

**Continuous Marine Water Quality Monitoring
(CMWQM)
Data Validation**

January 2025

Date: 26th February 2025





Scope of report:
January 2025 results

Treated database are used
(1st January – 31st January 2025)

10 stations in operation in January 2025

Total Data

	DO	Salinity	Temperature	Turbidity	Conductivity	pH	TSS	TDS	Chlorophyll	fDOM	PAHs	Total
Total Raw Data	14864	14864	14864	14864	14864	14864	14864	14864	14864	14864	10404	159044
Total Delay Data	3	3	3	3	3	3	3	3	3	3	3	33
Accepted Data / Environmental Data	14710	14371	14800	14441	14371	14800	14441	14371	14203	11863	7505	149876
Rejected Data	154	493	64	423	493	64	423	493	661	3001	2899	9168
% Rejected Data	1.04	3.32	0.43	2.85	3.32	0.43	2.85	3.32	4.45	20.19	27.86	6.367

Data Deletion Remarks

Parameter	Remarks
Conductivity	Crabs trapped inside the sonde guard – CM01K
	Sensor drift due to wiper malfunction – CM10L, CM14S
DO	Sensor hang and record 0.00 – CM03N
Turbidity & Chlorophyll	Sensor drift due to wiper malfunction – CM10L, CM14S
fDOM	Data out of range (DOR) due to slightly negative reading – CM13T
PAHs	No CTG deployment at site – CM03N & CM10L, CM14S

Raw Data

No.	Parameter	Delayed Data (% of Monthly Data)	Deleted Data (% of Raw Data)	Raw Data Completeness (% of Raw Data Available)
1	Dissolved Oxygen	0.02	1.04	99.89
2	Salinity	0.02	3.32	99.89
3	Temperature	0.02	0.43	99.89
4	Turbidity	0.02	2.85	99.89
5	Conductivity	0.02	3.32	99.89
6	pH	0.02	0.43	99.89
7	Total Suspended Solid	0.02	2.85	99.89
8	Total Dissolved Solid	0.02	3.32	99.89
9	Chlorophyll-a	0.02	4.45	99.89
10	fDOM	0.02	20.19	99.89
11	PAHs	0.02	27.86	69.92

Raw Data

Parameter	Dissolved Oxygen	Salinity	Temperature	Turbidity	Conductivity	pH	Total Suspended Solid	Total Dissolve Solid	Chlorophyll_a	fDOM	PAH
CM01K: Pulau Langkawi, Kedah	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488
CM02M: Pulau Undan, Melaka	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476	1476
CM03N: Port Dickson, Negeri Sembilan	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	*0
CM04J: Tanjung Piai, Johor	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488
CM05J: Tanjung Pengelih, Johor	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488
CM10S: W. P. Labuan	1484	1484	1484	1484	1484	1484	1484	1484	1484	1484	0
CM11Q: Santubong, Sarawak	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488
CM12A: Pulau Mentagor, Perak	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488
CM13T: Pulau Kapas, Terengganu	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488
CM14S: Teluk Sepanggar, Sabah	1488	1488	1488	1488	1488	1488	1488	1488	1488	1488	*0

Estimated total data per station per parameter for January 2025 = 1488

*PAHs from CM03N & CM14S station is under on-going instrument testing and non claimable

Environmental Data

No.	Parameter	CM01K: Pulau Langkawi, Kedah	CM02M: Pulau Undan, Melaka	CM03N: Port Dickson, Negeri Sembilan	CM04J: Tanjung Piai, Johor	CM05J: Tanjung Pengelih, Johor	CM10S: W. P. Labuan	CM11Q: Santubong, Sarawak	CM12A: Pulau Mentagor, Perak	CM13T: Pulau Kapas, Terengganu	CM14S: Teluk Sepanggar, Sabah
1	Dissolved Oxygen	1481	1468	1389	1486	1484	1474	1484	1483	1484	1477
2	Salinity	1318	1384	1479	1485	1484	1387	1484	1460	1484	1406
3	Temperature	1481	1468	1479	1486	1484	1474	1484	1483	1484	1477
4	Turbidity	1477	1468	1479	1486	1484	1190	1484	1483	1484	1406
5	Conductivity	1318	1384	1479	1485	1484	1387	1484	1460	1484	1406
6	pH	1481	1468	1479	1486	1484	1474	1484	1483	1484	1477
7	Total Suspended Solid	1477	1468	1479	1486	1484	1190	1484	1483	1484	1406
8	Total Dissolved Solid	1318	1384	1479	1485	1484	1387	1484	1460	1484	1406
9	Chlorophyll-a	1481	1468	1479	1486	1484	949	1484	1482	1484	1406
10	fDOM	1480	1468	1479	1426	1477	1166	1484	1483	262	138
11	PAHs	1481	397	*0	1487	28	0	1145	1483	1484	*0

Estimated total data per station per parameter (without deletion) for January 2025 = 1488

*PAHs from CM03N & CM14S station is under on-going instrument testing and non claimable

CMWQM Invoice

INVOICE CLAIM									
No.	Items	Unit	Price Per Paramater (RM)	ENVIRONMENTAL DATA		PENALTY		Total Data Count	Total Invoice (RM)
				(Count)	Value (RM)	(Count)	Value (RM)		
				A	B	(B X A)	C		
A	<u>Parameter Analyzed (in-situ)</u>	-	-	-	-	-	-	-	-
1	Dissolved Oxygen	% saturation	0.89	14,710	13,091.90	3	2.67	14,707	13,089.23
2	Salinity	g/L (ppt)	0.89	14,371	12,790.19	3	2.67	14,368	12,787.52
3	Temperature	°C	0.89	14,800	13,172.00	3	2.67	14,797	13,169.33
4	Turbidity	NTU	0.89	14,441	12,852.49	3	2.67	14,438	12,849.82
5	Conductivity	mS/cm	0.89	14,371	12,790.19	3	2.67	14,368	12,787.52
6	pH	-	0.89	14,800	13,172.00	3	2.67	14,797	13,169.33
7	TSS	mg/l	0.89	14,441	12,852.49	3	2.67	14,438	12,849.82
8	TDS	mg/l	0.89	14,371	12,790.19	3	2.67	14,368	12,787.52
9	Chlorophyll-a	-	0.88	14,203	12,498.64	3	2.64	14,200	12,496.00
10	FDOM		0.88	11,863	10,439.44	3	2.64	11,860	10,436.80
11	PAH	mg/l	0.88	7,505	6,604.40	3	2.64	7,502	6,601.76
Total Amount (RM)				133,053.93		29.28		133,024.65	

Invoice with Tax January 2025



PAKAR SCIENO TW
Integrated Environmental Solutions

PROFORMA INVOICE

Bill To:
 Jabatan Alam Sekitar
 Kementerian Sumber Air dan Kalamul Alam (KREK)
 Area 1-4, Plot No. 1 & 2, Wawasan Sungai Kall
 No 28, Perumahan Perakasa, Fasa 1/4
 62574 Putrajaya

P. Invoice No: JAN20250078
Date: 12 February 2025
Service Tax No.: ER6-1081-3290007

Page No: Page 1 of 1

DESCRIPTION	AMOUNT	RM
Concession Agreement dated 18 June 2016 in relation to Environmental Quality Monitoring Programme ("EQMP")		
VARIABLE EQMP MAINTENANCE CHARGES FOR THE MONTH OF JANUARY 2025		
Marine Water Quality Monitoring Programme		
a. Marine Marine Water Quality Monitoring (MMWQM)		
(i) For Coastal	102,967.64	
(ii) For Estuary	82,869.55	
(iii) For Inland	57,642.88	
(iv) For Stead of Jalin	30,365.02	
		273,845.07
b. Continuous Marine Water Quality Monitoring (CMWQM)		
Level : Air dan permukaan	133,052.99	
	(28.28)	
		104,774.71
		378,619.78
RM : Five Hundred Fifty Four Thousand Twenty Nine & Oh Thirty Three Only	TOTAL (Excl. Service Tax)	542,898.12
	Add Service Tax 6%	32,573.85
	TOTAL (Incl. Service Tax)	575,471.97

All payments shall be made payable to Pakar Scieno TW Sdn Bhd.

Bank Details:
 Bank Name : Malaysia Banking Berhad
 Branch : Petaling Jaya Main
 Address : 58-57, Jalan Dutera (2/4), 46200 Petaling Jaya
 Bank No. : 22 - 7666 1988
 Account No. : 5141 8965 7357
 Please email payment advice to finance@pakar.com.my

PAKAR SCIENO TW SDN BHD



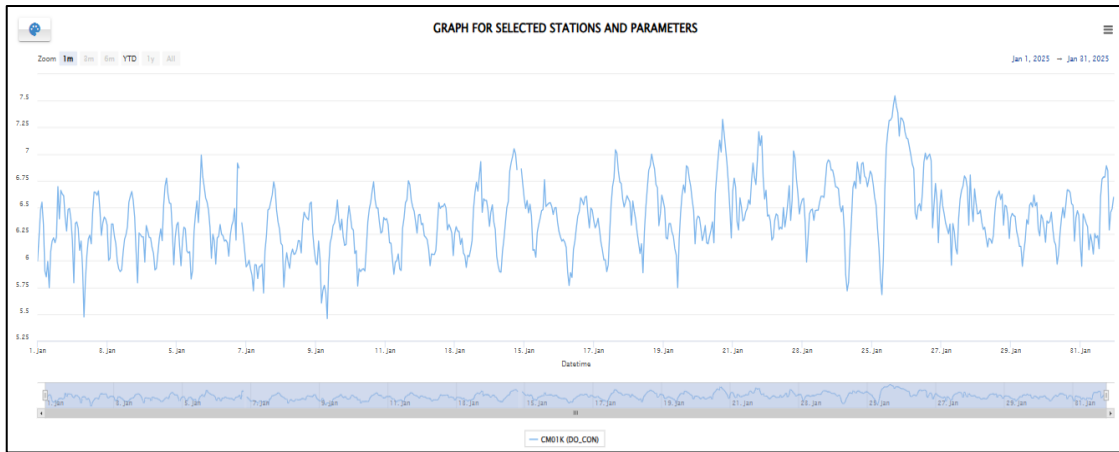
Dr. Abdul Razak Abdullah
Chief Executive Officer

Pakar Scieno TW Sdn Bhd (1103189-X)
 25, Jalan Pengajaran U138, Teanyaya Industrial Park, Section 11,
 40150 Shah Alam, Selangor Darul Ehsan, Malaysia
 Tel: 603-5688 6364 Fax: 603-5569 0423
 Email address: finance@pakar.com.my

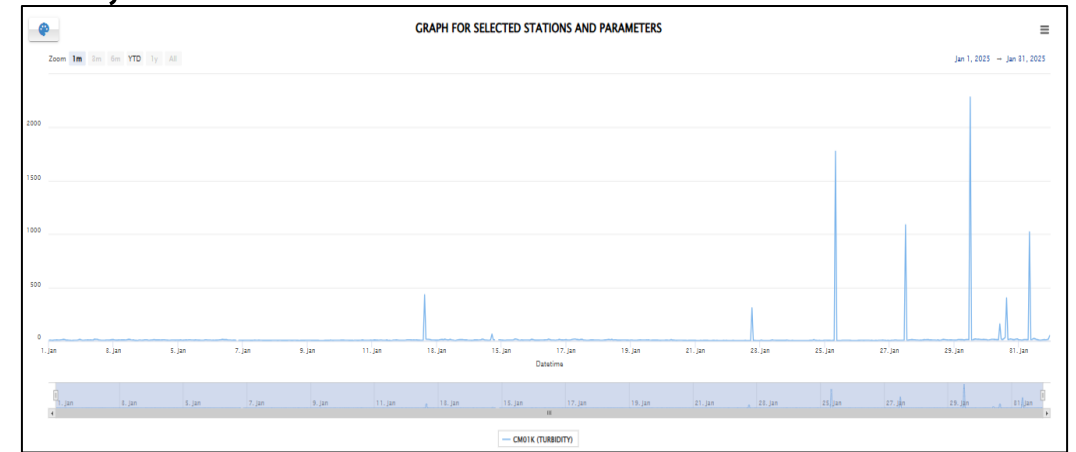


Marine Jan 2025 invoice.pdf

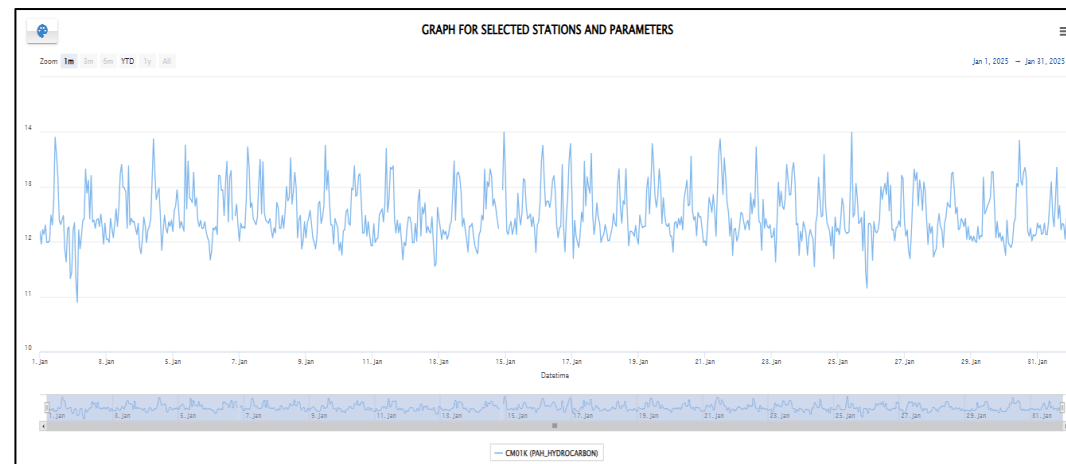
Environmental Data for DO, Turbidity and PAHs CM01K: Pulau Langkawi, Kedah



Dissolved Oxygen (mg/L)

