

Establishing Water Clarity Benchmarks for Sarasota County Estuarine
Waters

Final Report:



Sarasota County Water Resources
2817 Cattlemen Road
Sarasota, Fl. 34232

September 21st 2007

Prepared By:

Janicki Environmental, Inc.

Contributing Authors: Mike Wessel
 Anthony Janicki
 Ravic Nijbroek

Executive Summary

Sarasota County's estuarine resources provide valuable ecological and economic benefits to southwest Florida and the County's Water Resources department has a mission to provide stewardship of these resources to serve its citizenry. As part of this mission Sarasota County (County) has contracted with Janicki Environmental, Inc. to develop benchmarks for water clarity in the County's estuarine waters. Water clarity is a phenomenon which is readily observable, ecologically important and is of great interest to the public at large as one measure of ecosystem health. Establishing benchmarks for water clarity is an important step the County has initiated in providing stewardship of its valued natural estuarine resources. Evaluation of the benchmarks will be used as part of an adaptive management approach to provide a level of service for protection against degradation of valued natural estuarine resources in Sarasota County. Specific goals were set forth in the scope of work for this benchmark-setting project. These goals were that the benchmarks be: objectively defined; scientifically defensible, geographically specific, related to a valued natural resource, and linked to a human activity that can be managed.

This report describes in detail the process used to establish the water clarity benchmarks and the evaluation strategy used to compare future water clarity conditions against the established benchmarks. The evaluation strategy is intended to be used in an adaptive management strategy and in that sense this report is to be considered a living document. The benchmark-setting strategy involved analyzing a wealth of empirical data collected within the County's estuarine waters including data on water quality, seagrass, and bathymetry. The approach identified seagrass as a valued natural resource which was most sensitive to changes in water clarity. Limiting factors for seagrass growth and productivity include maintaining a water clarity condition to allow sufficient light to reach the depth at which seagrass typically grow. Since Sarasota County estuarine waters are inherently diverse with respect to freshwater inflows, depth, and sediment types, the water clarity benchmarks needed to be geographically specific. Therefore, prior to establishing the water clarity benchmarks a segmentation scheme was developed to identify estuarine waters where water quality was relatively homogeneous. Once a segmentation scheme was developed, seagrass data from aerial surveys and available bathymetry data for County waters were mapped and translated to an electronic database for analysis. The goal was to use all available data to identify a light attenuation value representative of conditions observed in Sarasota County waters which contributed to a healthy seagrass community. The traditional depth limitations of seagrass within these segments were used as a guideline to establish threshold values for light attenuation. The thresholds were established to allow for sufficient light penetration to provide the physical light requirements of seagrass to a depth above which 90 percent of the seagrasses have ever been recorded in Sarasota Bay based on the Southwest Florida Water Management Districts (SWFWMD) biannual aerial seagrass surveys over the past ten years. While there is some debate about the light requirements of seagrass, we selected 25% of available light at the surface as an adequate threshold for light availability. This coefficient is very similar to those used in the estuarine

waters of the Indian River Lagoon, Tampa Bay, and Charlotte Harbor to establish water quality targets based on water clarity.

Water with higher clarity attenuates less light allowing a higher percentage of available light to reach greater depths. Thus, the deeper the depth target, the smaller the K_d value needs to be. The light attenuation coefficient, K_d , is measured as a routine part of Sarasota County's current ambient water quality monitoring program. The following table provides the target depths and threshold K_d values used for evaluating each estuarine water clarity monitoring segment.

Segment	Target Depth (ft)	Target Depth (m)	K_d Threshold 1/m
Sarasota Bay North	5.6	1.7	0.81
Sarasota Bay South	6.4	2.0	0.71
Roberts Bay North	3.6	1.1	1.24
Little Sarasota Bay	3.8	1.2	1.20
Blackburn Bay	3.9	1.2	1.16
Dona / Roberts Bay	3.7	1.1	1.23
Lemon Bay North	4.6	1.4	0.98

Establishing water clarity benchmarks for Sarasota County provides natural resource managers with an evaluation tool for water clarity based on the best currently available information. The water clarity benchmarks are meant to serve as a tool to compare future ambient monitoring data to an established threshold for water clarity. The benchmarks serve as a useful measure of protection against degrading water clarity and also as an indicator of significantly improving water clarity conditions. Evaluation of the benchmarks will be used as part of Basin Management Action Plans (BMAP's) developed in coordination with the Florida Department of Environmental Protection (FDEP) in an adaptive management approach to provide a level of service for protection of a valued natural estuarine resource in Sarasota County through examination of water clarity status and trends. Hindcasting using the water clarity benchmark evaluation process confirmed the applicability of the benchmarks to historic water clarity values collected over eight years of routine monitoring throughout Sarasota County.

There are two components to the assessment of water clarity in Sarasota County estuarine waters; status and trends. Benchmark evaluation serves as a status report card to county commissioners and the public at large on one measure of the estuarine health in Sarasota County while trends may be used to assess changes in water clarity over time; to identify

and prioritize remedial actions; to evaluate the effects of surface and stormwater improvements on water clarity, and to assess the potential benefits of restoration efforts.

Status evaluation is proposed to take place on a calendar year basis. Each year the data collected within each water clarity segment in Sarasota County will be assessed and compared to the established benchmarks. The evaluation process uses data collected from 1998 through 2005 (a time period when seagrasses were observed to be stable) to examine the frequency of K_d values in exceedance of the threshold value. This exceedance frequency is used as the benchmark value and exceedance frequencies of subsequent years of data are compared to the exceedance frequency from historic data. Since lower K_d values correspond to more light reaching to deeper depths, a K_d value lower than the benchmark is considered a “success” while a value above the benchmark is considered an “exceedance”. The binomial test is used to evaluate a sample (one year’s worth of data) with respect to the benchmark. There are four categories which are used to compare the annual light attenuation data collected within each segment to its water clarity benchmark:

Category	Definition
Green Star	Water clarity is better than benchmark with highest statistical certainty
Green	Water clarity meets the benchmark
Yellow	Water clarity is worse than benchmark with statistical certainty
Red	Water clarity significantly worse than benchmark with highest statistical certainty

A decision matrix is provided to provide managers with an action plan based on results of the status report card evaluation. Management actions are ordered based not only on the response to a single year’s evaluation but also to the results from multiple years of evaluation. Combined, the benchmarks and evaluation strategy serve as a powerful tool objectively assess the water clarity conditions in Sarasota County estuarine waters and provide water resource managers with important objectively derived information to assist in the protection of the County’s valuable natural estuarine resources.

Acknowledgments

This project could not have happened without the support of many environmental professionals working in southwest Florida including: John Ryan, Jon Perry and Jack Merriam from Sarasota County Water Resources; The staff at Mote Marine Laboratory for their water quality collection efforts; Shawn Landry and Jason Scalaro from the USF Water Atlas; Mark Alderson and Gary Raulerson from the Sarasota County Estuary Program; Kristen Kaufman from the Southwest Florida Water Management Districts Surface Water Improvement Program; Tom Singleton from the Florida Department of Environmental Protection, and all the members of the Southwest Florida Seagrass Working Group.

Suggested Reference:

Wessel, M. R. , A. Janicki and R. N. Nijbroek. 2007. Establishing water clarity benchmarks for Sarasota County estuarine waters. Report submitted to Sarasota County Water Resources. Sarasota, Florida

Table of Contents

Acknowledgments	5
Suggested Reference:	5
Introduction	9
Introduction	9
Goals and Objectives:	10
Segmentation	12
Water Quality Monitoring Segmentation:	15
FDEP Waterbody Identification Scheme:	16
Proposed Segmentation Scheme:	16
Kendall Tau Trend Test	20
Establishing a Natural Resource Benchmark	21
Seagrass as a Valued Resource:	21
Photosynthetically Active Radiation:	24
Bathymetry:	25
Establishing Water Clarity Benchmarks	27
Joining Seagrass and Bathymetry Coverages:	27
Estimating Secchi from Kd:	31
Evaluation Strategy	33
Discussion	41
References	45
Appendix 1	46
Appendix 2	47
Appendix 3	48
Appendix 4	49

List of Tables

Table 1.	Results of distribution comparisons for water quality parameters by Sarasota County Ambient Water Quality Monitoring segment. Table is arranged from North (top) to South (bottom).	15
Table 2.	Results of distribution comparisons for water quality parameters by WBID. Table is arranged from North (top) to South (bottom).	16
Table 3.	Trend results for Kendall Tau trend test based on data from 1995 through 2005.	21
Table 4.	Target seagrass depths (based on 90 th percentile of distribution) and corresponding target <i>Kd</i> values.	29
Table 5.	Water clarity <i>Kd</i> thresholds and correction factor derived via regression analysis to establish a potential secchi disk depth thresholds.	33
Table 6.	Evaluation categories for water clarity status relative to benchmark distribution.	34
Table 7.	Benchmark light attenuation parameter estimate (<i>Kd</i>) by segment and historical exceedence percentile based on data collected from 1998 through 2005 (except Dona and Roberts Bay which has only been sampled from 2003-2005).	35

List of Figures

Figure 1.	Sarasota County Ambient Water Quality Monitoring Network segmentation scheme.	13
Figure 2.	Sarasota County Waterbody Identifiers (WBIDs) designated by the FDEP.	14
Figure 3.	Differences between the FDEP WBID boundaries associated with Sarasota Bay North and the derived water clarity segments used for benchmark setting (blue background).	18
Figure 4.	Proposed water clarity benchmark segmentation scheme showing segments clockwise from north to south. Note: Lemon Bay South is in Charlotte County and is shown but not included in the analysis.	19
Figure 5.	Seagrass abundance expressed as a percentage of the total segment area from 1988 through 2004. Note: lines are interpolated for years without full coverage	22
Figure 6.	Historical extent of seagrass coverage based on SWFWMD SWIM survey years 1998-2004.	23
Figure 7.	Bathymetry (depth at mean low water) for Sarasota Bay segments.	26
Figure 8.	Example of grid overlay and assignment of seagrass cells in Sarasota Bay North.	28
Figure 9.	Seagrass depth targets (dotted horizontal line) for each water clarity segment in Sarasota County.	30
Figure 10.	Distribution of the light attenuation coefficient K_d by Sarasota County water clarity segment. Arrows represent the Threshold K_d values. The boxplots display quantiles of the data distribution where the bottom of the box represents the 25 th percentile, the center (horizontal line) is the median, the top of the box is the 75 th percentile and the whiskers (extent of the vertical line represents the 5 th and 95 th percentile.	31
Figure 11.	Observed vs. predicted secchi disk depth based on relationship between K_d (i.e., $1/K_d$) and Secchi. Note: solid line is the 1:1 line indicating the expected relationship.	33
Figure 12.	Probability Density Function for Binomial distribution with $P=0.25$ and 100 Observations.	36
Figure 13.	Example Distributions of light attenuation with increasing exceedence proportions from left to right. Evaluation categories are based on a benchmark with 25% exceedence frequency.	37
Figure 14.	Inter annual variation in light attenuation in the Sarasota Bay North water clarity segment with status evaluation for each year presented in the header boxes above the boxplots. Status evaluation is based on a benchmark distribution with 25% exceedance.	38
Figure 15.	Decision matrix for water clarity assessment using the Sarasota County water clarity report card.	40
Figure 16.	Example evaluation of water clarity of Sarasota County estuarine waters for sample year 2003.	43

Introduction

The quality and clarity of estuarine waters has important scientific implications for estuarine ecosystems and is an observable phenomenon that is of great interest to the general public. In Sarasota County (County), there is concern that water clarity has declined from increasing nutrient pollution, discharge of sediments, and changes in runoff volume from watersheds. Additionally, the community has voiced concern about water clarity in several estuarine waterbodies of Sarasota County. These issues have lead Sarasota County to develop objective criteria to assess water quality conditions, and as an important step in this process, have identified water clarity as water quality parameter of interest. Water clarity is a phenomenon which is readily observable, ecologically important and is of great interest to the public at large as a measure of ecosystem health. The County initiated this project to establish benchmarks for non-degradation of estuarine water clarity. The purpose of the benchmarks is to define objective numerical criteria that could be used to evaluate future water clarity measurements against conditions thought to provide a beneficial environment for the county's valued natural estuarine resources. Evaluation of the benchmarks is intended to be used as part of Basin Management Action Plans (BMAP's) developed in coordination with the Florida Department of Environmental Protection (FDEP) in an adaptive management approach to provide a level of service for protection of a valued natural resource in Sarasota County and is in that sense a "living" process.

Water clarity is generally measured either by a secchi disk reading in which one follows the descent of the disk to a depth in the water column where it is just barely visible; or by an electronic meter that measures light attenuation through the water via two sensors spaced a constant distance apart (e.g., 0.5m) under the waters surface. While water clarity is measurable; from a management perspective, it can only be managed through manipulation of water quality parameters. Water quality parameters that affect light attenuation include color, turbidity, and suspended matter as well as phytoplankton concentrations (usually measured as chlorophyll-a concentrations) that are thought to be limited by nutrient inputs such as nitrogen and phosphorus species.

Federal and state regulatory agencies are increasingly focusing on evaluating water quality as a means of establishing definitions of impairment of waterbodies. For example, the Florida Department of Environmental Protection has established a criterion for determining impairment of water bodies based on chlorophyll-a concentrations. Many of the estuarine waters in Sarasota County have chlorophyll-a concentrations that are near the thresholds described in the Florida Impaired Waters Rule, or "IWR" (Chapter 62-303, Florida Administrative Code); and therefore, may have required pollutant load reductions assigned to them through the state's Total Maximum Daily Load (TMDL) Program (PBS&J 2006). In particular, Roberts Bay (WBID 1968D) and Blackburn Bay (WBID 1968F) are currently listed as impaired for historical increases in chlorophyll-a. Upper Lemon Bay (WBID 1983A) is also listed as impaired for chlorophyll-a (exceedance of the 11 $\mu\text{g/L}$ threshold). Chlorophyll is only one constituent of water quality that effects the attenuation of light

through the water column, reducing available light required for seagrass health and productivity.

Sarasota County is partnering with the Environmental Protection Agency (EPA), The Florida Department of Environmental Protection (FDEP) and other agencies to develop Basin Management Action Plans (BMAP) to manage activities and implement projects to restore and protect valuable estuarine resources. As part of that goal, Sarasota County Water Resources has set out to establish water clarity benchmarks for Sarasota County estuarine waters that are;

- objective
- scientifically defensible,
- geographically specific,
- related to a valued natural resource, and
- linked to a human activity that can be managed.

Goals and Objectives:

The goal of this project was to develop water clarity benchmarks which were scientifically defensible and also easily understood by the non-scientific community such that Sarasota County can bolster community activism in protecting their valued natural resources. Once the water clarity benchmarks are identified, estuarine response models, including deterministic and empirically based water quality models, can support management decisions on how to most effectively protect water clarity in these estuarine waters of concern. The objectives listed below represent a series of steps that were used to establish water clarity benchmarks in Sarasota County estuarine waters based on the best available scientific information and related to requirements for a valued natural resource whenever possible.

Several objectives were identified in order to define the appropriate mechanisms for developing water clarity benchmarks. The defined objectives were to:

- 1) Identify water quality parameters that influence water clarity in Sarasota County waters.
- 2) Identify a segmentation scheme to divide Sarasota County waters into areas (segments) where the empirical distributions of water quality parameters tend to be similar to establish geographically specific water clarity benchmarks.
- 3) Identify a valued natural resource component and criterion for protection of the resource
- 4) Identify a resource based water clarity benchmark that protects the valued resource.

- 5) Identify an evaluation strategy to assess future ambient data with respect to the benchmarks.
- 6) Translate the scientific information derived from these analyses to the non-scientific community to encourage activism in protecting the valued resource.

The following report explains in detail the evaluation used to assess each objective listed above and the resulting water clarity benchmarks derived from the assessment process. Of course, the first objective was to identify all the water quality data available for analysis. Sarasota County has partnered with the University of South Florida to make all its water quality data available to the public through the Sarasota County Water Atlas (<http://www.wateratlas.usf.edu/>). Therefore, a master dataset of all measured water quality parameters was compiled. The specific water quality parameters identified for analysis included:

- Chlorophyll a (ug/l)
- Color (pcu)
- Total Nitrogen (mg/l)
- Total Phosphorus (mg/l)
- Salinity (ppt)
- Secchi disk depth (m)
- Dissolved Oxygen (mg/l)
- Total Suspended Solids (mg/l)
- Turbidity (NTU)
- Light Attenuation (K)

Once these parameters were subset from the master database, the data were imported into ArcGIS (ESRI, 2005) and plotted based on listed geographic coordinates. The majority of these data represent a fixed location sampling scheme conducted under the direction of the Sarasota County Ambient Water Quality Monitoring Network. A geographic information systems software package (ArcGIS v9.0; ESRI 2005) was used to assign the water quality data to the existing segmentation schemes including the County sampling scheme and the FDEP water body identifiers (WBID).

Segmentation

Since Sarasota County estuarine waters are inherently diverse with respect to freshwater inflows, depth and sediment types, the water clarity benchmarks needed to be geographically specific. Therefore, prior to establishing the water clarity benchmarks a segmentation scheme was developed to identify areas of the County's estuarine waters where water quality was relatively homogeneous. Previously established segmentation schemes include the Sarasota County Ambient Water Quality Monitoring Network segmentation scheme (Figure 1) and the FDEP WBIDs (Figure 2).

We examined the empirical water quality to assess similarities and differences in the distribution of water quality constituents that affect light attenuation, and the light attenuation coefficient K_d , throughout the County's estuarine waters. We first defined a conceptual model with the expectation that water quality is driven by freshwater inputs, coastal inlets and residence time. The expectation was that high Color (pcu), low salinity (ppt) waters influenced by blackwater tributaries of the Myakka River would have different water quality than areas with low freshwater inputs and increased influence of coastal inlets. Subsequently, two research teams independently constructed cumulative distribution function (CDF) plots for all relevant water quality constituents and identified segments that co-varied with respect to the water quality constituents of interest. One team compared the current water quality data across monitoring segments used by the current water quality monitoring scheme while the other team used the WBID designations. The two teams then convened to compare their findings and finalize a proposed water clarity segmentation scheme. Finally, a statistically robust, nonparametric trend test (Kendall Tau) was used to assess trends within each of the proposed segments for the water quality constituents and compare adjacent segments with respect to trends in water quality.

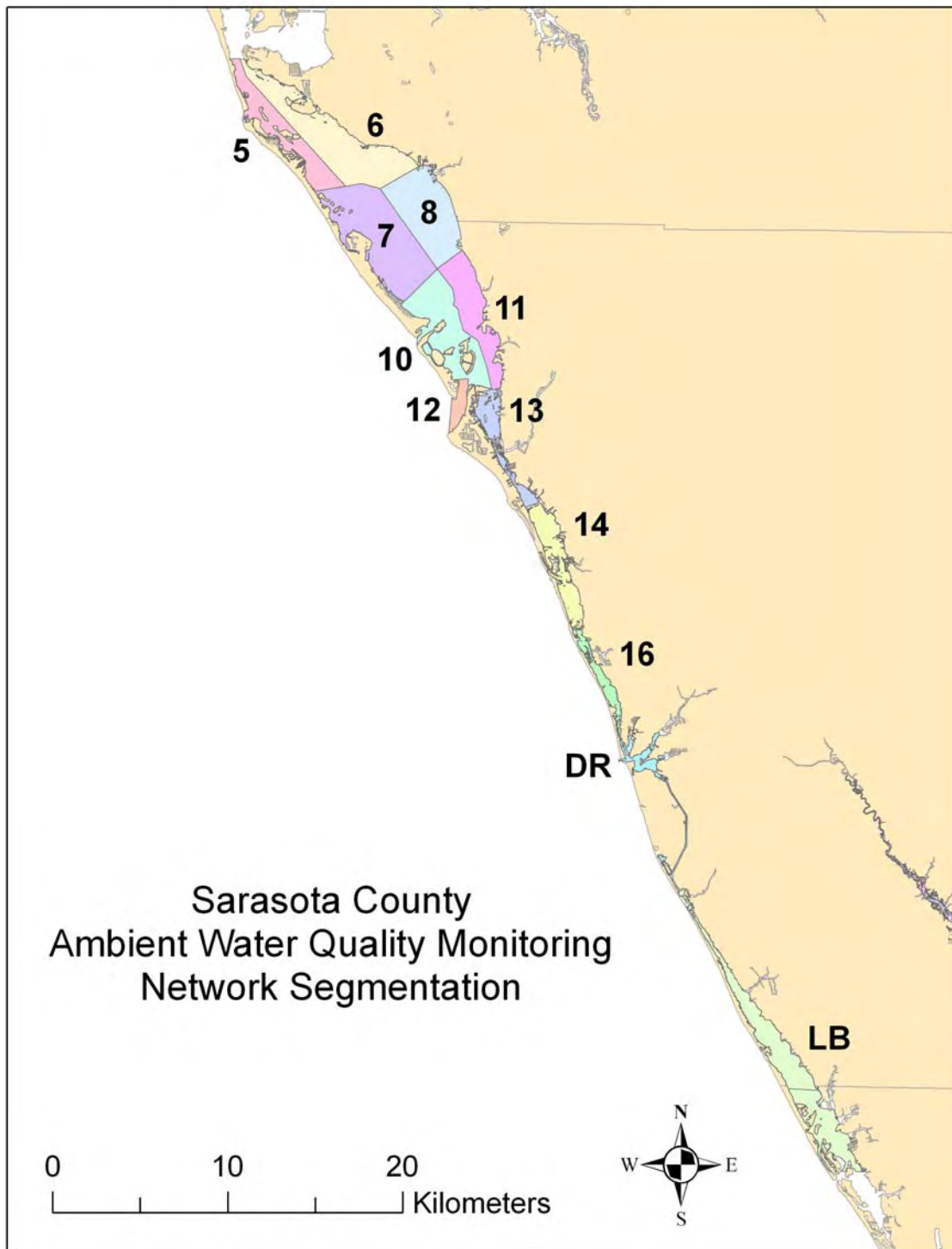


Figure 1. Sarasota County Ambient Water Quality Monitoring Network segmentation scheme.



Figure 2. Sarasota County Waterbody Identifiers (WBIDs) designated by the FDEP.

Water Quality Monitoring Segmentation:

The research team characterizing similarities among water quality monitoring segments categorized the distribution for each water quality constituent of interest as being average, above average, or below average using the CDF plots. These plots are provided in Appendix 1. A table was constructed based on the teams rankings of each water quality constituent across segments. For most water quality constituents including Salinity, Chla, Color, DO, Kd and TN, the northern segments (i.e., 7, 8, 10, 11, 12) were clearly separated from the remaining segments (Table 1). Total Phosphorus was similar throughout the study area except for Lemon Bay where the distribution was generally higher than all other segments. Turbidity and TSS were least predictable in terms of the spatial compatibility of their distributions with less obviously patterns of similarity among adjacent segments.

Table 1. Results of distribution comparisons for water quality parameters by Sarasota County Ambient Water Quality Monitoring segment. Table is arranged from North (top) to South (bottom).

Segment	Salinity (ppt)	Chla_C ug/L	Color (pcu)	DO (mg/L)	Light (Kd)	TP (mg/L)	TSS (mg/L)	TN (mg/l)	Turb (mg/L)
7	++	na	--	++	--	O	-	--	--
8	++	na	--	++	--	O	O	--	--
10	++	--	--	++	--	O	O	--	--
11	++	--	--	++	--	O	O	--	O
12	++	--	--	++	--	O	-	--	--
13	--	++	++	O	++	O	O	O	++
14	--	++	++	O	++	O	O	++	++
16	O	O	O	++	O	O	O	O	O
DR	--	--	++	--	++	O	-	O	++
LB	--	++	++	--	++	++	O	++	O

++ = Higher than average O = Average distribution -- = Lower than average

FDEP Waterbody Identification Scheme:

The research team characterizing similarities among FDEP WBIDs followed parallel logic to categorize the distribution of water quality for each WBID of interest as being average, above average, or below average using the CDF plots. These plots are provided in Appendix 2. A table was constructed based on the team's rankings of each water quality constituent across WBIDs. As was found with the water quality segments, for most water quality constituents including (Salinity, Chla, Color, DO, Kd and TN) the northern WBIDs (i.e. 1968B and 1968C) were clearly separated from the remaining WBIDs (Table 2). Turbidity and TSS were somewhat less predictable in terms of the spatial compatibility; however, distributions of TP became more spatially distinguishable than with the water quality segments.

Table 2. Results of distribution comparisons for water quality parameters by WBID. Table is arranged from North (top) to South (bottom).

Segment	Salinity (ppt)	Chla_C ug/L	Color (pcu)	DO (mg/L)	Light (Kd)	TP (mg/L)	TSS (mg/L)	TN (mg/l)	Turb (mg/L)
1968B	++	--	--	++	--	--	++	--	--
1968C	++	--	--	++	--	--	O	--	O
1968D	O	O	O	O	O	O	O	O	O
1968E	--	O	O	O	O	O	O	++	O
1968F	O	O	O	O	O	O	O	O	O
2002	--	--	++	--	++	++	--	O	++
2018	O	--	++	--	++	++	--	O	++
1983A	--	++	++	--	O	++	O	++	O

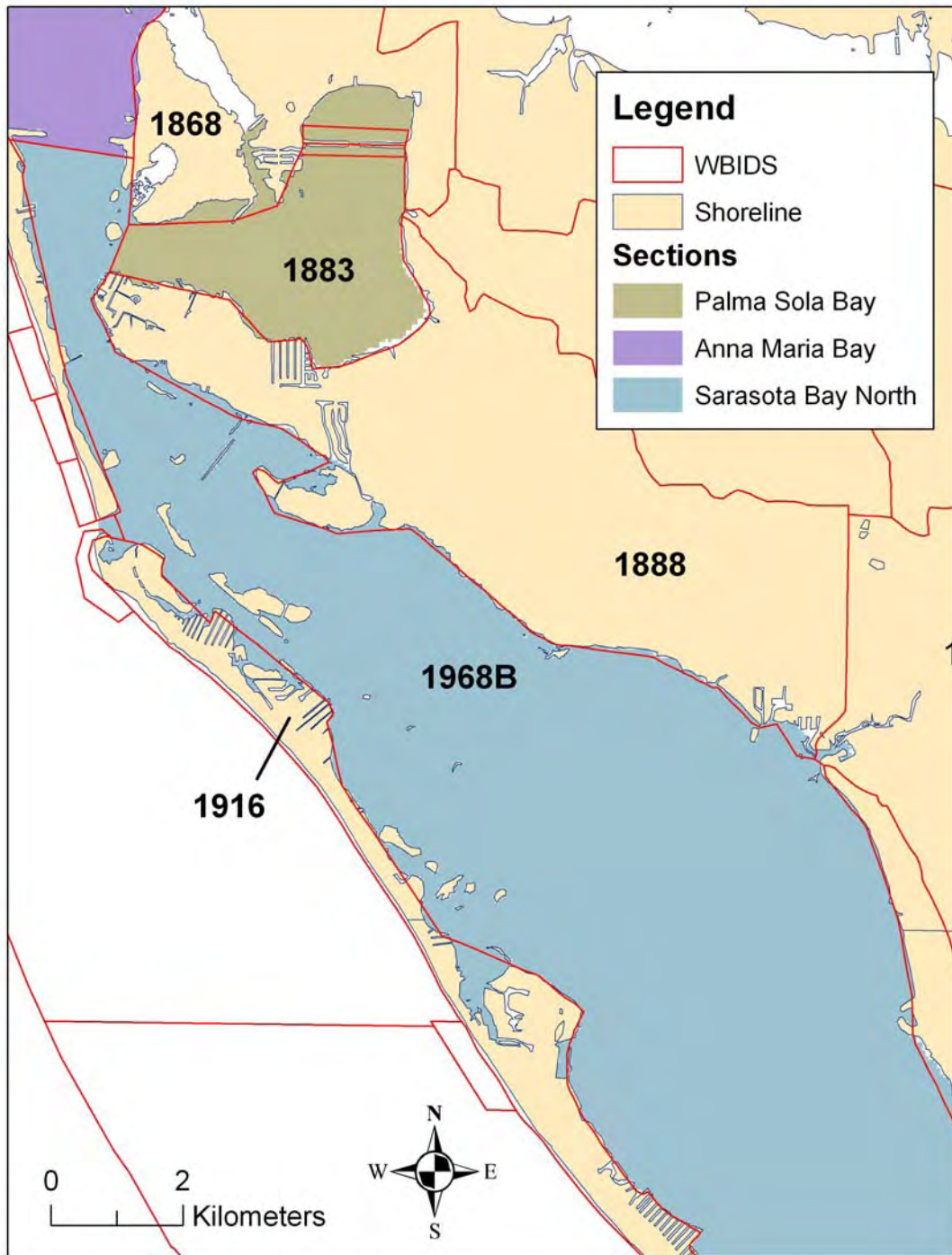
++ = Higher than average O = Average distribution -- = Lower than average

Proposed Segmentation Scheme:

Exploratory data analysis suggested that both the Sarasota County Ambient Water Quality Monitoring Networks segmentation scheme and the FDEP WBID designations represented relatively homogeneous groupings for most water quality parameters of interest. However, segmentation on the Sarasota County WBID scale offered several advantages with respect to setting water quality benchmarks.

- Sarasota County WBIDs are based on hydrologic units and therefore reflect variation in hydrologic inputs which contribute to variations in water clarity within the receiving waterbodies.
- Regulatory evaluation of water quality is performed by WBID and therefore benchmark criteria established for water quality and water clarity would be relevant to regulatory assessments conducted by the state regulatory agencies.
- Using a segmentation scheme on the WBID scale reduces the number of segments requiring benchmarks which simplifies the process of evaluating water quality and water clarity in Sarasota County waters while maintaining continuity in sampling design and logistical considerations.

The proposed water clarity segments we developed, however, are not identical to the FDEP designations. In particular, several WBID boundaries group nearshore estuarine waters in Sarasota Bay as being part of adjacent land based WBIDs whereas our segment definitions group those areas into the Sarasota Bay Estuarine WBIDs (See Figure 3). The final water clarity segmentation scheme is shown in Figure 4.



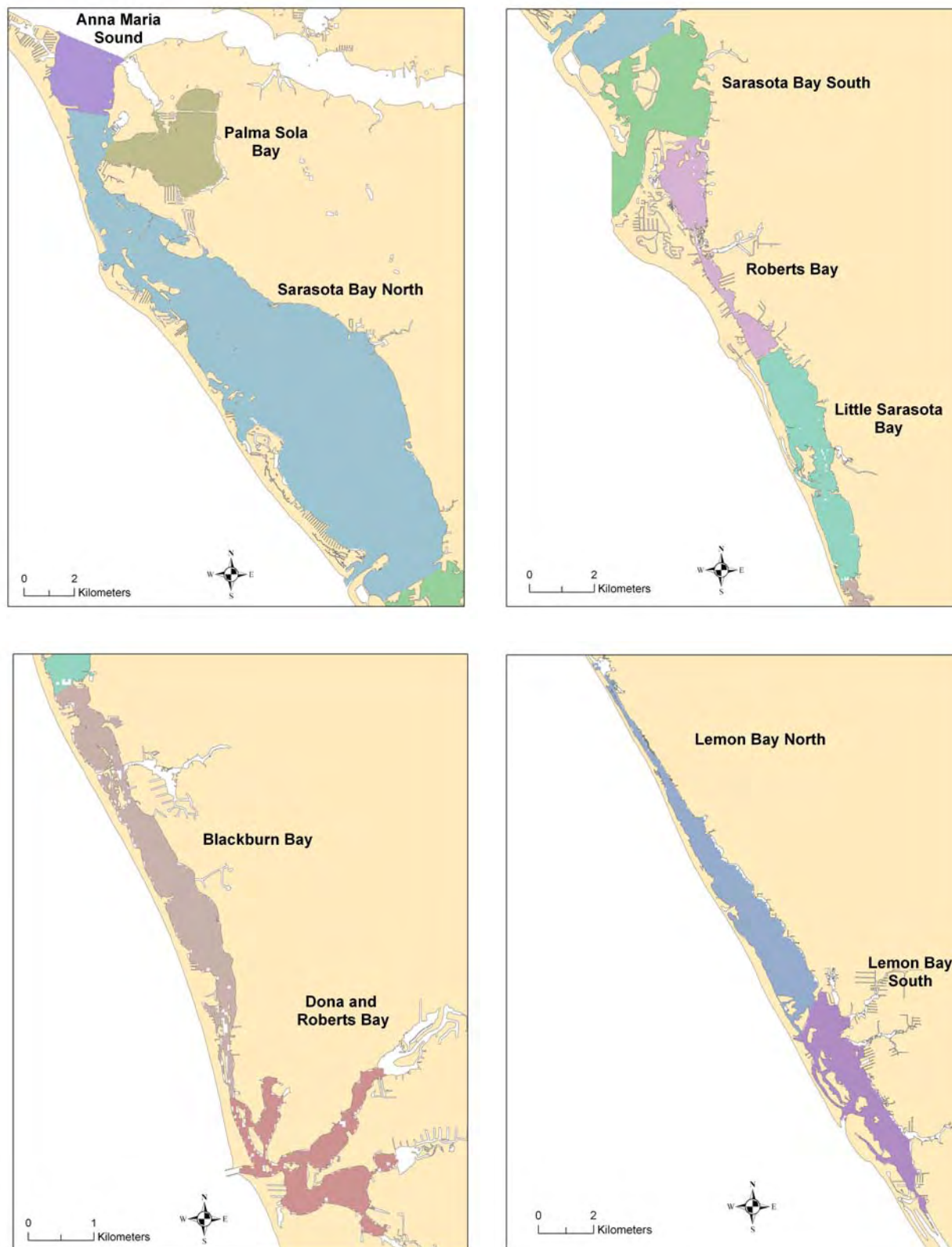


Figure 4. Proposed water clarity benchmark segmentation scheme showing segments clockwise form north to south. Note: Lemon Bay South is in Charlotte County and is shown but not was included in the analysis.

Kendall Tau Trend Test

Once the segmentation scheme was developed, a robust statistical analysis was conducted to examine trends in water quality parameters within each water clarity segment and compare trend results across segments. The Kendall Tau is an objective statistical test commonly employed for evaluating status and trends in water quality parameters for estuarine waters (Reckhow et al., 1993). The test uses non-parametric statistical procedures to evaluate the direction and magnitude of time series water quality trends while accounting for the effects of seasonality and autocorrelation on the estimate of the error structure associated with the significance testing procedure. This test requires a time series of sufficient length to assess time series trends. Given the sampling design employed in Sarasota County 5 years of monthly data was necessary for trend detection. Therefore, the Dona Bay and Roberts Bay segment did not meet the requirements for testing. For the remaining segments, data from 1995 through 2005 was used to assess trends.

Results of the Kendall Tau trend tests suggested that similarities existed with respect to several important water quality constituents. The Kendall Tau trend test revealed similar patterns seen in the CDF plots (Table 3) though not all segments met the sampling requirements of 5 continuous years and 60 samples necessary to be included in the testing procedure (i.e. Dona and Roberts Bay). The detailed results for Kendall Tau testing for each segment and water quality constituent can be found in Appendix 3. In summary, for most parameters and segments there was no evidence of a statistically significant trend; however, there was an increasing trend in salinity, chlorophyll and turbidity in the Sarasota Bay segments. Conversely, TN concentrations were decreasing over time in Roberts Bay and Blackburn Bay. Total Phosphorus increased significantly in all segments with adequate sample size for analysis. A closer examination of these trends revealed that increases were primarily driven by significantly lower values prior to the year 2000 and that if only data from 2000 through 2005 were considered, a significant trend was less likely to result. This result underscores the importance of revisiting trend tests over time in an effort to identify potential sources of variation such as changes to analytical methods, sampling designs and natural variations before inferring anthropogenic causes of trends in water quality.

Table 3. Trend results for Kendall Tau trend test based on data from 1995 through 2005.

Segment	Salinity (ppt)	Chla_C (ug/L)	Color (pcu)	DO (mg/L)	Light (Kd)	TP (mg/L)	TSS (mg/L)	TN (mg/L)	Turb (mg/L)
Sarasota Bay North (SBN)	++	++	O	O	O	++	++	O	++
Sarasota Bay South (SBS)	++	++	O	++	O	++	O	O	++
Roberts Bay (RBN)	O	++	O	O	O	++	O	---	O
Little Sarasota Bay (LSB)	O	O	O	O	O	++	---	O	++
Blackburn Bay (BB)	O	O	O	O	O	++	O	---	O
Dona and Roberts Bay (DRB)	na	na	na	na	na	na	na	na	na
Lemon Bay (LB)	O	O	O	O	O	++	---	---	++

++ = Increasing O = No trend --- = Decreasing

Note: Dona and Roberts Bay did not have sufficient time series for trend test

Establishing a Natural Resource Benchmark

Seagrass as a Valued Resource:

Seagrass was identified as the primary valued natural resource for protection in Sarasota County estuarine waters. Identifying a water clarity benchmark for seagrass involved estimating the light requirement for seagrass in Sarasota County waters. To accomplish this, the recent historic extent of seagrass in Sarasota County needed to be identified to determine where and how deep the seagrasses grow. The Southwest Florida Water Management District (SWFWMD) has performed aerial seagrass mapping surveys 9 times since 1982. The surveys have become a critical component of SWFWMD's Surface Water Improvement and Management (SWIM) program. The source data for these surveys are USGS 7.5' topographic quadrangles and the end products are GIS polygon shapefiles of seagrasses along the coastal estuarine waters of southwest Florida. The final estuary characterization includes multiple habitat codes. Two types of codes, patchy (FLUCSCODE 9113) and continuous (FLUCSCODE 9116) seagrass were combined to determine the presence or absence of seagrass in each water clarity segment. The minimum mapping unit for determining seagrass coverage was 0.5 acres. This determines the smallest area which was identified as patchy or continuous seagrass with certainty.

Several years of seagrass data did not cover the entire area of interest and were subsequently not used in the analysis. Seagrass data for 1982, 1990, and 1992 were completed only for parts of Sarasota Bay or Lemon Bay. In addition, the methodology used for the first year of analysis (i.e., 1982) was deemed too unreliable compared to the methodology used for later years. The following years were surveyed for the entire area of concern and used in our analysis: 1988, 1994, 1996, 1999, 2001, and 2004. Seagrass data from 1990 and 1992 were used in the areas where data were available.

Trends in seagrass abundance were evident for some of the segment areas with apparent increases in Seagrass from 1994 through 2001 in Little Sarasota Bay, Blackburn Bay and Lemon Bay (Figure 5). This is interesting given the apparent decreasing trends in Total Nitrogen in these areas over the sampling period (see Table 3). Note that 1990 and 1992 were partial seagrass survey years and therefore the lines in Figure 6 are interpolated between 1988 and 1994.

%Seagrass

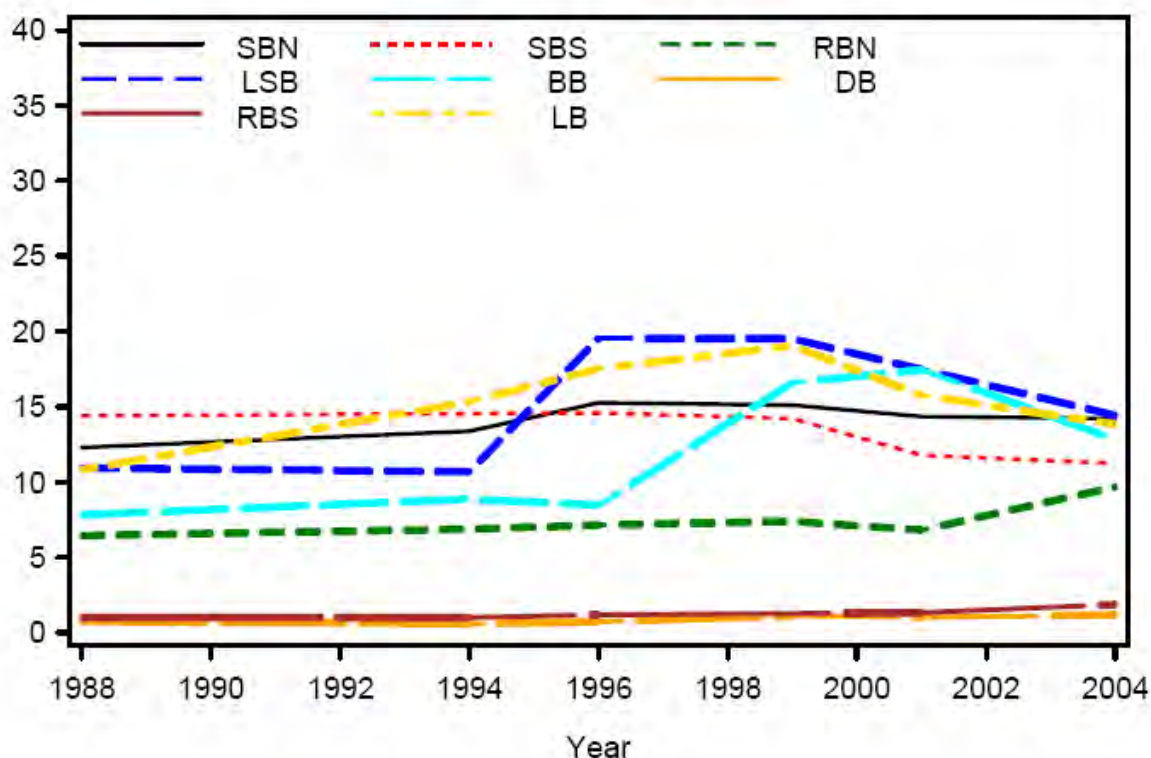


Figure 5. Seagrass abundance expressed as a percentage of the total segment area from 1988 through 2004. Note: lines are interpolated for years without full coverage

All survey years were combined to generate a seagrass coverage representing the recent historical extent of seagrass in Sarasota County estuarine waters (Figure 6). This coverage was then used to establish a depth target for penetration of adequate light to support seagrass communities in each of the established water clarity segments.



Figure 6. Historical extent of seagrass coverage based on SWFWMD SWIM survey years 1998-2004.

Photosynthetically Active Radiation:

The light requirements of seagrass have been used as a criterion for establishing water clarity and water quality targets in several other Florida estuarine systems including Tampa Bay (Janicki and Wade, 1996), Charlotte Harbor (Corbett and Hale 2006) and the Indian River Lagoon (Gallegos and Kenworthy 1996). Two types of seagrass are dominant in these waters; *Halodule wrightii* and *Thalassia testudinum*. The depth to which these species distribute varies as a function of many environmental parameters including sediment type and wave energy but is thought to be primarily regulated by the amount of light available for photosynthesis. Photosynthetically Active Radiation (PAR) is often used to estimate the percent of light available just below the surface of the water that is available at a given depth.

The attenuation of PAR is estimated by the coefficient K_d described in the equation for downward irradiance (Kirk 1994).

$$I_z = I_0^{-K_d*(Z)}$$

Where:

I_0 = Incident light just below the surface

I_z = incident Light at depth z

K_d = Light Attenuation Coefficient

Z = Depth in meters

For the purposes of these analyses light penetration at a given depth is expressed as a percentage of the sub-surface irradiance (i.e., the amount of light available just below the waters surface) though in practice the scattering of light due to surface turbulence and other factors affect the penetration of light into the water. The transparency of water was measured as an in-situ parameter using two distinct methods; a secchi disk and a downwelling irradiance sensor. The downwelling irradiance sensor estimates the diffuse light attenuation coefficient (K_d) and is measured as a routine part of the Sarasota County Water Quality Monitoring program. The diffuse light attenuation coefficient (K_d) is calculated:

$$K_d = \frac{-\ln(E_d(z_2) / E_d(z_1))}{Z_2 - Z_1}$$

Where :

Z_1 and Z_2 = depths of the top and bottom light sensors

E_d = measured downward irradiance

Higher values of K_d indicate higher attenuation of PAR and a smaller percentage of the light just below the surface available at a given depth.

Bathymetry:

To correlate seagrass data from the aerial surveys with depth, we obtained bathymetry data from the National Geophysical Data Center (NGDC) (Figure 7). These datasets were compiled from multiple sources: US National Ocean Service Hydrographic Database, US Geological Survey, Monterey Bay Aquarium Research Institute, US Army Corps of Engineers LIDAR, USGS 3 arc-second DEM's and Shuttle Radar Topography Data, and various other academic institutions (Divins and Metzger, 2006). The final data were corrected, compiled and merged, and distributed as the NGDC 3 Arc-Second Coastal relief Model. A 3 arc-second grid in this geographical area roughly corresponded to a 83m x 90m rectangular grid. These data were referenced to the mean low water (MLW) local vertical datum. In addition, they had a vertical accuracy of 0.3 m in waters 0 – 20 m deep and an accuracy of 1.0 m in waters deeper than 20 m. The horizontal accuracy was 1.5 mm of the sounding location. For analysis purposes, the vertical accuracy was assumed to be unbiased and the data are reported as provided without accounting for this uncertainty.

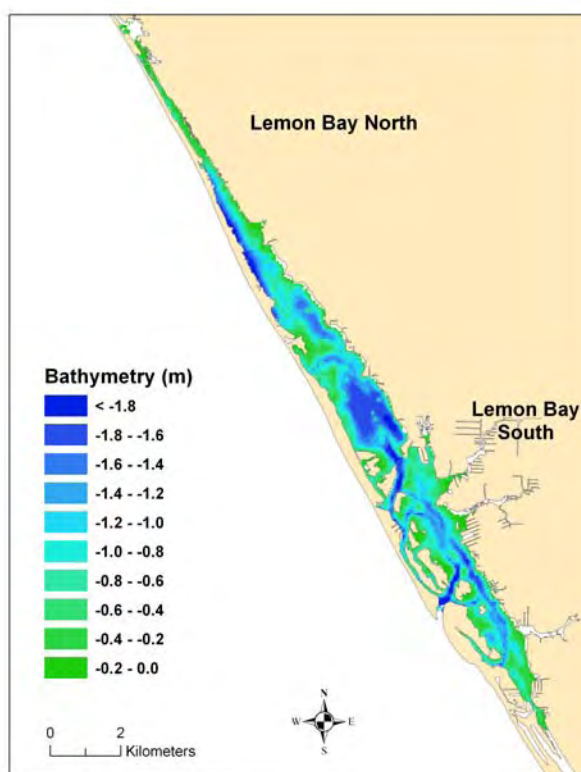
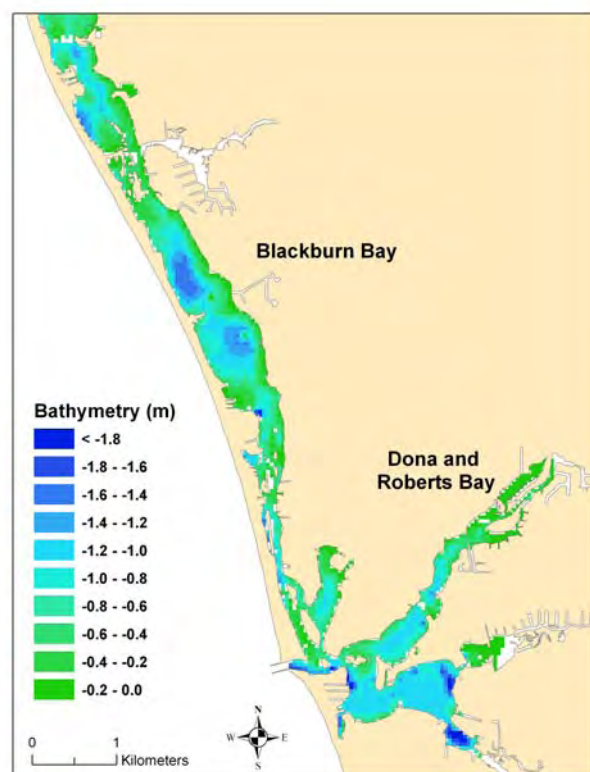
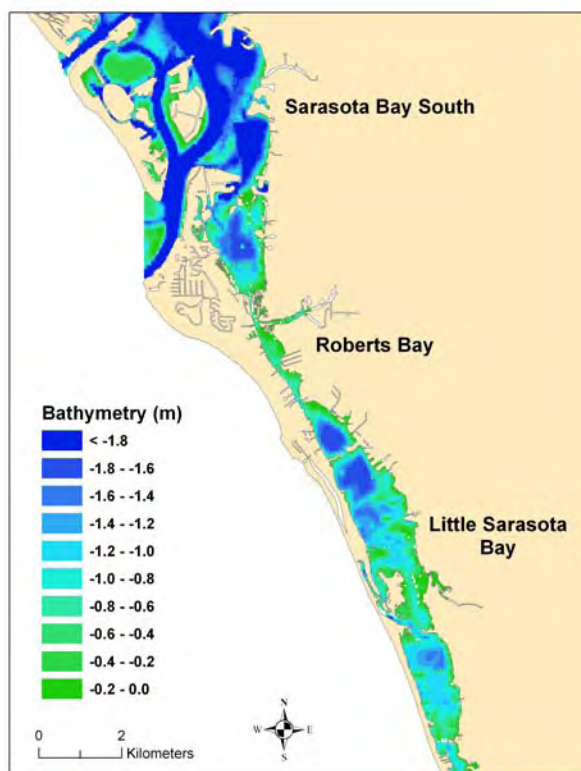
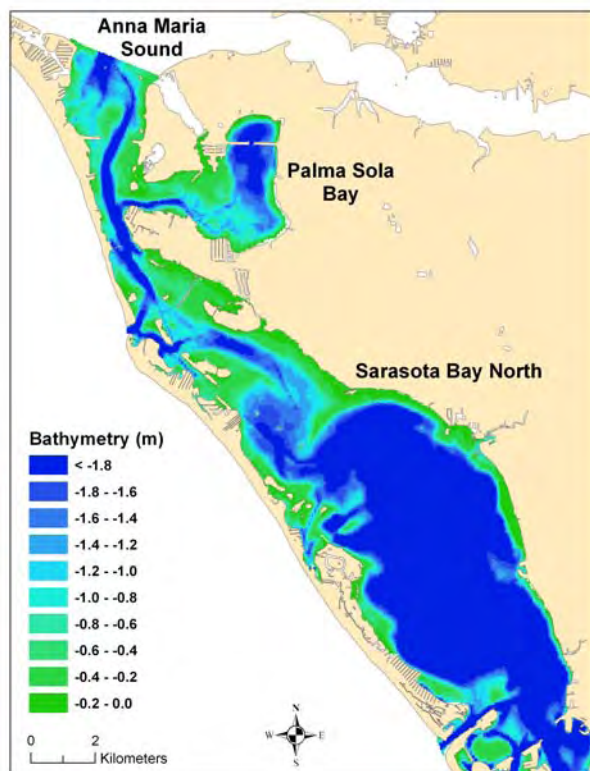


Figure 7. Bathymetry (depth at mean low water) for Sarasota Bay segments.

Establishing Water Clarity Benchmarks

Joining Seagrass and Bathymetry Coverages:

To assign depth to seagrass coverages it was necessary to develop a grid network such that the bathymetry and seagrass coverages could be joined. We chose a 45m x 45m grid to join these data. The grid cell size was determined by calculating the smallest possible square that was greater than the seagrass survey minimum mapping unit. The grid network was joined with the bathymetry coverage, the seagrass coverages for each survey year and the official County estuarine shoreline coverage from the Sarasota Bay Estuary Program (SBEP). The SBEP shoreline extends from Sarasota Bay to Roberts Bay. The official FDEP county shoreline was used for the area extending south of Roberts Bay to the southern border of Lemon Bay. The FDEP and SBEP shorelines were extremely similar over their common extents giving us confidence that the DEP shoreline can be used for the area south of Roberts Bay.

Using ESRI ArcGIS 9.0, grid cells were removed when the center point of the cell was outside the shoreline shapefile (on land). In addition, we used our best judgment to remove cells in selected man-made “finger canals”. These grid cells amounted to less than 1% of the total area analyzed. This approach is consistent with the selection of non-restorable areas when setting seagrass targets in Tampa Bay (Janicki and Wade, 1996). Once this was completed we had identified a population of interest for analytical purposes.

We used the grid overlay to assign seagrass presence or absence to each 45mX45m cell in the grid. If greater than 50% of the grid cell contained seagrass in any year the cell was considered a seagrass cell (See example Figure 8 where green cells contained seagrass and light blue cells did not). We then assigned bathymetry to each cell and calculated the depth distribution of those cells that were ever recorded as containing seagrass. Analysis of the seagrass depth distribution for each segment was conducted by calculating the cumulative distribution of depth across cells where greater than 50% of the cell area contained seagrass in any seagrass survey year. The 90th percentile of this depth distribution was identified as the target depth for protection of seagrass in Sarasota County. That is, if sufficient light for seagrass success was allowed to penetrate to the depth above which 90 percent of the seagrass had ever been recorded, this would serve as an appropriate water clarity threshold. Once the 90th percentile was identified for each water clarity segment, the equation for downward irradiance was rearranged to solve for a K_d value that allowed 25% of sub-surface irradiance to penetrate to the target depth. The 25 percent sub-surface irradiance value represents an estimate of the light requirements consistent with several other studies of Florida estuaries including Tampa Bay (20.5%, Janicki and Wade 1996), Charlotte Harbor (25%, CHNEP 2006), Indian River Lagoon (Gallegos and Kenworthy 1996) and others (cited in CHNEP 2006).

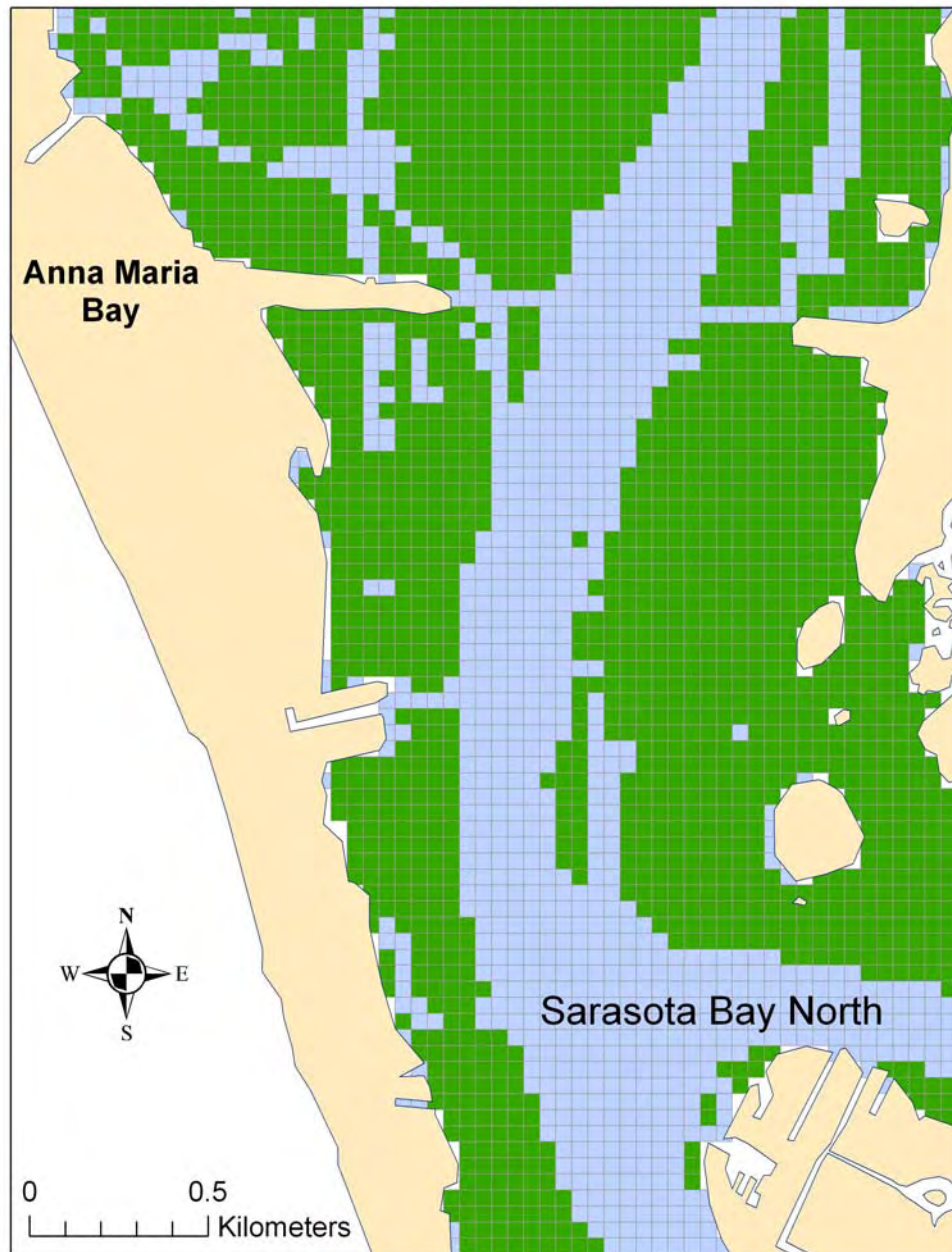


Figure 8. Example of grid overlay and assignment of seagrass cells in Sarasota Bay North.

The seagrass depth distributions varied substantially by segment (Figure 9) indicating both differences in the bottom contours by segment as well as differences in light availability. For example, in Sarasota Bay North approximately 40% of seagrass was found in depths greater than 1 meter (at mean low water) while in the southern portion of Sarasota Bay, 60% of the seagrass was found in depths greater than 1 meter. This is thought to be primarily due to bathymetry as Sarasota Bay North which has a more delineated shelf with lower proportion of available habitat between 1 and 2 meters (at mean low water) while the southern portion of the bay has a higher proportion of available habitat between 1 and 2 meters. The 90th percentile which represents the depth target for 25% sub surface irradiance is shown as the dotted horizontal line on the graphs.

Using the equation for downward irradiance rearranged to solve for K_d , the target depths were converted to threshold K_d values (Table 4). The threshold values in reference boxplots of the empirical data are shown for K_d in Figure 10. The boxplots are constructed to display the quantiles of the data distribution and the arrows identify the K_d thresholds in relation to the empirical distribution.

Table 4. Target seagrass depths (based on 90th percentile of distribution) and corresponding target K_d values.

Segment	Target Depth (m)	K_d Threshold
Sarasota Bay North	1.73	0.81
Sarasota Bay South	1.96	0.71
Roberts Bay North	1.12	1.24
Little Sarasota Bay	1.16	1.20
Blackburn Bay	1.19	1.16
Dona / Roberts Bay	1.13	1.23
Lemon Bay North	1.42	0.98

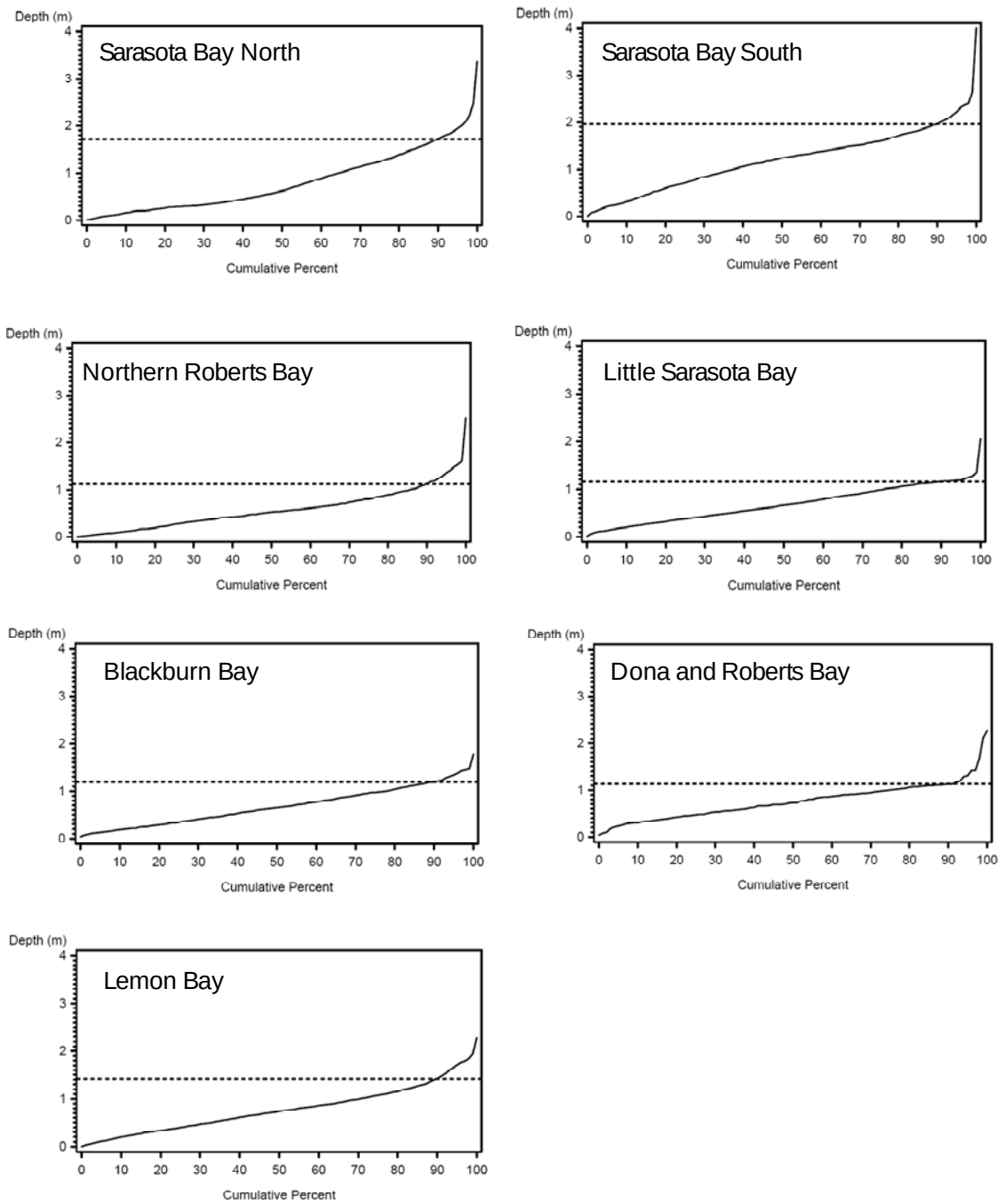


Figure 9. Seagrass depth targets (dotted horizontal line) for each water clarity segment in Sarasota County.

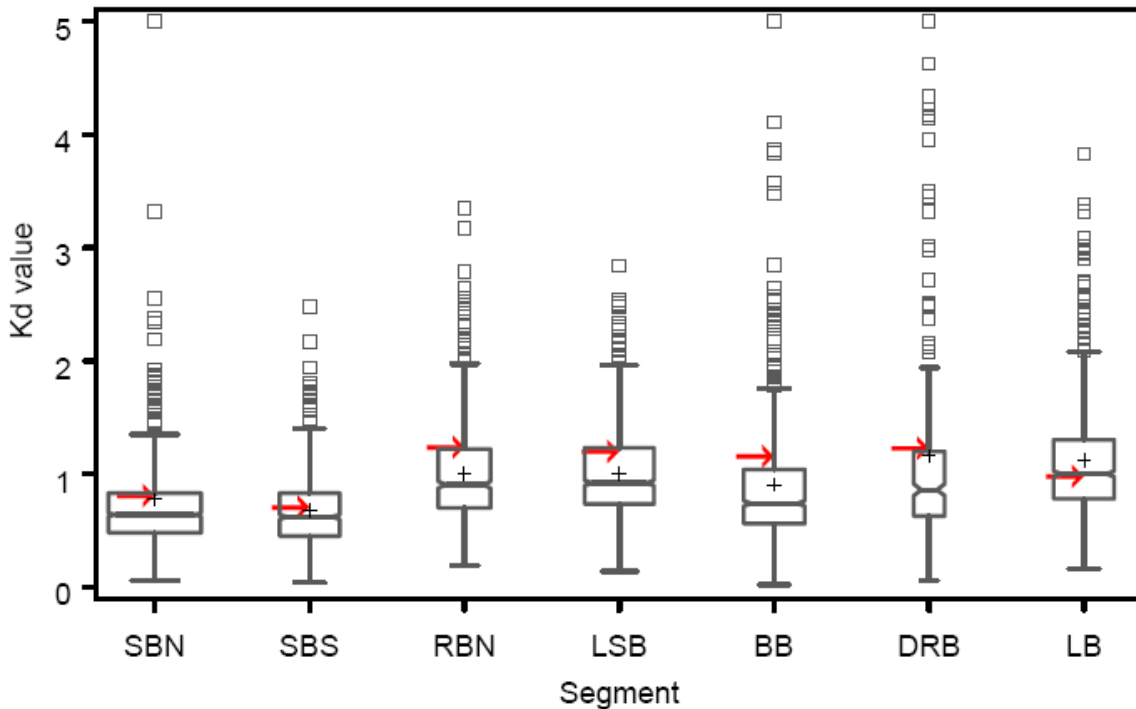


Figure 10. Distribution of the light attenuation coefficient K_d by Sarasota County water clarity segment. Arrows represent the Threshold K_d values. The boxplots display quantiles of the data distribution where the bottom of the box represents the 25th percentile, the center (horizontal line) is the median, the top of the box is the 75th percentile and the whiskers (extent of the vertical line represents the 5th and 95th percentile).

Estimating Secchi from K_d :

Another aim of this project was to translate findings regarding water clarity thresholds into secchi disk thresholds that could be translated to the non-scientific community to bolster participation in monitoring water clarity in Sarasota County. As such, once the threshold criteria were established, the threshold K_d values were translated into a corresponding secchi disk depth benchmark in the hopes that the County could build community activism through development of a volunteer monitoring program for water clarity. In order to relate K_d and secchi disk a correction factor was needed since as K_d increases secchi should decrease. Giesen (1990) reported the relationship between light attenuation and secchi disk depth in the Dutch Wadden Sea could be described using the relationship:

$$K_d = 1.7 / \text{secchi (m)}$$

We estimated the relationship between secchi disk depth and a given K_d measure using the empirical data collected within Sarasota County. By using data where secchi disk and K_d values were recorded concurrently, we developed a regression equation to estimate the mean secchi disk depth for a given observed K_d value. Since the light attenuation

coefficient and secchi disk depth are inversely related, the regression equation took the form of:

$$Y = B_1 * 1 / Kd$$

Where:

Y = secchi disk depth in meters

B_1 = coefficient used to translate Kd to secchi depth

Secchi disk readings where the secchi lay on the bottom were excluded from this analysis as well as Kd values greater than 6 and less than 0.17 (less than 5 percent of the data distribution).

Results of regression analysis suggest that for a given Kd value, the average secchi disk value could be predicted with confidence; however, there was considerable variability for individual predictions when examining the observed vs the predicted secchi disk relationship (Figure 11). Further, since lower Kd values are more likely to result in the secchi being recorded as "On Bottom" the regression relationship is likely skewed toward higher Kd values. The coefficient from regression analysis was used as a correction factor to convert the threshold Kd value into a target secchi threshold (Table 5.). These correction factors are substantially smaller than those derived by Gieson (1990) and likely biased toward predicting the Kd - secchi relationship in less clear waters which may have resulted in unrealistically low secchi benchmarks. The detailed results including analysis of variance table, prediction and residual plots are provided in Appendix 4. The application of secchi disk to water clarity benchmark evaluation is discussed in greater detail in the following section.

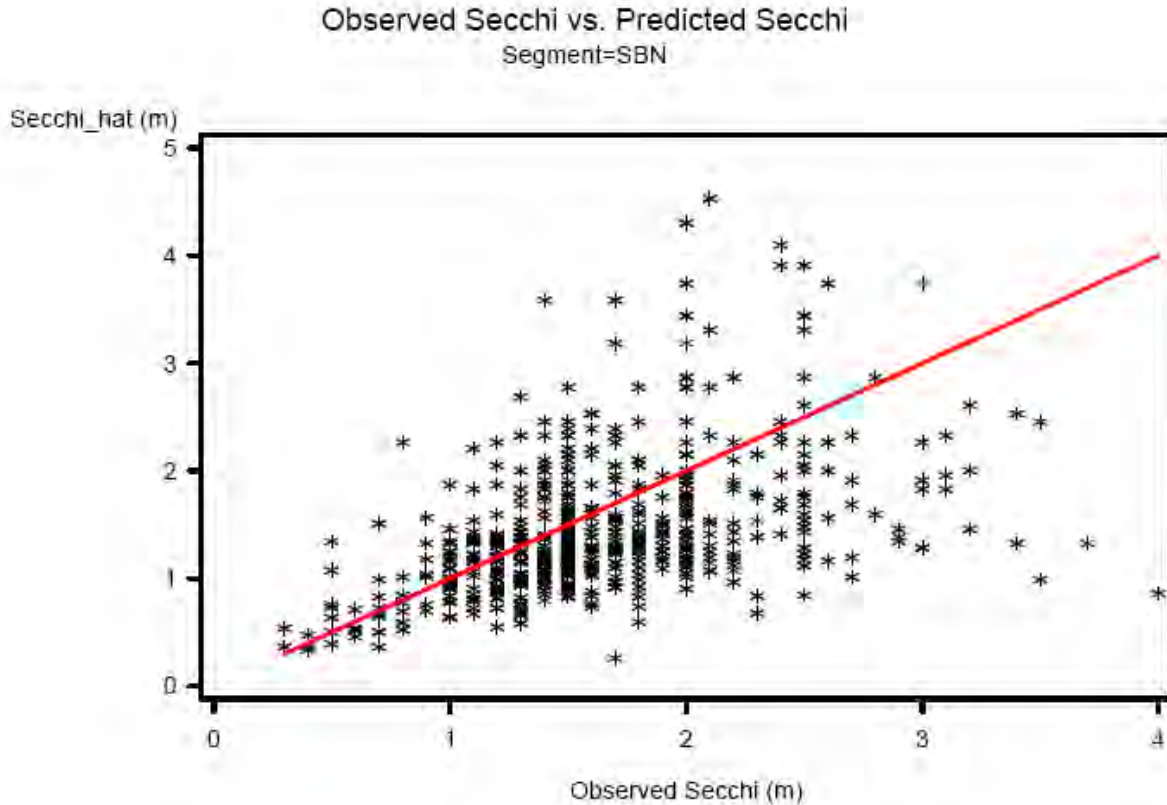


Figure 11. Observed vs. predicted secchi disk depth based on relationship between K_d (i.e., $1/K_d$) and Secchi. Note: solid line is the 1:1 line indicating the expected relationship.

Table 5. Water clarity K_d thresholds and correction factor derived via regression analysis to establish a potential secchi disk depth thresholds.

Segment	Target Depth (m)	K_d Threshold	Correction Factor	Secchi (m) Threshold
Sarasota Bay North	1.73	0.81	0.86	1.06
Sarasota Bay South	1.96	0.71	0.85	1.19
Roberts Bay North	1.12	1.24	0.91	0.74
Little Sarasota Bay	1.16	1.20	1.08	0.90
Blackburn Bay	1.19	1.16	1.01	0.87
Dona / Roberts Bay	1.13	1.23	0.96	0.98
Lemon Bay North	1.42	0.98	1.10	0.89

Evaluation Strategy

The water clarity benchmarks established for Sarasota County estuarine waters are based on a comprehensive analysis of water quality data collected over eight years using an extensive water quality monitoring effort and are linked to seagrass, a natural resource of

great concern in Sarasota County. The water clarity benchmarks were developed to provide sufficient light for seagrass productivity to a depth above which 90 percent of the seagrasses have ever been recorded in Sarasota Bay based on the Southwest Florida Water Management Districts (SWFWMD) biannual aerial seagrass surveys. The benchmarks are geographically specific to account for the dynamic attributes of the various water clarity segments of Sarasota County's coastal estuarine waters.

The purpose of establishing water clarity benchmarks for Sarasota County was to give natural resource managers a mechanism for evaluation of water clarity based on the best currently available information. Evaluation of the benchmarks will be used as part of Basin Management Action Plans (BMAP's) developed in coordination with the Florida Department of Environmental Protection (FDEP) in an adaptive management approach to provide a level of service for protection of a valued natural resource in Sarasota County. There are two components to the assessment of water clarity in Sarasota County estuarine waters; status and trends. Benchmark evaluation can serve as a report card to county commissioners and the public at large on one measure of the estuarine health in Sarasota County while trends may be used to:

- assess changes in water clarity over time;
- identify and prioritize remedial actions;
- evaluate the effects of surface and stormwater improvements on water clarity, and
- assess the potential benefits of restoration efforts.

Status evaluation is the "report card" and is proposed to take place on a calendar year basis. Each year the data collected within each water clarity segment in Sarasota County will be assessed and compared to the established benchmarks. Since the benchmarks represent an estimate of the physical requirement of seagrass, the data will be evaluated as to the proportion of samples that meet or exceed the benchmarks. A binomial is assigned to each K_d value collected using a 1 to denote an "exceedance" and a 0 to denote a "success". Since lower K_d values correspond to more light reaching to deep depths, a K_d value lower than the benchmark is considered a success while a value above the benchmark is considered an exceedance. It is the distribution of these values that is used to evaluate the sample data to the benchmark in each segment. There are four categories which are used to compare the annual data collected within each segment to its water clarity benchmark (Table 6).

Table 6. Evaluation categories for water clarity status relative to benchmark distribution.

Category	Definition
Green Star	Distribution has significantly fewer exceedences than would be expected by chance with a 1% error rate.
Green	Distribution meets the benchmark.
Yellow	Significantly more exceedences than would be expected by chance with error rate of 5%.

Red	Significantly more exceedences than would be expected by chance with error rate of 1%.
-----	--

As an example, consider the threshold K_d value in Sarasota Bay North: $K_d=0.81$. This benchmark would allow 25 percent of available light just below the water's surface to reach a depth of 1.73 meters. Over the study period, a K_d value of less than or equal to 0.81 occurred 75 percent of the time. Conversely, a K_d value higher than the threshold (exceedence) occurred 25 percent of the time. Table 7 provides the historical exceedence percentile for K_d in each water clarity segment of interest.

Table 7. Benchmark light attenuation parameter estimate (K_d) by segment and historical exceedence percentile based on data collected from 1998 through 2005 (except Dona and Roberts Bay which has only been sampled from 2003-2005).

Segment	Target Depth (m)	Threshold K_d (1/m)	Historical Exceedence Percentile
Sarasota Bay North	1.73	0.81	25 th
Sarasota Bay South	1.96	0.71	37 rd
Roberts Bay North	1.12	1.24	25 th
Little Sarasota Bay	1.16	1.20	26 th
Blackburn Bay	1.19	1.16	20 th
Dona / Roberts Bay	1.13	1.23	24 th
Lemon Bay North	1.42	0.98	47 rd

To evaluate whether or not water clarity is meeting the benchmark, the binomial test (Wackerly et. al., 1996) can be used to evaluate a sample (one year's worth of data) with respect to the benchmark. Using the example for Sarasota Bay North, we consider a value of $K_d > 0.81$ to be an exceedence. The proportion of exceedences is calculated from the total number of samples collected (e.g., $36/100=0.36$). The proportion of exceedences in the sample is then compared to the proportion observed from the data used to set the benchmark (i.e., 0.25). If 100 observations were collected independently then the expectation is that 25 observations would exceed the benchmark (i.e., have a K_d value above the threshold value). Based on the sample size and the benchmark ("true") exceedence percentile, one can determine statistically if the percent exceedence is a) less than 0.25 with statistical certainty or b) the percent exceedence is greater than 0.25 with statistical certainty. The statistical test is conducted to test two hypotheses. These are called one tailed tests. The first (left sided test) tests the probability that the percent exceedence in the sample is less than the true proportion of successes. As an example, the figure below (Figure 12) is a binomial distribution with a probability of success of 0.25 and 100 observations.

The critical value for the left sided test is found by summing the left hand side probabilities of the distribution shown in Figure 12 to find the point where the sum is just less than 0.05. This point corresponds to the critical value for establishing that the sample proportion has

Hypothetical Kd distributions are shown in Figure 13. with increasing percent exceedences from left to right. The second boxplot from the left represents the example for Sarasota Bay North (i.e., a distribution with 25% exceedence). The first boxplot from the left represents a distribution with significantly fewer exceedences than the target distribution. The third boxplot from the left has an exceedence percentile of 33%. This would constitute a distribution with significantly more exceedences than would be expected by chance using a 5% error rate ($\alpha=0.05$). The 5% error rate is the standard criterion for evaluating statistical significance but implies that 5% of the time we would claim a difference when no actual difference existed (false positive rate). For management purposes, multiple levels of uncertainty are incorporated into the evaluation process. Therefore, the last distribution from the left represents a distribution with a 36% exceedence. This corresponds to a statistically significant difference with a 1% error rate ($\alpha=0.01$). Both the “Red” and

“Star” categories use the 1% error rate to incorporate an added level of certainty to the evaluative criteria.

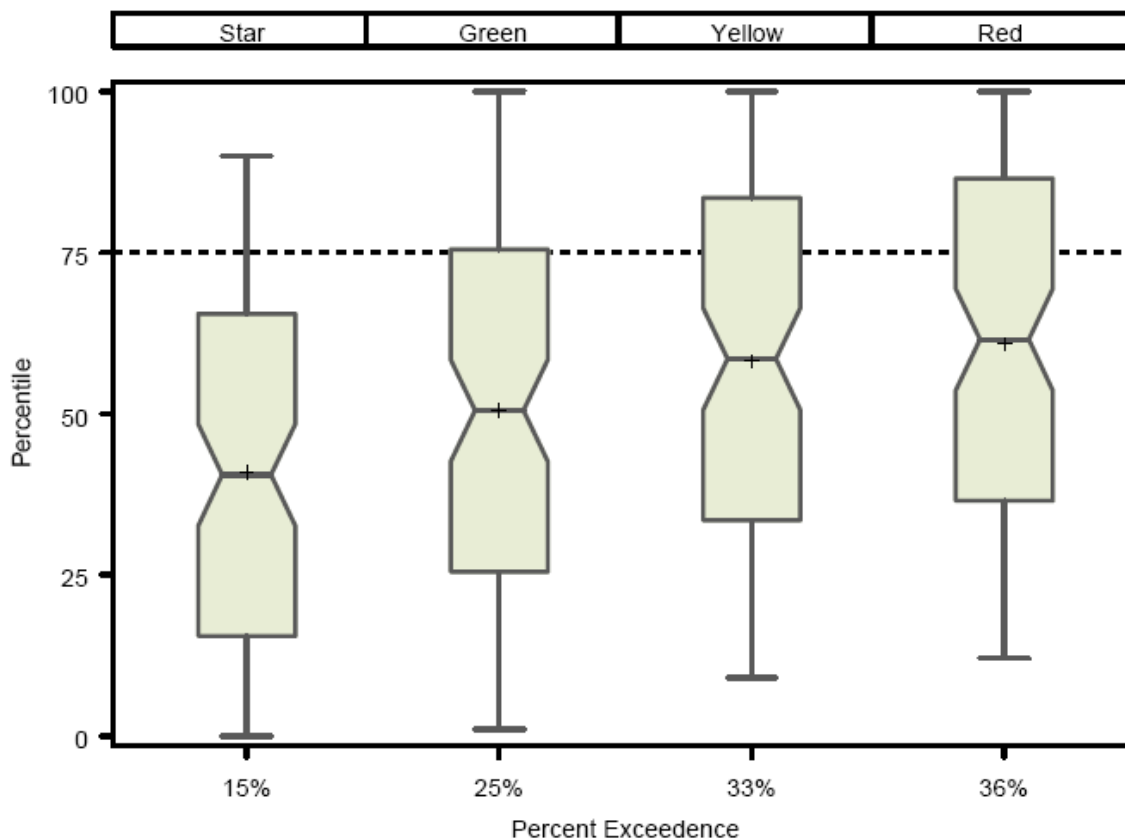


Figure 13. Example Distributions of light attenuation with increasing exceedence proportions from left to right. Evaluation categories are based on a benchmark with 25% exceedence frequency.

Management actions in response to benchmark evaluation incorporate both status and trends. The status evaluation reports the previous calendar years status with respect to the benchmark. The trends evaluation incorporates the temporal component to assess the status with respect to the natural variability in water clarity associated with fluctuations in inputs such as rainfall and instream flows which tend to increase the color content of estuarine waters, reducing water clarity. For example, when establishing water clarity benchmarks, the 8 years of light attenuation data were used to establish the population of *Kd* measurements. If the evaluation criteria described above were applied to the data used to create the benchmarks in Sarasota Bay North, there would be variability in status across years (Figure 14). The first 2 years of data, 1998 and 1999 had an exceedence proportion which was statistically higher than expected using a 5% error rate. The remaining years achieved the benchmark and in the case of 2005 actually had significantly fewer exceedences than expected with a 99% certainty. Since natural variability can cause shifts

in the distribution which might result in a statistically significant difference for a given year, the evaluation process incorporates multiple years of evaluation into a decision matrix.

Exceedence Criteria is the 75th Percentile of the Empirical Distribution from 1998-2005

Segment=SBN Parameter=Kd

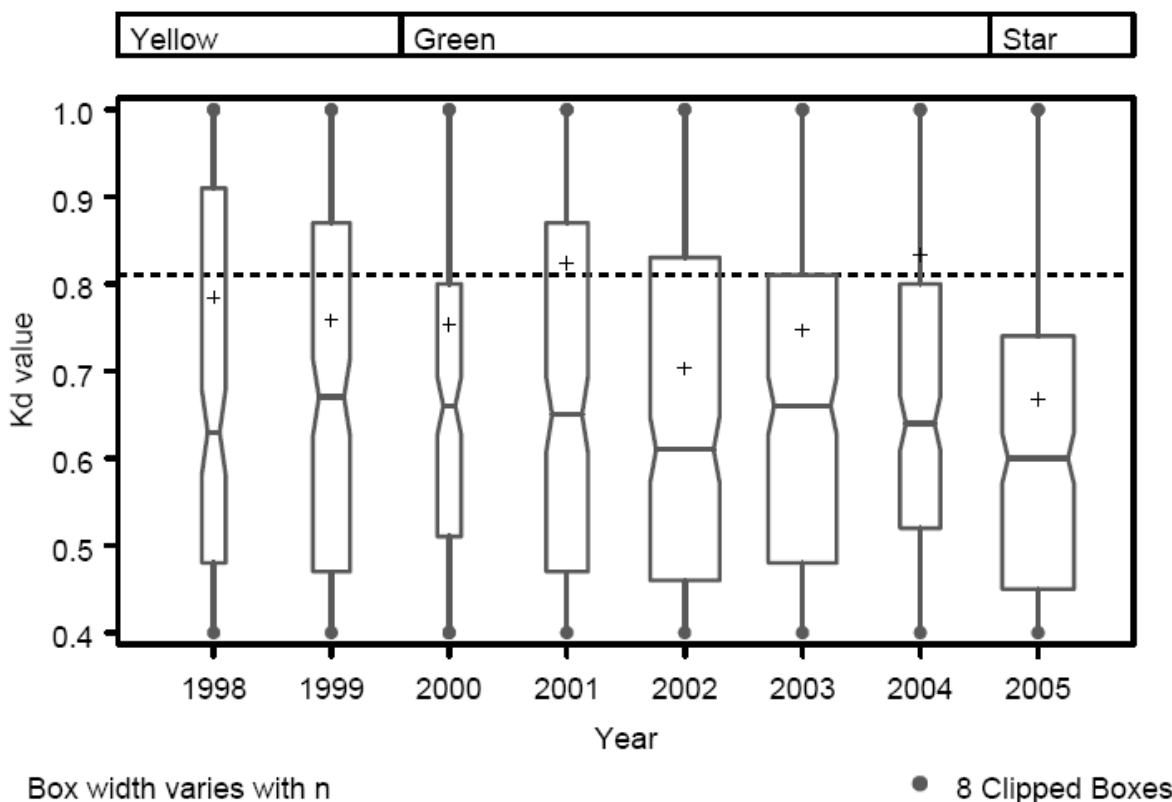


Figure 14. Inter annual variation in light attenuation in the Sarasota Bay North water clarity segment with status evaluation for each year presented in the header boxes above the boxplots. Status evaluation is based on a benchmark distribution with 25% exceedance.

The management plan for assessing the water clarity benchmarks should be considered with every report card evaluation (i.e., annually). Management actions are based on the following hierarchical levels:

Level 1 - Water clarity conditions are improved with respect to benchmark levels ("Star"). Identify fluctuations in estuarine inputs (both natural and anthropogenic) which may have contributed to increased water clarity. If management actions have contributed to increased water clarity, recognize your successes.

Level 2 - Water clarity conditions are achieving benchmark levels (“Green”). Guard against future risks to water clarity exceedences. Strategize on future improvements which may results in water clarity improvements.

Level 3 - Water clarity conditions did not meet benchmarks for a single year (“Red” or “Yellow”). Identify fluctuations in estuarine inputs (both natural and anthropogenic) which may have contributed to the observed increase in water clarity benchmark exceedences. Identify actions which could ameliorate the negative impacts of estuarine inputs causing reduced water clarity.

Level 4 - Water clarity conditions did not meet benchmarks for consecutive years (2 consecutive “Reds” or any combination of “Red” and “Yellow” for three consecutive years). This level serves as an early warning system that the water clarity segment is out of balance from historic conditions (i.e., those used to set the benchmarks). Prioritize this water clarity segment for remedial action. Re-evaluate Kendal Tau trend test analysis to confirm decreasing trend in water clarity after accounting for seasonality. Evaluate water quality models to determine influence of estuarine inputs in reduced water clarity. Appropriate resources to rectify potential sources of reduced water clarity.

The first three levels depend primarily on status evaluation. Level 4 is the primary action level. This level requires confirmation of an observed trend in degrading clarity through other analytical techniques which are more analytically sophisticated such as the Kendall Tau trend test which accounts for seasonality and autocorrelation when assessing trends or stochastic or deterministic water quality models which assign potential causal relationships between estuarine inputs and water clarity. The decision matrix is illustrated in Figure 15 on the following page.

Currently, Sarasota County seagrasses appear to be in stable condition and the benchmarks are based on these conditions. The established benchmarks will serve as a warning system against degradation of water clarity and will be reviewed as more information becomes available in an adaptive management strategy associated with other basin management efforts. The water clarity benchmarks serve as only one component of a much larger effort known as Basin Management Action Plans designed to protect watersheds in Florida. The water clarity benchmarks and the evaluation strategy proposed herein represent proactive efforts of Sarasota County Water Resources to provide a level of service to ensure protection of its valued natural estuarine resources.

Decision matrix

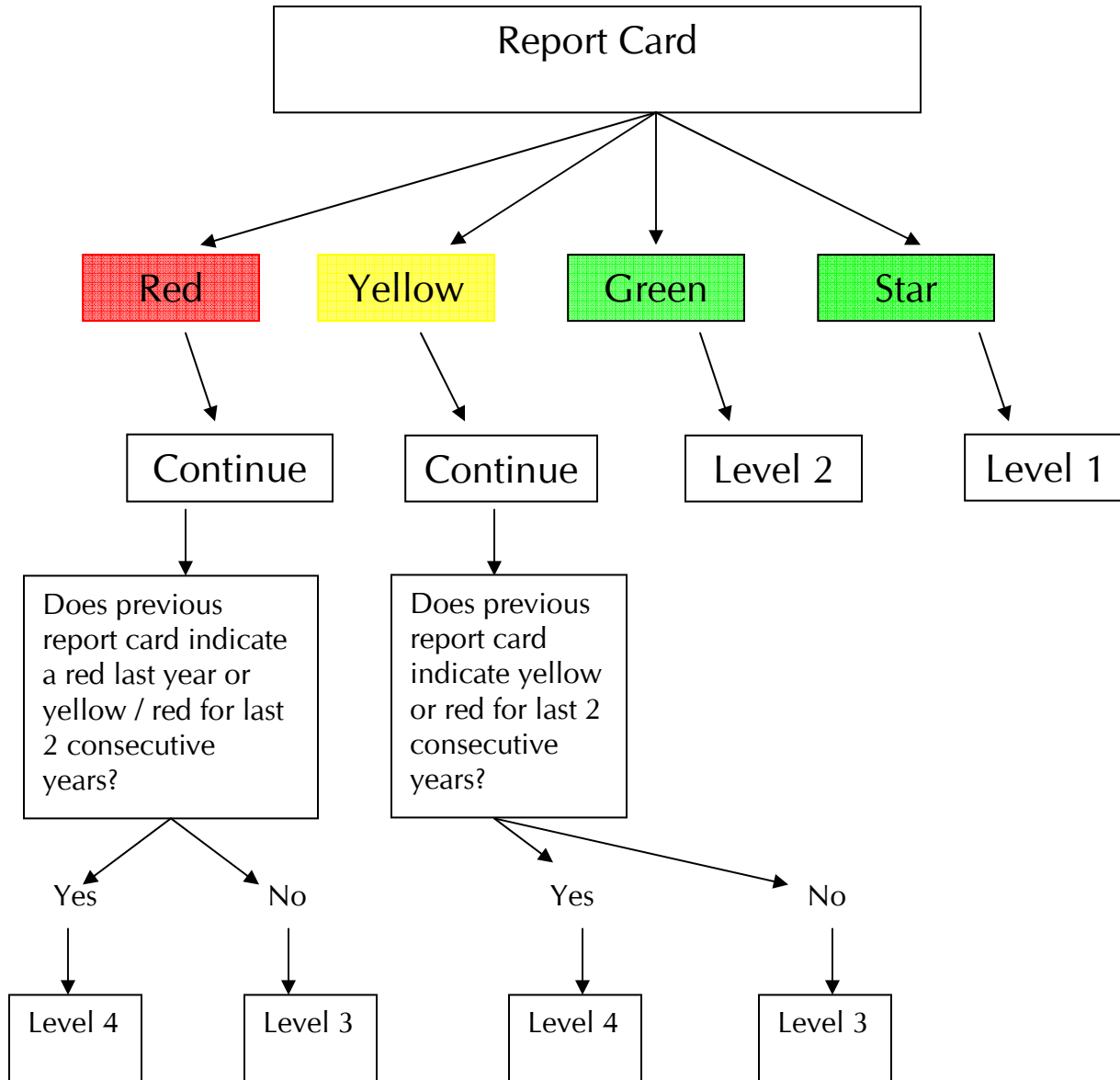


Figure 15. Decision matrix for water clarity assessment using the Sarasota County water clarity report card.

Discussion

Proper management of estuarine resources relies on a wealth of information to make informed decisions about how management actions may be used to effectively steward valued natural resources. In establishing water clarity benchmarks, Sarasota County has utilized data from an extensive ambient water quality monitoring program, aerial seagrass census surveys, bathymetry data, local knowledge, expert opinion and incorporated information from previous scientific studies to derive localized and geographically specific water clarity benchmarks for Sarasota County's estuarine waters. The water clarity benchmarks represent an objective, empirically derived, and measurable estimate of the water clarity that can serve as a benchmark for non-degradation and provide a status report card to facilitate stewardship of estuarine ecosystem water quality.

Water quality is known to be related to fresh water inputs, proximity to coastal inlets and tidal creeks, circulation, and residence time. We used empirical water quality data to derive a segmentation scheme that represents relatively homogeneous areas with respect to water quality in Sarasota County estuarine waters. This segmentation scheme considers the coastal hydrology, and proximity to fresh water inputs as well as the empirically collected data to define segments that provide a reasonable means of describing geographically specific changes in water clarity over time. The benchmarks are not intended to make inferences about water clarity at any particular point or for any specific area smaller than the segment definitions. The Dona and Roberts Bay segment relied on less data than the other segments since it has only been routinely sampled since 2003. This segment should be viewed as an opportunity for adaptive management as there are many potential restoration efforts already in planning stages for this water body.

The water clarity benchmark evaluation strategy outlines potential management actions based on assessment of the water clarity benchmarks and a decision matrix is provided to guide managers through the evaluation process. The County has included many stakeholders in this benchmark-setting process including; the Florida Department of Environmental Protection, The Sarasota Bay National Estuary Program, the Southwest Florida Water management District, local community stakeholders, and the Southwest Florida Seagrass Working Group. The water clarity benchmarks provide a simple mechanism to evaluate empirical data on an annual basis and provide objective criteria for determining the status of water clarity from year to year and are meant to serve in an adaptive management process. The established benchmarks and evaluation process are completely flexible to redefinition as more information becomes available.

The attempt to relate K_d and secchi was successful only in terms of estimating the average secchi disk depth for a given K_d value. Successful implementation of a volunteer monitoring program designed to estimate water clarity conditions should continue with the understanding of the constraints to relate secchi and K_d using currently employed methodologies. The currently derived secchi disk benchmarks may be biased towards less clear waters and artificially low to provide the sufficient needs for seagrass. Shallow water secchi disks are being considered as an alternative to the standard secchi disks currently

used. A pilot study for these disks is in the planning stages and should include concurrent K_d measurements to examine the relationship between K_d and the shallow water secchi across a variety of depths encountered in County waters.

There are assumptions which should be recognized regarding the water clarity benchmarks and their evaluation using the binomial test. There remains debate about the quantity and quality of light necessary to maintain seagrass communities as well as what physical and environmental properties may affect the utilization of available light. The 25% of sub-surface irradiance value was chosen based on published literature values for Florida estuaries. While this estimate is more than twice some estimates for seagrass light requirements in Florida, it does not fully account for the potential light limiting effects of epiphytic growth which has been observed in Sarasota County waters (Dixon and Kirkpatrick 1995). It is also known that several factors other than water clarity including wave energy, sedimentation, and disease influence the health of seagrass. The bathymetry data used for this analysis were the best currently available data for assigning depths to the waterbodies of interest ;however, the data were collected nearly 50 years ago and updated only for major passes and navigable channels. Further the vertical accuracy of the data (i.e., 0.3m) was not incorporated into the benchmark-setting process. Validation of the bathymetry data is ongoing as part of a separate project to ground truth both the bathymetry and the seagrass mapping data. The SWFWMD SWIM seagrass surveys rely on good visibility and water clarity conditions to accurately reflect the true extent of seagrass coverage. The accuracy and precision of the K_d measurement tool also contribute to uncertainty in the exactness of the benchmarks to provide the requirements necessary to maintain healthy seagrass communities. Statistically, the binomial test assumes that samples are independent and that the probability of an exceedence does not change over time from the benchmark population. Therefore, changes to the sampling program such as using new instrumentation for measuring light attenuation or, especially redistributing the sampling effort seasonally might affect the evaluation process. Fortunately, the data used to create the benchmarks came from an intensive and routine monthly sampling effort. Given the proportion of samples collected monthly remains consistent; the exceedence proportions should remain within the variability of the population used to establish the benchmarks.

Despite these uncertainties it was necessary for Sarasota County Water Resources to move forward in setting benchmarks for water clarity which will allow them to evaluate future conditions against known benchmarks. The primary objective is to provide a mechanism for defining and identifying potential degradation in water clarity in a timely manner to serve as a warning system for water resource managers. These benchmarks will serve in an adaptive management approach as part of a larger BMAP process. If more rigorous benchmarks are needed, the benchmarks can be easily refined under the current evaluation strategy. The current benchmarks have proven to be attainable under historic conditions and appear to capture natural variability such as the influence of periods of greater than normal rainfall on water clarity. For example, 2003 was a wet year for rainfall in Sarasota County and using the water clarity benchmarks to evaluate 2003 resulted in a cautionary status for water clarity in the Roberts Bay North, Little Sarasota Bay and Lemon Bay segments.



Figure 16. Example evaluation of water clarity or Sarasota County estuarine waters for sample year 2003.

The water clarity benchmarks provided in this document, in combination with an abundance of scientific and management actions already in progress are providing a solid foundation for future management of Sarasota County's valued natural estuarine resources. These benchmarks along with other efforts will be used to develop management plans and action items to establish future goals and objectives to ensure that Sarasota County

continues to provide an adequate level of service in protecting its resources for its citizenry.

References

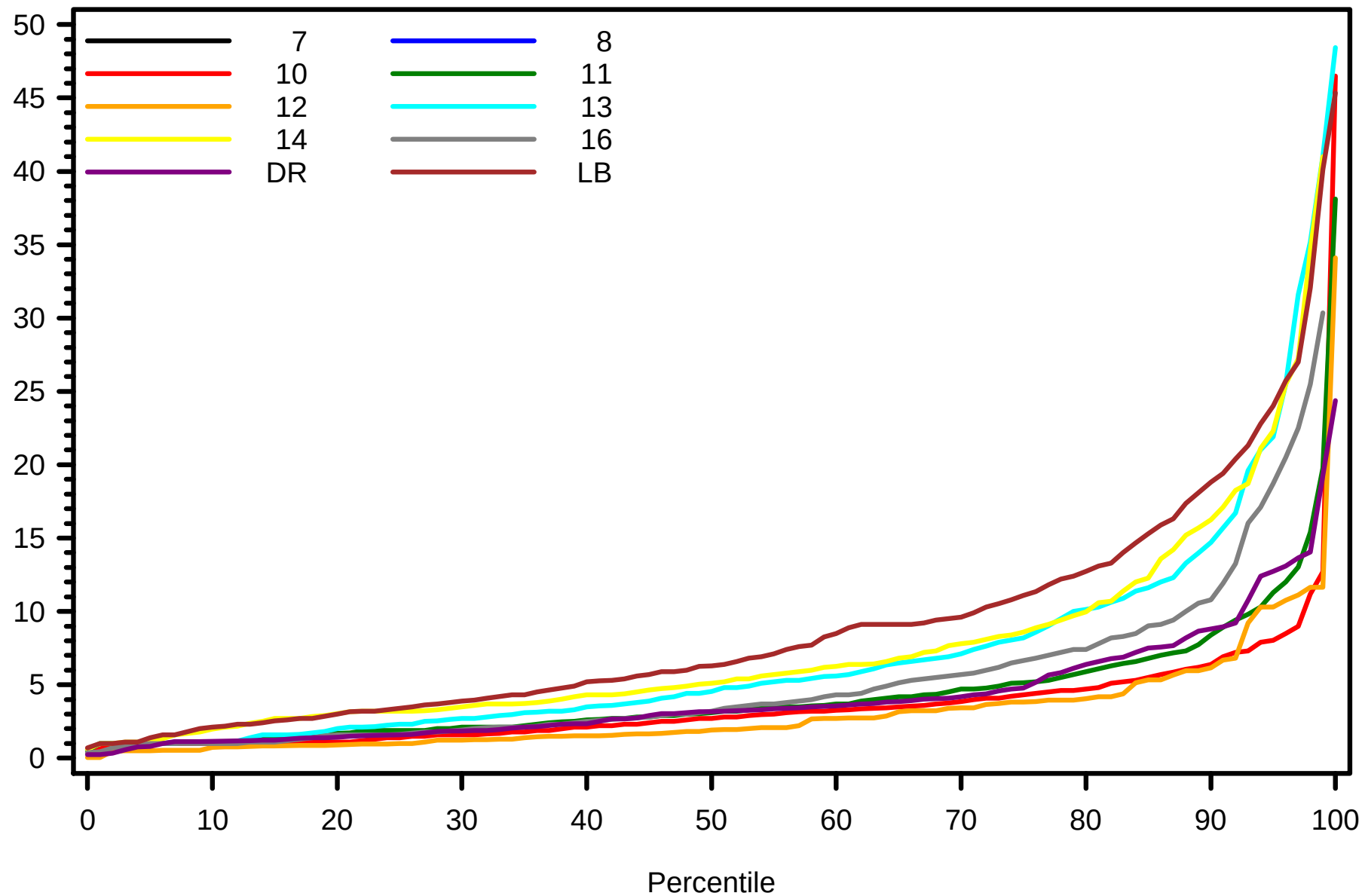
- Corbett, C. and J. Hale 2006. Development of water quality targets for Charlotte Harbor, Florida using Seagrass light requirements. Florida Scientist v69: p36-50.
- CHNEP 2006. Numerical water quality targets for Lemon Bay, Charlotte Harbor and Estero Bay, Florida. Charlotte Harbor National Estuary Program Technical Report #06-3.
- Dixon, L. K. and J.R. Leverone. 1995. Light requirements of *Thalassia testudinum* in Tampa Bay, Florida. Submitted to: Surface Water Improvement and Management Program, Southwest Florida Water Management District. Submitted by: Mote Marine Laboratory, Sarasota, Florida. Mote Marine Technical Report Number 425.
- Dixon, L. K. and G. Kirkpatrick 1995. Light attenuation with respect to seagrasses in Sarasota Bay, Florida. Mote Marine Laboratory Technical Report #407
- Divins, D.L. and D. Metzger, NGDC Coastal Relief Model, Retrieved 2006, <http://www.ngdc.noaa.gov/mgg/coastal/coastal.html>
- ESRI 2005. 380 New York Street, Redlands, CA. 92373-8100 USA.
- Gallegos, C.L. and W. J. Kenworthy 1996. Seagrass depth limits in the Indian River Lagoon: Application of an optical water quality model. Estuarine Coastal Shelf Sciences v42: p267-288
- Giesen, W.B.J.T., M.M. van Katijk, and C. den Hartog. 1990. Eelgrass condition and turbidity in the Dutch Wadden Sea. Aquatic Botany. v37: p71-85.
- Janicki, A. and D. Wade 1996. Habitat protection and restoration targets for Tampa Bay. Prepared for Tampa Bay National Estuary Program. Technical Publication Number 07-93
- Kirk, J.T. 1994. Light and Photosynthesis in Aquatic Ecosystems. Cambridge University Press, New York, NY.
- PBS&J 2006. Establishment of estuarine water clarity targets for Sarasota County. Submitted to: Sarasota County Water Resources. Submitted by: PBS&J
- Reckhow, K.H., K. Kepford, and W.W. Hicks 1993. Methods for the Analysis of Lake Water Quality Trends. EPA 841-R-93-003.
- Wackerly, D.D., W. Mendenhall and R.L. Scheaffer. *Mathematical Statistics with Applications*. 5th Edition 1996. Wadsworth Publishing Company. Belmont California 94002.

Appendix 1

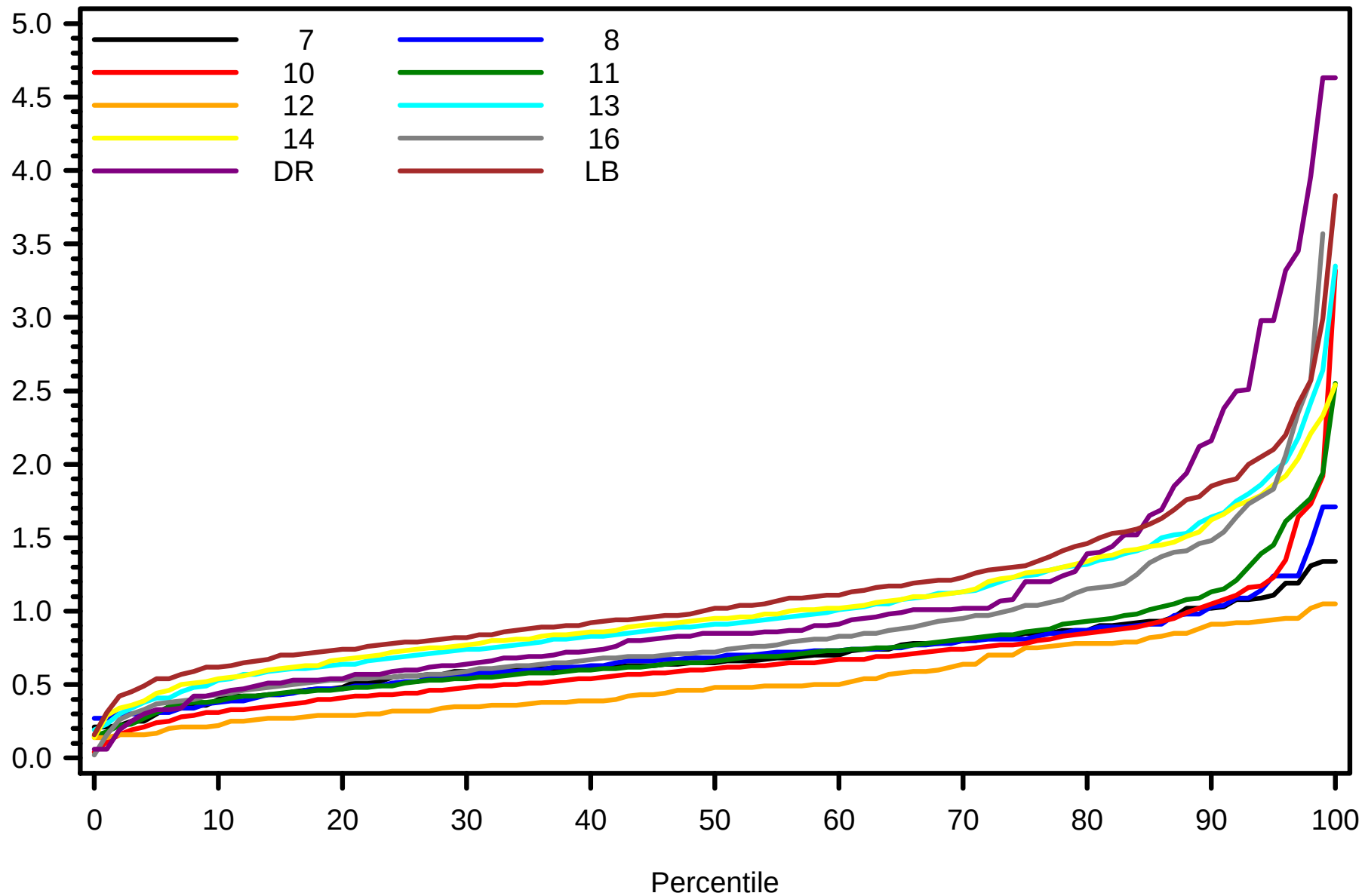
Chla_C
(ug/L)

Sarasota County Water Quality

Cumulative Distribution of Corrected Chlorophyll a By Segment



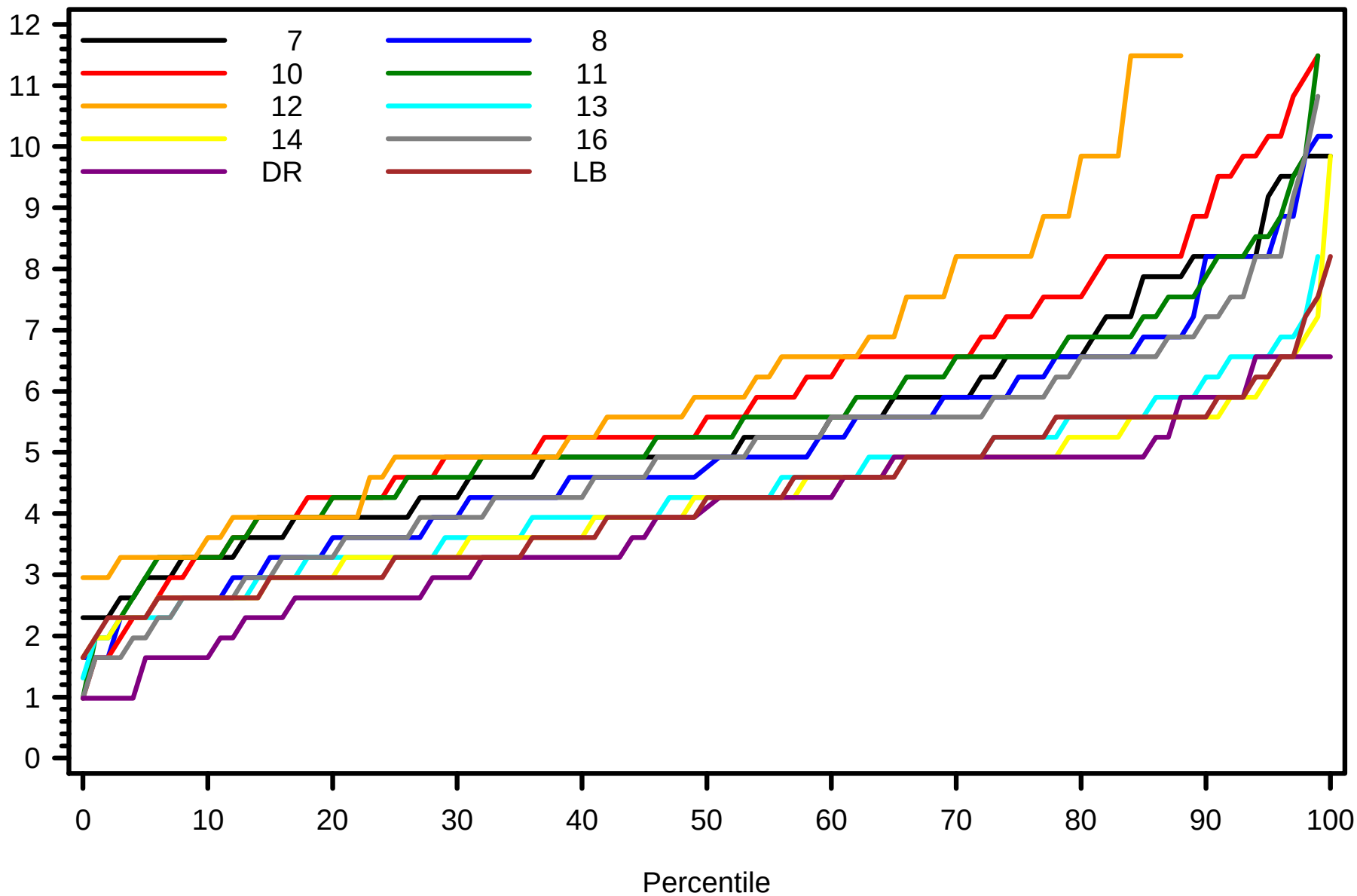
Sarasota County Water Quality
Cumulative Distribution of Light Attenuation Coefficient By Segment



Secchi
(Feet)

Sarasota County Water Quality

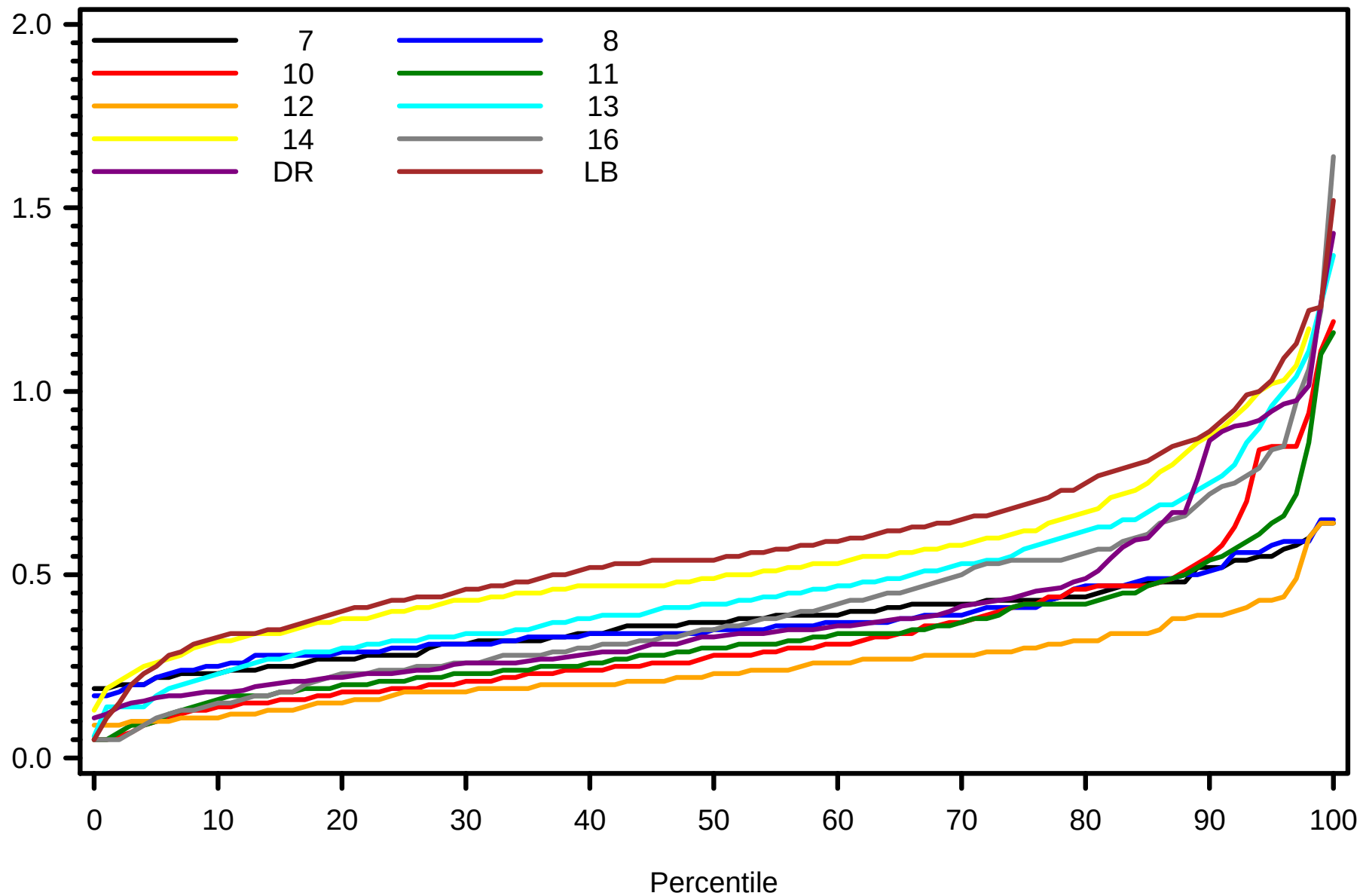
Cumulative Distribution of Secchi Disk Depths By Segment



TN
(mg/L)

Sarasota County Water Quality

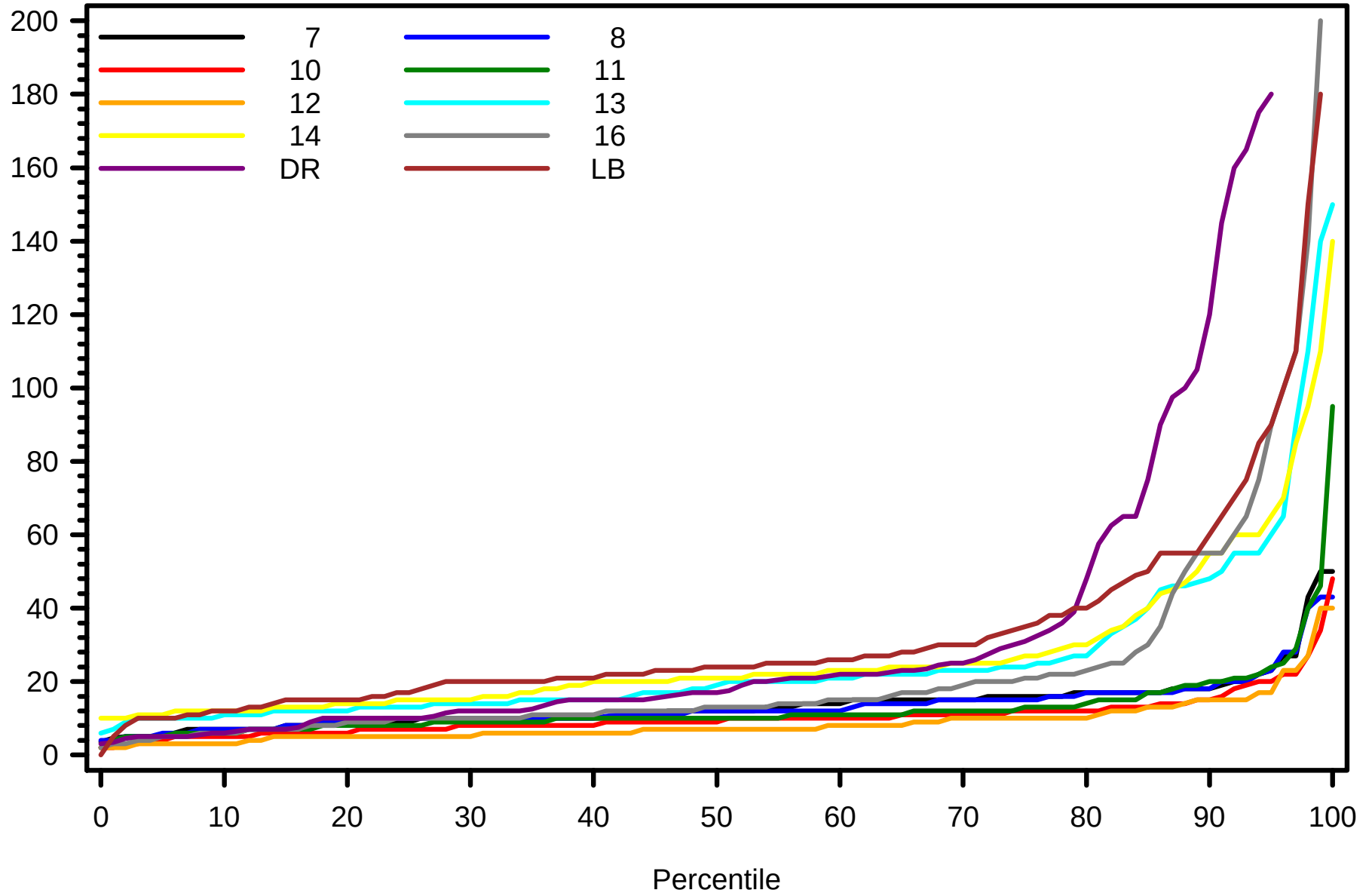
Cumulative Distribution of Total Nitrogen By Segment

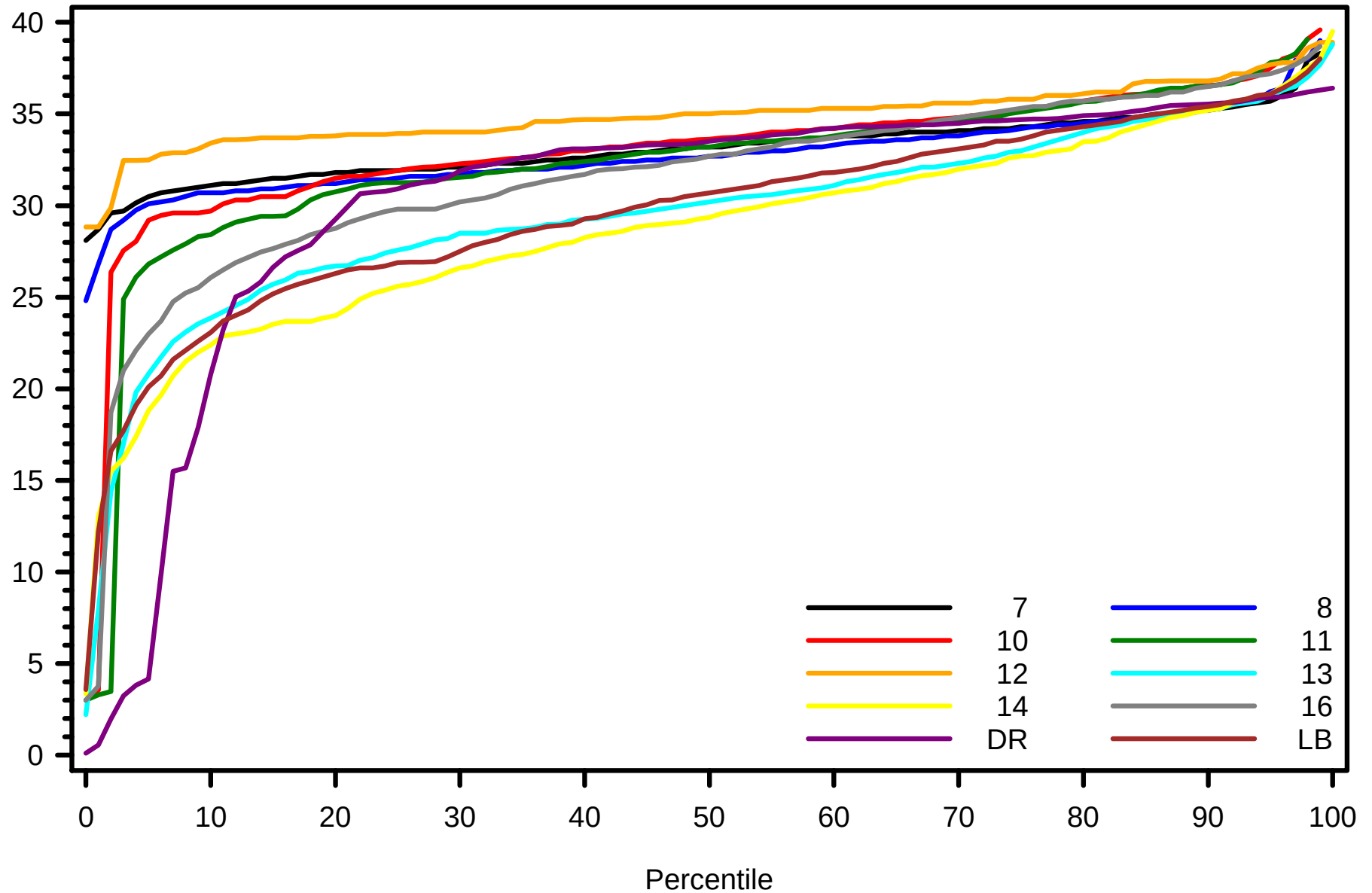


Sarasota County Water Quality

Cumulative Distribution of Color By Segment

Color
(PCU)

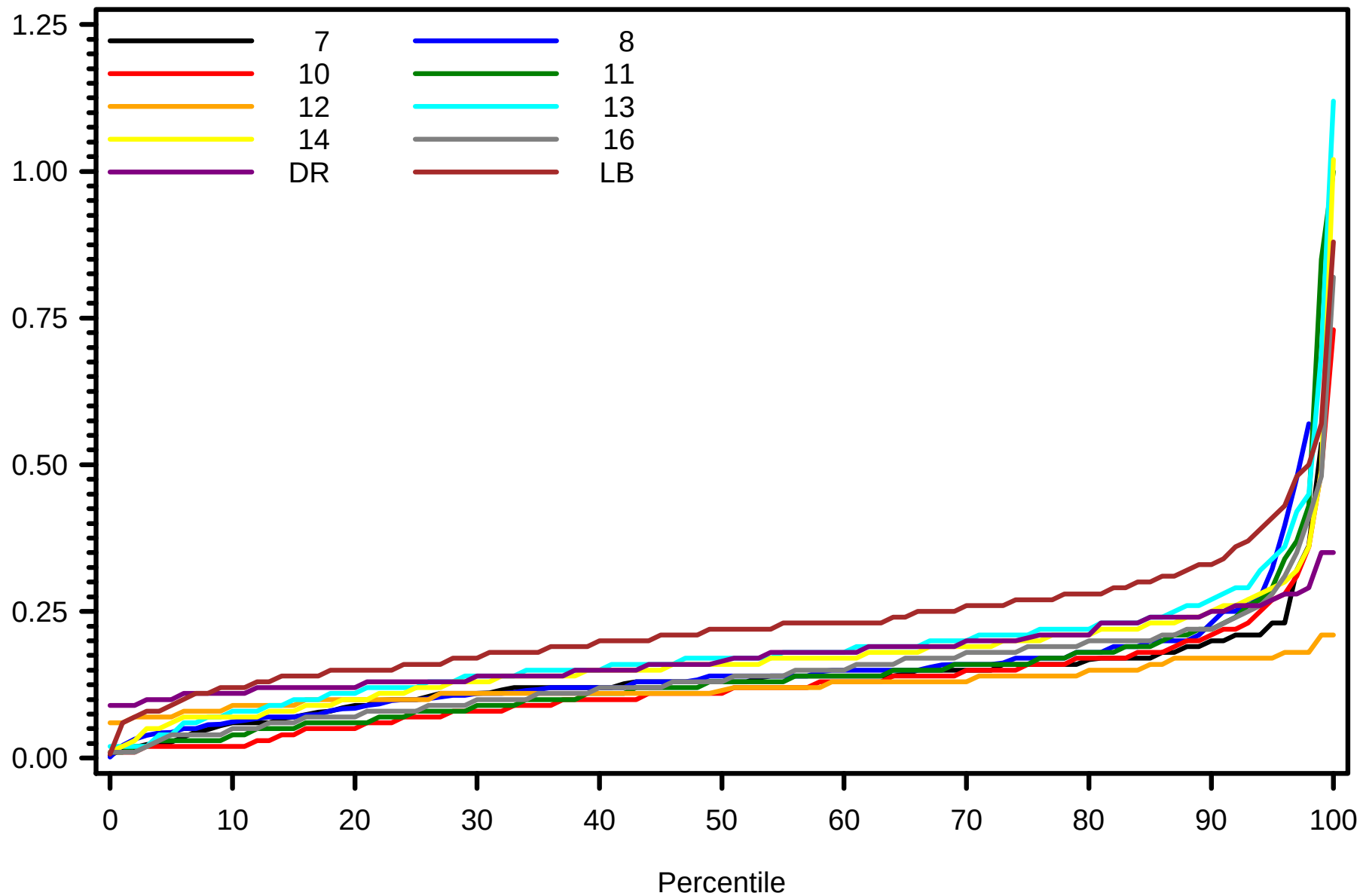


Salinity
(ppt)

TP
(mg/L)

Sarasota County Water Quality

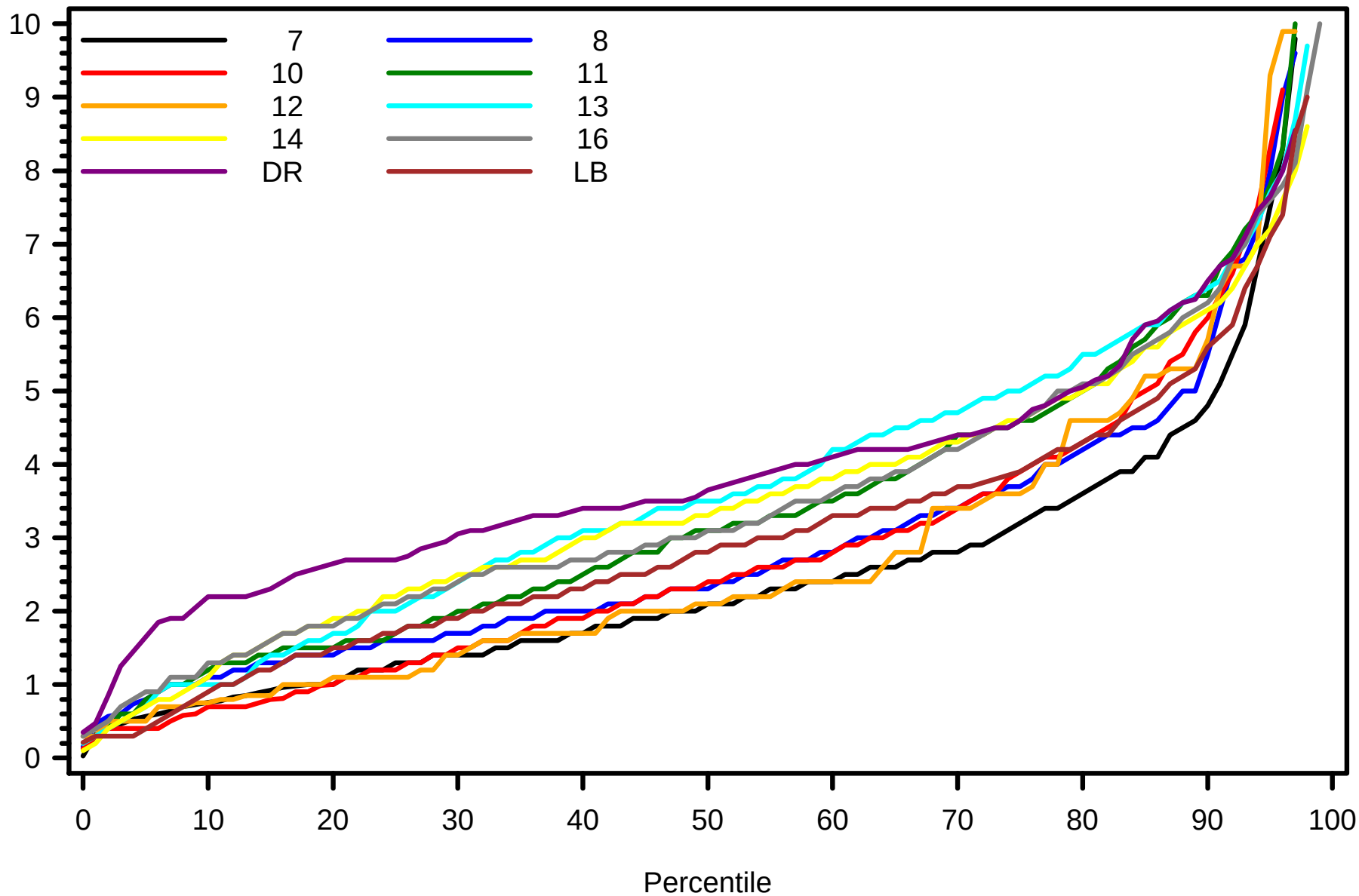
Cumulative Distribution of Total Phosphorus By Segment



Turbidity
(NTU)

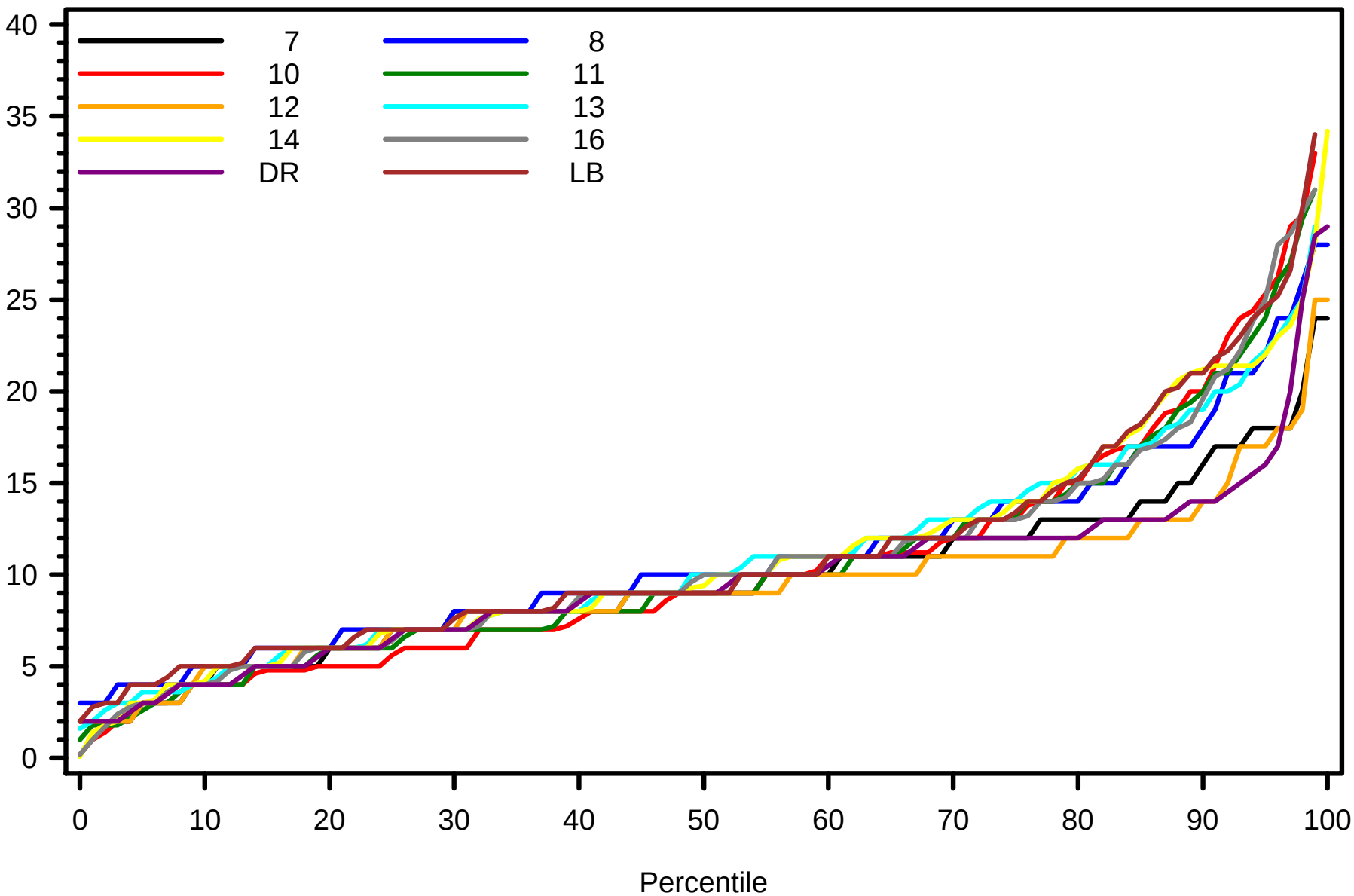
Sarasota County Water Quality

Cumulative Distribution of Turbidity By Segment



Sarasota County Water Quality

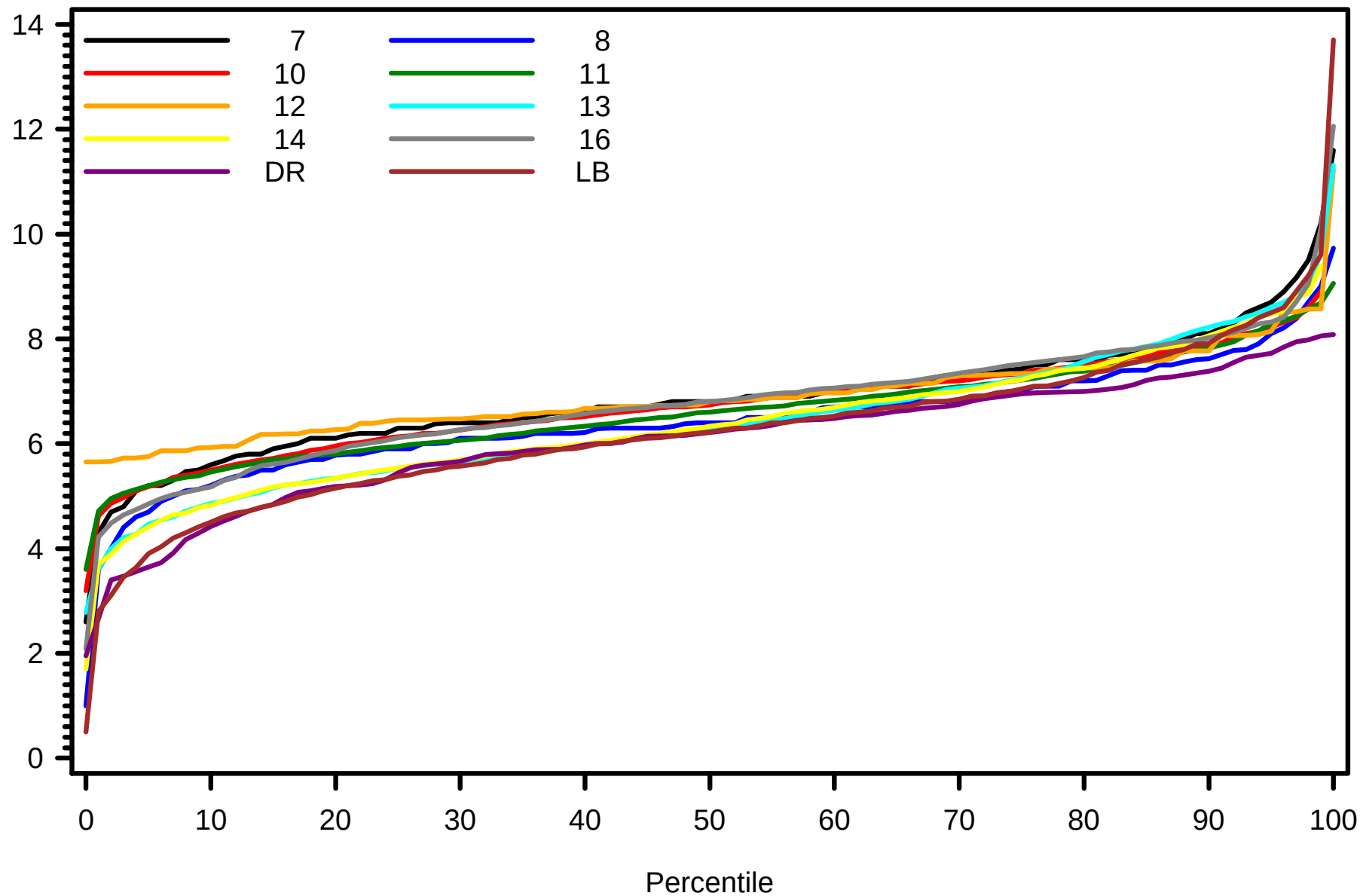
Cumulative Distribution of Total Suspended Solids by Segment



DO
(mg/L)

Sarasota County Water Quality

Cumulative Distribution of Dissolved Oxygen by Segment

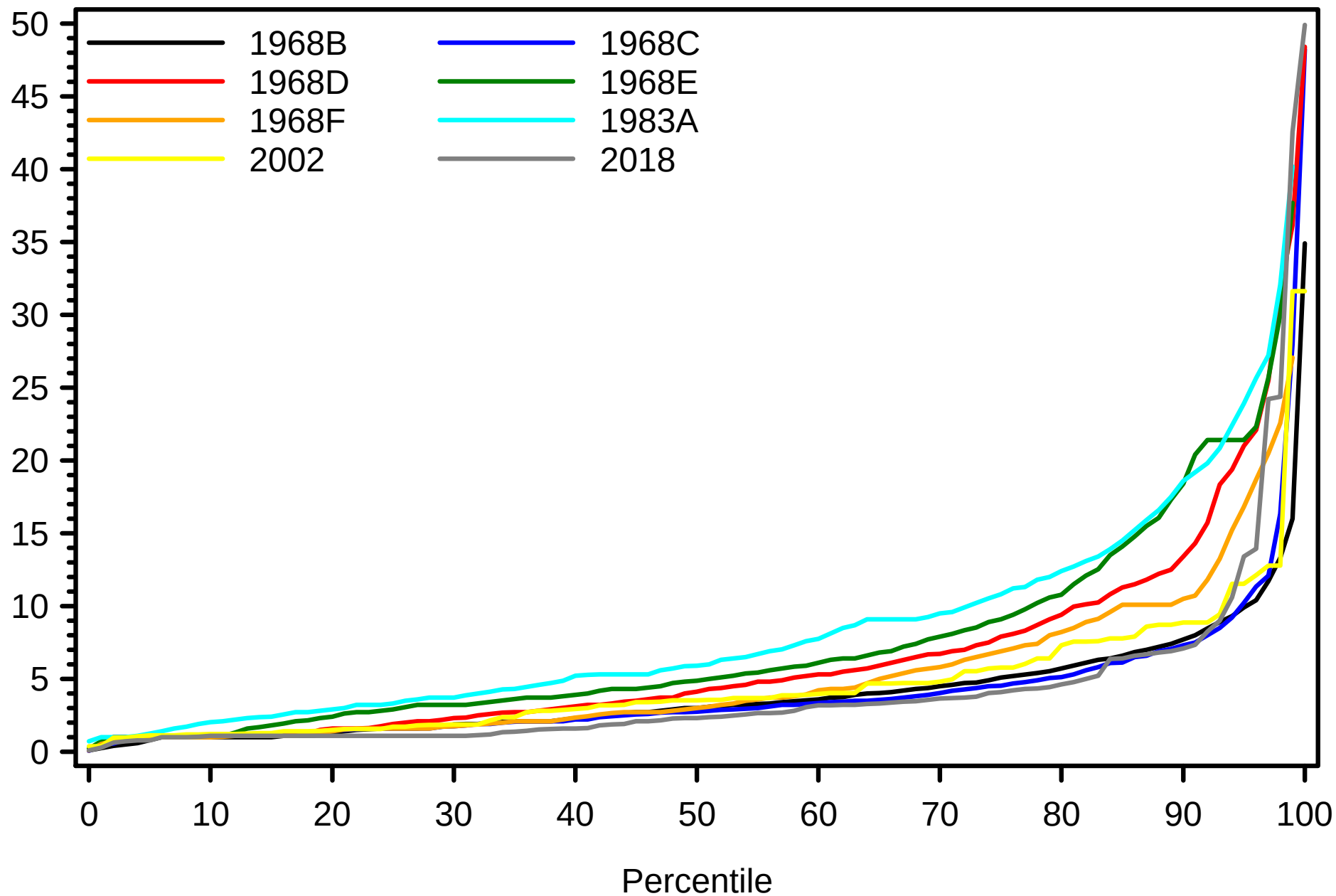


Appendix 2

Chla C
(ug/L)

Sarasota County Water Quality

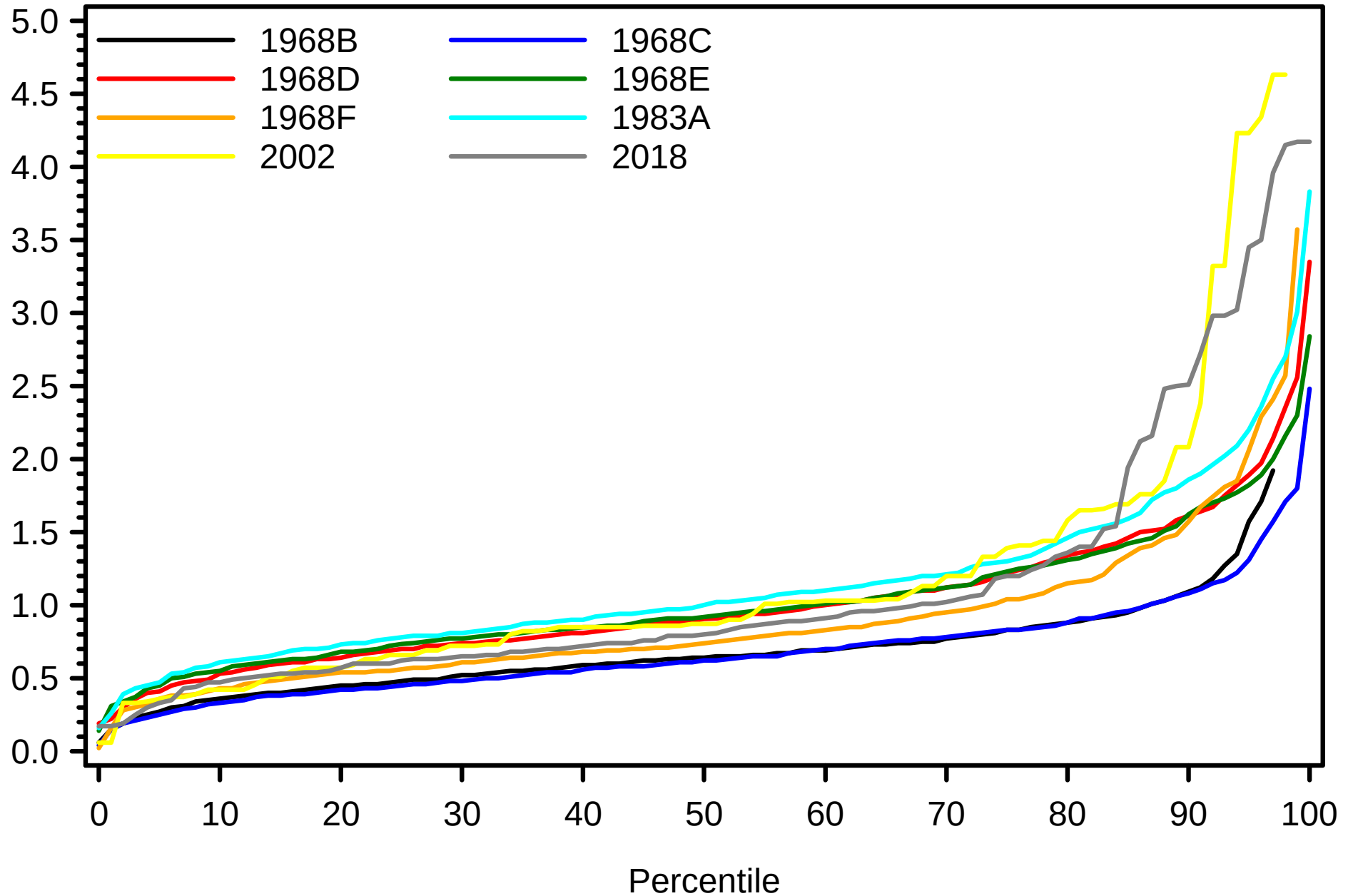
Cumulative Distribution of Corrected Chlorophyll a By Segment



K_d
(m)

Sarasota County Water Quality

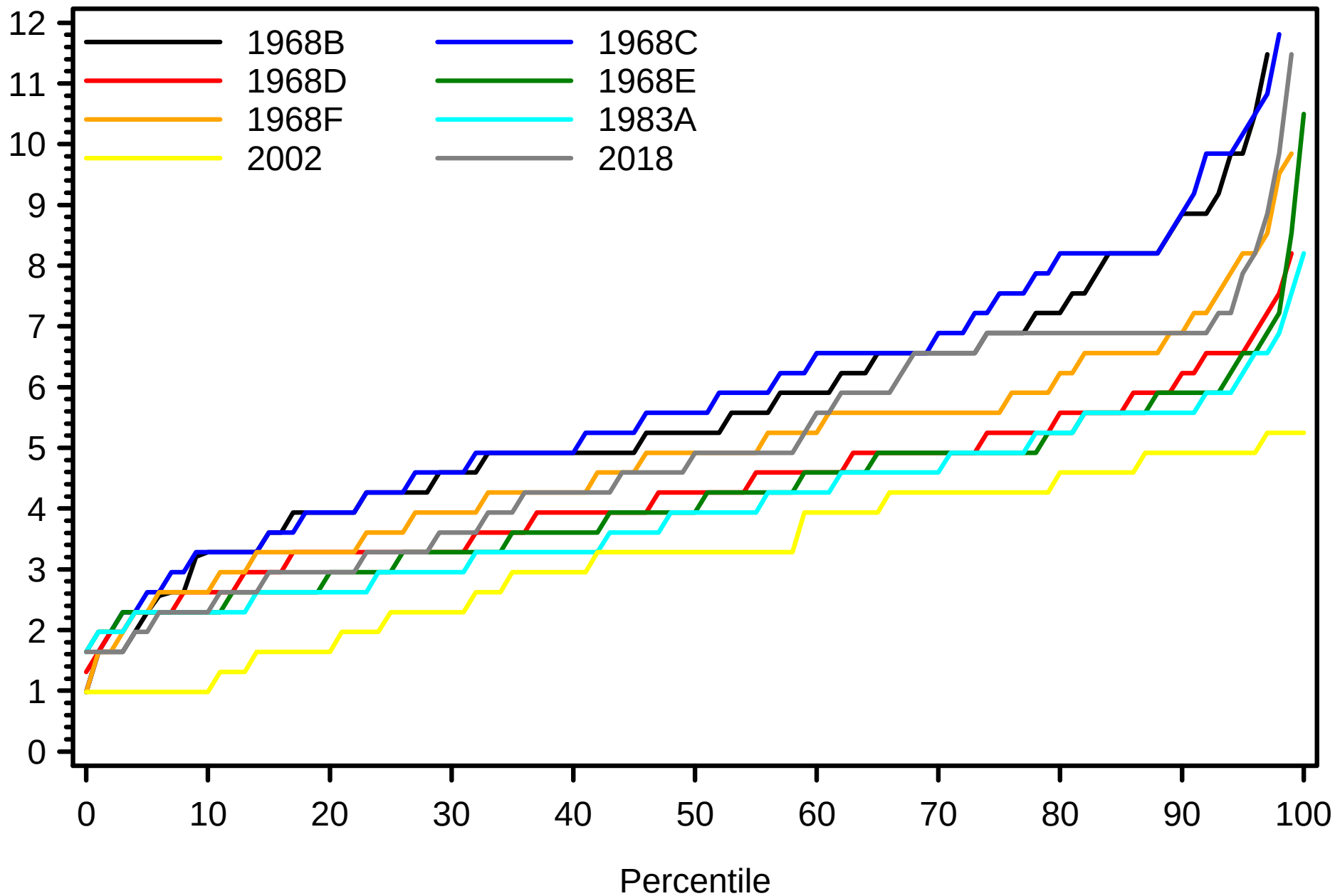
Cumulative Distribution of Light Attenuation Coefficient By Segment



Secchi
(Feet)

