

Guana Tolomato Matanzas National Estuarine Research Reserve

SEACAR Water Quality Analysis

Last compiled on 18 March, 2025

Contents

Indicators	2
Nutrients	2
Total Nitrogen - Discrete	2
Total Phosphorus - Discrete	4
Water Quality	6
Dissolved Oxygen - Discrete	6
Dissolved Oxygen - Continuous	8
Dissolved Oxygen Saturation - Discrete	10
Dissolved Oxygen Saturation - Continuous	12
Salinity - Discrete	14
Salinity - Continuous	16
Water Temperature - Discrete	18
Water Temperature - Continuous	20
pH - Discrete	22
pH - Continuous	24
Water Clarity	26
Turbidity - Discrete	26
Turbidity - Continuous	28
Total Suspended Solids - Discrete	30
Chlorophyll a, Uncorrected for Pheophytin - Discrete	32
Chlorophyll a, Corrected for Pheophytin - Discrete	34
Secchi Depth - Discrete	36
Colored Dissolved Organic Matter - Discrete	38

Indicators

Nutrients

Total Nitrogen - Discrete

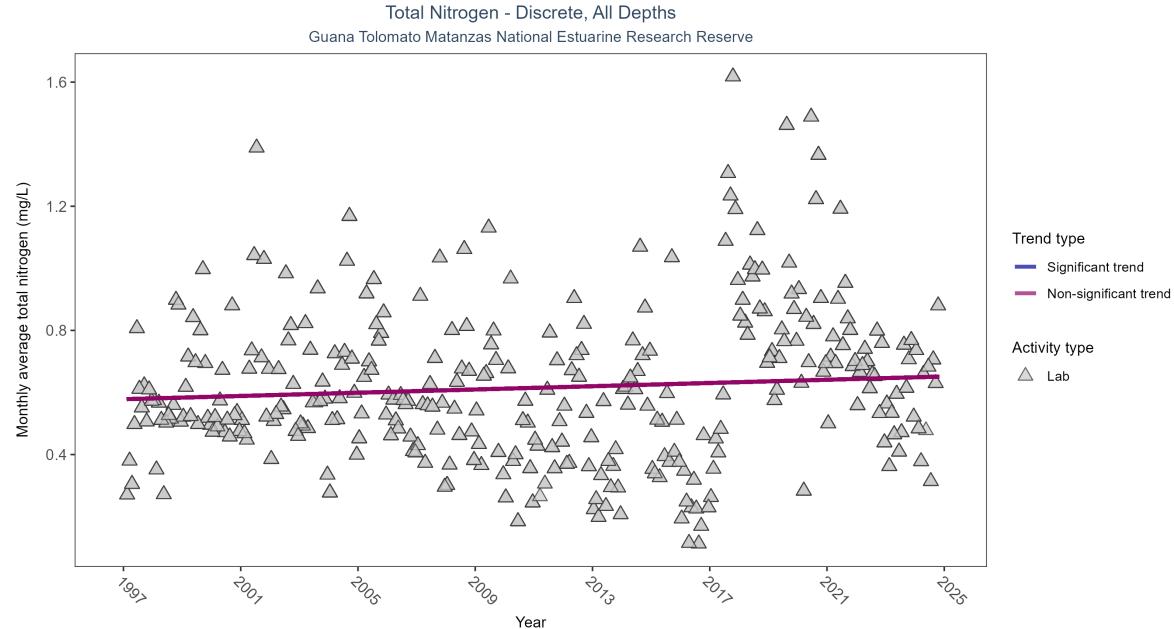
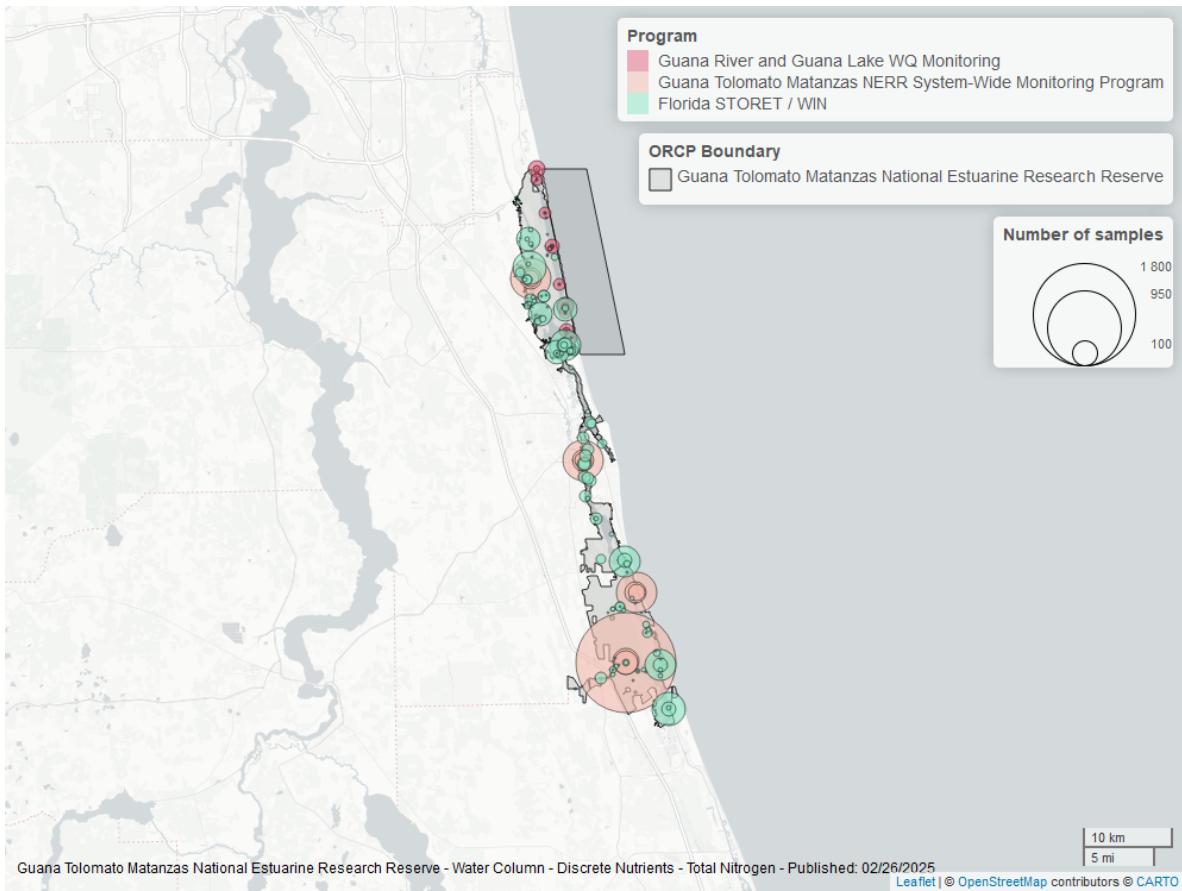


Table 1: Seasonal Kendall-Tau Results for - Total Nitrogen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	No significant trend	5960	28	1997 - 2024	0.5545	0.07049	0.57824	0.00262	0.07505021628467231642467538677



Total Phosphorus - Discrete

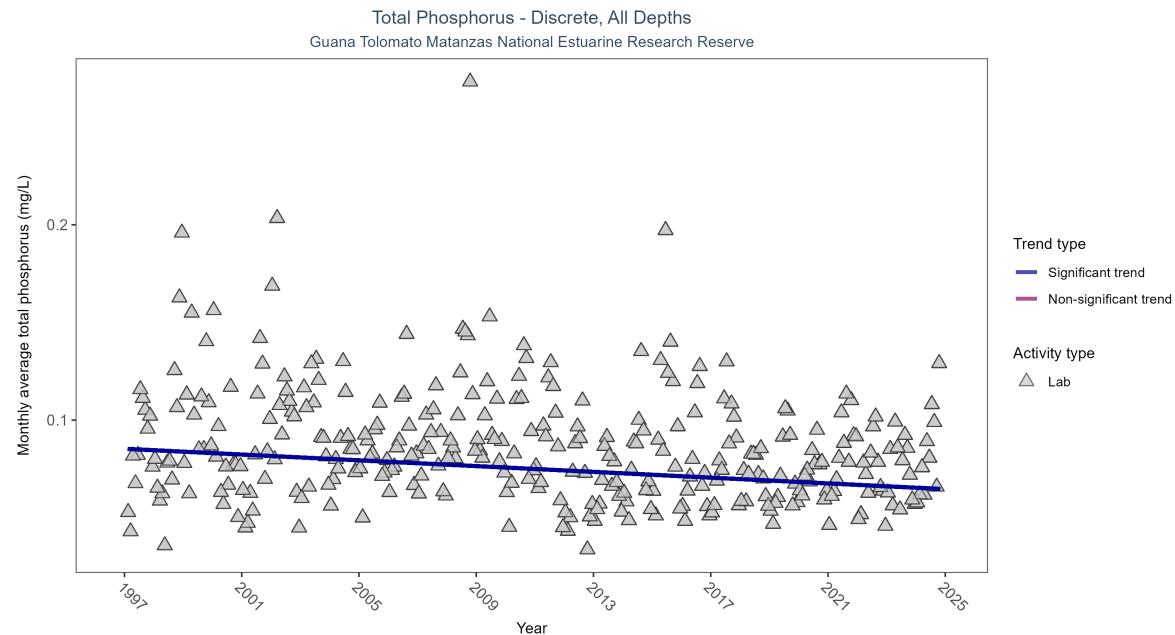
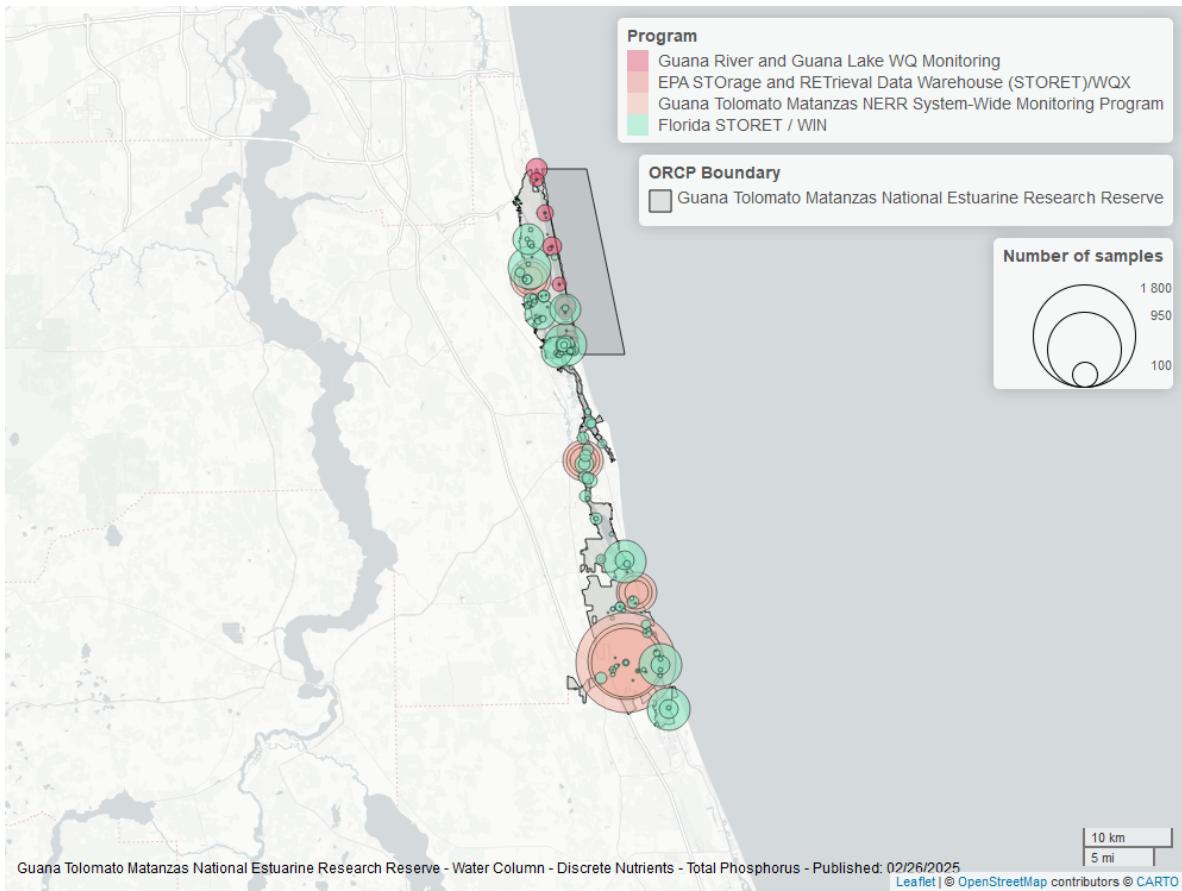


Table 2: Seasonal Kendall-Tau Results for - Total Phosphorus

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly decreasing trend	9346	28	1997 - 2024	0.072	-0.2044	0.08532	-0.00074	0.0000017638795644722379108056131702397806293447501957416534423828