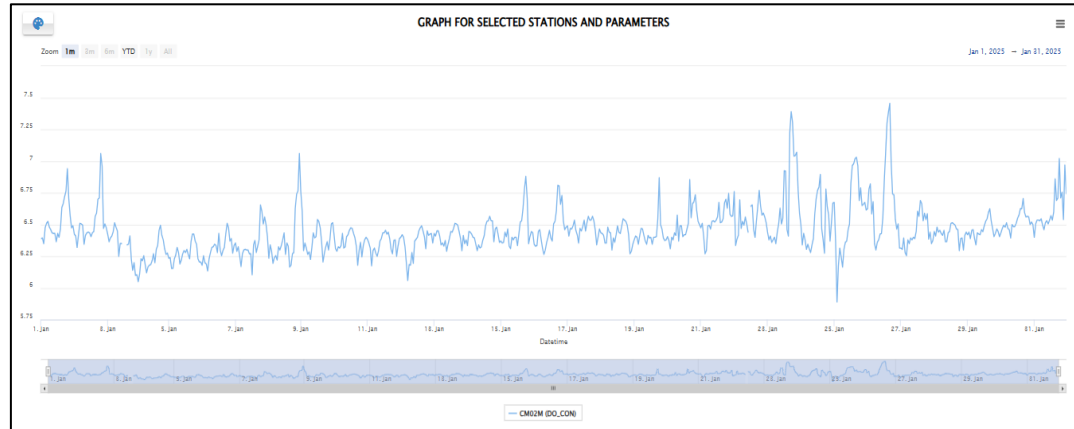


Turbidity (NTU)

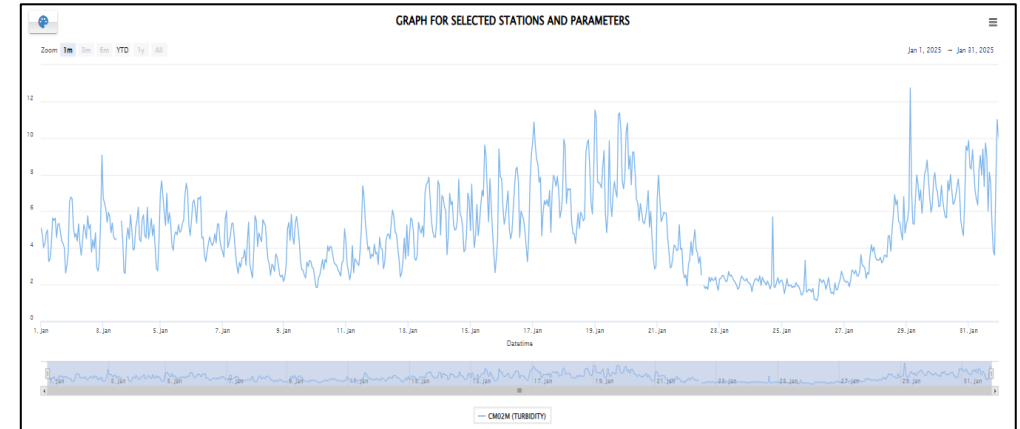


PAHs ($\mu\text{g/l}$)

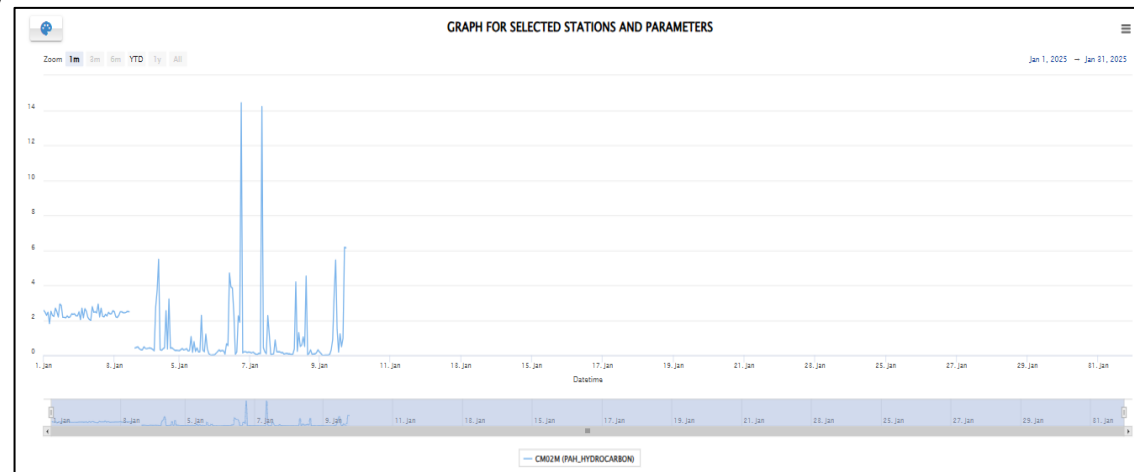
Environmental Data for DO, Turbidity and PAHs CM02M: Pulau Undan, Melaka



Dissolved Oxygen (mg/L)

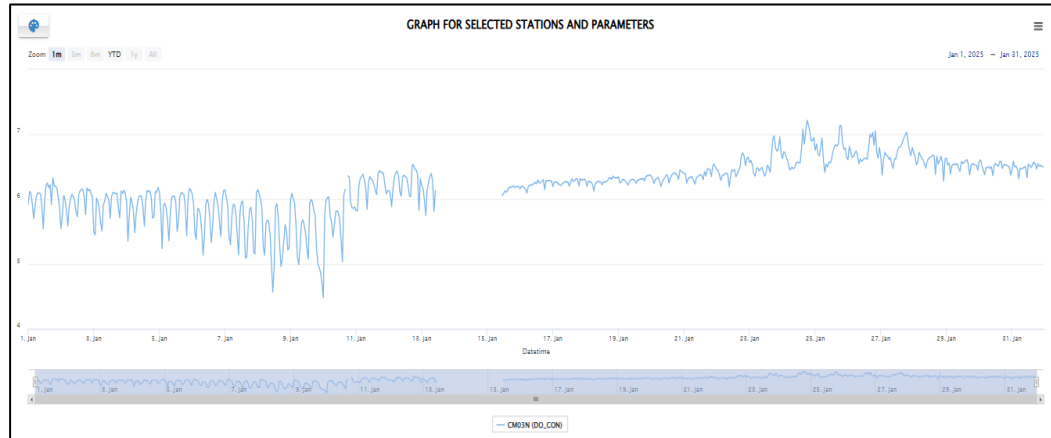


Turbidity (NTU)

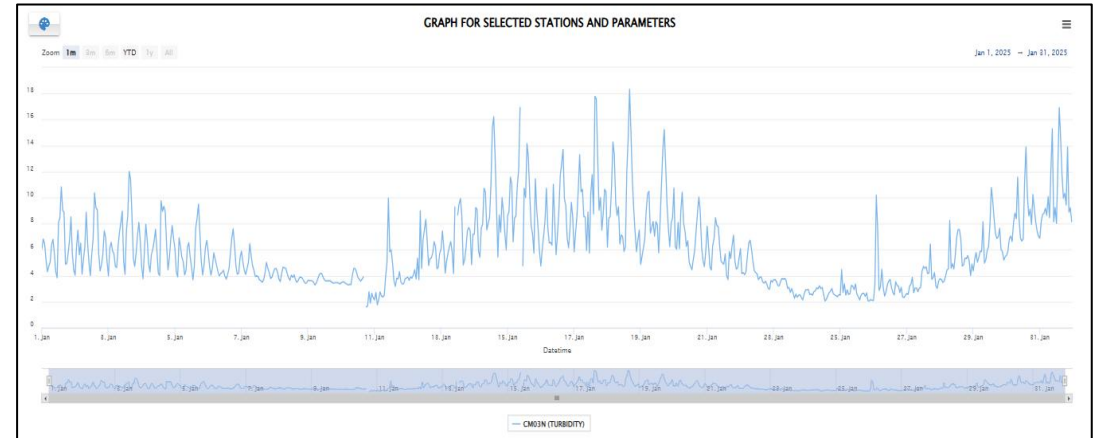


PAHs ($\mu\text{g/l}$)

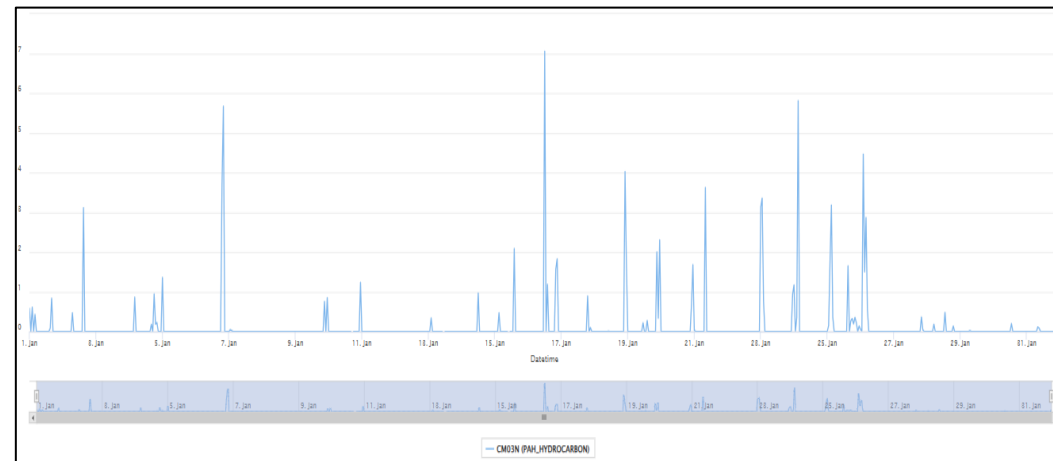
Environmental Data for DO, Turbidity and PAHs CM03N: Port Dickson, Negeri Sembilan



Dissolved Oxygen (mg/L)



Turbidity (NTU)

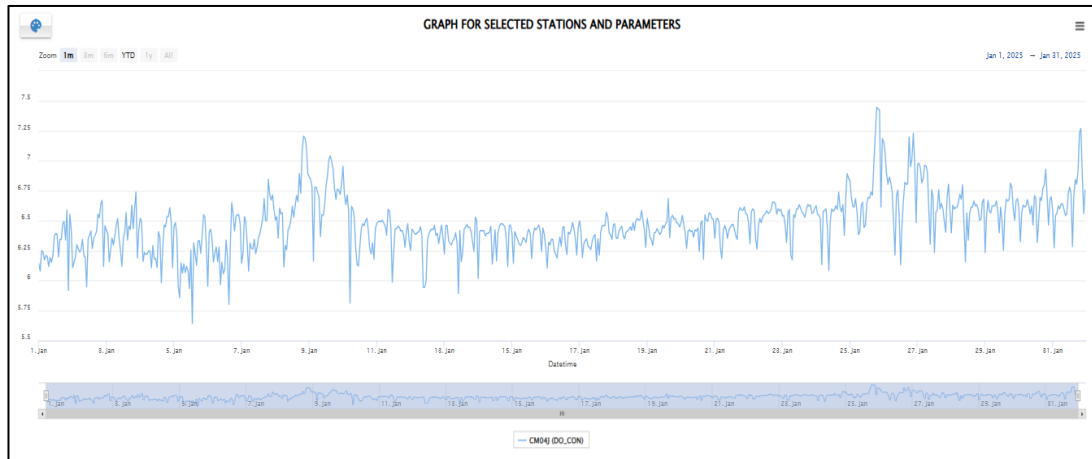


PAHs ($\mu\text{g/l}$)

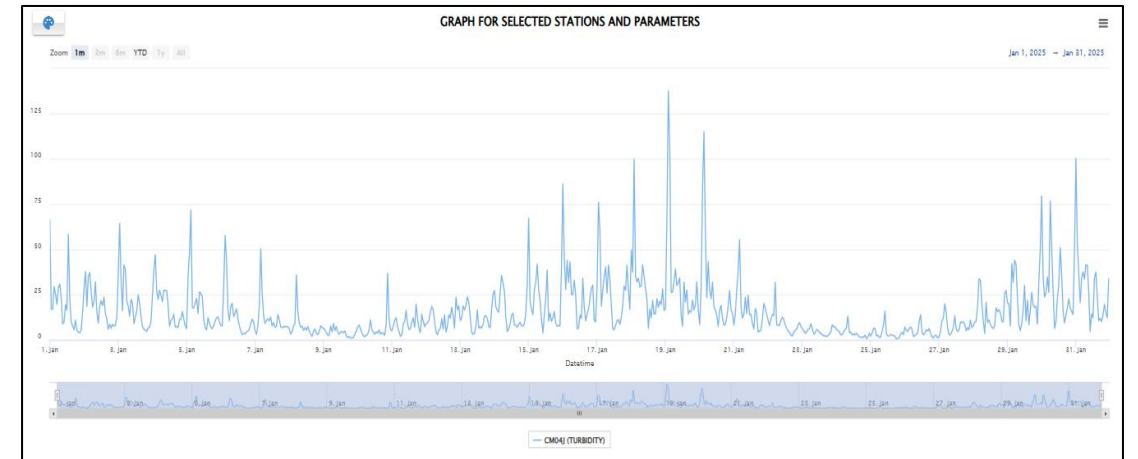
*PAHs from CM03N station is under on-going instrument testing and all data are non claimable

Environmental Data for DO, Turbidity and PAHs

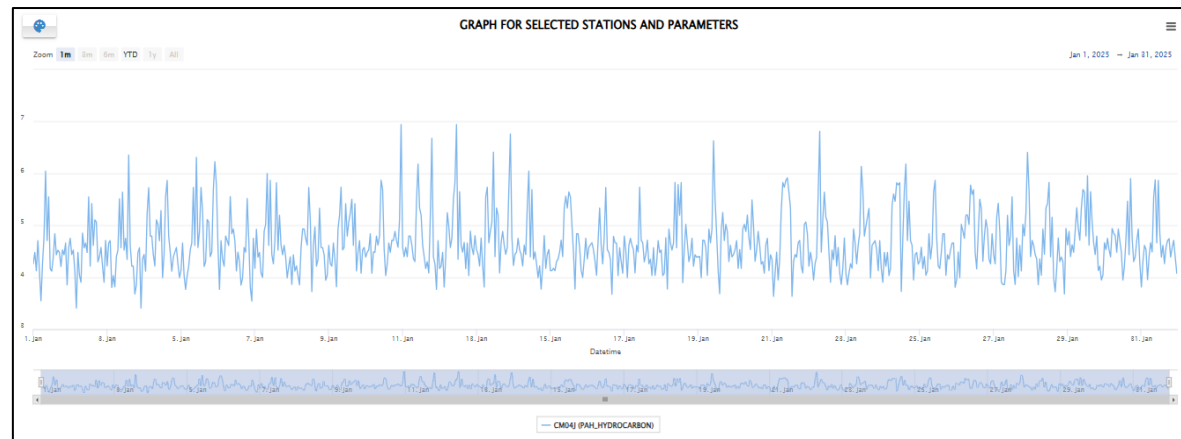
CM04J: Tanjung Piai, Johor



Dissolved Oxygen (mg/L)