Sarasota County Water Quality

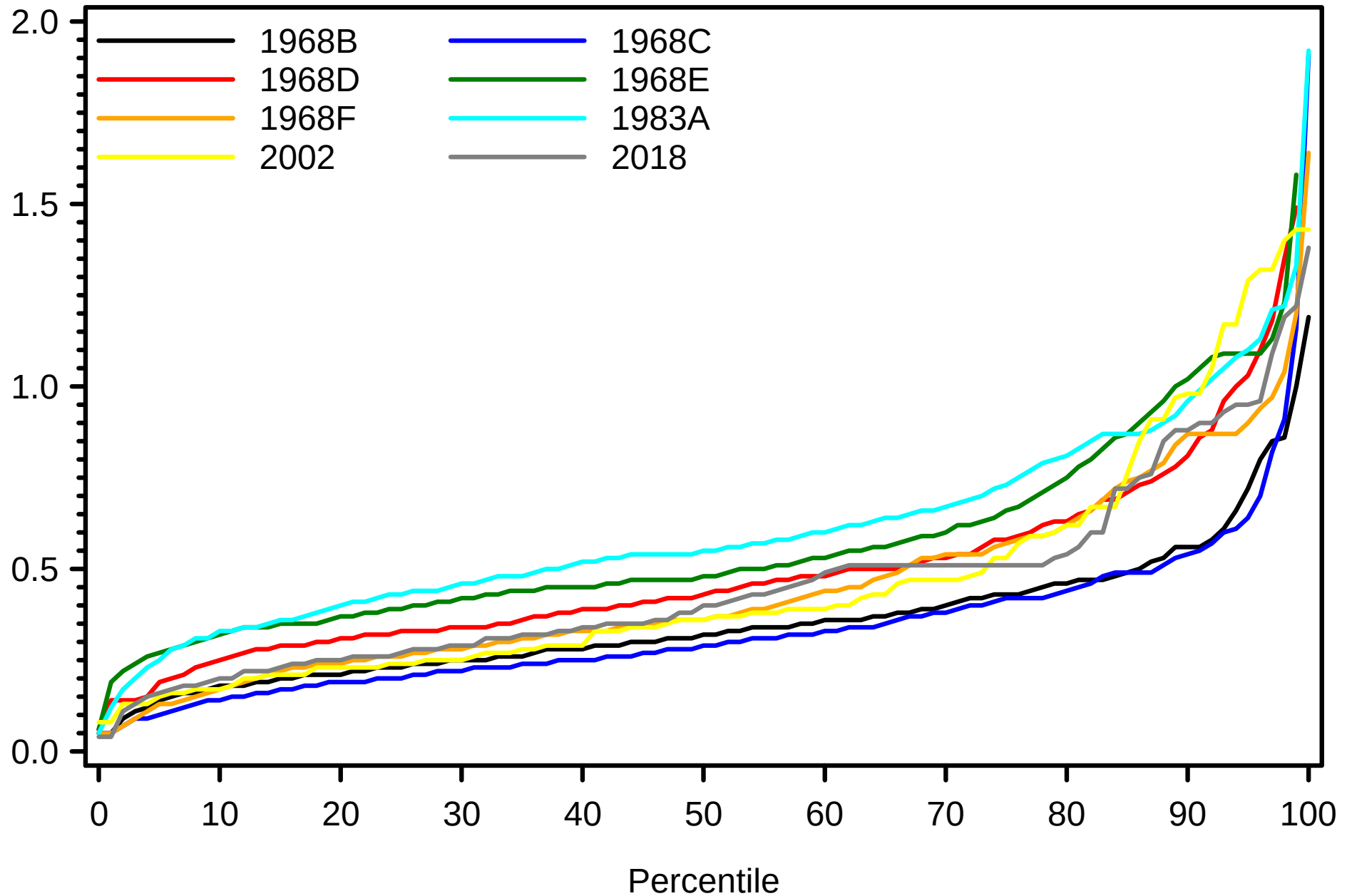
Cumulative Distribution of Secchi Disk Depths By Segment



TN
(mg/L)

Sarasota County Water Quality

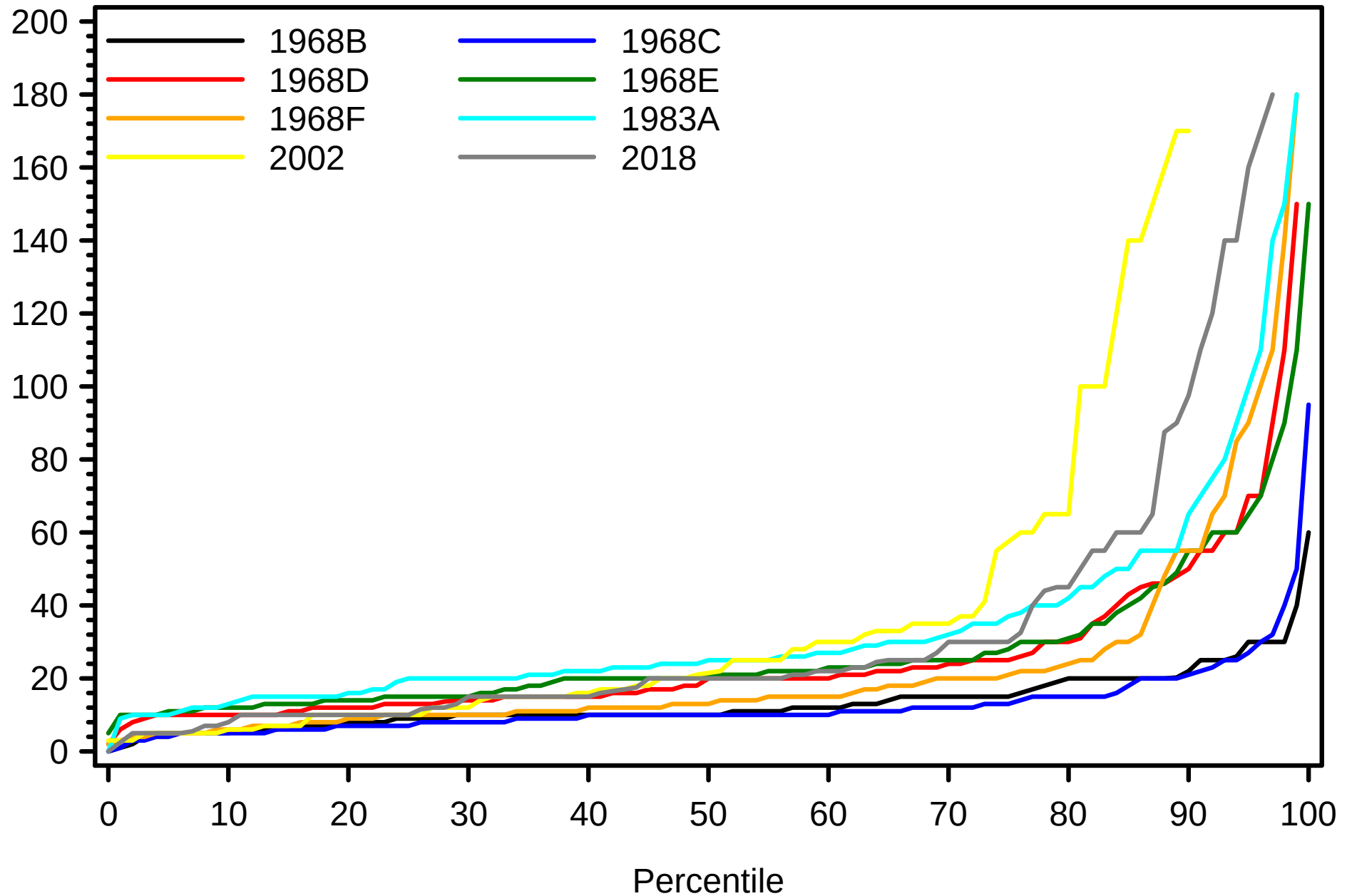
Cumulative Distribution of Total Nitrogen By Segment



Color
(PCU)

Sarasota County Water Quality

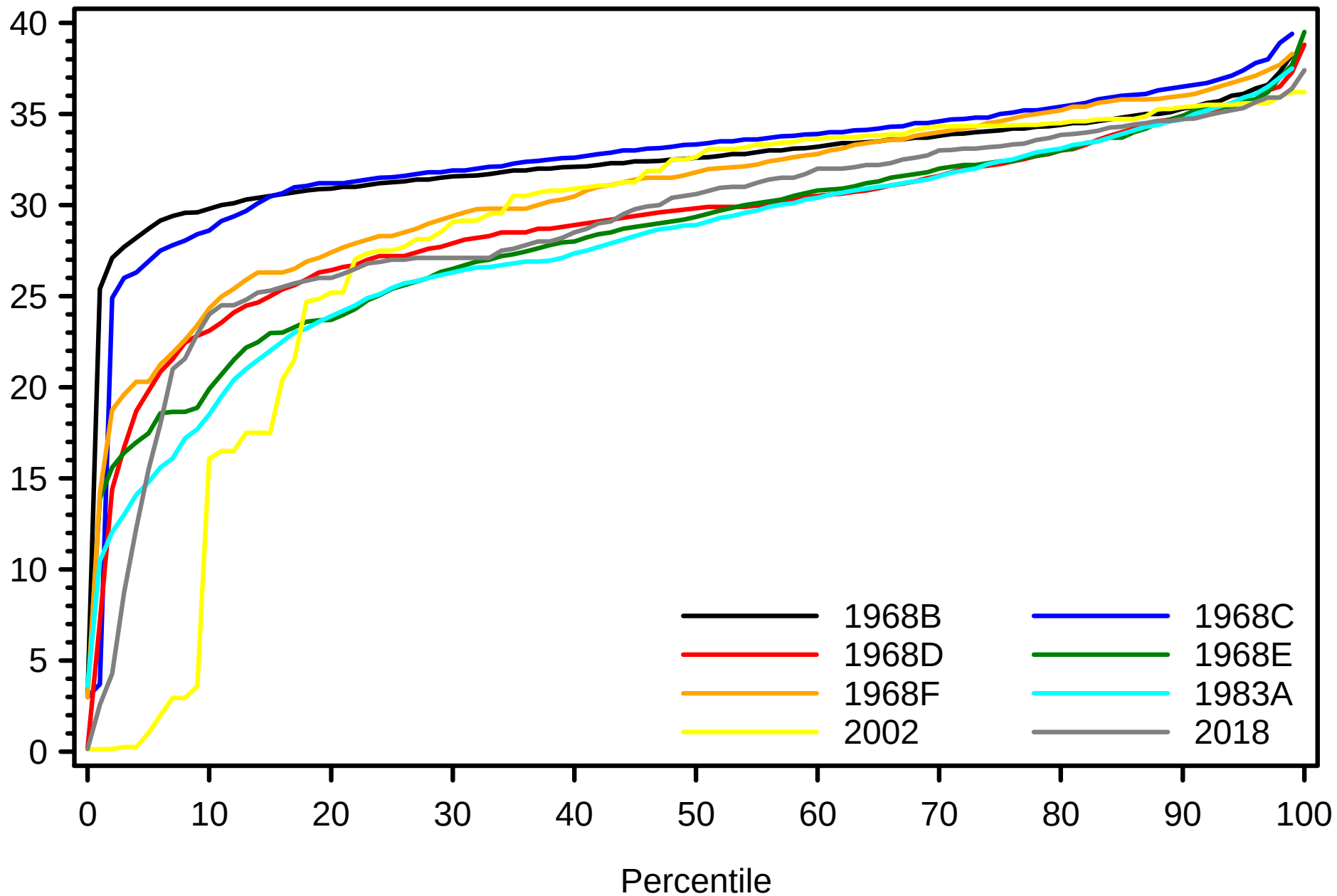
Cumulative Distribution of Color By Segment



Salinity
(ppt)

Sarasota County Water Quality

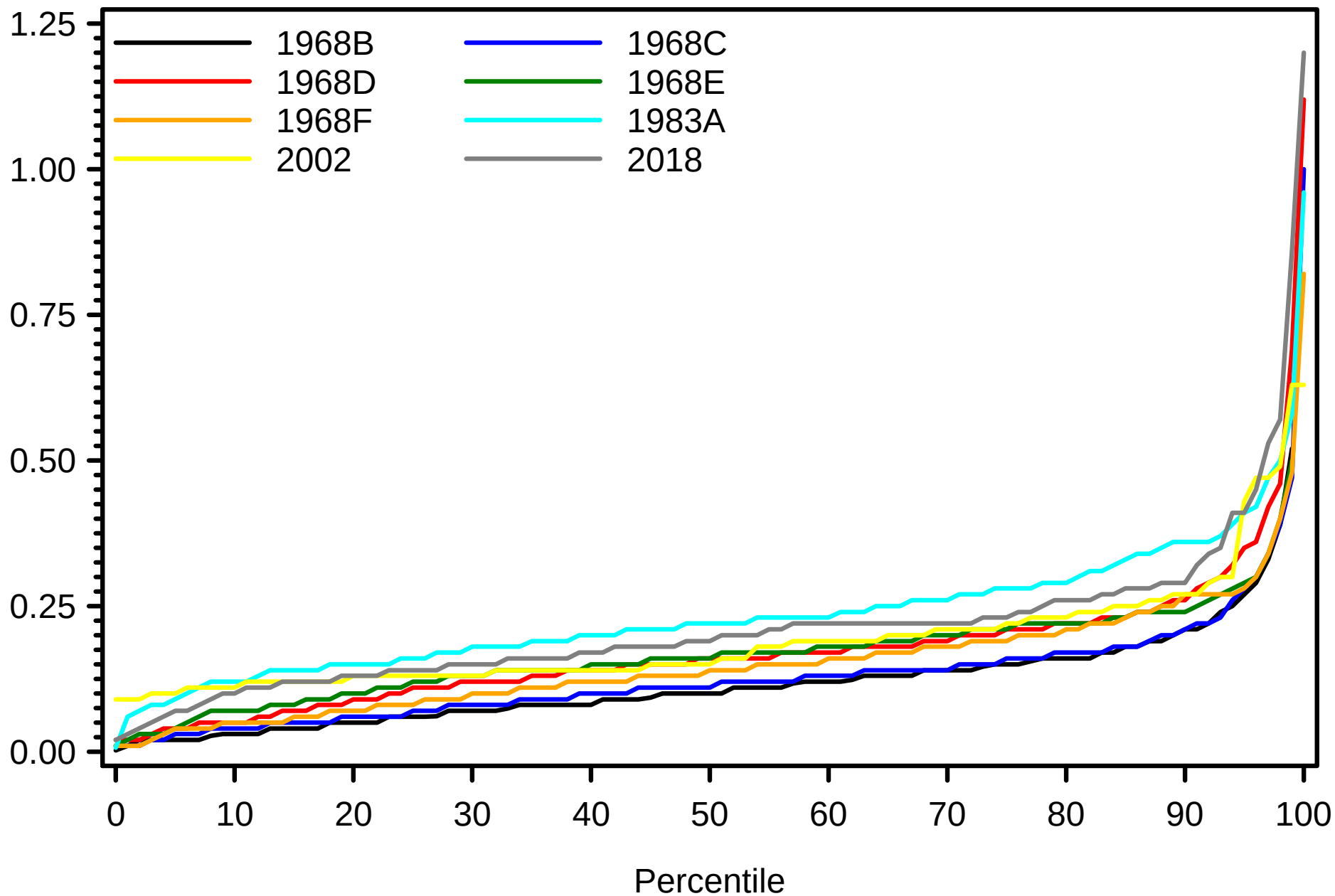
Cumulative Distribution of Salinity By Segment



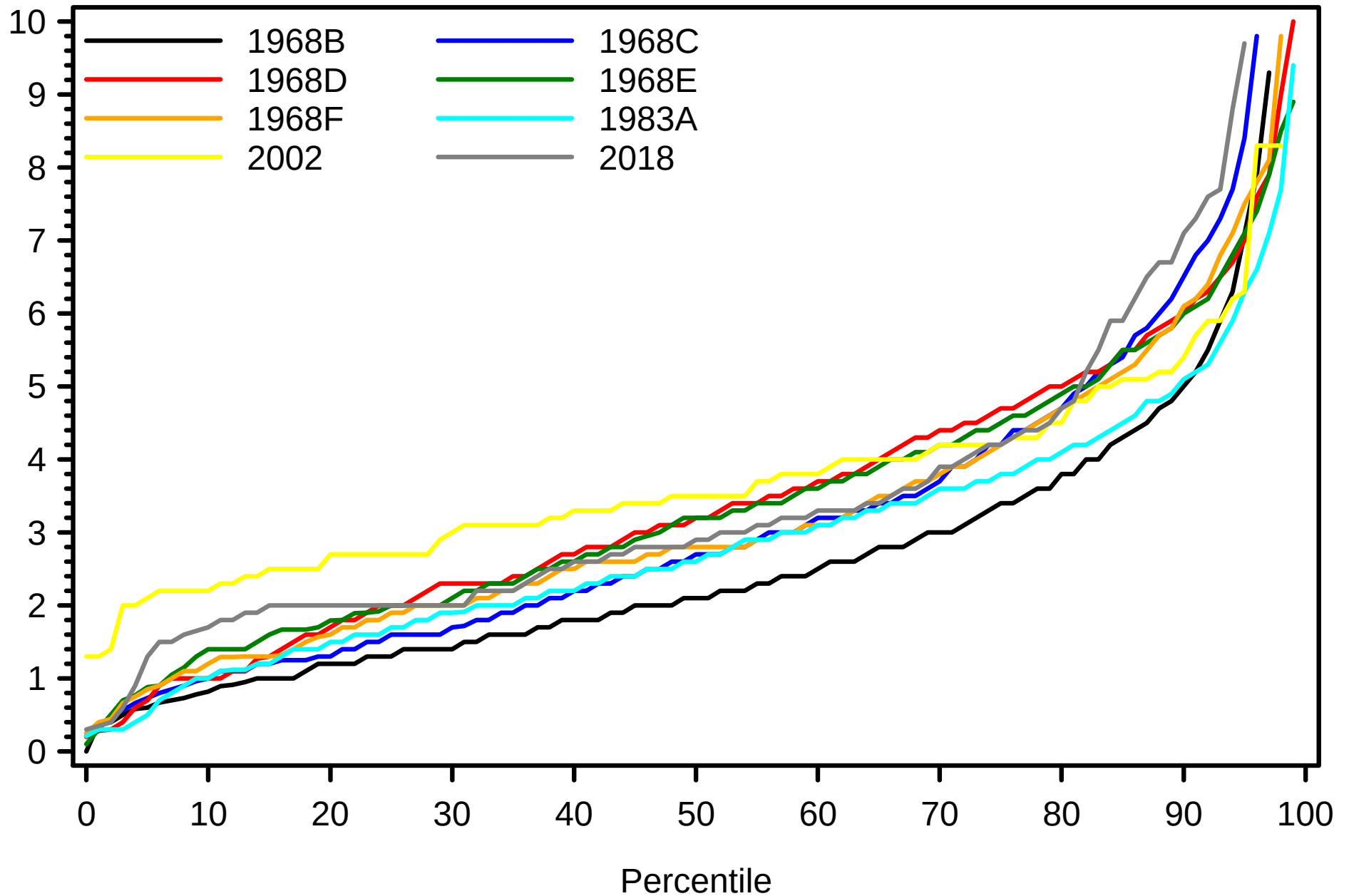
TP
(mg/L)

Sarasota County Water Quality

Cumulative Distribution of Total Phosphorus By Segment



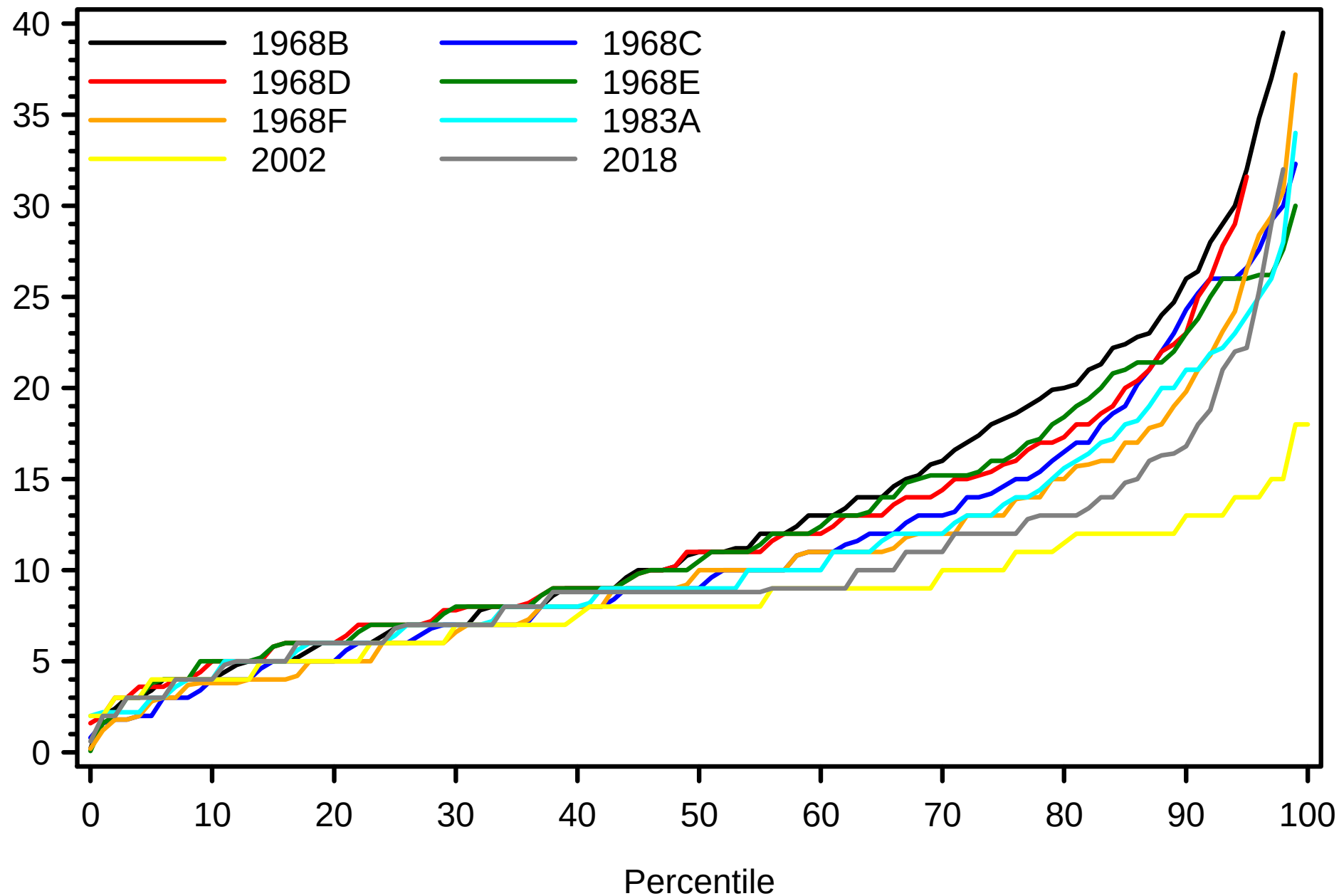
Turbidity (NTU)



TSS
(mg/L)

Sarasota County Water Quality

Cumulative Distribution of Total Suspended Solids by Segment



Appendix 3

Segment Label Key
SBN = Sarasota Bay North
SBS = Sarasota Bay South
RBN = Roberts Bay (North)
LSB = Little Sarasota Bay
BB = Blackburn Bay
DRB = Dona and Roberts Bay
LB = Lemon Bay

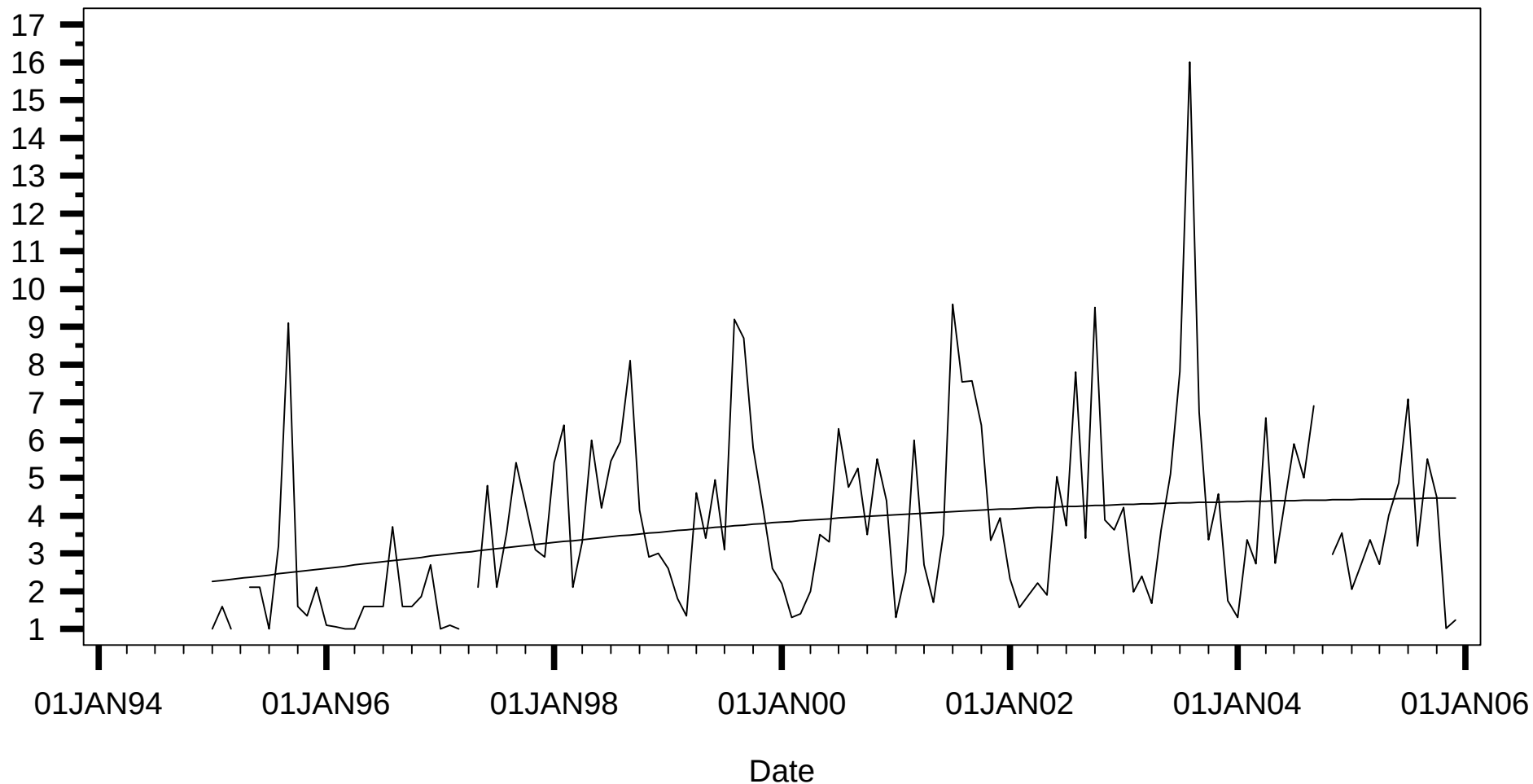
Trends Appendix - Display 1

Monthly Data Time Series for CHLA_C

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

CHLA_C
(ug/l)

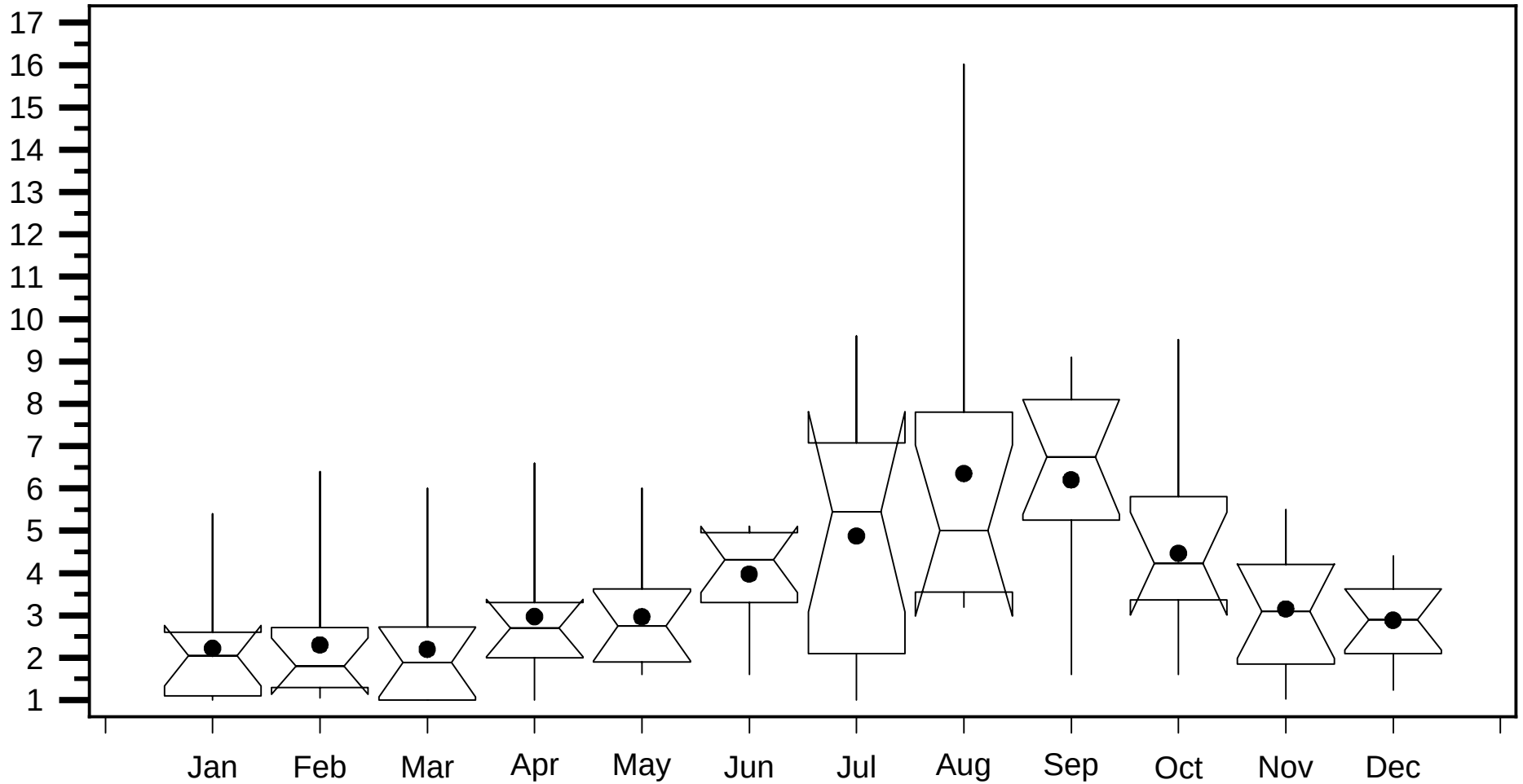


Trends Appendix - Display 2

Seasonal Univariate Statistics for CHLA_C

Sarasota County Segment= SBN

CHLA_C
(ug/l)

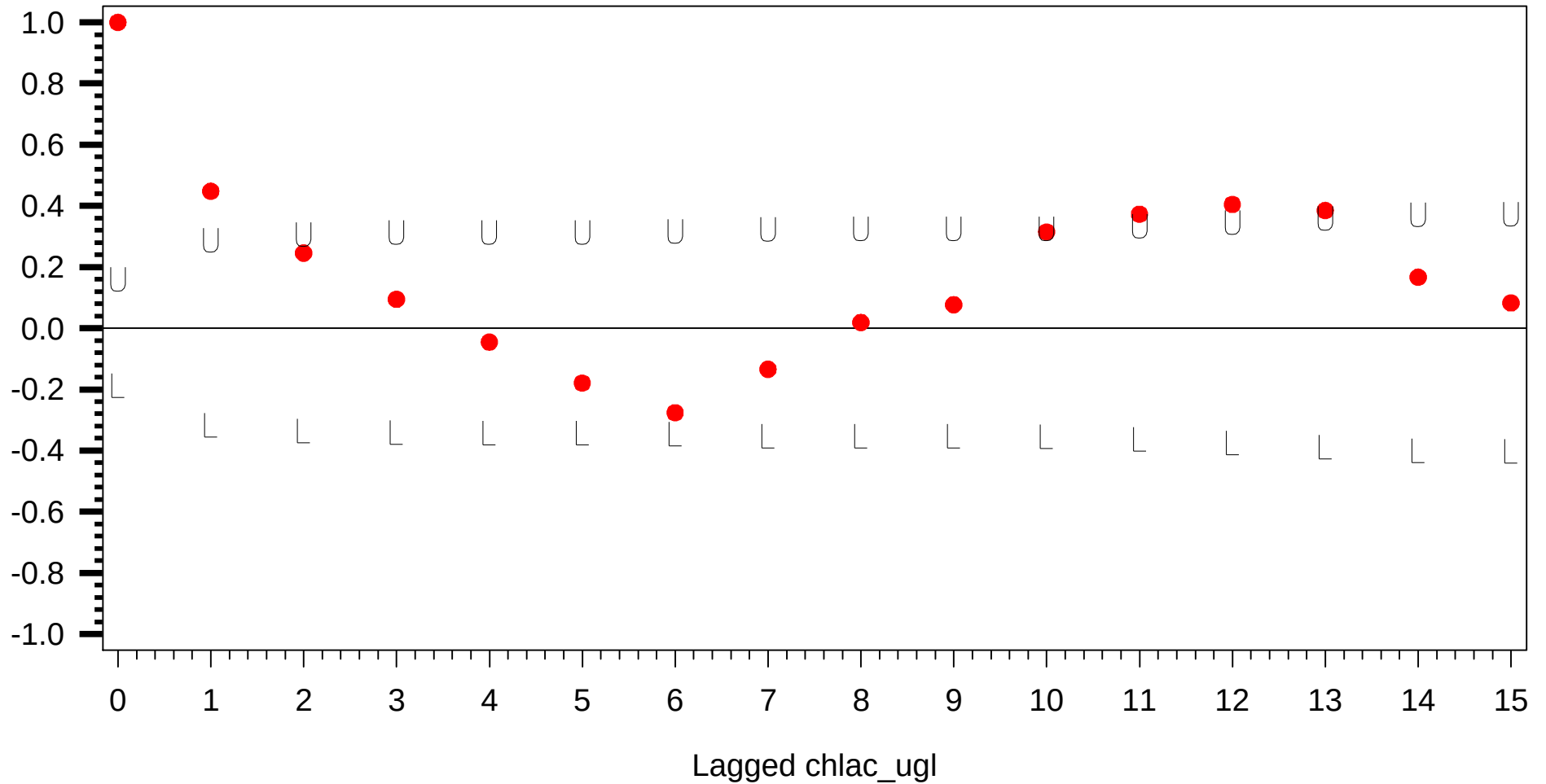


Lagged chlac_u _{gl}	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.448	0.151	0.302	-0.302
2	0.246	0.161	0.321	-0.321
3	0.095	0.163	0.327	-0.327
4	-0.045	0.164	0.328	-0.328
5	-0.179	0.164	0.328	-0.328
6	-0.276	0.165	0.331	-0.331
7	-0.134	0.169	0.338	-0.338
8	0.019	0.170	0.339	-0.339
9	0.077	0.170	0.339	-0.339
10	0.315	0.170	0.340	-0.340
11	0.373	0.174	0.348	-0.348
12	0.405	0.180	0.360	-0.360
13	0.385	0.187	0.374	-0.374
14	0.167	0.193	0.386	-0.386
15	0.083	0.194	0.388	-0.388

Trends Appendix - Display 4
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 5

Seasonal Kendall Tau Trend Test Statistics for CHLA_C
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.307	0	0.023	0.184

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 6

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.30745	.000007749	0.022537	0.18444

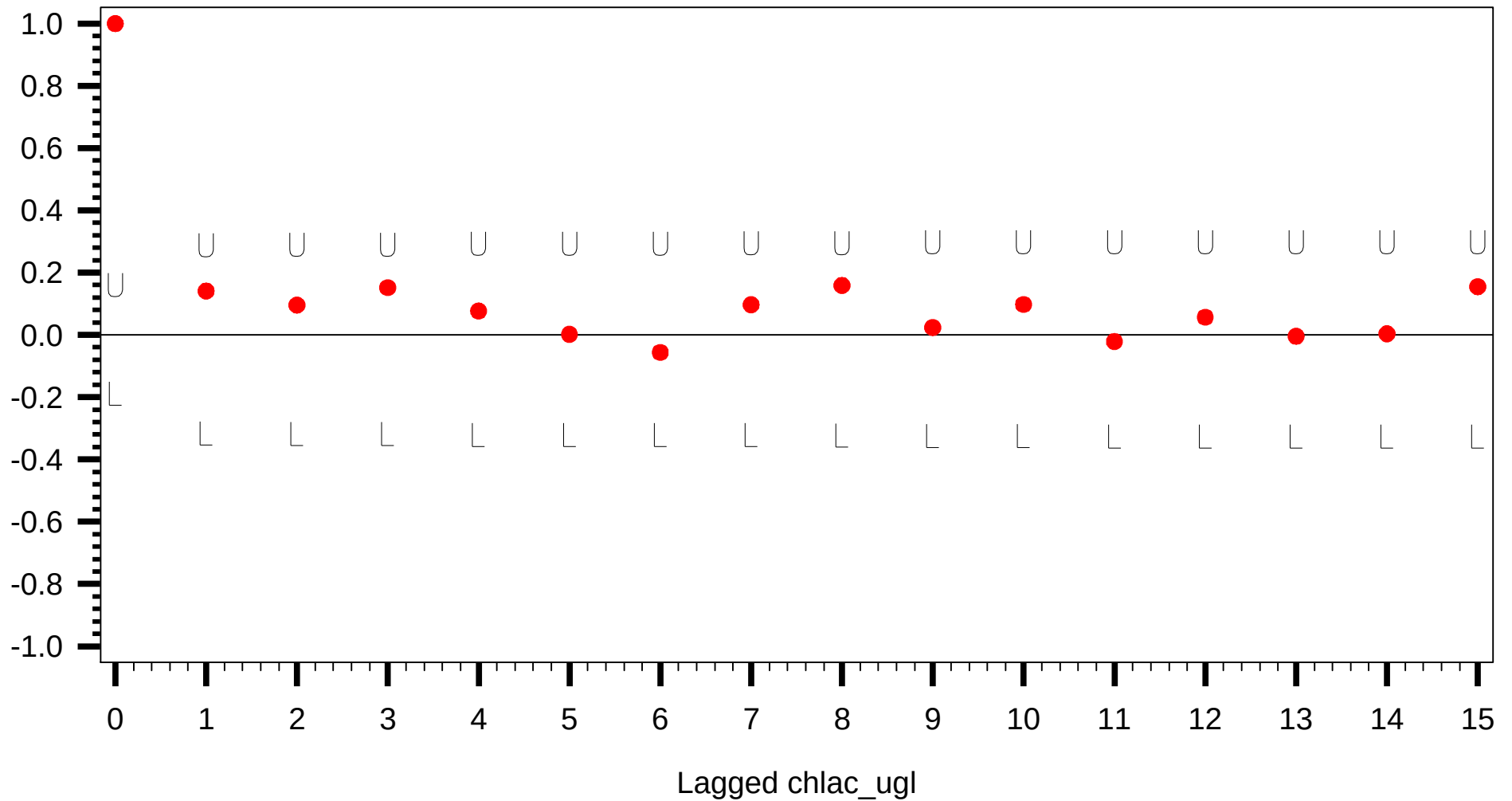
U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 8
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

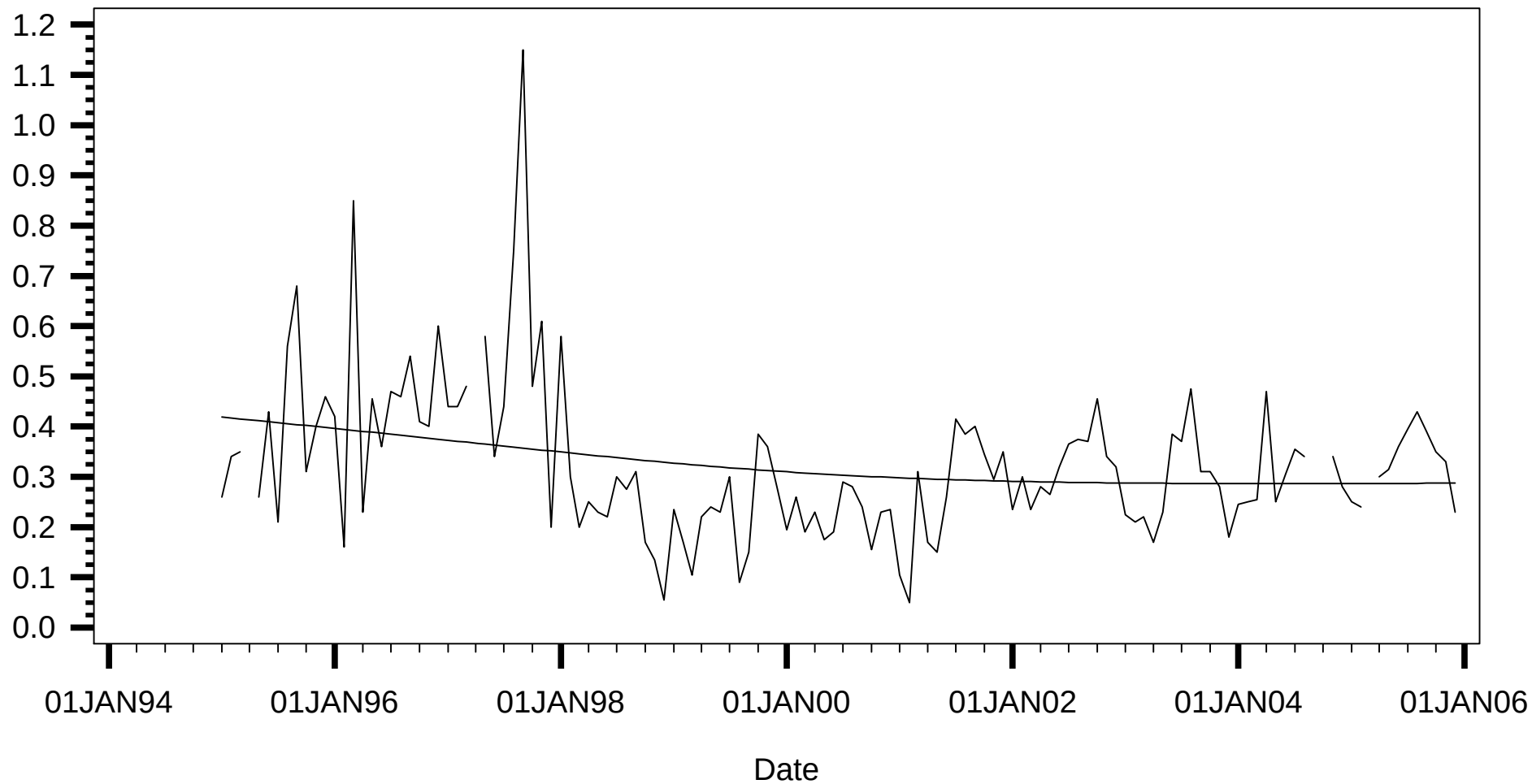
Trends Appendix - Display 9

Monthly Data Time Series for TN

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

TN
(mg/l)

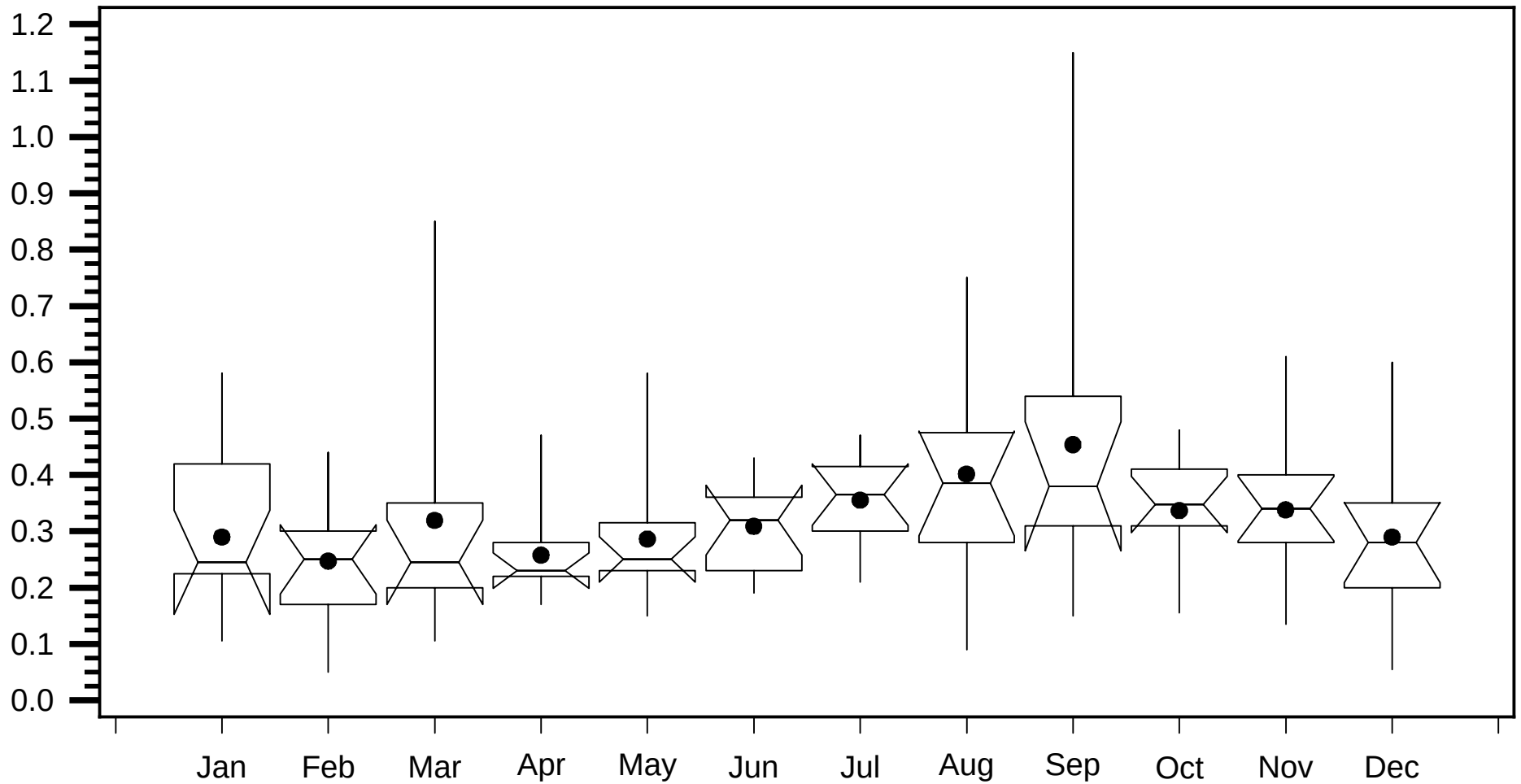


Trends Appendix - Display 10

Seasonal Univariate Statistics for TN

Sarasota County Segment= SBN

TN
(mg/l)

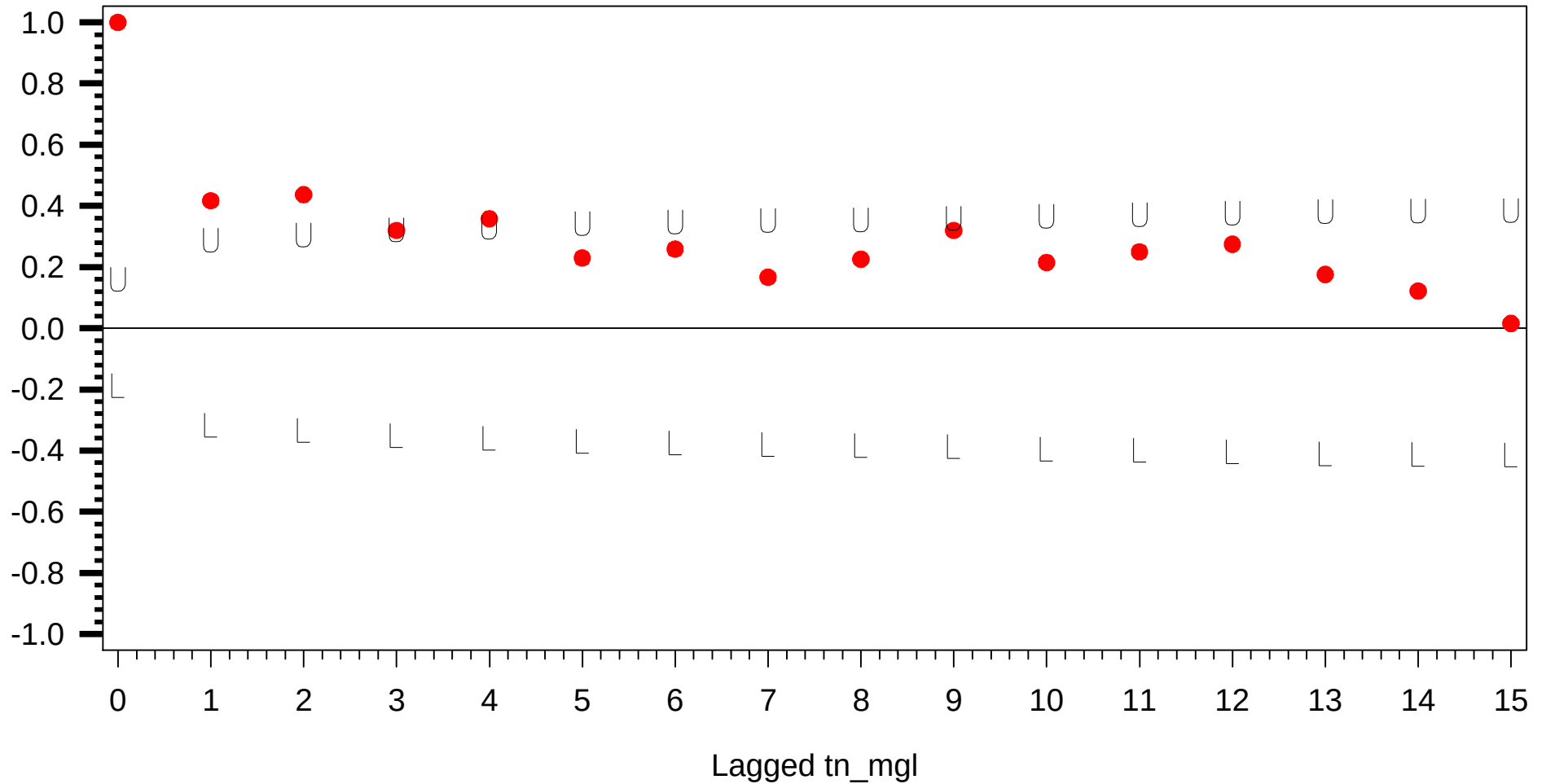


Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.417	0.151	0.302	-0.302
2	0.437	0.159	0.319	-0.319
3	0.320	0.168	0.336	-0.336
4	0.358	0.173	0.345	-0.345
5	0.230	0.178	0.356	-0.356
6	0.259	0.180	0.361	-0.361
7	0.167	0.183	0.366	-0.366
8	0.226	0.184	0.369	-0.369
9	0.320	0.186	0.373	-0.373
10	0.215	0.191	0.381	-0.381
11	0.250	0.192	0.385	-0.385
12	0.275	0.195	0.390	-0.390
13	0.176	0.198	0.396	-0.396
14	0.122	0.199	0.398	-0.398
15	0.016	0.200	0.399	-0.399

Trends Appendix - Display 12
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 13

Seasonal Kendall Tau Trend Test Statistics for TN
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.126	0.071	0.412	-.007

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 14

Seasonal Kendall Tau Trend Test Statistics for TN

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.12602	0.071246	0.41153	-.00666667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 15

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

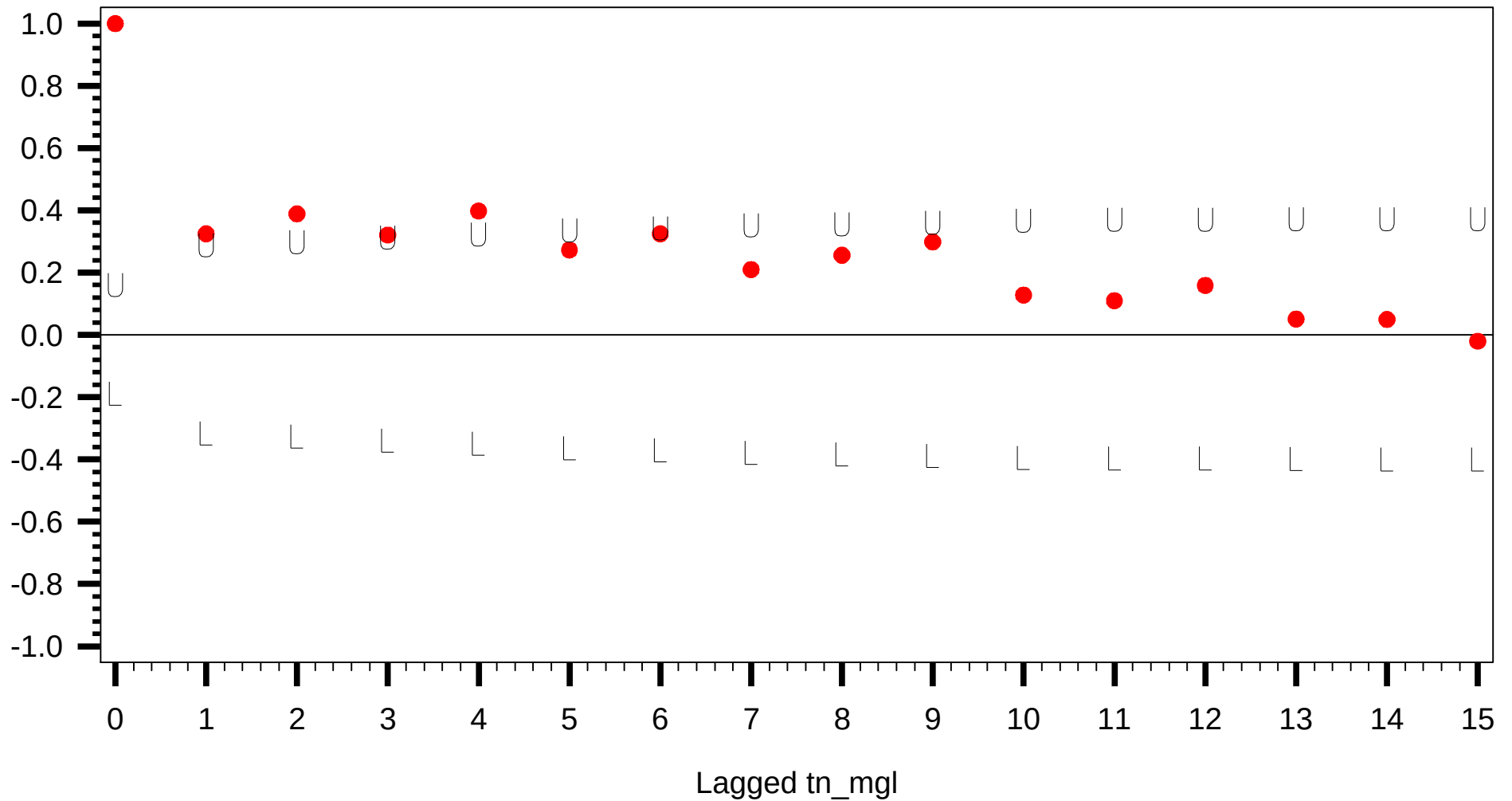
Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.325	0.151	0.302	-0.302
2	0.389	0.156	0.312	-0.312
3	0.321	0.163	0.326	-0.326
4	0.398	0.168	0.336	-0.336
5	0.273	0.175	0.350	-0.350
6	0.325	0.178	0.356	-0.356
7	0.210	0.183	0.365	-0.365
8	0.256	0.184	0.369	-0.369
9	0.299	0.187	0.374	-0.374
10	0.128	0.191	0.381	-0.381
11	0.110	0.191	0.383	-0.383
12	0.159	0.192	0.383	-0.383
13	0.051	0.193	0.385	-0.385
14	0.050	0.193	0.386	-0.386
15	-0.020	0.193	0.386	-0.386

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 16
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

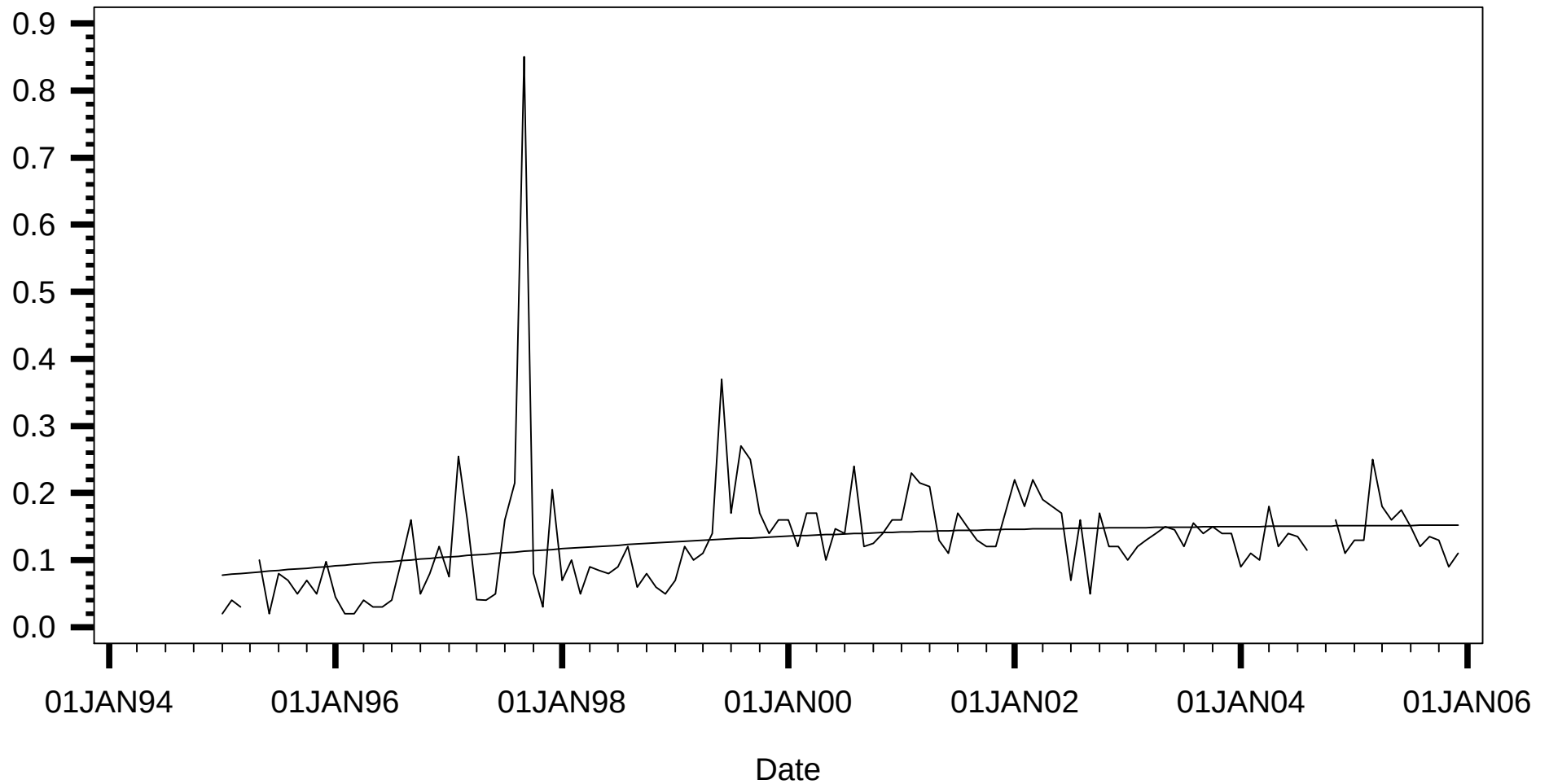
Trends Appendix - Display 17

Monthly Data Time Series for TP

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

TP
(mg/l)

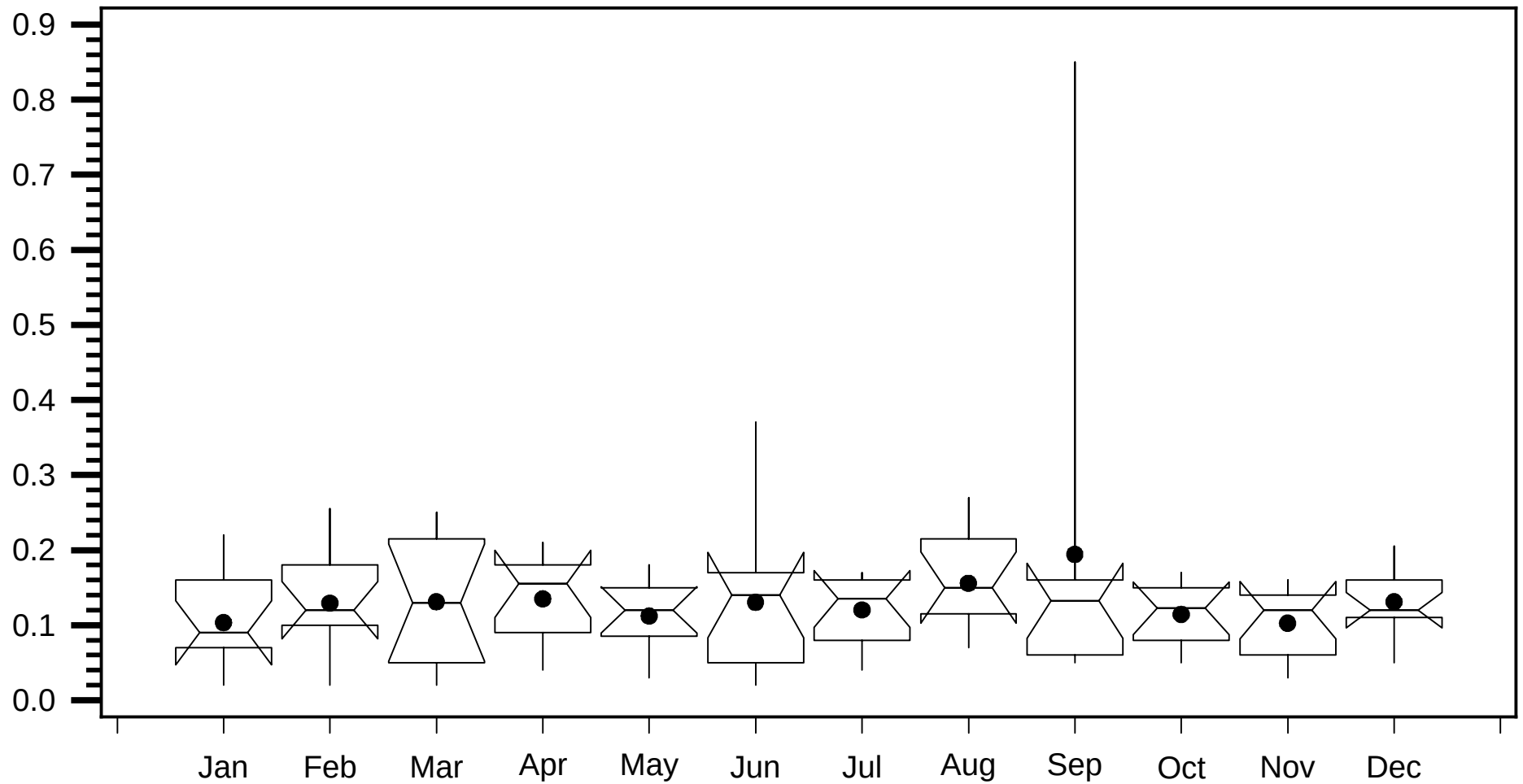


Trends Appendix - Display 18

Seasonal Univariate Statistics for TP

Sarasota County Segment= SBN

TP
(mg/l)



Trends Appendix - Display 19

Autocorrelation Statistics for Sarasota County Segment = SBN '

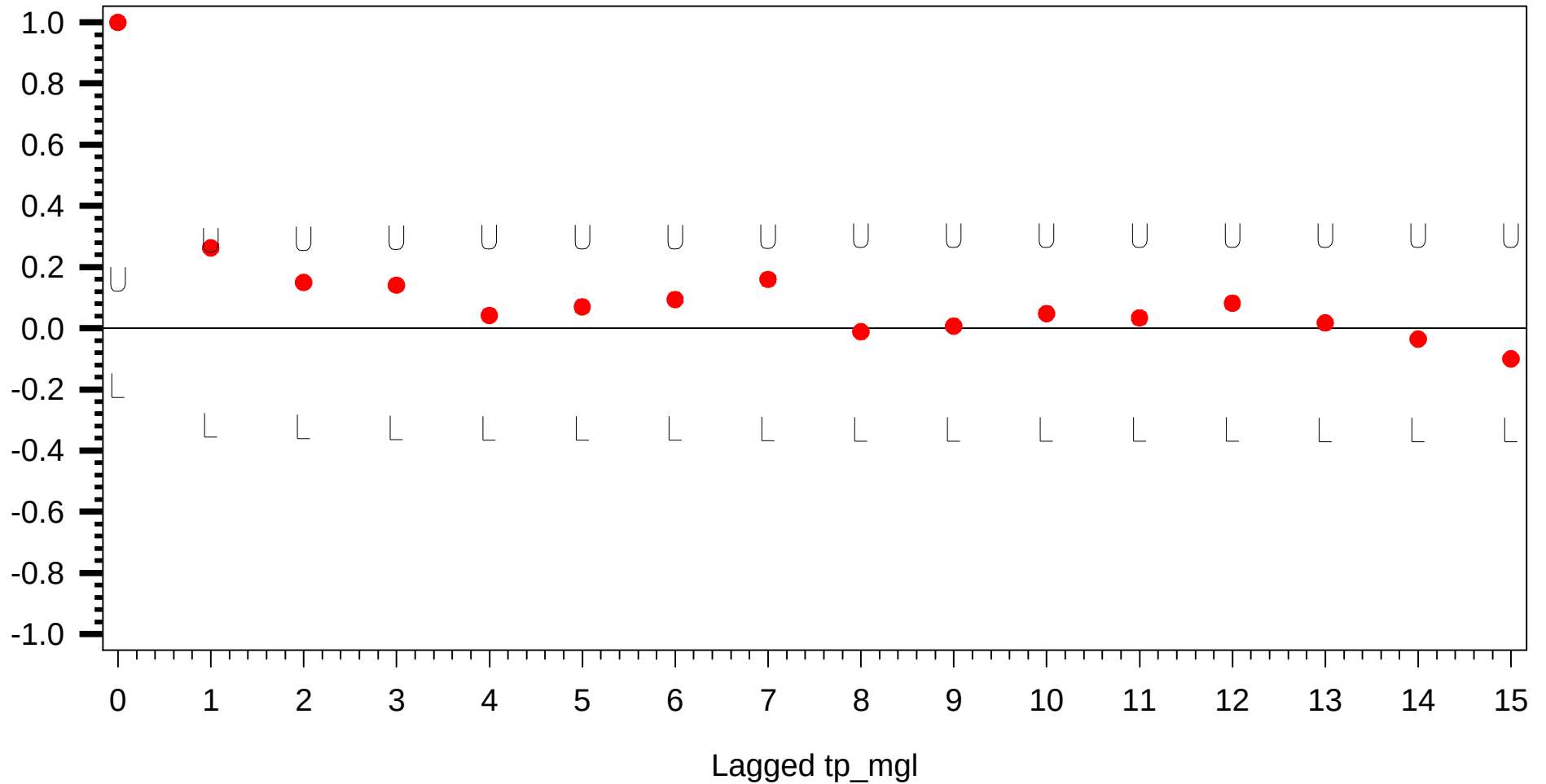
Unadjusted for Seasonal Medians

Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.263	0.151	0.302	-0.302
2	0.150	0.154	0.308	-0.308
3	0.141	0.155	0.311	-0.311
4	0.042	0.156	0.313	-0.313
5	0.070	0.156	0.313	-0.313
6	0.094	0.157	0.313	-0.313
7	0.160	0.157	0.314	-0.314
8	-0.011	0.158	0.317	-0.317
9	0.007	0.158	0.317	-0.317
10	0.048	0.158	0.317	-0.317
11	0.034	0.158	0.317	-0.317
12	0.082	0.158	0.317	-0.317
13	0.018	0.159	0.318	-0.318
14	-0.035	0.159	0.318	-0.318
15	-0.100	0.159	0.318	-0.318

Trends Appendix - Display 20
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 21

Seasonal Kendall Tau Trend Test Statistics for TP
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.359	0	0.025	0.01

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 22

Seasonal Kendall Tau Trend Test Statistics for TP

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.35873	.000000119	0.024946	0.01

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 23

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

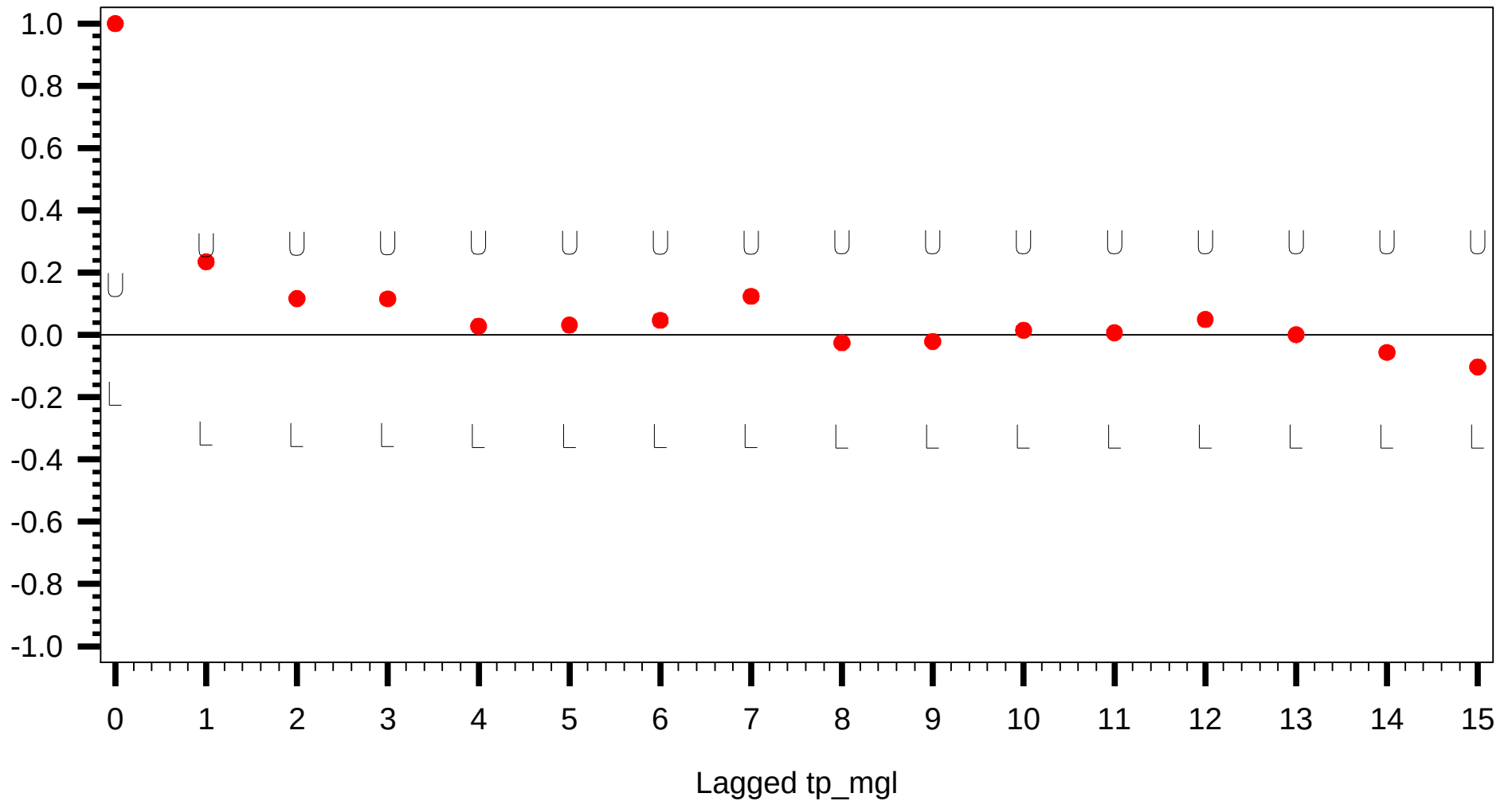
Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.235	0.151	0.302	-0.302
2	0.117	0.154	0.307	-0.307
3	0.116	0.154	0.308	-0.308
4	0.028	0.155	0.310	-0.310
5	0.032	0.155	0.310	-0.310
6	0.047	0.155	0.310	-0.310
7	0.124	0.155	0.310	-0.310
8	-0.025	0.156	0.312	-0.312
9	-0.021	0.156	0.312	-0.312
10	0.015	0.156	0.312	-0.312
11	0.007	0.156	0.312	-0.312
12	0.050	0.156	0.312	-0.312
13	0.001	0.156	0.312	-0.312
14	-0.056	0.156	0.312	-0.312
15	-0.103	0.156	0.312	-0.312

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 24
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

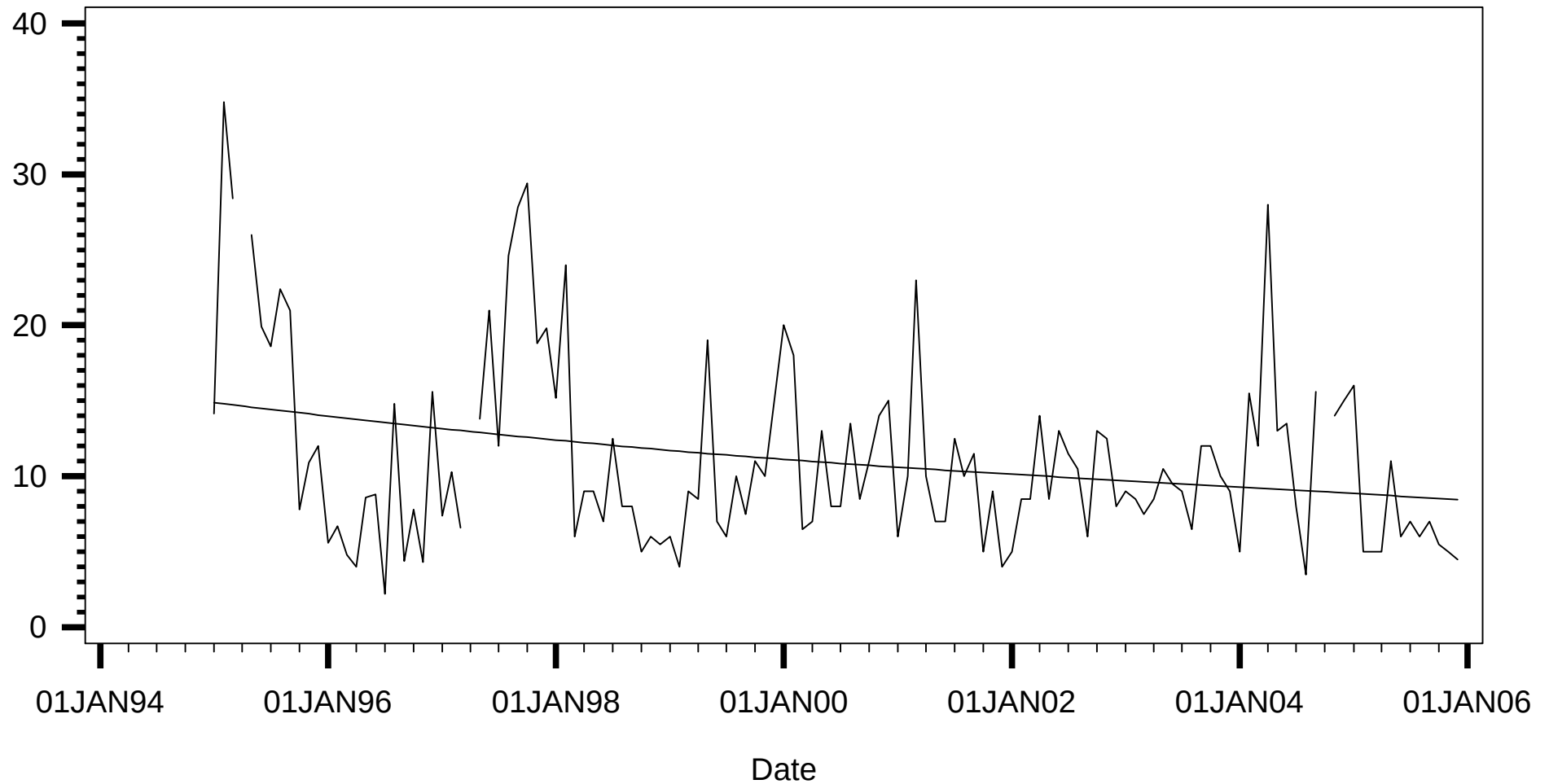
Trends Appendix - Display 25

Monthly Data Time Series for TSS

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

TSS
(mg/l)

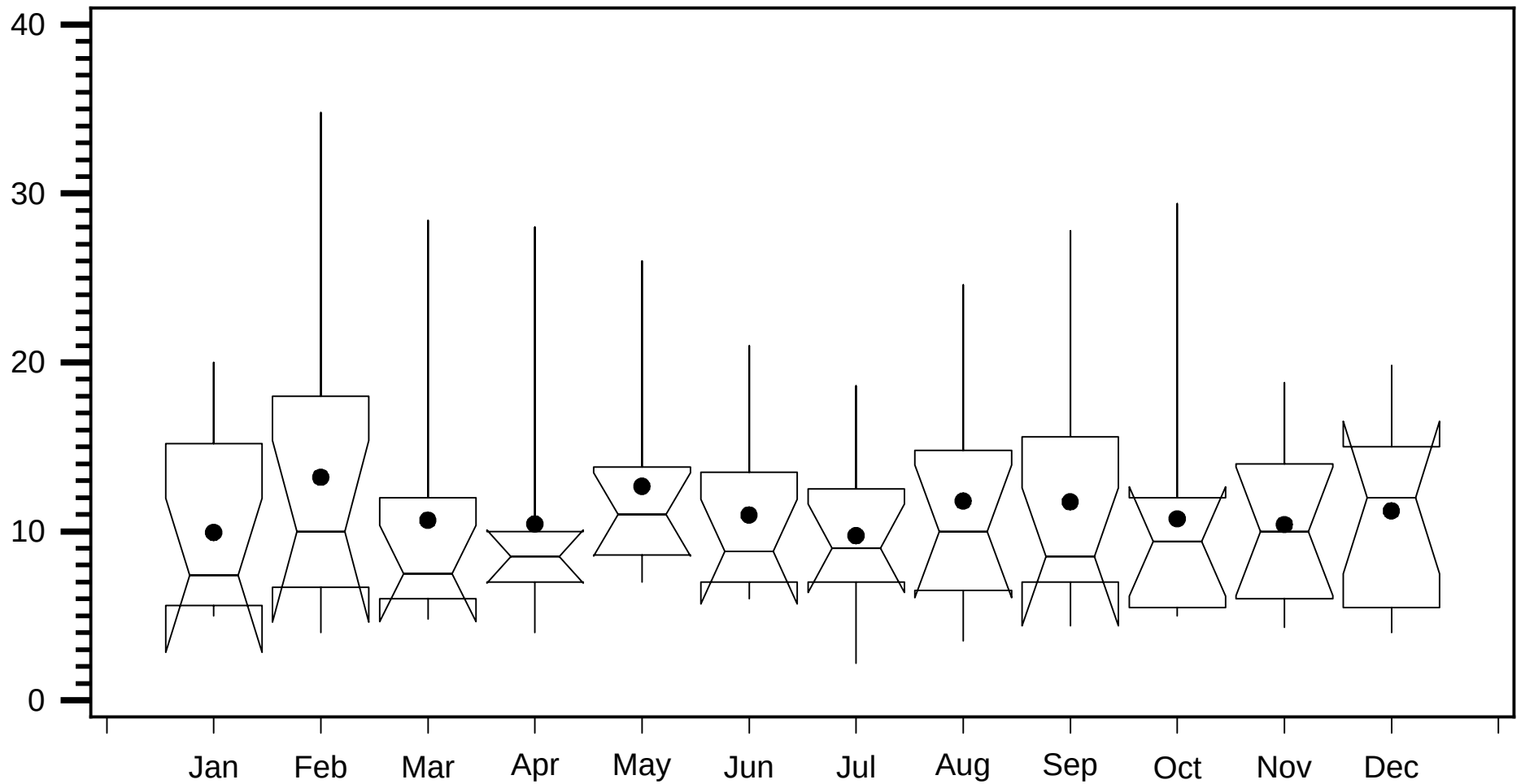


Trends Appendix - Display 26

Seasonal Univariate Statistics for TSS

Sarasota County Segment= SBN

TSS
(mg/l)



Trends Appendix - Display 27

Autocorrelation Statistics for Sarasota County Segment = SBN '

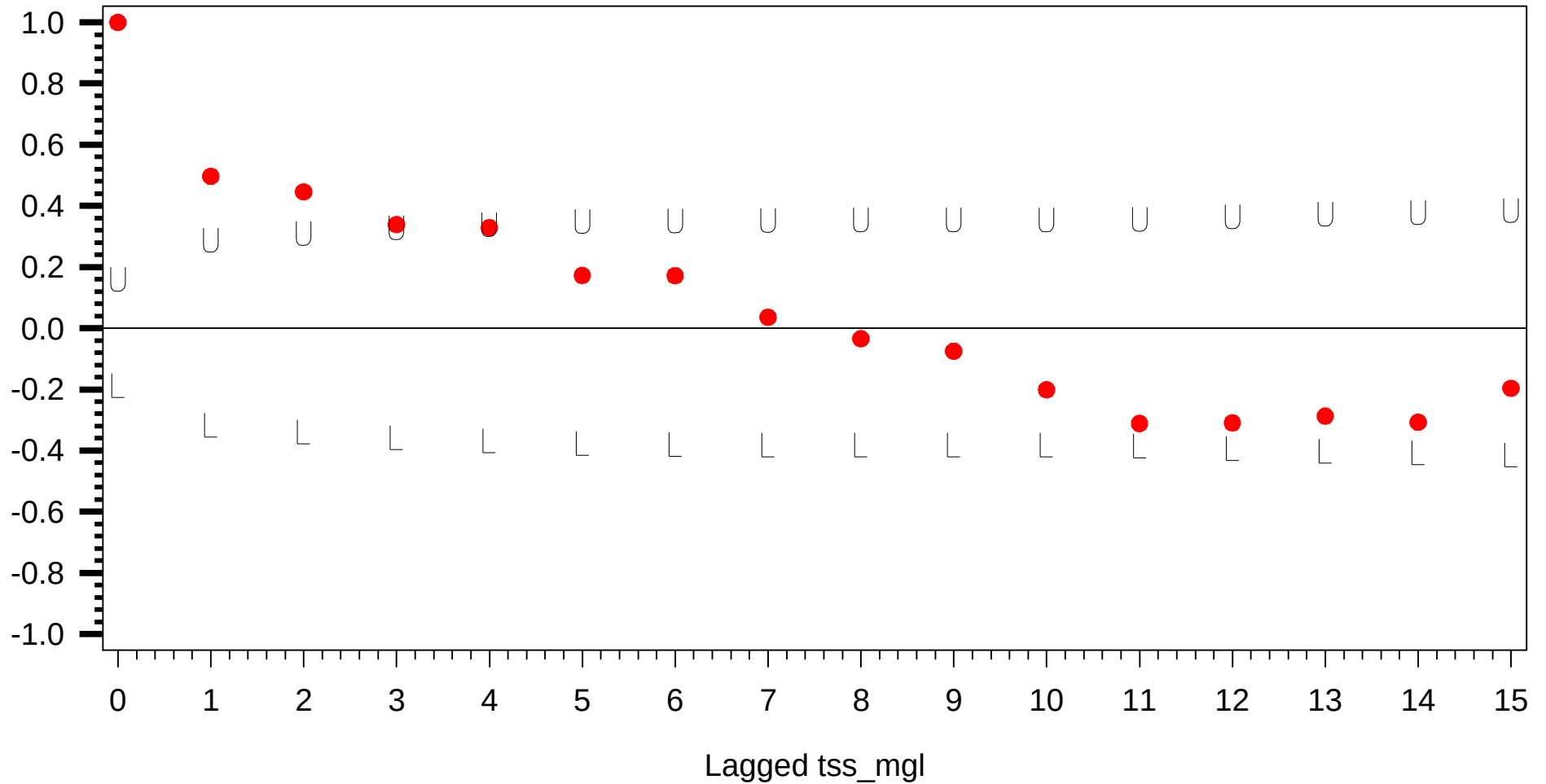
Unadjusted for Seasonal Medians

Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.497	0.151	0.302	-0.302
2	0.446	0.163	0.325	-0.325
3	0.339	0.172	0.343	-0.343
4	0.329	0.177	0.353	-0.353
5	0.173	0.181	0.363	-0.363
6	0.172	0.183	0.365	-0.365
7	0.036	0.184	0.367	-0.367
8	-0.034	0.184	0.368	-0.368
9	-0.075	0.184	0.368	-0.368
10	-0.201	0.184	0.368	-0.368
11	-0.311	0.186	0.371	-0.371
12	-0.309	0.190	0.379	-0.379
13	-0.287	0.193	0.387	-0.387
14	-0.307	0.197	0.393	-0.393
15	-0.196	0.200	0.400	-0.400

Trends Appendix - Display 28
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 29

Seasonal Kendall Tau Trend Test Statistics for TSS
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.143	0.038	0.282	-0.3

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 30

Seasonal Kendall Tau Trend Test Statistics for TSS

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.14263	0.038352	0.28169	-0.3

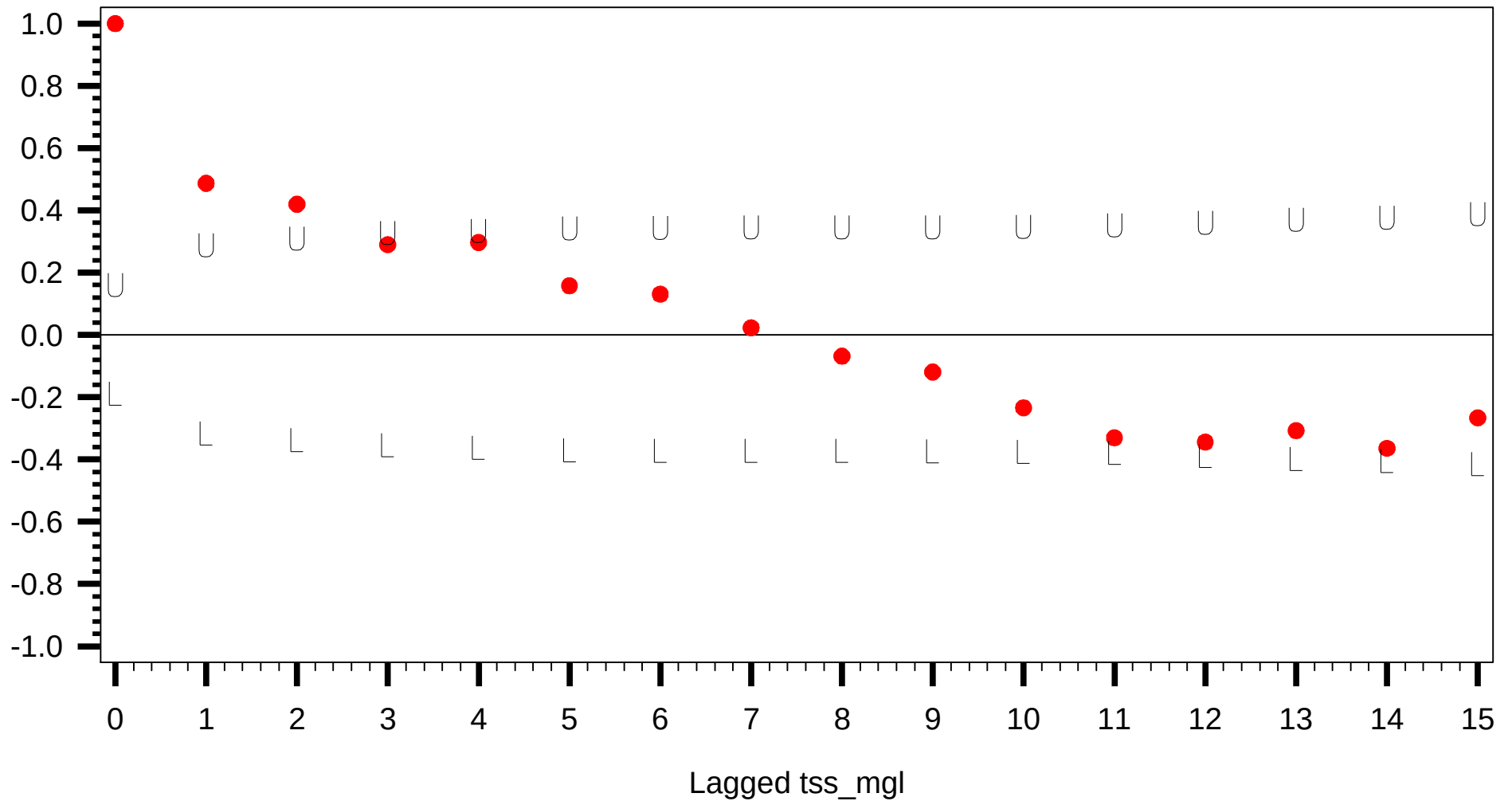
U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 32
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

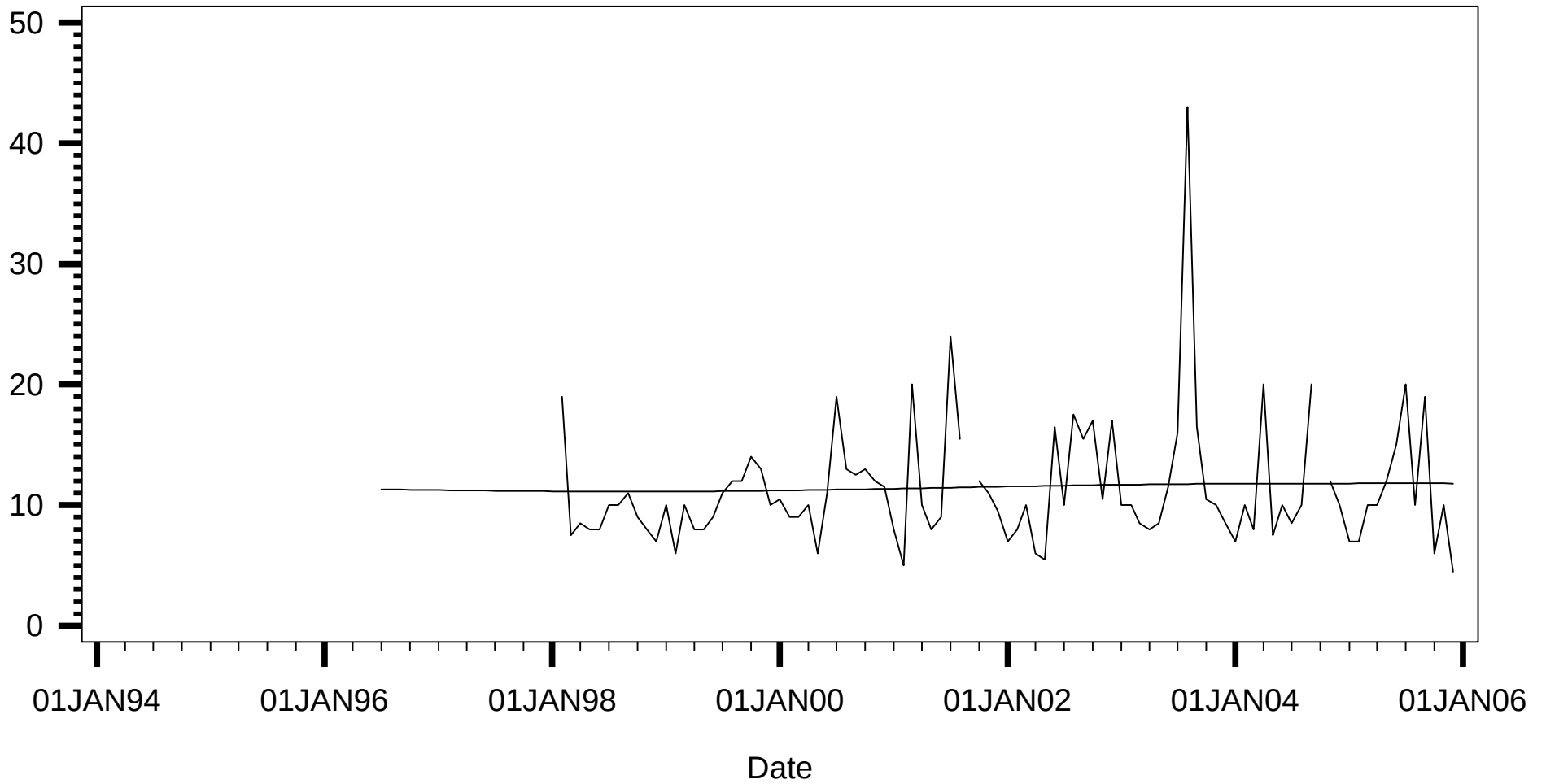
Trends Appendix - Display 33

Monthly Data Time Series for Color

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

Color
(pcu)

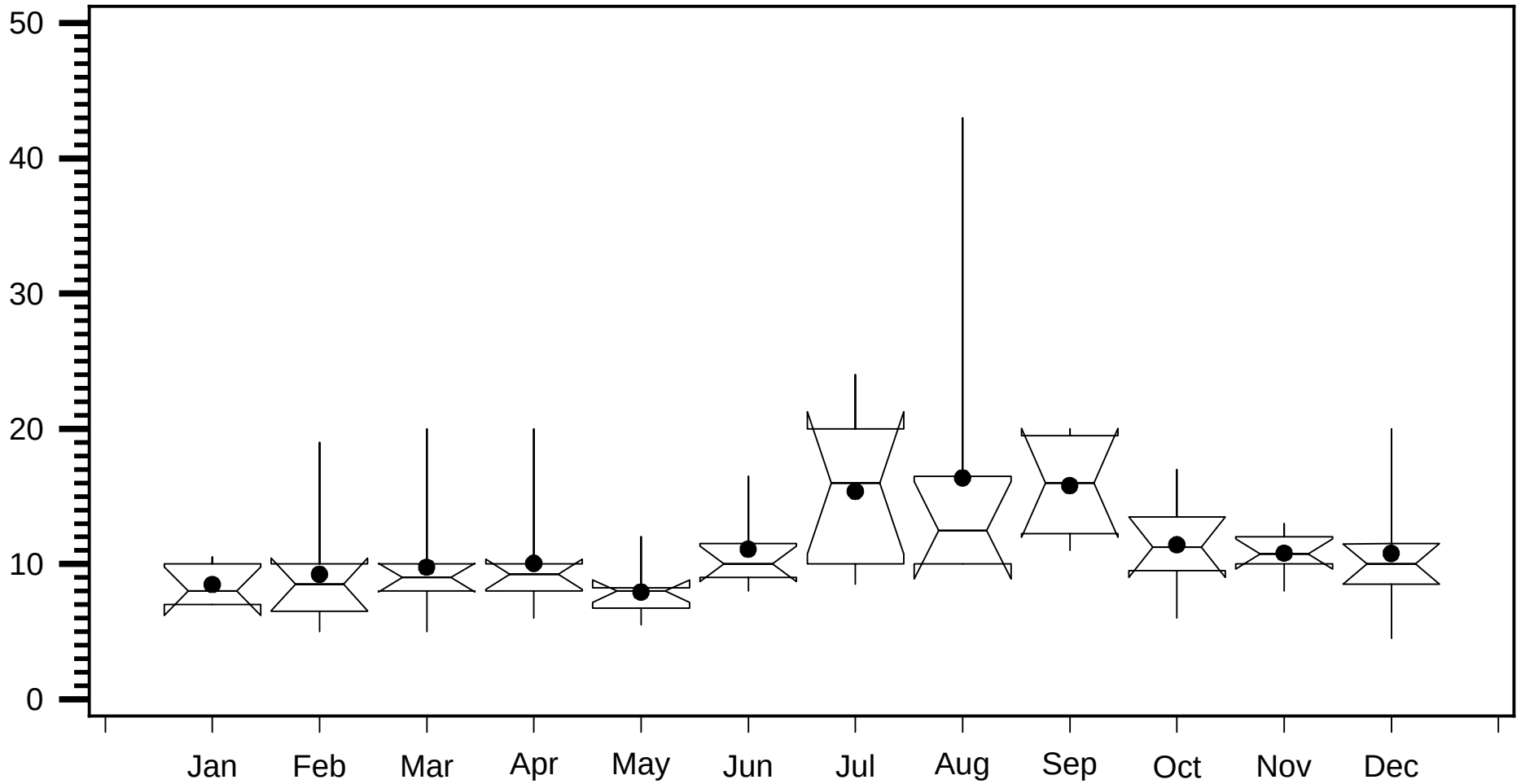


Trends Appendix - Display 34

Seasonal Univariate Statistics for Color

Sarasota County Segment= SBN

Color
(pcu)



Trends Appendix - Display 35

Autocorrelation Statistics for Sarasota County Segment = SBN '

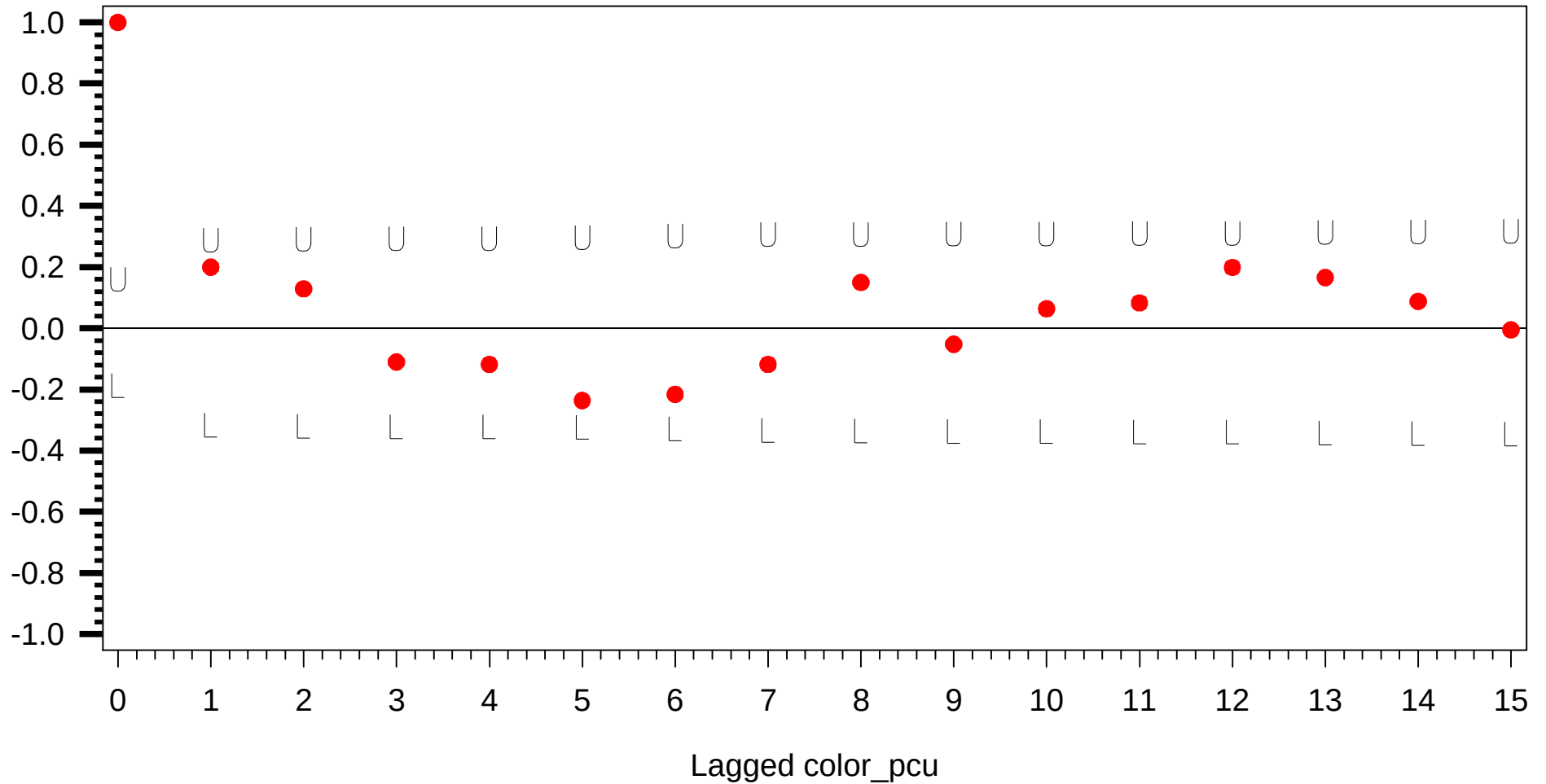
Unadjusted for Seasonal Medians

Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.200	0.151	0.302	-0.302
2	0.129	0.153	0.306	-0.306
3	-0.110	0.154	0.307	-0.307
4	-0.118	0.154	0.308	-0.308
5	-0.236	0.155	0.310	-0.310
6	-0.216	0.158	0.315	-0.315
7	-0.118	0.160	0.320	-0.320
8	0.150	0.160	0.321	-0.321
9	-0.052	0.161	0.323	-0.323
10	0.064	0.162	0.323	-0.323
11	0.083	0.162	0.324	-0.324
12	0.199	0.162	0.324	-0.324
13	0.166	0.164	0.328	-0.328
14	0.088	0.165	0.330	-0.330
15	-0.005	0.166	0.331	-0.331

Trends Appendix - Display 36
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 37

Seasonal Kendall Tau Trend Test Statistics for Color
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.054	0.52	0.543	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 38

Seasonal Kendall Tau Trend Test Statistics for Color

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.054054	0.51963	0.54252	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 39

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

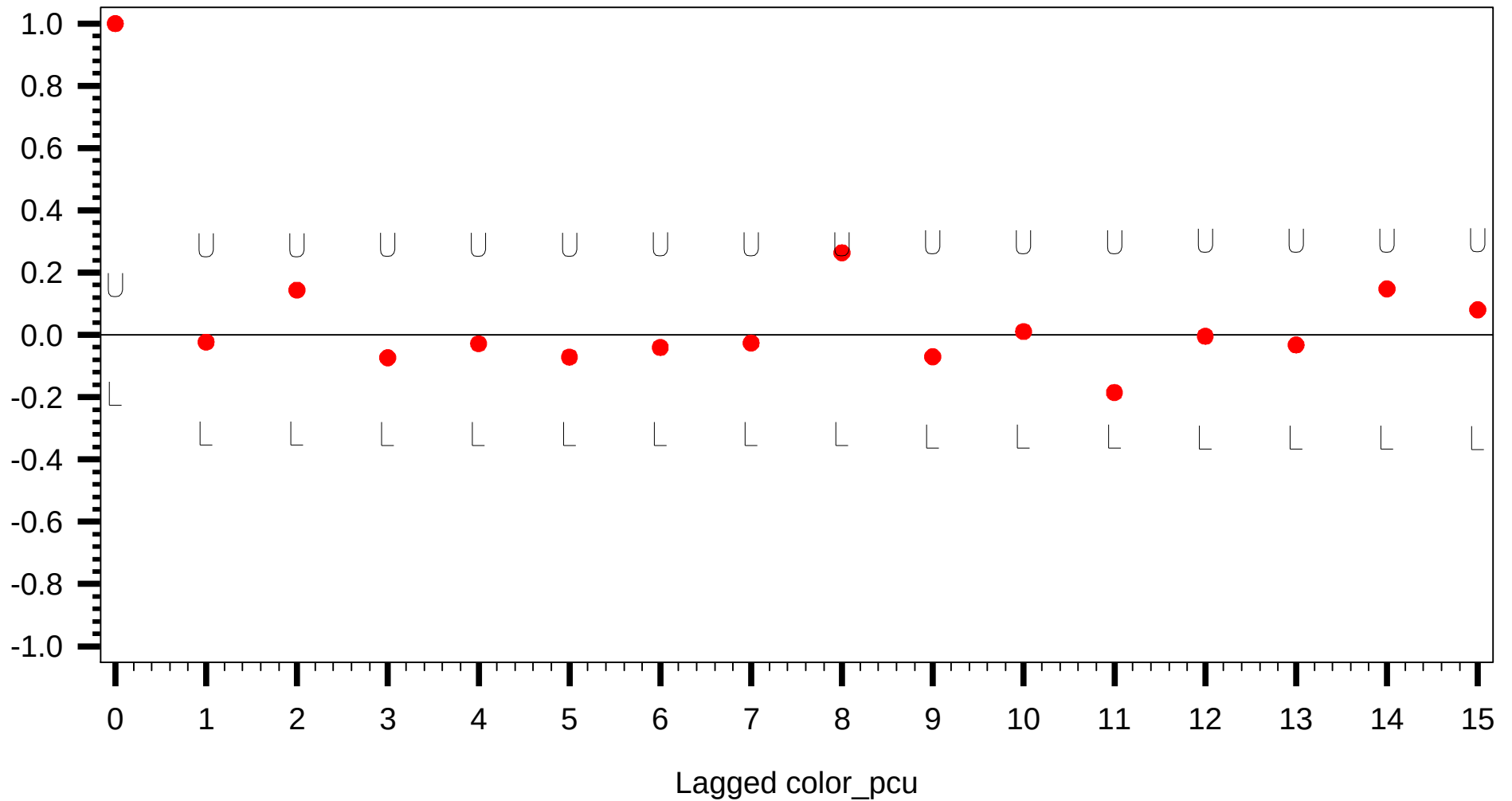
Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	-0.023	0.151	0.302	-0.302
2	0.144	0.151	0.302	-0.302
3	-0.073	0.152	0.304	-0.304
4	-0.028	0.152	0.304	-0.304
5	-0.071	0.152	0.304	-0.304
6	-0.040	0.152	0.305	-0.305
7	-0.026	0.152	0.305	-0.305
8	0.264	0.152	0.305	-0.305
9	-0.070	0.156	0.312	-0.312
10	0.011	0.156	0.312	-0.312
11	-0.185	0.156	0.312	-0.312
12	-0.004	0.158	0.316	-0.316
13	-0.032	0.158	0.316	-0.316
14	0.148	0.158	0.316	-0.316
15	0.081	0.159	0.318	-0.318

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 40
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

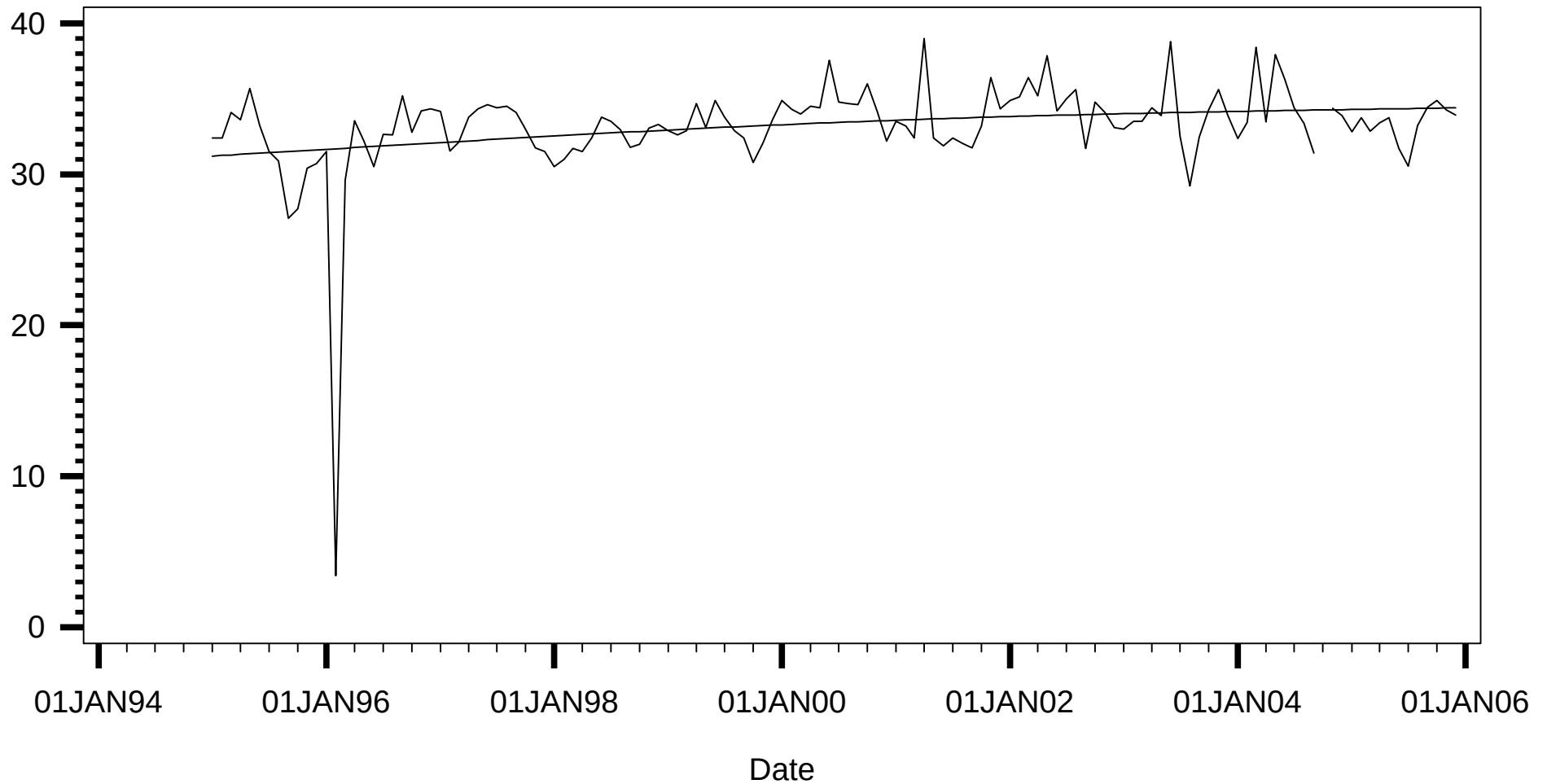
Trends Appendix - Display 41

Monthly Data Time Series for Salinity

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

Salinity
(ppt)

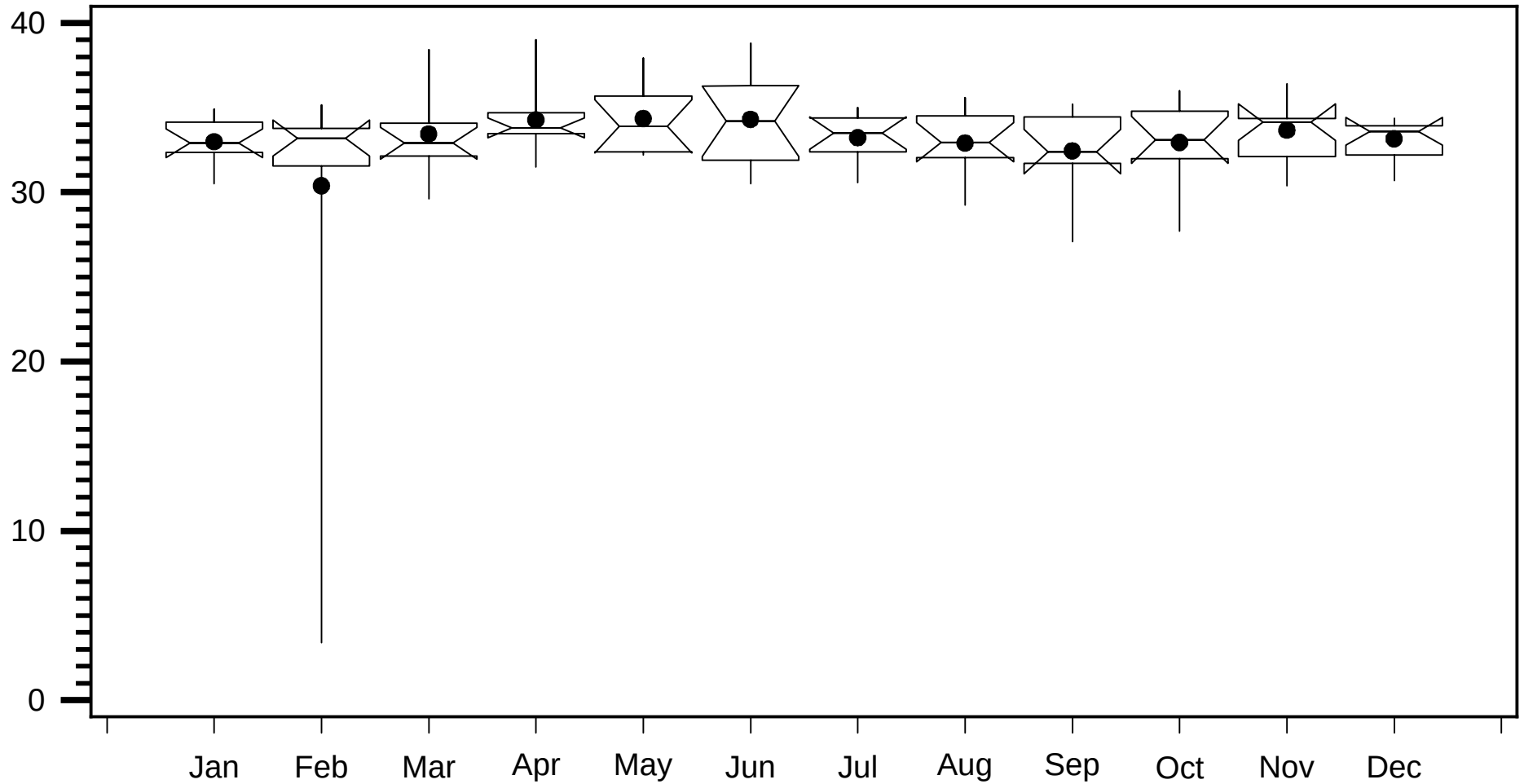


Trends Appendix - Display 42

Seasonal Univariate Statistics for Salinity

Sarasota County Segment= SBN

Salinity
(ppt)



Trends Appendix - Display 43

Autocorrelation Statistics for Sarasota County Segment = SBN '

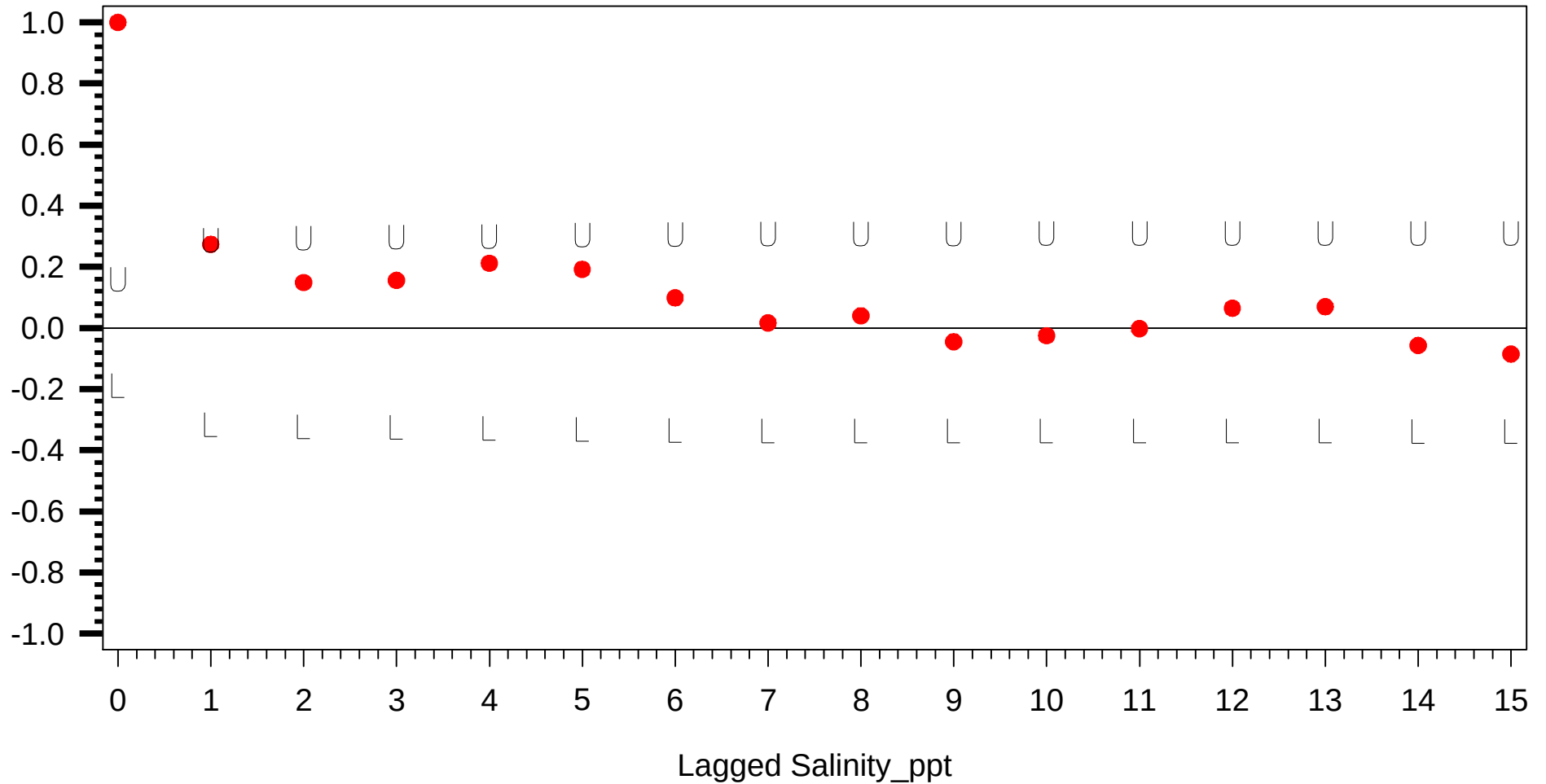
Unadjusted for Seasonal Medians

Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.274	0.151	0.302	-0.302
2	0.149	0.154	0.309	-0.309
3	0.156	0.156	0.311	-0.311
4	0.212	0.157	0.314	-0.314
5	0.192	0.159	0.318	-0.318
6	0.099	0.161	0.321	-0.321
7	0.017	0.161	0.322	-0.322
8	0.040	0.161	0.322	-0.322
9	-0.045	0.161	0.322	-0.322
10	-0.025	0.161	0.323	-0.323
11	-0.002	0.161	0.323	-0.323
12	0.065	0.161	0.323	-0.323
13	0.070	0.162	0.323	-0.323
14	-0.057	0.162	0.324	-0.324
15	-0.085	0.162	0.324	-0.324

Trends Appendix - Display 44
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



Trends Appendix - Display 45

Seasonal Kendall Tau Trend Test Statistics for Salinity
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.252	0	0.038	0.188

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 46

Seasonal Kendall Tau Trend Test Statistics for Salinity

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.25231	.000212073	0.037622	0.1875

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 47

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

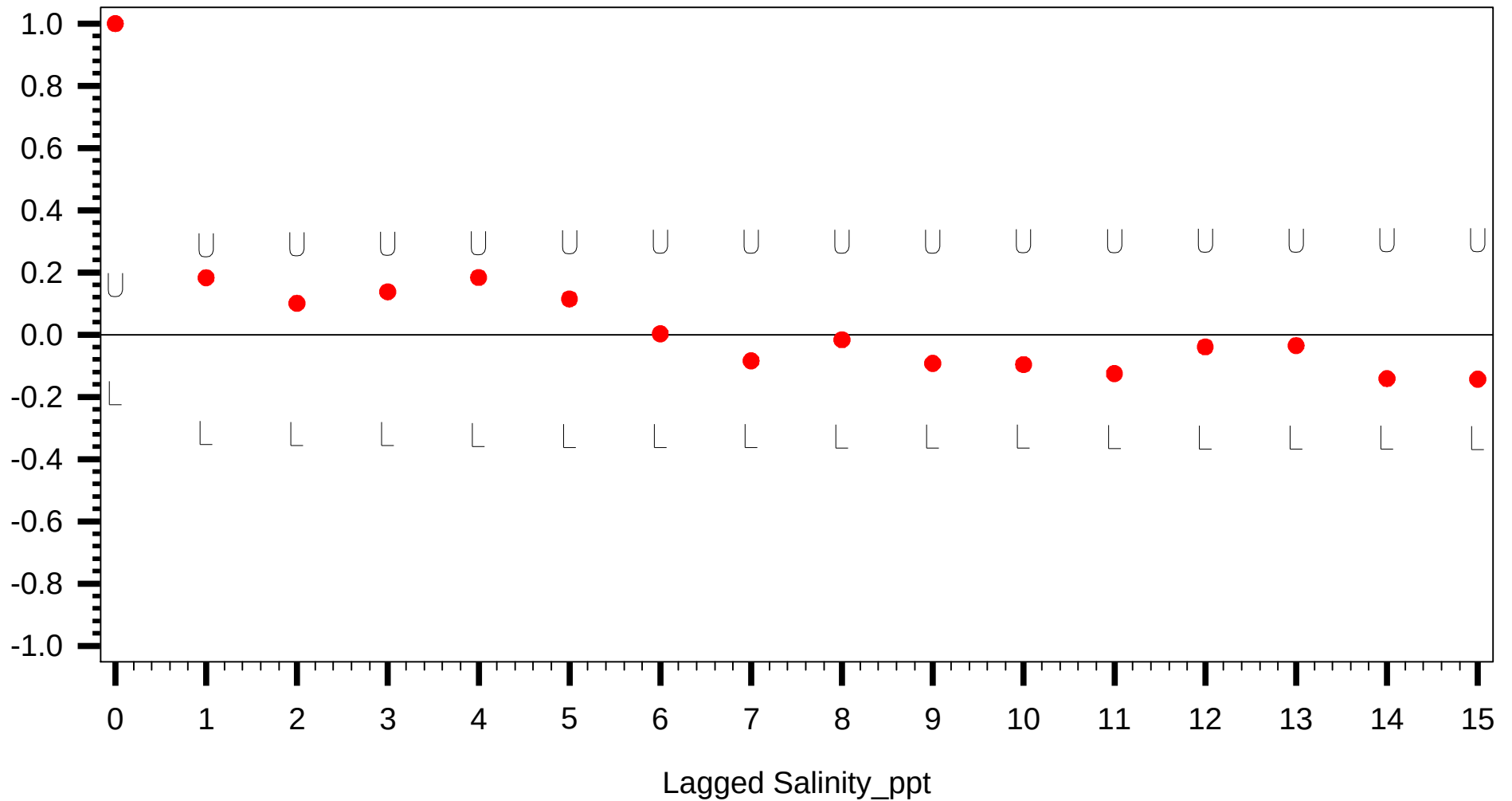
Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.183	0.151	0.302	-0.302
2	0.101	0.152	0.305	-0.305
3	0.138	0.153	0.306	-0.306
4	0.184	0.154	0.308	-0.308
5	0.115	0.156	0.311	-0.311
6	0.003	0.156	0.312	-0.312
7	-0.084	0.156	0.312	-0.312
8	-0.016	0.157	0.313	-0.313
9	-0.092	0.157	0.313	-0.313
10	-0.096	0.157	0.314	-0.314
11	-0.125	0.157	0.315	-0.315
12	-0.039	0.158	0.316	-0.316
13	-0.035	0.158	0.316	-0.316
14	-0.141	0.158	0.317	-0.317
15	-0.143	0.159	0.318	-0.318

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 48
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

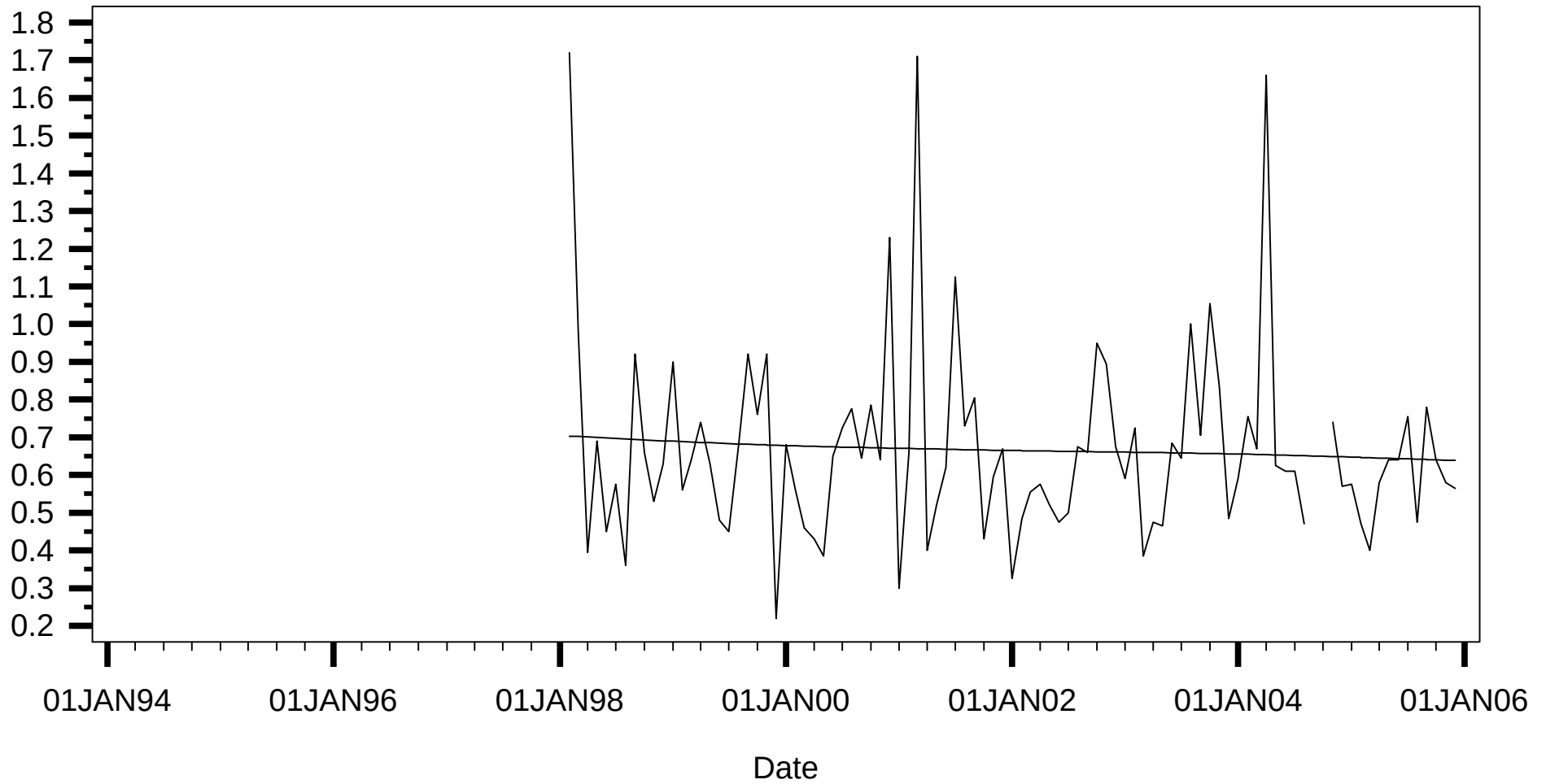
Trends Appendix - Display 49

Monthly Data Time Series for Kd

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

Kd
(1/meter)

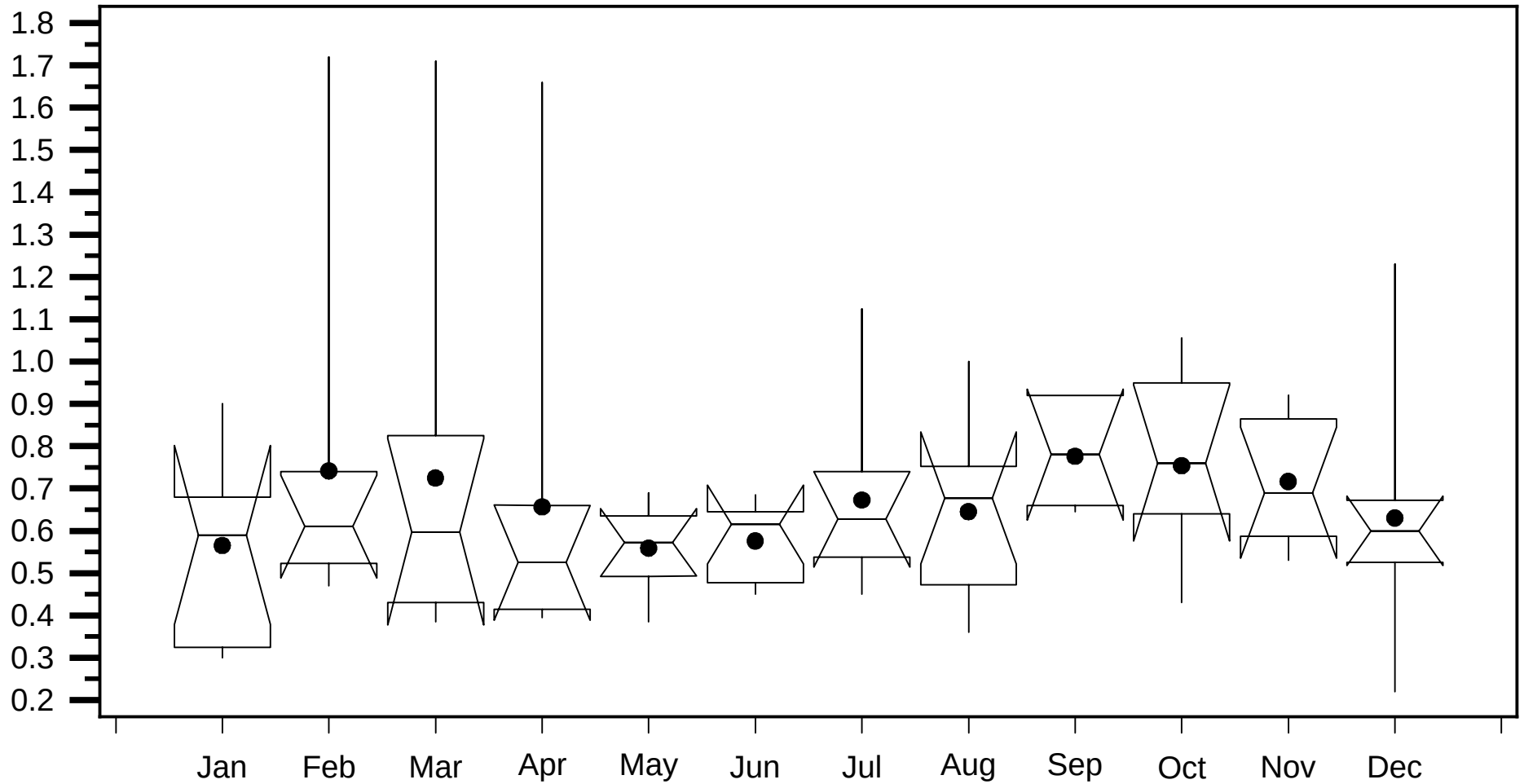


Trends Appendix - Display 50

Seasonal Univariate Statistics for Kd

Sarasota County Segment= SBN

Kd
(1/meter)



Trends Appendix - Display 51

Autocorrelation Statistics for Sarasota County Segment = SBN '

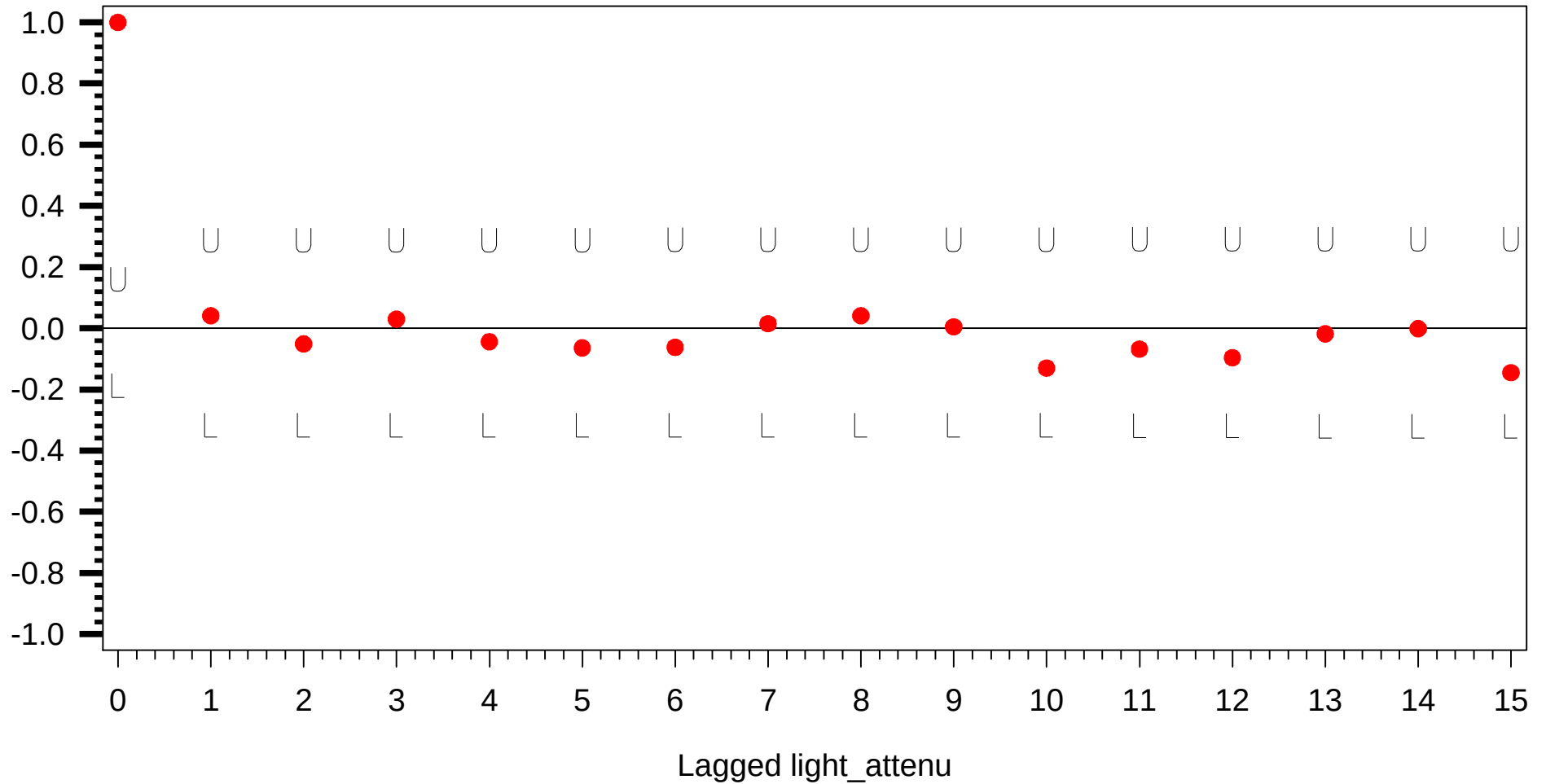
Unadjusted for Seasonal Medians

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.041	0.151	0.302	-0.302
2	-0.051	0.151	0.302	-0.302
3	0.030	0.151	0.302	-0.302
4	-0.044	0.151	0.302	-0.302
5	-0.064	0.151	0.302	-0.302
6	-0.062	0.151	0.303	-0.303
7	0.015	0.152	0.303	-0.303
8	0.041	0.152	0.303	-0.303
9	0.005	0.152	0.303	-0.303
10	-0.130	0.152	0.303	-0.303
11	-0.068	0.152	0.305	-0.305
12	-0.096	0.153	0.305	-0.305
13	-0.018	0.153	0.306	-0.306
14	-0.001	0.153	0.306	-0.306
15	-0.145	0.153	0.306	-0.306

Trends Appendix - Display 52
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 53

Seasonal Kendall Tau Trend Test Statistics for Kd
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
.003	1	1	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 54

Seasonal Kendall Tau Trend Test Statistics for Kd

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
.0031746	1	1	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 55

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

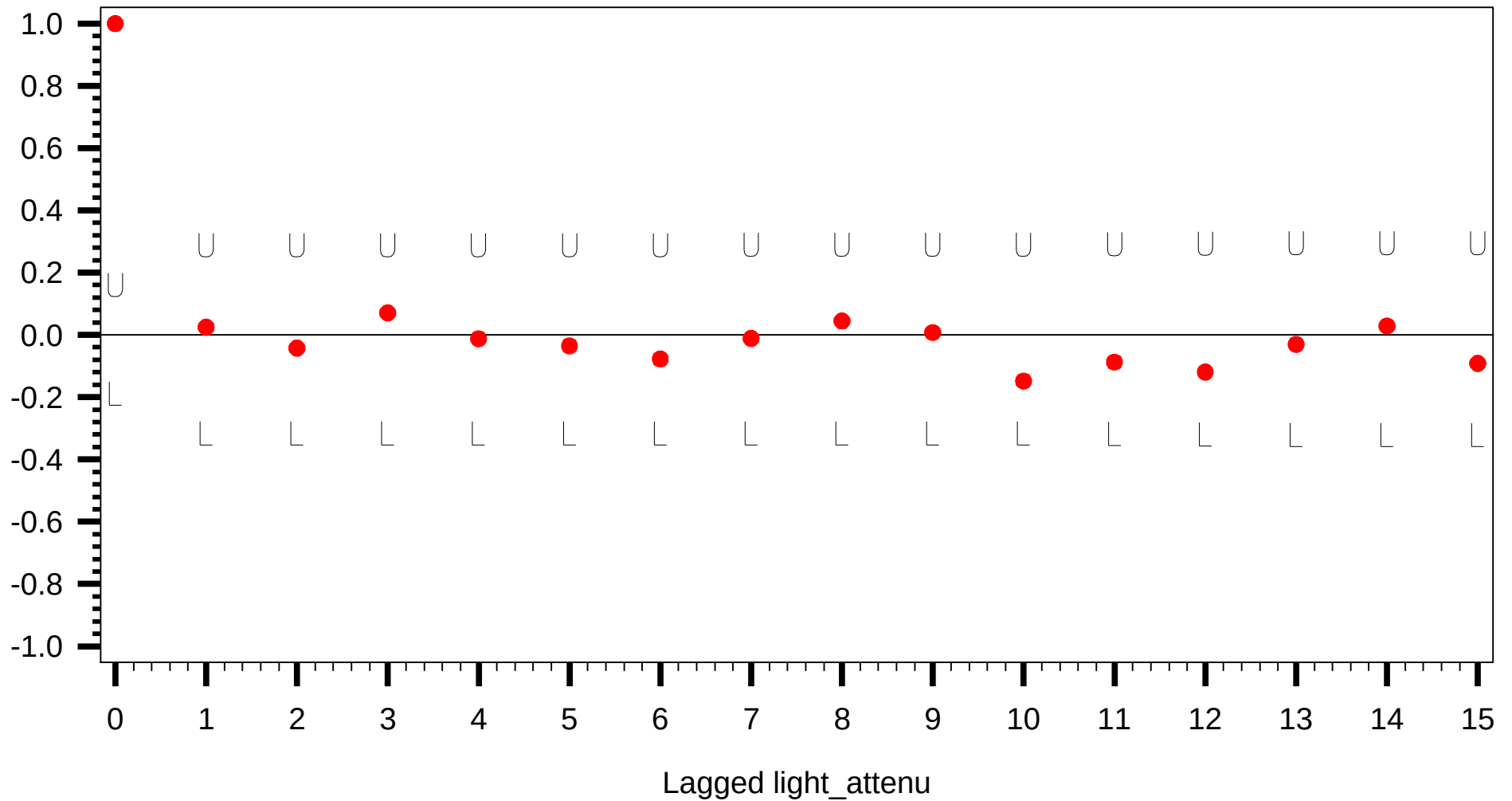
Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.025	0.151	0.302	-0.302
2	-0.042	0.151	0.302	-0.302
3	0.071	0.151	0.302	-0.302
4	-0.012	0.151	0.302	-0.302
5	-0.035	0.151	0.302	-0.302
6	-0.077	0.151	0.302	-0.302
7	-0.011	0.151	0.303	-0.303
8	0.045	0.151	0.303	-0.303
9	0.008	0.152	0.303	-0.303
10	-0.148	0.152	0.303	-0.303
11	-0.087	0.153	0.305	-0.305
12	-0.119	0.153	0.306	-0.306
13	-0.030	0.154	0.308	-0.308
14	0.029	0.154	0.308	-0.308
15	-0.091	0.154	0.308	-0.308

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 56
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

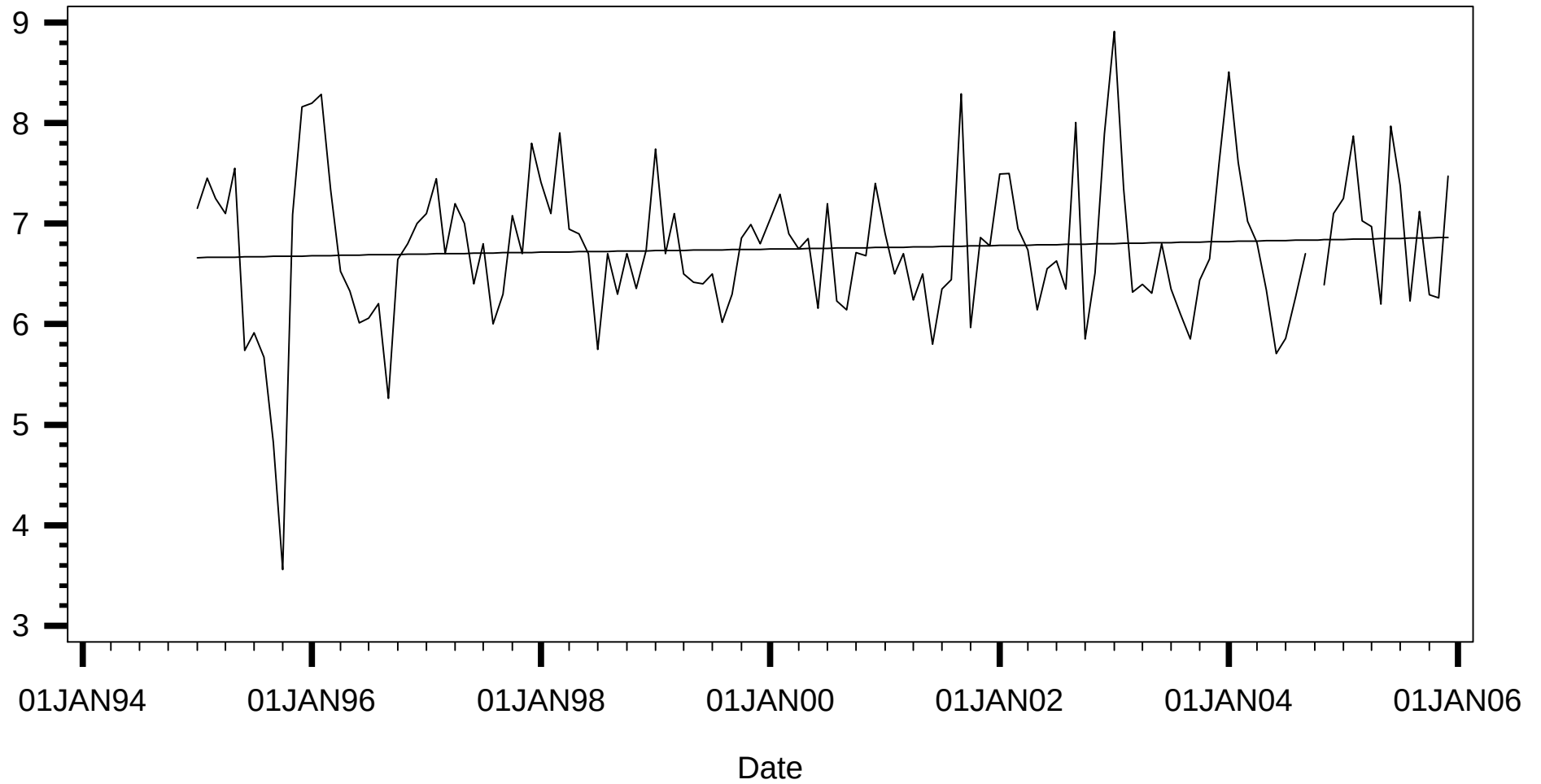
Trends Appendix - Display 57

Monthly Data Time Series for DO

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

DO
(mgl)

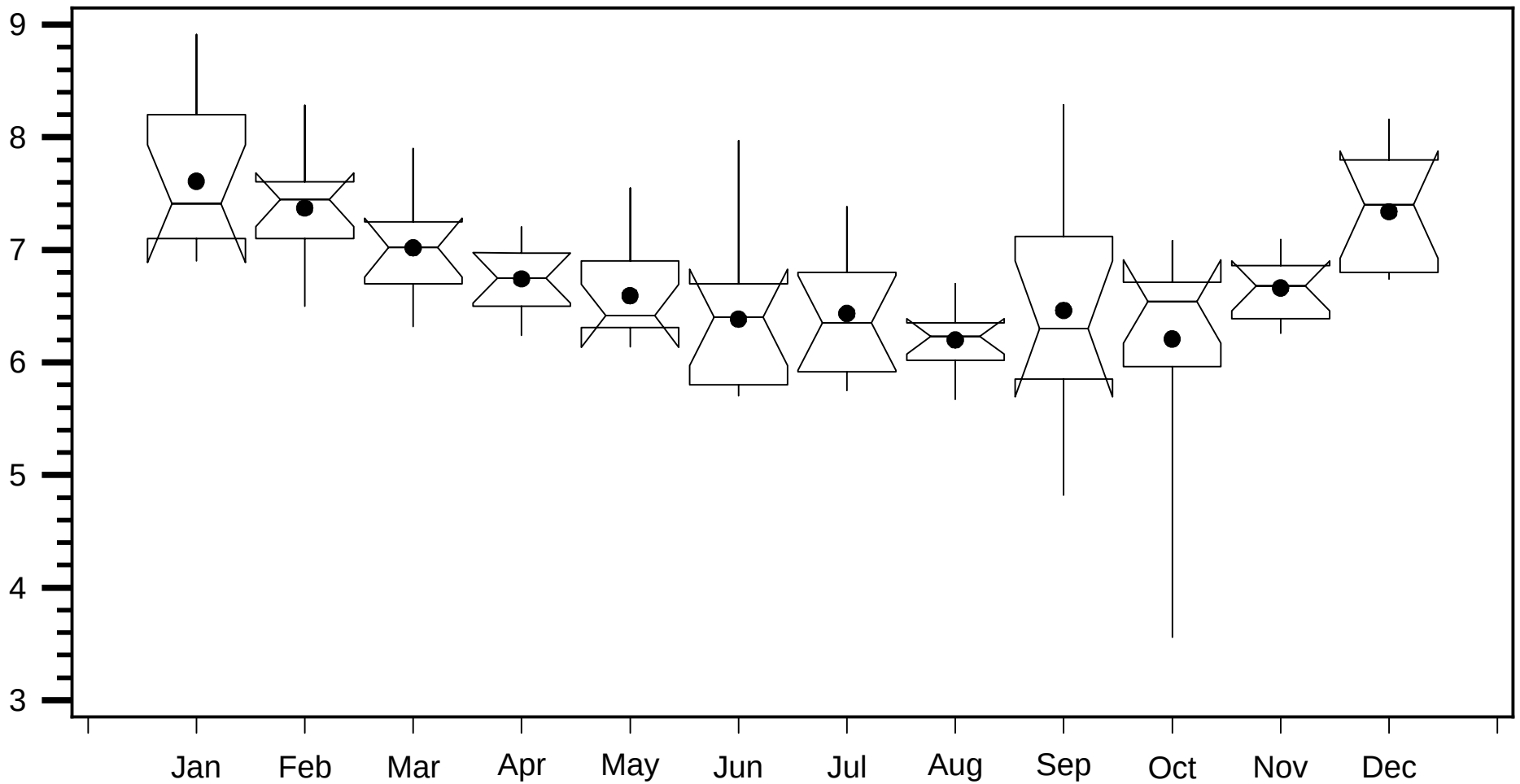


Trends Appendix - Display 58

Seasonal Univariate Statistics for DO

Sarasota County Segment= SBN

DO
(mg/l)

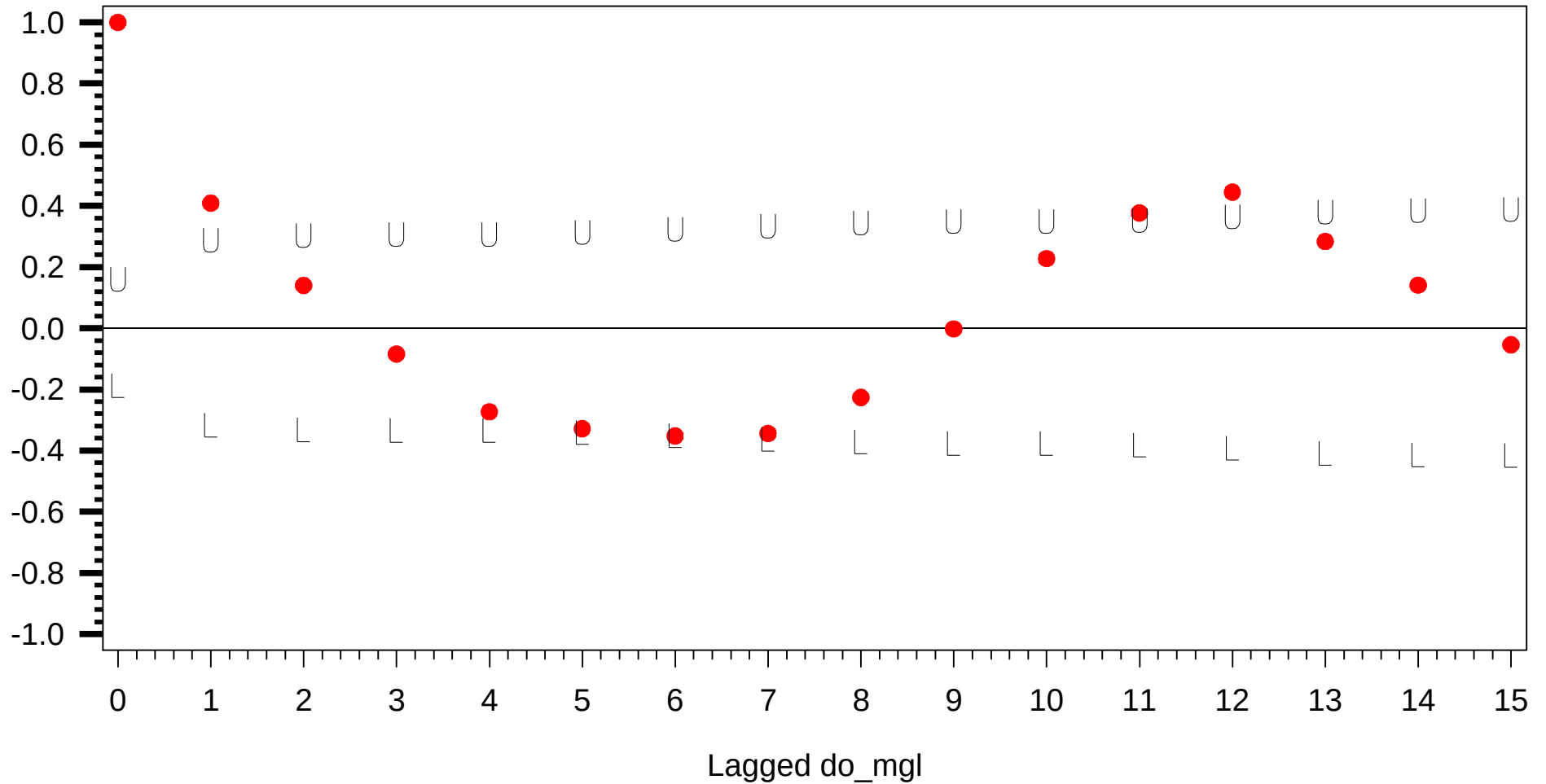


Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.409	0.151	0.302	-0.302
2	0.140	0.159	0.318	-0.318
3	-0.084	0.160	0.320	-0.320
4	-0.273	0.160	0.320	-0.320
5	-0.328	0.164	0.327	-0.327
6	-0.352	0.169	0.337	-0.337
7	-0.344	0.174	0.348	-0.348
8	-0.226	0.179	0.358	-0.358
9	-0.002	0.181	0.363	-0.363
10	0.228	0.181	0.363	-0.363
11	0.377	0.183	0.367	-0.367
12	0.445	0.189	0.378	-0.378
13	0.284	0.197	0.394	-0.394
14	0.141	0.200	0.400	-0.400
15	-0.054	0.201	0.402	-0.402

