Air Quality Monthly Report

October, 2024

Department of Environment
Ministry of Environment Forest and Climate Change, Bangladesh.

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Introduction:

Department of Environment (DoE), Bangladesh has established a countrywide air quality monitoring (AQM) network. The continuous monitoring of 6 (six) criteria pollutants ($PM_{2.5}$, PM_{10}, SO_2, CO, NOx and O_3) is being done by 31(thirty one) Continuous Air Monitoring Stations (CAMS) and Compact Continuous Air Monitoring Stations (C-CAMS) located in the divisional and industrial districts of the country. The network encompasses all the regions of the country - Dhaka, Narayanganj, Gazipur, Savar, Mymensing, Narsindi in the center, Chittagong in the south-east. Khulna, Cumilla and Barisal in the south, Rajshahi in the west, and Sylhet in the north-east regions, Rangpur in the north west of the country. And C-CAMS are located in Faridpur, Jashore, Satkhira, Bagerhat, Gopalganj, Tangail, Bogura, Tongi, BUET campus, Brahmanbaria, Feni, Noakhali, BSRM (Chattogram), Cox's-Bazar, Nagor Bhaban, Dhaka. The data and information generated from those stations are automatically collected in the central server and are disseminated through DoE website. Air Quality Index (AQI) for each city is calculated and published online daily for notifying the people about the status of air quality in their respective city.

Quality Assurance/Quality Control (QA/QC) methods and procedures are implemented with full documentation and are validated through an international certified calibration reference laboratory. Forms and log sheets document every activity in the air monitoring stations and document all maintenance, calibration, operation and other activities such as all visits to the stations. This monthly report provides an overview and analysis of air quality monitoring data in Bangladesh for the month wise monitoring results.

The report summarizes the data of different CAMS located in different cities of Bangladesh.

Standards of Ambient Air Quality

The Government of Bangladesh has enacted Air Pollution (Control) Rules – 2022 with ambient air quality standards. This report establishes the Air Quality Index (AQI) followed by USEPA guideline to evaluate air pollution.

Table 1: National Ambient Air Quality Standards (NAAQS) for Bangladesh

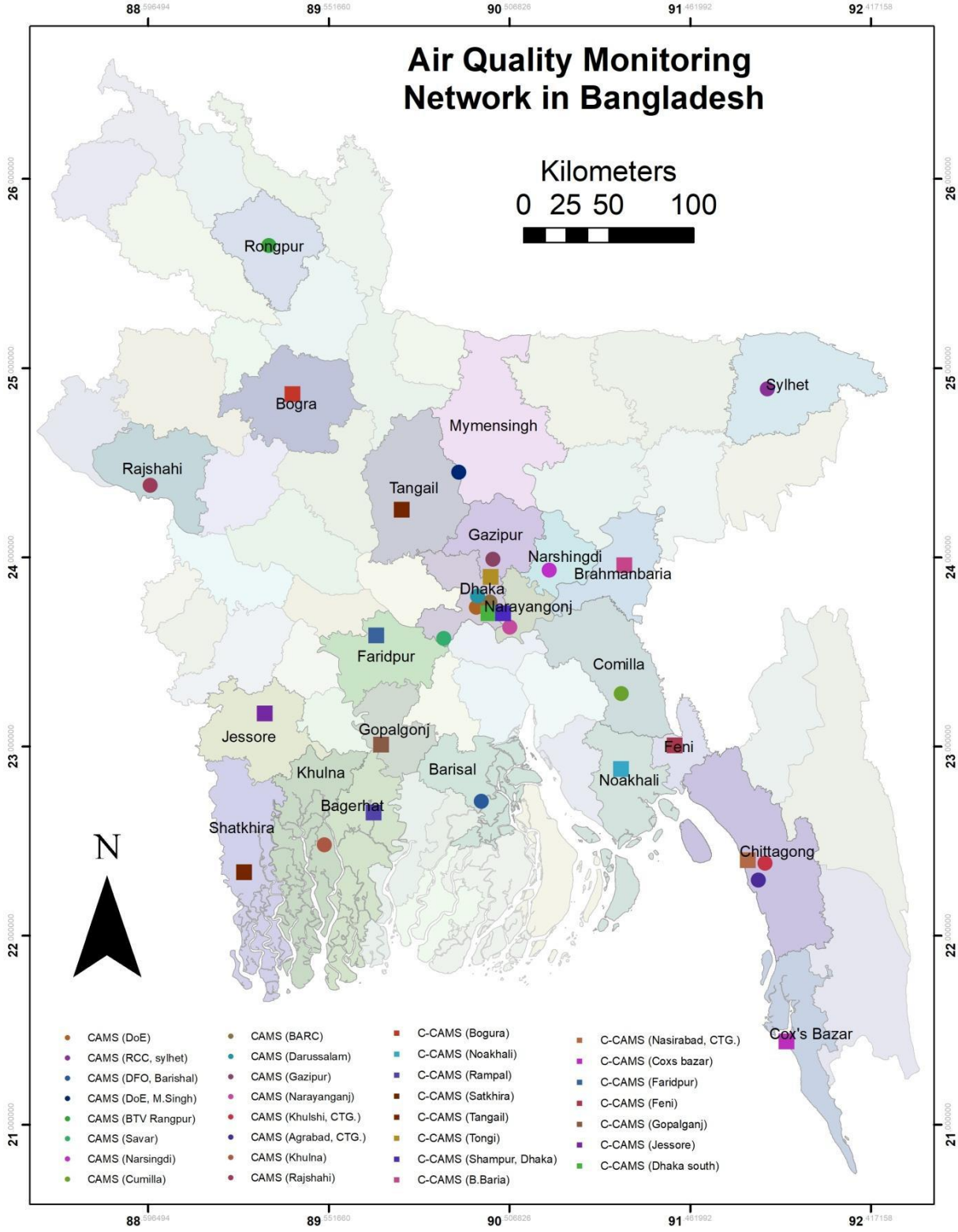
Pollutant	Limit Value	Averaging time
CO	5 mg/m^3	8 hours[a]
	20 mg/m^3	1 hour[a]
Pb	0.25 µg/m^3	Annual
	0.50 µg/m^3	24 hours
NO_x	40 µg/m^3	Annual
	80 µg/m^3	24 hours
PM_{10}	50 µg/m^3	Annual[b]
	150 µg/m^3	24 hours[c]
$PM_{2.5}$	35 µg/m^3	Annual
	65 µg/m^3	24 hours
O_3	180 µg/m^3	1 hour[d]
	100 µg/m^3	8 hours
SO_2		Annual
	80 µg/m^3	24 hours[a]