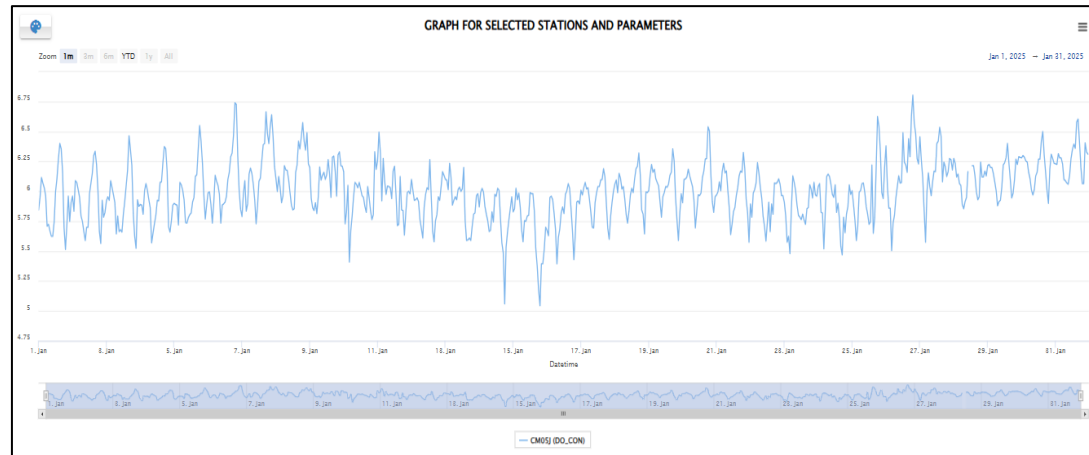


Turbidity (NTU)

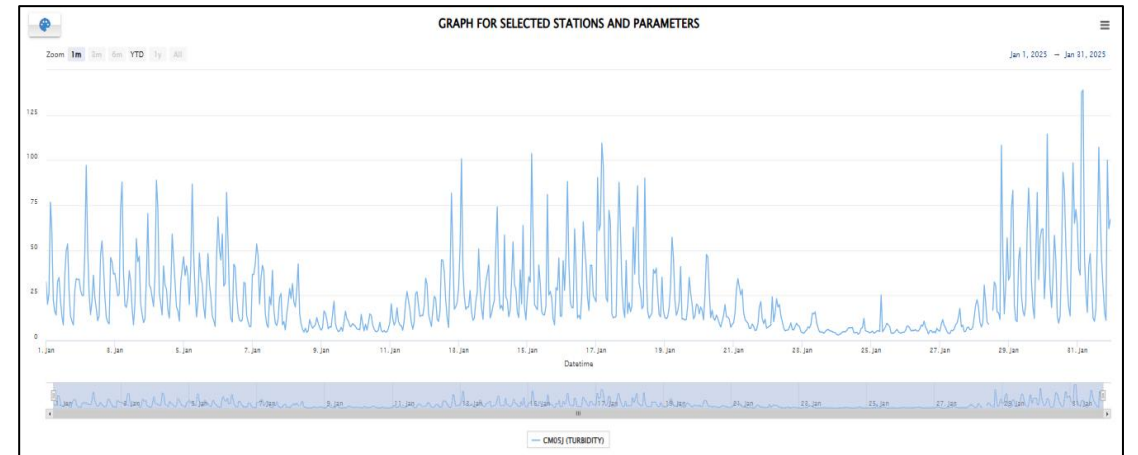


PAHs ($\mu\text{g/l}$)

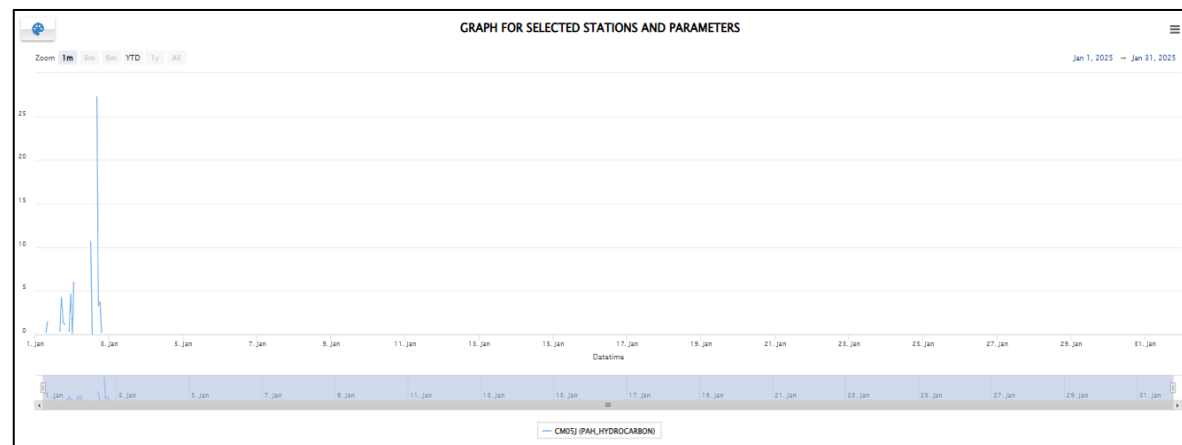
Environmental Data for DO, Turbidity and PAHs CM05J: Tanjung Pengelih, Johor



Dissolved Oxygen (mg/L)

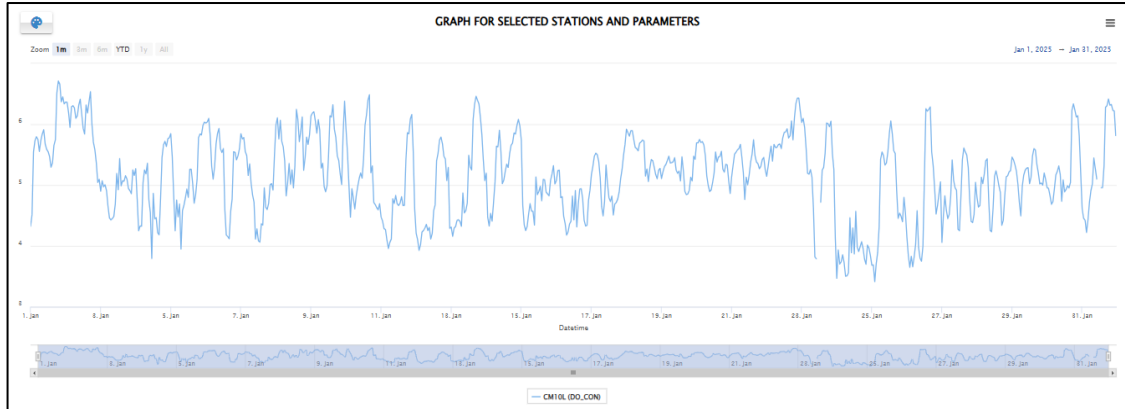


Turbidity (NTU)

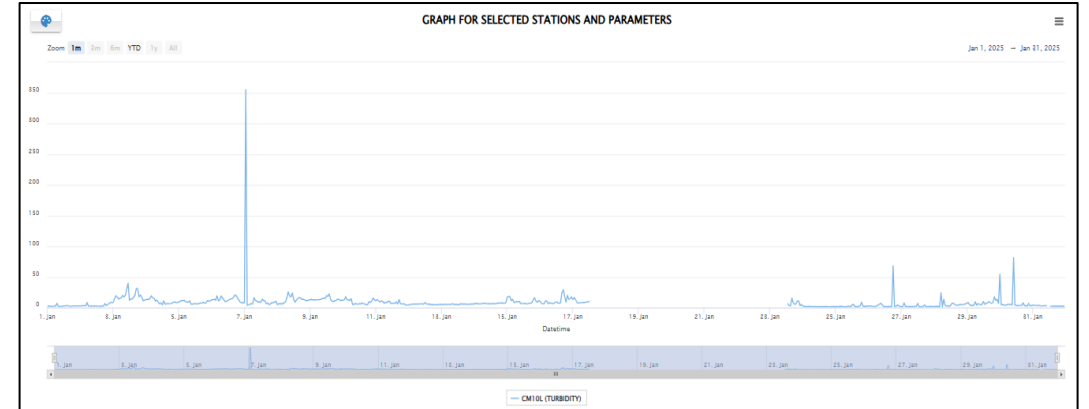


PAHs ($\mu\text{g/l}$)

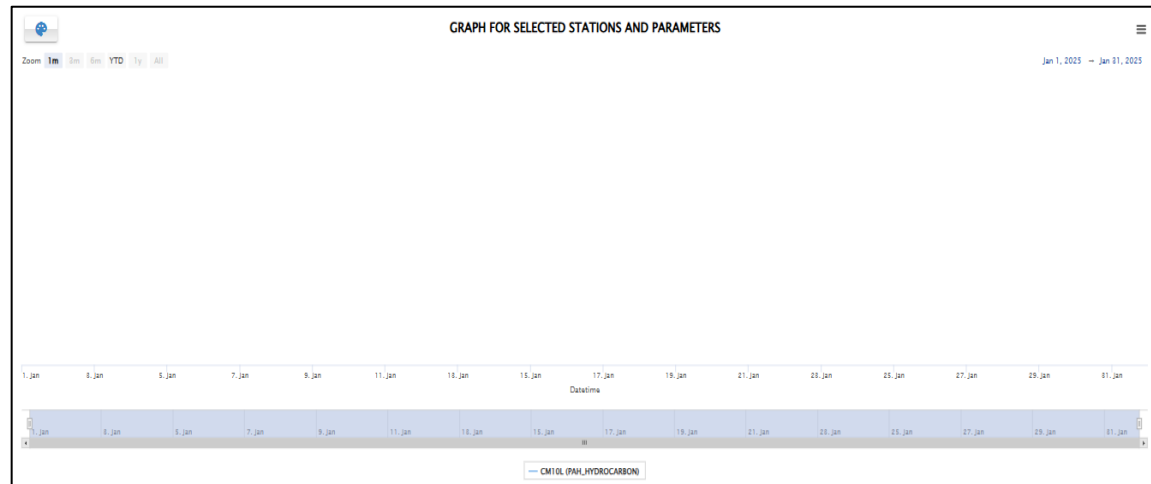
Environmental Data for DO, Turbidity and PAHs CM10S: W. P. Labuan



Dissolved Oxygen (mg/L)



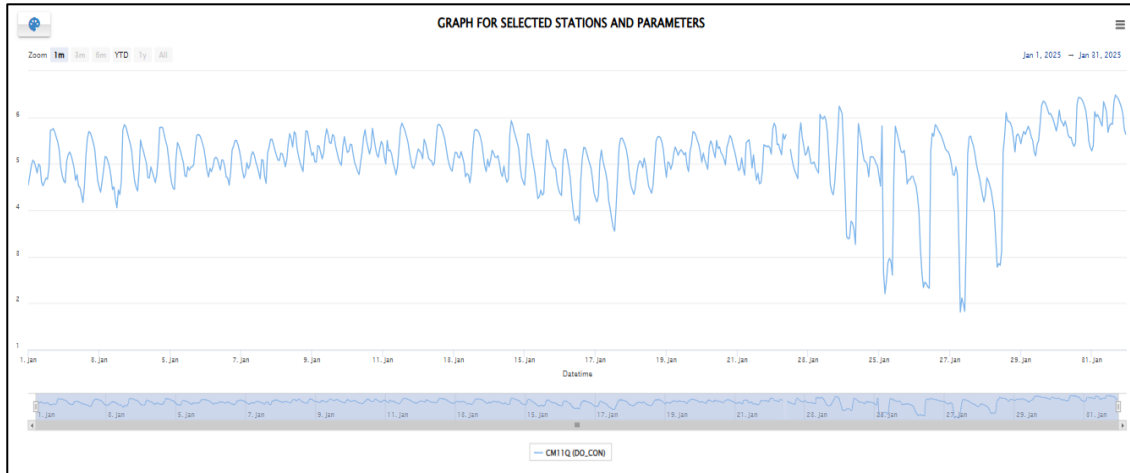
Turbidity (NTU)



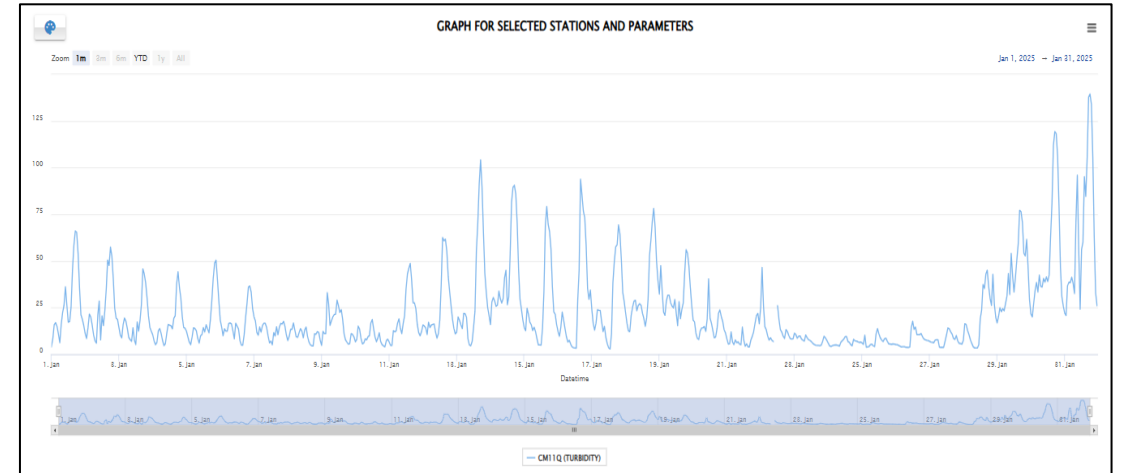
PAHs (µg/l)

