Air Quality Monthly Report

February, 2024

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

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Introduction:

Department of Environment (DoE), Bangladesh has been 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 public 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

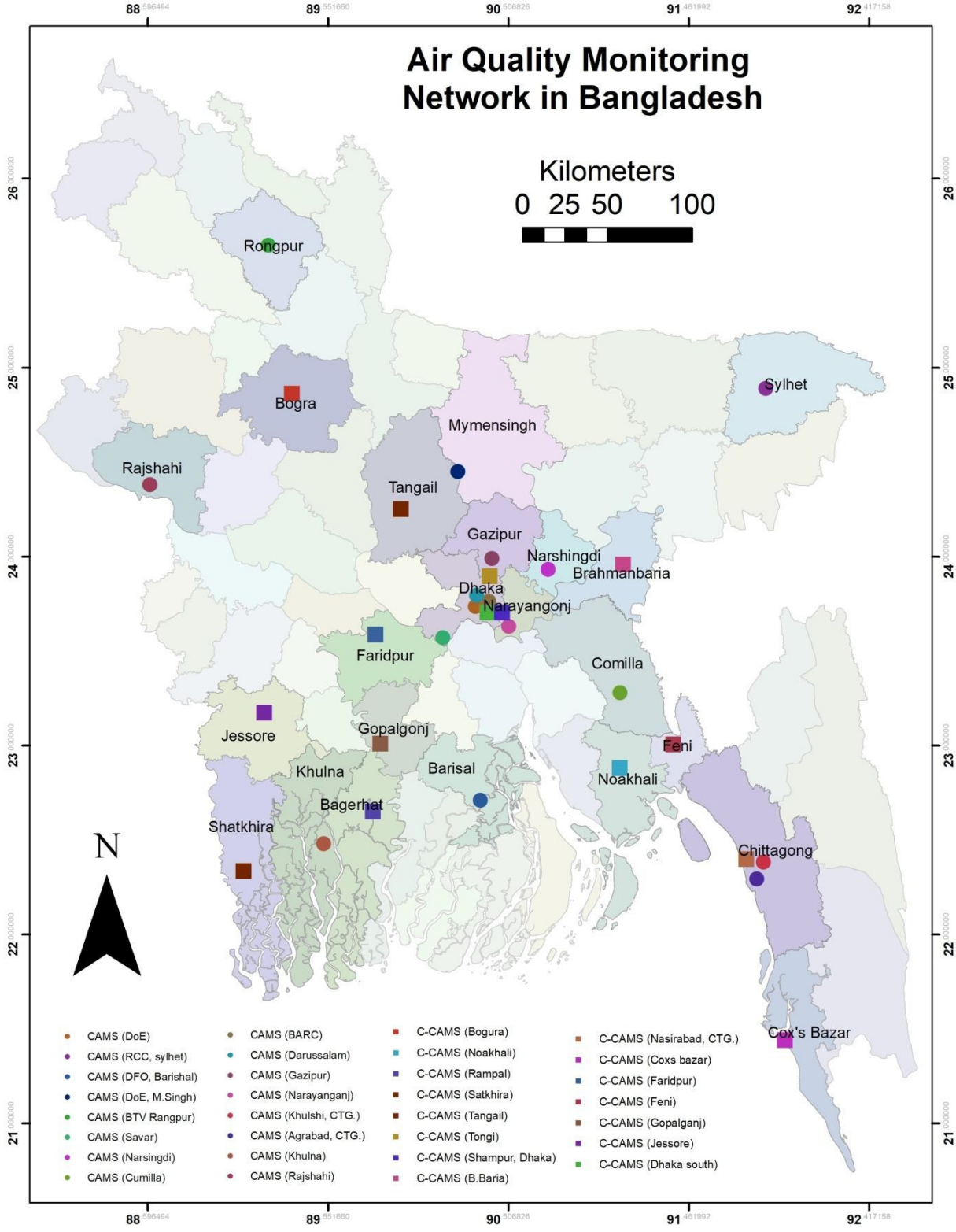
Pollutant	Limit Value	Averaging time
CO	5 mg/m^3	8 hours[a]
	20 mg/m^3	1 hour[a]
Pb	0.25 µg/m^3	Annual
	0.50 µg/m^3	24 hours
NO_x	40 µg/m^3	Annual
	80 µg/m^3	24 hours
PM_{10}	50 µg/m^3	Annual[b]
	150 µg/m^3	24 hours[c]
$PM_{2.5}$	35 µg/m^3	Annual
	65 µg/m^3	24 hours
O_3	180 µg/m^3	1 hour[d]
	100 µg/m^3	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	ভালো	Green
51-100	Moderate	মোটামুটি	Yellow Green
101-150	Caution	সতর্কতামূলক	Yellow
151-200	Unhealthy	মোটামুটি 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 February, 2024

