

# Cape Romano-Ten Thousand Islands Aquatic Preserve

## SEACAR Water Quality Analysis

Last compiled on 09 January, 2025

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# Indicators

## Nutrients

### Total Nitrogen - Discrete

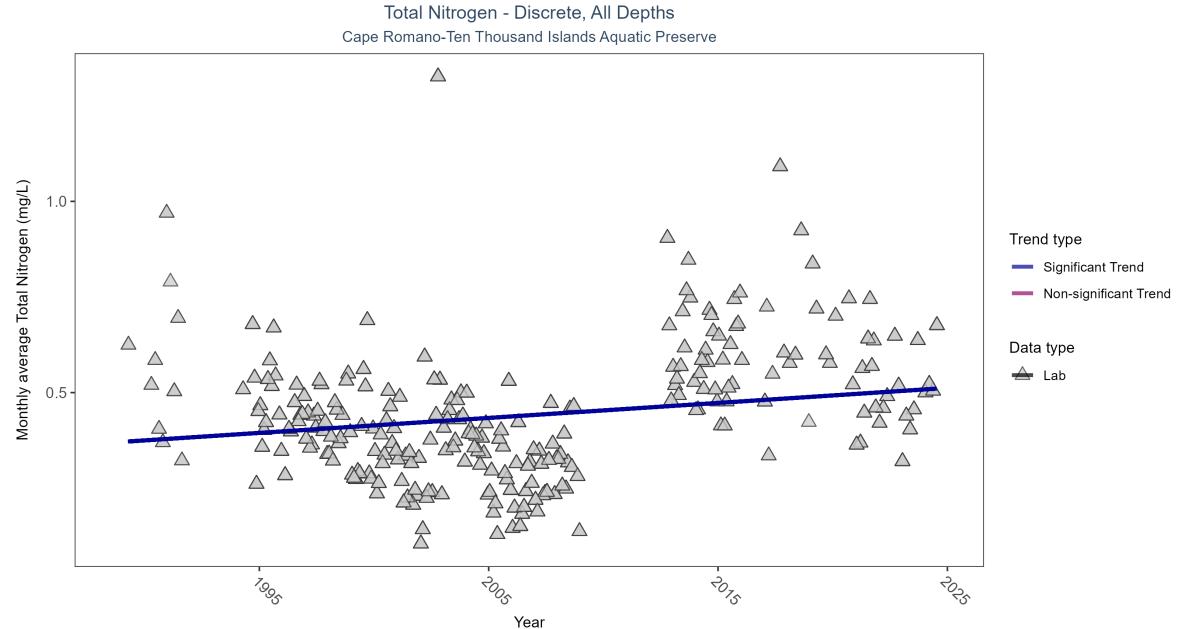


Table 1: Seasonal Kendall-Tau Results for - Total Nitrogen

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Significantly increasing trend	2468	31	1989 - 2024	0.3761	0.1385	0.3711	0.00392	0.0016

## Total Phosphorus - Discrete

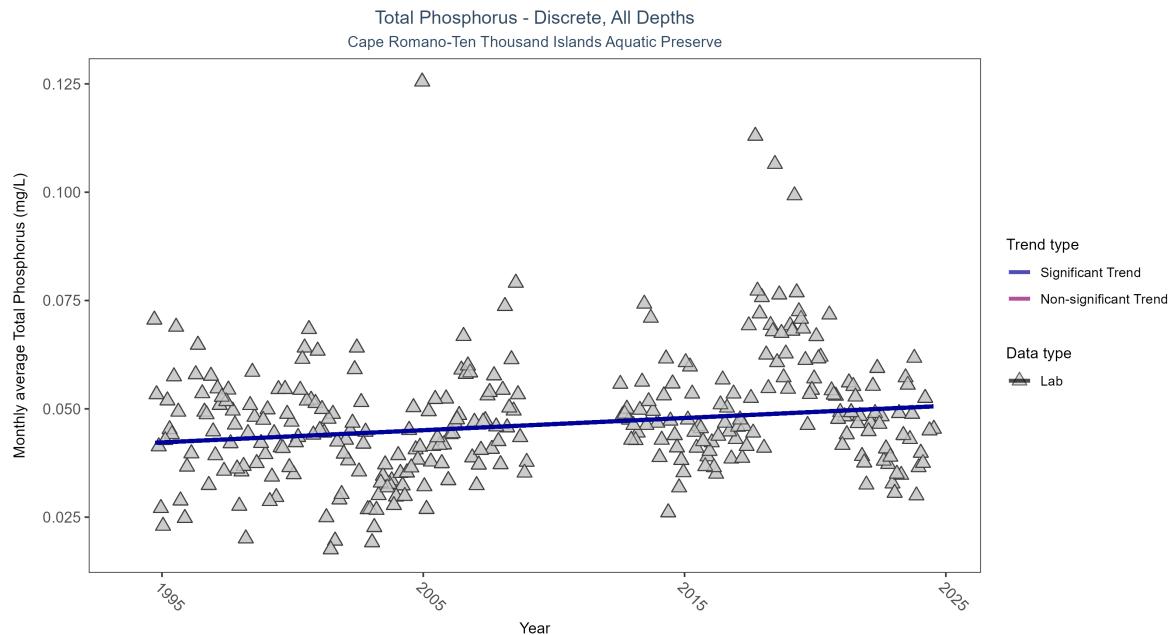


Table 2: Seasonal Kendall-Tau Results for - Total Phosphorus

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Significantly increasing trend	2958	28	1994 - 2024	0.0431	0.1557	0.04197	0.00028	0.0001

## Water Quality

### Dissolved Oxygen - Discrete

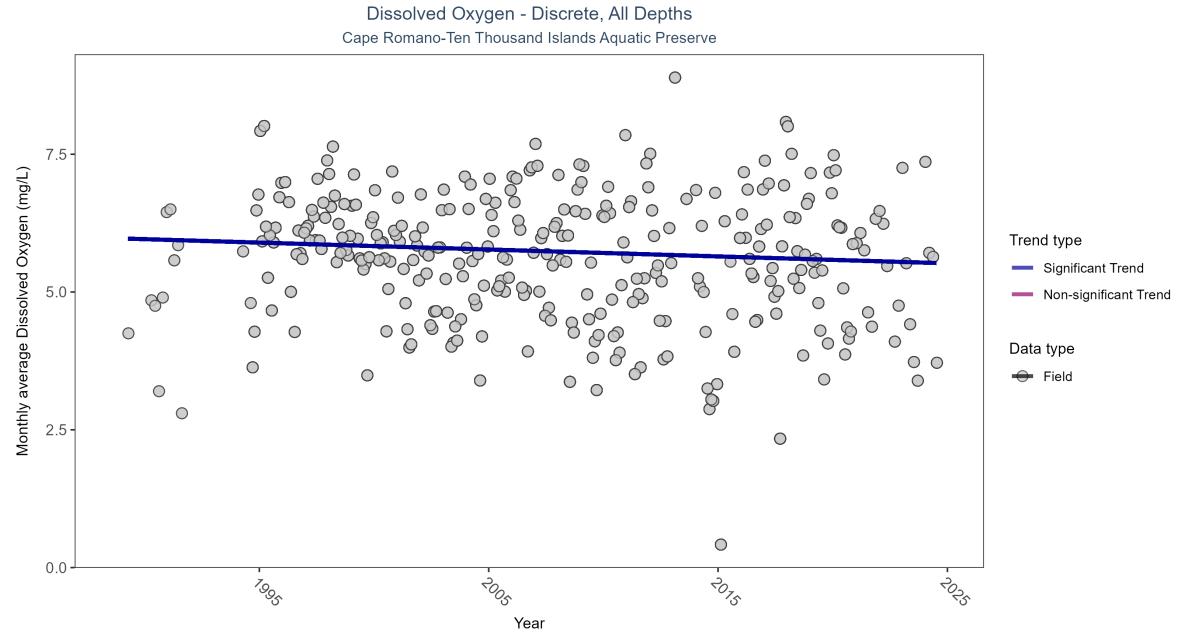


Table 3: Seasonal Kendall-Tau Results for - Dissolved Oxygen

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	Significantly decreasing trend	10665	34	1989 - 2024	5.8	-0.0863	5.97162	-0.01252	0.0287