**No CTG deployment at site

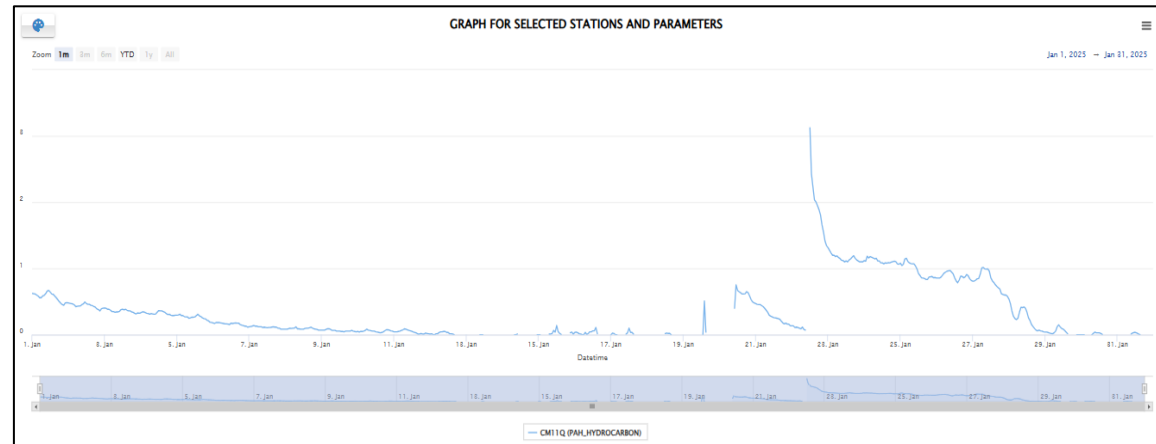
Environmental Data for DO, Turbidity and PAHs CM11Q: Santubong, Sarawak



Dissolved Oxygen (mg/L)

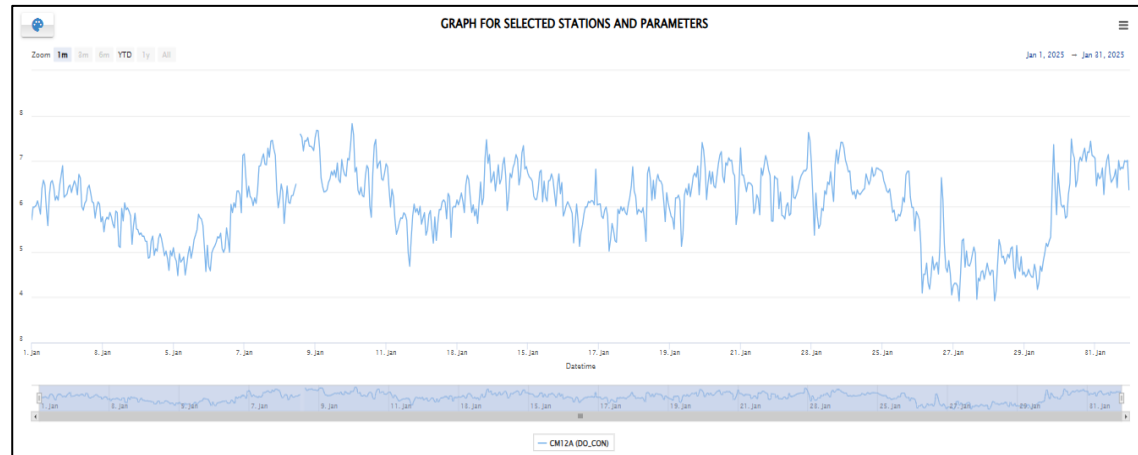


Turbidity (NTU)

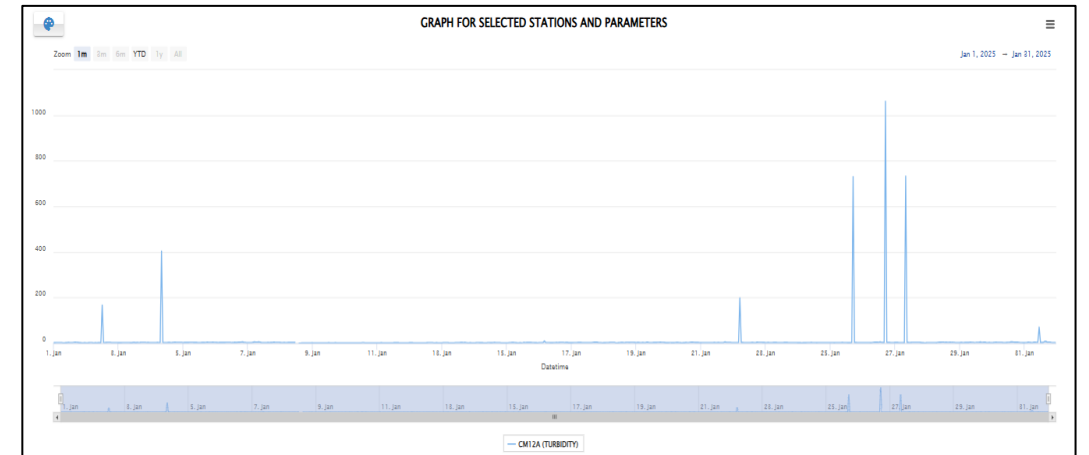


PAHs ($\mu\text{g/l}$)

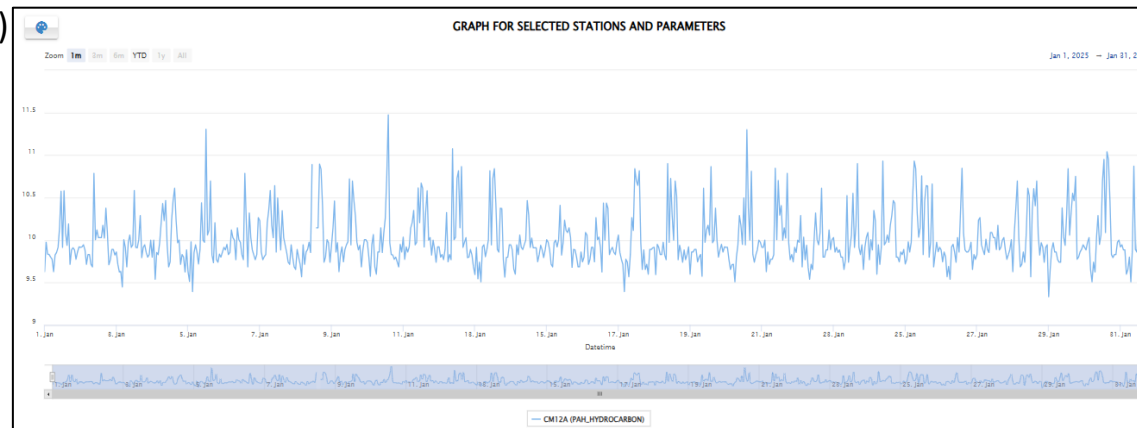
Environmental Data for DO, Turbidity and PAHs CM12A: Pulau Mentagor, Perak



Dissolved Oxygen (mg/L)

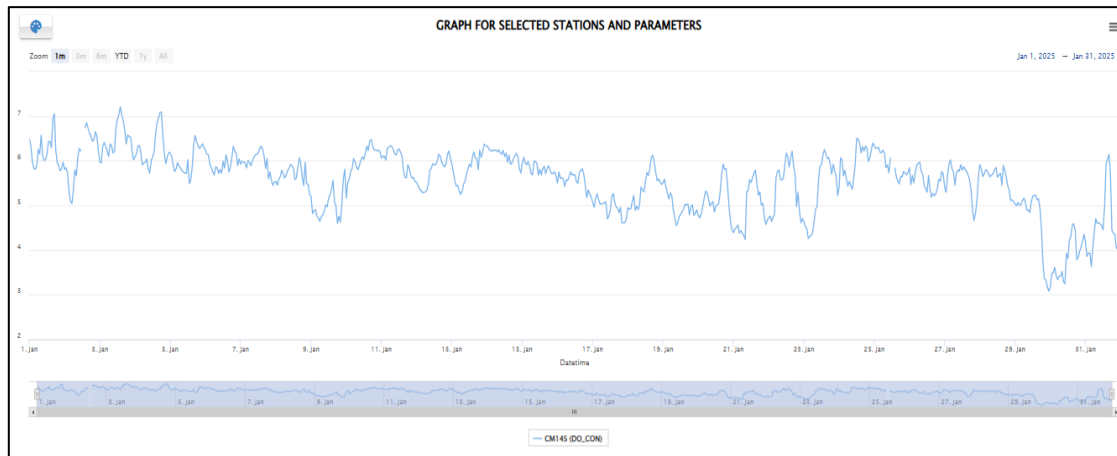


Turbidity (NTU)

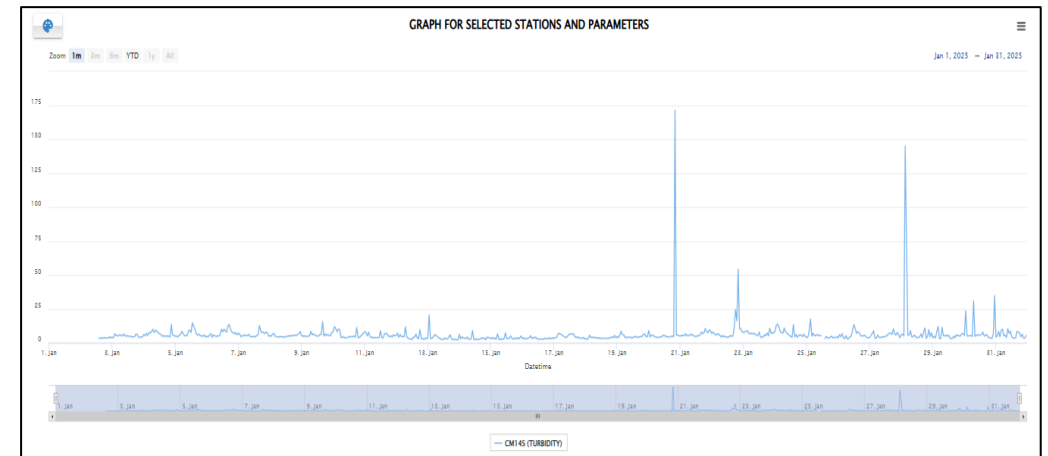


PAHs ($\mu\text{g/l}$)

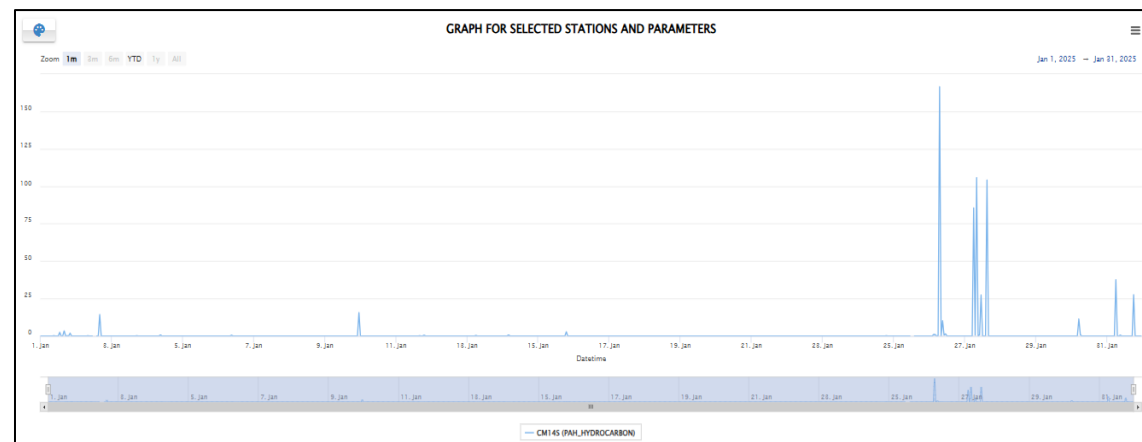
Environmental Data for DO, Turbidity and PAHs CM14S: Teluk Sepanggar, Sabah



Dissolved Oxygen (mg/L)