Table 2: Air quality index (AQI) in Bangladesh

Air quality index (AQI)	Category		Colour
	In English	In Bangla	
0-50	Good	ভাল	Green
51-100	Moderate	মধ্যম	Yellow Green
101-150	Caution	সাবধানতা/সতর্কীকরণ	Yellow
151-200	Unhealthy	অস্বাস্থ্যকর	Orange
201-300	Very Unhealthy	খুব অস্বাস্থ্যকর	Red
301-500	Extremely Unhealthy/Hazardous	অত্যন্ত অস্বাস্থ্যকর	Purple

Location Map of Air Monitoring Station

Figure 1: Locations Map of Continuous Air Monitoring Stations (CAMS) under Department of Environment in Bangladesh.



Station Information

Table 3: Overview of the locations and capacity of the CAMS

City	ID	Location	Latitude/ Longitude	Monitoring Capacity	Year of Est.	Type	Inlet & Met tower Height(m)
Dhaka	CAMS-1	Dept of Environment	23°.77'73.94"N 90°.37'26.03"E	PM_{10}, $PM_{2.5}$, SO_2, CO, O_3 & NOx with Meteorological Parameters	2012	UB/Res	4.8 & 8
	CAMS-2	Farmgate	23°.75'94.10"N 90°.38'86.79"E		2008	Rd/Com	8.8 & 11
	CAMS-3	Darussalam	23°.78'07.75"N 90°.35'54.10"E		2012	UB/Com	8.8 & 11
Gazipur	CAMS-4	Gazipur	23°.99'41.28"N 90°.42'23.15"E		2012	SUB	8.8 & 11
Narayanganj	CAMS-5	Narayanganj	23°.62'60.79"N 90°.50'72.00"E		2012	UB industry	8.8 & 11
Chattogram	CAMS-6	TV Station, Khulshi	22°.36'04.87"N 91°.80'04.54"E		2006	UB1	4.8 & 7
	CAMS-7	Agrabad	22°.32'30.20"N 91°.80'23.36"E		2012	UB/Res	8.8 & 11
Khulna	CAMS-8	Boyra	22°.83'57.75"N 89°.52'90.56"E		2008	UB	6.8 & 10
Rajshahi	CAMS-9	Sapura	24°.38'33.20"N 88°.60'80.07"E		2008	Rd/Res	6.8 & 10
Sylhet	CAMS-10	Red Crecent Campus	24°.88'83.34"N 91°.86'73.47"E		2012	Rd/UB/Res	13.8 & 15
Barishal	CAMS-11	DFO Office Campus	22°.71'02.87"N 90°.36'25.98"E		2012	UB/Res	6.8 & 10
Mymensingh	CAMS-12	DoE Office, Divisional Headquarter	24°.76'24.58"N 90°.40'21.02"E		2019	UB	8.8 & 11
Rangpur	CAMS-13	BTV Rangpur Station	25°.74'73.71"N 89°.22'89.31"E		2019	UB	8.8 & 11
Savar	CAMS-14	Atomic Energy Research Institute	23°.95'37.04"N 90°.27'97.94"E		2019	SUB	10.8 & 14
Narsingdi	CAMS-15	Sadar Upazila Complex	23°.93'24.56"N 90°.71'65.98"E		2019	SUB	8.8 & 11
Cumilla	CAMS-16	Court Area	23°.47'29.88"N 91°.18'06.71"E		2019	UB	8.8 & 11

UB: Urban; Rd: Road; Res: residential; Com: Commercial; SUB: Suburban; Rural: Rural

