#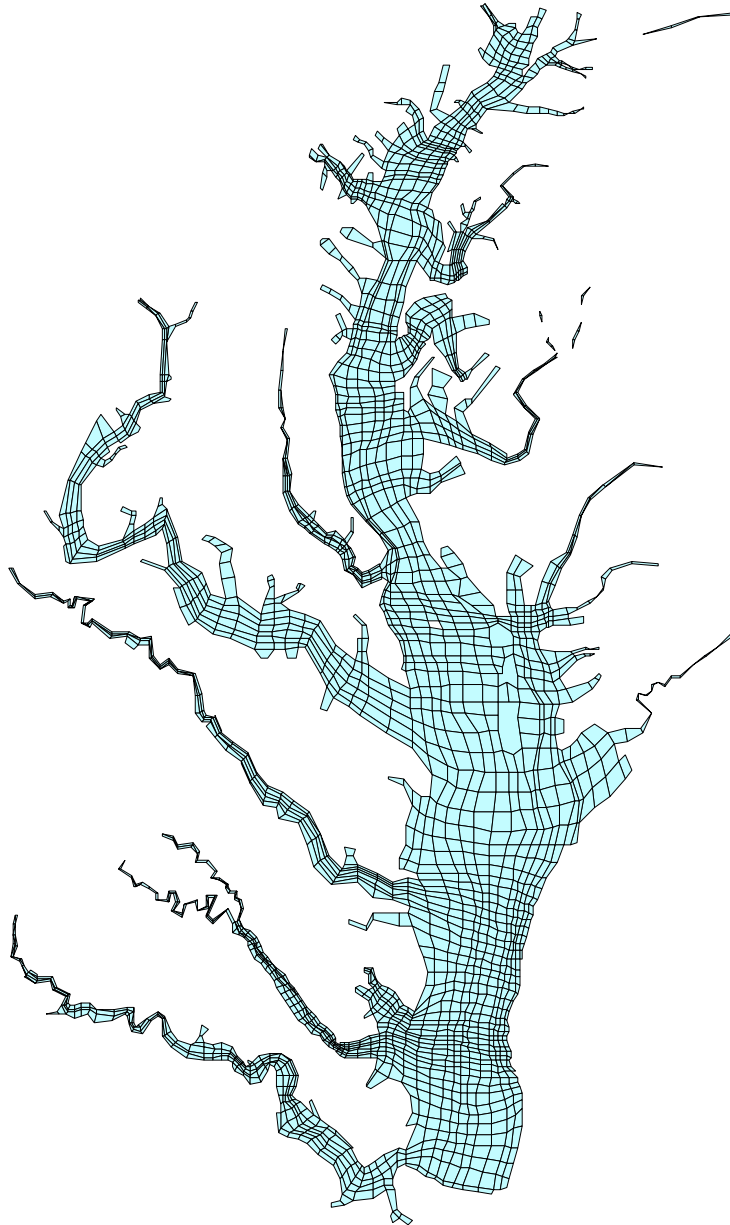 A Comparison of Chesapeake Bay Estuary Model Calibration With 1985 - 1994 Observed Data and Method of Application to Water Quality Criteria

Chesapeake Bay Program

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A Comparison of Chesapeake Bay Estuary Model Calibration With 1985 - 1994 Observed Data and Method of Application to Water Quality Criteria

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A Report of the
Modeling Subcommittee
Chesapeake Bay Program Office
Annapolis, MD

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Section 1. Overview of Problem and Description of Methods

A comparison of modeling and monitoring data to examine model bias is the initial step in the application of the Chesapeake Bay Water Quality Model (CBWQM)) to proposed water quality criteria. The proposed water quality criteria include dissolved oxygen (DO), clarity, and chlorophyll, each with fixed concentrations, durations, and frequency within specific regions of the Bay.

Data comparison is based on all available mainstem and tributary monitoring data from 1985 to 1994 - the full ten years of model calibration.   Comparing the CBWQM estimates of DO, clarity, and chlorophyll to observations is used to detect uncertainty in the model calibration. A methodology is described in Section 2, to correct for systematic model errors in the three proposed water quality criteria. The methodology is applied to all regions of the Bay.

Each observation of the three proposed water quality criteria is compared to a model computation taken at the same time and location in model space. The comparison is made only for the critical season of each of the proposed water quality criteria, e.g., March-May for the spring criteria of chlorophyll, and July-August for the summer criteria of chlorophyll. Comparisons are made for each proposed criteria at each CB Criteria Segment (CBCS). A CBCS is here defined as an area delineated by the planer boundaries of a CB segment, and temporally and spatially by the definitions of the proposed water quality criteria for DO, chlorophyll, or clarity. Table 1 lists the Chesapeake Bay (CB) segments assessed by this report and the associated monitoring stations.

Table 1. CB Segments and Monitoring Stations.

REGION	CB CRITERIA SEGMENT	STATION
Mainstem	CB1TF	CB1.1, CB2.1
	CB2OH	CB2.2, CB3.1
	CB3MH	CB3.2, CB3.3W, CB3.3C, CB3.3E
	CB4MH	CB4.1C, CB4.1E, CB4.1W, CB4.2E, CB4.2C, CB4.2W, CB4.3W, CB4.3E, CB4.3C, CB4.4
	CB5MH	CB5.1W, CB5.1, CB5.2, CB5.3, CB5.4, CB5.4W, CB5.5
	CB6PH	CB6.1, CB6.2, CB6.3, CB6.4

Table 1 *(continued)*. **CB Segments and Monitoring Stations.**

REGION	CB CRITERIA SEGMENT	STATION
	CB7PH	EE3.5, CB7.1N, CB7.1, CB7.1S, CB7.2E, CB7.2, CB7.3E, CB7.3, CB7.4N
	CB8PH	CB7.4, CB8.1, CB8.1E
Patuxent	PAXTF	TF1.3, TF1.4, TF1.5
	PAXOH	TF1.6, TF1.7
	PAXMH	RET1.1, LE1.1, LE1.2, LE1.3, LE1.4
Potomac	POTTF	TF2.1, TF2.2, TF2.3, TF2.4
	POTOH	RET2.1, RET2.3, RET2.2
	POTMH	RET2.4, LE2.2, LE2.3
Rappahannock	RPPTF	TF3.1D, TF3.1A, TF3.1E, TF3.1B, TF3.2, TF3.2A
	RPPOH	TF3.3
	RPPMH	RET3.1, RET3.2, LE3.1, LE3.2 , LE3.4, LE3.6
York	MPNTF	TF4.4, TF4.4A
	MPNOH	RET4.2
	PMKTF	TF4.2, TF4.1A
	PMKOH	RET4.1
	YRKMH	RET4.3, LE4.1
	YRKPH	LE4.2, LE4.3
	PIAMH	LE3.7
	MOBPH	WE4.1, WE4.2, WE4.3, WE4.4
James	JMSTF	TF5.2, TF5.2A, TF5.3, TF5.5, TF5.5A , TF5.6
	JMSOH	RET5.2, LE5.1
	JMSMH	LE5.2, LE5.3
	JMSPH	LE5.5, LE5.4
East Shore	EASMH	EE1.1
	CHOOH	ET5.1
	CHOMH1	EE2.1
	CHOMH2	ET5.2
	TANMH	EE3.1, EE3.2
	POCMH	EE3.3, EE3.4

For each of the CB segments, and for each of the criteria, the comparison includes scatter plots, cumulative plots, regressions, and reporting of summary statistics for computed and observed data. A regional map of the CB segment with the associated monitoring stations used in the analysis is included.

Dissolved oxygen is evaluated for the protection of migratory fish, open water, deep water, deep channel, and deep channel anoxic criteria. Different CBCSs have different DO criteria. Some segments lack the depth of deep and channel designated uses, while other segments do not require protection of the migratory fish resource. In all CB segments listed in Table 1, two seasons, spring and summer, are evaluated for chlorophyll. Clarity (ke or light attenuation) is also evaluated in all CB segments. Table 2 lists the criteria evaluated in each CB segment.

Table 2. Criteria Evaluated In Each CB Segment.

| Region	CB Segment	Migratory 2/15-6/10	Migratory 6/11-2/14	Open Water all year	Deep Water 5/1-9/30	Deep Water 10/1-4/30	Deep Channel 5/1-9/30	Deep Channel 10/1-4/30	Deep Channel Anoxic 5/1-9/30	Deep Channel Anoxic 10/1-4/30	Chlorophyll Spring 3/1-5/30	Chlorophyll Summer 7/1-9/30
Mainstem	CB1TF	X	X								X	X
	CB2OH	X	X		X	X					X	X
	CB3MH	X	X		X	X	X	X	X	X	X	X
	CB4MH			X	X	X	X	X	X	X	X	X
	CB5MH			X	X	X	X	X	X	X	X	X
	CB6PH			X	X	X					X	X
	CB7PH			X	X	X					X	X
	CB8PH			X							X	X
Patuxent	PAXTF	X	X								X	X
	PAXOH	X	X								X	X
	PAXMH	X	X	X	X	X					X	X
Potomac	POTTF	X	X								X	X
	POTOH	X	X								X	X
	POTMH	X	X	X	X	X	X	X	X	X	X	X
Rapp	RPPTF	X	X								X	X
	RPPOH	X	X								X	X
	RPPMH	X	X	X	X	X					X	X
York	MPNTF	X	X								X	X
	MPNOH	X	X								X	X
	PMKOH	X	X								X	X
	PMKTF	X	X								X	X
	YRKMH	X	X	X							X	X
	YRKPH			X	X	X					X	X
	PIAMH			X							X	X
	MOBPH			X	X	X					X	X
James	JMSTF	X	X								X	X
	JMSOH	X	X								X	X
	JMSMH	X	X	X							X	X
	JMSPH			X							X	X
E. Shore	EASMH			X	X	X					X	X
	CHOOH	X	X	X							X	X
	CHOMH1			X							X	X
	CHOMH2	X									X	X
	TANMH			X							X	X
	POCMH			X							X	X

Section 2. Applying The Chesapeake Water Quality Model (CBWQM) And Observed Data To Proposed Water Quality Criteria

The Chesapeake 2000 nutrient and sediment allocations will be based on load allocation process requires that specific water quality conditions being met over critical time periods within CBCSs. These CBCSs are given either a 'pass' or 'fail' status. While the CBWQM can estimate changes in water quality due to changes in input loads with reasonable accuracy, an exact match of the simulated and observed data is impossible.

This section describes the way the criteria attainment and load allocation process uses the strengths of both the CBWQM and the observations. The observed data is used to assess criteria attainment during a 'base' period corresponding to the years of calibration for the CBWQM, 1985-1994. The CBWQM is used in scenario mode to determine the effect of changes in nutrient and sediment loads on water quality concentrations. A modified 1985-1994 observed data set is generated for each scenario using both the model and the observations. The same criteria attainment assessment process applied to the observed data is then applied to this 'scenario' data to determine likely criteria attainment under modified loading scenarios.

MODEL AGREEMENT WITH DATA

An extensive calibration and review process enabled a better calibration of the CBWQM than possible with earlier versions. The CBWQM was judged to be sufficiently calibrated for application to the Chesapeake Bay and its major tidal tributaries in January, 2002 by the Modeling Subcommittee; however, as Figure 1 illustrates, even a well calibrated model will not always match the monitored data when evaluating the pass/fail metric of a water quality criterion. Figure 1 shows hypothetical frequency plots for model calibration output and observed data in a CBCS decision area.

FIGURE 1. Hypothetical Frequency Distribution of Observed and Model Calibration Data in CB5 for the Deep Channel Criterion
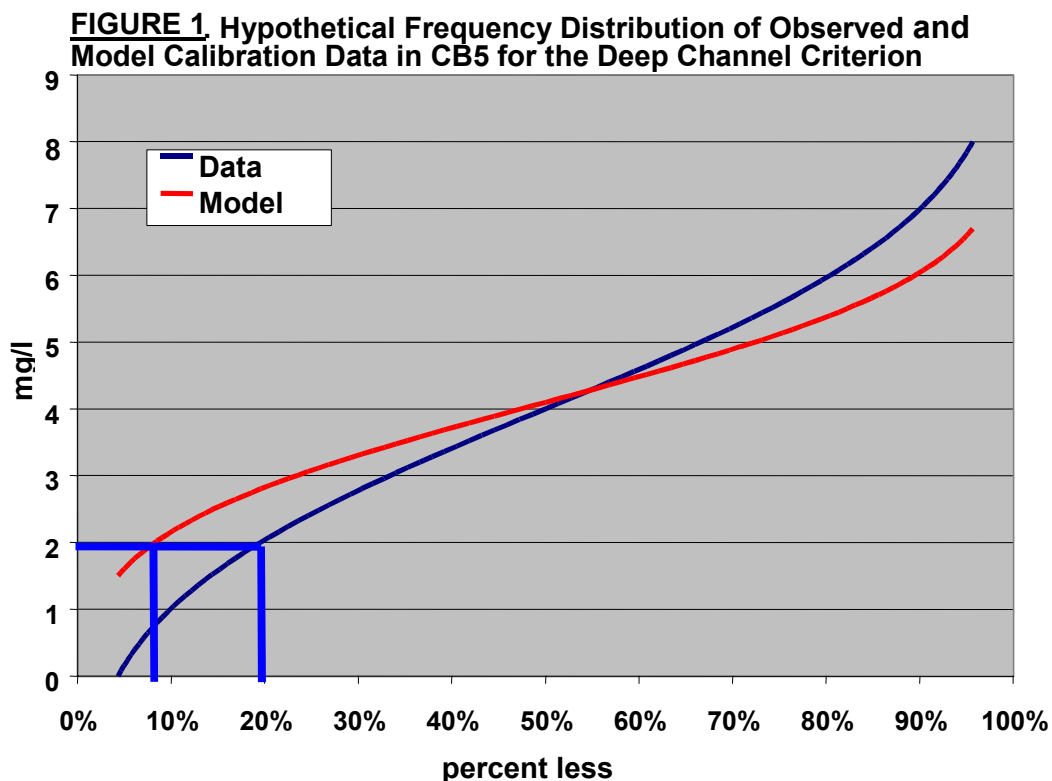
In the Figure 1 hypothetical, we are showing dissolved oxygen in the Deep Channel portion of Chesapeake Bay mainstem segment of CB5 during the period the Deep Channel DO criterion is applied, May 1 through September 30. From this graph one could infer, subject to other calibration measures, that the model was estimating the observed data fairly well, since it matches the mean, approximates the range, and has the same characteristic shape. Despite the acceptable calibration, if the criterion was set so that this decision area must have a dissolved oxygen concentration of less than 2 mg/l no more than 10 percent of the time, using the model would lead to a 'pass', while using the data would lead to a 'fail'.

Given that discrepancies exist in the determination of criteria attainment between the CBWQM and monitored data, it is appropriate to use the more accurate monitored data to assess attainment. The CBWQM must be used, however, to assess the relative changes in water quality due to management actions that have not yet occurred, that is, to link management actions, actual or planned, recommended or merely proposed, to water quality. To assess water quality criteria in the Chesapeake, a synergy of the monitoring and modeling strengths, a combination of the comparative accuracy of the monitored data and the ability of the CBWQM to predict changes, is used.

OVERVIEW OF METHODOLOGY

When a CBWQM scenario is run, we can compare the water quality output of the scenario to the water quality output of the calibration over any time or space scale within the model domain. Figure 2 shows the hypothetical output of a CBWQM scenario with aggressive management to reduce loads compared with the same CBWQM output for the calibration. These are shown on a frequency plot so that changes in the prediction of attainment can be seen along with the blue line of the observed data. Figure 3 shows the relationship between the calibration and scenario CBWQM output in more analytical detail. By regressing the scenario output against the calibration output, we can find a relationship that can be used to transform the observed data set.

FIGURE 2. Hypothetical Frequency Distribution of Observed and Model Calibration Data in CB5 for the Deep Channel Criterion
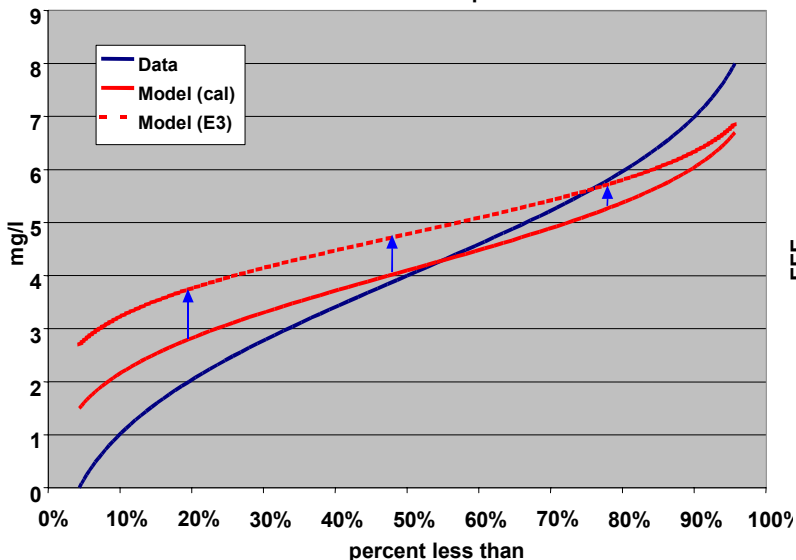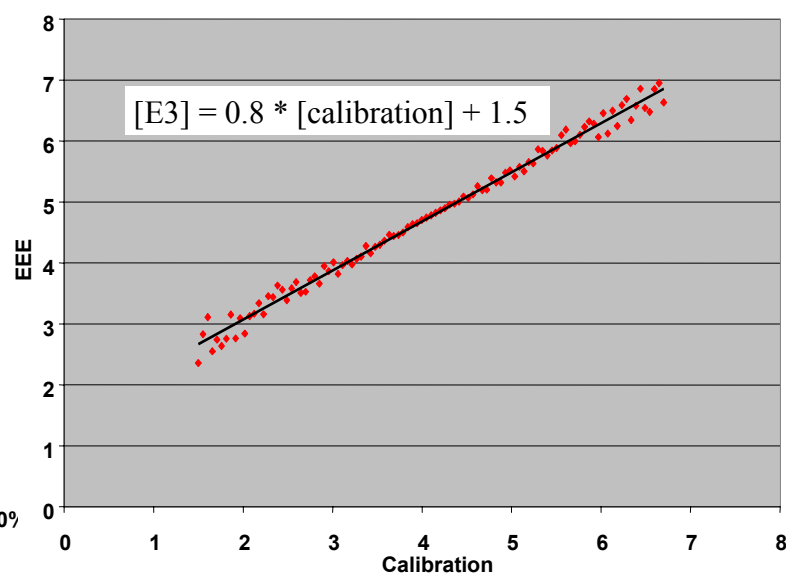

FIGURE 3. Example of a Regression Between Model Calibration and Scenario Data

$$[E3] = 0.8 * [calibration] + 1.5$$

Once the relationship between the calibration and any particular scenario is established, this relationship is used to generate an "observed" data set for the scenario (Figure 4). The value of each observation of dissolved oxygen, chlorophyll, and light extinction in the 1985-1994 data set is replaced with a 'scenario-modified' value. The 'scenario-modified' values represent an estimate of an observed data set under the conditions of nutrient and sediment management represented by the scenario.

FIGURE 4. **Example of the Regression Equation applied to the Observed**
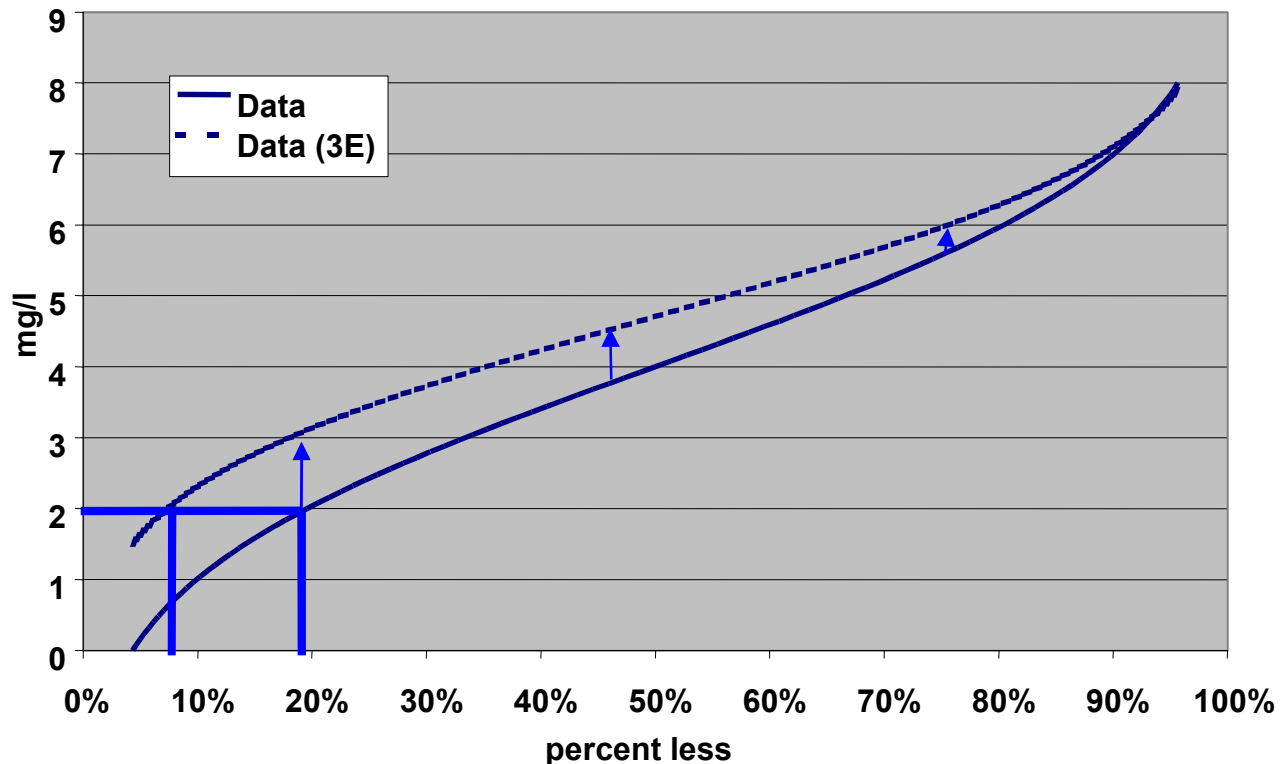
Figure 5 shows the flow of information for determining criteria attainment under two scenarios. The base criteria attainment is determined based solely on observations. The CBWQM is used in conjunction with this data set to generate a 'scenario data set' for each scenario by a sequence of steps which include generation of regressions, spatial distribution of model data with an interpolator, and examination of criteria exceedance in space and time with a cumulative frequency distribution. These steps as discussed in more detail below.

Figure 5: Information Flow Among Observed, Calibration and Scenario Databases
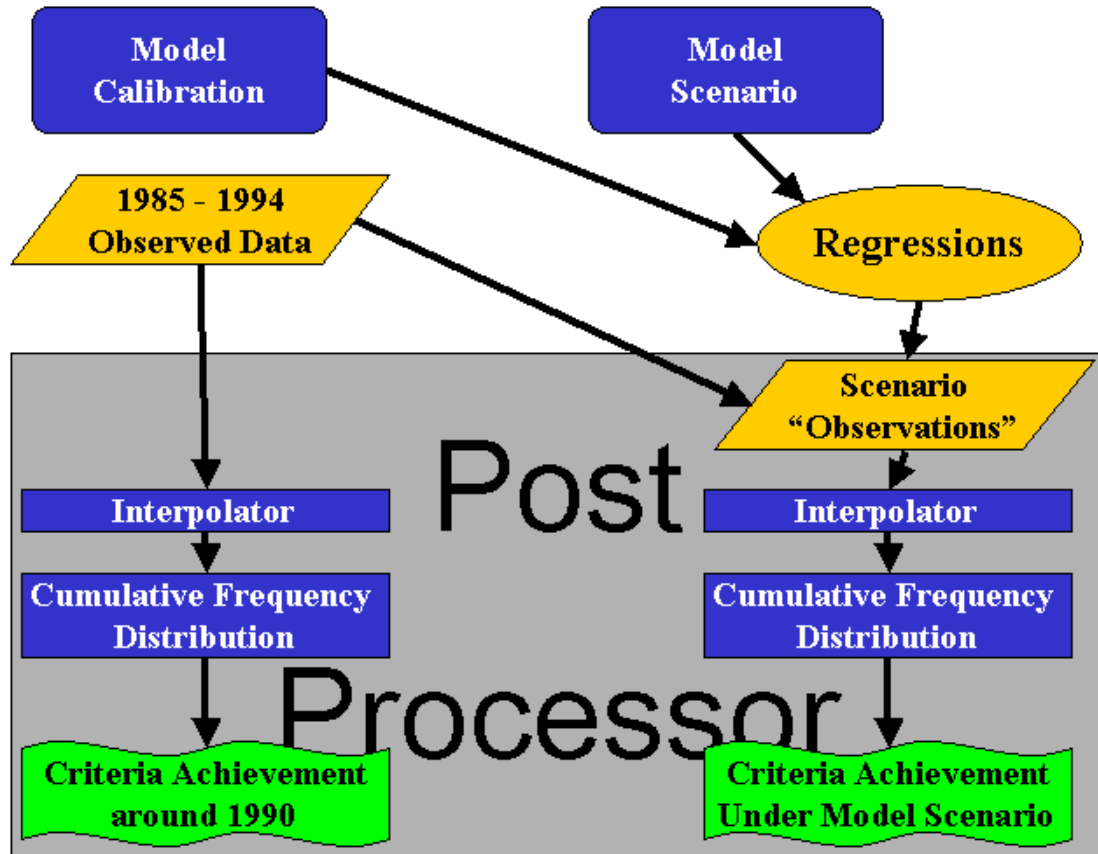
REGRESSION DEVELOPMENT

Criteria attainment judgements are made for CBCS decision areas for specific times of the year. The CBWQM has water quality values for more than 13,000 points, or cells, within the model domain, and on average about 400 for each CB segment on a daily basis. To make the modification of the original data set and generate the scenario data set, it is necessary to 1) choose a particular space and time domain over which regressions will be run, 2) choose an appropriate distribution, i.e., log or normal distribution, and 3) to examine the need for multiple regressions to find the most appropriate relationships between the CBWQM calibration and scenario CBWQM runs.

The model cells corresponding to the monitoring stations were chosen as the most appropriate scale as the assessment of progress and attainment of the water quality criteria will be assessed at the monitoring stations on a three year running average of monitoring data. This is consistent with the principal of "planning load reductions with the model, testing achievement of the criteria with the monitoring data."   The same methodology for assessing water quality criteria using the Spatial Interpolator Model and the Cumulative Frequency Distribution (CFD) is used for both the planning and determination of the nutrient and sediment allocations (model) and testing of achievement of the water quality criteria by 2010 (monitoring data). This ensures

consistency between the model planning approach and the monitoring assessment approach. As monitoring data is expanded into the shallows in future years, the next version of the CBWQM, planned for completion in 2006, will incorporate the expanded monitoring set in a consistent manner.

The aggregation of time is on a monthly scale in the regression between the CBWQM calibration and scenario CBWQM runs. A monthly scale uses the data points for all paired average daily values of the calibration and the scenario. This has the advantage of having a sufficient number of points (about 30, corresponding to days in the month) to establish each regression while using an appropriate temporal scale which takes into account other seasonally changing influences like temperature's effect on reaction rates and physical processes, such as the saturation of DO in water. In addition, a monthly scale of aggregation for each month in the ten year period, i.e., 120 months, takes into account management actions influencing water quality, such the reductions of loads from point sources though the 1985 to 1994 period, as well as the changes in loads from hydrology, NPS management actions, and other changes through time. Aggregating to a coarser scale would lose temporal detail without improving the regressions.

Multiple regressions were examined extensively, but were statistically shown to improve the regressions marginally, while adding additional complexity and uncertainty of the coefficients, so that a single regression of each water quality parameter was chosen (Modeling Subcommittee Minutes - July, 2002). Based on the underlying distribution of the model results, a log-log regression was chosen for the clarity and chlorophyll parameters. Dissolved oxygen displayed a normal distribution and an untransformed regression was chosen for this parameter. Final regressions for each criterion, cell, and month can be found at https://archive.chesapeakebay.net/modeling/modmon_files/ regressions/

SPATIAL INTERPOLATOR
Once the scenario data are adjusted, the Spatial Interpolator Model is applied to estimate the extent of the adjusted values of DO, clarity, and chlorophyll in the CB segment. The CB segment level is the smallest spatial level for the application of the draft water quality criteria. The interpolator is run for each month and the average monthly value is assessed at each cell of the Spatial Interpolator Model as a "pass/fail" for the draft water quality criteria. Information of the Spatial Interpolator Model can be found at http://www.chesapeakebay.net/cims/interpolator.htm

CUMULATIVE FREQUENCY DISTRIBUTION (CFD)
The collection of "pass/fail" cells in the months covered by the water quality criteria is aggregated into a cumulative frequency function (CFD) representing the seasonal attainment of the water quality criteria as expressed as a percent. Details of the CDF methodology can be found in a presentation called "CFD_description-10_02.ppt", available for download from this FTP folder (just cut & paste the following URL into the address bar on your internet browser, and right click to download): https://archive.chesapeakebay.net/Modeling/modmon_files/

ASSESSMENT OF THE CHESAPEAKE WATER QUALITY MODEL (CBWQM) TO EVALUATE PROPOSED WATER QUALITY CRITERIA

Within the context of the regression – interpolator - CFD method, it is useful to assess the degree of model calibration in each designated use region areas where the model will be applied based on the accuracy of the unadjusted model output in matching the observed data.

To assess the model calibration a strict one-to-one comparison is made between the observed and simulated data, compared at the same time (observed and simulated) and space (real and virtual). Tables 2 and 1 describe the proposed designated use regions, the criteria evaluated in each segment, and the monitoring stations used respectively. Based on a set of empirical decision rules, the relative "goodness" or "skill" of model calibration to the observed data was determined.

In order to assess the skill of the Chesapeake Bay Water Quality Model (CBWQM) calibration based on comparisons of unadjusted simulated and observed data, a set of empirical decision rules were developed. Based on the decision rules, the proposed designated use regions were rated as "high certainty", "moderate certainty", or "low certainty". The rating was determined by relative performance of the predicted compared to observed metrics under each set of rules.

One comparison between the observed and simulated data is the central tendency, the mean or median, of the data. Another is the dispersion, or standard deviation. Range comparisons of the minimum or maximum were also employed, as well as examination of the frequency and scatter plots. Combined, the summary statistics and statistical plots were used to determine a relative confidence estimate of model calibration. Best professional judgement was used in cases where most, but not all, of the criteria were met. While the criteria of migratory, deep water, and deep channel is applied for the entire year, emphasis in this evaluation was placed on the periods critical for the living resources protected by the criteria. Evaluation of the migratory criteria emphasized the late winter/spring period, while still considering the entire year. In the same way, the dissolved oxygen deep water and deep channel emphasized the summer period. The decision rules yielded equivalent results when three of the authors applied them independently. The decision rules were:

>   DO :
>> $R^2 > 0.5$ desirable,
>>   Mean differences not greater than 1.0 mg/l (or roughly 10%),
>>   Minimum concentrations do not differ by more than 2.0 mg/l,
>>   Standard deviations do not differ by more than 0.5, and
>>   Best professional judgement.
>   Chlorophyll
>> $R^2 > 0.2$ desirable,
>>   Mean differences not greater than two times the concentration,
>>   Maximum concentrations do not differ by more than 20.0 ug/l,
>>   Standard deviations do not differ by more than three times the other standard deviation, and

Best professional judgement.

Water clarity

$R^2 > 0.2$ desirable,

Mean differences not greater than two times the concentration ,

Maximum concentrations do not differ by more than two times Ke,

Standard deviations do not differ by more than two standard deviations, and

Best professional judgement.

A summary of the relative confidence in model calibrations to observed data is provided in Table 3.

Table 3. Relative Assessment of CBWQM Calibration – Unadjusted Model Estimates.

CB Segment	Migratory Feb-June	Open Water all year	Dissolved Oxygen Deep Water	Dissolved Oxygen Deep Channel	Chlorophyll a Spring	Chlorophyll a Summer	Water Clarity
CB1TF	Blue	NA	NA	NA	Green	Green	Blue
CB2OH	Blue	NA	Green	NA	Blue	Green	Blue
CB3MH	Blue	NA	Green	Blue	Blue	Yellow	Blue
CB4MH	NA	Blue	Green	Green	Green	Blue	Blue
CB5MH	NA	Blue	Yellow	Yellow	Blue	Green	Blue
CB6PH	NA	Blue	Yellow	NA	Green	Green	Blue
CB7PH	NA	Blue	Blue	NA	Green	Blue	Blue
CB8PH	NA	Blue	NA	NA	Blue	Green	Blue
PAXTF	Green	NA	NA	NA	Blue	Yellow	Green
PAXOH	Green	NA	NA	NA	Yellow	Blue	Green
PAXMH	Blue	Green	Green	NA	Blue	Green	Blue
POTTF	Green	NA	NA	NA	Blue	Blue	Green
POTOH	Green	NA	NA	NA	Green	Yellow	Blue
POTMH	Blue	Blue	Green	Blue	Blue	Green	Blue
RPPTF	Blue	NA	NA	NA	Yellow	Green	Blue
RPPOH	Green	NA	NA	NA	Yellow	Green	Blue
RPPMH	Green	Blue	Blue	NA	Green	Blue	Blue
MPNTF	Yellow	NA	NA	NA	Green	Green	Blue
MPNOH	Green	NA	NA	NA	Blue	Green	Green
PMKTF	Blue	NA	NA	NA	Green	Blue	Yellow
PMKOH	Green	NA	NA	NA	Green	Yellow	Green
YRKMH	Blue	Blue	NA	NA	Blue	Blue	Blue
YRKPH	NA	Blue	Blue	NA	Green	Blue	Blue
PIAMH	NA	Blue	NA	NA	Blue	Blue	Blue
MOBPH	NA	Blue	Blue	NA	Blue	Blue	Blue
JMSTF	Green	NA	NA	NA	Blue	Green	Green
JMSOH	Blue	NA	NA	NA	Blue	Yellow	Blue
JMSMH	Blue	Blue	NA	NA	Yellow	Yellow	Blue
JMSPH	NA	Blue	NA	NA	Green	Blue	Blue
EASMH	NA	Blue	Blue	NA	Green	Yellow	Blue
CHOOH	Yellow	NA	NA	NA	Green	Green	Blue
CHOMH2	Blue	NA	NA	NA	Yellow	Blue	Green
CHOMH1	NA	Blue	NA	NA	Green	Green	Green
TANMH	NA	Green	NA	NA	Blue	Blue	Green
POCMH	NA	Blue	NA	NA	Green	Blue	Green

Key

Blue	High Certainty
Green	Moderate Certainty
Yellow	Low Certainty

Most of the migratory DO regions received high to moderate scores with only the MPNTF and CHOOH receiving "low certainty" scores. All the open water DO regions received high to moderate scores. Deep Water DO also received all high to moderate scores, with the exception of CB5MH and CB6PH.   In the case of Deep Channel DO, the only segment that received a low score was CB5MH. Spring chlorophyll was estimated to have low certainty in the regions of PAXOH, RPPTF, RPPOH, JMSMH, and CHOMH2, otherwise high to moderate certainty was estimated. Summer chlorophyll was estimated to have low certainty in the regions of CB3MH, PAXTF, PAXOH, POTOH, RRPTF, PMKOH, JMSOH, JMSPH, EASMH, CHOOH, and CHOMH2. Water clarity was rated as a high or moderate certainty in all regions with the exception of PMKTF. Figures 6-12 represent the information of Table 3 in a spatial format, showing the extent of the different regions of high, moderate, and low certainty for the DO, chlorophyll, and clarity criteria

Figure 6
Relative Assessment of the CBWQM Calibration
Dissolved Oxygen - Migratory Criteria

Relative Model Confidence

NOT APPLICABLE
HIGH CERTAINTY
MODERATE CERTAINTY
LOW CERTAINTY

0 5 10 20 30 40 Miles

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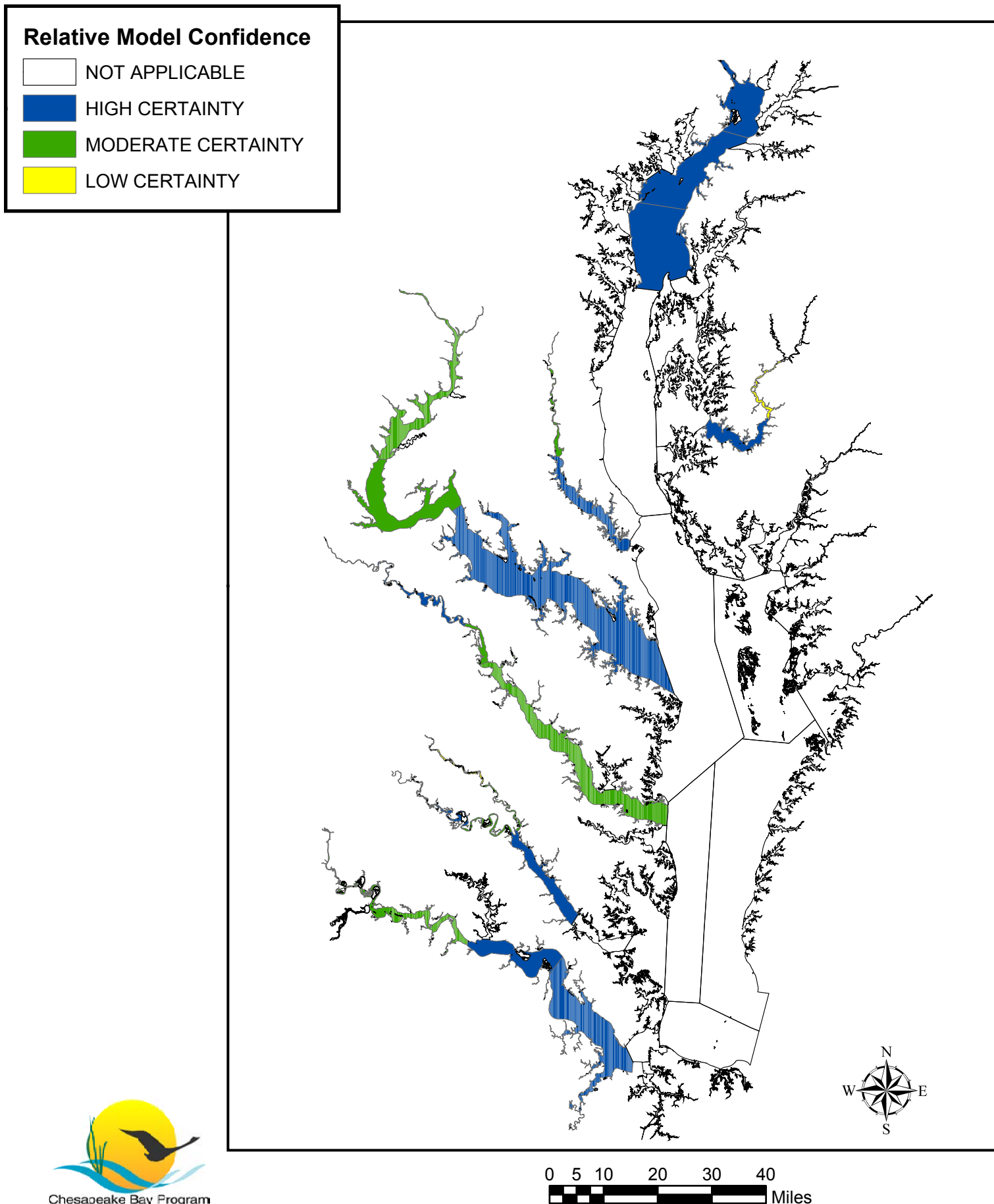
Figure 7

Relative Assessment of the CBWQM Calibration
Dissolved Oxygen - Open Water Criteria

Relative Model Confidence

- NOT APPLICABLE
- HIGH CERTAINTY
- MODERATE CERTAINTY
- LOW CERTAINTY

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0 5 10 20 30 40 Miles

N
W E
S
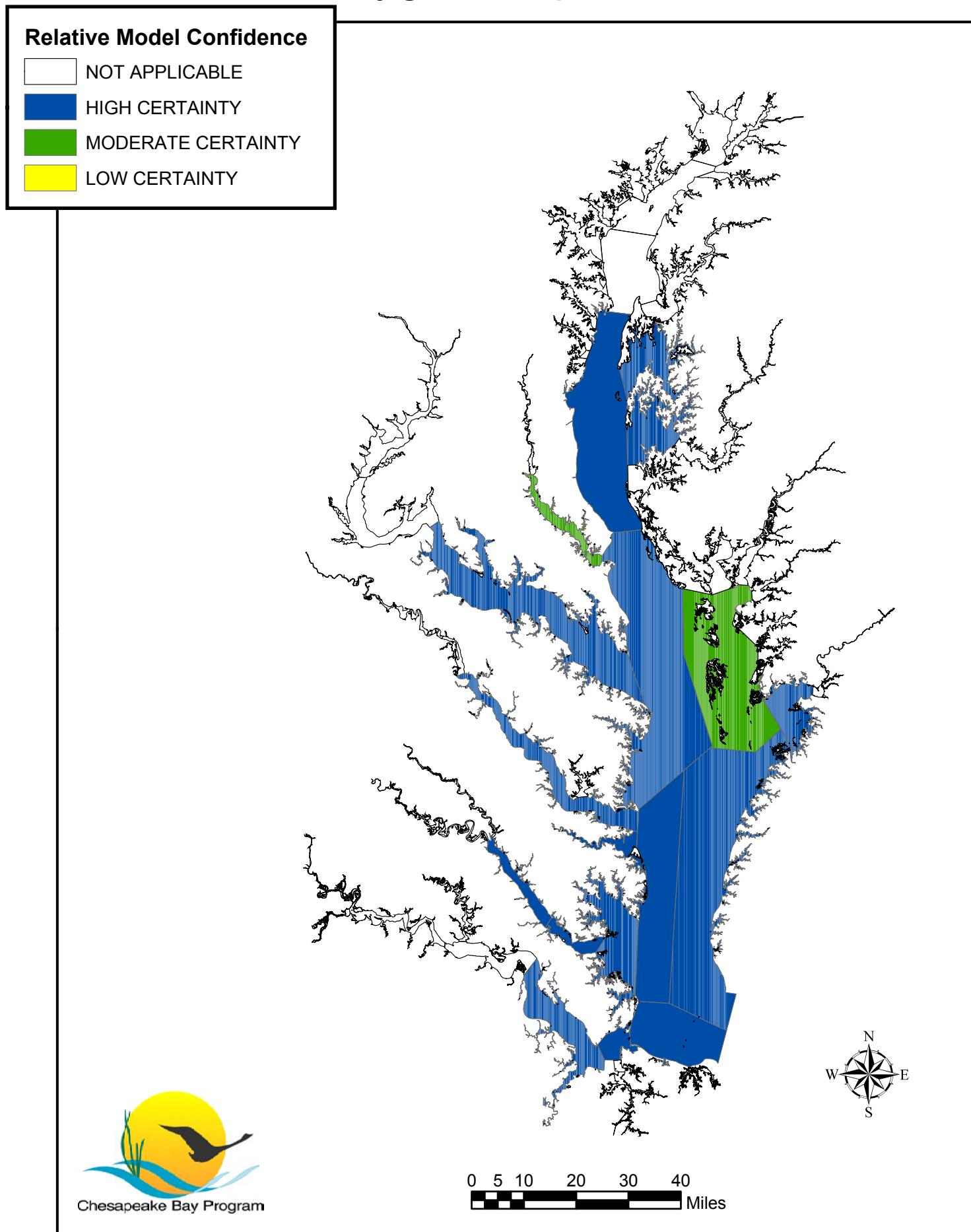
Figure 8

Relative Assessment of the CBWQM Calibration
Dissolved Oxygen - Deep Water Criteria

Relative Model Confidence

NOT APPLICABLE

HIGH CERTAINTY

MODERATE CERTAINTY

LOW CERTAINTY

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N
W E
S

0 5 10 20 30 40
Miles
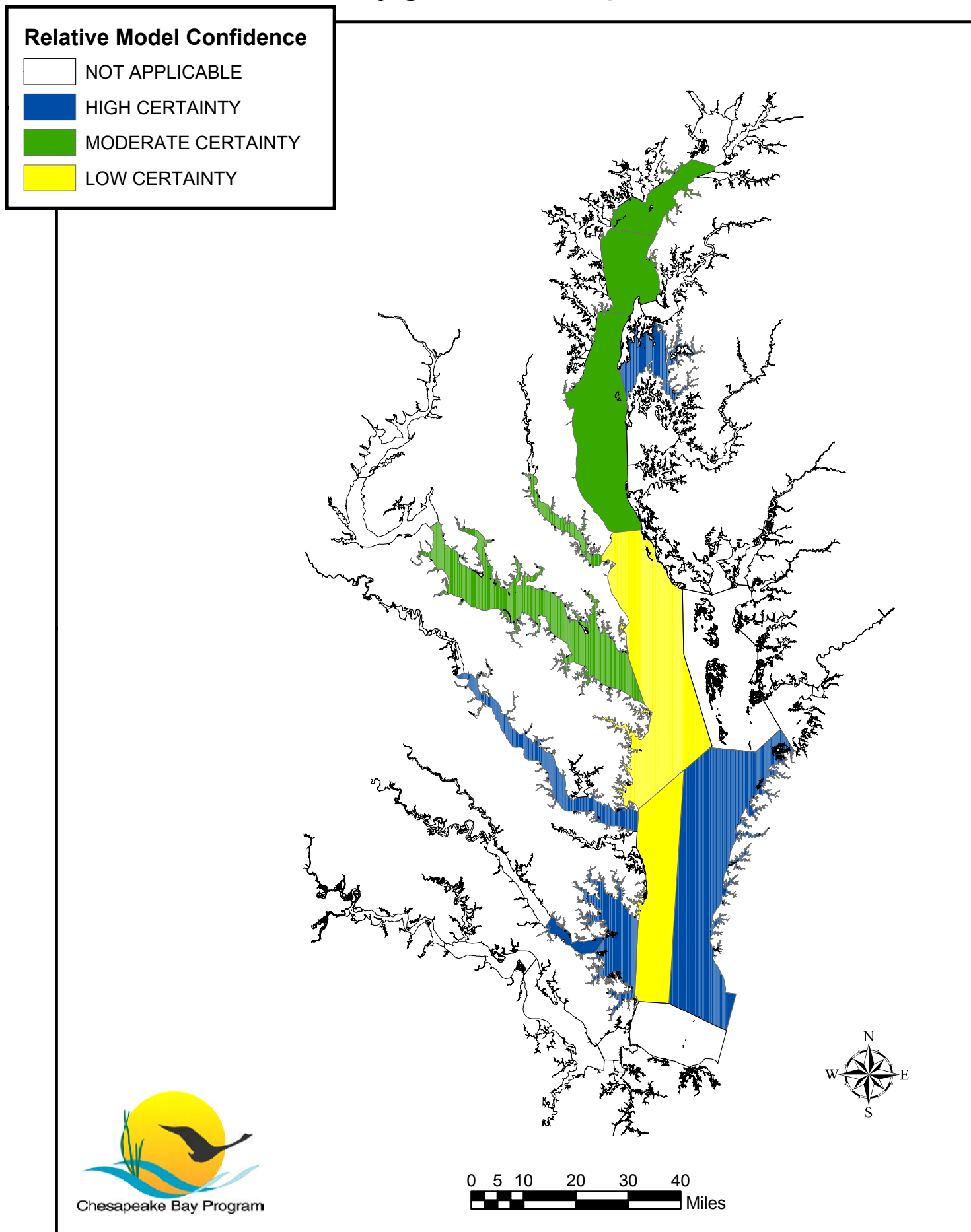
Figure 9

Relative Assessment of the CBWQM Calibration
Dissolved Oxygen - Deep Channel Criteria

Relative Model Confidence

- NOT APPLICABLE
- HIGH CERTAINTY
- MODERATE CERTAINTY
- LOW CERTAINTY

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0 5 10   20   30   40
Miles
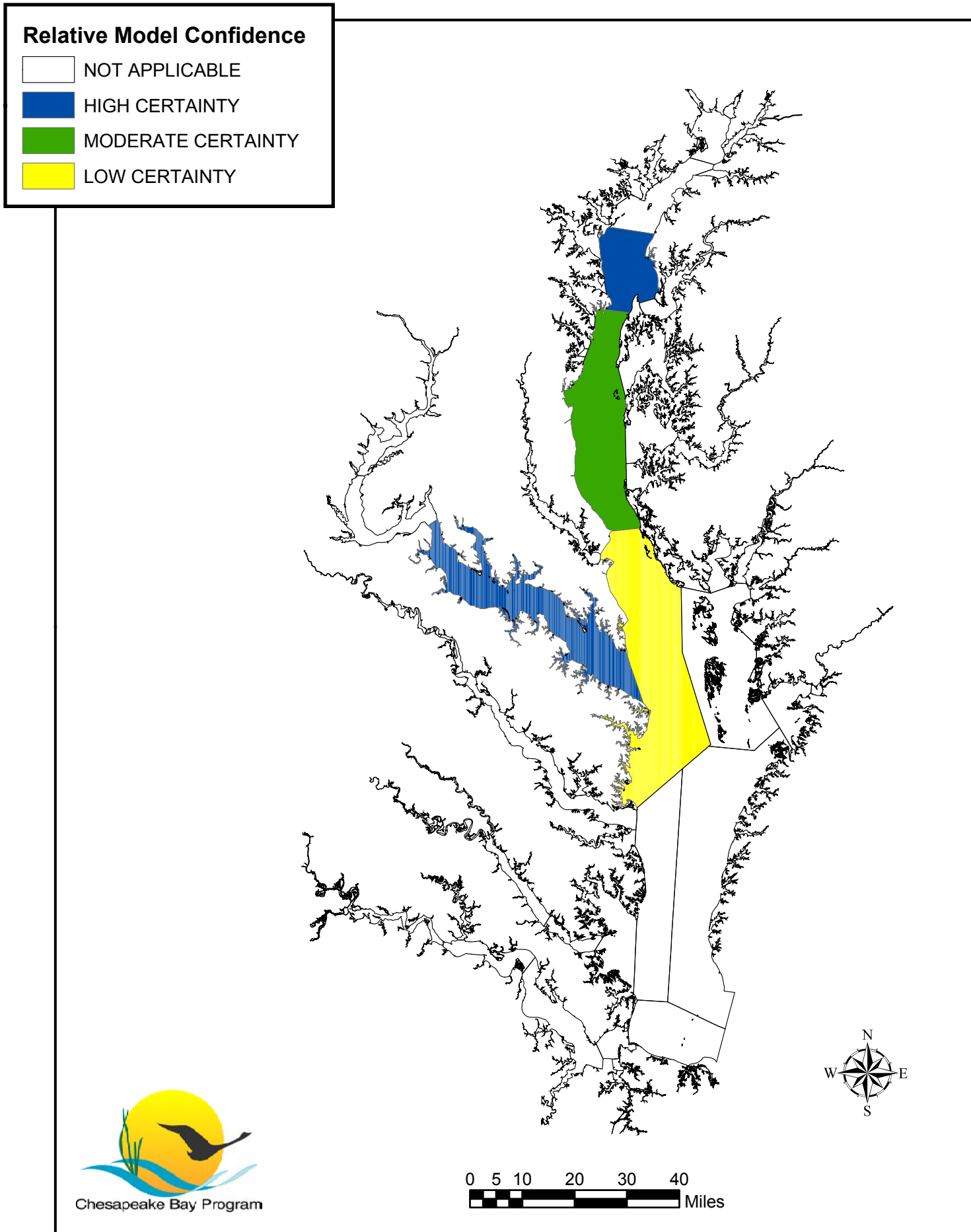
Figure 10
Relative Assessment of the CBWQM Calibration
Chlorophyll a - Spring Criteria

Relative Model Confidence

- NOT APPLICABLE
- HIGH CERTAINTY
- MODERATE CERTAINTY
- LOW CERTAINTY

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0 5 10   20   30   40
Miles
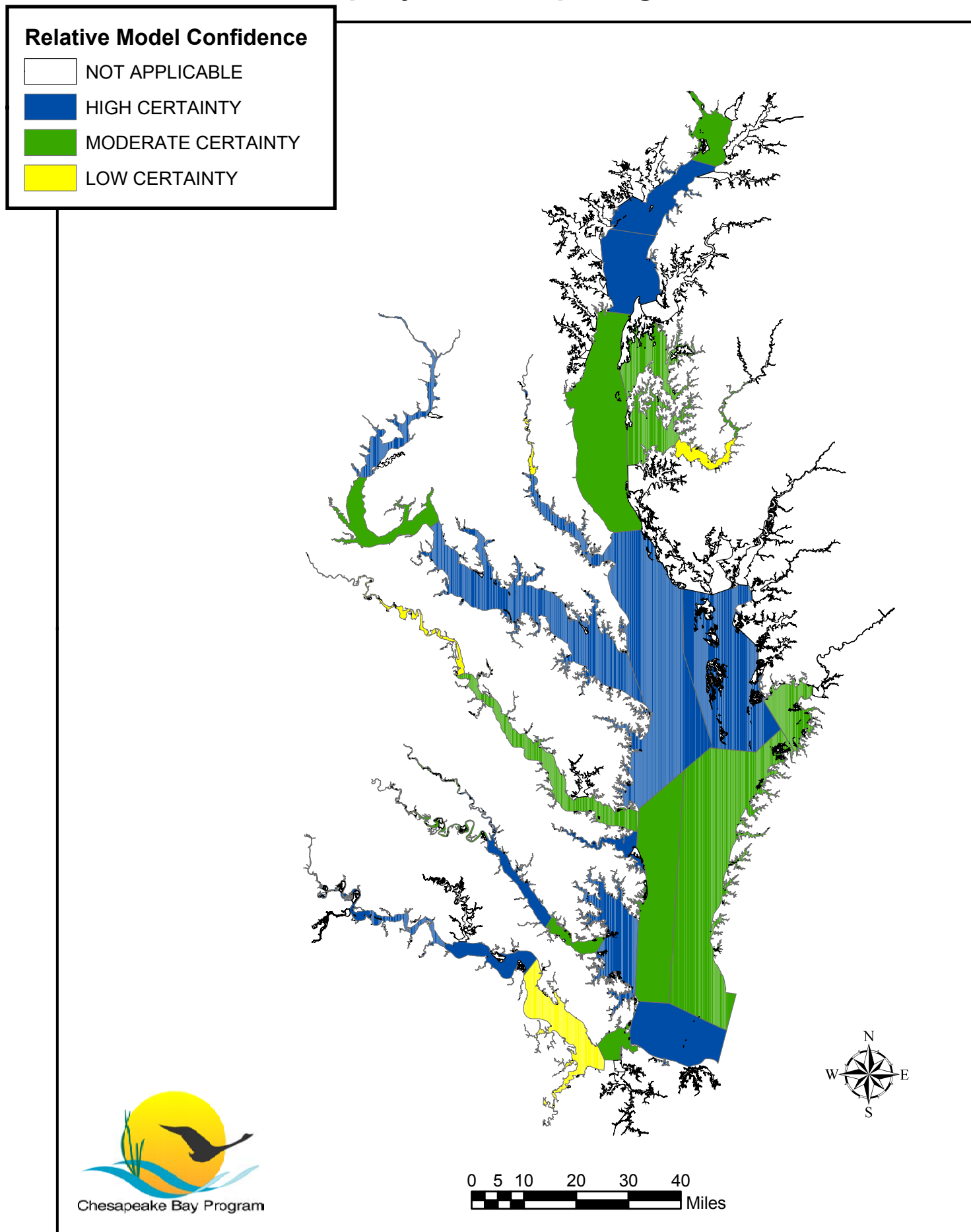
Figure 11

Relative Assessment of the CBWQM Calibration
Chlorophyll a - Summer Criteria

Relative Model Confidence

	NOT APPLICABLE
	HIGH CERTAINTY
	MODERATE CERTAINTY
	LOW CERTAINTY

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0 5 10   20   30   40
Miles
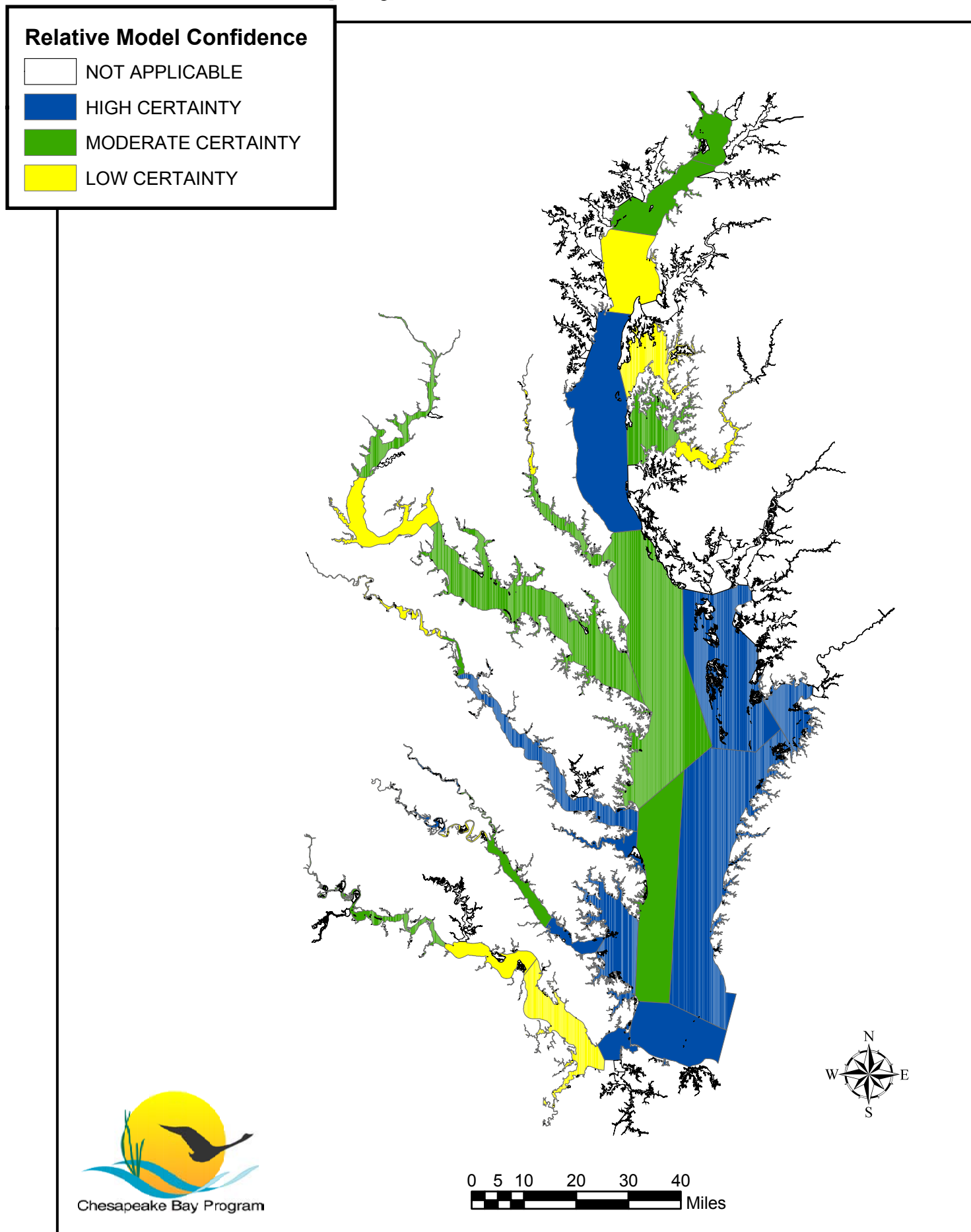
Figure 12

Relative Assessment of the CBWQM Calibration Water Clarity Criteria

Relative Model Confidence

- NOT APPLICABLE
- HIGH CERTAINTY
- MODERATE CERTAINTY
- LOW CERTAINTY

0 5 10 20 30 40 Miles

N
W E
S

Chesapeake Bay Program
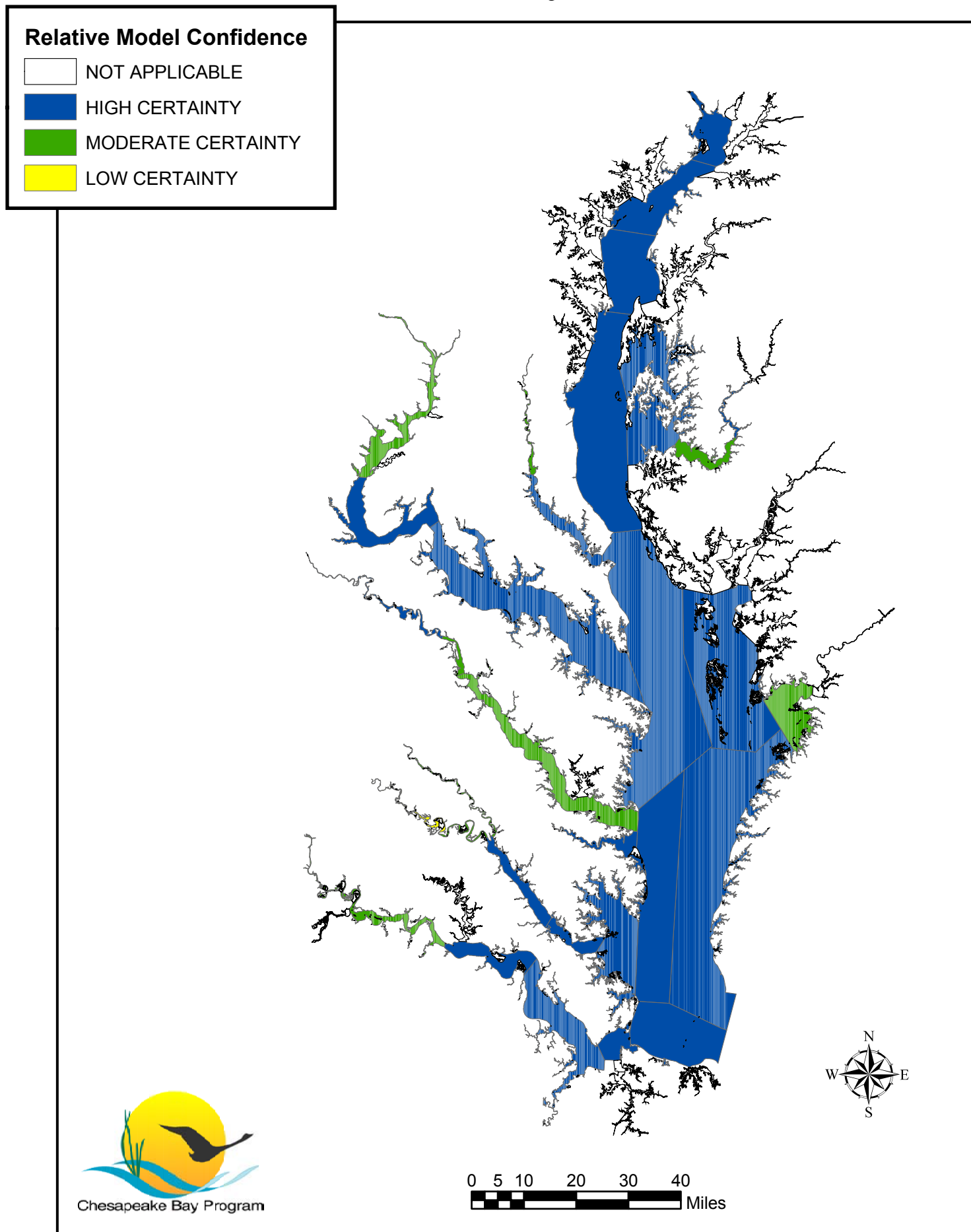
SUMMARY:

All models have uncertainty. Uncertainty is addressed in the application of the CBEMP to proposed water quality criteria by 1) a water quality model in continuous use and refinement in the Chesapeake Bay for more than a decade and a half with demonstrable improvements in scale, model calibration, and model capability; 2) an adjustment methodology which takes into account the degree of model calibration skill and by application of regression and spatial interpolation, adjusts model output to best estimate achievement of the proposed water quality criteria; and 3) a cumulative frequency distribution which accounts for violation of the proposed criteria over time and space and allows for exceedences of criteria up to 10% of time and space while still protecting living resources within the designated use.

Application of the CBEMP is recommended for all CBCSs and all criteria, but in CBCSs with low certainty, interpretation of model responses should proceed with more caution due to lower confidence in model predictions for those temporal and spatial domains. An example would be the deep channel DO estimates in CB5 where the model overestimates dissolved oxygen. The regression-spatial interpolator method adjust the estimated DO down, to be more consistent with the observed data, but the anoxic response of the sediment is not simulated; i.e., the first order correction of adjusting the model output down is addressed but the second order effects of a reduced anoxic effect from the sediment is not.

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Section 3. Comparison of Model Estimates to Observations for DO, Chlorophyll, and Clarity

Model estimates are compared to observations using the model cell corresponding to each monitoring station observation and depth. The observations, which are essentially instantaneous, are compared to the mean daily model estimate. This is a difficult evaluative test of model estimates as even slight temporal phase shifts in model response can indicate a poor comparison between the model calibration and observations. As the model will be applied on a ten-year average basis for the evaluation of load reductions needed to remove water quality impairments in the Bay caution should be used in applying these comparisons alone. Additional information on the CBWQM calibration can be found on the CBP web site http://www.chesapeakebay.net/modsc.htm under the "Current Projects and Info" tab.

Regions of the Chesapeake Bay with Proposed Water Quality Standards Assessed by the Water Quality Model

CBP Monitoring Segments

- Criteria Assessed
- Criteria Not Assessed

Chesapeake Bay Program

0 5 10   20   30   40
Miles

Chesapeake Bay Standard Segment CB1TF

Location Map of
Segment CB1TF within
the Chesapeake Bay Model Grid

CB1.1

CB2.1

N
W   E
S

Chesapeake Bay Program

0   1   2   4   6   8
Miles
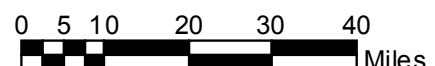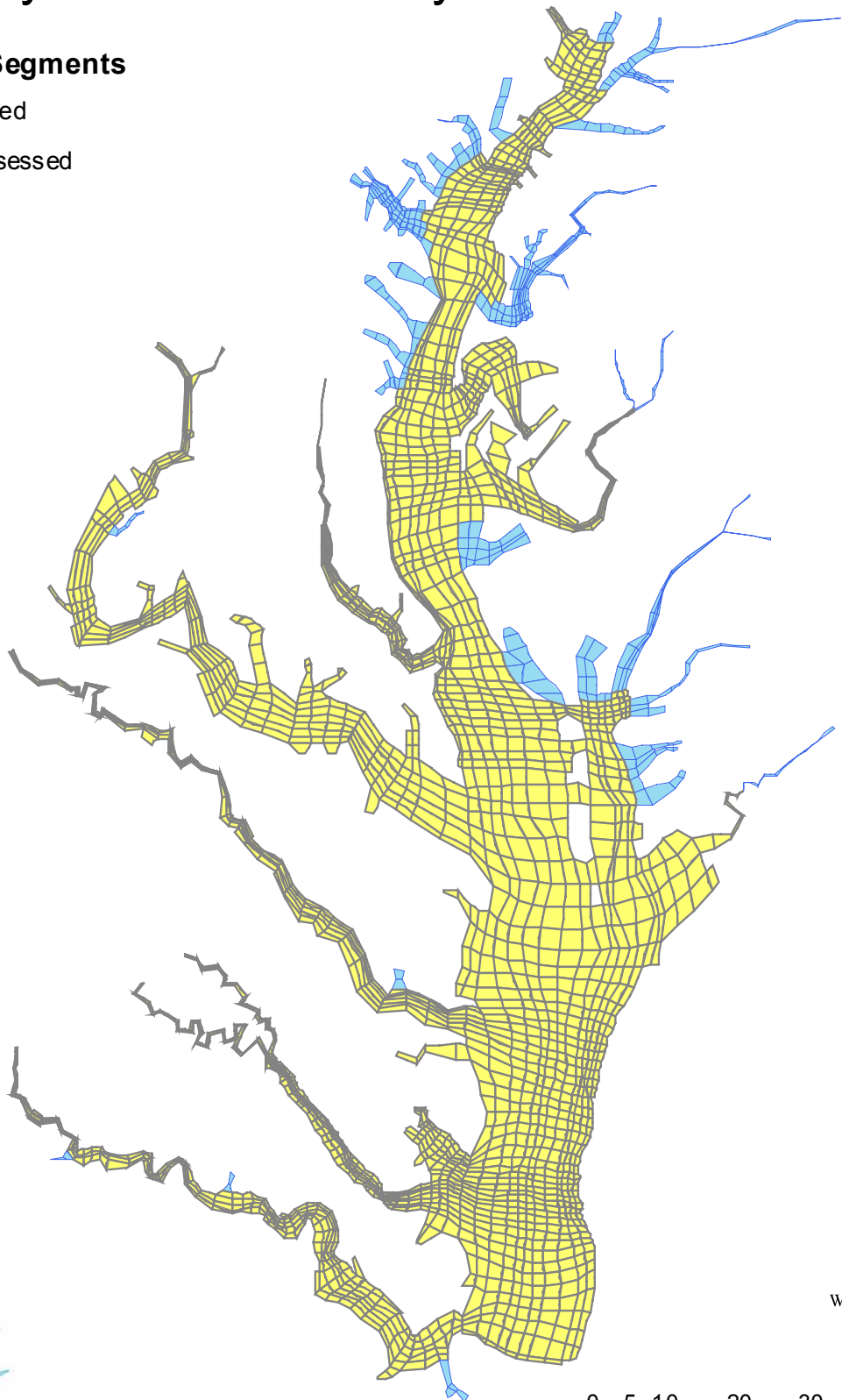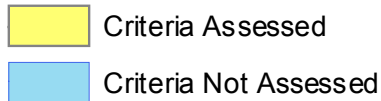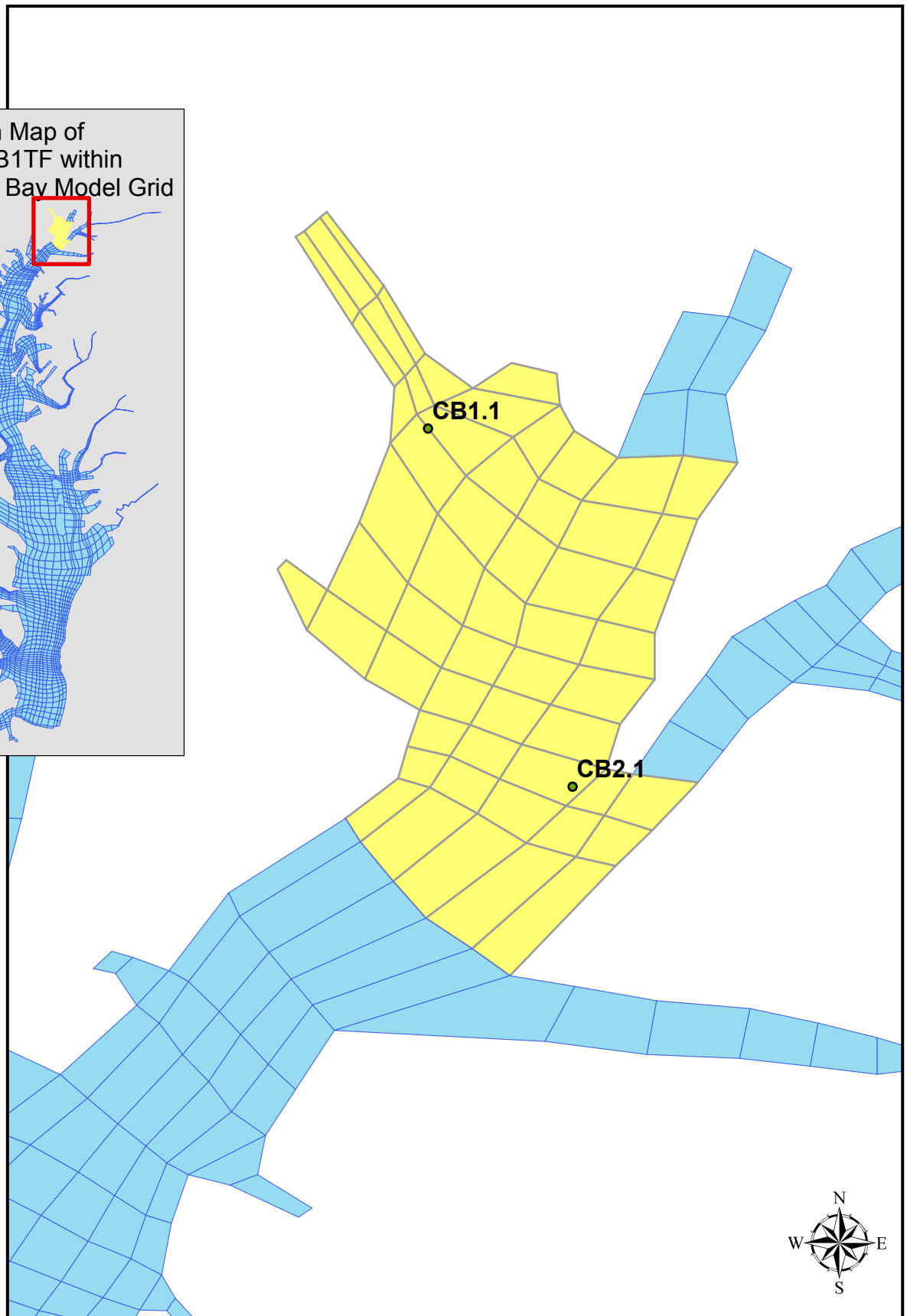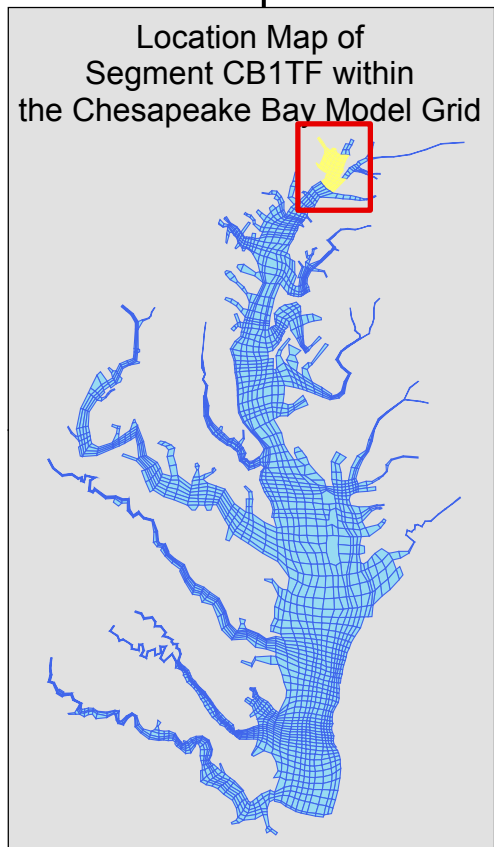
MIGRATORY **Dissolved Oxygen**
Segment CB1TF (Mainstem CB1 Tidal Fresh)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 366 pairs of predictions and observed data, the **slope** is 0.9017 and the **intercept** is 1.4189. The **R-Squared** value for this regression is 0.6900.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 366 pairs of predictions and observed data, the **slope** is 0.8722 and the **intercept** is 0.1485. The **R-Squared** value for this regression is 0.6615.

Statistics (units in mg/l)

Mean observed 10.6928   Mean predicted 10.2851
Min. observed 5.448   Min. predicted 6.328
Max. observed 14.2667   Max. predicted 13.31
Std. Dev. Observed 1.9153   Std. Dev. predicted 1.7644
Median observed 10.8500   Median predicted 10.4070
90th Percentile observed 13.0000   90th Percentile predicted 12.5210
10th Percentile observed 8.0000   10th Percentile predicted 7.7635

Differences (predicted – observed)

Mean difference -0.4076 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 366
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment CB1TF Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
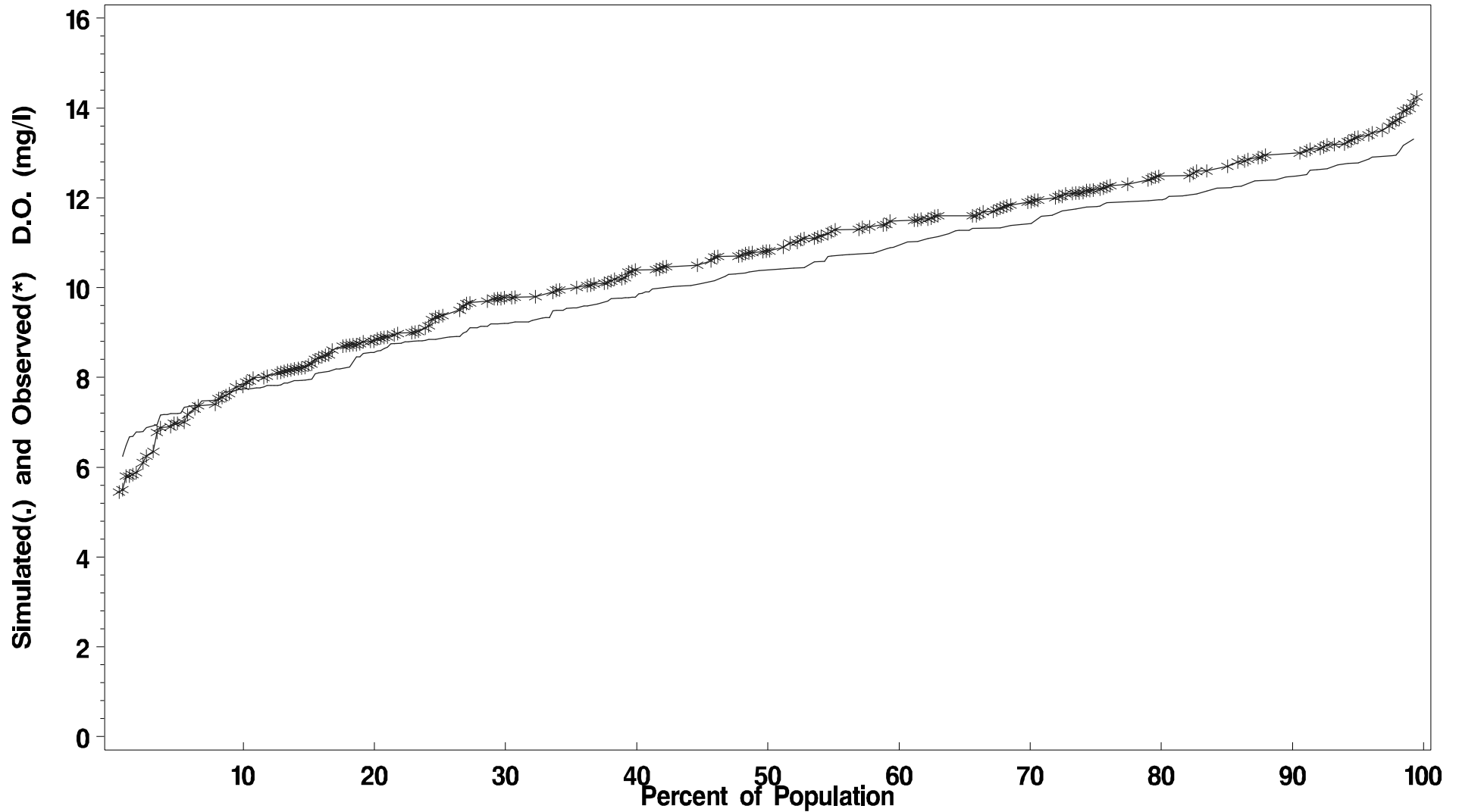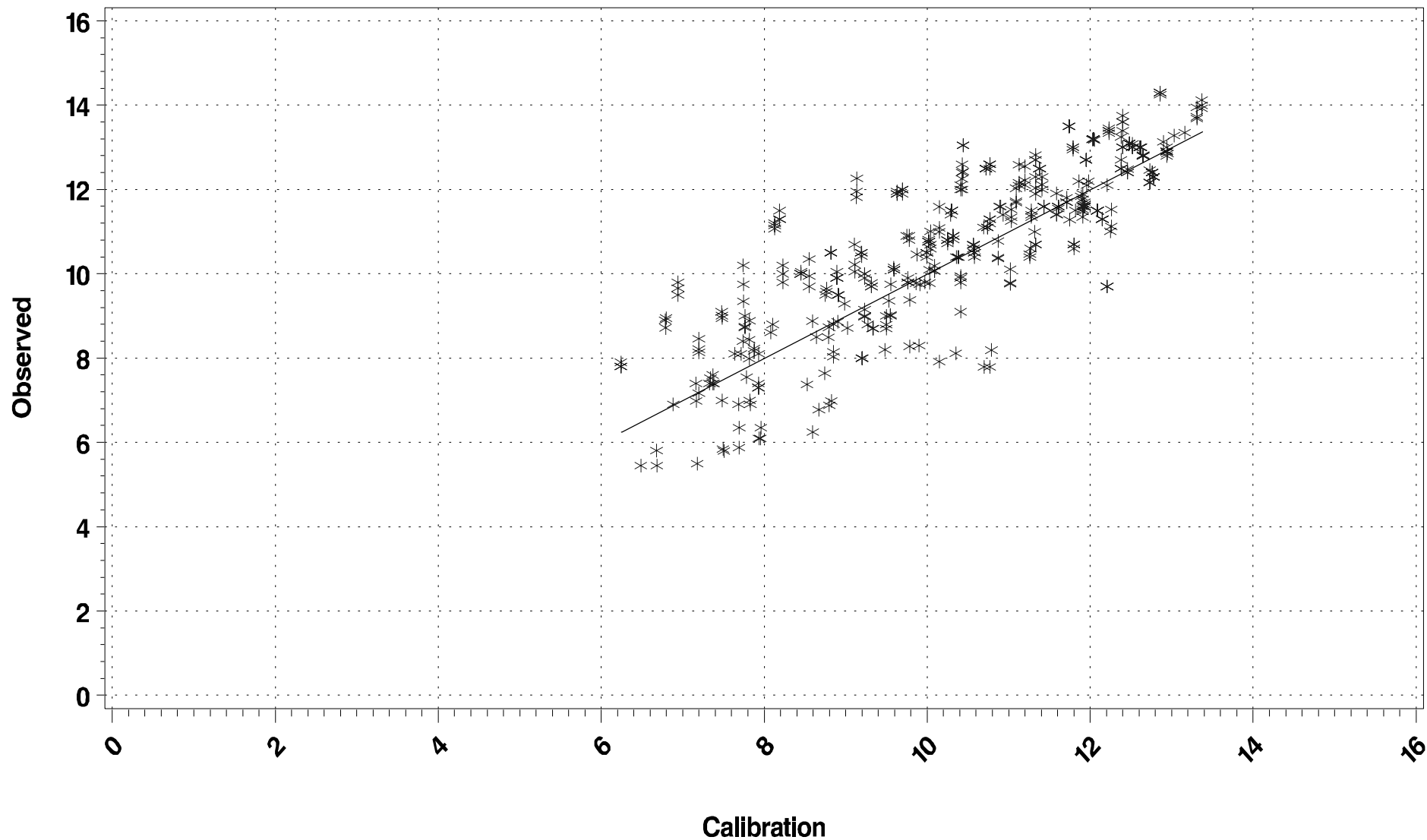
Migratory Dissolved Oxygen (mg/l)
Segment CB1TF   Season: Feb 15 — June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 750 pairs of predictions and observed data, the **slope** is 0.8417 and the **intercept** is 1.2527. The **R-Squared** value for this regression is 0.7544.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 750 pairs of predictions and observed data, the **slope** is 0.7487 and the **intercept** is 0.2407. The **R-Squared** value for this regression is 0.6507.

Statistics (units in mg/l)

Mean observed 8.6658   Mean predicted 8.8071
Min. observed 5.3524   Min. predicted 4.513
Max. observed 14.7   Max. predicted 14.03
Std. Dev. Observed 2.5338   Std. Dev. predicted 2.6146
Median observed 7.6633   Median predicted 8.2954
90th Percentile observed 13.0400 90th Percentile predicted 13.1060
10th Percentile observed 6.2000 10th Percentile predicted 5.7484

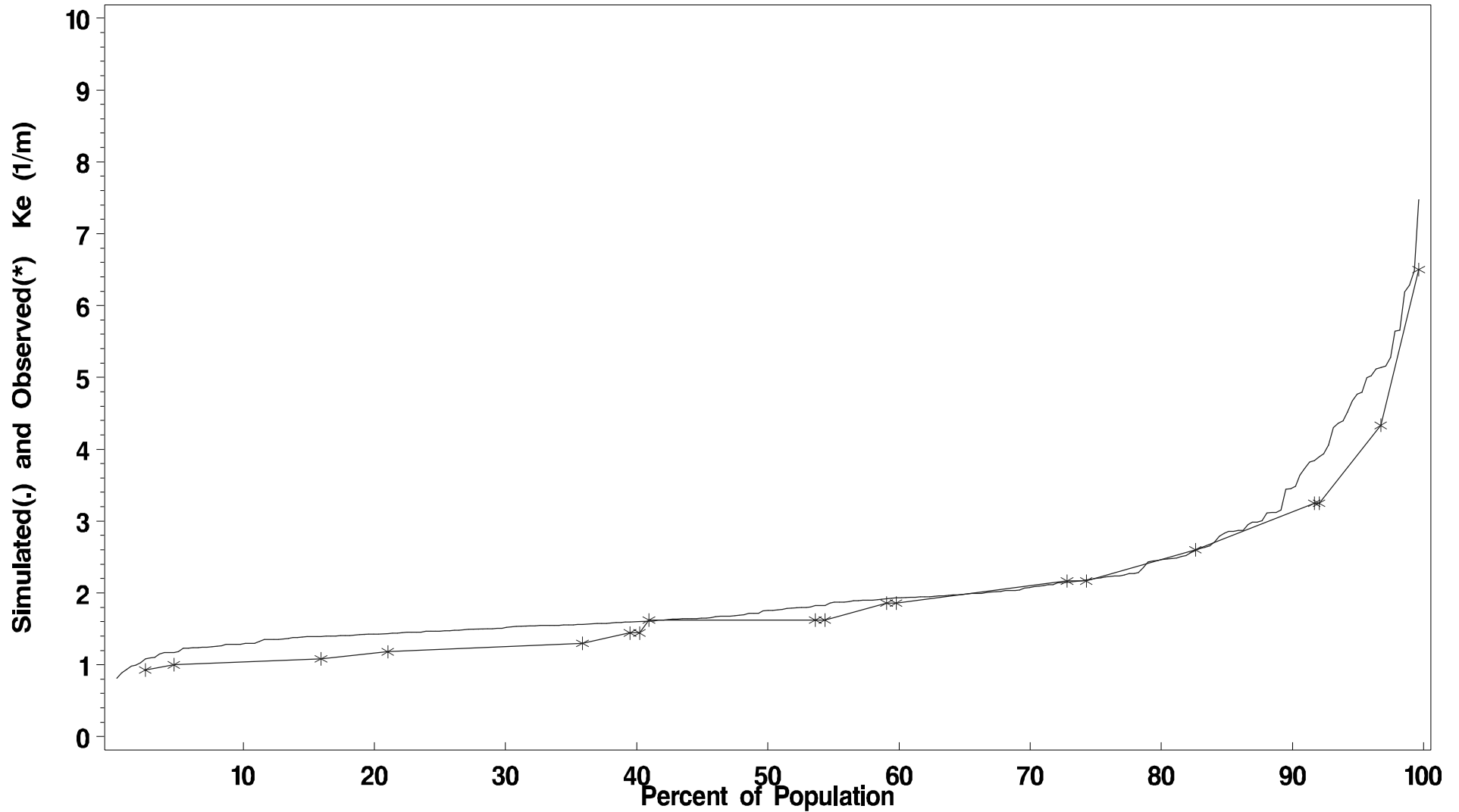
Differences (predicted – observed)

Mean difference 0.1413 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 750
Number of Predicted Violations 0
Number of Observed Violations 0

---

[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment CB1TF Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment CB1TF Season: June 11 – Feb 14
(Scatter Plot)

<div align="center">
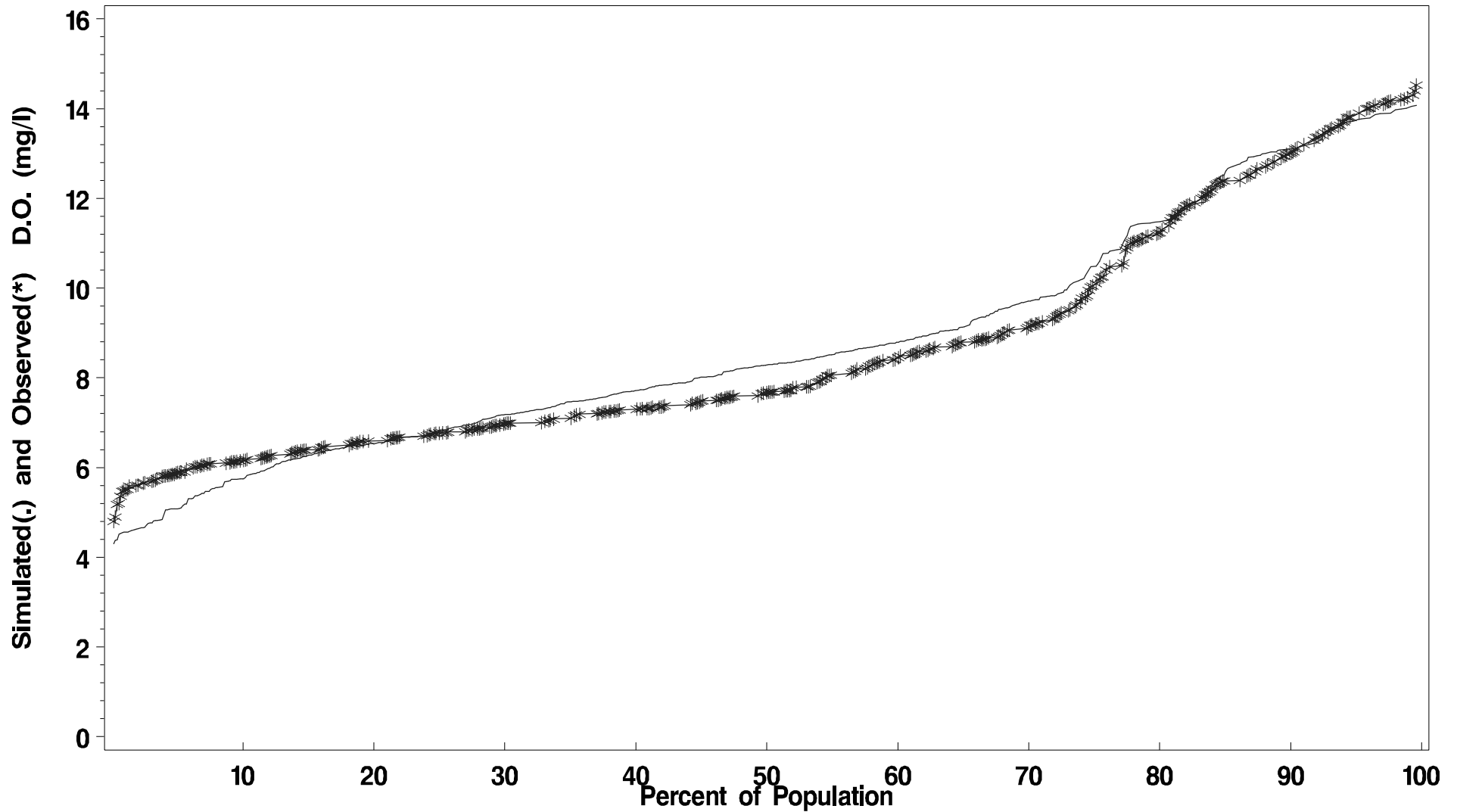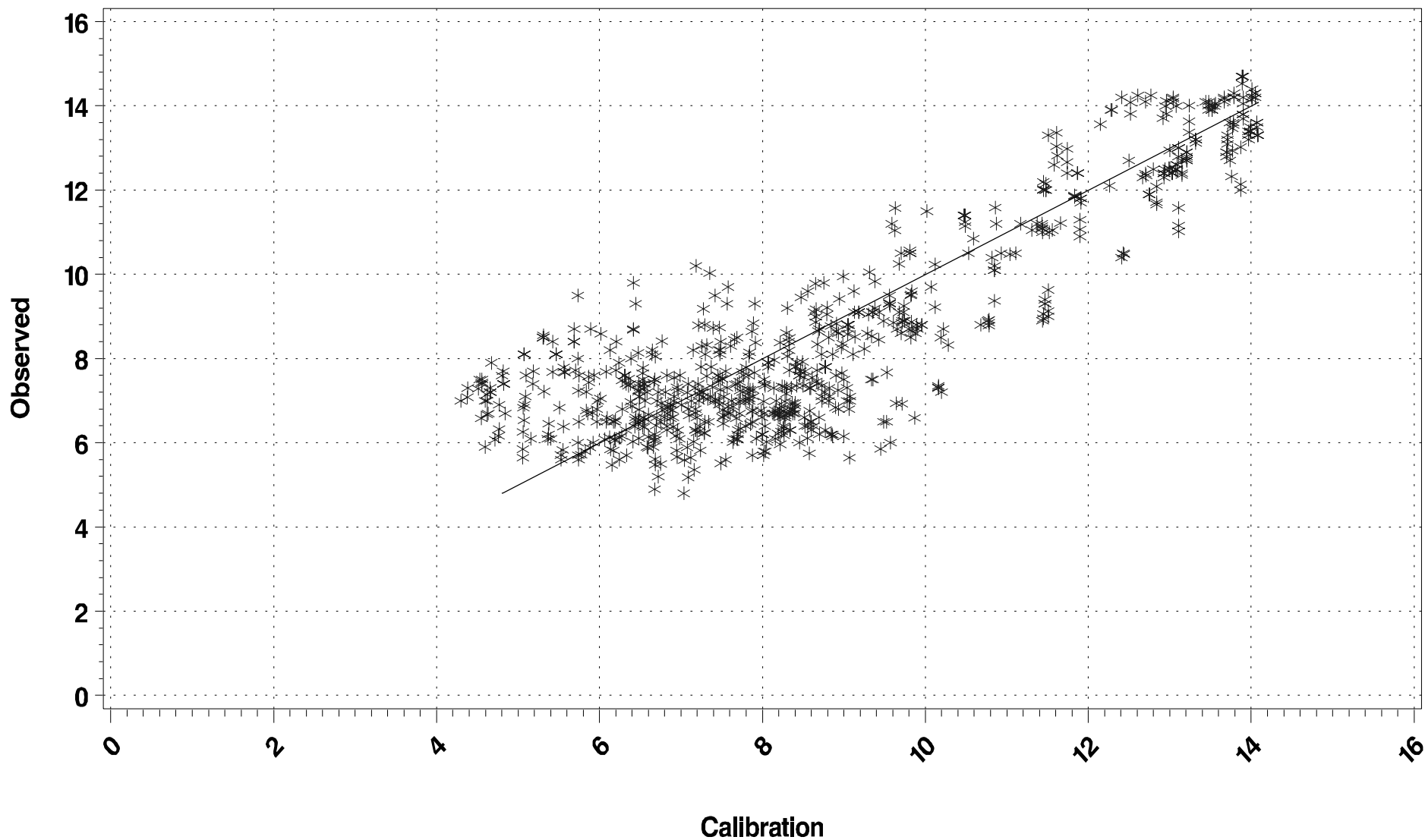
TIDAL FRESH **Chlorophyll**
Segment CB1TF (Mainstem CB1 Tidal Fresh)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 111 pairs of predictions and observed data, the **slope** is 0.0984 and the **intercept** is 7.9843. The **R-Squared** value for this regression is 0.0022.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 111 pairs of predictions and observed data, the **slope** is 0.1330 and the **intercept** is 0.8090. The **R-Squared** value for this regression is 0.0061.

Statistics (units in μg/l)

Mean observed 8.6357	Mean predicted 6.6206
Min. observed 0.7000	Min. predicted 0.5160
Max. observed 23.6560	Max. predicted 12.8060
Std. Dev. Observed 4.7613	Std. Dev. predicted 2.2740
Median observed 7.8000	Median predicted 6.5099
95th Percentile observed 17.2000	95th Percentile predicted 10.7990
10th Percentile observed 2.7000	10th Percentile predicted 3.6364

Differences (predicted – observed)

Mean difference -2.0151 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB1TF   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment CB1TF Season: July 1 – Sept 30
(Scatter Plot)

<div align="center">
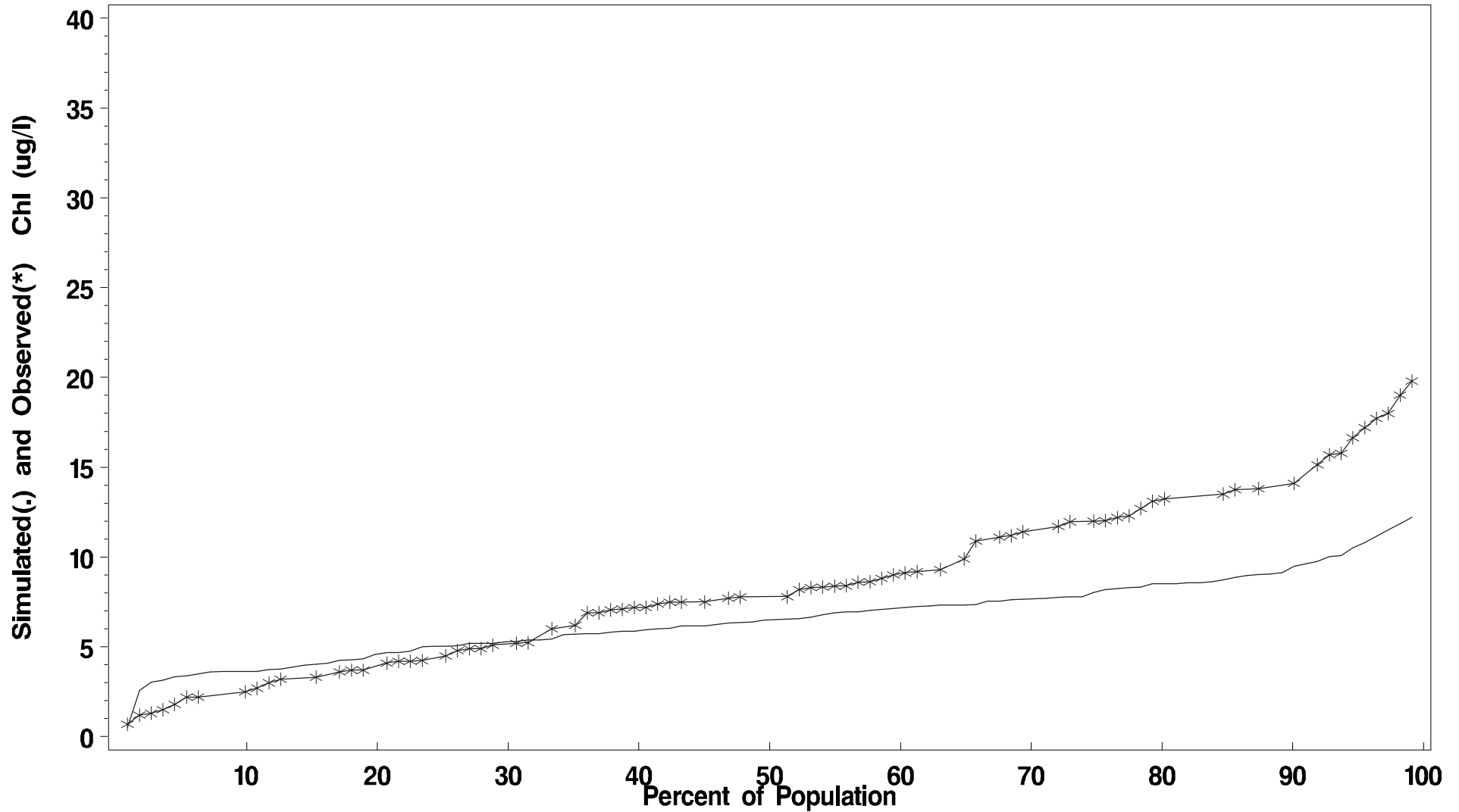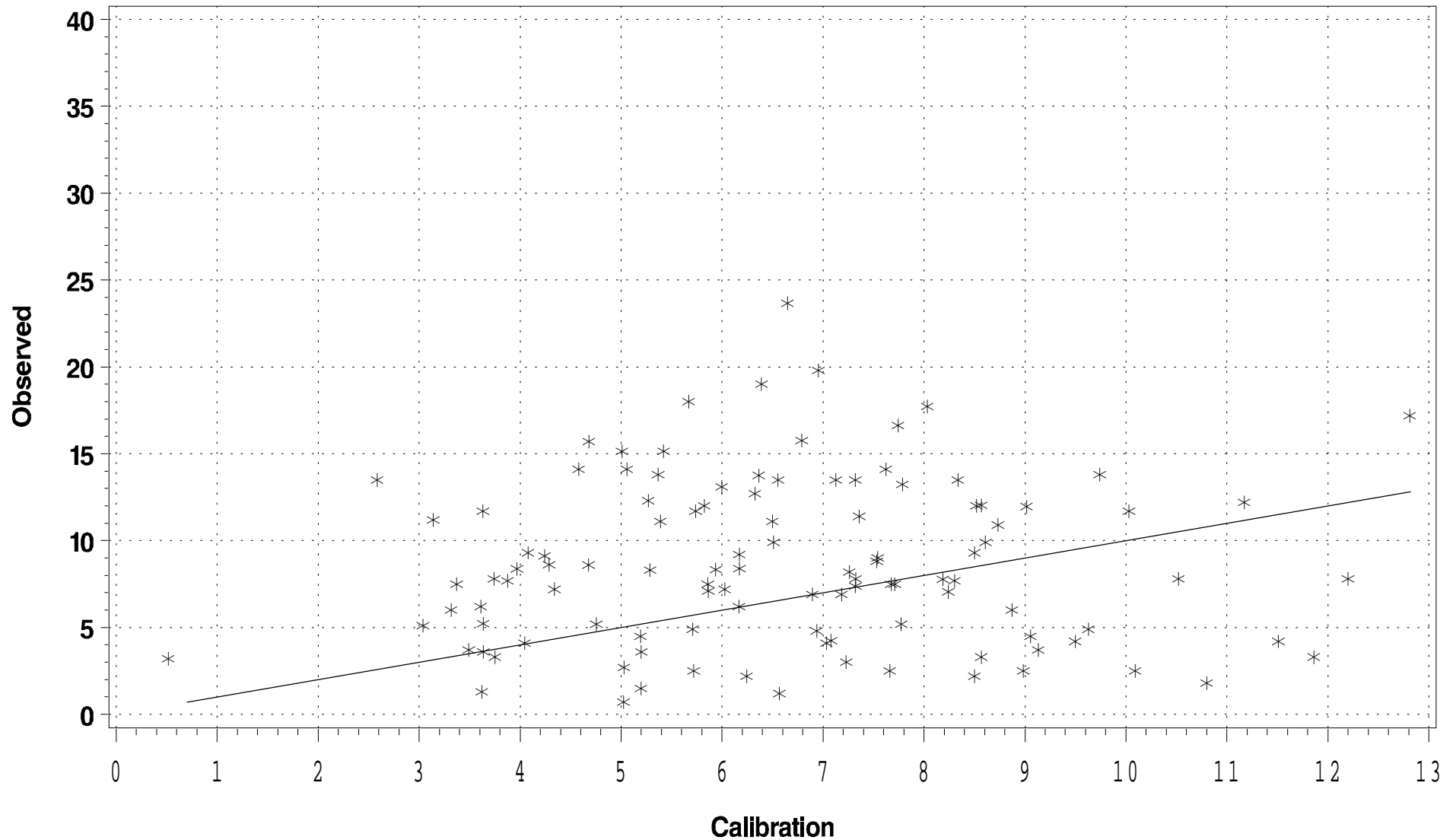
TIDAL FRESH **Chlorophyll**
Segment CB1TF (Mainstem CB1 Tidal Fresh)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 96 pairs of predictions and observed data, the **slope** is 0.0900 and the **intercept** is 7.6962. The **R-Squared** value for this regression is 0.0013.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 96 pairs of predictions and observed data, the **slope** is 0.0118 and the **intercept** is 0.8571. The **R-Squared** value for this regression is 0.0001.

Statistics (units in μg/l)

Mean observed 8.0672	Mean predicted 4.1225
Min. observed 1.0000	Min. predicted 0.6822
Max. observed 23.4000	Max. predicted 10.4410
Std. Dev. Observed 5.8988	Std. Dev. predicted 2.3334
Median observed 6.5500	Median predicted 3.7057
95th Percentile observed 20.5000	95th Percentile predicted 9.4411
10th Percentile observed 1.6000	10th Percentile predicted 1.7014

Differences (predicted – observed)

Mean difference -3.9447 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB1TF   Season: March 1 − May 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Simulated(.) and Observed(*) Chl (ug/l)

Percent of Population
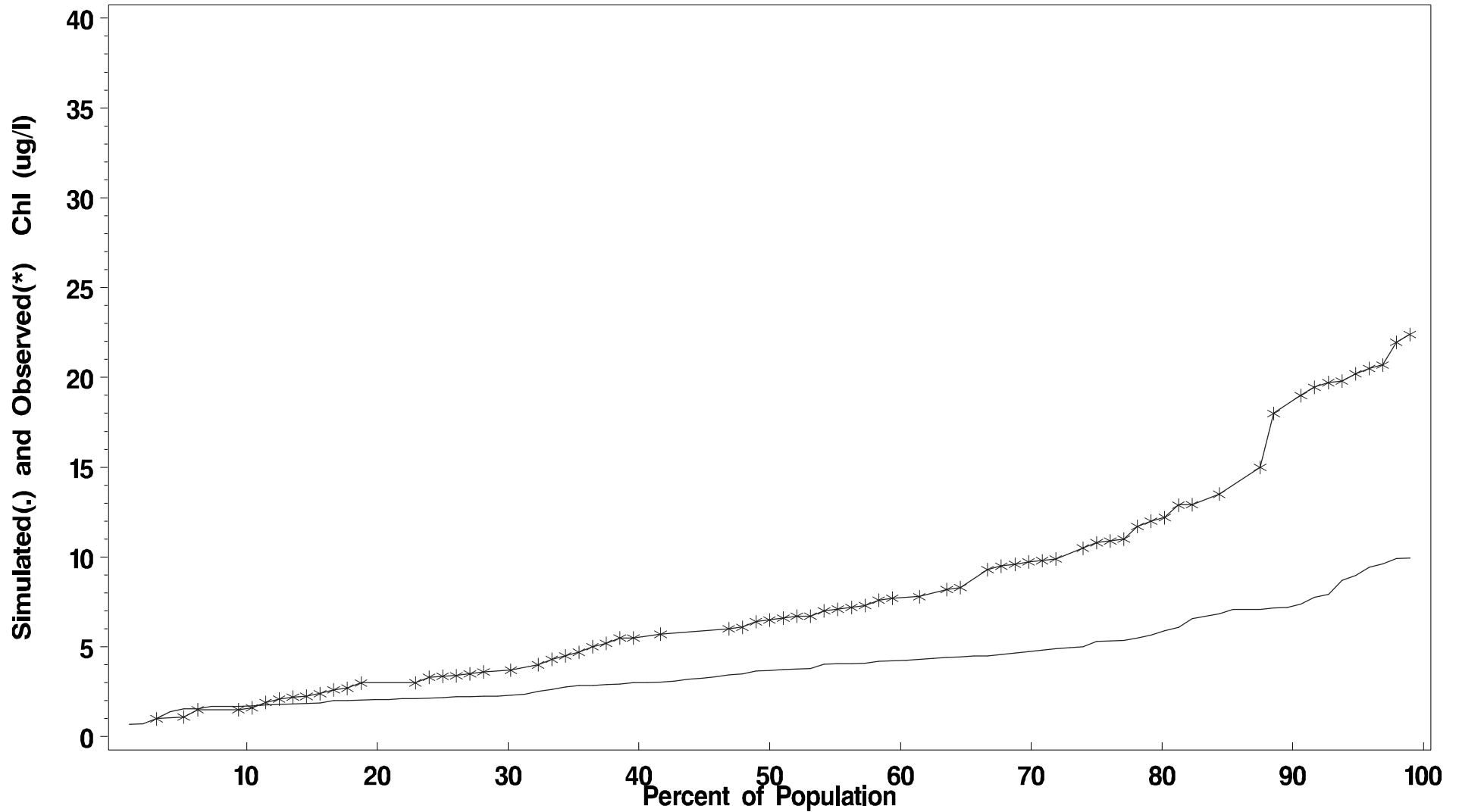
Chlorophyll Concentration (ug/l)
Segment CB1TF   Season: March 1 – May 30
(Scatter Plot)
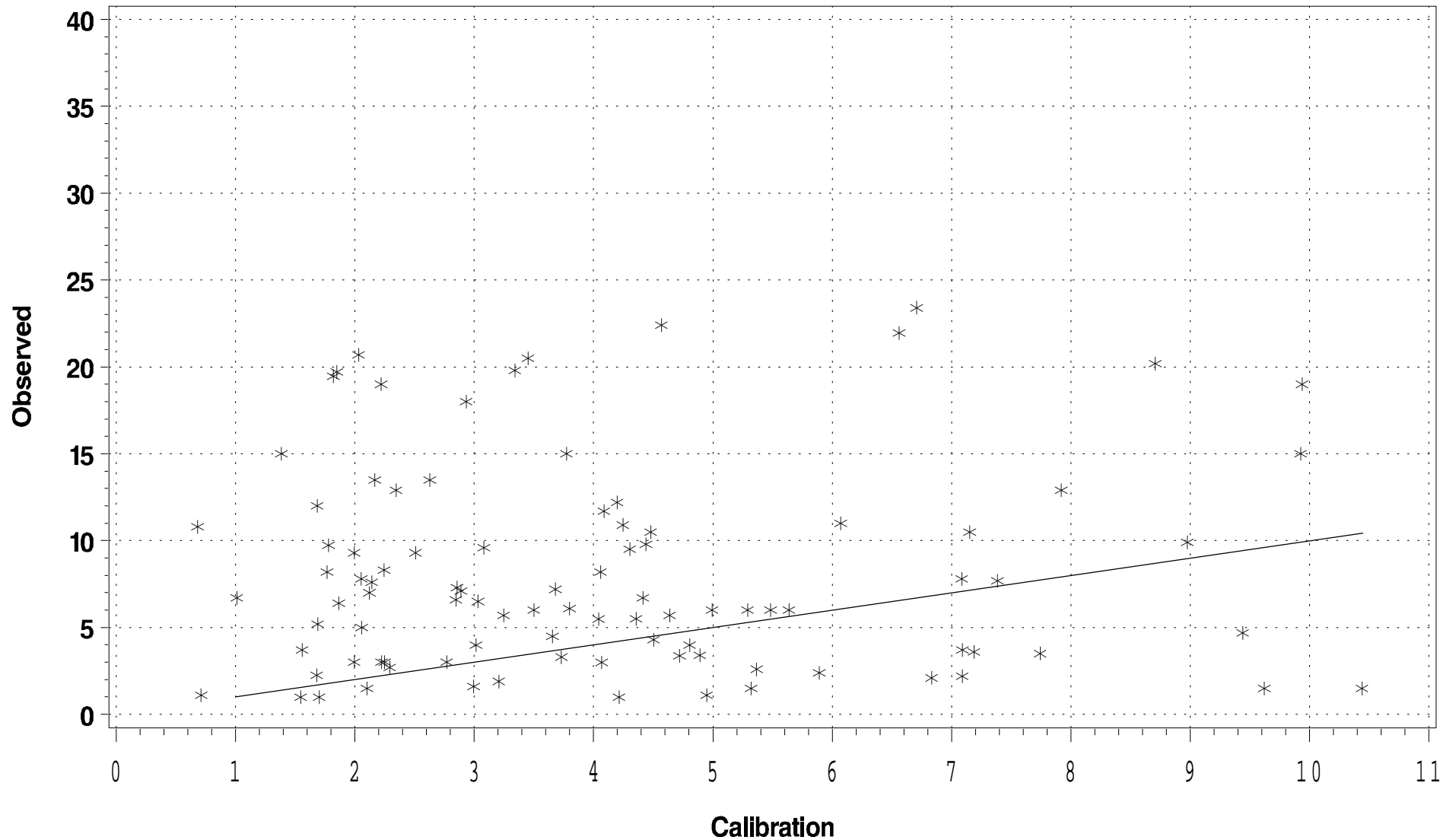
TIDAL FRESH **Light Attenuation**
Segment CB1TF (Mainstem CB1 Tidal Fresh)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 276 pairs of predictions and observed data, the **slope** is 0.3548 and the **intercept** is 1.3338. The **R-Squared** value for this regression is 0.1143.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 276 pairs of predictions and observed data, the **slope** is 0.4752 and the **intercept** is 0.2382. The **R-Squared** value for this regression is 0.1813.

Statistics (units in 1/m)

Mean observed 2.0898   Mean predicted 2.1307
Min. observed 0.9286   Min. predicted 0.8093
Max. observed 13.0000   Max. predicted 13.3120
Std. Dev. Observed 1.3220   Std. Dev. predicted 1.2599
Median observed 1.6250   Median predicted 1.7566
90th Percentile observed 3.2500   90th Percentile predicted 3.4868
10th Percentile observed 1.0833   10th Percentile predicted 1.2974

Differences (predicted – observed)

Mean difference 0.0409 1/m

---

[1] observed is dependent, predicted is independent

Ke (1/m)

Segment CB1TF   Season: April 1 – Oct 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)

Segment CB1TF   Season: April 1 – Oct 30
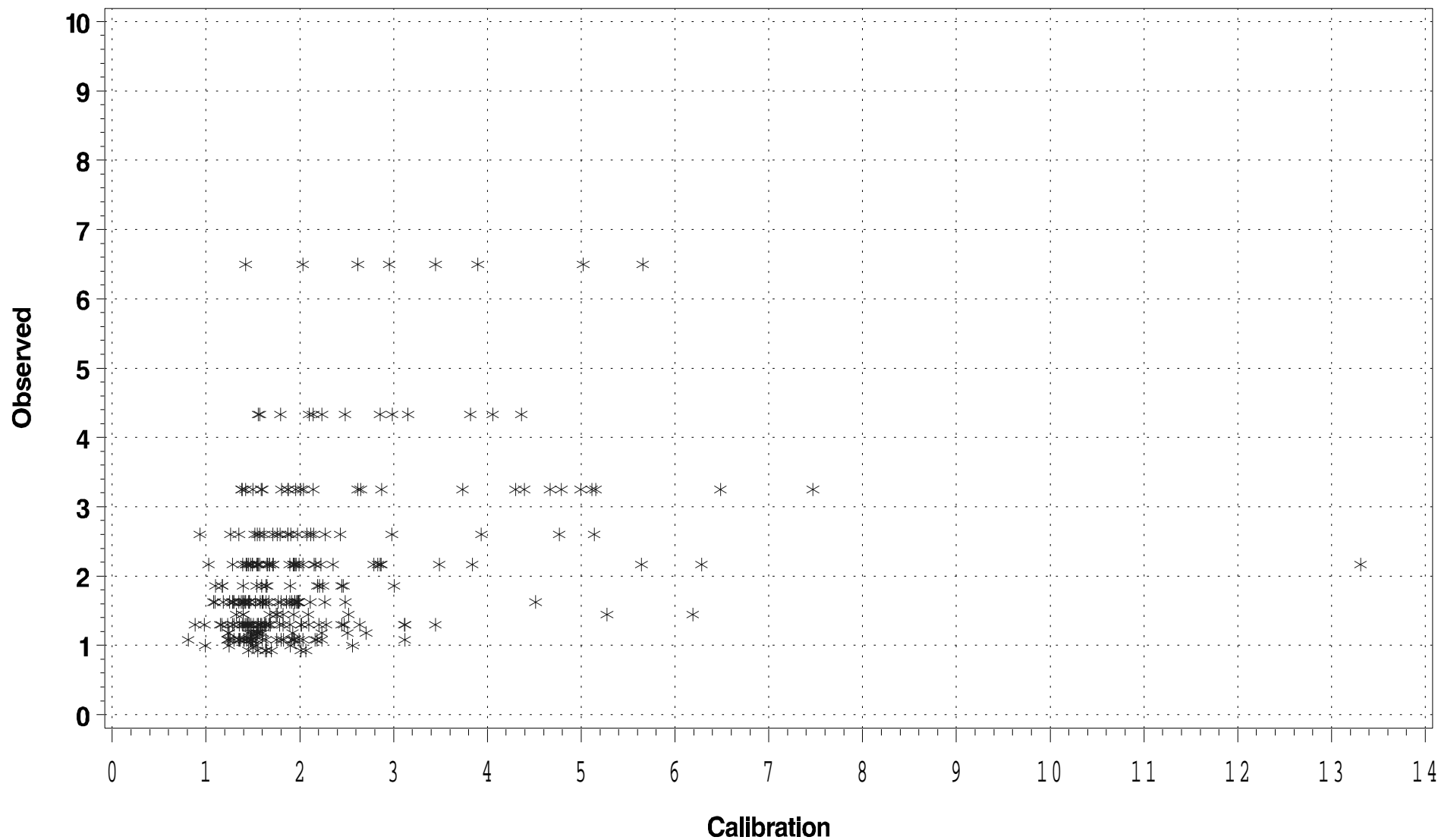
(Scatter Plot)

Chesapeake Bay Standard Segment CB2OH

Location Map of
Segment CB2OH within
the Chesapeake Bay Model Grid

CB2.2

CB3.1

N
W E
S

0   1.5   3   6   9   12

Miles

Chesapeake Bay Program
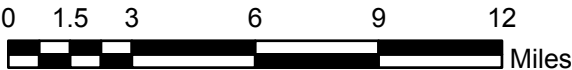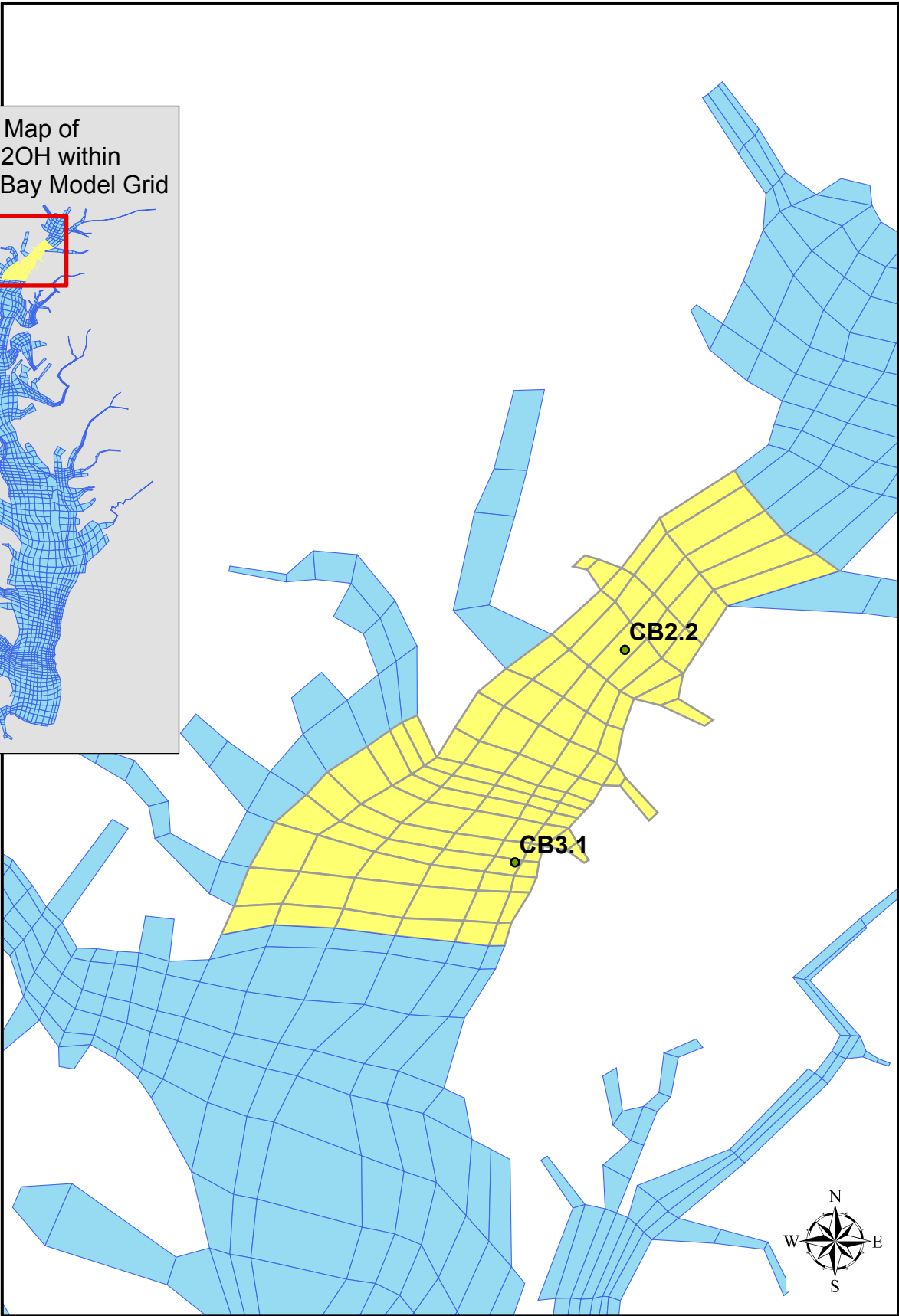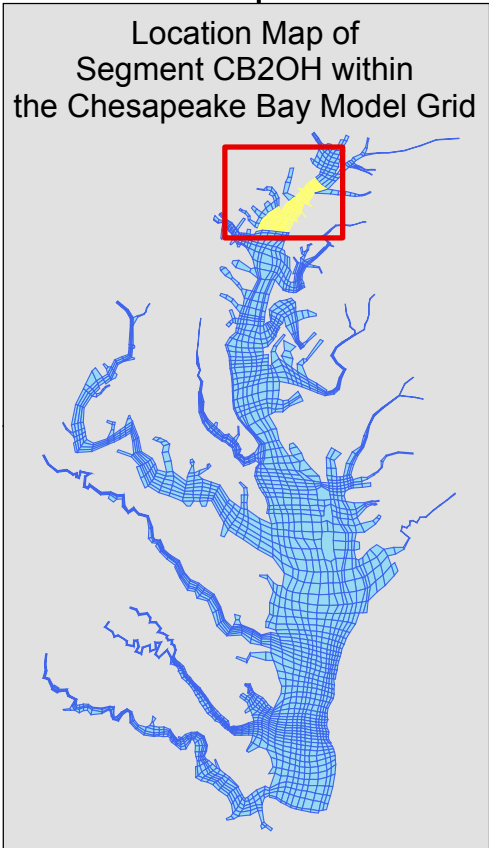
MIGRATORY **Dissolved Oxygen**
Segment CB2OH (Mainstem CB2 Oligohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 523 pairs of predictions and observed data, the **slope** is 0.8581 and the **intercept** is 1.2252. The **R-Squared** value for this regression is 0.6632.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 523 pairs of predictions and observed data, the **slope** is 0.8098 and the **intercept** is 0.1866. The **R-Squared** value for this regression is 0.6033.

Statistics (units in mg/l)

Mean observed 9.5661   Mean predicted 9.7204
Min. observed 2.8   Min. predicted 3.047
Max. observed 13.705   Max. predicted 14.32
Std. Dev. Observed 2.2523   Std. Dev. predicted 2.1375
Median observed 9.5000   Median predicted 10.0630
90th Percentile observed 12.3000   90th Percentile predicted 12.2800
10th Percentile observed 6.6000   10th Percentile predicted 6.8706

Differences (predicted – observed)

Mean difference 0.1543 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

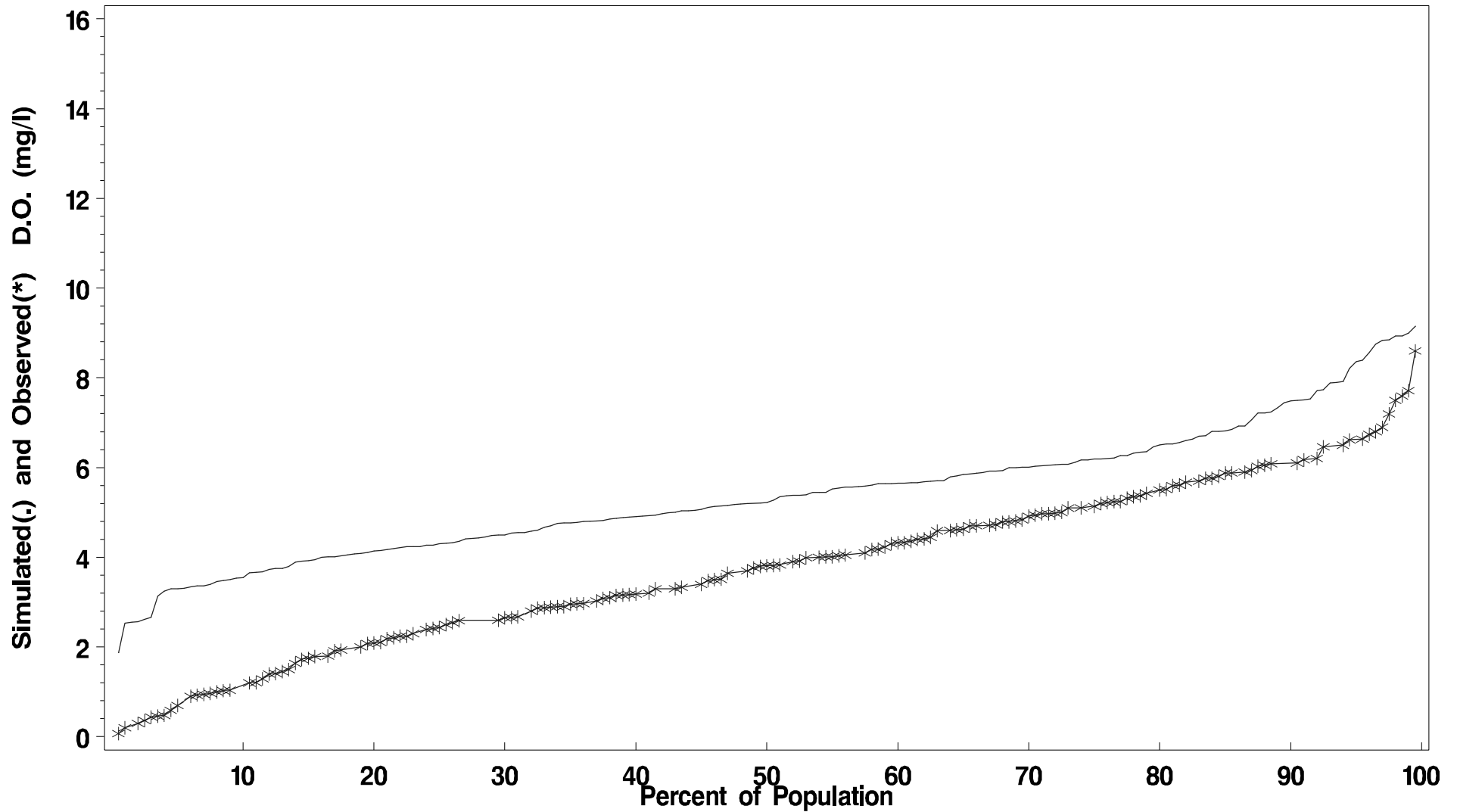Number of predicted and observed pairs 523
Number of Predicted Violations 17
Number of Observed Violations 14

[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment CB2OH   Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
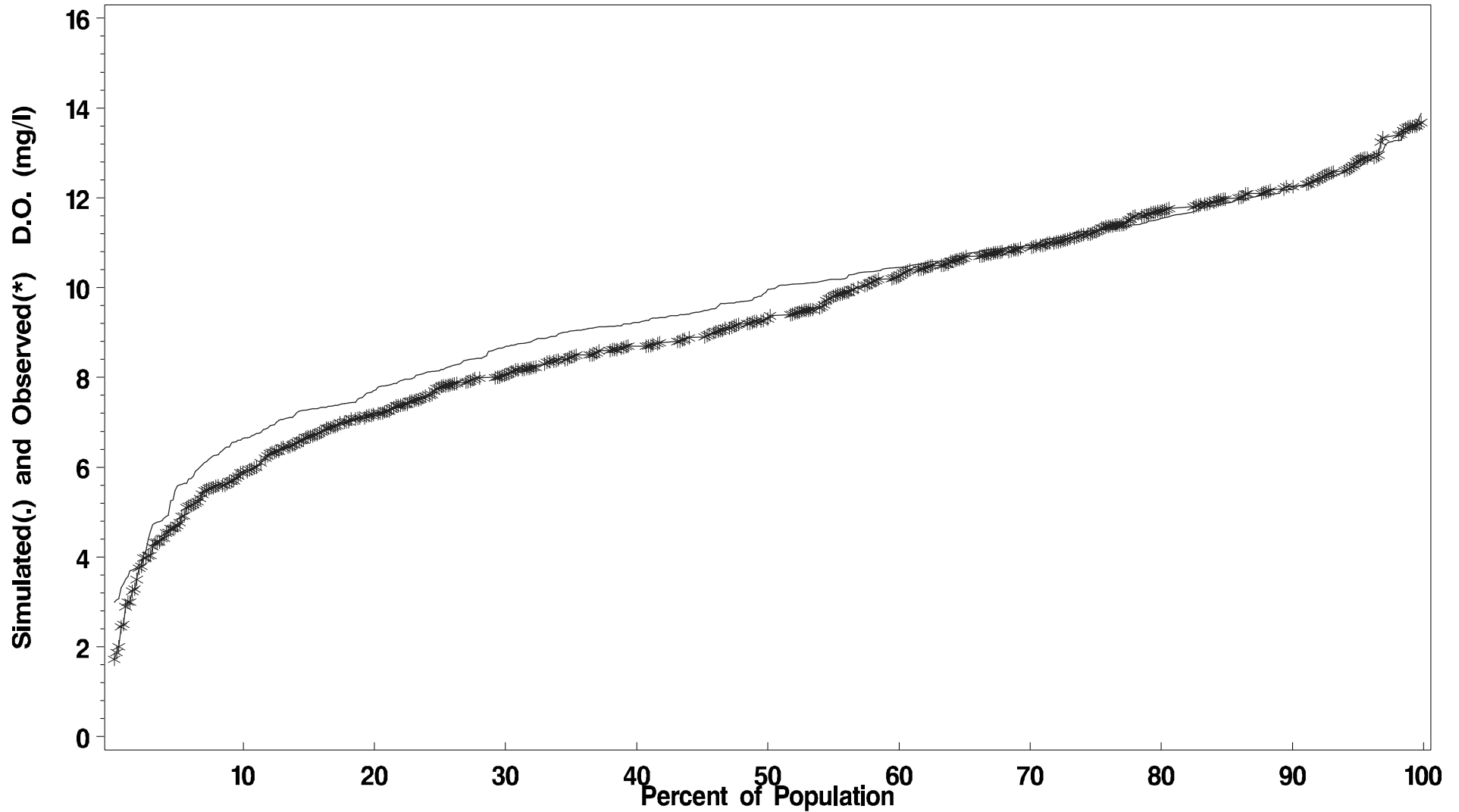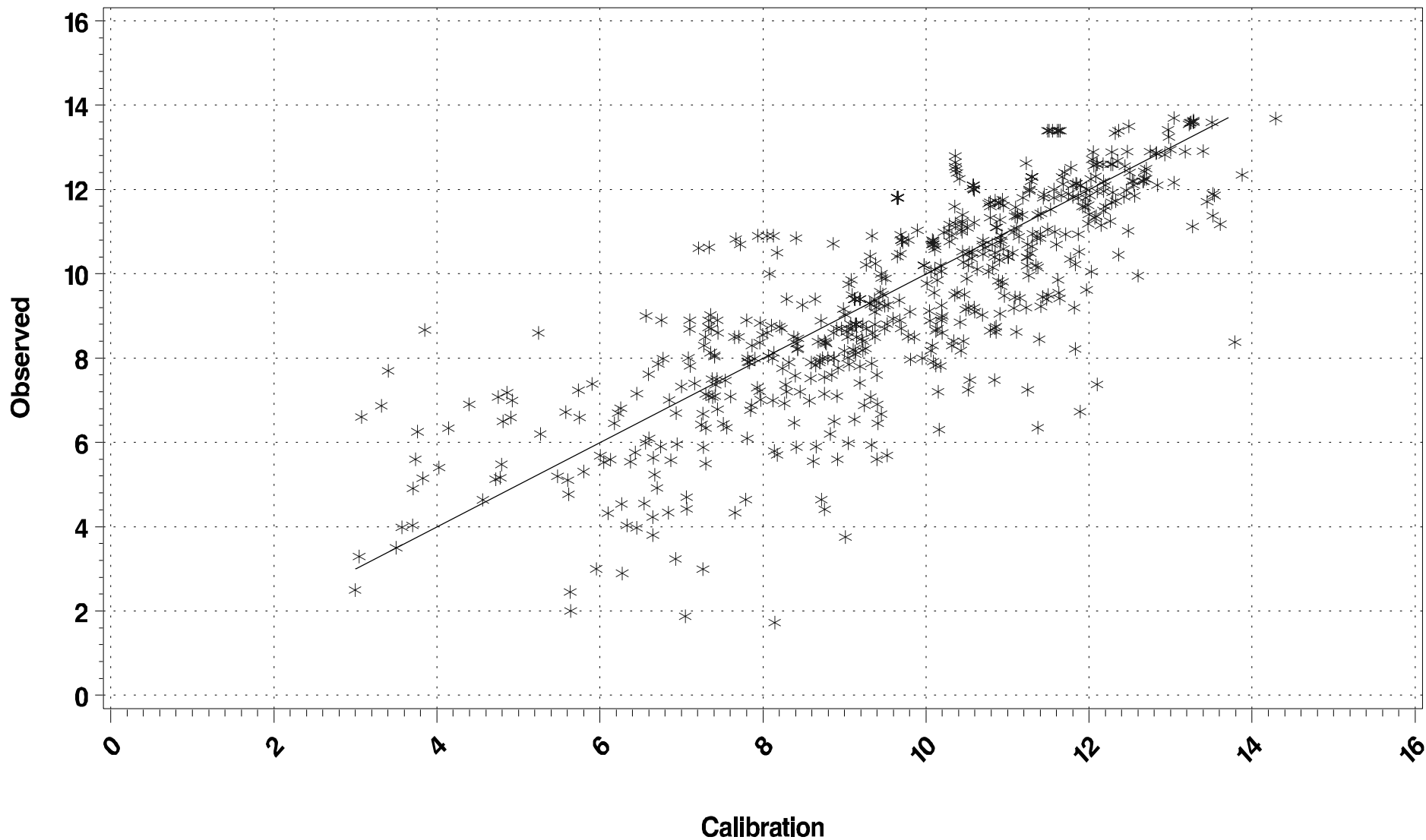
Migratory Dissolved Oxygen (mg/l)
Segment CB2OH Season: Feb 15 — June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 1076 pairs of predictions and observed data, the **slope** is 0.7345 and the **intercept** is 2.6275. The **R-Squared** value for this regression is 0.6095.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1076 pairs of predictions and observed data, the **slope** is 0.5421 and the **intercept** is 0.4517. The **R-Squared** value for this regression is 0.4947.

Statistics (units in mg/l)

Mean observed 7.8410   Mean predicted 7.0982
Min. observed 2.45   Min. predicted 1.221
Max. observed 14.8333   Max. predicted 13.81
Std. Dev. Observed 2.3871   Std. Dev. predicted 2.5373
Median observed 7.0000   Median predicted 6.8353
90th Percentile observed 11.9000 90th Percentile predicted 10.9820
10th Percentile observed 5.6600   10th Percentile predicted 3.9234

Differences (predicted – observed)

Mean difference -0.7428 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1076
Number of Predicted Violations 72
Number of Observed Violations 9

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment CB2OH Season: June 11 – Feb 14
### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
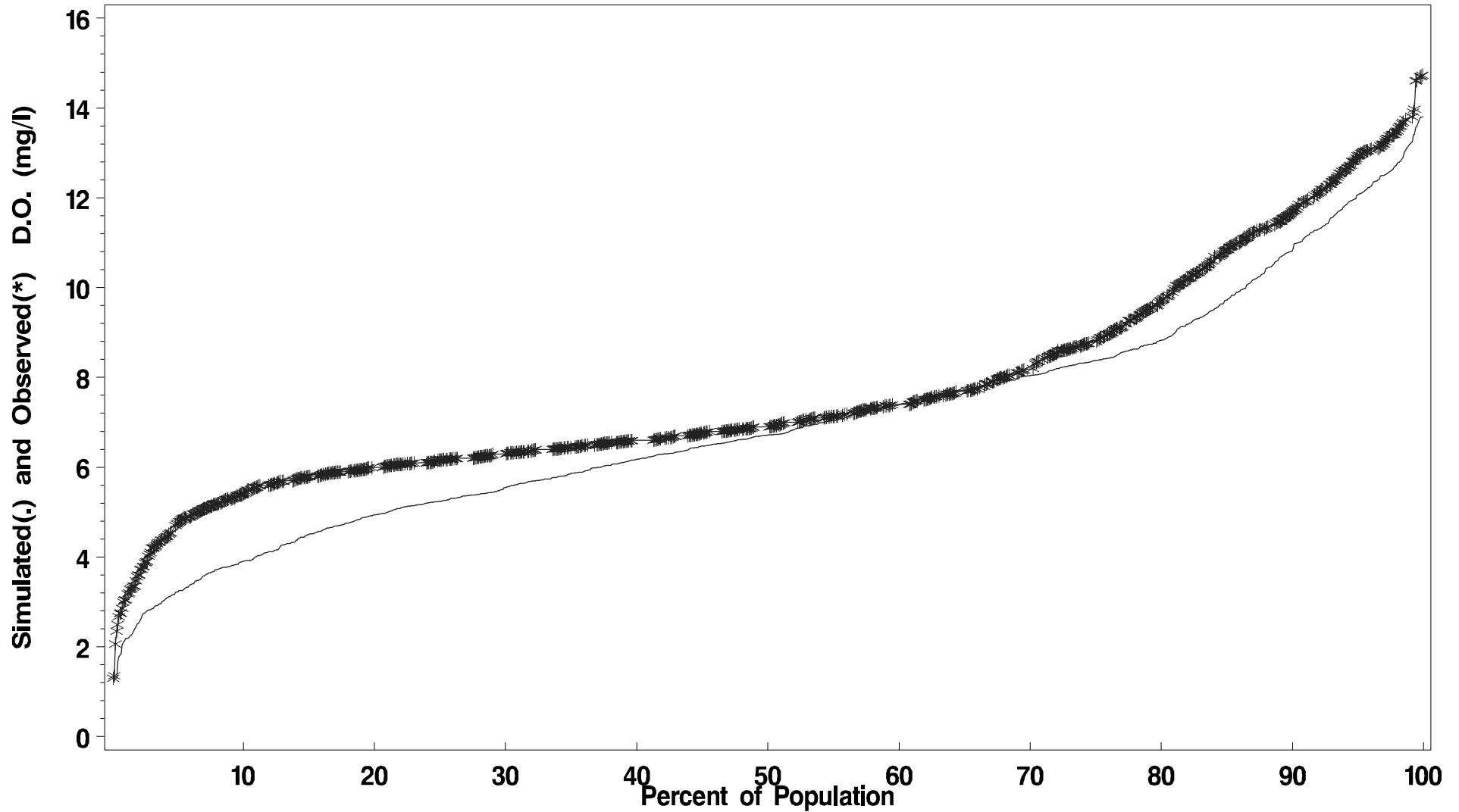
Migratory Dissolved Oxygen (mg/l)
Segment CB2OH Season: June 11 − Feb 14
(Scatter Plot)
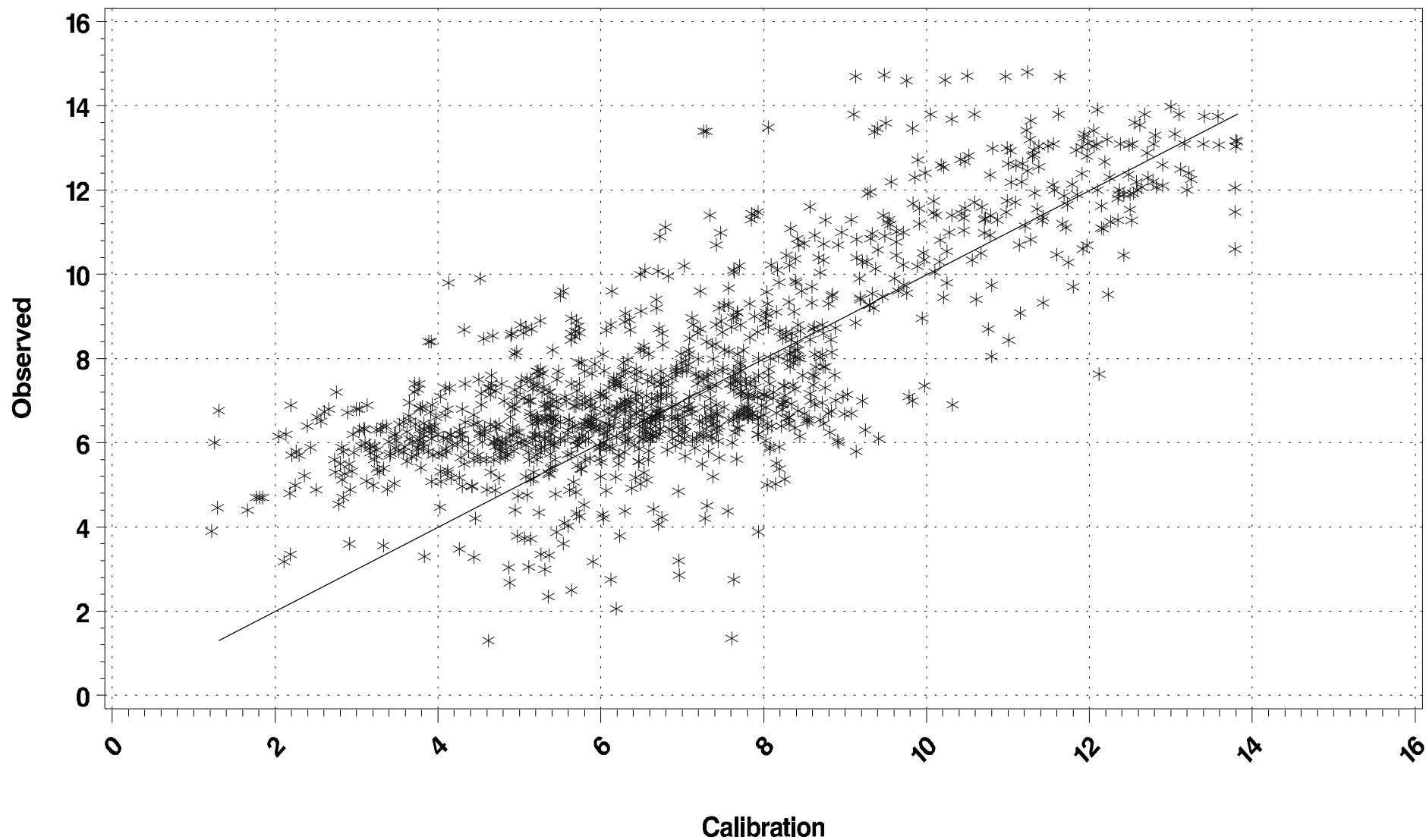
DEEP WATER **Dissolved Oxygen**
Segment CB2OH (Mainstem CB2 Oligohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 169 pairs of predictions and observed data, the **slope** is 0.4308 and the **intercept** is 2.3341. The **R-Squared** value for this regression is 0.1382.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 169 pairs of predictions and observed data, the **slope** is 0.5009 and the **intercept** is 0.3309. The **R-Squared** value for this regression is 0.1102.

Statistics (units in mg/l)

Mean observed 4.6305   Mean predicted 5.3309
Min. observed 1.5   Min. predicted 2.633
Max. observed 8   Max. predicted 9.401
Std. Dev. Observed 1.7094   Std. Dev. predicted 1.4749
Median observed 5.0000   Median predicted 5.1793
90th Percentile observed 6.7000   90th Percentile predicted 7.4383
10th Percentile observed 2.3500   10th Percentile predicted 3.5053


Differences (predicted – observed)

Mean difference 0.7004 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 169
Number of Predicted Violations 0
Number of Observed Violations 1

---

[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB2OH   Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Water   Dissolved Oxygen (mg/l)
Segment CB2OH   Season: May 1 — Sept 30
(Scatter Plot)
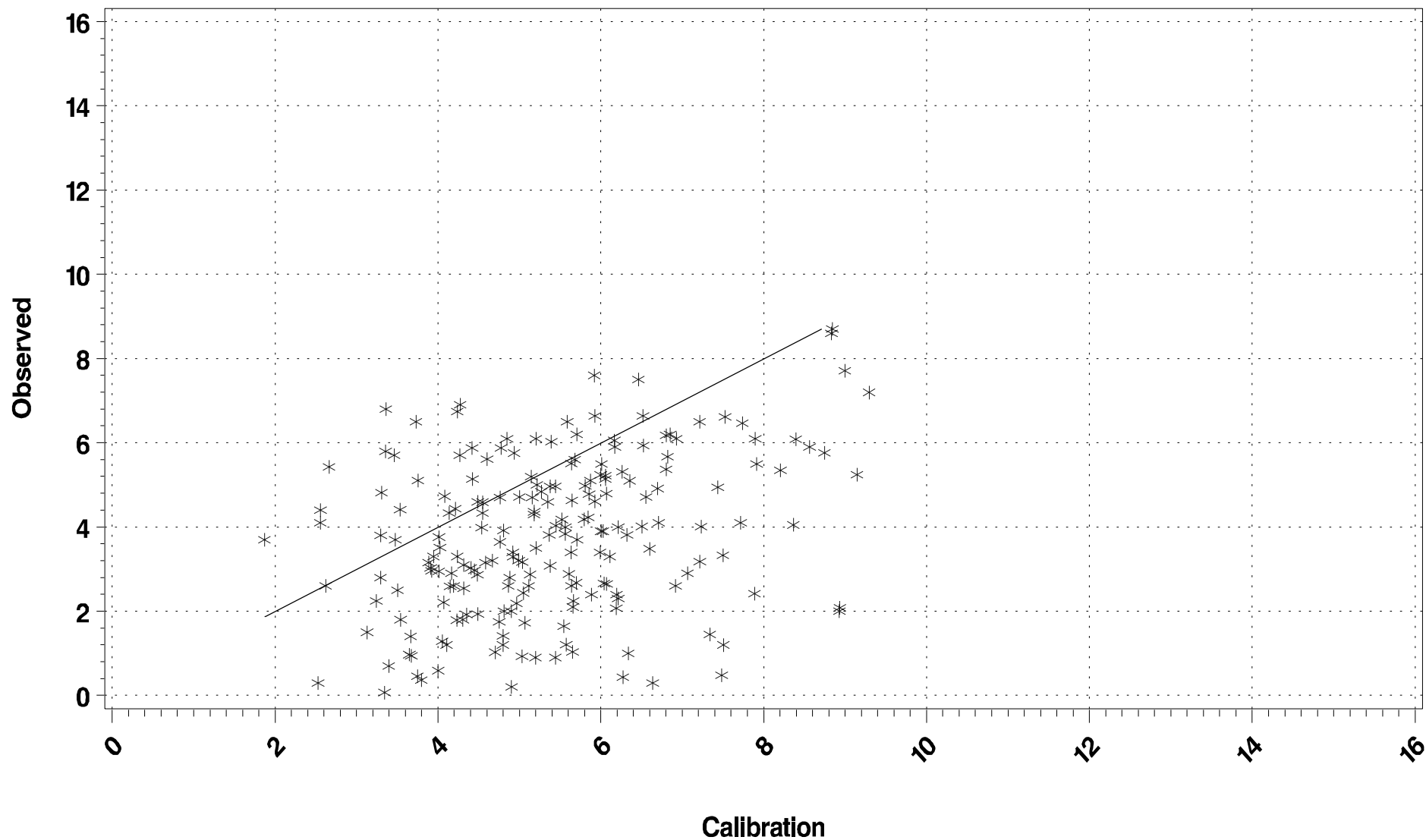
DEEP WATER **Dissolved Oxygen**
Segment CB2OH (Mainstem CB2 Oligohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 172 pairs of predictions and observed data, the **slope** is 0.4569 and the **intercept** is 4.6962. The **R-Squared** value for this regression is 0.3782.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 172 pairs of predictions and observed data, the **slope** is 0.4482 and the **intercept** is 0.5417. The **R-Squared** value for this regression is 0.3844.

Statistics (units in mg/l)

Mean observed 8.6517	Mean predicted 8.6580
Min. observed 4.6	Min. predicted 3.292
Max. observed 12.75	Max. predicted 13.33
Std. Dev. Observed 1.9226	Std. Dev. predicted 2.5881
Median observed 8.4850	Median predicted 8.9597
90th Percentile observed 11.0100	90th Percentile predicted 12.0040
10th Percentile observed 6.3800	10th Percentile predicted 5.0635

Differences (predicted – observed)

Mean difference 0.0062 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 172
Number of Predicted Violations 2
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB2OH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
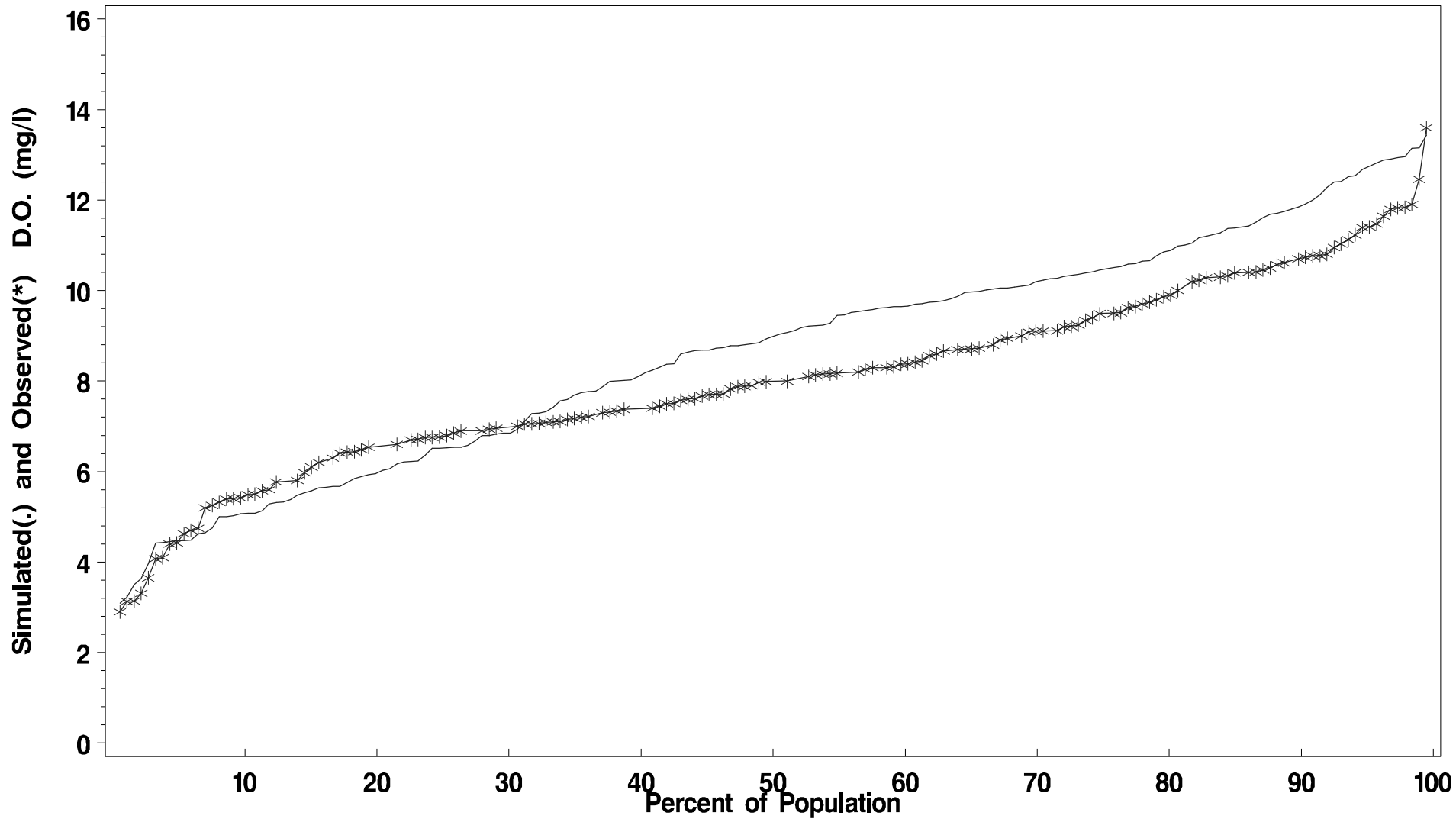
Deep Water Dissolved Oxygen (mg/l)
Segment CB2OH   Season: Oct 1 – April 30
(Scatter Plot)
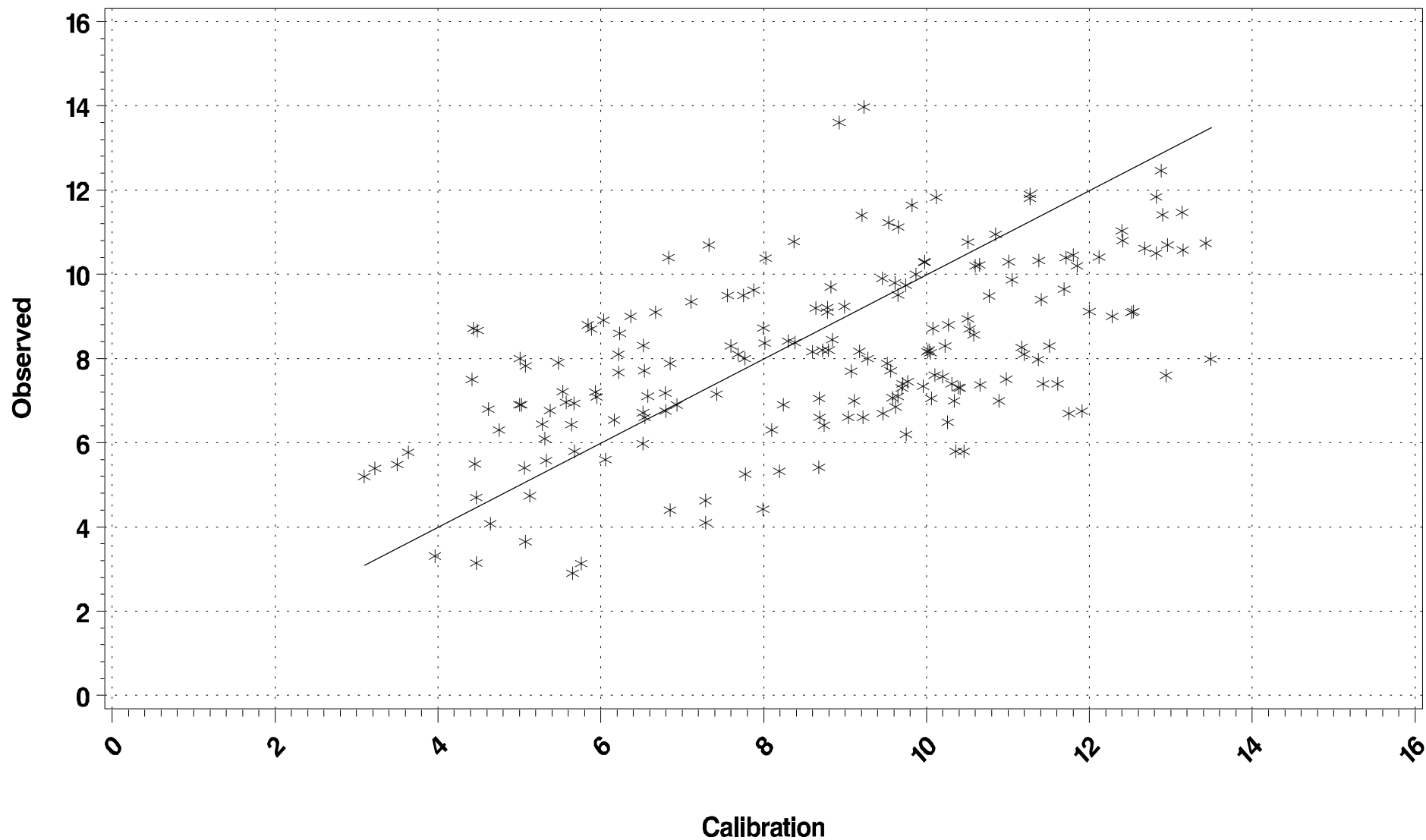
OLIGOHALINE **Chlorophyll**
Segment CB2OH (Mainstem CB2 Oligohaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 112 pairs of predictions and observed data, the **slope** is 1.4278 and the
intercept is -3.4750. The **R-Squared** value for this regression is 0.1356.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 112 pairs of predictions and observed data, the **slope** is 1.2541 and the
intercept is -0.3108. The **R-Squared** value for this regression is 0.1631.

Statistics (units in µg/l)

Mean observed 7.9730   Mean predicted 8.0177
Min. observed 1.0000   Min. predicted 4.0360
Max. observed 41.3000   Max. predicted 12.3290
Std. Dev. Observed 6.1217   Std. Dev. predicted 1.5786
Median observed 6.7142   Median predicted 8.0208
95th Percentile observed 18.9000   95th Percentile predicted 10.5140
10th Percentile observed 2.8500   10th Percentile predicted 5.8559

Differences (predicted – observed)

Mean difference 0.0446 µg/l

---

[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB2OH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
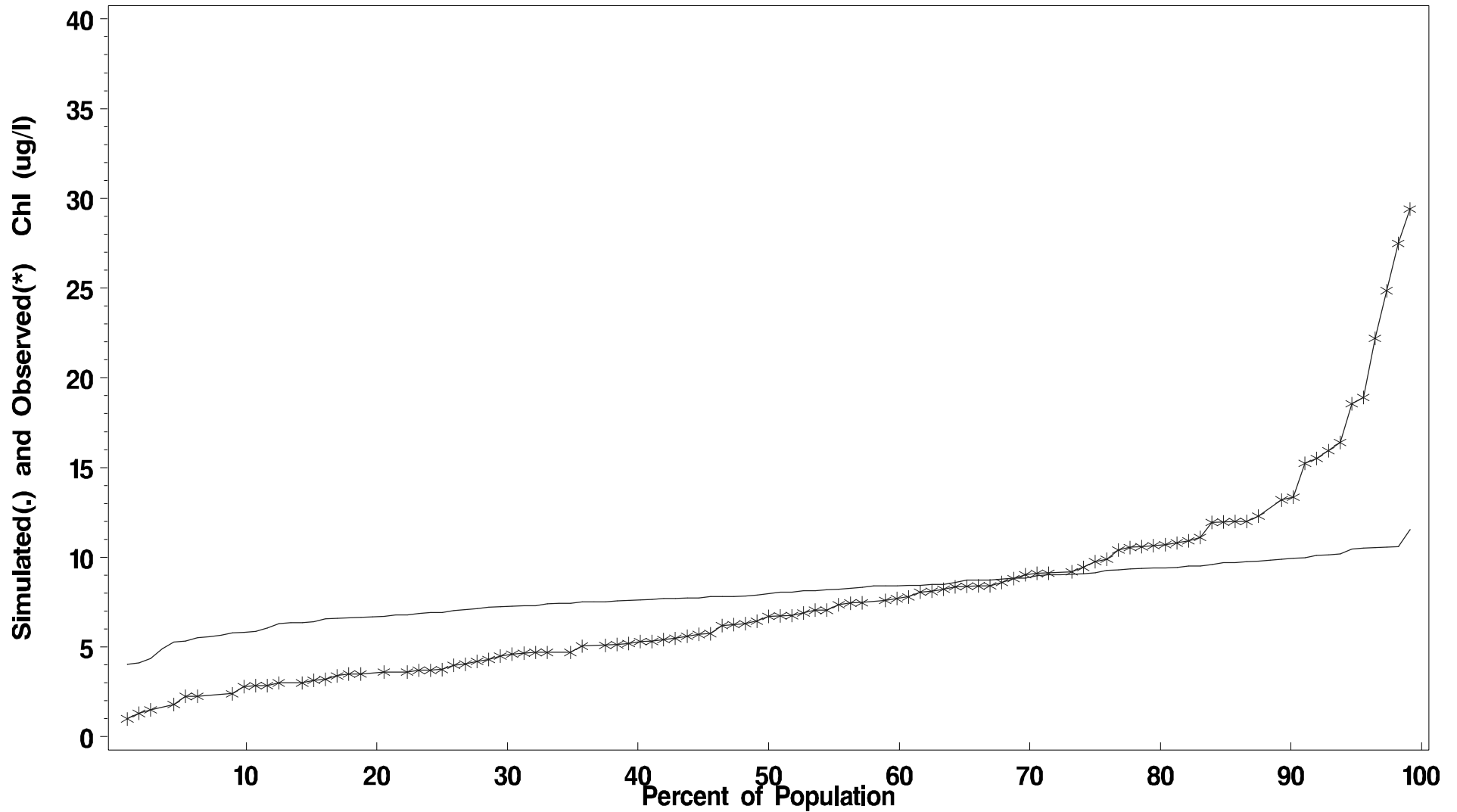
Chlorophyll Concentration (ug/l)
Segment CB2OH   Season: July 1 – Sept 30
(Scatter Plot)
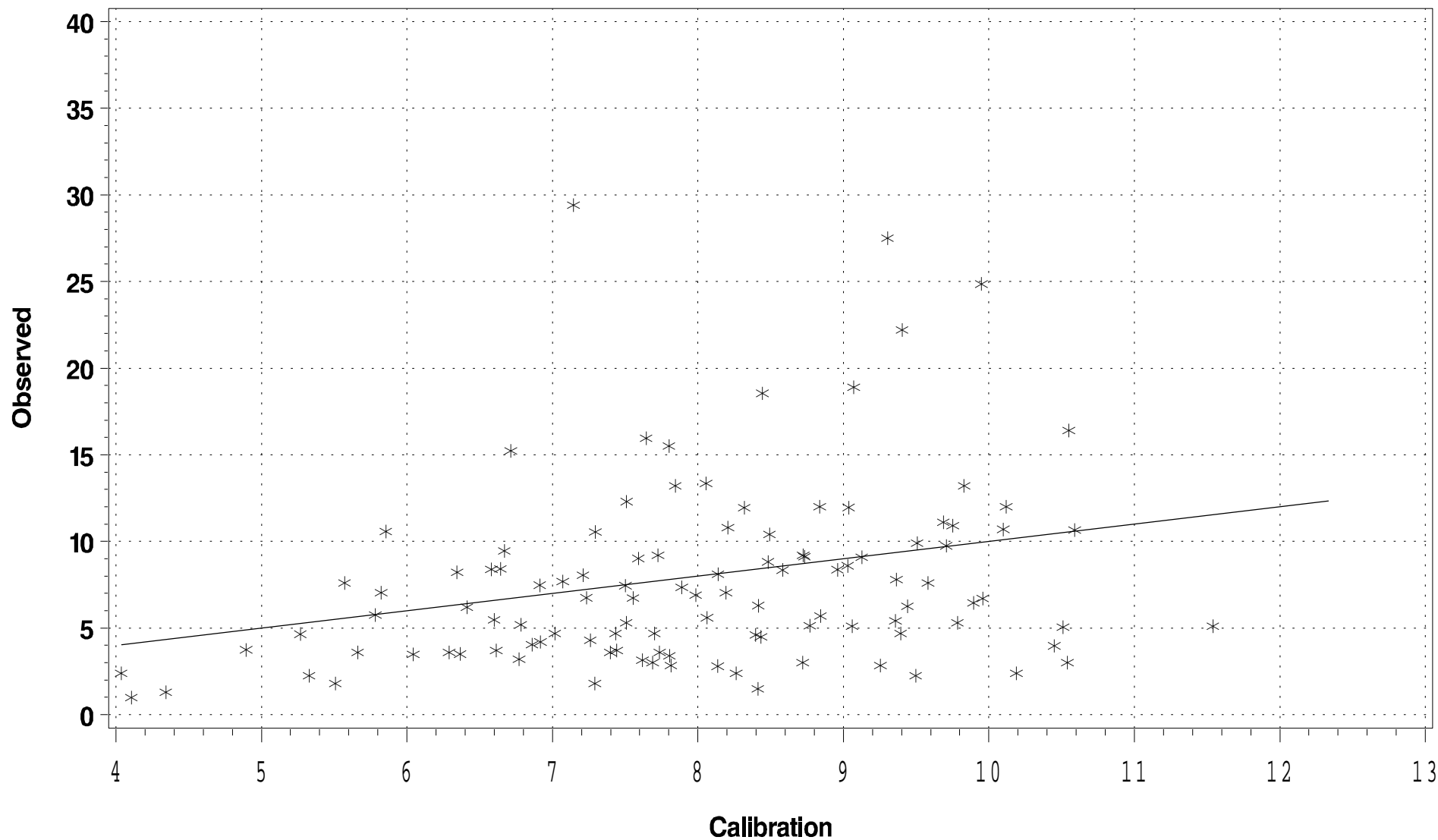
OLIGOHALINE **Chlorophyll**
Segment CB2OH (Mainstem CB2 Oligohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 106 pairs of predictions and observed data, the **slope** is 0.8131 and the **intercept** is 0.5720. The **R-Squared** value for this regression is 0.2089.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 106 pairs of predictions and observed data, the **slope** is 0.5852 and the **intercept** is 0.2334. The **R-Squared** value for this regression is 0.1328.

Statistics (units in μg/l)

Mean observed 6.9815   Mean predicted 7.8824
Min. observed 0.7500   Min. predicted 0.3945
Max. observed 37.7027   Max. predicted 25.6890
Std. Dev. Observed 7.7643   Std. Dev. predicted 4.3647
Median observed 4.1000   Median predicted 6.9351
95th Percentile observed 25.6964   95th Percentile predicted 17.7000
10th Percentile observed 1.4969   10th Percentile predicted 3.9043

Differences (predicted – observed)

Mean difference 0.9009 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB2OH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
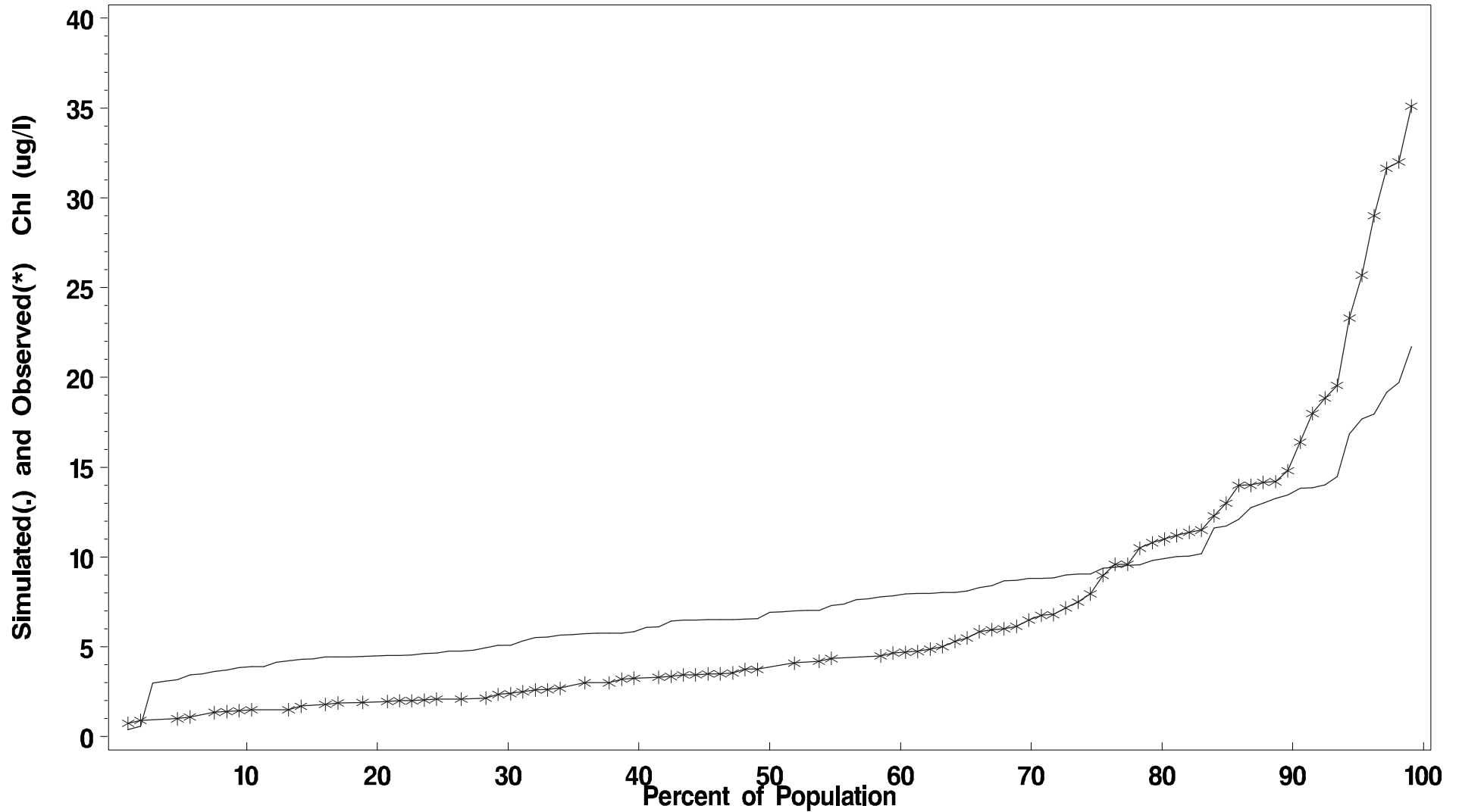
Chlorophyll Concentration (ug/l)
Segment CB2OH   Season: March 1 – May 30
(Scatter Plot)
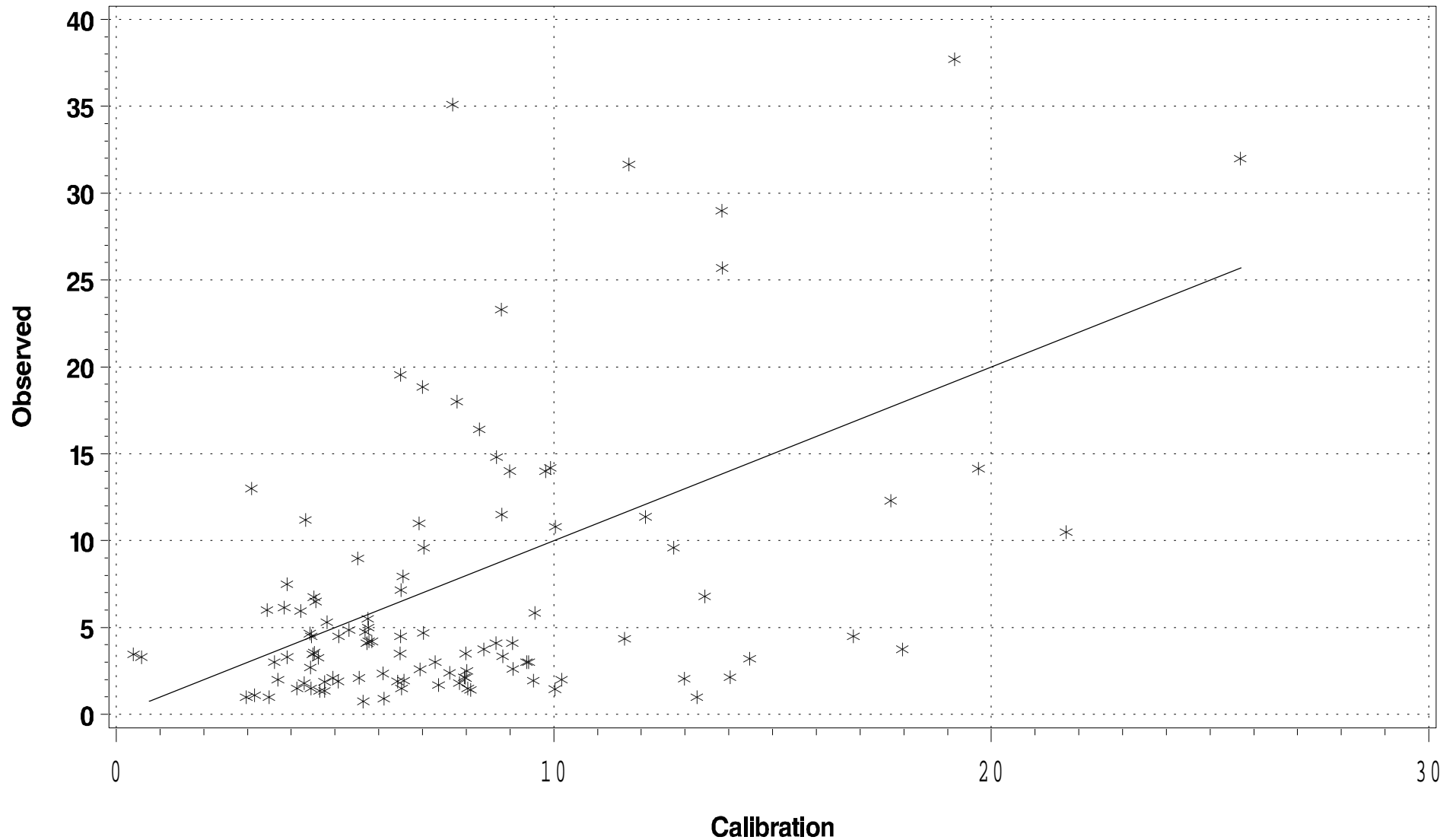
OLIGOHALINE **Light Attenuation**
Segment CB2OH (Mainstem CB2 Oligohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 275 pairs of predictions and observed data, the **slope** is 0.6339 and the **intercept** is 0.7466. The **R-Squared** value for this regression is 0.2574.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 275 pairs of predictions and observed data, the **slope** is 0.6548 and the **intercept** is 0.1551. The **R-Squared** value for this regression is 0.3072.

Statistics (units in 1/m)

Mean observed 2.0010   Mean predicted 1.9789
Min. observed 0.6500   Min. predicted 0.6711
Max. observed 13.0000   Max. predicted 6.9007
Std. Dev. Observed 1.1957   Std. Dev. predicted 0.9570
Median observed 1.6250   Median predicted 1.7561
90th Percentile observed 3.2500   90th Percentile predicted 3.0022
10th Percentile observed 1.0833   10th Percentile predicted 1.3213

Differences (predicted – observed)

Mean difference -0.0221 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment CB2OH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment CB2OH   Season: April 1 – Oct 30
(Scatter Plot)
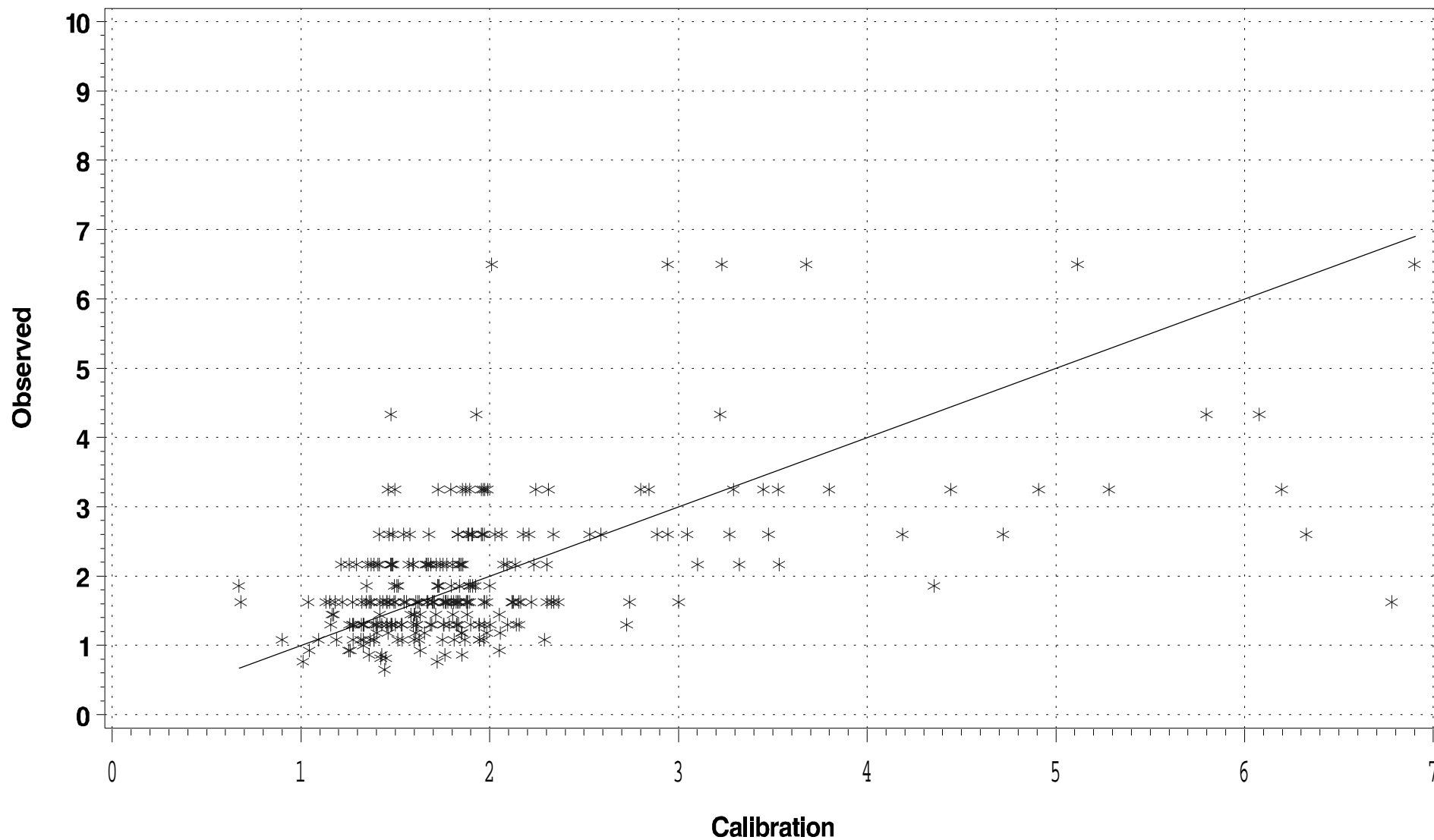
Chesapeake Bay Standard Segment CB3MH

Location Map of
Segment CB3MH within
the Chesapeake Bay Model Grid

CB3.2

CB3.3W CB3.3E
CB3.3C

Chesapeake Bay Program

N
W   E
S

0 1 2   4   6   8
Miles
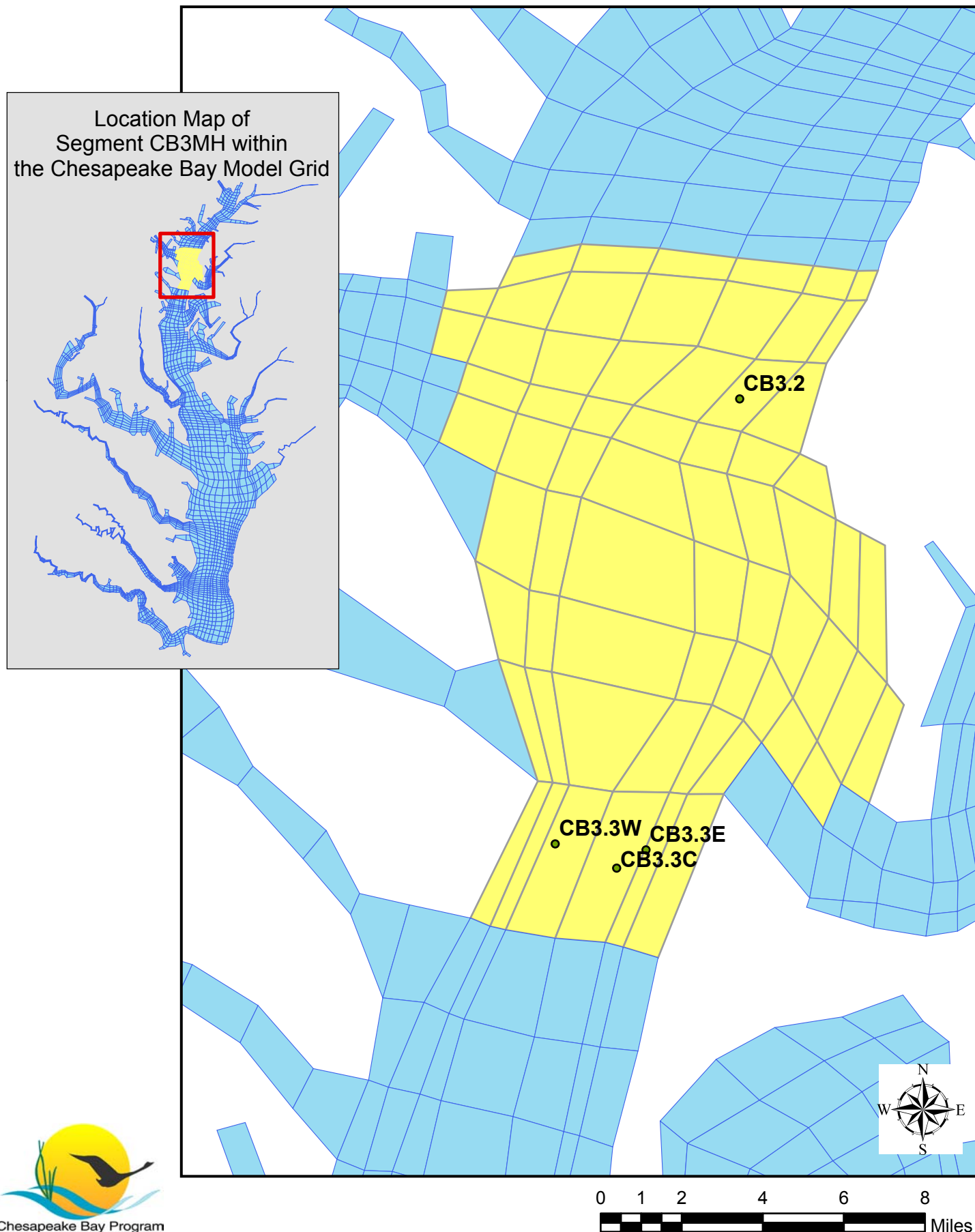
MIGRATORY **Dissolved Oxygen**
Segment CB3MH (Mainstem CB3 Mesohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 1084 pairs of predictions and observed data, the **slope** is 0.8700 and the
intercept is 0.2581. The **R-Squared** value for this regression is 0.6585.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1084 pairs of predictions and observed data, the **slope** is 1.0990 and the
intercept is -0.1534. The **R-Squared** value for this regression is 0.6402.

Statistics (units in mg/l)

Mean observed 8.9894   Mean predicted 10.0357
Min. observed 0.25   Min. predicted 2.062
Max. observed 15.3   Max. predicted 16.04
Std. Dev. Observed 2.5639   Std. Dev. predicted 2.3912
Median observed 9.4500   Median predicted 10.1575
90th Percentile observed 11.8000   90th Percentile predicted 13.0690
10th Percentile observed 5.5000   10th Percentile predicted 6.7192

Differences (predicted – observed)

Mean difference 1.0462 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 5 mg/l.

Number of predicted and observed pairs 1084
Number of Predicted Violations 32
Number of Observed Violations 71

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
**Segment CB3MH   Season: Feb 15 – June 10**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
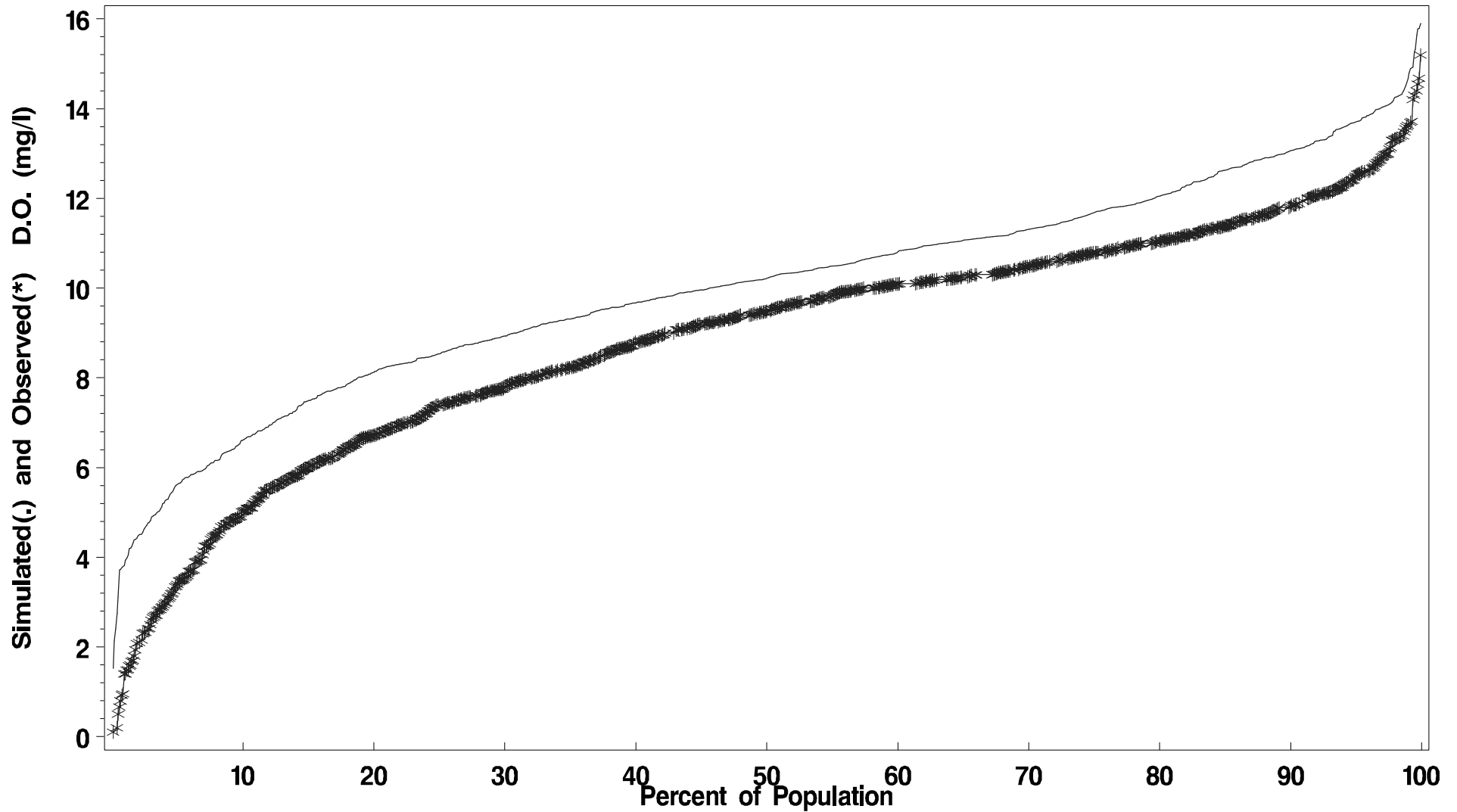
**Migratory Dissolved Oxygen (mg/l)
Segment CB3MH Season: Feb 15 — June 10**
(Scatter Plot)
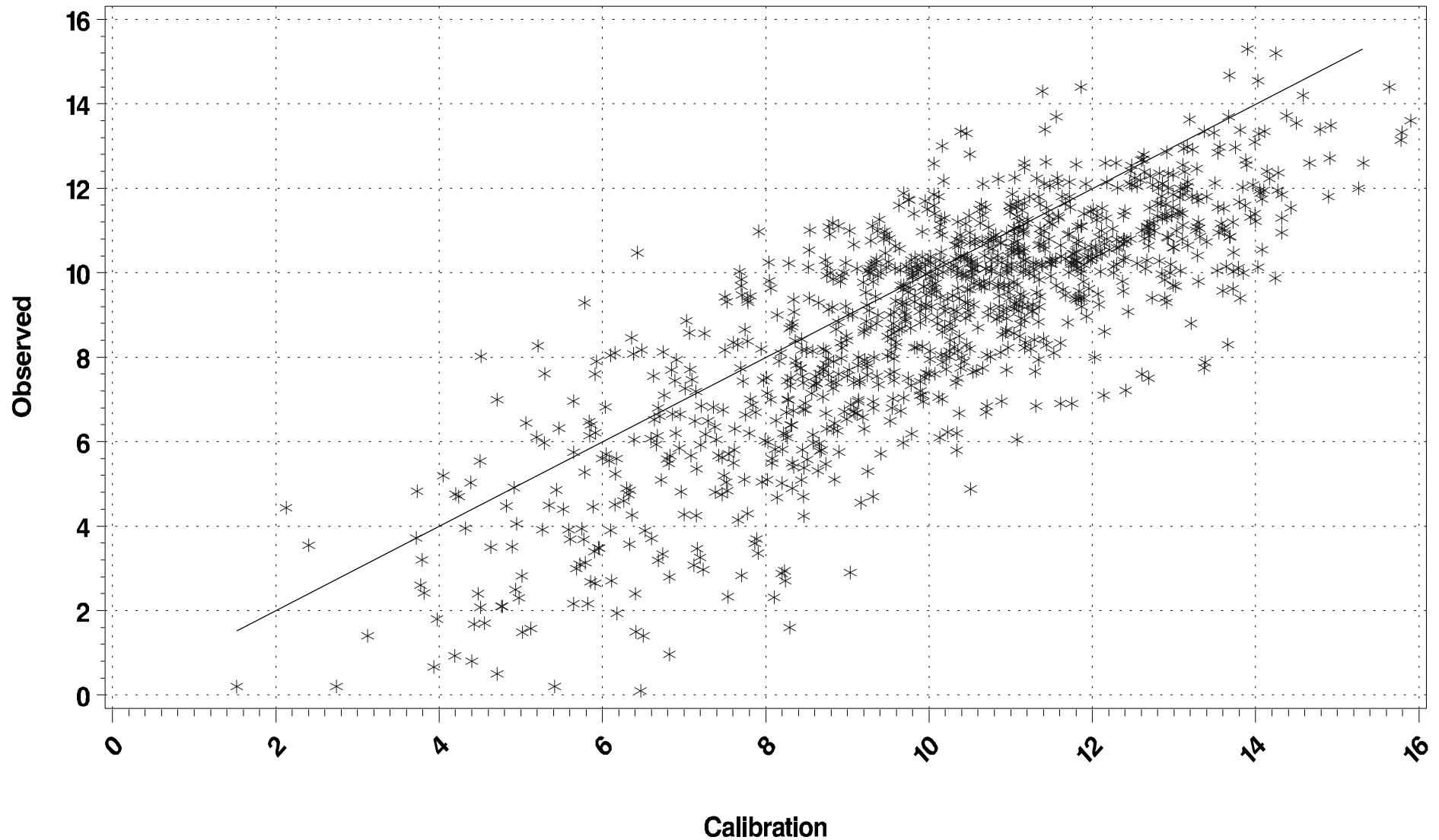
MIGRATORY **Dissolved Oxygen**
Segment CB3MH (Mainstem CB3 Mesohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 2012 pairs of predictions and observed data, the **slope** is 0.8351 and the **intercept** is 1.4613. The **R-Squared** value for this regression is 0.4824.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 2012 pairs of predictions and observed data, the **slope** is 0.8081 and the **intercept** is 0.1778. The **R-Squared** value for this regression is 0.4069.

Statistics (units in mg/l)

Mean observed 7.1788   Mean predicted 6.8465
Min. observed 0.05   Min. predicted 1.554
Max. observed 15.9333   Max. predicted 13.76
Std. Dev. Observed 2.6329   Std. Dev. predicted 2.1897
Median observed 6.9350   Median predicted 6.7385
90th Percentile observed 10.8000   90th Percentile predicted 9.7097
10th Percentile observed 4.0000   10th Percentile predicted 4.0228

Differences (predicted – observed)

Mean difference -0.3323 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 2012
Number of Predicted Violations 115
Number of Observed Violations 128

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment CB3MH   Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
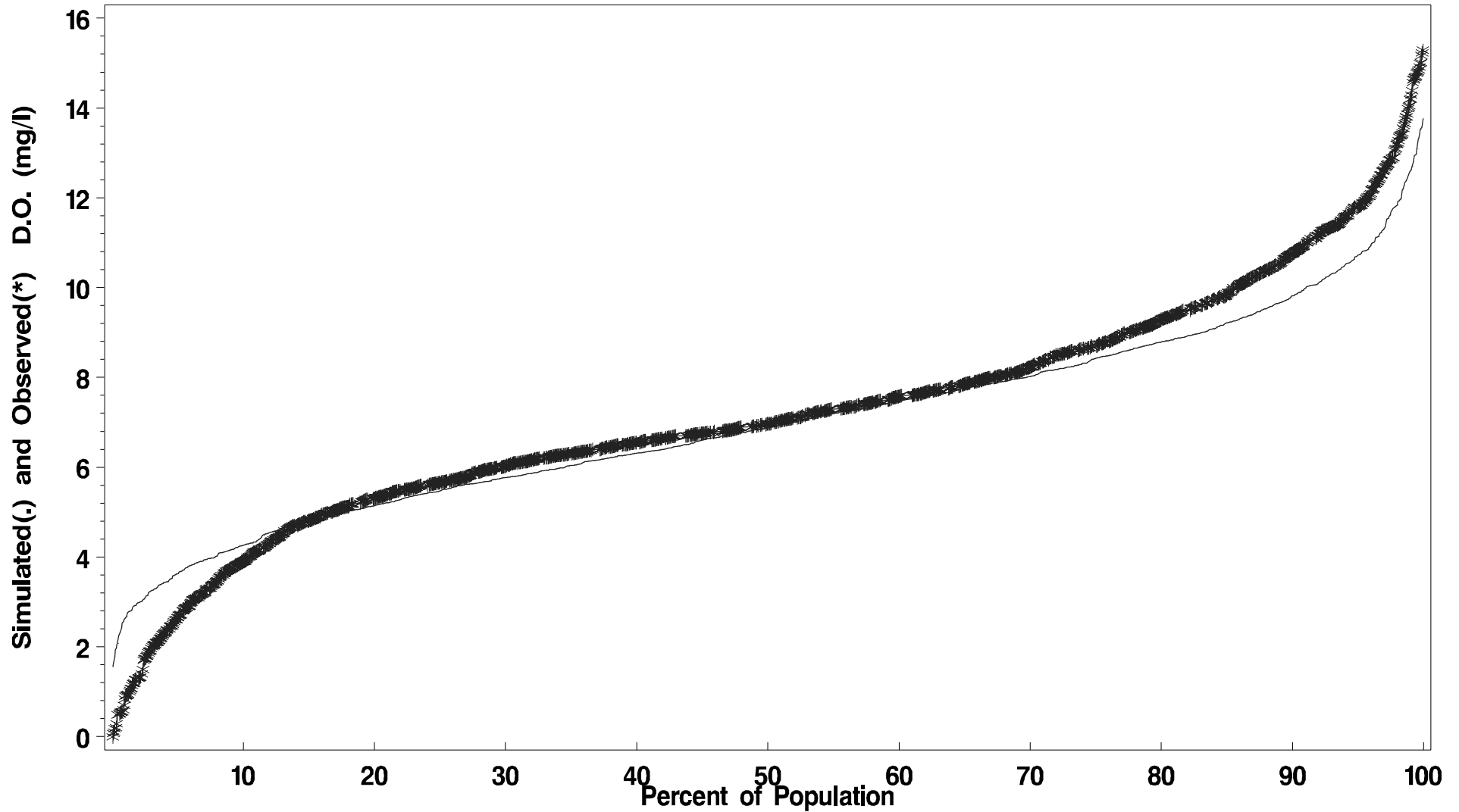
Migratory Dissolved Oxygen (mg/l)
Segment CB3MH Season: June 11 – Feb 14
(Scatter Plot)
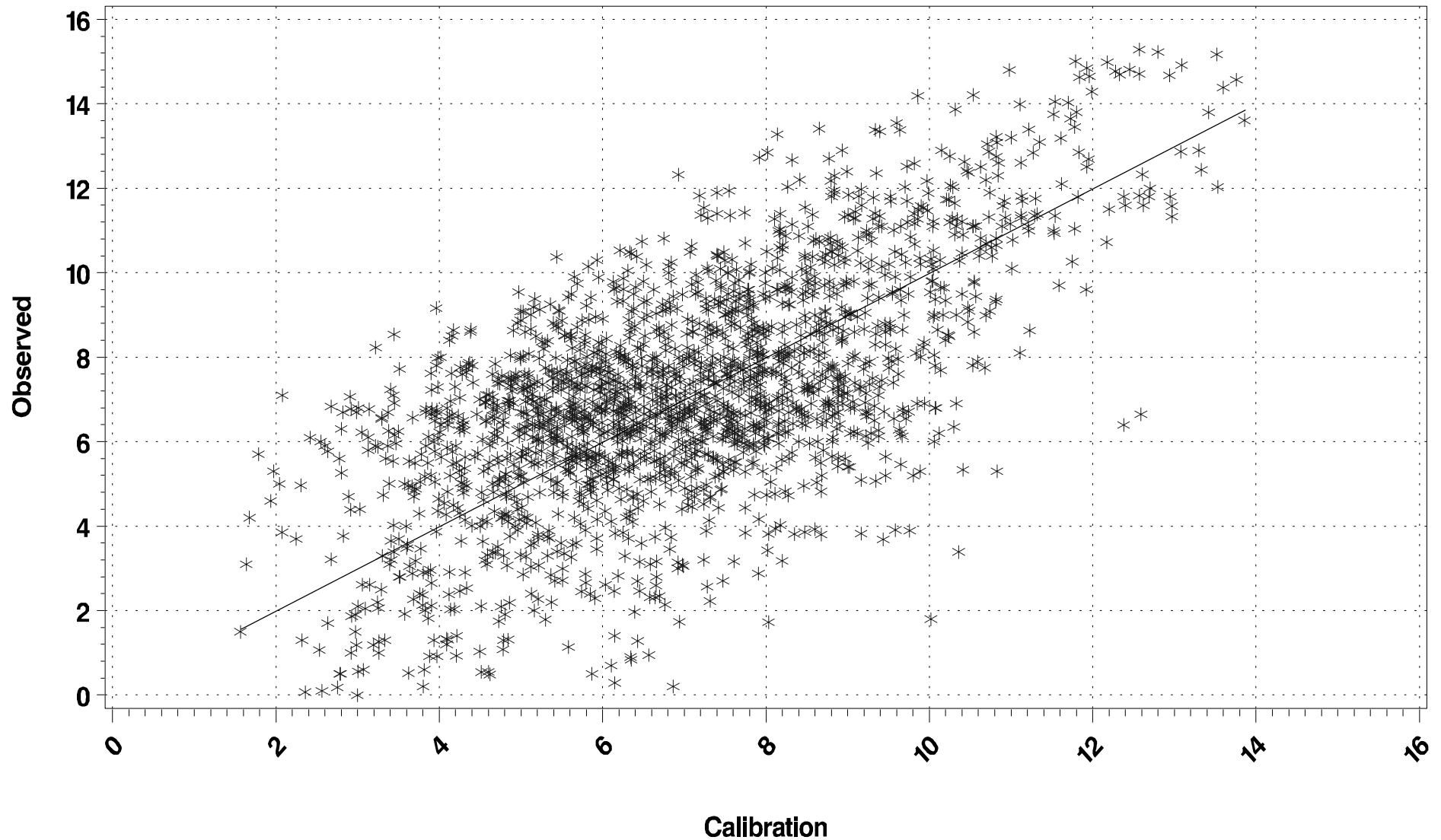
Regression of Calibration vs. Observations[1]

Using the 636 pairs of predictions and observed data, the **slope** is 0.3013 and the **intercept** is 2.4871. The **R-Squared** value for this regression is 0.0724.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 636 pairs of predictions and observed data, the **slope** is 0.4978 and the **intercept** is 0.2164. The **R-Squared** value for this regression is 0.0126.

Statistics (units in mg/l)

Mean observed 3.4658   Mean predicted 3.2479
Min. observed 0   Min. predicted 0
Max. observed 10.092   Max. predicted 9.45
Std. Dev. Observed 2.2466   Std. Dev. predicted 2.0057
Median observed 3.5185   Median predicted 3.0605
90th Percentile observed 6.3210   90th Percentile predicted 6.0780
10th Percentile observed 0.4880   10th Percentile predicted 0.7493

Differences (predicted – observed)

Mean difference -0.2179 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 636
Number of Predicted Violations 155
Number of Observed Violations 173

[1] observed is dependent, predicted is independent

Deep Water   Dissolved Oxygen (mg/l)
Segment CB3MH   Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Water Dissolved Oxygen (mg/l)
Segment CB3MH Season: May 1 — Sept 30

(Scatter Plot)

Observed (y-axis)
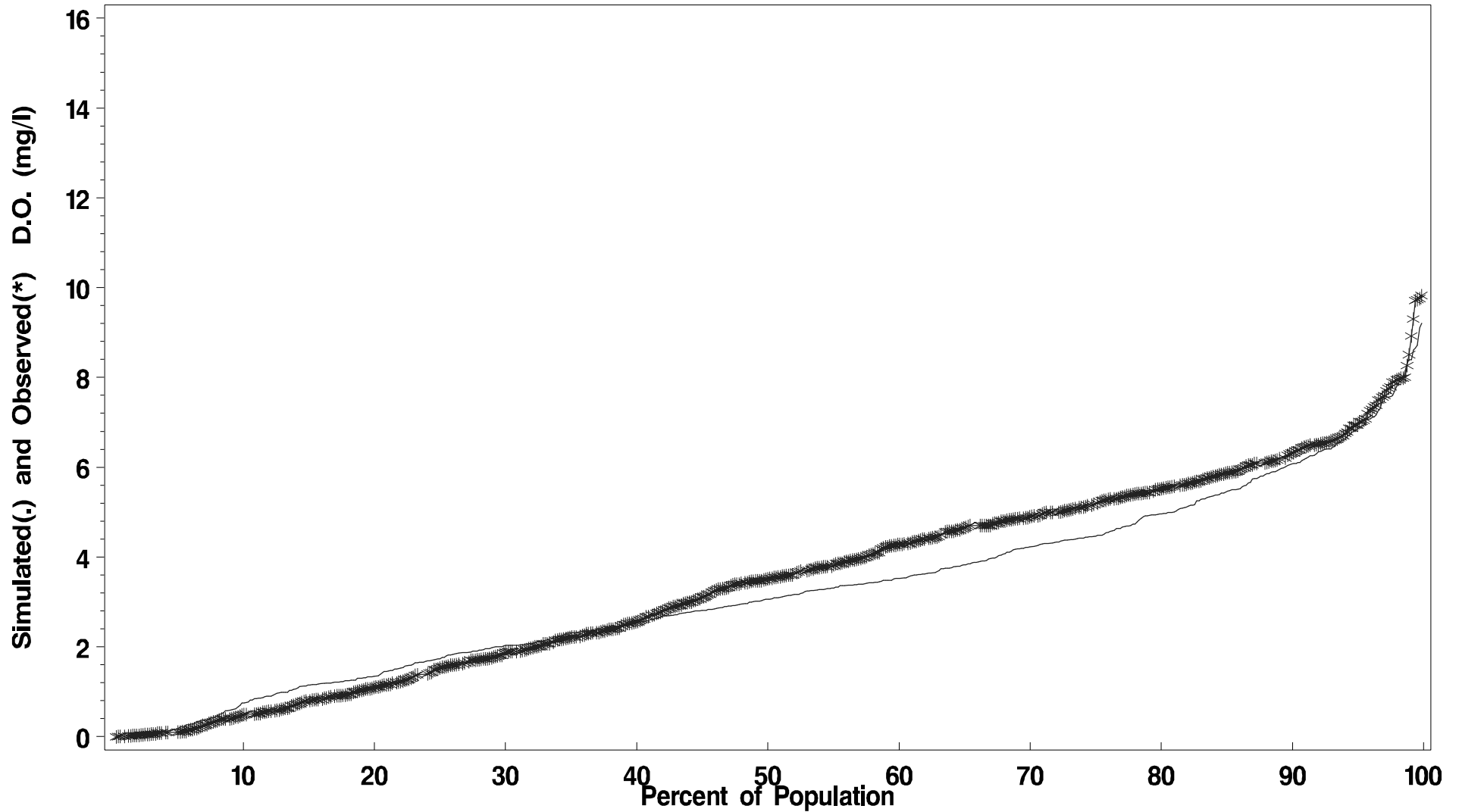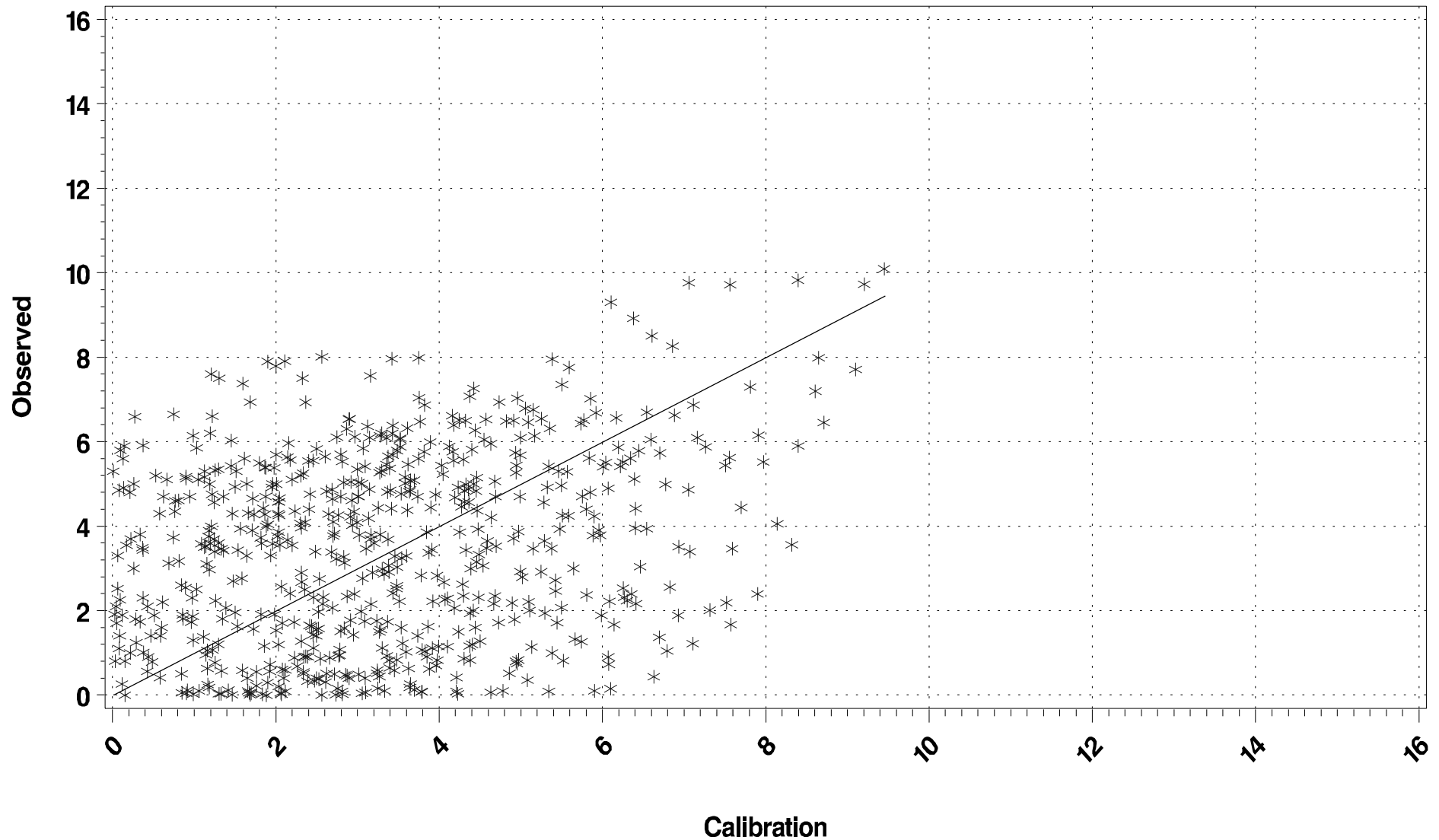
Calibration (x-axis)

DEEP WATER **Dissolved Oxygen**
Segment CB3MH (Mainstem CB3 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 220 pairs of predictions and observed data, the **slope** is 0.4115 and the **intercept** is 4.6516. The **R-Squared** value for this regression is 0.3131.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 220 pairs of predictions and observed data, the **slope** is 0.3960 and the **intercept** is 0.5684. The **R-Squared** value for this regression is 0.2658.