Trends Appendix - Display 60
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 61

Seasonal Kendall Tau Trend Test Statistics for DO
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.02	0.785	0.693	-.004

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 62

Seasonal Kendall Tau Trend Test Statistics for DO

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.02	0.78486	0.69348	-.00444444

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 63

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

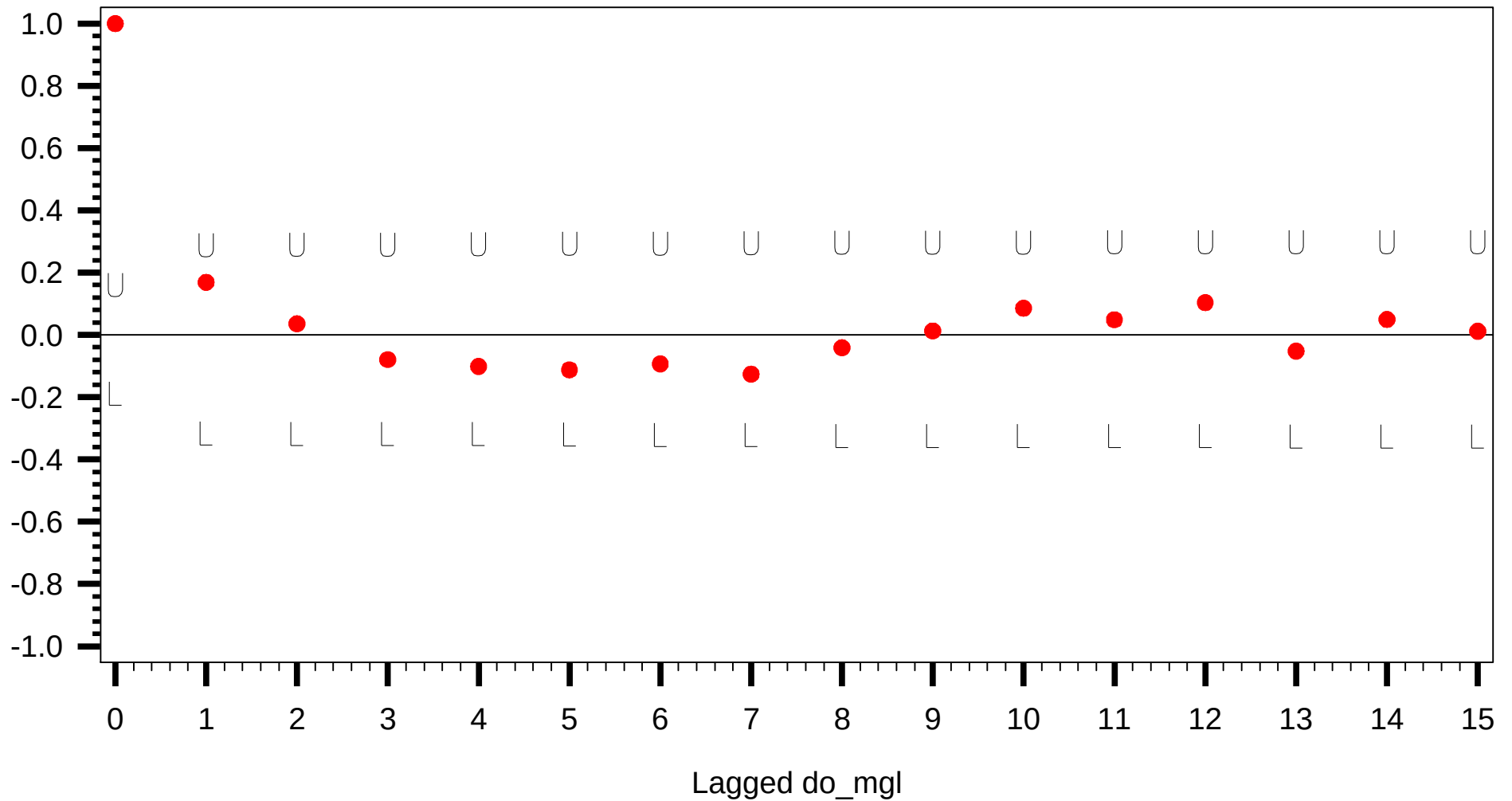
Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.169	0.151	0.302	-0.302
2	0.036	0.152	0.304	-0.304
3	-0.079	0.152	0.304	-0.304
4	-0.101	0.153	0.305	-0.305
5	-0.112	0.153	0.306	-0.306
6	-0.093	0.154	0.307	-0.307
7	-0.126	0.154	0.308	-0.308
8	-0.041	0.155	0.310	-0.310
9	0.013	0.155	0.310	-0.310
10	0.086	0.155	0.310	-0.310
11	0.049	0.155	0.311	-0.311
12	0.104	0.155	0.311	-0.311
13	-0.052	0.156	0.312	-0.312
14	0.050	0.156	0.312	-0.312
15	0.012	0.156	0.312	-0.312

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 64
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

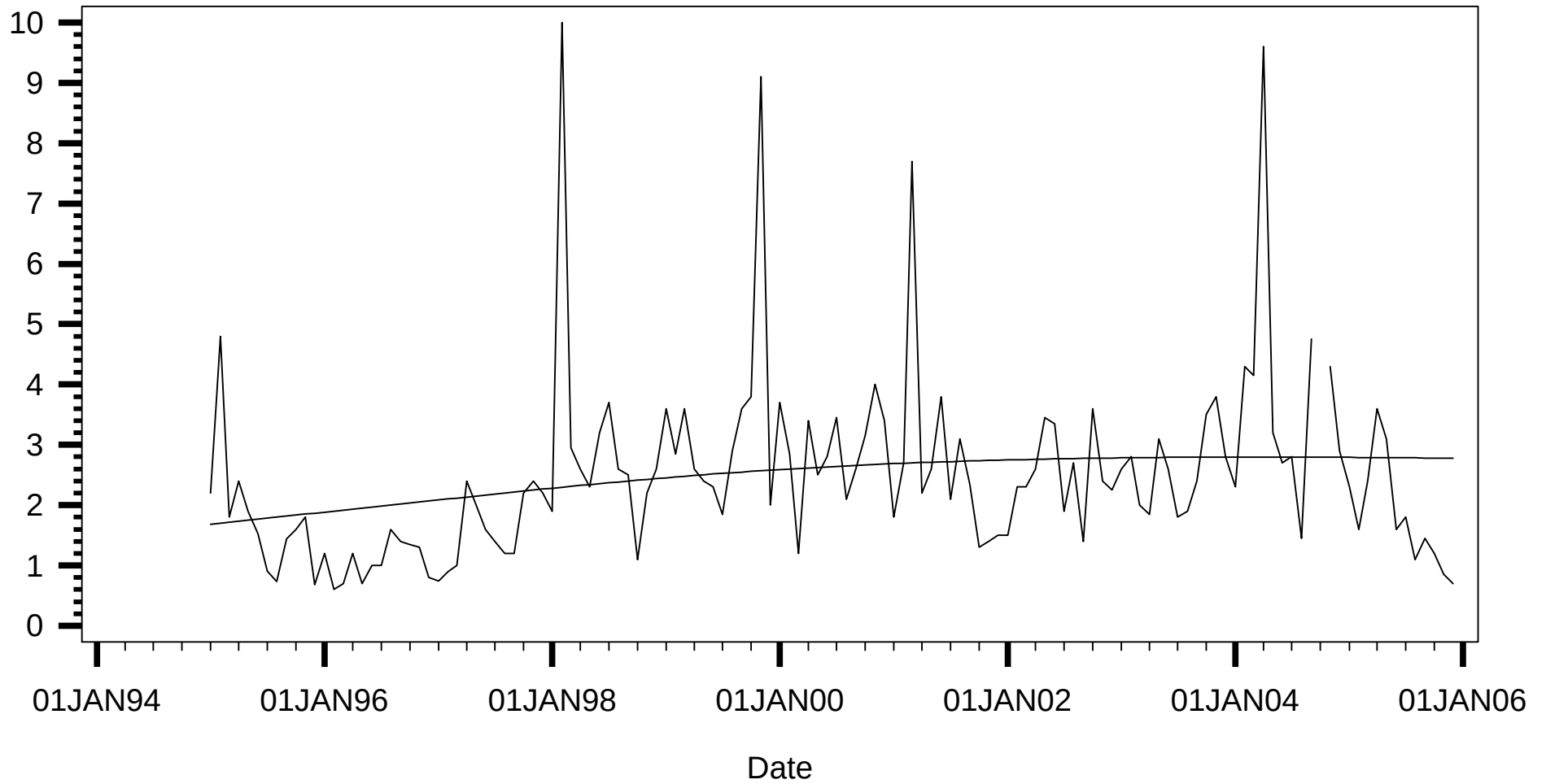
Trends Appendix - Display 65

Monthly Data Time Series for Turbidity

Sarasota County Segment= SBN

Not Adjusted for Seasonal Medians

Turbidity
(NTU)

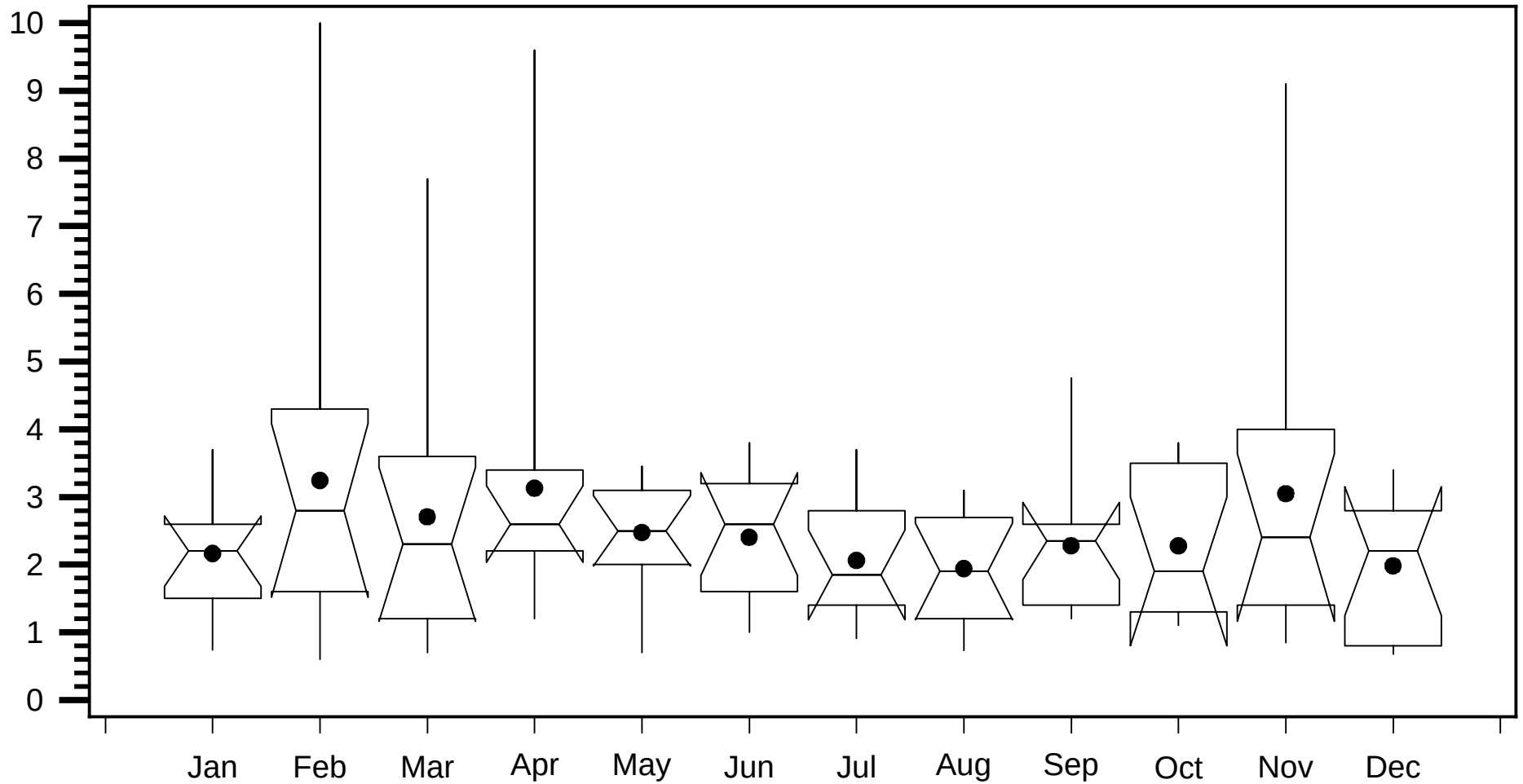


Trends Appendix - Display 66

Seasonal Univariate Statistics for Turbidity

Sarasota County Segment= SBN

Turbidity
(NTU)



Trends Appendix - Display 67

Autocorrelation Statistics for Sarasota County Segment = SBN '

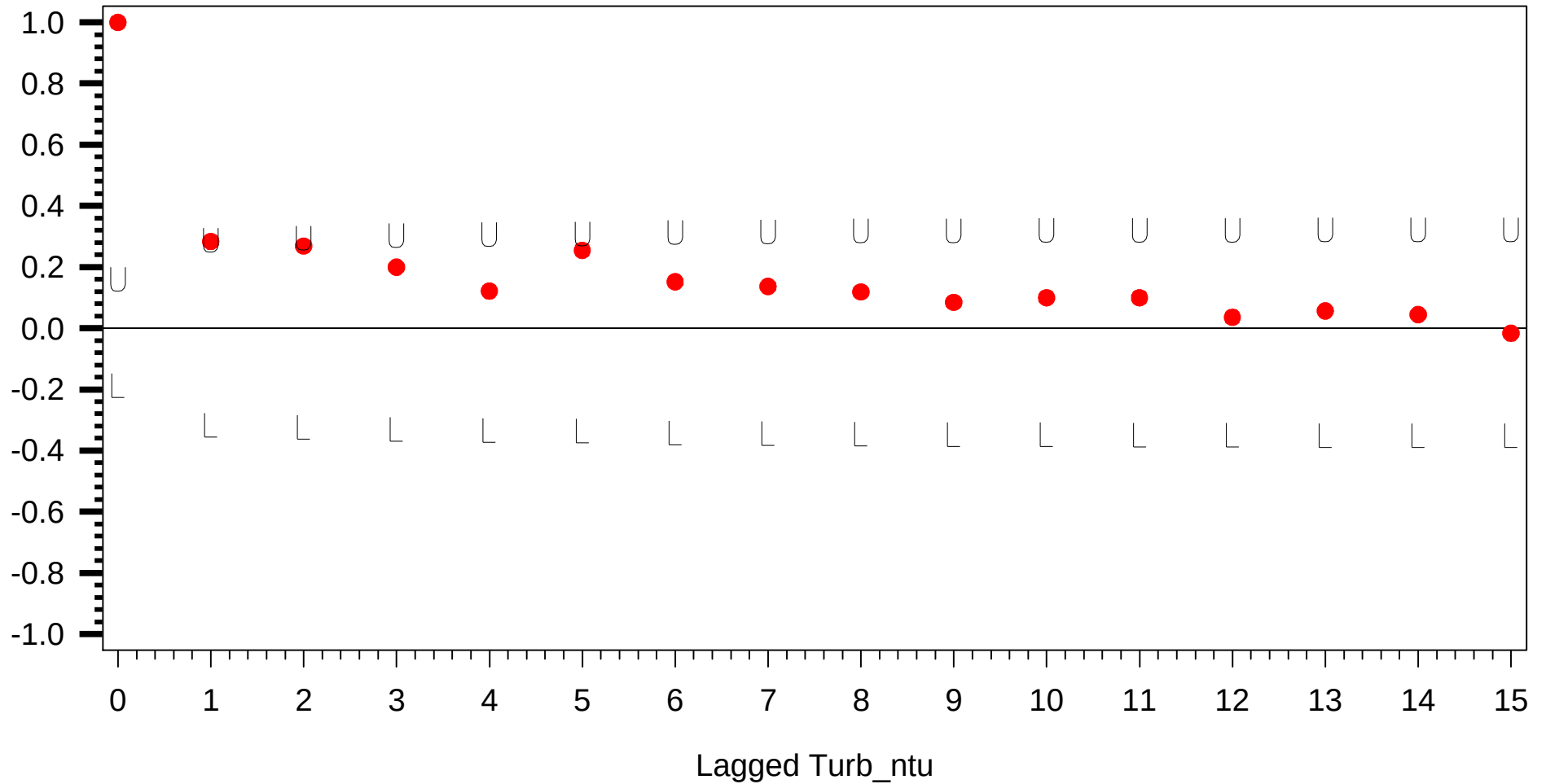
Unadjusted for Seasonal Medians

Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.284	0.151	0.302	-0.302
2	0.269	0.155	0.309	-0.309
3	0.200	0.158	0.317	-0.317
4	0.122	0.160	0.320	-0.320
5	0.255	0.161	0.322	-0.322
6	0.152	0.164	0.328	-0.328
7	0.137	0.165	0.330	-0.330
8	0.119	0.166	0.332	-0.332
9	0.085	0.166	0.333	-0.333
10	0.100	0.167	0.334	-0.334
11	0.100	0.167	0.335	-0.335
12	0.036	0.168	0.335	-0.335
13	0.057	0.168	0.336	-0.336
14	0.045	0.168	0.336	-0.336
15	-0.016	0.168	0.336	-0.336

Trends Appendix - Display 68
Correlogram for Sarasota County Segment = SBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 69

Seasonal Kendall Tau Trend Test Statistics for Turbidity
Sarasota County Segment = SBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.257	0	0.093	0.117

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 70

Seasonal Kendall Tau Trend Test Statistics for Turbidity

Sarasota County Segment = SBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.25692	.000156999	0.092918	0.11667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 71

Autocorrelation Statistics for Sarasota County Segment = SBN '

Adjusted for Seasonal Median and Detrended

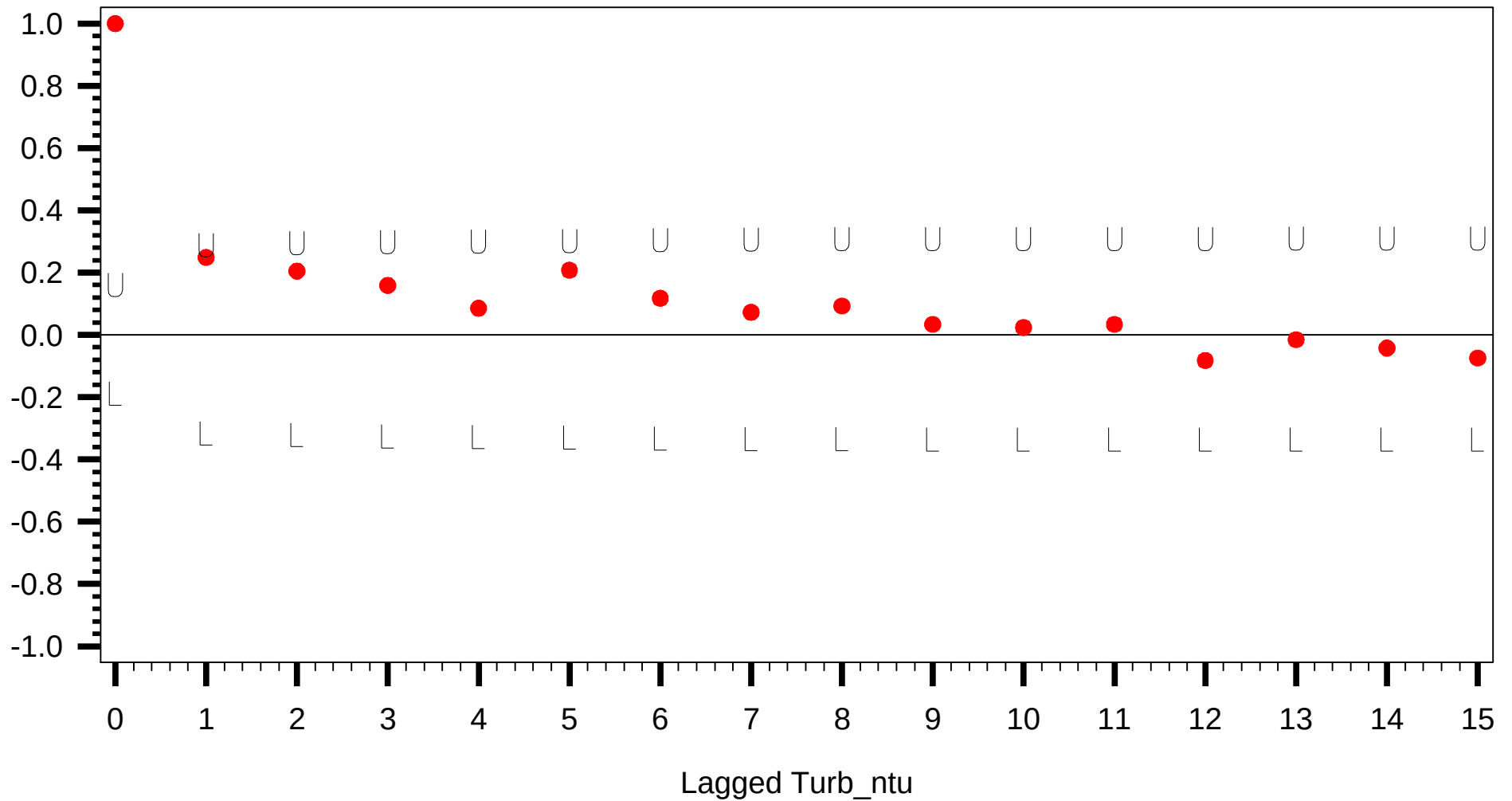
Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.249	0.151	0.302	-0.302
2	0.205	0.154	0.308	-0.308
3	0.159	0.156	0.312	-0.312
4	0.086	0.157	0.314	-0.314
5	0.208	0.157	0.315	-0.315
6	0.118	0.160	0.319	-0.319
7	0.073	0.160	0.320	-0.320
8	0.093	0.160	0.321	-0.321
9	0.034	0.161	0.322	-0.322
10	0.024	0.161	0.322	-0.322
11	0.034	0.161	0.322	-0.322
12	-0.082	0.161	0.322	-0.322
13	-0.015	0.161	0.323	-0.323
14	-0.042	0.161	0.323	-0.323
15	-0.074	0.161	0.323	-0.323

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 72
Correlogram for Sarasota County Segment = SBN '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

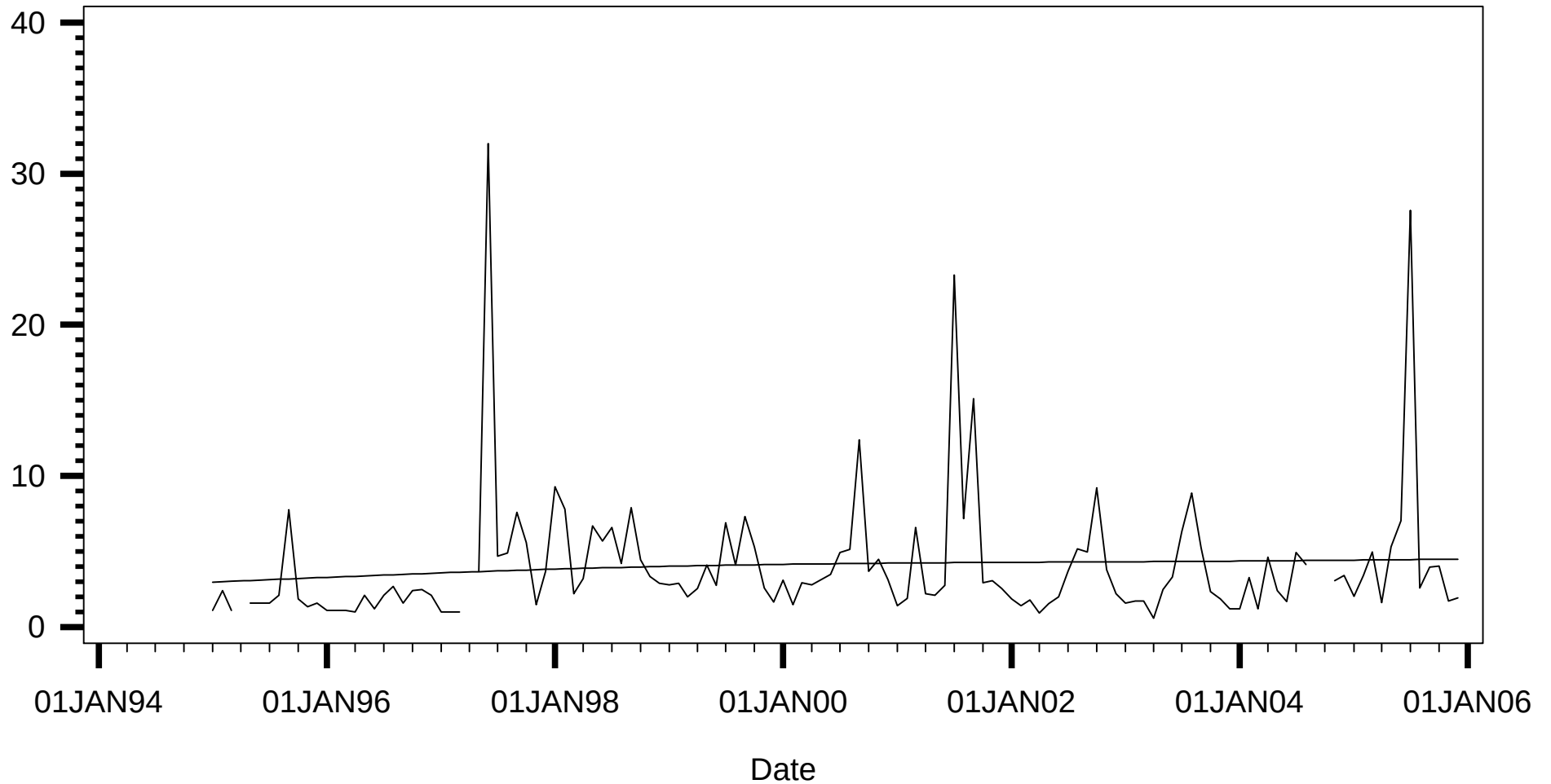
Trends Appendix - Display 73

Monthly Data Time Series for CHLA_C

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

CHLA_C
(ug/l)

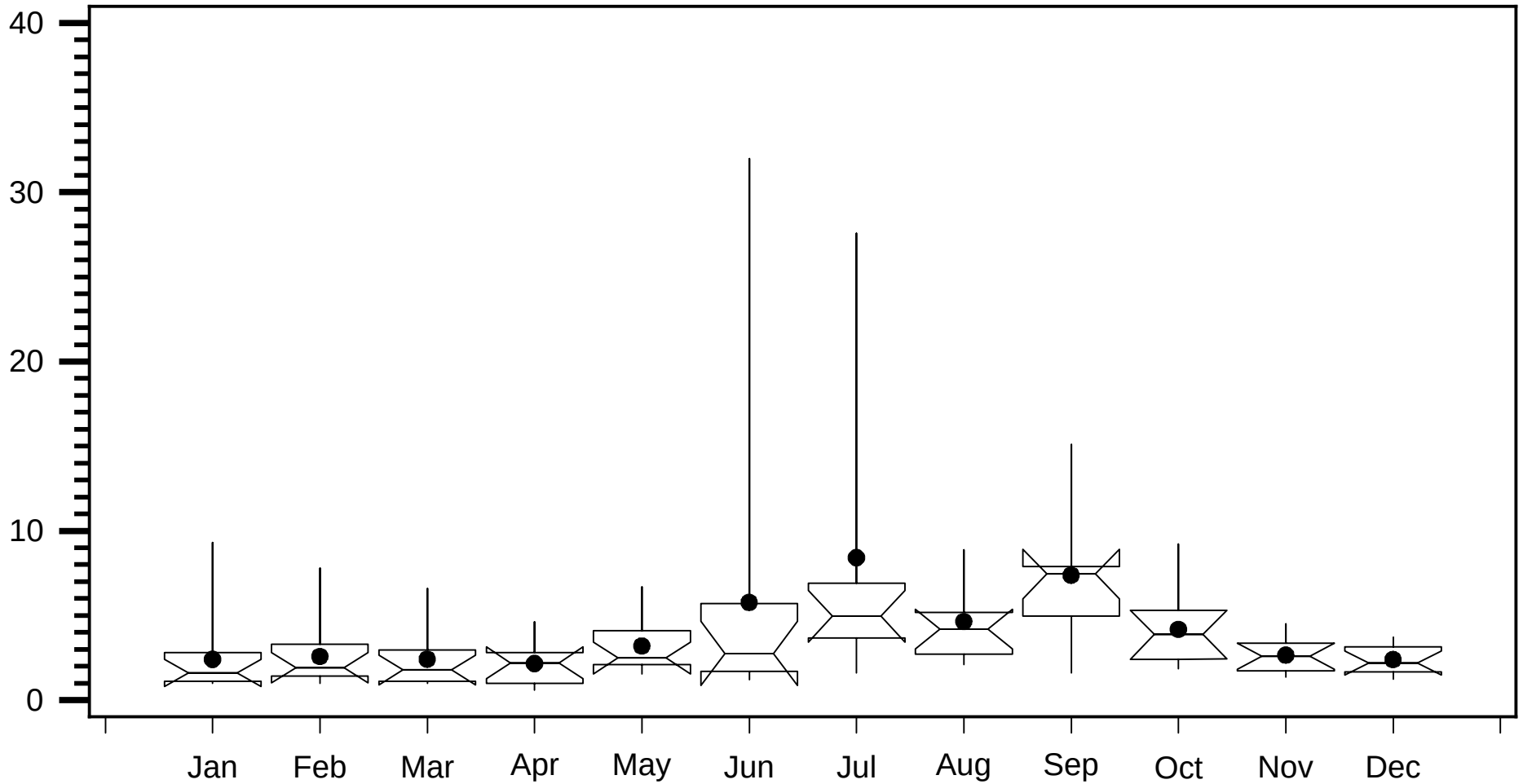


Trends Appendix - Display 74

Seasonal Univariate Statistics for CHLA_C

Sarasota County Segment= SBS

CHLA_C
(ug/l)



Trends Appendix - Display 75

Autocorrelation Statistics for Sarasota County Segment = SBS '

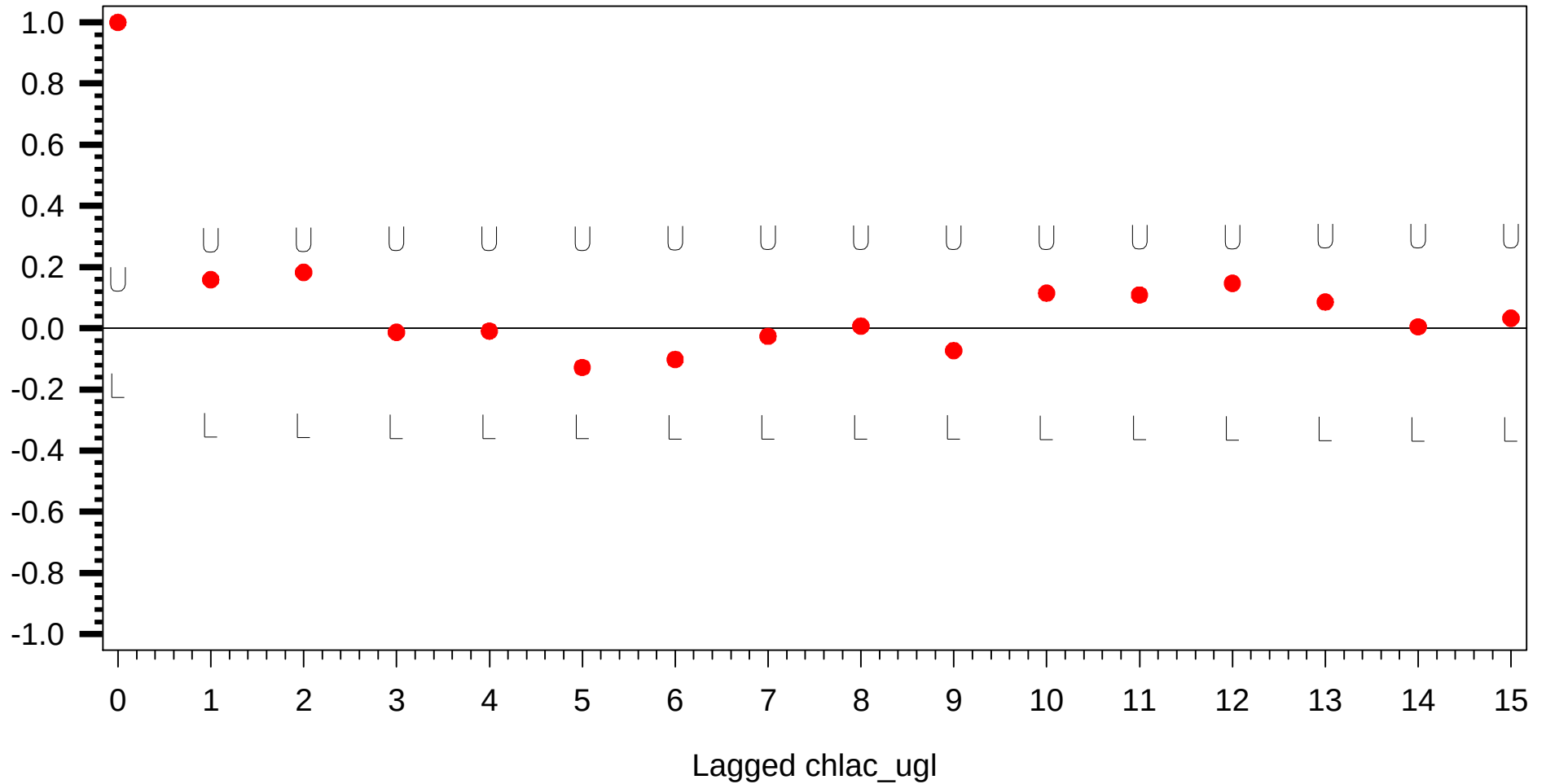
Unadjusted for Seasonal Medians

Lagged chlac_uhl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.159	0.151	0.302	-0.302
2	0.183	0.152	0.304	-0.304
3	-0.013	0.154	0.307	-0.307
4	-0.009	0.154	0.307	-0.307
5	-0.128	0.154	0.307	-0.307
6	-0.102	0.155	0.309	-0.309
7	-0.026	0.155	0.310	-0.310
8	0.007	0.155	0.310	-0.310
9	-0.073	0.155	0.310	-0.310
10	0.115	0.155	0.311	-0.311
11	0.109	0.156	0.312	-0.312
12	0.147	0.157	0.313	-0.313
13	0.086	0.158	0.315	-0.315
14	0.005	0.158	0.316	-0.316
15	0.033	0.158	0.316	-0.316

Trends Appendix - Display 76
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 77

Seasonal Kendall Tau Trend Test Statistics for CHLA_C
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.147	0.035	0.288	0.083

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 78

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.14654	0.035040	0.28767	0.083333

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 79

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

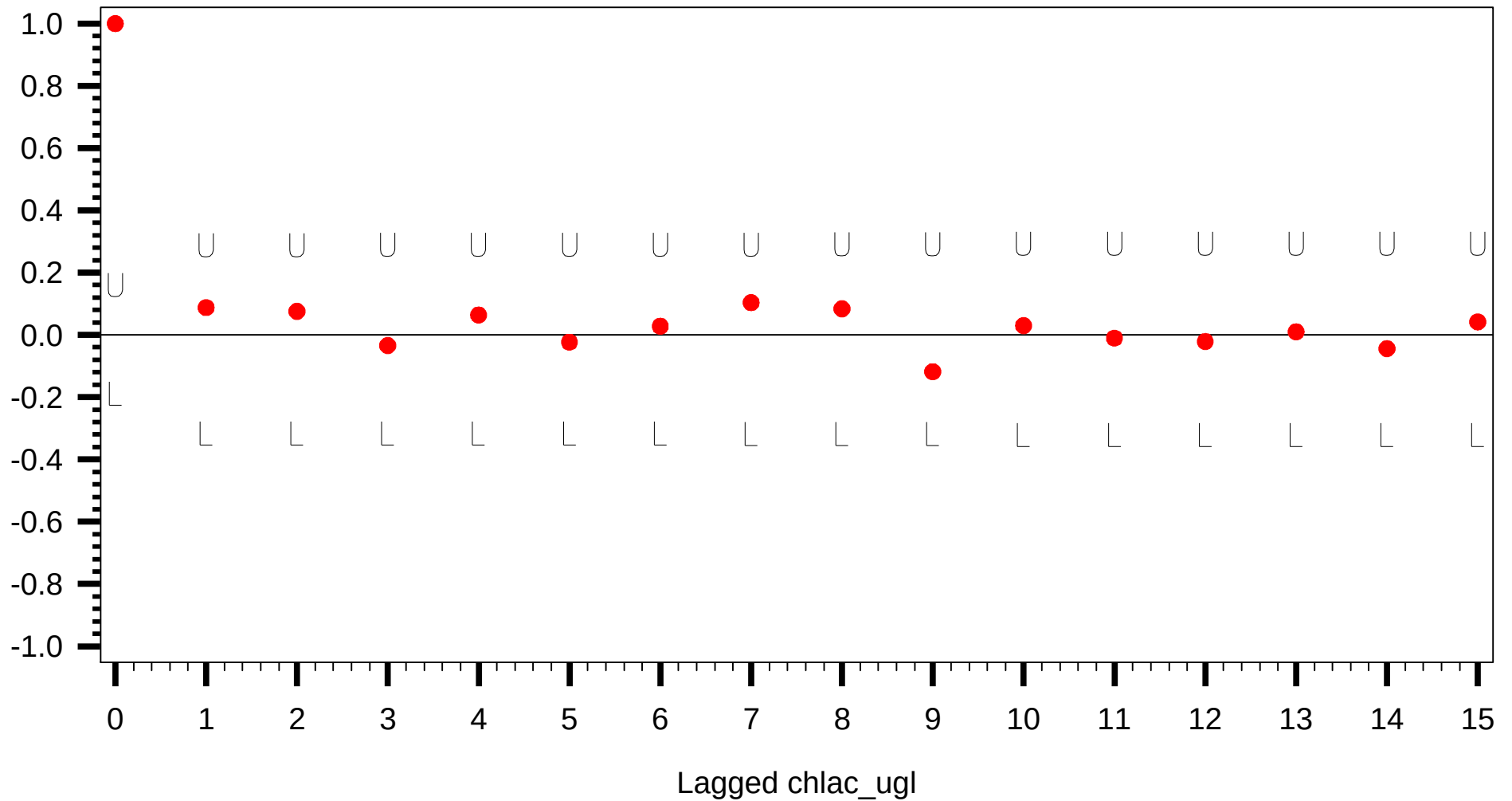
Lagged chlac_uql	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.088	0.151	0.302	-0.302
2	0.076	0.151	0.302	-0.302
3	-0.034	0.151	0.303	-0.303
4	0.064	0.151	0.303	-0.303
5	-0.023	0.152	0.303	-0.303
6	0.028	0.152	0.303	-0.303
7	0.104	0.152	0.304	-0.304
8	0.084	0.152	0.305	-0.305
9	-0.118	0.153	0.305	-0.305
10	0.030	0.153	0.307	-0.307
11	-0.010	0.153	0.307	-0.307
12	-0.021	0.153	0.307	-0.307
13	0.010	0.153	0.307	-0.307
14	-0.044	0.153	0.307	-0.307
15	0.042	0.154	0.307	-0.307

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 80
Correlogram for Sarasota County Segment = SBS '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

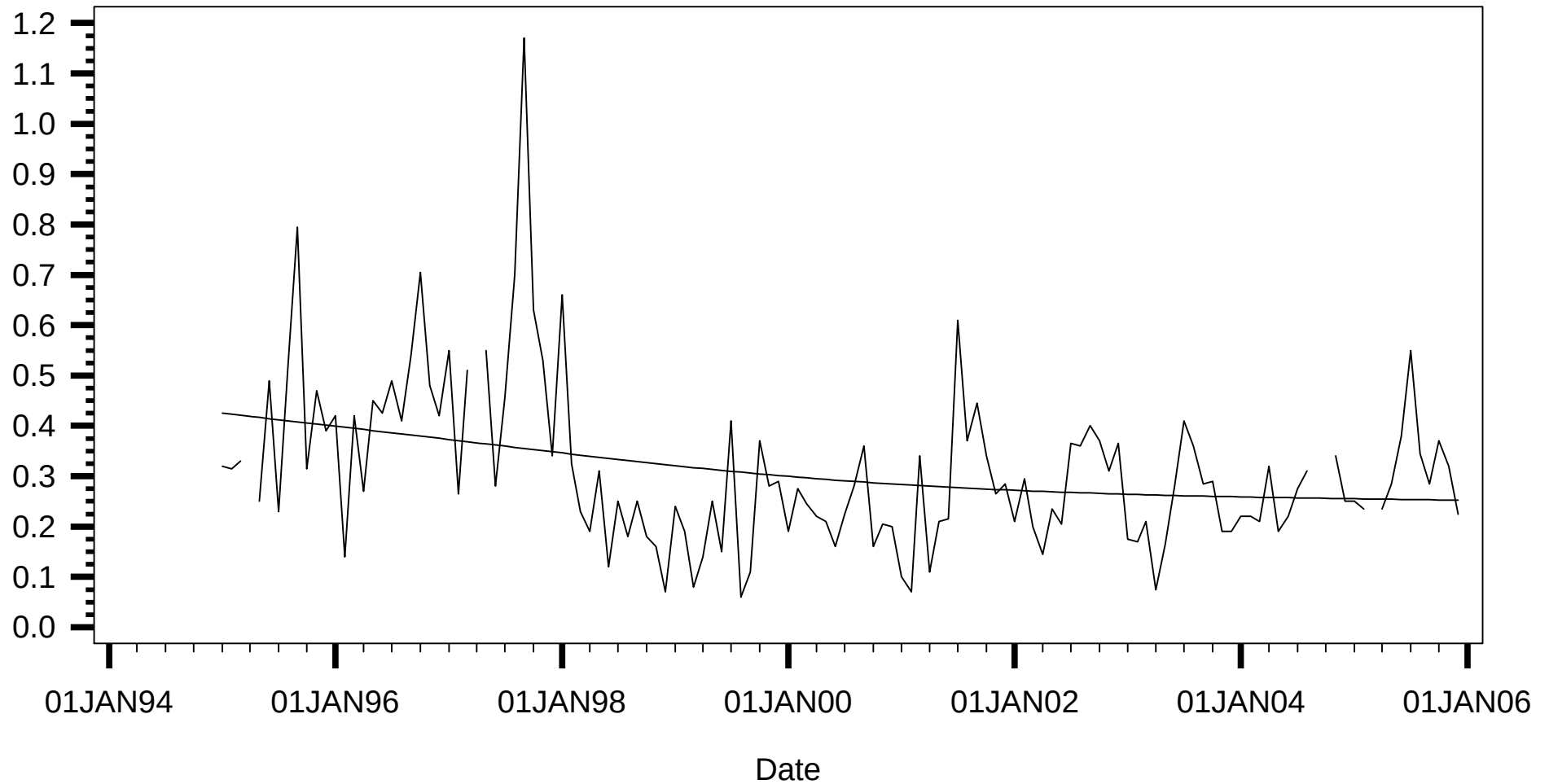
Trends Appendix - Display 81

Monthly Data Time Series for TN

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

TN
(mg/l)

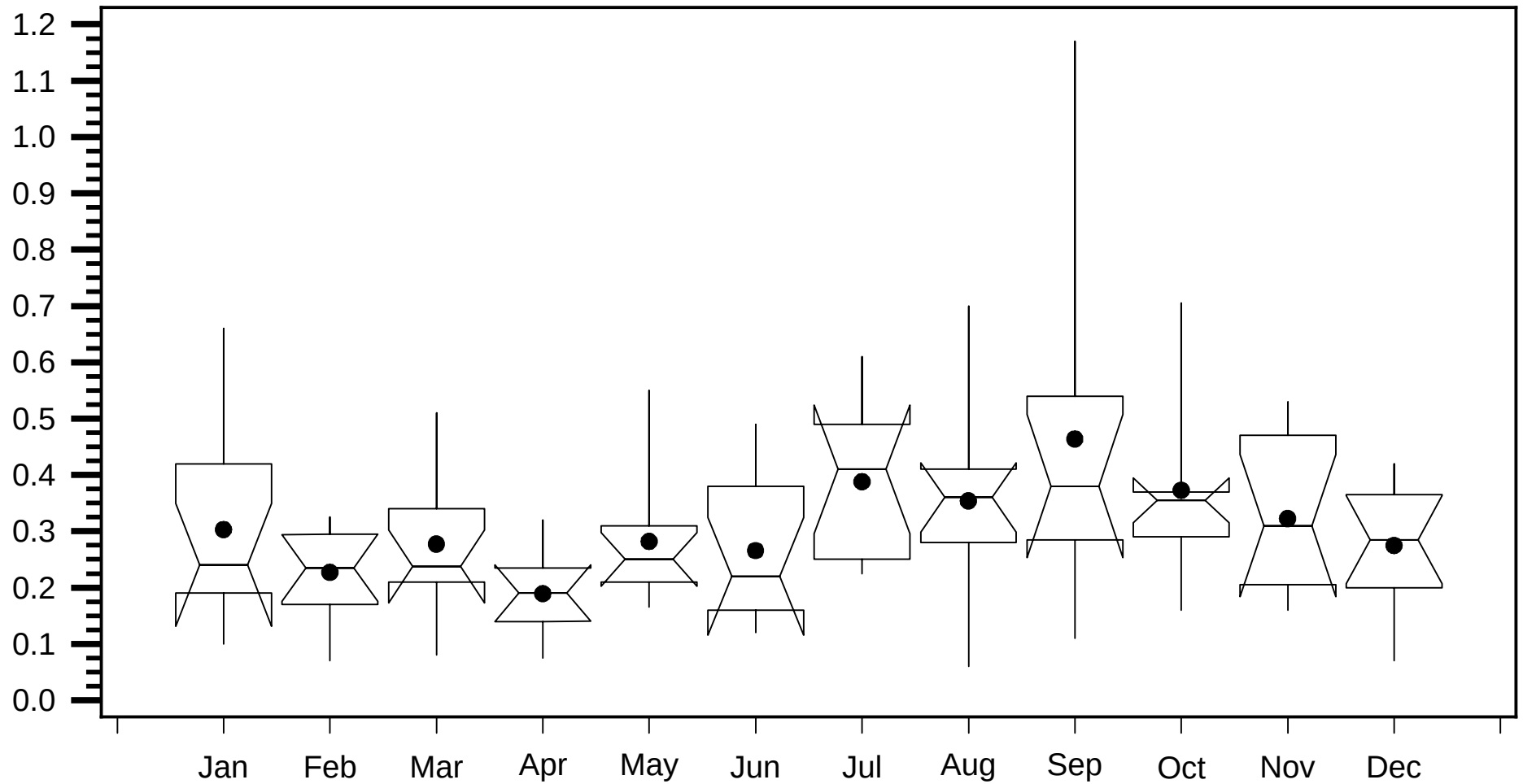


Trends Appendix - Display 82

Seasonal Univariate Statistics for TN

Sarasota County Segment= SBS

TN
(mg/l)



Trends Appendix - Display 83

Autocorrelation Statistics for Sarasota County Segment = SBS '

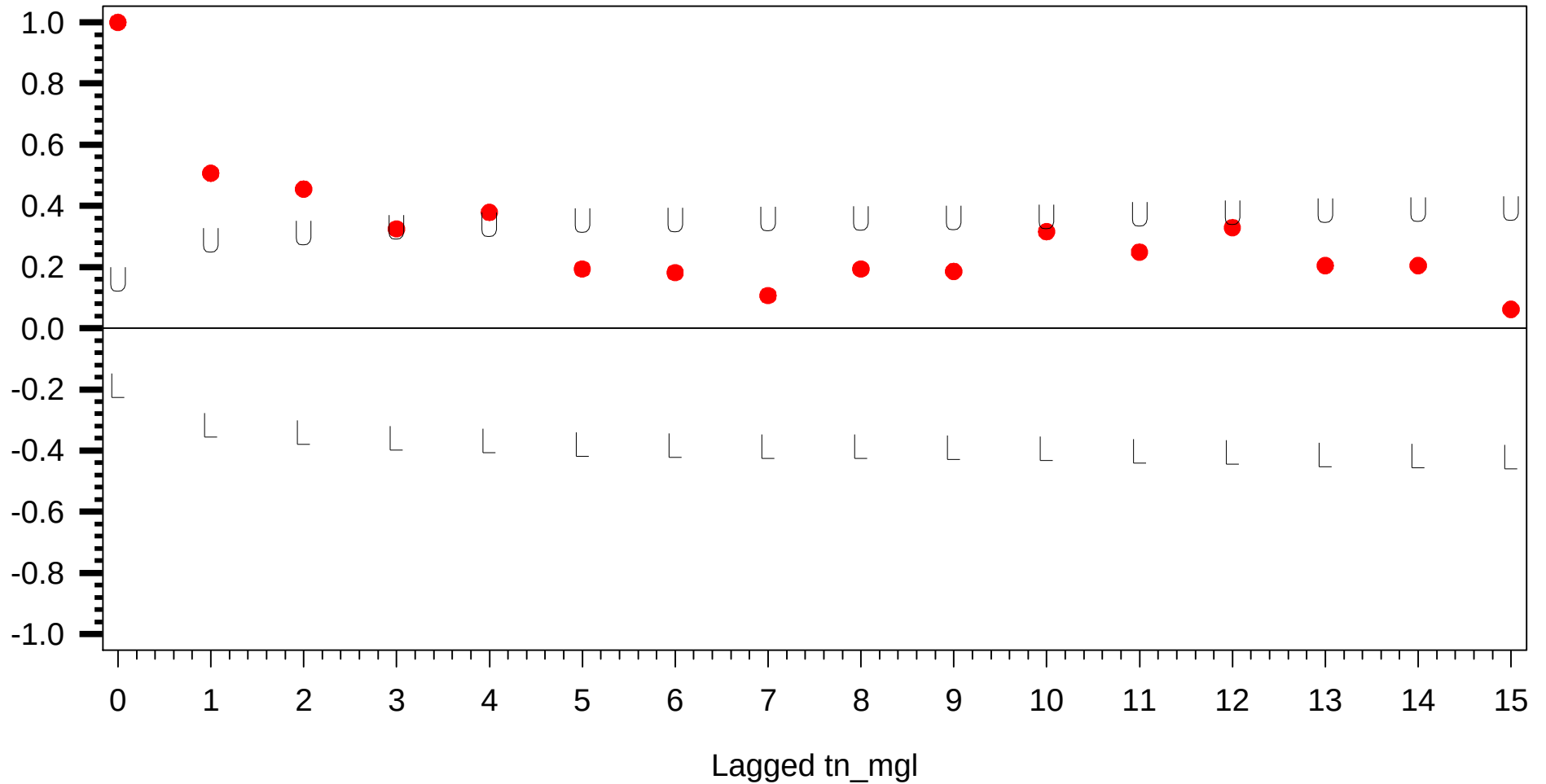
Unadjusted for Seasonal Medians

Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.507	0.151	0.302	-0.302
2	0.455	0.163	0.326	-0.326
3	0.325	0.173	0.345	-0.345
4	0.379	0.177	0.354	-0.354
5	0.194	0.183	0.366	-0.366
6	0.182	0.185	0.369	-0.369
7	0.107	0.186	0.372	-0.372
8	0.194	0.187	0.373	-0.373
9	0.186	0.188	0.376	-0.376
10	0.316	0.189	0.379	-0.379
11	0.249	0.193	0.387	-0.387
12	0.329	0.196	0.392	-0.392
13	0.205	0.200	0.400	-0.400
14	0.205	0.202	0.403	-0.403
15	0.062	0.203	0.406	-0.406

Trends Appendix - Display 84
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 85

Seasonal Kendall Tau Trend Test Statistics for TN
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.205	.003	0.164	-0.012

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 86

Seasonal Kendall Tau Trend Test Statistics for TN

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.20458	.0032596	0.16391	-0.012

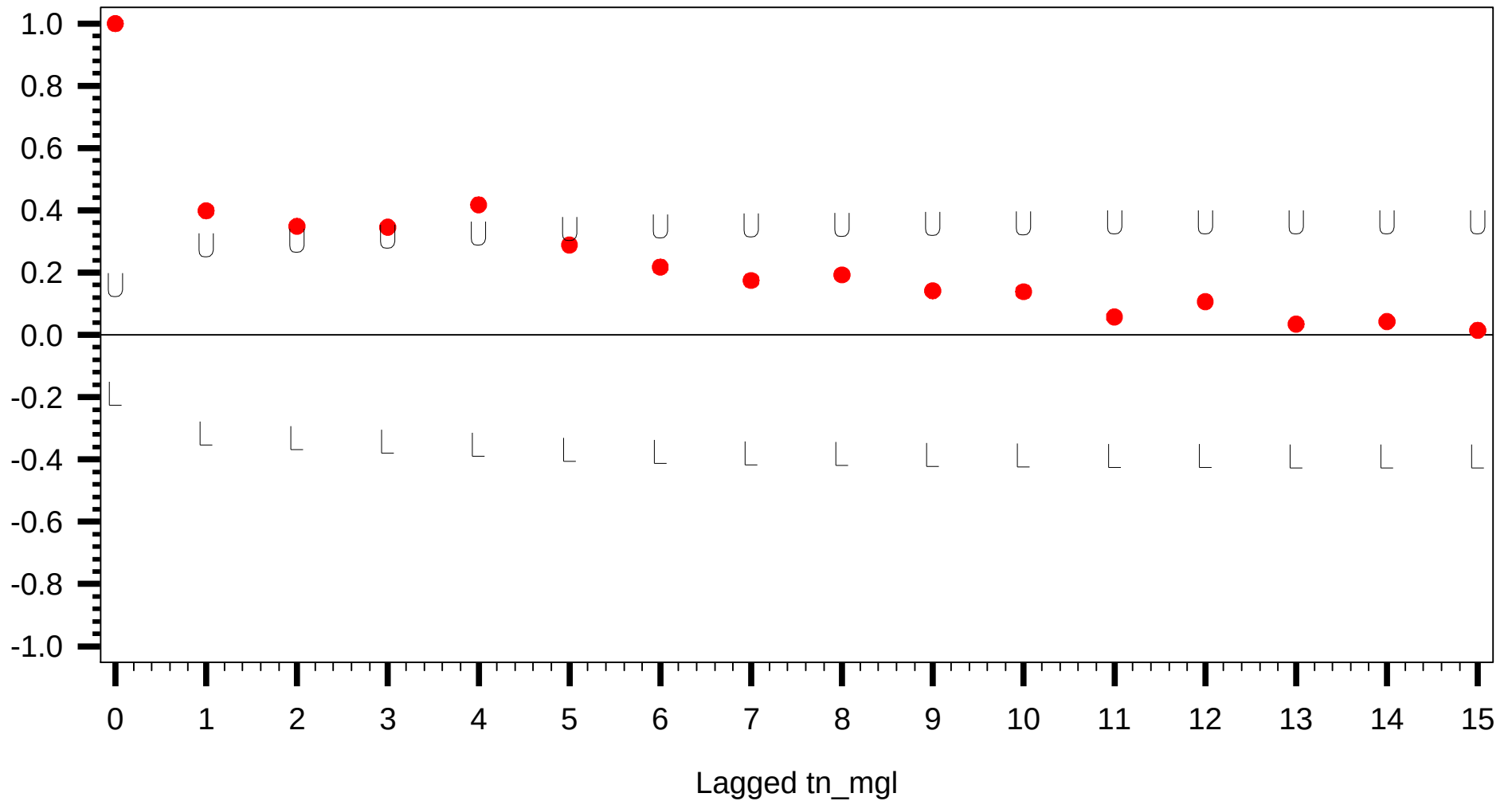
U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 88
Correlogram for Sarasota County Segment = SBS '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

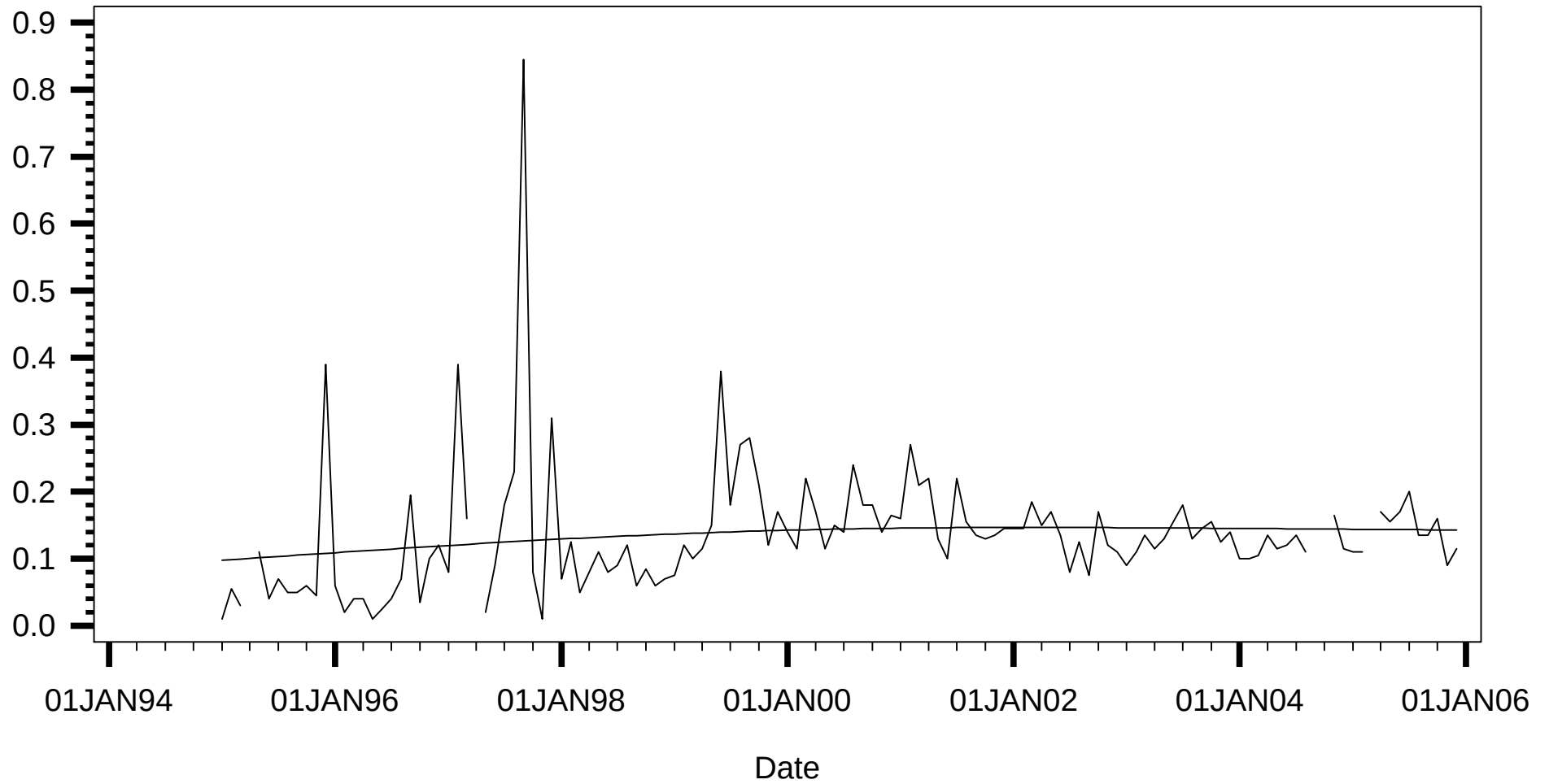
Trends Appendix - Display 89

Monthly Data Time Series for TP

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

TP
(mg/l)

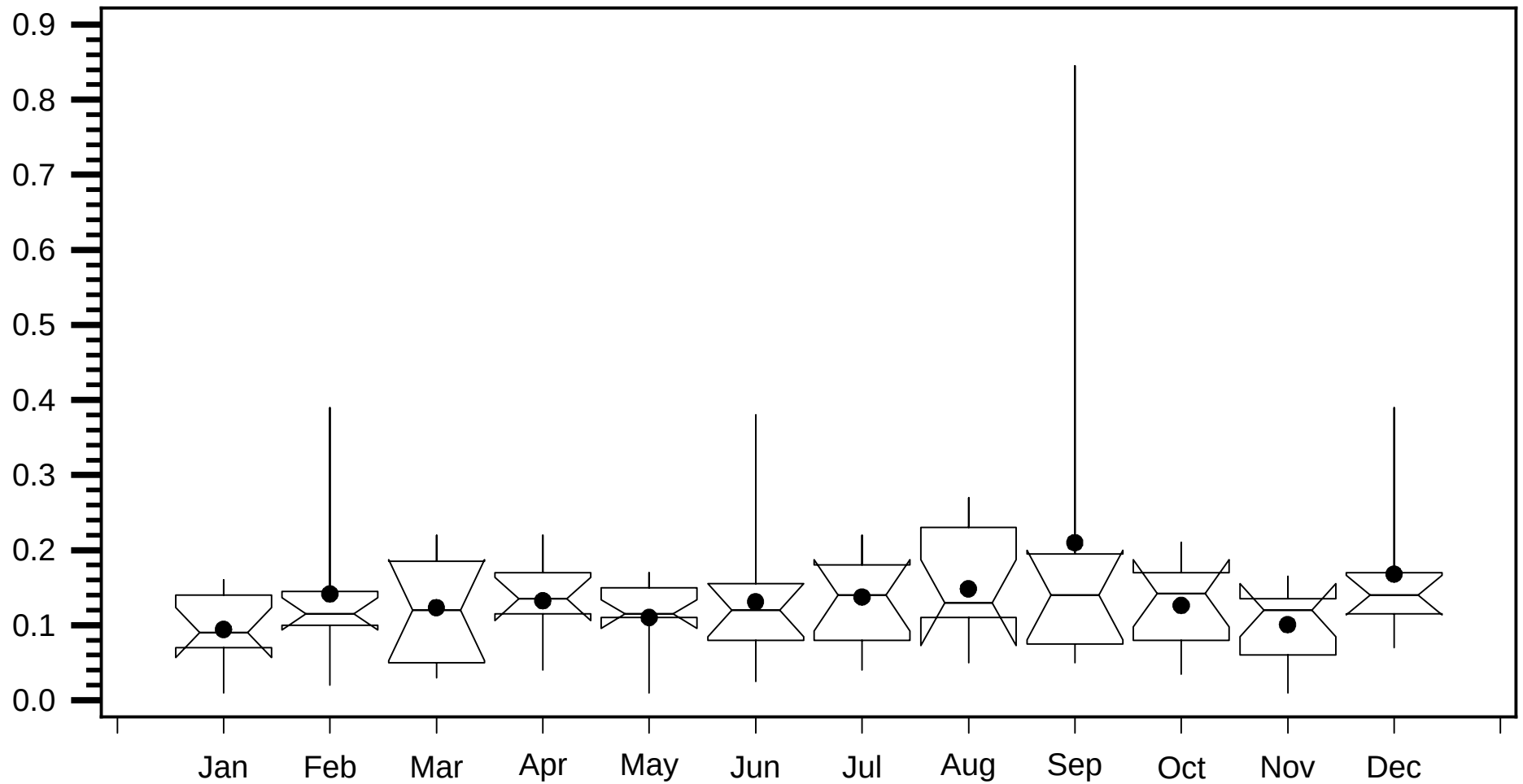


Trends Appendix - Display 90

Seasonal Univariate Statistics for TP

Sarasota County Segment= SBS

TP
(mg/l)



Trends Appendix - Display 91

Autocorrelation Statistics for Sarasota County Segment = SBS '

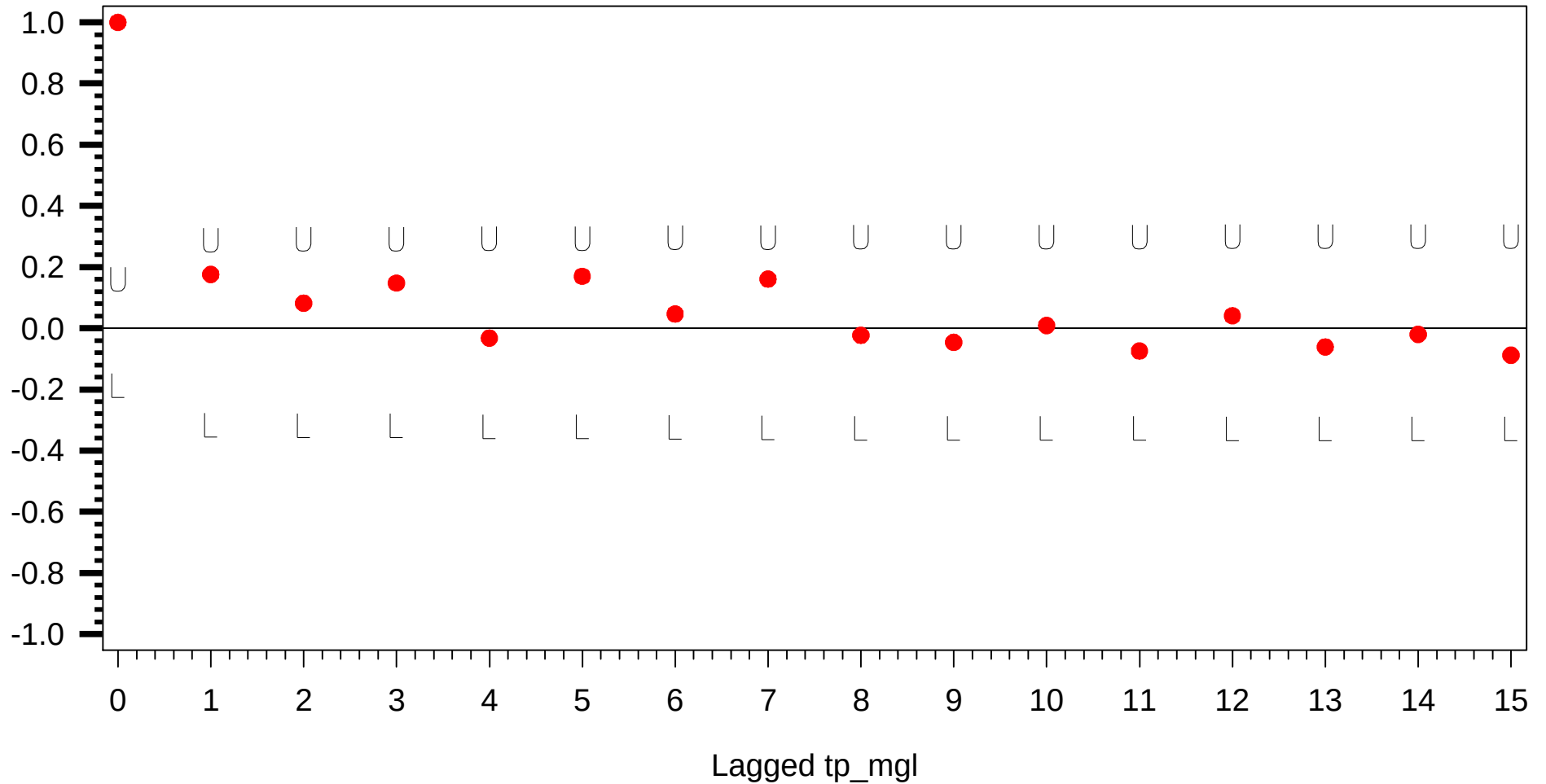
Unadjusted for Seasonal Medians

Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.176	0.151	0.302	-0.302
2	0.082	0.152	0.305	-0.305
3	0.148	0.153	0.305	-0.305
4	-0.032	0.154	0.307	-0.307
5	0.170	0.154	0.308	-0.308
6	0.047	0.155	0.310	-0.310
7	0.161	0.155	0.311	-0.311
8	-0.023	0.157	0.313	-0.313
9	-0.046	0.157	0.313	-0.313
10	0.009	0.157	0.313	-0.313
11	-0.074	0.157	0.313	-0.313
12	0.041	0.157	0.314	-0.314
13	-0.061	0.157	0.314	-0.314
14	-0.020	0.157	0.314	-0.314
15	-0.088	0.157	0.314	-0.314

Trends Appendix - Display 92
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 93

Seasonal Kendall Tau Trend Test Statistics for TP
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.267	0	0.083	.007

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 94

Seasonal Kendall Tau Trend Test Statistics for TP

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.26678	.000120401	0.082695	.00666667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 95

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

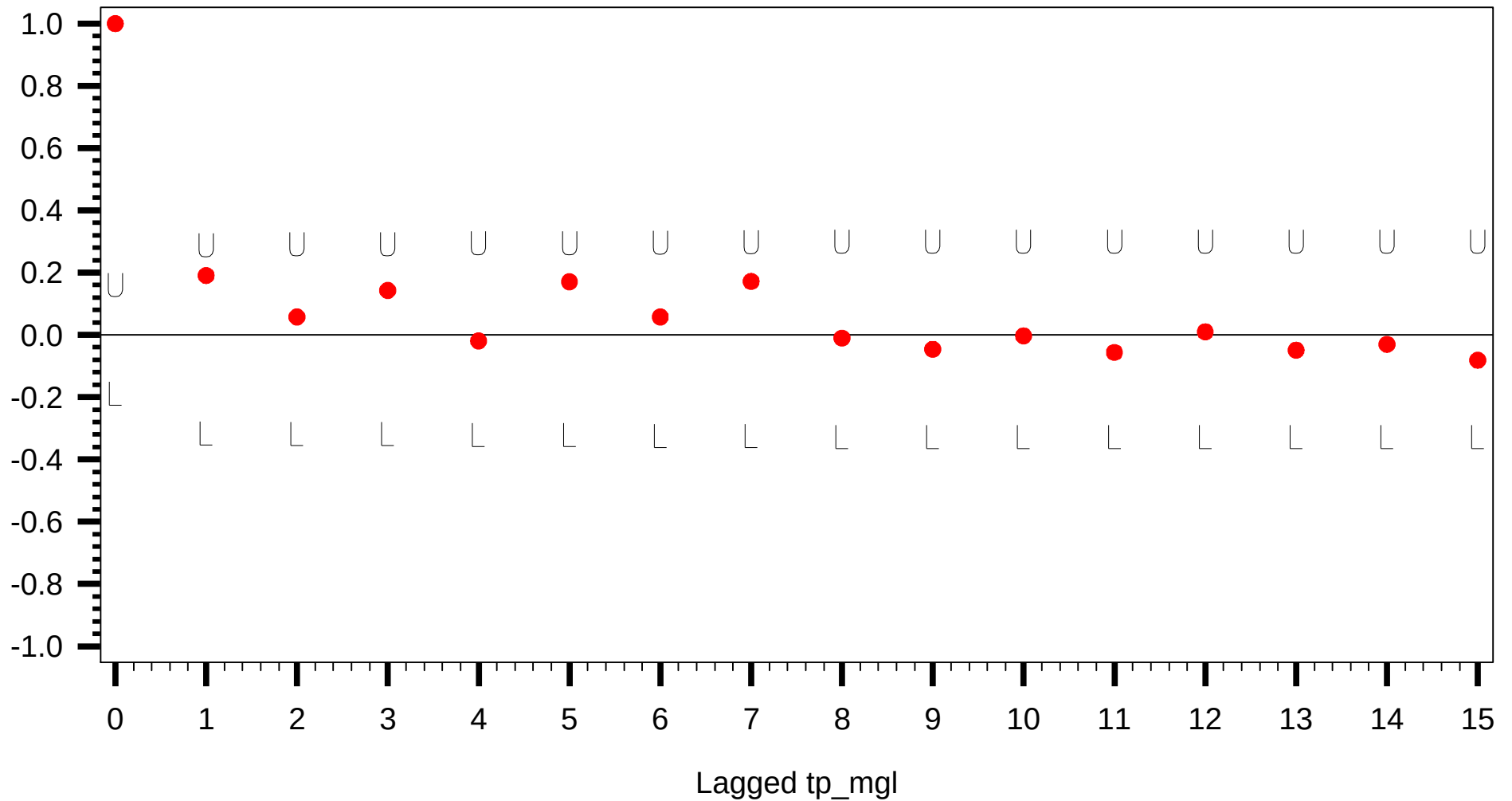
Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.191	0.151	0.302	-0.302
2	0.058	0.153	0.305	-0.305
3	0.143	0.153	0.305	-0.305
4	-0.019	0.154	0.308	-0.308
5	0.171	0.154	0.308	-0.308
6	0.058	0.155	0.310	-0.310
7	0.172	0.155	0.311	-0.311
8	-0.010	0.157	0.314	-0.314
9	-0.046	0.157	0.314	-0.314
10	-0.003	0.157	0.314	-0.314
11	-0.056	0.157	0.314	-0.314
12	0.010	0.157	0.314	-0.314
13	-0.049	0.157	0.314	-0.314
14	-0.030	0.157	0.314	-0.314
15	-0.081	0.157	0.314	-0.314

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 96
Correlogram for Sarasota County Segment = SBS '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

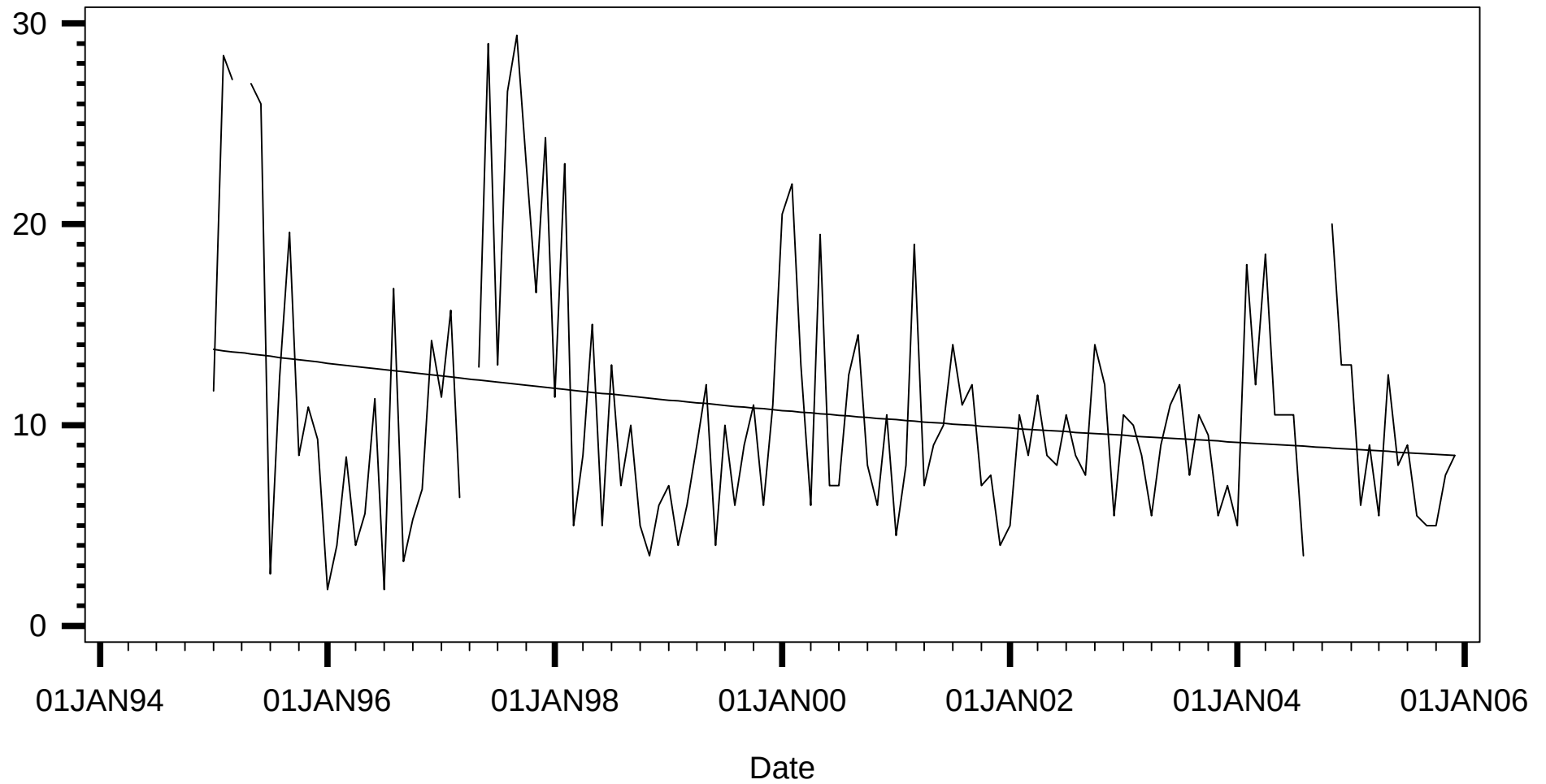
Trends Appendix - Display 97

Monthly Data Time Series for TSS

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

TSS
(mg/l)

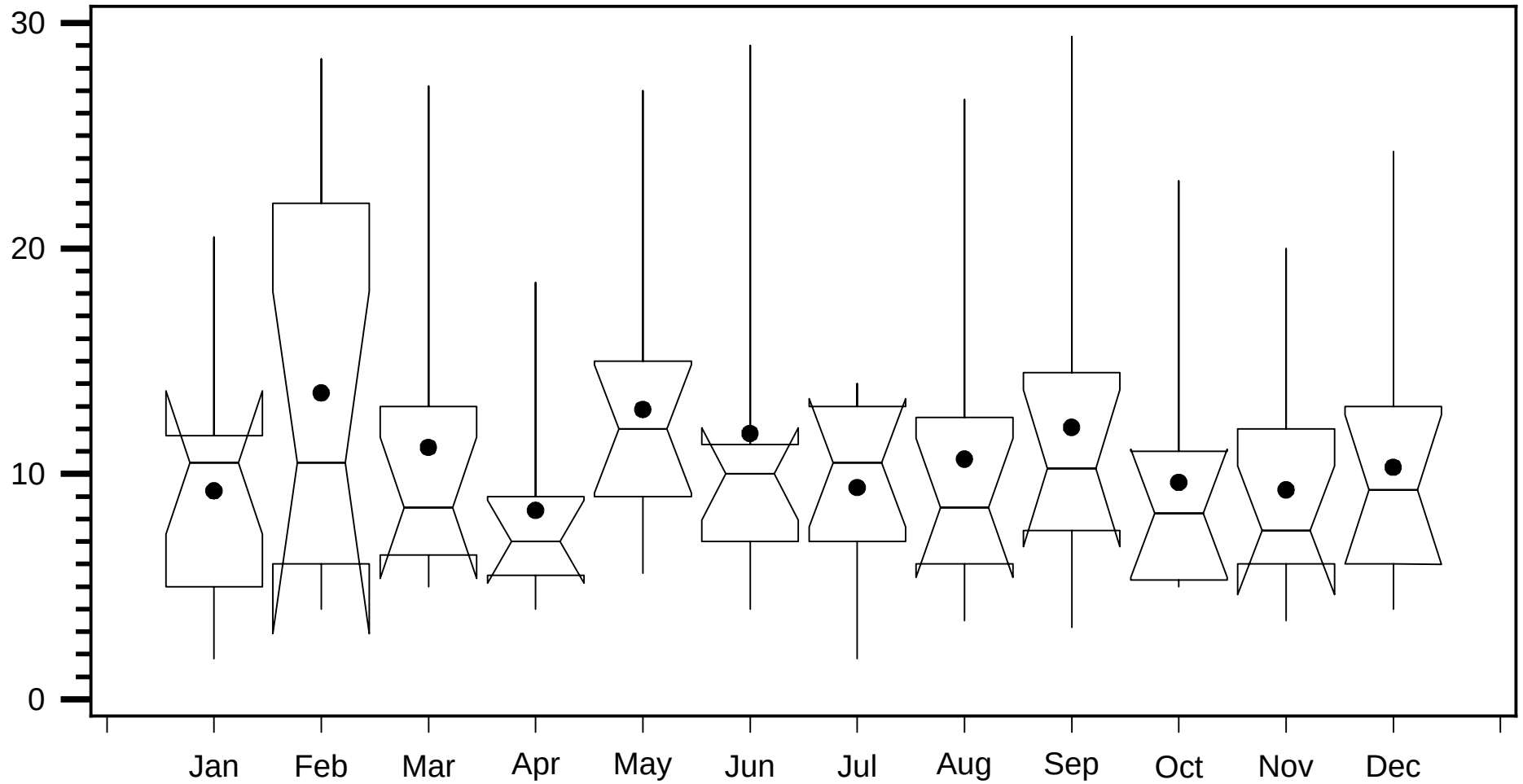


Trends Appendix - Display 98

Seasonal Univariate Statistics for TSS

Sarasota County Segment= SBS

TSS
(mg/l)



Trends Appendix - Display 99

Autocorrelation Statistics for Sarasota County Segment = SBS '

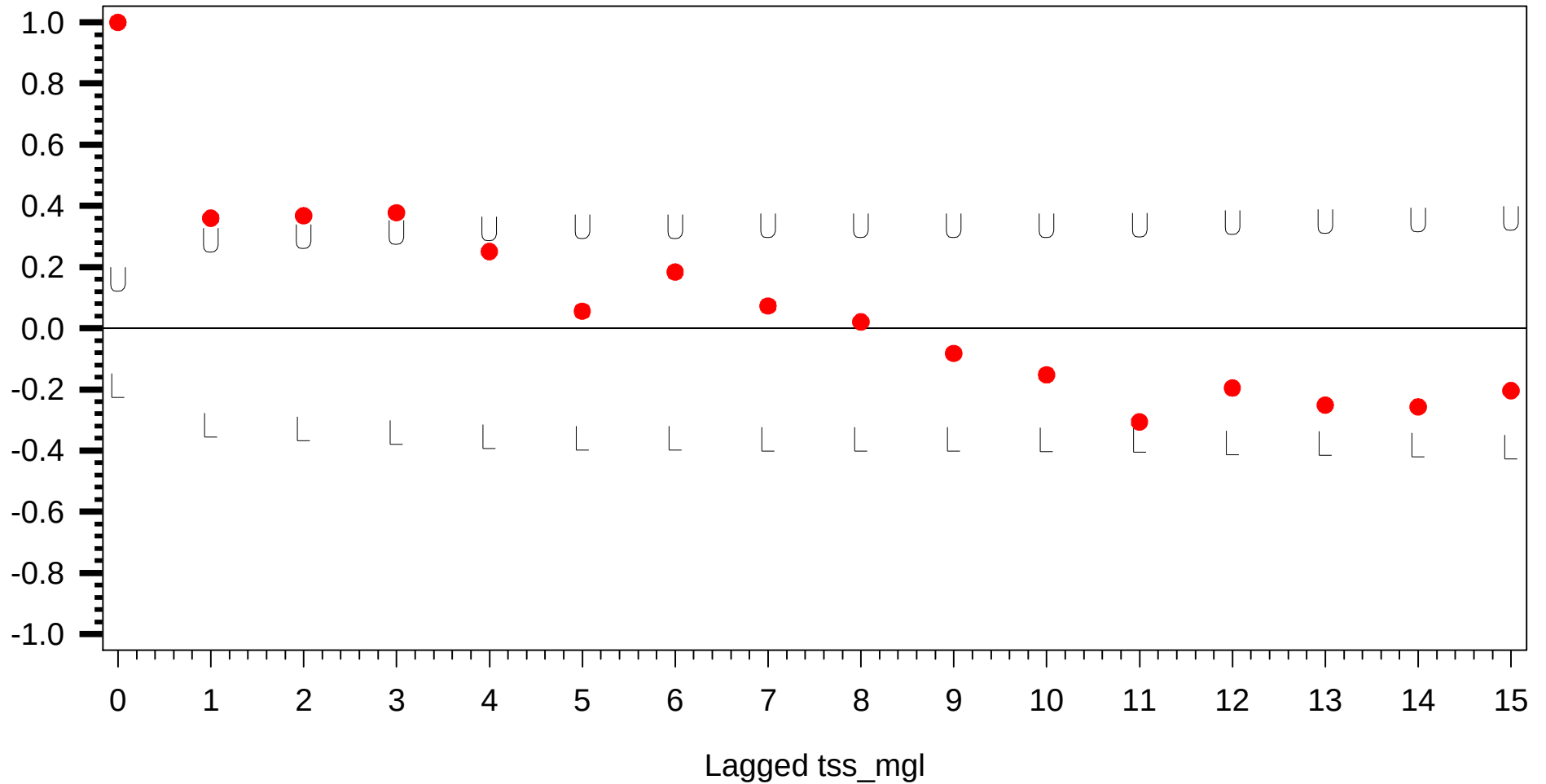
Unadjusted for Seasonal Medians

Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.360	0.151	0.302	-0.302
2	0.368	0.157	0.314	-0.314
3	0.378	0.164	0.327	-0.327
4	0.251	0.170	0.340	-0.340
5	0.056	0.173	0.346	-0.346
6	0.184	0.173	0.346	-0.346
7	0.073	0.174	0.349	-0.349
8	0.021	0.175	0.349	-0.349
9	-0.082	0.175	0.349	-0.349
10	-0.152	0.175	0.350	-0.350
11	-0.306	0.176	0.352	-0.352
12	-0.195	0.180	0.360	-0.360
13	-0.251	0.182	0.363	-0.363
14	-0.257	0.184	0.368	-0.368
15	-0.204	0.187	0.374	-0.374

Trends Appendix - Display 100
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 101

Seasonal Kendall Tau Trend Test Statistics for TSS
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.101	0.146	0.364	-0.214

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 102

Seasonal Kendall Tau Trend Test Statistics for TSS

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.10145	0.14559	0.36374	-0.21429

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 103

Autocorrelation Statistics for Sarasota County Segment = SBS

Adjusted for Seasonal Median and Detrended

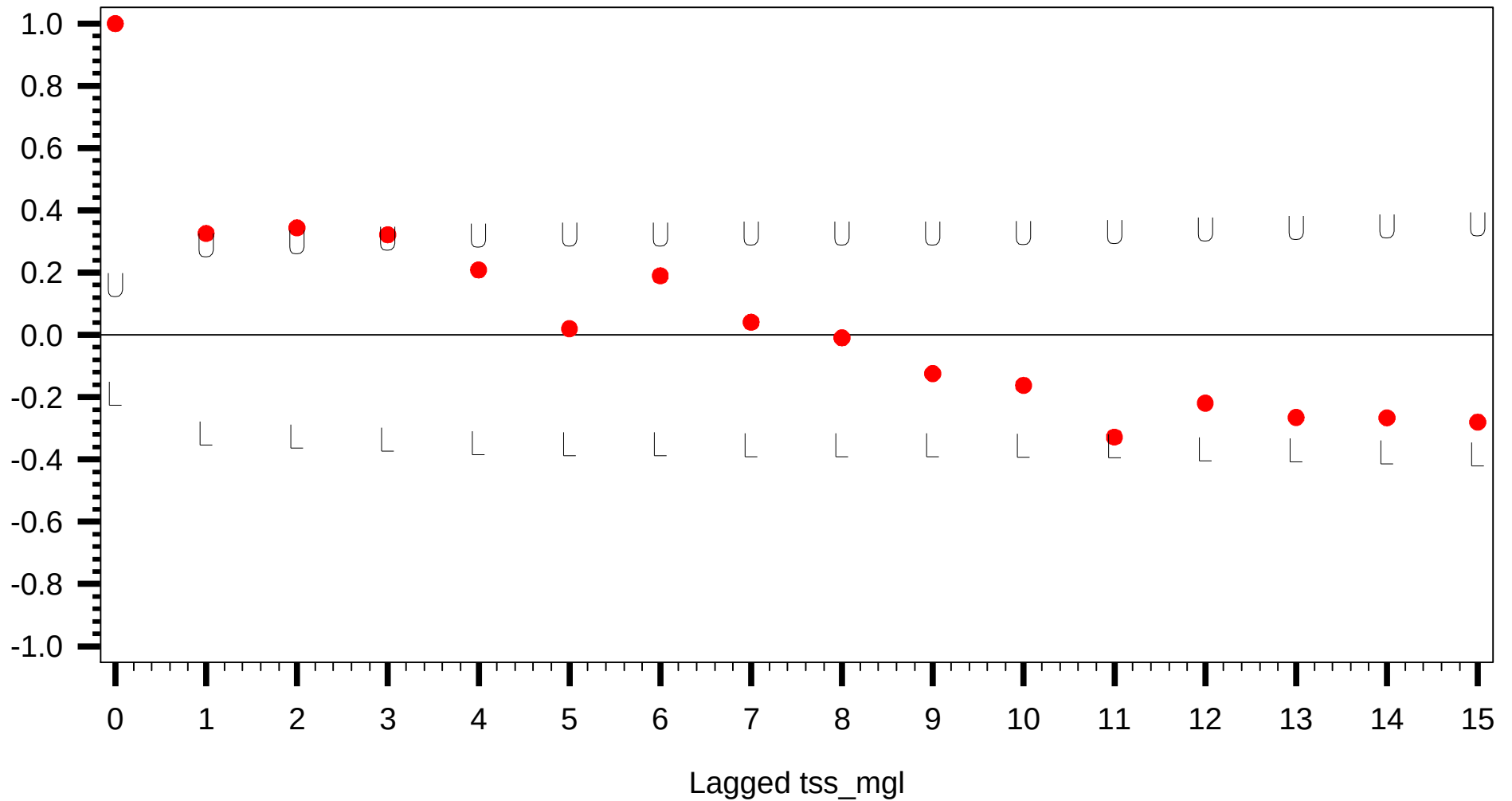
Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.326	0.151	0.302	-0.302
2	0.344	0.156	0.312	-0.312
3	0.322	0.162	0.323	-0.323
4	0.209	0.166	0.333	-0.333
5	0.020	0.168	0.337	-0.337
6	0.190	0.168	0.337	-0.337
7	0.041	0.170	0.340	-0.340
8	-0.009	0.170	0.340	-0.340
9	-0.124	0.170	0.340	-0.340
10	-0.162	0.171	0.342	-0.342
11	-0.328	0.172	0.344	-0.344
12	-0.219	0.177	0.353	-0.353
13	-0.265	0.179	0.357	-0.357
14	-0.266	0.182	0.363	-0.363
15	-0.280	0.185	0.369	-0.369

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 104
Correlogram for Sarasota County Segment = SBS '

Correlation

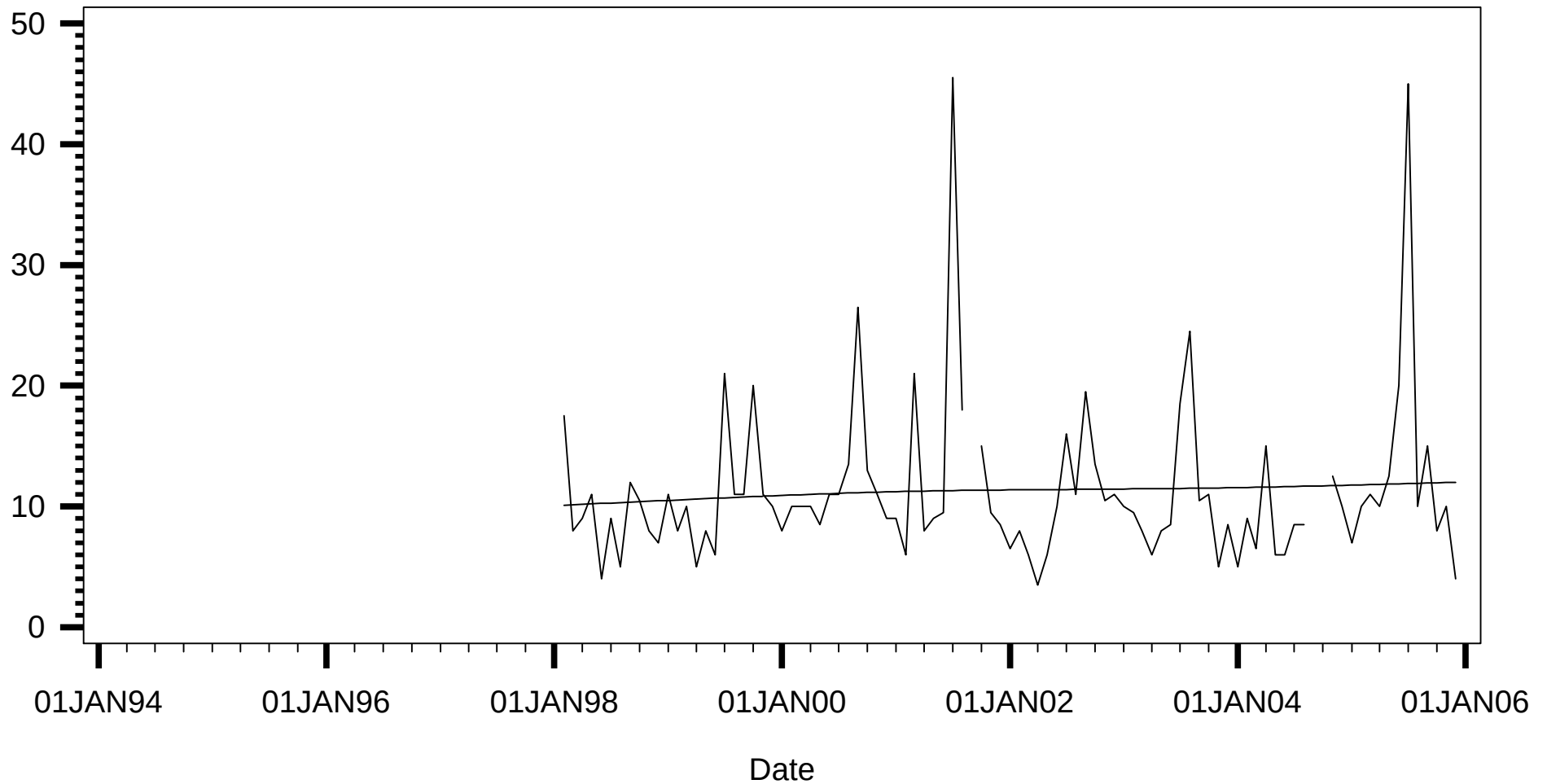
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 105
Monthly Data Time Series for Color
Sarasota County Segment= SBS
Not Adjusted for Seasonal Medians

Color
(pcu)

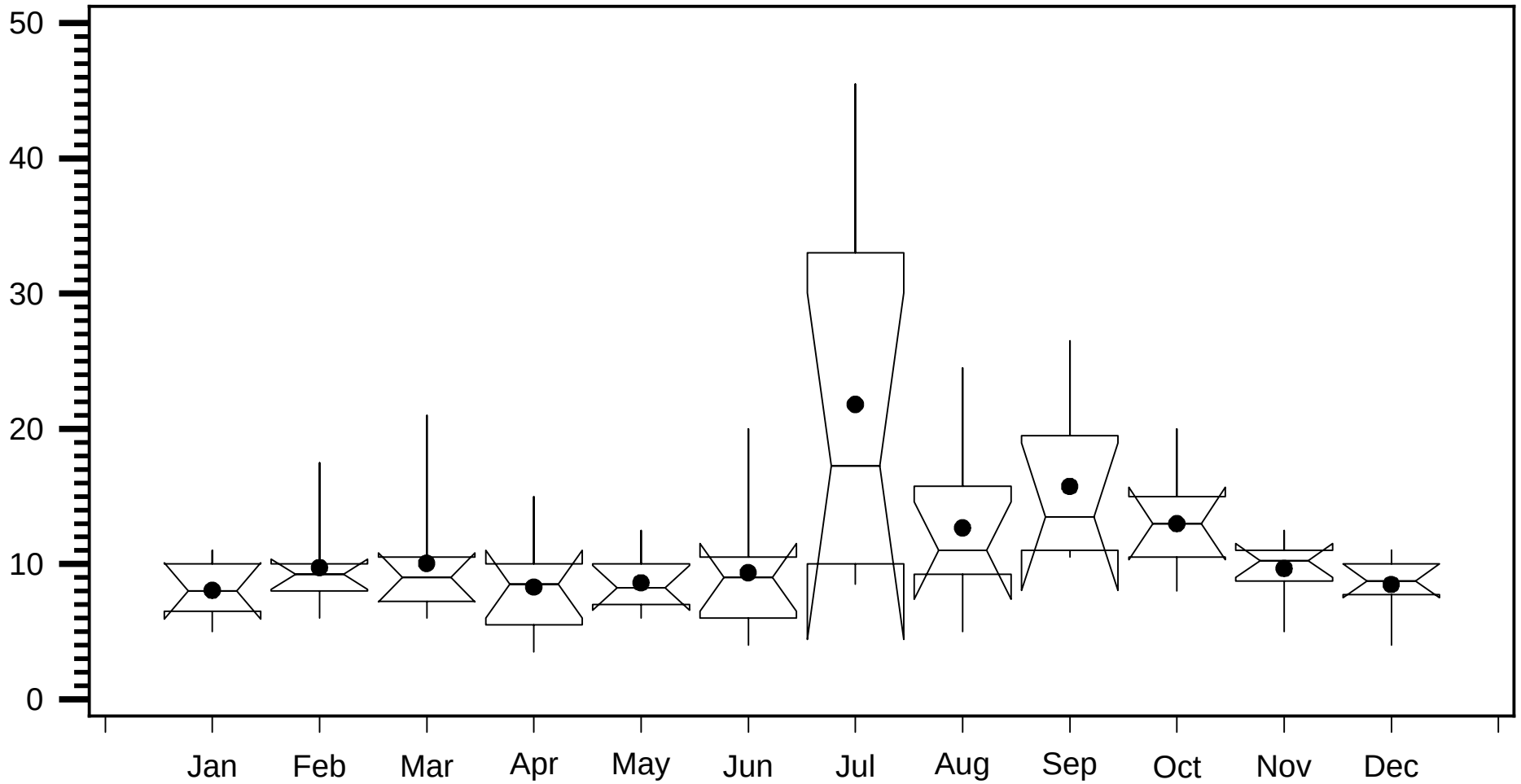


Trends Appendix - Display 106

Seasonal Univariate Statistics for Color

Sarasota County Segment= SBS

Color
(pcu)



Trends Appendix - Display 107

Autocorrelation Statistics for Sarasota County Segment = SBS '

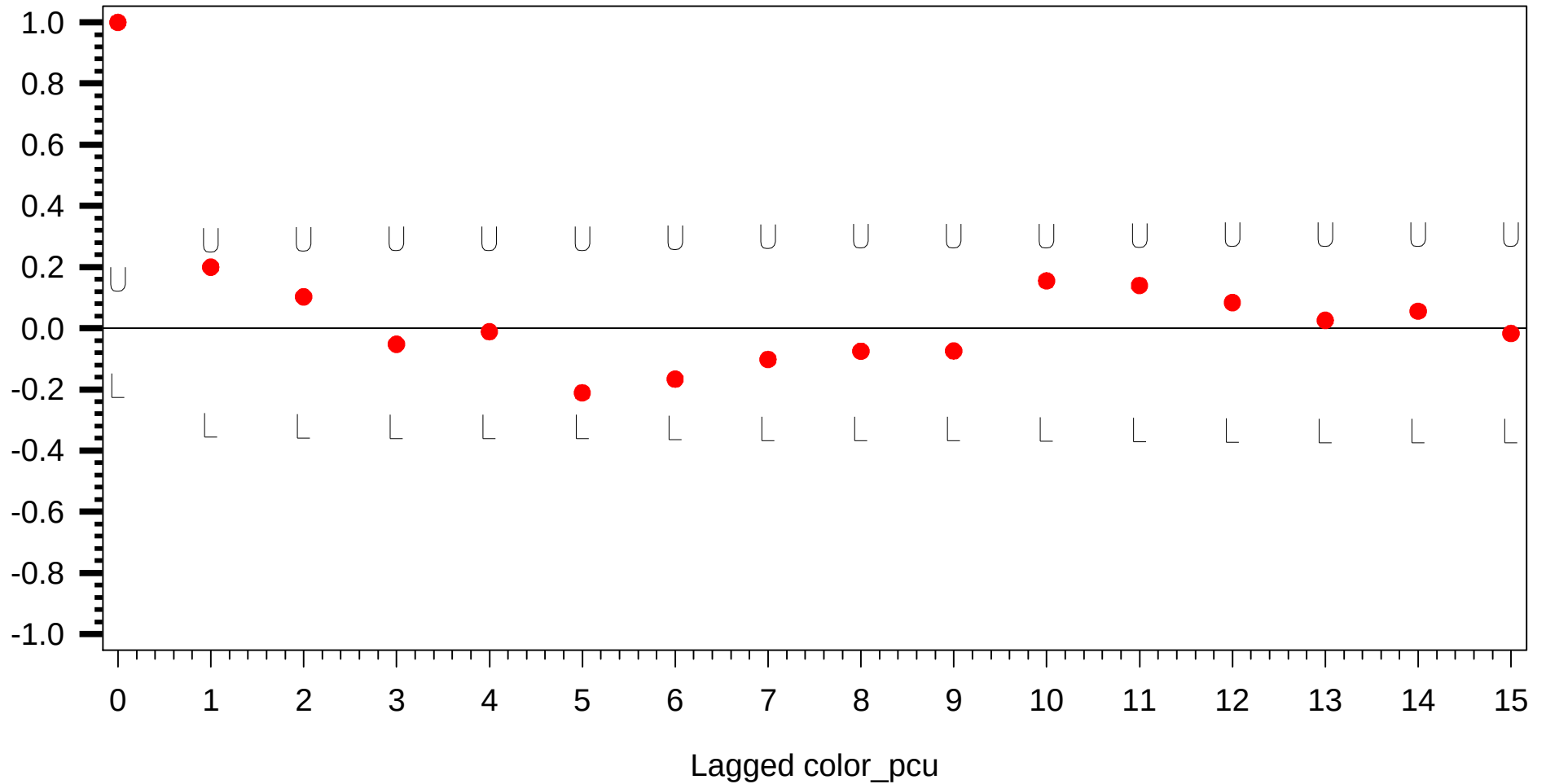
Unadjusted for Seasonal Medians

Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.200	0.151	0.302	-0.302
2	0.103	0.153	0.306	-0.306
3	-0.052	0.153	0.307	-0.307
4	-0.011	0.153	0.307	-0.307
5	-0.211	0.153	0.307	-0.307
6	-0.166	0.156	0.311	-0.311
7	-0.102	0.157	0.314	-0.314
8	-0.075	0.157	0.315	-0.315
9	-0.074	0.158	0.315	-0.315
10	0.155	0.158	0.316	-0.316
11	0.140	0.159	0.318	-0.318
12	0.084	0.160	0.320	-0.320
13	0.026	0.160	0.321	-0.321
14	0.056	0.160	0.321	-0.321
15	-0.017	0.161	0.321	-0.321

Trends Appendix - Display 108
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 109

Seasonal Kendall Tau Trend Test Statistics for Color
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-.003	1	1	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 110

Seasonal Kendall Tau Trend Test Statistics for Color

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-.00323625	1	1	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 111

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

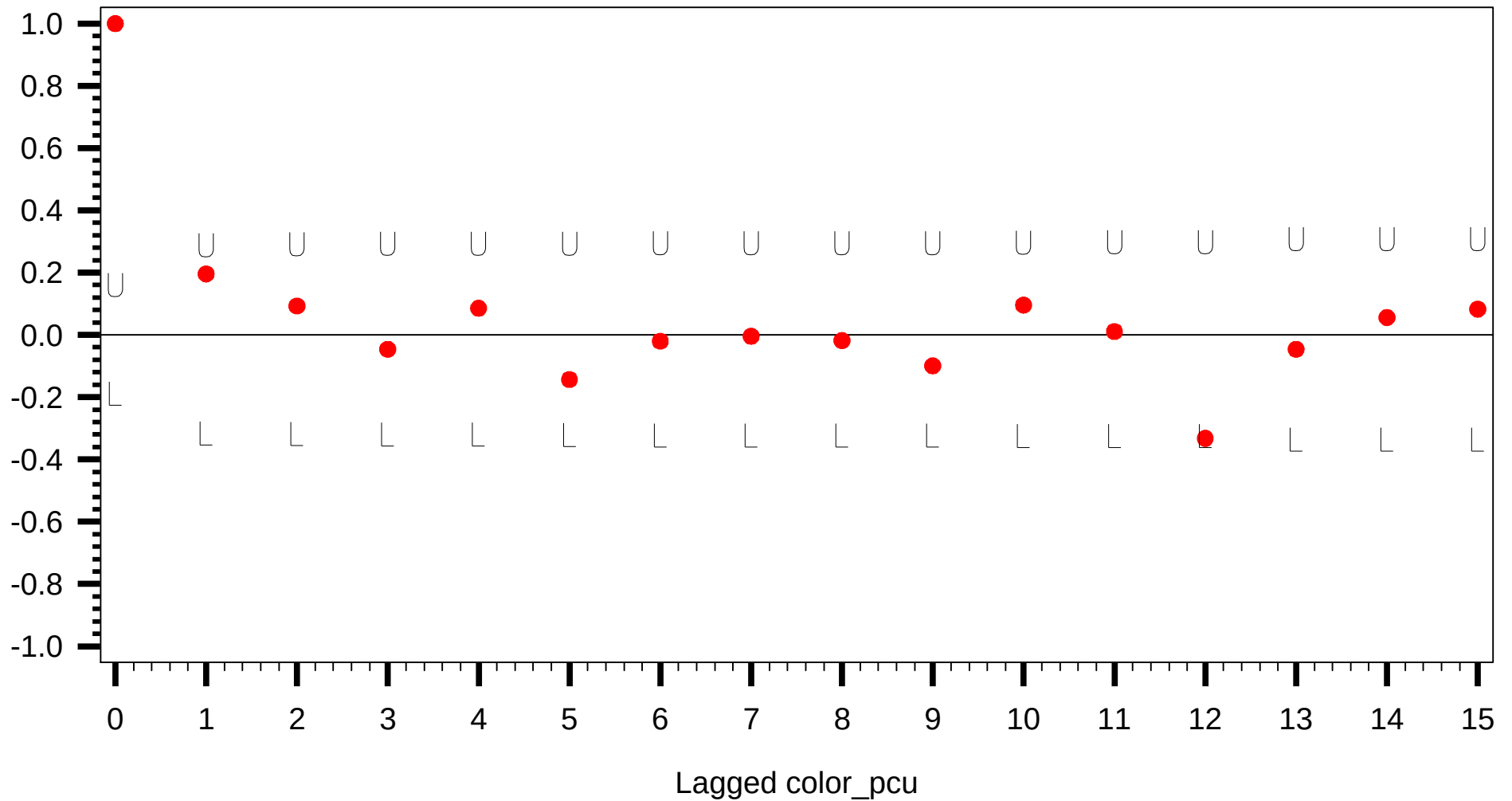
Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.196	0.151	0.302	-0.302
2	0.093	0.153	0.305	-0.305
3	-0.046	0.153	0.306	-0.306
4	0.086	0.153	0.306	-0.306
5	-0.143	0.154	0.307	-0.307
6	-0.020	0.155	0.309	-0.309
7	-0.004	0.155	0.309	-0.309
8	-0.018	0.155	0.309	-0.309
9	-0.099	0.155	0.309	-0.309
10	0.096	0.155	0.310	-0.310
11	0.011	0.156	0.311	-0.311
12	-0.332	0.156	0.311	-0.311
13	-0.046	0.161	0.322	-0.322
14	0.056	0.161	0.322	-0.322
15	0.083	0.161	0.322	-0.322

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 112
Correlogram for Sarasota County Segment = SBS '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

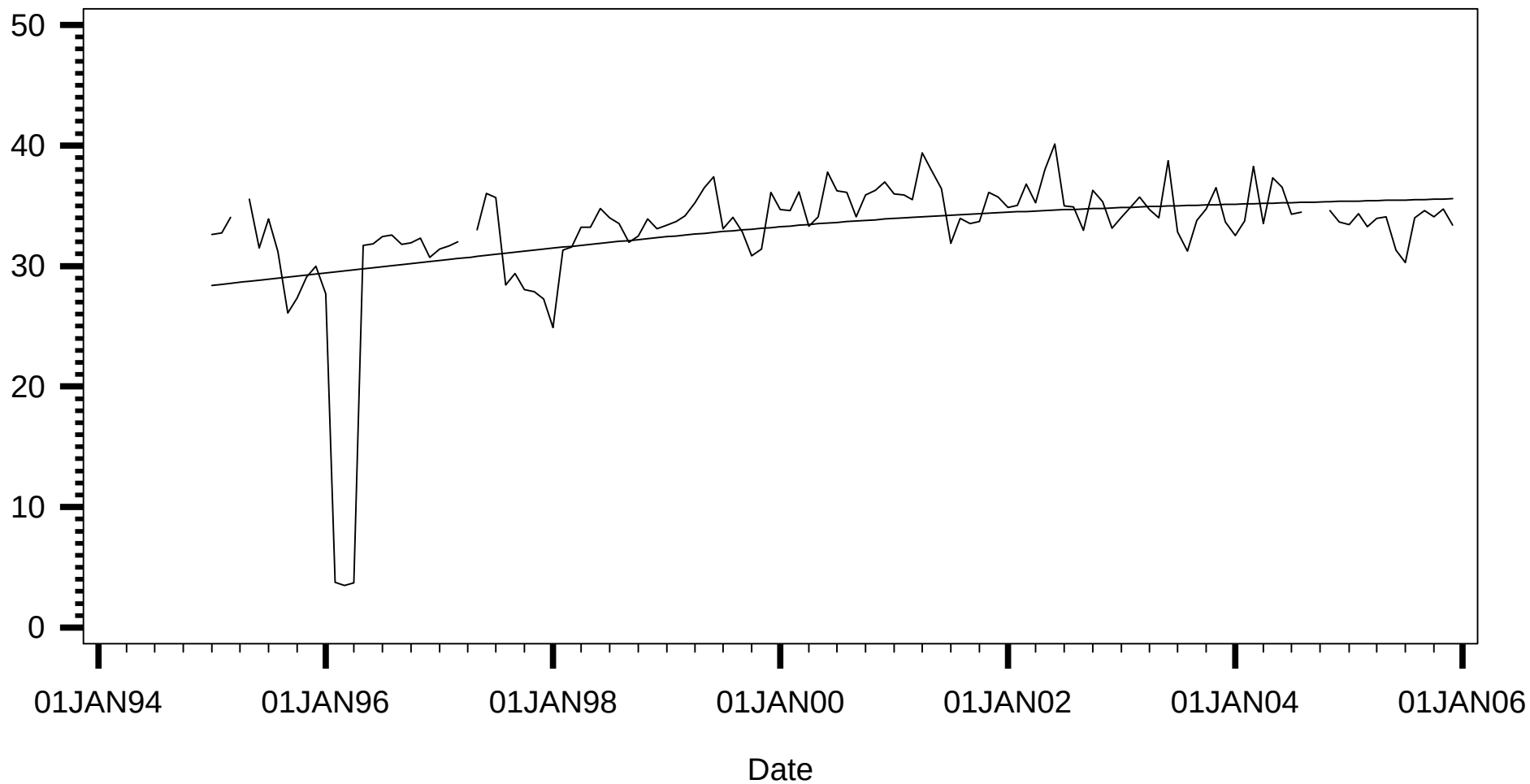
Trends Appendix - Display 113

Monthly Data Time Series for Salinity

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

Salinity
(ppt)

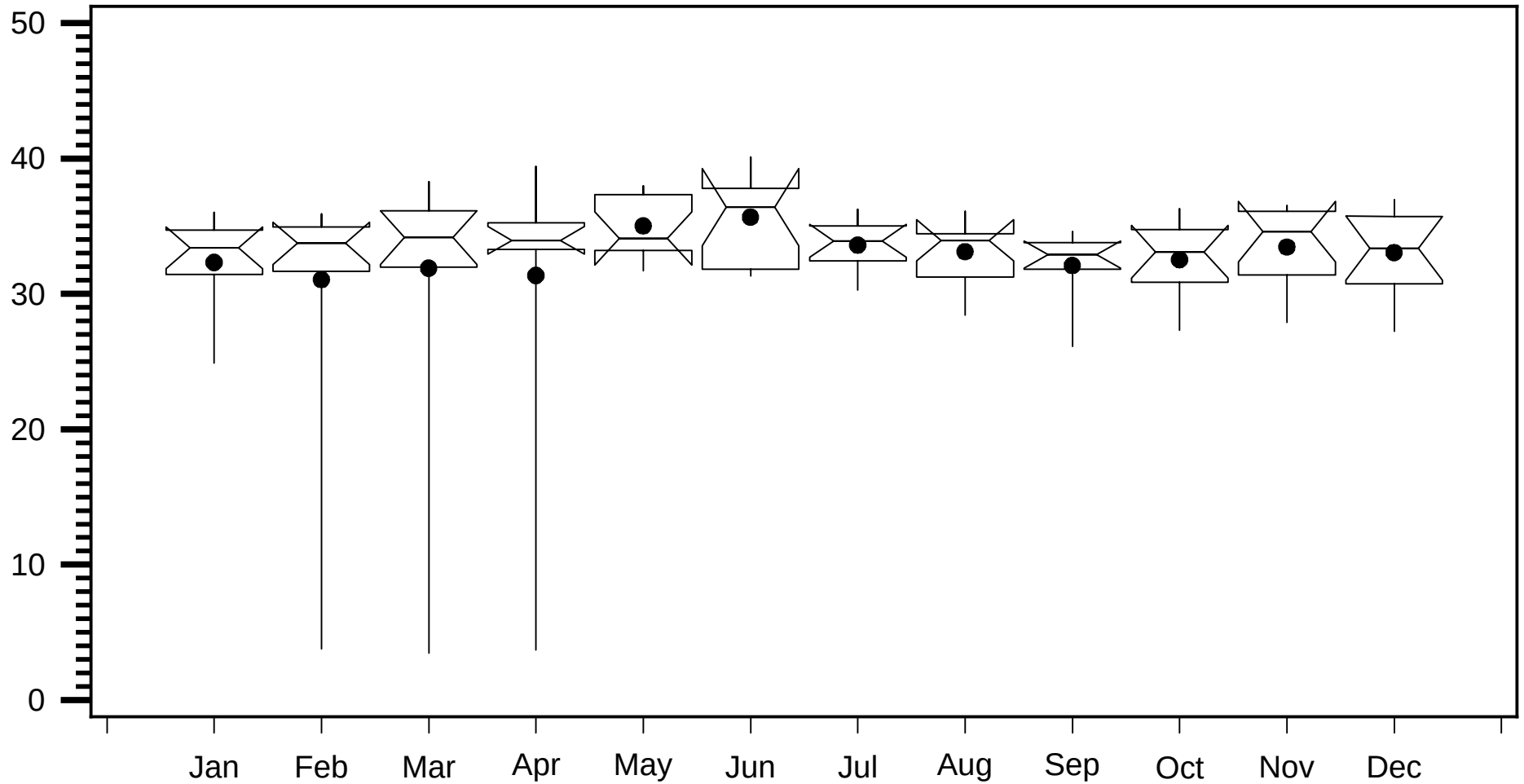


Trends Appendix - Display 114

Seasonal Univariate Statistics for Salinity

Sarasota County Segment= SBS

Salinity
(ppt)



Trends Appendix - Display 115

Autocorrelation Statistics for Sarasota County Segment = SBS '

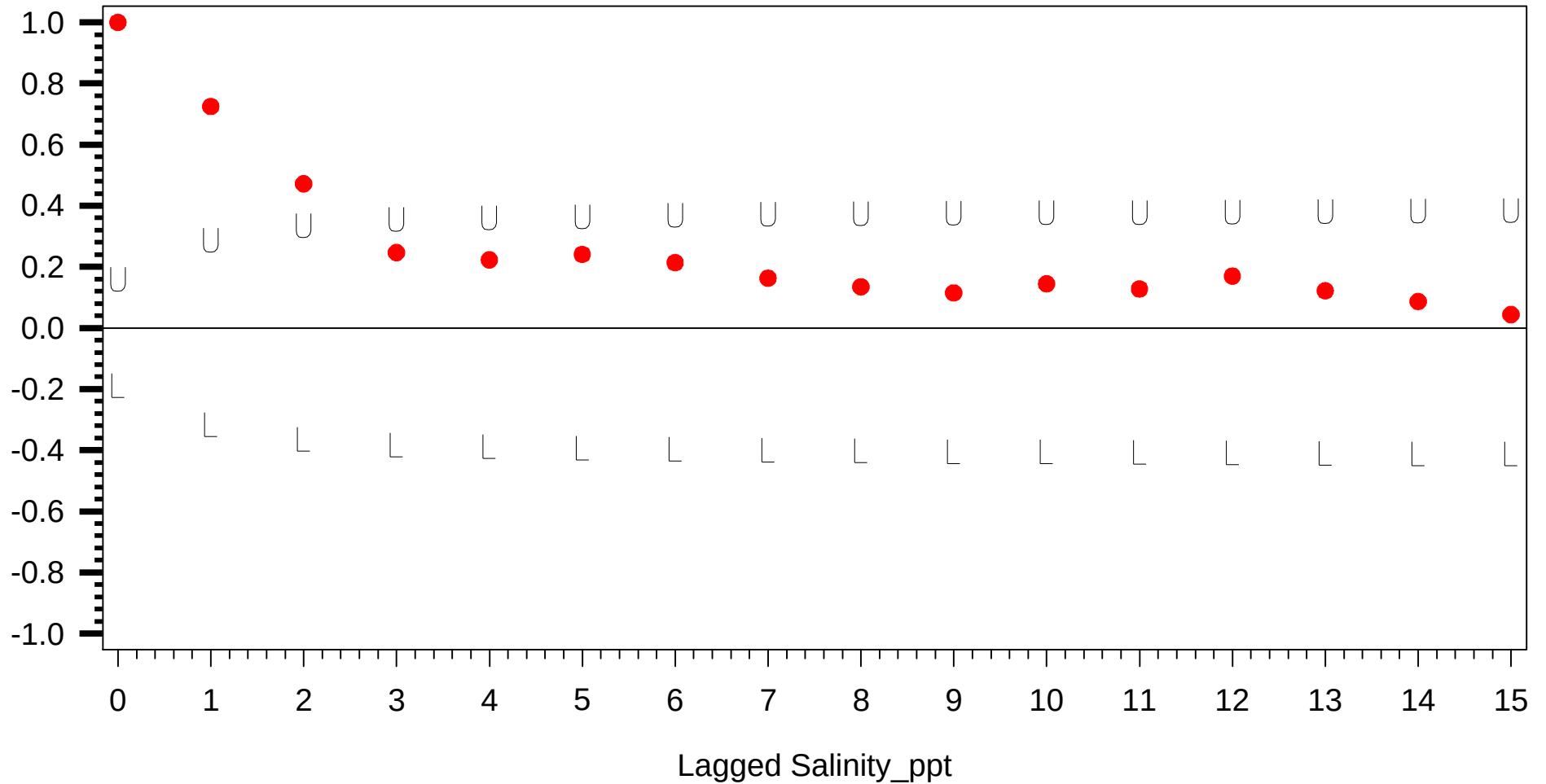
Unadjusted for Seasonal Medians

Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.725	0.151	0.302	-0.302
2	0.472	0.175	0.350	-0.350
3	0.247	0.185	0.369	-0.369
4	0.223	0.187	0.374	-0.374
5	0.241	0.189	0.378	-0.378
6	0.214	0.191	0.383	-0.383
7	0.163	0.193	0.386	-0.386
8	0.135	0.194	0.388	-0.388
9	0.115	0.195	0.390	-0.390
10	0.145	0.195	0.391	-0.391
11	0.128	0.196	0.392	-0.392
12	0.170	0.197	0.394	-0.394
13	0.122	0.198	0.396	-0.396
14	0.087	0.199	0.397	-0.397
15	0.044	0.199	0.398	-0.398

Trends Appendix - Display 116
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 117

Seasonal Kendall Tau Trend Test Statistics for Salinity
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.374	0	0.03	0.365

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 118

Seasonal Kendall Tau Trend Test Statistics for Salinity

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.37359	.000000119	0.029626	0.365

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 119

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

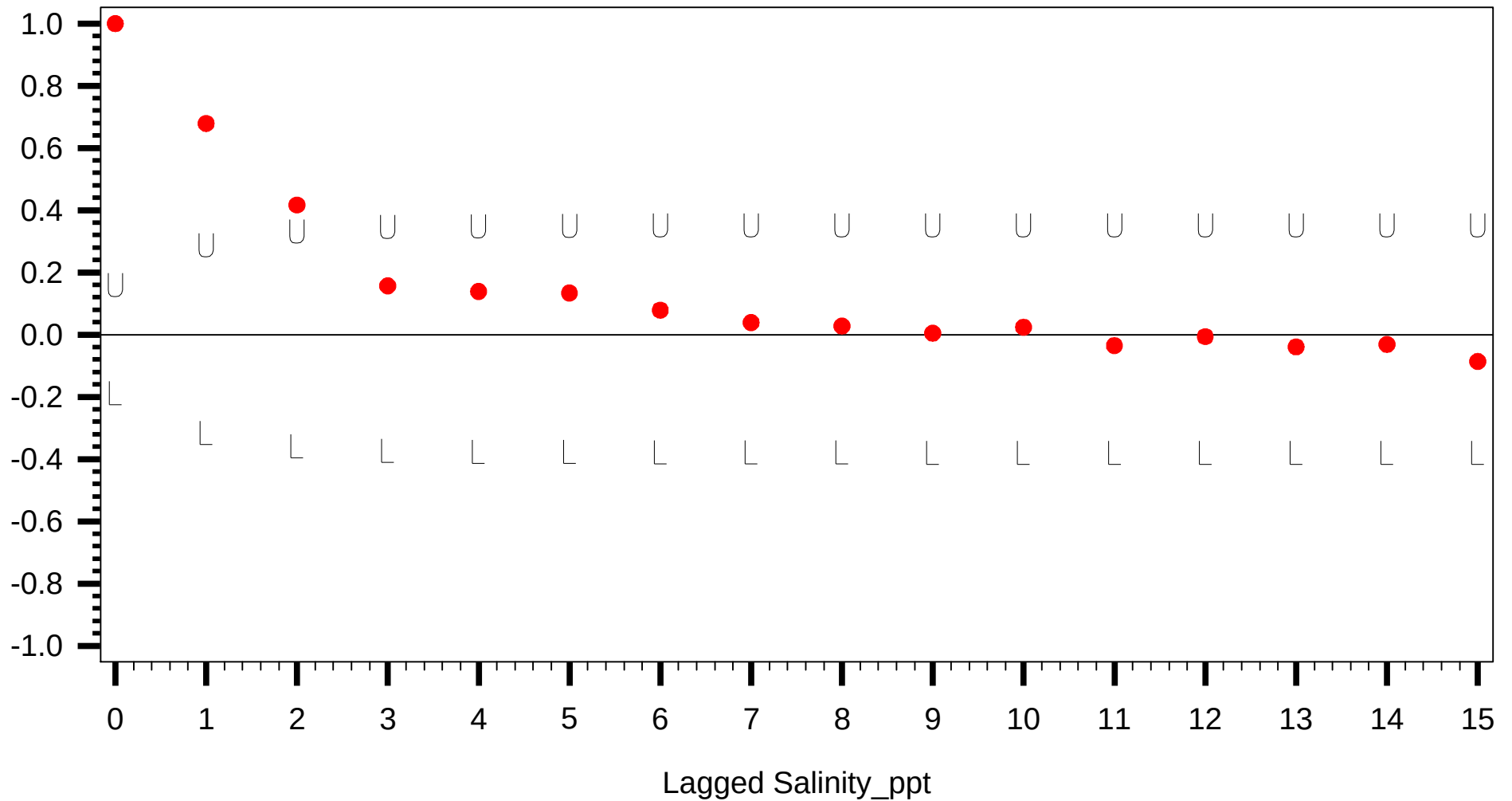
Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.679	0.151	0.302	-0.302
2	0.417	0.172	0.345	-0.345
3	0.157	0.180	0.360	-0.360
4	0.139	0.181	0.362	-0.362
5	0.134	0.182	0.363	-0.363
6	0.079	0.182	0.365	-0.365
7	0.039	0.183	0.365	-0.365
8	0.028	0.183	0.365	-0.365
9	0.005	0.183	0.366	-0.366
10	0.024	0.183	0.366	-0.366
11	-0.035	0.183	0.366	-0.366
12	-0.006	0.183	0.366	-0.366
13	-0.039	0.183	0.366	-0.366
14	-0.031	0.183	0.366	-0.366
15	-0.086	0.183	0.366	-0.366

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 120
Correlogram for Sarasota County Segment = SBS '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

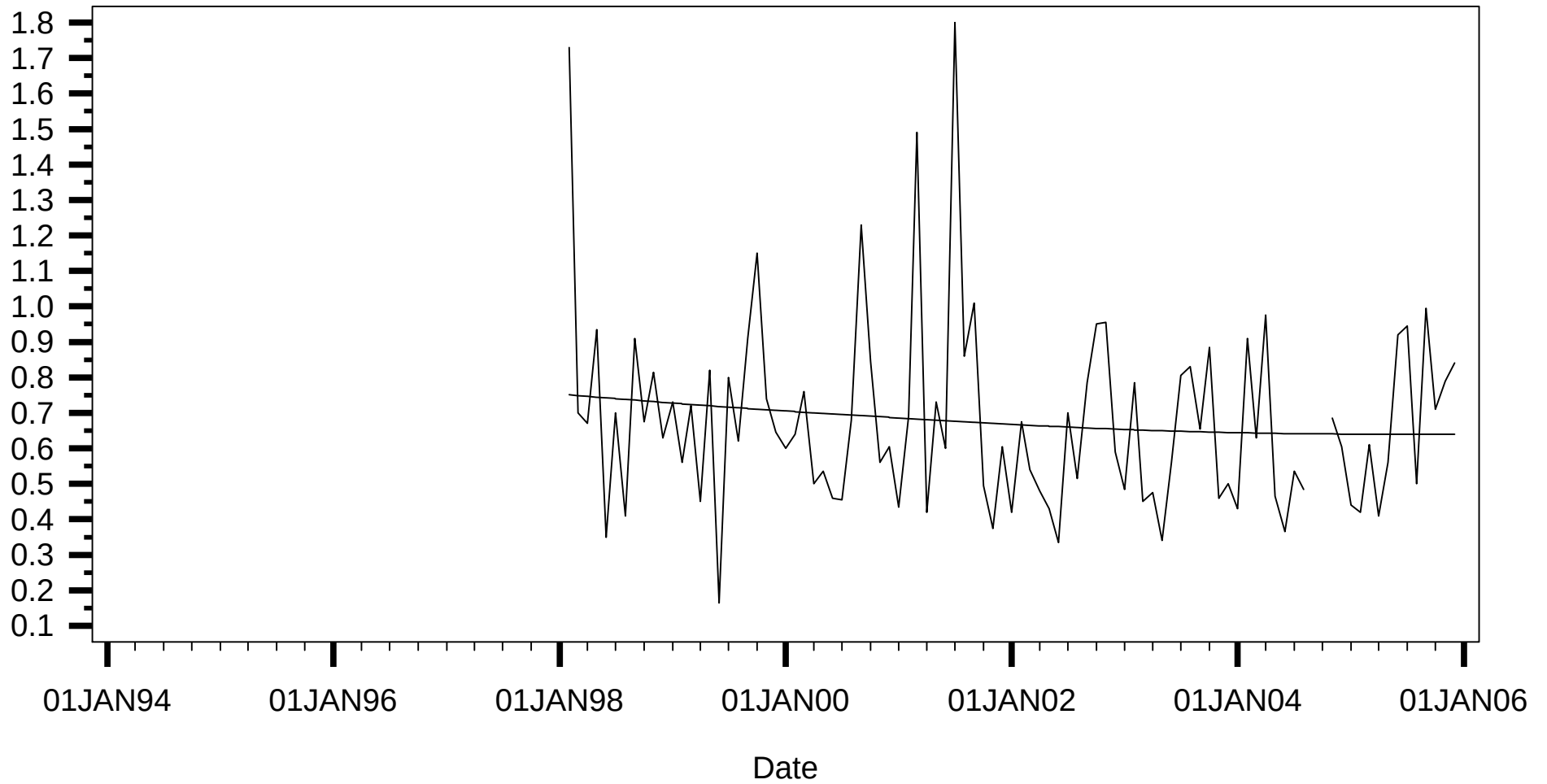
Trends Appendix - Display 121

Monthly Data Time Series for Kd

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

Kd
(1/meter)

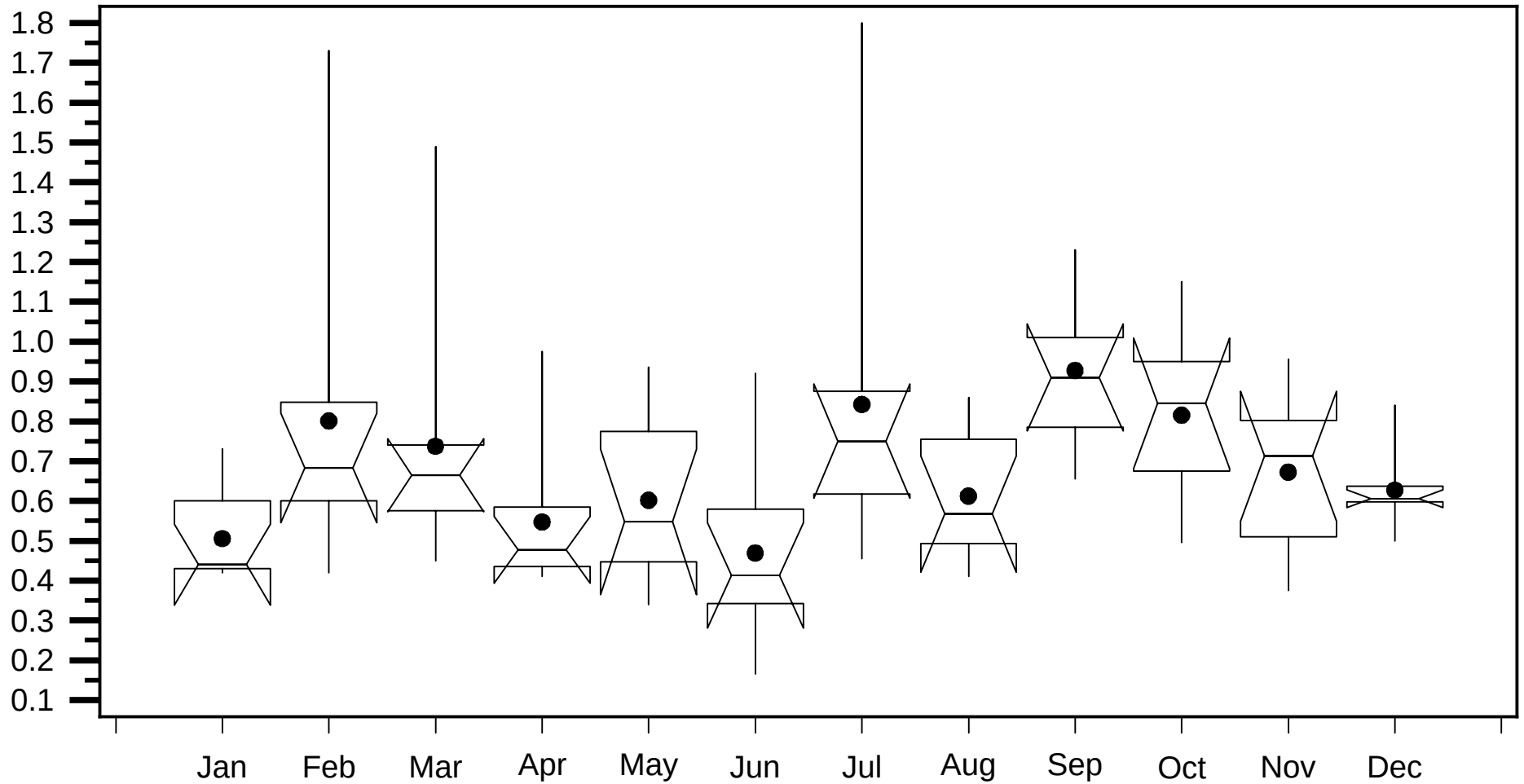


Trends Appendix - Display 122

Seasonal Univariate Statistics for Kd

Sarasota County Segment= SBS

Kd
(1/meter)



Trends Appendix - Display 123

Autocorrelation Statistics for Sarasota County Segment = SBS '

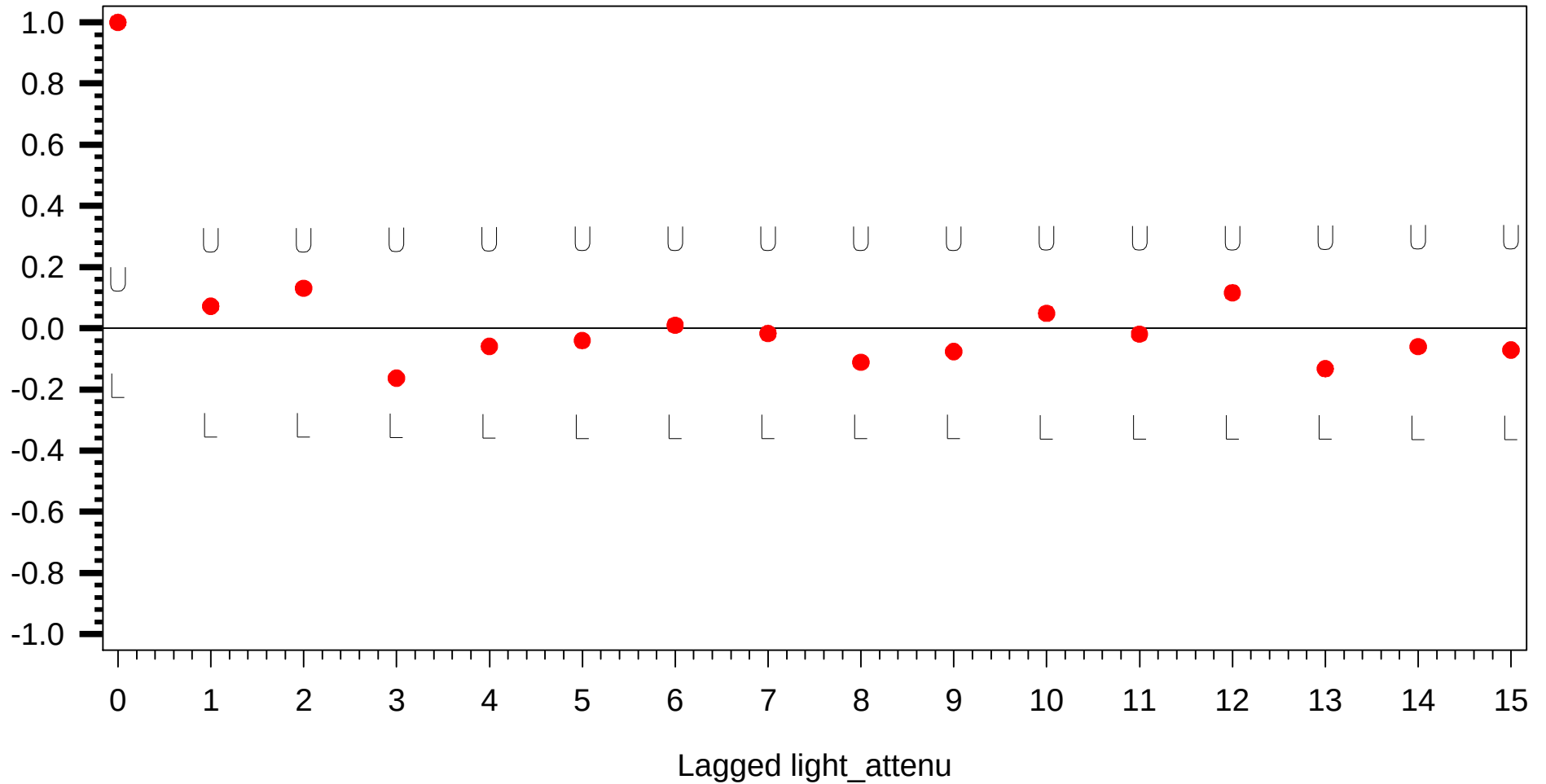
Unadjusted for Seasonal Medians

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.072	0.151	0.302	-0.302
2	0.131	0.151	0.302	-0.302
3	-0.163	0.152	0.304	-0.304
4	-0.059	0.153	0.306	-0.306
5	-0.040	0.153	0.307	-0.307
6	0.010	0.153	0.307	-0.307
7	-0.017	0.153	0.307	-0.307
8	-0.111	0.153	0.307	-0.307
9	-0.076	0.154	0.308	-0.308
10	0.049	0.154	0.309	-0.309
11	-0.019	0.154	0.309	-0.309
12	0.116	0.154	0.309	-0.309
13	-0.132	0.155	0.310	-0.310
14	-0.060	0.156	0.312	-0.312
15	-0.071	0.156	0.312	-0.312

Trends Appendix - Display 124
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 125

Seasonal Kendall Tau Trend Test Statistics for Kd
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.102	0.246	0.164	-0.01

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 126

Seasonal Kendall Tau Trend Test Statistics for Kd

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.10159	0.24643	0.16366	-0.01

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 127

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

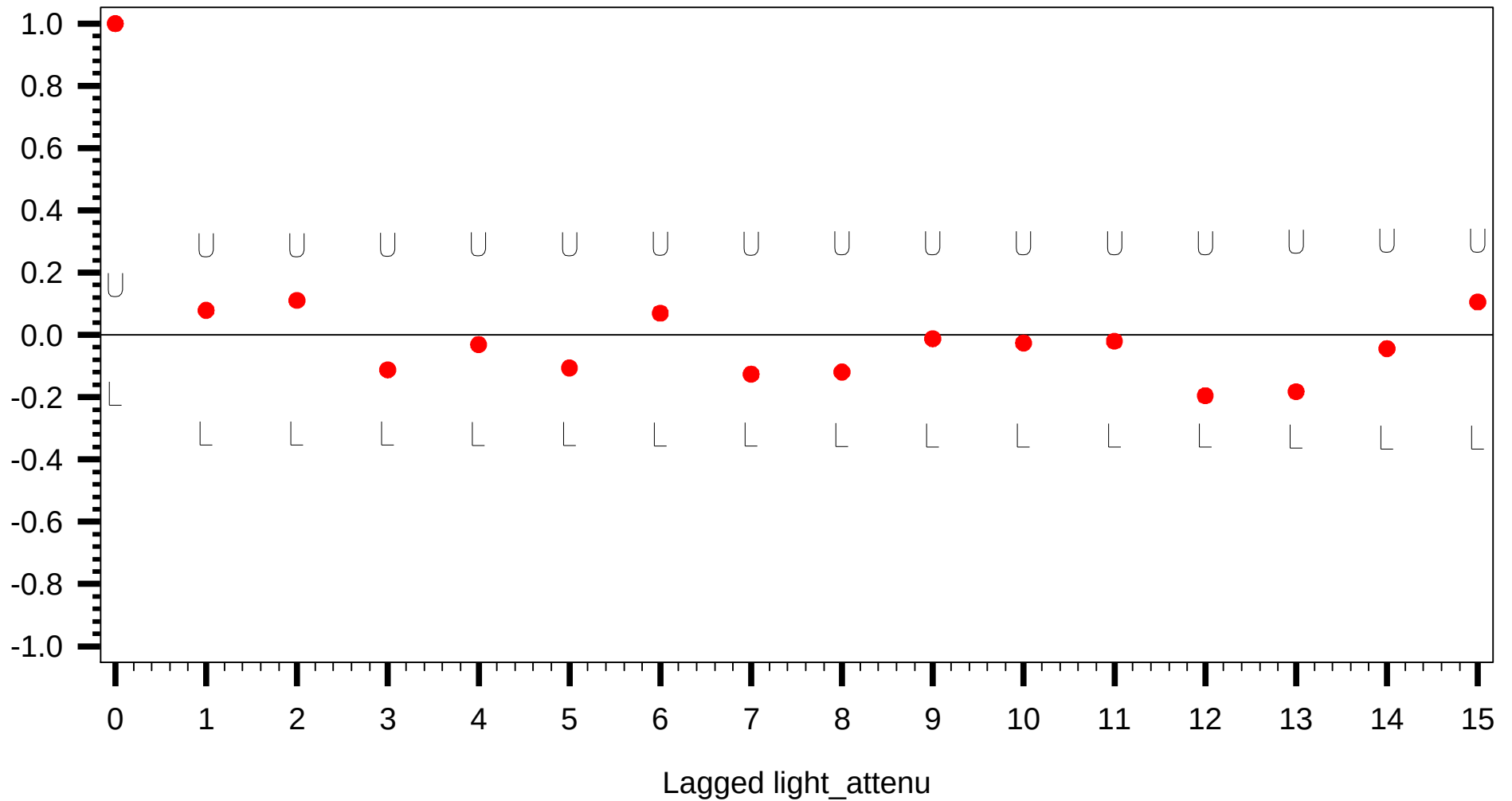
Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.079	0.151	0.302	-0.302
2	0.111	0.151	0.302	-0.302
3	-0.112	0.152	0.303	-0.303
4	-0.031	0.152	0.305	-0.305
5	-0.106	0.152	0.305	-0.305
6	0.070	0.153	0.306	-0.306
7	-0.126	0.153	0.306	-0.306
8	-0.119	0.154	0.308	-0.308
9	-0.012	0.155	0.309	-0.309
10	-0.026	0.155	0.309	-0.309
11	-0.020	0.155	0.309	-0.309
12	-0.195	0.155	0.309	-0.309
13	-0.182	0.157	0.313	-0.313
14	-0.044	0.158	0.316	-0.316
15	0.106	0.158	0.316	-0.316

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 128
Correlogram for Sarasota County Segment = SBS '

Correlation

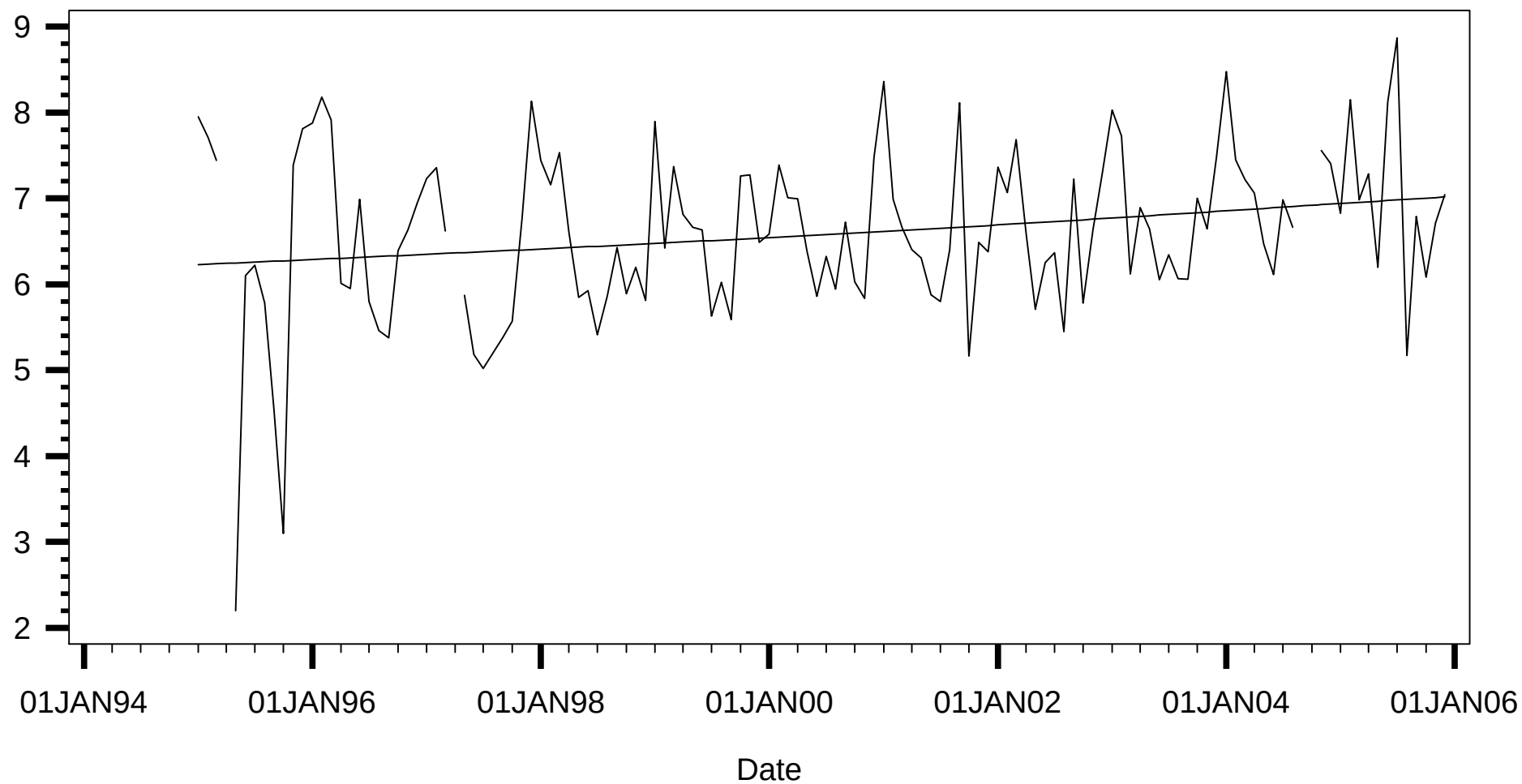
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 129
Monthly Data Time Series for DO
Sarasota County Segment= SBS
Not Adjusted for Seasonal Medians

DO
(mgl)

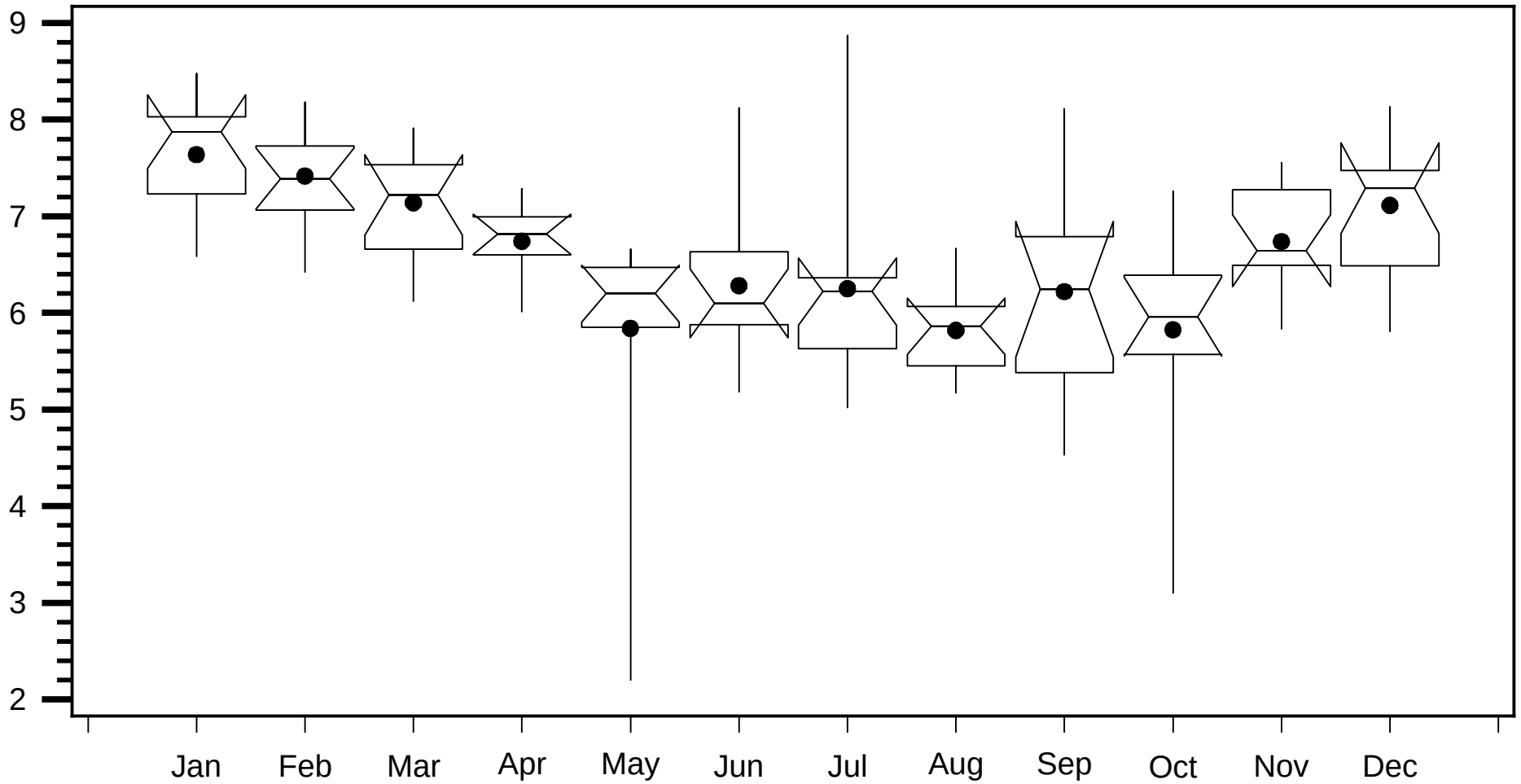


Trends Appendix - Display 130

Seasonal Univariate Statistics for DO

Sarasota County Segment= SBS

DO
(mg/l)