Water Quality

Dissolved Oxygen - Discrete

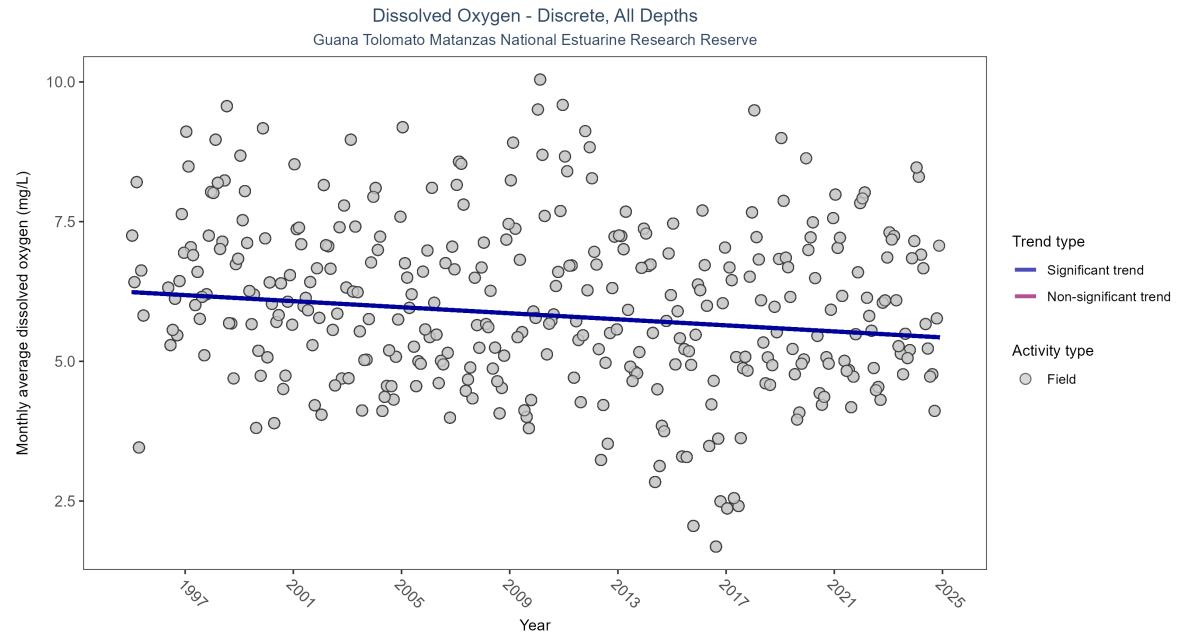
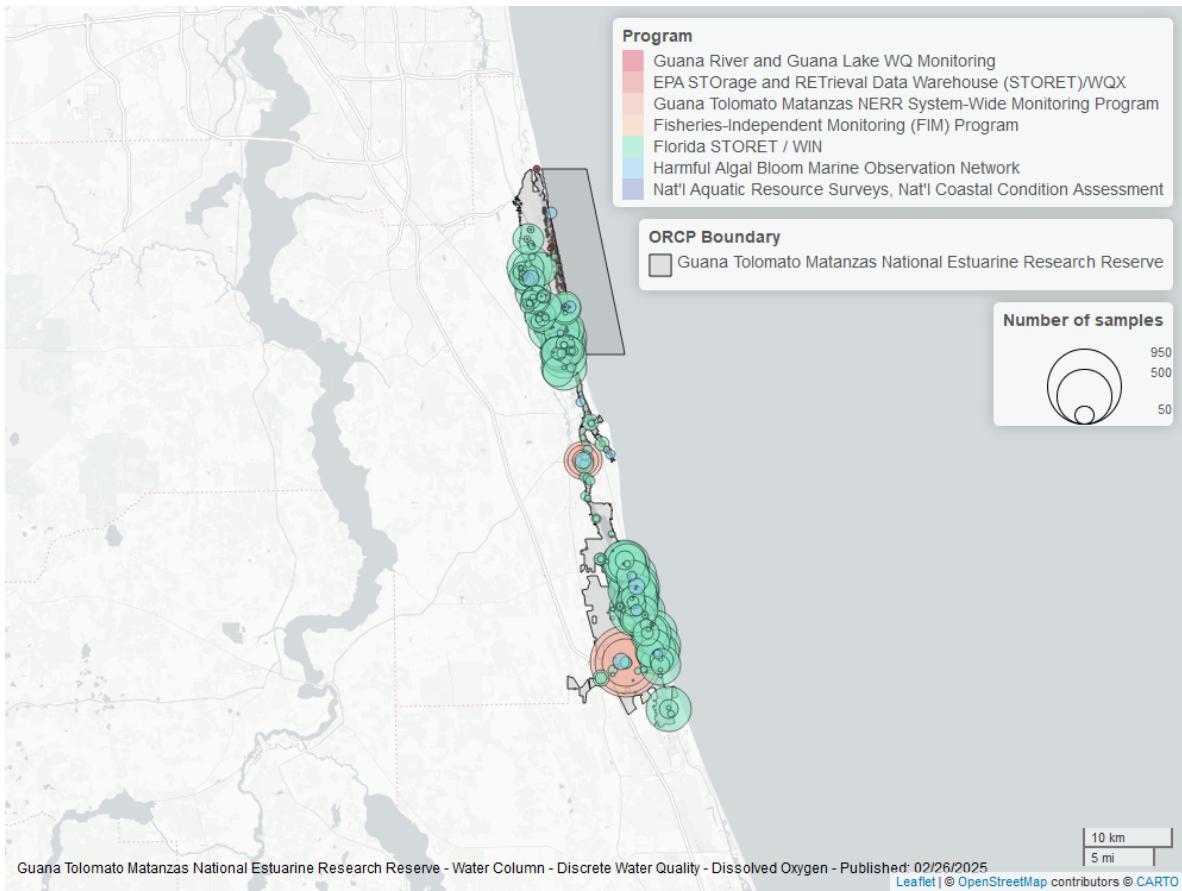


Table 3: Seasonal Kendall-Tau Results for - Dissolved Oxygen

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly decreasing trend	22400	30	1995 - 2024	5.99	-0.16934	6.2392	-0.02706	0.00000612431667817



Dissolved Oxygen - Continuous

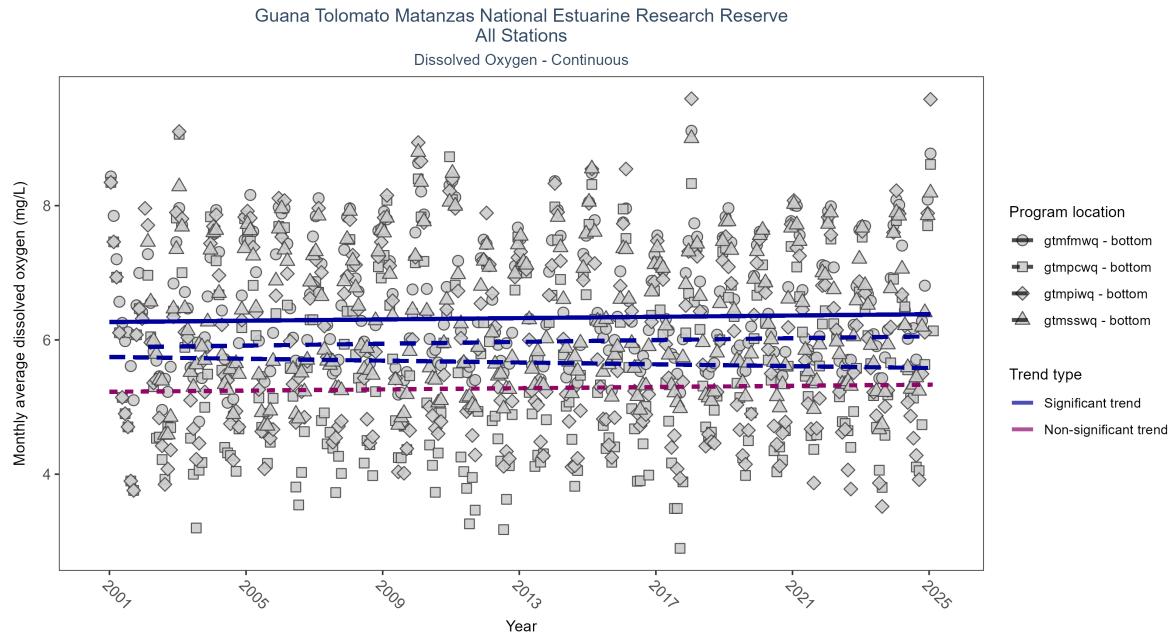
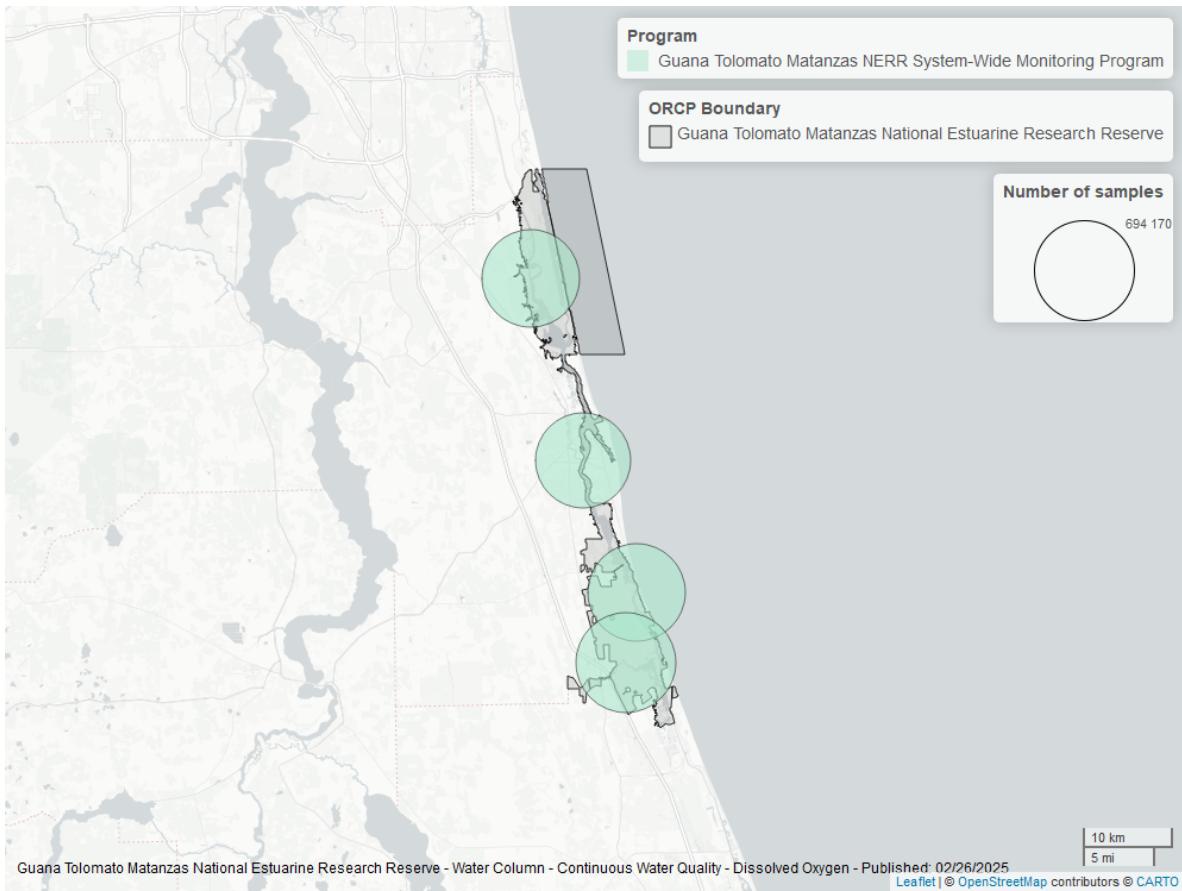


Table 4: Seasonal Kendall-Tau Results for All Stations - Dissolved Oxygen

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
gtmsswq	Significantly increasing trend	661972	24	2002 - 2025	6.3	0.10	5.89	0.01	0.025704276
gtpiwq	Significantly decreasing trend	665008	25	2001 - 2025	5.9	-0.09	5.75	-0.01	0.042364390
gtmfwmwq	Significantly increasing trend	683159	25	2001 - 2025	6.5	0.10	6.27	0.00	0.023852324
gtmcwq	No significant trend	703770	25	2001 - 2025	5.5	0.04	5.23	0.00	0.329169812



Dissolved Oxygen Saturation - Discrete

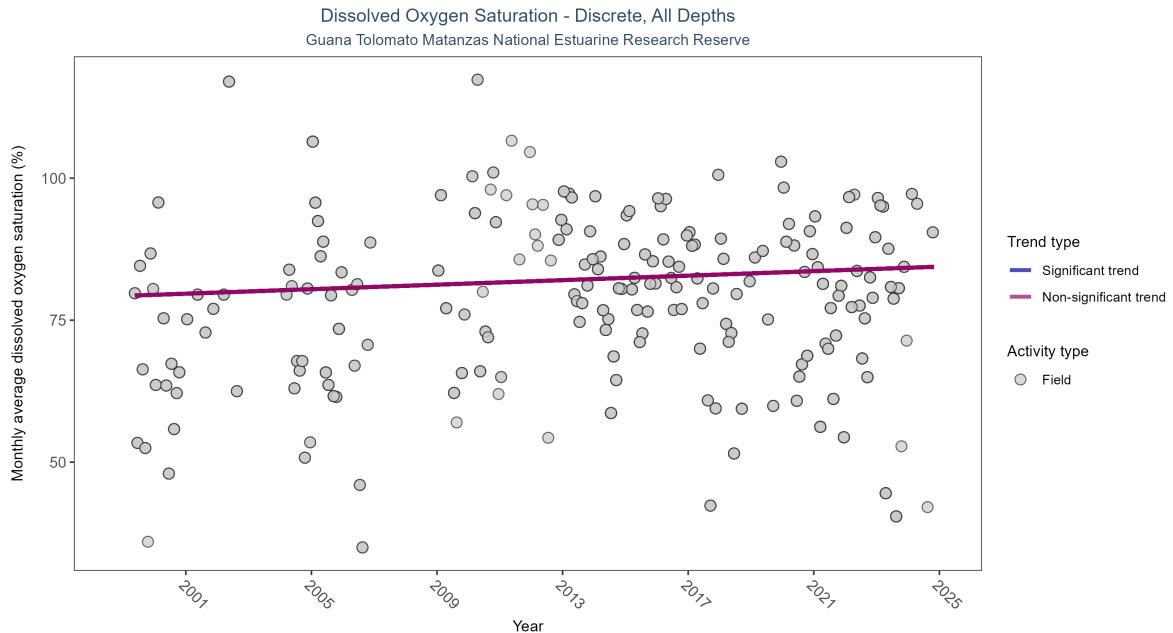
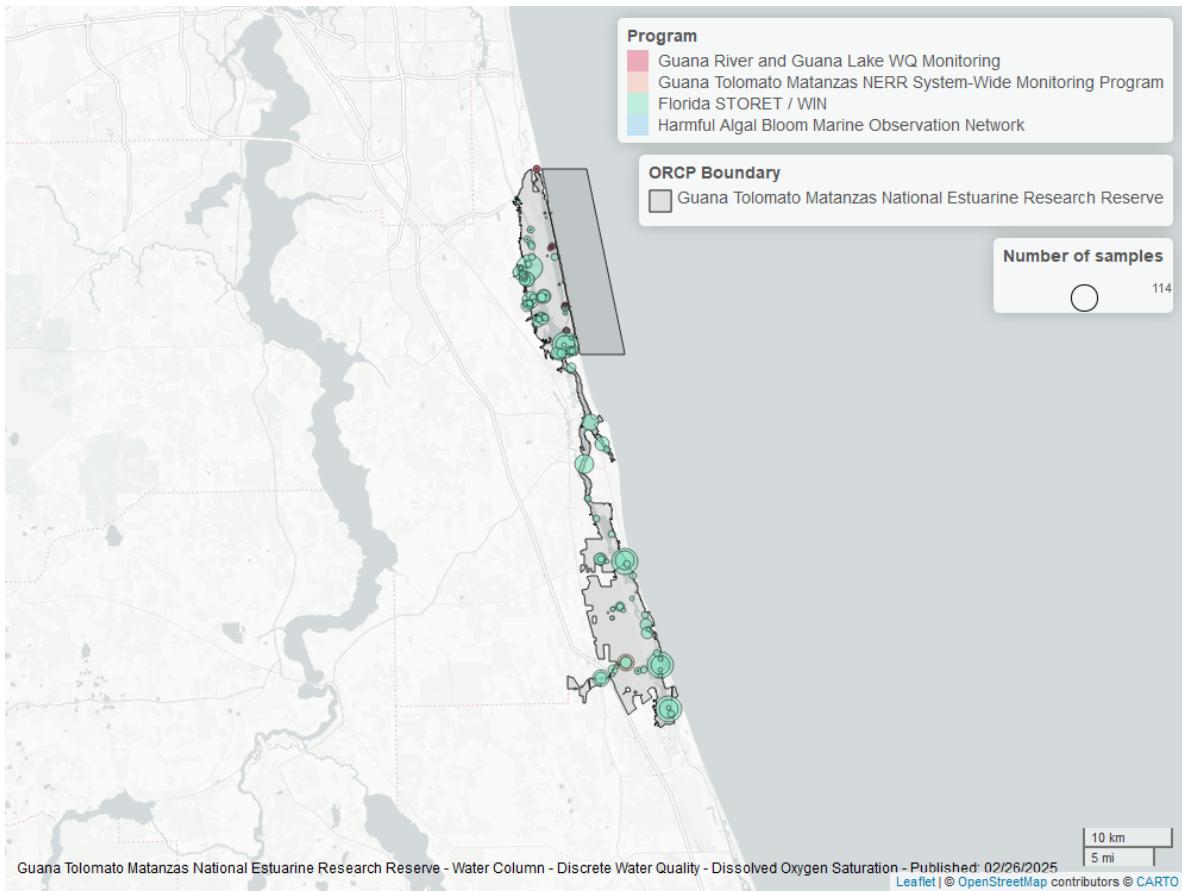