Table 4: Overview of the locations and capacity of the C-CAMS

City	ID	Location	Lat/Lon	Year of Est.	Type	Monitoring Capacity	Inlet & Met tower Height(m)
Faridpur	C-CAMS-17	Sadar, Faridpur (Municipal Office)	23°.60'64.11"N 89°.83'88.19"E		SUB		9 & 11
Jashore	C-CAMS-18	Sadar, Jashore (circuit house)	23°.16'22.16"N 89°.20'63.70"E		SUB		12 & 14
Satkhira	C-CAMS-19	Shyamnagar, Satkhira	22°.31'59.96"N 89°.04'31.70"E		Rural		5.2 & 7.2
Bagerhat	C-CAMS-20	Rampal, Bagerhat (Maytree Super Thermal Power Project)	22°.59'60.86"N 89°.55'37.20"E		Rural/Industrial		5.7 & 7.7
Gopalganj	C-CAMS-21	Sadar, Gopalganj	23°.00'88.53"N 89°.82'91.60"E		SUB		22 & 24
Tangail	C-CAMS-22	Sadar, Tangail (DoE office)	24°.24'97.96"N 89°.92'93.57"E		SUB		15 & 17
Bogura	C-CAMS-23	Sadar, Bogura (DoE Office)	24°.86'17.79"N 89°.36'11.46"E		SUB		9 & 11
Tongi	C-CAMS-24	BSCIC, Tongi, Gazipur	23°.89'41.74"N 90°.41'12.10"E		Com/ Industrial	PM_{10}, $PM_{2.5}$, SO_2, CO, O_3& NOx with Meteorological Parameters	18 & 20
BUET	C-CAMS-25	Department of Chemical Engineering, BUET, Dhaka	23°.72'75.91"N 90°.39'27.97"E	2020	UB		10 & 12
Brahmanbaria	C-CAMS-26	Sadar, B.Baria (municipal Office)	23°.97'43.71"N 91°.10'97.69"E		SUB		18 & 20
Feni	C-CAMS-27	Sadar, Feni (DoE Office)	23°.00'62.97"N 91°.38'13.05"E		SUB		18 & 20
Noakhali	C-CAMS-28	Maijdi Bazar, Noakhali (DoE Office)	22°.88'11.48"N 91°.09'69.66"E		SUB		15 & 17
Chattogram BSRM	C-CAMS-29	BSRM, Nasirabad, Chattogram	22°.37'28.38"N 91°.81'80.54"E		UB/Industrial		12 & 14
Cox's-Bazar	C-CAMS-30	Saymon Road, Sadar, Cox's-Bazar (DoE Office)	21°.44'22.08"N 91°.97'10.83"E		SUB		9 & 11
Nagor Bhaban, Dhaka	C-CAMS-31	Nagar Bhaban, DSCC, Dhaka	23°.72'40.75"N 90°.40'91.42"E		UB/Com		13 & 15

UB: Urban; Rd: Road; Res: residential; Com: Commercial; SUB: Suburban; Rural: Rural