Trends Appendix - Display 131

Autocorrelation Statistics for Sarasota County Segment = SBS '

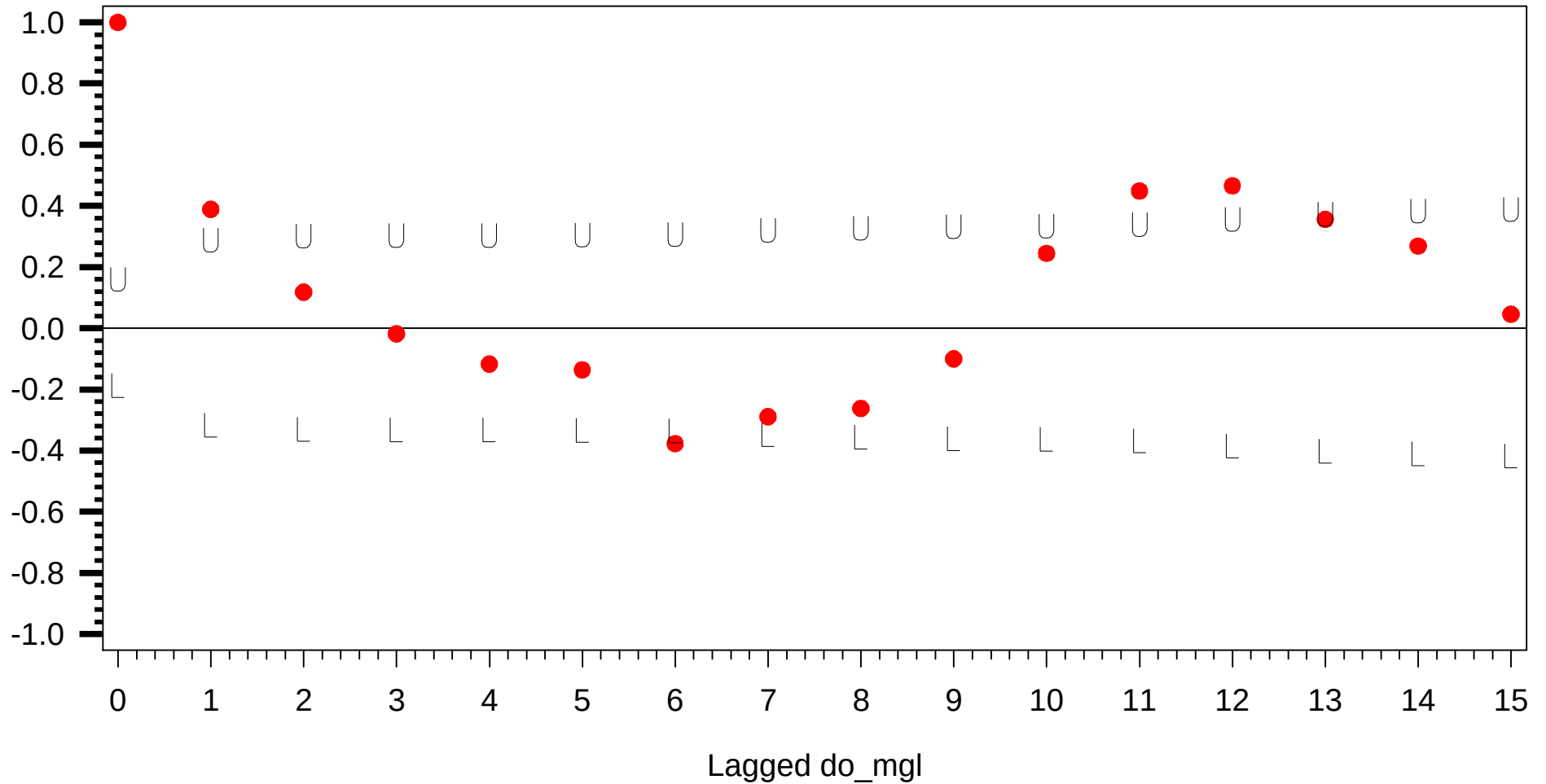
Unadjusted for Seasonal Medians

Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.389	0.151	0.302	-0.302
2	0.118	0.158	0.316	-0.316
3	-0.018	0.159	0.318	-0.318
4	-0.117	0.159	0.318	-0.318
5	-0.136	0.160	0.319	-0.319
6	-0.377	0.160	0.321	-0.321
7	-0.289	0.167	0.334	-0.334
8	-0.262	0.171	0.341	-0.341
9	-0.100	0.174	0.347	-0.347
10	0.245	0.174	0.348	-0.348
11	0.449	0.177	0.353	-0.353
12	0.466	0.185	0.370	-0.370
13	0.356	0.194	0.388	-0.388
14	0.269	0.199	0.397	-0.397
15	0.046	0.201	0.403	-0.403

Trends Appendix - Display 132
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 133

Seasonal Kendall Tau Trend Test Statistics for DO
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.203	.003	0.029	0.056

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 134

Seasonal Kendall Tau Trend Test Statistics for DO

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.20290	.00344181	0.029246	0.056

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 135

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

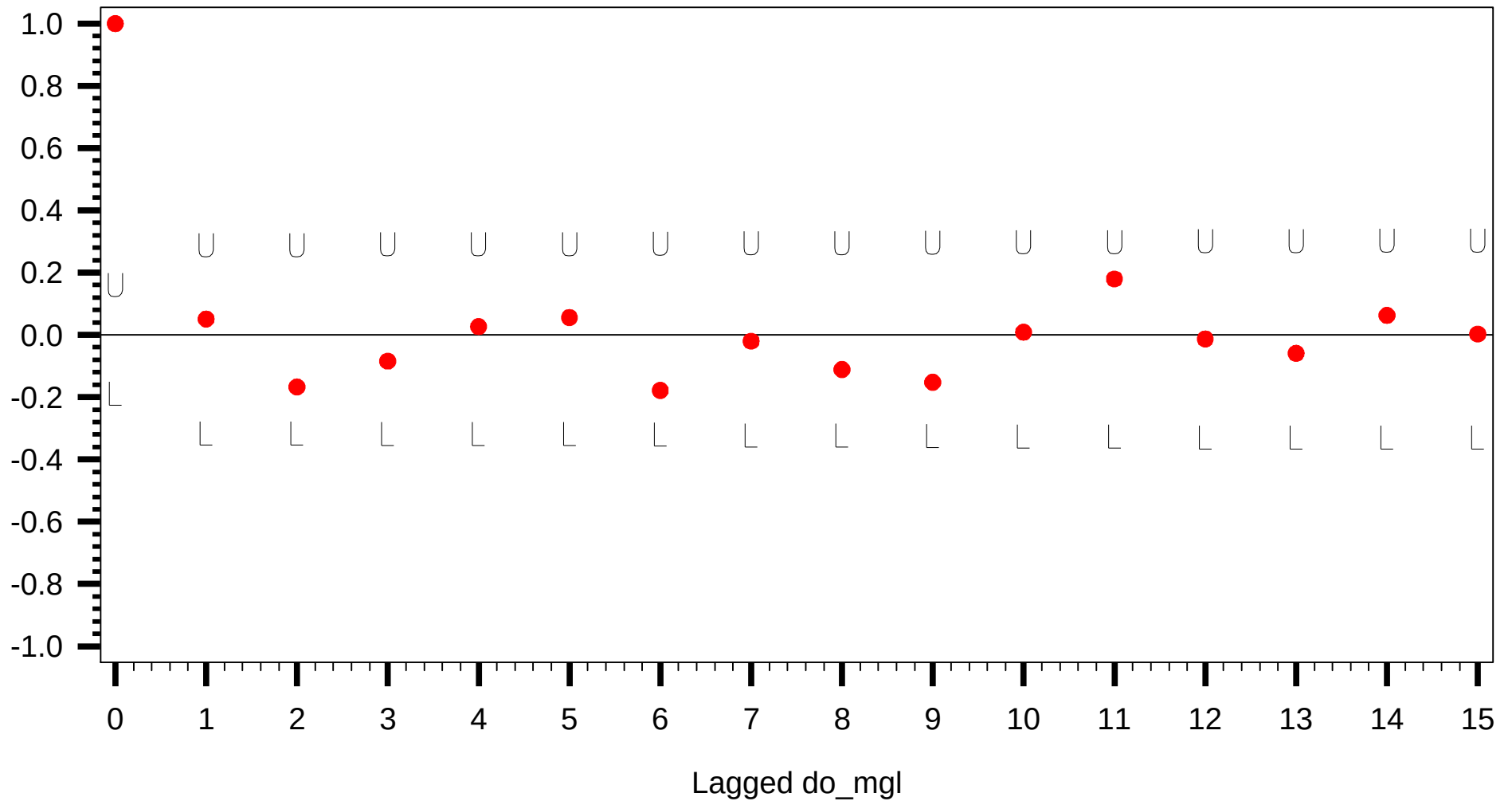
Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.051	0.151	0.302	-0.302
2	-0.167	0.151	0.302	-0.302
3	-0.084	0.152	0.305	-0.305
4	0.027	0.153	0.305	-0.305
5	0.056	0.153	0.305	-0.305
6	-0.178	0.153	0.306	-0.306
7	-0.020	0.154	0.309	-0.309
8	-0.111	0.154	0.309	-0.309
9	-0.152	0.155	0.310	-0.310
10	0.009	0.156	0.312	-0.312
11	0.180	0.156	0.312	-0.312
12	-0.013	0.158	0.315	-0.315
13	-0.059	0.158	0.315	-0.315
14	0.063	0.158	0.316	-0.316
15	0.003	0.158	0.316	-0.316

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 136
Correlogram for Sarasota County Segment = SBS '

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

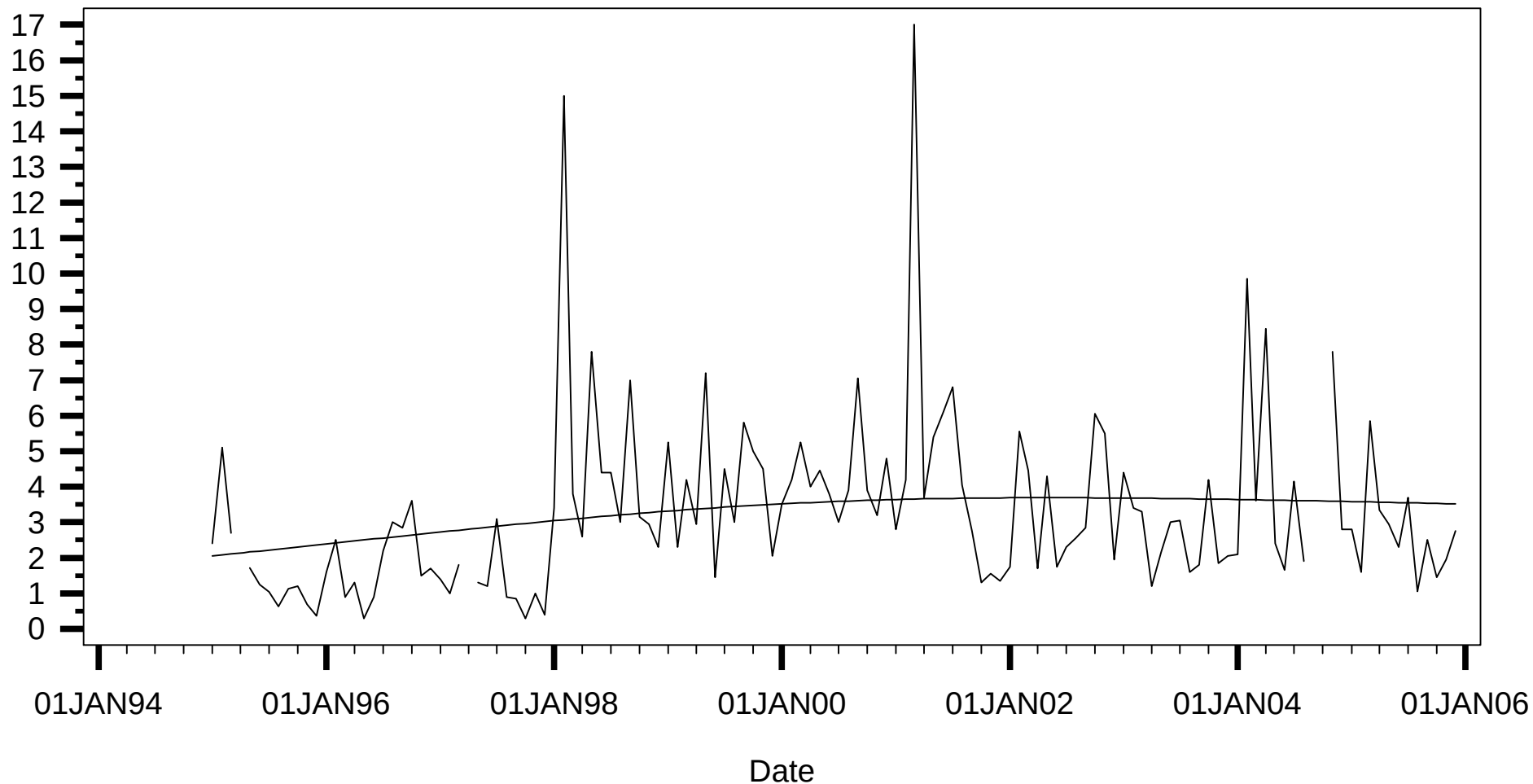
Trends Appendix - Display 137

Monthly Data Time Series for Turbidity

Sarasota County Segment= SBS

Not Adjusted for Seasonal Medians

Turbidity
(NTU)

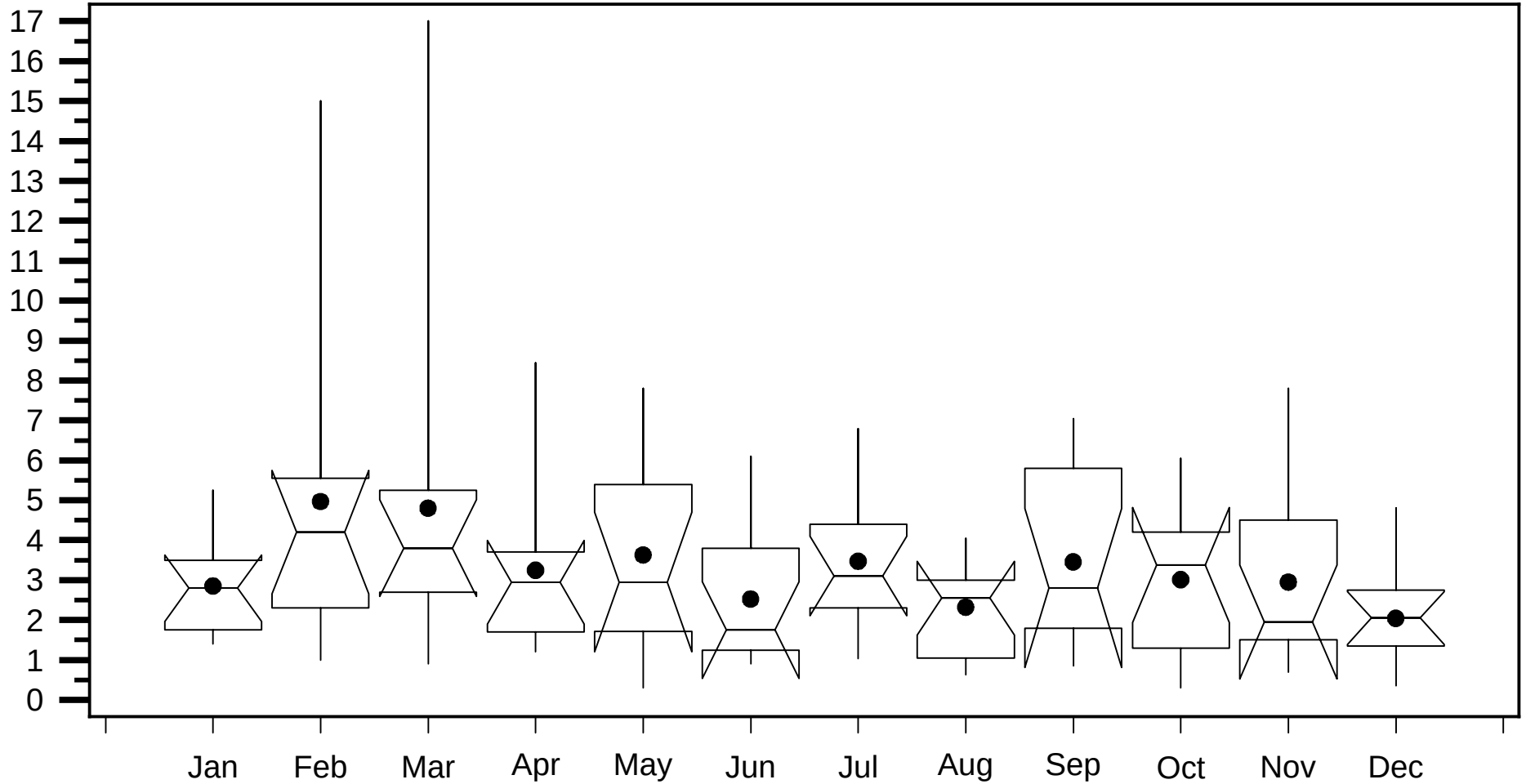


Trends Appendix - Display 138

Seasonal Univariate Statistics for Turbidity

Sarasota County Segment= SBS

Turbidity
(NTU)



Trends Appendix - Display 139

Autocorrelation Statistics for Sarasota County Segment = SBS '

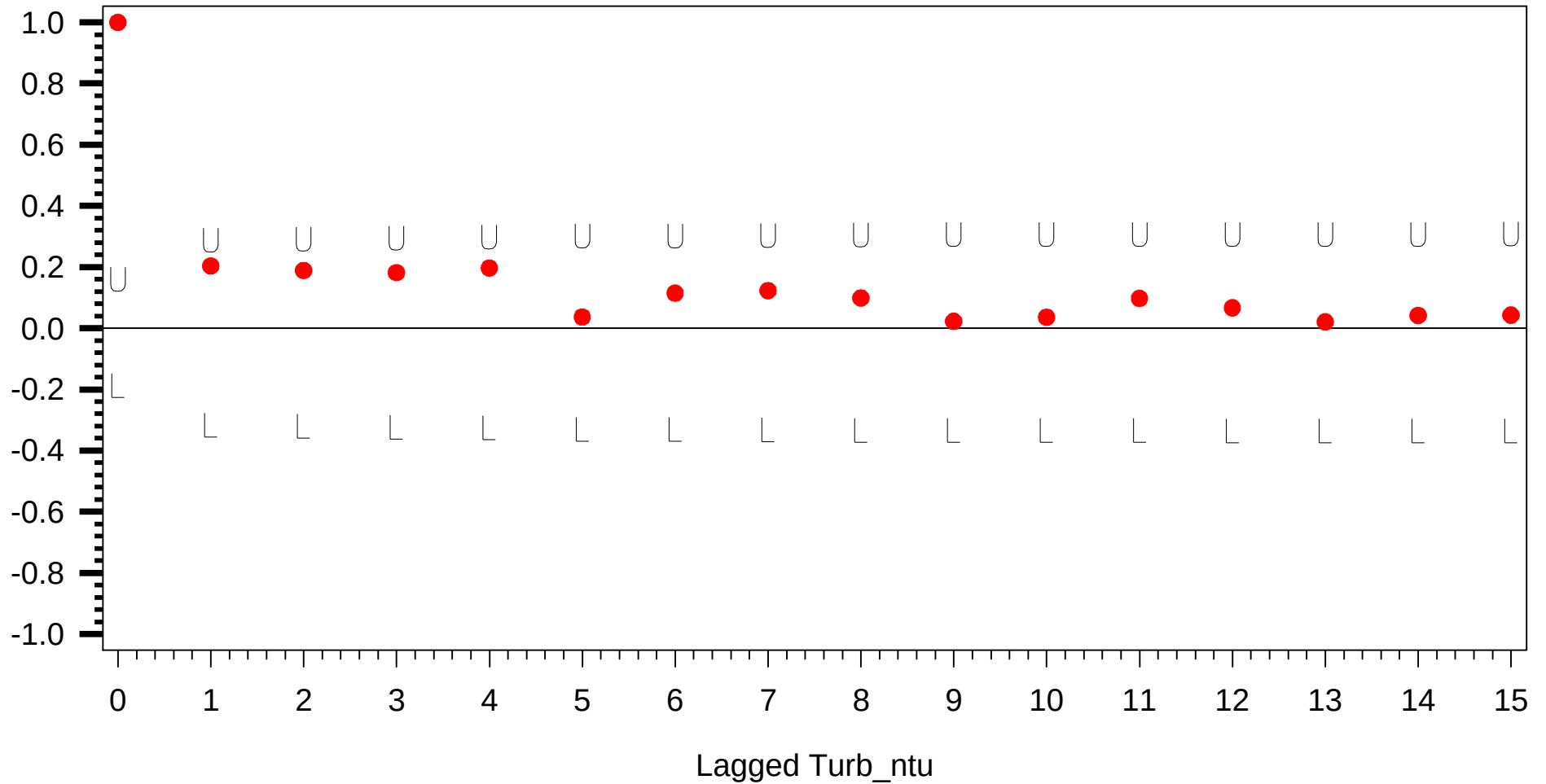
Unadjusted for Seasonal Medians

Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.204	0.151	0.302	-0.302
2	0.189	0.153	0.306	-0.306
3	0.182	0.155	0.309	-0.309
4	0.197	0.156	0.312	-0.312
5	0.037	0.158	0.316	-0.316
6	0.115	0.158	0.316	-0.316
7	0.123	0.159	0.318	-0.318
8	0.099	0.159	0.319	-0.319
9	0.023	0.160	0.320	-0.320
10	0.036	0.160	0.320	-0.320
11	0.098	0.160	0.320	-0.320
12	0.067	0.161	0.321	-0.321
13	0.021	0.161	0.321	-0.321
14	0.042	0.161	0.321	-0.321
15	0.043	0.161	0.322	-0.322

Trends Appendix - Display 140
Correlogram for Sarasota County Segment = SBS

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 141

Seasonal Kendall Tau Trend Test Statistics for Turbidity
Sarasota County Segment = SBS

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.235	.001	0.137	0.138

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 142

Seasonal Kendall Tau Trend Test Statistics for Turbidity

Sarasota County Segment = SBS

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.23511	.000675321	0.13667	0.1375

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 143

Autocorrelation Statistics for Sarasota County Segment = SBS '

Adjusted for Seasonal Median and Detrended

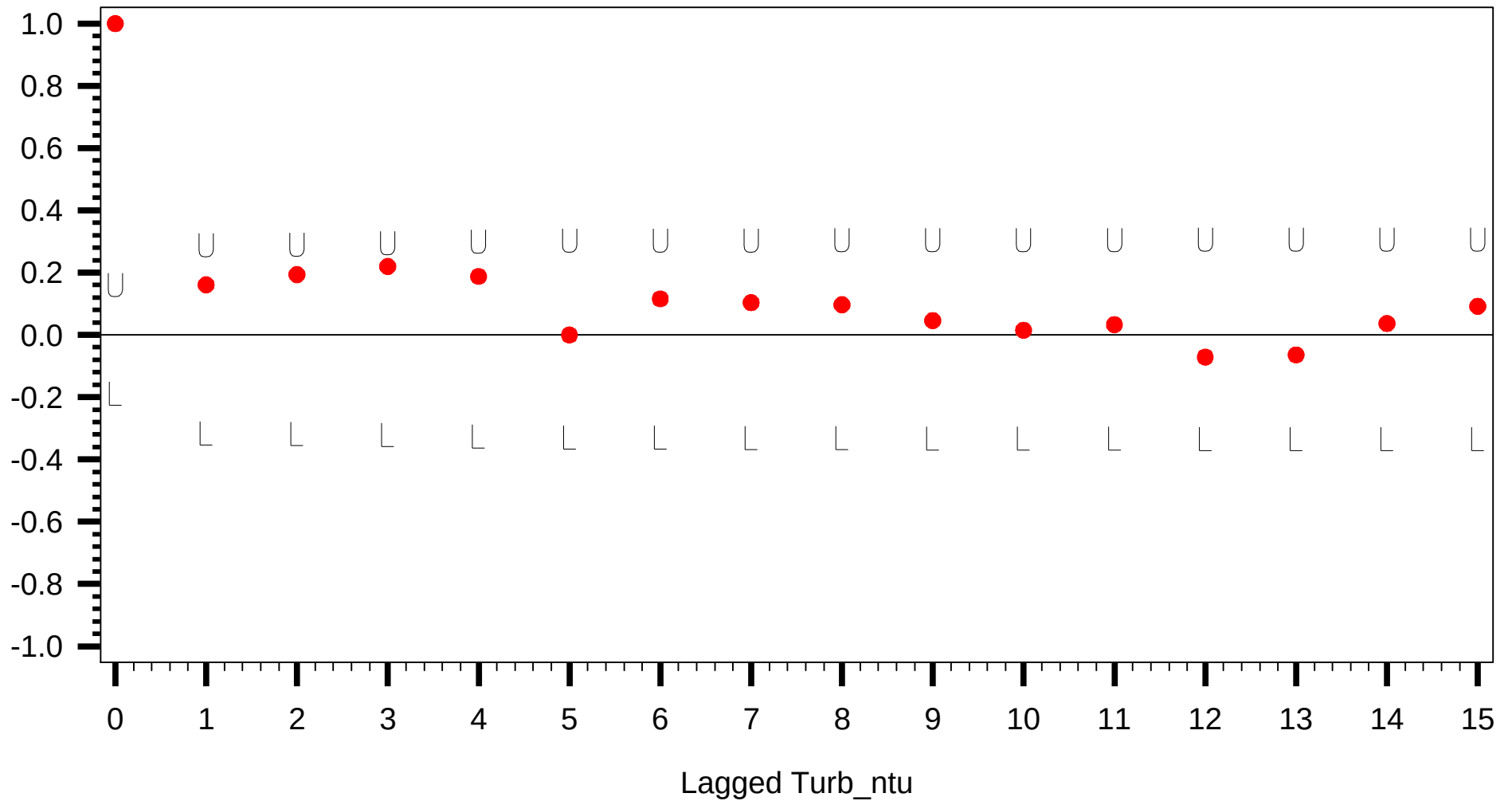
Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.161	0.151	0.302	-0.302
2	0.194	0.152	0.304	-0.304
3	0.220	0.154	0.308	-0.308
4	0.188	0.156	0.313	-0.313
5	0.000	0.158	0.316	-0.316
6	0.116	0.158	0.316	-0.316
7	0.104	0.159	0.317	-0.317
8	0.097	0.159	0.318	-0.318
9	0.046	0.160	0.319	-0.319
10	0.015	0.160	0.319	-0.319
11	0.033	0.160	0.319	-0.319
12	-0.071	0.160	0.320	-0.320
13	-0.064	0.160	0.320	-0.320
14	0.037	0.160	0.320	-0.320
15	0.092	0.160	0.320	-0.320

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 144
Correlogram for Sarasota County Segment = SBS '

Correlation

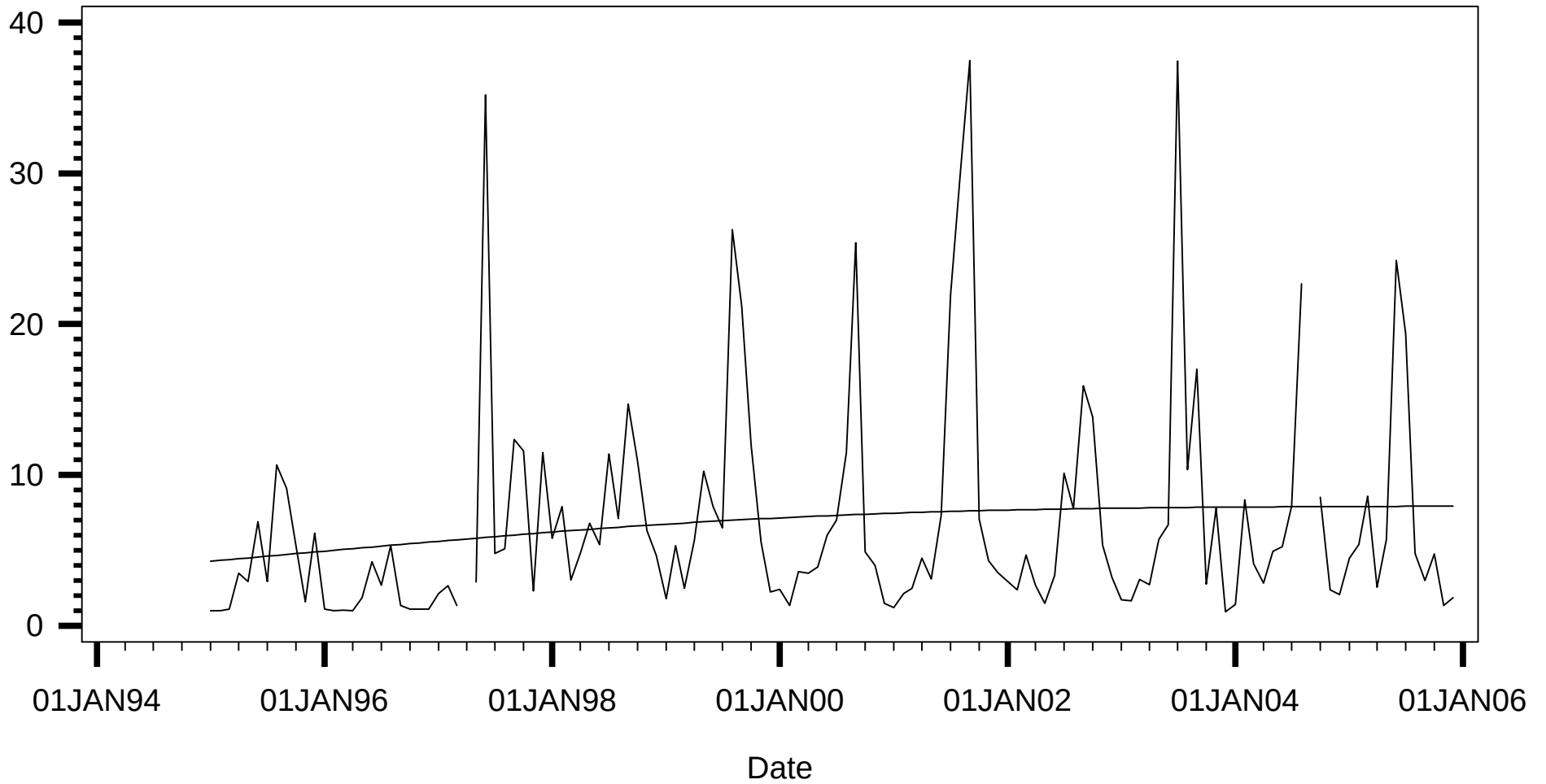
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 145
Monthly Data Time Series for CHLA_C
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

CHLA_C
(ug/l)

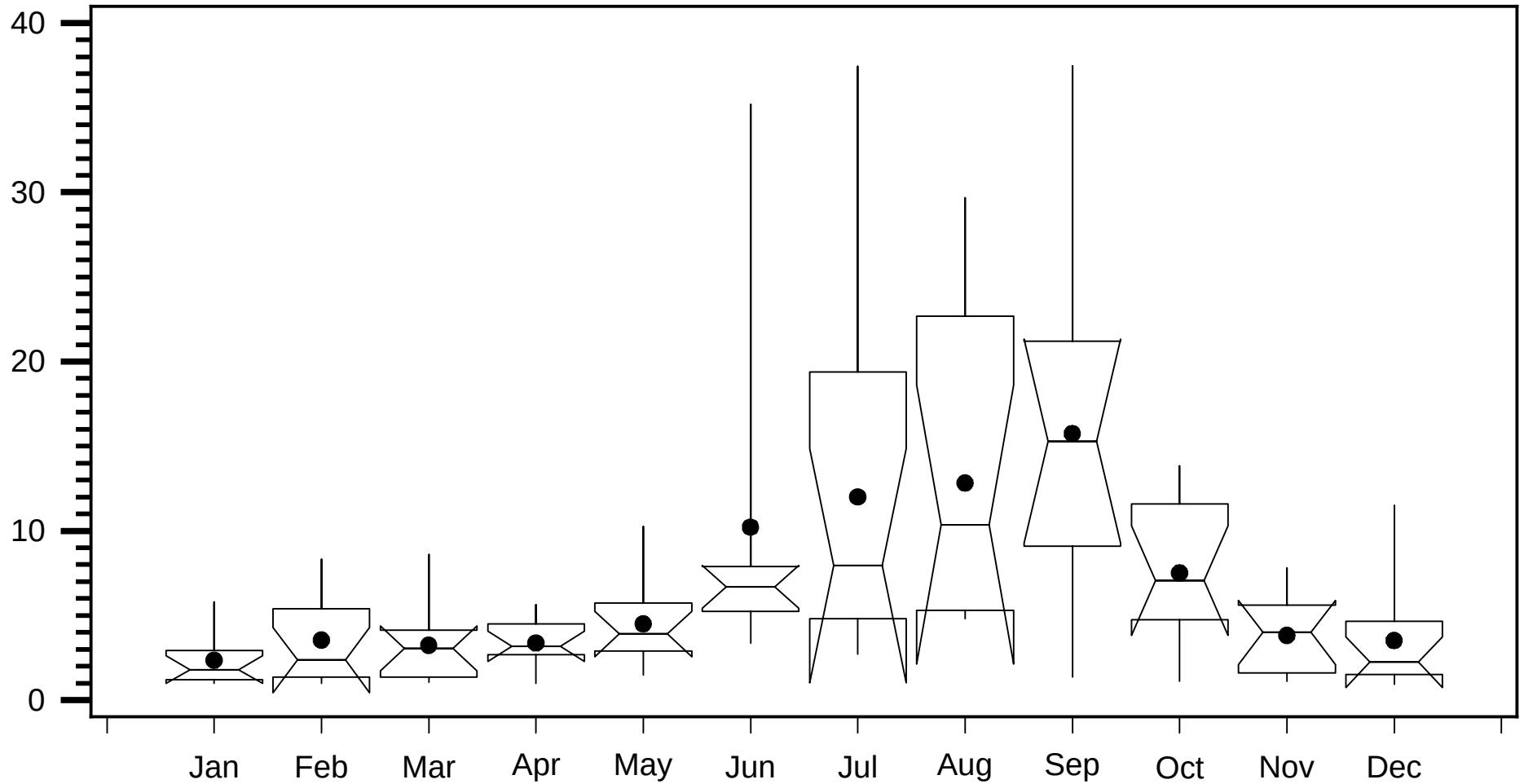


Trends Appendix - Display 146

Seasonal Univariate Statistics for CHLA_C

Sarasota County Segment= RBN

CHLA_C
(ug/l)

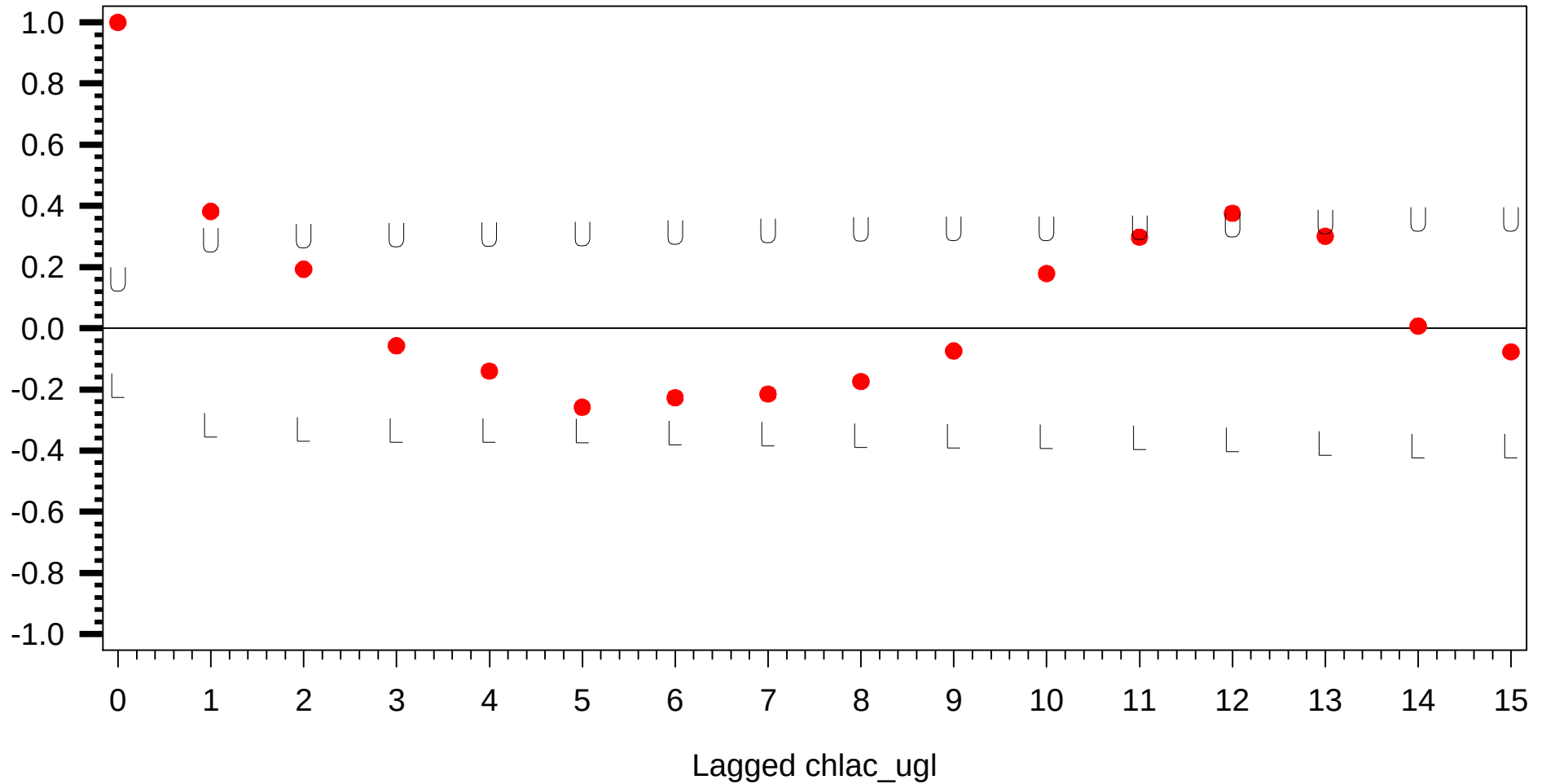


Lagged chlac_uql	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.382	0.151	0.302	-0.302
2	0.193	0.158	0.316	-0.316
3	-0.057	0.160	0.319	-0.319
4	-0.140	0.160	0.320	-0.320
5	-0.258	0.161	0.322	-0.322
6	-0.227	0.164	0.328	-0.328
7	-0.215	0.166	0.332	-0.332
8	-0.174	0.168	0.337	-0.337
9	-0.074	0.170	0.339	-0.339
10	0.179	0.170	0.340	-0.340
11	0.298	0.171	0.343	-0.343
12	0.376	0.175	0.351	-0.351
13	0.301	0.181	0.362	-0.362
14	0.007	0.185	0.370	-0.370
15	-0.077	0.185	0.370	-0.370

Trends Appendix - Display 148
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 149

Seasonal Kendall Tau Trend Test Statistics for CHLA_C
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.178	.009	0.165	0.233

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 150

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.17813	.00945532	0.16452	0.23333

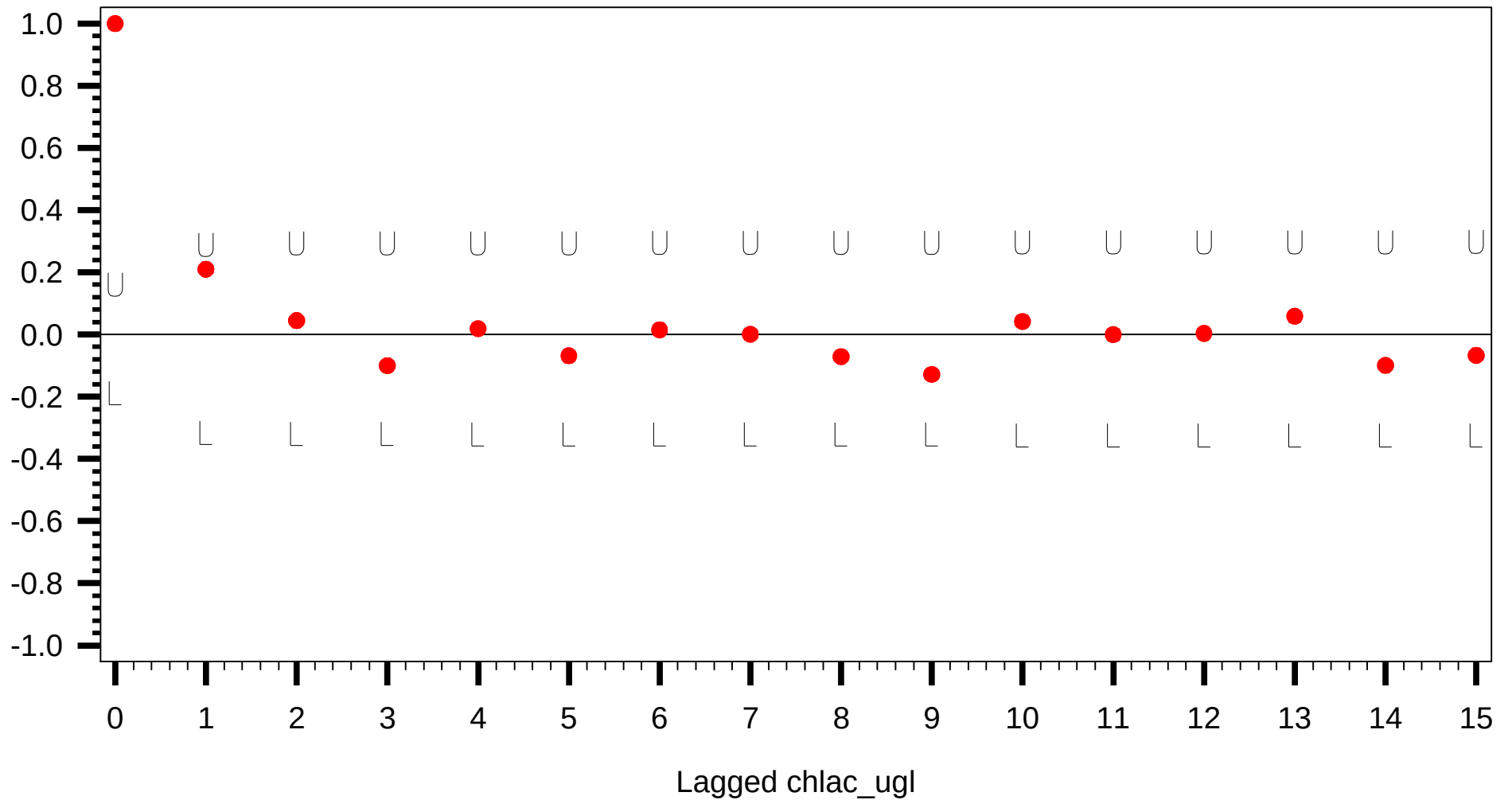
U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 152
Correlogram for Sarasota County Segment = RBN '

Correlation

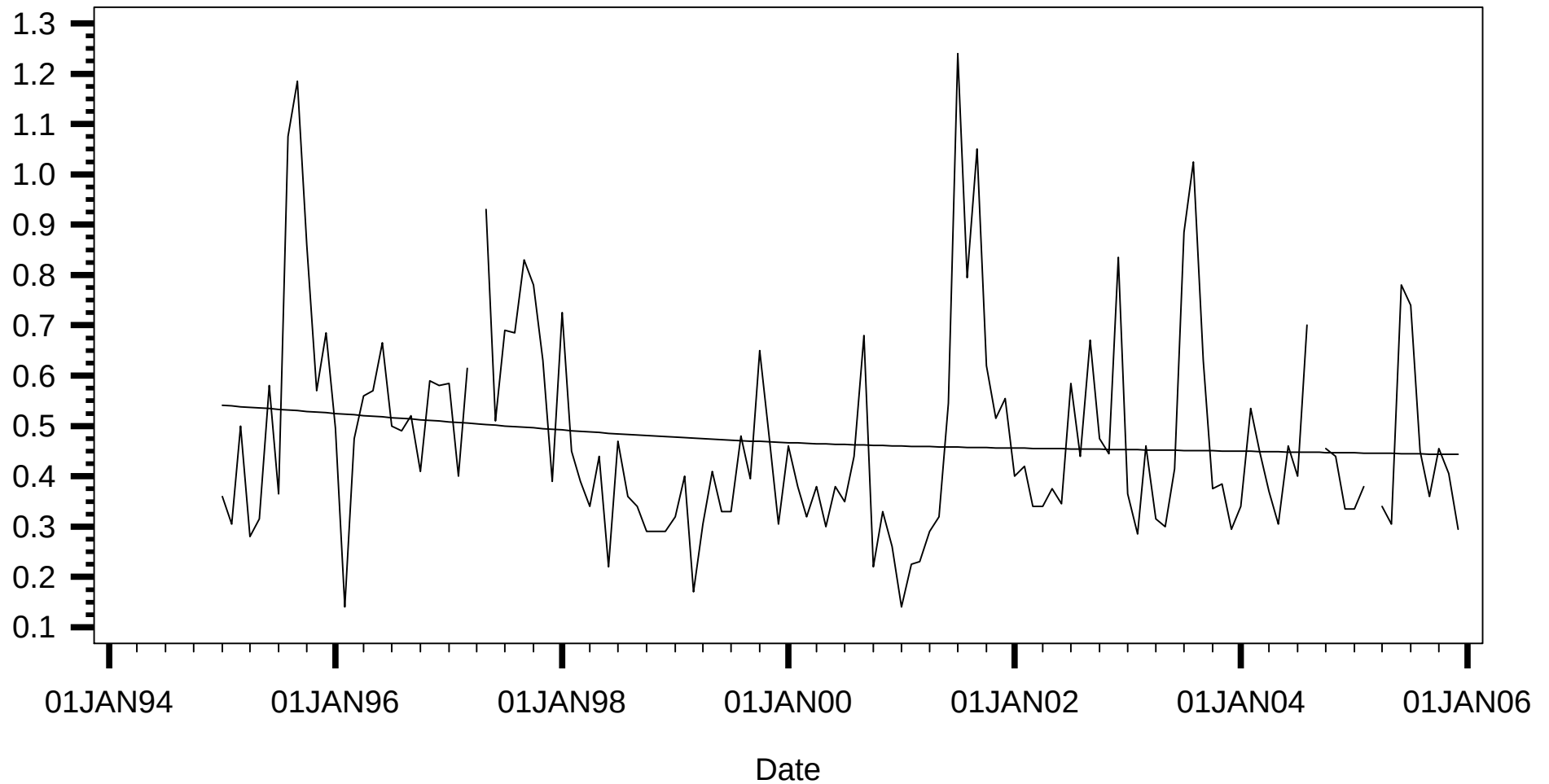
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 153
Monthly Data Time Series for TN
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

TN
(mg/l)

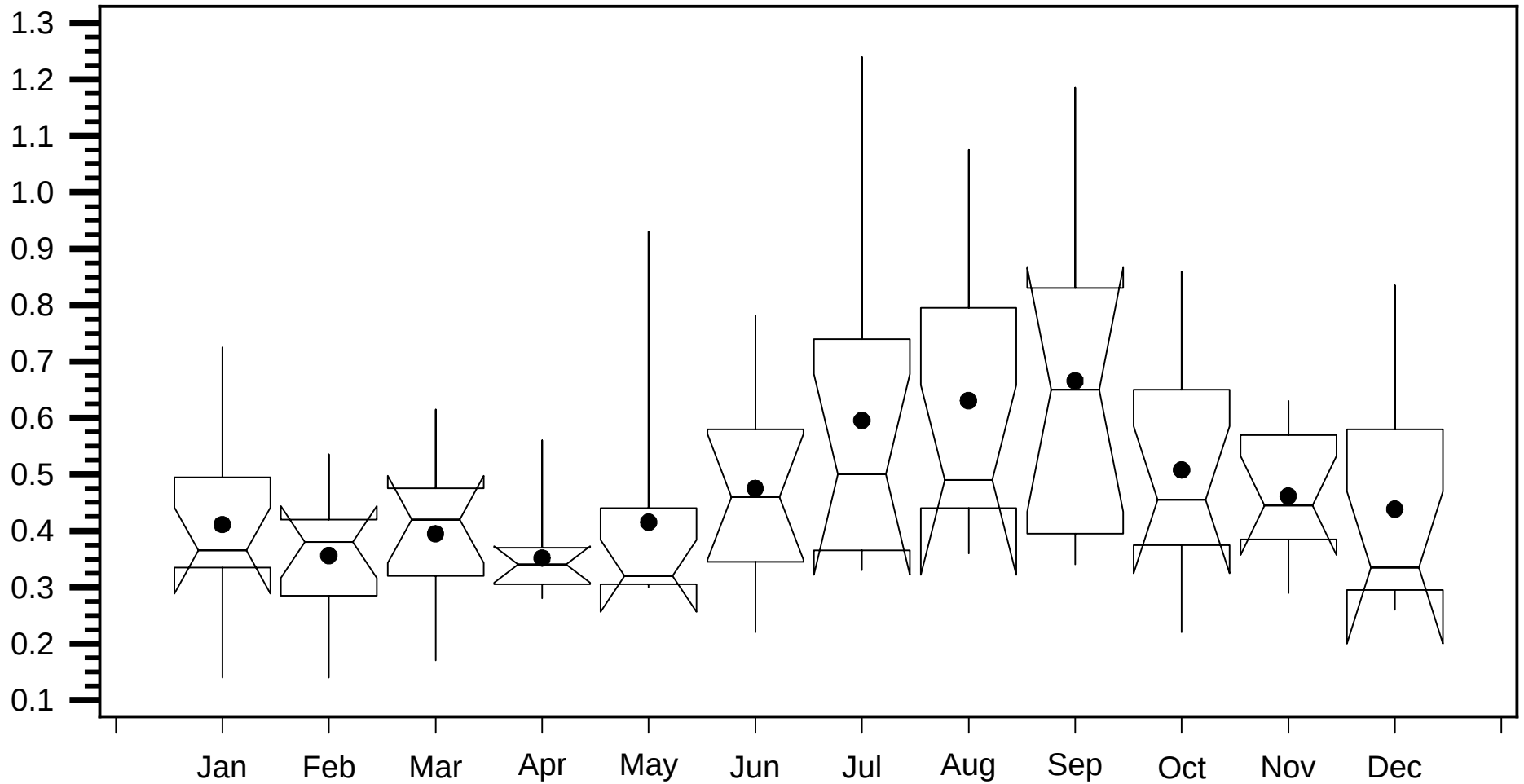


Trends Appendix - Display 154

Seasonal Univariate Statistics for TN

Sarasota County Segment= RBN

TN
(mg/l)



Trends Appendix - Display 155

Autocorrelation Statistics for Sarasota County Segment = RBN'

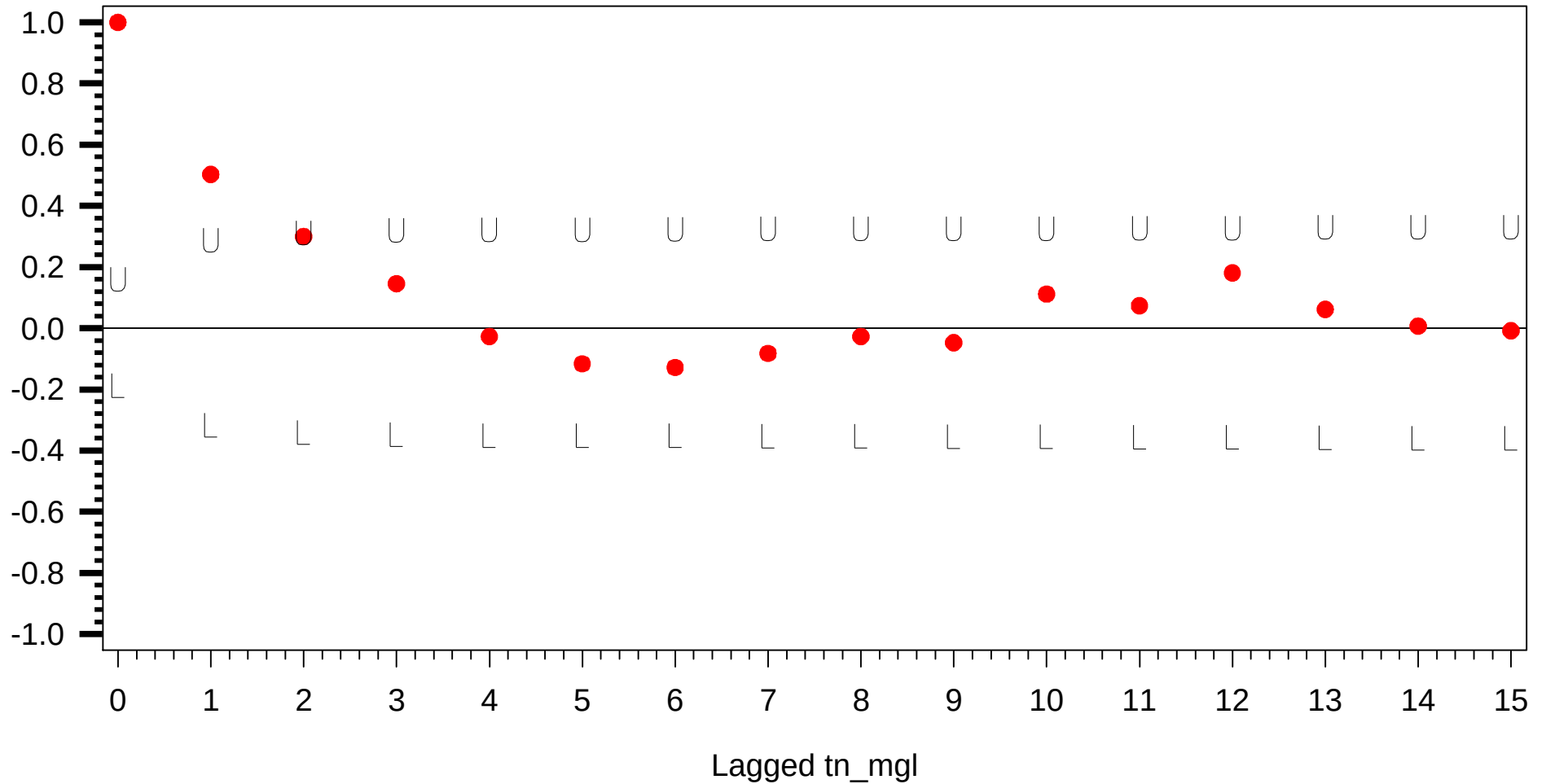
Unadjusted for Seasonal Medians

Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.503	0.151	0.302	-0.302
2	0.300	0.163	0.326	-0.326
3	0.146	0.167	0.334	-0.334
4	-0.027	0.168	0.336	-0.336
5	-0.116	0.168	0.336	-0.336
6	-0.128	0.169	0.337	-0.337
7	-0.082	0.169	0.339	-0.339
8	-0.027	0.170	0.339	-0.339
9	-0.047	0.170	0.340	-0.340
10	0.112	0.170	0.340	-0.340
11	0.074	0.170	0.341	-0.341
12	0.181	0.171	0.341	-0.341
13	0.062	0.172	0.344	-0.344
14	0.007	0.172	0.345	-0.345
15	-0.008	0.172	0.345	-0.345

Trends Appendix - Display 156
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 157

Seasonal Kendall Tau Trend Test Statistics for TN
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.143	0.038	0.172	-.009

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 158

Seasonal Kendall Tau Trend Test Statistics for TN

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.14286	0.038492	0.17162	-.00854167

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 159

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

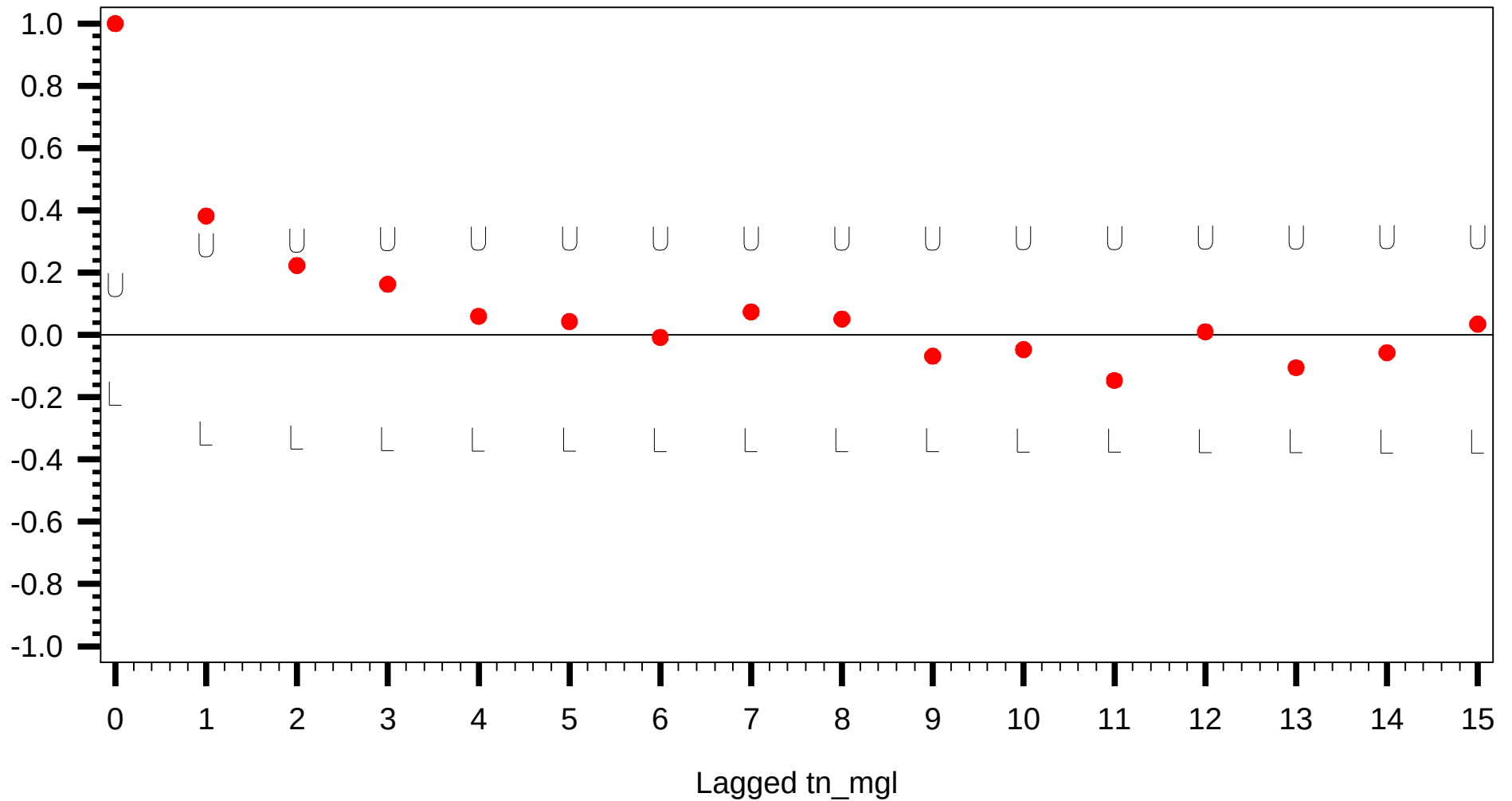
Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.382	0.151	0.302	-0.302
2	0.223	0.158	0.316	-0.316
3	0.163	0.160	0.321	-0.321
4	0.060	0.162	0.323	-0.323
5	0.043	0.162	0.323	-0.323
6	-0.008	0.162	0.324	-0.324
7	0.074	0.162	0.324	-0.324
8	0.051	0.162	0.324	-0.324
9	-0.068	0.162	0.324	-0.324
10	-0.047	0.162	0.325	-0.325
11	-0.146	0.162	0.325	-0.325
12	0.010	0.163	0.327	-0.327
13	-0.105	0.163	0.327	-0.327
14	-0.057	0.164	0.328	-0.328
15	0.035	0.164	0.328	-0.328

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 160
Correlogram for Sarasota County Segment = RBN'

Correlation

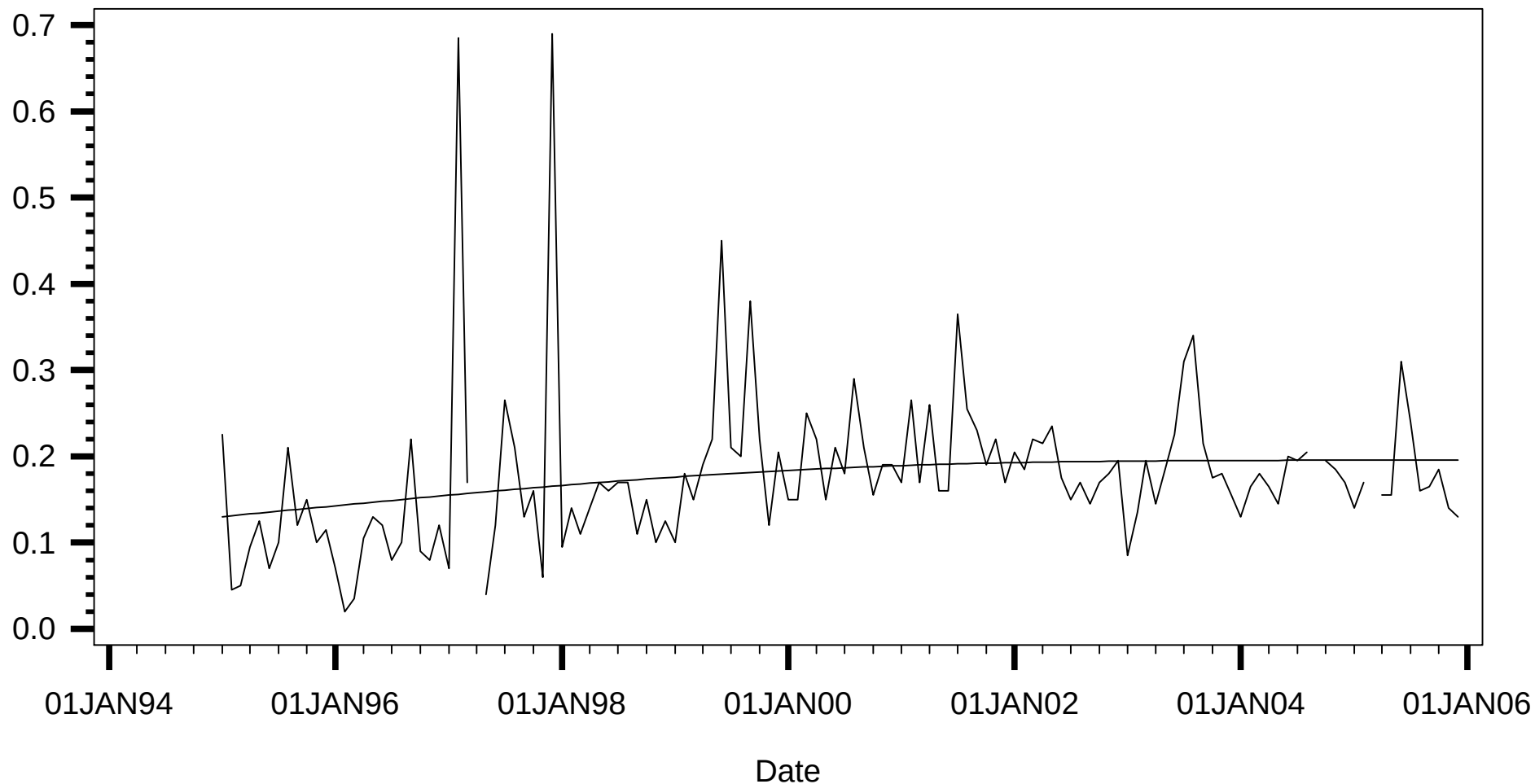
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 161
Monthly Data Time Series for TP
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

TP
(mg/l)

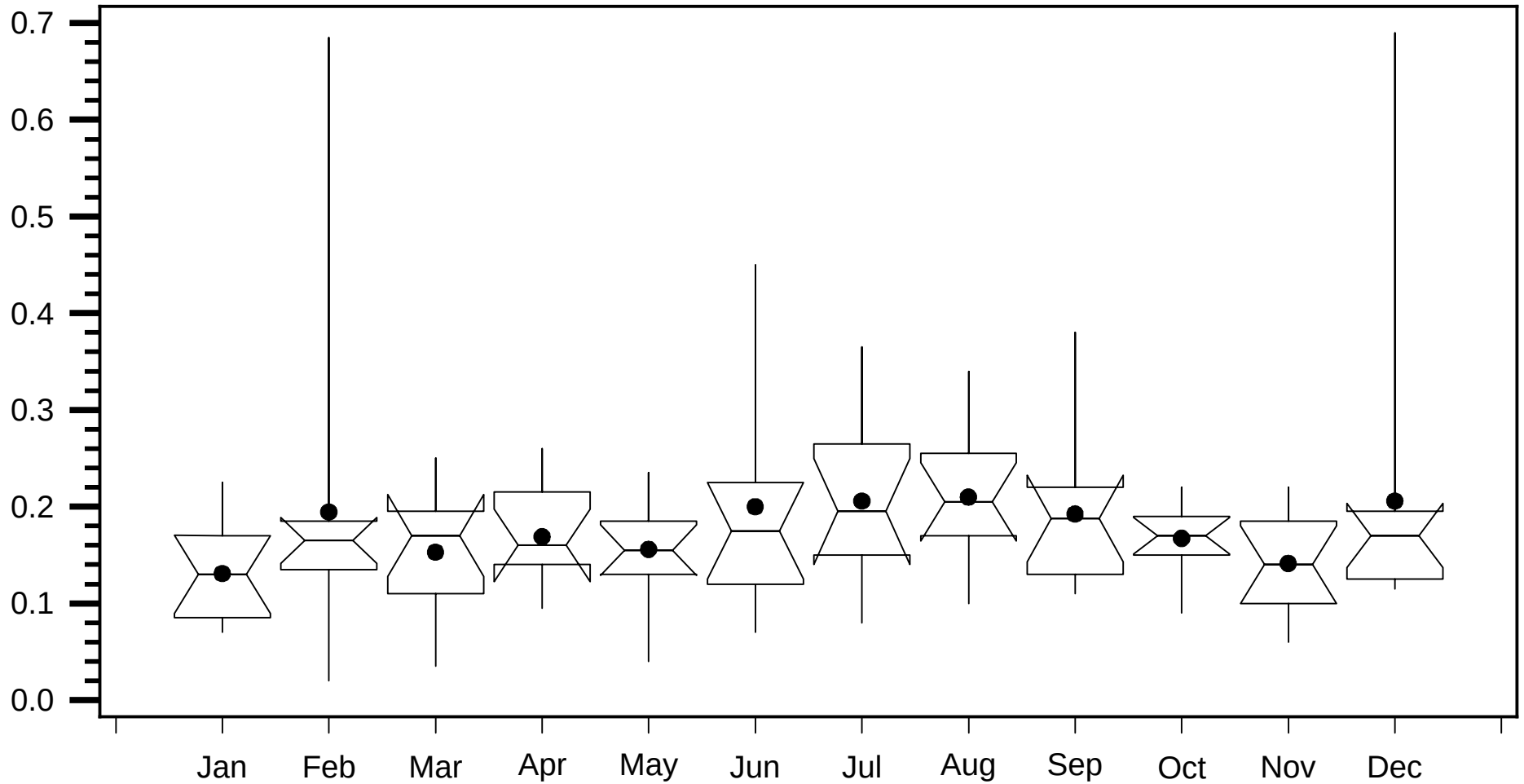


Trends Appendix - Display 162

Seasonal Univariate Statistics for TP

Sarasota County Segment= RBN

TP
(mg/l)



Trends Appendix - Display 163

Autocorrelation Statistics for Sarasota County Segment = RBN'

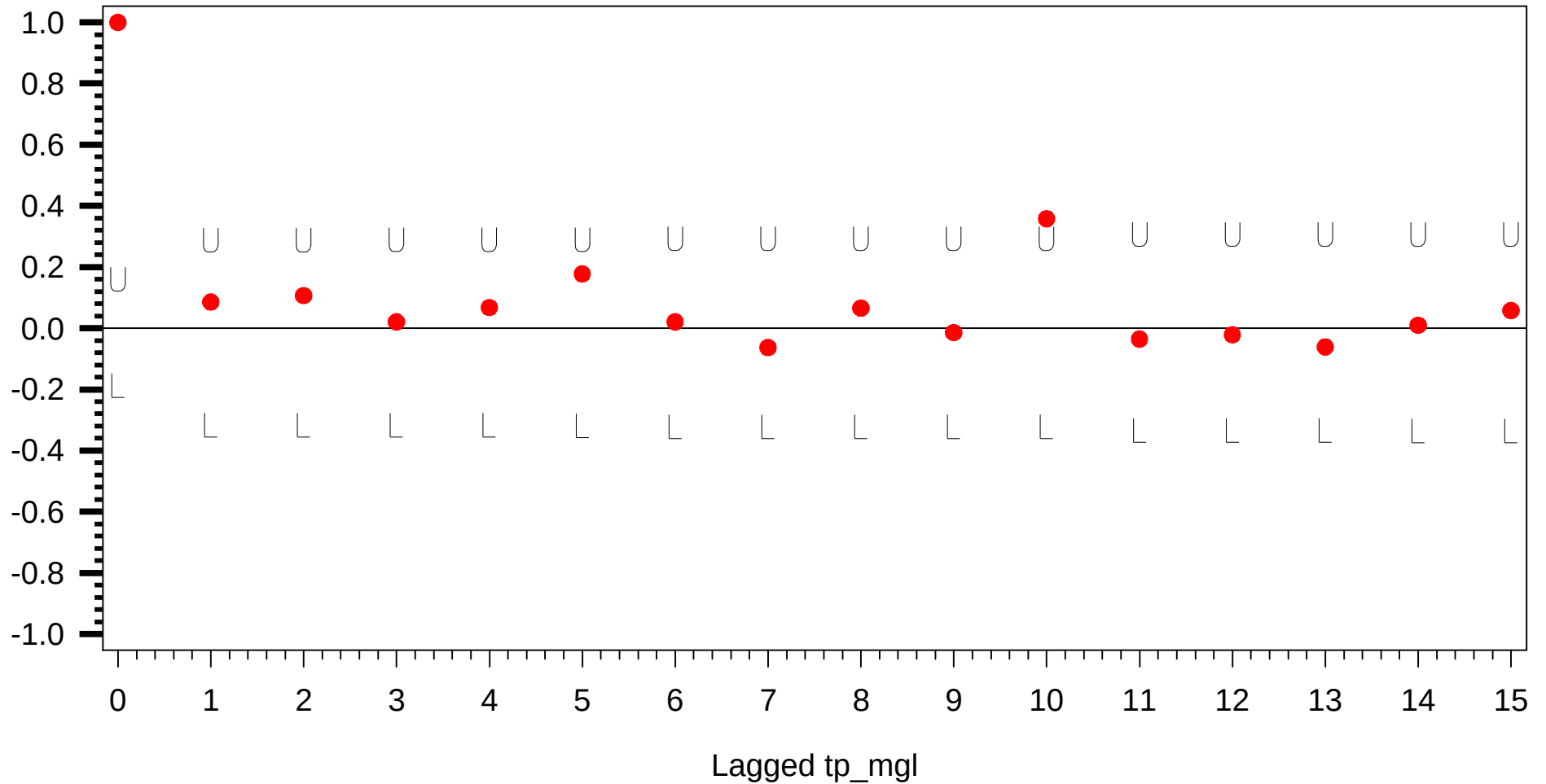
Unadjusted for Seasonal Medians

Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.086	0.151	0.302	-0.302
2	0.107	0.151	0.302	-0.302
3	0.021	0.152	0.303	-0.303
4	0.068	0.152	0.303	-0.303
5	0.178	0.152	0.304	-0.304
6	0.021	0.154	0.307	-0.307
7	-0.063	0.154	0.307	-0.307
8	0.066	0.154	0.307	-0.307
9	-0.014	0.154	0.308	-0.308
10	0.358	0.154	0.308	-0.308
11	-0.035	0.160	0.320	-0.320
12	-0.021	0.160	0.320	-0.320
13	-0.061	0.160	0.320	-0.320
14	0.010	0.160	0.321	-0.321
15	0.058	0.160	0.321	-0.321

Trends Appendix - Display 164
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 165

Seasonal Kendall Tau Trend Test Statistics for TP
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.314	0	0.037	.007

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 166

Seasonal Kendall Tau Trend Test Statistics for TP

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.31429	.000004768	0.036971	.00666667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 167

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

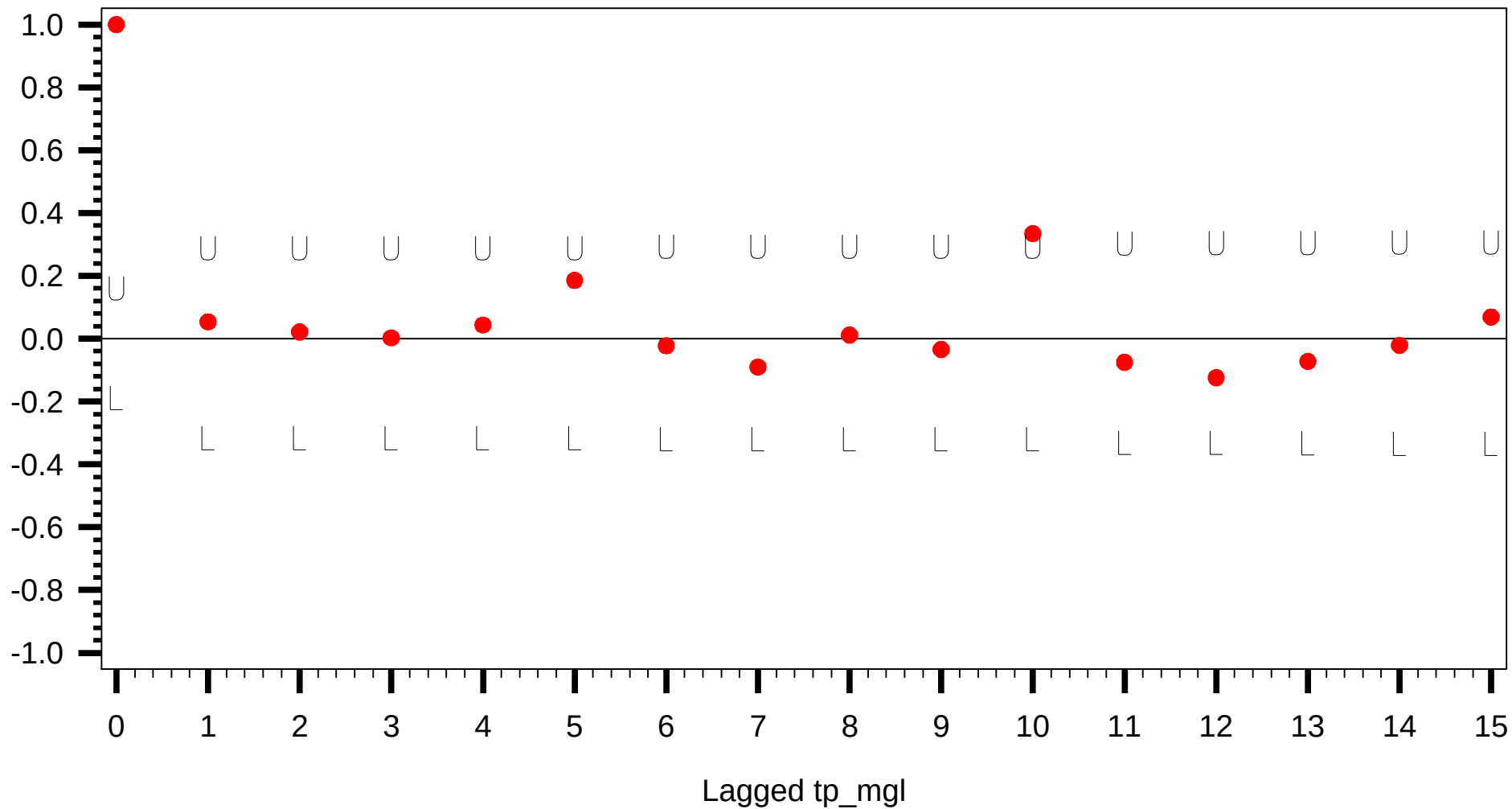
Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.054	0.151	0.302	-0.302
2	0.022	0.151	0.302	-0.302
3	0.003	0.151	0.302	-0.302
4	0.044	0.151	0.302	-0.302
5	0.186	0.151	0.302	-0.302
6	-0.022	0.153	0.306	-0.306
7	-0.090	0.153	0.306	-0.306
8	0.012	0.153	0.306	-0.306
9	-0.034	0.153	0.306	-0.306
10	0.335	0.153	0.306	-0.306
11	-0.075	0.159	0.317	-0.317
12	-0.124	0.159	0.318	-0.318
13	-0.072	0.160	0.319	-0.319
14	-0.021	0.160	0.320	-0.320
15	0.069	0.160	0.320	-0.320

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 168
Correlogram for Sarasota County Segment = RBN'

Correlation

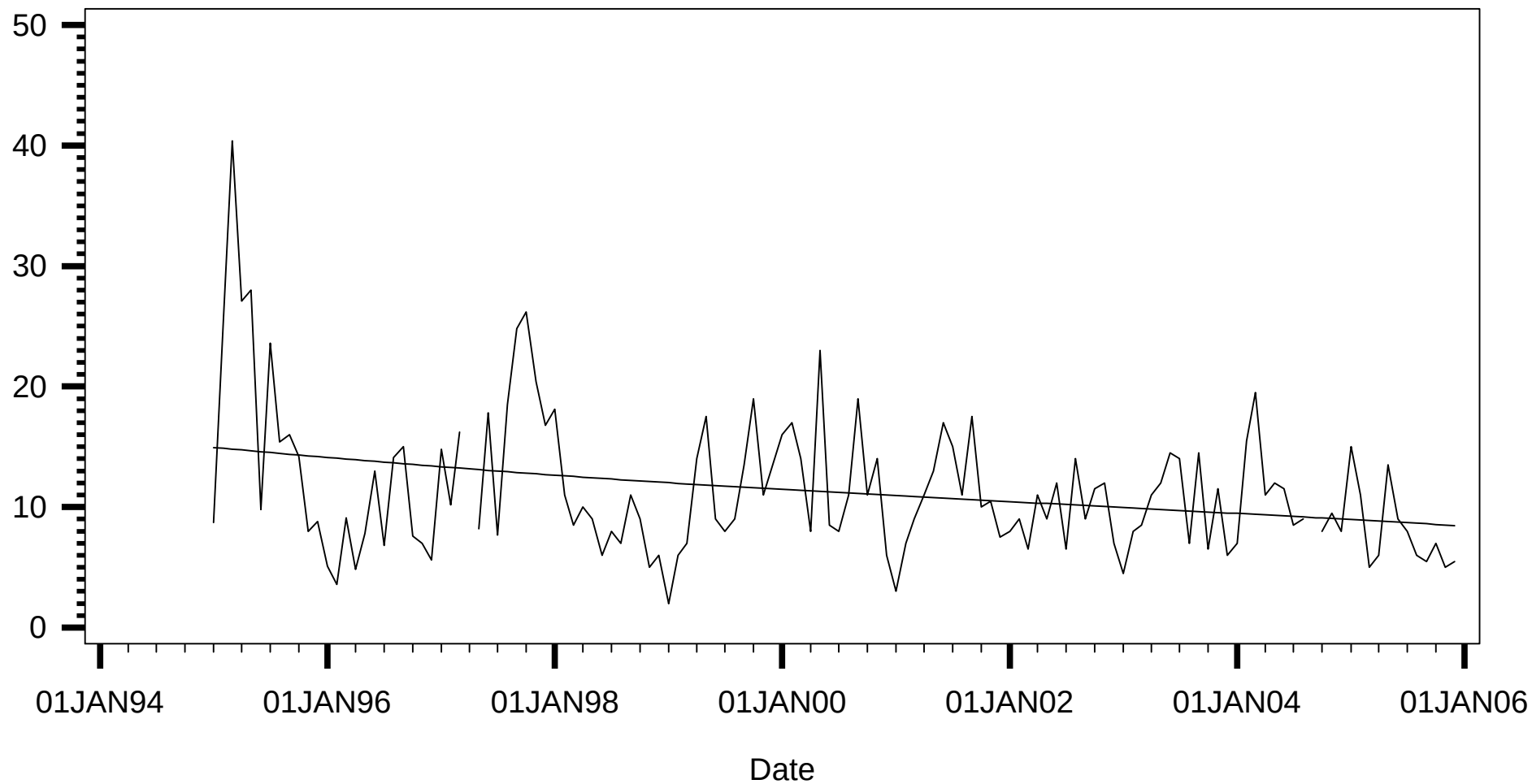
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 169
Monthly Data Time Series for TSS
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

TSS
(mg/l)

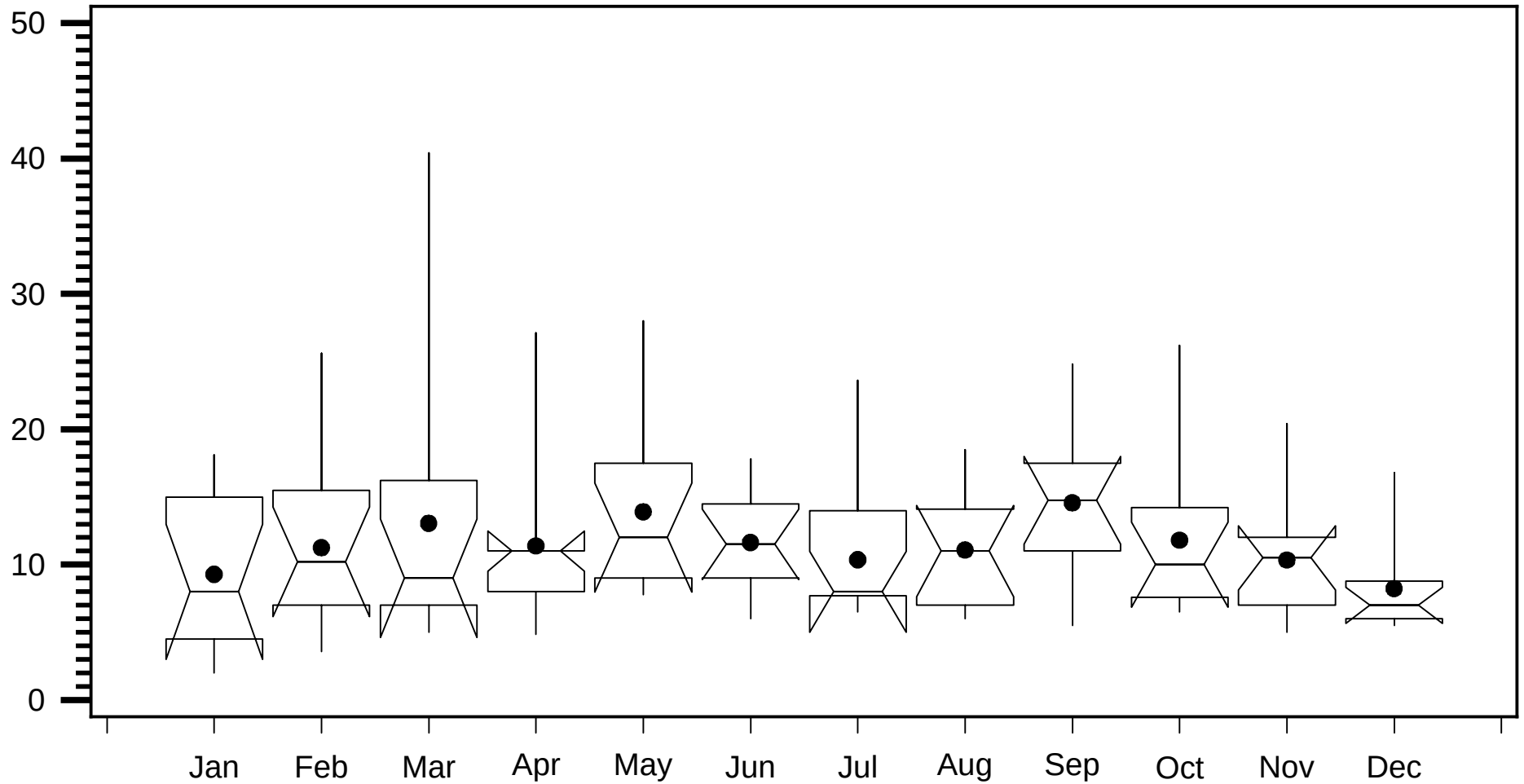


Trends Appendix - Display 170

Seasonal Univariate Statistics for TSS

Sarasota County Segment= RBN

TSS
(mg/l)



Trends Appendix - Display 171

Autocorrelation Statistics for Sarasota County Segment = RBN'

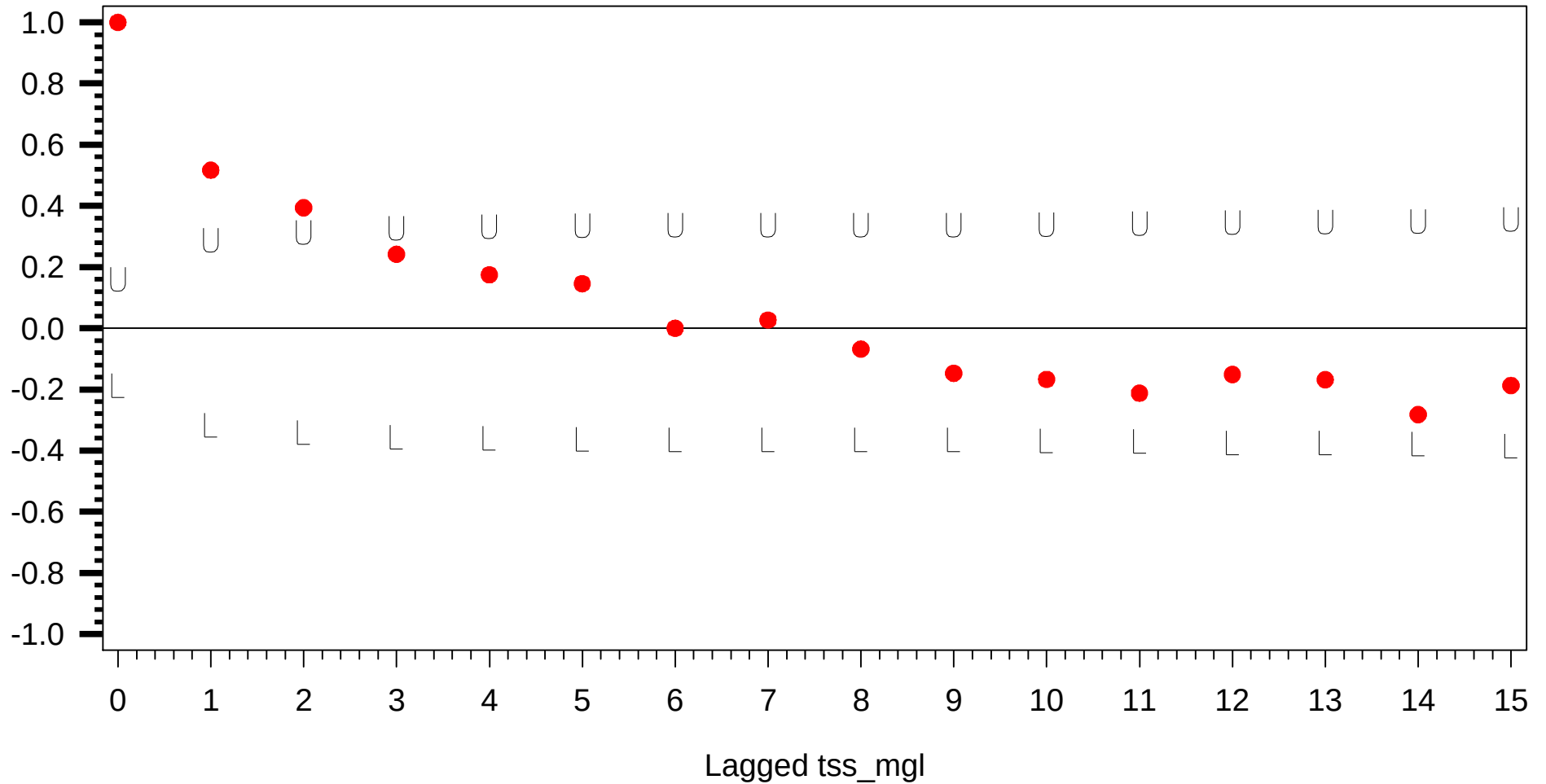
Unadjusted for Seasonal Medians

Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.517	0.151	0.302	-0.302
2	0.394	0.164	0.327	-0.327
3	0.242	0.171	0.341	-0.341
4	0.175	0.173	0.346	-0.346
5	0.146	0.175	0.349	-0.349
6	0.000	0.176	0.351	-0.351
7	0.027	0.176	0.351	-0.351
8	-0.068	0.176	0.351	-0.351
9	-0.147	0.176	0.351	-0.351
10	-0.167	0.177	0.353	-0.353
11	-0.212	0.178	0.356	-0.356
12	-0.151	0.180	0.360	-0.360
13	-0.168	0.181	0.361	-0.361
14	-0.282	0.182	0.364	-0.364
15	-0.187	0.185	0.370	-0.370

Trends Appendix - Display 172
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 173

Seasonal Kendall Tau Trend Test Statistics for TSS
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.147	0.032	0.227	-0.273

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 174

Seasonal Kendall Tau Trend Test Statistics for TSS

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.14688	0.031507	0.22651	-0.27286

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 175

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

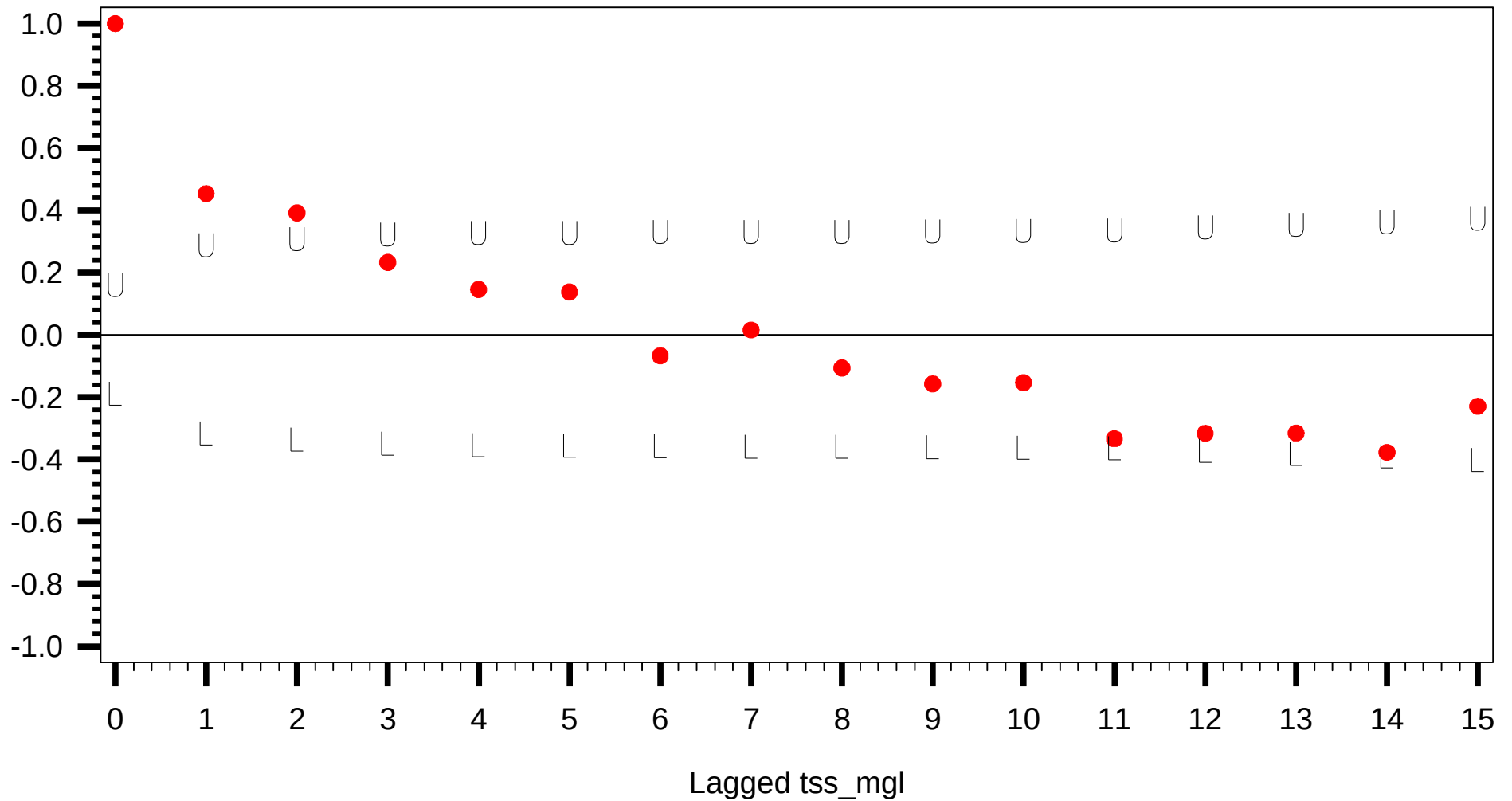
Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.454	0.151	0.302	-0.302
2	0.392	0.161	0.322	-0.322
3	0.233	0.168	0.336	-0.336
4	0.146	0.170	0.341	-0.341
5	0.138	0.171	0.342	-0.342
6	-0.067	0.172	0.344	-0.344
7	0.016	0.172	0.345	-0.345
8	-0.106	0.172	0.345	-0.345
9	-0.157	0.173	0.346	-0.346
10	-0.153	0.174	0.348	-0.348
11	-0.333	0.175	0.350	-0.350
12	-0.316	0.180	0.359	-0.359
13	-0.315	0.184	0.368	-0.368
14	-0.377	0.188	0.376	-0.376
15	-0.229	0.193	0.387	-0.387

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 176
Correlogram for Sarasota County Segment = RBN'

Correlation

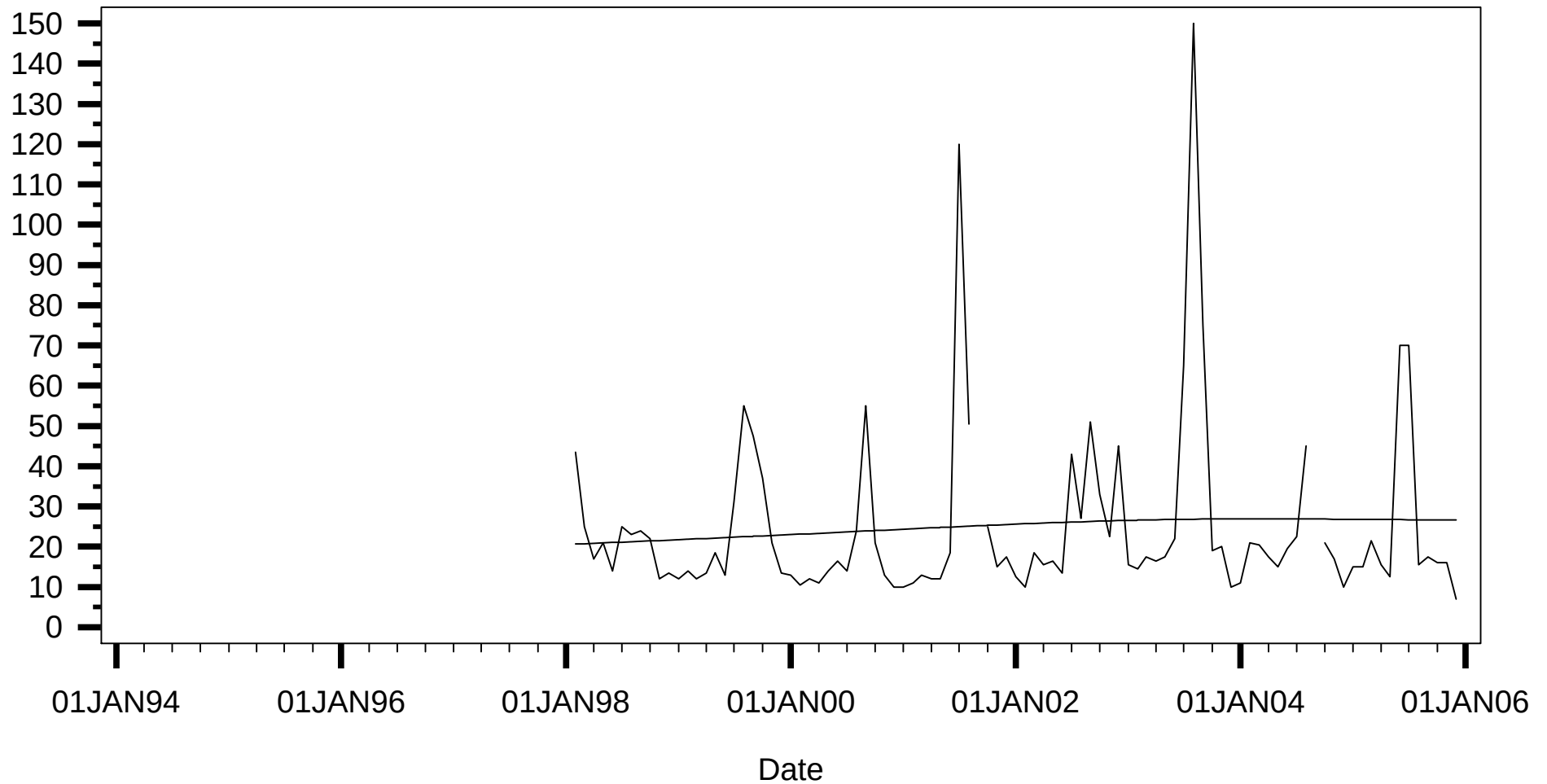
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 177
Monthly Data Time Series for Color
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

Color
(pcu)

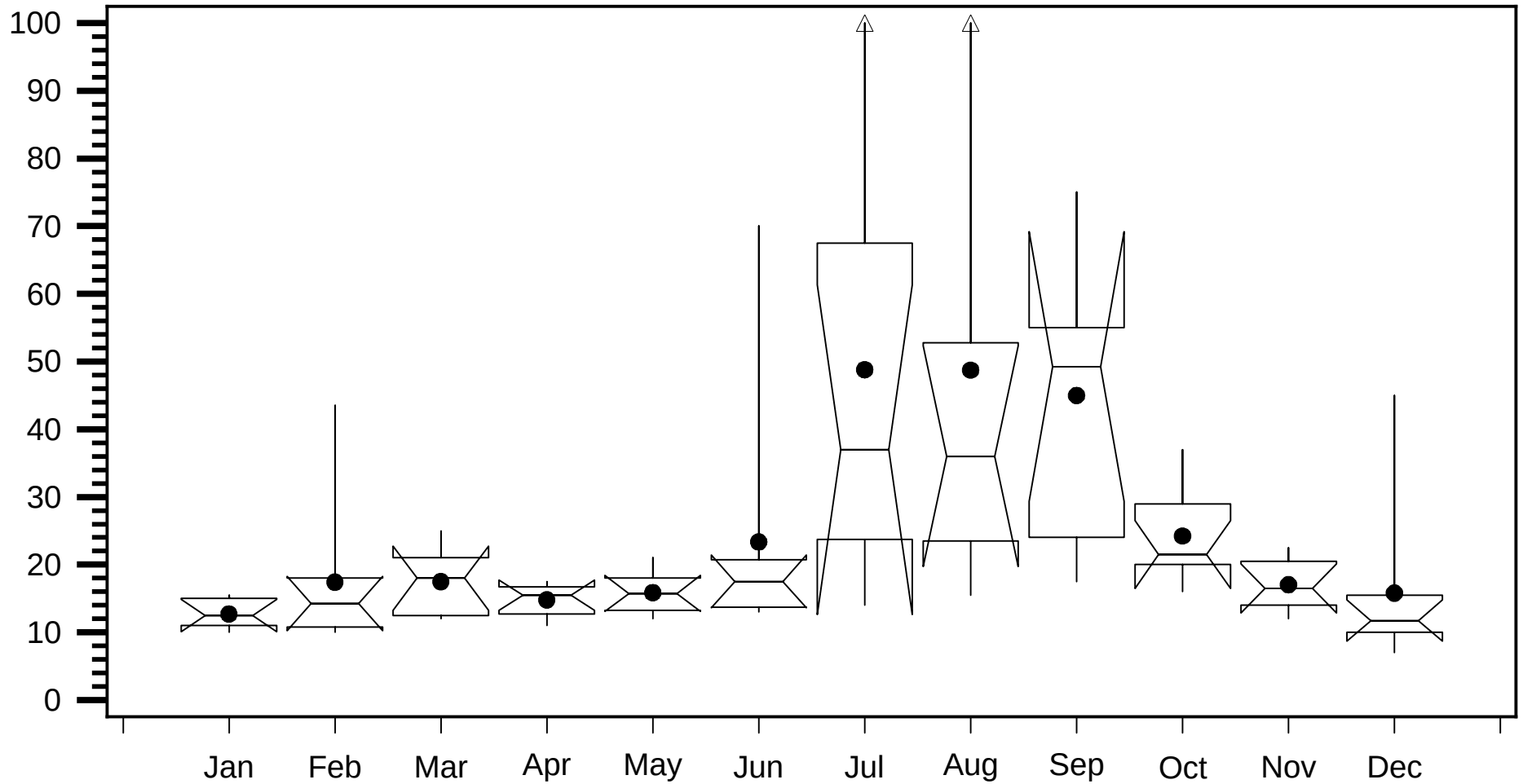


Trends Appendix - Display 178

Seasonal Univariate Statistics for Color

Sarasota County Segment= RBN

Color
(pcu)



Trends Appendix - Display 179

Autocorrelation Statistics for Sarasota County Segment = RBN'

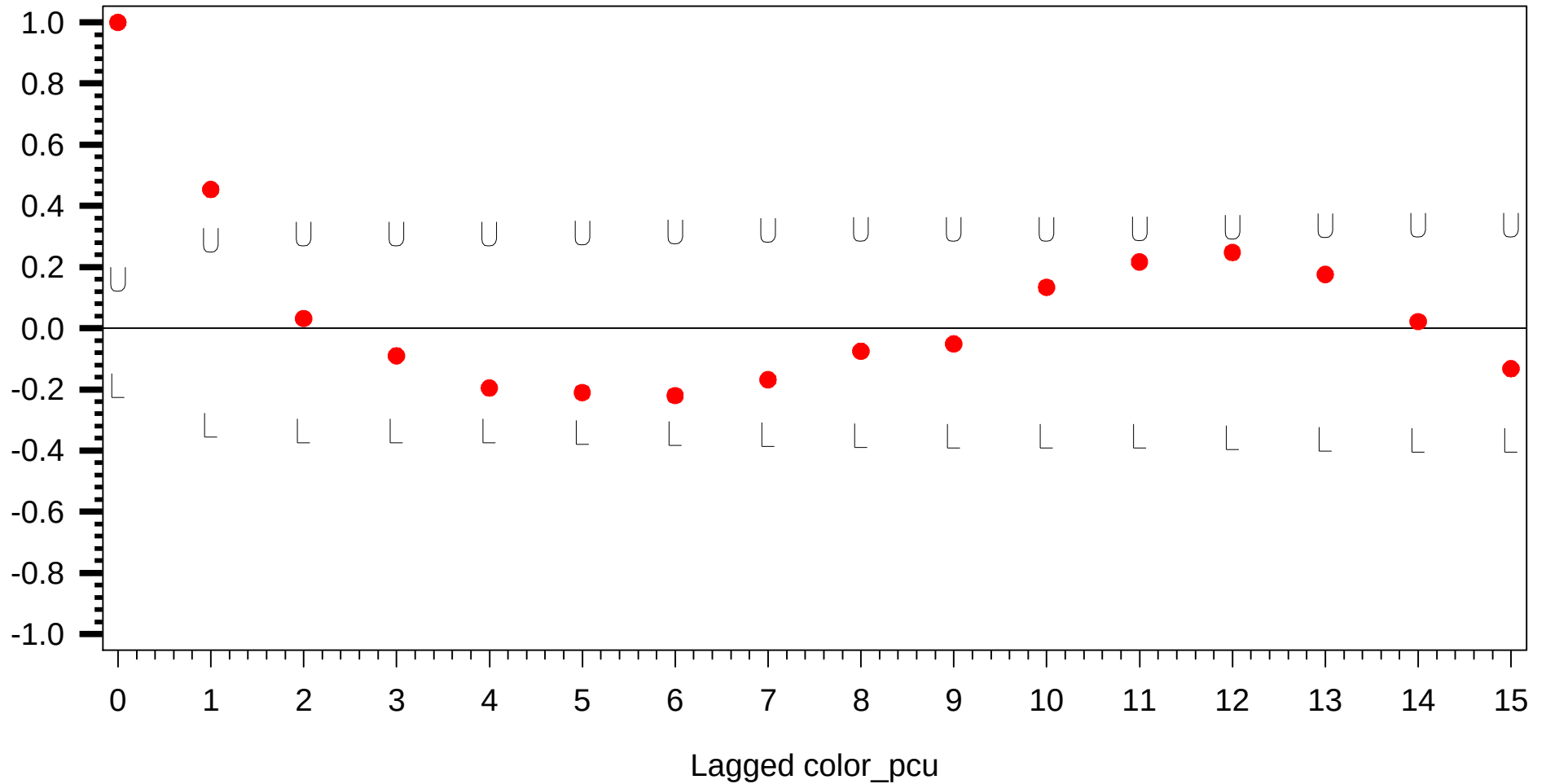
Unadjusted for Seasonal Medians

Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.454	0.151	0.302	-0.302
2	0.032	0.161	0.322	-0.322
3	-0.090	0.161	0.322	-0.322
4	-0.195	0.161	0.322	-0.322
5	-0.210	0.163	0.326	-0.326
6	-0.220	0.165	0.330	-0.330
7	-0.168	0.167	0.334	-0.334
8	-0.075	0.169	0.337	-0.337
9	-0.051	0.169	0.338	-0.338
10	0.134	0.169	0.338	-0.338
11	0.217	0.170	0.339	-0.339
12	0.248	0.172	0.344	-0.344
13	0.176	0.174	0.349	-0.349
14	0.022	0.176	0.352	-0.352
15	-0.132	0.176	0.352	-0.352

Trends Appendix - Display 180
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 181

Seasonal Kendall Tau Trend Test Statistics for Color
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.079	0.371	0.435	0.292

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 182

Seasonal Kendall Tau Trend Test Statistics for Color

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.079114	0.37054	0.43545	0.29167

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 183

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

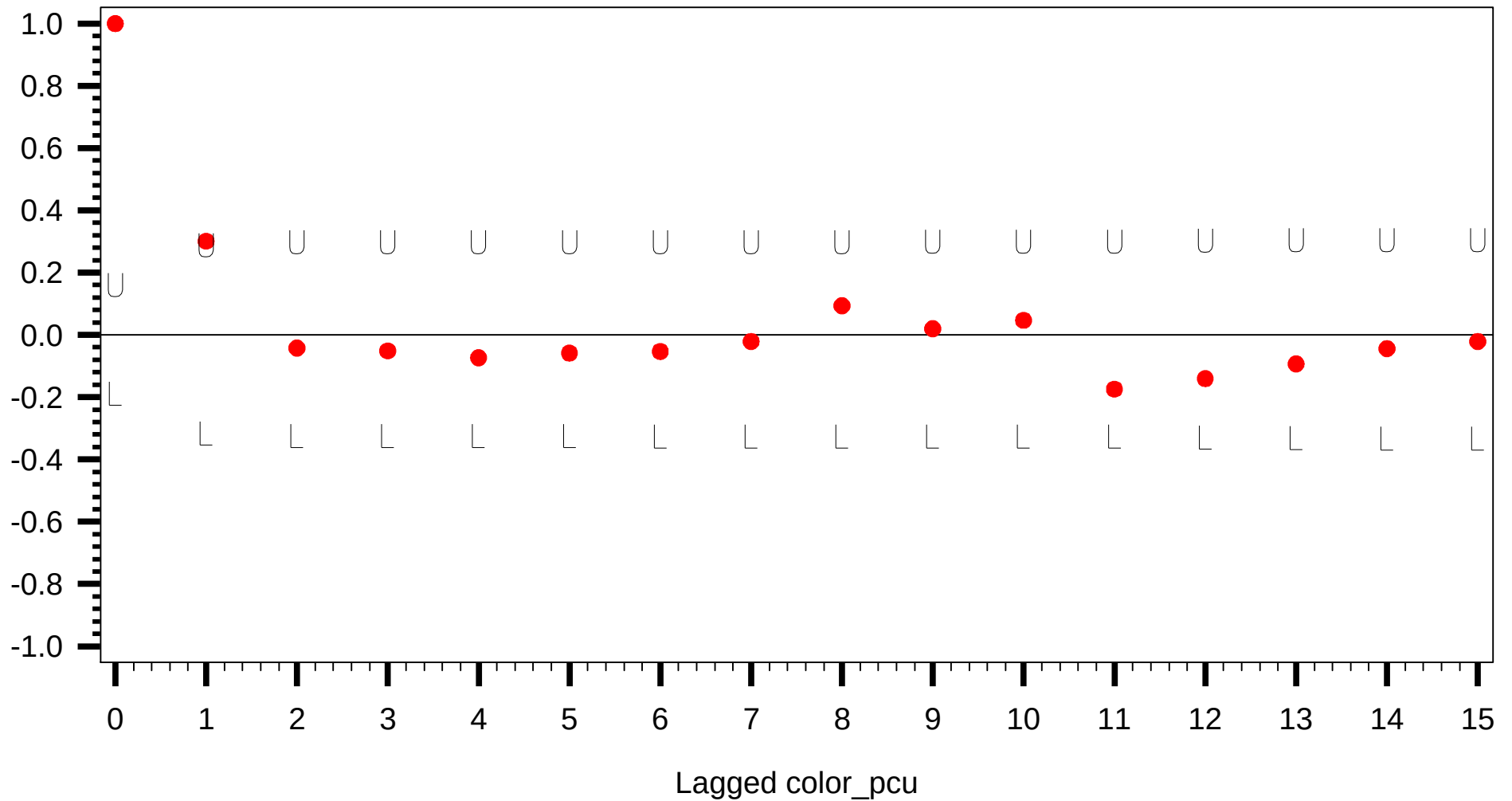
Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.301	0.151	0.302	-0.302
2	-0.042	0.155	0.311	-0.311
3	-0.051	0.155	0.311	-0.311
4	-0.073	0.155	0.311	-0.311
5	-0.058	0.156	0.311	-0.311
6	-0.053	0.156	0.312	-0.312
7	-0.021	0.156	0.312	-0.312
8	0.094	0.156	0.312	-0.312
9	0.020	0.156	0.313	-0.313
10	0.047	0.156	0.313	-0.313
11	-0.174	0.157	0.313	-0.313
12	-0.140	0.158	0.316	-0.316
13	-0.093	0.159	0.318	-0.318
14	-0.044	0.159	0.319	-0.319
15	-0.021	0.159	0.319	-0.319

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 184
Correlogram for Sarasota County Segment = RBN'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

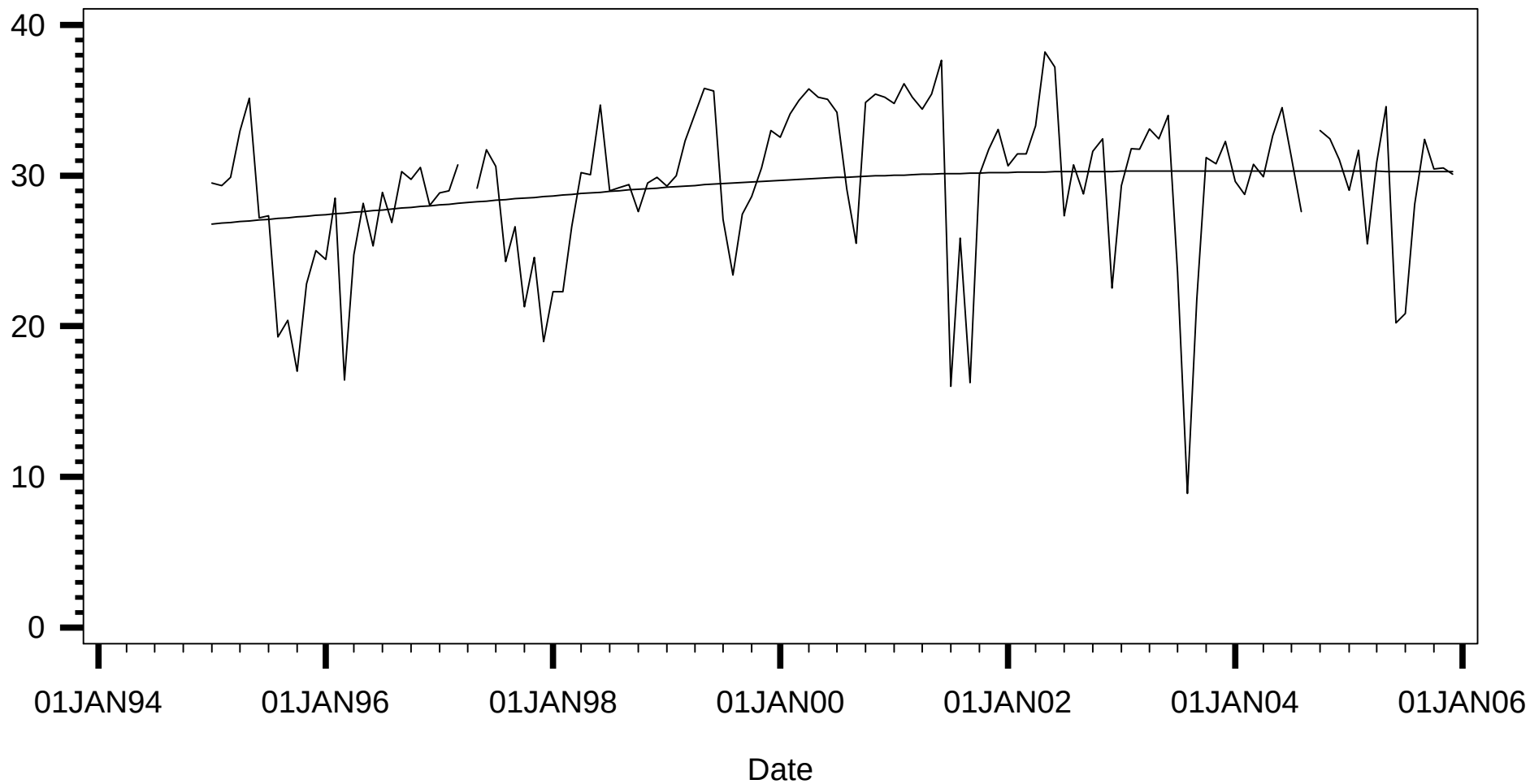
Trends Appendix - Display 185

Monthly Data Time Series for Salinity

Sarasota County Segment= RBN

Not Adjusted for Seasonal Medians

Salinity
(ppt)

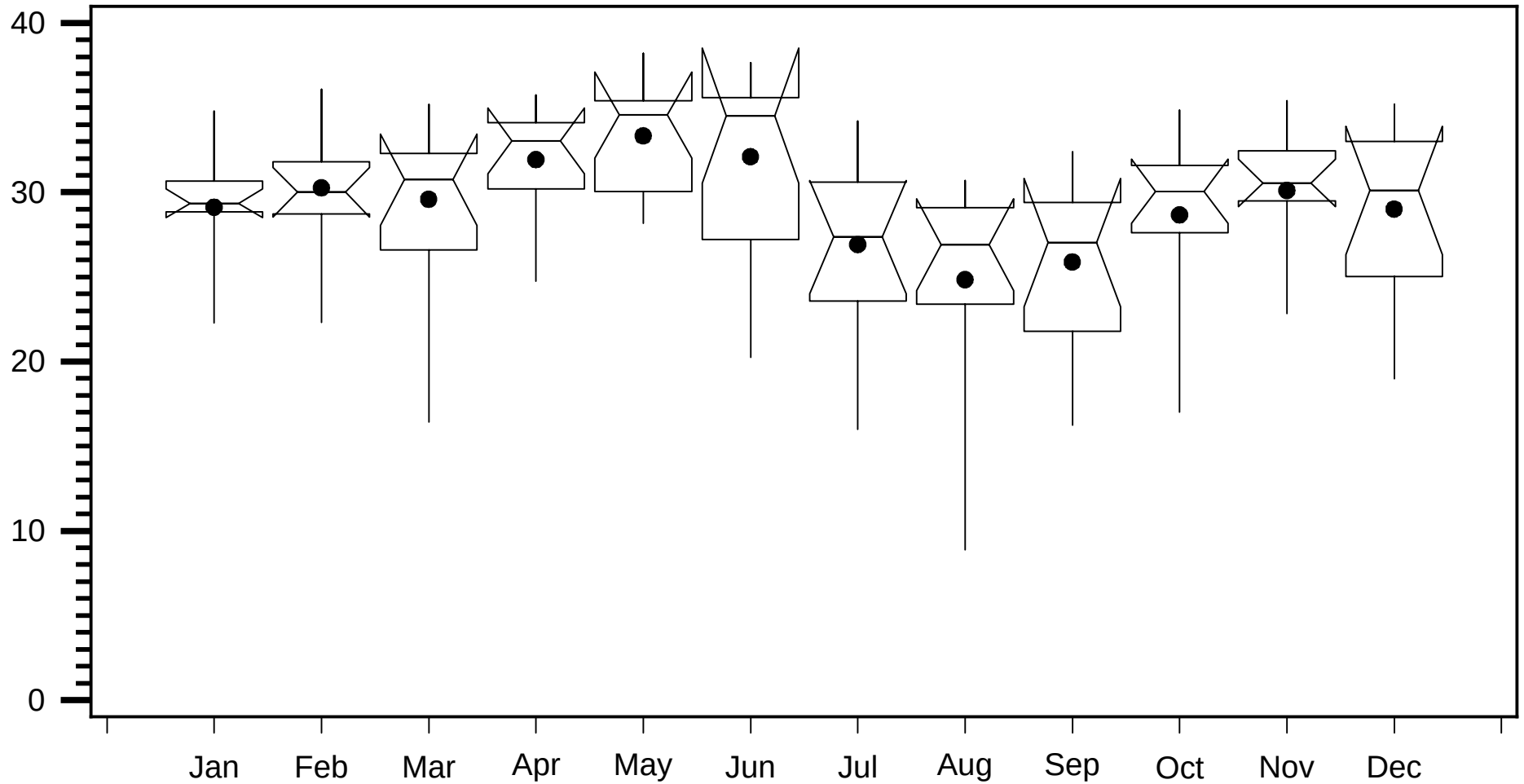


Trends Appendix - Display 186

Seasonal Univariate Statistics for Salinity

Sarasota County Segment= RBN

Salinity
(ppt)



Trends Appendix - Display 187

Autocorrelation Statistics for Sarasota County Segment = RBN'

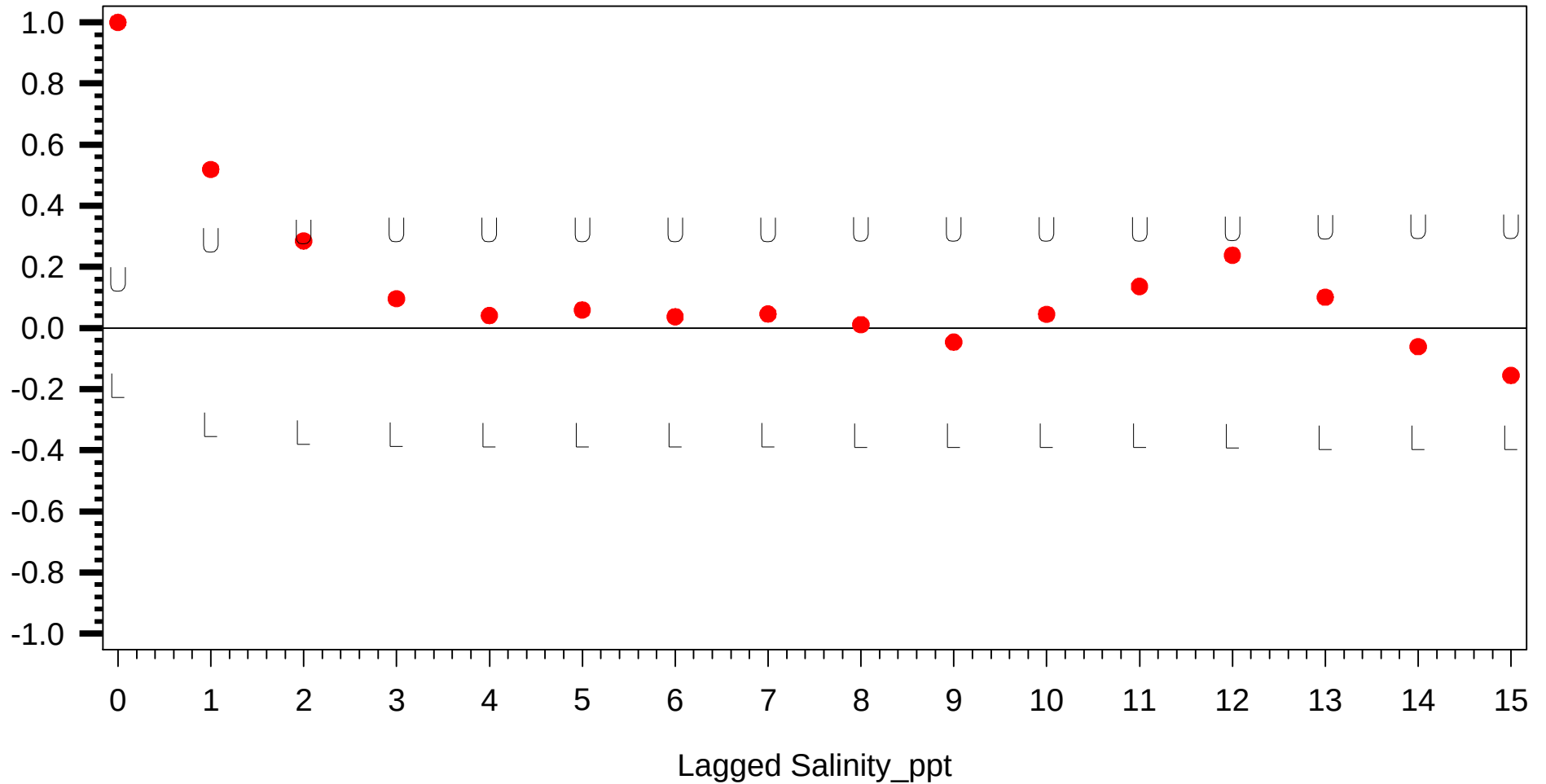
Unadjusted for Seasonal Medians

Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.519	0.151	0.302	-0.302
2	0.285	0.164	0.328	-0.328
3	0.096	0.167	0.335	-0.335
4	0.041	0.168	0.336	-0.336
5	0.059	0.168	0.336	-0.336
6	0.037	0.168	0.336	-0.336
7	0.046	0.168	0.336	-0.336
8	0.011	0.168	0.337	-0.337
9	-0.046	0.168	0.337	-0.337
10	0.045	0.168	0.337	-0.337
11	0.136	0.168	0.337	-0.337
12	0.238	0.169	0.339	-0.339
13	0.101	0.172	0.344	-0.344
14	-0.061	0.172	0.345	-0.345
15	-0.155	0.172	0.345	-0.345

Trends Appendix - Display 188
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 189

Seasonal Kendall Tau Trend Test Statistics for Salinity
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.203	.003	0.137	0.342

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 190

Seasonal Kendall Tau Trend Test Statistics for Salinity

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.20313	.00306606	0.13742	0.3425

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 191

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

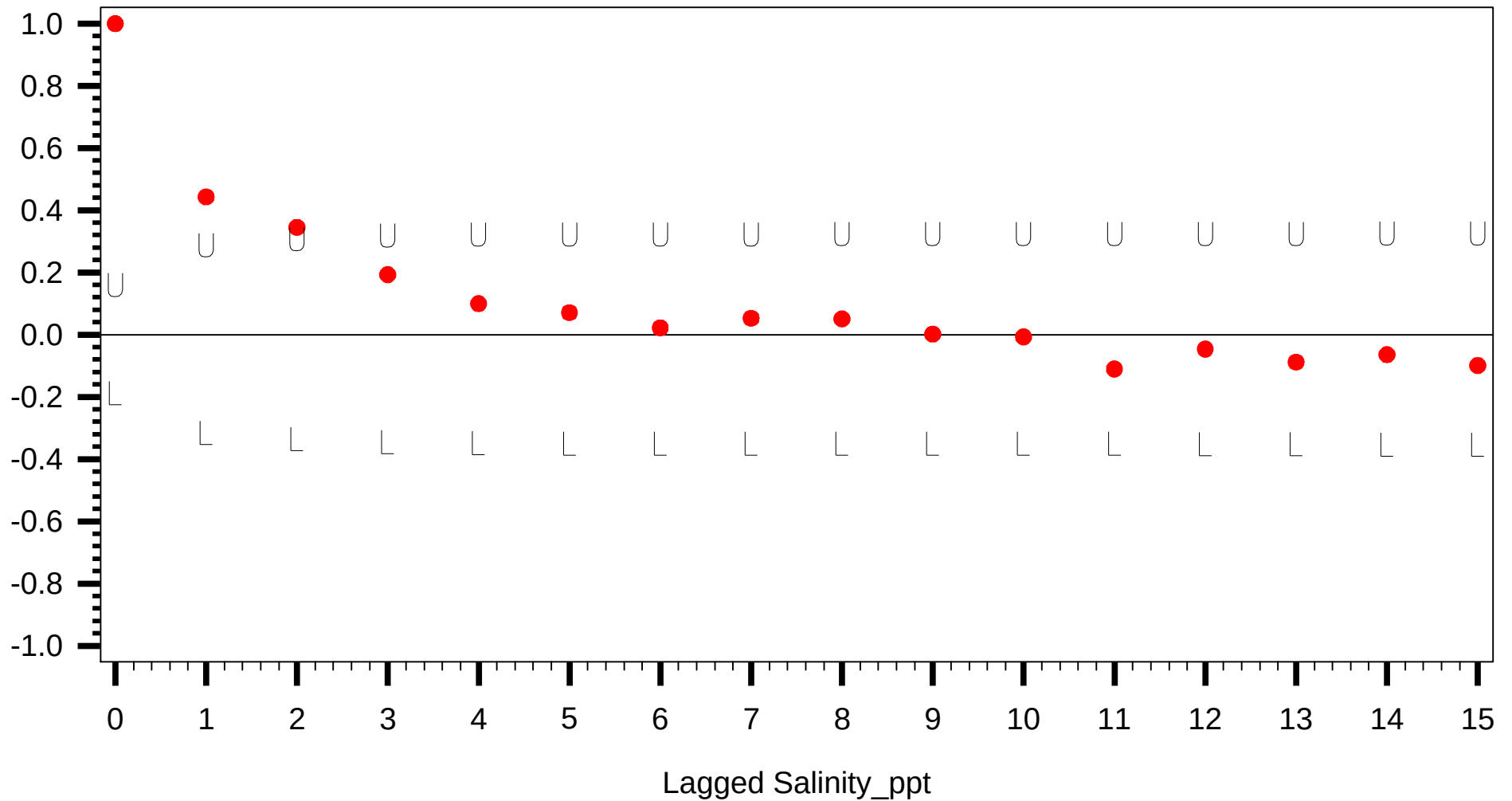
Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.443	0.151	0.302	-0.302
2	0.345	0.160	0.321	-0.321
3	0.193	0.166	0.332	-0.332
4	0.100	0.168	0.335	-0.335
5	0.071	0.168	0.336	-0.336
6	0.022	0.168	0.336	-0.336
7	0.053	0.168	0.336	-0.336
8	0.051	0.168	0.337	-0.337
9	0.002	0.168	0.337	-0.337
10	-0.007	0.168	0.337	-0.337
11	-0.110	0.168	0.337	-0.337
12	-0.046	0.169	0.338	-0.338
13	-0.088	0.169	0.338	-0.338
14	-0.064	0.169	0.339	-0.339
15	-0.099	0.170	0.339	-0.339

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 192
Correlogram for Sarasota County Segment = RBN'

Correlation

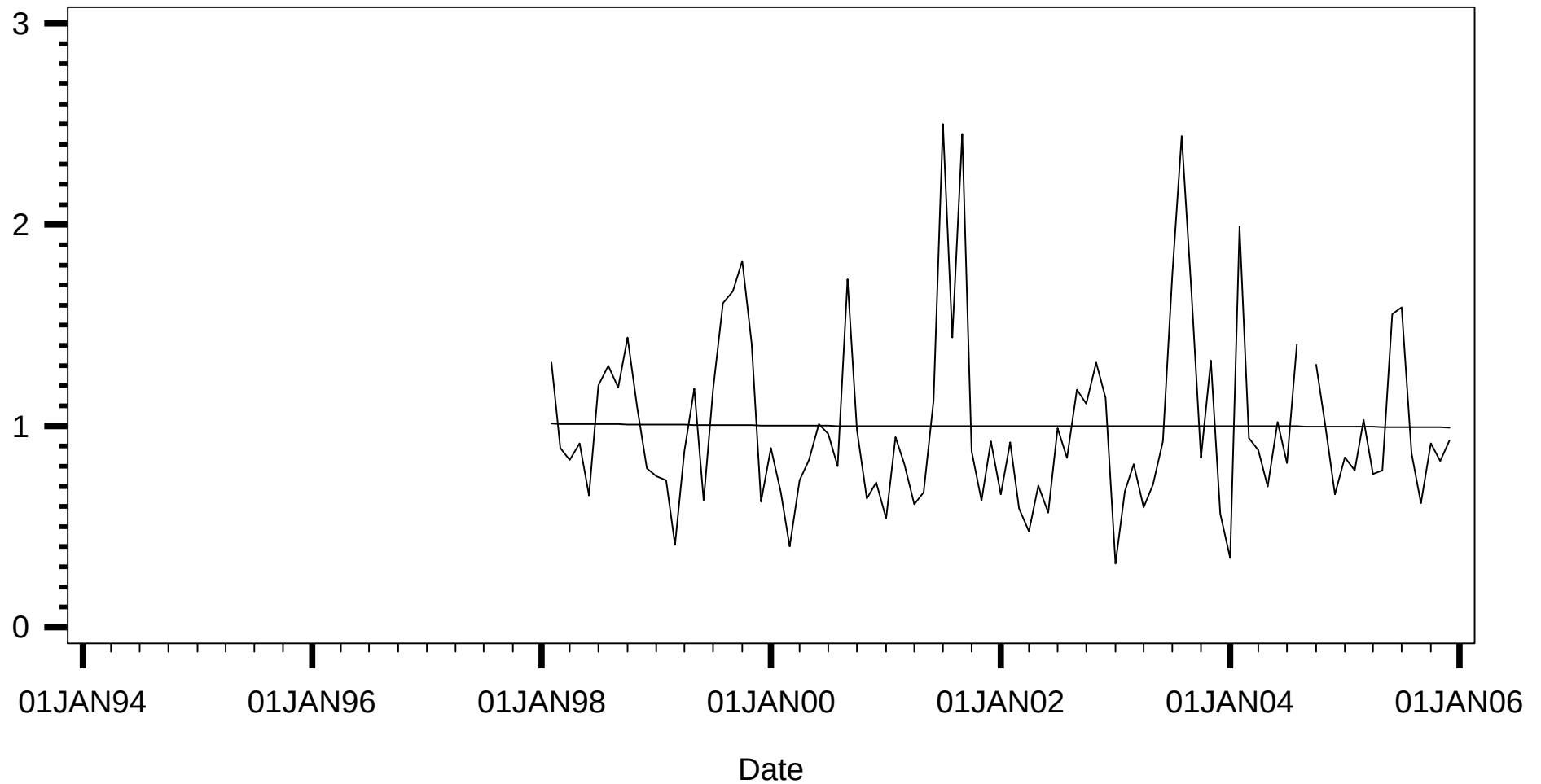
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 193
Monthly Data Time Series for Kd
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

Kd
(1/meter)

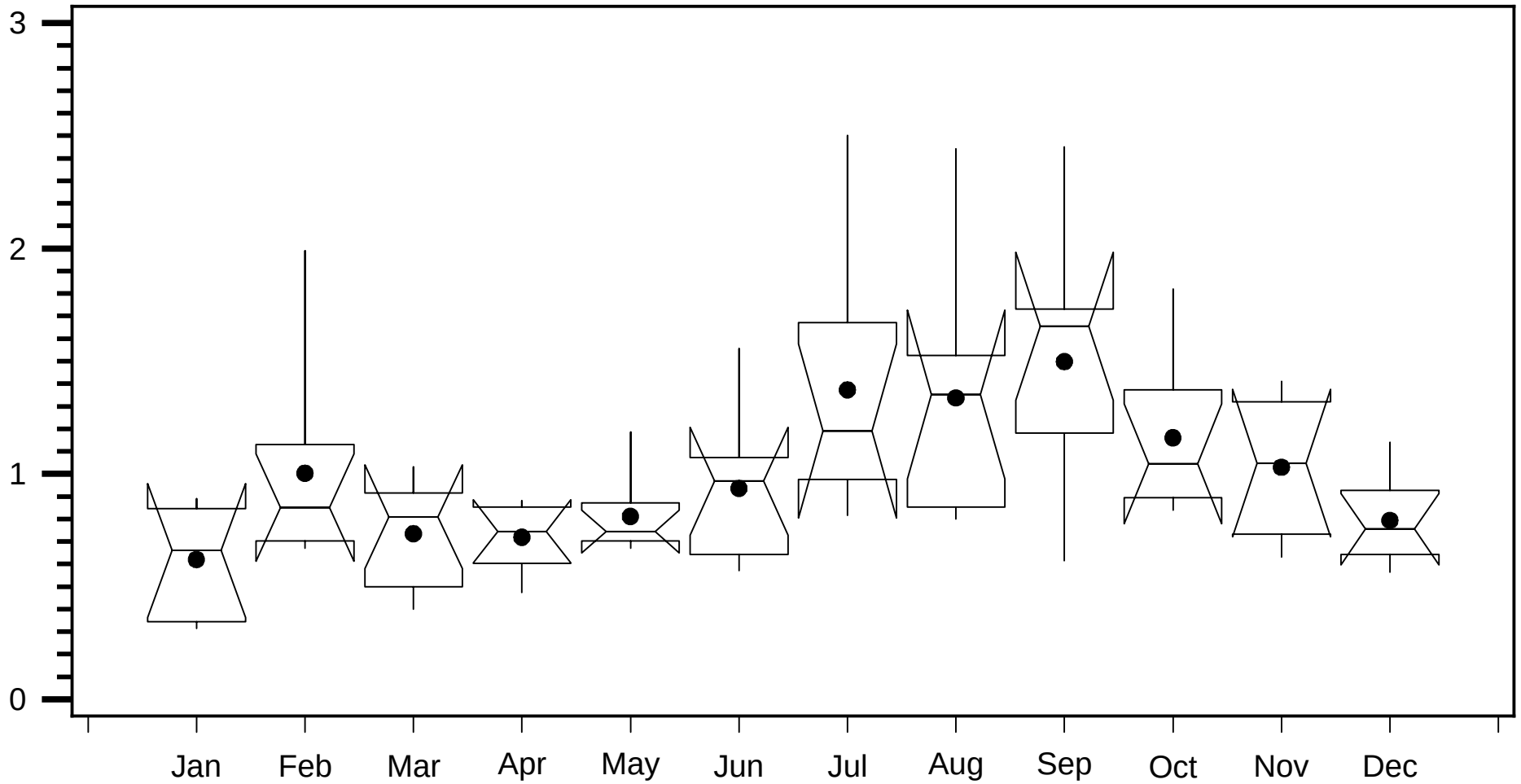


Trends Appendix - Display 194

Seasonal Univariate Statistics for Kd

Sarasota County Segment= RBN

Kd
(1/meter)



Trends Appendix - Display 195

Autocorrelation Statistics for Sarasota County Segment = RBN'

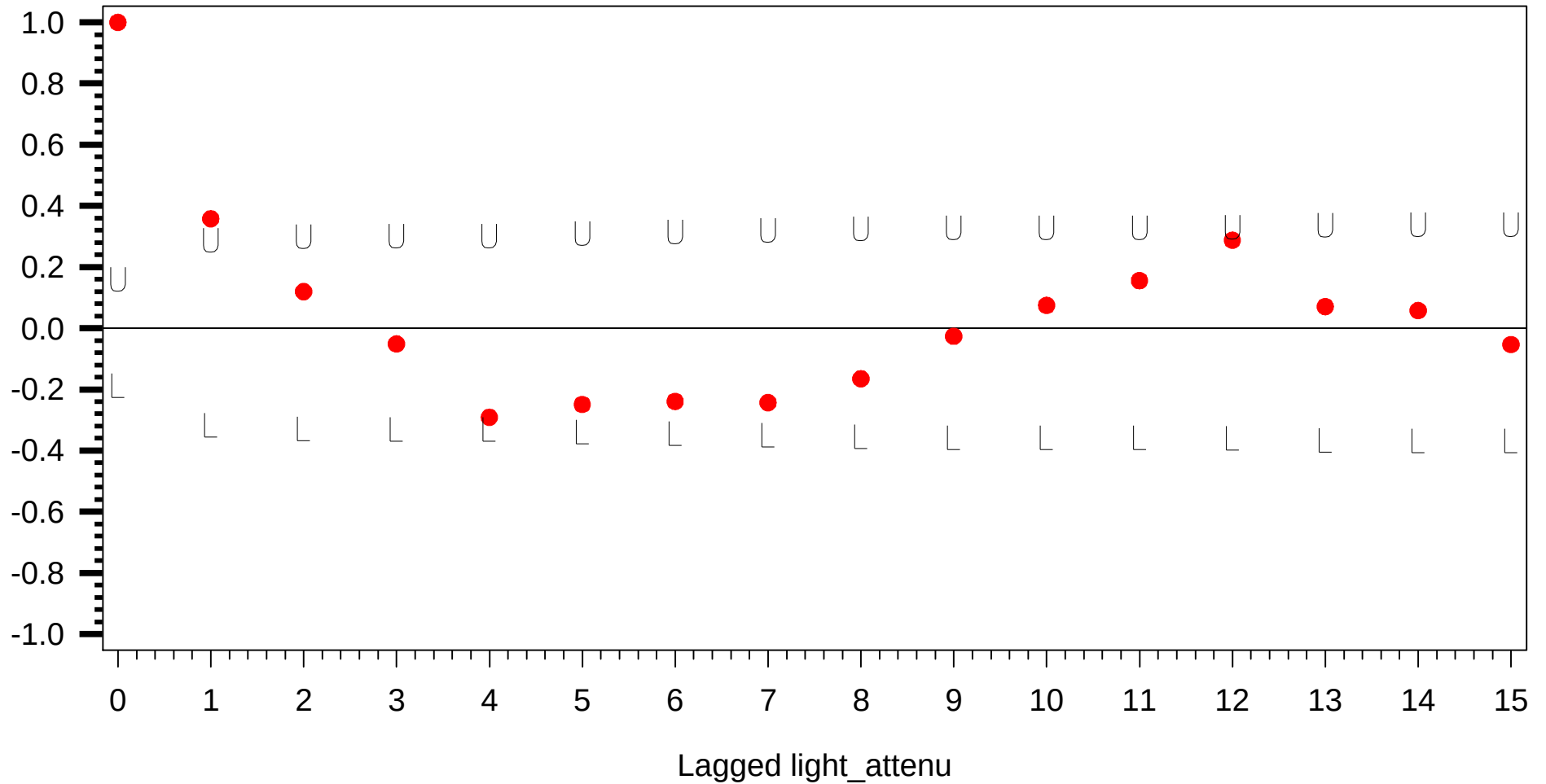
Unadjusted for Seasonal Medians

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.358	0.151	0.302	-0.302
2	0.120	0.157	0.314	-0.314
3	-0.051	0.158	0.316	-0.316
4	-0.291	0.158	0.316	-0.316
5	-0.249	0.162	0.324	-0.324
6	-0.239	0.165	0.330	-0.330
7	-0.243	0.167	0.335	-0.335
8	-0.165	0.170	0.340	-0.340
9	-0.026	0.171	0.343	-0.343
10	0.075	0.171	0.343	-0.343
11	0.156	0.172	0.343	-0.343
12	0.288	0.173	0.345	-0.345
13	0.071	0.176	0.352	-0.352
14	0.058	0.176	0.353	-0.353
15	-0.053	0.177	0.353	-0.353

Trends Appendix - Display 196
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 197

Seasonal Kendall Tau Trend Test Statistics for Kd
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.034	0.713	0.706	-.009

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 198

Seasonal Kendall Tau Trend Test Statistics for Kd

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.034162	0.71335	0.70566	-.0095

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 199

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

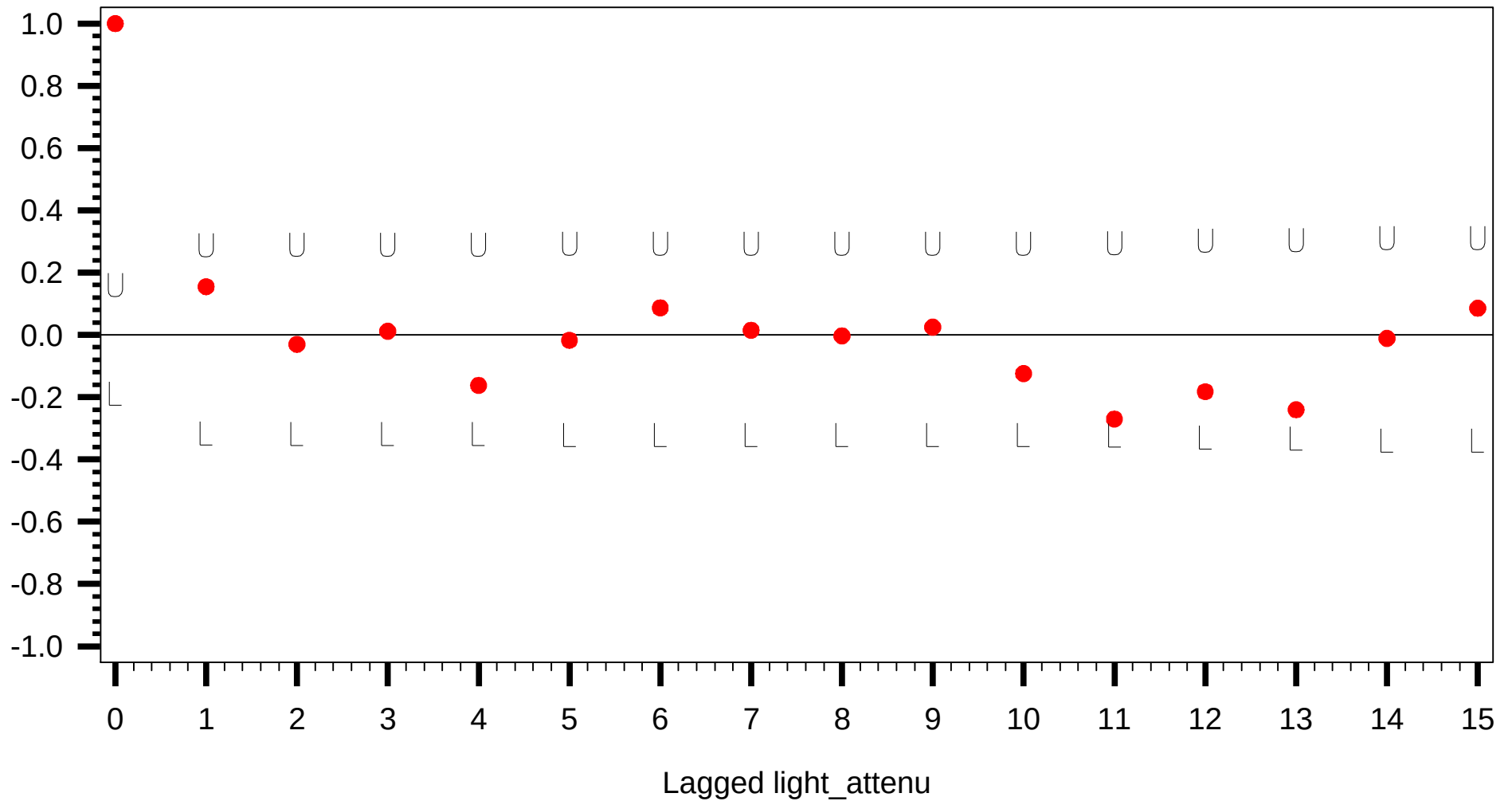
Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.155	0.151	0.302	-0.302
2	-0.030	0.152	0.304	-0.304
3	0.012	0.152	0.304	-0.304
4	-0.162	0.152	0.304	-0.304
5	-0.017	0.153	0.307	-0.307
6	0.087	0.153	0.307	-0.307
7	0.015	0.154	0.307	-0.307
8	-0.003	0.154	0.307	-0.307
9	0.025	0.154	0.307	-0.307
10	-0.124	0.154	0.307	-0.307
11	-0.270	0.155	0.309	-0.309
12	-0.182	0.158	0.316	-0.316
13	-0.240	0.160	0.319	-0.319
14	-0.011	0.162	0.325	-0.325
15	0.086	0.162	0.325	-0.325

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 200
Correlogram for Sarasota County Segment = RBN'

Correlation

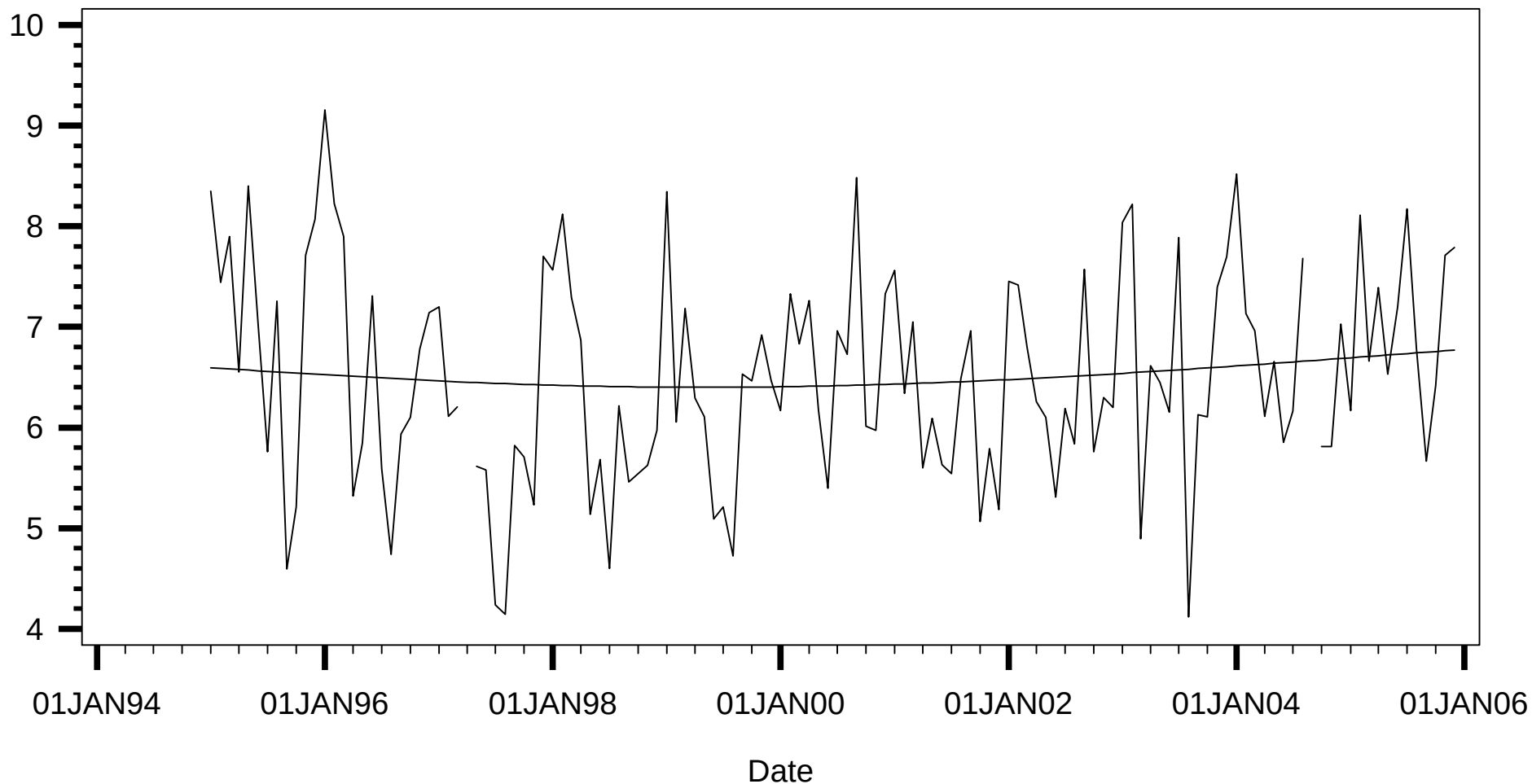
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 201
Monthly Data Time Series for DO
Sarasota County Segment= RBN
Not Adjusted for Seasonal Medians

