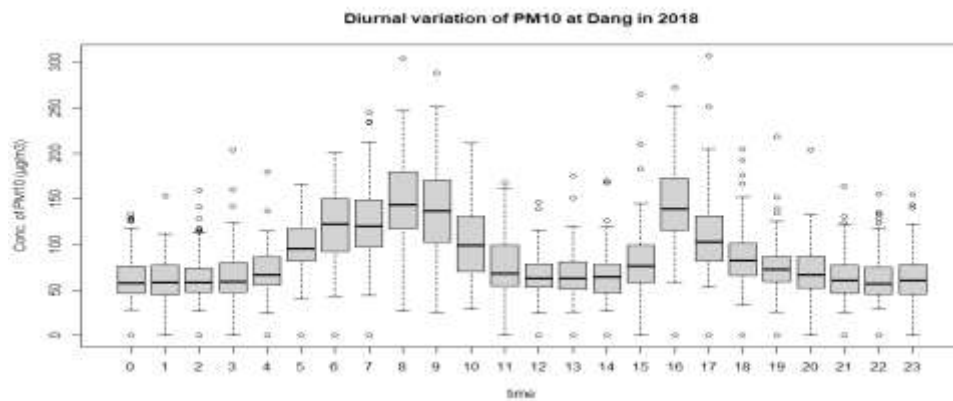


Figure 13: Diurnal Variation PM<sub>10</sub>

### Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2018 counts 80 of which 7 days exceed the NAAQS guideline.

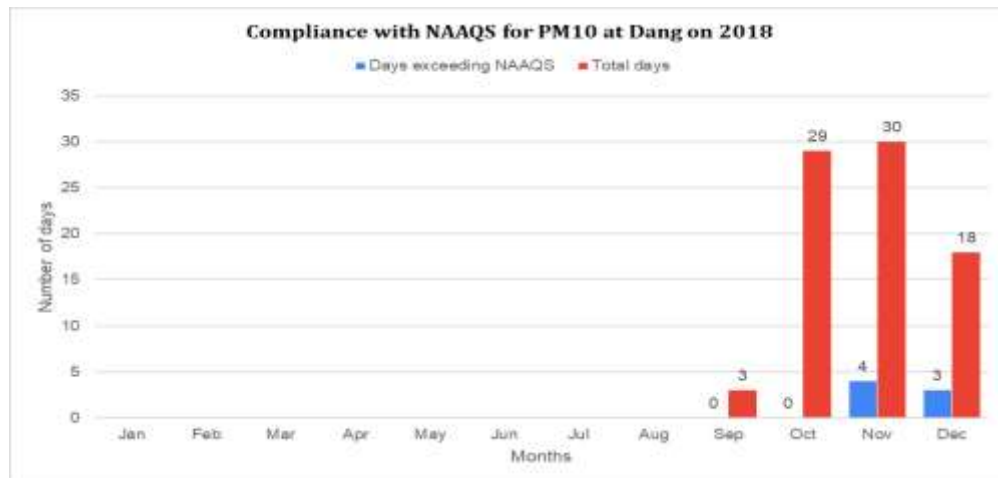


Figure 14: Compliance status of PM<sub>10</sub>

## 2.1.5 Temporal Variation of TSP

### Annual average of TSP

Due to lack of data, the annual average for TSP at Dang Station for the year 2018 could not be calculated.

### Daily average of TSP

Daily average concentration of TSP was high during November and low during October.



Figure 15: Daily average of TSP

### Monthly average of TSP

The highest and the lowest monthly average of TSP was found during November (157.62  $\mu\text{g}/\text{m}^3$ ) and October (135.99  $\mu\text{g}/\text{m}^3$ ) respectively. The mean value for the 9-day period for September was found to be 68.97  $\mu\text{g}/\text{m}^3$ .

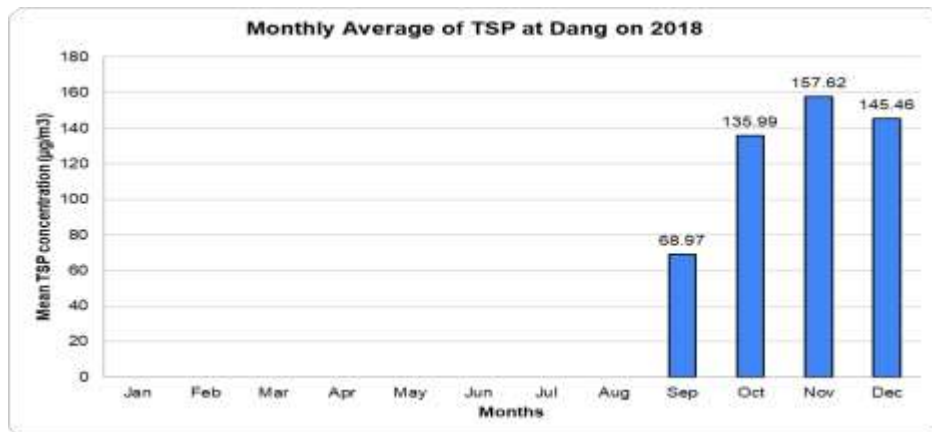


Figure 16: Monthly average of TSP



## Monthly variation of TSP

Variation in concentration of TSP was found more in November and low in October.

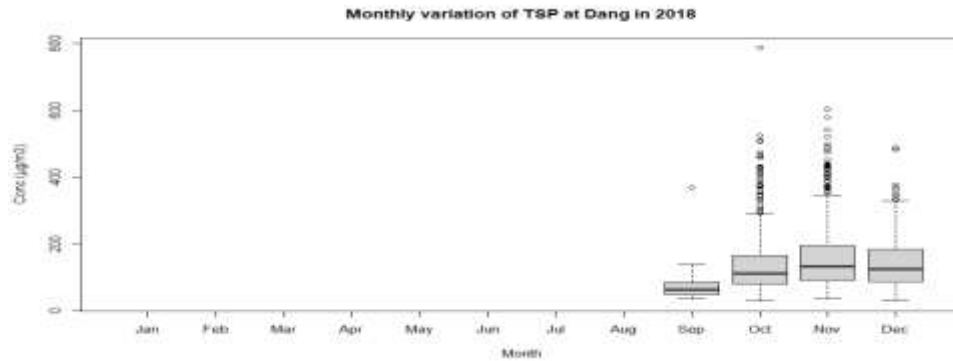


Figure 17: Monthly Variation of TSP

## Seasonal variation of TSP

Due to lack of enough data, seasonal variation of average TSP concentration could not be calculated.

## Diurnal variation of 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 9 am and low at 12 am.

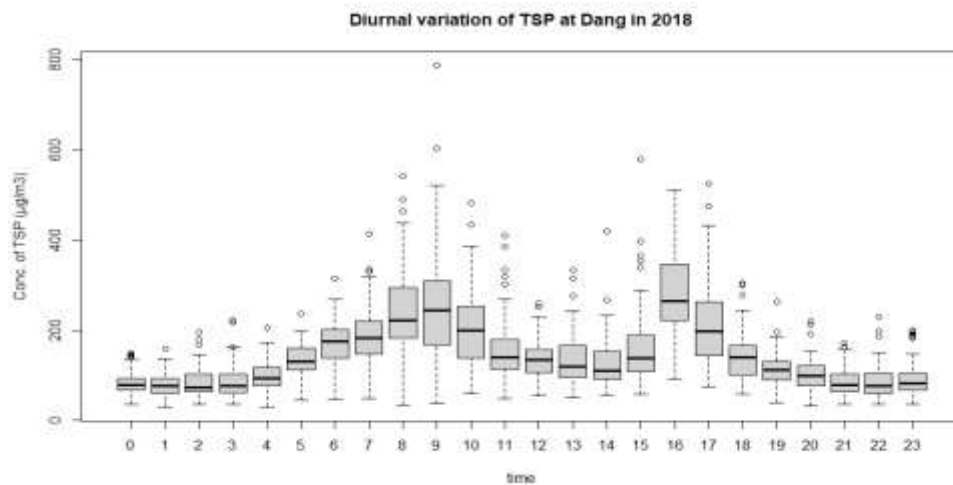


Figure 18: Diurnal Variation of TSP

## Compliance status of TSP

The total days of TSP monitored in the year 2018 counts 80 of which only one day exceed the NAAQS guideline.



Figure 19: Compliance Status of TSP

## 2.2 Air quality status, 2019

### 2.2.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP

The annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP at Dang Station is shown in the figure below.

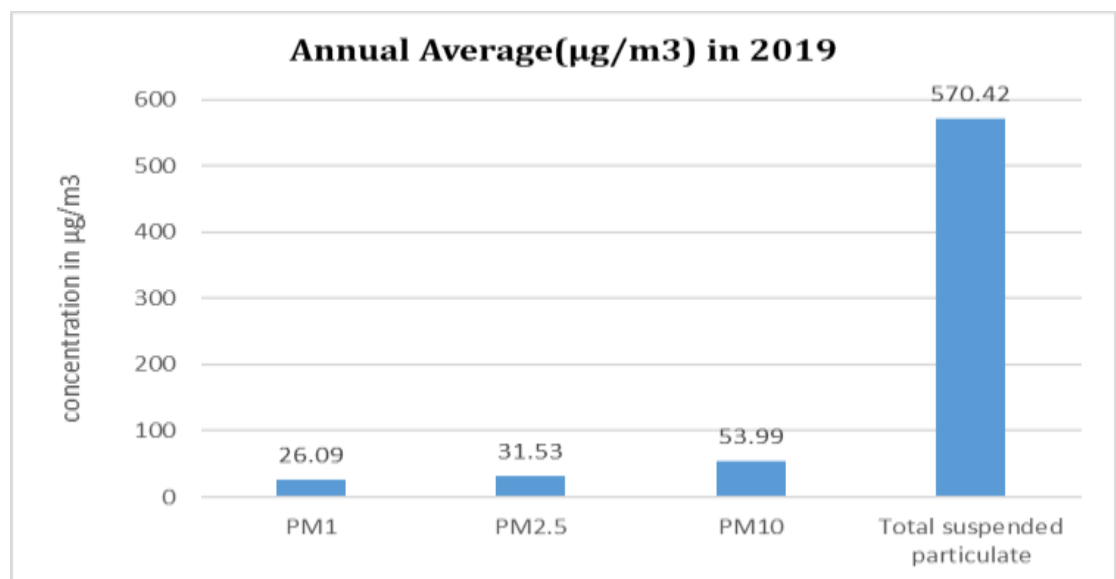


Figure 20: Annual Average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP

## 2.2.2 Temporal variation of PM<sub>1</sub>

### Annual Average of PM<sub>1</sub>

The annual average of PM<sub>1</sub> at Dang Station for the year 2019 was found to be 26.09 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>1</sub> is shown in the figure below.

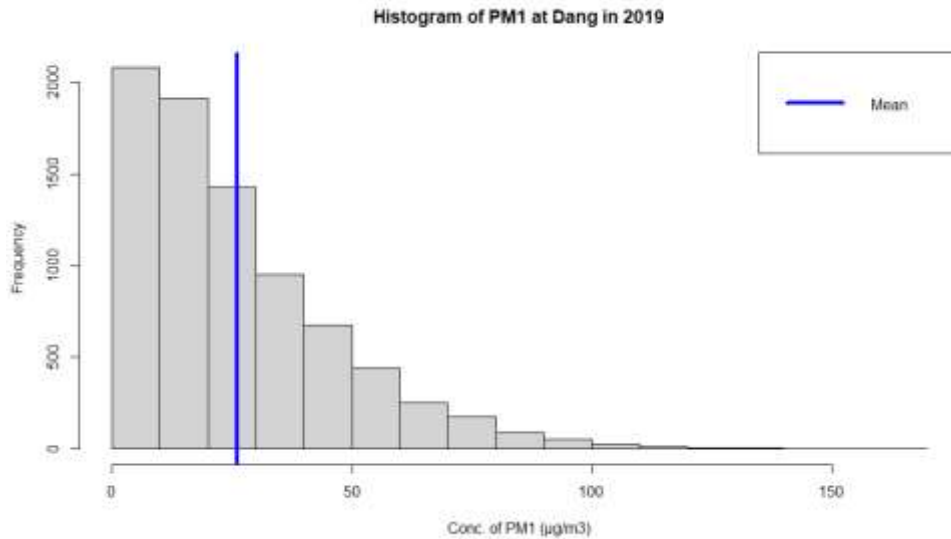


Figure 21:Histogram of PM<sub>1</sub>

### Daily average of PM<sub>1</sub>

Daily average concentration of PM<sub>1</sub> was high during January and low during August and September.

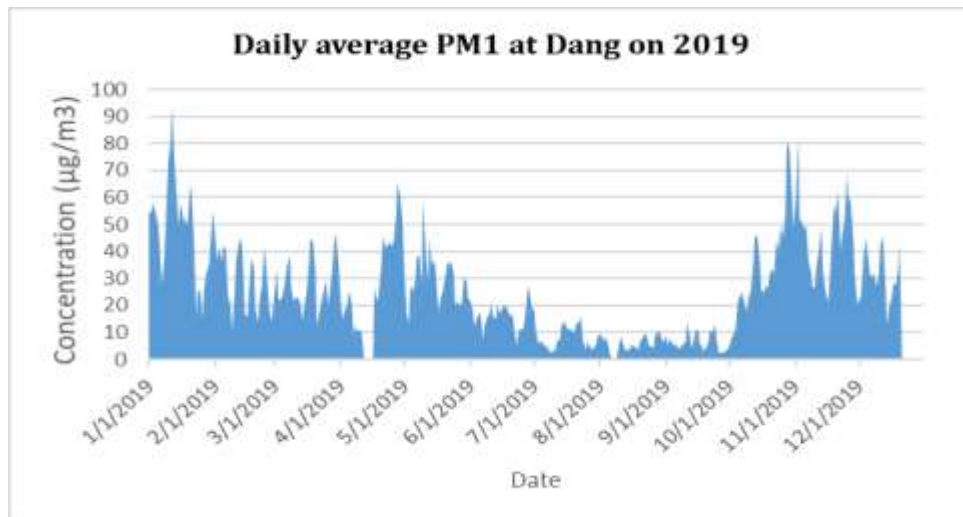


Figure 22:Daily Average of PM<sub>1</sub>

### Monthly average of PM<sub>1</sub>

The mean value for January and August were 48.87  $\mu\text{g}/\text{m}^3$  and 6.38  $\mu\text{g}/\text{m}^3$  respectively.

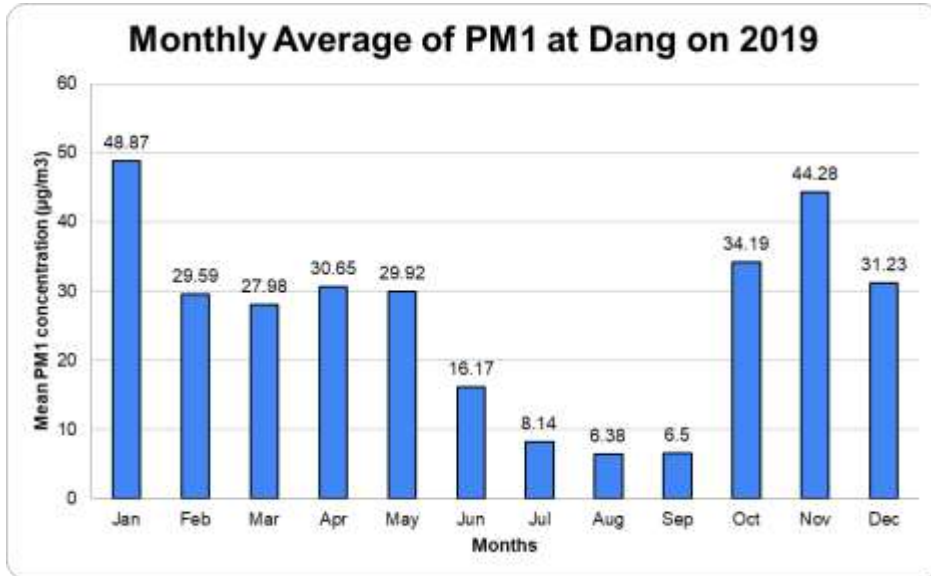


Figure 23: Monthly Average of PM<sub>1</sub>

### Monthly Variation of PM<sub>1</sub>

Variation in concentration of PM<sub>1</sub> was found more in January and low in August.

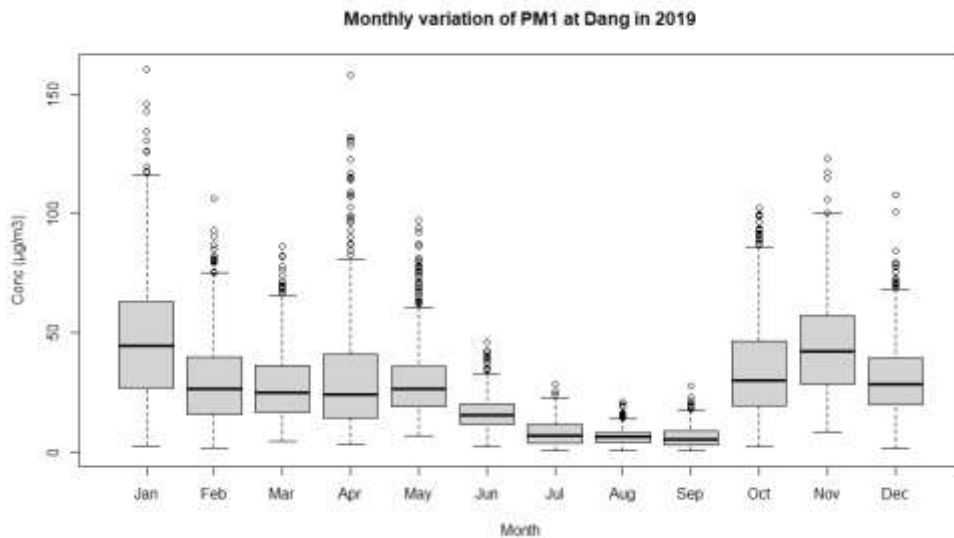


Figure 24: Monthly Variation of PM<sub>1</sub>

### Seasonal variation of PM<sub>1</sub>

Ambient concentration of average PM<sub>1</sub> during Winter (December-February), Pre-monsoon (March-May), Monsoon (June-September), and Post-monsoon (October-November) can be shown in the below. The concentration of PM<sub>1</sub> was found higher during Winter (44.97  $\mu\text{g}/\text{m}^3$ ) and lower during Monsoon season (10.23  $\mu\text{g}/\text{m}^3$ ).

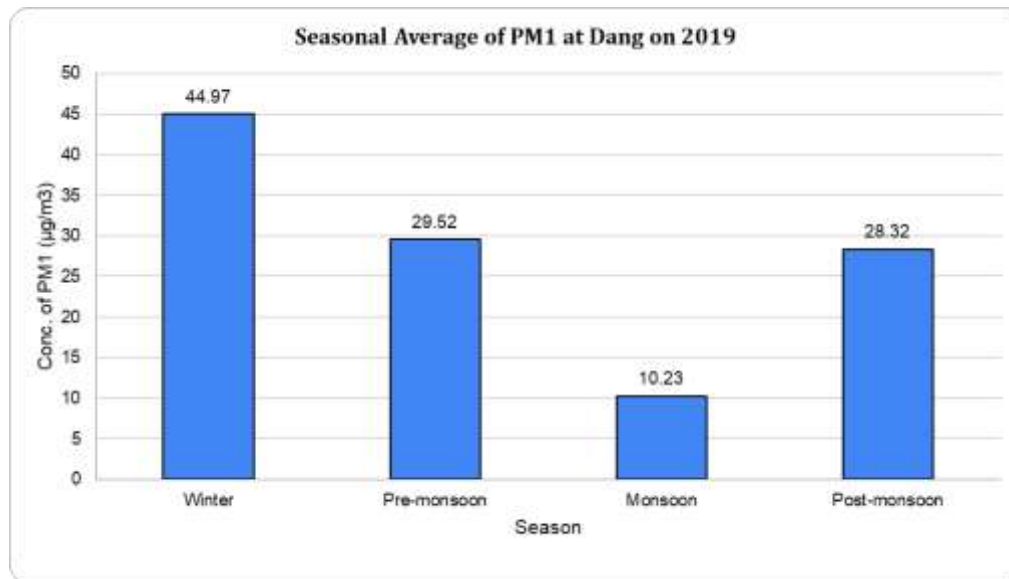


Figure 25: Seasonal Variation of PM<sub>1</sub>

### Diurnal variation of PM<sub>1</sub> concentration

The diurnal variation of average PM<sub>1</sub> concentration can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 6 am and low at 12 pm.

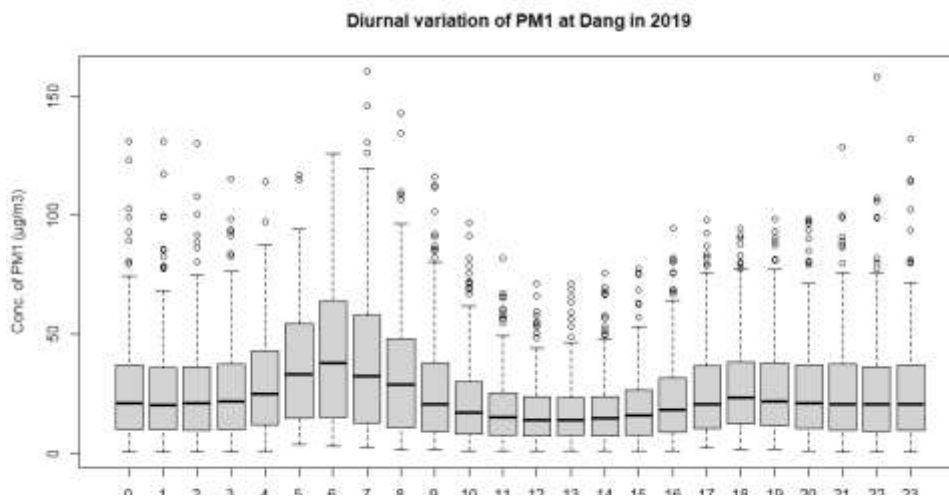


Figure 26: Diurnal Variation of PM<sub>1</sub>

### 2.2.3 Temporal variation of PM<sub>2.5</sub>

#### Annual average of PM<sub>2.5</sub>

Annual Average of PM<sub>2.5</sub> at Dang Station for the year 2019 was found to be 31.53 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>1</sub> is shown in the figure below.