## Dissolved Oxygen - Continuous

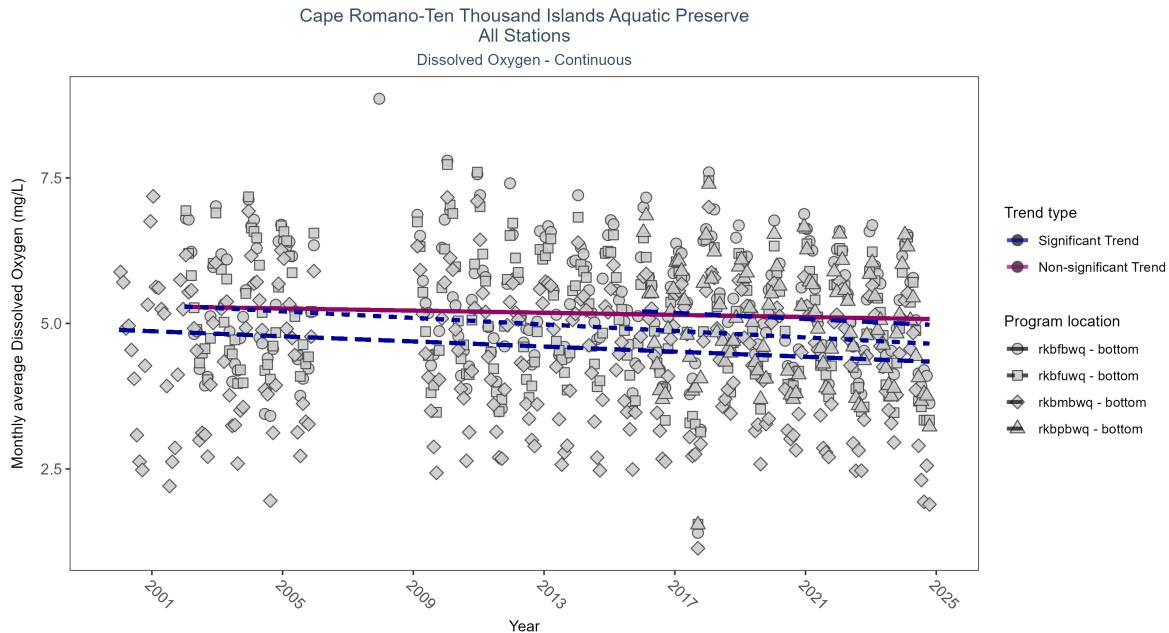


Table 4: Seasonal Kendall-Tau Results for All Stations - Dissolved Oxygen

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
rkbfbwq	No significant trend	559530	21	2002 - 2024	5.4	-0.08	5.28	-0.01	0.1032
rkbfuwq	Significantly decreasing trend	594676	20	2002 - 2024	5.0	-0.33	5.29	-0.03	0.0000
rkbmbwq	Significantly decreasing trend	613238	22	2000 - 2024	4.4	-0.26	4.89	-0.02	0.0000
rkbpbwq	Significantly decreasing trend	289726	9	2016 - 2024	4.9	-0.18	5.21	-0.03	0.0246

## Dissolved Oxygen Saturation - Discrete

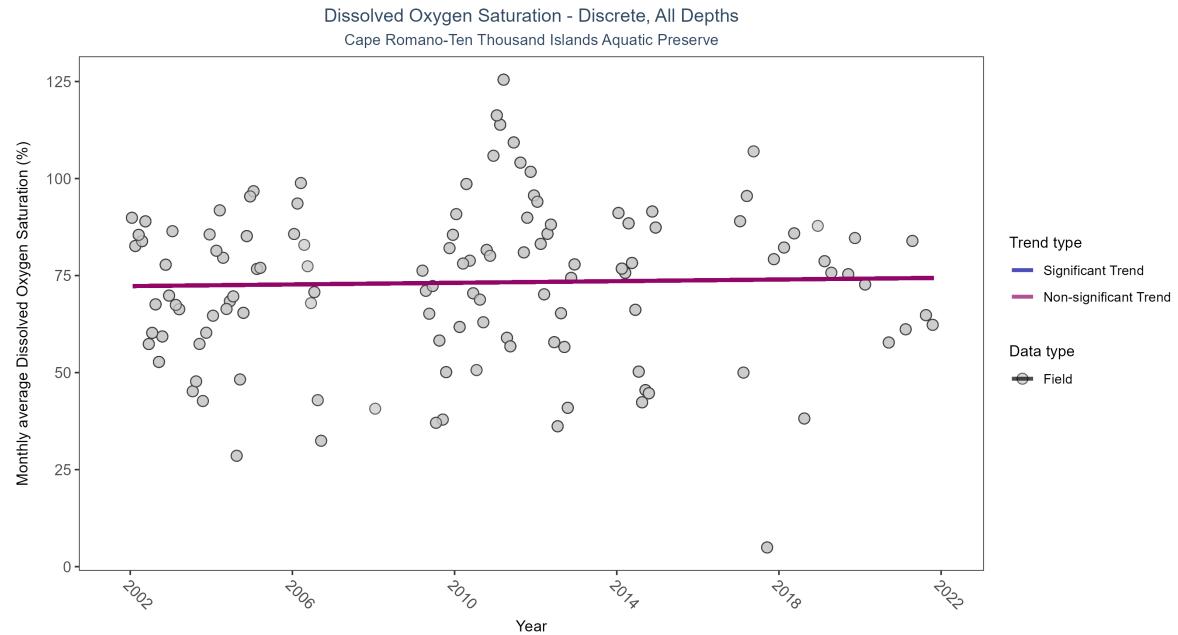


Table 5: Seasonal Kendall-Tau Results for - Dissolved Oxygen Saturation

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	No significant trend	570	16	2002 - 2021	74.75	0.0495	72.28418	0.10625	0.5970

