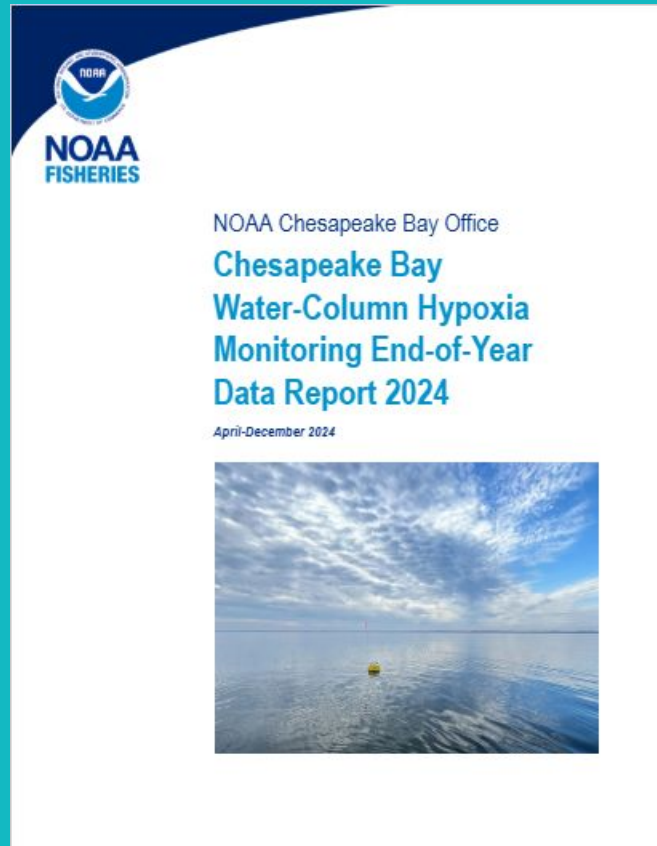


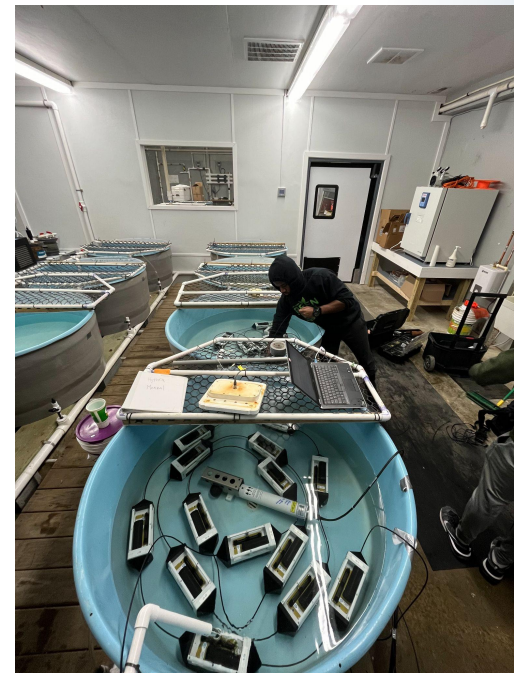
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2024 Hypoxia Data Deliverables



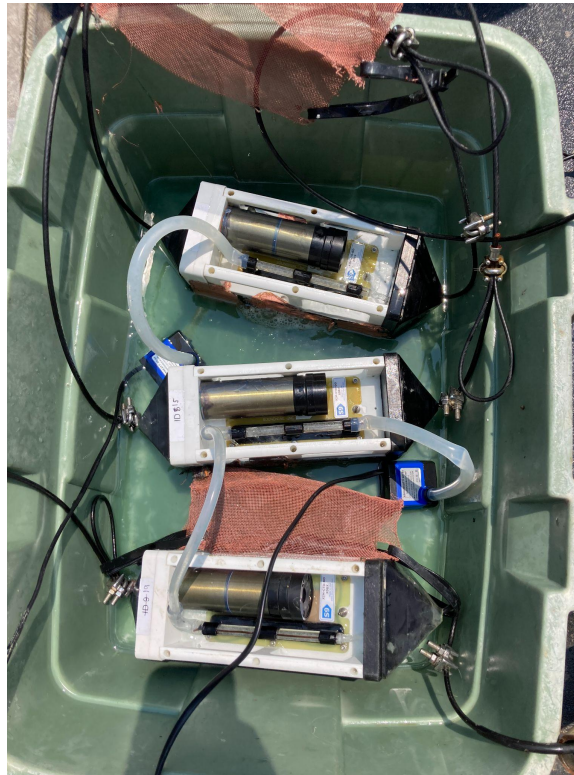
More than a report - a story behind the data

