

Southeast Florida Coral Reef Ecosystem Conservation Area

SEACAR Water Quality Analysis

Last compiled on 09 January, 2025

Contents

Indicators	2
Nutrients	2
Total Nitrogen - Discrete	2
Total Phosphorus - Discrete	3
Water Quality	4
Dissolved Oxygen - Discrete	4
Dissolved Oxygen Saturation - Discrete	5
Salinity - Discrete	6
Water Temperature - Discrete	7
Water Temperature - Continuous	7
pH - Discrete	10
Water Clarity	11
Turbidity - Discrete	11
Total Suspended Solids - Discrete	12
Chlorophyll a, Uncorrected for Pheophytin - Discrete	13
Chlorophyll a, Corrected for Pheophytin - Discrete	14
Secchi Depth - Discrete	15
Colored Dissolved Organic Matter - Discrete	16

Indicators

Nutrients

Total Nitrogen - Discrete

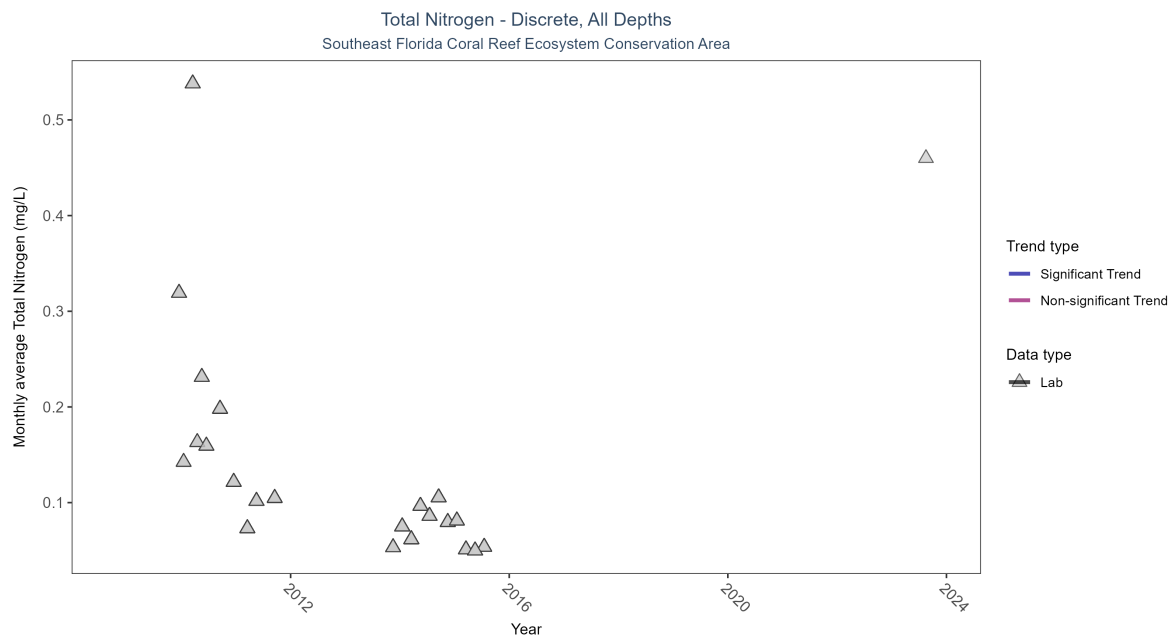


Table 1: Seasonal Kendall-Tau Results for - Total Nitrogen

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Insufficient data to calculate trend	890	7	2009 - 2023	0.071	-	-	-	NA

Total Phosphorus - Discrete

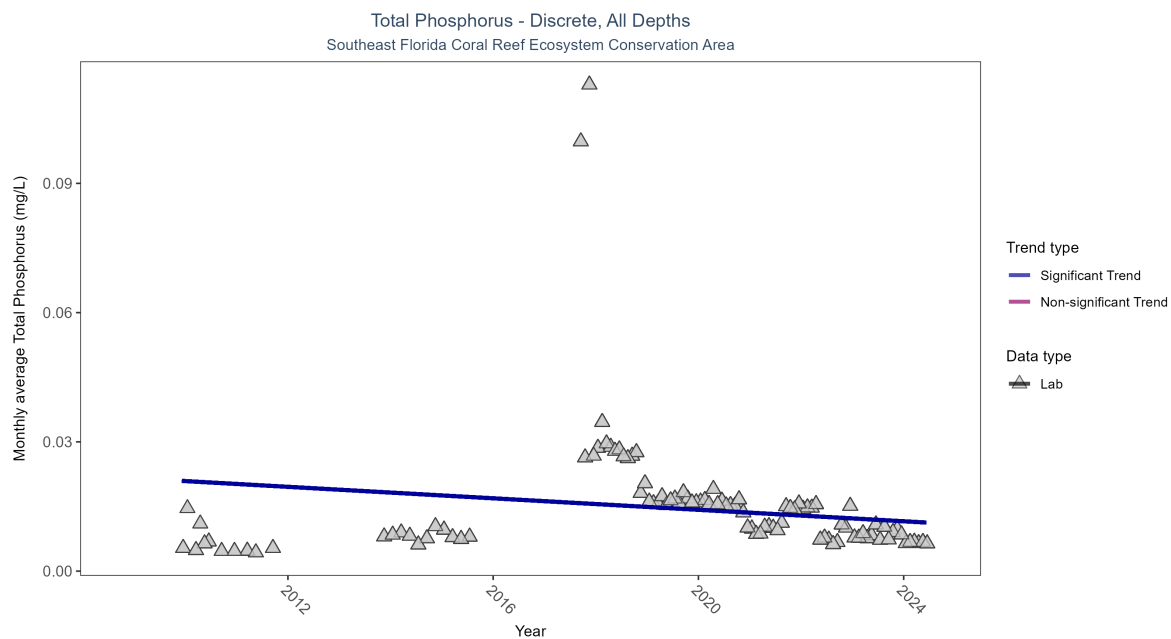


Table 2: Seasonal Kendall-Tau Results for - Total Phosphorus

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Significantly decreasing trend	17322	14	2009 - 2024	0.014	-0.294	0.02156	-0.00067	0.0034