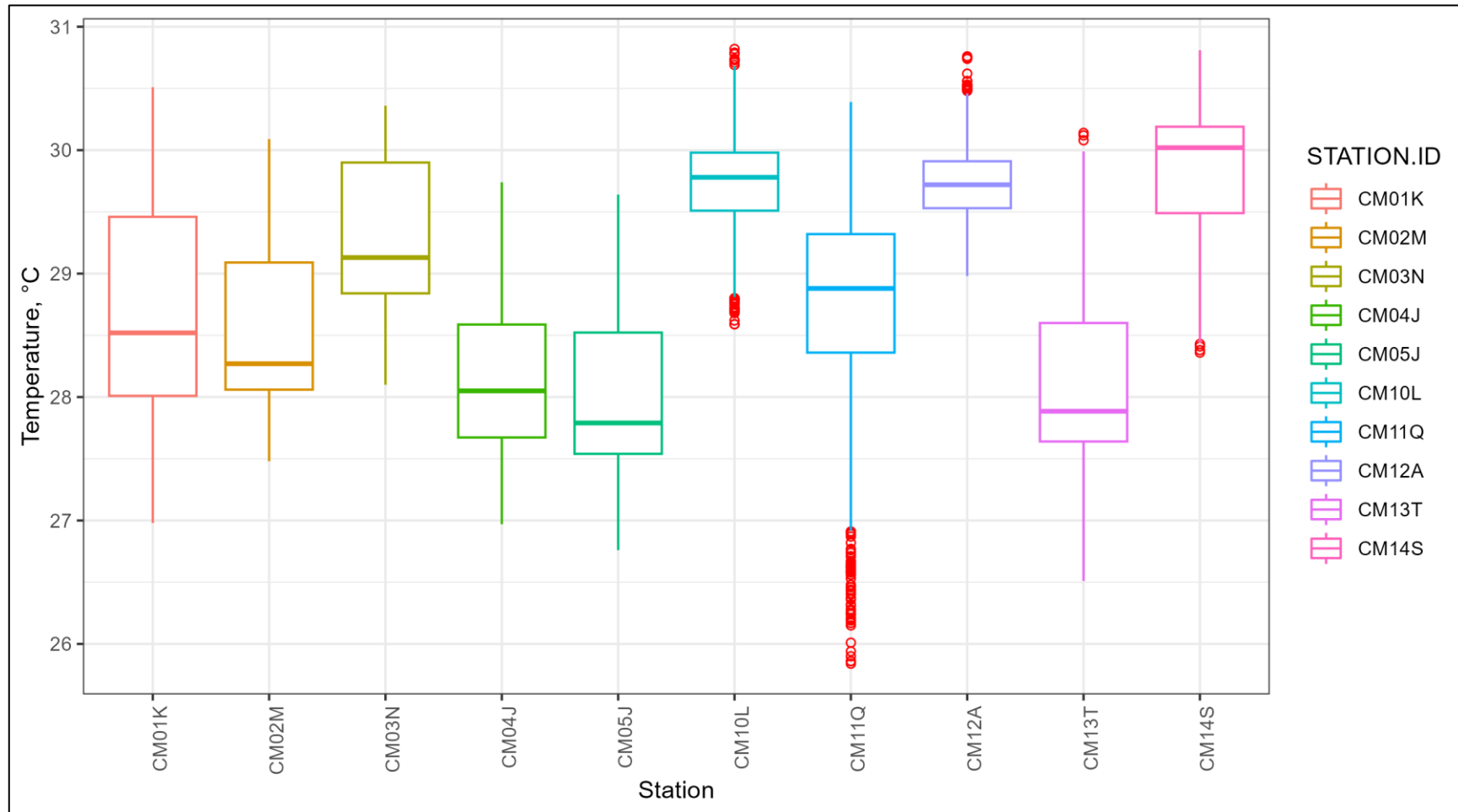
Turbidity (NTU)



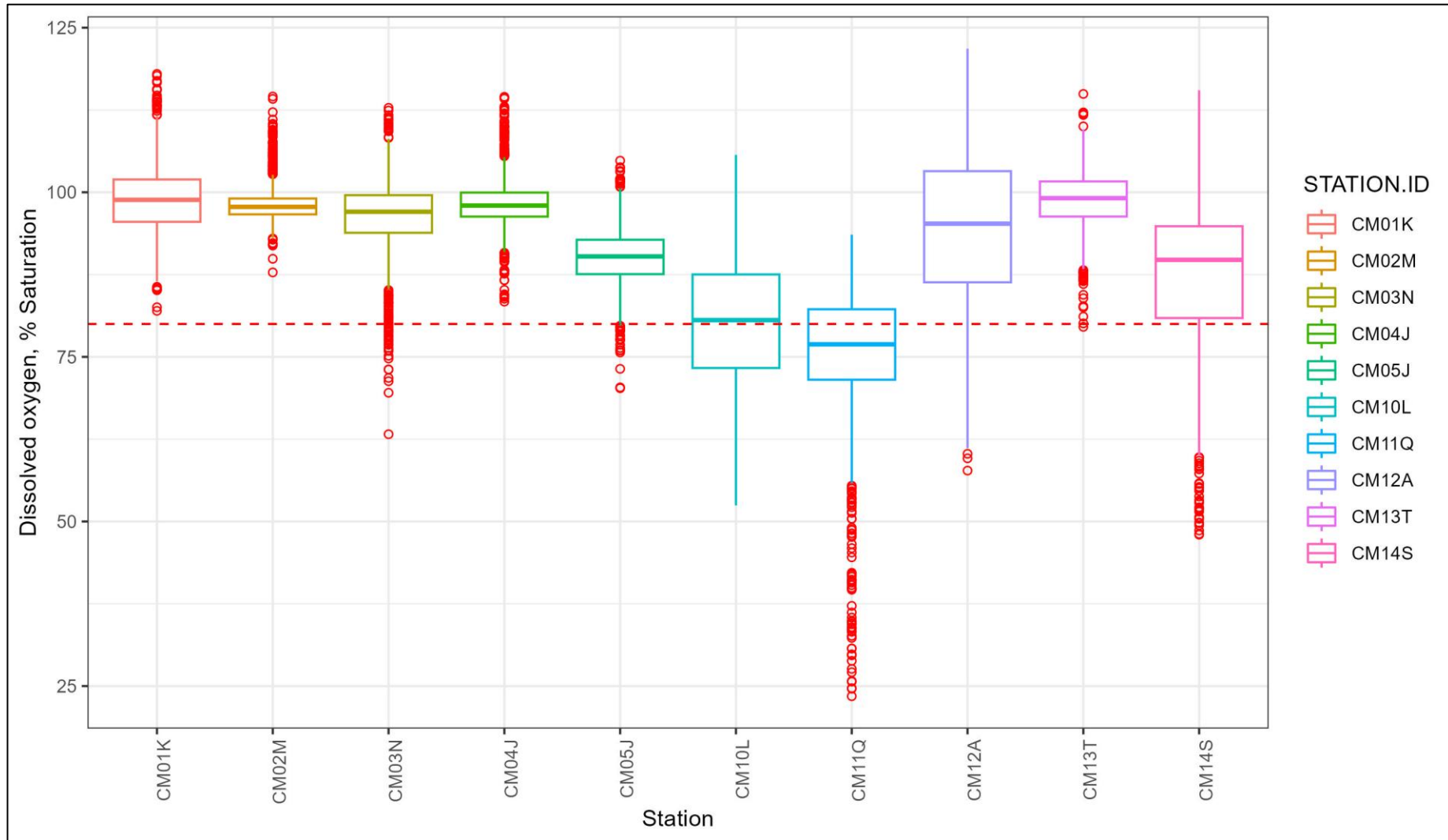
PAHs (µg/l)

*PAHs from CM14S station is under on-going instrument testing and all data are non claimable