Table 5: Seasonal Kendall-Tau Results for - Dissolved Oxygen Saturation



Dissolved Oxygen Saturation - Continuous

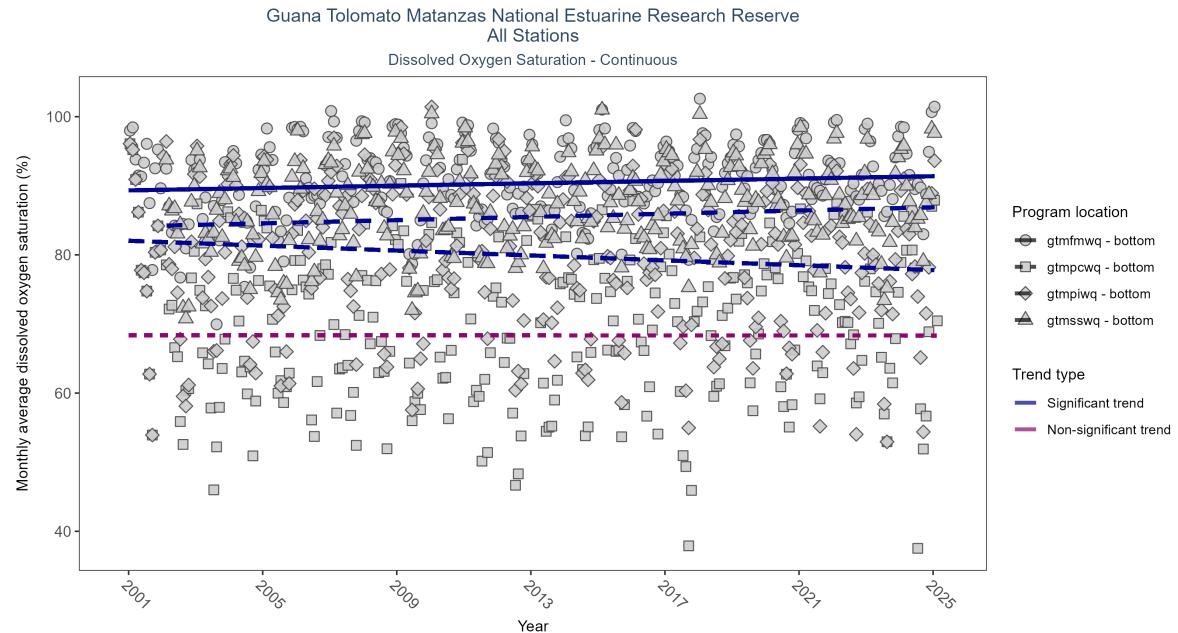
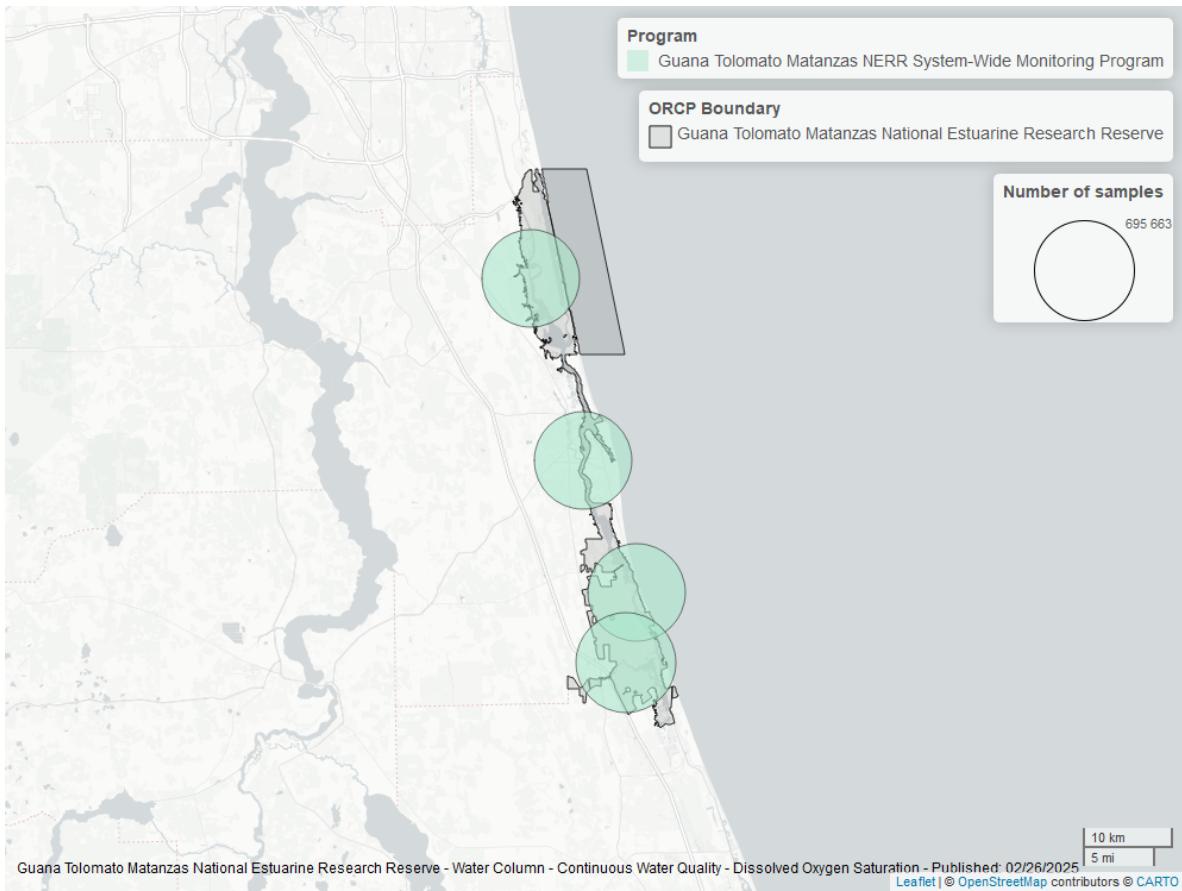


Table 6: Seasonal Kendall-Tau Results for All Stations - Dissolved Oxygen Saturation

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
gtpiwq	Significantly decreasing trend	670820	25	2001 - 2025	82.2	-0.18	82.04	-0.18	0.00002726625
gtmsswq	Significantly increasing trend	667908	24	2002 - 2025	89.5	0.15	84.22	0.12	0.00052573020
gtmfmwq	Significantly increasing trend	694826	25	2001 - 2025	92.6	0.15	89.33	0.09	0.00049620707
gtmcwq	No significant trend	705263	25	2001 - 2025	71.4	0.00	68.37	0.00	0.97159119744



Salinity - Discrete

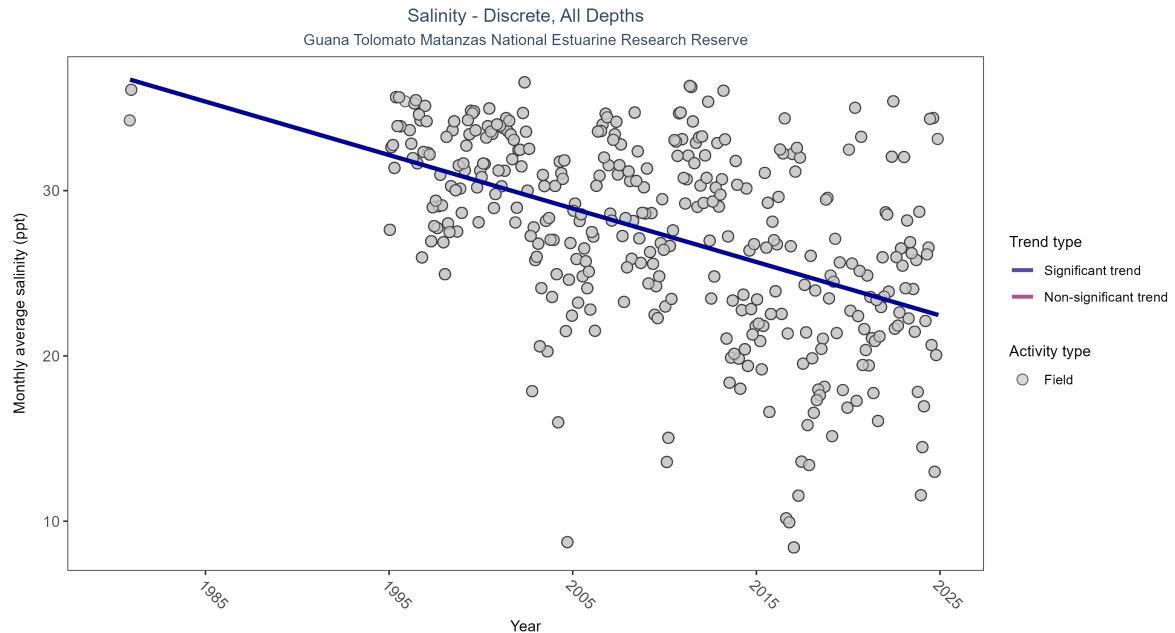
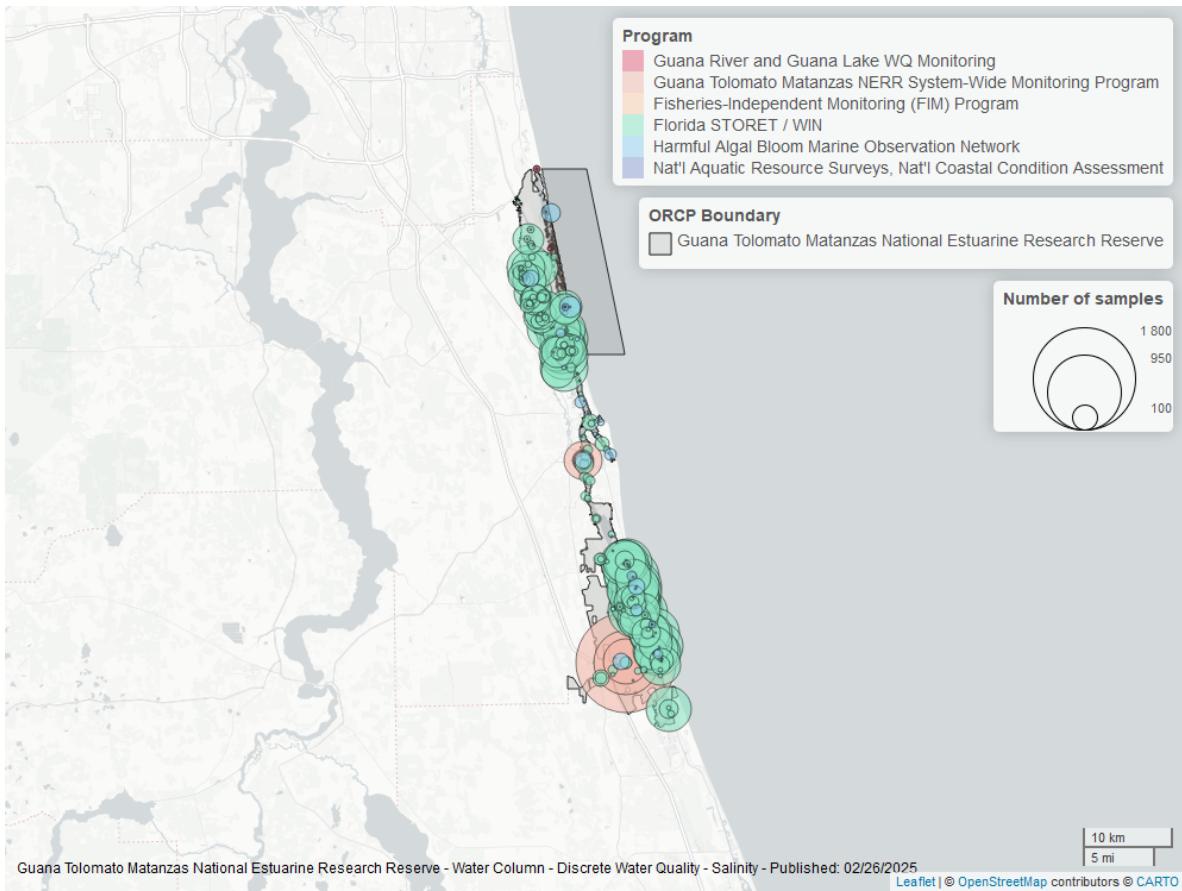