Water Quality

Dissolved Oxygen - Discrete

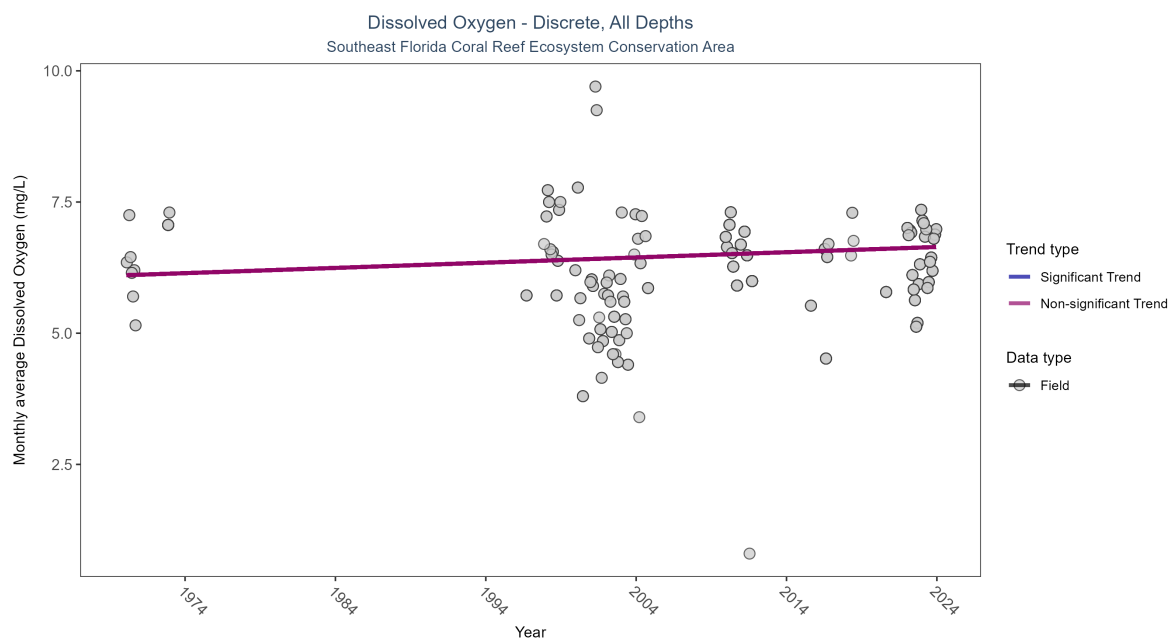


Table 3: Seasonal Kendall-Tau Results for - Dissolved Oxygen

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	No significant trend	742	20	1970 - 2023	6.49	0.0958	6.10456	0.00998	0.3066

Dissolved Oxygen Saturation - Discrete

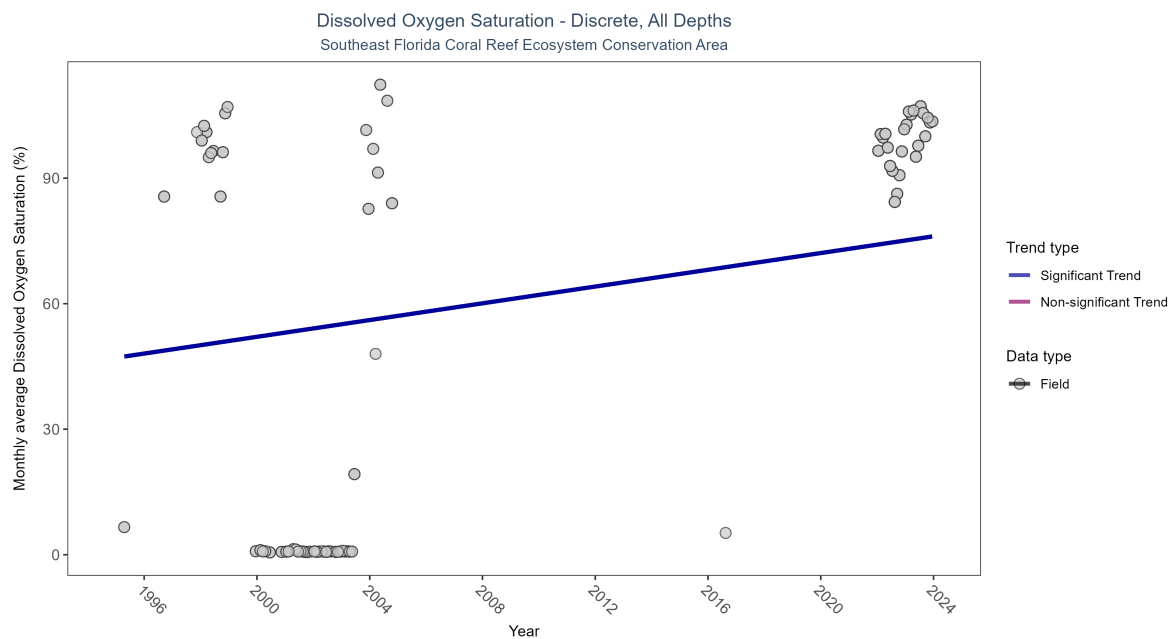


Table 4: Seasonal Kendall-Tau Results for - Dissolved Oxygen Saturation

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	Significantly increasing trend	378	13	1995 - 2023	97.85	0.3286	47.07696	1.00088	0.0019