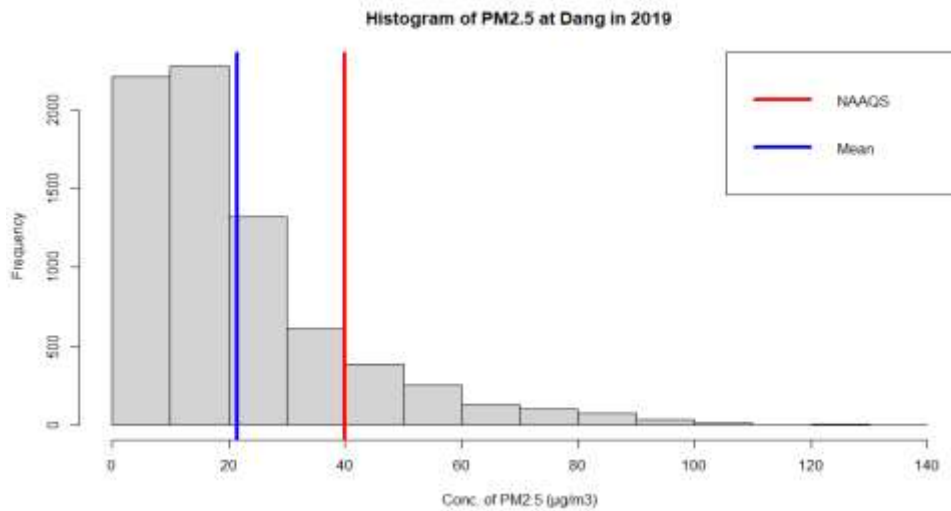


Figure 27: Histogram of PM<sub>2.5</sub>

#### Daily average of PM<sub>2.5</sub>

Daily average concentration of PM<sub>2.5</sub> was high during January and low during August as shown in figure below.

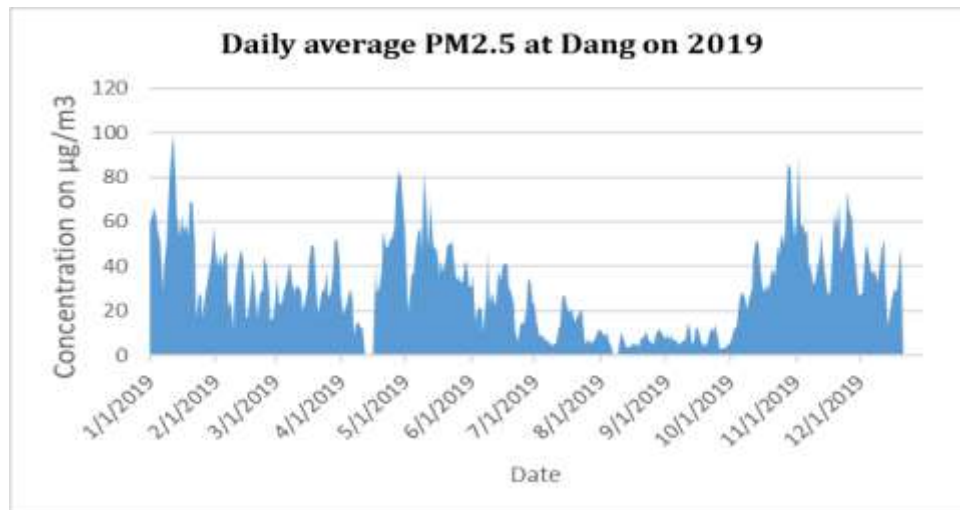


Figure 28: Daily Average of PM<sub>2.5</sub>

### Monthly average of PM<sub>2.5</sub>

The highest and the lowest monthly average of PM<sub>1</sub> was found during January (52.98  $\mu\text{g}/\text{m}^3$ ) and July (7.36  $\mu\text{g}/\text{m}^3$ ) respectively.

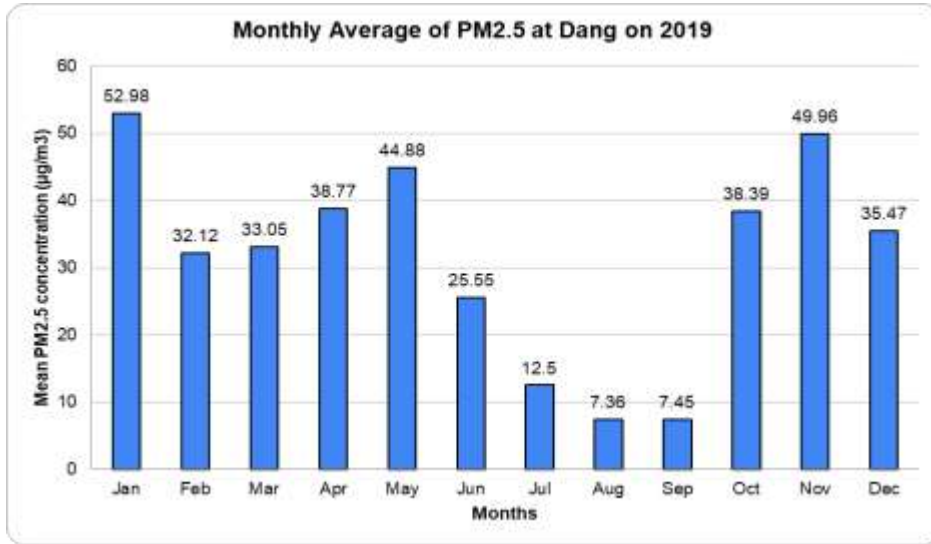


Figure 29: Monthly Average of PM<sub>2.5</sub>

### Monthly Variation of PM<sub>2.5</sub>

Variation in concentration of PM<sub>2.5</sub> was found more during January and low during August.

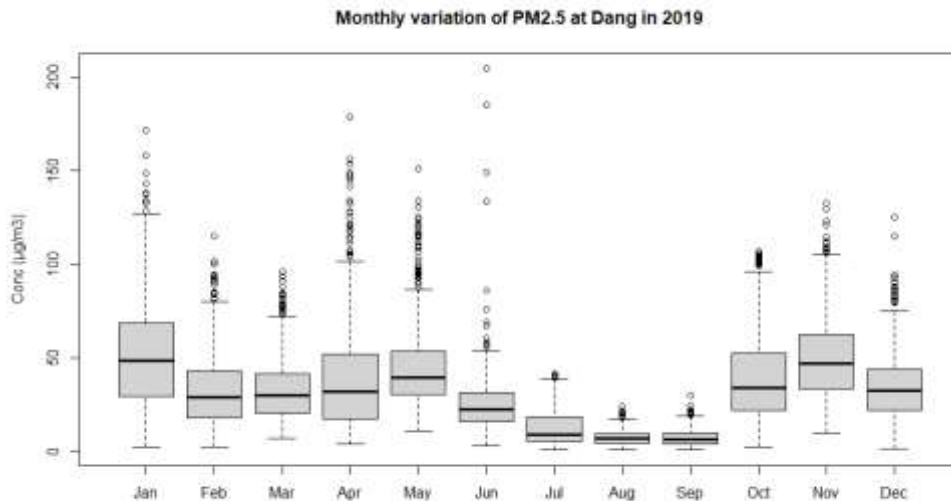


Figure 30: Monthly Variation of PM<sub>2.5</sub>

### Seasonal variation of PM<sub>2.5</sub> concentration

Ambient concentration of average PM<sub>2.5</sub> during Winter(December-February), Pre-monsoon(March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the figure below. The concentration of PM<sub>2.5</sub> was found higher during Winter (49.68  $\mu\text{g}/\text{m}^3$ ) and low during Monsoon season (15.14  $\mu\text{g}/\text{m}^3$ ) **Error! Reference source not found..**

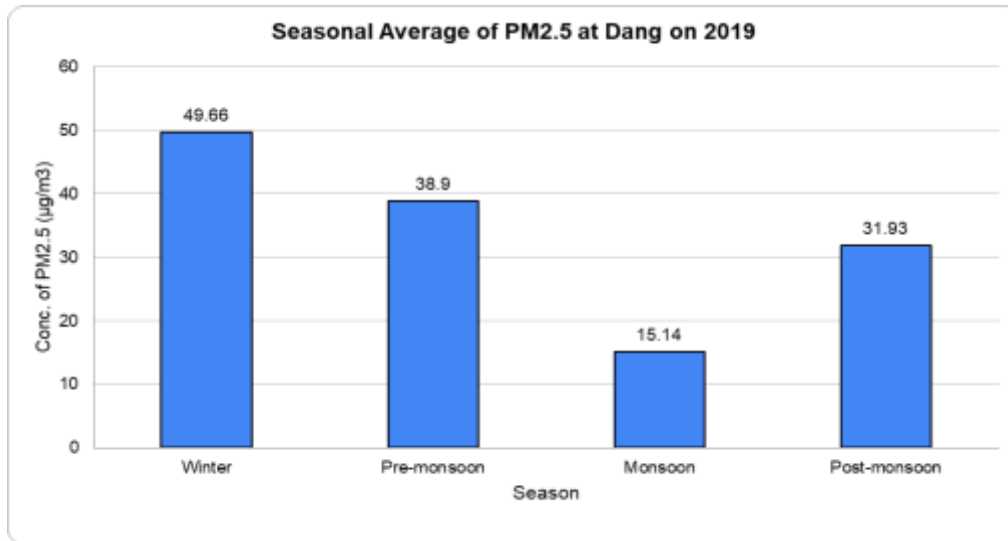


Figure 31: Seasonal variation of PM<sub>2.5</sub>

### Diurnal variation of PM<sub>2.5</sub> concentration

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below. The variation in PM<sub>2.5</sub> concentrations was high at around 6 am and low at 1 pm.



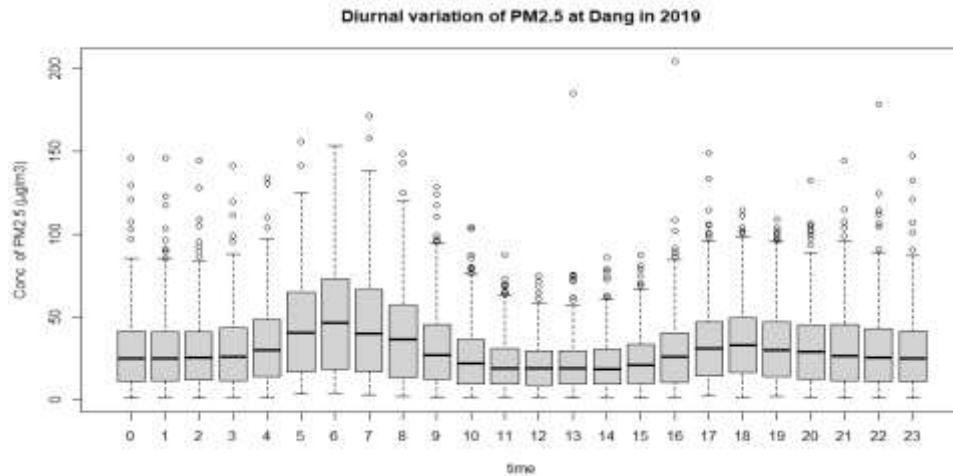


Figure 32: Diurnal Variation of PM<sub>2.5</sub>

### Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2019 counts 346, of which 112 days exceeded the NAAQS guideline.

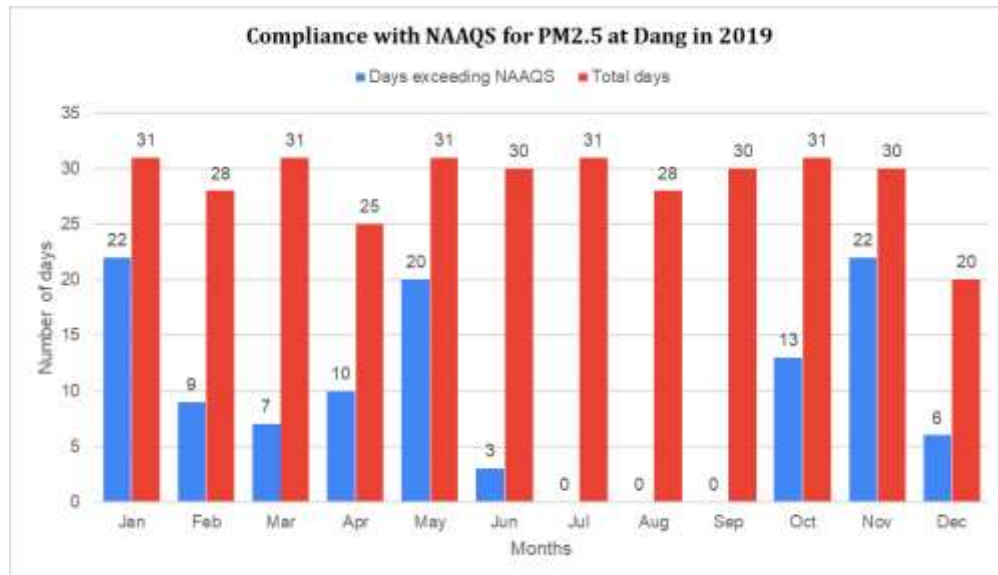


Figure 33: Compliance Status of PM<sub>2.5</sub>

### 2.2.4 Temporal variation of PM<sub>10</sub>

#### Annual average of PM<sub>10</sub>

The annual average for PM<sub>10</sub> for Dang Station was observed to be 53.99 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>10</sub> is shown in the figure below.

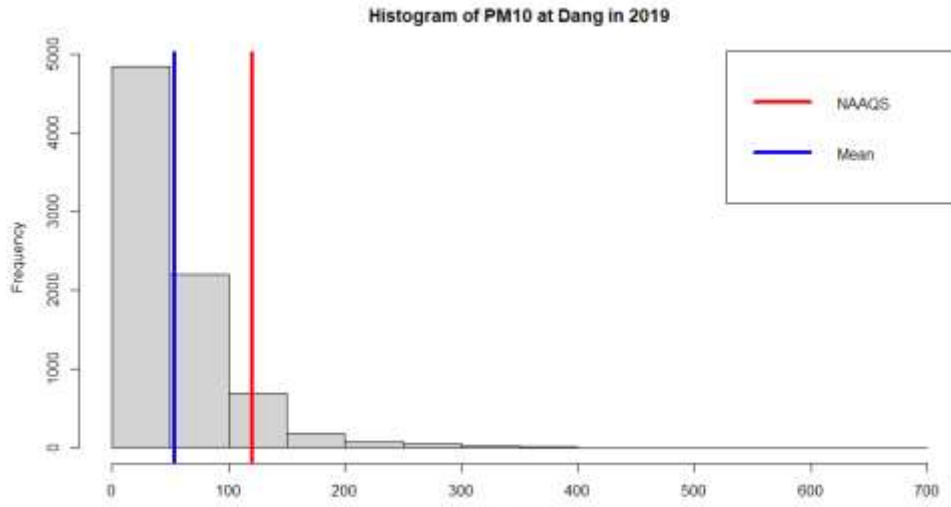


Figure 34: Histogram of PM<sub>10</sub>

### Daily average of PM<sub>10</sub>

Daily average concentration of PM<sub>10</sub> was high during May and low during August and September as shown in the figure below.

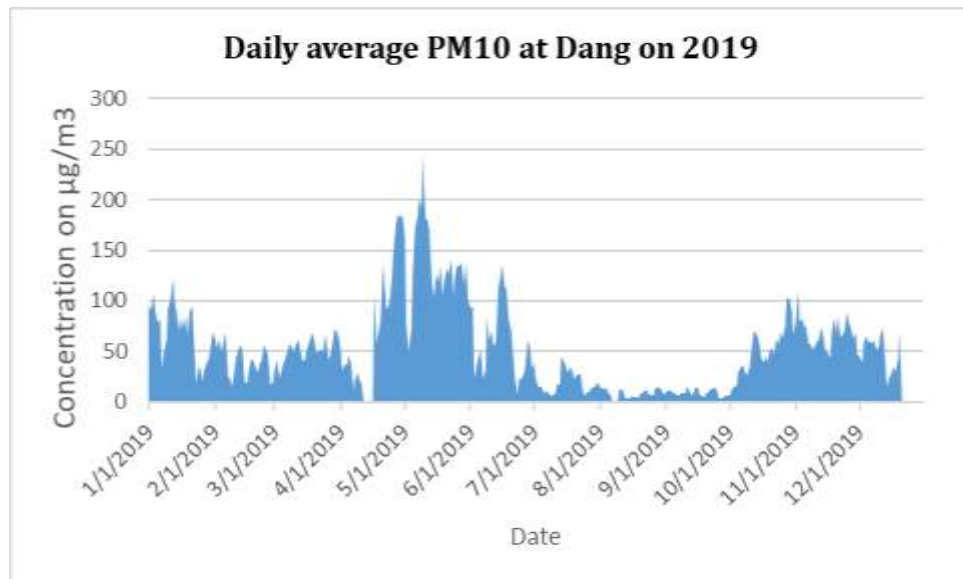


Figure 35: Daily Average of PM<sub>10</sub>

### Monthly average of PM<sub>10</sub>

The highest and the lowest monthly average of PM<sub>2.5</sub> was found during January (108.15  $\mu\text{g}/\text{m}^3$ ) and July (10.29  $\mu\text{g}/\text{m}^3$ ) respectively.

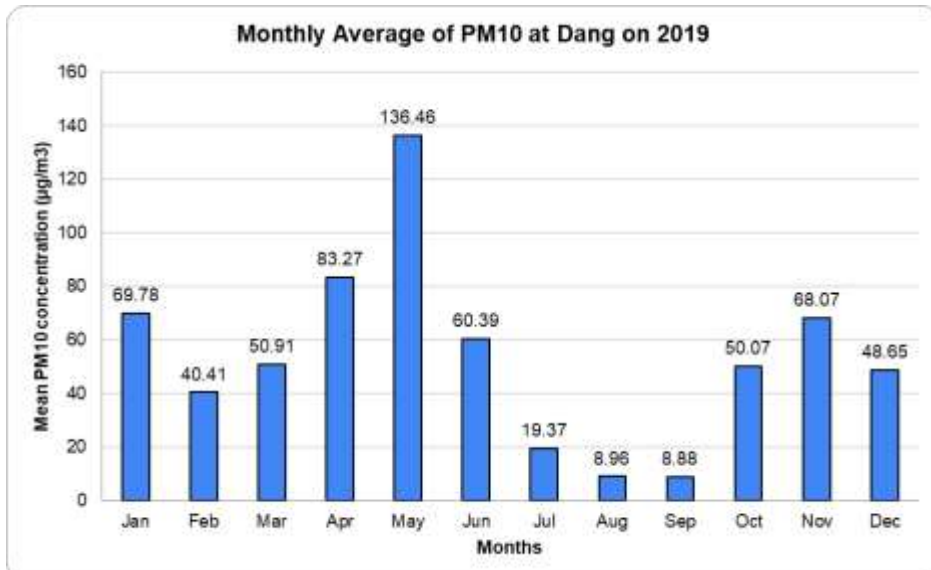


Figure 36: Monthly Average of PM<sub>10</sub>

### Seasonal Variation of PM<sub>10</sub>

Variation in concentration of PM<sub>10</sub> was found high in April and low in August and September as shown in the figure below.

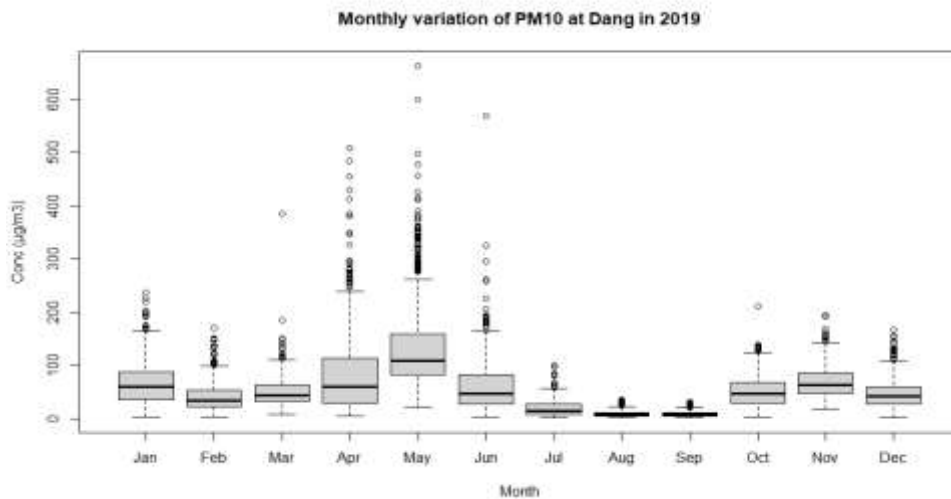


Figure 37: Monthly Variation of PM<sub>10</sub>

### Seasonal variation of PM<sub>10</sub>

Ambient concentration of average PM<sub>10</sub> during Winter (December-February), Pre-monsoon(March-May), Monsoon (June-September), and Post-monsoon (October-November) can be shown in the figure below. The concentration of PM<sub>10</sub> was found higher during Pre-monsoon (90.21 µg/m<sup>3</sup>) than Monsoon season (29.57 µg/m<sup>3</sup>).