Table 7: Seasonal Kendall-Tau Results for - Salinity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
All	Significantly decreasing trend	25641	31	1980 - 2024	31.71	-0.36104	37.00413	-0.32348	0.0000000000000000000000000000000009514635001550981775741977



Salinity - Continuous

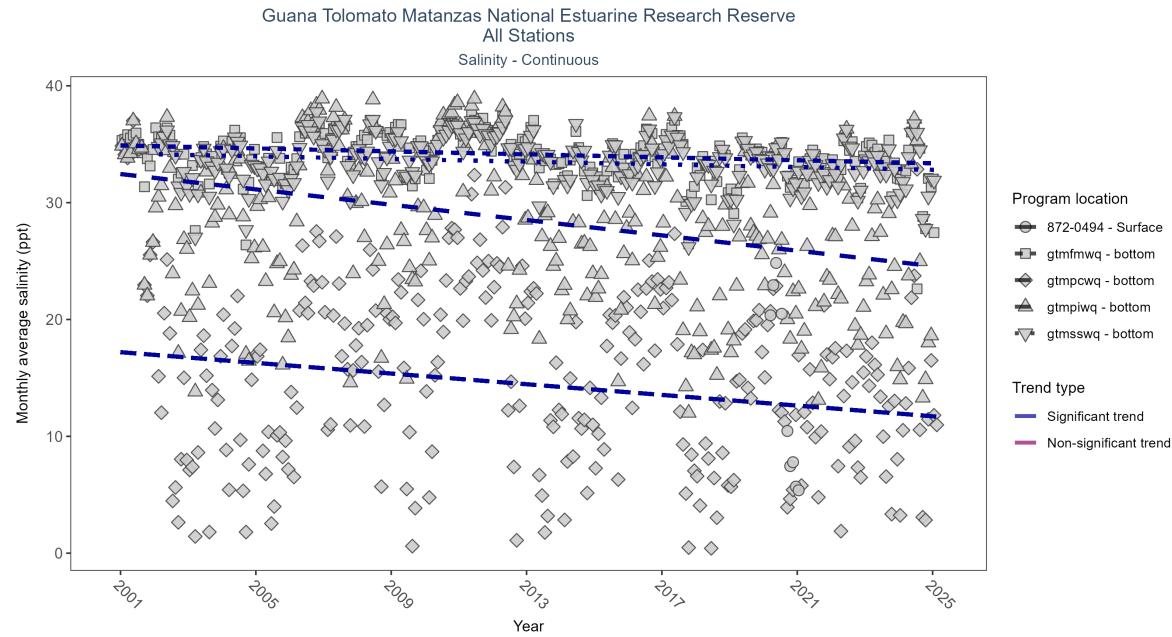
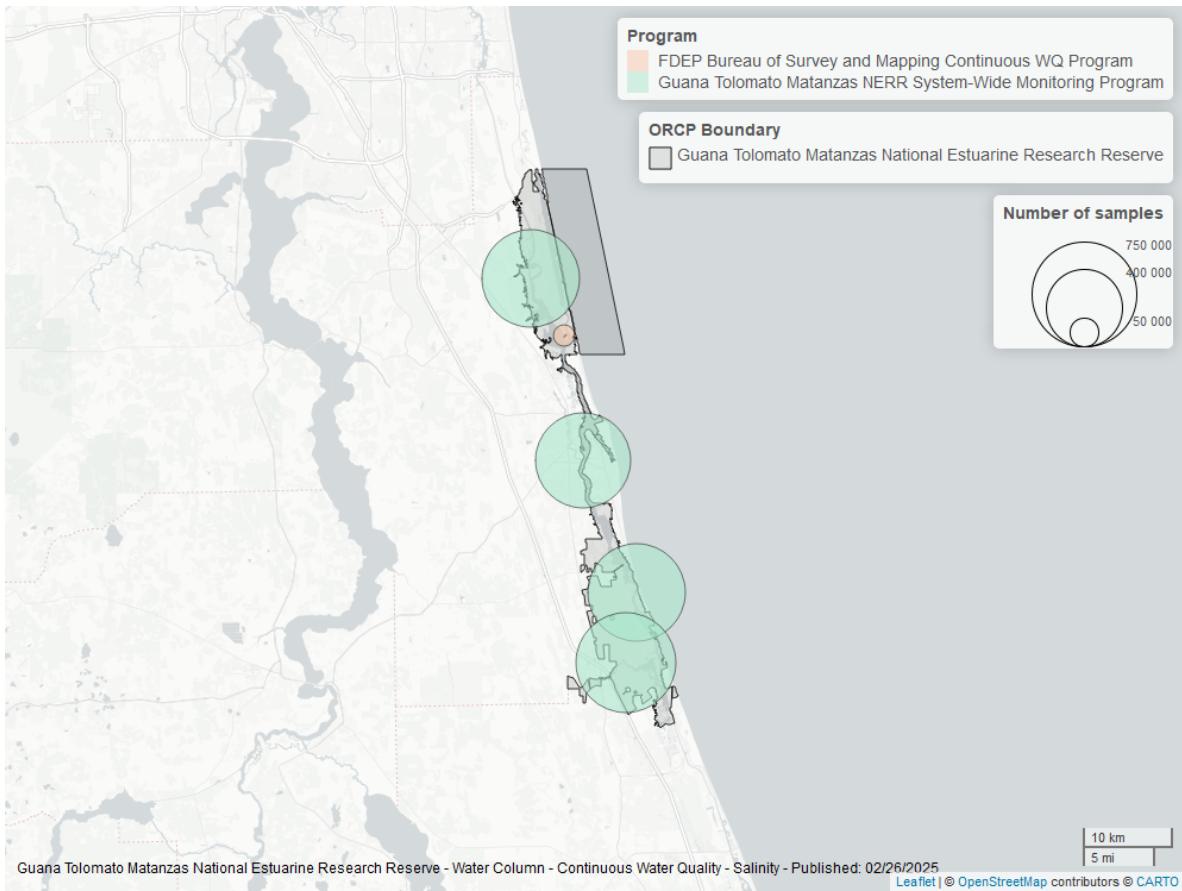


Table 8: Seasonal Kendall-Tau Results for All Stations - Salinity

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
gtmsswq	Significantly decreasing trend	646637	24	2002 - 2025	33.90	-0.12	34.14	-0.06	0.0047140449977152
gtmpiwq	Significantly decreasing trend	666468	24	2001 - 2024	27.90	-0.26	32.45	-0.33	0.0000000004077239
gtmfmwq	Significantly decreasing trend	671050	25	2001 - 2025	34.40	-0.17	34.89	-0.06	0.0000476287655455
gtmcwq	Significantly decreasing trend	713330	25	2001 - 2025	16.60	-0.14	17.2	-0.23	0.0007944694146235
872-0494	Insufficient data to calculate trend	34918	2	2020 - 2021	8.99	-	-	-	NA



Water Temperature - Discrete

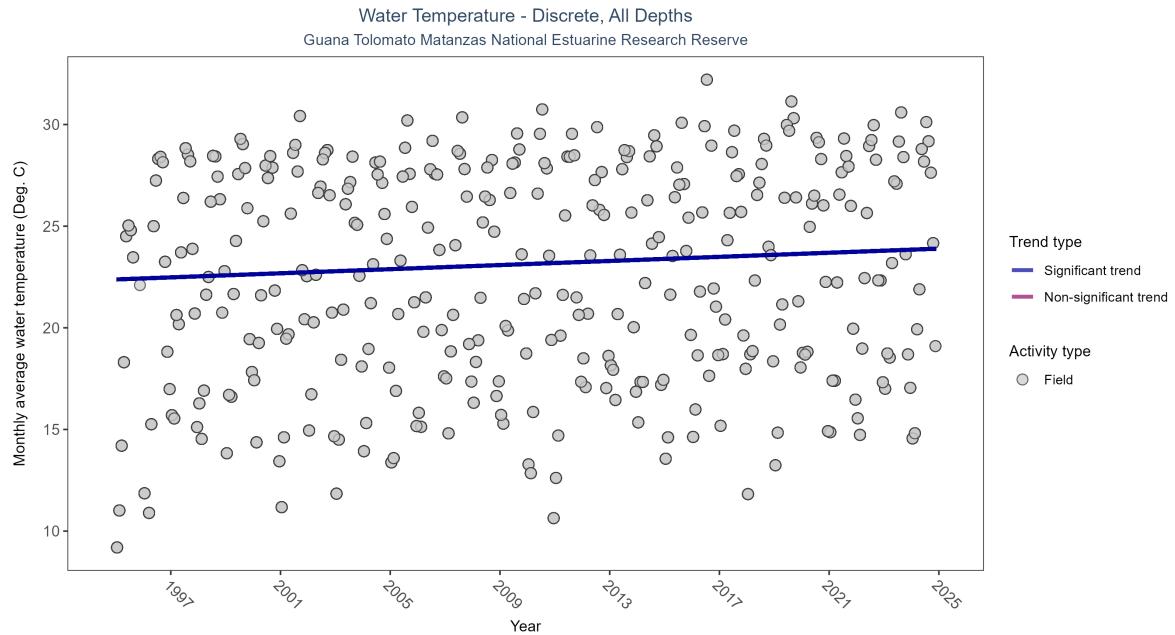
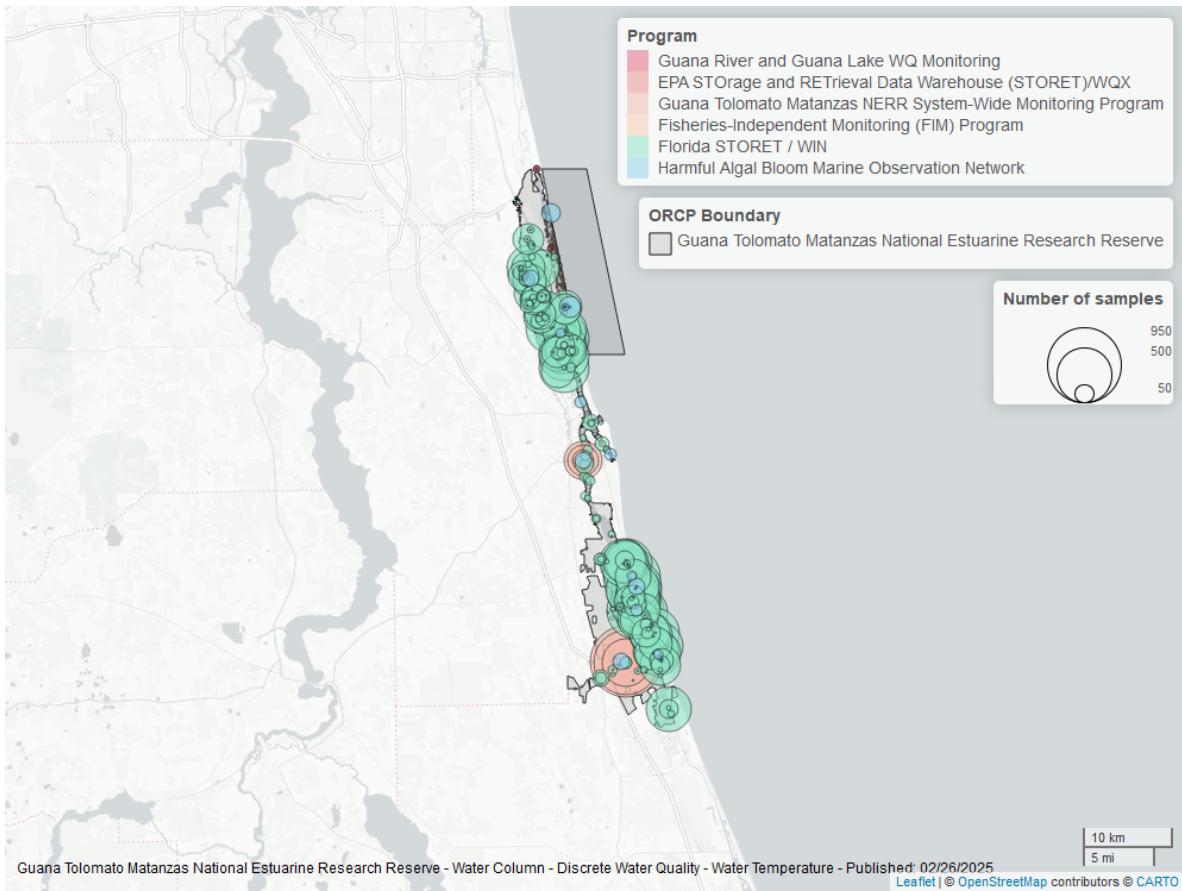


Table 9: Seasonal Kendall-Tau Results for - Water Temperature

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly increasing trend	25291	30	1995 - 2024	23.3	0.21369	22.37929	0.05051	0.00000008612653585