Statistics (units in mg/l)

Mean observed 7.7575   Mean predicted 7.5483
Min. observed 0.77   Min. predicted 2.191
Max. observed 14.77   Max. predicted 13.28
Std. Dev. Observed 2.2519   Std. Dev. predicted 3.0622
Median observed 7.9800   Median predicted 8.0137
90th Percentile observed 10.6000   90th Percentile predicted 11.6955
10th Percentile observed 4.8500   10th Percentile predicted 3.4519

Differences (predicted – observed)

Mean difference -0.2092 mg/l

Violations of Standards
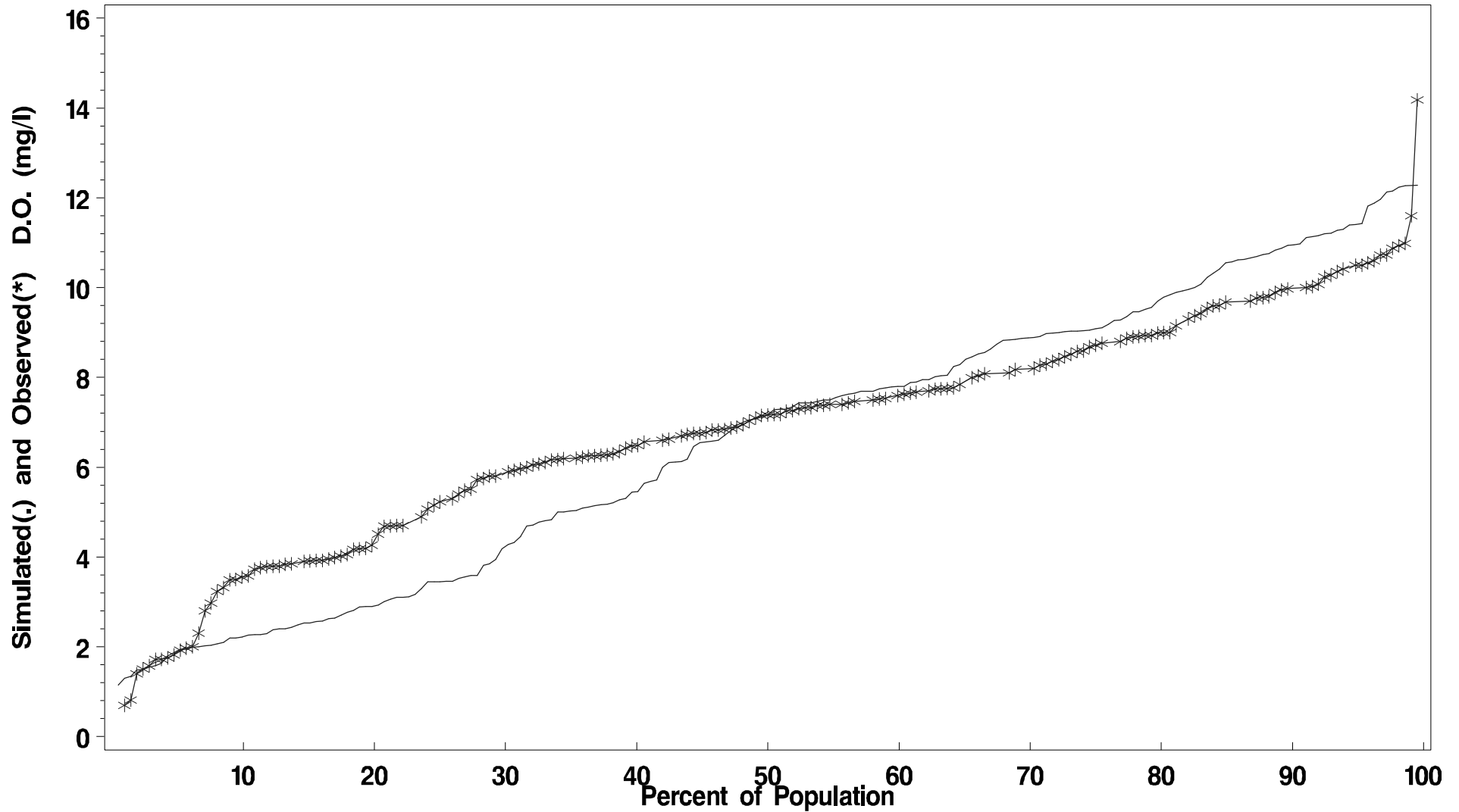Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 220
Number of Predicted Violations 26
Number of Observed Violations 9

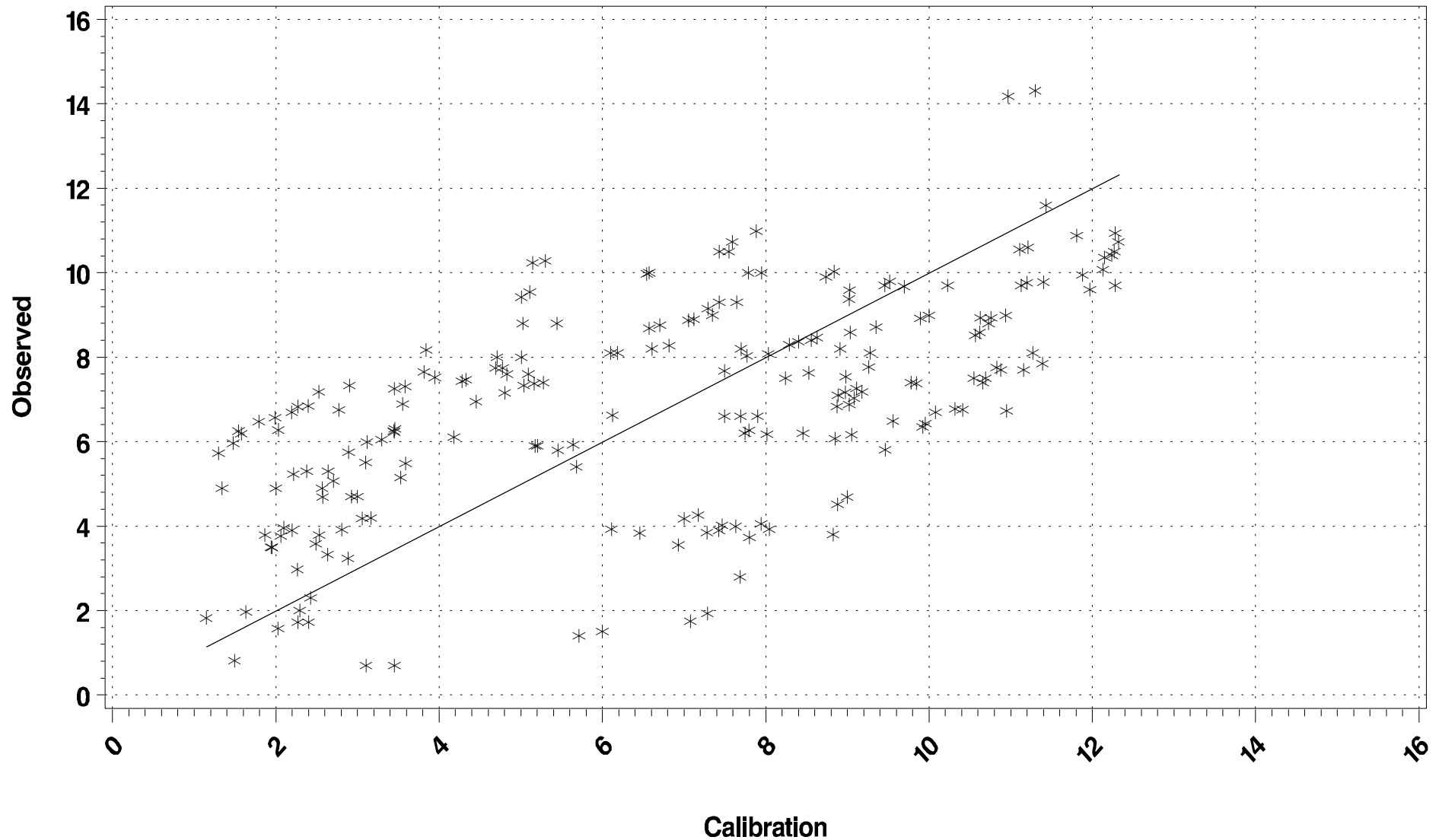[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB3MH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

**Deep Water Dissolved Oxygen (mg/l)
Segment CB3MH Season: Oct 1 — April 30**
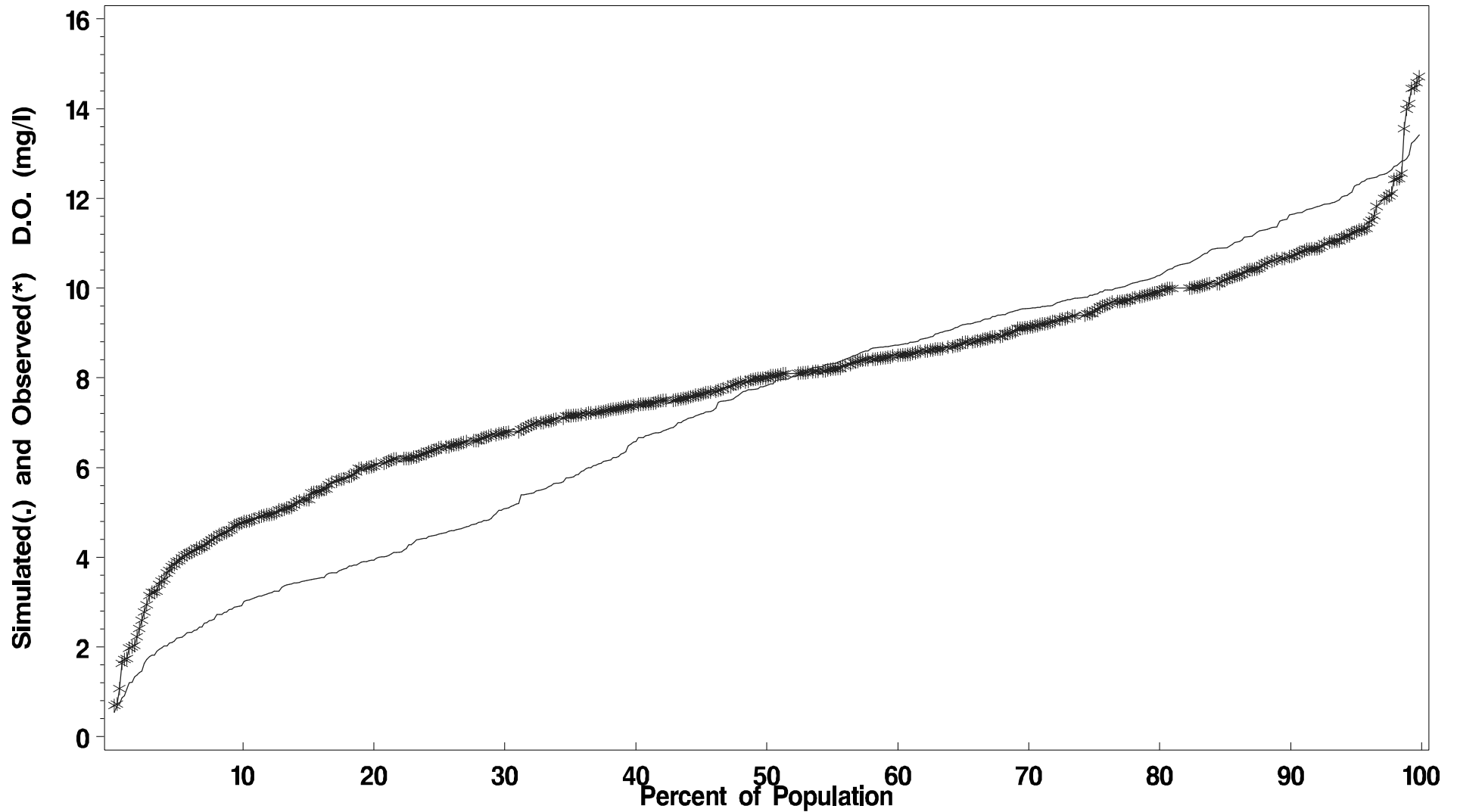
(Scatter Plot)

Observed
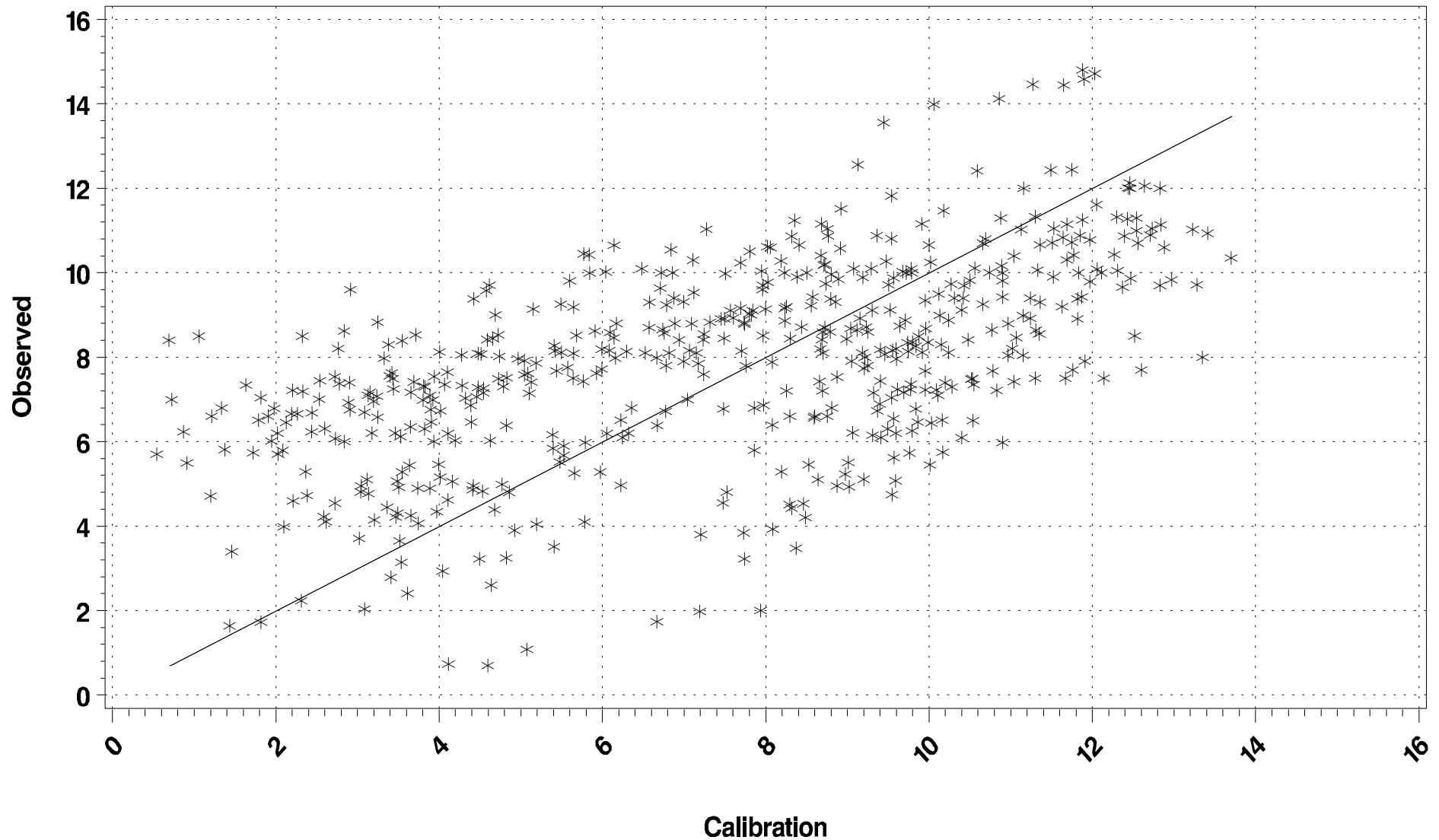
Calibration

DEEP CHANNEL **Dissolved Oxygen**
Segment CB3MH (Mainstem CB3 Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 190 pairs of predictions and observed data, the **slope** is 0.4728 and the **intercept** is 0.6242. The **R-Squared** value for this regression is 0.2138.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 190 pairs of predictions and observed data, the **slope** is 0.4719 and the **intercept** is 0.1293. The **R-Squared** value for this regression is 0.1652.

Statistics (units in mg/l)

Mean observed 1.4965   Mean predicted 1.8450
Min. observed 0   Min. predicted 0.0054
Max. observed 7.9   Max. predicted 7.761
Std. Dev. Observed 1.6870   Std. Dev. predicted 1.6500
Median observed 0.9000   Median predicted 1.3994
90th Percentile observed 4.2449   90th Percentile predicted 4.5309
10th Percentile observed 0.0300   10th Percentile predicted 0.2453

Differences (predicted – observed)

Mean difference 0.3485 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l.

Number of predicted and observed pairs 190
Number of Predicted Violations 67
Number of Observed Violations 100

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)
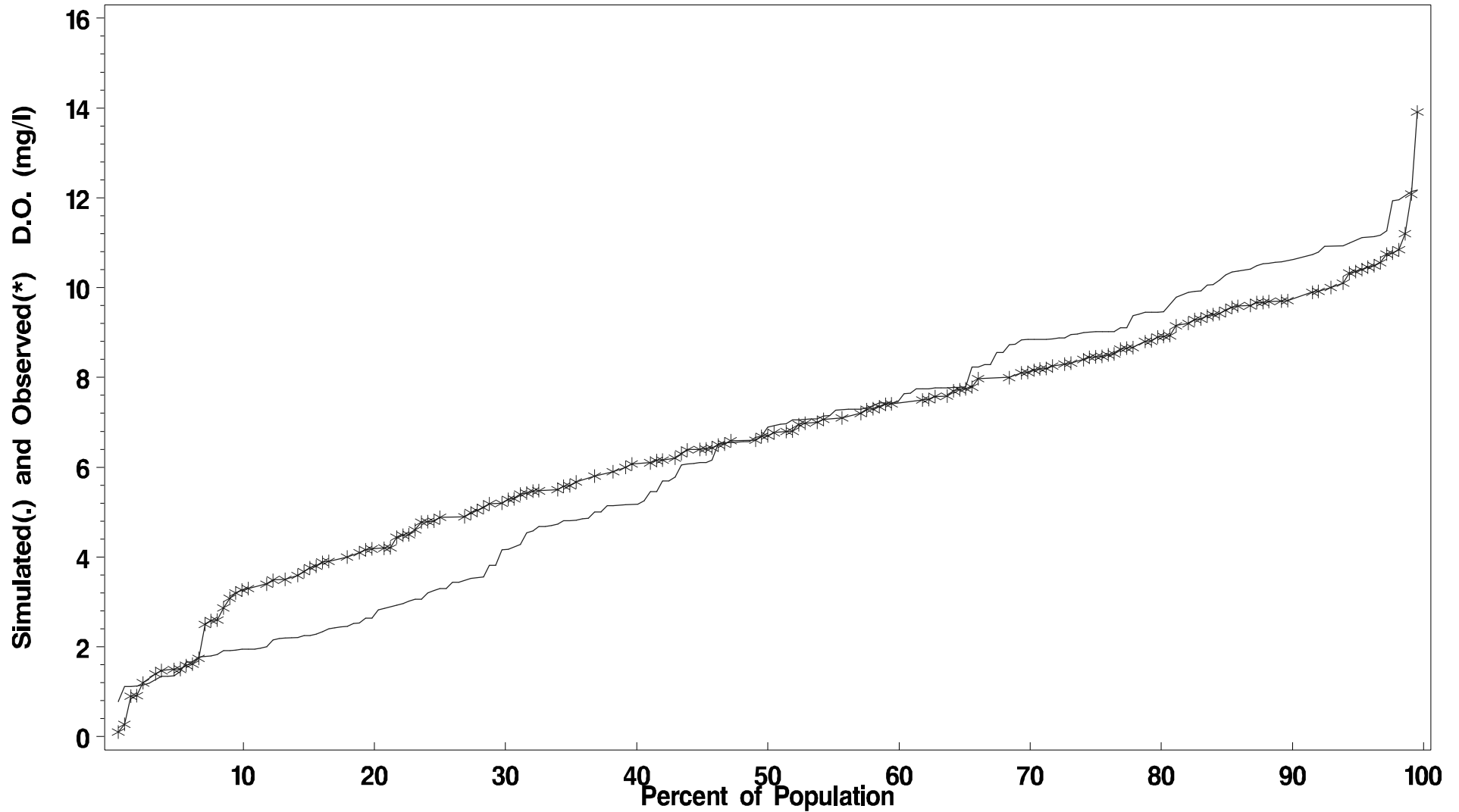# Segment CB3MH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
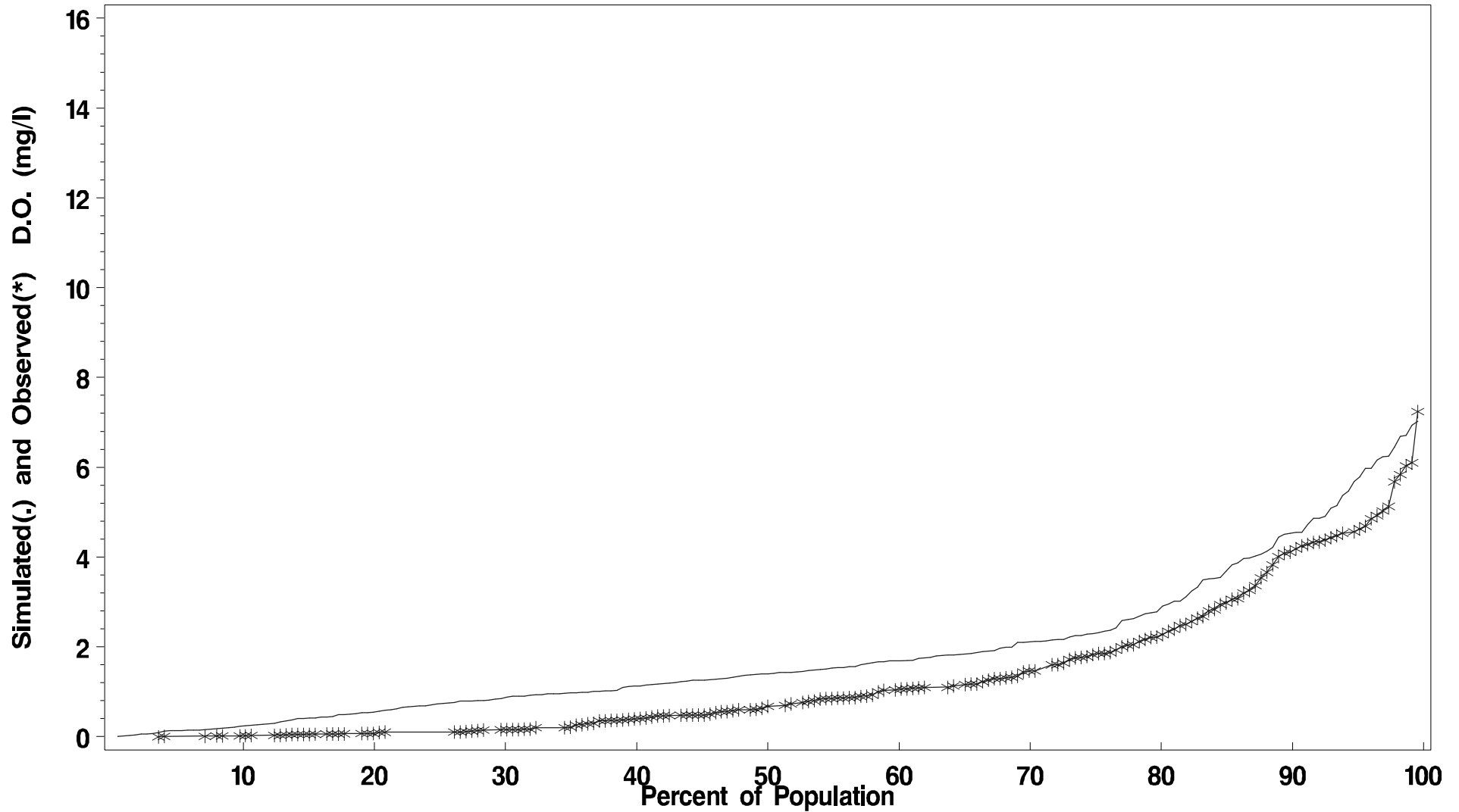
Deep Channel Dissolved Oxygen (mg/l)
Segment CB3MH Season: May 1 – Sept 30
(Scatter Plot)
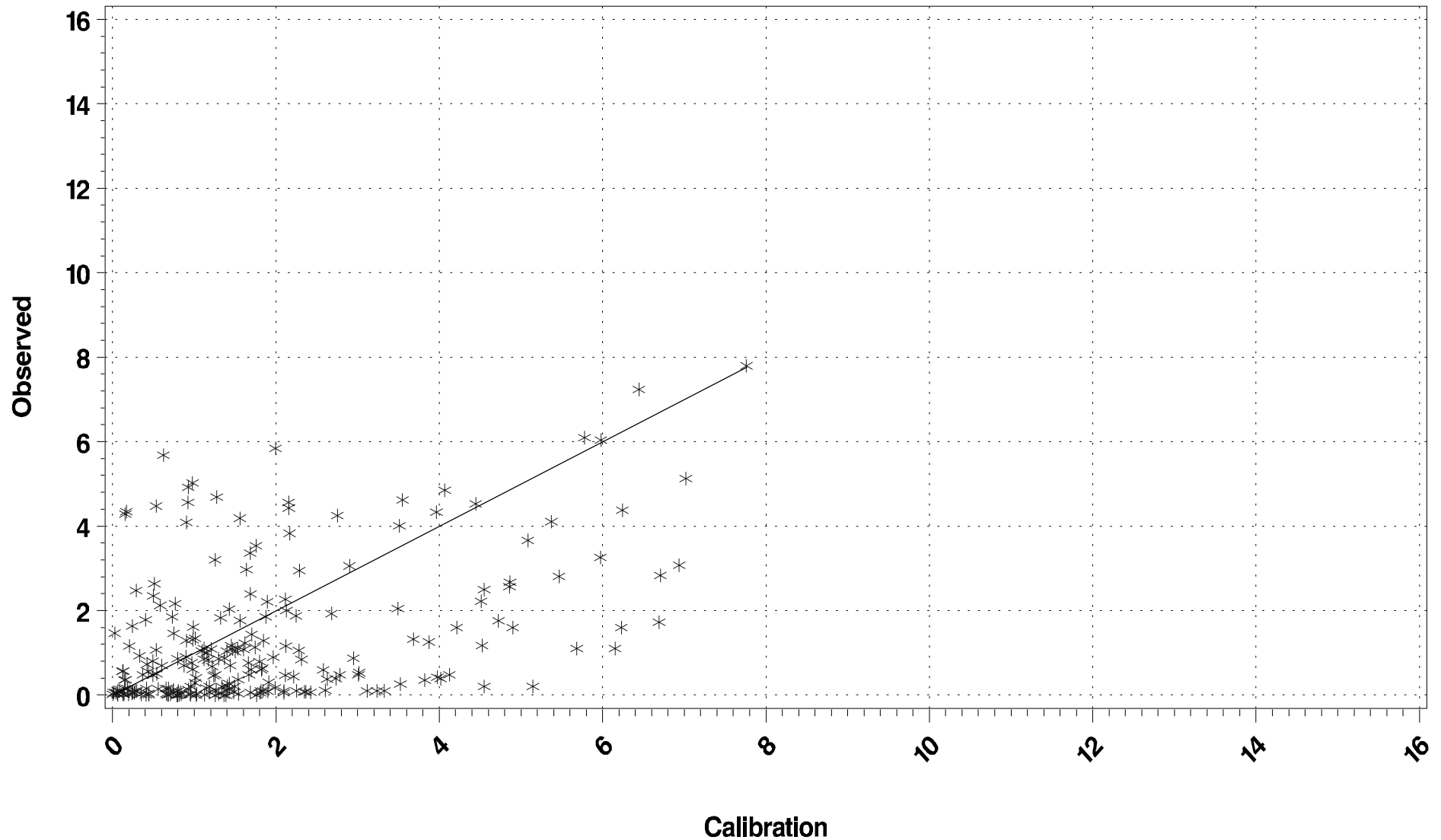
DEEP CHANNEL **Dissolved Oxygen**
Segment CB3MH (Mainstem CB3 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 169 pairs of predictions and observed data, the **slope** is 0.4531 and the **intercept** is 4.0215. The **R-Squared** value for this regression is 0.3693.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 169 pairs of predictions and observed data, the **slope** is 0.4120 and the **intercept** is 0.5358. The **R-Squared** value for this regression is 0.3111.

Statistics (units in mg/l)

Mean observed 7.0687   Mean predicted 6.7260
Min. observed 0.7   Min. predicted 1.148
Max. observed 14.58   Max. predicted 12.28
Std. Dev. Observed 2.4143   Std. Dev. predicted 3.2386
Median observed 7.4000   Median predicted 7.3493
90th Percentile observed 10.0000   90th Percentile predicted 11.1080
10th Percentile observed 3.9700   10th Percentile predicted 2.2621

Differences (predicted – observed)

Mean difference -0.3427 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 169
Number of Predicted Violations 43
Number of Observed Violations 10

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)
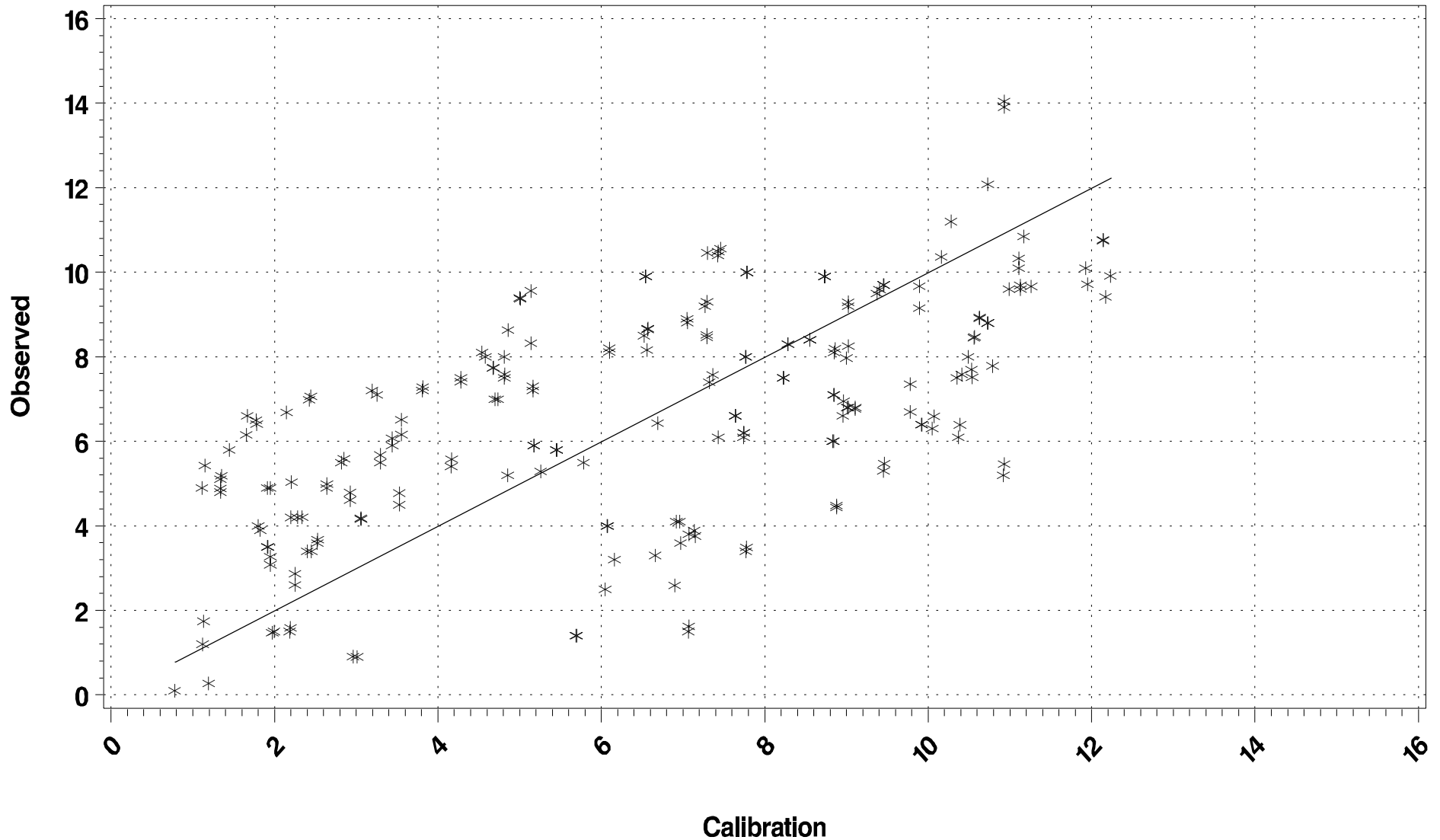# Segment CB3MH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Channel Dissolved Oxygen (mg/l)
Segment CB3MH Season: Oct 1 – April 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 210 pairs of predictions and observed data, the **slope** is 0.4420 and the **intercept** is 0.3819. The **R-Squared** value for this regression is 0.2732.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 210 pairs of predictions and observed data, the **slope** is 0.4632 and the **intercept** is 0.0897. The **R-Squared** value for this regression is 0.2430.

Statistics (units in mg/l)

Mean observed 1.0577   Mean predicted 1.5287
Min. observed 0   Min. predicted -0.0078
Max. observed 6.8   Max. predicted 6.701
Std. Dev. Observed 1.3992   Std. Dev. predicted 1.6546
Median observed 0.5000   Median predicted 0.9193
90th Percentile observed 3.0000   90th Percentile predicted 4.4590
10th Percentile observed 0.0200   10th Percentile predicted 0.0509


Differences (predicted – observed)

Mean difference 0.4711 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 210
Number of Predicted Violations 113
Number of Observed Violations 136

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[1] observed is dependent, predicted is independent

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB3MH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
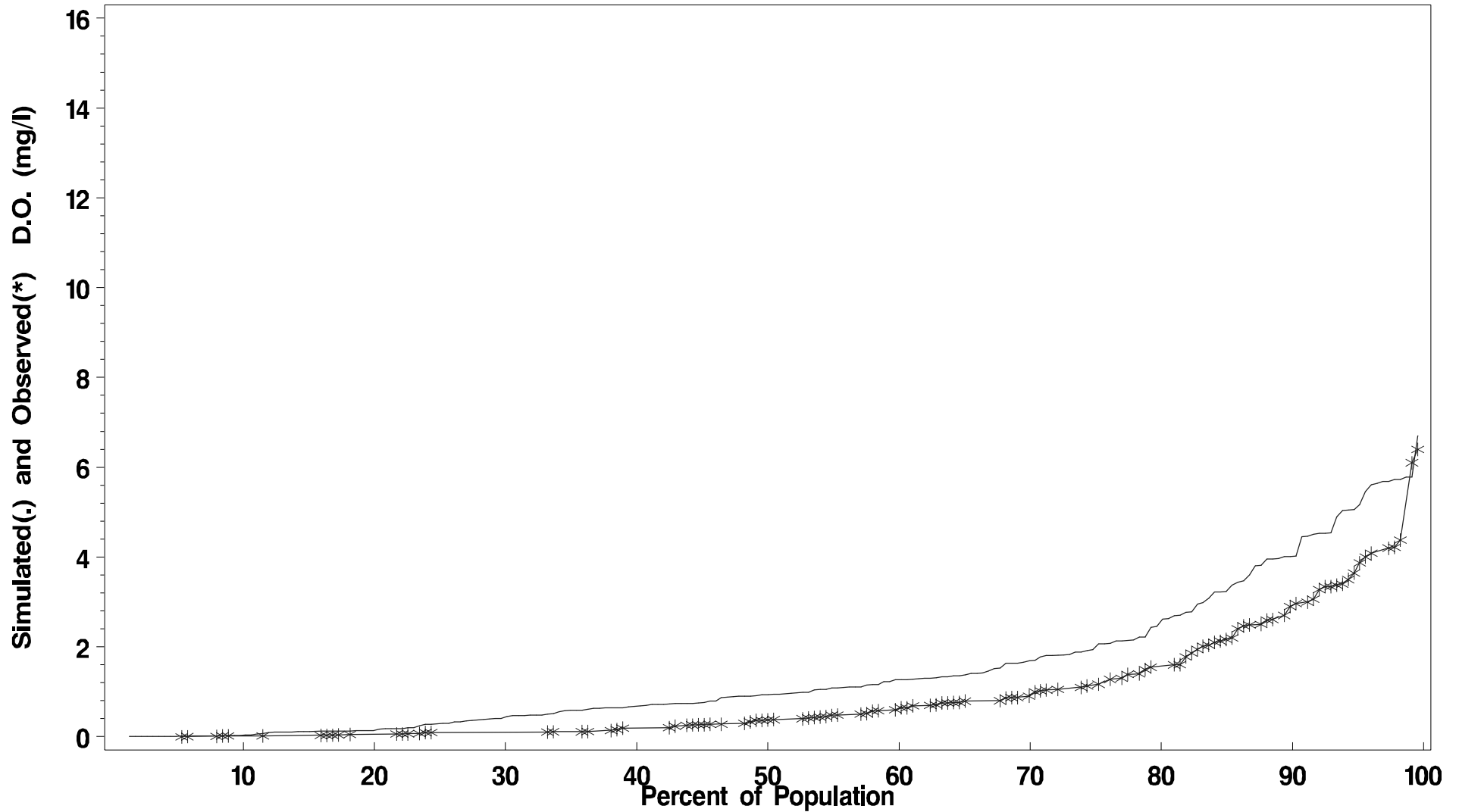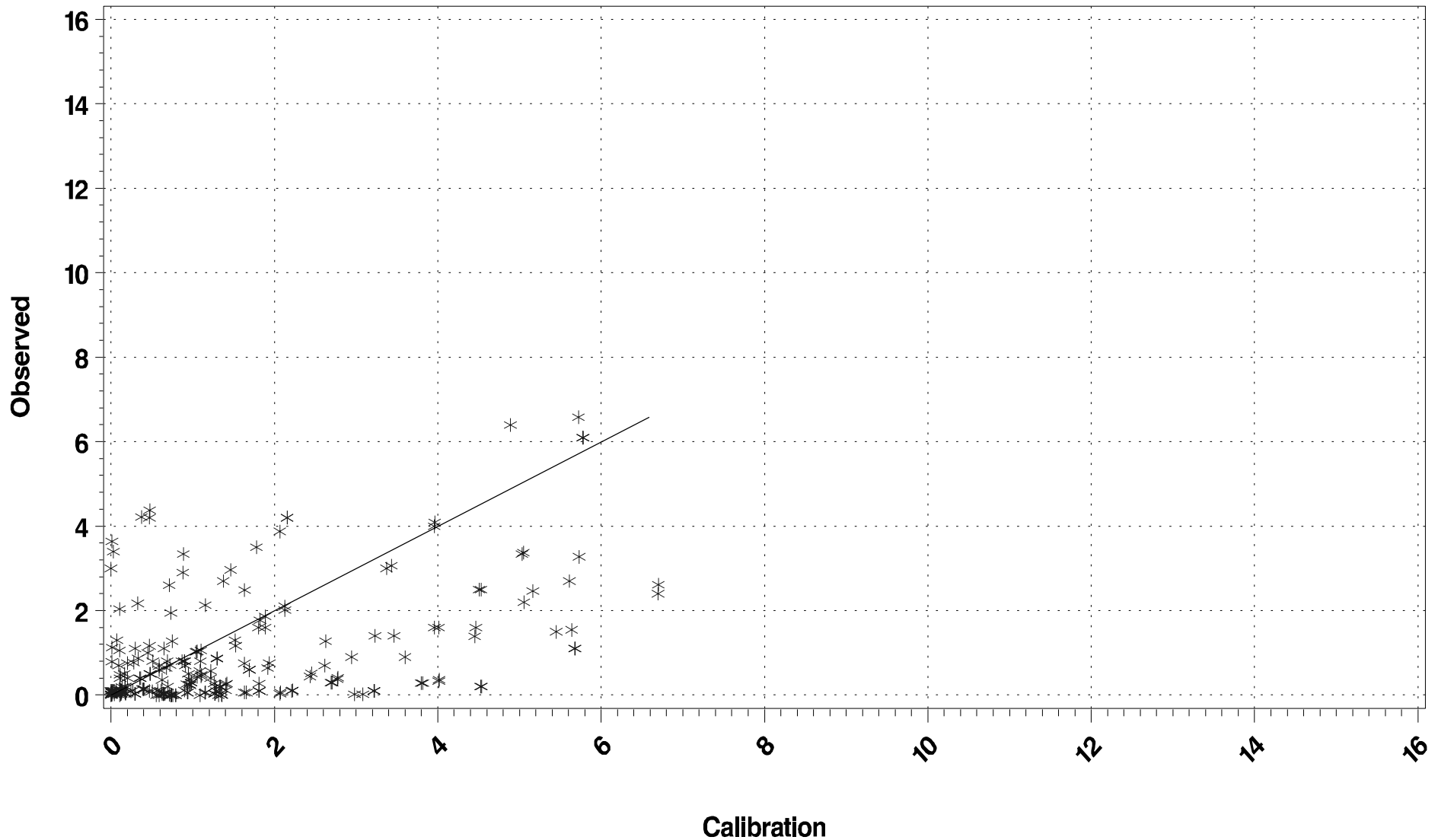
Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB3MH Season: May 1 – Sept 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 195 pairs of predictions and observed data, the **slope** is 0.4731 and the **intercept** is 3.6793. The **R-Squared** value for this regression is 0.3718.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 195 pairs of predictions and observed data, the **slope** is 0.4459 and the **intercept** is 0.4926. The **R-Squared** value for this regression is 0.3274.

Statistics (units in mg/l)

Mean observed 6.6531   Mean predicted 6.2857
Min. observed 0.4   Min. predicted 0.7785
Max. observed 11.5667   Max. predicted 12.23
Std. Dev. Observed 2.4699   Std. Dev. predicted 3.1834
Median observed 6.9000   Median predicted 6.5690
90th Percentile observed 9.9000   90th Percentile predicted 10.6250
10th Percentile observed 3.5000   10th Percentile predicted 1.9214

Differences (predicted – observed)

Mean difference -0.3674 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 195
Number of Predicted Violations 53
Number of Observed Violations 19

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[1] observed is dependent, predicted is independent
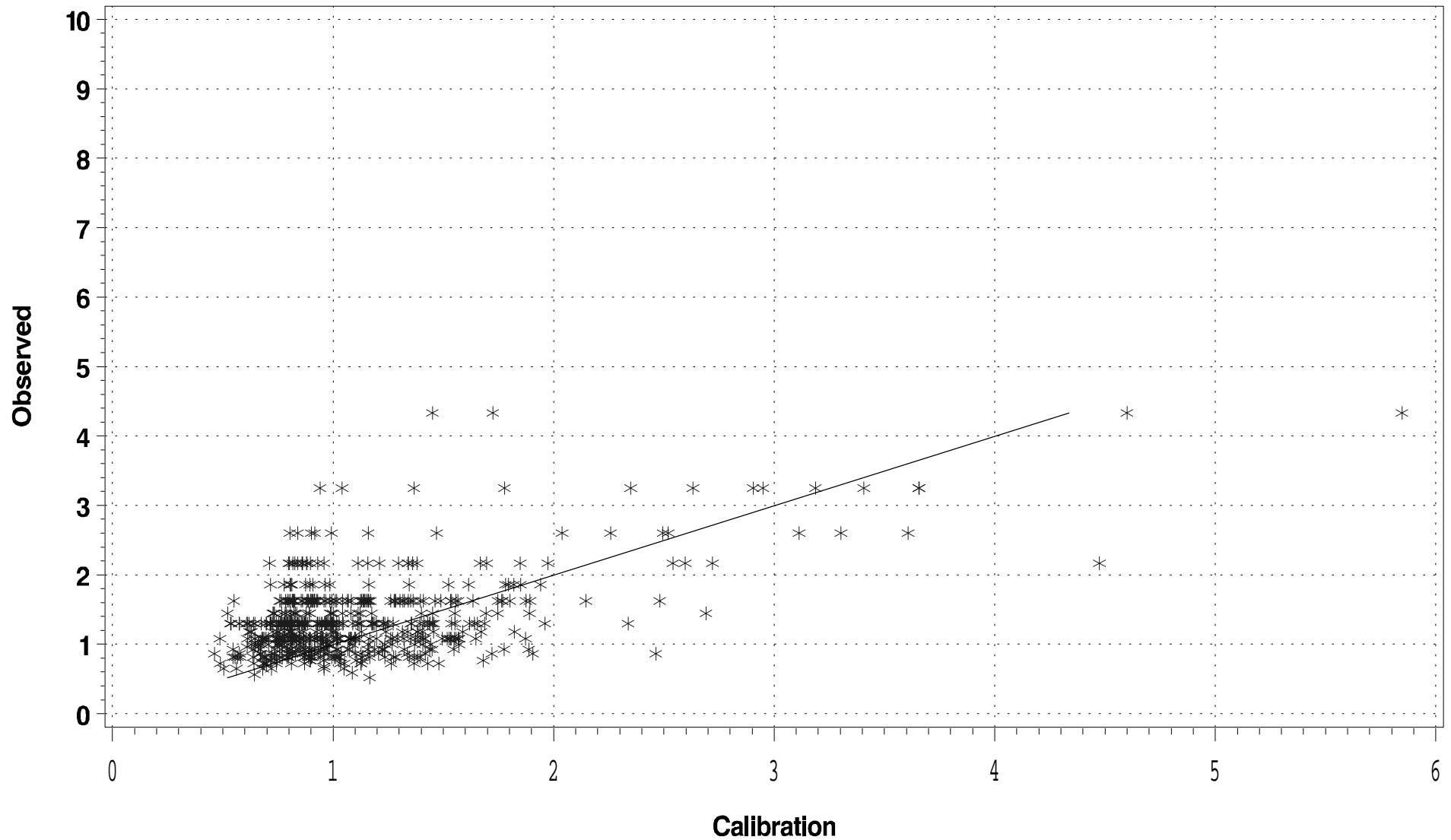
Deep Channel Anoxic   Dissolved Oxygen (mg/l)
Segment CB3MH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

**Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB3MH Season: Oct 1 — April 30**

(Scatter Plot)

Observed

Calibration

Regression of Calibration vs. Observations[1]
Using the 227 pairs of predictions and observed data, the **slope** is 0.3459 and the **intercept** is 11.8883. The **R-Squared** value for this regression is 0.0077.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 227 pairs of predictions and observed data, the **slope** is 0.3171 and the **intercept** is 0.8167. The **R-Squared** value for this regression is 0.0138.

Statistics (units in µg/l)

Mean observed 15.2653   Mean predicted 9.7637
Min. observed 0.4010   Min. predicted 4.7817
Max. observed 44.3000   Max. predicted 16.9400
Std. Dev. Observed 9.1791   Std. Dev. predicted 2.3281
Median observed 12.7000   Median predicted 9.7119
95th Percentile observed 34.1000   95th Percentile predicted 13.8410
10th Percentile observed 5.5000   10th Percentile predicted 6.6122

Differences (predicted – observed)

Mean difference -5.5016 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)

Segment CB3MH   Season: July 1 – Sept 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
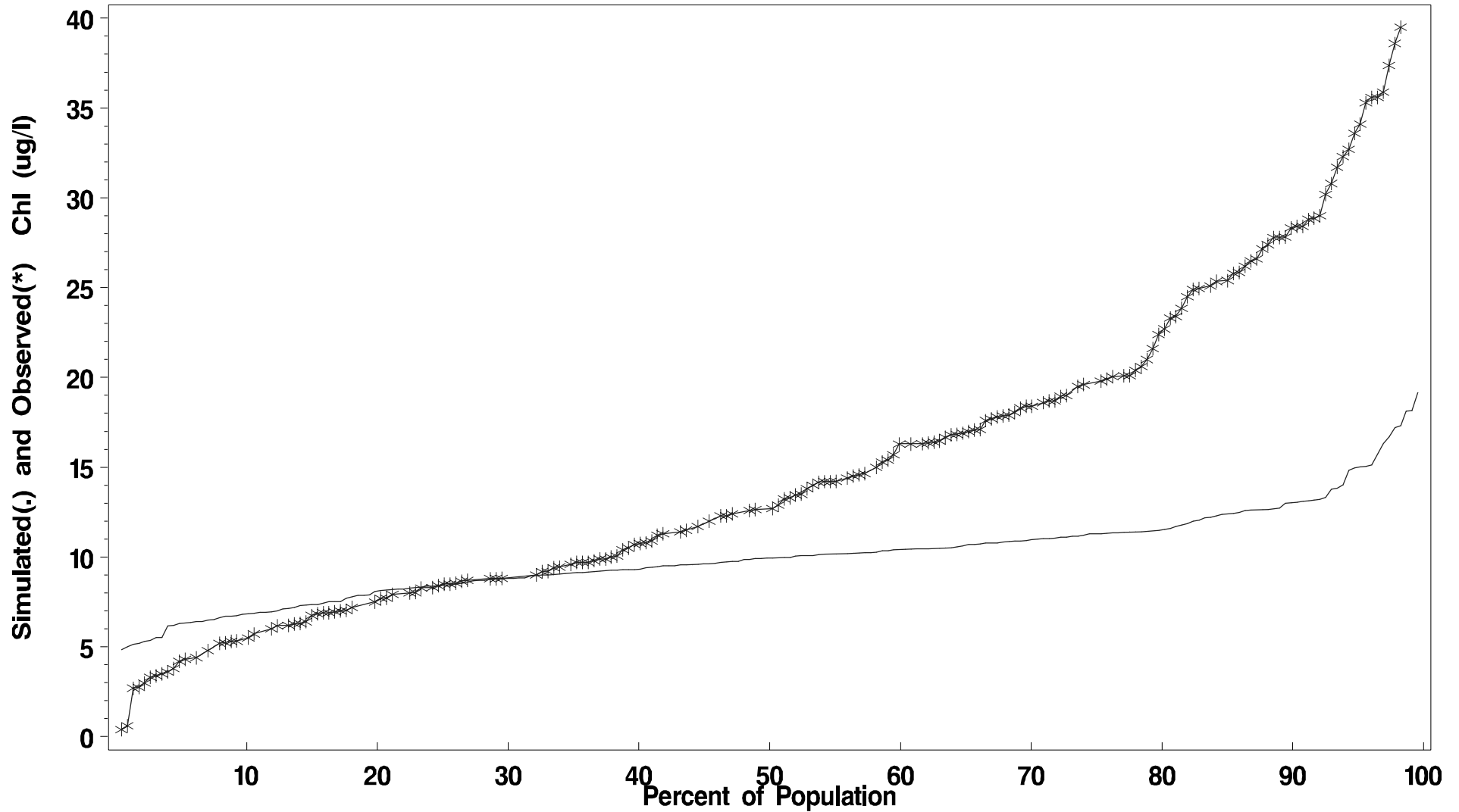
Chlorophyll Concentration (ug/l)
Segment CB3MH   Season: July 1 – Sept 30
(Scatter Plot)
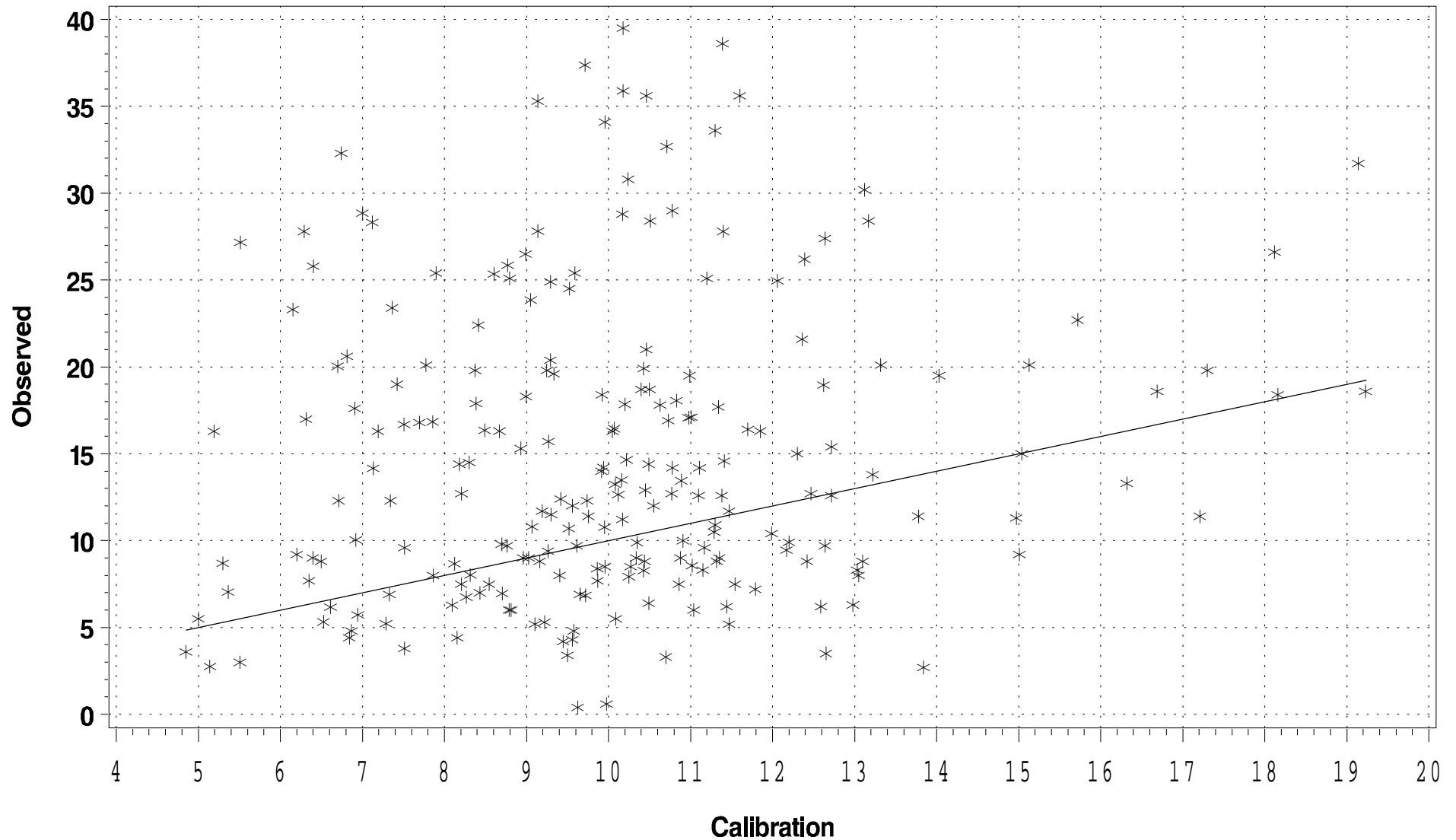
MESOHALINE **Chlorophyll**
Segment CB3MH (Mainstem CB3 Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 223 pairs of predictions and observed data, the **slope** is 0.3319 and the **intercept** is 5.9431. The **R-Squared** value for this regression is 0.0378.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 223 pairs of predictions and observed data, the **slope** is 0.6993 and the **intercept** is 0.1536. The **R-Squared** value for this regression is 0.1273.

Statistics (units in μg/l)

Mean observed 10.6139   Mean predicted 14.0726
Min. observed 0.2000   Min. predicted 1.4091
Max. observed 45.0000   Max. predicted 41.1150
Std. Dev. Observed 8.3411   Std. Dev. predicted 4.8837
Median observed 7.9335   Median predicted 13.4870
95th Percentile observed 28.3000   95th Percentile predicted 21.3590
10th Percentile observed 2.7000   10th Percentile predicted 9.6691

Differences (predicted – observed)

Mean difference 3.4587 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB3MH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
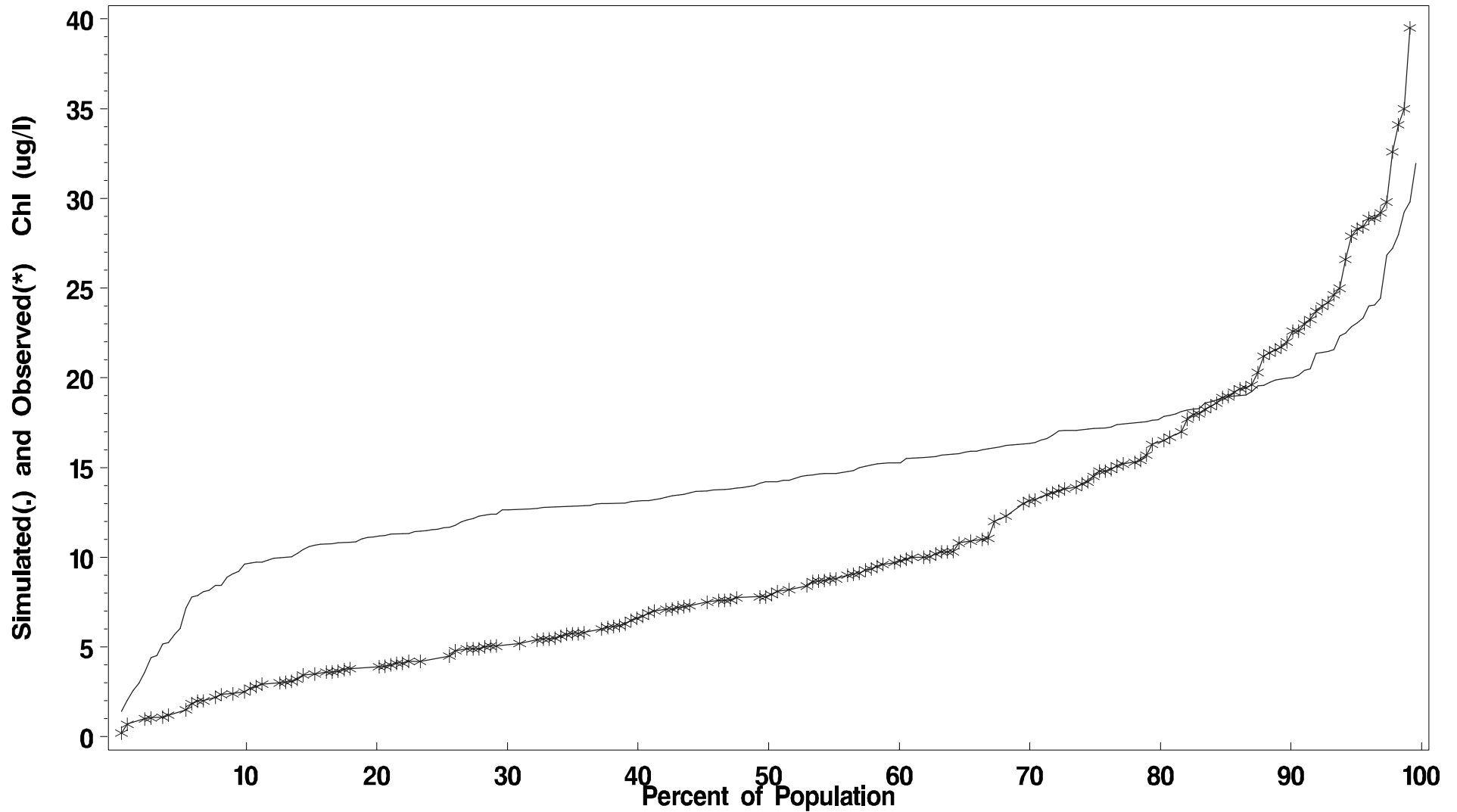
Chlorophyll Concentration (ug/l)
Segment CB3MH   Season: March 1 – May 30
(Scatter Plot)
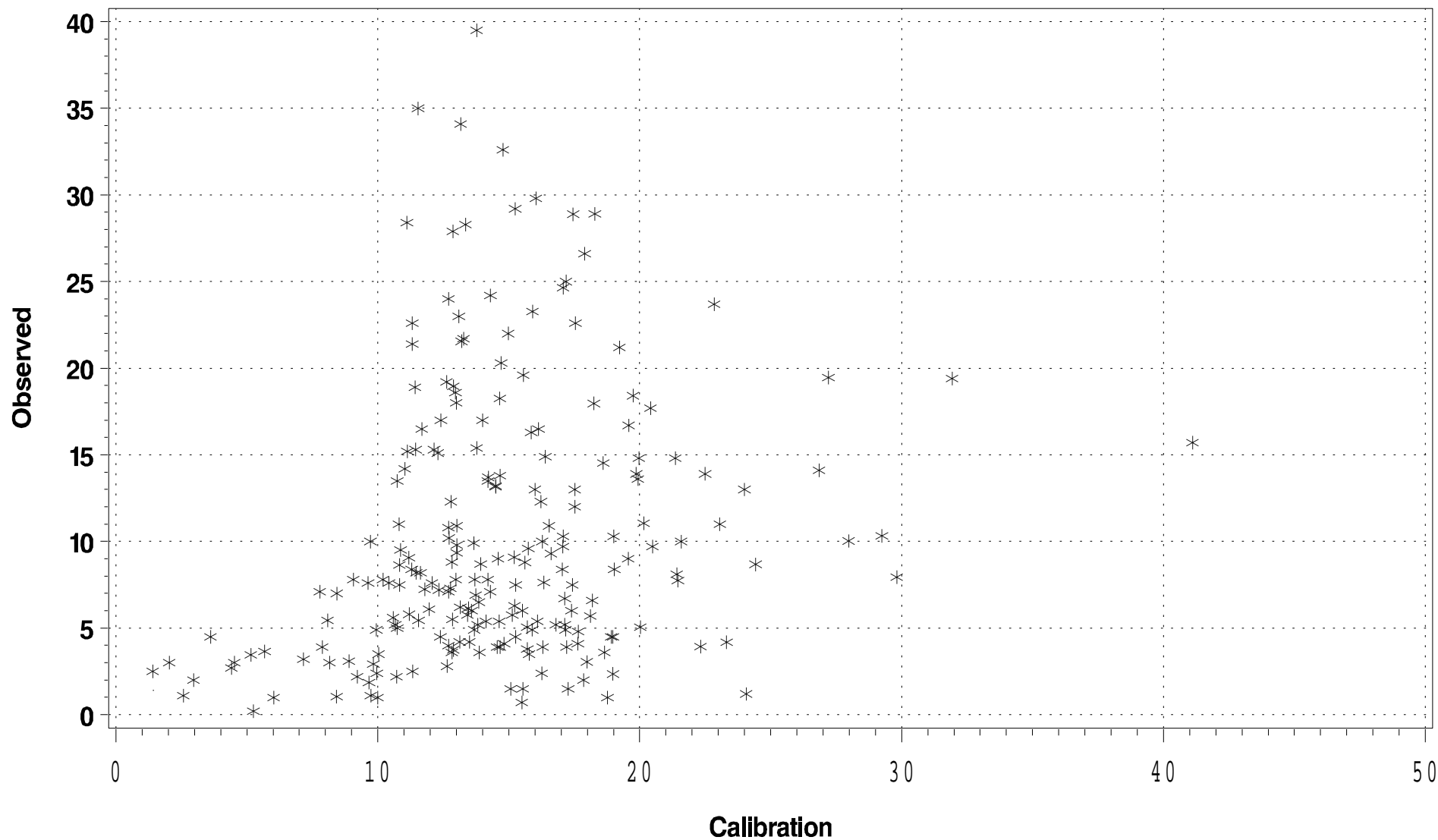
MESOHALINE **Light Attenuation**
Segment CB3MH (Mainstem CB3 Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 564 pairs of predictions and observed data, the **slope** is 0.5400 and the **intercept** is 0.7554. The **R-Squared** value for this regression is 0.2885.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 564 pairs of predictions and observed data, the **slope** is 0.4517 and the **intercept** is 0.2203. The **R-Squared** value for this regression is 0.2152.

Statistics (units in 1/m)

Mean observed 1.3493	Mean predicted 1.0999
Min. observed 0.5200	Min. predicted 0.4595
Max. observed 4.3333	Max. predicted 5.8465
Std. Dev. Observed 0.5633	Std. Dev. predicted 0.5602
Median observed 1.3000	Median predicted 0.9298
90th Percentile observed 2.1667	90th Percentile predicted 1.6466
10th Percentile observed 0.8125	10th Percentile predicted 0.6860

Differences (predicted – observed)

Mean difference -0.2494 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment CB3MH   Season: April 1 – Oct 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment CB3MH Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment CB4MH

Location Map of
Segment CB4MH within
the Chesapeake Bay Model Grid

CB4.1C
CB4.1W
CB4.1E

CB4.2W
CB4.2E
CB4.2C

CB4.3W
CB4.3E
CB4.3C

CB4.4

N
W E
S

0   1.5   3   6   9   12
Miles

Chesapeake Bay Program
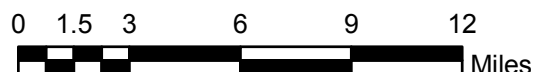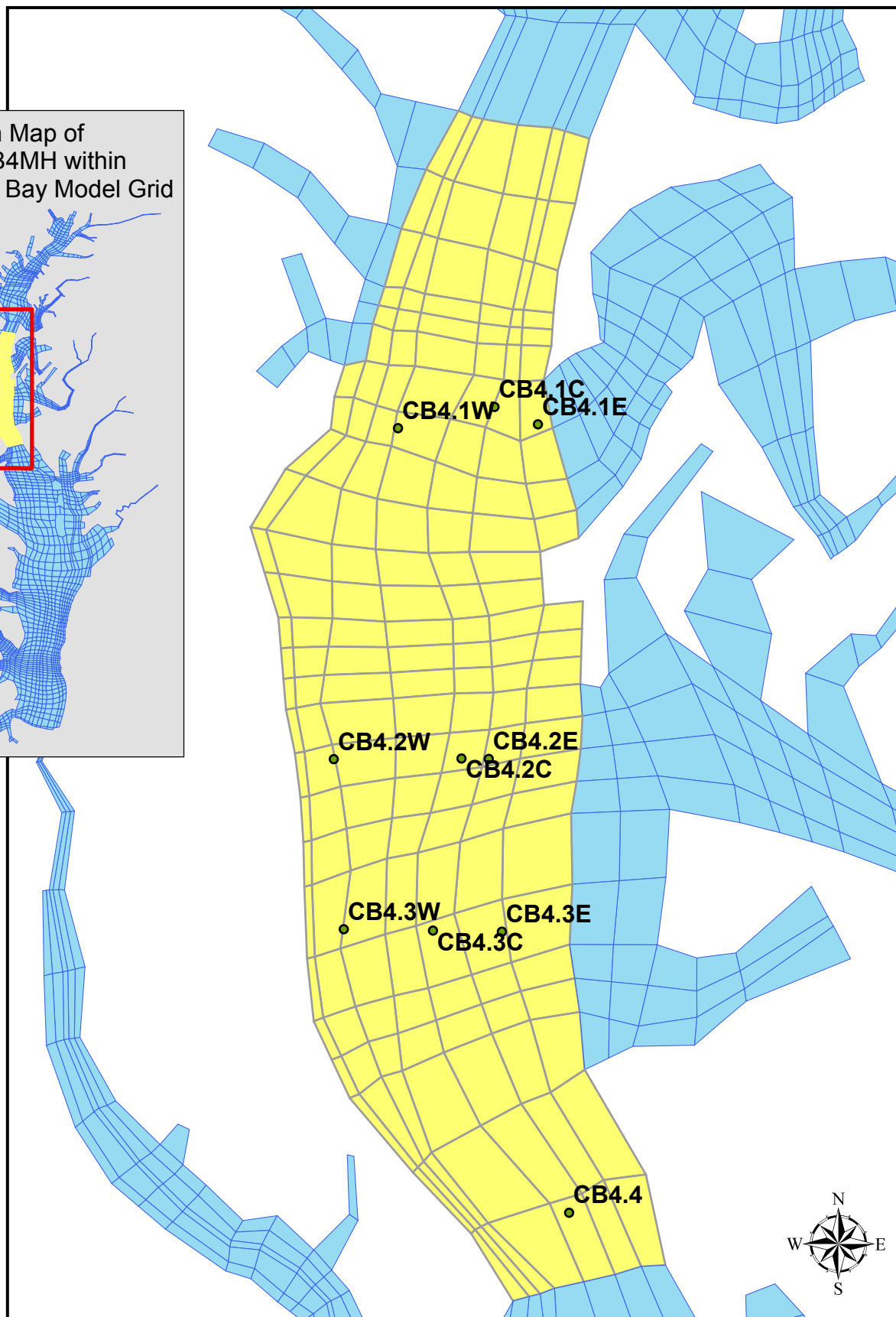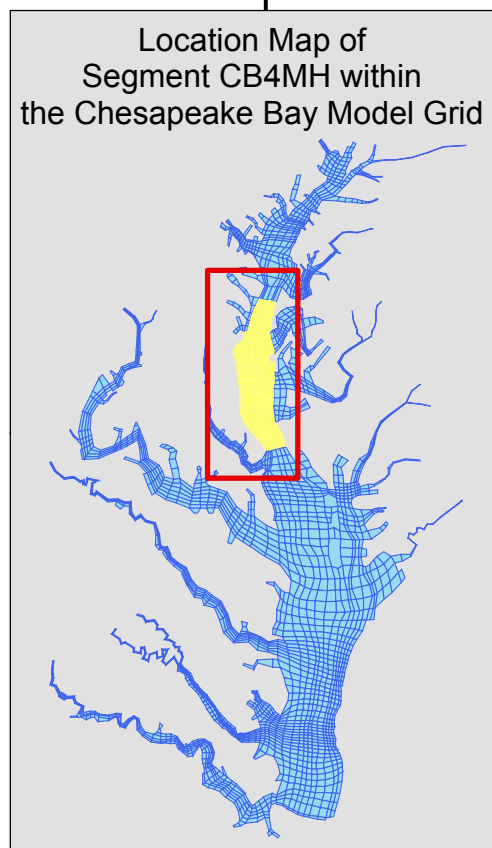
OPEN WATER **Dissolved Oxygen**
Segment CB4MH (Mainstem CB4 Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 7369 pairs of predictions and observed data, the **slope** is 0.7632 and the **intercept** is 1.8845. The **R-Squared** value for this regression is 0.5522.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 7369 pairs of predictions and observed data, the **slope** is 0.7988 and the **intercept** is 0.1832. The **R-Squared** value for this regression is 0.4697.

Statistics (units in mg/l)

Mean observed 8.4128   Mean predicted 8.5537
Min. observed 0.03   Min. predicted 0.9359
Max. observed 15.3   Max. predicted 15.92
Std. Dev. Observed 2.6146   Std. Dev. predicted 2.5456
Median observed 8.2400   Median predicted 8.3002
90th Percentile observed 11.8500   90th Percentile predicted 12.0530
10th Percentile observed 5.3250   10th Percentile predicted 5.4864

Differences (predicted – observed)

Mean difference 0.1409 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 7369
Number of Predicted Violations 92
Number of Observed Violations 289

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
**Segment CB4MH   Season: Jan 1 – Dec 31**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
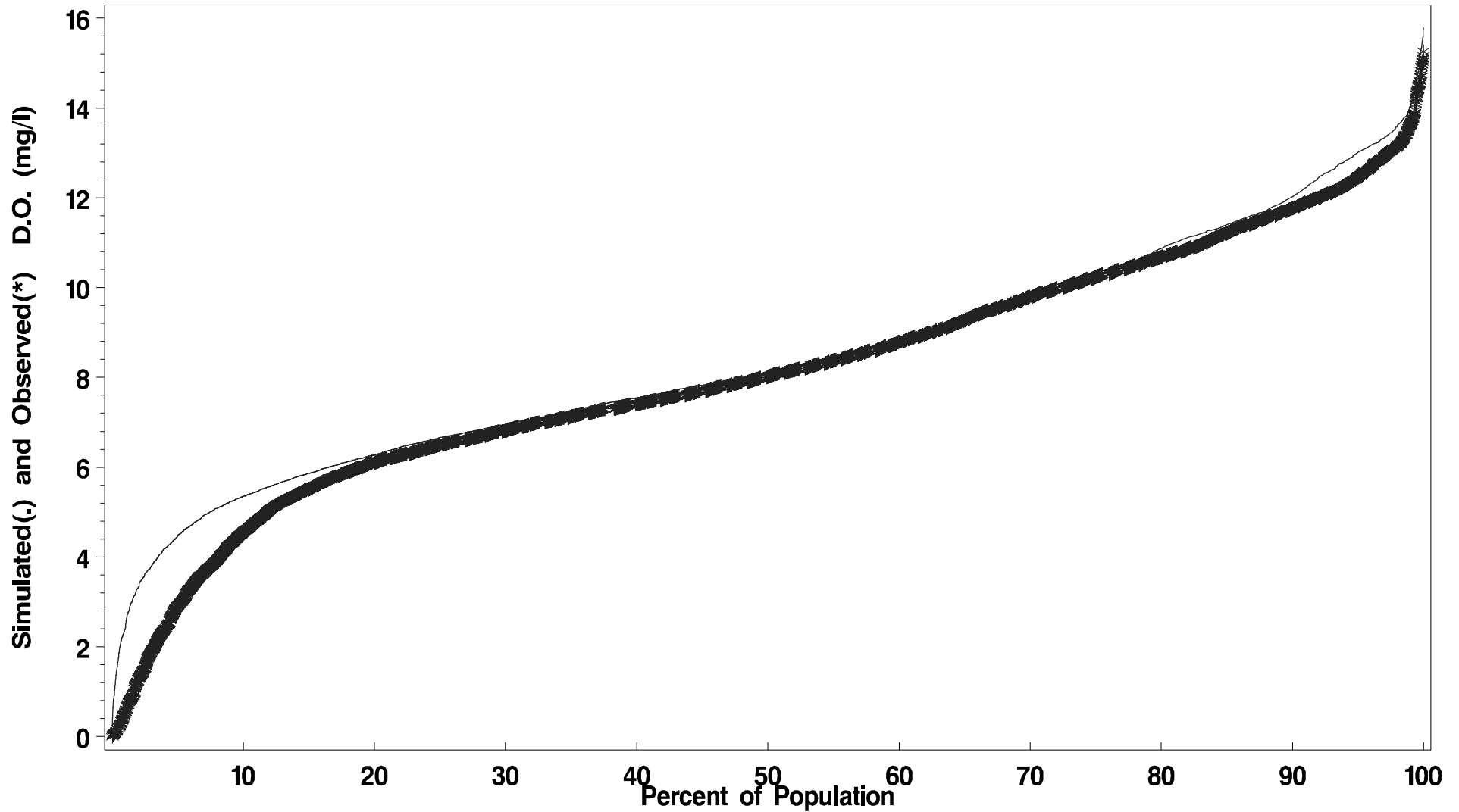
Open Water Dissolved Oxygen (mg/l)
Segment CB4MH Season: Jan 1 — Dec 31
(Scatter Plot)
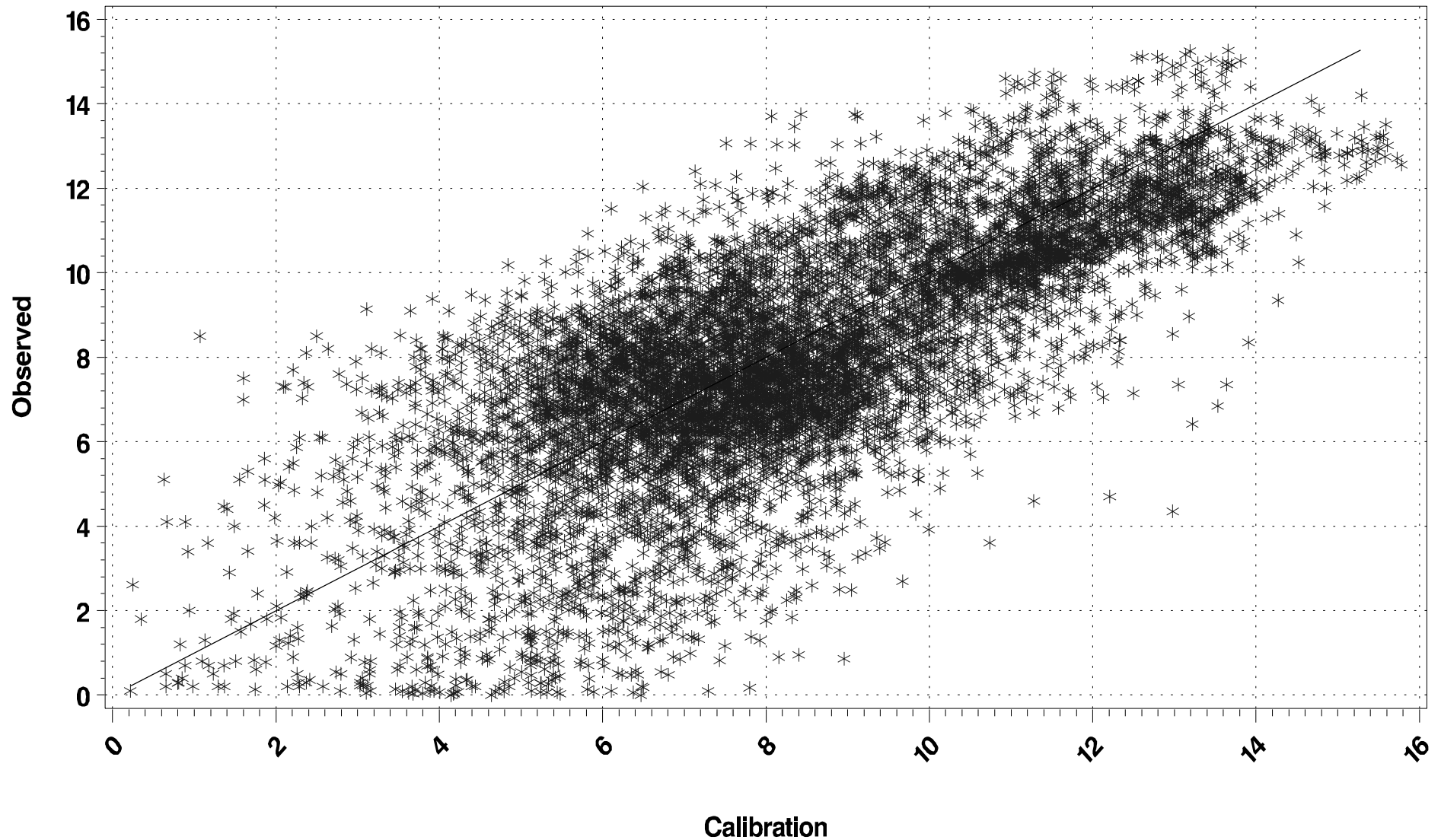
DEEP WATER **Dissolved Oxygen**
Segment CB4MH (Mainstem CB4 Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 1962 pairs of predictions and observed data, the **slope** is 0.7235 and the **intercept** is -0.1257. The **R-Squared** value for this regression is 0.2896.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1962 pairs of predictions and observed data, the **slope** is 1.0135 and the **intercept** is -0.2034. The **R-Squared** value for this regression is 0.2779.

Statistics (units in mg/l)

Mean observed 3.0017   Mean predicted 4.3227
Min. observed 0   Min. predicted 0.0108
Max. observed 10.5   Max. predicted 10.03
Std. Dev. Observed 2.4819   Std. Dev. predicted 1.8461
Median observed 2.4000   Median predicted 4.0675
90th Percentile observed 6.6000   90th Percentile predicted 6.8881
10th Percentile observed 0.1000   10th Percentile predicted 2.1472

Differences (predicted – observed)

Mean difference 1.3210 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 1962
Number of Predicted Violations 147
Number of Observed Violations 806

[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB4MH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
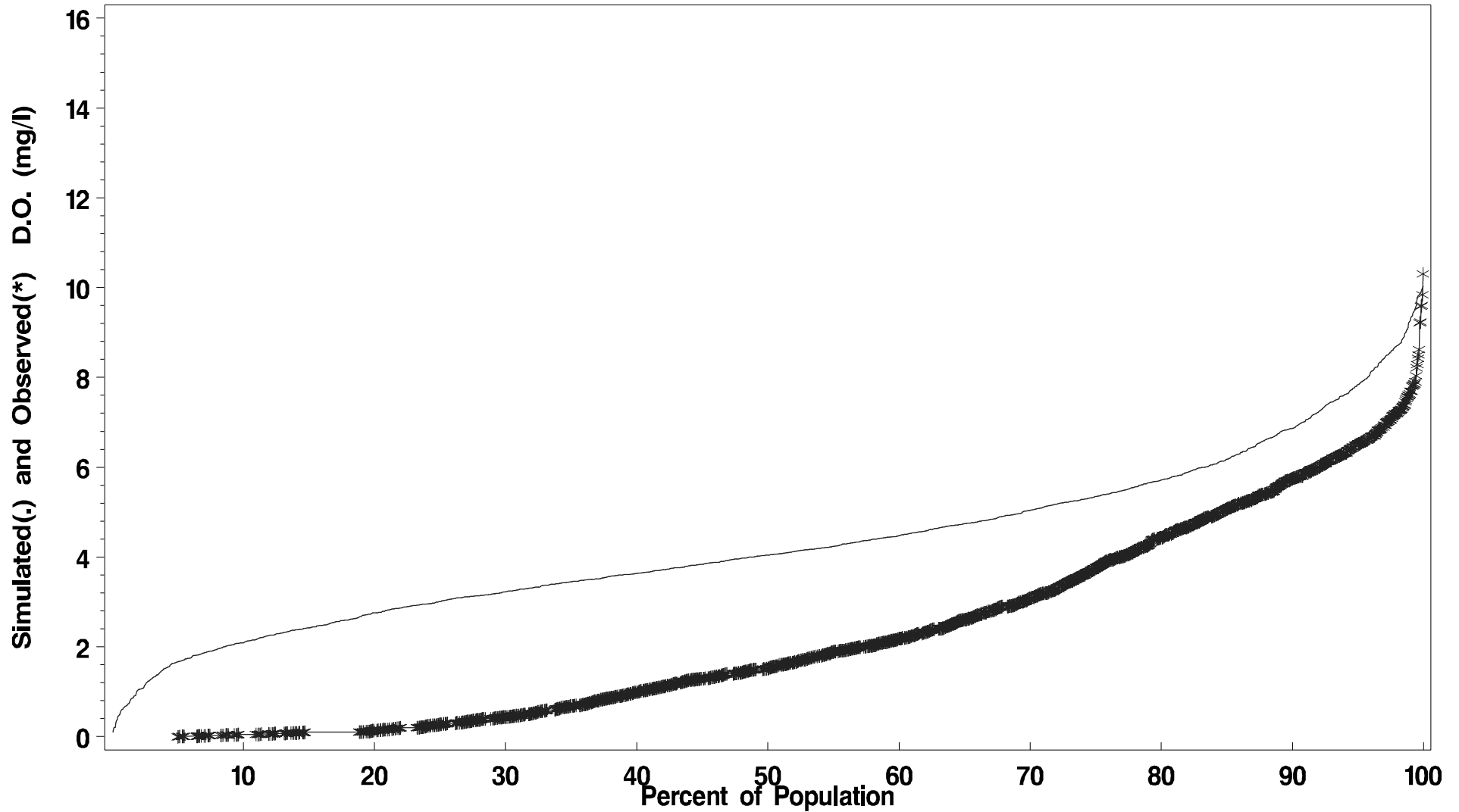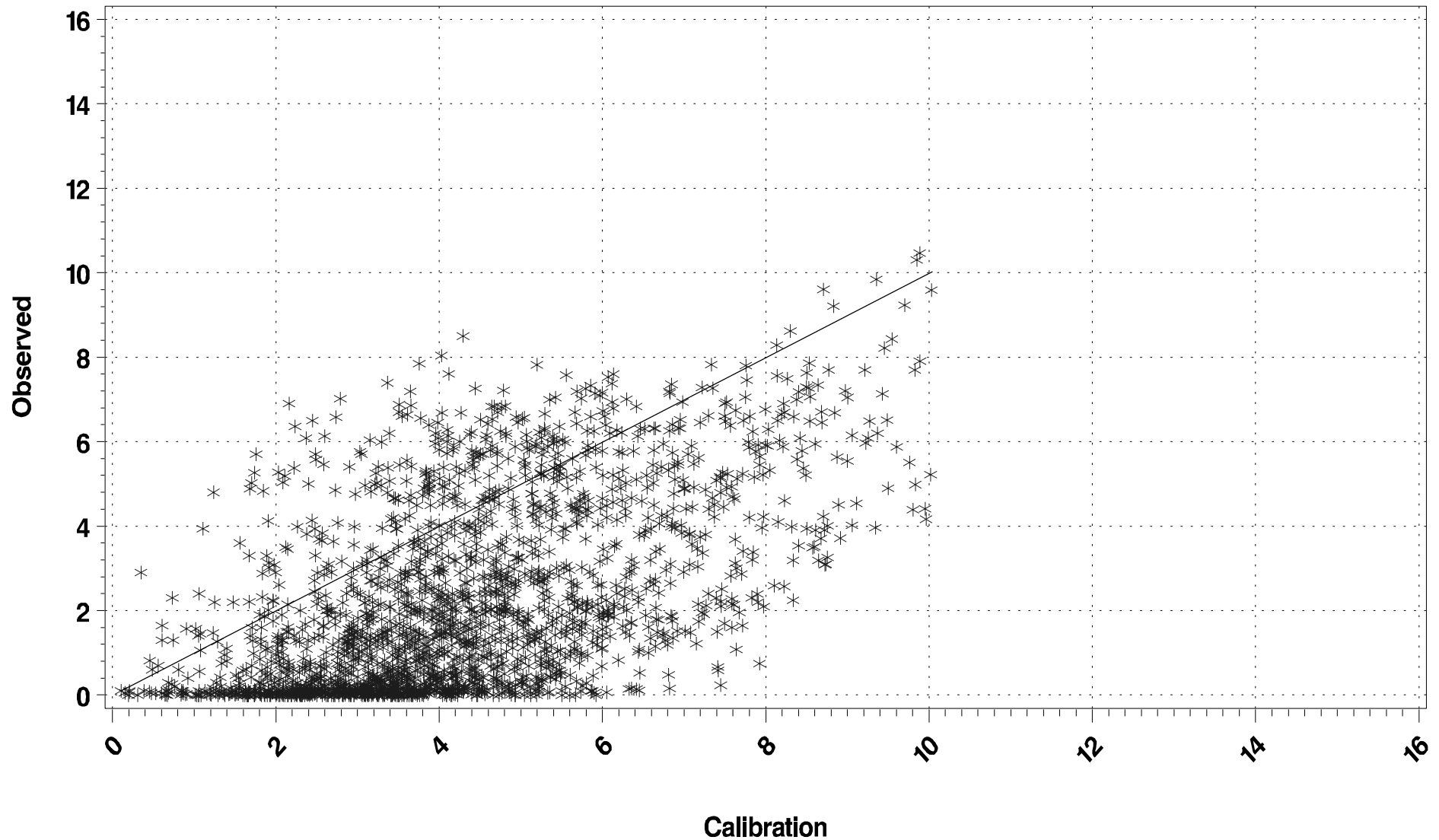
Deep Water Dissolved Oxygen (mg/l)
Segment CB4MH Season: May 1 – Sept 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 1677 pairs of predictions and observed data, the **slope** is 0.4879 and the **intercept** is 4.4493. The **R-Squared** value for this regression is 0.3911.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1677 pairs of predictions and observed data, the **slope** is 0.4583 and the **intercept** is 0.5304. The **R-Squared** value for this regression is 0.3242.

Statistics (units in mg/l)

Mean observed 8.6358   Mean predicted 8.5805
Min. observed 0.75   Min. predicted 1.833
Max. observed 14.75   Max. predicted 14.59
Std. Dev. Observed 2.2427   Std. Dev. predicted 2.8745
Median observed 8.8000   Median predicted 9.0977
90th Percentile observed 11.4000   90th Percentile predicted 12.2050
10th Percentile observed 5.6000   10th Percentile predicted 4.4926

Differences (predicted – observed)

Mean difference -0.0553 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1677
Number of Predicted Violations 52
Number of Observed Violations 39

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[1] observed is dependent, predicted is independent

Deep Water   Dissolved Oxygen (mg/l)
Segment CB4MH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
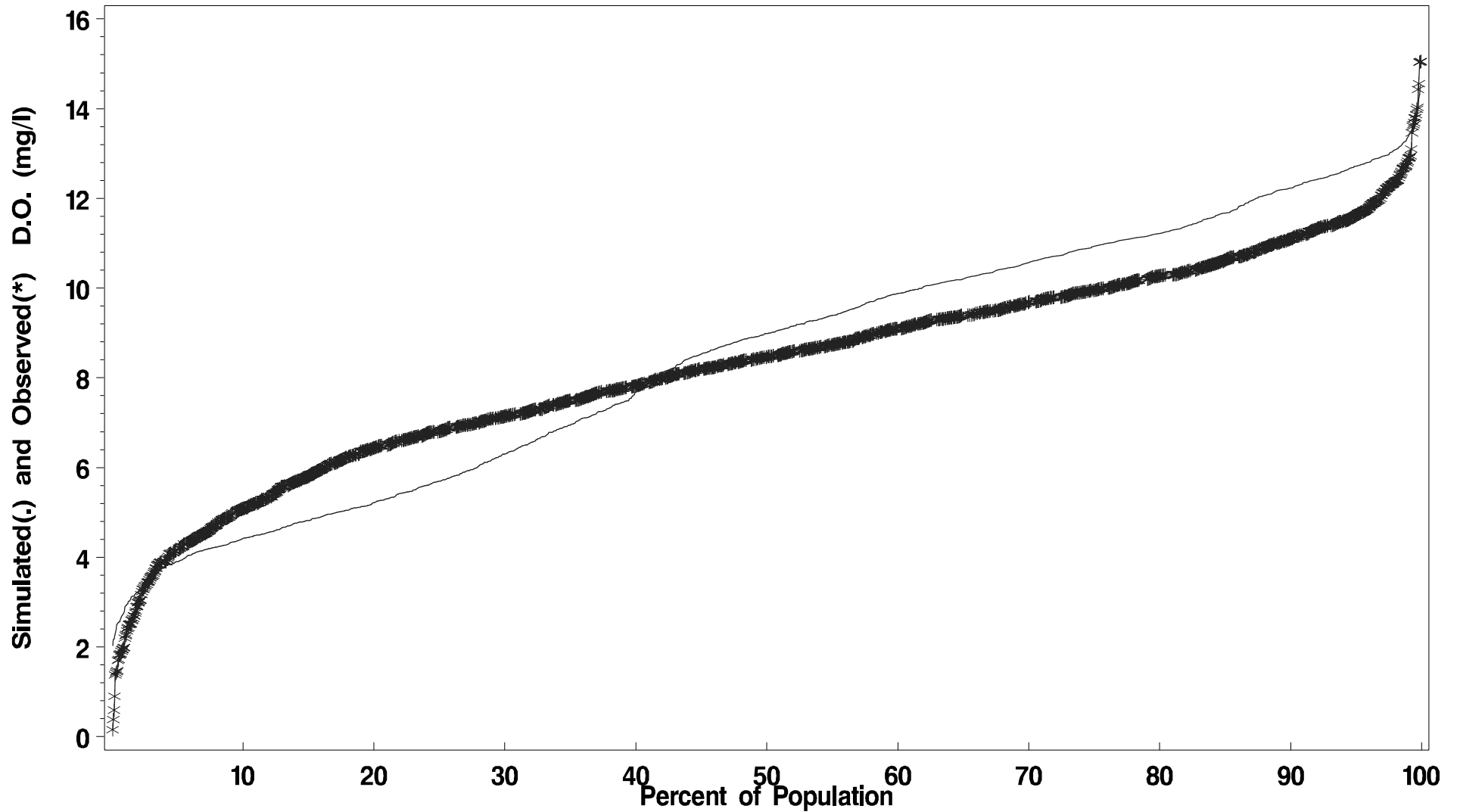
Deep Water Dissolved Oxygen (mg/l)
Segment CB4MH Season: Oct 1 – April 30
(Scatter Plot)
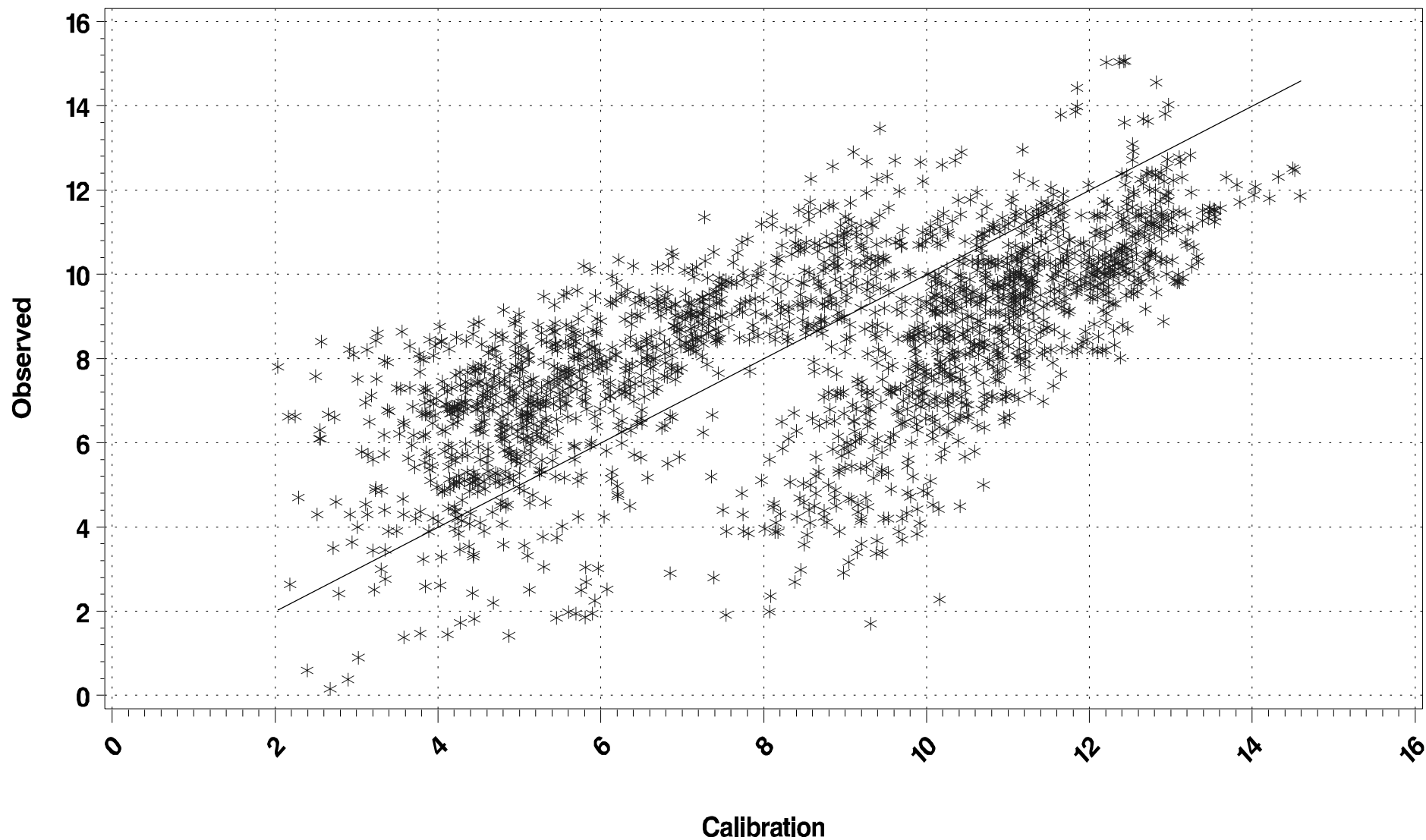
DEEP CHANNEL **Dissolved Oxygen**
Segment CB4MH (Mainstem CB4 Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 939 pairs of predictions and observed data, the **slope** is 0.5257 and the
intercept is -0.2263. The **R-Squared** value for this regression is 0.4629.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 939 pairs of predictions and observed data, the **slope** is 0.6659 and the
intercept is -0.0794. The **R-Squared** value for this regression is 0.3687.

Statistics (units in mg/l)

Mean observed 1.1975   Mean predicted 2.7084
Min. observed 0   Min. predicted -0.0354
Max. observed 6.9   Max. predicted 9.91
Std. Dev. Observed 1.5146   Std. Dev. predicted 1.9602
Median observed 0.5000   Median predicted 2.3034
90th Percentile observed 3.7000   90th Percentile predicted 5.8189
10th Percentile observed 0.0000   10th Percentile predicted 0.5583

Differences (predicted – observed)

Mean difference 1.5109 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 1 mg/l.

Number of predicted and observed pairs 939
Number of Predicted Violations 129
Number of Observed Violations 481

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[1] observed is dependent, predicted is independent

Deep Channel   Dissolved Oxygen (mg/l)
# Segment CB4MH   Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
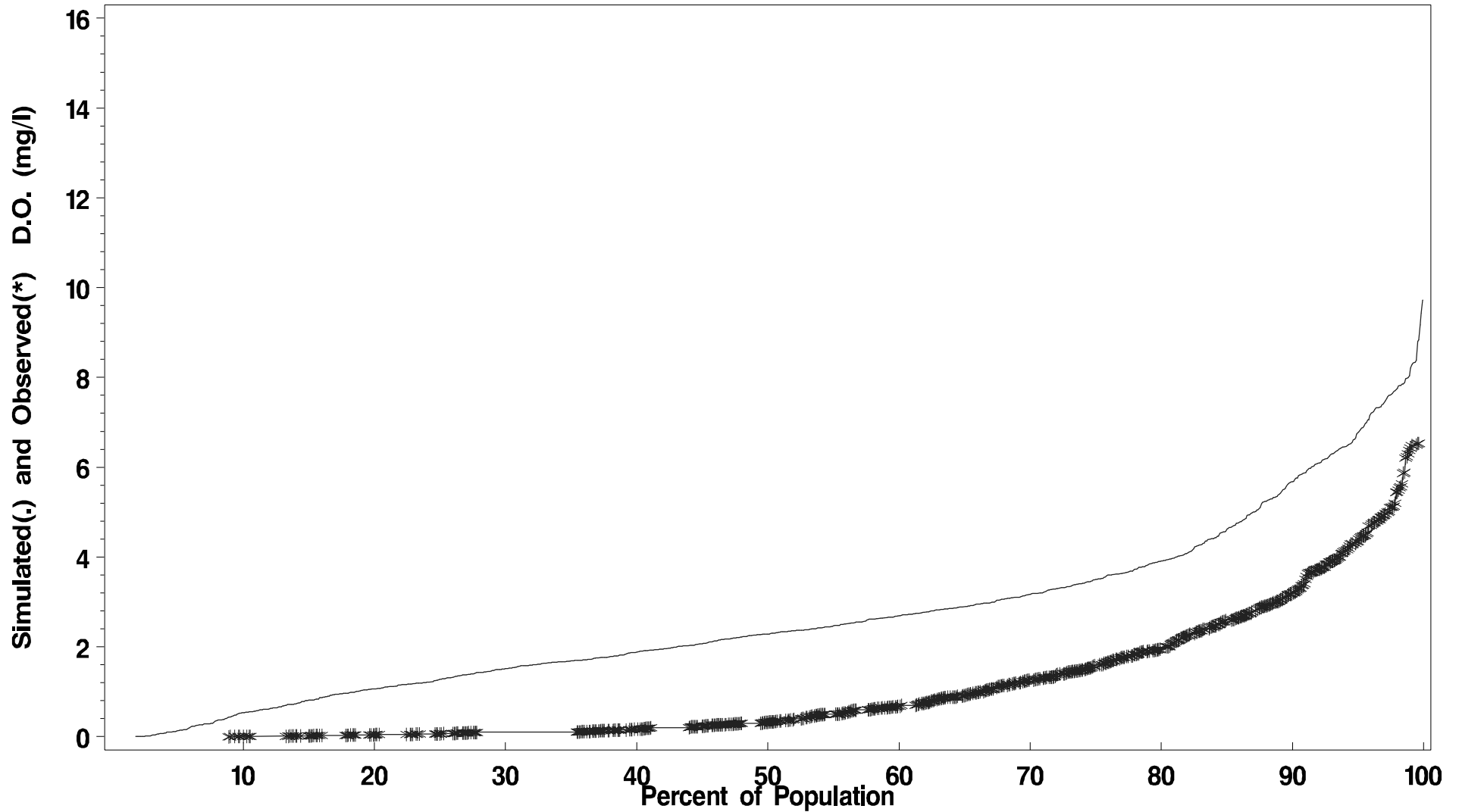
Deep Channel Dissolved Oxygen (mg/l)
Segment CB4MH Season: May 1 – Sept 30
(Scatter Plot)
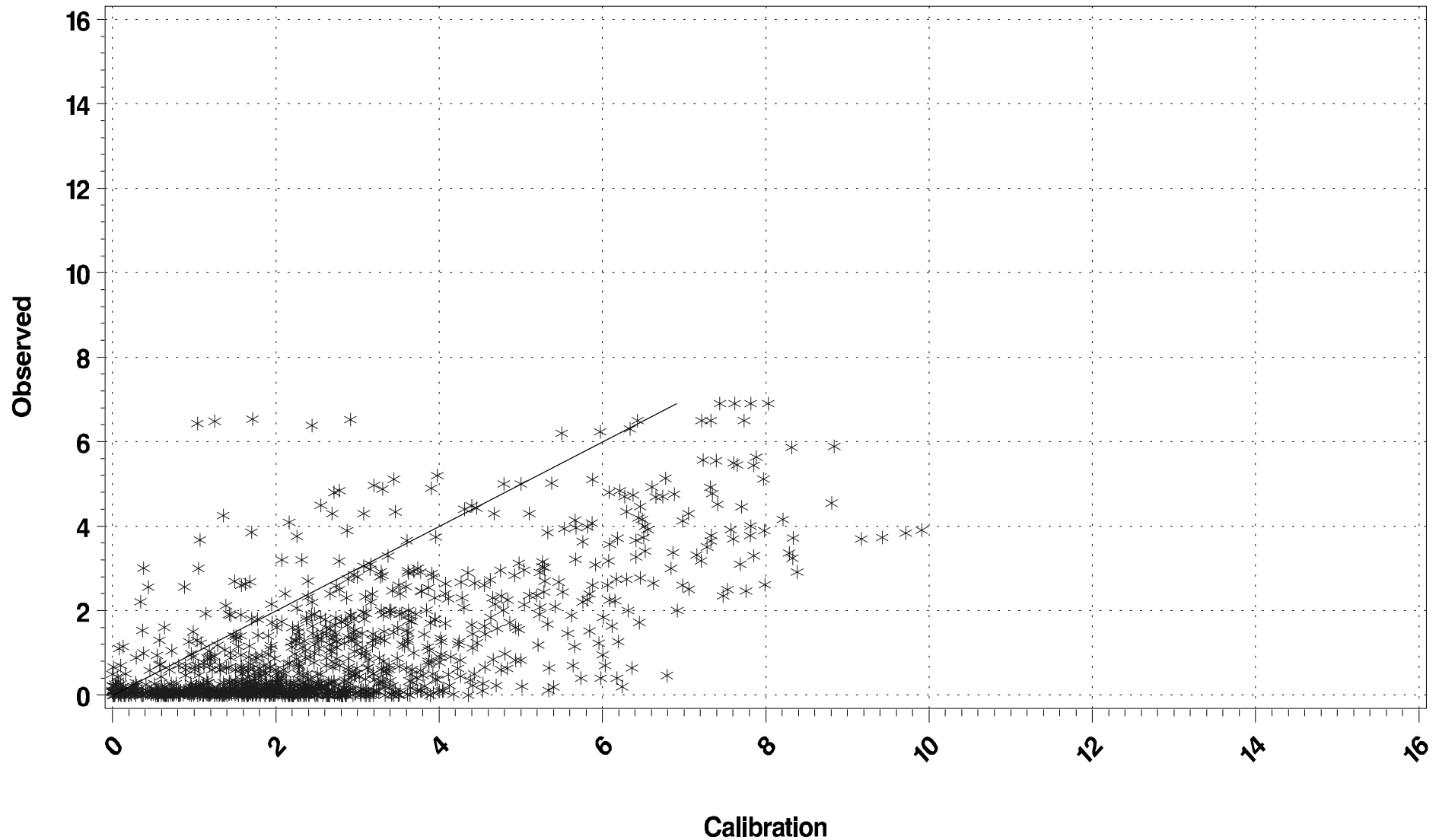
DEEP CHANNEL **Dissolved Oxygen**
Segment CB4MH (Mainstem CB4 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 894 pairs of predictions and observed data, the **slope** is 0.5531 and the **intercept** is 3.4991. The **R-Squared** value for this regression is 0.4744.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 894 pairs of predictions and observed data, the **slope** is 0.5440 and the **intercept** is 0.4270. The **R-Squared** value for this regression is 0.4011.

Statistics (units in mg/l)

Mean observed 7.6762   Mean predicted 7.5523
Min. observed 0.1000   Min. predicted 1.3819
Max. observed 13.80000   Max. predicted 13.2280
Std. Dev. Observed 2.3811   Std. Dev. predicted 2.9653
Median observed 7.9850   Median predicted 8.0050
90th Percentile observed 10.5000   90th Percentile predicted 11.3220
10th Percentile observed 4.3300   10th Percentile predicted 3.3759

Differences (predicted – observed)

Mean difference -0.1239 mg/l

Violations of Standards
Standard violation estiimated using an instantatnious minimum DO standard of 1 mg/l.

Number of predicted and observed pairs 894
Number of Predicted Violations 96
Number of Observed Violations 48

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)
# Segment CB4MH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
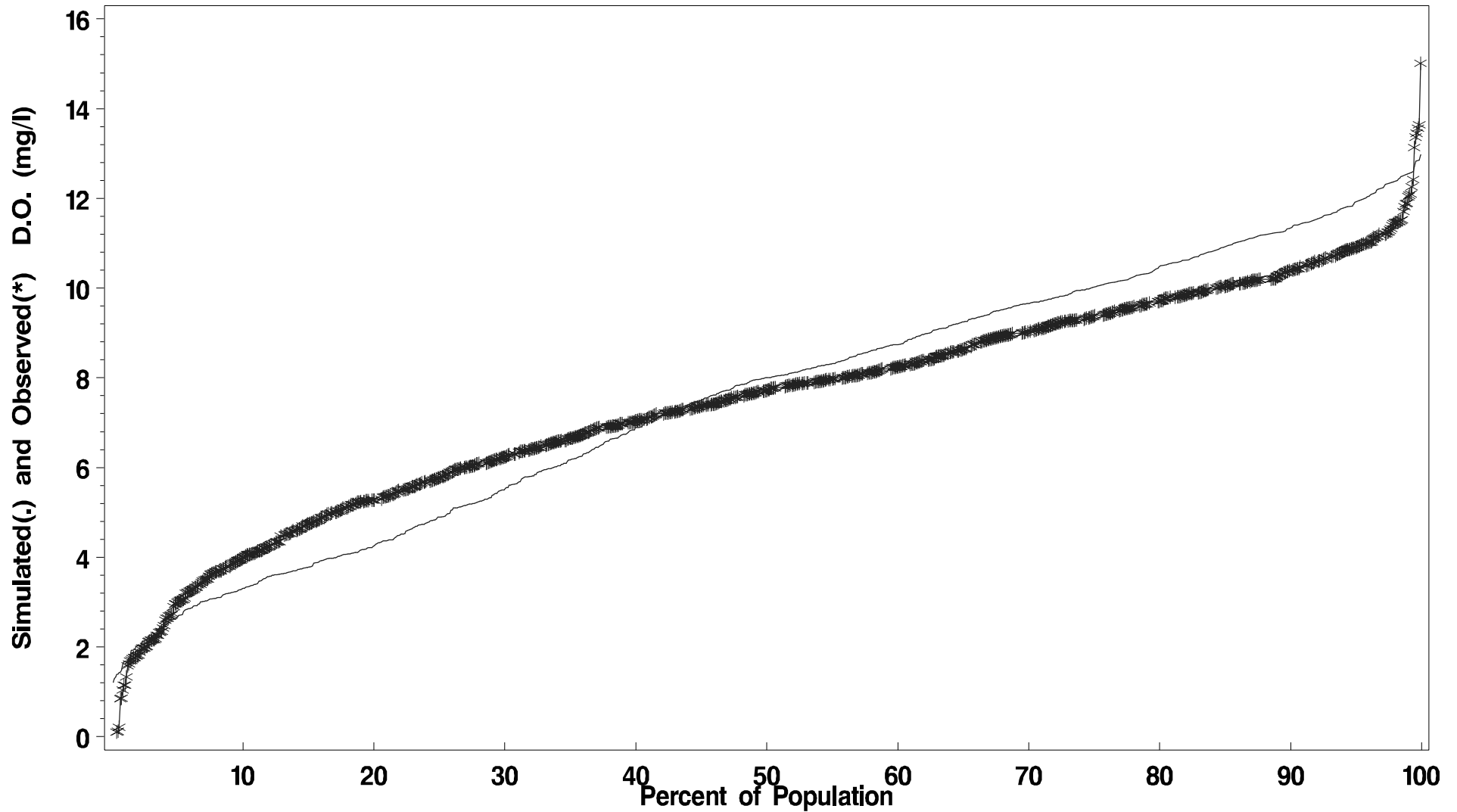
**Deep Channel Dissolved Oxygen (mg/l)
Segment CB4MH Season: Oct 1 – April 30**

(Scatter Plot)
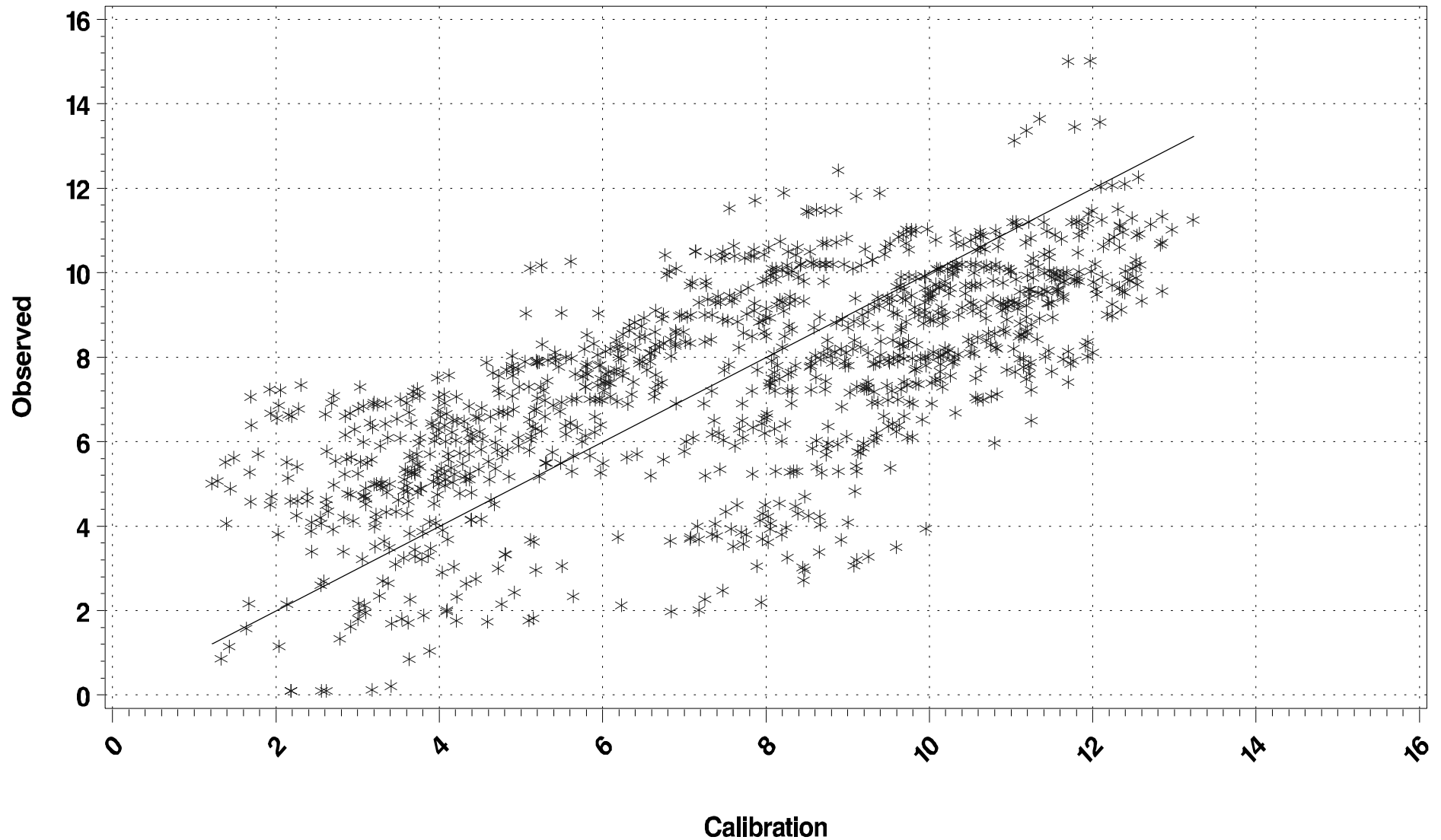
Observed

Calibration

Regression of Calibration vs. Observations[1]

Using the 922 pairs of predictions and observed data, the **slope** is 0.5279 and the **intercept** is -0.0647. The **R-Squared** value for this regression is 0.5022.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 922 pairs of predictions and observed data, the **slope** is 0.5913 and the **intercept** is -0.0145. The **R-Squared** value for this regression is 0.4341.

Statistics (units in mg/l)

Mean observed 0.9503   Mean predicted 1.9227
Min. observed 0   Min. predicted -0.0064
Max. observed 6.9   Max. predicted 9.102
Std. Dev. Observed 1.3969   Std. Dev. predicted 1.8751
Median observed 0.2100   Median predicted 1.4118
90th Percentile observed 3.0000   90th Percentile predicted 4.6342
10th Percentile observed 0.0100   10th Percentile predicted 0.0239

Differences (predicted – observed)

Mean difference 0.9724 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 922
Number of Predicted Violations 184
Number of Observed Violations 428

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[1] observed is dependent, predicted is independent

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB4MH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
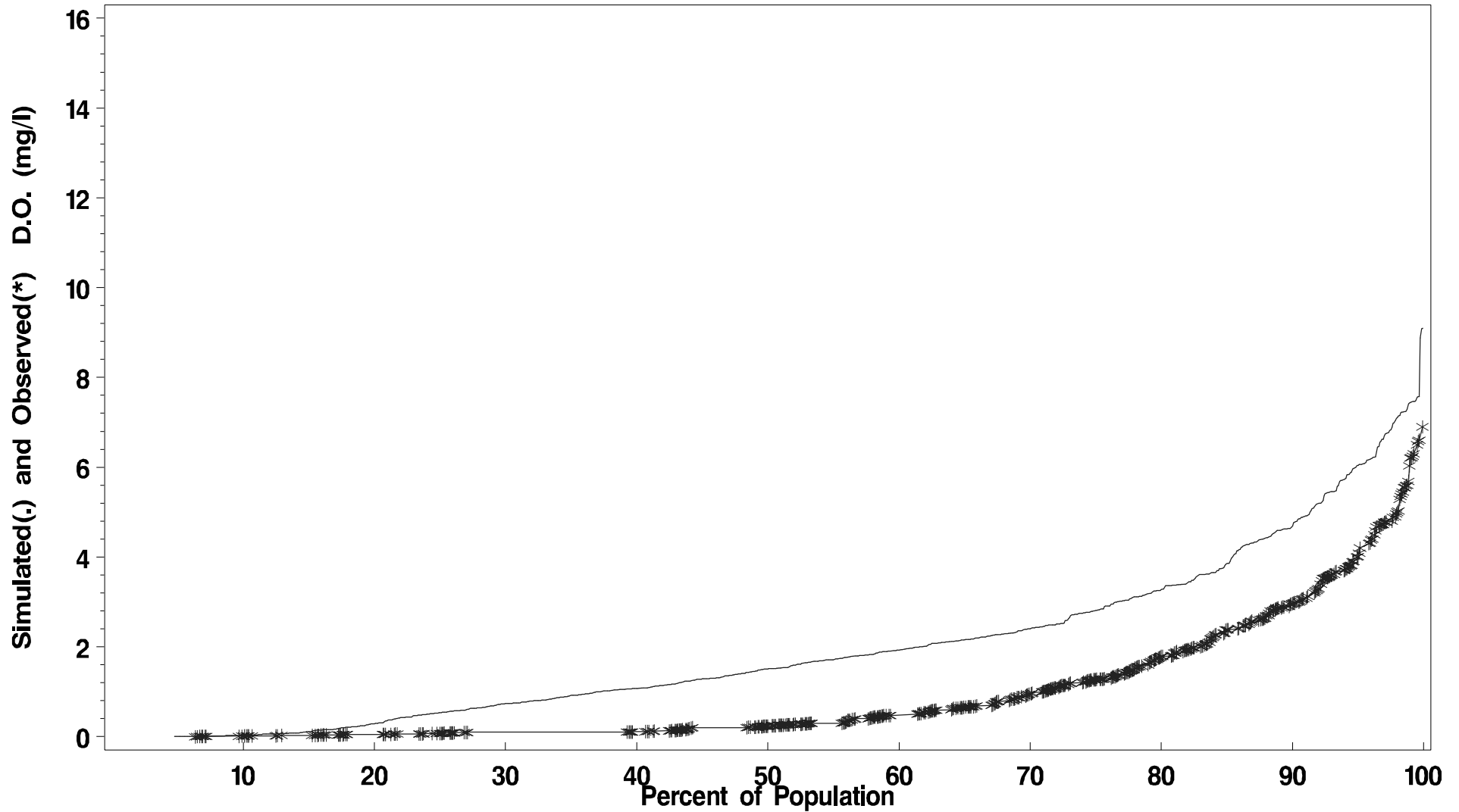
Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB4MH Season: May 1 – Sept 30
(Scatter Plot)
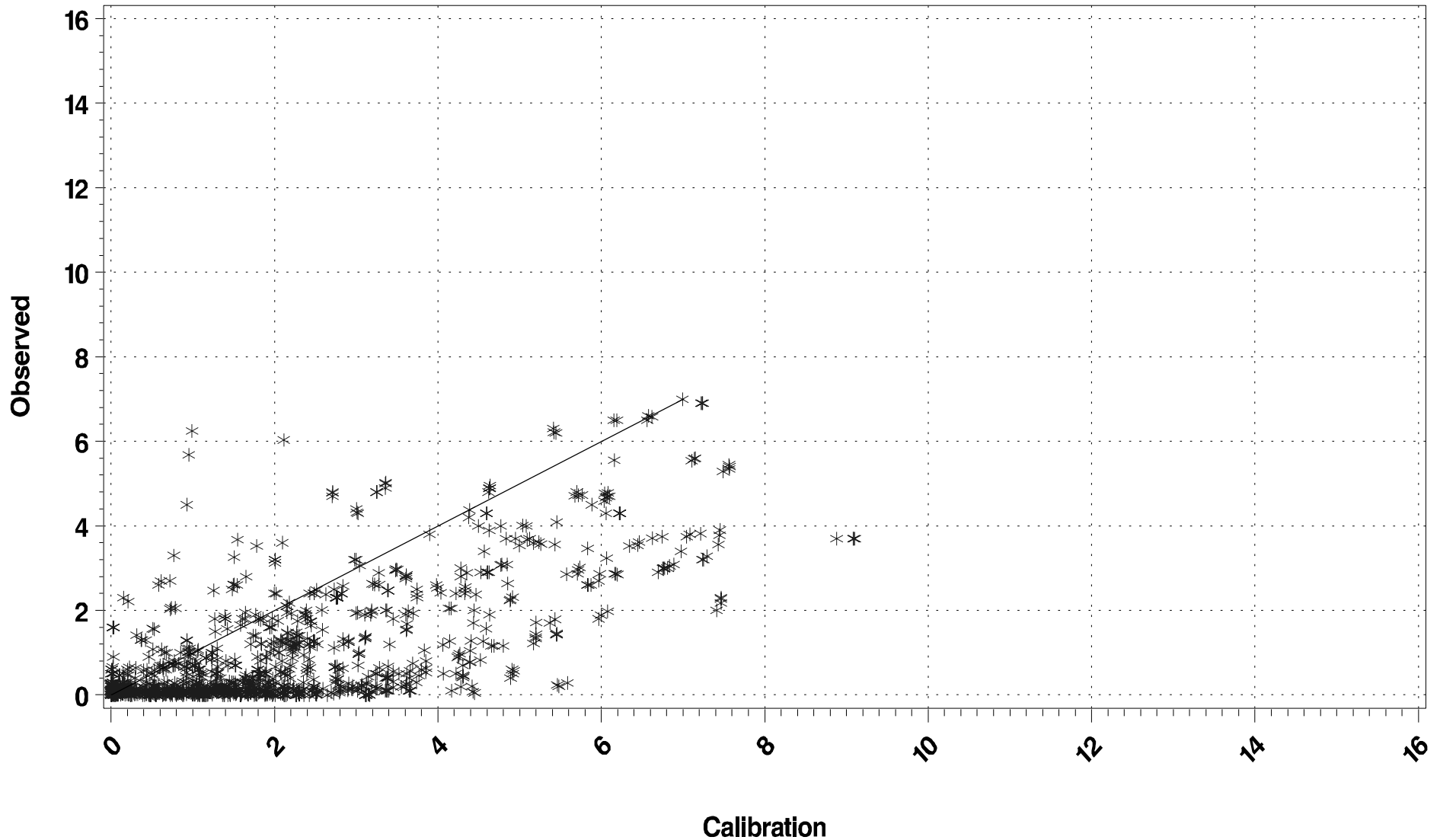
DEEP CHANNEL ANOXIC **Dissolved Oxygen**
Segment CB4MH (Mainstem CB4 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 890 pairs of predictions and observed data, the **slope** is 0.5991 and the **intercept** is 3.0080. The **R-Squared** value for this regression is 0.5369.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 890 pairs of predictions and observed data, the **slope** is 0.5654 and the **intercept** is 0.3990. The **R-Squared** value for this regression is 0.4479.

Statistics (units in mg/l)

Mean observed 7.2160	Mean predicted 7.0234
Min. observed 0.1	Min. predicted 0.3893
Max. observed 13.4	Max. predicted 12.8
Std. Dev. Observed 2.4764	Std. Dev. predicted 3.0285
Median observed 7.4500	Median predicted 7.3031
90th Percentile observed 10.2000	90th Percentile predicted 10.8730
10th Percentile observed 3.9000	10th Percentile predicted 2.9003

Differences (predicted – observed)

Mean difference -0.1925 mg/l

Violations of Standards

Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 890
Number of Predicted Violations 72
Number of Observed Violations 44

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[1] observed is dependent, predicted is independent

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB4MH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
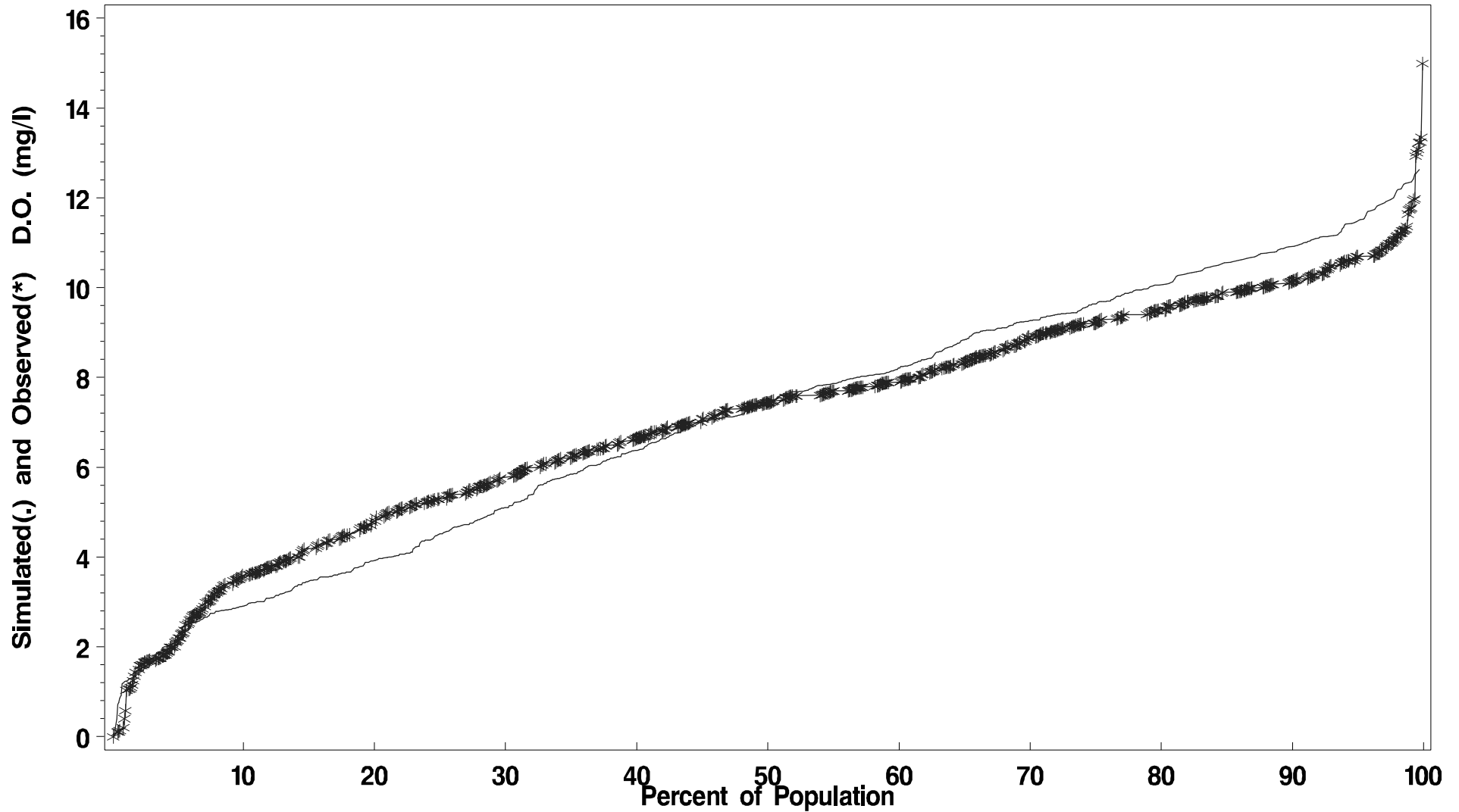
Deep Channel Anoxic   Dissolved Oxygen (mg/l)
Segment CB4MH   Season: Oct 1 – April 30
(Scatter Plot)
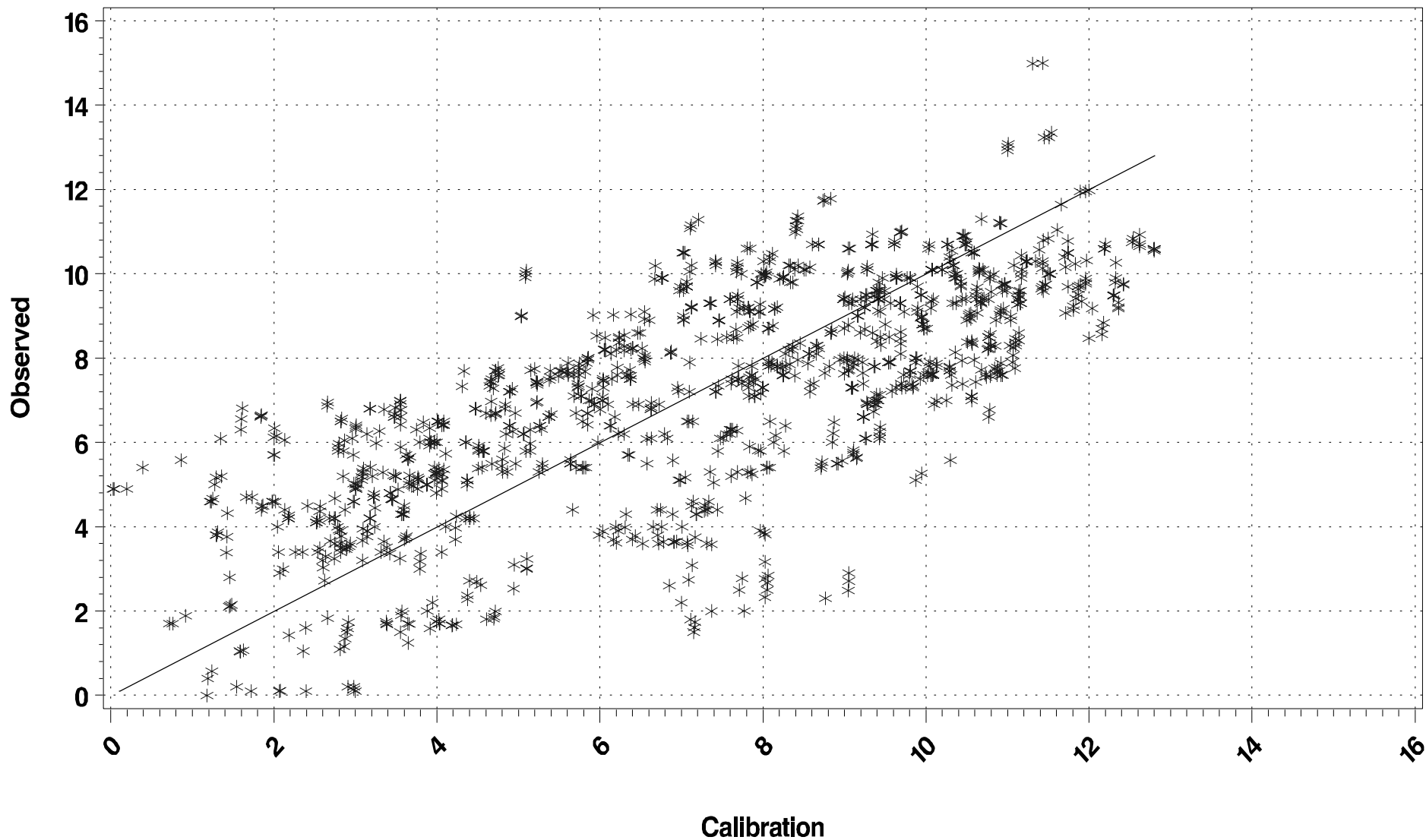
MESOHALINE **Chlorophyll**
Segment CB4MH (Mainstem CB4 Mesohaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 570 pairs of predictions and observed data, the **slope** is 0.7701 and the **intercept** is 3.0380. The **R-Squared** value for this regression is 0.1600.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 570 pairs of predictions and observed data, the **slope** is 0.7804 and the **intercept** is 0.2144. The **R-Squared** value for this regression is 0.1847.

Statistics (units in μg/l)

Mean observed 11.6846   Mean predicted 11.2280
Min. observed 1.5000   Min. predicted 5.6486
Max. observed 44.3000   Max. predicted 26.9780
Std. Dev. Observed 6.9356   Std. Dev. predicted 3.6029
Median observed 10.0000   Median predicted 10.3535
95th Percentile observed 26.7267   95th Percentile predicted 17.8490
10th Percentile observed 5.1661   10th Percentile predicted 7.7370

Differences (predicted – observed)

Mean difference -0.4566 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB4MH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
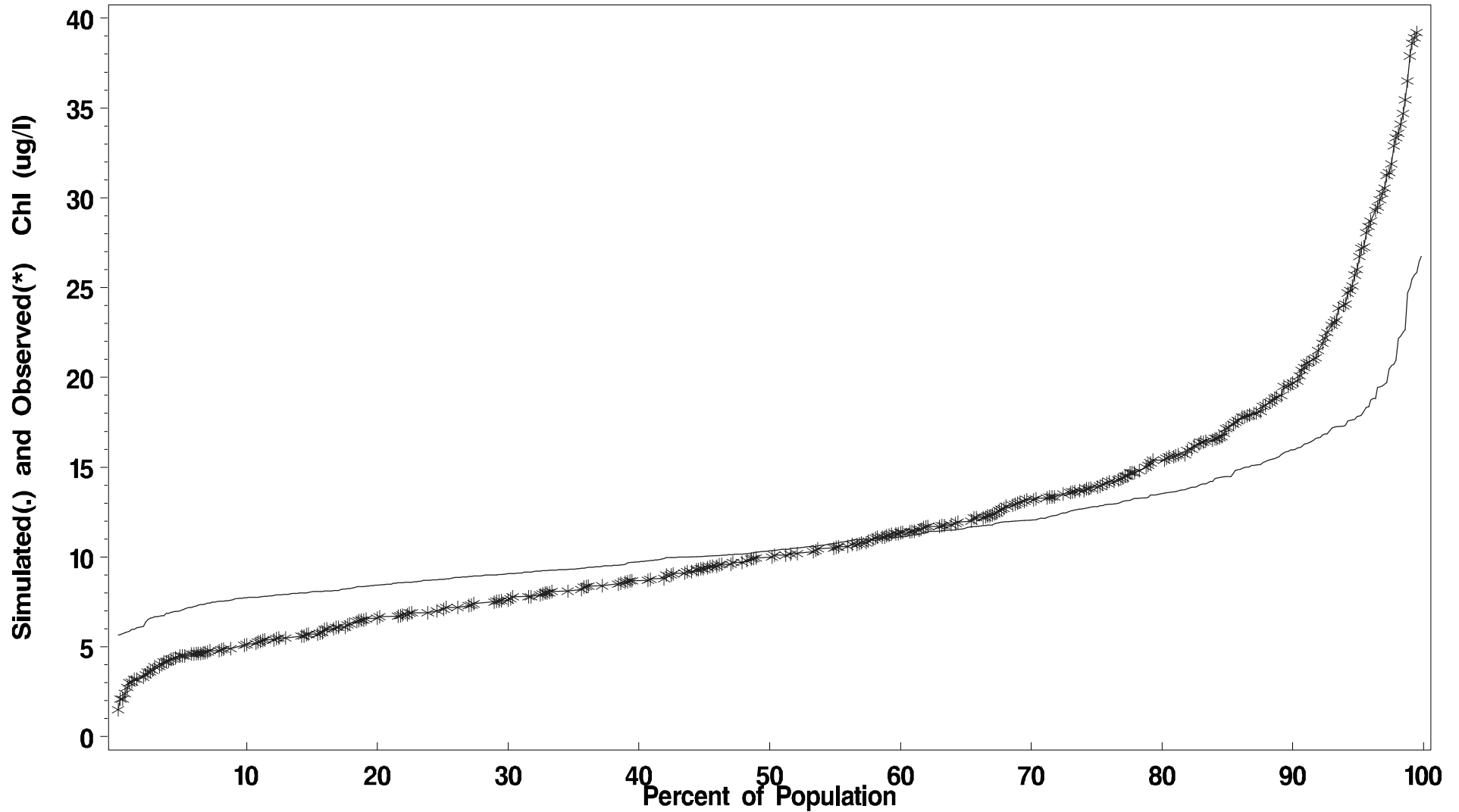
Chlorophyll Concentration (ug/l)
Segment CB4MH   Season: July 1 – Sept 30
(Scatter Plot)
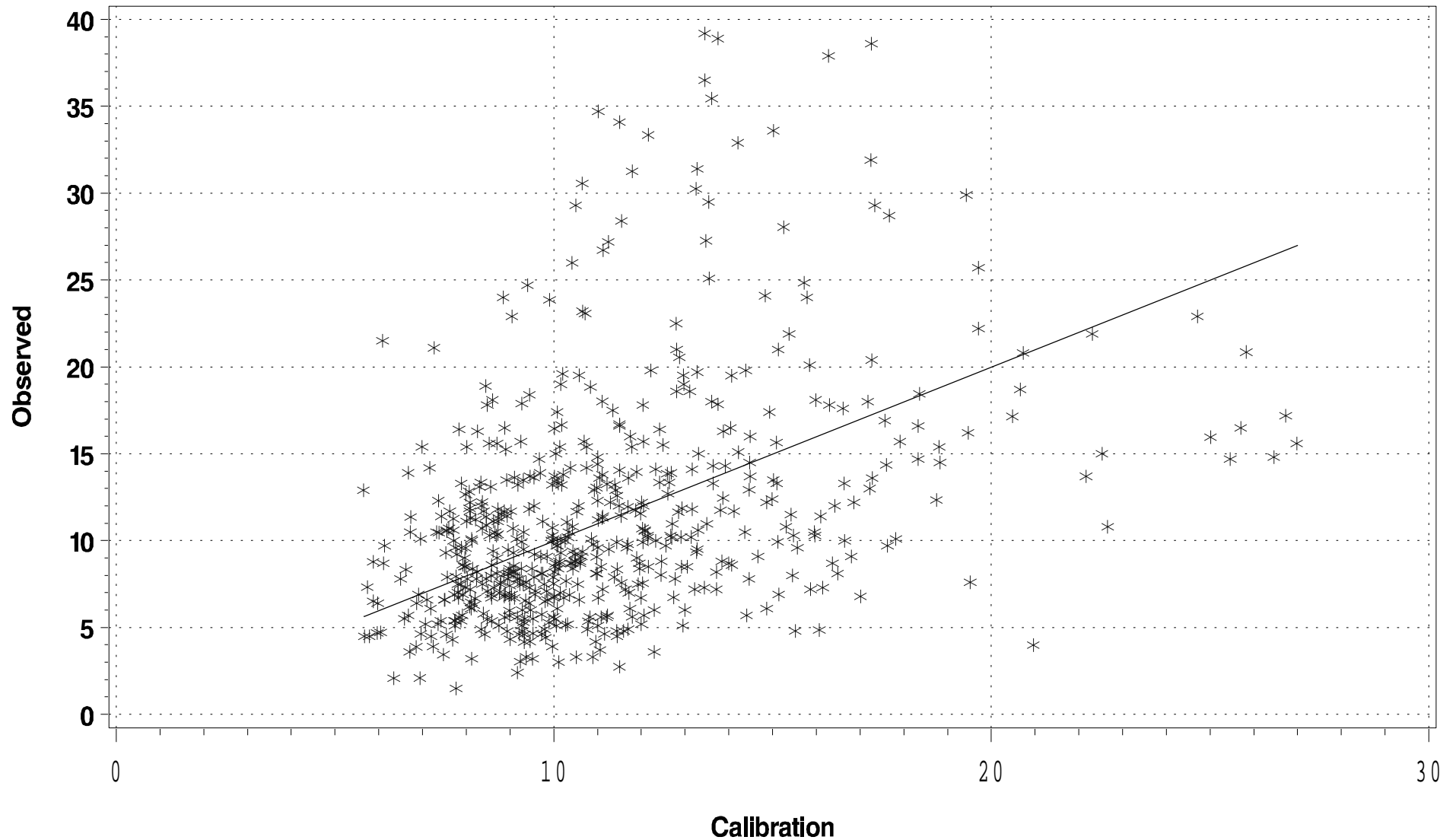
MESOHALINE **Chlorophyll**
Segment CB4MH (Mainstem CB4 Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 555 pairs of predictions and observed data, the **slope** is 0.0298 and the
intercept is 8.8727. The **R-Squared** value for this regression is 0.0007.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 555 pairs of predictions and observed data, the **slope** is 0.1694 and the
intercept is 0.7352. The **R-Squared** value for this regression is 0.0076.

Statistics (units in μg/l)

Mean observed 9.3366   Mean predicted 15.5769
Min. observed 1.0000   Min. predicted 4.4391
Max. observed 37.5500   Max. predicted 45.9220
Std. Dev. Observed 6.4251   Std. Dev. predicted 5.5788
Median observed 7.8000   Median predicted 14.4280
95th Percentile observed 22.8000   95th Percentile predicted 26.1560
10th Percentile observed 2.8000   10th Percentile predicted 9.9901

Differences (predicted – observed)

Mean difference 6.2403 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)

Segment CB4MH Season: March 1 – May 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
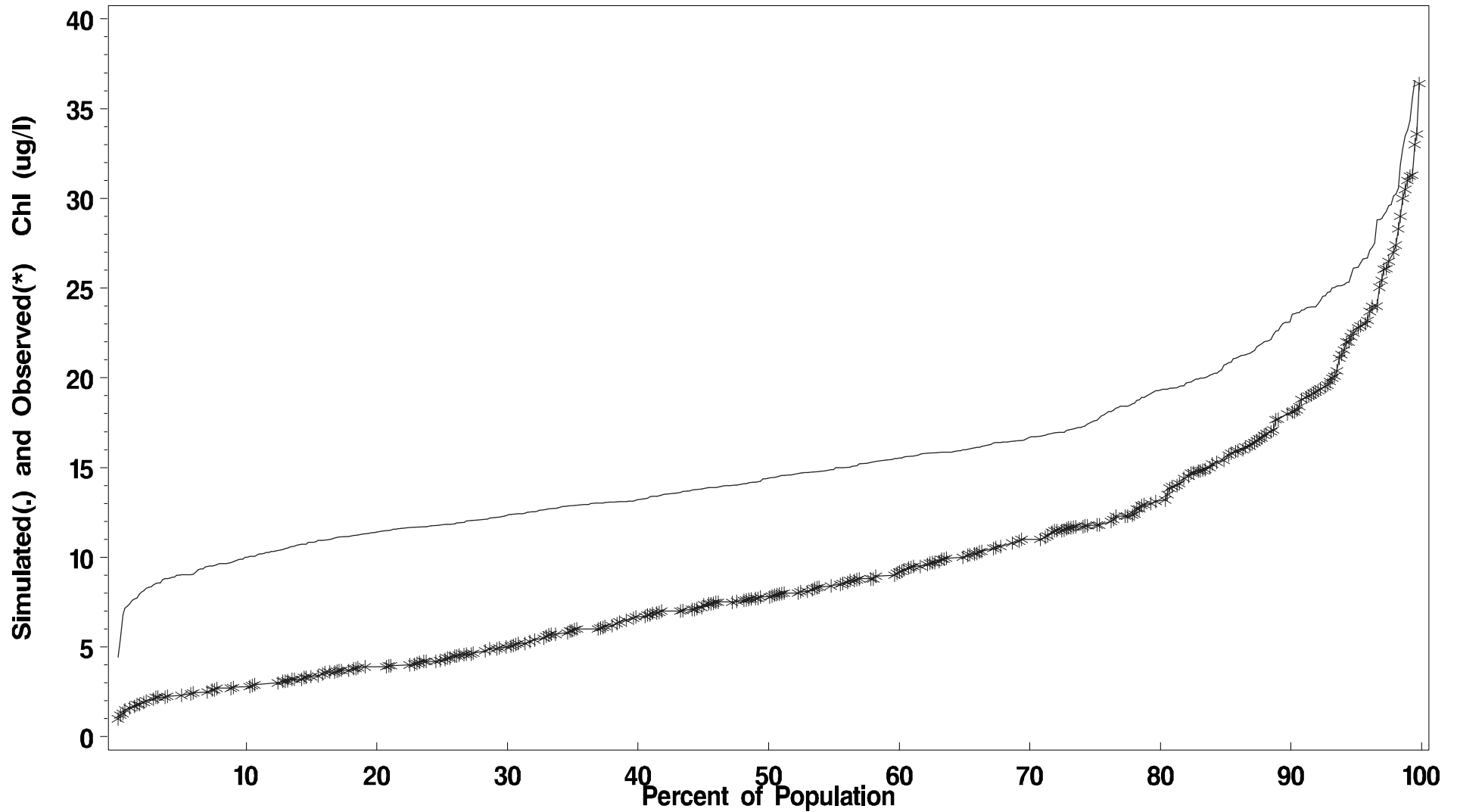
Chlorophyll Concentration (ug/l)
Segment CB4MH   Season: March 1 – May 30
(Scatter Plot)
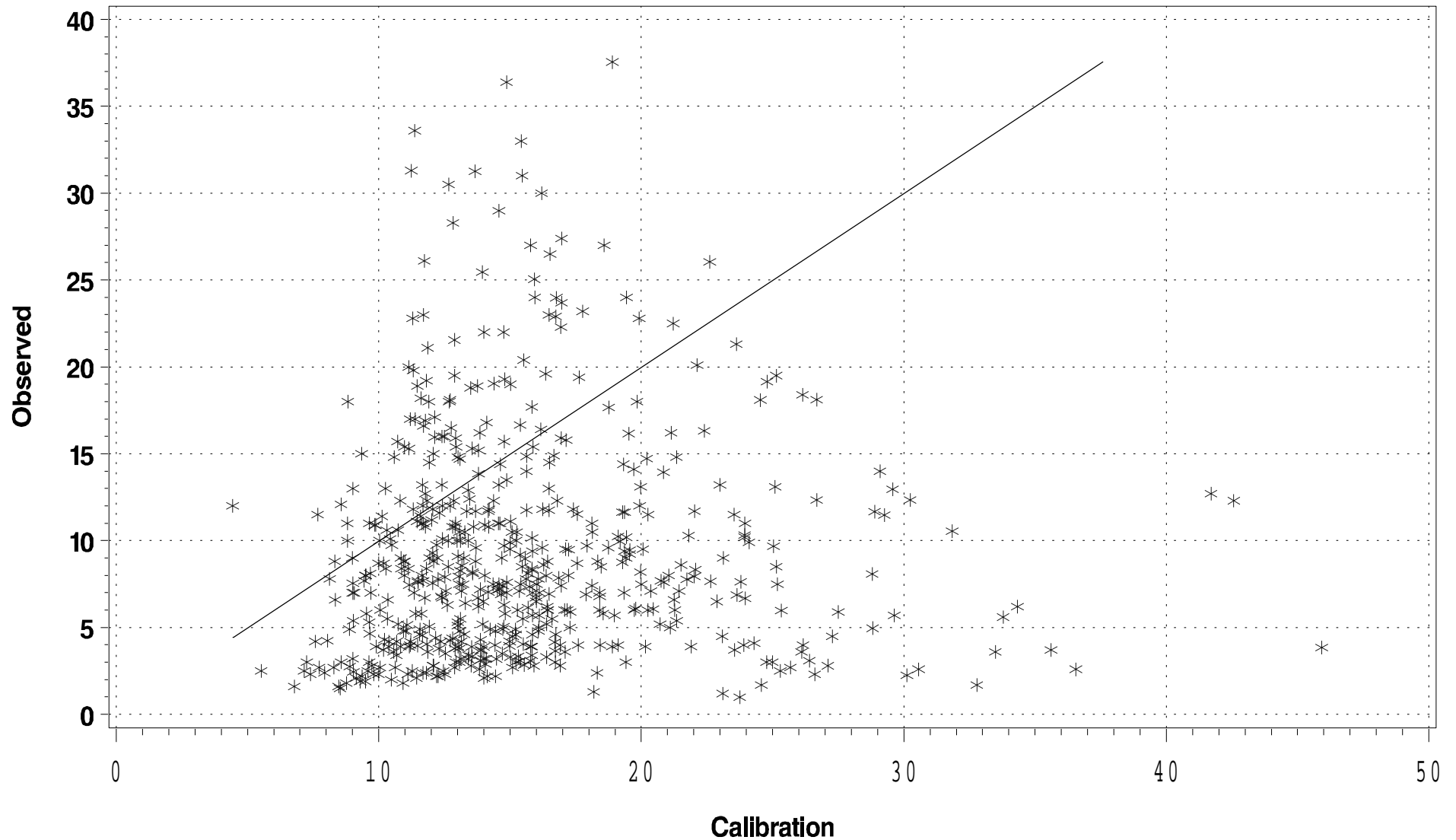
MESOHALINE **Light Attenuation**
Segment CB4MH (Mainstem CB4 Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 1355 pairs of predictions and observed data, the **slope** is 0.3859 and the **intercept** is 0.5554. The **R-Squared** value for this regression is 0.2139.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1355 pairs of predictions and observed data, the **slope** is 0.4100 and the **intercept** is 0.1629. The **R-Squared** value for this regression is 0.2162.

Statistics (units in 1/m)

Mean observed 0.8970   Mean predicted 0.8852
Min. observed 0.4063   Min. predicted 0.3706
Max. observed 3.2500   Max. predicted 3.5385
Std. Dev. Observed 0.3083   Std. Dev. predicted 0.3695
Median observed 0.8125   Median predicted 0.7838
90th Percentile observed 1.3000   90th Percentile predicted 1.2588
10th Percentile observed 0.5909   10th Percentile predicted 0.5729

Differences (predicted – observed)

Mean difference -0.0118 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment CB4MH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment CB4MH   Season: April 1 – Oct 30
(Scatter Plot)
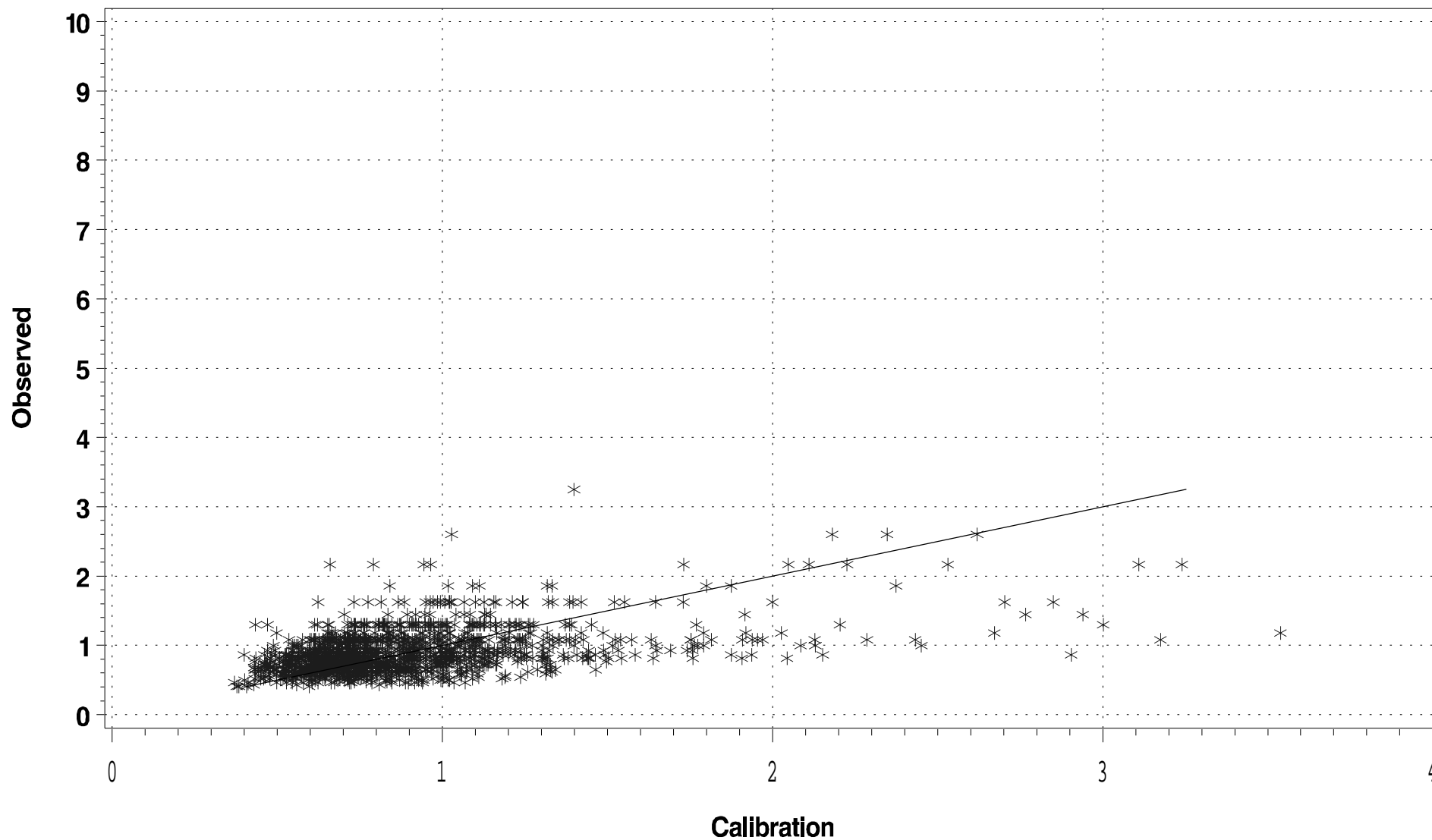
Chesapeake Bay Standard Segment CB5MH

Location Map of
Segment CB5MH within
the Chesapeake Bay Model Grid

CB5.1W

CB5.1

CB5.2

CB5.3

CB5.4W

CB5.4

CB5.5

Chesapeake Bay Program

N
W E
S

0   2   4   8   12   16

Miles
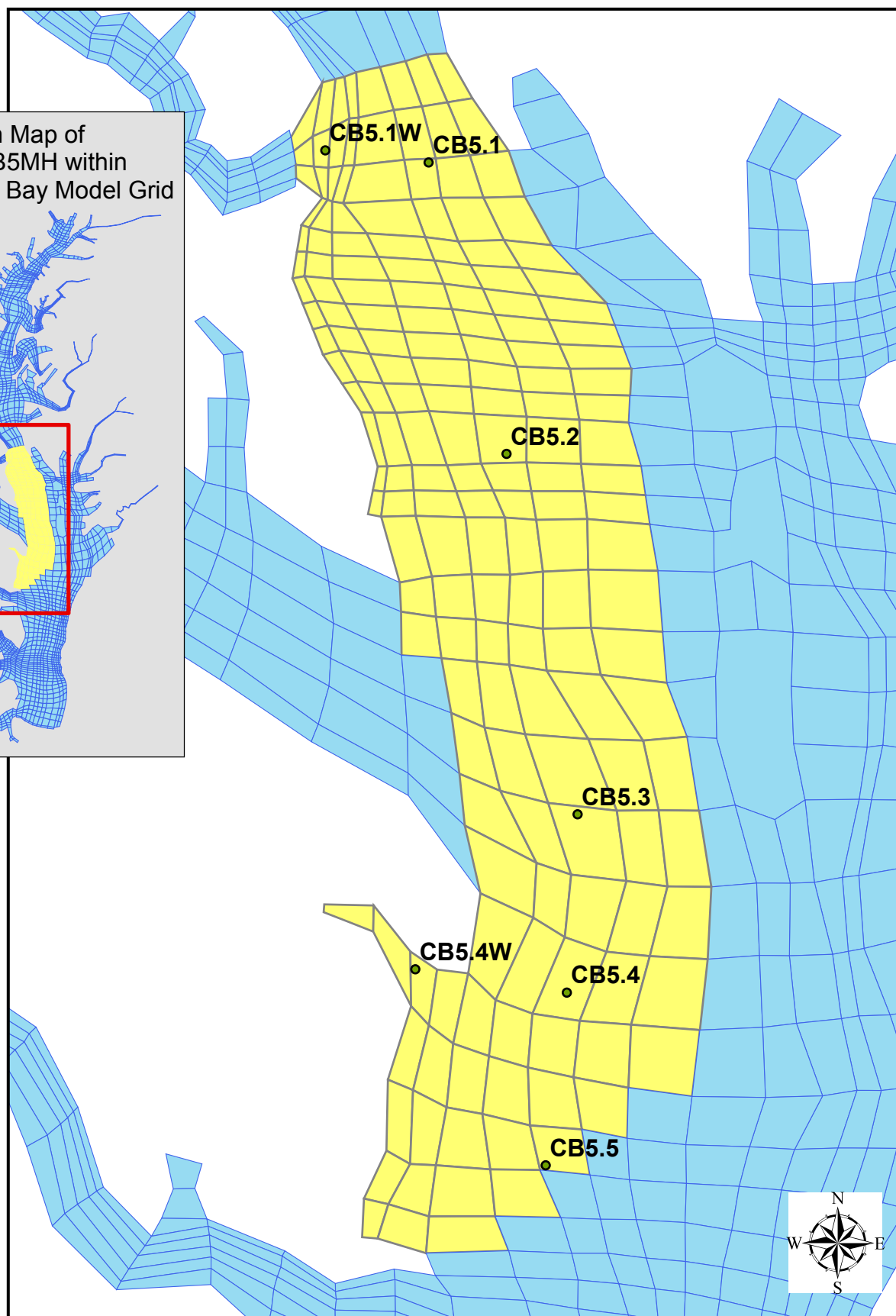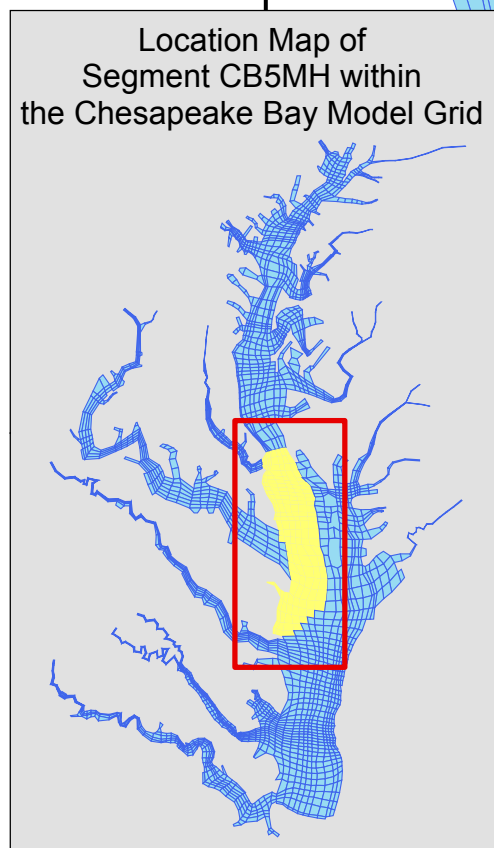
OPEN WATER **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 4653 pairs of predictions and observed data, the **slope** is 0.7867 and the **intercept** is 1.8425. The **R-Squared** value for this regression is 0.6149.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 4653 pairs of predictions and observed data, the **slope** is 0.7993 and the **intercept** is 0.1947. The **R-Squared** value for this regression is 0.5692.

Statistics (units in mg/l)

Mean observed 9.0765   Mean predicted 9.1957
Min. observed 3.7   Min. predicted 4.382
Max. observed 15.2   Max. predicted 15.16
Std. Dev. Observed 2.1198   Std. Dev. predicted 2.1130
Median observed 8.8000   Median predicted 8.4922
90th Percentile observed 12.1000   90th Percentile predicted 12.4520
10th Percentile observed 6.5500   10th Percentile predicted 6.9403

Differences (predicted – observed)

Mean difference 0.1191 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 4653
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
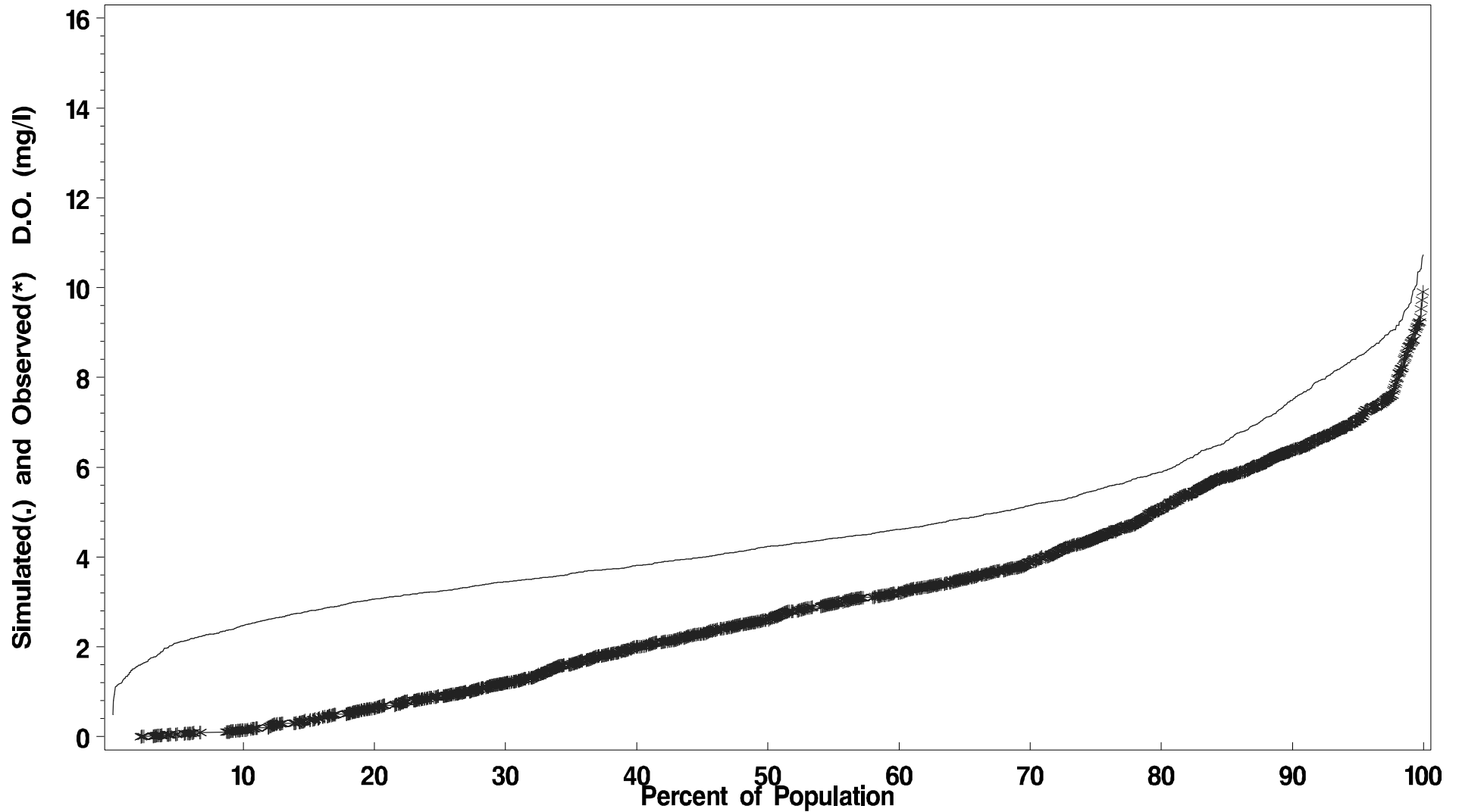# Segment CB5MH Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment CB5MH   Season: Jan 1 — Dec 31
(Scatter Plot)

<div align="center">

DEEP WATER **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
May 1 - Sept 30

</div>
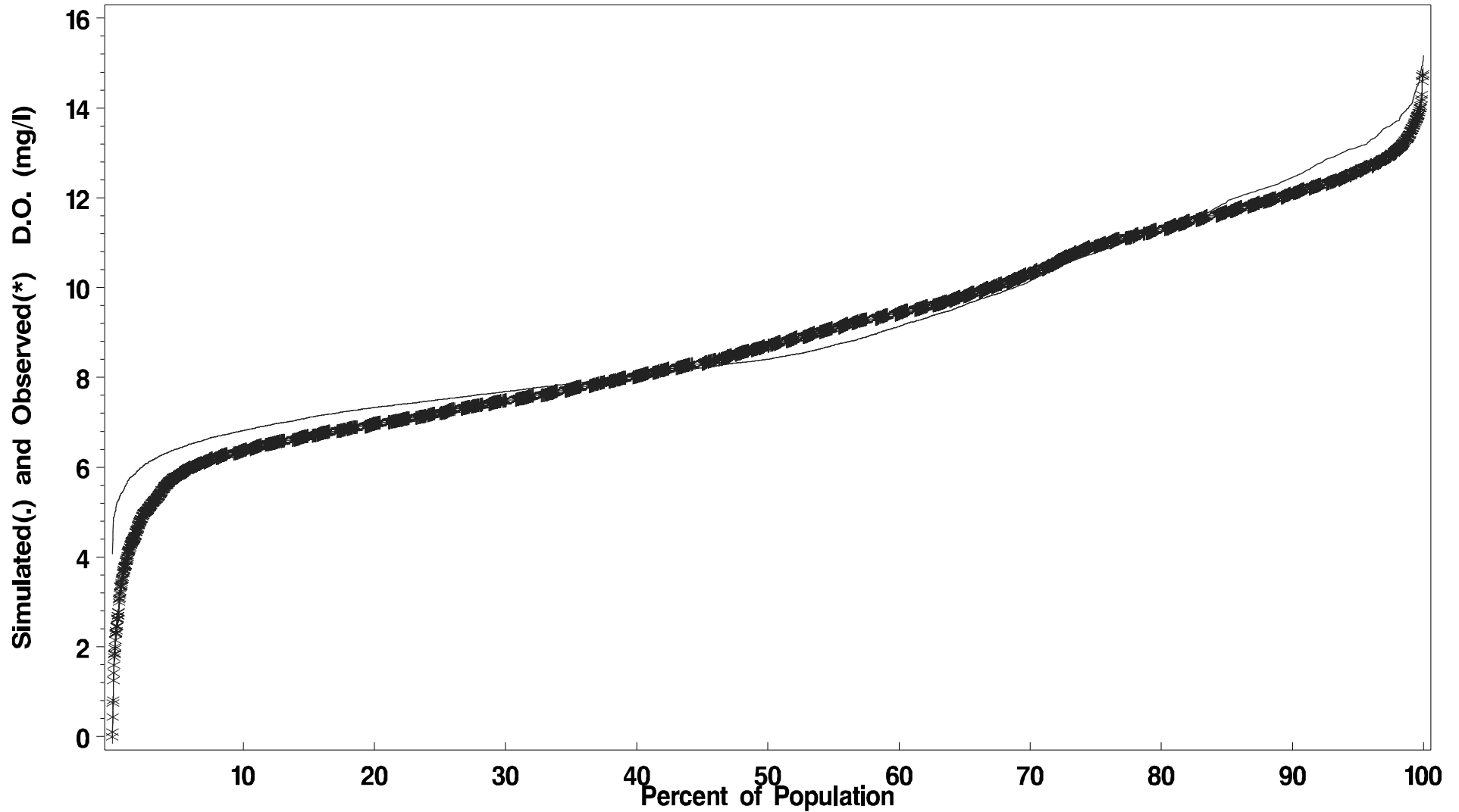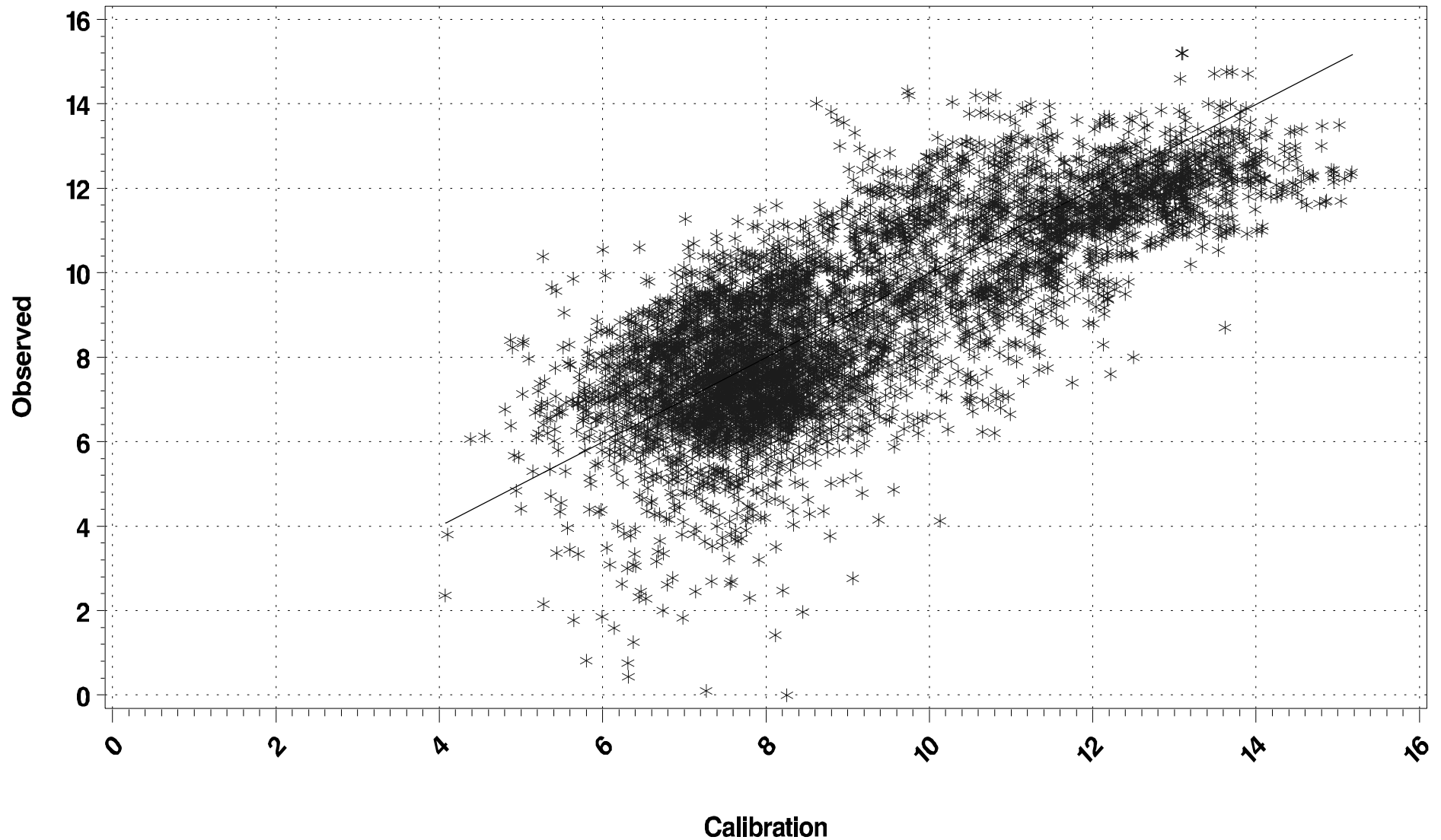
Regression of Calibration vs. Observations[1]

Using the 2039 pairs of predictions and observed data, the **slope** is 0.9939 and the **intercept** is -1.7989. The **R-Squared** value for this regression is 0.3913.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 2039 pairs of predictions and observed data, the **slope** is 1.6446 and the **intercept** is -0.7305. The **R-Squared** value for this regression is 0.3494.

Statistics (units in mg/l)

Mean observed 4.7139   Mean predicted 6.5529
Min. observed 0   Min. predicted 2.003
Max. observed 11.5   Max. predicted 11.23
Std. Dev. Observed 2.5004   Std. Dev. predicted 1.5736
Median observed 5.0000   Median predicted 6.4024
90th Percentile observed 7.8000   90th Percentile predicted 8.9330
10th Percentile observed 1.0000   10th Percentile predicted 4.7503

Differences (predicted – observed)

Mean difference 1.8390 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 2039
Number of Predicted Violations 0
Number of Observed Violations 317

[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB5MH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
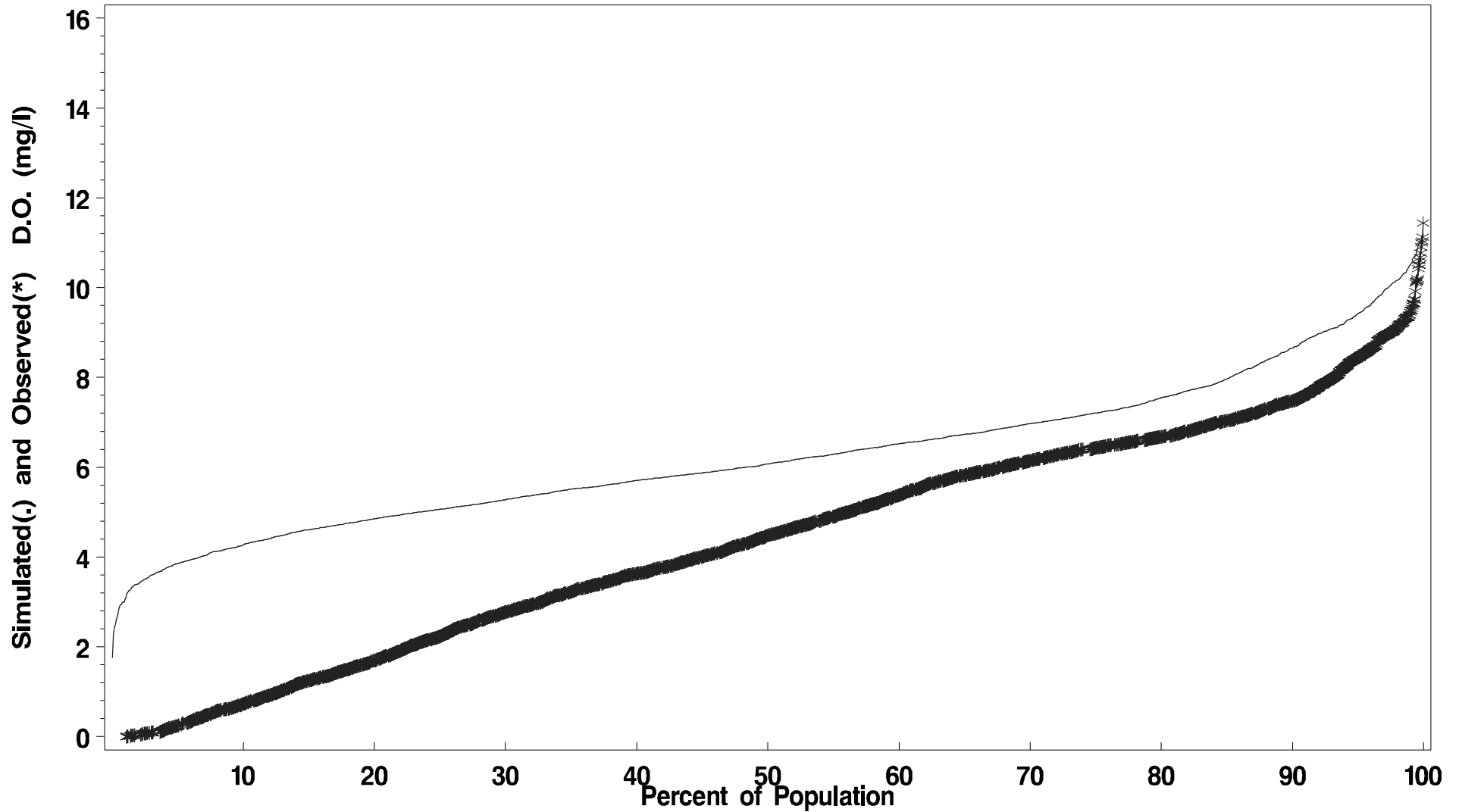
Deep Water   Dissolved Oxygen (mg/l)
Segment CB5MH   Season: May 1 – Sept 30
(Scatter Plot)
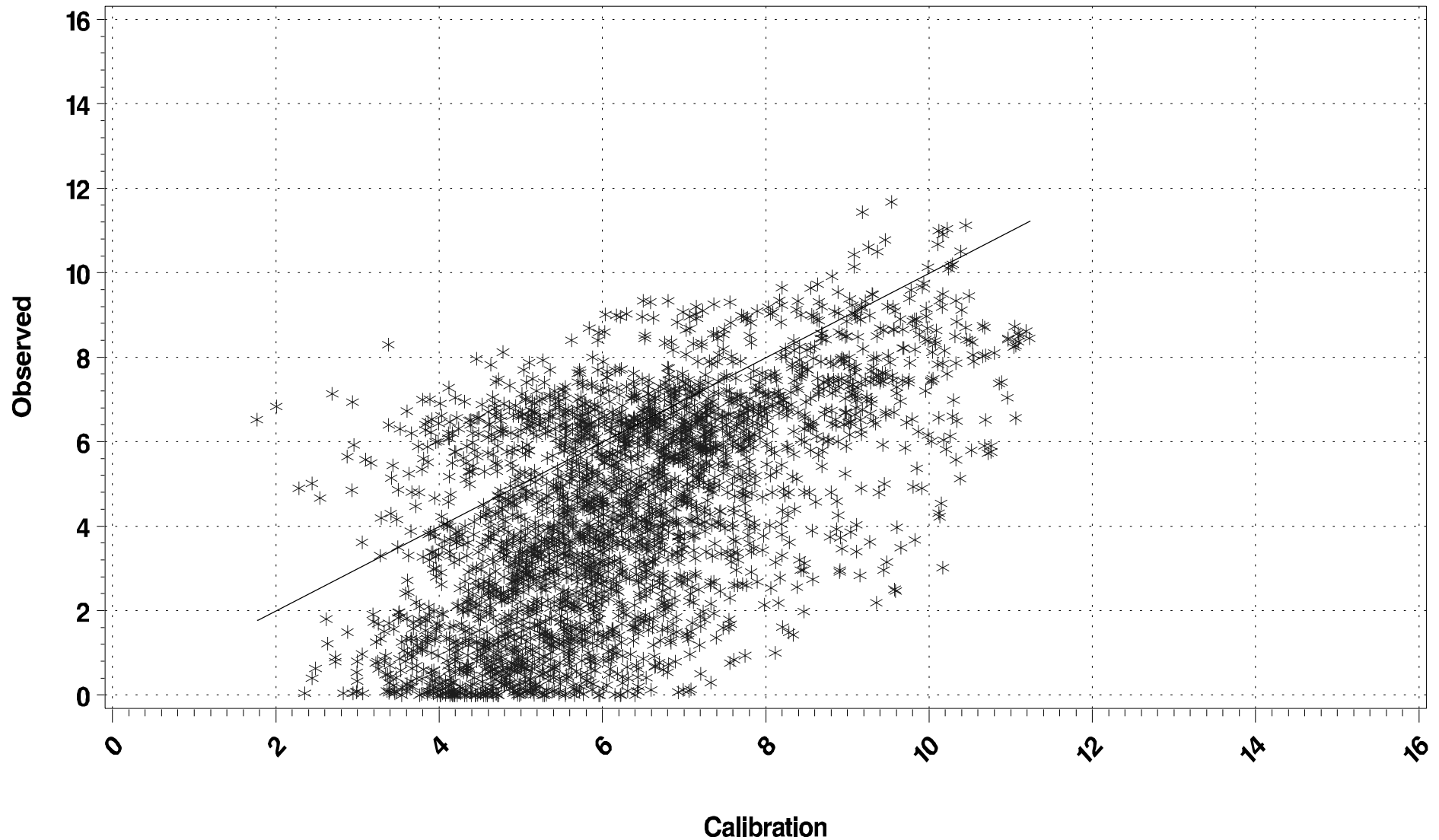
DEEP WATER **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 1848 pairs of predictions and observed data, the **slope** is 0.5748 and the **intercept** is 4.2221. The **R-Squared** value for this regression is 0.5841.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1848 pairs of predictions and observed data, the **slope** is 0.5749 and the **intercept** is 0.4417. The **R-Squared** value for this regression is 0.5622.

Statistics (units in mg/l)

Mean observed 9.7497   Mean predicted 9.6158
Min. observed 1.4   Min. predicted 3.796
Max. observed 15   Max. predicted 14.93
Std. Dev. Observed 1.8788   Std. Dev. predicted 2.4980
Median observed 10.0000   Median predicted 10.0475
90th Percentile observed 11.9800   90th Percentile predicted 12.6730
10th Percentile observed 7.2250   10th Percentile predicted 6.2097

Differences (predicted – observed)

Mean difference -0.1339 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1848
Number of Predicted Violations 0
Number of Observed Violations 5

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[1] observed is dependent, predicted is independent

Deep Water   Dissolved Oxygen (mg/l)
Segment CB5MH   Season: Oct 1 − April 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
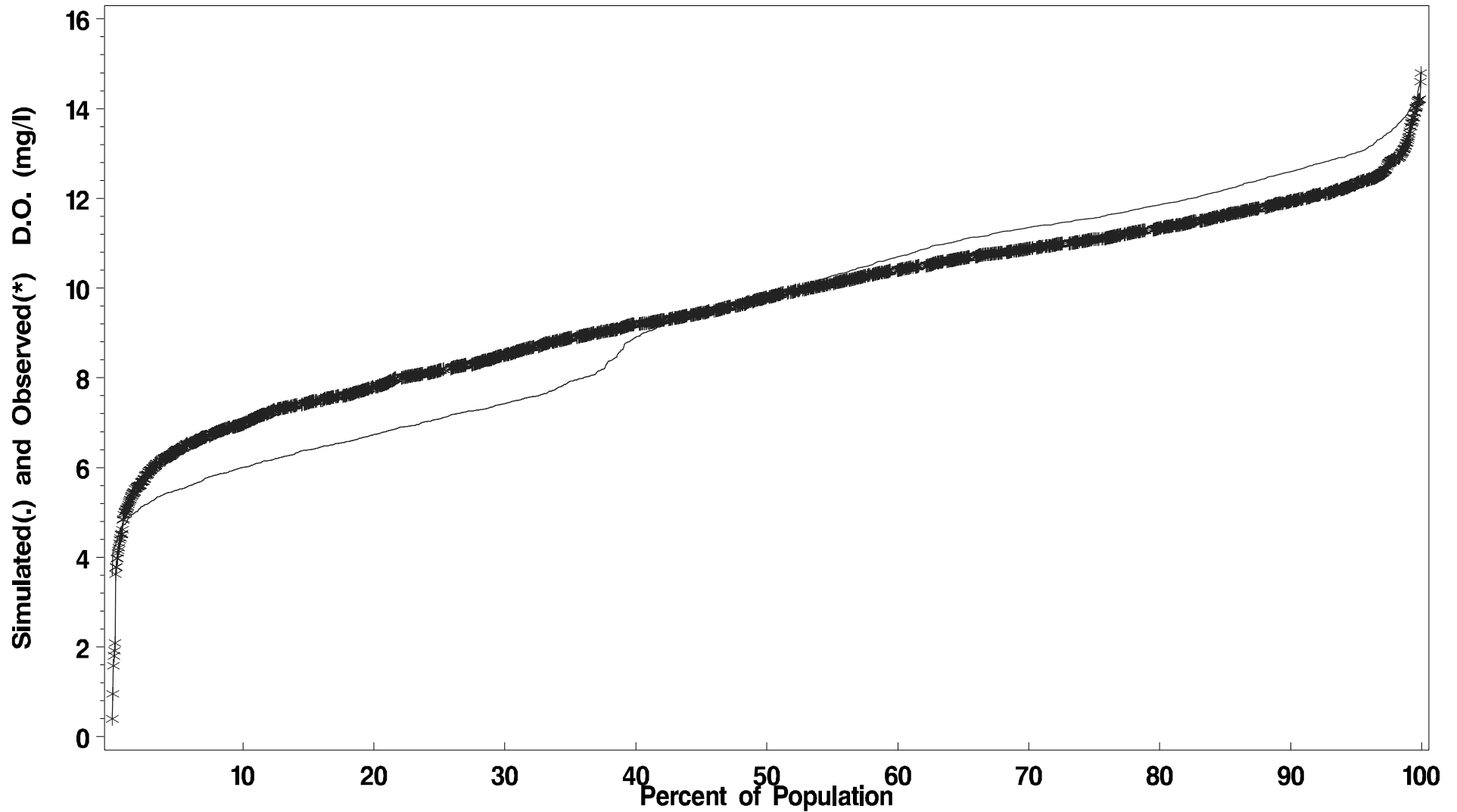
Deep Water Dissolved Oxygen (mg/l)
Segment CB5MH   Season: Oct 1 — April 30
(Scatter Plot)
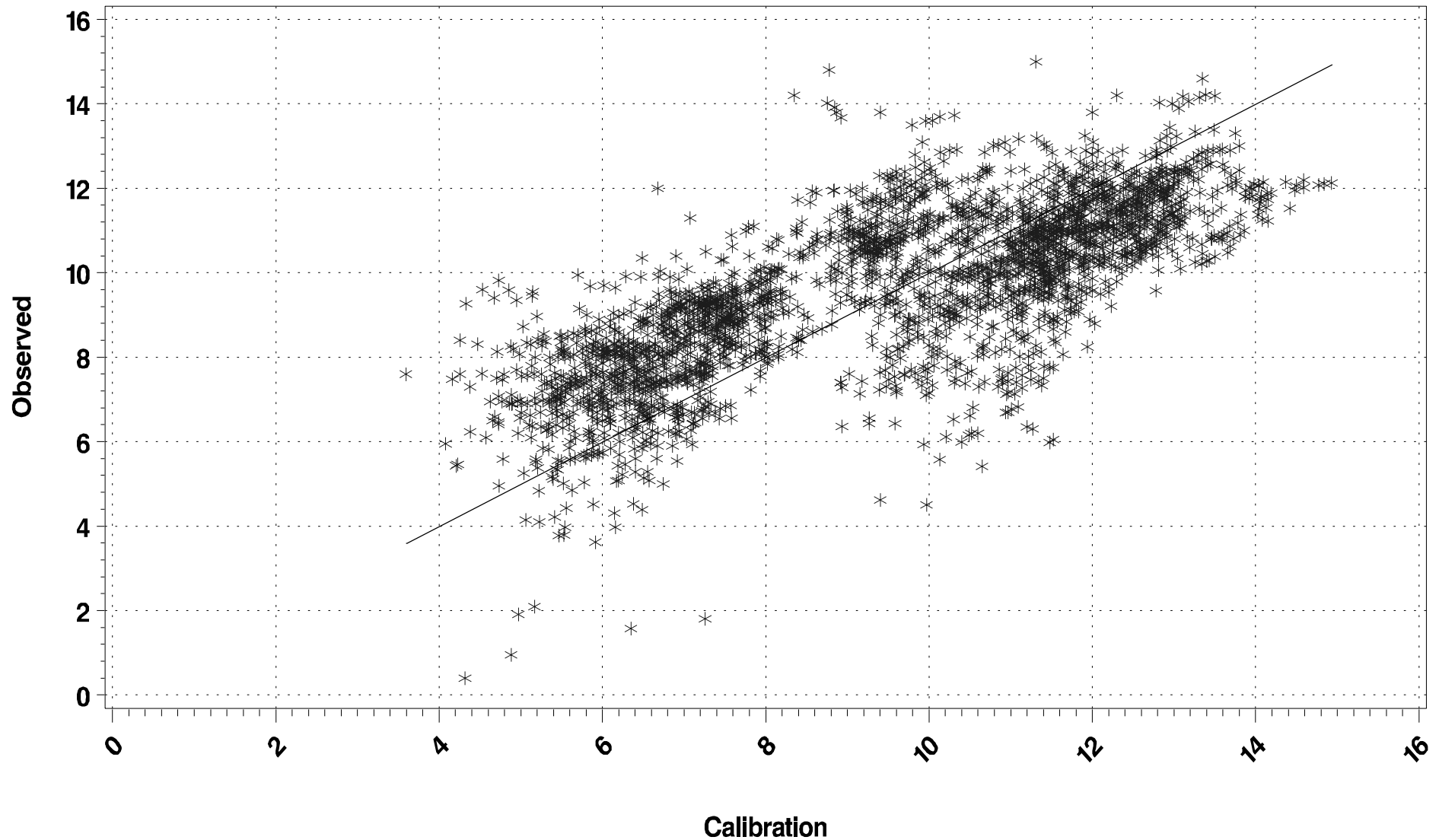
DEEP CHANNEL **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 1533 pairs of predictions and observed data, the **slope** is 0.8078 and the **intercept** is -1.1784. The **R-Squared** value for this regression is 0.5171.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1533 pairs of predictions and observed data, the **slope** is 1.3578 and the **intercept** is -0.5178. The **R-Squared** value for this regression is 0.4818.

Statistics (units in mg/l)

Mean observed 2.7876   Mean predicted 4.9099
Min. observed 0   Min. predicted 0.8191
Max. observed 8.28   Max. predicted 10.96
Std. Dev. Observed 2.1358   Std. Dev. predicted 1.9013
Median observed 2.5600   Median predicted 4.5899
90th Percentile observed 6.1200   90th Percentile predicted 7.9324
10th Percentile observed 0.2000   10th Percentile predicted 2.7222

Differences (predicted – observed)

Mean difference 2.1222 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l.

Number of predicted and observed pairs 1533
Number of Predicted Violations 2
Number of Observed Violations 411

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)
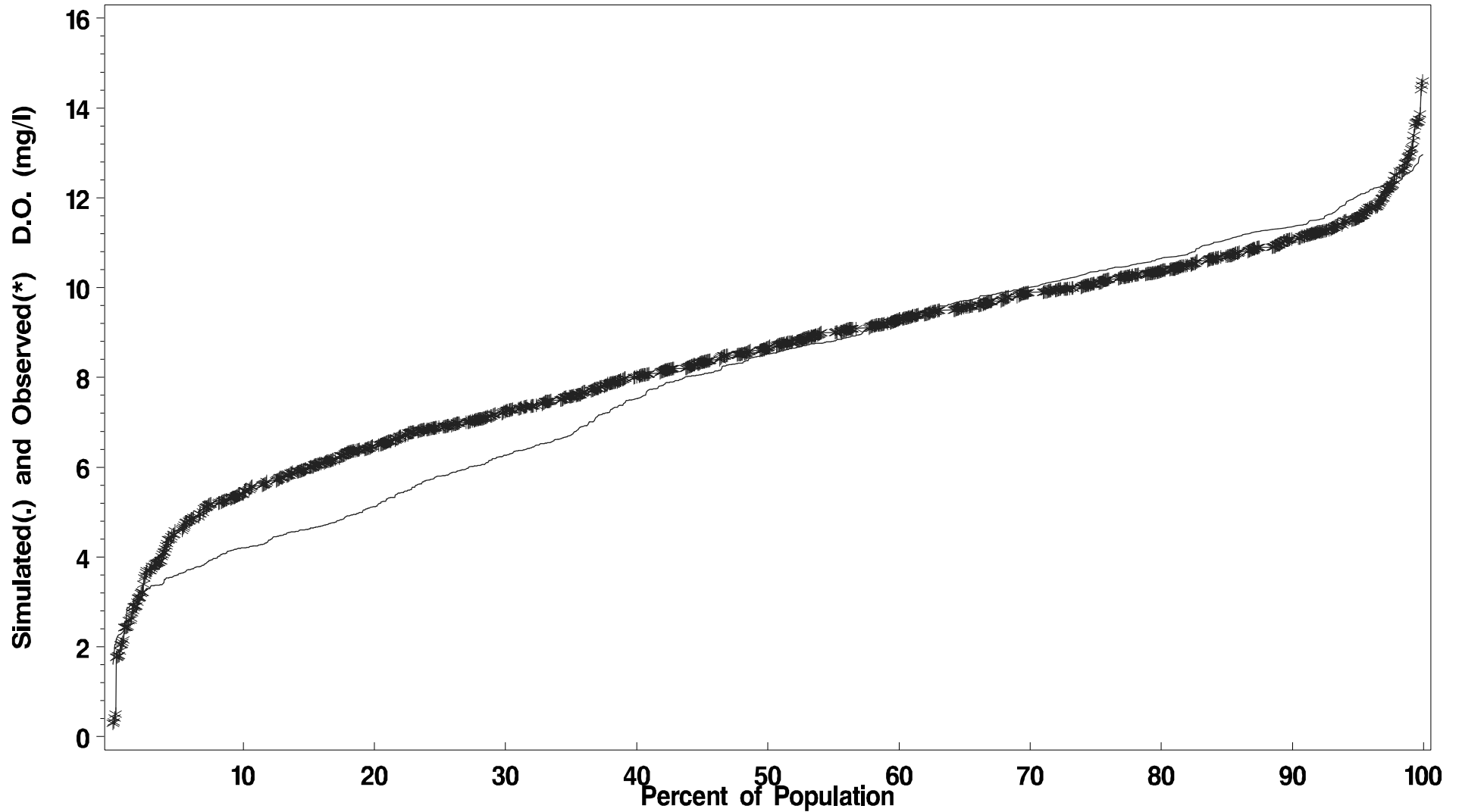# Segment CB5MH Season: May 1 – Sept 30
### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Channel Dissolved Oxygen (mg/l)
Segment CB5MH Season: May 1 — Sept 30
(Scatter Plot)
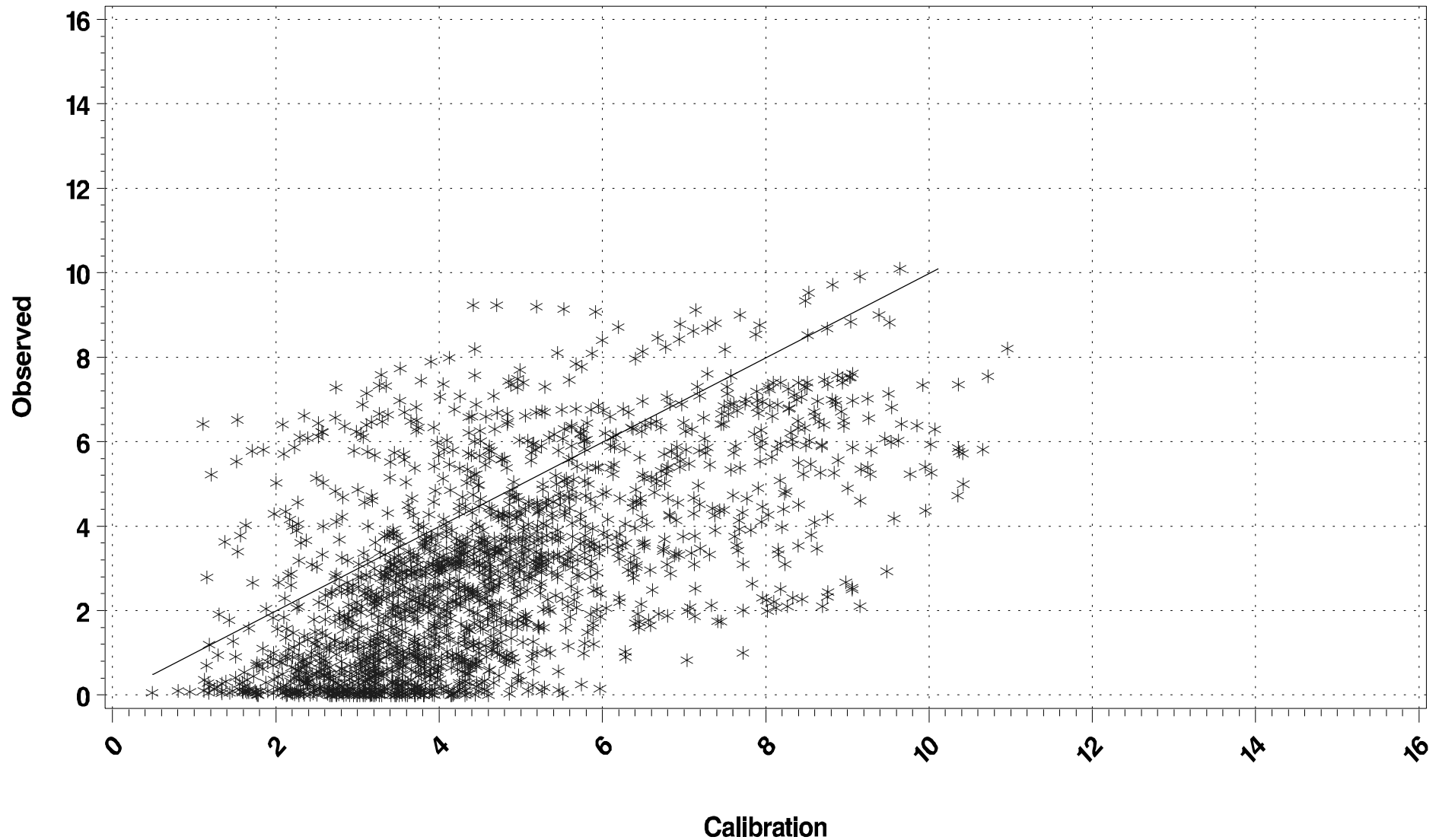
DEEP CHANNEL **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 1468 pairs of predictions and observed data, the **slope** is 0.5639 and the **intercept** is 3.9311. The **R-Squared** value for this regression is 0.5236.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1468 pairs of predictions and observed data, the **slope** is 0.5669 and the **intercept** is 0.4323. The **R-Squared** value for this regression is 0.4763.

Statistics (units in mg/l)

Mean observed 8.9227	Mean predicted 8.8524
Min. observed 0.4	Min. predicted 2.66
Max. observed 14.2	Max. predicted 13.94
Std. Dev. Observed 2.0002	Std. Dev. predicted 2.5667
Median observed 9.1400	Median predicted 9.3088
90th Percentile observed 11.3000	90th Percentile predicted 11.9210
10th Percentile observed 6.2900	10th Percentile predicted 5.2269

Differences (predicted – observed)

Mean difference -0.0703 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1468
Number of Predicted Violations 7
Number of Observed Violations 11

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)

Segment CB5MH Season: Oct 1 − April 30

Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
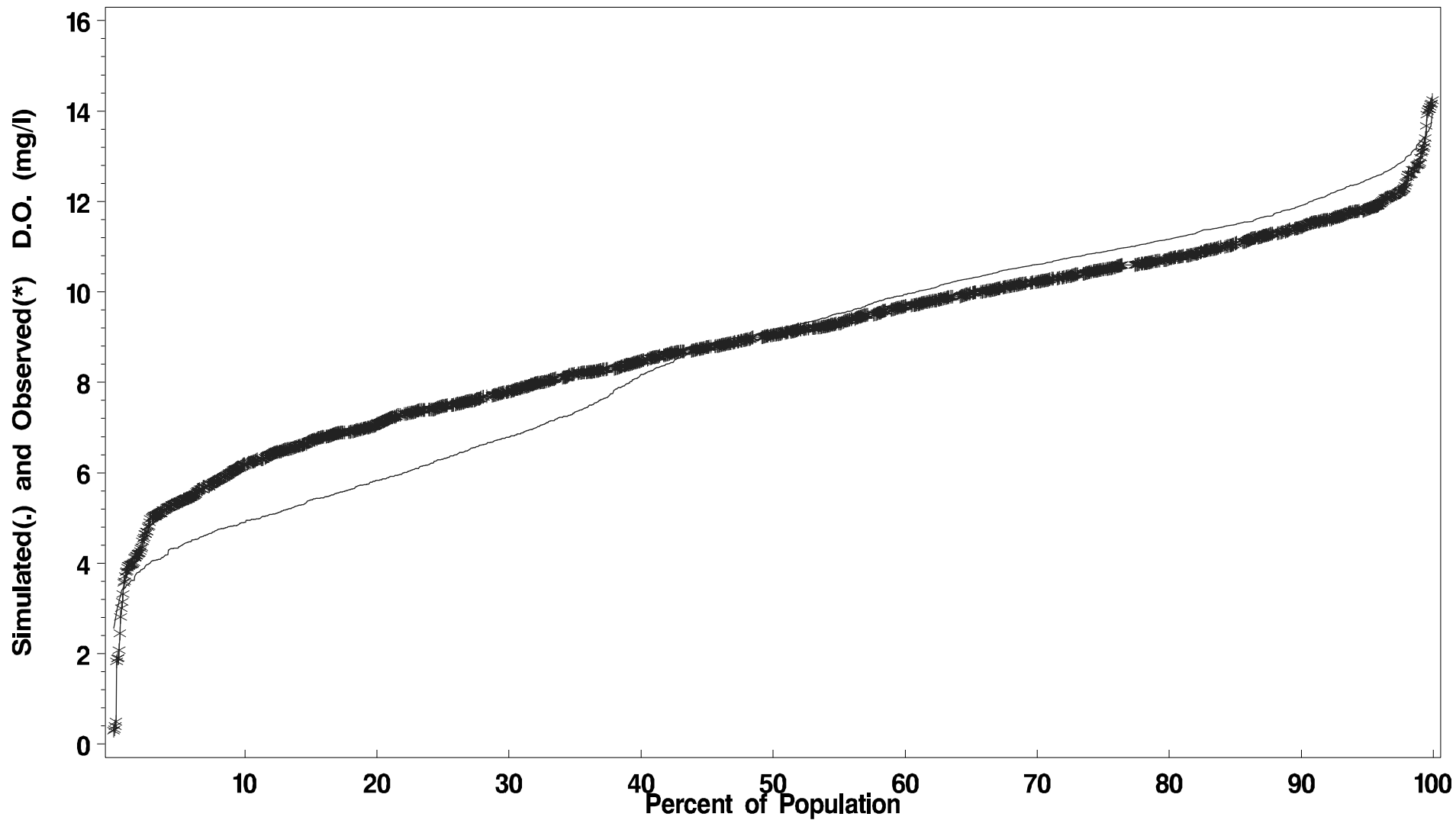
Deep Channel Dissolved Oxygen (mg/l)
Segment CB5MH Season: Oct 1 – April 30

(Scatter Plot)
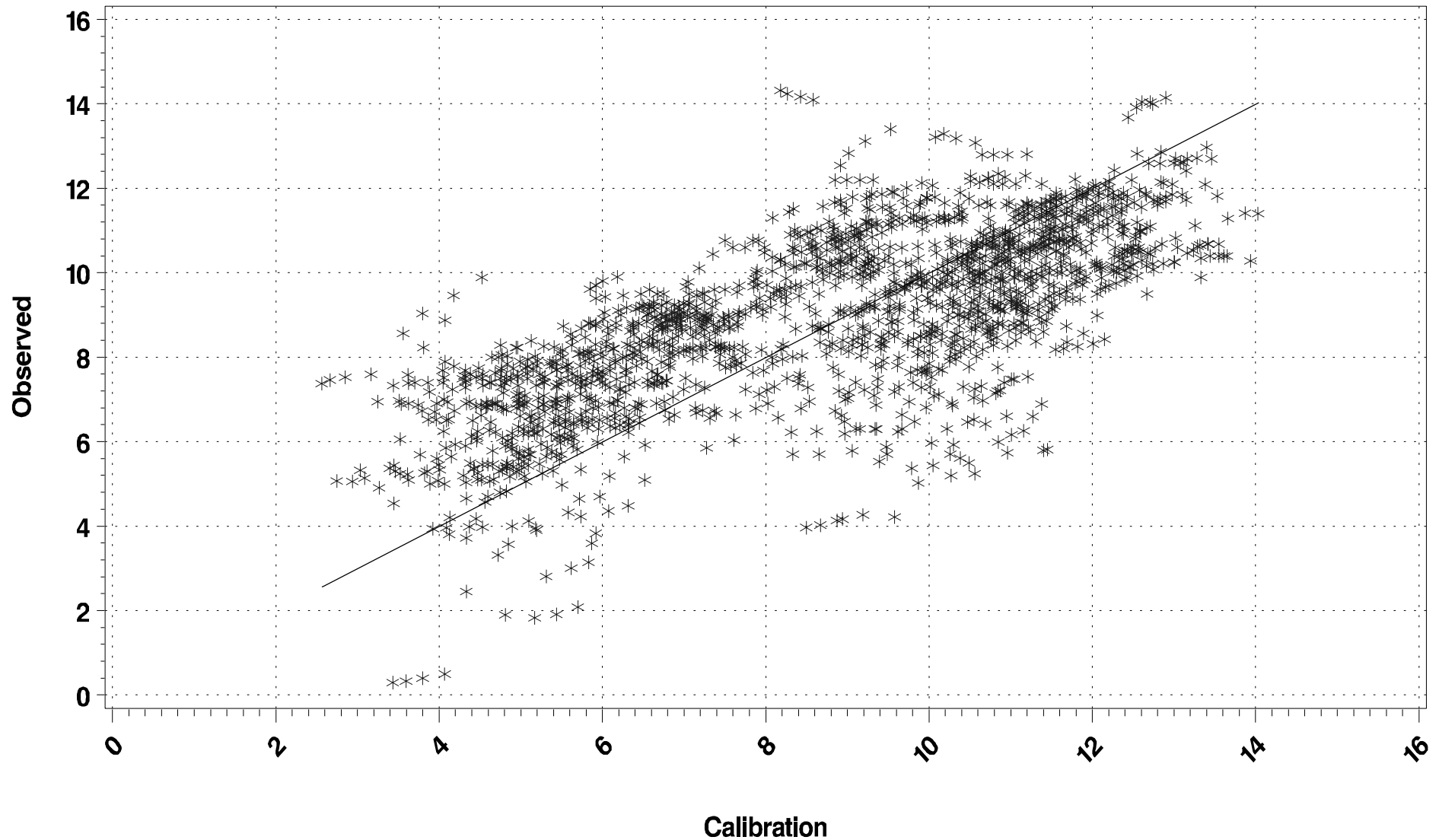
DEEP CHANNEL ANOXIC **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 1031 pairs of predictions and observed data, the **slope** is 0.7270 and the **intercept** is -0.2019. The **R-Squared** value for this regression is 0.5234.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1031 pairs of predictions and observed data, the **slope** is 0.9894 and the **intercept** is -0.1615. The **R-Squared** value for this regression is 0.4803.

Statistics (units in mg/l)

Mean observed 2.3415   Mean predicted 3.4983
Min. observed 0   Min. predicted 0.0128
Max. observed 7.43   Max. predicted 10.35
Std. Dev. Observed 1.9378   Std. Dev. predicted 1.9282
Median observed 2.0000   Median predicted 3.1135
90th Percentile observed 5.2900   90th Percentile predicted 6.5227
10th Percentile observed 0.1000   10th Percentile predicted 1.3599

Differences (predicted – observed)

Mean difference 1.1568 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 1031
Number of Predicted Violations 60
Number of Observed Violations 341

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[1] observed is dependent, predicted is independent

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB5MH   Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
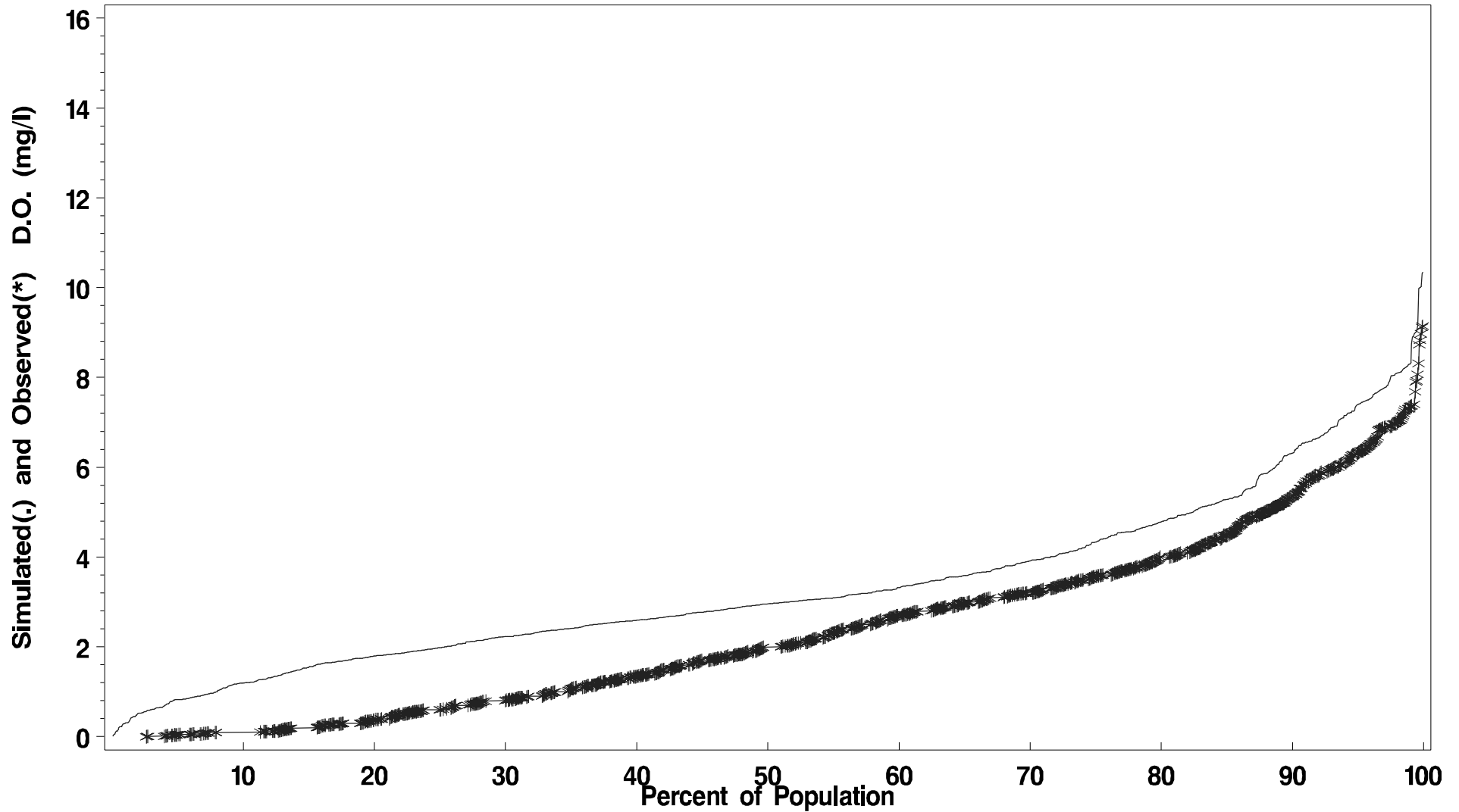
Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB5MH   Season: May 1 – Sept 30

(Scatter Plot)
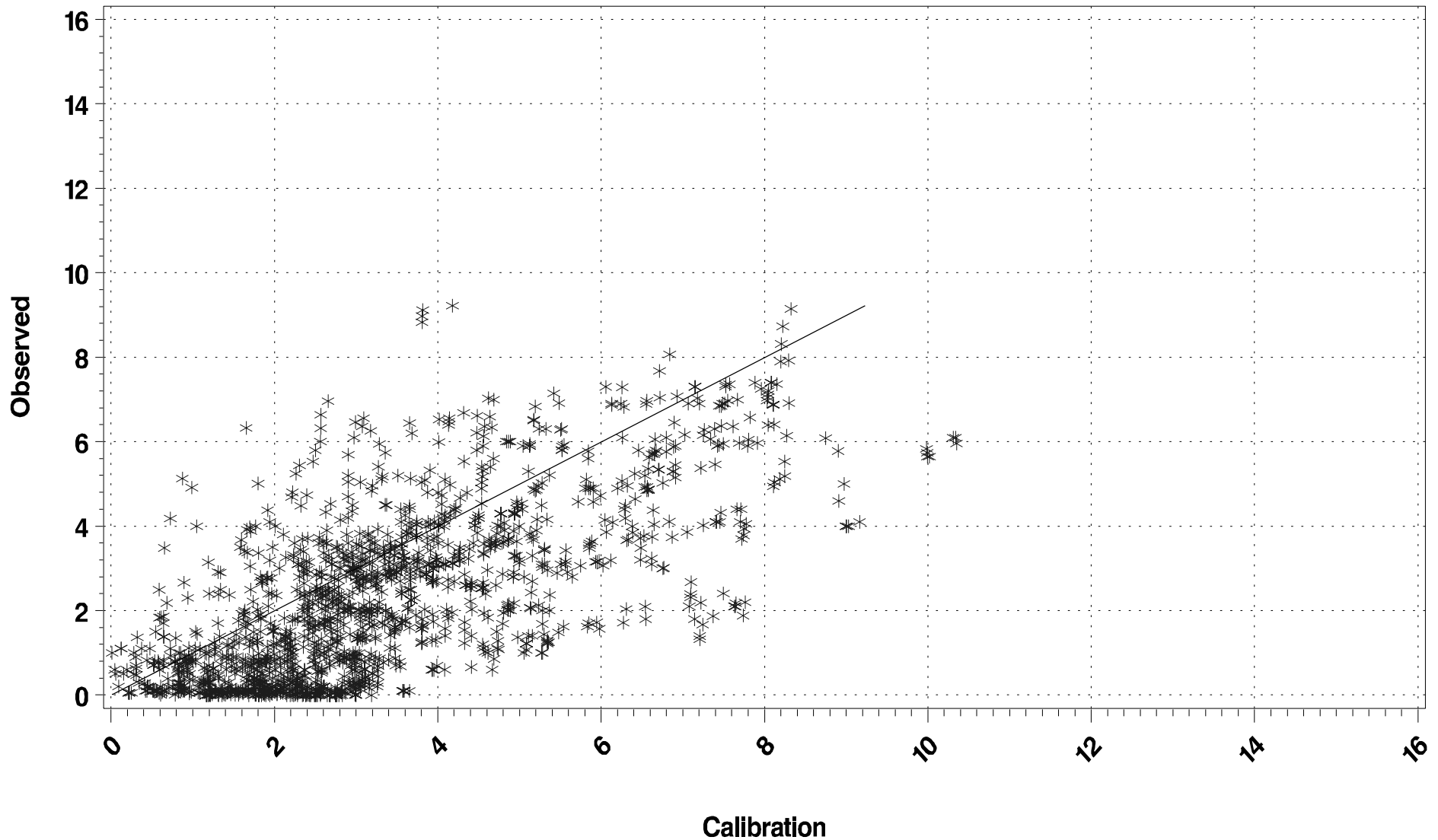
DEEP CHANNEL ANOXIC **Dissolved Oxygen**
Segment CB5MH (Mainstem CB5 Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 978 pairs of predictions and observed data, the **slope** is 0.5915 and the **intercept** is 3.6673. The **R-Squared** value for this regression is 0.5744.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 978 pairs of predictions and observed data, the **slope** is 0.5852 and the **intercept** is 0.4141. The **R-Squared** value for this regression is 0.5208.