Summary of Components
Month of October, 2024

Table 5: Summary of components, Month of October, 2024

Parameter	Summary	DoE	BARC	Darus-sala	Gazipur	Narayanganj	TV-Station	Agrabad, C	Sylhet	Khulna	Rajshahi	Barisal	Savar	Mymensingh	Rangpur	Cumilla	Narshingdi
SO2 -24 hr	Average	9.6	3.0	5.5	9.8	DNA	3.6	DNA	10.5	91.1	5.8	5.3	4.7	4.2	6.1	1.1	1.3
	Max	11.8	10.8	7.8	13.1	DNA	8.0	DNA	11.4	137.4	10.5	7.2	9.4	9.2	15.3	2.8	9.9
	Min	8.0	0.7	0.1	7.7	DNA	1.1	DNA	10.1	29.8	2.7	3.7	1.8	1.9	0.6	1.0	0.1
	Excedance(Days)	0.0	0.0	0.0	0.0	DNA	0.0	DNA	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Data capture(%)	87.1	77.4	87.1	93.5	DNA	100.0	DNA	19.4	9.7	100.0	74.2	100.0	100.0	100.0	100.0	87.1
NO2 -24 hr	Average	2.4	34.4	3.2	DNA	1.7	6.9	1.4	2.5	1.7	4.0	3.6	4.2	DNA	5.8	1.9	2.3
	Max	3.0	66.6	9.2	DNA	1.7	11.1	3.5	3.1	2.0	4.1	8.6	4.6	DNA	9.8	3.0	3.5
	Min	1.6	15.2	1.1	DNA	1.6	4.0	0.8	1.6	1.6	3.8	0.8	3.9	DNA	2.6	1.5	0.2
	Excedance(Days)	0.0	4.0	0.0	DNA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DNA	0.0	0.0	0.0
	Data capture(%)	100.0	96.8	100.0	DNA	100.0	100.0	41.9	29.0	90.3	100.0	100.0	100.0	DNA	100.0	80.6	80.6
CO-8hr	Average	1.7	4.0	1.7	2.2	DNA	1.2	2.1	1.5	DNA	1.7	DNA	1.9	1.8	1.1	1.7	1.4
	Max	3.2	4.9	2.7	3.1	DNA	1.4	5.0	2.8	DNA	3.9	DNA	3.9	4.9	3.4	2.5	2.2
	Min	0.3	1.9	1.3	1.8	DNA	1.0	1.0	0.2	DNA	0.6	DNA	0.5	1.0	0.3	1.0	0.9
	Excedance(Hour)	0.0	321.0	0.0	0.0	DNA	0.0	3.0	0.0	DNA	0.0	DNA	0.0	1.0	0.0	0.0	0.0
	Data capture(%)	99.1	92.9	99.1	30.9	DNA	5.5	9.4	72.3	DNA	89.0	DNA	52.6	96.8	99.1	84.9	99.1
O3-8hr	Average	DNA	8.0	1.8	0.0	5.2	21.4	DNA	0.0	15.6	36.8	6.2	13.7	16.1	9.6	DNA	7.5
	Max	DNA	37.0	2.3	0.0	5.4	53.2	DNA	0.0	44.0	49.8	55.0	22.2	30.4	19.0	DNA	44.8
	Min	DNA	1.6	1.5	0.0	5.1	2.1	DNA	0.0	4.5	5.8	1.6	5.6	5.6	2.1	DNA	1.0
	Excedance(Hour)	DNA	0.0	0.0	0.0	0.0	5.0	DNA	0.0	0.0	0.0	2.0	0.0	0.0	0.0	DNA	0.0
	Data capture(%)	DNA	88.8	99.1	90.3	31.2	96.1	DNA	0.0	85.8	78.5	65.7	99.1	99.1	96.9	DNA	83.9
PM2.5 -24hr	Average	62.7	65.7	99.3	66.8	90.3	115.5	DNA	33.0	61.9	55.5	10.6	185.6	75.4	55.9	58.1	70.3
	Max	173.7	175.0	213.3	239.7	180.5	223.2	DNA	63.7	136.5	107.4	13.2	249.8	208.7	169.7	116.6	127.0
	Min	14.4	26.1	43.5	6.8	15.8	64.6	DNA	9.9	14.1	8.1	7.5	138.8	23.0	24.8	11.7	20.6
	Excedance(Days)	12.0	14.0	21.0	11.0	17.0	30.0	DNA	0.0	12.0	13.0	0.0	31.0	20.0	8.0	13.0	17.0
	Data capture(%)	100.0	96.8	87.1	77.4	100.0	100.0	DNA	74.2	90.3	100.0	22.6	100.0	100.0	100.0	100.0	100.0
PM10 -24hr	Average	71.6	136.2	109.5	93.8	DNA	219.0	DNA	81.2	34.8	136.6	DNA	251.8	102.7	86.9	62.3	DNA
	Max	187.9	302.4	208.4	224.3	DNA	313.1	DNA	171.5	82.2	275.2	DNA	342.7	182.1	164.5	115.6	DNA
	Min	20.5	38.7	25.0	20.8	DNA	154.8	DNA	25.3	11.2	25.0	DNA	186.5	30.9	16.5	18.8	DNA
	Excedance(Days)	2.0	5.0	2.0	4.0	DNA	26.0	DNA	1.0	0.0	13.0	DNA	31.0	3.0	3.0	0.0	DNA
	Data capture(%)	100.0	58.1	77.4	93.5	DNA	83.9	DNA	74.2	58.1	100.0	DNA	100.0	100.0	100.0	96.8	DNA
Solar rad. 1hr	Average	124.72	135.81	71.5	DNA	DNA	518.2	140.6	DNA	243.9	147.1	93.2	179.6	148.0	253.2	199.2	212.0
	Max	476.91	660.2	1020.0	DNA	DNA	554.8	647.9	DNA	1256.4	865.8	639.9	652.0	768.1	861.8	733.4	1016.0
	Min	8.45	0.1	988.0	DNA	DNA	231.3	7.5	DNA	1.6	0.0	6.0	0.0	0.0	0.1	0.0	0.0
	Data capture(%)	95.83	84	99	DNA	DNA	96	37	DNA	85	59	99	59.9	73.0	58.9	65.2	67.6
Relative Hum	Average	74.07	71.7	78.8	DNA	DNA	58.1	78.8	39.7	84.3	92.3	63.3	76.9	96.9	89.8	DNA	39.1
	Max	91.32	98.1	95.0	DNA	DNA	91.9	96.9	39.8	99.6	92.5	69.2	100.0	99.4	99.6	DNA	81.3
	Min	42.68	22.4	45.8	DNA	DNA	57.1	50.7	39.6	63.5	82.5	58.3	18.5	63.4	52.3	DNA	16.9
	Data capture(%)	95.70	98.9	100.0	DNA	DNA	95	37	70	85	97	99	56.5	100.0	99.7	DNA	98.8
Ambient Tem	Average	30.13	24.9	31.6	DNA	DNA	18.7	24.4	DNA	29.4	29.9	26.1	15.9	26.4	26.0	27.3	27.1
	Max	37.90	31.0	35.4	DNA	DNA	31.6	37.7	DNA	36.1	35.7	30.3	24.5	32.3	32.0	33.6	33.0
	Min	17.27	18.6	8.9	DNA	DNA	11.5	7.7	DNA	23.1	9.0	20.3	9.5	20.4	20.8	22.2	20.3
	Data capture(%)	93.82	98.5	80	DNA	DNA	96	17	DNA	86	96	99	99.1	100.0	96.6	99.7	98.3
Rainfall 1hr	Average	DNA	3.71	DNA	DNA	DNA	DNA	0.01	DNA	DNA	0.79	0.30	DNA	4.15	2.65	0.66	4.89
	Max	DNA	34.40	DNA	DNA	DNA	DNA	0.03	DNA	DNA	5.80	0.83	DNA	28.05	26.00	4.13	30.55
	Min	DNA	0.20	DNA	DNA	DNA	DNA	0.01	DNA	DNA	0.20	0.01	DNA	0.30	0.25	0.03	0.25
	Data capture(%)	DNA	10.62	DNA	DNA	DNA	DNA	9.68	DNA	DNA	4.03	90.32	DNA	9.81	6.59	7.12	9.27
CAMS= Continuous Air Monitoring Station, NAAQS=National Ambient Air Quality Standard, a=Refurbisment CAMS, PM= Particulate Matter																	
DNA= Data Not Available																	