DO
(mgl)

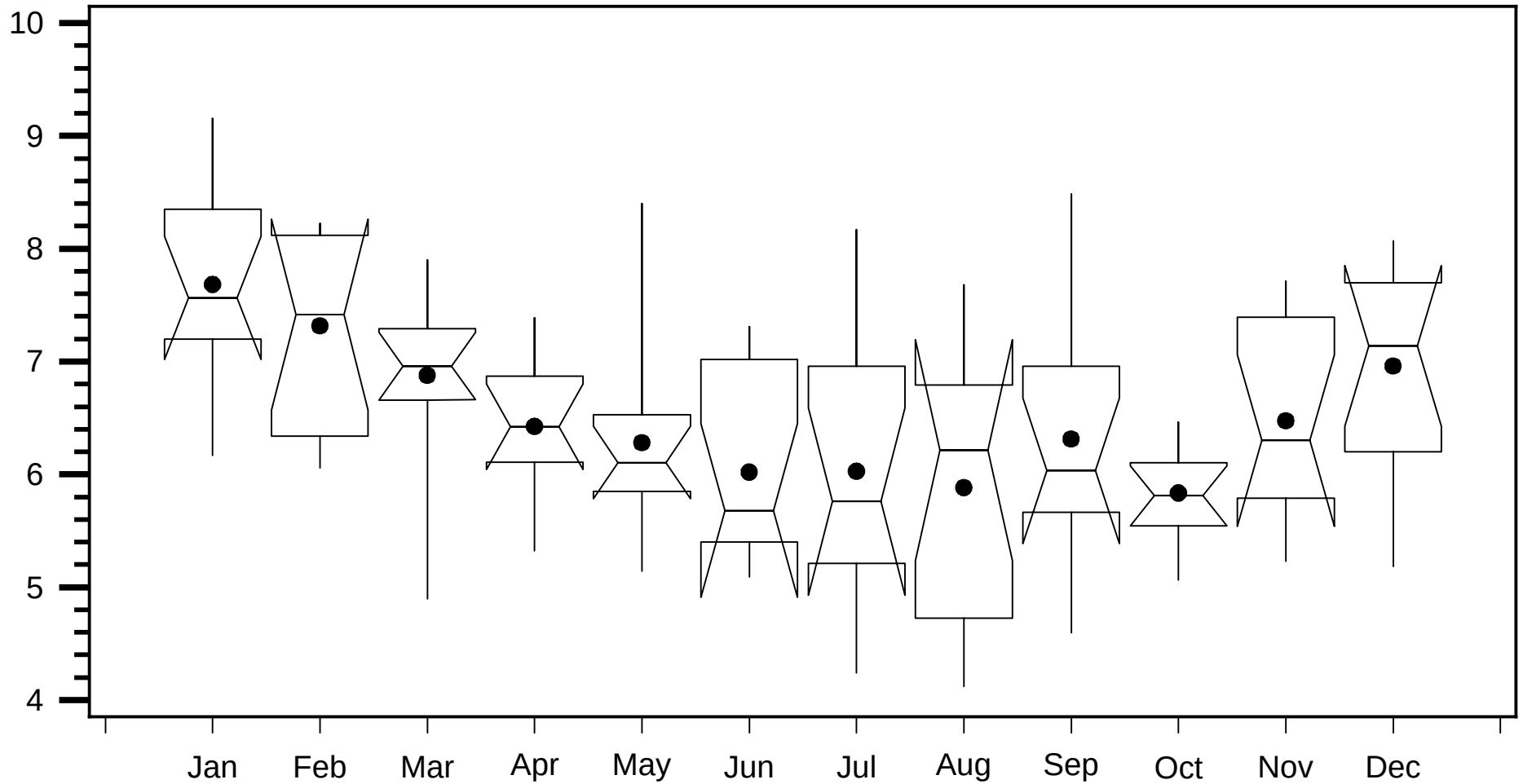


Trends Appendix - Display 202

Seasonal Univariate Statistics for DO

Sarasota County Segment= RBN

DO
(mg/l)



Trends Appendix - Display 203

Autocorrelation Statistics for Sarasota County Segment = RBN'

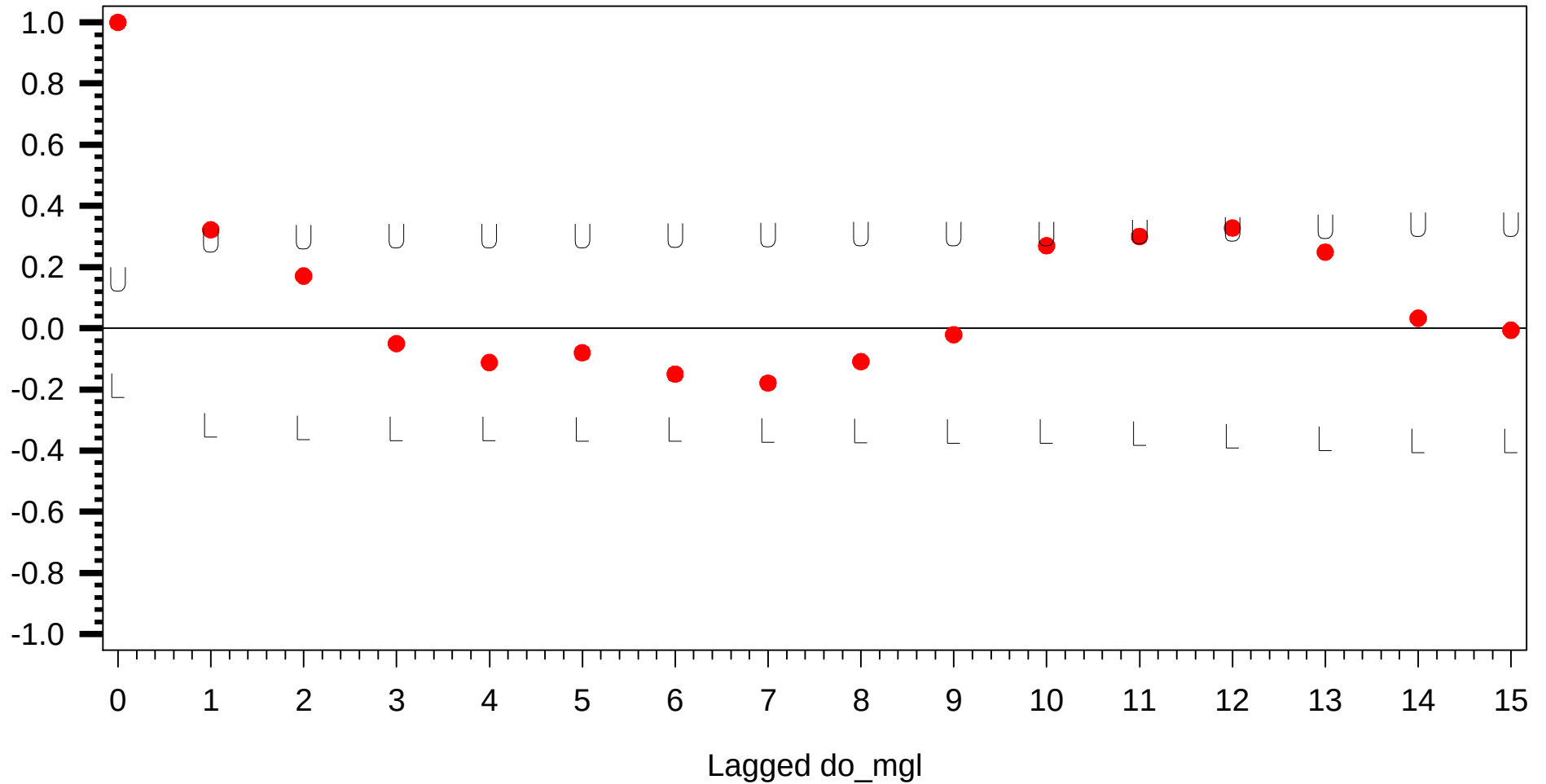
Unadjusted for Seasonal Medians

Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.322	0.151	0.302	-0.302
2	0.171	0.156	0.312	-0.312
3	-0.050	0.157	0.315	-0.315
4	-0.112	0.157	0.315	-0.315
5	-0.080	0.158	0.316	-0.316
6	-0.150	0.158	0.317	-0.317
7	-0.179	0.159	0.319	-0.319
8	-0.109	0.161	0.322	-0.322
9	-0.021	0.161	0.323	-0.323
10	0.270	0.162	0.323	-0.323
11	0.300	0.165	0.330	-0.330
12	0.328	0.169	0.338	-0.338
13	0.249	0.174	0.347	-0.347
14	0.033	0.176	0.353	-0.353
15	-0.006	0.176	0.353	-0.353

Trends Appendix - Display 204
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 205

Seasonal Kendall Tau Trend Test Statistics for DO
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.083	0.233	0.452	0.042

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 206

Seasonal Kendall Tau Trend Test Statistics for DO

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.082813	0.23252	0.45231	0.042083

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 207

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

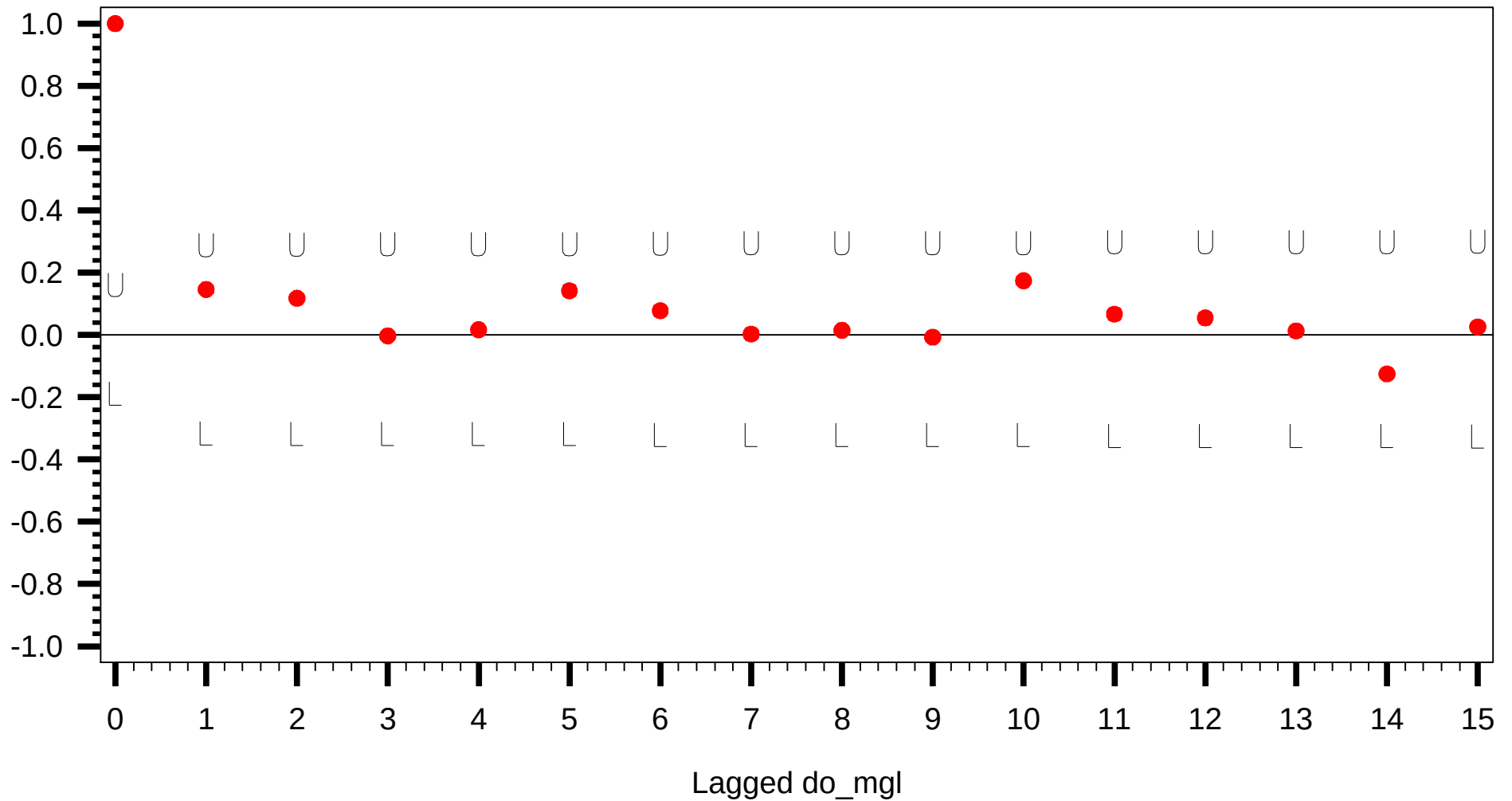
Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.146	0.151	0.302	-0.302
2	0.118	0.152	0.304	-0.304
3	-0.003	0.153	0.305	-0.305
4	0.017	0.153	0.305	-0.305
5	0.142	0.153	0.305	-0.305
6	0.078	0.154	0.307	-0.307
7	0.003	0.154	0.308	-0.308
8	0.015	0.154	0.308	-0.308
9	-0.007	0.154	0.308	-0.308
10	0.174	0.154	0.308	-0.308
11	0.067	0.155	0.311	-0.311
12	0.055	0.156	0.311	-0.311
13	0.013	0.156	0.311	-0.311
14	-0.125	0.156	0.311	-0.311
15	0.026	0.156	0.313	-0.313

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 208
Correlogram for Sarasota County Segment = RBN'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

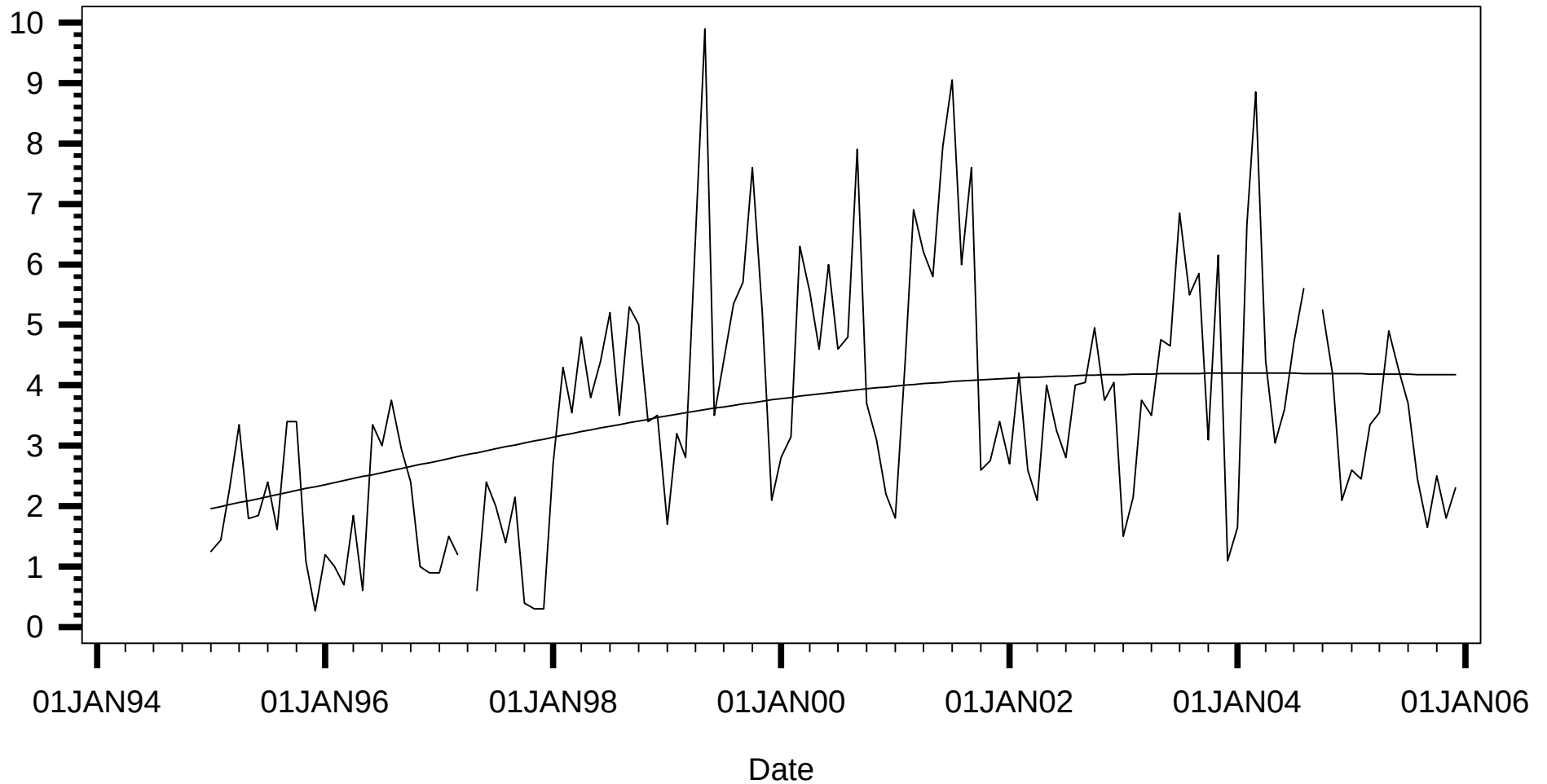
Trends Appendix - Display 209

Monthly Data Time Series for Turbidity

Sarasota County Segment= RBN

Not Adjusted for Seasonal Medians

Turbidity
(NTU)

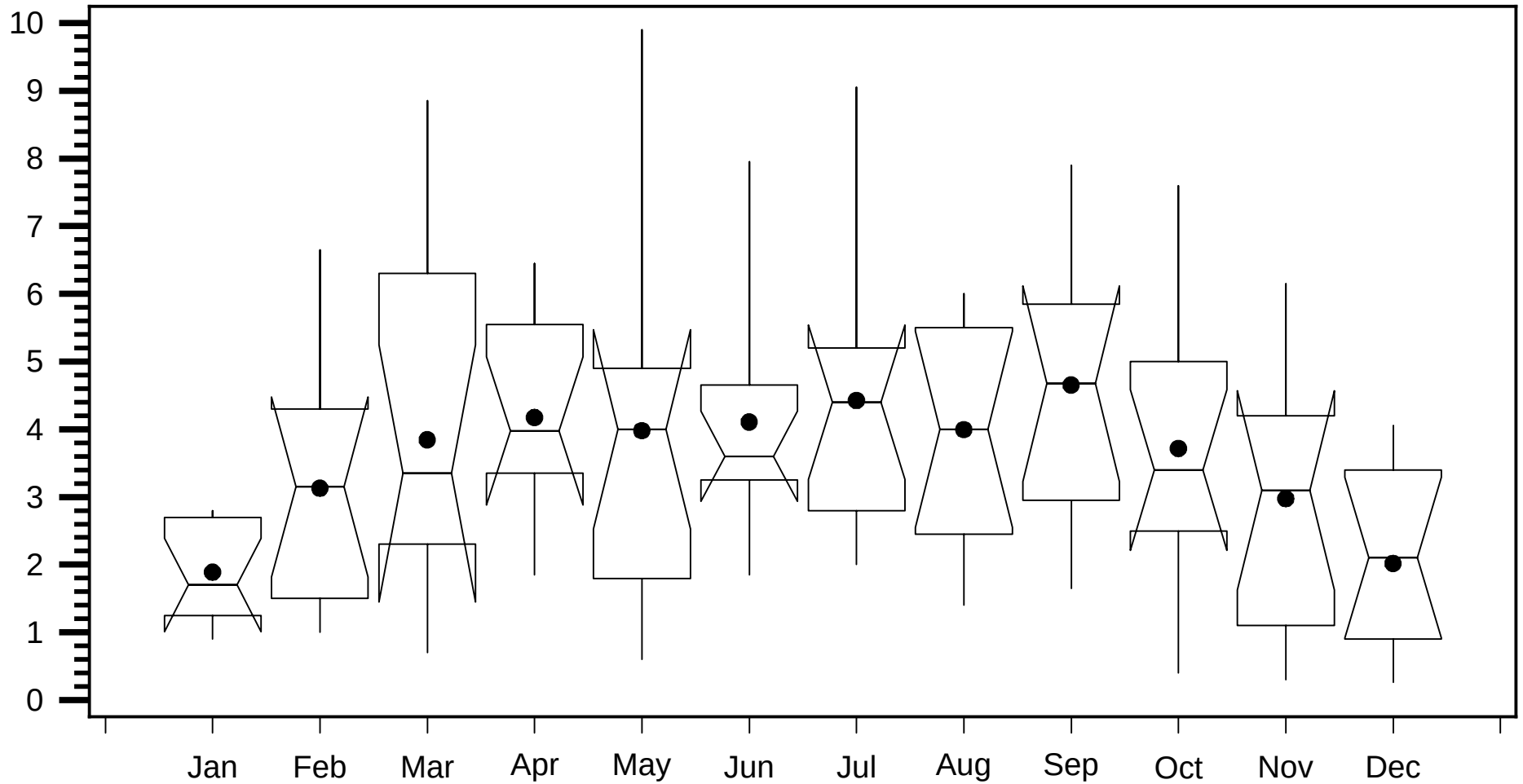


Trends Appendix - Display 210

Seasonal Univariate Statistics for Turbidity

Sarasota County Segment= RBN

Turbidity
(NTU)



Trends Appendix - Display 211

Autocorrelation Statistics for Sarasota County Segment = RBN'

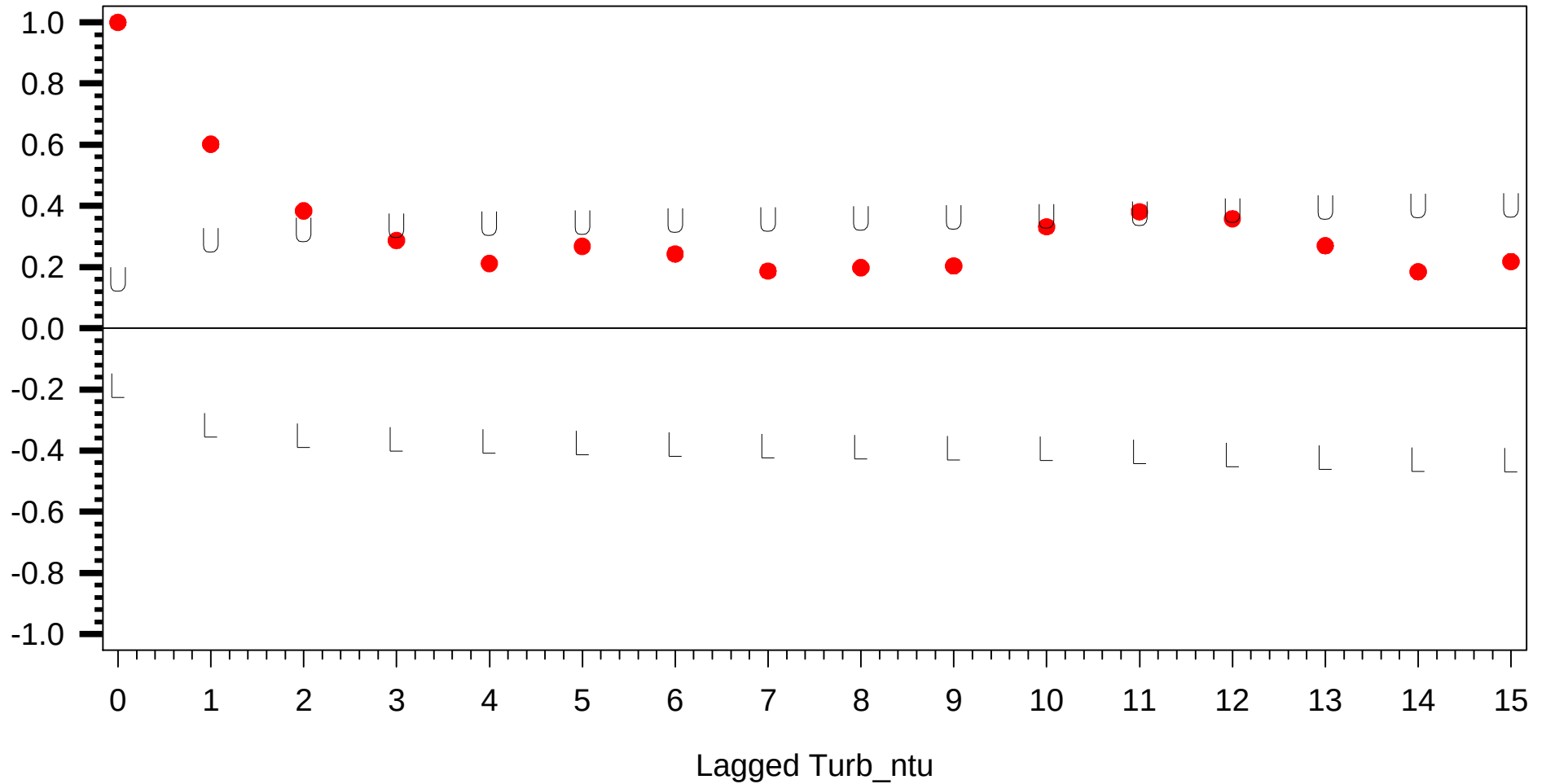
Unadjusted for Seasonal Medians

Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.602	0.151	0.302	-0.302
2	0.384	0.168	0.336	-0.336
3	0.287	0.175	0.349	-0.349
4	0.212	0.178	0.356	-0.356
5	0.268	0.180	0.360	-0.360
6	0.243	0.183	0.366	-0.366
7	0.187	0.185	0.371	-0.371
8	0.198	0.187	0.374	-0.374
9	0.204	0.188	0.377	-0.377
10	0.332	0.190	0.380	-0.380
11	0.381	0.194	0.389	-0.389
12	0.358	0.200	0.400	-0.400
13	0.270	0.205	0.409	-0.409
14	0.185	0.207	0.415	-0.415
15	0.218	0.209	0.417	-0.417

Trends Appendix - Display 212
Correlogram for Sarasota County Segment = RBN

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 213

Seasonal Kendall Tau Trend Test Statistics for Turbidity
Sarasota County Segment = RBN

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.308	0	0.082	0.2

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 214

Seasonal Kendall Tau Trend Test Statistics for Turbidity

Sarasota County Segment = RBN

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.30781	.000006914	0.082321	0.2

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 215

Autocorrelation Statistics for Sarasota County Segment = RBN'

Adjusted for Seasonal Median and Detrended

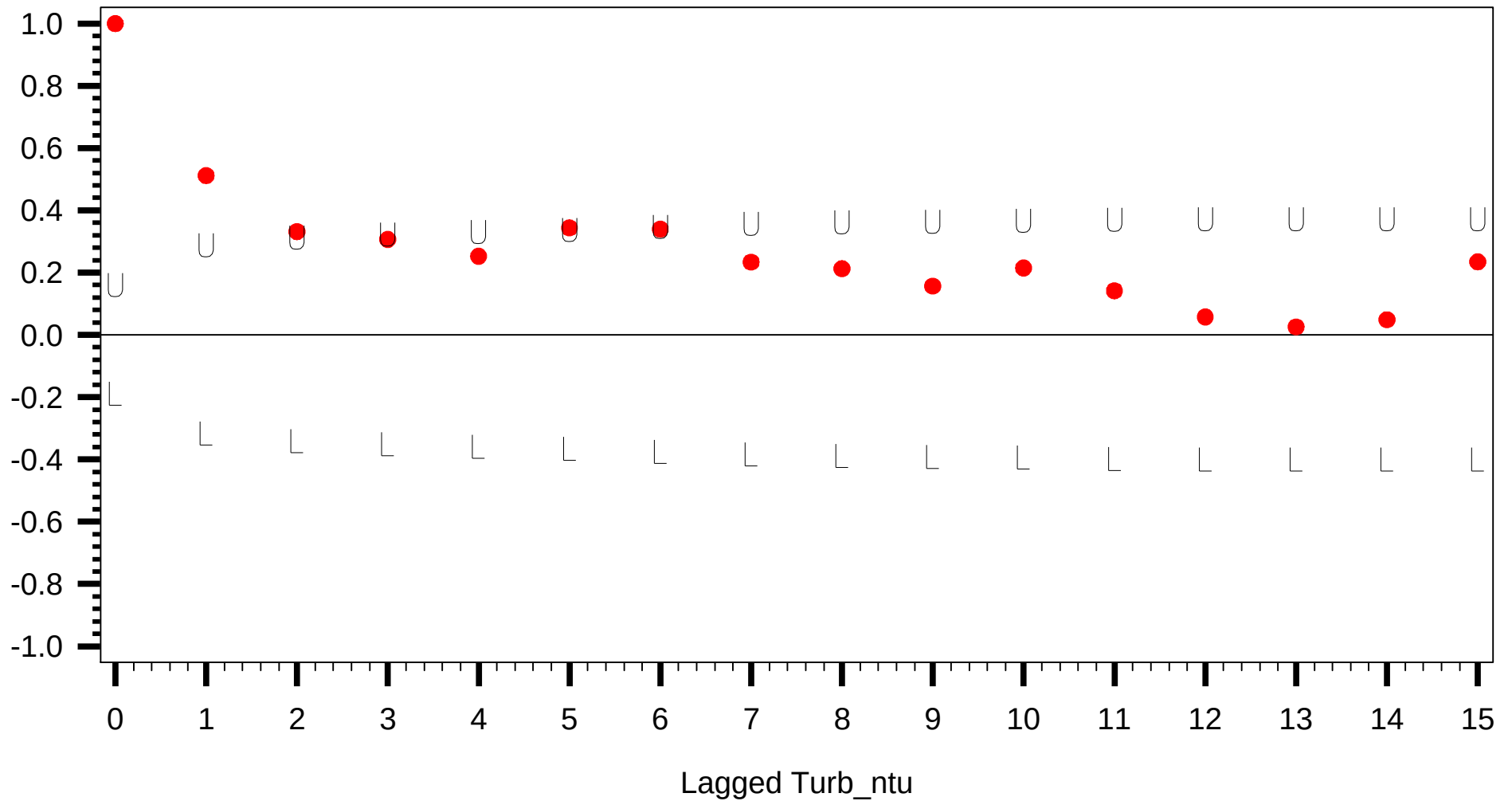
Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.512	0.151	0.302	-0.302
2	0.332	0.163	0.327	-0.327
3	0.307	0.168	0.337	-0.337
4	0.253	0.173	0.345	-0.345
5	0.344	0.175	0.351	-0.351
6	0.340	0.180	0.361	-0.361
7	0.234	0.185	0.370	-0.370
8	0.213	0.187	0.375	-0.375
9	0.157	0.189	0.378	-0.378
10	0.215	0.190	0.380	-0.380
11	0.142	0.192	0.384	-0.384
12	0.058	0.193	0.386	-0.386
13	0.026	0.193	0.386	-0.386
14	0.049	0.193	0.386	-0.386
15	0.235	0.193	0.386	-0.386

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 216
Correlogram for Sarasota County Segment = RBN'

Correlation

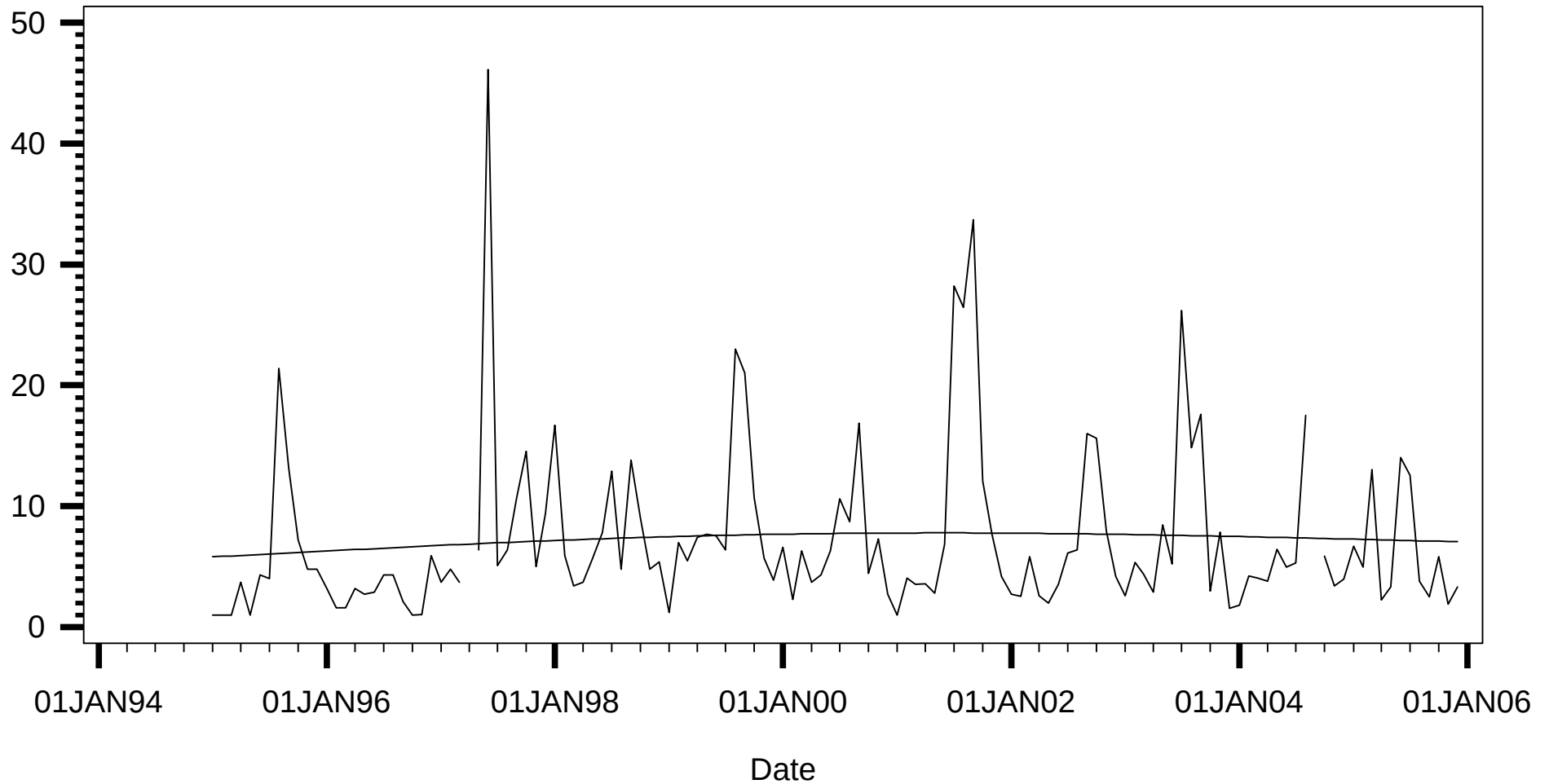
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 217
Monthly Data Time Series for CHLA_C
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

CHLA_C
(ug/l)

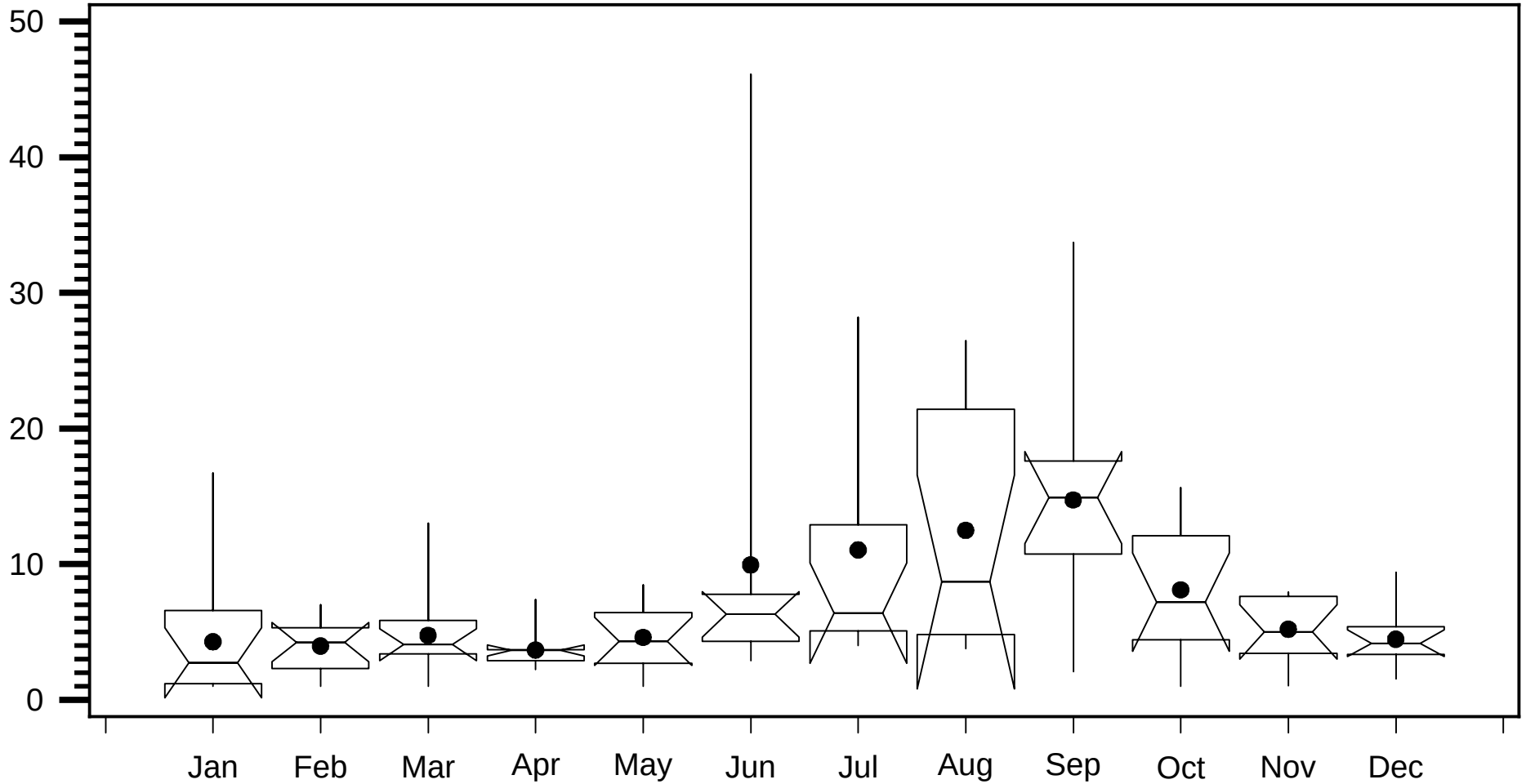


Trends Appendix - Display 218

Seasonal Univariate Statistics for CHLA_C

Sarasota County Segment= LSB

CHLA_C
(ug/l)



Trends Appendix - Display 219

Autocorrelation Statistics for Sarasota County Segment = LSB'

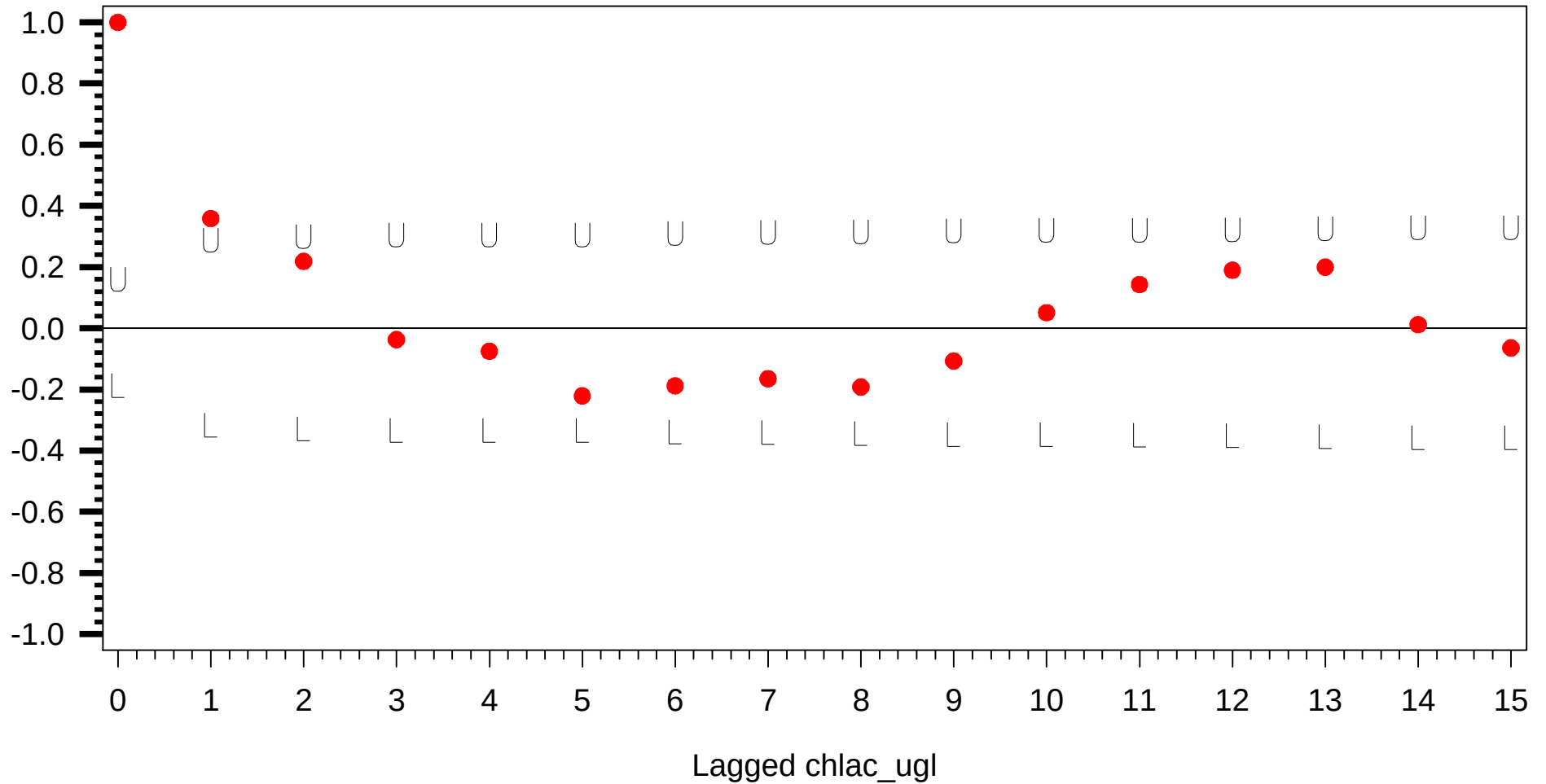
Unadjusted for Seasonal Medians

Lagged chlac_ugl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.359	0.151	0.302	-0.302
2	0.219	0.157	0.314	-0.314
3	-0.037	0.159	0.319	-0.319
4	-0.075	0.159	0.319	-0.319
5	-0.221	0.160	0.319	-0.319
6	-0.188	0.162	0.324	-0.324
7	-0.165	0.164	0.327	-0.327
8	-0.192	0.165	0.330	-0.330
9	-0.107	0.167	0.333	-0.333
10	0.051	0.167	0.334	-0.334
11	0.143	0.167	0.335	-0.335
12	0.190	0.168	0.336	-0.336
13	0.200	0.170	0.340	-0.340
14	0.012	0.172	0.343	-0.343
15	-0.064	0.172	0.343	-0.343

Trends Appendix - Display 220
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 221

Seasonal Kendall Tau Trend Test Statistics for CHLA_C
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.111	0.108	0.283	0.124

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 222

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.11094	0.10777	0.28314	0.12406

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 223

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

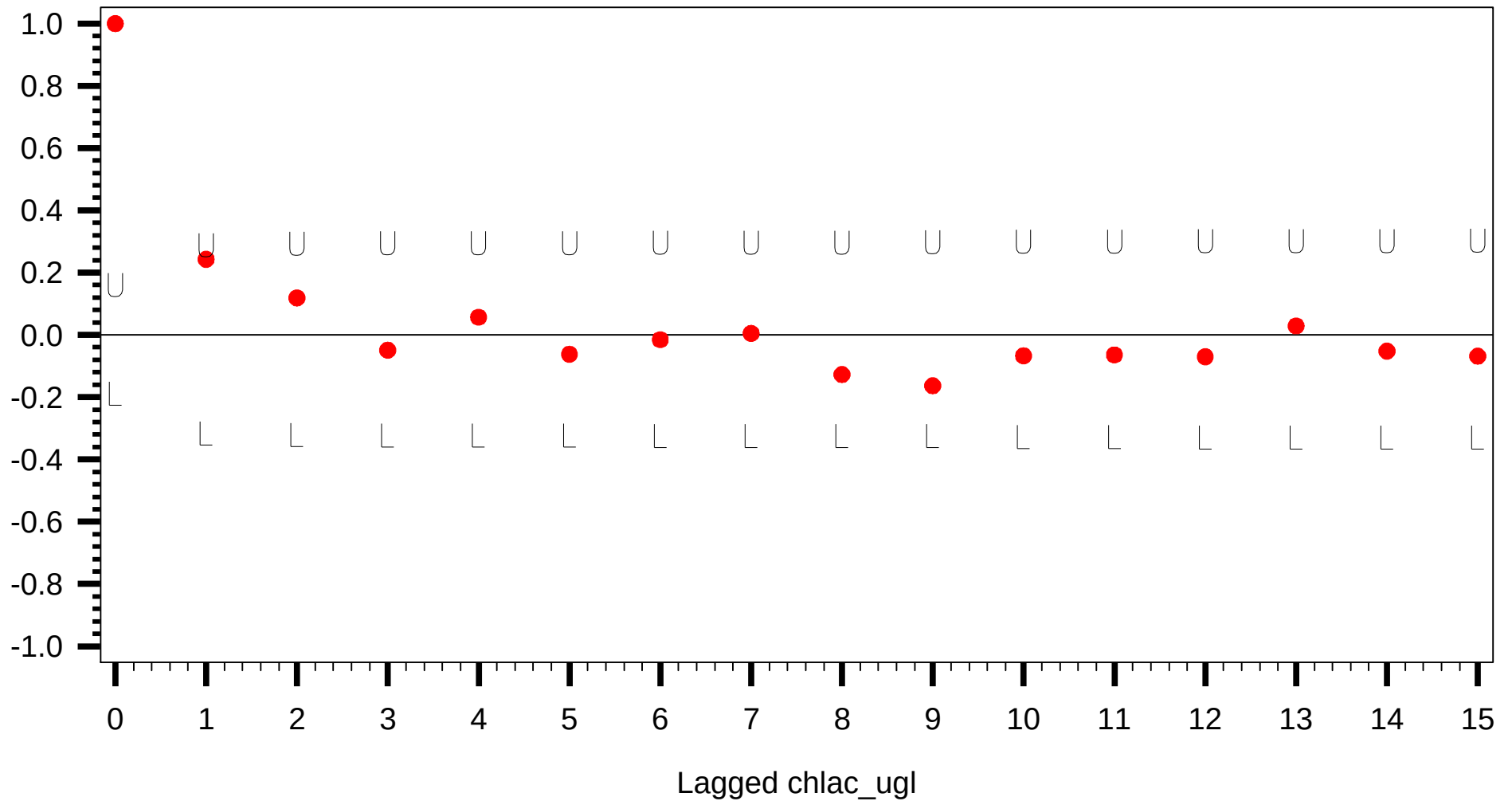
Lagged chlac_uhl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.243	0.151	0.302	-0.302
2	0.119	0.154	0.307	-0.307
3	-0.049	0.154	0.309	-0.309
4	0.057	0.155	0.309	-0.309
5	-0.062	0.155	0.309	-0.309
6	-0.015	0.155	0.310	-0.310
7	0.005	0.155	0.310	-0.310
8	-0.127	0.155	0.310	-0.310
9	-0.163	0.156	0.311	-0.311
10	-0.067	0.157	0.314	-0.314
11	-0.064	0.157	0.314	-0.314
12	-0.070	0.157	0.315	-0.315
13	0.029	0.158	0.315	-0.315
14	-0.052	0.158	0.315	-0.315
15	-0.068	0.158	0.316	-0.316

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 224
Correlogram for Sarasota County Segment = LSB'

Correlation

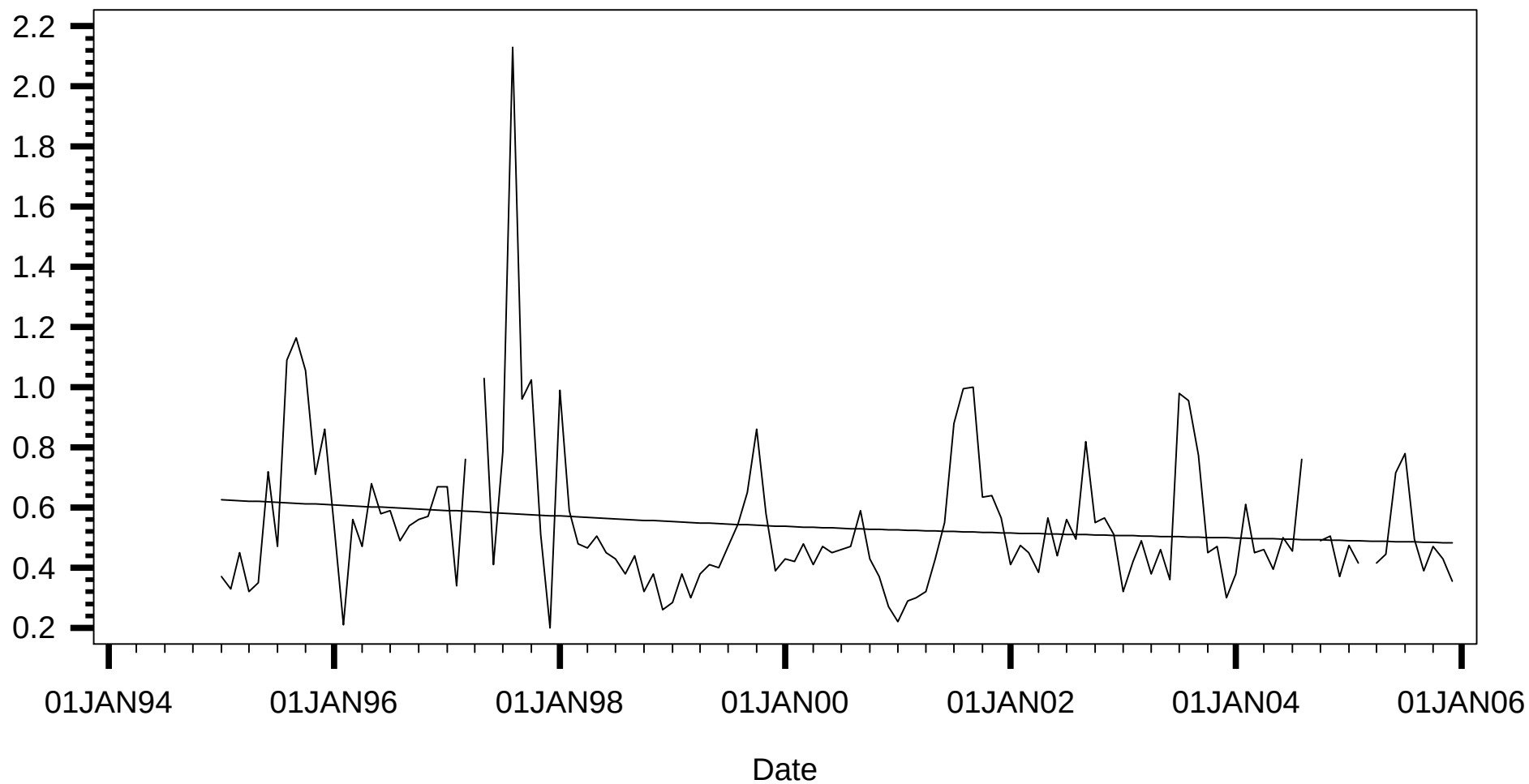
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 225
Monthly Data Time Series for TN
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

TN
(mg/l)

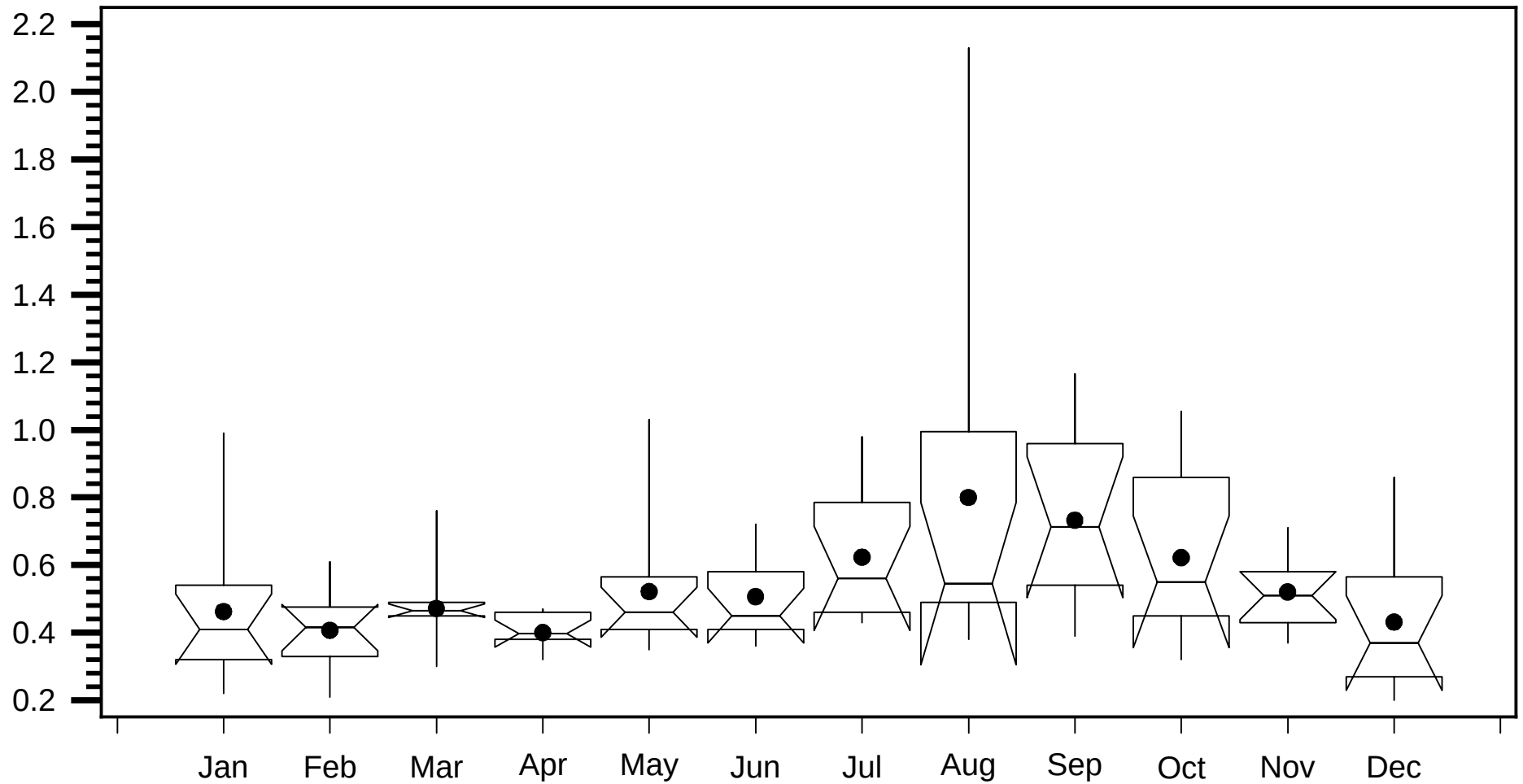


Trends Appendix - Display 226

Seasonal Univariate Statistics for TN

Sarasota County Segment= LSB

TN
(mg/l)



Trends Appendix - Display 227

Autocorrelation Statistics for Sarasota County Segment = LSB'

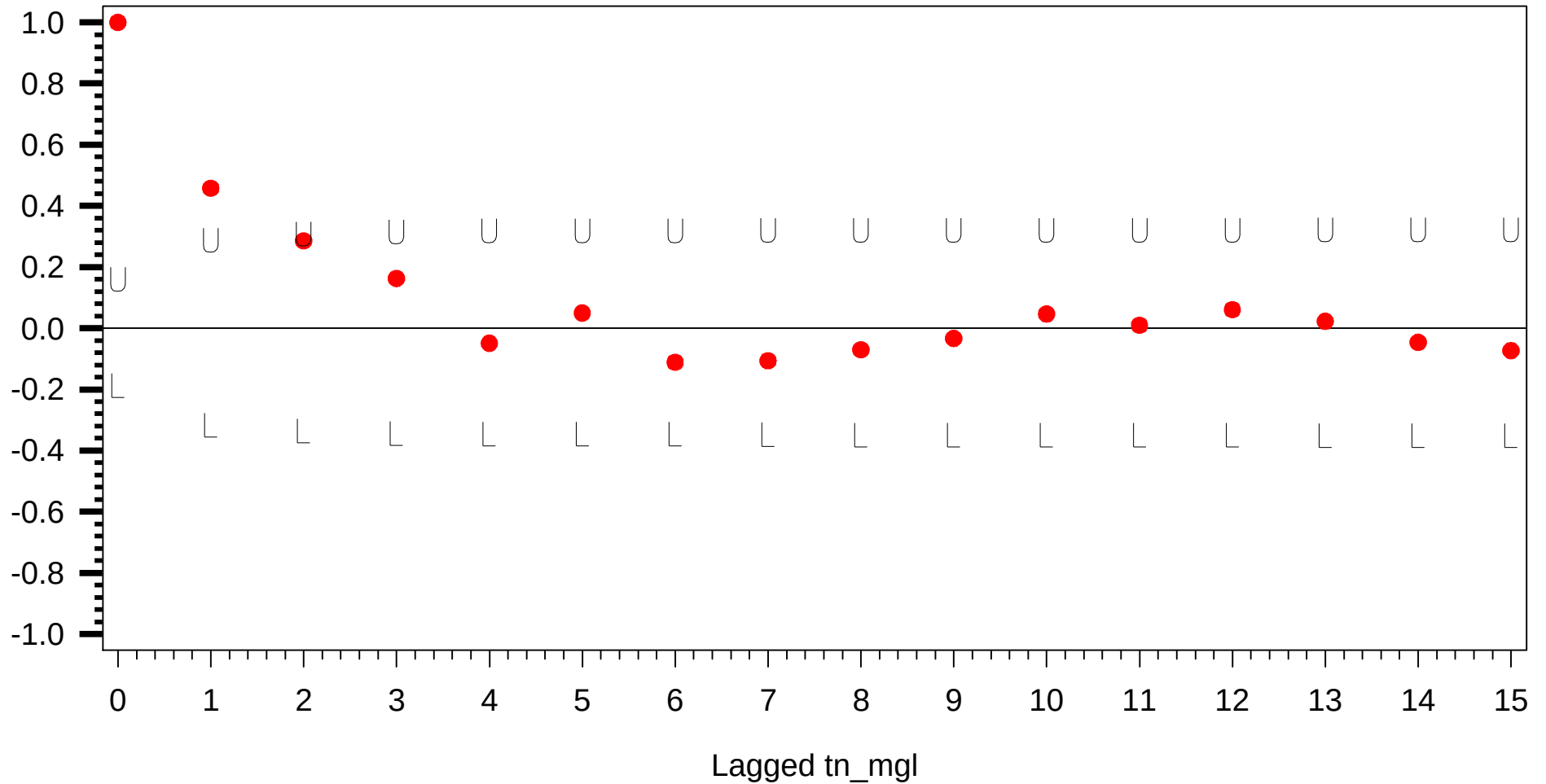
Unadjusted for Seasonal Medians

Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.458	0.151	0.302	-0.302
2	0.286	0.161	0.322	-0.322
3	0.163	0.165	0.330	-0.330
4	-0.049	0.166	0.332	-0.332
5	0.050	0.166	0.332	-0.332
6	-0.111	0.166	0.332	-0.332
7	-0.106	0.167	0.334	-0.334
8	-0.070	0.167	0.335	-0.335
9	-0.033	0.168	0.335	-0.335
10	0.047	0.168	0.335	-0.335
11	0.010	0.168	0.335	-0.335
12	0.061	0.168	0.335	-0.335
13	0.023	0.168	0.336	-0.336
14	-0.046	0.168	0.336	-0.336
15	-0.073	0.168	0.336	-0.336

Trends Appendix - Display 228
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 229

Seasonal Kendall Tau Trend Test Statistics for TN
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.097	0.163	0.181	-.005

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 230

Seasonal Kendall Tau Trend Test Statistics for TN

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.096825	0.16284	0.18149	-.005

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 231

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

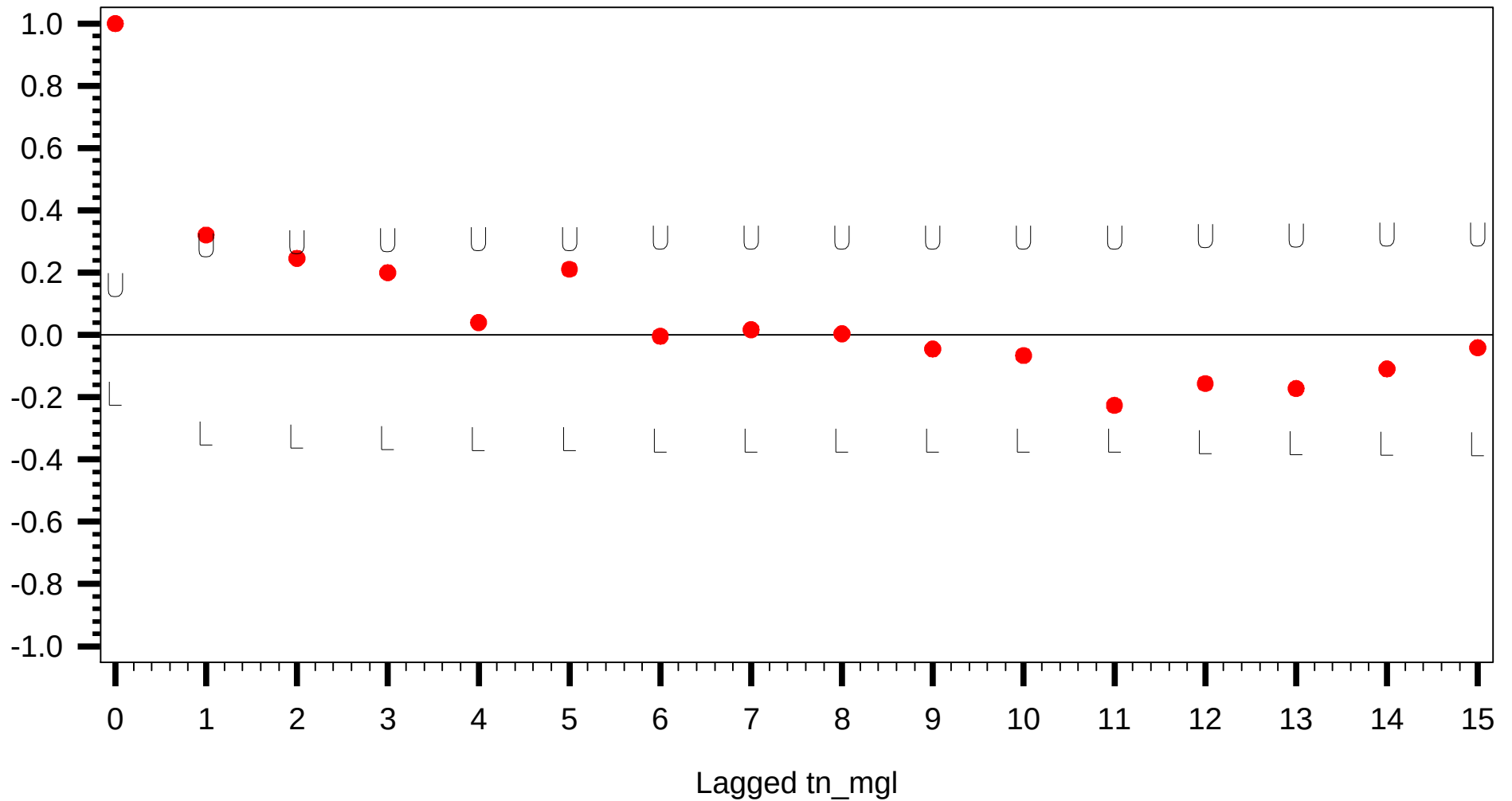
Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.321	0.151	0.302	-0.302
2	0.246	0.156	0.312	-0.312
3	0.200	0.159	0.318	-0.318
4	0.040	0.161	0.321	-0.321
5	0.211	0.161	0.321	-0.321
6	-0.004	0.163	0.326	-0.326
7	0.017	0.163	0.326	-0.326
8	0.004	0.163	0.326	-0.326
9	-0.045	0.163	0.326	-0.326
10	-0.066	0.163	0.326	-0.326
11	-0.226	0.163	0.326	-0.326
12	-0.156	0.165	0.331	-0.331
13	-0.172	0.167	0.333	-0.333
14	-0.109	0.168	0.336	-0.336
15	-0.041	0.168	0.337	-0.337

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 232
Correlogram for Sarasota County Segment = LSB'

Correlation

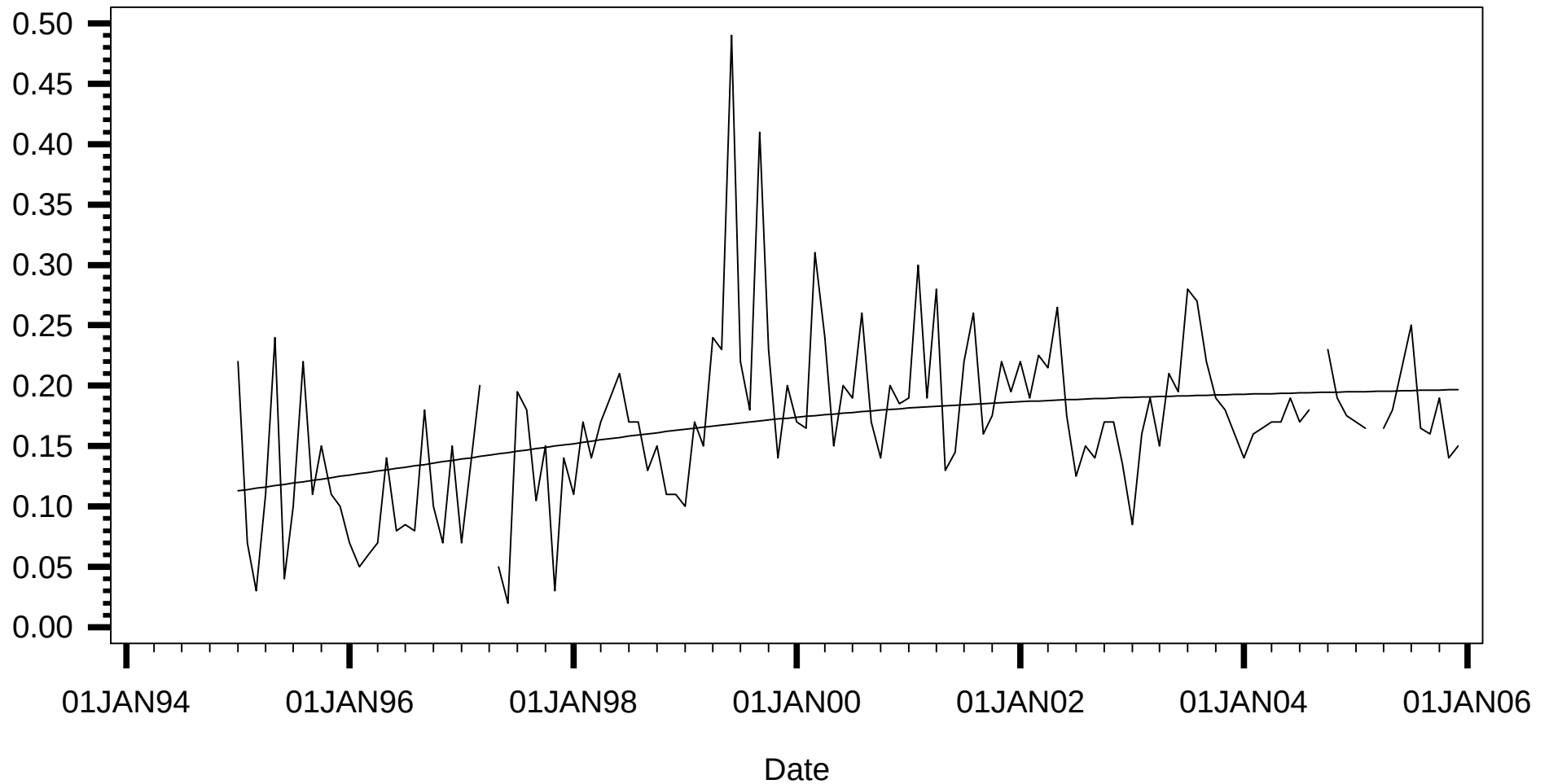
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 233
Monthly Data Time Series for TP
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

TP
(mg/l)

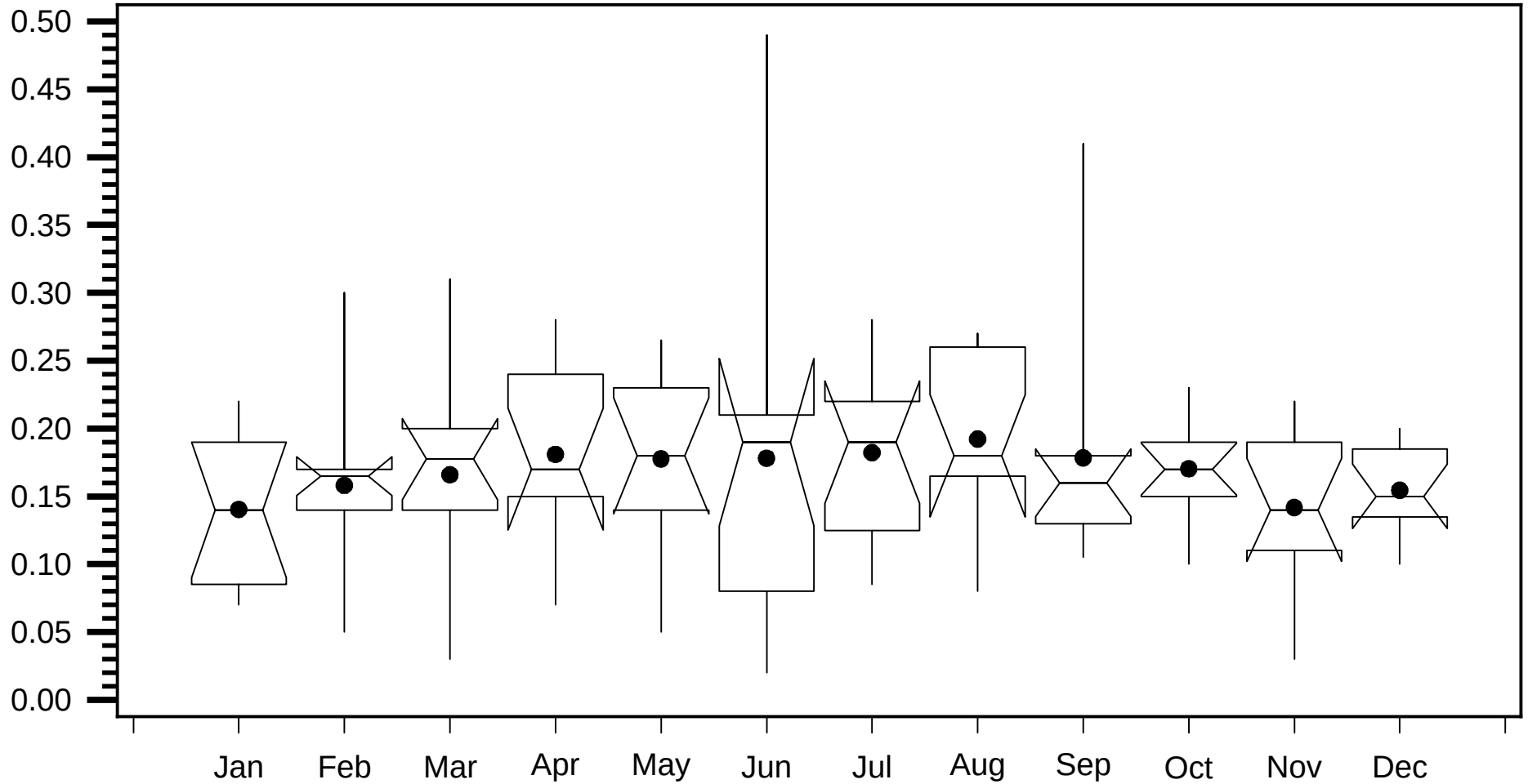


Trends Appendix - Display 234

Seasonal Univariate Statistics for TP

Sarasota County Segment= LSB

TP
(mg/l)



Trends Appendix - Display 235

Autocorrelation Statistics for Sarasota County Segment = LSB'

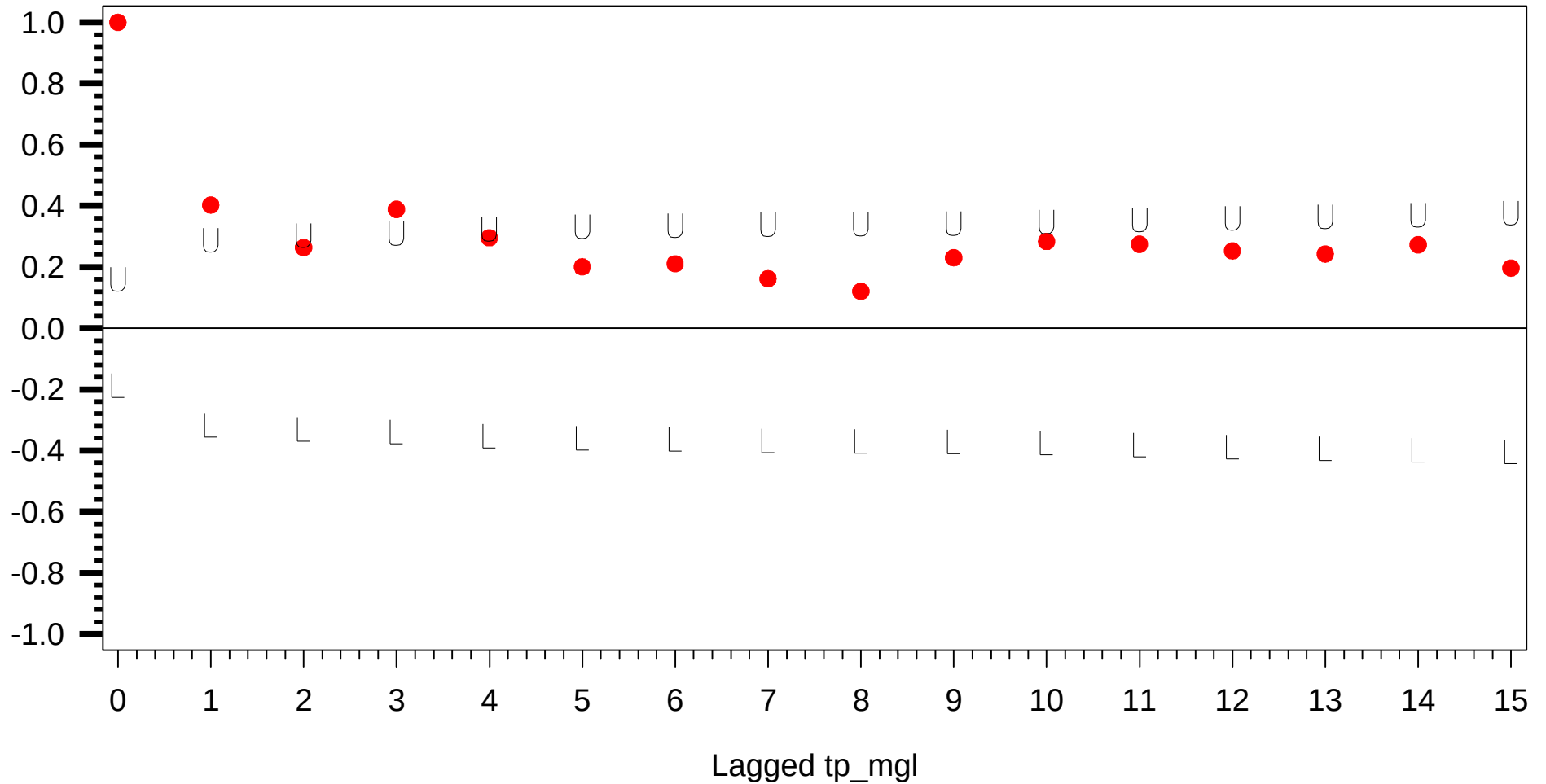
Unadjusted for Seasonal Medians

Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.403	0.151	0.302	-0.302
2	0.264	0.159	0.317	-0.317
3	0.389	0.162	0.324	-0.324
4	0.296	0.169	0.338	-0.338
5	0.201	0.173	0.346	-0.346
6	0.211	0.175	0.349	-0.349
7	0.162	0.177	0.353	-0.353
8	0.121	0.178	0.355	-0.355
9	0.231	0.178	0.357	-0.357
10	0.284	0.181	0.361	-0.361
11	0.275	0.184	0.368	-0.368
12	0.253	0.187	0.374	-0.374
13	0.243	0.190	0.379	-0.379
14	0.273	0.192	0.384	-0.384
15	0.197	0.195	0.390	-0.390

Trends Appendix - Display 236
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 237

Seasonal Kendall Tau Trend Test Statistics for TP
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.279	0	0.04	.008

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 238

Seasonal Kendall Tau Trend Test Statistics for TP

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.27937	.000044227	0.039899	.00763889

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 239

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

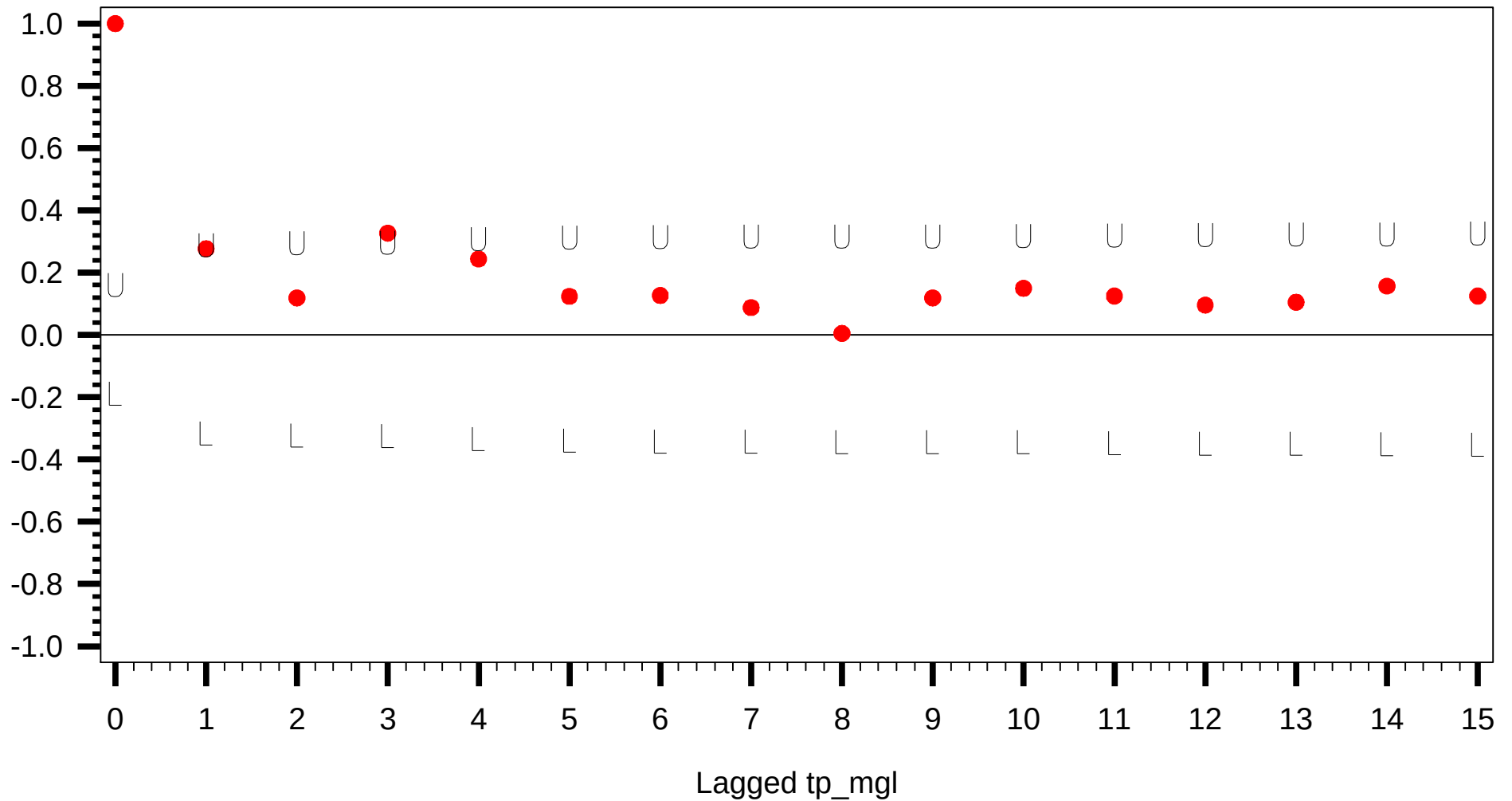
Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.277	0.151	0.302	-0.302
2	0.119	0.155	0.309	-0.309
3	0.327	0.155	0.310	-0.310
4	0.244	0.160	0.321	-0.321
5	0.124	0.163	0.326	-0.326
6	0.127	0.164	0.328	-0.328
7	0.088	0.165	0.329	-0.329
8	0.005	0.165	0.330	-0.330
9	0.119	0.165	0.330	-0.330
10	0.150	0.166	0.331	-0.331
11	0.125	0.167	0.333	-0.333
12	0.096	0.167	0.335	-0.335
13	0.105	0.168	0.336	-0.336
14	0.157	0.168	0.337	-0.337
15	0.125	0.169	0.339	-0.339

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 240
Correlogram for Sarasota County Segment = LSB'

Correlation

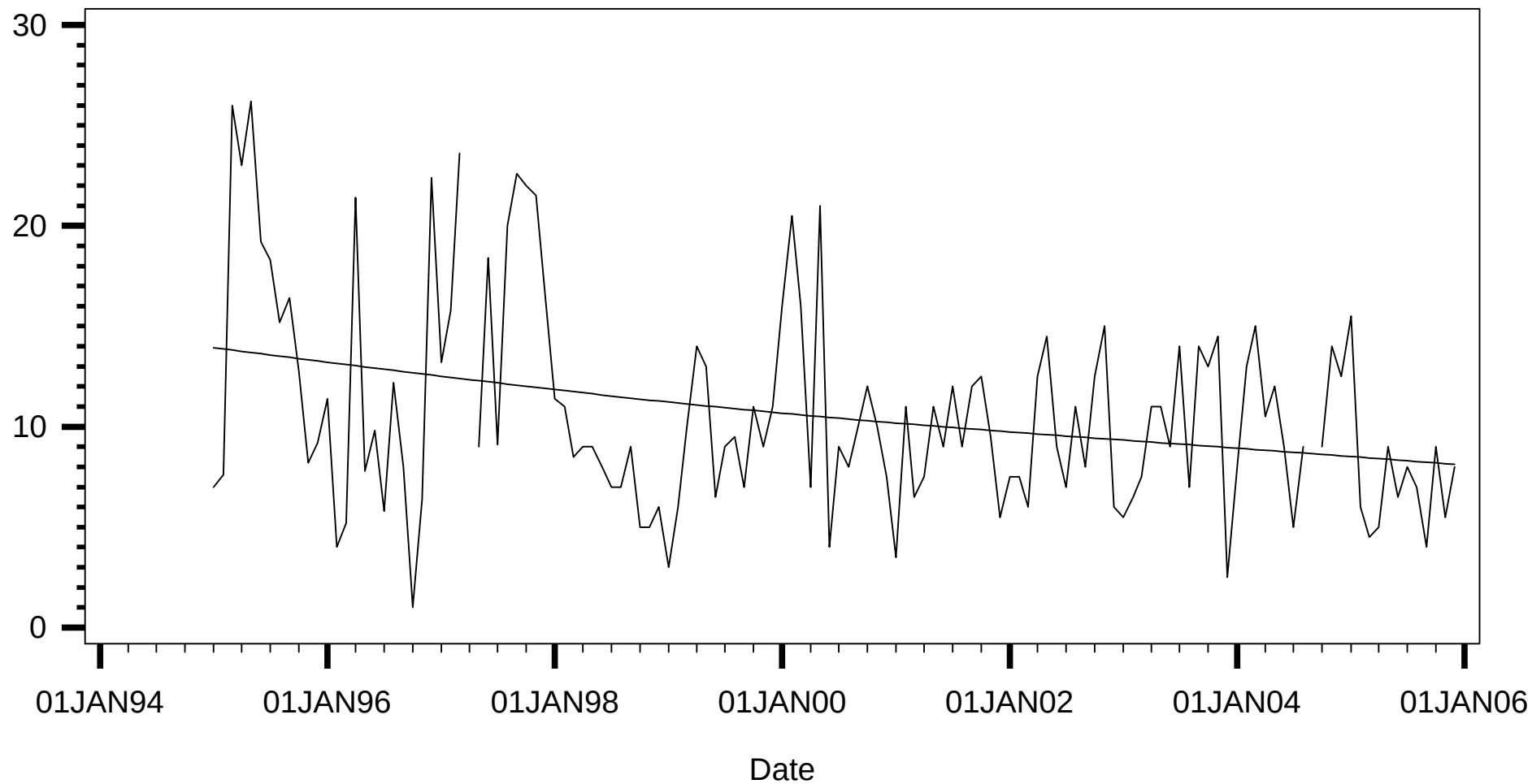
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 241
Monthly Data Time Series for TSS
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

TSS
(mg/l)

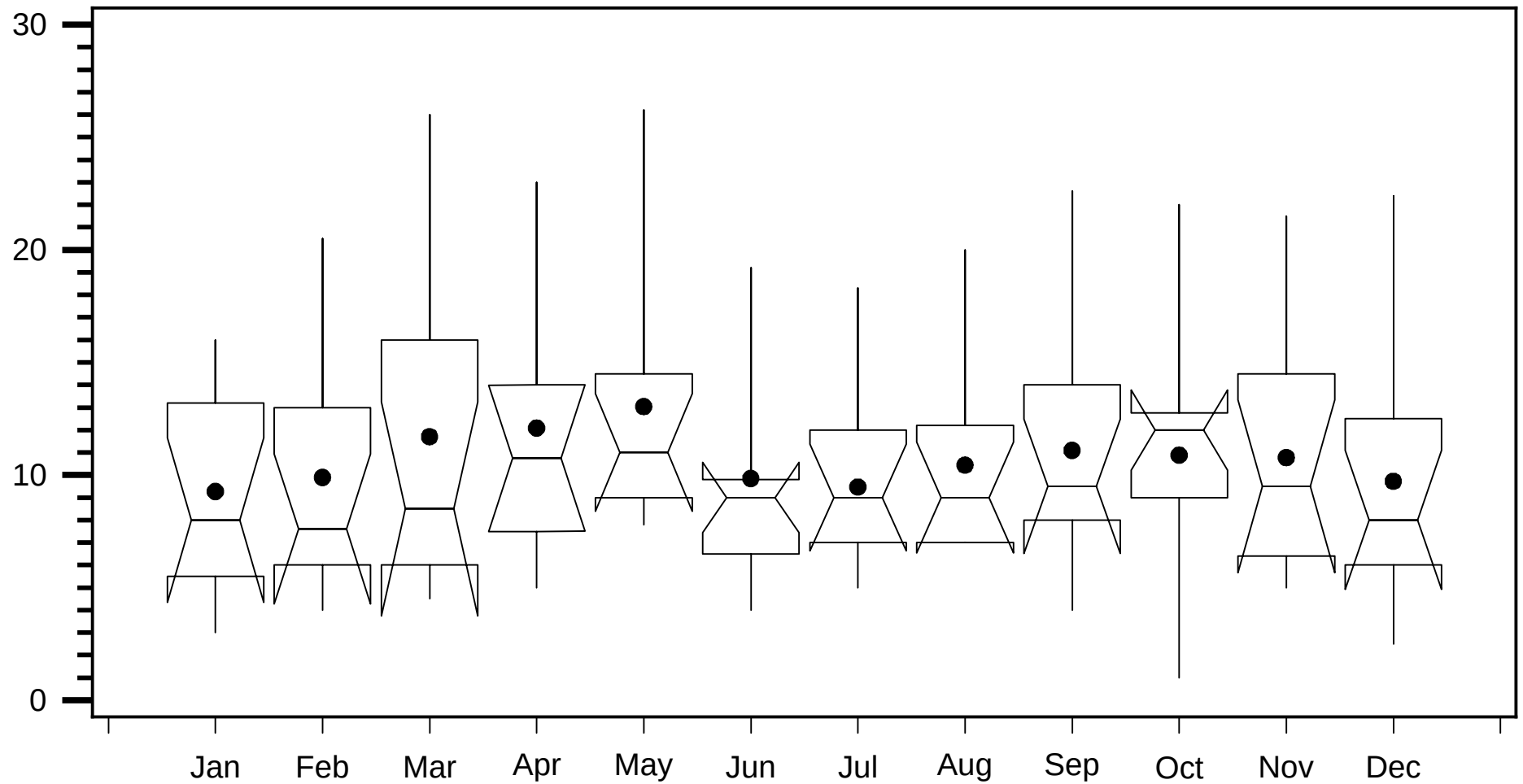


Trends Appendix - Display 242

Seasonal Univariate Statistics for TSS

Sarasota County Segment= LSB

TSS
(mg/l)



Trends Appendix - Display 243

Autocorrelation Statistics for Sarasota County Segment = LSB'

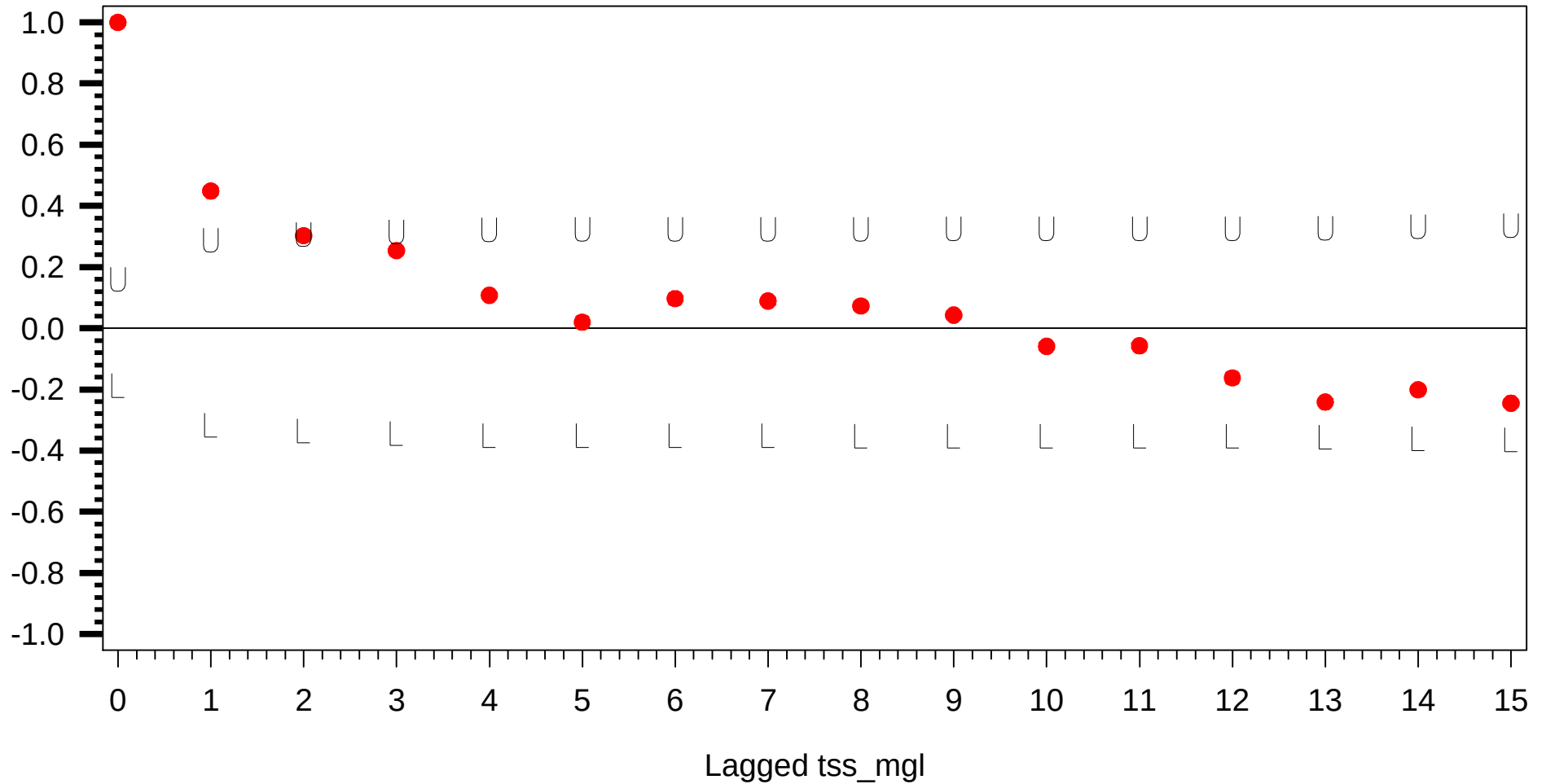
Unadjusted for Seasonal Medians

Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.449	0.151	0.302	-0.302
2	0.303	0.161	0.321	-0.321
3	0.254	0.165	0.330	-0.330
4	0.108	0.168	0.336	-0.336
5	0.020	0.168	0.337	-0.337
6	0.097	0.168	0.337	-0.337
7	0.089	0.169	0.337	-0.337
8	0.073	0.169	0.338	-0.338
9	0.043	0.169	0.339	-0.339
10	-0.059	0.169	0.339	-0.339
11	-0.057	0.170	0.339	-0.339
12	-0.162	0.170	0.339	-0.339
13	-0.241	0.171	0.342	-0.342
14	-0.201	0.173	0.347	-0.347
15	-0.245	0.175	0.350	-0.350

Trends Appendix - Display 244
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 245

Seasonal Kendall Tau Trend Test Statistics for TSS
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.172	0.012	0.166	-0.4

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 246

Seasonal Kendall Tau Trend Test Statistics for TSS

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.17188	0.011760	0.16633	-0.4

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 247

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

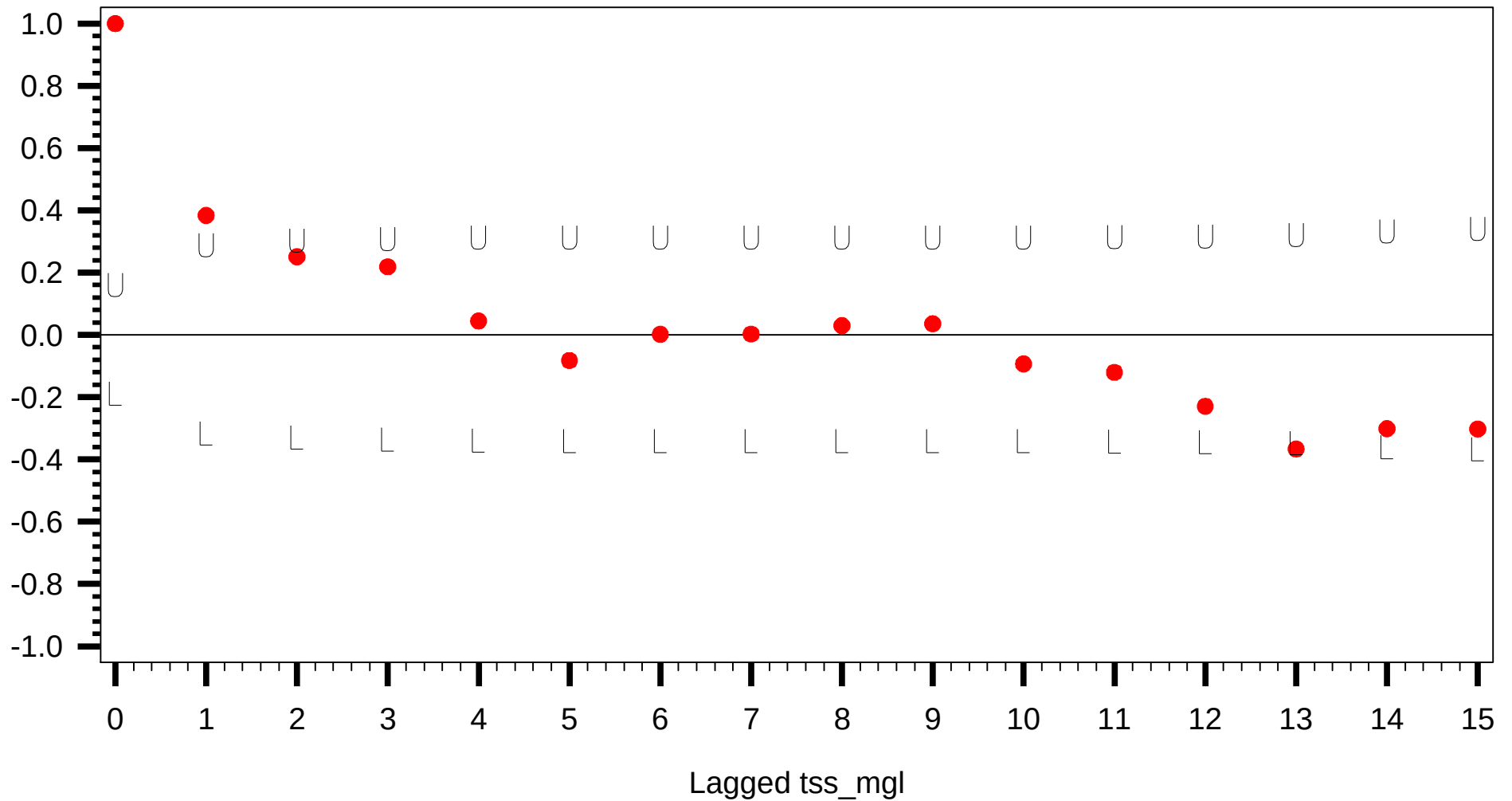
Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.384	0.151	0.302	-0.302
2	0.251	0.158	0.316	-0.316
3	0.219	0.161	0.322	-0.322
4	0.045	0.163	0.326	-0.326
5	-0.082	0.163	0.327	-0.327
6	0.002	0.164	0.327	-0.327
7	0.003	0.164	0.327	-0.327
8	0.030	0.164	0.327	-0.327
9	0.036	0.164	0.327	-0.327
10	-0.093	0.164	0.327	-0.327
11	-0.120	0.164	0.328	-0.328
12	-0.229	0.165	0.330	-0.330
13	-0.366	0.167	0.334	-0.334
14	-0.301	0.173	0.346	-0.346
15	-0.302	0.177	0.354	-0.354

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 248
Correlogram for Sarasota County Segment = LSB'

Correlation

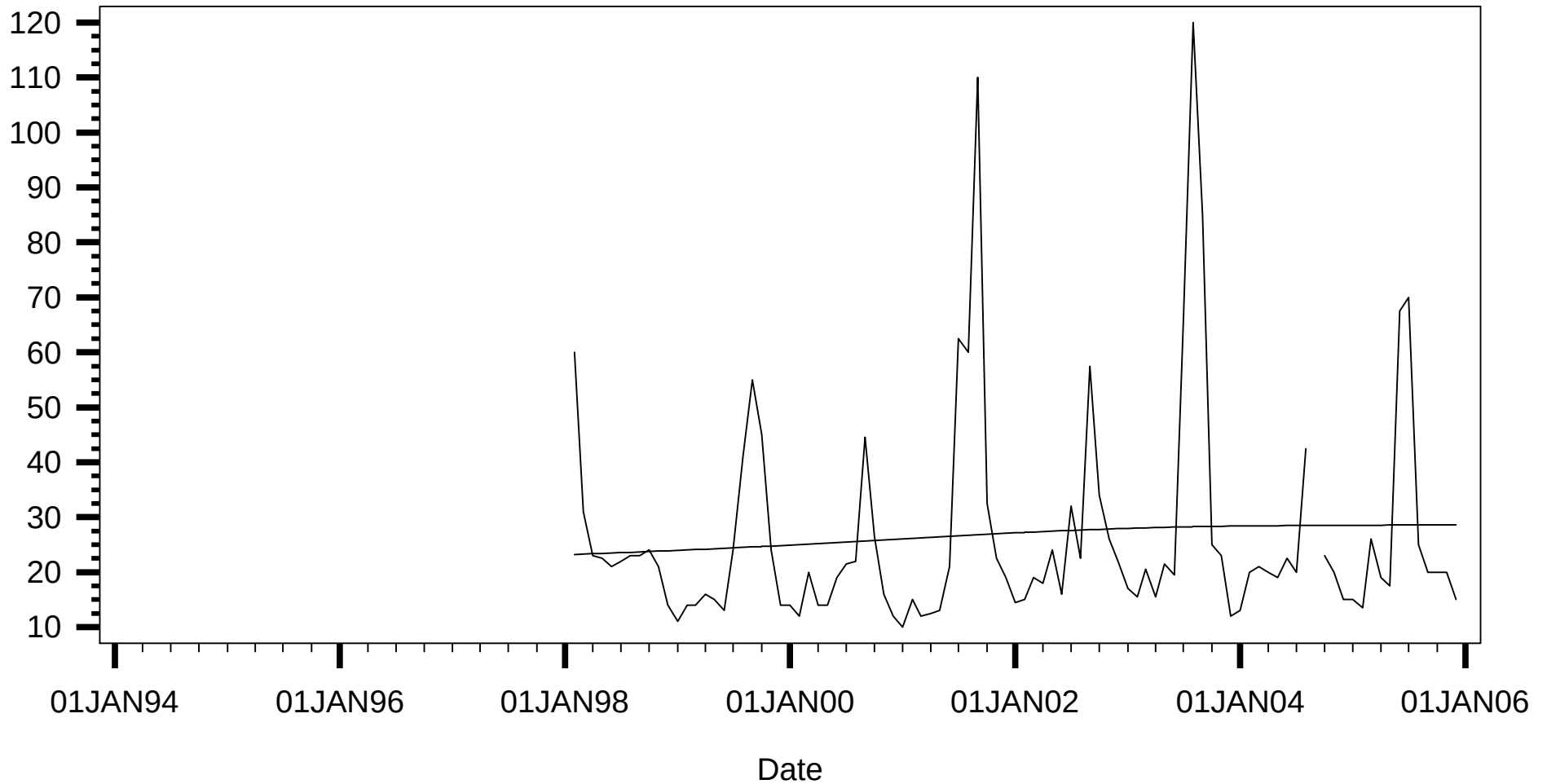
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 249
Monthly Data Time Series for Color
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

Color
(pcu)

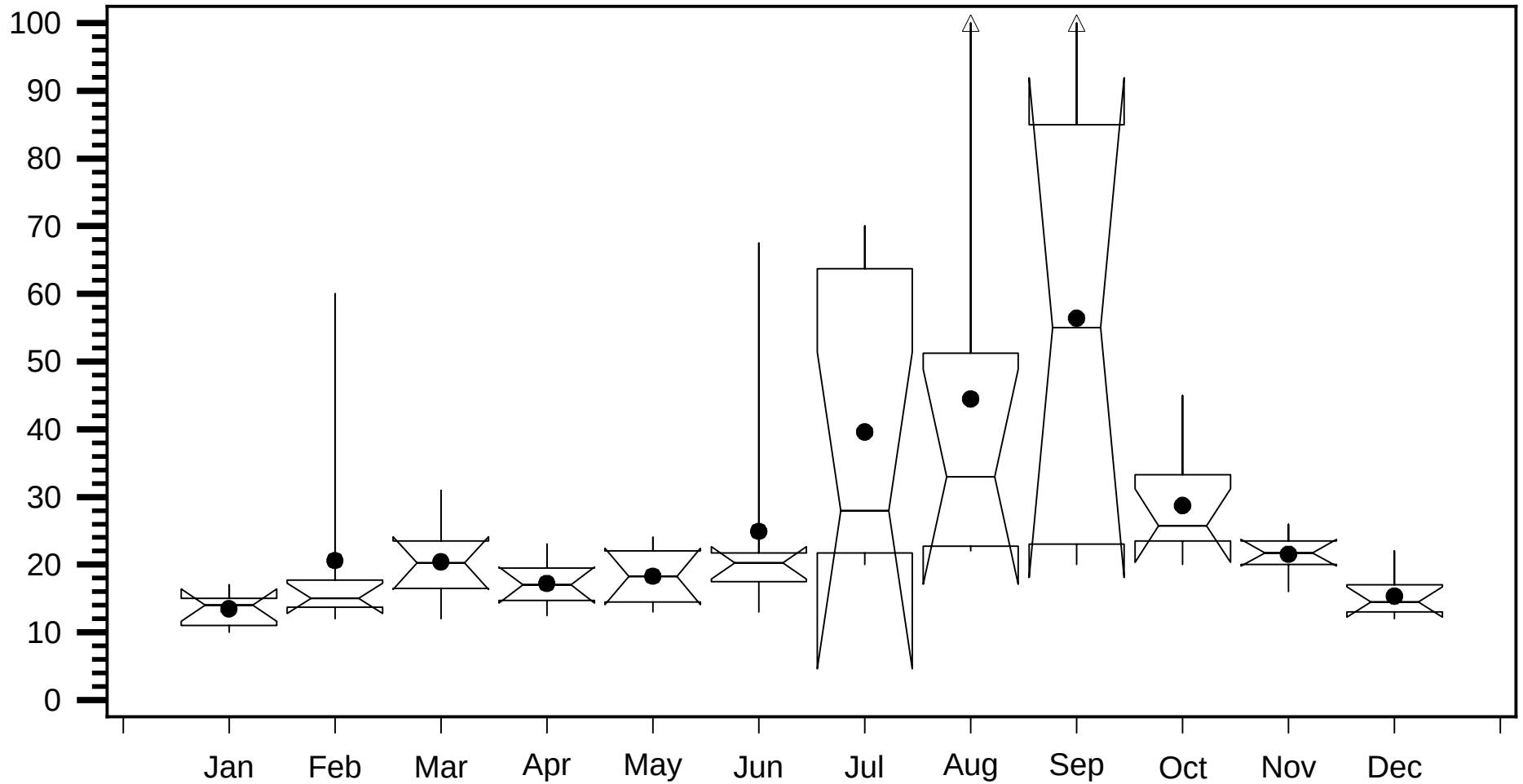


Trends Appendix - Display 250

Seasonal Univariate Statistics for Color

Sarasota County Segment= LSB

Color
(pcu)



Trends Appendix - Display 251

Autocorrelation Statistics for Sarasota County Segment = LSB'

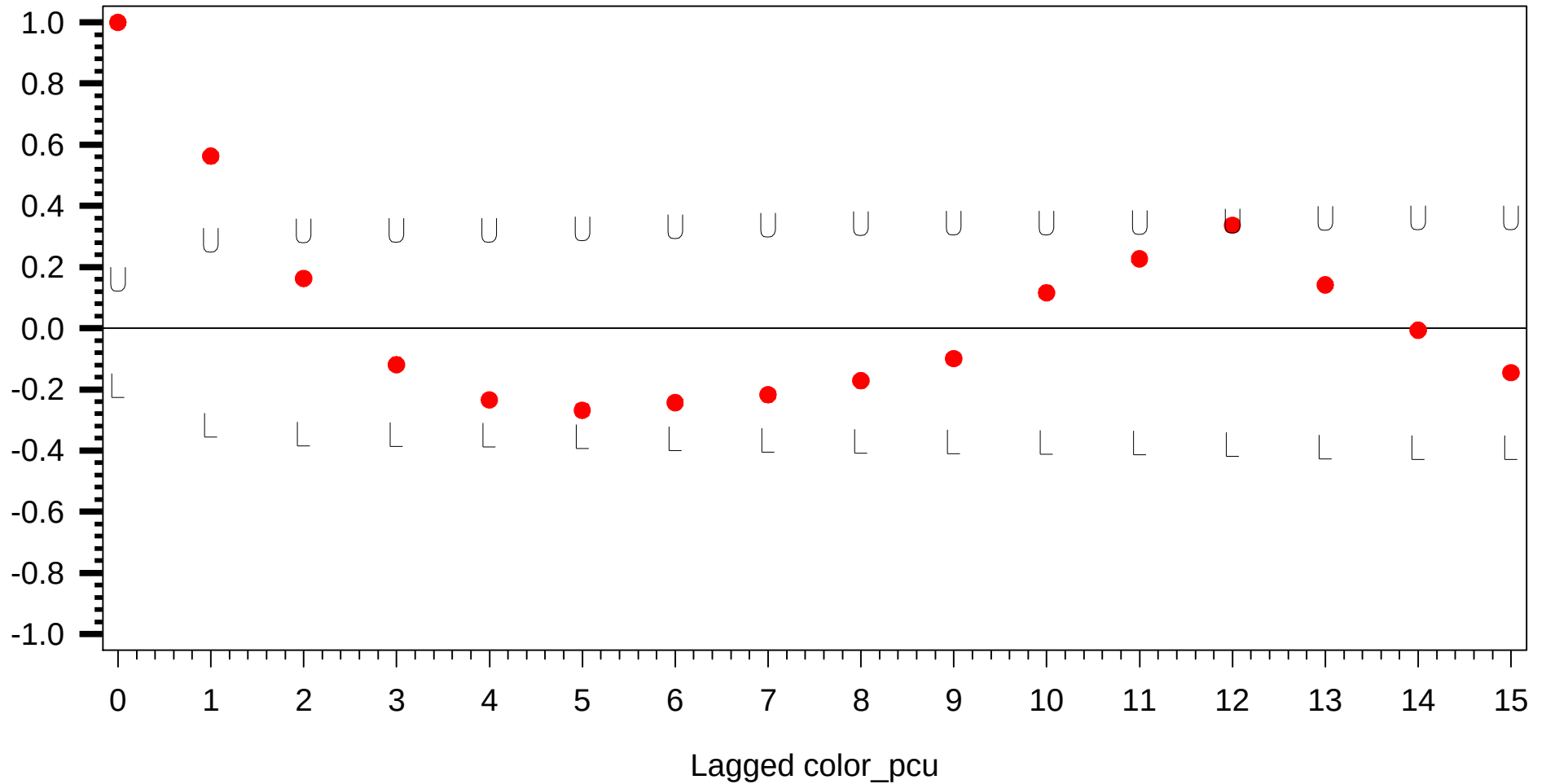
Unadjusted for Seasonal Medians

Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.563	0.151	0.302	-0.302
2	0.163	0.166	0.332	-0.332
3	-0.119	0.167	0.334	-0.334
4	-0.234	0.168	0.335	-0.335
5	-0.268	0.170	0.340	-0.340
6	-0.243	0.173	0.347	-0.347
7	-0.217	0.176	0.352	-0.352
8	-0.171	0.178	0.356	-0.356
9	-0.099	0.179	0.358	-0.358
10	0.116	0.180	0.359	-0.359
11	0.227	0.180	0.360	-0.360
12	0.337	0.182	0.365	-0.365
13	0.142	0.187	0.374	-0.374
14	-0.006	0.188	0.376	-0.376
15	-0.145	0.188	0.376	-0.376

Trends Appendix - Display 252
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 253

Seasonal Kendall Tau Trend Test Statistics for Color
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.124	0.151	0.279	0.3

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 254

Seasonal Kendall Tau Trend Test Statistics for Color

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.12422	0.15056	0.27891	0.3

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 255

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

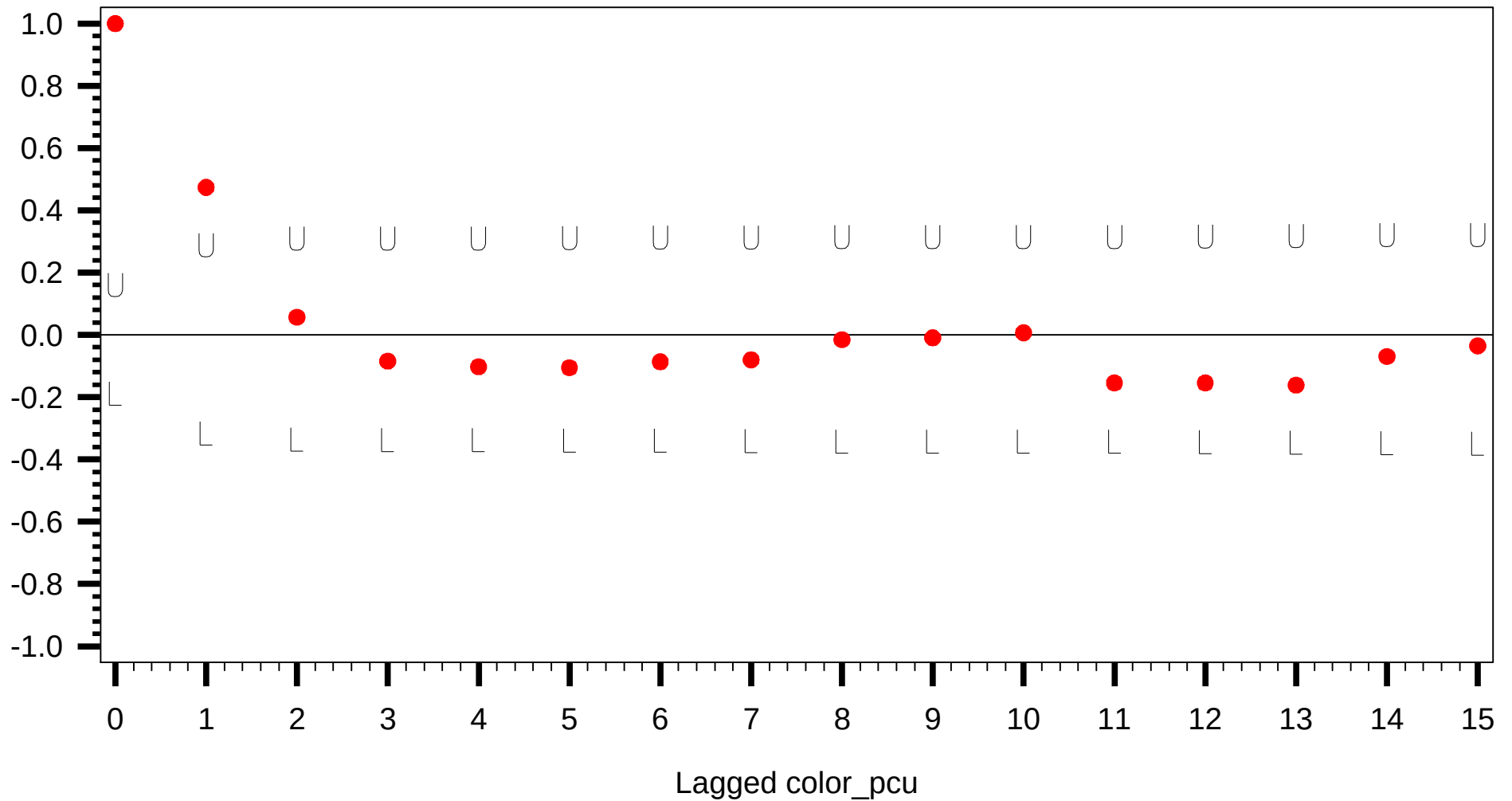
Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.474	0.151	0.302	-0.302
2	0.057	0.162	0.323	-0.323
3	-0.084	0.162	0.324	-0.324
4	-0.102	0.162	0.324	-0.324
5	-0.105	0.163	0.325	-0.325
6	-0.086	0.163	0.326	-0.326
7	-0.080	0.163	0.327	-0.327
8	-0.015	0.164	0.328	-0.328
9	-0.009	0.164	0.328	-0.328
10	0.007	0.164	0.328	-0.328
11	-0.154	0.164	0.328	-0.328
12	-0.154	0.165	0.330	-0.330
13	-0.161	0.166	0.332	-0.332
14	-0.069	0.167	0.334	-0.334
15	-0.035	0.167	0.335	-0.335

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 256
Correlogram for Sarasota County Segment = LSB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

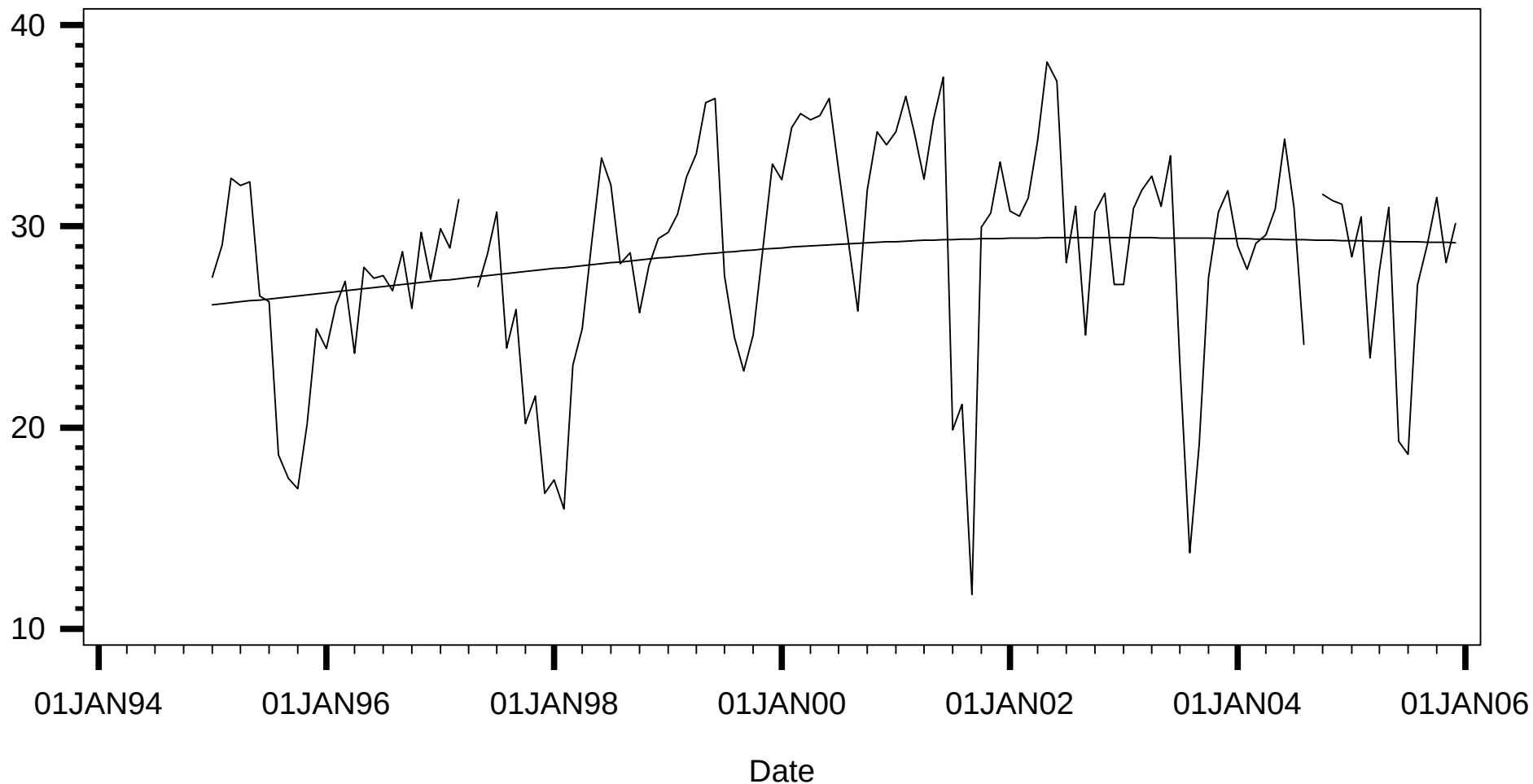
Trends Appendix - Display 257

Monthly Data Time Series for Salinity

Sarasota County Segment= LSB

Not Adjusted for Seasonal Medians

Salinity
(ppt)

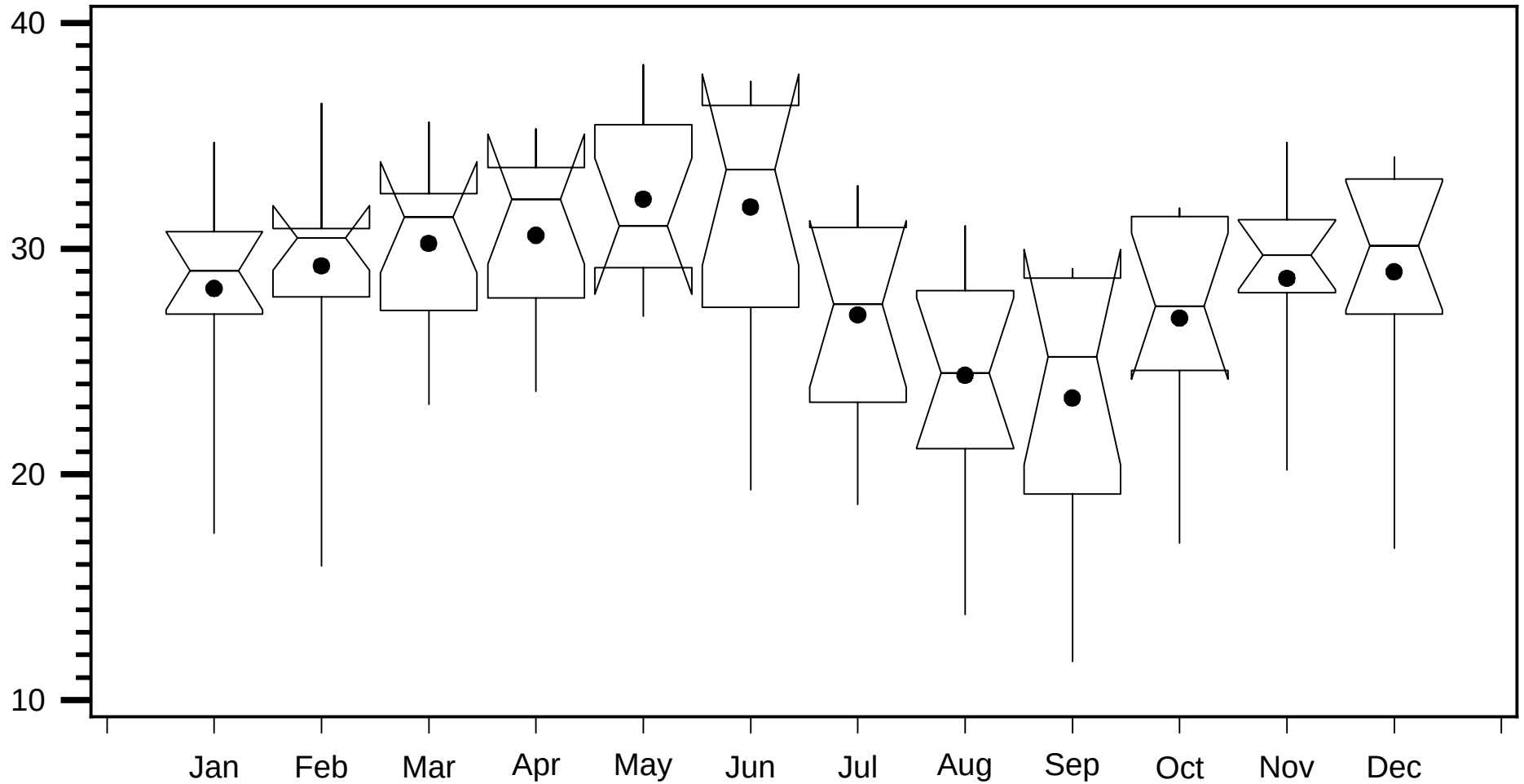


Trends Appendix - Display 258

Seasonal Univariate Statistics for Salinity

Sarasota County Segment= LSB

Salinity
(ppt)



Trends Appendix - Display 259

Autocorrelation Statistics for Sarasota County Segment = LSB'

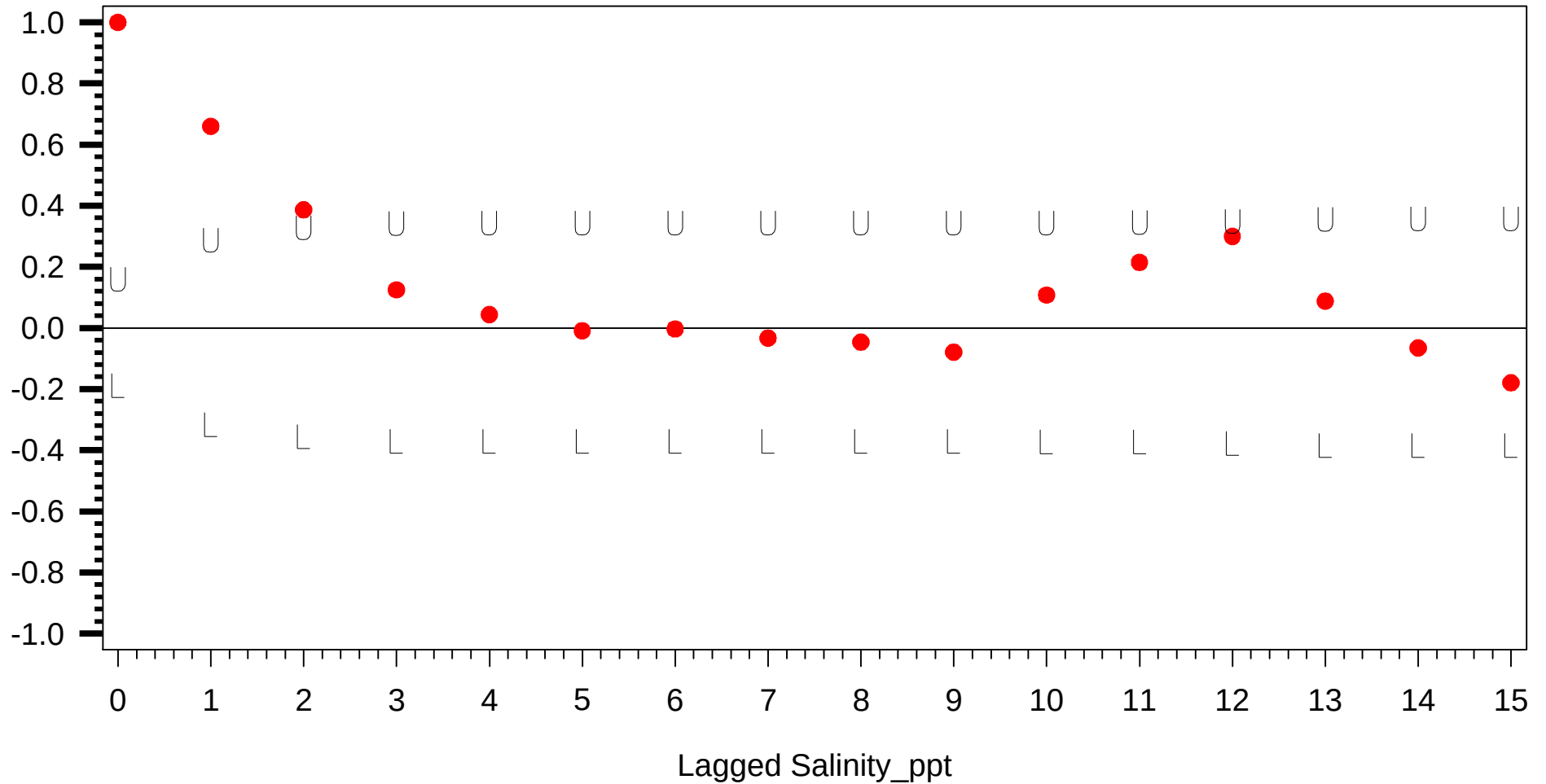
Unadjusted for Seasonal Medians

Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.660	0.151	0.302	-0.302
2	0.387	0.171	0.342	-0.342
3	0.125	0.178	0.356	-0.356
4	0.044	0.178	0.357	-0.357
5	-0.009	0.179	0.357	-0.357
6	-0.003	0.179	0.357	-0.357
7	-0.033	0.179	0.357	-0.357
8	-0.046	0.179	0.357	-0.357
9	-0.079	0.179	0.357	-0.357
10	0.108	0.179	0.358	-0.358
11	0.215	0.179	0.359	-0.359
12	0.300	0.181	0.363	-0.363
13	0.088	0.185	0.370	-0.370
14	-0.065	0.185	0.371	-0.371
15	-0.179	0.186	0.371	-0.371

Trends Appendix - Display 260
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 261

Seasonal Kendall Tau Trend Test Statistics for Salinity
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.167	0.015	0.236	0.33

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 262

Seasonal Kendall Tau Trend Test Statistics for Salinity

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.16719	0.014997	0.23624	0.32972

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 263

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

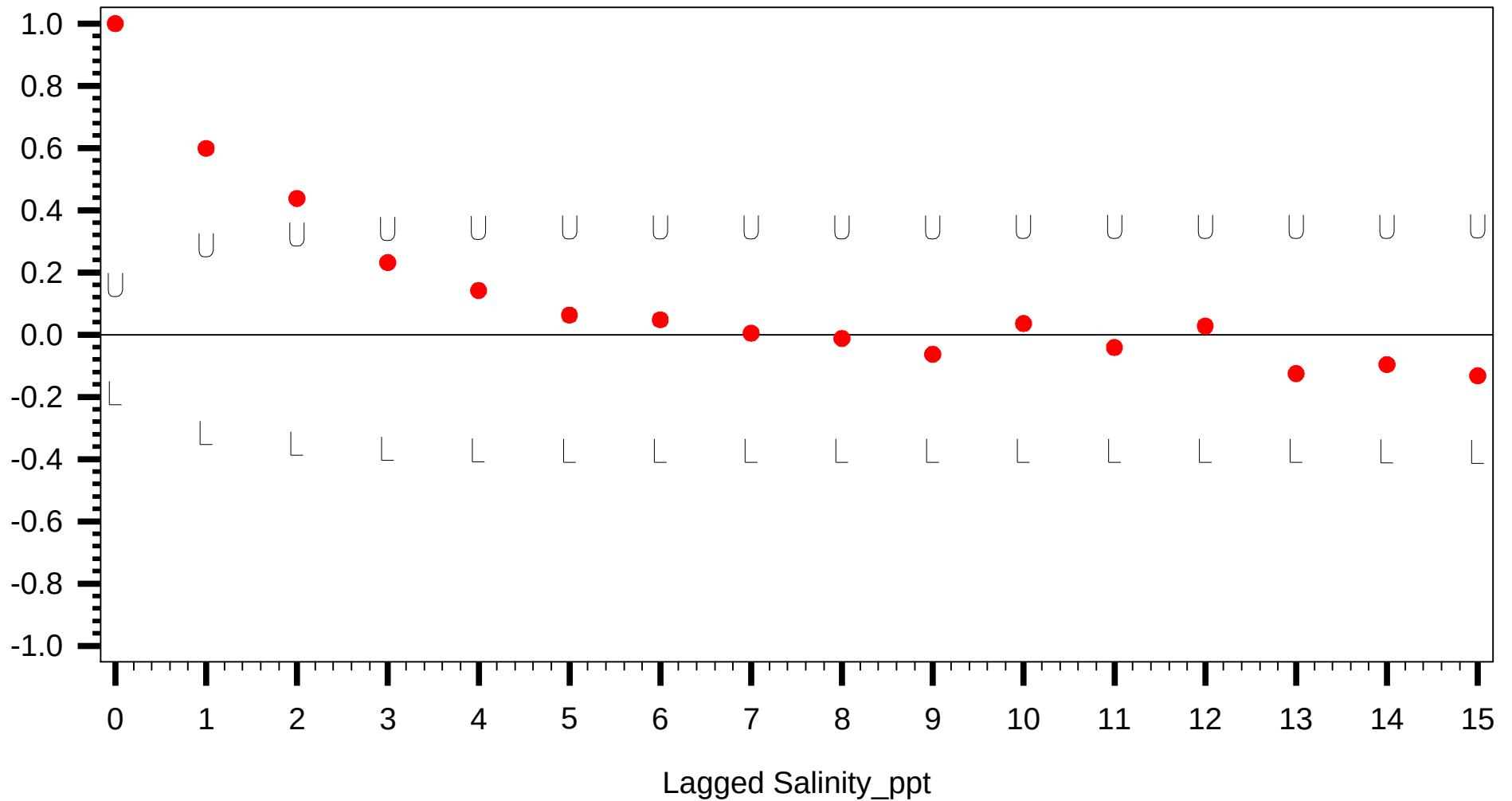
Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.599	0.151	0.302	-0.302
2	0.438	0.168	0.336	-0.336
3	0.232	0.176	0.353	-0.353
4	0.142	0.179	0.357	-0.357
5	0.063	0.179	0.359	-0.359
6	0.048	0.180	0.359	-0.359
7	0.005	0.180	0.359	-0.359
8	-0.012	0.180	0.359	-0.359
9	-0.063	0.180	0.359	-0.359
10	0.036	0.180	0.360	-0.360
11	-0.041	0.180	0.360	-0.360
12	0.028	0.180	0.360	-0.360
13	-0.125	0.180	0.360	-0.360
14	-0.096	0.181	0.361	-0.361
15	-0.132	0.181	0.362	-0.362

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 264
Correlogram for Sarasota County Segment = LSB'

Correlation

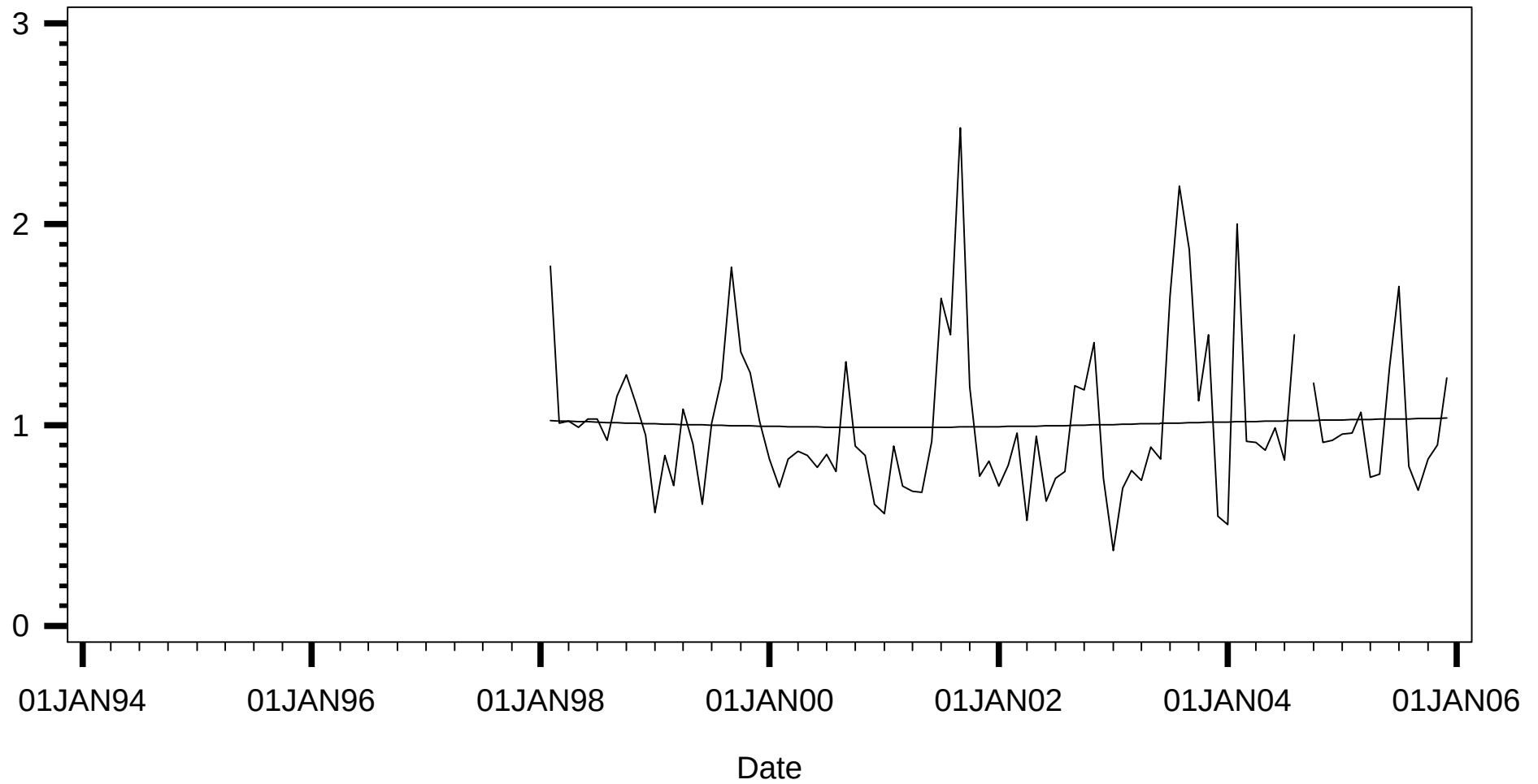
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 265
Monthly Data Time Series for Kd
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

Kd
(1/meter)

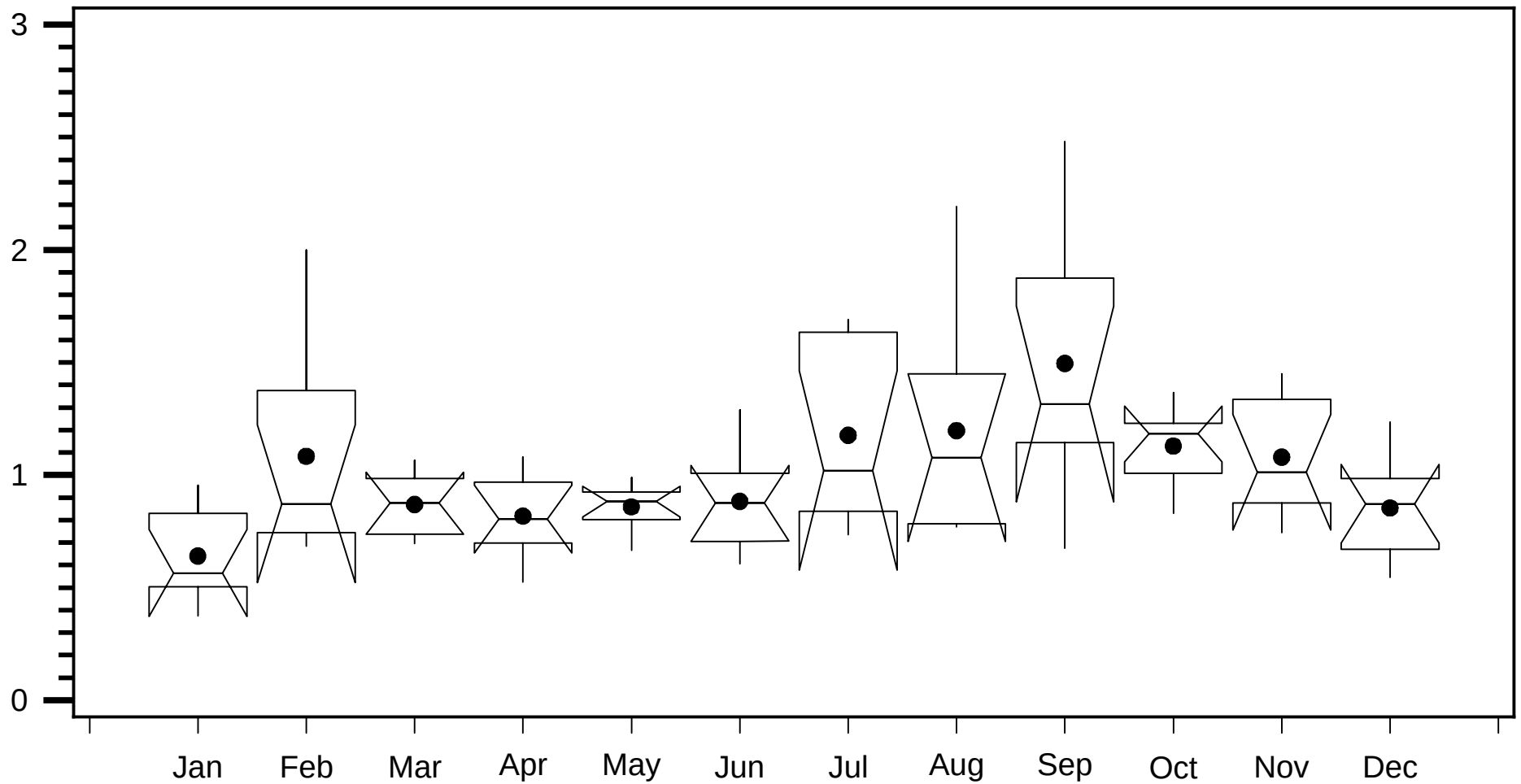


Trends Appendix - Display 266

Seasonal Univariate Statistics for Kd

Sarasota County Segment= LSB

Kd
(1/meter)



Trends Appendix - Display 267

Autocorrelation Statistics for Sarasota County Segment = LSB'

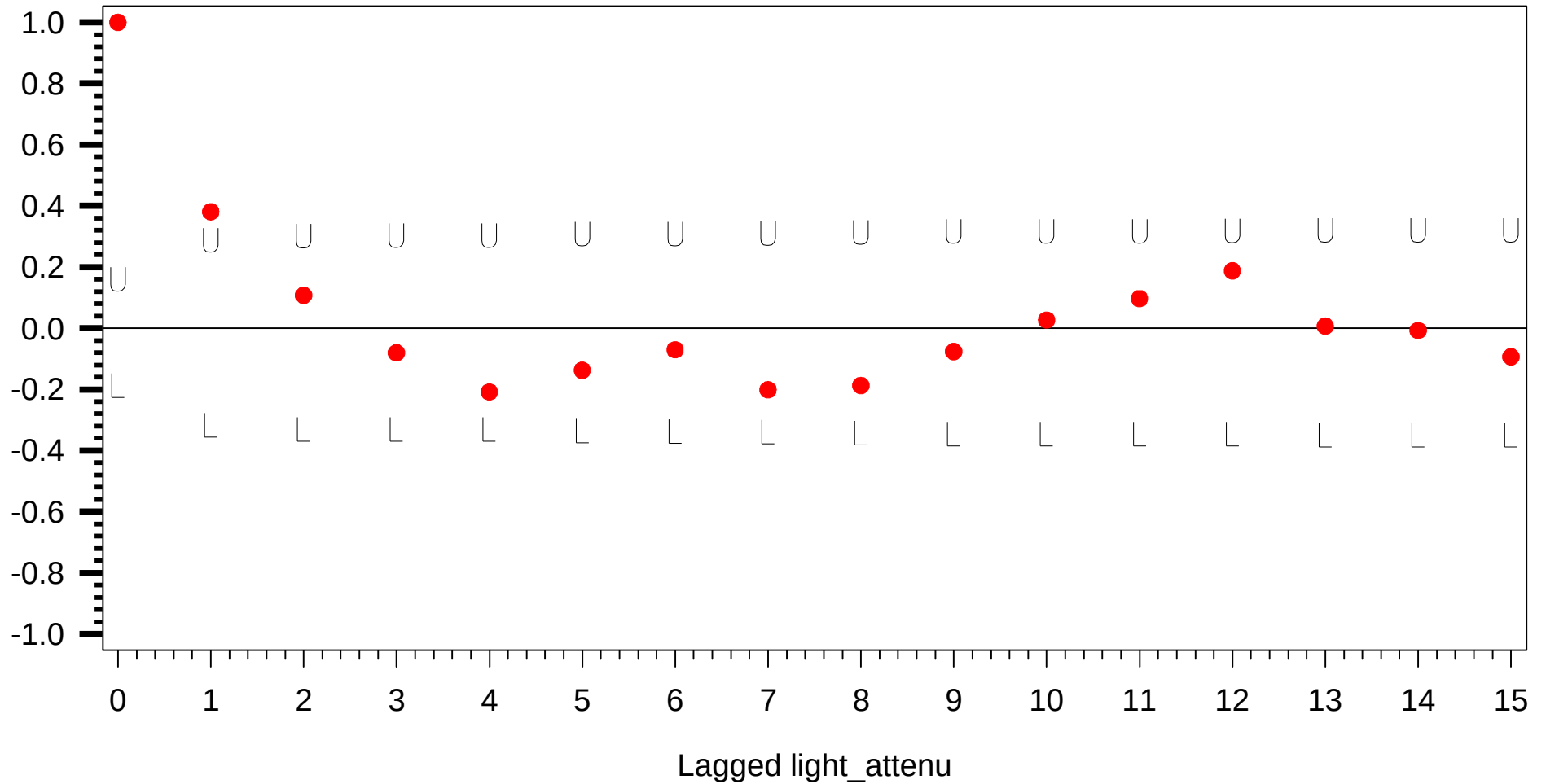
Unadjusted for Seasonal Medians

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.381	0.151	0.302	-0.302
2	0.108	0.158	0.316	-0.316
3	-0.080	0.158	0.317	-0.317
4	-0.208	0.159	0.317	-0.317
5	-0.137	0.161	0.322	-0.322
6	-0.070	0.162	0.323	-0.323
7	-0.201	0.162	0.324	-0.324
8	-0.187	0.164	0.328	-0.328
9	-0.076	0.165	0.331	-0.331
10	0.027	0.166	0.331	-0.331
11	0.097	0.166	0.331	-0.331
12	0.188	0.166	0.332	-0.332
13	0.007	0.168	0.335	-0.335
14	-0.007	0.168	0.335	-0.335
15	-0.093	0.168	0.335	-0.335

Trends Appendix - Display 268
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 269

Seasonal Kendall Tau Trend Test Statistics for Kd
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.031	0.741	0.791	-.004

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 270

Seasonal Kendall Tau Trend Test Statistics for Kd

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.031056	0.74076	0.79147	-.004

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 271

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

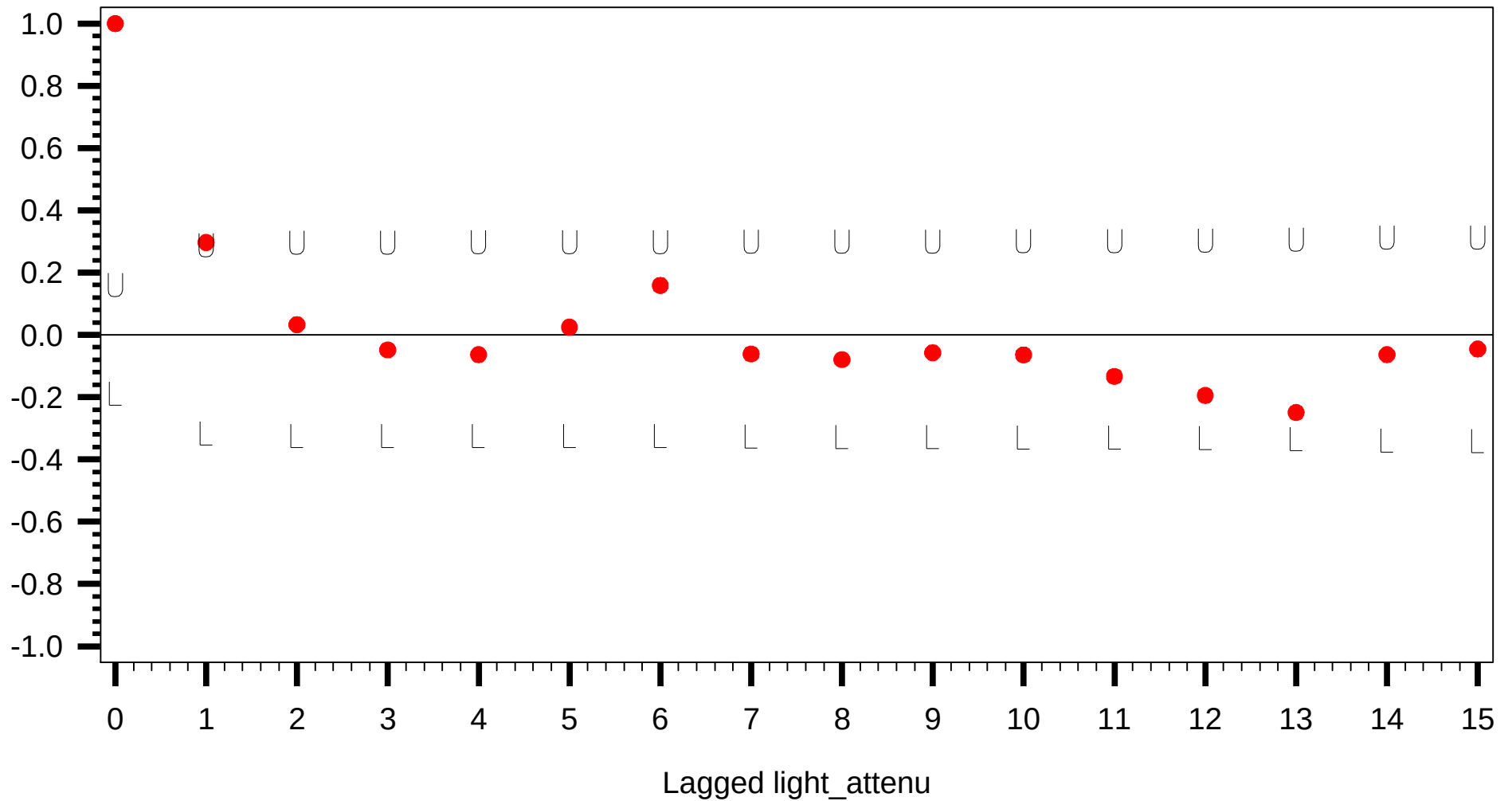
Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.297	0.151	0.302	-0.302
2	0.033	0.155	0.310	-0.310
3	-0.048	0.155	0.310	-0.310
4	-0.063	0.155	0.311	-0.311
5	0.025	0.155	0.311	-0.311
6	0.159	0.156	0.311	-0.311
7	-0.061	0.157	0.313	-0.313
8	-0.079	0.157	0.314	-0.314
9	-0.057	0.157	0.314	-0.314
10	-0.064	0.157	0.315	-0.315
11	-0.133	0.158	0.315	-0.315
12	-0.194	0.158	0.317	-0.317
13	-0.249	0.160	0.320	-0.320
14	-0.063	0.163	0.326	-0.326
15	-0.045	0.163	0.327	-0.327