Salinity - Discrete

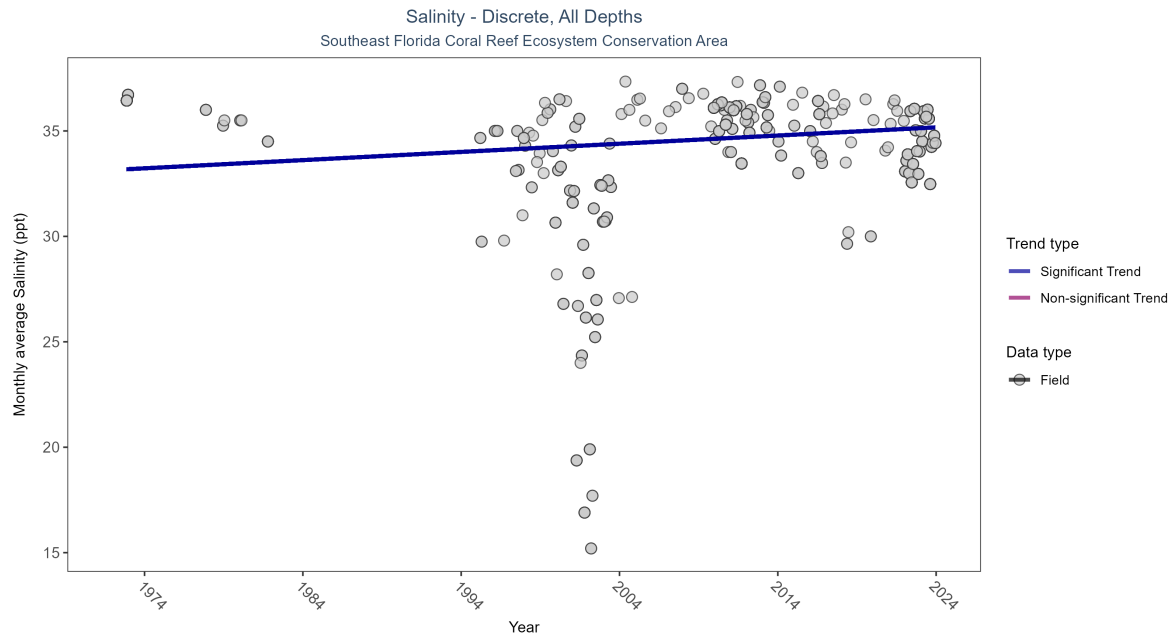


Table 5: Seasonal Kendall-Tau Results for - Salinity

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
All	Significantly increasing trend	987	35	1972 - 2023	35.6	0.1527	33.14963	0.03888	0.0088

Water Temperature - Discrete

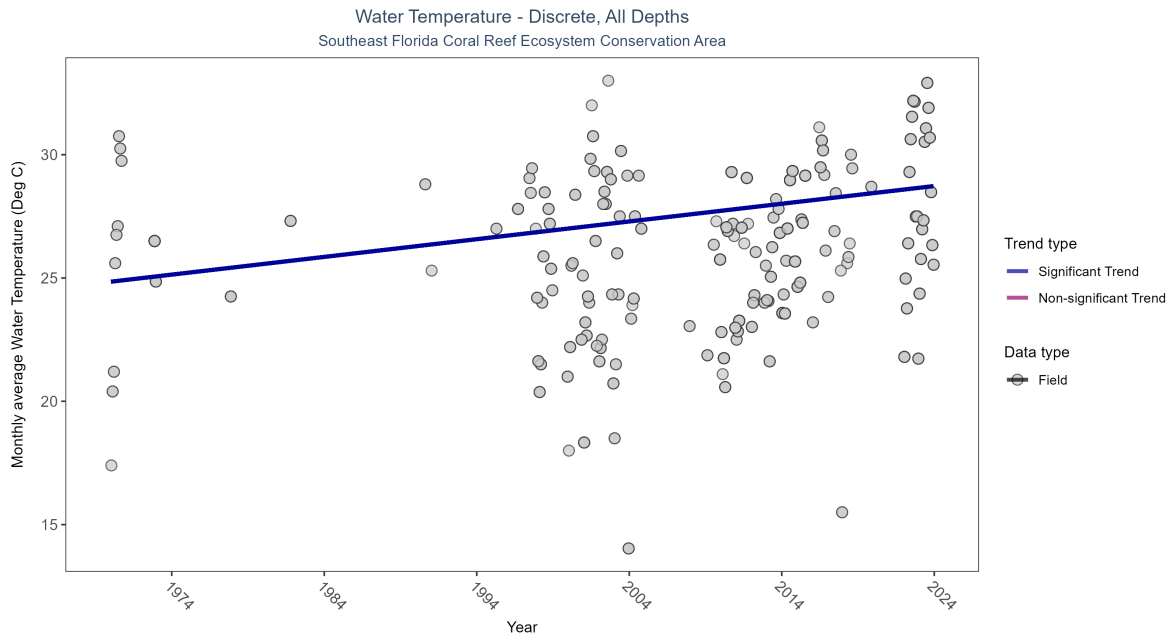


Table 6: Seasonal Kendall-Tau Results for - Water Temperature

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	Significantly increasing trend	1580	30	1970 - 2023	26.58235	0.2894	24.84913	0.07184	0.0000