- Challenges with long-term monitoring
- Efforts in the field
- **Validating data**
- Results



Challenges with long-term monitoring

Biofouling & Spare Parts



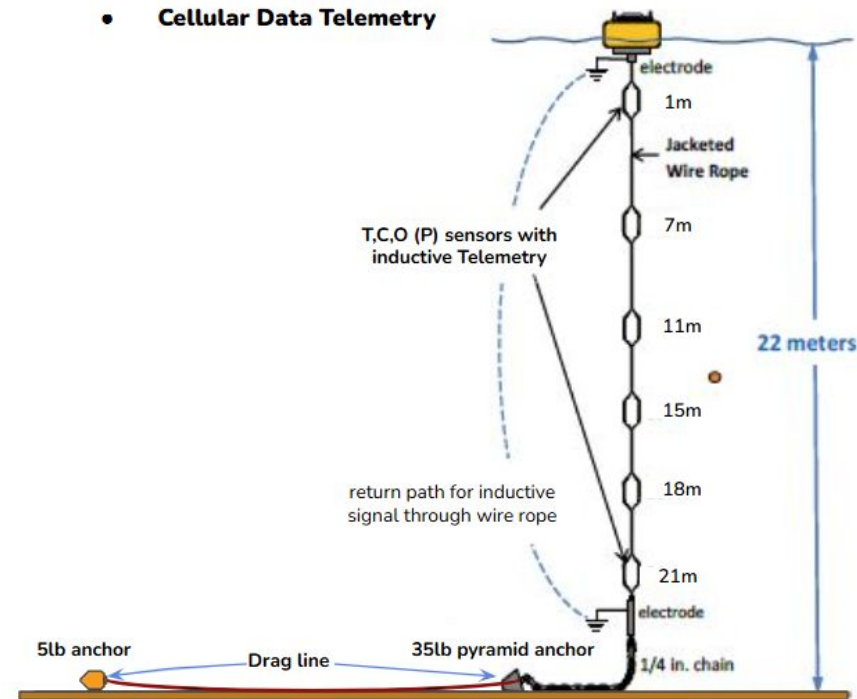
Efforts in the field

Time on the water & improved recovery



Soundnine Ultibuoy with:

- Inductive Underwater Telemetry
- GPS
- Cellular Data Telemetry



Validating Data

Pre-deployment, In-situ, Post-deployment



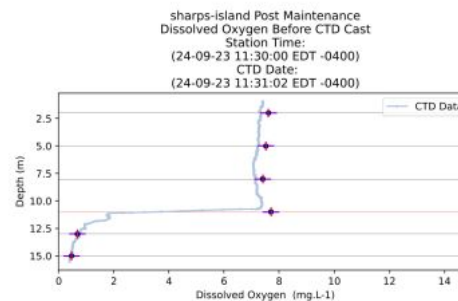
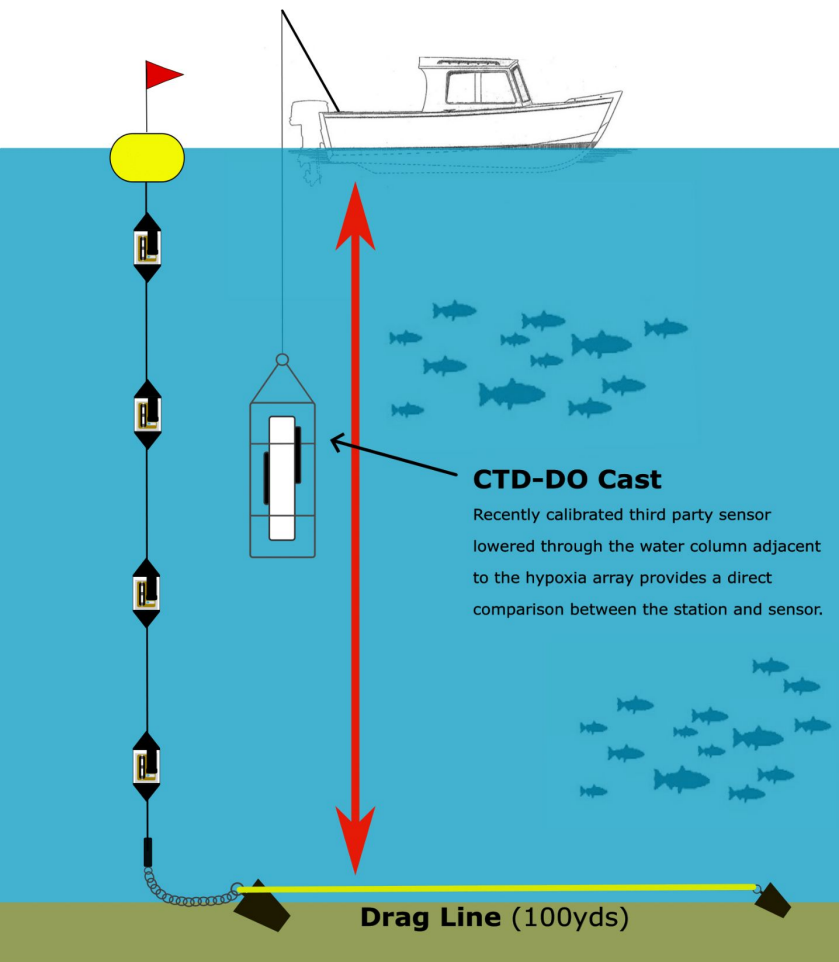
Run 4

1 Cold high DO
microCAT

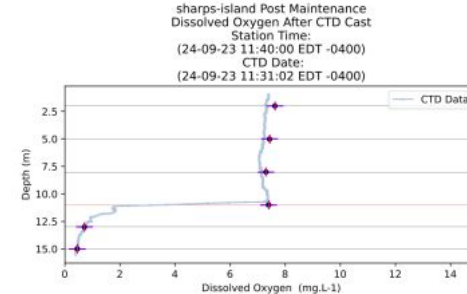
Temp (C)	Conductivity (S/m)	Pressure (dbar)	DO (ml/L)	Corrected DO (mg/L)			
10.23742	0.555104	0.1809	7.5071	10.72802126			
S9							
	SN	ID	Temp C	Pressure (dbar)	Conductivity (S/m)	DO (mg/L)	Corrected DO (mg/L)
	0BT	25	0.06074486486		0.01870410811	3.42617027	0.2052490103
	0FP	19	0.06245027027		0.01865816216	3.433954054	0.2130327941
	0FQ	11	0.06446108108		0.01889059459	3.423954054	0.2030327941

Validating Data

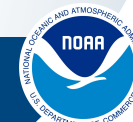
Pre-deployment, In-Situ, Post-deployment



Station date	Pressure	CTD date	Difference (±0.5) mg.L-1
2.0	7.65	11.91	7.31
5.0	7.52	15.04	7.24
8.0	7.45	18.13	7.34
11.0	7.7	21.05	4.42
13.0	0.87	23.84	0.77
15.0	0.46	25.96	0.46