Statistics (units in mg/l)

Mean observed 8.4847   Mean predicted 8.1440
Min. observed 0.3   Min. predicted 2.06
Max. observed 13.95   Max. predicted 13.06
Std. Dev. Observed 2.0643   Std. Dev. predicted 2.6447
Median observed 8.7000   Median predicted 8.5736
90th Percentile observed 10.9000   90th Percentile predicted 11.3470
10th Percentile observed 5.7000   10th Percentile predicted 4.3755
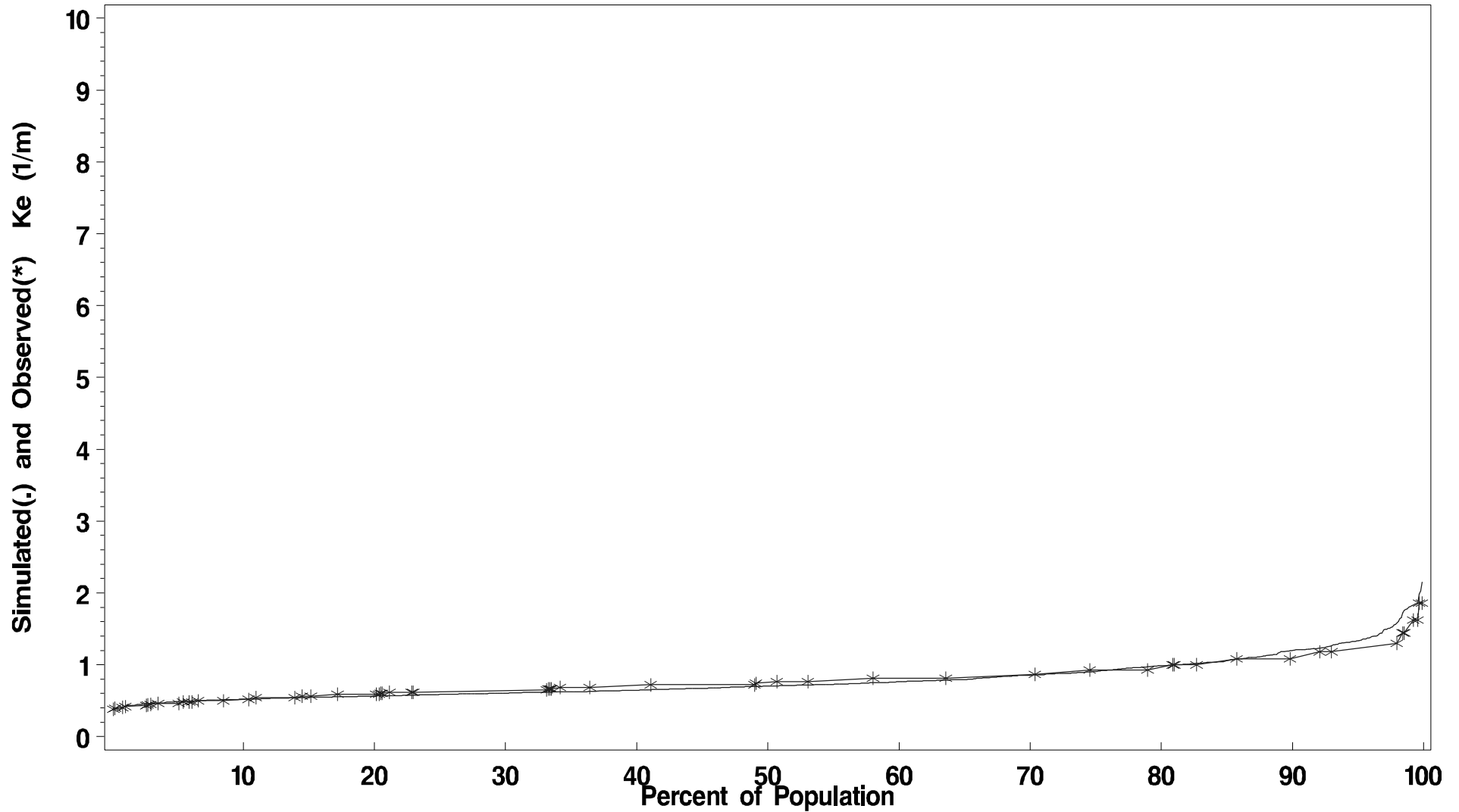

Differences (predicted – observed)

Mean difference -0.3408 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 978
Number of Predicted Violations 29
Number of Observed Violations 18

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[1] observed is dependent, predicted is independent

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB5MH Season: Oct 1 – April 30
### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment CB5MH   Season: Oct 1 – April 30

(Scatter Plot)

<div style="text-align: center">
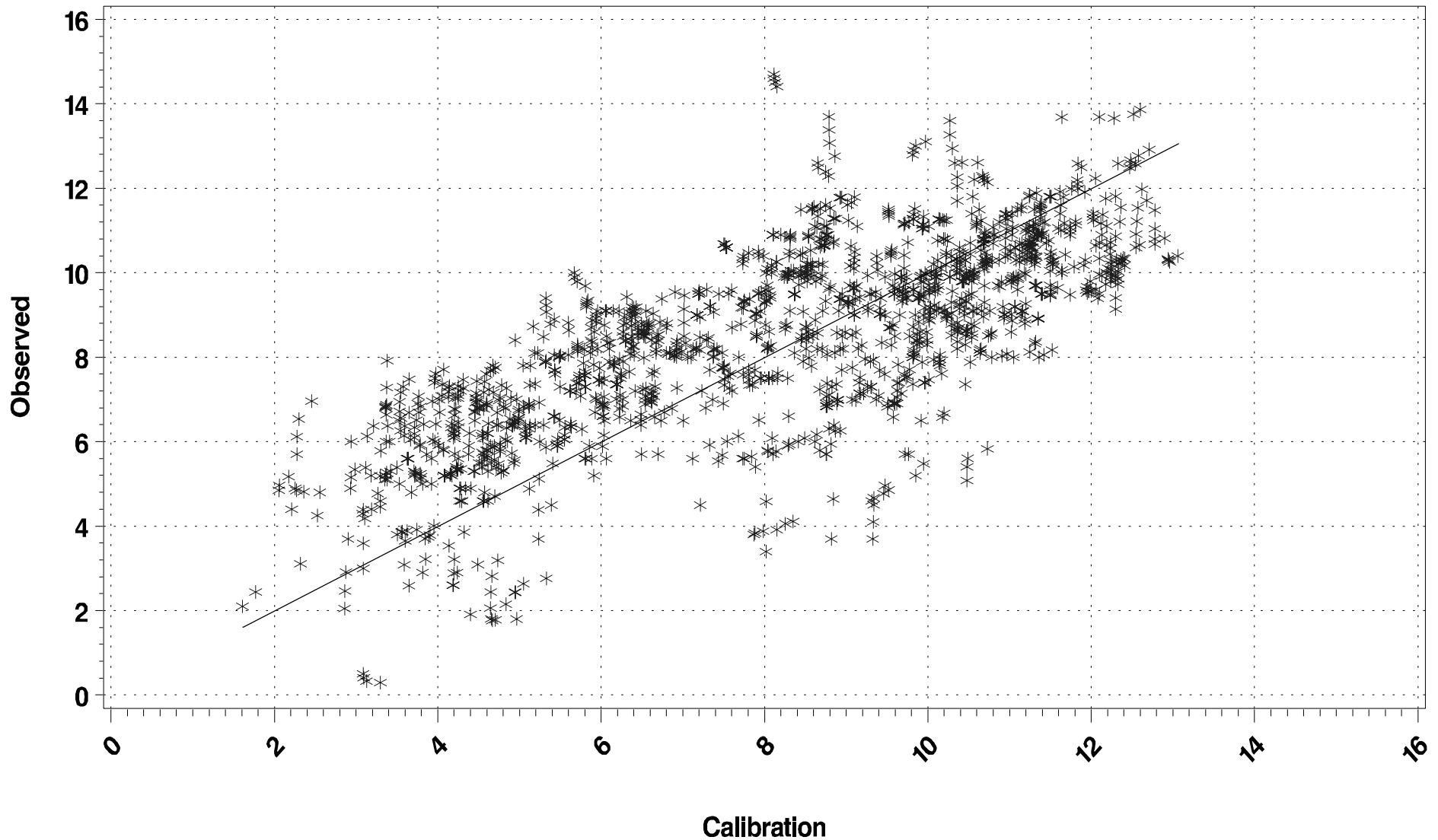
MESOHALINE **Chlorophyll**
Segment CB5MH (Mainstem CB5 Mesohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 449 pairs of predictions and observed data, the **slope** is 0.9033 and the **intercept** is 1.5816. The **R-Squared** value for this regression is 0.1608.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 449 pairs of predictions and observed data, the **slope** is 0.8345 and the **intercept** is 0.1580. The **R-Squared** value for this regression is 0.1530.

Statistics (units in µg/l)

Mean observed 9.1732	Mean predicted 8.4047
Min. observed 0.0000	Min. predicted 4.9381
Max. observed 34.1000	Max. predicted 18.9280
Std. Dev. Observed 4.9982	Std. Dev. predicted 2.2190
Median observed 7.9000	Median predicted 7.8784
95th Percentile observed 19.6000	95th Percentile predicted 13.1490
10th Percentile observed 4.3000	10th Percentile predicted 6.1627

Differences (predicted – observed)

Mean difference -0.7685 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB5MH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
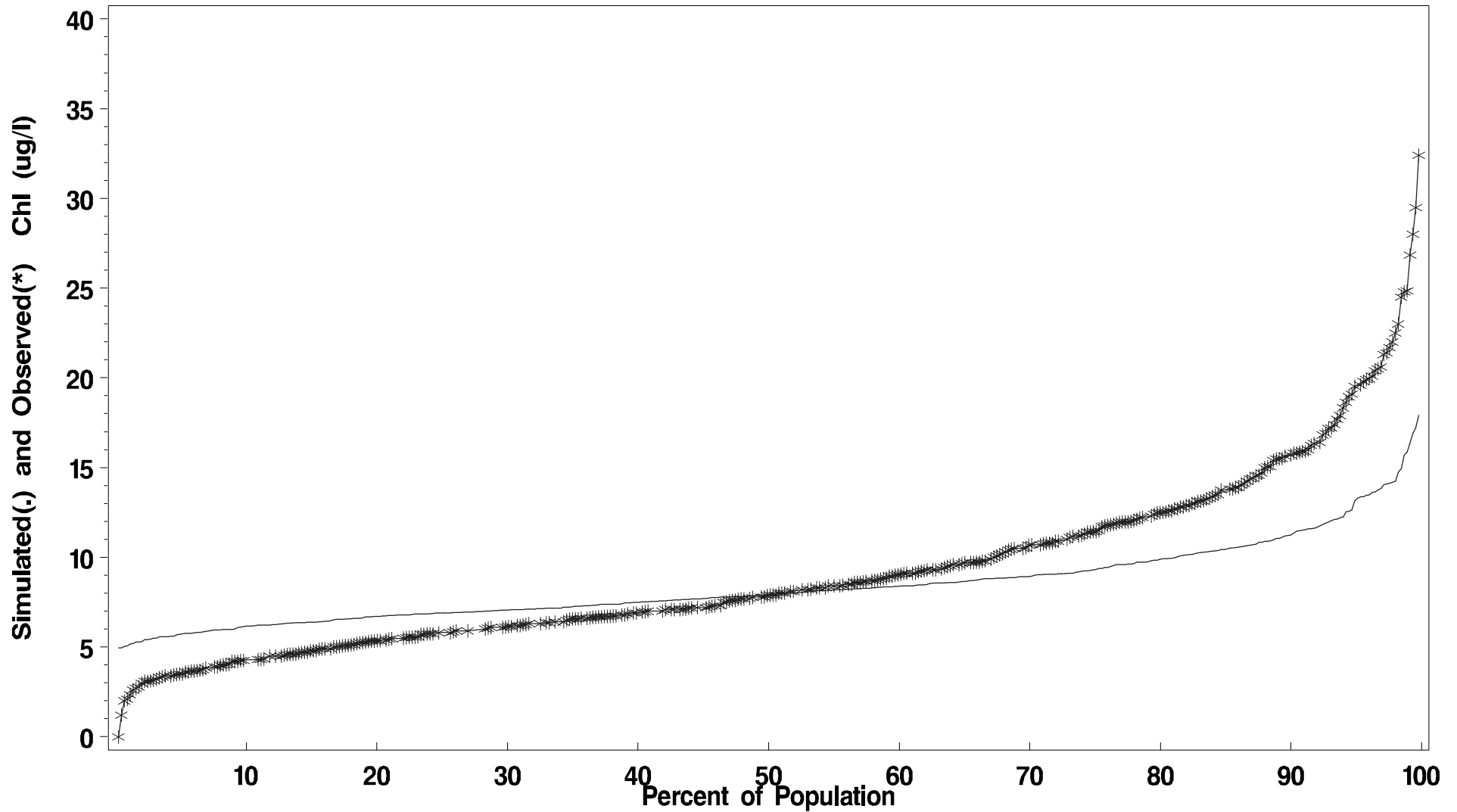
Chlorophyll Concentration (ug/l)
Segment CB5MH   Season: July 1 – Sept 30
(Scatter Plot)
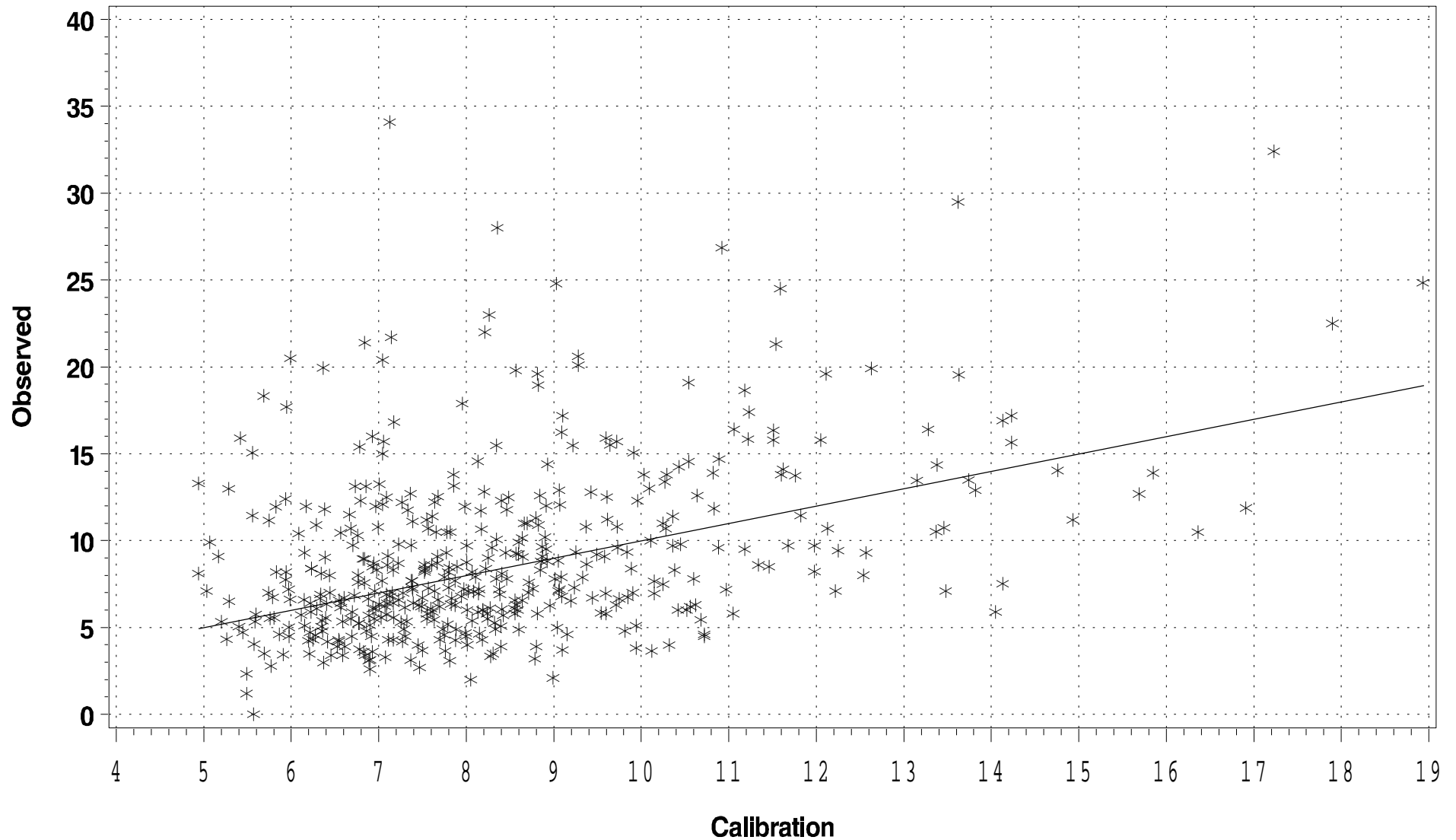
MESOHALINE **Chlorophyll**
Segment CB5MH (Mainstem CB5 Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 381 pairs of predictions and observed data, the **slope** is 0.5004 and the
intercept is 3.5206. The **R-Squared** value for this regression is 0.0721.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 381 pairs of predictions and observed data, the **slope** is 0.7731 and the
intercept is 0.0621. The **R-Squared** value for this regression is 0.1102.

Statistics (units in µg/l)

Mean observed 10.1525   Mean predicted 13.2542
Min. observed 1.0000   Min. predicted 5.0312
Max. observed 46.8600   Max. predicted 34.2150
Std. Dev. Observed 8.5722   Std. Dev. predicted 4.6001
Median observed 7.2000   Median predicted 12.4090
95th Percentile observed 28.6000   95th Percentile predicted 22.2160
10th Percentile observed 2.7127   10th Percentile predicted 8.4751

Differences (predicted – observed)

Mean difference 3.1016 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB5MH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
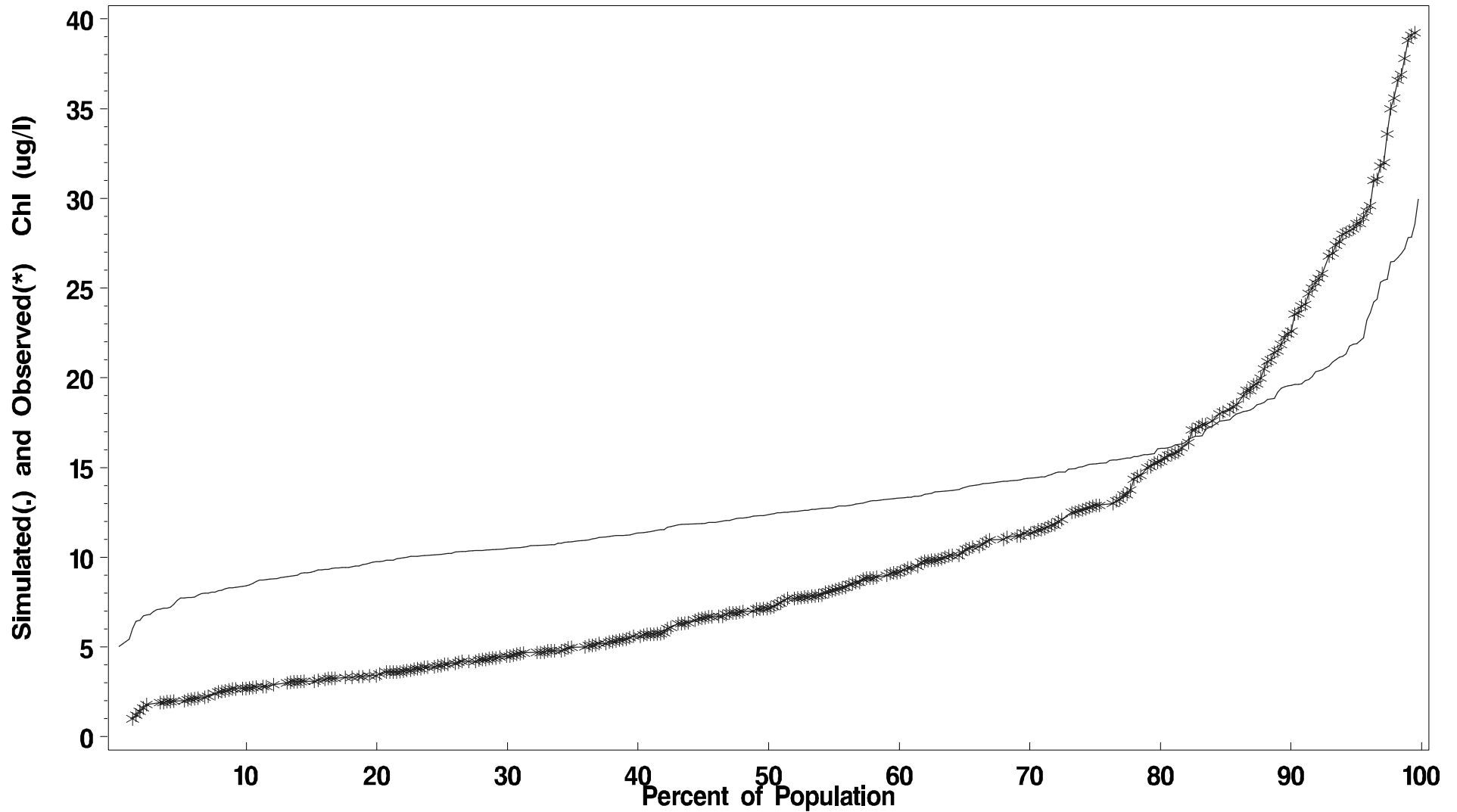
Chlorophyll Concentration (ug/l)
Segment CB5MH   Season: March 1 – May 30
(Scatter Plot)
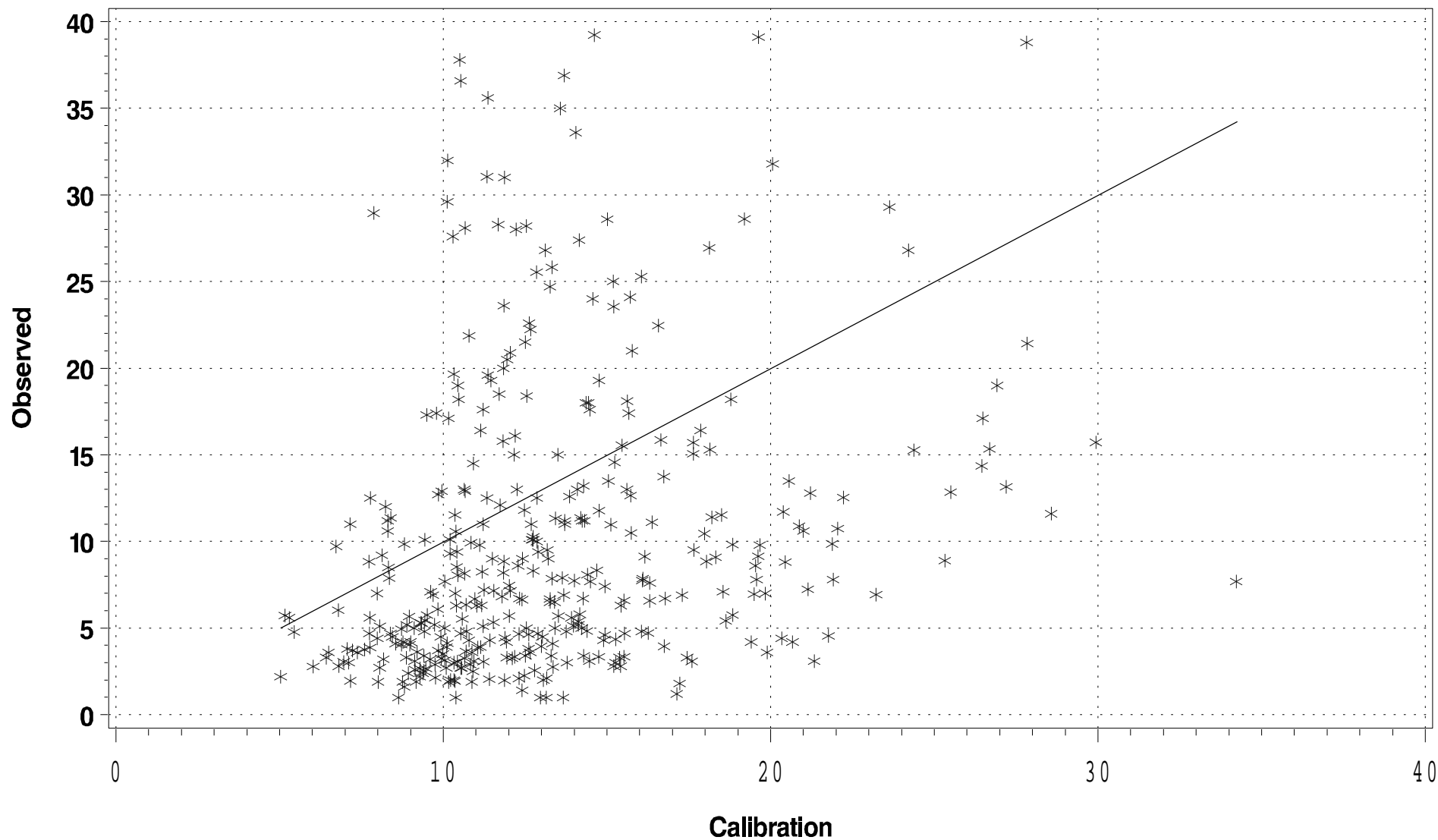
MESOHALINE **Light Attenuation**
Segment CB5MH (Mainstem CB5 Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 1014 pairs of predictions and observed data, the **slope** is 0.2715 and the **intercept** is 0.5907. The **R-Squared** value for this regression is 0.0831.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1014 pairs of predictions and observed data, the **slope** is 0.2981 and the **intercept** is 0.1786. The **R-Squared** value for this regression is 0.1015.

Statistics (units in 1/m)

Mean observed 0.7980	Mean predicted 0.7635
Min. observed 0.3824	Min. predicted 0.3685
Max. observed 3.2500	Max. predicted 2.4634
Std. Dev. Observed 0.2637	Std. Dev. predicted 0.2801
Median observed 0.7222	Median predicted 0.6786
90th Percentile observed 1.0833	90th Percentile predicted 1.1704
10th Percentile observed 0.5200	10th Percentile predicted 0.5115

Differences (predicted – observed)

Mean difference -0.0345 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment CB5MH   Season: April 1 — Oct 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Ke (1/m)
Segment CB5MH   Season: April 1 – Oct 30
(Scatter Plot)
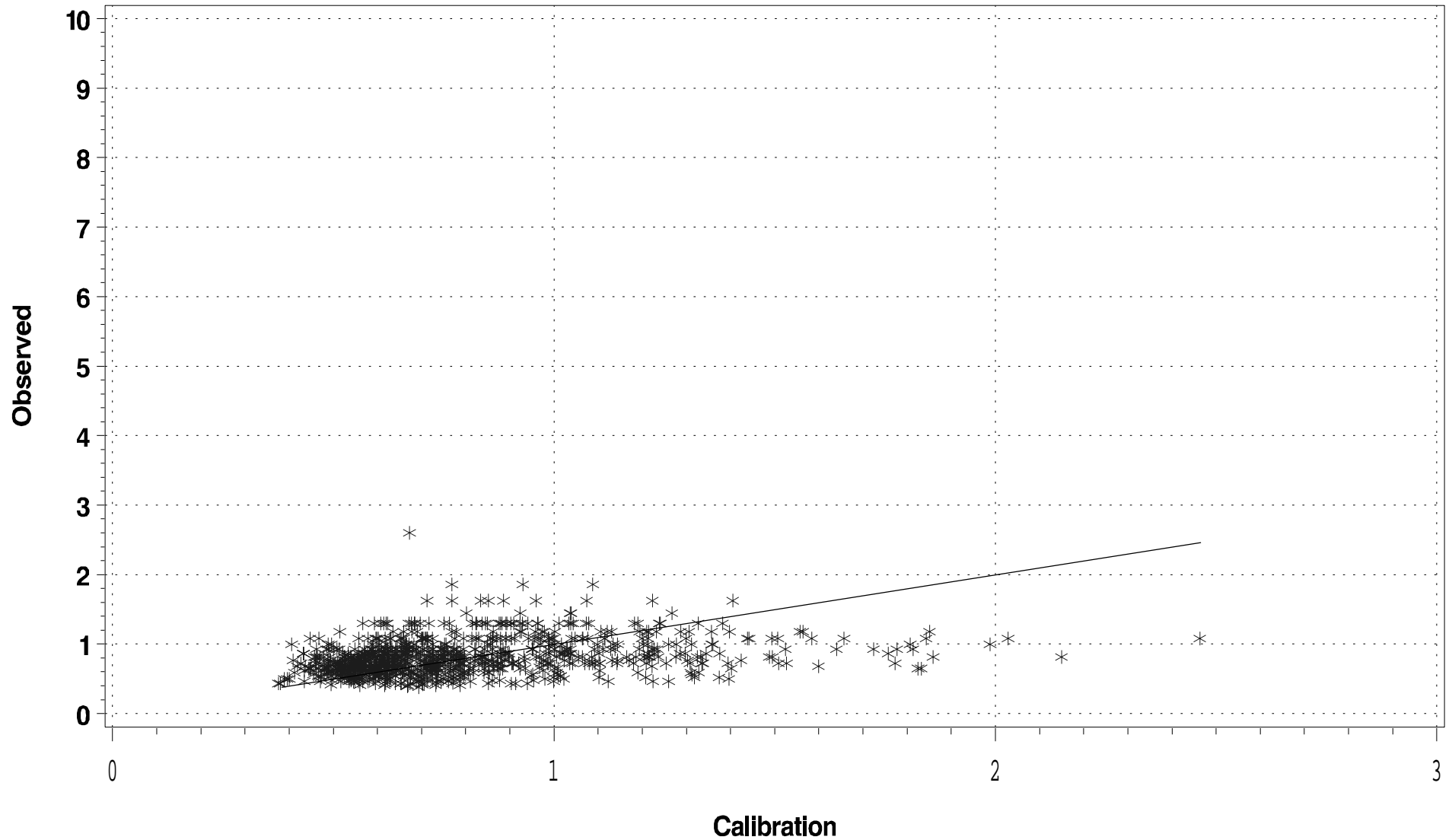
Chesapeake Bay Standard Segment CB6PH

Location Map of
Segment CB6PH within
the Chesapeake Bay Model Grid

CB6.1

CB6.2

CB6.3

CB6.4

Chesapeake Bay Program

N
W   E
S

0   1.5   3   6   9   12
Miles
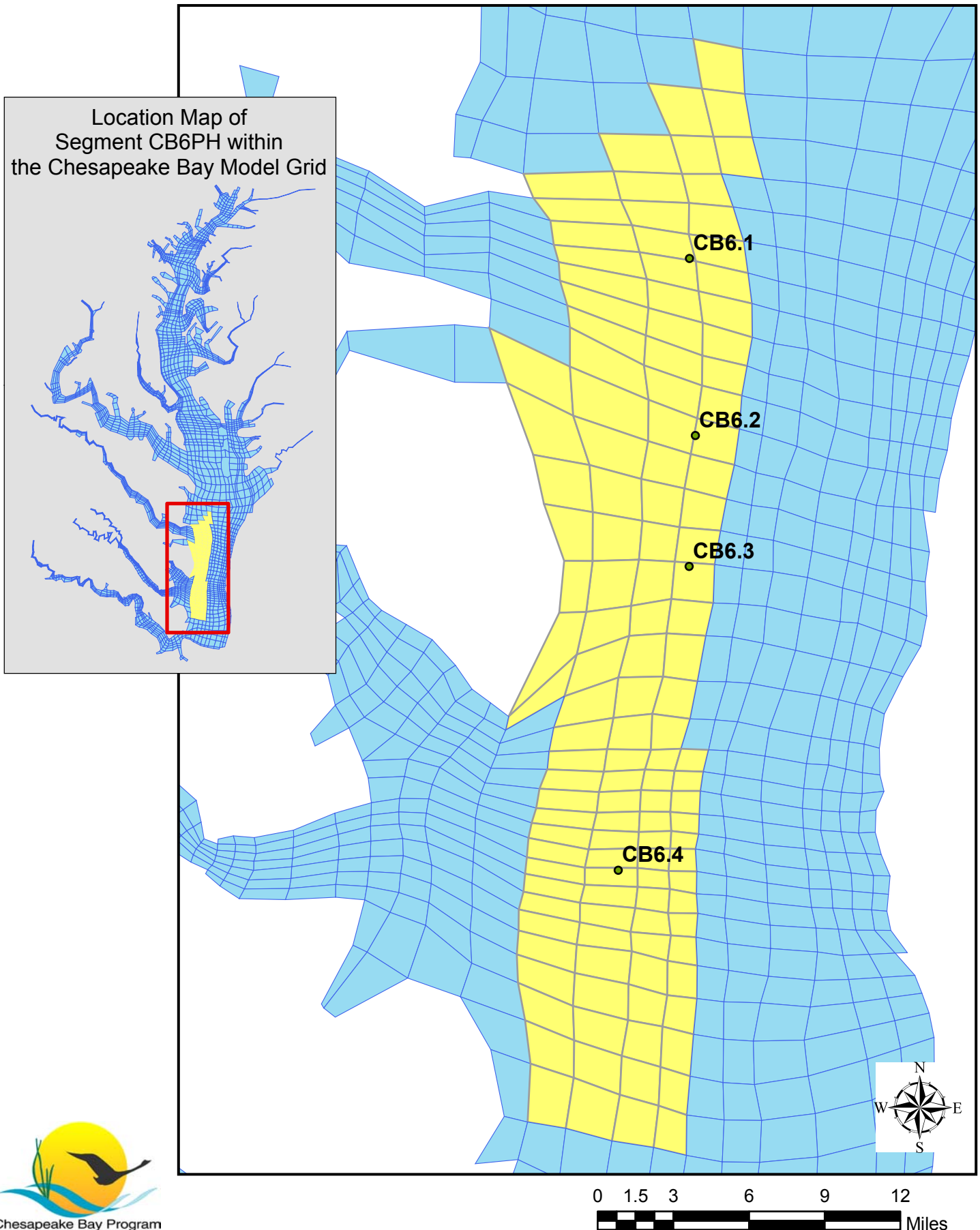
OPEN WATER **Dissolved Oxygen**
Segment CB6PH (Mainstem CB6 Polyhaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 2768 pairs of predictions and observed data, the **slope** is 0.8416 and the **intercept** is 1.1140. The **R-Squared** value for this regression is 0.6523.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 2768 pairs of predictions and observed data, the **slope** is 0.8973 and the **intercept** is 0.0861. The **R-Squared** value for this regression is 0.6208.

Statistics (units in mg/l)

Mean observed 8.7252   Mean predicted 9.0438
Min. observed 3.53   Min. predicted 4.687
Max. observed 14.16   Max. predicted 14.63
Std. Dev. Observed 2.0804   Std. Dev. predicted 1.9965
Median observed 8.5300   Median predicted 8.4299
90th Percentile observed 11.6700   90th Percentile predicted 12.1100
10th Percentile observed 6.1800   10th Percentile predicted 6.8700

Differences (predicted – observed)

Mean difference 0.3187 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 2768
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
Segment CB6PH Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
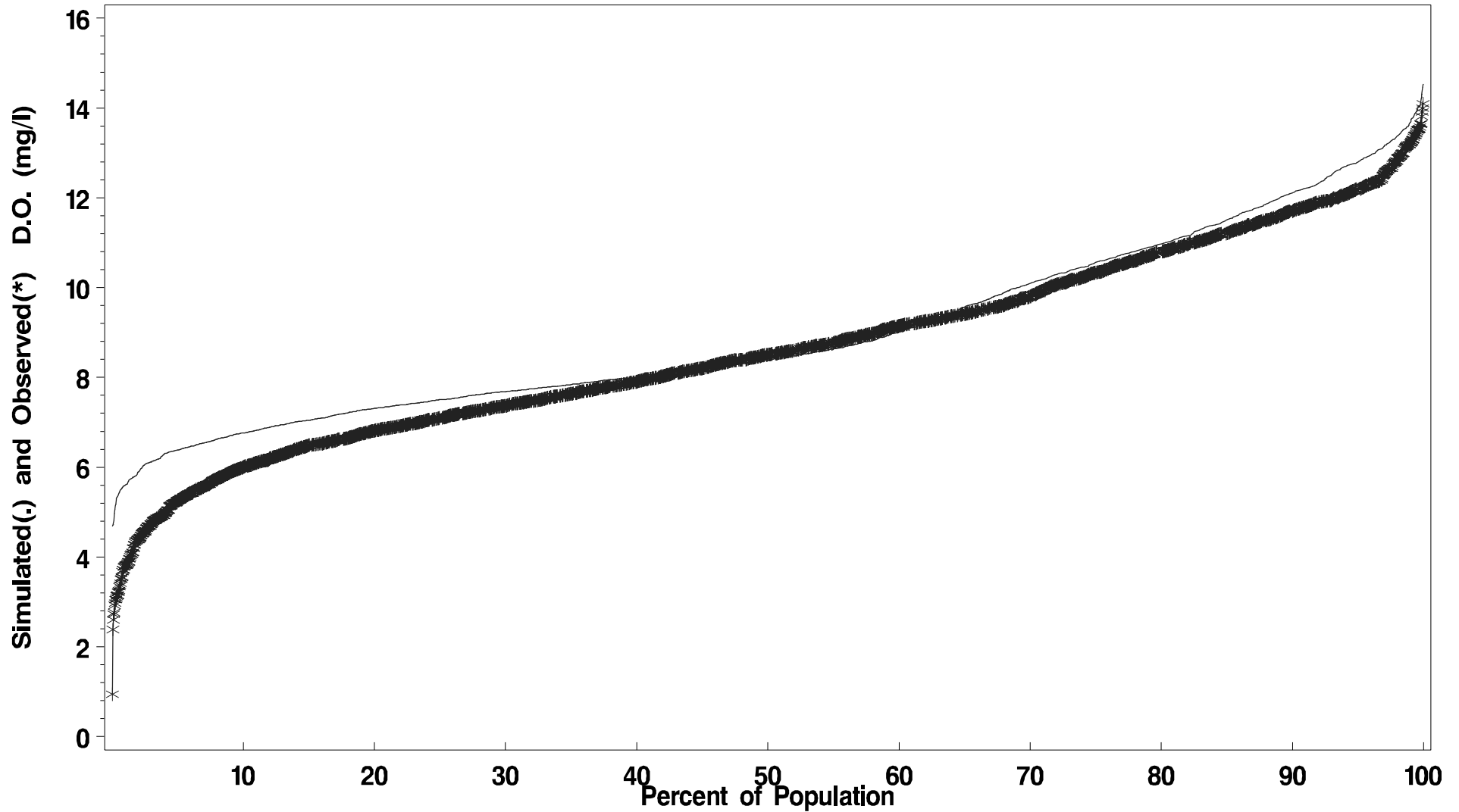
Open Water   Dissolved Oxygen (mg/l)
Segment CB6PH   Season: Jan 1 — Dec 31
(Scatter Plot)
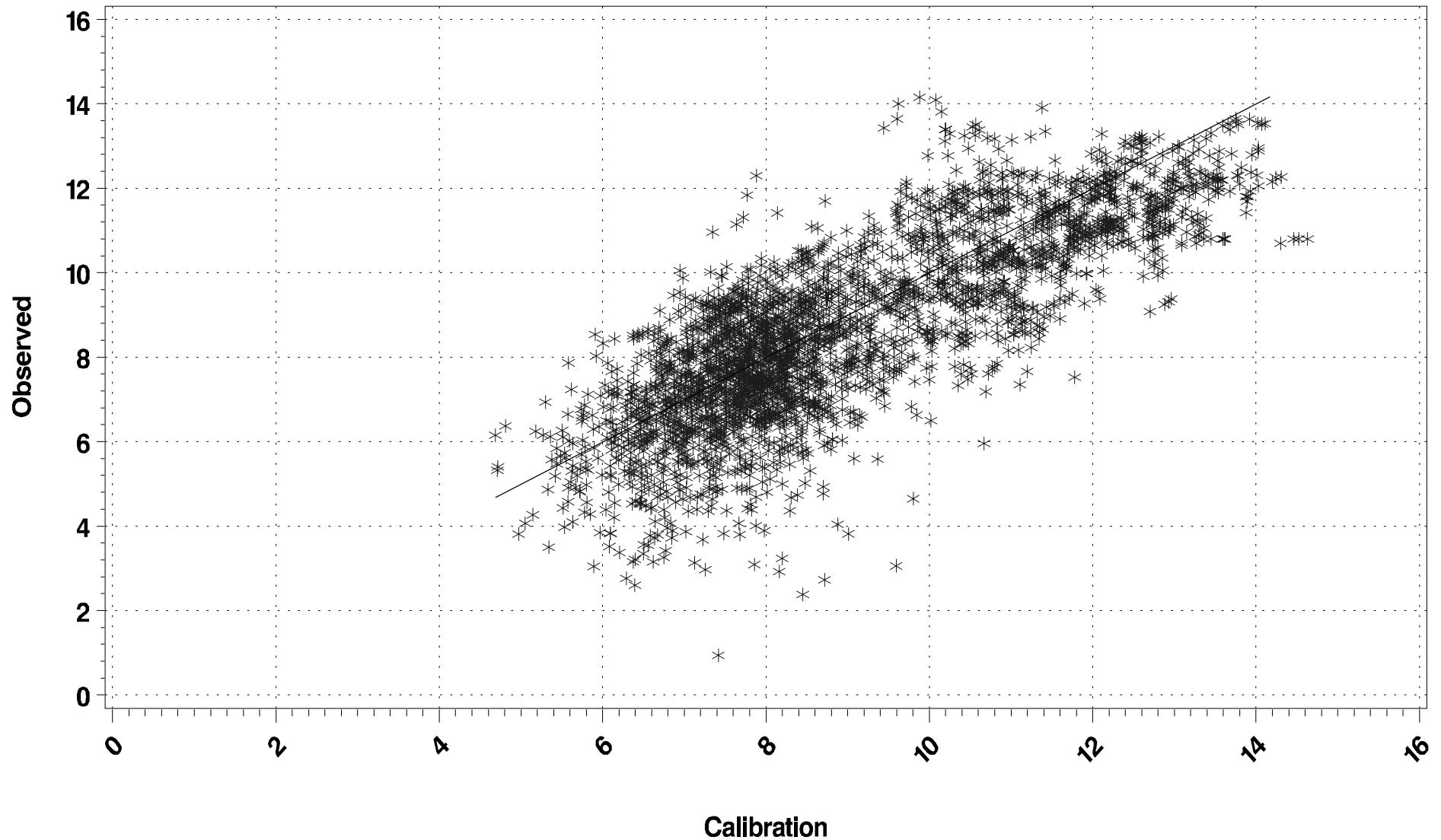
DEEP WATER **Dissolved Oxygen**
Segment CB6PH (Mainstem CB6 Polyhaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 1112 pairs of predictions and observed data, the **slope** is 0.8344 and the **intercept** is -0.2465. The **R-Squared** value for this regression is 0.4617.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1112 pairs of predictions and observed data, the **slope** is 1.0841 and the **intercept** is -0.1703. The **R-Squared** value for this regression is 0.3978.

Statistics (units in mg/l)

Mean observed 4.7513   Mean predicted 5.9900
Min. observed 0.35   Min. predicted 2.339
Max. observed 10.19   Max. predicted 11.01
Std. Dev. Observed 1.8233   Std. Dev. predicted 1.4849
Median observed 4.7025   Median predicted 5.6943
90th Percentile observed 7.2000   90th Percentile predicted 8.4776
10th Percentile observed 2.3900   10th Percentile predicted 4.3896

Differences (predicted – observed)

Mean difference 1.2387 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 1112
Number of Predicted Violations 0
Number of Observed Violations 50

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB6PH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
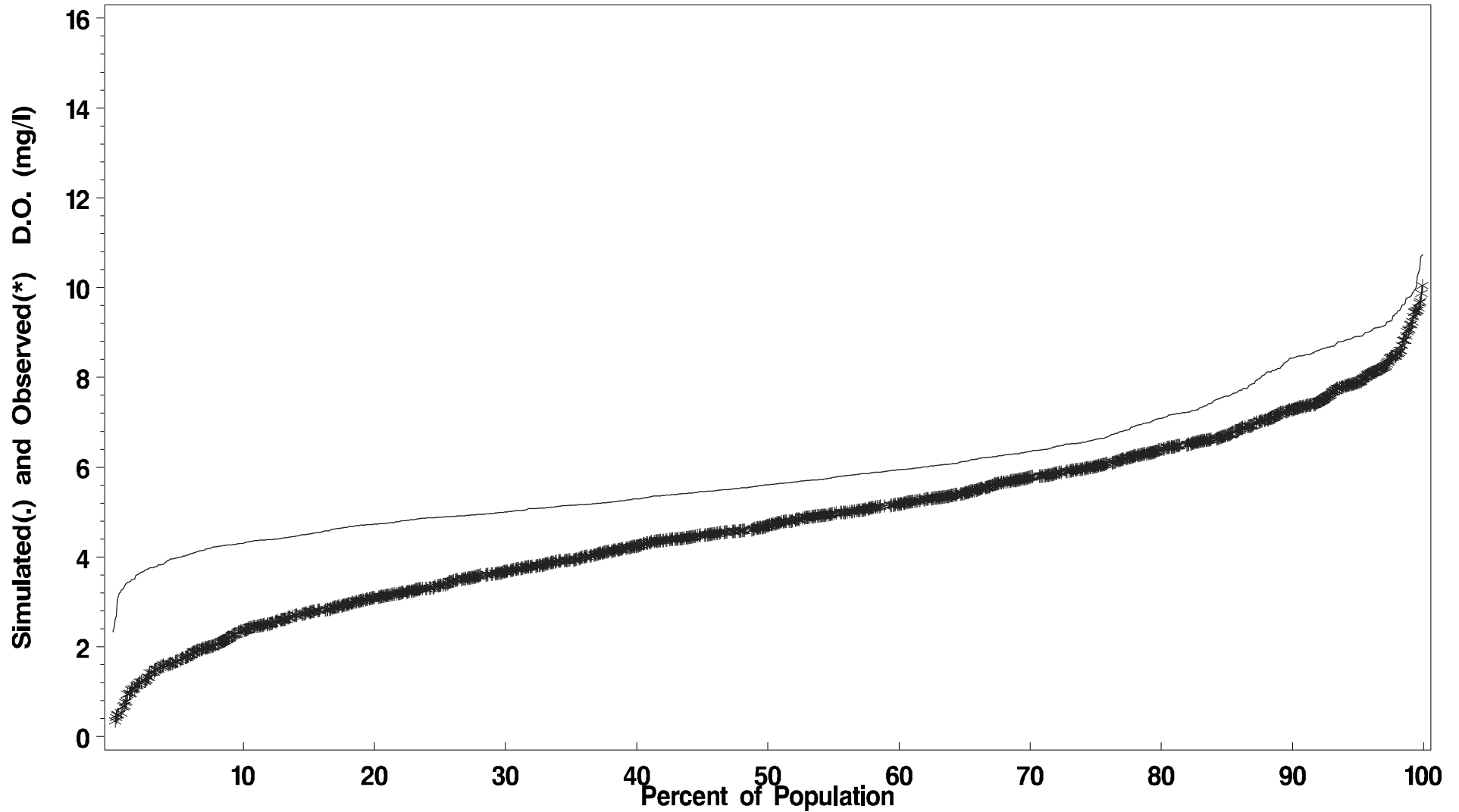
**Deep Water Dissolved Oxygen (mg/l)
Segment CB6PH   Season: May 1 — Sept 30**
(Scatter Plot)
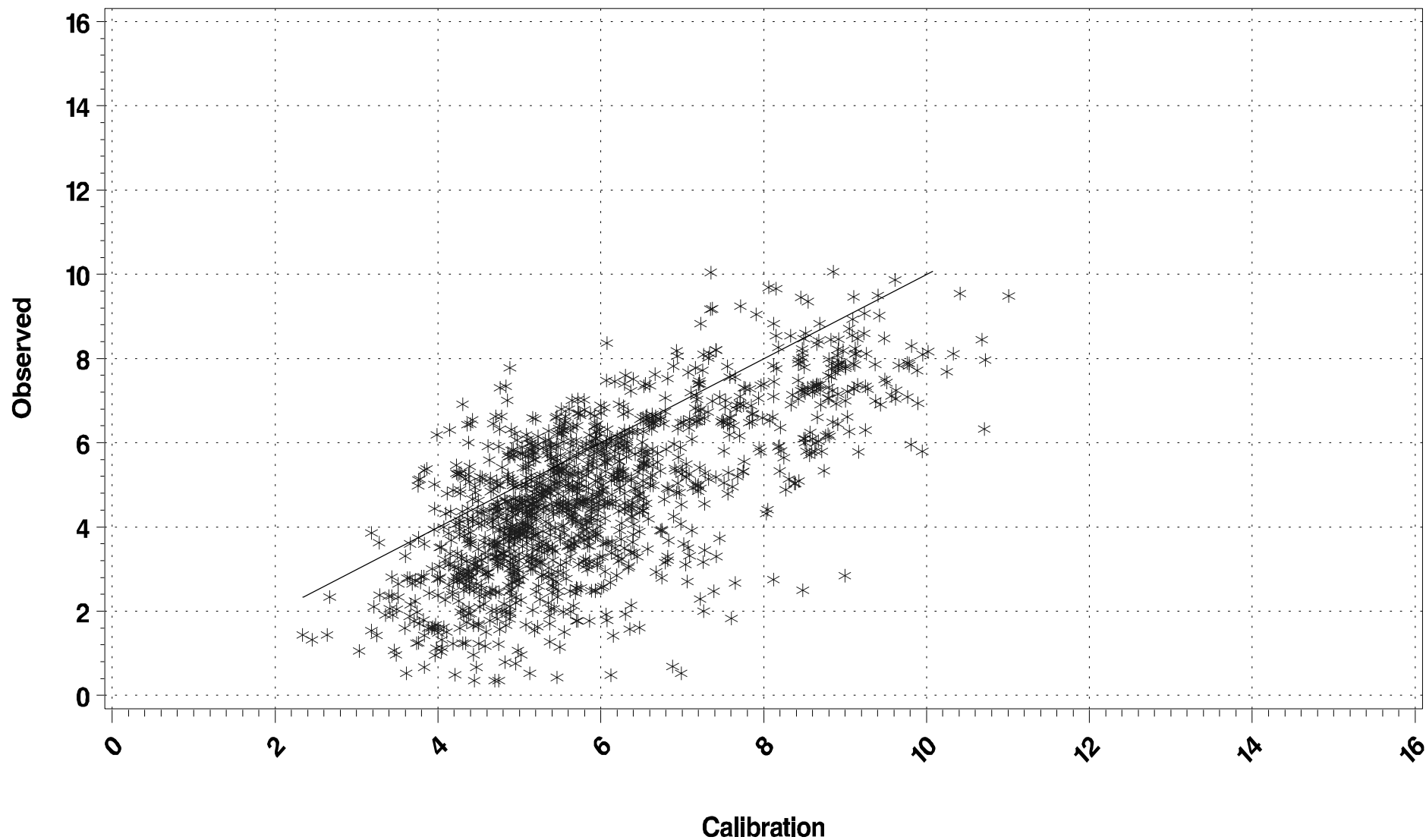
DEEP WATER **Dissolved Oxygen**
Segment CB6PH (Mainstem CB6 Polyhaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 954 pairs of predictions and observed data, the **slope** is 0.6087 and the **intercept** is 3.6425. The **R-Squared** value for this regression is 0.6102.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 954 pairs of predictions and observed data, the **slope** is 0.6130 and the **intercept** is 0.3923. The **R-Squared** value for this regression is 0.6289.

Statistics (units in mg/l)

Mean observed 9.2992   Mean predicted 9.2935
Min. observed 2.7   Min. predicted 4.698
Max. observed 14.2   Max. predicted 14.07
Std. Dev. Observed 1.7392   Std. Dev. predicted 2.2322
Median observed 9.3525   Median predicted 9.7089
90th Percentile observed 11.3800   90th Percentile predicted 12.0990
10th Percentile observed 6.9400   10th Percentile predicted 6.2032

Differences (predicted – observed)

Mean difference -0.0057 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 954
Number of Predicted Violations 0
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment CB6PH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

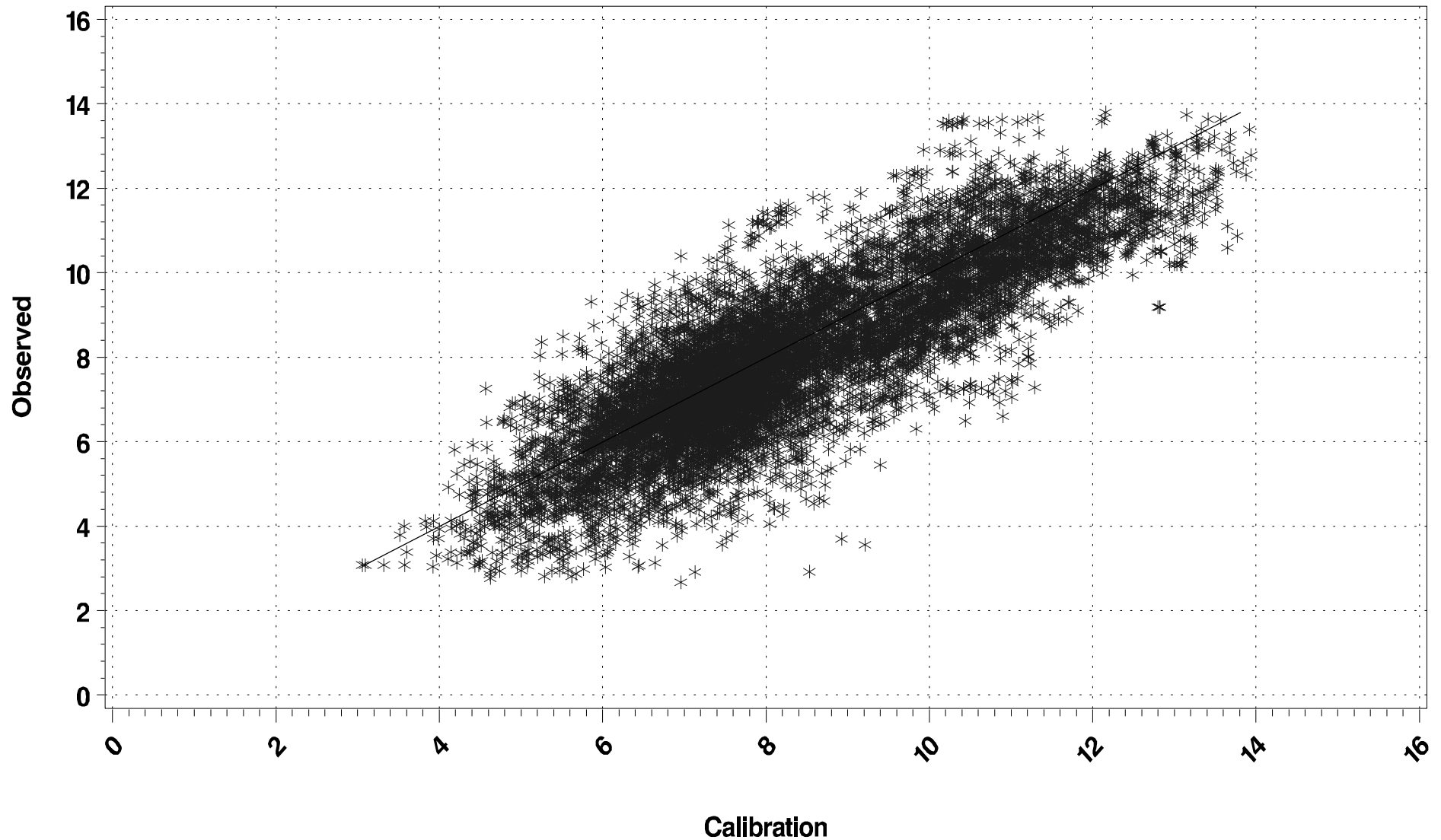# Deep Water   Dissolved Oxygen (mg/l)
Segment CB6PH   Season: Oct 1 – April 30

(Scatter Plot)

Regression of Calibration vs. Observations[1]
Using the 230 pairs of predictions and observed data, the **slope** is 1.6538 and the **intercept** is -2.6350. The **R-Squared** value for this regression is 0.0906.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 230 pairs of predictions and observed data, the **slope** is 1.4765 and the **intercept** is -0.3949. The **R-Squared** value for this regression is 0.1034.

Statistics (units in μg/l)

Mean observed 8.5646   Mean predicted 6.7721
Min. observed 0.0000   Min. predicted 4.4141
Max. observed 31.0000   Max. predicted 11.1440
Std. Dev. Observed 5.4272   Std. Dev. predicted 0.9876
Median observed 7.4253   Median predicted 6.7032
95th Percentile observed 20.2000 95th Percentile predicted 8.3993
10th Percentile observed 3.3000   10th Percentile predicted 5.6065

Differences (predicted – observed)

Mean difference -1.7925 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB6PH   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Y-axis: Simulated(.) and Observed(*) Chl (ug/l)

X-axis: Percent of Population

Chlorophyll Concentration (ug/l)
Segment CB6PH   Season: July 1 − Sept 30
(Scatter Plot)

<div align="center">
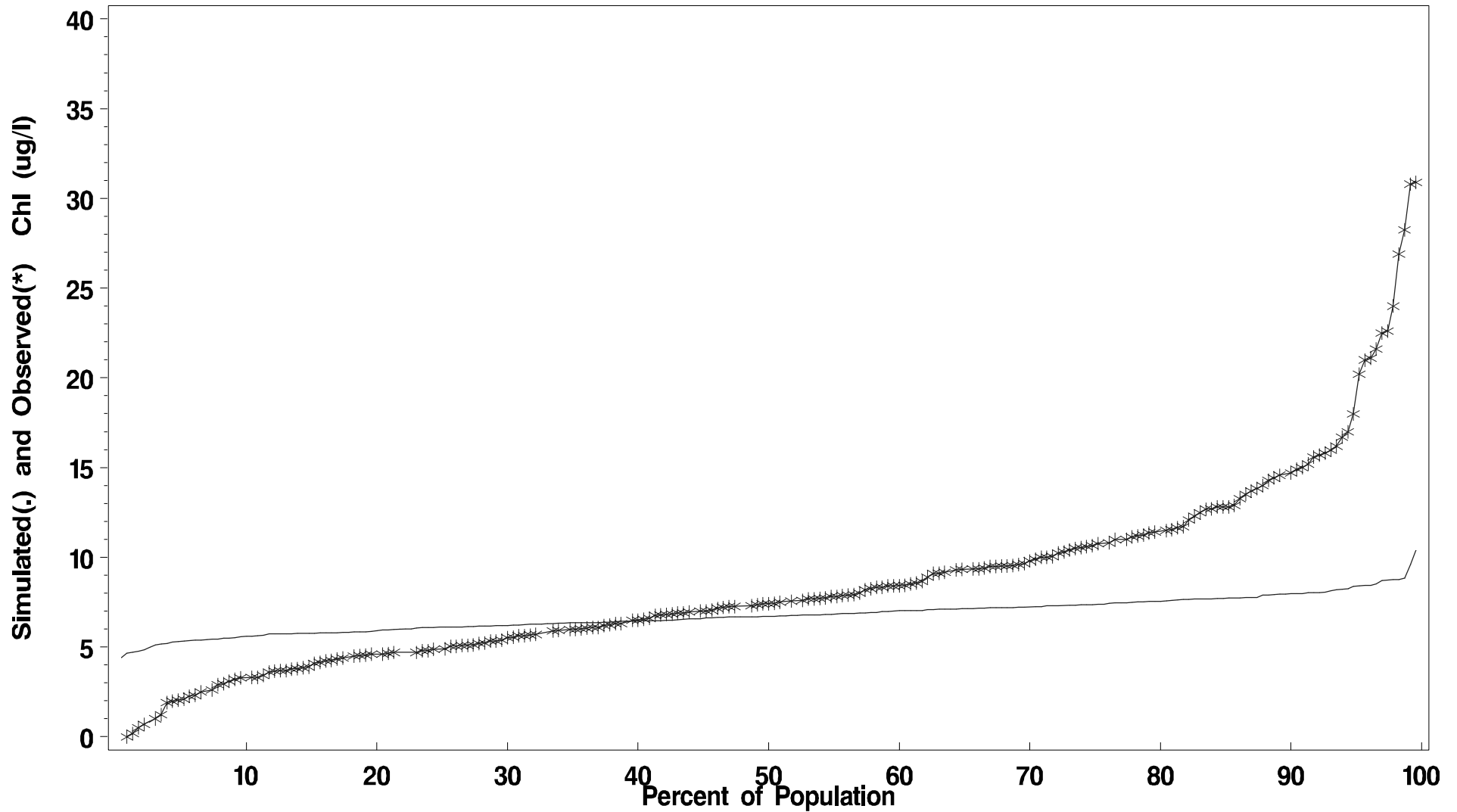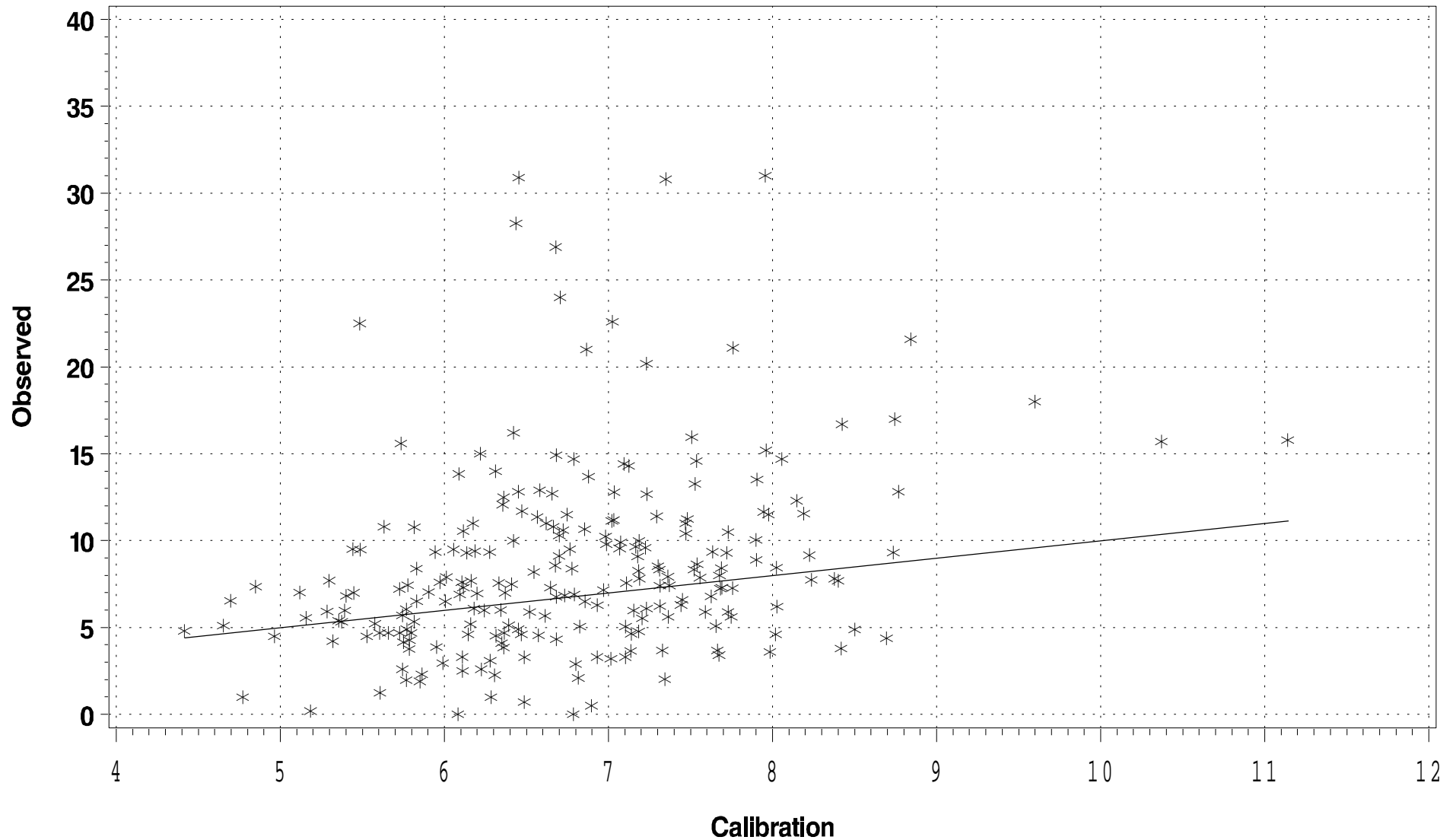
POLYHALINE **Chlorophyll**
Segment CB6PH (Mainstem CB6 Polyhaline)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 186 pairs of predictions and observed data, the **slope** is 0.2346 and the **intercept** is 6.3778. The **R-Squared** value for this regression is 0.0077.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 186 pairs of predictions and observed data, the **slope** is 0.2996 and the **intercept** is 0.5695. The **R-Squared** value for this regression is 0.0105.

Statistics (units in µg/l)

Mean observed 8.8284   Mean predicted 10.4461
Min. observed 0.0000   Min. predicted 4.5396
Max. observed 35.7000   Max. predicted 21.2980
Std. Dev. Observed 7.6373   Std. Dev. predicted 2.8626
Median observed 5.9007   Median predicted 10.1710
95th Percentile observed 26.6000   95th Percentile predicted 16.8580
10th Percentile observed 2.3000   10th Percentile predicted 7.5676

Differences (predicted – observed)

Mean difference 1.6177 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB6PH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
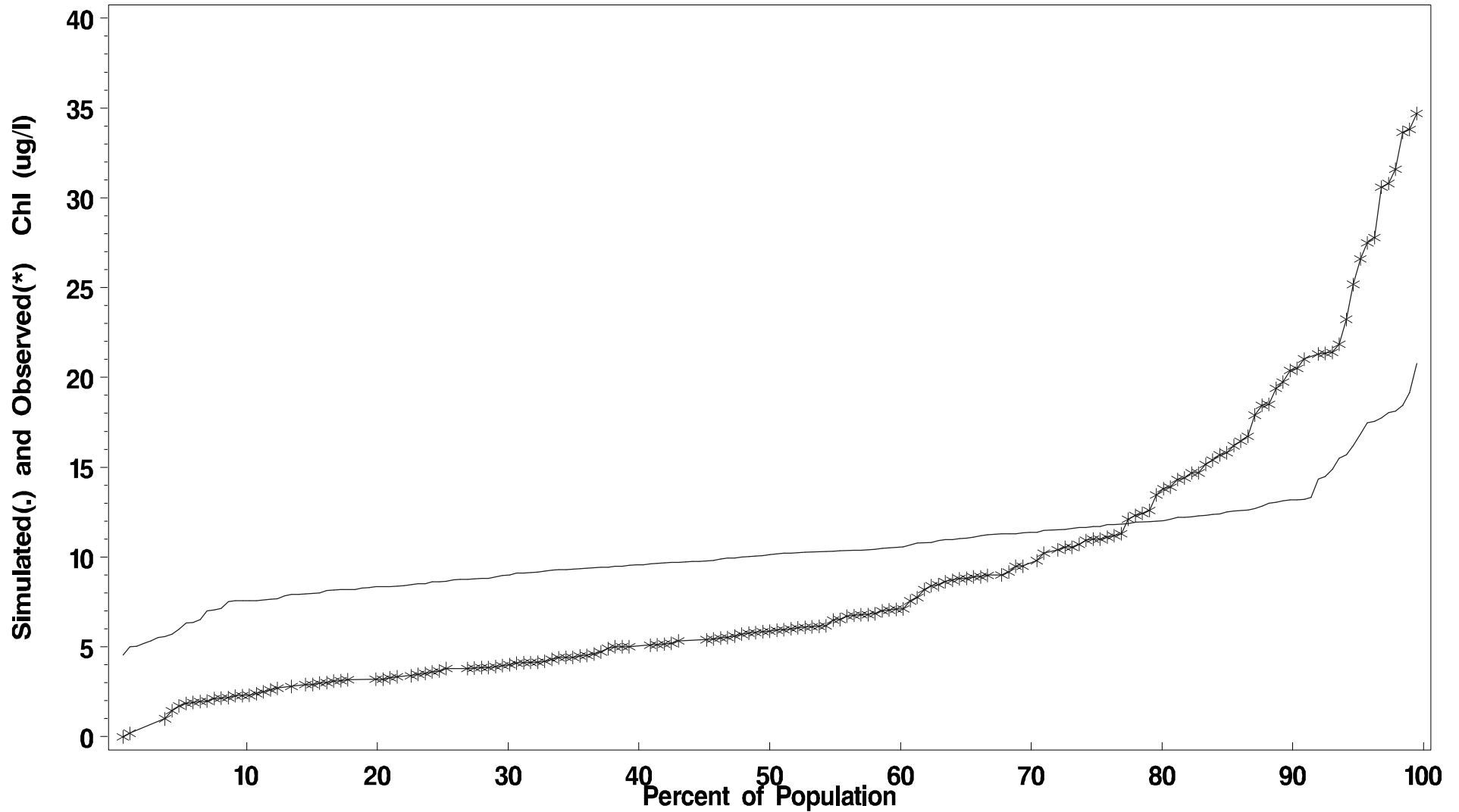
Chlorophyll Concentration (ug/l)
Segment CB6PH   Season: March 1 — May 30
(Scatter Plot)
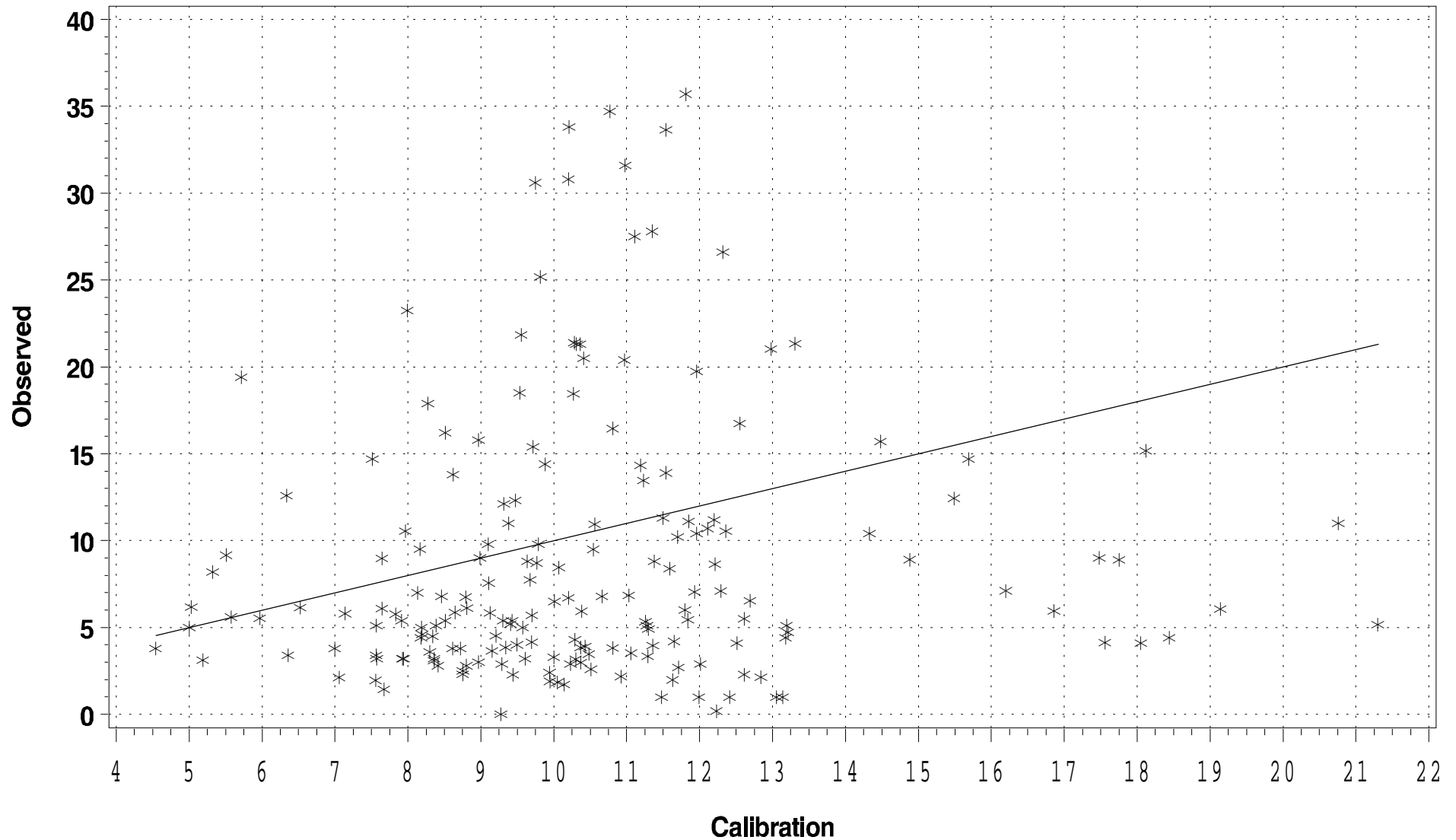
POLYHALINE **Light Attenuation**
Segment CB6PH (Mainstem CB6 Polyhaline)
March-May Sept-Nov

Regression of Calibration vs. Observations[1]

Using the 363 pairs of predictions and observed data, the **slope** is 0.0608 and the **intercept** is 0.7090. The **R-Squared** value for this regression is 0.0018.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 363 pairs of predictions and observed data, the **slope** is 0.0550 and the **intercept** is 0.2261. The **R-Squared** value for this regression is 0.0017.

Statistics (units in 1/m)

Mean observed 0.7501   Mean predicted 0.6750
Min. observed 0.3714   Min. predicted 0.3828
Max. observed 2.1667   Max. predicted 1.4919
Std. Dev. Observed 0.2736   Std. Dev. predicted 0.1922
Median observed 0.6842   Median predicted 0.6474
90th Percentile observed 1.0833   90th Percentile predicted 0.9069
10th Percentile observed 0.4643   10th Percentile predicted 0.4681

Differences (predicted – observed)

Mean difference -0.0750 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment CB6PH   Season: March–May Sept–Nov

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment CB6PH   Season: March–May Sept–Nov
(Scatter Plot)
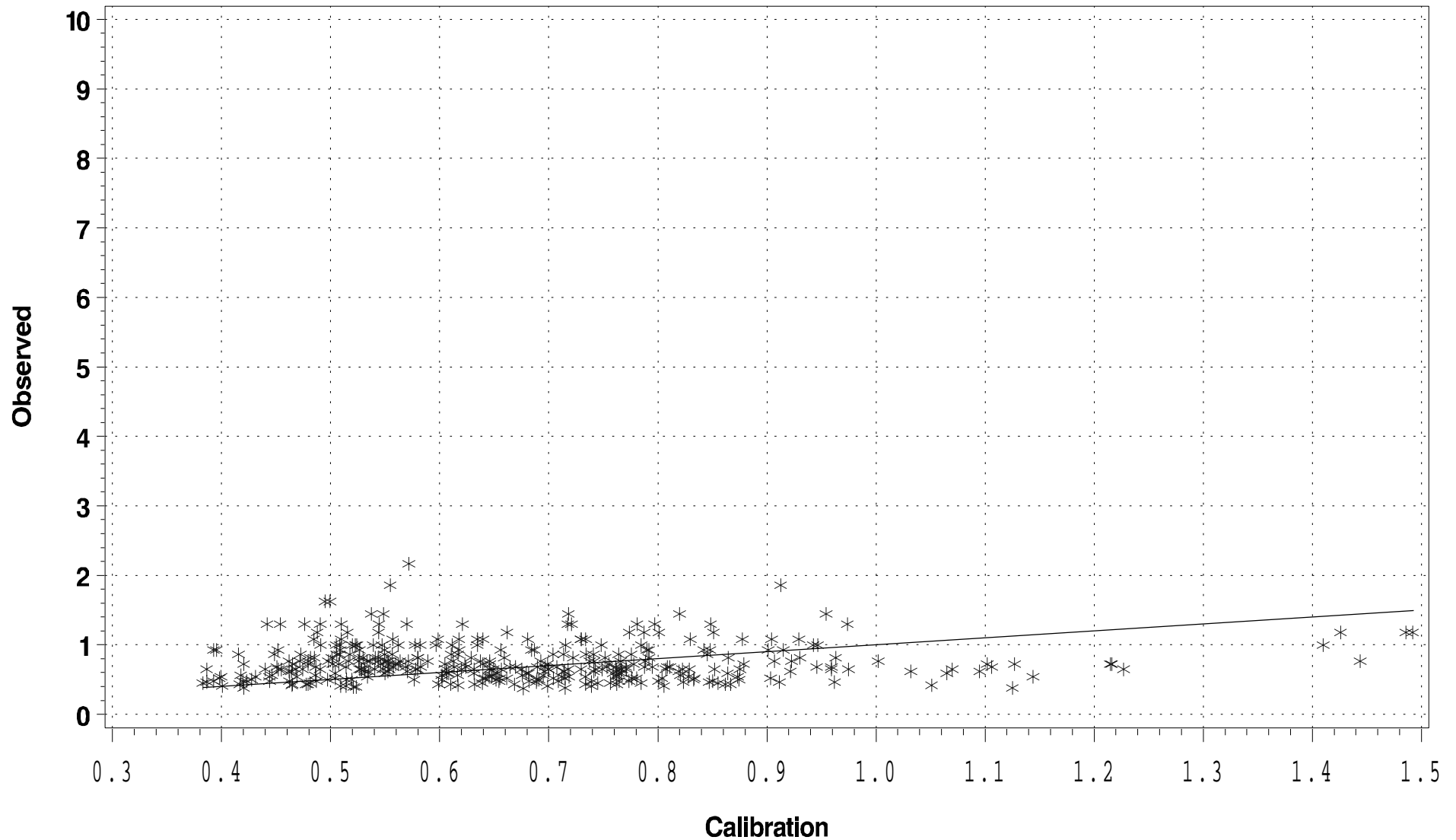
Chesapeake Bay Standard Segment CB7PH

Location Map of
Segment CB7PH within
the Chesapeake Bay Model Grid

EE3.5

CB7.1N

CB7.1

CB7.1S

CB7.2
CB7.2E

CB7.3E

CB7.3

CB7.4N

Chesapeake Bay Program

N
W   E
S

0   2   4   8   12   16
Miles
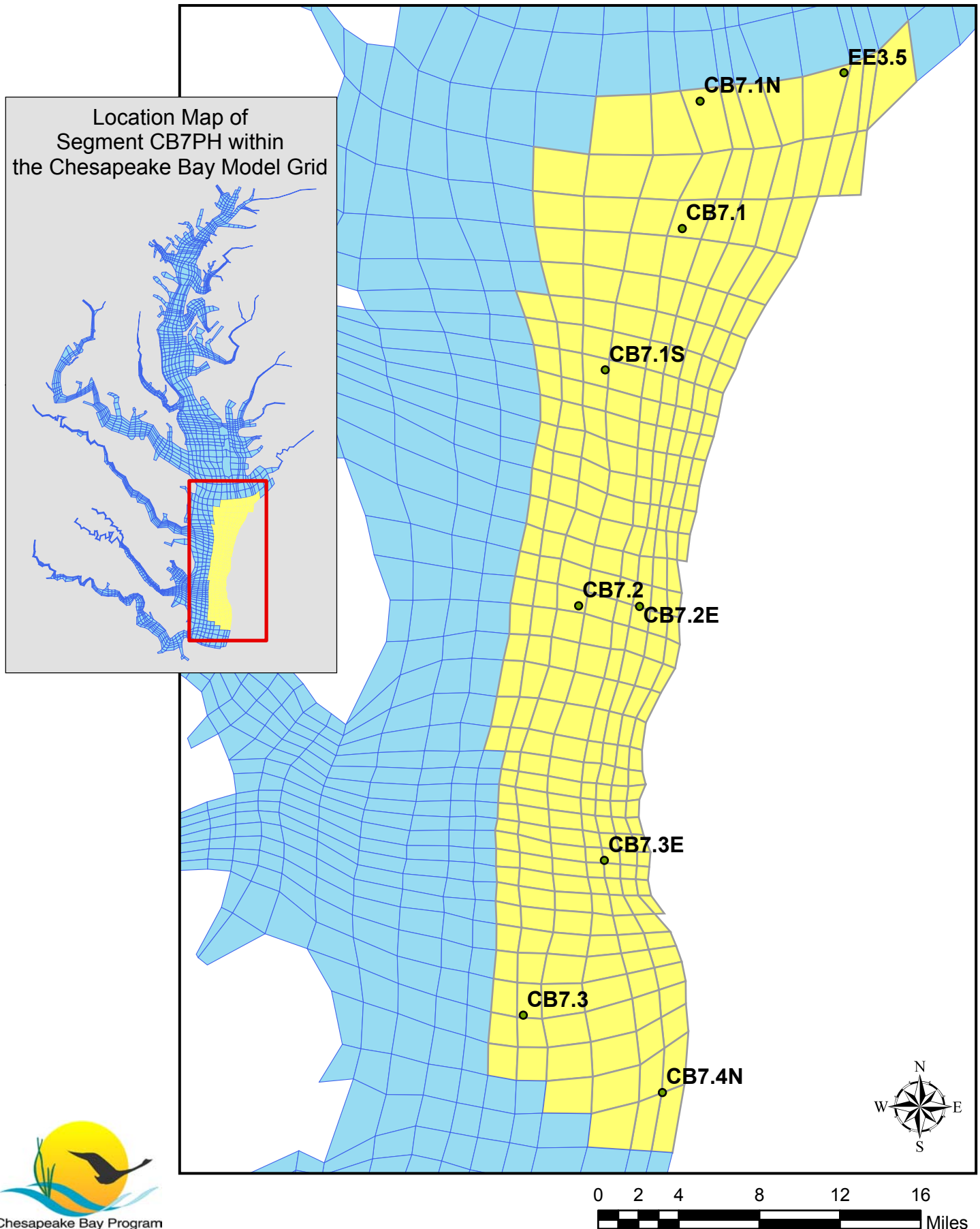
OPEN WATER **Dissolved Oxygen**
Segment CB7PH (Mainstem CB7 Polyhaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 7460 pairs of predictions and observed data, the **slope** is 0.8929 and the **intercept** is 0.6213. The **R-Squared** value for this regression is 0.7373.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 7460 pairs of predictions and observed data, the **slope** is 0.9460 and the **intercept** is 0.0368. The **R-Squared** value for this regression is 0.7186.

Statistics (units in mg/l)

Mean observed 8.1244	Mean predicted 8.4034
Min. observed 2.81	Min. predicted 3.059
Max. observed 13.75	Max. predicted 13.94
Std. Dev. Observed 2.1132	Std. Dev. predicted 2.0322
Median observed 7.9850	Median predicted 8.0215
90th Percentile observed 11.0750	90th Percentile predicted 11.3640
10th Percentile observed 5.4750	10th Percentile predicted 5.9519

Differences (predicted – observed)

Mean difference 0.2790 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 7460
Number of Predicted Violations 3
Number of Observed Violations 67

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
Segment CB7PH   Season: Jan 1 — Dec 31
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Simulated(.) and Observed(*)   D.O. (mg/l)

Percent of Population
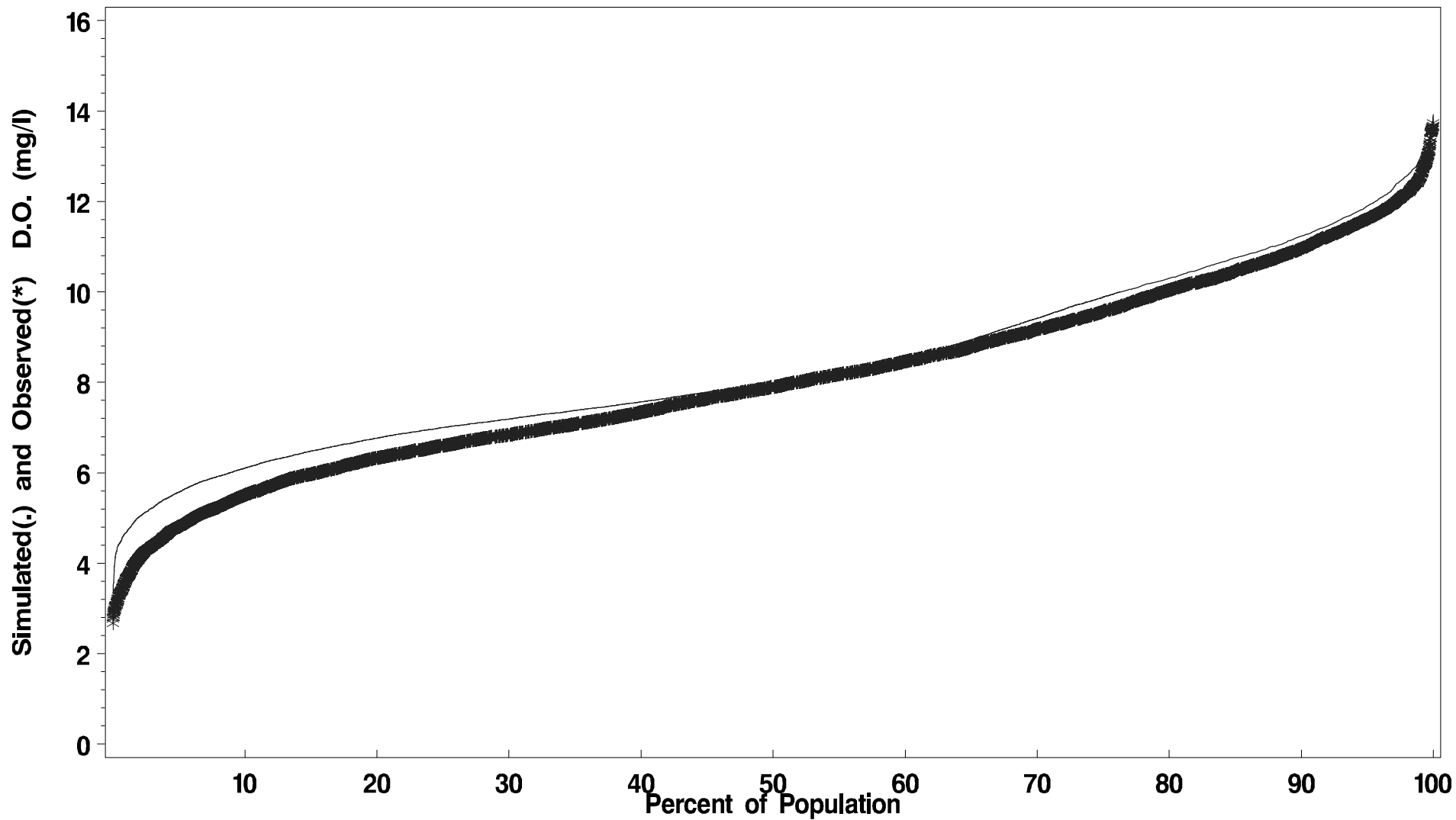
Open Water   Dissolved Oxygen (mg/l)
Segment CB7PH   Season: Jan 1 − Dec 31
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 1780 pairs of predictions and observed data, the **slope** is 0.4084 and the **intercept** is 3.3837. The **R-Squared** value for this regression is 0.1997.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1780 pairs of predictions and observed data, the **slope** is 0.3513 and the **intercept** is 0.5280. The **R-Squared** value for this regression is 0.1422.

Statistics (units in mg/l)

Mean observed 5.6934   Mean predicted 5.6557
Min. observed 0.335   Min. predicted 0.4118
Max. observed 10.2   Max. predicted 10.66
Std. Dev. Observed 1.6147   Std. Dev. predicted 1.7666
Median observed 5.8300   Median predicted 5.5932
90th Percentile observed 7.7050   90th Percentile predicted 8.0257
10th Percentile observed 3.4000   10th Percentile predicted 3.4402


Differences (predicted – observed)

Mean difference -0.0377 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 1780
Number of Predicted Violations 15
Number of Observed Violations 8

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)

Segment CB7PH Season: May 1 – Sept 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
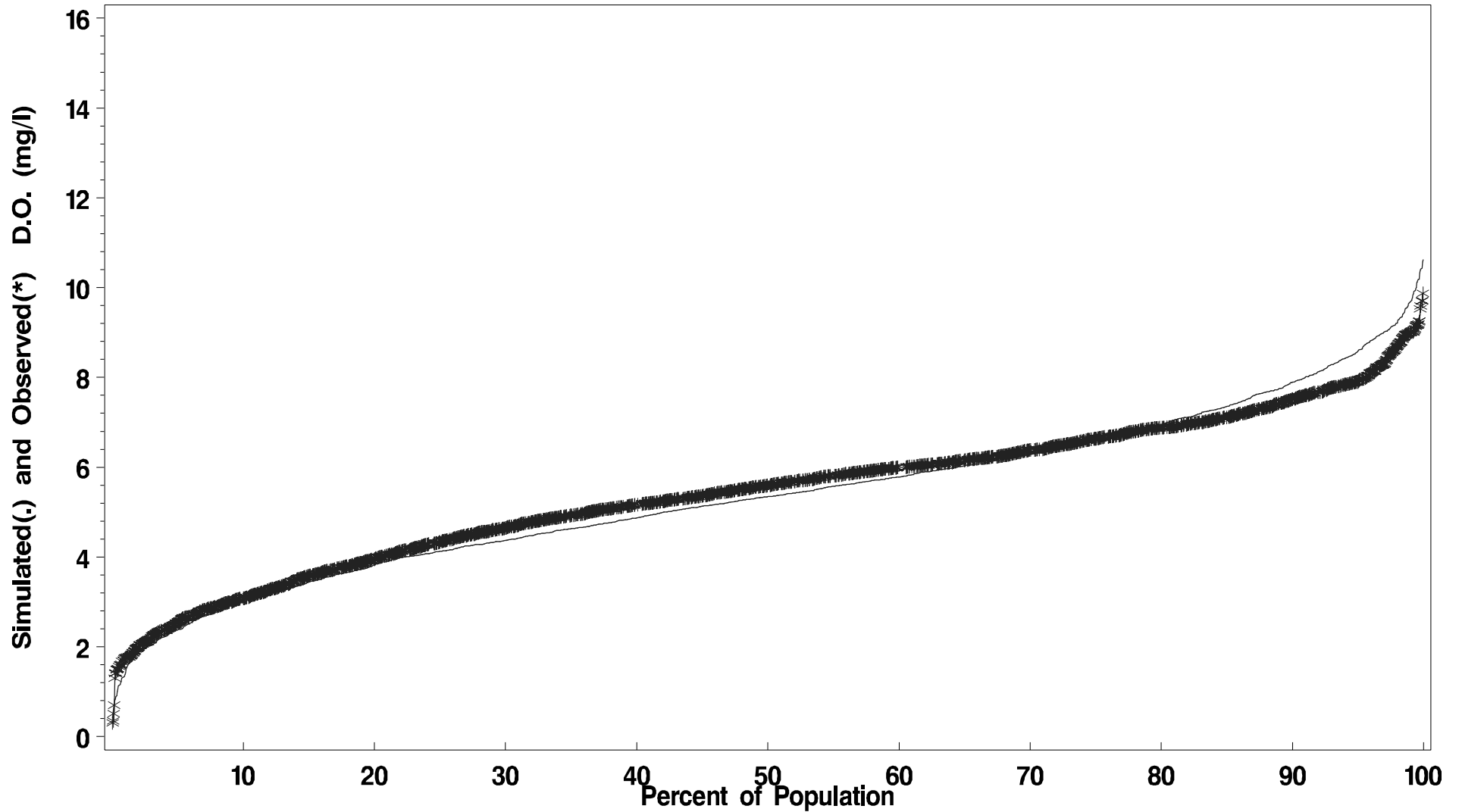
Deep Water   Dissolved Oxygen (mg/l)
Segment CB7PH   Season: May 1 − Sept 30
(Scatter Plot)
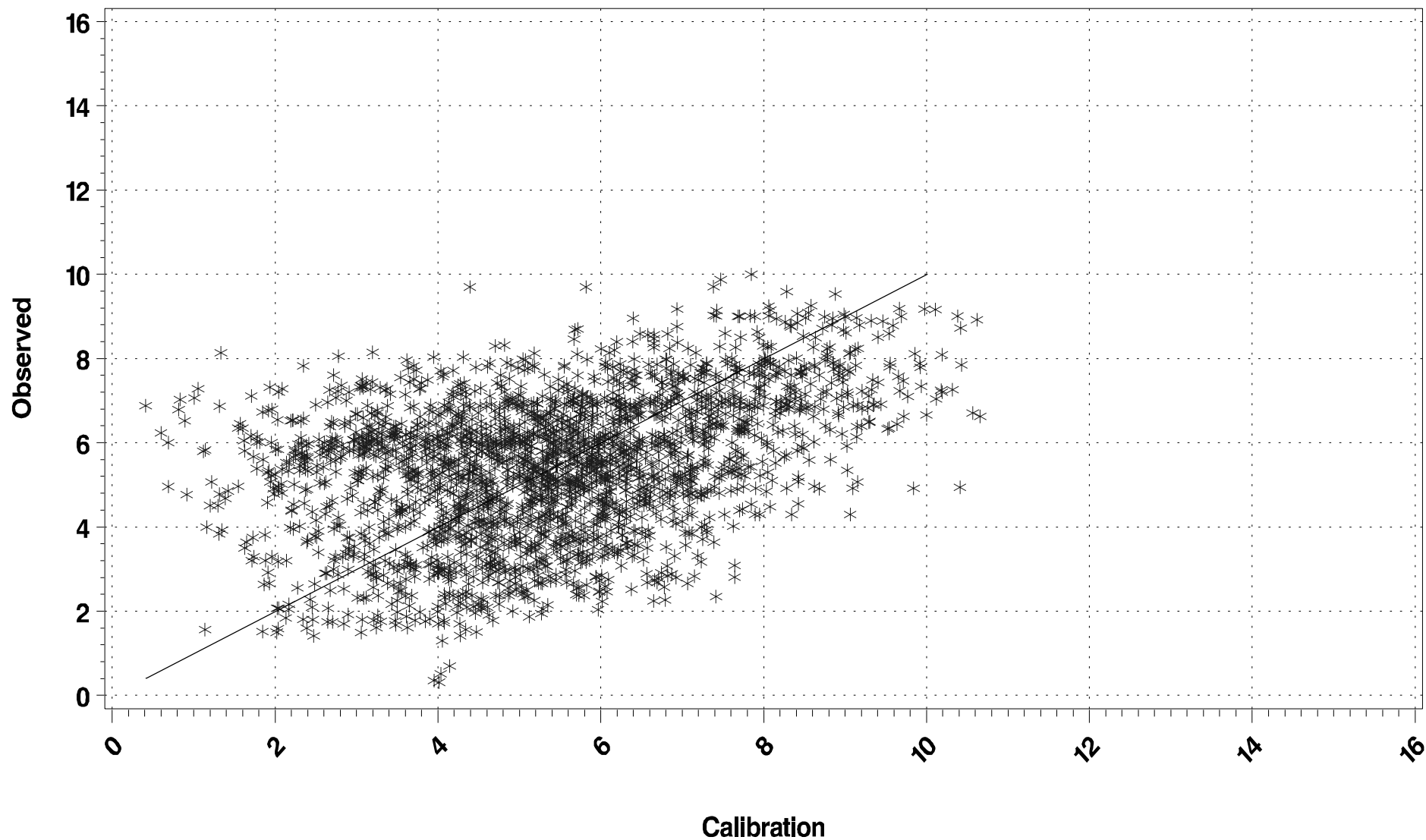
DEEP WATER **Dissolved Oxygen**
Segment CB7PH (Mainstem CB7 Polyhaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 1599 pairs of predictions and observed data, the **slope** is 0.5111 and the **intercept** is 4.8745. The **R-Squared** value for this regression is 0.5061.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1599 pairs of predictions and observed data, the **slope** is 0.4628 and the **intercept** is 0.5575. The **R-Squared** value for this regression is 0.5029.

Statistics (units in mg/l)

Mean observed 9.4208   Mean predicted 8.8957
Min. observed 5.0343   Min. predicted 2.227
Max. observed 13.62   Max. predicted 13.48
Std. Dev. Observed 1.6082   Std. Dev. predicted 2.2386
Median observed 9.5100   Median predicted 9.2371
90th Percentile observed 11.3600   90th Percentile predicted 11.7250
10th Percentile observed 7.3100   10th Percentile predicted 5.8005
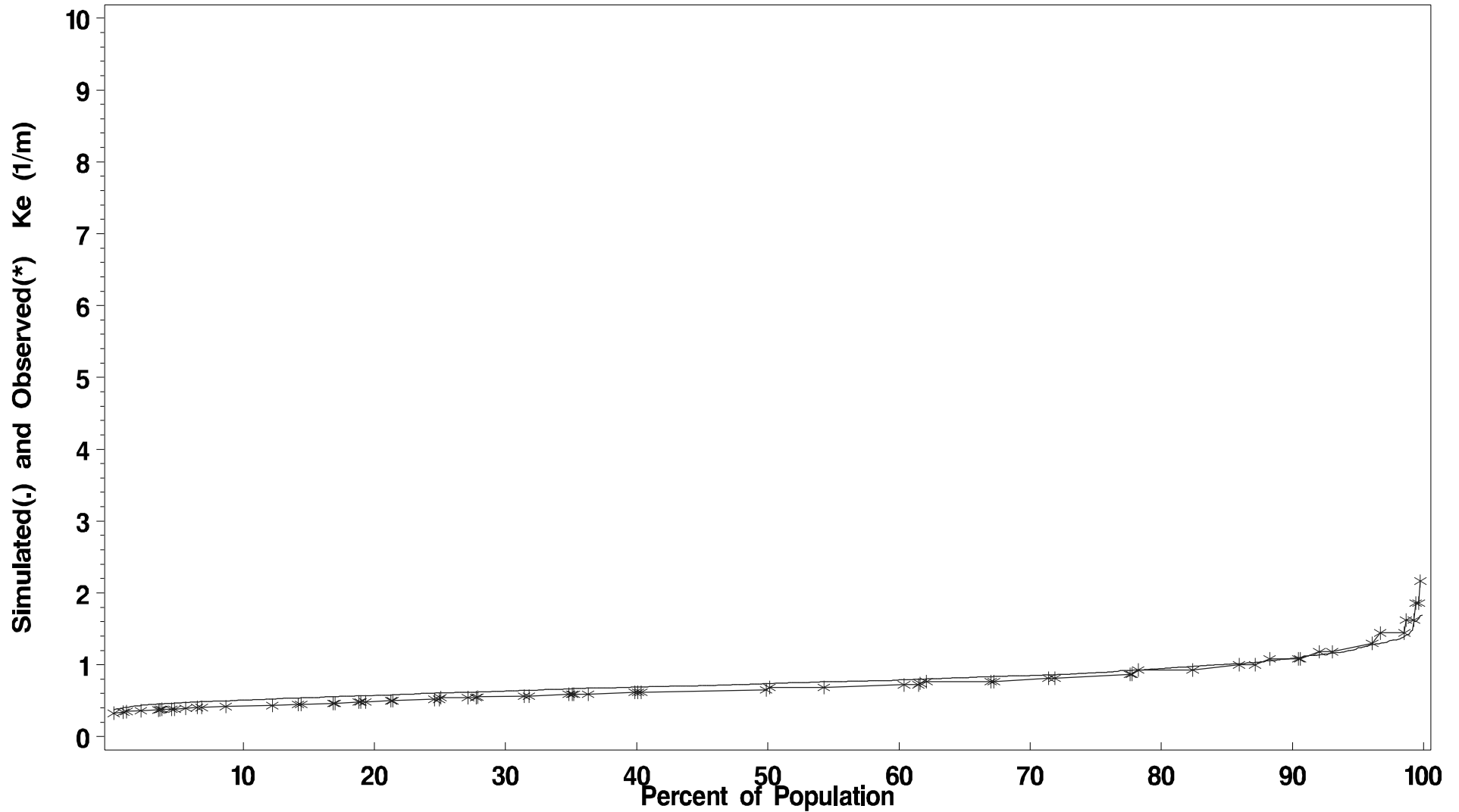
Differences (predicted – observed)

Mean difference -0.5251 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1599
Number of Predicted Violations 7
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

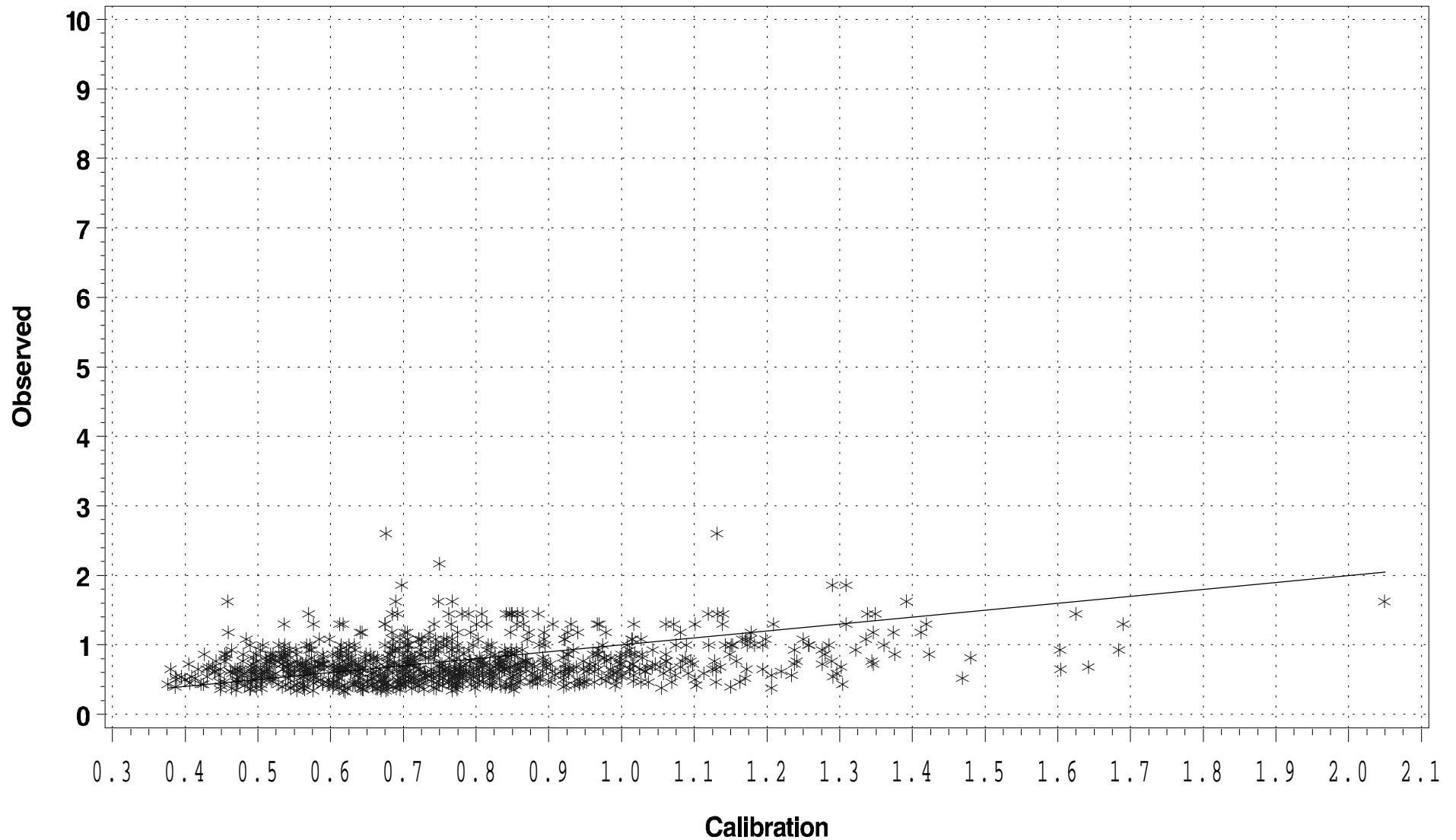# Deep Water Dissolved Oxygen (mg/l)
Segment CB7PH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

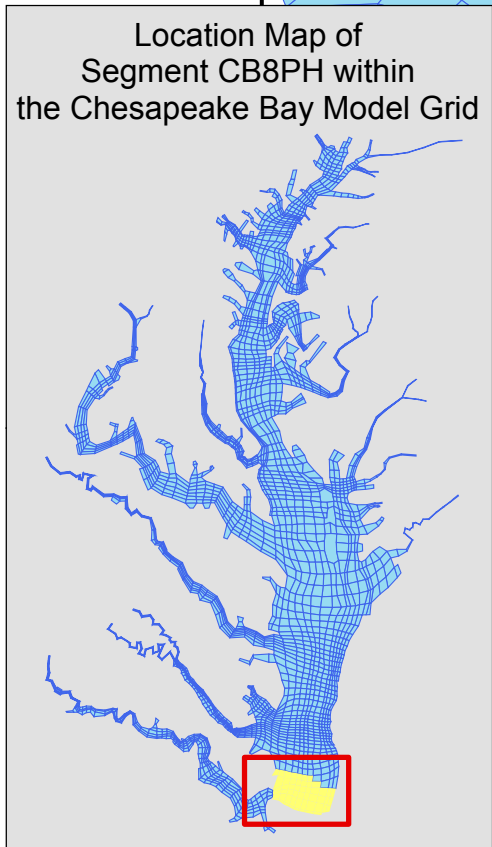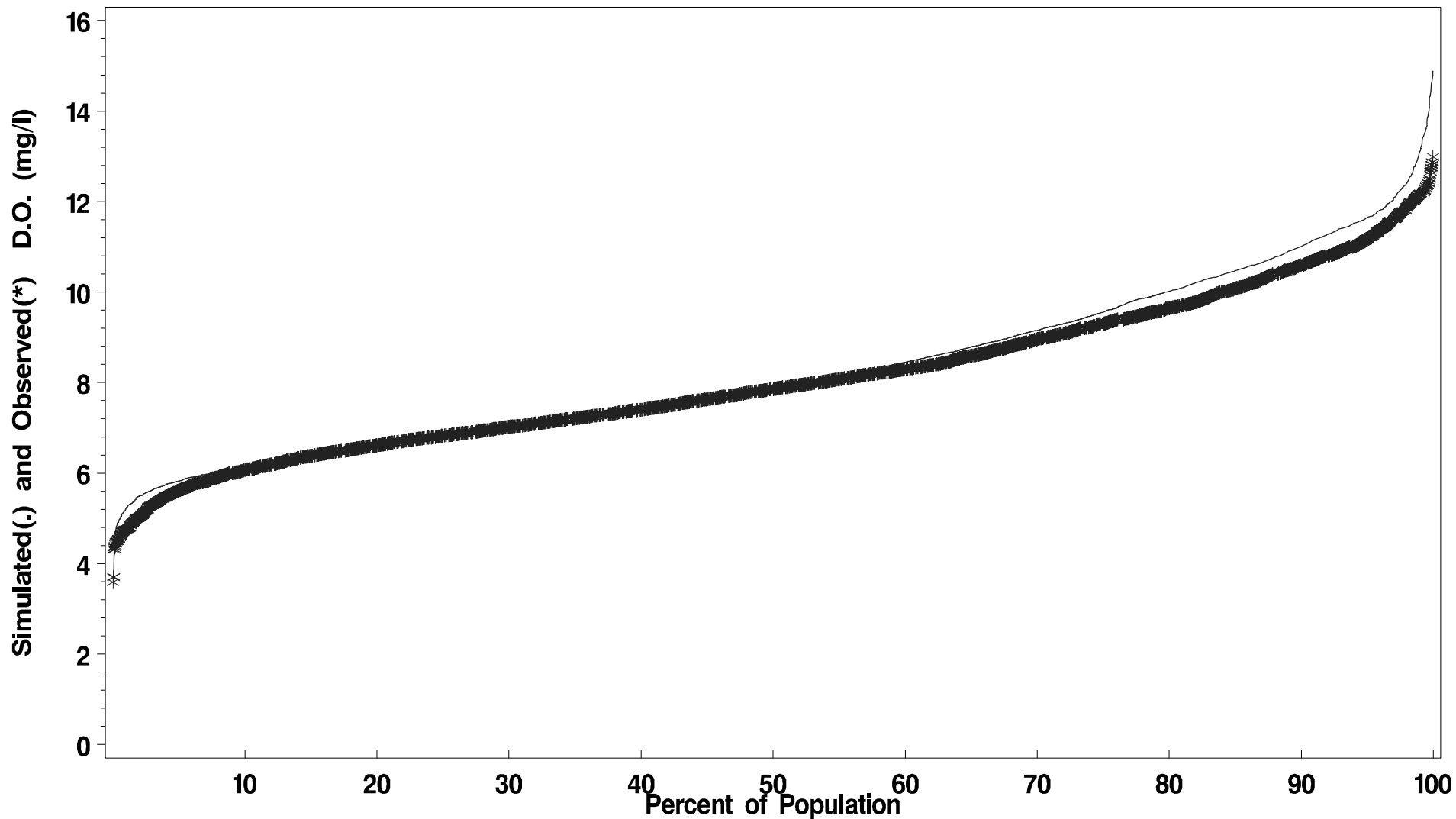# Deep Water Dissolved Oxygen (mg/l)
Segment CB7PH   Season: Oct 1 – April 30

(Scatter Plot)

<div align="center">
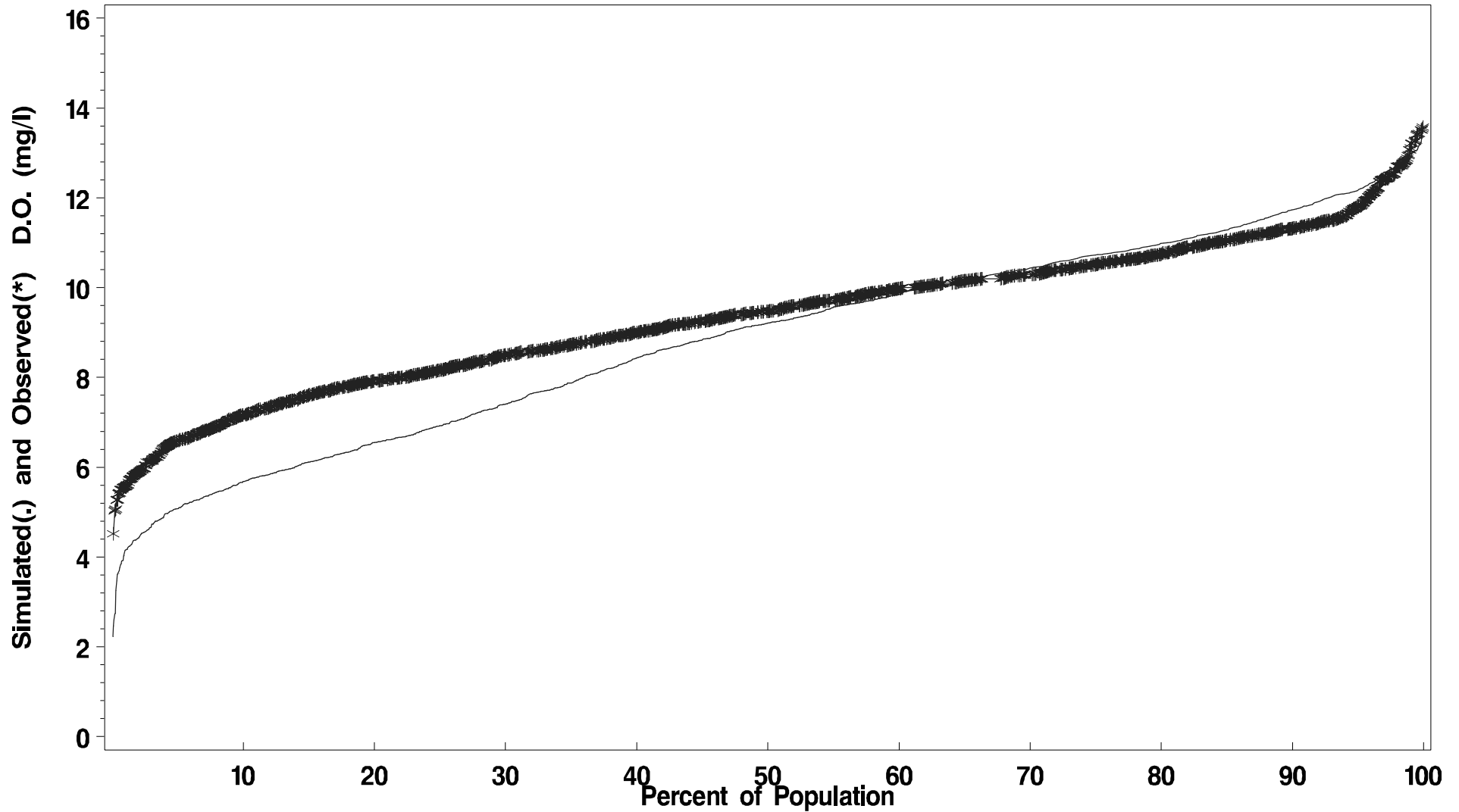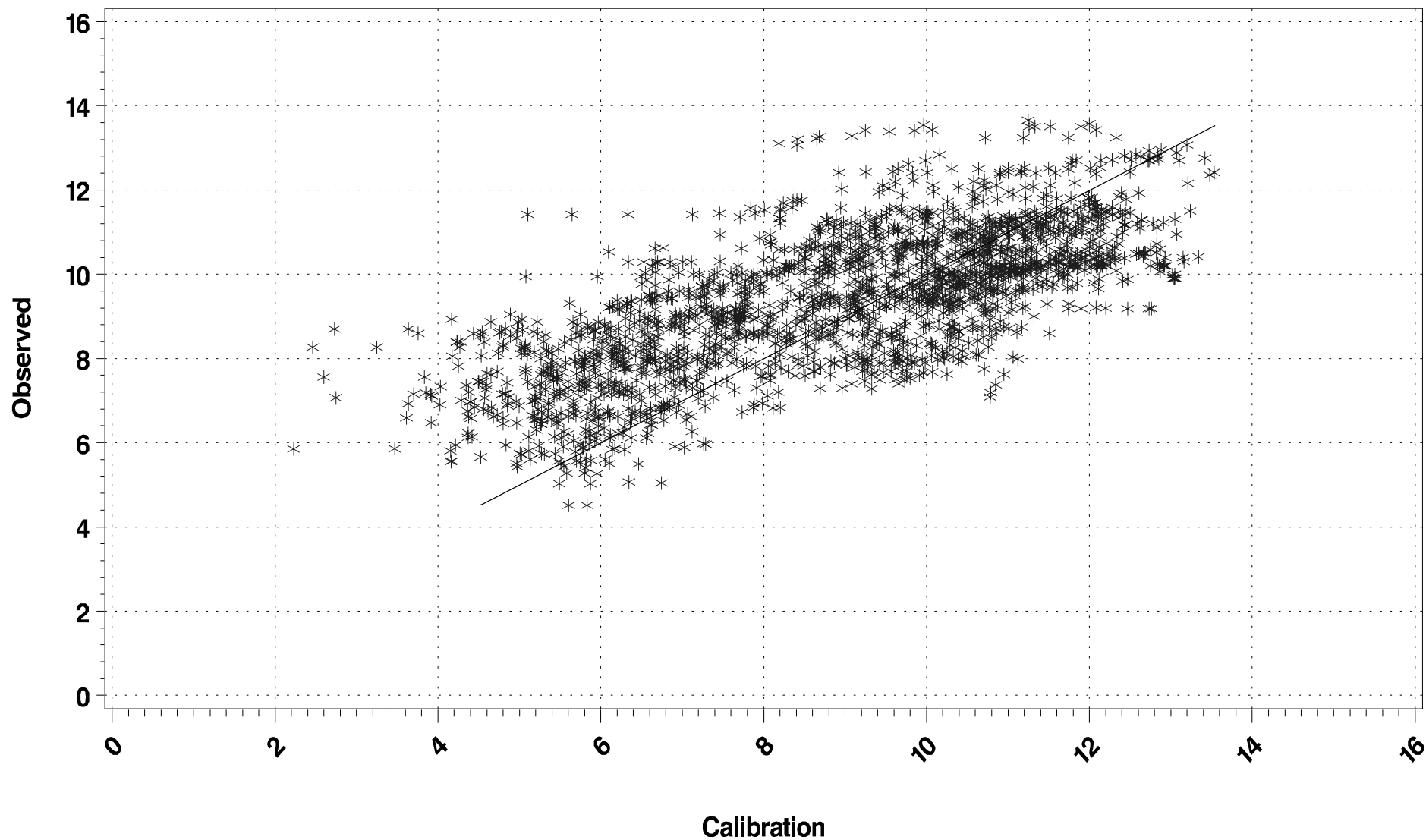
POLYHALINE **Chlorophyll**
Segment CB7PH (Mainstem CB7 Polyhaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 459 pairs of predictions and observed data, the **slope** is 0.9793 and the **intercept** is 0.4760. The **R-Squared** value for this regression is 0.1904.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 459 pairs of predictions and observed data, the **slope** is 1.1164 and the **intercept** is -0.1293. The **R-Squared** value for this regression is 0.1893.

Statistics (units in μg/l)

Mean observed 7.2273	Mean predicted 6.8942
Min. observed 0.0000	Min. predicted 3.7304
Max. observed 23.9000	Max. predicted 12.8690
Std. Dev. Observed 3.8741	Std. Dev. predicted 1.7264
Median observed 6.7765	Median predicted 6.4578
95th Percentile observed 14.6000	95th Percentile predicted 10.6150
10th Percentile observed 2.8000	10th Percentile predicted 5.0577

Differences (predicted – observed)

Mean difference -0.3331 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB7PH Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
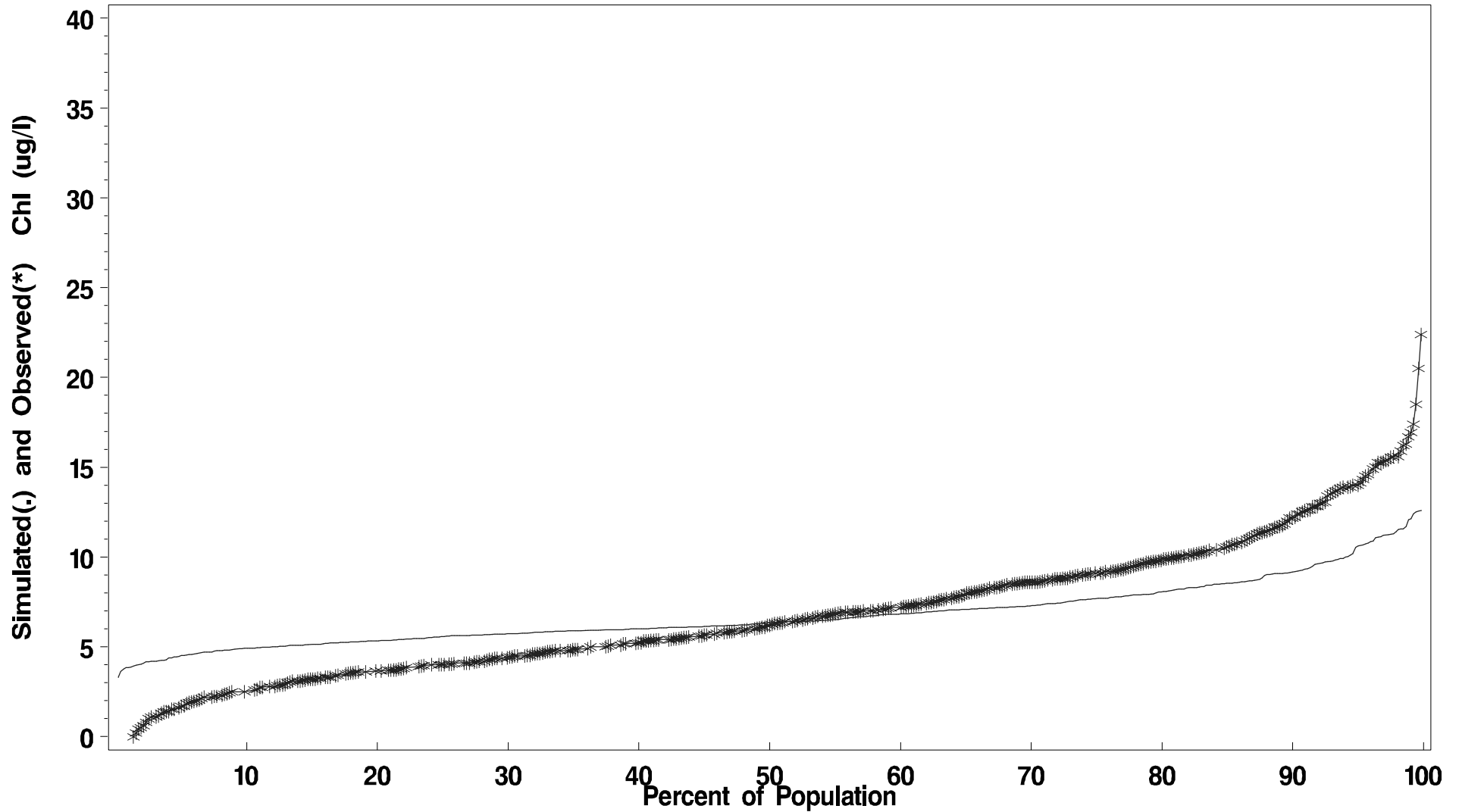
Chlorophyll Concentration (ug/l)
Segment CB7PH   Season: July 1 — Sept 30
(Scatter Plot)
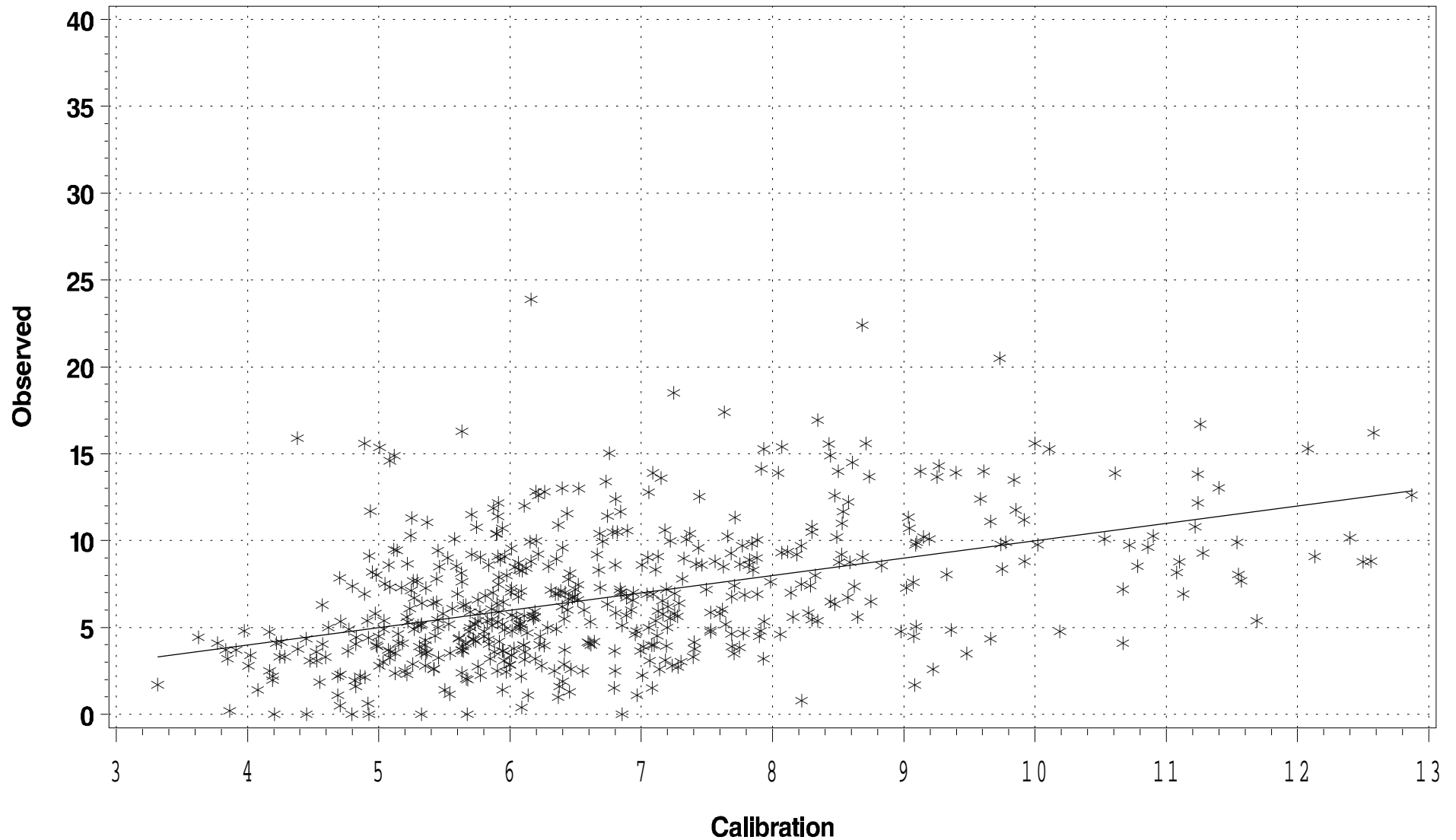
POLYHALINE **Chlorophyll**
Segment CB7PH (Mainstem CB7 Polyhaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 378 pairs of predictions and observed data, the **slope** is 0.8041 and the
intercept is -0.0105. The **R-Squared** value for this regression is 0.1042.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 378 pairs of predictions and observed data, the **slope** is 0.9238 and the
intercept is -0.1096. The **R-Squared** value for this regression is 0.1092.

Statistics (units in µg/l)

Mean observed 8.2656   Mean predicted 10.2918
Min. observed 0.0000   Min. predicted 3.8292
Max. observed 47.4726   Max. predicted 20.6730
Std. Dev. Observed 7.5330   Std. Dev. predicted 3.0245
Median observed 5.4447   Median predicted 9.8686
95th Percentile observed 25.6000   95th Percentile predicted 16.3050
10th Percentile observed 1.8743   10th Percentile predicted 6.9589

Differences (predicted – observed)

Mean difference 2.0262 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
## Segment CB7PH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
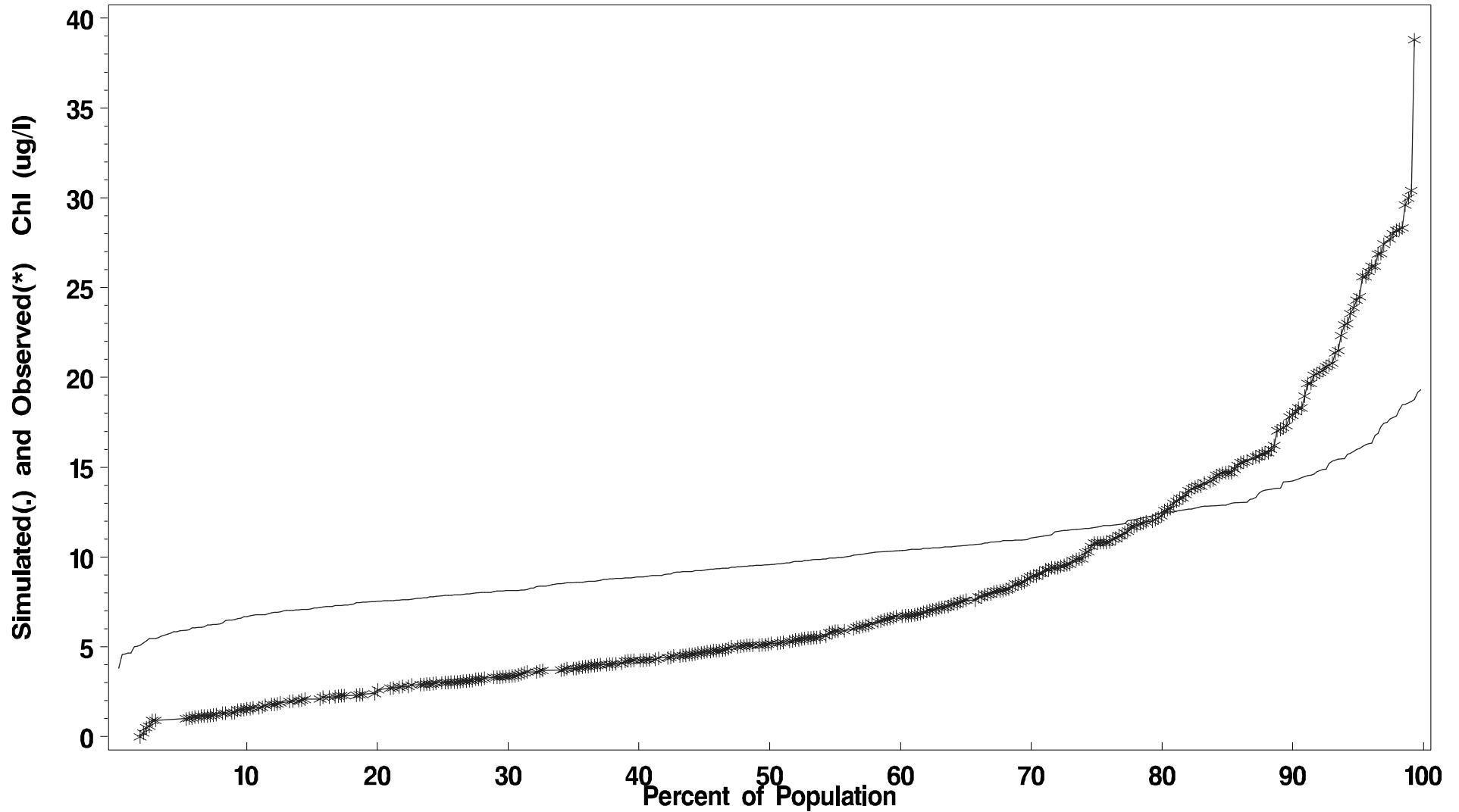
Chlorophyll Concentration (ug/l)
Segment CB7PH   Season: March 1 − May 30
(Scatter Plot)
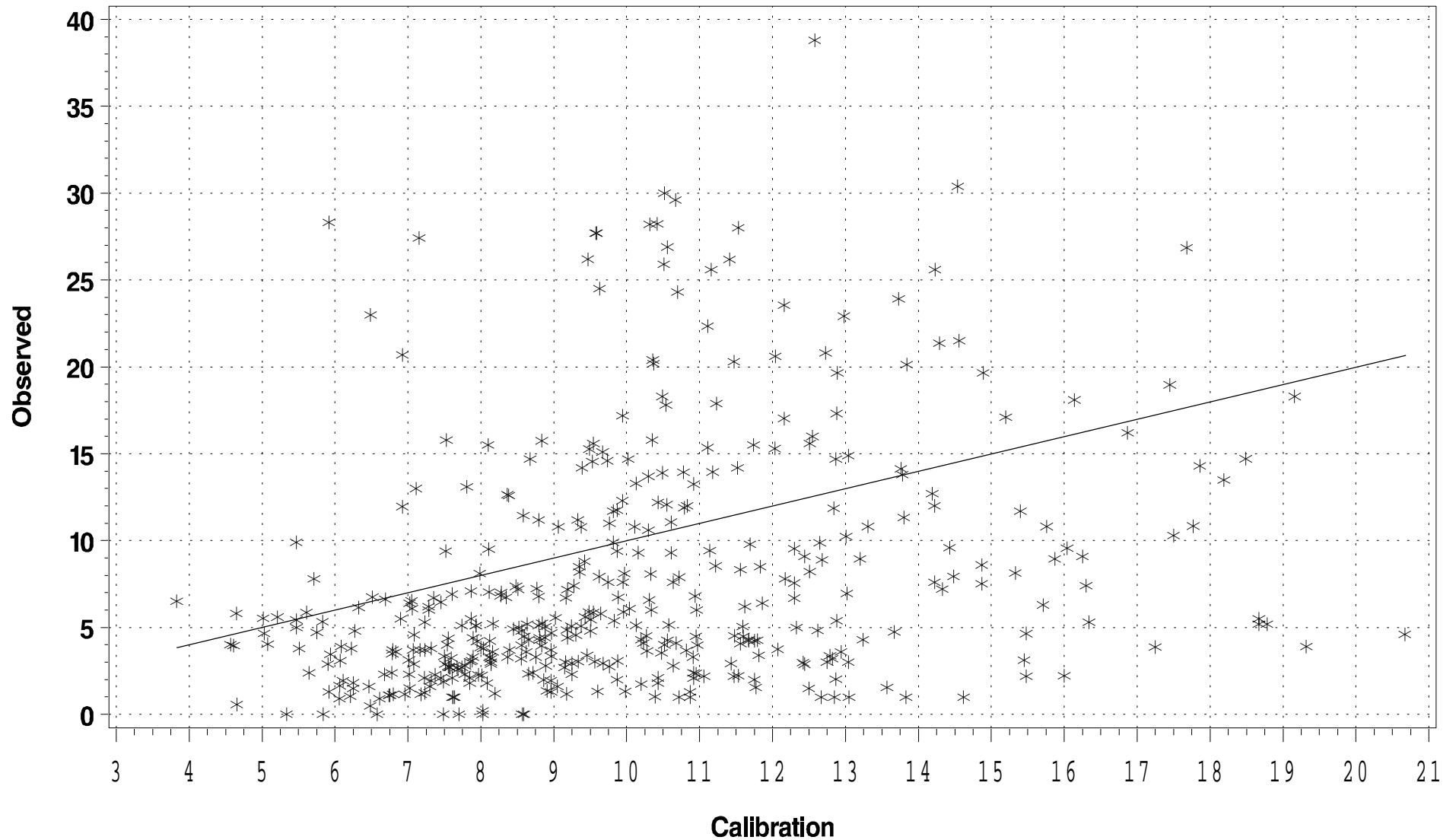
POLYHALINE **Light Attenuation**
Segment CB7PH (Mainstem CB7 Polyhaline)
March-May Sept-Nov

Regression of Calibration vs. Observations[1]

Using the 730 pairs of predictions and observed data, the **slope** is 0.3218 and the
intercept is 0.4921. The **R-Squared** value for this regression is 0.0663.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 730 pairs of predictions and observed data, the **slope** is 0.3124 and the
intercept is 0.1589. The **R-Squared** value for this regression is 0.0651.

Statistics (units in 1/m)

Mean observed 0.7358   Mean predicted 0.7570
Min. observed 0.3250   Min. predicted 0.3758
Max. observed 2.6000   Max. predicted 1.6898
Std. Dev. Observed 0.2831   Std. Dev. predicted 0.2265
Median observed 0.6842   Median predicted 0.7189
90th Percentile observed 1.0833   90th Percentile predicted 1.0828
10th Percentile observed 0.4333   10th Percentile predicted 0.5029

Differences (predicted – observed)

Mean difference 0.0213 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment CB7PH   Season: March–May Sept–Nov
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)

Segment CB7PH   Season: March – May Sept – Nov

(Scatter Plot)

Chesapeake Bay Standard Segment CB8PH

Location Map of
Segment CB8PH within
the Chesapeake Bay Model Grid

CB8.1

CB7.4

CB8.1E

Chesapeake Bay Program

N
W   E
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0   1.25 2.5   5   7.5   10
Miles
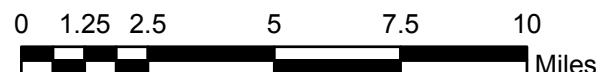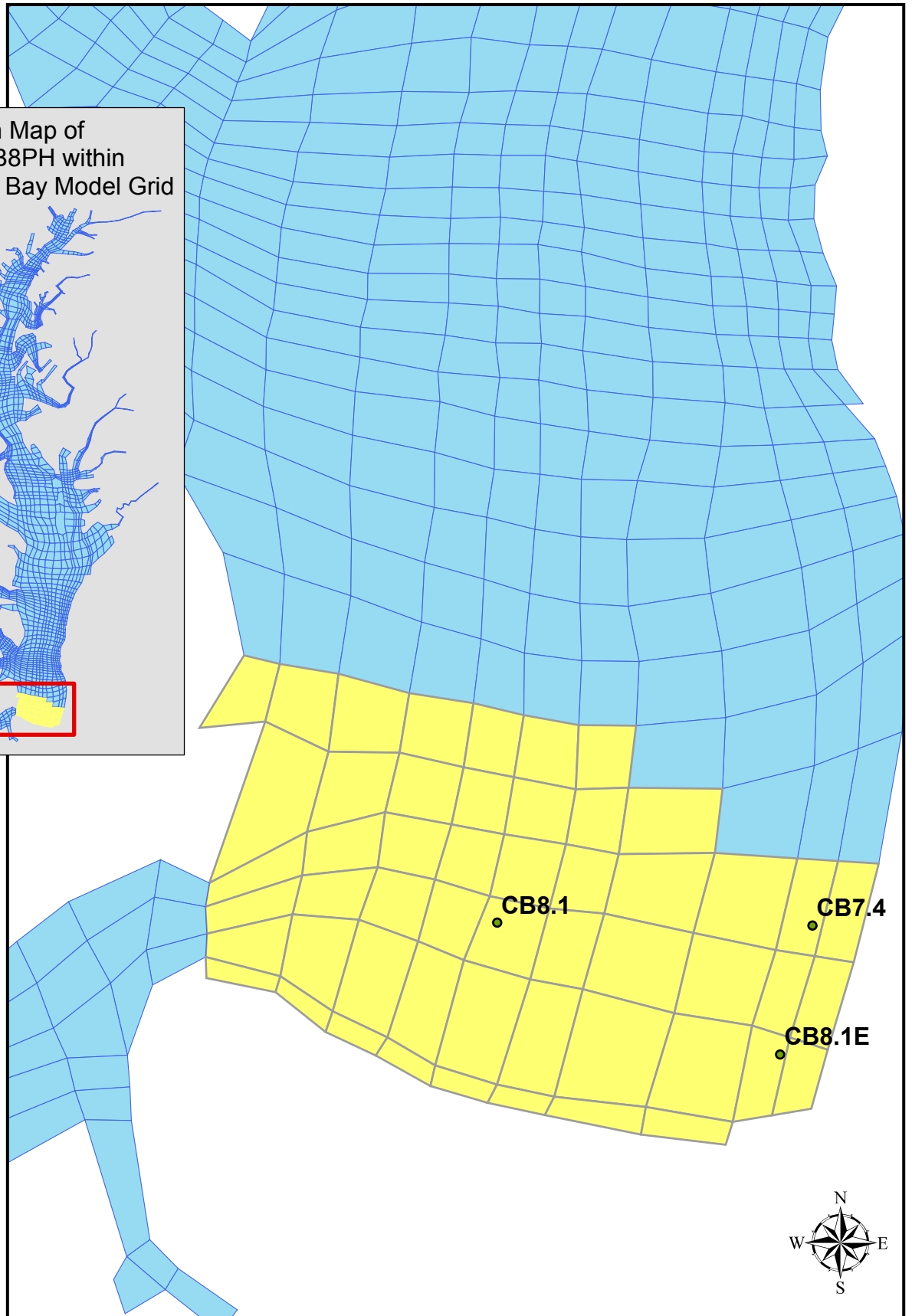
OPEN WATER **Dissolved Oxygen**
Segment CB8PH (Mainstem CB8 Polyhaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 5098 pairs of predictions and observed data, the **slope** is 0.7584 and the **intercept** is 1.9102. The **R-Squared** value for this regression is 0.7427.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 5098 pairs of predictions and observed data, the **slope** is 0.7637 and the **intercept** is 0.2240. The **R-Squared** value for this regression is 0.7174.

Statistics (units in mg/l)

Mean observed 8.1577   Mean predicted 8.2374
Min. observed 3.7   Min. predicted 4.433
Max. observed 13.4   Max. predicted 15.39
Std. Dev. Observed 1.7888   Std. Dev. predicted 2.0325
Median observed 7.8900   Median predicted 7.8817
90th Percentile observed 10.8000   90th Percentile predicted 11.1920
10th Percentile observed 6.0350   10th Percentile predicted 5.8659


Differences (predicted – observed)

Mean difference 0.0797 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 5098
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
Segment CB8PH   Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment CB8PH   Season: Jan 1 – Dec 31
(Scatter Plot)
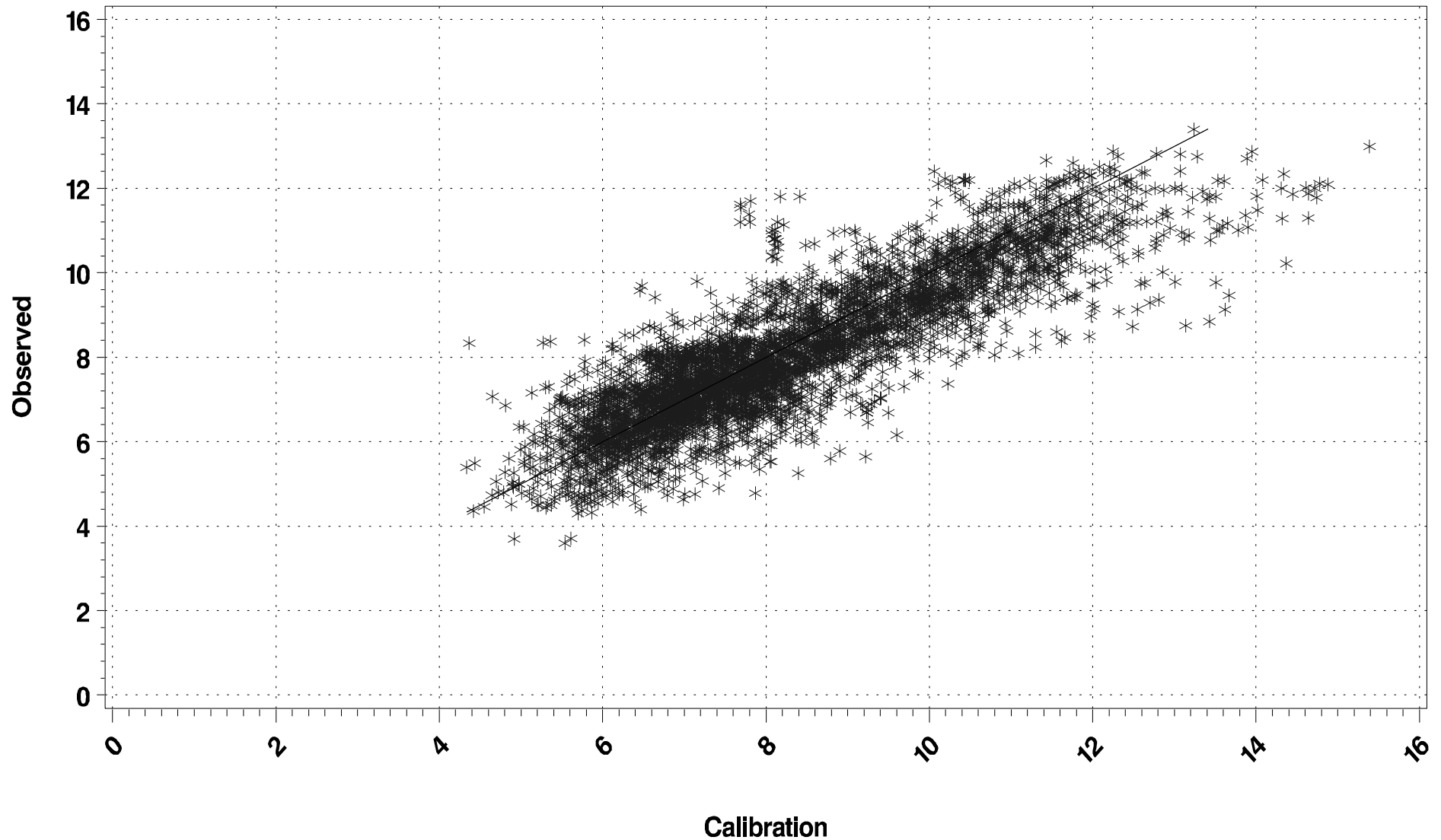
POLYHALINE **Chlorophyll**
Segment CB8PH (Mainstem CB8 Polyhaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 234 pairs of predictions and observed data, the **slope** is 0.4643 and the
intercept is 3.2256. The **R-Squared** value for this regression is 0.0434.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 234 pairs of predictions and observed data, the **slope** is 0.7436 and the
intercept is 0.1254. The **R-Squared** value for this regression is 0.0685.

Statistics (units in µg/l)

Mean observed 6.9141   Mean predicted 7.9447
Min. observed 0.0000   Min. predicted 4.5984
Max. observed 22.1076   Max. predicted 15.6630
Std. Dev. Observed 4.4931   Std. Dev. predicted 2.0151
Median observed 6.0250   Median predicted 7.5194
95th Percentile observed 16.6000   95th Percentile predicted 12.0180
10th Percentile observed 2.3000   10th Percentile predicted 5.7287

Differences (predicted – observed)

Mean difference 1.0306 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB8PH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
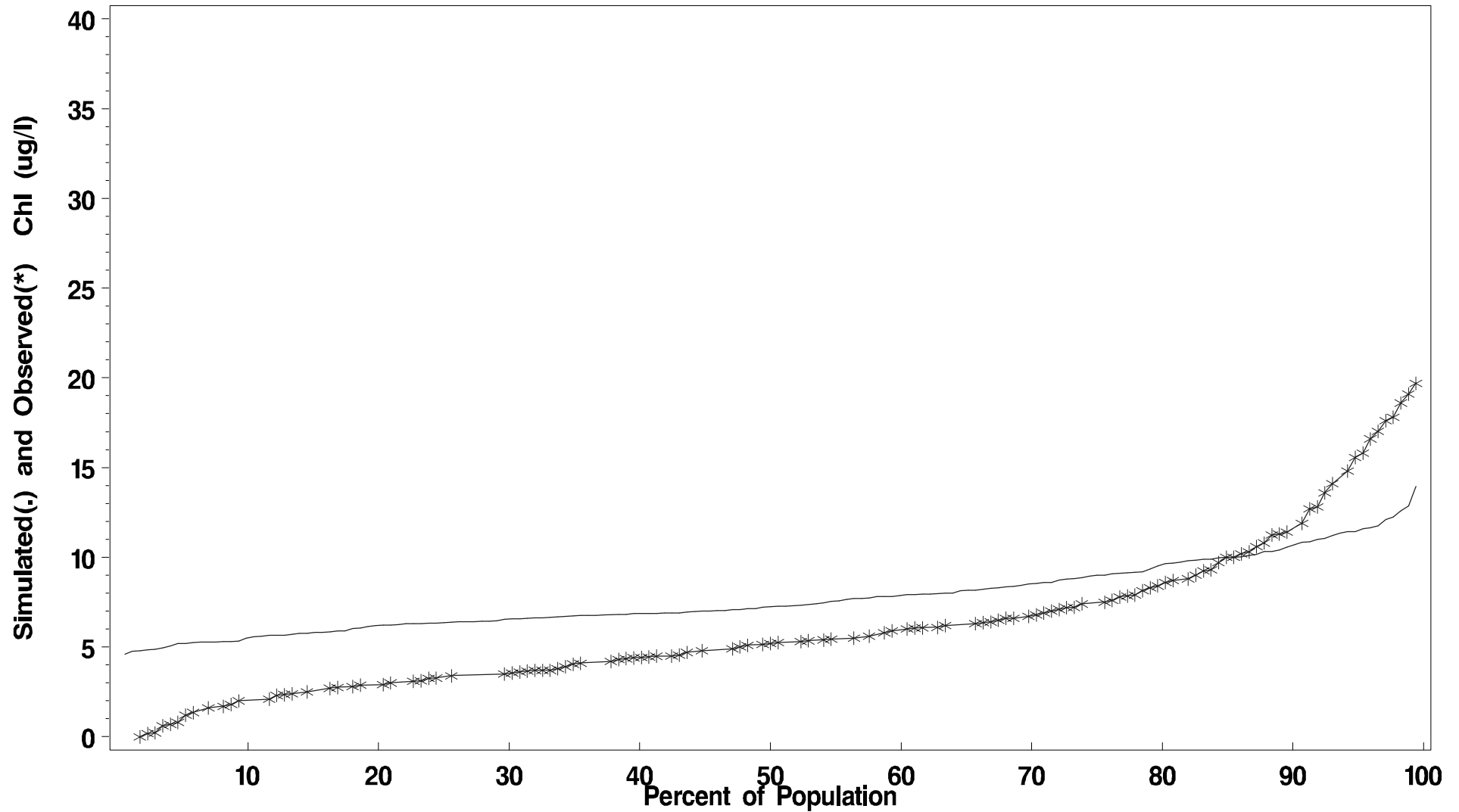
Chlorophyll Concentration (ug/l)
Segment CB8PH   Season: July 1 — Sept 30
(Scatter Plot)
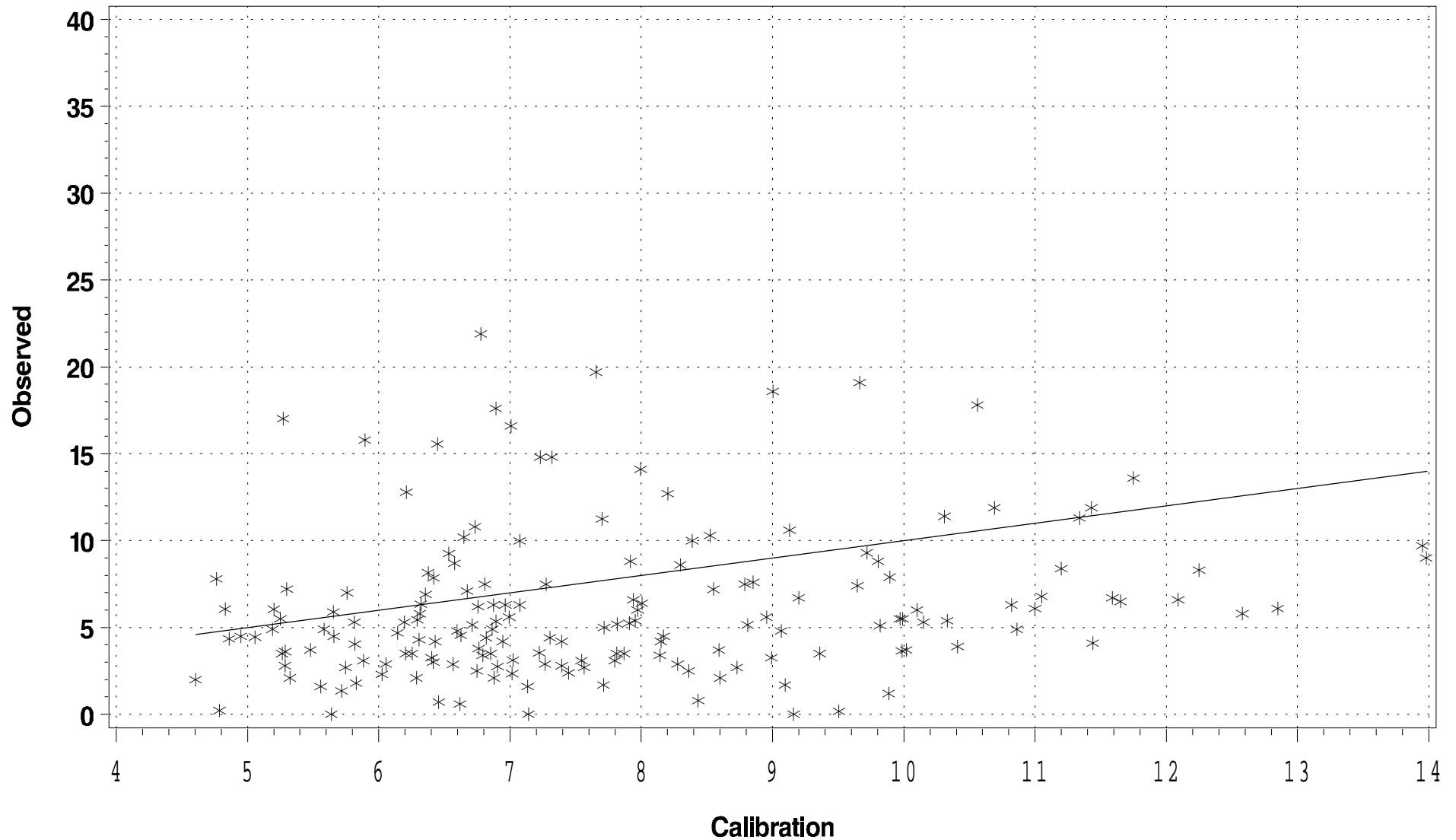
POLYHALINE **Chlorophyll**
Segment CB8PH (Mainstem CB8 Polyhaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 187 pairs of predictions and observed data, the **slope** is 0.5028 and the **intercept** is 2.0258. The **R-Squared** value for this regression is 0.1916.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 187 pairs of predictions and observed data, the **slope** is 0.9579 and the **intercept** is -0.1990. The **R-Squared** value for this regression is 0.2166.

Statistics (units in µg/l)

Mean observed 8.4597	Mean predicted 12.7951
Min. observed 0.0000	Min. predicted 4.9616
Max. observed 26.2000	Max. predicted 35.3350
Std. Dev. Observed 6.5819	Std. Dev. predicted 5.7297
Median observed 6.3000	Median predicted 10.9980
95th Percentile observed 22.1000	95th Percentile predicted 24.3330
10th Percentile observed 1.9000	10th Percentile predicted 7.2531

Differences (predicted – observed)

Mean difference 4.3353 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CB8PH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
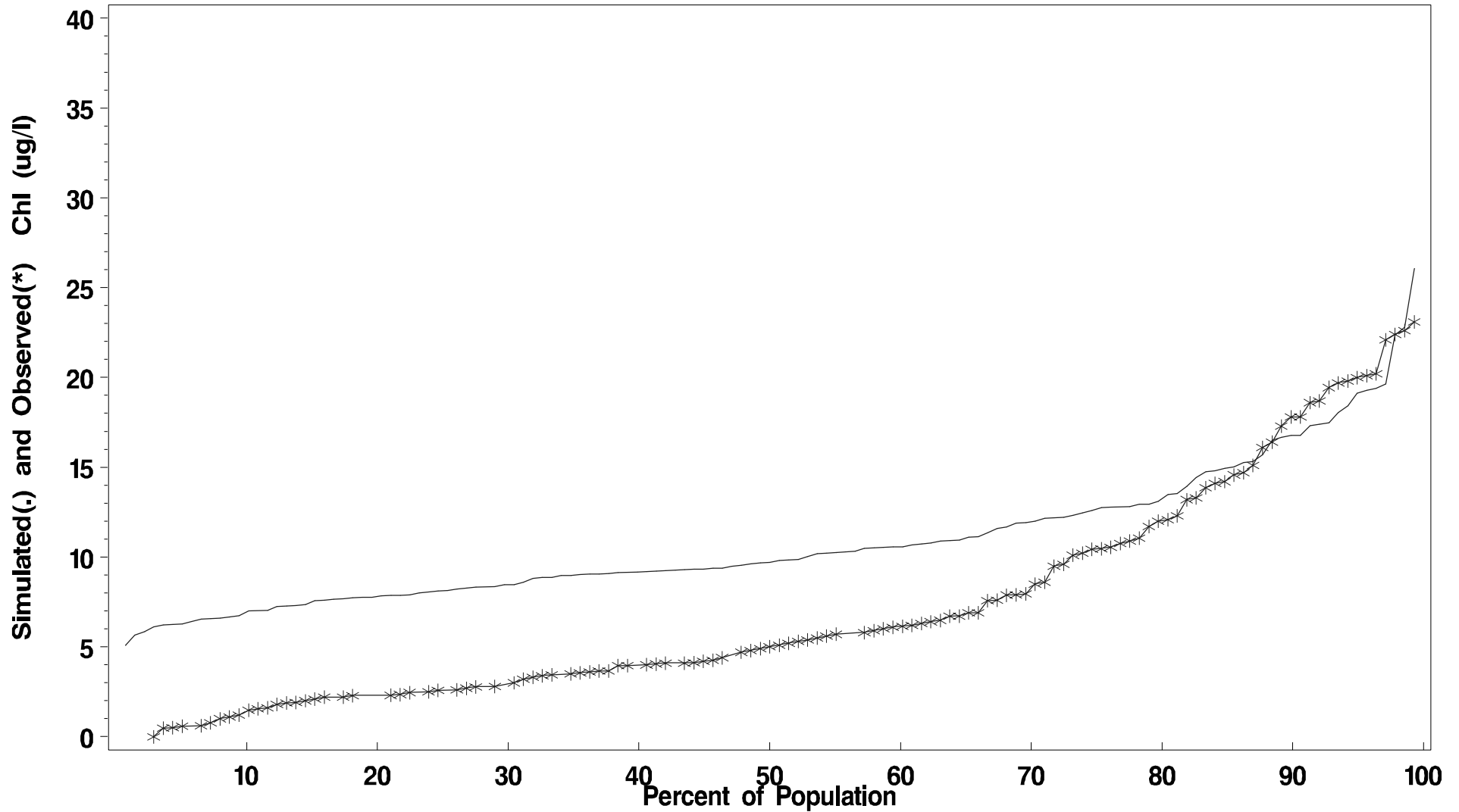
Chlorophyll Concentration (ug/l)
Segment CB8PH   Season: March 1 – May 30
(Scatter Plot)
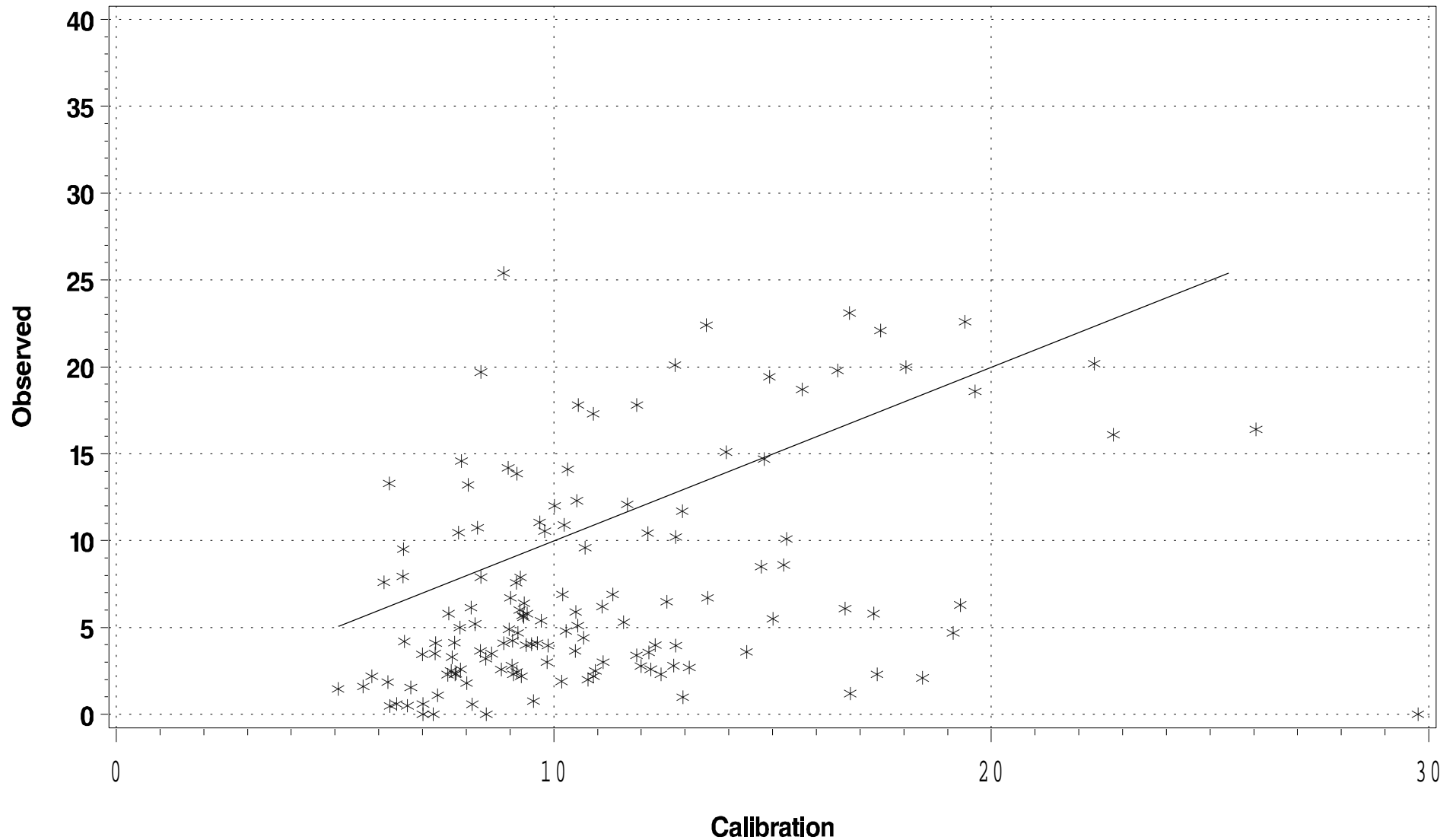
POLYHALINE **Light Attenuation**
Segment CB8PH (Mainstem CB8 Polyhaline)
March-May Sept-Nov

Regression of Calibration vs. Observations[1]

Using the 391 pairs of predictions and observed data, the **slope** is 0.5160 and the **intercept** is 0.3619. The **R-Squared** value for this regression is 0.1809.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 391 pairs of predictions and observed data, the **slope** is 0.5640 and the **intercept** is 0.0991. The **R-Squared** value for this regression is 0.1957.

Statistics (units in 1/m)

Mean observed 0.8477   Mean predicted 0.9415
Min. observed 0.3095   Min. predicted 0.4799
Max. observed 2.6000   Max. predicted 2.3665
Std. Dev. Observed 0.3675   Std. Dev. predicted 0.3029
Median observed 0.7647   Median predicted 0.8791
90th Percentile observed 1.3000   90th Percentile predicted 1.3185
10th Percentile observed 0.4643   10th Percentile predicted 0.6313


Differences (predicted – observed)

Mean difference 0.0937 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment CB8PH   Season: March−May Sept−Nov

Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
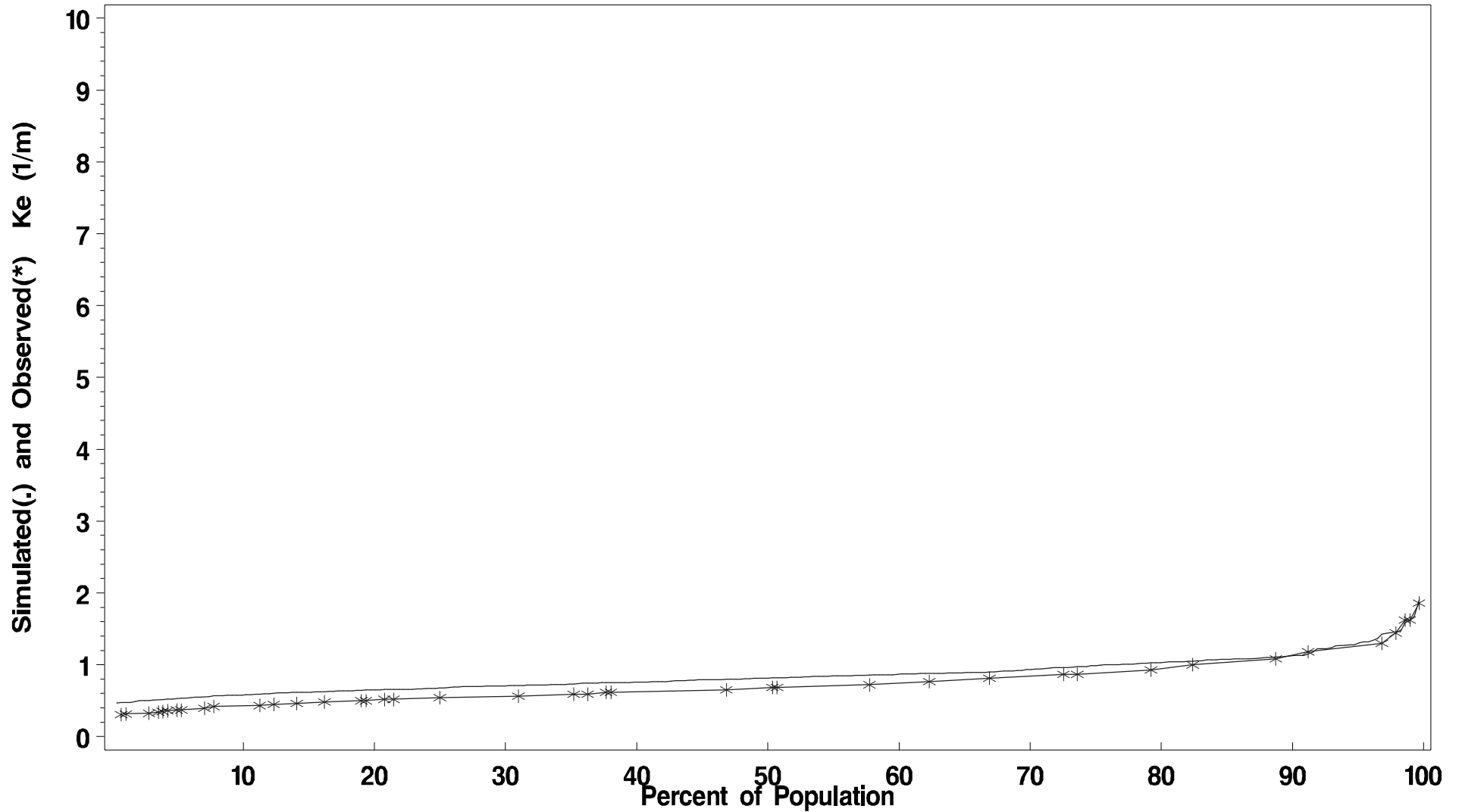
Ke (1/m)
Segment CB8PH Season: March – May Sept – Nov
(Scatter Plot)
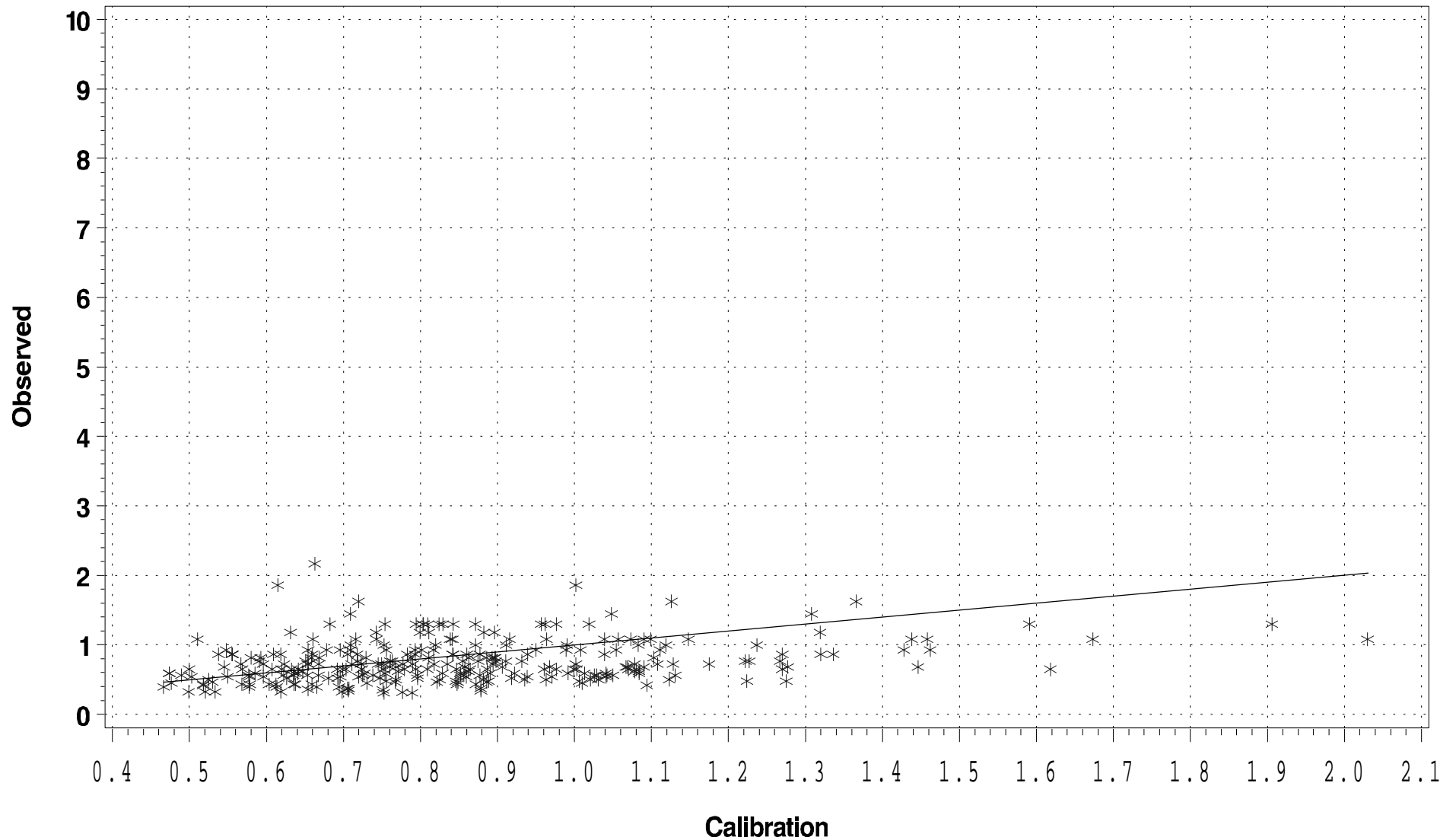
Chesapeake Bay Standard Segment PAXTF

Location Map of
Segment PAXTF within
the Chesapeake Bay Model Grid
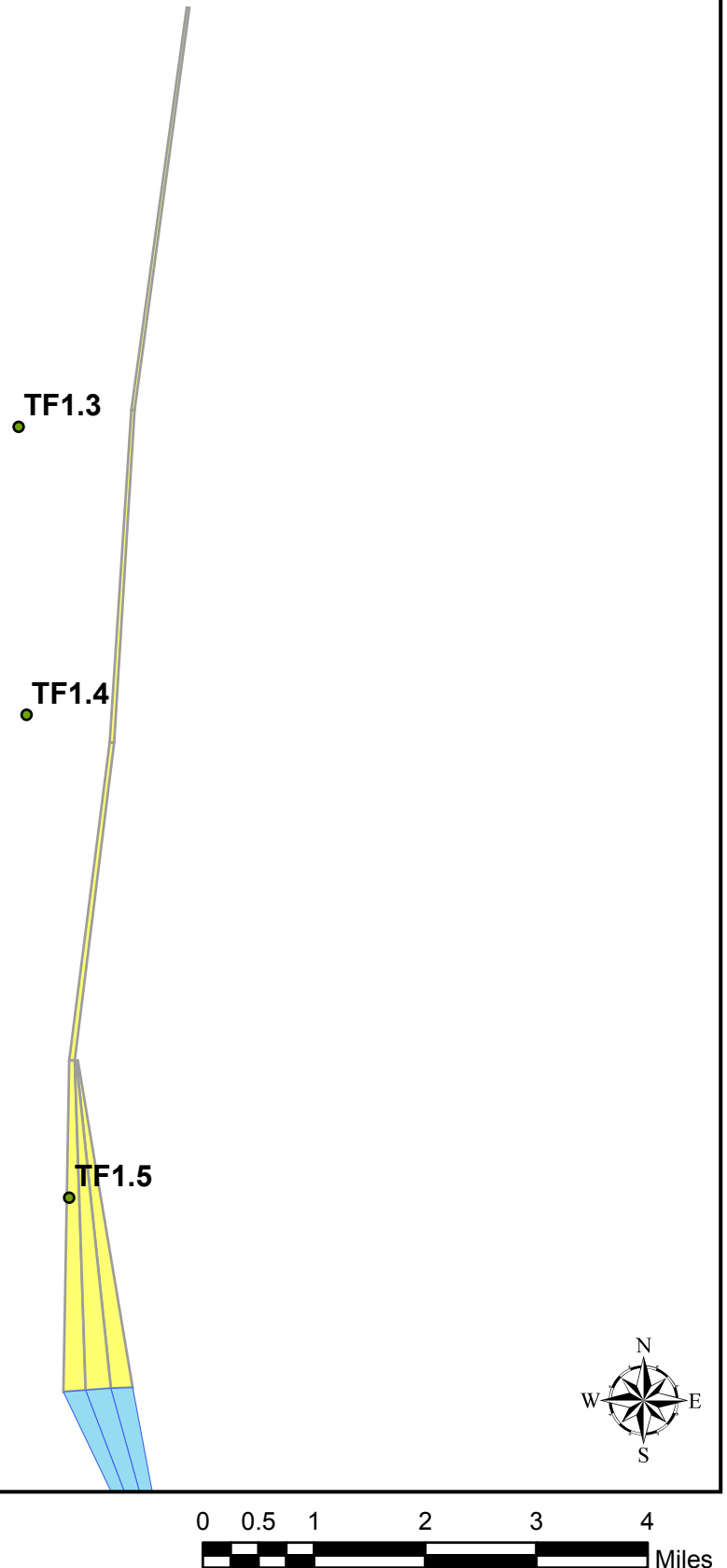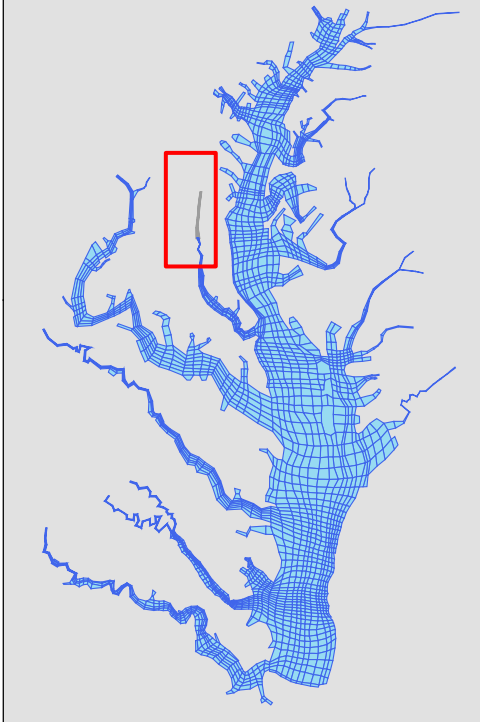
TF1.3

TF1.4

TF1.5

Chesapeake Bay Program

N
W E
S

0   0.5   1   2   3   4
Miles

Regression of Calibration vs. Observations[1]

Using the 334 pairs of predictions and observed data, the **slope** is 0.6041 and the **intercept** is 5.2562. The **R-Squared** value for this regression is 0.4664.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 334 pairs of predictions and observed data, the **slope** is 0.4422 and the **intercept** is 0.6214. The **R-Squared** value for this regression is 0.4492.

Statistics (units in mg/l)

Mean observed 9.5950   Mean predicted 7.1827
Min. observed 5.5   Min. predicted 1.495
Max. observed 13   Max. predicted 12.1
Std. Dev. Observed 1.6280   Std. Dev. predicted 1.8405
Median observed 9.5456   Median predicted 7.2587
90th Percentile observed 11.7000   90th Percentile predicted 9.4193
10th Percentile observed 7.3932   10th Percentile predicted 4.6122

Differences (predicted – observed)

Mean difference -2.4123 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 334
Number of Predicted Violations 67
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment PAXTF   Season: Feb 15 — June 10
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
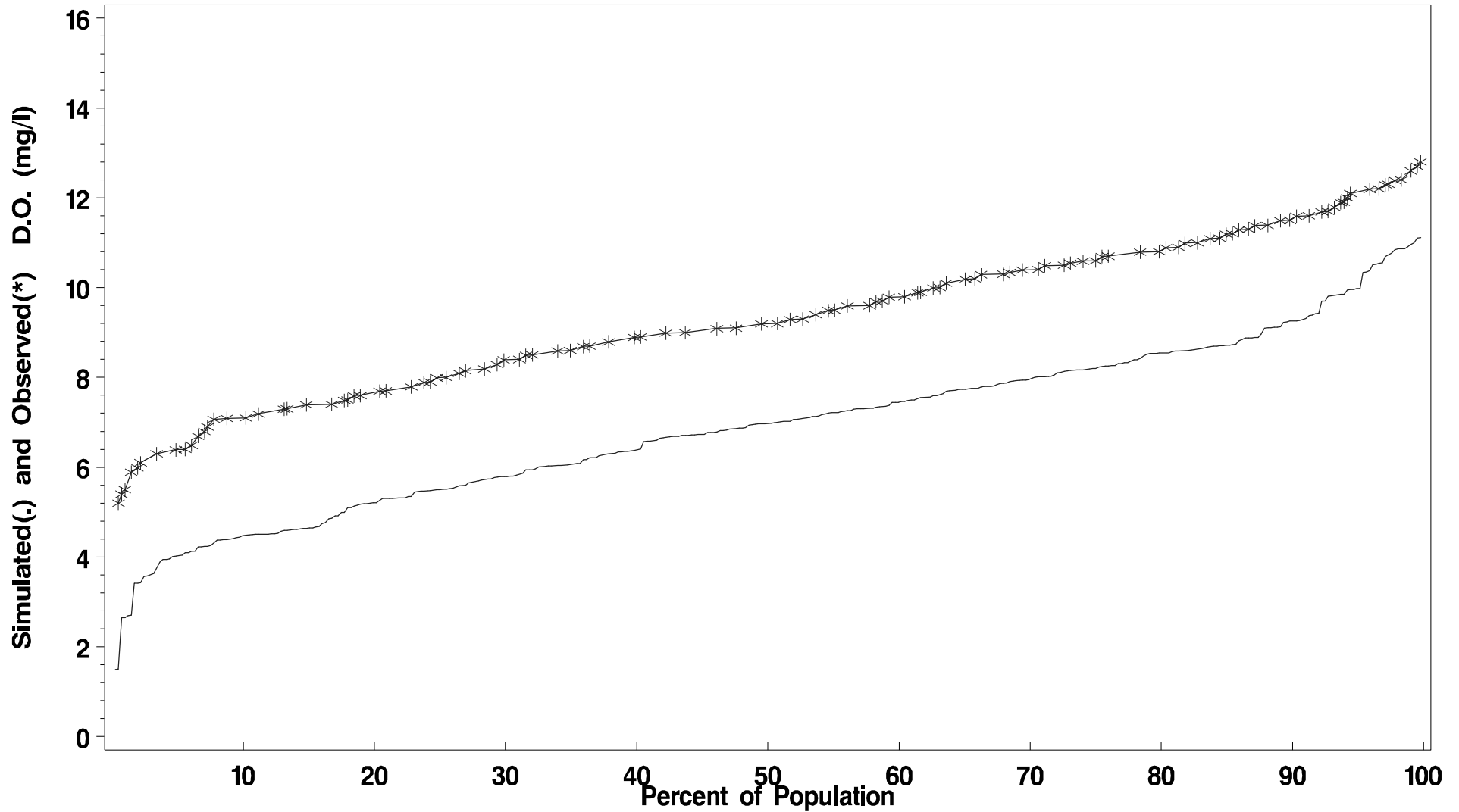
Migratory Dissolved Oxygen (mg/l)
Segment PAXTF Season: Feb 15 − June 10
(Scatter Plot)
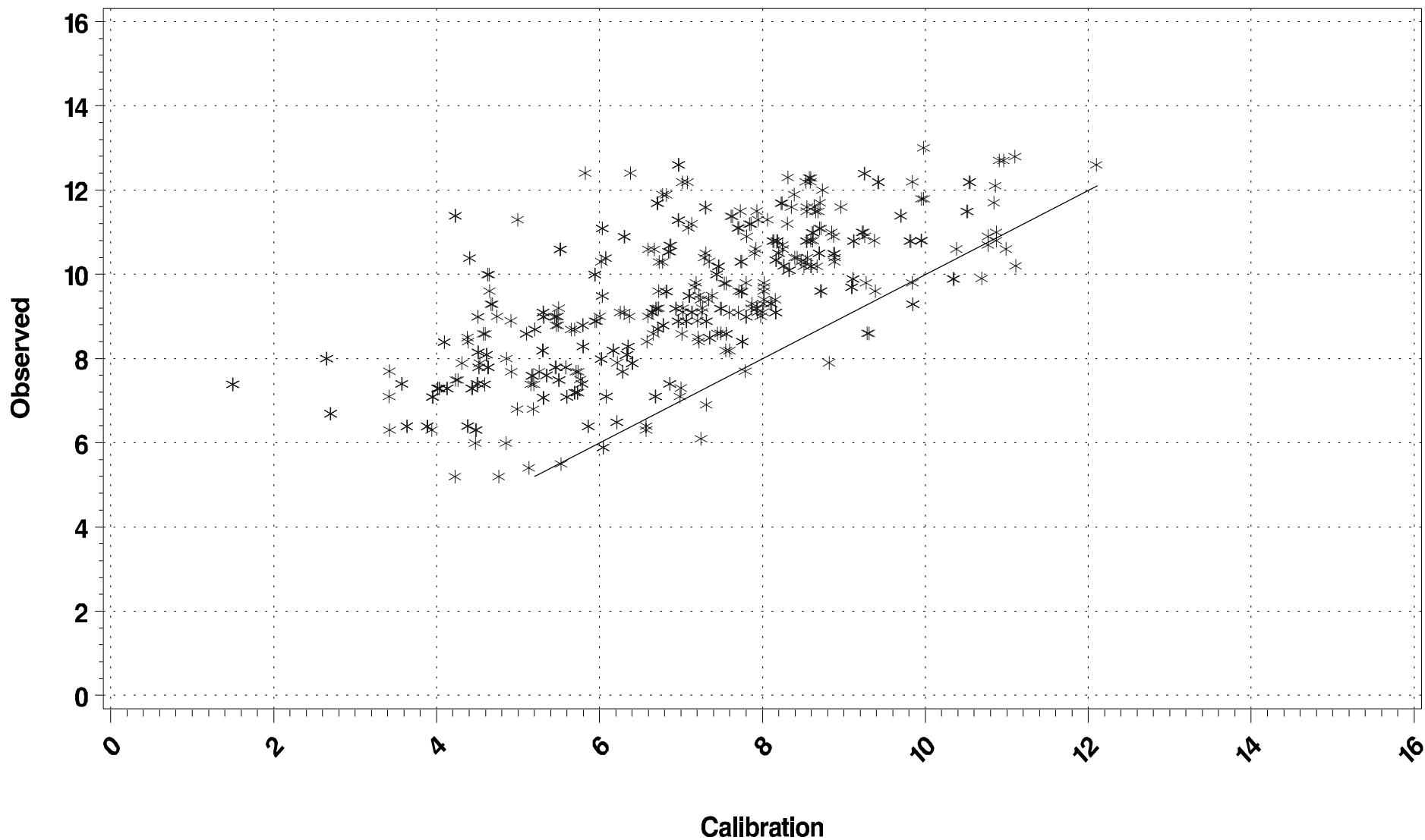
MIGRATORY **Dissolved Oxygen**
Segment PAXTF (Patuxent Tidal Fresh)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 594 pairs of predictions and observed data, the **slope** is 0.5372 and the **intercept** is 5.7525. The **R-Squared** value for this regression is 0.3598.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 594 pairs of predictions and observed data, the **slope** is 0.2789 and the **intercept** is 0.7594. The **R-Squared** value for this regression is 0.2512.

Statistics (units in mg/l)

Mean observed 8.7946   Mean predicted 5.6627
Min. observed 4.4   Min. predicted -0.5191
Max. observed 13.3798   Max. predicted 10.45
Std. Dev. Observed 2.1085   Std. Dev. predicted 2.3541
Median observed 8.6918   Median predicted 5.4077
90th Percentile observed 11.5890   90th Percentile predicted 9.2347
10th Percentile observed 6.0000   10th Percentile predicted 2.9116

Differences (predicted – observed)

Mean difference -3.1319 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 594
Number of Predicted Violations 148
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment PAXTF   Season: June 11 — Feb 14
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

**Migratory   Dissolved Oxygen (mg/l)
Segment PAXTF   Season: June 11 — Feb 14**

(Scatter Plot)

<div align="center">
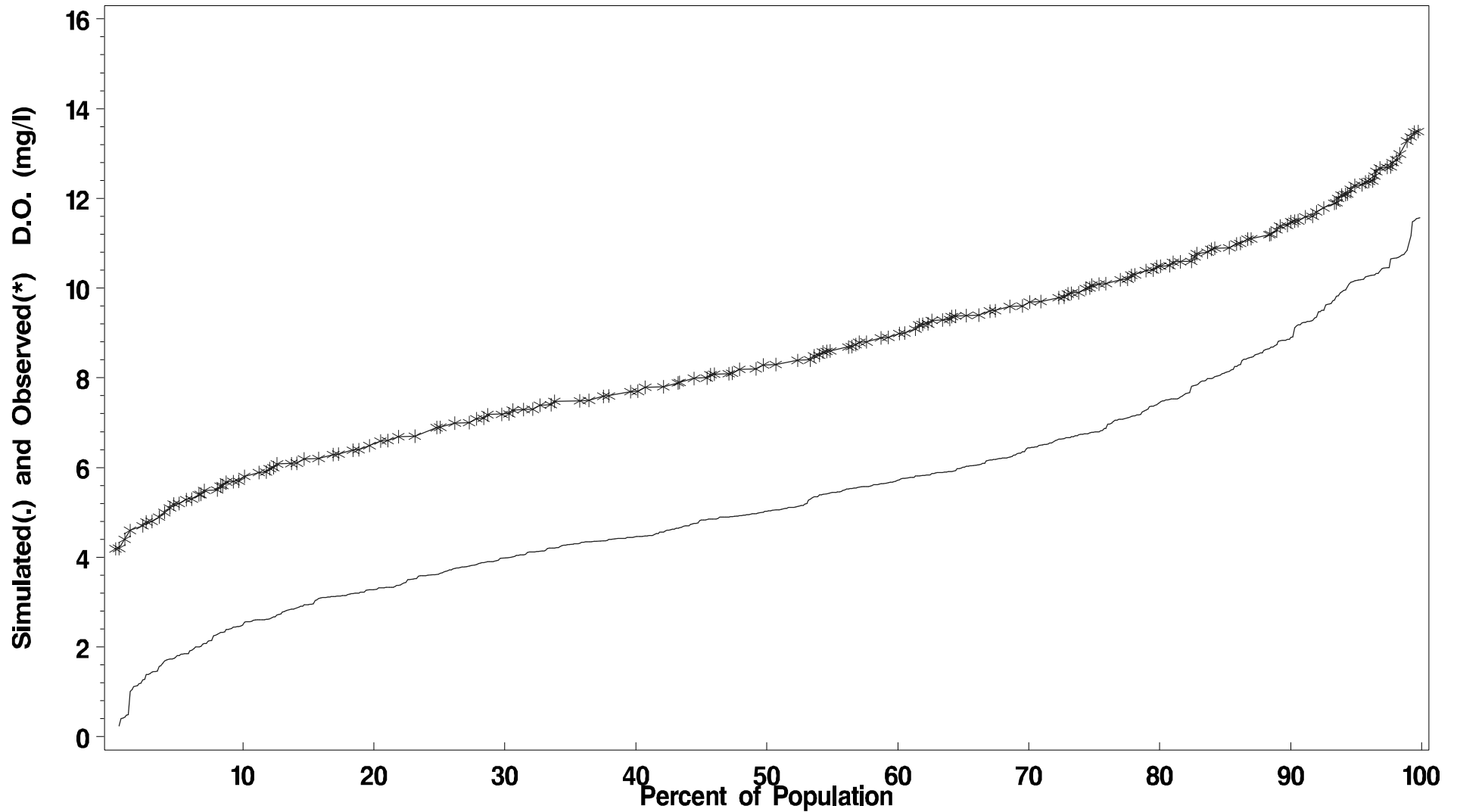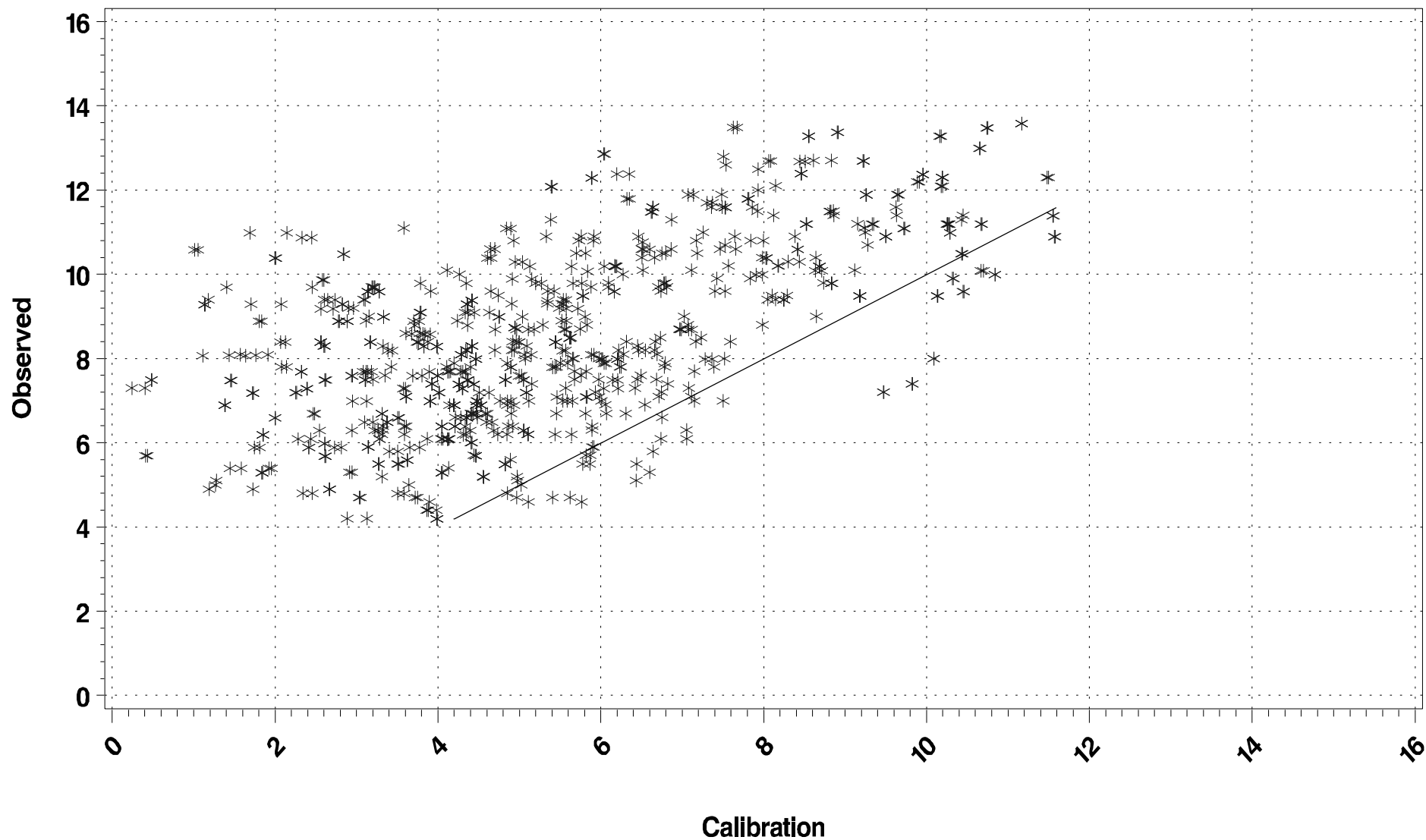
TIDAL FRESH **Chlorophyll**
Segment PAXTF (Patuxent Tidal Fresh)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 203 pairs of predictions and observed data, the **slope** is 1.7917 and the **intercept** is 8.4654. The **R-Squared** value for this regression is 0.1778.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 203 pairs of predictions and observed data, the **slope** is 0.6588 and the **intercept** is 0.6052. The **R-Squared** value for this regression is 0.1567.

Statistics (units in µg/l)

Mean observed 24.6573   Mean predicted 9.0373
Min. observed 1.4969   Min. predicted 0.6092
Max. observed 76.9000   Max. predicted 20.0710
Std. Dev. Observed 21.6304   Std. Dev. predicted 5.0908
Median observed 17.7000   Median predicted 8.7428
95th Percentile observed 67.7000   95th Percentile predicted 17.3940
10th Percentile observed 3.0000   10th Percentile predicted 2.4711

Differences (predicted – observed)

Mean difference -15.6200 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PAXTF   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
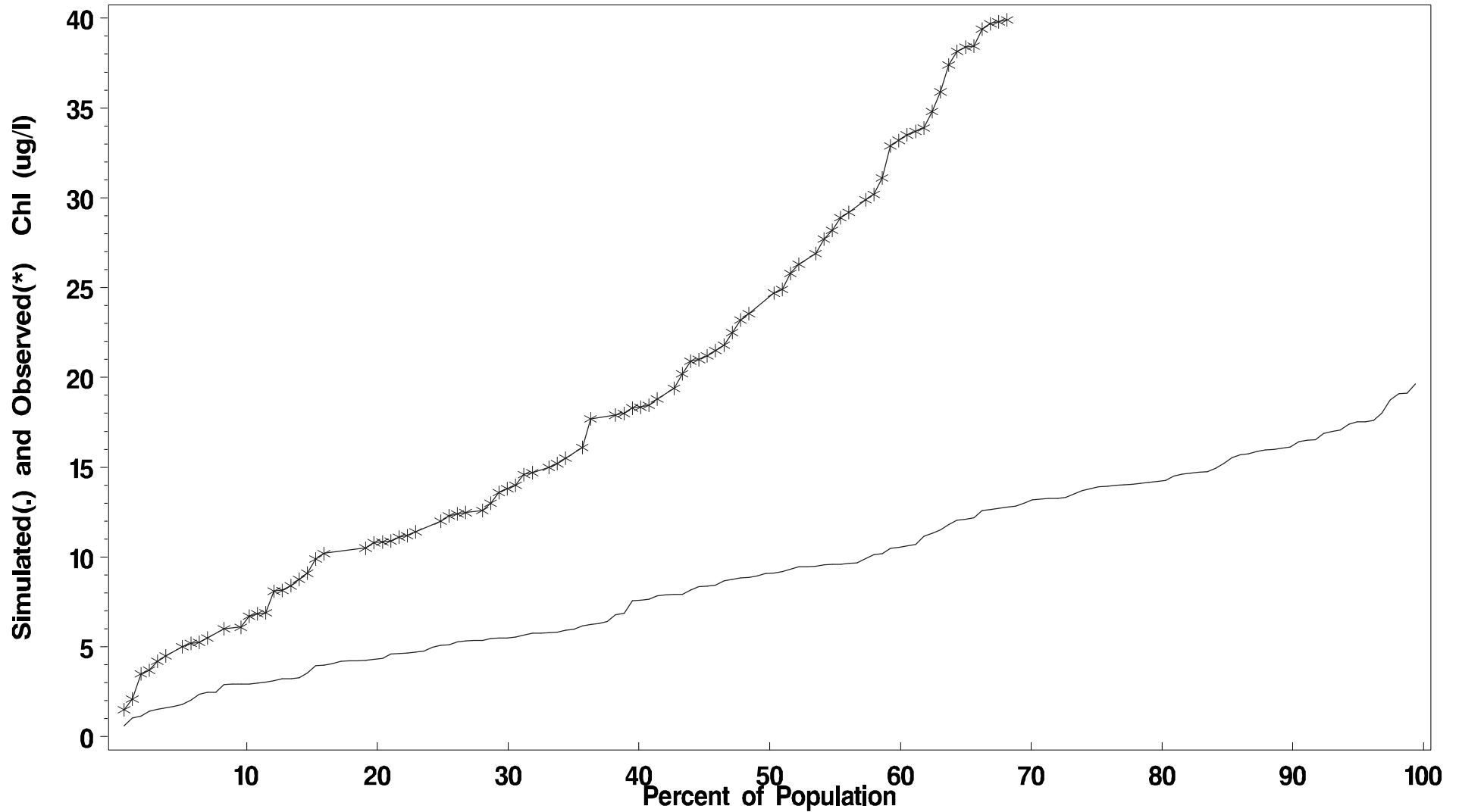
Chlorophyll Concentration (ug/l)
Segment PAXTF   Season: July 1 — Sept 30
(Scatter Plot)
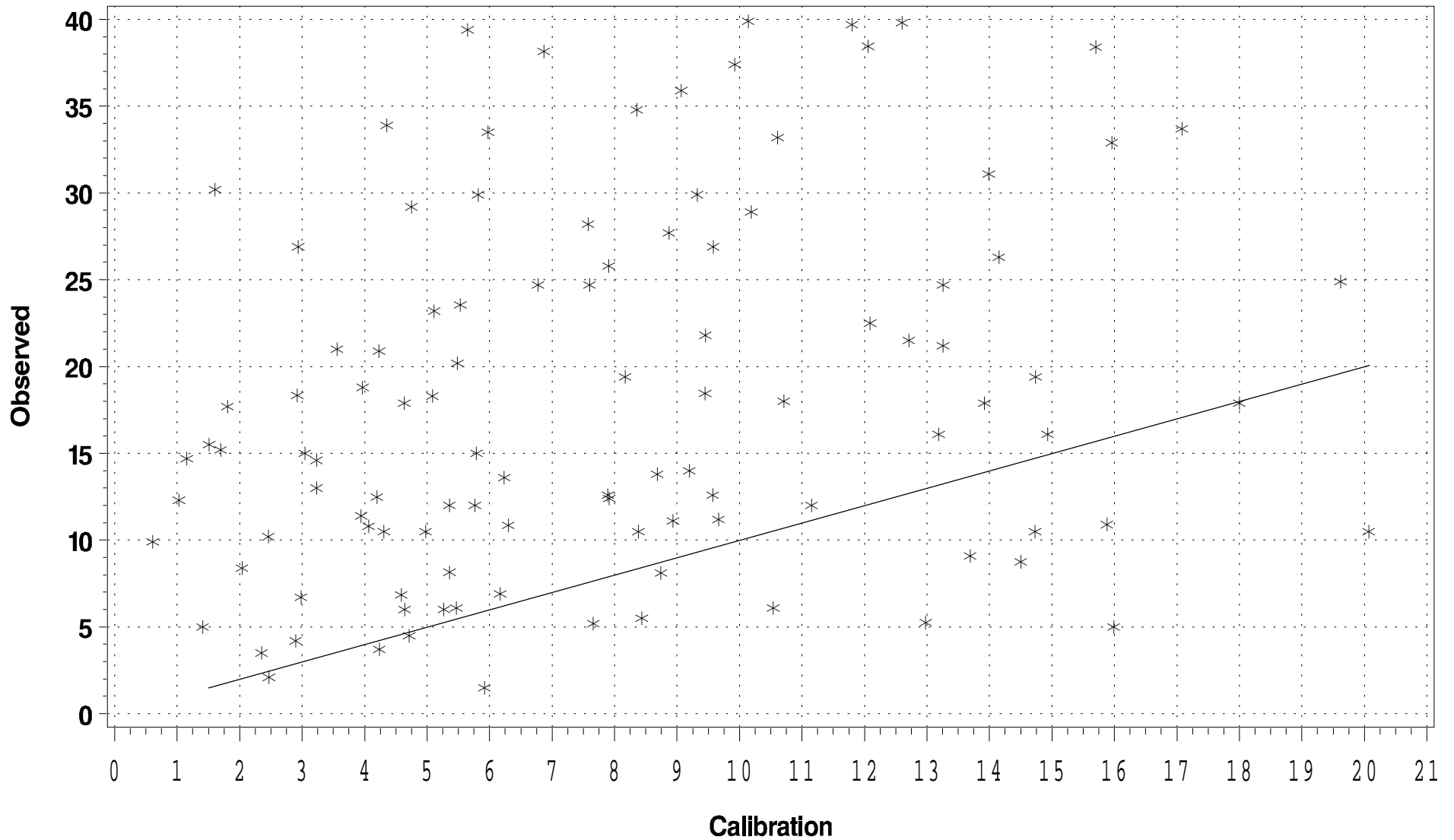
TIDAL FRESH **Chlorophyll**
Segment PAXTF (Patuxent Tidal Fresh)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 192 pairs of predictions and observed data, the **slope** is 1.1333 and the
intercept is 1.5965. The **R-Squared** value for this regression is 0.3010.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 192 pairs of predictions and observed data, the **slope** is 0.5587 and the
intercept is 0.4039. The **R-Squared** value for this regression is 0.2932.

Statistics (units in μg/l)

Mean observed 8.2167   Mean predicted 5.8415
Min. observed 0.9000   Min. predicted 0.1067
Max. observed 70.8000   Max. predicted 30.7270
Std. Dev. Observed 11.6831   Std. Dev. predicted 5.6563
Median observed 4.5000   Median predicted 3.5441
95th Percentile observed 28.6000 95th Percentile predicted 18.4610
10th Percentile observed 2.0000   10th Percentile predicted 1.2620

Differences (predicted – observed)

Mean difference -2.3752 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PAXTF   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
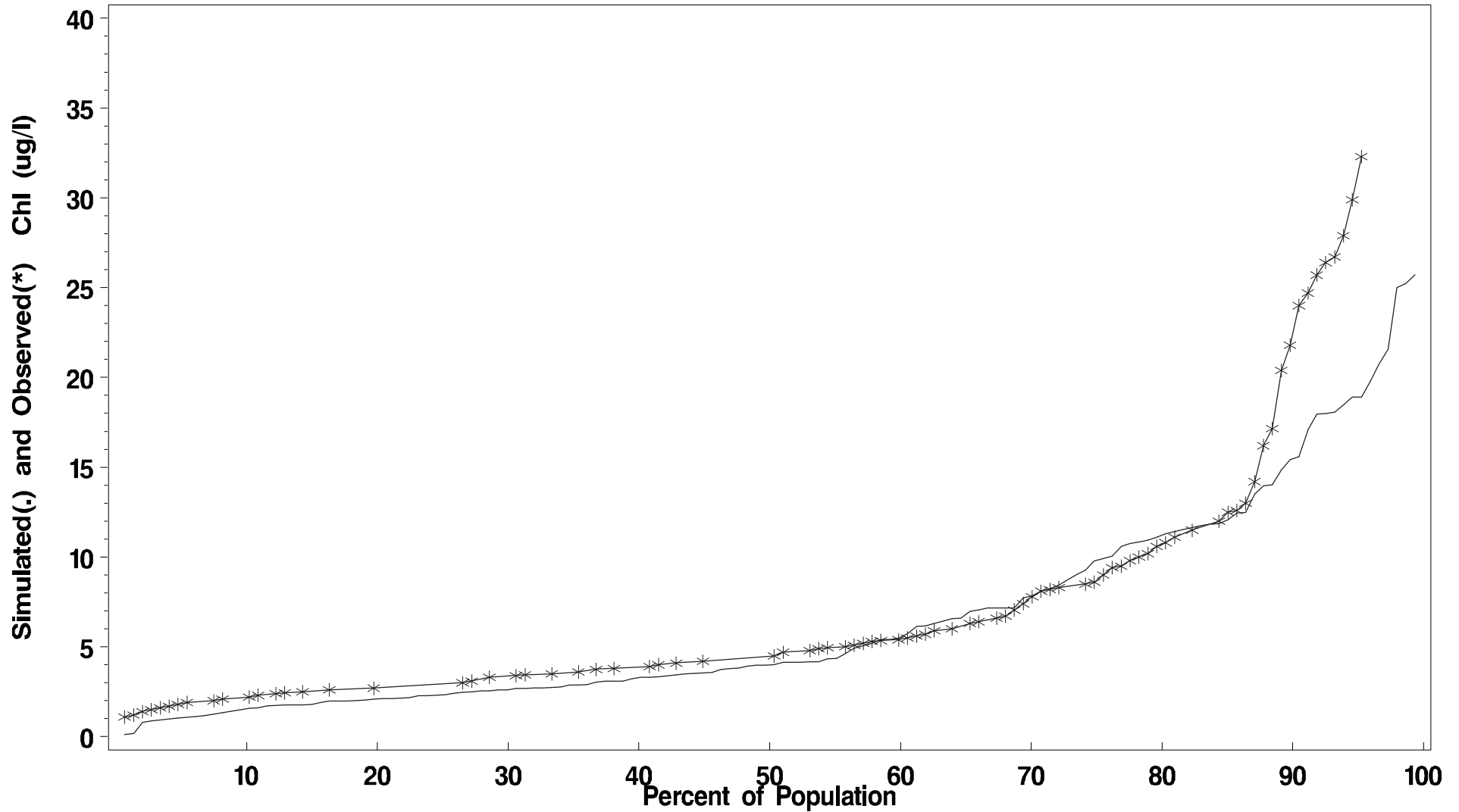
Chlorophyll Concentration (ug/l)
Segment PAXTF Season: March 1 – May 30

(Scatter Plot)
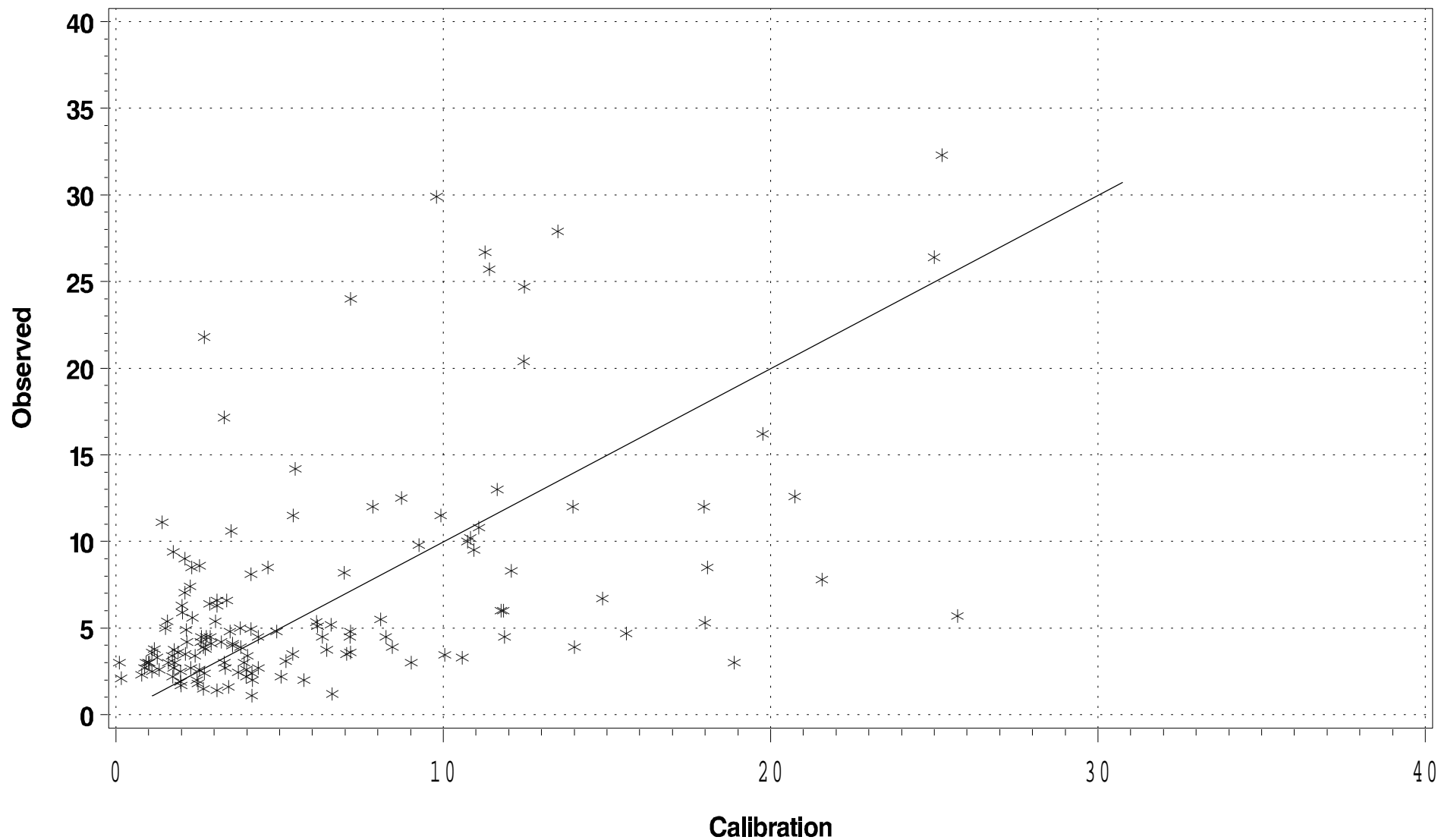
TIDAL FRESH **Light Attenuation**
Segment PAXTF (Patuxent Tidal Fresh)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 263 pairs of predictions and observed data, the **slope** is 0.0301 and the **intercept** is 4.1425. The **R-Squared** value for this regression is 0.0089.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 263 pairs of predictions and observed data, the **slope** is 0.2360 and the **intercept** is 0.5379. The **R-Squared** value for this regression is 0.1033.