Water Temperature - Continuous

National Data Buoy Center - 5

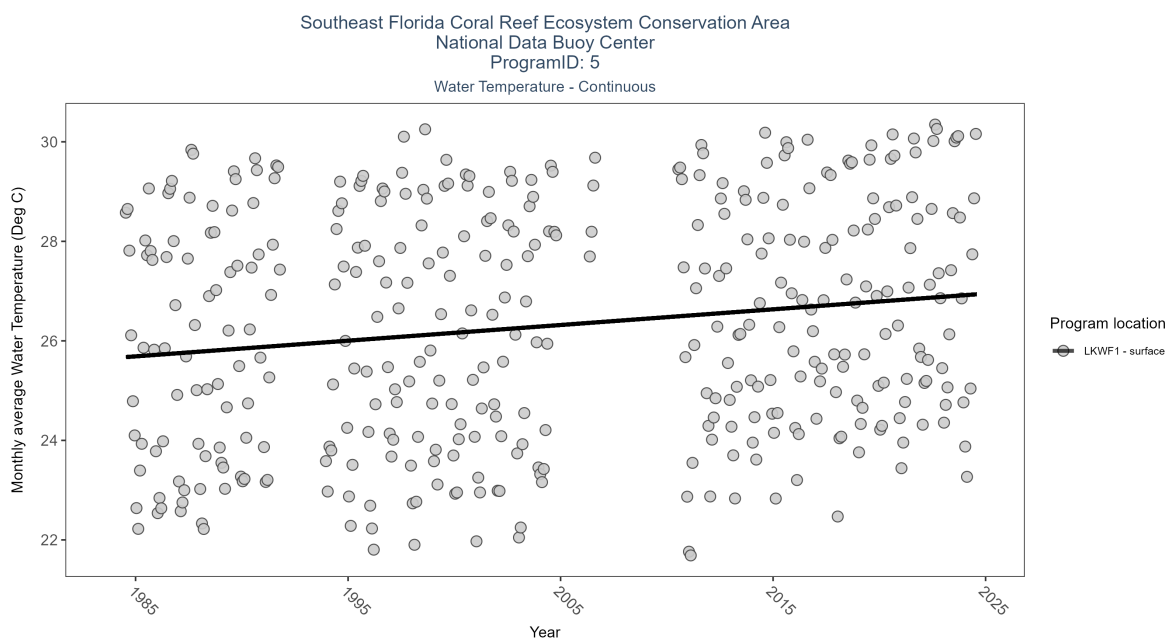


Table 7: Seasonal Kendall-Tau Results for All Stations - Water Temperature

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
LKWF1	Significantly increasing trend	1254716	36	1984 - 2024	26.5	0.41	25.66	0.03	0.0000