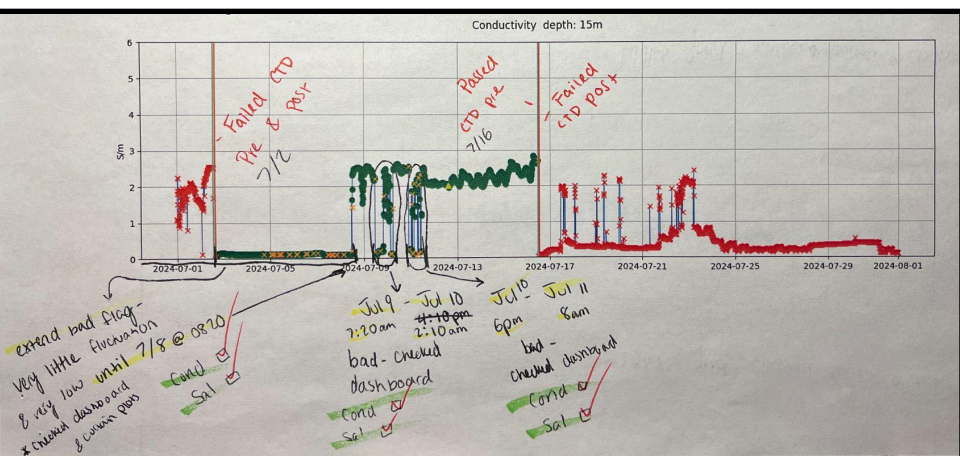
Station date	Pressure	CTD date	Difference (±0.5) mg.L-1
2.0	7.65	11.93	7.31
5.0	7.66	15.04	7.24
8.0	7.3	18.33	7.34
11.0	7.4	21.36	4.42
13.0	0.75	23.85	0.77
15.0	0.46	25.07	0.46



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Validating Data

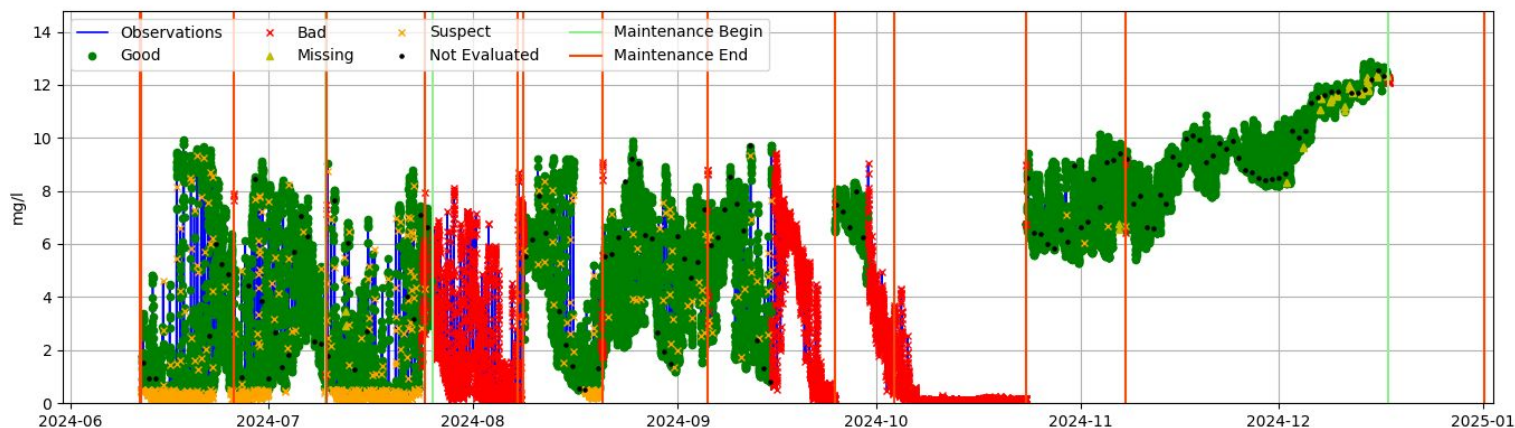
Pre-deployment, In-situ, Post-deployment