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 272
Correlogram for Sarasota County Segment = LSB'

Correlation

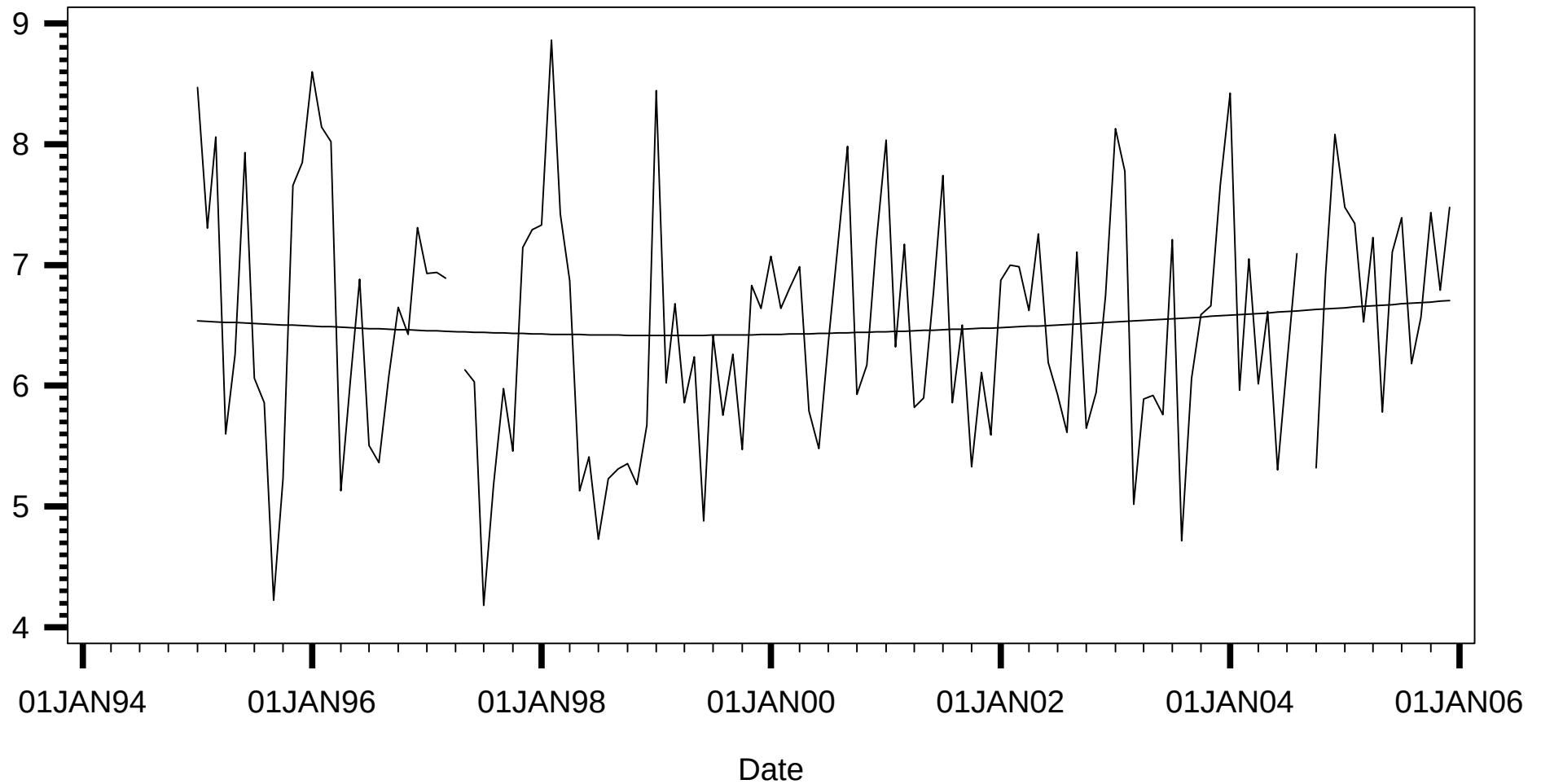
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 273
Monthly Data Time Series for DO
Sarasota County Segment= LSB
Not Adjusted for Seasonal Medians

DO
(mgl)

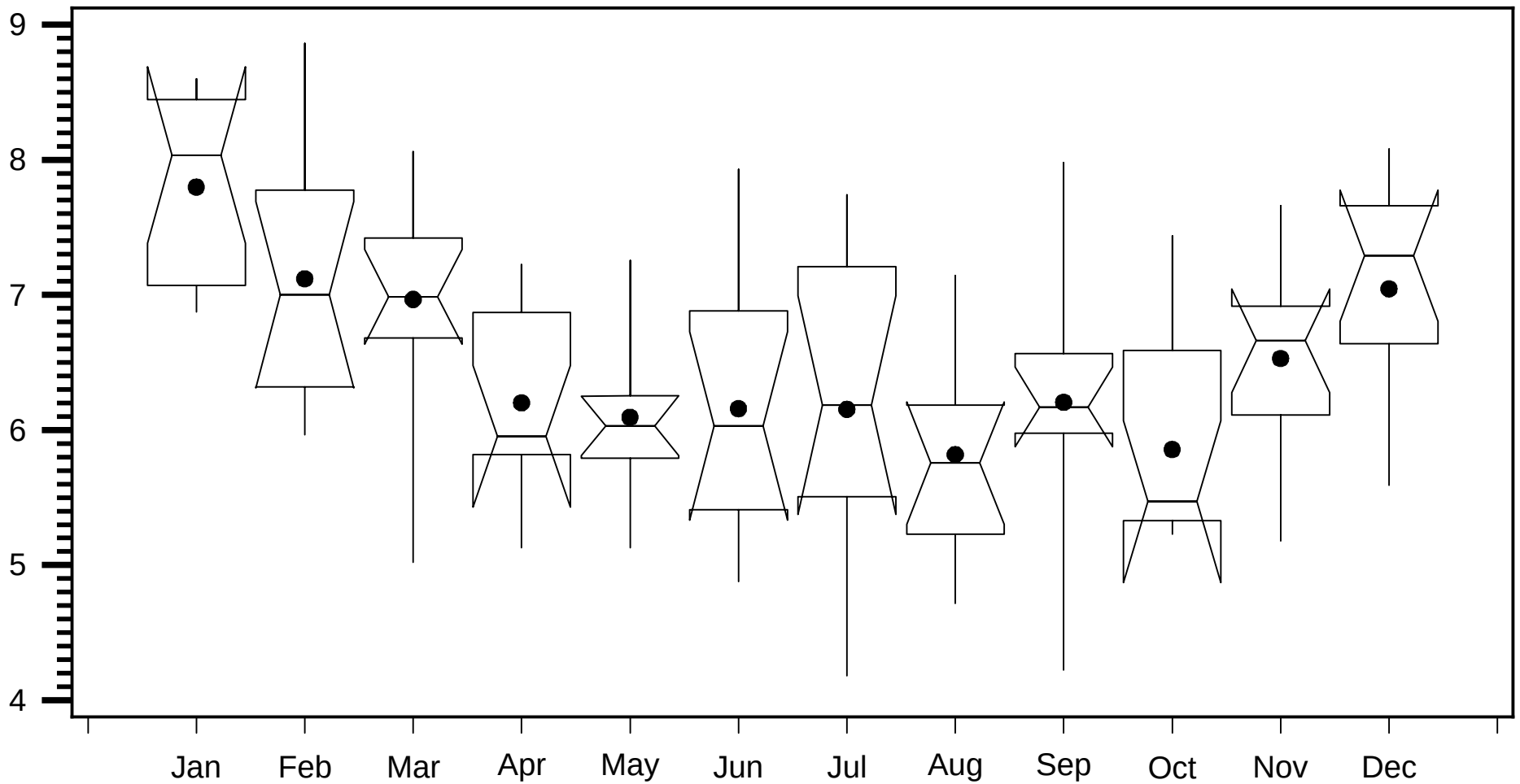


Trends Appendix - Display 274

Seasonal Univariate Statistics for DO

Sarasota County Segment= LSB

DO
(mg/l)



Trends Appendix - Display 275

Autocorrelation Statistics for Sarasota County Segment = LSB'

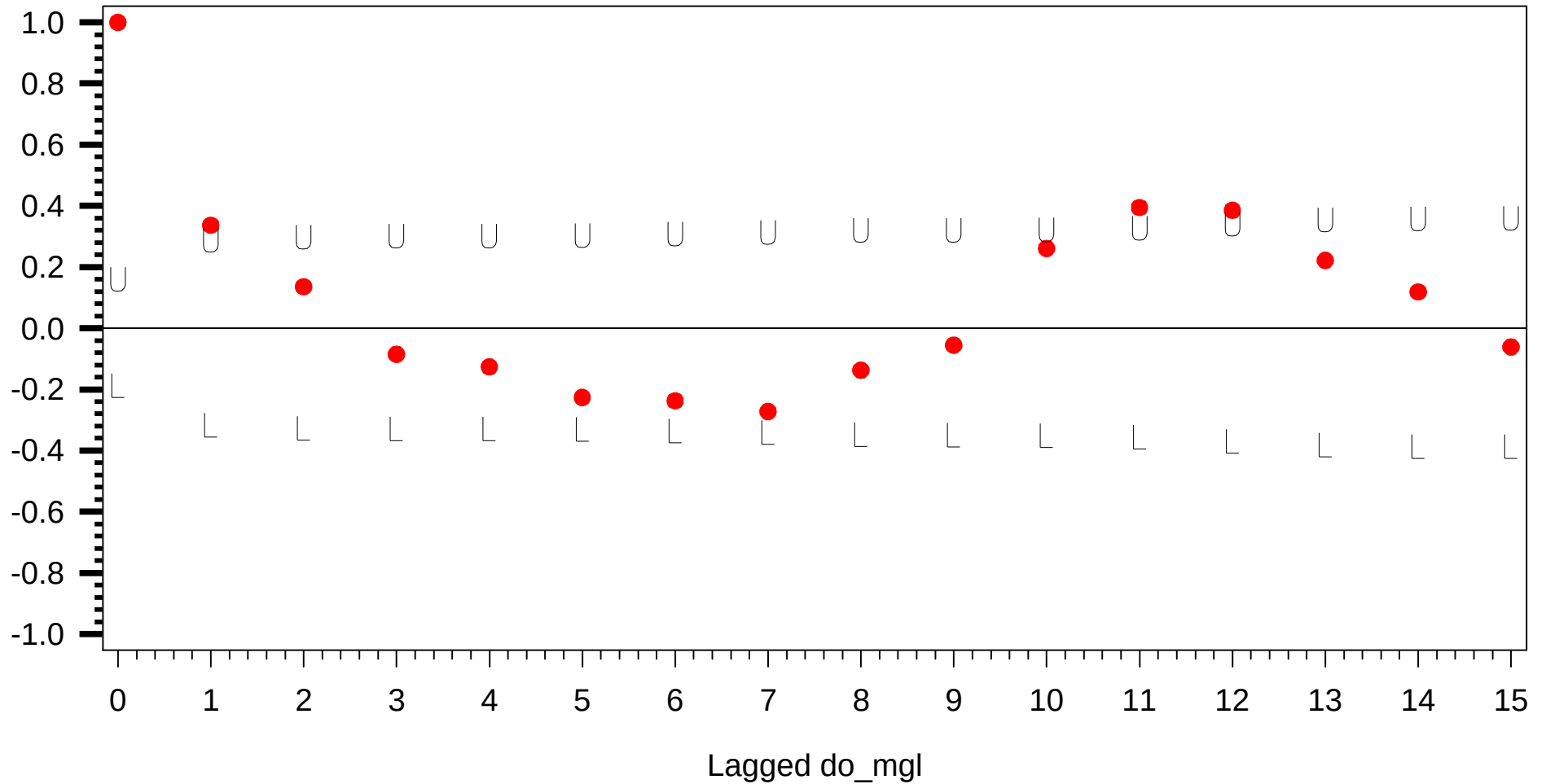
Unadjusted for Seasonal Medians

Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.337	0.151	0.302	-0.302
2	0.136	0.156	0.313	-0.313
3	-0.085	0.157	0.315	-0.315
4	-0.126	0.158	0.315	-0.315
5	-0.226	0.158	0.317	-0.317
6	-0.237	0.161	0.322	-0.322
7	-0.272	0.163	0.327	-0.327
8	-0.137	0.167	0.334	-0.334
9	-0.055	0.168	0.335	-0.335
10	0.261	0.168	0.336	-0.336
11	0.395	0.171	0.342	-0.342
12	0.386	0.178	0.355	-0.355
13	0.222	0.184	0.368	-0.368
14	0.119	0.186	0.372	-0.372
15	-0.061	0.186	0.373	-0.373

Trends Appendix - Display 276
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 277

Seasonal Kendall Tau Trend Test Statistics for DO
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.039	0.582	0.605	0.019

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 278

Seasonal Kendall Tau Trend Test Statistics for DO

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.039063	0.58181	0.60488	0.018667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 279

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

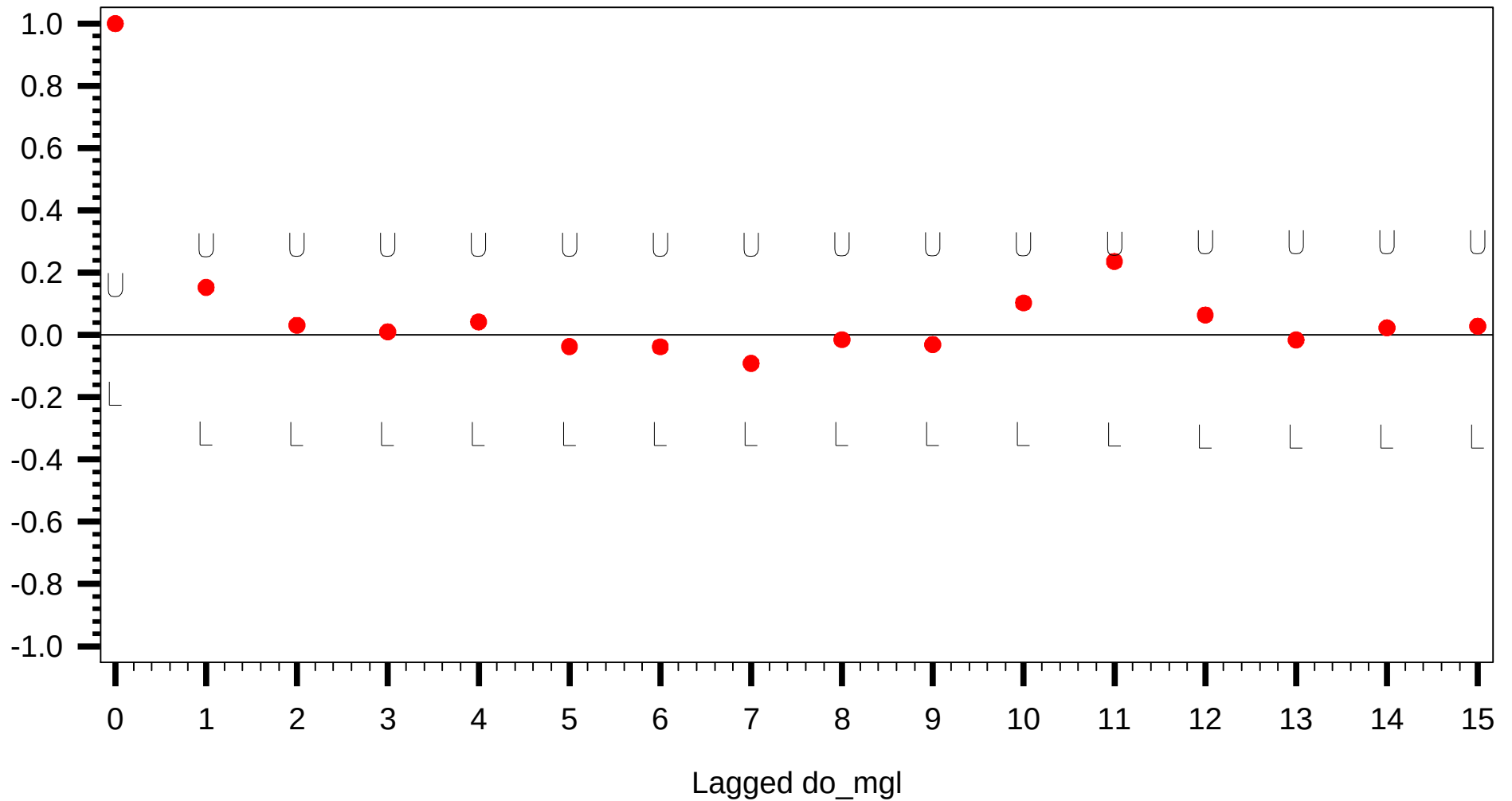
Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.153	0.151	0.302	-0.302
2	0.031	0.152	0.304	-0.304
3	0.010	0.152	0.304	-0.304
4	0.042	0.152	0.304	-0.304
5	-0.037	0.152	0.304	-0.304
6	-0.038	0.152	0.304	-0.304
7	-0.091	0.152	0.304	-0.304
8	-0.015	0.153	0.305	-0.305
9	-0.031	0.153	0.305	-0.305
10	0.103	0.153	0.305	-0.305
11	0.236	0.153	0.306	-0.306
12	0.064	0.156	0.312	-0.312
13	-0.016	0.156	0.312	-0.312
14	0.023	0.156	0.312	-0.312
15	0.028	0.156	0.312	-0.312

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 280
Correlogram for Sarasota County Segment = LSB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

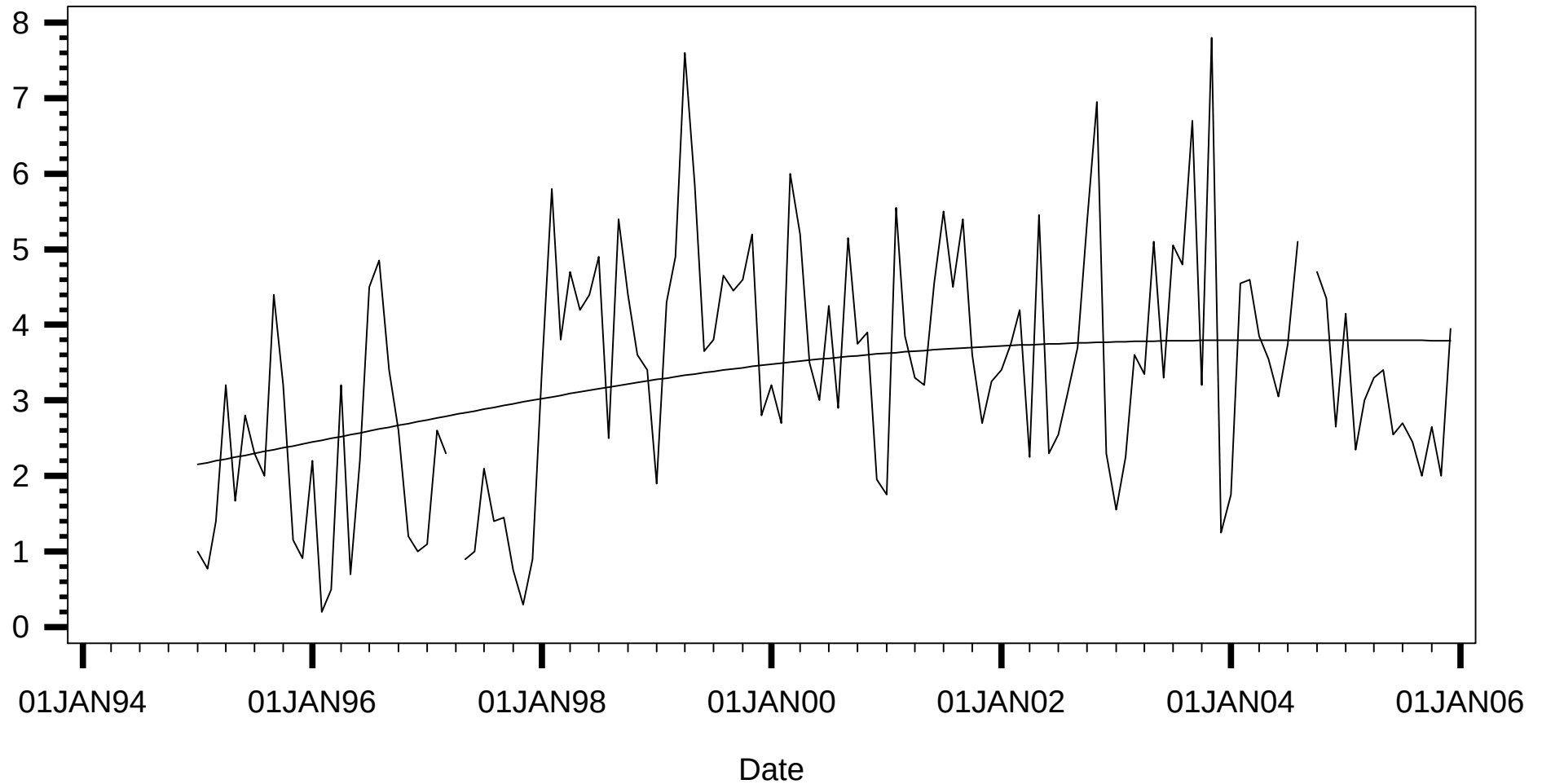
Trends Appendix - Display 281

Monthly Data Time Series for Turbidity

Sarasota County Segment= LSB

Not Adjusted for Seasonal Medians

Turbidity
(NTU)

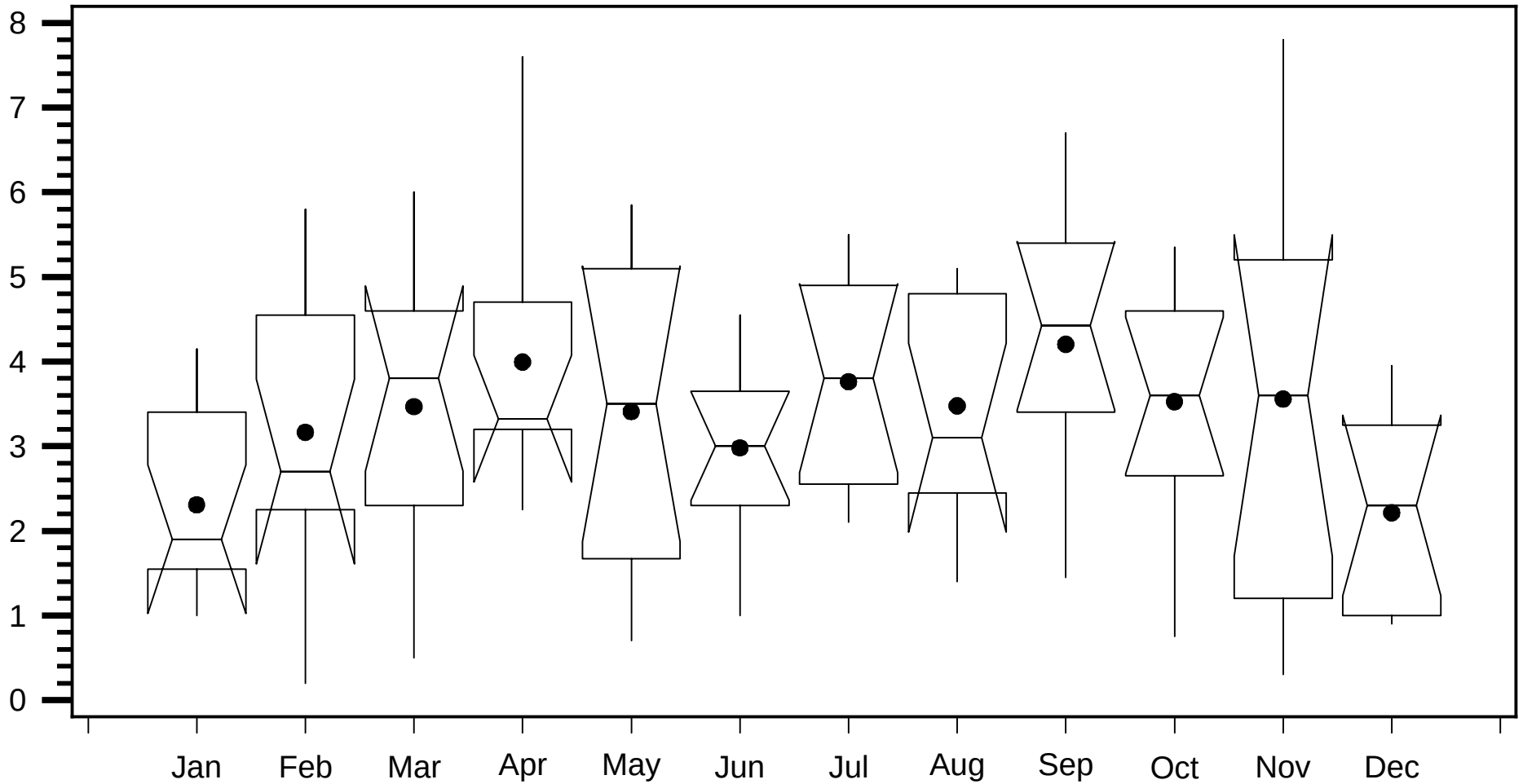


Trends Appendix - Display 282

Seasonal Univariate Statistics for Turbidity

Sarasota County Segment= LSB

Turbidity
(NTU)



Trends Appendix - Display 283

Autocorrelation Statistics for Sarasota County Segment = LSB'

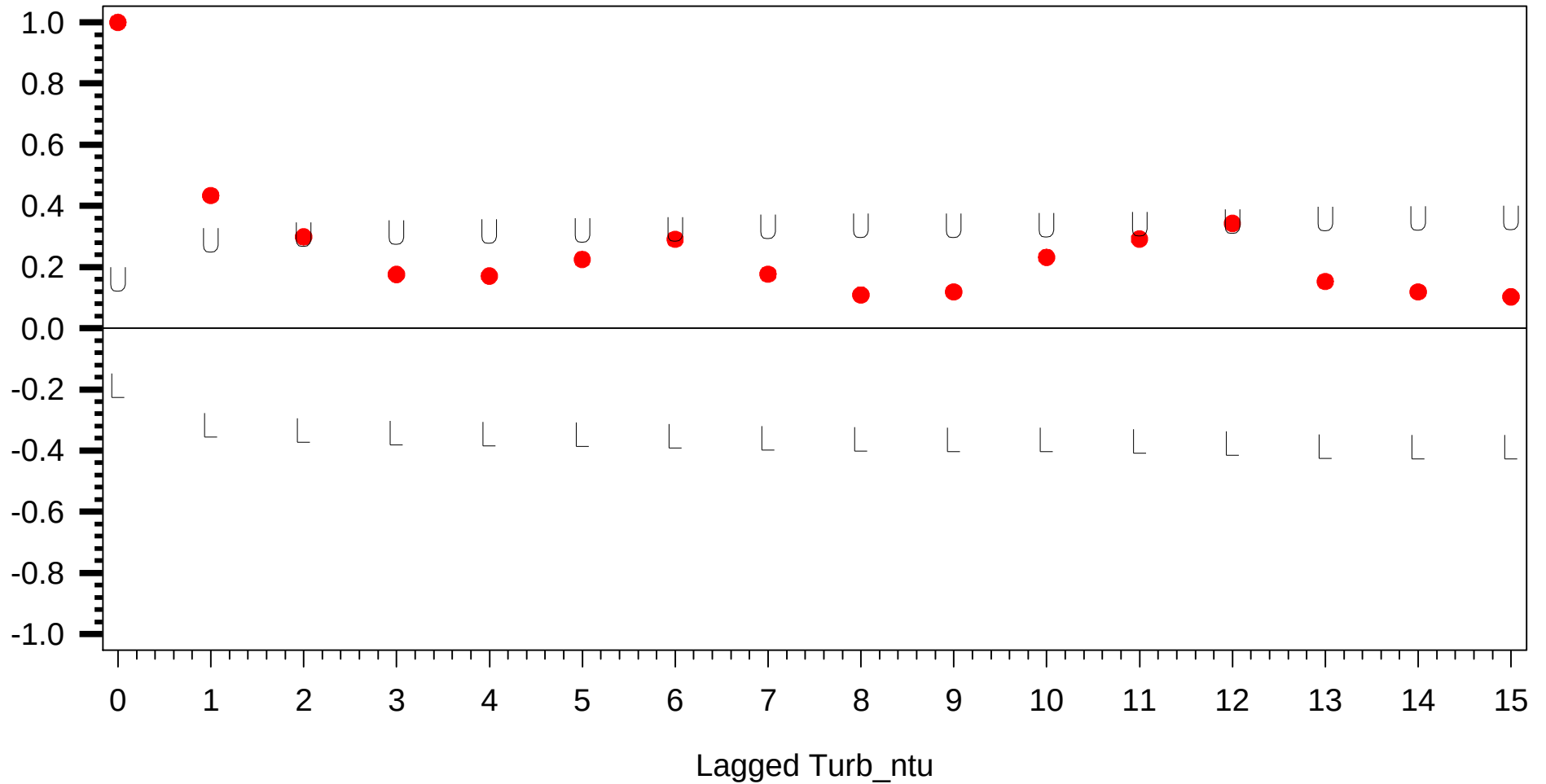
Unadjusted for Seasonal Medians

Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.434	0.151	0.302	-0.302
2	0.299	0.160	0.320	-0.320
3	0.176	0.164	0.328	-0.328
4	0.171	0.166	0.331	-0.331
5	0.225	0.167	0.334	-0.334
6	0.291	0.169	0.338	-0.338
7	0.177	0.173	0.346	-0.346
8	0.109	0.174	0.349	-0.349
9	0.119	0.175	0.350	-0.350
10	0.232	0.175	0.351	-0.351
11	0.292	0.178	0.355	-0.355
12	0.343	0.181	0.363	-0.363
13	0.153	0.186	0.372	-0.372
14	0.119	0.187	0.374	-0.374
15	0.103	0.188	0.375	-0.375

Trends Appendix - Display 284
Correlogram for Sarasota County Segment = LSB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 285

Seasonal Kendall Tau Trend Test Statistics for Turbidity
Sarasota County Segment = LSB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.225	.001	0.159	0.142

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 286

Seasonal Kendall Tau Trend Test Statistics for Turbidity

Sarasota County Segment = LSB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.225	.00101686	0.15926	0.14167

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 287

Autocorrelation Statistics for Sarasota County Segment = LSB'

Adjusted for Seasonal Median and Detrended

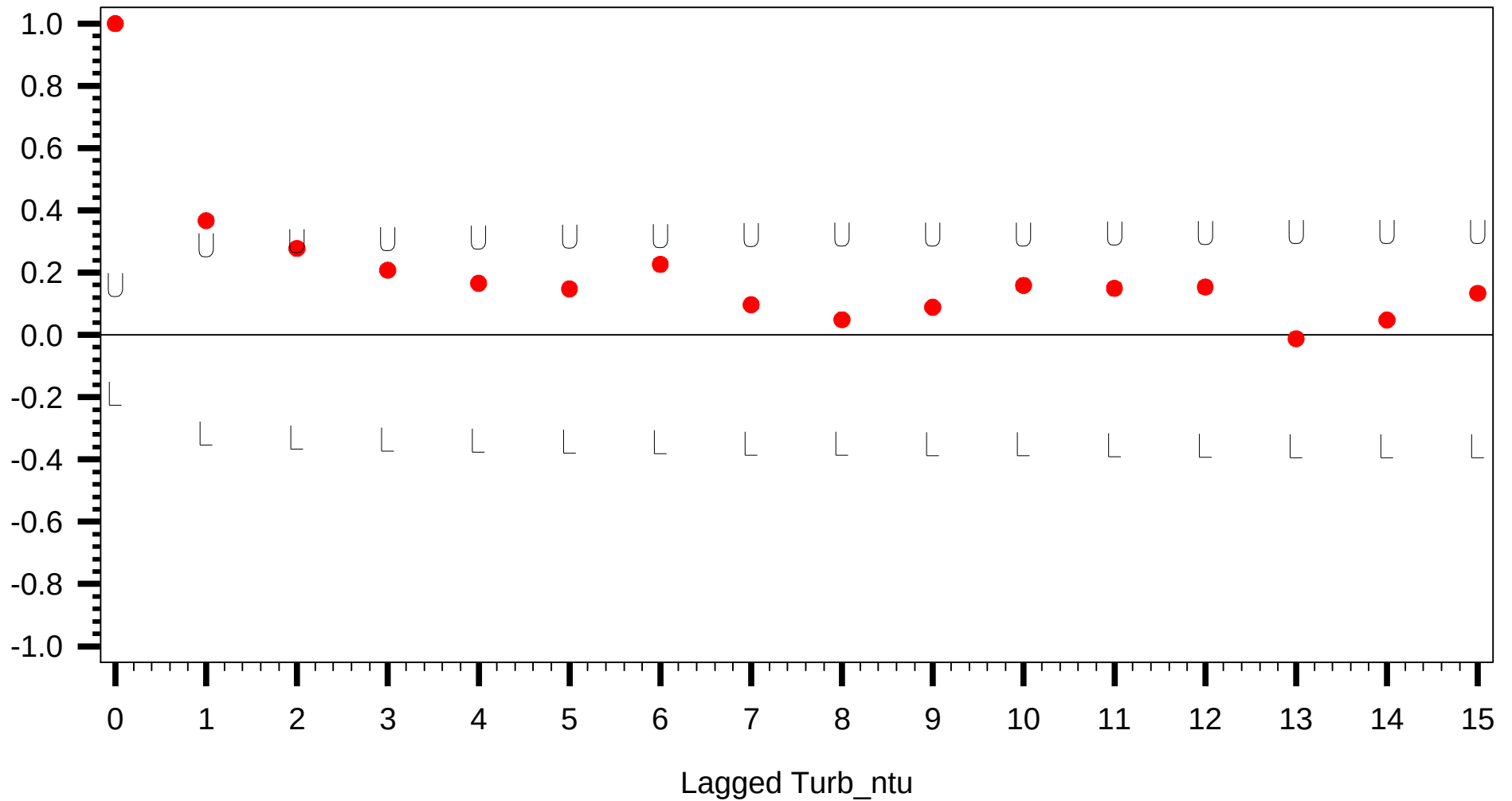
Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.367	0.151	0.302	-0.302
2	0.278	0.157	0.315	-0.315
3	0.208	0.161	0.322	-0.322
4	0.166	0.163	0.326	-0.326
5	0.148	0.164	0.329	-0.329
6	0.227	0.165	0.331	-0.331
7	0.097	0.168	0.335	-0.335
8	0.049	0.168	0.336	-0.336
9	0.089	0.168	0.337	-0.337
10	0.159	0.169	0.337	-0.337
11	0.150	0.170	0.340	-0.340
12	0.154	0.171	0.342	-0.342
13	-0.012	0.172	0.344	-0.344
14	0.048	0.172	0.344	-0.344
15	0.134	0.172	0.344	-0.344

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 288
Correlogram for Sarasota County Segment = LSB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

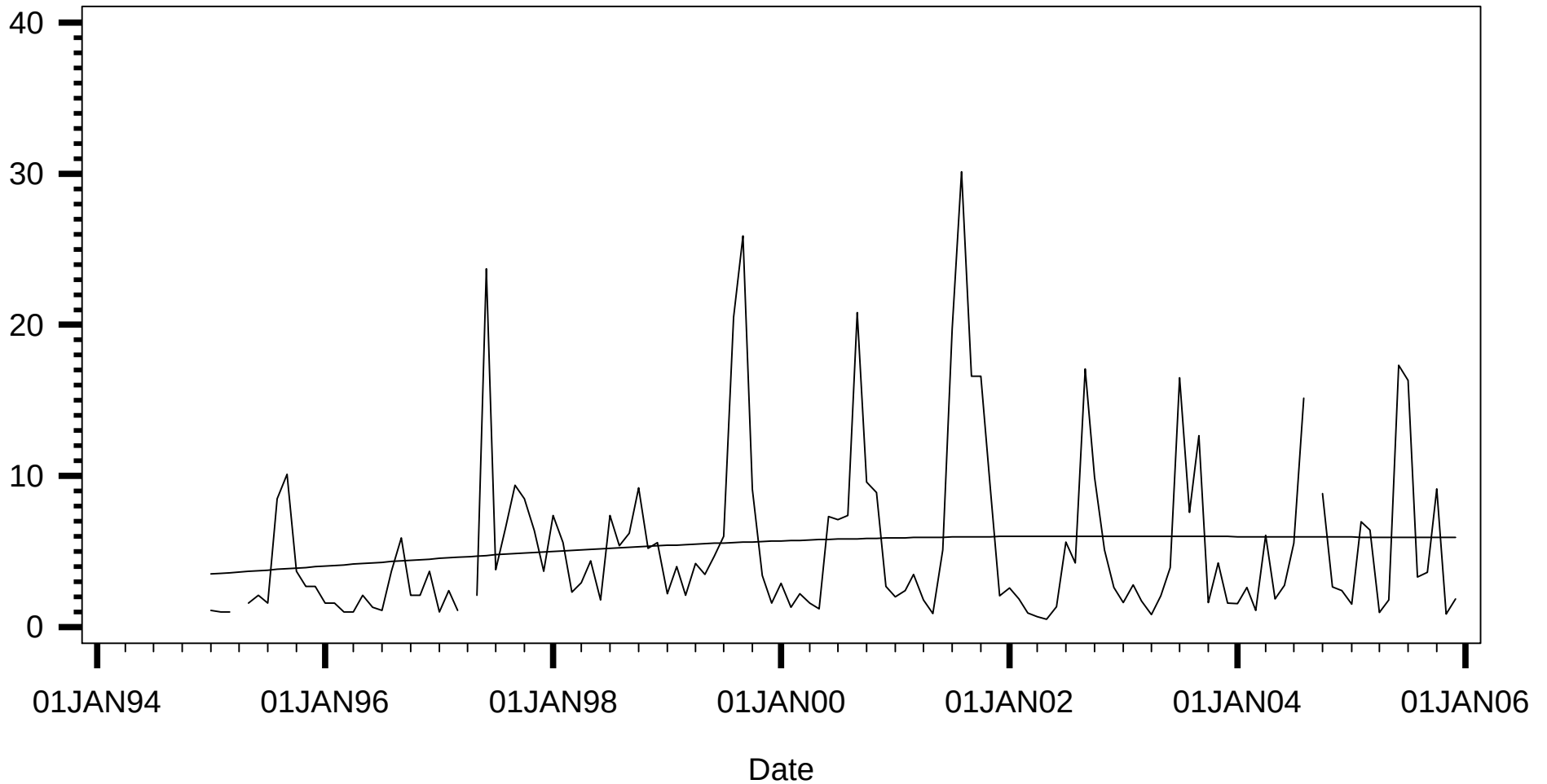
Trends Appendix - Display 289

Monthly Data Time Series for CHLA_C

"Sarasota County Segment= "BB

Not Adjusted for Seasonal Medians

CHLA_C
(ug/l)

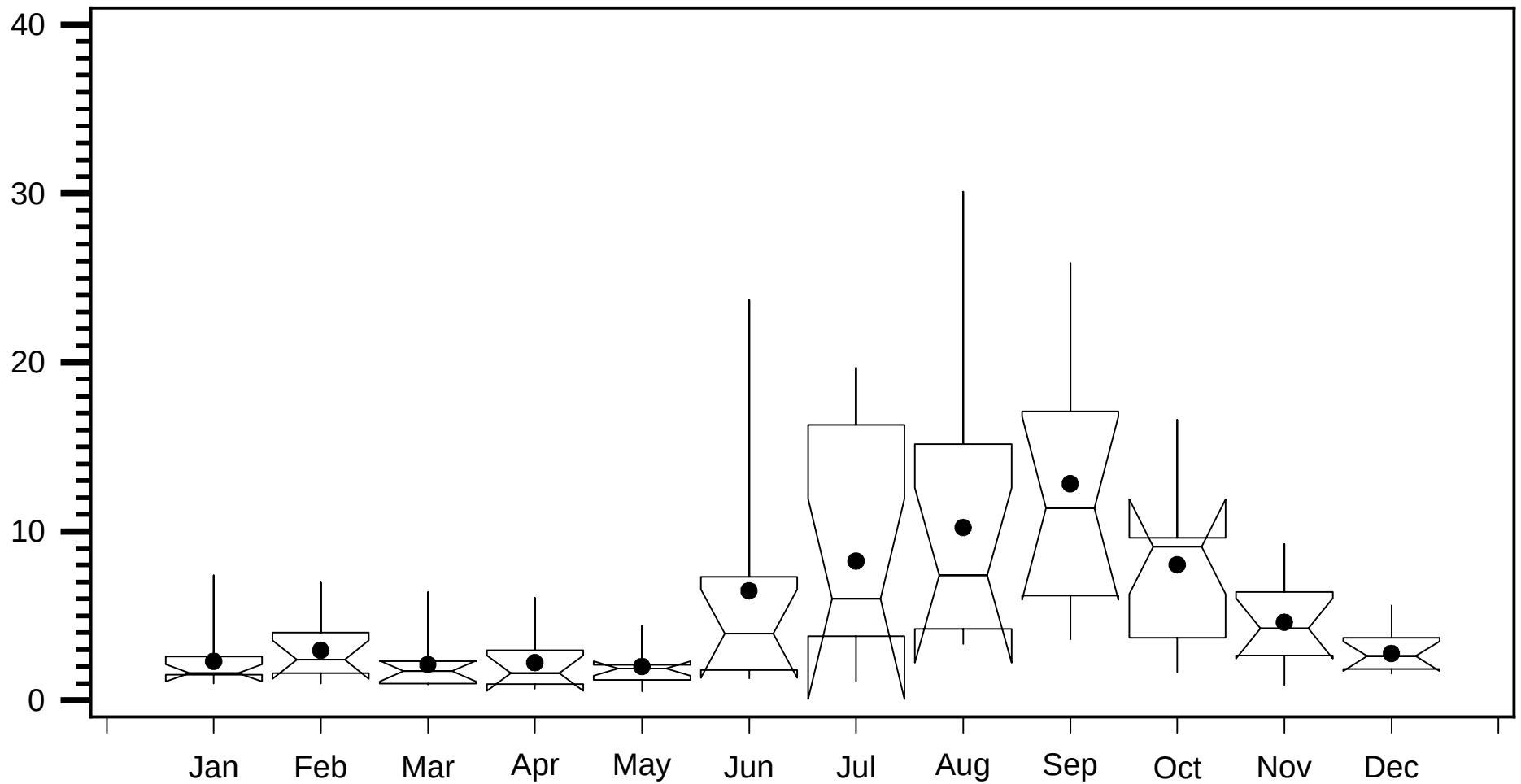


Trends Appendix - Display 290

Seasonal Univariate Statistics for CHLA_C

"Sarasota County Segment= "BB

CHLA_C
(ug/l)



Trends Appendix - Display 291

"Autocorrelation Statistics for Sarasota County Segment = "BB'

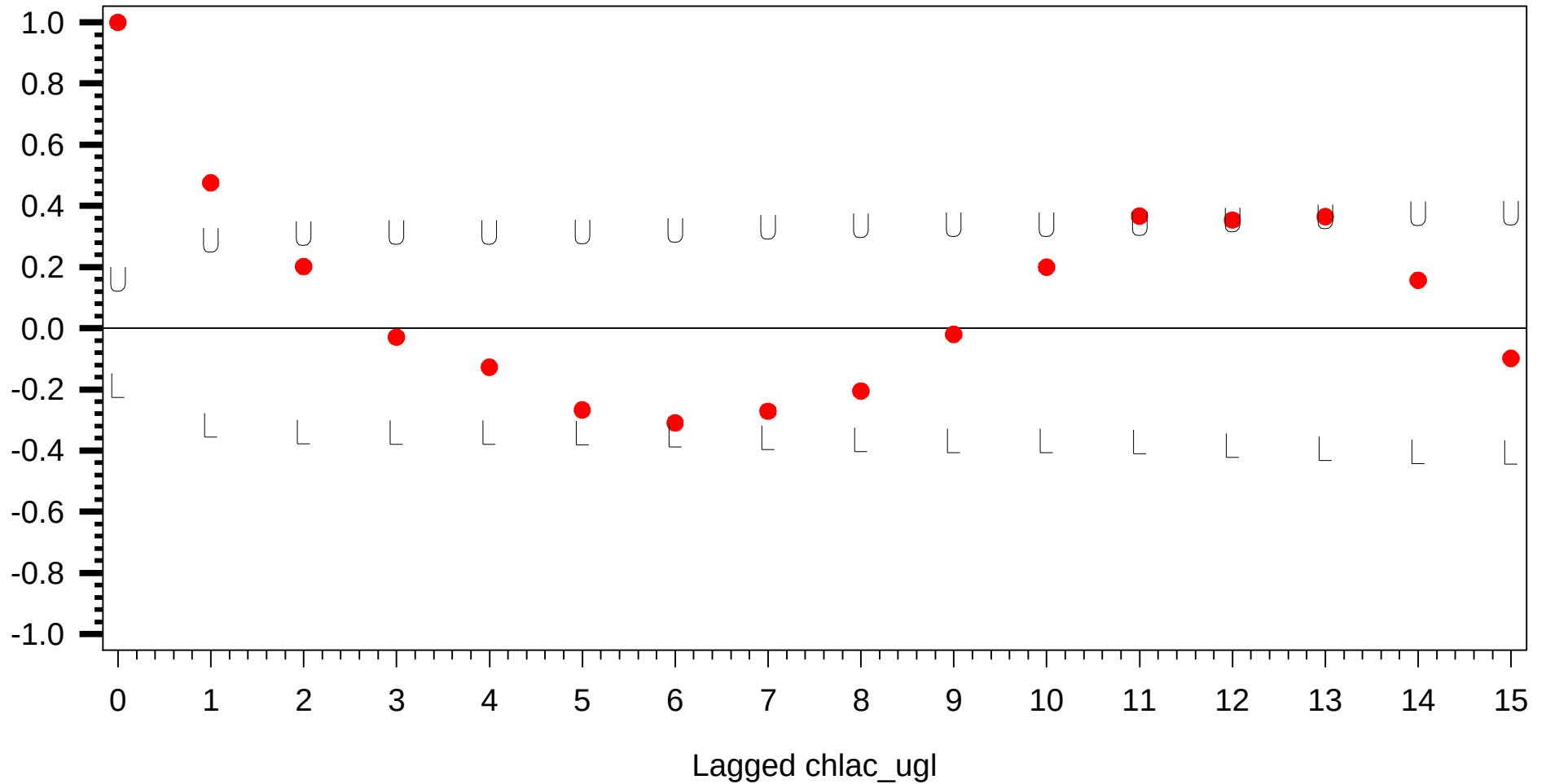
Unadjusted for Seasonal Medians

Lagged chlac_uhl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.476	0.151	0.302	-0.302
2	0.202	0.162	0.324	-0.324
3	-0.029	0.164	0.327	-0.327
4	-0.127	0.164	0.327	-0.327
5	-0.267	0.164	0.329	-0.329
6	-0.309	0.168	0.335	-0.335
7	-0.271	0.172	0.344	-0.344
8	-0.205	0.175	0.350	-0.350
9	-0.020	0.177	0.354	-0.354
10	0.200	0.177	0.354	-0.354
11	0.367	0.179	0.357	-0.357
12	0.354	0.184	0.369	-0.369
13	0.365	0.189	0.379	-0.379
14	0.157	0.195	0.389	-0.389
15	-0.098	0.196	0.391	-0.391

Trends Appendix - Display 292
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 293

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.054	0.444	0.626	0.06

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 294

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.053883	0.44442	0.62602	0.06

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 295

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

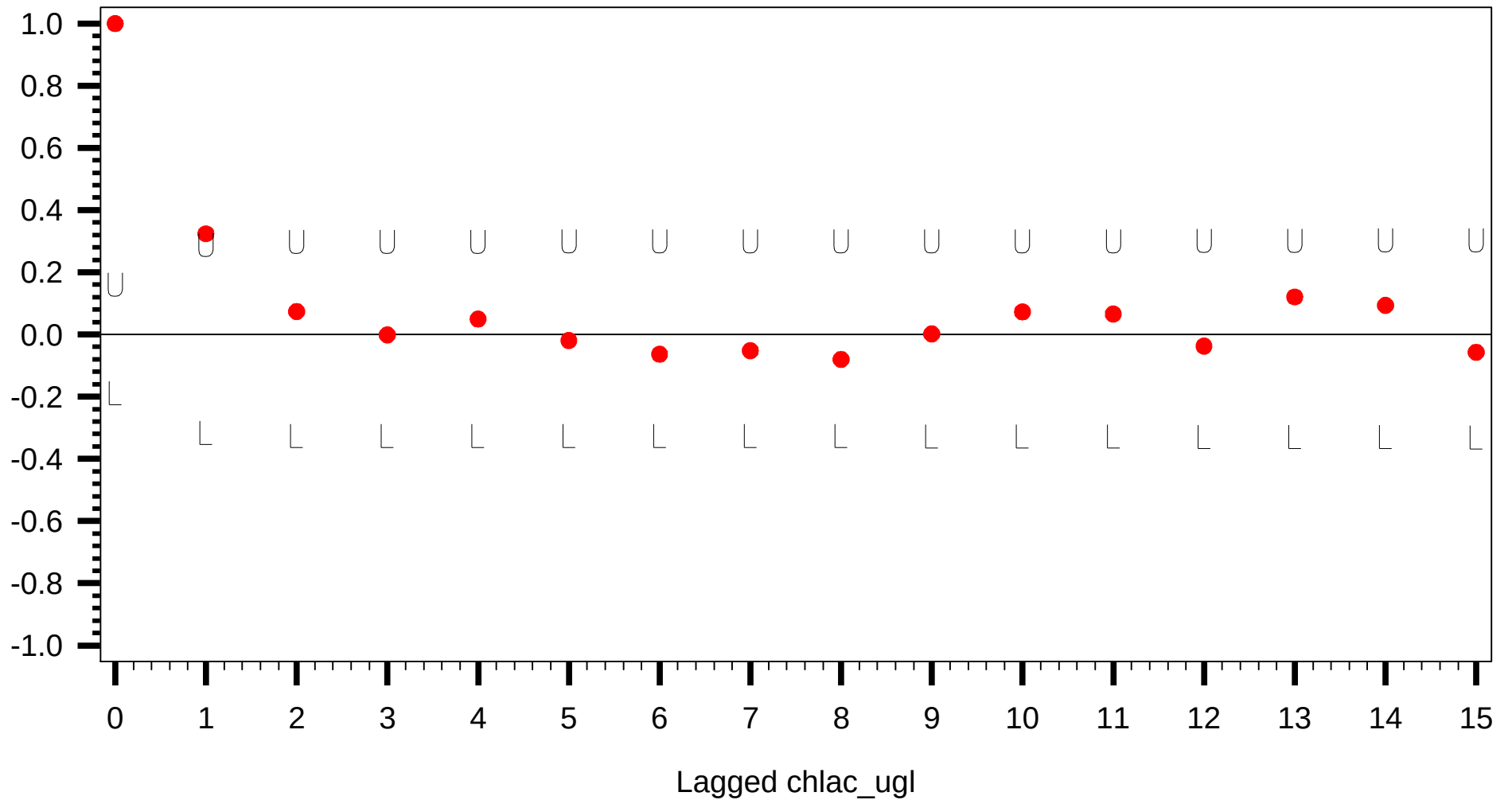
Lagged chlac_uhl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.324	0.151	0.302	-0.302
2	0.074	0.156	0.312	-0.312
3	-0.001	0.156	0.312	-0.312
4	0.050	0.156	0.312	-0.312
5	-0.019	0.156	0.313	-0.313
6	-0.063	0.156	0.313	-0.313
7	-0.052	0.157	0.313	-0.313
8	-0.080	0.157	0.313	-0.313
9	0.002	0.157	0.314	-0.314
10	0.073	0.157	0.314	-0.314
11	0.066	0.157	0.314	-0.314
12	-0.037	0.157	0.315	-0.315
13	0.121	0.157	0.315	-0.315
14	0.094	0.158	0.316	-0.316
15	-0.057	0.159	0.317	-0.317

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 296
"Correlogram for Sarasota County Segment = "BB'

Correlation

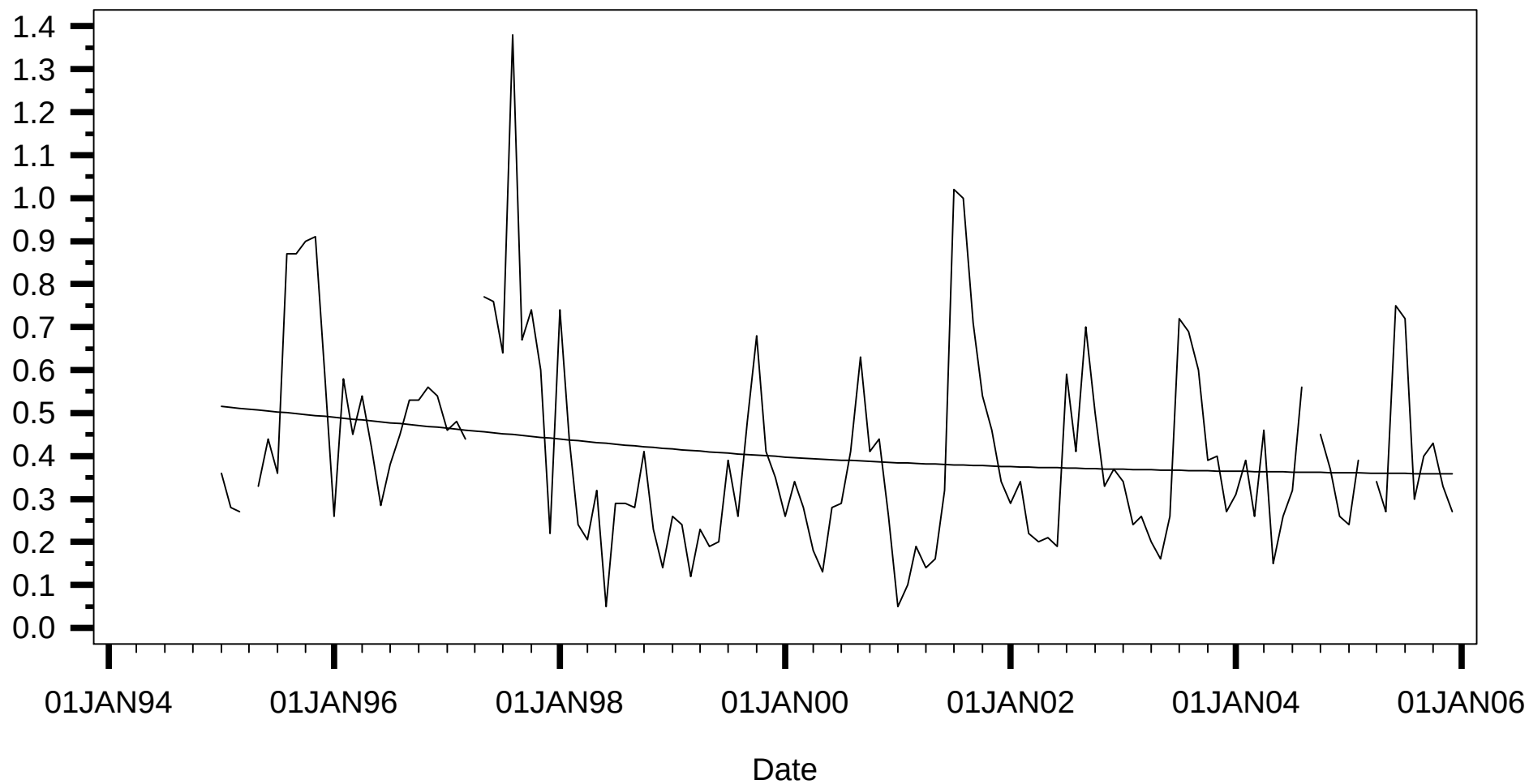
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 297
Monthly Data Time Series for TN
"Sarasota County Segment= "BB
Not Adjusted for Seasonal Medians

TN
(mg/l)

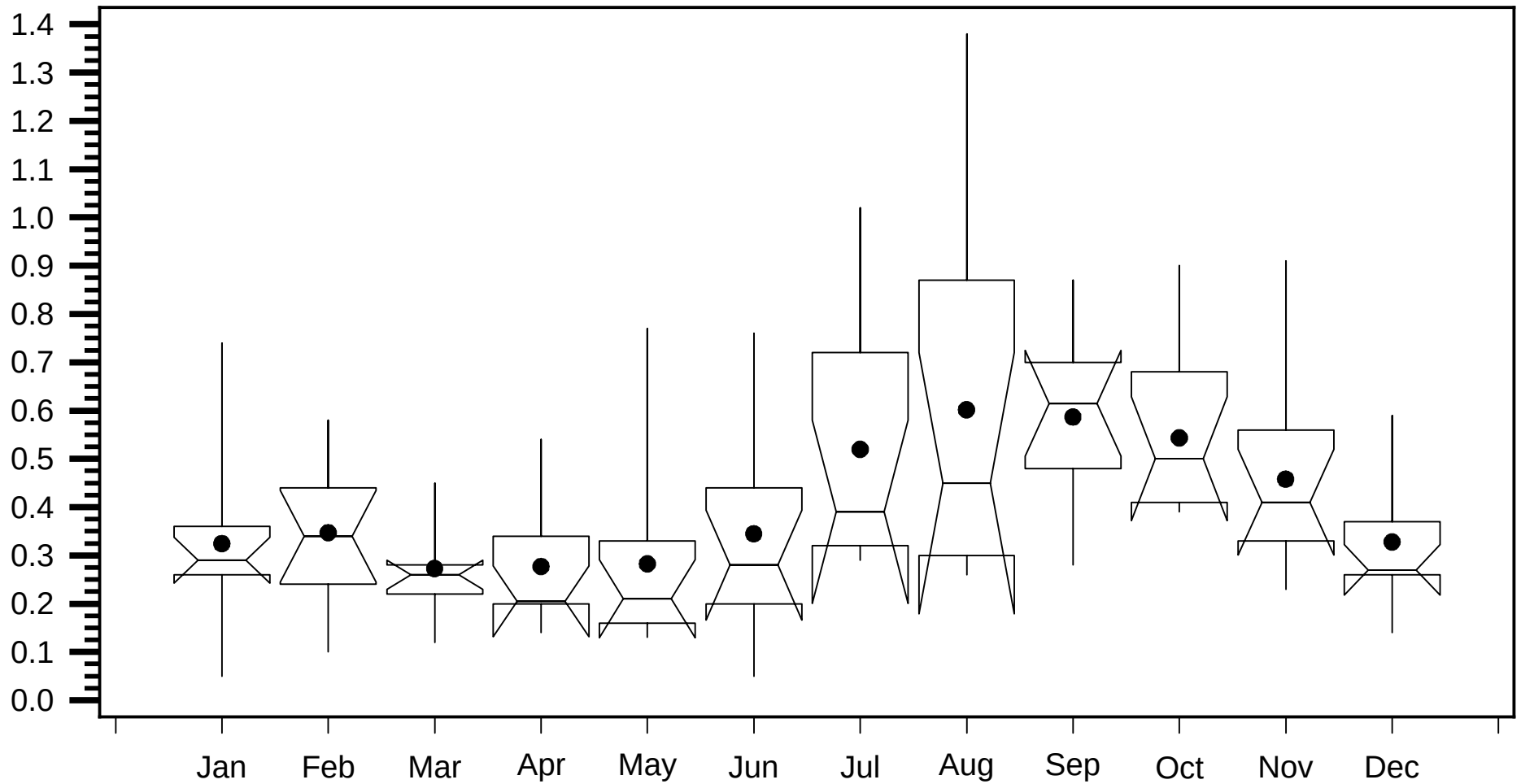


Trends Appendix - Display 298

Seasonal Univariate Statistics for TN

"Sarasota County Segment= "BB"

TN
(mg/l)



Trends Appendix - Display 299

"Autocorrelation Statistics for Sarasota County Segment = "BB'

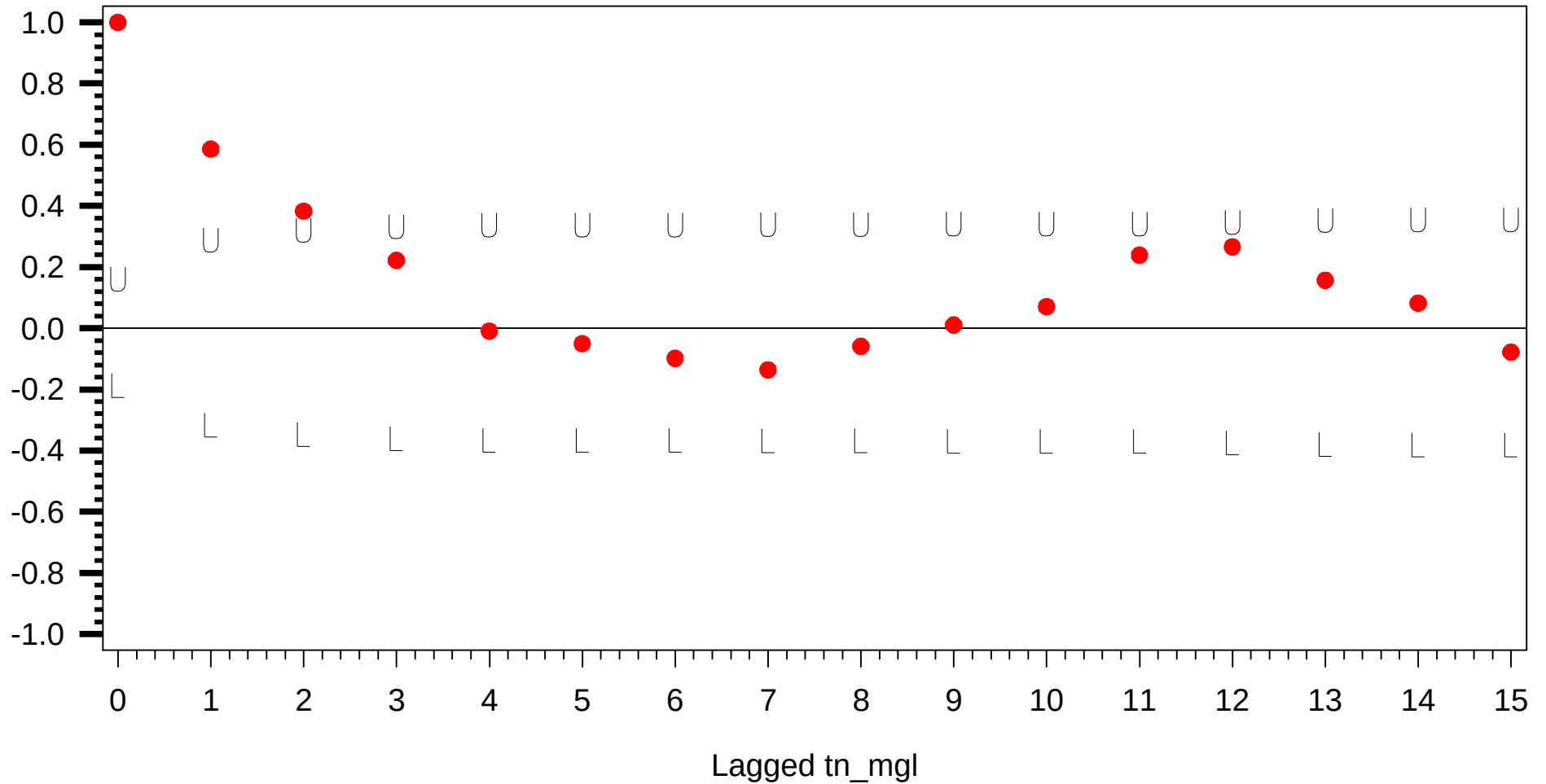
Unadjusted for Seasonal Medians

Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.586	0.151	0.302	-0.302
2	0.383	0.167	0.334	-0.334
3	0.222	0.174	0.347	-0.347
4	-0.009	0.176	0.352	-0.352
5	-0.050	0.176	0.352	-0.352
6	-0.098	0.176	0.352	-0.352
7	-0.136	0.176	0.353	-0.353
8	-0.059	0.177	0.354	-0.354
9	0.011	0.177	0.355	-0.355
10	0.071	0.177	0.355	-0.355
11	0.239	0.177	0.355	-0.355
12	0.266	0.180	0.360	-0.360
13	0.157	0.183	0.366	-0.366
14	0.082	0.184	0.368	-0.368
15	-0.078	0.184	0.368	-0.368

Trends Appendix - Display 300
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 301

Seasonal Kendall Tau Trend Test Statistics for TN
"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.206	.003	0.089	-0.012

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 302

Seasonal Kendall Tau Trend Test Statistics for TN

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.20612	.00282923	0.088530	-0.012

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 303

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

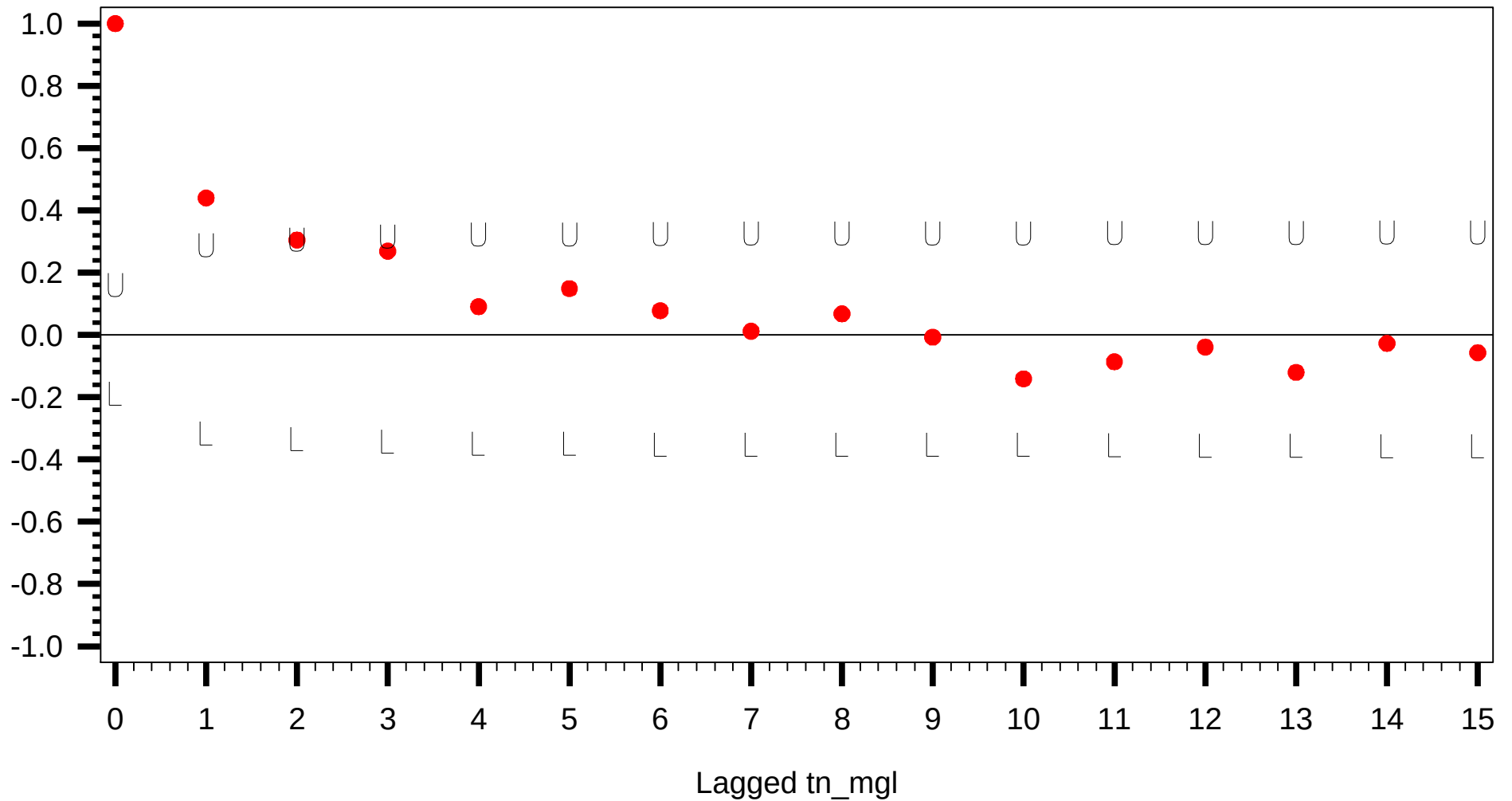
Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.440	0.151	0.302	-0.302
2	0.305	0.160	0.320	-0.320
3	0.269	0.165	0.329	-0.329
4	0.091	0.168	0.336	-0.336
5	0.149	0.168	0.336	-0.336
6	0.078	0.169	0.338	-0.338
7	0.012	0.169	0.339	-0.339
8	0.068	0.169	0.339	-0.339
9	-0.007	0.170	0.339	-0.339
10	-0.141	0.170	0.339	-0.339
11	-0.086	0.171	0.341	-0.341
12	-0.039	0.171	0.342	-0.342
13	-0.120	0.171	0.342	-0.342
14	-0.027	0.172	0.343	-0.343
15	-0.057	0.172	0.343	-0.343

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 304
"Correlogram for Sarasota County Segment = "BB'

Correlation

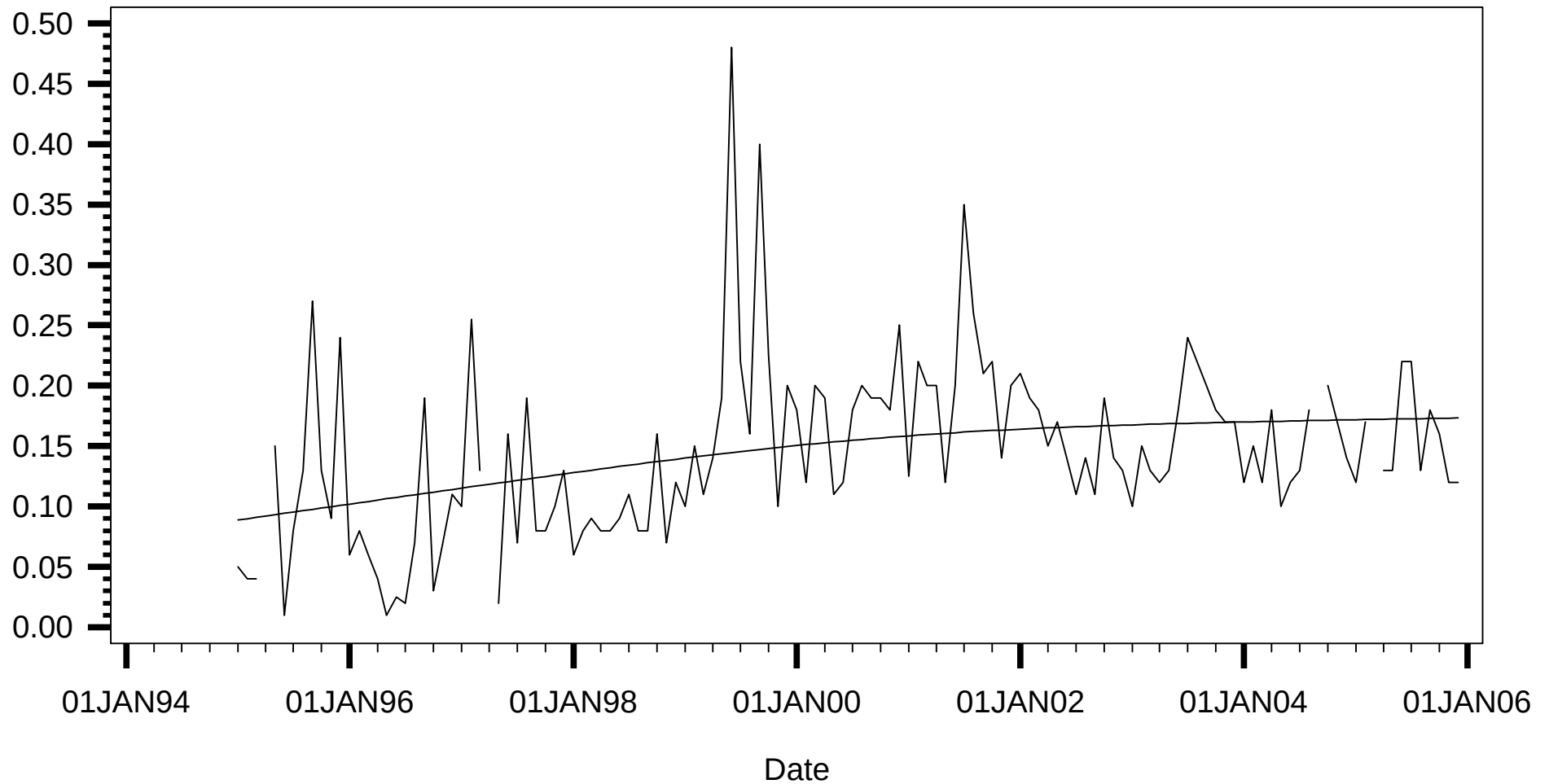
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 305
Monthly Data Time Series for TP
"Sarasota County Segment= "BB
Not Adjusted for Seasonal Medians

TP
(mg/l)

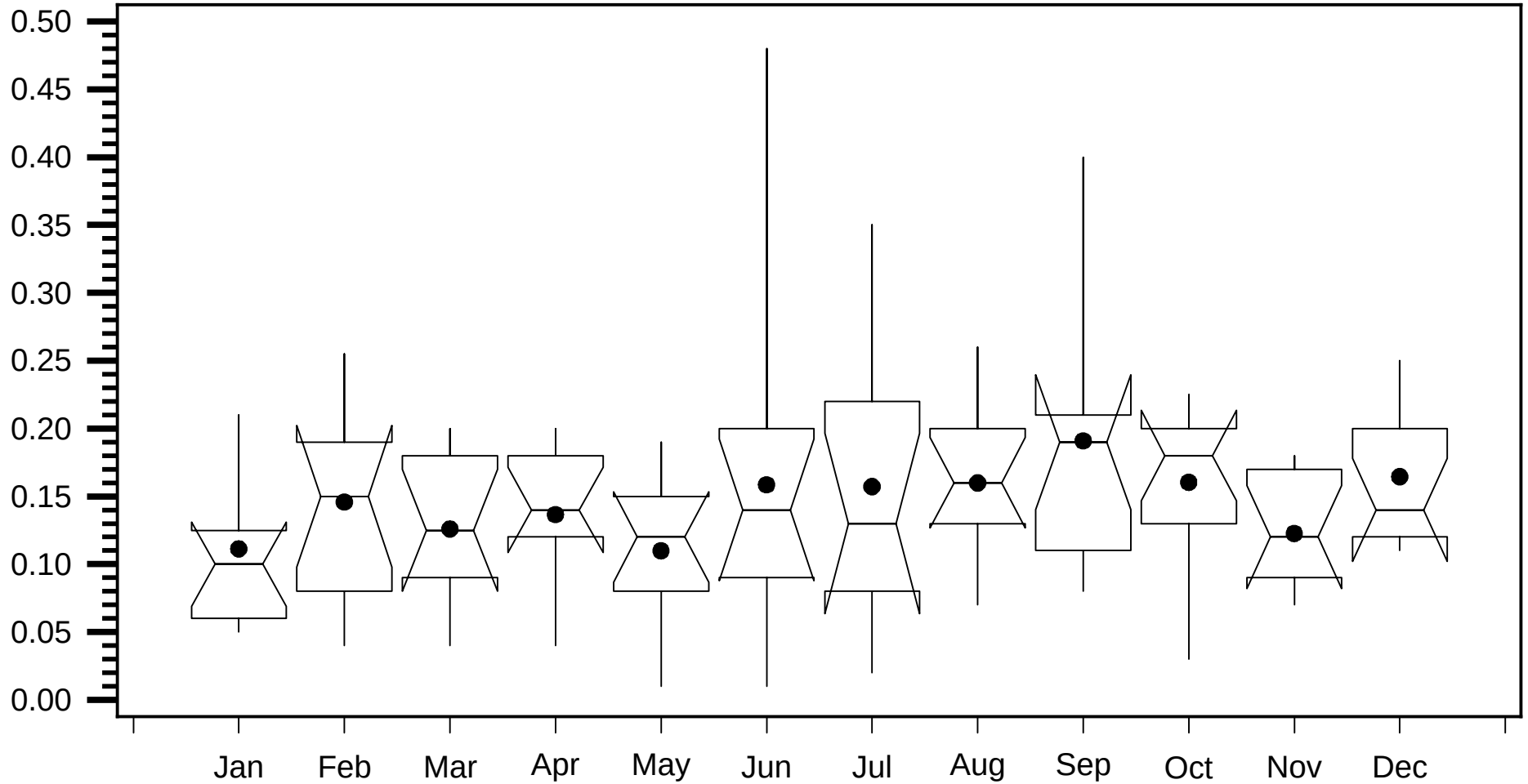


Trends Appendix - Display 306

Seasonal Univariate Statistics for TP

"Sarasota County Segment= "BB"

TP
(mg/l)



Trends Appendix - Display 307

"Autocorrelation Statistics for Sarasota County Segment = "BB'

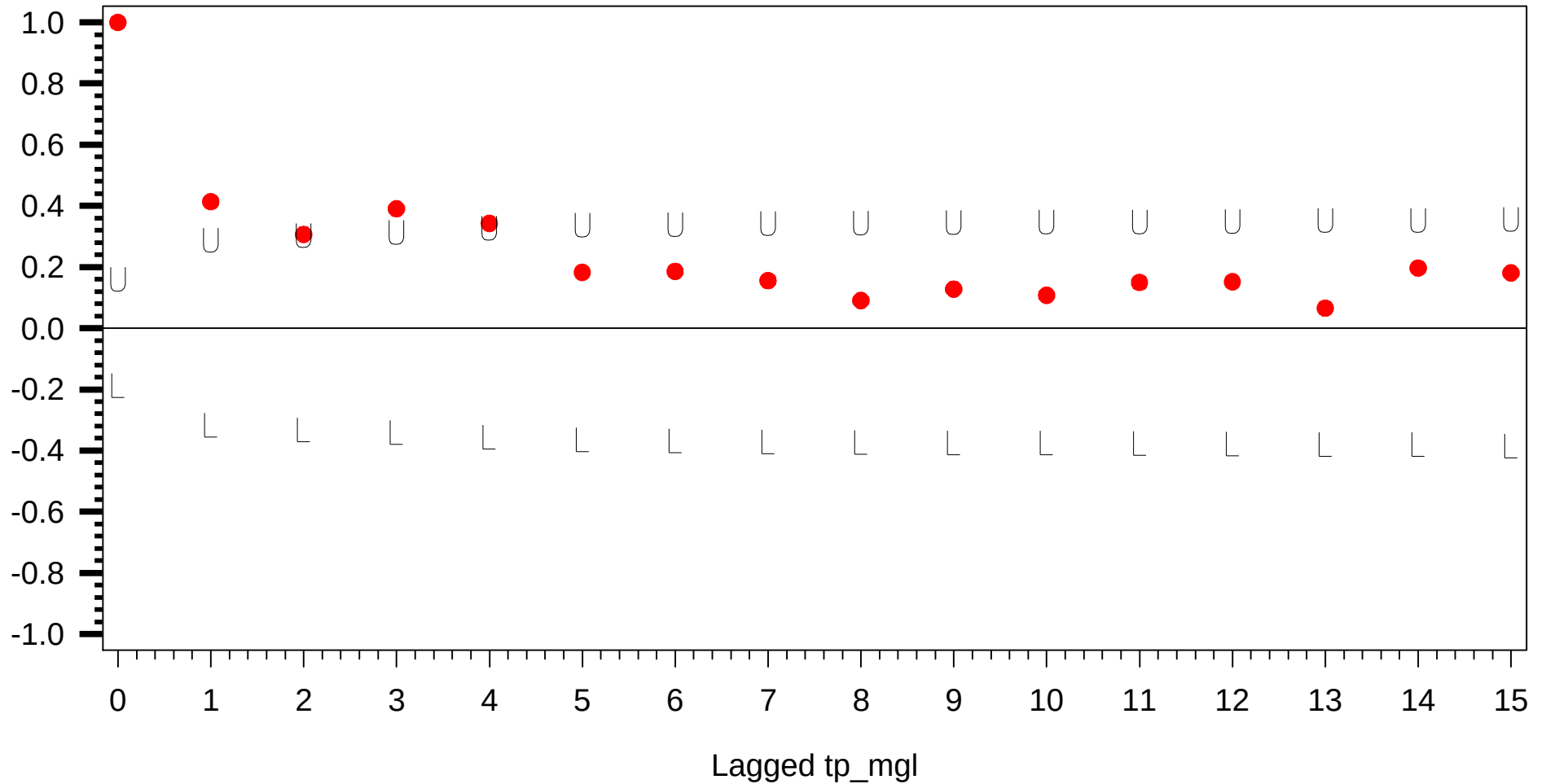
Unadjusted for Seasonal Medians

Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.414	0.151	0.302	-0.302
2	0.307	0.159	0.318	-0.318
3	0.391	0.164	0.327	-0.327
4	0.343	0.170	0.341	-0.341
5	0.183	0.176	0.351	-0.351
6	0.186	0.177	0.354	-0.354
7	0.156	0.179	0.357	-0.357
8	0.091	0.180	0.359	-0.359
9	0.128	0.180	0.360	-0.360
10	0.108	0.181	0.361	-0.361
11	0.150	0.181	0.362	-0.362
12	0.152	0.182	0.364	-0.364
13	0.066	0.183	0.366	-0.366
14	0.197	0.183	0.366	-0.366
15	0.181	0.185	0.370	-0.370

Trends Appendix - Display 308
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 309

Seasonal Kendall Tau Trend Test Statistics for TP
"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.309	0	0.061	.008

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 310

Seasonal Kendall Tau Trend Test Statistics for TP

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.30918	.000006795	0.060659	.008

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 311

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

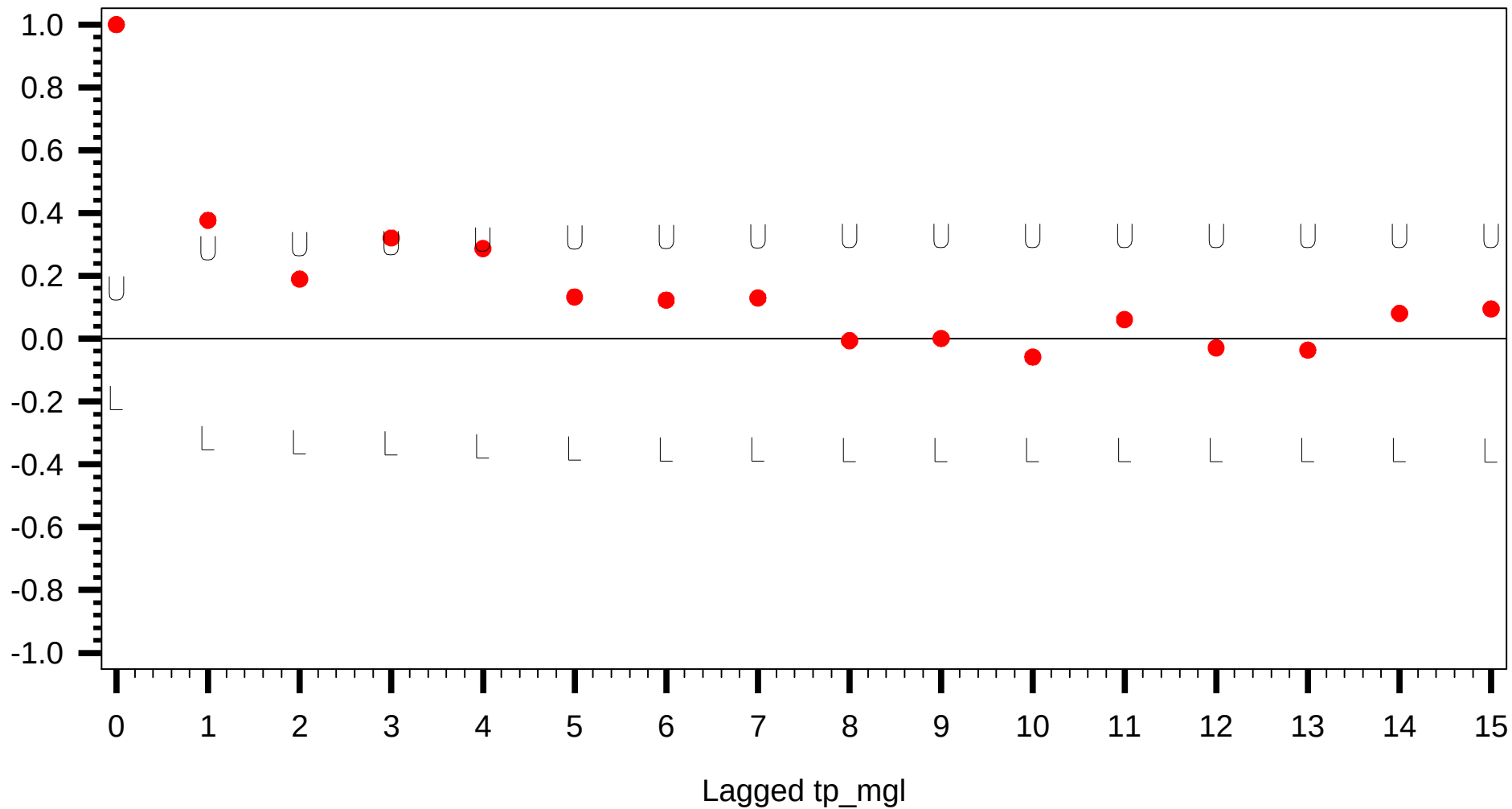
Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.377	0.151	0.302	-0.302
2	0.190	0.158	0.315	-0.315
3	0.321	0.159	0.319	-0.319
4	0.287	0.164	0.329	-0.329
5	0.133	0.168	0.336	-0.336
6	0.123	0.169	0.338	-0.338
7	0.130	0.170	0.339	-0.339
8	-0.006	0.170	0.341	-0.341
9	0.001	0.170	0.341	-0.341
10	-0.058	0.170	0.341	-0.341
11	0.061	0.170	0.341	-0.341
12	-0.029	0.171	0.341	-0.341
13	-0.036	0.171	0.341	-0.341
14	0.081	0.171	0.341	-0.341
15	0.095	0.171	0.342	-0.342

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 312
"Correlogram for Sarasota County Segment = "BB'

Correlation

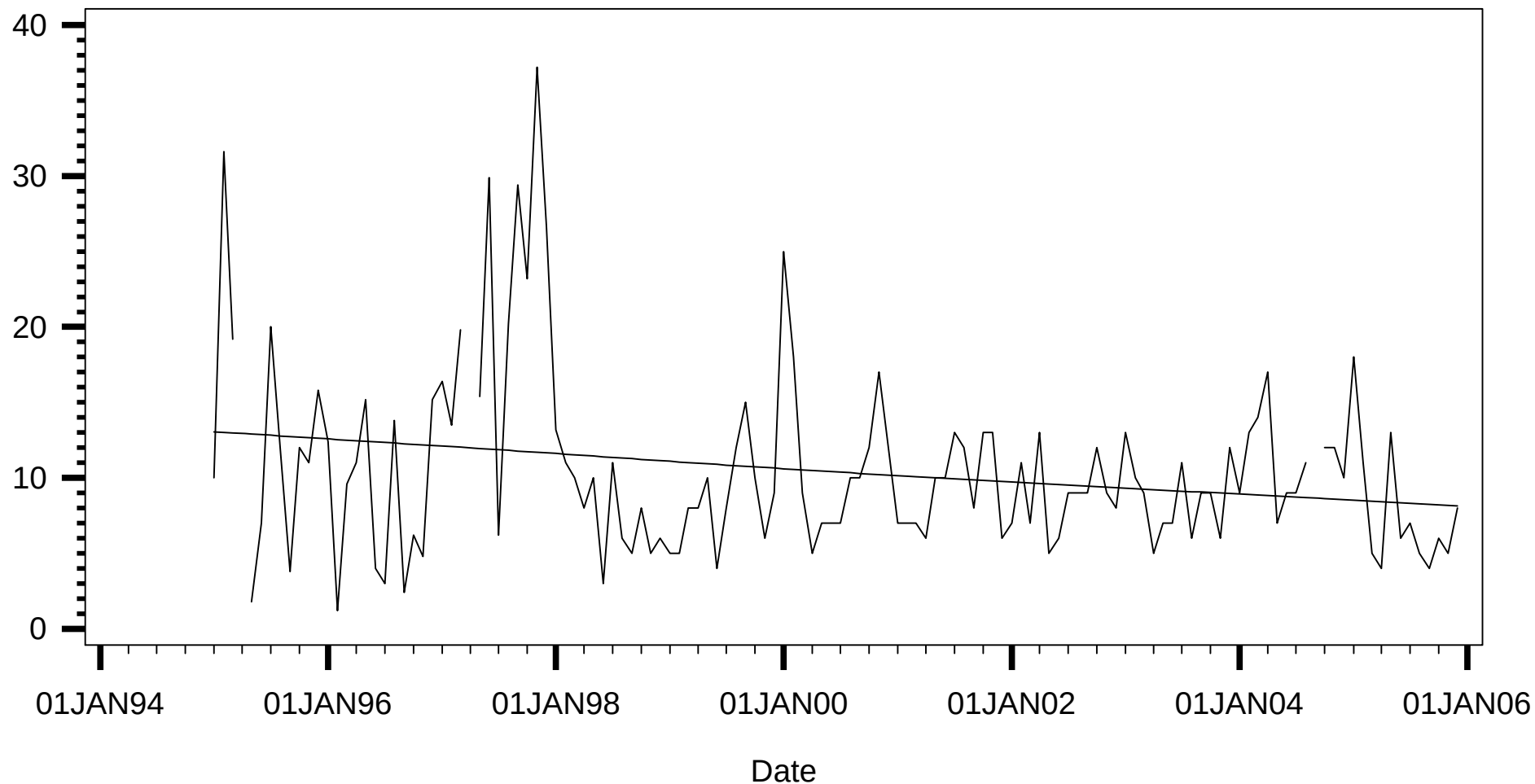
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 313
Monthly Data Time Series for TSS
"Sarasota County Segment= "BB
Not Adjusted for Seasonal Medians

TSS
(mg/l)

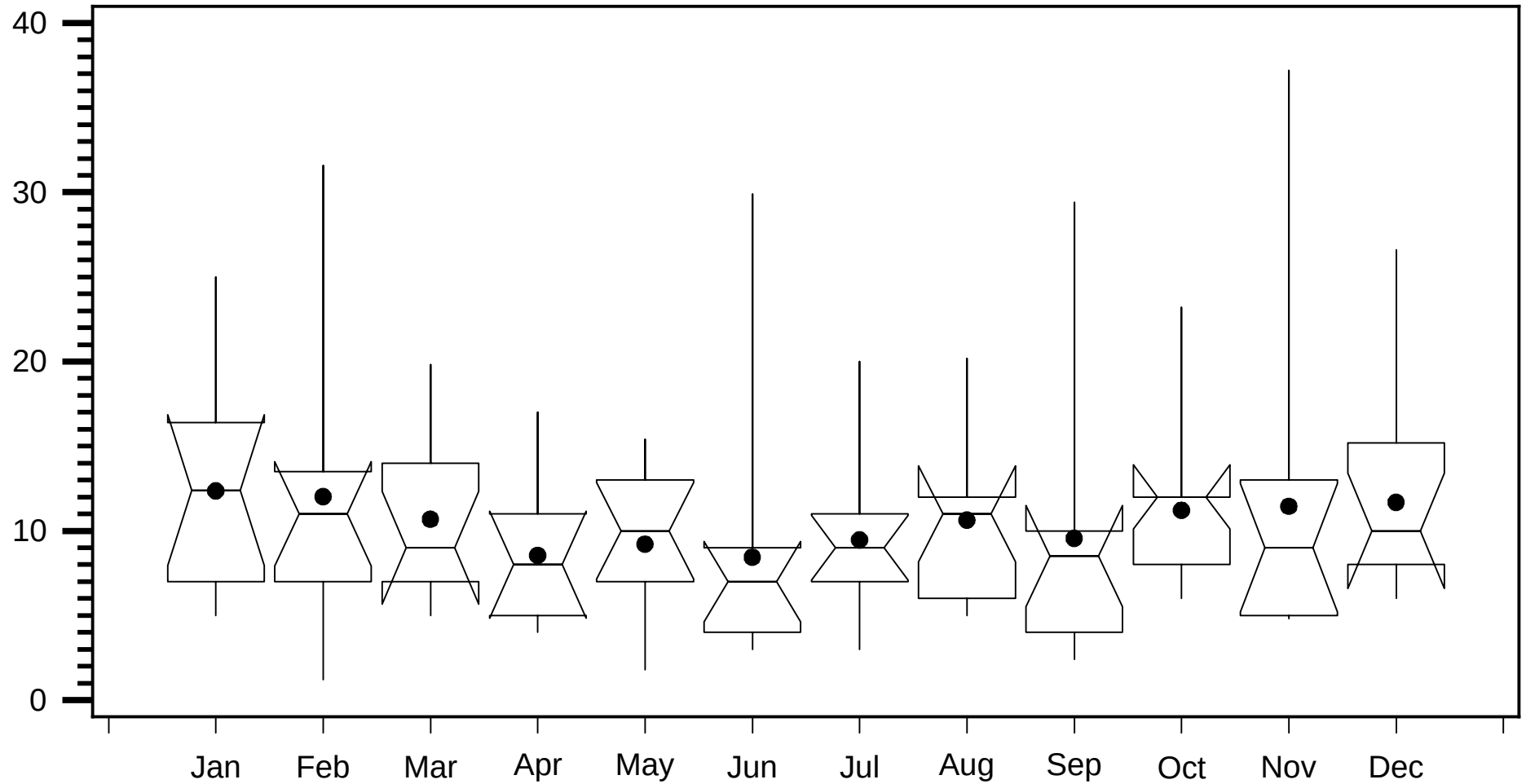


Trends Appendix - Display 314

Seasonal Univariate Statistics for TSS

"Sarasota County Segment= "BB"

TSS
(mg/l)



Trends Appendix - Display 315

"Autocorrelation Statistics for Sarasota County Segment = "BB'

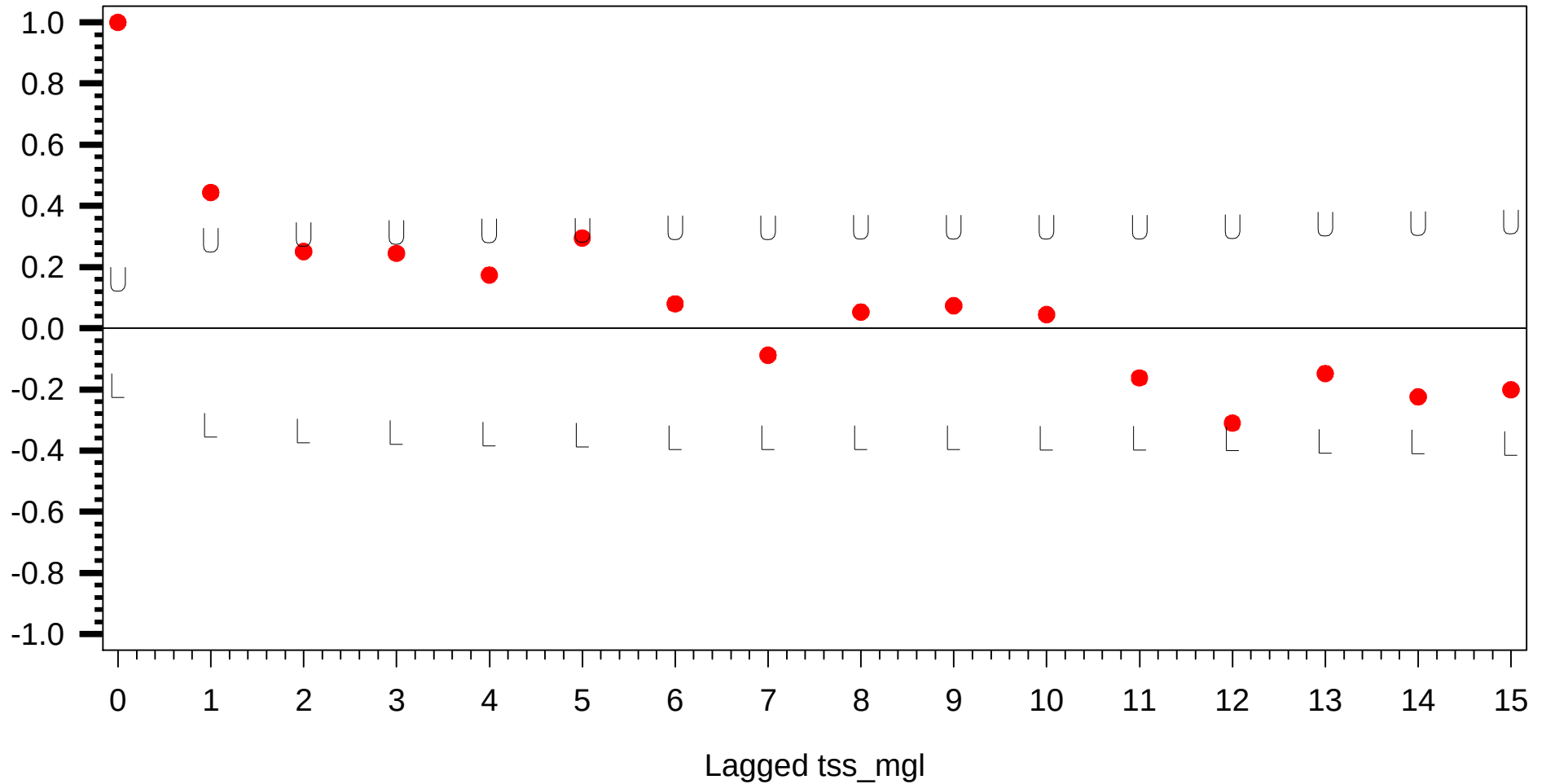
Unadjusted for Seasonal Medians

Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.444	0.151	0.302	-0.302
2	0.251	0.160	0.321	-0.321
3	0.245	0.163	0.327	-0.327
4	0.174	0.166	0.332	-0.332
5	0.295	0.167	0.335	-0.335
6	0.080	0.171	0.343	-0.343
7	-0.088	0.172	0.343	-0.343
8	0.053	0.172	0.344	-0.344
9	0.074	0.172	0.344	-0.344
10	0.045	0.172	0.345	-0.345
11	-0.162	0.172	0.345	-0.345
12	-0.310	0.174	0.347	-0.347
13	-0.148	0.178	0.355	-0.355
14	-0.224	0.179	0.357	-0.357
15	-0.201	0.181	0.362	-0.362

Trends Appendix - Display 316
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 317

Seasonal Kendall Tau Trend Test Statistics for TSS

"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.128	0.061	0.261	-0.286

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 318

Seasonal Kendall Tau Trend Test Statistics for TSS

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.12837	0.060974	0.26104	-0.28571

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 319

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

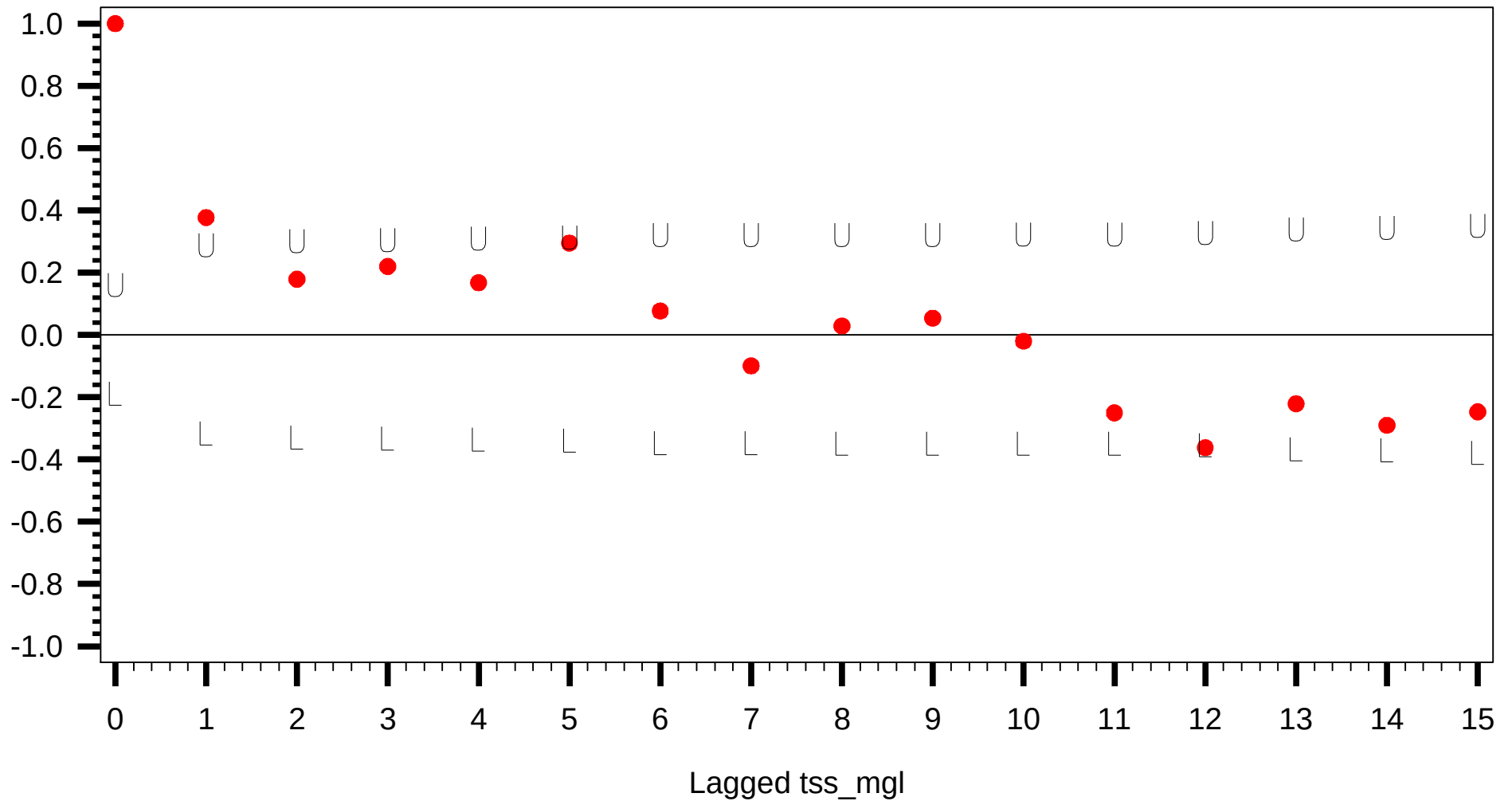
Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.377	0.151	0.302	-0.302
2	0.179	0.158	0.315	-0.315
3	0.220	0.159	0.319	-0.319
4	0.168	0.162	0.323	-0.323
5	0.295	0.163	0.326	-0.326
6	0.077	0.167	0.334	-0.334
7	-0.099	0.167	0.334	-0.334
8	0.029	0.168	0.335	-0.335
9	0.054	0.168	0.335	-0.335
10	-0.020	0.168	0.336	-0.336
11	-0.250	0.168	0.336	-0.336
12	-0.362	0.171	0.341	-0.341
13	-0.221	0.176	0.353	-0.353
14	-0.290	0.178	0.357	-0.357
15	-0.247	0.182	0.364	-0.364

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 320
"Correlogram for Sarasota County Segment = "BB'

Correlation

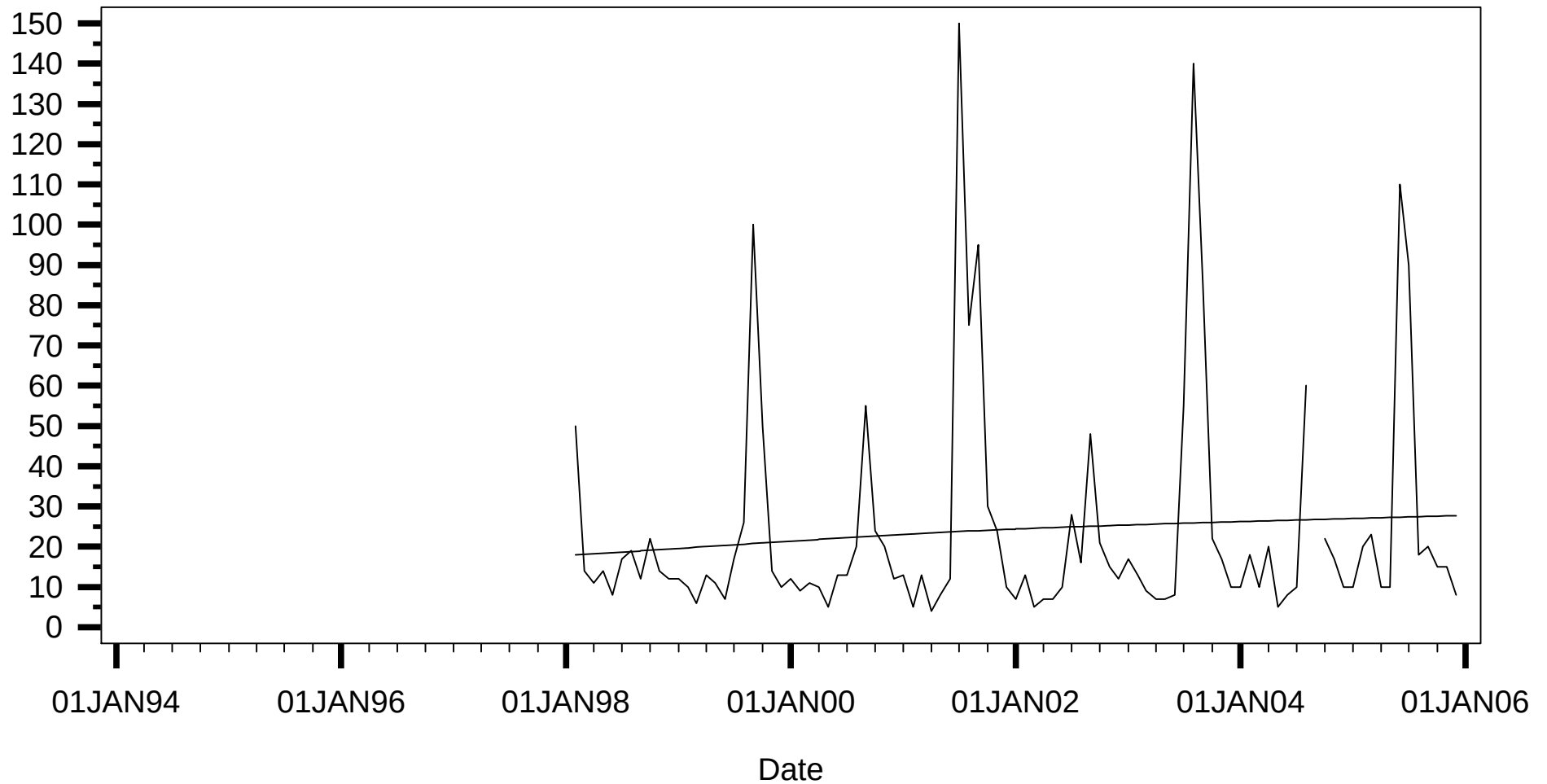
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 321
Monthly Data Time Series for Color
"Sarasota County Segment= "BB
Not Adjusted for Seasonal Medians

Color
(pcu)

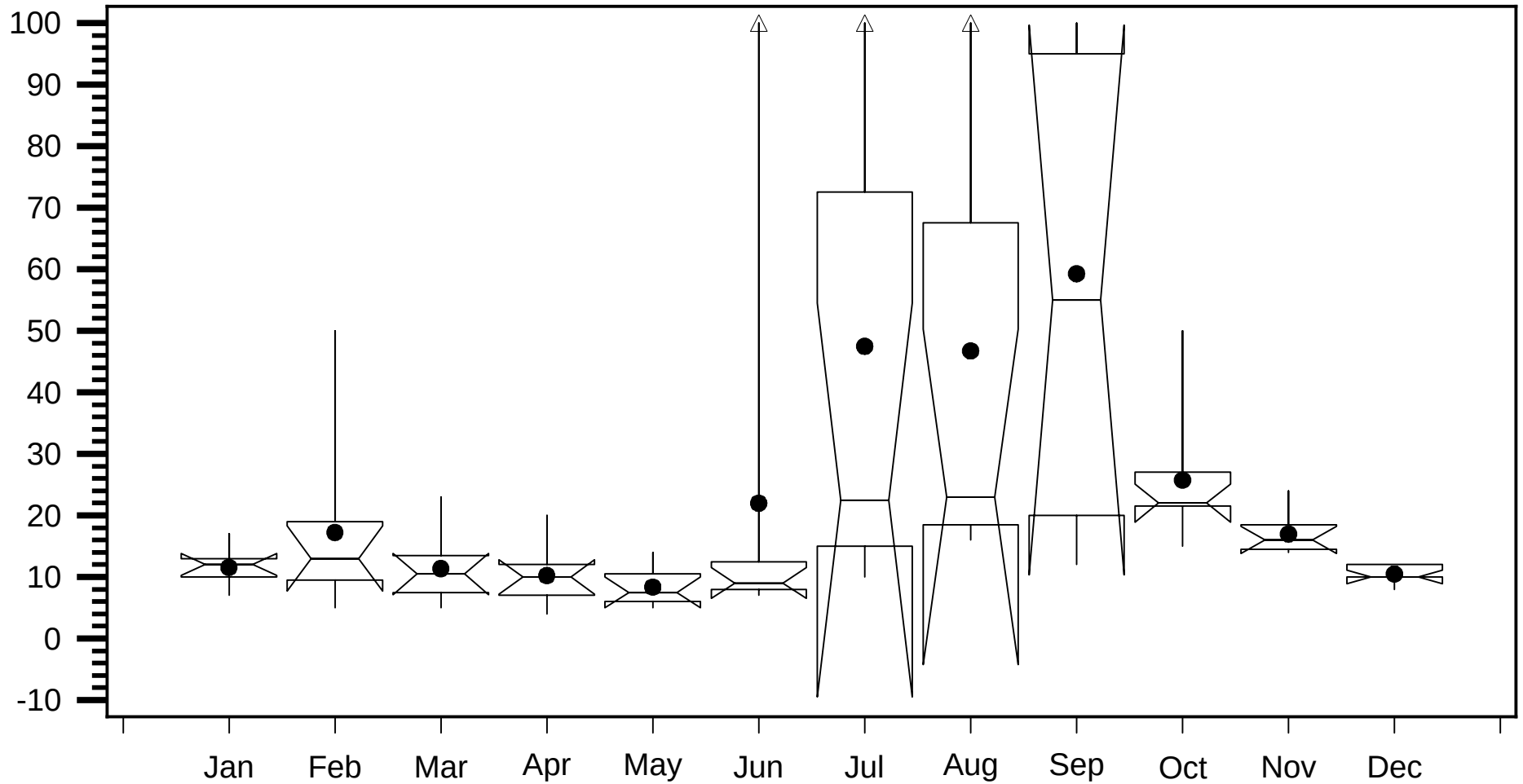


Trends Appendix - Display 322

Seasonal Univariate Statistics for Color

"Sarasota County Segment= "BB

Color
(pcu)



Trends Appendix - Display 323

"Autocorrelation Statistics for Sarasota County Segment = 'BB'

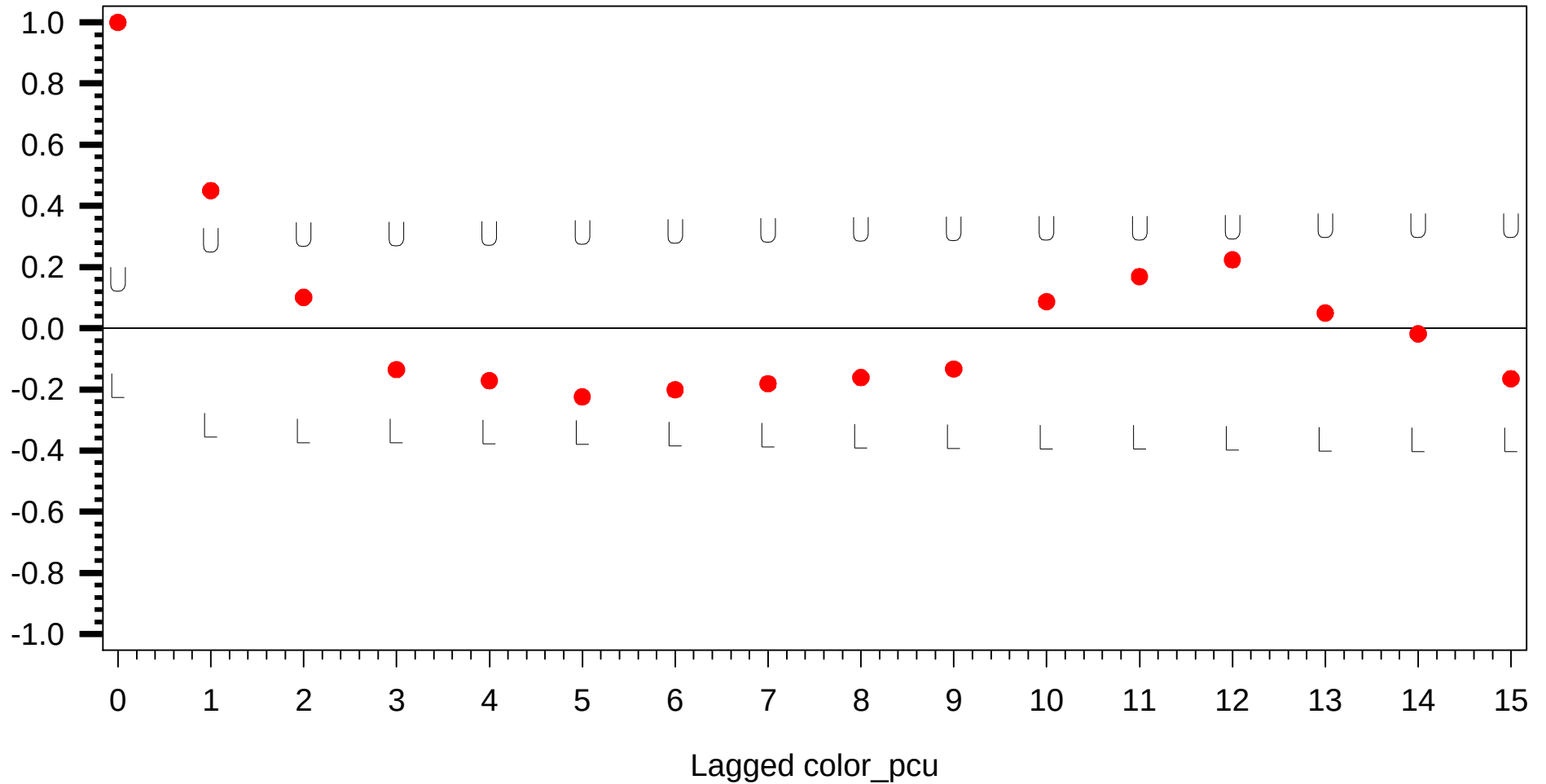
Unadjusted for Seasonal Medians

Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.450	0.151	0.302	-0.302
2	0.101	0.161	0.321	-0.321
3	-0.135	0.161	0.322	-0.322
4	-0.171	0.162	0.324	-0.324
5	-0.224	0.163	0.327	-0.327
6	-0.201	0.166	0.331	-0.331
7	-0.181	0.167	0.335	-0.335
8	-0.161	0.169	0.338	-0.338
9	-0.133	0.170	0.340	-0.340
10	0.087	0.171	0.342	-0.342
11	0.169	0.171	0.342	-0.342
12	0.224	0.172	0.345	-0.345
13	0.050	0.175	0.349	-0.349
14	-0.018	0.175	0.350	-0.350
15	-0.165	0.175	0.350	-0.350

Trends Appendix - Display 324
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 325

Seasonal Kendall Tau Trend Test Statistics for Color
"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.056	0.524	0.474	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 326

Seasonal Kendall Tau Trend Test Statistics for Color

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.055901	0.52386	0.47436	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 327

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

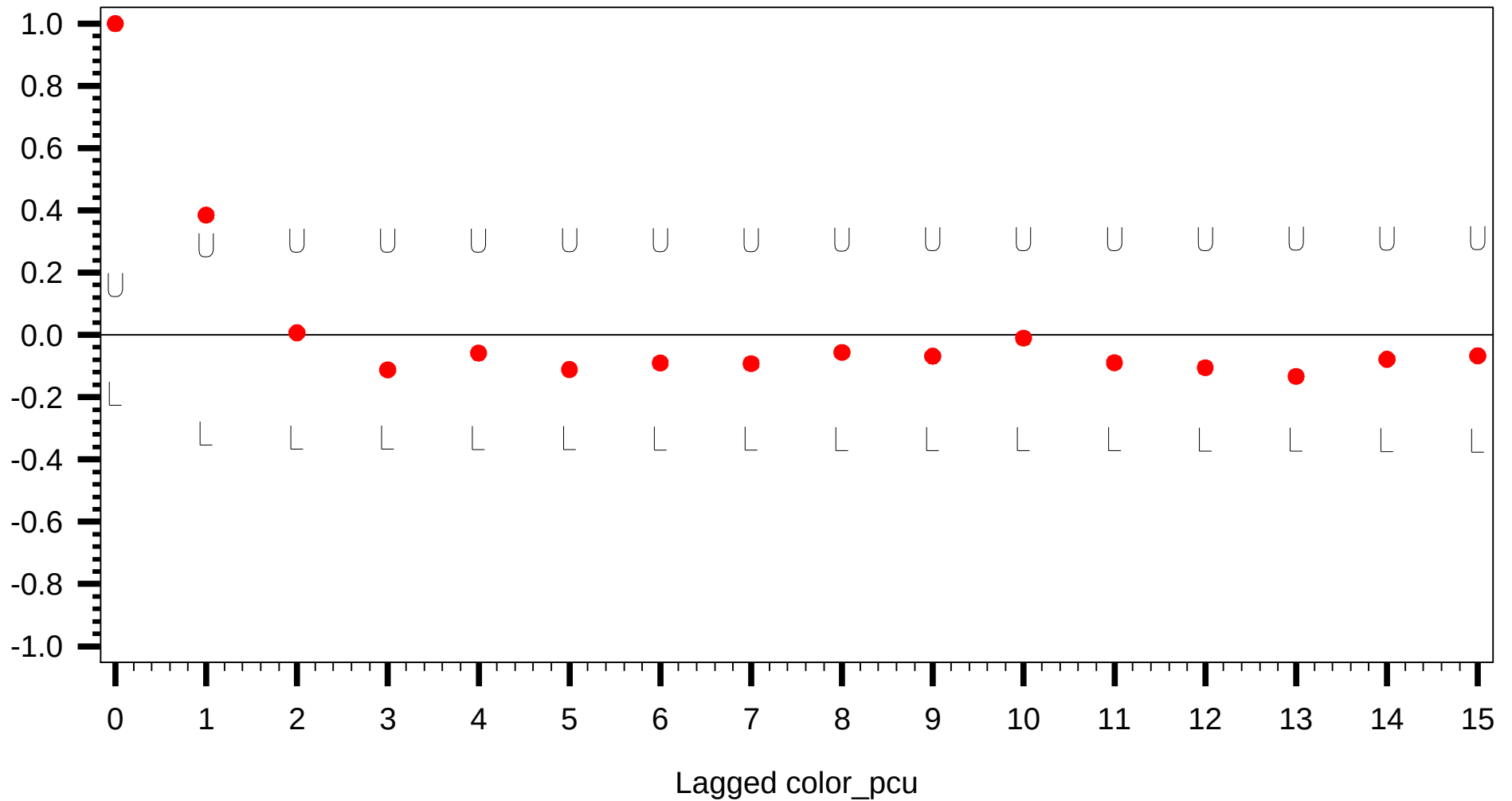
Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.385	0.151	0.302	-0.302
2	0.007	0.158	0.316	-0.316
3	-0.112	0.158	0.316	-0.316
4	-0.058	0.159	0.317	-0.317
5	-0.111	0.159	0.318	-0.318
6	-0.090	0.159	0.319	-0.319
7	-0.092	0.160	0.319	-0.319
8	-0.056	0.160	0.320	-0.320
9	-0.068	0.160	0.321	-0.321
10	-0.010	0.161	0.321	-0.321
11	-0.089	0.161	0.321	-0.321
12	-0.105	0.161	0.322	-0.322
13	-0.133	0.161	0.323	-0.323
14	-0.078	0.162	0.324	-0.324
15	-0.067	0.163	0.325	-0.325

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 328
"Correlogram for Sarasota County Segment = "BB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

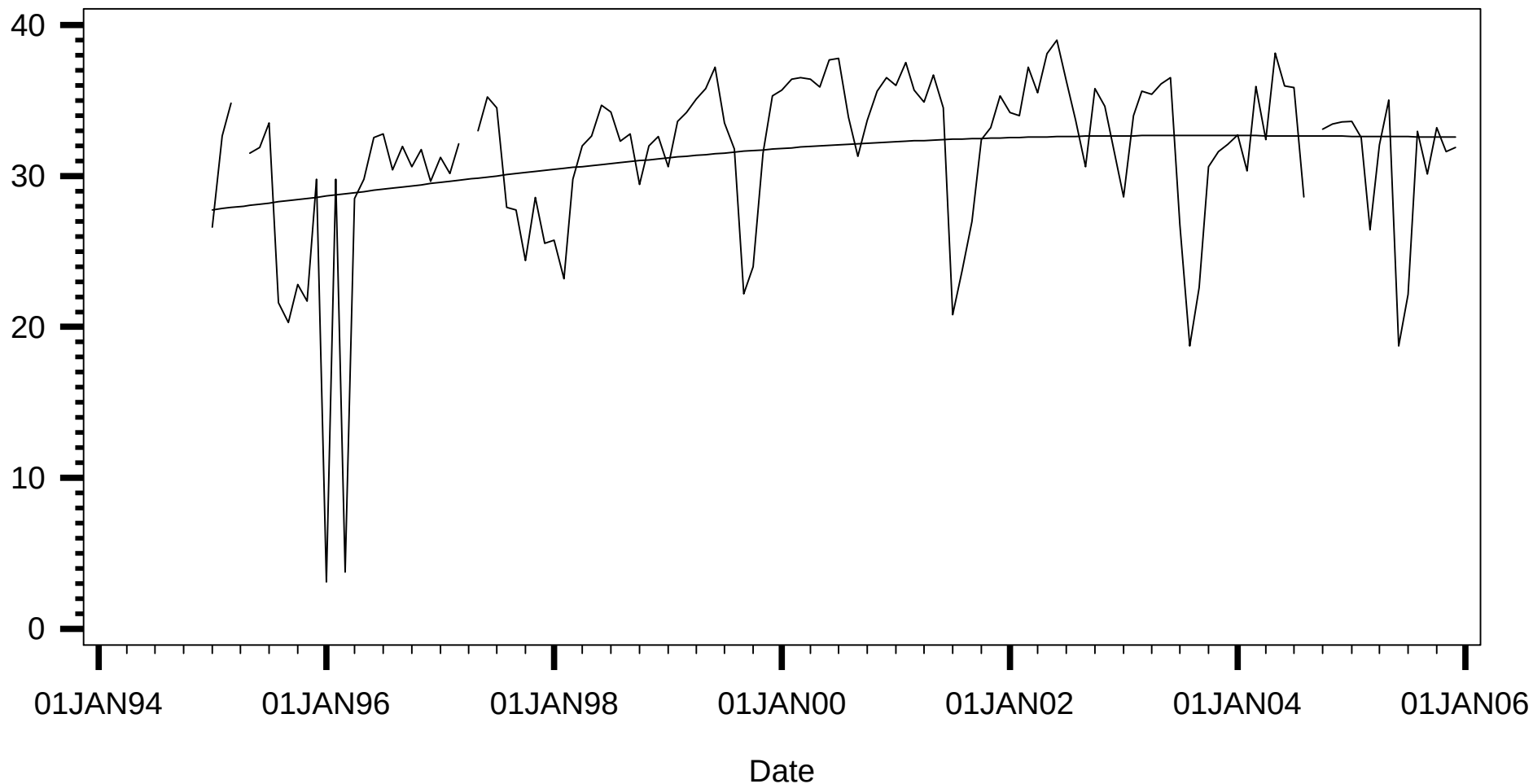
Trends Appendix - Display 329

Monthly Data Time Series for Salinity

"Sarasota County Segment= "BB

Not Adjusted for Seasonal Medians

Salinity
(ppt)

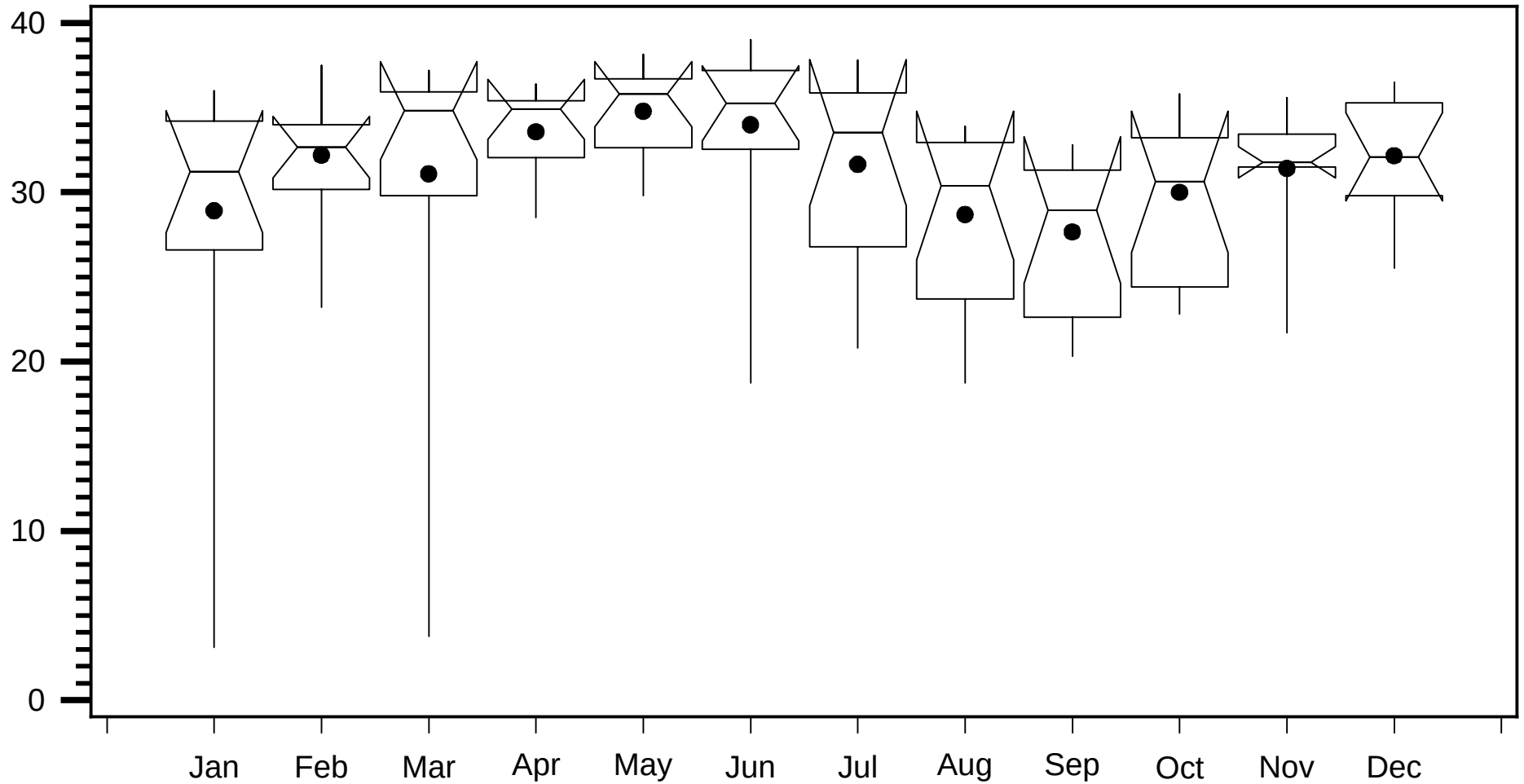


Trends Appendix - Display 330

Seasonal Univariate Statistics for Salinity

"Sarasota County Segment= "BB"

Salinity
(ppt)



Trends Appendix - Display 331

"Autocorrelation Statistics for Sarasota County Segment = "BB'

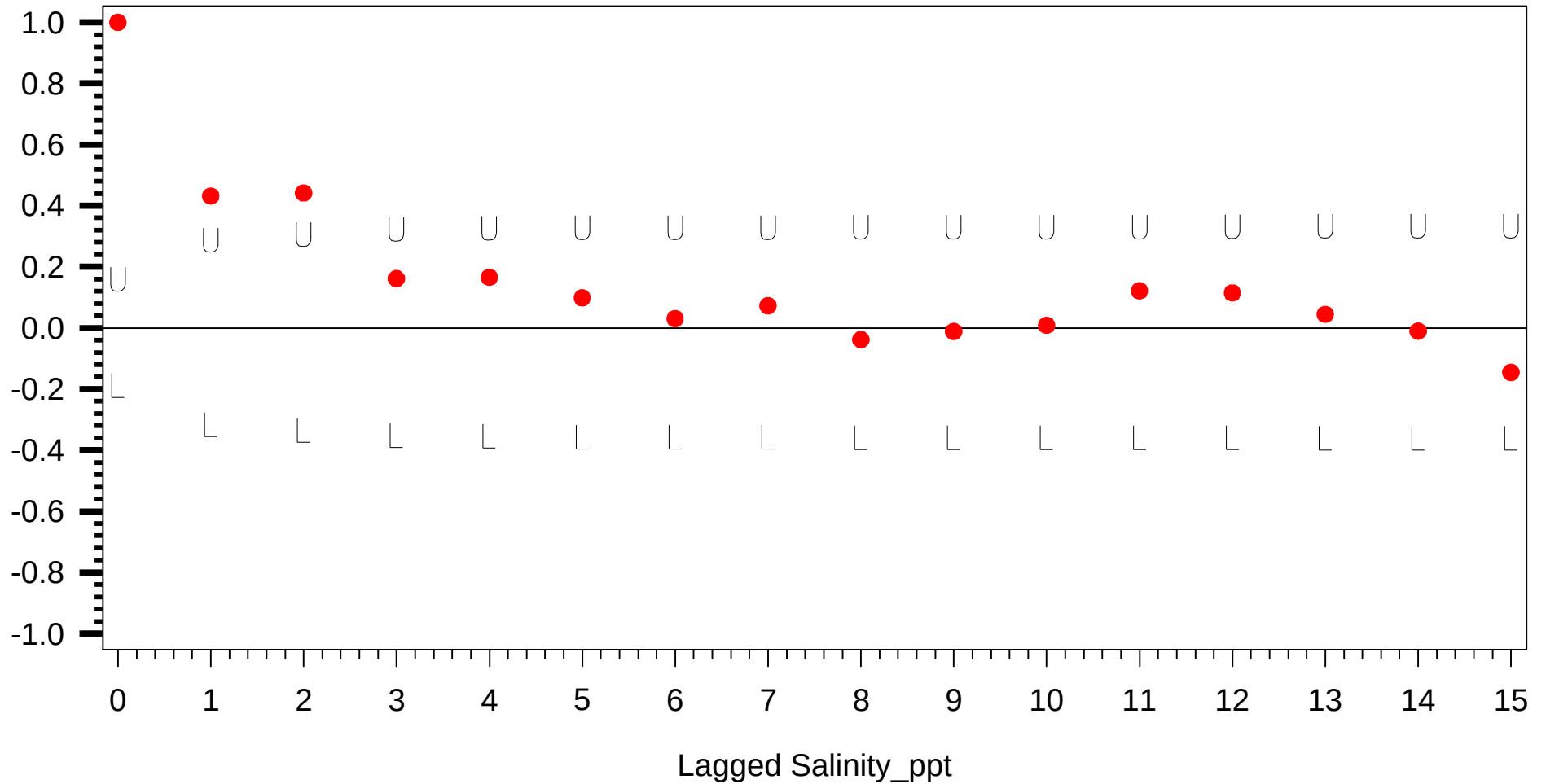
Unadjusted for Seasonal Medians

Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.432	0.151	0.302	-0.302
2	0.442	0.160	0.320	-0.320
3	0.162	0.169	0.338	-0.338
4	0.166	0.170	0.340	-0.340
5	0.099	0.171	0.343	-0.343
6	0.031	0.172	0.343	-0.343
7	0.073	0.172	0.343	-0.343
8	-0.038	0.172	0.344	-0.344
9	-0.011	0.172	0.344	-0.344
10	0.009	0.172	0.344	-0.344
11	0.122	0.172	0.344	-0.344
12	0.115	0.173	0.345	-0.345
13	0.045	0.173	0.347	-0.347
14	-0.010	0.173	0.347	-0.347
15	-0.145	0.173	0.347	-0.347

Trends Appendix - Display 332
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 333

Seasonal Kendall Tau Trend Test Statistics for Salinity

"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.255	0	0.107	0.36

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 334

Seasonal Kendall Tau Trend Test Statistics for Salinity

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.25515	.000211716	0.10697	0.36

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 335

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

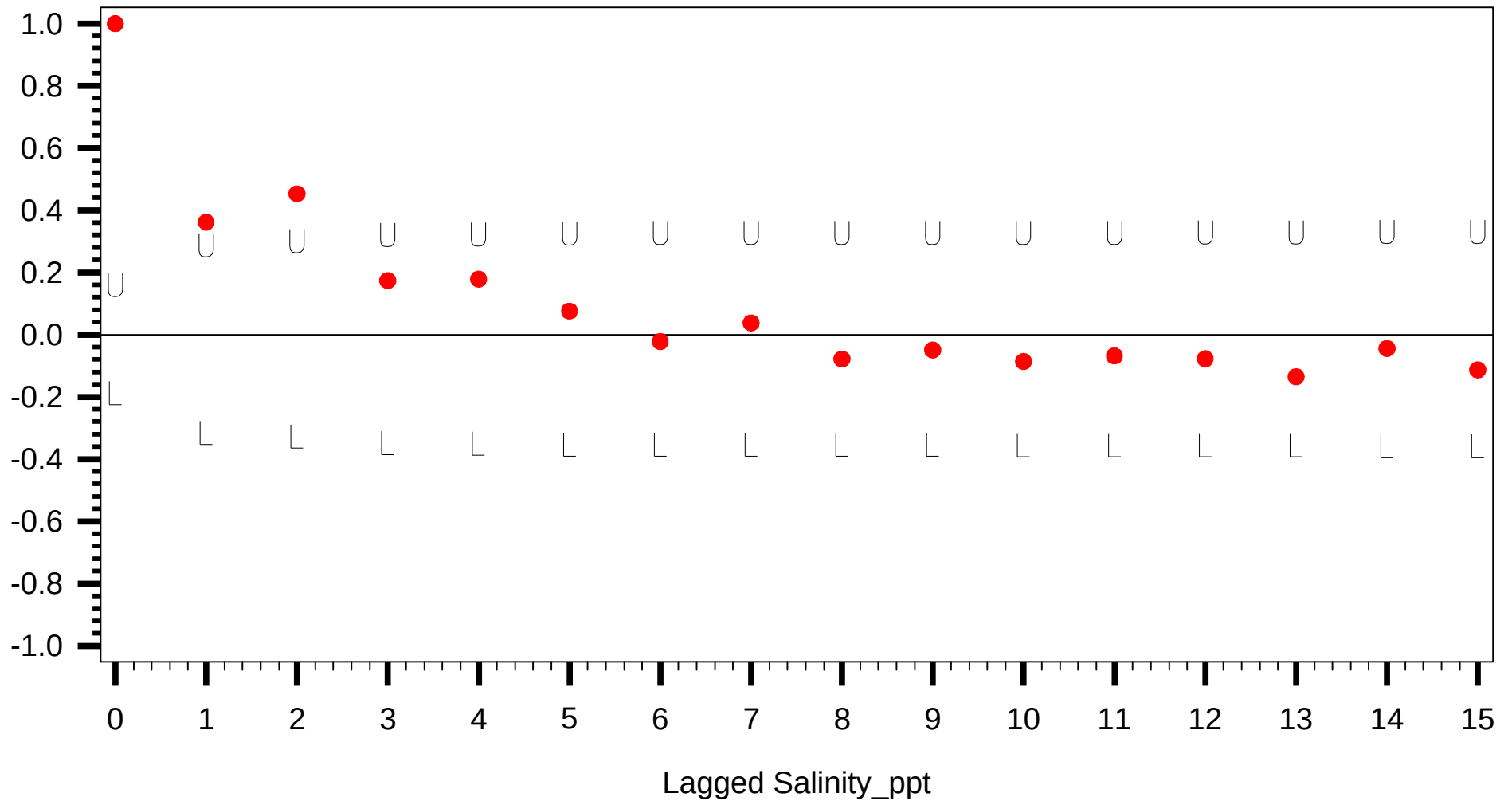
Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.362	0.151	0.302	-0.302
2	0.453	0.157	0.314	-0.314
3	0.174	0.167	0.334	-0.334
4	0.179	0.168	0.336	-0.336
5	0.076	0.170	0.339	-0.339
6	-0.022	0.170	0.340	-0.340
7	0.038	0.170	0.340	-0.340
8	-0.078	0.170	0.340	-0.340
9	-0.049	0.170	0.340	-0.340
10	-0.086	0.170	0.341	-0.341
11	-0.068	0.171	0.341	-0.341
12	-0.077	0.171	0.342	-0.342
13	-0.135	0.171	0.342	-0.342
14	-0.044	0.172	0.344	-0.344
15	-0.113	0.172	0.344	-0.344

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 336
"Correlogram for Sarasota County Segment = "BB'

Correlation

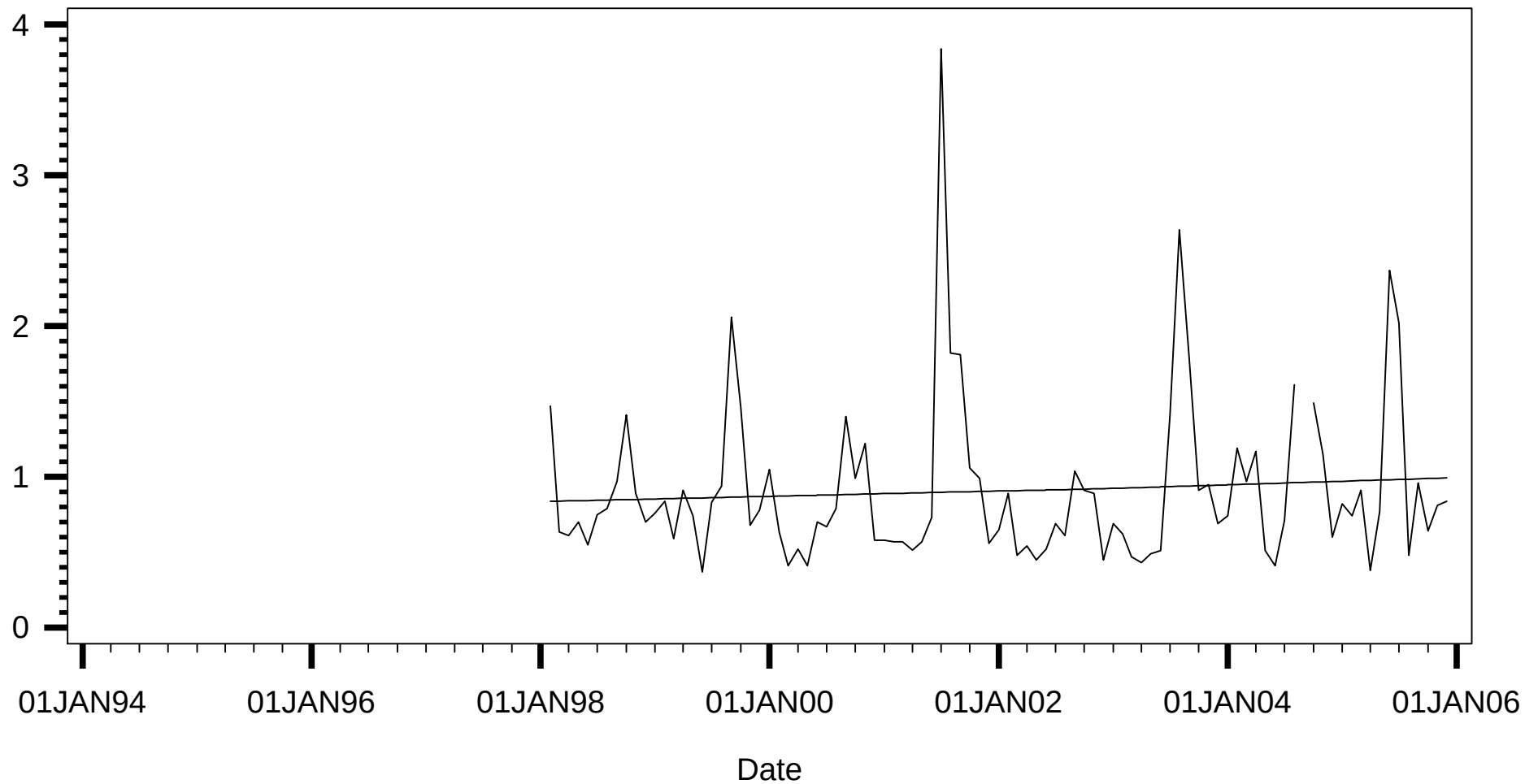
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 337
Monthly Data Time Series for Kd
"Sarasota County Segment= "BB
Not Adjusted for Seasonal Medians

Kd
(1/meter)

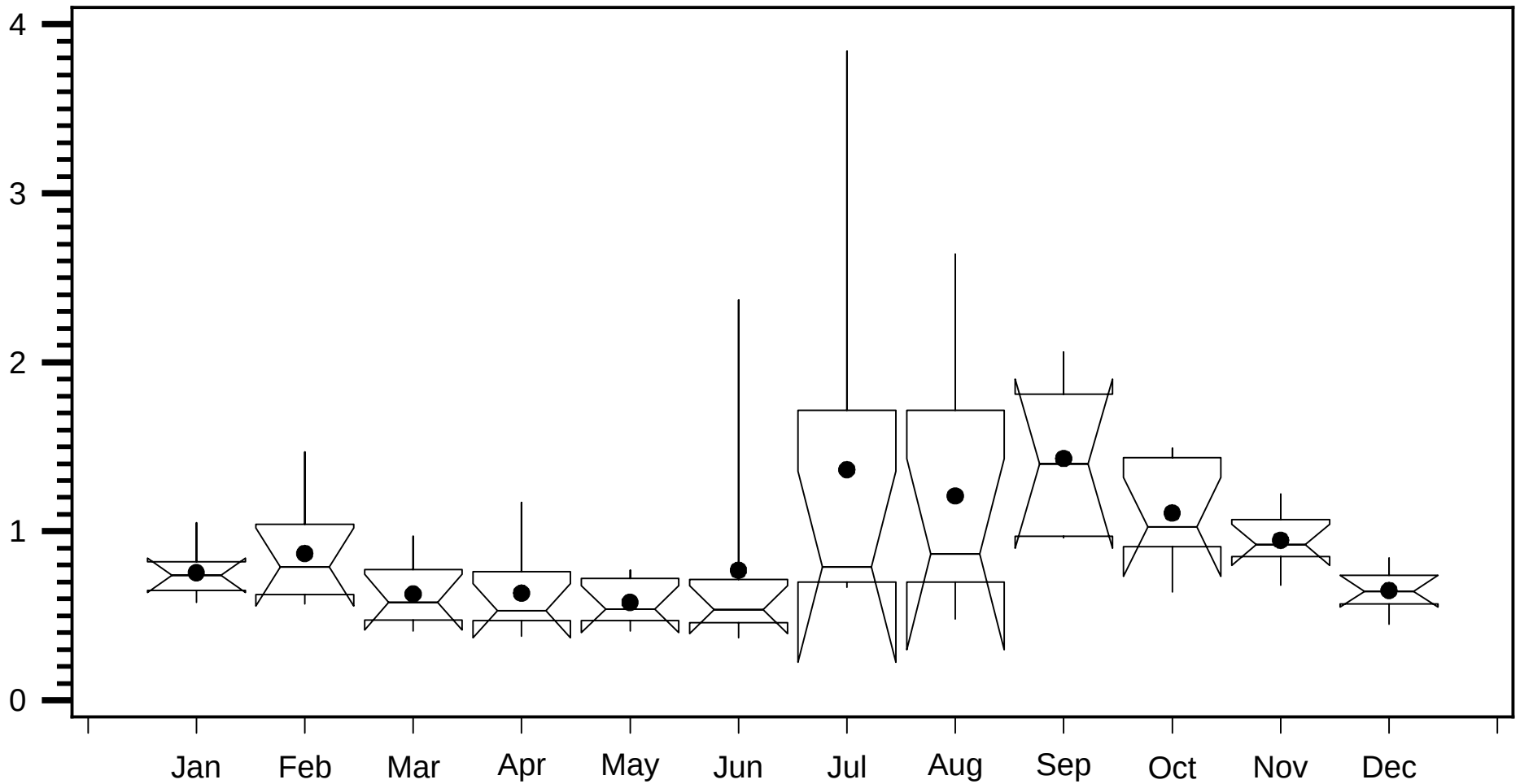


Trends Appendix - Display 338

Seasonal Univariate Statistics for Kd

"Sarasota County Segment= "BB

Kd
(1/meter)



Trends Appendix - Display 339

"Autocorrelation Statistics for Sarasota County Segment = "BB'

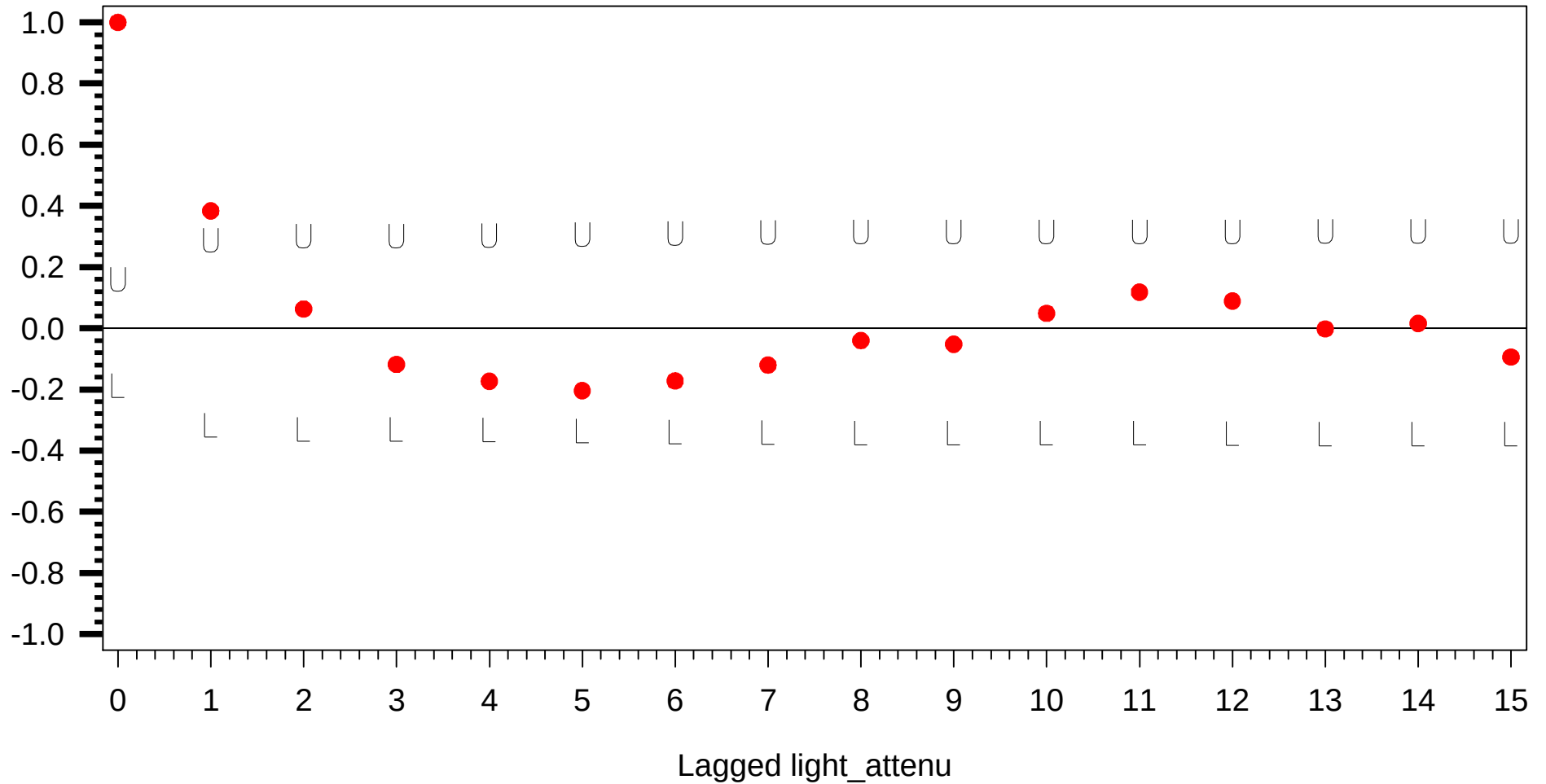
Unadjusted for Seasonal Medians

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.384	0.151	0.302	-0.302
2	0.063	0.158	0.316	-0.316
3	-0.118	0.158	0.316	-0.316
4	-0.173	0.159	0.318	-0.318
5	-0.204	0.160	0.321	-0.321
6	-0.172	0.162	0.324	-0.324
7	-0.120	0.164	0.327	-0.327
8	-0.040	0.164	0.329	-0.329
9	-0.052	0.164	0.329	-0.329
10	0.049	0.164	0.329	-0.329
11	0.118	0.165	0.329	-0.329
12	0.089	0.165	0.330	-0.330
13	-0.002	0.166	0.331	-0.331
14	0.016	0.166	0.331	-0.331
15	-0.094	0.166	0.331	-0.331