Statistics (units in 1/m)

Mean observed 4.2772   Mean predicted 4.4799
Min. observed 1.8571   Min. predicted 1.0809
Max. observed 13.0000   Max. predicted 104.5900
Std. Dev. Observed 2.1402   Std. Dev. predicted 6.7263
Median observed 4.3333   Median predicted 3.8580
90th Percentile observed 6.5000   90th Percentile predicted 5.6090
10th Percentile observed 2.6000   10th Percentile predicted 1.8157


Differences (predicted – observed)

Mean difference 0.2027 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment PAXTF   Season: April 1 — Oct 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Ke (1/m)
Segment PAXTF   Season: April 1 — Oct 30
(Scatter Plot)
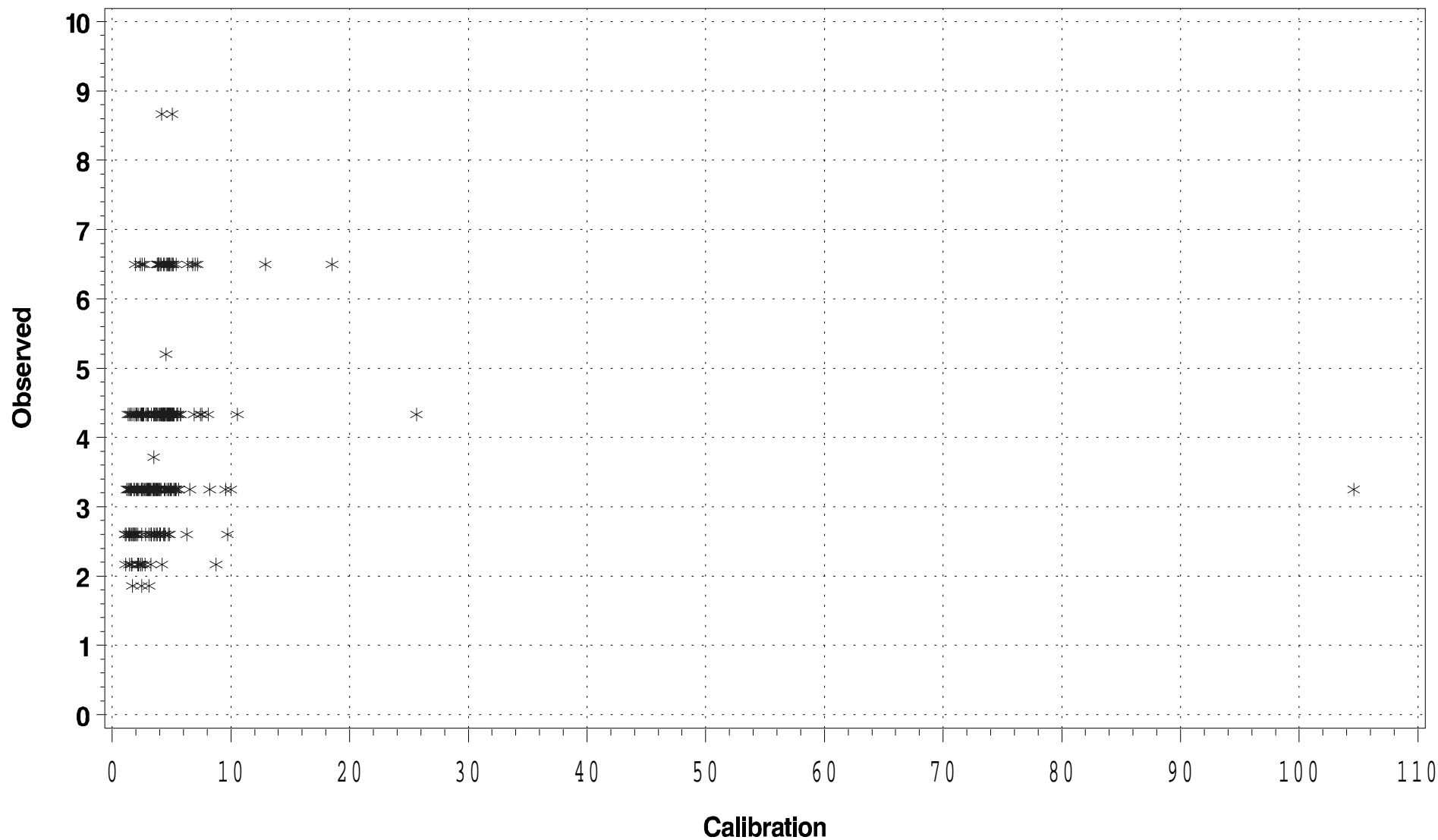
Chesapeake Bay Standard Segment PAXOH
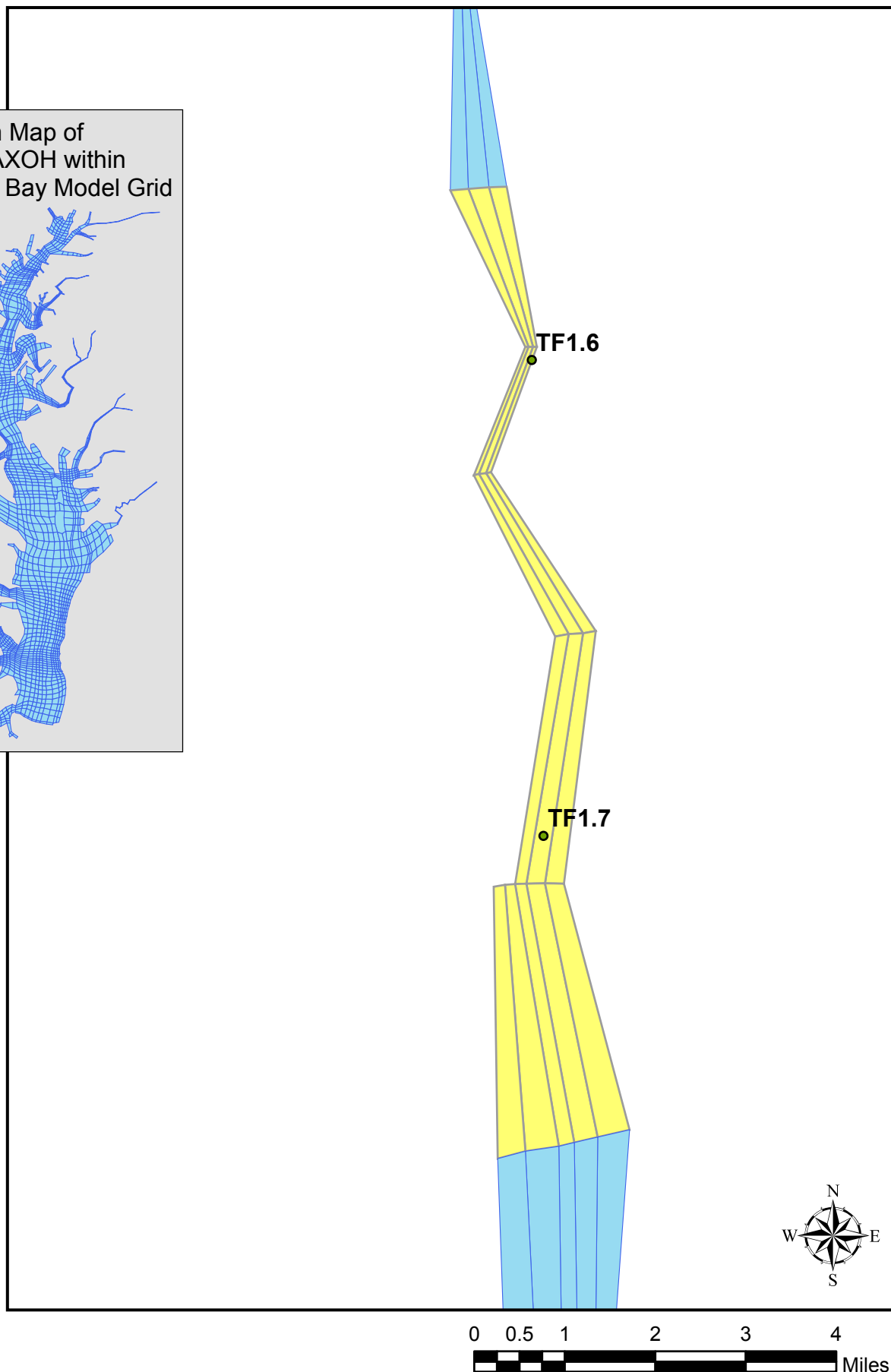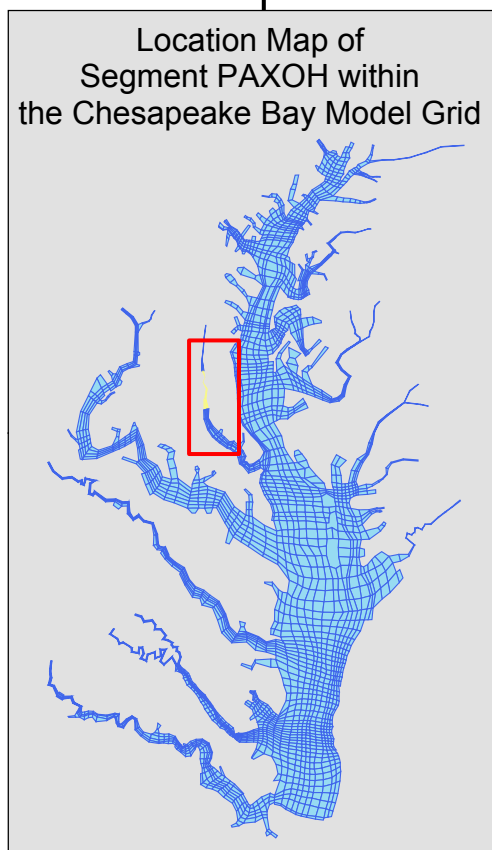
Location Map of
Segment PAXOH within
the Chesapeake Bay Model Grid

TF1.6

TF1.7

Chesapeake Bay Program

N
W   E
S

0   0.5   1   2   3   4
Miles

Regression of Calibration vs. Observations[1]

Using the 137 pairs of predictions and observed data, the **slope** is 0.4136 and the **intercept** is 4.9249. The **R-Squared** value for this regression is 0.1863.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 137 pairs of predictions and observed data, the **slope** is 0.4222 and the **intercept** is 0.5576. The **R-Squared** value for this regression is 0.2001.

Statistics (units in mg/l)

Mean observed 8.8637	Mean predicted 9.5231
Min. observed 4.75	Min. predicted 2.55
Max. observed 12.7	Max. predicted 13.99
Std. Dev. Observed 1.9325	Std. Dev. predicted 2.0168
Median observed 8.8000	Median predicted 9.4604
90th Percentile observed 11.6000	90th Percentile predicted 12.2590
10th Percentile observed 6.3500	10th Percentile predicted 7.0971

Differences (predicted – observed)

Mean difference 0.6593 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 137
Number of Predicted Violations 2
Number of Observed Violations 2

---

[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment PAXOH   Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
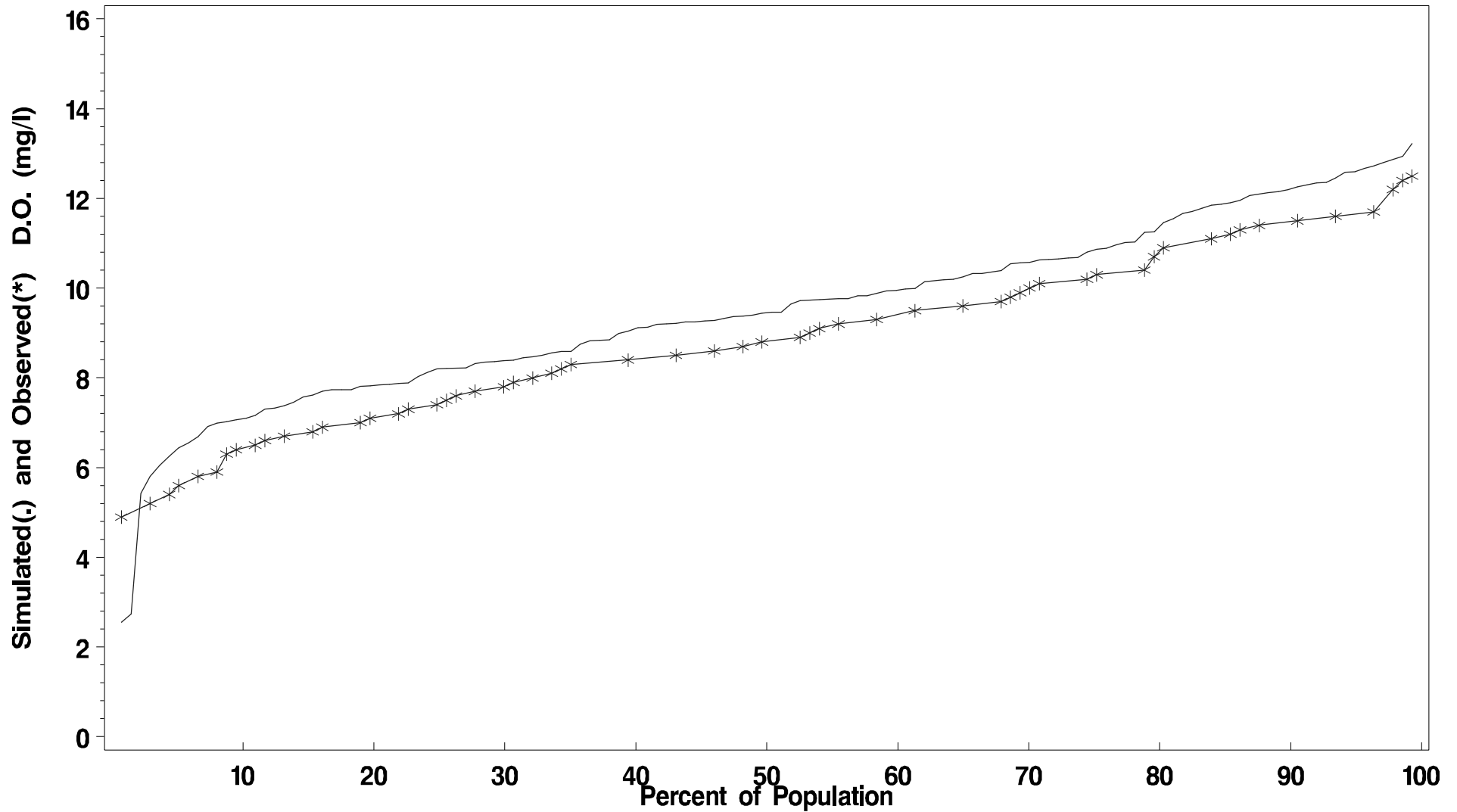
**Migratory   Dissolved Oxygen (mg/l)
Segment PAXOH   Season: Feb 15 – June 10**

(Scatter Plot)
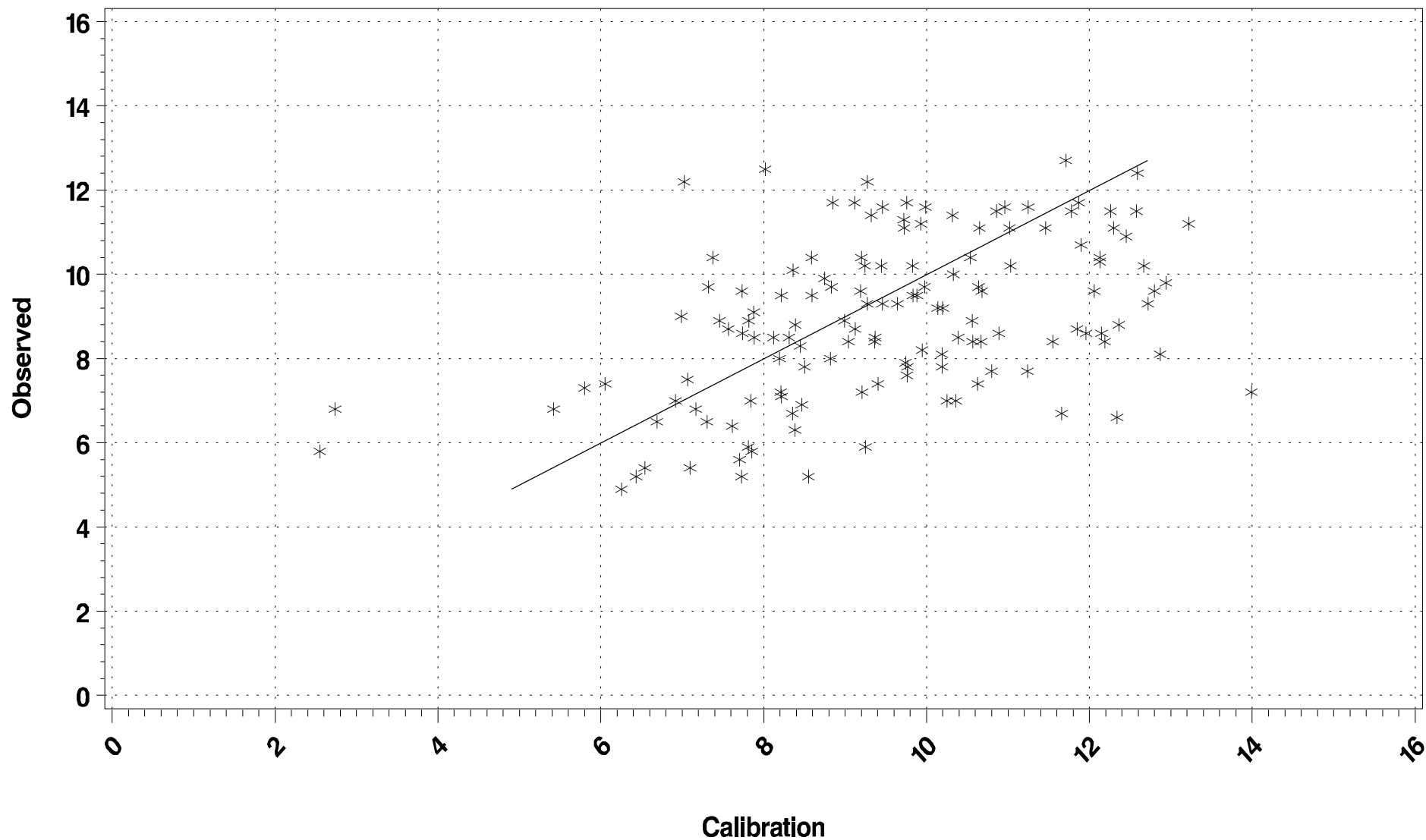
Observed

Calibration

Regression of Calibration vs. Observations[1]

Using the 246 pairs of predictions and observed data, the **slope** is 0.5860 and the **intercept** is 2.9616. The **R-Squared** value for this regression is 0.1992.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 246 pairs of predictions and observed data, the **slope** is 0.4734 and the **intercept** is 0.4728. The **R-Squared** value for this regression is 0.1554.

Statistics (units in mg/l)

Mean observed 7.5436   Mean predicted 7.8195
Min. observed 2.9667   Min. predicted 3.037
Max. observed 14   Max. predicted 11.97
Std. Dev. Observed 2.4006   Std. Dev. predicted 1.8286
Median observed 6.9250   Median predicted 7.9936
90th Percentile observed 11.3000   90th Percentile predicted 10.0710
10th Percentile observed 4.8667   10th Percentile predicted 5.2180

Differences (predicted – observed)

Mean difference 0.2759 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 246
Number of Predicted Violations 4
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
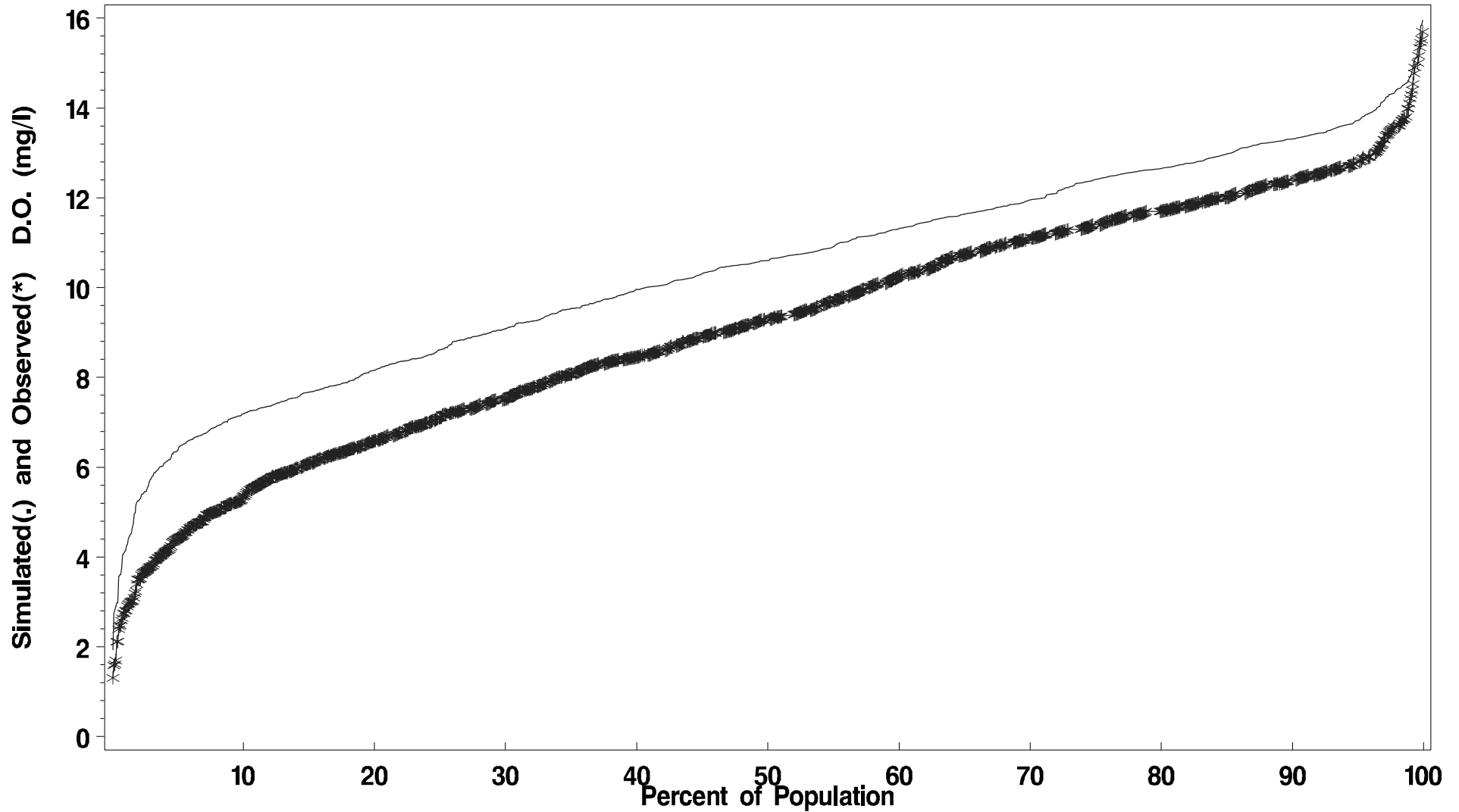# Segment PAXOH   Season: June 11 − Feb 14
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
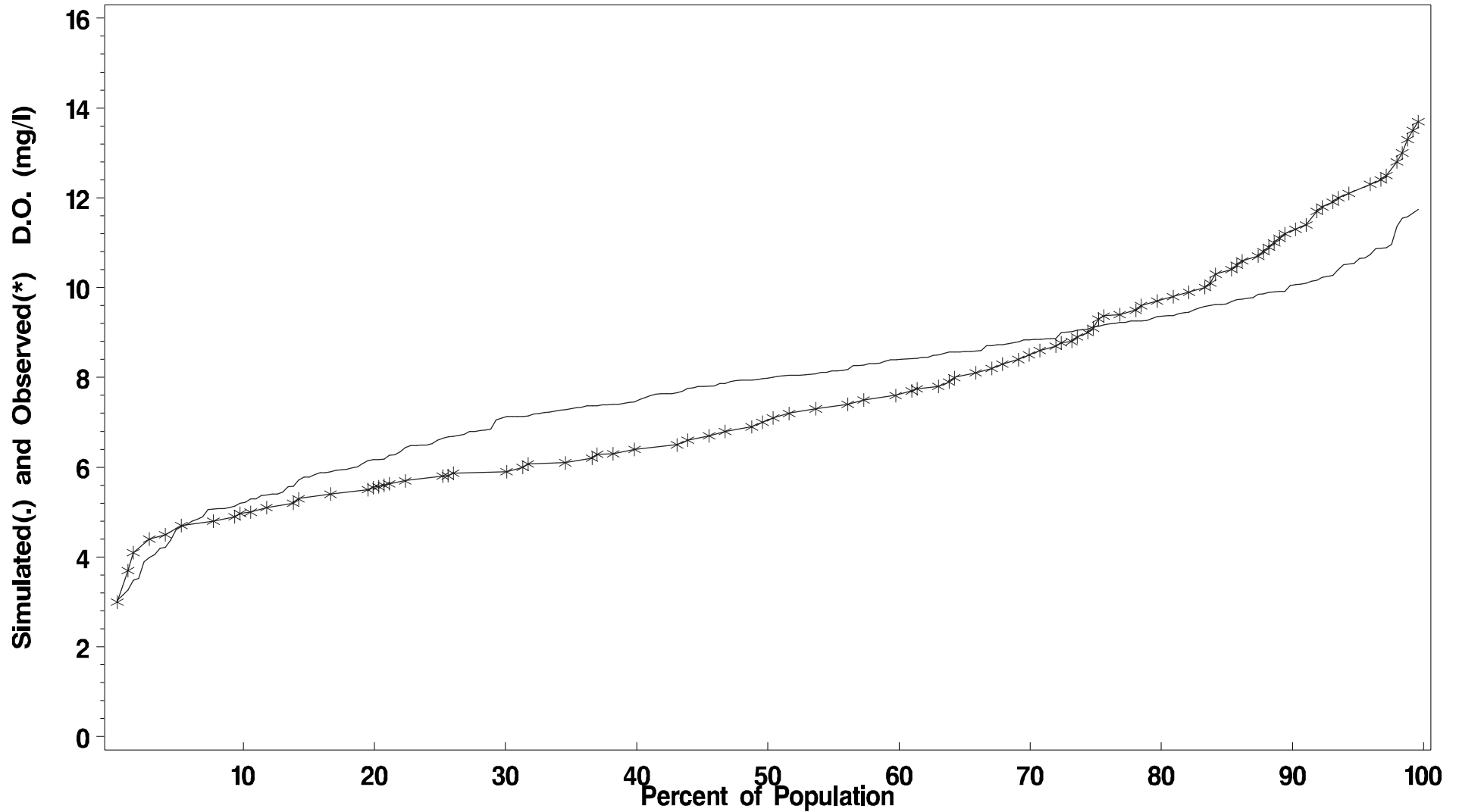
Migratory Dissolved Oxygen (mg/l)
Segment PAXOH   Season: June 11 – Feb 14
(Scatter Plot)
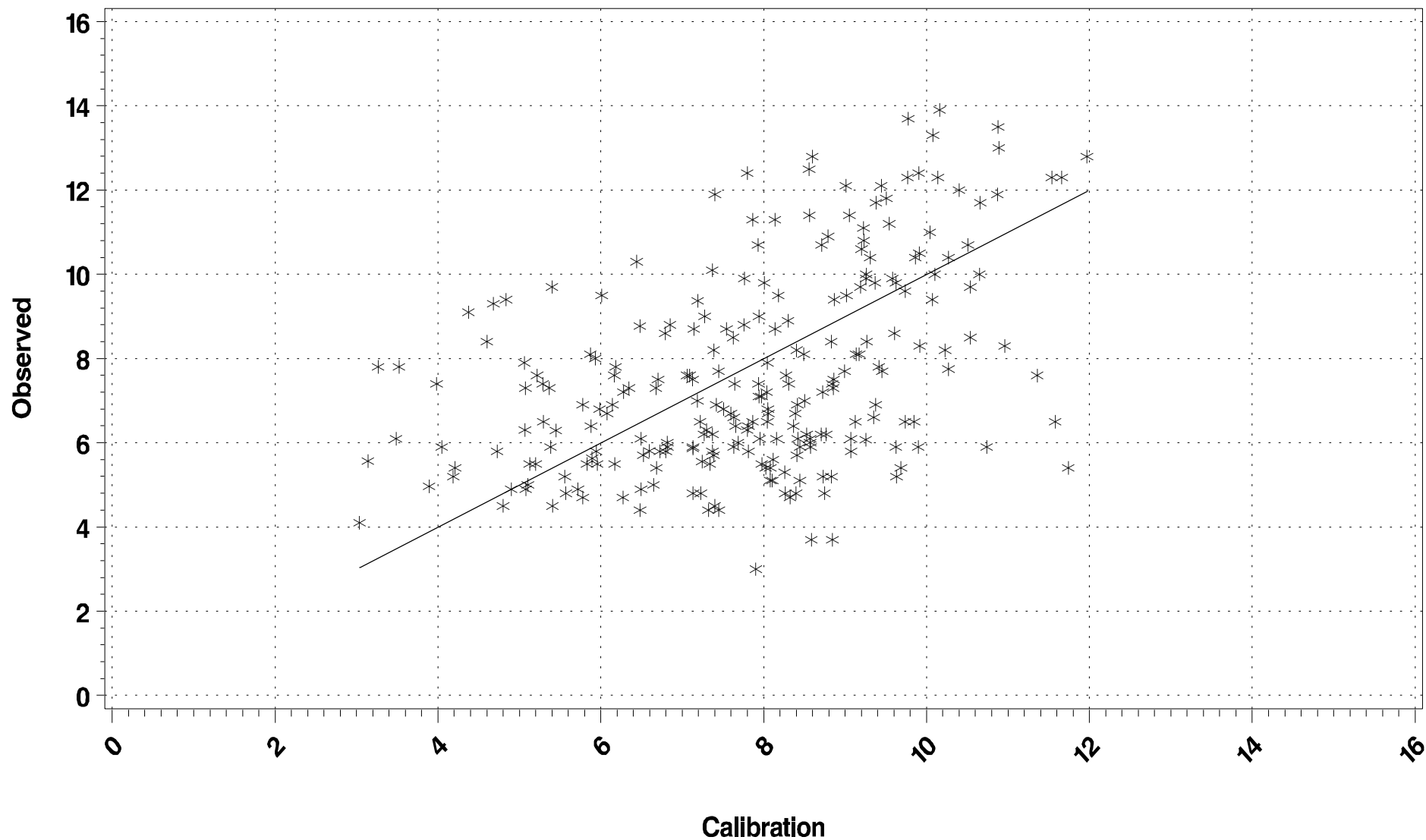
OLIGOHALINE **Chlorophyll**
Segment PAXOH (Patuxent Oligohaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 117 pairs of predictions and observed data, the **slope** is -0.0819 and the **intercept** is 23.9108. The **R-Squared** value for this regression is 0.0009.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 117 pairs of predictions and observed data, the **slope** is -0.0389 and the **intercept** is 1.3303. The **R-Squared** value for this regression is 0.0005.

Statistics (units in µg/l)

Mean observed 22.5735   Mean predicted 16.3187
Min. observed 2.2500   Min. predicted 1.8798
Max. observed 60.4000   Max. predicted 26.8150
Std. Dev. Observed 14.1554   Std. Dev. predicted 5.2071
Median observed 19.2750   Median predicted 17.3480
95th Percentile observed 54.1000   95th Percentile predicted 23.9670
10th Percentile observed 5.9500   10th Percentile predicted 9.2355

Differences (predicted – observed)

Mean difference -6.2548 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PAXOH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
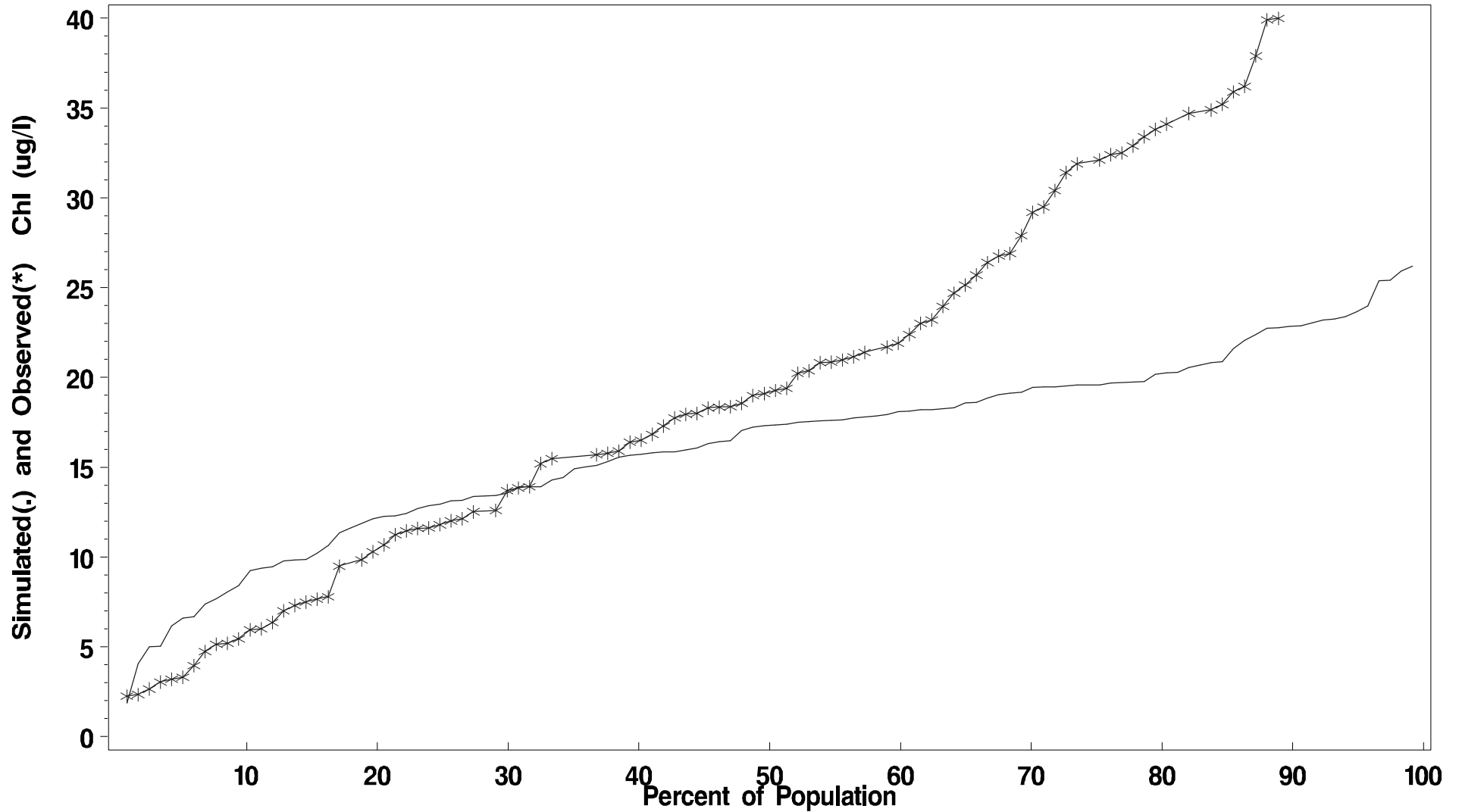
Chlorophyll Concentration (ug/l)
Segment PAXOH   Season: July 1 − Sept 30
(Scatter Plot)
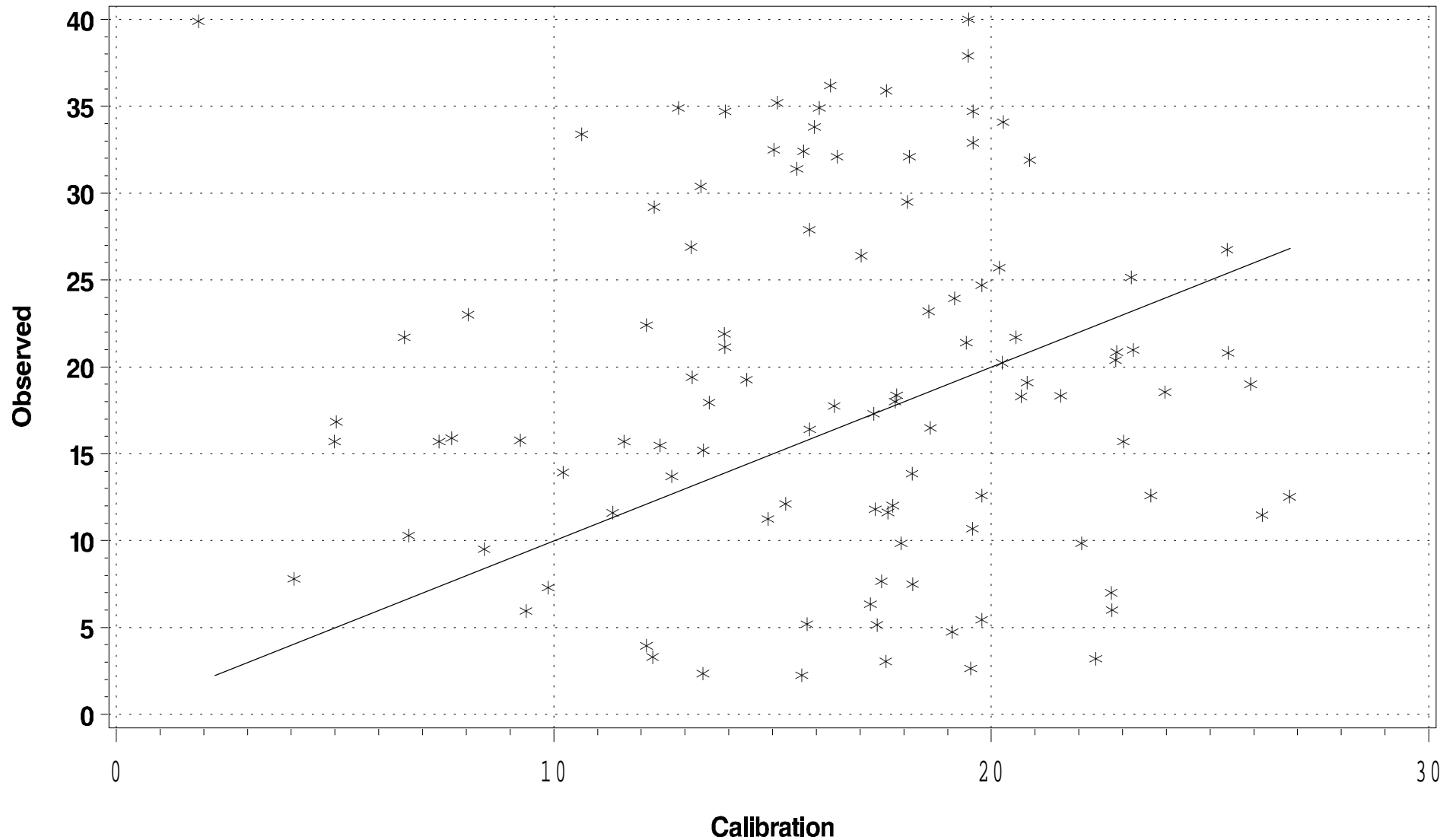
Regression of Calibration vs. Observations[1]
Using the 103 pairs of predictions and observed data, the **slope** is 0.2366 and the
intercept is 7.7828. The **R-Squared** value for this regression is 0.0194.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 103 pairs of predictions and observed data, the **slope** is 0.3765 and the
intercept is 0.4990. The **R-Squared** value for this regression is 0.0434.

Statistics (units in μg/l)

Mean observed 12.3634   Mean predicted 19.3602
Min. observed 0.5000   Min. predicted 3.3595
Max. observed 68.5000   Max. predicted 35.2730
Std. Dev. Observed 12.9291   Std. Dev. predicted 7.6034
Median observed 7.7000   Median predicted 19.5920
95th Percentile observed 39.2000   95th Percentile predicted 32.2910
10th Percentile observed 3.1500   10th Percentile predicted 9.6474

Differences (predicted – observed)

Mean difference 6.9968 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PAXOH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
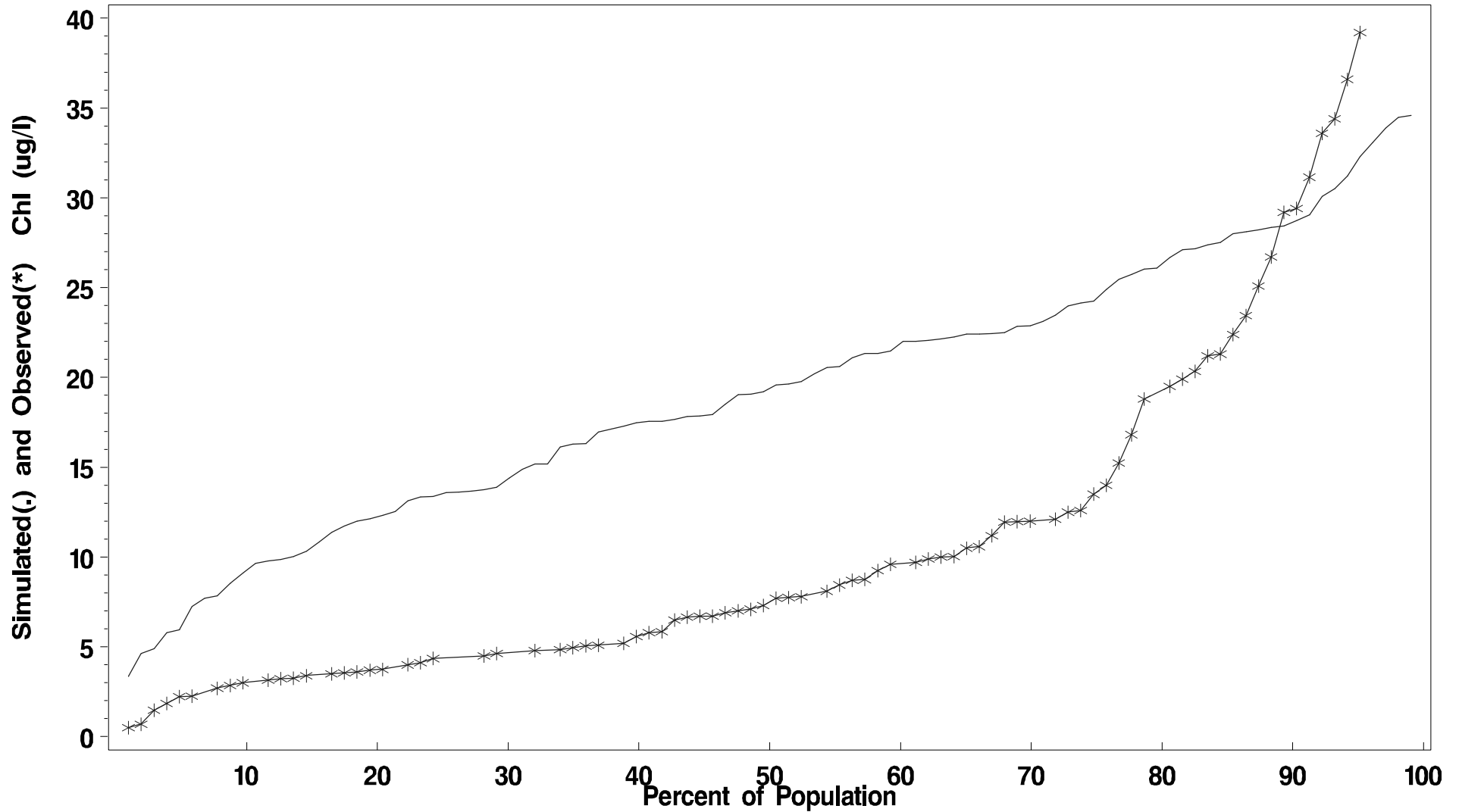
Chlorophyll Concentration (ug/l)
Segment PAXOH   Season: March 1 – May 30
(Scatter Plot)
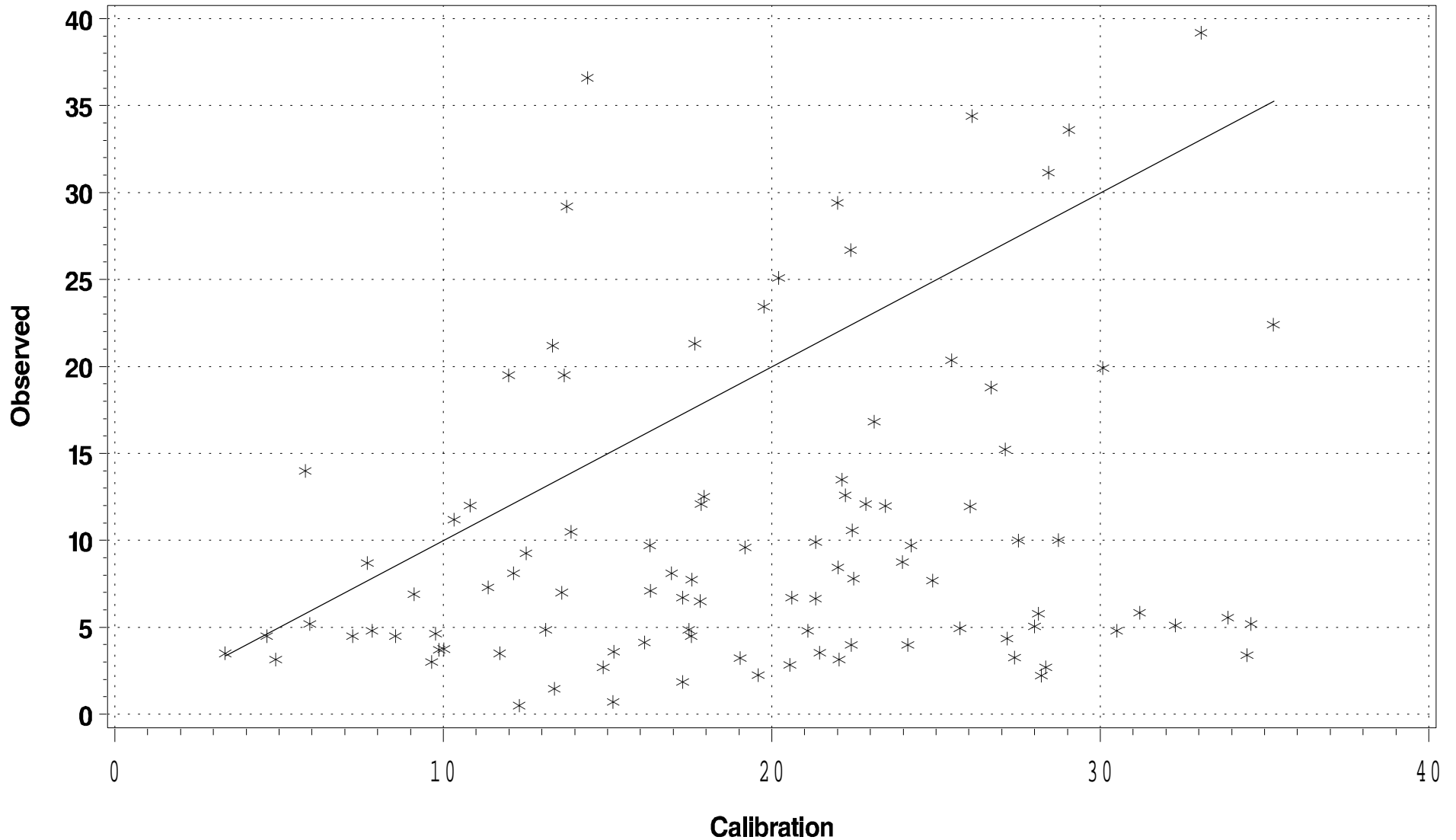
OLIGOHALINE **Light Attenuation**
Segment PAXOH (Patuxent Oligohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 269 pairs of predictions and observed data, the **slope** is 0.2737 and the **intercept** is 2.7026. The **R-Squared** value for this regression is 0.0886.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 269 pairs of predictions and observed data, the **slope** is 0.4234 and the **intercept** is 0.3675. The **R-Squared** value for this regression is 0.1389.

Statistics (units in 1/m)

Mean observed 3.9358   Mean predicted 4.5064
Min. observed 1.8571   Min. predicted 2.5929
Max. observed 13.0000   Max. predicted 18.3700
Std. Dev. Observed 1.6690   Std. Dev. predicted 1.8151
Median observed 3.2500   Median predicted 4.3159
90th Percentile observed 6.5000   90th Percentile predicted 5.9698
10th Percentile observed 2.6000   10th Percentile predicted 3.1380

Differences (predicted – observed)

Mean difference 0.5706 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment PAXOH   Season: April 1 – Oct 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment PAXOH   Season: April 1 – Oct 30
(Scatter Plot)
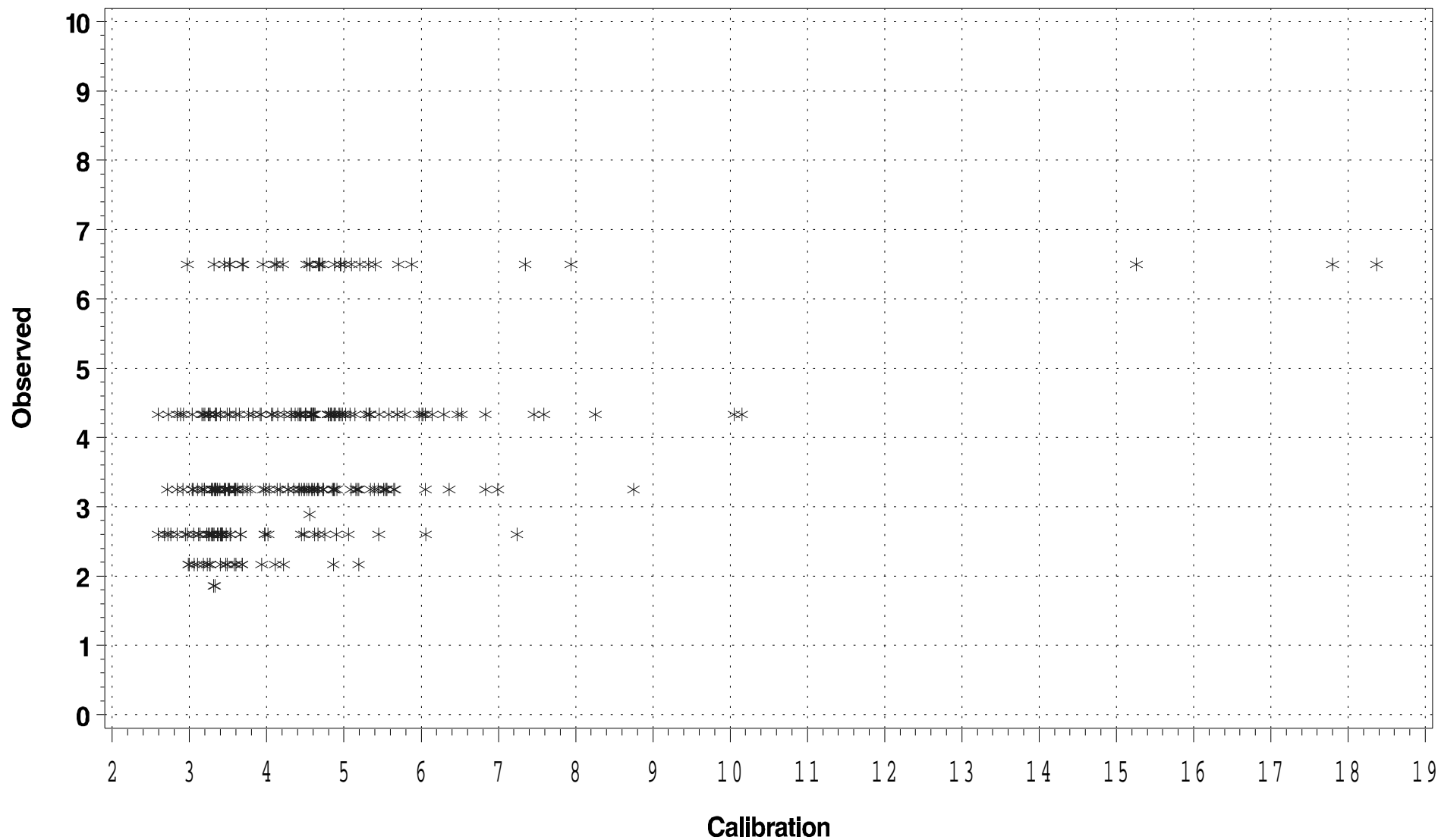
Chesapeake Bay Standard Segment PAXMH

Location Map of
Segment PAXMH within
the Chesapeake Bay Model Grid

RET1.1

LE1.1

LE1.2

LE1.3

LE1.4

Chesapeake Bay Program

0 1 2 4 6 8 Miles

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W E
S
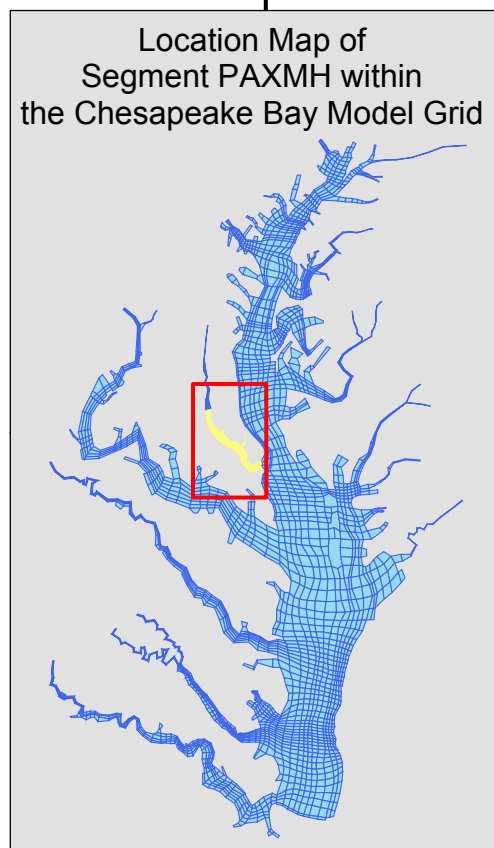
MIGRATORY **Dissolved Oxygen**
Segment PAXMH (Patuxent Mesohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 734 pairs of predictions and observed data, the **slope** is 0.8991 and the **intercept** is 0.0107. The **R-Squared** value for this regression is 0.6417.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 734 pairs of predictions and observed data, the **slope** is 0.9780 and the **intercept** is -0.0231. The **R-Squared** value for this regression is 0.6217.

Statistics (units in mg/l)

Mean observed 9.5820   Mean predicted 10.6459
Min. observed 3.3   Min. predicted 2.981
Max. observed 15.8   Max. predicted 16.43
Std. Dev. Observed 2.5039   Std. Dev. predicted 2.2309
Median observed 9.7000   Median predicted 10.8100
90th Percentile observed 12.6000   90th Percentile predicted 13.3990
10th Percentile observed 6.2000   10th Percentile predicted 7.4799

Differences (predicted – observed)

Mean difference 1.0640 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 734
Number of Predicted Violations 6
Number of Observed Violations 22

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[1] observed is dependent, predicted is independent

**Migratory   Dissolved Oxygen (mg/l)**
Segment PAXMH   Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment PAXMH Season: Feb 15 — June 10
(Scatter Plot)
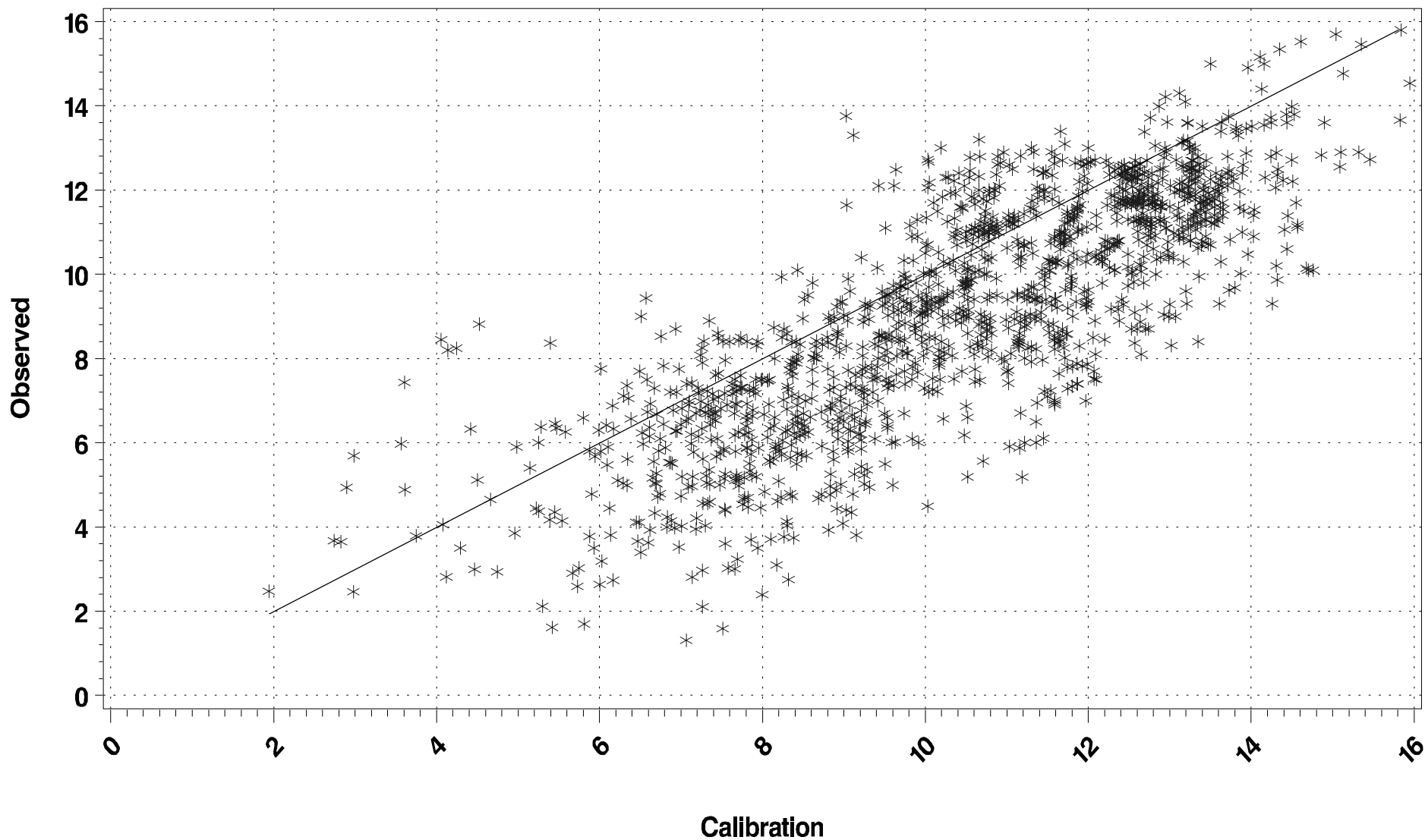
MIGRATORY **Dissolved Oxygen**
Segment PAXMH (Patuxent Mesohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 1352 pairs of predictions and observed data, the **slope** is 0.8593 and the **intercept** is 1.0260. The **R-Squared** value for this regression is 0.4655.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1352 pairs of predictions and observed data, the **slope** is 0.8044 and the **intercept** is 0.1685. The **R-Squared** value for this regression is 0.4130.

Statistics (units in mg/l)

Mean observed 7.4010   Mean predicted 7.4190
Min. observed 1.3   Min. predicted 1.511
Max. observed 15.4   Max. predicted 14.98
Std. Dev. Observed 2.7318   Std. Dev. predicted 2.1691
Median observed 6.8000   Median predicted 7.2765
90th Percentile observed 11.4000   90th Percentile predicted 10.3490
10th Percentile observed 4.4000   10th Percentile predicted 4.7613

Differences (predicted – observed)

Mean difference 0.0180 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1352
Number of Predicted Violations 32
Number of Observed Violations 57

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment PAXMH   Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
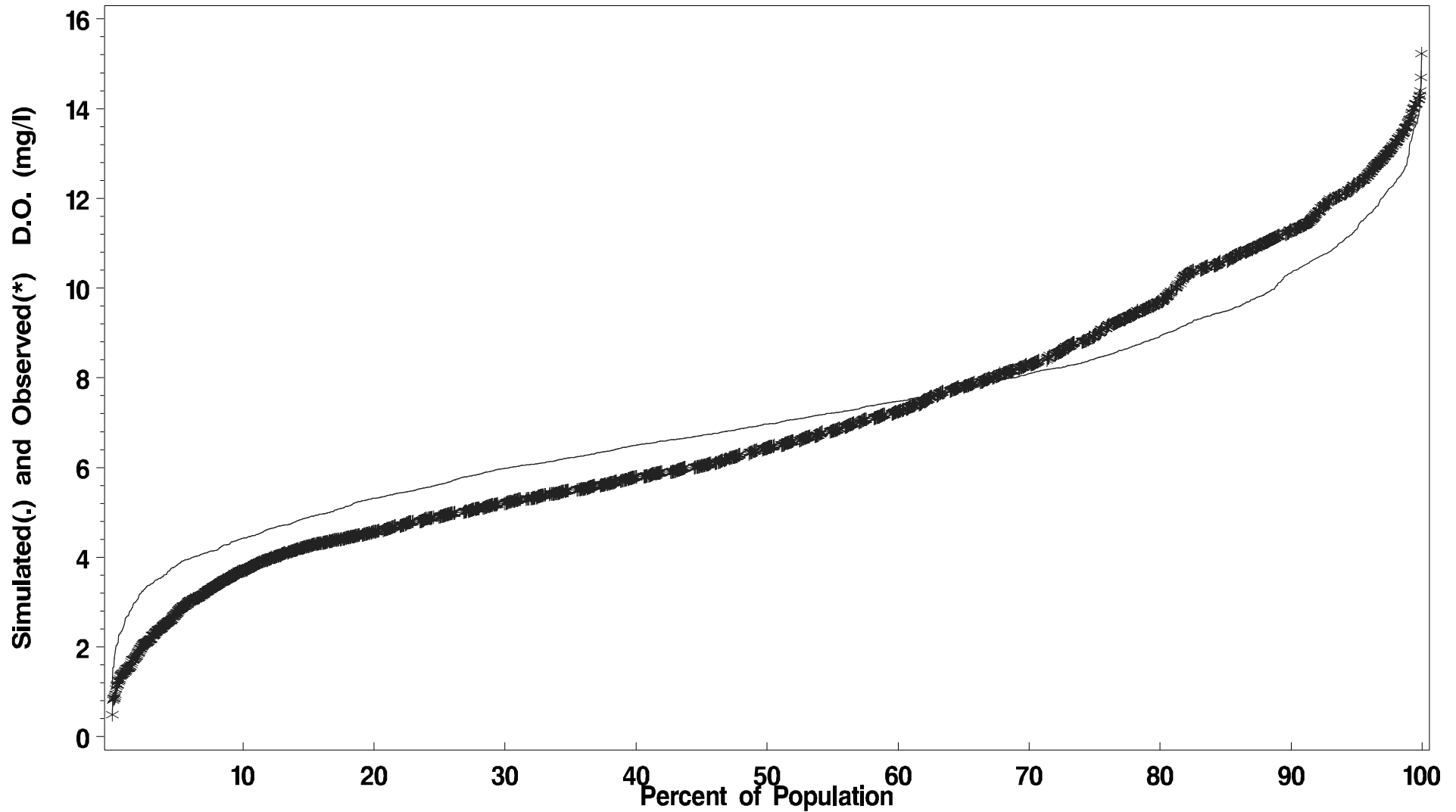
Migratory Dissolved Oxygen (mg/l)
Segment PAXMH Season: June 11 — Feb 14
(Scatter Plot)
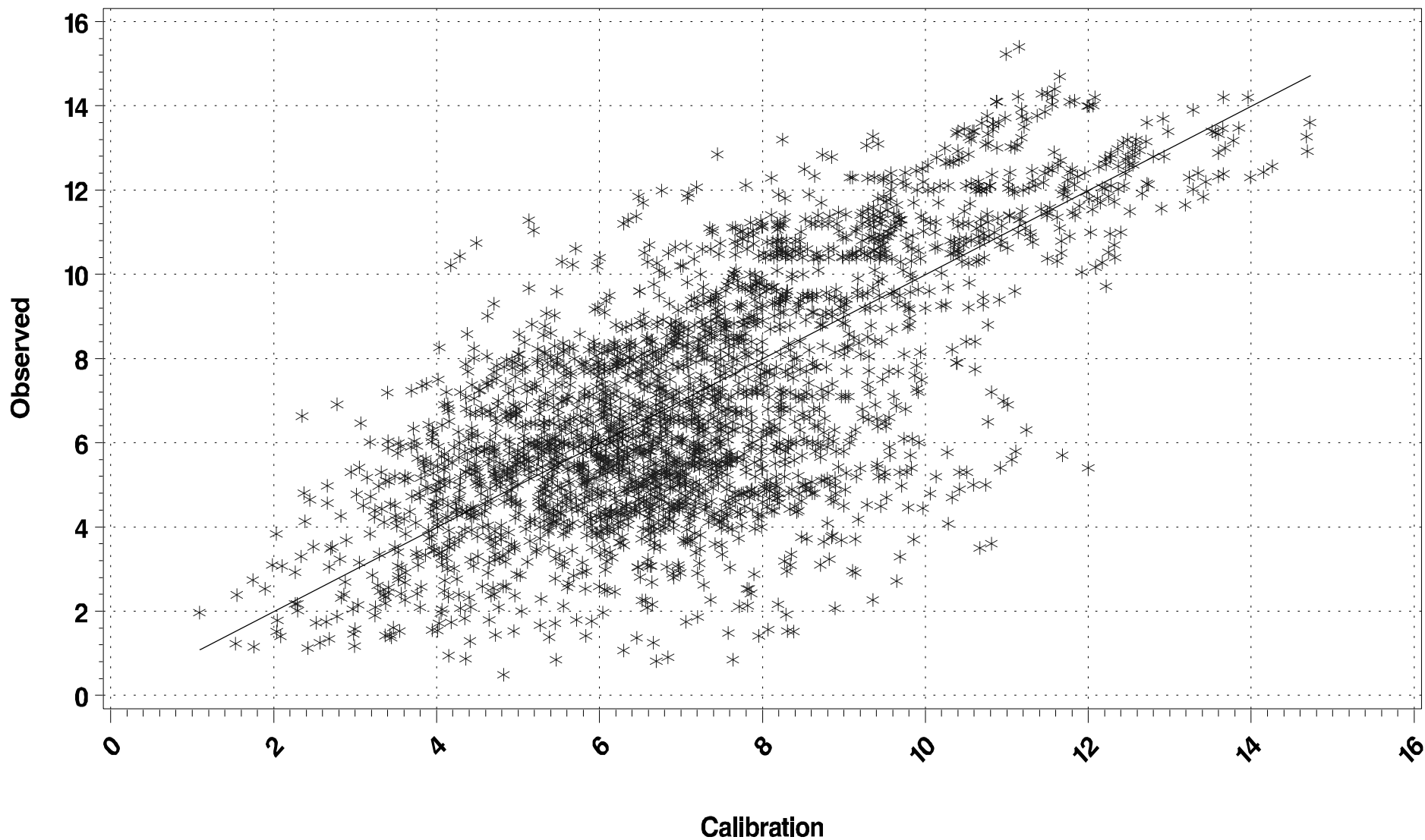
OPEN WATER **Dissolved Oxygen**
Segment PAXMH (Patuxent Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 582 pairs of predictions and observed data, the **slope** is 0.8939 and the **intercept** is 0.5483. The **R-Squared** value for this regression is 0.6543.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 582 pairs of predictions and observed data, the **slope** is 0.9366 and the **intercept** is 0.0395. The **R-Squared** value for this regression is 0.5853.

Statistics (units in mg/l)

Mean observed 8.4802   Mean predicted 8.8730
Min. observed 1.7   Min. predicted 4.567
Max. observed 13.9   Max. predicted 14.93
Std. Dev. Observed 2.6165   Std. Dev. predicted 2.3675
Median observed 8.0000   Median predicted 8.1025
90th Percentile observed 12.2000   90th Percentile predicted 12.6810
10th Percentile observed 5.3000   10th Percentile predicted 6.3133

Differences (predicted – observed)

Mean difference 0.3927 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 582
Number of Predicted Violations 0
Number of Observed Violations 3

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[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
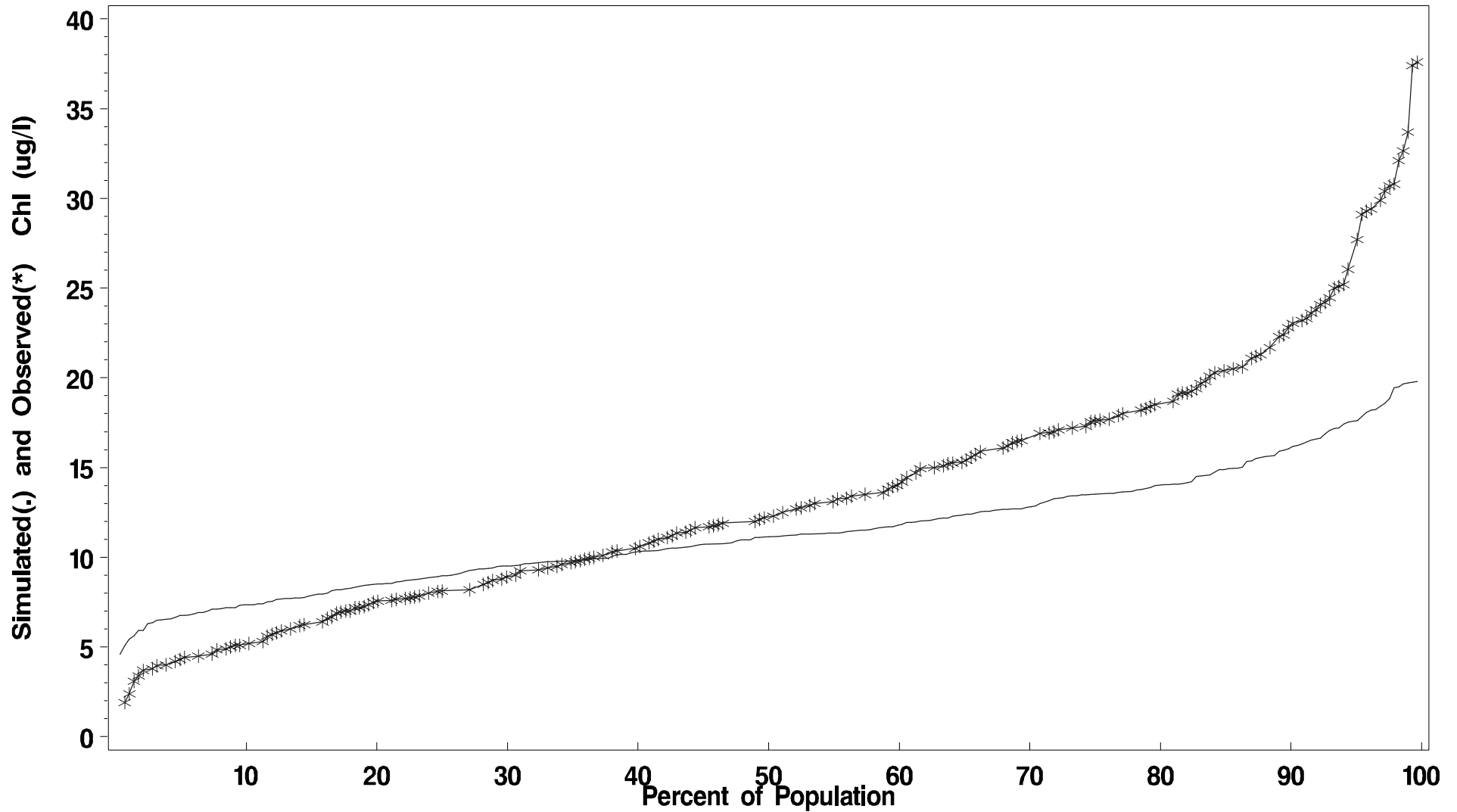# Segment PAXMH Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
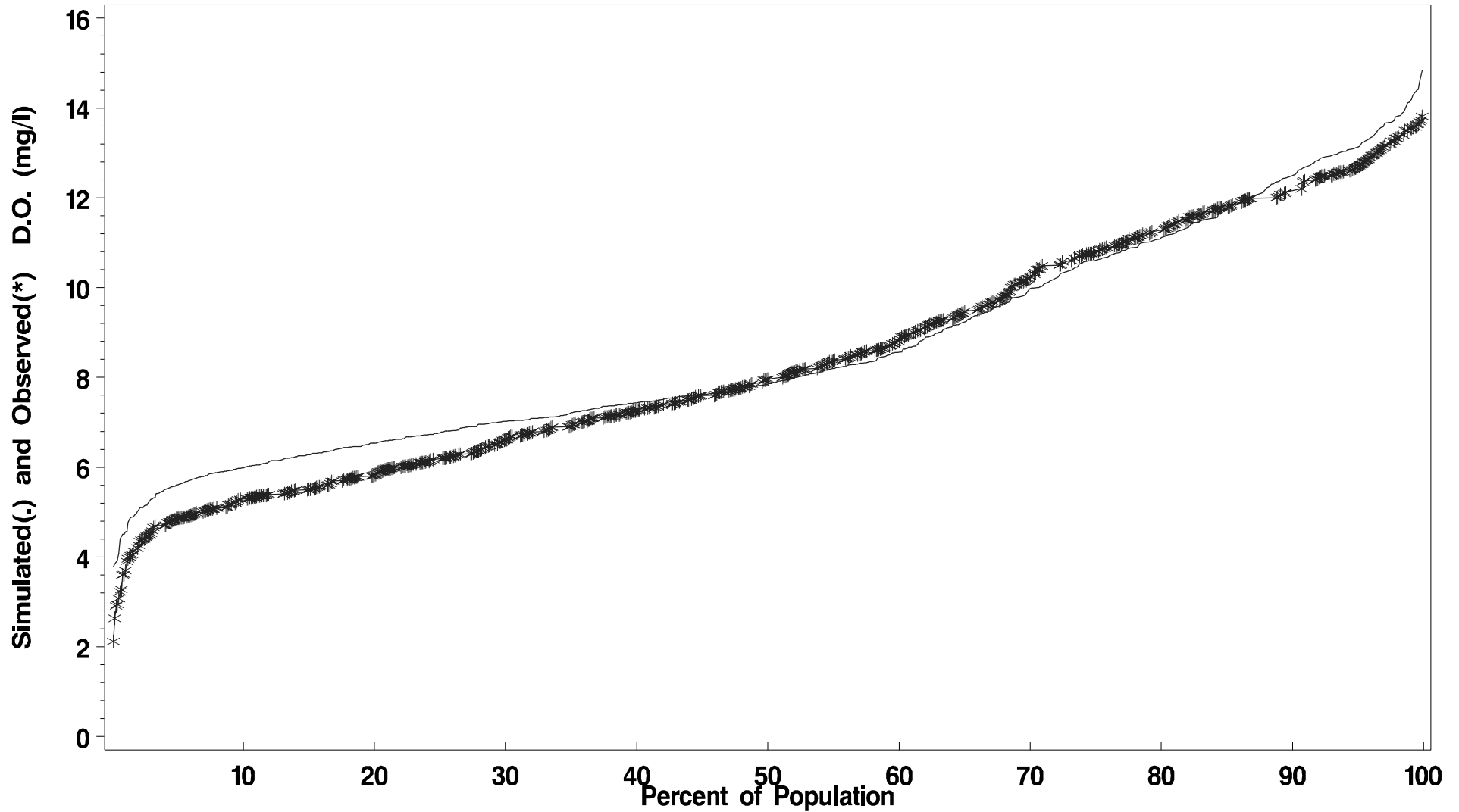
Open Water   Dissolved Oxygen (mg/l)
Segment PAXMH   Season: Jan 1 – Dec 31
(Scatter Plot)
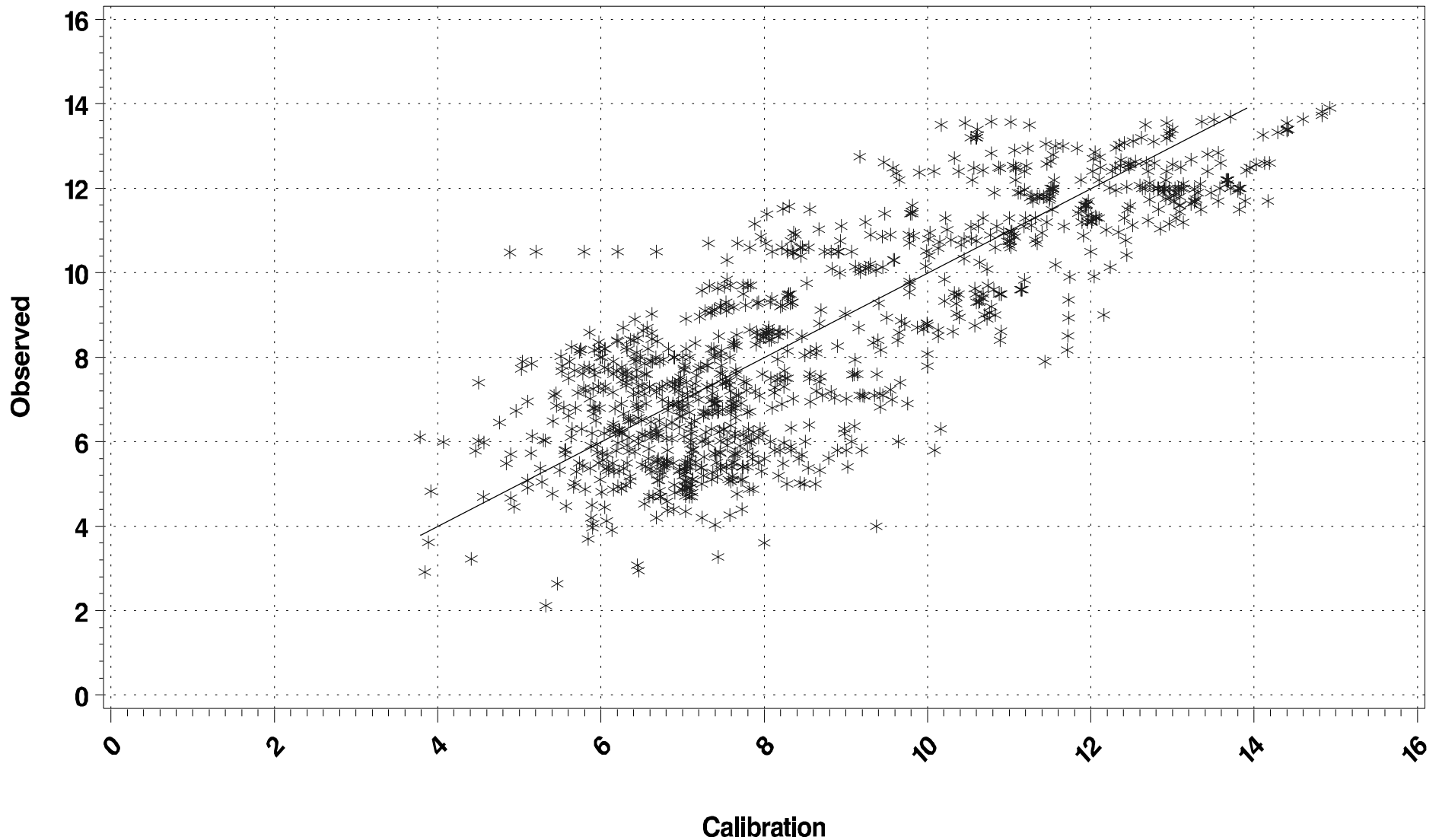
DEEP WATER **Dissolved Oxygen**
Segment PAXMH (Patuxent Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 299 pairs of predictions and observed data, the **slope** is 0.7756 and the **intercept** is 0.6384. The **R-Squared** value for this regression is 0.3618.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 299 pairs of predictions and observed data, the **slope** is 1.0464 and the **intercept** is -0.1007. The **R-Squared** value for this regression is 0.3137.

Statistics (units in mg/l)

Mean observed 4.9156   Mean predicted 5.5147
Min. observed 0.05   Min. predicted 2.478
Max. observed 10.5   Max. predicted 10.05
Std. Dev. Observed 1.9802   Std. Dev. predicted 1.5358
Median observed 5.2000   Median predicted 5.3546
90th Percentile observed 7.1000   90th Percentile predicted 7.3961
10th Percentile observed 2.0000   10th Percentile predicted 3.6210


Differences (predicted – observed)

Mean difference 0.5992 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 299
Number of Predicted Violations 0
Number of Observed Violations 24

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment PAXMH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
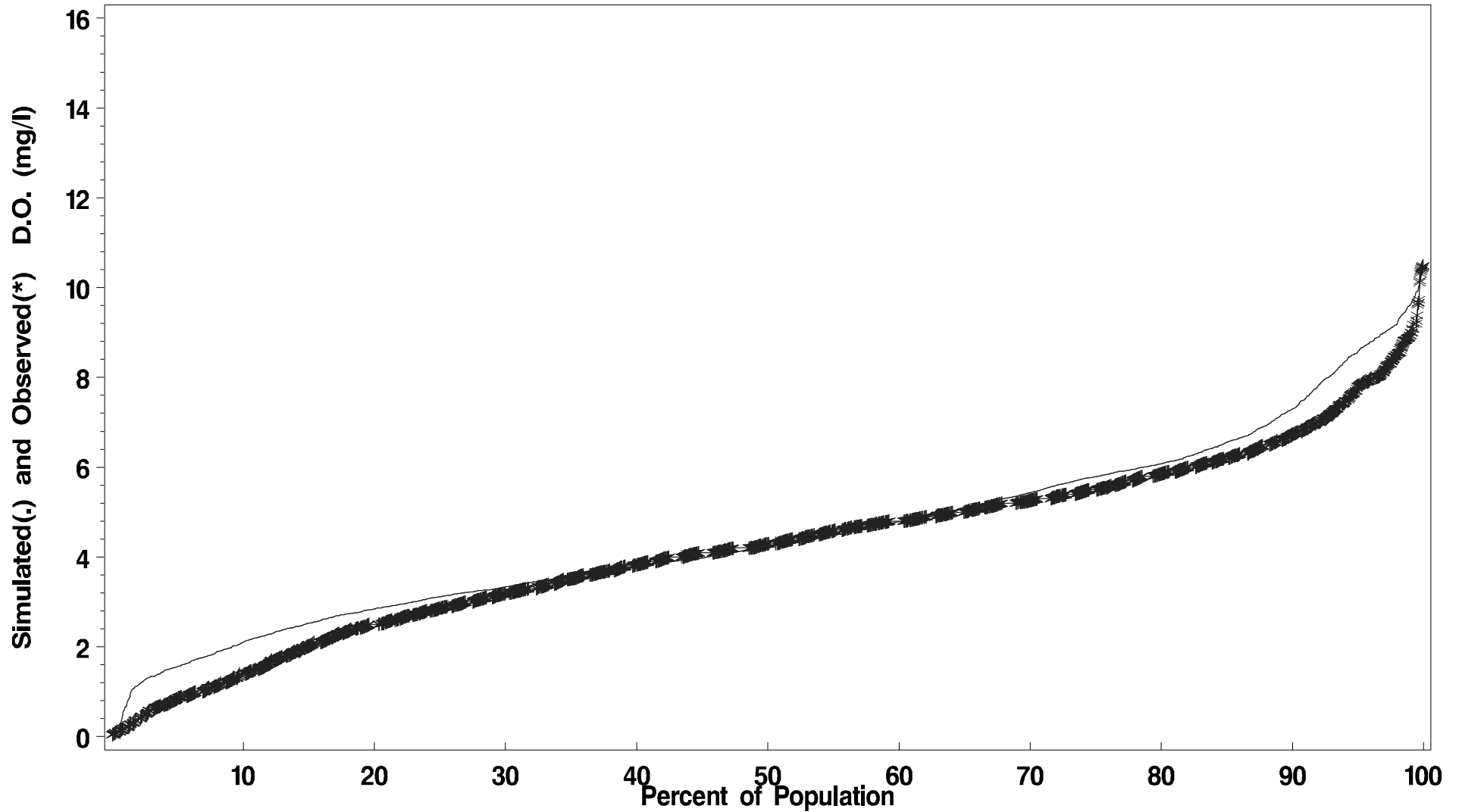
Deep Water Dissolved Oxygen (mg/l)
Segment PAXMH Season: May 1 – Sept 30
(Scatter Plot)
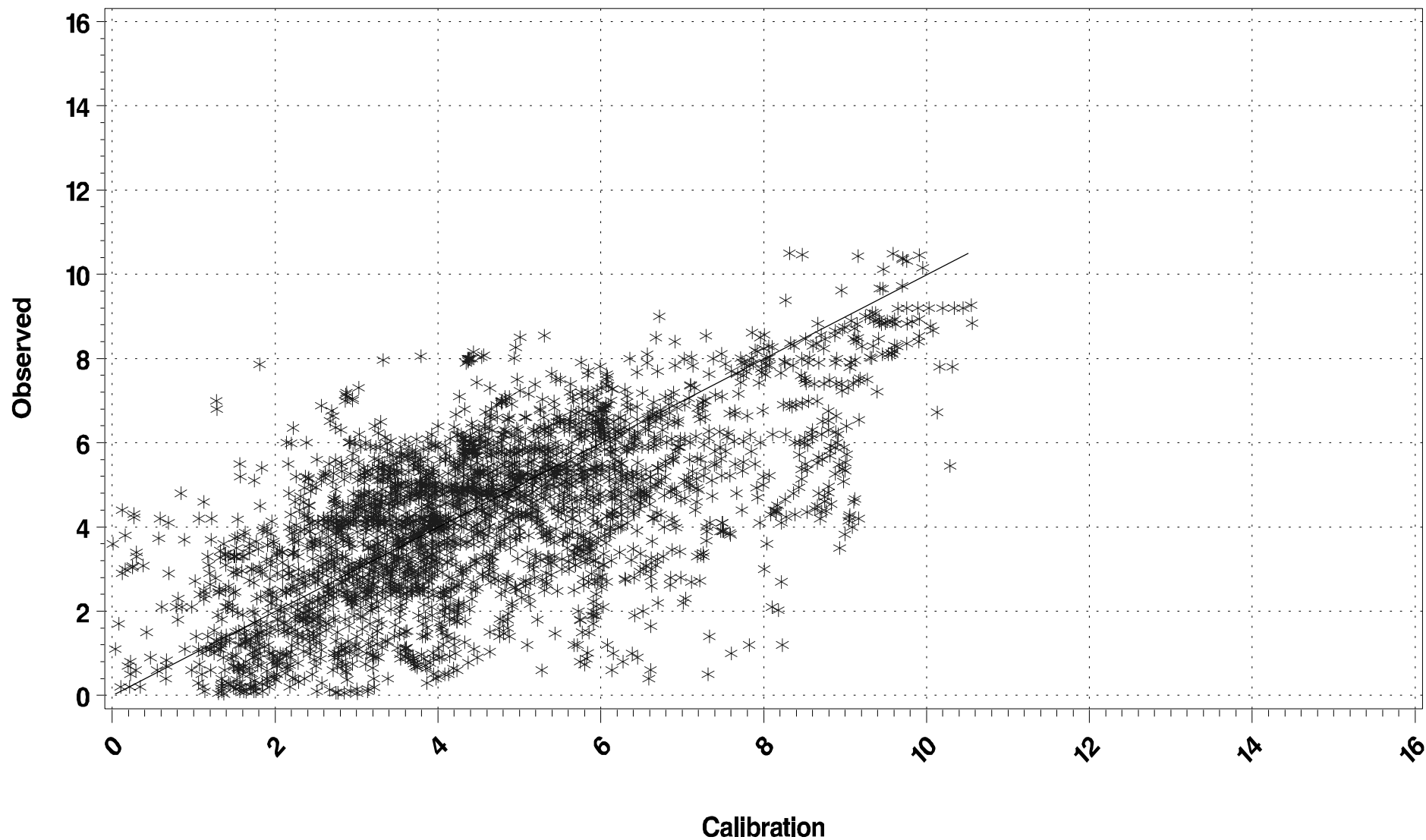
DEEP WATER **Dissolved Oxygen**
Segment PAXMH (Patuxent Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 276 pairs of predictions and observed data, the **slope** is 0.5832 and the **intercept** is 4.8899. The **R-Squared** value for this regression is 0.5935.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 276 pairs of predictions and observed data, the **slope** is 0.5241 and the **intercept** is 0.5238. The **R-Squared** value for this regression is 0.5951.

Statistics (units in mg/l)

Mean observed 10.1861   Mean predicted 9.0807
Min. observed 4.4   Min. predicted 3.638
Max. observed 15   Max. predicted 14.24
Std. Dev. Observed 2.0590   Std. Dev. predicted 2.7197
Median observed 10.4000   Median predicted 9.5268
90th Percentile observed 12.7000   90th Percentile predicted 12.6200
10th Percentile observed 7.6000   10th Percentile predicted 5.2743

Differences (predicted – observed)

Mean difference -1.1054 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 276
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Deep Water   Dissolved Oxygen (mg/l)
Segment PAXMH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Water   Dissolved Oxygen (mg/l)
Segment PAXMH   Season: Oct 1 – April 30

(Scatter Plot)

<div align="center">
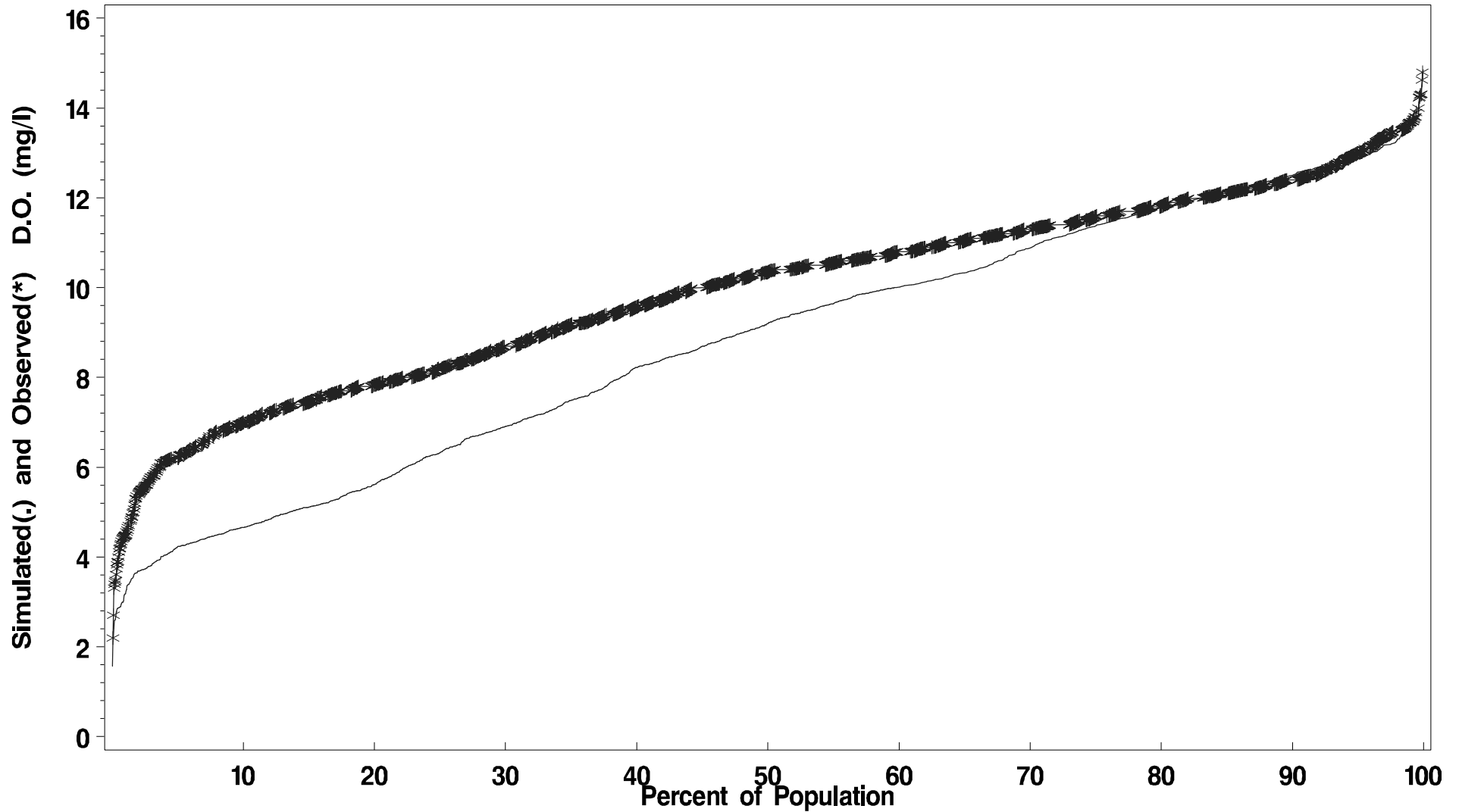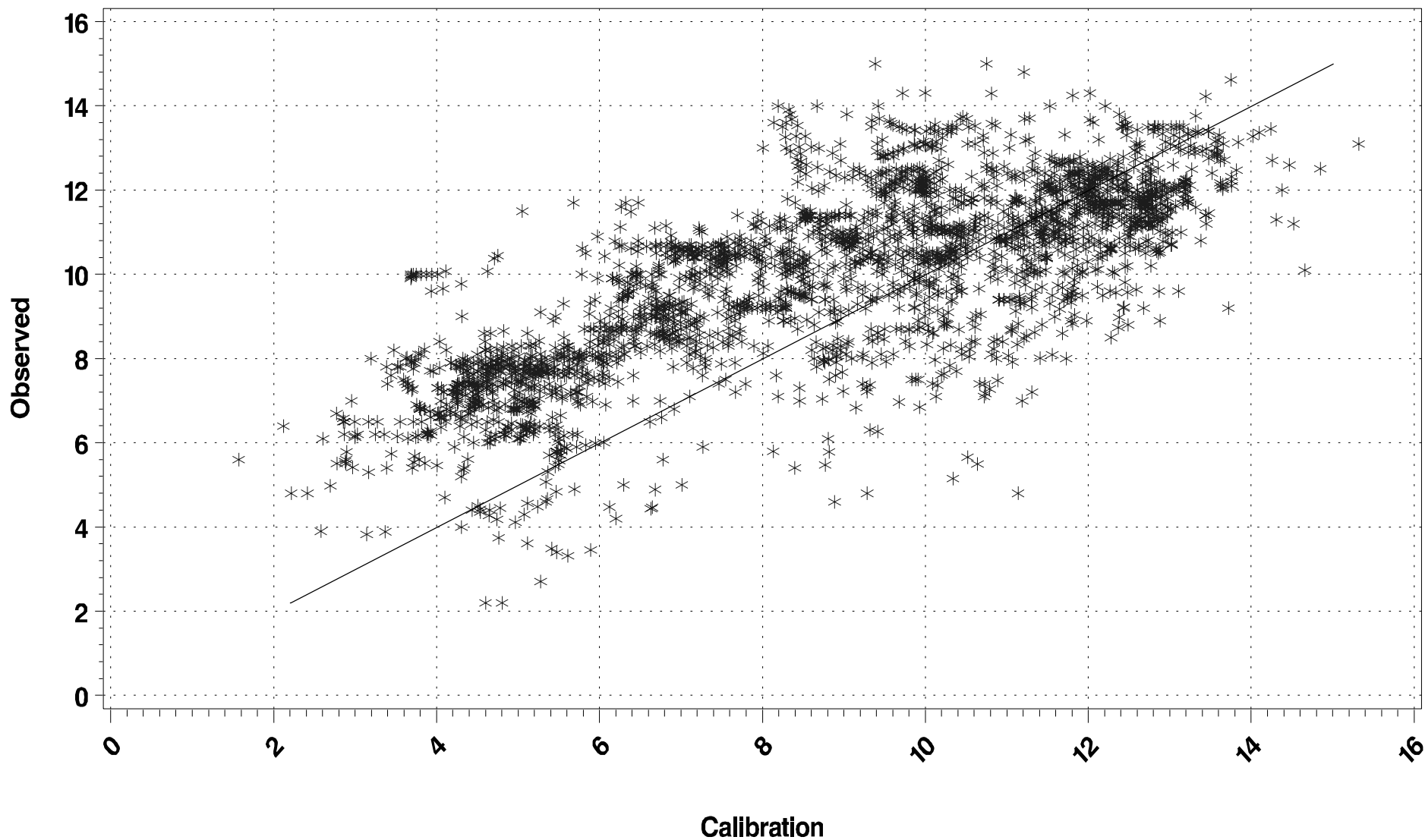
MESOHALINE **Chlorophyll**
Segment PAXMH (Patuxent Mesohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 284 pairs of predictions and observed data, the **slope** is 1.0603 and the **intercept** is 1.3381. The **R-Squared** value for this regression is 0.2226.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 284 pairs of predictions and observed data, the **slope** is 1.0080 and the **intercept** is 0.0180. The **R-Squared** value for this regression is 0.2636.

Statistics (units in μg/l)

Mean observed 13.5593   Mean predicted 11.5262
Min. observed 1.9000   Min. predicted 4.5906
Max. observed 41.6000   Max. predicted 21.3970
Std. Dev. Observed 7.1406   Std. Dev. predicted 3.1771
Median observed 12.3000   Median predicted 11.3265
95th Percentile observed 27.7000   95th Percentile predicted 17.4410
10th Percentile observed 5.2000   10th Percentile predicted 7.3466

Differences (predicted – observed)

Mean difference -2.0332 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PAXMH   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment PAXMH   Season: July 1 — Sept 30
(Scatter Plot)
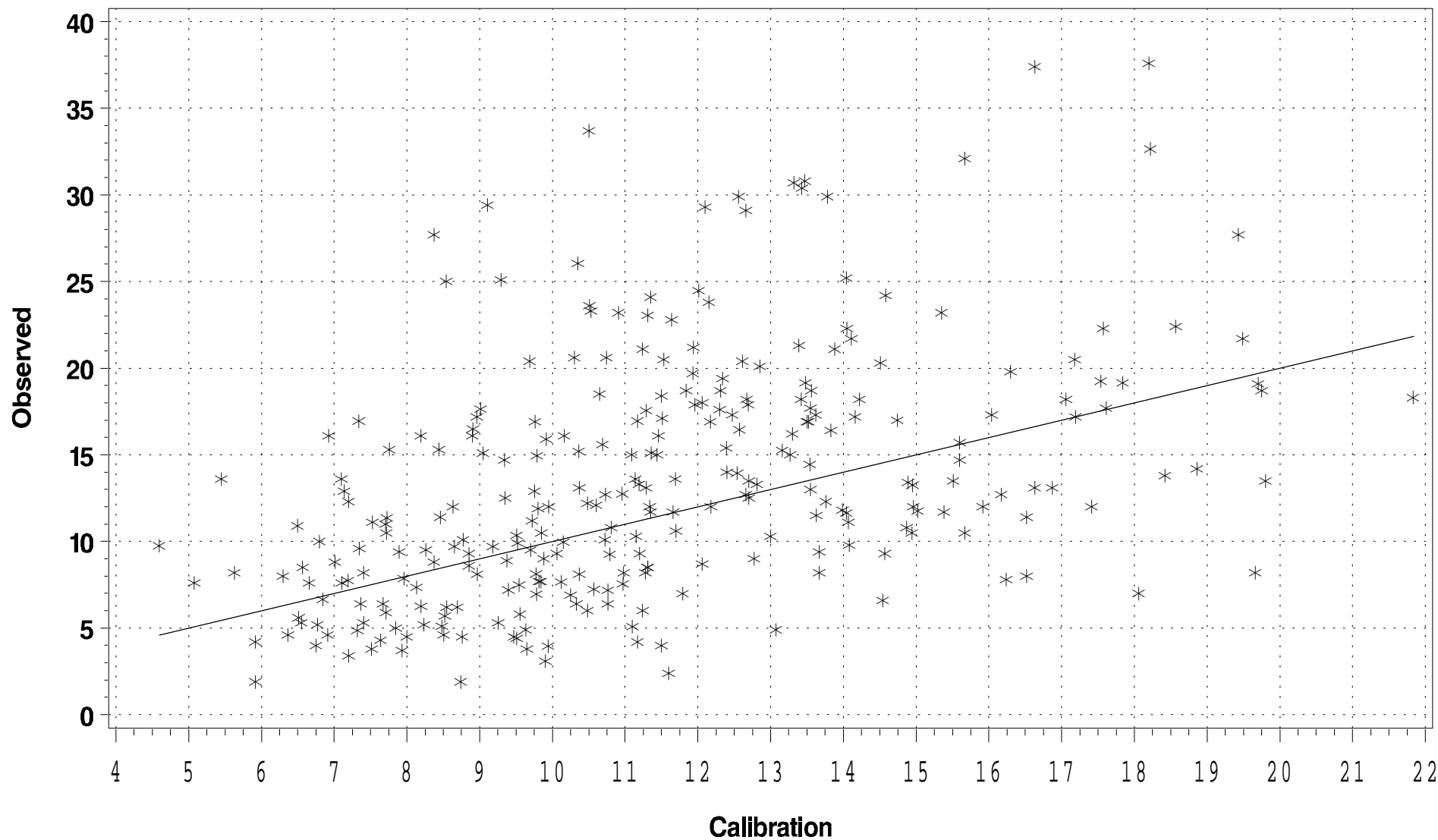
Regression of Calibration vs. Observations[1]
Using the 243 pairs of predictions and observed data, the **slope** is 0.1199 and the **intercept** is 9.4309. The **R-Squared** value for this regression is 0.0089.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 243 pairs of predictions and observed data, the **slope** is 0.1569 and the **intercept** is 0.7994. The **R-Squared** value for this regression is 0.0049.

Statistics (units in µg/l)

Mean observed 12.0648   Mean predicted 21.9668
Min. observed 0.4000   Min. predicted 7.7914
Max. observed 57.6000   Max. predicted 46.8610
Std. Dev. Observed 9.5417   Std. Dev. predicted 7.4885
Median observed 9.4000   Median predicted 20.8100
95th Percentile observed 31.5000   95th Percentile predicted 38.5690
10th Percentile observed 3.1000   10th Percentile predicted 13.5770

Differences (predicted – observed)

Mean difference 9.9020 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PAXMH   Season: March 1 − May 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Y-axis: Simulated(.) and Observed(*) Chl (ug/l)

X-axis: Percent of Population

Chlorophyll Concentration (ug/l)
Segment PAXMH Season: March 1 – May 30
(Scatter Plot)
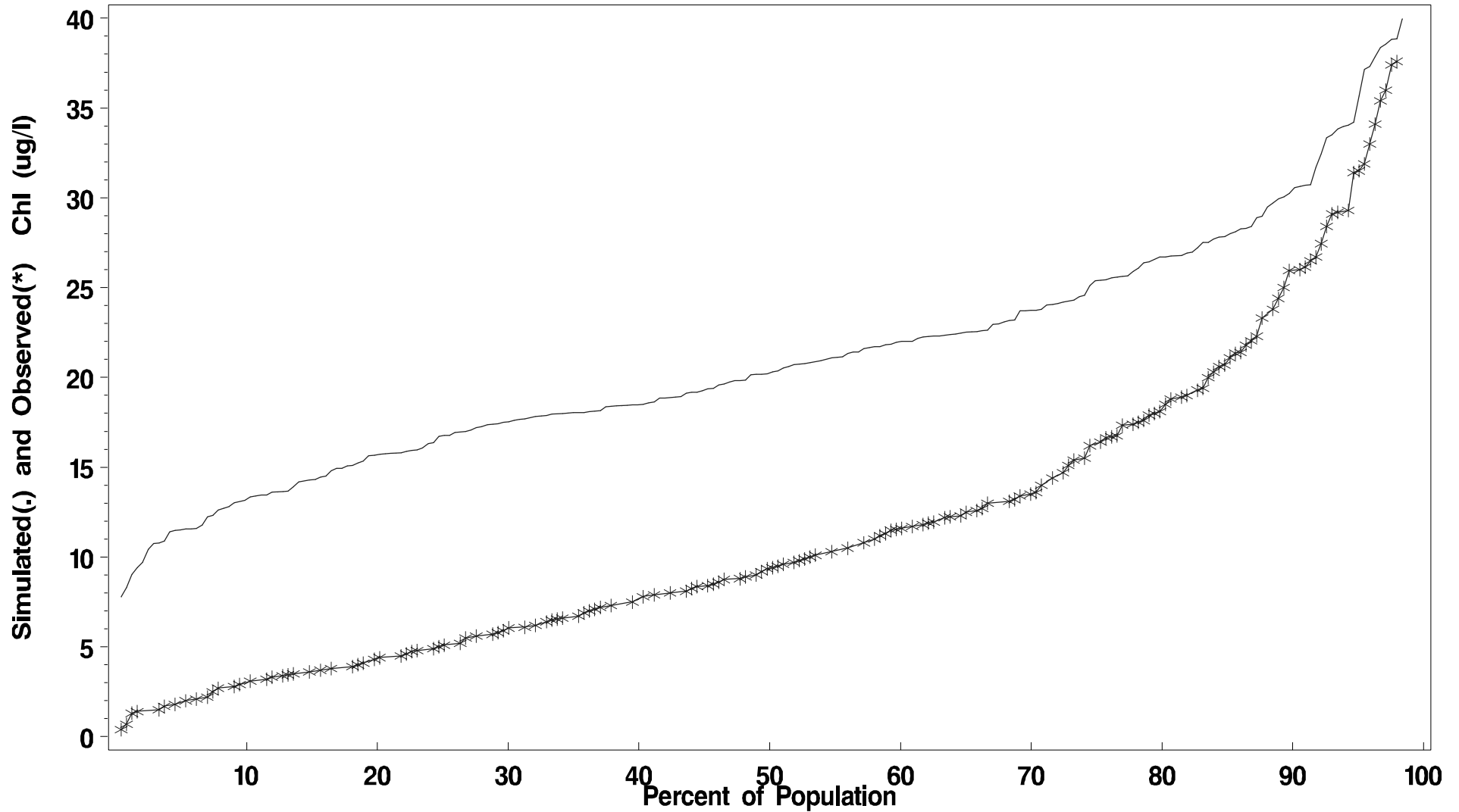
Observed
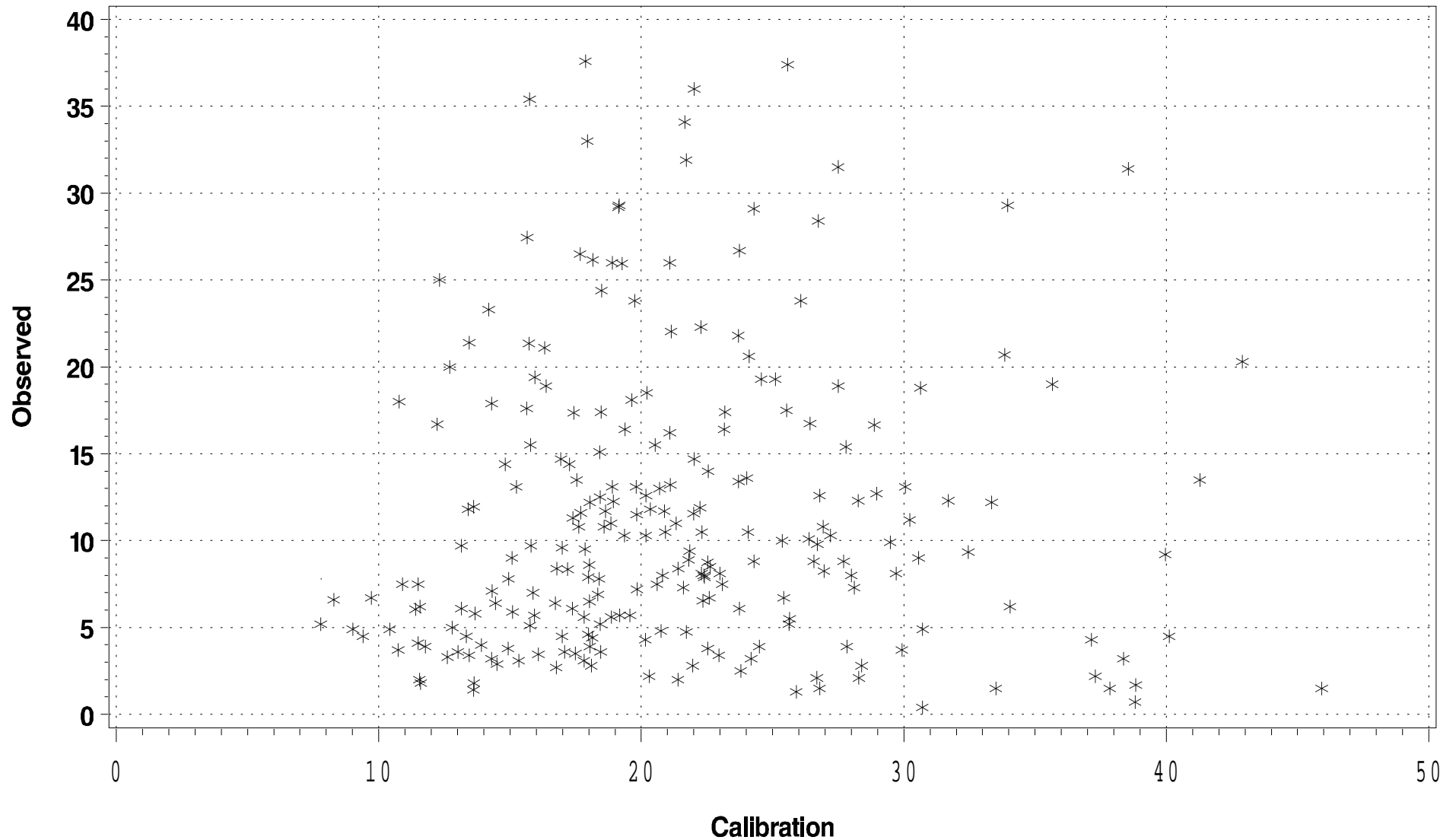
Calibration

MESOHALINE **Light Attenuation**
Segment PAXMH (Patuxent Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 686 pairs of predictions and observed data, the **slope** is 0.8950 and the **intercept** is 0.0184. The **R-Squared** value for this regression is 0.1318.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 686 pairs of predictions and observed data, the **slope** is 0.9483 and the **intercept** is -0.0189. The **R-Squared** value for this regression is 0.3511.

Statistics (units in 1/m)

Mean observed 1.4081   Mean predicted 1.5527
Min. observed 0.5000   Min. predicted 0.6690
Max. observed 26.0000   Max. predicted 4.9003
Std. Dev. Observed 1.1758   Std. Dev. predicted 0.4770
Median observed 1.1818   Median predicted 1.4965
90th Percentile observed 2.1667   90th Percentile predicted 2.0646
10th Percentile observed 0.7222   10th Percentile predicted 1.0229


Differences (predicted – observed)

Mean difference 0.1447 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment PAXMH   Season: April 1 – Oct 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment PAXMH   Season: April 1 – Oct 30
(Scatter Plot)
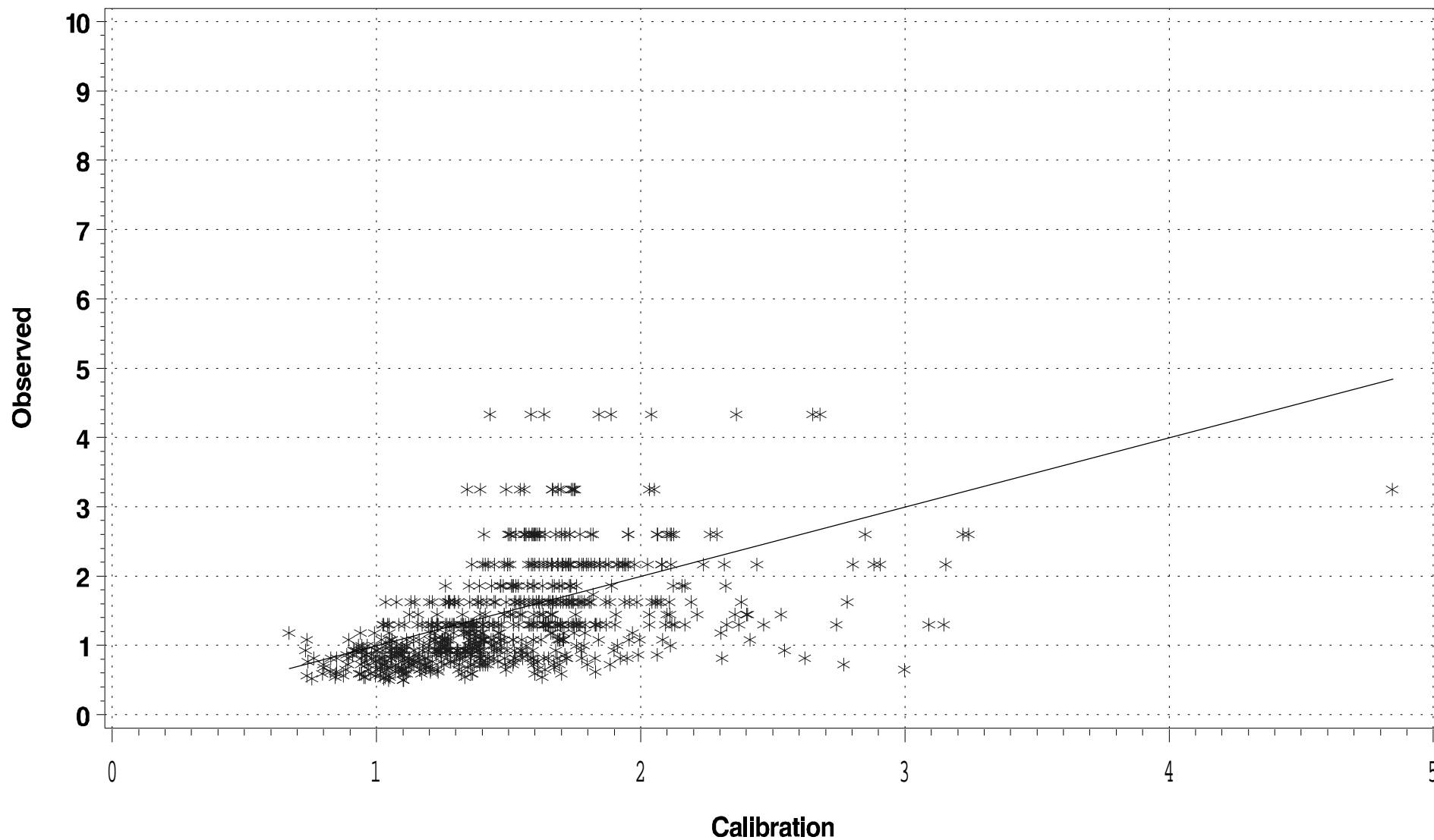
Chesapeake Bay Standard Segment POTTF
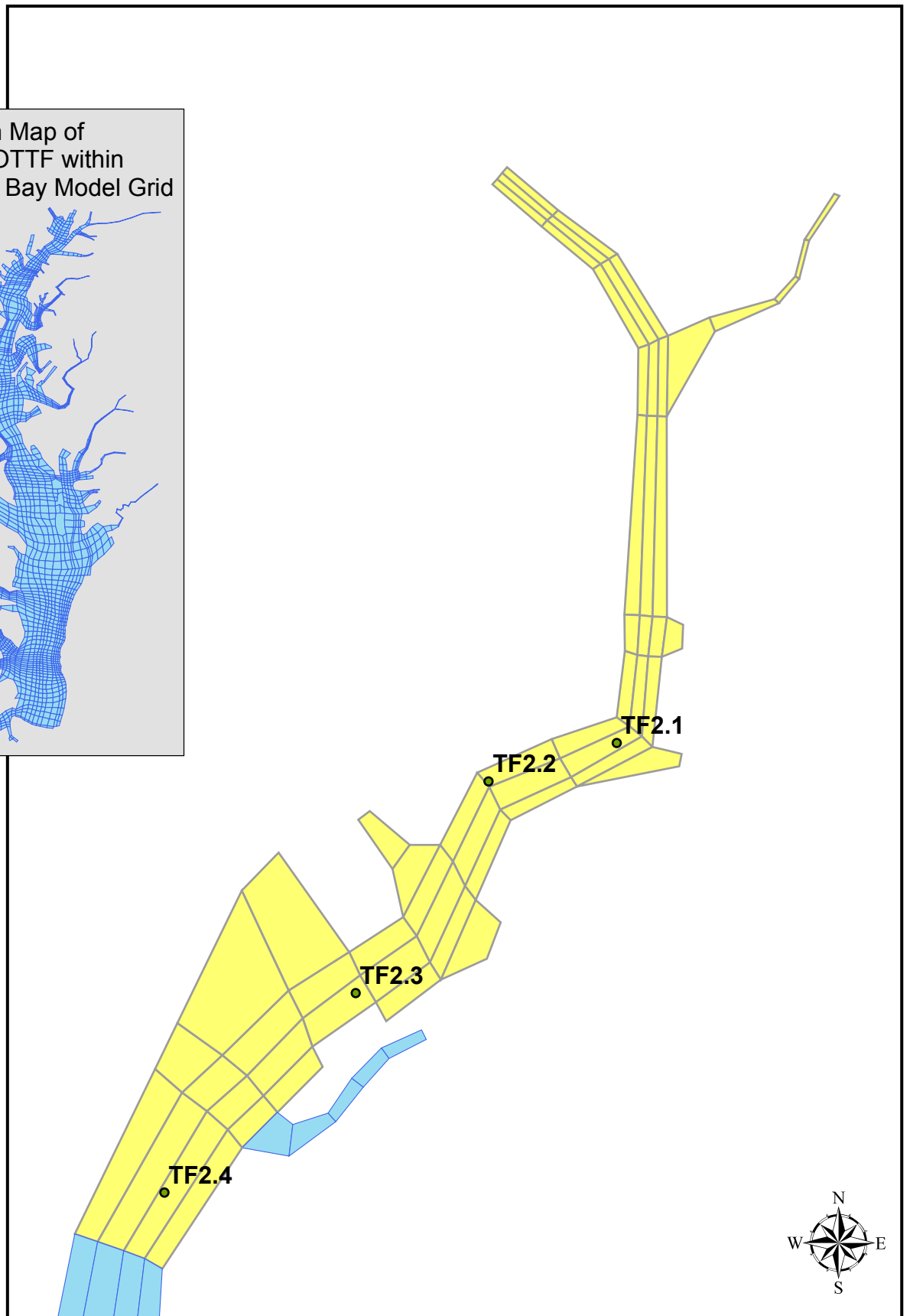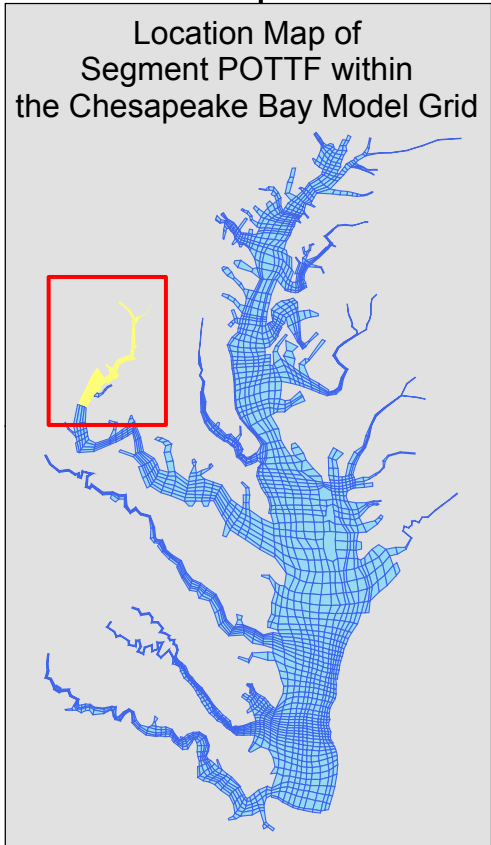
Location Map of
Segment POTTF within
the Chesapeake Bay Model Grid

TF2.1

TF2.2

TF2.3

TF2.4

Chesapeake Bay Program

N
W   E
S

0   1.5   3   6   9   12
                                              Miles

Regression of Calibration vs. Observations[1]

Using the 544 pairs of predictions and observed data, the **slope** is 0.7618 and the **intercept** is 1.6553. The **R-Squared** value for this regression is 0.3358.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 544 pairs of predictions and observed data, the **slope** is 0.7862 and the **intercept** is 0.1894. The **R-Squared** value for this regression is 0.3004.

Statistics (units in mg/l)

Mean observed 9.6511   Mean predicted 10.4953
Min. observed 4.4   Min. predicted 6.328
Max. observed 13.6   Max. predicted 13.79
Std. Dev. Observed 1.8536   Std. Dev. predicted 1.4098
Median observed 9.8000   Median predicted 10.5570
90th Percentile observed 12.3000   90th Percentile predicted 12.3470
10th Percentile observed 7.1667   10th Percentile predicted 8.5410

Differences (predicted – observed)

Mean difference 0.8442 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 544
Number of Predicted Violations 0
Number of Observed Violations 2

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment POTTF Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
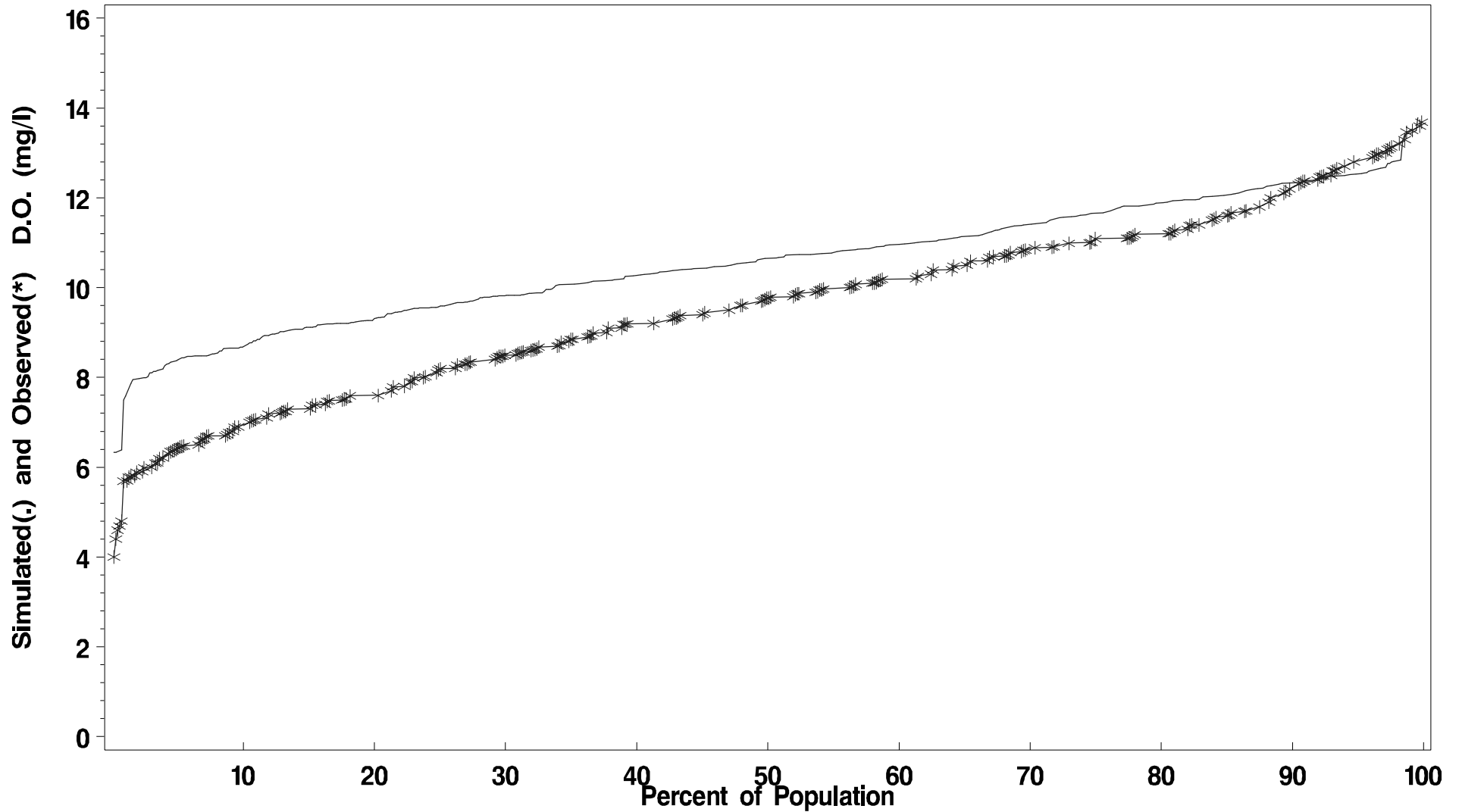
Migratory   Dissolved Oxygen (mg/l)
Segment POTTF   Season: Feb 15 — June 10
(Scatter Plot)
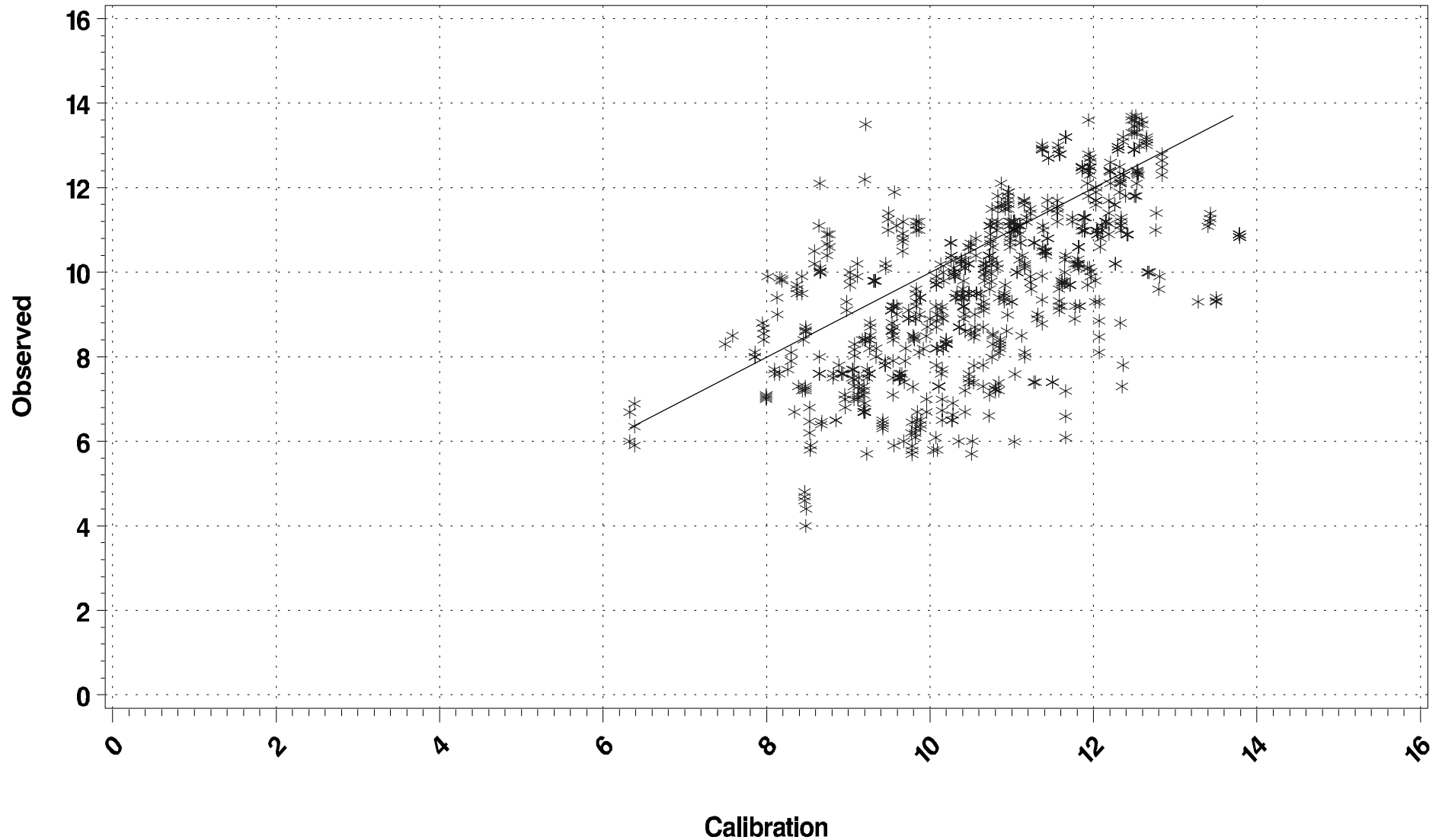
MIGRATORY **Dissolved Oxygen**
Segment POTTF (Potomac Tidal Fresh)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 1170 pairs of predictions and observed data, the **slope** is 0.7946 and the **intercept** is 0.6744. The **R-Squared** value for this regression is 0.4832.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1170 pairs of predictions and observed data, the **slope** is 0.7697 and the **intercept** is 0.1722. The **R-Squared** value for this regression is 0.3926.

Statistics (units in mg/l)

Mean observed 8.1964   Mean predicted 9.4669
Min. observed 1.9   Min. predicted 4.434
Max. observed 15.1   Max. predicted 16.76
Std. Dev. Observed 2.2889   Std. Dev. predicted 2.0026
Median observed 7.6000   Median predicted 9.1746
90th Percentile observed 11.9000   90th Percentile predicted 12.5540
10th Percentile observed 5.7000   10th Percentile predicted 7.1219

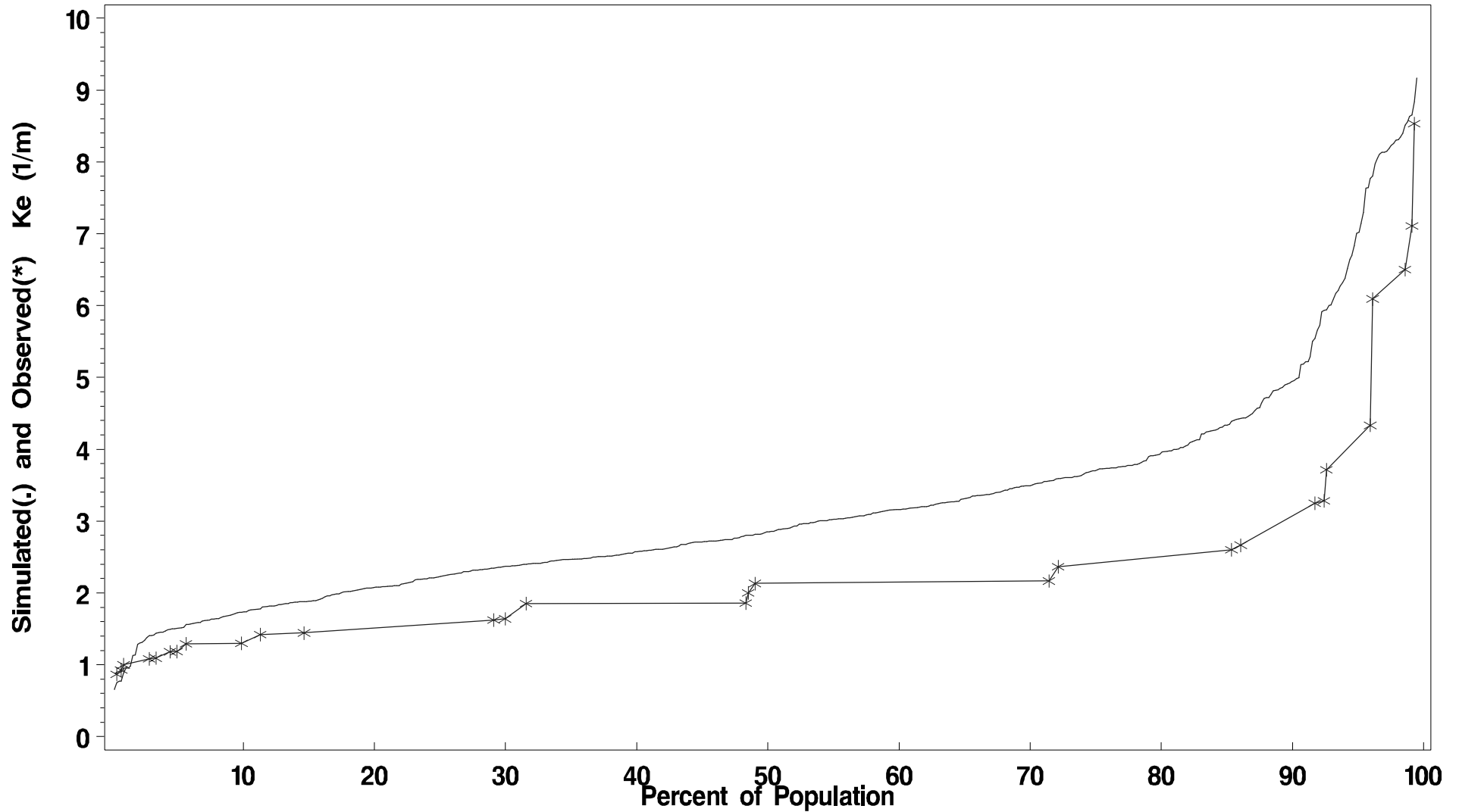**Differences** (predicted – observed)

Mean difference 1.2705 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1170
Number of Predicted Violations 0
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment POTTF Season: June 11 − Feb 14
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
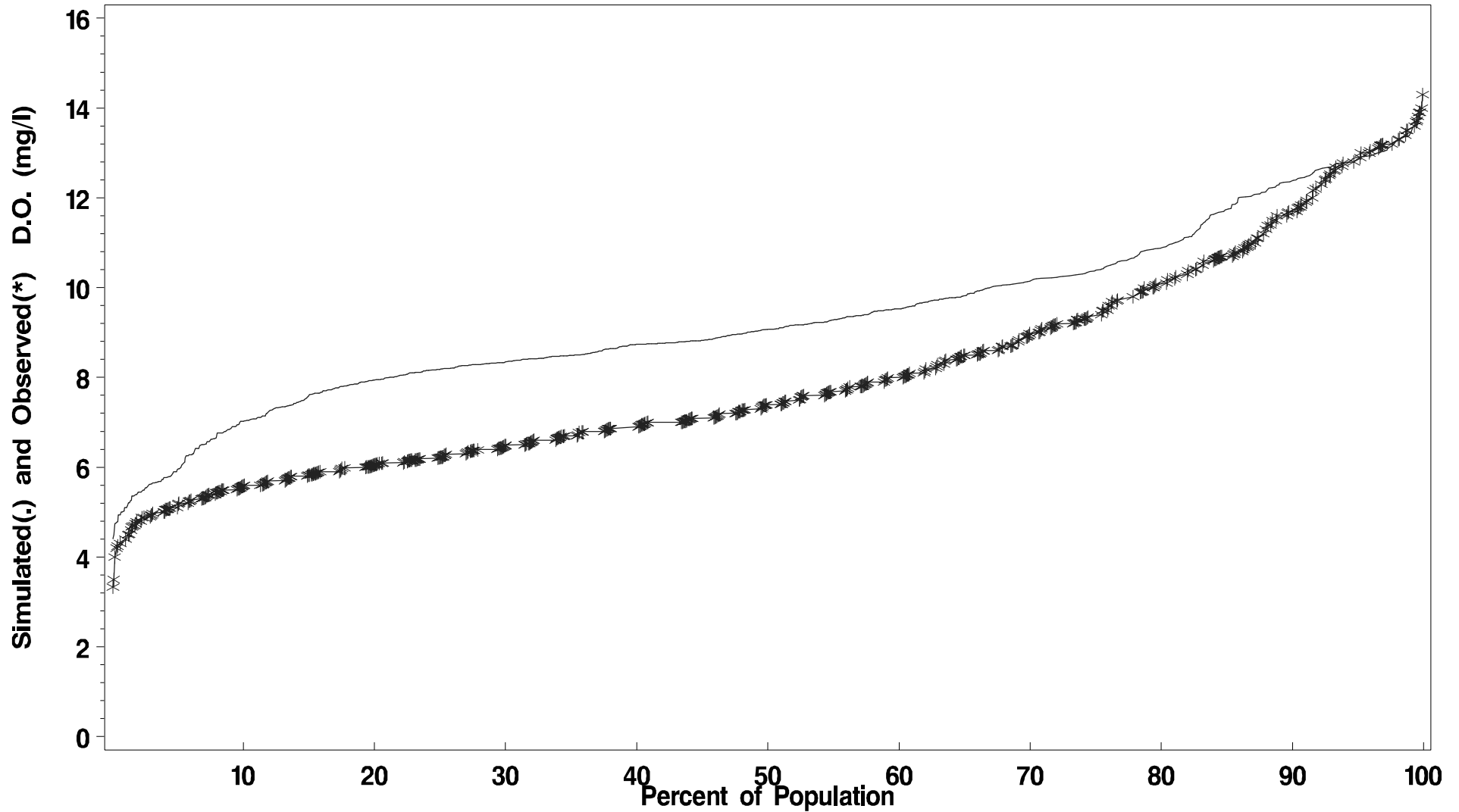
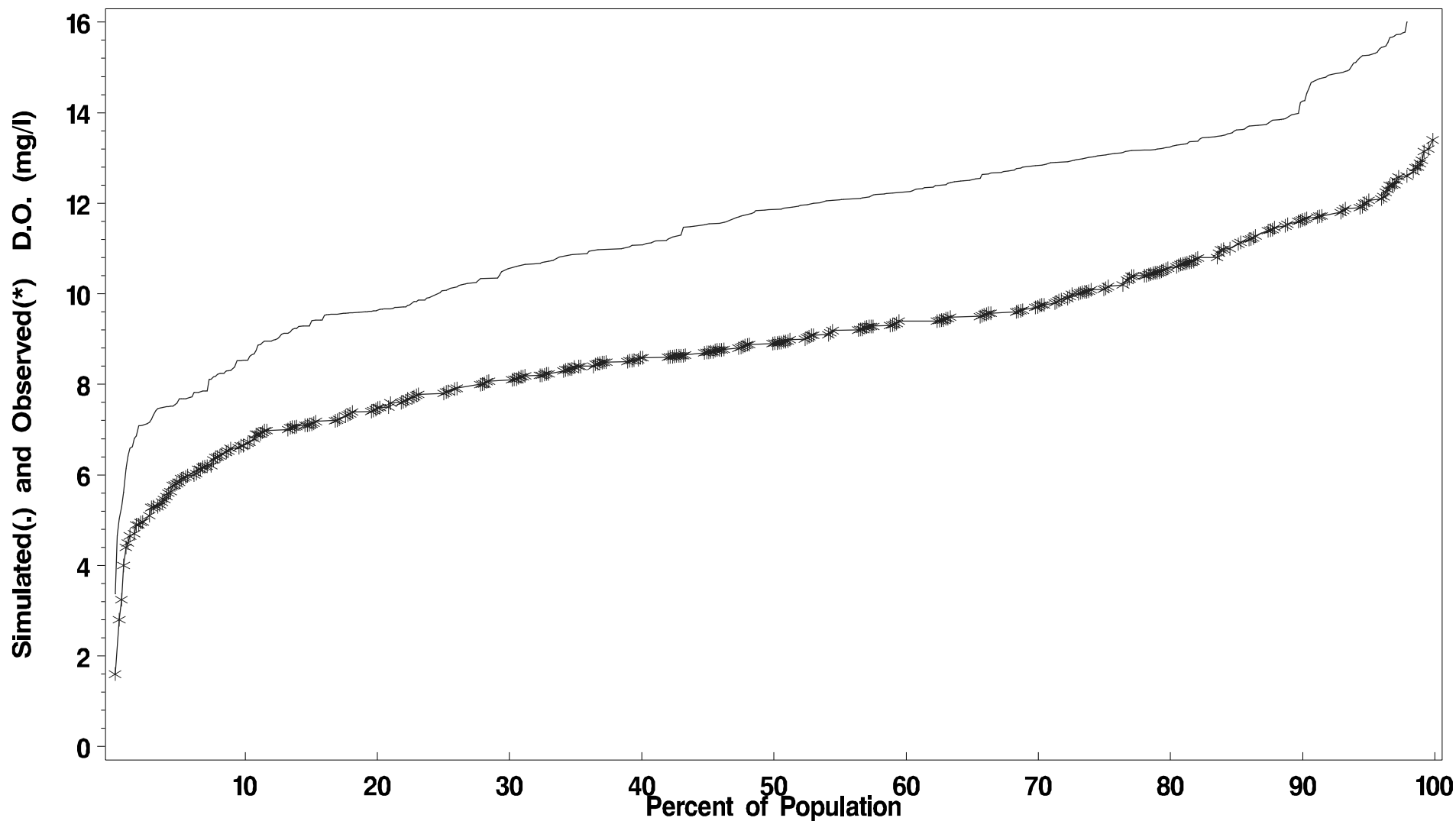**Migratory Dissolved Oxygen (mg/l)**
Segment POTTF   Season: June 11 – Feb 14
(Scatter Plot)
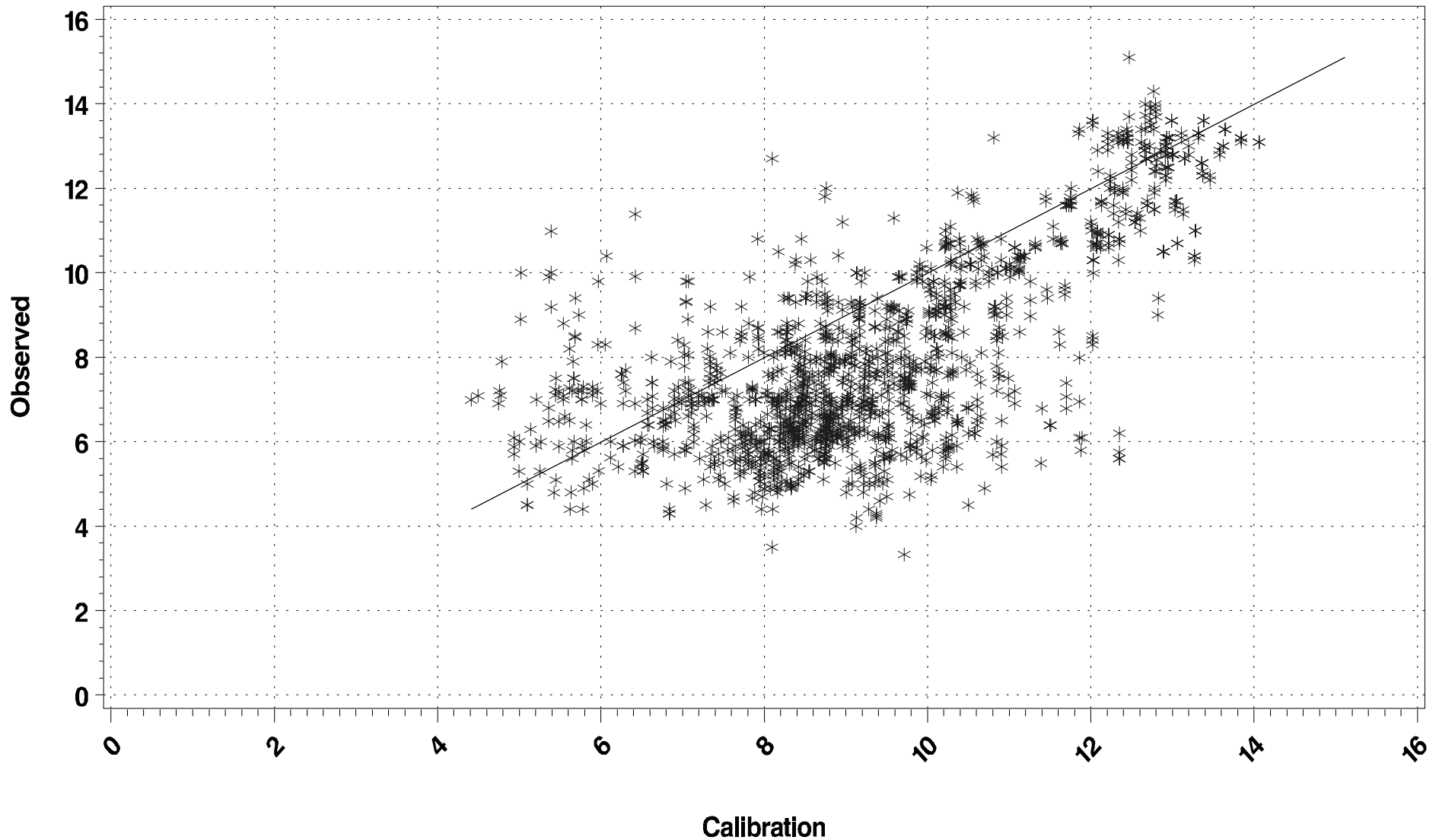
Regression of Calibration vs. Observations[1]
Using the 338 pairs of predictions and observed data, the **slope** is 0.1773 and the **intercept** is 13.8865. The **R-Squared** value for this regression is 0.0187.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 338 pairs of predictions and observed data, the **slope** is 0.3311 and the **intercept** is 0.7204. The **R-Squared** value for this regression is 0.0489.

Statistics (units in μg/l)

Mean observed 17.9969	Mean predicted 23.1834
Min. observed 2.3316	Min. predicted 3.3451
Max. observed 105.9100	Max. predicted 91.5260
Std. Dev. Observed 15.4149	Std. Dev. predicted 11.8753
Median observed 14.7392	Median predicted 20.6880
95th Percentile observed 53.0796	95th Percentile predicted 42.9280
10th Percentile observed 4.2557	10th Percentile predicted 10.8920

Differences (predicted – observed)

Mean difference 5.1865 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment POTTF   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
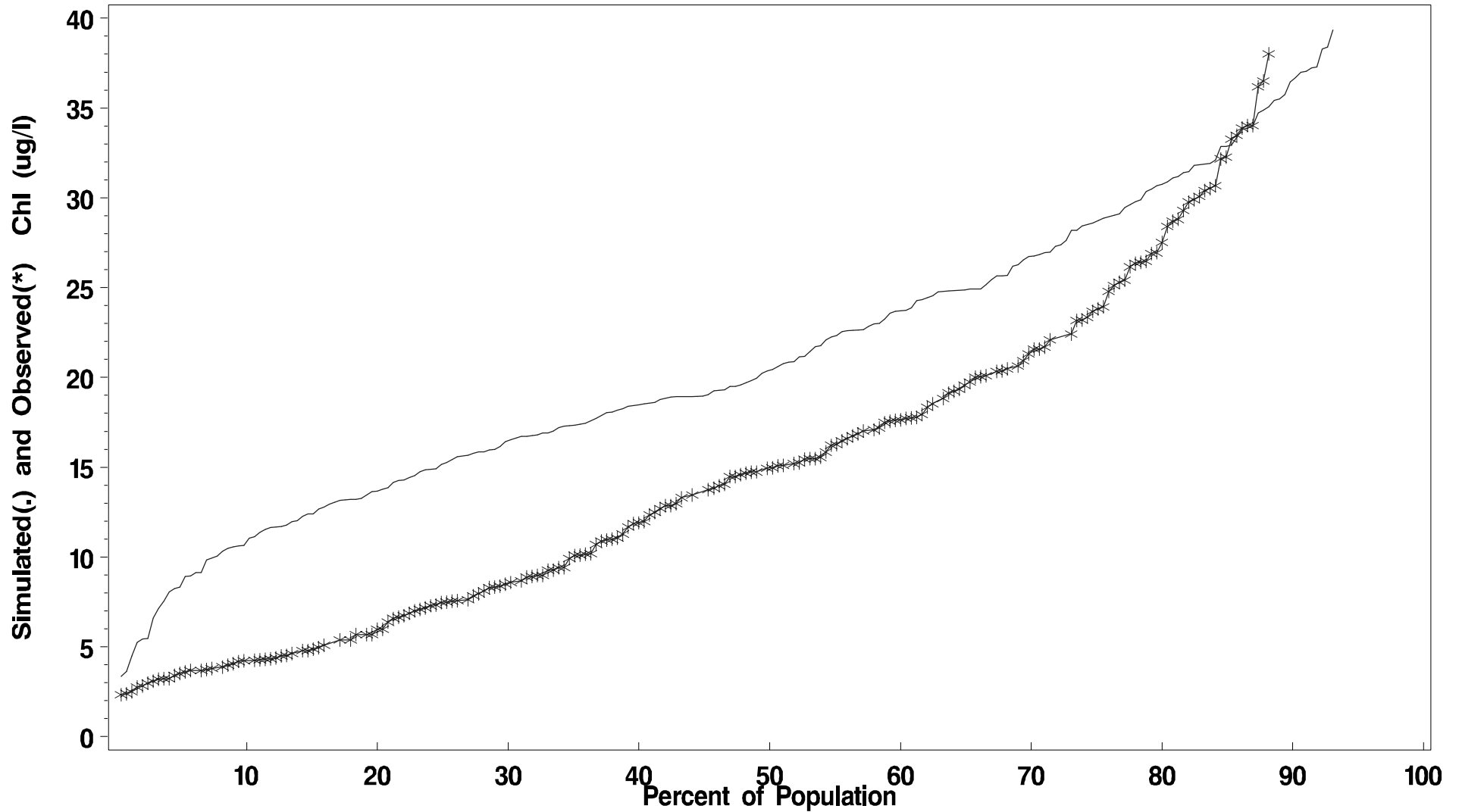
Chlorophyll Concentration (ug/l)
Segment POTTF   Season: July 1 – Sept 30
(Scatter Plot)
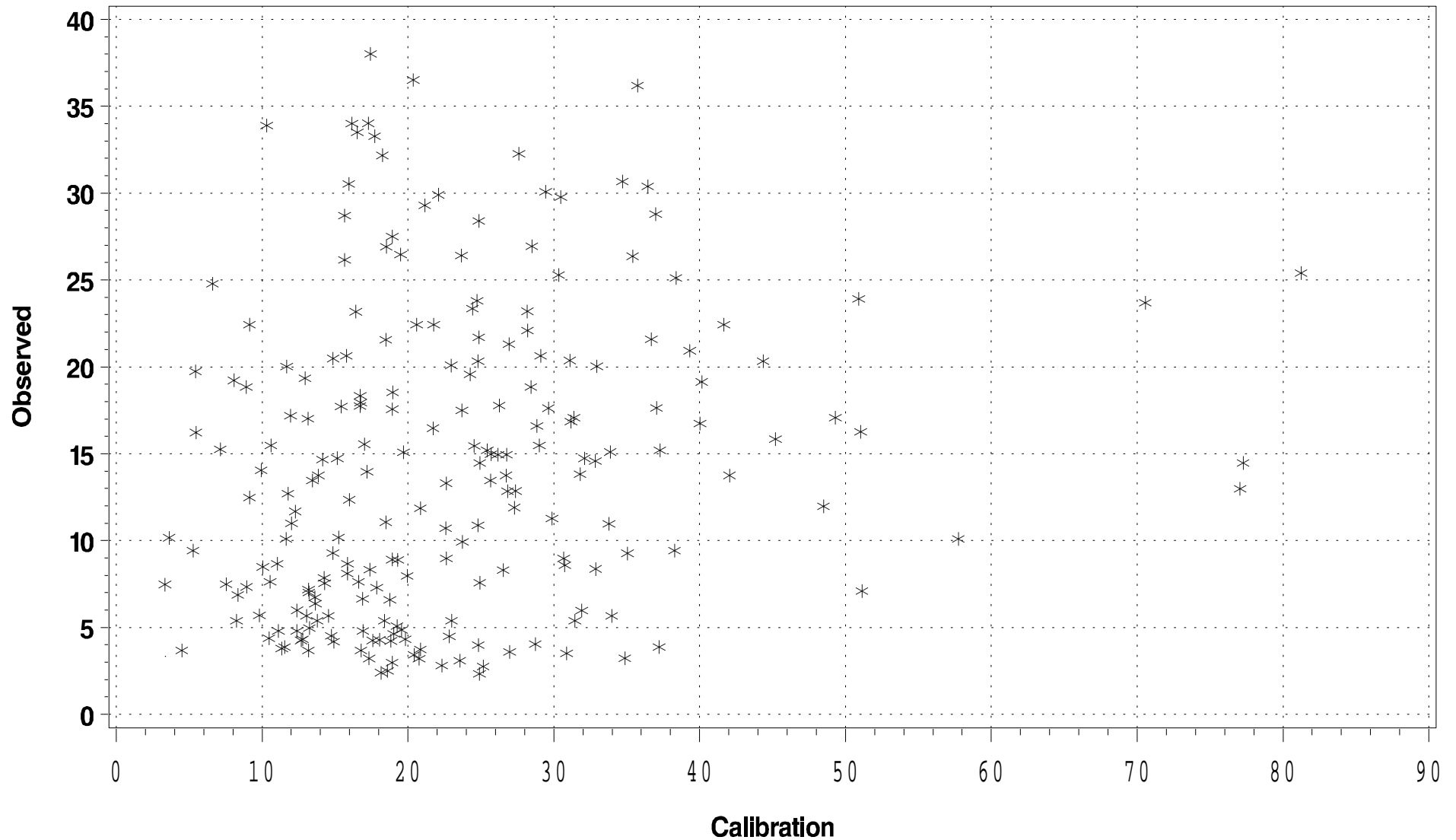
Regression of Calibration vs. Observations[1]
Using the 271 pairs of predictions and observed data, the **slope** is 0.3060 and the **intercept** is 3.5879. The **R-Squared** value for this regression is 0.0771.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 271 pairs of predictions and observed data, the **slope** is 0.4027 and the **intercept** is 0.4002. The **R-Squared** value for this regression is 0.1560.

Statistics (units in µg/l)

Mean observed 5.8362	Mean predicted 7.3474
Min. observed 0.2246	Min. predicted 0.4277
Max. observed 39.6114	Max. predicted 31.2270
Std. Dev. Observed 5.3032	Std. Dev. predicted 4.8107
Median observed 4.4856	Median predicted 6.8514
95th Percentile observed 16.7000	95th Percentile predicted 14.8450
10th Percentile observed 1.4000	10th Percentile predicted 1.8829

Differences (predicted – observed)

Mean difference 1.5112 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment POTTF Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
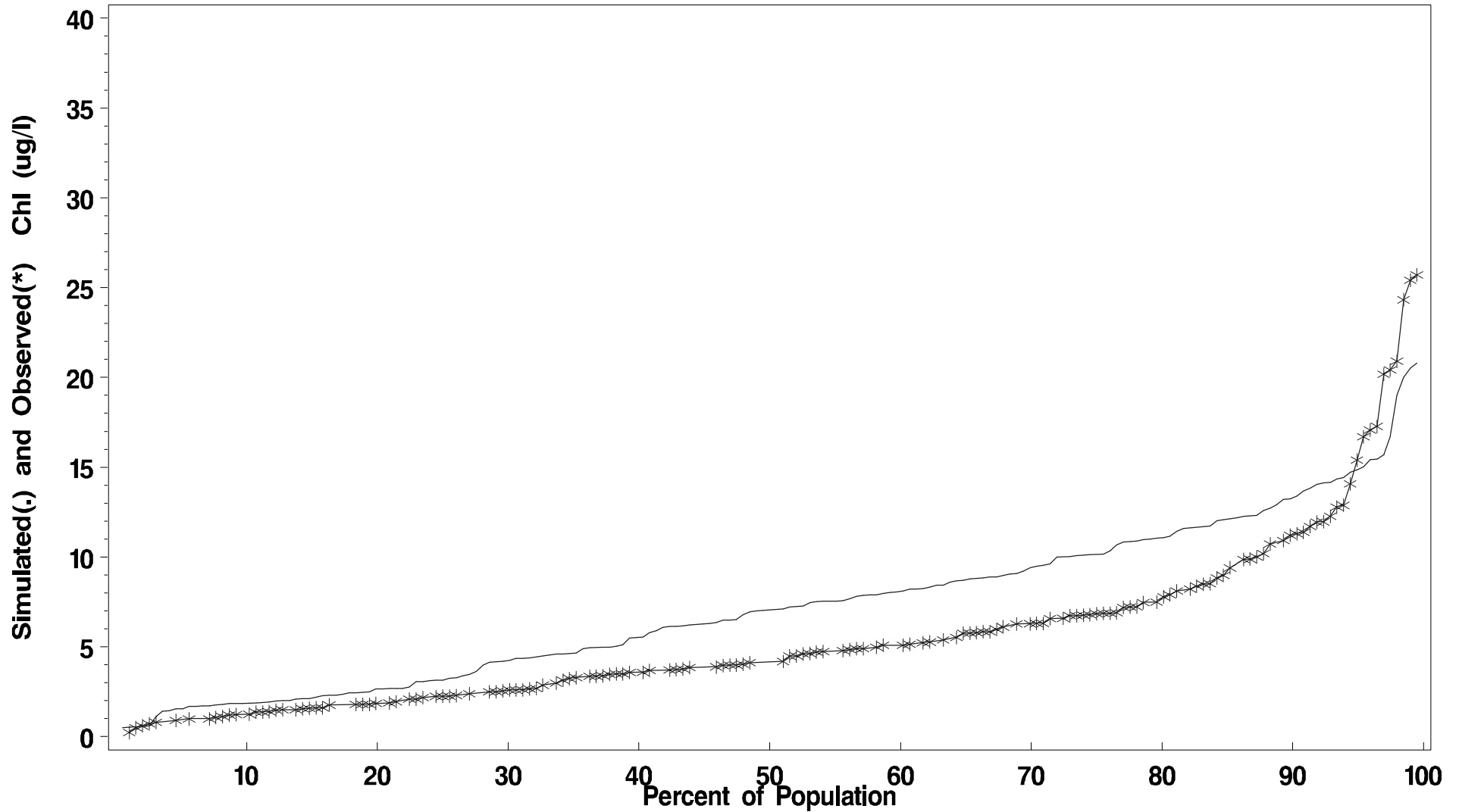
Chlorophyll Concentration (ug/l)
Segment POTTF   Season: March 1 – May 30
(Scatter Plot)
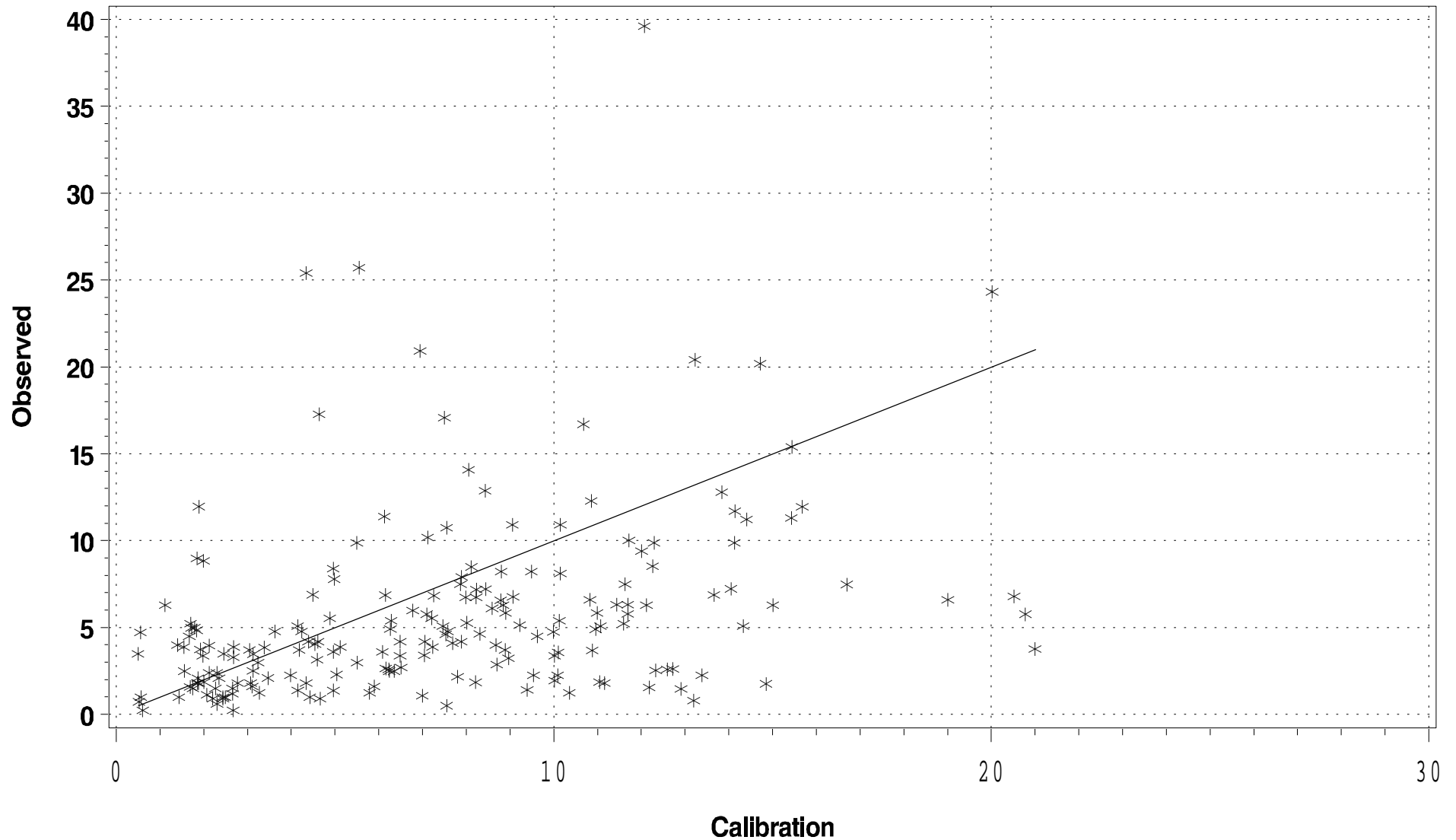
TIDAL FRESH **Light Attenuation**
Segment POTTF (Potomac Tidal Fresh)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 917 pairs of predictions and observed data, the **slope** is 0.3423 and the **intercept** is 1.2498. The **R-Squared** value for this regression is 0.1932.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 917 pairs of predictions and observed data, the **slope** is 0.3858 and the **intercept** is 0.2690. The **R-Squared** value for this regression is 0.1878.

Statistics (units in 1/m)

Mean observed 2.3749   Mean predicted 3.2866
Min. observed 0.8667   Min. predicted 0.6543
Max. observed 13.0000   Max. predicted 27.8490
Std. Dev. Observed 1.6262   Std. Dev. predicted 2.0880
Median observed 1.8571   Median predicted 2.7701
90th Percentile observed 3.2500   90th Percentile predicted 5.2192
10th Percentile observed 1.3000   10th Percentile predicted 1.6869

Differences (predicted – observed)

Mean difference 0.9117 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment POTTF   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment POTTF   Season: April 1 — Oct 30
(Scatter Plot)
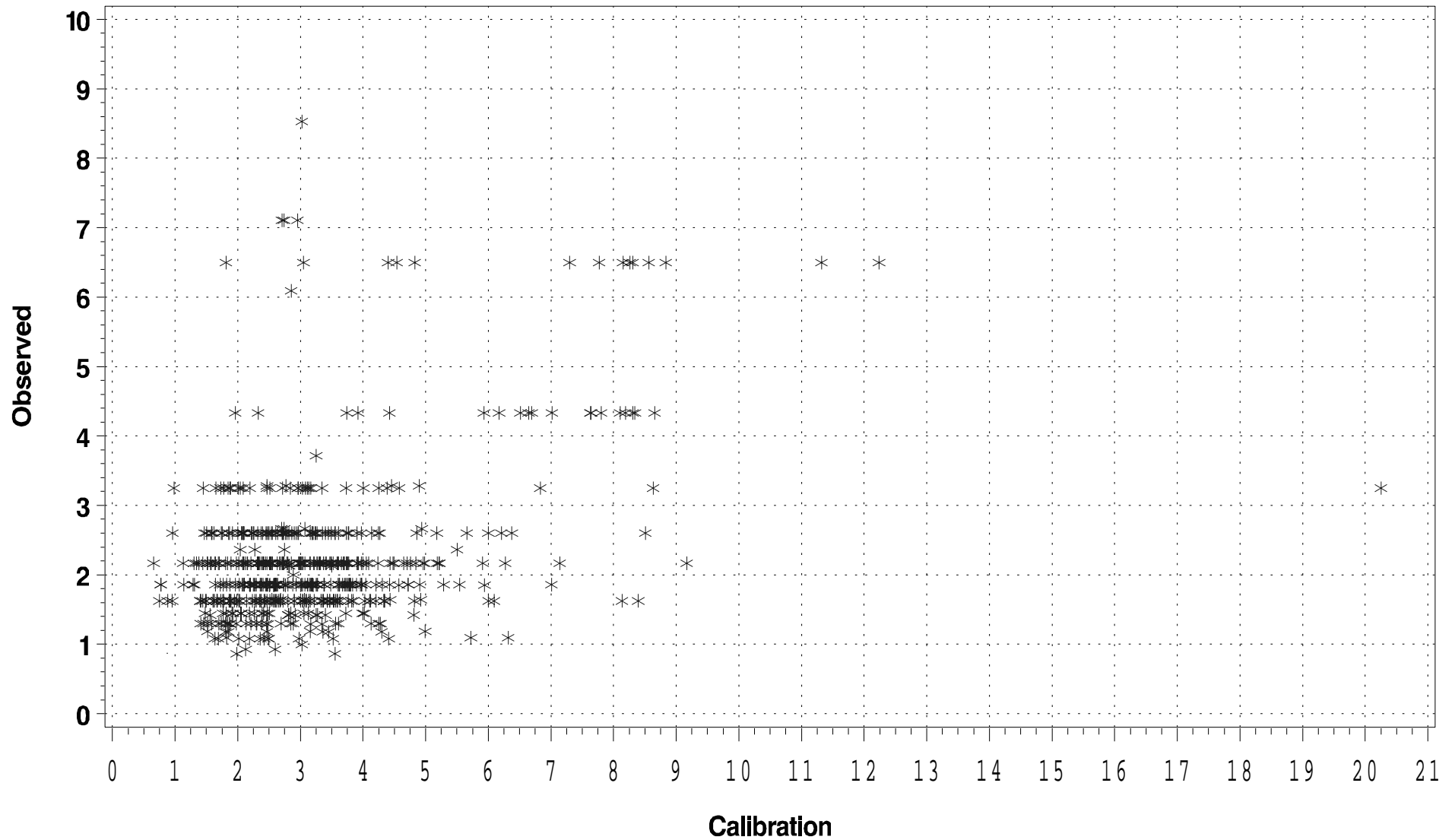
Chesapeake Bay Standard Segment POTOH
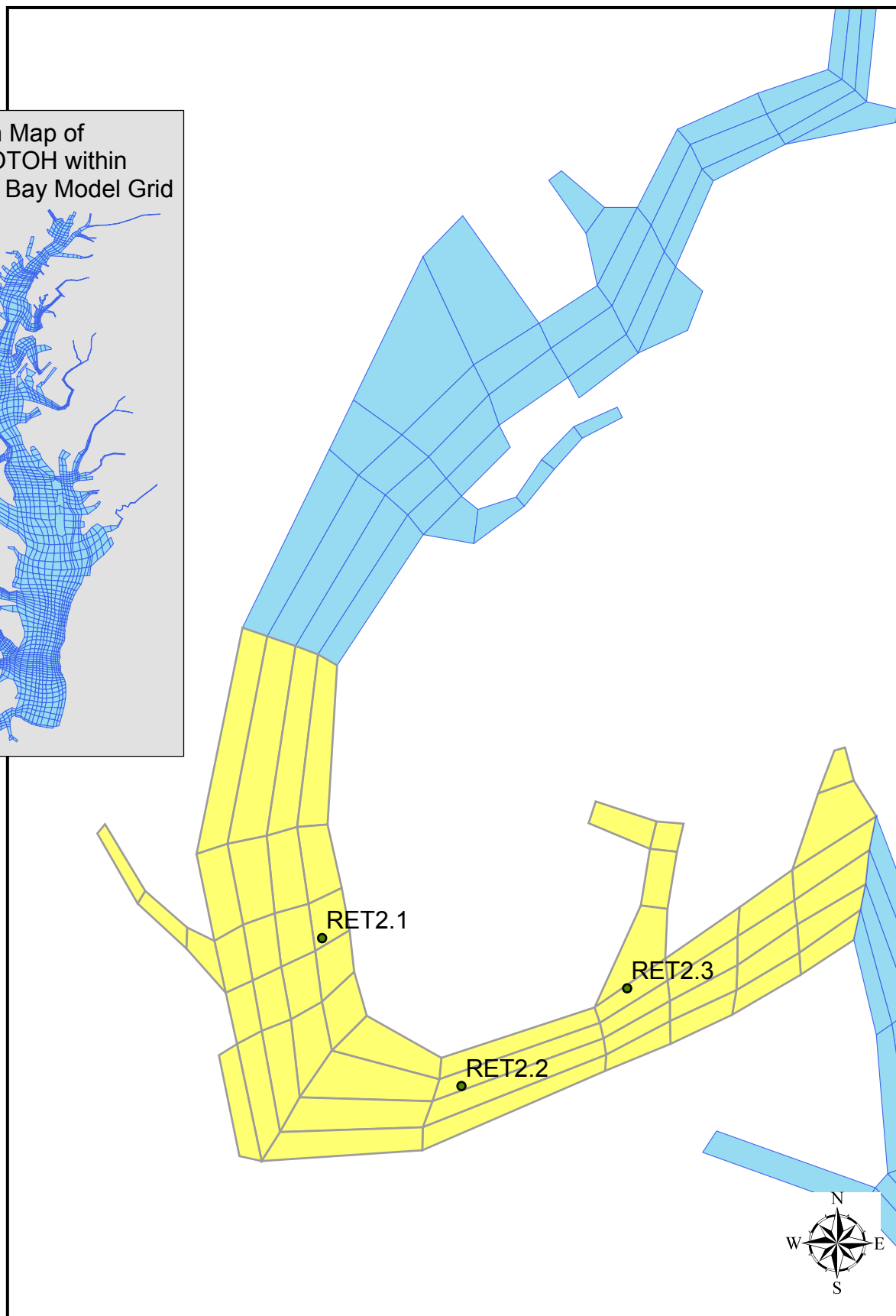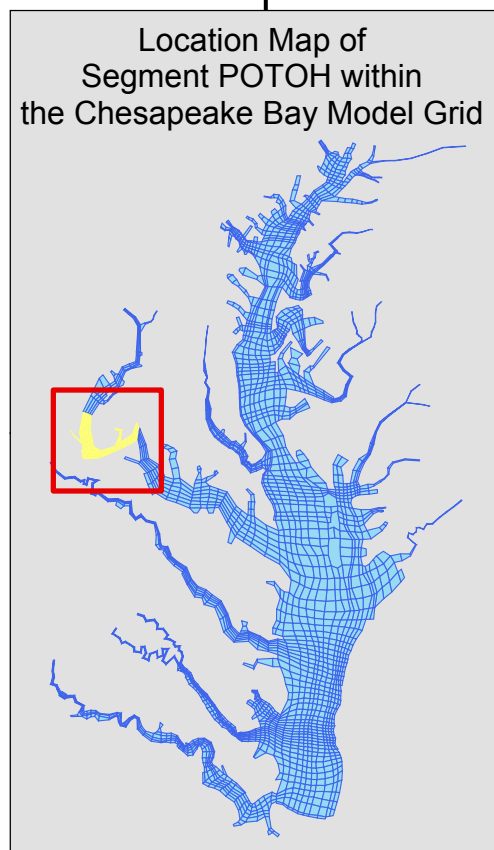
Location Map of
Segment POTOH within
the Chesapeake Bay Model Grid

RET2.1

RET2.3

RET2.2

Chesapeake Bay Program

N
W E
S

0 1 2 4 6 8
Miles

Regression of Calibration vs. Observations[1]

Using the 354 pairs of predictions and observed data, the **slope** is 0.3876 and the **intercept** is 4.6939. The **R-Squared** value for this regression is 0.2105.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 354 pairs of predictions and observed data, the **slope** is 0.5097 and the **intercept** is 0.4434. The **R-Squared** value for this regression is 0.2295.

Statistics (units in mg/l)

Mean observed 9.2234   Mean predicted 11.6871
Min. observed 2.8   Min. predicted 6.591
Max. observed 13.4   Max. predicted 17.01
Std. Dev. Observed 1.7942   Std. Dev. predicted 2.1240
Median observed 9.1500   Median predicted 11.8735
90th Percentile observed 11.8000   90th Percentile predicted 14.4270
10th Percentile observed 7.1000   10th Percentile predicted 8.9527

Differences (predicted – observed)

Mean difference 2.4638 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 354
Number of Predicted Violations 0
Number of Observed Violations 3

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment POTOH Season: Feb 15 − June 10
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Migratory   Dissolved Oxygen (mg/l)
Segment POTOH   Season: Feb 15 – June 10
(Scatter Plot)
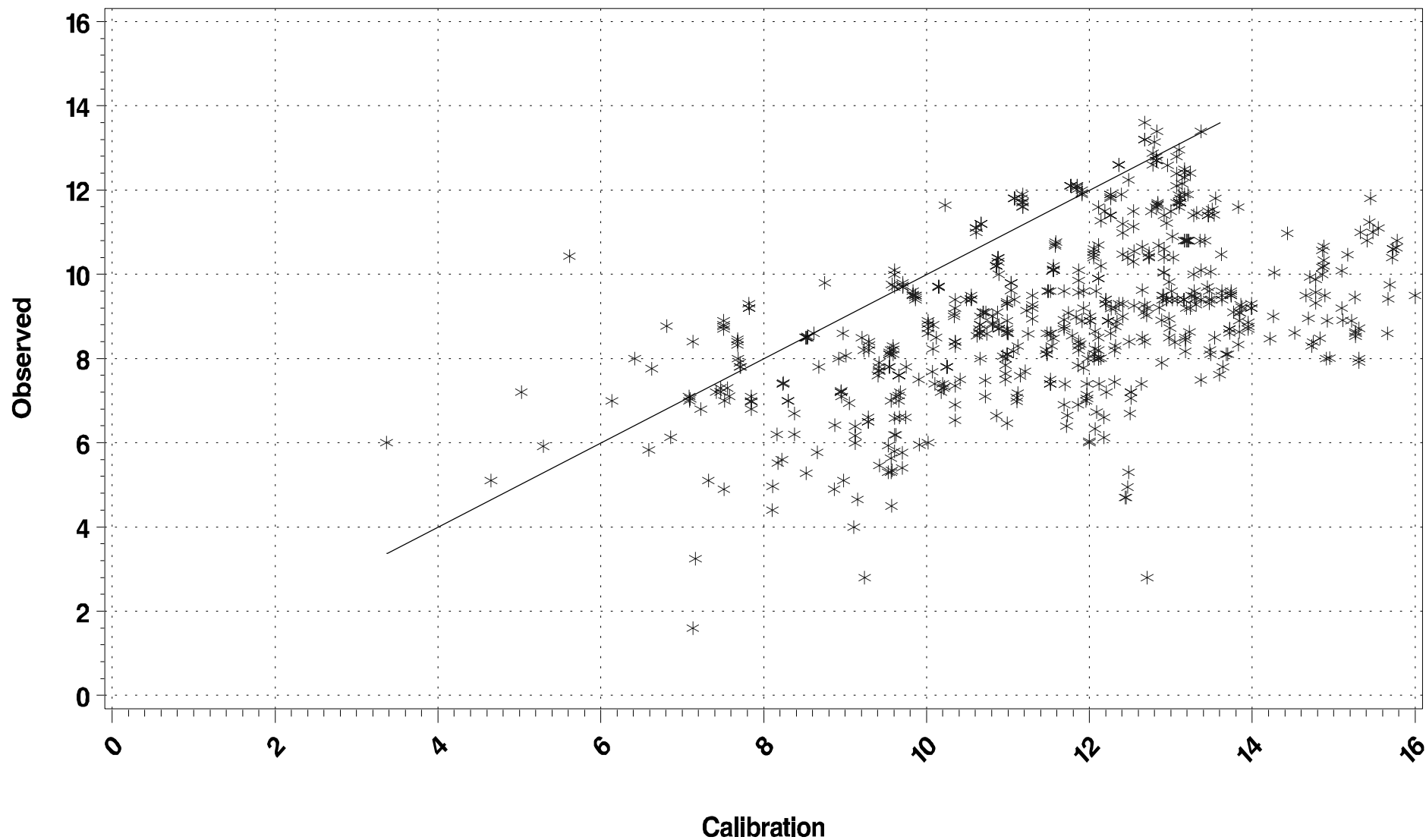
MIGRATORY **Dissolved Oxygen**
Segment POTOH (Potomac Oligohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 706 pairs of predictions and observed data, the **slope** is 1.1098 and the **intercept** is -2.3104. The **R-Squared** value for this regression is 0.6888.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 706 pairs of predictions and observed data, the **slope** is 1.2150 and the **intercept** is -0.2821. The **R-Squared** value for this regression is 0.6472.

Statistics (units in mg/l)

Mean observed 7.8684   Mean predicted 9.1721
Min. observed 3   Min. predicted 4.928
Max. observed 16.7   Max. predicted 16.43
Std. Dev. Observed 2.2252   Std. Dev. predicted 1.6641
Median observed 7.2000   Median predicted 8.8794
90th Percentile observed 11.6000   90th Percentile predicted 11.7950
10th Percentile observed 5.7000   10th Percentile predicted 7.4222

Differences (predicted – observed)

Mean difference 1.3037 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 706
Number of Predicted Violations 0
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment POTOH   Season: June 11 – Feb 14
### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment POTOH Season: June 11 – Feb 14
(Scatter Plot)

<div align="center">
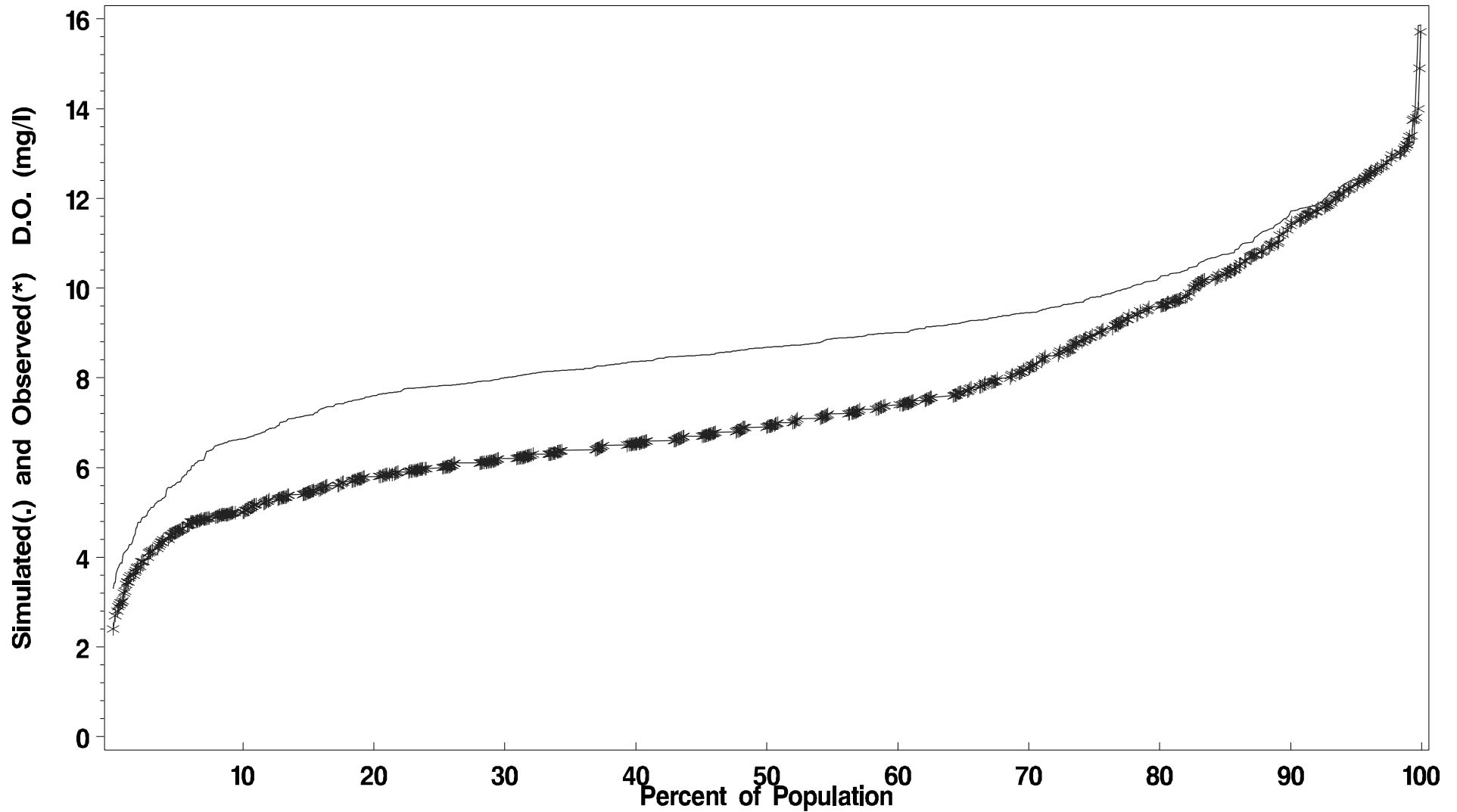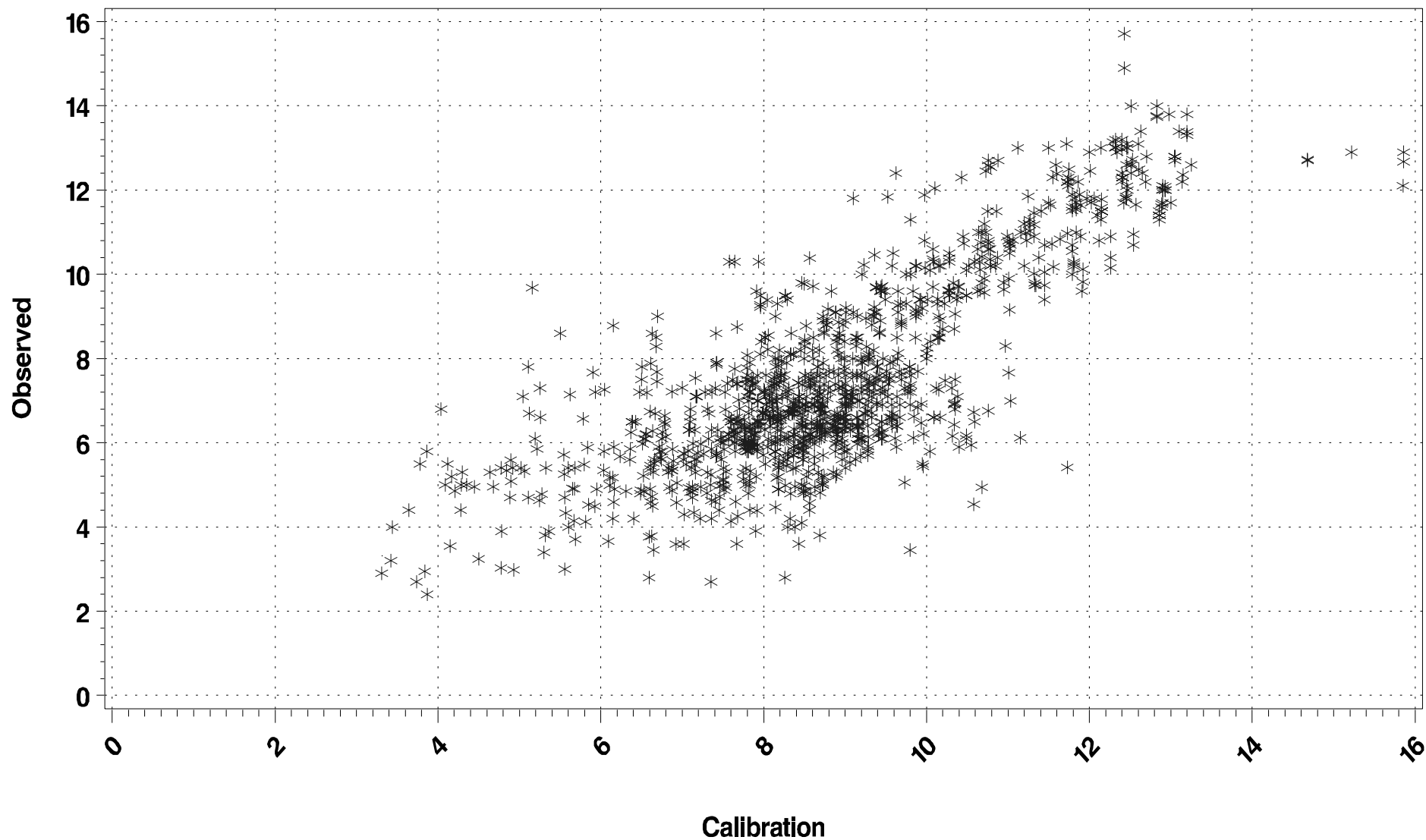
OLIGOHALINE **Chlorophyll**
Segment POTOH (Potomac Oligohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 149 pairs of predictions and observed data, the **slope** is -0.3470 and the
intercept is 11.7729. The **R-Squared** value for this regression is 0.0015.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 149 pairs of predictions and observed data, the **slope** is 0.3310 and the
intercept is 0.5295. The **R-Squared** value for this regression is 0.0107.

Statistics (units in μg/l)

Mean observed 8.8011	Mean predicted 8.5651
Min. observed 1.7971	Min. predicted 4.9008
Max. observed 209.5600	Max. predicted 18.7260
Std. Dev. Observed 17.9377	Std. Dev. predicted 2.0136
Median observed 5.4912	Median predicted 8.3529
95th Percentile observed 24.4230	95th Percentile predicted 12.5900
10th Percentile observed 2.8121	10th Percentile predicted 6.3791

Differences (predicted – observed)

Mean difference -0.2361 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment POTOH   Season: July 1 − Sept 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
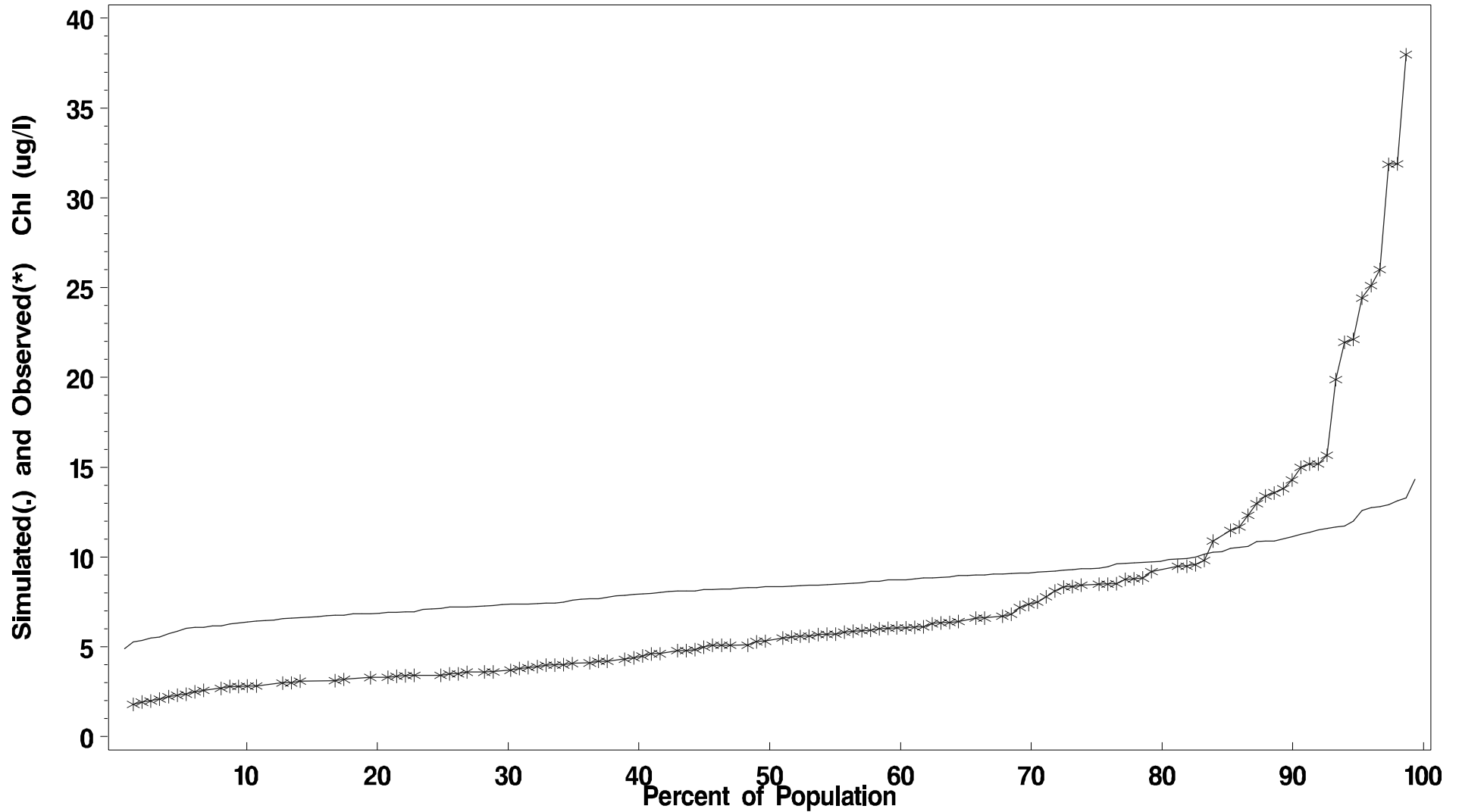
Chlorophyll Concentration (ug/l)
Segment POTOH   Season: July 1 – Sept 30
(Scatter Plot)
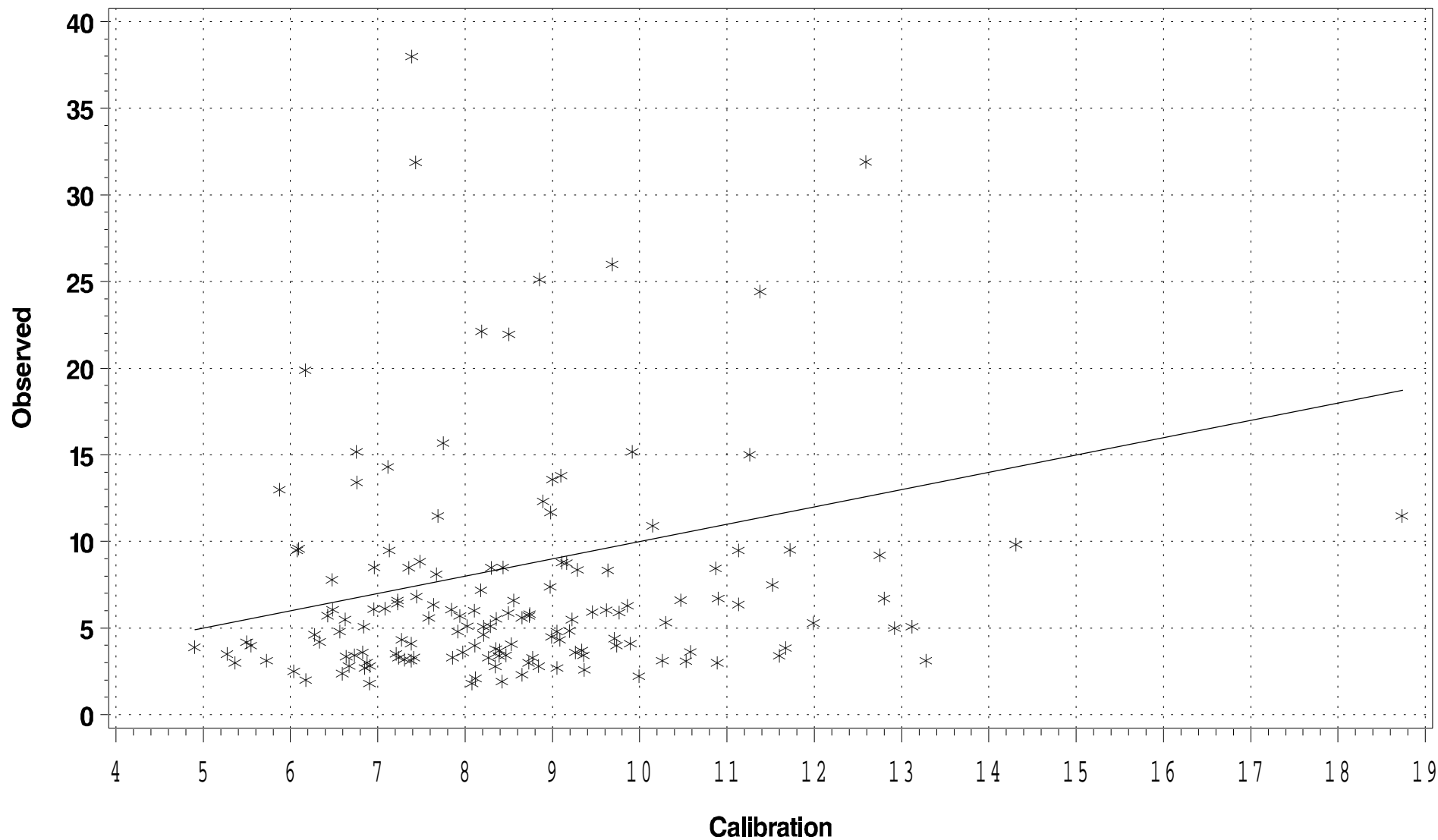
OLIGOHALINE **Chlorophyll**
Segment POTOH (Potomac Oligohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 130 pairs of predictions and observed data, the **slope** is 0.1321 and the **intercept** is 3.3303. The **R-Squared** value for this regression is 0.0405.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 130 pairs of predictions and observed data, the **slope** is 0.2358 and the **intercept** is 0.3980. The **R-Squared** value for this regression is 0.0535.

Statistics (units in µg/l)

Mean observed 5.2277   Mean predicted 14.3665
Min. observed 0.3208   Min. predicted 1.3812
Max. observed 40.6196   Max. predicted 49.7780
Std. Dev. Observed 6.9929   Std. Dev. predicted 10.6602
Median observed 2.7739   Median predicted 10.7835
95th Percentile observed 18.3696   95th Percentile predicted 35.0890
10th Percentile observed 1.0580   10th Percentile predicted 3.7610

Differences (predicted – observed)

Mean difference 9.1389 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment POTOH   Season: March 1 — May 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
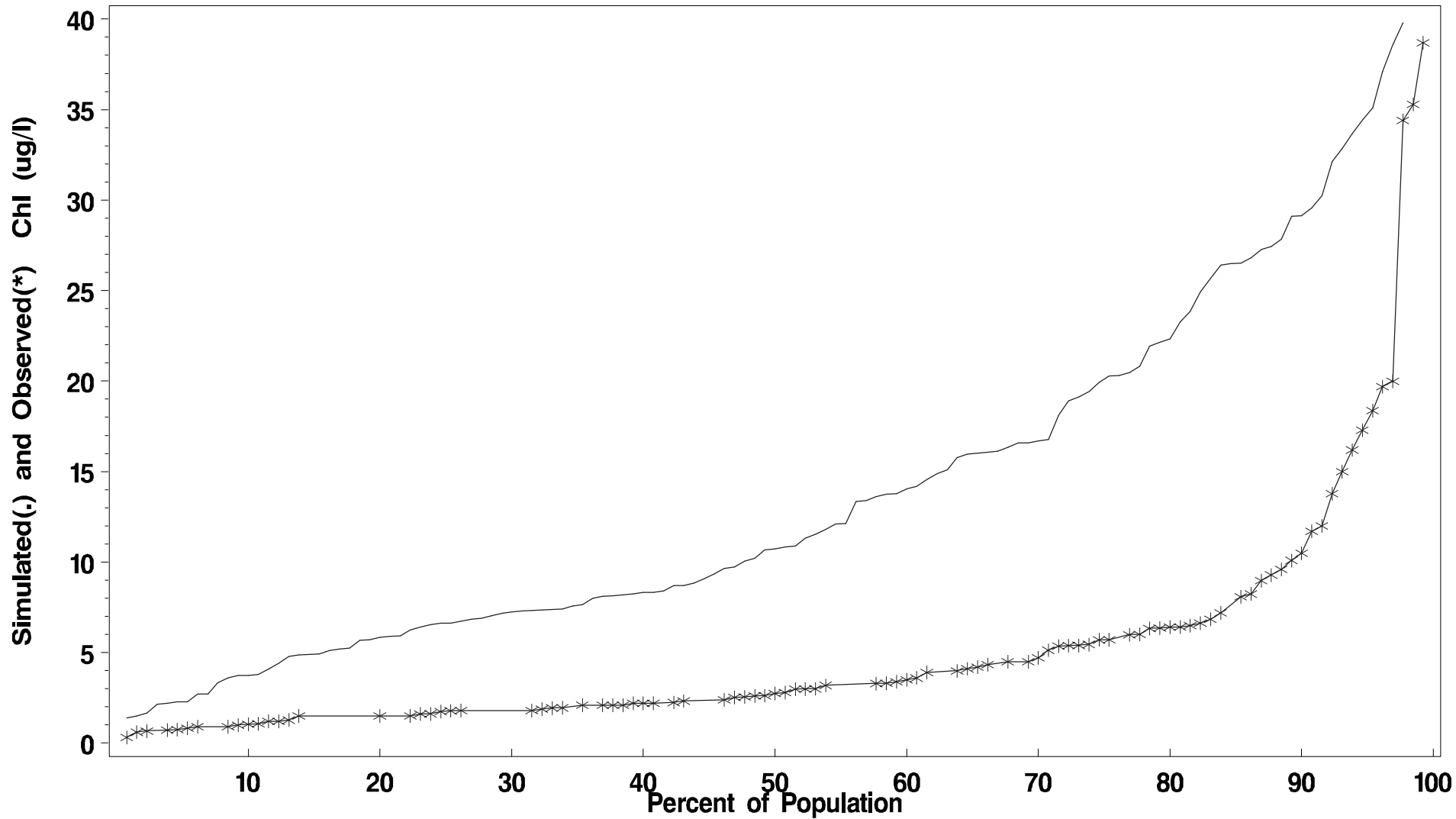
Chlorophyll Concentration (ug/l)
Segment POTOH   Season: March 1 — May 30
(Scatter Plot)
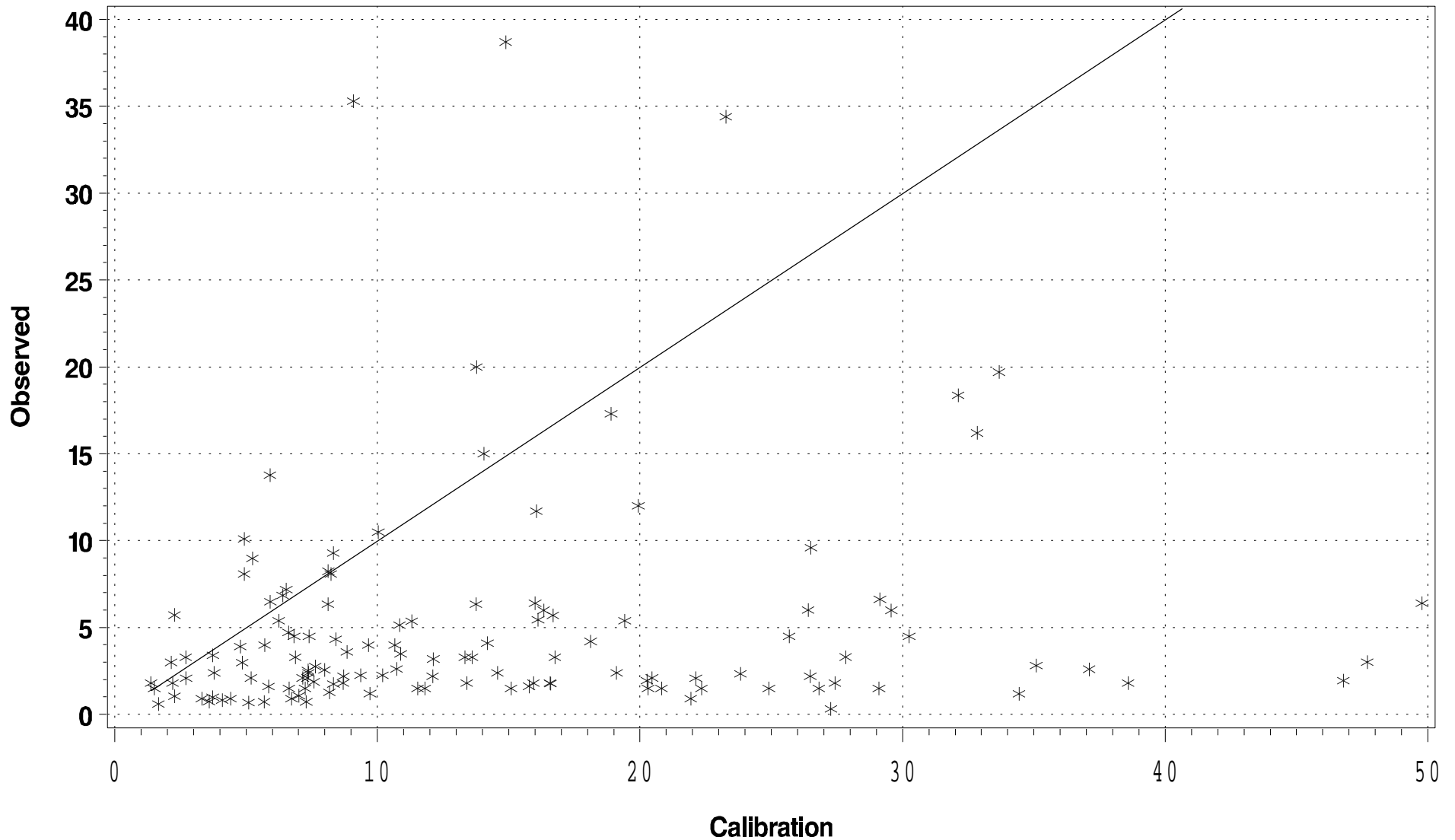
OLIGOHALINE **Light Attenuation**
Segment POTOH (Potomac Oligohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 347 pairs of predictions and observed data, the **slope** is 0.6018 and the **intercept** is 1.0087. The **R-Squared** value for this regression is 0.2459.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 347 pairs of predictions and observed data, the **slope** is 0.5773 and the **intercept** is 0.2175. The **R-Squared** value for this regression is 0.2204.

Statistics (units in 1/m)

Mean observed 2.5281   Mean predicted 2.5246
Min. observed 0.5652   Min. predicted 1.0874
Max. observed 13.0000   Max. predicted 7.6920
Std. Dev. Observed 1.3072   Std. Dev. predicted 1.0771
Median observed 2.1667   Median predicted 2.2166
90th Percentile observed 4.3333   90th Percentile predicted 3.6998
10th Percentile observed 1.3000   10th Percentile predicted 1.6313

Differences (predicted – observed)

Mean difference -0.0035 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment POTOH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)

Segment POTOH   Season: April 1 — Oct 30
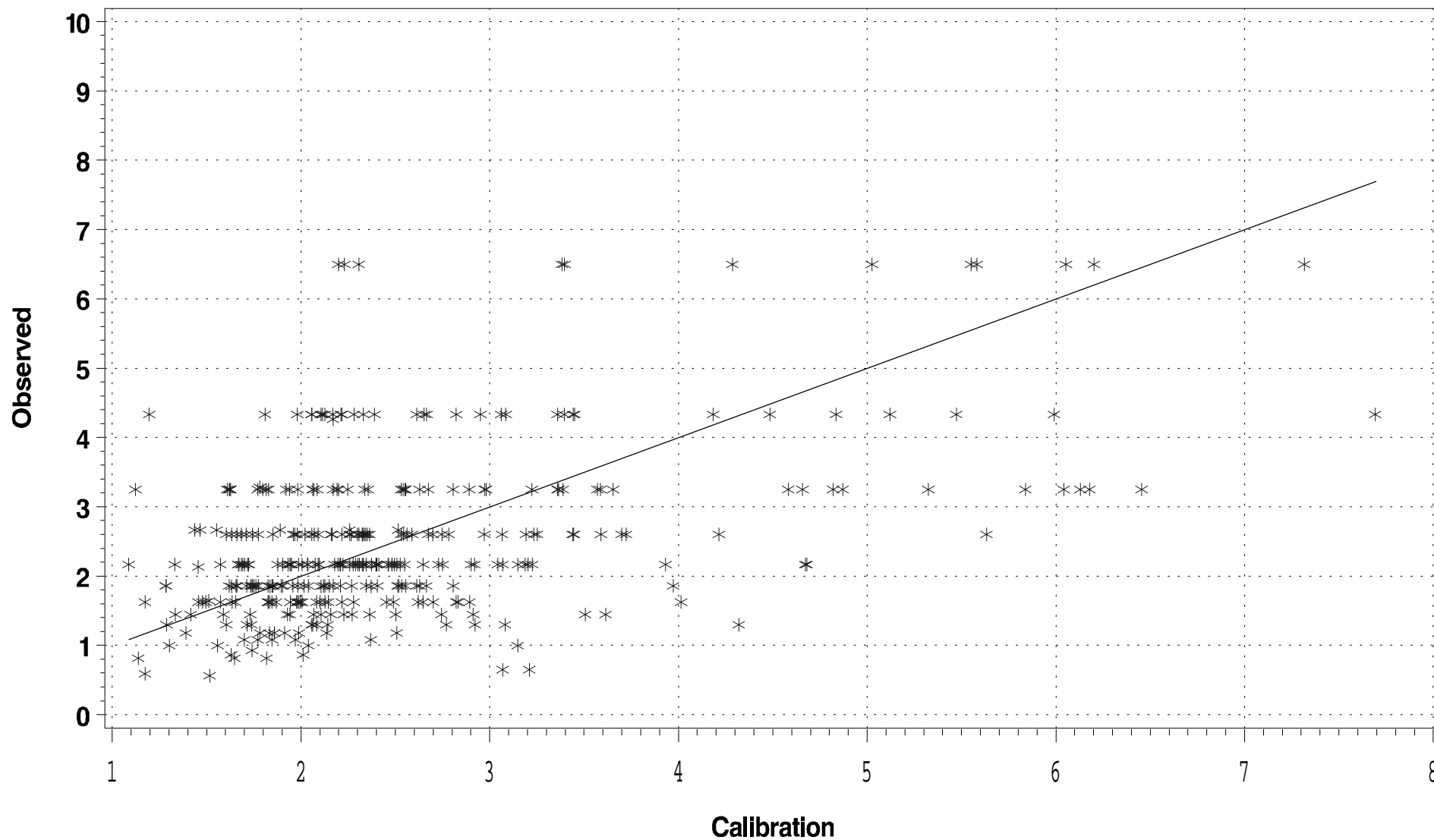
(Scatter Plot)

Chesapeake Bay Standard Segment POTMH
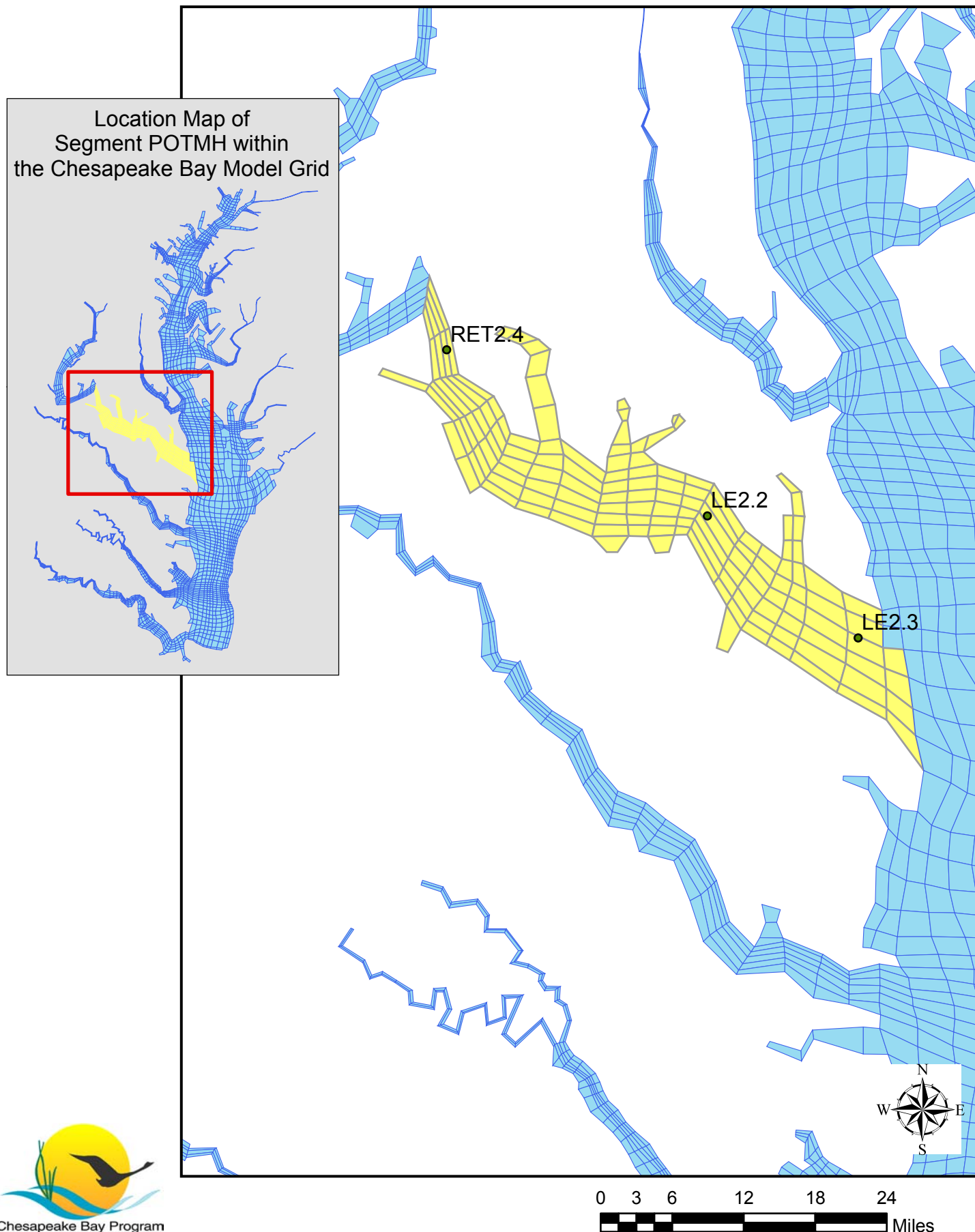
Location Map of
Segment POTMH within
the Chesapeake Bay Model Grid

RET2.4

LE2.2

LE2.3

N
W   E
S

0   3   6   12   18   24
Miles

Chesapeake Bay Program

Regression of Calibration vs. Observations[1]

Using the 161 pairs of predictions and observed data, the **slope** is 0.5504 and the **intercept** is 2.9528. The **R-Squared** value for this regression is 0.5598.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 161 pairs of predictions and observed data, the **slope** is 0.6100 and the **intercept** is 0.3409. The **R-Squared** value for this regression is 0.5529.