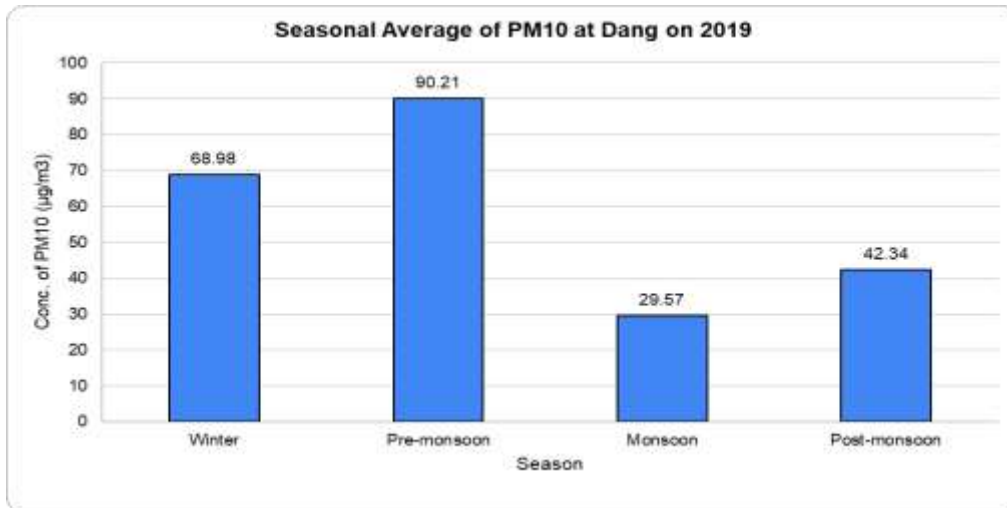


Figure 38: Seasonal Variation of PM<sub>10</sub>

**Diurnal variation of average PM<sub>10</sub> concentration**

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below. The variation in PM<sub>10</sub> concentration was high at around 6 am and 4 pm and low at 12 and 1 pm.

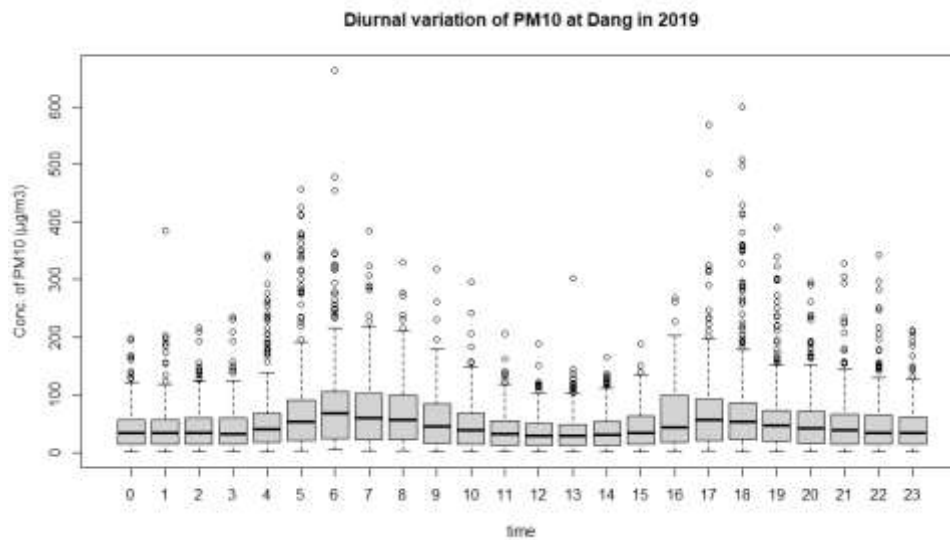


Figure 39: Diurnal Variation of PM<sub>10</sub>

**Compliance status of PM<sub>10</sub>**

The total days of PM<sub>10</sub> monitored in the year 2019 counts 346 of which 31 days exceed the NAAQS guideline.

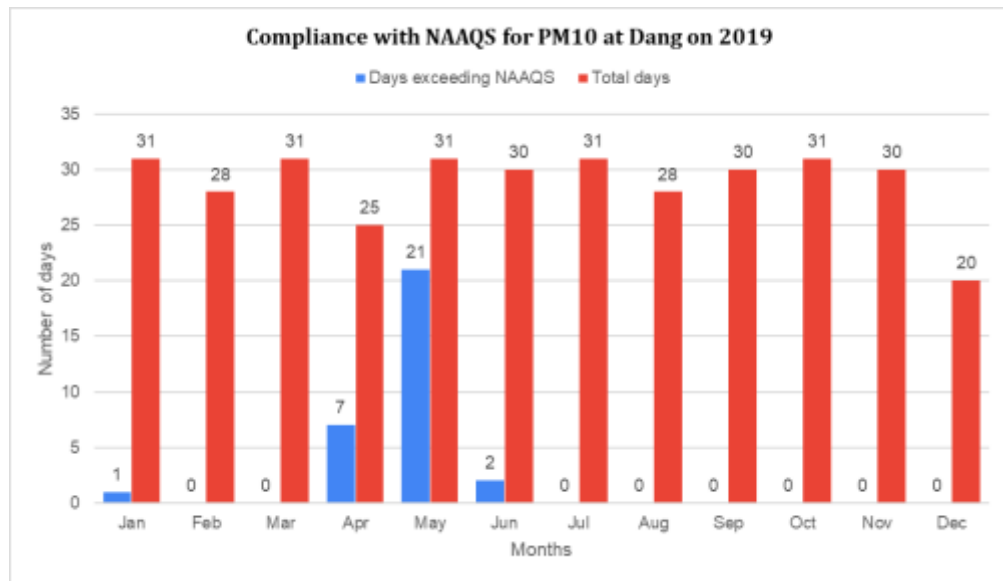


Figure 40: Compliance Status of PM<sub>10</sub>

### 2.2.5 Temporal variation of TSP

#### Annual average of TSP

Annual average of TSP for Dang Station for the year 2019 was observed to be 570.42 µg/m<sup>3</sup>.

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

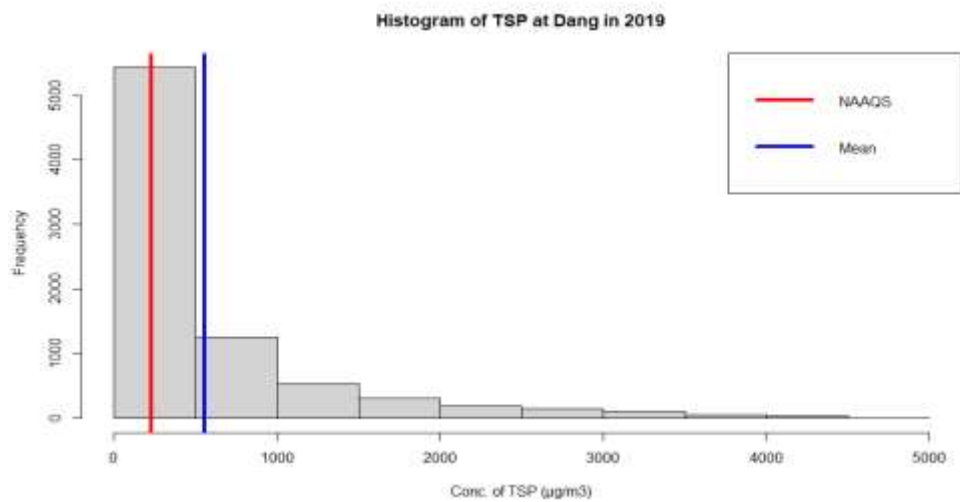


Figure 41: Histogram for TSP

### Daily average of TSP

Daily average concentration of TSP was high during May and low during January, February and September as shown in the figure below.

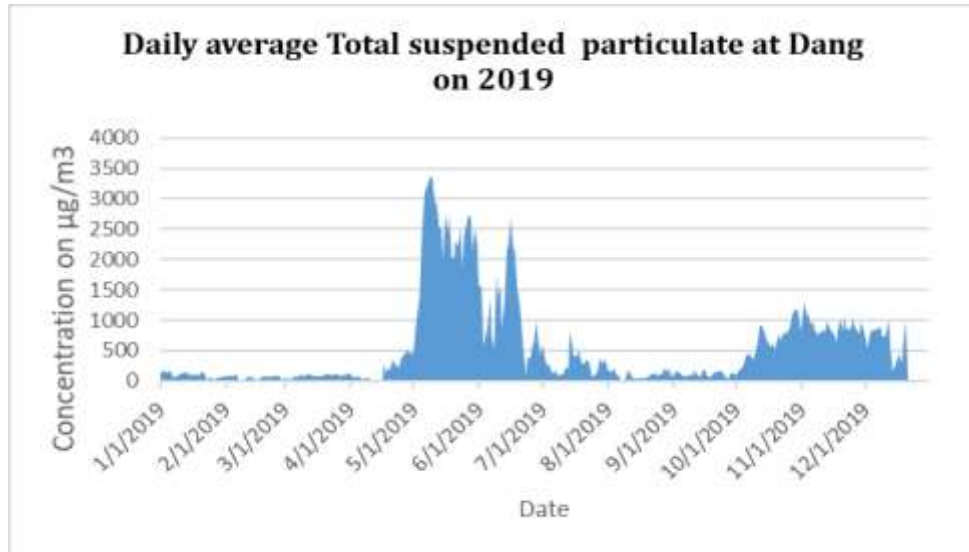


Figure 42: Daily Average of TSP

### Monthly average of TSP

The highest and the lowest monthly average of TSP was found during May ( $2381.1\mu\text{g}/\text{m}^3$ ) and February ( $57.82\mu\text{g}/\text{m}^3$ ) respectively.

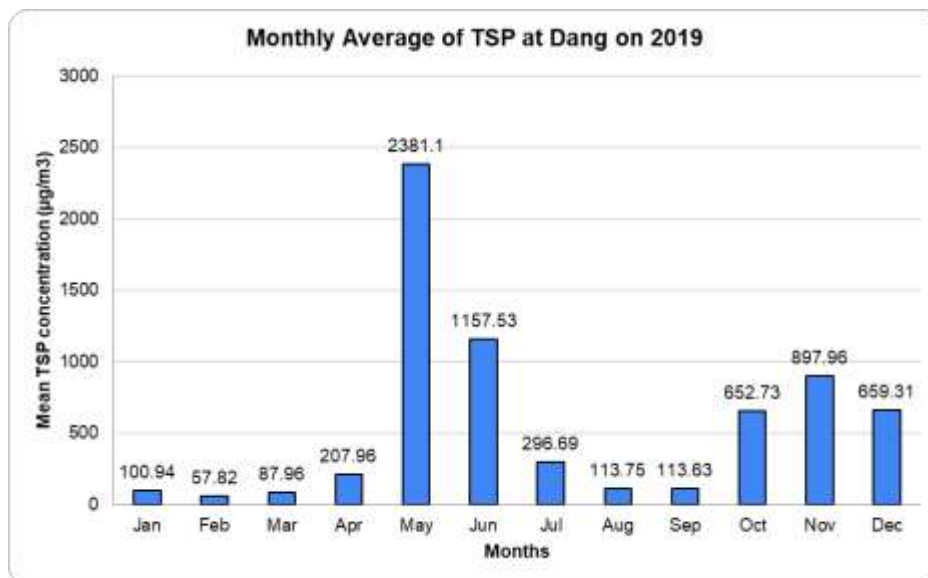


Figure 43: Monthly Average of TSP

## Monthly Variation of TSP

Variation in concentration of TSP was found more in May and low in February as shown in figure below.

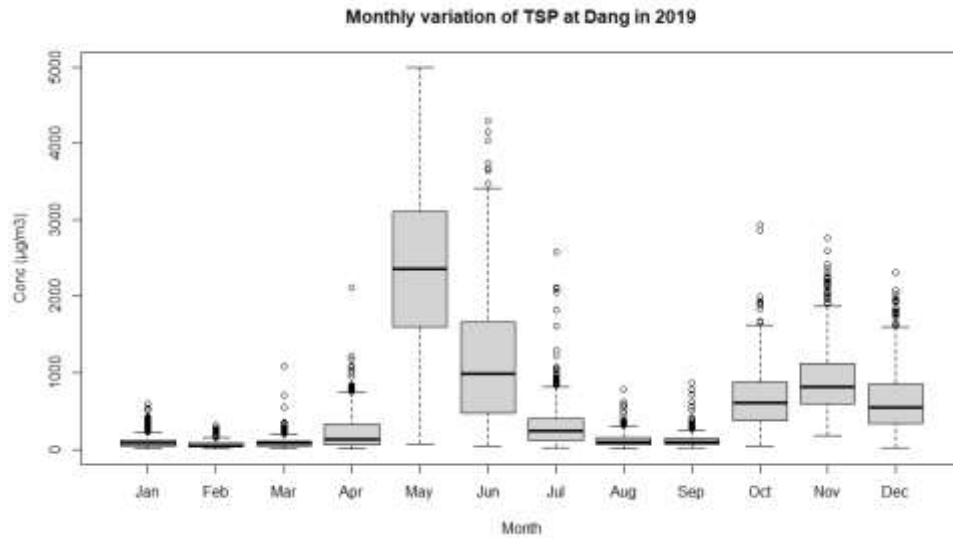


Figure 44: Monthly Variation of TSP

## Seasonal variation of TSP

Ambient concentration of average TSP during Winter (December-February), Pre-monsoon(March-May), Monsoon (June-September), and Post-monsoon (October-November) can be shown in the figure below. The concentration of TSP was found higher during Pre-monsoon ( $892.34 \mu\text{g}/\text{m}^3$ ) and lower during Winter season ( $101.41 \mu\text{g}/\text{m}^3$ ).

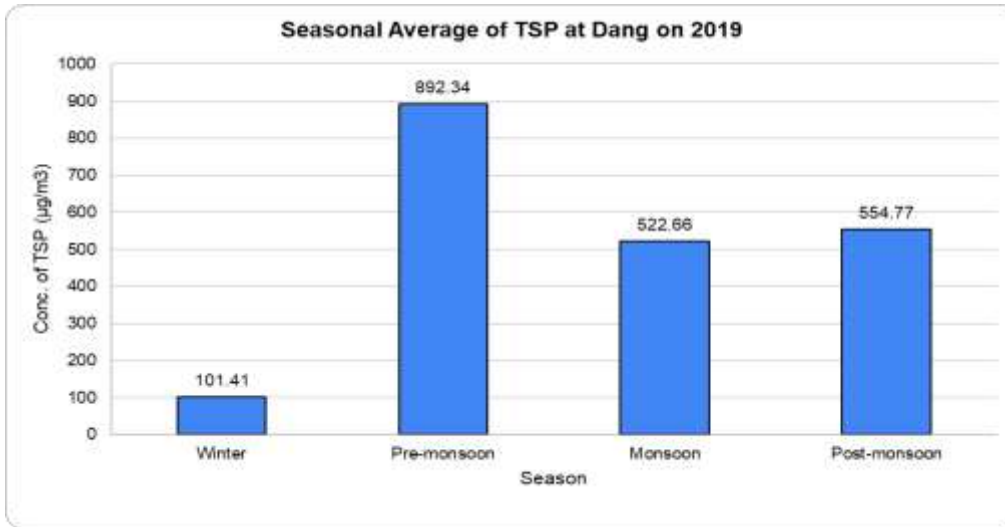


Figure 45: Seasonal Variation of TSP

**Diurnal variation of 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 4 pm and low at 3 am.

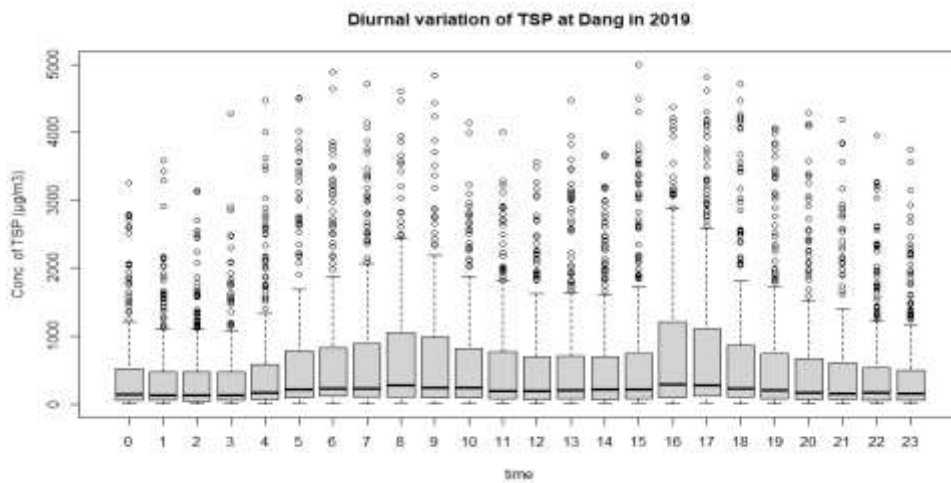


Figure 46: Diurnal Variation of TSP

**Compliance status of TSP**

The total days of TSP monitored in the year 2019 counts 346 of which 165 days exceed the NAAQS guideline as shown in the figure below.



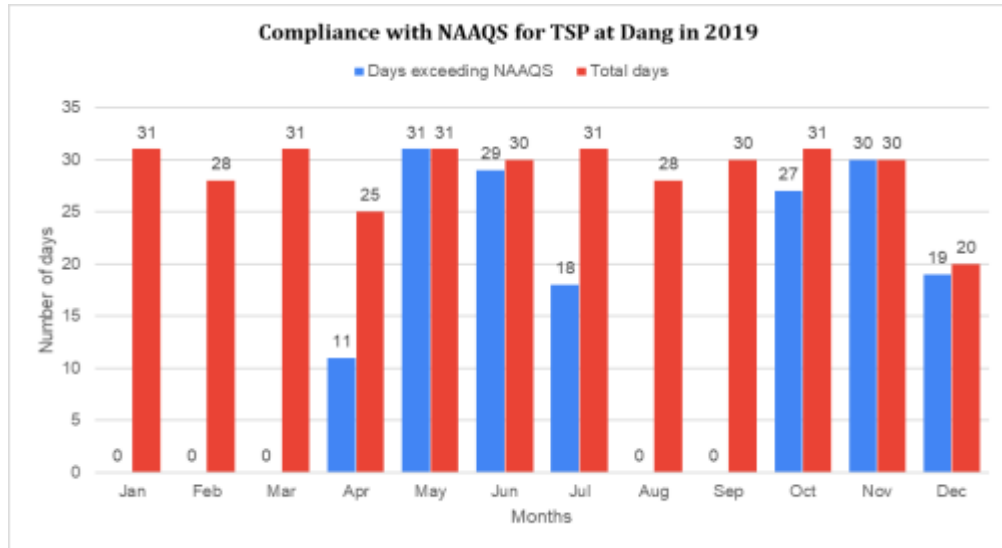


Figure 47: Compliance Status of TSP

### 2.3 Air quality status, 2020

#### 2.3.1 Annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP

The annual average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP for the Dang station was calculated as shown in the figure below.

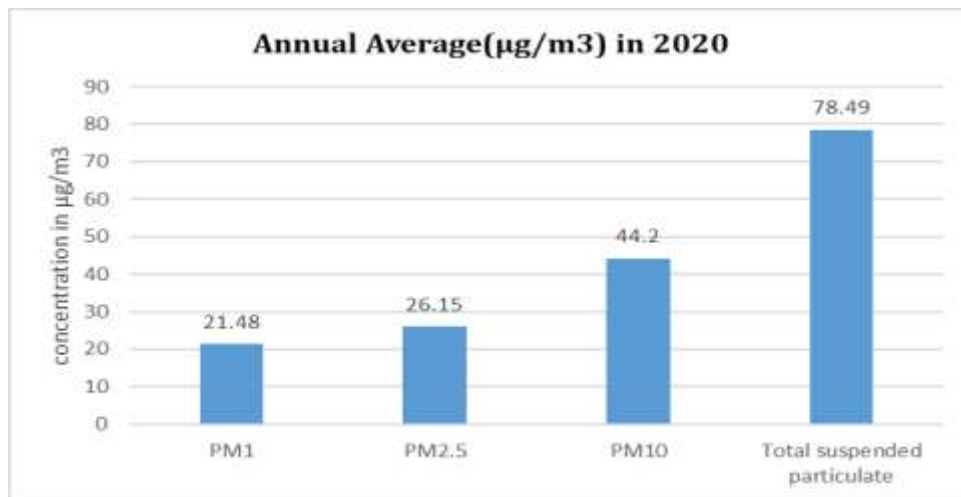


Figure 48: Average of PM<sub>1</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and TSP

#### 2.3.2 Temporal variation of PM<sub>1</sub>

##### Annual average of PM<sub>1</sub>

The annual average for PM<sub>1</sub> for Dang Station was observed to be 21.48 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>1</sub> is shown in the figure below.