## Dissolved Oxygen Saturation - Continuous

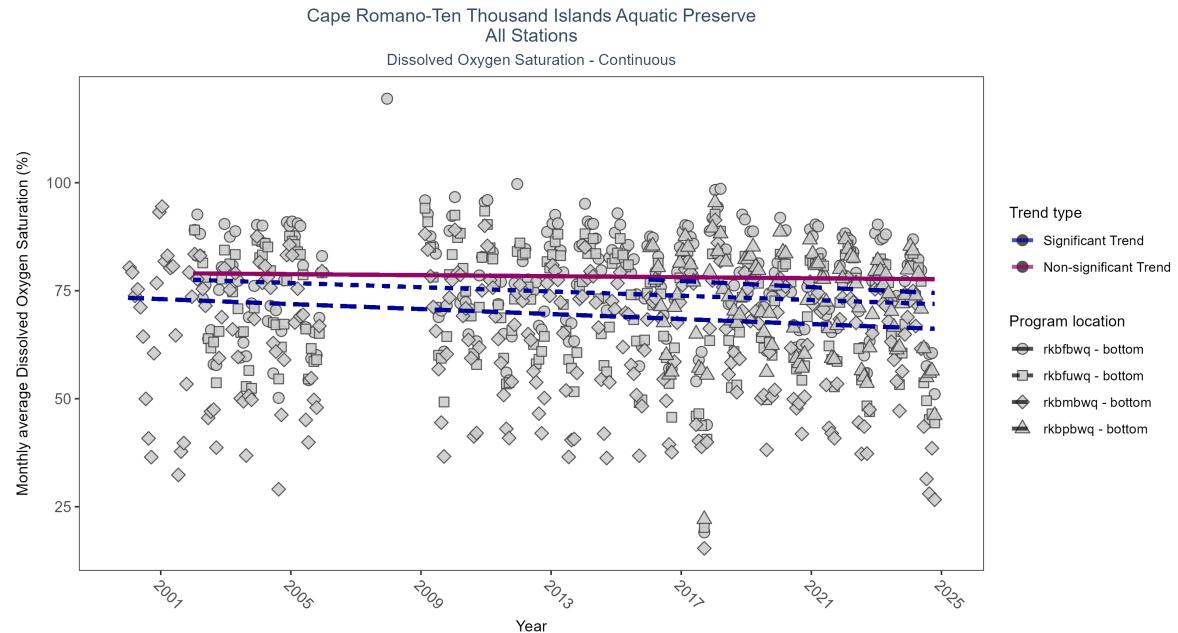


Table 6: Seasonal Kendall-Tau Results for All Stations - Dissolved Oxygen Saturation

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
rkbfbwq	No significant trend	563836	21	2002 - 2024	78.3	-0.04	79.01	-0.06	0.4097
rkbfuwq	Significantly decreasing trend	594935	20	2002 - 2024	72.2	-0.26	77.53	-0.25	0.0000
rkbmbwq	Significantly decreasing trend	619562	22	2000 - 2024	65.1	-0.23	73.35	-0.29	0.0000
rkbpbwq	Significantly decreasing trend	291357	9	2016 - 2024	72.3	-0.18	77.60	-0.36	0.0289

## Salinity - Discrete

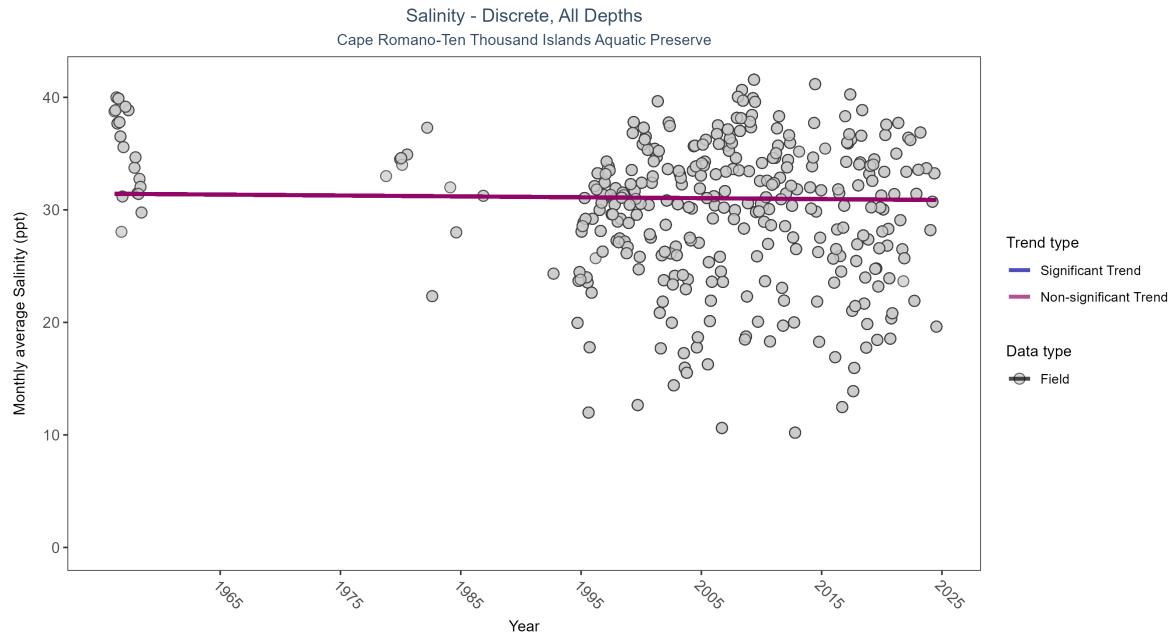


Table 7: Seasonal Kendall-Tau Results for - Salinity

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
All	No significant trend	10977	44	1956 - 2024	31.9	-0.0153	31.4304	-0.00802	0.7170

## Salinity - Continuous

National Water Information System - 7

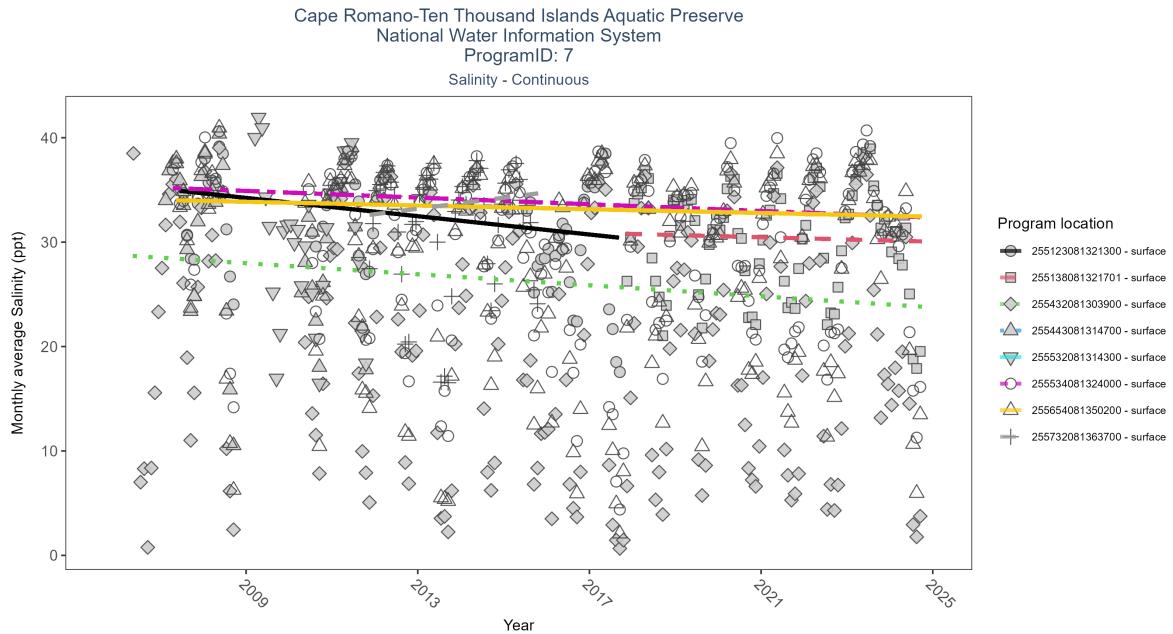


Table 8: Seasonal Kendall-Tau Results for All Stations - Salinity

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
255123081321300	Significantly decreasing trend	1809	8	2007 - 2017	32	-0.23	35.11	-0.44	0.0182
255432081303900	Significantly decreasing trend	5961	18	2006 - 2024	21	-0.2	28.77	-0.26	0.0001
255534081324000	Significantly decreasing trend	5677	17	2007 - 2024	32	-0.14	35.22	-0.16	0.0083
255654081350200	No significant trend	5674	17	2007 - 2024	32	-0.09	34.04	-0.09	0.0955
255732081363700	No significant trend	1434	5	2011 - 2015	34	0.25	32.15	0.52	0.0955
255443081314700	Insufficient data to calculate trend	1465	4	2007 - 2011	32	-	-	-	-
255532081314300	Insufficient data to calculate trend	902	3	2009 - 2011	31	-	-	-	-
255138081321701	No significant trend	2482	8	2017 - 2024	31	-0.05	30.89	-0.11	0.5671