Table 5 Summary of components_ Month of February, 2024

Parameter	Summary	DoE	BARC	Darus-sala	Gazipur	Narayanganj	TV-Station	Agrabad, CI	Sylhet	Khulna	Rajshahi	Barisal	Savar	Mymensingh	Rangpur	Cumilla	Narshingdi
SO2 -24 hr	Average	9.2	4.9	11.0	11.1	DNA	6.8	8.7	5.6	2.9	4.5	DNA	4.5	5.2	0.0	3.4	2.0
	Max	11.8	7.7	11.2	12.5	DNA	8.6	10.6	5.8	6.5	9.5	DNA	8.7	7.6	0.0	6.1	4.9
	Min	4.9	2.5	10.9	10.5	DNA	4.0	6.4	5.4	1.2	1.4	DNA	2.4	3.2	0.0	1.7	0.7
	Excedance(Days)	0.0	0.0	0.0	0.0	DNA	0.0	0.0	0.0	0.0	0.0	DNA	0.0	0.0	0.0	0.0	0.0
	Data capture(%)	64.5	74.2	80.6	74.2	DNA	93.5	80.6	77.4	93.5	93.5	DNA	93.5	48.4	29.0	93.5	93.5
NO2 -24 hr	Average	1.9	DNA	3.2	DNA	DNA	4.0	8.7	1.0	1.8	5.8	3.5	4.0	1.5	5.4	5.1	2.0
	Max	7.6	DNA	5.2	DNA	DNA	4.2	10.9	4.3	1.9	7.7	11.8	4.4	1.8	11.8	7.8	2.2
	Min	0.4	DNA	0.9	DNA	DNA	3.8	6.1	0.1	1.7	4.3	0.2	3.9	1.0	3.2	1.9	1.8
	Excedance(Days)	0.0	DNA	0.0	DNA	DNA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Data capture(%)	25.8	DNA	93.5	DNA	DNA	93.5	71.0	77.4	93.5	93.5	74.2	93.5	93.5	93.5	93.5	93.5
CO-8hr	Average	1.6	1.7	1.9	1.0	0.9	1.3	3.0	2.7	2.2	1.8	DNA	1.4	1.6	1.4	1.9	1.3
	Max	3.5	4.0	3.1	3.3	2.3	3.2	4.0	3.7	4.0	3.8	DNA	2.8	3.5	3.9	3.7	3.8
	Min	1.0	0.2	1.5	0.8	0.5	0.8	1.2	1.8	0.2	0.7	DNA	0.3	0.4	0.0	0.1	0.8
	Excedance(Hour)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DNA	0.0	0.0	0.0	0.0	0.0
	Data capture(%)	49.9	92.6	29.8	92.2	92.6	51.5	71.8	75.4	47.4	92.6	DNA	82.4	92.6	79.6	59.5	92.6
O3-8hr	Average	DNA	7.5	4.3	7.7	2.3	12.5	2.7	1.6	12.7	5.2	DNA	6.8	8.8	9.7	9.6	7.4
	Max	DNA	20.9	4.4	12.0	3.2	29.6	2.8	1.7	27.2	21.6	DNA	18.9	32.7	20.0	28.9	33.1
	Min	DNA	0.3	4.3	5.5	0.2	5.4	2.5	1.2	0.3	0.1	DNA	0.4	0.4	1.1	0.4	0.2
	Excedance(Hour)	DNA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	DNA	0.0	0.0	0.0	0.0	0.0
	Data capture(%)	DNA	92.2	92.6	77.3	35.1	89.5	73.4	15.9	86.2	51.2	DNA	92.6	92.6	74.1	92.3	88.0
PM2.5 -24hr	Average	132.9	127.4	145.1	145.9	175.8	84.5	130.5	66.6	101.3	126.5	82.7	151.5	129.2	226.3	160.2	137.4
	Max	213.4	211.2	229.5	216.6	278.3	146.5	230.9	108.8	176.5	222.8	145.9	231.5	289.9	337.4	258.8	223.8
	Min	52.6	60.2	69.8	61.9	59.2	5.2	71.6	20.1	36.4	67.8	34.7	77.8	16.0	134.6	66.7	64.2