Trends Appendix - Display 340
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 341

Seasonal Kendall Tau Trend Test Statistics for Kd
"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.047	0.607	0.662	-.007

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 342

Seasonal Kendall Tau Trend Test Statistics for Kd

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.046584	0.60655	0.66221	-.00708333

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 343

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.346	0.151	0.302	-0.302
2	-0.021	0.157	0.313	-0.313
3	-0.099	0.157	0.313	-0.313
4	-0.077	0.157	0.314	-0.314
5	-0.089	0.157	0.315	-0.315
6	-0.045	0.158	0.316	-0.316
7	-0.005	0.158	0.316	-0.316
8	0.083	0.158	0.316	-0.316
9	0.005	0.158	0.317	-0.317
10	-0.070	0.158	0.317	-0.317
11	-0.095	0.158	0.317	-0.317
12	-0.163	0.159	0.318	-0.318
13	-0.140	0.160	0.320	-0.320
14	-0.037	0.161	0.322	-0.322
15	0.010	0.161	0.322	-0.322

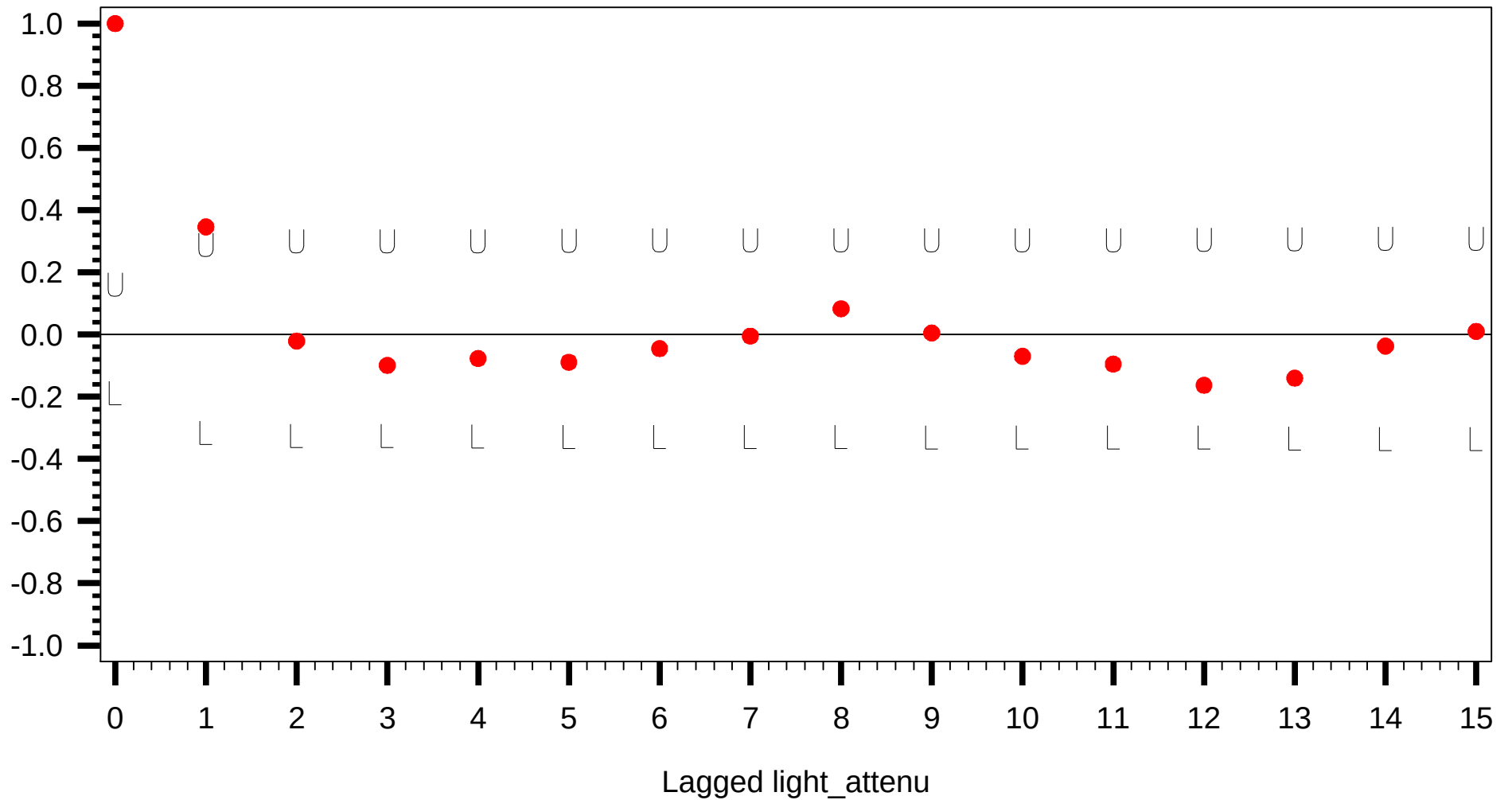
U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 344

"Correlogram for Sarasota County Segment = 'BB'

Correlation

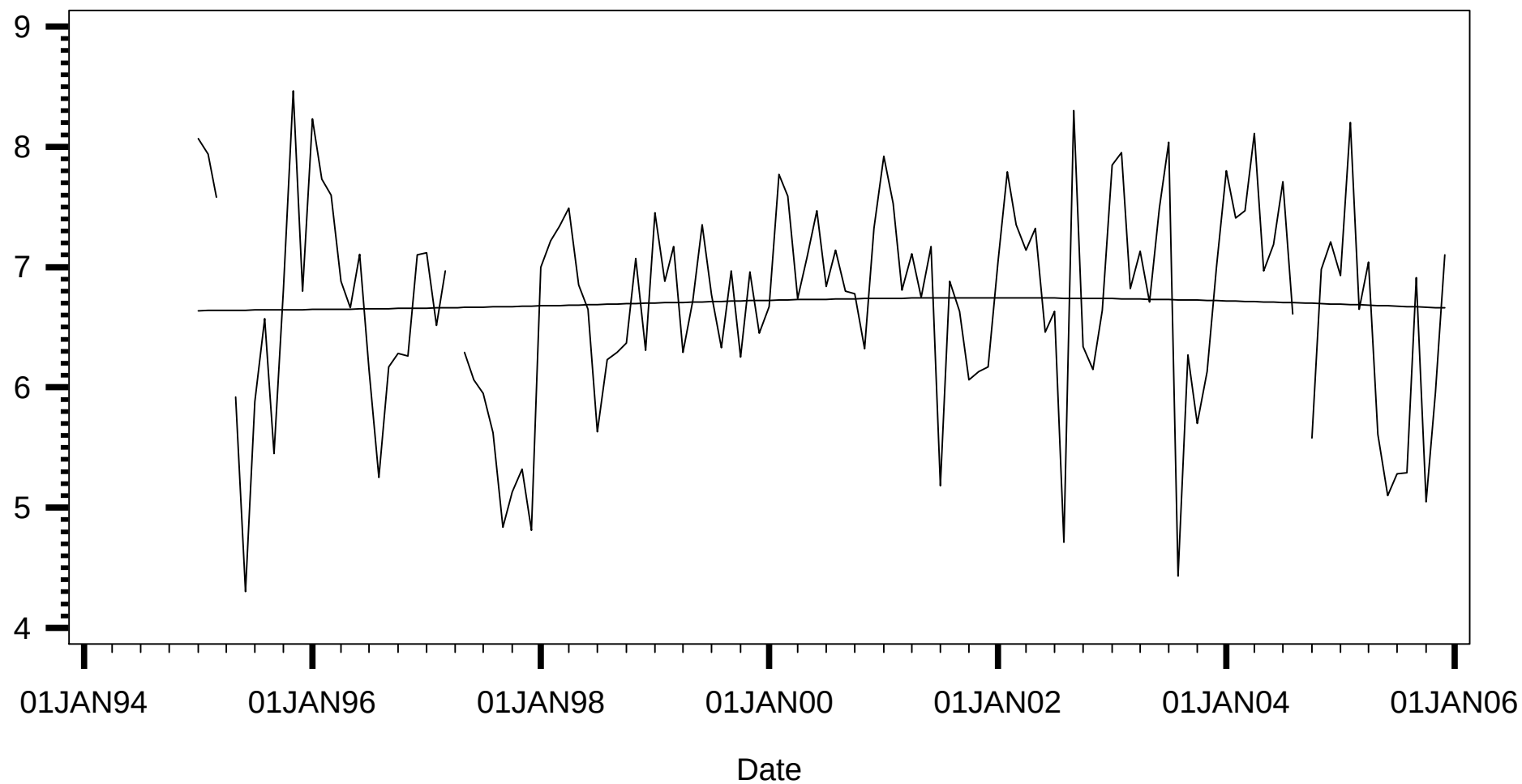
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 345
Monthly Data Time Series for DO
"Sarasota County Segment= "BB
Not Adjusted for Seasonal Medians

DO
(mgl)

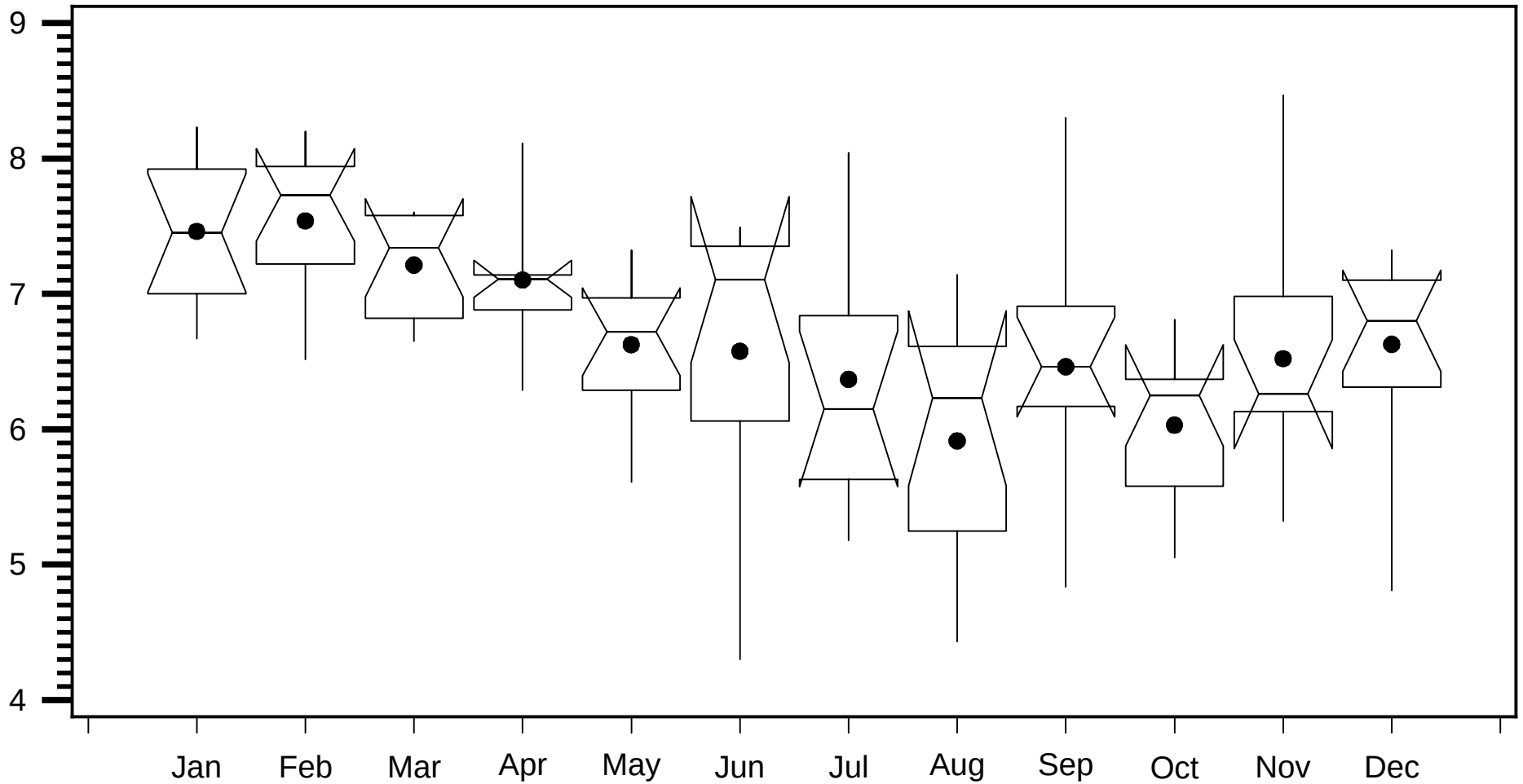


Trends Appendix - Display 346

Seasonal Univariate Statistics for DO

"Sarasota County Segment= "BB

DO
(mgl)



Trends Appendix - Display 347

"Autocorrelation Statistics for Sarasota County Segment = "BB'

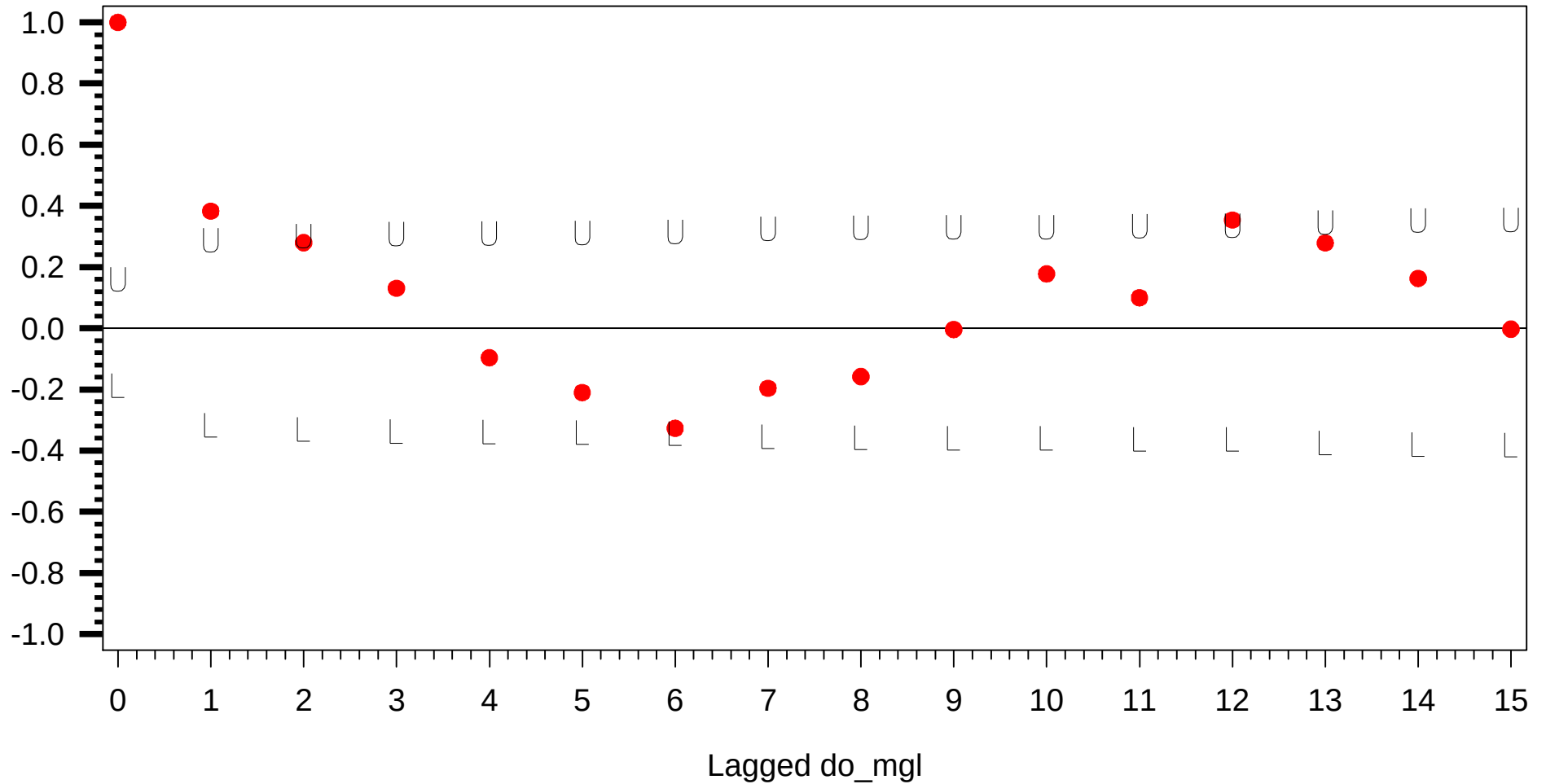
Unadjusted for Seasonal Medians

Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.383	0.151	0.302	-0.302
2	0.280	0.158	0.316	-0.316
3	0.131	0.162	0.323	-0.323
4	-0.096	0.162	0.325	-0.325
5	-0.210	0.163	0.326	-0.326
6	-0.327	0.165	0.330	-0.330
7	-0.196	0.170	0.340	-0.340
8	-0.158	0.172	0.343	-0.343
9	-0.004	0.173	0.345	-0.345
10	0.178	0.173	0.345	-0.345
11	0.100	0.174	0.348	-0.348
12	0.354	0.174	0.349	-0.349
13	0.279	0.180	0.360	-0.360
14	0.163	0.183	0.366	-0.366
15	-0.003	0.184	0.368	-0.368

Trends Appendix - Display 348
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 349

Seasonal Kendall Tau Trend Test Statistics for DO
"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.03	0.677	0.788	.007

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 350

Seasonal Kendall Tau Trend Test Statistics for DO

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.030111	0.67682	0.78753	.00666667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 351

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.156	0.151	0.302	-0.302
2	0.189	0.152	0.304	-0.304
3	0.140	0.154	0.307	-0.307
4	0.071	0.155	0.309	-0.309
5	-0.055	0.155	0.310	-0.310
6	-0.027	0.155	0.310	-0.310
7	0.013	0.155	0.310	-0.310
8	0.010	0.155	0.310	-0.310
9	0.022	0.155	0.310	-0.310
10	0.105	0.155	0.310	-0.310
11	-0.224	0.156	0.311	-0.311
12	0.070	0.158	0.316	-0.316
13	-0.002	0.158	0.317	-0.317
14	0.044	0.158	0.317	-0.317
15	-0.104	0.158	0.317	-0.317

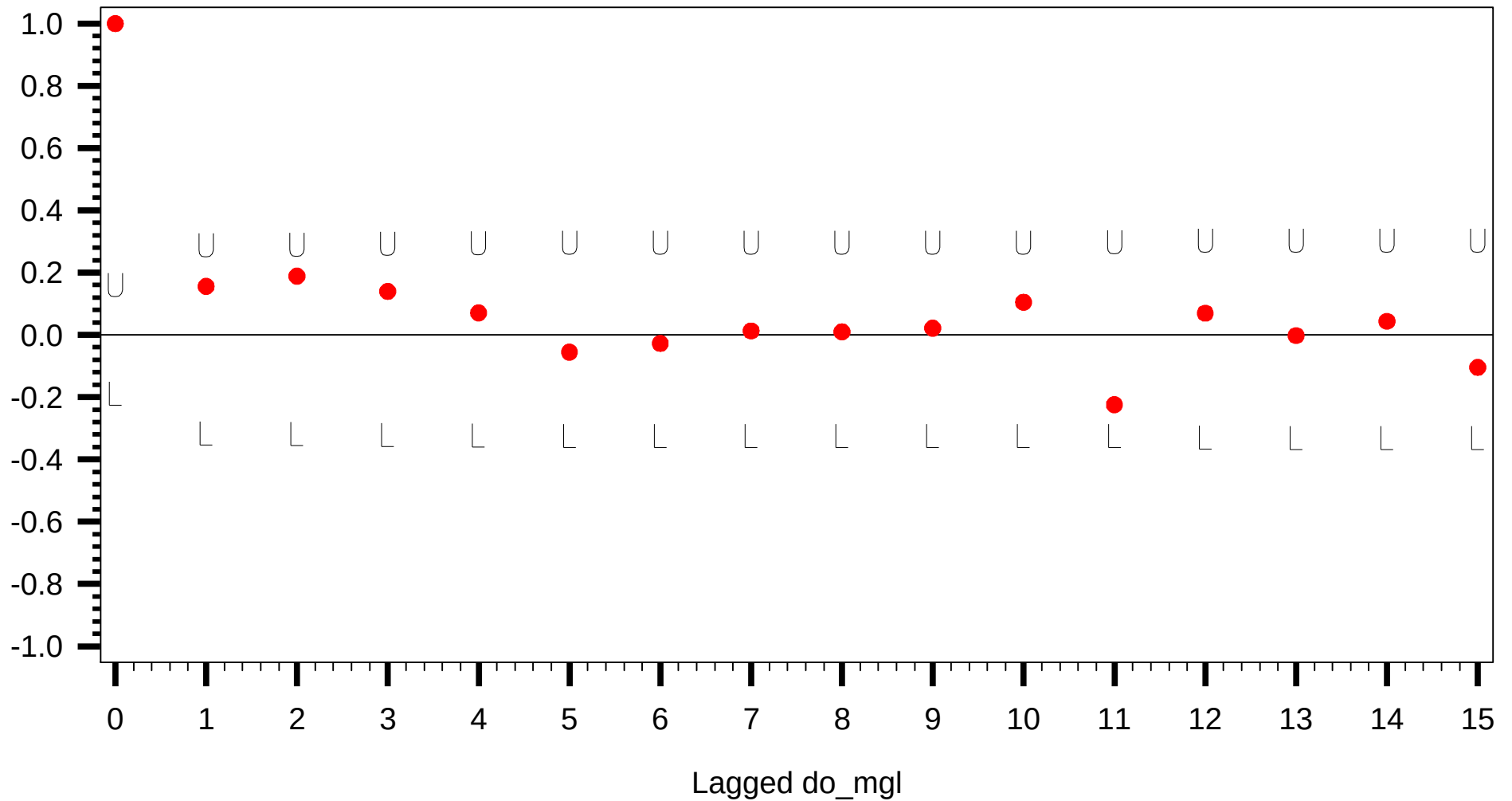
U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 352

"Correlogram for Sarasota County Segment = 'BB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

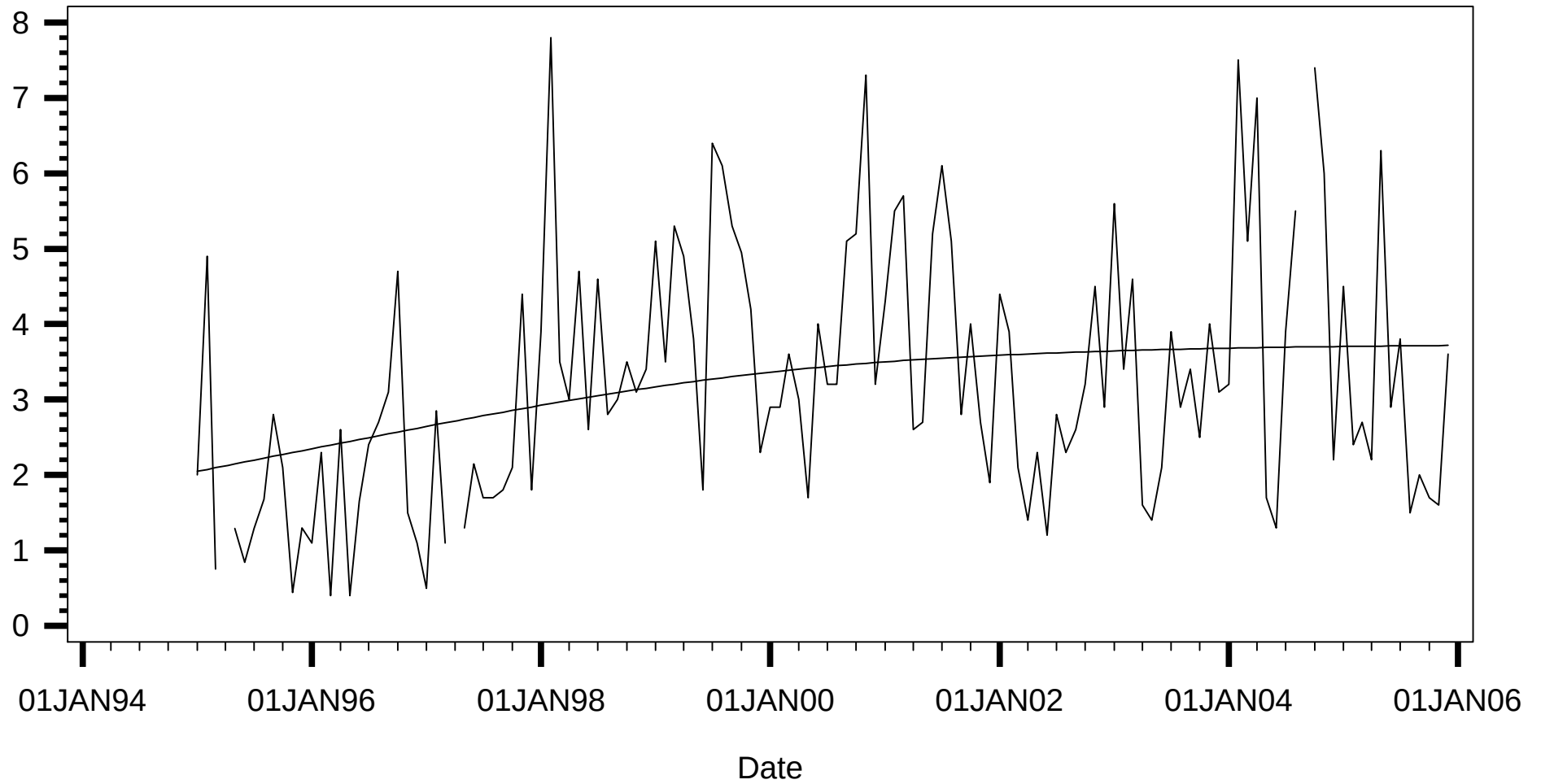
Trends Appendix - Display 353

Monthly Data Time Series for Turbidity

"Sarasota County Segment= "BB

Not Adjusted for Seasonal Medians

Turbidity
(NTU)

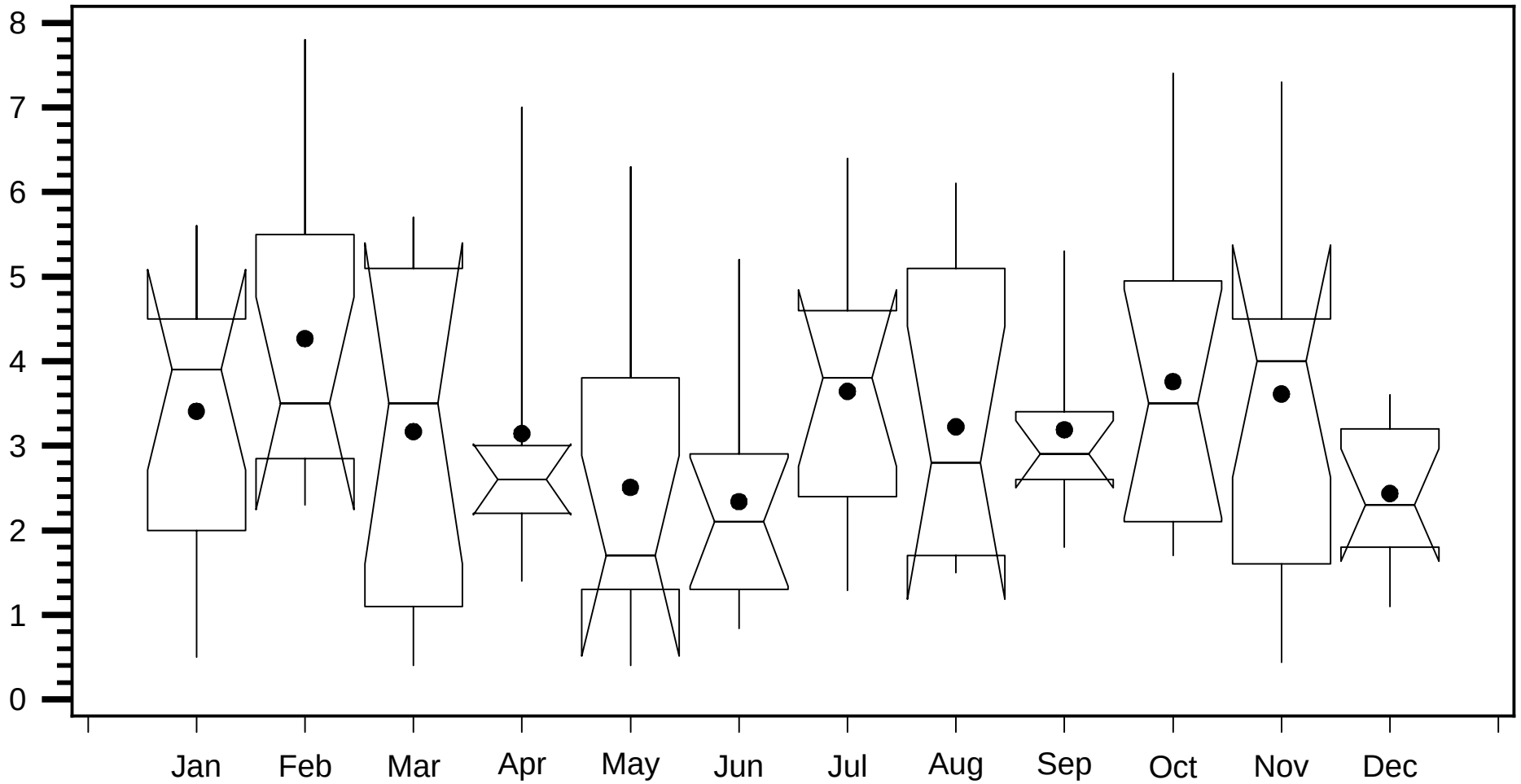


Trends Appendix - Display 354

Seasonal Univariate Statistics for Turbidity

"Sarasota County Segment= "BB"

Turbidity
(NTU)



Trends Appendix - Display 355

"Autocorrelation Statistics for Sarasota County Segment = "BB'

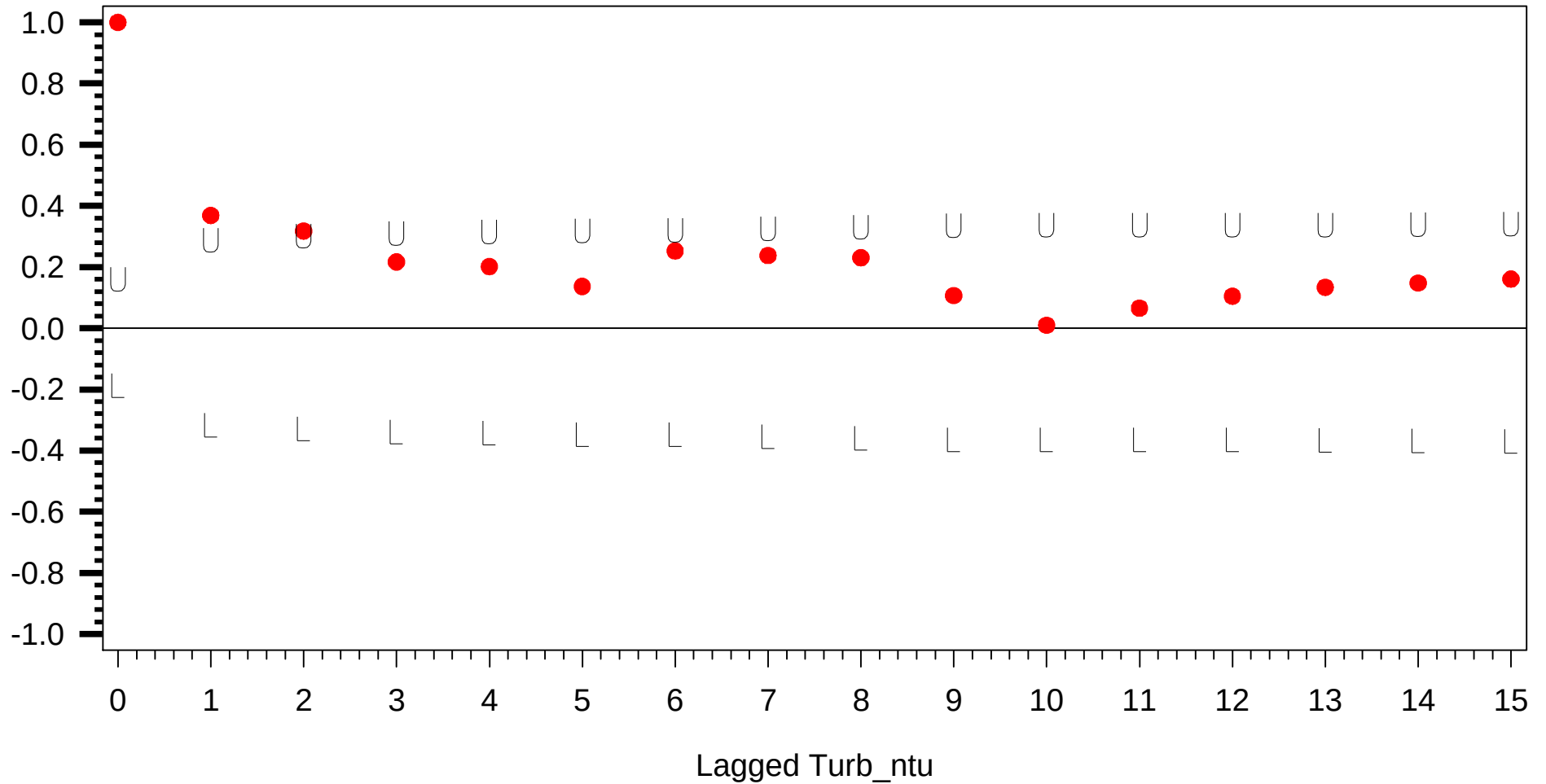
Unadjusted for Seasonal Medians

Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.369	0.151	0.302	-0.302
2	0.318	0.157	0.315	-0.315
3	0.217	0.162	0.325	-0.325
4	0.202	0.164	0.329	-0.329
5	0.137	0.166	0.333	-0.333
6	0.253	0.167	0.334	-0.334
7	0.238	0.170	0.340	-0.340
8	0.231	0.173	0.345	-0.345
9	0.107	0.175	0.350	-0.350
10	0.010	0.175	0.351	-0.351
11	0.066	0.175	0.351	-0.351
12	0.105	0.176	0.351	-0.351
13	0.134	0.176	0.352	-0.352
14	0.148	0.177	0.354	-0.354
15	0.161	0.178	0.355	-0.355

Trends Appendix - Display 356
"Correlogram for Sarasota County Segment = "BB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 357

Seasonal Kendall Tau Trend Test Statistics for Turbidity

"Sarasota County Segment = "BB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.227	.001	0.122	0.157

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 358

Seasonal Kendall Tau Trend Test Statistics for Turbidity

"Sarasota County Segment = "BB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.22662	.000995994	0.12199	0.15714

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 359

"Autocorrelation Statistics for Sarasota County Segment = "BB'

Adjusted for Seasonal Median and Detrended

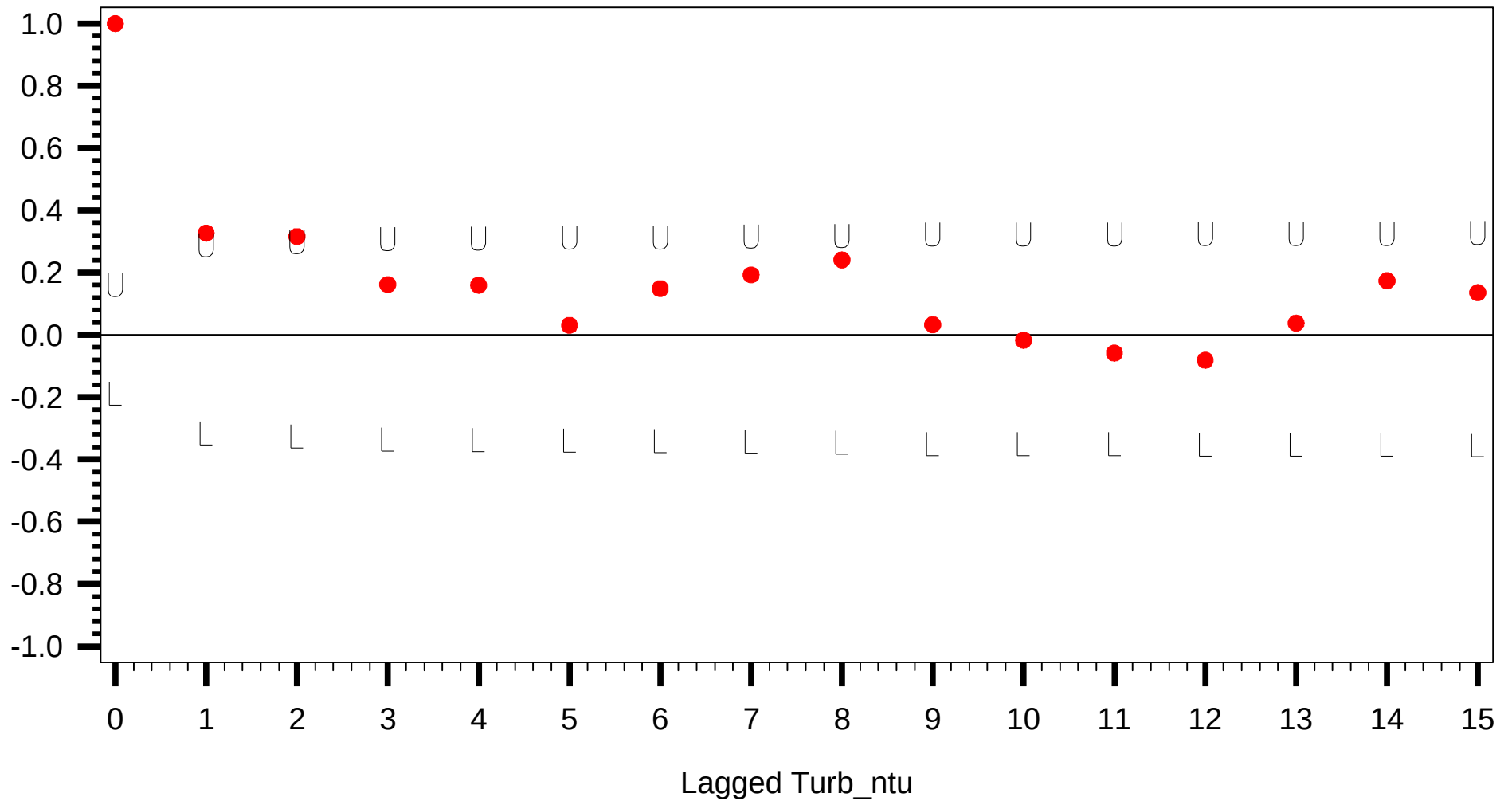
Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.327	0.151	0.302	-0.302
2	0.316	0.156	0.312	-0.312
3	0.162	0.161	0.322	-0.322
4	0.160	0.162	0.324	-0.324
5	0.031	0.163	0.326	-0.326
6	0.149	0.163	0.327	-0.327
7	0.193	0.164	0.329	-0.329
8	0.241	0.166	0.332	-0.332
9	0.033	0.169	0.337	-0.337
10	-0.017	0.169	0.337	-0.337
11	-0.058	0.169	0.337	-0.337
12	-0.081	0.169	0.338	-0.338
13	0.038	0.169	0.338	-0.338
14	0.174	0.169	0.338	-0.338
15	0.136	0.171	0.341	-0.341

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 360
"Correlogram for Sarasota County Segment = "BB'

Correlation

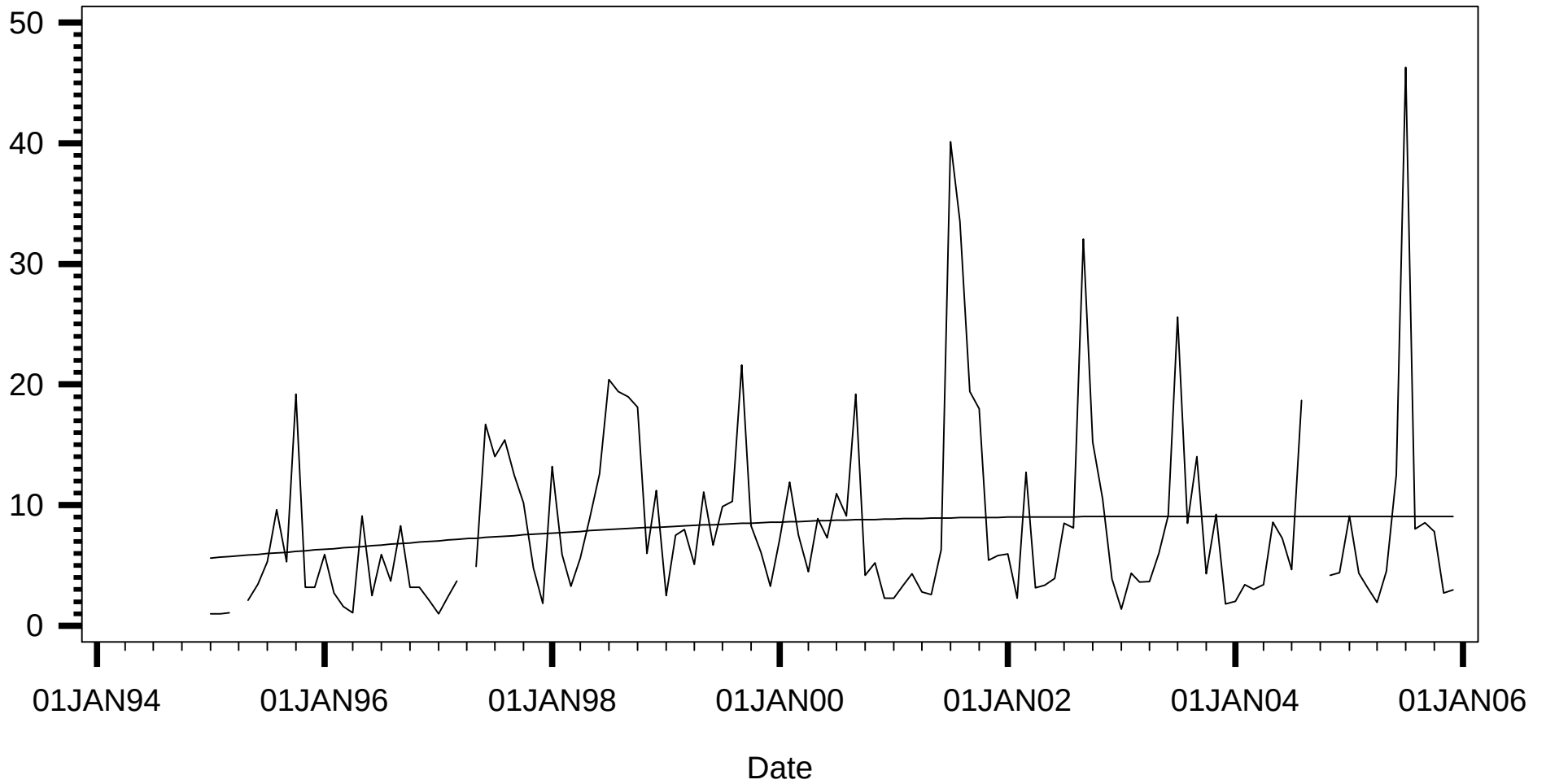
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 361
Monthly Data Time Series for CHLA_C
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

CHLA_C
(ug/l)

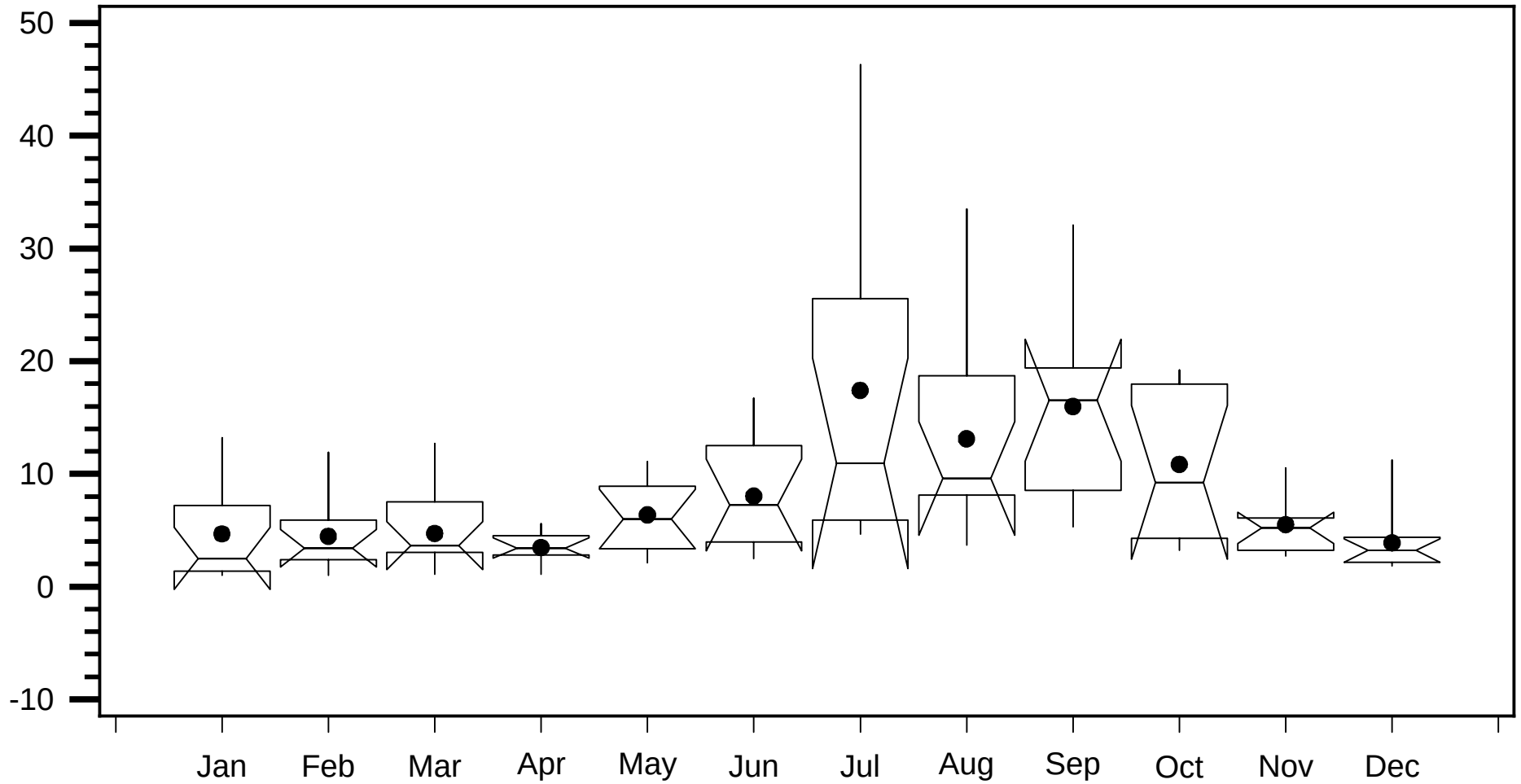


Trends Appendix - Display 362

Seasonal Univariate Statistics for CHLA_C

Sarasota County Segment= LB

CHLA_C
(ug/l)



Trends Appendix - Display 363

Autocorrelation Statistics for Sarasota County Segment = LB'

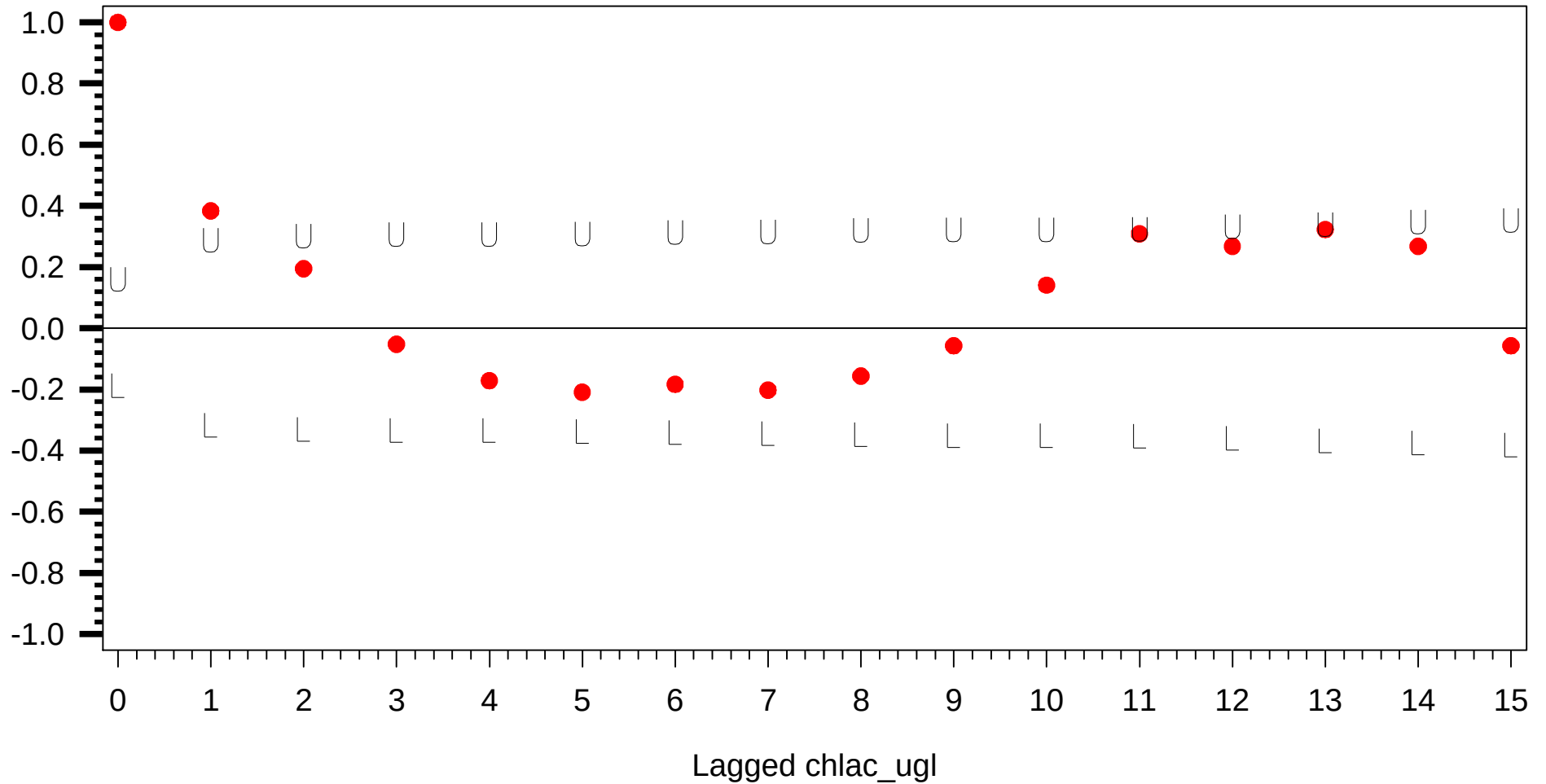
Unadjusted for Seasonal Medians

Lagged chlac_uhl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.384	0.151	0.302	-0.302
2	0.195	0.158	0.316	-0.316
3	-0.052	0.160	0.320	-0.320
4	-0.171	0.160	0.320	-0.320
5	-0.209	0.161	0.323	-0.323
6	-0.183	0.163	0.327	-0.327
7	-0.202	0.165	0.330	-0.330
8	-0.156	0.167	0.334	-0.334
9	-0.057	0.168	0.336	-0.336
10	0.141	0.168	0.336	-0.336
11	0.309	0.169	0.338	-0.338
12	0.268	0.173	0.346	-0.346
13	0.323	0.176	0.353	-0.353
14	0.268	0.181	0.361	-0.361
15	-0.057	0.184	0.367	-0.367

Trends Appendix - Display 364
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 365

Seasonal Kendall Tau Trend Test Statistics for CHLA_C
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.095	0.174	0.454	0.139

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 366

Seasonal Kendall Tau Trend Test Statistics for CHLA_C

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.095008	0.17433	0.45385	0.13875

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 367

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

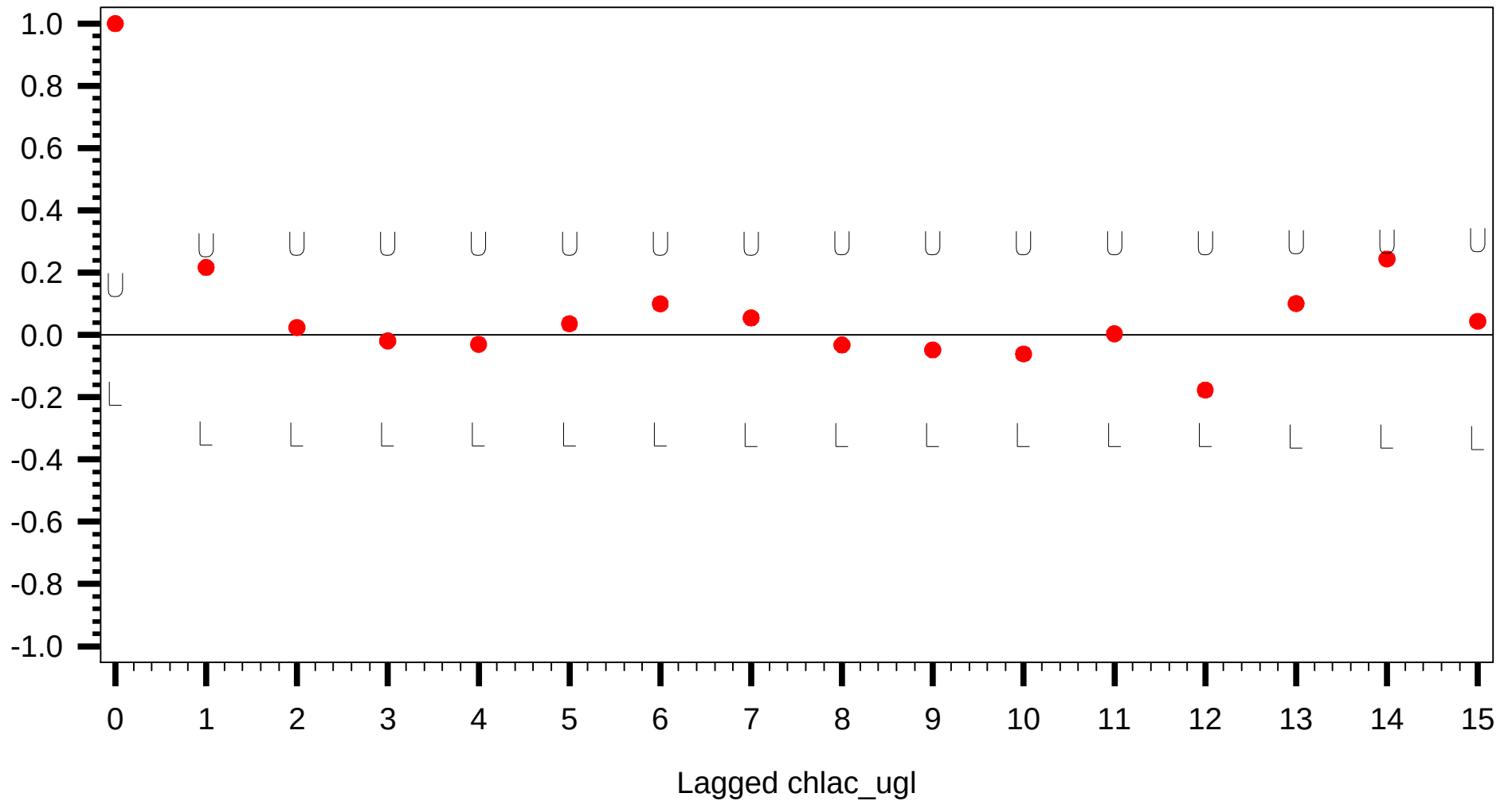
Lagged chlac_uvl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.217	0.151	0.302	-0.302
2	0.024	0.153	0.306	-0.306
3	-0.019	0.153	0.306	-0.306
4	-0.030	0.153	0.306	-0.306
5	0.036	0.153	0.306	-0.306
6	0.100	0.153	0.306	-0.306
7	0.055	0.154	0.307	-0.307
8	-0.032	0.154	0.308	-0.308
9	-0.048	0.154	0.308	-0.308
10	-0.061	0.154	0.308	-0.308
11	0.004	0.154	0.308	-0.308
12	-0.177	0.154	0.308	-0.308
13	0.101	0.156	0.312	-0.312
14	0.244	0.156	0.313	-0.313
15	0.044	0.159	0.318	-0.318

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 368
Correlogram for Sarasota County Segment = LB'

Correlation

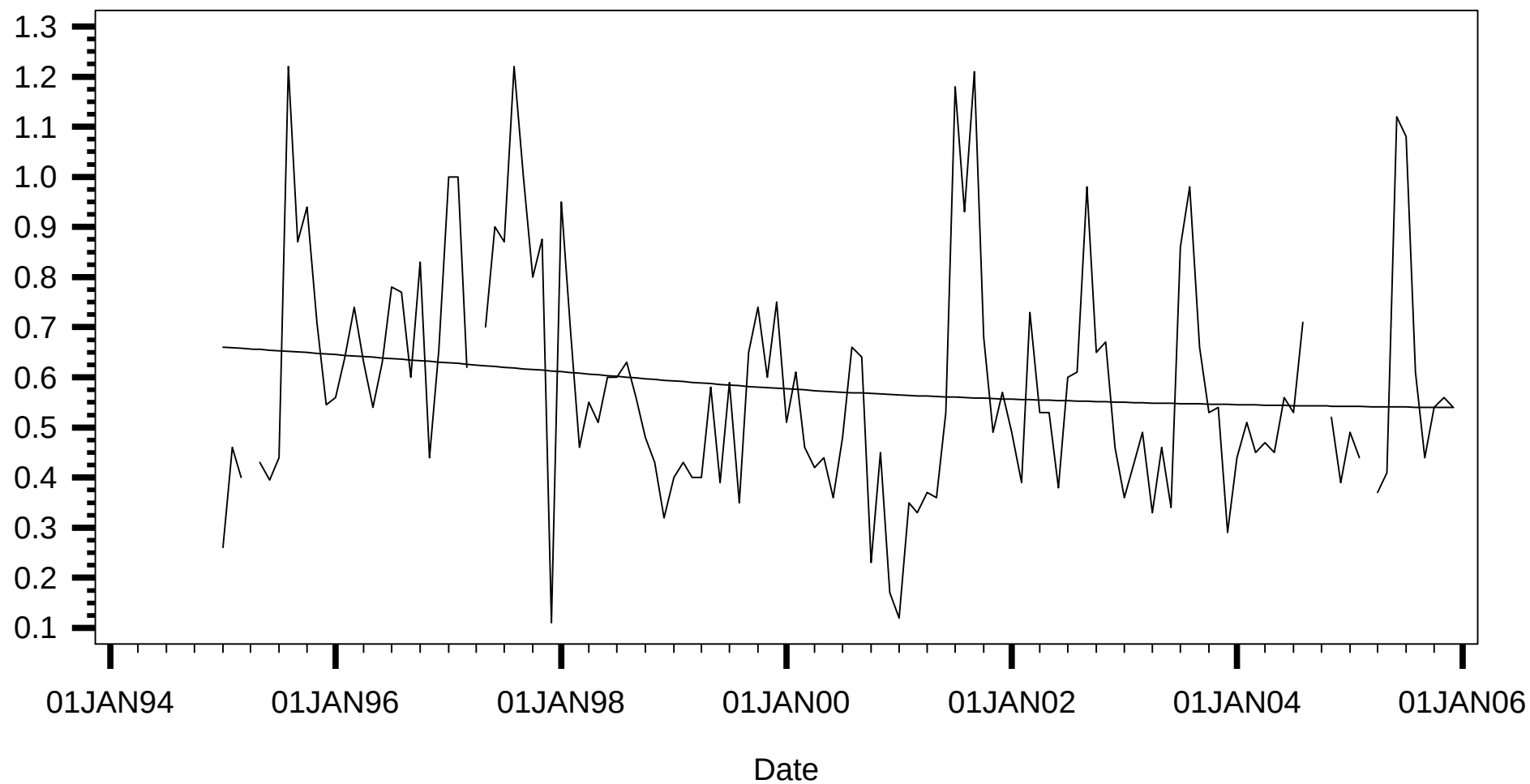
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 369
Monthly Data Time Series for TN
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

TN
(mg/l)

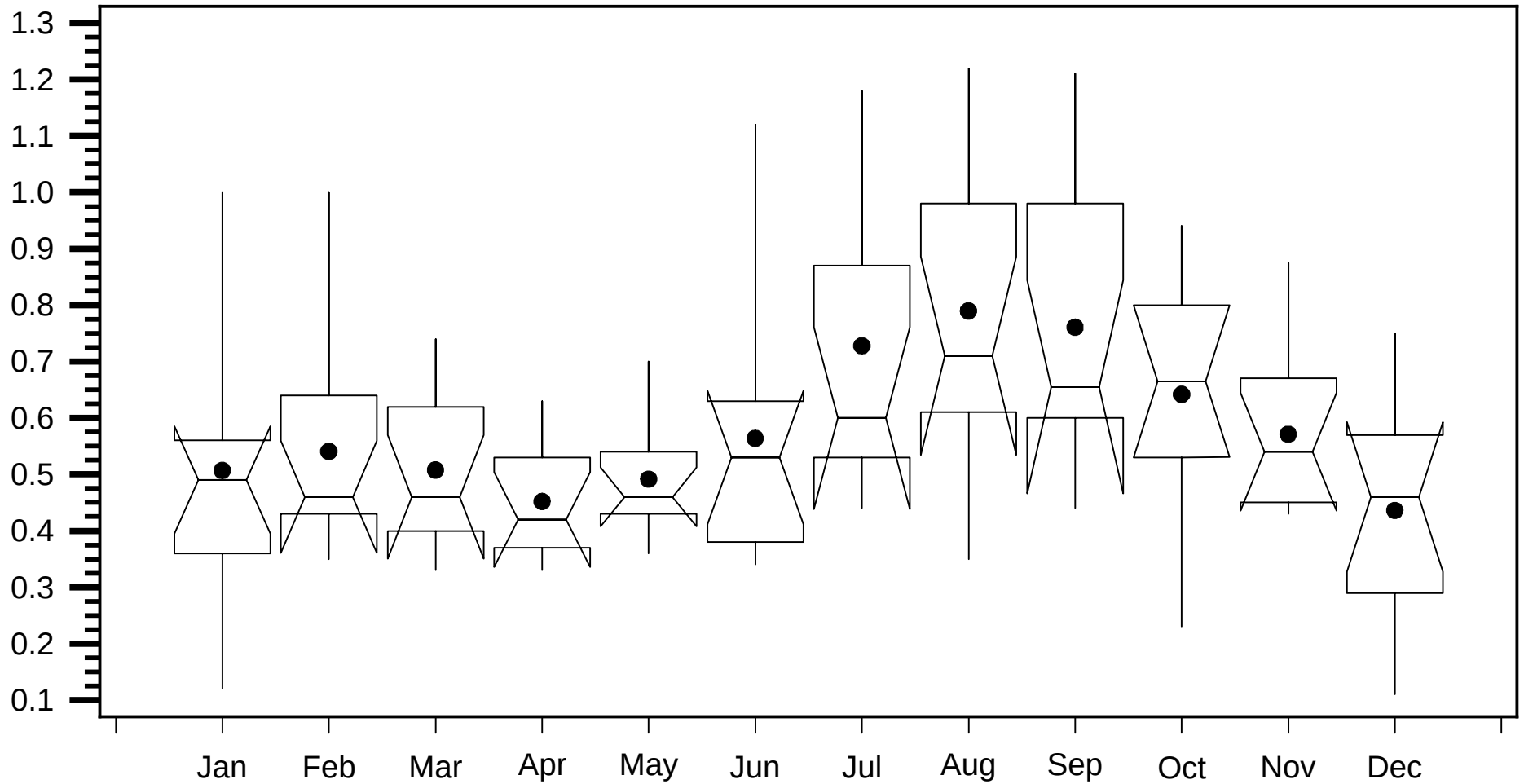


Trends Appendix - Display 370

Seasonal Univariate Statistics for TN

Sarasota County Segment= LB

TN
(mg/l)



Trends Appendix - Display 371

Autocorrelation Statistics for Sarasota County Segment = LB'

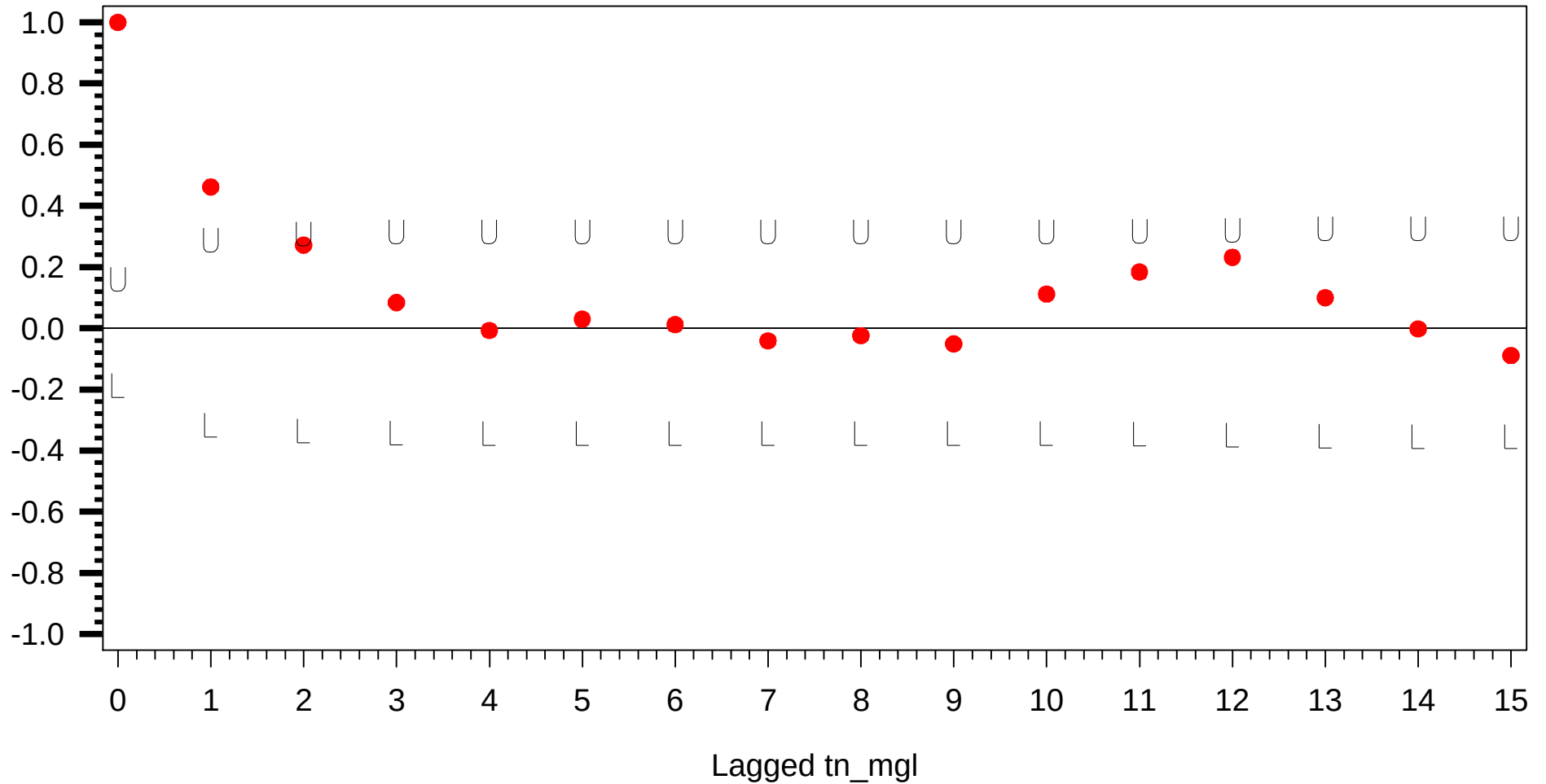
Unadjusted for Seasonal Medians

Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.462	0.151	0.302	-0.302
2	0.272	0.161	0.322	-0.322
3	0.084	0.165	0.329	-0.329
4	-0.007	0.165	0.330	-0.330
5	0.030	0.165	0.330	-0.330
6	0.012	0.165	0.330	-0.330
7	-0.041	0.165	0.330	-0.330
8	-0.024	0.165	0.330	-0.330
9	-0.051	0.165	0.330	-0.330
10	0.112	0.165	0.330	-0.330
11	0.184	0.166	0.331	-0.331
12	0.232	0.167	0.335	-0.335
13	0.100	0.170	0.339	-0.339
14	-0.002	0.170	0.340	-0.340
15	-0.089	0.170	0.340	-0.340

Trends Appendix - Display 372
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 373

Seasonal Kendall Tau Trend Test Statistics for TN
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.175	0.012	0.084	-0.012

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 374

Seasonal Kendall Tau Trend Test Statistics for TN

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.17512	0.011966	0.083855	-0.012

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 375

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

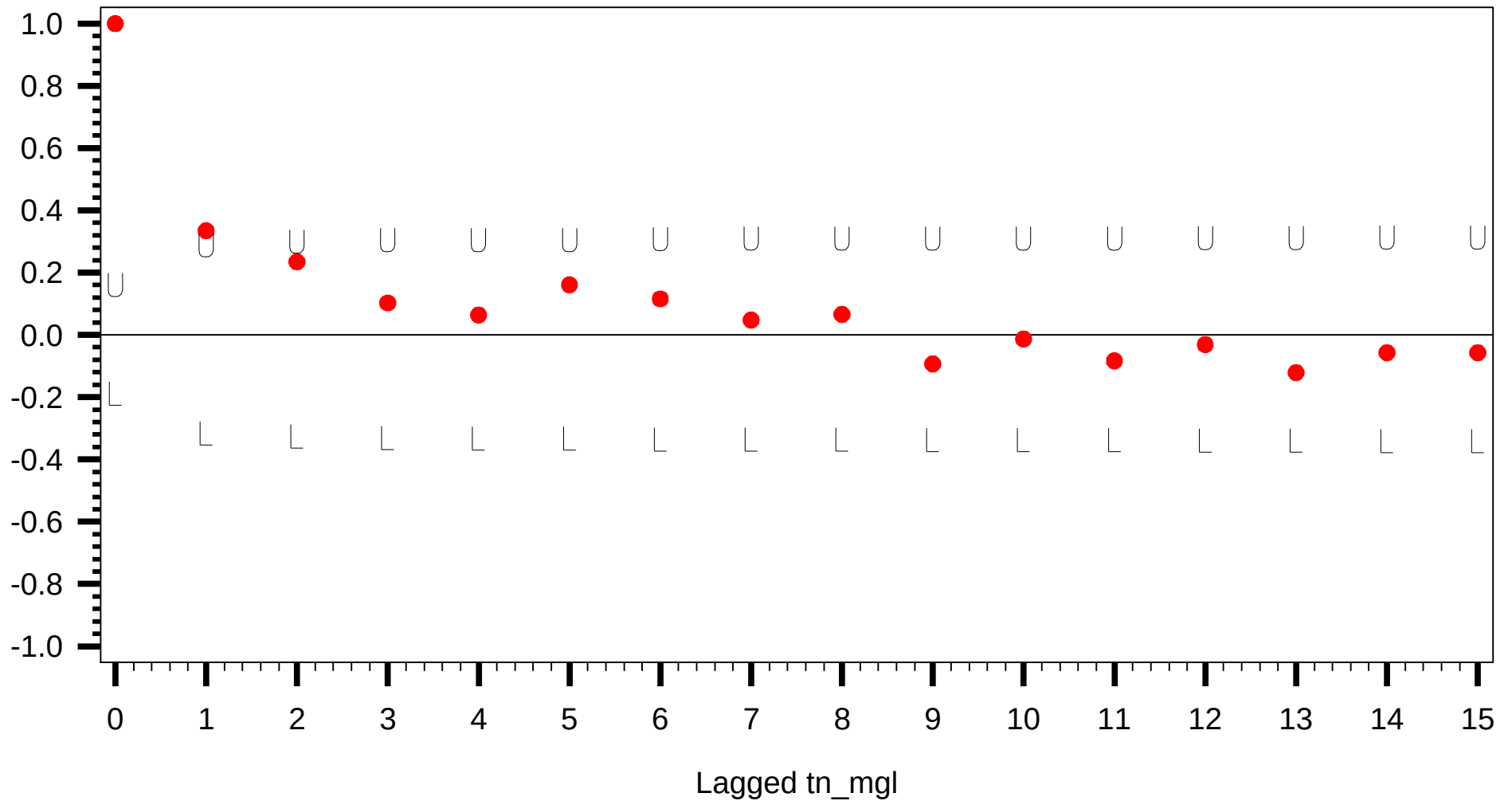
Lagged tn_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.335	0.151	0.302	-0.302
2	0.235	0.156	0.313	-0.313
3	0.103	0.159	0.318	-0.318
4	0.064	0.159	0.319	-0.319
5	0.161	0.160	0.319	-0.319
6	0.116	0.161	0.322	-0.322
7	0.048	0.162	0.323	-0.323
8	0.066	0.162	0.323	-0.323
9	-0.093	0.162	0.324	-0.324
10	-0.013	0.162	0.324	-0.324
11	-0.083	0.162	0.324	-0.324
12	-0.031	0.163	0.325	-0.325
13	-0.121	0.163	0.325	-0.325
14	-0.057	0.163	0.327	-0.327
15	-0.057	0.163	0.327	-0.327

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 376
Correlogram for Sarasota County Segment = LB'

Correlation

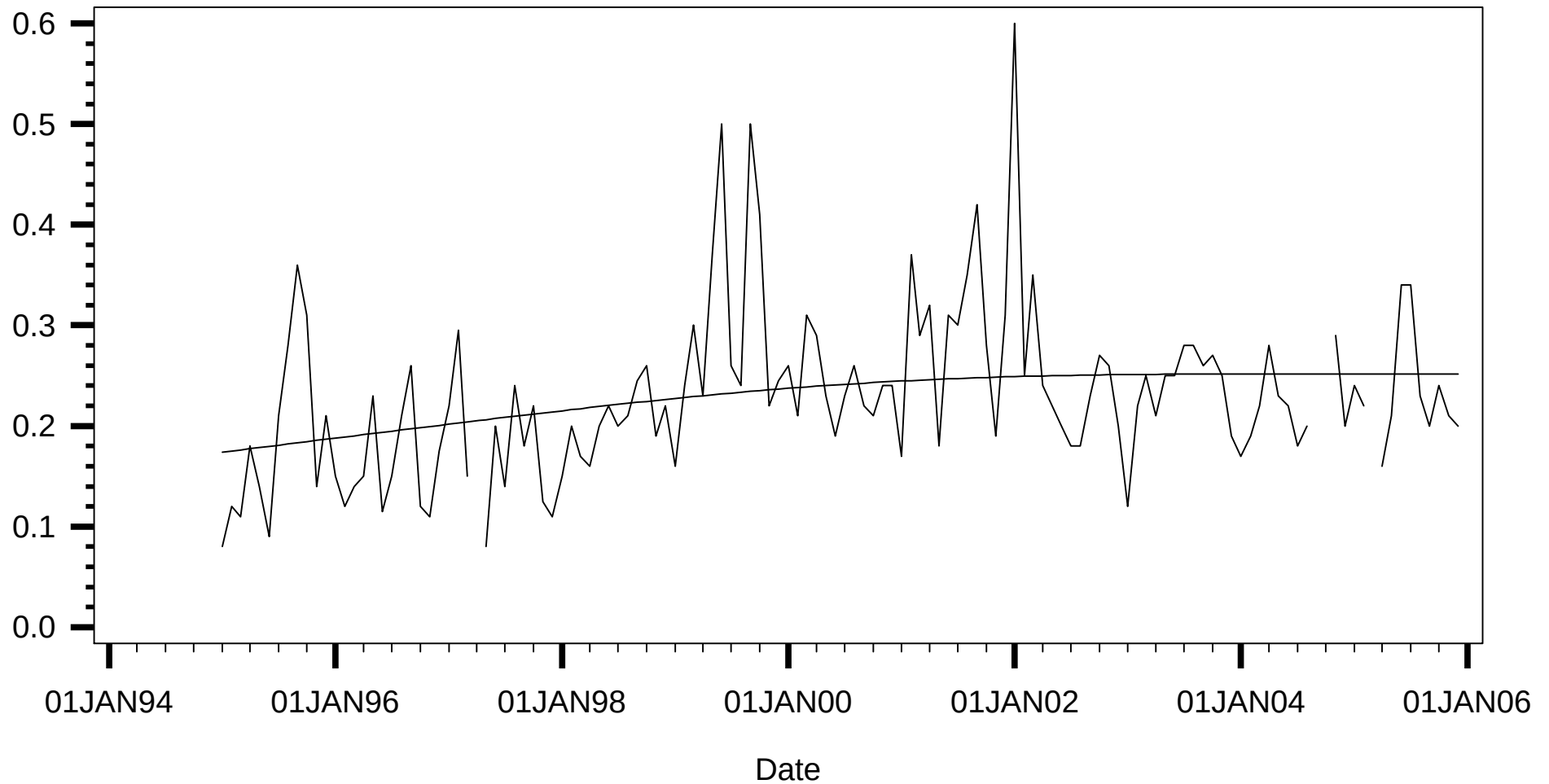
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 377
Monthly Data Time Series for TP
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

TP
(mg/l)

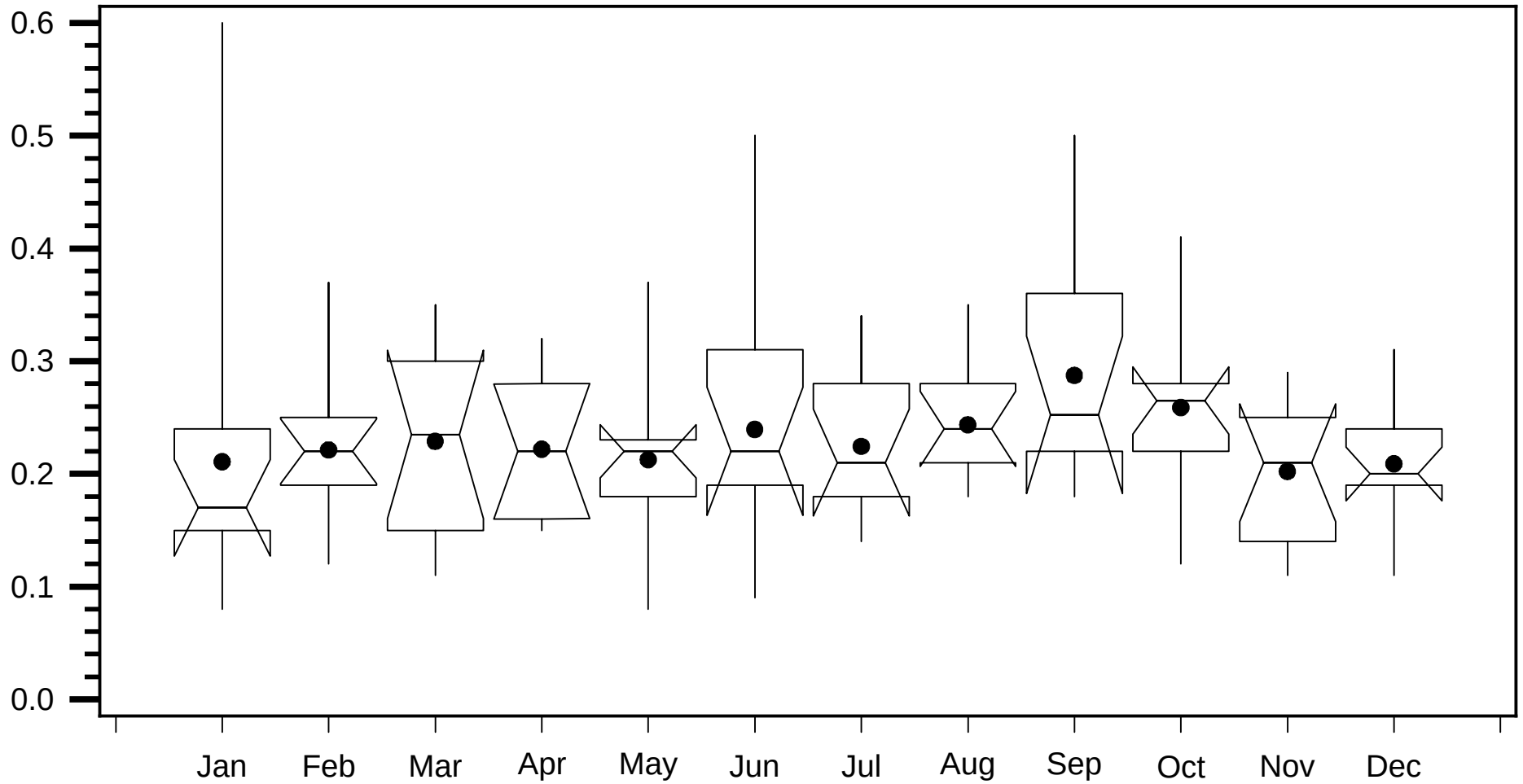


Trends Appendix - Display 378

Seasonal Univariate Statistics for TP

Sarasota County Segment= LB

TP
(mg/l)



Trends Appendix - Display 379

Autocorrelation Statistics for Sarasota County Segment = LB'

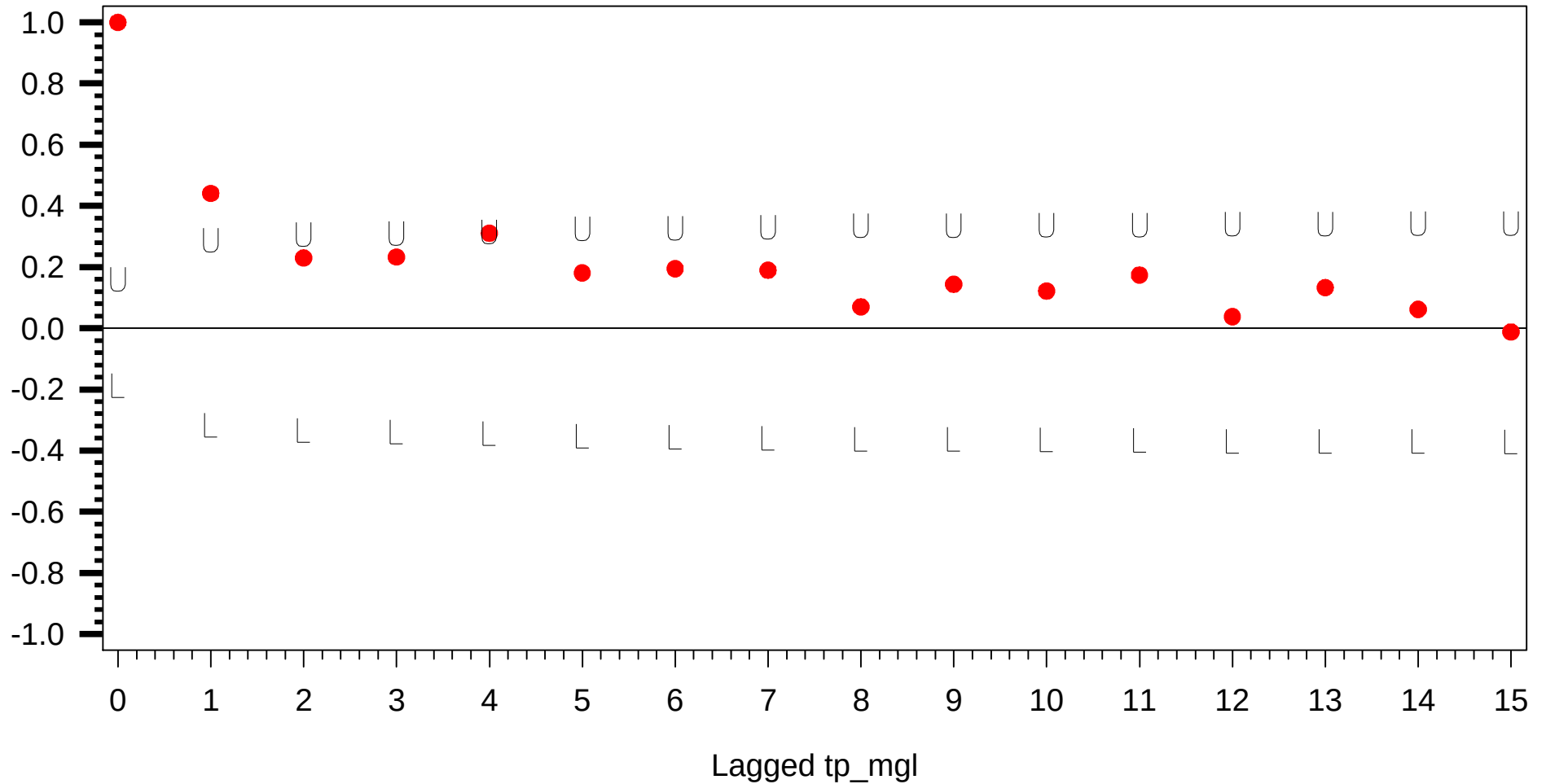
Unadjusted for Seasonal Medians

Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.441	0.151	0.302	-0.302
2	0.230	0.160	0.320	-0.320
3	0.233	0.163	0.325	-0.325
4	0.311	0.165	0.330	-0.330
5	0.181	0.170	0.339	-0.339
6	0.195	0.171	0.342	-0.342
7	0.190	0.173	0.345	-0.345
8	0.070	0.174	0.349	-0.349
9	0.144	0.175	0.349	-0.349
10	0.122	0.175	0.351	-0.351
11	0.174	0.176	0.352	-0.352
12	0.038	0.177	0.355	-0.355
13	0.133	0.177	0.355	-0.355
14	0.062	0.178	0.356	-0.356
15	-0.012	0.178	0.357	-0.357

Trends Appendix - Display 380
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 381

Seasonal Kendall Tau Trend Test Statistics for TP
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.242	0	0.066	.008

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 382

Seasonal Kendall Tau Trend Test Statistics for TP

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.24194	.000442863	0.066397	.00816667

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 383

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

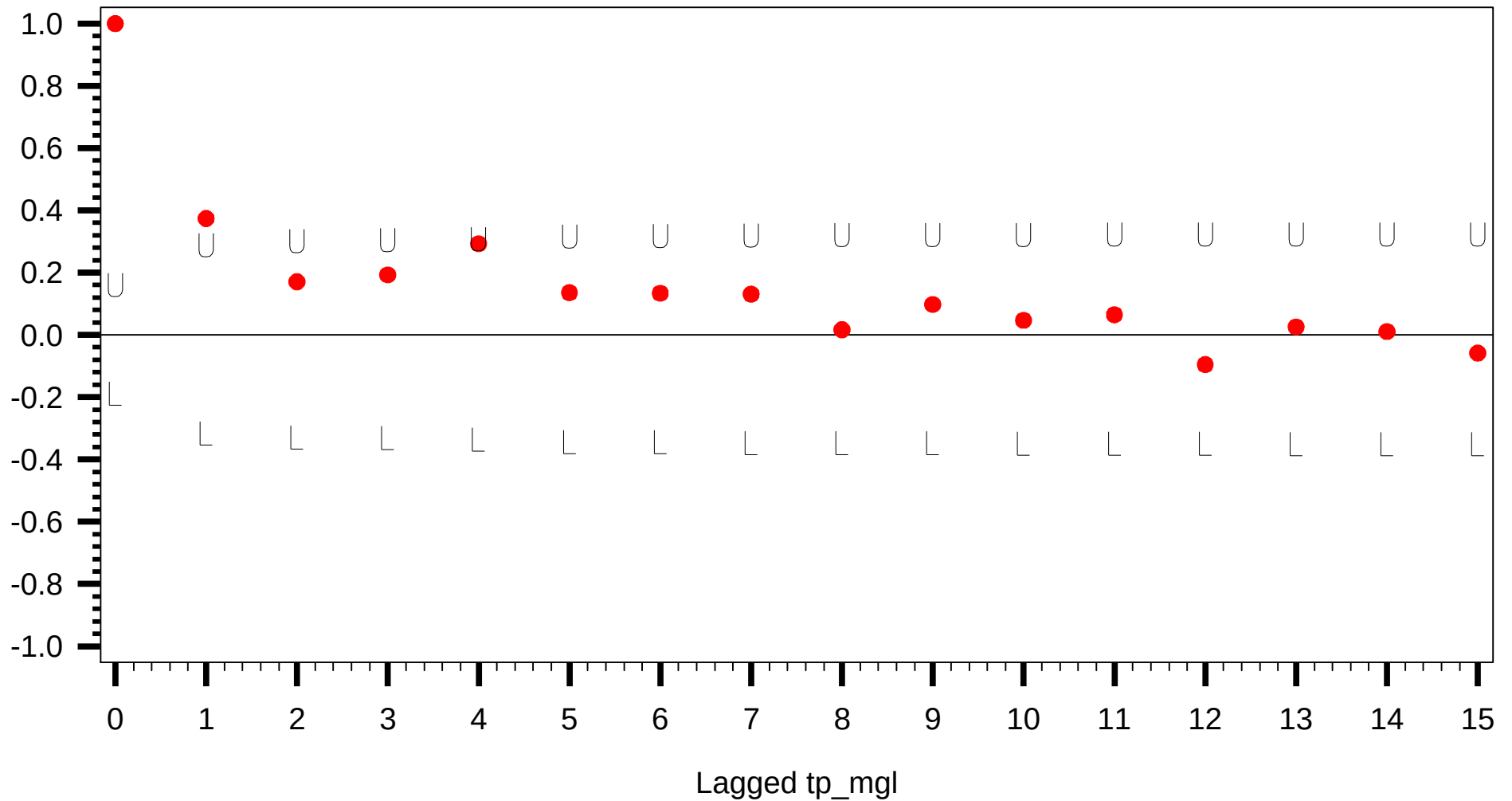
Lagged tp_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.374	0.151	0.302	-0.302
2	0.171	0.158	0.315	-0.315
3	0.193	0.159	0.318	-0.318
4	0.293	0.161	0.322	-0.322
5	0.136	0.165	0.330	-0.330
6	0.134	0.166	0.331	-0.331
7	0.131	0.166	0.333	-0.333
8	0.017	0.167	0.334	-0.334
9	0.098	0.167	0.334	-0.334
10	0.047	0.168	0.335	-0.335
11	0.065	0.168	0.336	-0.336
12	-0.095	0.168	0.336	-0.336
13	0.026	0.168	0.337	-0.337
14	0.011	0.168	0.337	-0.337
15	-0.058	0.168	0.337	-0.337

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 384
Correlogram for Sarasota County Segment = LB'

Correlation

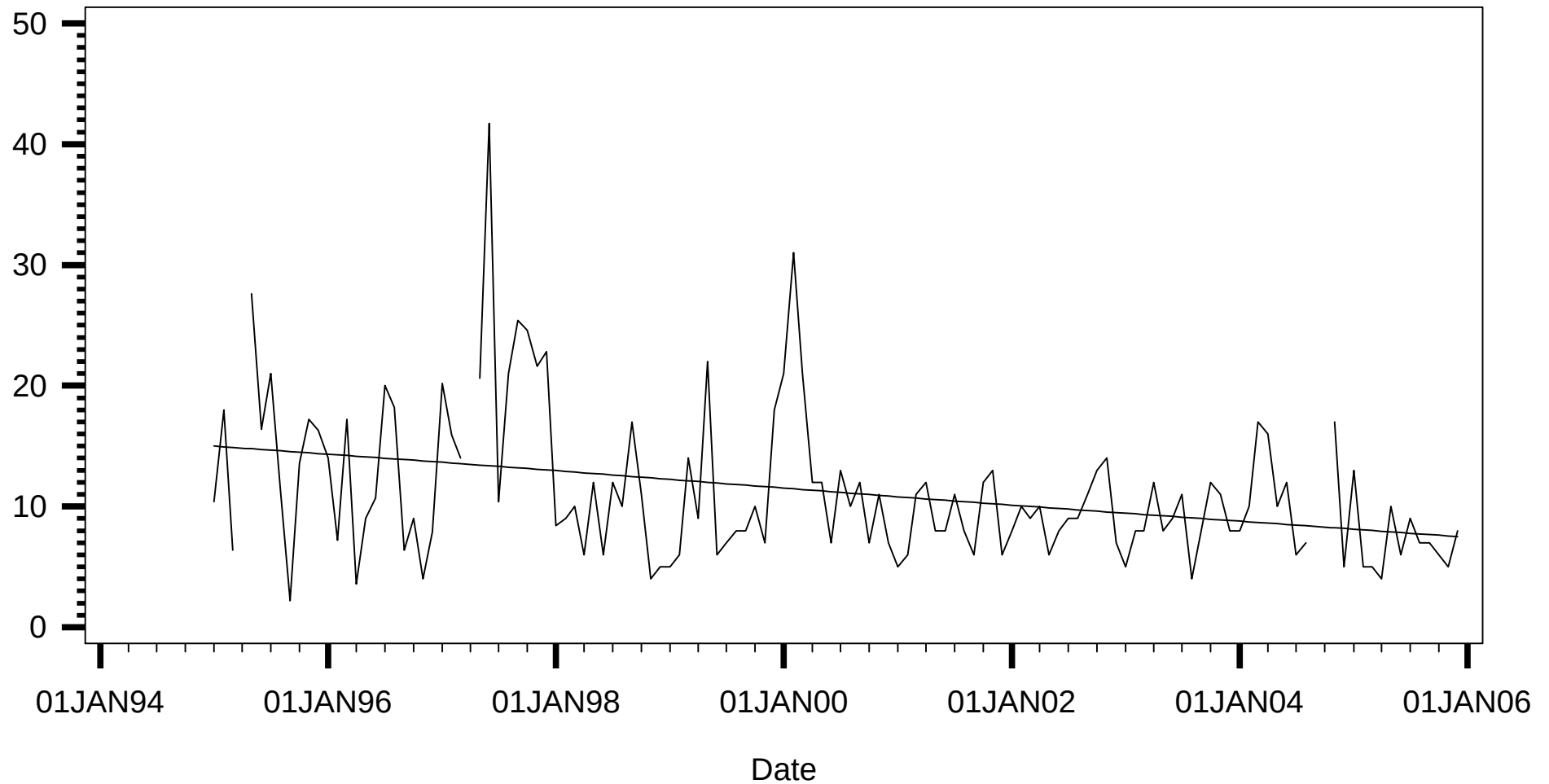
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 385
Monthly Data Time Series for TSS
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

TSS
(mg/l)

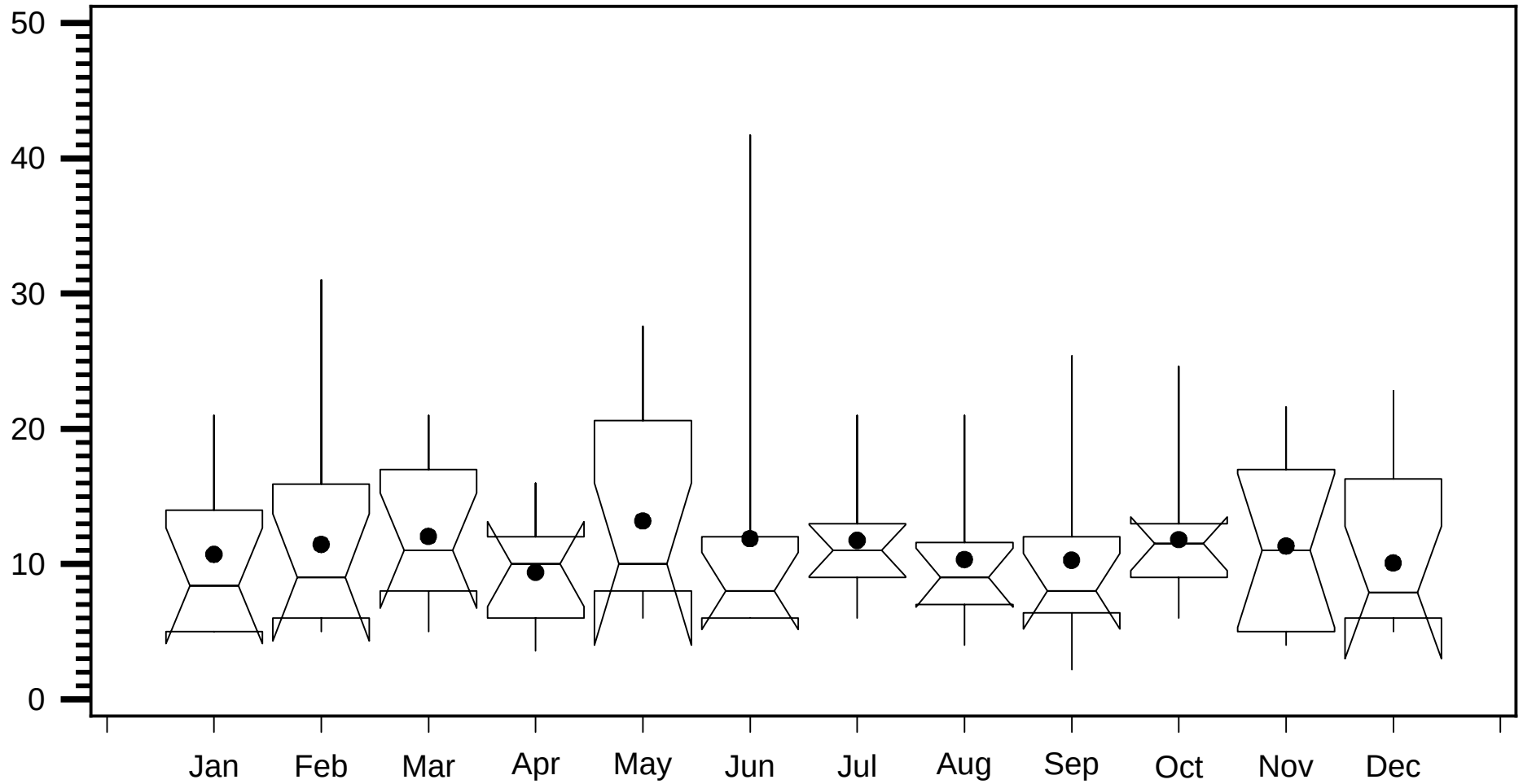


Trends Appendix - Display 386

Seasonal Univariate Statistics for TSS

Sarasota County Segment= LB

TSS
(mg/l)



Trends Appendix - Display 387

Autocorrelation Statistics for Sarasota County Segment = LB'

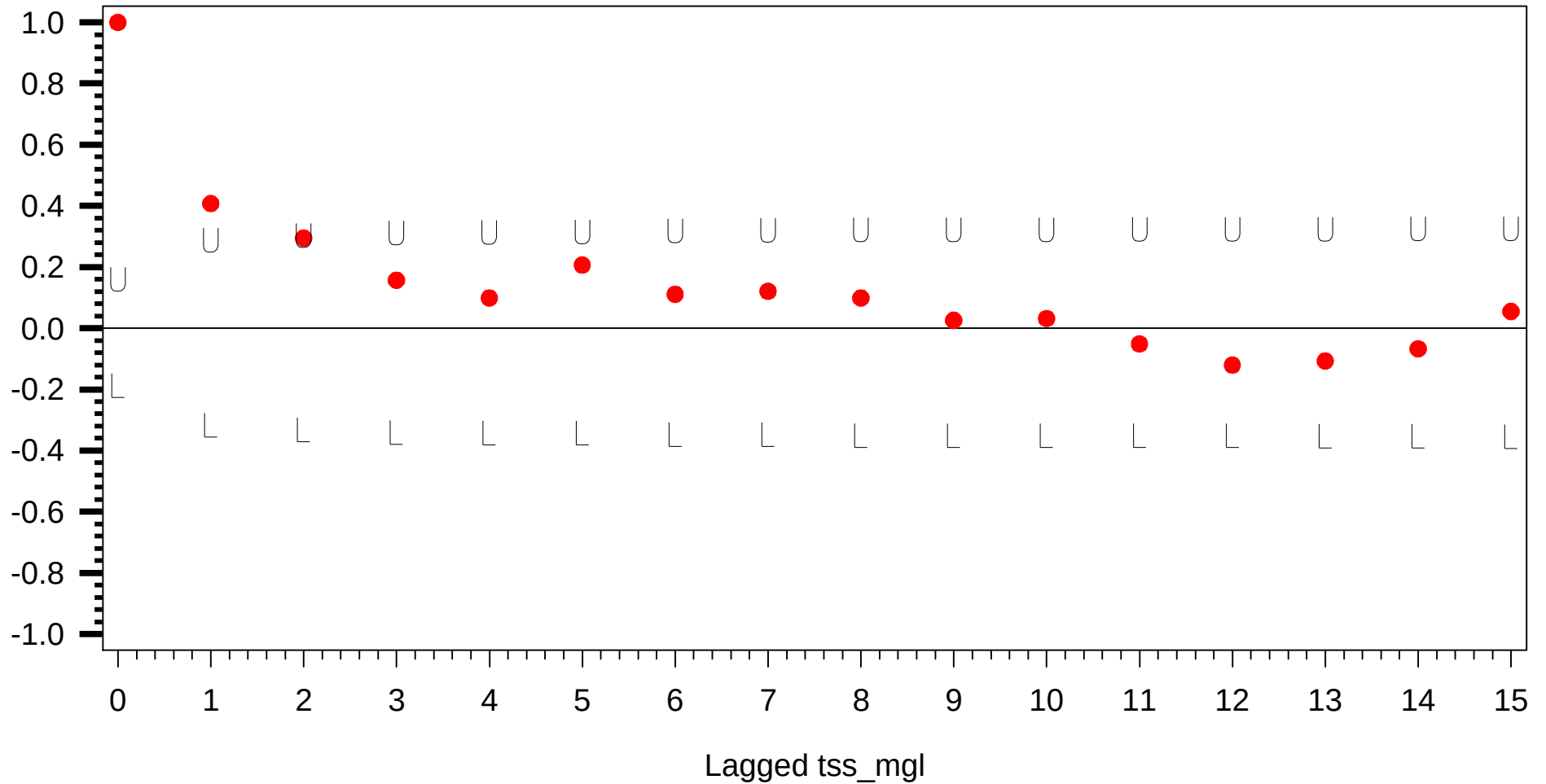
Unadjusted for Seasonal Medians

Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.408	0.151	0.302	-0.302
2	0.295	0.159	0.318	-0.318
3	0.157	0.163	0.326	-0.326
4	0.099	0.164	0.328	-0.328
5	0.207	0.165	0.329	-0.329
6	0.111	0.167	0.333	-0.333
7	0.121	0.167	0.334	-0.334
8	0.099	0.168	0.336	-0.336
9	0.026	0.168	0.336	-0.336
10	0.032	0.168	0.336	-0.336
11	-0.051	0.168	0.337	-0.337
12	-0.120	0.168	0.337	-0.337
13	-0.107	0.169	0.338	-0.338
14	-0.067	0.170	0.339	-0.339
15	0.055	0.170	0.340	-0.340

Trends Appendix - Display 388
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 389

Seasonal Kendall Tau Trend Test Statistics for TSS
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.222	.001	0.07	-0.489

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 390

Seasonal Kendall Tau Trend Test Statistics for TSS

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.22222	.00122621	0.069829	-0.48889

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 391

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

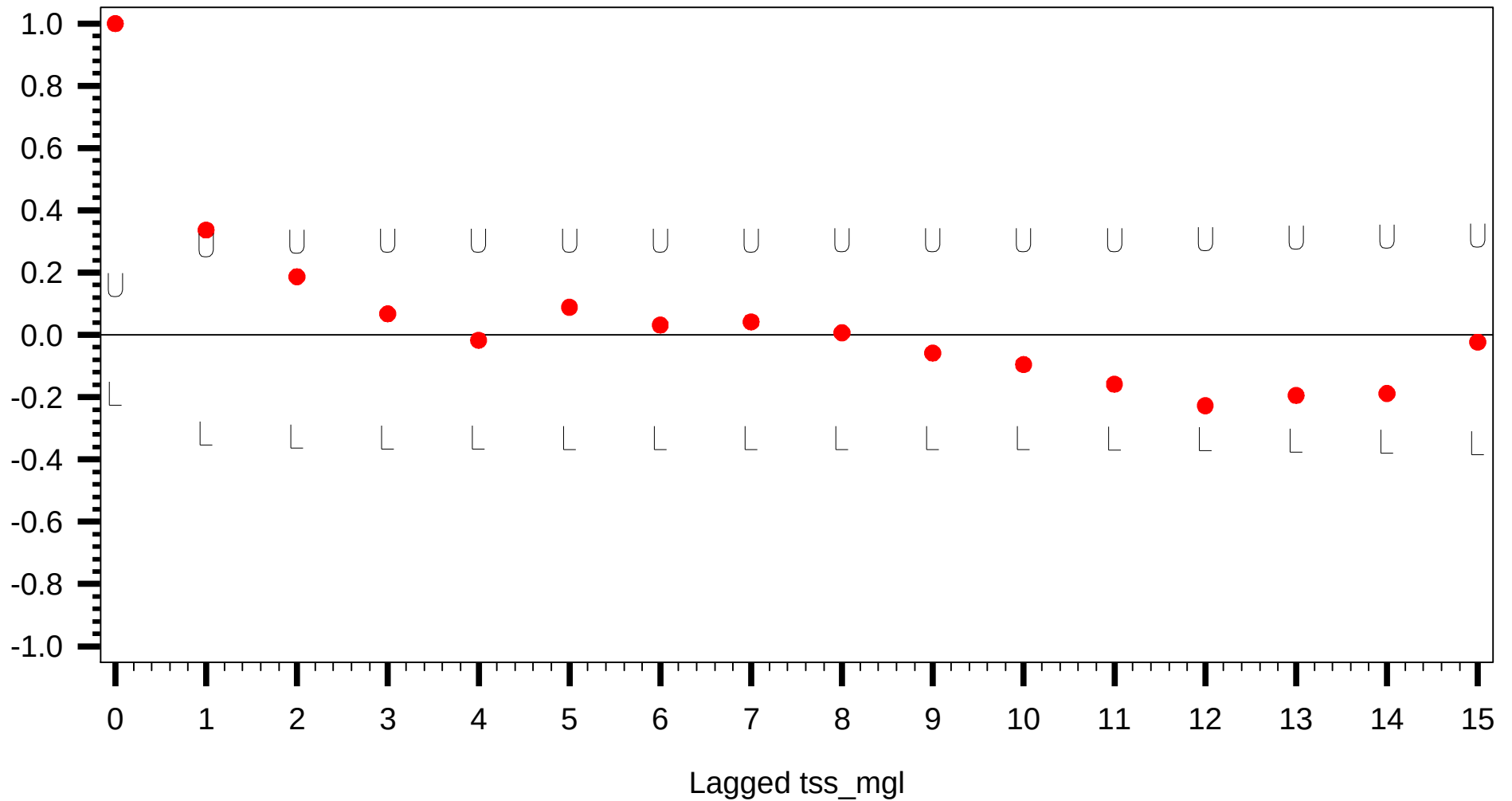
Lagged tss_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.337	0.151	0.302	-0.302
2	0.187	0.156	0.313	-0.313
3	0.068	0.158	0.316	-0.316
4	-0.017	0.158	0.316	-0.316
5	0.089	0.158	0.317	-0.317
6	0.032	0.159	0.317	-0.317
7	0.042	0.159	0.317	-0.317
8	0.007	0.159	0.318	-0.318
9	-0.058	0.159	0.318	-0.318
10	-0.095	0.159	0.318	-0.318
11	-0.158	0.159	0.319	-0.319
12	-0.227	0.161	0.321	-0.321
13	-0.194	0.163	0.326	-0.326
14	-0.188	0.165	0.329	-0.329
15	-0.023	0.166	0.333	-0.333

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 392
Correlogram for Sarasota County Segment = LB'

Correlation

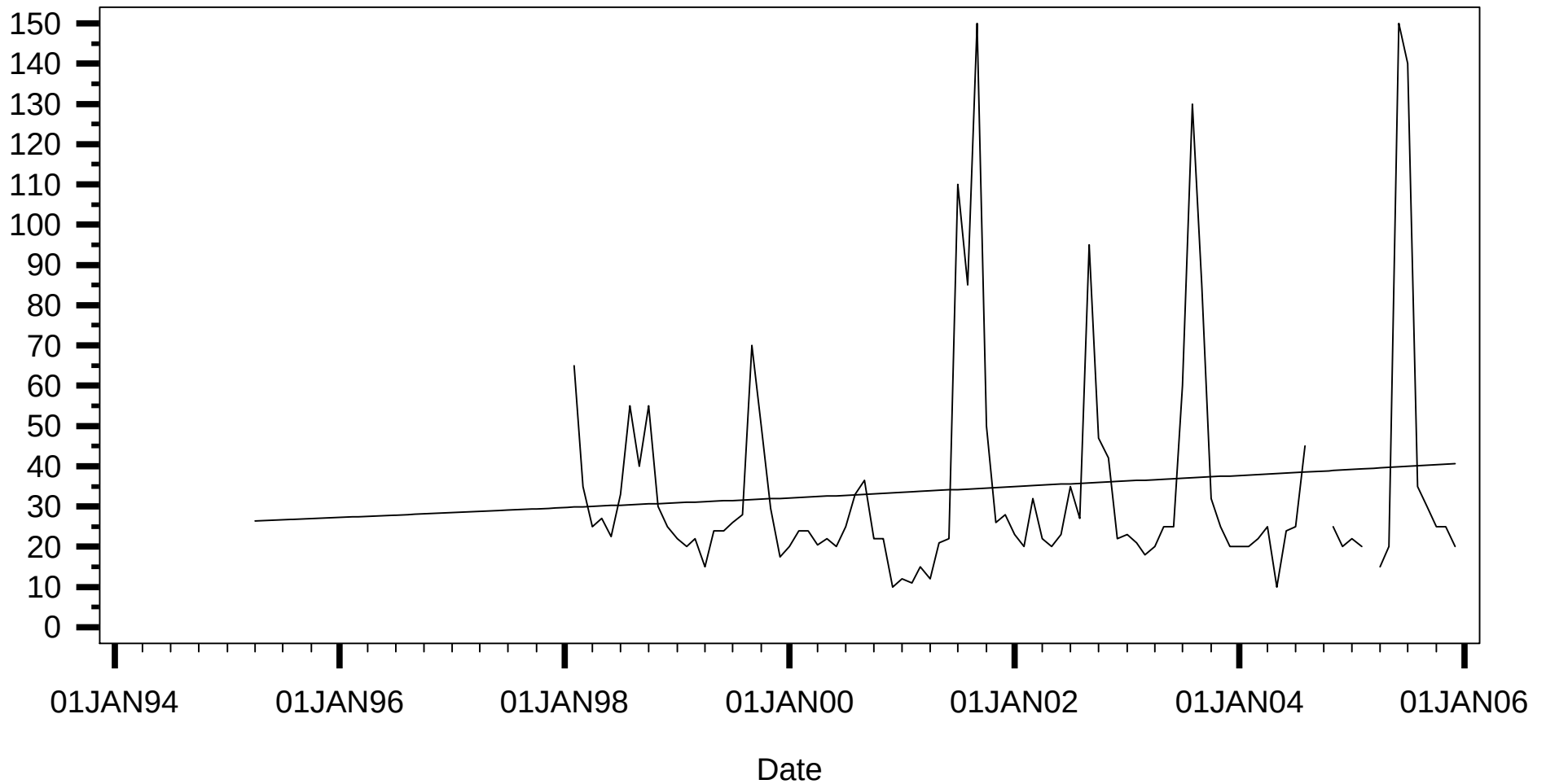
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 393
Monthly Data Time Series for Color
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

Color
(pcu)

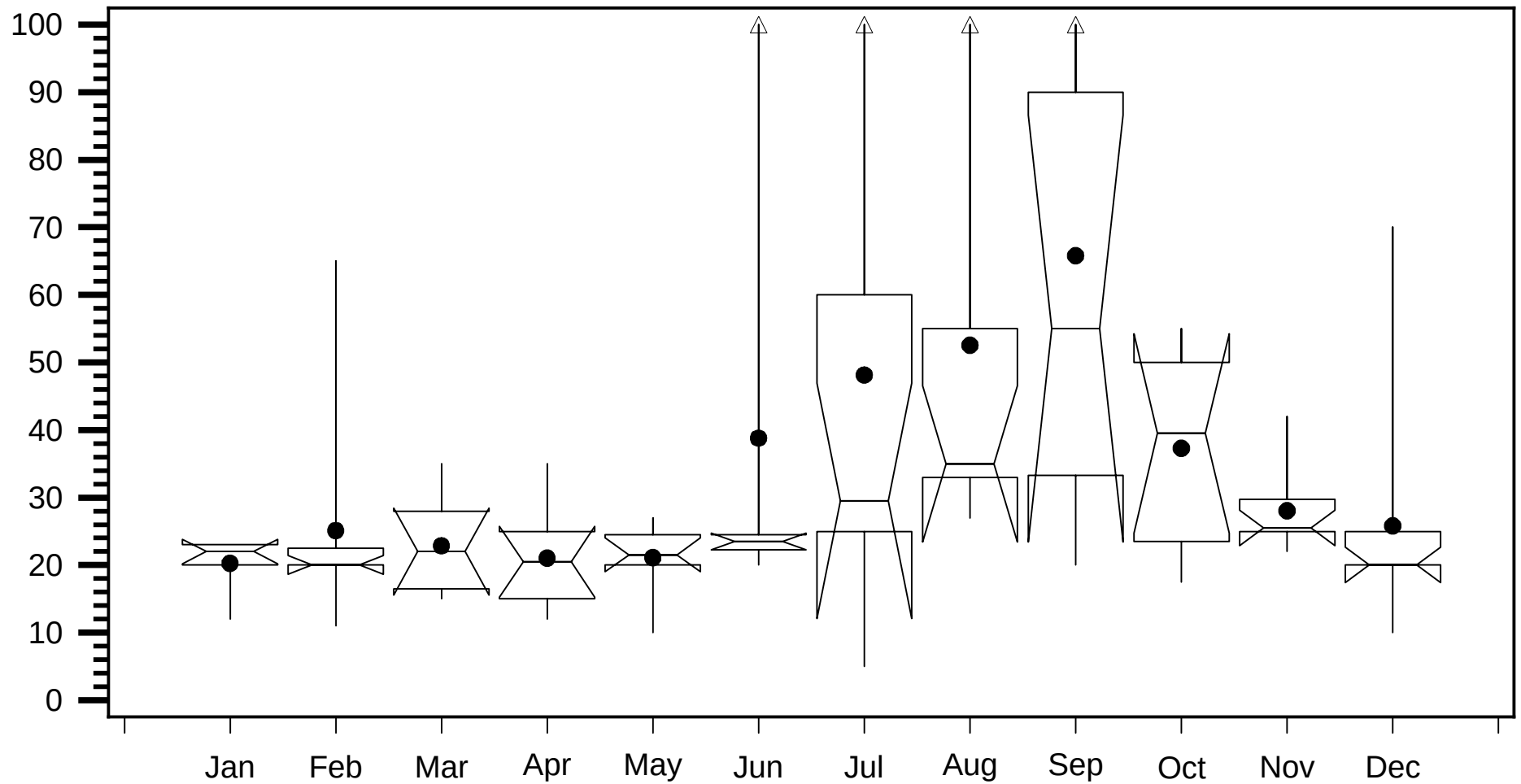


Trends Appendix - Display 394

Seasonal Univariate Statistics for Color

Sarasota County Segment= LB

Color
(pcu)



Trends Appendix - Display 395

Autocorrelation Statistics for Sarasota County Segment = LB'

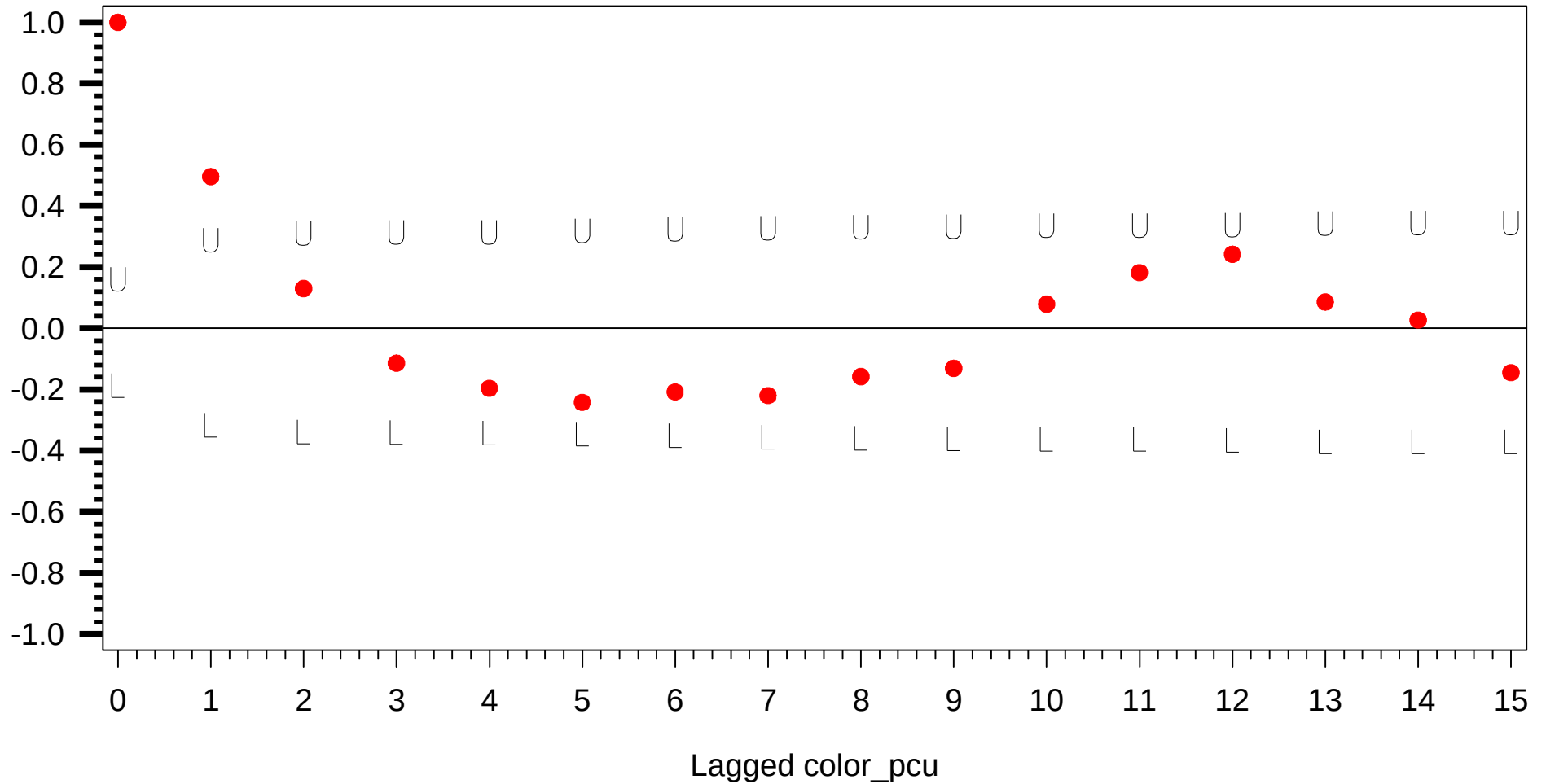
Unadjusted for Seasonal Medians

Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.496	0.151	0.302	-0.302
2	0.130	0.163	0.325	-0.325
3	-0.114	0.163	0.327	-0.327
4	-0.196	0.164	0.328	-0.328
5	-0.242	0.166	0.332	-0.332
6	-0.208	0.168	0.337	-0.337
7	-0.220	0.170	0.341	-0.341
8	-0.158	0.173	0.345	-0.345
9	-0.131	0.174	0.347	-0.347
10	0.079	0.174	0.349	-0.349
11	0.182	0.175	0.349	-0.349
12	0.242	0.176	0.352	-0.352
13	0.086	0.179	0.357	-0.357
14	0.027	0.179	0.358	-0.358
15	-0.145	0.179	0.358	-0.358

Trends Appendix - Display 396
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 397

Seasonal Kendall Tau Trend Test Statistics for Color
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.027	0.761	0.826	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 398

Seasonal Kendall Tau Trend Test Statistics for Color

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.027027	0.76089	0.82586	0

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 399

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

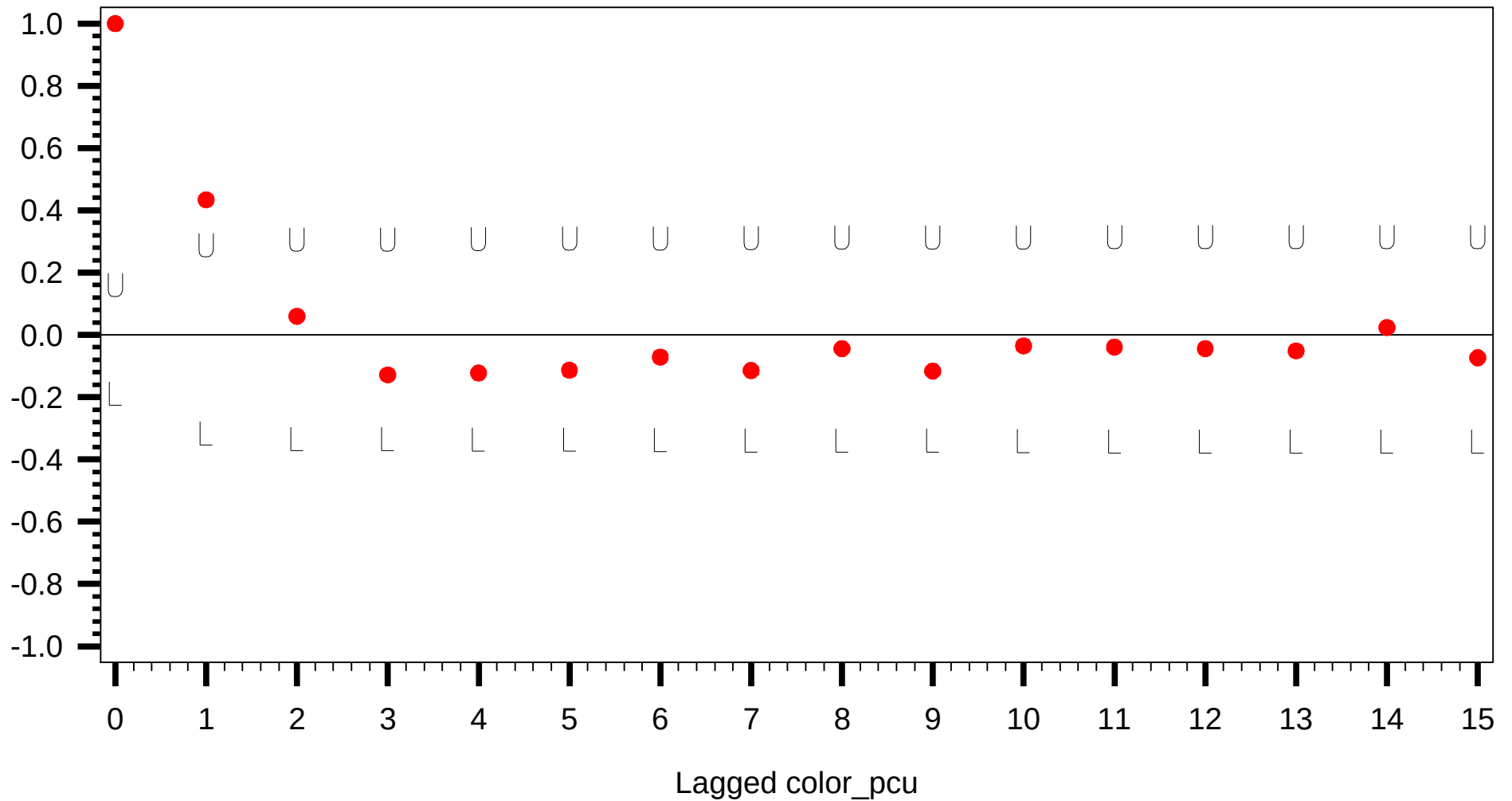
Lagged color_pcu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.434	0.151	0.302	-0.302
2	0.060	0.160	0.320	-0.320
3	-0.128	0.160	0.320	-0.320
4	-0.122	0.161	0.322	-0.322
5	-0.113	0.162	0.323	-0.323
6	-0.071	0.162	0.324	-0.324
7	-0.114	0.162	0.325	-0.325
8	-0.044	0.163	0.326	-0.326
9	-0.116	0.163	0.326	-0.326
10	-0.035	0.164	0.327	-0.327
11	-0.039	0.164	0.328	-0.328
12	-0.044	0.164	0.328	-0.328
13	-0.051	0.164	0.328	-0.328
14	0.024	0.164	0.328	-0.328
15	-0.073	0.164	0.328	-0.328

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 400
Correlogram for Sarasota County Segment = LB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

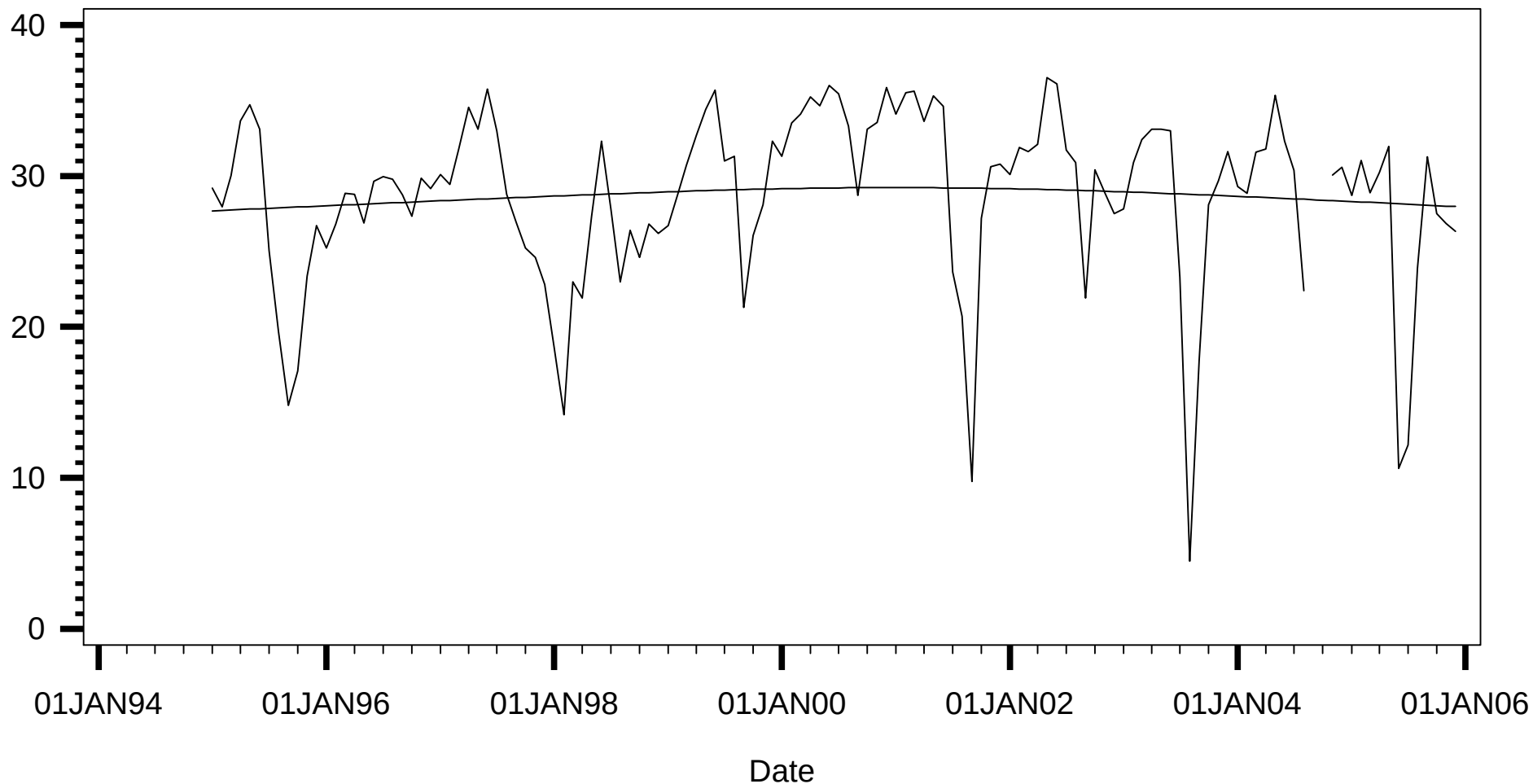
Trends Appendix - Display 401

Monthly Data Time Series for Salinity

Sarasota County Segment= LB

Not Adjusted for Seasonal Medians

Salinity
(ppt)

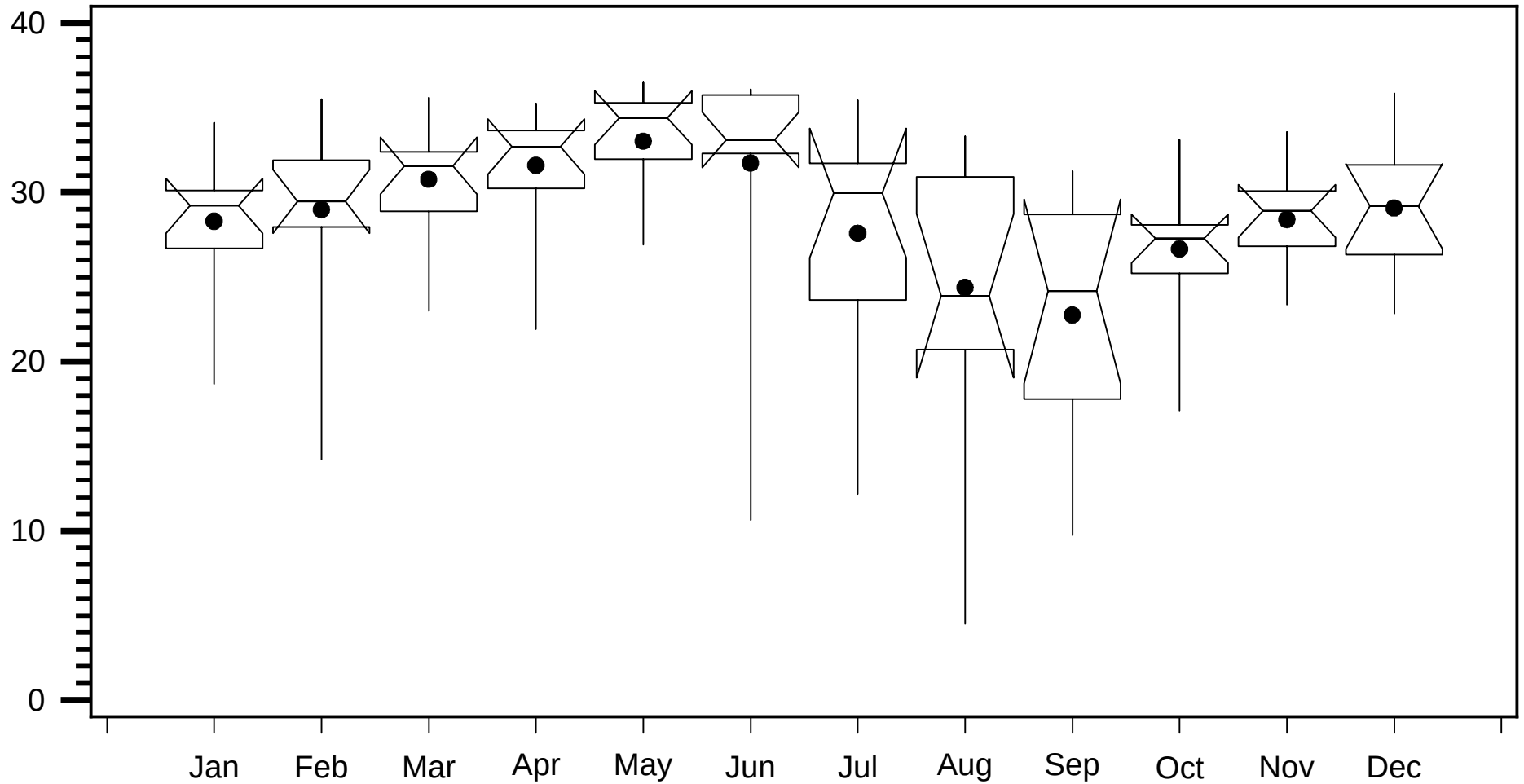


Trends Appendix - Display 402

Seasonal Univariate Statistics for Salinity

Sarasota County Segment= LB

Salinity
(ppt)



Trends Appendix - Display 403

Autocorrelation Statistics for Sarasota County Segment = LB'

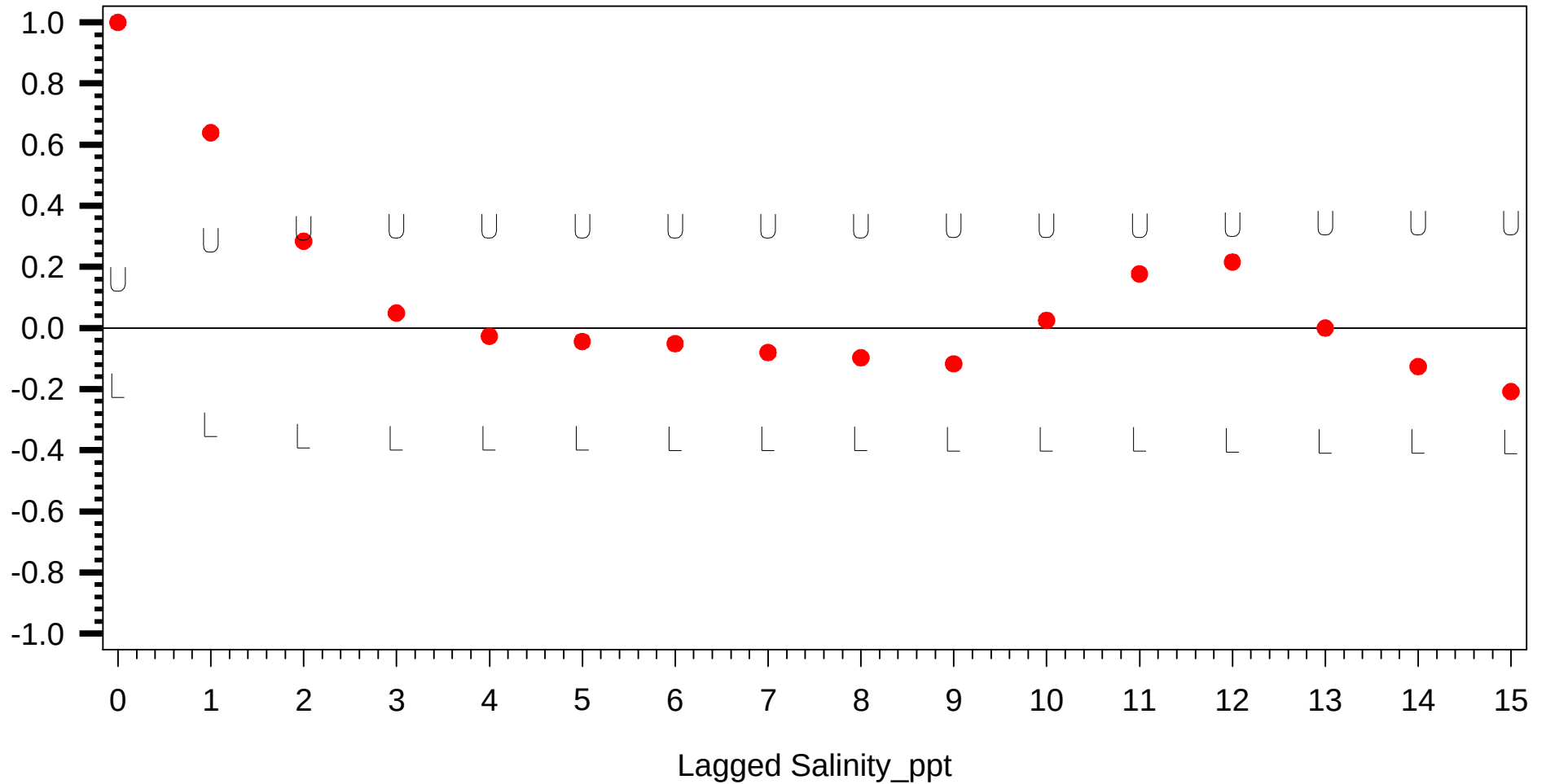
Unadjusted for Seasonal Medians

Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.639	0.151	0.302	-0.302
2	0.284	0.170	0.340	-0.340
3	0.049	0.174	0.347	-0.347
4	-0.027	0.174	0.347	-0.347
5	-0.044	0.174	0.347	-0.347
6	-0.051	0.174	0.348	-0.348
7	-0.080	0.174	0.348	-0.348
8	-0.097	0.174	0.348	-0.348
9	-0.117	0.175	0.349	-0.349
10	0.025	0.175	0.350	-0.350
11	0.177	0.175	0.350	-0.350
12	0.216	0.177	0.353	-0.353
13	0.000	0.179	0.357	-0.357
14	-0.126	0.179	0.357	-0.357
15	-0.208	0.179	0.358	-0.358

Trends Appendix - Display 404
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 405

Seasonal Kendall Tau Trend Test Statistics for Salinity Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.097	0.161	0.506	0.17

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 406

Seasonal Kendall Tau Trend Test Statistics for Salinity

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.096875	0.16146	0.50623	0.17

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 407

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

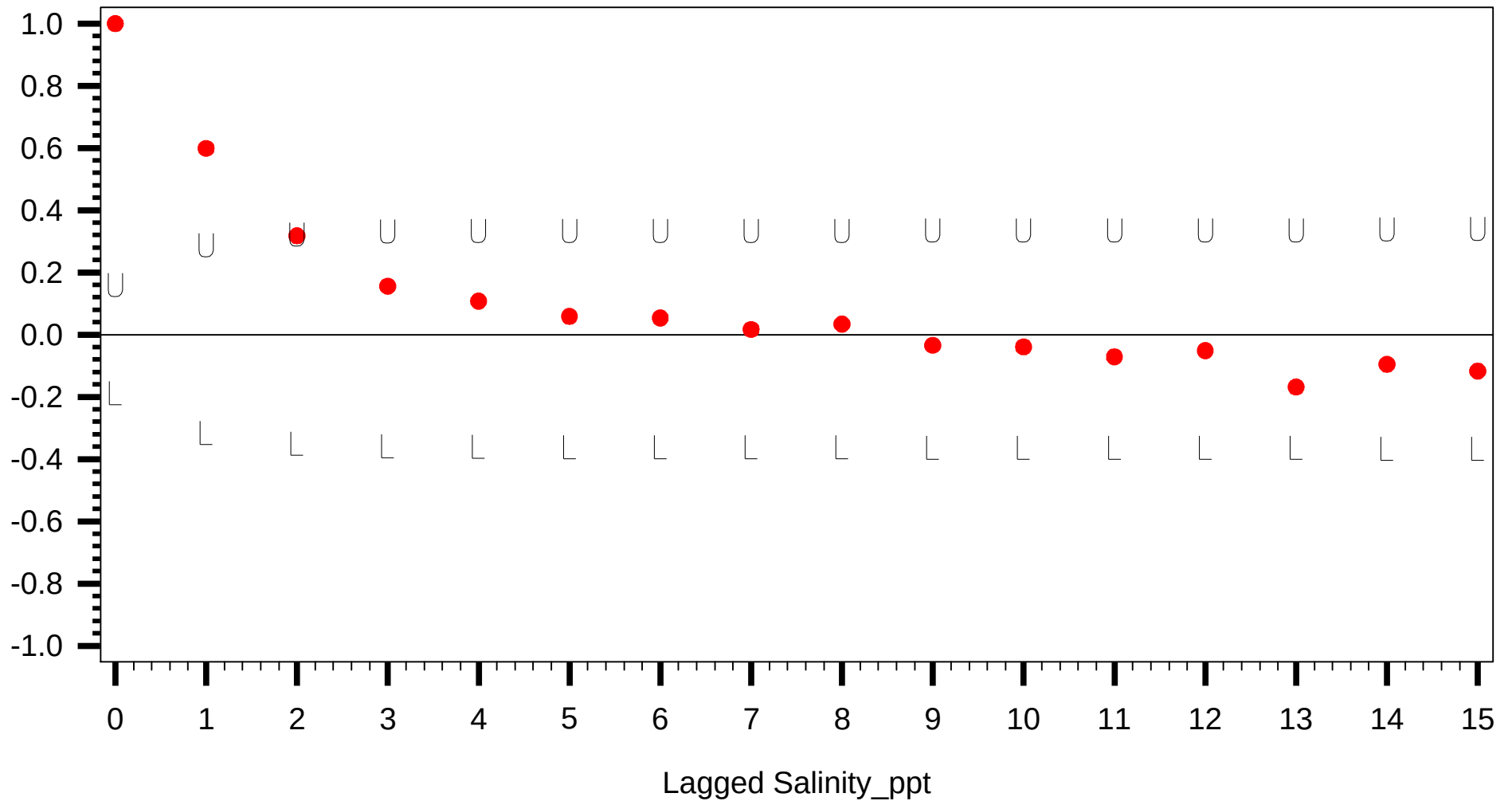
Lagged Salinity_ppt	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.599	0.151	0.302	-0.302
2	0.318	0.168	0.336	-0.336
3	0.156	0.172	0.345	-0.345
4	0.108	0.173	0.347	-0.347
5	0.059	0.174	0.348	-0.348
6	0.054	0.174	0.348	-0.348
7	0.017	0.174	0.348	-0.348
8	0.034	0.174	0.348	-0.348
9	-0.034	0.174	0.349	-0.349
10	-0.039	0.174	0.349	-0.349
11	-0.071	0.174	0.349	-0.349
12	-0.051	0.175	0.349	-0.349
13	-0.168	0.175	0.349	-0.349
14	-0.095	0.176	0.352	-0.352
15	-0.117	0.176	0.353	-0.353

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 408
Correlogram for Sarasota County Segment = LB'

Correlation

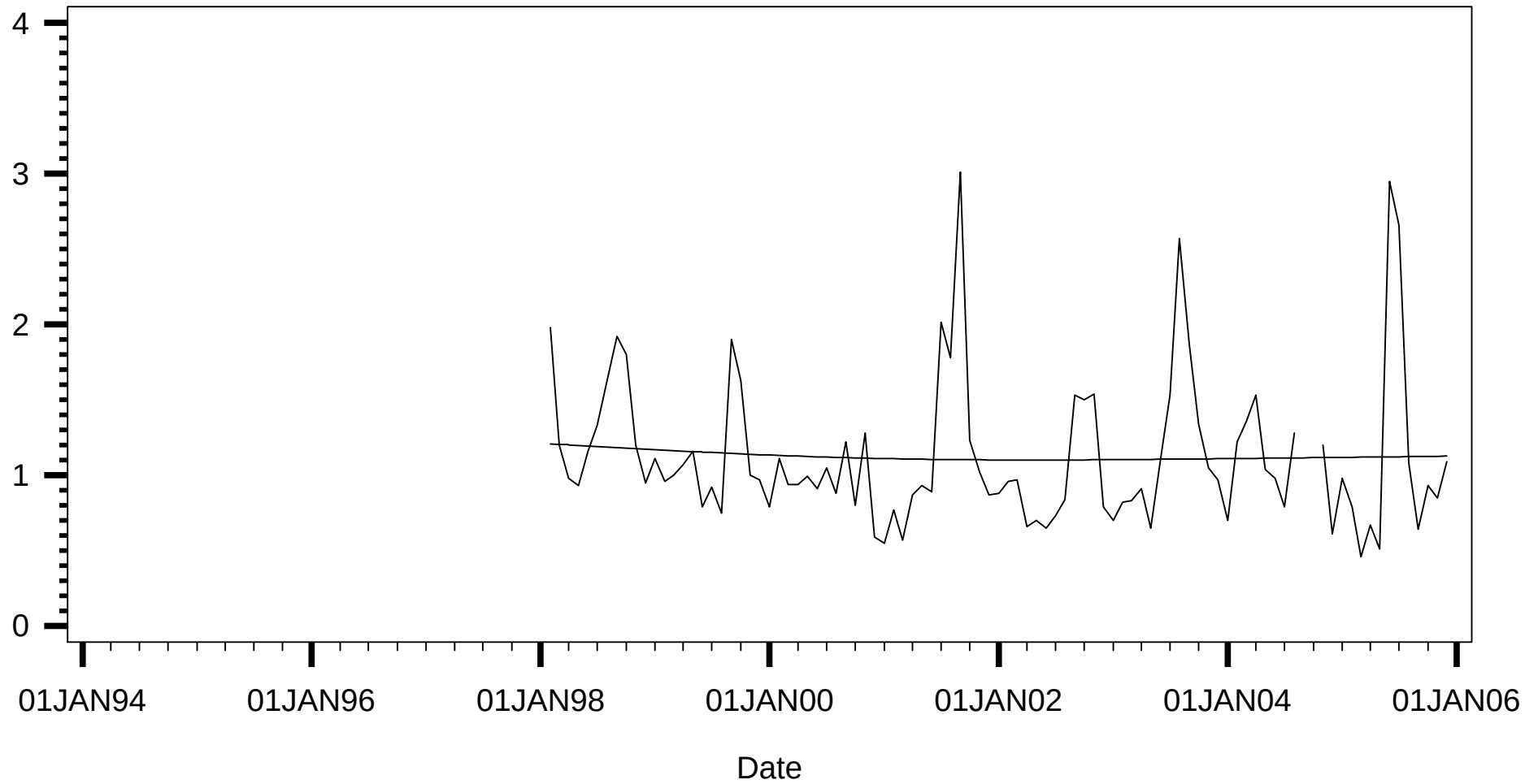
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 409
Monthly Data Time Series for Kd
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

Kd
(1/meter)

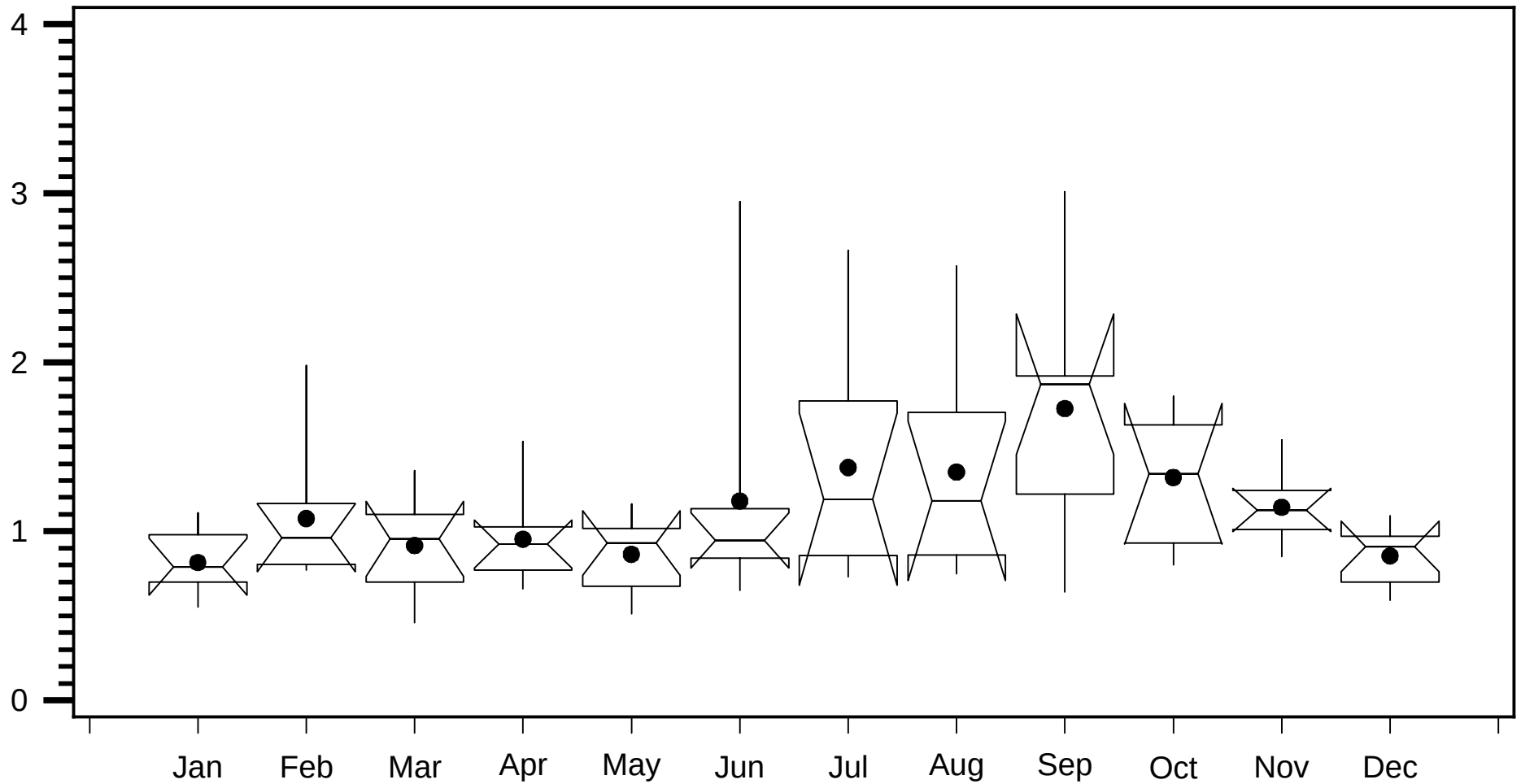


Trends Appendix - Display 410

Seasonal Univariate Statistics for Kd

Sarasota County Segment= LB

Kd
(1/meter)