Statistics (units in mg/l)

Mean observed 9.0597   Mean predicted 11.0945
Min. observed 4.5   Min. predicted 3.472
Max. observed 13.4   Max. predicted 17.14
Std. Dev. Observed 1.9524   Std. Dev. predicted 2.6539
Median observed 9.2000   Median predicted 11.4570
90th Percentile observed 11.5750   90th Percentile predicted 14.2480
10th Percentile observed 6.2000   10th Percentile predicted 7.4872

Differences (predicted – observed)

Mean difference 2.0348 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 161
Number of Predicted Violations 3
Number of Observed Violations 1

[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment POTMH Season: Feb 15 − June 10
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
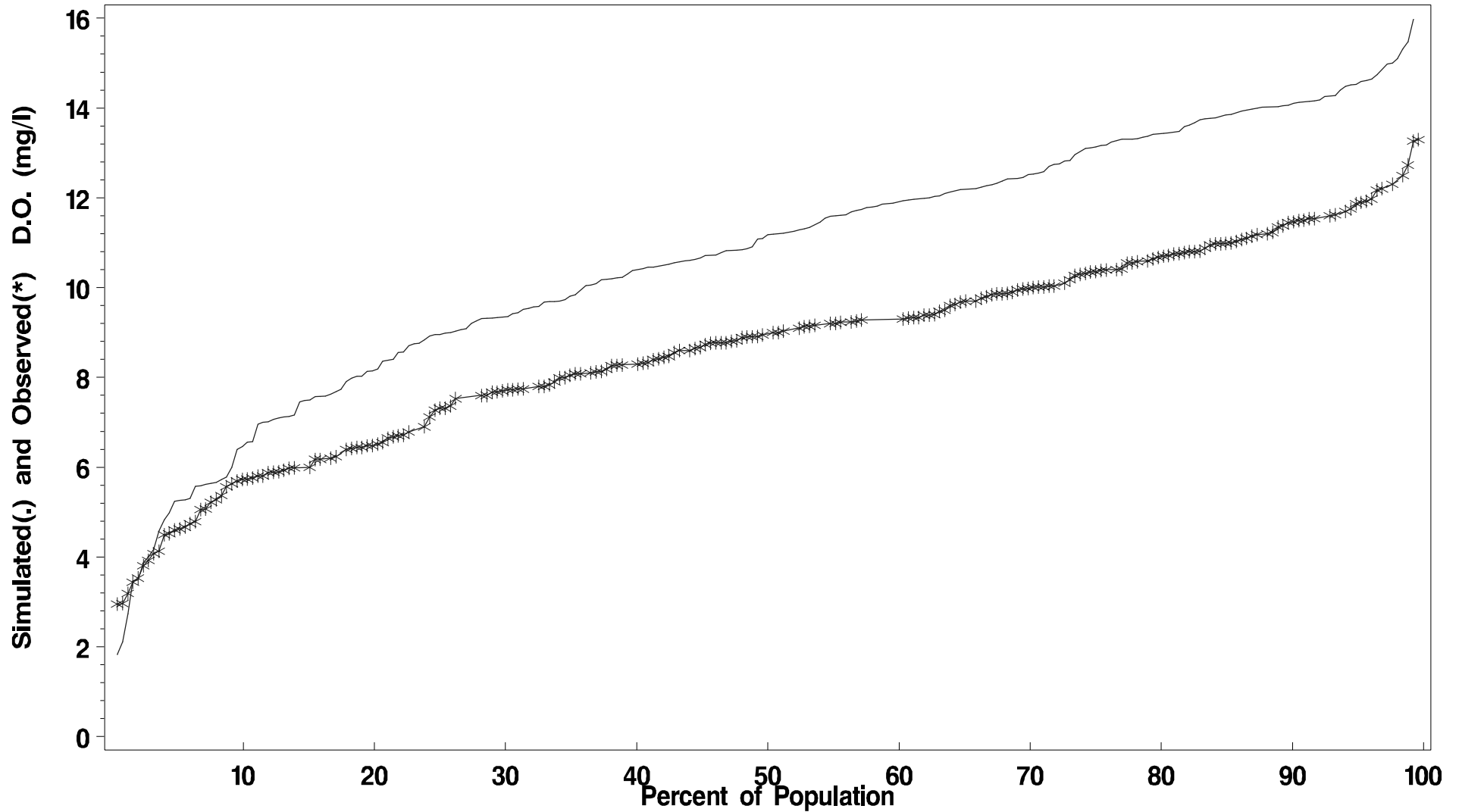
**Migratory   Dissolved Oxygen (mg/l)
Segment POTMH   Season: Feb 15 – June 10**

(Scatter Plot)
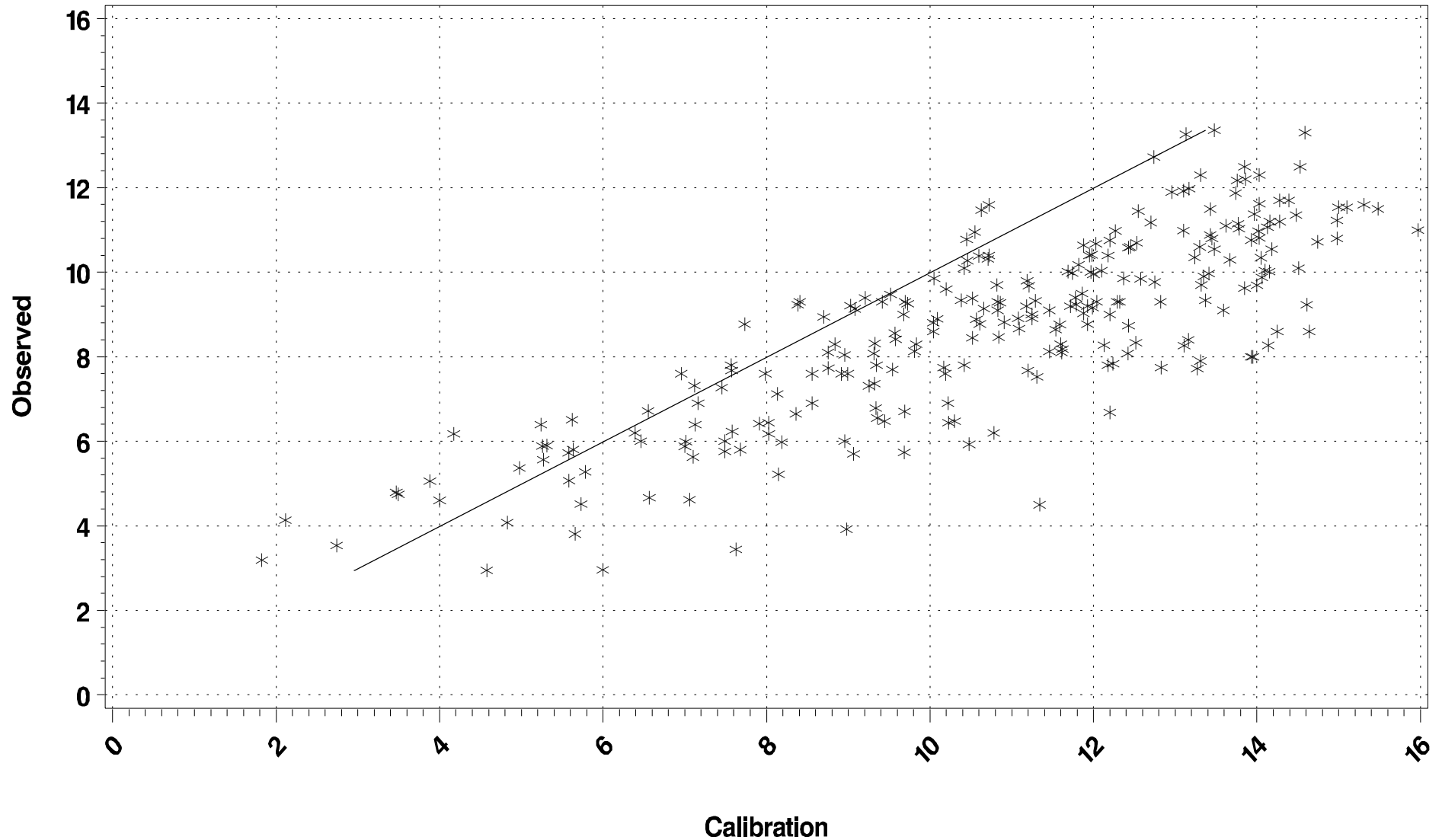
Regression of Calibration vs. Observations[1]

Using the 356 pairs of predictions and observed data, the **slope** is 0.7133 and the **intercept** is 1.6865. The **R-Squared** value for this regression is 0.4276.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 356 pairs of predictions and observed data, the **slope** is 0.6214 and the **intercept** is 0.3187. The **R-Squared** value for this regression is 0.3406.

Statistics (units in mg/l)

Mean observed 7.0438   Mean predicted 7.5109
Min. observed 0.9   Min. predicted 1.721
Max. observed 14.1   Max. predicted 14.71
Std. Dev. Observed 2.3861   Std. Dev. predicted 2.1876
Median observed 6.3000   Median predicted 7.5437
90th Percentile observed 10.5000   90th Percentile predicted 10.0610
10th Percentile observed 4.6000   10th Percentile predicted 4.4637

Differences (predicted – observed)

Mean difference 0.4672 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 356
Number of Predicted Violations 11
Number of Observed Violations 4

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment POTMH Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory   Dissolved Oxygen (mg/l)
Segment POTMH   Season: June 11 — Feb 14
(Scatter Plot)

Scatter plot with x-axis labeled "Calibration" ranging from 0 to 16, and y-axis labeled "Observed" ranging from 0 to 16.
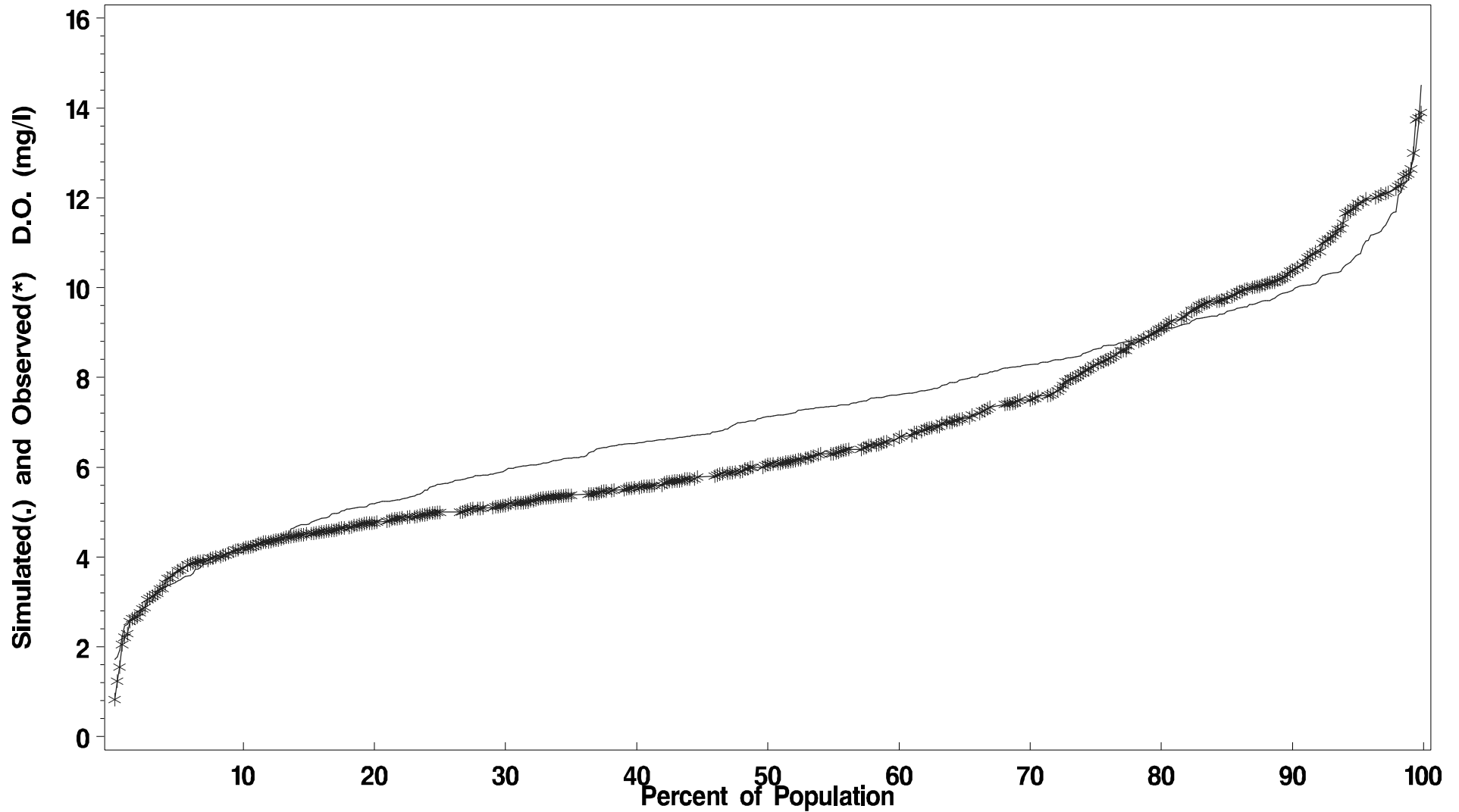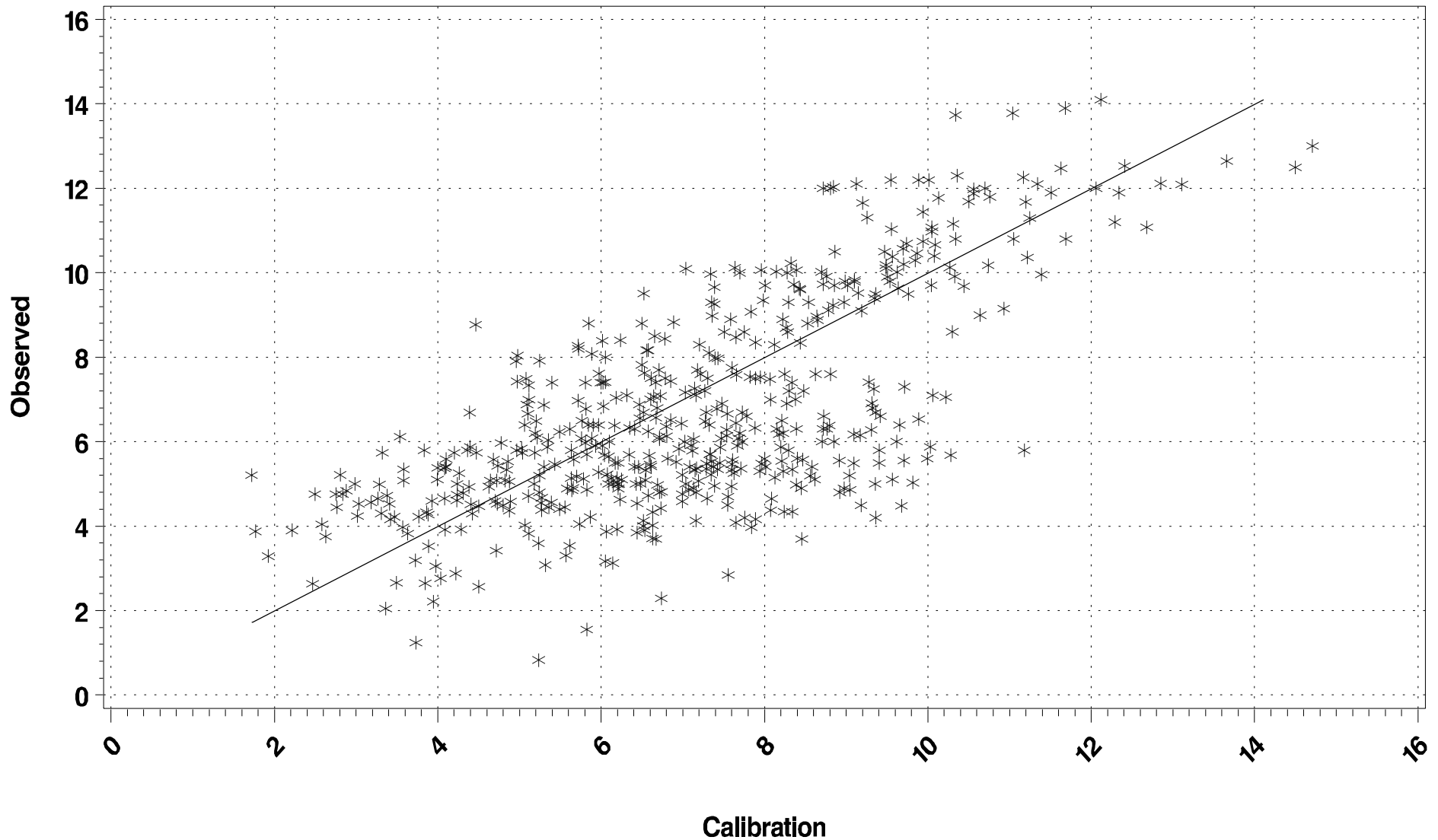
OPEN WATER **Dissolved Oxygen**
Segment POTMH (Potomac Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 1387 pairs of predictions and observed data, the **slope** is 0.7885 and the **intercept** is 1.9034. The **R-Squared** value for this regression is 0.6234.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1387 pairs of predictions and observed data, the **slope** is 0.8341 and the **intercept** is 0.1616. The **R-Squared** value for this regression is 0.5581.

Statistics (units in mg/l)

Mean observed 8.8526   Mean predicted 8.8137
Min. observed 0.07   Min. predicted 2.784
Max. observed 16.2   Max. predicted 17.57
Std. Dev. Observed 2.6647   Std. Dev. predicted 2.6684
Median observed 8.6000   Median predicted 8.1915
90th Percentile observed 12.4000   90th Percentile predicted 12.8330
10th Percentile observed 5.6200   10th Percentile predicted 5.8533

Differences (predicted – observed)

Mean difference -0.0389 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1387
Number of Predicted Violations 3
Number of Observed Violations 18

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[1] observed is dependent, predicted is independent

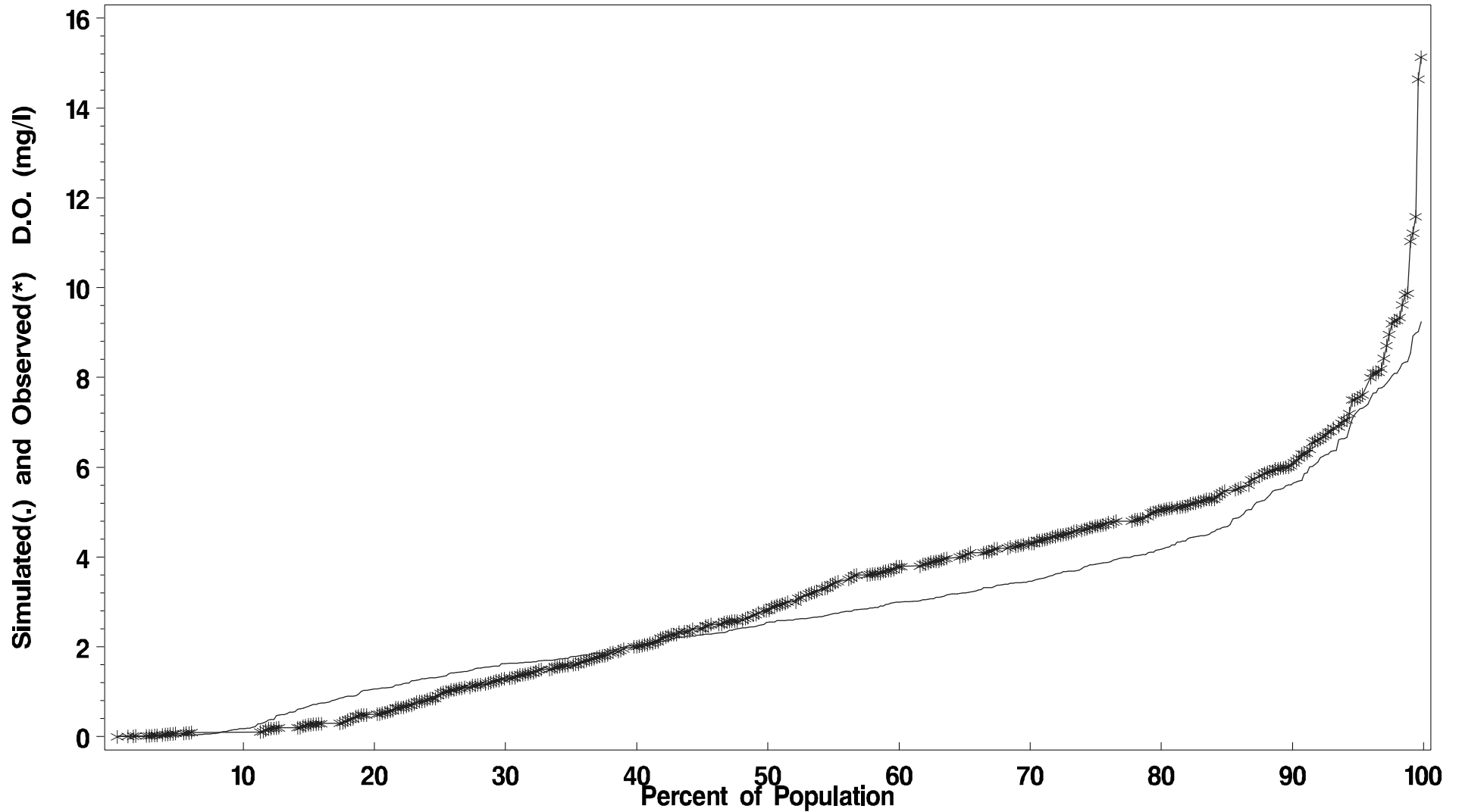# Open Water Dissolved Oxygen (mg/l)
Segment POTMH Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
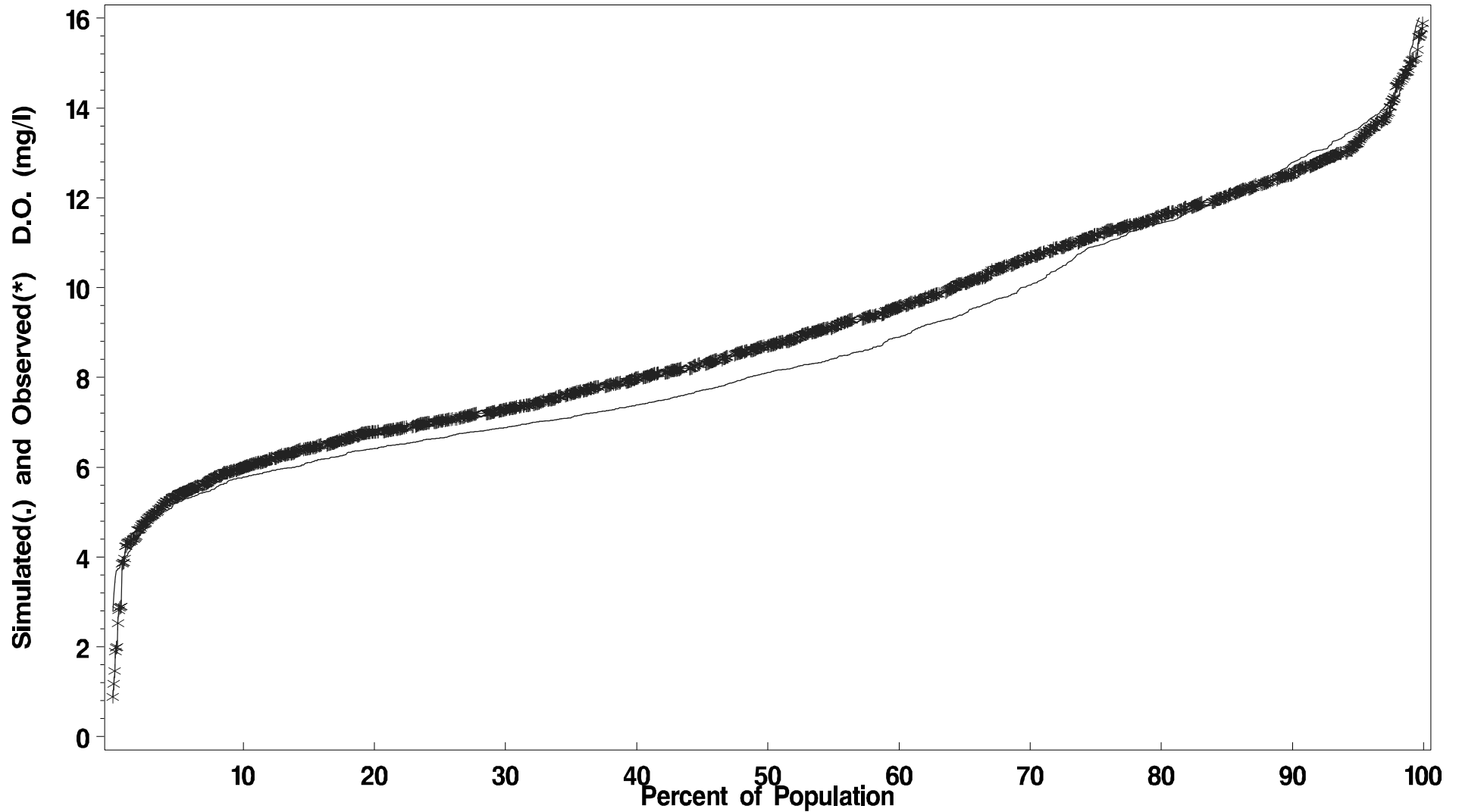
Open Water Dissolved Oxygen (mg/l)
Segment POTMH Season: Jan 1 — Dec 31
(Scatter Plot)
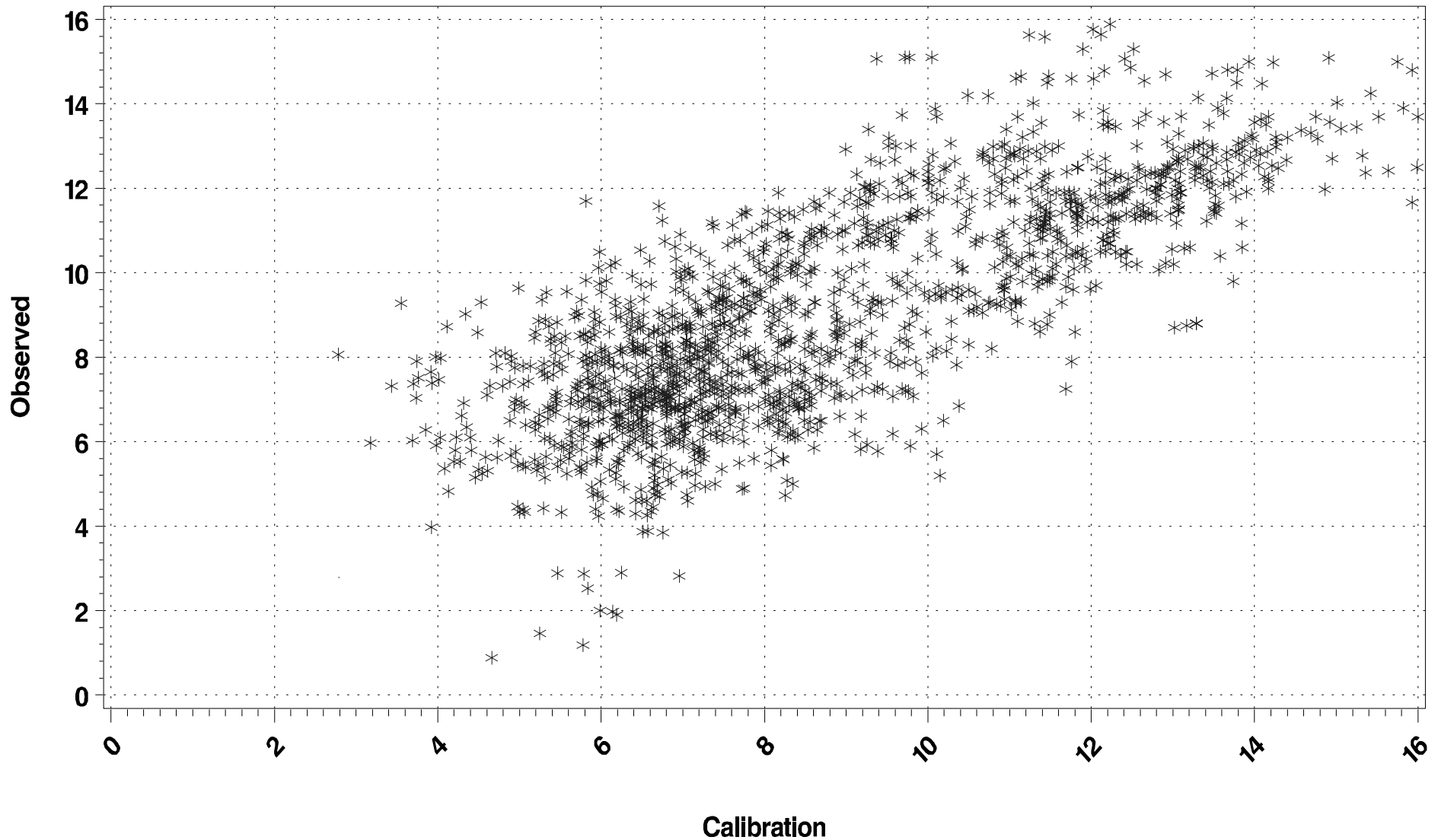
DEEP WATER **Dissolved Oxygen**
Segment POTMH (Potomac Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 712 pairs of predictions and observed data, the **slope** is 0.5508 and the
intercept is 1.4628. The **R-Squared** value for this regression is 0.2143.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 712 pairs of predictions and observed data, the **slope** is 0.3717 and the
intercept is 0.3451. The **R-Squared** value for this regression is 0.0655.

Statistics (units in mg/l)

Mean observed 3.8833   Mean predicted 4.3947
Min. observed 0   Min. predicted 0.0099
Max. observed 10.9   Max. predicted 11.32
Std. Dev. Observed 2.6390   Std. Dev. predicted 2.2179
Median observed 4.0458   Median predicted 4.3210
90th Percentile observed 7.3500 90th Percentile predicted 7.3627
10th Percentile observed 0.2000 10th Percentile predicted 1.5627

Differences (predicted – observed)

Mean difference 0.5114 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 1.7 mg/l.

Number of predicted and observed pairs 712
Number of Predicted Violations 77
Number of Observed Violations 193

[1] observed is dependent, predicted is independent

Deep Water   Dissolved Oxygen (mg/l)
Segment POTMH   Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
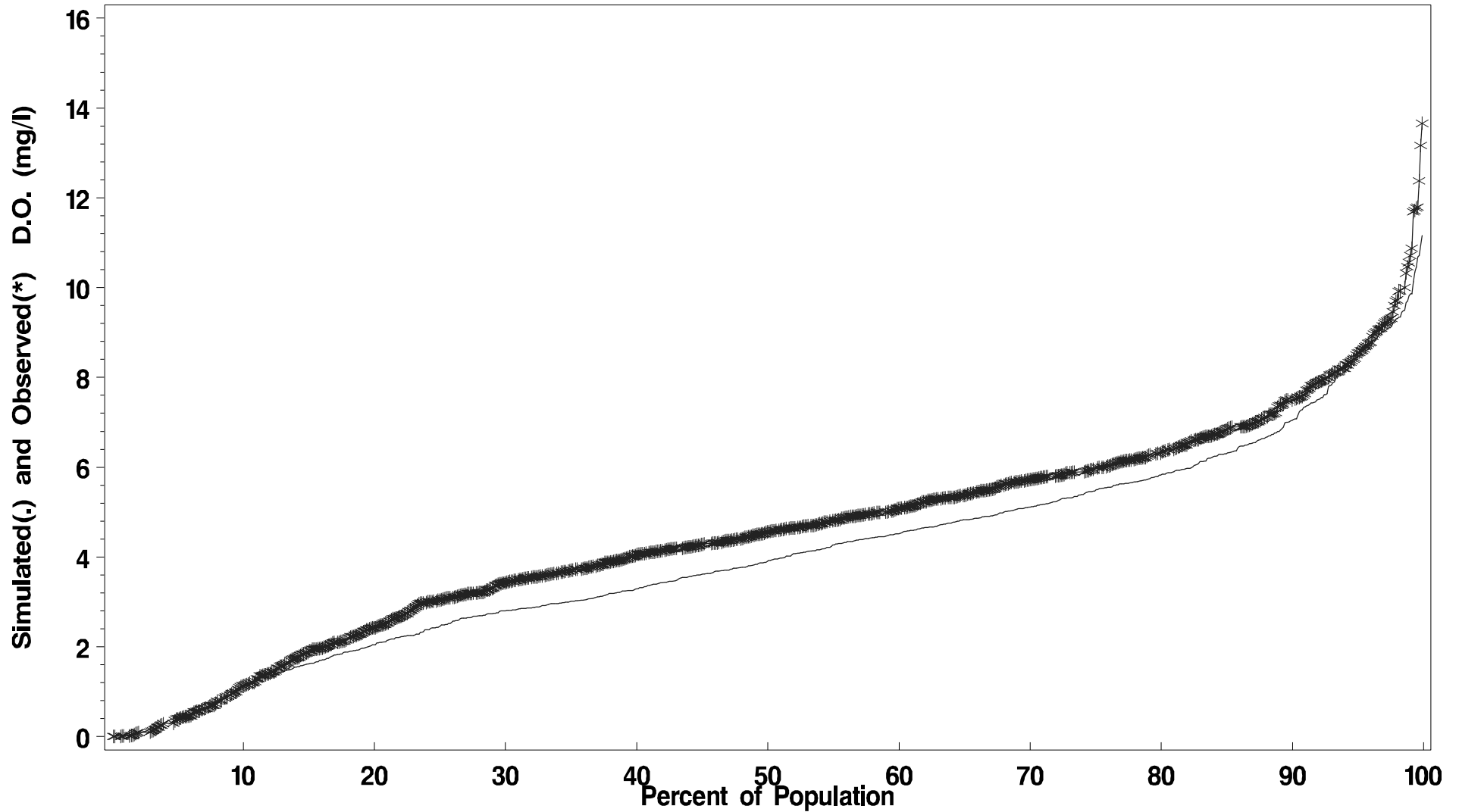
Deep Water   Dissolved Oxygen (mg/l)
Segment POTMH   Season: May 1 – Sept 30
(Scatter Plot)
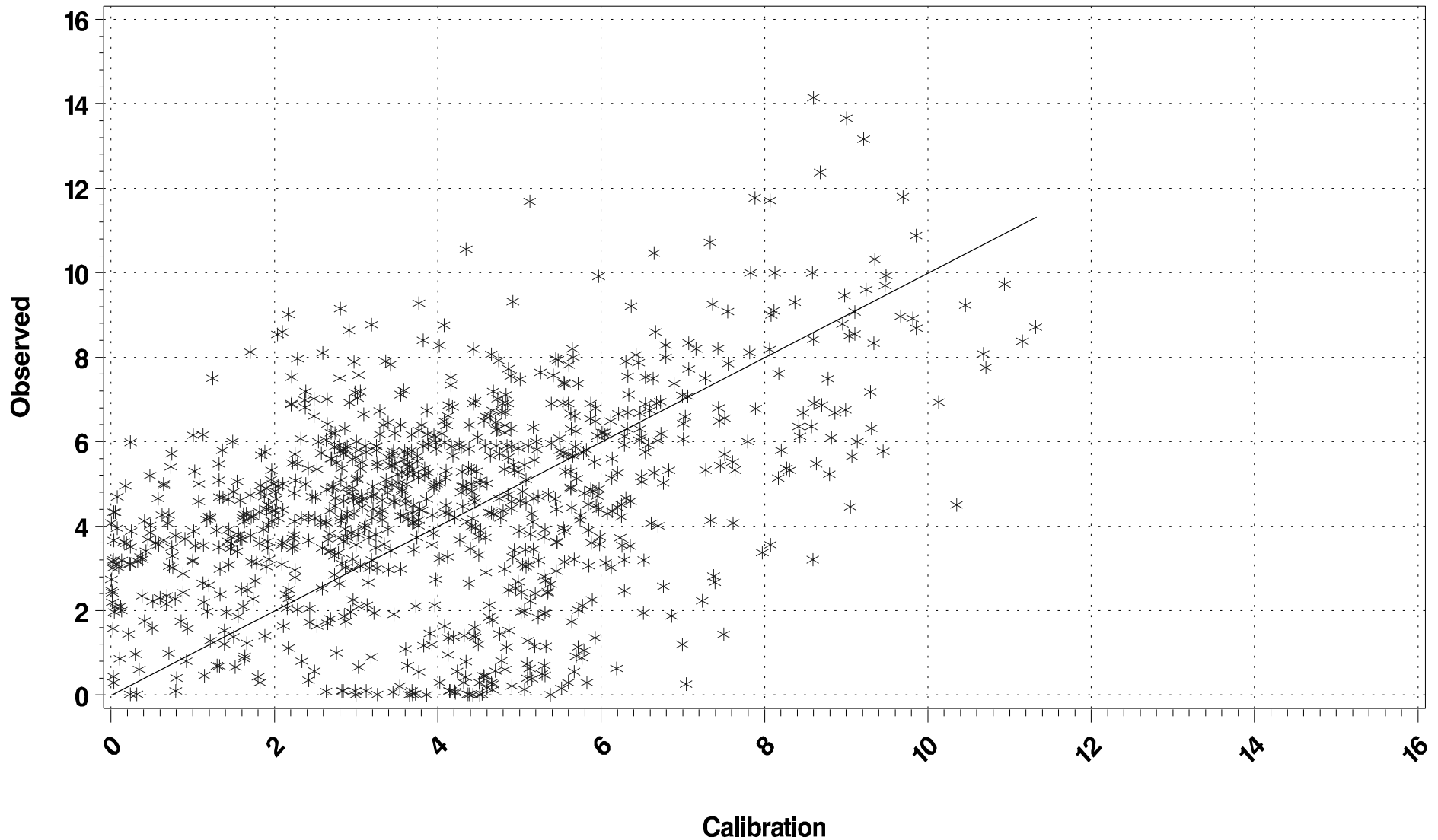
DEEP WATER **Dissolved Oxygen**
Segment POTMH (Potomac Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 688 pairs of predictions and observed data, the **slope** is 0.5407 and the
intercept is 4.6683. The **R-Squared** value for this regression is 0.5016.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 688 pairs of predictions and observed data, the **slope** is 0.5021 and the
intercept is 0.5193. The **R-Squared** value for this regression is 0.4290.

Statistics (units in mg/l)

Mean observed 9.3710   Mean predicted 8.6978
Min. observed 1   Min. predicted 2.637
Max. observed 16.1   Max. predicted 15.22
Std. Dev. Observed 2.2213   Std. Dev. predicted 2.9097
Median observed 9.4050   Median predicted 8.8593
90th Percentile observed 12.1000   90th Percentile predicted 12.7020
10th Percentile observed 6.5333   10th Percentile predicted 4.7527

Differences (predicted – observed)

Mean difference -0.6732 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 3.5 mg/l.

Number of predicted and observed pairs 688
Number of Predicted Violations 10
Number of Observed Violations 6

[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment POTMH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
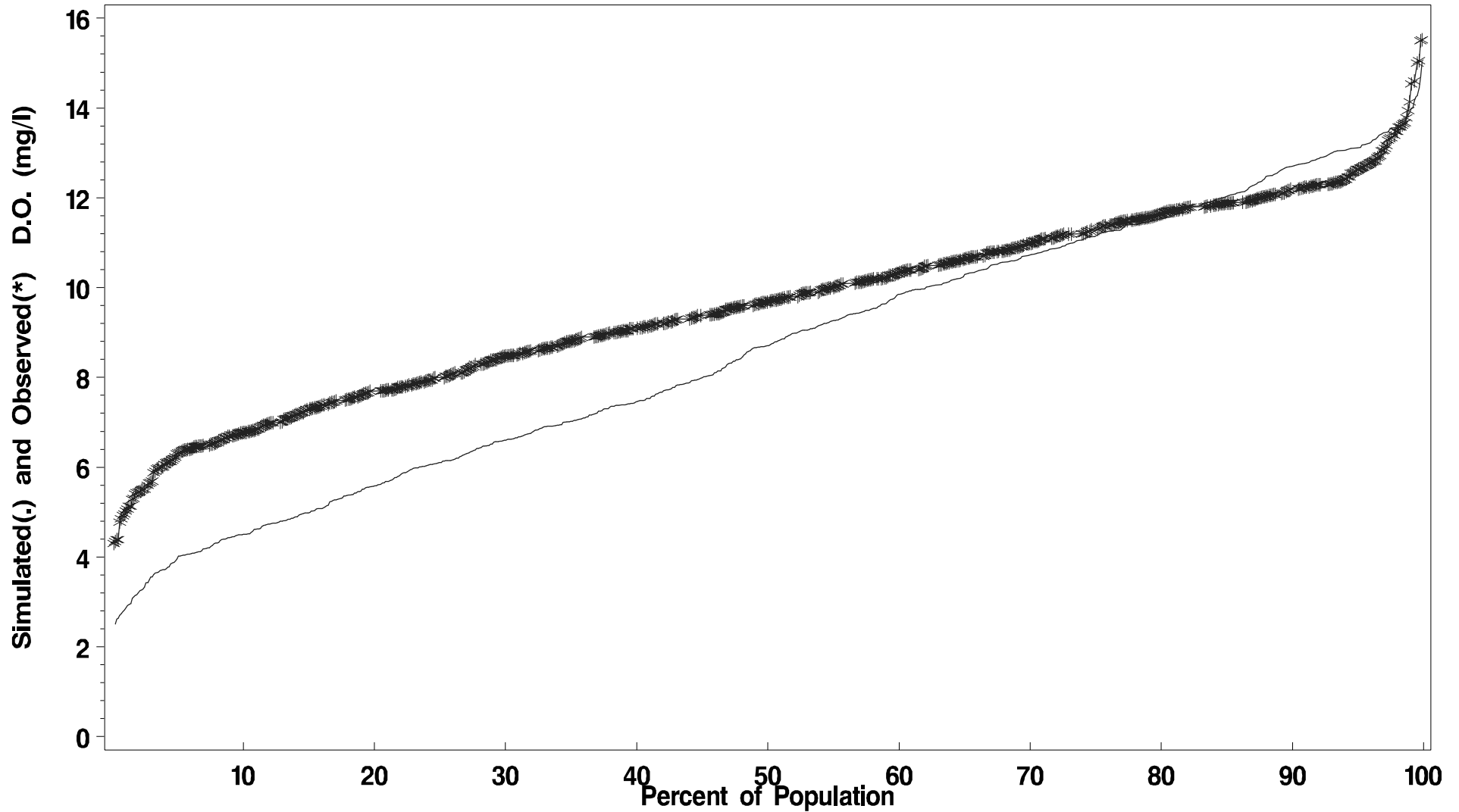
Deep Water   Dissolved Oxygen (mg/l)
Segment POTMH   Season: Oct 1 — April 30

(Scatter Plot)
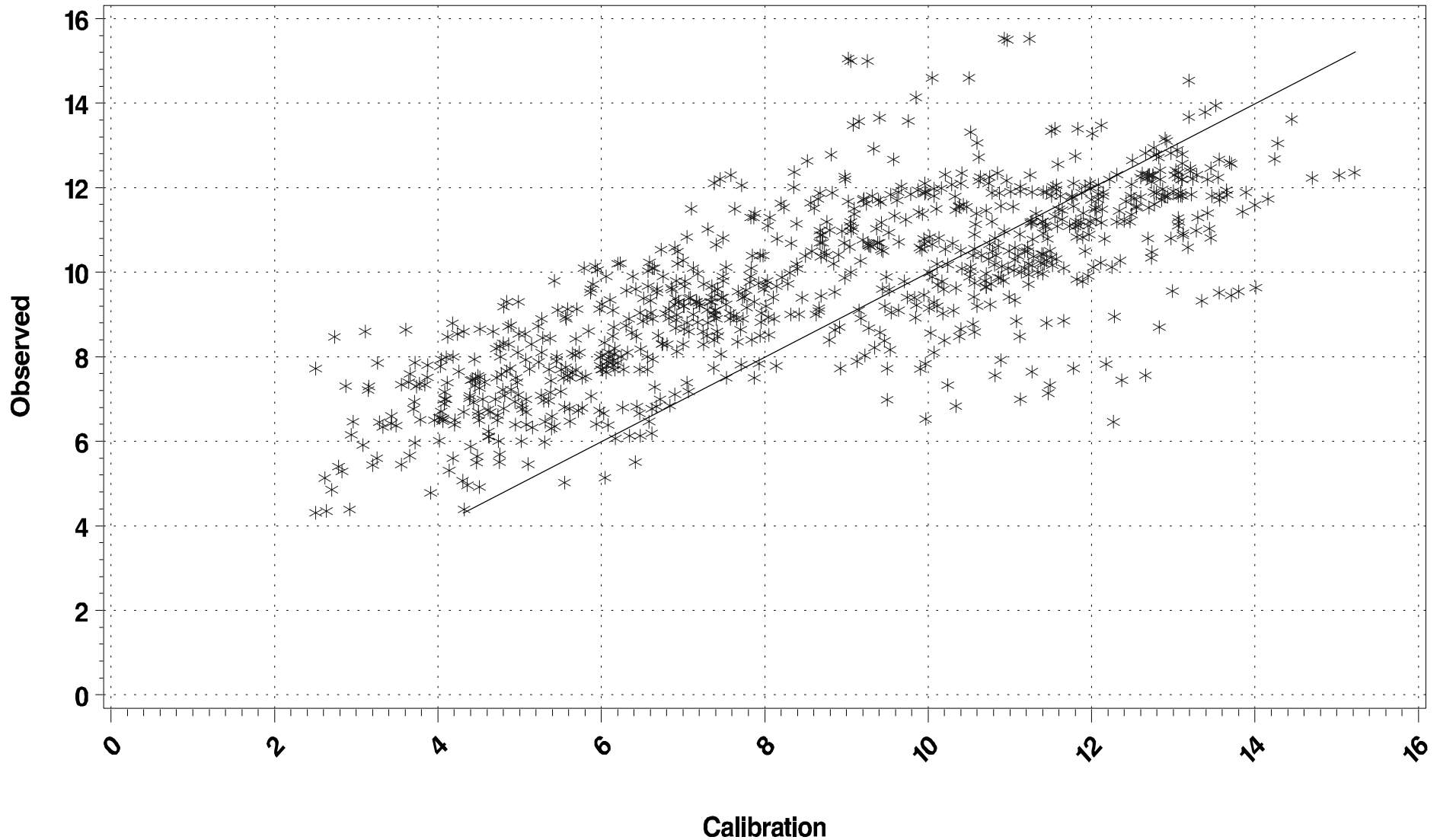
DEEP CHANNEL **Dissolved Oxygen**
Segment POTMH (Potomac Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 110 pairs of predictions and observed data, the **slope** is 0.2608 and the **intercept** is 2.5123. The **R-Squared** value for this regression is 0.0591.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 110 pairs of predictions and observed data, the **slope** is 0.0265 and the **intercept** is 0.5288. The **R-Squared** value for this regression is 0.0006.

Statistics (units in mg/l)

Mean observed 3.2811	Mean predicted 2.9480
Min. observed 0	Min. predicted 0.001
Max. observed 8.2	Max. predicted 9.24
Std. Dev. Observed 2.3989	Std. Dev. predicted 2.2361
Median observed 3.2650	Median predicted 3.0032
90th Percentile observed 6.4000	90th Percentile predicted 5.6543
10th Percentile observed 0.1000	10th Percentile predicted 0.0609

Differences (predicted – observed)

Mean difference -0.3331 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l.

Number of predicted and observed pairs 110
Number of Predicted Violations 23
Number of Observed Violations 28

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)
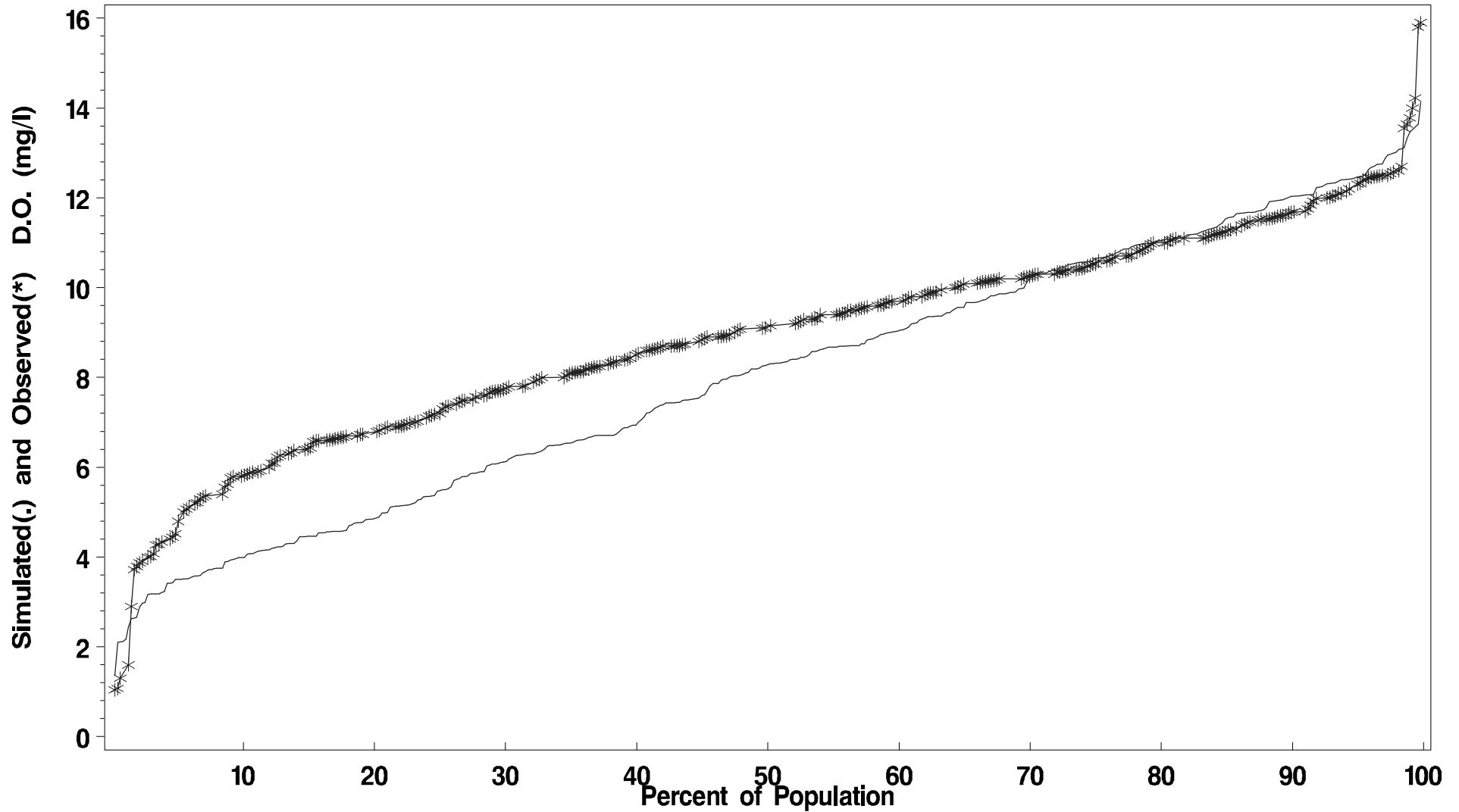# Segment POTMH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Channel Dissolved Oxygen (mg/l)
Segment POTMH Season: May 1 – Sept 30
(Scatter Plot)
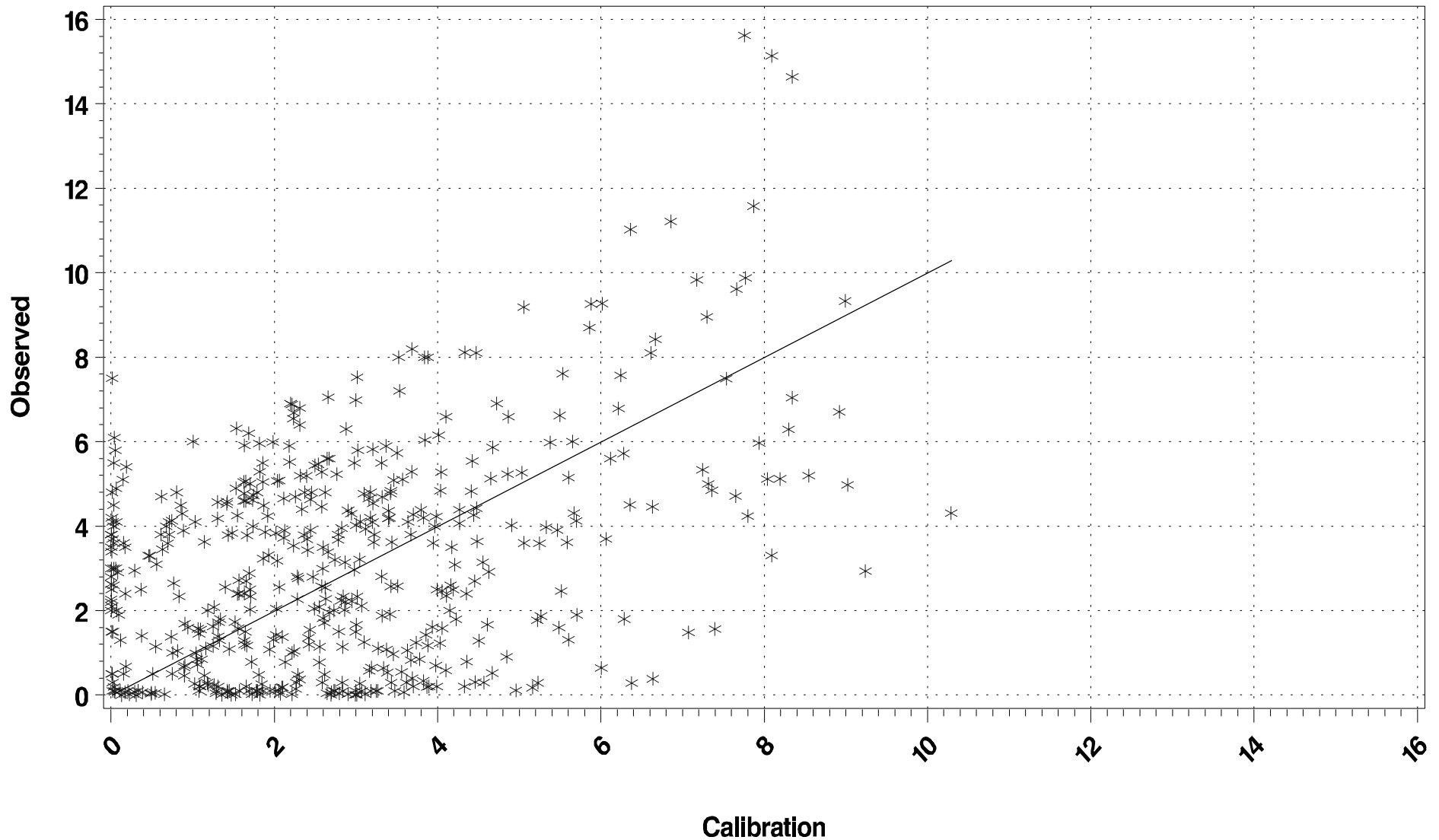
DEEP CHANNEL **Dissolved Oxygen**
Segment POTMH (Potomac Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 80 pairs of predictions and observed data, the **slope** is 0.4904 and the **intercept** is 5.5160. The **R-Squared** value for this regression is 0.6278.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 80 pairs of predictions and observed data, the **slope** is 0.3956 and the **intercept** is 0.6453. The **R-Squared** value for this regression is 0.6032.

Statistics (units in mg/l)

Mean observed 9.3947   Mean predicted 7.9097
Min. observed 4.8   Min. predicted 2.367
Max. observed 13.67   Max. predicted 14.24
Std. Dev. Observed 2.0310   Std. Dev. predicted 3.2816
Median observed 9.5750   Median predicted 7.6866
90th Percentile observed 11.7500   90th Percentile predicted 12.3545
10th Percentile observed 6.7000   10th Percentile predicted 3.8365

Differences (predicted – observed)

Mean difference -1.4850 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 80
Number of Predicted Violations 6
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Deep Channel Dissolved Oxygen (mg/l)
Segment POTMH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Simulated(.) and Observed(*) D.O. (mg/l)

Percent of Population

Deep Channel Dissolved Oxygen (mg/l)
Segment POTMH Season: Oct 1 – April 30

(Scatter Plot)

Observed (y-axis)
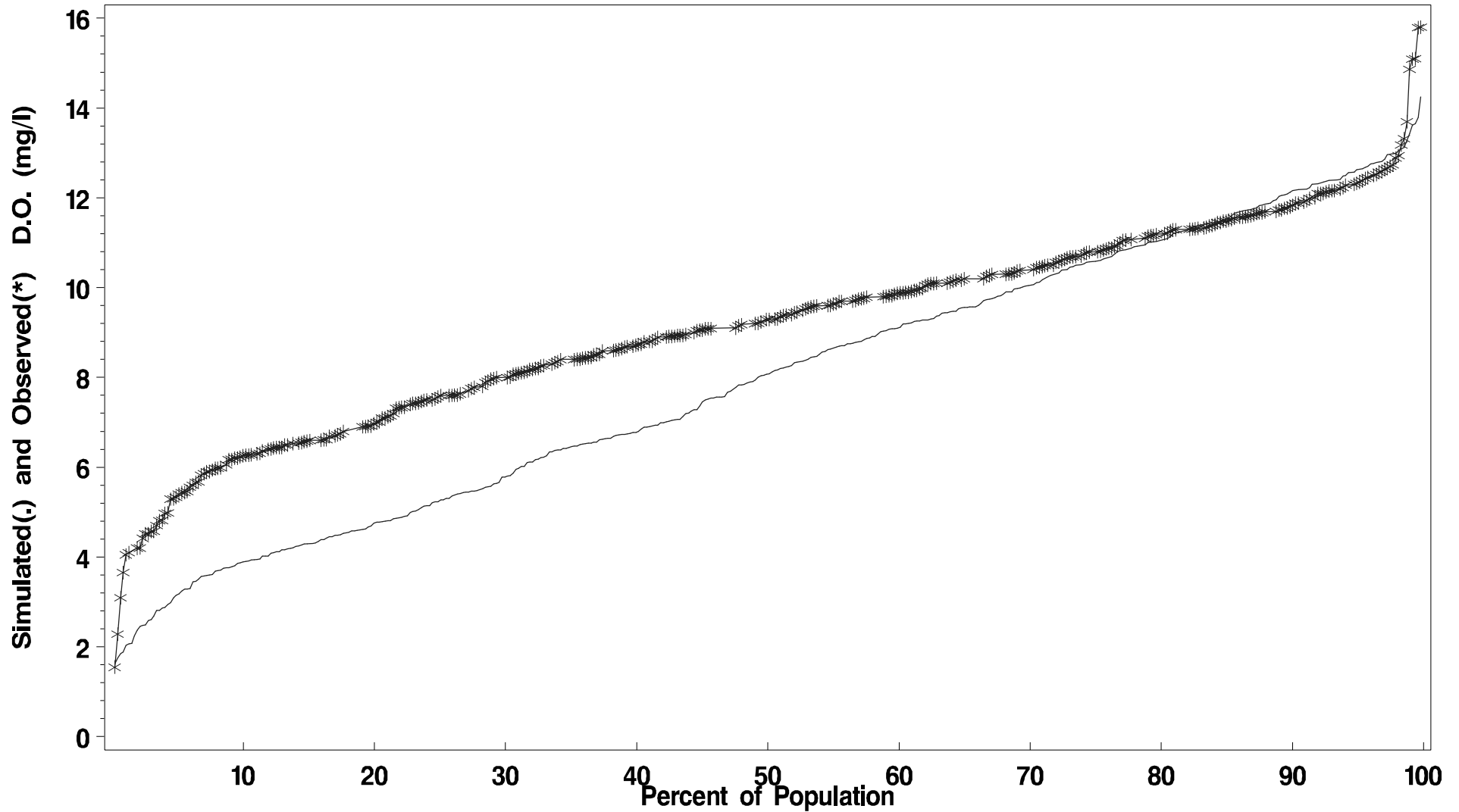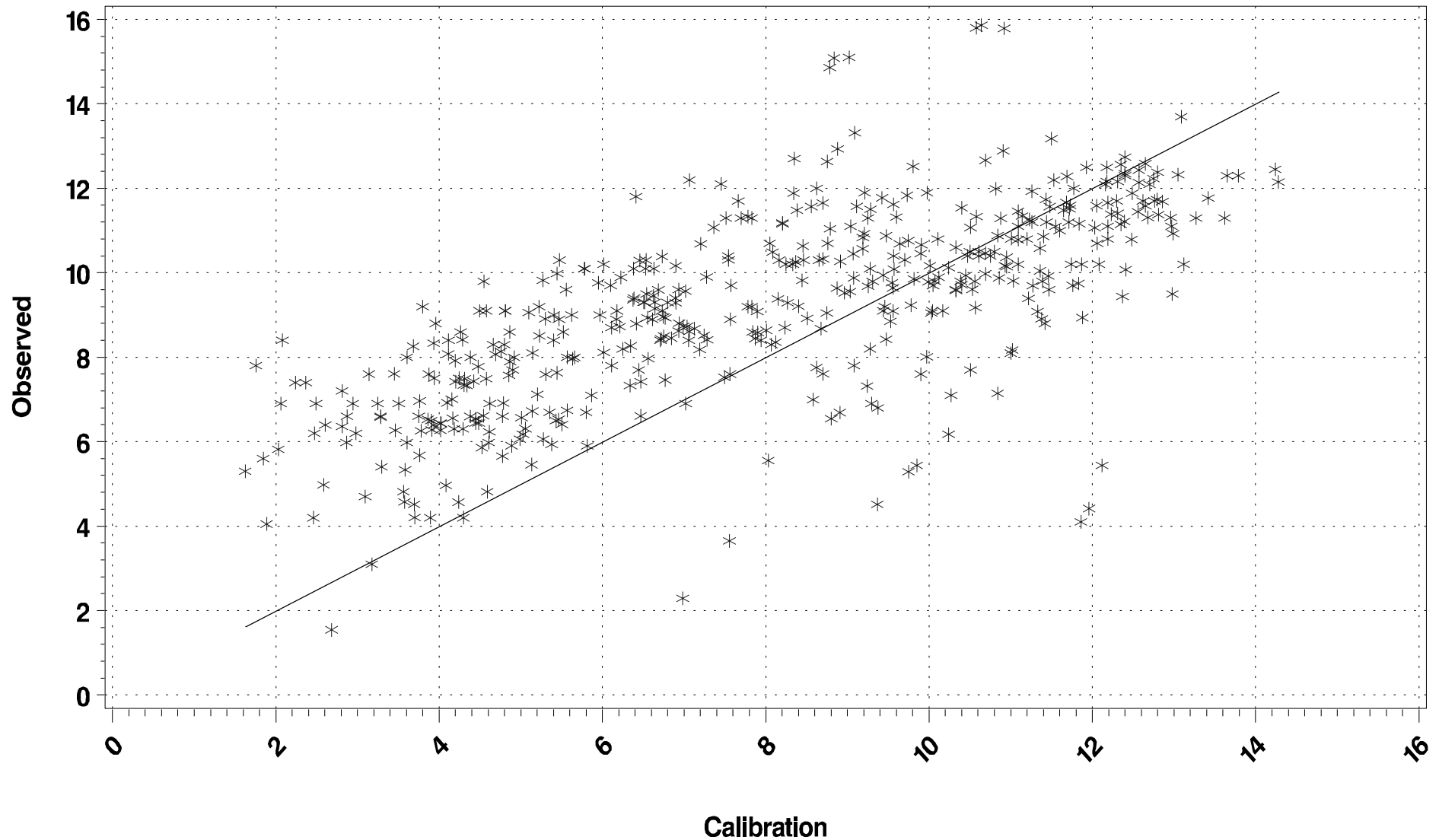
Calibration (x-axis)

Regression of Calibration vs. Observations[1]

Using the 192 pairs of predictions and observed data, the **slope** is 0.7002 and the **intercept** is -0.3000. The **R-Squared** value for this regression is 0.3926.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 192 pairs of predictions and observed data, the **slope** is 1.0389 and the **intercept** is -0.2420. The **R-Squared** value for this regression is 0.4171.

Statistics (units in mg/l)

Mean observed 2.4058   Mean predicted 3.8644
Min. observed 0   Min. predicted 0.0116
Max. observed 7.7   Max. predicted 10.29
Std. Dev. Observed 2.2154   Std. Dev. predicted 1.9824
Median observed 1.9337   Median predicted 3.6348
90th Percentile observed 5.9000   90th Percentile predicted 6.7248
10th Percentile observed 0.1000   10th Percentile predicted 1.4423

Differences (predicted – observed)

Mean difference 1.4586 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 192
Number of Predicted Violations 11
Number of Observed Violations 73

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[1] observed is dependent, predicted is independent

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment POTMH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Channel Anoxic   Dissolved Oxygen (mg/l)
Segment POTMH   Season: May 1 — Sept 30
(Scatter Plot)

<div align="center">

DEEP CHANNEL ANOXIC **Dissolved Oxygen**
Segment POTMH (Potomac Mesohaline)
Oct 1 - April 30

</div>
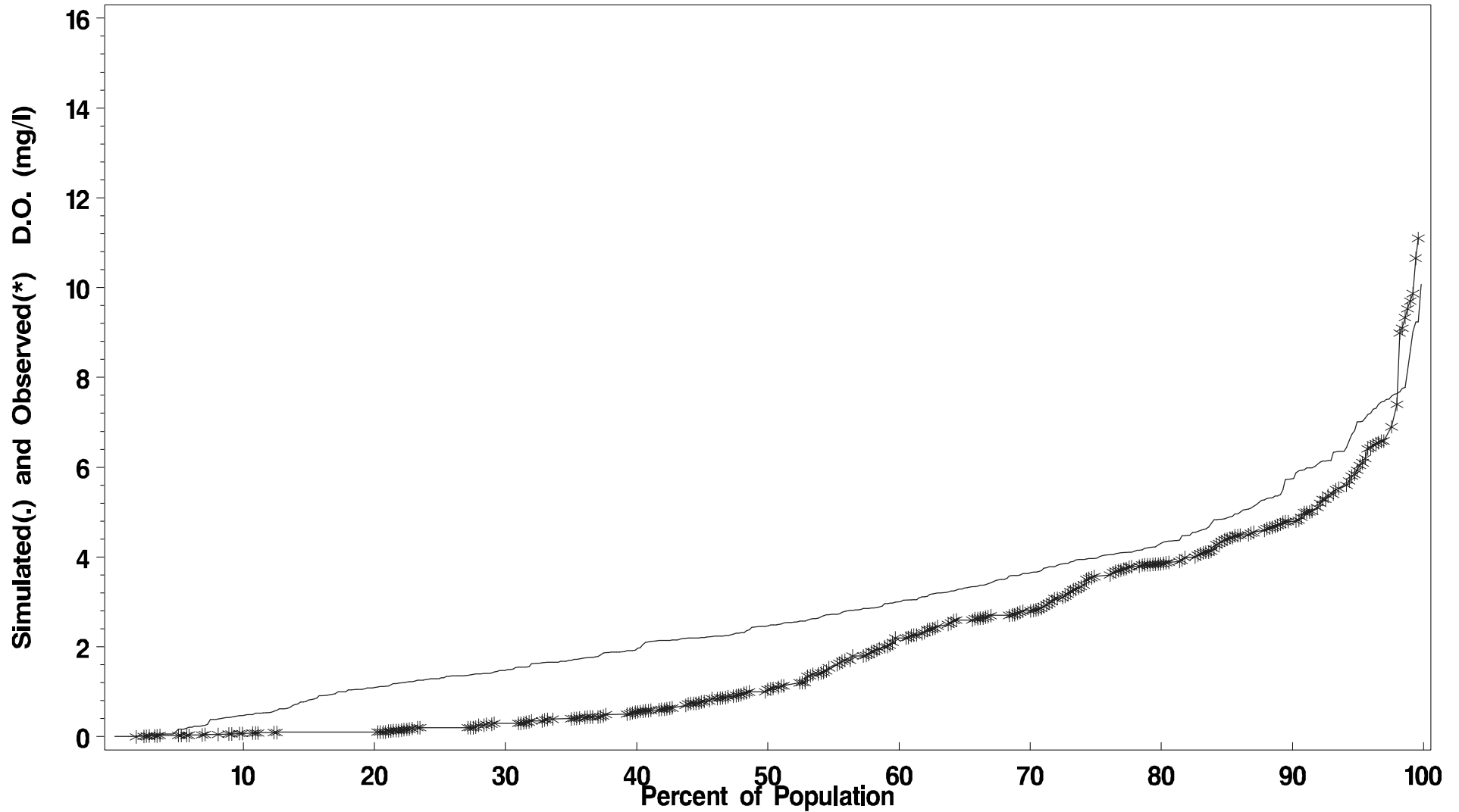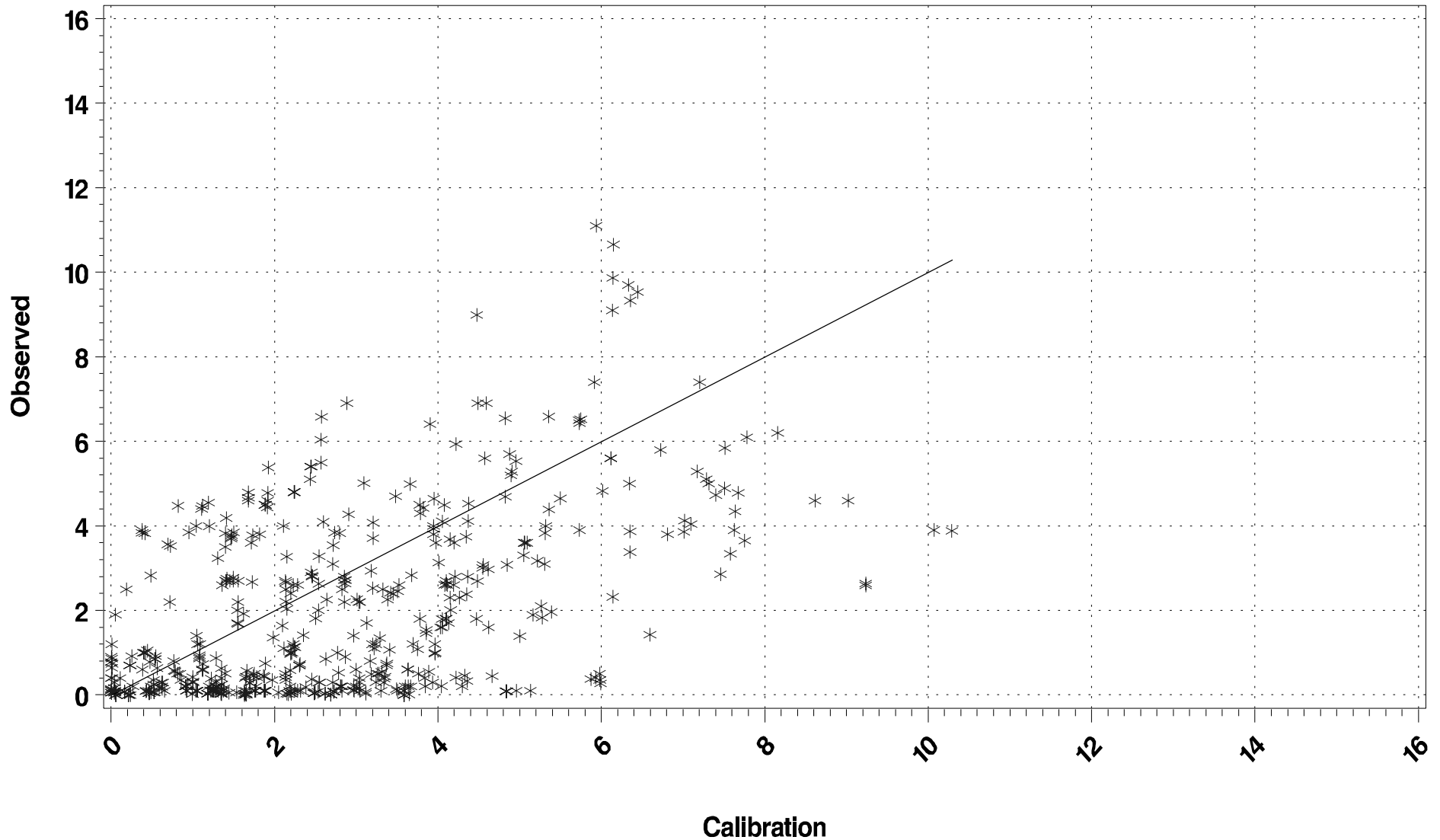
Regression of Calibration vs. Observations[1]

Using the 180 pairs of predictions and observed data, the **slope** is 0.5401 and the **intercept** is 4.8137. The **R-Squared** value for this regression is 0.5985.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 180 pairs of predictions and observed data, the **slope** is 0.4718 and the **intercept** is 0.5575. The **R-Squared** value for this regression is 0.5587.

Statistics (units in mg/l)

Mean observed 9.4852   Mean predicted 8.6493
Min. observed 4.19   Min. predicted 2.884
Max. observed 13.7   Max. predicted 14.28
Std. Dev. Observed 1.9678   Std. Dev. predicted 2.8186
Median observed 9.7000   Median predicted 8.7508
90th Percentile observed 11.8325   90th Percentile predicted 12.3135
10th Percentile observed 6.7500   10th Percentile predicted 4.7708

Differences (predicted – observed)

Mean difference -0.8360 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l. In the Deep Channel Anoxic designated use, the final criteria will likely allow seasonal anoxic, and no DO minimum will be established for the May 1 to September 30 period.

Number of predicted and observed pairs 180
Number of Predicted Violations 3
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent
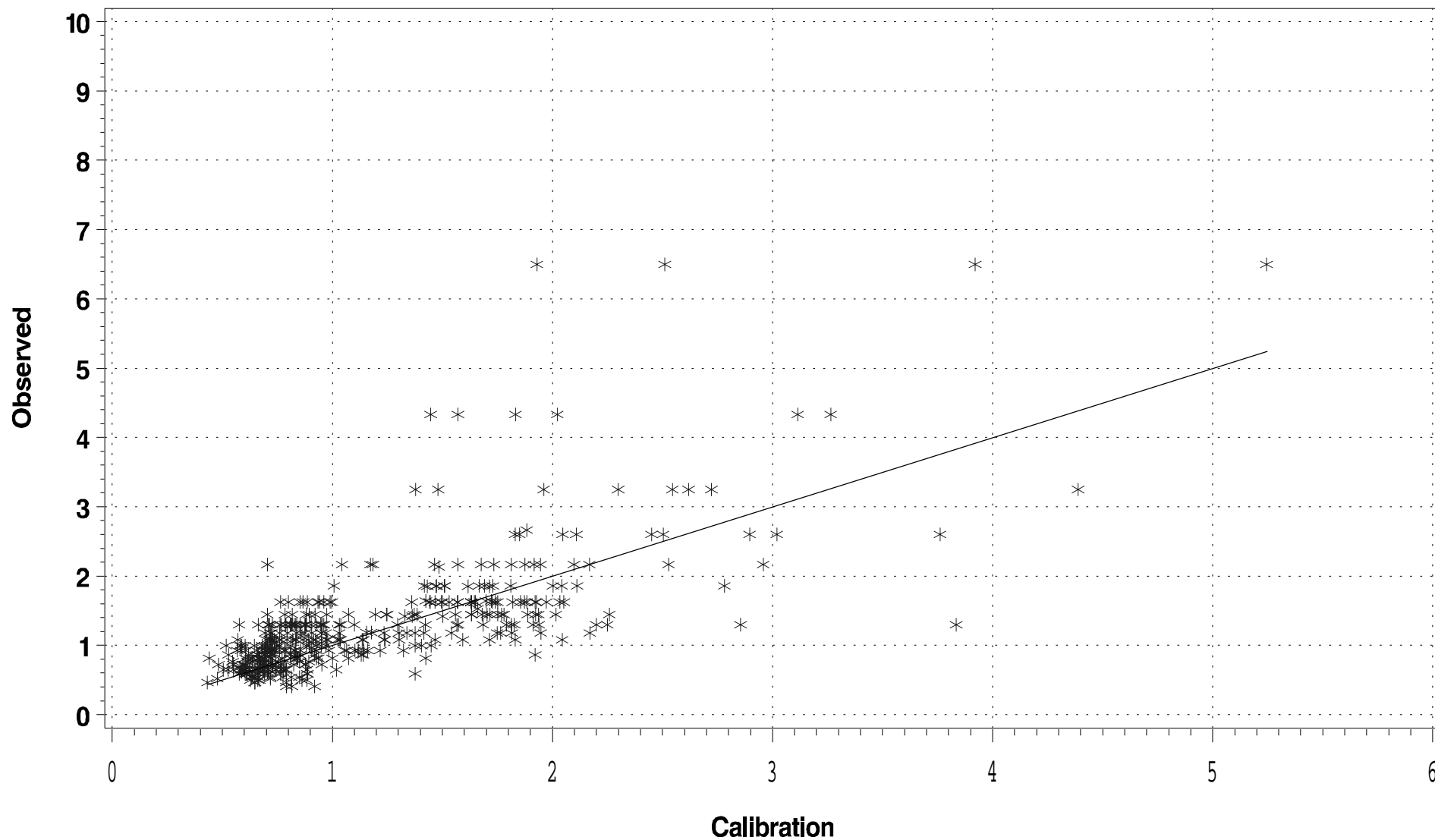
Deep Channel Anoxic   Dissolved Oxygen (mg/l)
Segment POTMH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Channel Anoxic Dissolved Oxygen (mg/l)
Segment POTMH Season: Oct 1 – April 30
(Scatter Plot)
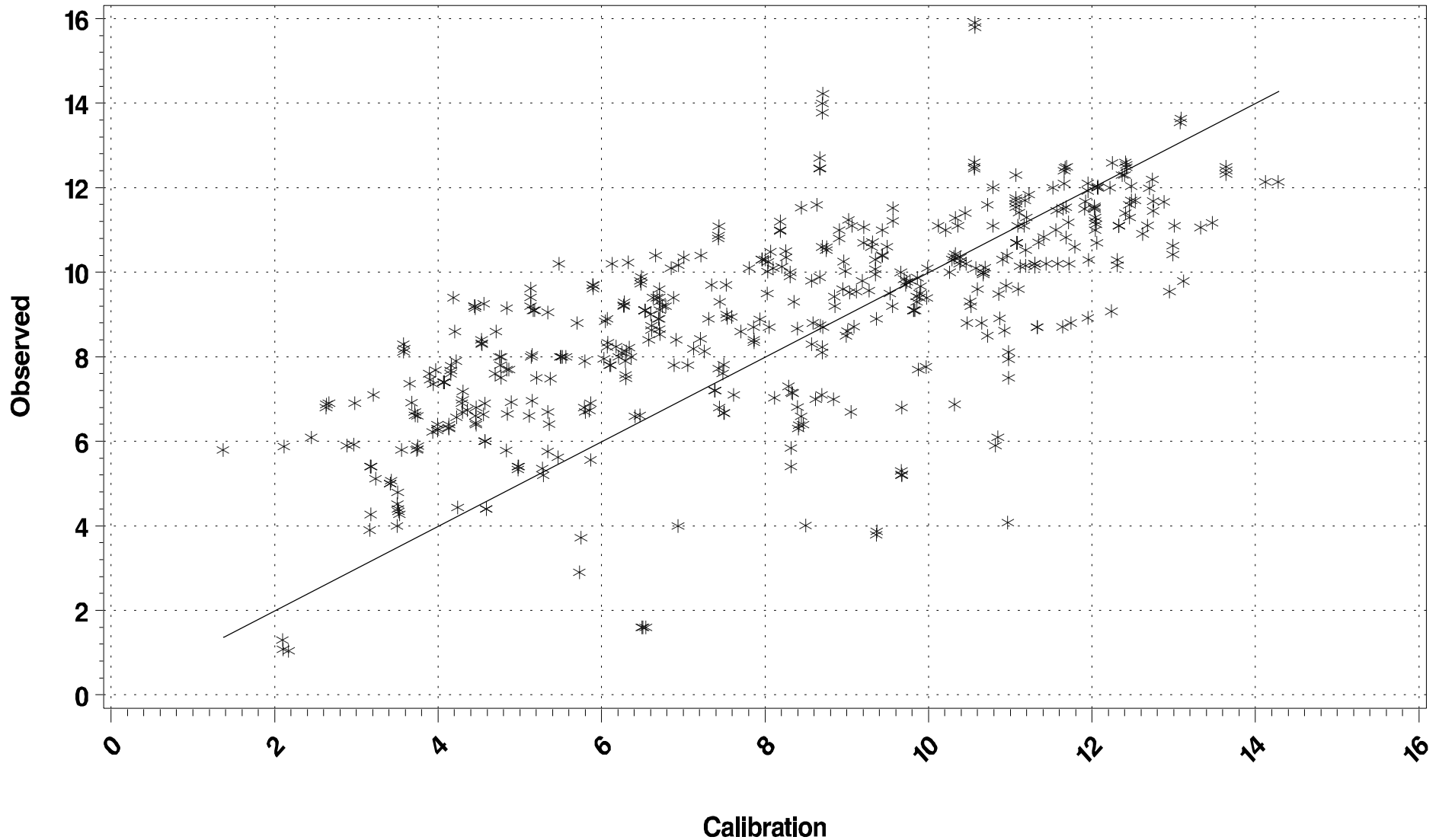
Regression of Calibration vs. Observations[1]
Using the 178 pairs of predictions and observed data, the **slope** is 0.9904 and the **intercept** is 2.9979. The **R-Squared** value for this regression is 0.0921.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 178 pairs of predictions and observed data, the **slope** is 0.3764 and the **intercept** is 0.6474. The **R-Squared** value for this regression is 0.0364.

Statistics (units in µg/l)

Mean observed 12.1770   Mean predicted 9.2680
Min. observed 1.7971   Min. predicted 3.8957
Max. observed 67.4086   Max. predicted 23.8150
Std. Dev. Observed 11.4549   Std. Dev. predicted 3.5099
Median observed 9.1104   Median predicted 8.4254
95th Percentile observed 35.7353   95th Percentile predicted 16.2830
10th Percentile observed 3.9936   10th Percentile predicted 5.4366

Differences (predicted – observed)

Mean difference -2.9090 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment POTMH   Season: July 1 − Sept 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
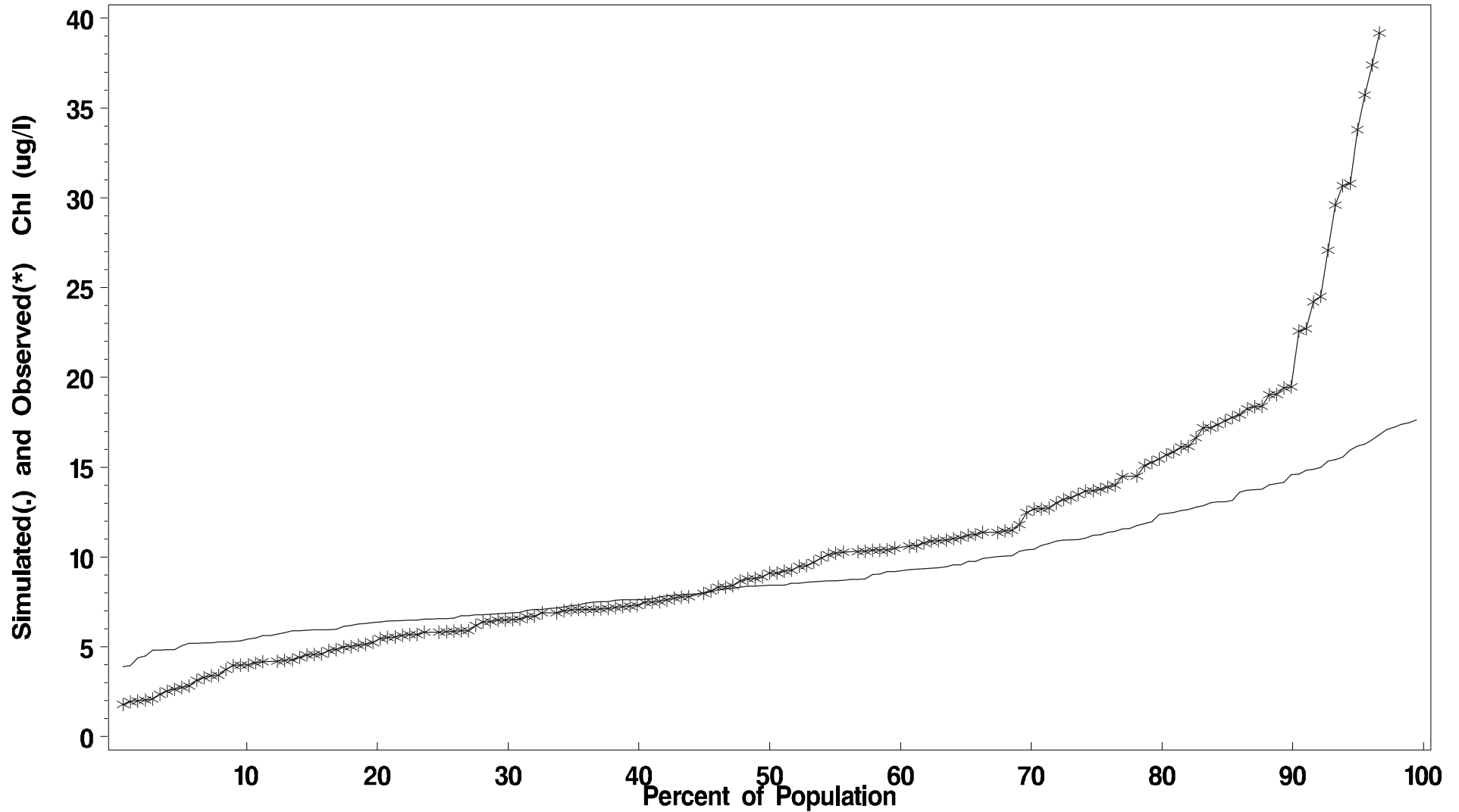
Chlorophyll Concentration (ug/l)
Segment POTMH   Season: July 1 – Sept 30
(Scatter Plot)
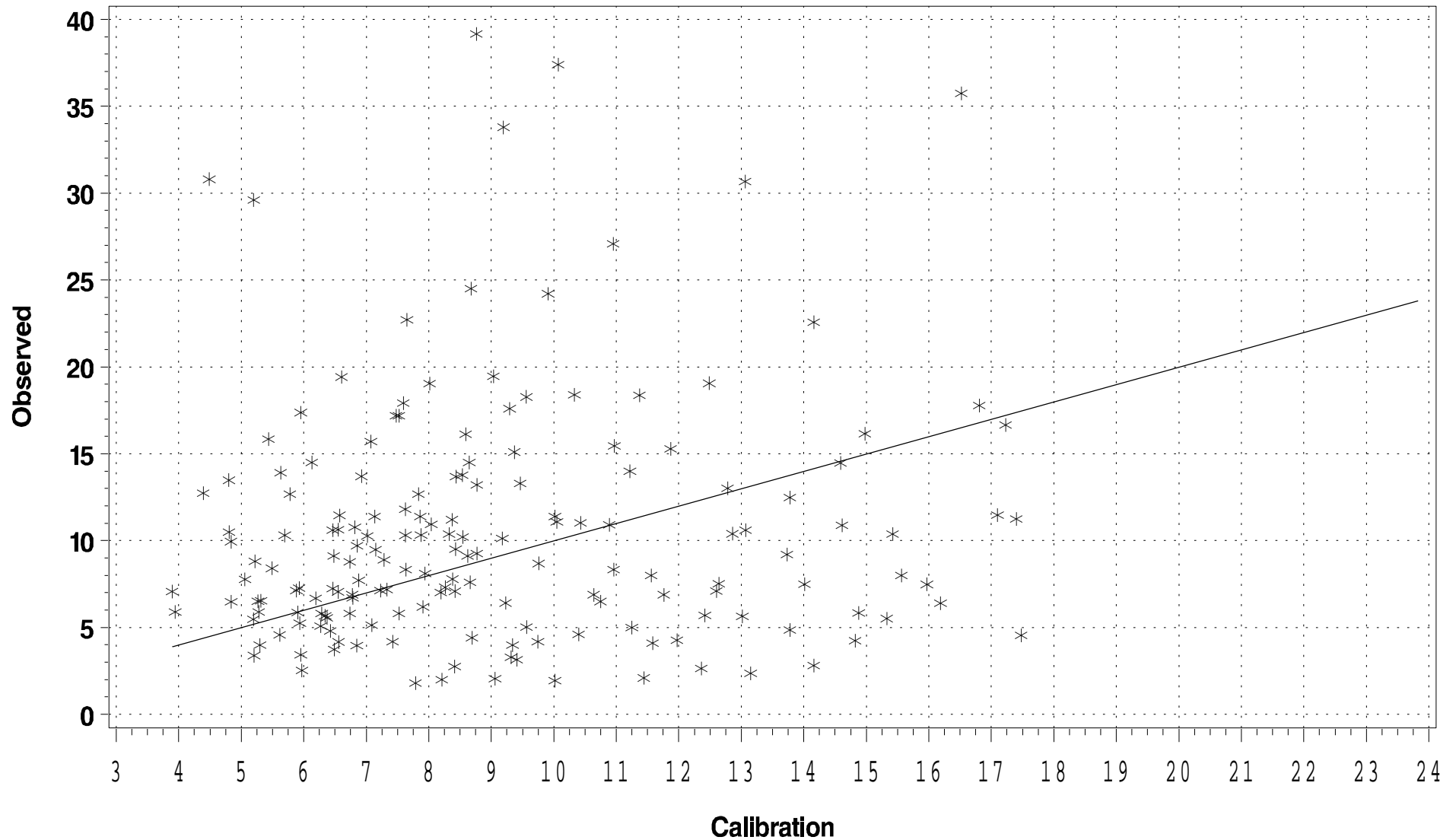
Regression of Calibration vs. Observations[1]
Using the 163 pairs of predictions and observed data, the **slope** is 0.0781 and the
intercept is 13.3420. The **R-Squared** value for this regression is 0.0017.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 163 pairs of predictions and observed data, the **slope** is 0.1146 and the
intercept is 0.8522. The **R-Squared** value for this regression is 0.0034.

Statistics (units in μg/l)

Mean observed 14.8347   Mean predicted 19.1028
Min. observed 0.4992   Min. predicted 4.0636
Max. observed 108.0282   Max. predicted 47.8680
Std. Dev. Observed 18.6598   Std. Dev. predicted 9.7890
Median observed 7.8249   Median predicted 15.6710
95th Percentile observed 58.0138   95th Percentile predicted 38.6020
10th Percentile observed 2.1787   10th Percentile predicted 9.1144

Differences (predicted – observed)

Mean difference 4.2681 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment POTMH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Y-axis: Simulated(.) and Observed(*) Chl (ug/l)

X-axis: Percent of Population
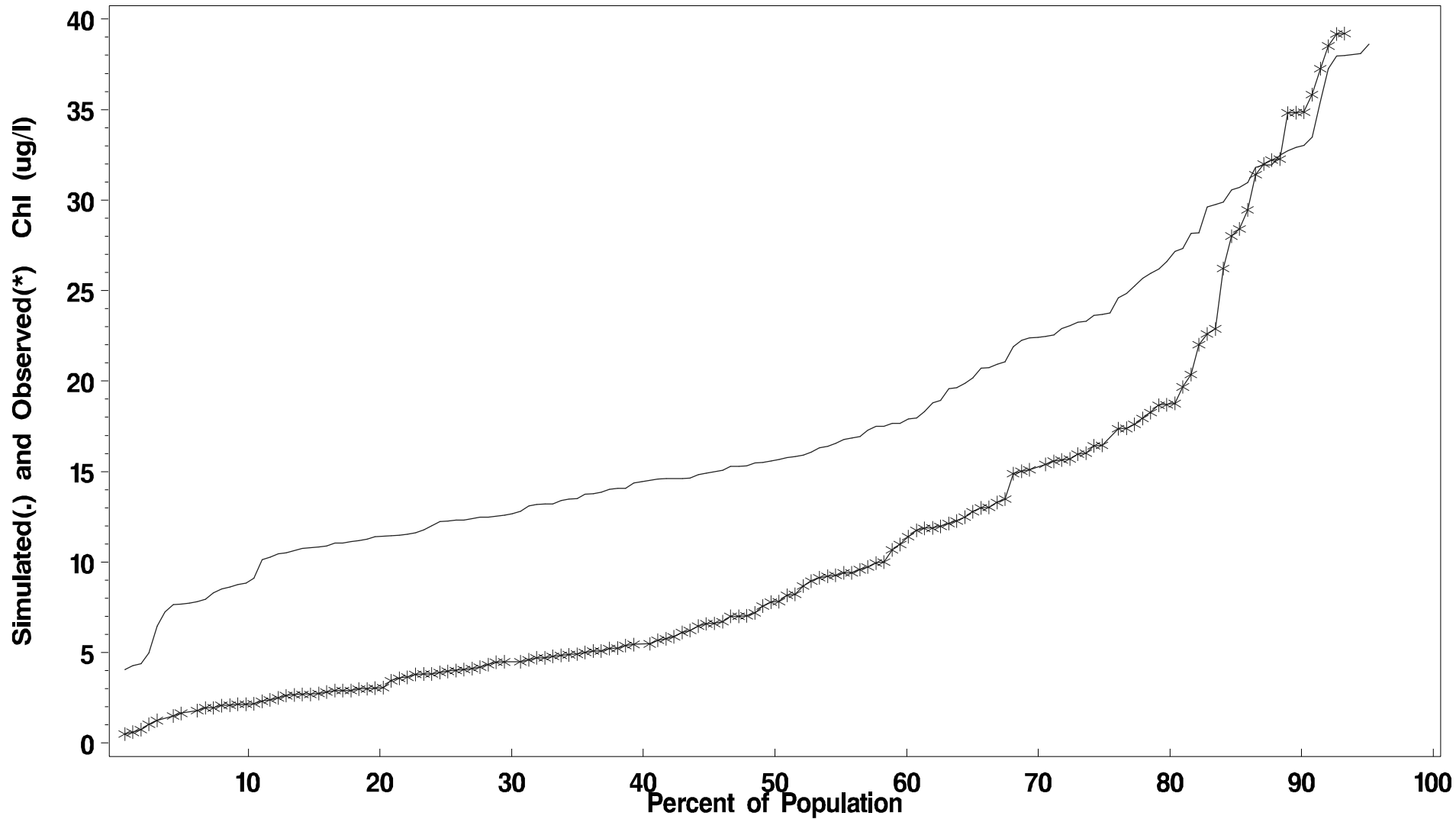
Chlorophyll Concentration (ug/l)
Segment POTMH   Season: March 1 – May 30
(Scatter Plot)
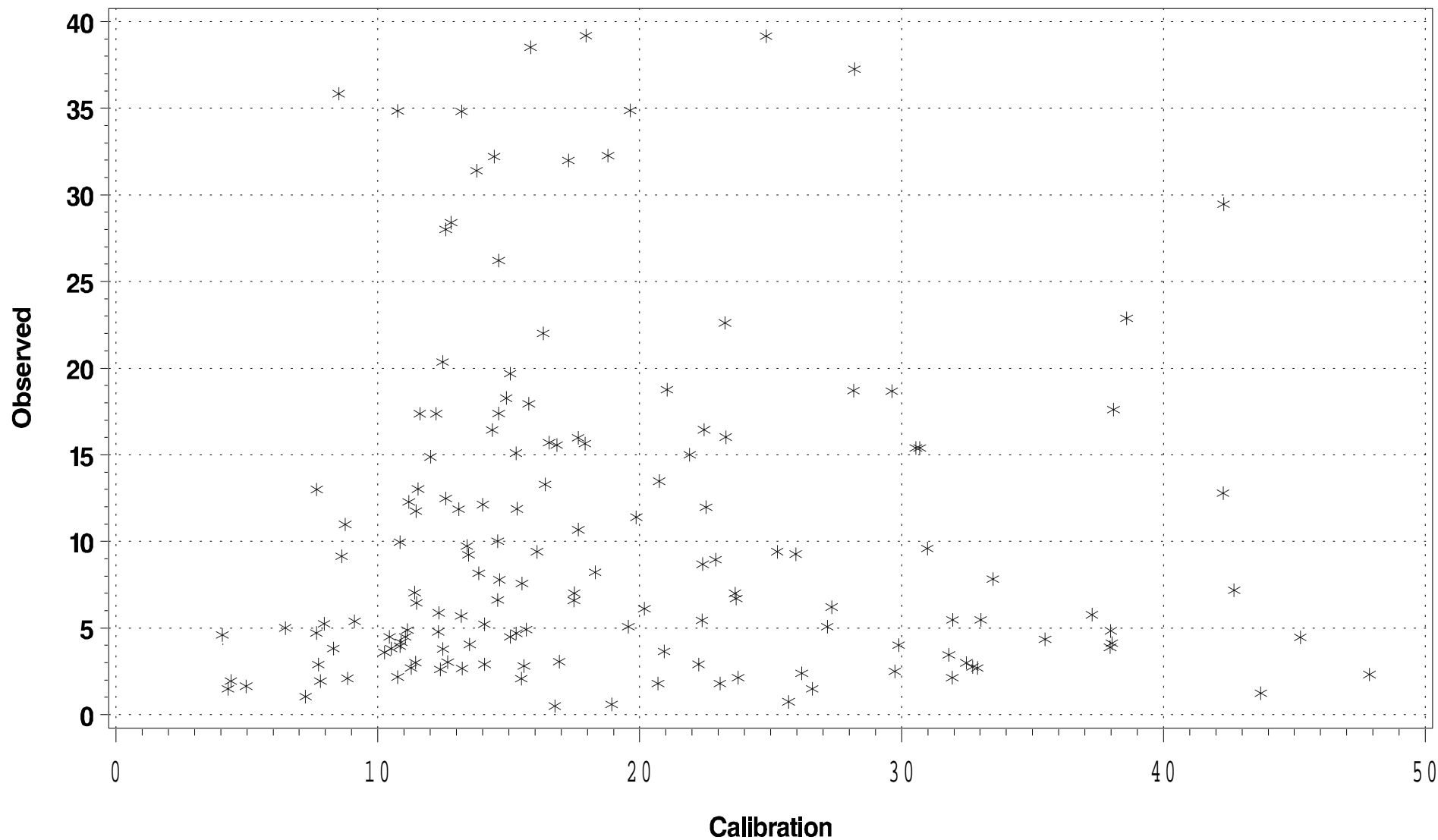
MESOHALINE **Light Attenuation**
Segment POTMH (Potomac Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 418 pairs of predictions and observed data, the **slope** is 0.9288 and the **intercept** is 0.2143. The **R-Squared** value for this regression is 0.5128.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 418 pairs of predictions and observed data, the **slope** is 0.8235 and the **intercept** is 0.0780. The **R-Squared** value for this regression is 0.5637.

Statistics (units in 1/m)

Mean observed 1.3033   Mean predicted 1.1726
Min. observed 0.4063   Min. predicted 0.4328
Max. observed 6.5000   Max. predicted 5.2452
Std. Dev. Observed 0.8366   Std. Dev. predicted 0.6450
Median observed 1.0833   Median predicted 0.9052
90th Percentile observed 2.1667   90th Percentile predicted 1.9365
10th Percentile observed 0.6500   10th Percentile predicted 0.6322

Differences (predicted – observed)

Mean difference -0.1308 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment POTMH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment POTMH Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment RPPTF
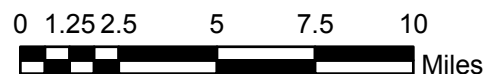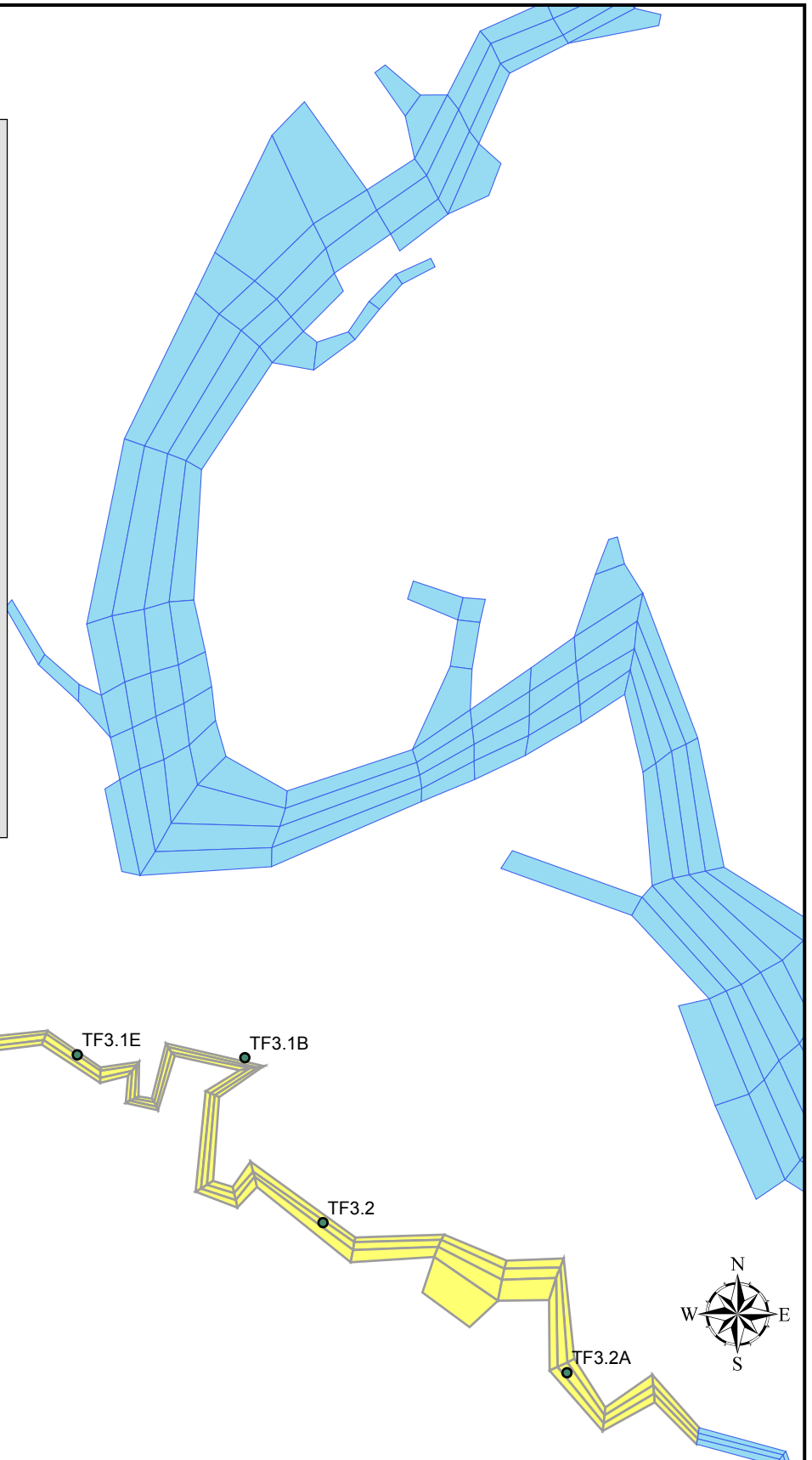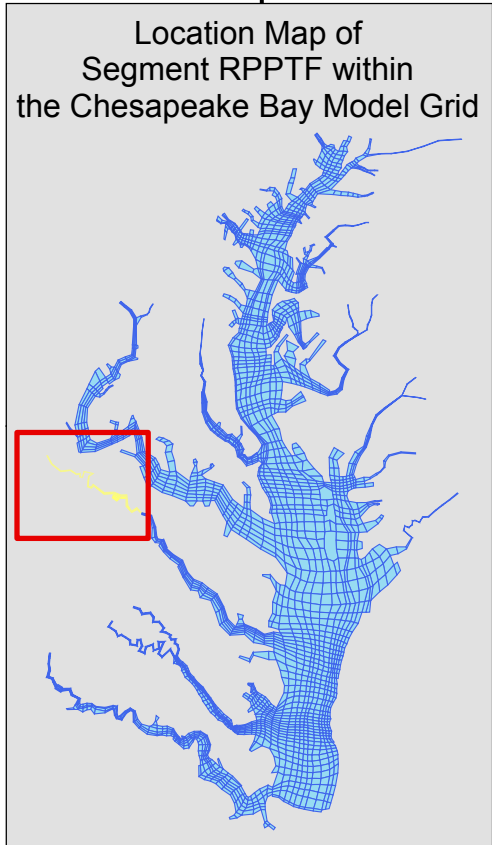
Location Map of
Segment RPPTF within
the Chesapeake Bay Model Grid

TF3.1D

TF3.1A

TF3.1E

TF3.1B

TF3.2

TF3.2A

N
W   E
S

Chesapeake Bay Program

0 1.25 2.5   5   7.5   10
Miles

Regression of Calibration vs. Observations[1]

Using the 394 pairs of predictions and observed data, the **slope** is 0.5331 and the
intercept is 3.8936. The **R-Squared** value for this regression is 0.1708.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 394 pairs of predictions and observed data, the **slope** is 0.5546 and the
intercept is 0.4278. The **R-Squared** value for this regression is 0.1571.

Statistics (units in mg/l)

Mean observed 9.4342   Mean predicted 10.3931
Min. observed 6   Min. predicted 5.714
Max. observed 13.28   Max. predicted 13.38
Std. Dev. Observed 1.7885   Std. Dev. predicted 1.3864
Median observed 9.3000   Median predicted 10.4900
90th Percentile observed 11.8000   90th Percentile predicted 12.1890
10th Percentile observed 7.1000   10th Percentile predicted 8.5106


Differences (predicted – observed)

Mean difference 0.9588 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 5 mg/l.

Number of predicted and observed pairs 394
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)

Segment RPPTF   Season: Feb 15 − June 10

Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
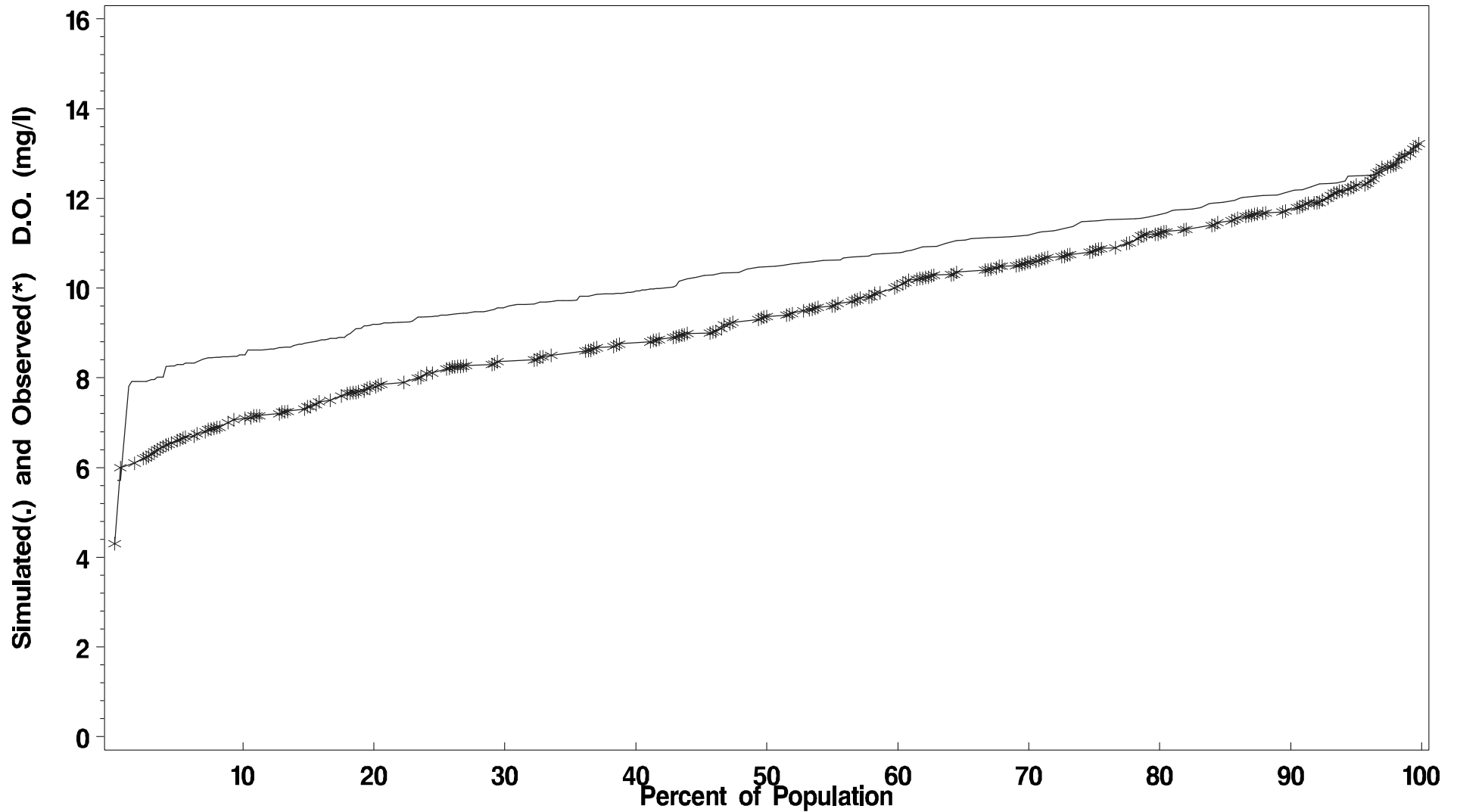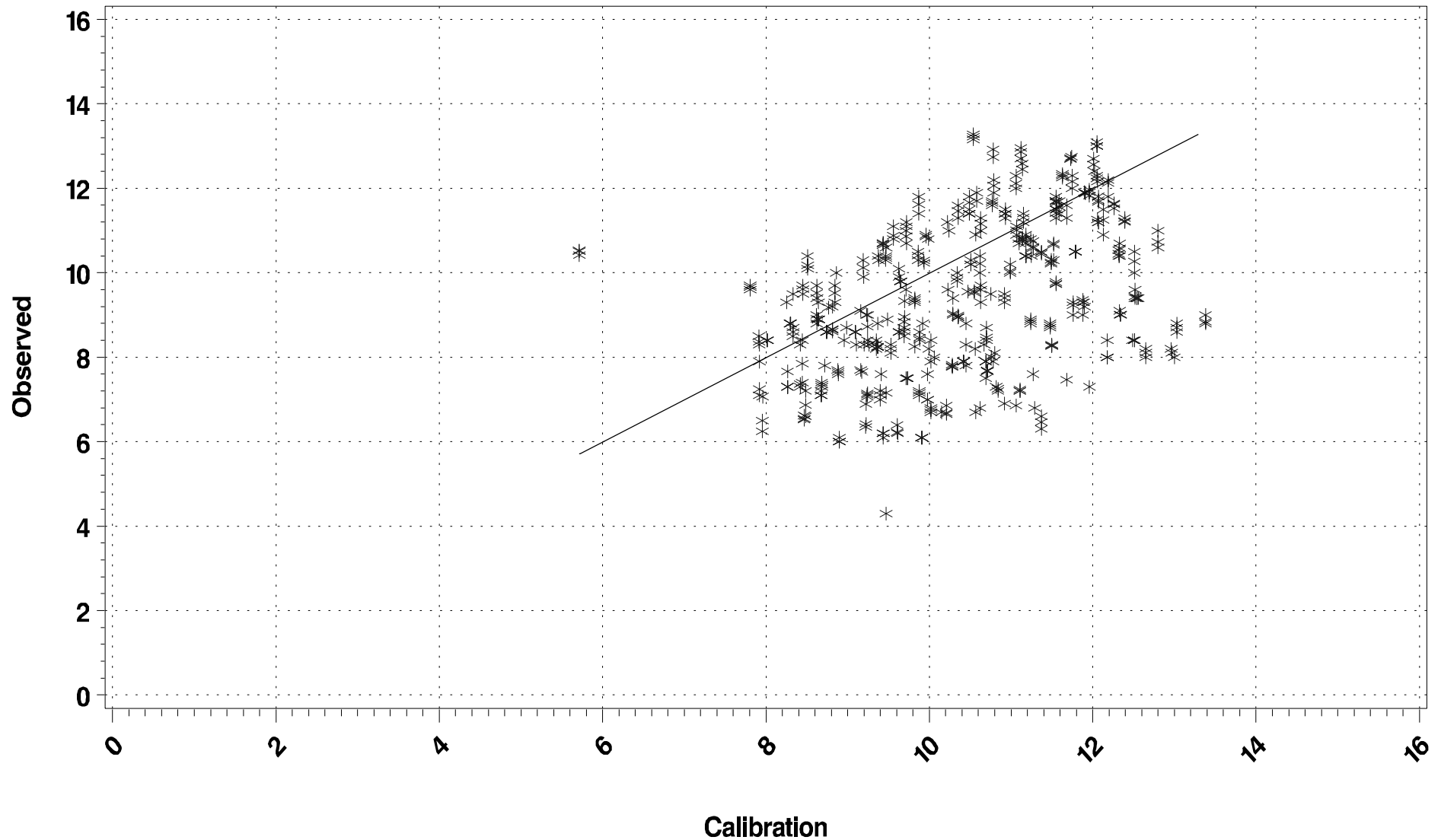
Migratory Dissolved Oxygen (mg/l)
Segment RPPTF Season: Feb 15 – June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 619 pairs of predictions and observed data, the **slope** is 0.7655 and the **intercept** is 1.7354. The **R-Squared** value for this regression is 0.4121.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 619 pairs of predictions and observed data, the **slope** is 0.4874 and the **intercept** is 0.4898. The **R-Squared** value for this regression is 0.2312.

Statistics (units in mg/l)

Mean observed 8.6087   Mean predicted 8.9792
Min. observed 4.3   Min. predicted 0.8244
Max. observed 15.8   Max. predicted 12.97
Std. Dev. Observed 2.1026   Std. Dev. predicted 1.7632
Median observed 8.2000   Median predicted 8.7521
90th Percentile observed 11.7000 90th Percentile predicted 11.6610
10th Percentile observed 6.3000   10th Percentile predicted 7.0952
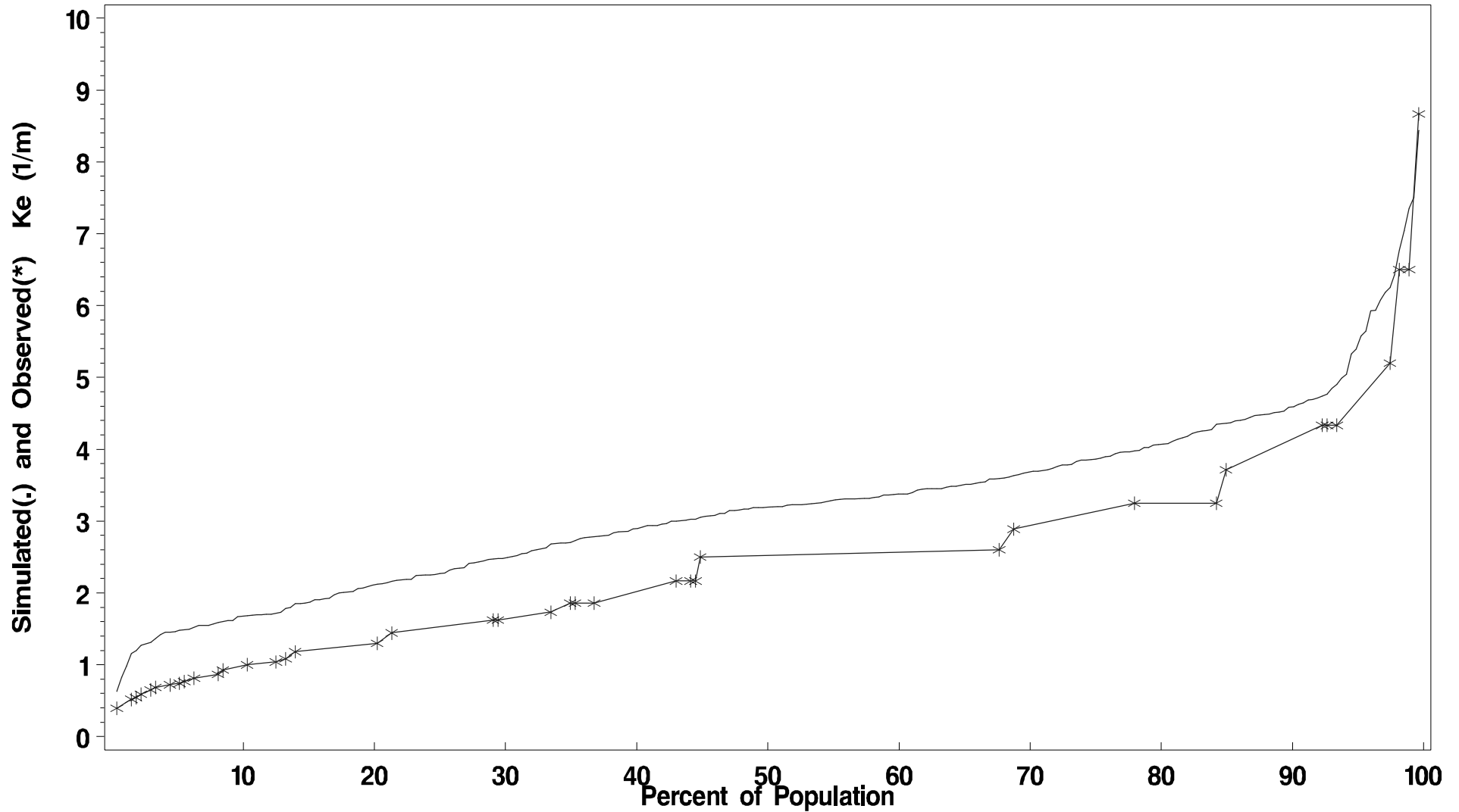

Differences (predicted – observed)

Mean difference 0.3706 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 619
Number of Predicted Violations 4
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment RPPTF   Season: June 11 — Feb 14
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

**Migratory Dissolved Oxygen (mg/l)
Segment RPPTF   Season: June 11 – Feb 14**

(Scatter Plot)

<div align="center">
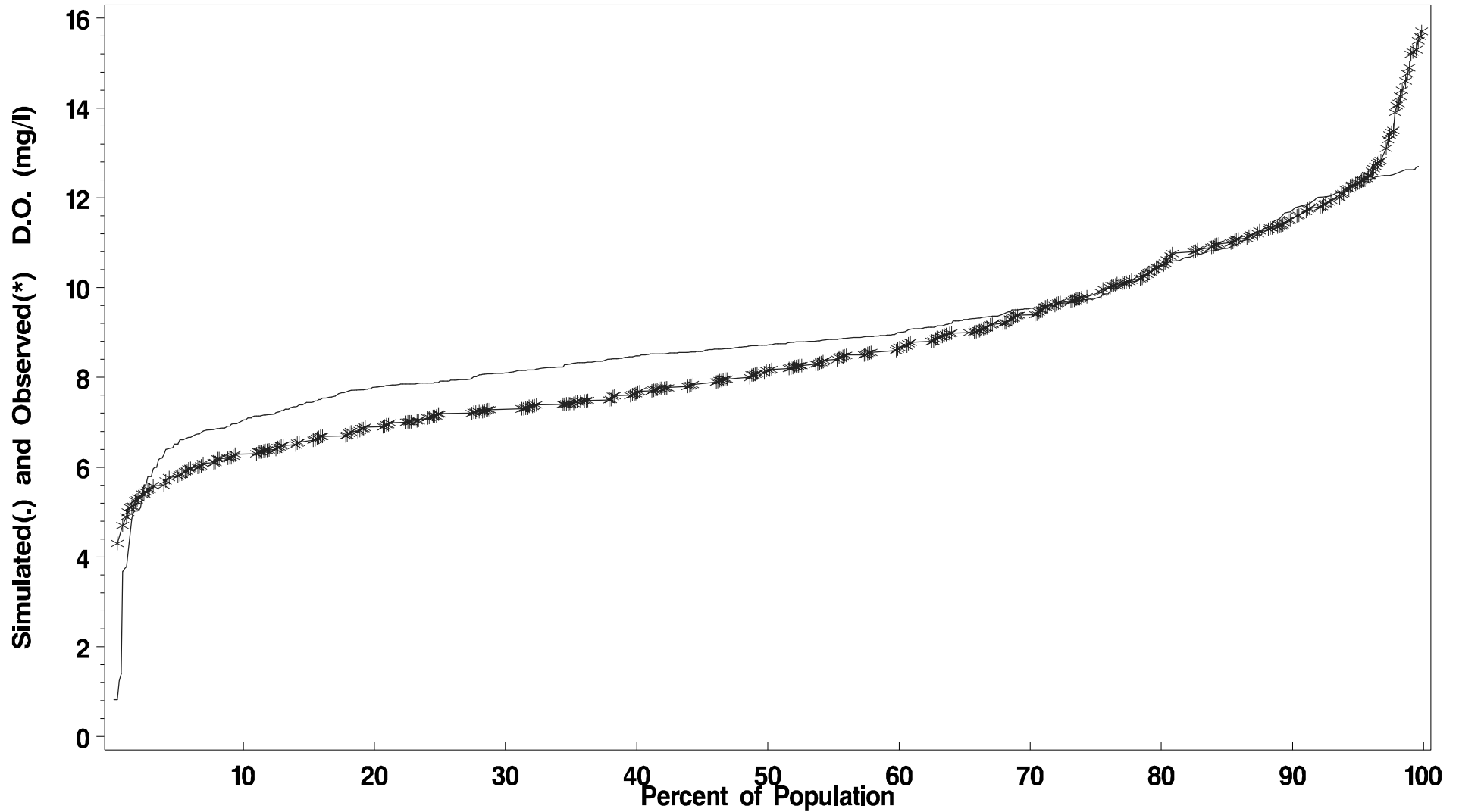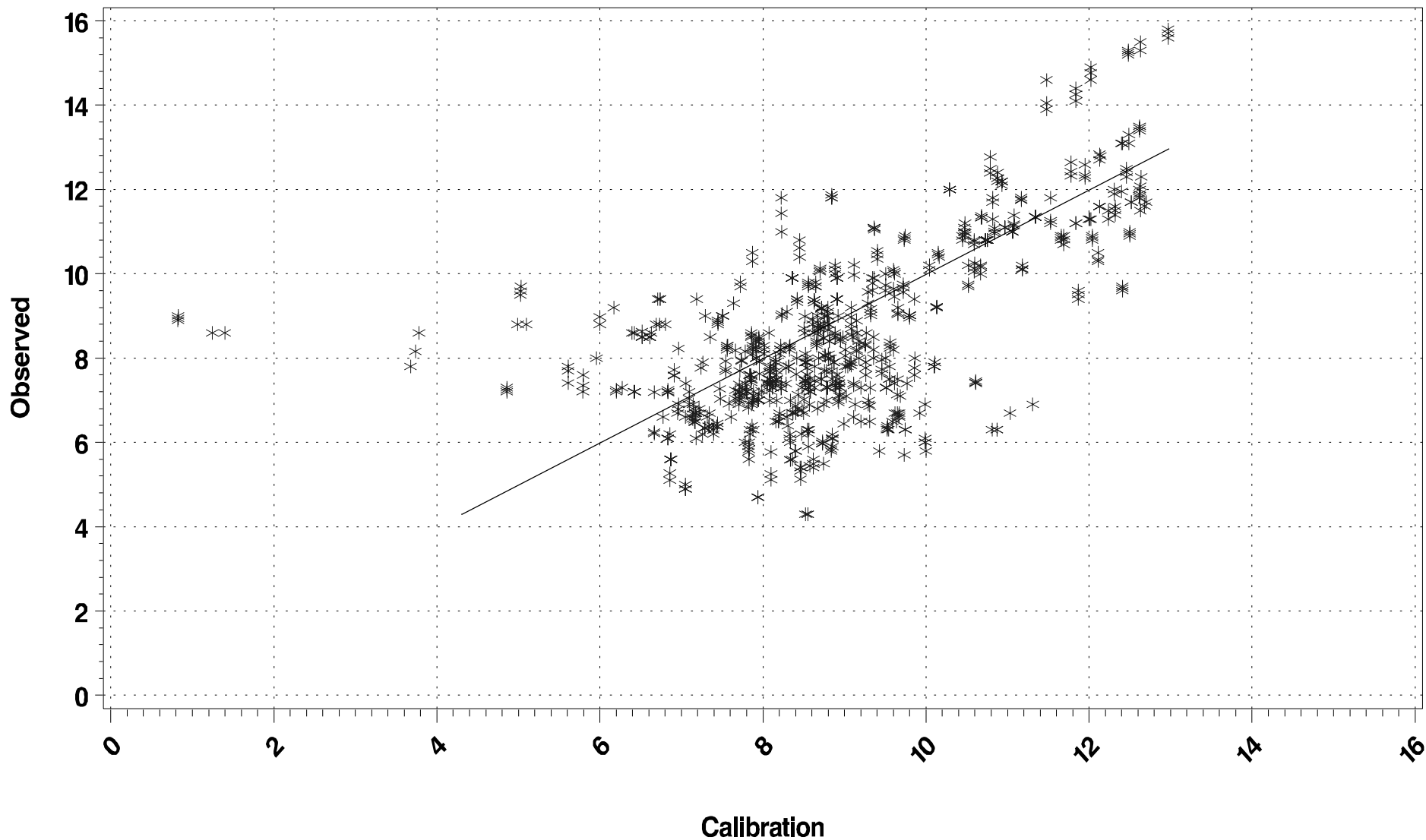
TIDAL FRESH **Chlorophyll**
Segment RPPTF (Rappahannock Tidal Fresh)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 102 pairs of predictions and observed data, the **slope** is -1.3682 and the **intercept** is 38.2938. The **R-Squared** value for this regression is 0.0479.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 102 pairs of predictions and observed data, the **slope** is -0.8804 and the **intercept** is 2.1659. The **R-Squared** value for this regression is 0.0487.

Statistics (units in μg/l)

Mean observed 23.3811   Mean predicted 10.8999
Min. observed 1.0000   Min. predicted 4.1279
Max. observed 107.7000   Max. predicted 19.4990
Std. Dev. Observed 17.7033   Std. Dev. predicted 2.8316
Median observed 21.9500   Median predicted 10.7110
95th Percentile observed 49.4354   95th Percentile predicted 15.9000
10th Percentile observed 2.4500   10th Percentile predicted 7.6908

Differences (predicted – observed)

Mean difference -12.4812 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment RPPTF   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
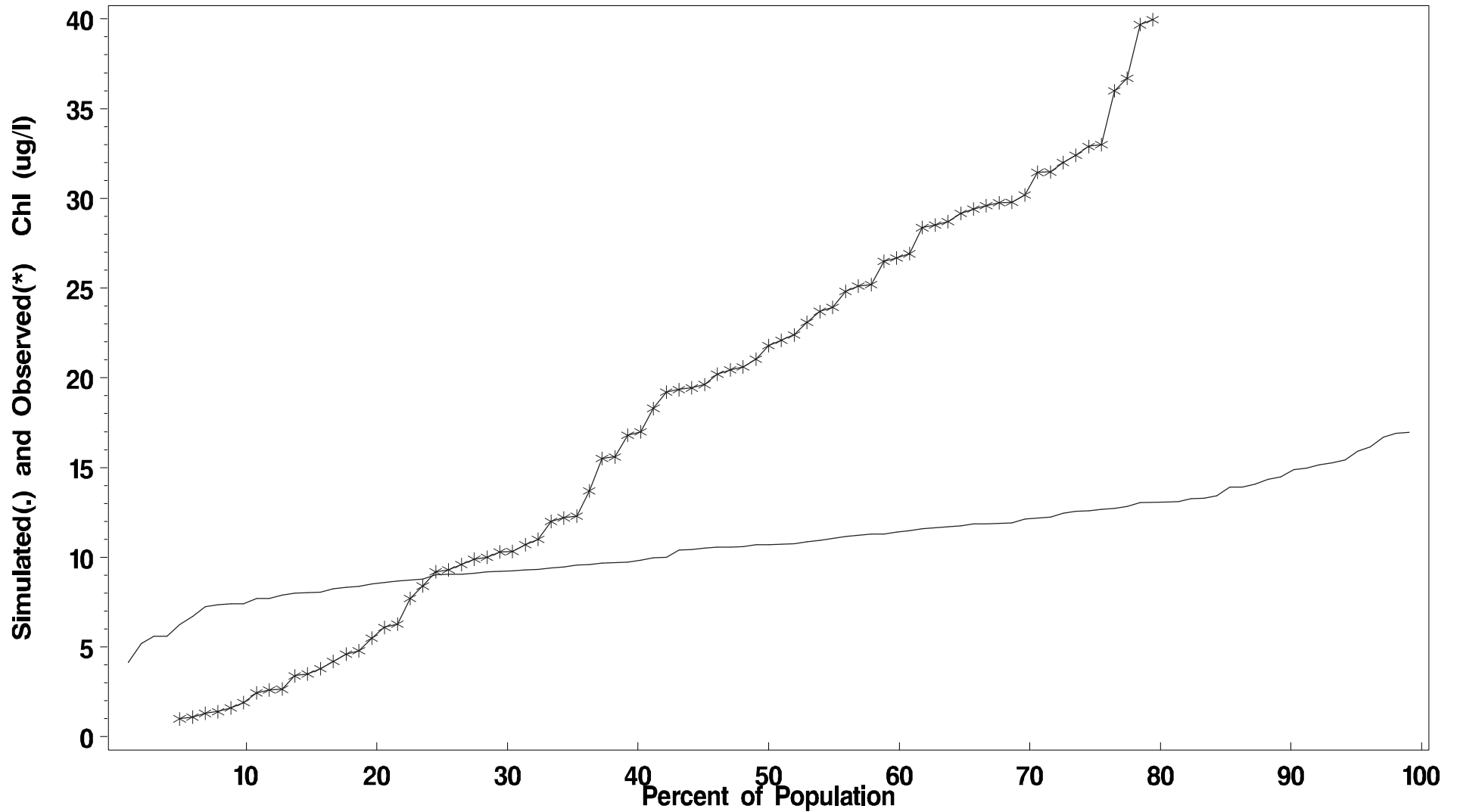
Chlorophyll Concentration (ug/l)
Segment RPPTF   Season: July 1 – Sept 30
(Scatter Plot)
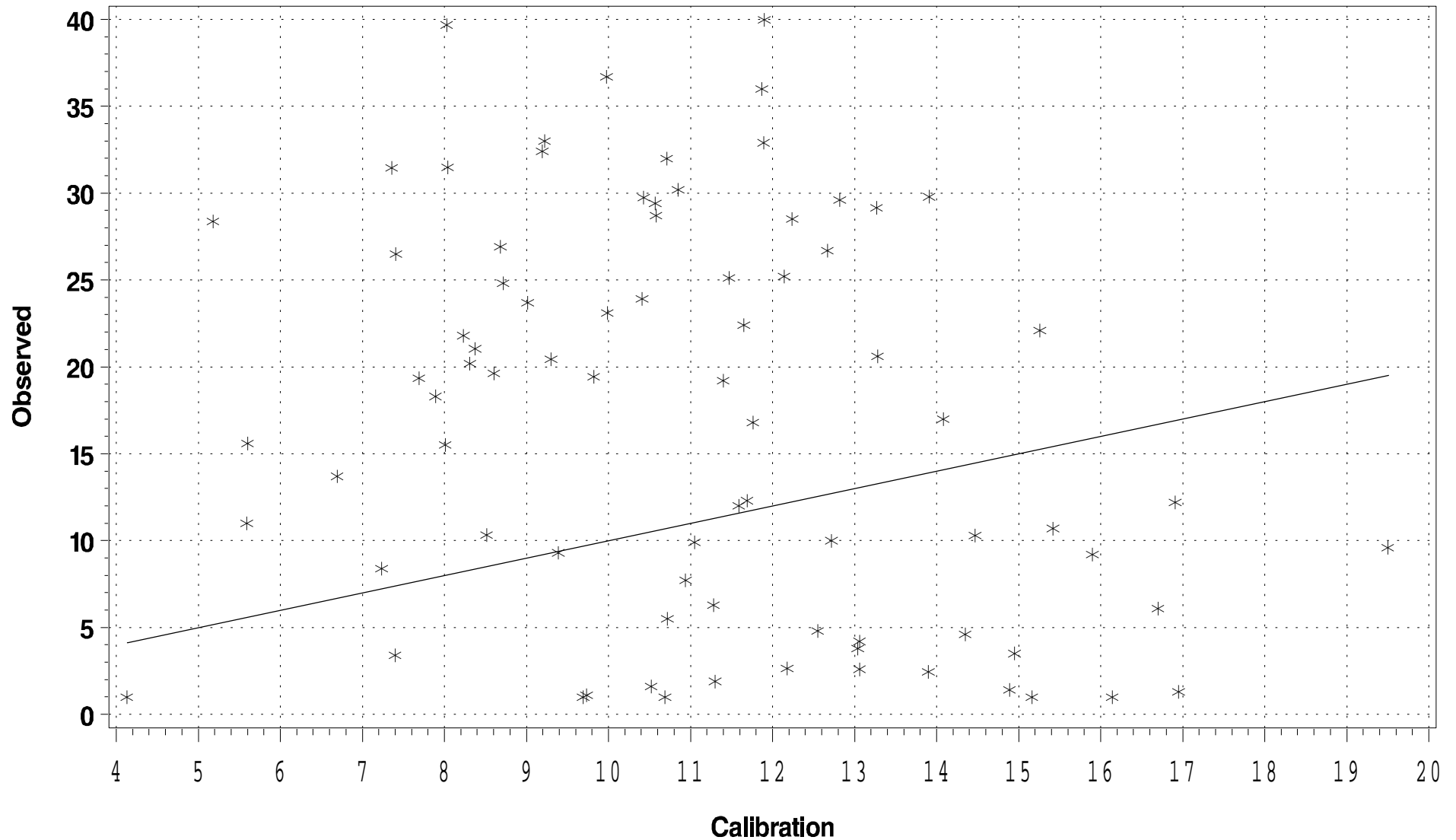
Regression of Calibration vs. Observations[1]
Using the 117 pairs of predictions and observed data, the **slope** is 0.2076 and the **intercept** is 2.5796. The **R-Squared** value for this regression is 0.0204.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 117 pairs of predictions and observed data, the **slope** is 0.3978 and the **intercept** is 0.2216. The **R-Squared** value for this regression is 0.1119.

Statistics (units in µg/l)

Mean observed 4.4318	Mean predicted 8.9201
Min. observed 1.0000	Min. predicted 0.2607
Max. observed 51.4723	Max. predicted 18.6430
Std. Dev. Observed 6.5052	Std. Dev. predicted 4.4753
Median observed 2.6000	Median predicted 9.0236
95th Percentile observed 16.8210	95th Percentile predicted 16.2430
10th Percentile observed 1.0000	10th Percentile predicted 2.5213

Differences (predicted – observed)

Mean difference 4.4883 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment RPPTF   Season: March 1 − May 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
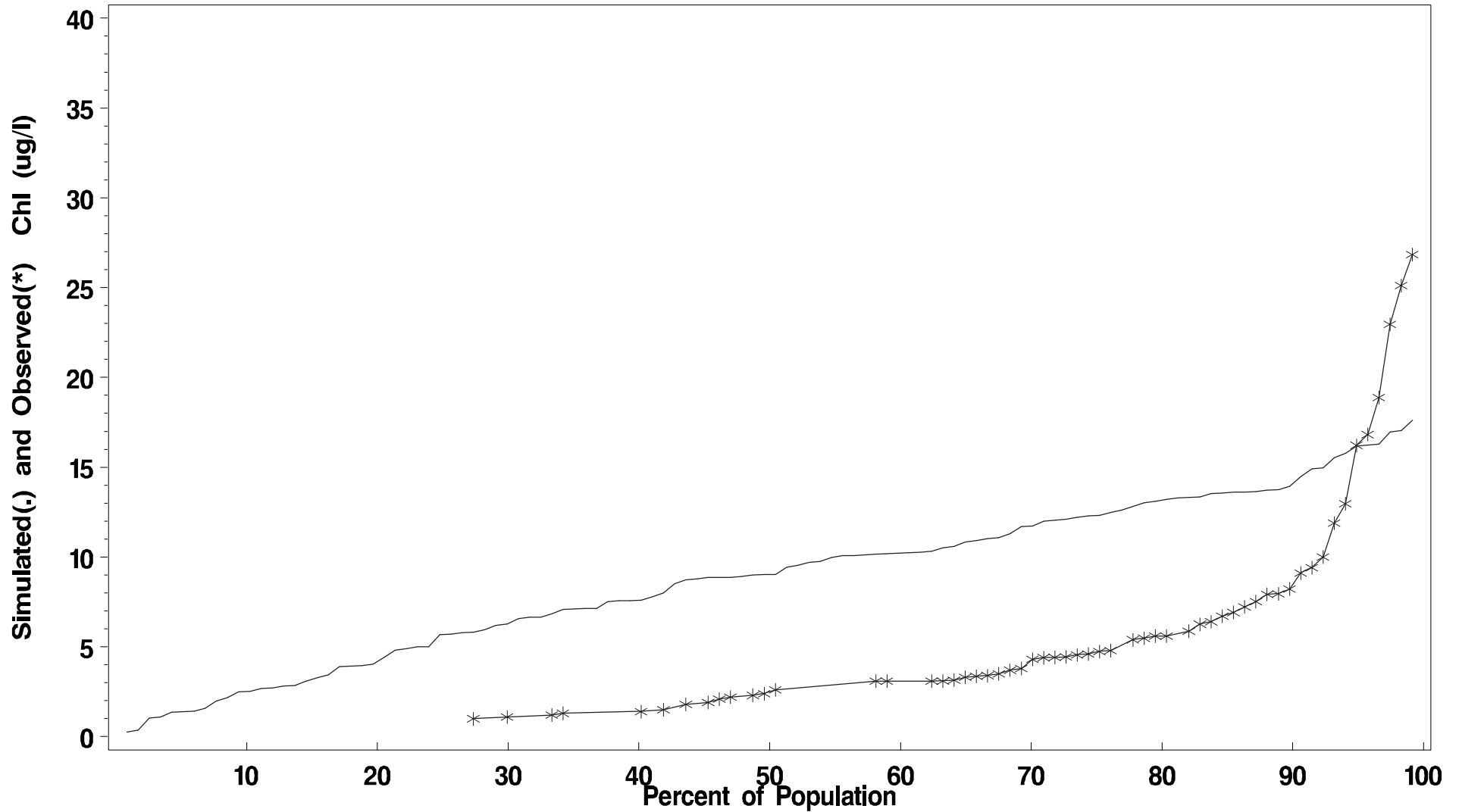
Chlorophyll Concentration (ug/l)
Segment RPPTF   Season: March 1 – May 30
(Scatter Plot)
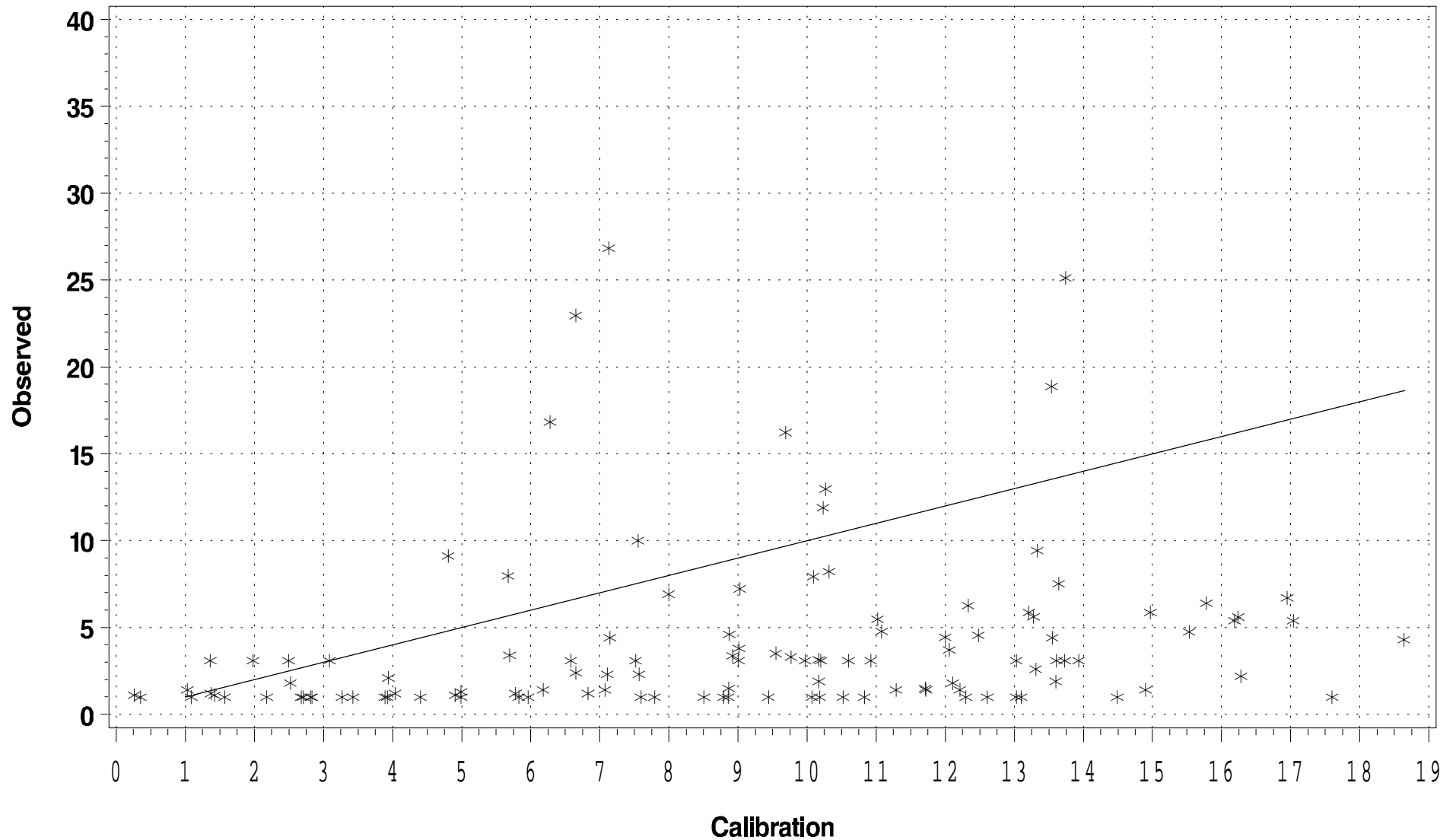
TIDAL FRESH **Light Attenuation**
Segment RPPTF (Rappahannock Tidal Fresh)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 272 pairs of predictions and observed data, the **slope** is 0.4074 and the **intercept** is 1.2794. The **R-Squared** value for this regression is 0.1246.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 272 pairs of predictions and observed data, the **slope** is 0.5458 and the **intercept** is 0.1931. The **R-Squared** value for this regression is 0.1871.

Statistics (units in 1/m)

Mean observed 2.5923   Mean predicted 3.2229
Min. observed 0.3939   Min. predicted 0.6276
Max. observed 13.0000   Max. predicted 9.1714
Std. Dev. Observed 1.4828   Std. Dev. predicted 1.2848
Median observed 2.6000   Median predicted 3.1963
90th Percentile observed 4.3333   90th Percentile predicted 4.5912
10th Percentile observed 1.0000   10th Percentile predicted 1.6796

Differences (predicted – observed)

Mean difference 0.6306 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment RPPTF   Season: April 1 − Oct 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Ke (1/m)
Segment RPPTF   Season: April 1 — Oct 30
(Scatter Plot)
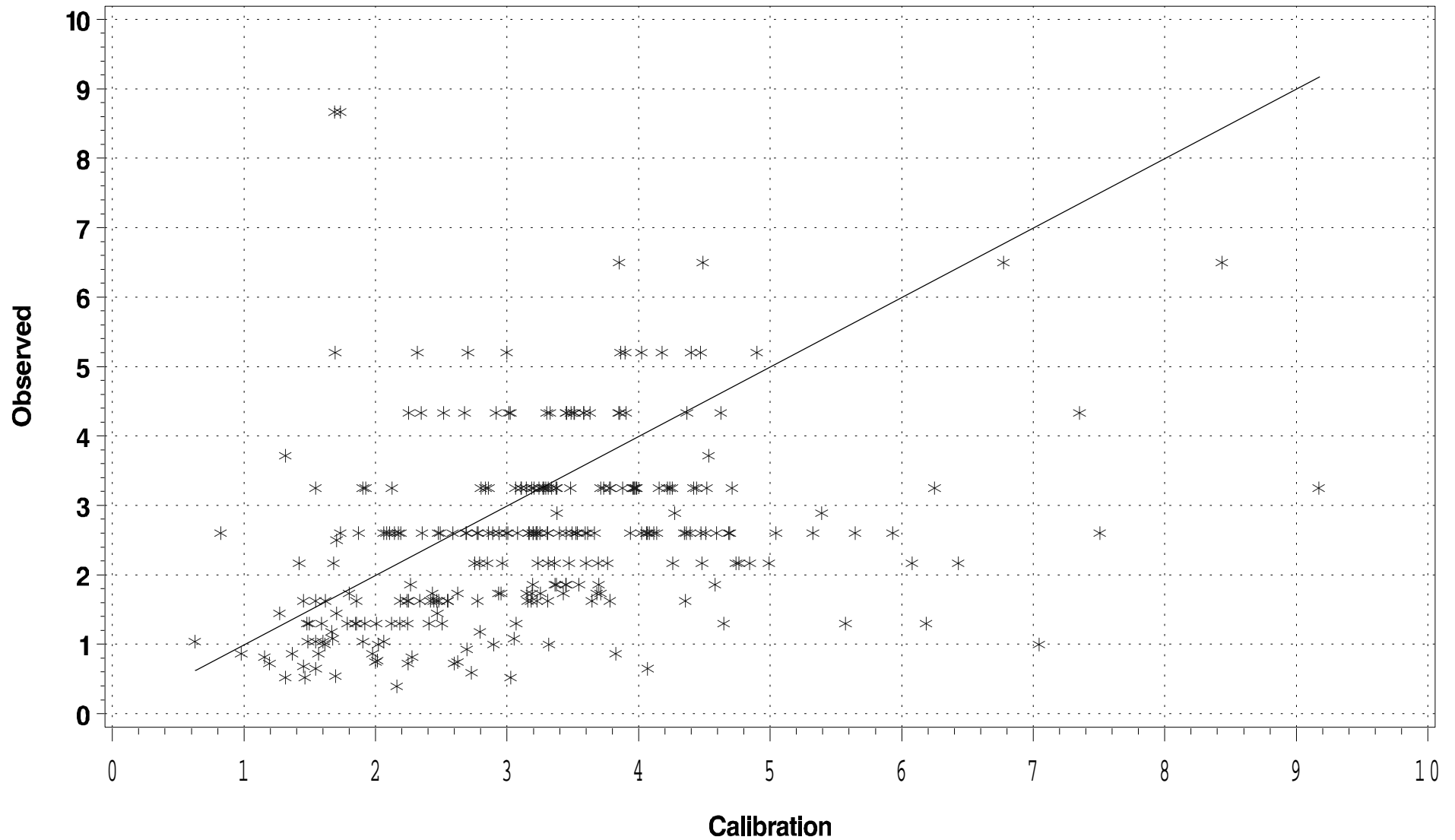
Chesapeake Bay Standard Segment RPPOH

Location Map of
Segment RPPOH within
the Chesapeake Bay Model Grid

TF3.3

N
W E
S

0   0.35 0.7   1.4   2.1   2.8
Miles

Chesapeake Bay Program
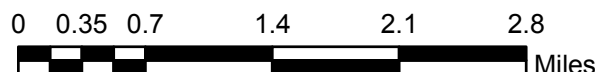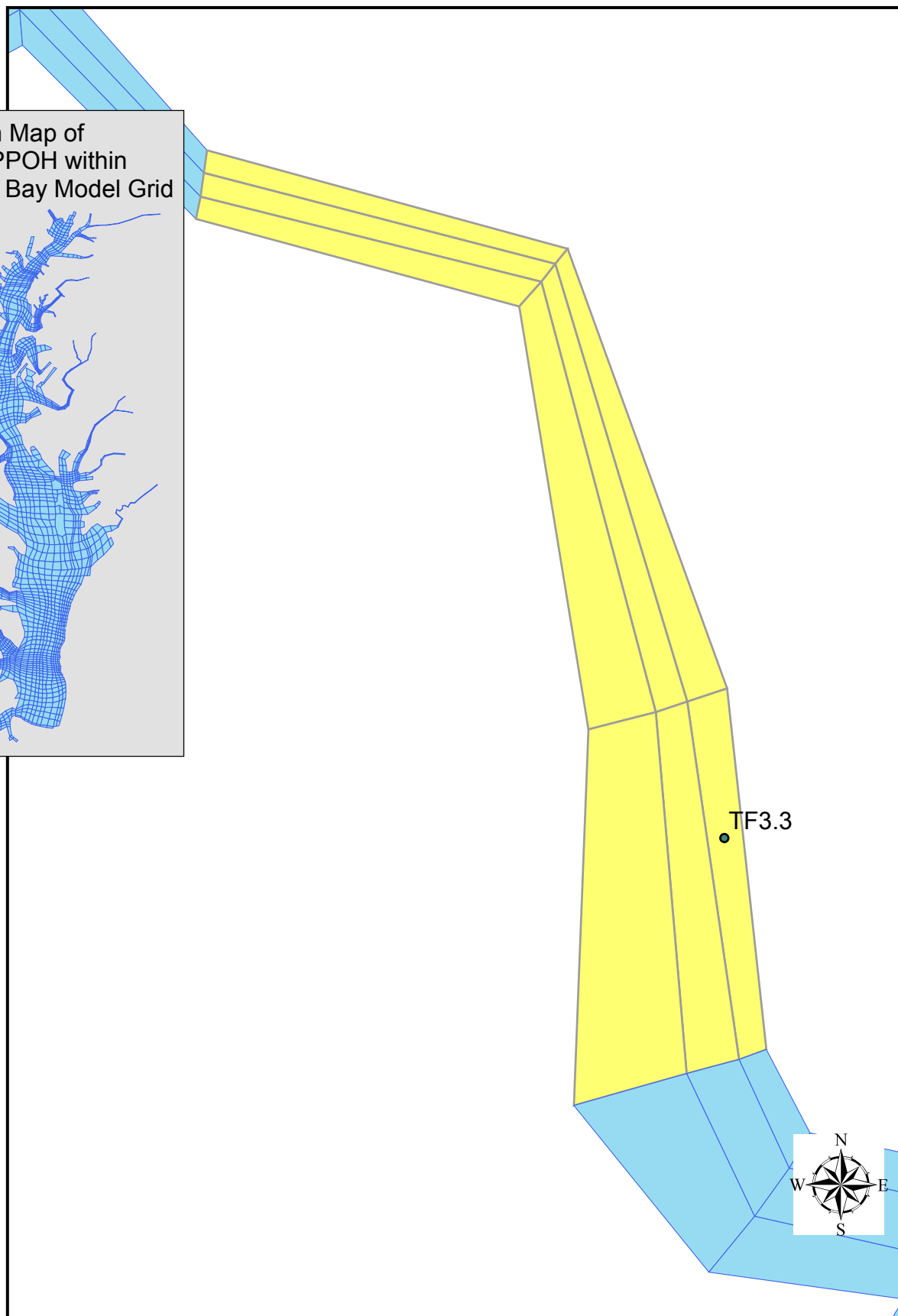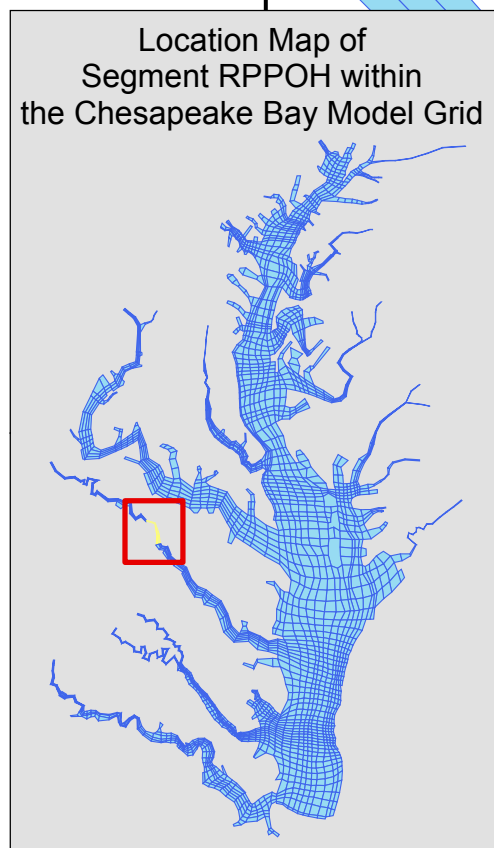
MIGRATORY **Dissolved Oxygen**
Segment RPPOH (Rappahannock Oligohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 63 pairs of predictions and observed data, the **slope** is 0.5388 and the **intercept** is 3.5967. The **R-Squared** value for this regression is 0.4352.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 63 pairs of predictions and observed data, the **slope** is 0.5449 and the **intercept** is 0.4304. The **R-Squared** value for this regression is 0.4063.

Statistics (units in mg/l)

Mean observed 9.0641   Mean predicted 10.1478
Min. observed 5.8   Min. predicted 4.031
Max. observed 13.1   Max. predicted 14.5
Std. Dev. Observed 1.6987   Std. Dev. predicted 2.0800
Median observed 9.1000   Median predicted 10.0910
90th Percentile observed 11.2000   90th Percentile predicted 12.9370
10th Percentile observed 6.9000   10th Percentile predicted 7.6538


Differences (predicted – observed)

Mean difference 1.0837 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 63
Number of Predicted Violations 1
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment RPPOH   Season: Feb 15 − June 10
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Migratory   Dissolved Oxygen (mg/l)
Segment RPPOH   Season: Feb 15 − June 10

(Scatter Plot)

<div align="center">
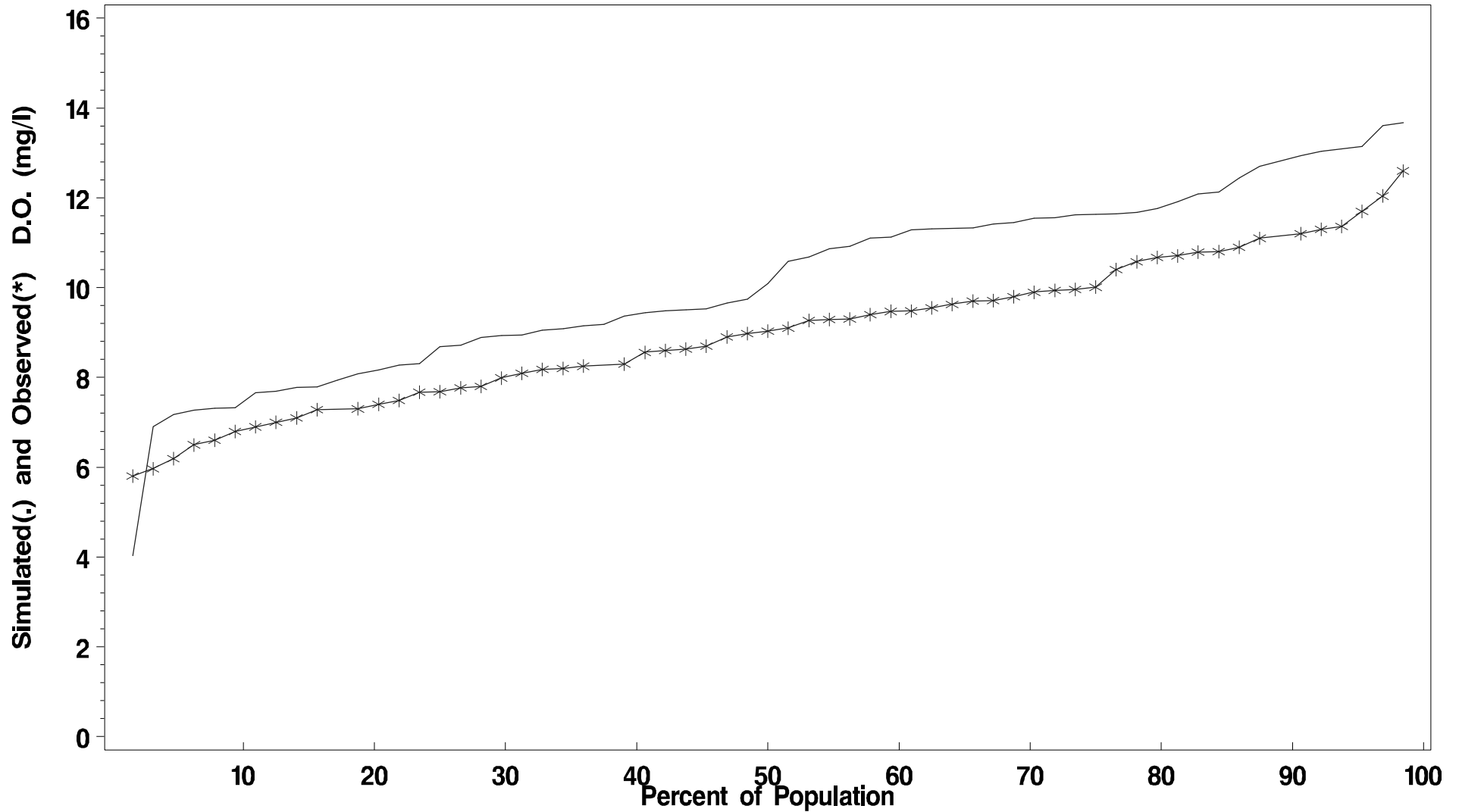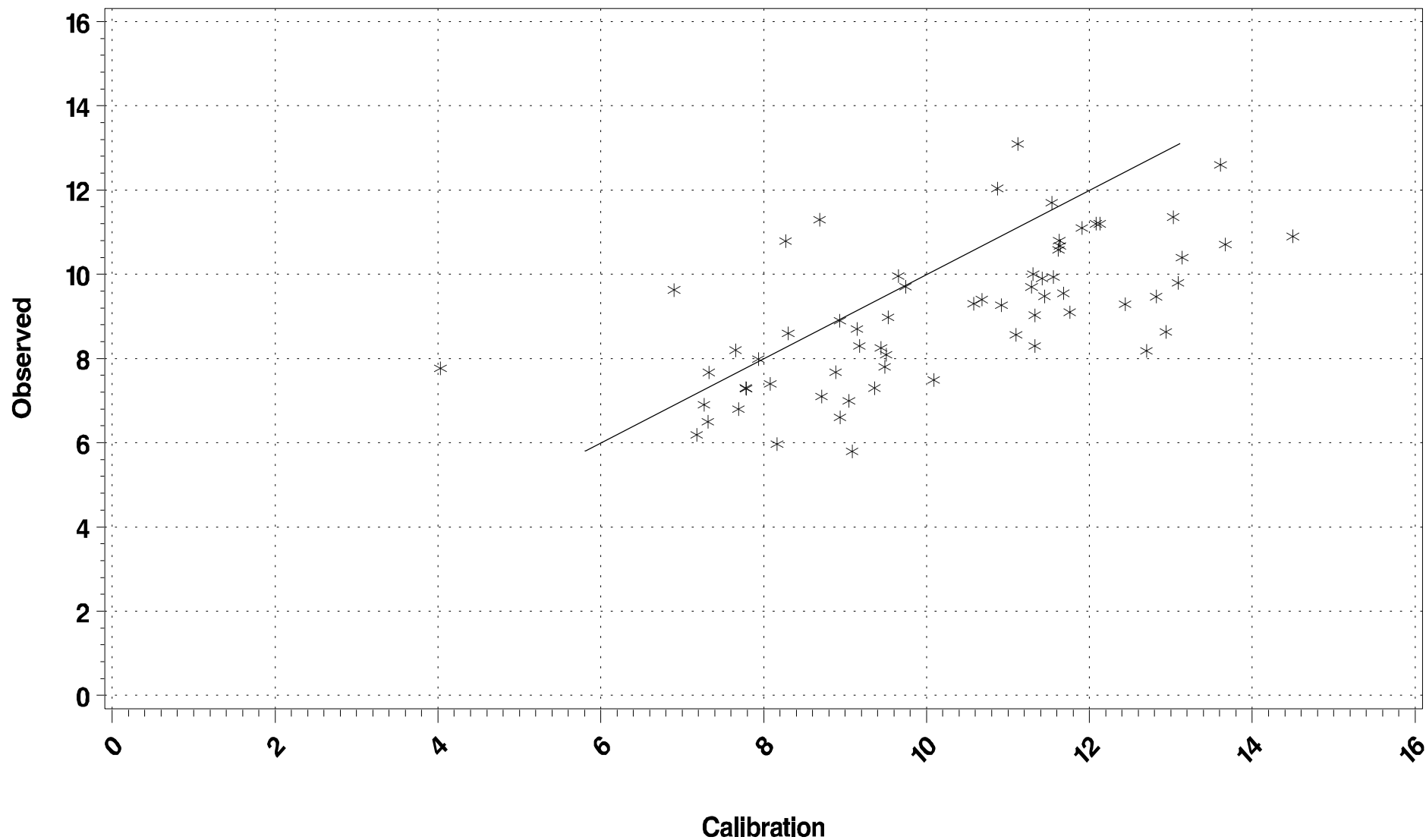
MIGRATORY **Dissolved Oxygen**
Segment RPPOH (Rappahannock Oligohaline)
June 11 - Feb 14

</div>

Regression of Calibration vs. Observations[1]

Using the 107 pairs of predictions and observed data, the **slope** is 1.0498 and the **intercept** is -0.1009. The **R-Squared** value for this regression is 0.5141.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 107 pairs of predictions and observed data, the **slope** is 0.8778 and the **intercept** is 0.1236. The **R-Squared** value for this regression is 0.4346.

Statistics (units in mg/l)

Mean observed 8.0502	Mean predicted 7.7643
Min. observed 5	Min. predicted 3.982
Max. observed 13.6	Max. predicted 11.18
Std. Dev. Observed 2.1043	Std. Dev. predicted 1.4372
Median observed 7.4300	Median predicted 7.5022
90th Percentile observed 11.6000	90th Percentile predicted 10.1170
10th Percentile observed 6.0400	10th Percentile predicted 6.2792

Differences (predicted – observed)

Mean difference -0.2859 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 107
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment RPPOH   Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
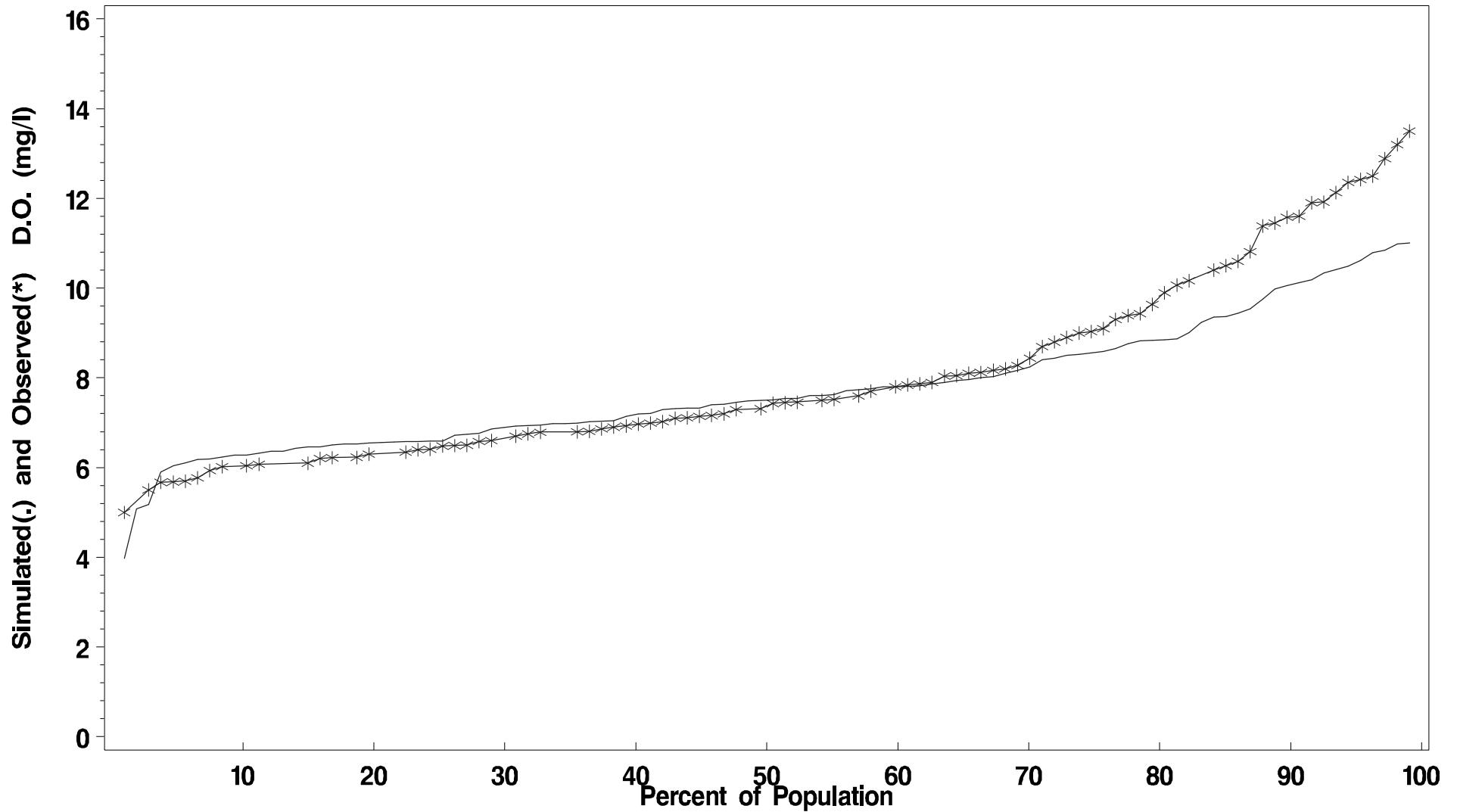
Migratory Dissolved Oxygen (mg/l)
Segment RPPOH Season: June 11 – Feb 14
(Scatter Plot)
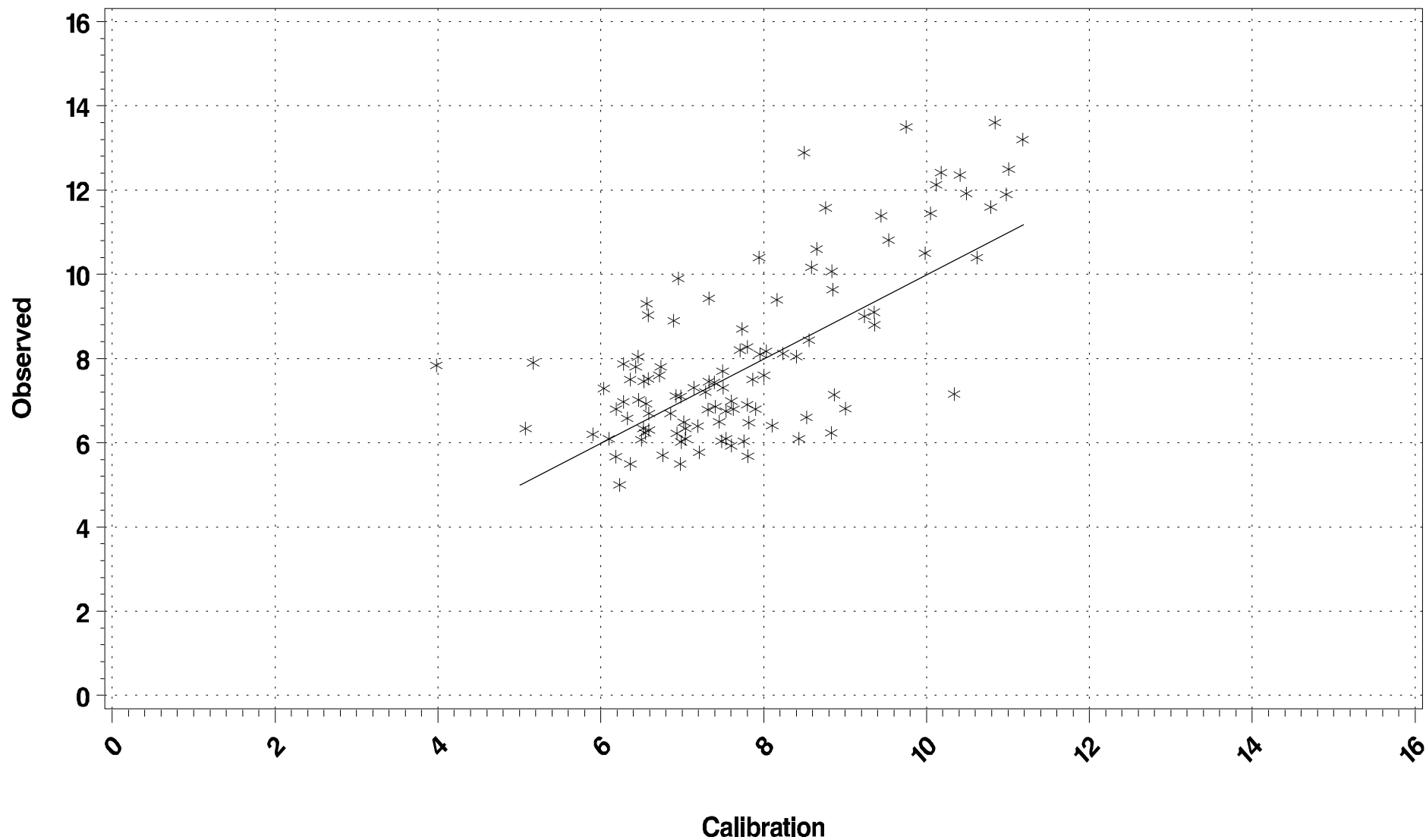
Regression of Calibration vs. Observations[1]

Using the 49 pairs of predictions and observed data, the **slope** is 0.1694 and the **intercept** is 9.8630. The **R-Squared** value for this regression is 0.0063.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 49 pairs of predictions and observed data, the **slope** is 0.1386 and the **intercept** is 0.9237. The **R-Squared** value for this regression is 0.0069.

Statistics (units in μg/l)

Mean observed 12.0173	Mean predicted 12.7149
Min. observed 4.5604	Min. predicted 4.8452
Max. observed 40.6507	Max. predicted 19.3030
Std. Dev. Observed 6.0958	Std. Dev. predicted 2.8532
Median observed 10.0677	Median predicted 13.0320
95th Percentile observed 22.5000	95th Percentile predicted 16.5970
10th Percentile observed 6.2798	10th Percentile predicted 8.9338

Differences (predicted – observed)

Mean difference 0.6976 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment RPPOH   Season: July 1 − Sept 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Y-axis: Simulated(.) and Observed(*) Chl (ug/l)

X-axis: Percent of Population
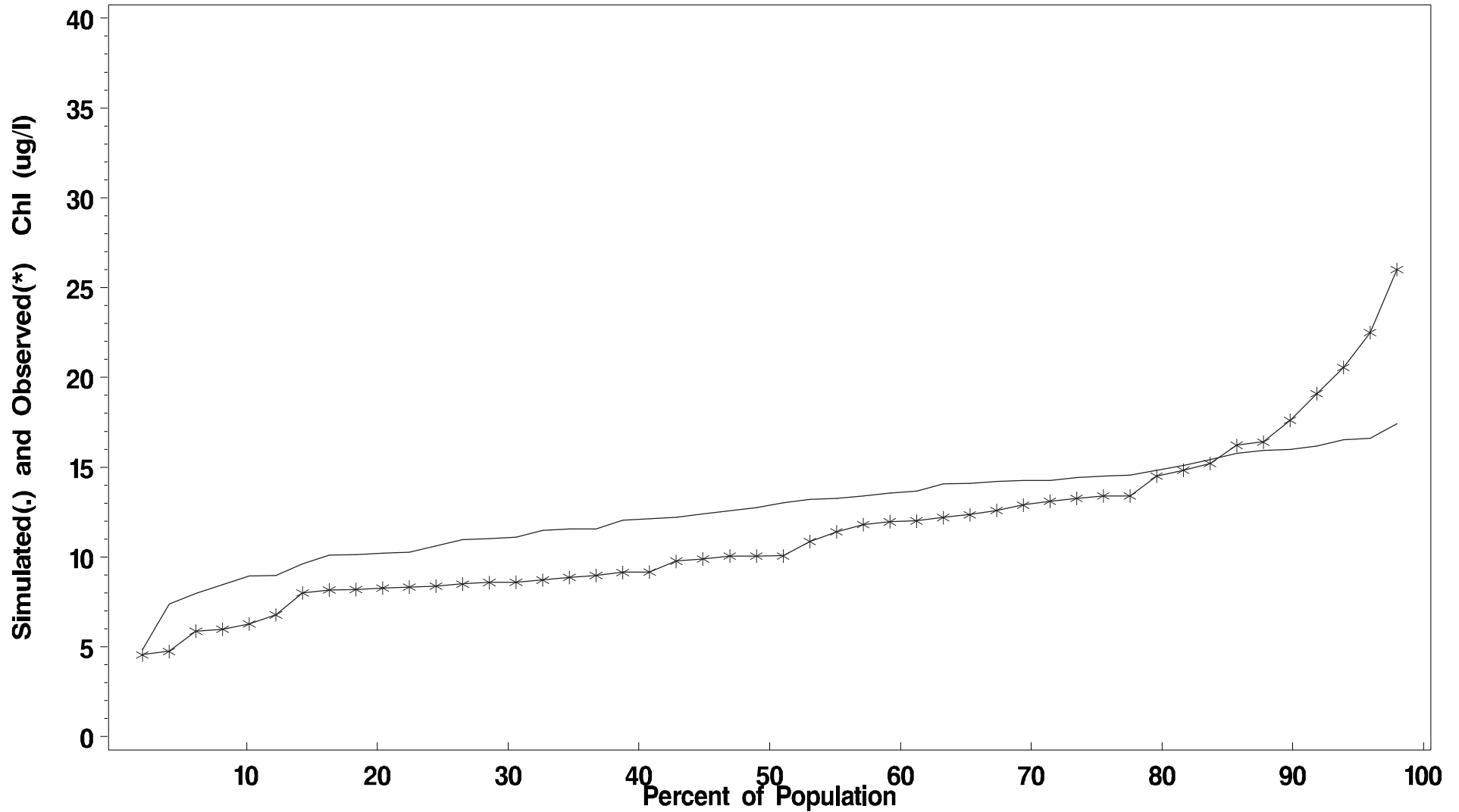
Chlorophyll Concentration (ug/l)
Segment RPPOH   Season: July 1 − Sept 30
(Scatter Plot)
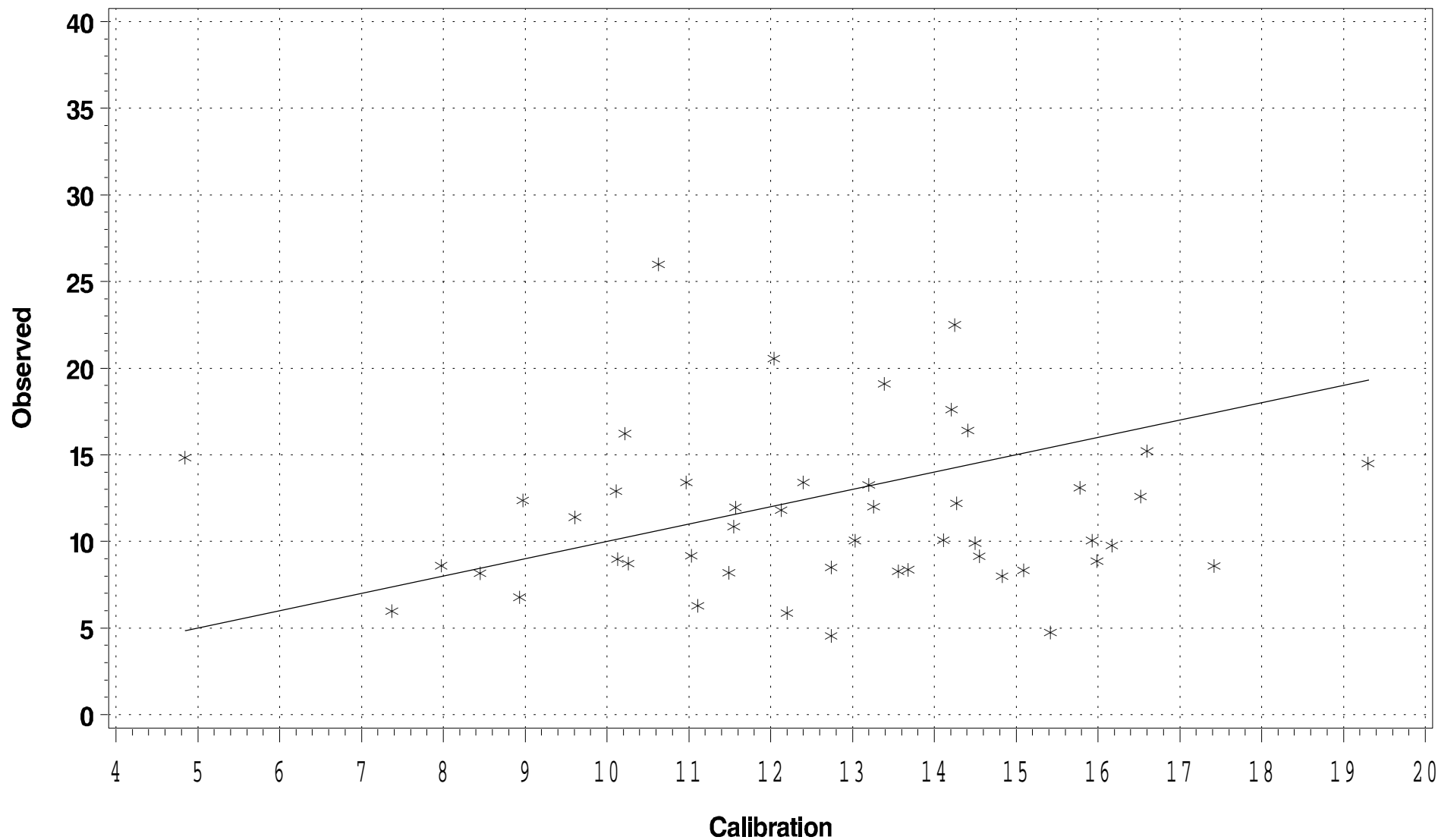
OLIGOHALINE **Chlorophyll**
Segment RPPOH (Rappahannock Oligohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 48 pairs of predictions and observed data, the **slope** is 0.1496 and the **intercept** is 4.1001. The **R-Squared** value for this regression is 0.0432.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 48 pairs of predictions and observed data, the **slope** is 0.2958 and the **intercept** is 0.4380. The **R-Squared** value for this regression is 0.0756.

Statistics (units in µg/l)

Mean observed 6.8095   Mean predicted 18.1075
Min. observed 1.0000   Min. predicted 2.7471
Max. observed 50.0000   Max. predicted 41.2290
Std. Dev. Observed 7.3754   Std. Dev. predicted 10.2427
Median observed 5.0837   Median predicted 15.6225
95th Percentile observed 15.5000   95th Percentile predicted 37.8400
10th Percentile observed 1.9000   10th Percentile predicted 8.0805

Differences (predicted – observed)

Mean difference 11.2980 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment RPPOH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment RPPOH   Season: March 1 — May 30
(Scatter Plot)

<div align="center">
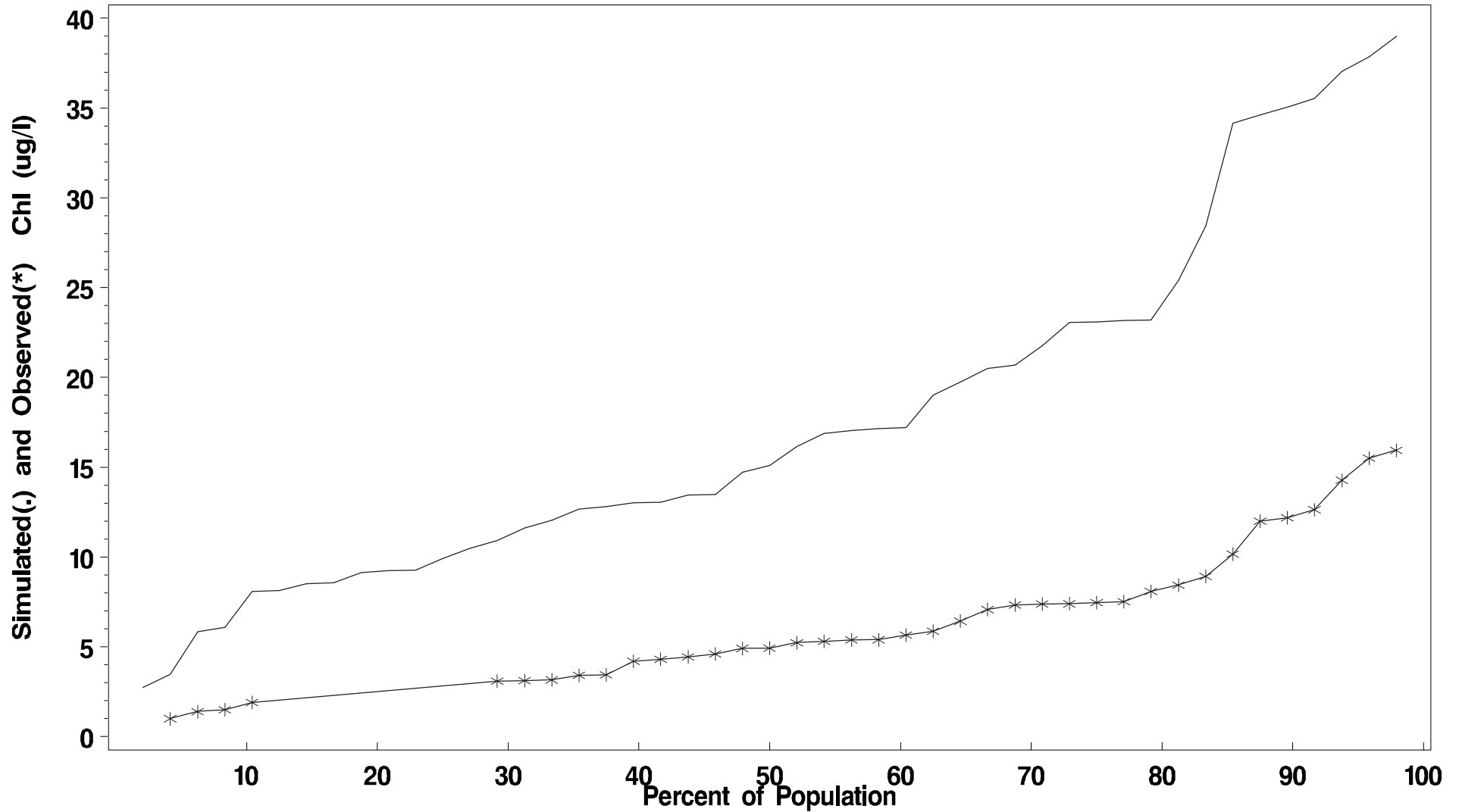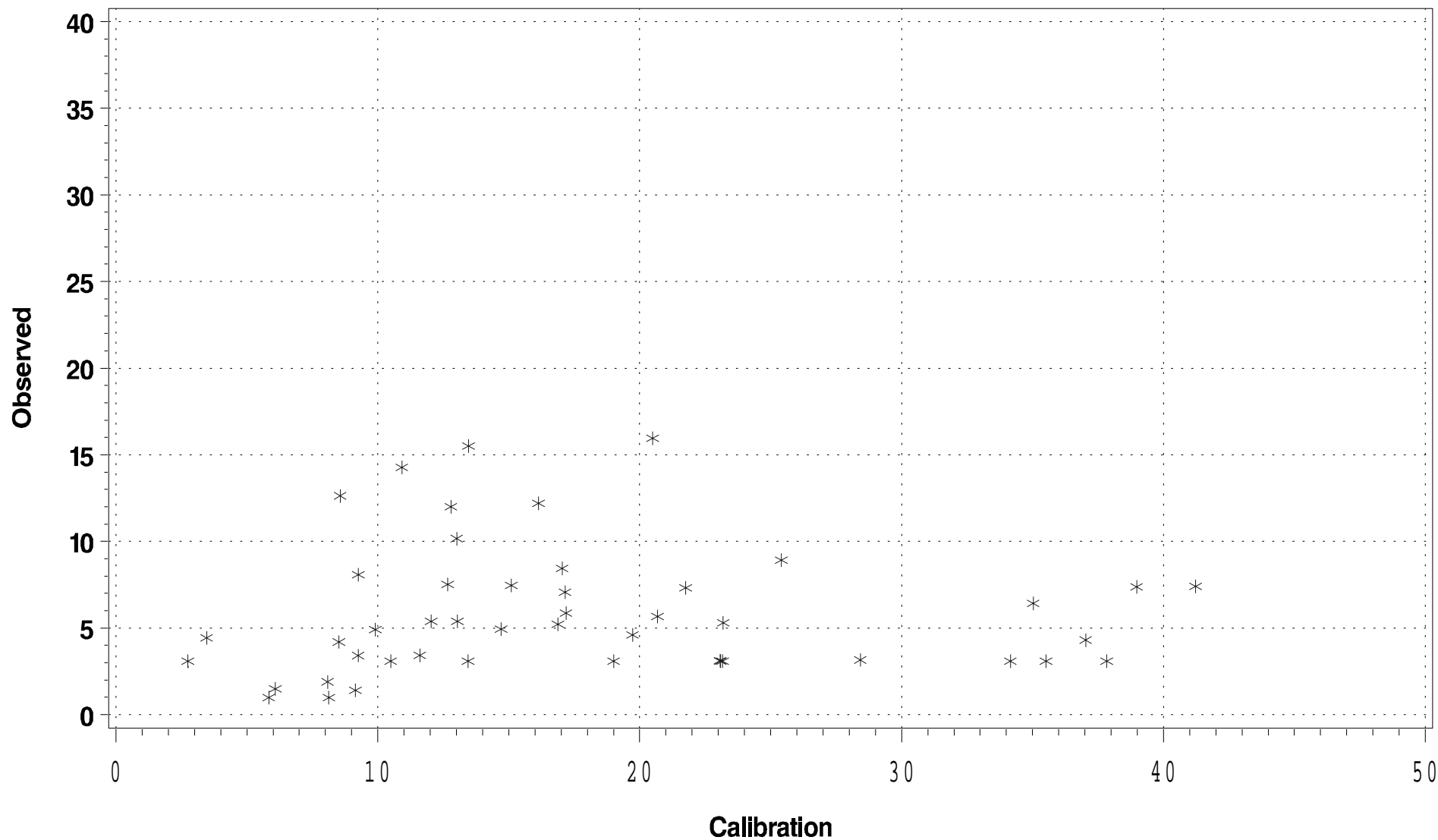
OLIGOHALINE **Light Attenuation**
Segment RPPOH (Rappahannock Oligohaline)
April 1 - Oct 30

</div>

Regression of Calibration vs. Observations[1]

Using the 119 pairs of predictions and observed data, the **slope** is 0.2777 and the **intercept** is 2.2331. The **R-Squared** value for this regression is 0.0132.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 119 pairs of predictions and observed data, the **slope** is 0.2239 and the **intercept** is 0.4534. The **R-Squared** value for this regression is 0.0078.

Statistics (units in 1/m)

Mean observed 3.2204	Mean predicted 3.5553
Min. observed 0.8667	Min. predicted 2.5175
Max. observed 8.6667	Max. predicted 6.6988
Std. Dev. Observed 1.5715	Std. Dev. predicted 0.6491
Median observed 2.6000	Median predicted 3.4676
90th Percentile observed 5.2000	90th Percentile predicted 4.3140
10th Percentile observed 1.7333	10th Percentile predicted 2.8321

Differences (predicted – observed)

Mean difference 0.3349 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment RPPOH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment RPPOH   Season: April 1 – Oct 30
(Scatter Plot)
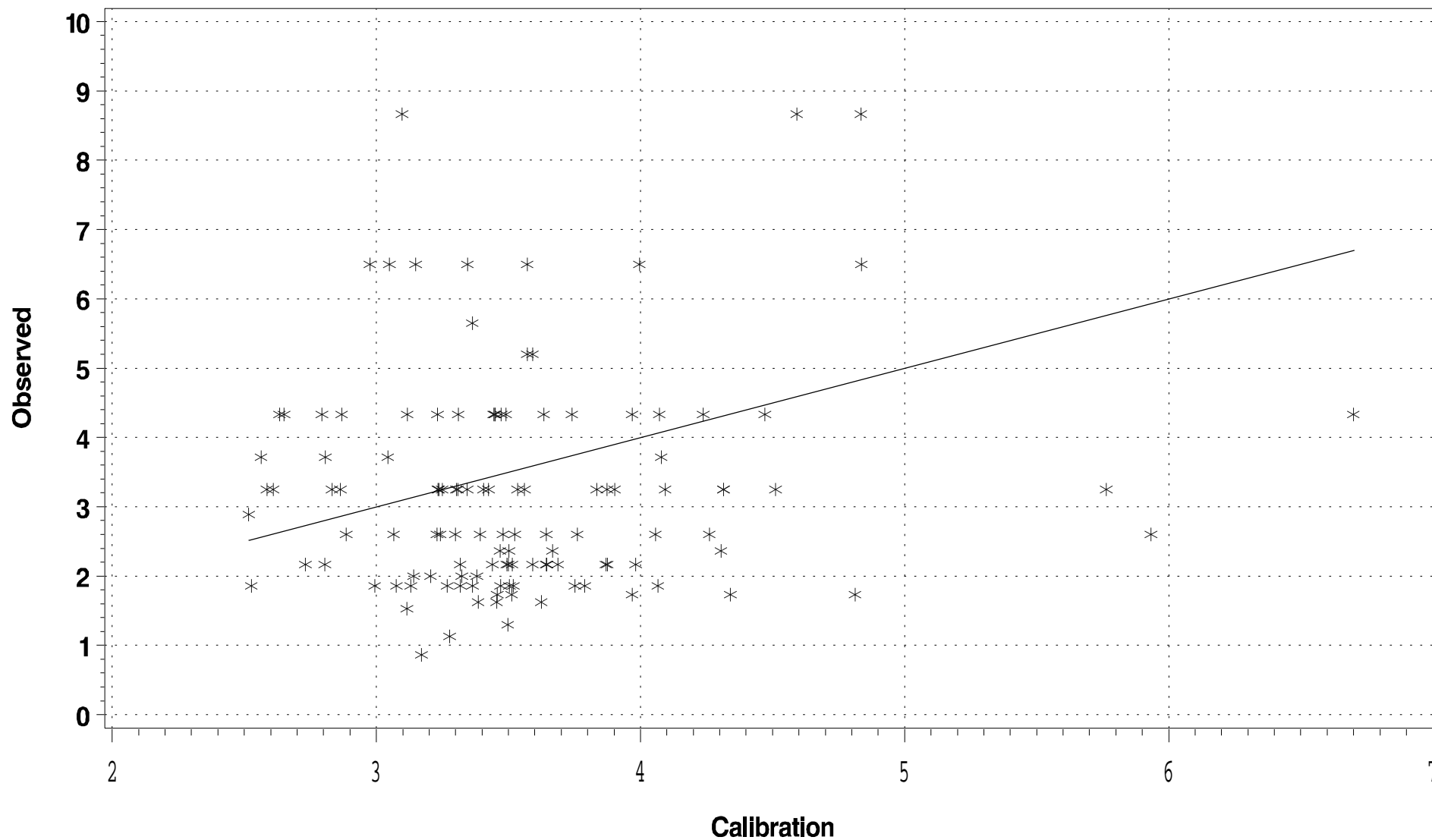
Chesapeake Bay Standard Segment RPPMH
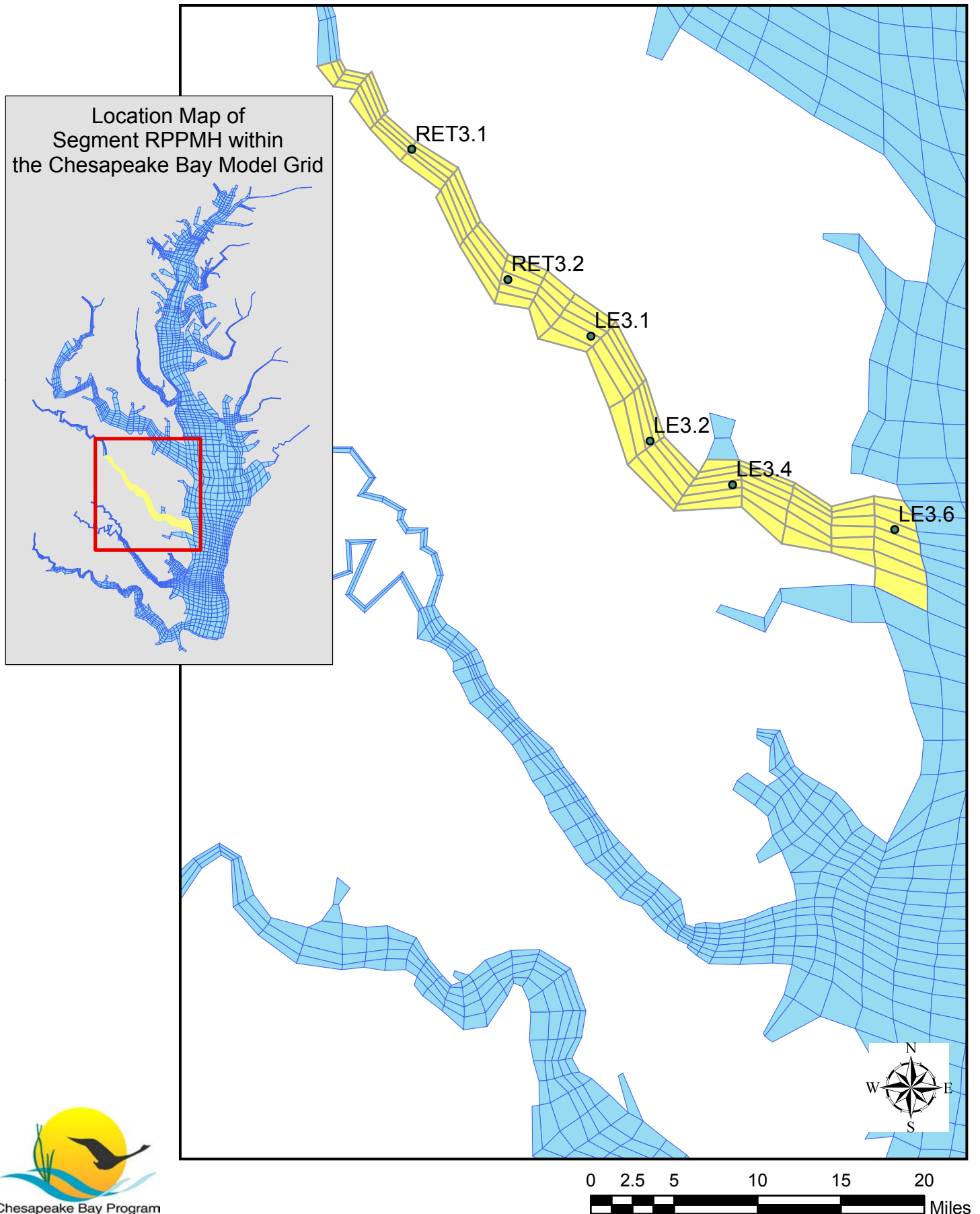
Location Map of
Segment RPPMH within
the Chesapeake Bay Model Grid

RET3.1

RET3.2

LE3.1

LE3.2

LE3.4

LE3.6

Chesapeake Bay Program

N
W   E
S

0   2.5   5   10   15   20

Miles

Regression of Calibration vs. Observations[1]

Using the 379 pairs of predictions and observed data, the **slope** is 0.4223 and the **intercept** is 5.0011. The **R-Squared** value for this regression is 0.5591.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 379 pairs of predictions and observed data, the **slope** is 0.3973 and the **intercept** is 0.5961. The **R-Squared** value for this regression is 0.5173.

Statistics (units in mg/l)

Mean observed 8.9500   Mean predicted 9.3515
Min. observed 5.1   Min. predicted 0.884
Max. observed 14.45   Max. predicted 20.77
Std. Dev. Observed 1.7998   Std. Dev. predicted 3.1868
Median observed 9.0700   Median predicted 9.0513
90th Percentile observed 11.2500   90th Percentile predicted 13.6550
10th Percentile observed 6.5000   10th Percentile predicted 5.5479

Differences (predicted – observed)

Mean difference 0.4015 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 379
Number of Predicted Violations 29
Number of Observed Violations 0

[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment RPPMH   Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
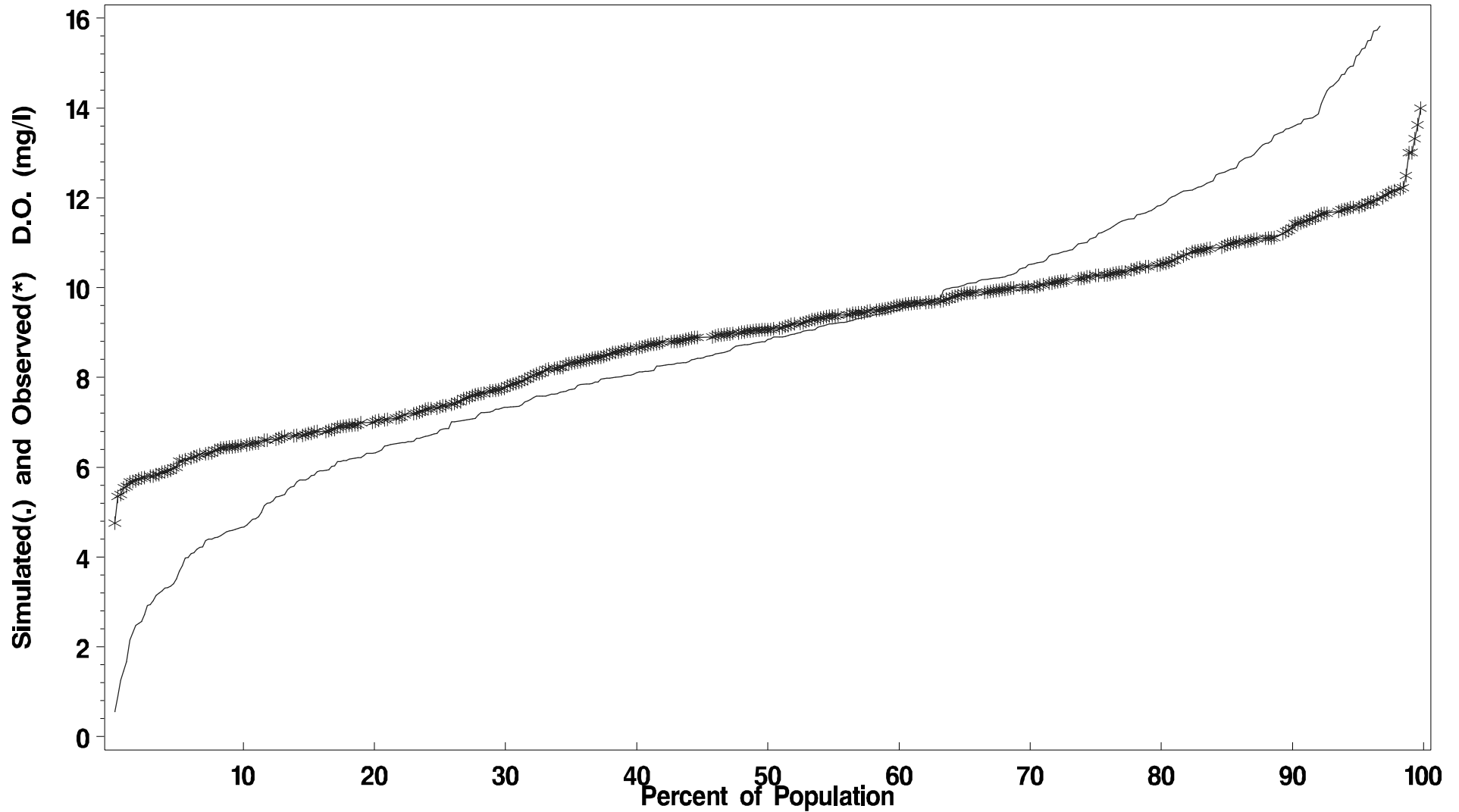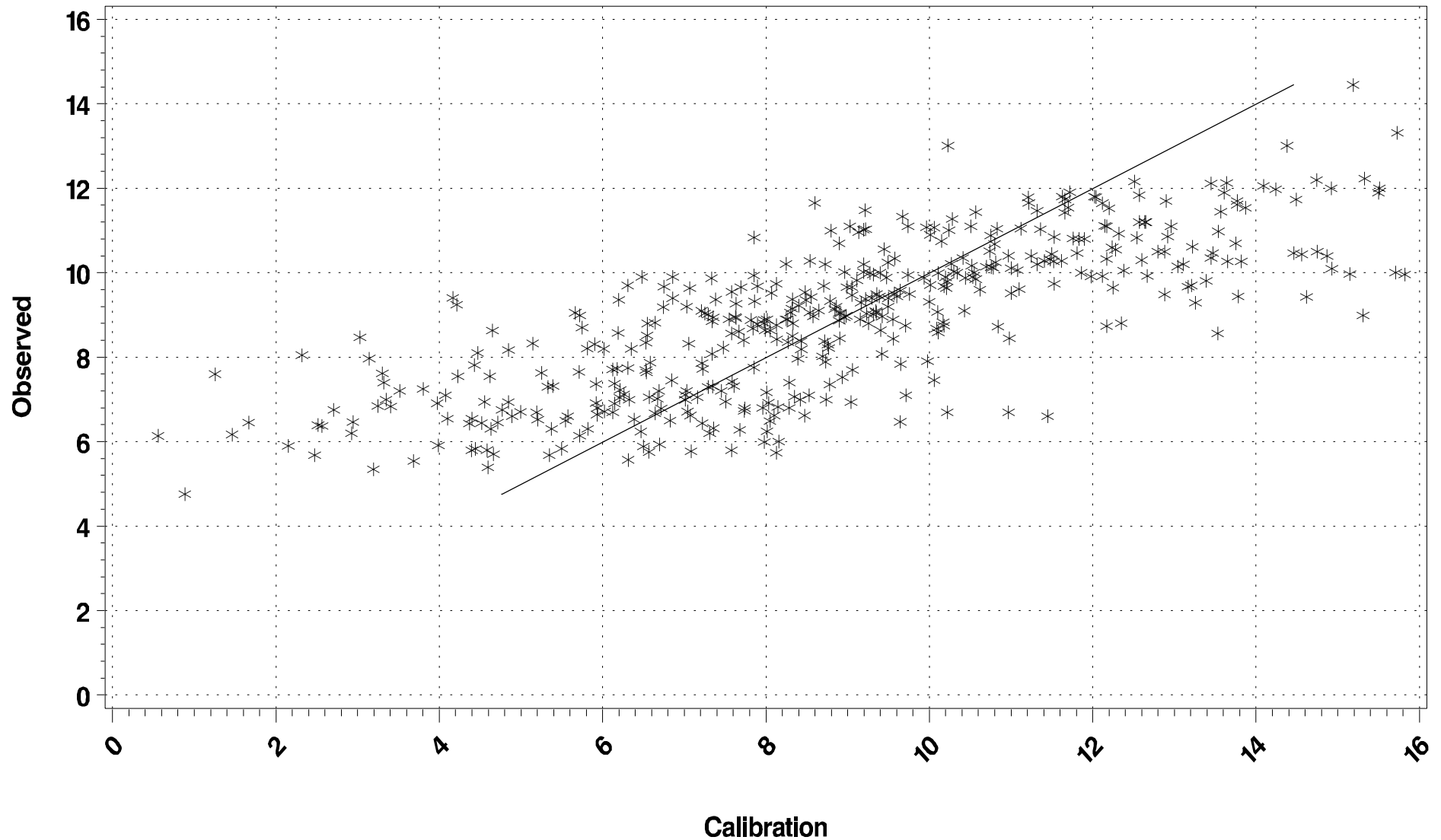
Migratory Dissolved Oxygen (mg/l)
Segment RPPMH Season: Feb 15 – June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 673 pairs of predictions and observed data, the **slope** is 0.6754 and the **intercept** is 3.0422. The **R-Squared** value for this regression is 0.5084.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 673 pairs of predictions and observed data, the **slope** is 0.5001 and the **intercept** is 0.4865. The **R-Squared** value for this regression is 0.4099.

Statistics (units in mg/l)

Mean observed 7.5974	Mean predicted 6.7443
Min. observed 3.32	Min. predicted 0.4642
Max. observed 13.9	Max. predicted 17.47
Std. Dev. Observed 2.2437	Std. Dev. predicted 2.3686
Median observed 6.8900	Median predicted 6.5919
90th Percentile observed 11.5000	90th Percentile predicted 9.4065
10th Percentile observed 5.3200	10th Percentile predicted 4.0142

Differences (predicted – observed)

Mean difference -0.8531 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 673
Number of Predicted Violations 42
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment RPPMH   Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
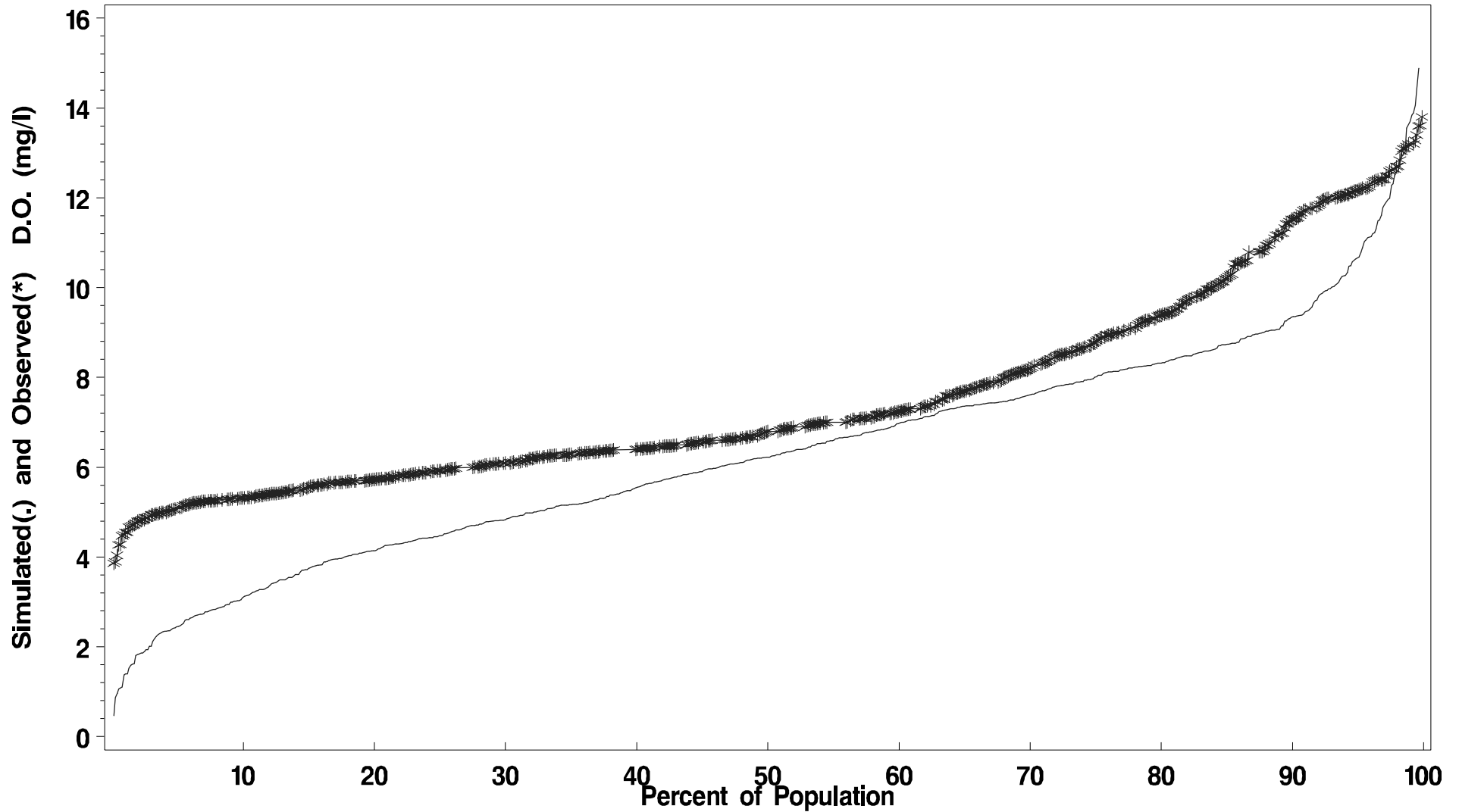
Migratory Dissolved Oxygen (mg/l)
Segment RPPMH Season: June 11 — Feb 14
(Scatter Plot)
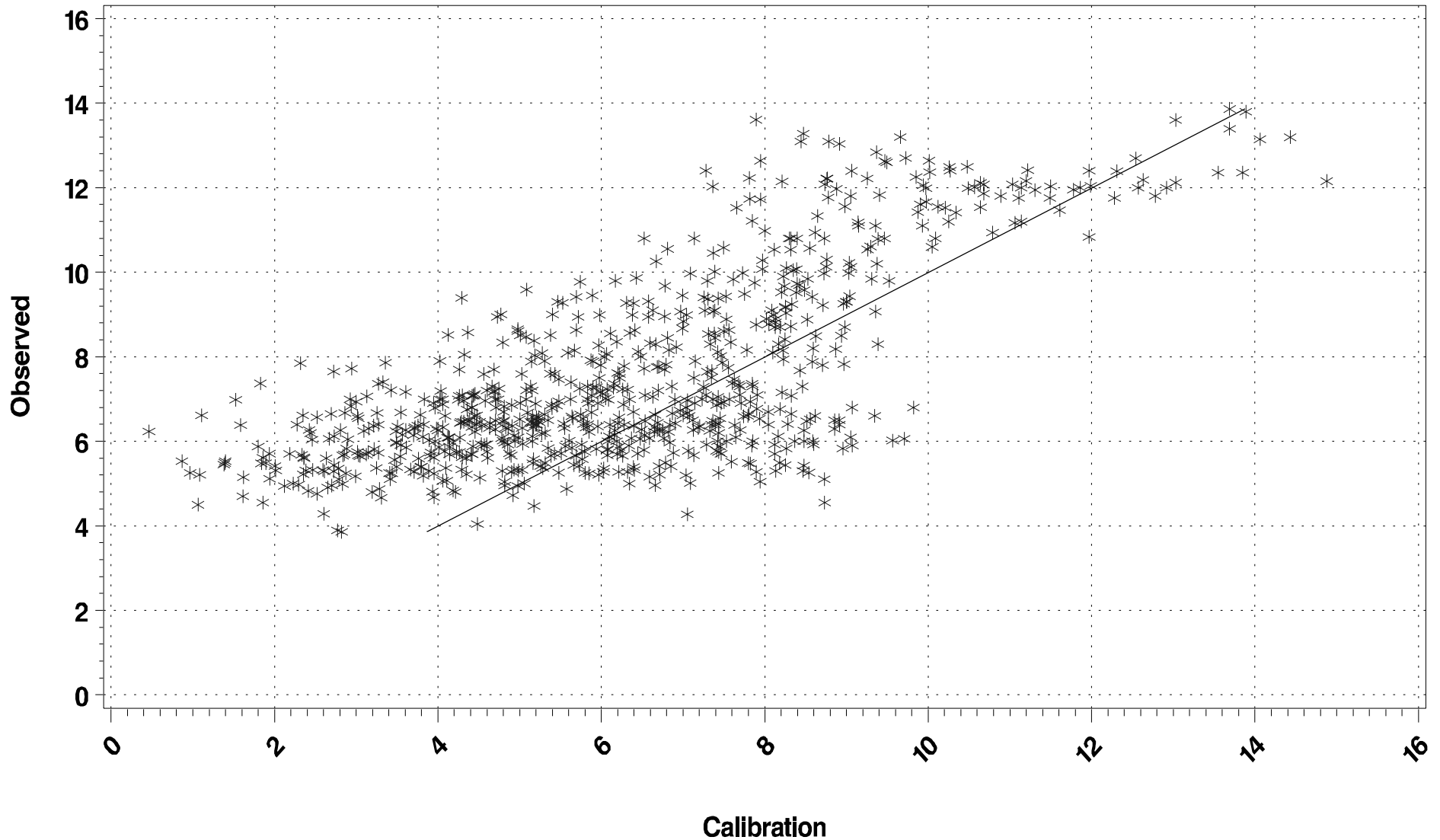
OPEN WATER **Dissolved Oxygen**
Segment RPPMH (Rappahannock Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 2324 pairs of predictions and observed data, the **slope** is 0.7679 and the **intercept** is 1.8224. The **R-Squared** value for this regression is 0.6505.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 2324 pairs of predictions and observed data, the **slope** is 0.7548 and the **intercept** is 0.2300. The **R-Squared** value for this regression is 0.5953.