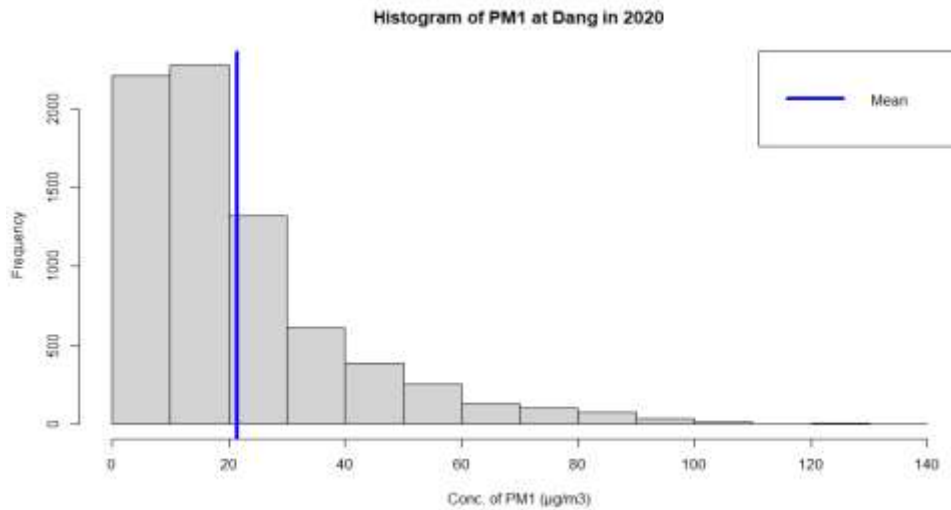


Figure 49: Histogram of PM<sub>1</sub>

### Daily average of PM<sub>1</sub>

Daily average concentration of PM<sub>1</sub> was high during December and low during July as shown in the figure below.

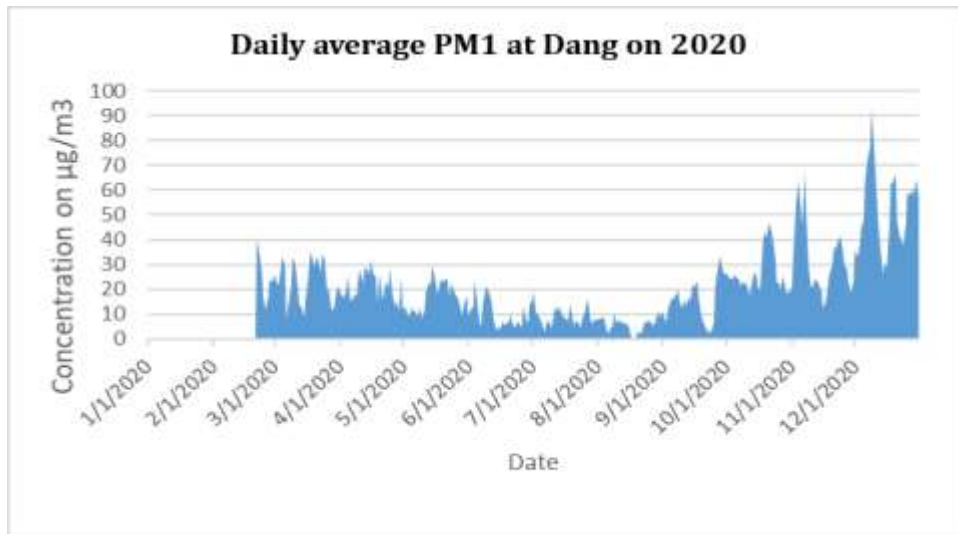


Figure 50: Daily Average of PM<sub>1</sub>

### Monthly average of PM<sub>1</sub>

The highest and the lowest monthly average of PM<sub>1</sub> was found during December (52.23  $\mu\text{g}/\text{m}^3$ ) and August (6.20  $\mu\text{g}/\text{m}^3$ ) respectively.

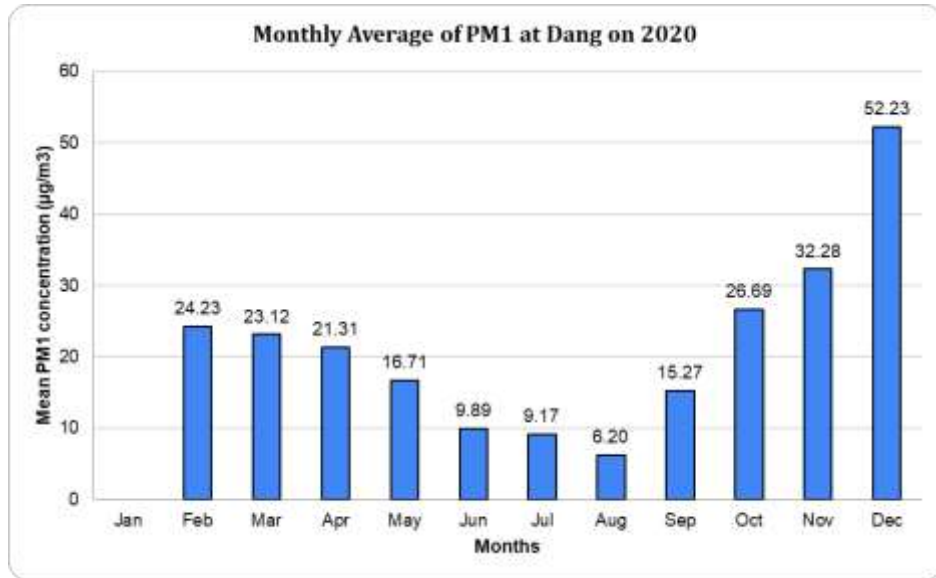


Figure 51: Monthly Average PM<sub>1</sub>

### Monthly Variation of PM<sub>1</sub>

Variation in concentration of PM<sub>1</sub> was found more in December and low in August as shown in the figure below.

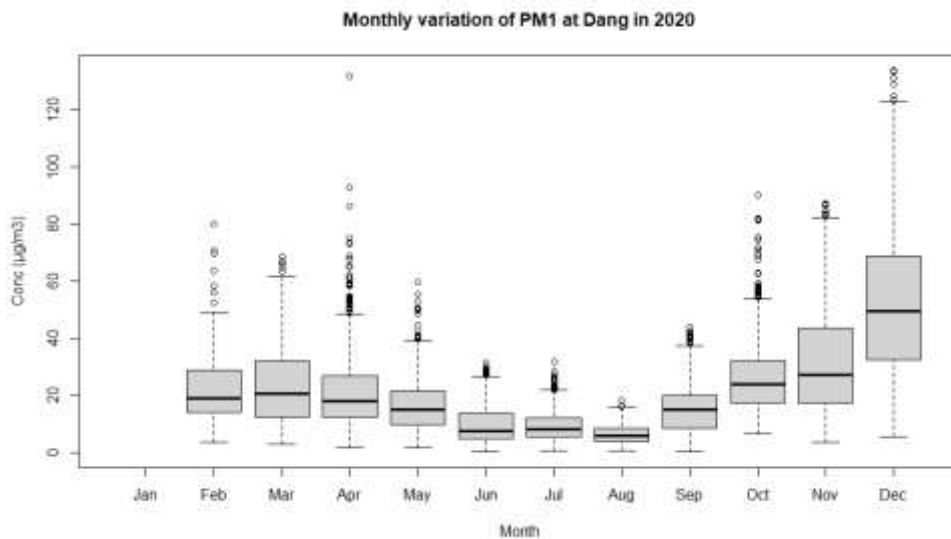


Figure 52: Monthly Variation of PM<sub>1</sub>

### Seasonal variation of PM<sub>1</sub>

Ambient concentration of average PM<sub>1</sub> during Winter (December-February), Pre-monsoon (March-May), Monsoon (June-September), and Post-monsoon (October-November) can be shown in the **Error! Reference source not found.**gure below. The concentration of PM<sub>1</sub> was found higher during Post-monsoon (24.75 µg/m<sup>3</sup>) and low during Monsoon season (8.42 µg/m<sup>3</sup>).

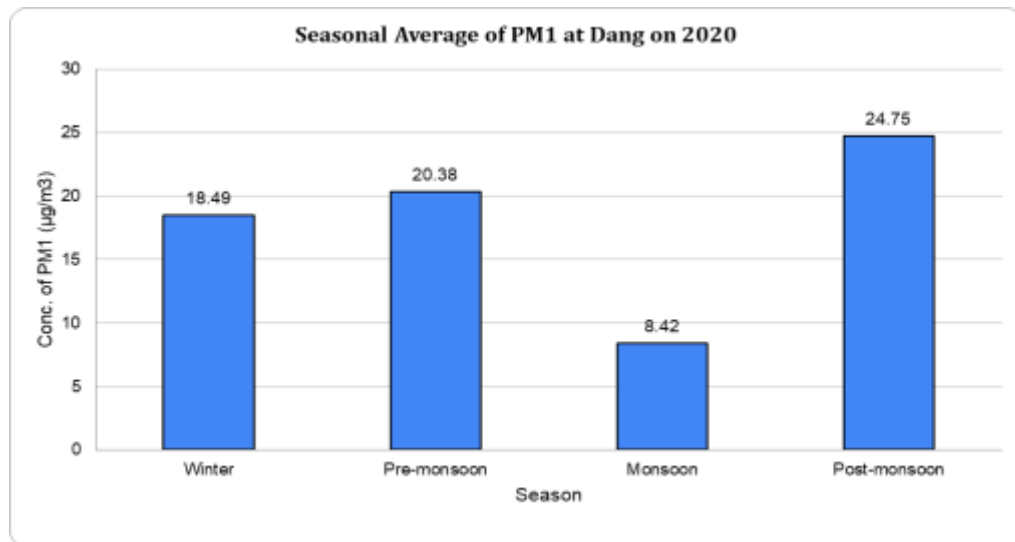


Figure 53: Seasonal Variation of PM<sub>1</sub>

**Diurnal variation of PM<sub>1</sub>**

The diurnal variation of average PM<sub>1</sub> concentration can be shown in the figure below. The variation in PM<sub>1</sub> concentration was high at around 6 am and low at 12 and 2 pm.

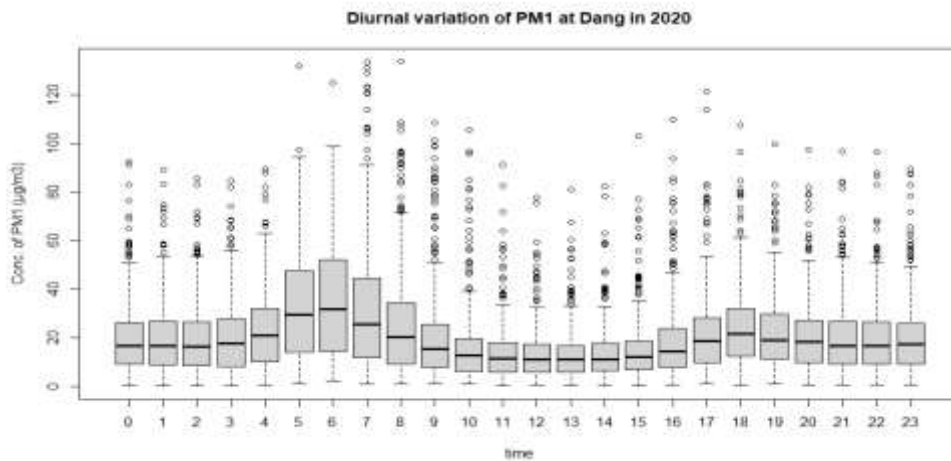


Figure 54: Diurnal Variation of PM<sub>1</sub>

### 2.3.3 Temporal variation of PM<sub>2.5</sub>

#### Annual average of PM<sub>2.5</sub>

The annual average for PM<sub>2.5</sub> for Dang Station was observed to be 26.15 µg/m<sup>3</sup>. Histogram of hourly average PM<sub>2.5</sub> is shown in the figure below.

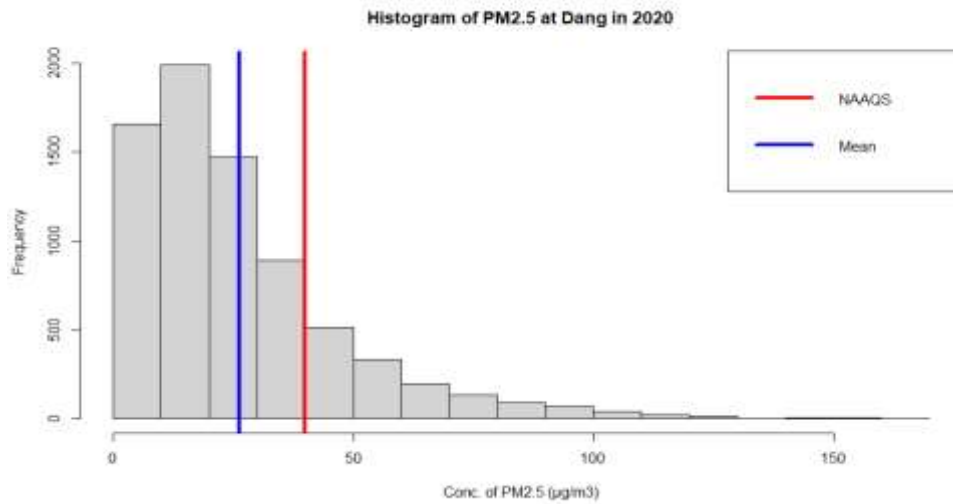


Figure 55: Histogram of PM<sub>2.5</sub>

#### Daily average of PM<sub>2.5</sub>

Daily average concentration of PM<sub>2.5</sub> was high during December and was found low during July.

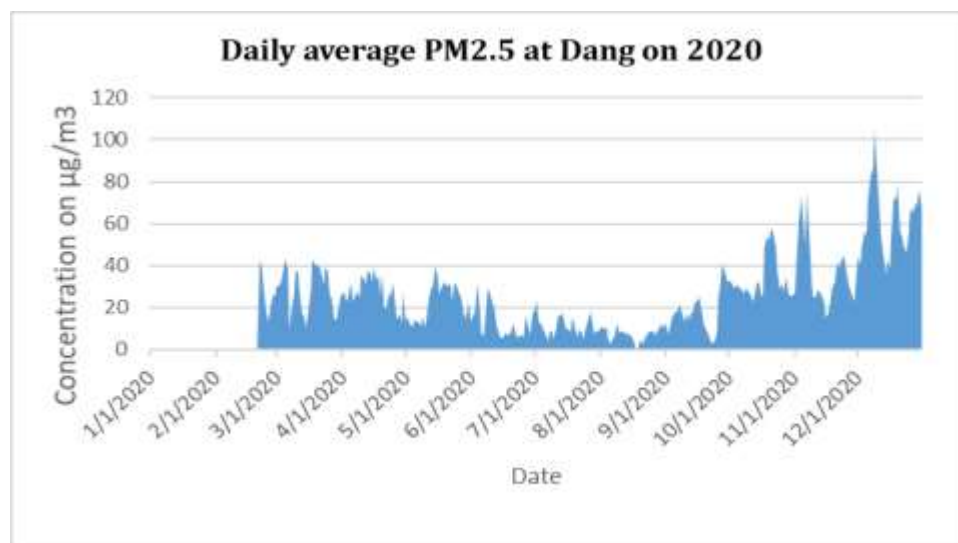


Figure 56: Daily Average of PM<sub>2.5</sub>

### Monthly average of PM<sub>2.5</sub>

The highest and the lowest monthly average of PM<sub>2.5</sub> was found during December (61.5  $\mu\text{g}/\text{m}^3$ ) and August (7.72  $\mu\text{g}/\text{m}^3$ ) respectively.

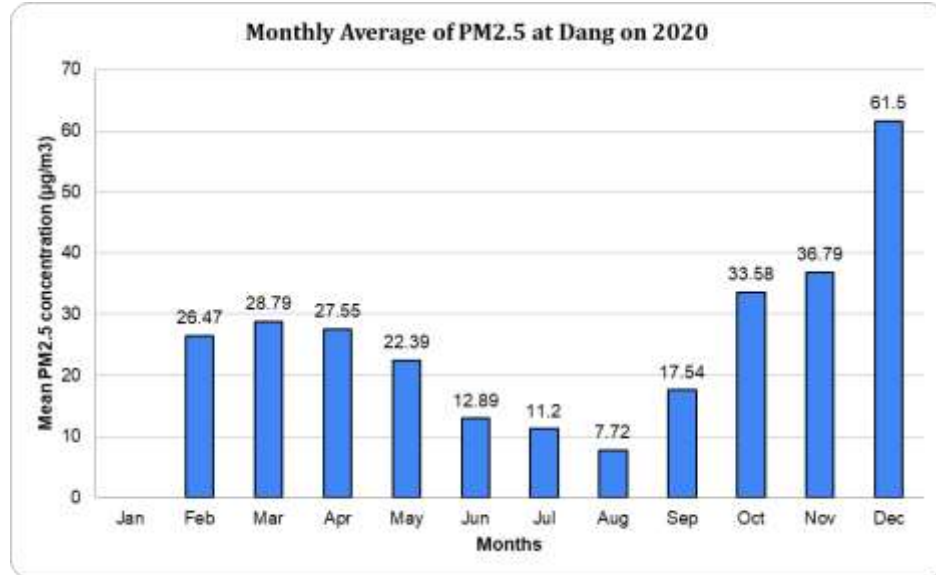


Figure 57: Monthly Average of PM<sub>2.5</sub>

### Monthly Variation of PM<sub>2.5</sub>

Variation in concentration of PM<sub>2.5</sub> was found more during December and low during August.

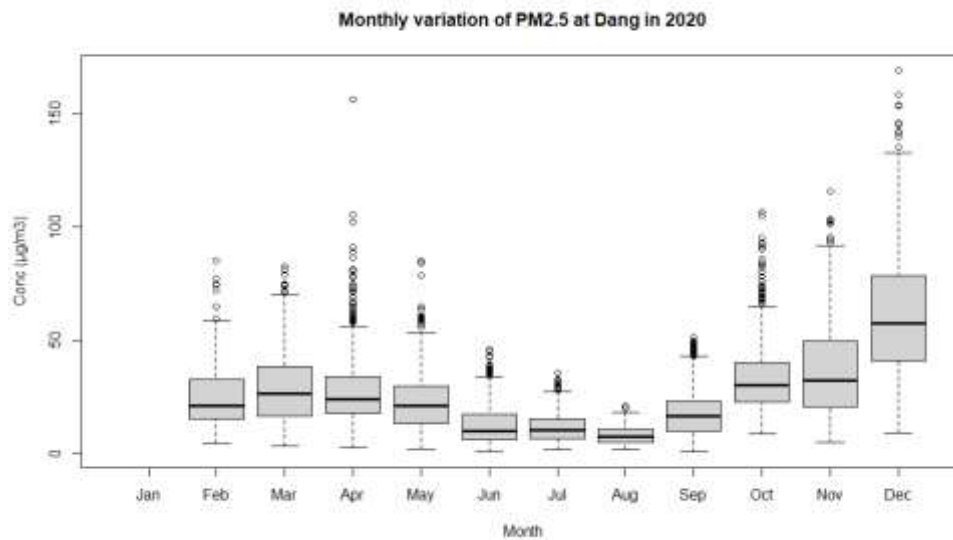


Figure 58: Monthly Variation of PM<sub>2.5</sub>

### Seasonal variation of PM<sub>2.5</sub>

Ambient concentration of average PM<sub>2.5</sub> during Winter (December-February), Pre-monsoon(March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the figure below. The concentration of PM<sub>2.5</sub> was found higher during Post-monsoon (29.3 µg/m<sup>3</sup>) than Monsoon season (10.61 µg/m<sup>3</sup>).

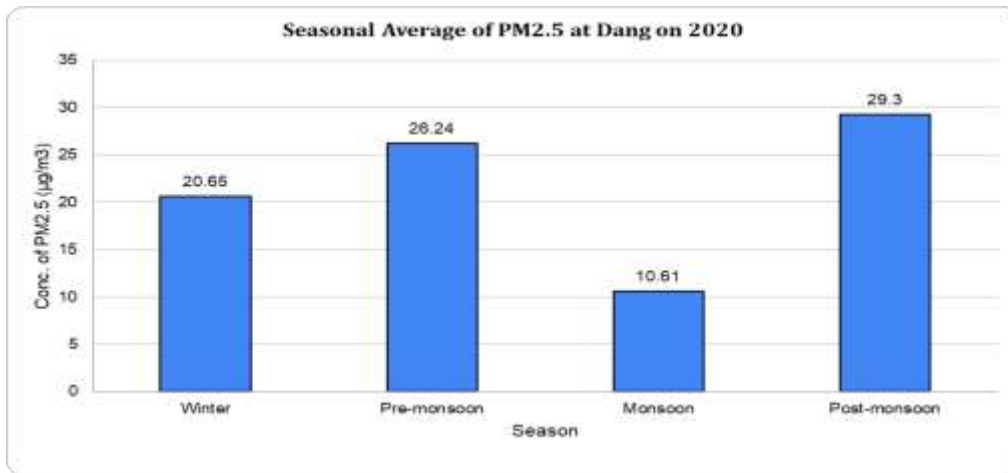


Figure 59: Seasonal Variation of PM<sub>2.5</sub>

### Diurnal variation of PM<sub>2.5</sub> concentration

The diurnal variation of average PM<sub>2.5</sub> concentrations can be shown in the figure below. The variation in PM<sub>2.5</sub> concentration was high at around 6 am and low at 12pm to 2pm.