Rookery Bay National Estuarine Research Reserve System-Wide Monitoring Program -  
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Cape Romano-Ten Thousand Islands Aquatic Preserve  
 Rookery Bay National Estuarine Research Reserve System-Wide Monitoring Program  
 ProgramID: 354  
 Salinity - Continuous

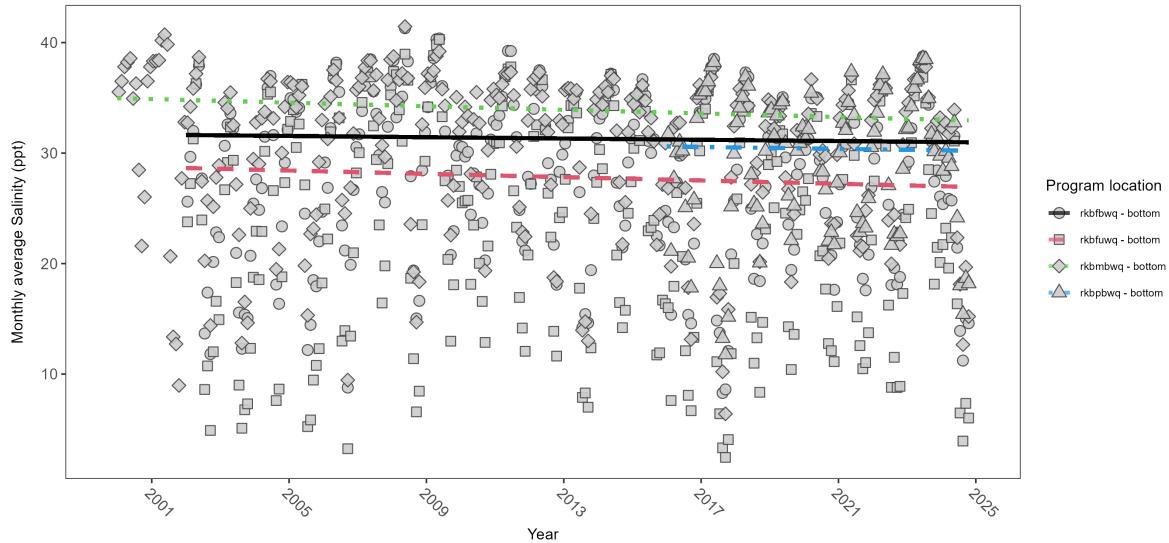


Table 9: Seasonal Kendall-Tau Results for All Stations - Salinity

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
rkbfbwq	No significant trend	658798	23	2002 - 2024	29.6	-0.03	31.64	-0.03	0.4691
rkbfuwq	No significant trend	675230	23	2002 - 2024	26.0	-0.07	28.65	-0.07	0.1290
rkbmbwq	Significantly decreasing trend	694825	25	2000 - 2024	33.3	-0.12	34.97	-0.08	0.0032
rkbpbwq	No significant trend	290041	9	2016 - 2024	30.2	-0.01	30.60	-0.04	0.9243

## Water Temperature - Discrete

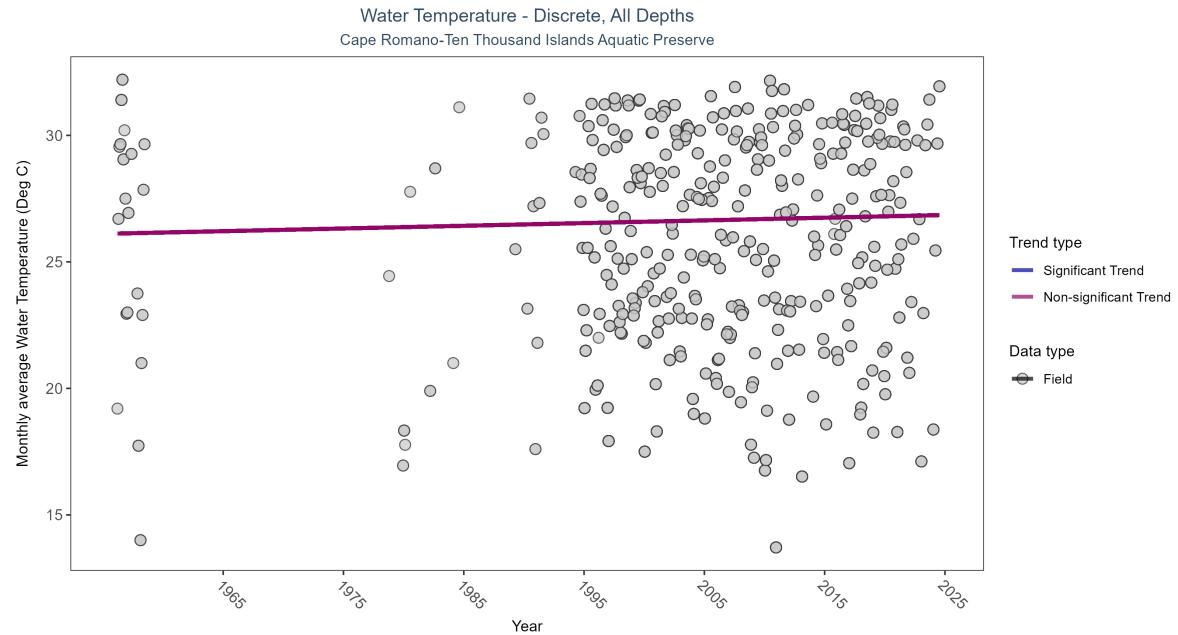


Table 10: Seasonal Kendall-Tau Results for - Water Temperature

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	No significant trend	11196	42	1956 - 2024	26.7	0.0592	26.11692	0.01066	0.0994