Water Temperature on Coral Reefs in the Florida Keys - 986

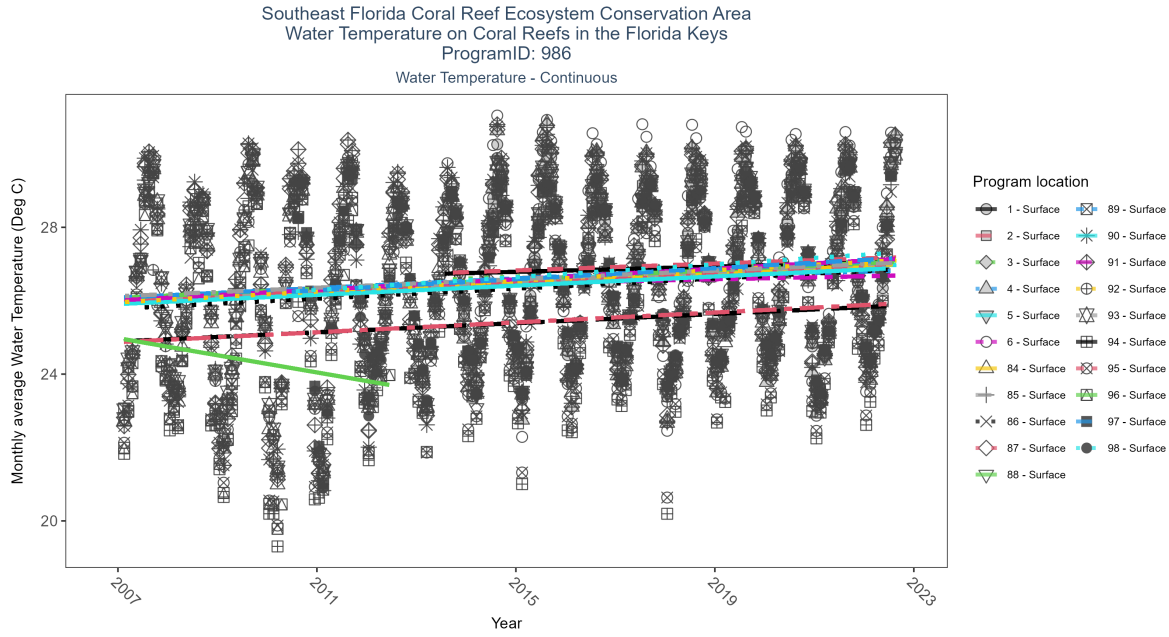


Table 8: Seasonal Kendall-Tau Results for All Stations - Water Temperature

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
90	Significantly increasing trend	97006	16	2007 - 2022	26.43	0.33	25.91	0.06	0.0000
1	No significant trend	65108	10	2013 - 2022	26.40	0.13	26.72	0.04	0.1158
85	Significantly increasing trend	114214	16	2007 - 2022	26.26	0.34	25.99	0.07	0.0000
92	Significantly increasing trend	111826	16	2007 - 2022	26.45	0.37	25.96	0.07	0.0000
97	Significantly increasing trend	97533	13	2010 - 2022	26.45	0.38	26.21	0.08	0.0000
88	Significantly increasing trend	115305	16	2007 - 2022	26.35	0.34	26.08	0.06	0.0000
89	Significantly increasing trend	113809	16	2007 - 2022	26.28	0.35	26.08	0.07	0.0000
87	Significantly increasing trend	108339	16	2007 - 2022	26.44	0.31	25.99	0.06	0.0000
94	Significantly increasing trend	90265	16	2007 - 2022	25.55	0.28	24.89	0.06	0.0000
86	Significantly increasing trend	104767	16	2007 - 2022	26.16	0.36	25.78	0.07	0.0000
95	Significantly increasing trend	102279	16	2007 - 2022	25.58	0.30	24.87	0.07	0.0000
91	Significantly increasing trend	102406	16	2007 - 2022	26.54	0.33	26.01	0.07	0.0000
84	Significantly increasing trend	111153	16	2007 - 2022	26.32	0.36	25.94	0.07	0.0000
5	Significantly increasing trend	51977	10	2013 - 2022	26.62	0.22	26.46	0.05	0.0067
3	Significantly increasing trend	60887	10	2013 - 2022	26.65	0.25	26.54	0.06	0.0010
4	Significantly increasing trend	68937	10	2013 - 2022	26.59	0.17	26.46	0.04	0.0305
93	Significantly increasing trend	106903	16	2007 - 2022	26.47	0.35	26.12	0.06	0.0000
98	Significantly increasing trend	87973	13	2010 - 2022	26.40	0.39	26.21	0.09	0.0000
2	Significantly increasing trend	64486	10	2013 - 2022	26.72	0.26	26.73	0.05	0.0007
6	No significant trend	63582	10	2013 - 2022	26.77	0.09	26.42	0.03	0.2598
96	No significant trend	25550	6	2007 - 2012	24.87	-0.25	24.98	-0.23	0.0801

pH - Discrete

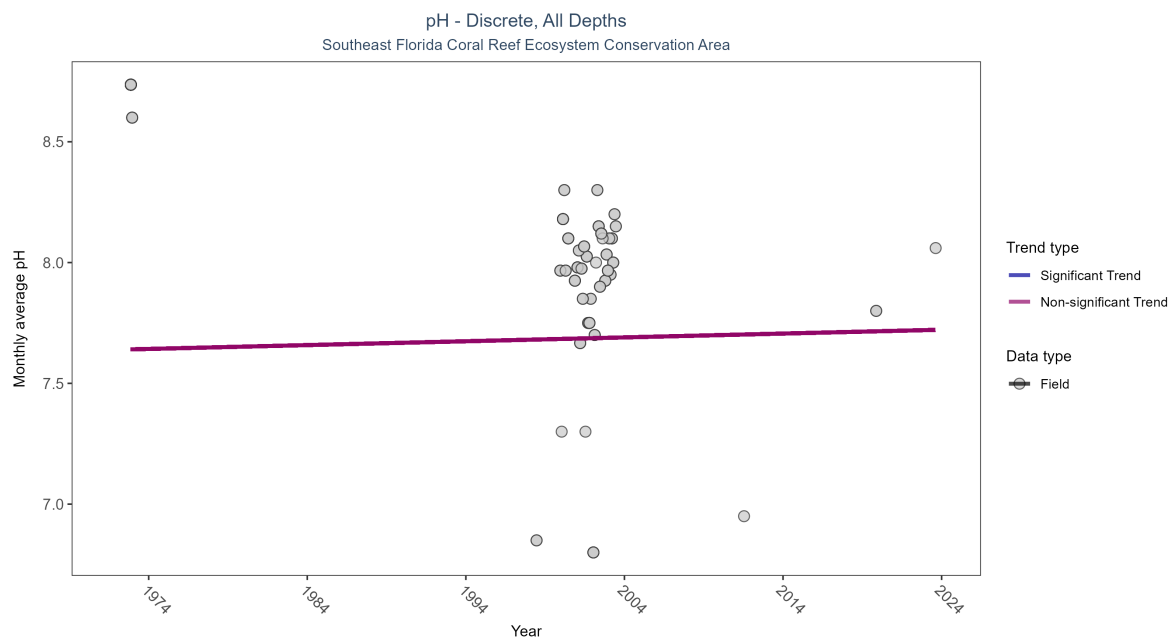


Table 9: Seasonal Kendall-Tau Results for - pH

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	No significant trend	172	10	1972 - 2023	8.2	0.0833	7.63924	0.00159	0.9124