Water Temperature - Continuous

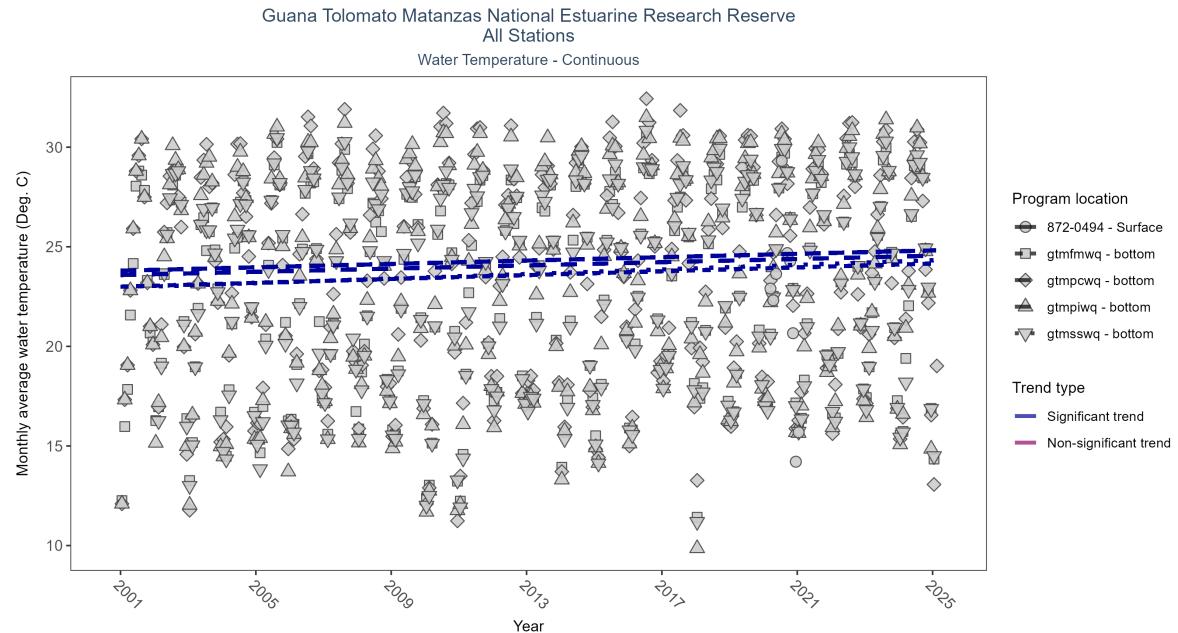
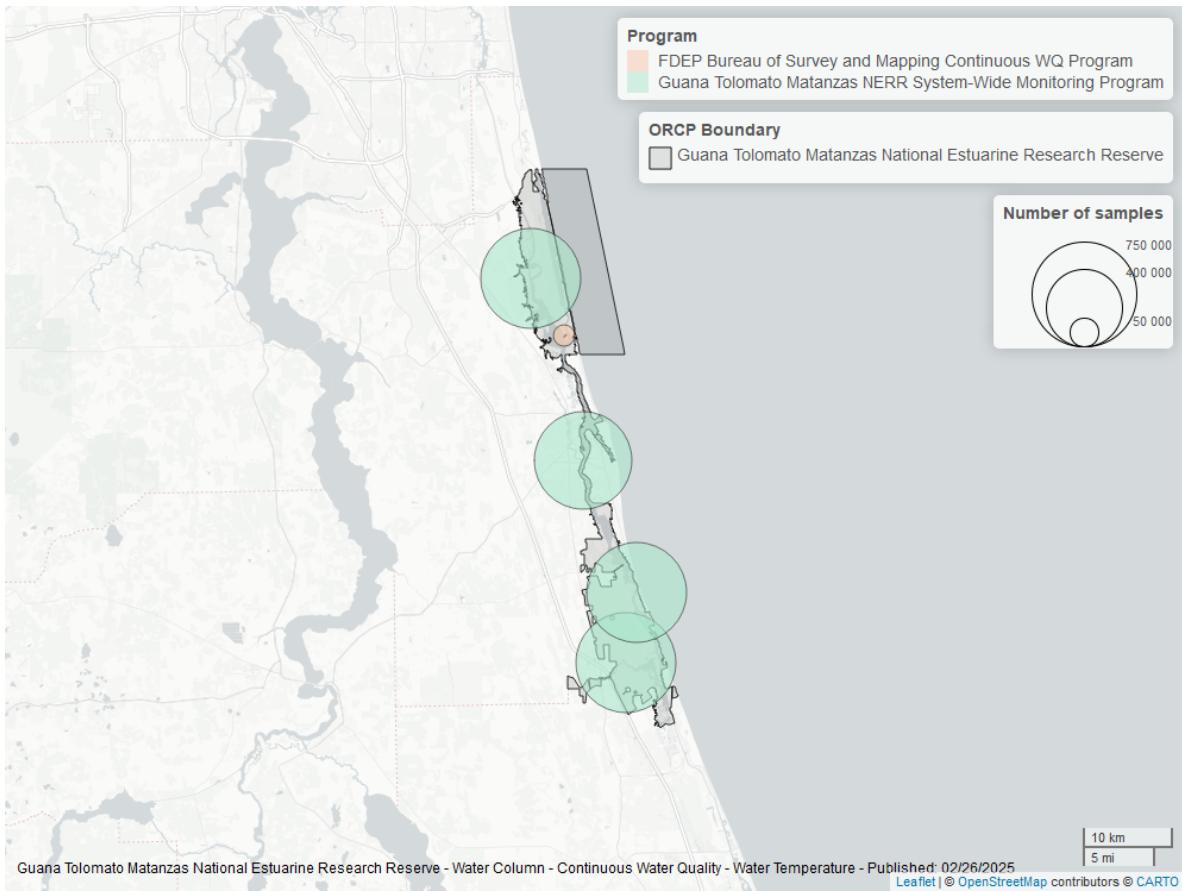


Table 10: Seasonal Kendall-Tau Results for All Stations - Water Temperature

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
gtmpcwq	Significantly increasing trend	721896	25	2001 - 2025	24.30	0.15	23.8	0.04	0.000422436359076
gtmfmwq	Significantly increasing trend	714709	25	2001 - 2025	23.70	0.23	23	0.05	0.00000046819382
gtmsswq	Significantly increasing trend	680248	24	2002 - 2025	23.80	0.23	23	0.06	0.00000081463078
gtmipiwb	Significantly increasing trend	716752	24	2001 - 2024	24.30	0.19	23.58	0.04	0.000005445138344
872-0494	Insufficient data to calculate trend	35473	2	2020 - 2021	22.34	-	-	-	NA



pH - Discrete

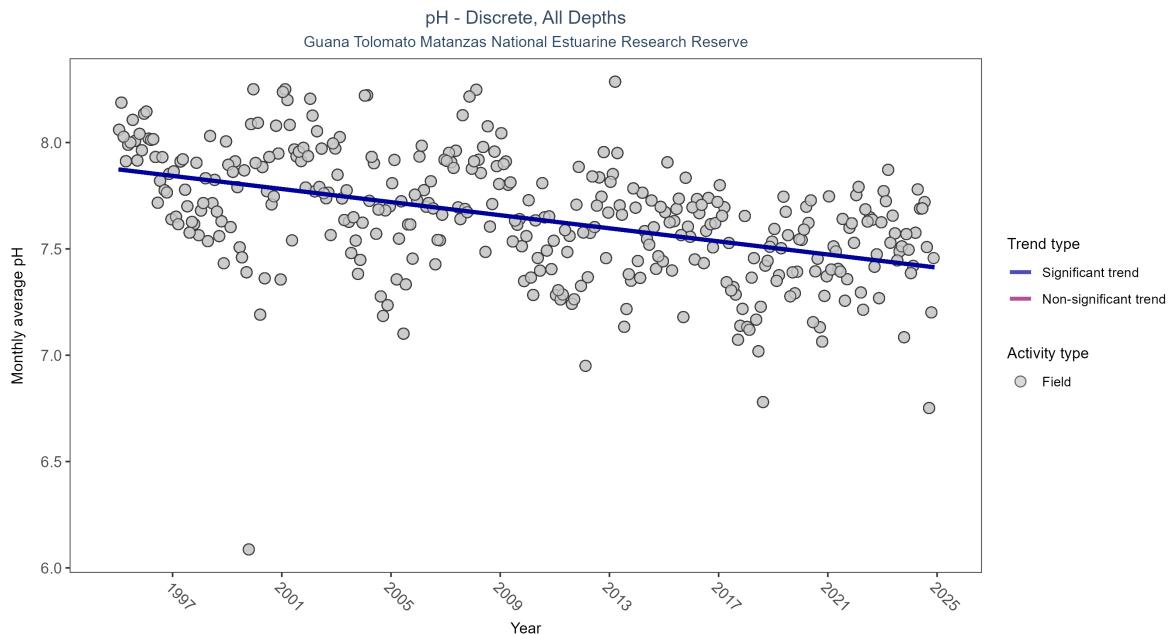
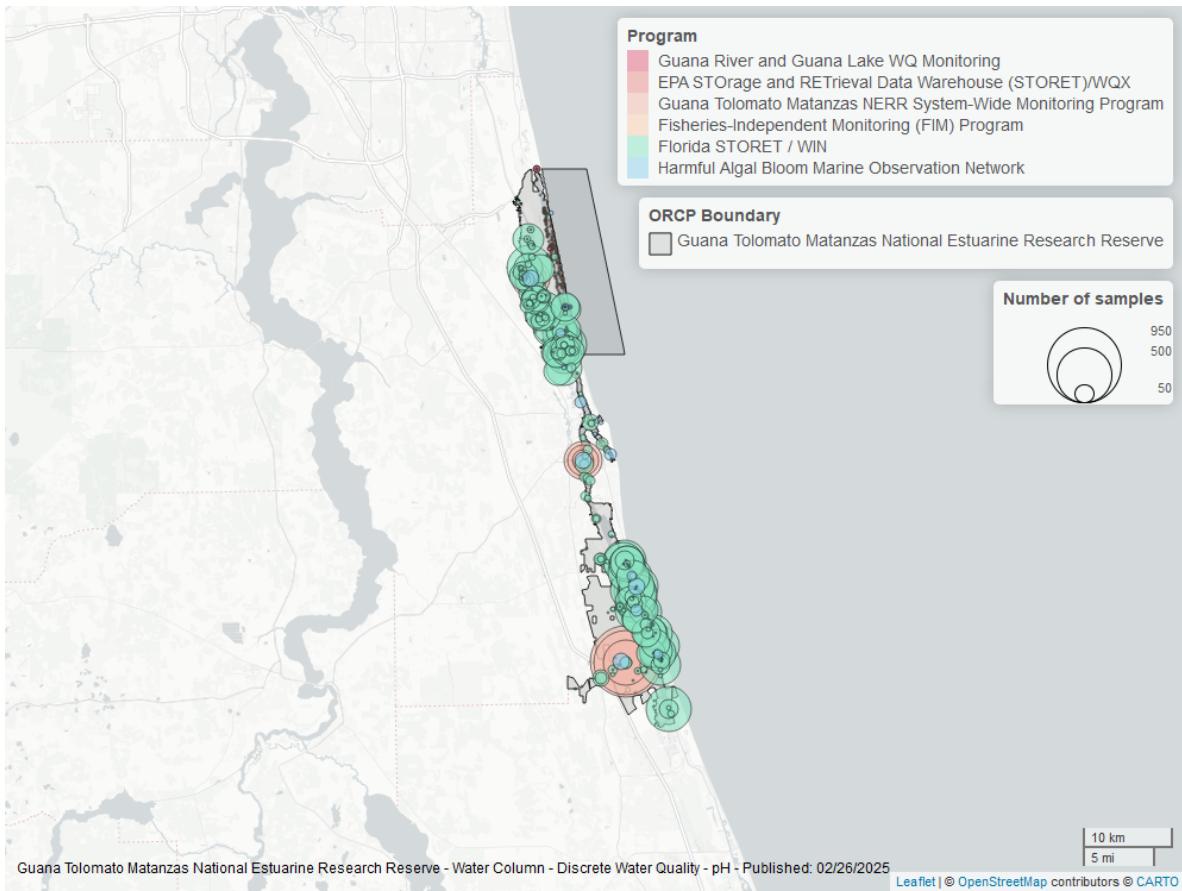