	Excedance(Days)	26.0	28.0	29.0	28.0	28.0	18.0	24.0	15.0	25.0	29.0	22.0	29.0	20.0	23.0	29.0	27.0
	Data capture(%)	93.5	93.5	93.5	93.5	93.5	87.1	77.4	77.4	93.5	93.5	93.5	93.5	93.5	74.2	93.5	90.3
PM10 -24hr	Average	238.8	281.3	259.5	252.0	271.3	217.0	249.6	221.2	156.4	286.7	164.8	209.5	246.5	343.8	200.1	190.0
	Max	391.2	463.1	402.0	395.7	432.3	358.4	374.8	301.4	318.5	333.4	230.3	373.4	358.6	434.9	308.3	286.9
	Min	102.8	101.6	103.0	94.1	112.8	112.0	87.3	68.6	69.9	221.6	103.3	14.5	135.9	223.8	78.0	71.4
	Excedance(Days)	23.0	20.0	22.0	21.0	23.0	22.0	22.0	21.0	13.0	17.0	17.0	21.0	26.0	16.0	22.0	21.0
	Data capture(%)	93.5	80.6	90.3	80.6	87.1	93.5	77.4	77.4	93.5	54.8	74.2	93.5	90.3	51.6	93.5	77.4
Solar rad. 1hr	Average	98.75	239.83	106.2	13.3	DNA	501.8	133.3	DNA	217.9	791.0	86.1	270.7	144.7	314.2	239.4	284.5
	Max	582.28	696.1	1020.0	44.4	DNA	546.1	648.7	DNA	934.6	806.8	573.6	796.8	819.3	838.8	691.5	745.7
	Min	21.44	0.2	1004.3	11.2	DNA	199.2	9.0	DNA	0.1	760.0	8.3	0.0	0.0	0.1	0.0	0.0
	Data capture(%)	87.10	32	39	91	DNA	91	71	DNA	42	89	93	54.3	48.7	46.6	49.9	25.1
Relative Hum	Average	54.00	57.6	61.0	DNA	DNA	59.4	59.4	DNA	72.1	90.4	62.9	61.2	79.9	77.6	47.9	47.1
	Max	87.66	99.0	93.0	DNA	DNA	94.4	99.6	DNA	89.8	93.4	72.8	100.0	99.5	99.7	87.1	83.1
	Min	21.20	23.3	24.4	DNA	DNA	57.1	16.1	DNA	59.4	89.4	54.8	16.5	27.9	26.3	19.3	17.2
	Data capture(%)	87.10	48.9	93.5	DNA	DNA	89	70	DNA	84	89	93	90.5	93.3	93.1	1.7	46.5
Ambient Tem	Average	25.62	19.9	23.2	DNA	DNA	22.8	23.6	DNA	23.5	22.7	22.2	20.9	20.2	18.8	21.4	20.1
	Max	42.91	25.5	29.6	DNA	DNA	35.0	42.9	DNA	33.4	32.2	35.5	28.8	27.6	27.0	29.6	27.9
	Min	7.08	12.6	7.0	DNA	DNA	13.6	7.0	DNA	14.7	13.7	10.2	12.6	12.3	11.0	12.6	12.4
	Data capture(%)	79.97	53.5	71	DNA	DNA	91	38	DNA	84	89	93	93.4	91.9	92.6	90.5	46.6
Rainfall 1hr	Average	DNA	2.77	0.2	0.1	DNA	DNA	DNA	DNA	DNA	1.66	0.4	0.04	1.76	0.02	DNA	0.03
	Max	DNA	7.33	0.2	0.5	DNA	DNA	DNA	DNA	DNA	5.67	1.0	0.10	11.40	0.02	DNA	0.07
	Min	DNA	0.02	0.2	0.0	DNA	DNA	DNA	DNA	DNA	0.03	0.0	0.02	0.30	0.01	DNA	0.01
	Data capture(%)	DNA	4.70	24	45	DNA	DNA	DNA	DNA	DNA	16.40	88	0.67	1.61	0.27	DNA	0.40