Water Clarity

Turbidity - Discrete

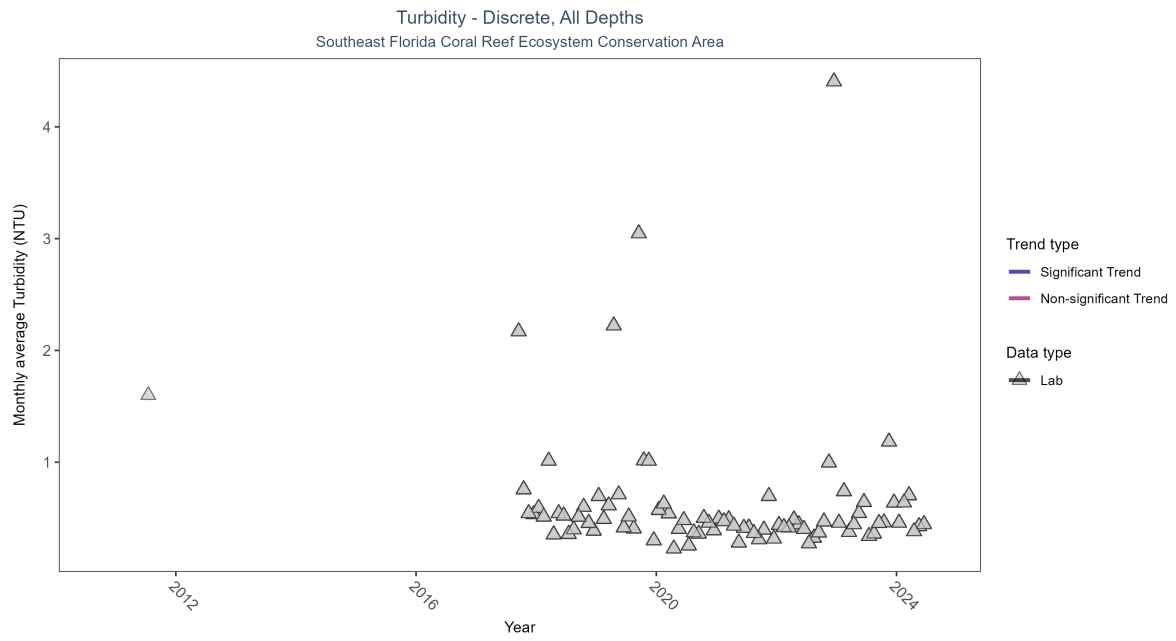


Table 10: Seasonal Kendall-Tau Results for - Turbidity

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Insufficient data to calculate trend	15580	9	2011 - 2024	0.3	-	-	-	NA

Total Suspended Solids - Discrete

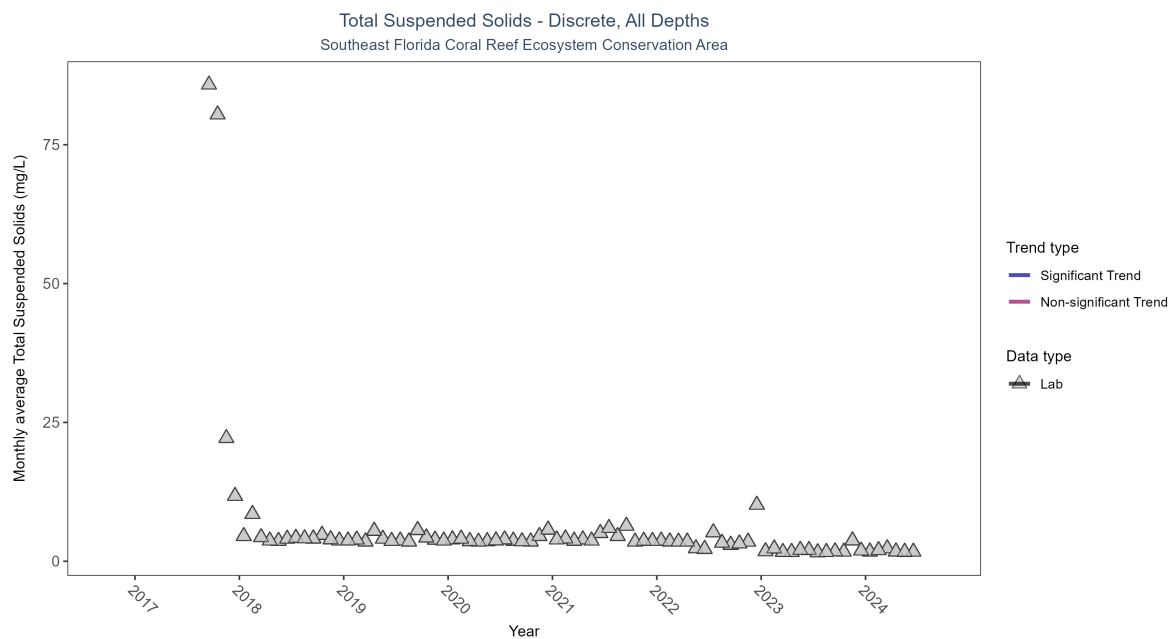


Table 11: Seasonal Kendall-Tau Results for - Total Suspended Solids

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Insufficient data to calculate trend	15025	8	2017 - 2024	3.47	-	-	-	NA