Temperature Boxplot for Each Station

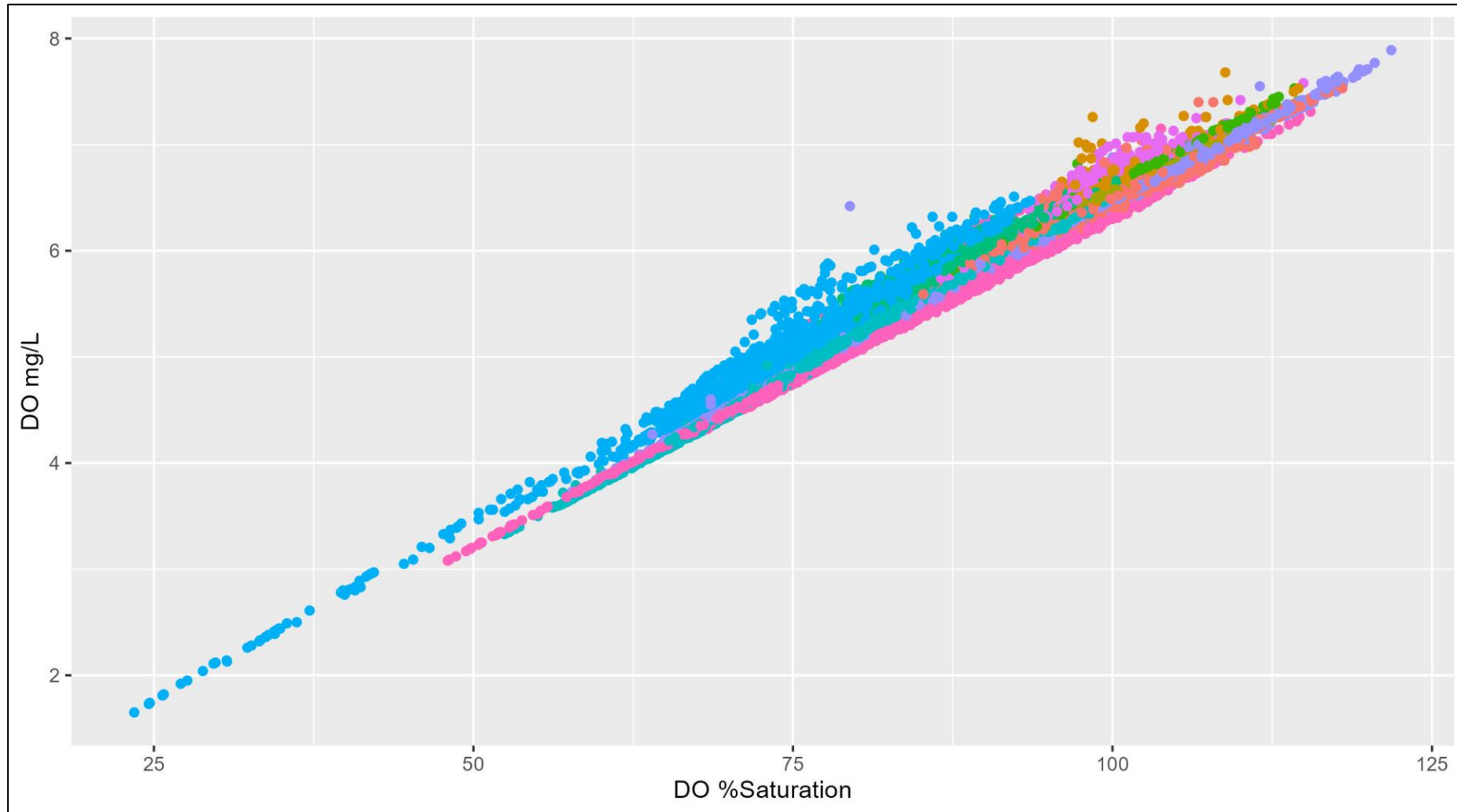


DO (%) Boxplot for Each Station

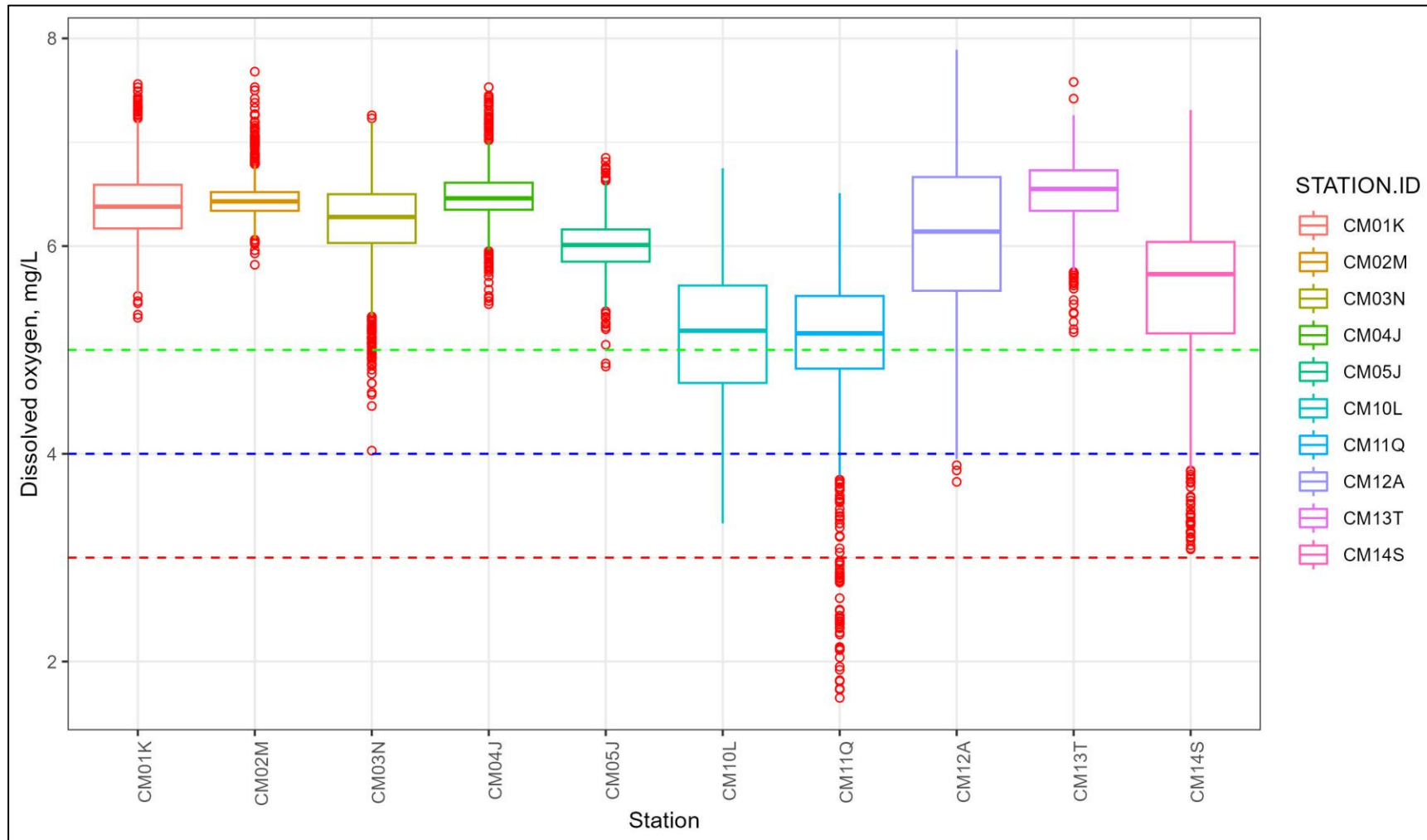




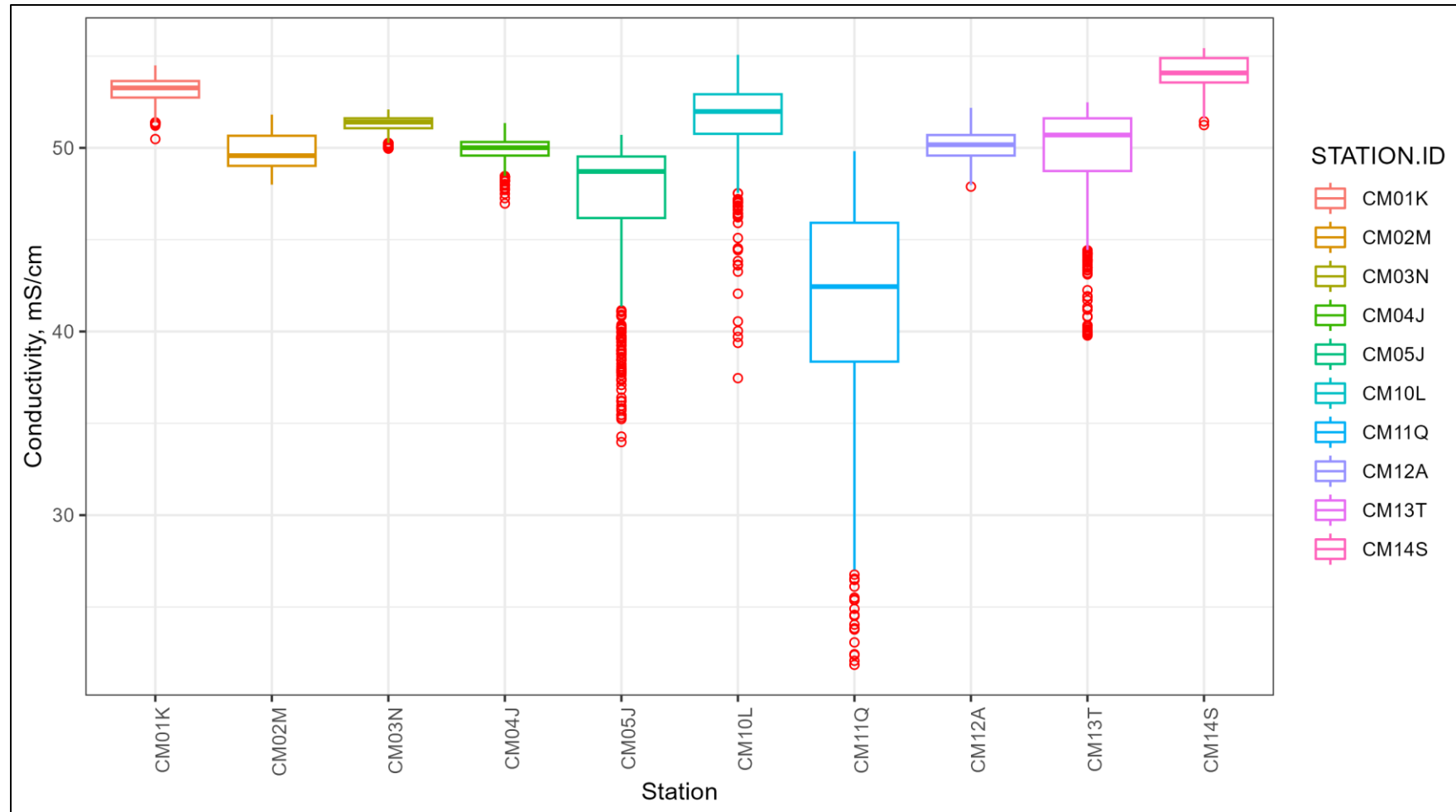
DO mgL_DO sat CALIBRATION GRAPH

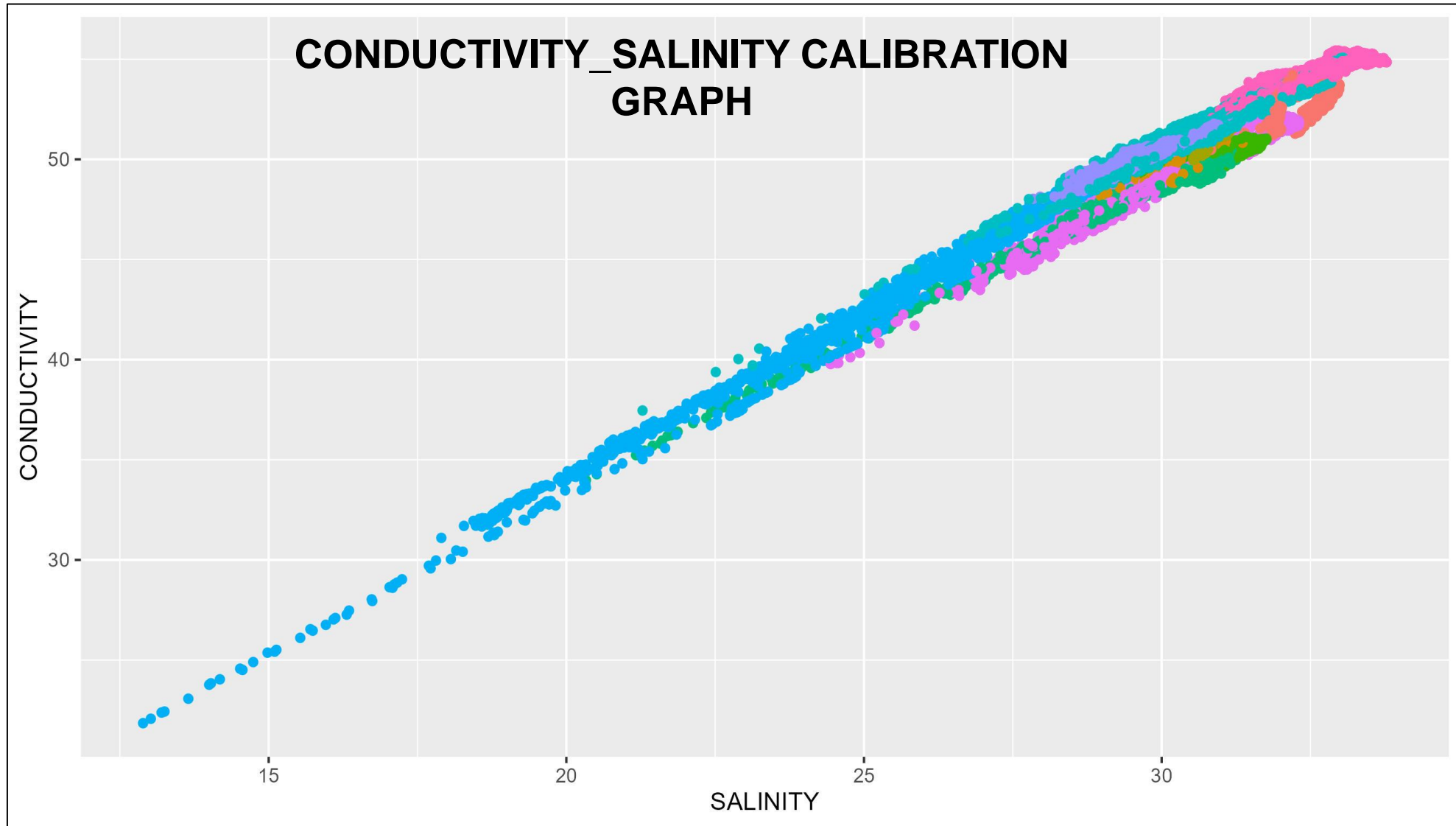


DO Concentration Boxplot for Each Station

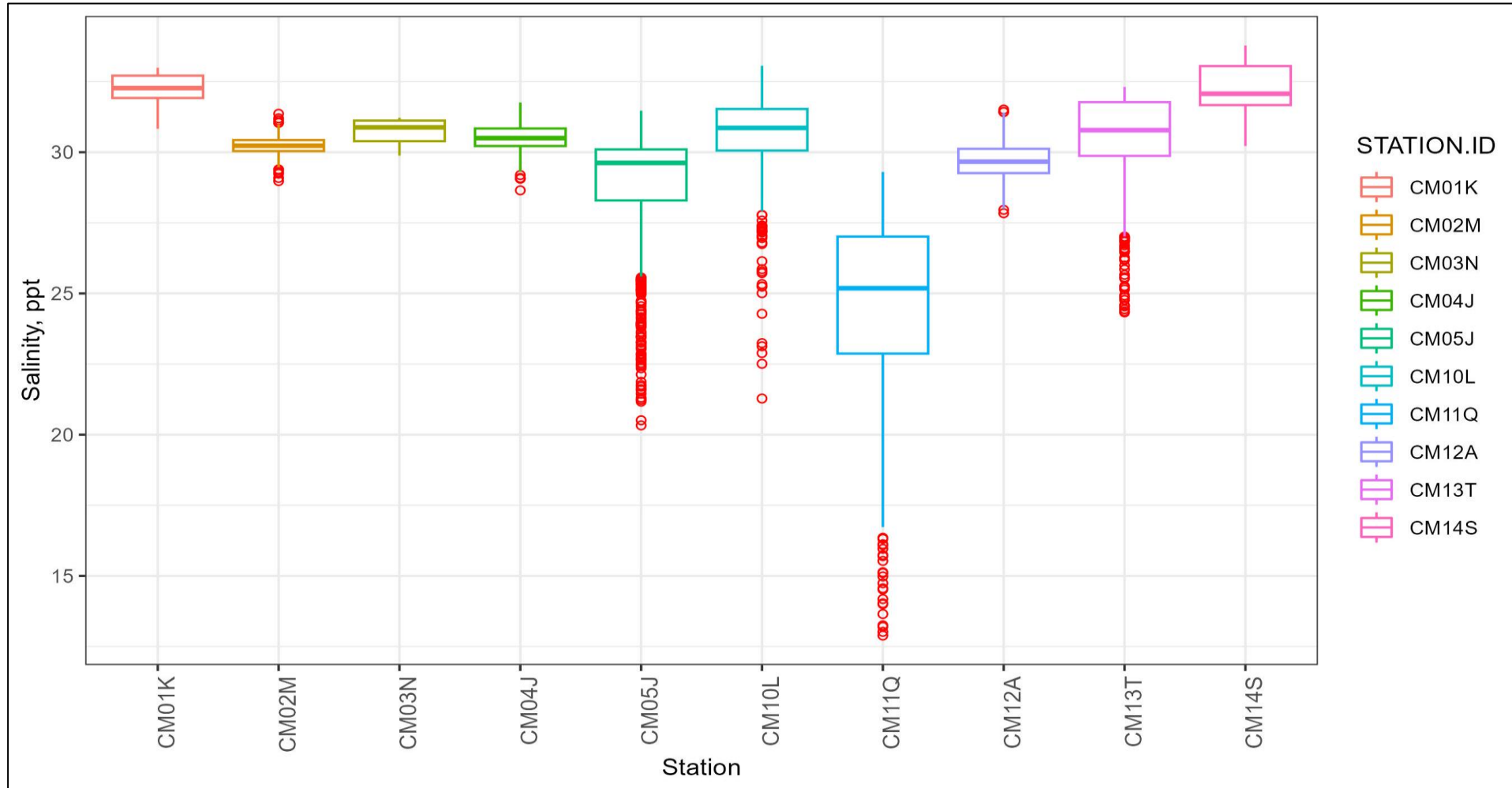


Conductivity Boxplot for Each Station