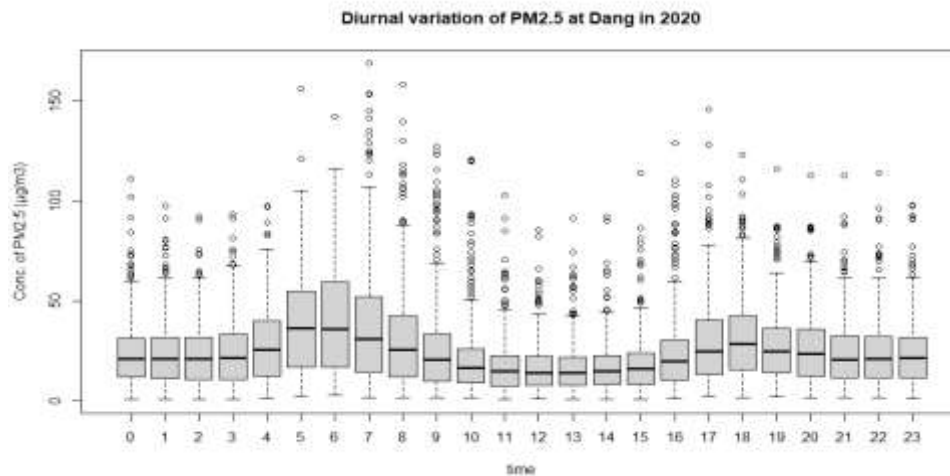


Figure 60: Diurnal Variation of PM<sub>2.5</sub>

## Compliance status of PM<sub>2.5</sub>

The total days of PM<sub>2.5</sub> monitored in the year 2020 counts 311, of which 52 days exceeded the NAAQS guideline.

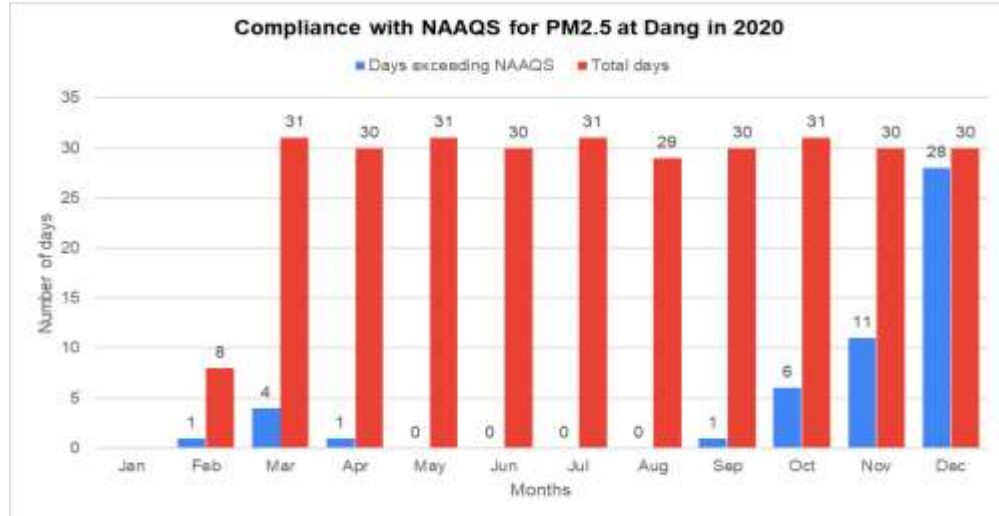


Figure 61: Compliance Status of PM<sub>2.5</sub>

### 2.3.4 Temporal variation of PM<sub>10</sub>

#### Annual average of PM<sub>10</sub>

Annual average of PM<sub>10</sub> for Dang Station was observed to be 78.49  $\mu\text{g}/\text{m}^3$ . Histogram of hourly average PM<sub>10</sub> is shown in the figure below.

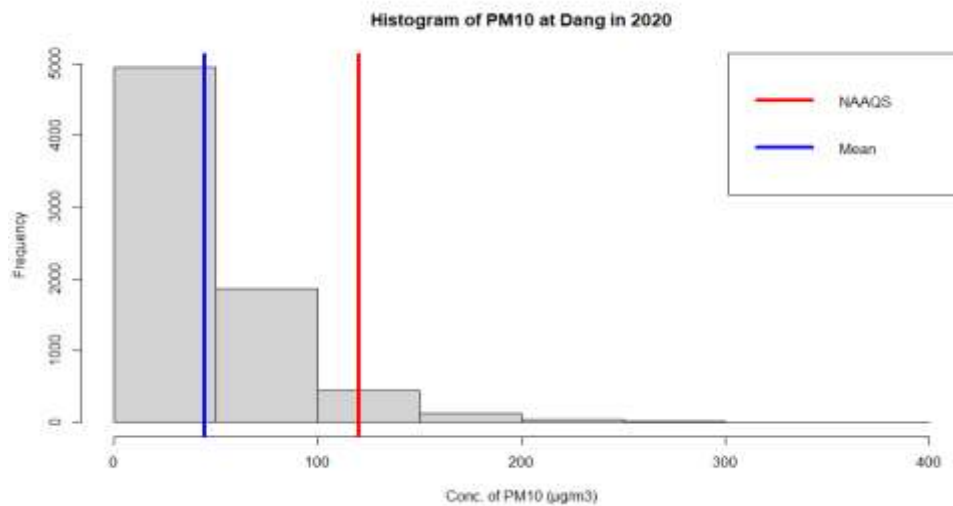


Figure 62: Histogram of PM<sub>10</sub>



### Daily average of PM<sub>10</sub>

Daily average concentration of PM<sub>10</sub> was high during December and low during August.

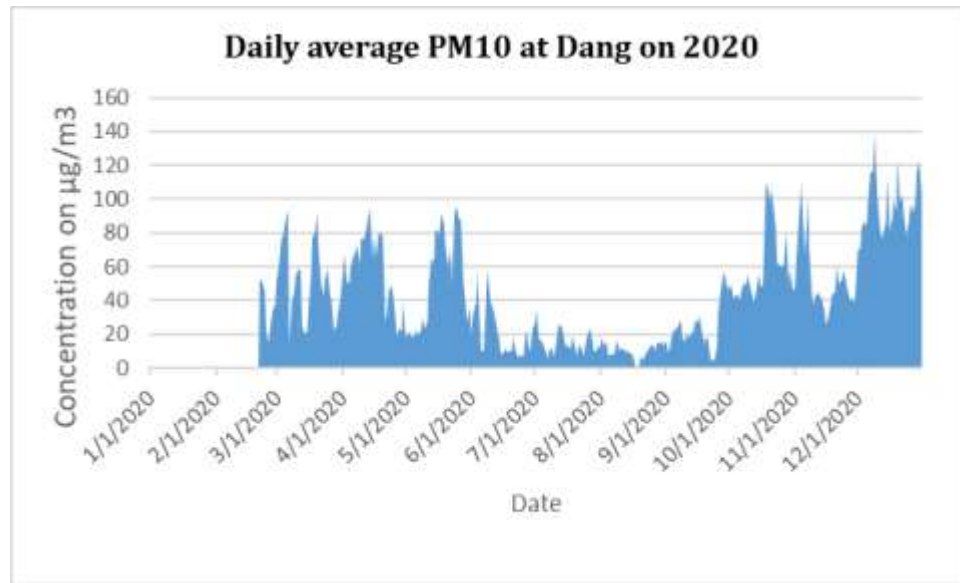


Figure 63: Daily Average of PM<sub>10</sub>

### Monthly average of PM<sub>10</sub>

The highest and the lowest monthly average of PM<sub>10</sub> was found during December (96.3 µg/m<sup>3</sup>) and August (10.94 µg/m<sup>3</sup>) respectively.

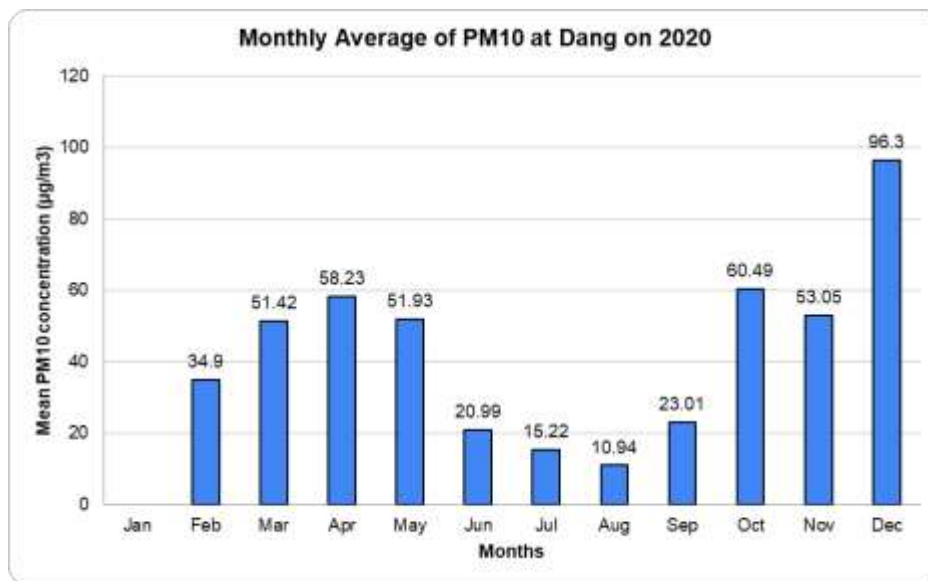


Figure 64: Monthly Average of PM<sub>10</sub>

## Monthly Variation of PM<sub>10</sub>

Variation in concentration of PM<sub>10</sub> was found more in December and low in August.

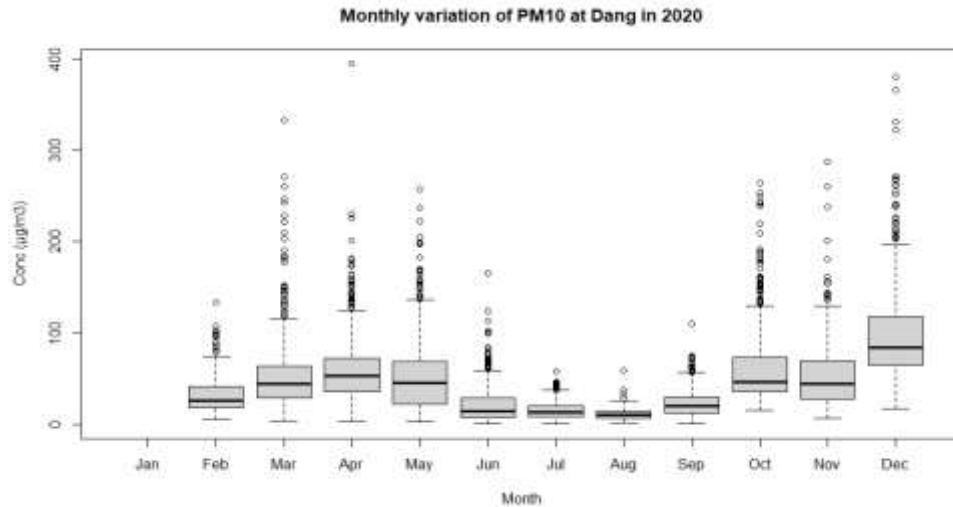


Figure 65: Monthly Variation of PM<sub>10</sub>

## Seasonal variation of PM<sub>10</sub>

Ambient concentration of average PM<sub>2.5</sub> during Winter (December-February), Pre-monsoon (March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the figure below. The concentration of PM<sub>2.5</sub> was found higher during Pre-monsoon (53.86 µg/m<sup>3</sup>) than monsoon season (15.72 µg/m<sup>3</sup>).

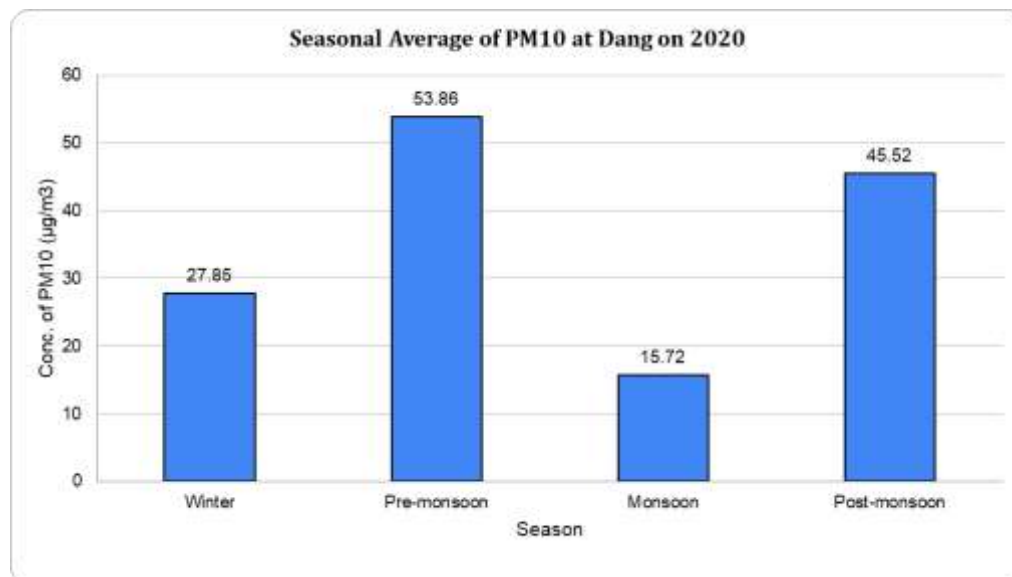


Figure 66: Seasonal Average of PM<sub>10</sub>

## Diurnal variation of PM<sub>10</sub> concentration

The diurnal variation of average PM<sub>10</sub> concentrations can be shown in the figure below. The variation in PM<sub>10</sub> concentration was high at around 7 am and low at 1 am.

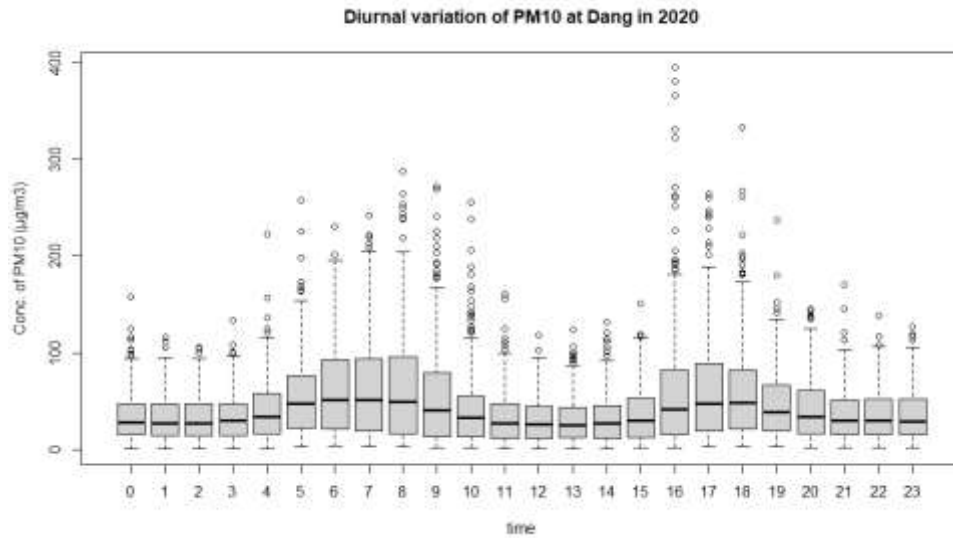


Figure 67: Diurnal Variation of PM<sub>10</sub>

## Compliance status of PM<sub>10</sub>

The total days of PM<sub>10</sub> monitored in the year 2020 counts 311 of which 157 days exceed the NAAQS guideline.

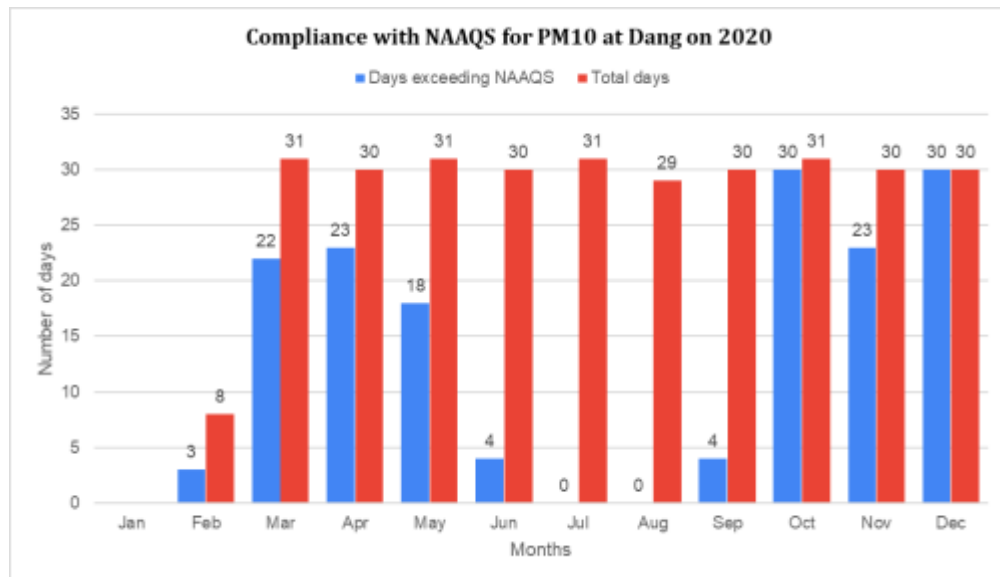


Figure 68: Compliance Status of PM<sub>10</sub>

### 2.3.5 Temporal variation of TSP

#### Annual average of TSP

Annual average of TSP for Dang Station was observed to be  $78.49 \mu\text{g}/\text{m}^3$ . Histogram of hourly average  $\text{PM}_{10}$  is shown in the figure below.

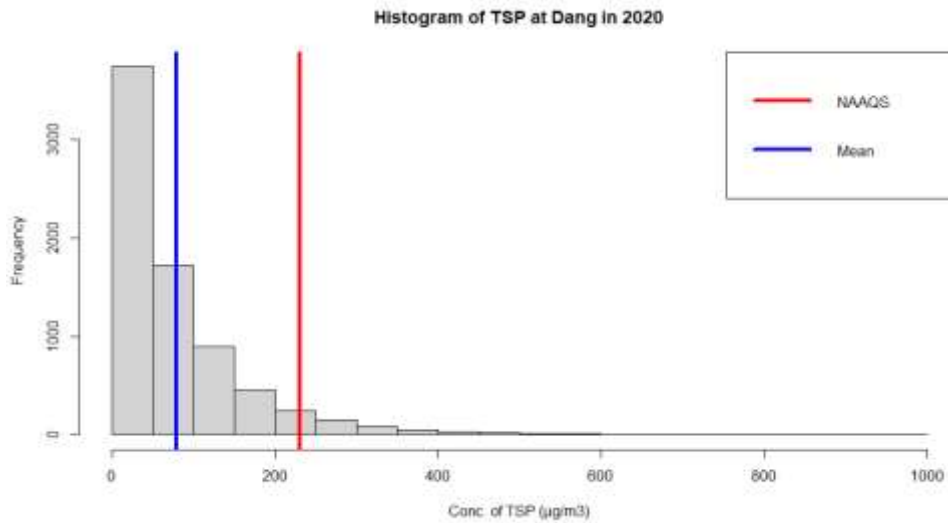


Figure 69: Histogram of TSP

#### Daily average of TSP

Daily average concentration of TSP was high during May and low during July and August.

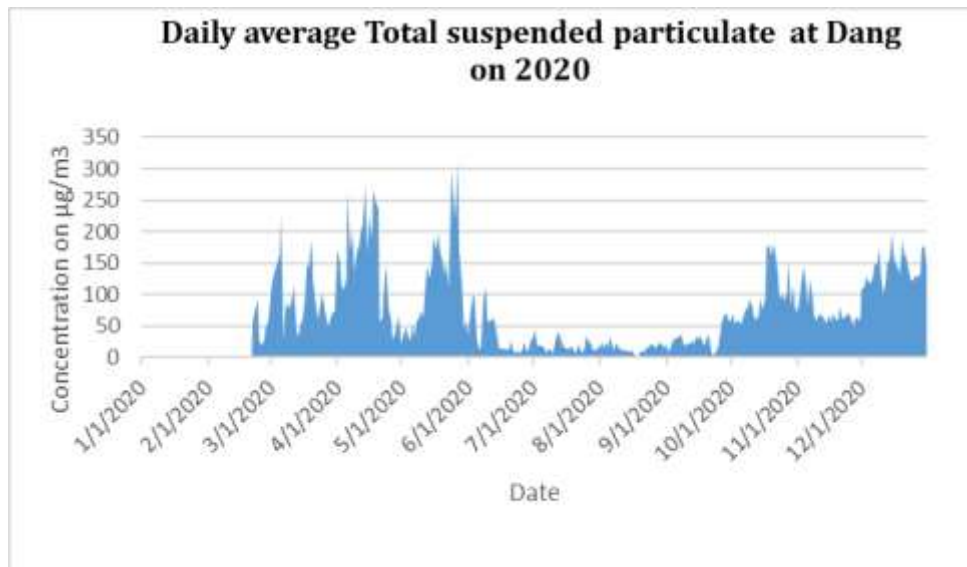


Figure 70: Daily Average of TSP

### Monthly average of TSP

The highest and the lowest monthly average of TSP was found during April ( $150.97 \mu\text{g}/\text{m}^3$ ) and August ( $16.33 \mu\text{g}/\text{m}^3$ ) respectively.