Statistics (units in mg/l)

Mean observed 8.4259   Mean predicted 8.5988
Min. observed 0.25   Min. predicted 1.61
Max. observed 15.91   Max. predicted 20.31
Std. Dev. Observed 2.3568   Std. Dev. predicted 2.4752
Median observed 8.1475   Median predicted 8.1450
90th Percentile observed 11.8300   90th Percentile predicted 12.0480
10th Percentile observed 5.5600   10th Percentile predicted 5.8488

Differences (predicted – observed)

Mean difference 0.1729 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 2324
Number of Predicted Violations 28
Number of Observed Violations 6

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
**Segment RPPMH   Season: Jan 1 − Dec 31**
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
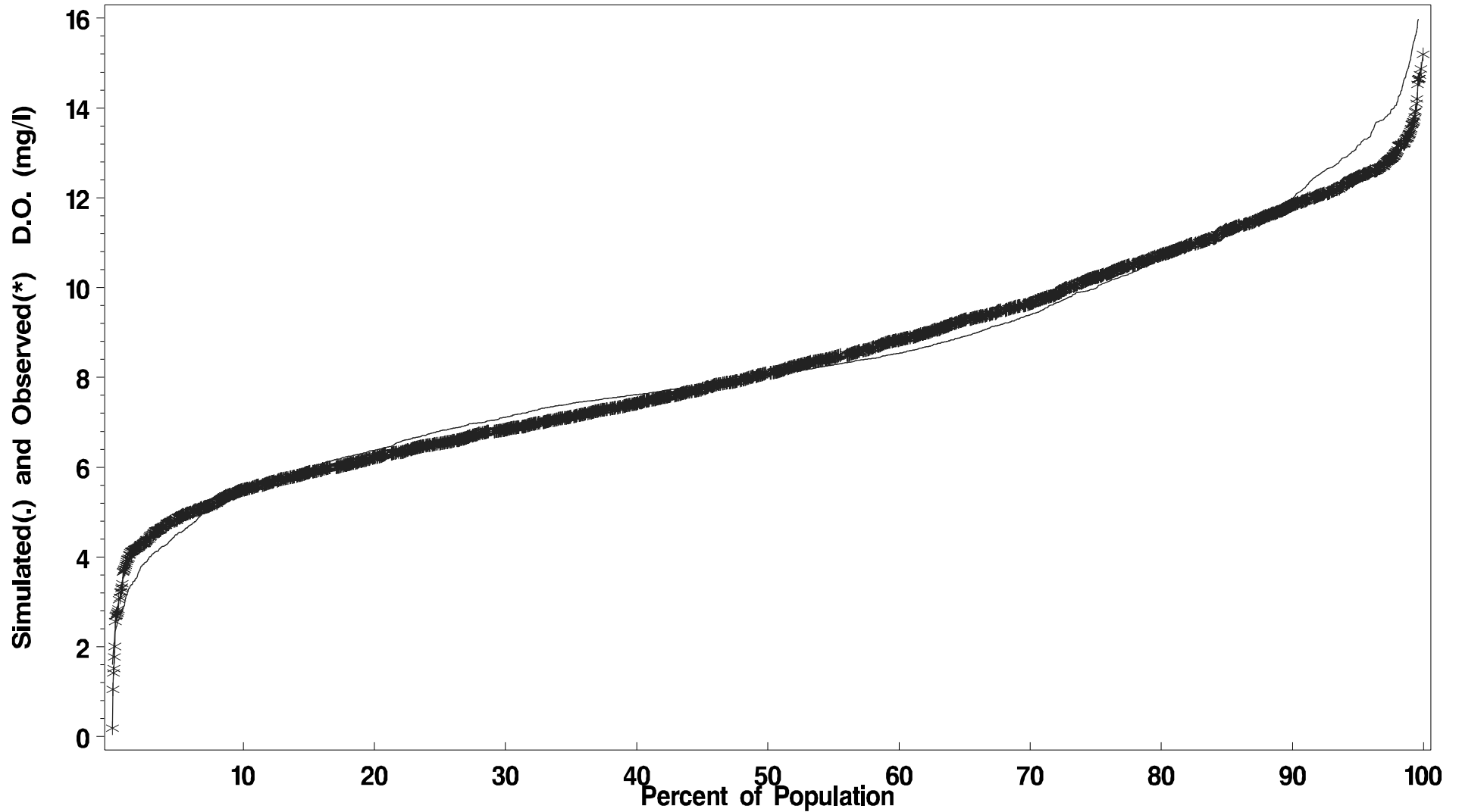
Open Water   Dissolved Oxygen (mg/l)
Segment RPPMH   Season: Jan 1 – Dec 31
(Scatter Plot)
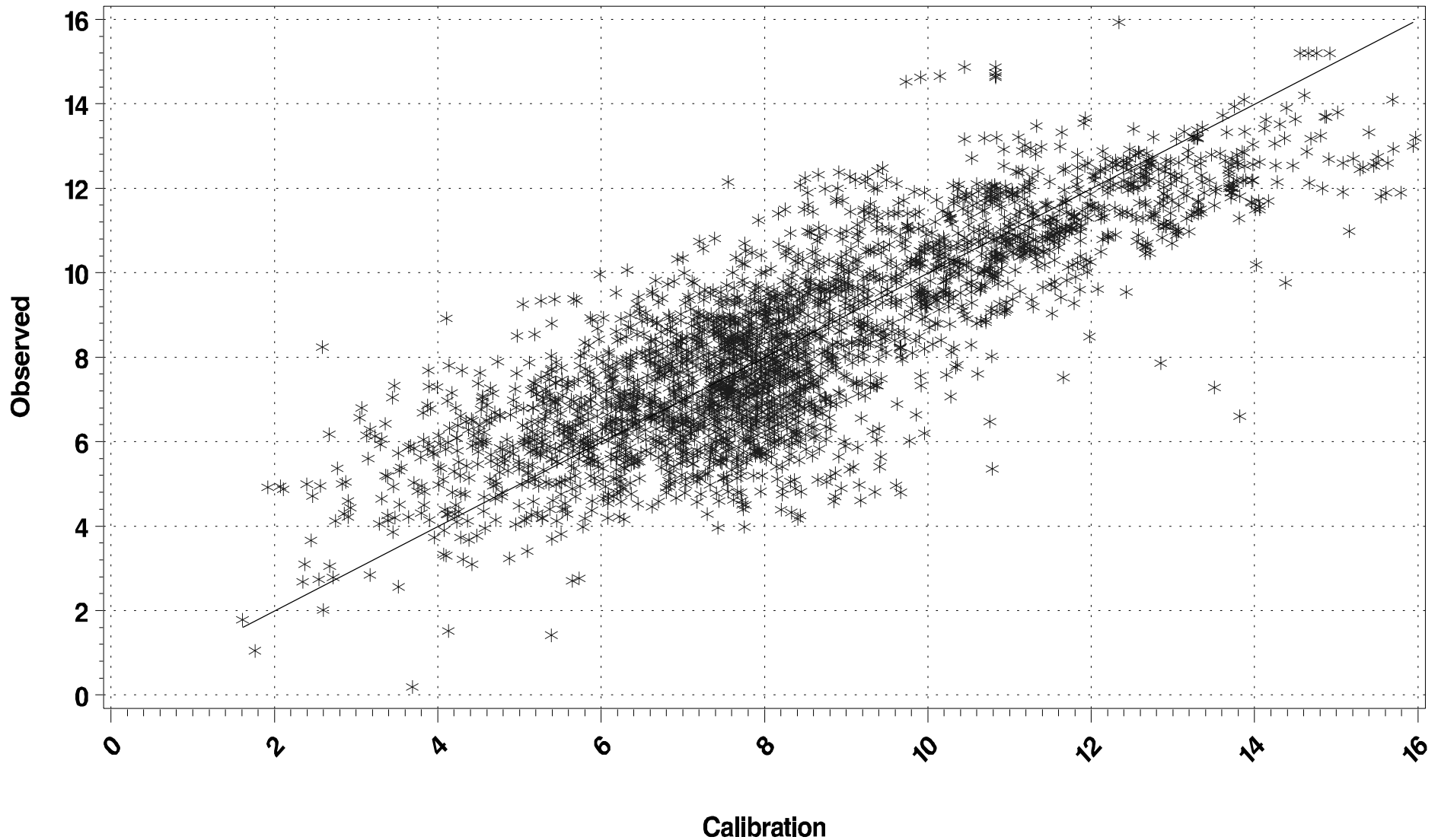
DEEP WATER **Dissolved Oxygen**
Segment RPPMH (Rappahannock Mesohaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 814 pairs of predictions and observed data, the **slope** is 0.7572 and the **intercept** is 1.0840. The **R-Squared** value for this regression is 0.5221.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 814 pairs of predictions and observed data, the **slope** is 0.7838 and the **intercept** is 0.1430. The **R-Squared** value for this regression is 0.4869.

Statistics (units in mg/l)

Mean observed 4.4772   Mean predicted 4.4813
Min. observed 0.1   Min. predicted -0.0129
Max. observed 11.1   Max. predicted 10.48
Std. Dev. Observed 2.2300   Std. Dev. predicted 2.1280
Median observed 4.7600   Median predicted 4.2866
90th Percentile observed 7.1529   90th Percentile predicted 7.2926
10th Percentile observed 1.3000   10th Percentile predicted 1.7814


Differences (predicted – observed)

Mean difference 0.0041 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 814
Number of Predicted Violations 76
Number of Observed Violations 117

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment RPPMH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
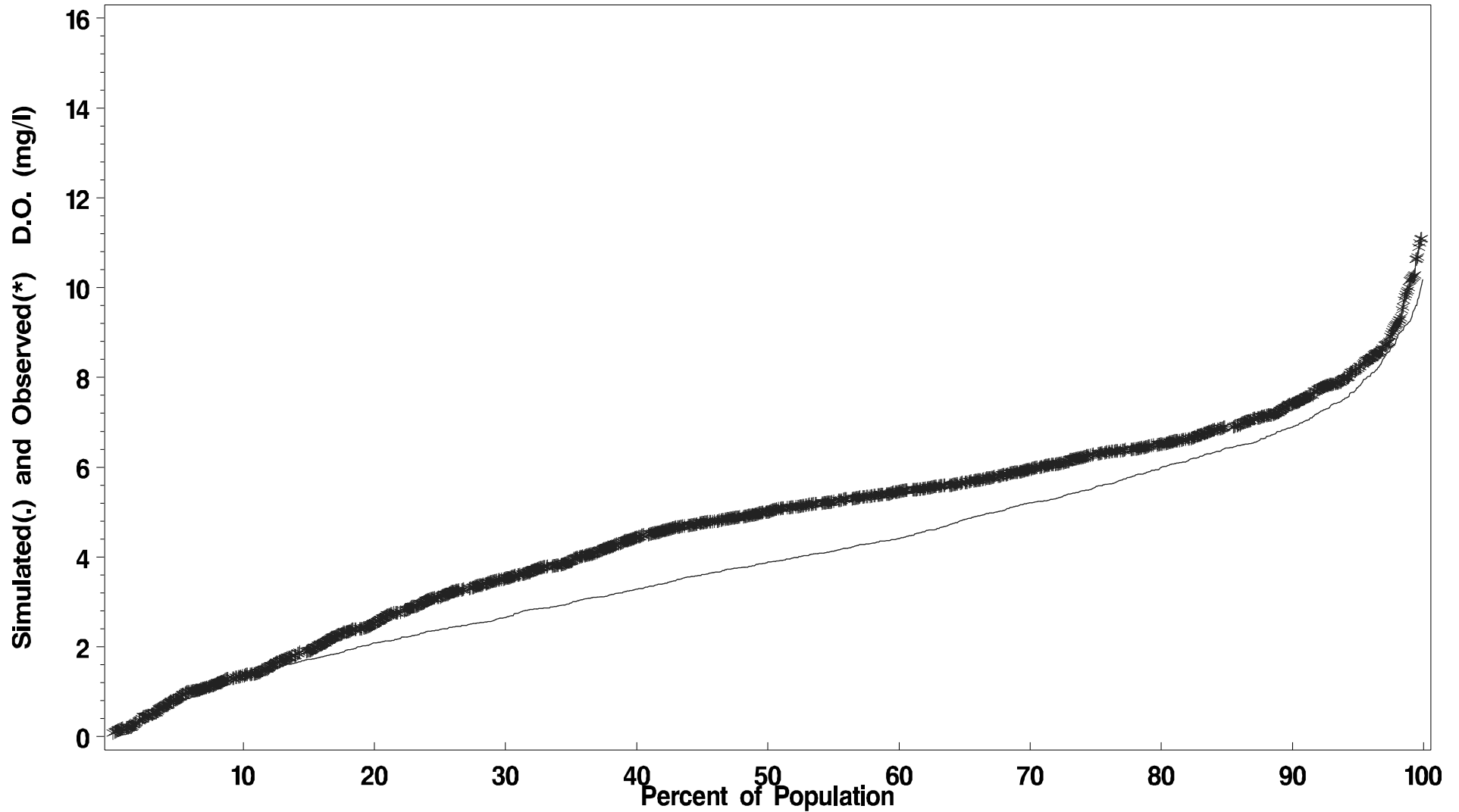
Deep Water   Dissolved Oxygen (mg/l)
Segment RPPMH   Season: May 1 − Sept 30
(Scatter Plot)
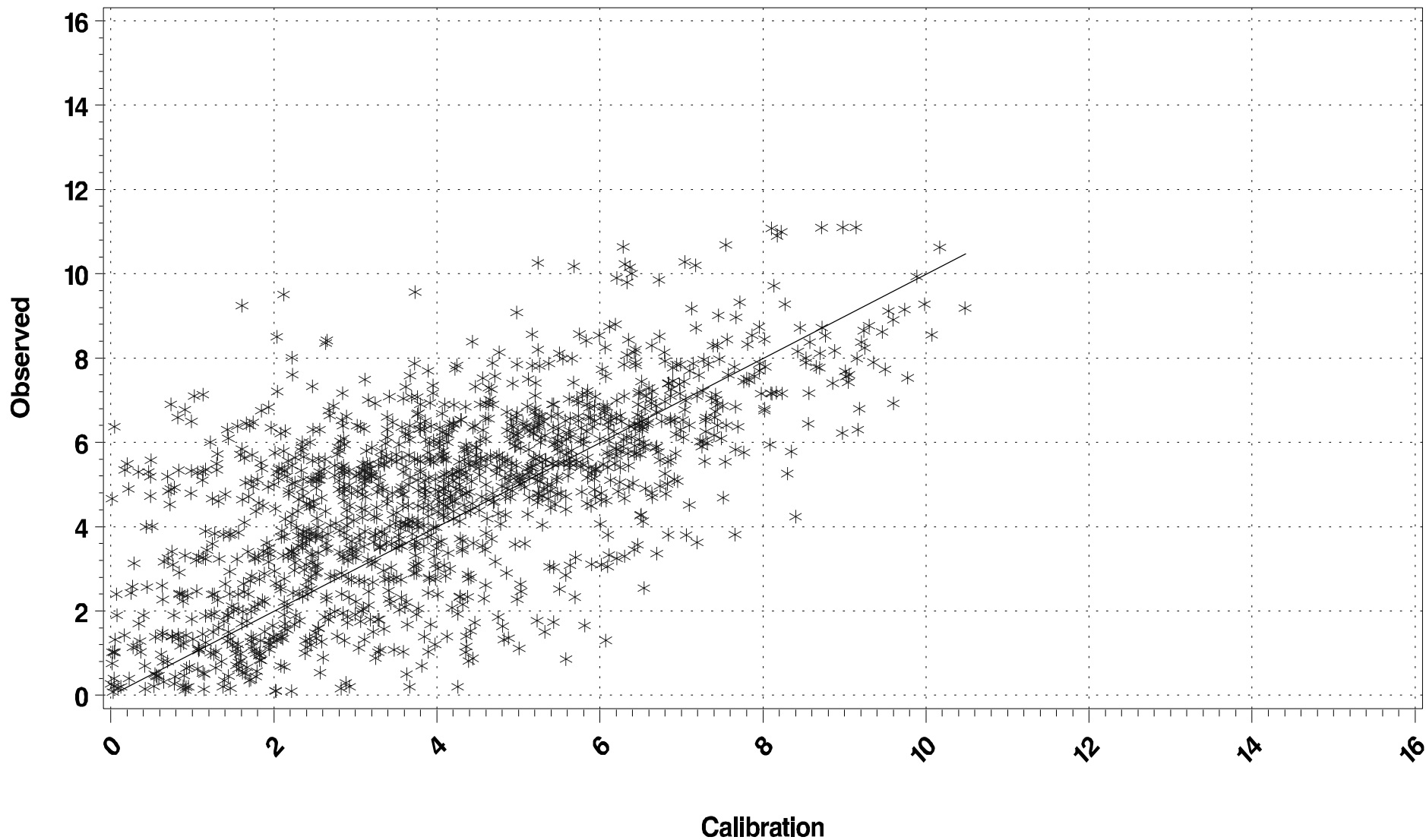
DEEP WATER **Dissolved Oxygen**
Segment RPPMH (Rappahannock Mesohaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 806 pairs of predictions and observed data, the **slope** is 0.6317 and the **intercept** is 4.0361. The **R-Squared** value for this regression is 0.6738.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 806 pairs of predictions and observed data, the **slope** is 0.5856 and the **intercept** is 0.4467. The **R-Squared** value for this regression is 0.7018.

Statistics (units in mg/l)

Mean observed 9.4092   Mean predicted 8.5054
Min. observed 2.87   Min. predicted 2.354
Max. observed 15.2   Max. predicted 14.48
Std. Dev. Observed 2.1442   Std. Dev. predicted 2.7861
Median observed 9.5575   Median predicted 8.6557
90th Percentile observed 11.9000   90th Percentile predicted 12.1030
10th Percentile observed 6.6700   10th Percentile predicted 4.6393
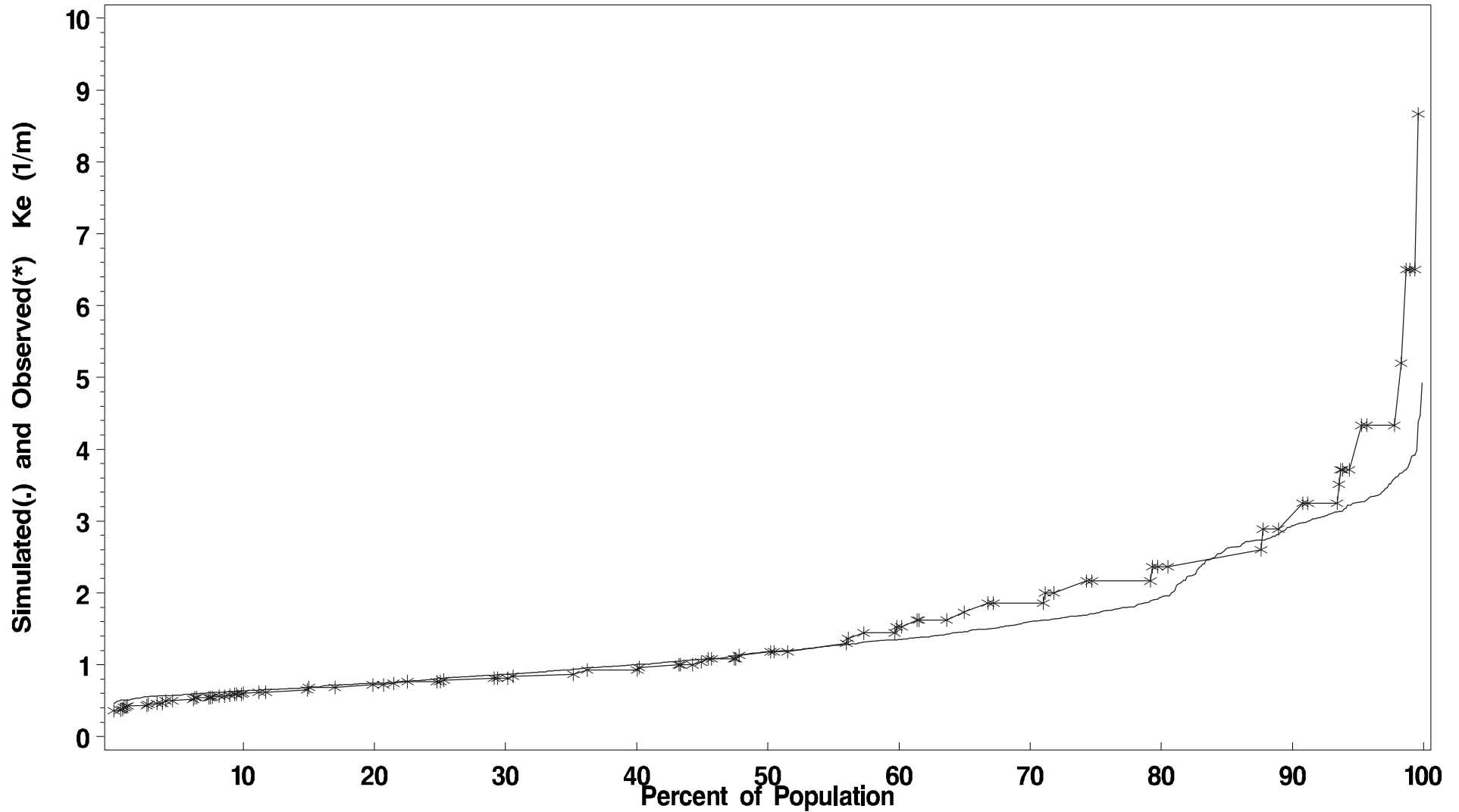

Differences (predicted – observed)

Mean difference -0.9038 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 806
Number of Predicted Violations 22
Number of Observed Violations 3

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[1] observed is dependent, predicted is independent
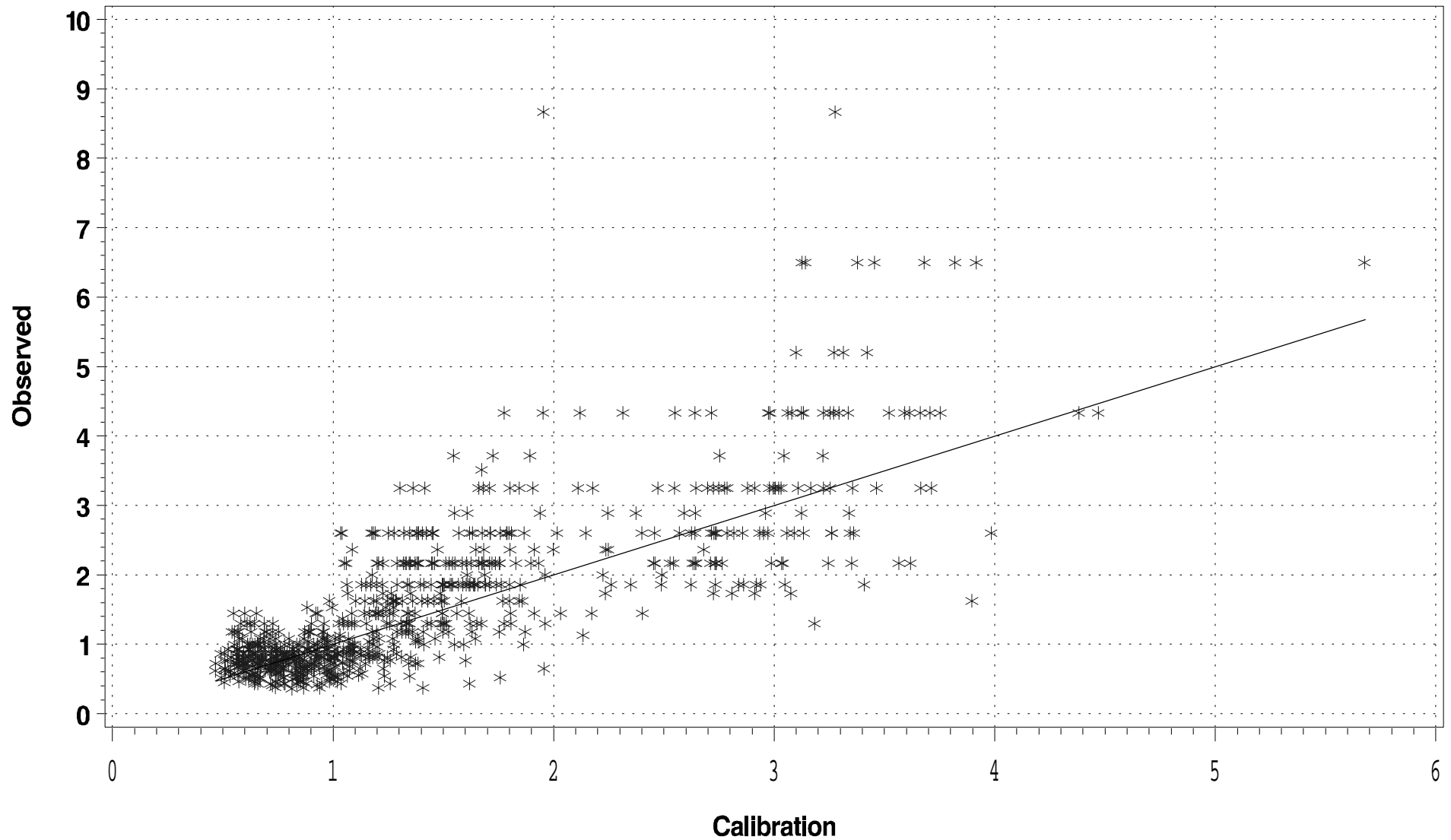
Deep Water Dissolved Oxygen (mg/l)
Segment RPPMH   Season: Oct 1 — April 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
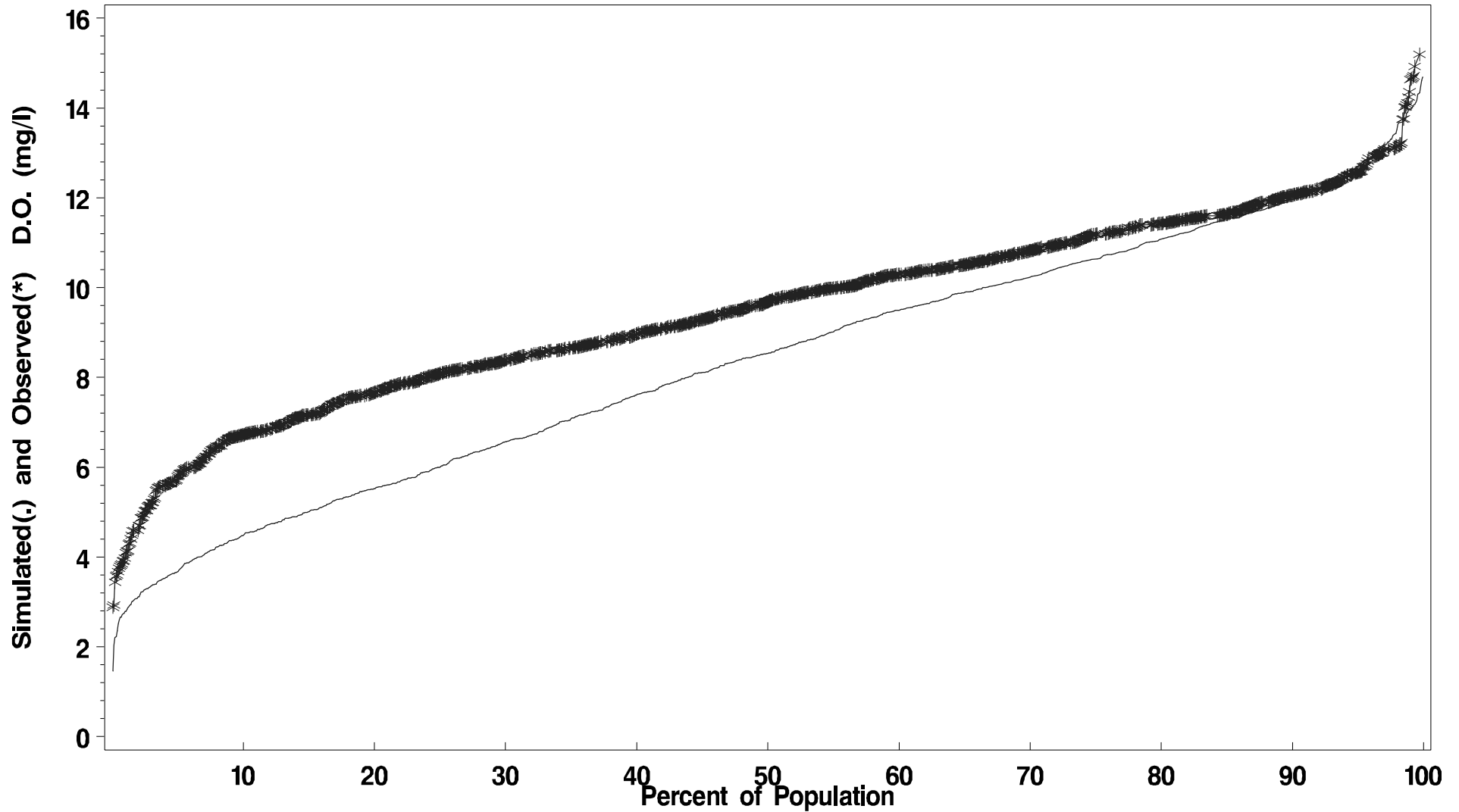
Deep Water   Dissolved Oxygen (mg/l)
Segment RPPMH   Season: Oct 1 – April 30
(Scatter Plot)
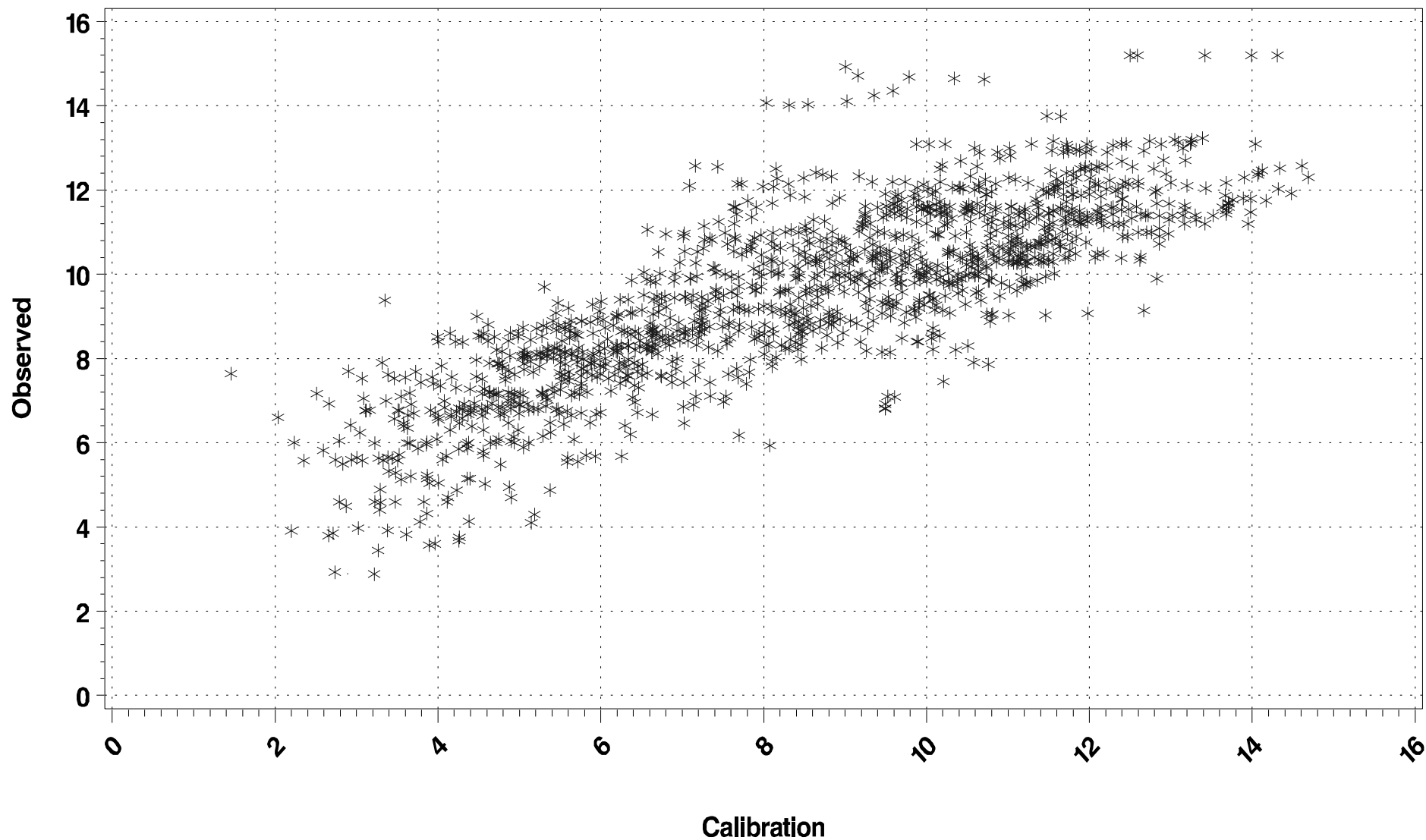
Regression of Calibration vs. Observations[1]
Using the 333 pairs of predictions and observed data, the **slope** is 0.2050 and the **intercept** is 7.5811. The **R-Squared** value for this regression is 0.0138.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 333 pairs of predictions and observed data, the **slope** is 0.1941 and the **intercept** is 0.7777. The **R-Squared** value for this regression is 0.0112.

Statistics (units in µg/l)

Mean observed 9.6309   Mean predicted 9.9999
Min. observed 1.0000   Min. predicted 3.1826
Max. observed 31.0000   Max. predicted 19.4520
Std. Dev. Observed 5.1767   Std. Dev. predicted 2.9633
Median observed 8.3731   Median predicted 9.3922
95th Percentile observed 20.4095 95th Percentile predicted 14.8030
10th Percentile observed 4.2333   10th Percentile predicted 6.4433

Differences (predicted – observed)

Mean difference 0.3690 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment RPPMH   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
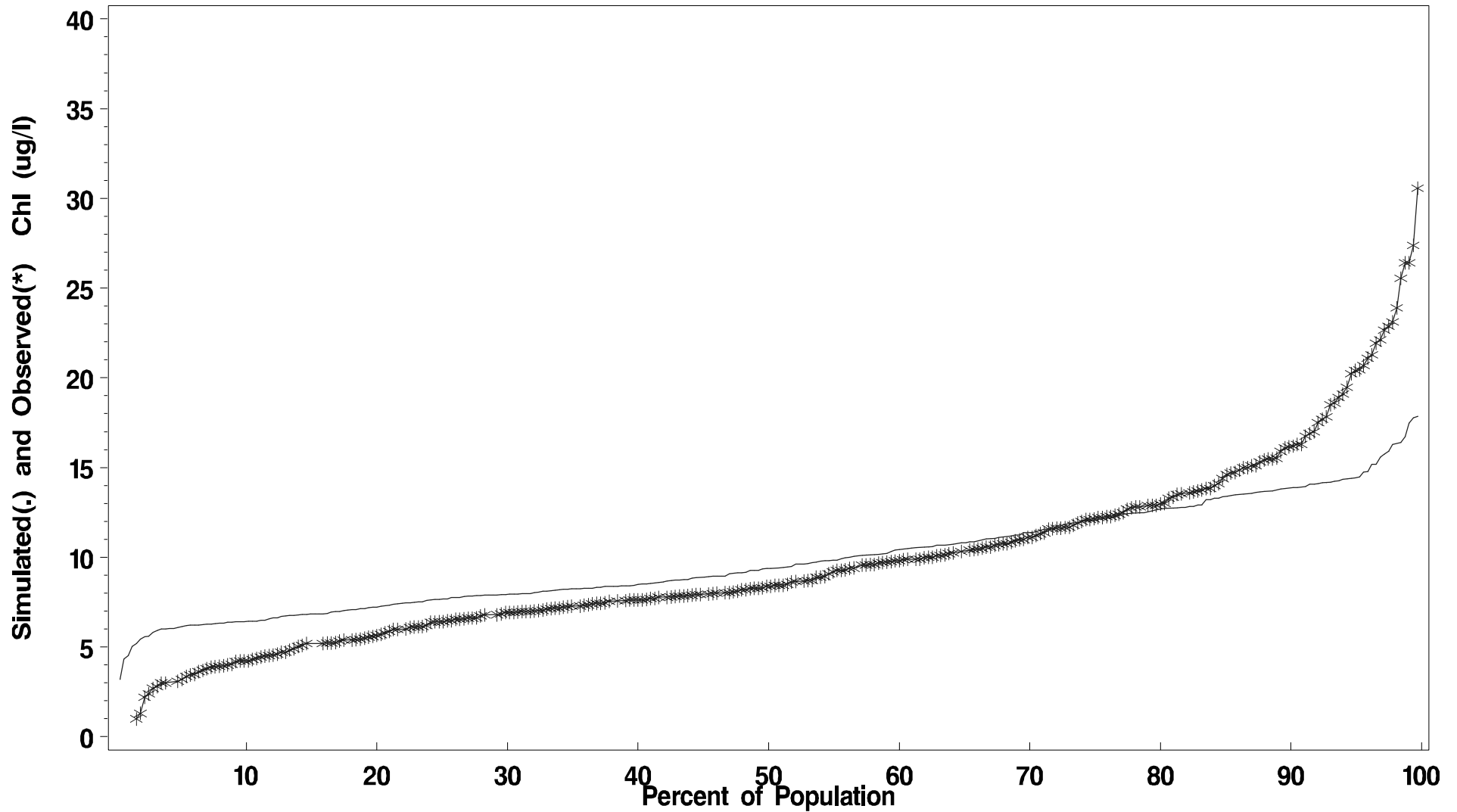
Chlorophyll Concentration (ug/l)
Segment RPPMH   Season: July 1 − Sept 30
(Scatter Plot)
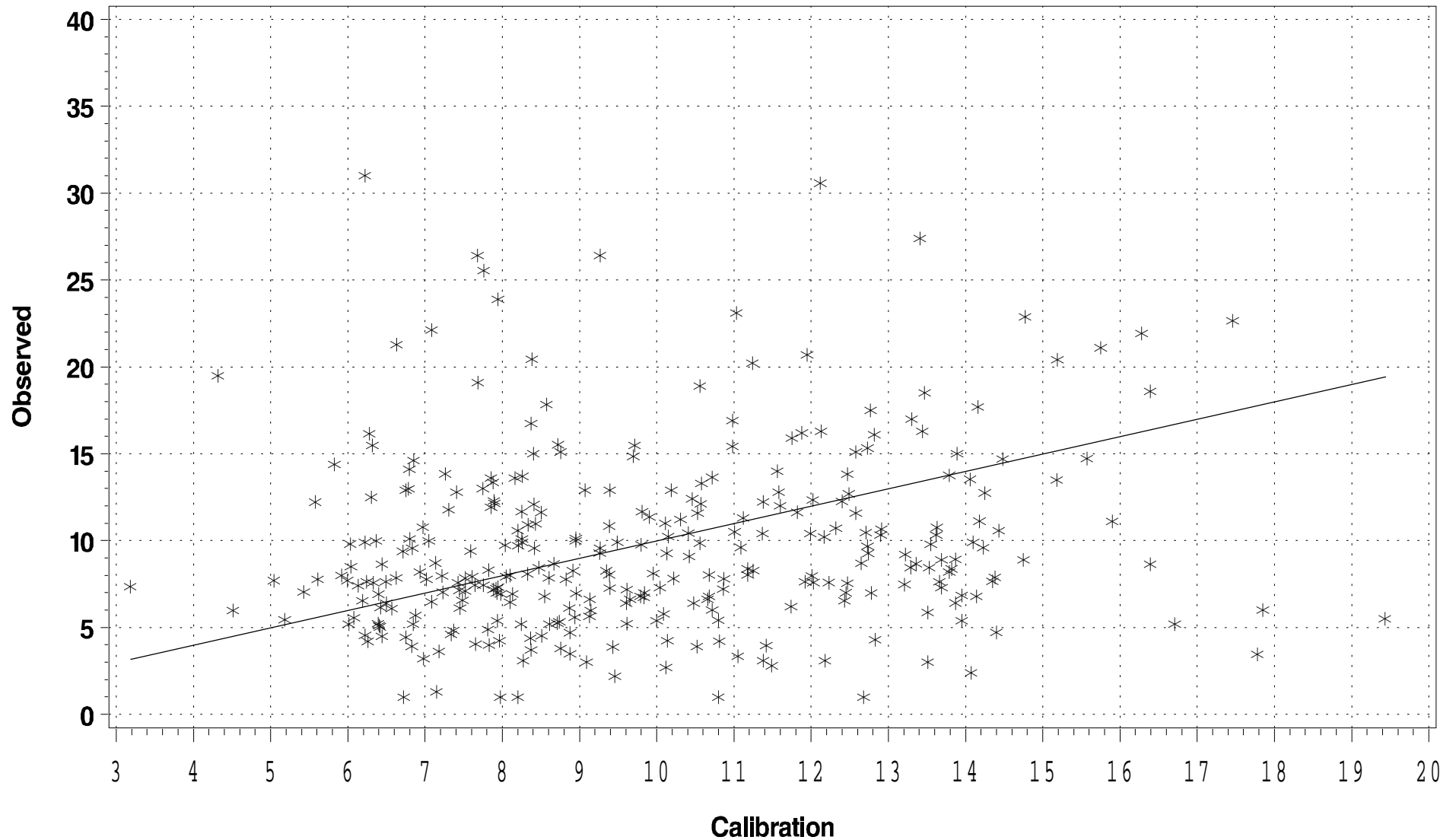
Regression of Calibration vs. Observations[1]
Using the 292 pairs of predictions and observed data, the **slope** is 0.2518 and the
intercept is 7.5781. The **R-Squared** value for this regression is 0.0730.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 292 pairs of predictions and observed data, the **slope** is 0.4785 and the
intercept is 0.3655. The **R-Squared** value for this regression is 0.0891.

Statistics (units in µg/l)

Mean observed 13.3948   Mean predicted 23.1010
Min. observed 1.0000   Min. predicted 2.8563
Max. observed 97.3000   Max. predicted 83.5990
Std. Dev. Observed 14.1348   Std. Dev. predicted 15.1627
Median observed 8.5664   Median predicted 18.7070
95th Percentile observed 36.9314   95th Percentile predicted 58.0240
10th Percentile observed 2.7000   10th Percentile predicted 10.2650

Differences (predicted – observed)

Mean difference 9.7062 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment RPPMH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
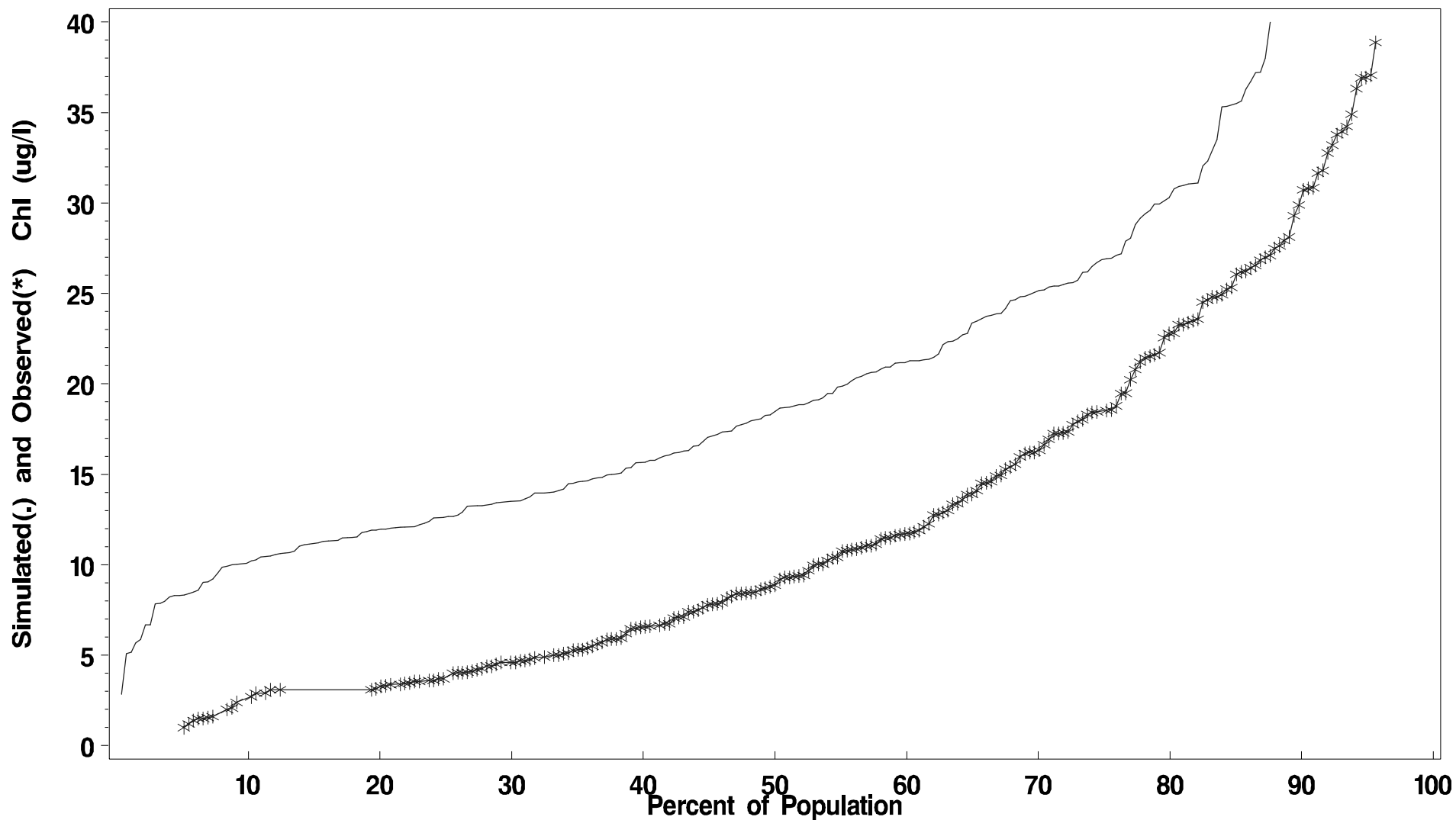
Chlorophyll Concentration (ug/l)
Segment RPPMH   Season: March 1 – May 30
(Scatter Plot)
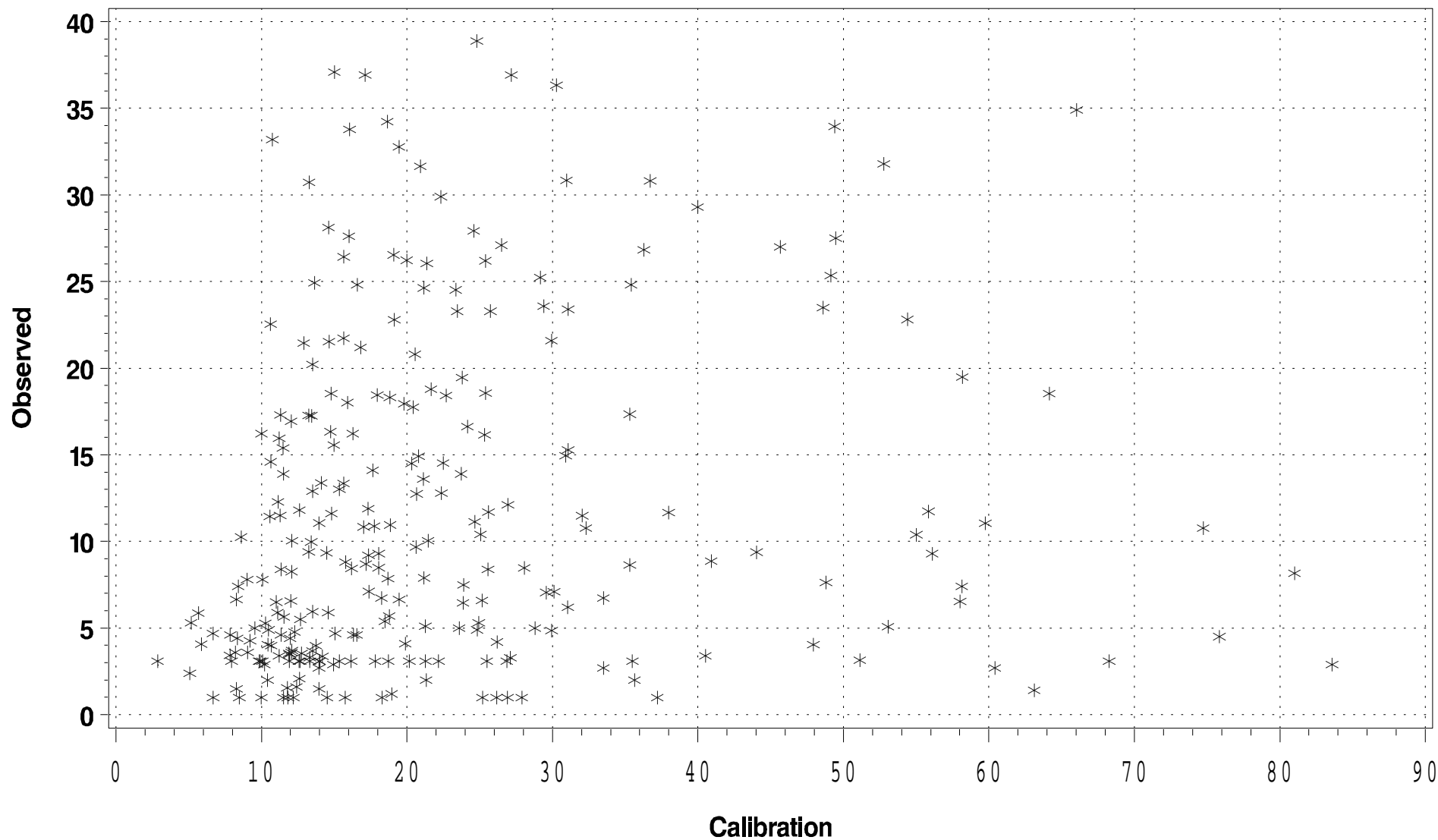
MESOHALINE **Light Attenuation**
Segment RPPMH (Rappahannock Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 801 pairs of predictions and observed data, the **slope** is 1.1380 and the
intercept is -0.0209. The **R-Squared** value for this regression is 0.5742.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 801 pairs of predictions and observed data, the **slope** is 0.9899 and the
intercept is 0.0209. The **R-Squared** value for this regression is 0.6618.

Statistics (units in 1/m)

Mean observed 1.6512   Mean predicted 1.4693
Min. observed 0.3611   Min. predicted 0.4671
Max. observed 13.0000   Max. predicted 5.6760
Std. Dev. Observed 1.3415   Std. Dev. predicted 0.8933
Median observed 1.1818   Median predicted 1.1837
90th Percentile observed 3.2500   90th Percentile predicted 2.9961
10th Percentile observed 0.6190   10th Percentile predicted 0.6426

Differences (predicted – observed)

Mean difference -0.1818 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment RPPMH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment RPPMH   Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment MPNTF
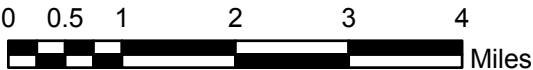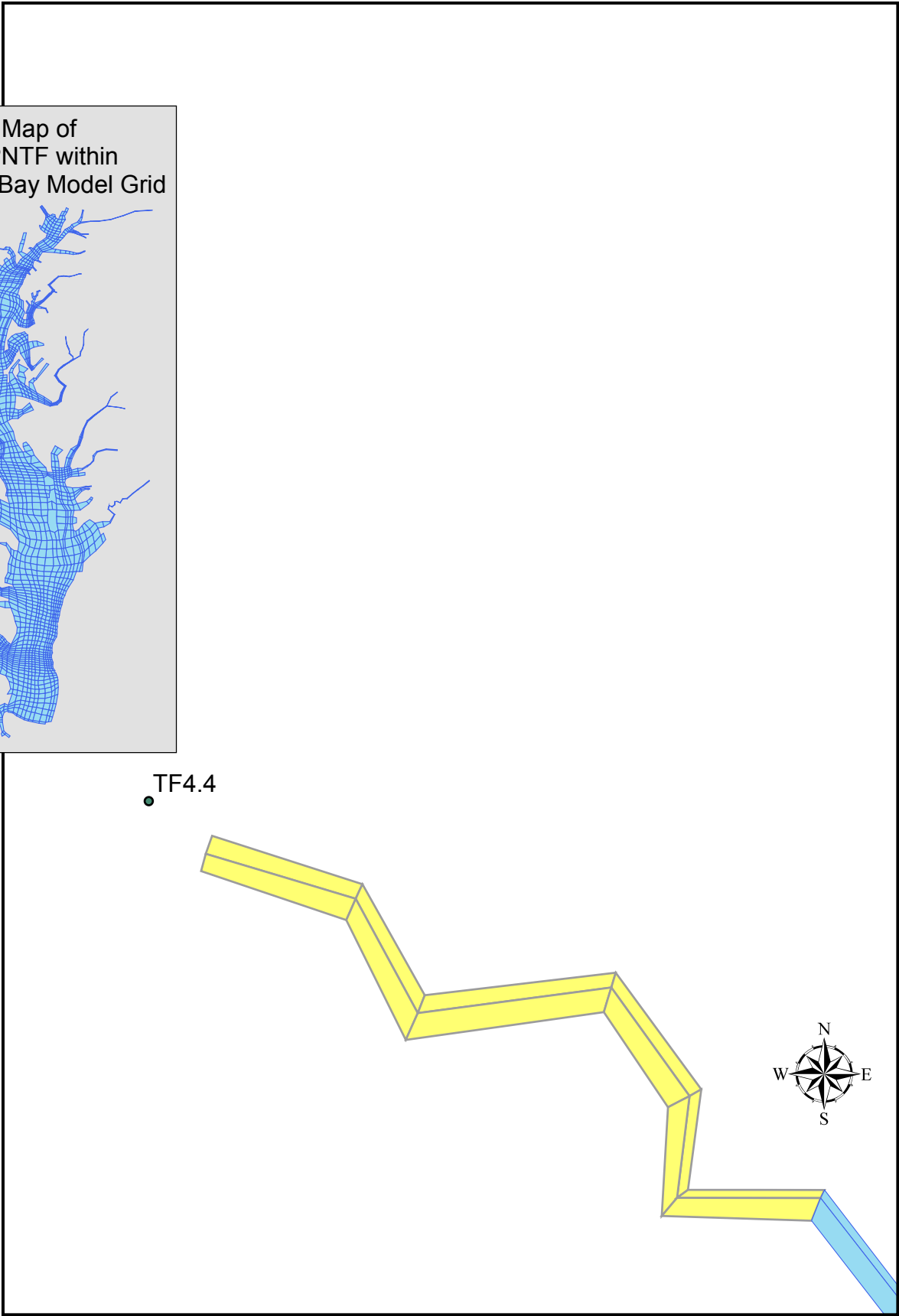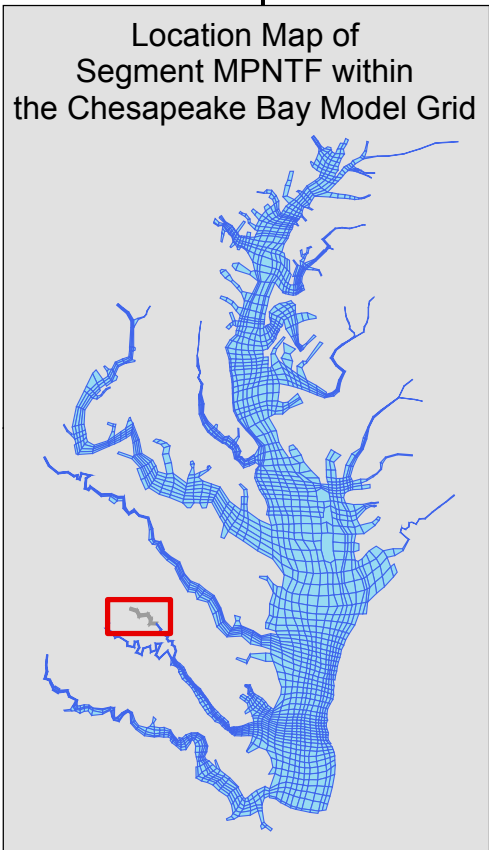
Location Map of
Segment MPNTF within
the Chesapeake Bay Model Grid

TF4.4

N
W   E
S

0 0.5 1   2   3   4
Miles

Chesapeake Bay Program

Regression of Calibration vs. Observations[1]

Using the 113 pairs of predictions and observed data, the **slope** is 0.9412 and the **intercept** is 2.5497. The **R-Squared** value for this regression is 0.3983.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 113 pairs of predictions and observed data, the **slope** is 0.7344 and the **intercept** is 0.3392. The **R-Squared** value for this regression is 0.4386.

Statistics (units in mg/l)

Mean observed 8.4050   Mean predicted 6.2211
Min. observed 5.08   Min. predicted 2.853
Max. observed 13.495   Max. predicted 9.858
Std. Dev. Observed 1.8998   Std. Dev. predicted 1.2739
Median observed 8.1300   Median predicted 6.0011
90th Percentile observed 11.1000   90th Percentile predicted 7.7548
10th Percentile observed 6.2000   10th Percentile predicted 4.6264

Differences (predicted – observed)

Mean difference -2.1838 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 113
Number of Predicted Violations 22
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment MPNTF Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
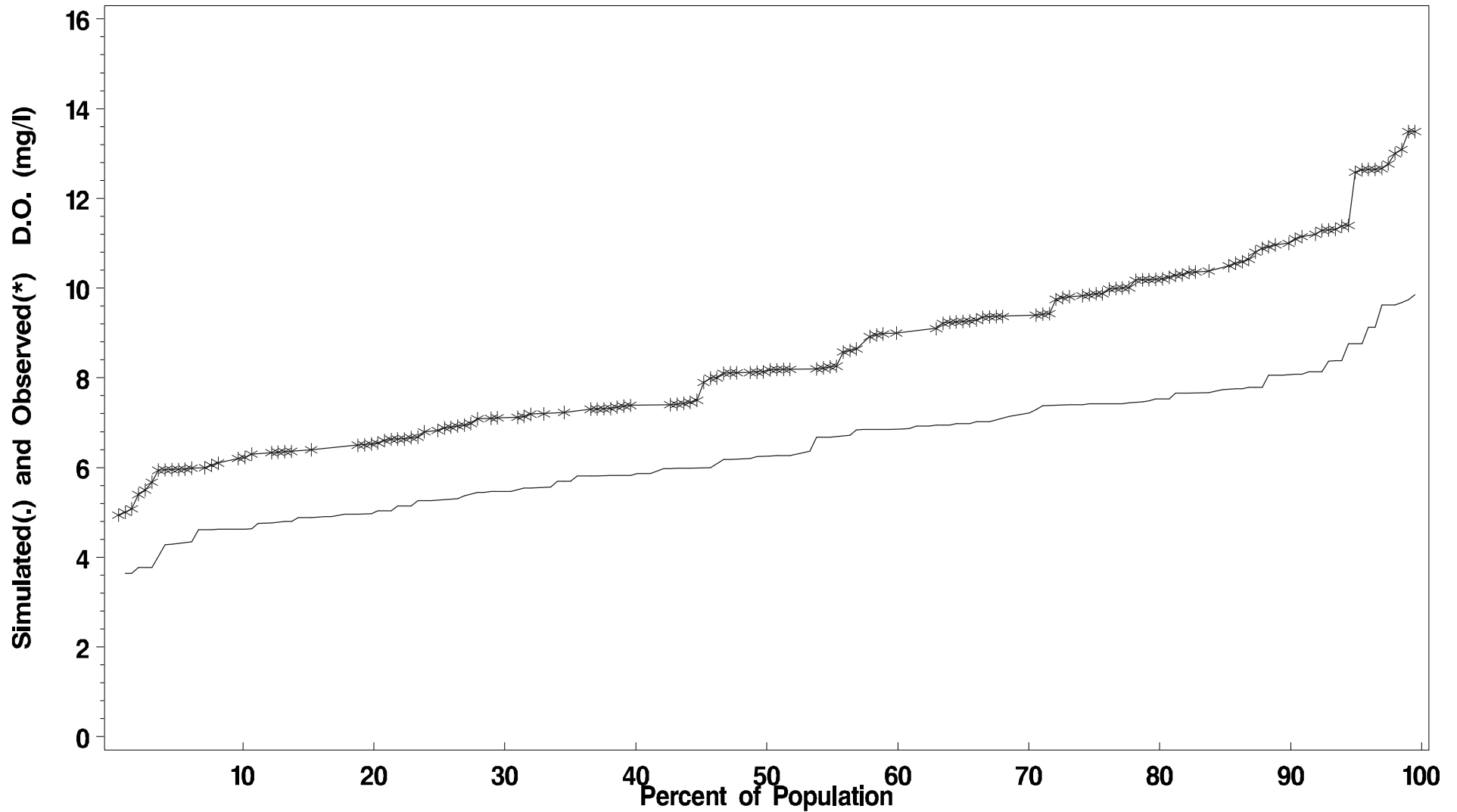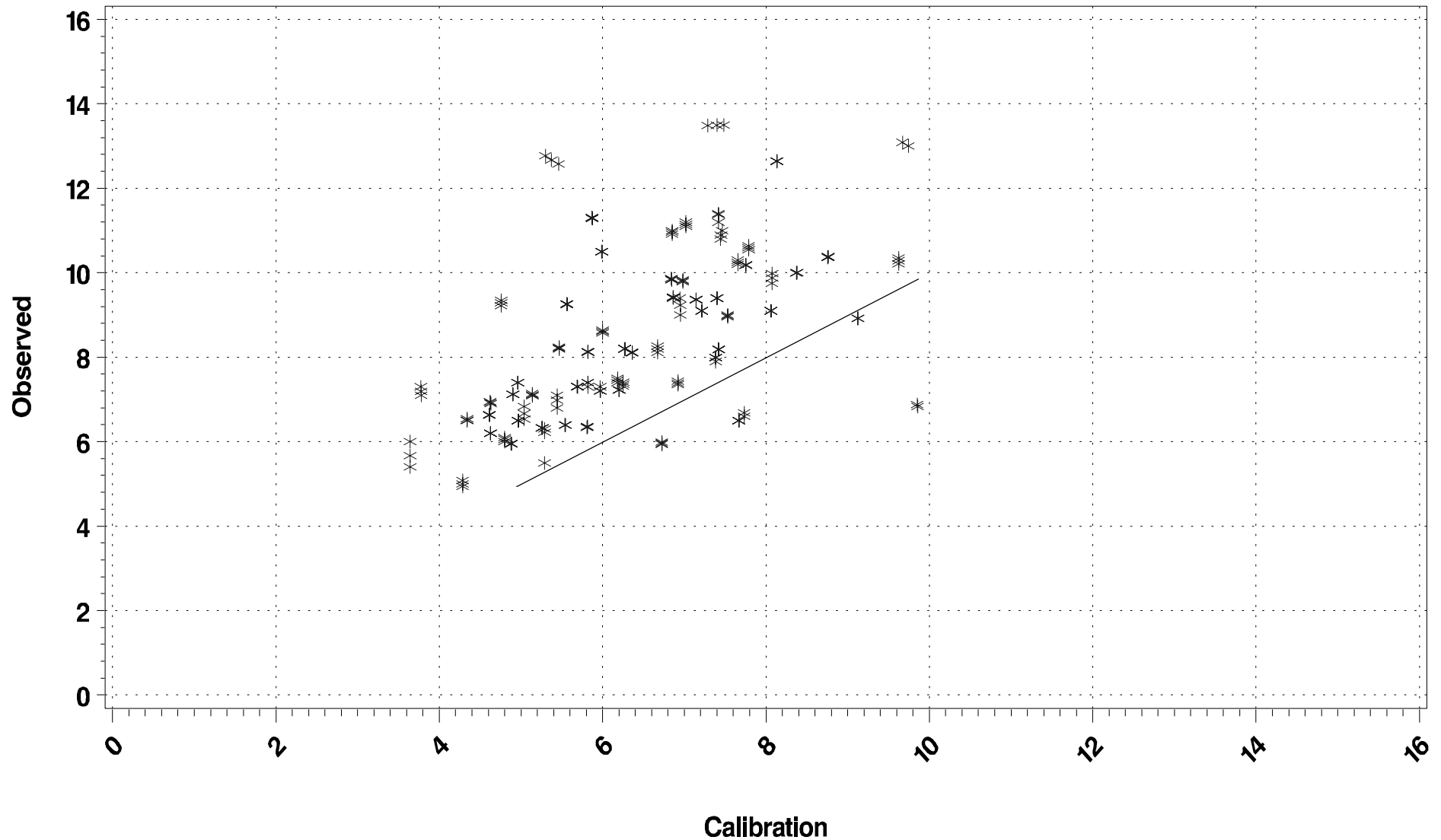
Migratory Dissolved Oxygen (mg/l)
Segment MPNTF Season: Feb 15 – June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 182 pairs of predictions and observed data, the **slope** is 1.0090 and the **intercept** is 2.0729. The **R-Squared** value for this regression is 0.7153.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 182 pairs of predictions and observed data, the **slope** is 0.6817 and the **intercept** is 0.3777. The **R-Squared** value for this regression is 0.6348.

Statistics (units in mg/l)

Mean observed 7.2390   Mean predicted 5.1198
Min. observed 4.085   Min. predicted 1.362
Max. observed 14.6   Max. predicted 9.87
Std. Dev. Observed 2.6479   Std. Dev. predicted 2.2194
Median observed 6.2500   Median predicted 4.4493
90th Percentile observed 11.3350   90th Percentile predicted 9.1242
10th Percentile observed 4.6900   10th Percentile predicted 2.8188

Differences (predicted – observed)

Mean difference -2.1192 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 182
Number of Predicted Violations 42
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment MPNTF Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment MPNTF Season: June 11 − Feb 14
(Scatter Plot)

<div align="center">
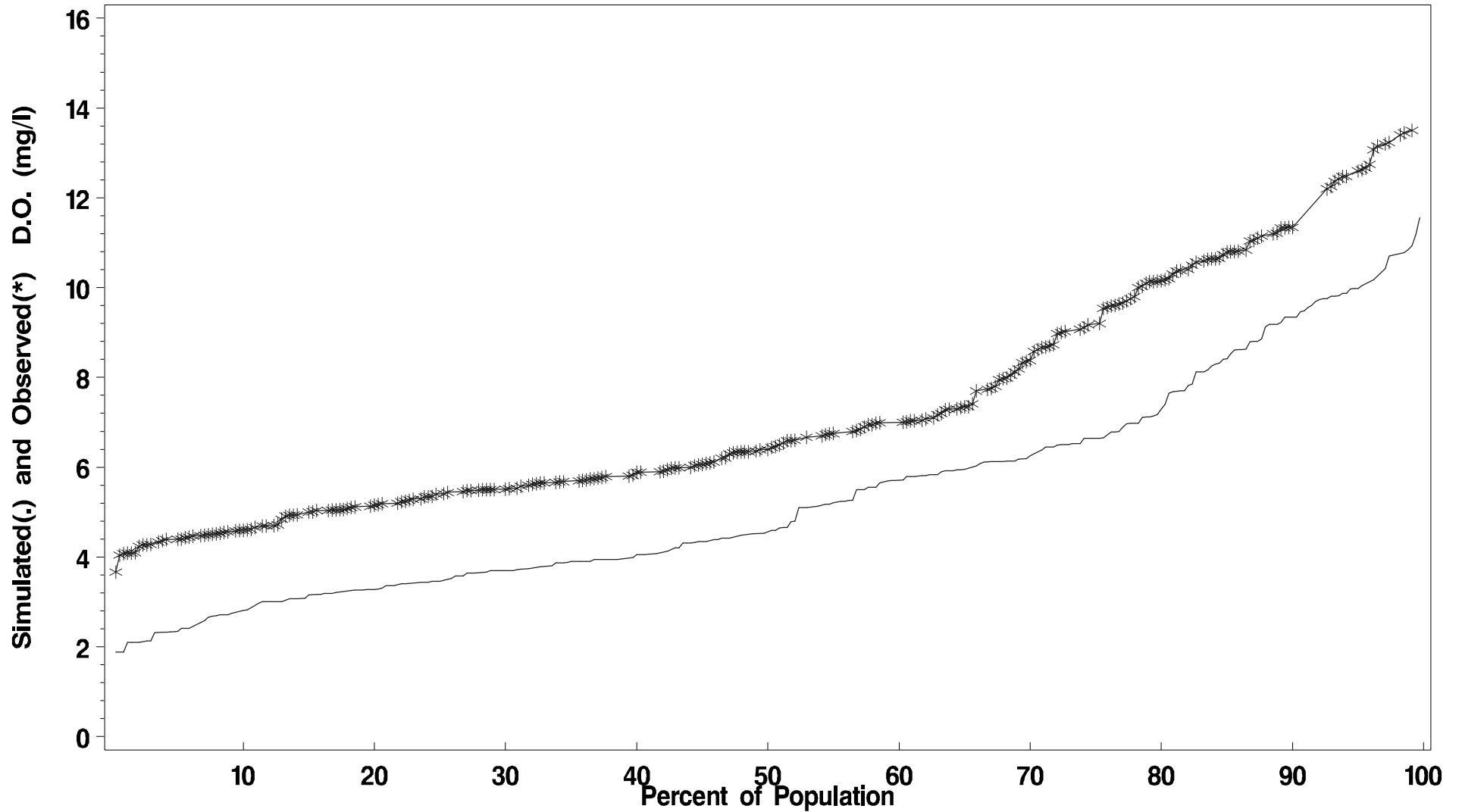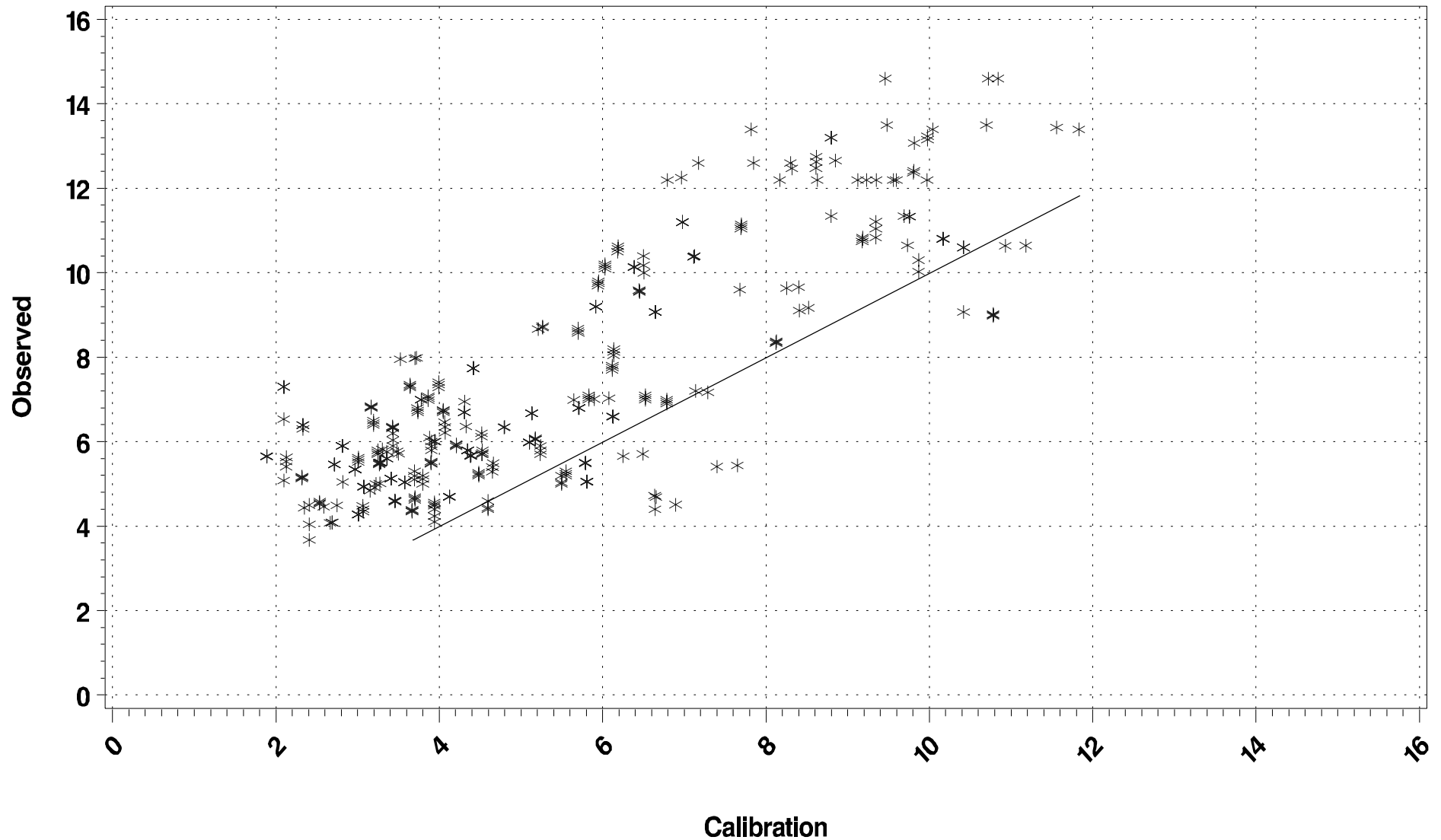
TIDAL FRESH **Chlorophyll**
Segment MPNTF (Mattaponi Tidal Fresh)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 50 pairs of predictions and observed data, the **slope** is 0.1905 and the **intercept** is 3.7309. The **R-Squared** value for this regression is 0.0204.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 50 pairs of predictions and observed data, the **slope** is 0.1772 and the **intercept** is 0.5812. The **R-Squared** value for this regression is 0.0177.

Statistics (units in μg/l)

Mean observed 4.9171	Mean predicted 6.2273
Min. observed 1.0000	Min. predicted 1.7006
Max. observed 16.7462	Max. predicted 10.8330
Std. Dev. Observed 2.9436	Std. Dev. predicted 2.2096
Median observed 4.1199	Median predicted 6.0052
95th Percentile observed 9.4198	95th Percentile predicted 10.0990
10th Percentile observed 2.2000	10th Percentile predicted 3.7080

Differences (predicted – observed)

Mean difference 1.3102 μg/l
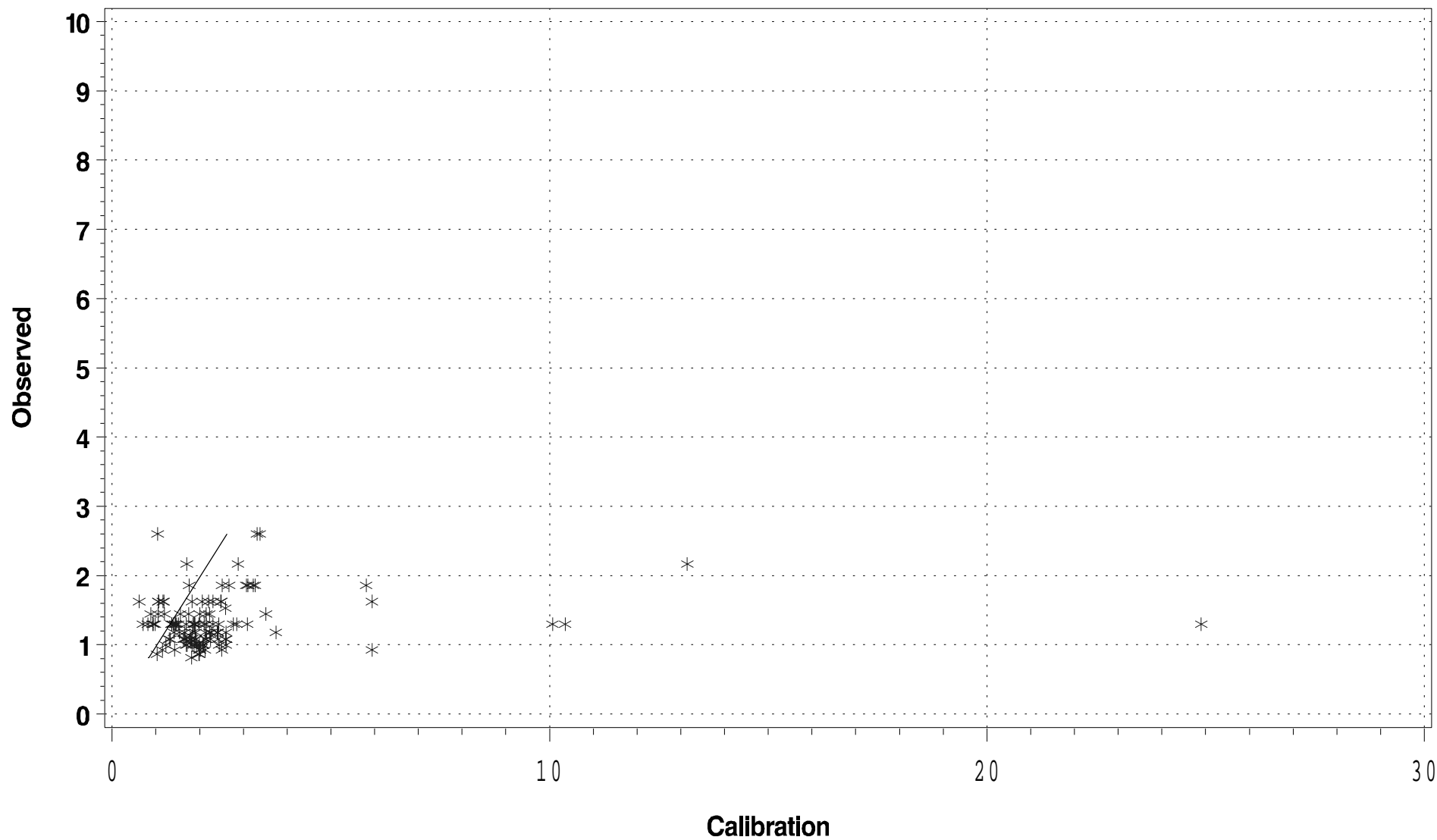
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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment MPNTF   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment MPNTF   Season: July 1 — Sept 30
(Scatter Plot)

<div align="center">
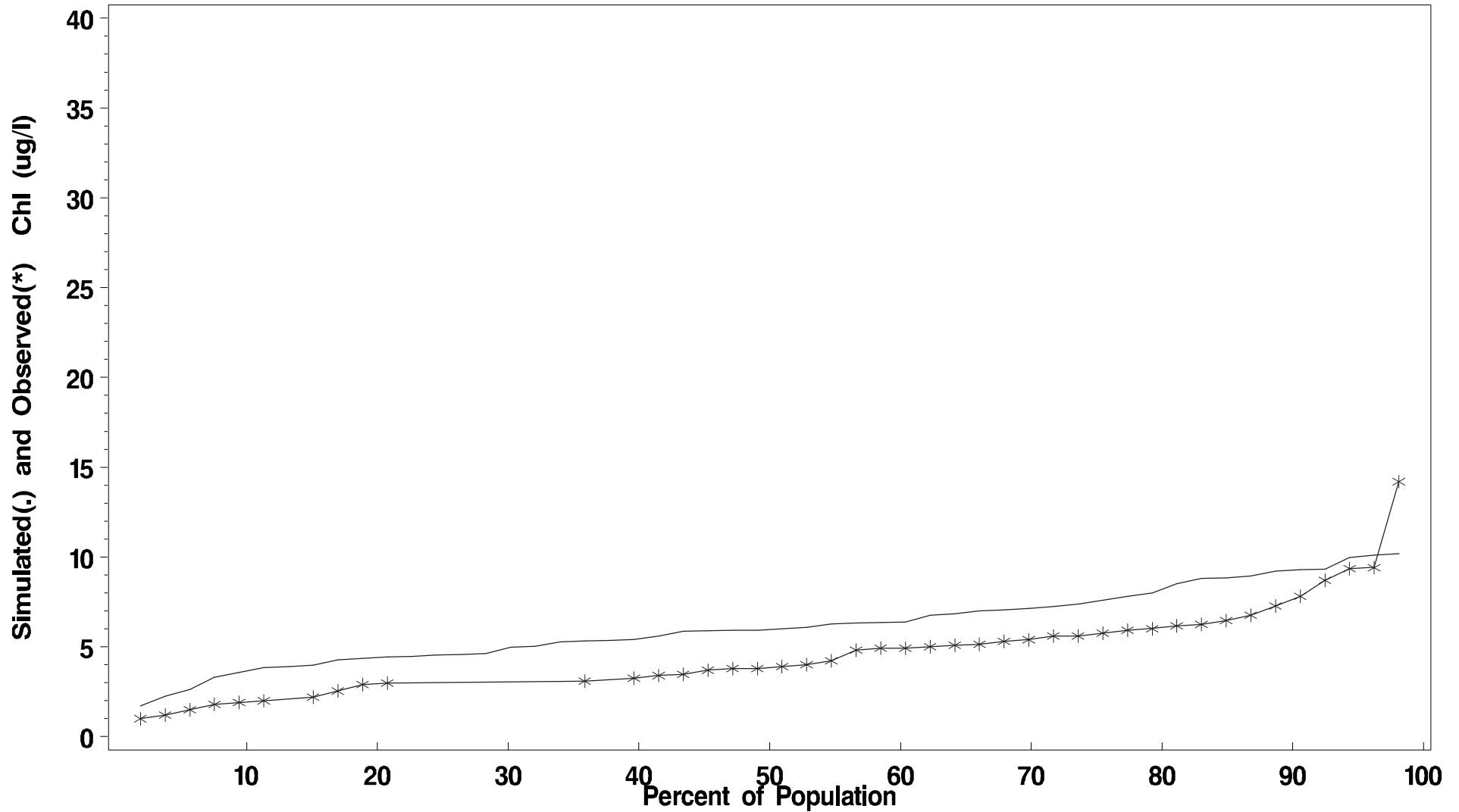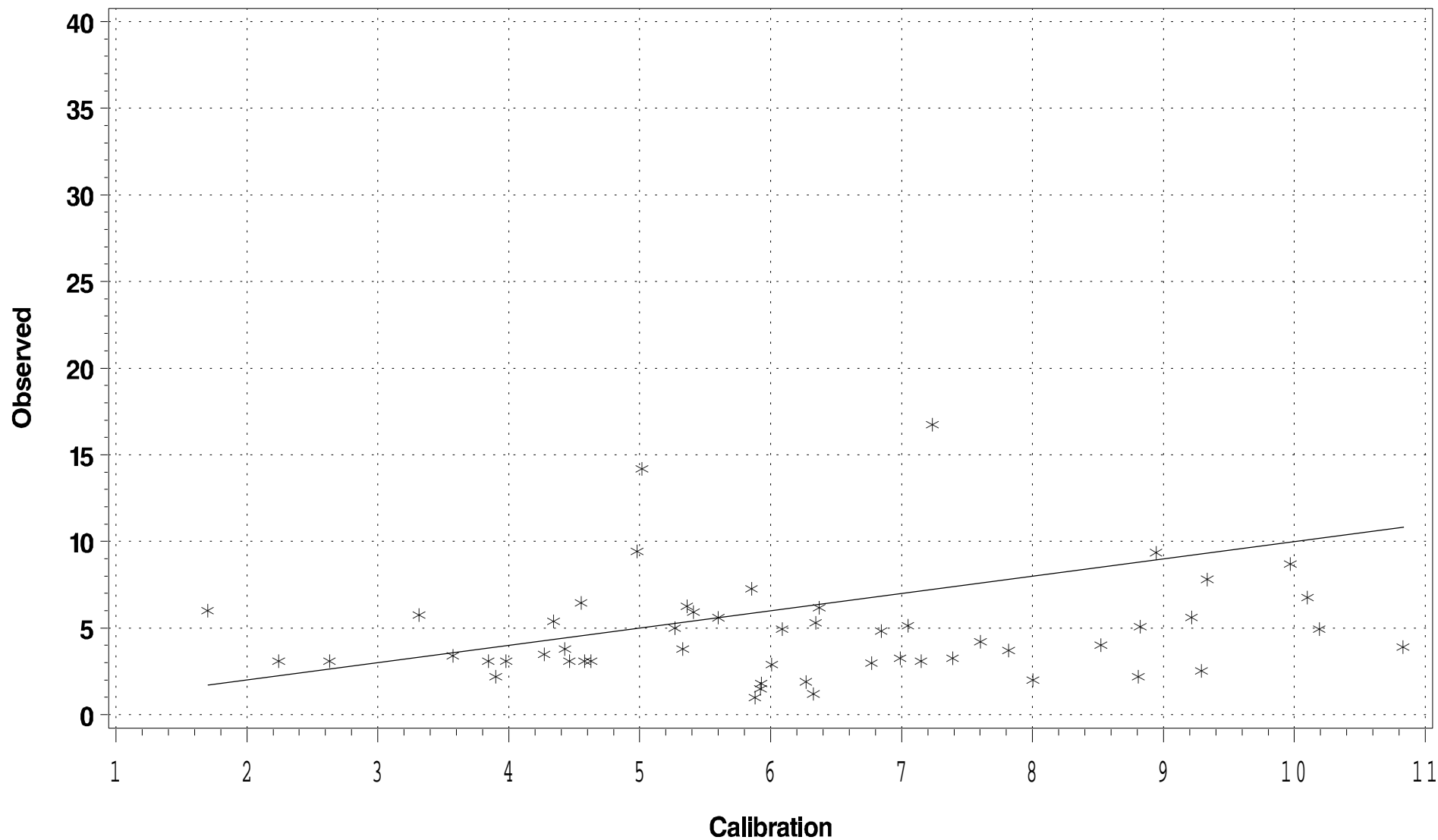
TIDAL FRESH **Chlorophyll**
Segment MPNTF (Mattaponi Tidal Fresh)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 49 pairs of predictions and observed data, the **slope** is -0.1303 and the **intercept** is 3.4182. The **R-Squared** value for this regression is 0.0210.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 49 pairs of predictions and observed data, the **slope** is -0.0539 and the **intercept** is 0.5865. The **R-Squared** value for this regression is 0.0047.

Statistics (units in μg/l)

Mean observed 2.8676	Mean predicted 4.2244
Min. observed 1.0000	Min. predicted 0.4402
Max. observed 15.8000	Max. predicted 10.8330
Std. Dev. Observed 2.1169	Std. Dev. predicted 2.3515
Median observed 3.1000	Median predicted 3.6876
95th Percentile observed 3.8000	95th Percentile predicted 7.5496
10th Percentile observed 1.0000	10th Percentile predicted 1.0837

Differences (predicted – observed)

Mean difference 1.3568 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment MPNTF   Season: March 1 — May 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
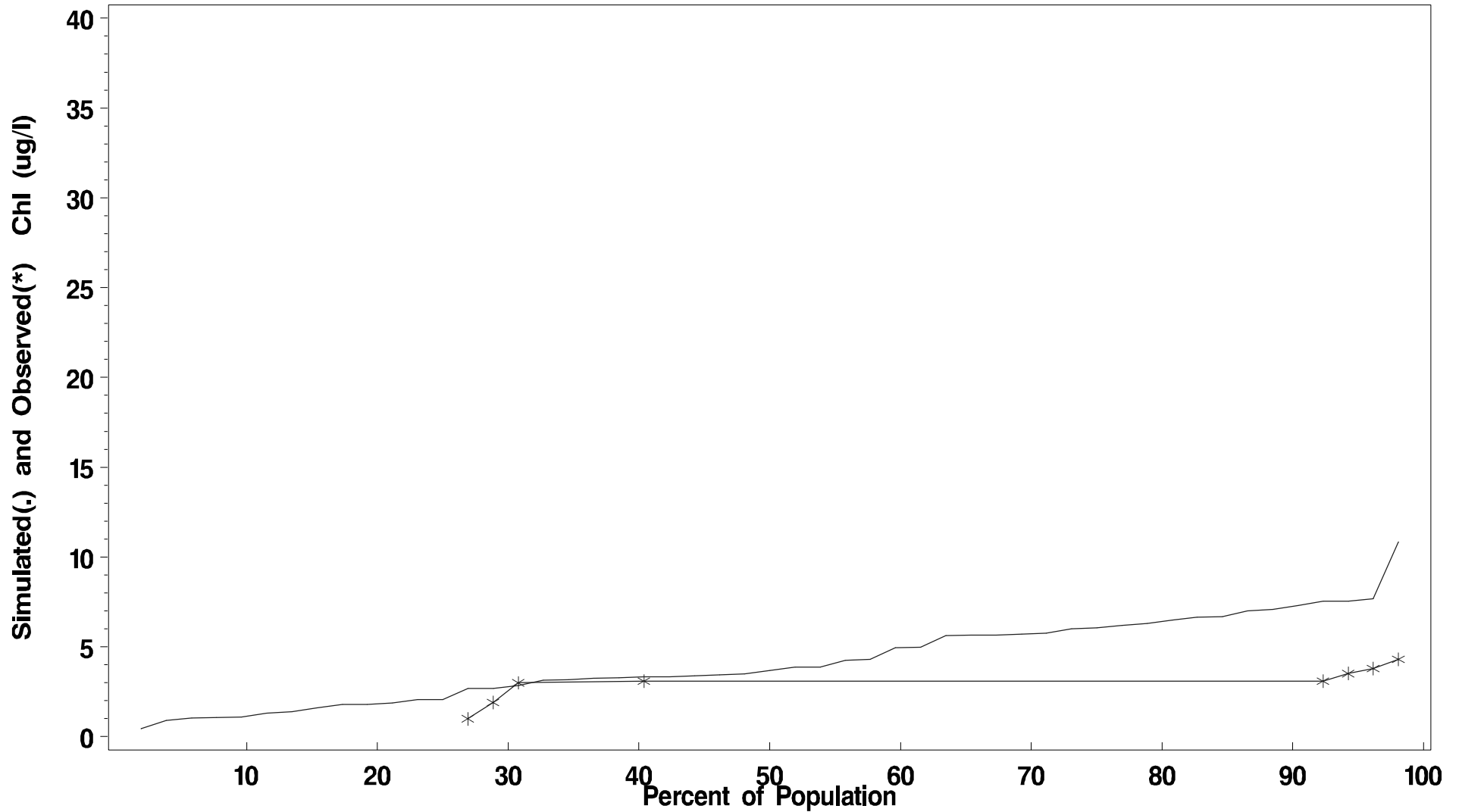
Chlorophyll Concentration (ug/l)
Segment MPNTF   Season: March 1 — May 30
(Scatter Plot)
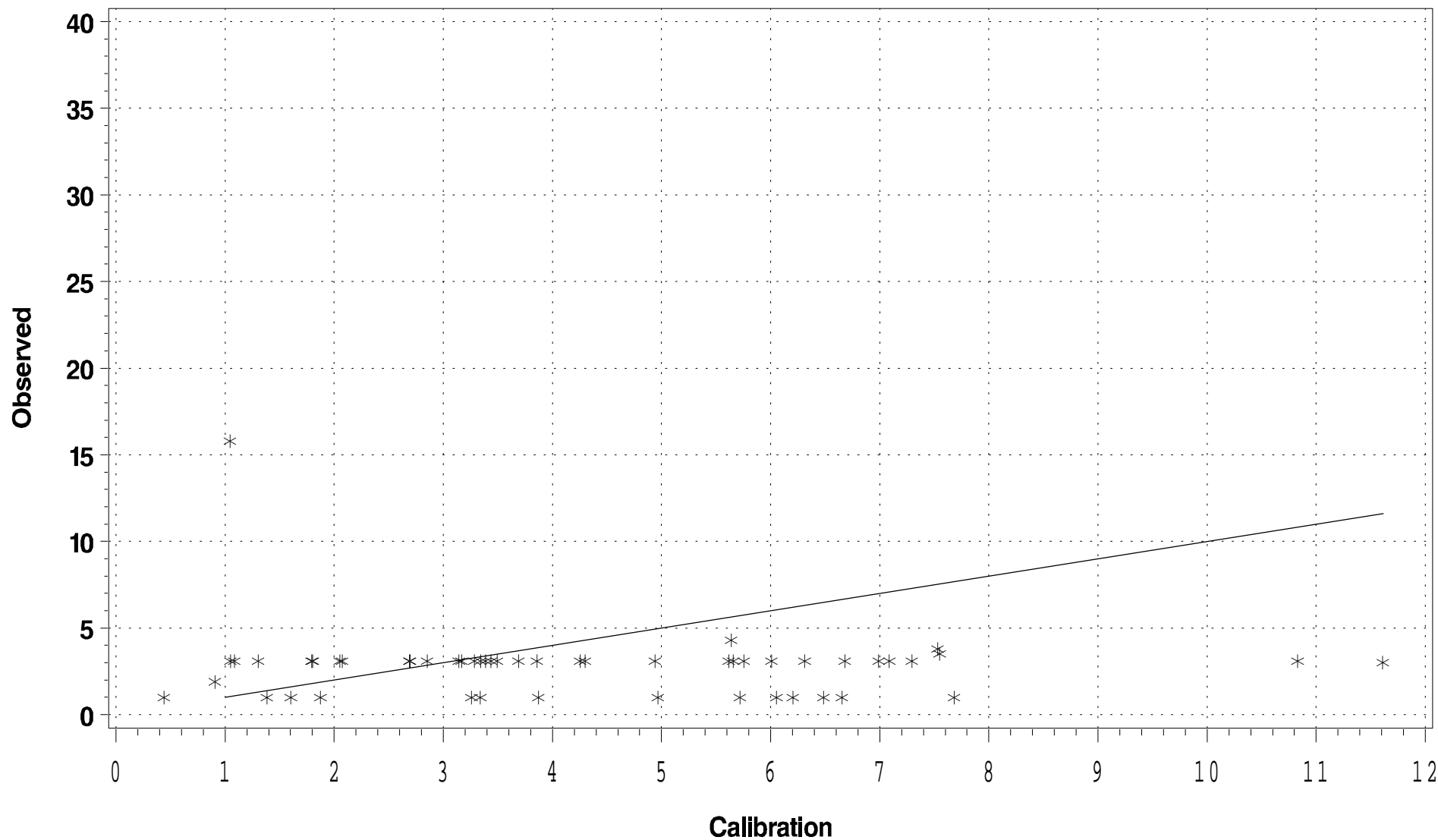
TIDAL FRESH **Light Attenuation**
Segment MPNTF (Mattaponi Tidal Fresh)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 109 pairs of predictions and observed data, the **slope** is 0.0157 and the **intercept** is 1.2435. The **R-Squared** value for this regression is 0.0218.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 109 pairs of predictions and observed data, the **slope** is 0.0419 and the **intercept** is 0.3345. The **R-Squared** value for this regression is 0.0186.

Statistics (units in 1/m)

Mean observed 1.2823   Mean predicted 2.4680
Min. observed 0.8125   Min. predicted 0.6221
Max. observed 2.6000   Max. predicted 24.8950
Std. Dev. Observed 0.2972   Std. Dev. predicted 2.7918
Median observed 1.3000   Median predicted 1.9263
90th Percentile observed 1.6250   90th Percentile predicted 3.0902
10th Percentile observed 0.9286   10th Percentile predicted 1.0607

Differences (predicted – observed)

Mean difference 1.1858 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment MPNTF   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)

Segment MPNTF   Season: April 1 — Oct 30

(Scatter Plot)

Chesapeake Bay Standard Segment MPNOH

Location Map of
Segment MPNOH within
the Chesapeake Bay Model Grid

RET4.2

N
W E
S

0 0.5 1 2 3 4 Miles

Chesapeake Bay Program
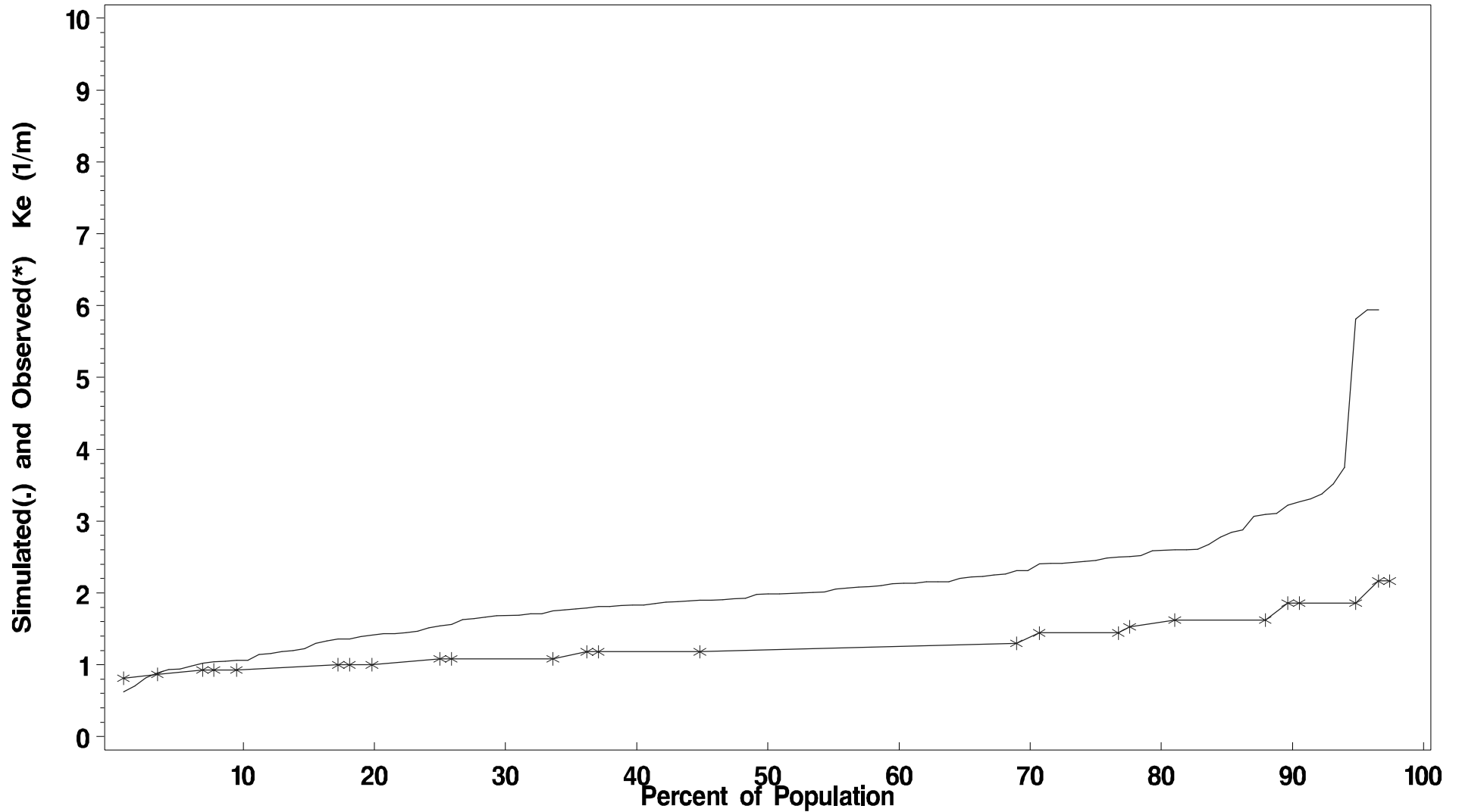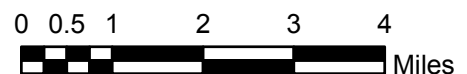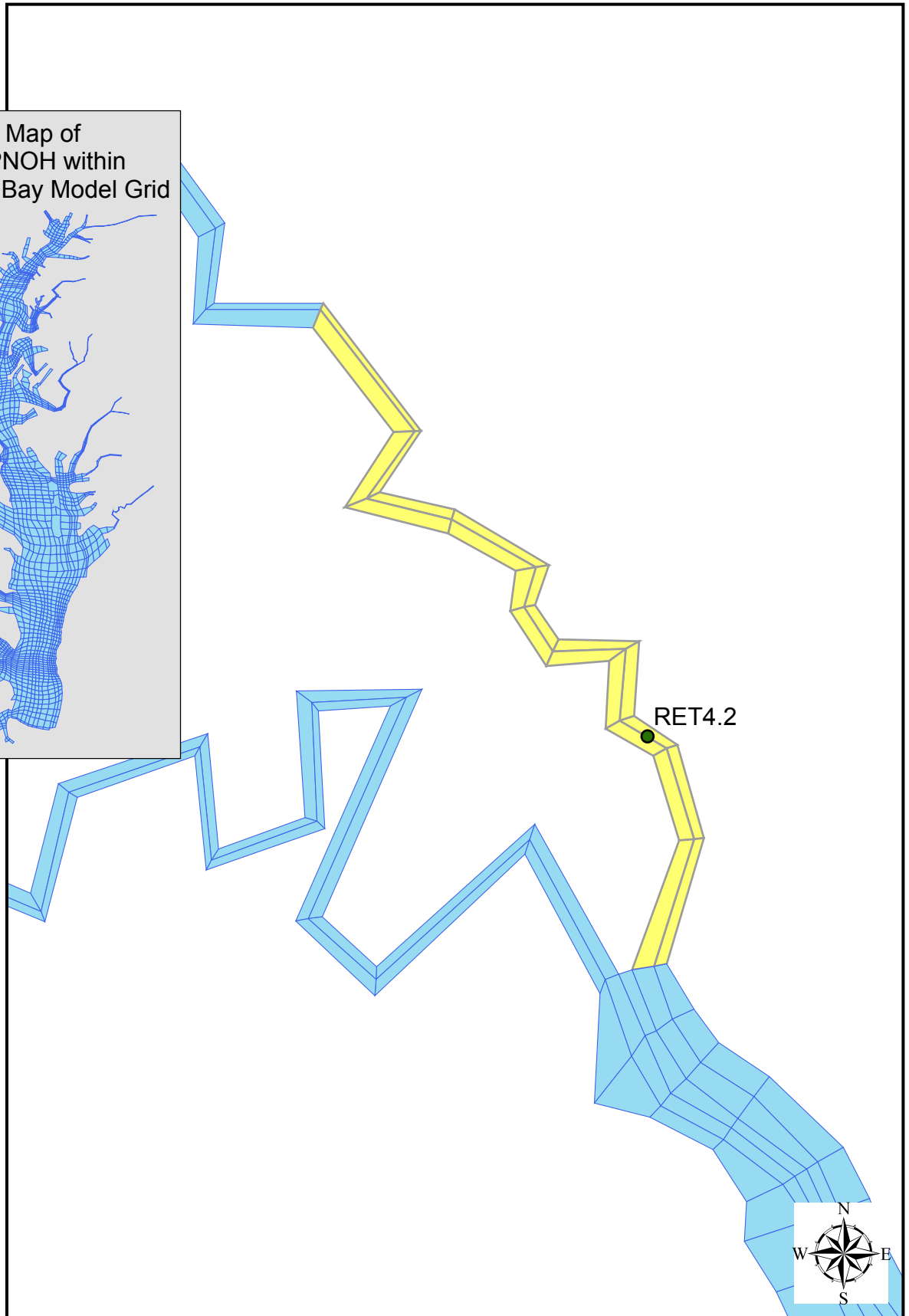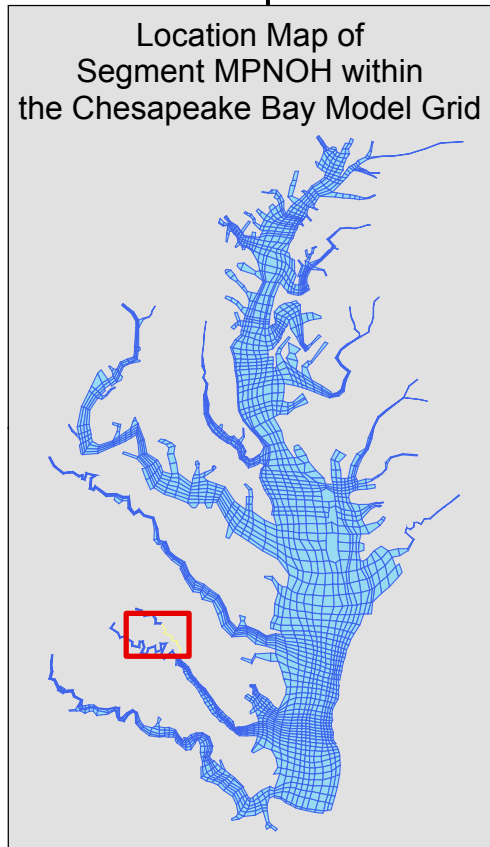
MIGRATORY **Dissolved Oxygen**
Segment MPNOH (Mattaponi Oligohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 315 pairs of predictions and observed data, the **slope** is 0.7036 and the **intercept** is 2.9807. The **R-Squared** value for this regression is 0.4497.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 315 pairs of predictions and observed data, the **slope** is 0.4957 and the **intercept** is 0.4992. The **R-Squared** value for this regression is 0.4147.

Statistics (units in mg/l)

Mean observed 7.9187   Mean predicted 7.0179
Min. observed 4.42   Min. predicted 1.533
Max. observed 12.81   Max. predicted 9.927
Std. Dev. Observed 1.9380   Std. Dev. predicted 1.8471
Median observed 7.8400   Median predicted 7.3166
90th Percentile observed 10.4800 90th Percentile predicted 8.9992
10th Percentile observed 5.4000   10th Percentile predicted 4.4820

Differences (predicted – observed)

Mean difference -0.9009 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 315
Number of Predicted Violations 22
Number of Observed Violations 6

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment MPNOH Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment MPNOH Season: Feb 15 – June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 548 pairs of predictions and observed data, the **slope** is 1.0958 and the **intercept** is 0.4305. The **R-Squared** value for this regression is 0.5970.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 548 pairs of predictions and observed data, the **slope** is 0.7853 and the **intercept** is 0.2264. The **R-Squared** value for this regression is 0.4939.

Statistics (units in mg/l)

Mean observed 6.5427   Mean predicted 5.5777
Min. observed 3   Min. predicted 2.393
Max. observed 12.8   Max. predicted 11.1
Std. Dev. Observed 2.4591   Std. Dev. predicted 1.7339
Median observed 5.5950   Median predicted 5.3995
90th Percentile observed 10.6500   90th Percentile predicted 8.0118
10th Percentile observed 4.2000   10th Percentile predicted 3.5302


Differences (predicted – observed)

Mean difference -0.9649 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 548
Number of Predicted Violations 23
Number of Observed Violations 6

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment MPNOH Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
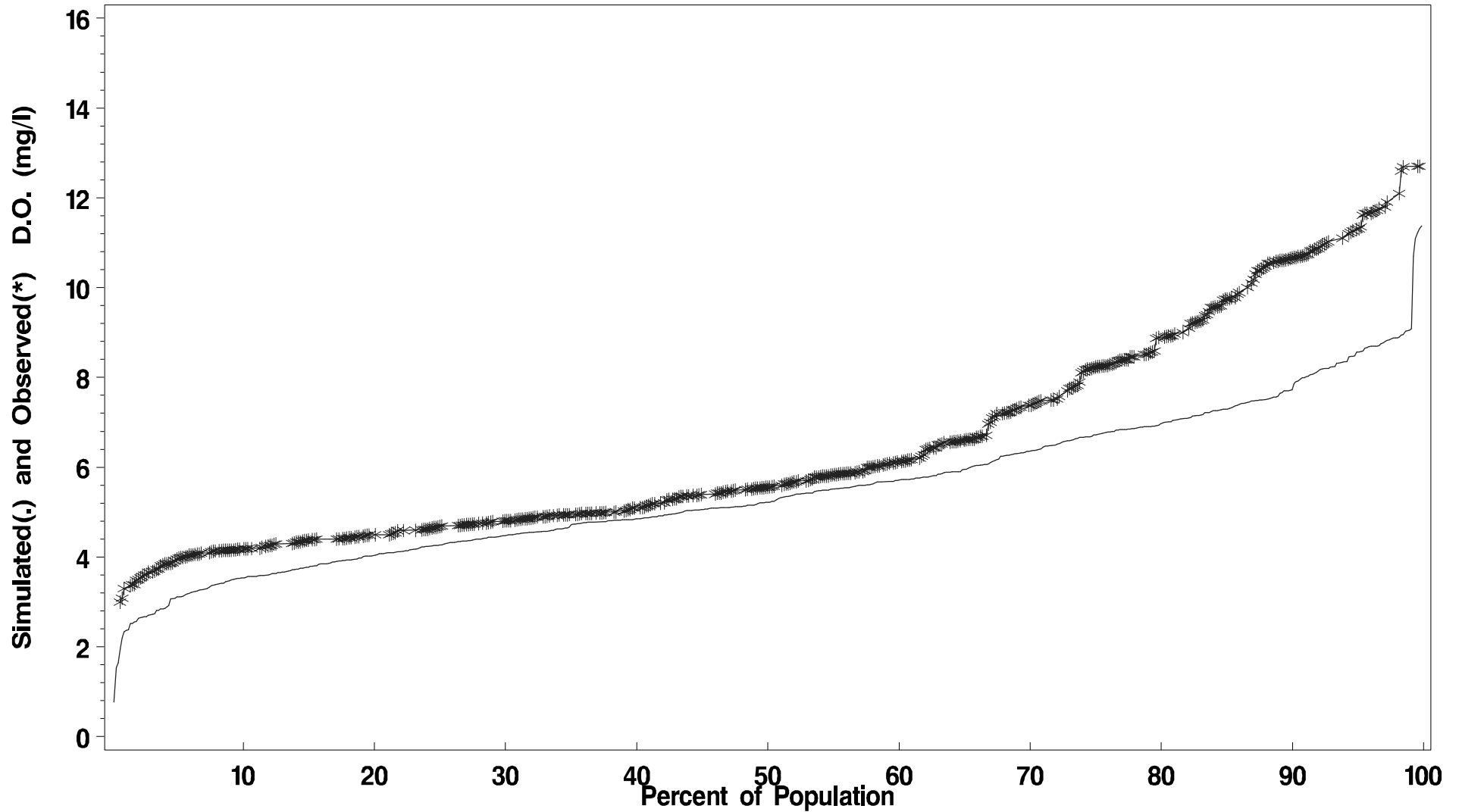
Migratory   Dissolved Oxygen (mg/l)
Segment MPNOH   Season: June 11 — Feb 14
(Scatter Plot)
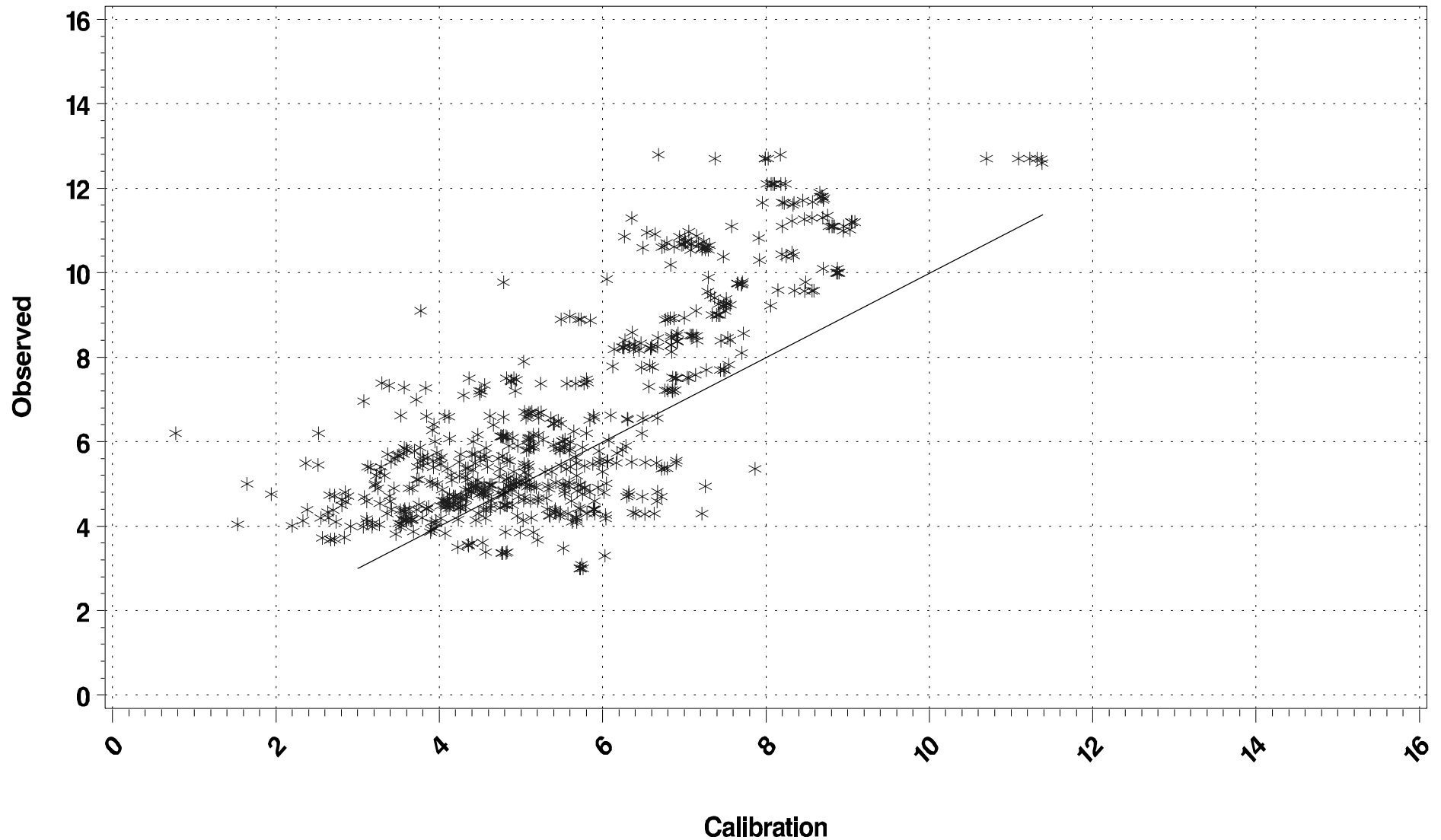
Regression of Calibration vs. Observations[1]
Using the 54 pairs of predictions and observed data, the **slope** is 0.5145 and the **intercept** is 5.9122. The **R-Squared** value for this regression is 0.0510.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 54 pairs of predictions and observed data, the **slope** is 0.5660 and the **intercept** is 0.4537. The **R-Squared** value for this regression is 0.0815.

Statistics (units in μg/l)

Mean observed 10.6760   Mean predicted 9.2588
Min. observed 1.8000   Min. predicted 3.9850
Max. observed 25.4000   Max. predicted 14.1210
Std. Dev. Observed 5.4774   Std. Dev. predicted 2.4030
Median observed 9.7113   Median predicted 9.4576
95th Percentile observed 23.3625   95th Percentile predicted 13.5980
10th Percentile observed 4.5000   10th Percentile predicted 6.0319

Differences (predicted – observed)

Mean difference -1.4172 μg/l

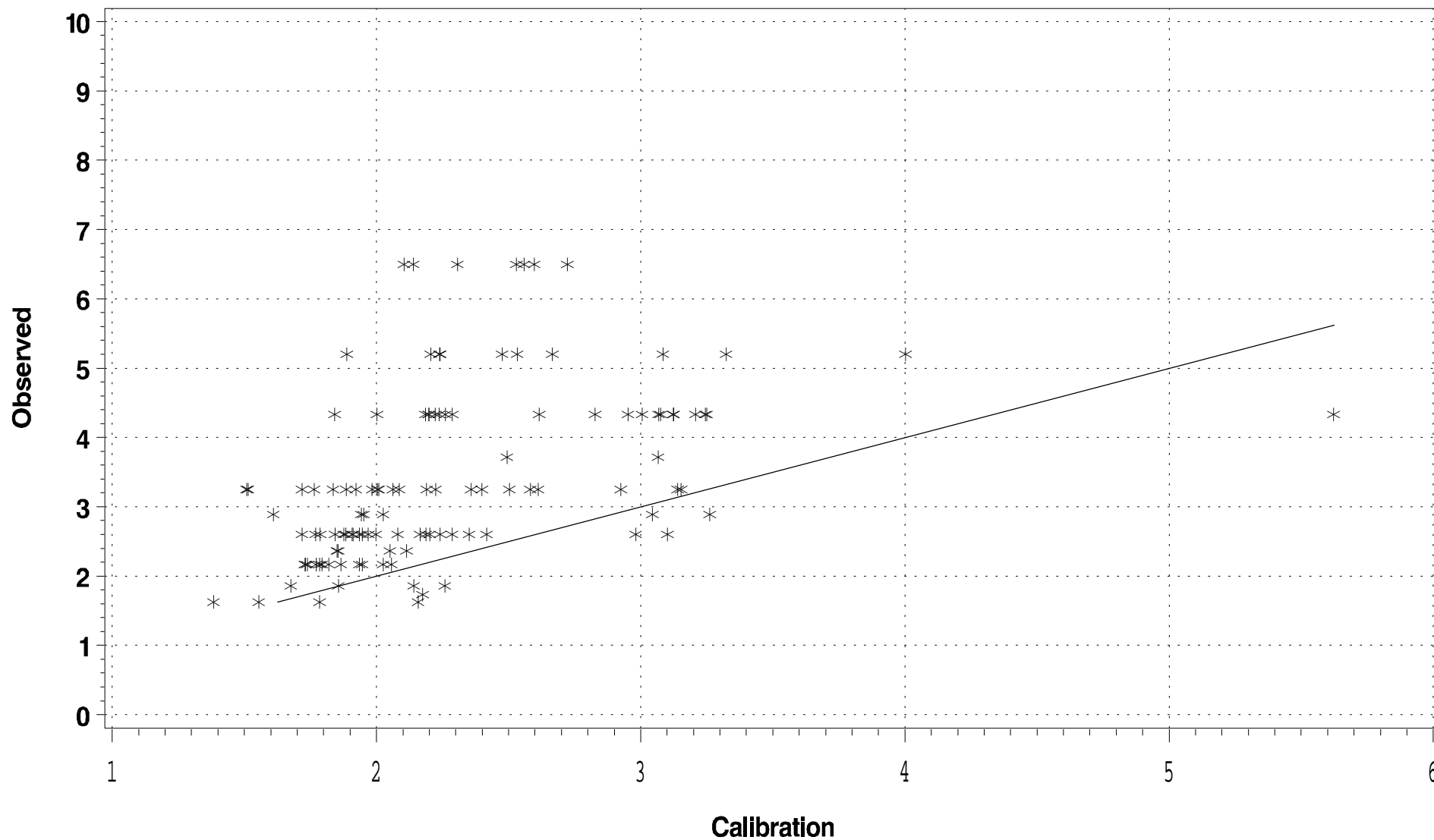[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment MPNOH   Season: July 1 − Sept 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment MPNOH   Season: July 1 – Sept 30
(Scatter Plot)

<div align="center">
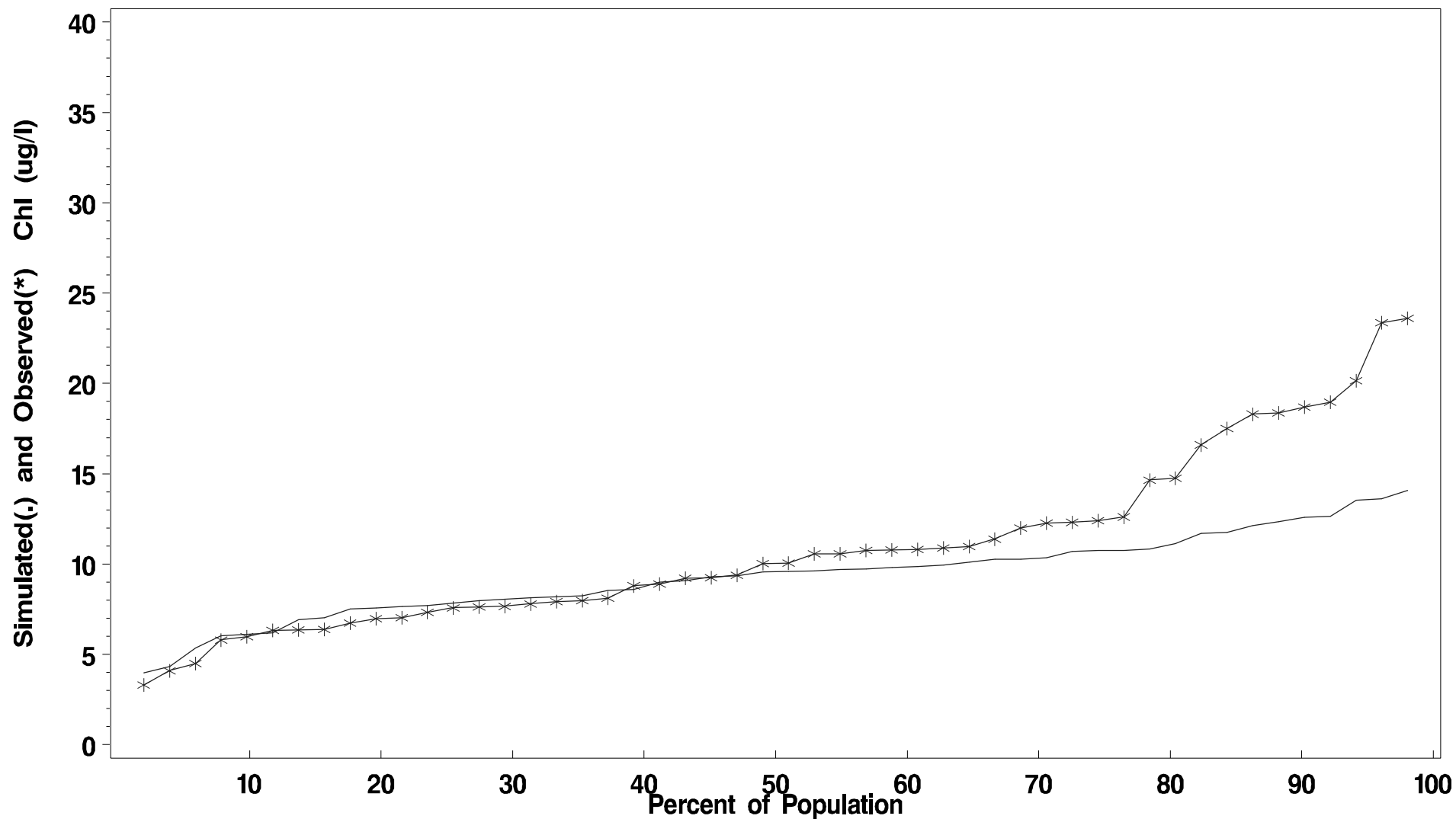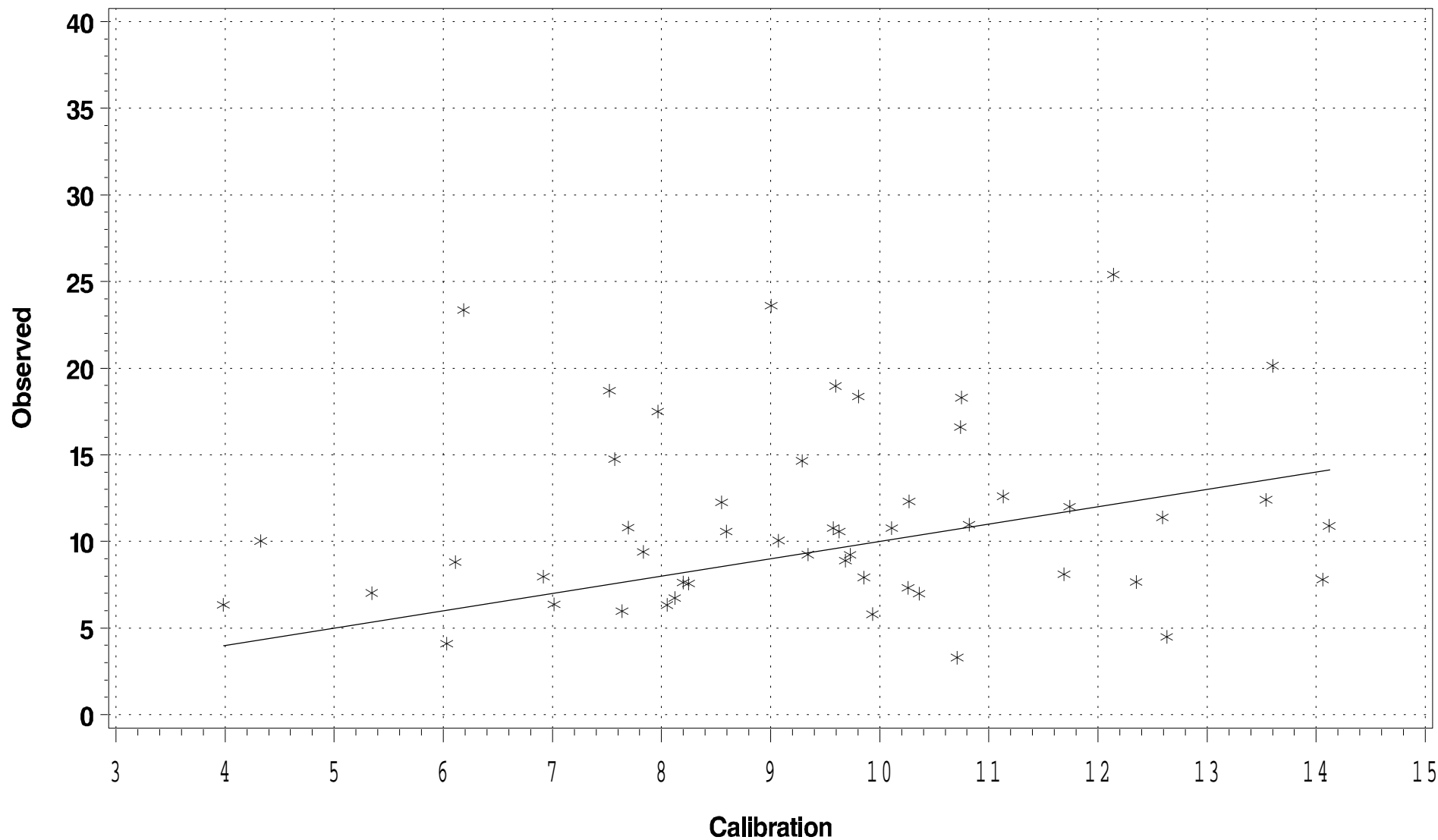
OLIGOHALINE **Chlorophyll**
Segment MPNOH (Mattaponi Oligohaline)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 51 pairs of predictions and observed data, the **slope** is 0.3212 and the **intercept** is 0.9174. The **R-Squared** value for this regression is 0.1039.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 51 pairs of predictions and observed data, the **slope** is 0.5562 and the **intercept** is 0.0796. The **R-Squared** value for this regression is 0.1257.

Statistics (units in µg/l)

Mean observed 3.5948   Mean predicted 8.3347
Min. observed 1.0000   Min. predicted 3.2590
Max. observed 13.0082   Max. predicted 14.5650
Std. Dev. Observed 2.7151   Std. Dev. predicted 2.7243
Median observed 3.1000   Median predicted 7.9414
95th Percentile observed 11.6626 95th Percentile predicted 13.3180
10th Percentile observed 1.0000   10th Percentile predicted 4.9222

Differences (predicted – observed)

Mean difference 4.7399 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment MPNOH   Season: March 1 — May 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
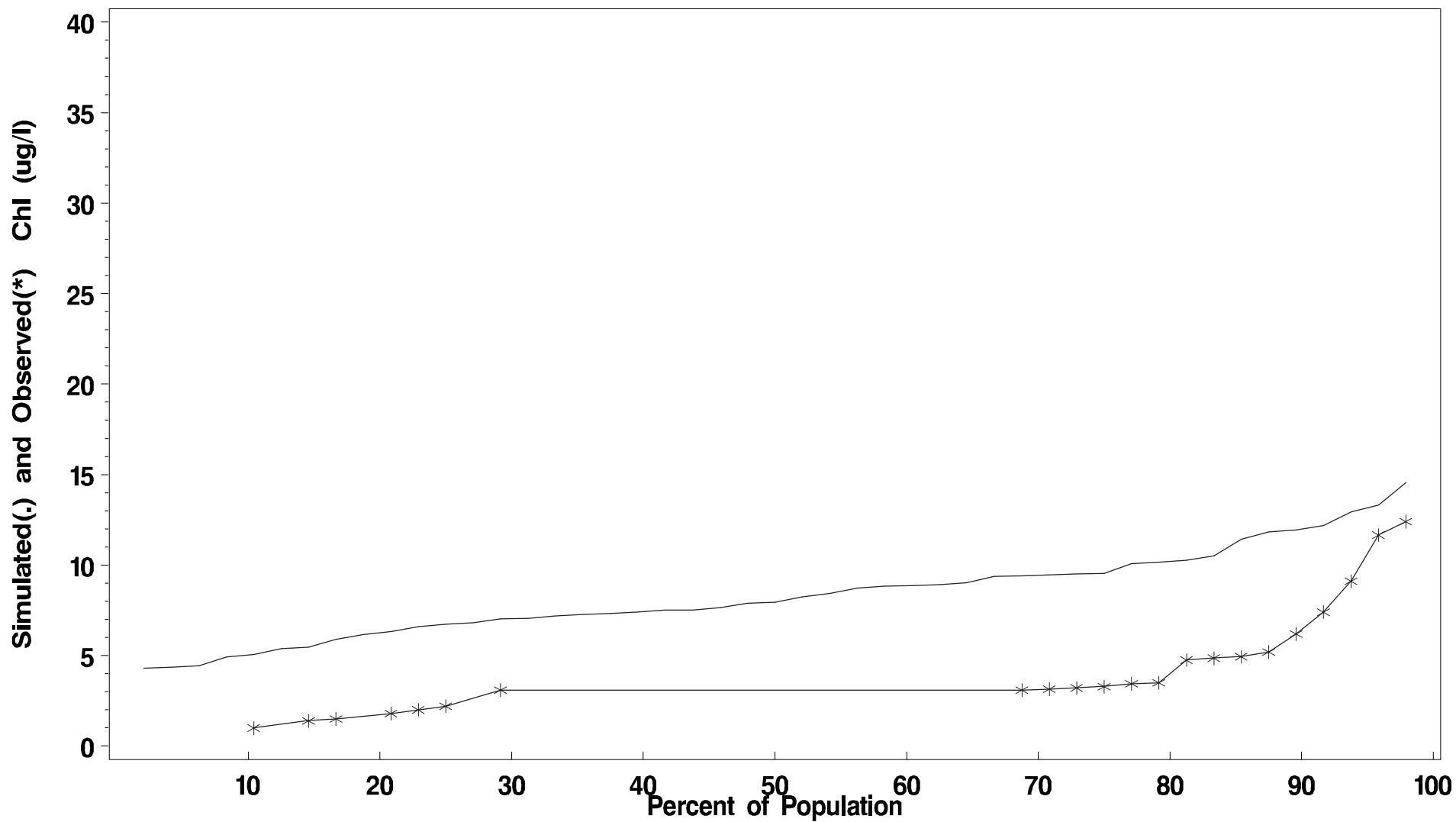
Chlorophyll Concentration (ug/l)
Segment MPNOH   Season: March 1 – May 30
(Scatter Plot)
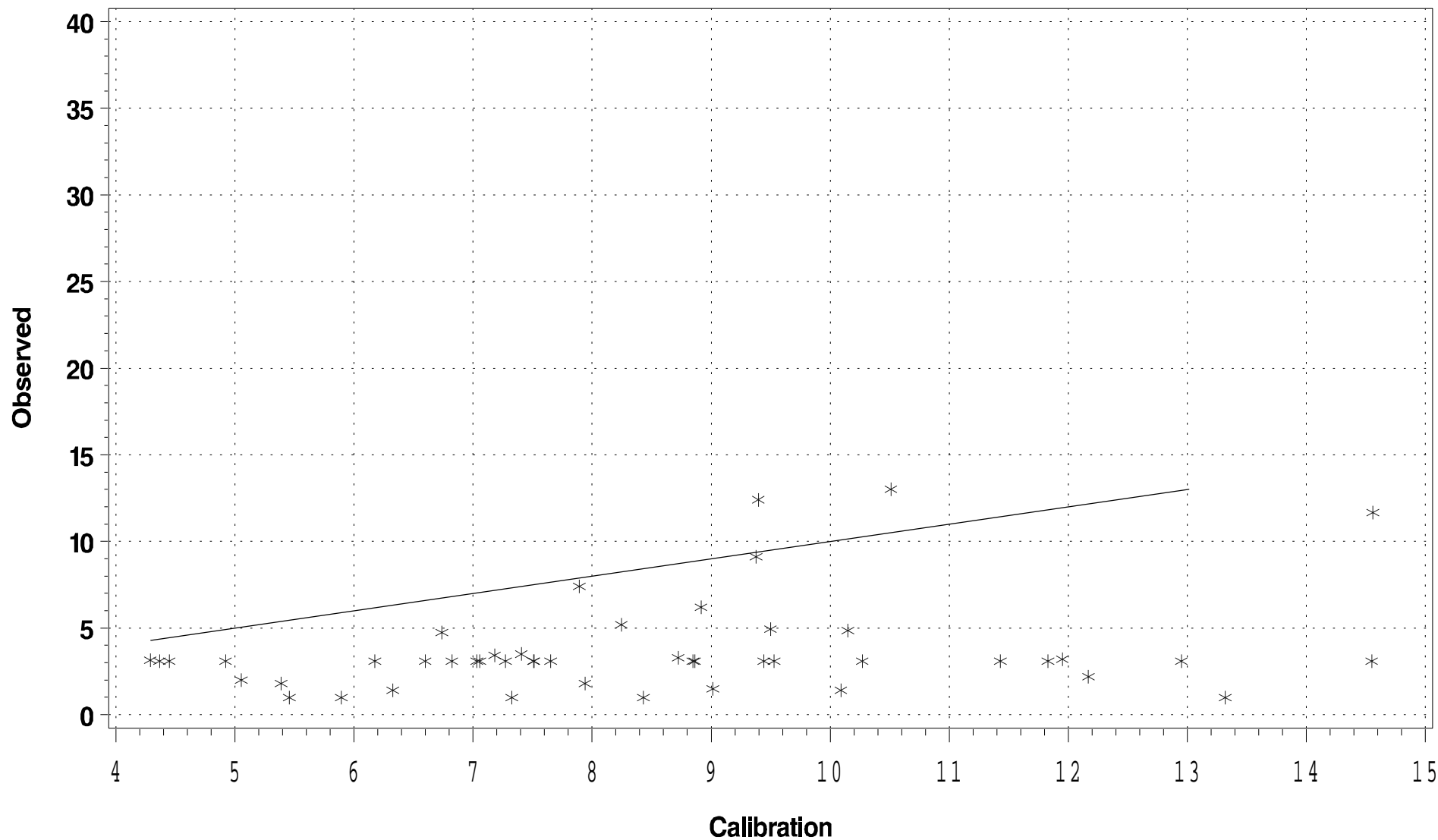
OLIGOHALINE **Light Attenuation**
Segment MPNOH (Mattaponi Oligohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 123 pairs of predictions and observed data, the **slope** is 0.5953 and the **intercept** is 2.0330. The **R-Squared** value for this regression is 0.0561.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 123 pairs of predictions and observed data, the **slope** is 0.5648 and the **intercept** is 0.3333. The **R-Squared** value for this regression is 0.1004.

Statistics (units in 1/m)

Mean observed 3.4188
Min. observed 1.1818
Max. observed 13.0000
Std. Dev. Observed 1.5361
Median observed 3.2500
90th Percentile observed 5.2000
10th Percentile observed 2.1667

Mean predicted 2.3279
Min. predicted 1.3831
Max. predicted 5.6233
Std. Dev. predicted 0.6113
Median predicted 2.1859
90th Percentile predicted 3.1246
10th Percentile predicted 1.7637

Differences (predicted – observed)

Mean difference -1.0909 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment MPNOH   Season: April 1 – Oct 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment MPNOH   Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment PMKOH

Location Map of
Segment PMKOH within
the Chesapeake Bay Model Grid

RET4.1

Chesapeake Bay Program

N
W E
S

0   0.5   1   2   3   4
Miles
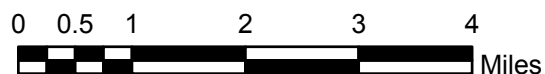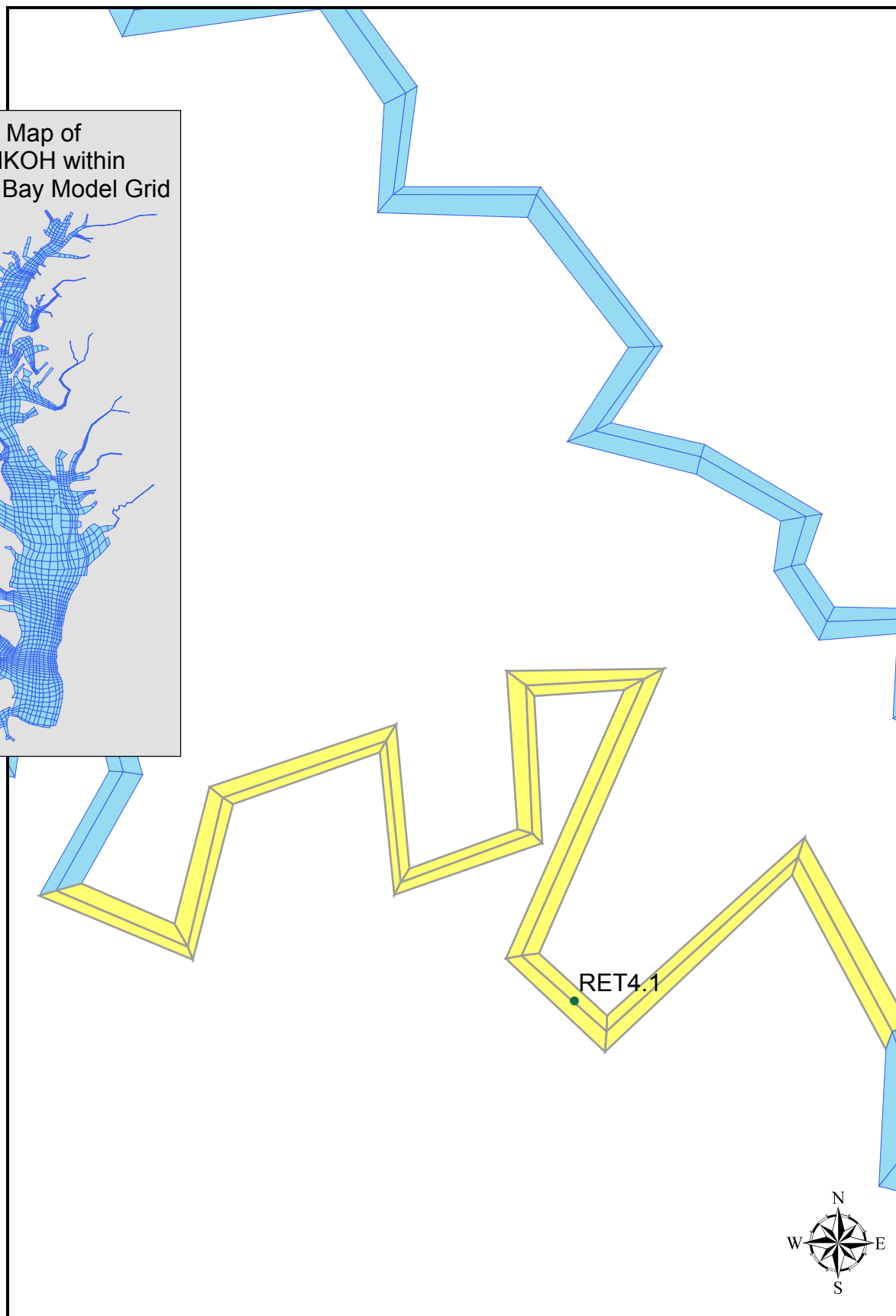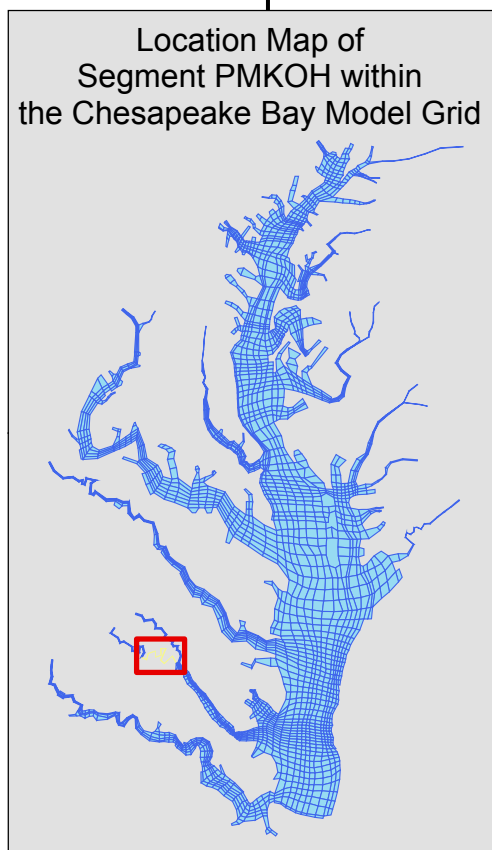
MIGRATORY **Dissolved Oxygen**
Segment PMKOH (Pamunkey Oligohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 192 pairs of predictions and observed data, the **slope** is 0.7616 and the **intercept** is 2.1330. The **R-Squared** value for this regression is 0.4585.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 192 pairs of predictions and observed data, the **slope** is 0.6185 and the **intercept** is 0.3695. The **R-Squared** value for this regression is 0.4244.

Statistics (units in mg/l)

Mean observed 7.9921   Mean predicted 7.6935
Min. observed 4.3   Min. predicted 2.366
Max. observed 12.9   Max. predicted 10.45
Std. Dev. Observed 1.8513   Std. Dev. predicted 1.6460
Median observed 7.8900   Median predicted 7.9446
90th Percentile observed 10.5100   90th Percentile predicted 9.6196
10th Percentile observed 5.6900   10th Percentile predicted 5.7466

Differences (predicted – observed)

Mean difference -0.2986 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 192
Number of Predicted Violations 14
Number of Observed Violations 5

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment PMKOH   Season: Feb 15 – June 10
### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory   Dissolved Oxygen (mg/l)
Segment PMKOH   Season: Feb 15 – June 10
(Scatter Plot)
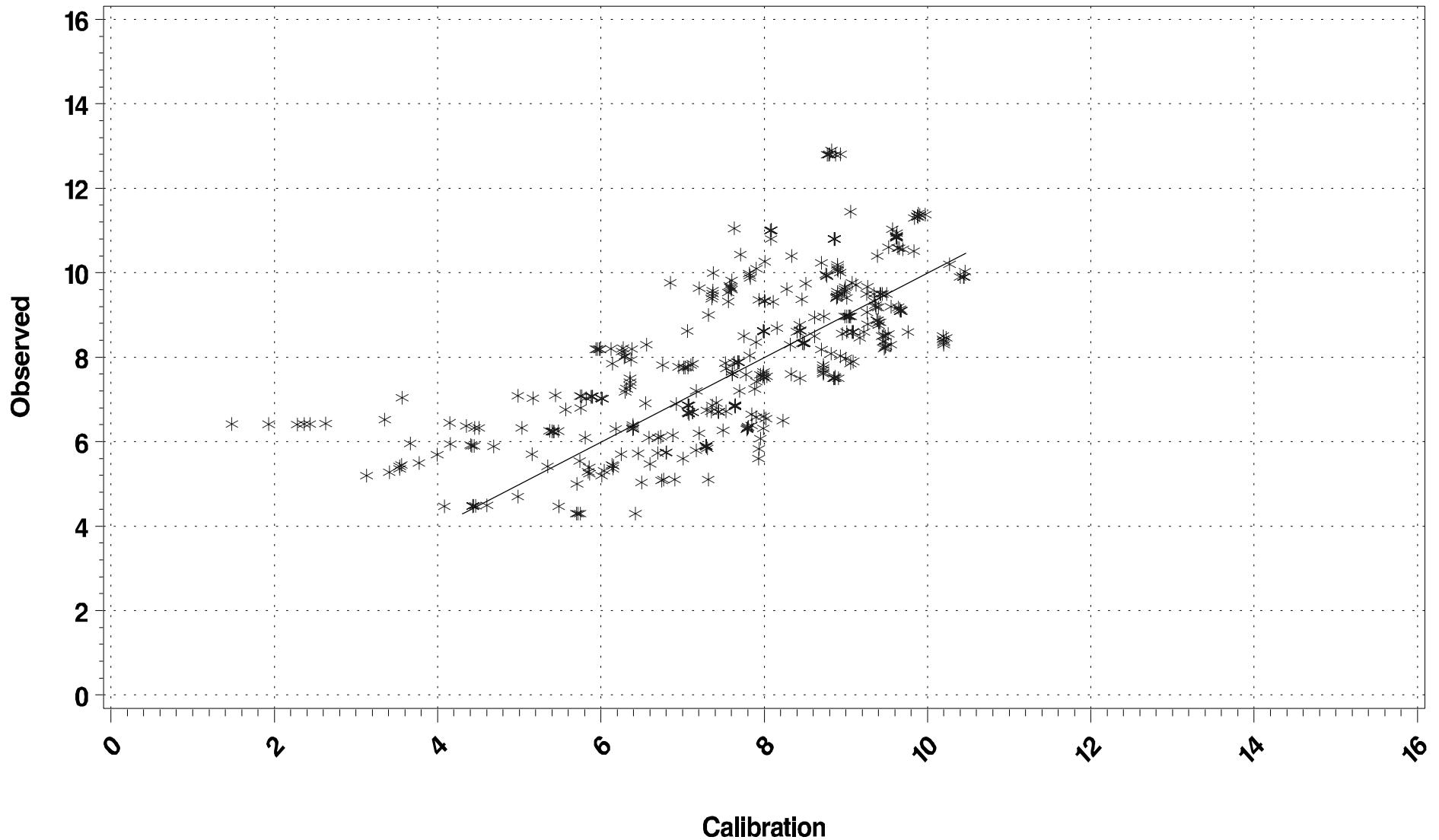
MIGRATORY **Dissolved Oxygen**
Segment PMKOH (Pamunkey Oligohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 331 pairs of predictions and observed data, the **slope** is 1.1123 and the **intercept** is -0.3694. The **R-Squared** value for this regression is 0.6016.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 331 pairs of predictions and observed data, the **slope** is 0.9200 and the **intercept** is 0.0779. The **R-Squared** value for this regression is 0.5252.

Statistics (units in mg/l)

Mean observed 6.4489   Mean predicted 6.1301
Min. observed 2.5   Min. predicted 2.984
Max. observed 12.8   Max. predicted 11.42
Std. Dev. Observed 2.4073   Std. Dev. predicted 1.6787
Median observed 5.5200   Median predicted 5.8666
90th Percentile observed 10.7300   90th Percentile predicted 8.4082
10th Percentile observed 4.0200   10th Percentile predicted 4.0475

Differences (predicted – observed)

Mean difference -0.3187 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 331
Number of Predicted Violations 15
Number of Observed Violations 7

---

[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment PMKOH   Season: June 11 — Feb 14
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment PMKOH   Season: June 11 – Feb 14
(Scatter Plot)

<div align="center">
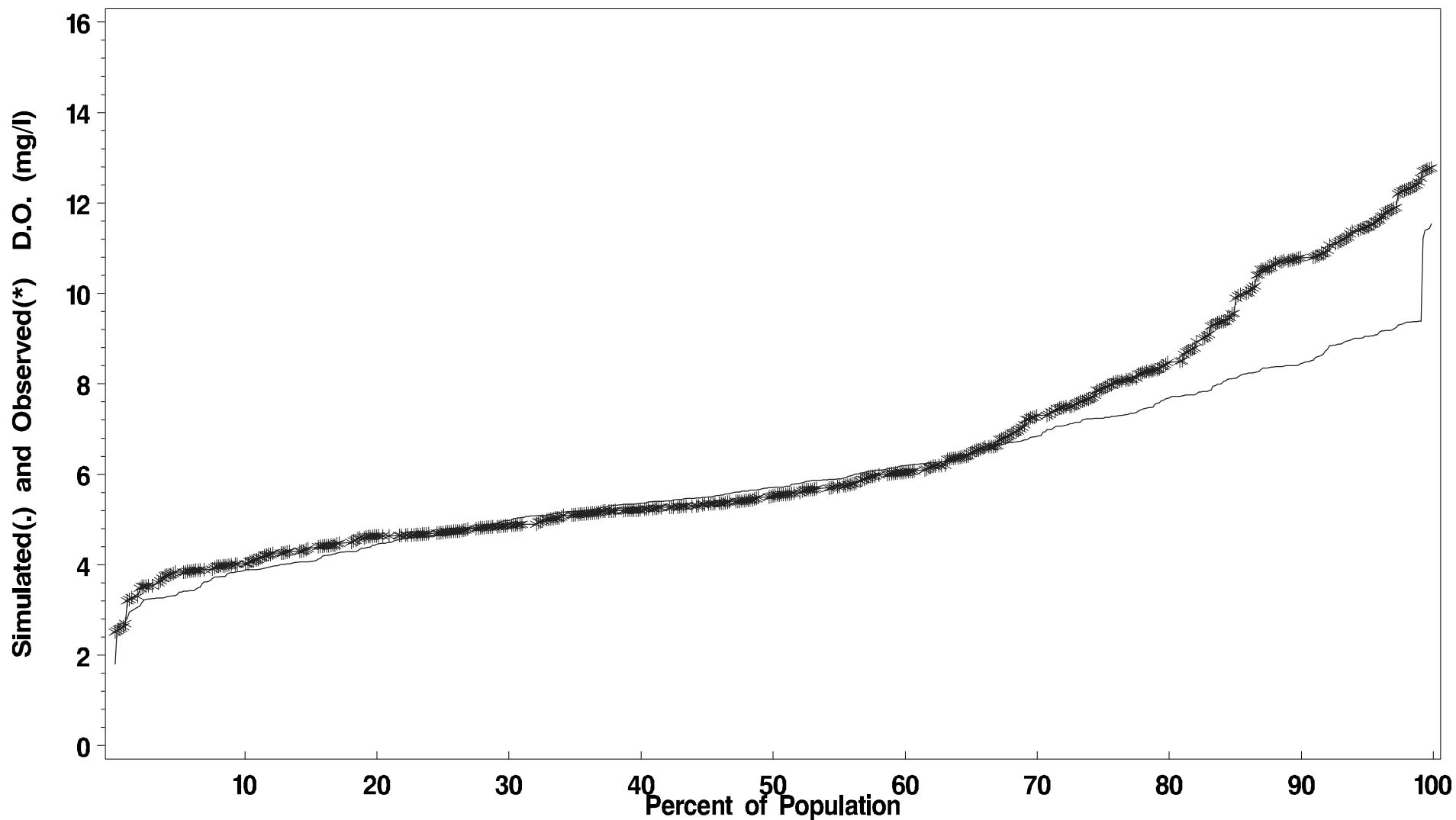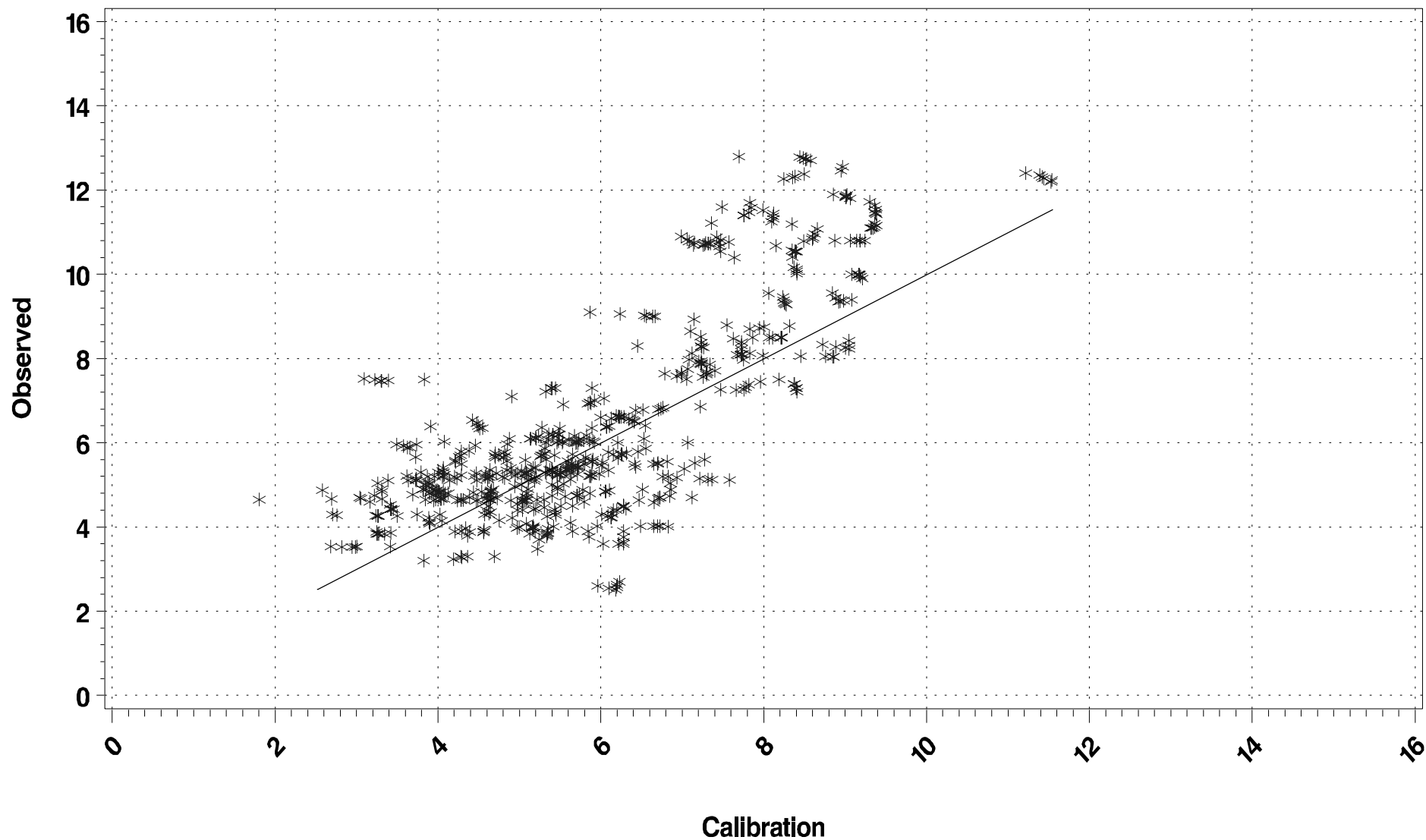
OLIGOHALINE **Chlorophyll**
Segment PMKOH (Pamunkey Oligohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 52 pairs of predictions and observed data, the **slope** is 0.4592 and the **intercept** is 9.0082. The **R-Squared** value for this regression is 0.0241.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 52 pairs of predictions and observed data, the **slope** is 0.3567 and the **intercept** is 0.7663. The **R-Squared** value for this regression is 0.0336.

Statistics (units in μg/l)

Mean observed 12.5251	Mean predicted 7.6584
Min. observed 2.0000	Min. predicted 3.8233
Max. observed 29.0718	Max. predicted 12.3770
Std. Dev. Observed 5.3367	Std. Dev. predicted 1.8031
Median observed 11.3718	Median predicted 7.6353
95th Percentile observed 23.0510	95th Percentile predicted 11.1210
10th Percentile observed 7.0626	10th Percentile predicted 5.7107

Differences (predicted – observed)

Mean difference -4.8667 μg/l

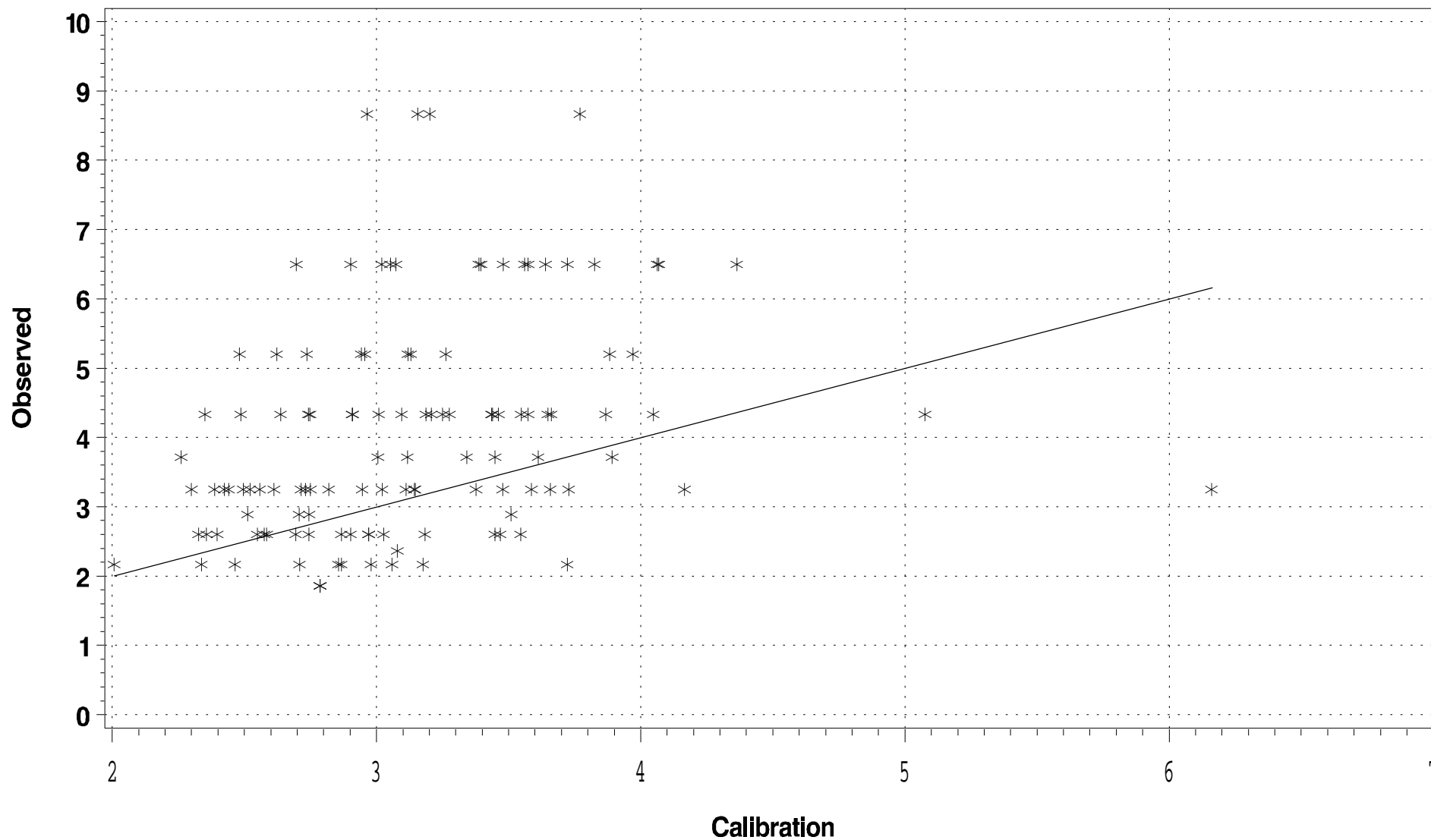[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PMKOH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Simulated(.) and Observed(*) Chl (ug/l)

Percent of Population
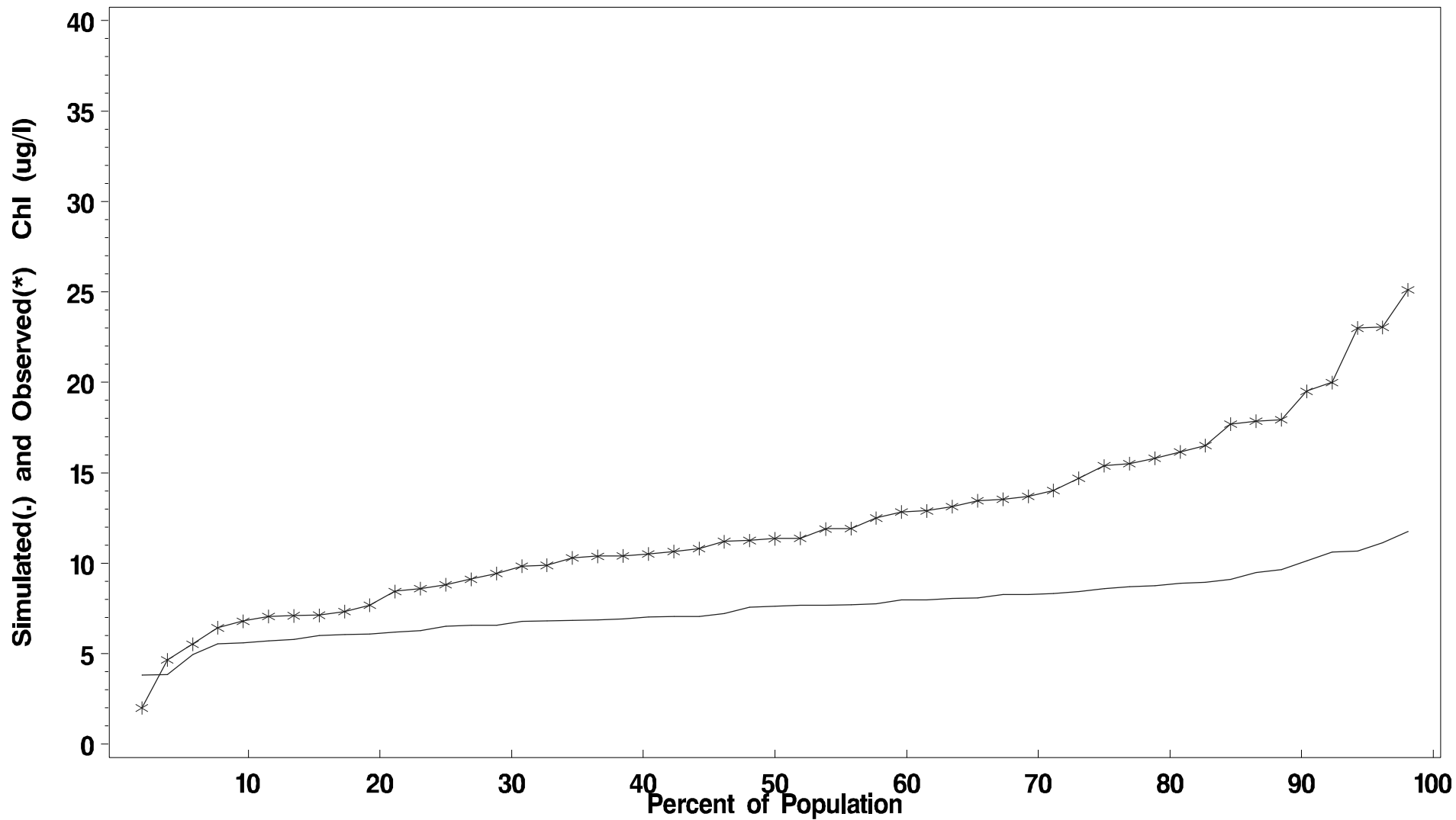
Chlorophyll Concentration (ug/l)
Segment PMKOH   Season: July 1 – Sept 30
(Scatter Plot)
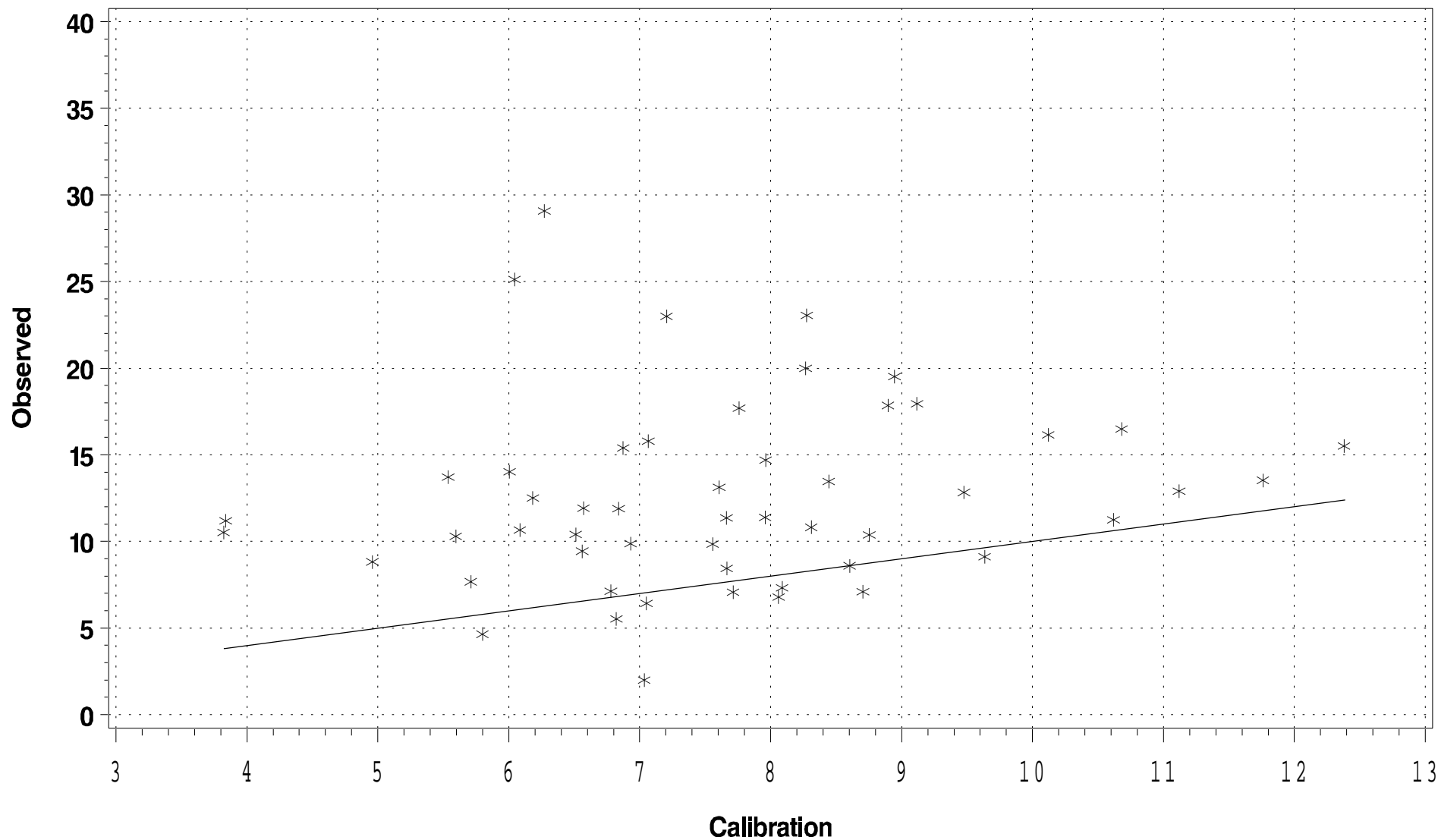
OLIGOHALINE **Chlorophyll**
Segment PMKOH (Pamunkey Oligohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 49 pairs of predictions and observed data, the **slope** is 0.2476 and the **intercept** is 3.5294. The **R-Squared** value for this regression is 0.0126.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 49 pairs of predictions and observed data, the **slope** is 0.2283 and the **intercept** is 0.5192. The **R-Squared** value for this regression is 0.0138.

Statistics (units in μg/l)

Mean observed 5.2714   Mean predicted 7.0351
Min. observed 1.0000   Min. predicted 2.3124
Max. observed 29.0069   Max. predicted 11.0710
Std. Dev. Observed 4.6394   Std. Dev. predicted 2.0999
Median observed 3.8000   Median predicted 6.8266
95th Percentile observed 12.8089   95th Percentile predicted 10.5770
10th Percentile observed 1.4000   10th Percentile predicted 3.9237

Differences (predicted – observed)

Mean difference 1.7638 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PMKOH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
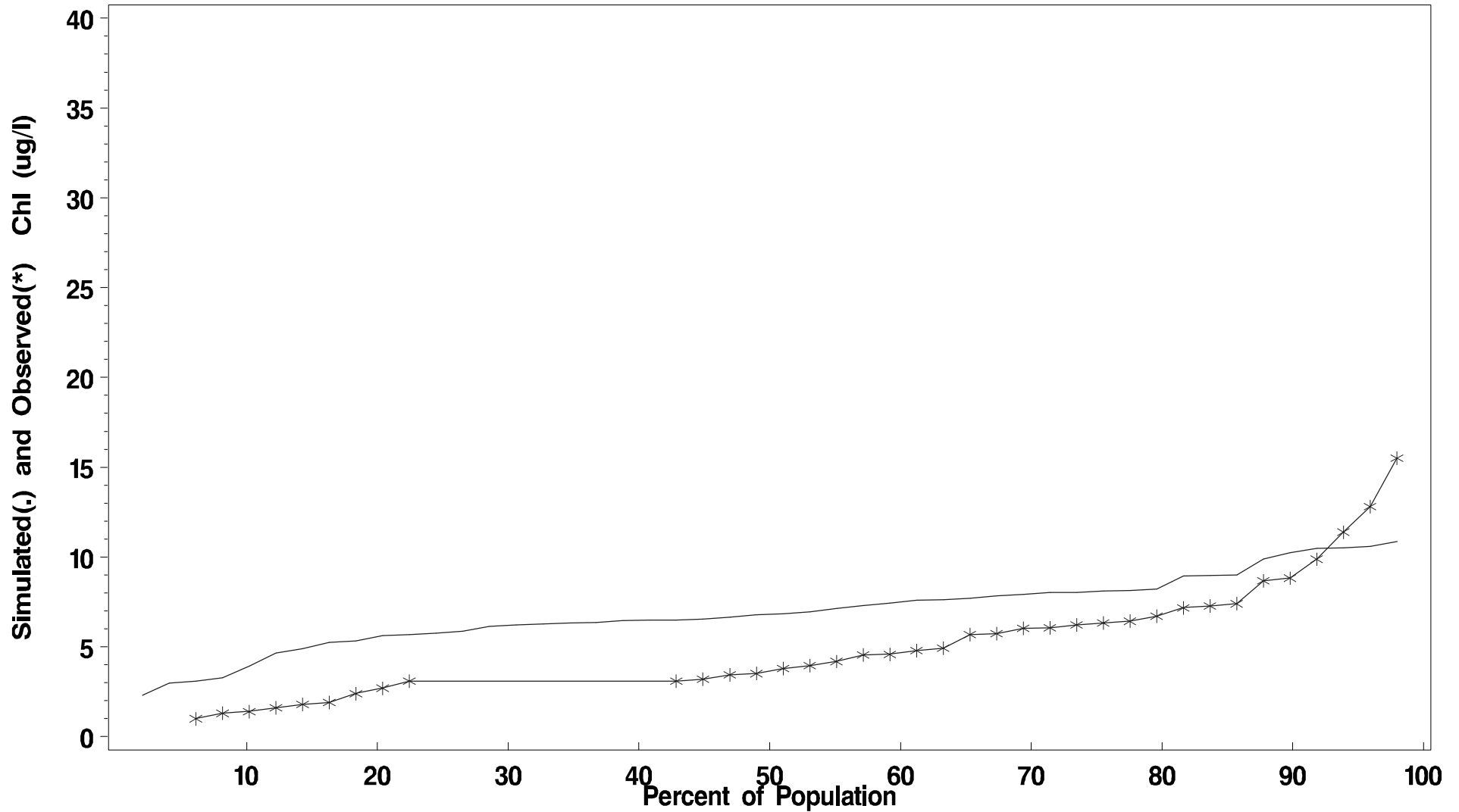
Chlorophyll Concentration (ug/l)
Segment PMKOH   Season: March 1 — May 30
(Scatter Plot)
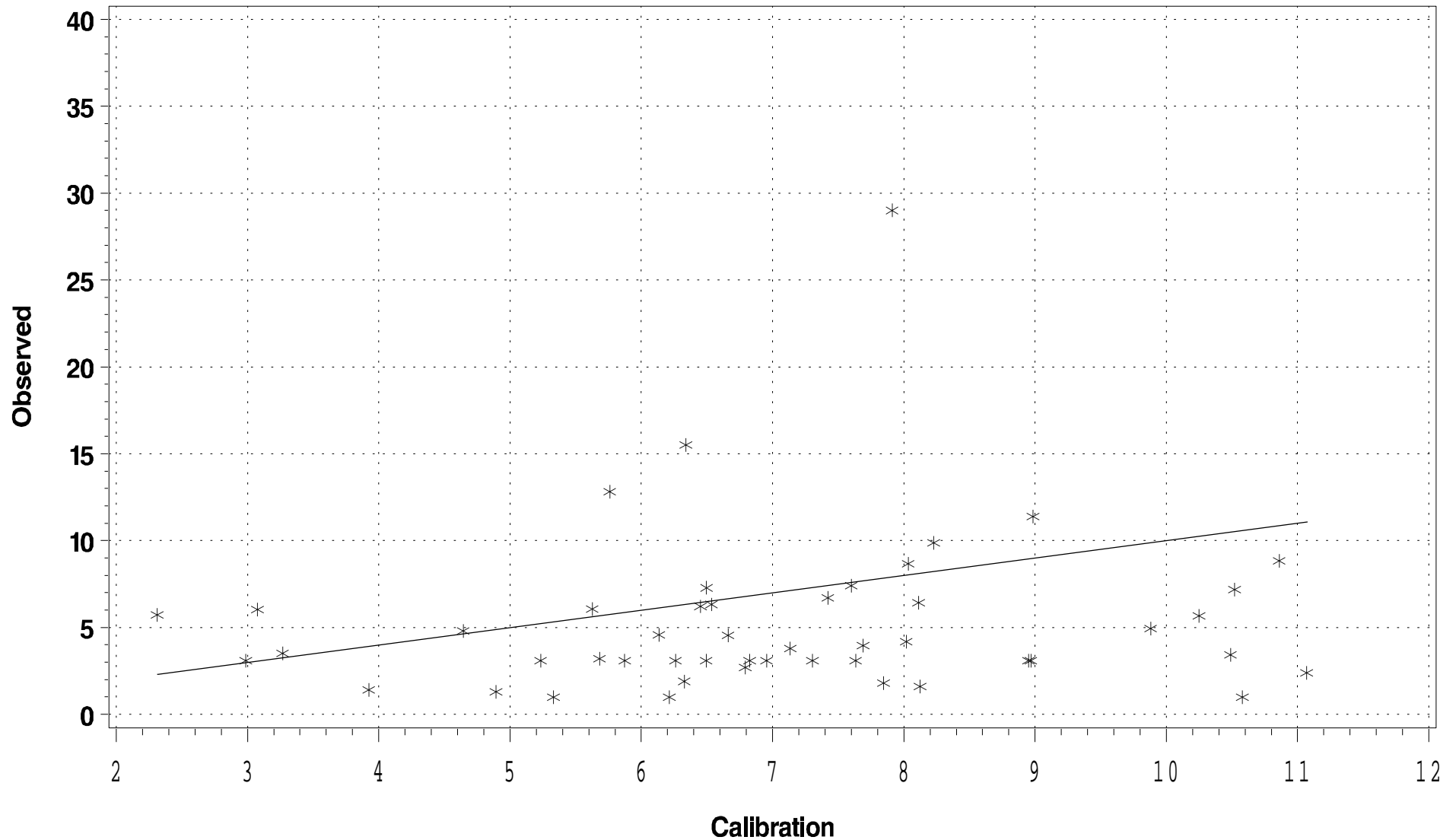
OLIGOHALINE **Light Attenuation**
Segment PMKOH (Pamunkey Oligohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 119 pairs of predictions and observed data, the **slope** is 0.8687 and the **intercept** is 1.4027. The **R-Squared** value for this regression is 0.0814.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 119 pairs of predictions and observed data, the **slope** is 0.7974 and the **intercept** is 0.1991. The **R-Squared** value for this regression is 0.1180.

Statistics (units in 1/m)

Mean observed 4.1247   Mean predicted 3.1333
Min. observed 1.8571   Min. predicted 2.0069
Max. observed 13.0000   Max. predicted 6.1600
Std. Dev. Observed 1.7969   Std. Dev. predicted 0.5900
Median observed 3.7143   Median predicted 3.0594
90th Percentile observed 6.5000   90th Percentile predicted 3.8247
10th Percentile observed 2.1667   10th Percentile predicted 2.4641

Differences (predicted – observed)

Mean difference -0.9914 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment PMKOH   Season: April 1 − Oct 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Ke (1/m)
Segment PMKOH   Season: April 1 — Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment PMKTF

Location Map of
Segment PMKTF within
the Chesapeake Bay Model Grid

TF4.2

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0 0.5 1 2 3 4
Miles

Chesapeake Bay Program
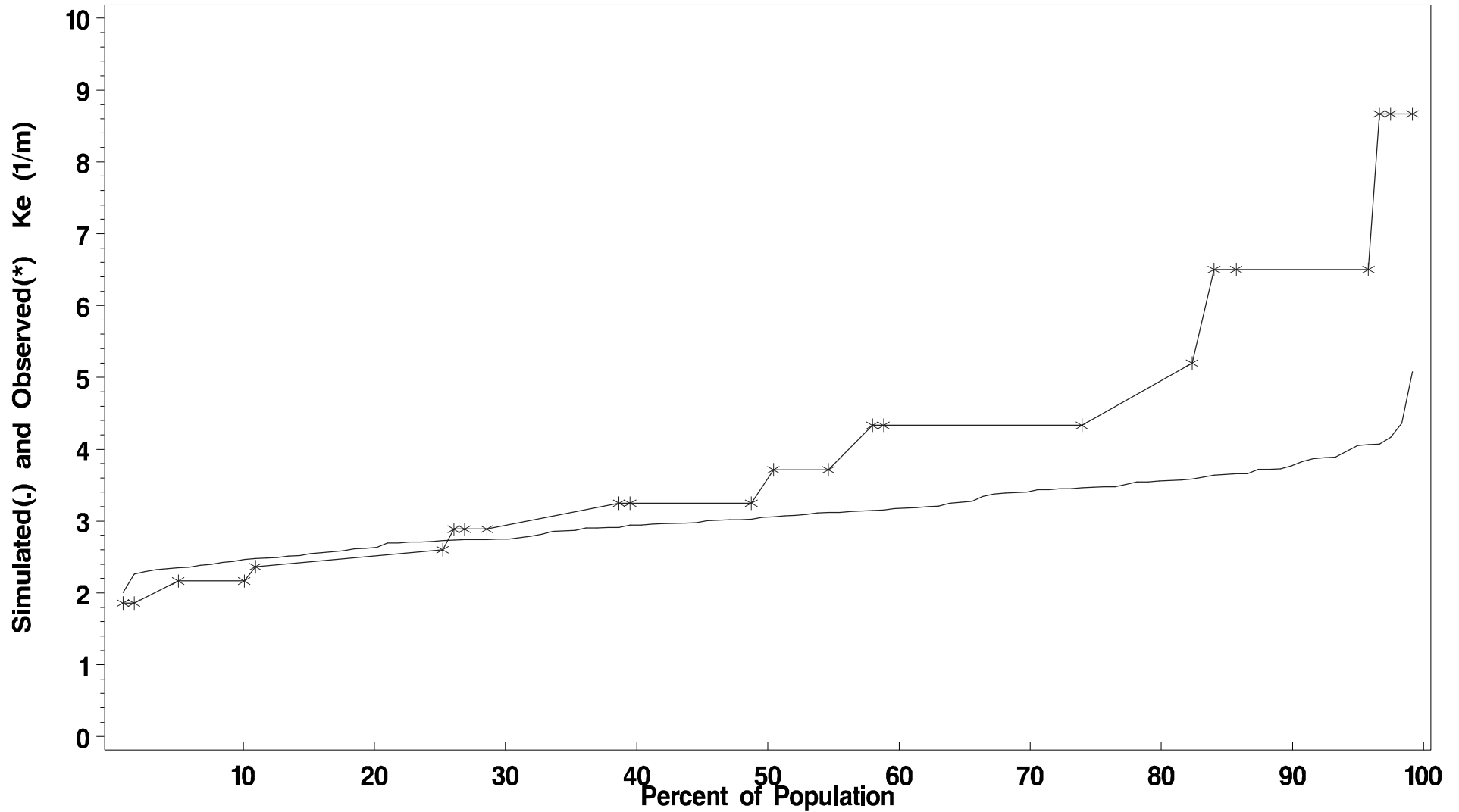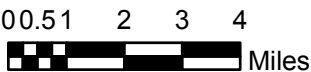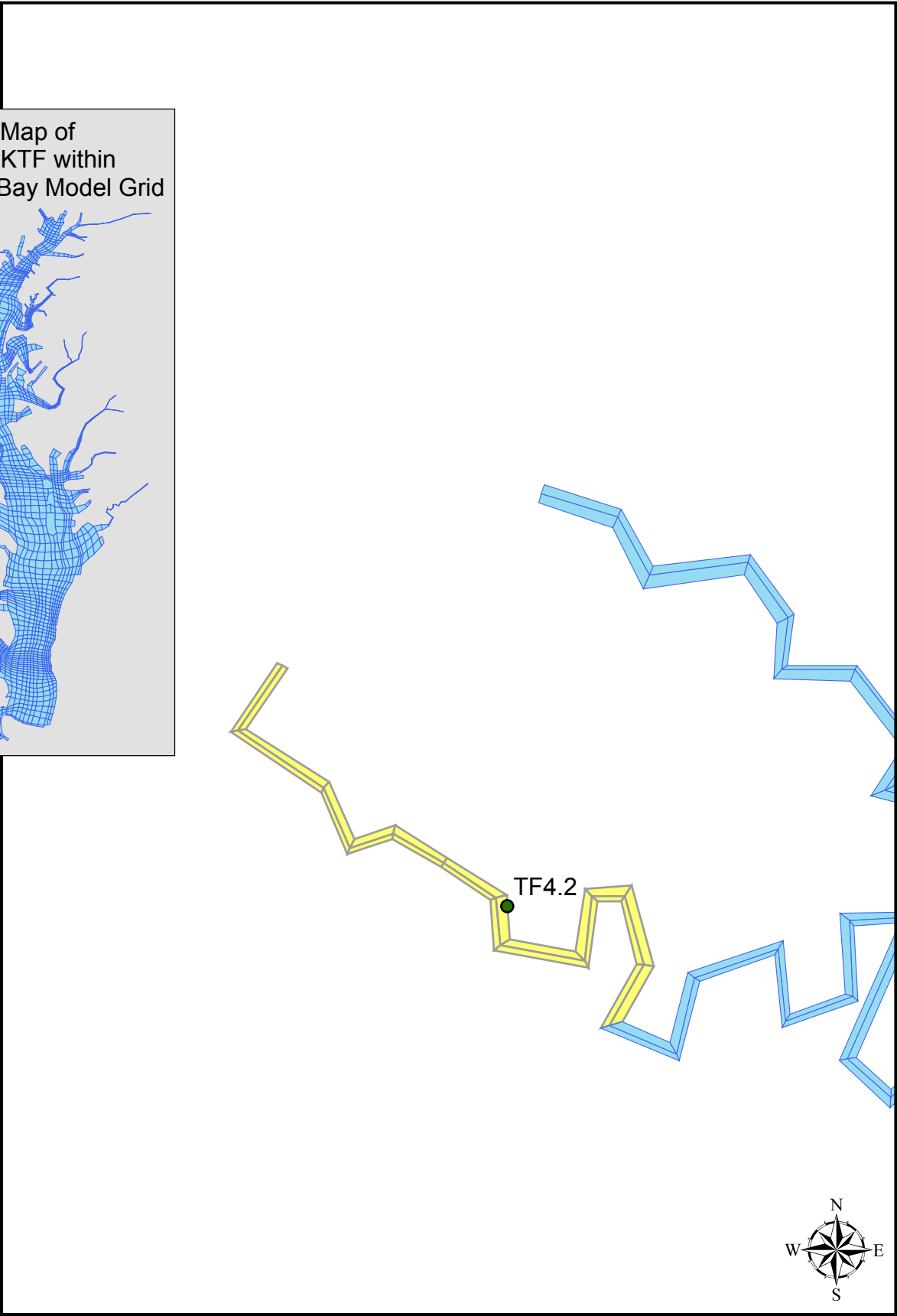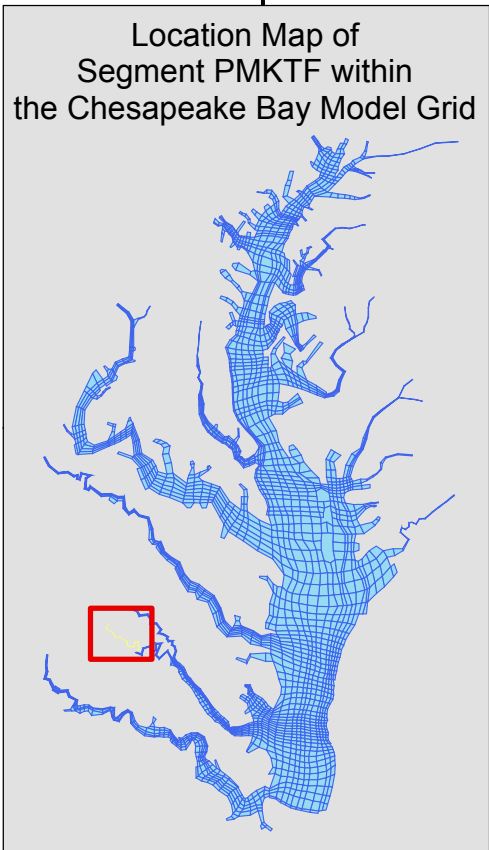
MIGRATORY **Dissolved Oxygen**
Segment PMKTF (Pamunkey Tidal Fresh)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 195 pairs of predictions and observed data, the **slope** is 0.9295 and the **intercept** is 1.4222. The **R-Squared** value for this regression is 0.3251.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 195 pairs of predictions and observed data, the **slope** is 0.8084 and the **intercept** is 0.2138. The **R-Squared** value for this regression is 0.3169.

Statistics (units in mg/l)

Mean observed 7.9916   Mean predicted 7.0674
Min. observed 3   Min. predicted 3.391
Max. observed 13.19   Max. predicted 9.851
Std. Dev. Observed 2.0372   Std. Dev. predicted 1.2496
Median observed 7.9000   Median predicted 7.1229
90th Percentile observed 10.3700   90th Percentile predicted 9.0009
10th Percentile observed 5.5000   10th Percentile predicted 5.6277

Differences (predicted – observed)

Mean difference -0.9241 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 195
Number of Predicted Violations 6
Number of Observed Violations 5

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
**Segment PMKTF   Season: Feb 15 – June 10**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment PMKTF   Season: Feb 15 — June 10
(Scatter Plot)
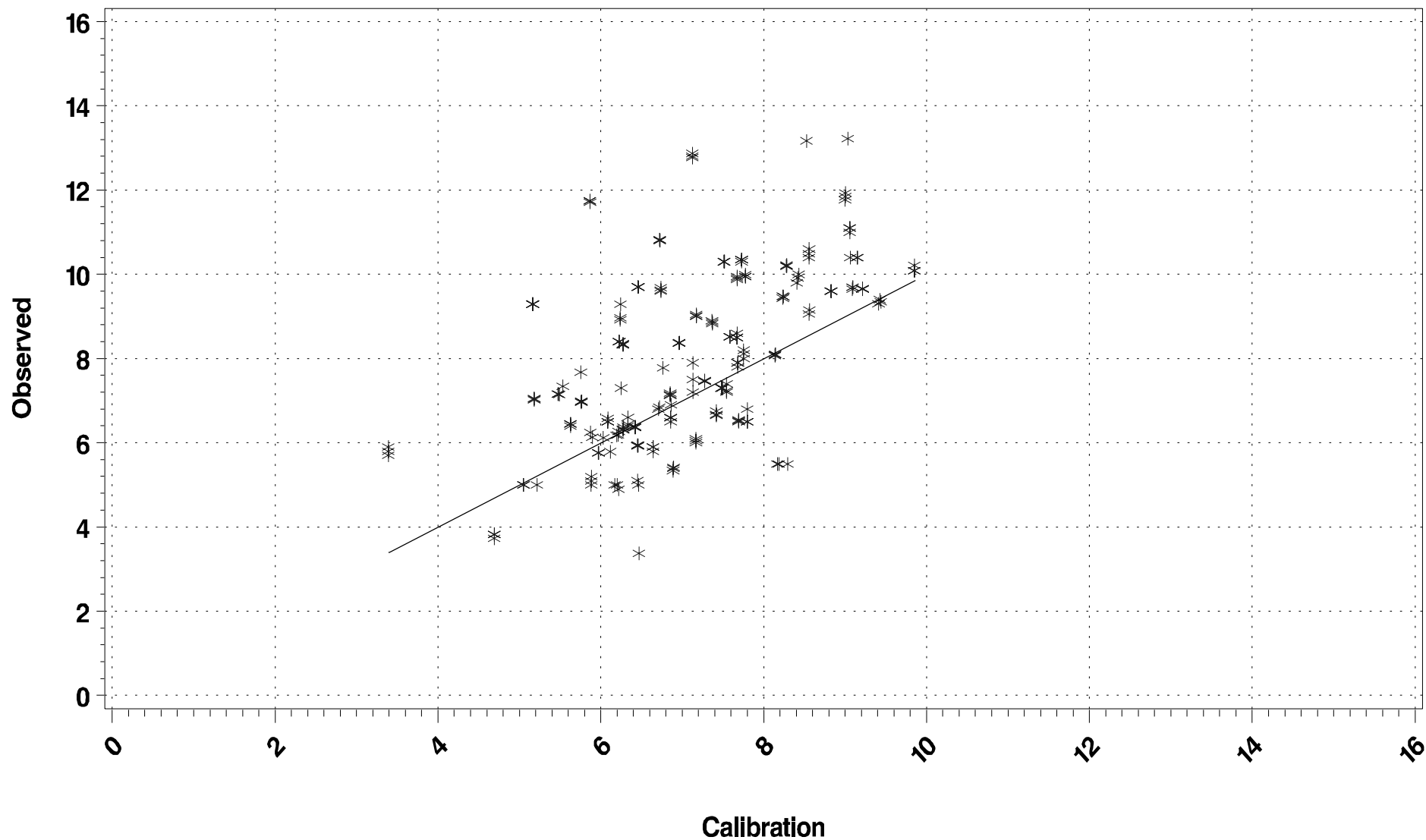
MIGRATORY **Dissolved Oxygen**
Segment PMKTF (Pamunkey Tidal Fresh)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 330 pairs of predictions and observed data, the **slope** is 0.6881 and the **intercept** is 2.9448. The **R-Squared** value for this regression is 0.4247.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 327 pairs of predictions and observed data, the **slope** is 0.3742 and the **intercept** is 0.5760. The **R-Squared** value for this regression is 0.2897.

Statistics (units in mg/l)

Mean observed 6.9016   Mean predicted 5.7500
Min. observed 2.9   Min. predicted -2.304
Max. observed 12.9   Max. predicted 12.51
Std. Dev. Observed 2.6153   Std. Dev. predicted 2.4768
Median observed 5.9000   Median predicted 5.6191
90th Percentile observed 11.2350   90th Percentile predicted 9.1939
10th Percentile observed 4.3300   10th Percentile predicted 3.0964


Differences (predicted – observed)

Mean difference -1.1516 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 330
Number of Predicted Violations 48
Number of Observed Violations 3

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment PMKTF Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
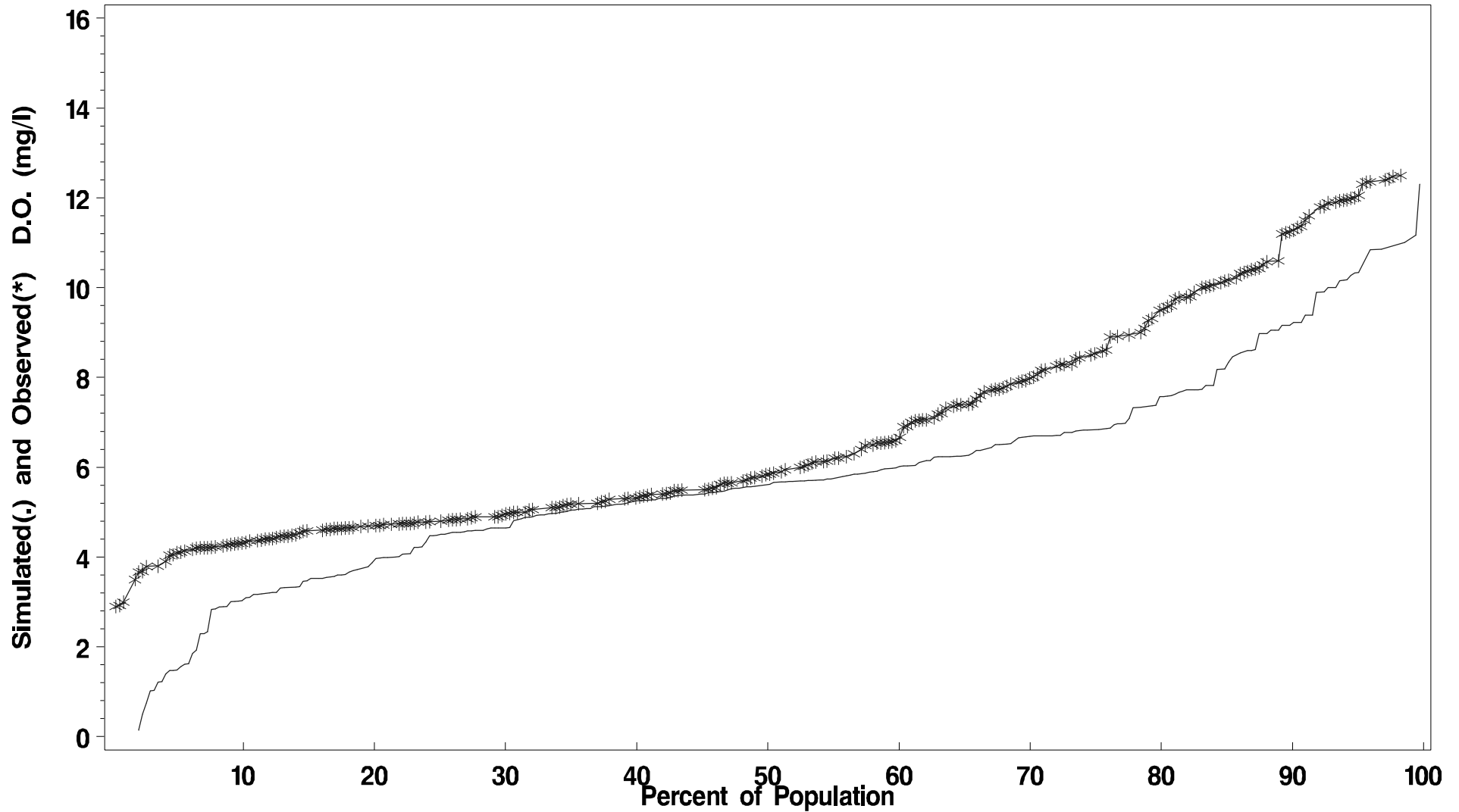
Migratory Dissolved Oxygen (mg/l)
Segment PMKTF   Season: June 11 — Feb 14
(Scatter Plot)
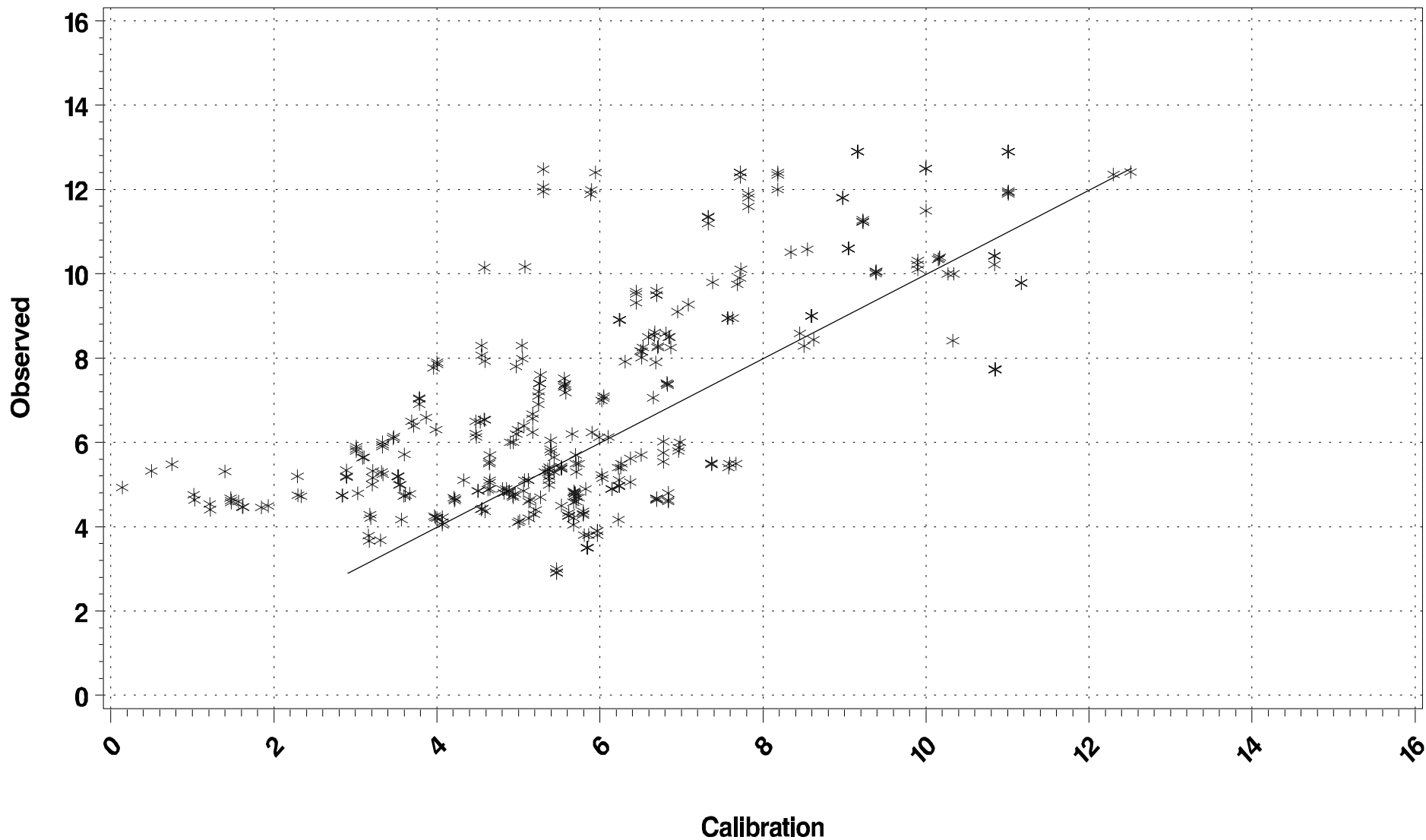
TIDAL FRESH **Chlorophyll**
Segment PMKTF (Pamunkey Tidal Fresh)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 54 pairs of predictions and observed data, the **slope** is 0.2014 and the **intercept** is 5.0420. The **R-Squared** value for this regression is 0.0079.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 54 pairs of predictions and observed data, the **slope** is 0.1411 and the **intercept** is 0.6800. The **R-Squared** value for this regression is 0.0038.

Statistics (units in μg/l)

Mean observed 6.5834   Mean predicted 7.6520
Min. observed 1.0000   Min. predicted 2.9350
Max. observed 17.4565   Max. predicted 13.0260
Std. Dev. Observed 4.4257   Std. Dev. predicted 1.9512
Median observed 4.8220   Median predicted 7.6335
95th Percentile observed 16.8001   95th Percentile predicted 10.3920
10th Percentile observed 3.1000   10th Percentile predicted 4.7314
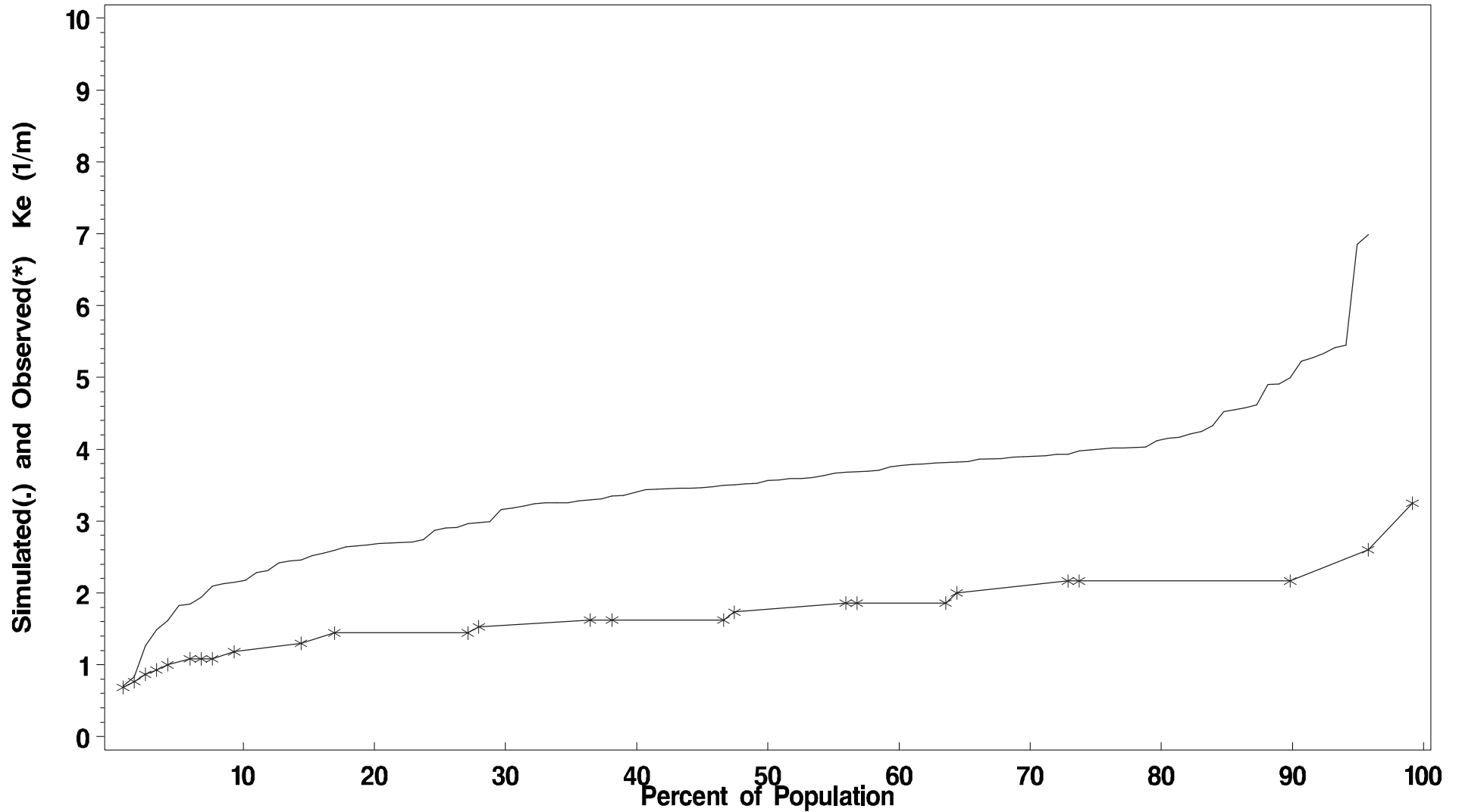

Differences (predicted – observed)

Mean difference 1.0687 μg/l
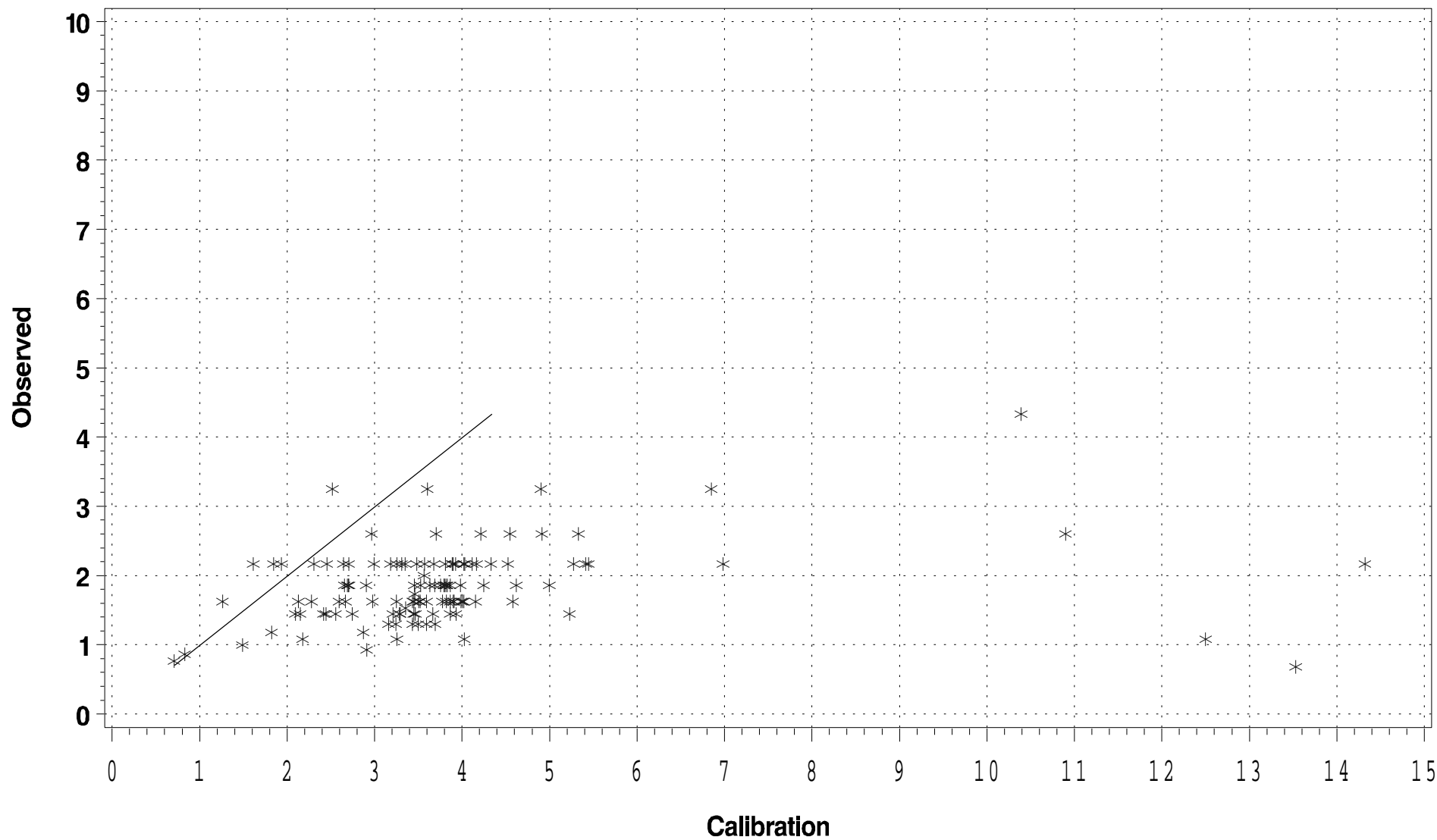
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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PMKTF   Season: July 1 − Sept 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
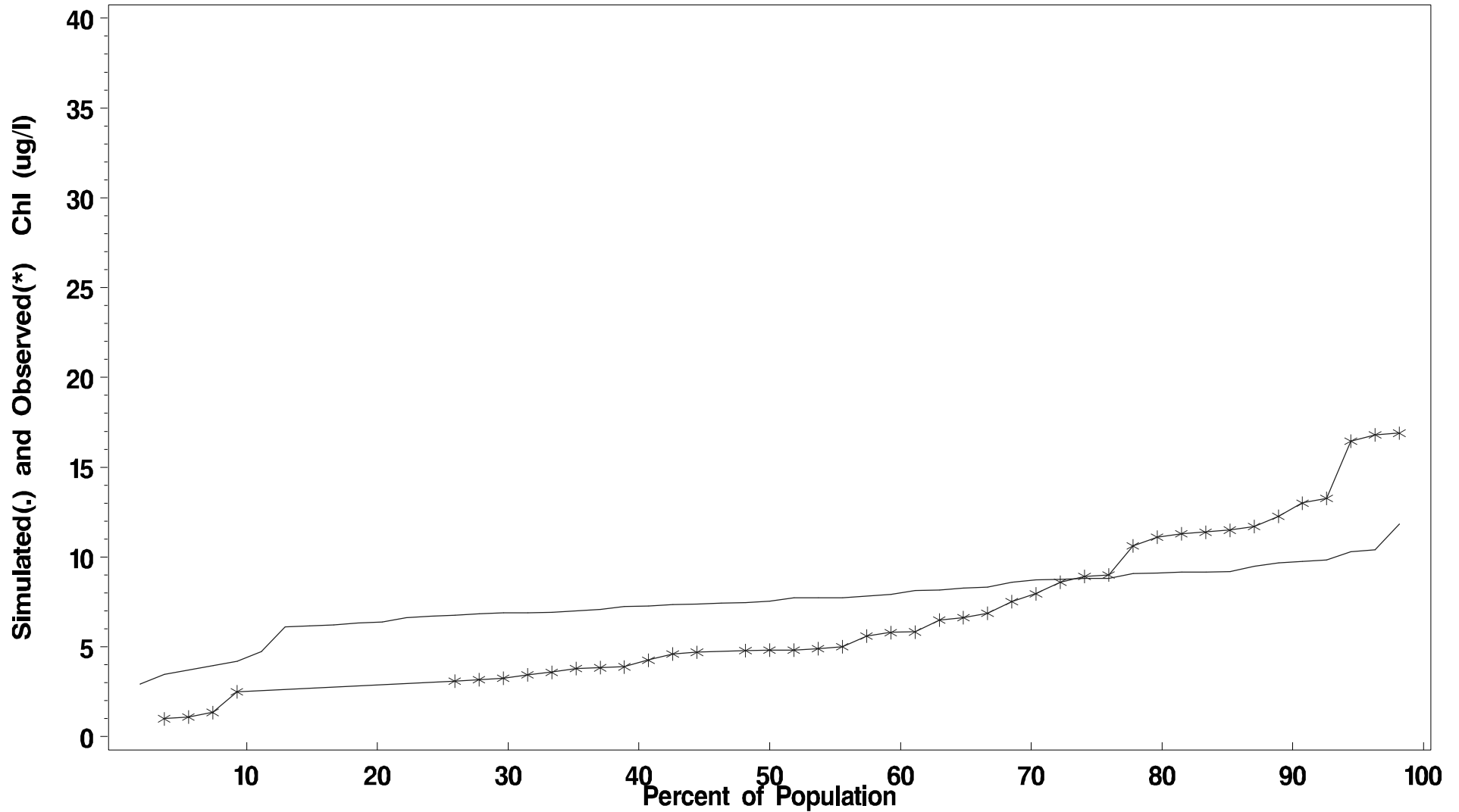
Chlorophyll Concentration (ug/l)
Segment PMKTF   Season: July 1 − Sept 30
(Scatter Plot)
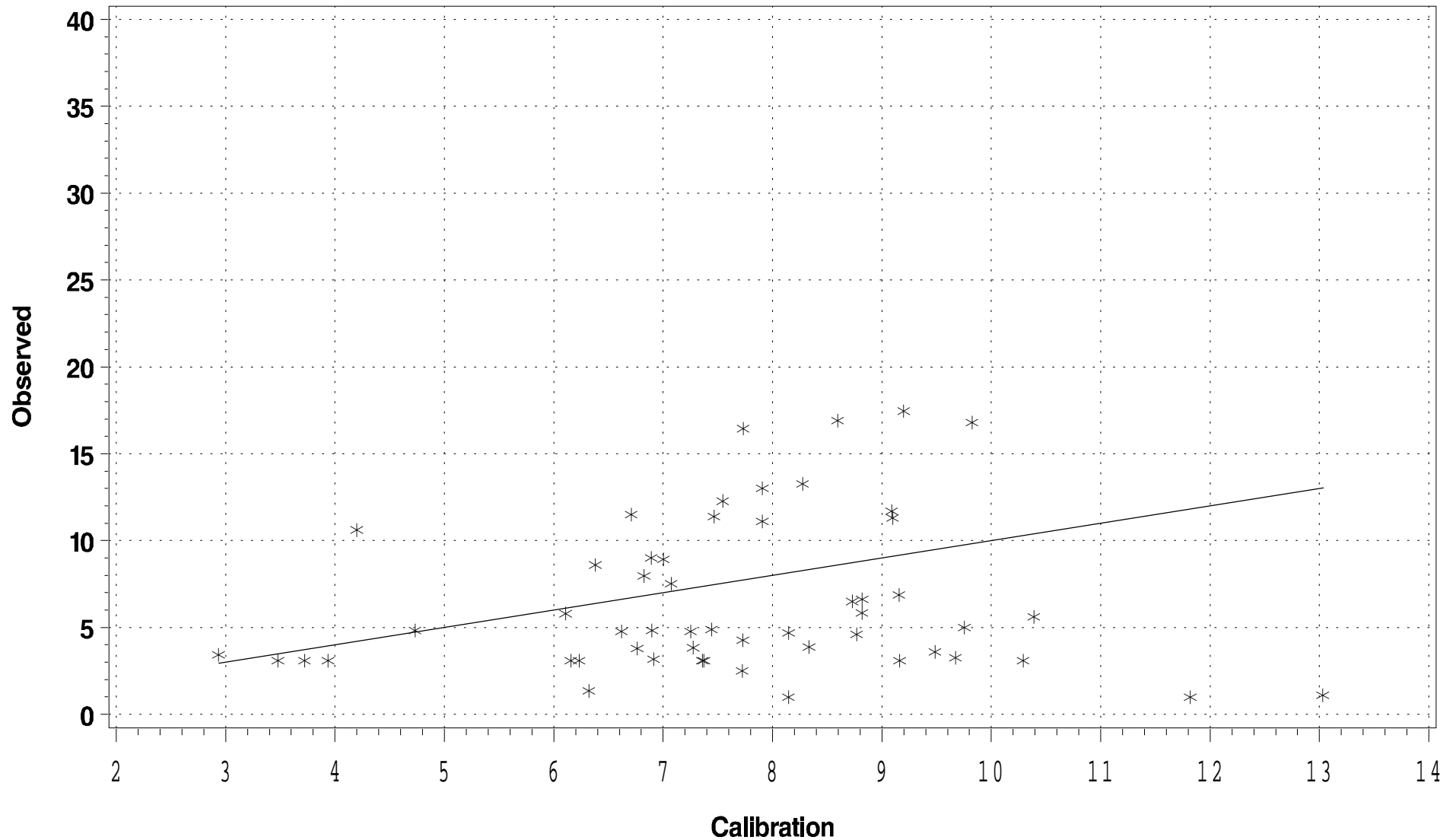
TIDAL FRESH **Chlorophyll**
Segment PMKTF (Pamunkey Tidal Fresh)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 52 pairs of predictions and observed data, the **slope** is 0.1309 and the **intercept** is 2.0042. The **R-Squared** value for this regression is 0.0423.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 52 pairs of predictions and observed data, the **slope** is 0.1371 and the **intercept** is 0.4363. The **R-Squared** value for this regression is 0.0452.