Table 11: Seasonal Kendall-Tau Results for - pH



pH - Continuous

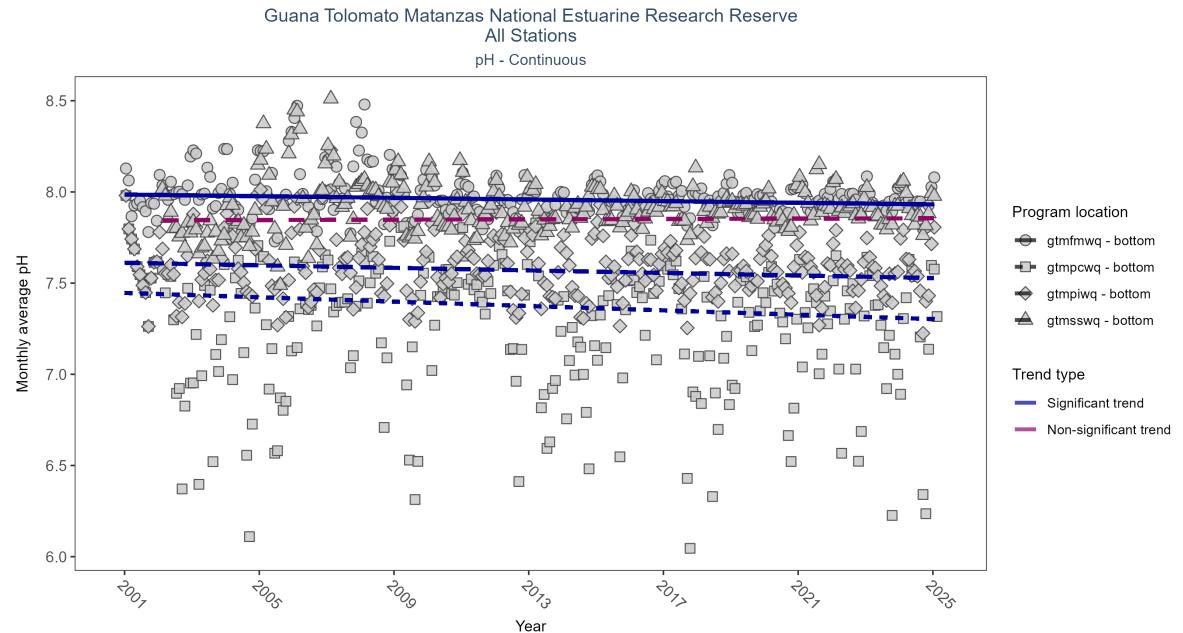
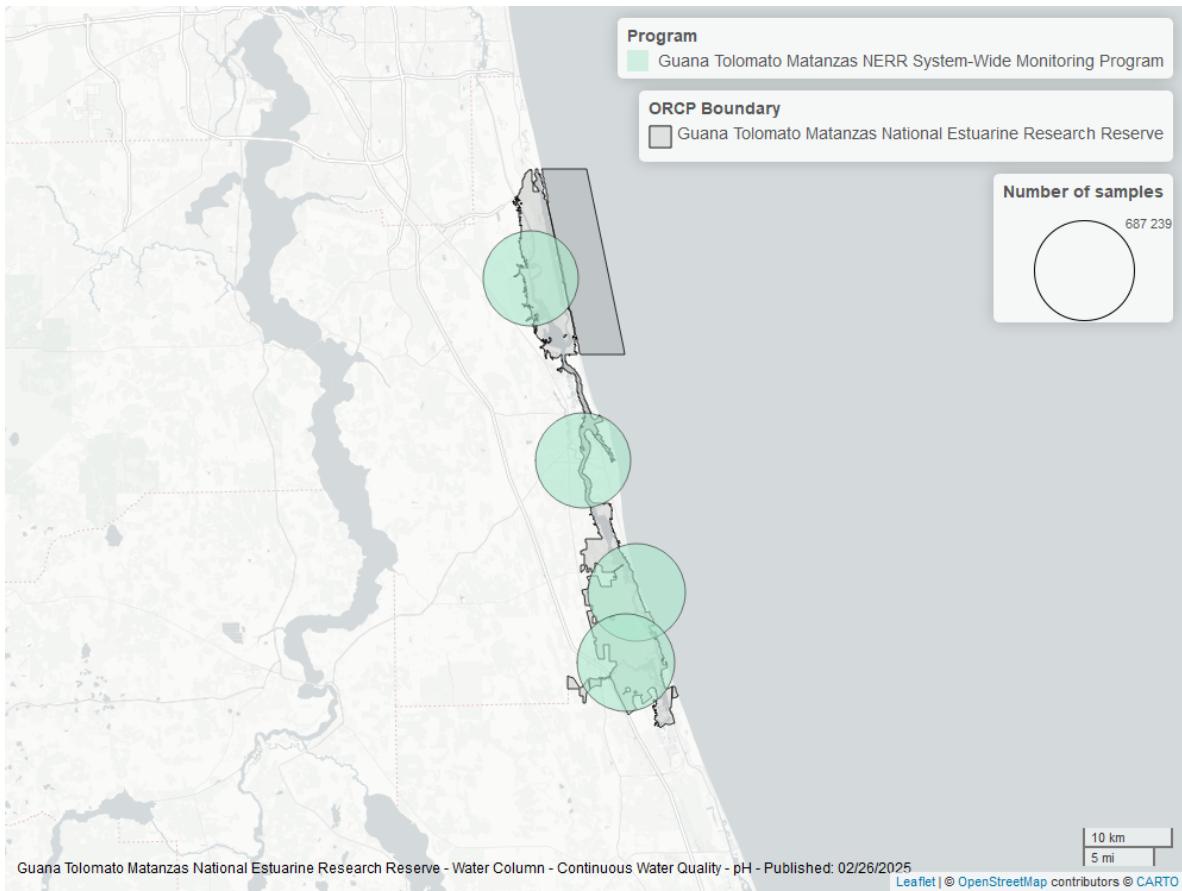


Table 12: Seasonal Kendall-Tau Results for All Stations - pH

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
gtmsswq	No significant trend	637677	24	2002 - 2025	7.9	0.02	7.84	0.00	0.5521328940
gtpiwq	Significantly decreasing trend	661500	25	2001 - 2025	7.6	-0.17	7.61	0.00	0.0000684824
gtmfmwq	Significantly decreasing trend	668566	25	2001 - 2025	8.0	-0.15	7.99	0.00	0.0003340332
gtmcwq	Significantly decreasing trend	696839	25	2001 - 2025	7.4	-0.12	7.45	-0.01	0.0035784023



Water Clarity

Turbidity - Discrete

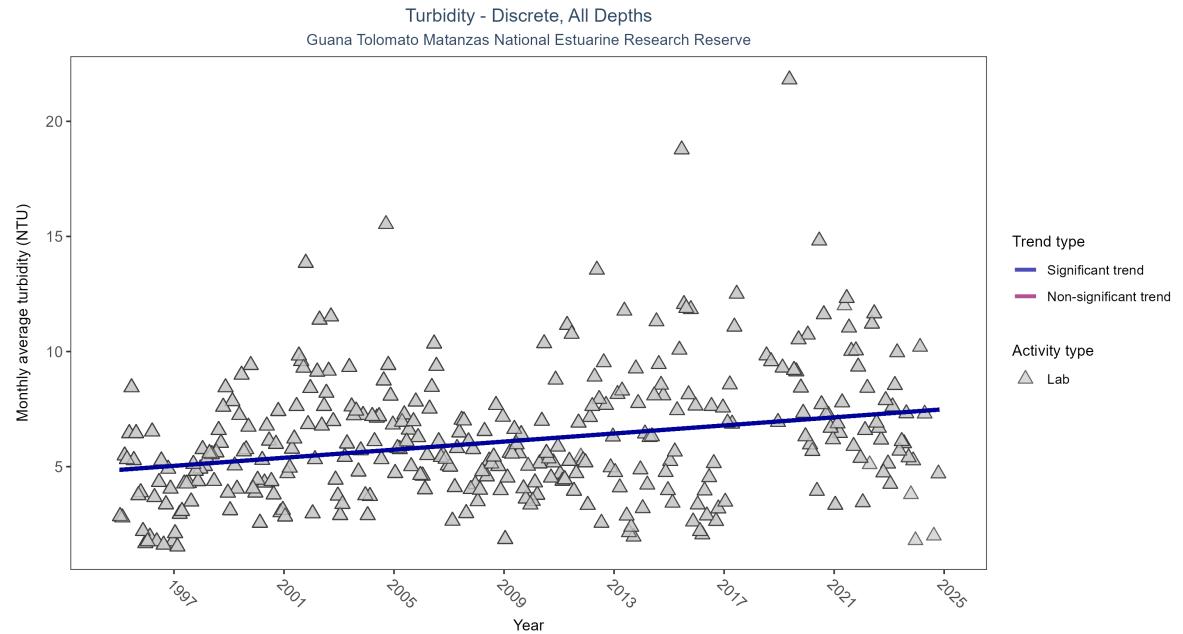
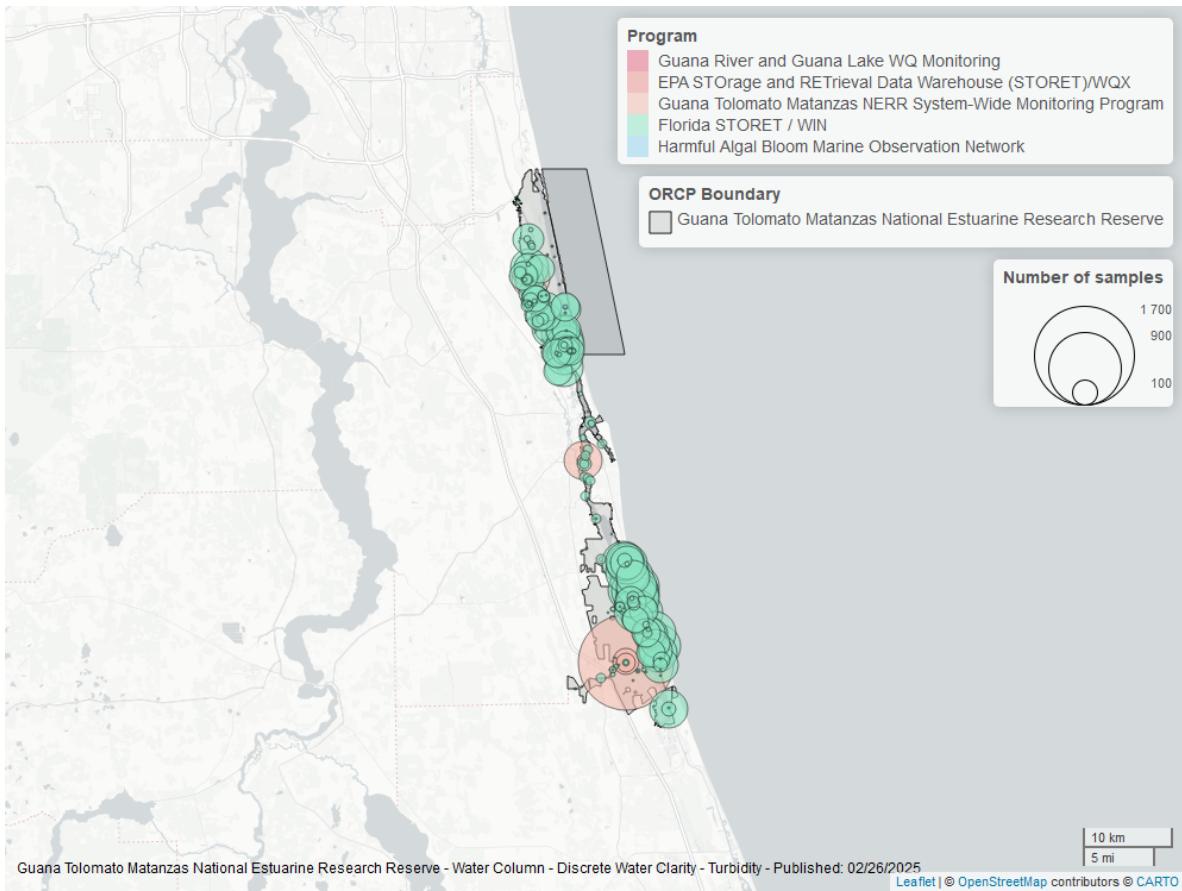


Table 13: Seasonal Kendall-Tau Results for - Turbidity

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly increasing trend	14793	30	1995 - 2024	4.5	0.22654	4.85933	0.0878	0.0000000584025328871



Turbidity - Continuous

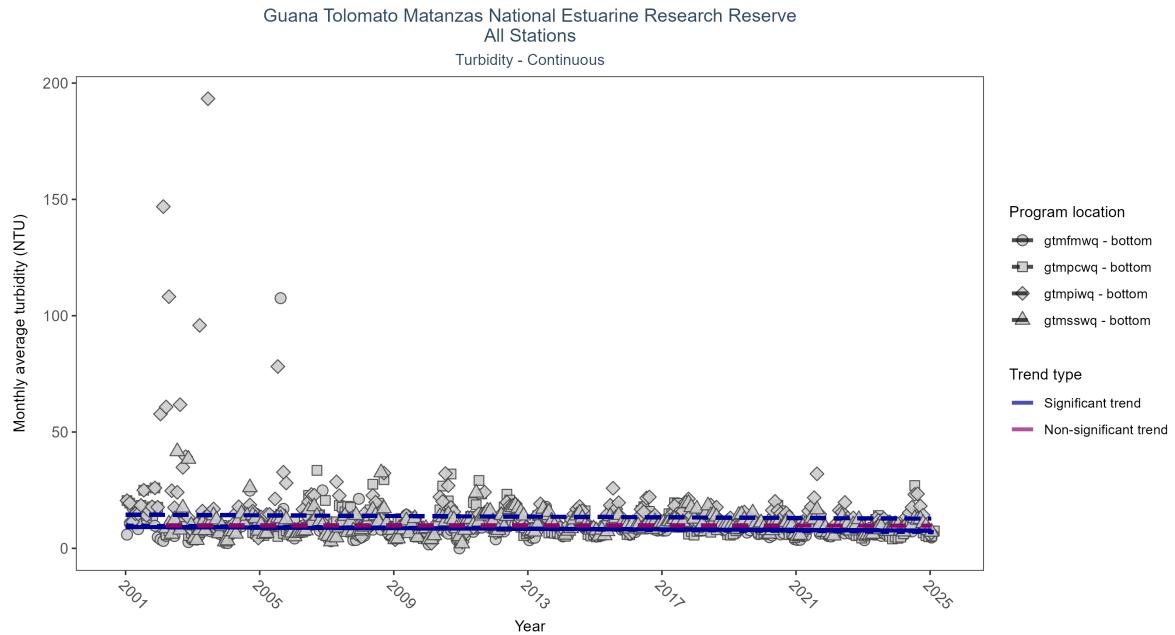
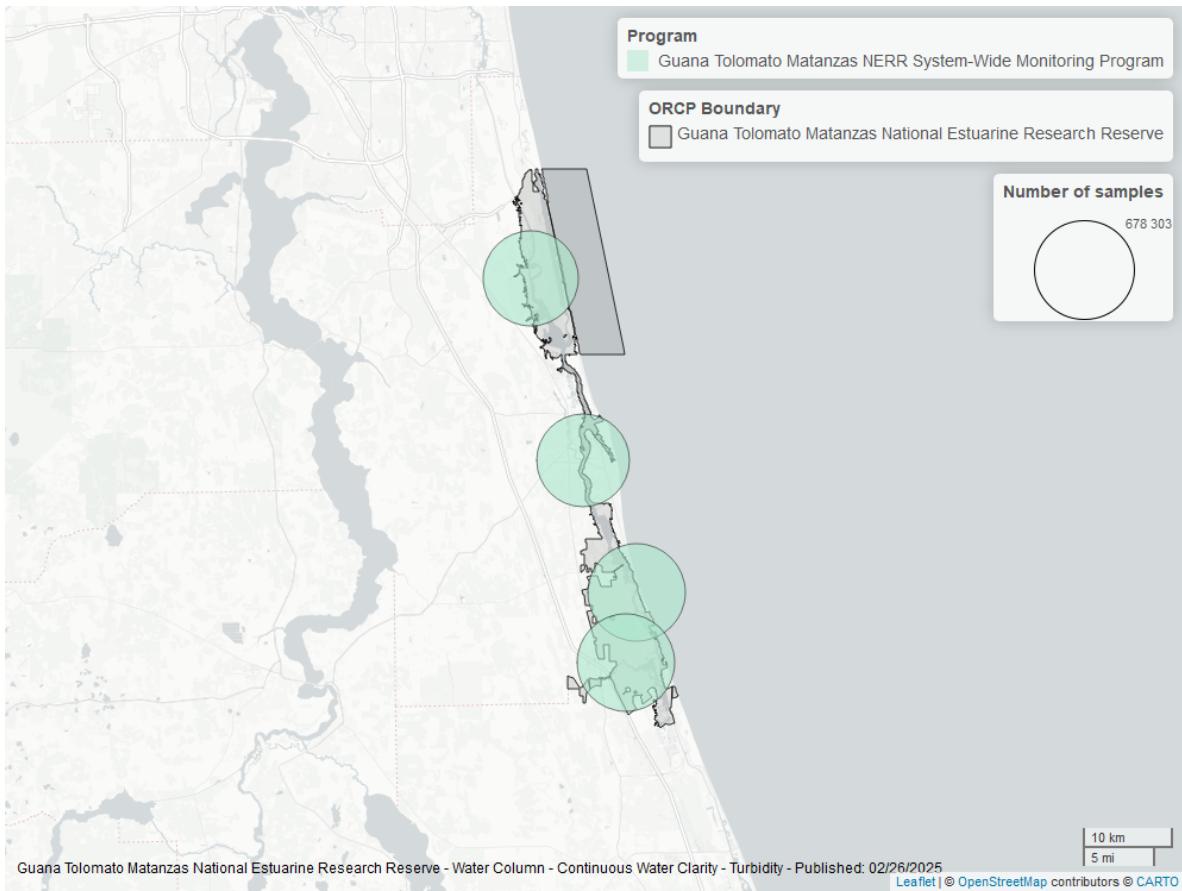