## Water Temperature - Continuous

National Water Information System - 7

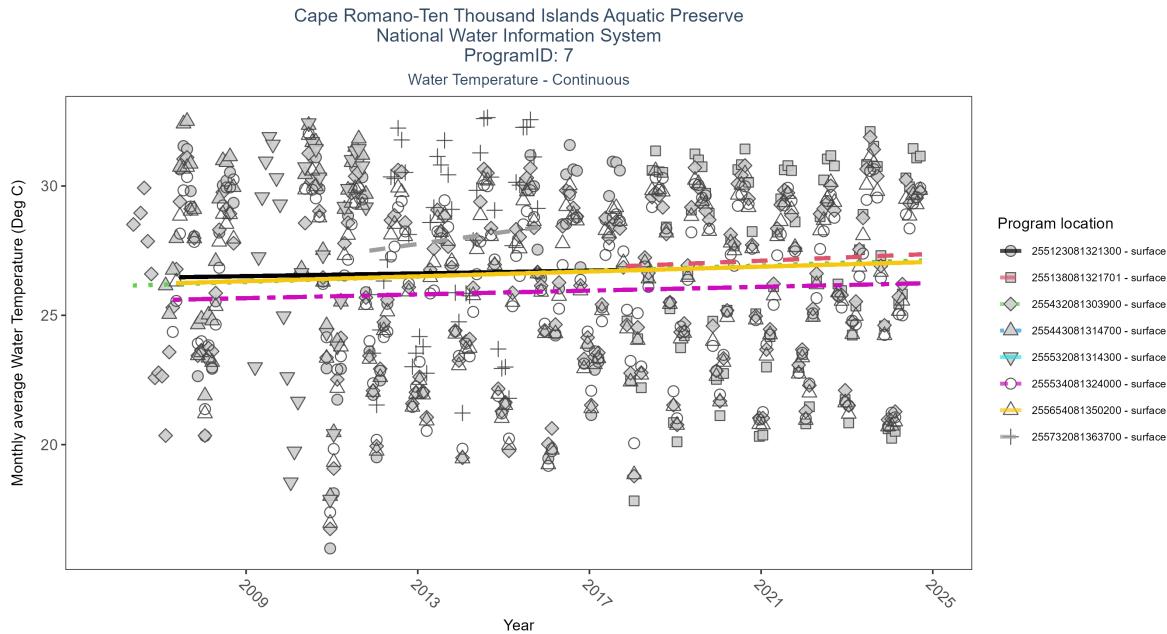


Table 11: Seasonal Kendall-Tau Results for All Stations - Water Temperature

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
255123081321300	No significant trend	1818	8	2007 - 2017	27.3	0.1	26.46	0.03	0.3843
255432081303900	Significantly increasing trend	6019	18	2006 - 2024	27.1	0.17	26.13	0.05	0.0011
255534081324000	Significantly increasing trend	5733	17	2007 - 2024	26.7	0.14	25.59	0.04	0.0088
255532081314300	Insufficient data to calculate trend	906	3	2009 - 2011	29.3	-	-	-	-
255654081350200	Significantly increasing trend	5712	17	2007 - 2024	26.9	0.15	26.23	0.05	0.0054
255443081314700	Insufficient data to calculate trend	2011	4	2007 - 2011	29.3	-	-	-	-
255732081363700	No significant trend	1435	5	2011 - 2015	28.4	0.24	27.3	0.23	0.1149
255138081321701	No significant trend	2498	8	2017 - 2024	27.3	0.12	26.85	0.07	0.1723

Rookery Bay National Estuarine Research Reserve System-Wide Monitoring Program -  
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Cape Romano-Ten Thousand Islands Aquatic Preserve  
 Rookery Bay National Estuarine Research Reserve System-Wide Monitoring Program  
 ProgramID: 354  
 Water Temperature - Continuous

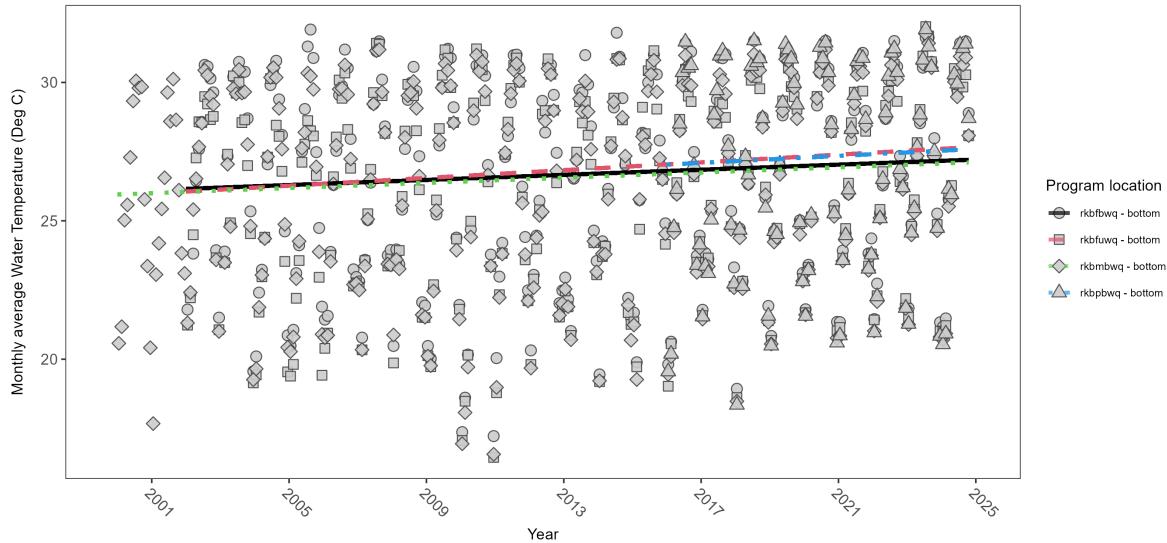


Table 12: Seasonal Kendall-Tau Results for All Stations - Water Temperature

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
rkbfbwq	Significantly increasing trend	674632	23	2002 - 2024	27.1	0.24	26.15	0.05	0.0000
rkbfuwq	Significantly increasing trend	685661	23	2002 - 2024	27.0	0.27	26.06	0.07	0.0000
rkbmbwq	Significantly increasing trend	718152	25	2000 - 2024	26.9	0.26	25.95	0.05	0.0000
rkbpbwq	No significant trend	292925	9	2016 - 2024	27.6	0.14	27.03	0.06	0.0711

## pH - Discrete

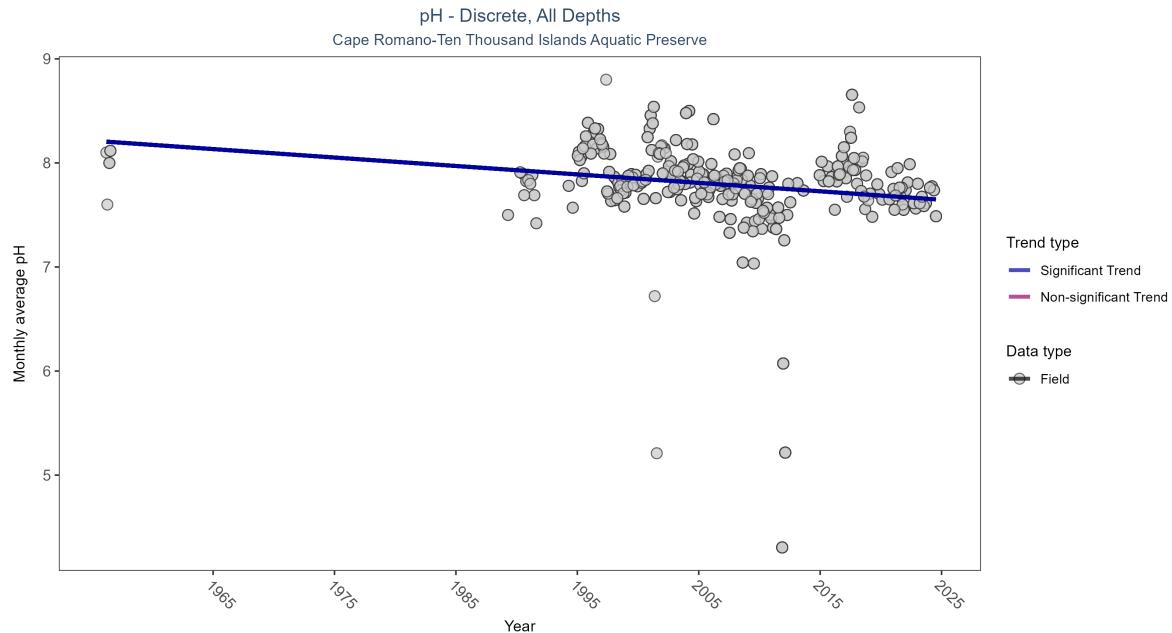


Table 13: Seasonal Kendall-Tau Results for - pH

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	Significantly decreasing trend	4605	35	1956 - 2024	7.865	-0.2307	8.20614	-0.00811	0.0000