Table 6: Air Quality Index (AQI) Month of October, 2024

Date	Dhaka	Chattogram	Gazipur	Narayanganj	Sylhet	Khulna	Rajshahi	Barishal	Savar	Mymensingh	Rangpur	Cumilla	Norshindi
01-10-2024	147	DNA	88	180	69	134	141	DNA	154	157	127	144	161
02-10-2024	151	DNA	99	120	70	132	121	DNA	165	141	86	109	152
03-10-2024	86	DNA	67	81	42	110	79	DNA	DNA	102	34	75	106
04-10-2024	86	DNA	98	67	38	51	54	DNA	DNA	109	64	76	115
05-10-2024	124	DNA	98	94	62	62	72	DNA	DNA	112	67	66	117
06-10-2024	107	DNA	60	65	90	97	91	DNA	129	132	42	95	116
07-10-2024	158	DNA	107	102	113	76	106	DNA	91	147	85	83	125
08-10-2024	130	DNA	71	83	59	64	110	DNA	90	128	89	77	124
09-10-2024	128	DNA	94	83	78	58	89	DNA	161	116	103	85	124
10-10-2024	131	DNA	166	83	94	DNA	119	DNA	103	157	96	98	156
11-10-2024	107	DNA	146	79	62	DNA	156	DNA	108	158	128	112	151
12-10-2024	150	DNA	DNA	138	77	DNA	167	DNA	154	155	157	118	156
13-10-2024	165	DNA	DNA	188	92	DNA	169	DNA	173	167	163	160	177
14-10-2024	167	DNA	187	254	125	161	159	DNA	177	163	138	166	175
15-10-2024	183	DNA	106	230	123	158	173	DNA	189	170	151	174	178
16-10-2024	230	DNA	191	199	131	173	169	DNA	234	181	157	182	188
17-10-2024	203	DNA	168	187	127	128	150	DNA	193	174	154	181	187
18-10-2024	177	DNA	159	186	101	171	128	DNA	174	167	160	171	172
19-10-2024	159	DNA	DNA	172	81	187	155	DNA	176	157	148	161	165
20-10-2024	160	DNA	DNA	170	DNA	157	156	DNA	165	166	147	151	162
21-10-2024	166	DNA	156	195	DNA	170	112	DNA	168	172	153	162	167
22-10-2024	163	DNA	161	192	DNA	160	118	DNA	169	172	148	155	164
23-10-2024	129	DNA	133	170	DNA	154	99	DNA	136	159	123	99	148
24-10-2024	71	DNA	50	58	DNA	68	72	DNA	77	74	80	49	68
25-10-2024	98	DNA	DNA	128	DNA	126	91	DNA	83	89	80	82	95
26-10-2024	153	DNA	DNA	138	DNA	154	71	35	150	118	79	139	130
27-10-2024	157	DNA	DNA	173	DNA	163	155	46	162	160	244	157	156
28-10-2024	158	DNA	153	193	105	168	169	51	169	162	178	163	153
29-10-2024	178	DNA	166	212	136	172	167	51	182	174	160	162	156
30-10-2024	163	DNA	174	168	125	159	157	41	185	188	94	172	173
31-10-2024	148	DNA	152	151	98	138	174	48	170	179	141	164	179

Table 7: Graphical representation of 24 hr. average of Sulfur-Di-Oxide (SO_2).