Table 14: Seasonal Kendall-Tau Results for All Stations - Turbidity

Program Location	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
gtmsswq	No significant trend	633255	24	2002 - 2025	9	0.00	9.83	0.00	0.9369617708167702341
gtpiwq	Significantly decreasing trend	643280	25	2001 - 2025	10	-0.10	14.48	-0.07	0.0222347224391014481
gtmfwmq	Significantly decreasing trend	680985	25	2001 - 2025	7	-0.11	9.19	-0.06	0.0072962669725477264
gtmcwq	Significantly decreasing trend	687902	25	2001 - 2025	9	-0.18	9.73	-0.11	0.0000281436222152836



Total Suspended Solids - Discrete

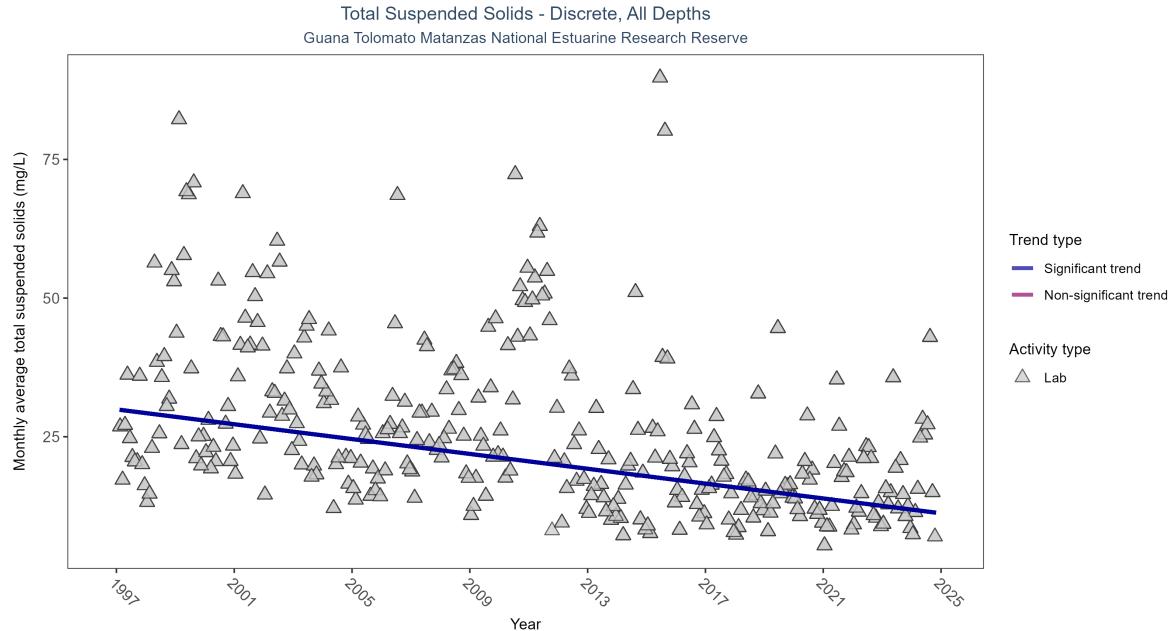
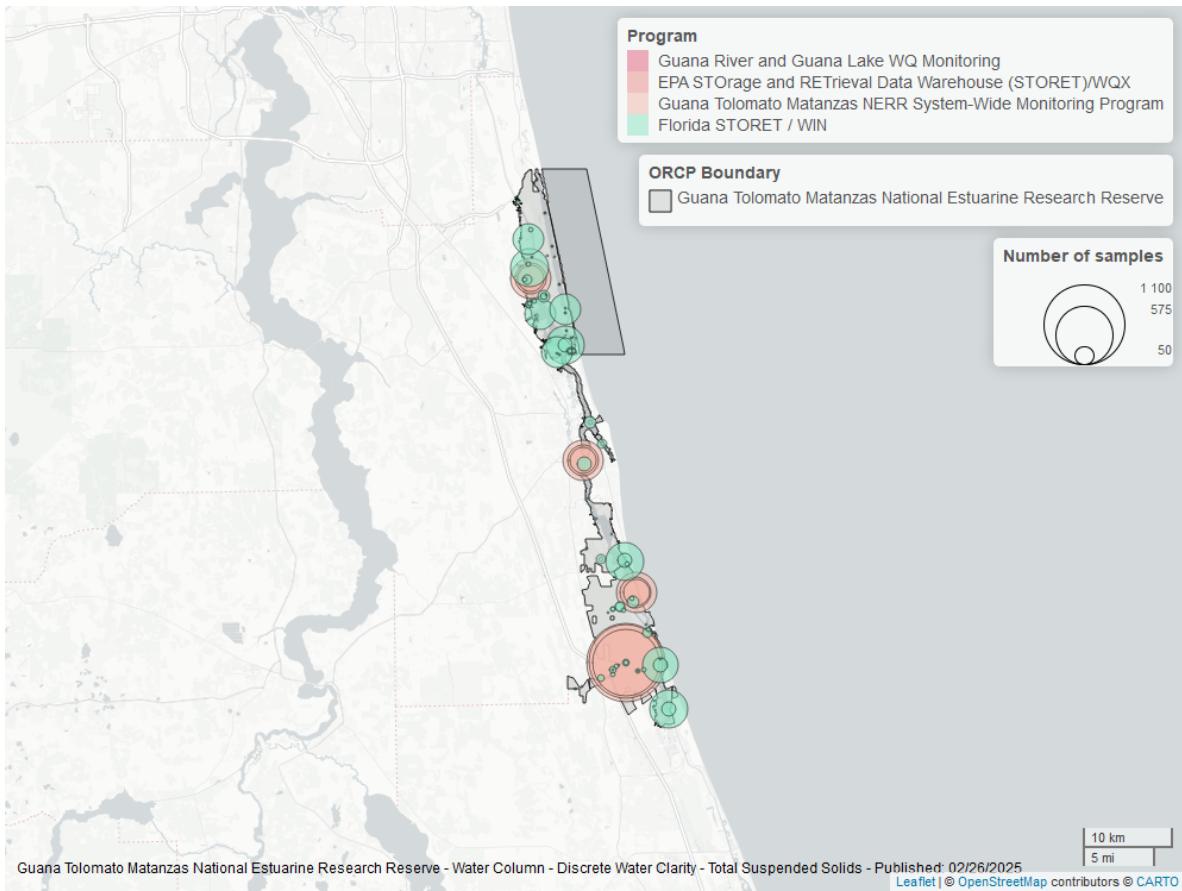


Table 15: Seasonal Kendall-Tau Results for - Total Suspended Solids



Chlorophyll a, Uncorrected for Pheophytin - Discrete

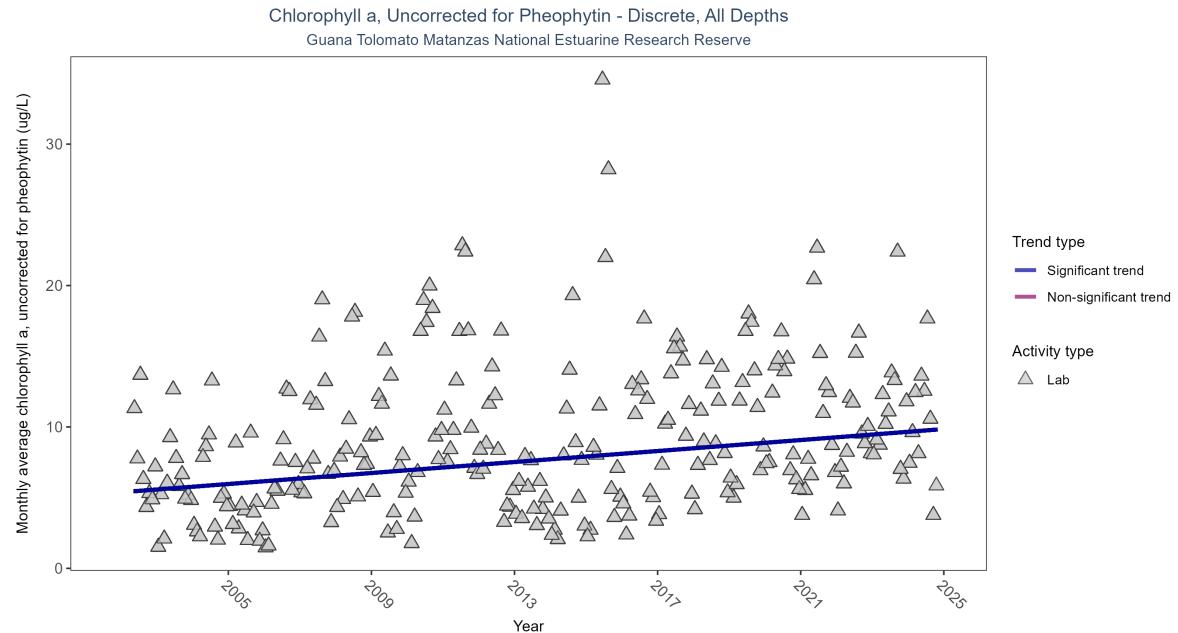
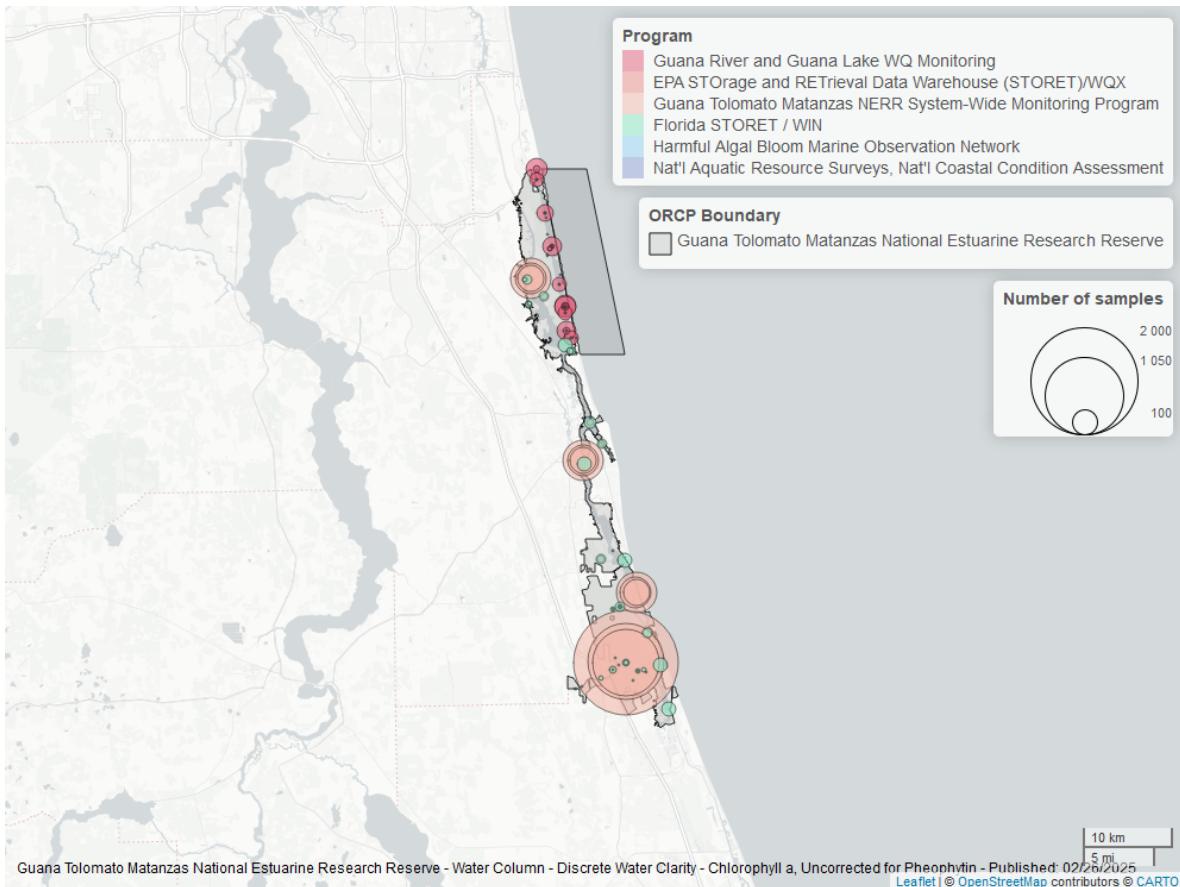


Table 16: Seasonal Kendall-Tau Results for - Chlorophyll a, Uncorrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly increasing trend	6317	23	2002 - 2024	6.2	0.25387	5.38207	0.19431	0.0000000729467653119741169