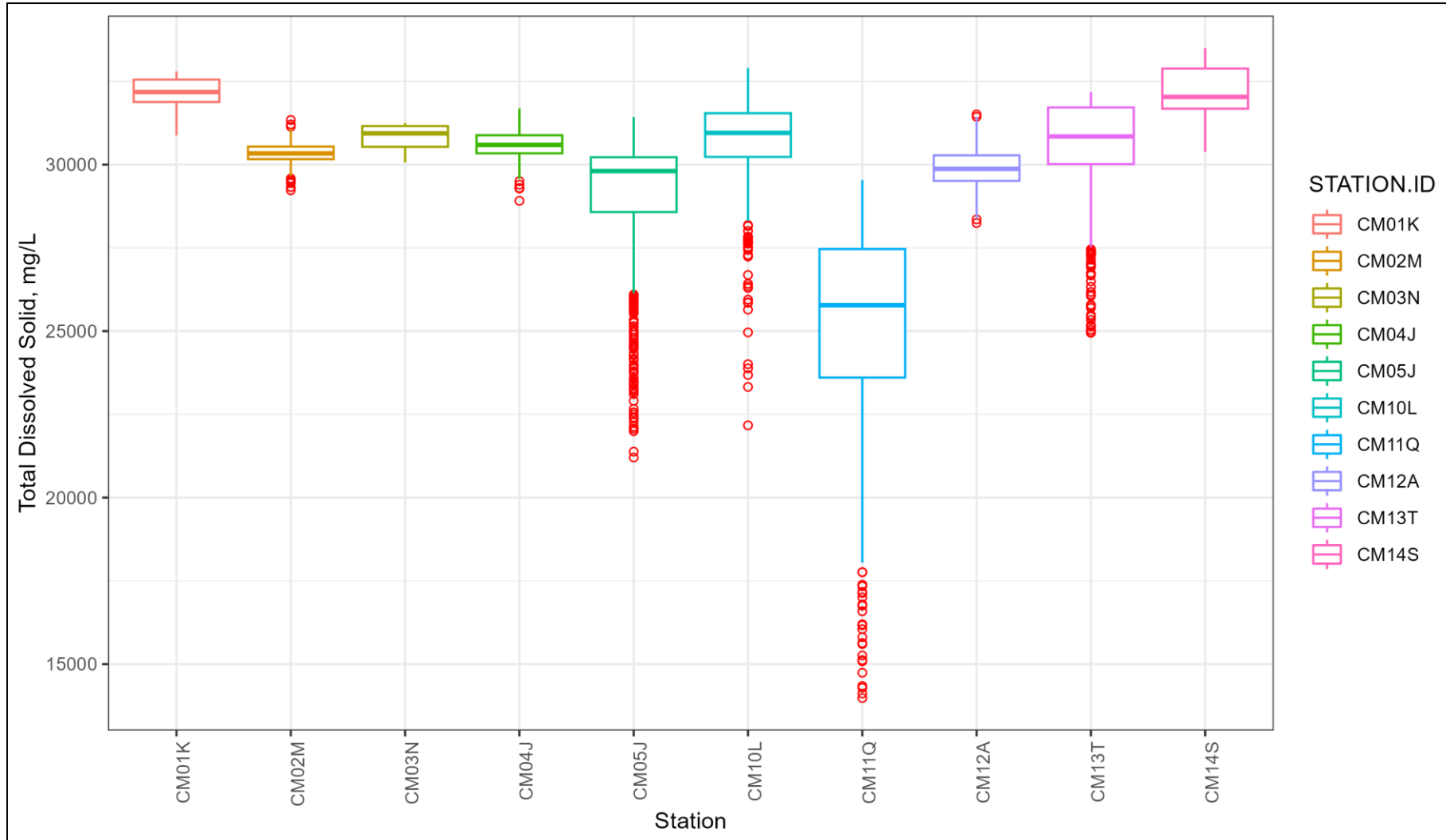




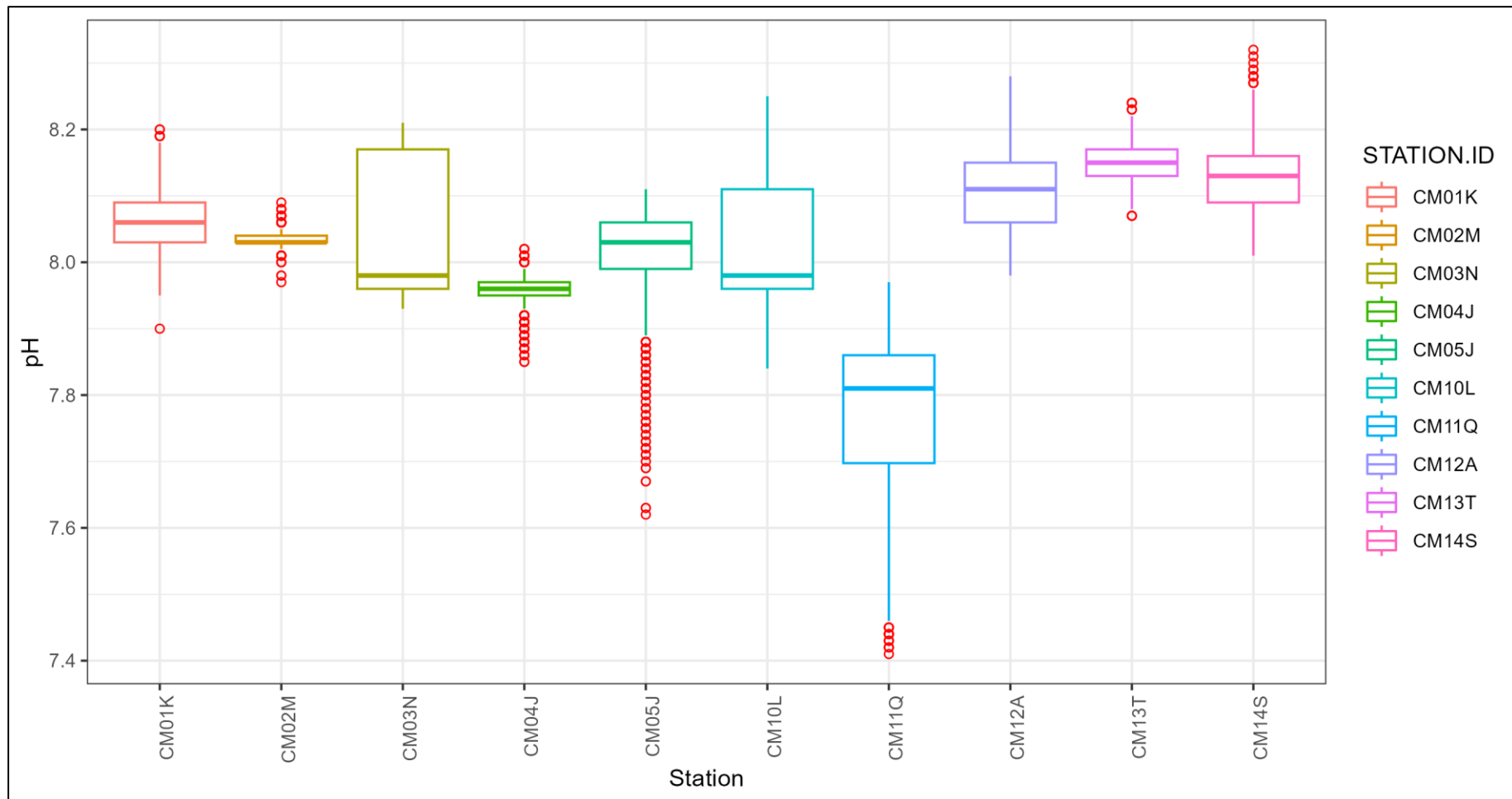
Salinity Boxplot for Each Station



TDS Boxplot for Each Station

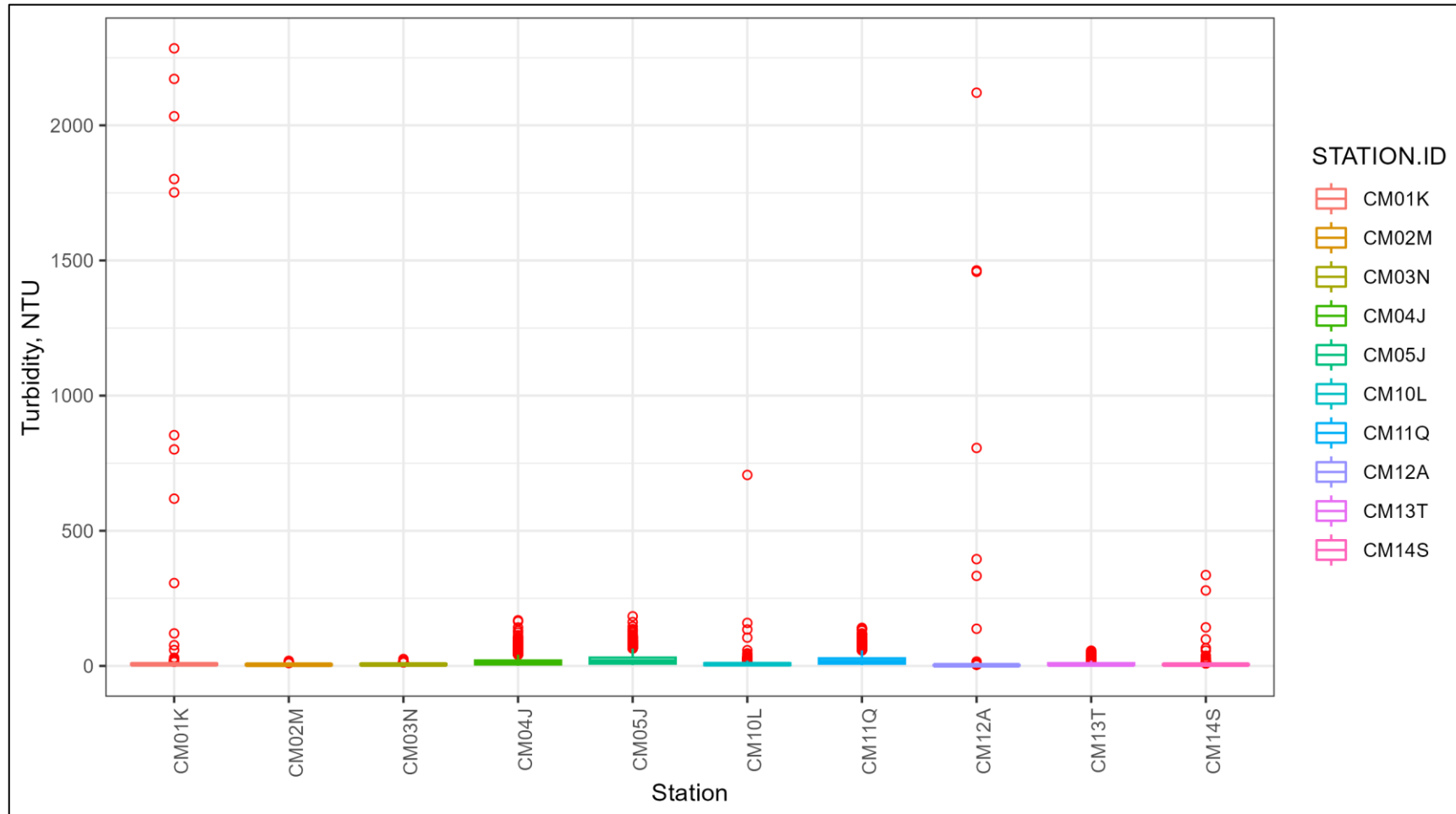


pH Boxplot for Each Station

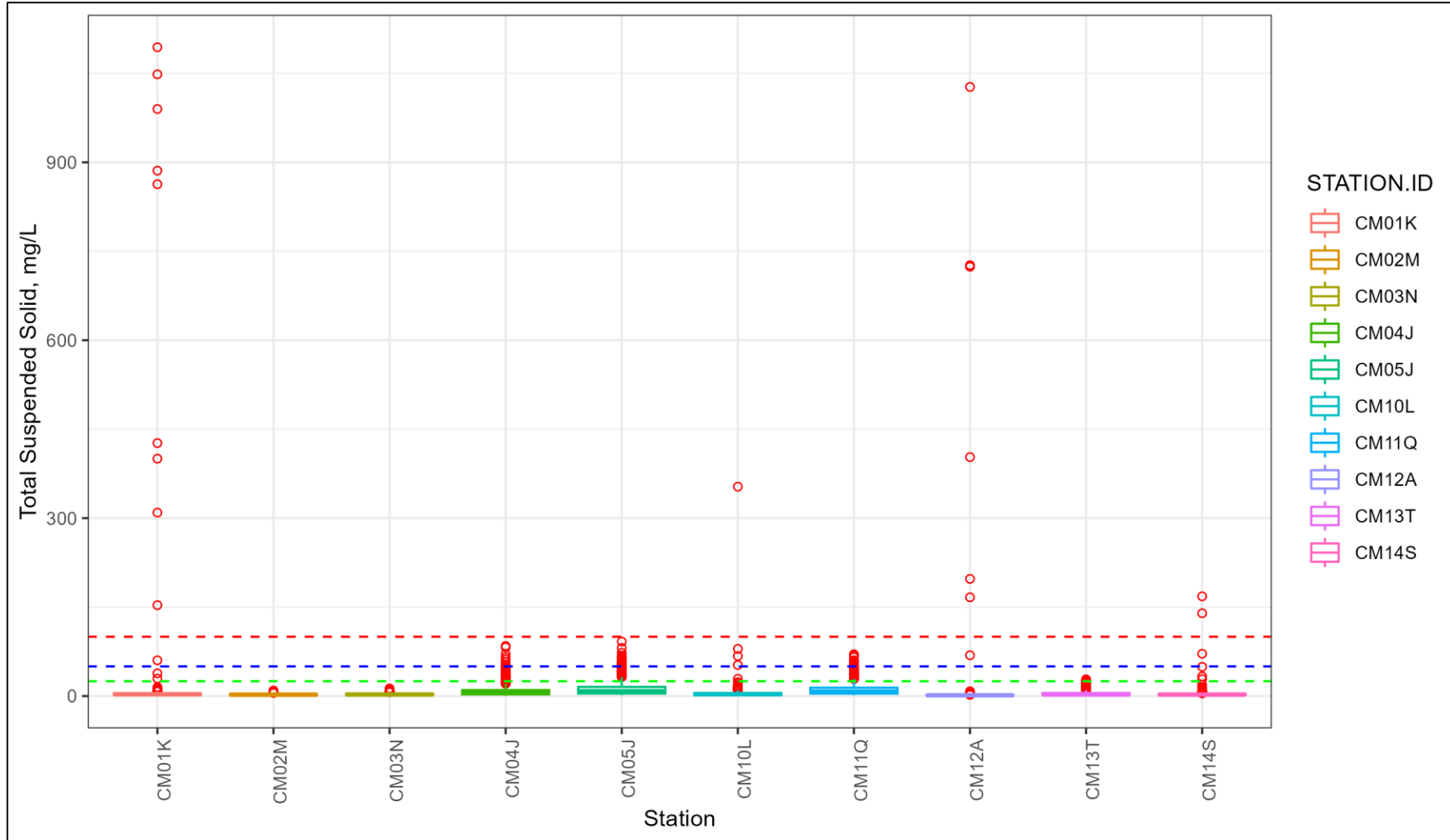




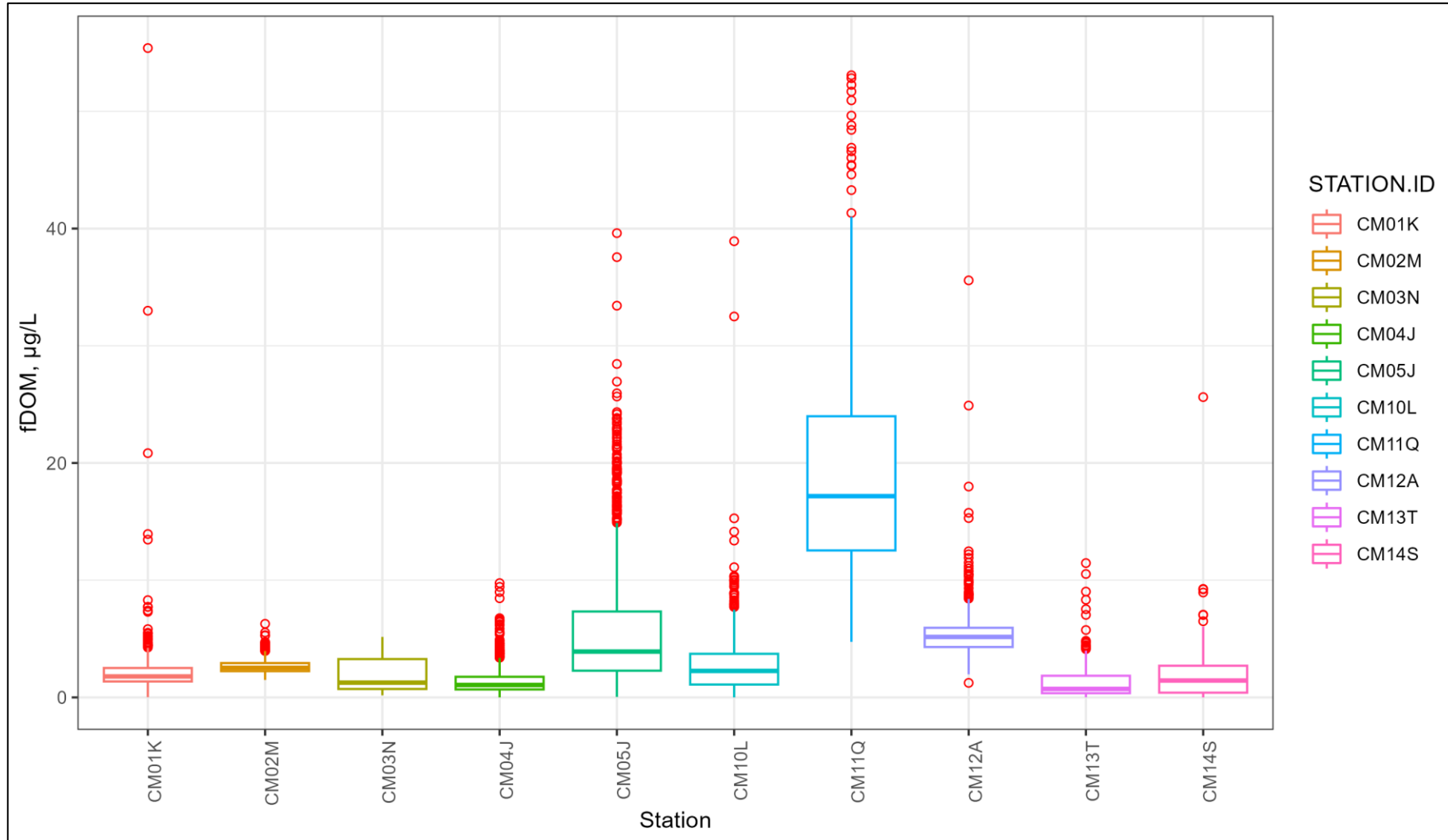
Turbidity Boxplot for Each Station



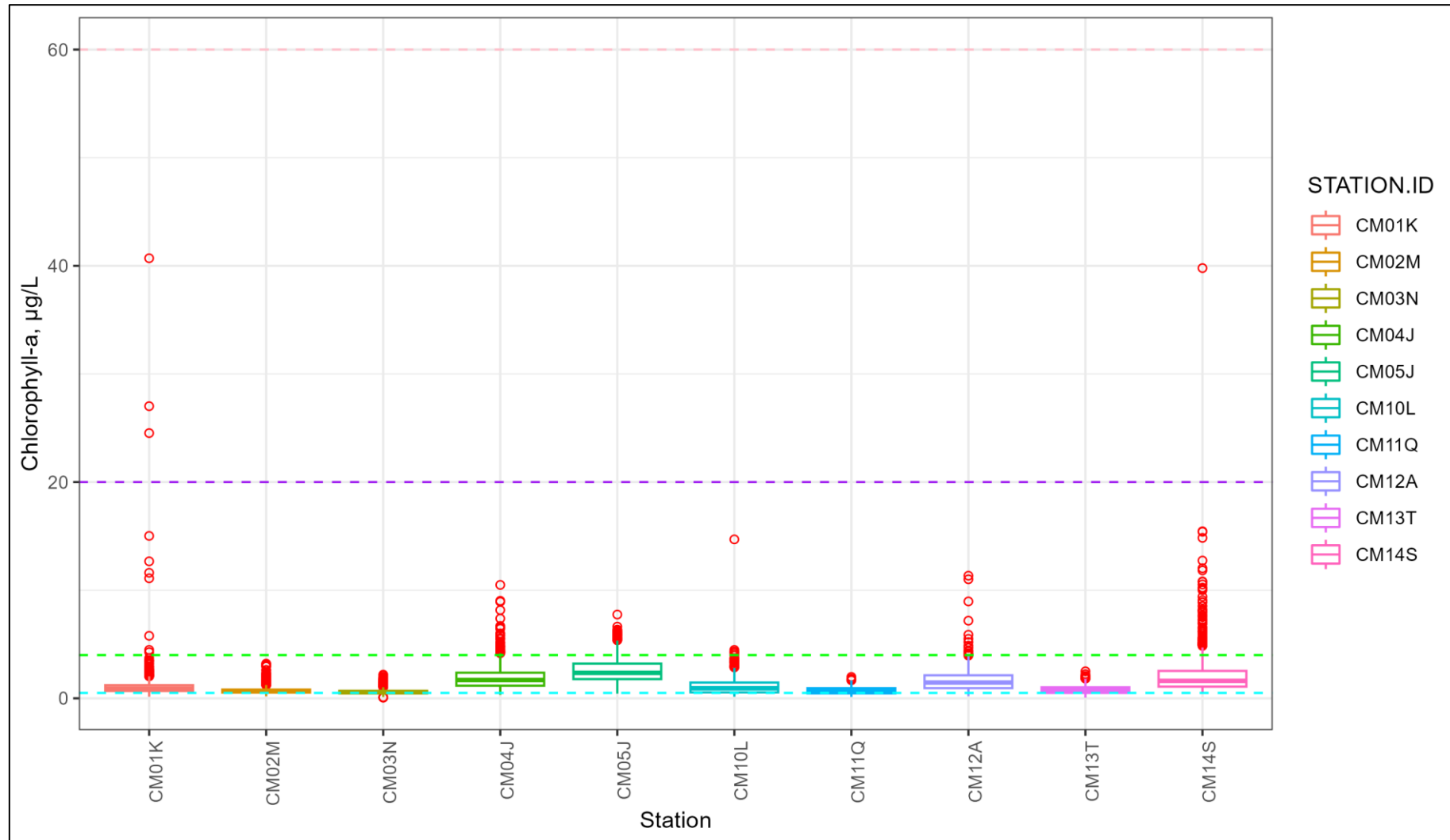
TSS Boxplot for Each Station