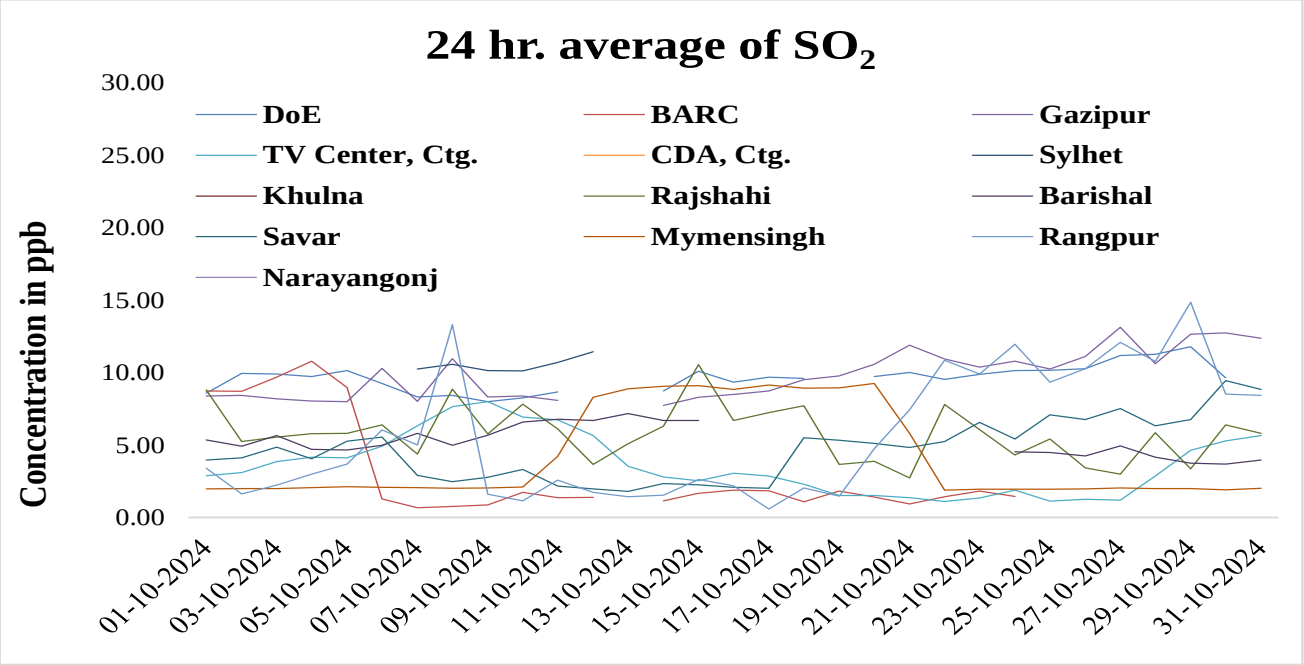


Table 8: Graphical representation of 24 hr. average of Nitrogen-Di-Oxide (NO_2).

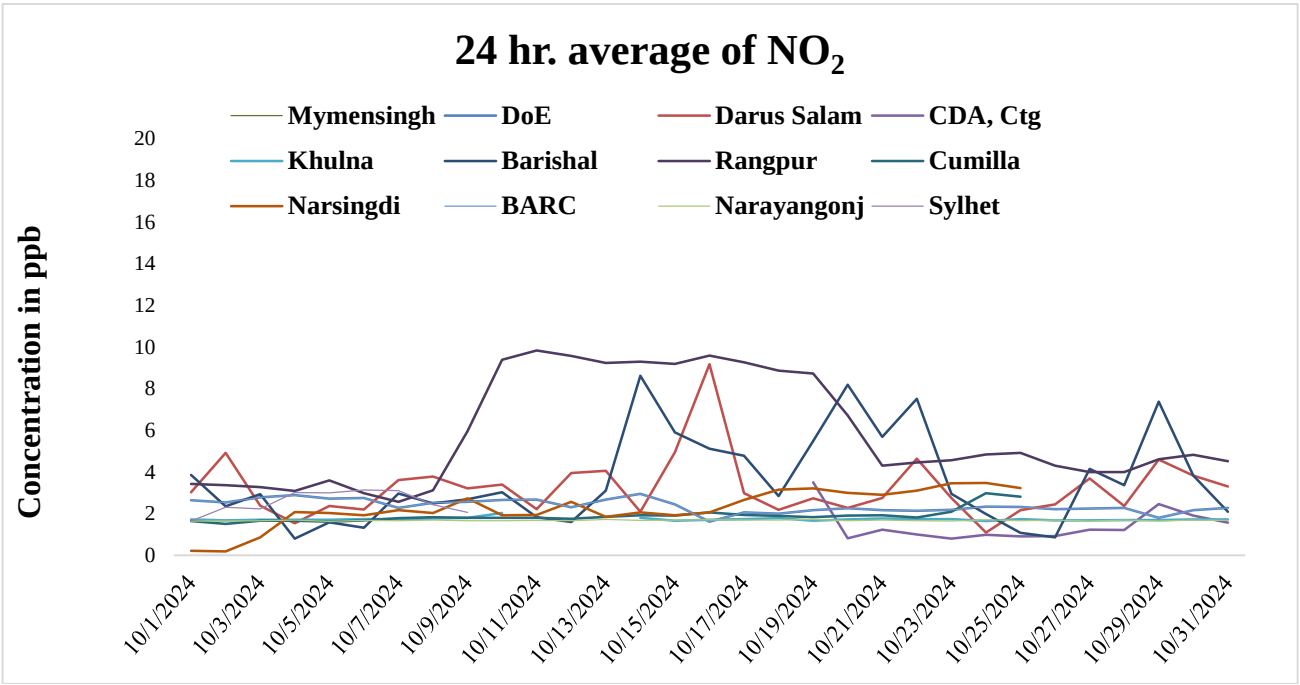


Table 9: Graphical representation of 8 hr. average of Carbon Mono-Oxide (CO)