Statistics (units in μg/l)

Mean observed 2.7093   Mean predicted 5.3869
Min. observed 1.0000   Min. predicted 0.1655
Max. observed 13.0830   Max. predicted 10.1160
Std. Dev. Observed 1.7098   Std. Dev. predicted 2.6857
Median observed 3.1000   Median predicted 5.3780
95th Percentile observed 3.1000   95th Percentile predicted 9.3898
10th Percentile observed 1.0000   10th Percentile predicted 1.6292

Differences (predicted – observed)

Mean difference 2.6776 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PMKTF   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
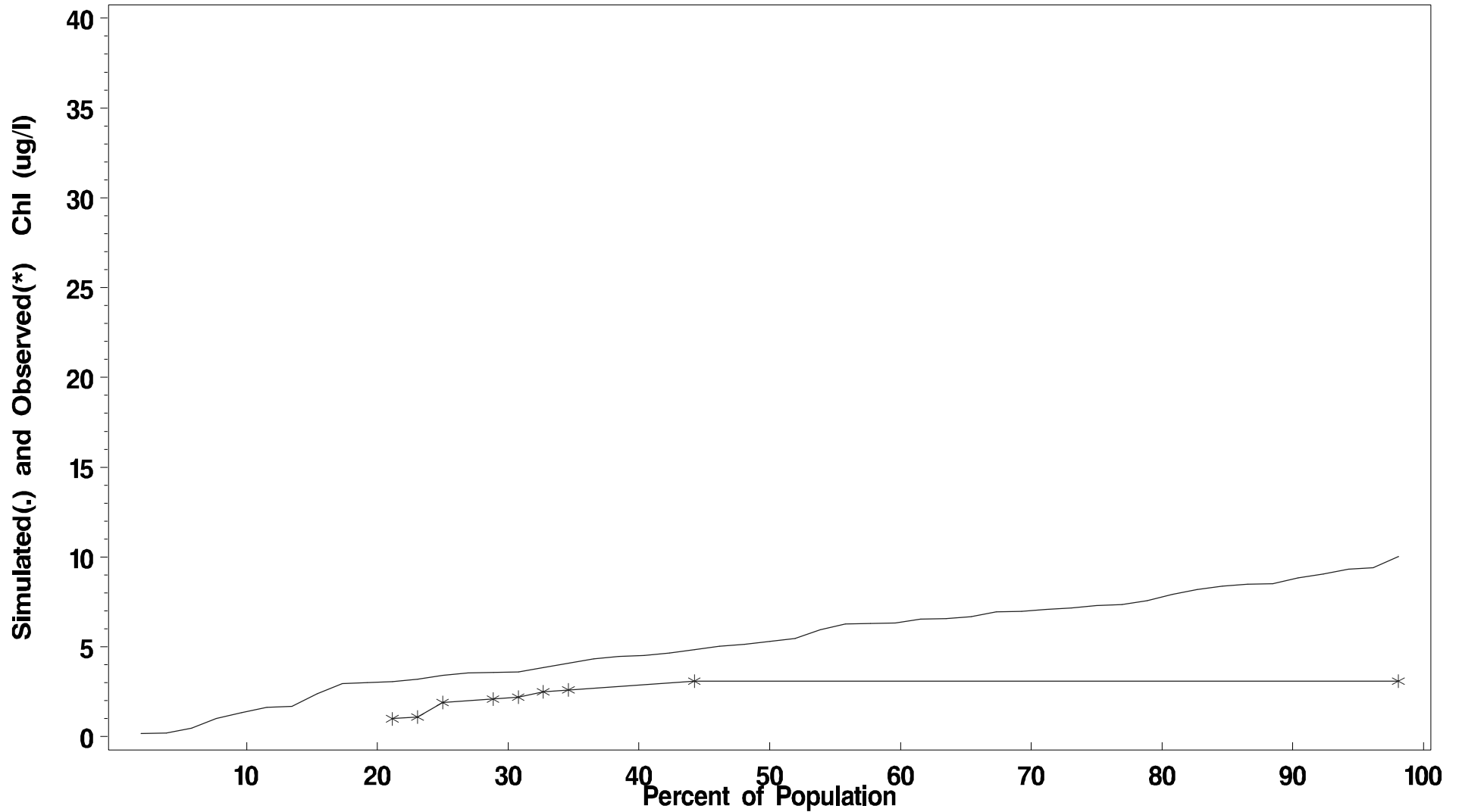
Chlorophyll Concentration (ug/l)
Segment PMKTF   Season: March 1 − May 30
(Scatter Plot)
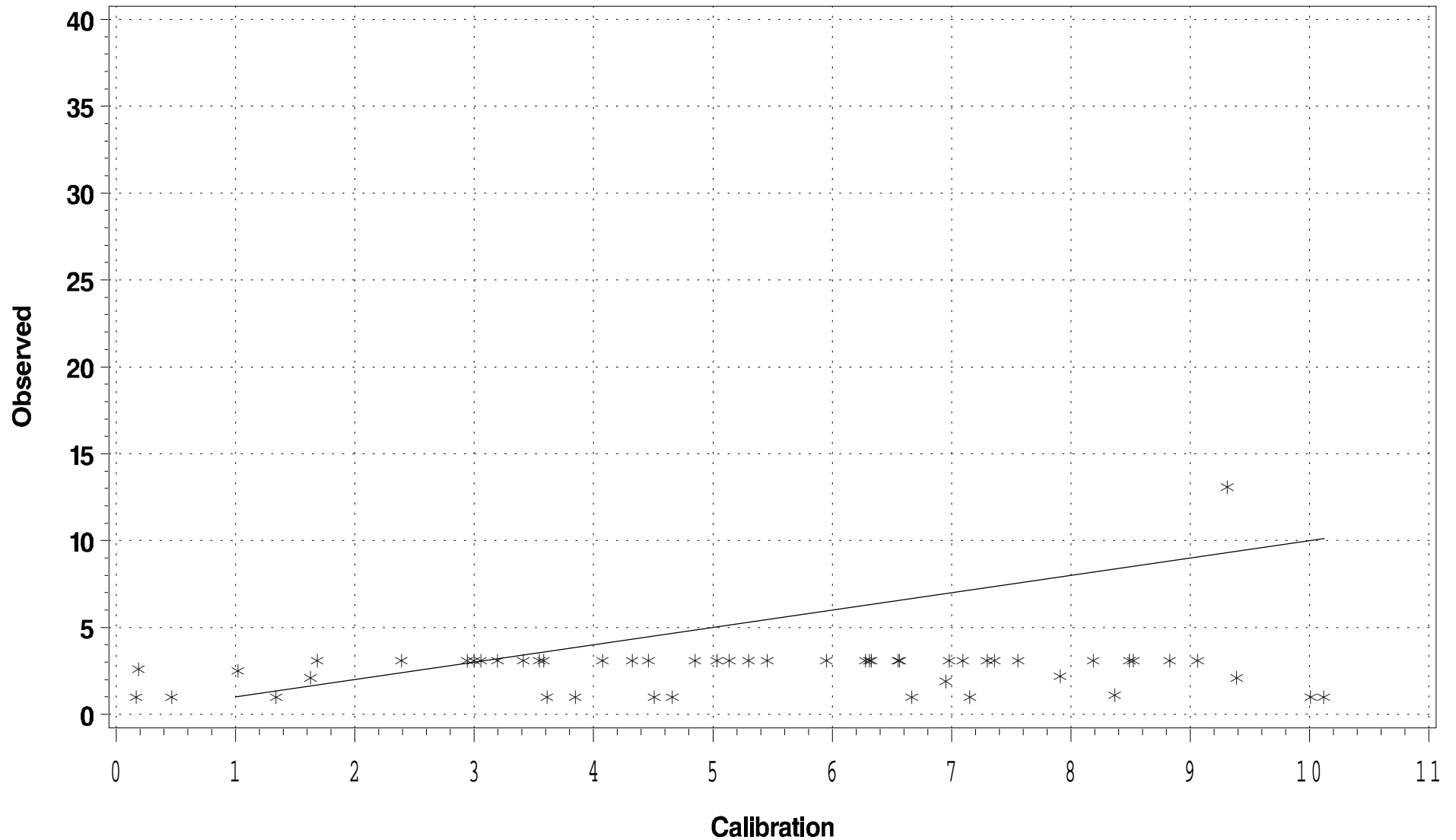
Regression of Calibration vs. Observations[1]

Using the 118 pairs of predictions and observed data, the **slope** is 0.0618 and the **intercept** is 1.6033. The **R-Squared** value for this regression is 0.0555.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 118 pairs of predictions and observed data, the **slope** is 0.1665 and the **intercept** is 0.3364. The **R-Squared** value for this regression is 0.0893.

Statistics (units in 1/m)

Mean observed 1.8410   Mean predicted 3.8438
Min. observed 0.6842   Min. predicted 0.7072
Max. observed 4.3333   Max. predicted 14.3200
Std. Dev. Observed 0.5454   Std. Dev. predicted 2.0777
Median observed 1.8571   Median predicted 3.5694
90th Percentile observed 2.6000   90th Percentile predicted 5.2277
10th Percentile observed 1.3000   10th Percentile predicted 2.1761

Differences (predicted – observed)

Mean difference 2.0028 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

Segment PMKTF   Season: April 1 – Oct 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment PMKTF   Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment YRKMH
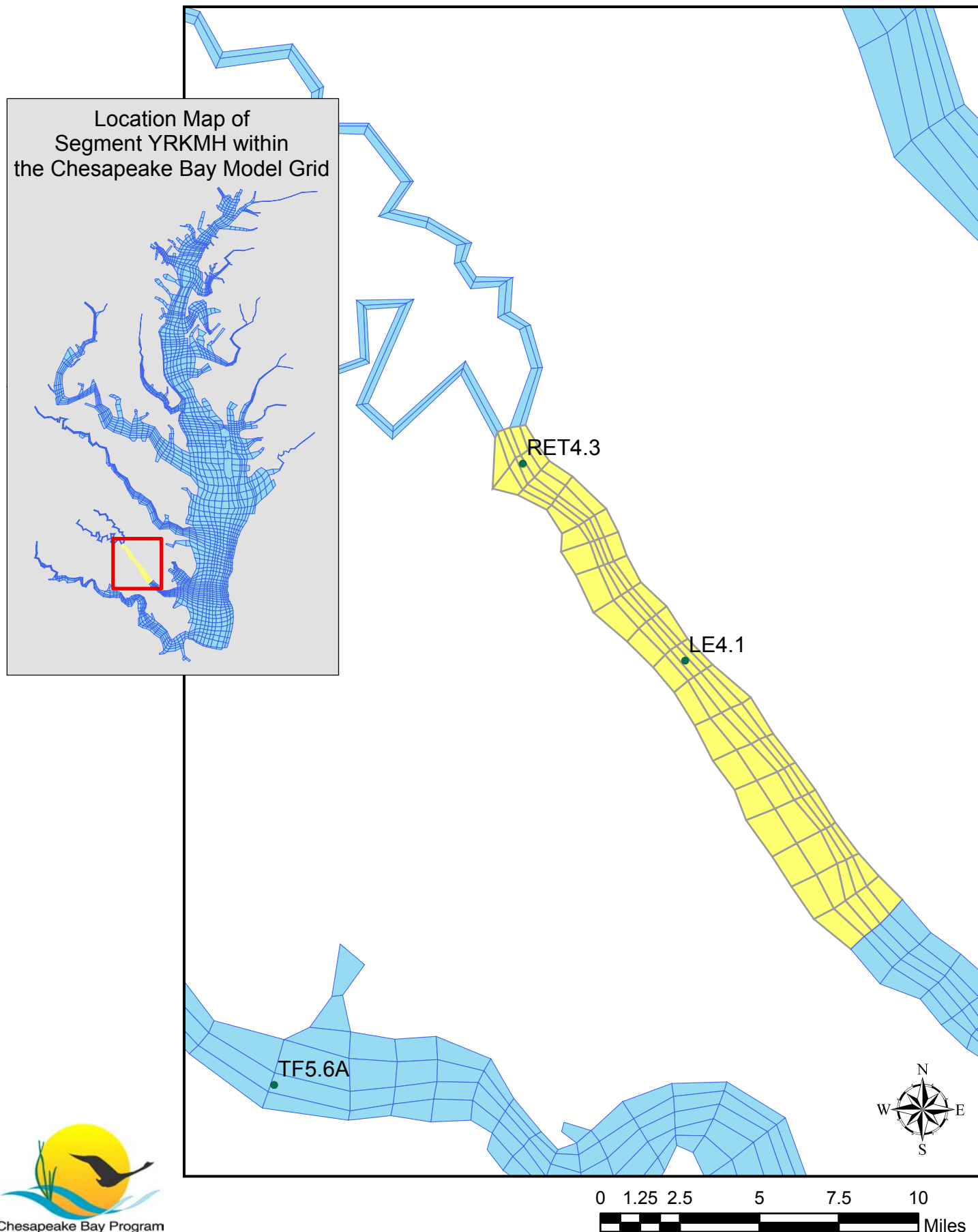
Location Map of
Segment YRKMH within
the Chesapeake Bay Model Grid

RET4.3

LE4.1

TF5.6A

Chesapeake Bay Program

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0   1.25 2.5   5   7.5   10
Miles

Regression of Calibration vs. Observations[1]

Using the 196 pairs of predictions and observed data, the **slope** is 0.7650 and the **intercept** is 1.5922. The **R-Squared** value for this regression is 0.5076.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 196 pairs of predictions and observed data, the **slope** is 0.6578 and the **intercept** is 0.3101. The **R-Squared** value for this regression is 0.4657.

Statistics (units in mg/l)

Mean observed 7.8678	Mean predicted 8.2033
Min. observed 4.4	Min. predicted 2.351
Max. observed 12.71	Max. predicted 11.02
Std. Dev. Observed 1.9100	Std. Dev. predicted 1.7788
Median observed 7.9450	Median predicted 8.4399
90th Percentile observed 10.5000	90th Percentile predicted 10.1950
10th Percentile observed 5.2200	10th Percentile predicted 5.8866

Differences (predicted – observed)

Mean difference 0.3355 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 196
Number of Predicted Violations 14
Number of Observed Violations 9

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[1] observed is dependent, predicted is independent

# Migratory Dissolved Oxygen (mg/l)
Segment YRKMH   Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
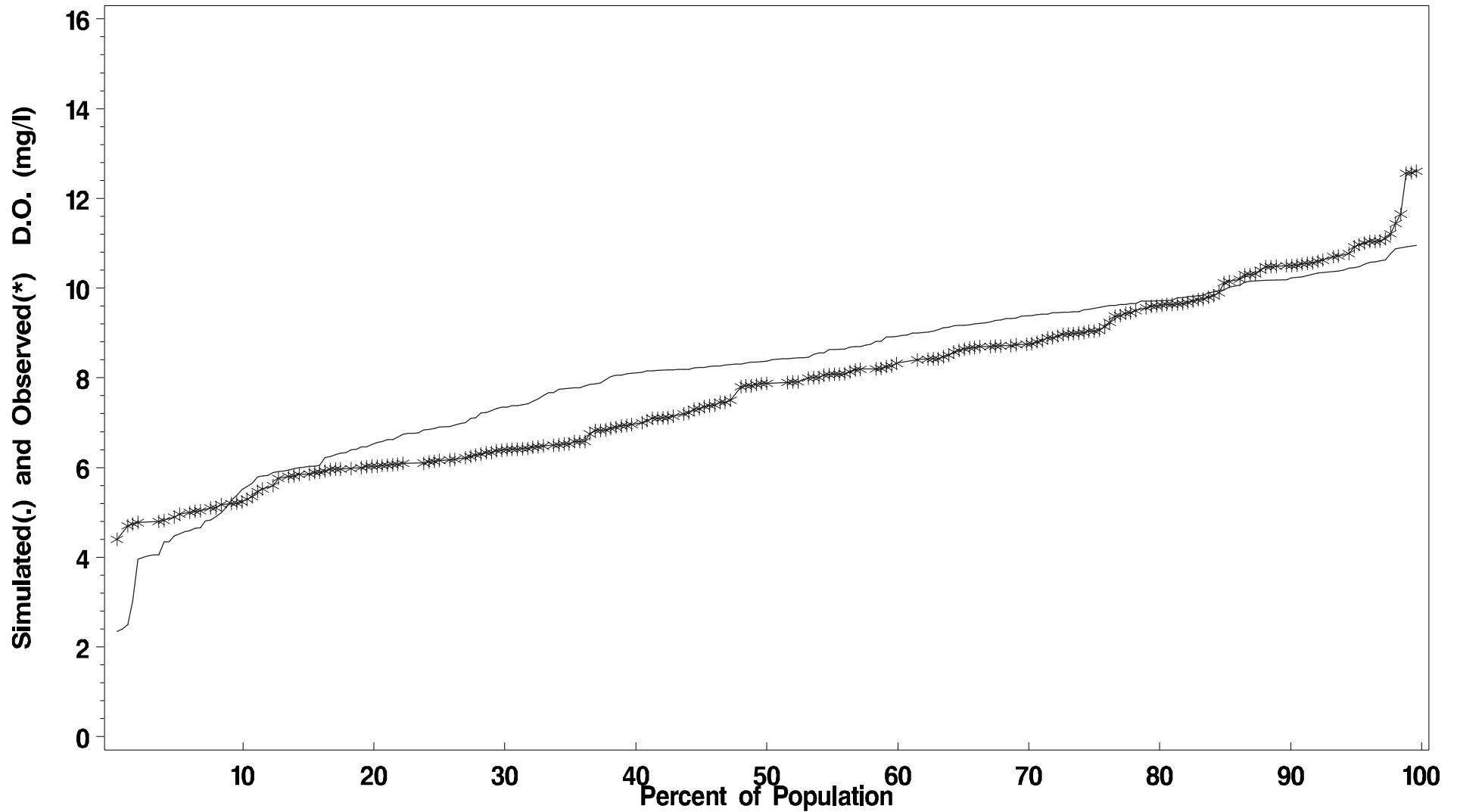
Migratory   Dissolved Oxygen (mg/l)
Segment YRKMH   Season: Feb 15 − June 10
(Scatter Plot)
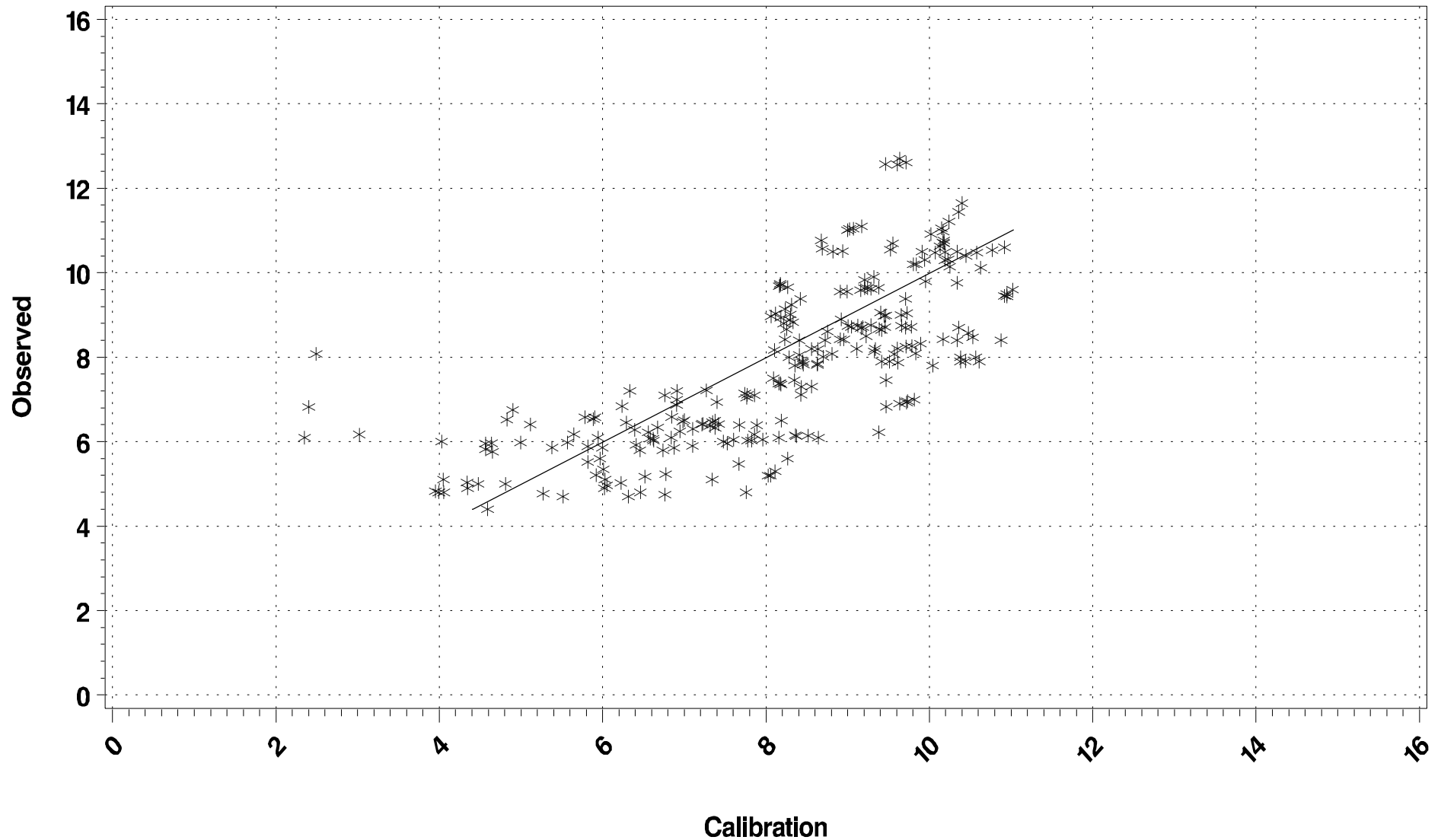
MIGRATORY **Dissolved Oxygen**
Segment YRKMH (York Mesohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 344 pairs of predictions and observed data, the **slope** is 1.1503 and the **intercept** is -0.8139. The **R-Squared** value for this regression is 0.6413.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 344 pairs of predictions and observed data, the **slope** is 0.9962 and the **intercept** is 0.0035. The **R-Squared** value for this regression is 0.5748.

Statistics (units in mg/l)

Mean observed 6.6124   Mean predicted 6.4562
Min. observed 3.1   Min. predicted 2.74
Max. observed 12.68   Max. predicted 12.06
Std. Dev. Observed 2.3974   Std. Dev. predicted 1.6690
Median observed 5.8300   Median predicted 6.1563
90th Percentile observed 10.6700 90th Percentile predicted 8.7075
10th Percentile observed 4.2000   10th Percentile predicted 4.4945

Differences (predicted – observed)

Mean difference -0.1561 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 344
Number of Predicted Violations 4
Number of Observed Violations 3

[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment YRKMH   Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
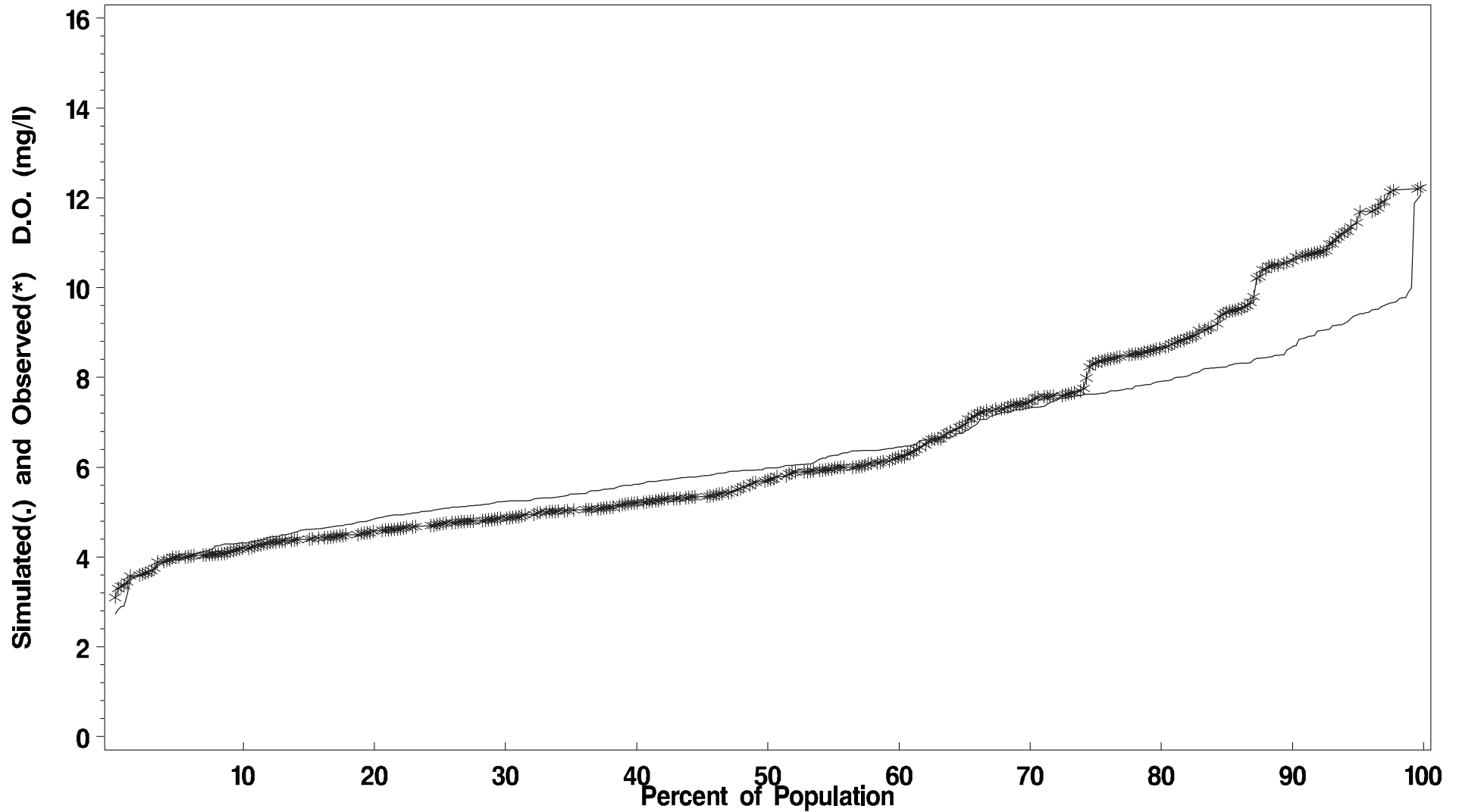
Migratory Dissolved Oxygen (mg/l)
Segment YRKMH   Season: June 11 – Feb 14
(Scatter Plot)
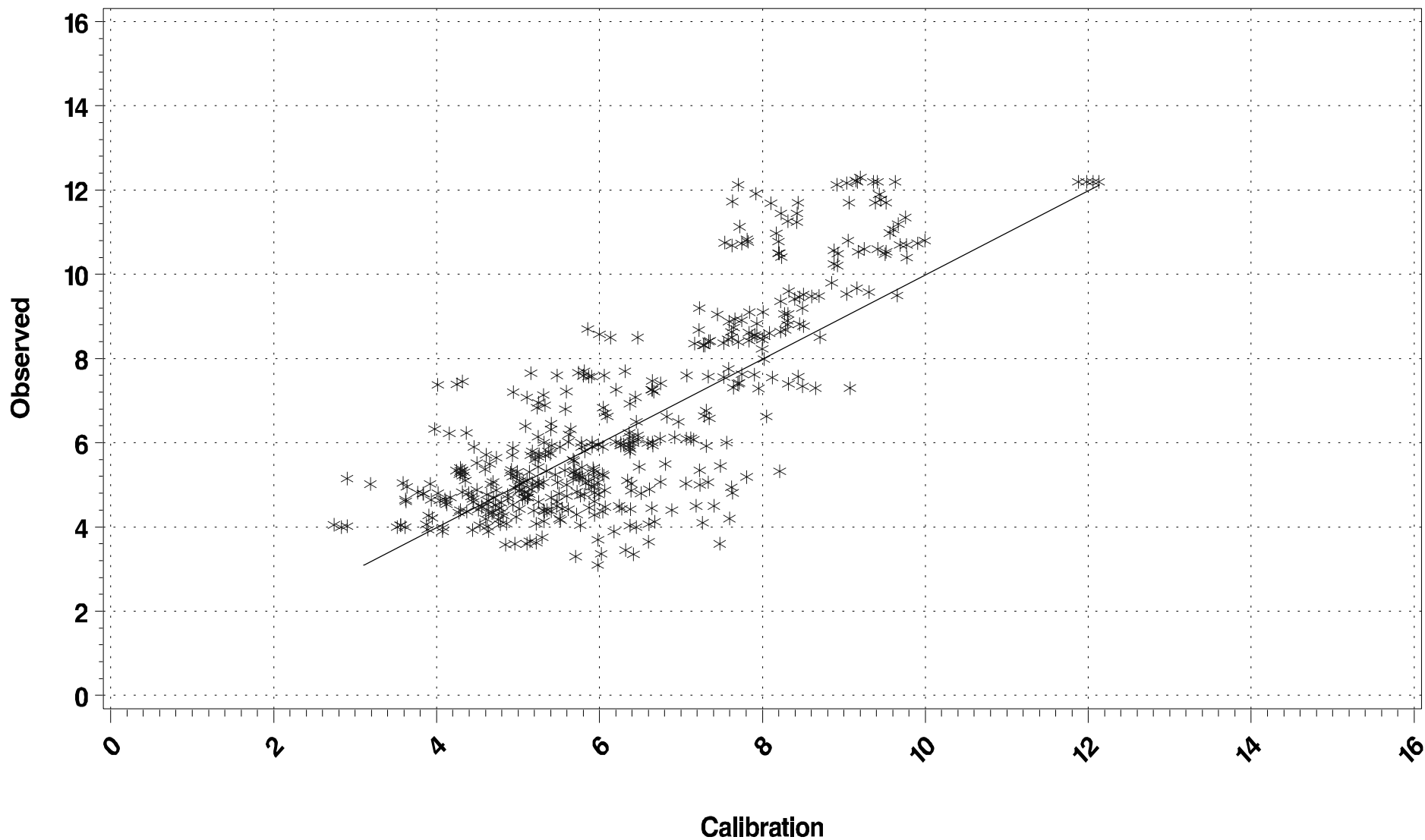
OPEN WATER **Dissolved Oxygen**
Segment YRKMH (York Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 509 pairs of predictions and observed data, the **slope** is 0.7800 and the **intercept** is 1.9486. The **R-Squared** value for this regression is 0.7299.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 509 pairs of predictions and observed data, the **slope** is 0.7297 and the **intercept** is 0.2655. The **R-Squared** value for this regression is 0.7209.

Statistics (units in mg/l)

Mean observed 7.4507   Mean predicted 7.0541
Min. observed 2.93   Min. predicted 3.084
Max. observed 13.26   Max. predicted 12.99
Std. Dev. Observed 2.2261   Std. Dev. predicted 2.4383
Median observed 6.9700   Median predicted 6.5101
90th Percentile observed 10.8000   90th Percentile predicted 10.8290
10th Percentile observed 4.9000   10th Percentile predicted 4.1941


Differences (predicted – observed)

Mean difference -0.3966 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 509
Number of Predicted Violations 11
Number of Observed Violations 2

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[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
Segment YRKMH   Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water Dissolved Oxygen (mg/l)
Segment YRKMH Season: Jan 1 – Dec 31
(Scatter Plot)

<div align="center">
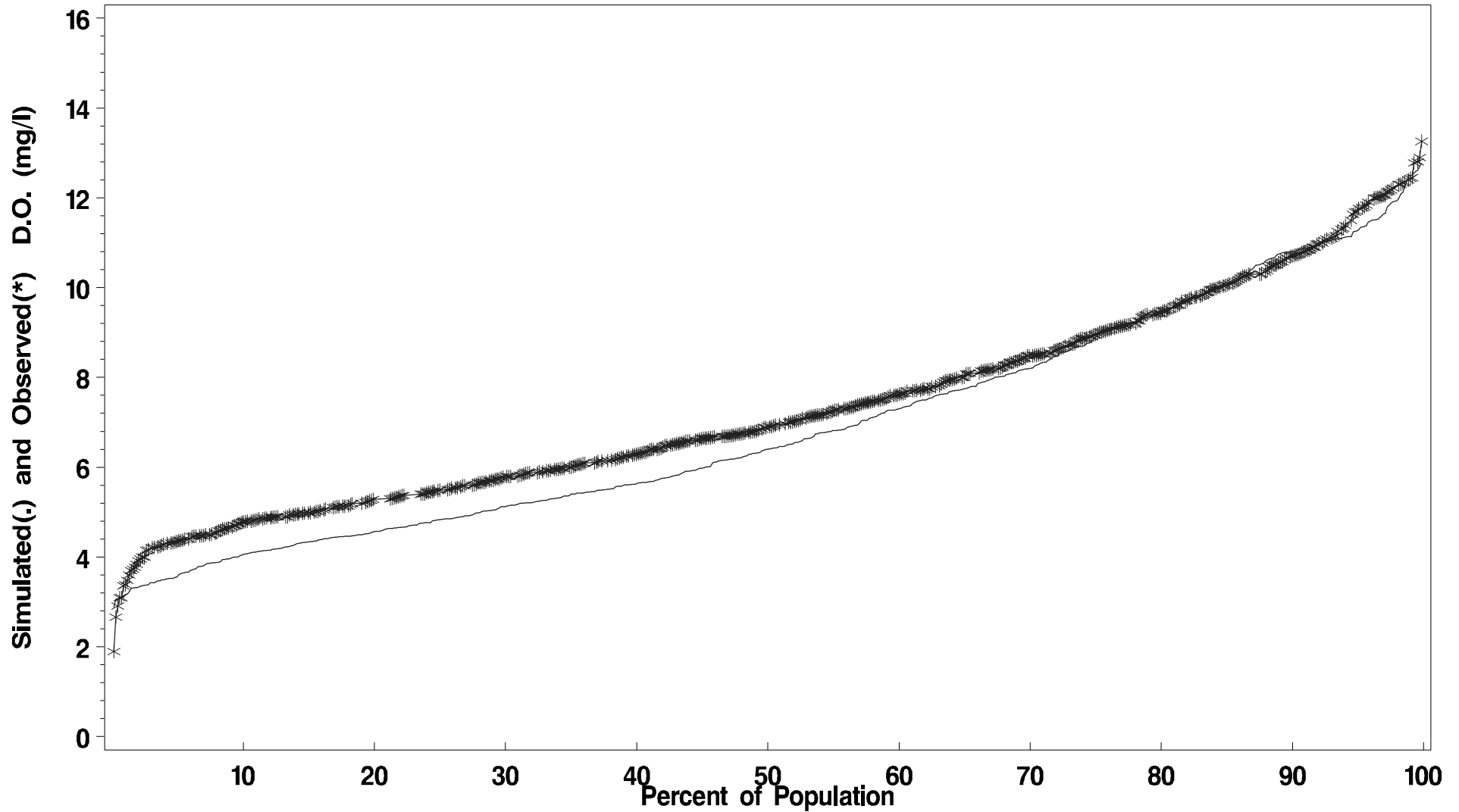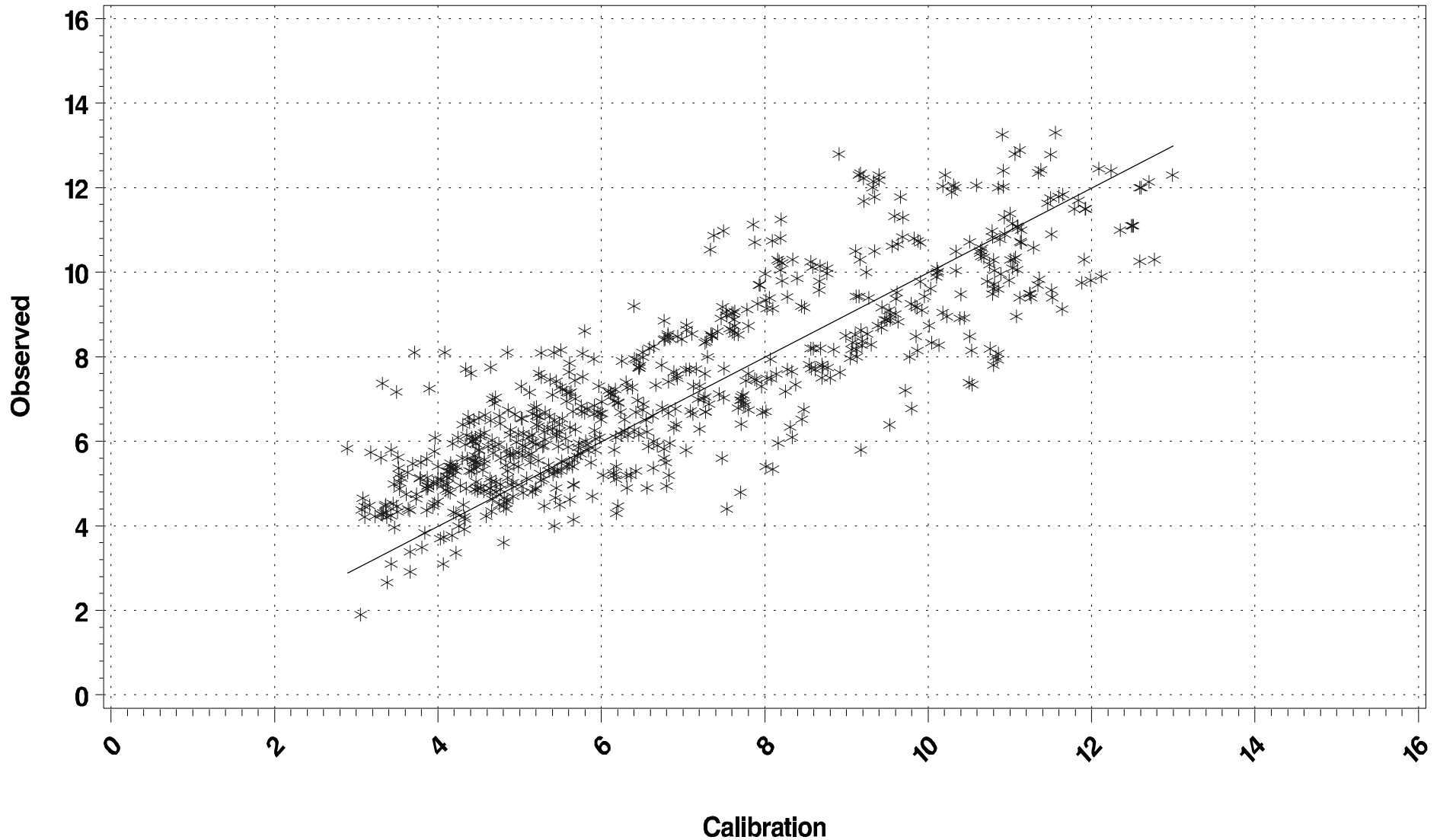
MESOHALINE **Chlorophyll**
Segment YRKMH (York Mesohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 107 pairs of predictions and observed data, the **slope** is 0.6805 and the **intercept** is 6.4928. The **R-Squared** value for this regression is 0.0848.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 107 pairs of predictions and observed data, the **slope** is 0.4246 and the **intercept** is 0.6857. The **R-Squared** value for this regression is 0.0645.

Statistics (units in μg/l)

Mean observed 13.8598	Mean predicted 10.8257
Min. observed 3.1000	Min. predicted 4.3405
Max. observed 32.6000	Max. predicted 17.2590
Std. Dev. Observed 6.2522	Std. Dev. predicted 2.6758
Median observed 12.0740	Median predicted 10.9150
95th Percentile observed 25.7673	95th Percentile predicted 14.8860
10th Percentile observed 7.2000	10th Percentile predicted 7.0336

Differences (predicted – observed)

Mean difference -3.0341 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)

Segment YRKMH   Season: July 1 – Sept 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
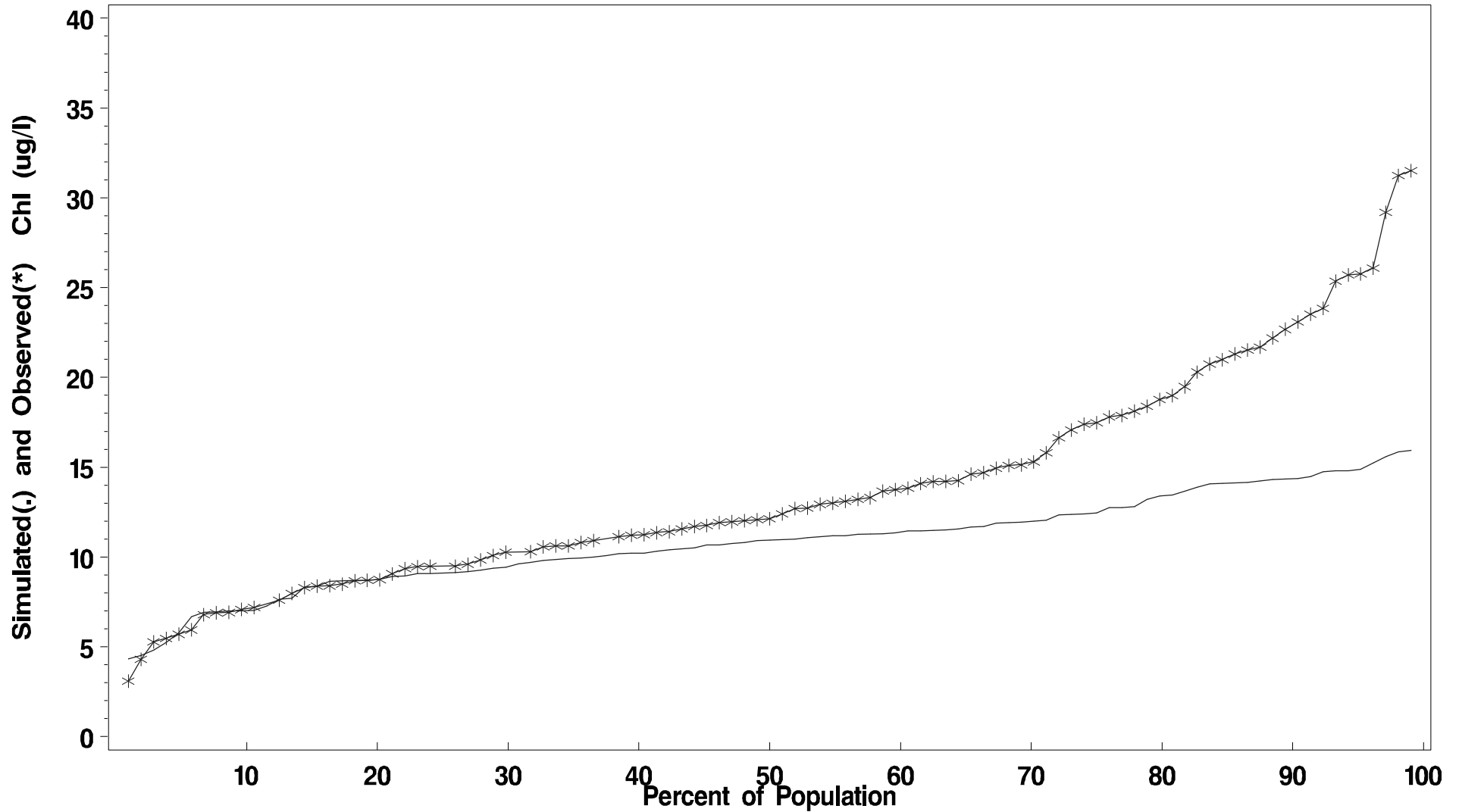
Chlorophyll Concentration (ug/l)
Segment YRKMH   Season: July 1 – Sept 30
(Scatter Plot)
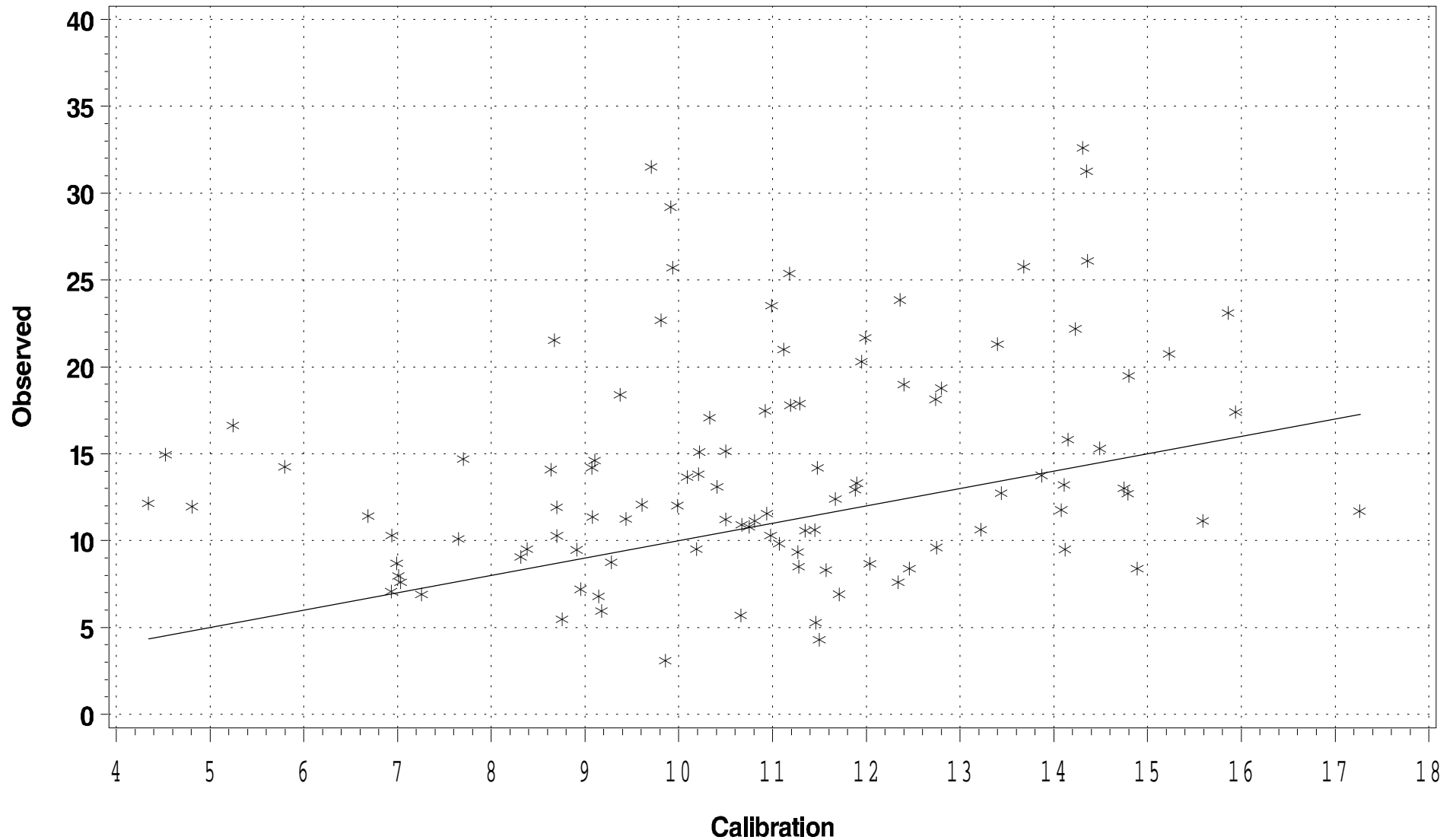
MESOHALINE **Chlorophyll**
Segment YRKMH (York Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 94 pairs of predictions and observed data, the **slope** is 0.5687 and the **intercept** is 2.2951. The **R-Squared** value for this regression is 0.2039.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 94 pairs of predictions and observed data, the **slope** is 0.7934 and the **intercept** is 0.0257. The **R-Squared** value for this regression is 0.2035.

Statistics (units in µg/l)

Mean observed 11.8873   Mean predicted 16.8658
Min. observed 1.0000   Min. predicted 4.6341
Max. observed 38.9092   Max. predicted 39.8870
Std. Dev. Observed 9.7080   Std. Dev. predicted 7.7086
Median observed 8.3733   Median predicted 15.9975
95th Percentile observed 32.9000   95th Percentile predicted 30.8160
10th Percentile observed 3.0000   10th Percentile predicted 8.6510

Differences (predicted – observed)

Mean difference 4.9785 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment YRKMH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
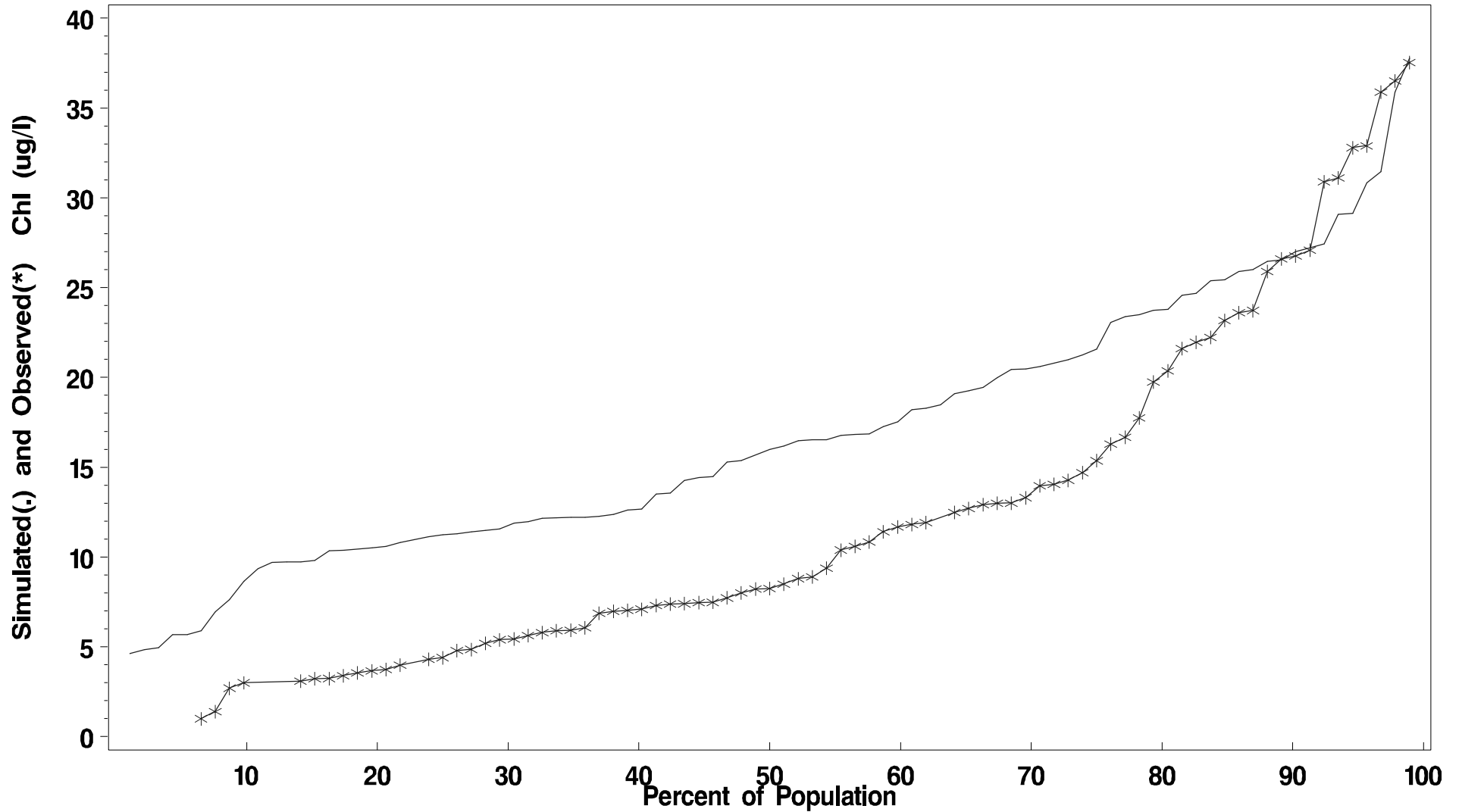
Chlorophyll Concentration (ug/l)
Segment YRKMH   Season: March 1 – May 30
(Scatter Plot)
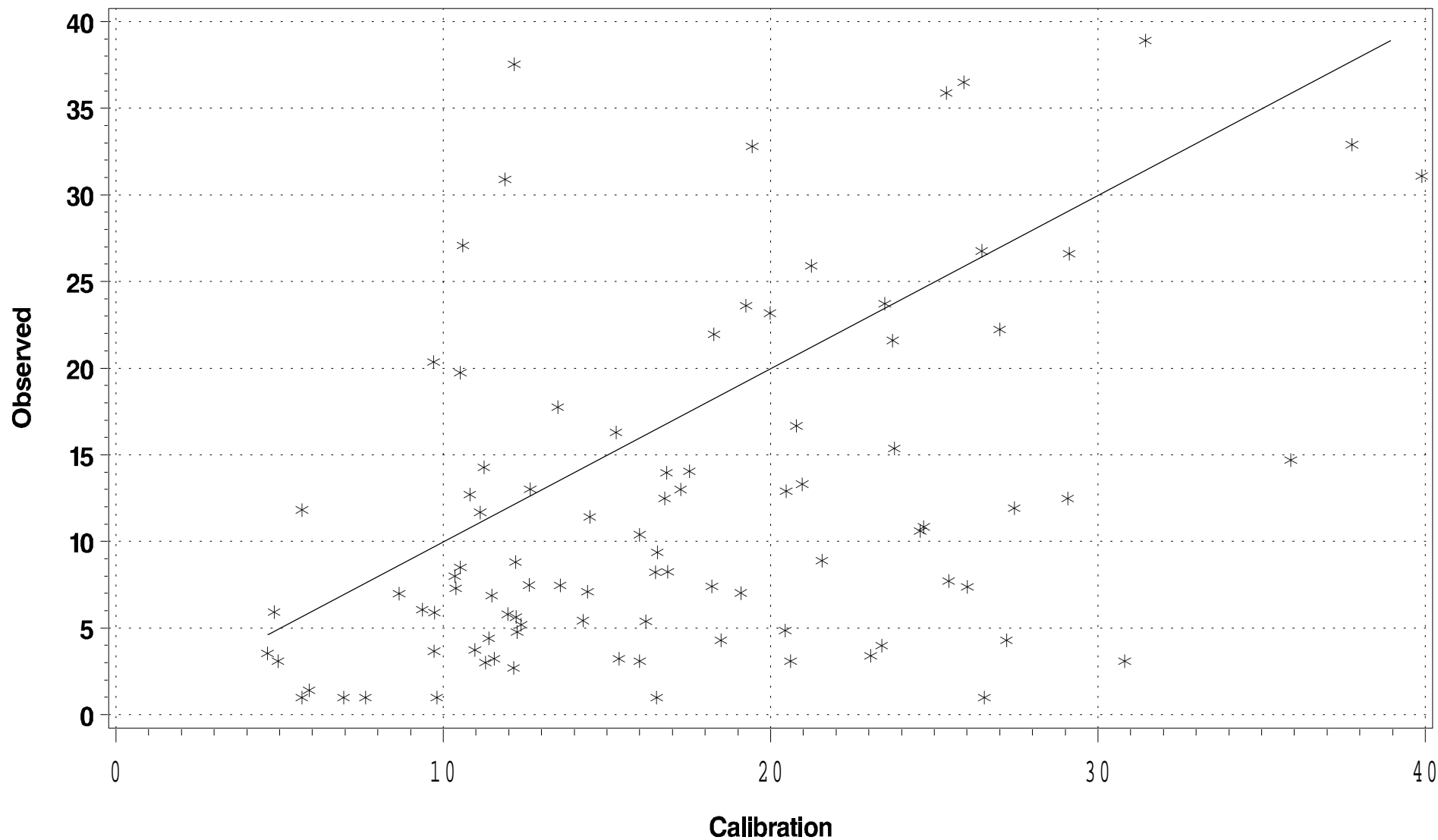
MESOHALINE **Light Attenuation**
Segment YRKMH (York Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 249 pairs of predictions and observed data, the **slope** is 0.5841 and the **intercept** is 1.3354. The **R-Squared** value for this regression is 0.0891.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 249 pairs of predictions and observed data, the **slope** is 0.6177 and the **intercept** is 0.2305. The **R-Squared** value for this regression is 0.1013.

Statistics (units in 1/m)

Mean observed 2.8378   Mean predicted 2.5724
Min. observed 1.1818   Min. predicted 1.8912
Max. observed 6.5000   Max. predicted 6.3024
Std. Dev. Observed 1.0565   Std. Dev. predicted 0.5400
Median observed 2.6000   Median predicted 2.4506
90th Percentile observed 4.3333   90th Percentile predicted 3.1094
10th Percentile observed 1.7333   10th Percentile predicted 2.0912

Differences (predicted – observed)

Mean difference -0.2654 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment YRKMH   Season: April 1 − Oct 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Ke (1/m)
Segment YRKMH   Season: April 1 − Oct 30
(Scatter Plot)
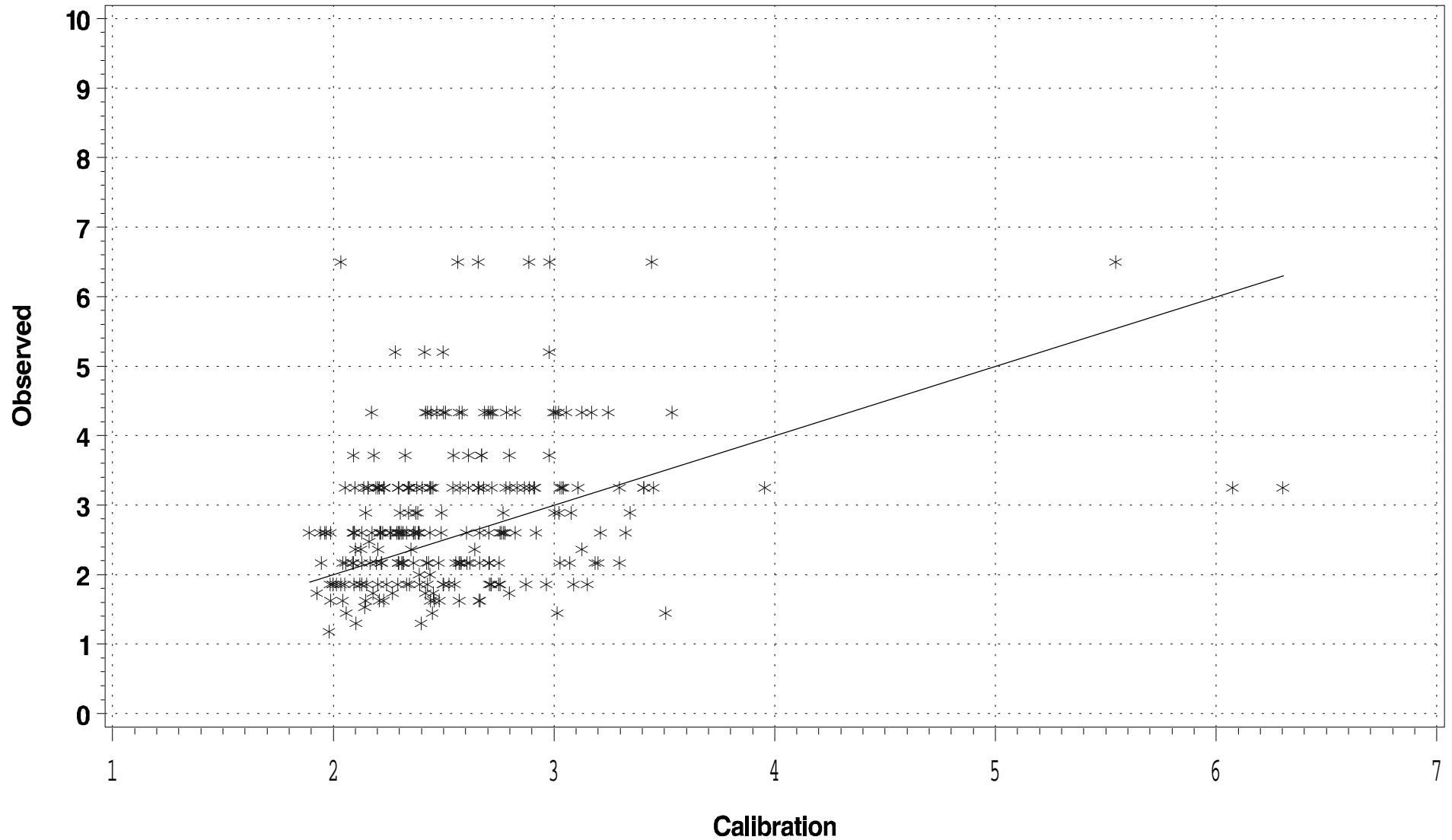
Chesapeake Bay Standard Segment YRKPH

Location Map of
Segment YRKPH within
the Chesapeake Bay Model Grid

LE4.2

LE4.3

Chesapeake Bay Program

0 0.5 1   2   3   4
Miles

N
W E
S
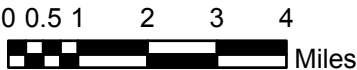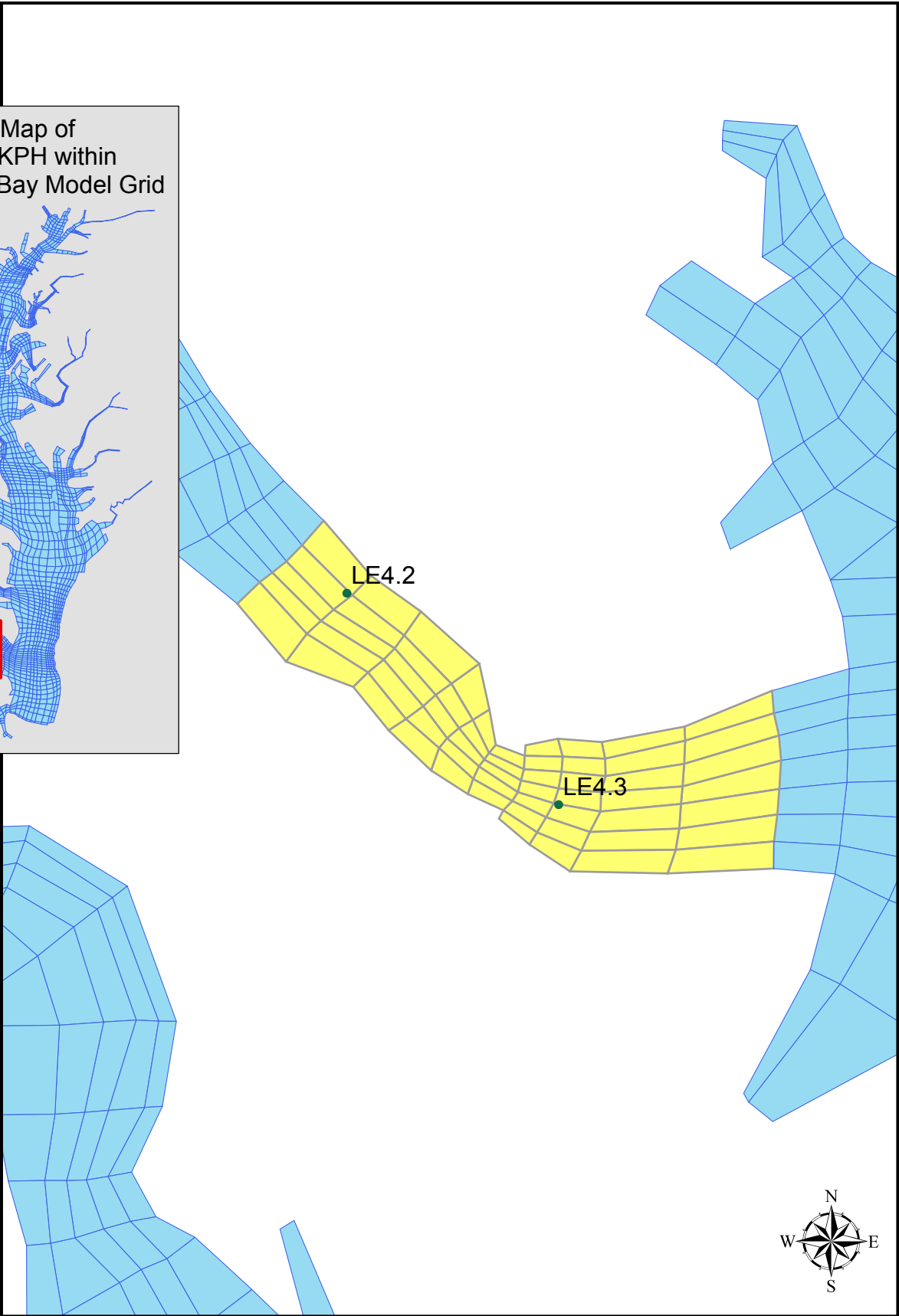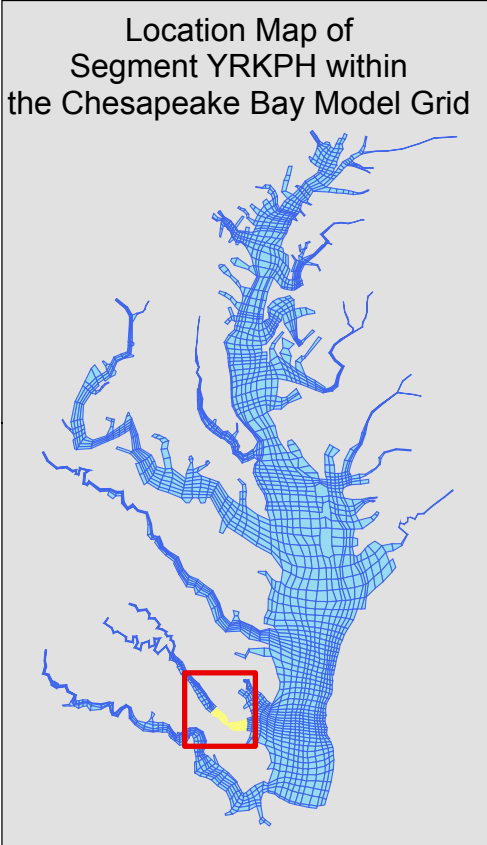
OPEN WATER **Dissolved Oxygen**
Segment YRKPH (York Polyhaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 1518 pairs of predictions and observed data, the **slope** is 0.7435 and the **intercept** is 1.9270. The **R-Squared** value for this regression is 0.7370.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1518 pairs of predictions and observed data, the **slope** is 0.7248 and the **intercept** is 0.2548. The **R-Squared** value for this regression is 0.6810.

Statistics (units in mg/l)

Mean observed 7.4872   Mean predicted 7.4781
Min. observed 1.49   Min. predicted 0.8993
Max. observed 14.1   Max. predicted 16.42
Std. Dev. Observed 2.4429   Std. Dev. predicted 2.8206
Median observed 7.2950   Median predicted 7.1499
90th Percentile observed 10.8800   90th Percentile predicted 11.3330
10th Percentile observed 4.5100   10th Percentile predicted 3.9959

Differences (predicted – observed)

Mean difference -0.0091 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1518
Number of Predicted Violations 86
Number of Observed Violations 58

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
# Segment YRKPH   Season: Jan 1 − Dec 31
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
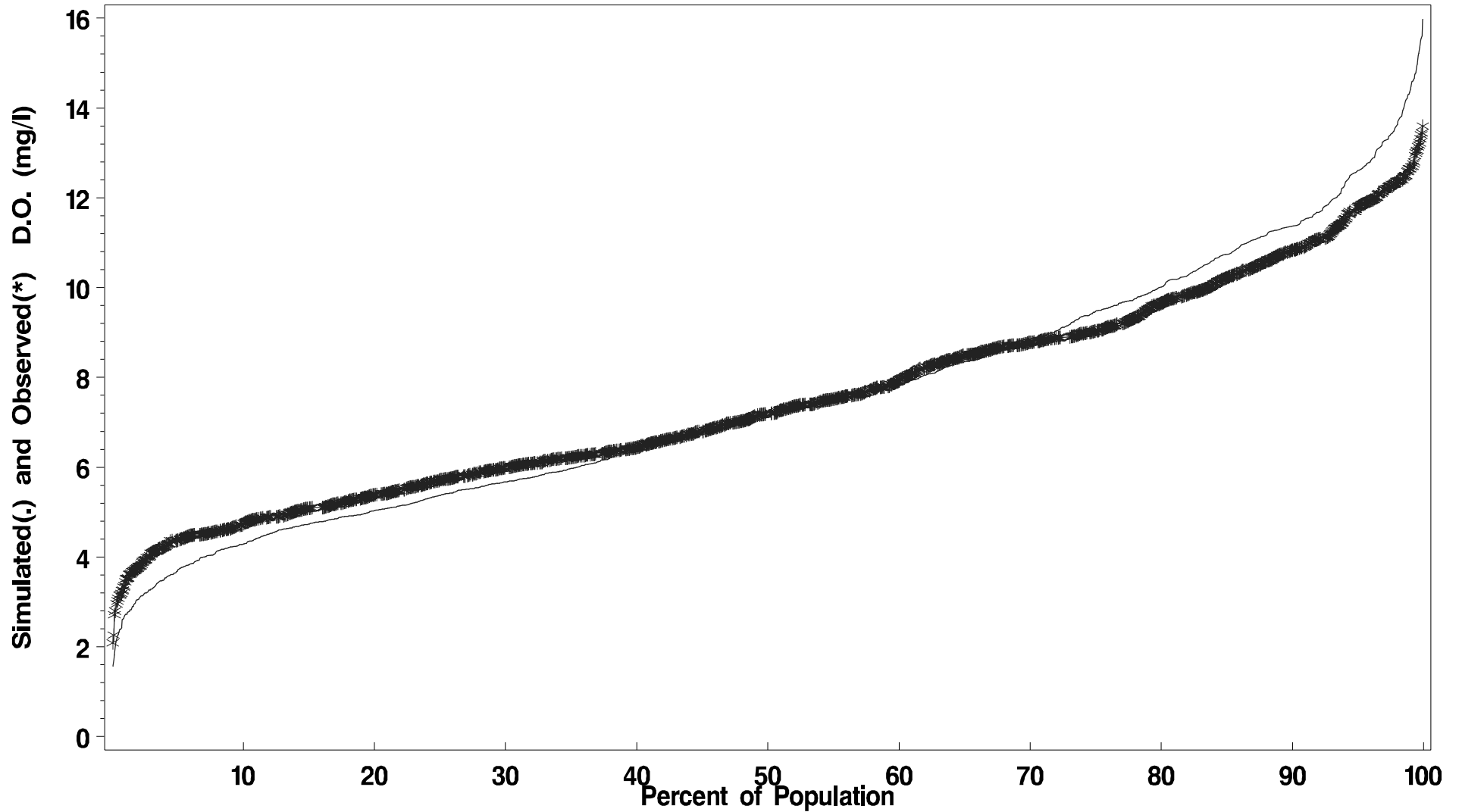
Open Water   Dissolved Oxygen (mg/l)
Segment YRKPH   Season: Jan 1 – Dec 31
(Scatter Plot)
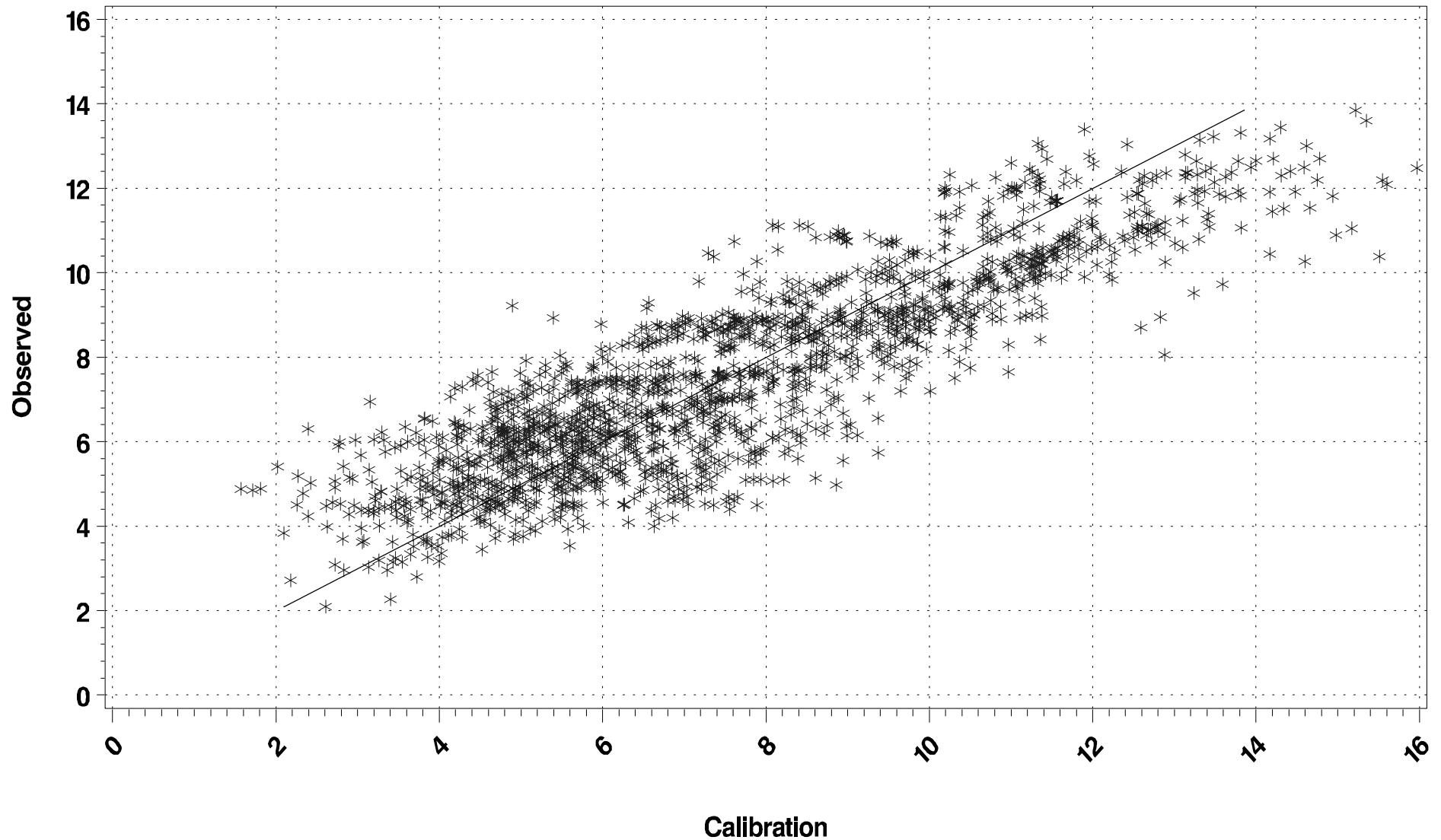
DEEP WATER **Dissolved Oxygen**
Segment YRKPH (York Polyhaline)
May 1 - Sept 30

Regression of Calibration vs. Observations[1]

Using the 573 pairs of predictions and observed data, the **slope** is 0.5915 and the **intercept** is 2.2975. The **R-Squared** value for this regression is 0.3909.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 573 pairs of predictions and observed data, the **slope** is 0.4743 and the **intercept** is 0.8636. The **R-Squared** value for this regression is 0.2914.

Statistics (units in mg/l)

Mean observed 4.7795   Mean predicted 4.1959
Min. observed 0.9000   Min. predicted 0.7514
Max. observed 9.8000   Max. predicted 8.4410
Std. Dev. Observed 1.5034   Std. Dev. predicted 1.5888
Median observed 4.7900   Median predicted 3.8750
90th Percentile observed 6.7030   90th Percentile predicted 6.7440
10th Percentile observed 2.7700   10th Percentile predicted 2.4410

Differences (predicted – observed)

Mean difference -0.5836 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 573
Number of Predicted Violations 8
Number of Observed Violations 19

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment YRKPH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
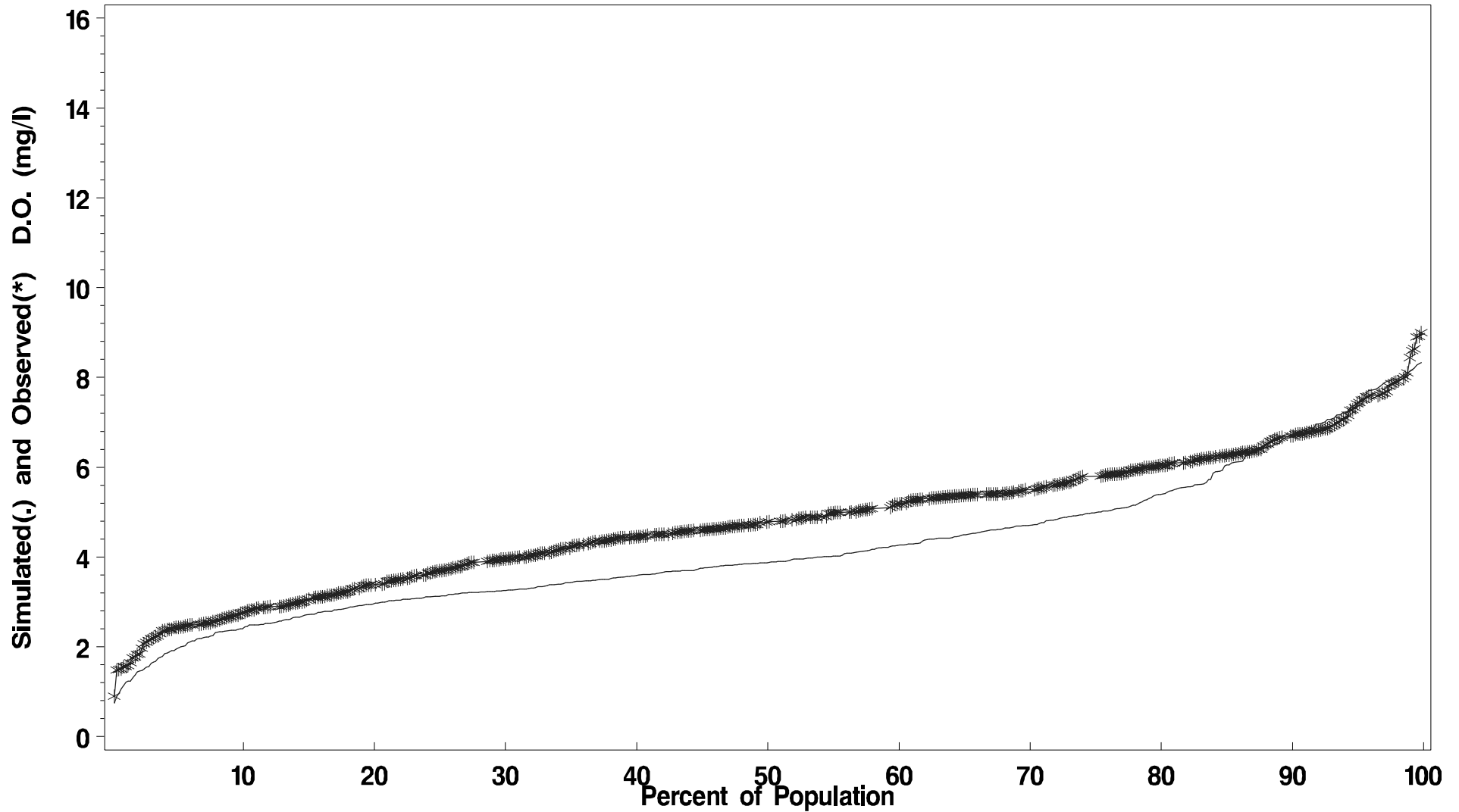
Deep Water   Dissolved Oxygen (mg/l)
Segment YRKPH   Season: May 1 – Sept 30

(Scatter Plot)
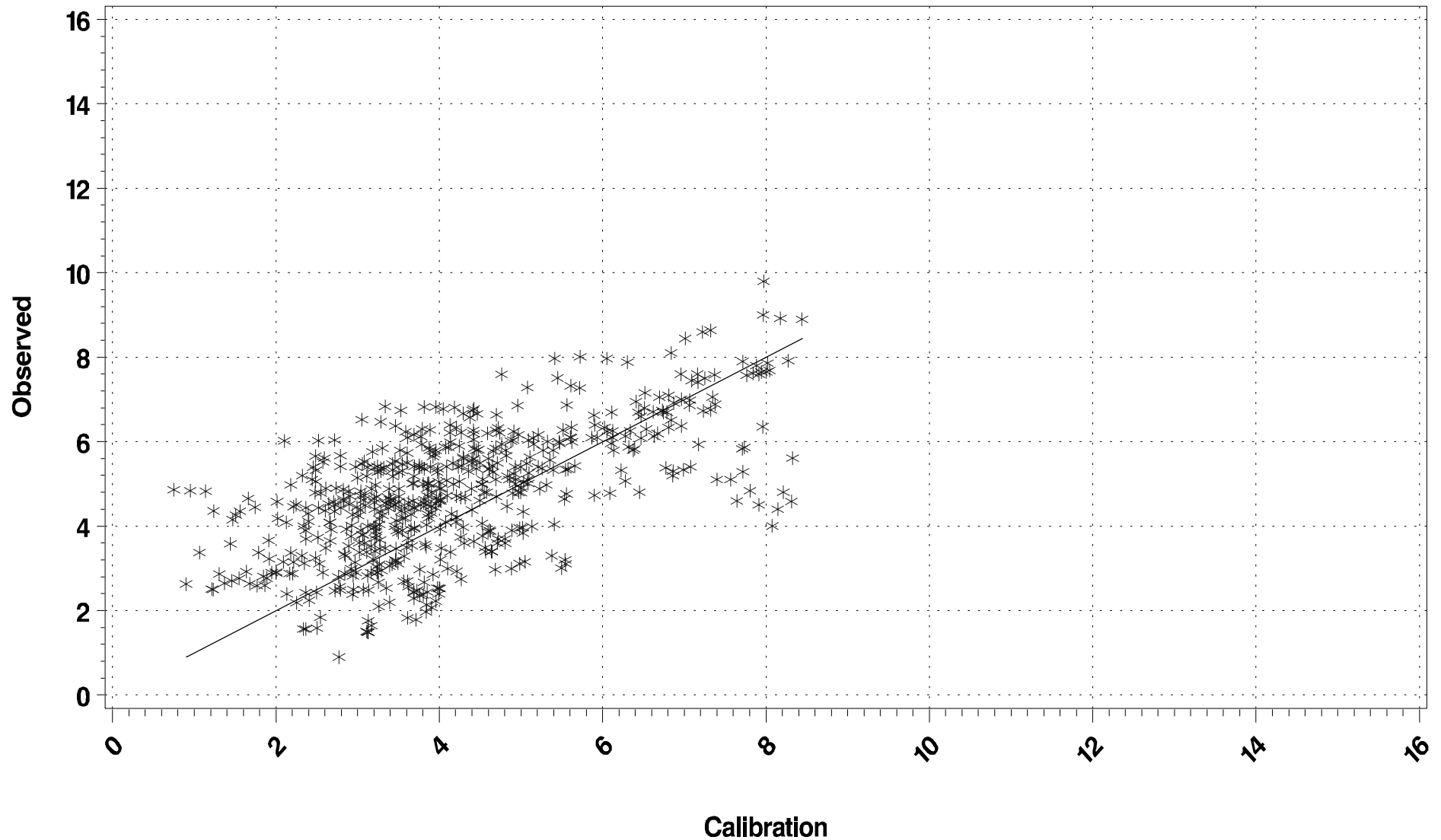
DEEP WATER **Dissolved Oxygen**
Segment YRKPH (York Polyhaline)
Oct 1 - April 30

Regression of Calibration vs. Observations[1]

Using the 609 pairs of predictions and observed data, the **slope** is 0.6009 and the **intercept** is 3.8377. The **R-Squared** value for this regression is 0.6632.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 609 pairs of predictions and observed data, the **slope** is 0.5100 and the **intercept** is 1.1024. The **R-Squared** value for this regression is 0.6287.

Statistics (units in mg/l)

Mean observed 8.8256	Mean predicted 8.3008
Min. observed 4.8000	Min. predicted 3.0220
Max. observed 13.0850	Max. predicted 13.3500
Std. Dev. Observed 1.8795	Std. Dev. predicted 2.5472
Median observed 8.7220	Median predicted 8.5800
90th Percentile observed 11.3800	90th Percentile predicted 11.3800
10th Percentile observed 6.1000	10th Percentile predicted 4.5230

Differences (predicted – observed)

Mean difference -0.5248 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 609
Number of Predicted Violations 0
Number of Observed Violations 6

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment YRKPH Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
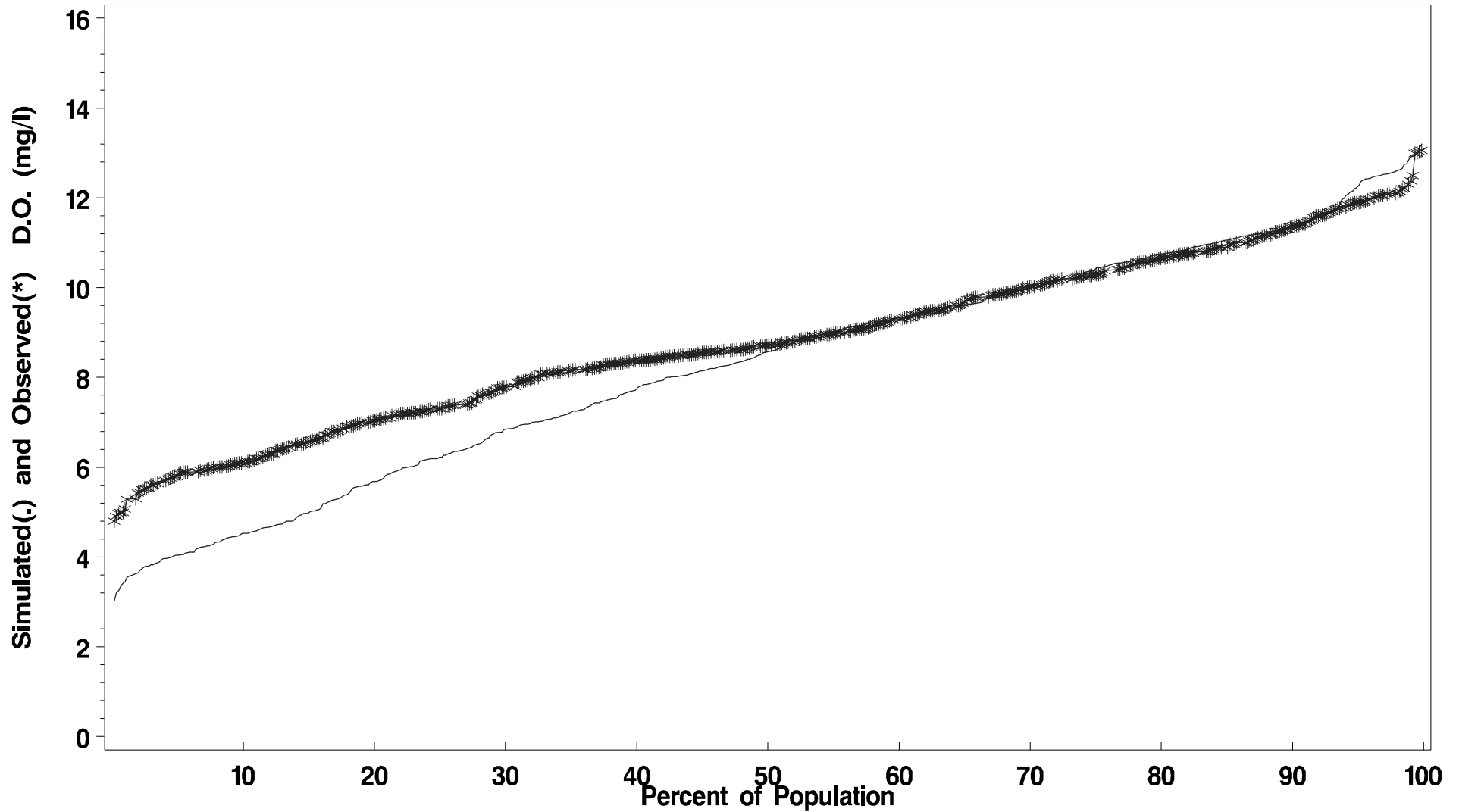
Deep Water Dissolved Oxygen (mg/l)
Segment YRKPH Season: Oct 1 – April 30
(Scatter Plot)
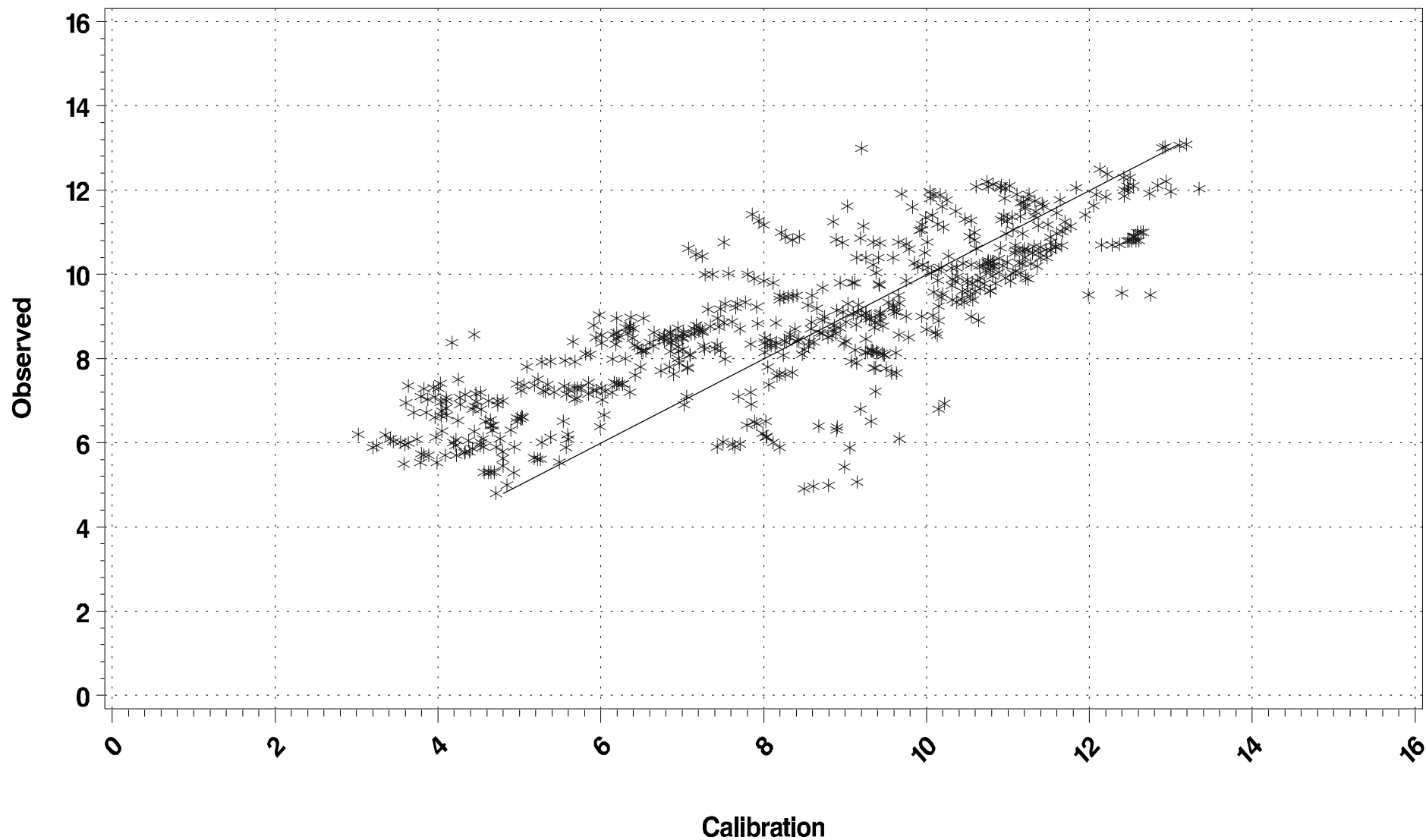
POLYHALINE **Chlorophyll**
Segment YRKPH (York Polyhaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 115 pairs of predictions and observed data, the **slope** is 0.0929 and the **intercept** is 6.2525. The **R-Squared** value for this regression is 0.0057.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 115 pairs of predictions and observed data, the **slope** is 0.1338 and the **intercept** is 0.7370. The **R-Squared** value for this regression is 0.0065.

Statistics (units in μg/l)

Mean observed 7.2841   Mean predicted 11.1023
Min. observed 2.0000   Min. predicted 5.1797
Max. observed 20.8622   Max. predicted 20.4910
Std. Dev. Observed 3.6680   Std. Dev. predicted 2.9908
Median observed 6.4000   Median predicted 10.7780
95th Percentile observed 15.3258   95th Percentile predicted 16.1780
10th Percentile observed 3.4547   10th Percentile predicted 7.3282

Differences (predicted – observed)

Mean difference 3.8182 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
## Segment YRKPH   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
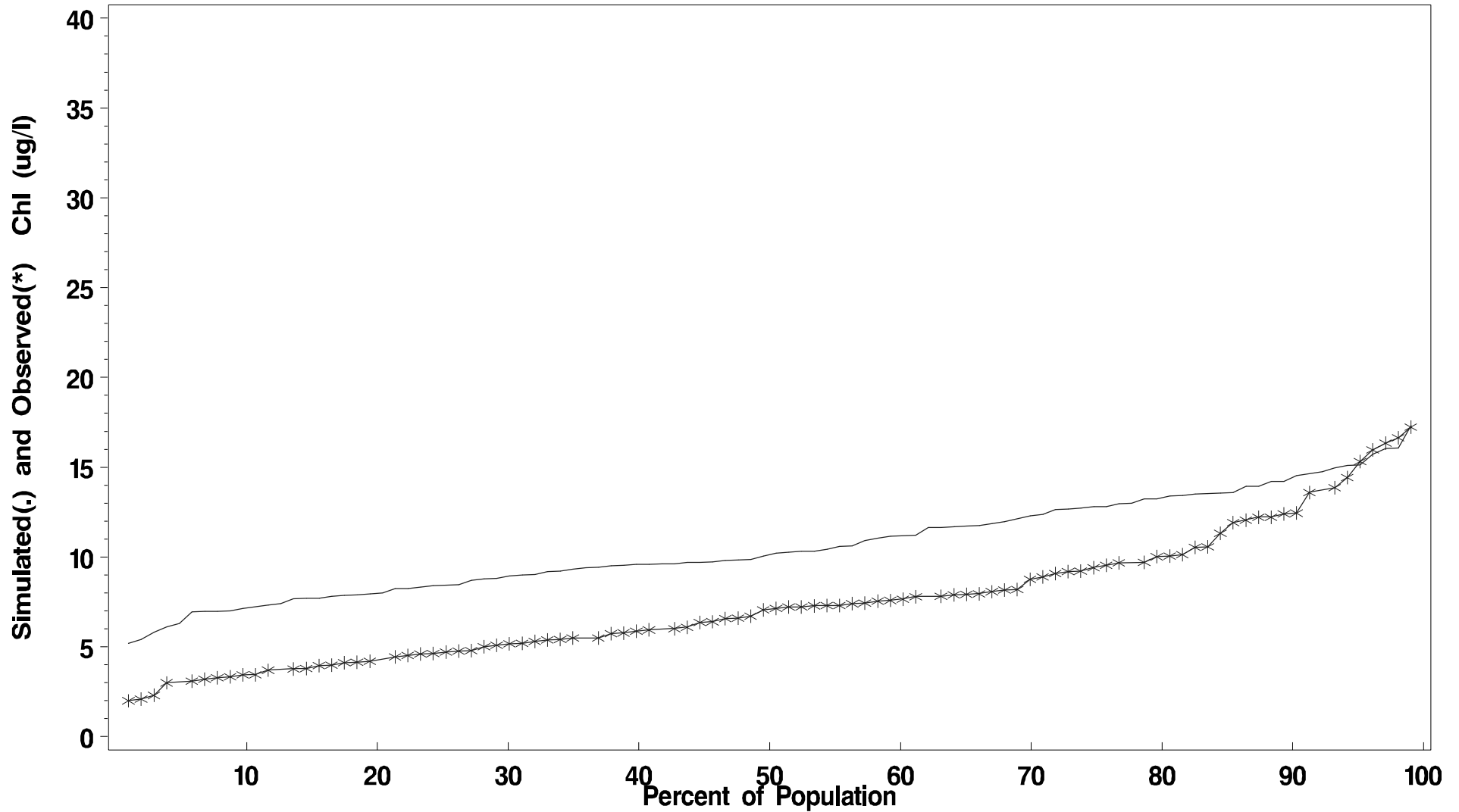
Chlorophyll Concentration (ug/l)
Segment YRKPH   Season: July 1 – Sept 30
(Scatter Plot)
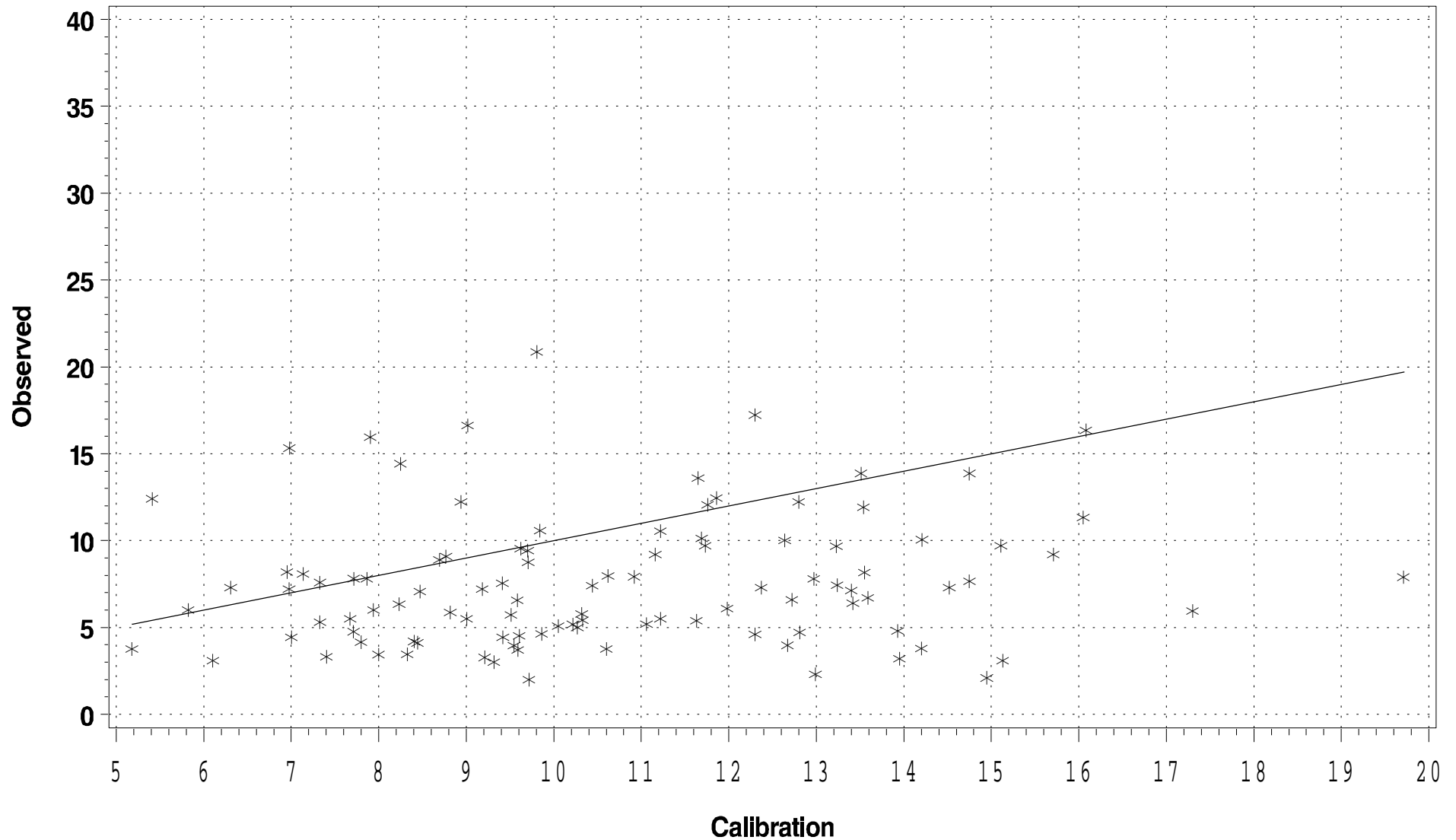
POLYHALINE **Chlorophyll**
Segment YRKPH (York Polyhaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 110 pairs of predictions and observed data, the **slope** is 0.7212 and the
intercept is -3.4210. The **R-Squared** value for this regression is 0.3550.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 110 pairs of predictions and observed data, the **slope** is 0.8204 and the
intercept is -0.0585. The **R-Squared** value for this regression is 0.2283.

Statistics (units in μg/l)

Mean observed 14.0702   Mean predicted 24.2520
Min. observed 1.6000   Min. predicted 9.0842
Max. observed 105.9000   Max. predicted 70.2540
Std. Dev. Observed 14.1449   Std. Dev. predicted 11.6852
Median observed 10.1798   Median predicted 21.5250
95th Percentile observed 39.2000   95th Percentile predicted 44.7240
10th Percentile observed 3.4410   10th Percentile predicted 13.3420

Differences (predicted – observed)

Mean difference 10.1818 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment YRKPH   Season: March 1 — May 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
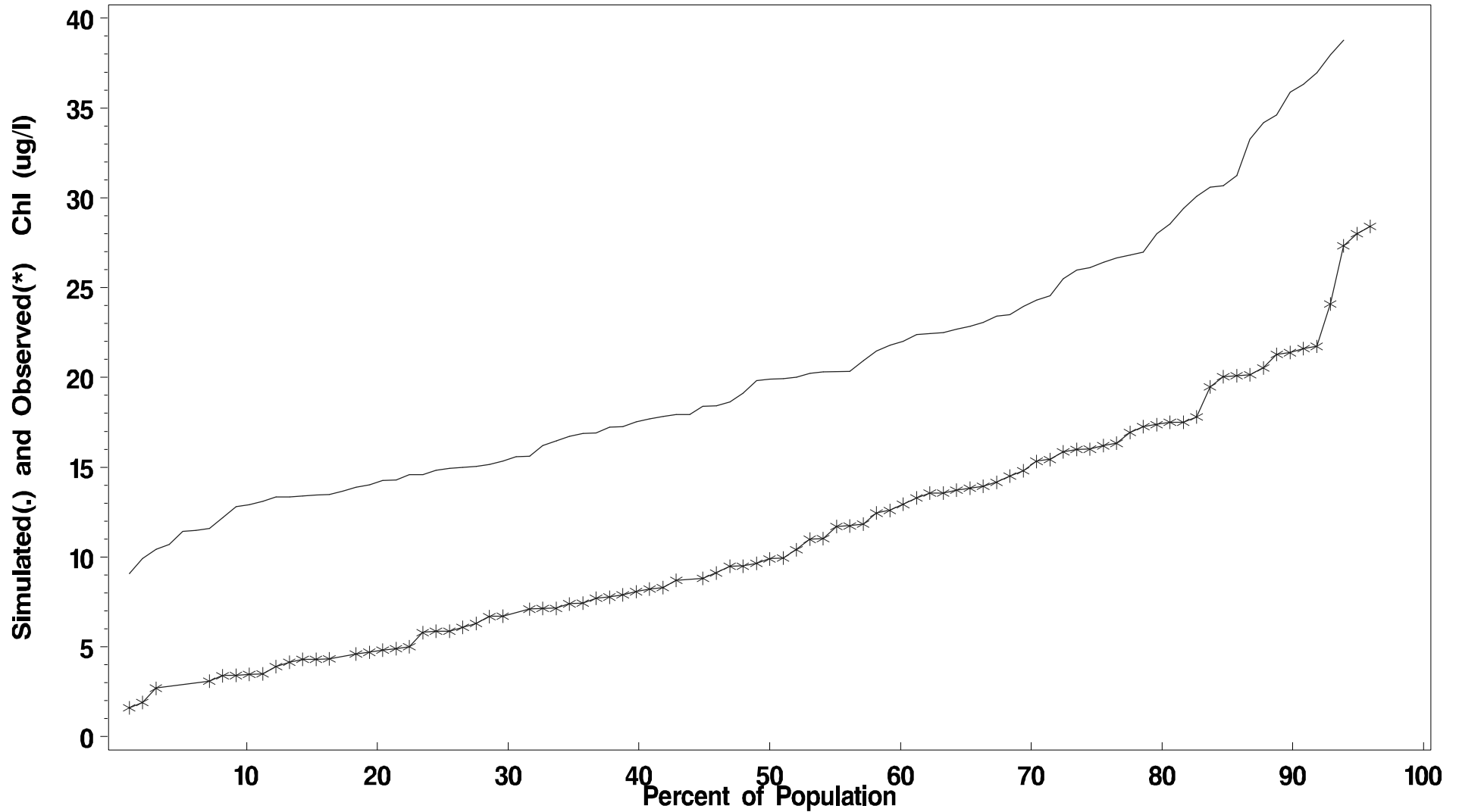
Chlorophyll Concentration (ug/l)
Segment YRKPH   Season: March 1 – May 30
(Scatter Plot)
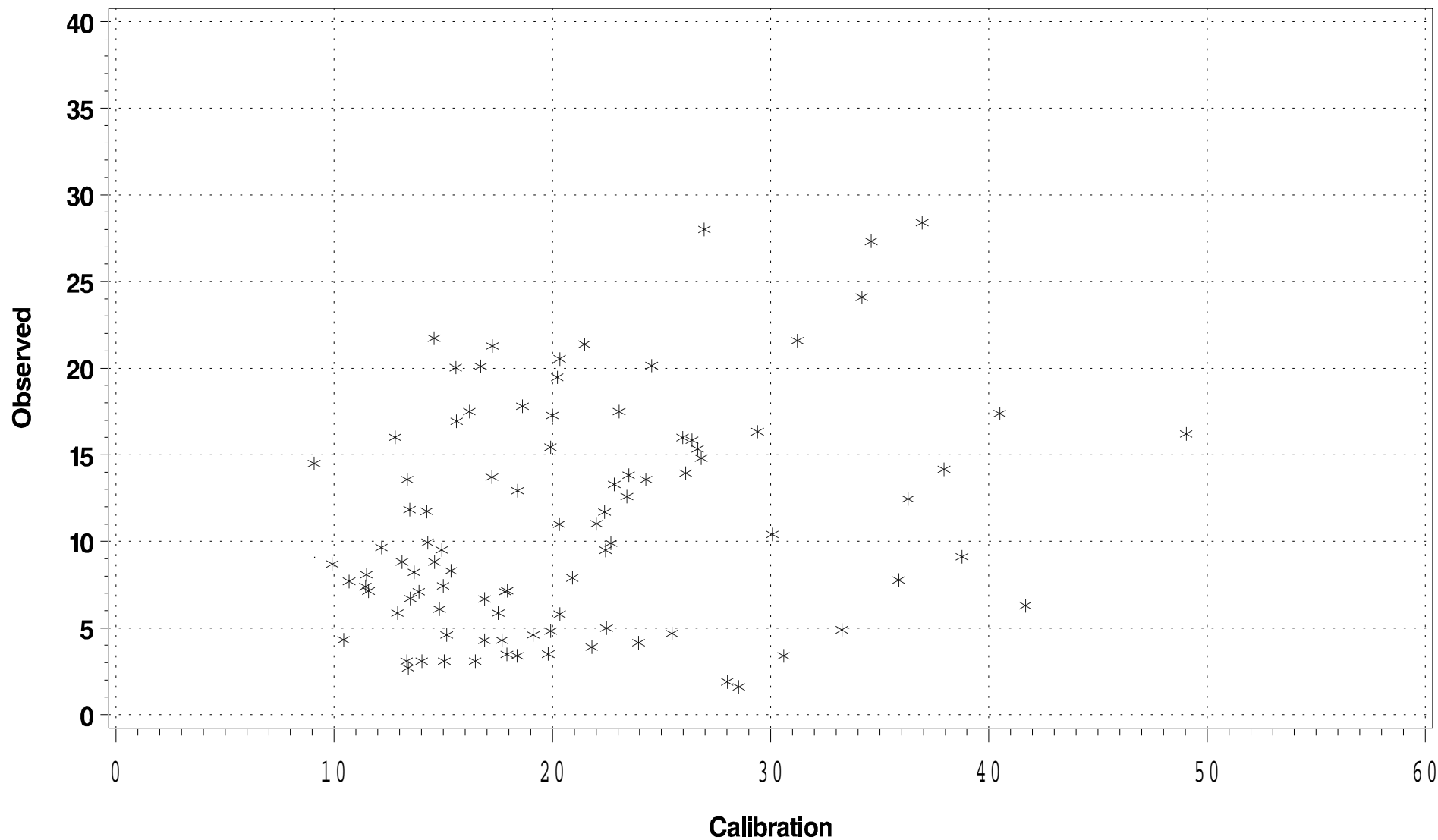
POLYHALINE **Light Attenuation**
Segment YRKPH (York Polyhaline)
March-May Sept-Nov

Regression of Calibration vs. Observations[1]

Using the 212 pairs of predictions and observed data, the **slope** is 0.9671 and the **intercept** is -0.1830. The **R-Squared** value for this regression is 0.4433.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 212 pairs of predictions and observed data, the **slope** is 0.9861 and the **intercept** is -0.0448. The **R-Squared** value for this regression is 0.4505.

Statistics (units in 1/m)

Mean observed 1.3037	Mean predicted 1.5372
Min. observed 0.4333	Min. predicted 0.7668
Max. observed 4.3333	Max. predicted 3.2246
Std. Dev. Observed 0.6589	Std. Dev. predicted 0.4536
Median observed 1.0833	Median predicted 1.4807
90th Percentile observed 2.1667	90th Percentile predicted 2.1665
10th Percentile observed 0.6500	10th Percentile predicted 1.0045

Differences (predicted – observed)

Mean difference 0.2335 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment YRKPH   Season: March – May Sept – Nov
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment YRKPH   Season: March–May Sept–Nov
(Scatter Plot)

Chesapeake Bay Standard Segment PIAMH

Location Map of
Segment PIAMH within
the Chesapeake Bay Model Grid

LE3.7

N
W E
S

0 0.5 1 2 3 4
Miles

Chesapeake Bay Program
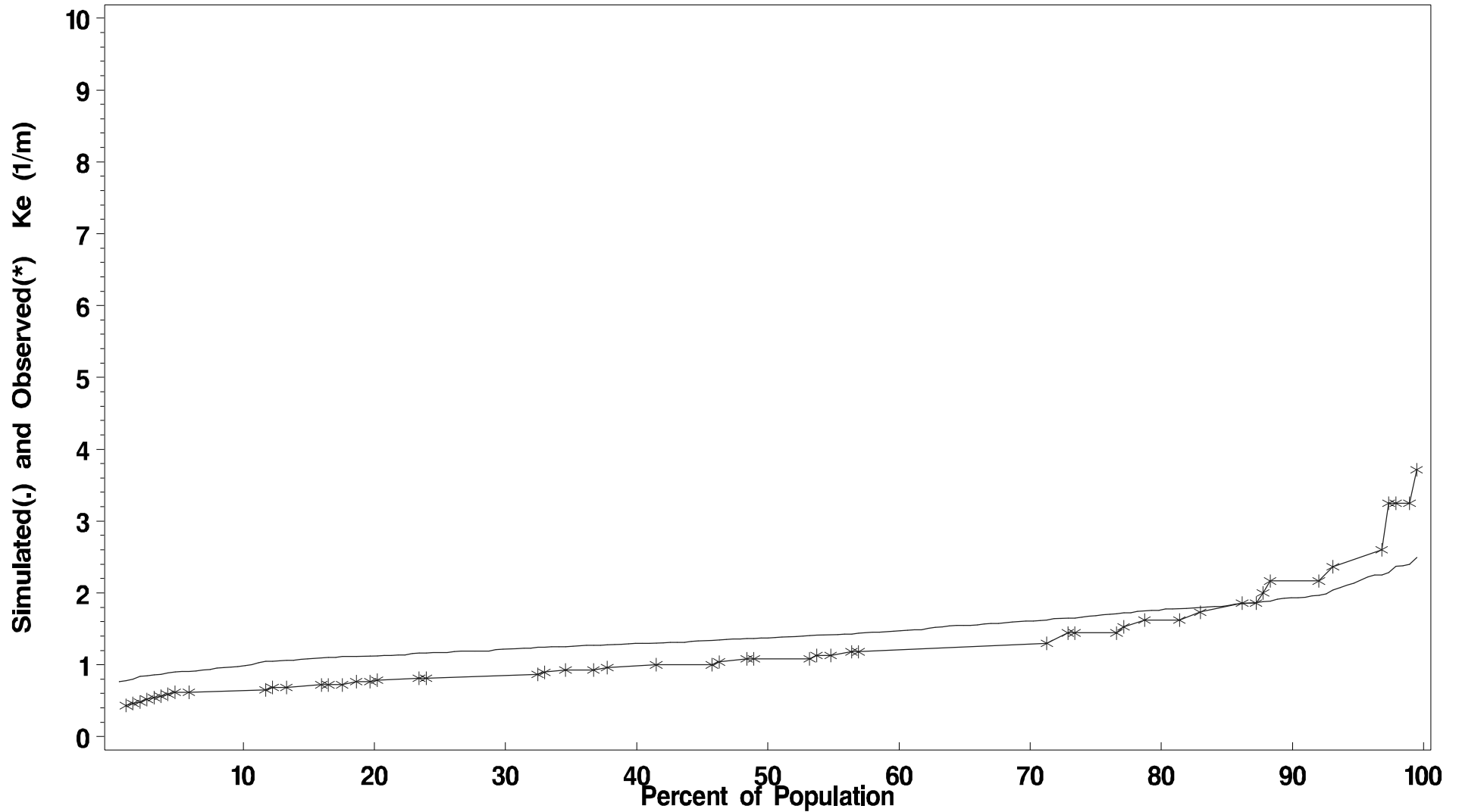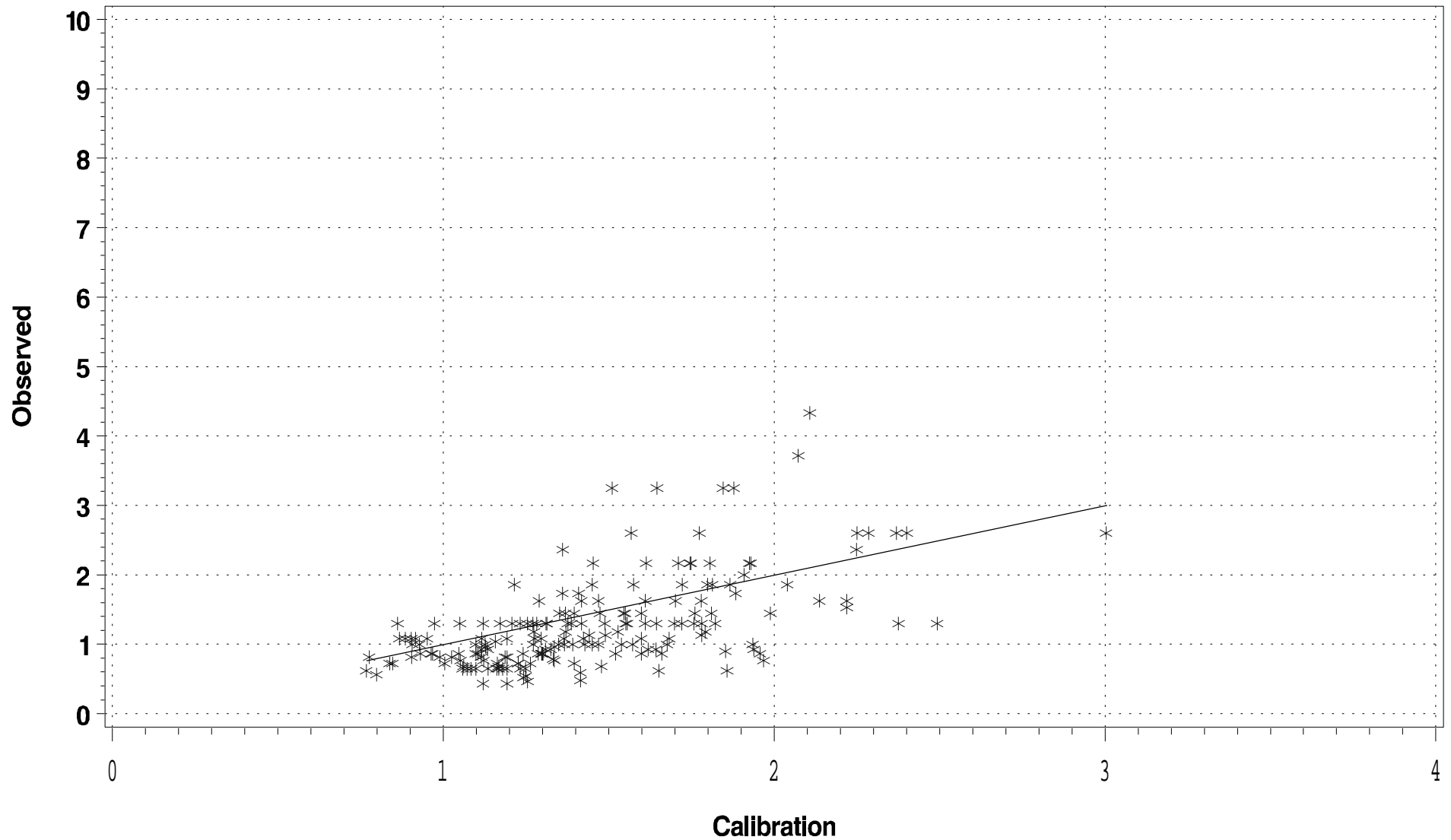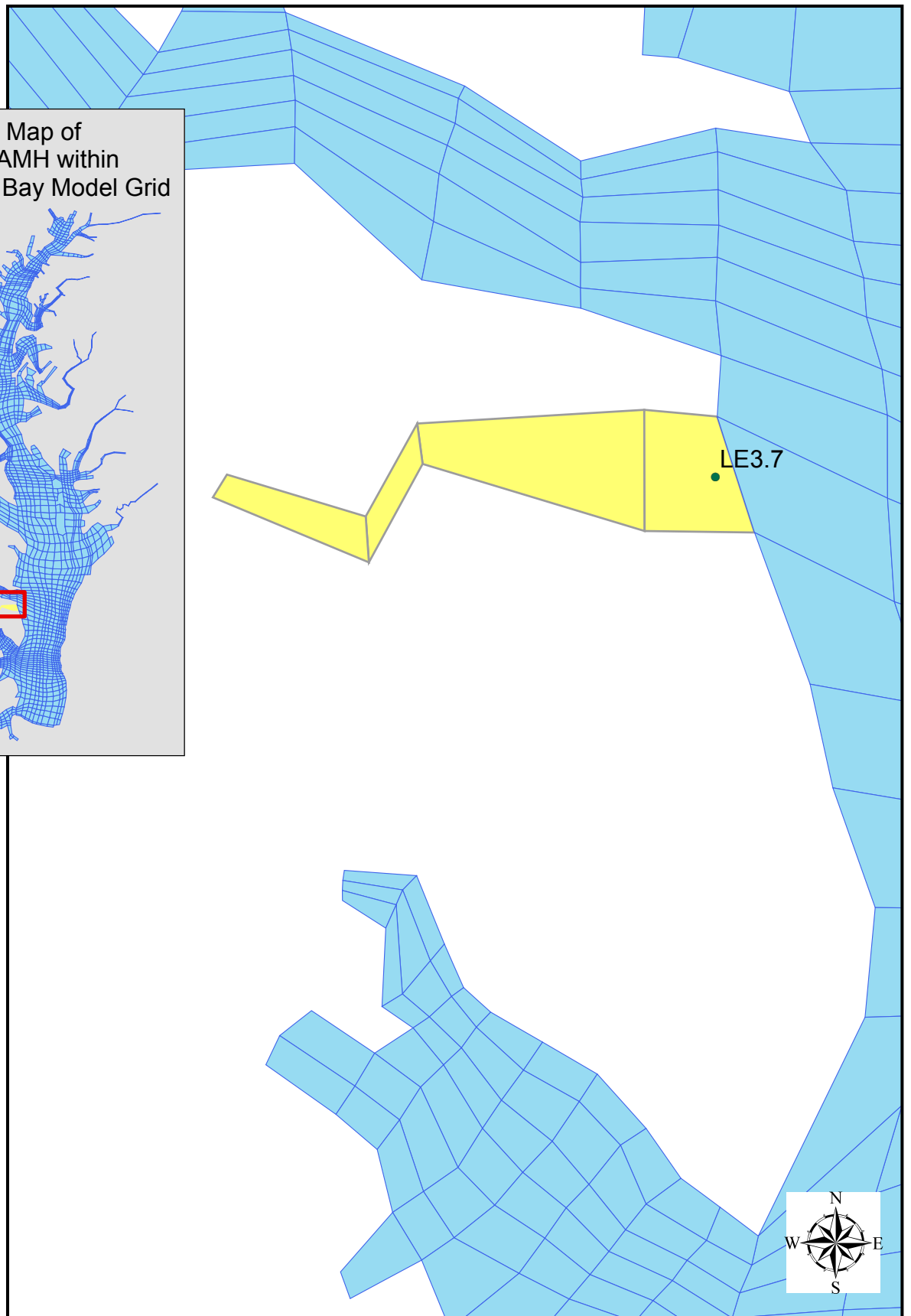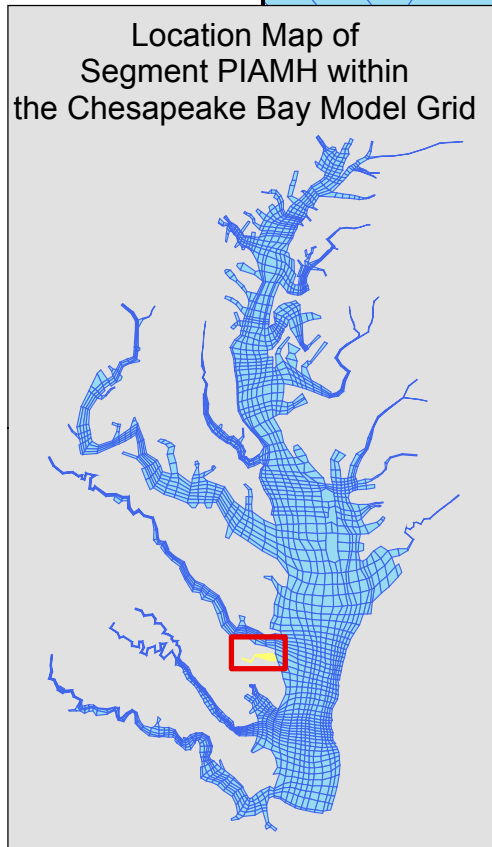
OPEN WATER **Dissolved Oxygen**
Segment PIAMH (Piankatank Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 36 pairs of predictions and observed data, the **slope** is 0.6388 and the **intercept** is 3.5376. The **R-Squared** value for this regression is 0.7263.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 36 pairs of predictions and observed data, the **slope** is 0.6068 and the **intercept** is 0.4060. The **R-Squared** value for this regression is 0.6636.

Statistics (units in mg/l)

Mean observed 9.1307   Mean predicted 8.7559
Min. observed 6.59   Min. predicted 5.097
Max. observed 12.25   Max. predicted 14.68
Std. Dev. Observed 1.7447   Std. Dev. predicted 2.3277
Median observed 8.7225   Median predicted 8.3728
90th Percentile observed 11.6150   90th Percentile predicted 12.1770
10th Percentile observed 6.7600   10th Percentile predicted 6.1074


Differences (predicted – observed)

Mean difference -0.3748 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 36
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
Segment PIAMH   Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
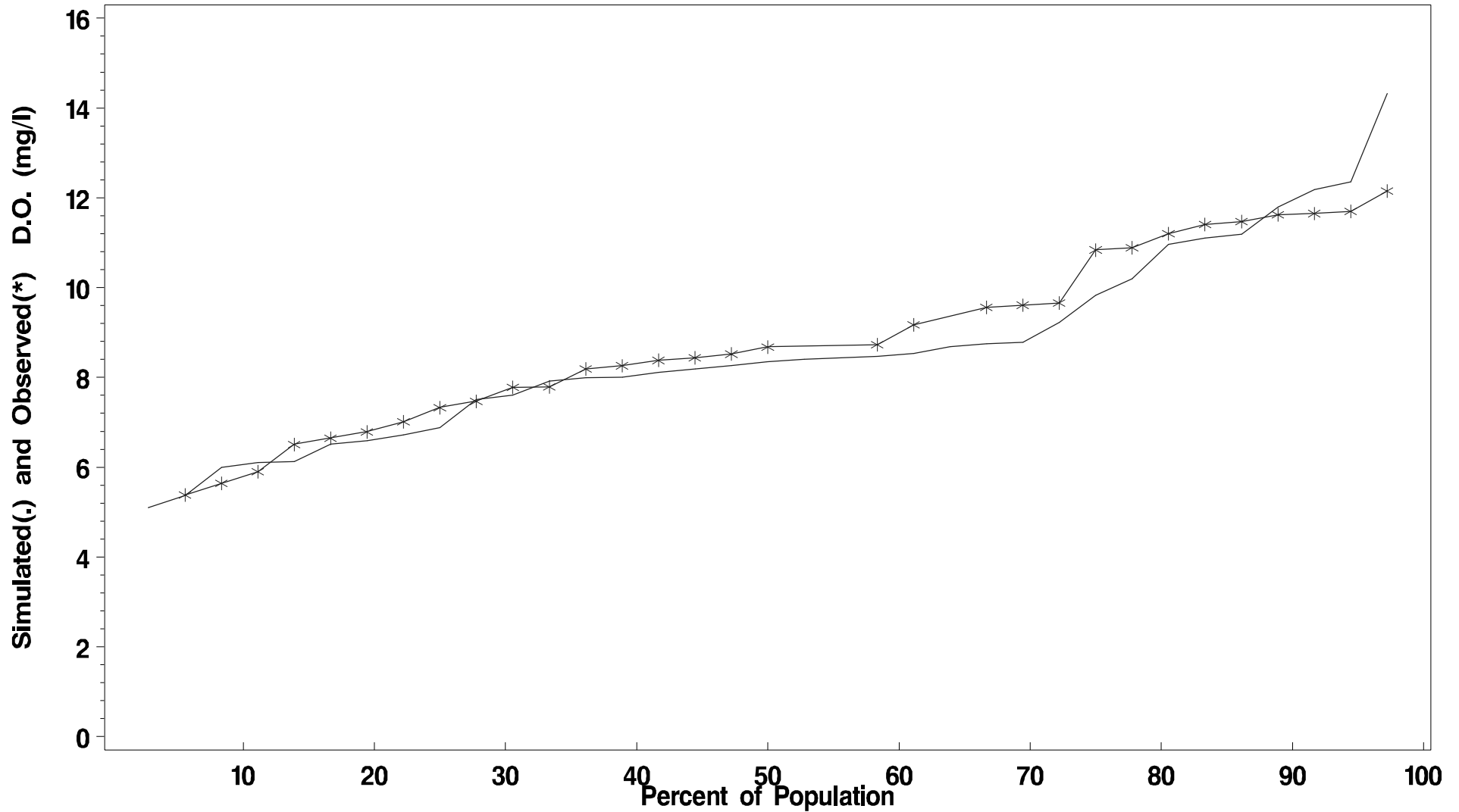
Open Water Dissolved Oxygen (mg/l)
Segment PIAMH Season: Jan 1 – Dec 31
(Scatter Plot)
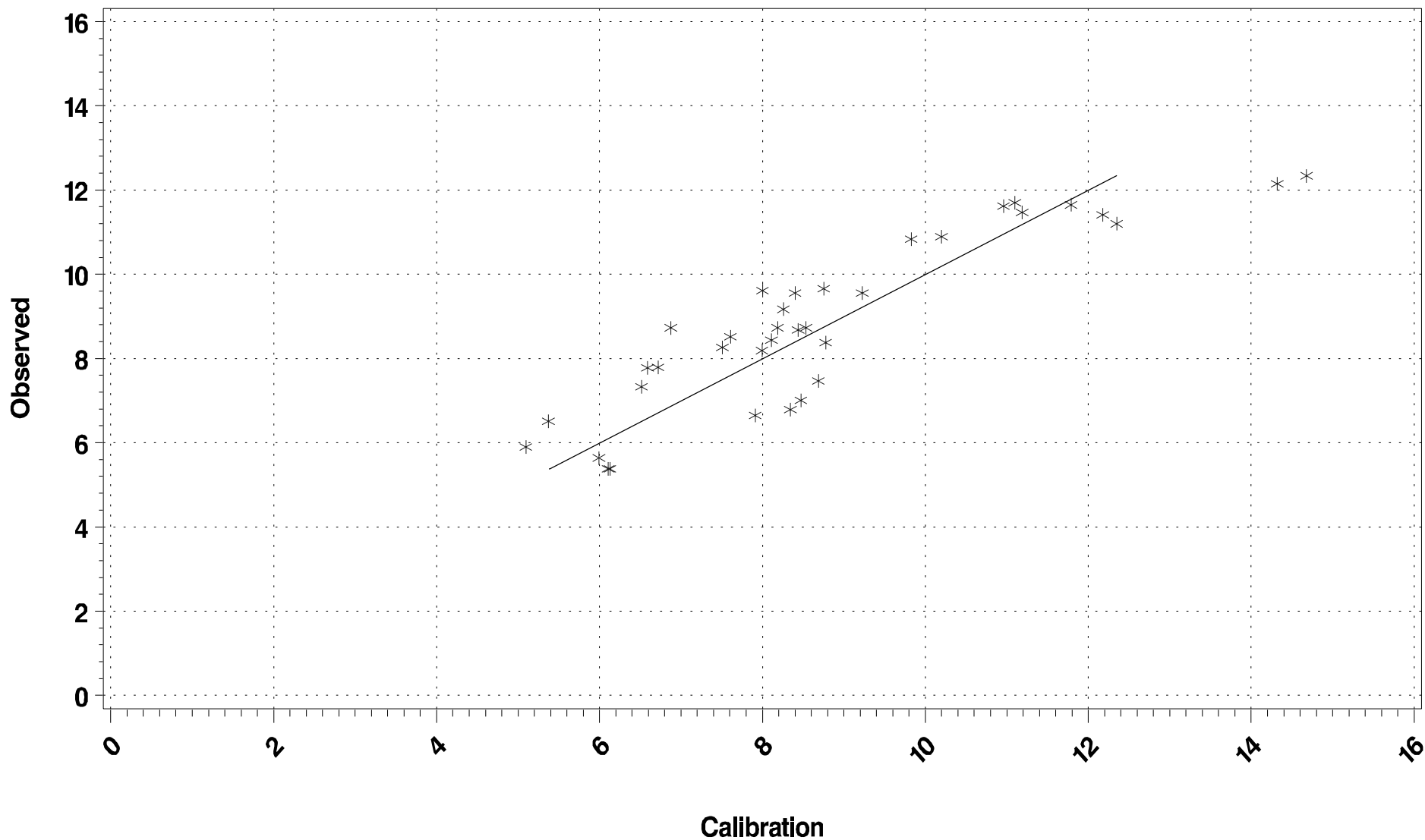
MESOHALINE **Chlorophyll**
Segment PIAMH (Piankatank Mesohaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 6 pairs of predictions and observed data, the **slope** is 2.0058 and the **intercept** is -5.3751. The **R-Squared** value for this regression is 0.2507.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 6 pairs of predictions and observed data, the **slope** is 1.5816 and the **intercept** is -0.4656. The **R-Squared** value for this regression is 0.2959.

Statistics (units in μg/l)

Mean observed 10.3056   Mean predicted 7.8176
Min. observed 6.1517   Min. predicted 6.4702
Max. observed 18.5992   Max. predicted 9.7207
Std. Dev. Observed 4.7842   Std. Dev. predicted 1.1942
Median observed 8.5821   Median predicted 7.8074
95th Percentile observed 18.5992   95th Percentile predicted 9.7207
10th Percentile observed 6.1517   10th Percentile predicted 6.4702


Differences (predicted – observed)

Mean difference -2.4880 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
## Segment PIAMH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment PIAMH Season: July 1 – Sept 30
(Scatter Plot)

<div align="center">
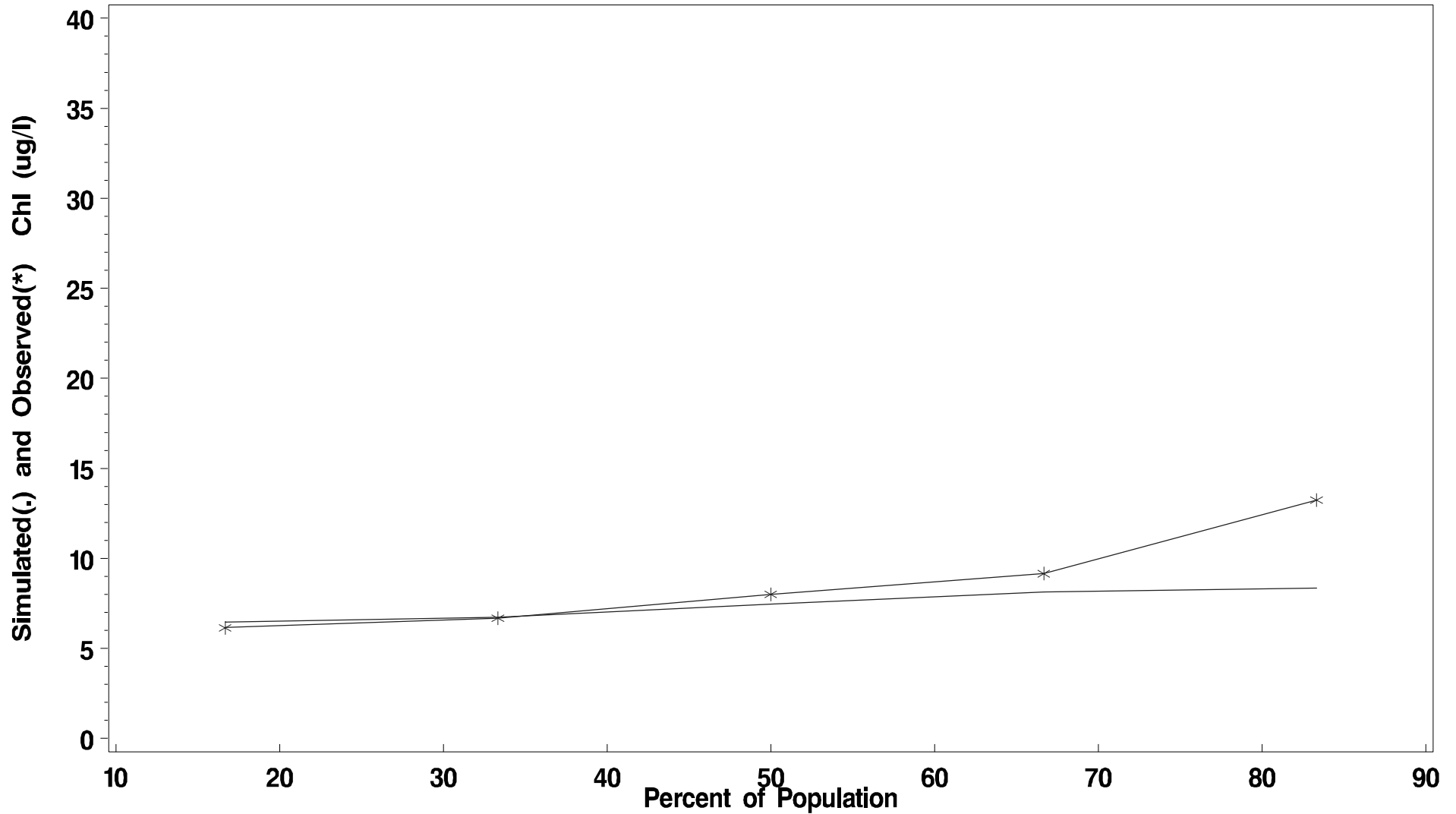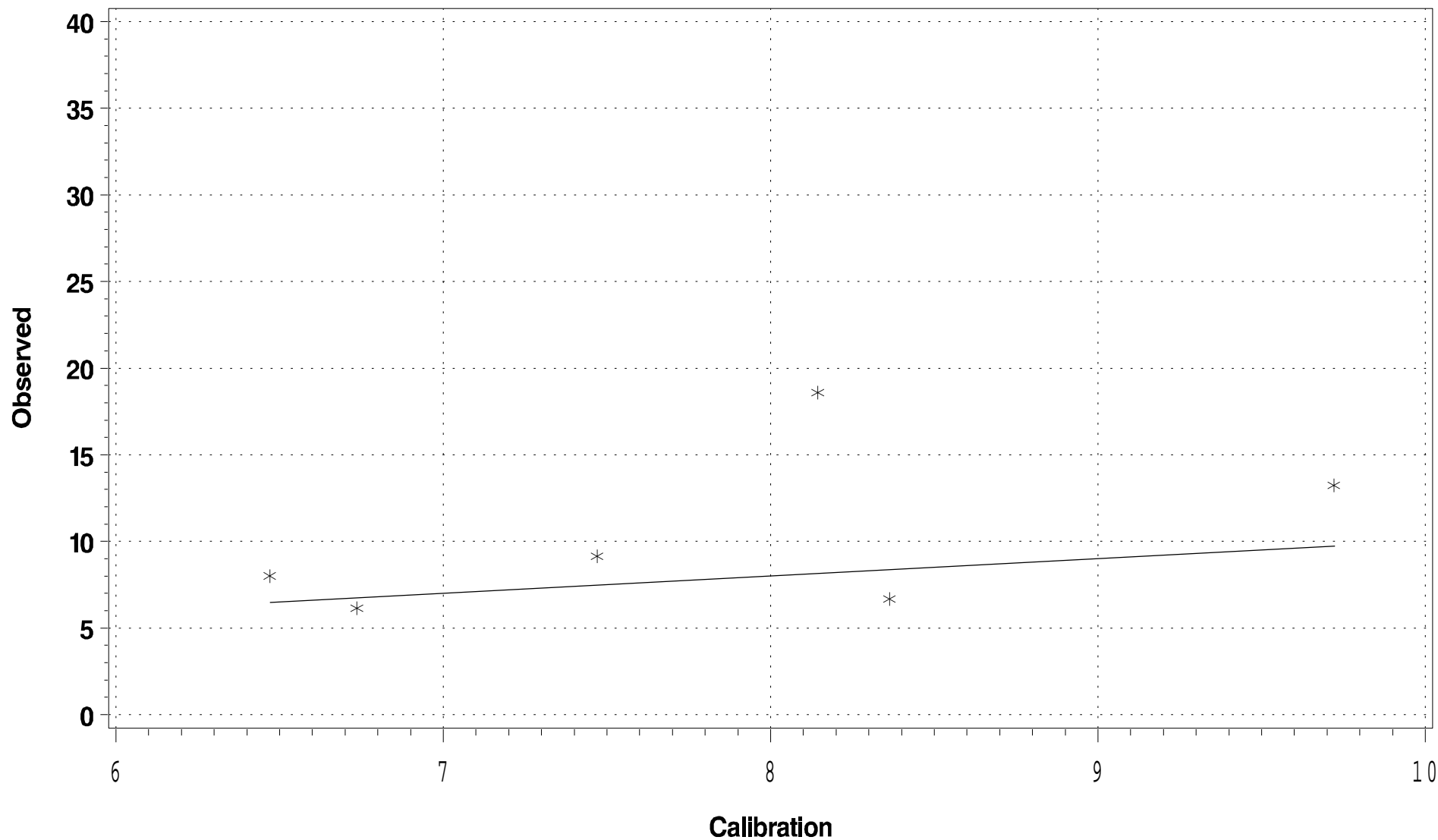
MESOHALINE **Chlorophyll**
Segment PIAMH (Piankatank Mesohaline)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 5 pairs of predictions and observed data, the **slope** is 1.0247 and the **intercept** is -4.3109. The **R-Squared** value for this regression is 0.4884.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 5 pairs of predictions and observed data, the **slope** is 1.4711 and the **intercept** is -0.7094. The **R-Squared** value for this regression is 0.5142.

Statistics (units in µg/l)

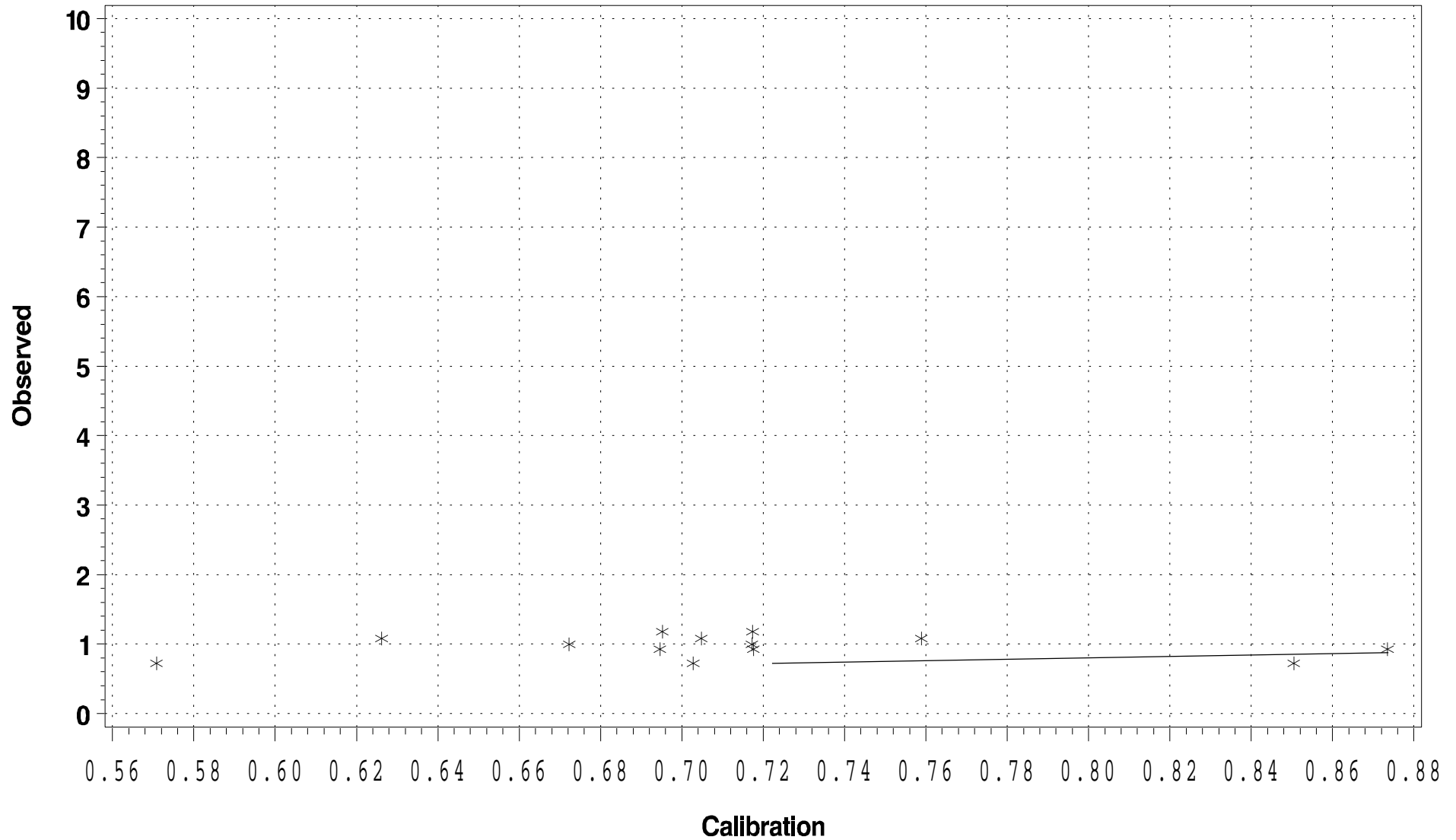|	
Mean observed 8.8537	Mean predicted 12.8477
Min. observed 5.0837	Min. predicted 9.2845
Max. observed 14.3059	Max. predicted 17.5620
Std. Dev. Observed 4.5677	Std. Dev. predicted 3.1152
Median observed 6.1517	Median predicted 13.1430
95th Percentile observed 14.3059	95th Percentile predicted 17.5620
10th Percentile observed 5.0837	10th Percentile predicted 9.2845

Differences (predicted – observed)

Mean difference 3.9940 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment PIAMH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
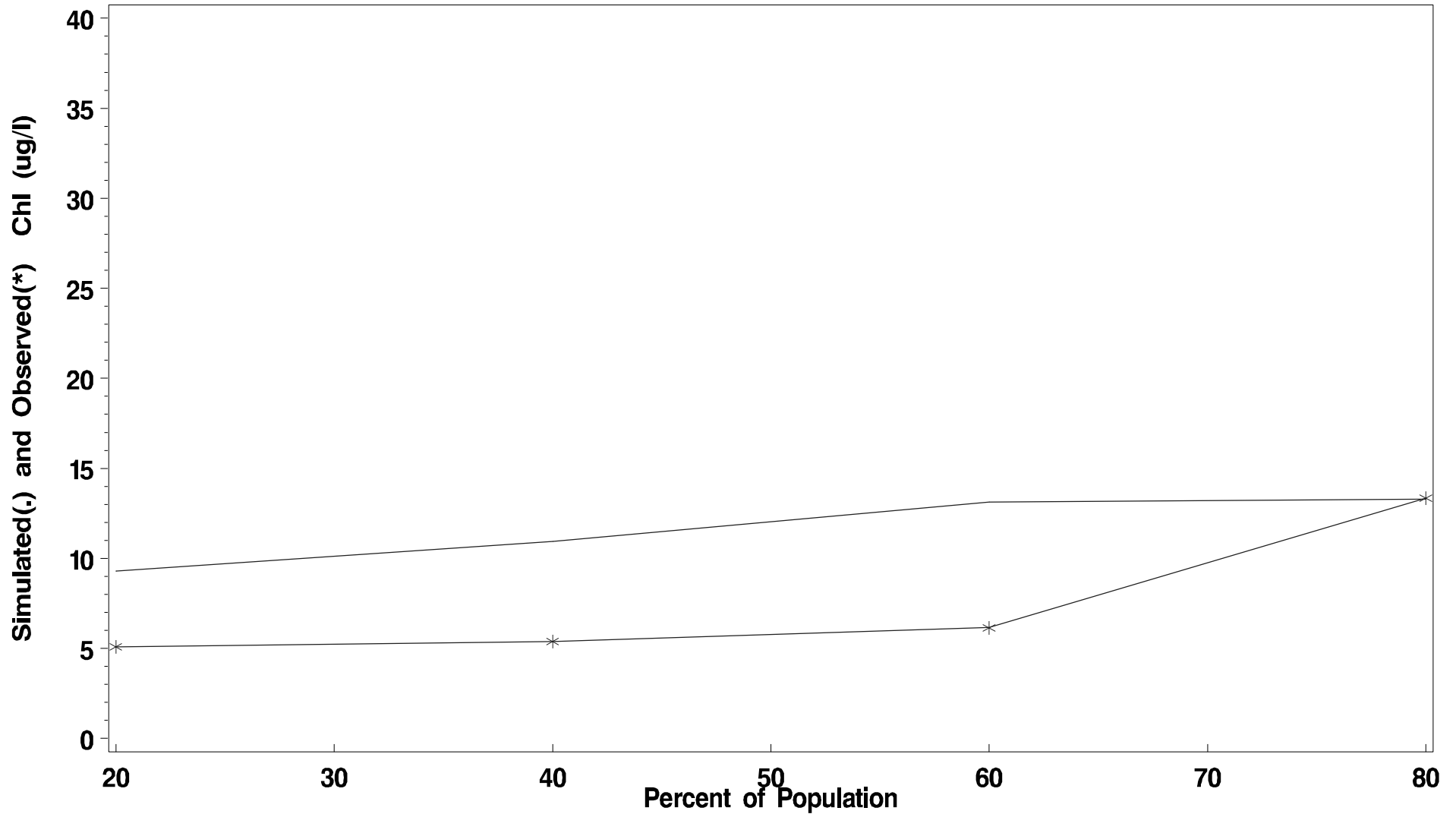
Chlorophyll Concentration (ug/l)
Segment PIAMH Season: March 1 – May 30
(Scatter Plot)
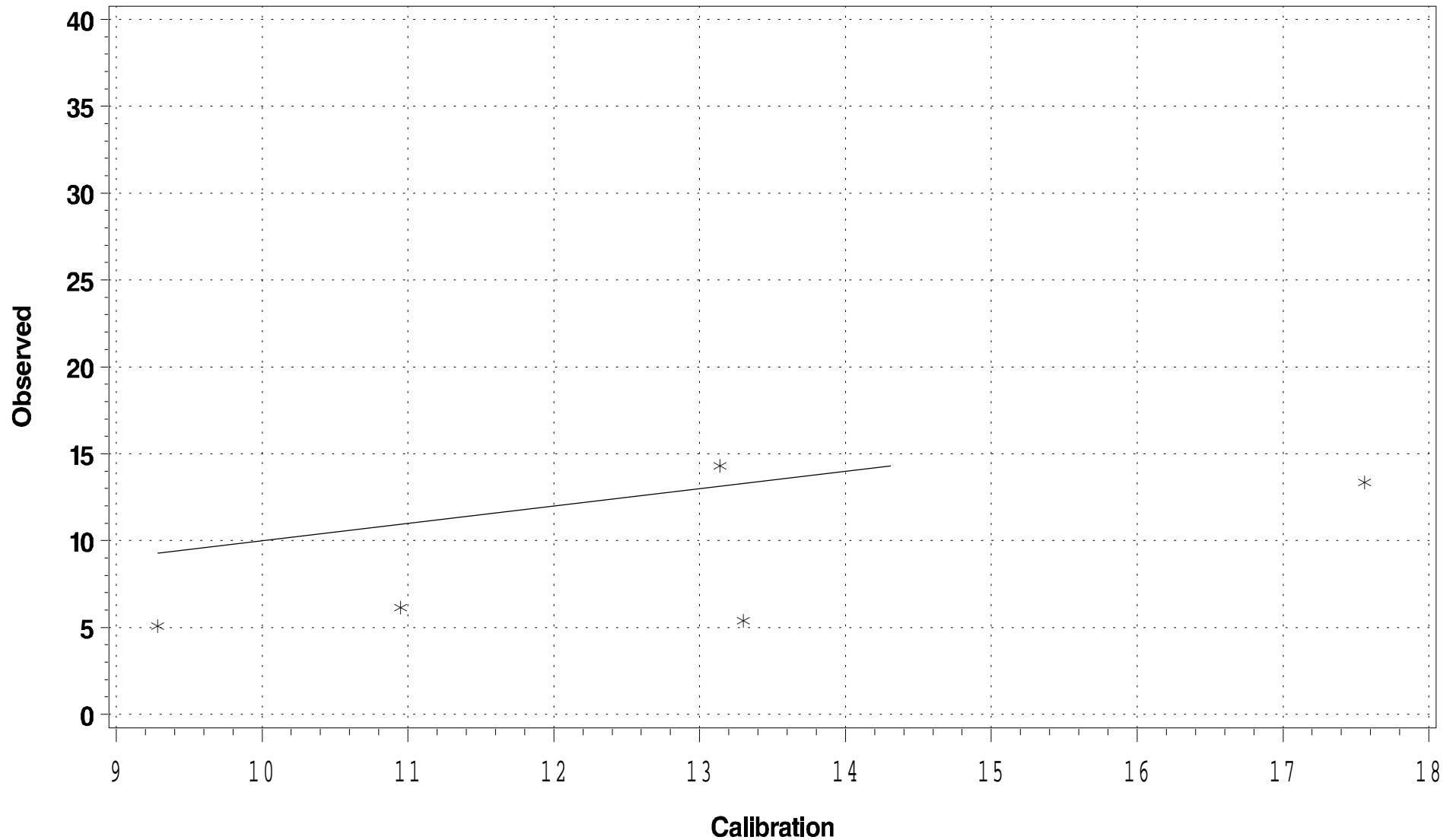
<p style="text-align: center;">MESOHALINE **Light Attenuation**
Segment PIAMH (Piankatank Mesohaline)
April 1 - Oct 30</p>

Regression of Calibration vs. Observations[1]

Using the 13 pairs of predictions and observed data, the **slope** is -0.1529 and the **intercept** is 1.0760. The **R-Squared** value for this regression is 0.0056.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 13 pairs of predictions and observed data, the **slope** is -0.0953 and the **intercept** is 0.3146. The **R-Squared** value for this regression is 0.0027.

Statistics (units in 1/m)

Mean observed 0.9666	Mean predicted 0.7155
Min. observed 0.7222	Min. predicted 0.5708
Max. observed 1.1818	Max. predicted 0.8735
Std. Dev. Observed 0.1631	Std. Dev. predicted 0.0801
Median observed 1.0000	Median predicted 0.7048
90th Percentile observed 1.1818	90th Percentile predicted 0.8505
10th Percentile observed 0.7222	10th Percentile predicted 0.6262

Differences (predicted – observed)

Mean difference -0.2511 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment PIAMH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment PIAMH   Season: April 1 − Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment MOBPH

Location Map of
Segment MOBPH within
the Chesapeake Bay Model Grid

WE4.1

WE4.2

WE4.3

WE4.4

N
W E
S

Chesapeake Bay Program

0 0.5 1   2   3   4
Miles
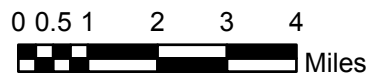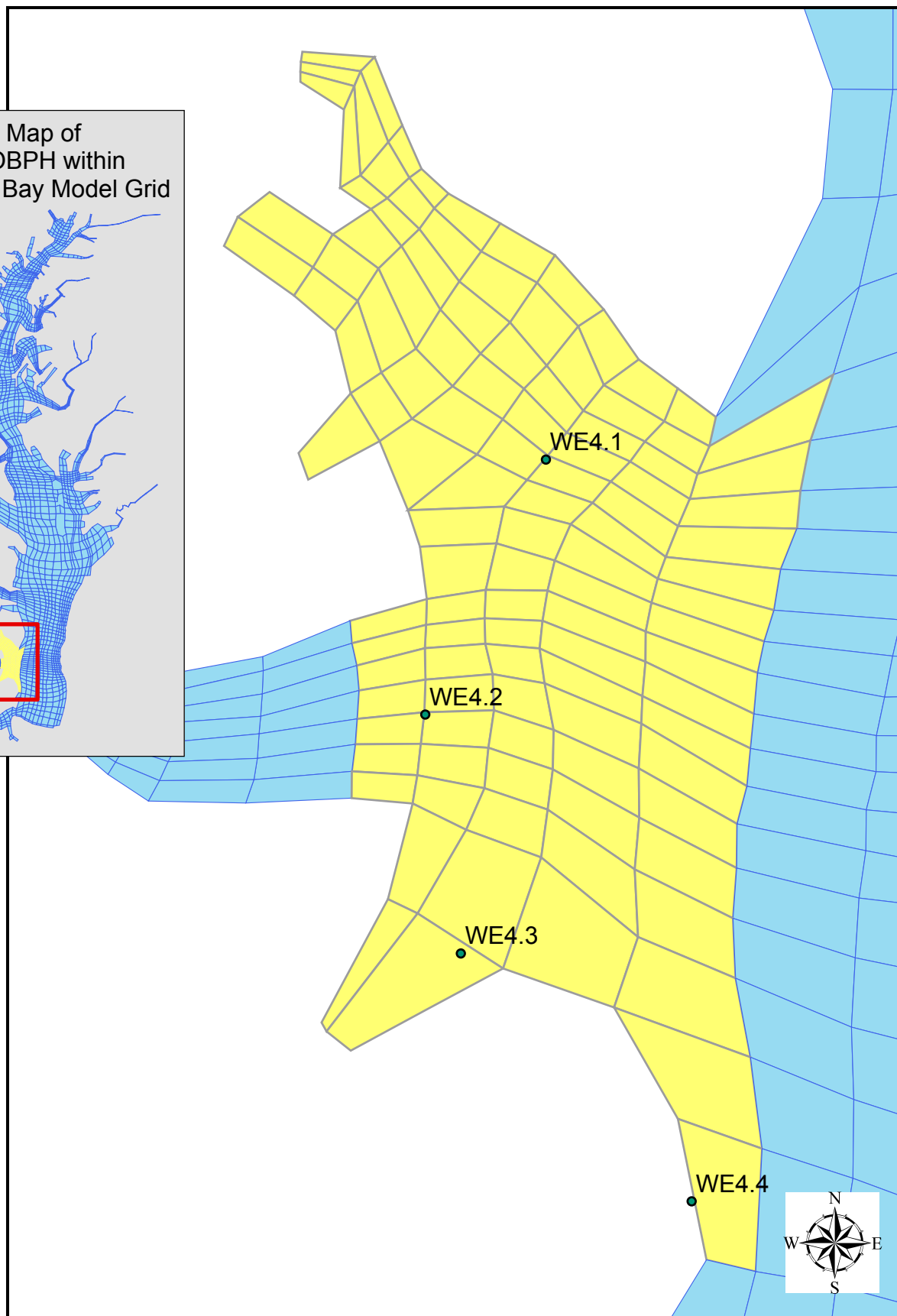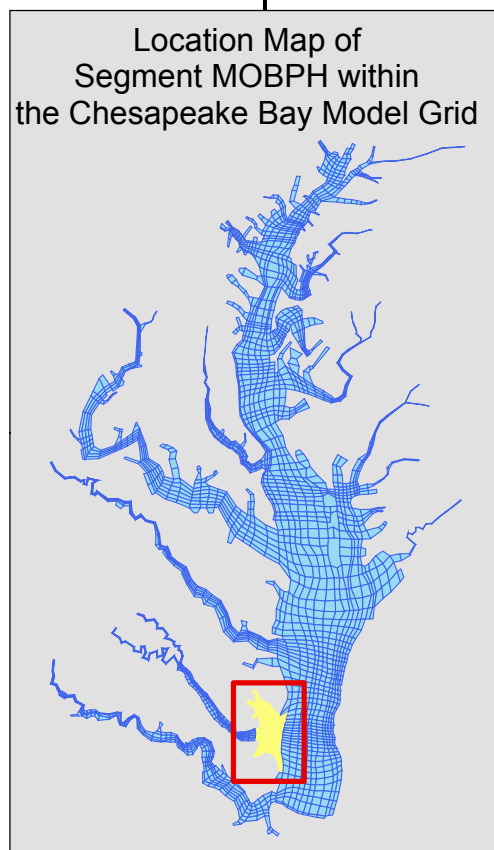
OPEN WATER **Dissolved Oxygen**
Segment MOBPH (Mobjack Bay Polyhaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 1839 pairs of predictions and observed data, the **slope** is 0.8069 and the
intercept is 1.7116. The **R-Squared** value for this regression is 0.7060.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1839 pairs of predictions and observed data, the **slope** is 0.7844 and the
intercept is 0.2123. The **R-Squared** value for this regression is 0.6507.

Statistics (units in mg/l)

Mean observed 8.3179   Mean predicted 8.1870
Min. observed 3.77   Min. predicted 2.476
Max. observed 14.0602   Max. predicted 15
Std. Dev. Observed 1.9920   Std. Dev. predicted 2.0743
Median observed 8.0000   Median predicted 7.6831
90th Percentile observed 11.3000   90th Percentile predicted 11.3290
10th Percentile observed 5.9800   10th Percentile predicted 5.9365

Differences (predicted – observed)

Mean difference -0.1309 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 3.5 mg/l.

Number of predicted and observed pairs 1839
Number of Predicted Violations 3
Number of Observed Violations 0

---

[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
# Segment MOBPH   Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment MOBPH   Season: Jan 1 – Dec 31
(Scatter Plot)

<div align="center">
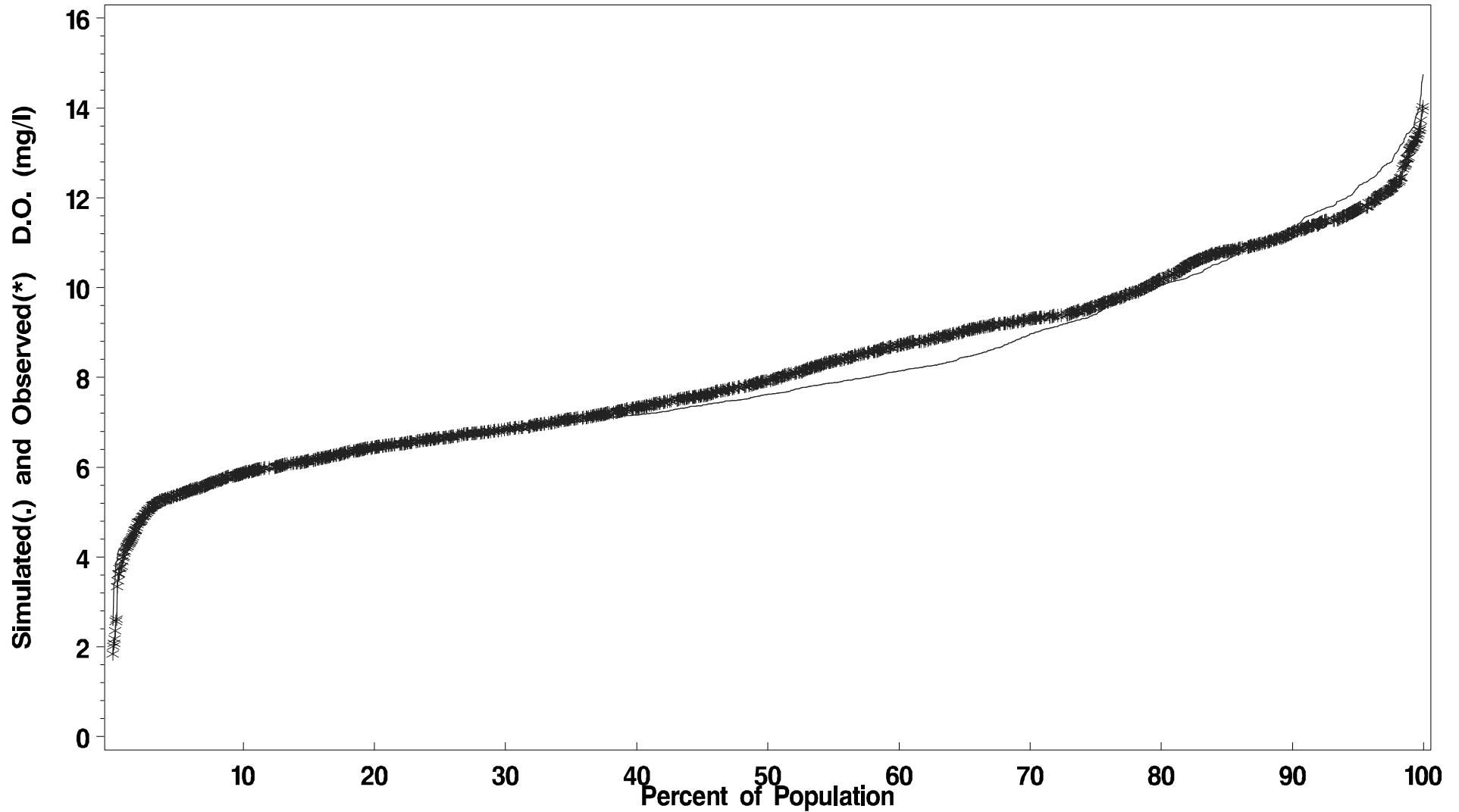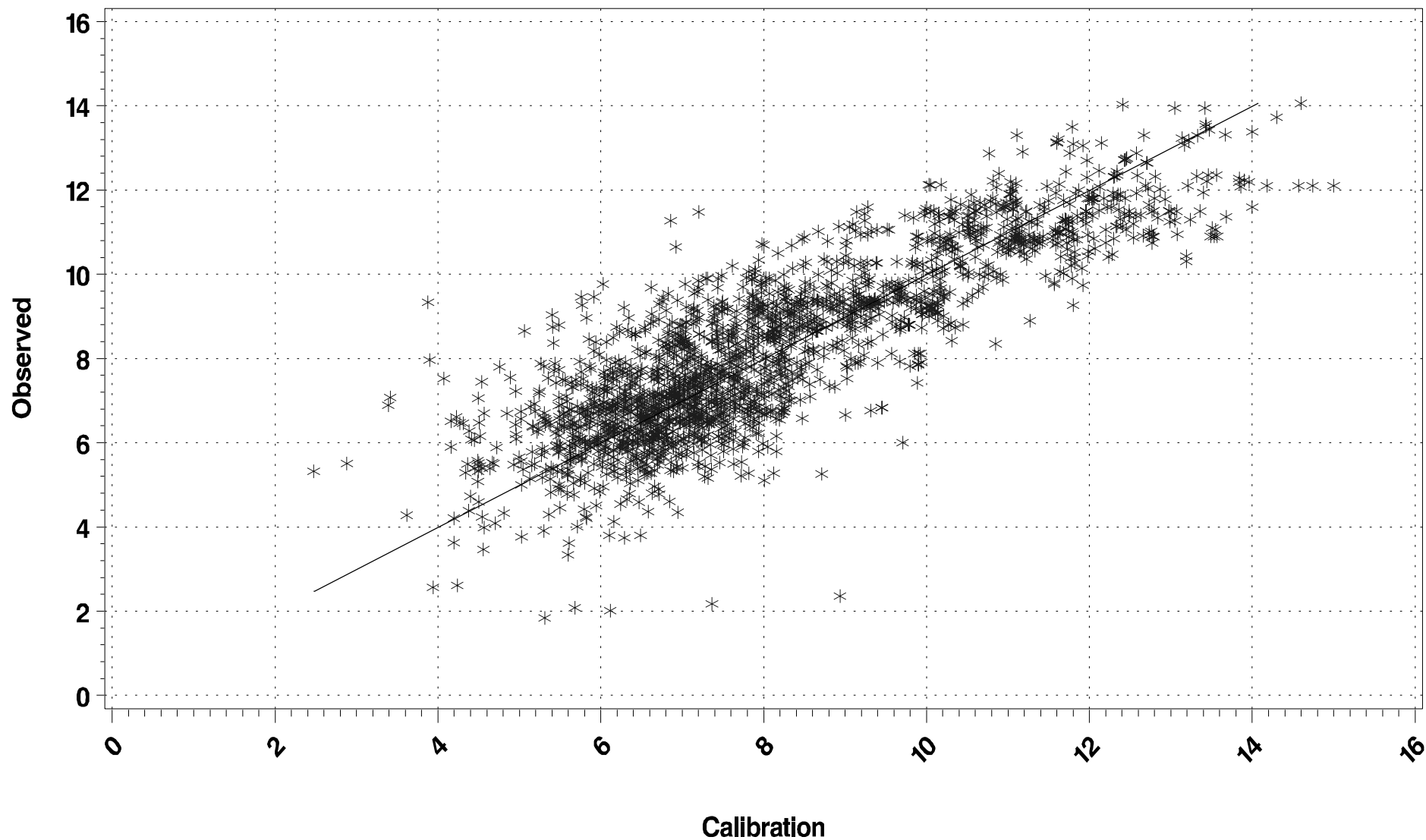
DEEP WATER **Dissolved Oxygen**
Segment MOBPH (Mobjack Bay Polyhaline)
May 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]

Using the 377 pairs of predictions and observed data, the **slope** is 0.6737 and the **intercept** is 1.6121. The **R-Squared** value for this regression is 0.3351.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 377 pairs of predictions and observed data, the **slope** is 0.7193 and the **intercept** is 0.2061. The **R-Squared** value for this regression is 0.2871.

Statistics (units in mg/l)

Mean observed 5.1972	Mean predicted 5.3218
Min. observed 1.05	Min. predicted 1.681
Max. observed 9.195	Max. predicted 9.84
Std. Dev. Observed 1.6607	Std. Dev. predicted 1.4270
Median observed 5.3500	Median predicted 5.1205
90th Percentile observed 7.2752	90th Percentile predicted 7.5253
10th Percentile observed 2.8000	10th Percentile predicted 3.7469

Differences (predicted – observed)

Mean difference 0.1246 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.

Number of predicted and observed pairs 377
Number of Predicted Violations 2
Number of Observed Violations 12

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
**Segment MOBPH Season: May 1 – Sept 30**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
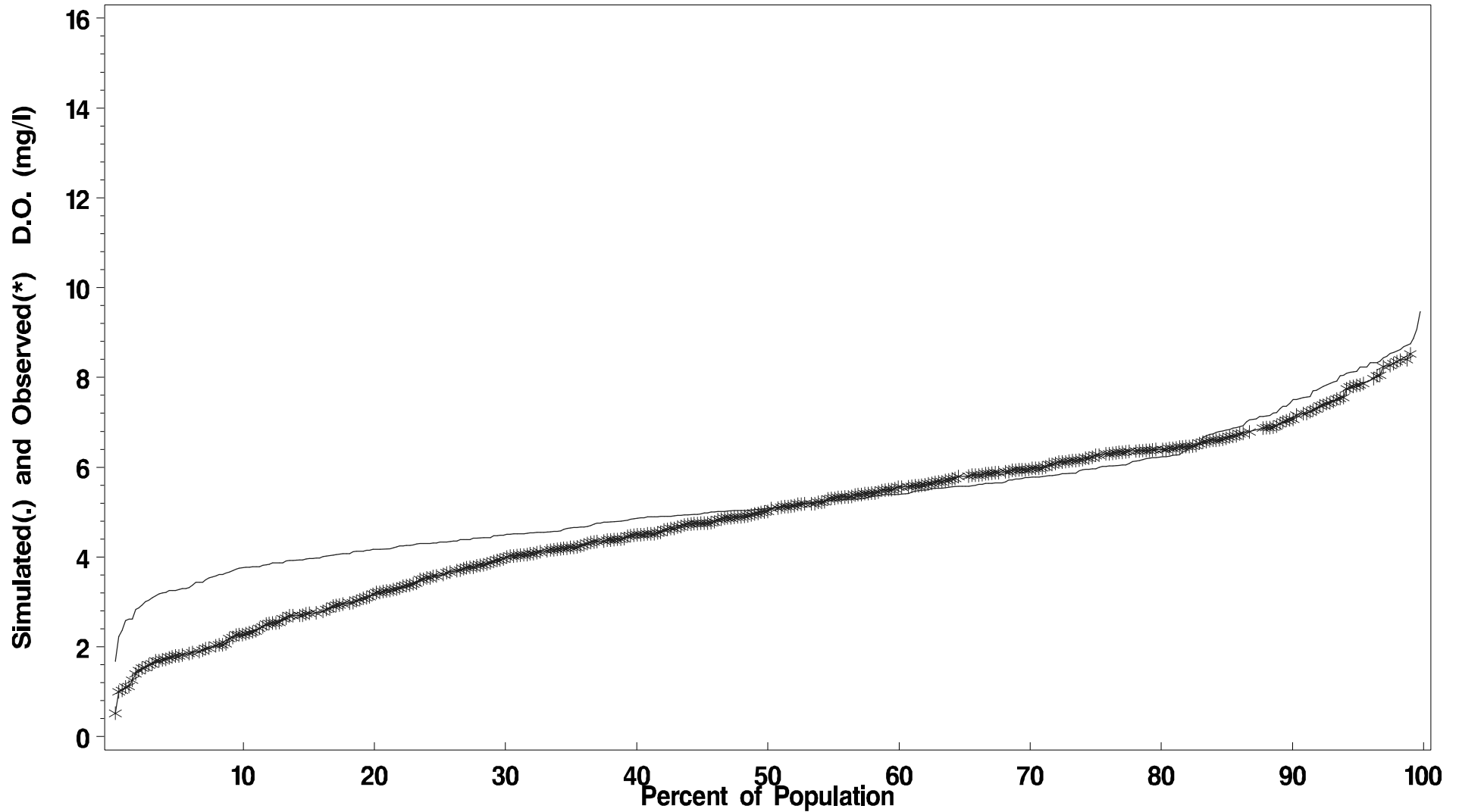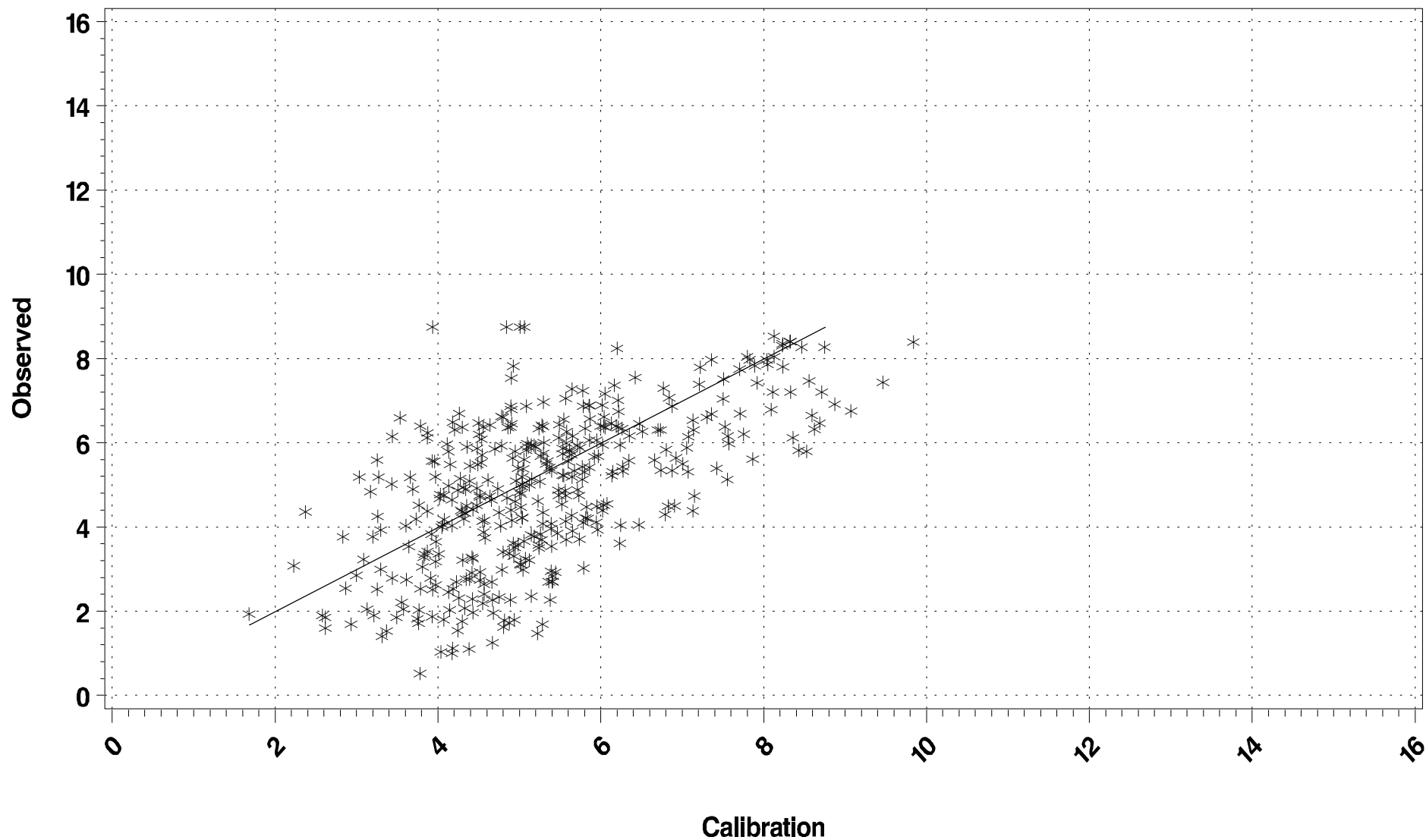
Deep Water Dissolved Oxygen (mg/l)
Segment MOBPH Season: May 1 – Sept 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 343 pairs of predictions and observed data, the **slope** is 0.5987 and the **intercept** is 3.8895. The **R-Squared** value for this regression is 0.5714.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 343 pairs of predictions and observed data, the **slope** is 0.5703 and the **intercept** is 0.4413. The **R-Squared** value for this regression is 0.5498.

Statistics (units in mg/l)

Mean observed 9.2563   Mean predicted 8.9639
Min. observed 4.1294   Min. predicted 4.394
Max. observed 13.4087   Max. predicted 13.92
Std. Dev. Observed 1.7704   Std. Dev. predicted 2.2354
Median observed 9.2500   Median predicted 9.4187
90th Percentile observed 11.4500   90th Percentile predicted 11.7940
10th Percentile observed 7.0650   10th Percentile predicted 5.7484
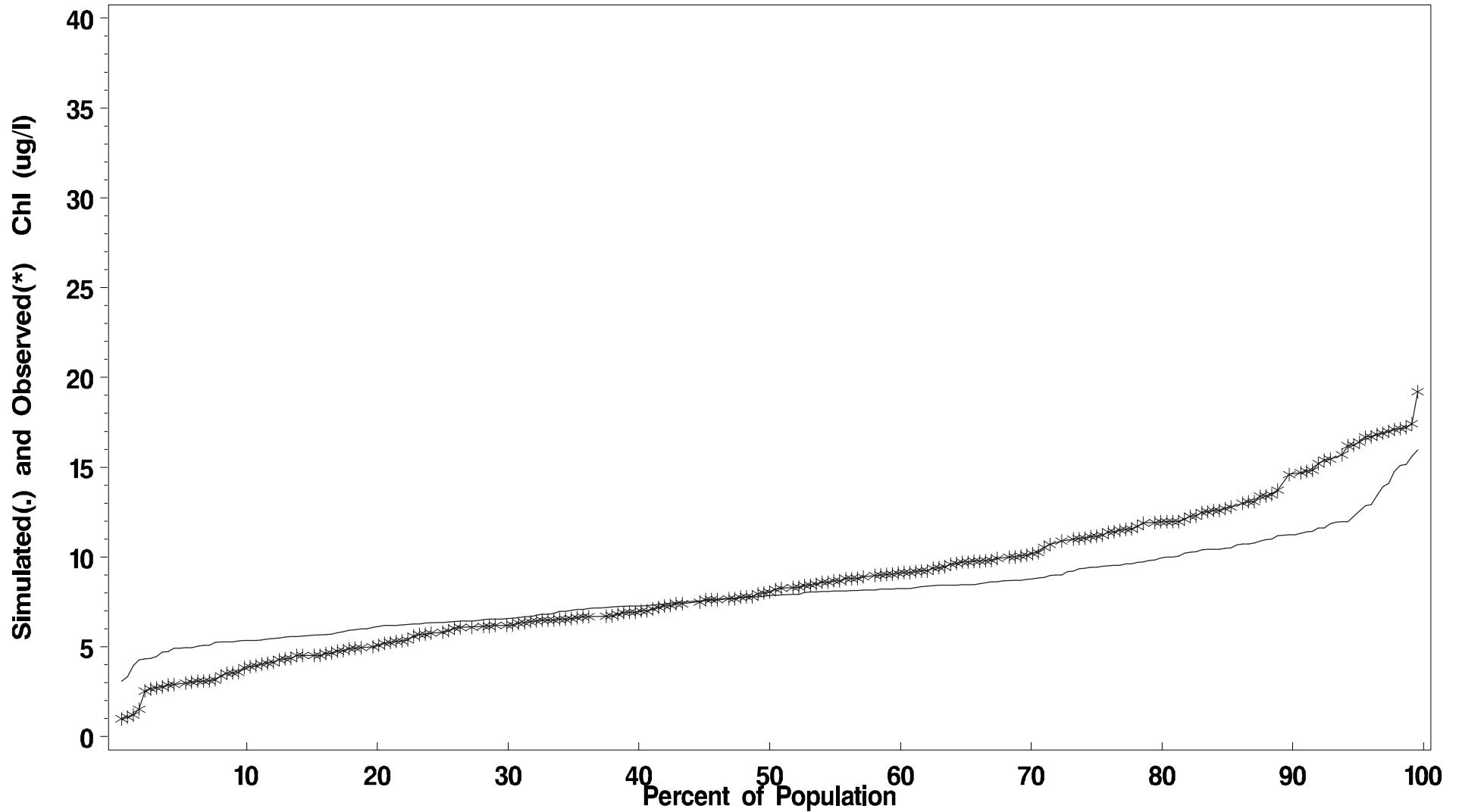

Differences (predicted – observed)

Mean difference -0.2924 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 343
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
Segment MOBPH   Season: Oct 1 — April 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
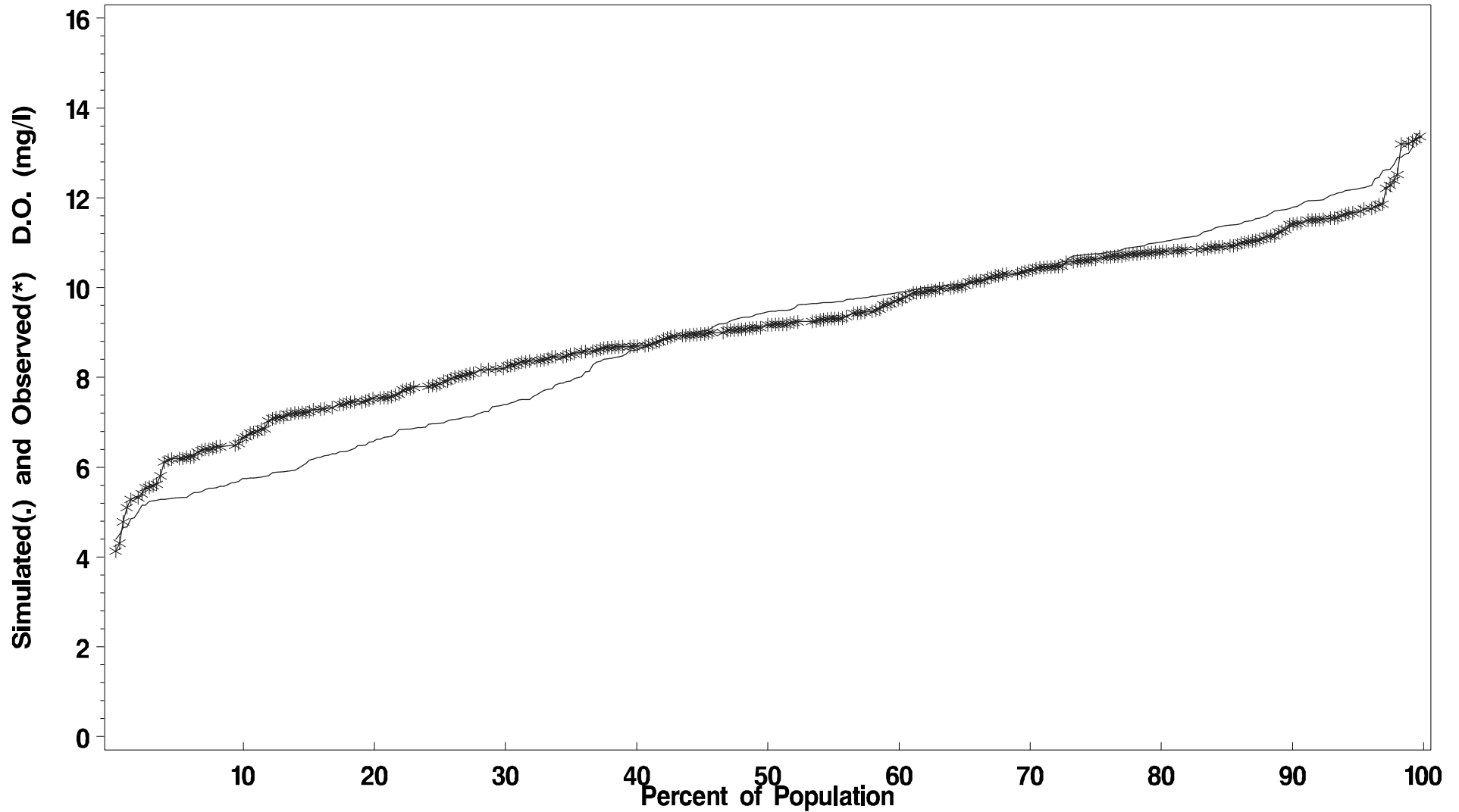
Deep Water   Dissolved Oxygen (mg/l)
Segment MOBPH   Season: Oct 1 — April 30
(Scatter Plot)
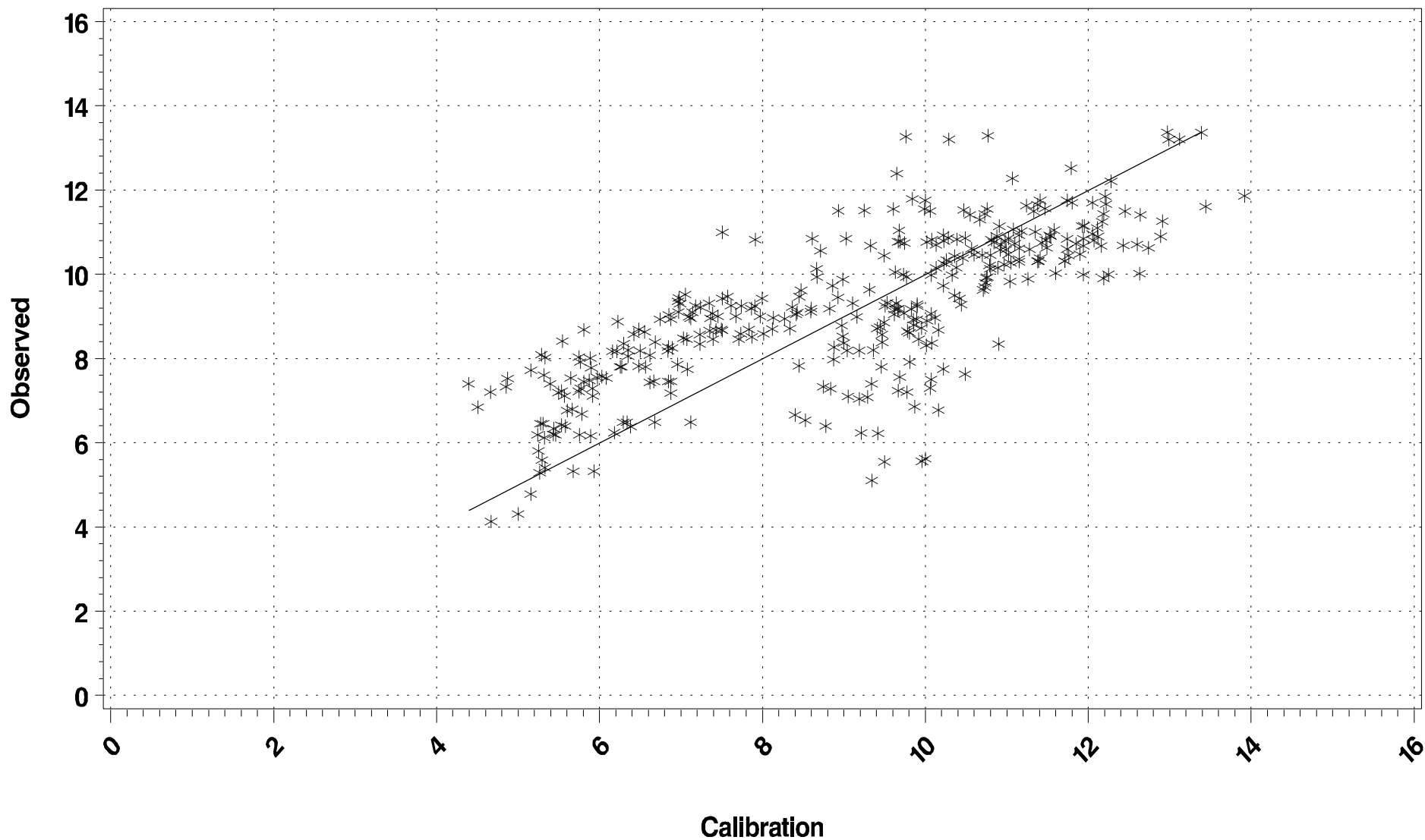
POLYHALINE **Chlorophyll**
Segment MOBPH (Mobjack Bay Polyhaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 230 pairs of predictions and observed data, the **slope** is 0.1496 and the
intercept is 7.4348. The **R-Squared** value for this regression is 0.0088.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 230 pairs of predictions and observed data, the **slope** is 0.2105 and the
intercept is 0.7457. The **R-Squared** value for this regression is 0.0150.

Statistics (units in μg/l)

Mean observed 8.6500   Mean predicted 8.1239
Min. observed 1.0000   Min. predicted 3.0784
Max. observed 21.2425   Max. predicted 20.3960
Std. Dev. Observed 3.9774   Std. Dev. predicted 2.4883
Median observed 8.2316   Median predicted 7.8400
95th Percentile observed 16.4000   95th Percentile predicted 12.5690
10th Percentile observed 3.8902   10th Percentile predicted 5.3483


Differences (predicted – observed)

Mean difference -0.5261 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
# Segment MOBPH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment MOBPH   Season: July 1 – Sept 30
(Scatter Plot)

<div align="center">

POLYHALINE **Chlorophyll**
Segment MOBPH (Mobjack Bay Polyhaline)
March 1 - May 30

</div>
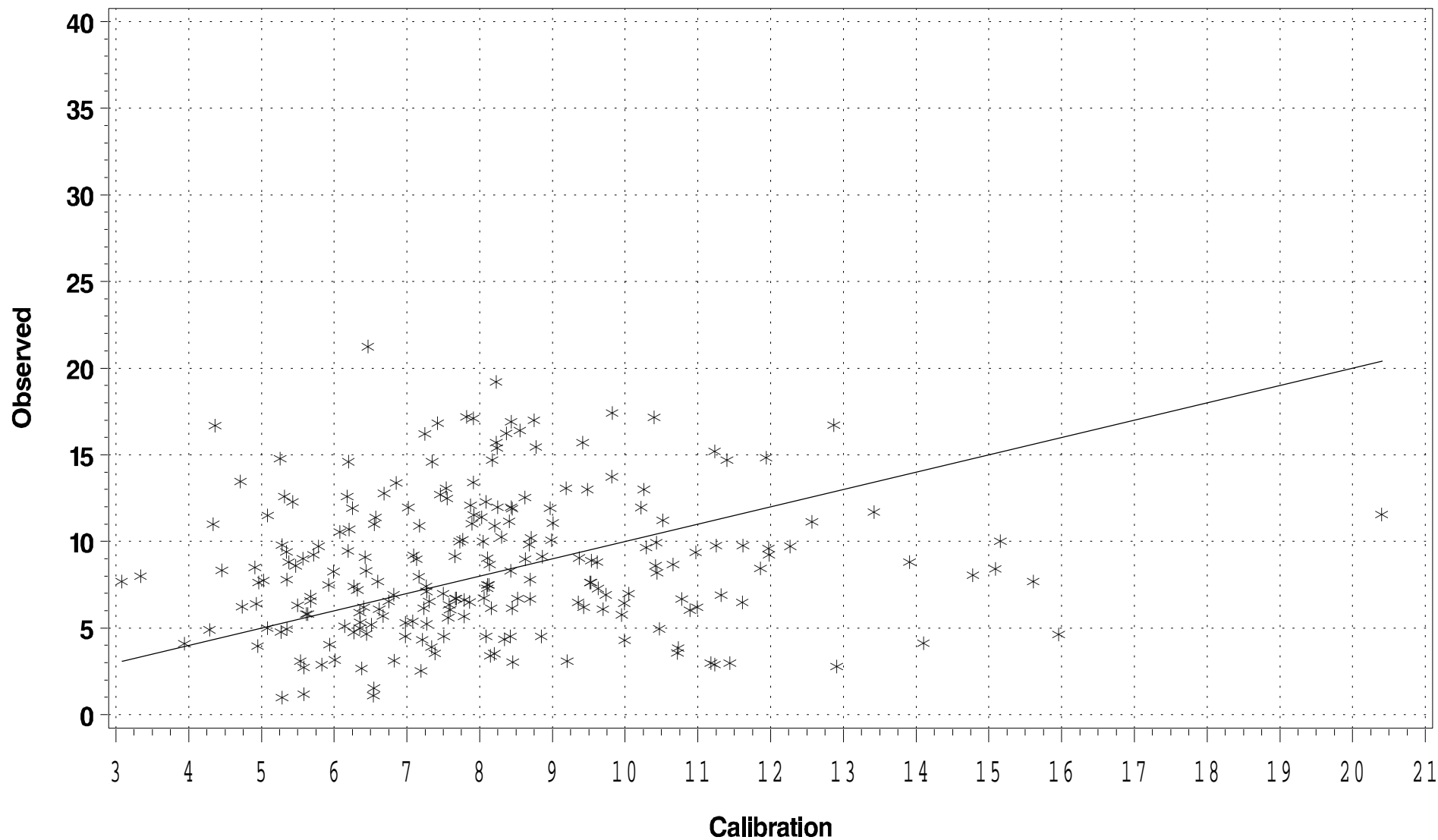
Regression of Calibration vs. Observations[1]
Using the 208 pairs of predictions and observed data, the **slope** is 0.2627 and the **intercept** is 4.3229. The **R-Squared** value for this regression is 0.0564.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 208 pairs of predictions and observed data, the **slope** is 0.3546 and the **intercept** is 0.4735. The **R-Squared** value for this regression is 0.0386.

Statistics (units in µg/l)

Mean observed 7.9766	Mean predicted 13.9083
Min. observed 1.0000	Min. predicted 4.1650
Max. observed 23.7000	Max. predicted 26.5700
Std. Dev. Observed 5.2526	Std. Dev. predicted 4.7486
Median observed 6.6661	Median predicted 13.3295
95th Percentile observed 19.8000	95th Percentile predicted 23.2820
10th Percentile observed 2.4030	10th Percentile predicted 8.2018

Differences (predicted – observed)

Mean difference 5.9316 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment MOBPH   Season: March 1 – May 30
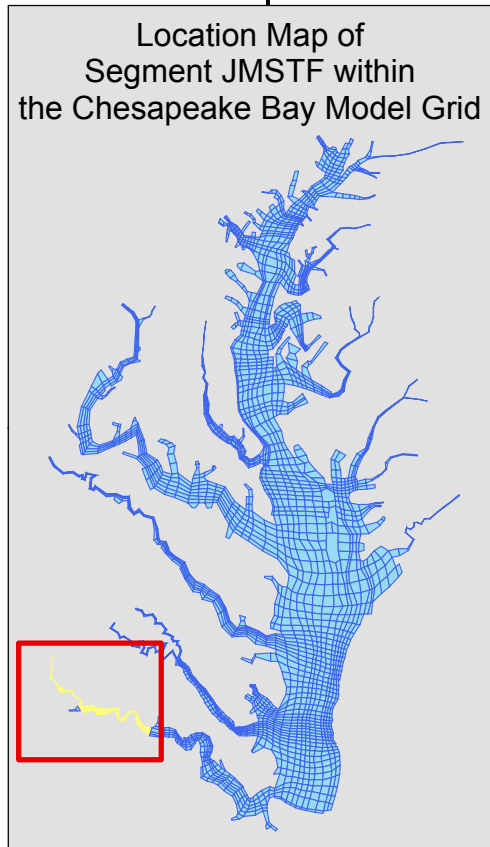### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
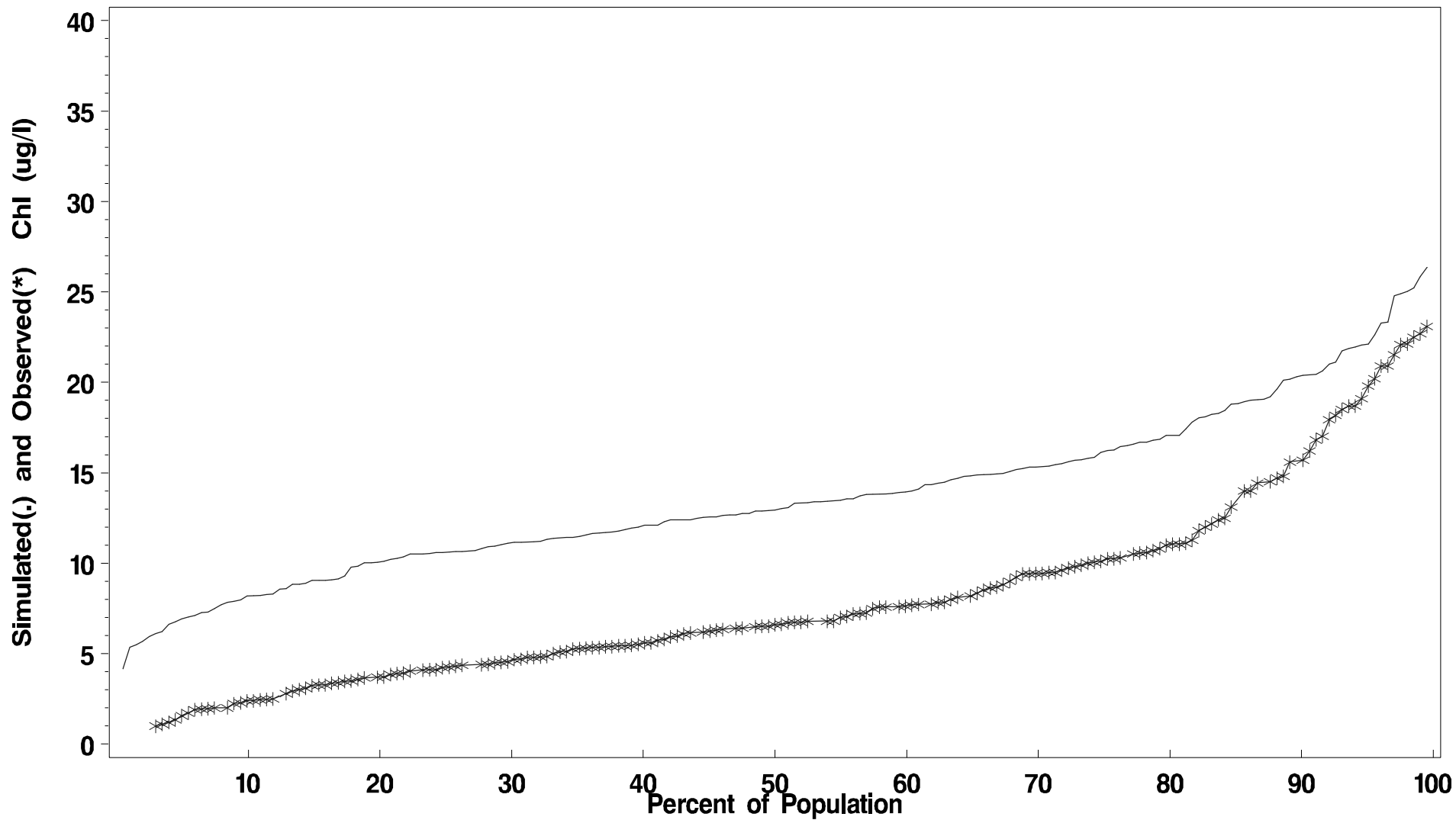
Chlorophyll Concentration (ug/l)
Segment MOBPH   Season: March 1 — May 30
(Scatter Plot)
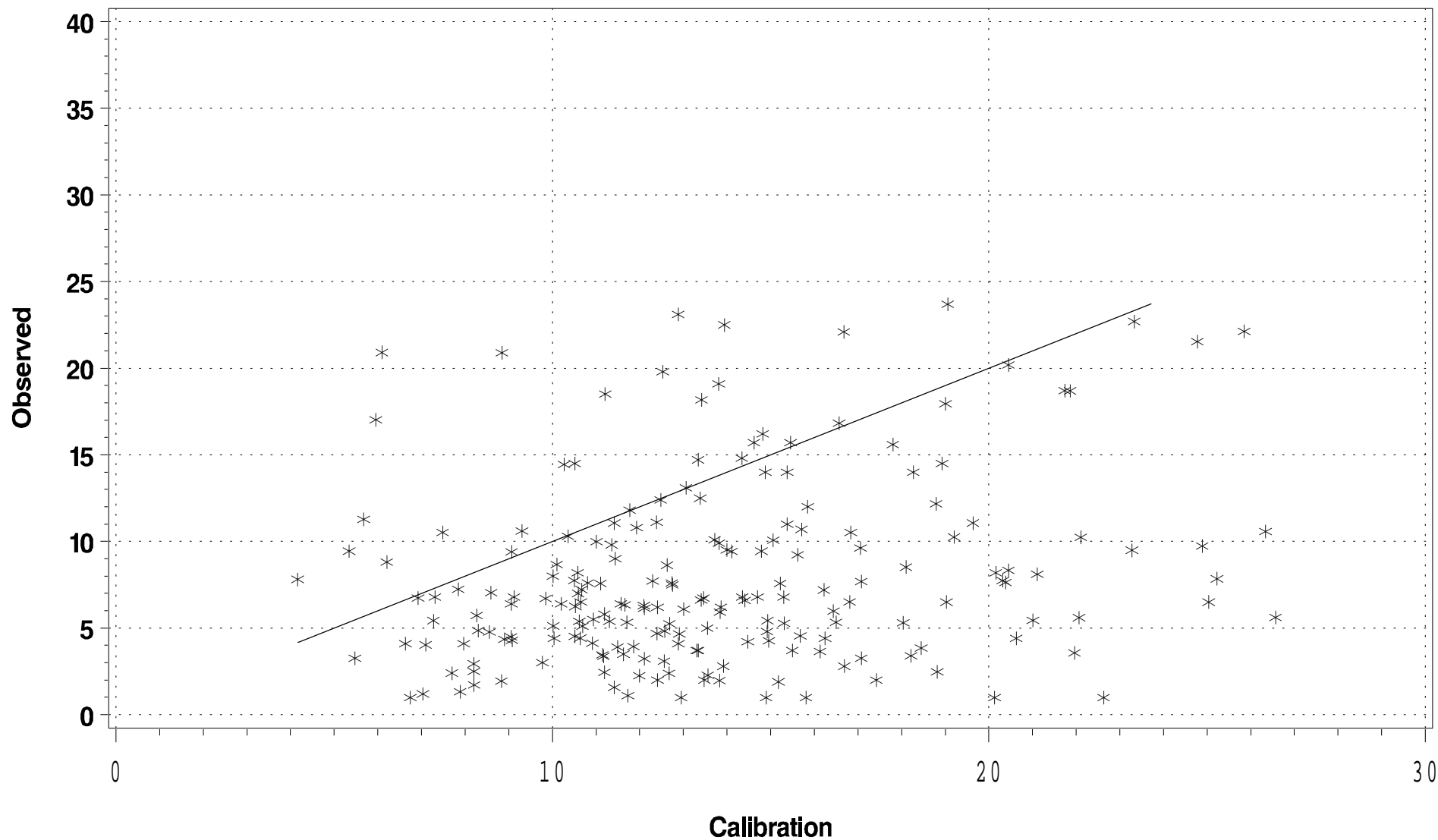
POLYHALINE **Light Attenuation**
Segment MOBPH (Mobjack Bay Polyhaline)
March-May Sept-Nov

Regression of Calibration vs. Observations[1]

Using the 356 pairs of predictions and observed data, the **slope** is -0.2424 and the **intercept** is 1.2794. The **R-Squared** value for this regression is 0.0065.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 356 pairs of predictions and observed data, the **slope** is -0.1478 and the **intercept** is 0.3406. The **R-Squared** value for this regression is 0.0076.