## pH - Continuous

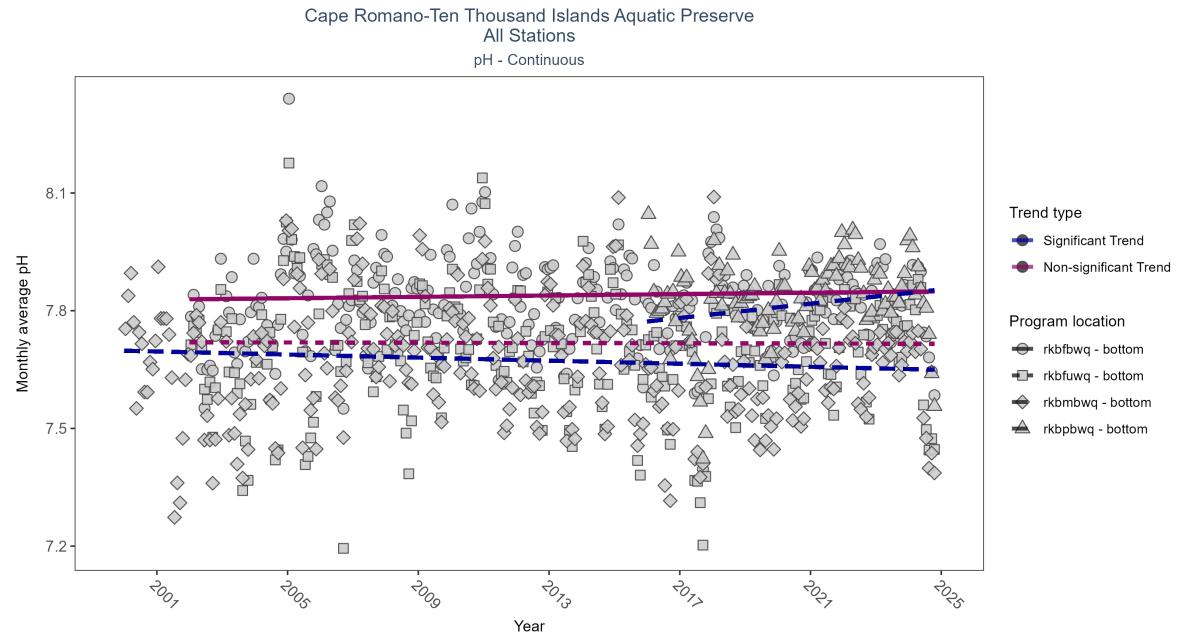


Table 14: Seasonal Kendall-Tau Results for All Stations - pH

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
rkbfbwq	No significant trend	626300	23	2002 - 2024	7.8	0.04	7.83	0.00	0.3005
rkbfuwq	No significant trend	649975	23	2002 - 2024	7.7	-0.01	7.72	0.00	0.8449
rkbmbwq	Significantly decreasing trend	683502	25	2000 - 2024	7.7	-0.09	7.70	0.00	0.0346
rkbpbwq	Significantly increasing trend	283219	9	2016 - 2024	7.8	0.20	7.77	0.01	0.0176

## Water Clarity

### Turbidity - Discrete

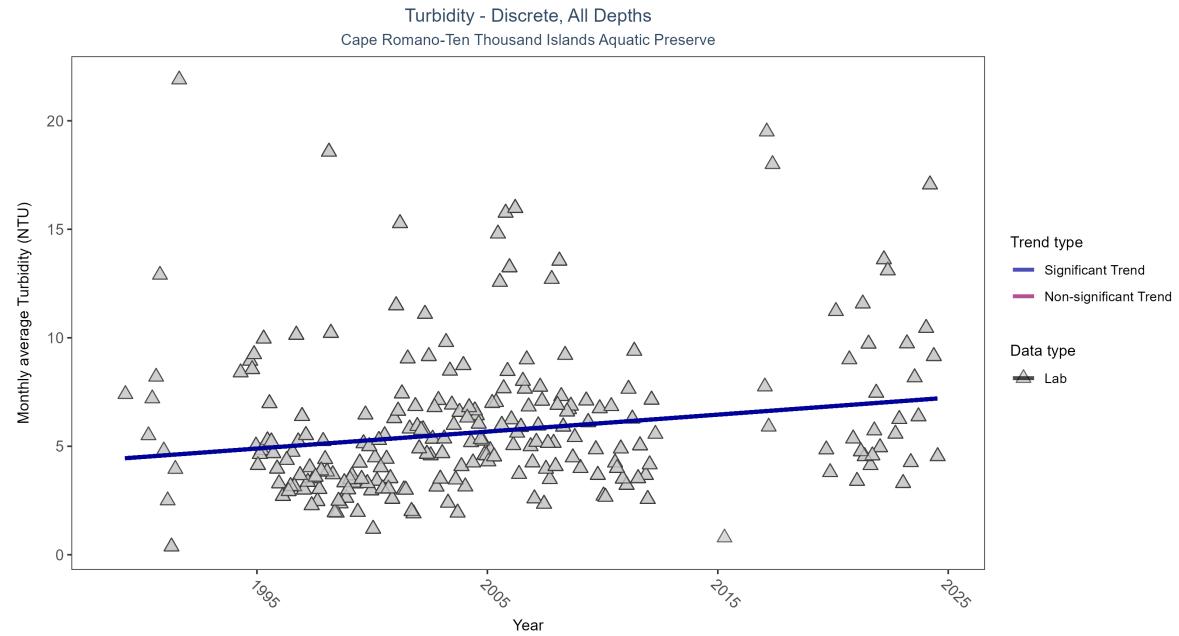


Table 15: Seasonal Kendall-Tau Results for - Turbidity

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Significantly increasing trend	4652	30	1989 - 2024	4	0.1546	4.42636	0.07812	0.0007