Chlorophyll a, Corrected for Pheophytin - Discrete

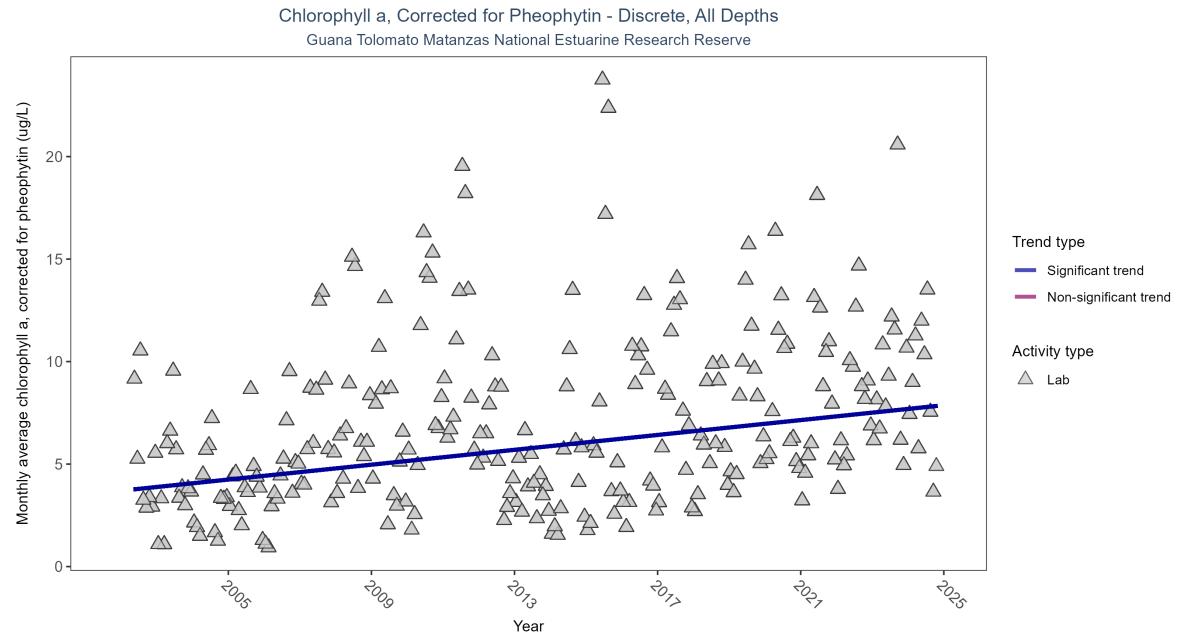
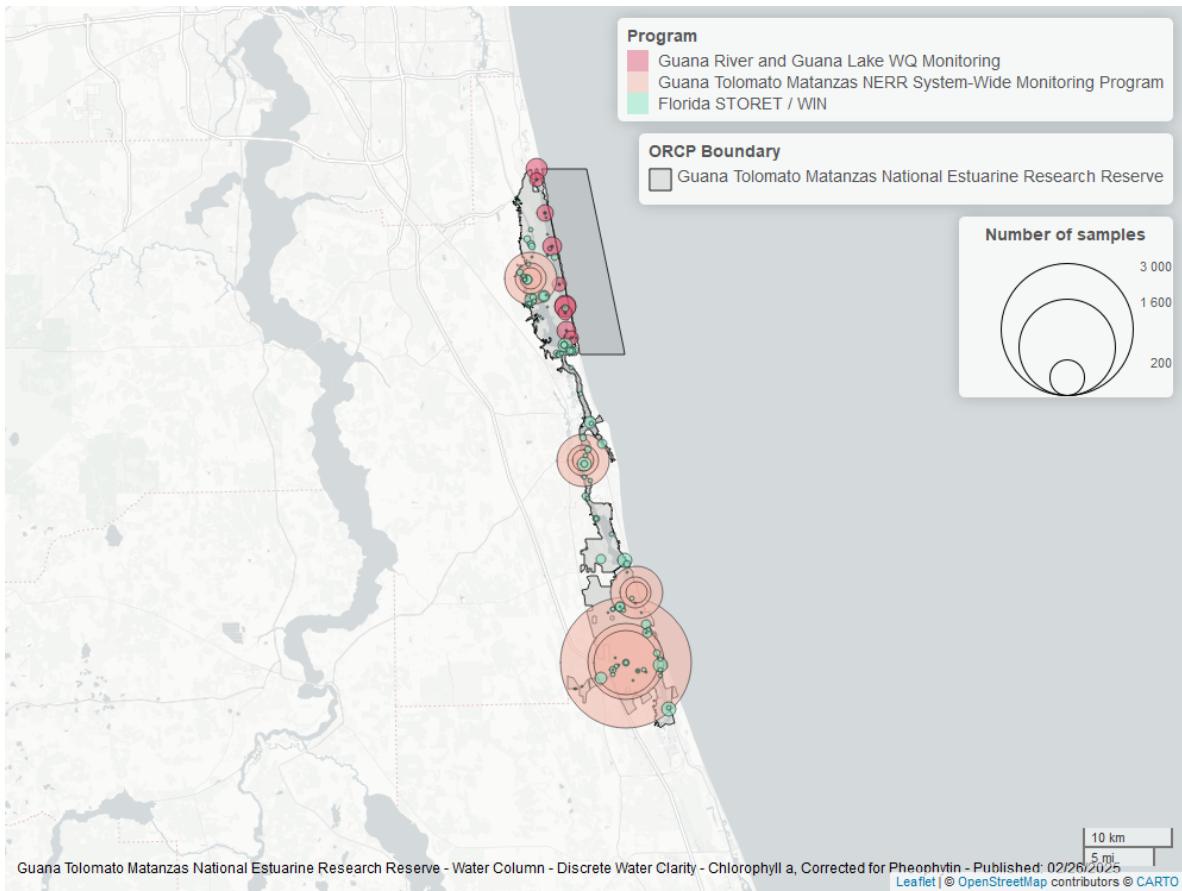


Table 17: Seasonal Kendall-Tau Results for - Chlorophyll a, Corrected for Pheophytin

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly increasing trend	7993	23	2002 - 2024	4.7	0.29681	3.70111	0.18133	0.000000000123944215559413234



Secchi Depth - Discrete

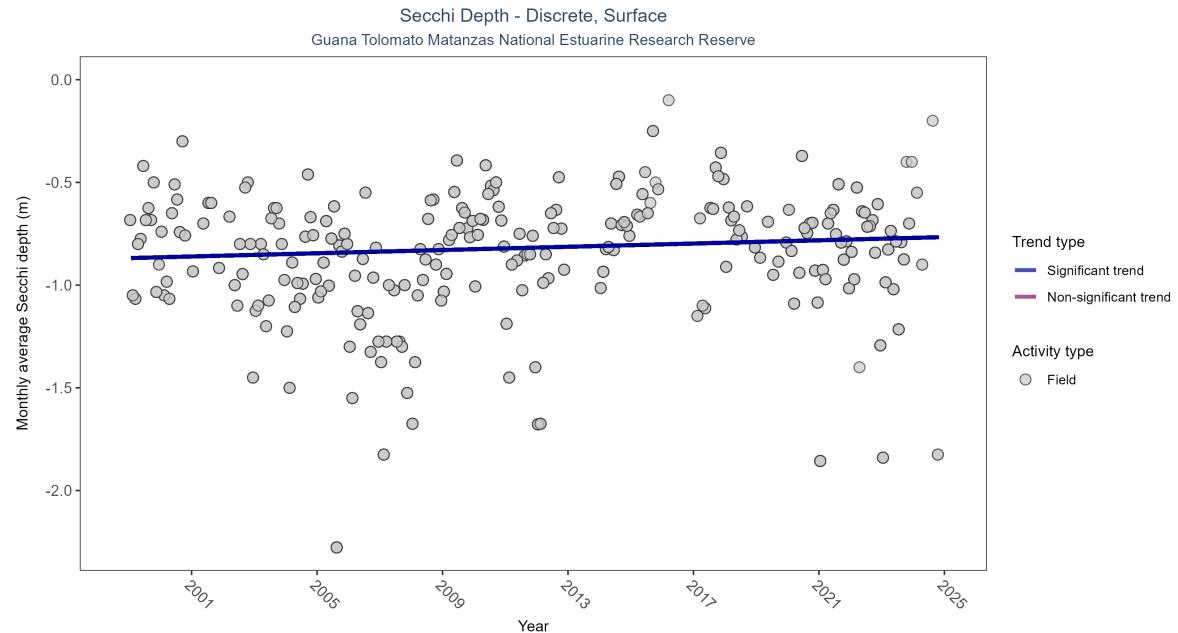
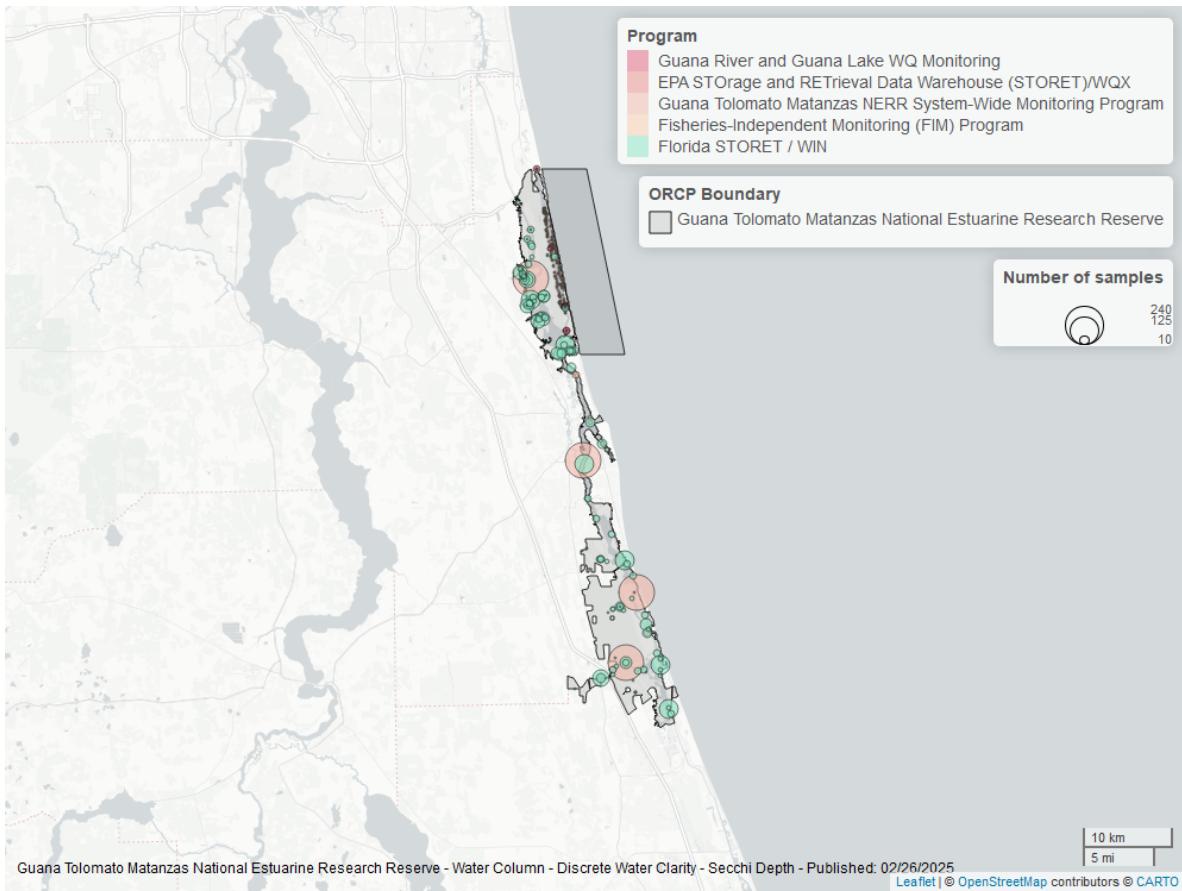


Table 18: Seasonal Kendall-Tau Results for - Secchi Depth

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Field	Significantly increasing trend	2870	25	1999 - 2024	-0.8	0.09635	-0.86855	0.00394	0.0435742872859516405803503857896



Colored Dissolved Organic Matter - Discrete

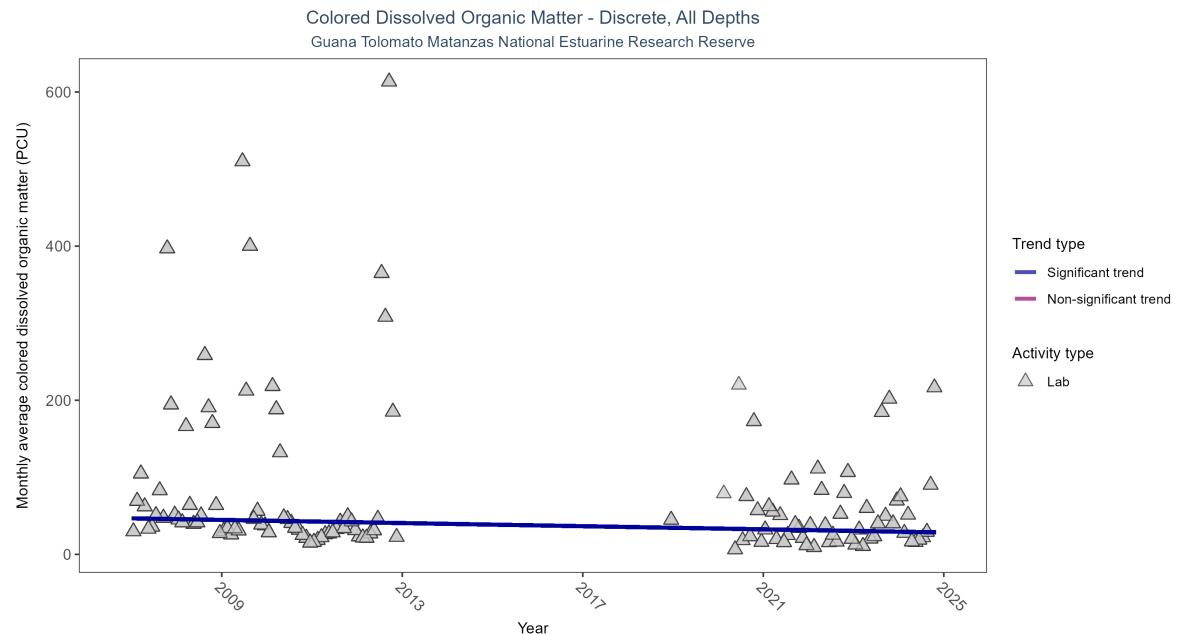


Table 19: Seasonal Kendall-Tau Results for - Colored Dissolved Organic Matter

Activity Type	Statistical Trend	Sample Count	Years with Data	Period of Record	Median Result Value	Tau	Sen Intercept	Sen Slope	P
Lab	Significantly decreasing trend	1826	12	2007 - 2024	33.4	-0.18985	46.72978	-1.01726	0.006415335268005922450540