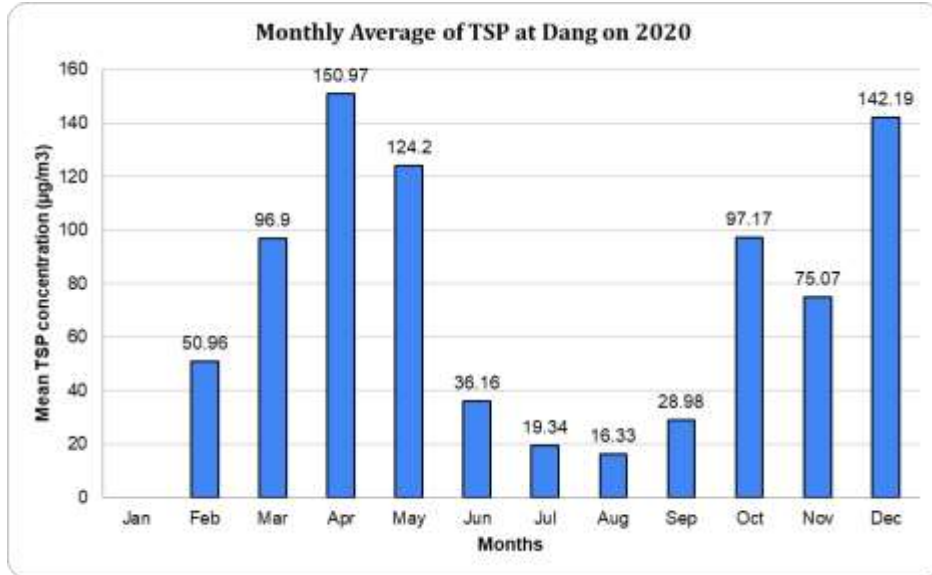


Figure 71: Monthly Average of TSP

### Monthly Variation of TSP

Variation in concentration of TSP was found more in April and low in August.

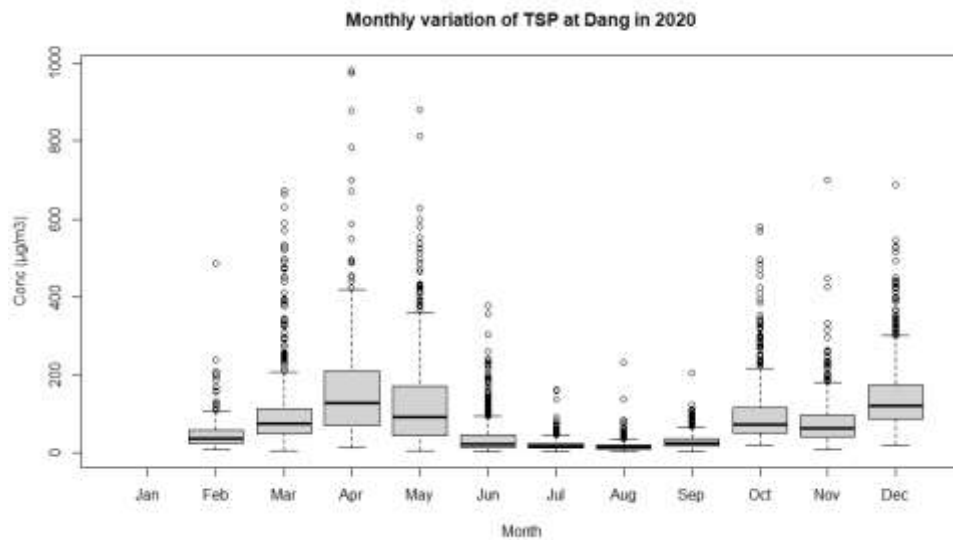


Figure 72: Monthly Variation of TSP

### Seasonal variation of TSP

Ambient concentration of average TSP during Winter (December-February), Pre-monsoon(March-May), monsoon (June-September), and post-monsoon (October-November) can be shown in the figure below. The concentration of TSP was found higher during winter (236.76  $\mu\text{g}/\text{m}^3$ ) than monsoon season (23.95  $\mu\text{g}/\text{m}^3$ ).

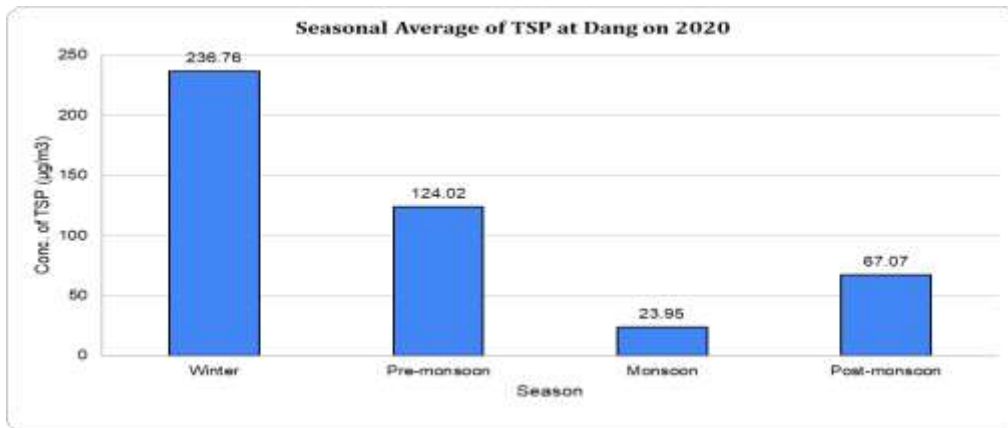


Figure 73: Seasonal Average of TSP

### 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 4 and 5 pm and low at 1 and 2 am.

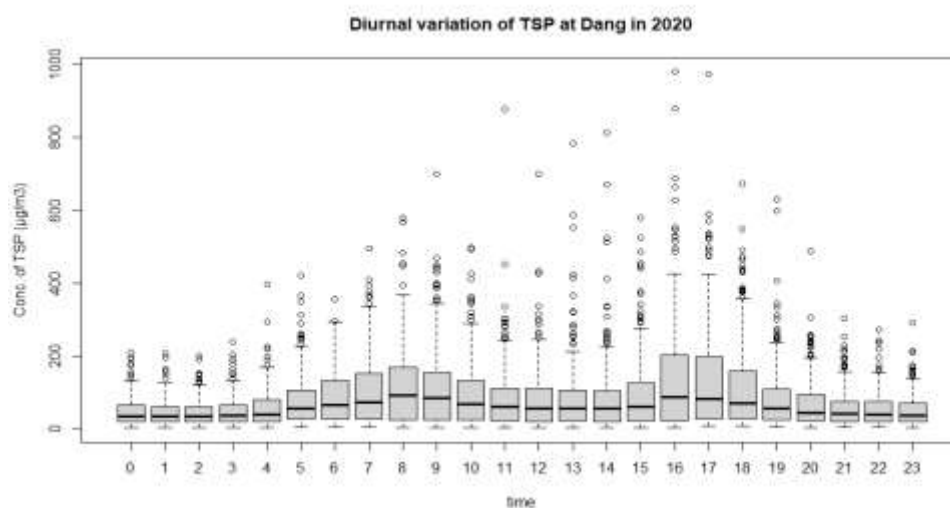


Figure 74: Diurnal Variation of TSP

## Compliance status of TSP

The total days of TSP monitored in the year 2018 counts 311 of which eight (8) days exceed the NAAQS guideline.

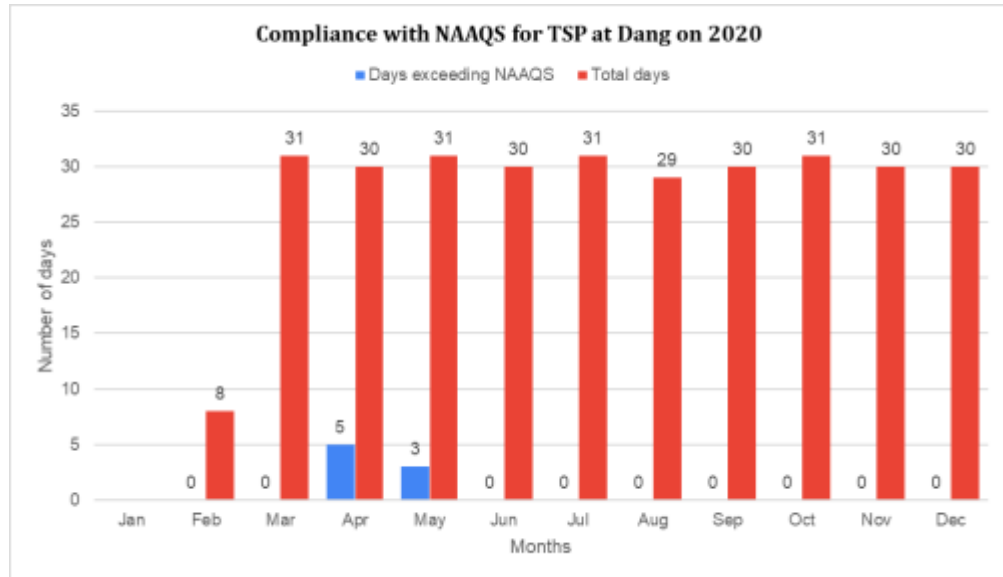


Figure 75: Compliance Status of TSP

## Annex

### PM<sub>1</sub> daily

Date	Value	Date	Value	Date	Value
1/1/2018		1/1/2019	54.3644	1/1/2020	
1/2/2018		1/2/2019	54.78465	1/2/2020	
1/3/2018		1/3/2019	58.09811	1/3/2020	
1/4/2018		1/4/2019	55.27208	1/4/2020	
1/5/2018		1/5/2019	50.57611	1/5/2020	
1/6/2018		1/6/2019	44.81181	1/6/2020	
1/7/2018		1/7/2019	27.64458	1/7/2020	
1/8/2018		1/8/2019	37.24437	1/8/2020	
1/9/2018		1/9/2019	48.05118	1/9/2020	
1/10/2018		1/10/2019	73.00653	1/10/2020	
1/11/2018		1/11/2019	80.86472	1/11/2020	
1/12/2018		1/12/2019	94.00759	1/12/2020	
1/13/2018		1/13/2019	73.38692	1/13/2020	
1/14/2018		1/14/2019	58.03868	1/14/2020	
1/15/2018		1/15/2019	49.40861	1/15/2020	
1/16/2018		1/16/2019	57.86625	1/16/2020	
1/17/2018		1/17/2019	51.37458	1/17/2020	
1/18/2018		1/18/2019	52.31556	1/18/2020	
1/19/2018		1/19/2019	49.625	1/19/2020	
1/20/2018		1/20/2019	62.50715	1/20/2020	
1/21/2018		1/21/2019	63.45014	1/21/2020	
1/22/2018		1/22/2019	45.83722	1/22/2020	
1/23/2018		1/23/2019	15.91604	1/23/2020	
1/24/2018		1/24/2019	24.61444	1/24/2020	
1/25/2018		1/25/2019	26.06076	1/25/2020	
1/26/2018		1/26/2019	14.93222	1/26/2020	
1/27/2018		1/27/2019	25.8616	1/27/2020	
1/28/2018		1/28/2019	32.22139	1/28/2020	
1/29/2018		1/29/2019	35.18458	1/29/2020	
1/30/2018		1/30/2019	42.49569	1/30/2020	
1/31/2018		1/31/2019	55.065	1/31/2020	
2/1/2018		2/1/2019	43.89813	2/1/2020	
2/2/2018		2/2/2019	36.71486	2/2/2020	
2/3/2018		2/3/2019	41.34986	2/3/2020	
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10/29/2018	22.82212	10/29/2019	78.00472	10/28/2020	25.44694
10/30/2018	24.45157	10/30/2019	61.0966	10/29/2020	19.87944
10/31/2018	21.4063	10/31/2019	48.59181	10/30/2020	18.60375
11/1/2018	17.69973	11/1/2019	58.55486	10/31/2020	18.86479
11/2/2018	22.33785	11/2/2019	81.75167	11/1/2020	20.8416
11/3/2018	48.54306	11/3/2019	51.81035	11/2/2020	33.88313
11/4/2018	54.40523	11/4/2019	50.92743	11/3/2020	53.23521
11/5/2018	39.19835	11/5/2019	47.95118	11/4/2020	63.8325
11/6/2018	39.45694	11/6/2019	50.51787	11/5/2020	57.28424
11/7/2018	44.78657	11/7/2019	36.60972	11/6/2020	45.67715
11/8/2018	70.59358	11/8/2019	32.04292	11/7/2020	67.51819
11/9/2018	56.36822	11/9/2019	26.77549	11/8/2020	51.05271
11/10/2018	49.00872	11/10/2019	26.55069	11/9/2020	28.465
11/11/2018	55.06255	11/11/2019	33.70819	11/10/2020	20.73465
11/12/2018	43.26366	11/12/2019	39.89104	11/11/2020	20.55882
11/13/2018	57.95373	11/13/2019	49.15604	11/12/2020	24.04396
11/14/2018	71.84784	11/14/2019	34.11868	11/13/2020	23.30799
11/15/2018	51.51167	11/15/2019	25.78738	11/14/2020	21.90243
11/16/2018	51.71805	11/16/2019	21.26872	11/15/2020	18.99278
11/17/2018	52.83825	11/17/2019	24.52049	11/16/2020	12.69965
11/18/2018	71.87447	11/18/2019	43.18972	11/17/2020	14.00201
11/19/2018	110.8774	11/19/2019	57.74293	11/18/2020	20.97826
11/20/2018	89.39219	11/20/2019	53.66118	11/19/2020	25.8825

11/21/2018	71.63979	11/21/2019	62.16743	11/20/2020	28.70646
11/22/2018	73.30191	11/22/2019	40.26792	11/21/2020	37.5831
11/23/2018	66.31697	11/23/2019	44.7309	11/22/2020	35.82674
11/24/2018	50.10403	11/24/2019	51.0132	11/23/2020	39.63535
11/25/2018	48.60746	11/25/2019	68.55371	11/24/2020	41.38521
11/26/2018	49.1421	11/26/2019	60.62166	11/25/2020	38.08104
11/27/2018	45.71194	11/27/2019	57.59326	11/26/2020	30.00208
11/28/2018	36.91225	11/28/2019	44.37325	11/27/2020	27.67715
11/29/2018	30.55164	11/29/2019	31.99014	11/28/2020	22.85194
11/30/2018	57.76256	11/30/2019	20.58035	11/29/2020	18.40285
12/1/2018	77.9951	12/1/2019	21.85493	11/30/2020	23.21139
12/2/2018	81.59795	12/2/2019	23.59367	12/1/2020	35.78137
12/3/2018	68.40898	12/3/2019	38.67239	12/2/2020	32.95384
12/4/2018	48.87947	12/4/2019	45.00384	12/3/2020	37.97958
12/5/2018	49.67619	12/5/2019	39.44671	12/4/2020	45.19903
12/6/2018	60.1898	12/6/2019	31.25101	12/5/2020	48.02813
12/7/2018	51.87743	12/7/2019	30.67554	12/6/2020	63.29736
12/8/2018	42.45533	12/8/2019	32.20766	12/7/2020	72.61597
12/9/2018	42.23589	12/9/2019	26.80329	12/8/2020	77.33854
12/10/2018	39.96967	12/10/2019	32.22933	12/9/2020	93.18646
12/11/2018	40.38939	12/11/2019	41.85648	12/10/2020	77.16715
12/12/2018	44.78962	12/12/2019	45.73101	12/11/2020	59.09479
12/13/2018	36.77809	12/13/2019	28.4963	12/12/2020	48.66312
12/14/2018	41.52489	12/14/2019	12.87882	12/13/2020	36.35687
12/15/2018		12/15/2019	19.38447	12/14/2020	25.97868
12/16/2018		12/16/2019	23.08883	12/15/2020	29.2519
12/17/2018		12/17/2019	27.68566	12/16/2020	29.55778
12/18/2018		12/18/2019	27.59786	12/17/2020	44.50278
12/19/2018		12/19/2019	33.01227	12/18/2020	62.02486
12/20/2018		12/20/2019	43.12845	12/19/2020	63.72375
12/21/2018		12/21/2019		12/20/2020	66.56949
12/22/2018		12/22/2019		12/21/2020	47.44496
12/23/2018		12/23/2019		12/22/2020	41.89431
12/24/2018		12/24/2019		12/23/2020	38.70847
12/25/2018		12/25/2019		12/24/2020	37.67542
12/26/2018		12/26/2019		12/25/2020	46.95653
12/27/2018		12/27/2019		12/26/2020	59.12855
12/28/2018	70.1035	12/28/2019		12/27/2020	57.98388
12/29/2018	78.80526	12/29/2019		12/28/2020	60.44292
12/30/2018	88.60127	12/30/2019		12/29/2020	58.41089
12/31/2018	52.08014	12/31/2019		12/30/2020	64.45764



				12/31/2020	56.8675
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**PM<sub>2.5</sub> daily**

Date	Value	Date	Value	Date	Value
1/1/2018		1/1/2019	60.9509	1/1/2020	
1/2/2018		1/2/2019	60.96633	1/2/2020	
1/3/2018		1/3/2019	66.7714	1/3/2020	
1/4/2018		1/4/2019	62.19604	1/4/2020	
1/5/2018		1/5/2019	55.67583	1/5/2020	
1/6/2018		1/6/2019	50.99354	1/6/2020	
1/7/2018		1/7/2019	29.25028	1/7/2020	
1/8/2018		1/8/2019	39.74361	1/8/2020	
1/9/2018		1/9/2019	50.76222	1/9/2020	
1/10/2018		1/10/2019	77.48799	1/10/2020	
1/11/2018		1/11/2019	85.3616	1/11/2020	
1/12/2018		1/12/2019	99.62962	1/12/2020	
1/13/2018		1/13/2019	78.71154	1/13/2020	
1/14/2018		1/14/2019	63.04014	1/14/2020	
1/15/2018		1/15/2019	53.37562	1/15/2020	
1/16/2018		1/16/2019	62.83	1/16/2020	
1/17/2018		1/17/2019	55.94972	1/17/2020	
1/18/2018		1/18/2019	58.96069	1/18/2020	
1/19/2018		1/19/2019	53.30035	1/19/2020	
1/20/2018		1/20/2019	67.99347	1/20/2020	
1/21/2018		1/21/2019	69.63736	1/21/2020	
1/22/2018		1/22/2019	50.78236	1/22/2020	
1/23/2018		1/23/2019	16.70021	1/23/2020	
1/24/2018		1/24/2019	26.36993	1/24/2020	
1/25/2018		1/25/2019	28.15174	1/25/2020	
1/26/2018		1/26/2019	16.28417	1/26/2020	
1/27/2018		1/27/2019	27.17104	1/27/2020	
1/28/2018		1/28/2019	33.72035	1/28/2020	
1/29/2018		1/29/2019	37.04431	1/29/2020	
1/30/2018		1/30/2019	44.44667	1/30/2020	
1/31/2018		1/31/2019	58.245	1/31/2020	
2/1/2018		2/1/2019	47.58236	2/1/2020	
2/2/2018		2/2/2019	39.88826	2/2/2020	
2/3/2018		2/3/2019	45.57868	2/3/2020	
2/4/2018		2/4/2019	38.79924	2/4/2020	
2/5/2018		2/5/2019	45.09292	2/5/2020	
2/6/2018		2/6/2019	46.79597	2/6/2020	

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2/8/2018		2/8/2019	24.37111	2/8/2020	
2/9/2018		2/9/2019	11.93597	2/9/2020	
2/10/2018		2/10/2019	26.8041	2/10/2020	
2/11/2018		2/11/2019	38.18229	2/11/2020	
2/12/2018		2/12/2019	44.76961	2/12/2020	
2/13/2018		2/13/2019	47.74597	2/13/2020	
2/14/2018		2/14/2019	42.38743	2/14/2020	
2/15/2018		2/15/2019	16.97472	2/15/2020	
2/16/2018		2/16/2019	16.88764	2/16/2020	
2/17/2018		2/17/2019	25.61778	2/17/2020	
2/18/2018		2/18/2019	39.24292	2/18/2020	
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2/20/2018		2/20/2019	22.4925	2/20/2020	
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2/22/2018		2/22/2019	28.02931	2/22/2020	43.53003
2/23/2018		2/23/2019	29.47208	2/23/2020	37.59896
2/24/2018		2/24/2019	44.82715	2/24/2020	29.85132
2/25/2018		2/25/2019	40.60701	2/25/2020	18.15229
2/26/2018		2/26/2019	28.93757	2/26/2020	12.79243
2/27/2018		2/27/2019	15.50431	2/27/2020	18.51632
2/28/2018		2/28/2019	16.52764	2/28/2020	25.62813
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3/2/2018		3/2/2019	35.90739	3/1/2020	30.23854
3/3/2018		3/3/2019	22.99507	3/2/2020	30.34118
3/4/2018		3/4/2019	23.59639	3/3/2020	33.20639
3/5/2018		3/5/2019	28.11972	3/4/2020	36.53993
3/6/2018		3/6/2019	31.48306	3/5/2020	43.45222
3/7/2018		3/7/2019	38.09444	3/6/2020	38.41618
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3/9/2018		3/9/2019	32.33206	3/8/2020	19.72812
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3/11/2018		3/11/2019	31.03625	3/10/2020	38.01083
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3/13/2018		3/13/2019	28.35431	3/12/2020	28.14264
3/14/2018		3/14/2019	19.63021	3/13/2020	17.44361
3/15/2018		3/15/2019	24.08931	3/14/2020	14.69632
3/16/2018		3/16/2019	29.9166	3/15/2020	10.41882
3/17/2018		3/17/2019	41.04792	3/16/2020	18.76146
3/18/2018		3/18/2019	49.33674	3/17/2020	29.01586
3/19/2018		3/19/2019	49.17535	3/18/2020	42.95861