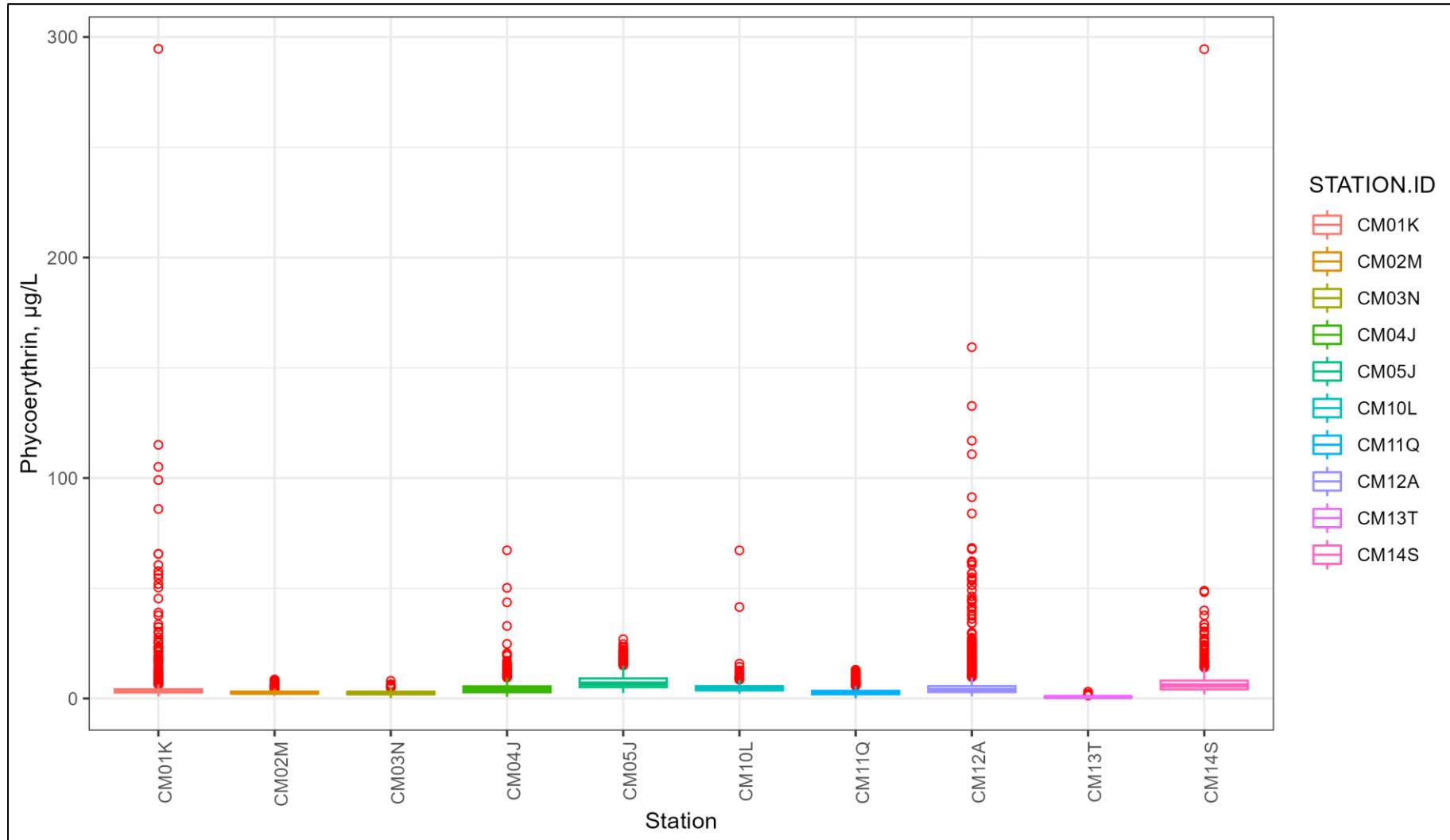
fDOM Boxplot for Each Station



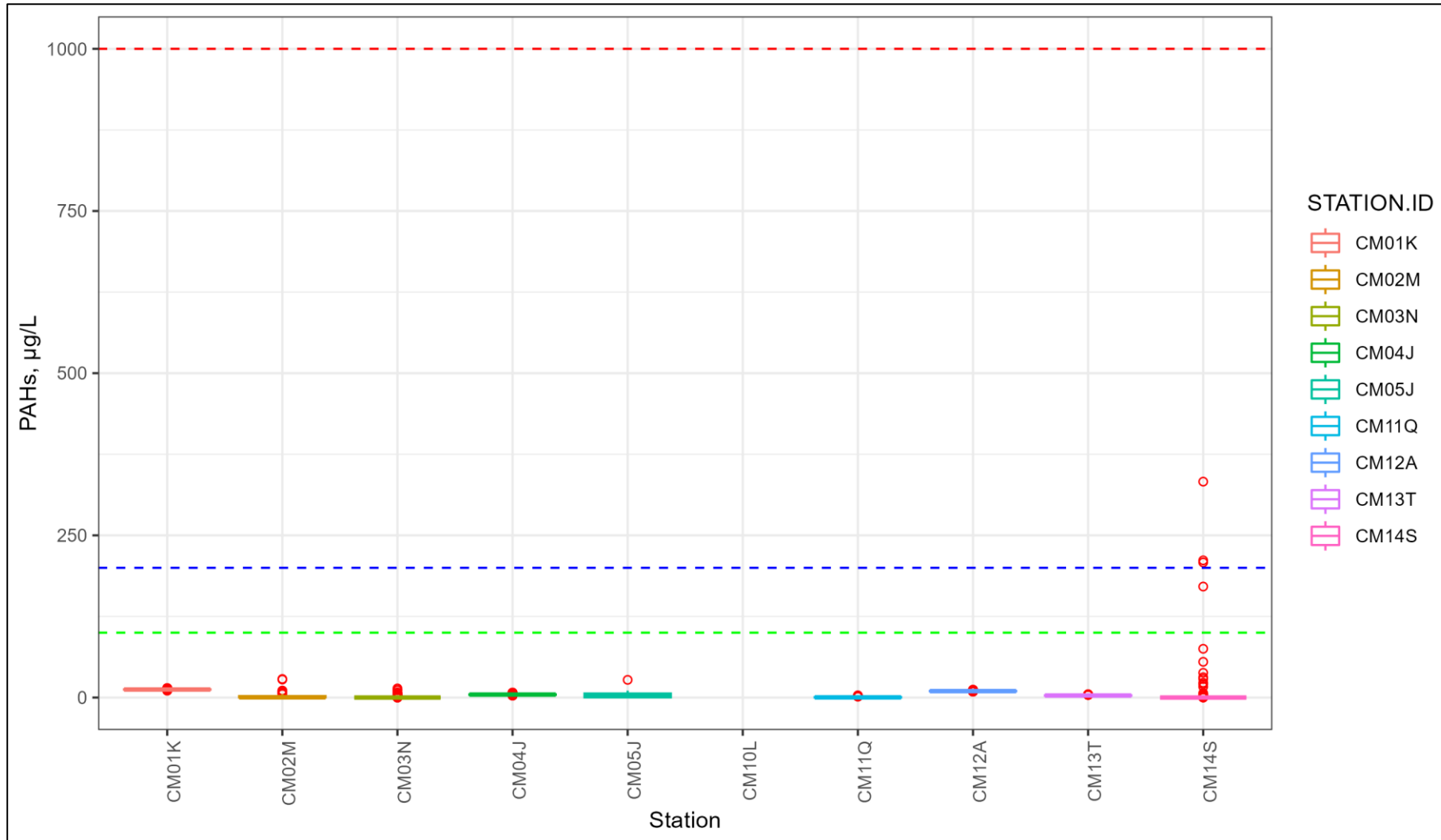
Chlorophyll Boxplot for Each Station



BGA_PE Boxplot for Each Station



PAHs Boxplot for Each Station



*PAHs from CM03N & CM14S station is under on-going instrument testing and all data are non claimable

*No CTG deployment at CM03N, CM10L & CM14S



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Thank You