## Turbidity - Continuous

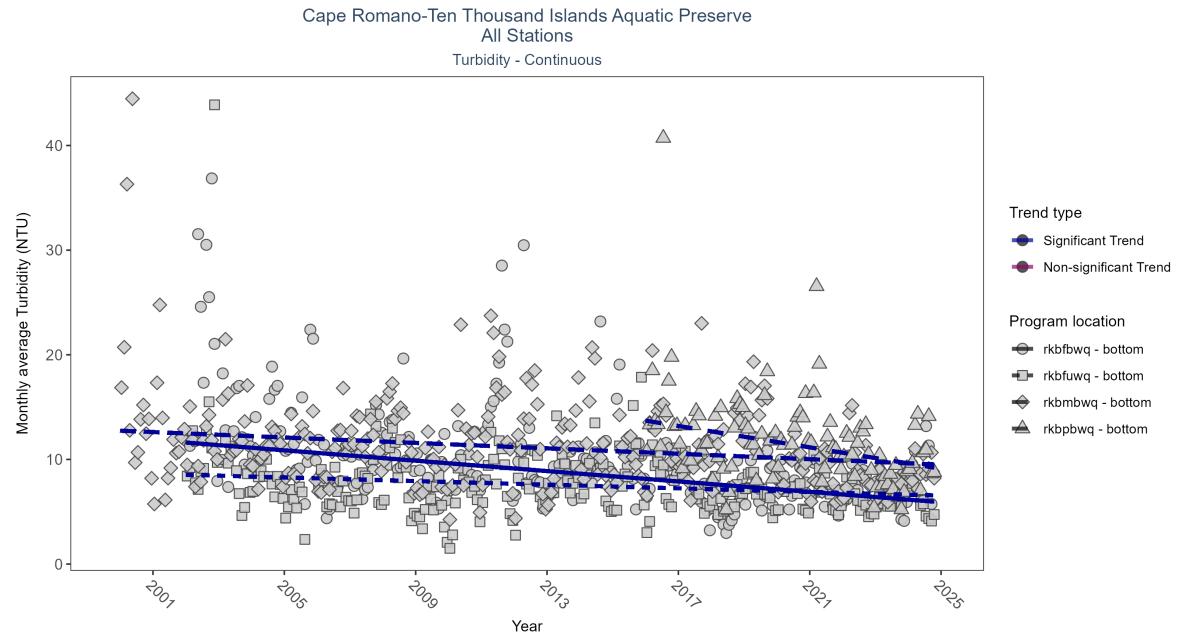


Table 16: Seasonal Kendall-Tau Results for All Stations - Turbidity

ProgramLocationID	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
rkbfbwq	Significantly decreasing trend	638544	23	2002 - 2024	7	-0.39	11.61	-0.25	0.0000
rkbfuwq	Significantly decreasing trend	615945	23	2002 - 2024	6	-0.20	8.54	-0.09	0.0000
rkbmbwq	Significantly decreasing trend	670439	25	2000 - 2024	9	-0.22	12.74	-0.13	0.0000
rkbpbwq	Significantly decreasing trend	286433	9	2016 - 2024	10	-0.37	13.71	-0.51	0.0000

## Total Suspended Solids - Discrete

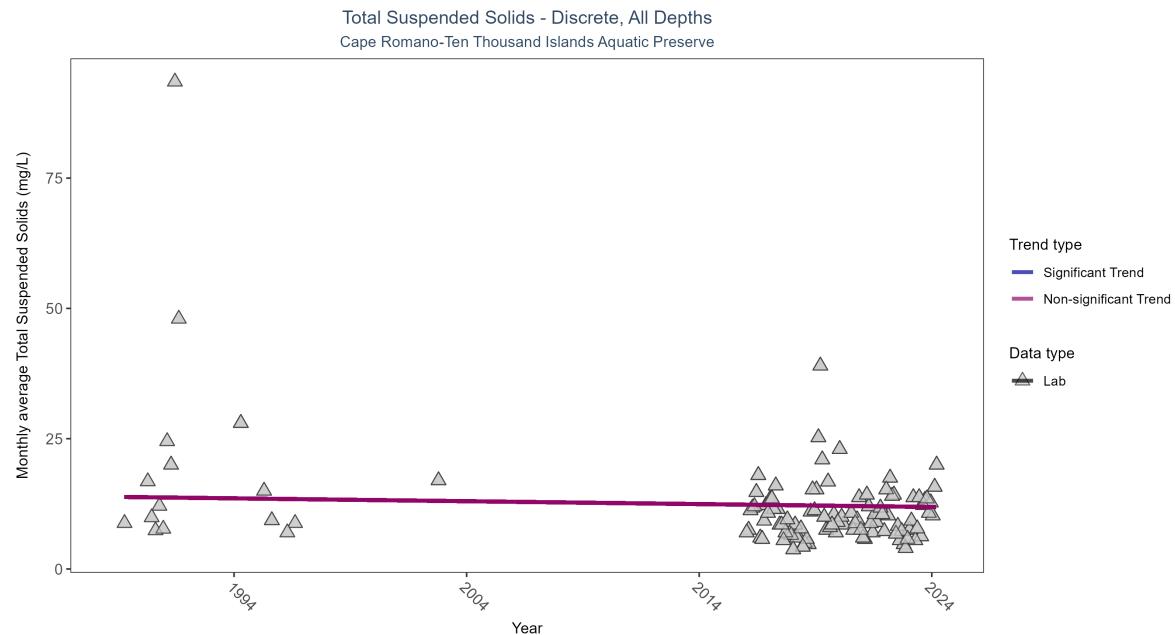


Table 17: Seasonal Kendall-Tau Results for - Total Suspended Solids

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	No significant trend	429	16	1989 - 2024	10	-0.0586	13.82946	-0.05517	0.3813

## Chlorophyll a, Uncorrected for Pheophytin - Discrete

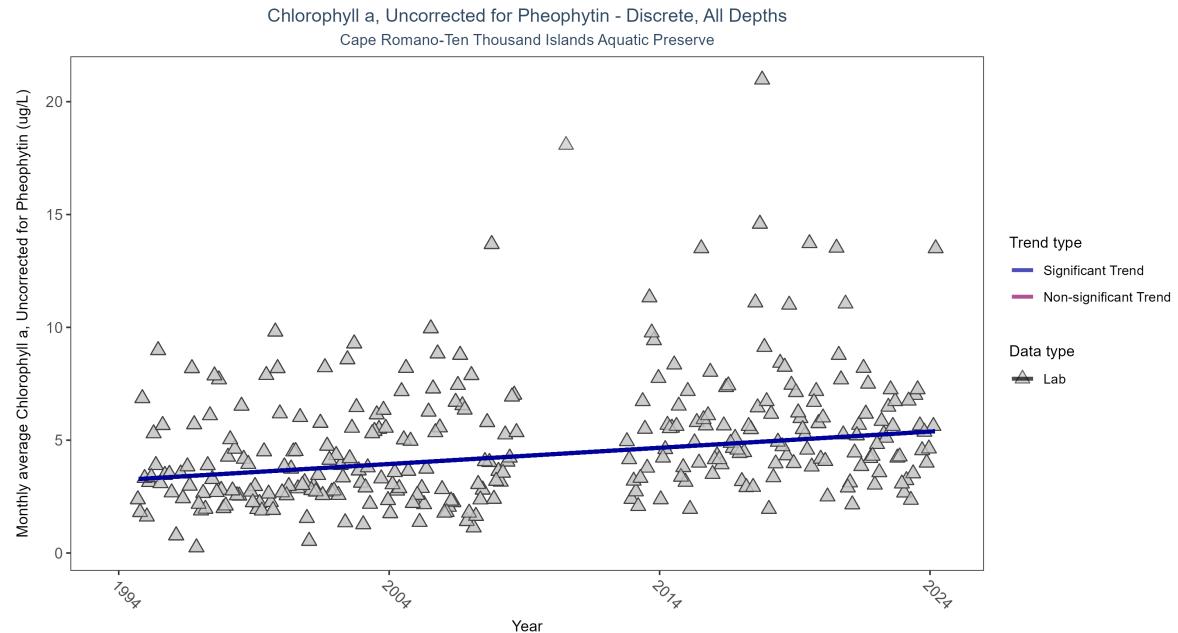


Table 18: Seasonal Kendall-Tau Results for - Chlorophyll a, Uncorrected for Pheophytin

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	Significantly increasing trend	2142	29	1994 - 2024	3.60135	0.2597	3.22617	0.07182	0.0000