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3/21/2018		3/21/2019	18.33978	3/20/2020	39.56528
3/22/2018		3/22/2019	24.15375	3/21/2020	40.74847
3/23/2018		3/23/2019	28.48014	3/22/2020	36.15771
3/24/2018		3/24/2019	29.65167	3/23/2020	30.77528
3/25/2018		3/25/2019	37.64826	3/24/2020	38.85674
3/26/2018		3/26/2019	25.80715	3/25/2020	37.91354
3/27/2018		3/27/2019	27.81875	3/26/2020	24.07188
3/28/2018		3/28/2019	37.63104	3/27/2020	26.42545
3/29/2018		3/29/2019	51.31535	3/28/2020	14.90368
3/30/2018		3/30/2019	52.11253	3/29/2020	14.2
3/31/2018		3/31/2019	41.5991	3/30/2020	18.14604
4/1/2018		4/1/2019	26.79674	3/31/2020	25.07063
4/2/2018		4/2/2019	18.07812	4/1/2020	26.12931
4/3/2018		4/3/2019	21.65611	4/2/2020	27.17862
4/4/2018		4/4/2019	24.58007	4/3/2020	22.49411
4/5/2018		4/5/2019	30.20694	4/4/2020	24.85896
4/6/2018		4/6/2019	25.84521	4/5/2020	31.64396
4/7/2018		4/7/2019	9.178403	4/6/2020	23.53167
4/8/2018		4/8/2019	14.39665	4/7/2020	24.4509
4/9/2018		4/9/2019	14.81639	4/8/2020	27.87757
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4/11/2018		4/11/2019	12.07384	4/10/2020	35.33431
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4/16/2018		4/16/2019		4/15/2020	32.37458
4/17/2018		4/17/2019	39.00472	4/16/2020	40.02569
4/18/2018		4/18/2019	28.00306	4/17/2020	32.98111
4/19/2018		4/19/2019	30.44771	4/18/2020	35.1216
4/20/2018		4/20/2019	38.69396	4/19/2020	25.83444
4/21/2018		4/21/2019	56.59917	4/20/2020	35.1171
4/22/2018		4/22/2019	49.46653	4/21/2020	19.29956
4/23/2018		4/23/2019	48.39479	4/22/2020	20.25446
4/24/2018		4/24/2019	51.67965	4/23/2020	27.25375
4/25/2018		4/25/2019	52.3284	4/24/2020	24.84091
4/26/2018		4/26/2019	58.01451	4/25/2020	31.90993
4/27/2018		4/27/2019	71.89785	4/26/2020	20.48208
4/28/2018		4/28/2019	83.05132	4/27/2020	14.21167
4/29/2018		4/29/2019	80.09868	4/28/2020	17.24674

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5/1/2018		5/1/2019	57.05382	4/30/2020	27.53444
5/2/2018		5/2/2019	26.17965	5/1/2020	13.43182
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5/4/2018		5/4/2019	35.32688	5/3/2020	12.3134
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5/6/2018		5/6/2019	45.42779	5/5/2020	13.96215
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5/8/2018		5/8/2019	57.44932	5/7/2020	12.97535
5/9/2018		5/9/2019	46.09315	5/8/2020	11.19347
5/10/2018		5/10/2019	82.33117	5/9/2020	16.08799
5/11/2018		5/11/2019	63.47629	5/10/2020	10.86139
5/12/2018		5/12/2019	48.00102	5/11/2020	13.66188
5/13/2018		5/13/2019	68.04632	5/12/2020	23.61792
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5/15/2018		5/15/2019	48.12456	5/14/2020	29.51167
5/16/2018		5/16/2019	47.20059	5/15/2020	39.2706
5/17/2018		5/17/2019	35.66724	5/16/2020	35.39653
5/18/2018		5/18/2019	42.89229	5/17/2020	26.76854
5/19/2018		5/19/2019	37.69797	5/18/2020	29.83236
5/20/2018		5/20/2019	43.66332	5/19/2020	32.40347
5/21/2018		5/21/2019	49.24972	5/20/2020	31.32306
5/22/2018		5/22/2019	49.65933	5/21/2020	30.07993
5/23/2018		5/23/2019	51.09321	5/22/2020	31.0984
5/24/2018		5/24/2019	44.22461	5/23/2020	22.54681
5/25/2018		5/25/2019	34.00844	5/24/2020	31.89729
5/26/2018		5/26/2019	35.44979	5/25/2020	30.11611
5/27/2018		5/27/2019	32.97973	5/26/2020	27.63937
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5/31/2018		5/31/2019	31.75512	5/30/2020	18.01312
6/1/2018		6/1/2019	30.2815	5/31/2020	22.81264
6/2/2018		6/2/2019	36.73199	6/1/2020	13.01889
6/3/2018		6/3/2019	14.65071	6/2/2020	16.90271
6/4/2018		6/4/2019	19.00556	6/3/2020	17.89514
6/5/2018		6/5/2019	21.71704	6/4/2020	31.99931
6/6/2018		6/6/2019	20.52601	6/5/2020	17.65333
6/7/2018		6/7/2019	10.15232	6/6/2020	7.405208
6/8/2018		6/8/2019	22.99535	6/7/2020	6.843403
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6/11/2018		6/11/2019	28.49028	6/10/2020	25.92
6/12/2018		6/12/2019	22.77451	6/11/2020	21.33632
6/13/2018		6/13/2019	23.32799	6/12/2020	20.41632
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6/15/2018		6/15/2019	33.74604	6/14/2020	7.131944
6/16/2018		6/16/2019	39.23319	6/15/2020	5.782986
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6/18/2018		6/18/2019	40.67569	6/17/2020	8.616875
6/19/2018		6/19/2019	31.04537	6/18/2020	6.876528
6/20/2018		6/20/2019	28.10049	6/19/2020	7.566801
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6/24/2018		6/24/2019	13.42681	6/23/2020	5.59125
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6/28/2018		6/28/2019	35.09396	6/27/2020	16.43222
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7/2/2018		7/2/2019	14.01056	7/1/2020	19.48965
7/3/2018		7/3/2019	8.583303	7/2/2020	23.84333
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7/5/2018		7/5/2019	8.808997	7/4/2020	11.91257
7/6/2018		7/6/2019	6.106702	7/5/2020	10.4775
7/7/2018		7/7/2019	7.112153	7/6/2020	7.127917
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7/9/2018		7/9/2019	3.894583	7/8/2020	7.844421
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7/11/2018		7/11/2019	4.917153	7/10/2020	5.191111
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7/15/2018		7/15/2019	26.30042	7/14/2020	17.4416
7/16/2018		7/16/2019	22.74895	7/15/2020	12.44167
7/17/2018		7/17/2019	19.14993	7/16/2020	10.035
7/18/2018		7/18/2019	20.96521	7/17/2020	9.744514
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7/20/2018		7/20/2019	14.92361	7/19/2020	15.80271

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7/23/2018		7/23/2019	20.79139	7/22/2020	9.647708
7/24/2018		7/24/2019	8.075903	7/23/2020	8.773611
7/25/2018		7/25/2019	4.625625	7/24/2020	5.299931
7/26/2018		7/26/2019	7.440556	7/25/2020	9.197292
7/27/2018		7/27/2019	6.281597	7/26/2020	13.09069
7/28/2018		7/28/2019	5.439792	7/27/2020	18.23972
7/29/2018		7/29/2019	7.256528	7/28/2020	15.20071
7/30/2018		7/30/2019	8.304028	7/29/2020	7.86341
7/31/2018		7/31/2019	11.80299	7/30/2020	7.921528
8/1/2018		8/1/2019	10.94194	7/31/2020	9.261181
8/2/2018		8/2/2019	10.08661	8/1/2020	9.510694
8/3/2018		8/3/2019	8.550972	8/2/2020	11.63618
8/4/2018		8/4/2019	10.21917	8/3/2020	9.807431
8/5/2018		8/5/2019	6.397083	8/4/2020	10.87549
8/6/2018		8/6/2019	4.0425	8/5/2020	5.133333
8/7/2018		8/7/2019		8/6/2020	2.883611
8/8/2018		8/8/2019		8/7/2020	5.690903
8/9/2018		8/9/2019		8/8/2020	6.296875
8/10/2018		8/10/2019	7.395278	8/9/2020	12.30306
8/11/2018		8/11/2019	10.46435	8/10/2020	7.984167
8/12/2018		8/12/2019	6.749514	8/11/2020	8.493125
8/13/2018		8/13/2019	3.651437	8/12/2020	8.631667
8/14/2018		8/14/2019	3.459722	8/13/2020	7.16252
8/15/2018		8/15/2019	3.649097	8/14/2020	7.937778
8/16/2018		8/16/2019	5.835556	8/15/2020	6.949236
8/17/2018		8/17/2019	4.579375	8/16/2020	5.541762
8/18/2018		8/18/2019	4.980278	8/17/2020	3.753293
8/19/2018		8/19/2019	3.810764	8/18/2020	
8/20/2018		8/20/2019	7.783958	8/19/2020	
8/21/2018		8/21/2019	7.704306	8/20/2020	4.787594
8/22/2018		8/22/2019	10.4484	8/21/2020	2.930395
8/23/2018		8/23/2019	9.296667	8/22/2020	4.352708
8/24/2018		8/24/2019	6.009722	8/23/2020	6.866718
8/25/2018		8/25/2019	5.836111	8/24/2020	8.290069
8/26/2018		8/26/2019	5.037708	8/25/2020	8.736736
8/27/2018		8/27/2019	9.582639	8/26/2020	9.04882
8/28/2018		8/28/2019	11.56667	8/27/2020	6.734306
8/29/2018		8/29/2019	11.31111	8/28/2020	8.761202
8/30/2018		8/30/2019	9.612917	8/29/2020	10.2884

8/31/2018		8/31/2019	7.029375	8/30/2020	12.67896
9/1/2018		9/1/2019	9.4675	8/31/2020	9.95625
9/2/2018		9/2/2019	7.126082	9/1/2020	12.59625
9/3/2018		9/3/2019	8.971806	9/2/2020	7.443403
9/4/2018		9/4/2019	6.619987	9/3/2020	9.56632
9/5/2018		9/5/2019	7.28798	9/4/2020	15.37687
9/6/2018		9/6/2019	5.790764	9/5/2020	17.65149
9/7/2018		9/7/2019	4.73375	9/6/2020	17.59042
9/8/2018		9/8/2019	5.944653	9/7/2020	19.41458
9/9/2018		9/9/2019	6.774375	9/8/2020	21.97021
9/10/2018		9/10/2019	7.153695	9/9/2020	16.42285
9/11/2018		9/11/2019	14.63569	9/10/2020	13.28653
9/12/2018		9/12/2019	10.24167	9/11/2020	17.60118
9/13/2018		9/13/2019	4.574667	9/12/2020	14.46424
9/14/2018		9/14/2019	7.21966	9/13/2020	17.47778
9/15/2018		9/15/2019	12.45299	9/14/2020	17.41924
9/16/2018		9/16/2019	11.85467	9/15/2020	22.97905
9/17/2018		9/17/2019	6.578867	9/16/2020	23.16583
9/18/2018		9/18/2019	5.446408	9/17/2020	25.78396
9/19/2018		9/19/2019	3.812421	9/18/2020	18.8084
9/20/2018		9/20/2019	5.558111	9/19/2020	11.1904
9/21/2018		9/21/2019	8.231597	9/20/2020	10.29347
9/22/2018		9/22/2019	12.1491	9/21/2020	7.828958
9/23/2018	25.27796	9/23/2019	10.7727	9/22/2020	4.043269
9/24/2018	29.33097	9/24/2019	14.05424	9/23/2020	3.420972
9/25/2018		9/25/2019	8.62809	9/24/2020	3.552986
9/26/2018		9/26/2019	2.353958	9/25/2020	8.754931
9/27/2018	15.2	9/27/2019	2.940972	9/26/2020	23.99521
9/28/2018		9/28/2019	3.125764	9/27/2020	32.88354
9/29/2018		9/29/2019	4.10785	9/28/2020	40.45938
9/30/2018		9/30/2019	4.770486	9/29/2020	37.73639
10/1/2018	40.51662	10/1/2019	5.603264	9/30/2020	32.94215
10/2/2018		10/2/2019	9.795737	10/1/2020	32.68014
10/3/2018		10/3/2019	11.57973	10/2/2020	32.47972
10/4/2018	41.65154	10/4/2019	13.05382	10/3/2020	29.77111
10/5/2018	39.28729	10/5/2019	24.27708	10/4/2020	29.33496
10/6/2018	41.5399	10/6/2019	26.73903	10/5/2020	30.68243
10/7/2018	46.16352	10/7/2019	28.59208	10/6/2020	28.77556
10/8/2018	44.81959	10/8/2019	24.14792	10/7/2020	28.97688
10/9/2018	43.38641	10/9/2019	20.41255	10/8/2020	26.78319
10/10/2018	50.22149	10/10/2019	26.06063	10/9/2020	29.44799

10/11/2018	37.24959	10/11/2019	30.13313	10/10/2020	27.92285
10/12/2018	26.91397	10/12/2019	43.64585	10/11/2020	26.85292
10/13/2018	29.96874	10/13/2019	52.04711	10/12/2020	22.64903
10/14/2018	43.69178	10/14/2019	50.47802	10/13/2020	24.88458
10/15/2018	50.56454	10/15/2019	41.48764	10/14/2020	31.0766
10/16/2018	45.49352	10/16/2019	30.5716	10/15/2020	32.5241
10/17/2018	47.01693	10/17/2019	28.42591	10/16/2020	27.3284
10/18/2018	47.46083	10/18/2019	32.18118	10/17/2020	24.95247
10/19/2018	38.25723	10/19/2019	29.53611	10/18/2020	47.9176
10/20/2018	44.89895	10/20/2019	37.16938	10/19/2020	53.95569
10/21/2018	34.23045	10/21/2019	39.0532	10/20/2020	52.02861
10/22/2018	36.83644	10/22/2019	35.37868	10/21/2020	57.93153
10/23/2018	45.49868	10/23/2019	49.8373	10/22/2020	55.36514
10/24/2018	52.15152	10/24/2019	44.72634	10/23/2020	49.16736
10/25/2018	40.78613	10/25/2019	54.83014	10/24/2020	38.25146
10/26/2018	39.31488	10/26/2019	49.94069	10/25/2020	29.02556
10/27/2018	31.85531	10/27/2019	59.64684	10/26/2020	31.13139
10/28/2018	29.27592	10/28/2019	86.18309	10/27/2020	27.05194
10/29/2018	30.16433	10/29/2019	83.64306	10/28/2020	34.71819
10/30/2018	33.87323	10/30/2019	67.76257	10/29/2020	26.10757
10/31/2018	30.02178	10/31/2019	53.04681	10/30/2020	25.73174
11/1/2018	25.6397	11/1/2019	63.35229	10/31/2020	25.49264
11/2/2018	30.04979	11/2/2019	88.94278	11/1/2020	27.16924
11/3/2018	60.50455	11/3/2019	58.01528	11/2/2020	40.49007
11/4/2018	66.25653	11/4/2019	58.7716	11/3/2020	60.87813
11/5/2018	49.59105	11/5/2019	54.32479	11/4/2020	72.8966
11/6/2018	49.34278	11/6/2019	56.48147	11/5/2020	64.27
11/7/2018	52.44077	11/7/2019	41.7109	11/6/2020	50.22056
11/8/2018	79.06205	11/8/2019	38.01083	11/7/2020	75.1941
11/9/2018	63.88623	11/9/2019	31.60188	11/8/2020	55.47889
11/10/2018	55.69365	11/10/2019	32.90479	11/9/2020	32.04632
11/11/2018	63.90397	11/11/2019	40.06229	11/10/2020	24.8916
11/12/2018	51.9555	11/12/2019	44.9316	11/11/2020	25.30465
11/13/2018	67.97463	11/13/2019	54.79993	11/12/2020	28.41438
11/14/2018	87.27085	11/14/2019	40.48757	11/13/2020	27.88181
11/15/2018	63.97229	11/15/2019	31.96162	11/14/2020	25.71819
11/16/2018	62.85462	11/16/2019	27.07716	11/15/2020	21.82431
11/17/2018	58.37672	11/17/2019	29.03313	11/16/2020	15.39049
11/18/2018	80.58556	11/18/2019	48.63382	11/17/2020	17.19986
11/19/2018	121.3936	11/19/2019	64.29299	11/18/2020	24.51063
11/20/2018	97.75222	11/20/2019	57.63486	11/19/2020	29.73062



11/21/2018	79.50506	11/21/2019	68.24847	11/20/2020	32.07764
11/22/2018	82.27966	11/22/2019	46.32979	11/21/2020	42.46303
11/23/2018	76.50885	11/23/2019	49.75132	11/22/2020	38.99104
11/24/2018	56.14639	11/24/2019	55.68979	11/23/2020	42.275
11/25/2018	54.67686	11/25/2019	73.61009	11/24/2020	45.1259
11/26/2018	55.84546	11/26/2019	64.75876	11/25/2020	41.67132
11/27/2018	52.6193	11/27/2019	61.73327	11/26/2020	33.52785
11/28/2018	43.70607	11/28/2019	49.31232	11/27/2020	30.93299
11/29/2018	37.28517	11/29/2019	39.69771	11/28/2020	26.93806
11/30/2018	65.37995	11/30/2019	26.55599	11/29/2020	22.54104
12/1/2018	84.31809	12/1/2019	27.21556	11/30/2020	27.72299
12/2/2018	89.25852	12/2/2019	27.51187	12/1/2020	44.05159
12/3/2018	75.68495	12/3/2019	43.45099	12/2/2020	41.24322
12/4/2018	56.42164	12/4/2019	50.43554	12/3/2020	48.5375
12/5/2018	55.95071	12/5/2019	44.86203	12/4/2020	54.84806
12/6/2018	69.00636	12/6/2019	37.50747	12/5/2020	56.41285
12/7/2018	59.05661	12/7/2019	36.72206	12/6/2020	71.5434
12/8/2018	47.78104	12/8/2019	38.85128	12/7/2020	82.75181
12/9/2018	47.81225	12/9/2019	32.53245	12/8/2020	86.69792
12/10/2018	46.95231	12/10/2019	37.60147	12/9/2020	105.1467
12/11/2018	48.13419	12/11/2019	47.63399	12/10/2020	84.66181
12/12/2018	54.05855	12/12/2019	52.00416	12/11/2020	65.22118
12/13/2018	45.53249	12/13/2019	30.40335	12/12/2020	54.84868
12/14/2018	48.57789	12/14/2019	13.45264	12/13/2020	44.75687
12/15/2018		12/15/2019	20.71619	12/14/2020	35.31764
12/16/2018		12/16/2019	24.84792	12/15/2020	42.92137
12/17/2018		12/17/2019	29.6292	12/16/2020	38.57076
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12/19/2018		12/19/2019	35.80267	12/18/2020	71.83243
12/20/2018		12/20/2019	49.3181	12/19/2020	71.61604
12/21/2018		12/21/2019		12/20/2020	78.33542
12/22/2018		12/22/2019		12/21/2020	56.15329
12/23/2018		12/23/2019		12/22/2020	52.71222
12/24/2018		12/24/2019		12/23/2020	49.24153
12/25/2018		12/25/2019		12/24/2020	46.06771
12/26/2018		12/26/2019		12/25/2020	56.11991
12/27/2018		12/27/2019		12/26/2020	67.70684
12/28/2018	76.43551	12/28/2019		12/27/2020	64.96515
12/29/2018	87.60144	12/29/2019		12/28/2020	69.46983
12/30/2018	99.6775	12/30/2019		12/29/2020	68.79854
12/31/2018	57.50588	12/31/2019		12/30/2020	76.19523

				12/31/2020	66.51715
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**PM<sub>10</sub> daily**

Date	Value	Date	Value	Date	Value
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1/3/2018		1/3/2019	108.1166	1/3/2020	
1/4/2018		1/4/2019	91.27974	1/4/2020	
1/5/2018		1/5/2019	78.76062	1/5/2020	
1/6/2018		1/6/2019	81.69576	1/6/2020	
1/7/2018		1/7/2019	33.59285	1/7/2020	
1/8/2018		1/8/2019	50.08736	1/8/2020	
1/9/2018		1/9/2019	60.86278	1/9/2020	
1/10/2018		1/10/2019	92.61611	1/10/2020	
1/11/2018		1/11/2019	100.5161	1/11/2020	
1/12/2018		1/12/2019	122.7396	1/12/2020	
1/13/2018		1/13/2019	102.7874	1/13/2020	
1/14/2018		1/14/2019	85.53549	1/14/2020	
1/15/2018		1/15/2019	68.94889	1/15/2020	
1/16/2018		1/16/2019	82.78722	1/16/2020	
1/17/2018		1/17/2019	73.27104	1/17/2020	
1/18/2018		1/18/2019	85.17764	1/18/2020	
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1/20/2018		1/20/2019	89.59236	1/20/2020	
1/21/2018		1/21/2019	94.97785	1/21/2020	
1/22/2018		1/22/2019	68.72646	1/22/2020	
1/23/2018		1/23/2019	18.23625	1/23/2020	
1/24/2018		1/24/2019	32.46111	1/24/2020	
1/25/2018		1/25/2019	35.30667	1/25/2020	
1/26/2018		1/26/2019	19.93972	1/26/2020	
1/27/2018		1/27/2019	30.47792	1/27/2020	
1/28/2018		1/28/2019	37.99444	1/28/2020	
1/29/2018		1/29/2019	43.18847	1/29/2020	
1/30/2018		1/30/2019	49.89945	1/30/2020	
1/31/2018		1/31/2019	69.73271	1/31/2020	
2/1/2018		2/1/2019	61.5359	2/1/2020	
2/2/2018		2/2/2019	52.56708	2/2/2020	
2/3/2018		2/3/2019	61.52145	2/3/2020	
2/4/2018		2/4/2019	49.36368	2/4/2020	
2/5/2018		2/5/2019	57.26028	2/5/2020	
2/6/2018		2/6/2019	69.93438	2/6/2020	