Trends Appendix - Display 411

Autocorrelation Statistics for Sarasota County Segment = LB'

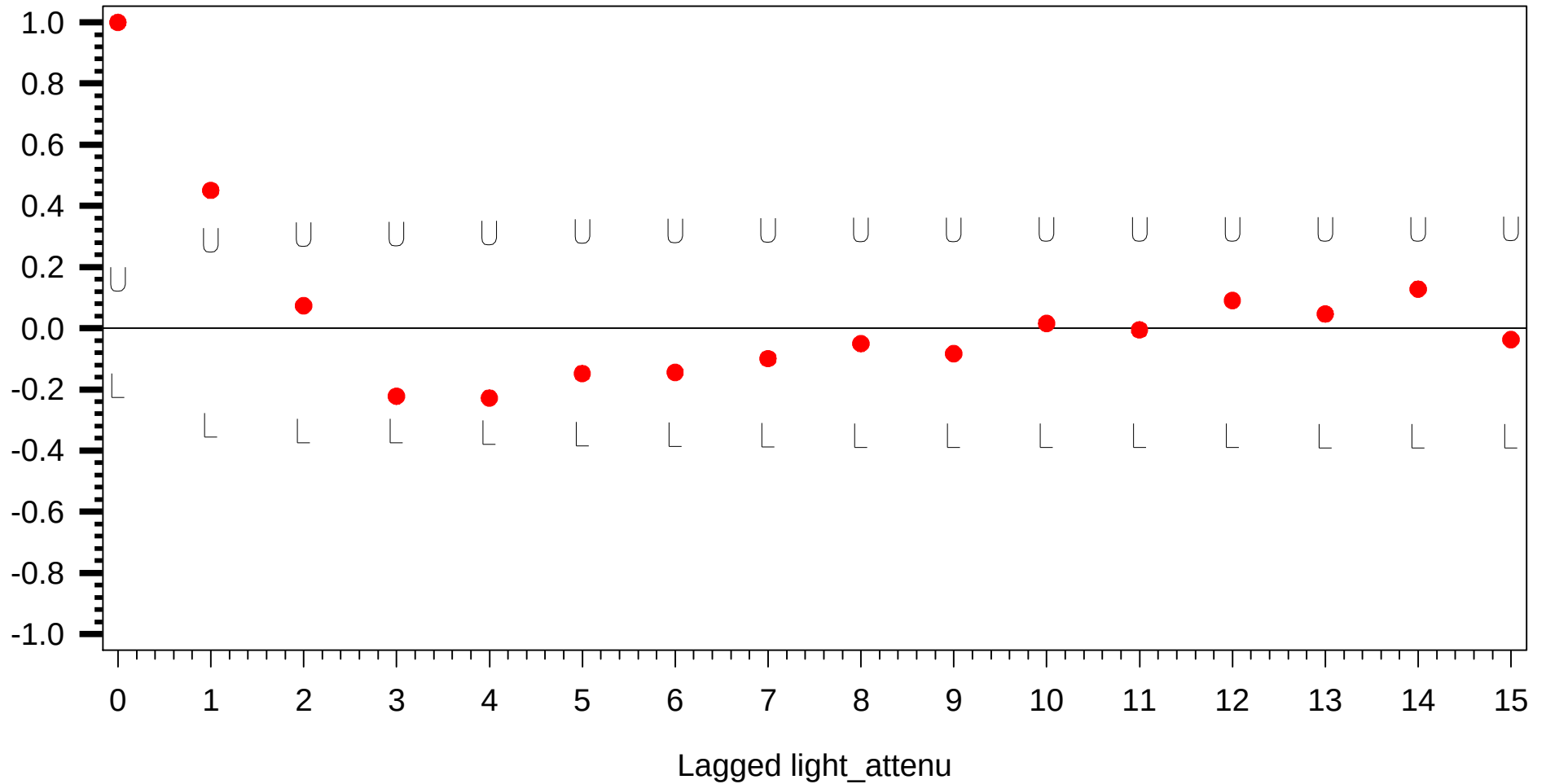
Unadjusted for Seasonal Medians

Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.451	0.151	0.302	-0.302
2	0.074	0.161	0.321	-0.321
3	-0.222	0.161	0.322	-0.322
4	-0.228	0.163	0.326	-0.326
5	-0.148	0.166	0.331	-0.331
6	-0.144	0.167	0.333	-0.333
7	-0.099	0.168	0.335	-0.335
8	-0.050	0.168	0.336	-0.336
9	-0.083	0.168	0.336	-0.336
10	0.016	0.168	0.337	-0.337
11	-0.005	0.168	0.337	-0.337
12	0.091	0.168	0.337	-0.337
13	0.047	0.169	0.338	-0.338
14	0.128	0.169	0.338	-0.338
15	-0.037	0.170	0.339	-0.339

Trends Appendix - Display 412
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 413

Seasonal Kendall Tau Trend Test Statistics for Kd
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.146	0.093	0.171	-0.029

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 414

Seasonal Kendall Tau Trend Test Statistics for Kd

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.14603	0.092621	0.17051	-0.029167

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 415

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

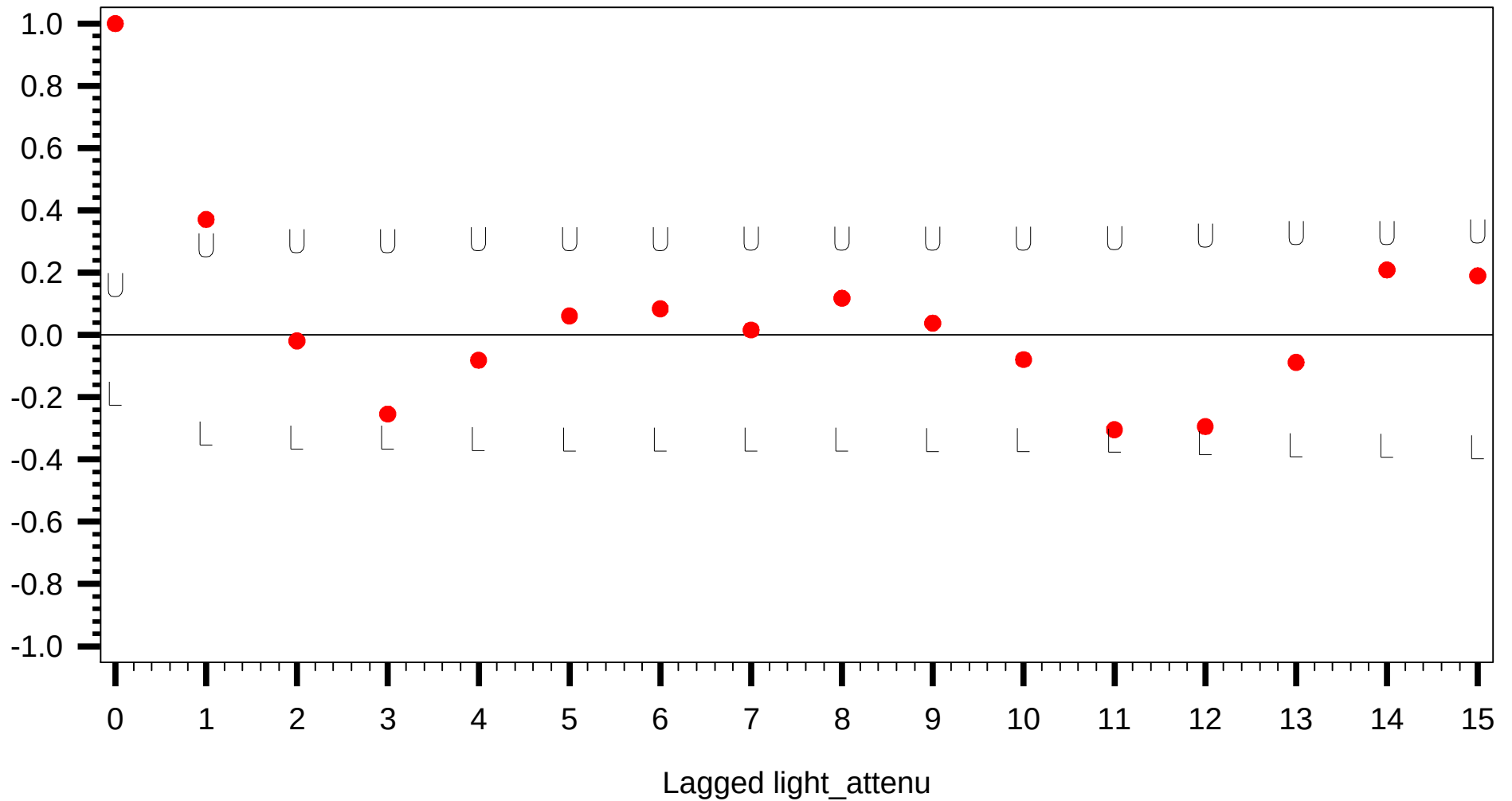
Lagged light_attenu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.371	0.151	0.302	-0.302
2	-0.019	0.158	0.315	-0.315
3	-0.254	0.158	0.315	-0.315
4	-0.081	0.161	0.321	-0.321
5	0.061	0.161	0.322	-0.322
6	0.084	0.161	0.322	-0.322
7	0.016	0.161	0.323	-0.323
8	0.118	0.161	0.323	-0.323
9	0.038	0.162	0.324	-0.324
10	-0.079	0.162	0.324	-0.324
11	-0.304	0.162	0.325	-0.325
12	-0.294	0.167	0.333	-0.333
13	-0.088	0.171	0.341	-0.341
14	0.209	0.171	0.342	-0.342
15	0.190	0.173	0.346	-0.346

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 416
Correlogram for Sarasota County Segment = LB'

Correlation

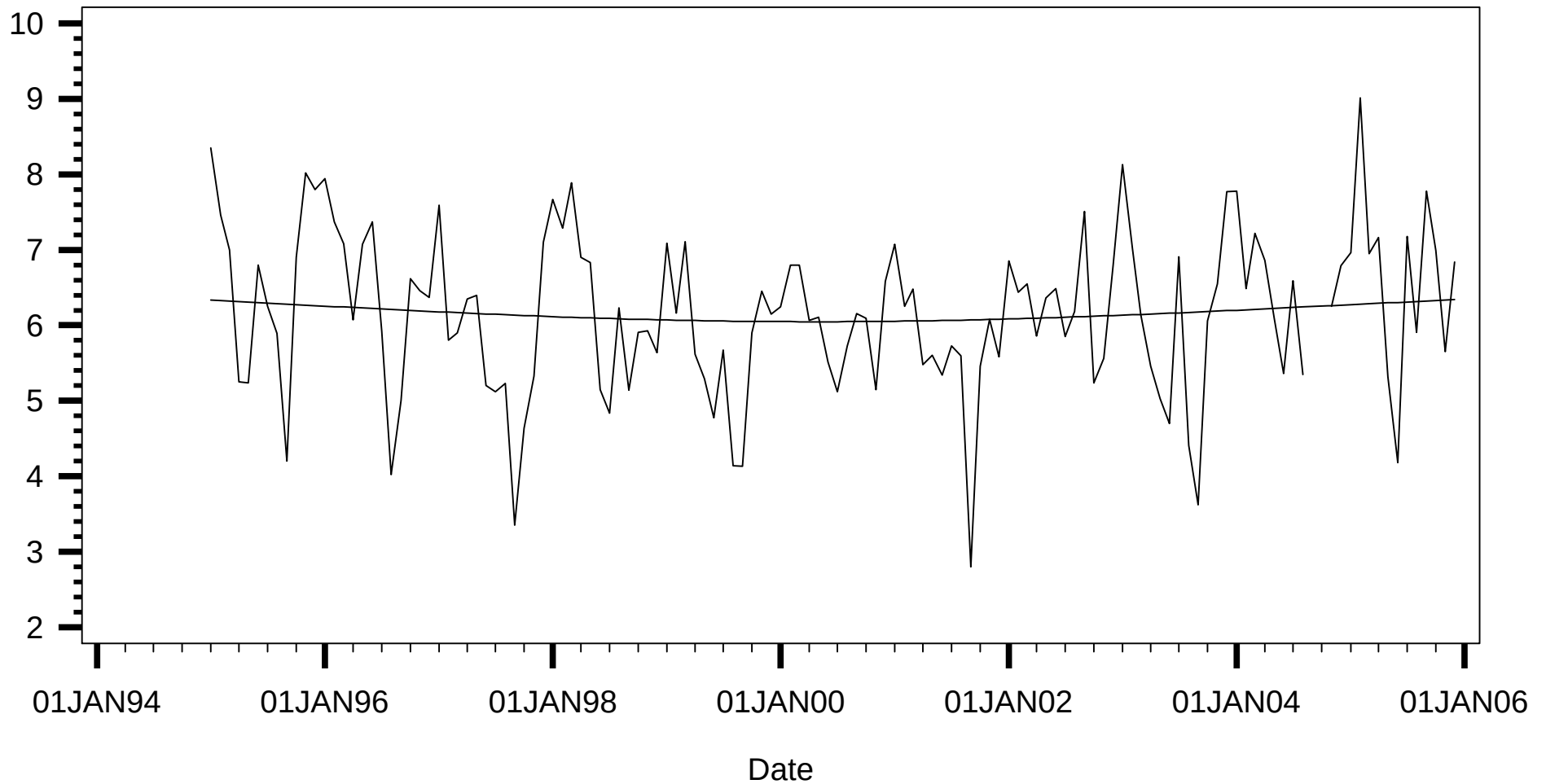
Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 417
Monthly Data Time Series for DO
Sarasota County Segment= LB
Not Adjusted for Seasonal Medians

DO
(mgl)

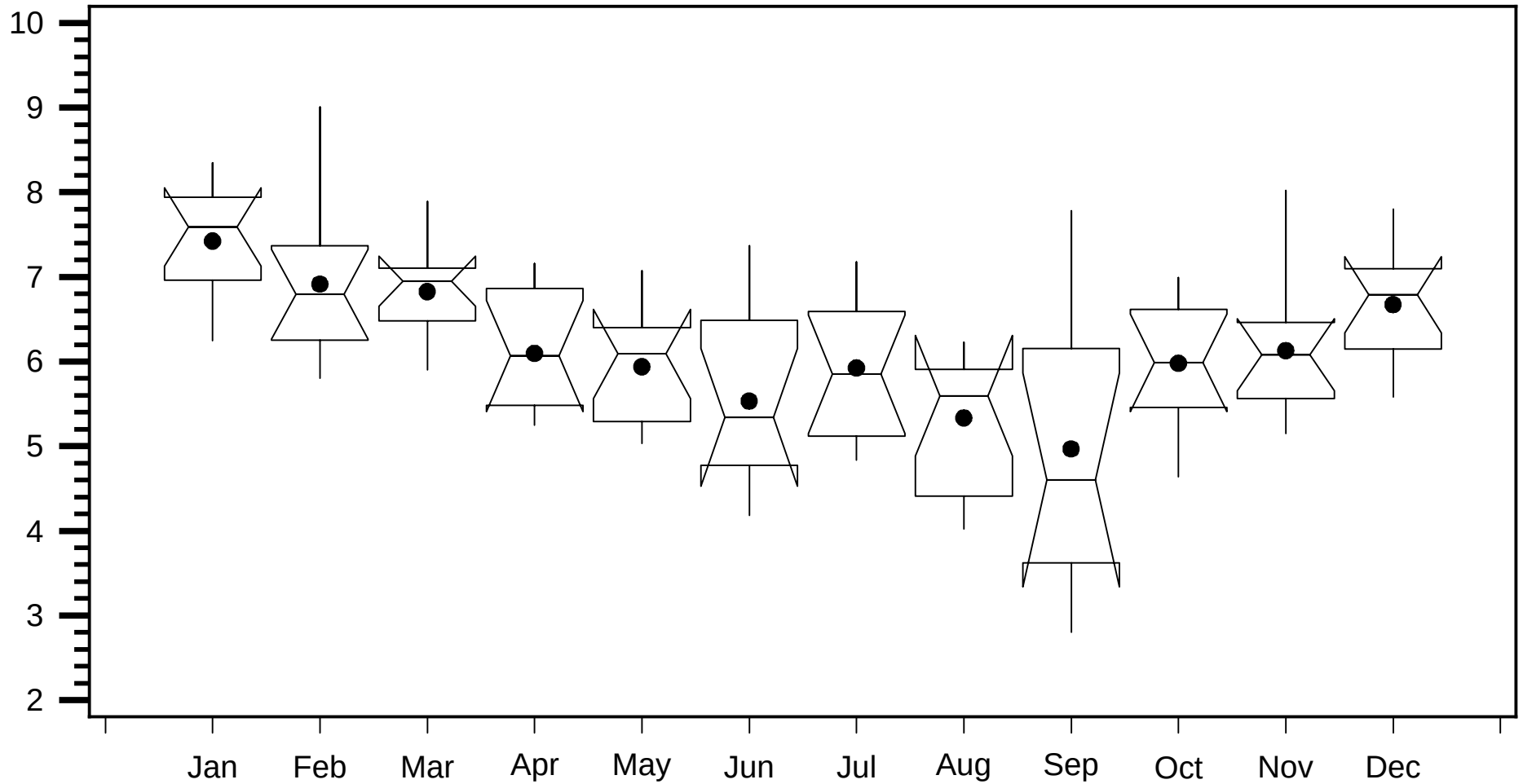


Trends Appendix - Display 418

Seasonal Univariate Statistics for DO

Sarasota County Segment= LB

DO
(mg/l)



Trends Appendix - Display 419

Autocorrelation Statistics for Sarasota County Segment = LB'

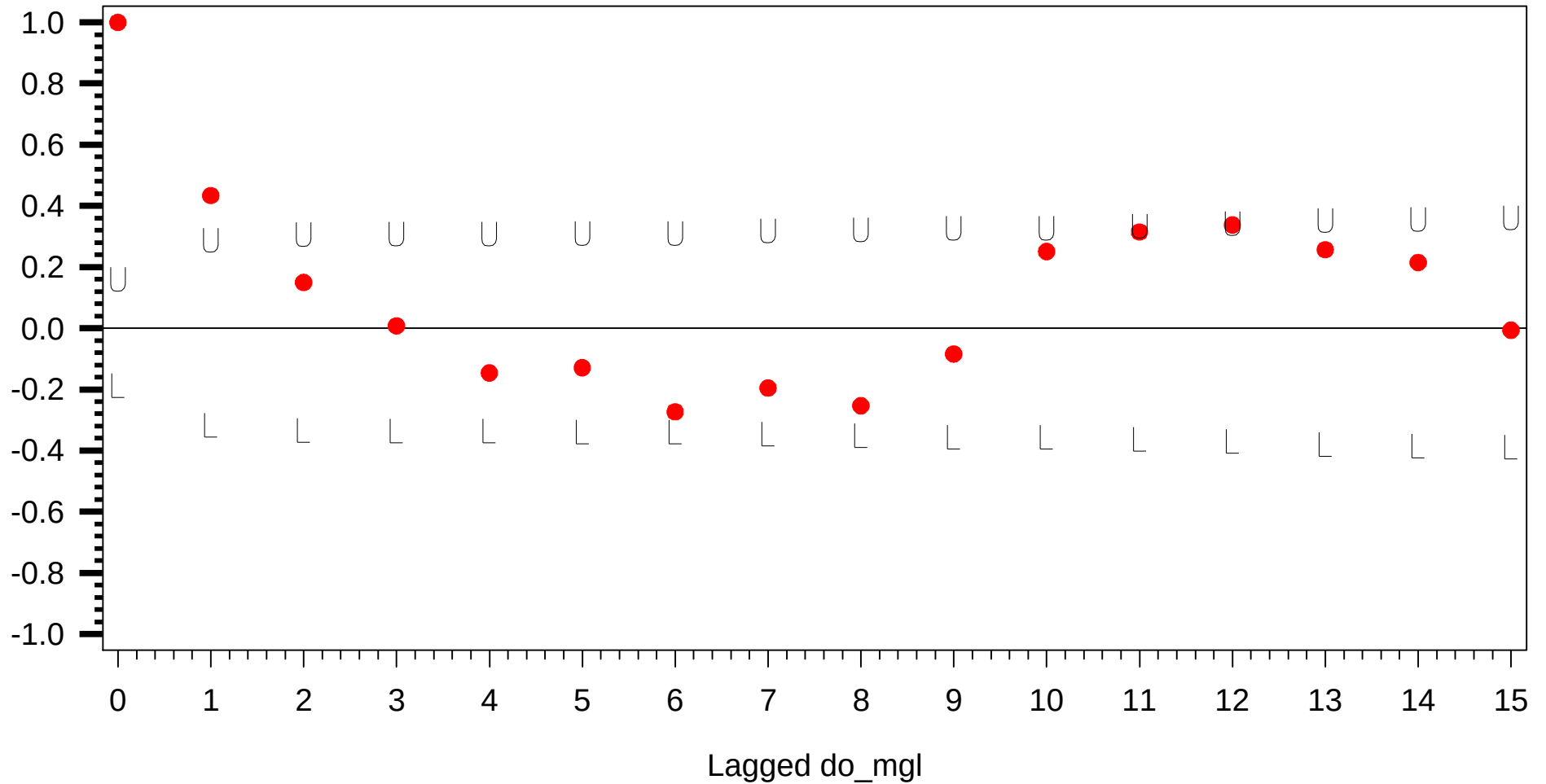
Unadjusted for Seasonal Medians

Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.434	0.151	0.302	-0.302
2	0.150	0.160	0.320	-0.320
3	0.008	0.161	0.322	-0.322
4	-0.146	0.161	0.322	-0.322
5	-0.129	0.162	0.324	-0.324
6	-0.273	0.163	0.325	-0.325
7	-0.195	0.166	0.332	-0.332
8	-0.253	0.168	0.336	-0.336
9	-0.084	0.171	0.342	-0.342
10	0.251	0.171	0.342	-0.342
11	0.315	0.174	0.348	-0.348
12	0.338	0.178	0.356	-0.356
13	0.257	0.183	0.366	-0.366
14	0.215	0.186	0.371	-0.371
15	-0.006	0.188	0.375	-0.375

Trends Appendix - Display 420
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 421

Seasonal Kendall Tau Trend Test Statistics for DO
Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.03	0.68	0.783	-.009

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 422

Seasonal Kendall Tau Trend Test Statistics for DO

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
-0.029688	0.67957	0.78343	-.009

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 423

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

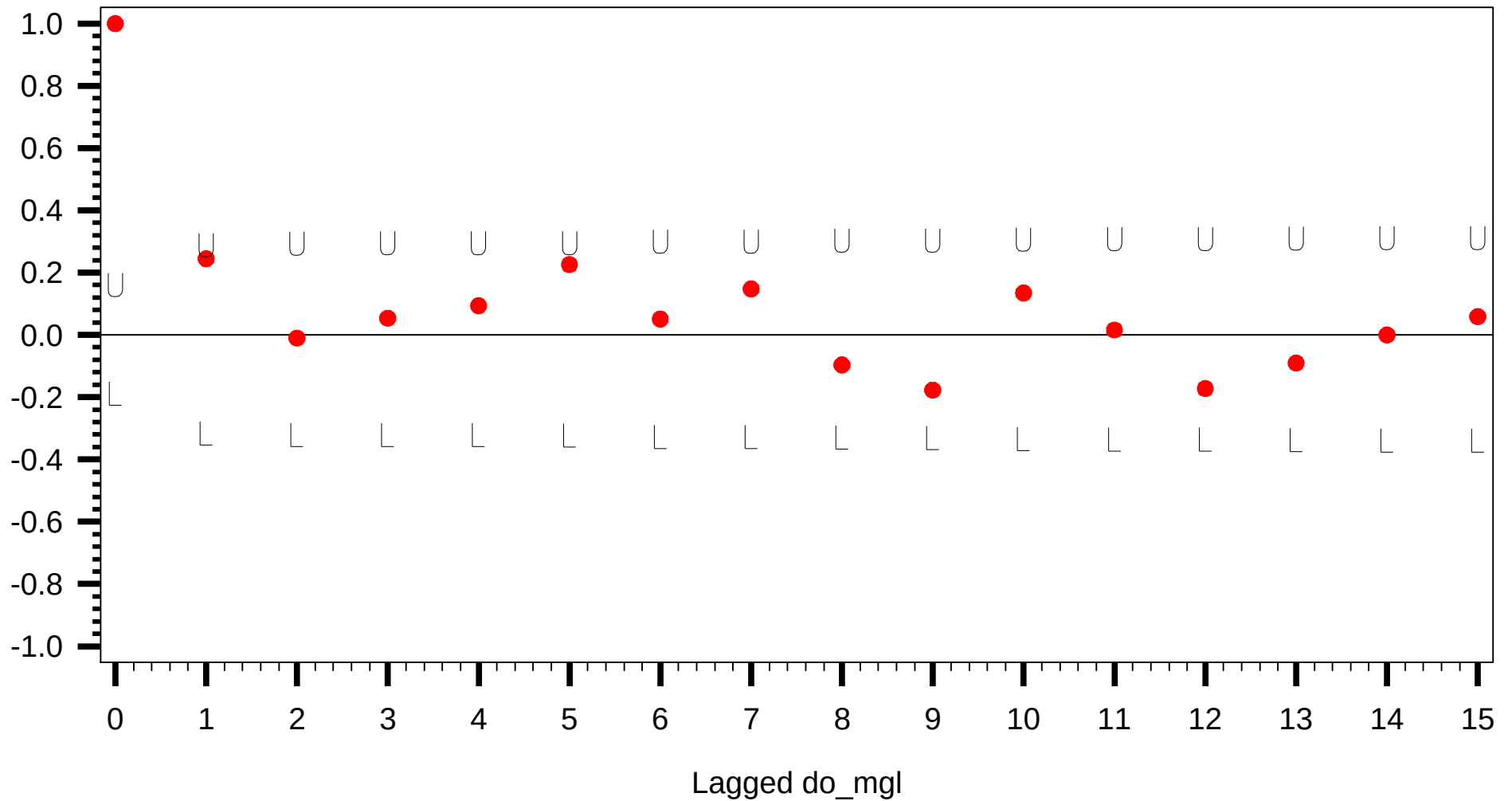
Lagged do_mgl	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.245	0.151	0.302	-0.302
2	-0.010	0.154	0.307	-0.307
3	0.054	0.154	0.308	-0.308
4	0.094	0.154	0.308	-0.308
5	0.226	0.154	0.309	-0.309
6	0.051	0.157	0.314	-0.314
7	0.148	0.157	0.314	-0.314
8	-0.096	0.158	0.316	-0.316
9	-0.177	0.158	0.317	-0.317
10	0.135	0.160	0.320	-0.320
11	0.016	0.161	0.322	-0.322
12	-0.172	0.161	0.322	-0.322
13	-0.090	0.162	0.324	-0.324
14	0.000	0.163	0.325	-0.325
15	0.059	0.163	0.325	-0.325

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 424
Correlogram for Sarasota County Segment = LB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

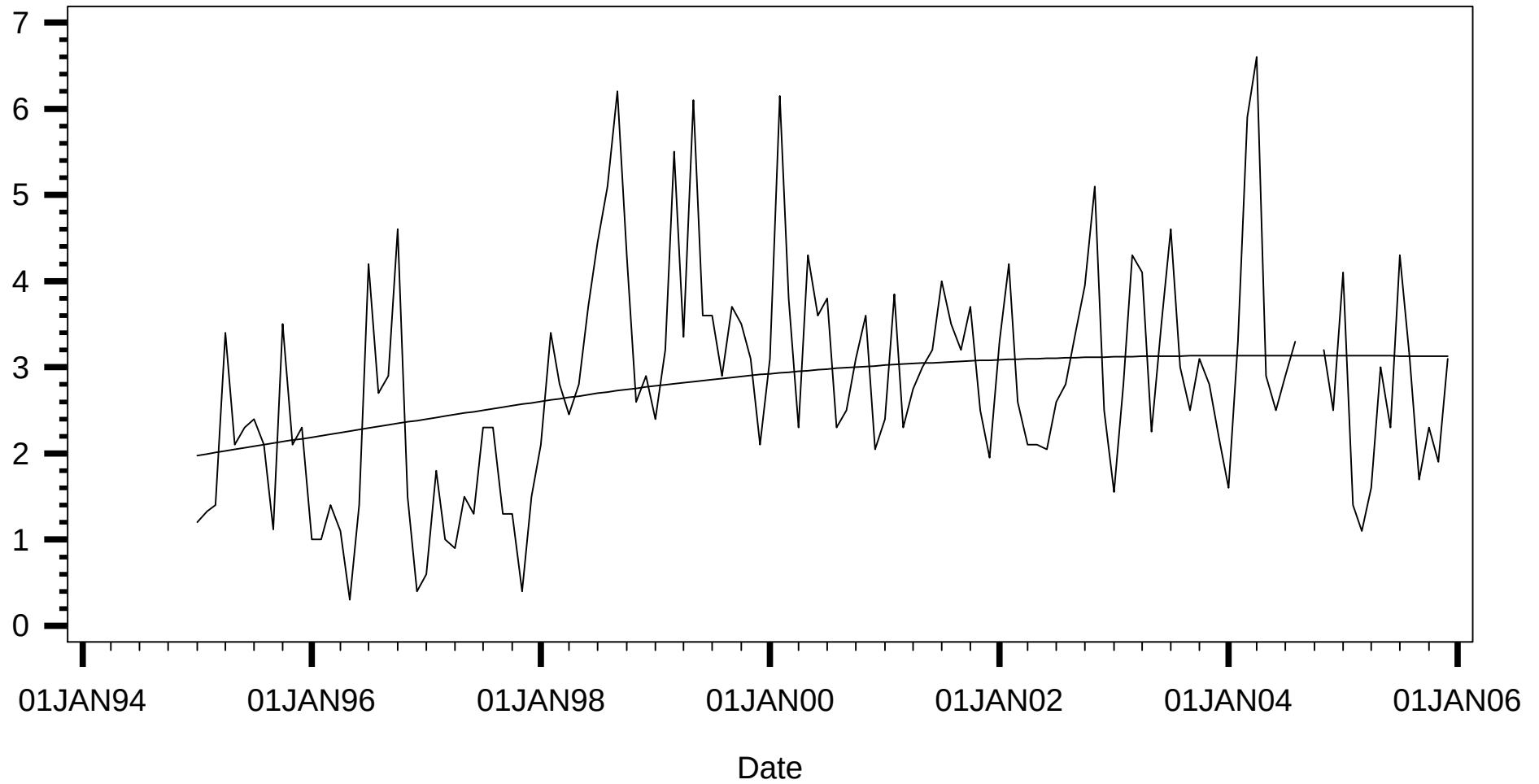
Trends Appendix - Display 425

Monthly Data Time Series for Turbidity

Sarasota County Segment= LB

Not Adjusted for Seasonal Medians

Turbidity
(NTU)

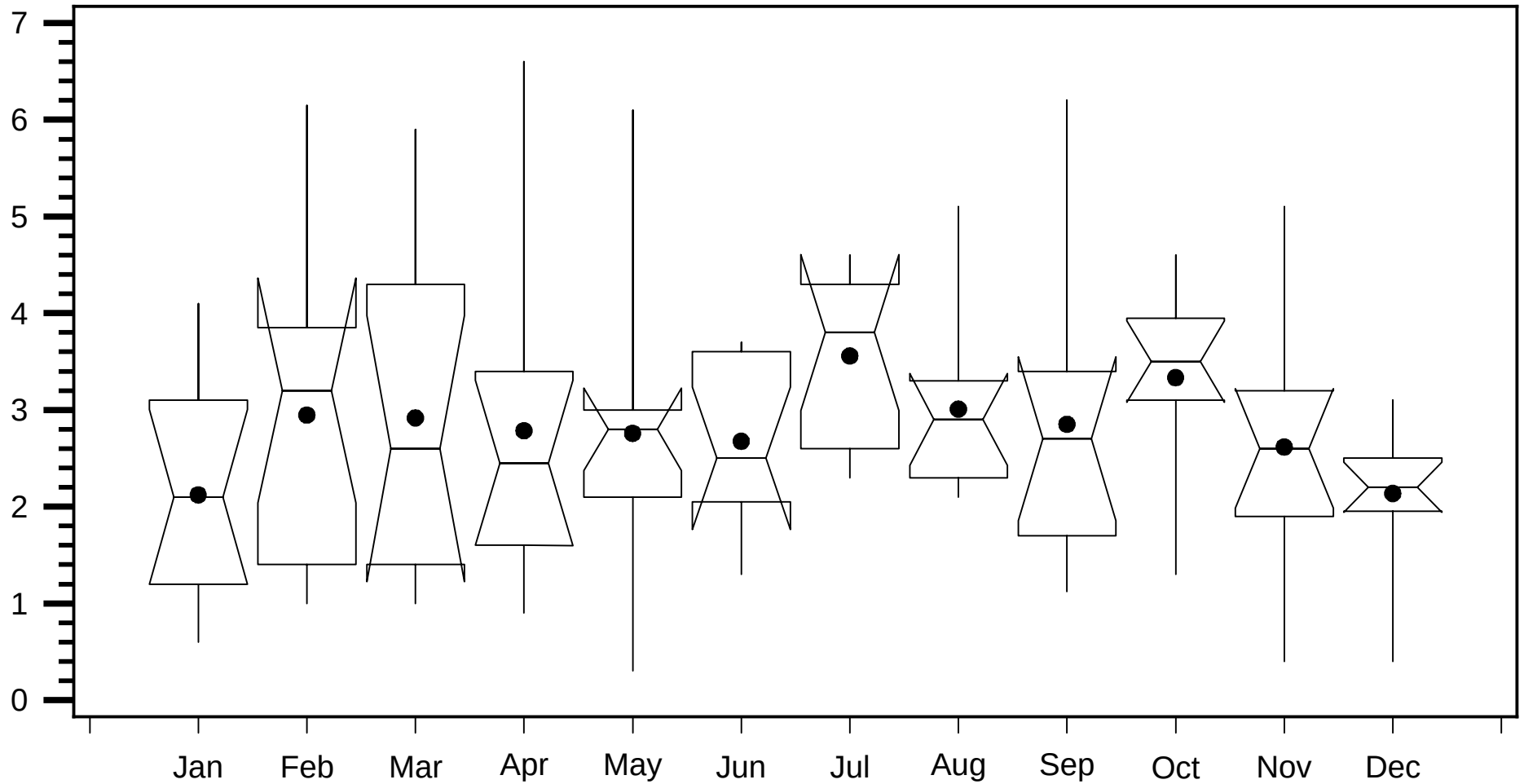


Trends Appendix - Display 426

Seasonal Univariate Statistics for Turbidity

Sarasota County Segment= LB

Turbidity
(NTU)



Trends Appendix - Display 427

Autocorrelation Statistics for Sarasota County Segment = LB'

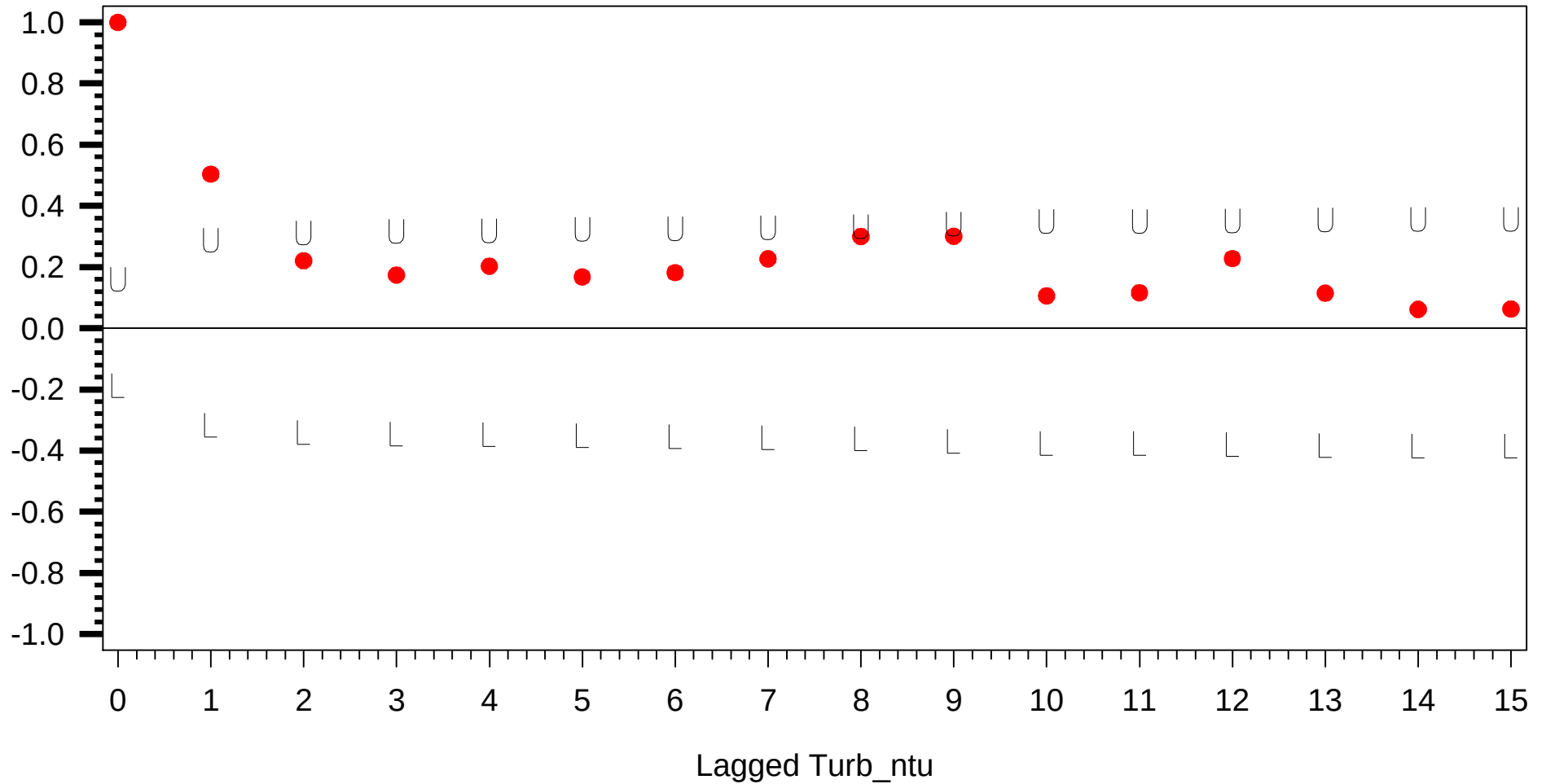
Unadjusted for Seasonal Medians

Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.504	0.151	0.302	-0.302
2	0.221	0.163	0.326	-0.326
3	0.174	0.165	0.331	-0.331
4	0.203	0.167	0.333	-0.333
5	0.168	0.169	0.337	-0.337
6	0.182	0.170	0.340	-0.340
7	0.227	0.171	0.343	-0.343
8	0.300	0.174	0.347	-0.347
9	0.301	0.177	0.355	-0.355
10	0.106	0.181	0.363	-0.363
11	0.116	0.182	0.363	-0.363
12	0.228	0.182	0.365	-0.365
13	0.115	0.184	0.369	-0.369
14	0.062	0.185	0.370	-0.370
15	0.063	0.185	0.370	-0.370

Trends Appendix - Display 428
Correlogram for Sarasota County Segment = LB

Correlation

Unadjusted for Seasonal Median



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Trends Appendix - Display 429

Seasonal Kendall Tau Trend Test Statistics for Turbidity Sarasota County Segment = LB

Unadjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.227	.001	0.127	0.1

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 430

Seasonal Kendall Tau Trend Test Statistics for Turbidity

Sarasota County Segment = LB

Adjusted for Seasonal Medians

Tau Statistic	P-Value Without Serial Correlation	P-Value With Serial Correlation	Slope Statistic
0.22656	.000922441	0.12666	0.1

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 431

Autocorrelation Statistics for Sarasota County Segment = LB'

Adjusted for Seasonal Median and Detrended

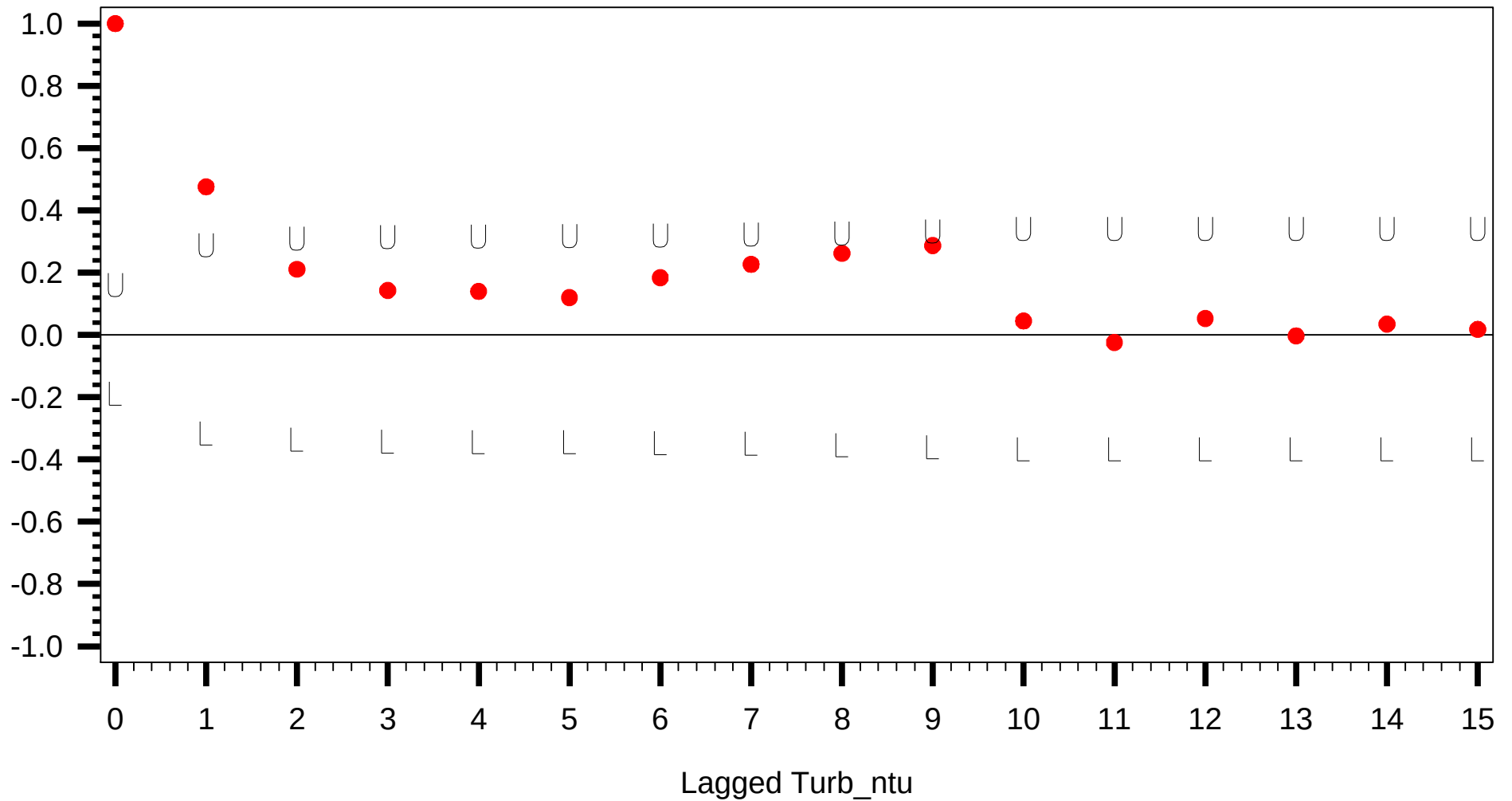
Lagged Turb_ntu	Correlation	Standard Error	Upper Limit	Lower Limit
0	1.000	0.087	0.174	-0.174
1	0.476	0.151	0.302	-0.302
2	0.211	0.162	0.323	-0.323
3	0.143	0.164	0.328	-0.328
4	0.140	0.165	0.330	-0.330
5	0.120	0.166	0.331	-0.331
6	0.184	0.166	0.333	-0.333
7	0.227	0.168	0.336	-0.336
8	0.262	0.170	0.340	-0.340
9	0.287	0.173	0.346	-0.346
10	0.045	0.177	0.354	-0.354
11	-0.024	0.177	0.354	-0.354
12	0.053	0.177	0.354	-0.354
13	-0.003	0.177	0.354	-0.354
14	0.035	0.177	0.354	-0.354
15	0.018	0.177	0.354	-0.354

U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit

Trends Appendix - Display 432
Correlogram for Sarasota County Segment = LB'

Correlation

Adjusted for Seasonal Median and Detrended



U=Upper 95% Confidence Limit L=Lower 95% Confidence Limit
Zero Reference Line Shown

Appendix 4

Segment Label Key
SBN = Sarasota Bay North
SBS = Sarasota Bay South
RBN = Roberts Bay (North)
LSB = Little Sarasota Bay
BB = Blackburn Bay
DRB = Dona and Roberts Bay
LB = Lemon Bay

The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=SBN

Number of Observations Read	1251
Number of Observations Used	1251

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	3150.39458	3150.39458	7436.55	<.0001
Error	1250	529.54593	0.42364		
Uncorrected Total	1251	3679.94050			

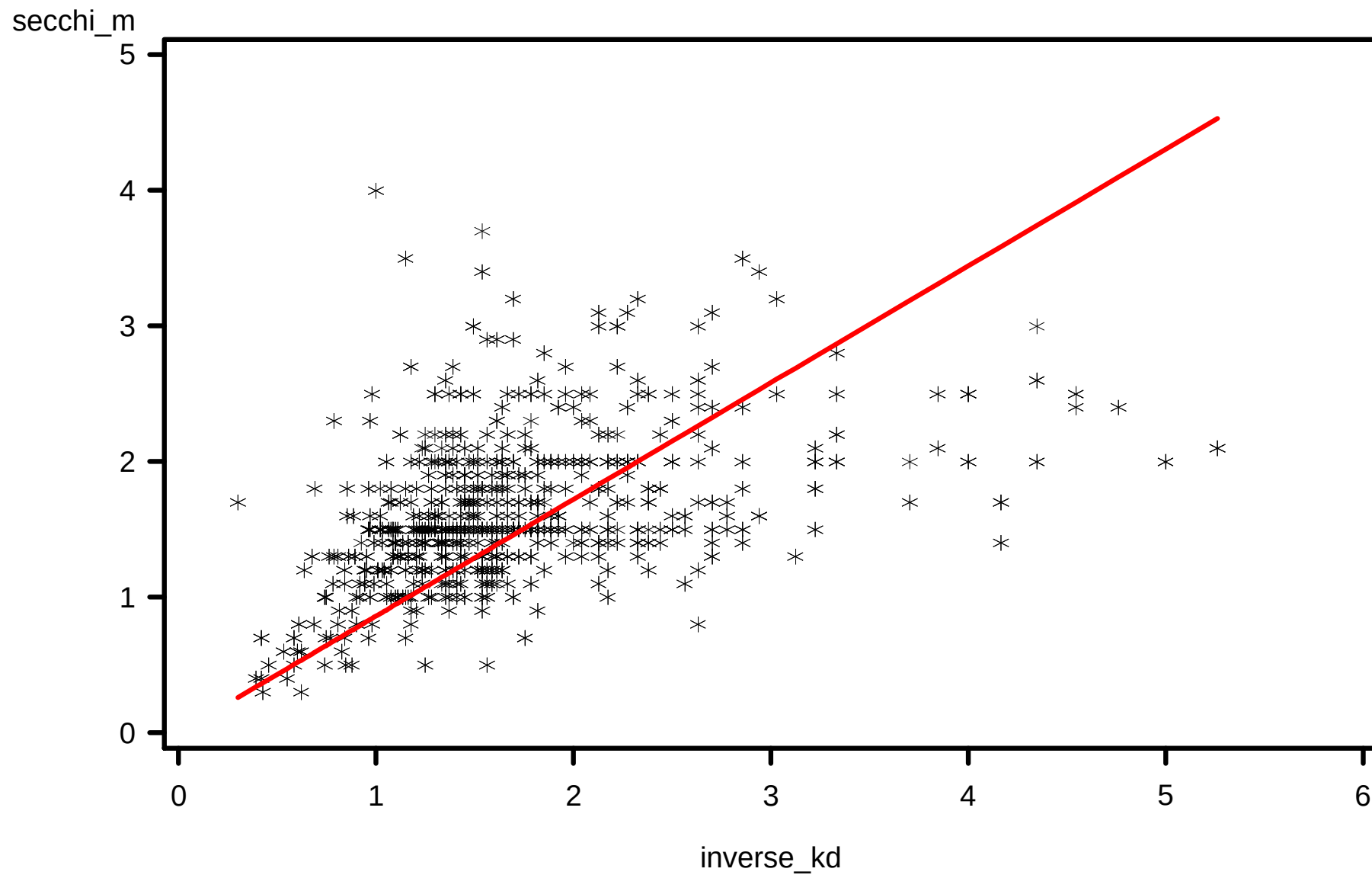
Root MSE	0.65087	R-Square	0.8561
Dependent Mean	1.62484	Adj R-Sq	0.8560
Coeff Var	40.05771		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	0.86050	0.00998	86.24	<.0001

Predicted Secchi vs. 1/Kd (m)

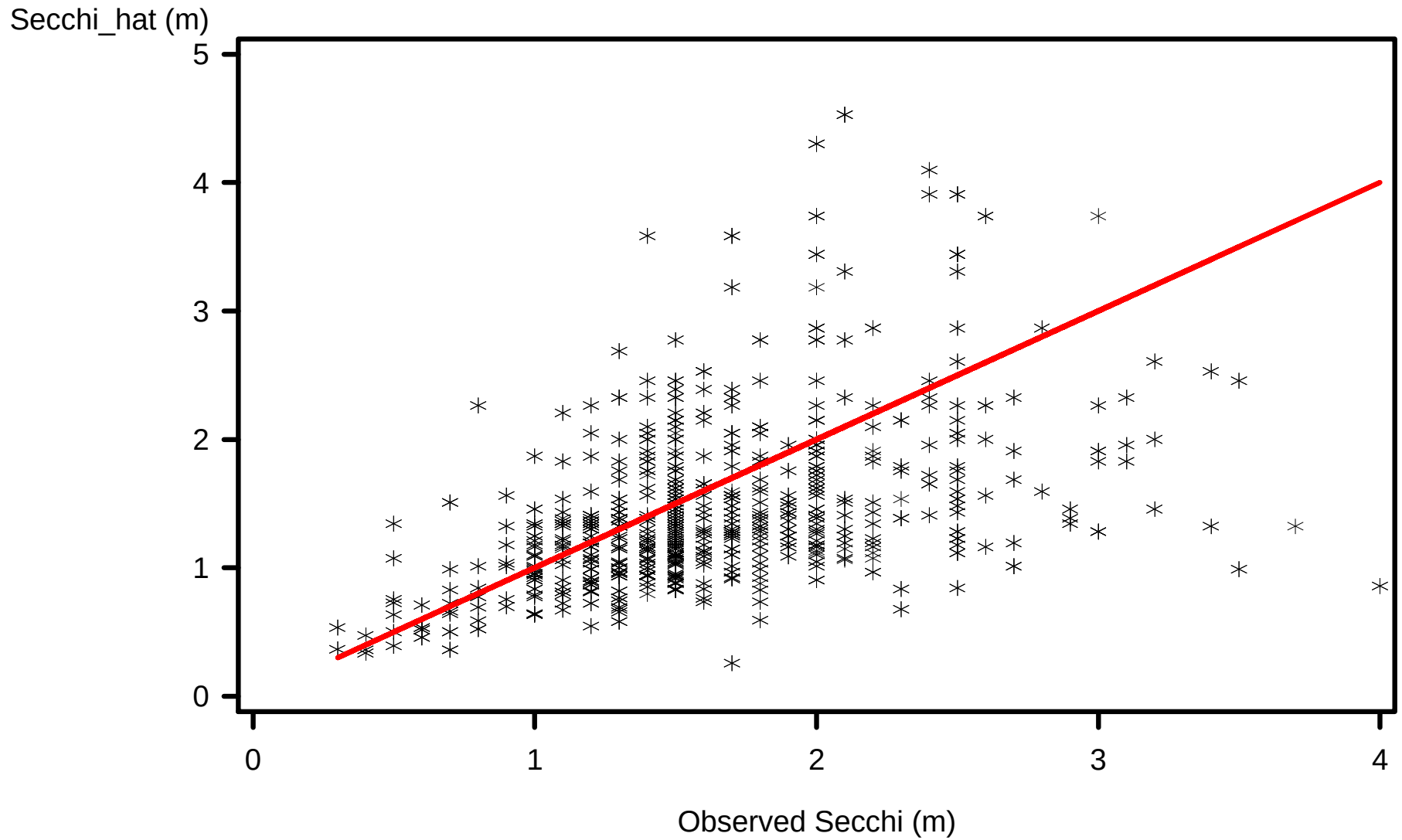
solid line is predicted relationship

Segment=SBN



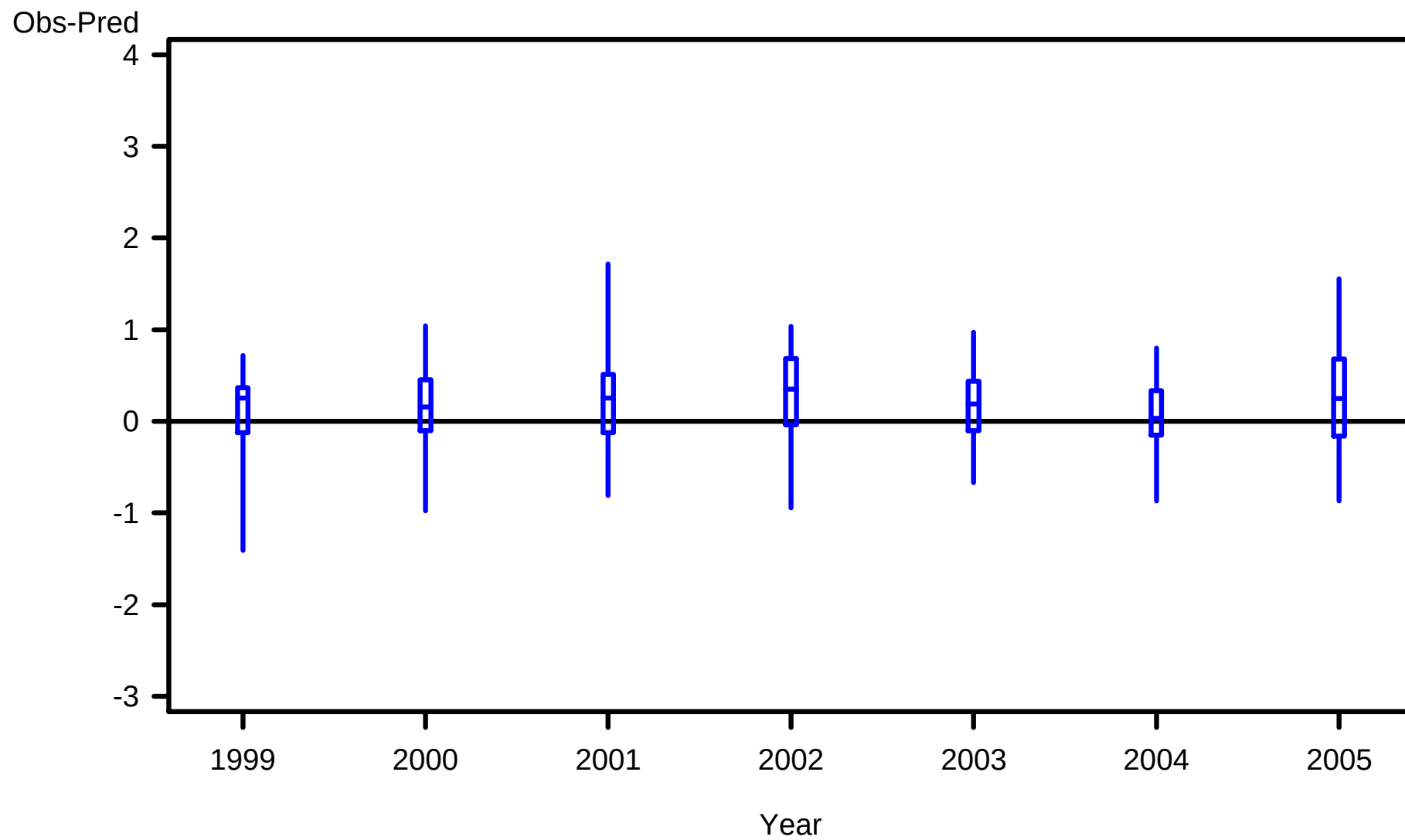
Observed Secchi vs. Predicted Secchi

Segment=SBN



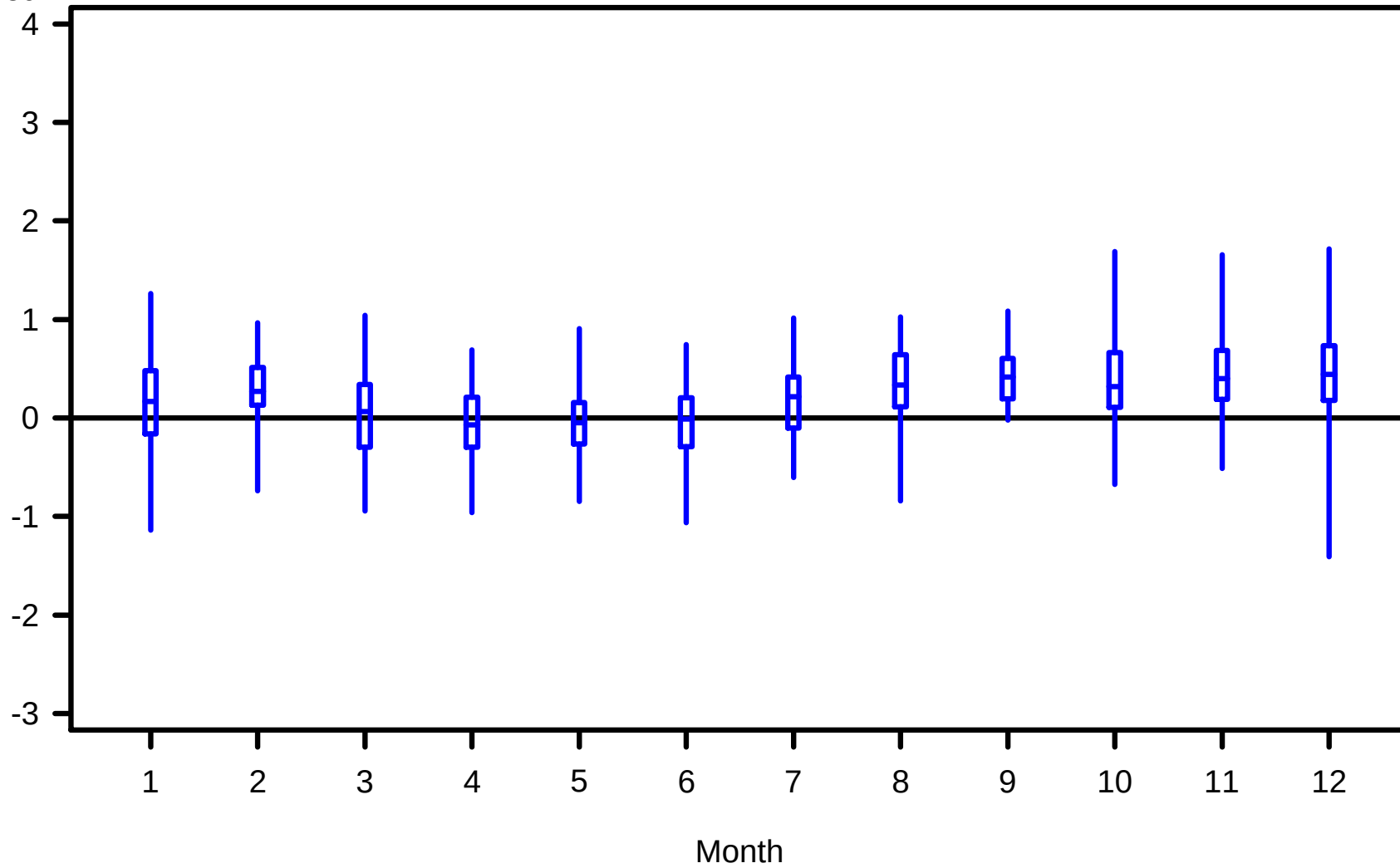
solid line is 1:1 line

Segment=SBN



Segment=SBN

Obs-Pred



The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=SBS

Number of Observations Read	635
Number of Observations Used	635

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	1779.22609	1779.22609	3159.82	<.0001
Error	634	356.99196	0.56308		
Uncorrected Total	635	2136.21805			

Root MSE	0.75039	R-Square	0.8329
Dependent Mean	1.70470	Adj R-Sq	0.8326
Coeff Var	44.01855		

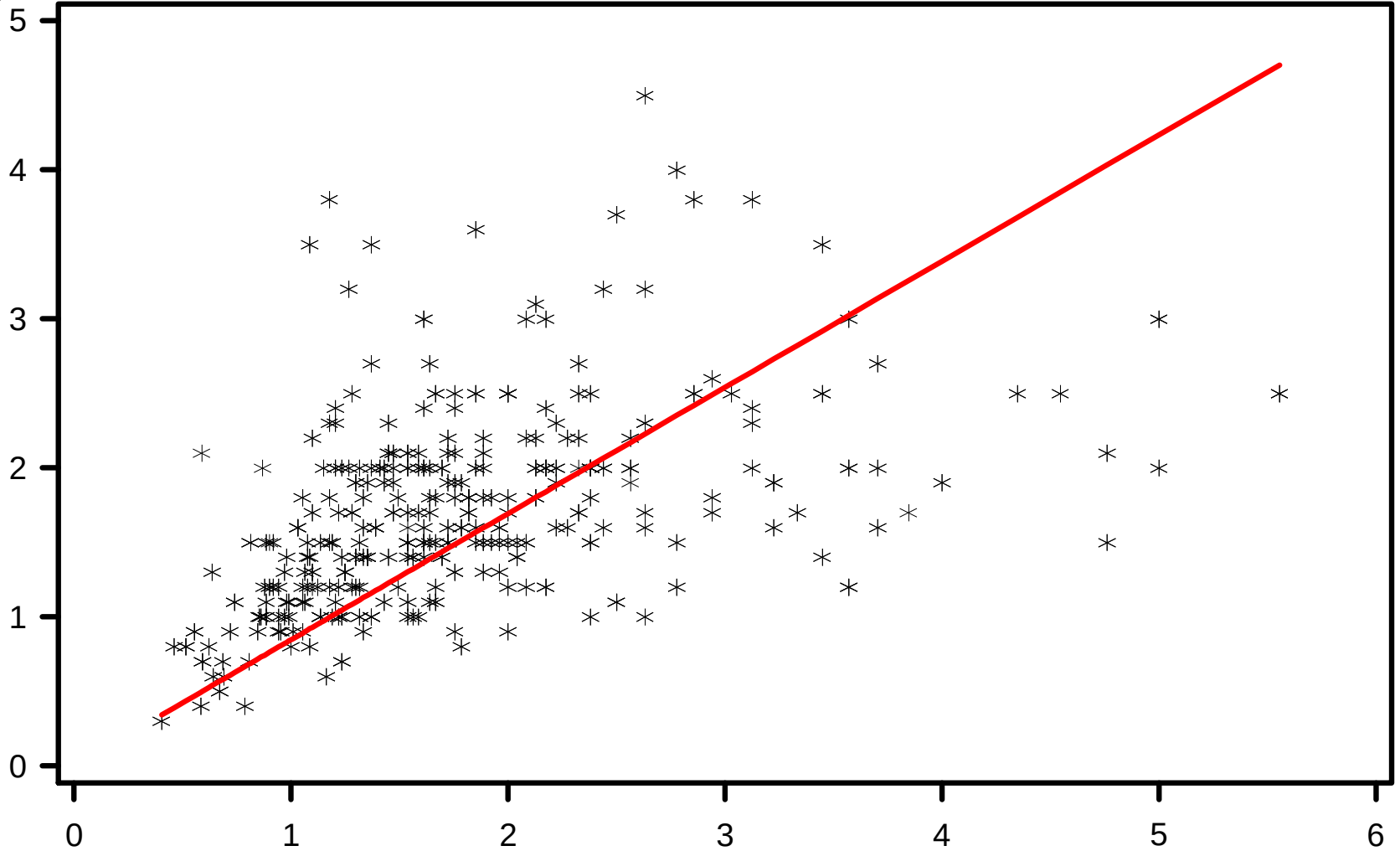
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	0.84678	0.01506	56.21	<.0001

Predicted Secchi vs. 1/Kd (m)

solid line is predicted relationship

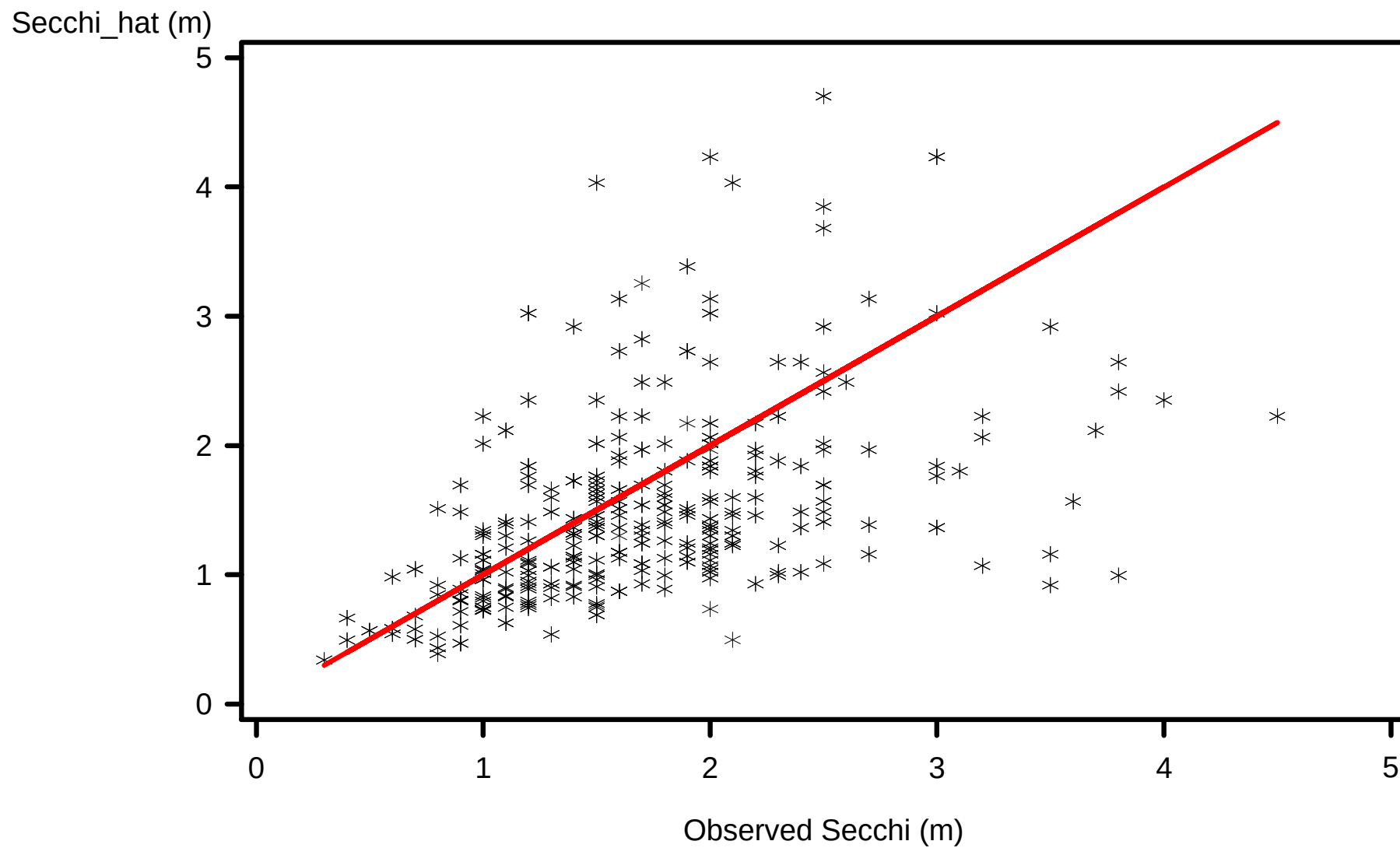
Segment=SBS

secchi_m



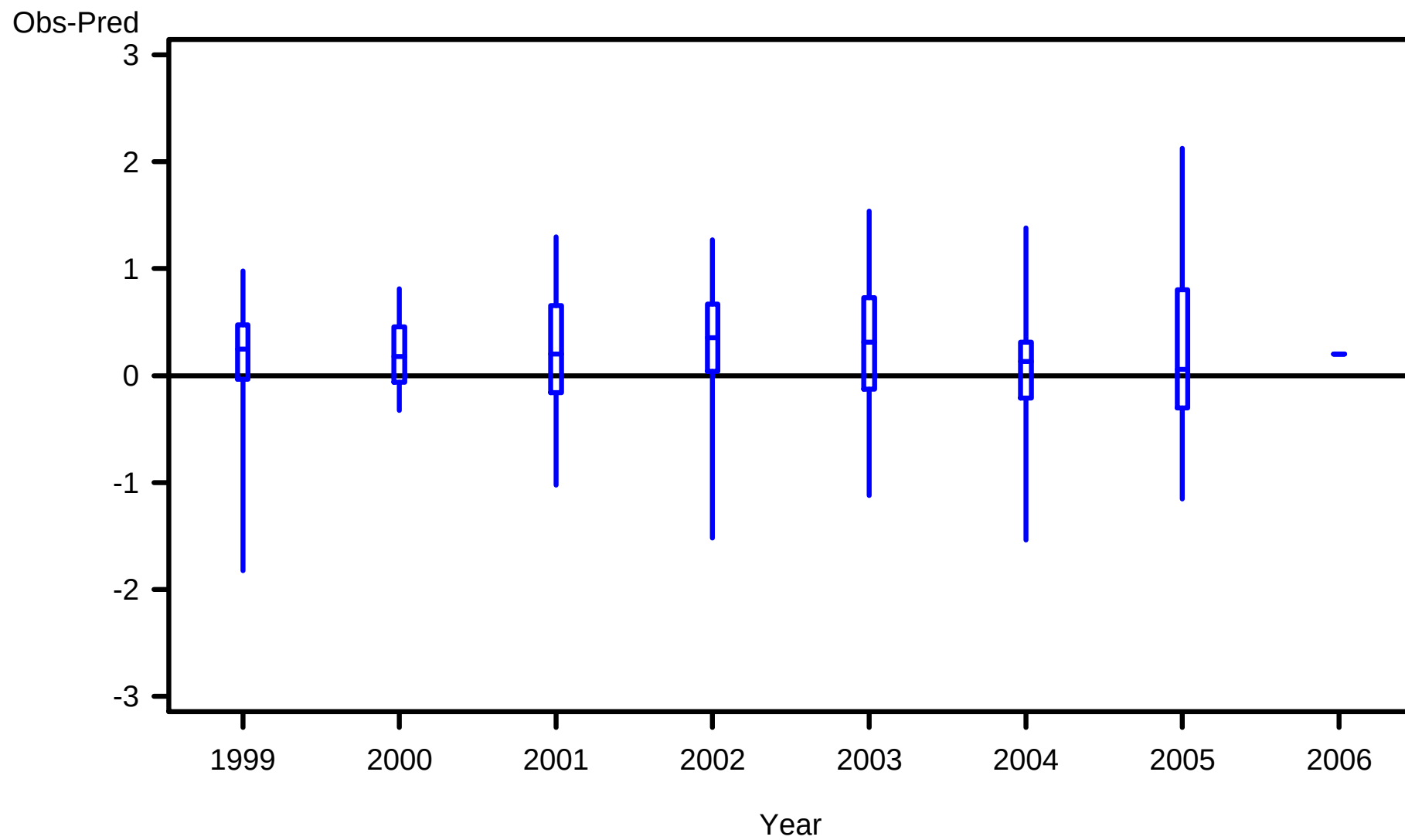
Observed Secchi vs. Predicted Secchi

Segment=SBS

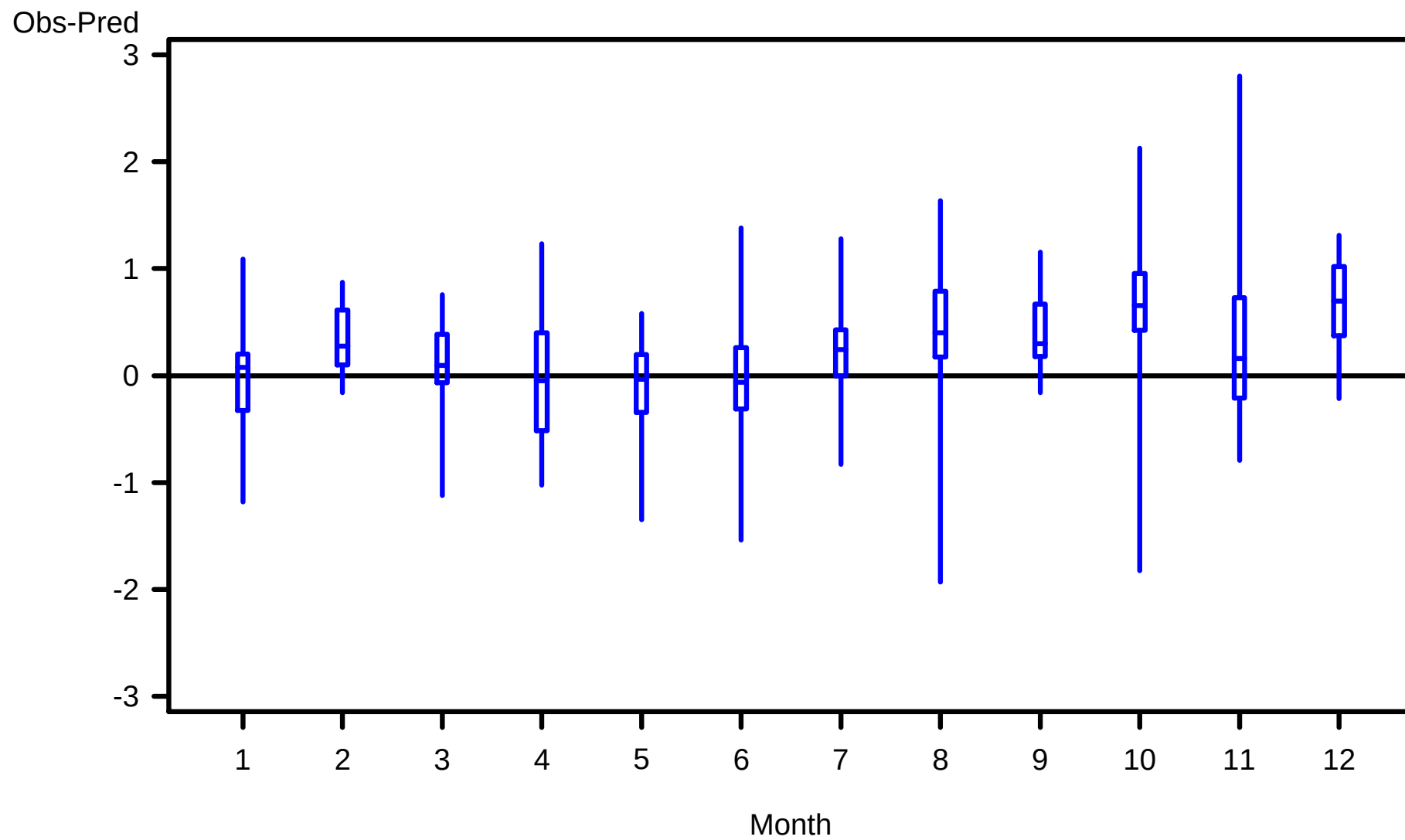


solid line is 1:1 line

Segment=SBS



Segment=SBS



The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=RBN

Number of Observations Read	306
Number of Observations Used	306

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	326.57828	326.57828	1564.36	<.0001
Error	305	63.67223	0.20876		
Uncorrected Total	306	390.25051			

Root MSE	0.45690	R-Square	0.8368
Dependent Mean	1.08495	Adj R-Sq	0.8363
Coeff Var	42.11276		

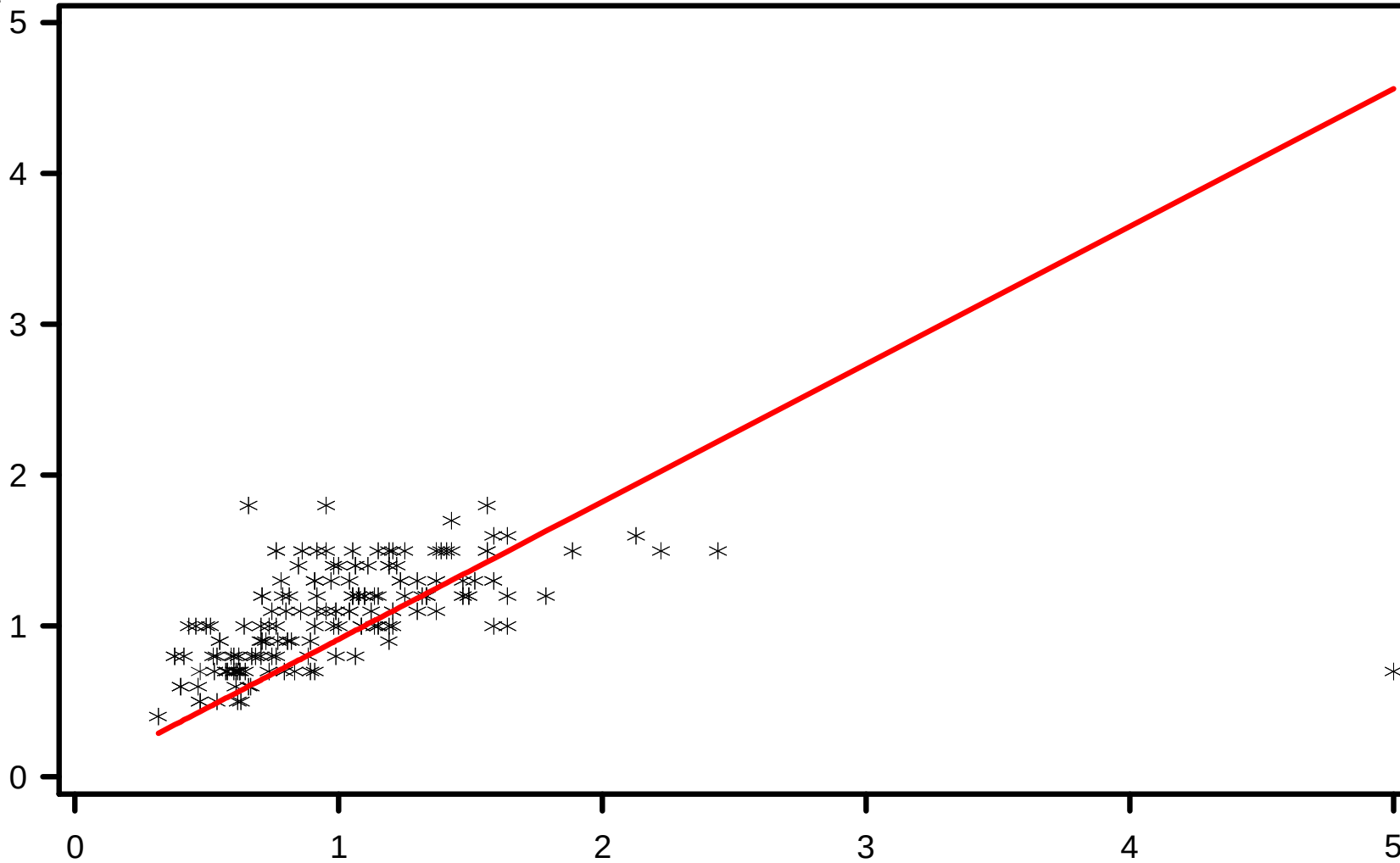
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	0.91242	0.02307	39.55	<.0001

Predicted Secchi vs. 1/Kd (m)

solid line is predicted relationship

Segment=RBN

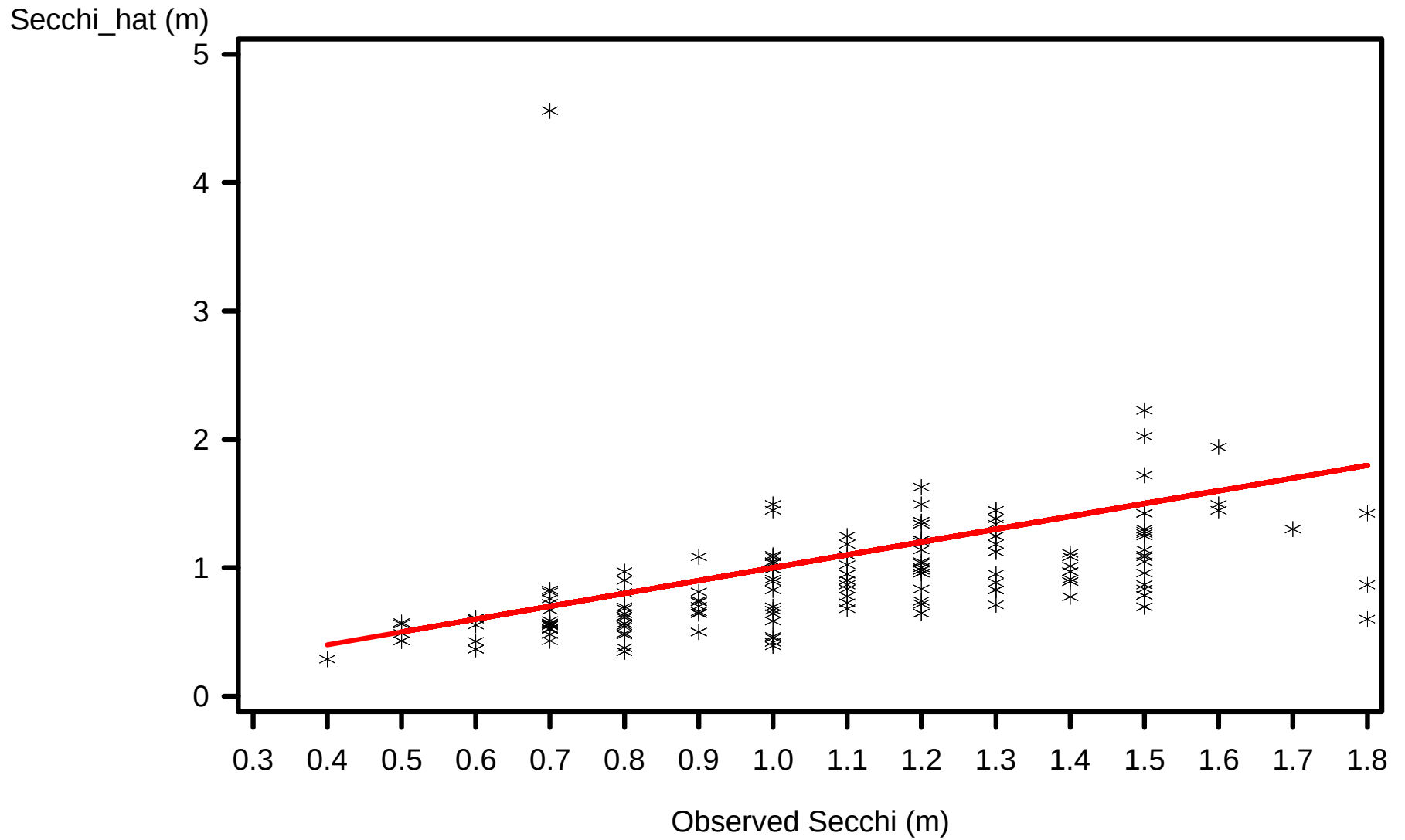
secchi_m



inverse_kd

Observed Secchi vs. Predicted Secchi

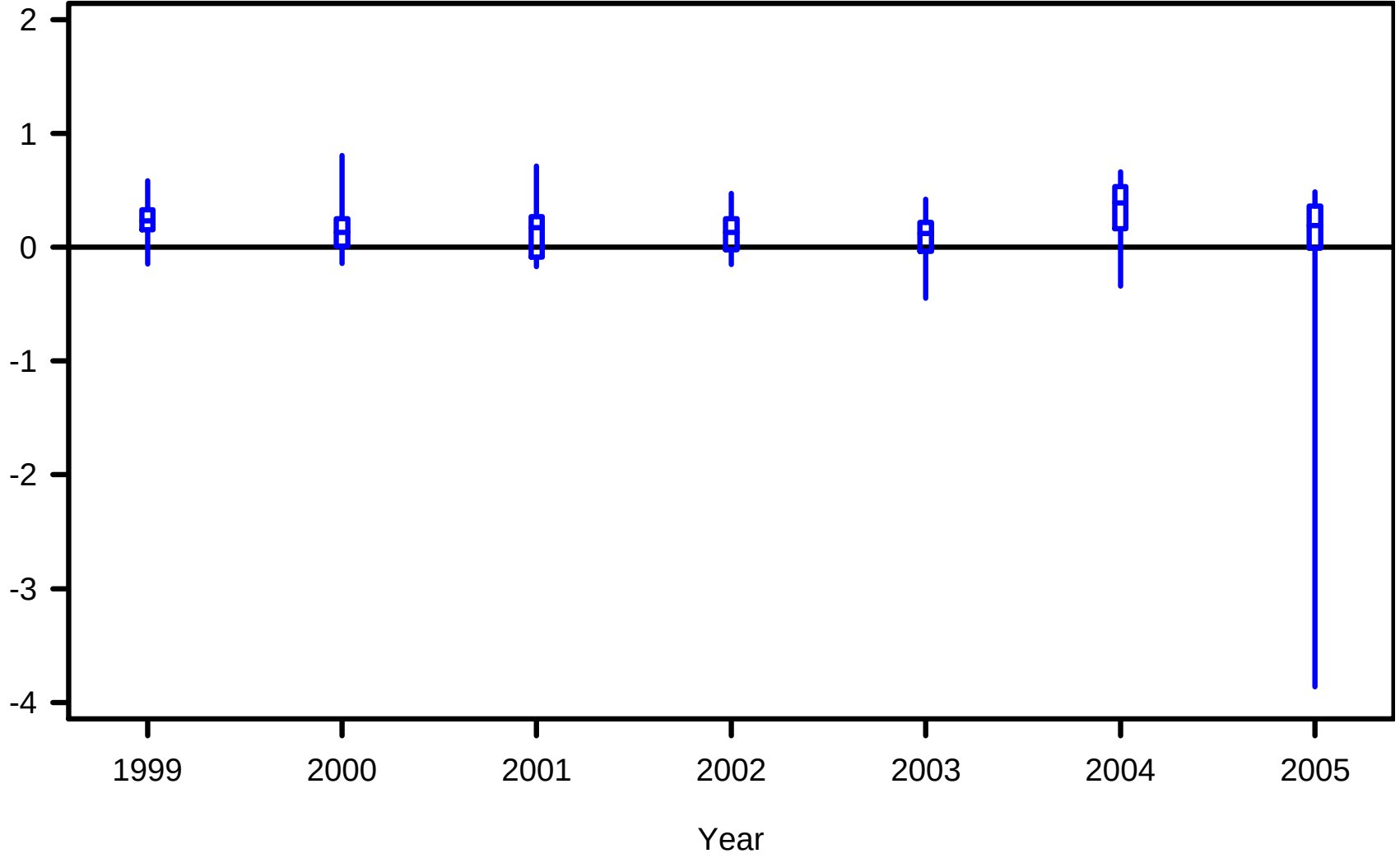
Segment=RBN



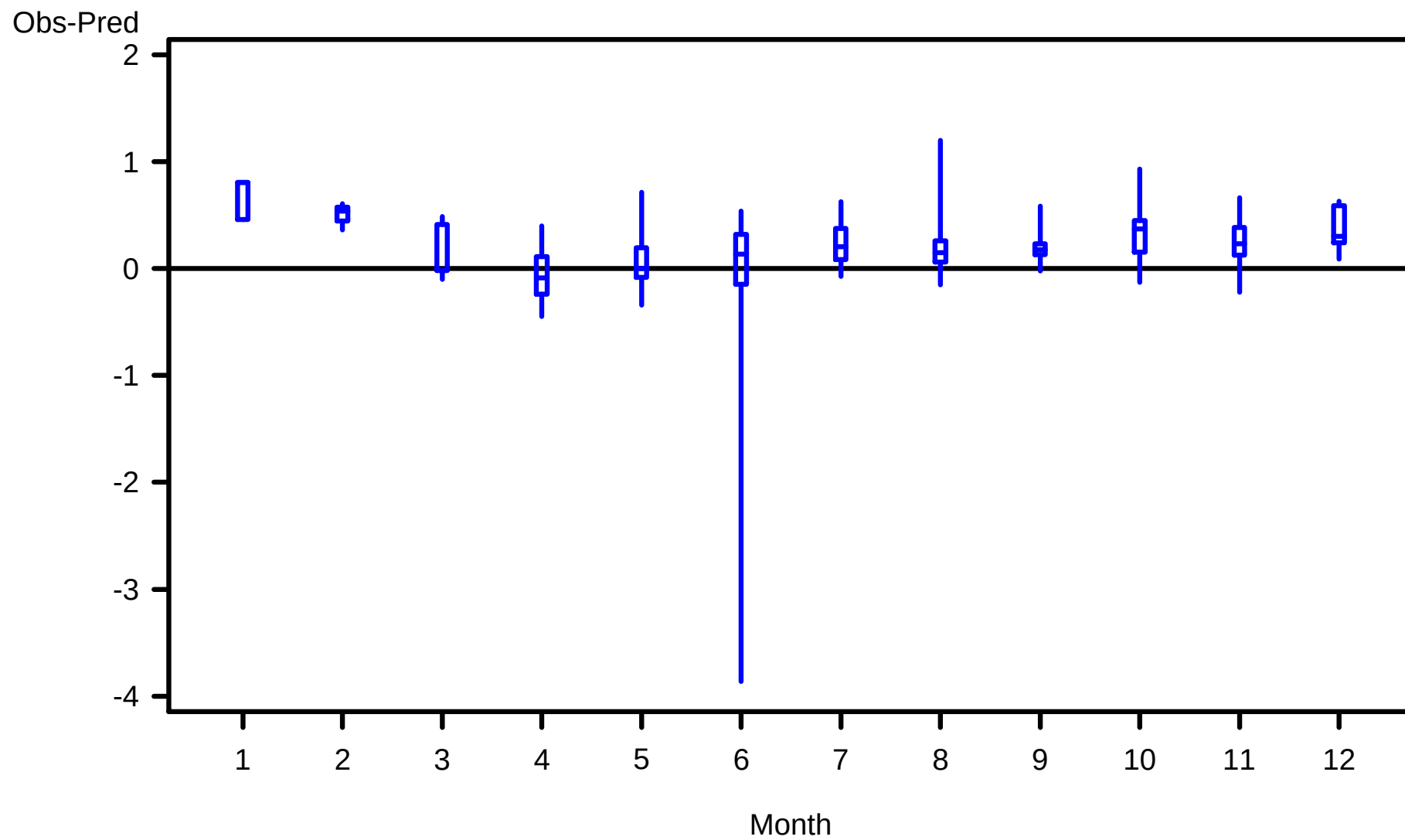
solid line is 1:1 line

Segment=RBN

Obs-Pred



Segment=RBN



The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=LSB

Number of Observations Read	646
Number of Observations Used	646

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	903.33582	903.33582	7807.16	<.0001
Error	645	74.63040	0.11571		
Uncorrected Total	646	977.96622			

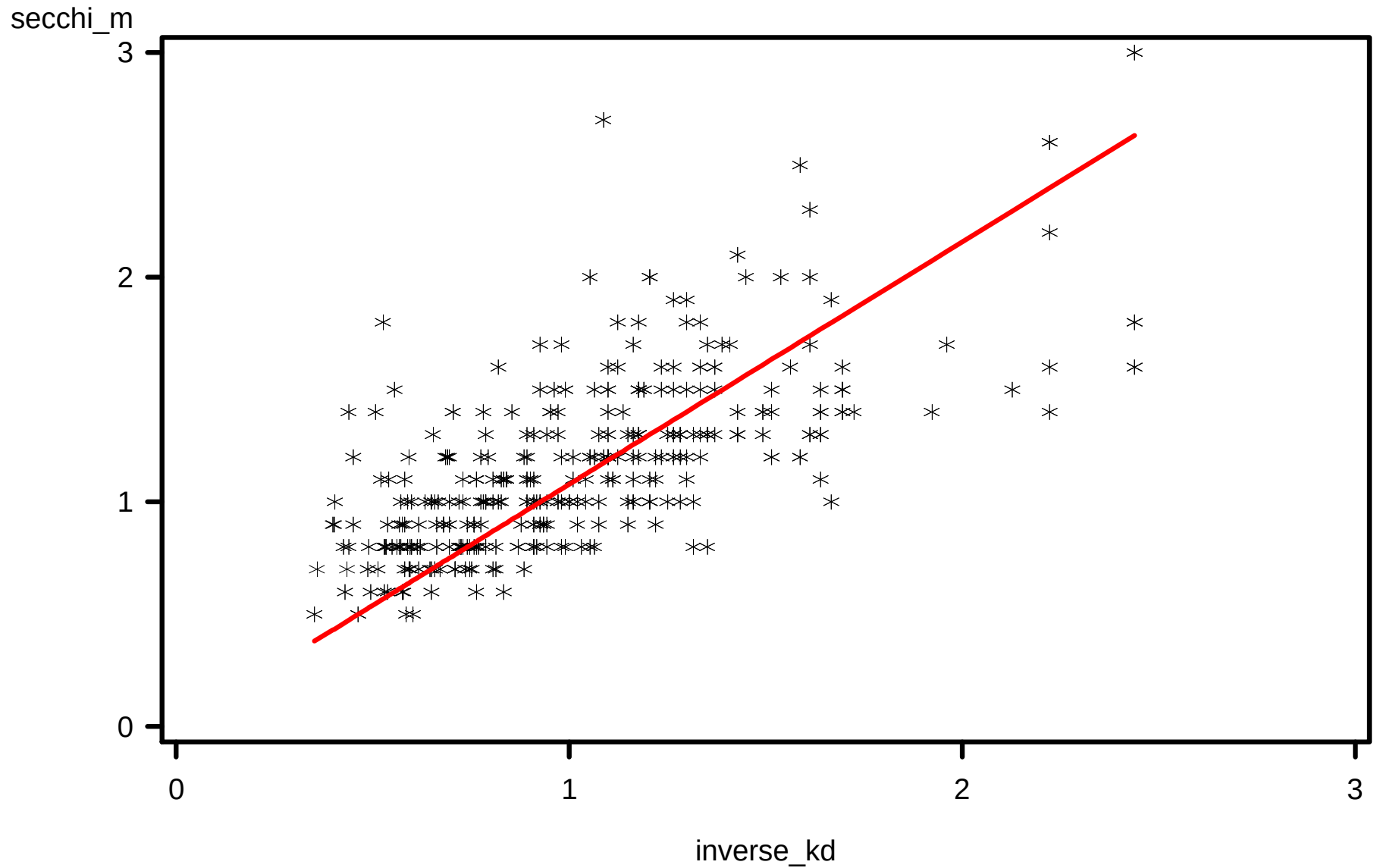
Root MSE	0.34016	R-Square	0.9237
Dependent Mean	1.16516	Adj R-Sq	0.9236
Coeff Var	29.19402		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	1.07855	0.01221	88.36	<.0001

Predicted Secchi vs. 1/Kd (m)

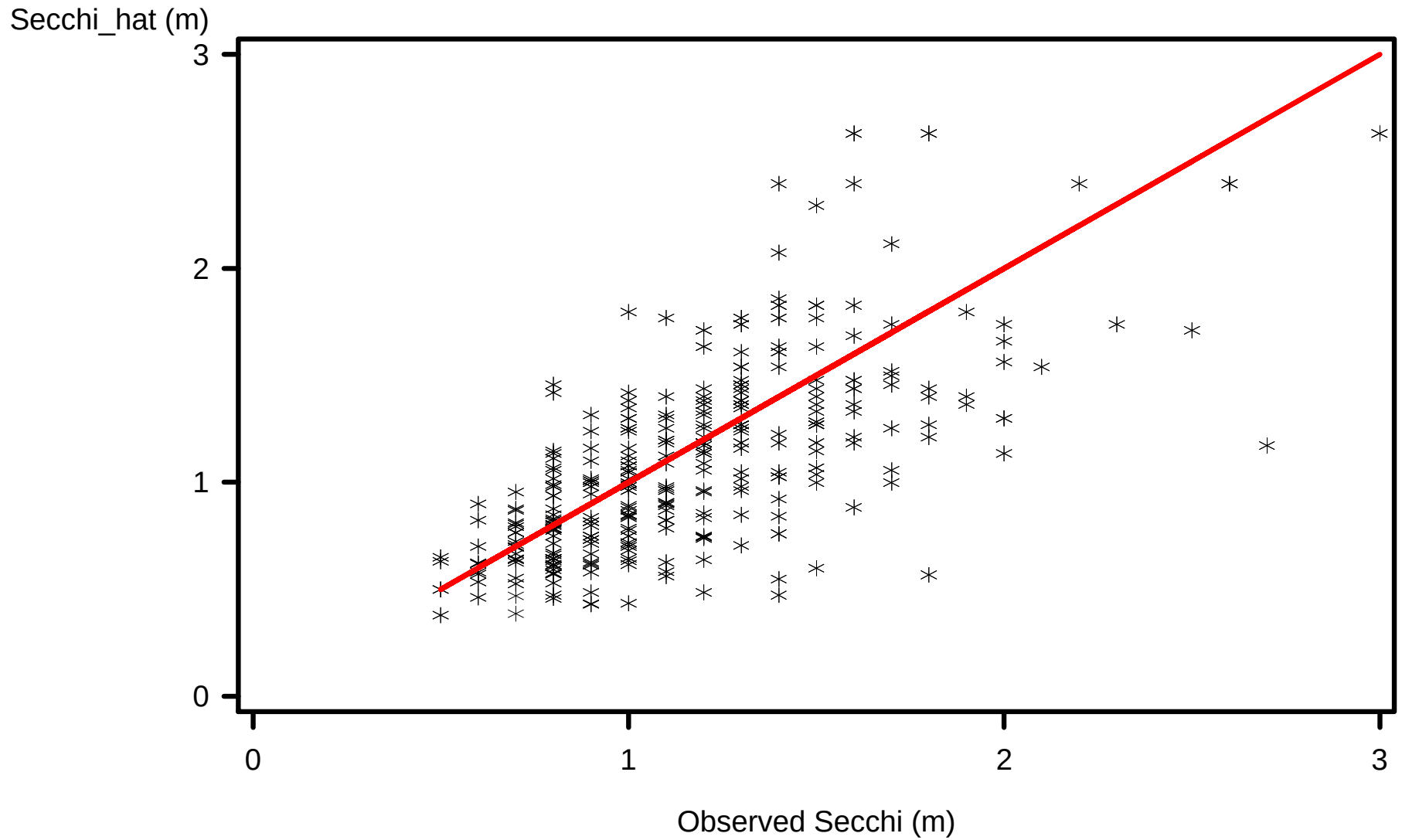
solid line is predicted relationship

Segment=LSB



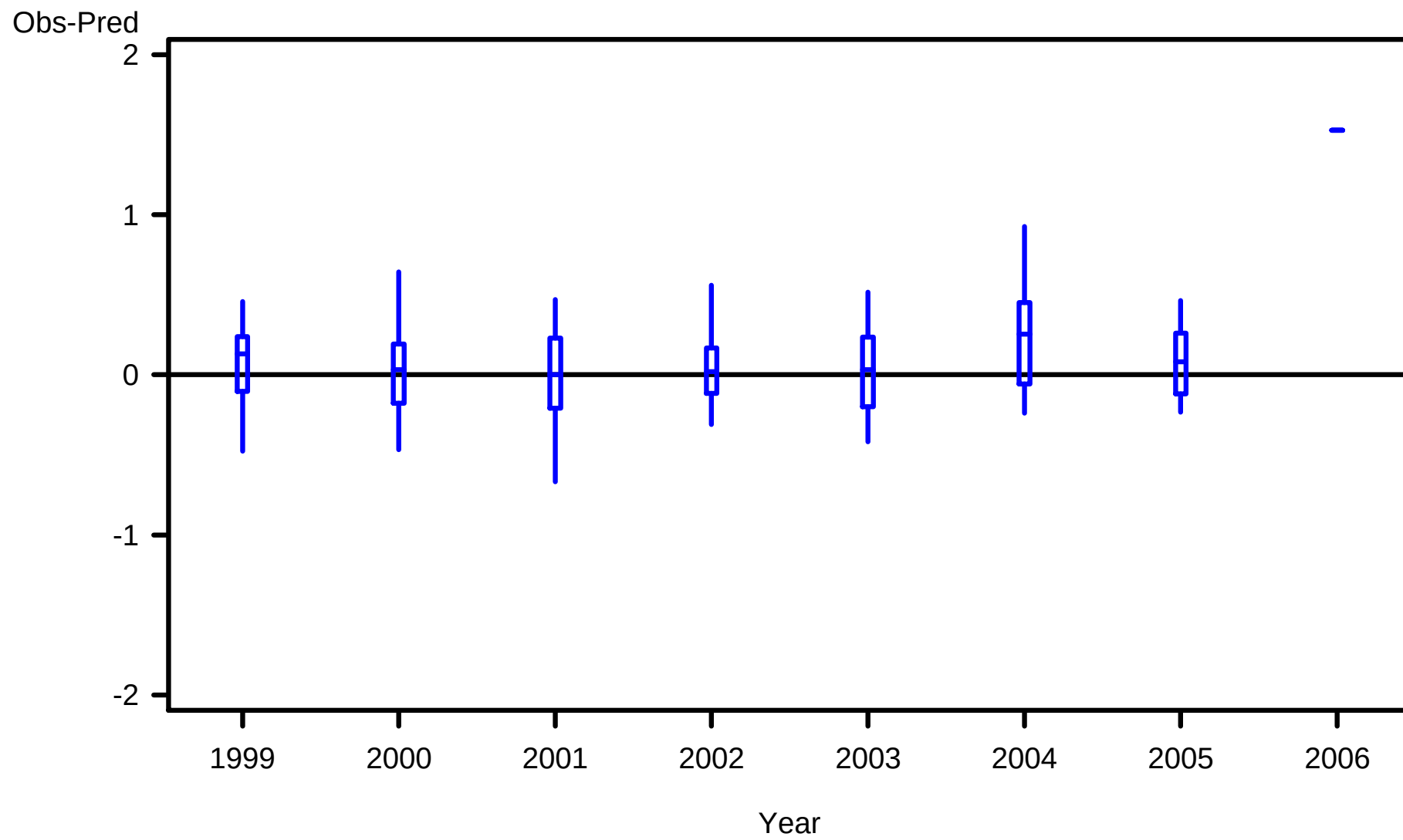
Observed Secchi vs. Predicted Secchi

Segment=LSB

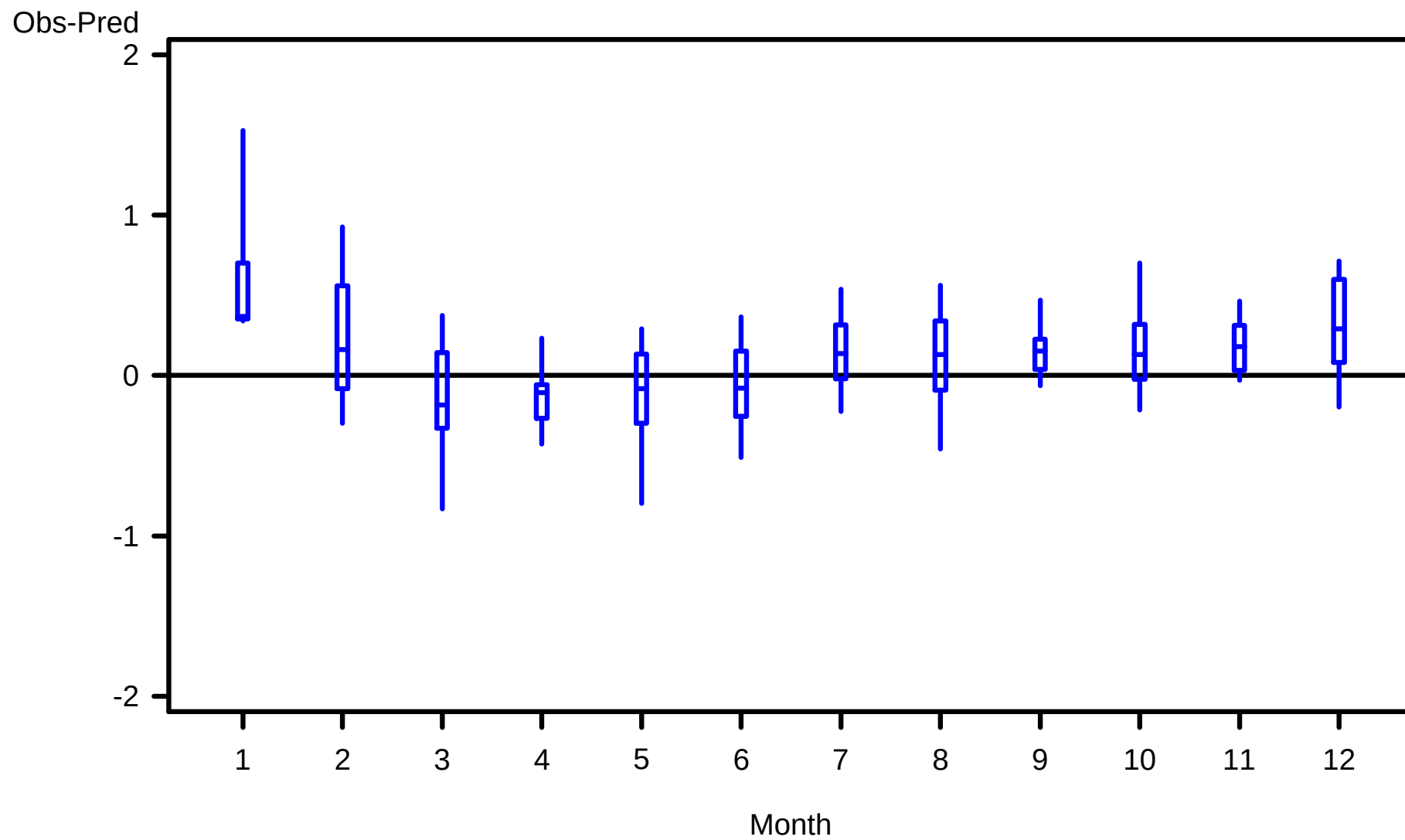


solid line is 1:1 line

Segment=LSB



Segment=LSB



The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=BB

Number of Observations Read	385
Number of Observations Used	385

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	728.10792	728.10792	2810.78	<.0001
Error	384	99.47196	0.25904		
Uncorrected Total	385	827.57987			

Root MSE	0.50896	R-Square	0.8798
Dependent Mean	1.33557	Adj R-Sq	0.8795
Coeff Var	38.10822		

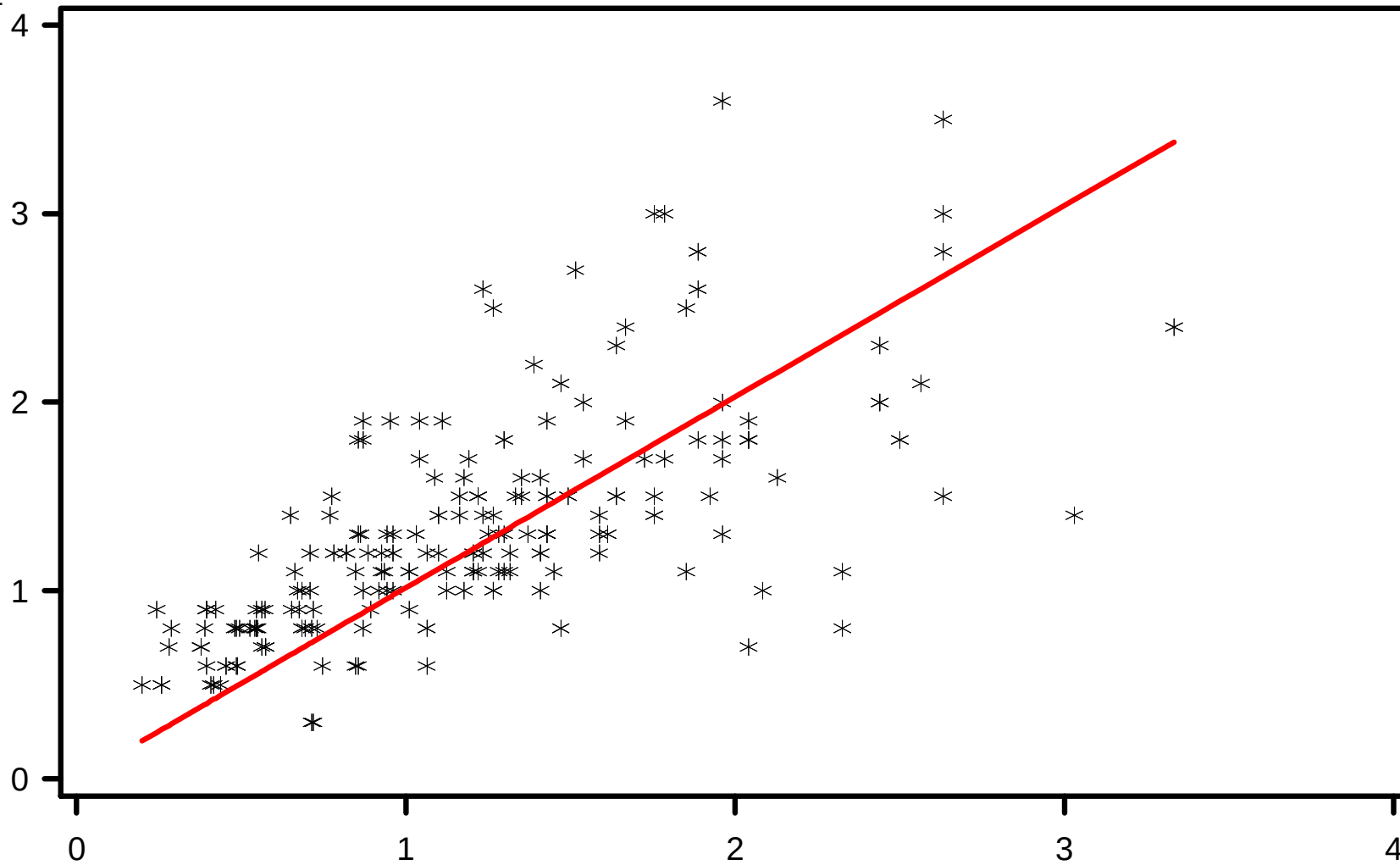
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	1.01411	0.01913	53.02	<.0001

Predicted Secchi vs. 1/Kd (m)

solid line is predicted relationship

Segment=BB

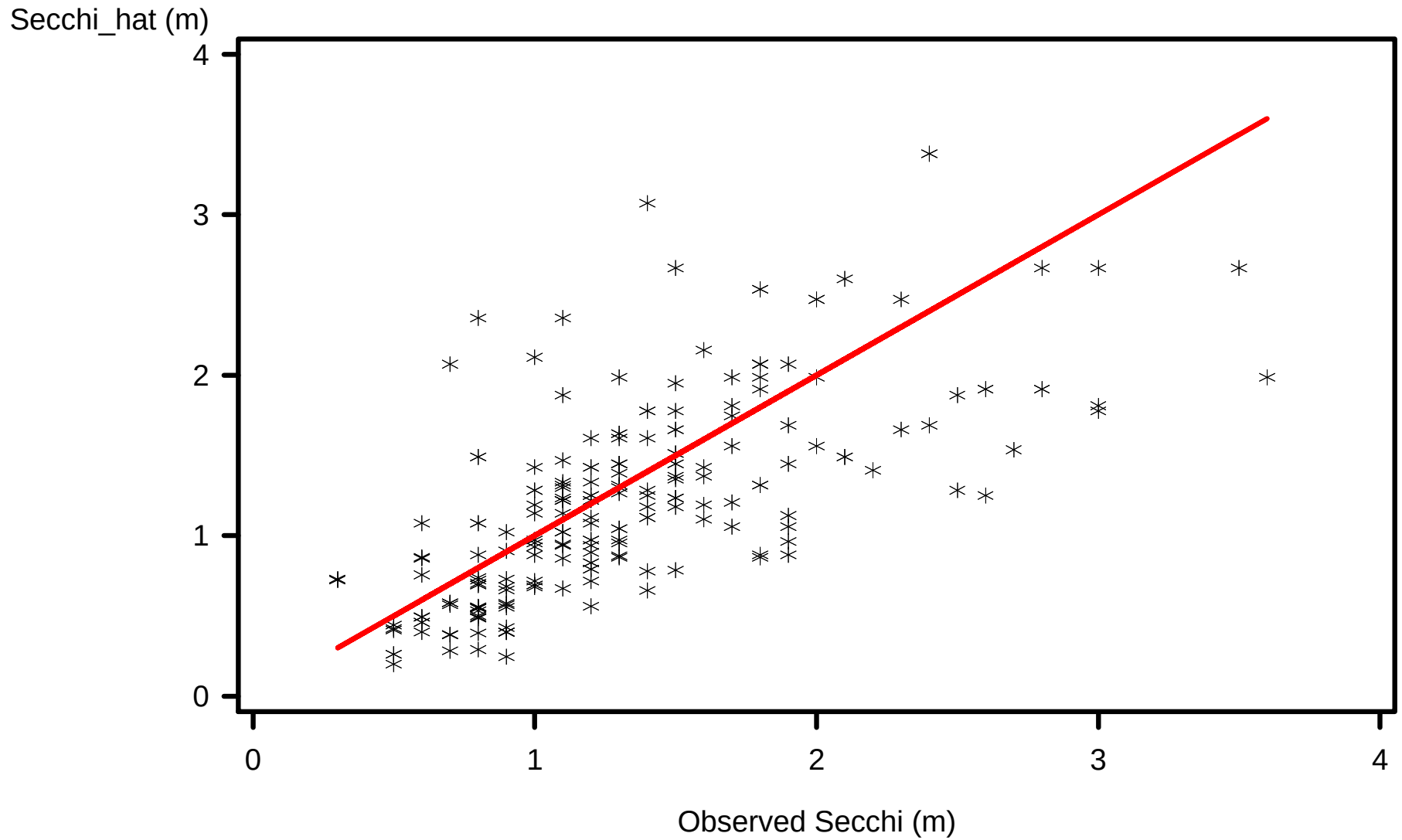
secchi_m



inverse_kd

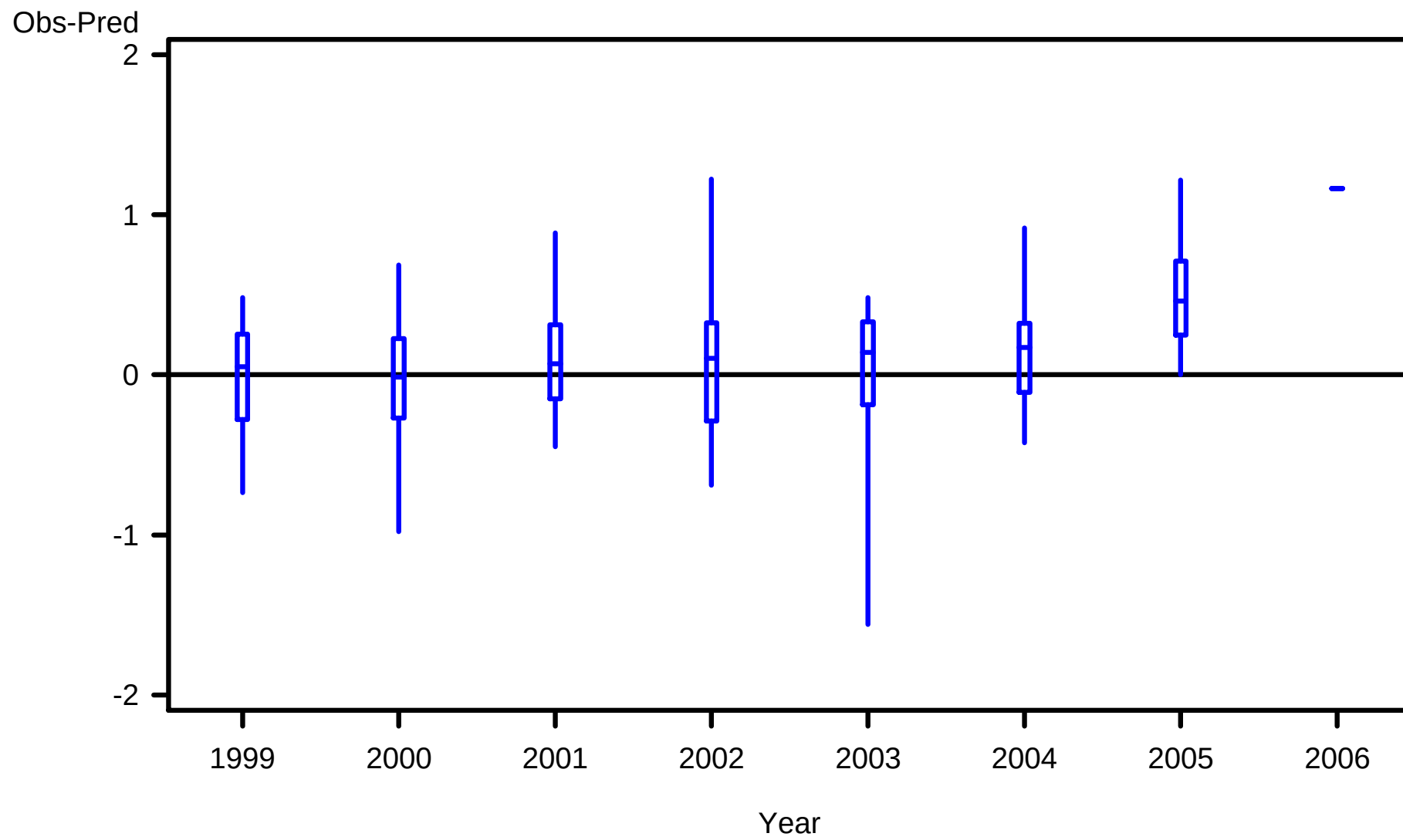
Observed Secchi vs. Predicted Secchi

Segment=BB

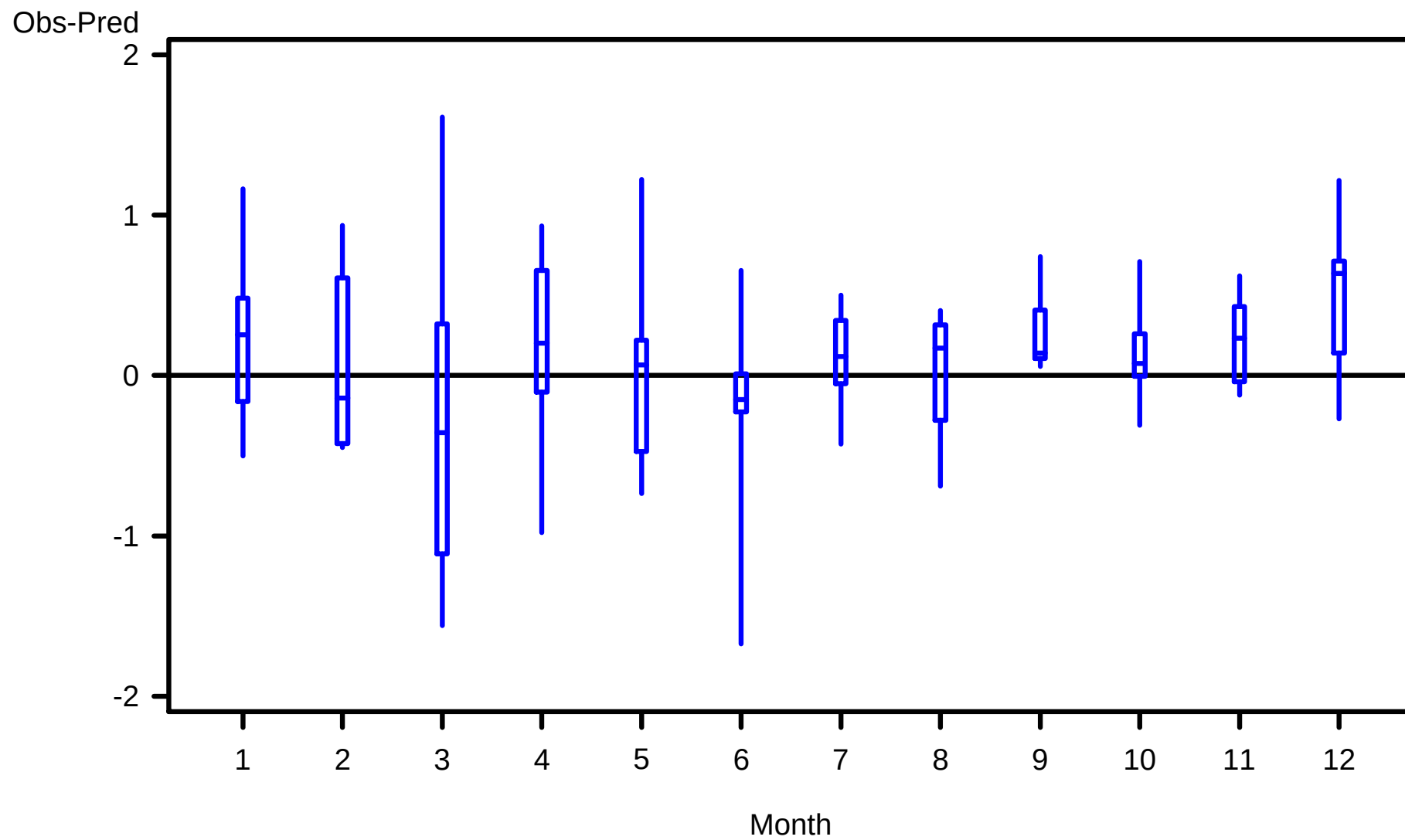


solid line is 1:1 line

Segment=BB



Segment=BB



The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=DRB

Number of Observations Read	140
Number of Observations Used	140

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	199.59811	199.59811	834.00	<.0001
Error	139	33.26622	0.23933		
Uncorrected Total	140	232.86434			

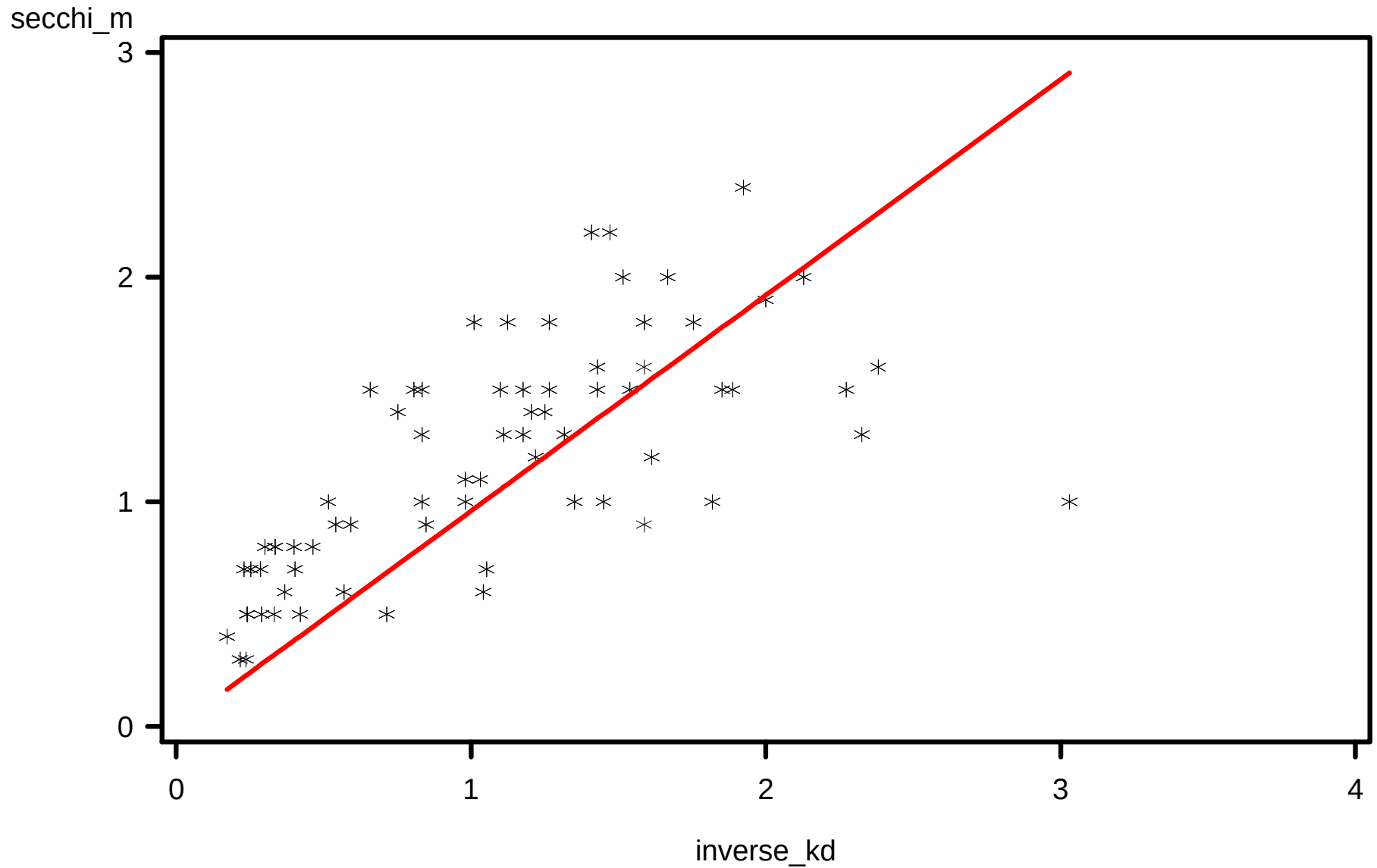
Root MSE	0.48921	R-Square	0.8571
Dependent Mean	1.18499	Adj R-Sq	0.8561
Coeff Var	41.28395		

Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	0.95967	0.03323	28.88	<.0001

Predicted Secchi vs. 1/Kd (m)

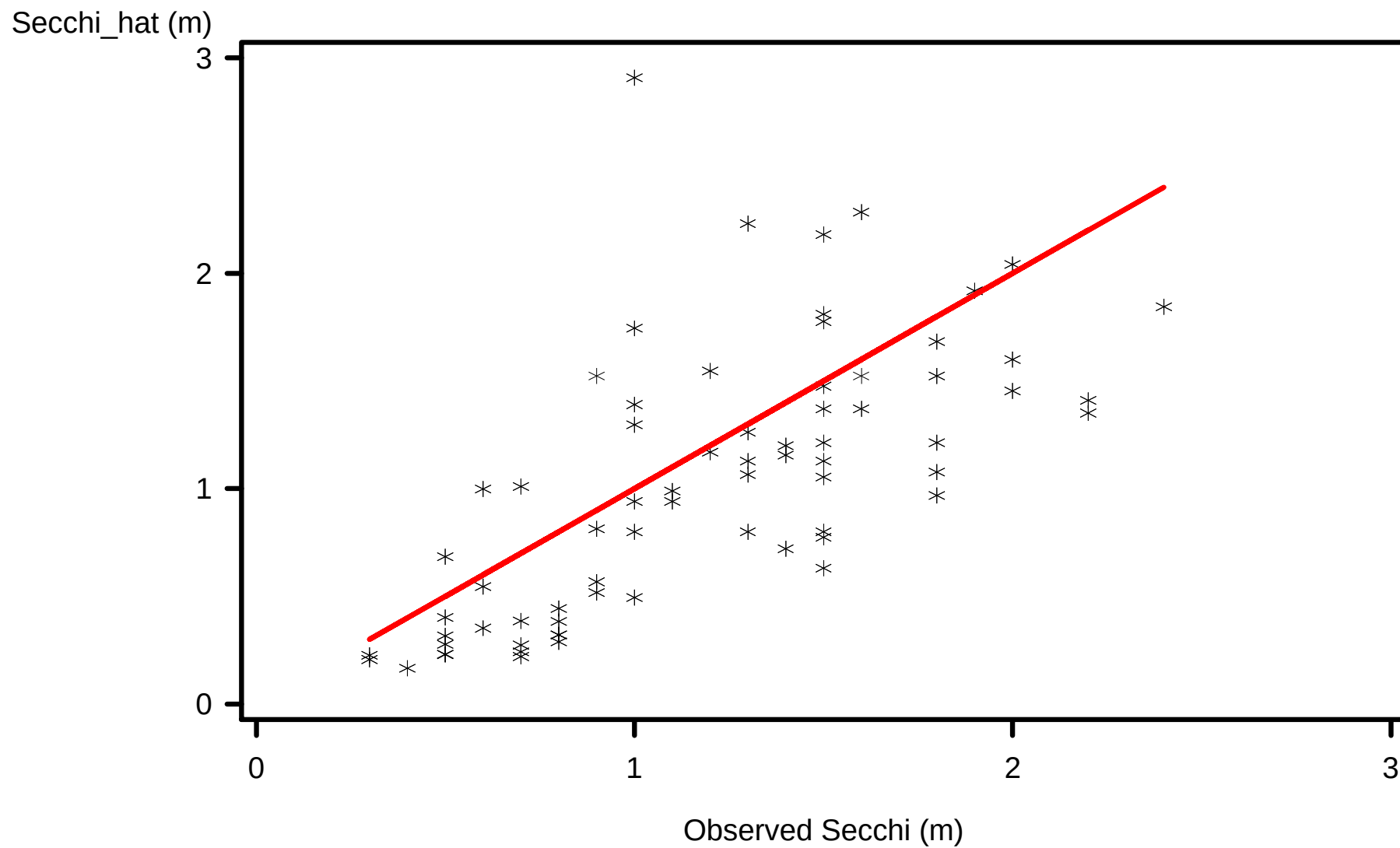
solid line is predicted relationship

Segment=DRB



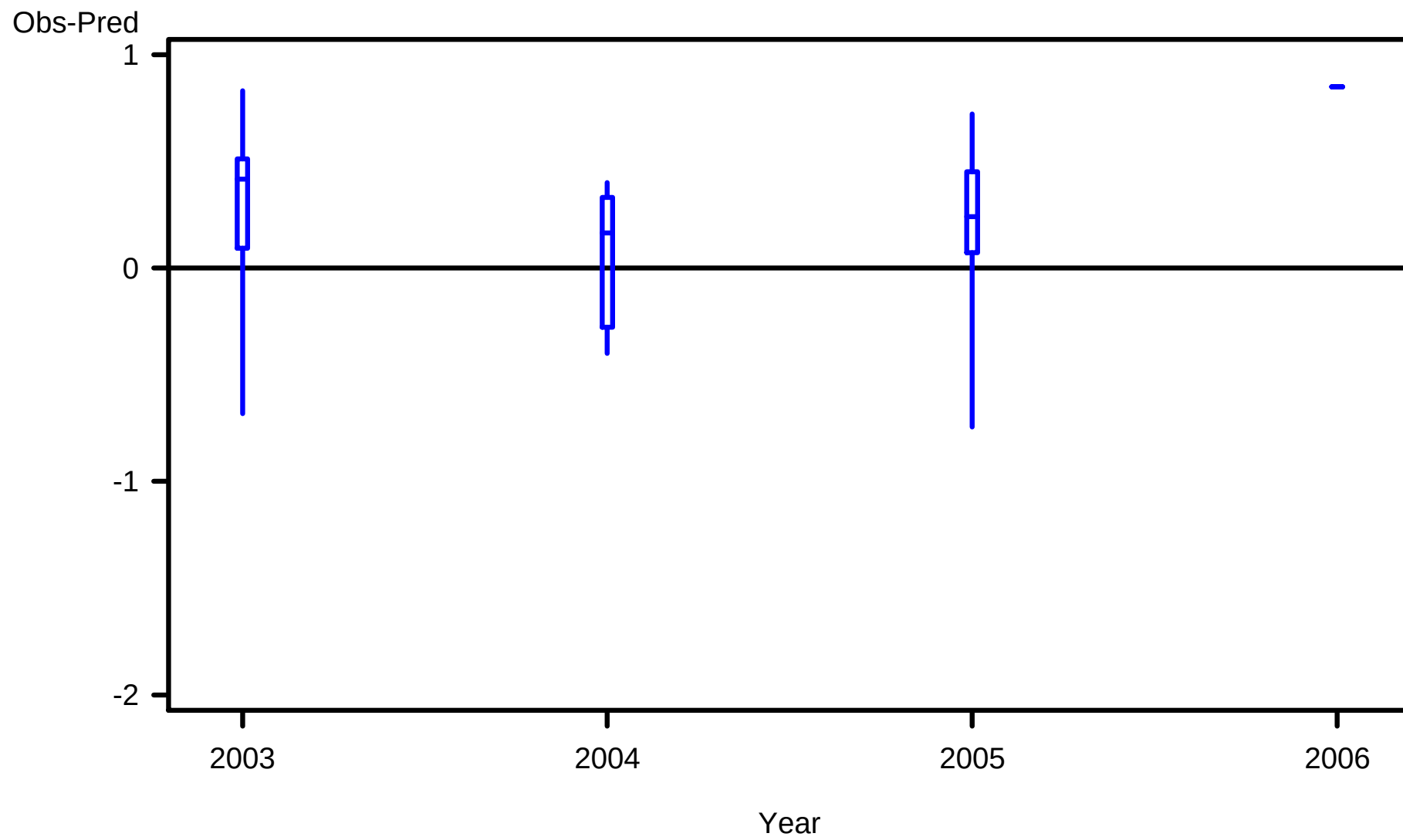
Observed Secchi vs. Predicted Secchi

Segment=DRB



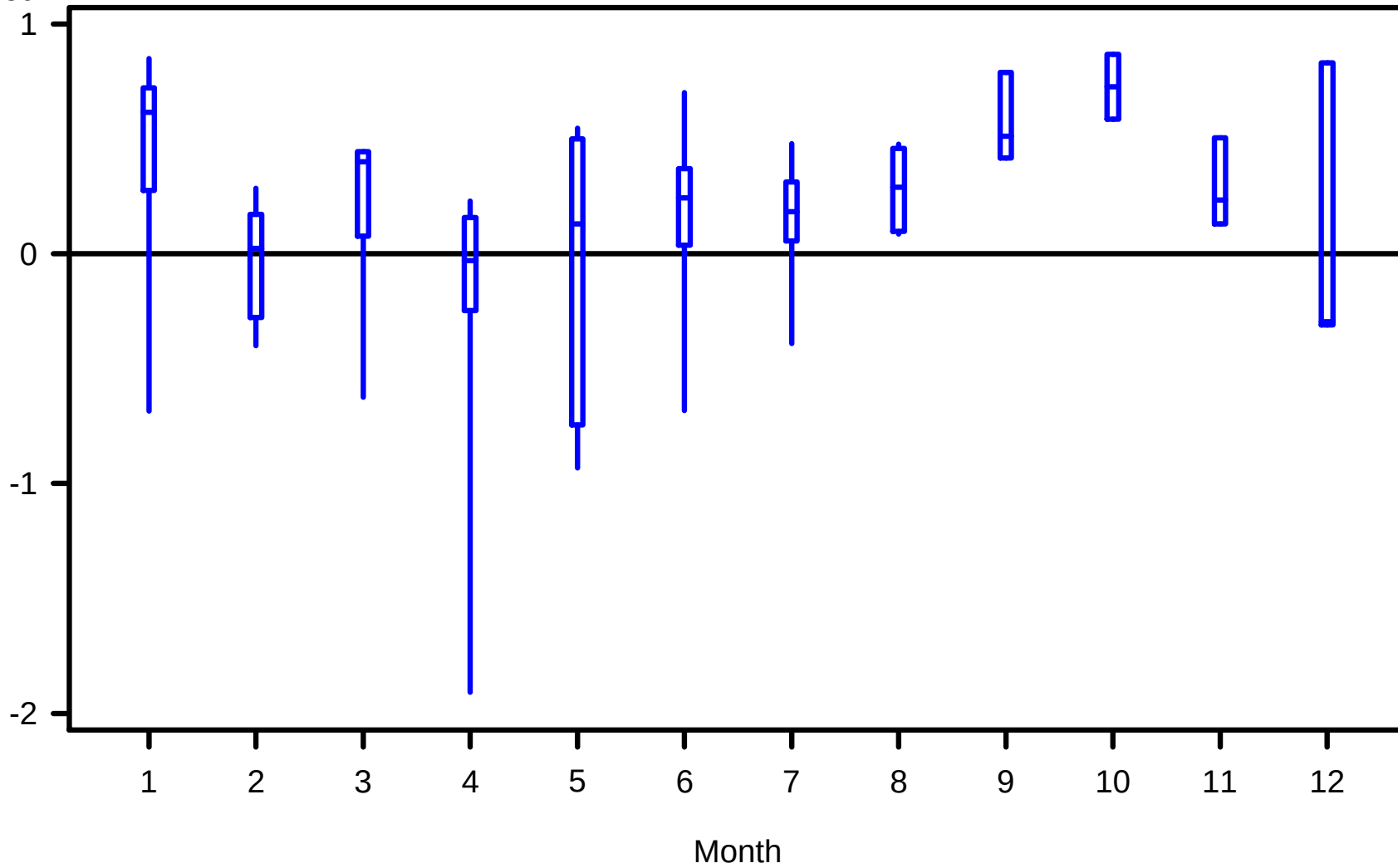
solid line is 1:1 line

Segment=DRB



Segment=DRB

Obs-Pred



The REG Procedure
Model: MODEL1
Dependent Variable: secchi_m

Segment=LB

Number of Observations Read	306
Number of Observations Used	306

Note: No intercept in model. R-Square is redefined.

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	397.60721	397.60721	2989.00	<.0001
Error	305	40.57213	0.13302		
Uncorrected Total	306	438.17934			

Root MSE	0.36472	R-Square	0.9074
Dependent Mean	1.12450	Adj R-Sq	0.9071
Coeff Var	32.43441		

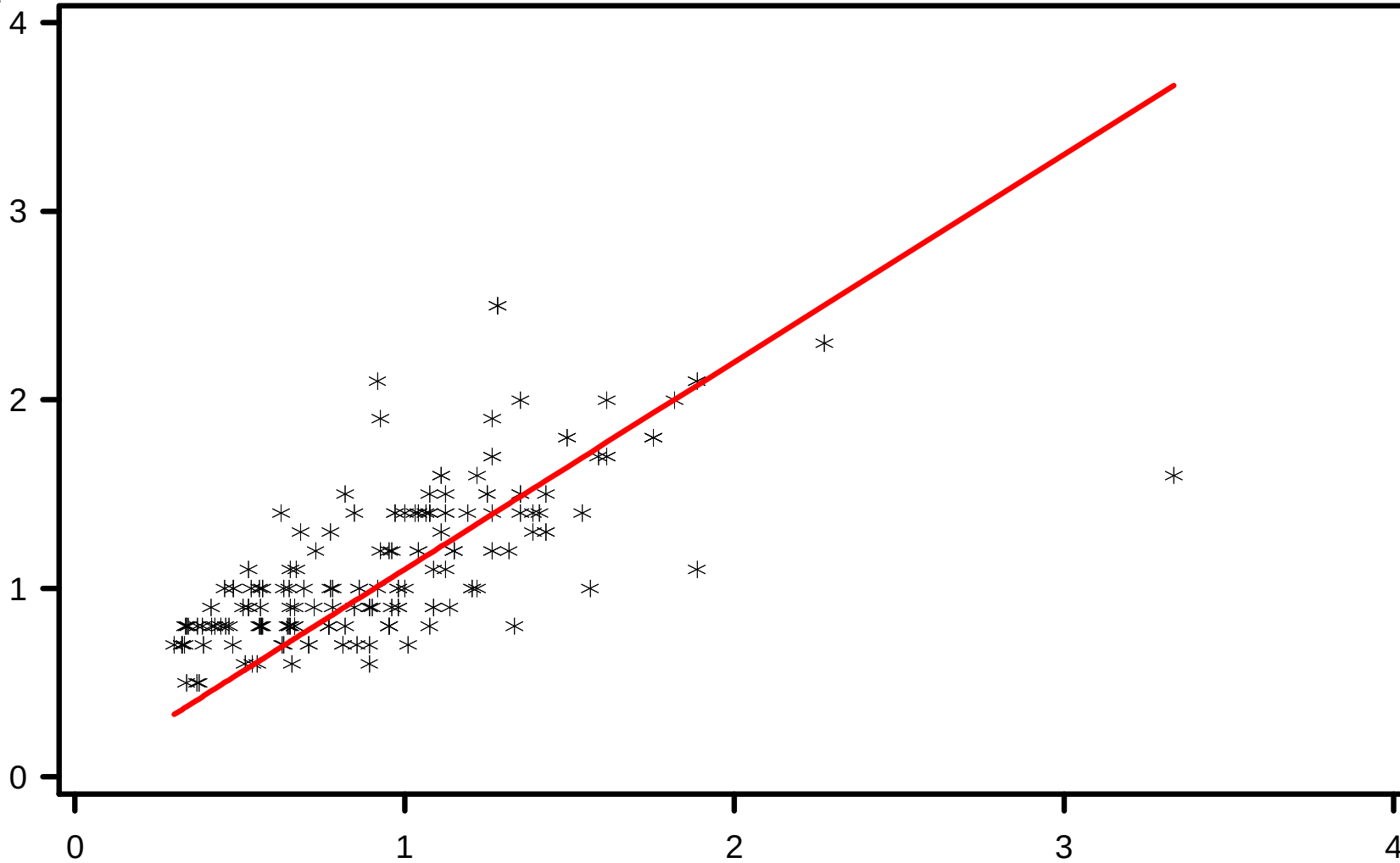
Parameter Estimates					
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t
inverse_kd	1	1.10056	0.02013	54.67	<.0001

Predicted Secchi vs. 1/Kd (m)

solid line is predicted relationship

Segment=LB

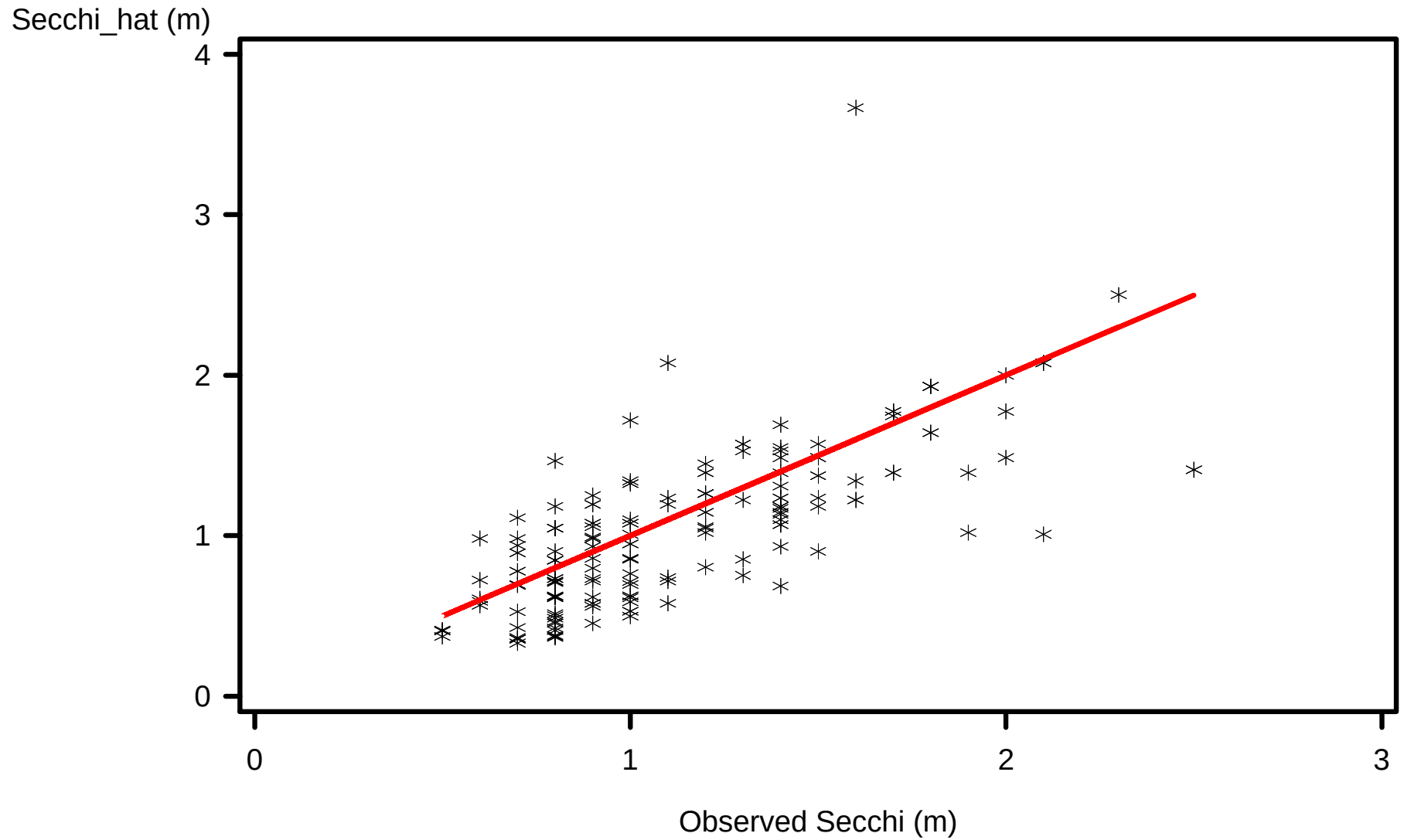
secchi_m



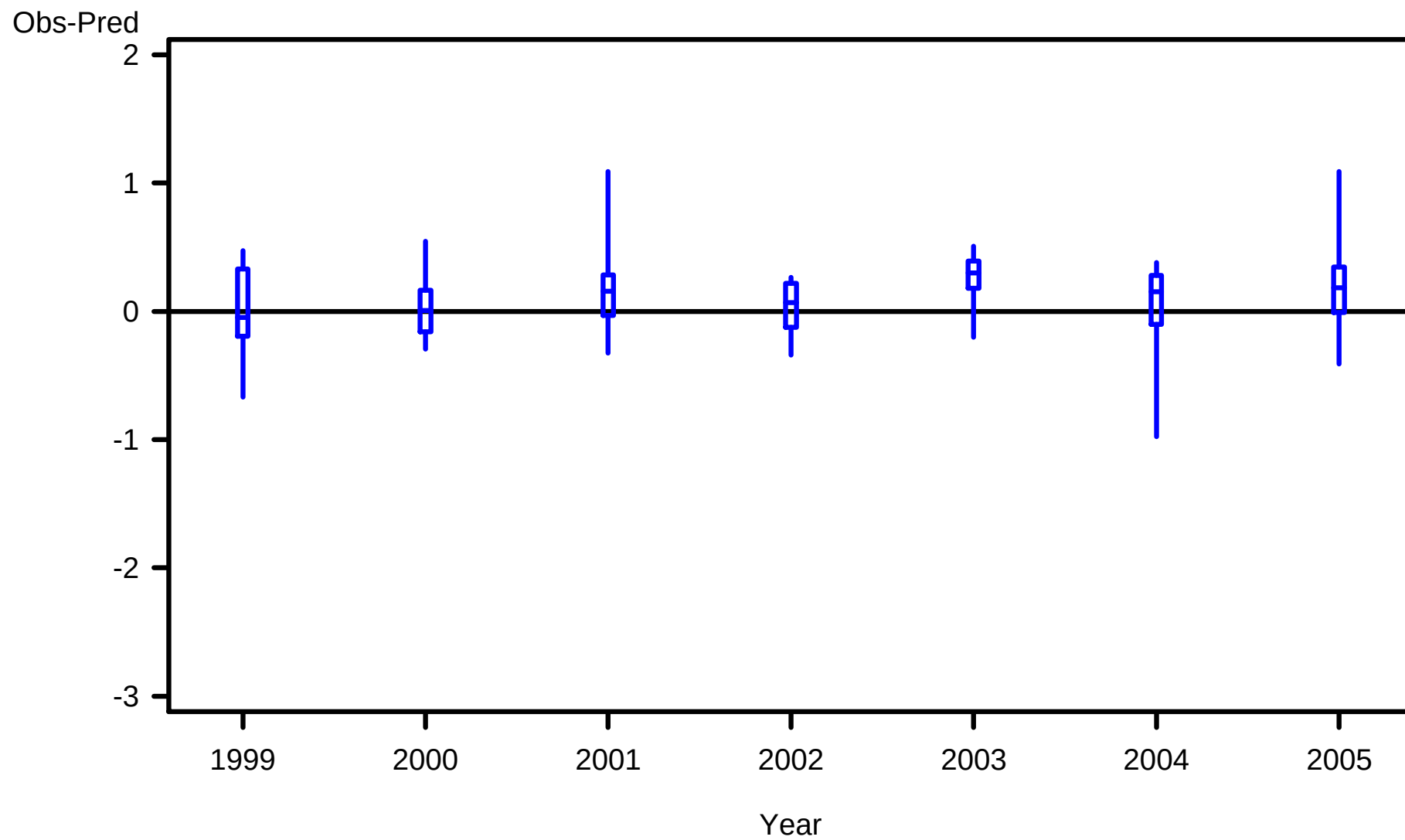
inverse_kd

Observed Secchi vs. Predicted Secchi

Segment=LB



Segment=LB



Segment=LB