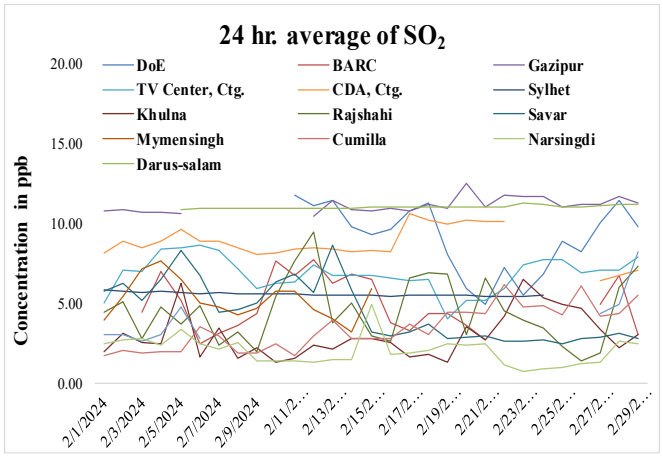
CAMS= Continuous Air Monitoring Station, NAAQS=National Ambient Air Quality Standard, a=Refurbisment CAMS, PM= Particulate Matter

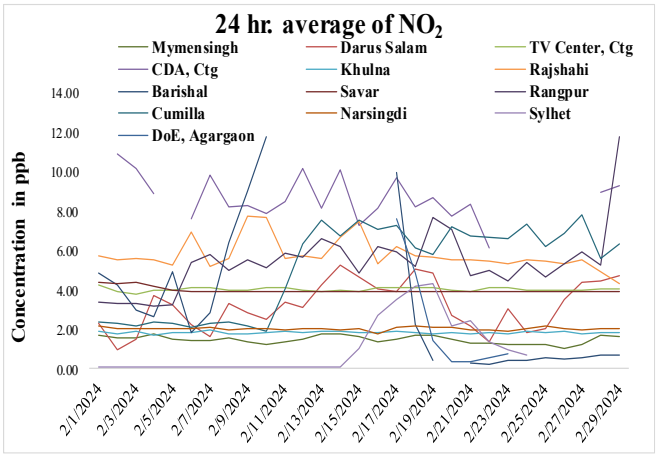
DNA= Data Not Available

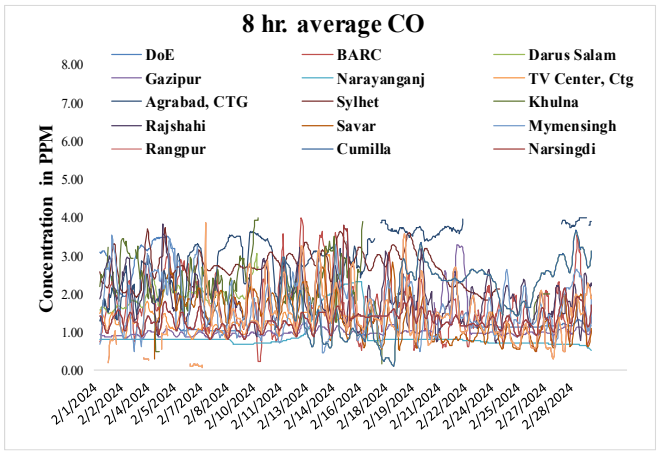
Table 6 Air Quality Index (AQI)_ Month of February, 2024