2/7/2018		2/7/2019	23.66062	2/7/2020	
2/8/2018		2/8/2019	25.43625	2/8/2020	
2/9/2018		2/9/2019	15.26431	2/9/2020	
2/10/2018		2/10/2019	30.92465	2/10/2020	
2/11/2018		2/11/2019	42.40798	2/11/2020	
2/12/2018		2/12/2019	51.00437	2/12/2020	
2/13/2018		2/13/2019	56.29618	2/13/2020	
2/14/2018		2/14/2019	51.35597	2/14/2020	
2/15/2018		2/15/2019	18.52917	2/15/2020	
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2/18/2018		2/18/2019	42.19826	2/18/2020	
2/19/2018		2/19/2019	40.69618	2/19/2020	
2/20/2018		2/20/2019	34.68132	2/20/2020	
2/21/2018		2/21/2019	28.40132	2/21/2020	
2/22/2018		2/22/2019	39.49306	2/22/2020	52.13525
2/23/2018		2/23/2019	40.79375	2/23/2020	51.06424
2/24/2018		2/24/2019	56.73625	2/24/2020	44.76618
2/25/2018		2/25/2019	50.63819	2/25/2020	21.11667
2/26/2018		2/26/2019	46.06236	2/26/2020	15.58896
2/27/2018		2/27/2019	17.75715	2/27/2020	22.62993
2/28/2018		2/28/2019	18.69458	2/28/2020	34.34257
3/1/2018		3/1/2019	29.89278	2/29/2020	37.58903
3/2/2018		3/2/2019	41.34477	3/1/2020	50.72882
3/3/2018		3/3/2019	24.10361	3/2/2020	61.42924
3/4/2018		3/4/2019	27.47833	3/3/2020	76.45028
3/5/2018		3/5/2019	37.96993	3/4/2020	77.32097
3/6/2018		3/6/2019	44.48875	3/5/2020	86.85833
3/7/2018		3/7/2019	48.53674	3/6/2020	93.17451
3/8/2018		3/8/2019	57.70924	3/7/2020	13.83861
3/9/2018		3/9/2019	53.49612	3/8/2020	38.8234
3/10/2018		3/10/2019	48.91444	3/9/2020	45.23694
3/11/2018		3/11/2019	56.93986	3/10/2020	54.15556
3/12/2018		3/12/2019	61.40174	3/11/2020	58.60944
3/13/2018		3/13/2019	52.47132	3/12/2020	57.78938
3/14/2018		3/14/2019	40.62604	3/13/2020	25.25139
3/15/2018		3/15/2019	41.58076	3/14/2020	20.91896
3/16/2018		3/16/2019	48.52208	3/15/2020	21.51076
3/17/2018		3/17/2019	57.51889	3/16/2020	34.10896
3/18/2018		3/18/2019	65.05312	3/17/2020	53.21462
3/19/2018		3/19/2019	68.33896	3/18/2020	76.73278

3/20/2018		3/20/2019	55.6909	3/19/2020	80.20444
3/21/2018		3/21/2019	48.37064	3/20/2020	91.27097
3/22/2018		3/22/2019	51.41174	3/21/2020	68.41347
3/23/2018		3/23/2019	50.61153	3/22/2020	49.32507
3/24/2018		3/24/2019	50.28333	3/23/2020	42.3241
3/25/2018		3/25/2019	66.23319	3/24/2020	53.16449
3/26/2018		3/26/2019	44.67764	3/25/2020	58.38424
3/27/2018		3/27/2019	41.72681	3/26/2020	42.63049
3/28/2018		3/28/2019	54.07875	3/27/2020	40.60487
3/29/2018		3/29/2019	70.72542	3/28/2020	22.26403
3/30/2018		3/30/2019	72.42071	3/29/2020	25.21882
3/31/2018		3/31/2019	65.46576	3/30/2020	32.80257
4/1/2018		4/1/2019	48.52612	3/31/2020	41.12521
4/2/2018		4/2/2019	31.33667	4/1/2020	57.51785
4/3/2018		4/3/2019	35.83917	4/2/2020	67.96646
4/4/2018		4/4/2019	37.9116	4/3/2020	51.21262
4/5/2018		4/5/2019	46.61479	4/4/2020	49.91472
4/6/2018		4/6/2019	37.47486	4/5/2020	59.49139
4/7/2018		4/7/2019	11.49382	4/6/2020	65.9691
4/8/2018		4/8/2019	20.51414	4/7/2020	67.03035
4/9/2018		4/9/2019	28.56757	4/8/2020	72.37118
4/10/2018		4/10/2019	20.2631	4/9/2020	61.03222
4/11/2018		4/11/2019	18.54581	4/10/2020	76.43444
4/12/2018		4/12/2019		4/11/2020	76.14479
4/13/2018		4/13/2019		4/12/2020	80.88535
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**TSP daily**

Date	Value	Date	Value	Date	Value
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1/3/2018		1/3/2019	172.0053	1/3/2020	
1/4/2018		1/4/2019	138.0308	1/4/2020	
1/5/2018		1/5/2019	135.1385	1/5/2020	
1/6/2018		1/6/2019	184.3671	1/6/2020	
1/7/2018		1/7/2019	44.10354	1/7/2020	
1/8/2018		1/8/2019	68.38229	1/8/2020	
1/9/2018		1/9/2019	77.02139	1/9/2020	
1/10/2018		1/10/2019	117.747	1/10/2020	
1/11/2018		1/11/2019	119.1495	1/11/2020	
1/12/2018		1/12/2019	144.6616	1/12/2020	
1/13/2018		1/13/2019	136.0563	1/13/2020	
1/14/2018		1/14/2019	137.8449	1/14/2020	
1/15/2018		1/15/2019	83.83972	1/15/2020	
1/16/2018		1/16/2019	108.8253	1/16/2020	
1/17/2018		1/17/2019	97.47347	1/17/2020	
1/18/2018		1/18/2019	118.2174	1/18/2020	
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1/20/2018		1/20/2019	129.0815	1/20/2020	
1/21/2018		1/21/2019	131.282	1/21/2020	
1/22/2018		1/22/2019	132.3261	1/22/2020	
1/23/2018		1/23/2019	21.72687	1/23/2020	
1/24/2018		1/24/2019	45.54021	1/24/2020	
1/25/2018		1/25/2019	73.01028	1/25/2020	
1/26/2018		1/26/2019	25.48049	1/26/2020	
1/27/2018		1/27/2019	40.07674	1/27/2020	
1/28/2018		1/28/2019	51.0016	1/28/2020	
1/29/2018		1/29/2019	57.21458	1/29/2020	
1/30/2018		1/30/2019	57.00215	1/30/2020	
1/31/2018		1/31/2019	84.69618	1/31/2020	
2/1/2018		2/1/2019	85.08882	2/1/2020	
2/2/2018		2/2/2019	75.81465	2/2/2020	
2/3/2018		2/3/2019	87.90382	2/3/2020	
2/4/2018		2/4/2019	70.58688	2/4/2020	
2/5/2018		2/5/2019	72.49521	2/5/2020	
2/6/2018		2/6/2019	110.4473	2/6/2020	

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2/8/2018		2/8/2019	26.41146	2/8/2020	
2/9/2018		2/9/2019	23.03736	2/9/2020	
2/10/2018		2/10/2019	39.90229	2/10/2020	
2/11/2018		2/11/2019	47.13353	2/11/2020	
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2/24/2018		2/24/2019	75.45056	2/24/2020	89.60347
2/25/2018		2/25/2019	71.19111	2/25/2020	27.31326
2/26/2018		2/26/2019	89.84706	2/26/2020	19.09896
2/27/2018		2/27/2019	27.18194	2/27/2020	29.86861
2/28/2018		2/28/2019	23.25063	2/28/2020	48.6966
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3/23/2018		3/23/2019	96.38028	3/22/2020	85.72958
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3/25/2018		3/25/2019	122.2692	3/24/2020	73.24012
3/26/2018		3/26/2019	107.9277	3/25/2020	102.4063
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4/23/2018		4/23/2019	260.0167	4/22/2020	62.42001
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4/26/2018		4/26/2019	408.4961	4/25/2020	77.56639
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4/29/2018		4/29/2019	458.5172	4/28/2020	38.37424

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5/16/2018		5/16/2019	2730.59	5/15/2020	154.4253
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5/30/2018		5/30/2019	2499.486	5/29/2020	122.2476
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6/2/2018		6/2/2019	1571.412	6/1/2020	36.10118
6/3/2018		6/3/2019	586.8961	6/2/2020	74.54799
6/4/2018		6/4/2019	673.3708	6/3/2020	100.013
6/5/2018		6/5/2019	910.2854	6/4/2020	96.94194
6/6/2018		6/6/2019	1380.639	6/5/2020	27.16687
6/7/2018		6/7/2019	743.4912	6/6/2020	13.83319
6/8/2018		6/8/2019	535.1121	6/7/2020	14.99549
6/9/2018		6/9/2019	1773.928	6/8/2020	92.98535

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6/11/2018		6/11/2019	1541.224	6/10/2020	57.54951
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6/13/2018		6/13/2019	1258.196	6/12/2020	59.90257
6/14/2018		6/14/2019	2161.251	6/13/2020	63.05667
6/15/2018		6/15/2019	2228.56	6/14/2020	43.84382
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6/17/2018		6/17/2019	2159.098	6/16/2020	12.44743
6/18/2018		6/18/2019	2180.76	6/17/2020	15.84896
6/19/2018		6/19/2019	1538.206	6/18/2020	12.74687
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6/22/2018		6/22/2019	473.5581	6/21/2020	26.63563
6/23/2018		6/23/2019	81.9125	6/22/2020	12.51256
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6/25/2018		6/25/2019	352.4714	6/24/2020	10.6342
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6/30/2018		6/30/2019	435.0443	6/29/2020	11.32667
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7/3/2018		7/3/2019	262.1671	7/2/2020	45.21062
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7/7/2018		7/7/2019	175.0035	7/6/2020	16.31799
7/8/2018		7/8/2019	138.6187	7/7/2020	7.405577
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7/10/2018		7/10/2019	124.9762	7/9/2020	14.11951
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7/17/2018		7/17/2019	399.8435	7/16/2020	14.71174
7/18/2018		7/18/2019	524.6236	7/17/2020	14.51583
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7/20/2018		7/20/2019	279.0317	7/19/2020	19.95674

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7/26/2018		7/26/2019	103.0278	7/25/2020	14.93458
7/27/2018		7/27/2019	176.3422	7/26/2020	33.81458
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7/30/2018		7/30/2019	349.463	7/29/2020	10.60659
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8/3/2018		8/3/2019	157.7313	8/2/2020	26.25431
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8/5/2018		8/5/2019	111.0632	8/4/2020	24.59972
8/6/2018		8/6/2019	93.06667	8/5/2020	14.27819
8/7/2018		8/7/2019		8/6/2020	34.22695
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8/9/2018		8/9/2019		8/8/2020	12.09819
8/10/2018		8/10/2019	157.1468	8/9/2020	23.02674
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8/13/2018		8/13/2019	40.31162	8/12/2020	13.04417
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8/15/2018		8/15/2019	36.79028	8/14/2020	12.49882
8/16/2018		8/16/2019	58.65486	8/15/2020	9.58625
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8/18/2018		8/18/2019	52.74306	8/17/2020	9.955122
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8/24/2018		8/24/2019	71.10833	8/23/2020	14.29261
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8/30/2018		8/30/2019	201.2779	8/29/2020	24.46514



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9/2/2018		9/2/2019	178.1295	9/1/2020	18.41292
9/3/2018		9/3/2019	136.6646	9/2/2020	9.667361
9/4/2018		9/4/2019	133.0014	9/3/2020	14.30312
9/5/2018		9/5/2019	113.5327	9/4/2020	26.73542
9/6/2018		9/6/2019	77.34861	9/5/2020	28.77056
9/7/2018		9/7/2019	76.04722	9/6/2020	30.61521
9/8/2018		9/8/2019	102.8757	9/7/2020	32.76917
9/9/2018		9/9/2019	92.86806	9/8/2020	37.0216
9/10/2018		9/10/2019	95.64825	9/9/2020	22.2759
9/11/2018		9/11/2019	167.9312	9/10/2020	16.29903
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9/14/2018		9/14/2019	85.33542	9/13/2020	28.20306
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9/16/2018		9/16/2019	174.175	9/15/2020	33.8025
9/17/2018		9/17/2019	85.2562	9/16/2020	30.32542
9/18/2018		9/18/2019	70.31576	9/17/2020	34.95486
9/19/2018		9/19/2019	60.27074	9/18/2020	24.66708
9/20/2018		9/20/2019	141.5302	9/19/2020	18.47549
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9/22/2018		9/22/2019	148.4681	9/21/2020	35.33799
9/23/2018	56.09854	9/23/2019	149.8162	9/22/2020	7.142359
9/24/2018	101.6255	9/24/2019	159.4226	9/23/2020	5.596806
9/25/2018		9/25/2019	113.6123	9/24/2020	6.034792
9/26/2018		9/26/2019	55.61521	9/25/2020	15.12403
9/27/2018	49.2	9/27/2019	34.47986	9/26/2020	41.07278
9/28/2018		9/28/2019	108.0192	9/27/2020	55.66368
9/29/2018		9/29/2019	137.9459	9/28/2020	67.7282
9/30/2018		9/30/2019	106.8038	9/29/2020	69.68562
10/1/2018	106.2461	10/1/2019	95.86667	9/30/2020	59.76431
10/2/2018		10/2/2019	168.0821	10/1/2020	58.44396
10/3/2018		10/3/2019	220.8119	10/2/2020	69.49917
10/4/2018	130.5644	10/4/2019	229.9111	10/3/2020	54.26896
10/5/2018	126.2526	10/5/2019	368.1086	10/4/2020	58.49007
10/6/2018	120.1051	10/6/2019	444.4771	10/5/2020	57.34708
10/7/2018	143.3558	10/7/2019	445.4442	10/6/2020	52.49028
10/8/2018	155.2695	10/8/2019	405.2458	10/7/2020	67.03667
10/9/2018	143.4347	10/9/2019	341.8527	10/8/2020	77.90722
10/10/2018	134.4834	10/10/2019	478.9904	10/9/2020	77.67972

10/11/2018	102.0085	10/11/2019	691.0236	10/10/2020	91.98417
10/12/2018	90.77186	10/12/2019	927.7821	10/11/2020	79.98882
10/13/2018	69.76748	10/13/2019	909.261	10/12/2020	65.54674
10/14/2018	126.6299	10/14/2019	803.7385	10/13/2020	59.45958
10/15/2018	132.8722	10/15/2019	728.6028	10/14/2020	67.64521
10/16/2018	94.61927	10/16/2019	614.8532	10/15/2020	93.92569
10/17/2018	140.6296	10/17/2019	562.9032	10/16/2020	76.09278
10/18/2018	157.6382	10/18/2019	616.2442	10/17/2020	93.76444
10/19/2018	139.0804	10/19/2019	509.8756	10/18/2020	176.2987
10/20/2018	152.2526	10/20/2019	702.5168	10/19/2020	177.5494
10/21/2018	137.1623	10/21/2019	758.8506	10/20/2020	159.7176
10/22/2018	177.0991	10/22/2019	653.5397	10/21/2020	182.249
10/23/2018	171.6079	10/23/2019	794.2518	10/22/2020	164.6866
10/24/2018	150.6811	10/24/2019	764.7356	10/23/2020	126.5505
10/25/2018	133.504	10/25/2019	854.0172	10/24/2020	91.61326
10/26/2018	124.533	10/26/2019	800.1806	10/25/2020	102.8292
10/27/2018	150.0406	10/27/2019	1038.153	10/26/2020	91.16764
10/28/2018	136.9618	10/28/2019	1155.283	10/27/2020	104.1322
10/29/2018	143.3887	10/29/2019	1185.453	10/28/2020	153.4849
10/30/2018	172.5274	10/30/2019	1154.722	10/29/2020	84.68243
10/31/2018	180.2432	10/31/2019	810.0066	10/30/2020	115.0414
11/1/2018	152.2664	11/1/2019	939.6743	10/31/2020	80.70458
11/2/2018	146.6923	11/2/2019	1303.594	11/1/2020	72.51583
11/3/2018	236.8547	11/3/2019	1082.954	11/2/2020	97.21014
11/4/2018	213.1305	11/4/2019	1098.133	11/3/2020	118.7708
11/5/2018	208.1529	11/5/2019	936.5111	11/4/2020	145.0702
11/6/2018	158.759	11/6/2019	962.9187	11/5/2020	110.3731
11/7/2018	135.9548	11/7/2019	838.9549	11/6/2020	83.19229
11/8/2018	161.0834	11/8/2019	774.418	11/7/2020	124.4676
11/9/2018	152.5829	11/9/2019	764.9747	11/8/2020	92.61035
11/10/2018	127.0752	11/10/2019	825.0254	11/9/2020	68.94299
11/11/2018	165.0293	11/11/2019	827.7436	11/10/2020	58.05292
11/12/2018	159.1578	11/12/2019	810.9642	11/11/2020	70.7909
11/13/2018	152.4366	11/13/2019	987.2674	11/12/2020	67.0325
11/14/2018	219.2335	11/14/2019	865.2121	11/13/2020	66.18354
11/15/2018	193.1438	11/15/2019	811.322	11/14/2020	56.27569
11/16/2018	155.3971	11/16/2019	774.7631	11/15/2020	55.46271
11/17/2018	96.56077	11/17/2019	643.6753	11/16/2020	68.99389
11/18/2018	160.8646	11/18/2019	831.8484	11/17/2020	56.31438
11/19/2018	213.531	11/19/2019	1013.774	11/18/2020	72.5825
11/20/2018	164.6602	11/20/2019	812.4715	11/19/2020	60.69576

11/21/2018	141.0179	11/21/2019	1048.017	11/20/2020	59.29868
11/22/2018	159.9081	11/22/2019	848.47	11/21/2020	81.61704
11/23/2018	178.5654	11/23/2019	869.198	11/22/2020	62.26312
11/24/2018	122.9337	11/24/2019	859.6167	11/23/2020	64.67944
11/25/2018	130.6831	11/25/2019	1043.295	11/24/2020	70.75208
11/26/2018	121.8643	11/26/2019	907.7274	11/25/2020	70.57861
11/27/2018	142.0823	11/27/2019	842.3346	11/26/2020	62.53278
11/28/2018	126.7412	11/28/2019	772.7891	11/27/2020	49.15514
11/29/2018	106.8449	11/29/2019	971.7621	11/28/2020	62.19778
11/30/2018	125.4293	11/30/2019	869.2513	11/29/2020	64.65639
12/1/2018	127.4889	12/1/2019	676.7464	11/30/2020	58.90271
12/2/2018	151.9546	12/2/2019	541.6633	12/1/2020	109.6047
12/3/2018	147.7635	12/3/2019	768.3524	12/2/2020	110.34
12/4/2018	138.1366	12/4/2019	833.5159	12/3/2020	128.9606
12/5/2018	118.1805	12/5/2019	835.2873	12/4/2020	123.9293
12/6/2018	153.5556	12/6/2019	841.0948	12/5/2020	116.4471
12/7/2018	139.5279	12/7/2019	870.4712	12/6/2020	129.5533
12/8/2018	111.6055	12/8/2019	905.9238	12/7/2020	147.6266
12/9/2018	122.8544	12/9/2019	716.821	12/8/2020	147.8554
12/10/2018	159.1293	12/10/2019	743.2178	12/9/2020	173.8722
12/11/2018	147.5204	12/11/2019	823.9214	12/10/2020	132.9553
12/12/2018	149.0537	12/12/2019	990.8044	12/11/2020	101.5592
12/13/2018	149.7941	12/13/2019	545.2871	12/12/2020	120.3622
12/14/2018	155.341	12/14/2019	163.4257	12/13/2020	149.0713
12/15/2018		12/15/2019	279.3426	12/14/2020	155.4172
12/16/2018		12/16/2019	334.6337	12/15/2020	198.9183
12/17/2018		12/17/2019	436.1291	12/16/2020	163.4551
12/18/2018		12/18/2019	306.737	12/17/2020	147.8443
12/19/2018		12/19/2019	573.8113	12/18/2020	142.321
12/20/2018		12/20/2019	998.9185	12/19/2020	130.1576
12/21/2018		12/21/2019		12/20/2020	186.1549
12/22/2018		12/22/2019		12/21/2020	160.3085
12/23/2018		12/23/2019		12/22/2020	161.2962
12/24/2018		12/24/2019		12/23/2020	137.8317
12/25/2018		12/25/2019		12/24/2020	120.5882
12/26/2018		12/26/2019		12/25/2020	124.5882
12/27/2018		12/27/2019		12/26/2020	130.4158
12/28/2018	155.1696	12/28/2019		12/27/2020	126.8992
12/29/2018	170.8832	12/29/2019		12/28/2020	133.4313
12/30/2018	190.0185	12/30/2019		12/29/2020	173.419
12/31/2018	130.2572	12/31/2019		12/30/2020	178.7911

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