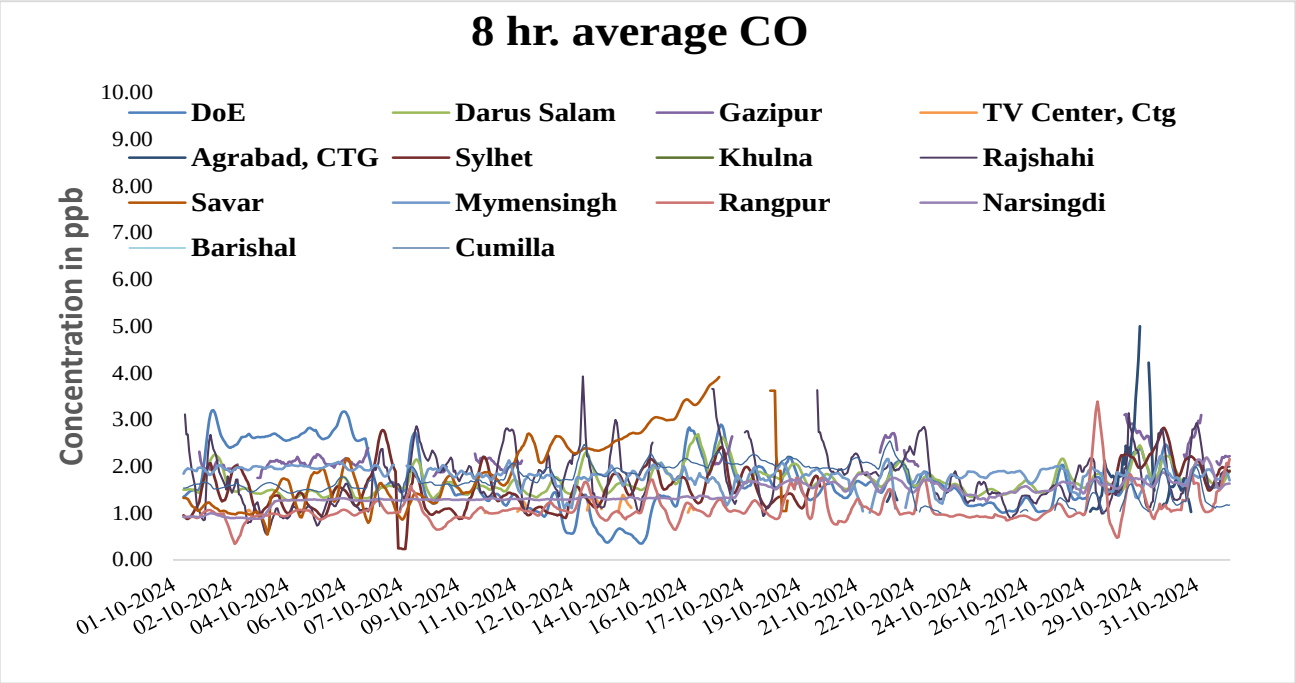


Table 10: Graphical representation of 8 hr. average of Ozone (O_3)

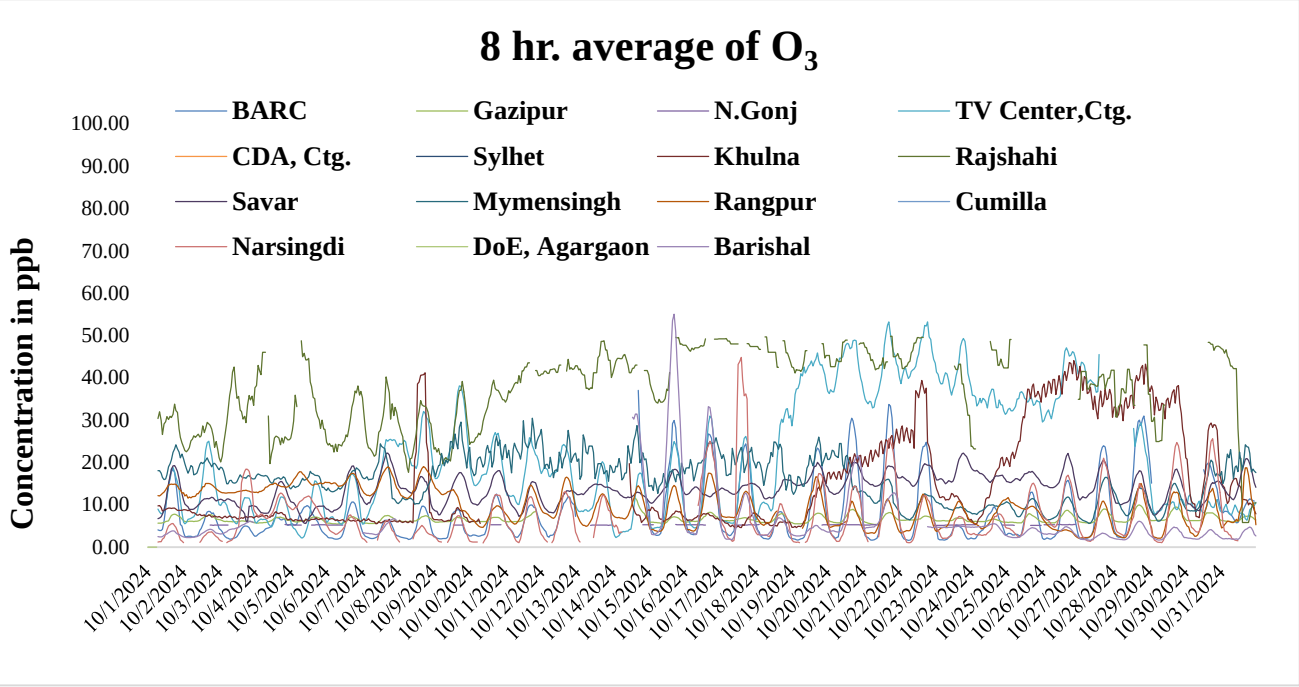


Table 11: Graphical representation of 24 hr. average concentration of PM_{10}.