## Chlorophyll a, Corrected for Pheophytin - Discrete

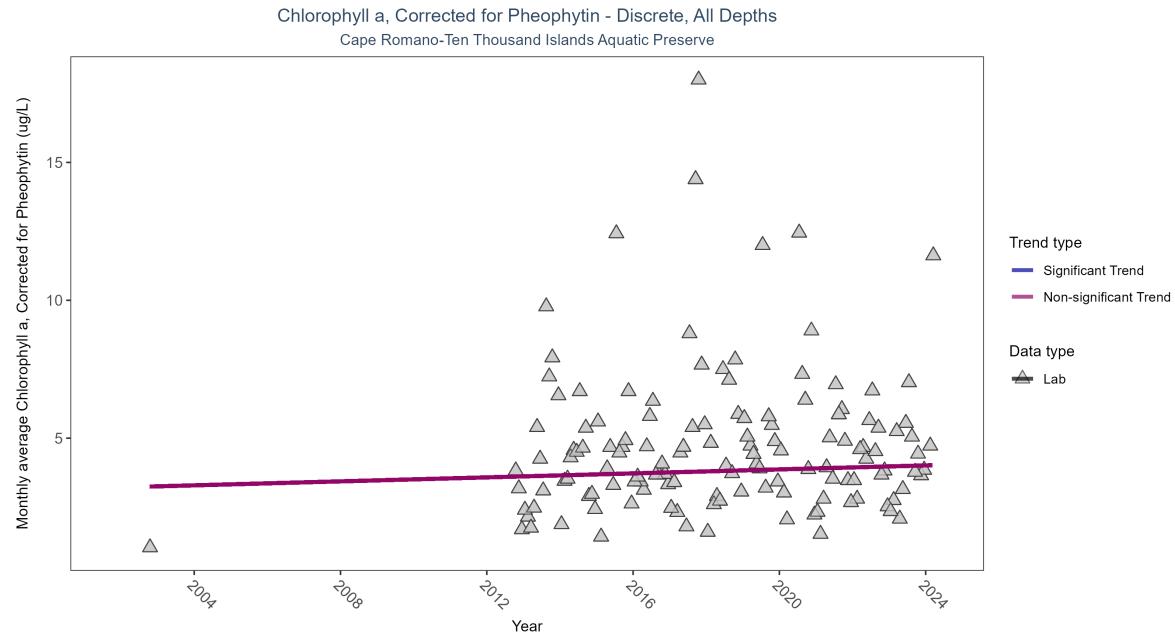


Table 19: Seasonal Kendall-Tau Results for - Chlorophyll a, Corrected for Pheophytin

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Lab	No significant trend	585	14	2002 - 2024	3.7	0.0685	3.21642	0.03611	0.3002

## Secchi Depth - Discrete

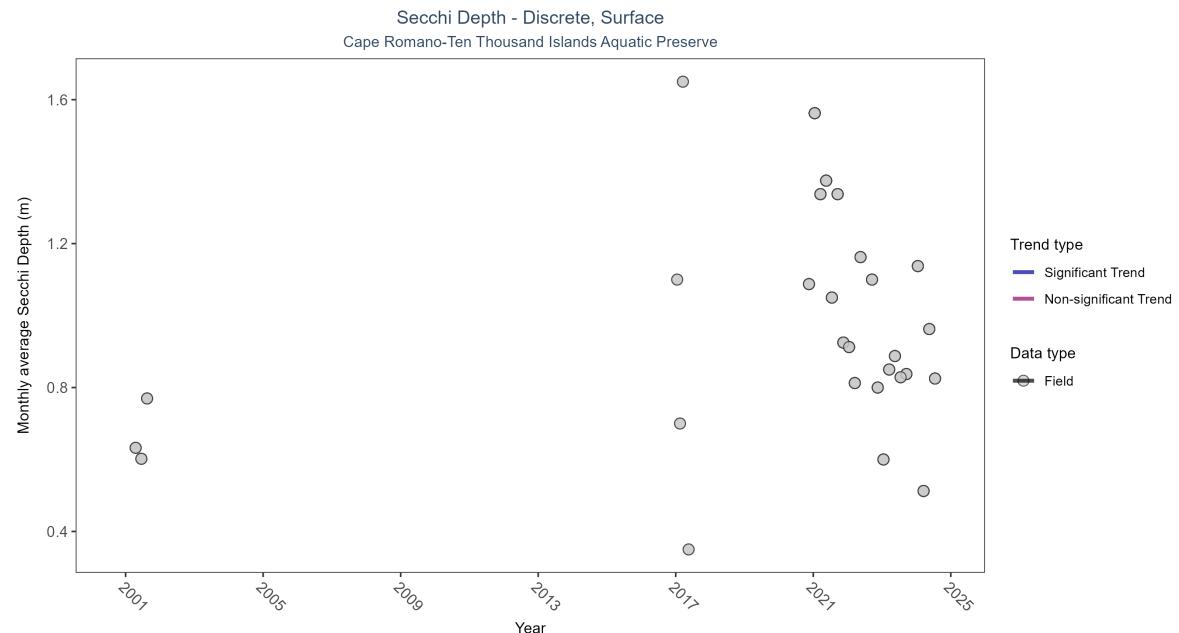


Table 20: Seasonal Kendall-Tau Results for - Secchi Depth

ActivityType	Statistical Trend	N-Data	N-Years	Period of Record	Median	tau	SennIntercept	SennSlope	p
Field	Insufficient data to calculate trend	235	7	2001 - 2024	0.9	-	-	-	NA

## Colored Dissolved Organic Matter - Discrete

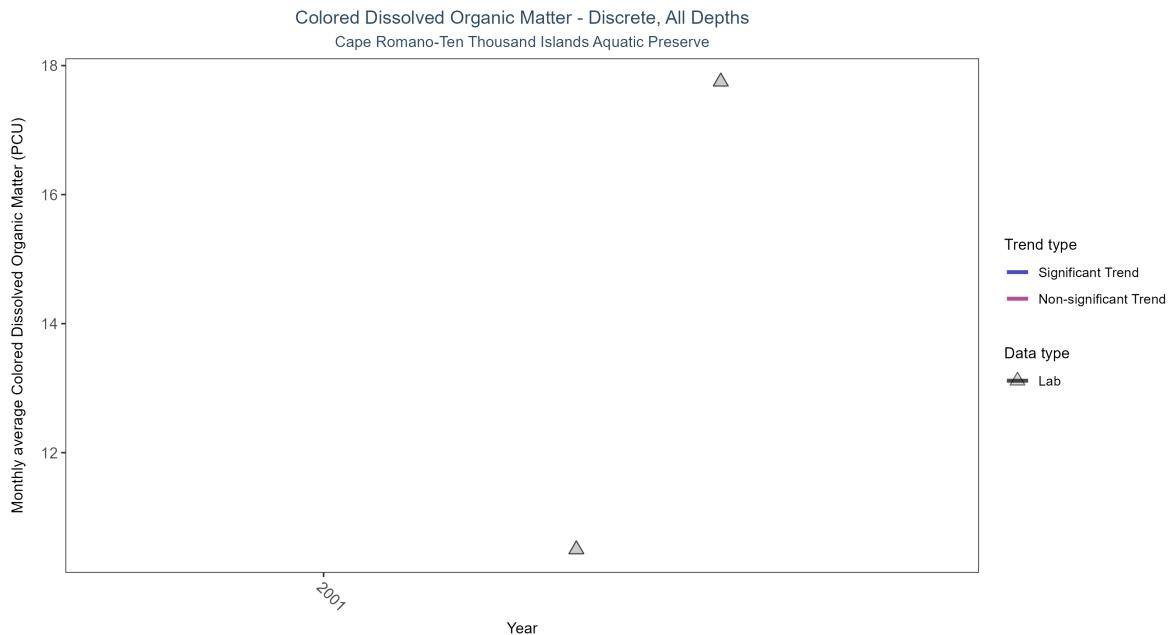


Table 21: Seasonal Kendall-Tau Results for - Colored Dissolved Organic Matter