Chlorophyll a, Uncorrected for Pheophytin - Discrete

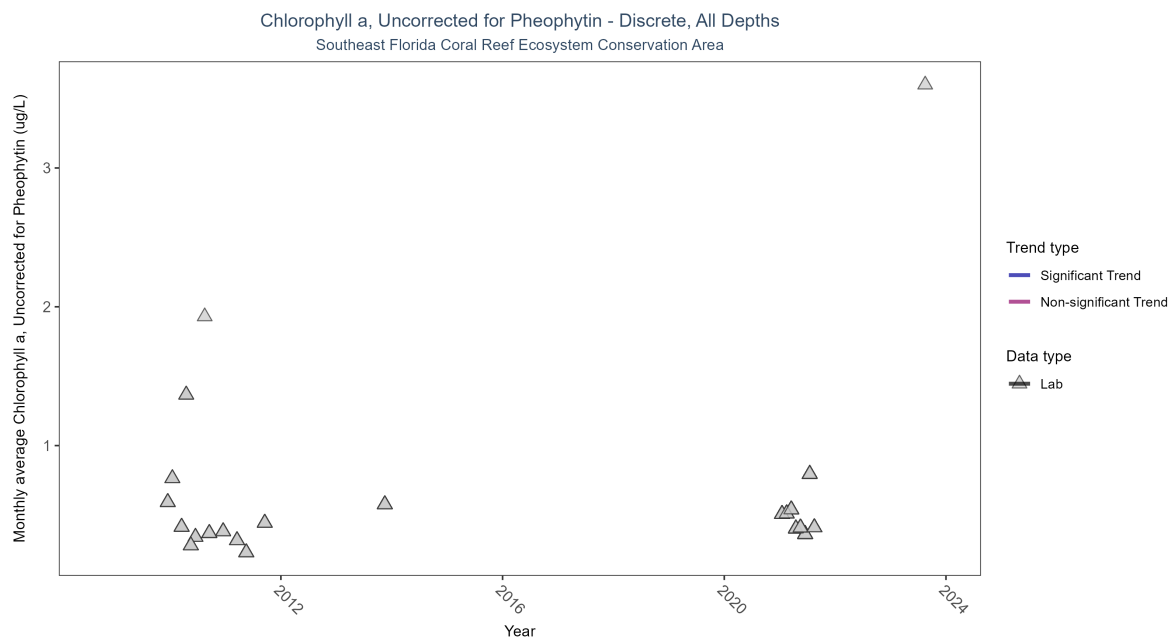


Table 12: Seasonal Kendall-Tau Results for - Chlorophyll a, Uncorrected for Pheophytin

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Insufficient data to calculate trend	1930	6	2009 - 2023	0.3844	-	-	-	NA

Chlorophyll a, Corrected for Pheophytin - Discrete

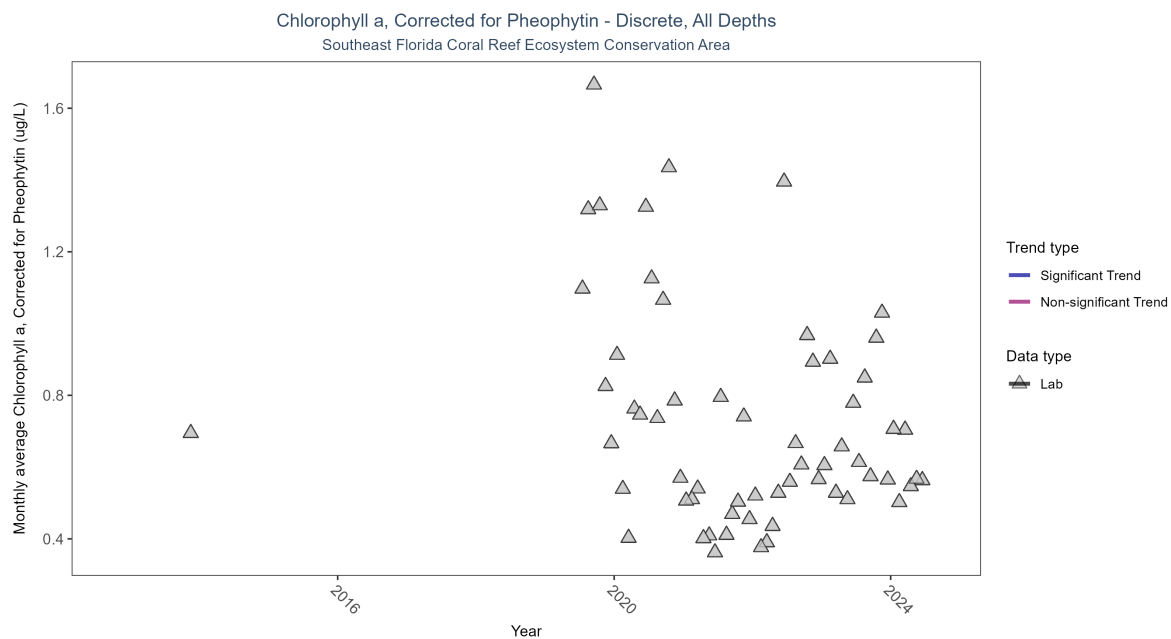


Table 13: Seasonal Kendall-Tau Results for - Chlorophyll a, Corrected for Pheophytin