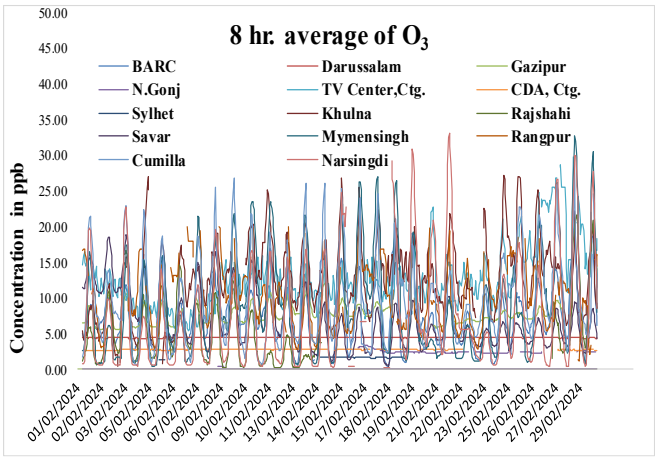
Date	Dhaka	Chittagong	Gazipur	Narayangonj	Sylhet	Khulna	Rajshahi	Barisal	Savar	Mymensingh	Rangpur	Cumilla	Norshindi
2/1/2024	225	183	218	247	151	154	231	173	255	DNA	339	215	198
2/2/2024	225	183	218	247	151	154	231	173	255	198	339	215	198
2/3/2024	204	209	215	202	157	179	188	159	200	193	272	186	189
2/4/2024	217	201	269	228	159	167	276	163	213	190	321	227	194
2/5/2024	229	187	280	231	157	178	209	167	225	187	366	226	216
2/6/2024	194	196	187	242		173	175	163	183	189	255	226	190
2/7/2024	181	207	190	241	157	177	157	161	186	184	196	224	188
2/8/2024	179	164	186	199	151	170	161	165	178	86	233	216	186
2/9/2024	178	157	182	198	121	187	161	163	192	62	215	184	176
2/10/2024	211	174	267	272	153	170	181	171	230	69	DNA	234	226
2/11/2024	250	196	197	242	153	193	198	175	218	193	281	259	236
2/12/2024	202	224	236	269	163	219	216	178	208	171	272	282	226
2/13/2024	208	177	253	312	158	200	217	172	215	235	204	210	224
2/14/2024	259	172	245	310	164	207	213	198	279	261	377	231	242
2/15/2024	242	168	220	259	164	173	190	181	253	277	413	215	266
2/16/2024	199	182	188	231	168	170	176	176	242	221	286	218	194
2/17/2024	205	180	201	283	171	169	198	173	DNA	205	344	256	DNA
2/18/2024	224	174	234	306	178	183	236	175	246	248	315	231	242
2/19/2024	231	176	218	230	154	168	267	160	240	253	327	267	211
2/20/2024	175	184	219	170	155	147	229	154	229	245	332	247	211
2/21/2024	188	159	183	156	130	135	179	111	177	240	271	177	175
2/22/2024	152	141	184	145	88	101	120	98	169	193	DNA	160	164
2/23/2024	167	114	145	241	68	108	167	128	160	DNA	180	148	DNA
2/24/2024	162	146	160	148	68	166	155	150	174	270	237	152	166
2/25/2024	144	142	142	164	DNA	181	139	171	164	192	198	172	DNA
2/26/2024	148	116	179	172	DNA	115	170	160	165	188	233	154	164
2/27/2024	182	131	199	201	DNA	141	172	161	206	203	280	195	170
2/28/2024	229	147	246	328	DNA	163	216	165	244	253	256	268	209
2/29/2024	230	164	226	276	DNA	220	147	163	244	307	233	300	202

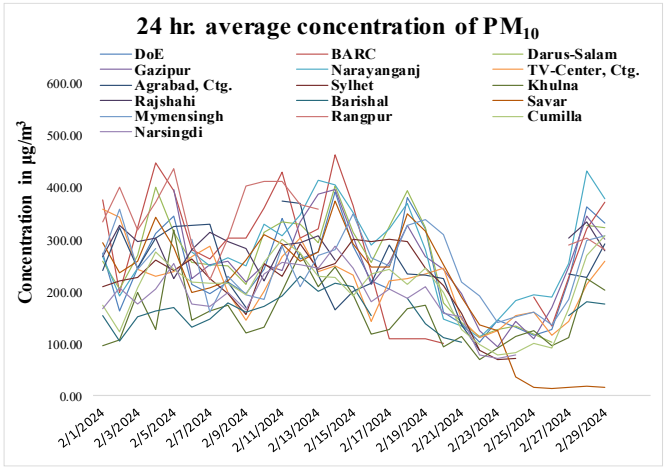
Table 7 Graphical representation of Gaseous and Particulate matter.

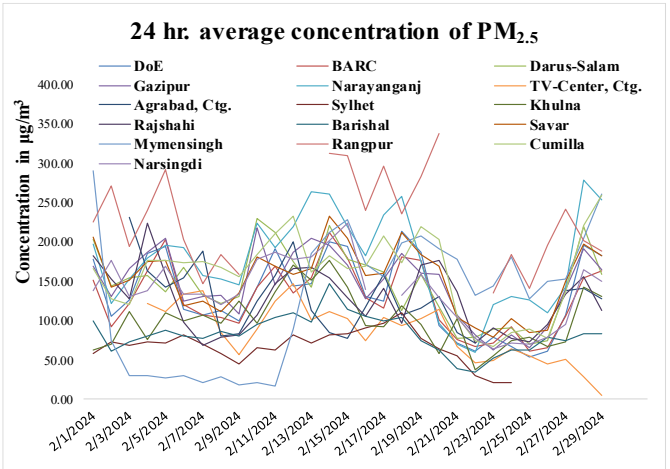












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