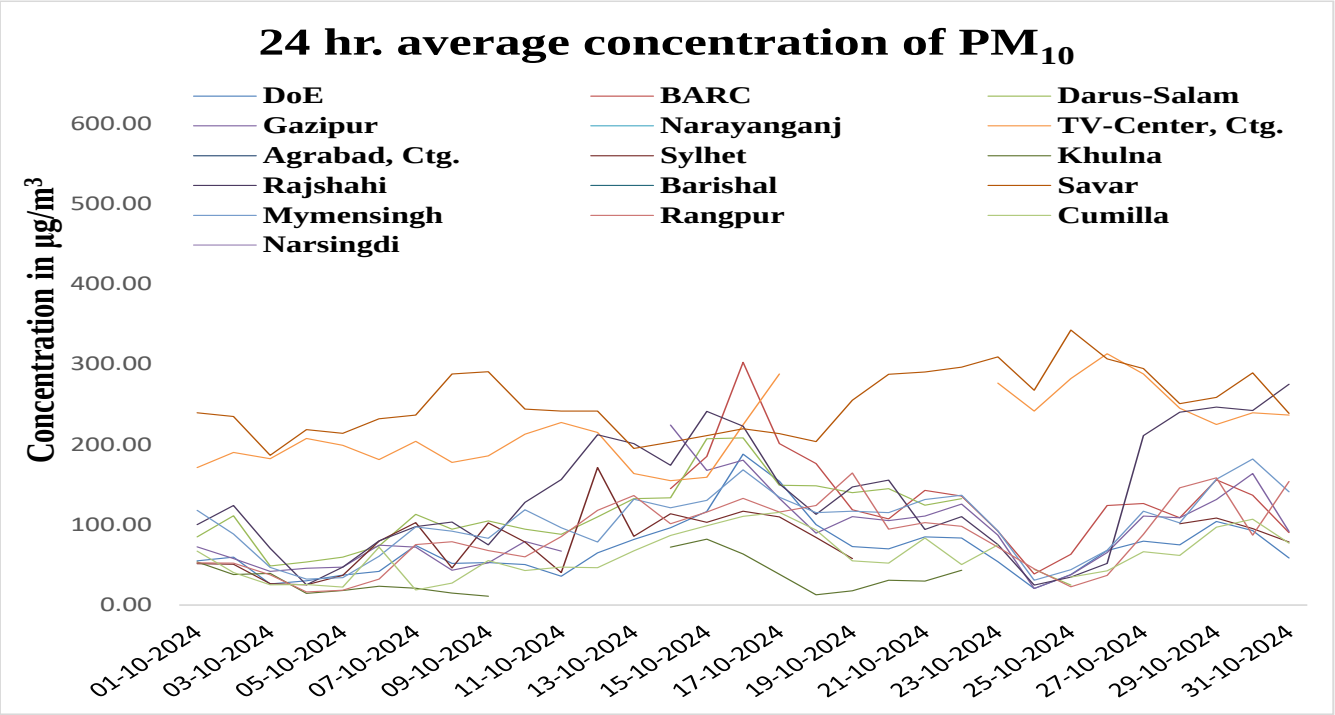
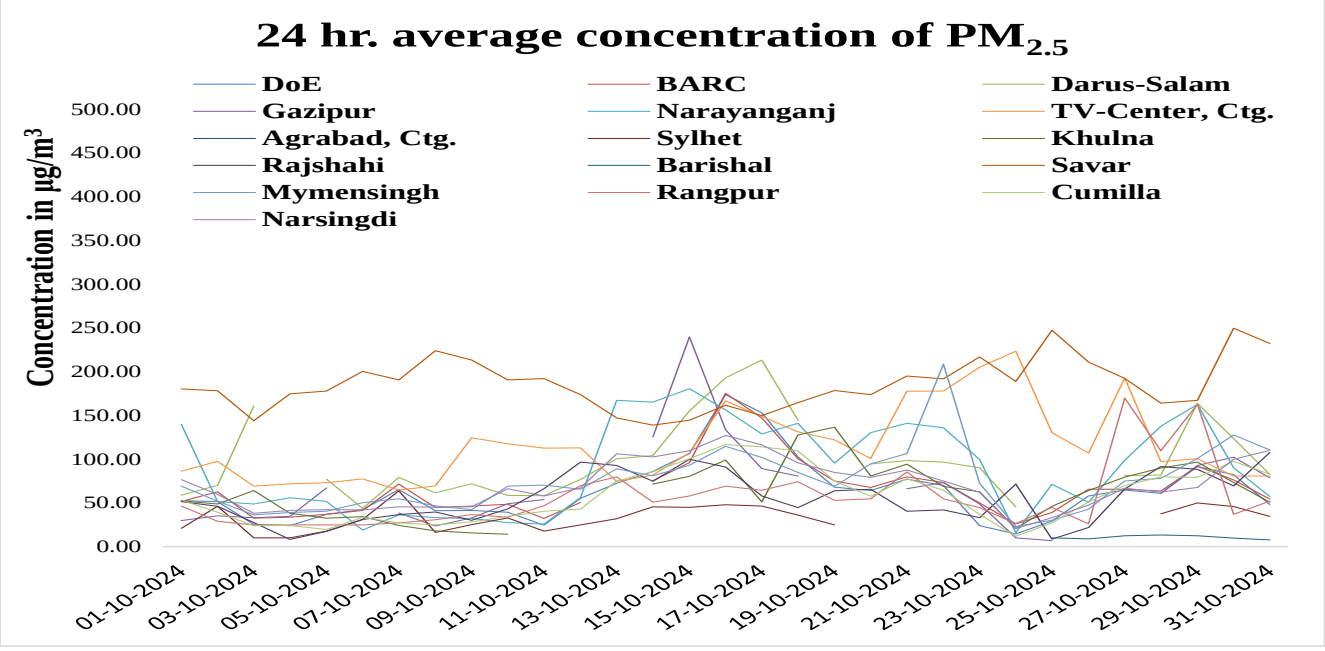


Table 12: Graphical representation of 24 hr. average concentration of $PM_{2.5}$.



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