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Insufficient data to calculate trend	10009	7	2013 - 2024	0.464	-	-	-	NA

Secchi Depth - Discrete

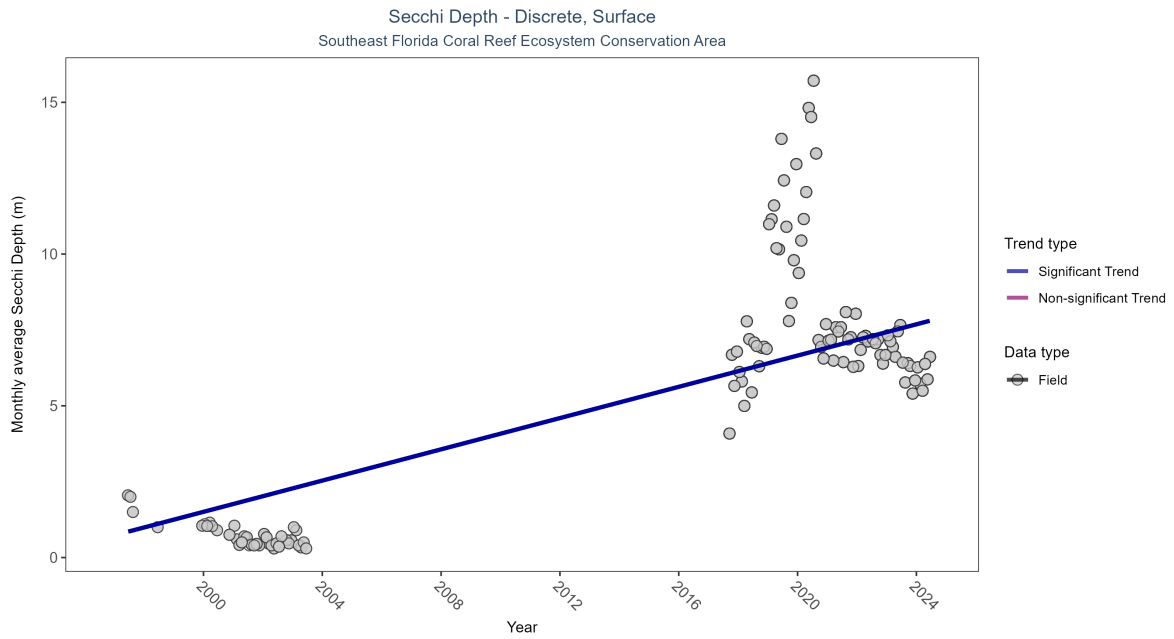


Table 14: Seasonal Kendall-Tau Results for - Secchi Depth

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	Significantly increasing trend	8962	15	1997 - 2024	6.1	0.2976	0.73362	0.25747	0.0000

Colored Dissolved Organic Matter - Discrete

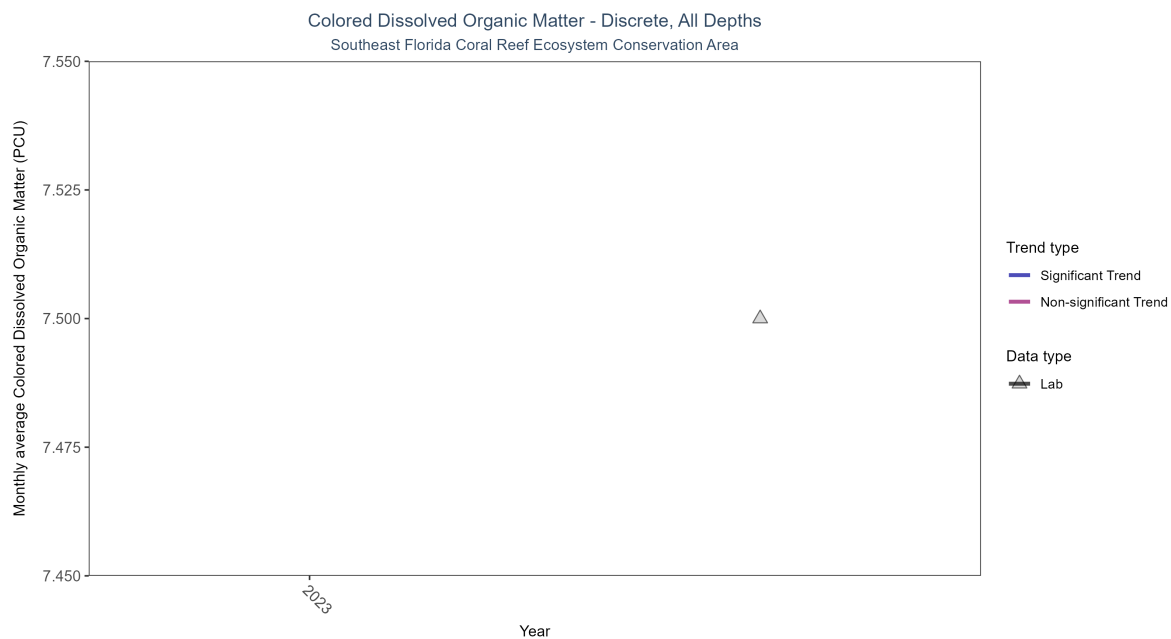


Table 15: Seasonal Kendall-Tau Results for - Colored Dissolved Organic Matter

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Insufficient data to calculate trend	1	1	2023 - 2023	7.5	-	-	-	NA