CLEMENTS_ISLAND

Station	QC	Depth	Measurement	Start Time (EDT)	End Time (EDT)	Reason	Notes
chlora-point	BAD	5	Dissolved Oxygen	2024-06-01 21:00-0400	2024-06-03 10:00-0400	Sensor started to decline	Failed Pre-ctd cast on 6/3 by 2.07mg/L, had started to decline due to biofouling as see in photos. Passed Post cleaning ctd
chlora-point	BAD	5	Dissolved Oxygen Adj	2024-06-01 21:00-0400	2024-06-03 10:00-0400	Sensor started to decline	Failed Pre-ctd cast on 6/3 by 2.07mg/L, had started to decline due to biofouling as see in photos. Passed Post cleaning ctd
chlora-point	BAD	Array		2024-06-03 10:00-0400	2024-06-03 11:06-0400	Maintenance	Cleaning
chlora-point	BAD	Array		2024-06-03 10:00-0400	2024-06-03 11:06-0400	Maintenance	Cleaning
chlora-point	BAD	5	Dissolved Oxygen	2024-06-14 19:50-0400	2024-06-20 13:20-0400	Sensor started to decline	Failed Pre-ctd cast on 6/20 by 5.04mg/L, had started to decline due to biofouling as see in photos. Passed Post cleaning ctd
chlora-point	BAD	5	Dissolved Oxygen Adj	2024-06-14 19:50-0400	2024-06-20 13:20-0400	Sensor started to decline	Failed Pre-ctd cast on 6/20 by 5.04mg/L, had started to decline due to biofouling as see in photos. Passed Post cleaning ctd
chlora-point	BAD	2	Dissolved Oxygen	2024-06-18 19:40-0400	2024-06-20 14:21-0400	Sensor started to decline	Failed Pre-cleaning ctd cast on 6/20, biofouling was extensive from photos and drift of DO readings was an outlier from the other sensors. Passed post cleaning ctd
chlora-point	BAD	2	Dissolved Oxygen Adj	2024-06-18 19:40-0400	2024-06-20 14:21-0400	Sensor started to decline	Failed Pre-cleaning ctd cast on 6/20, biofouling was extensive from photos and drift of DO readings was an outlier from the other sensors. Passed post cleaning ctd
chlora-point	BAD	Array		2024-06-20 13:30-0400	2024-06-20 14:21-0400	Maintenance	Cleaning
chlora-point	Questionable or Suspect	2	Water Temperature	2024-06-20 14:32-0400	2024-07-02 14:08-0400	Failed CTD Cast	Failed post ctd cast on 6/2 by 0.03C and failed the pre-ctd cast on 7/2 by 0.41C. Due to the small amount of error we changed this from bad to suspect
chlora-point	BAD	2	Water Temperature	2024-06-20 14:32-0400	2024-07-02 14:08-0400	Failed CTD Cast	Bad data
chlora-point	BAD	5	Dissolved Oxygen	2024-06-21 02:30-0400	2024-07-02 13:10-0400	Sensor started to decline	Failed Pre-ctd cast on 7/2 by 5.16mg/L, had started to decline due to biofouling as see in photos. Passed Post cleaning ctd
chlora-point	BAD	5	Dissolved Oxygen Adj	2024-06-21 02:30-0400	2024-07-02 13:10-0400	Sensor started to decline	Failed Pre-ctd cast on 7/2 by 5.16mg/L, had started to decline due to biofouling as see in photos. Passed Post cleaning ctd
chlora-point	BAD	8	Dissolved Oxygen	2024-06-30 00:00-0400	2024-07-02 13:10-0400	Sensor started to decline	Failed Pre-cleaning ctd cast on 7/2, biofouling was extensive from photos. Passed post cleaning ctd
chlora-point	BAD	8	Dissolved Oxygen Adj	2024-06-30 00:00-0400	2024-07-02 13:10-0400	Sensor started to decline	Failed Pre-cleaning ctd cast on 7/2, biofouling was extensive from photos. Passed post cleaning ctd

Dissolved Oxygen depth: 8m



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Results - Lower Choptank & Lower Potomac

Lower Choptank	Good Data % Change	Suspect Data % Change	Bad Data % Change
Temperature	60.65	-93.71	-96.41
Conductivity	151.66	-97.99	-99.96
Salinity	71.59	-96.46	-89.40
Dissolved Oxygen	41.48	-68.33	-73.85
Dissolved Oxygen Salinity Adjusted	124.92	-85.98	-73.57

Data quality percent change from the end of the year 2023 season and 2024 season for Lower Choptank.

Lower Potomac	Good Data % Change	Suspect Data % Change	Bad Data % Change
Temperature	34.12	89.75	-94.42
Conductivity	162.02	-96.18	-99.80
Salinity	200.80	385.93	-95.41
Dissolved Oxygen	34.21	22.18	-87.32
Dissolved Oxygen Salinity Adjusted	174.48	-64.12	-87.13

Data quality percent change from the end of the year 2023 season and 2024 season for Lower Potomac.