Statistics (units in 1/m)

Mean observed 1.0208   Mean predicted 1.0665
Min. observed 0.4194   Min. predicted 0.5077
Max. observed 13.0000   Max. predicted 1.8494
Std. Dev. Observed 0.7253   Std. Dev. predicted 0.2416
Median observed 0.9286   Median predicted 1.0419
90th Percentile observed 1.4444   90th Percentile predicted 1.3985
10th Percentile observed 0.6190   10th Percentile predicted 0.7727

Differences (predicted – observed)

Mean difference 0.0456 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment MOBPH   Season: March−May Sept−Nov
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Ke (1/m)
Segment MOBPH   Season: March – May Sept – Nov
(Scatter Plot)

Chesapeake Bay Standard Segment JMSTF

Location Map of
Segment JMSTF within
the Chesapeake Bay Model Grid

TF5.2

TF5.2A

TF5.3

TF5.5

TF5.5A

TF5.6

N
W E
S

0 1.5 3 6 9 12
Miles

Chesapeake Bay Program
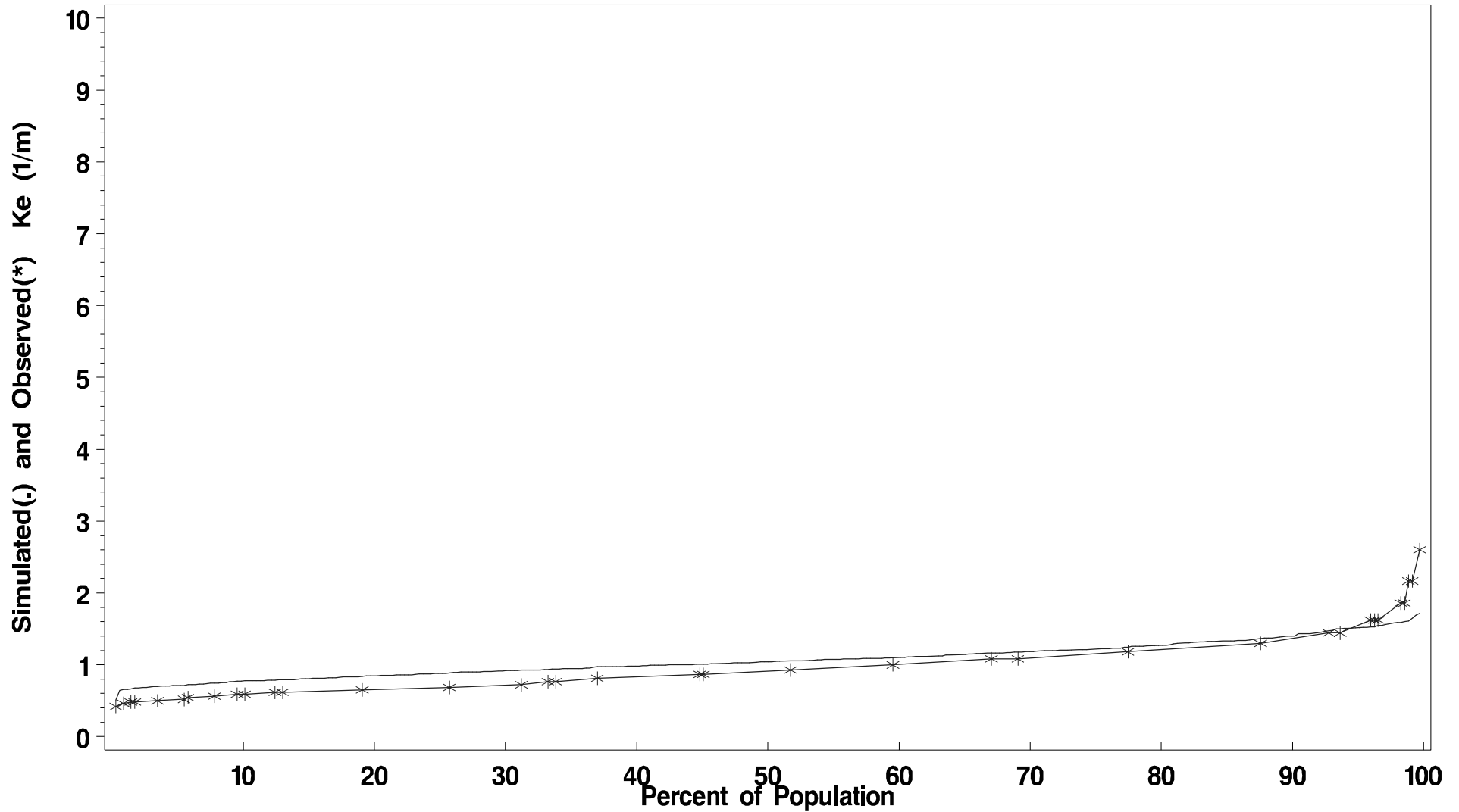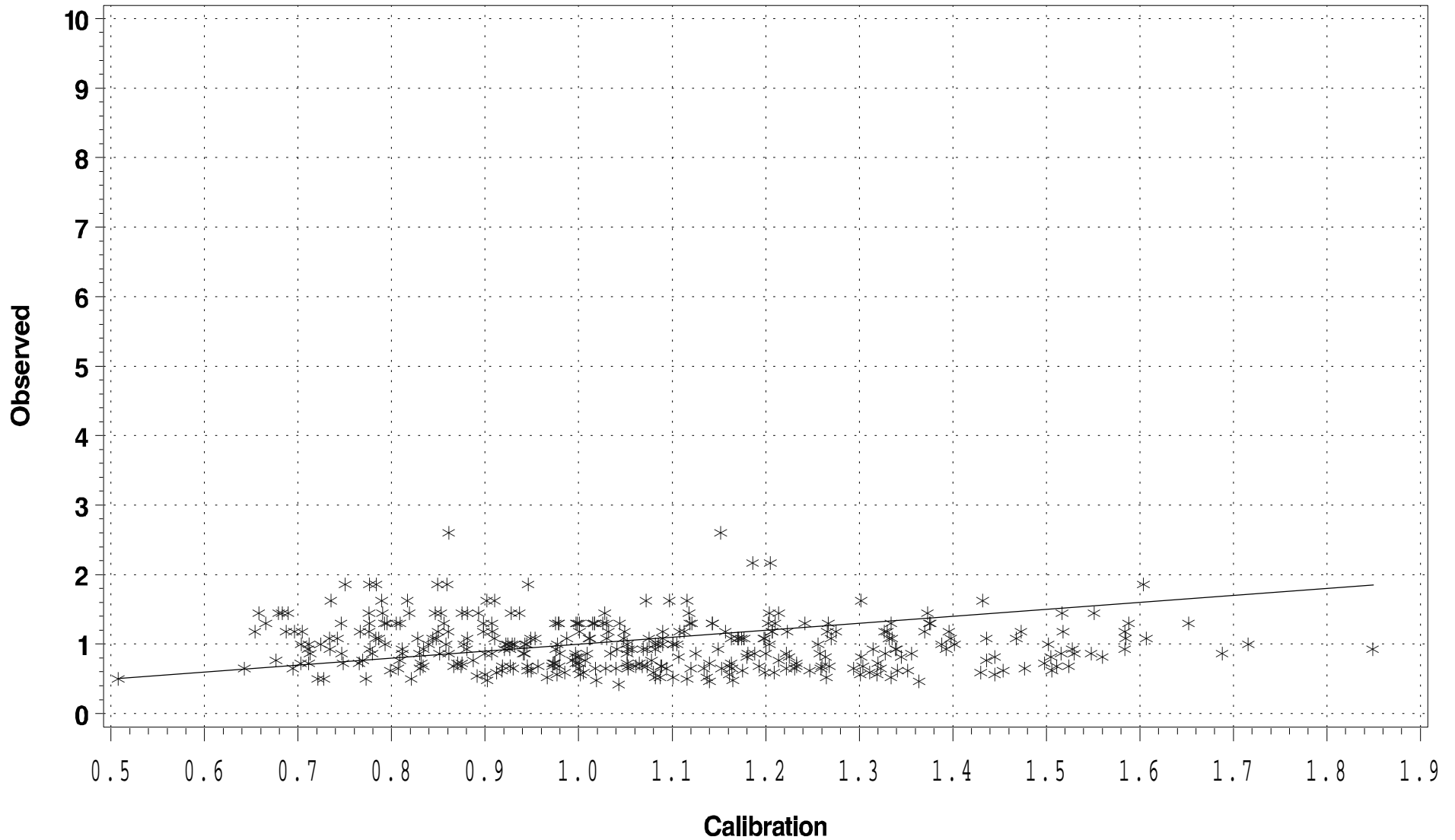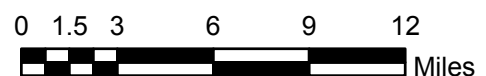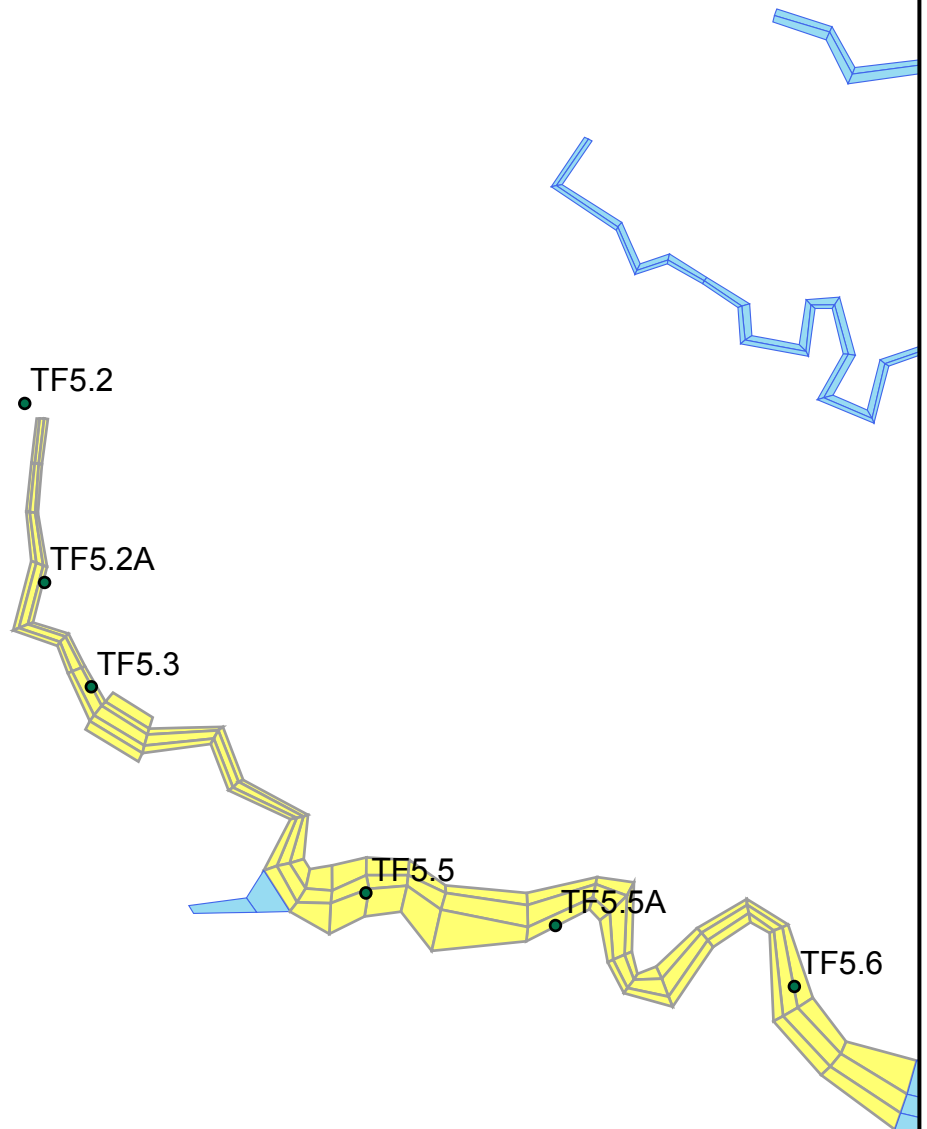
MIGRATORY **Dissolved Oxygen**
Segment JMSTF (James Tidal Fresh)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 747 pairs of predictions and observed data, the **slope** is -0.0003 and the **intercept** is 9.3870. The **R-Squared** value for this regression is 0.0000.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 747 pairs of predictions and observed data, the **slope** is 0.0170 and the **intercept** is 0.9915. The **R-Squared** value for this regression is 0.0003.

Statistics (units in mg/l)

Mean observed 9.3836   Mean predicted 10.5983
Min. observed 5.1   Min. predicted 5.338
Max. observed 13.6   Max. predicted 19.12
Std. Dev. Observed 1.7777   Std. Dev. predicted 2.1893
Median observed 9.6000   Median predicted 10.4770
90th Percentile observed 11.5200   90th Percentile predicted 13.5800
10th Percentile observed 6.8000   10th Percentile predicted 7.9931

Differences (predicted – observed)

Mean difference 1.2147 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 747
Number of Predicted Violations 0
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
**Segment JMSTF   Season: Feb 15 – June 10**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
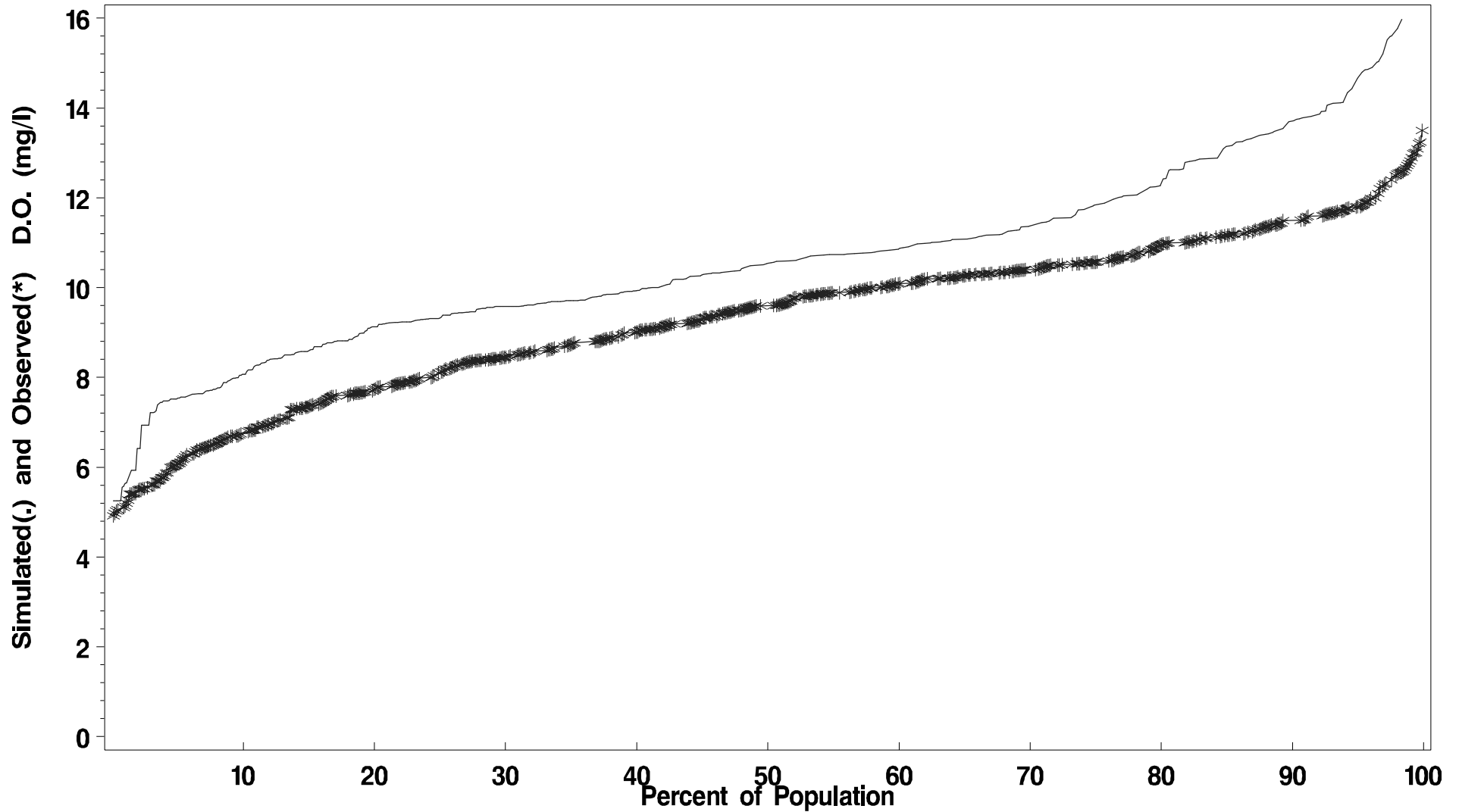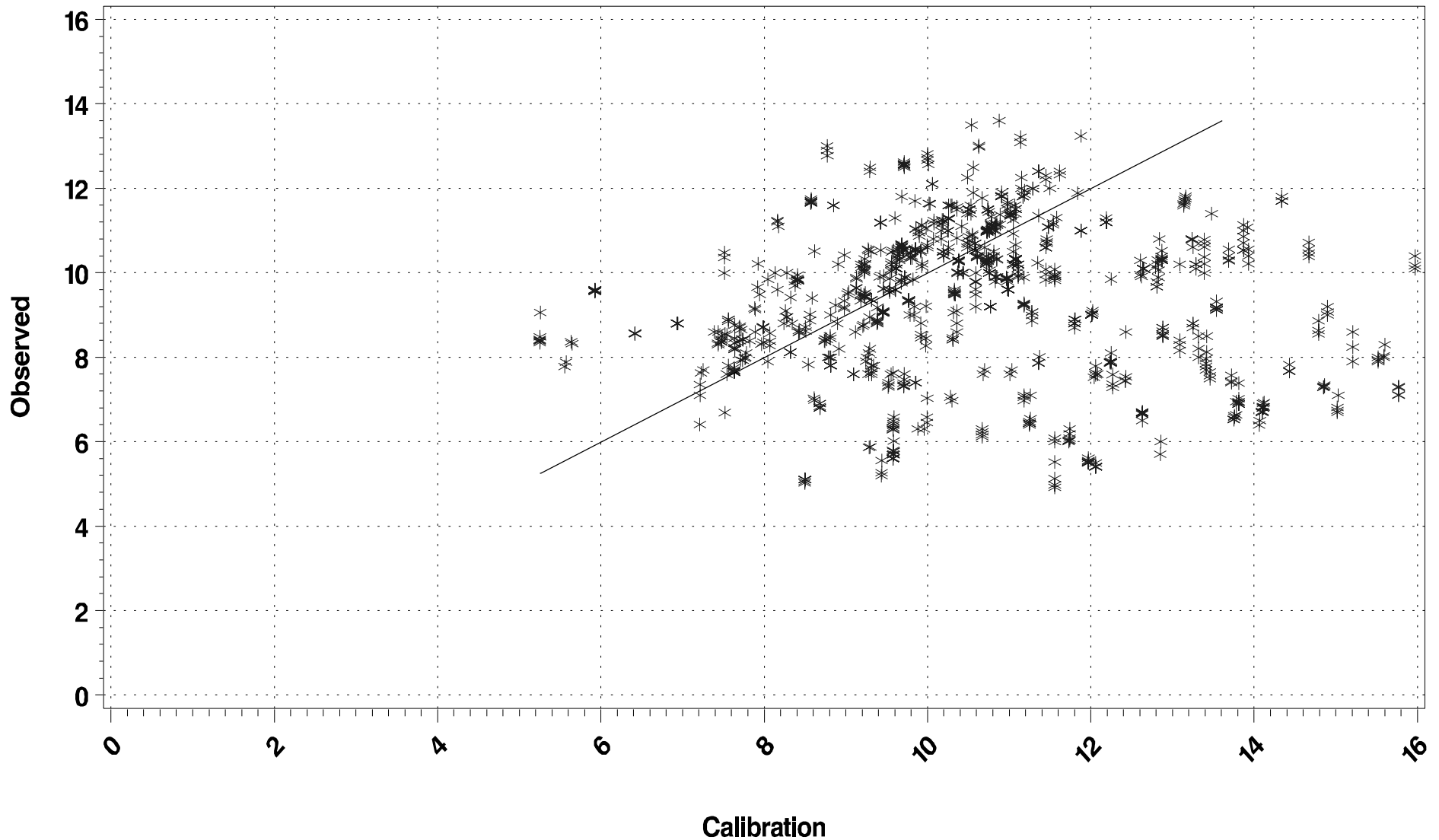
Migratory   Dissolved Oxygen (mg/l)
Segment JMSTF   Season: Feb 15 — June 10
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 1279 pairs of predictions and observed data, the **slope** is 0.4167 and the **intercept** is 4.4986. The **R-Squared** value for this regression is 0.2299.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1279 pairs of predictions and observed data, the **slope** is 0.3782 and the **intercept** is 0.5820. The **R-Squared** value for this regression is 0.2184.

Statistics (units in mg/l)

Mean observed 8.2111   Mean predicted 8.9095
Min. observed 3.8   Min. predicted 2.523
Max. observed 14.4   Max. predicted 16.82
Std. Dev. Observed 2.1572   Std. Dev. predicted 2.4823
Median observed 7.8200   Median predicted 8.9106
90th Percentile observed 11.6000   90th Percentile predicted 12.0190
10th Percentile observed 5.6900   10th Percentile predicted 5.8226

Differences (predicted – observed)

Mean difference 0.6984 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 1279
Number of Predicted Violations 25
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment JMSTF Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
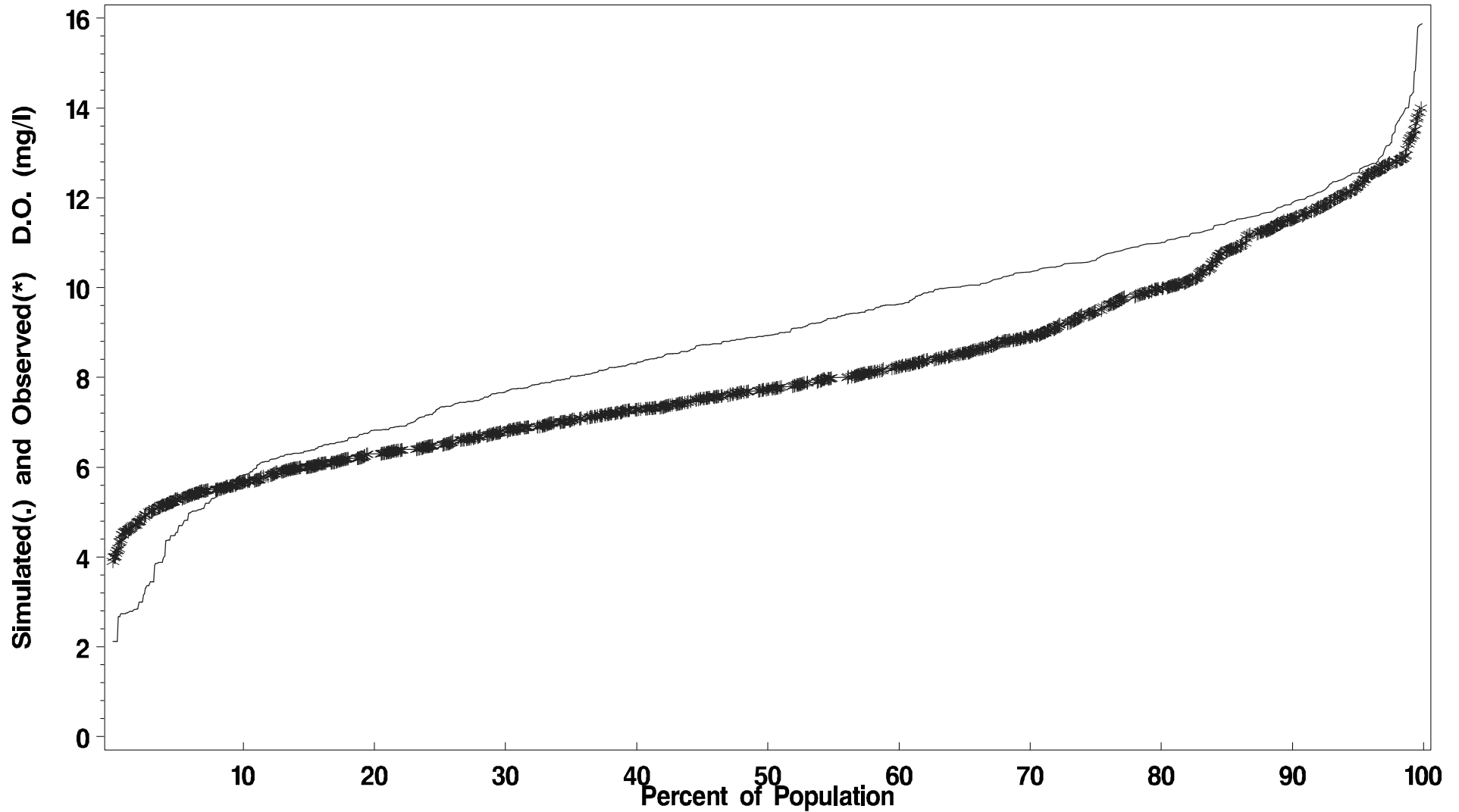
Migratory   Dissolved Oxygen (mg/l)
Segment JMSTF   Season: June 11 – Feb 14
(Scatter Plot)
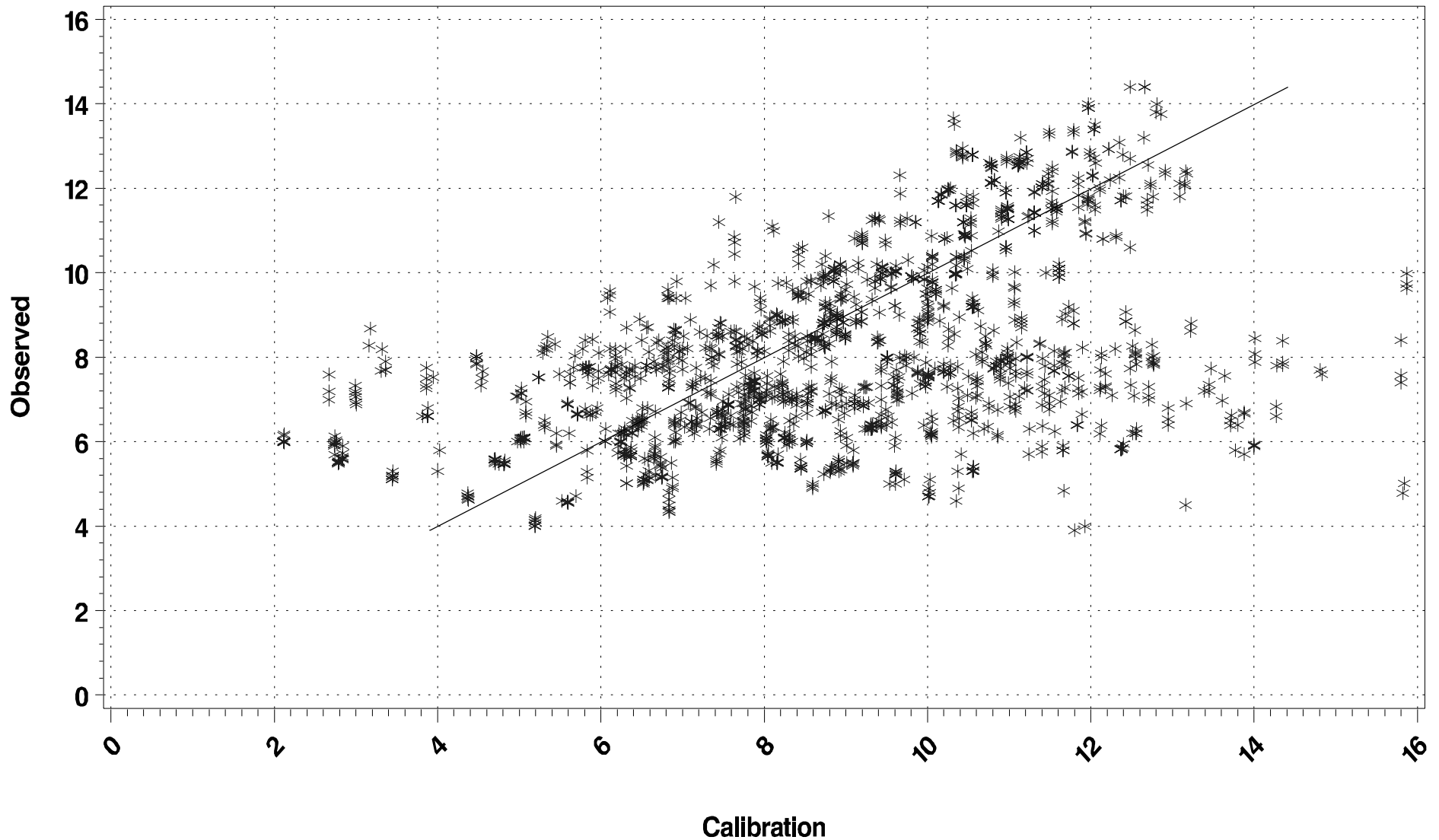
Regression of Calibration vs. Observations[1]
Using the 249 pairs of predictions and observed data, the **slope** is 0.9450 and the **intercept** is 4.0157. The **R-Squared** value for this regression is 0.2615.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 249 pairs of predictions and observed data, the **slope** is 0.9015 and the **intercept** is 0.0701. The **R-Squared** value for this regression is 0.4477.

Statistics (units in $\mu g/l$)

Mean observed 21.4239   Mean predicted 18.4206
Min. observed 0.5233   Min. predicted -0.3188
Max. observed 136.1000   Max. predicted 42.8260
Std. Dev. Observed 20.9240   Std. Dev. predicted 11.3223
Median observed 14.6667   Median predicted 17.5790
95th Percentile observed 61.4580   95th Percentile predicted 36.8160
10th Percentile observed 2.2000   10th Percentile predicted 3.5236

Differences (predicted – observed)

Mean difference -3.0033 $\mu g/l$

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[1] observed is dependent, predicted is independent

**Chlorophyll Concentration (ug/l)**
Segment JMSTF   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
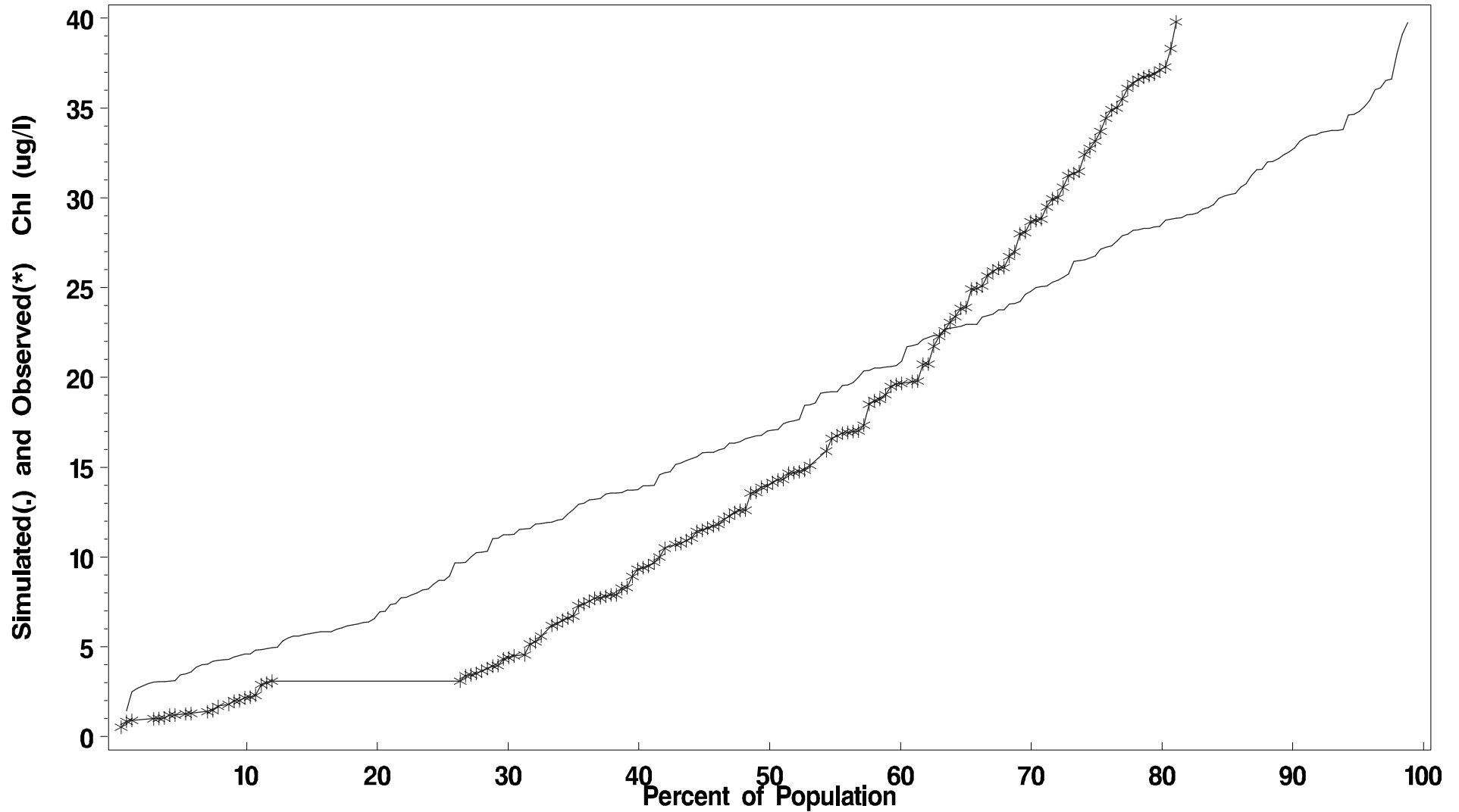
Chlorophyll Concentration (ug/l)
Segment JMSTF   Season: July 1 — Sept 30
(Scatter Plot)
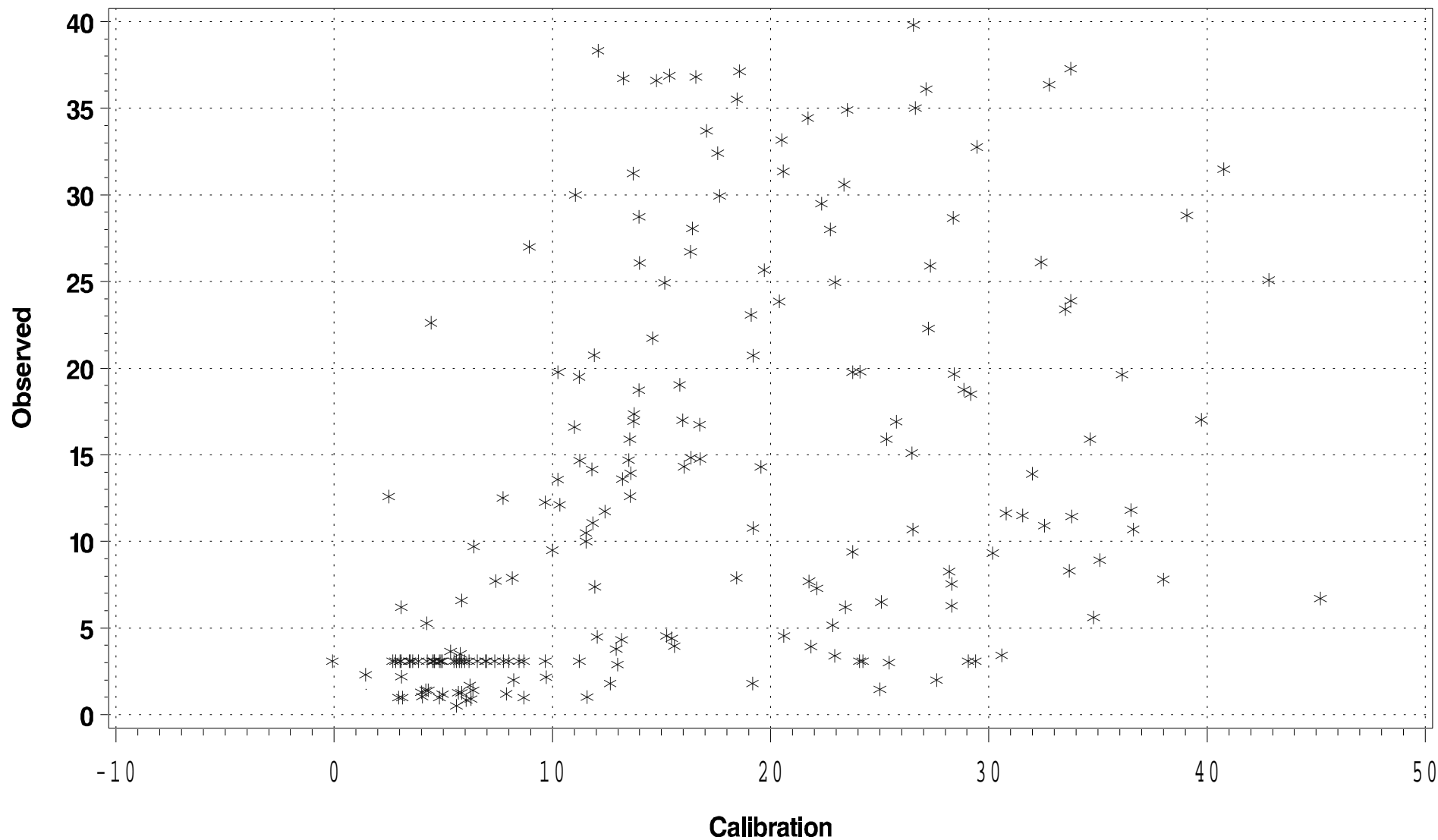
TIDAL FRESH **Chlorophyll**
Segment JMSTF (James Tidal Fresh)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 226 pairs of predictions and observed data, the **slope** is 0.7008 and the
intercept is 3.3499. The **R-Squared** value for this regression is 0.3617.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 226 pairs of predictions and observed data, the **slope** is 0.5287 and the
intercept is 0.4169. The **R-Squared** value for this regression is 0.3376.

Statistics (units in μg/l)

Mean observed 10.2838   Mean predicted 9.8948
Min. observed 1.0000   Min. predicted 0.1265
Max. observed 60.9000   Max. predicted 49.0490
Std. Dev. Observed 12.2353   Std. Dev. predicted 10.5014
Median observed 4.4108   Median predicted 5.7351
95th Percentile observed 37.9282   95th Percentile predicted 30.5690
10th Percentile observed 1.2000   10th Percentile predicted 0.7689
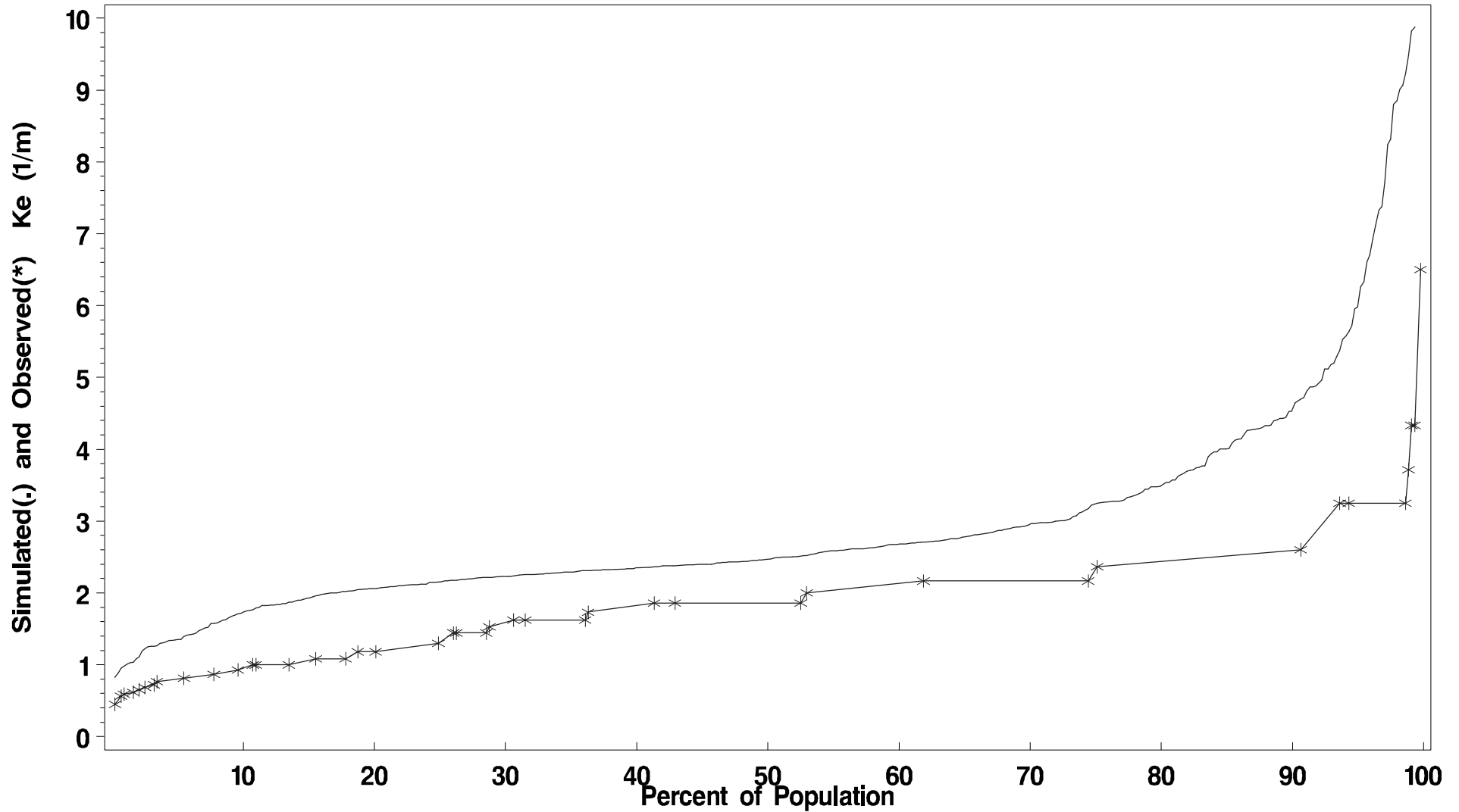

Differences (predicted − observed)

Mean difference -0.3890 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment JMSTF   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
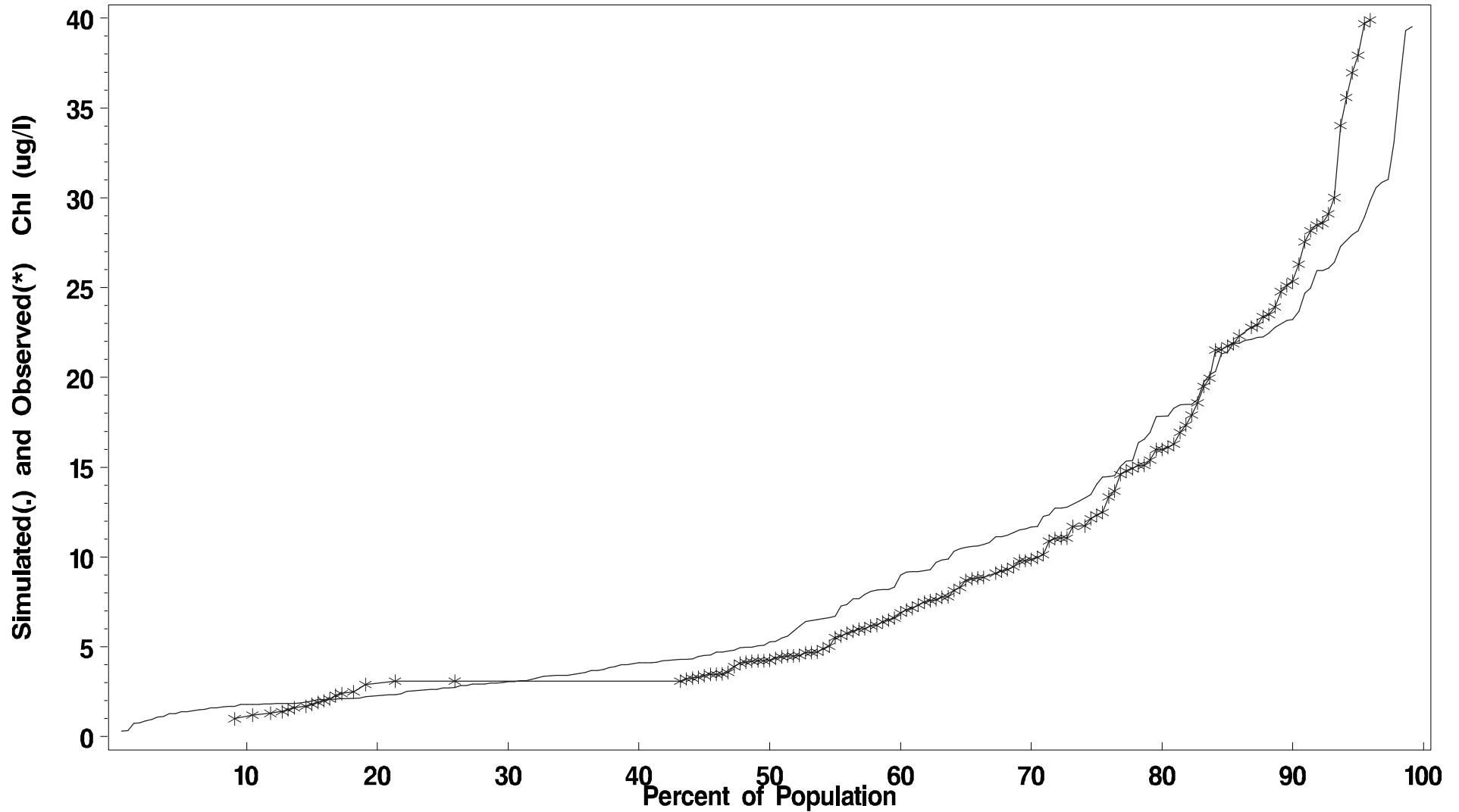
Chlorophyll Concentration (ug/l)
Segment JMSTF   Season: March 1 – May 30
(Scatter Plot)
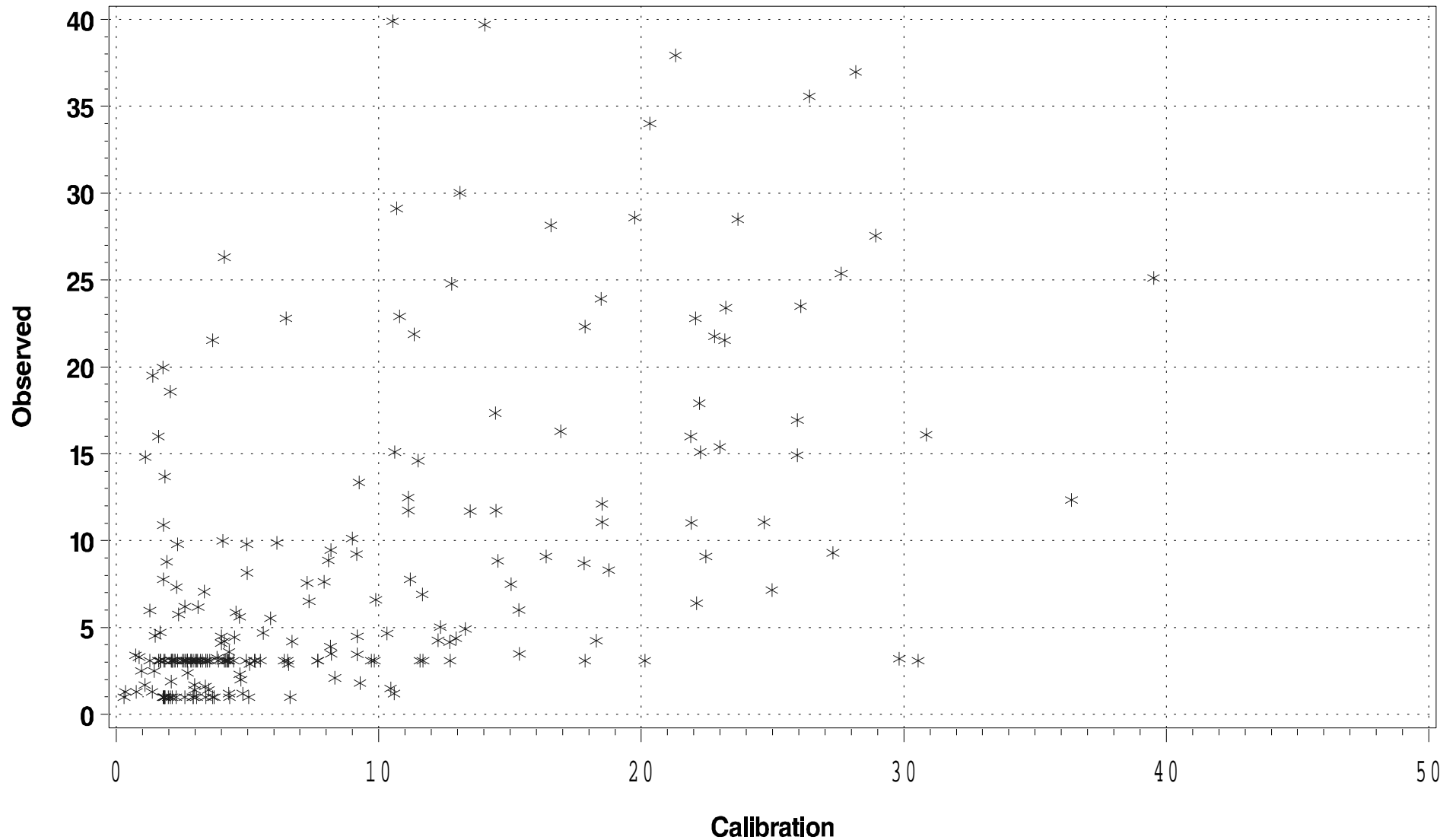
TIDAL FRESH **Light Attenuation**
Segment JMSTF (James Tidal Fresh)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 450 pairs of predictions and observed data, the **slope** is 0.1071 and the **intercept** is 1.6712. The **R-Squared** value for this regression is 0.0758.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 450 pairs of predictions and observed data, the **slope** is 0.3162 and the **intercept** is 0.2792. The **R-Squared** value for this regression is 0.1536.

Statistics (units in 1/m)

Mean observed 1.9934   Mean predicted 3.0078
Min. observed 0.4483   Min. predicted 0.8229
Max. observed 13.0000   Max. predicted 37.5580
Std. Dev. Observed 0.9319   Std. Dev. predicted 2.3959
Median observed 1.8571   Median predicted 2.4550
90th Percentile observed 2.9250   90th Percentile predicted 4.5260
10th Percentile observed 1.0000   10th Percentile predicted 1.7273

Differences (predicted – observed)

Mean difference 1.0144 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment JMSTF   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment JMSTF   Season: April 1 – Oct 30
(Scatter Plot)
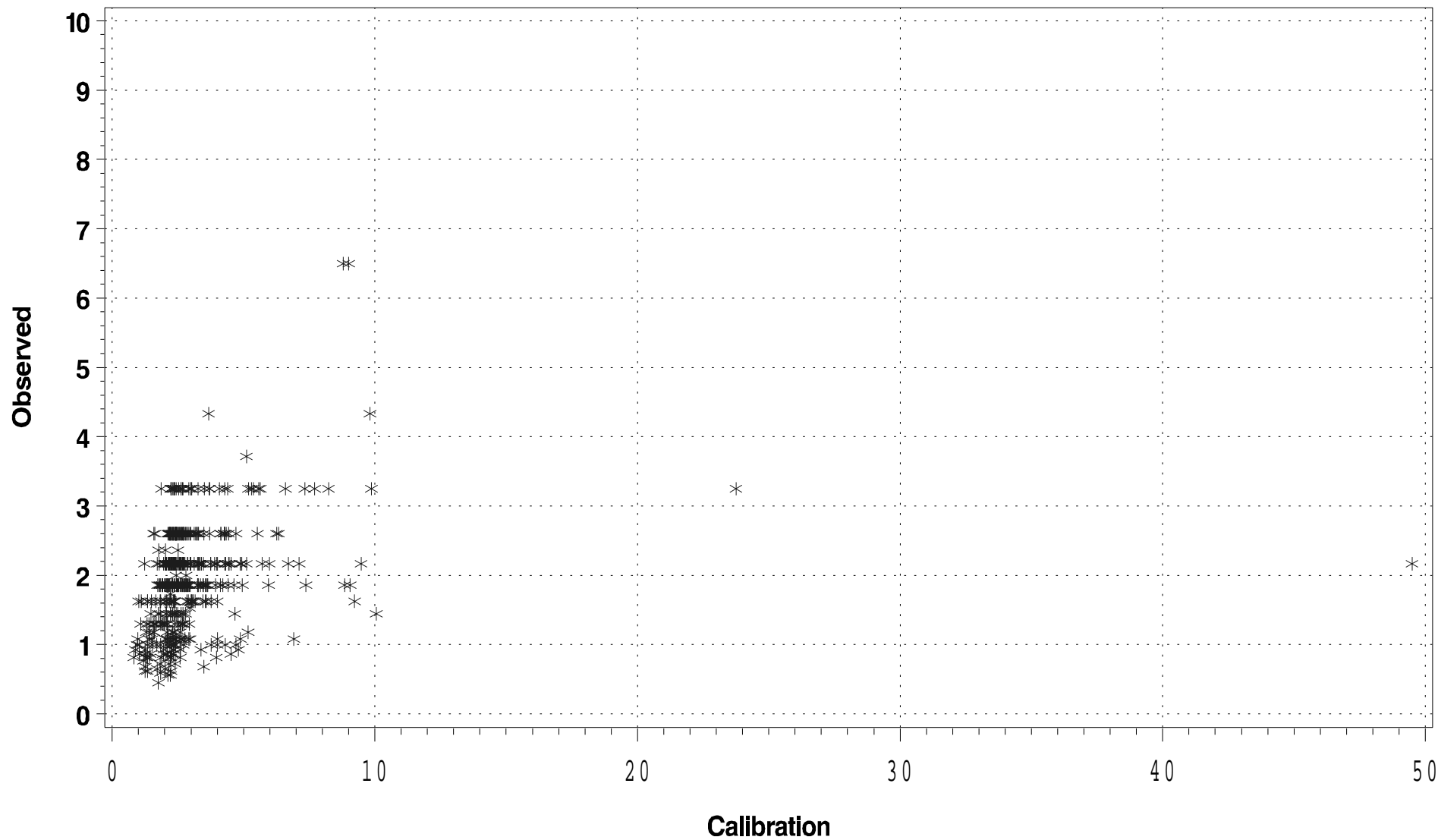
Chesapeake Bay Standard Segment JMSOH
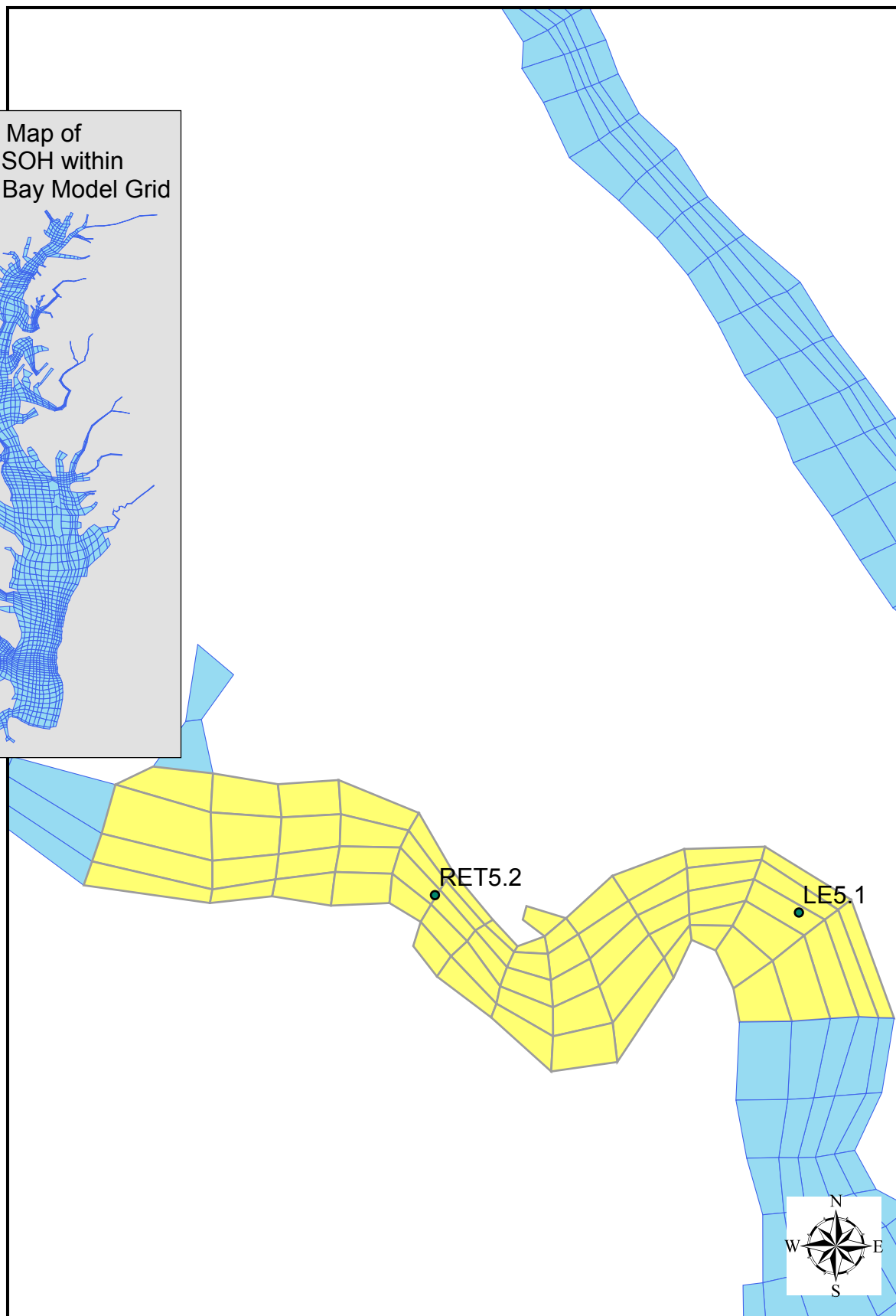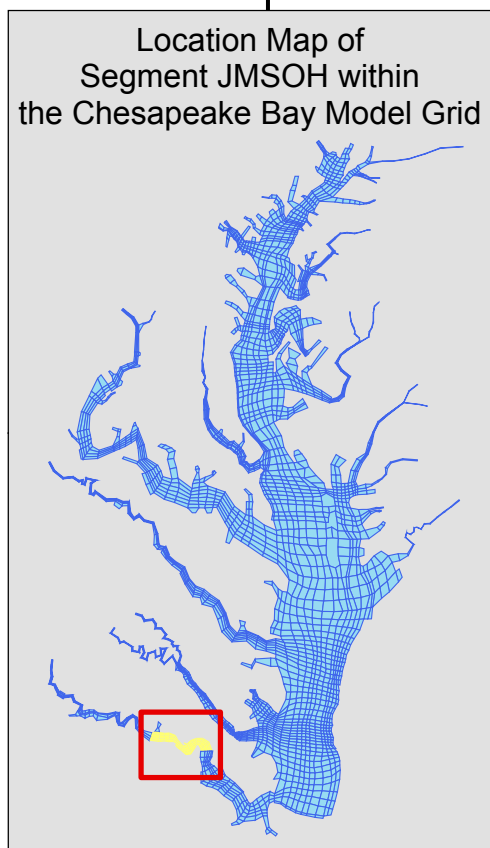
Location Map of
Segment JMSOH within
the Chesapeake Bay Model Grid

RET5.2

LE5.1

N
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0 0.5 1   2   3   4
Miles

Chesapeake Bay Program

Regression of Calibration vs. Observations[1]

Using the 413 pairs of predictions and observed data, the **slope** is 0.4775 and the **intercept** is 4.4914. The **R-Squared** value for this regression is 0.4855.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 413 pairs of predictions and observed data, the **slope** is 0.4812 and the **intercept** is 0.5101. The **R-Squared** value for this regression is 0.4816.

Statistics (units in mg/l)

Mean observed 9.2751   Mean predicted 10.0191
Min. observed 6.1   Min. predicted 3.799
Max. observed 12.18   Max. predicted 18.12
Std. Dev. Observed 1.5819   Std. Dev. predicted 2.3085
Median observed 9.3100   Median predicted 10.2380
90th Percentile observed 11.4000   90th Percentile predicted 12.4640
10th Percentile observed 7.0100   10th Percentile predicted 6.9781

Differences (predicted – observed)

Mean difference 0.7441 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 413
Number of Predicted Violations 9
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

**Migratory   Dissolved Oxygen (mg/l)**
Segment JMSOH   Season: Feb 15 − June 10
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

**Migratory Dissolved Oxygen (mg/l)
Segment JMSOH Season: Feb 15 – June 10**
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 697 pairs of predictions and observed data, the **slope** is 0.6945 and the **intercept** is 2.7428. The **R-Squared** value for this regression is 0.6095.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 697 pairs of predictions and observed data, the **slope** is 0.5620 and the **intercept** is 0.4285. The **R-Squared** value for this regression is 0.5371.

Statistics (units in mg/l)

Mean observed 7.9267   Mean predicted 7.4645
Min. observed 5.11   Min. predicted 2.889
Max. observed 13.93   Max. predicted 12.62
Std. Dev. Observed 1.8444   Std. Dev. predicted 2.0734
Median observed 7.2500   Median predicted 7.2865
90th Percentile observed 11.0000   90th Percentile predicted 10.6110
10th Percentile observed 6.1300   10th Percentile predicted 4.8925
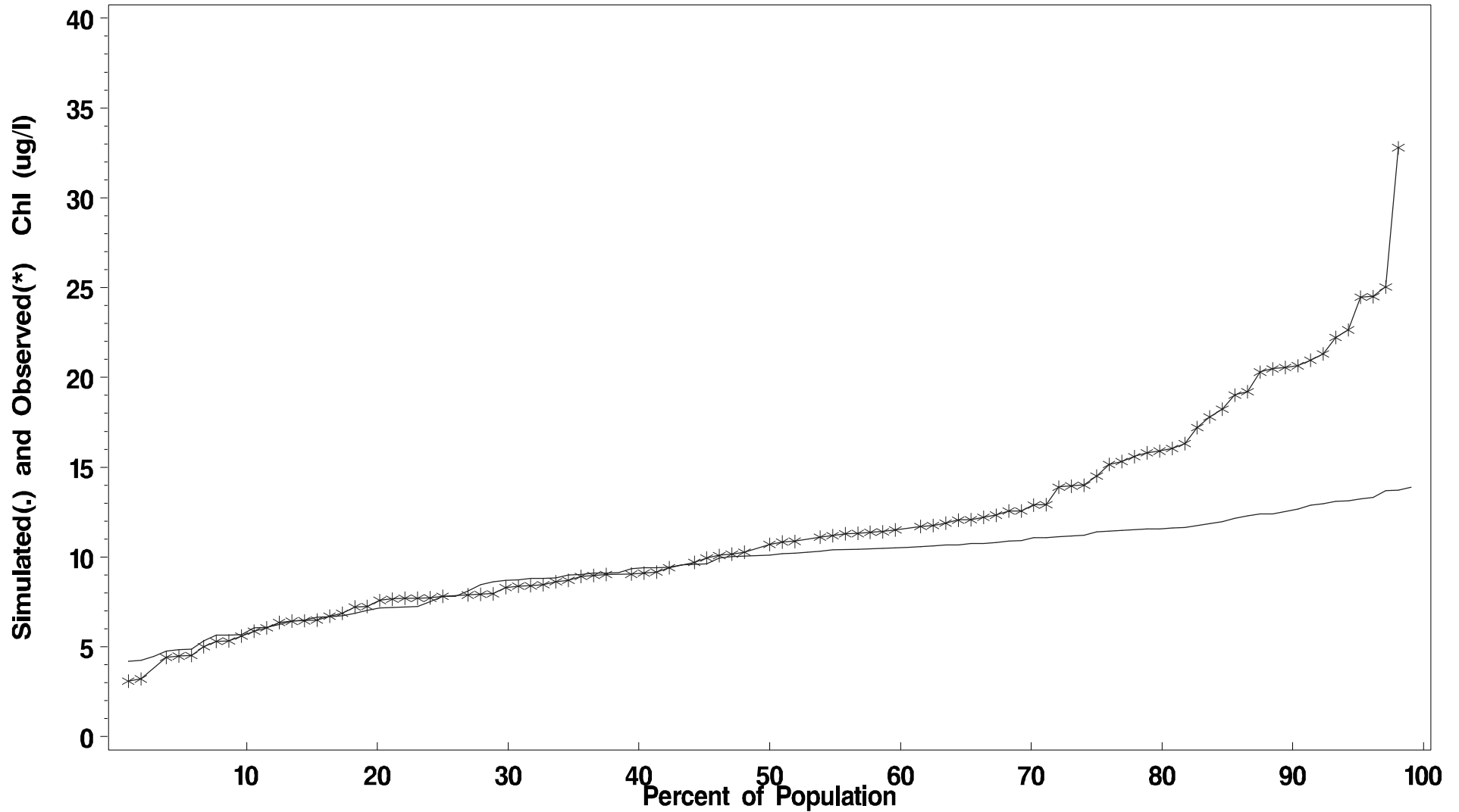

Differences (predicted – observed)

Mean difference -0.4622 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 697
Number of Predicted Violations 10
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
Segment JMSOH   Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
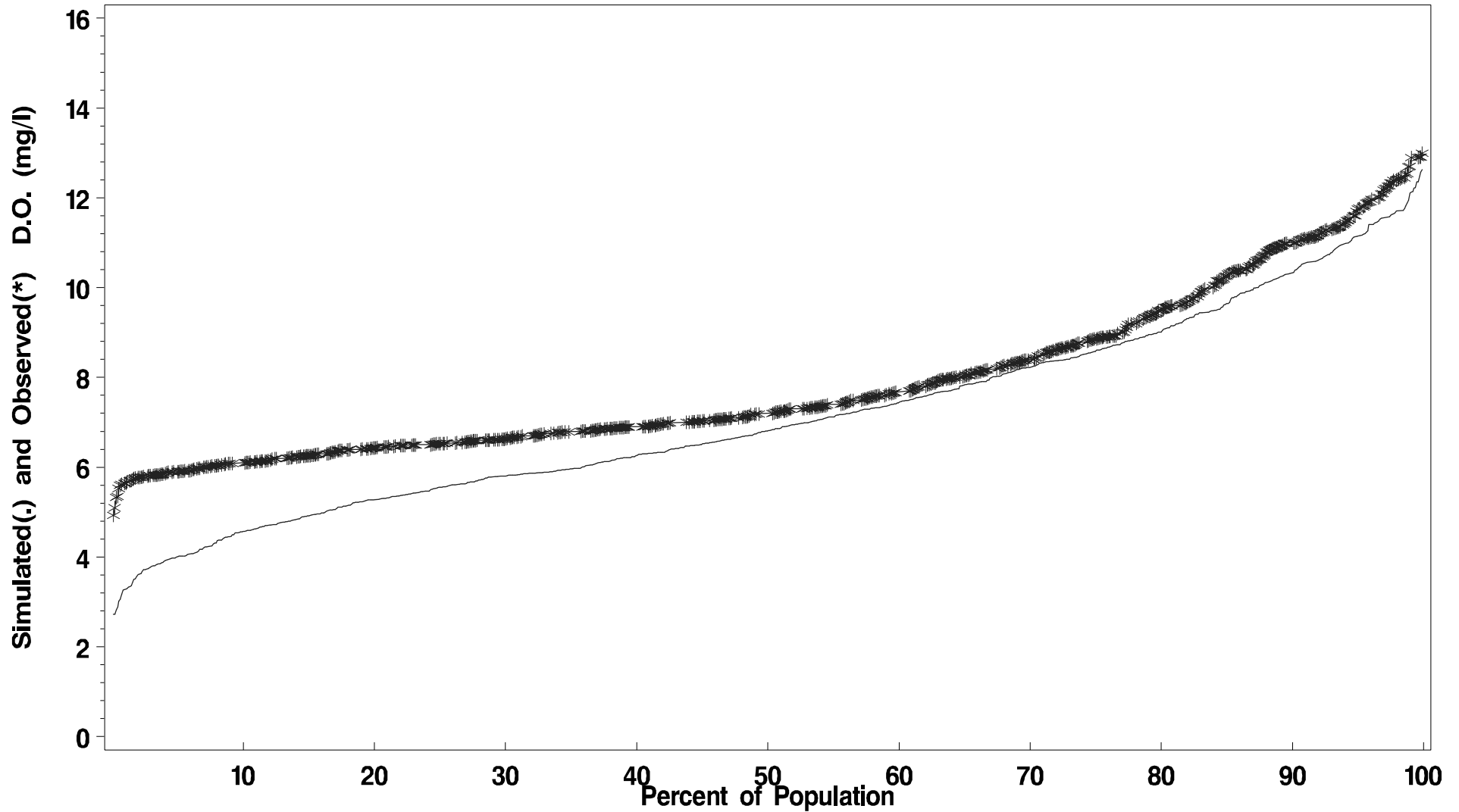
Migratory Dissolved Oxygen (mg/l)
Segment JMSOH   Season: June 11 − Feb 14
(Scatter Plot)
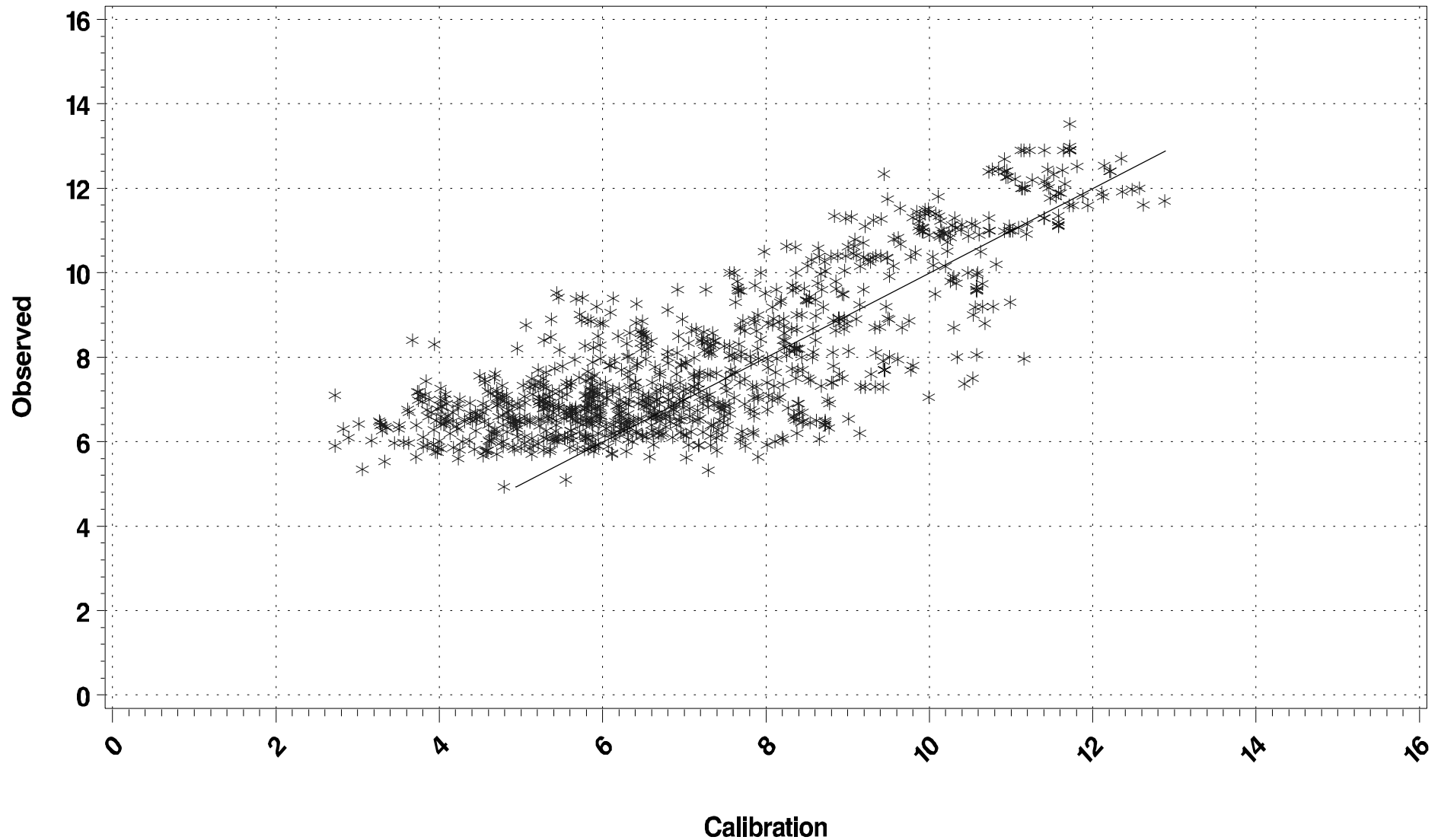
<center>
OLIGOHALINE **Chlorophyll**
Segment JMSOH (James Oligohaline)
July 1 - Sept 30
</center>

Regression of Calibration vs. Observations[1]
Using the 113 pairs of predictions and observed data, the **slope** is 0.4836 and the **intercept** is 8.0934. The **R-Squared** value for this regression is 0.0113.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 113 pairs of predictions and observed data, the **slope** is 0.4283 and the **intercept** is 0.6373. The **R-Squared** value for this regression is 0.0536.

Statistics (units in μg/l)

|	
Mean observed 12.9642	Mean predicted 10.0721
Min. observed 3.1000	Min. predicted 4.2015
Max. observed 122.3000	Max. predicted 16.6910
Std. Dev. Observed 12.1955	Std. Dev. predicted 2.6860
Median observed 10.8402	Median predicted 10.4630
95th Percentile observed 24.5047	95th Percentile predicted 14.4540
10th Percentile observed 5.8770	10th Percentile predicted 6.2994

Differences (predicted – observed)

Mean difference -2.8921 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
## Segment JMSOH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment JMSOH   Season: July 1 − Sept 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]
Using the 99 pairs of predictions and observed data, the **slope** is 0.5544 and the **intercept** is 4.8711. The **R-Squared** value for this regression is 0.1385.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 99 pairs of predictions and observed data, the **slope** is 0.8059 and the **intercept** is 0.0791. The **R-Squared** value for this regression is 0.2107.

Statistics (units in μg/l)

Mean observed 12.4127   Mean predicted 13.6036
Min. observed 1.0000   Min. predicted 2.9905
Max. observed 82.0000   Max. predicted 56.7780
Std. Dev. Observed 12.8253   Std. Dev. predicted 8.6100
Median observed 9.1000   Median predicted 11.0770
95th Percentile observed 38.5933   95th Percentile predicted 36.7810
10th Percentile observed 1.8000   10th Percentile predicted 6.1714

Differences (predicted – observed)

Mean difference 1.1909 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
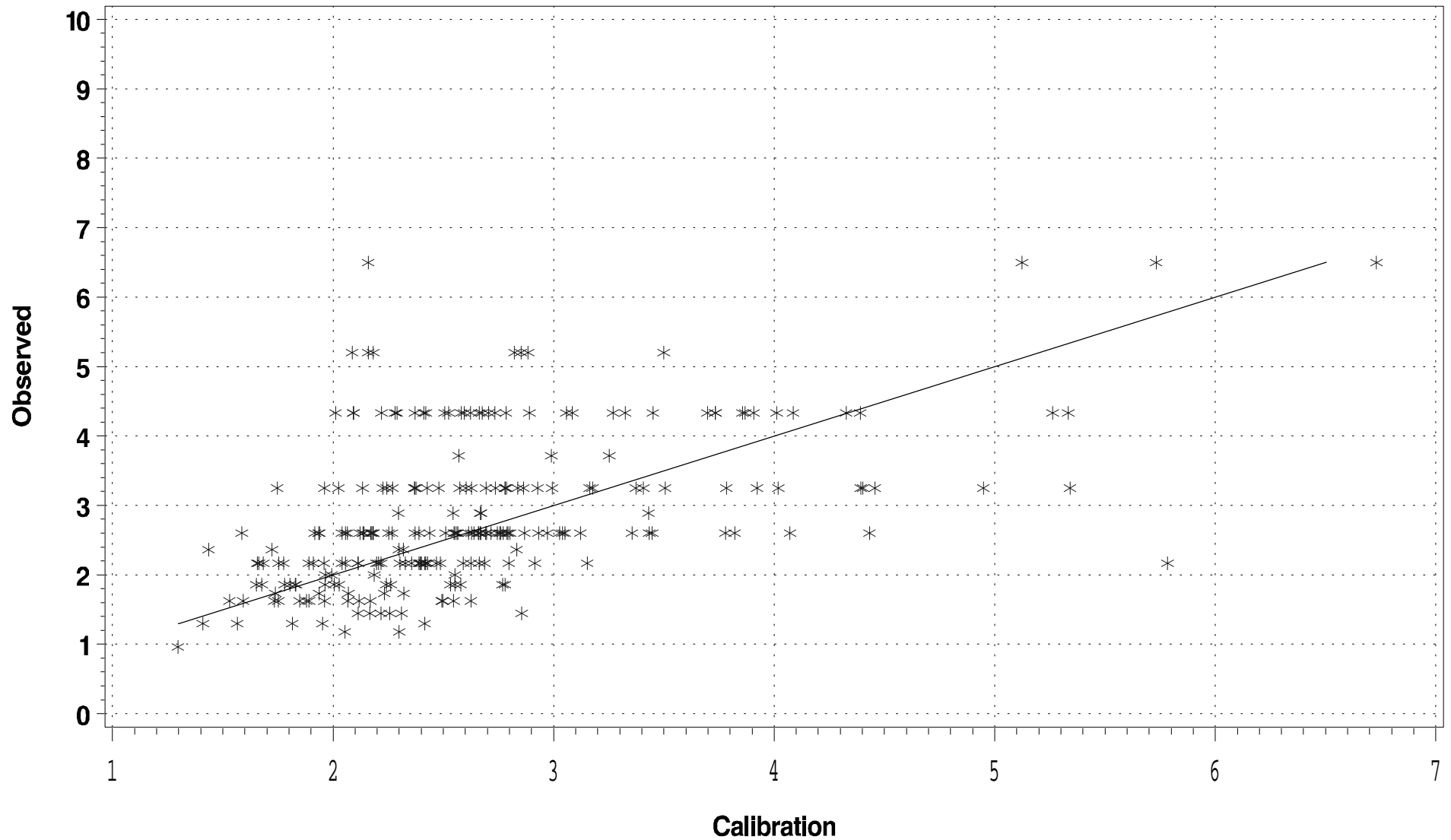**Segment JMSOH   Season: March 1 — May 30**
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
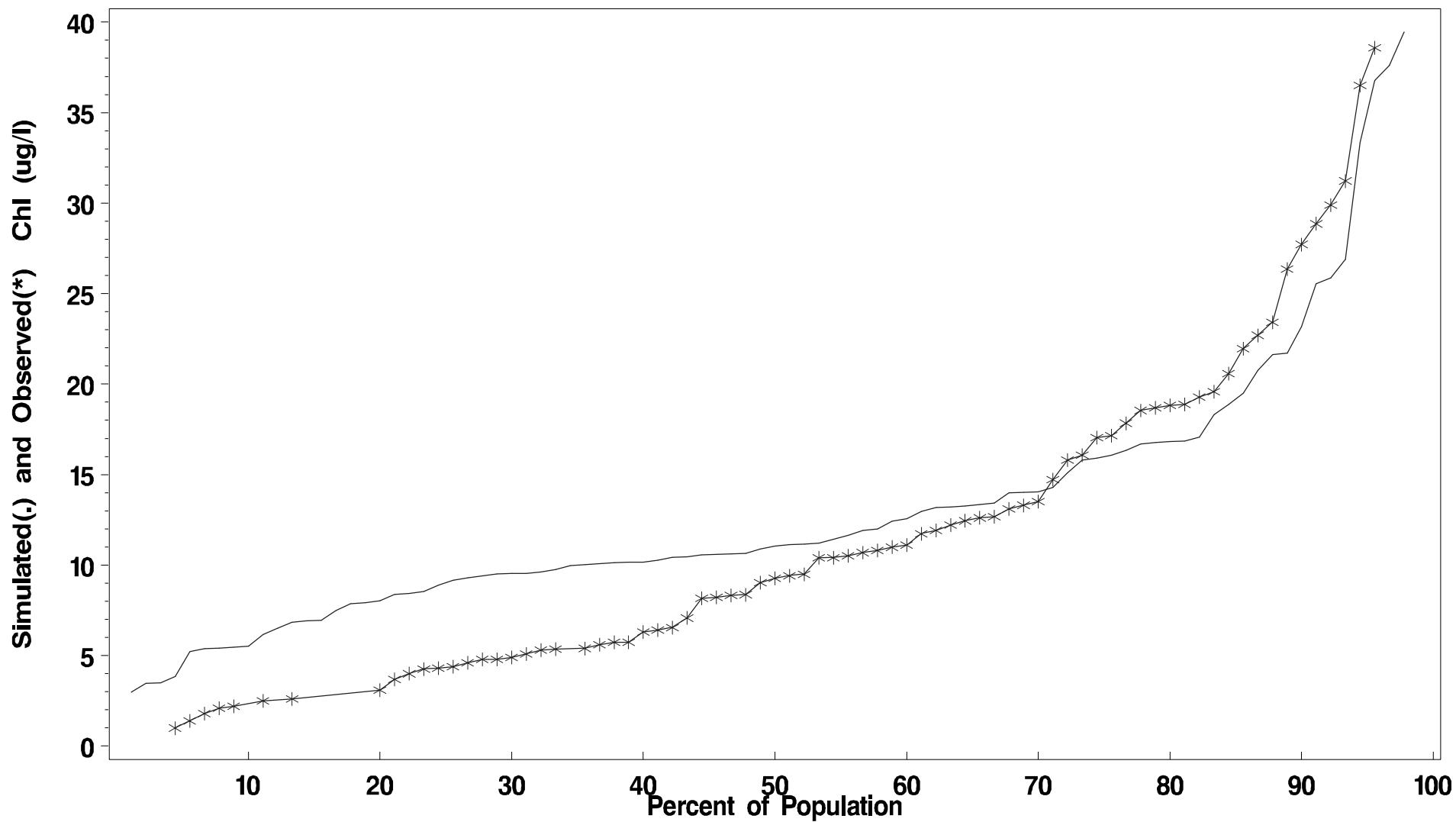
Chlorophyll Concentration (ug/l)
Segment JMSOH   Season: March 1 — May 30
(Scatter Plot)
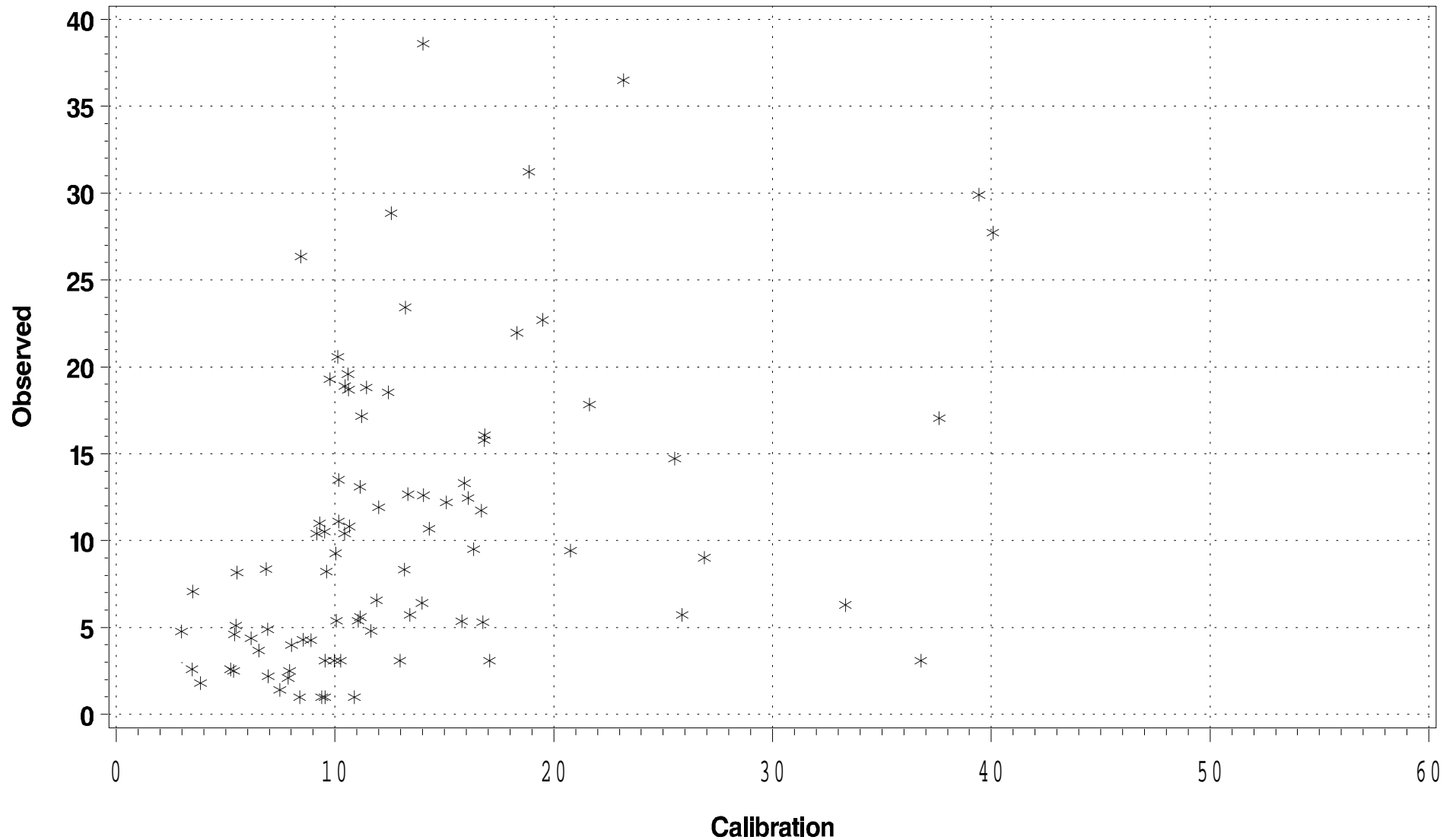
Regression of Calibration vs. Observations[1]

Using the 263 pairs of predictions and observed data, the **slope** is 0.6461 and the **intercept** is 1.1065. The **R-Squared** value for this regression is 0.2464.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 263 pairs of predictions and observed data, the **slope** is 0.6770 and the **intercept** is 0.1921. The **R-Squared** value for this regression is 0.2639.

Statistics (units in 1/m)

Mean observed 2.8285   Mean predicted 2.6653
Min. observed 0.9630   Min. predicted 1.2965
Max. observed 6.5000   Max. predicted 6.7204
Std. Dev. Observed 1.0564   Std. Dev. predicted 0.8116
Median observed 2.6000   Median predicted 2.5345
90th Percentile observed 4.3333   90th Percentile predicted 3.7345
10th Percentile observed 1.6250   10th Percentile predicted 1.8915

Differences (predicted – observed)

Mean difference -0.1632 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment JMSOH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)

Segment JMSOH Season: April 1 − Oct 30

(Scatter Plot)

Chesapeake Bay Standard Segment JMSMH

Location Map of
Segment JMSMH within
the Chesapeake Bay Model Grid

LE5.2

LE5.3

Chesapeake Bay Program

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W   E
S

0   1.25   2.5   5   7.5   10
Miles
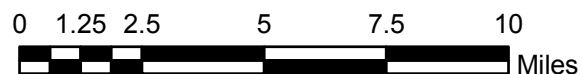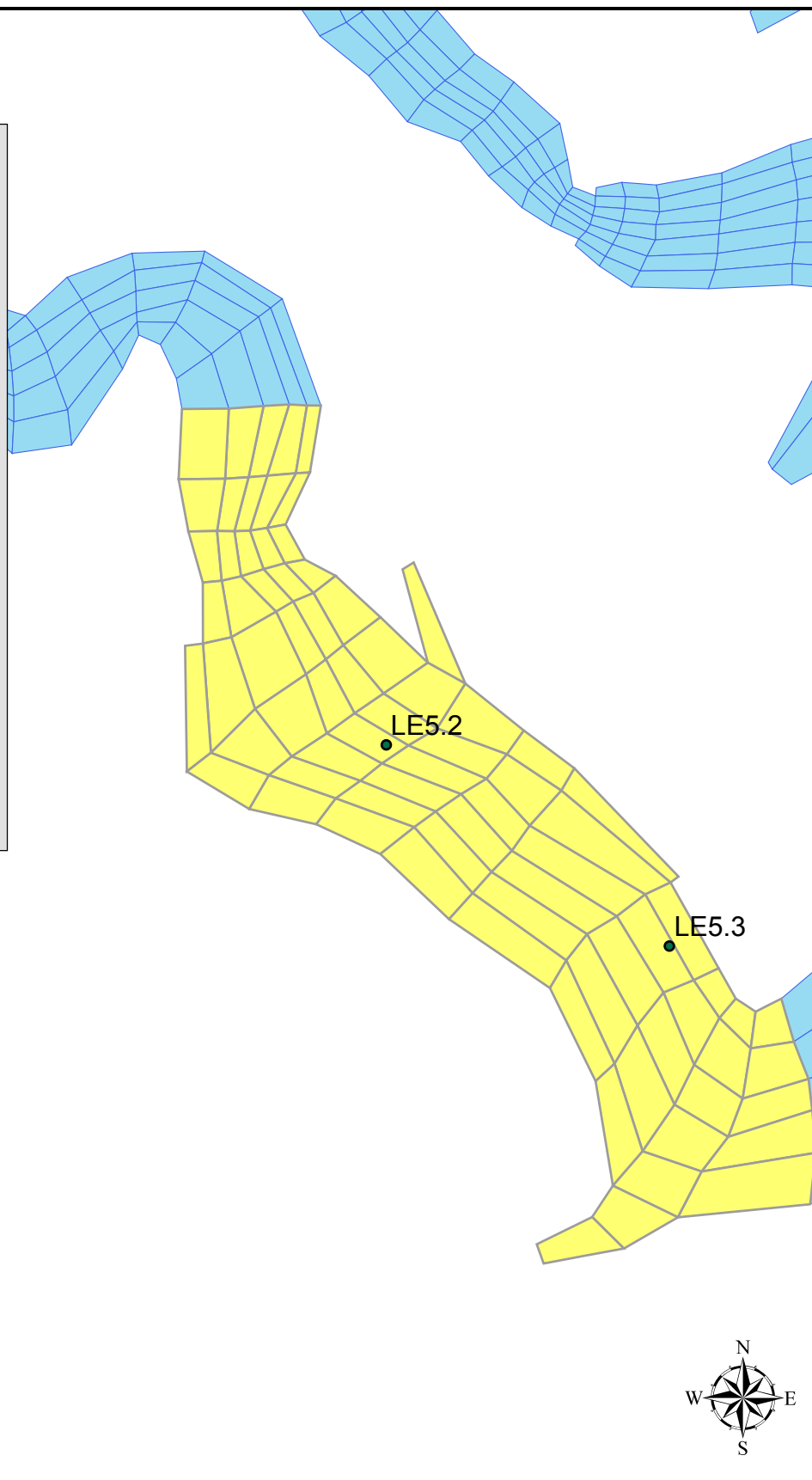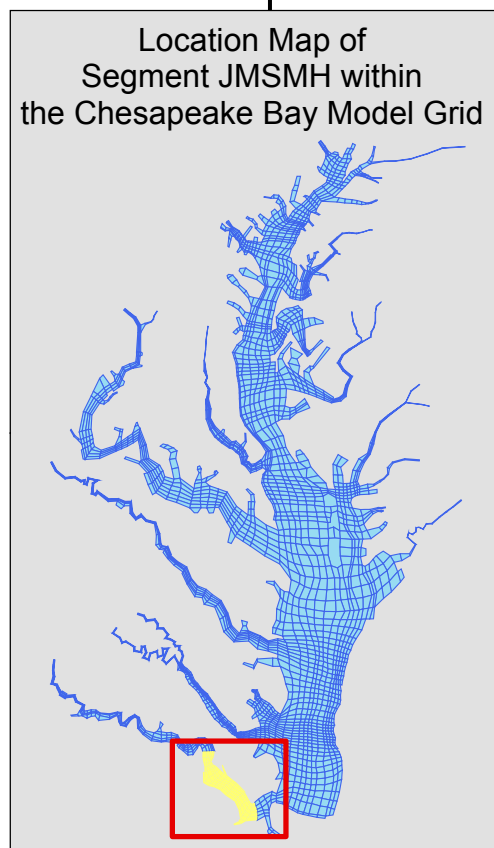
MIGRATORY **Dissolved Oxygen**
Segment JMSMH (James Mesohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 300 pairs of predictions and observed data, the **slope** is 0.4471 and the **intercept** is 4.2972. The **R-Squared** value for this regression is 0.6586.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 300 pairs of predictions and observed data, the **slope** is 0.4801 and the **intercept** is 0.4921. The **R-Squared** value for this regression is 0.6666.

Statistics (units in mg/l)

Mean observed 8.7181   Mean predicted 9.8878
Min. observed 5.7   Min. predicted 3.541
Max. observed 12.74   Max. predicted 18.38
Std. Dev. Observed 1.7388   Std. Dev. predicted 3.1561
Median observed 8.4800   Median predicted 9.7870
90th Percentile observed 11.2300   90th Percentile predicted 14.0495
10th Percentile observed 6.4000   10th Percentile predicted 5.5464

Differences (predicted – observed)

Mean difference 1.1698 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 300
Number of Predicted Violations 14
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
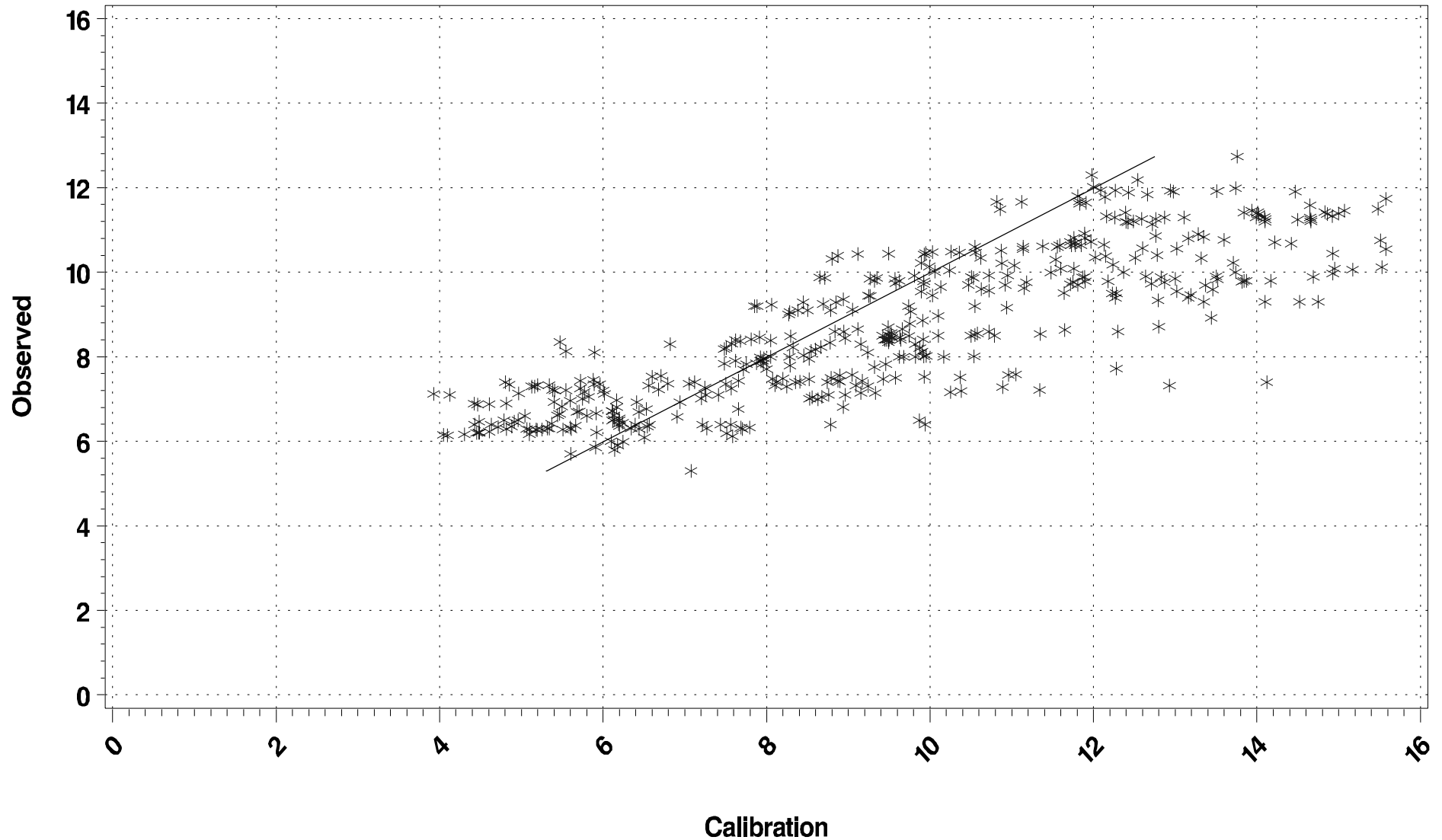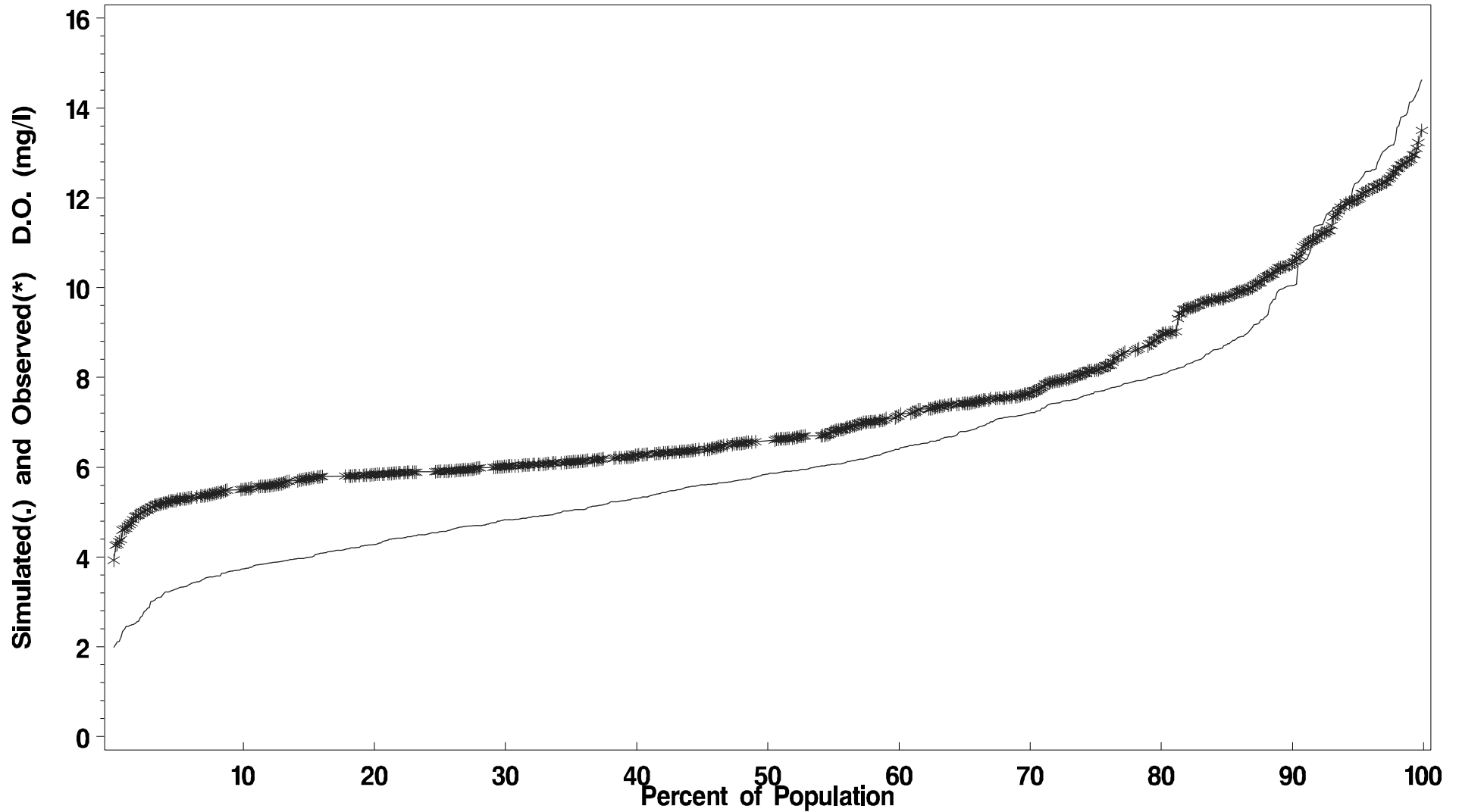**Segment JMSMH   Season: Feb 15 − June 10**
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data
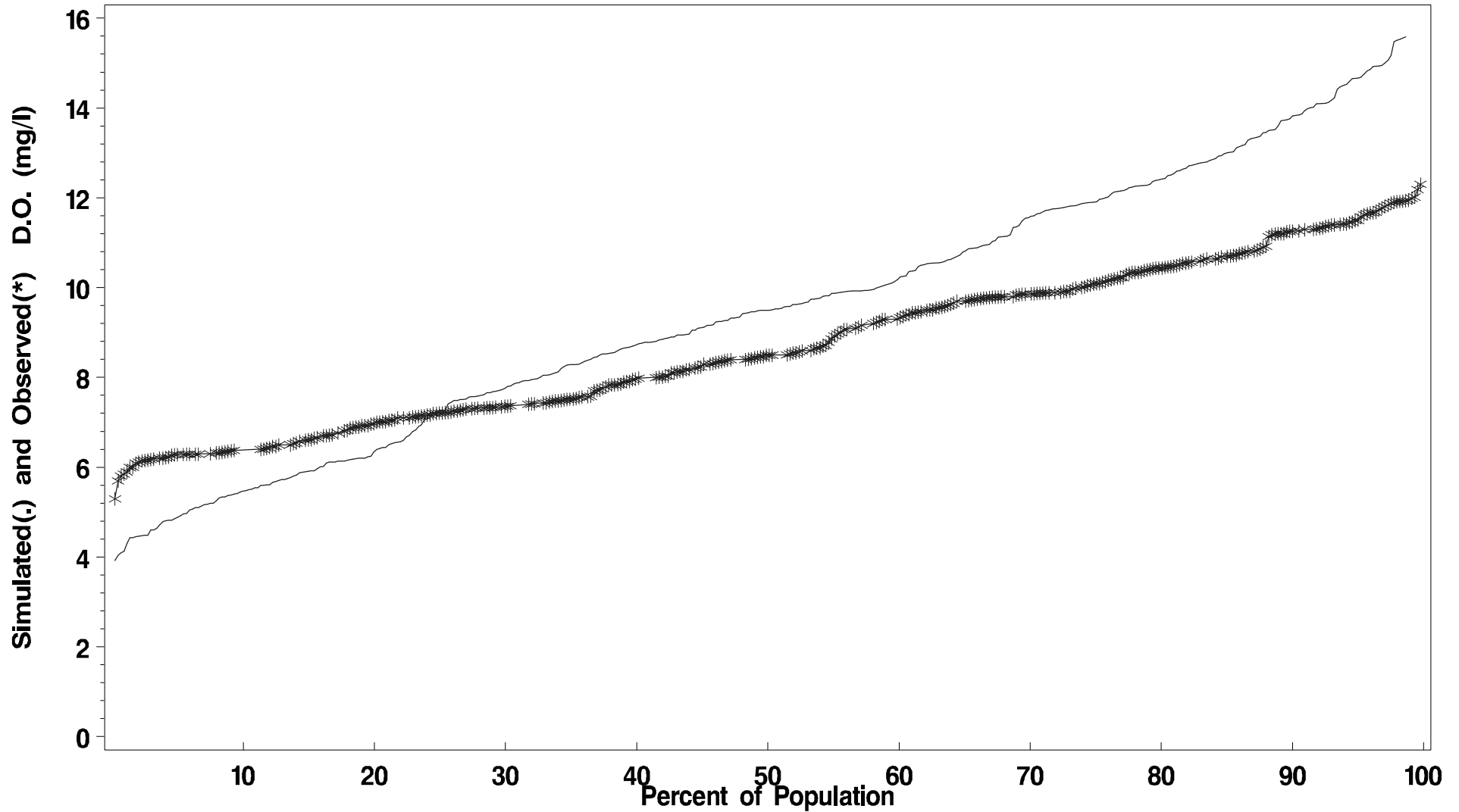
**Migratory Dissolved Oxygen (mg/l)
Segment JMSMH   Season: Feb 15 — June 10**

(Scatter Plot)

MIGRATORY **Dissolved Oxygen**
Segment JMSMH (James Mesohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 496 pairs of predictions and observed data, the **slope** is 0.6968 and the **intercept** is 2.6782. The **R-Squared** value for this regression is 0.7500.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 496 pairs of predictions and observed data, the **slope** is 0.5995 and the **intercept** is 0.3915. The **R-Squared** value for this regression is 0.6717.

Statistics (units in mg/l)

Mean observed 7.4325   Mean predicted 6.8235
Min. observed 3.93   Min. predicted 2.456
Max. observed 13.55   Max. predicted 15.37
Std. Dev. Observed 2.0471   Std. Dev. predicted 2.5443
Median observed 6.7000   Median predicted 6.2605
90th Percentile observed 10.6600   90th Percentile predicted 10.5470
10th Percentile observed 5.5500   10th Percentile predicted 4.0672

Differences (predicted – observed)

Mean difference -0.6090 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 496
Number of Predicted Violations 16
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
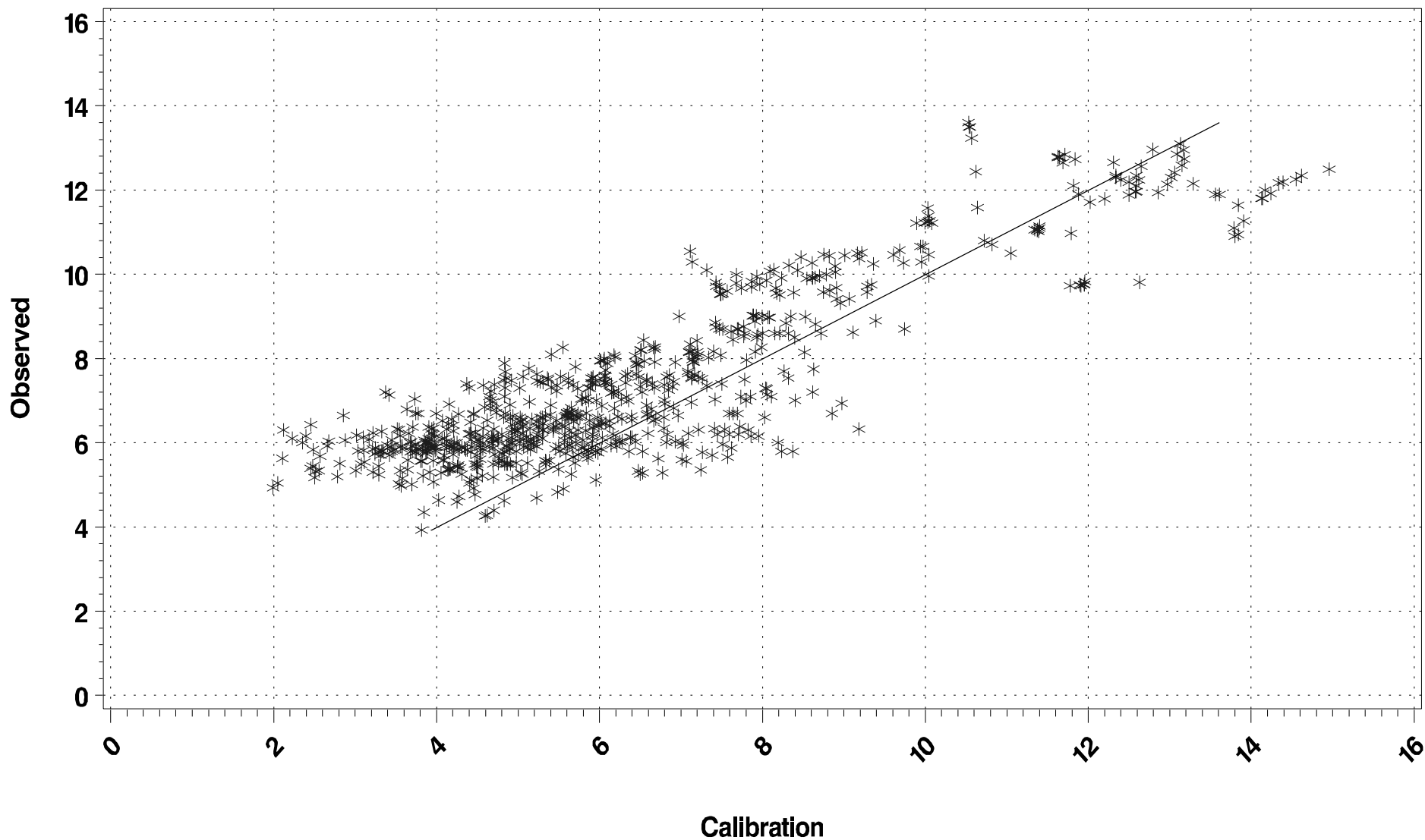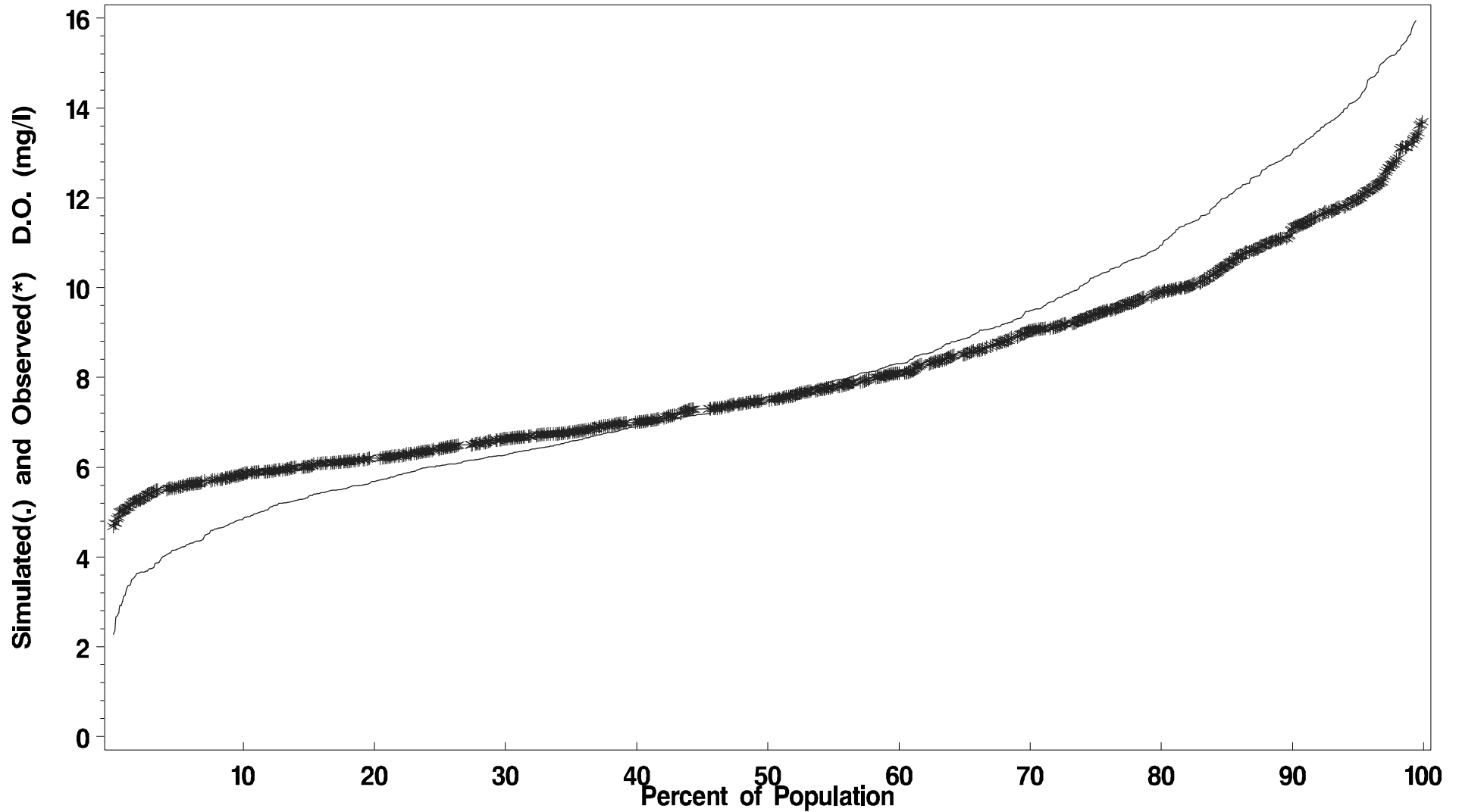## Segment JMSMH Season: June 11 – Feb 14
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory Dissolved Oxygen (mg/l)
Segment JMSMH Season: June 11 − Feb 14
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 668 pairs of predictions and observed data, the **slope** is 0.5851 and the
intercept is 3.0605. The **R-Squared** value for this regression is 0.7411.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 668 pairs of predictions and observed data, the **slope** is 0.6052 and the
intercept is 0.3661. The **R-Squared** value for this regression is 0.7272.

Statistics (units in mg/l)

Mean observed 8.0386   Mean predicted 8.5079
Min. observed 4.68   Min. predicted 3.033
Max. observed 13.8   Max. predicted 17.85
Std. Dev. Observed 2.0274   Std. Dev. predicted 2.9828
Median observed 7.5100   Median predicted 7.7463
90th Percentile observed 11.1900   90th Percentile predicted 13.1940
10th Percentile observed 5.8700   10th Percentile predicted 5.2743

Differences (predicted – observed)

Mean difference 0.4693 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 3.5 mg/l.

Number of predicted and observed pairs 668
Number of Predicted Violations 2
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
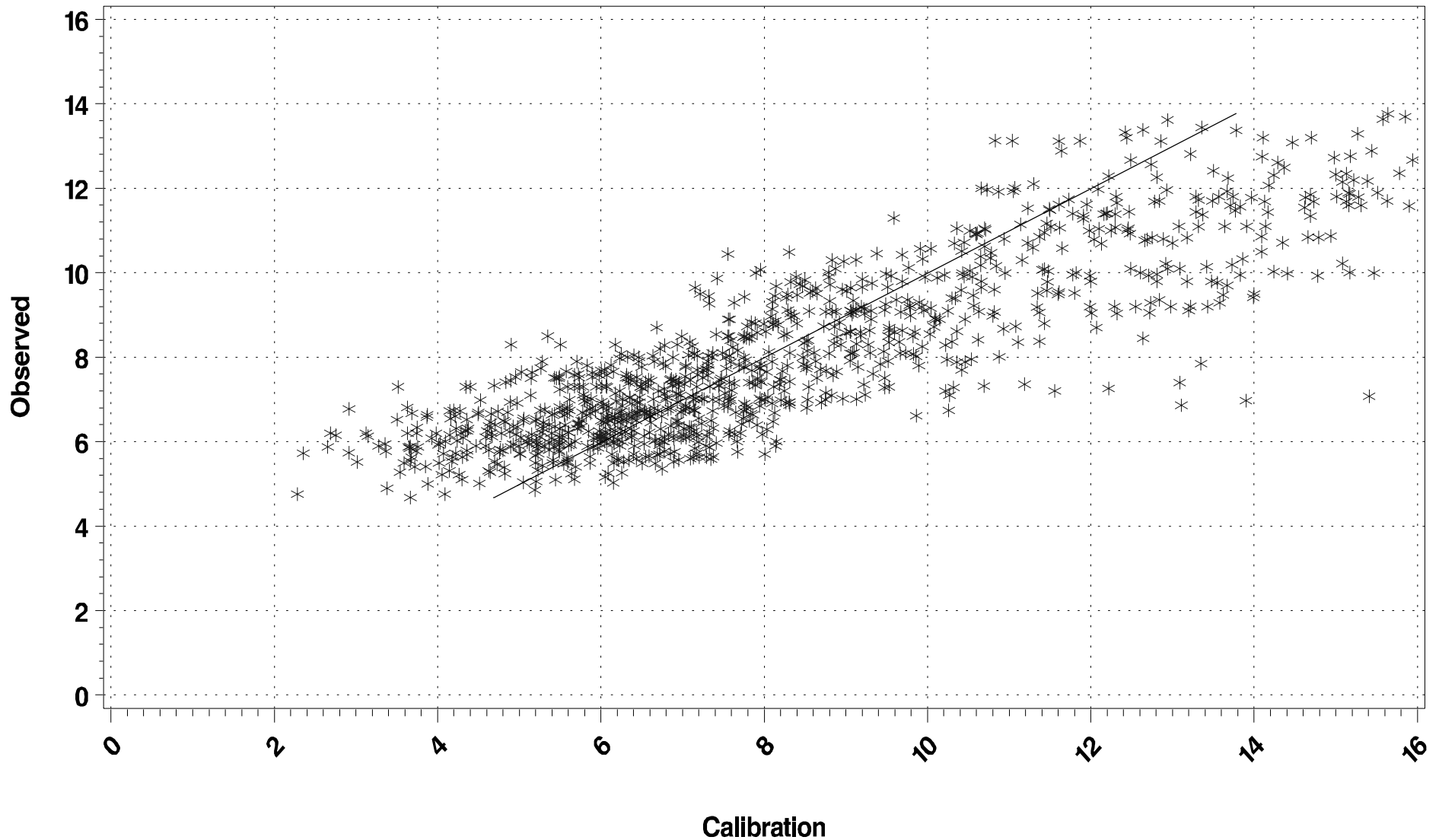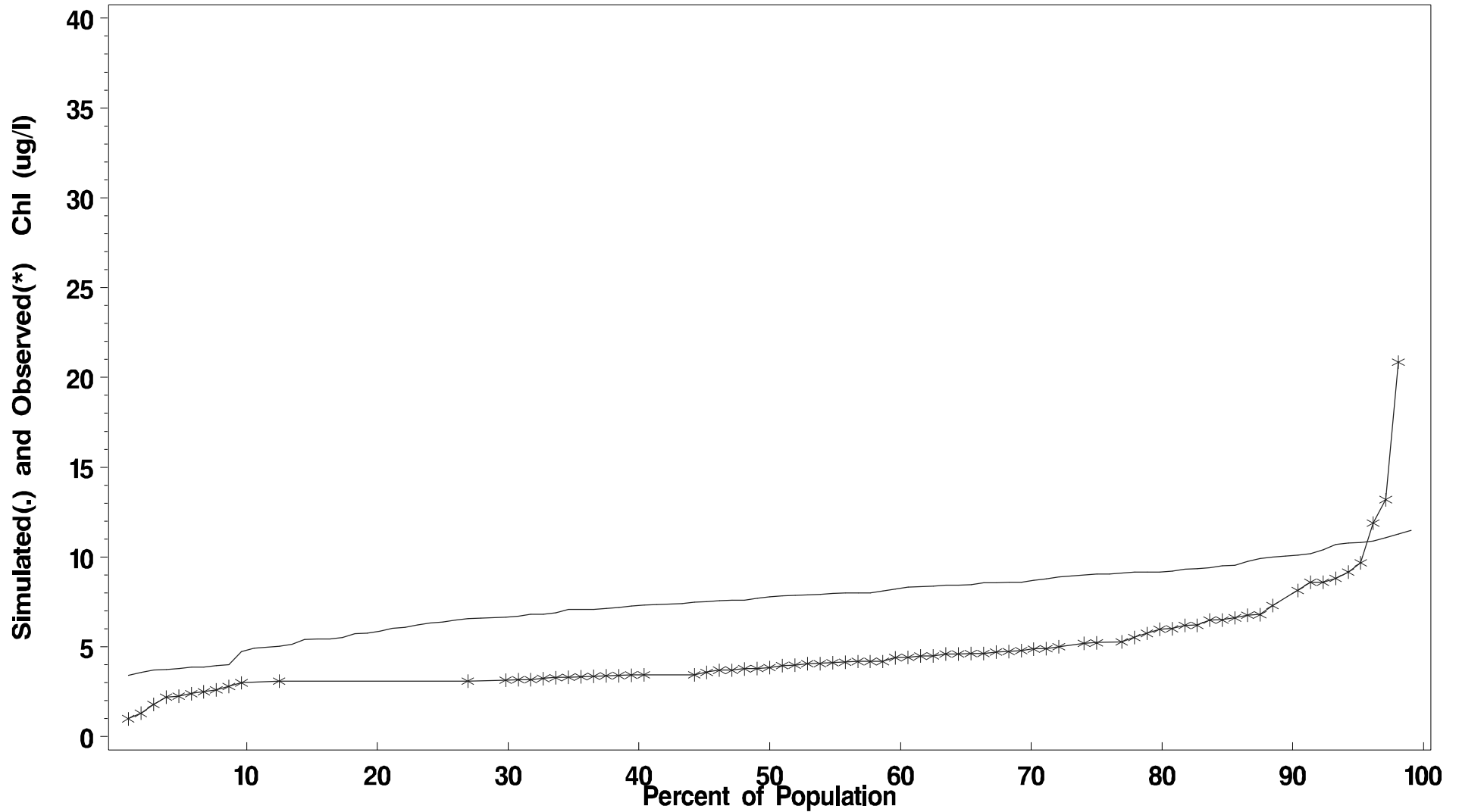**Segment JMSMH Season: Jan 1 – Dec 31**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment JMSMH   Season: Jan 1 — Dec 31
(Scatter Plot)

<div align="center">

MESOHALINE **Chlorophyll**
Segment JMSMH (James Mesohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 110 pairs of predictions and observed data, the **slope** is 0.0256 and the **intercept** is 5.8951. The **R-Squared** value for this regression is 0.0000.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 110 pairs of predictions and observed data, the **slope** is 0.2577 and the **intercept** is 0.4944. The **R-Squared** value for this regression is 0.0165.

Statistics (units in μg/l)

|	
Mean observed 6.1000	Mean predicted 8.0080
Min. observed 1.0000	Min. predicted 3.5747
Max. observed 131.5000	Max. predicted 12.8120
Std. Dev. Observed 12.8730	Std. Dev. predicted 2.1406
Median observed 3.9001	Median predicted 7.9067
95th Percentile observed 9.6773	95th Percentile predicted 11.4680
10th Percentile observed 3.0500	10th Percentile predicted 4.9532

Differences (predicted – observed)

Mean difference 1.9080 μg/l

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[1] observed is dependent, predicted is independent

# Chlorophyll Concentration (ug/l)
Segment JMSMH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Simulated(.) and Observed(*) Chl (ug/l)

Percent of Population

Chlorophyll Concentration (ug/l)
Segment JMSMH   Season: July 1 – Sept 30
(Scatter Plot)
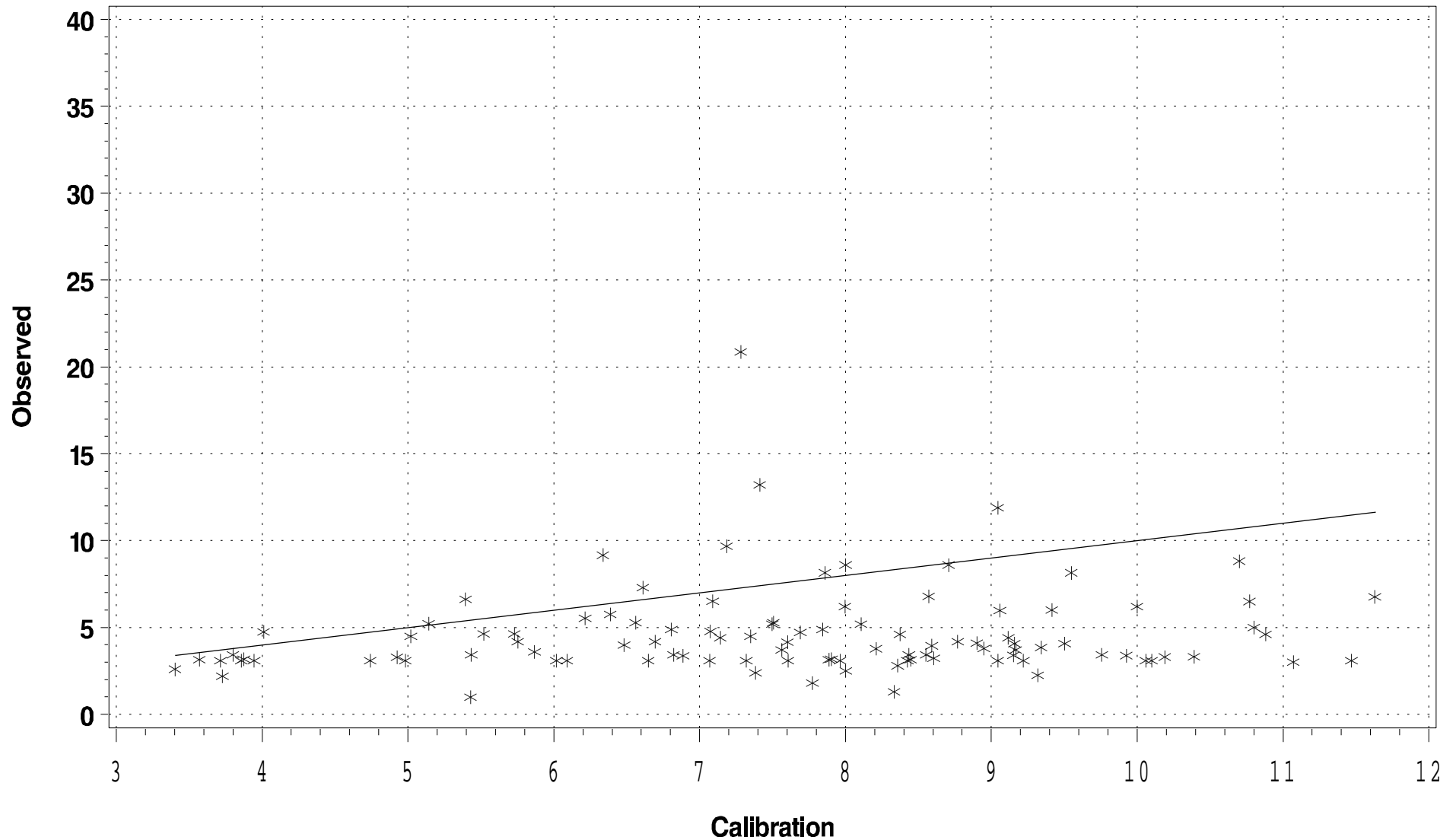
MESOHALINE **Chlorophyll**
Segment JMSMH (James Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 99 pairs of predictions and observed data, the **slope** is 0.2347 and the **intercept** is 6.1353. The **R-Squared** value for this regression is 0.0371.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 99 pairs of predictions and observed data, the **slope** is 0.5807 and the **intercept** is 0.1176. The **R-Squared** value for this regression is 0.0702.

Statistics (units in μg/l)

Mean observed 13.2594   Mean predicted 30.3524
Min. observed 1.0000   Min. predicted 9.1717
Max. observed 78.6475   Max. predicted 65.7080
Std. Dev. Observed 15.4341   Std. Dev. predicted 12.6708
Median observed 6.9153   Median predicted 26.7730
95th Percentile observed 53.8770   95th Percentile predicted 58.1130
10th Percentile observed 2.5000   10th Percentile predicted 16.0740

Differences (predicted – observed)

Mean difference 17.0930 μg/l

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[1] observed is dependent, predicted is independent
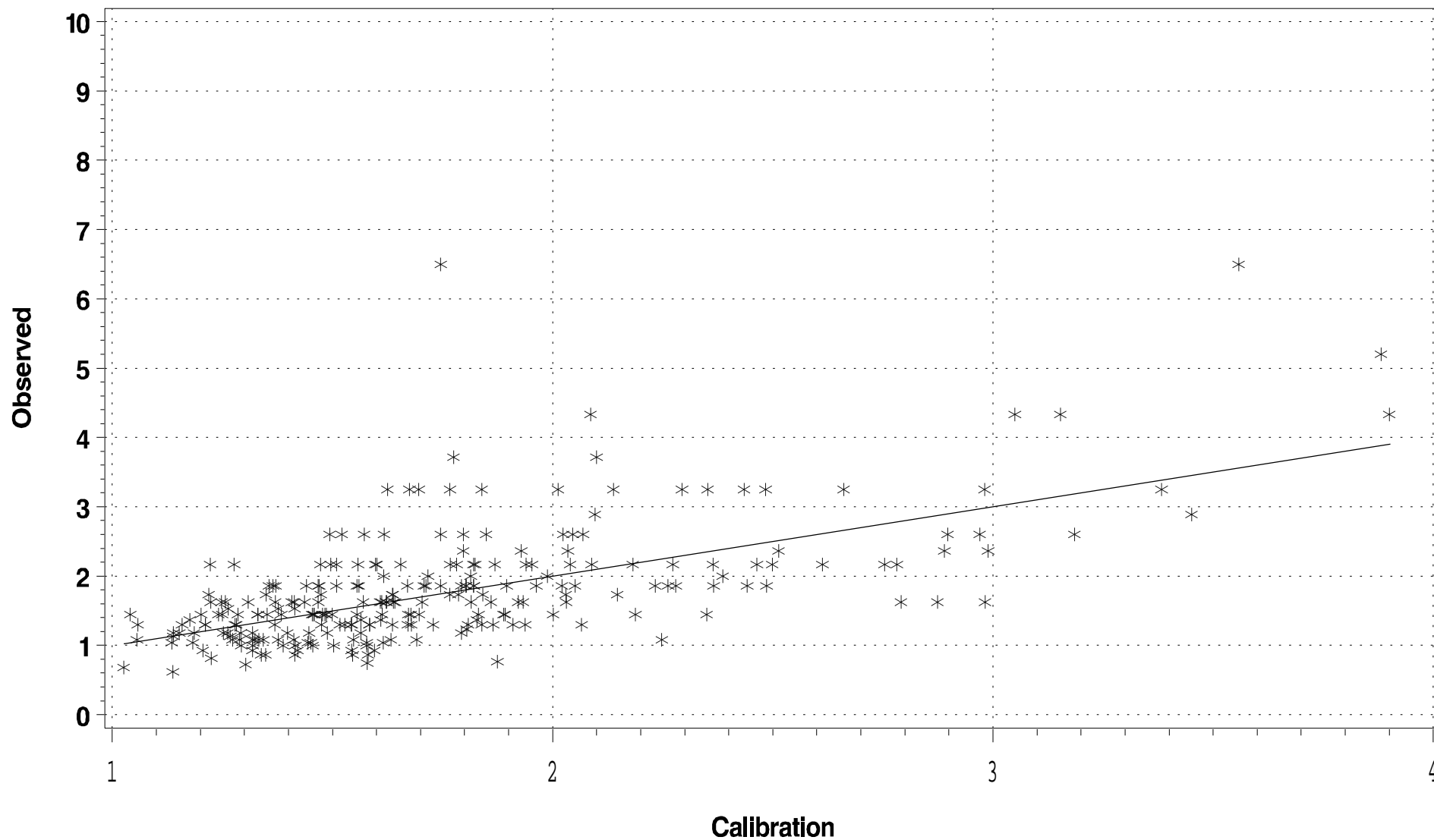
Chlorophyll Concentration (ug/l)

Segment JMSMH   Season: March 1 – May 30

Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
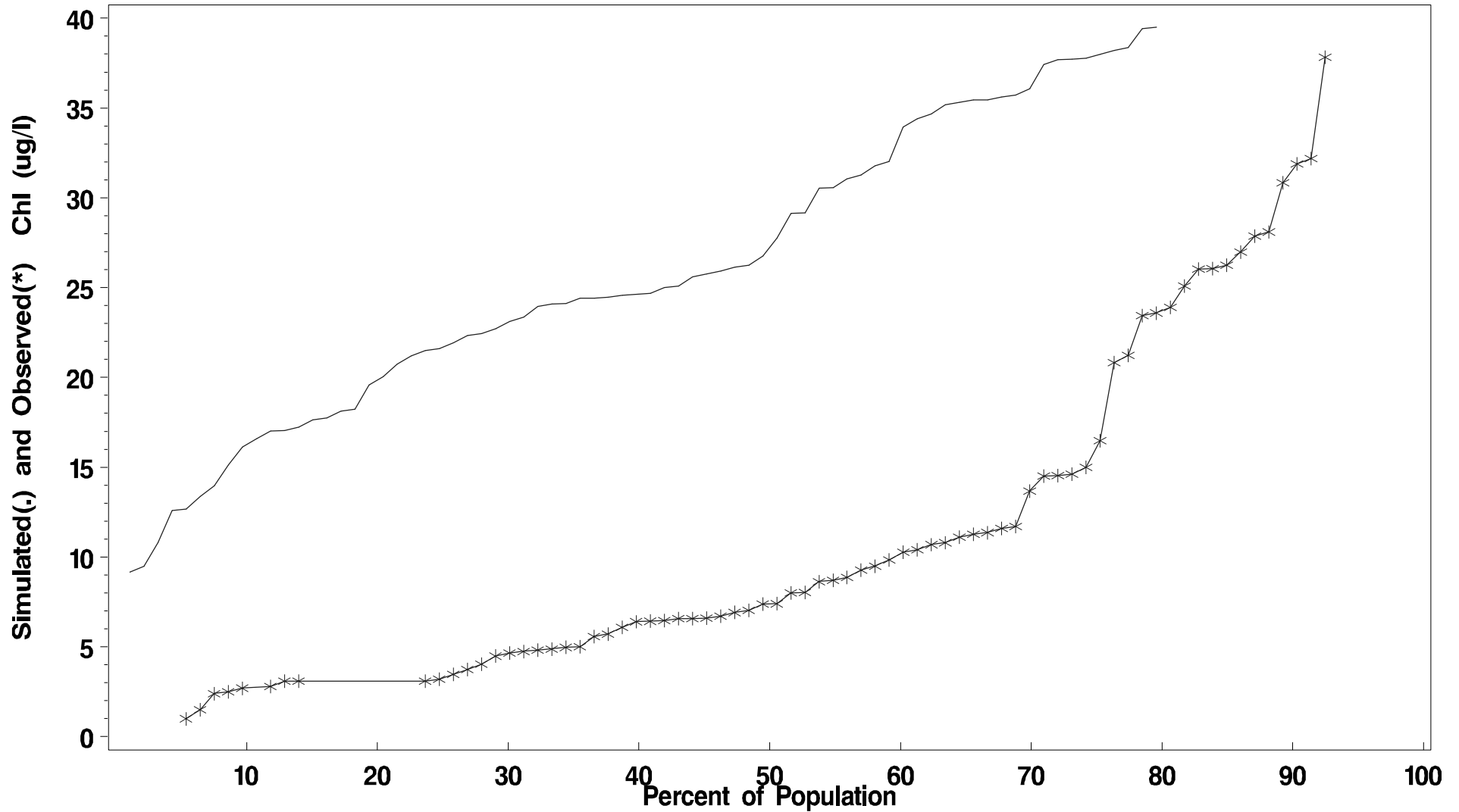
Chlorophyll Concentration (ug/l)
Segment JMSMH   Season: March 1 – May 30
(Scatter Plot)
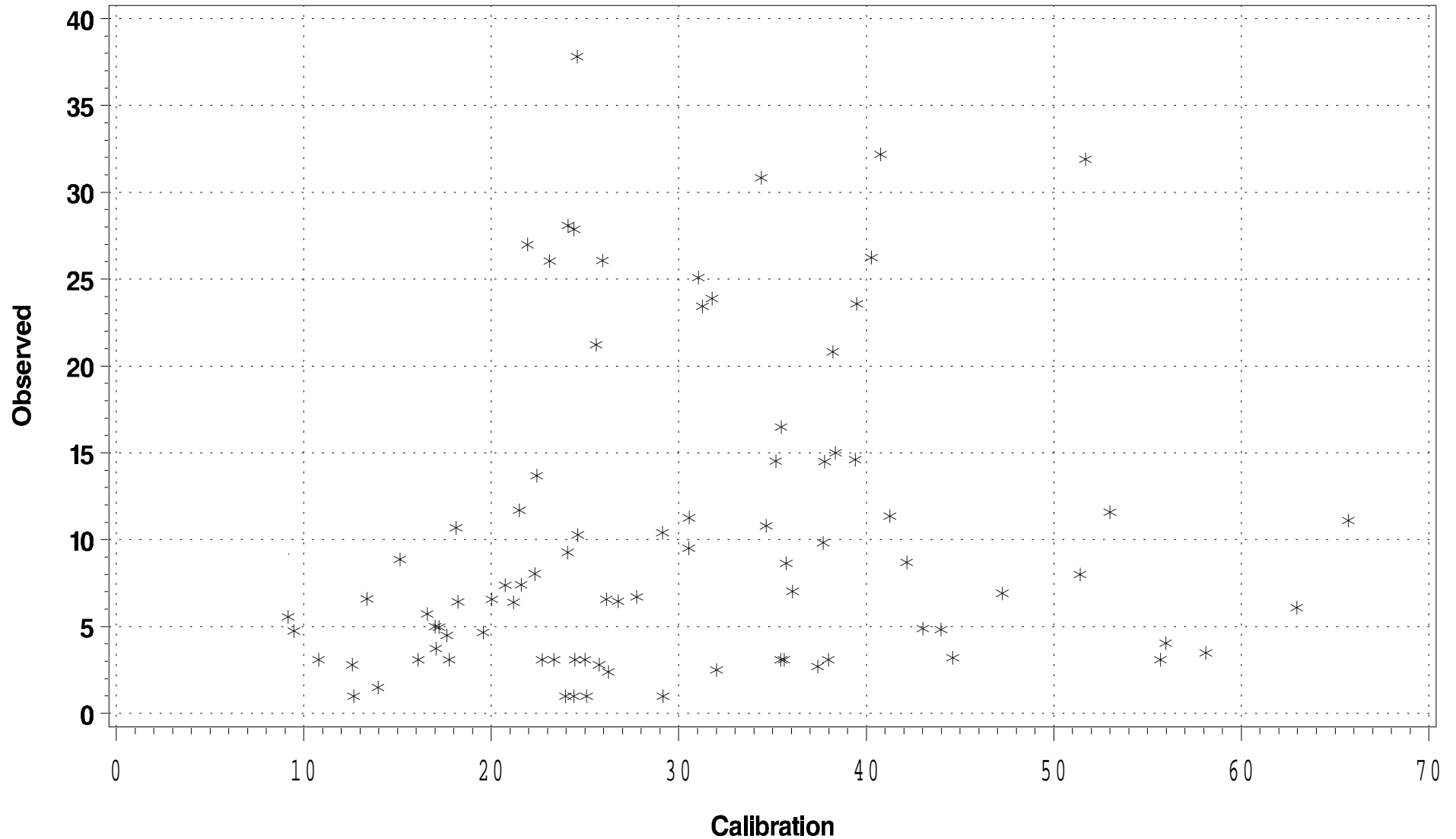
MESOHALINE **Light Attenuation**
Segment JMSMH (James Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 267 pairs of predictions and observed data, the **slope** is 1.0742 and the **intercept** is -0.0347. The **R-Squared** value for this regression is 0.4439.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 267 pairs of predictions and observed data, the **slope** is 0.9617 and the **intercept** is 0.0222. The **R-Squared** value for this regression is 0.4402.

Statistics (units in 1/m)

Mean observed 1.8588   Mean predicted 1.7628
Min. observed 0.6190   Min. predicted 0.8907
Max. observed 6.5000   Max. predicted 4.0369
Std. Dev. Observed 0.9041   Std. Dev. predicted 0.5608
Median observed 1.6250   Median predicted 1.6325
90th Percentile observed 3.2500   90th Percentile predicted 2.4836
10th Percentile observed 1.0400   10th Percentile predicted 1.2190

Differences (predicted – observed)

Mean difference -0.0960 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
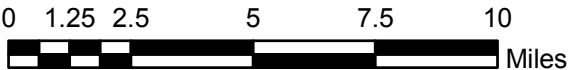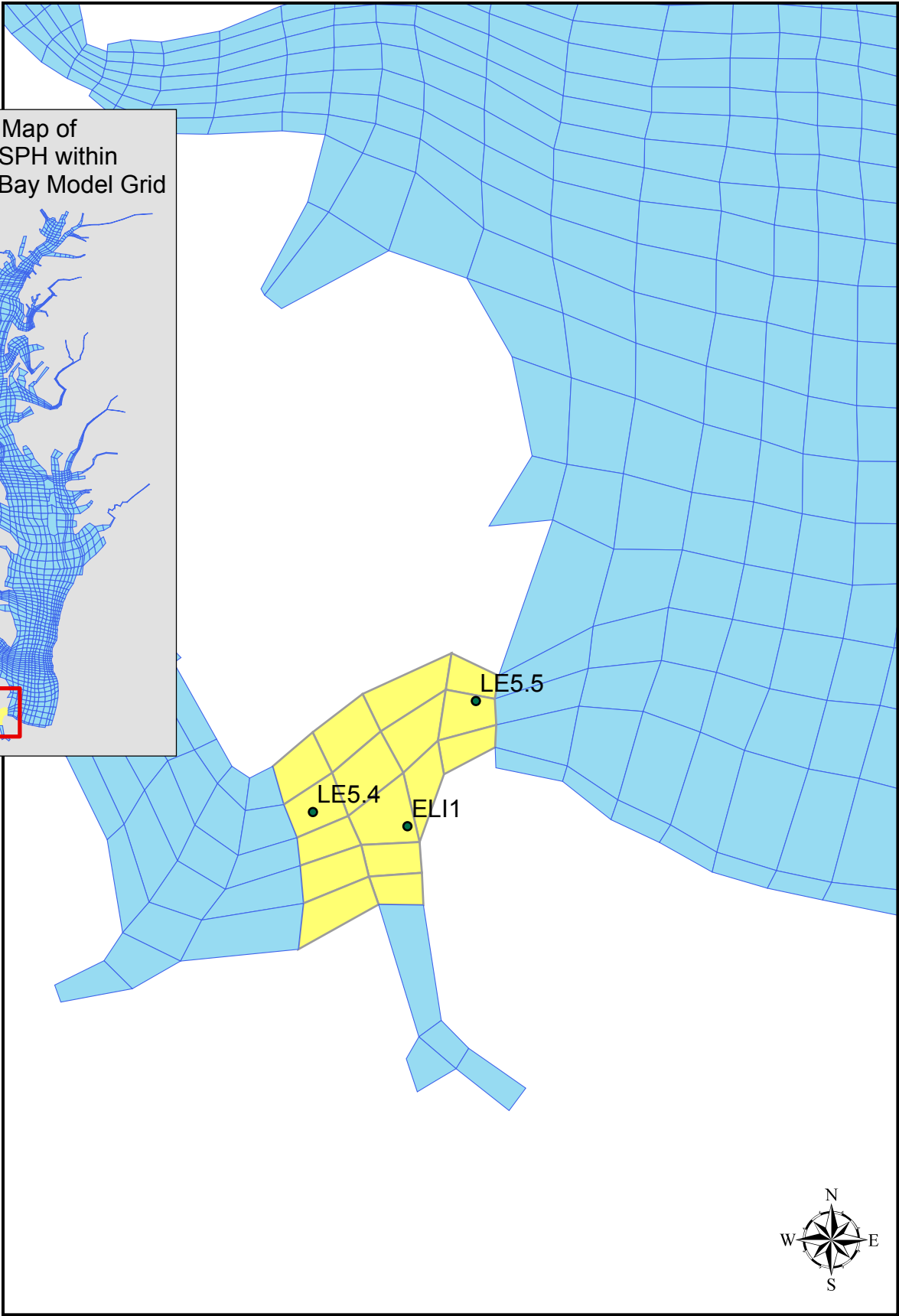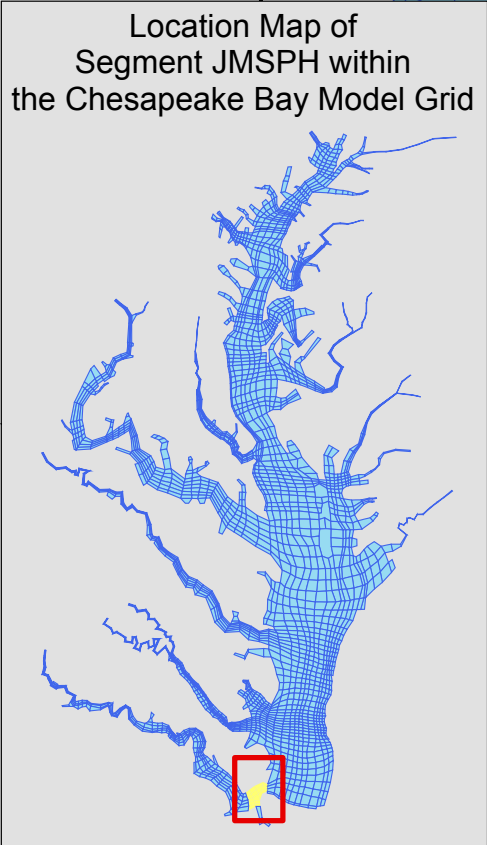Segment JMSMH Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment JMSMH   Season: April 1 − Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment JMSPH

Location Map of
Segment JMSPH within
the Chesapeake Bay Model Grid

LE5.5

LE5.4

ELI1

Chesapeake Bay Program

N
W   E
S

0   1.25 2.5   5   7.5   10
Miles
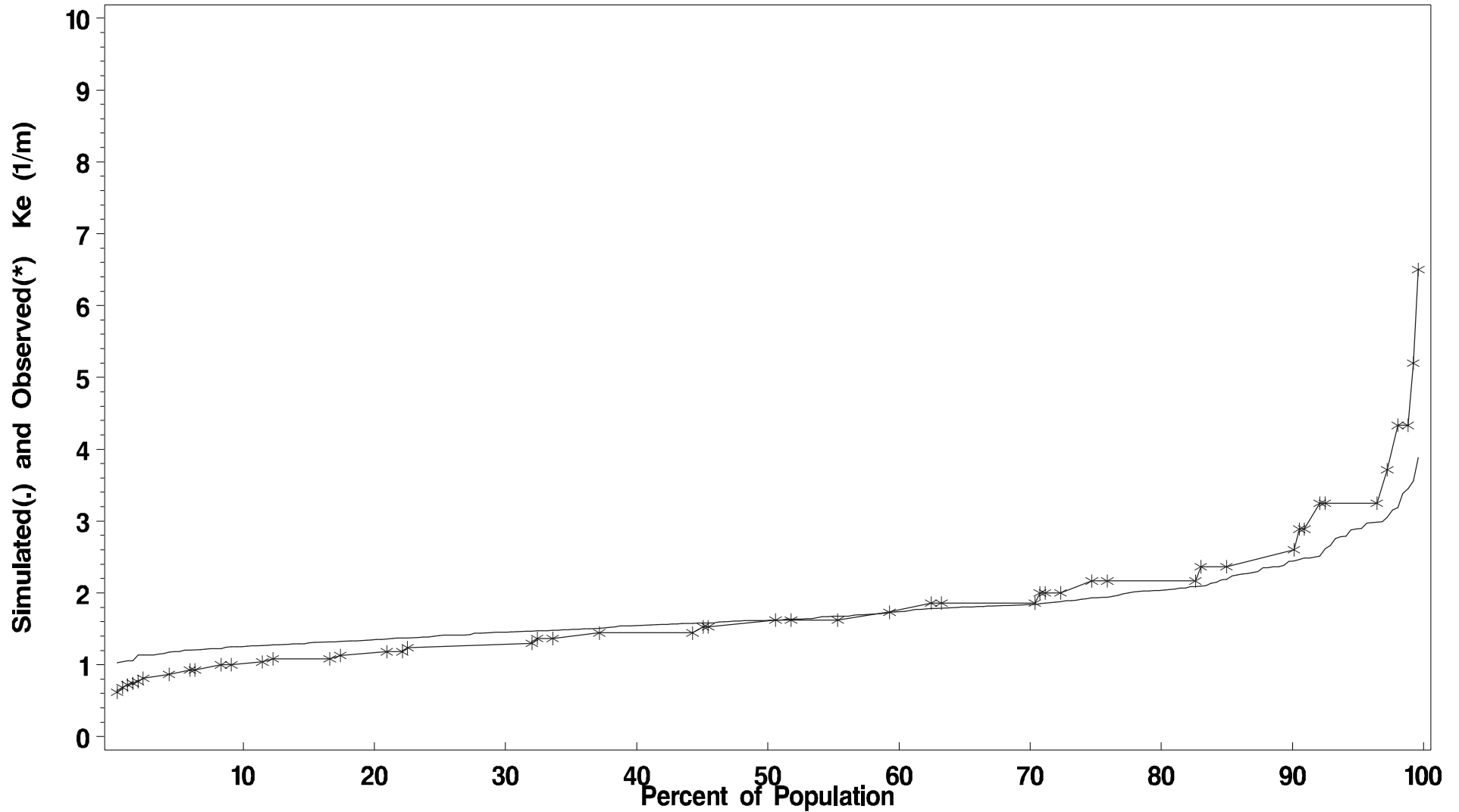
OPEN WATER **Dissolved Oxygen**
Segment JMSPH (James Polyhaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 997 pairs of predictions and observed data, the **slope** is 0.6307 and the
intercept is 2.6685. The **R-Squared** value for this regression is 0.7159.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 997 pairs of predictions and observed data, the **slope** is 0.6556 and the
intercept is 0.3153. The **R-Squared** value for this regression is 0.6925.

Statistics (units in mg/l)

Mean observed 7.8995   Mean predicted 8.2940
Min. observed 3.25   Min. predicted 3.039
Max. observed 13.8   Max. predicted 17.4
Std. Dev. Observed 2.0478   Std. Dev. predicted 2.7473
Median observed 7.5400   Median predicted 7.6125
90th Percentile observed 10.8100 90th Percentile predicted 12.2850
10th Percentile observed 5.6000   10th Percentile predicted 5.2772

Differences (predicted – observed)

Mean difference 0.3945 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
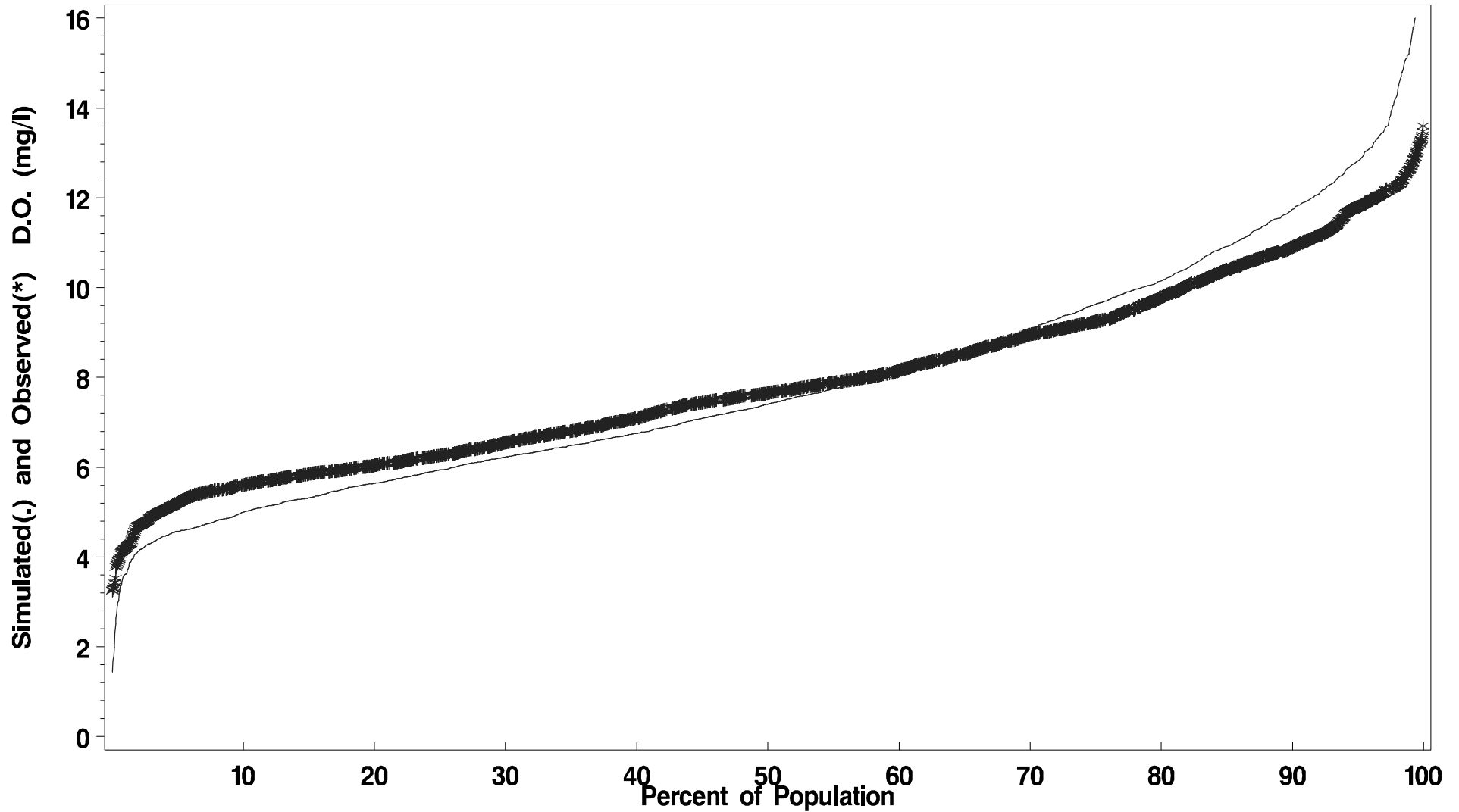standard of 3.5 mg/l.

Number of predicted and observed pairs 997
Number of Predicted Violations 8
Number of Observed Violations 5

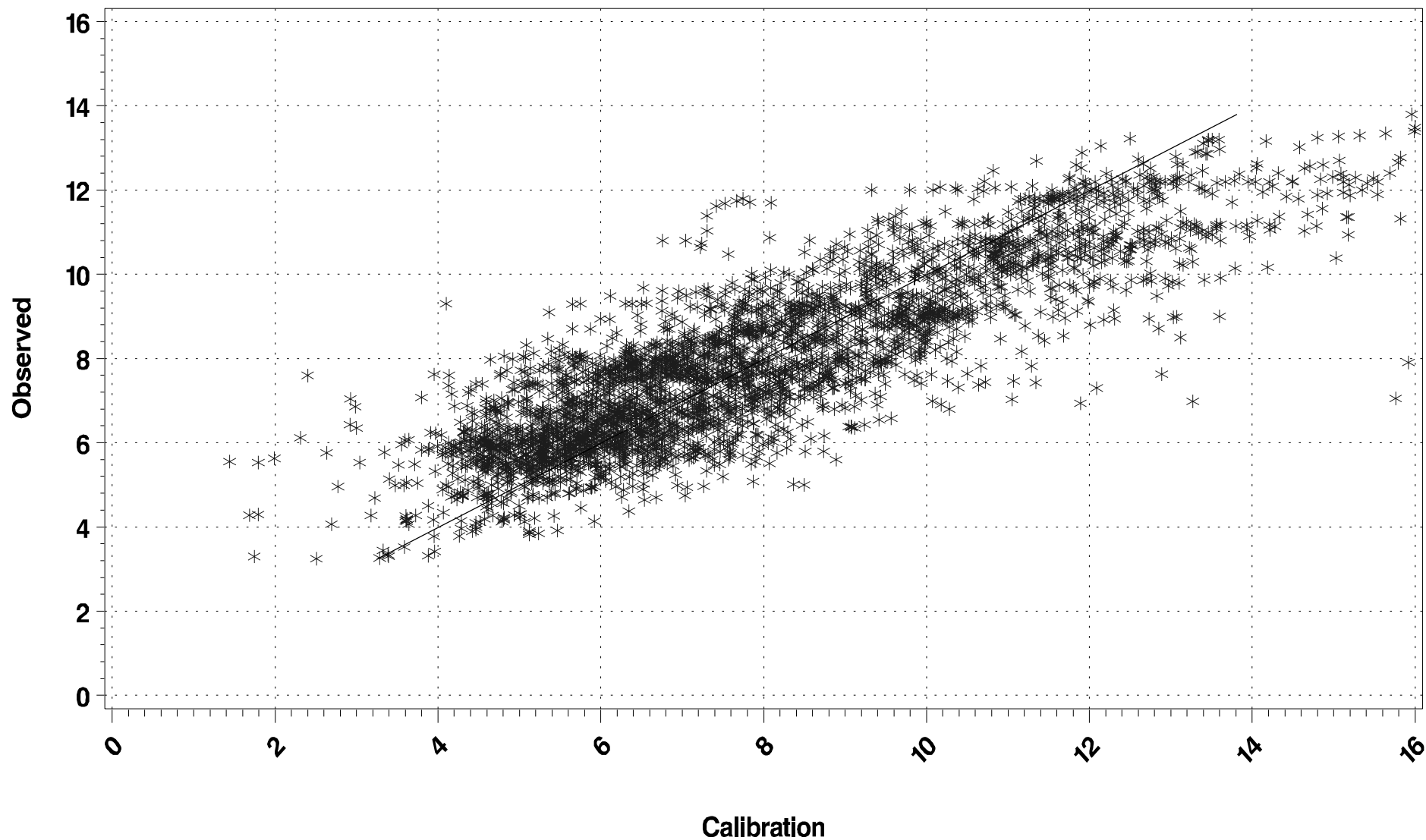[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
Segment JMSPH Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water Dissolved Oxygen (mg/l)
Segment JMSPH Season: Jan 1 – Dec 31
(Scatter Plot)

POLYHALINE **Chlorophyll**
Segment JMSPH (James Polyhaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 51 pairs of predictions and observed data, the **slope** is 0.2107 and the **intercept** is 2.9797. The **R-Squared** value for this regression is 0.0324.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 51 pairs of predictions and observed data, the **slope** is 0.3040 and the **intercept** is 0.4433. The **R-Squared** value for this regression is 0.0611.

Statistics (units in µg/l)

Mean observed 4.4095   Mean predicted 6.7844
Min. observed 2.4000   Min. predicted 3.0047
Max. observed 13.1000   Max. predicted 10.2950
Std. Dev. Observed 2.0507   Std. Dev. predicted 1.7503
Median observed 3.4461   Median predicted 6.8742
95th Percentile observed 9.1000   95th Percentile predicted 9.4652
10th Percentile observed 3.0000   10th Percentile predicted 4.0678

Differences (predicted – observed)

Mean difference 2.3749 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
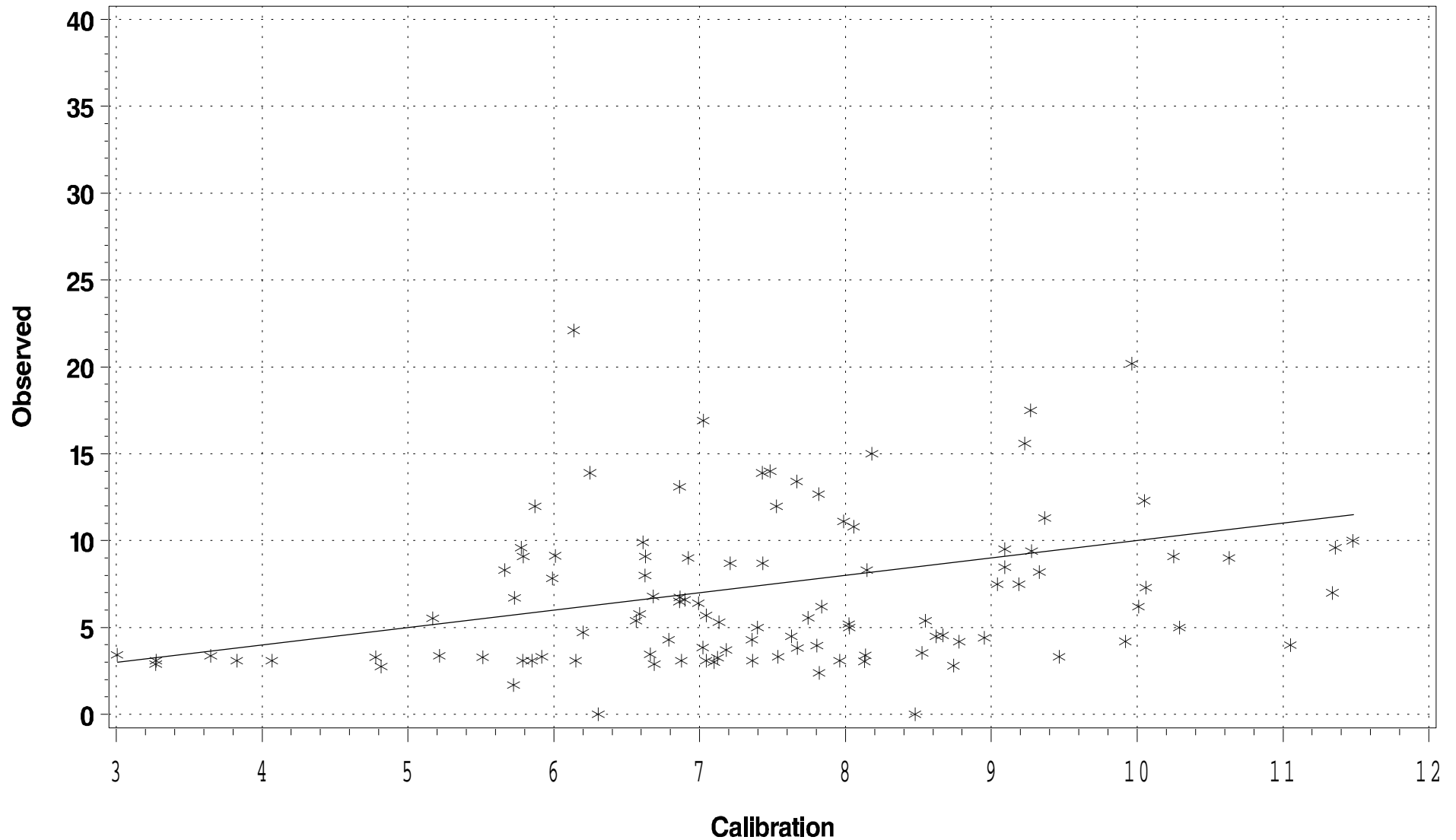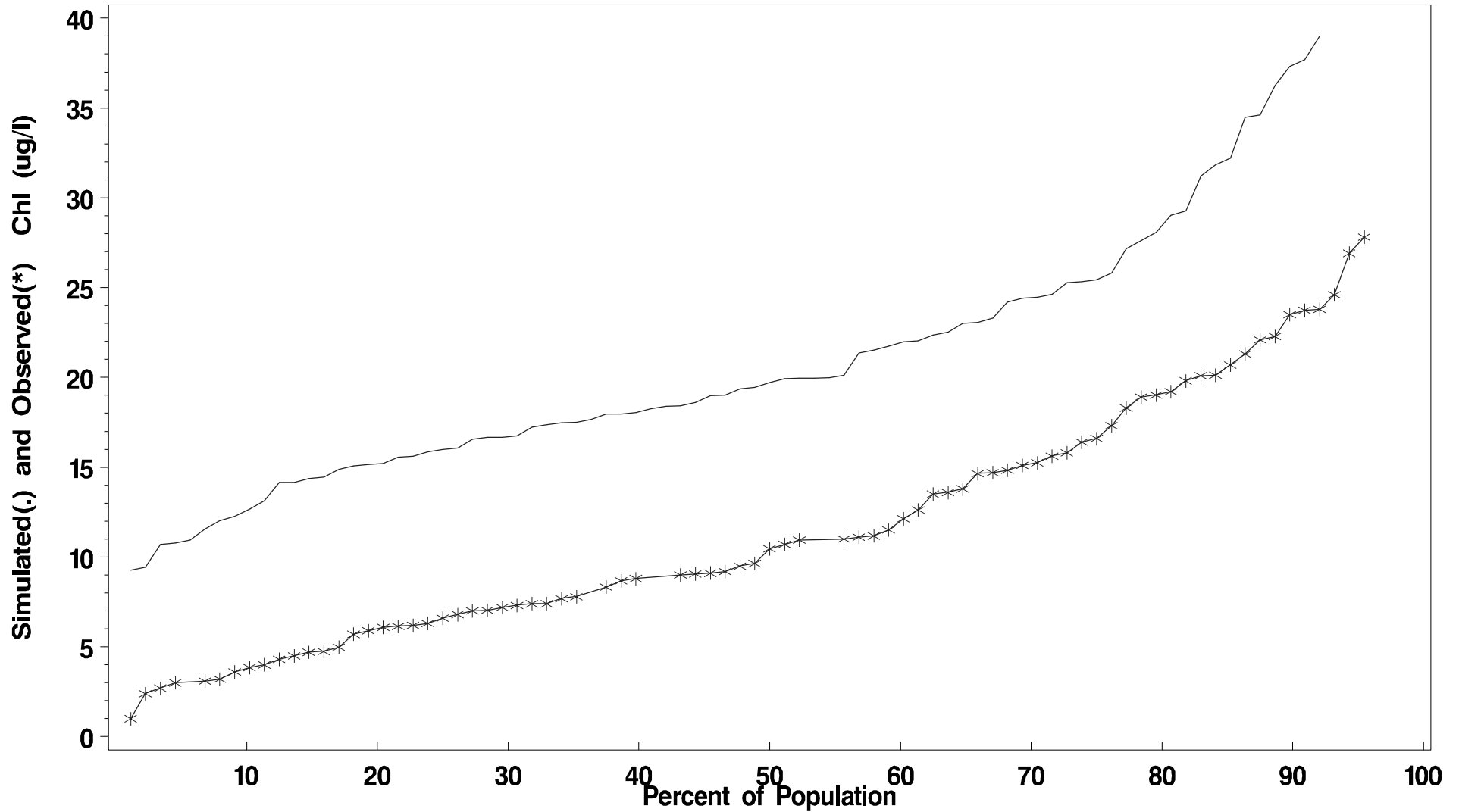## Segment JMSPH   Season: July 1 — Sept 30
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data
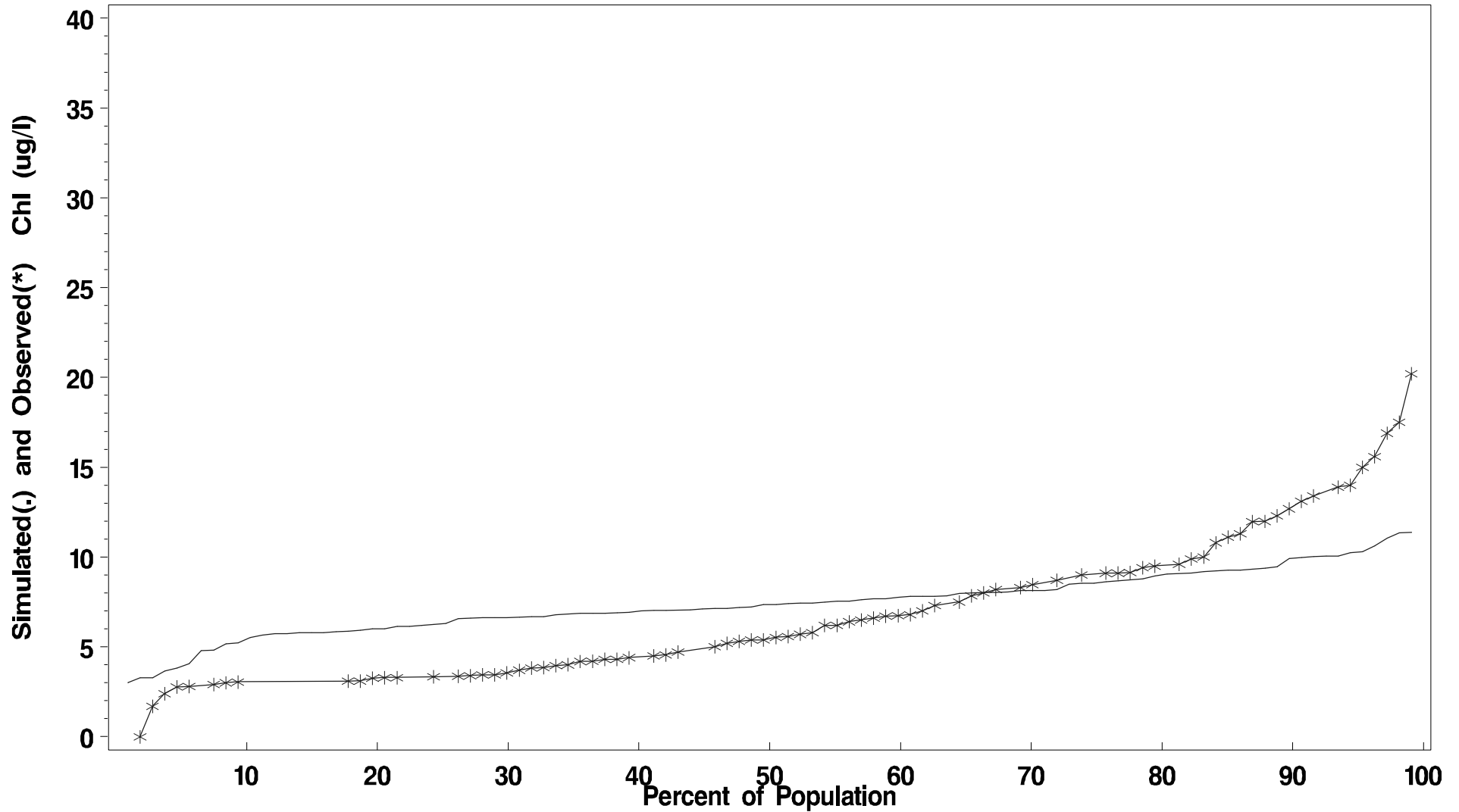
Chlorophyll Concentration (ug/l)
Segment JMSPH   Season: July 1 − Sept 30
(Scatter Plot)

POLYHALINE **Chlorophyll**
Segment JMSPH (James Polyhaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 44 pairs of predictions and observed data, the **slope** is 0.1450 and the **intercept** is 11.2785. The **R-Squared** value for this regression is 0.0165.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 44 pairs of predictions and observed data, the **slope** is 0.3779 and the **intercept** is 0.5553. The **R-Squared** value for this regression is 0.0375.

Statistics (units in µg/l)

Mean observed 15.0377	Mean predicted 25.9300
Min. observed 1.0000	Min. predicted 12.2670
Max. observed 63.8450	Max. predicted 63.0980
Std. Dev. Observed 13.4700	Std. Dev. predicted 11.9437
Median observed 11.0883	Median predicted 21.7585
95th Percentile observed 47.3187	95th Percentile predicted 47.4410
10th Percentile observed 3.2000	10th Percentile predicted 15.1350

Differences (predicted – observed)

Mean difference 10.8923 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
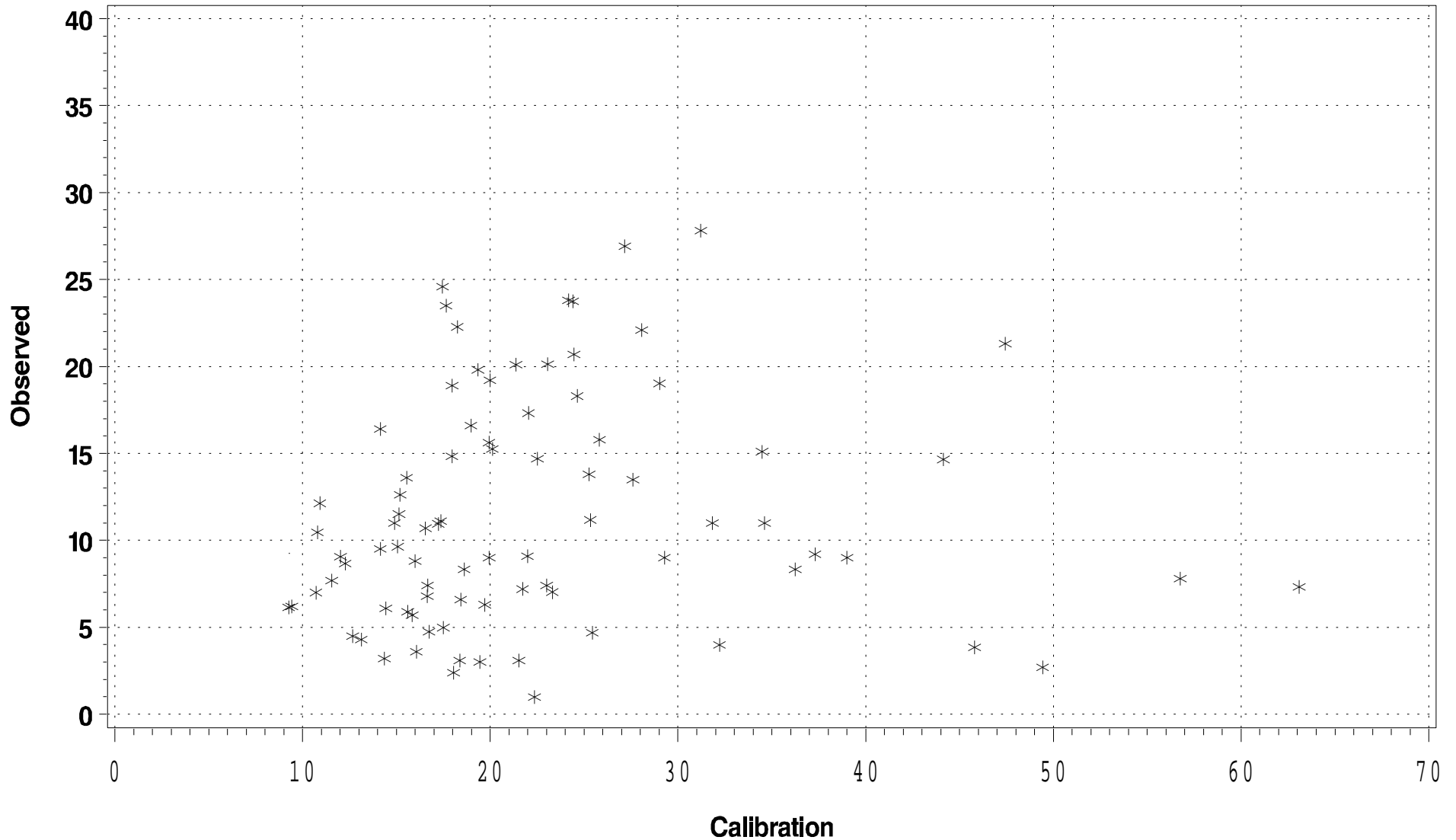## Segment JMSPH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment JMSPH   Season: March 1 – May 30
(Scatter Plot)

POLYHALINE **Light Attenuation**
Segment JMSPH (James Polyhaline)
March-May Sept-Nov

Regression of Calibration vs. Observations[1]

Using the 93 pairs of predictions and observed data, the **slope** is 0.4359 and the **intercept** is 0.5893. The **R-Squared** value for this regression is 0.2792.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 93 pairs of predictions and observed data, the **slope** is 0.5261 and the **intercept** is 0.1398. The **R-Squared** value for this regression is 0.3045.

Statistics (units in 1/m)

Mean observed 1.1974   Mean predicted 1.3948
Min. observed 0.5417   Min. predicted 0.8159
Max. observed 2.3636   Max. predicted 3.3562
Std. Dev. Observed 0.3940   Std. Dev. predicted 0.4776
Median observed 1.0833   Median predicted 1.2449
90th Percentile observed 1.7105   90th Percentile predicted 2.1983
10th Percentile observed 0.7647   10th Percentile predicted 0.9287

Differences (predicted – observed)

Mean difference 0.1974 1/m

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[1] observed is dependent, predicted is independent

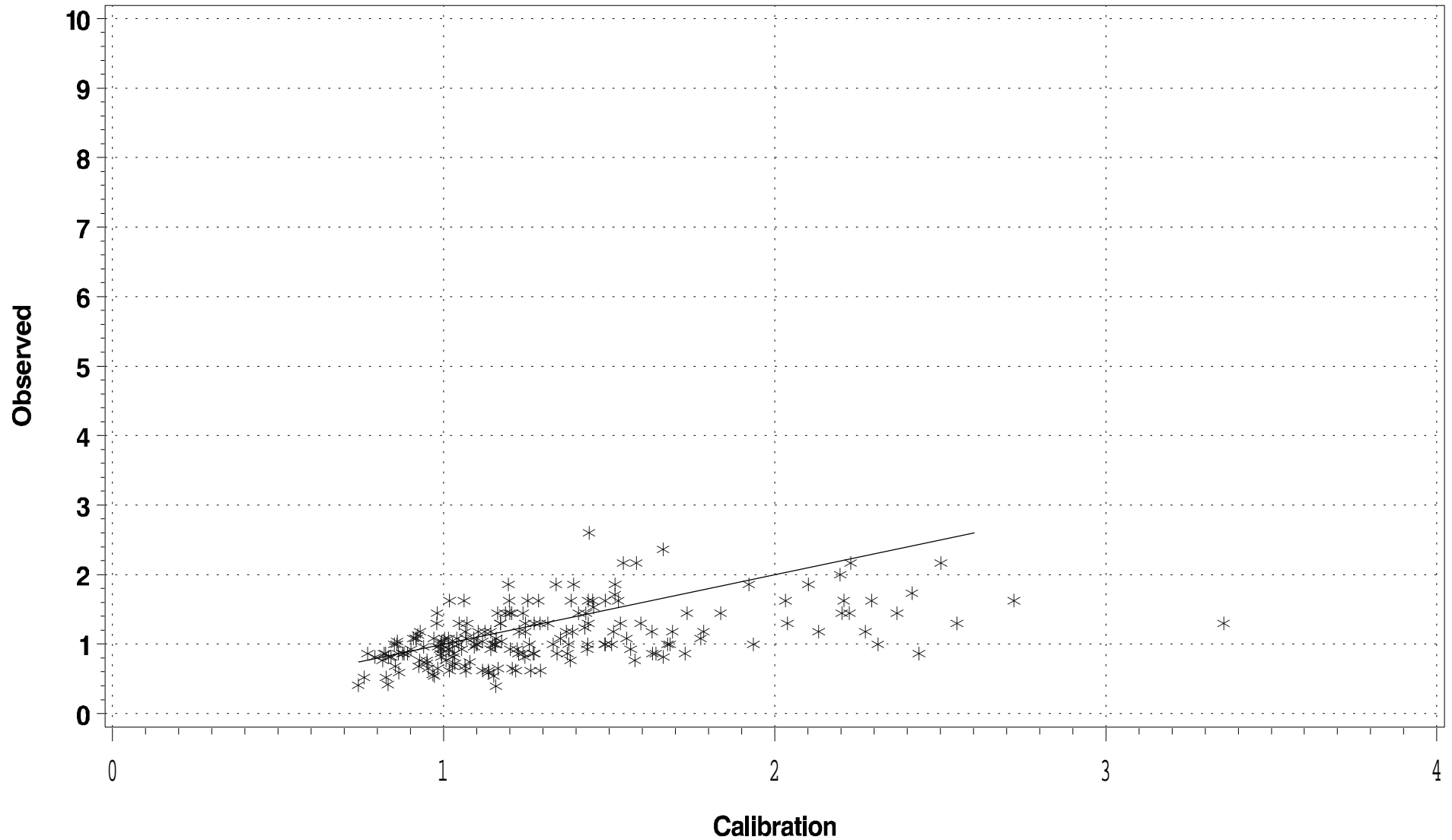# Ke (1/m)

Segment JMSPH   Season: March–May Sept–Nov

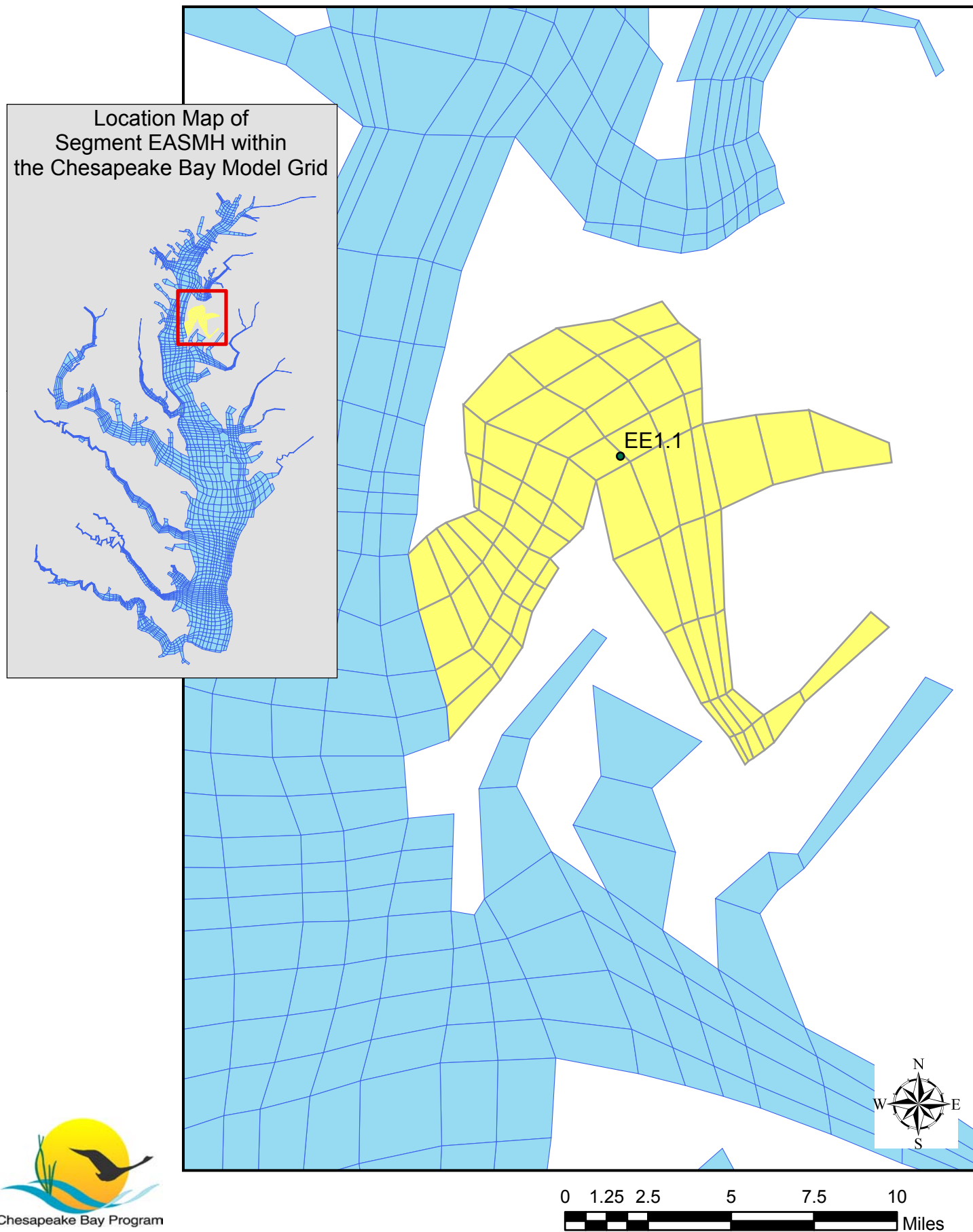### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment JMSPH   Season: March – May Sept – Nov
(Scatter Plot)

Chesapeake Bay Standard Segment EASMH

Location Map of
Segment EASMH within
the Chesapeake Bay Model Grid

EE1.1

Chesapeake Bay Program

N
W   E
S

0   1.25 2.5   5   7.5   10
Miles
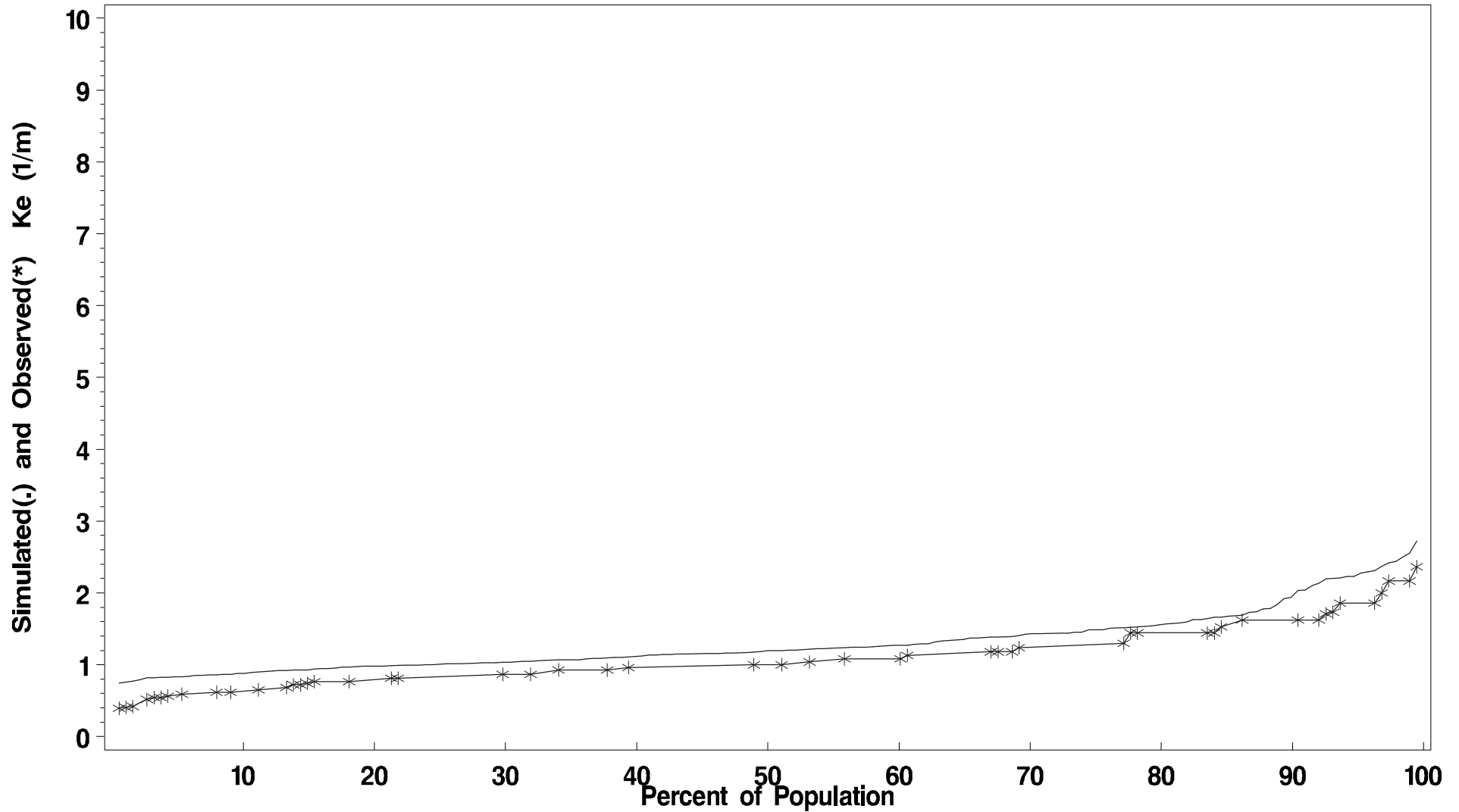
OPEN WATER **Dissolved Oxygen**
Segment EASMH (Eastern Bay Mesohaline - Eastern Shore)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 1137 pairs of predictions and observed data, the **slope** is 0.7714 and the **intercept** is 2.2753. The **R-Squared** value for this regression is 0.6071.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 1137 pairs of predictions and observed data, the **slope** is 0.7419 and the **intercept** is 0.2605. The **R-Squared** value for this regression is 0.5303.

Statistics (units in mg/l)

Mean observed 8.3674	Mean predicted 7.8971
Min. observed 0	Min. predicted -0.0644
Max. observed 13.5	Max. predicted 14.41
Std. Dev. Observed 2.7940	Std. Dev. predicted 2.8220
Median observed 8.3500	Median predicted 8.2261
90th Percentile observed 11.8000	90th Percentile predicted 11.4650
10th Percentile observed 5.2000	10th Percentile predicted 3.8395

Differences (predicted – observed)

Mean difference -0.4703 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.
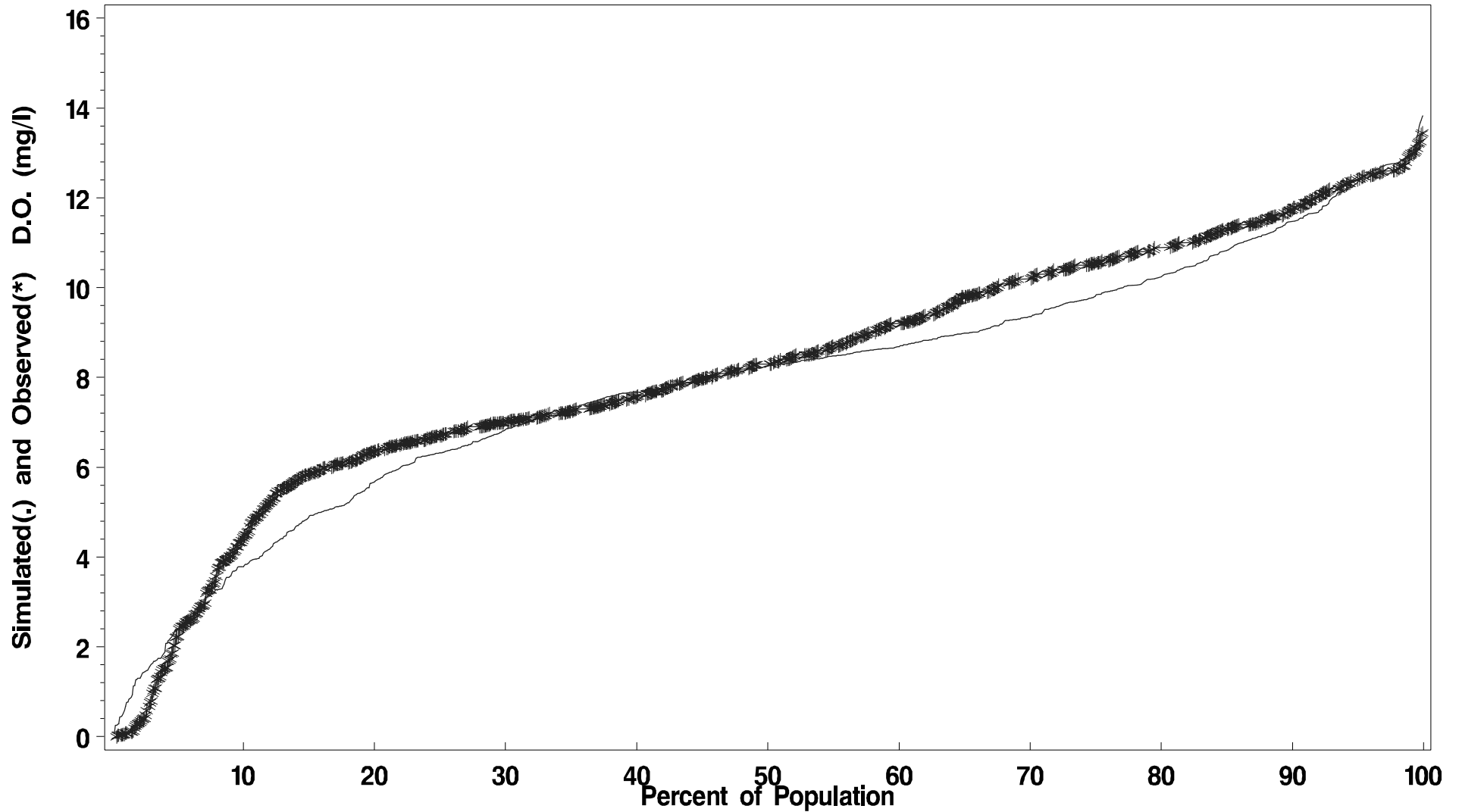
Number of predicted and observed pairs 1137
Number of Predicted Violations 95
Number of Observed Violations 72

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[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
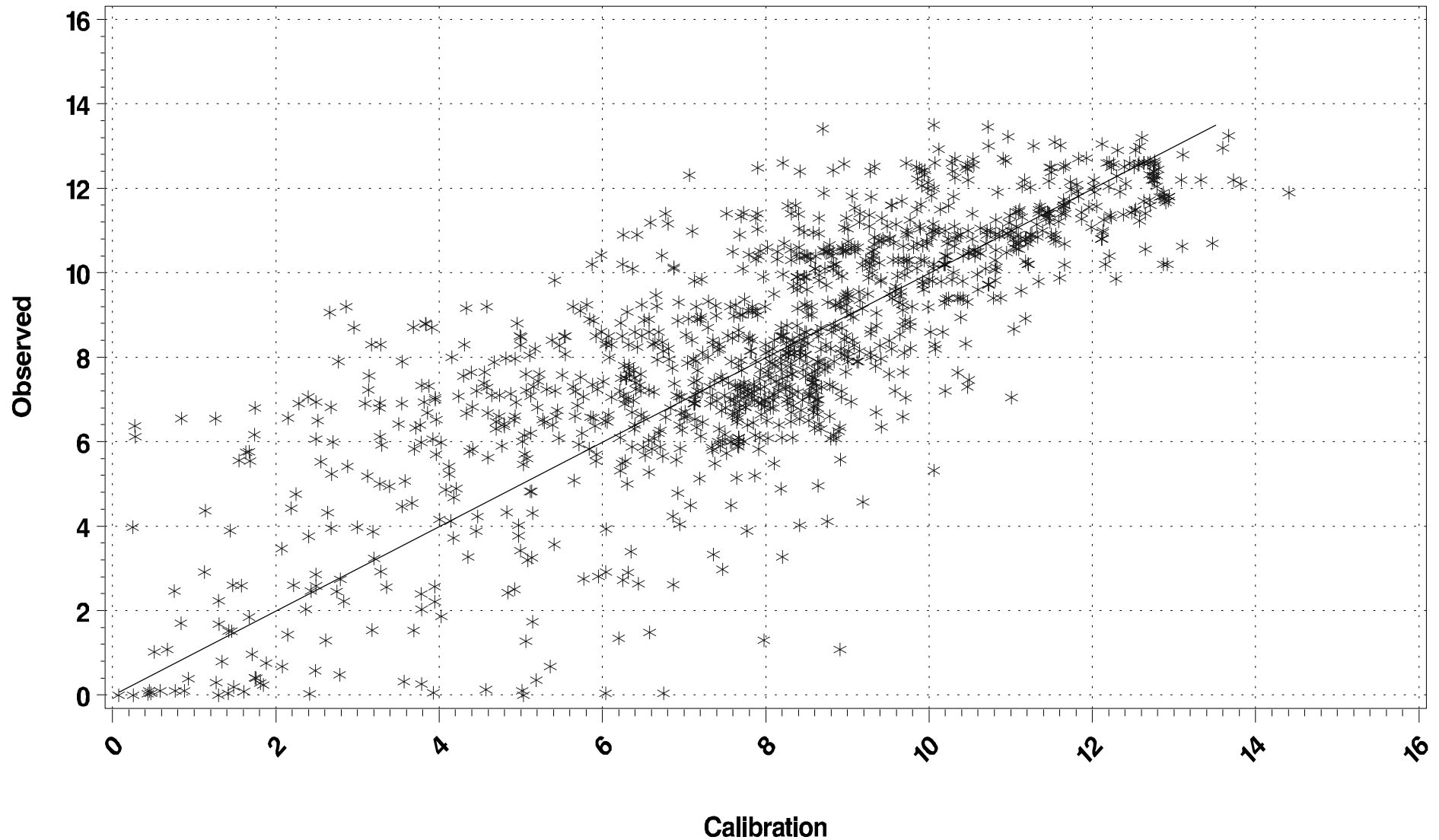**Segment EASMH   Season: Jan 1 – Dec 31**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment EASMH   Season: Jan 1 – Dec 31
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 91 pairs of predictions and observed data, the **slope** is 0.5559 and the **intercept** is 1.1559. The **R-Squared** value for this regression is 0.3122.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 91 pairs of predictions and observed data, the **slope** is 0.6510 and the **intercept** is 0.1454. The **R-Squared** value for this regression is 0.3703.

Statistics (units in mg/l)

Mean observed 2.6899   Mean predicted 2.7593
Min. observed 0   Min. predicted 0.0013
Max. observed 8.1   Max. predicted 9.589
Std. Dev. Observed 2.5305   Std. Dev. predicted 2.5433
Median observed 2.0500   Median predicted 2.2539
90th Percentile observed 6.4500   90th Percentile predicted 6.9767
10th Percentile observed 0.0400   10th Percentile predicted 0.1140

Differences (predicted – observed)

Mean difference 0.0694 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 1.7 mg/l.
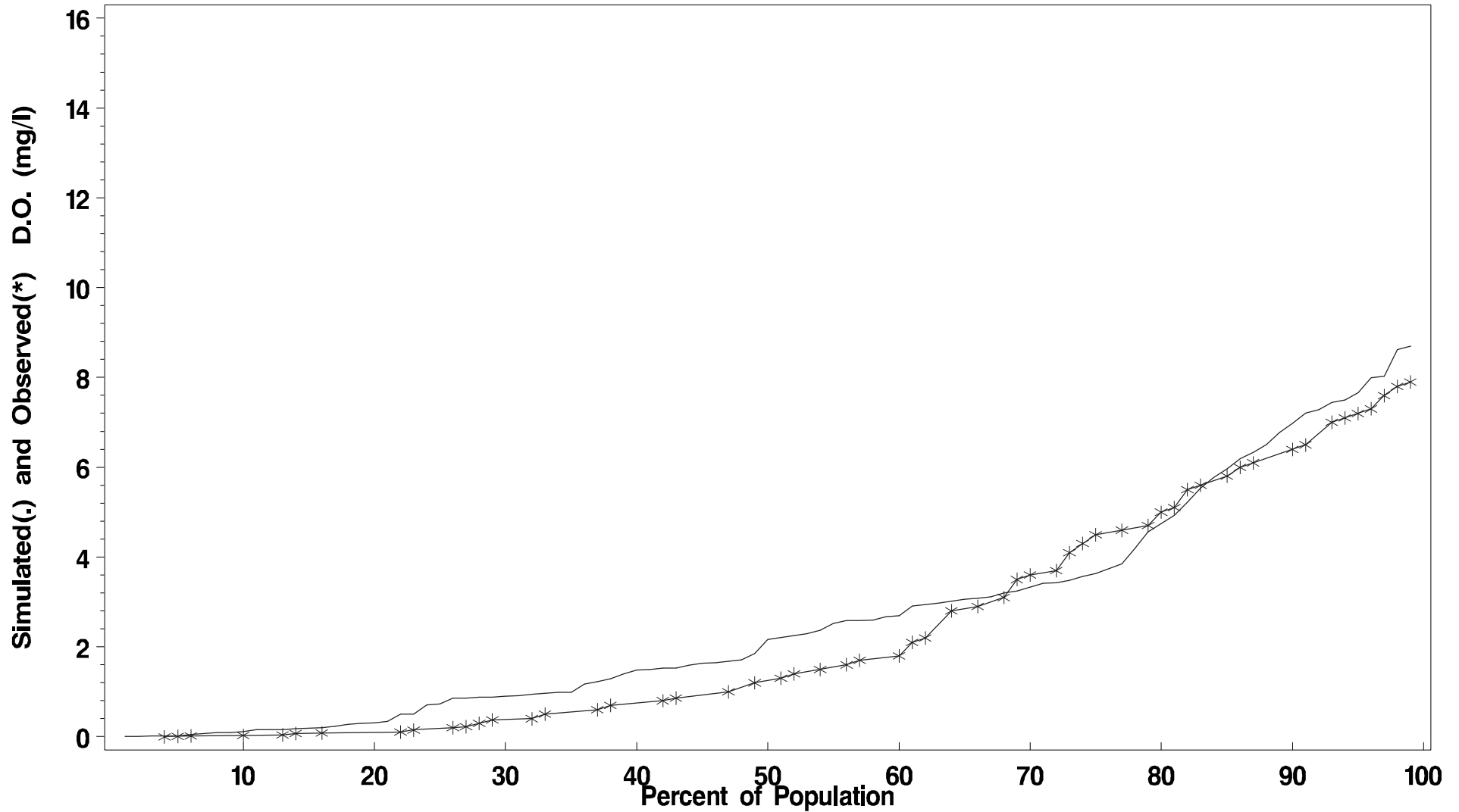
Number of predicted and observed pairs 91
Number of Predicted Violations 43
Number of Observed Violations 41

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[1] observed is dependent, predicted is independent

Deep Water Dissolved Oxygen (mg/l)
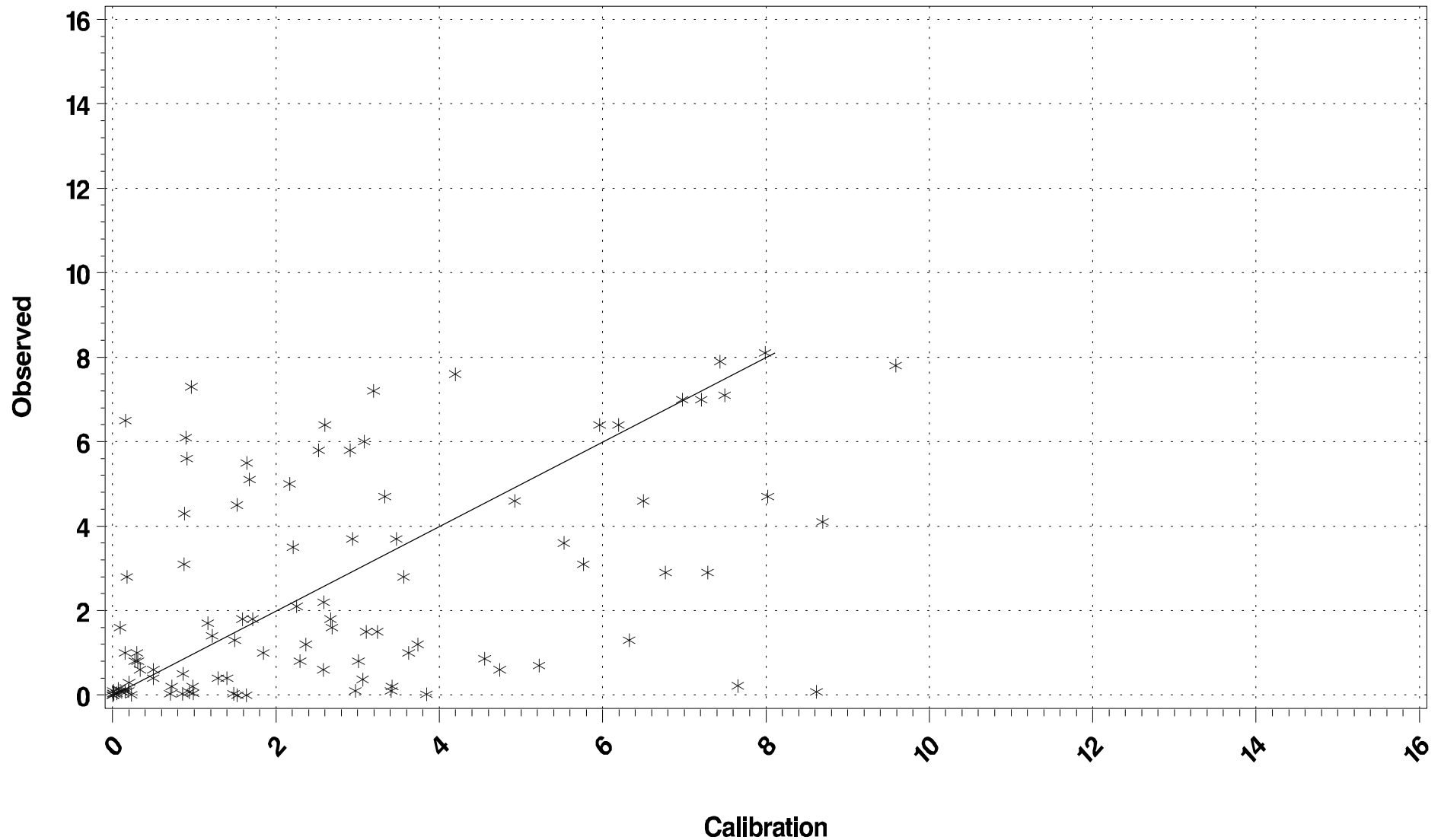# Segment EASMH Season: May 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Water Dissolved Oxygen (mg/l)
Segment EASMH Season: May 1 – Sept 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]

Using the 91 pairs of predictions and observed data, the **slope** is 0.3832 and the **intercept** is 6.0327. The **R-Squared** value for this regression is 0.2456.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 91 pairs of predictions and observed data, the **slope** is 0.2841 and the **intercept** is 0.7272. The **R-Squared** value for this regression is 0.1928.

Statistics (units in mg/l)

Mean observed 8.8858   Mean predicted 7.4459
Min. observed 2.1   Min. predicted 1.446
Max. observed 12.6   Max. predicted 12.75
Std. Dev. Observed 2.2530   Std. Dev. predicted 2.9142
Median observed 9.1500   Median predicted 7.6577
90th Percentile observed 11.4500   90th Percentile predicted 11.1040
10th Percentile observed 5.6000   10th Percentile predicted 2.8008

Differences (predicted – observed)

Mean difference -1.4399 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 91
Number of Predicted Violations 12
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Deep Water   Dissolved Oxygen (mg/l)
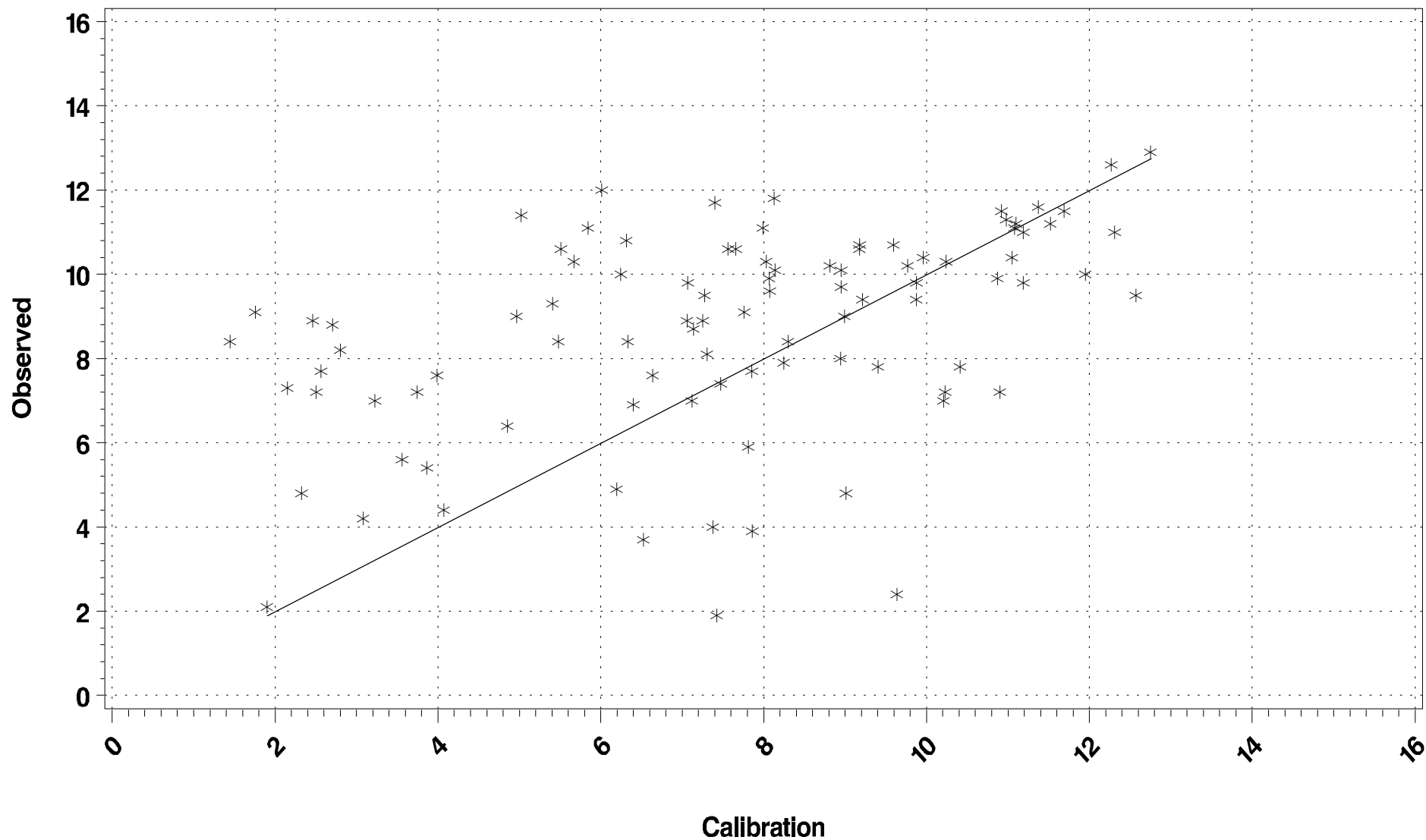# Segment EASMH   Season: Oct 1 – April 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Deep Water   Dissolved Oxygen (mg/l)
Segment EASMH   Season: Oct 1 — April 30
(Scatter Plot)

Observed vs. Calibration

<div align="center">
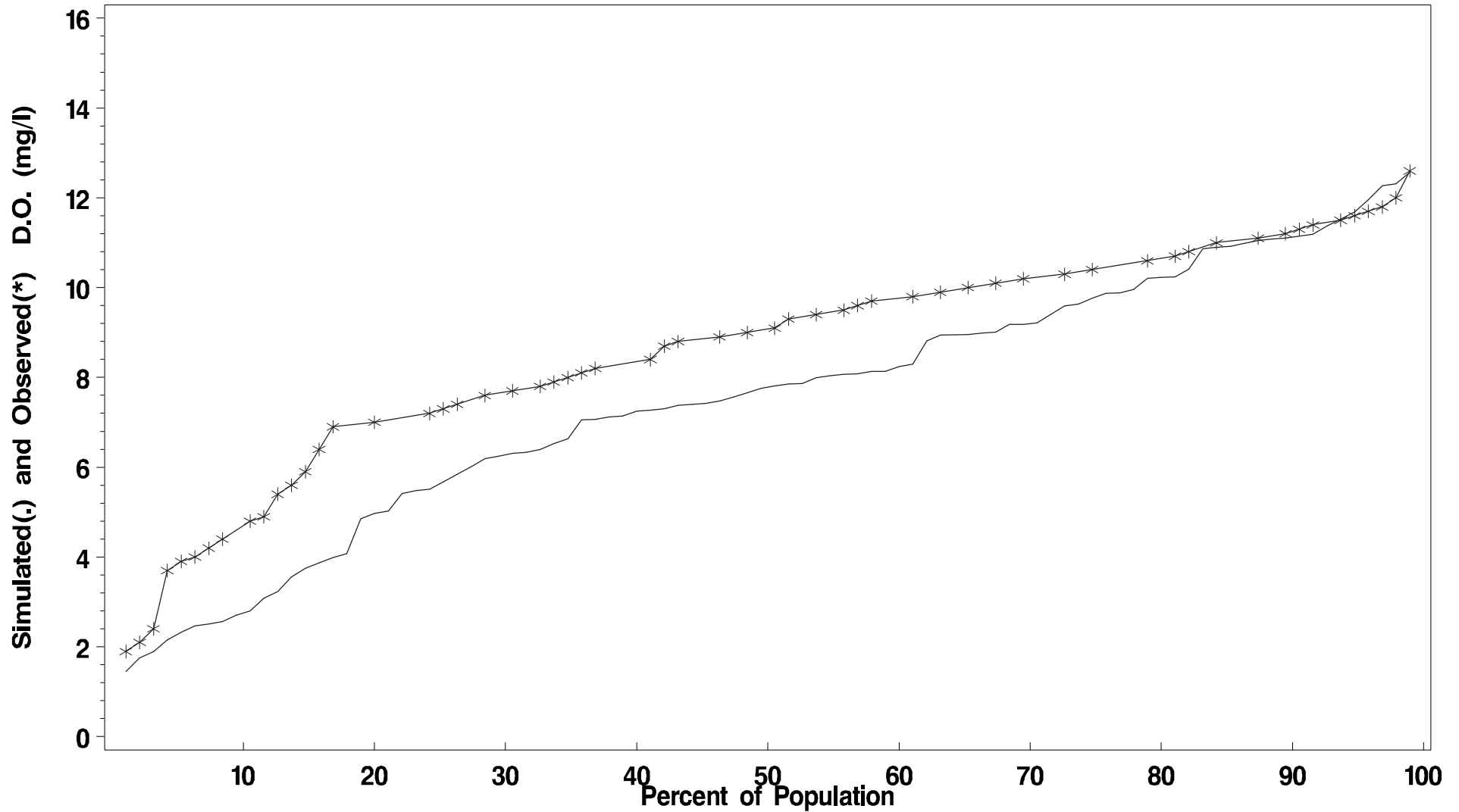
MESOHALINE **Chlorophyll**
Segment EASMH (Eastern Bay Mesohaline - Eastern Shore)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 57 pairs of predictions and observed data, the **slope** is 3.6661 and the **intercept** is -17.0590. The **R-Squared** value for this regression is 0.0488.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 57 pairs of predictions and observed data, the **slope** is 0.5911 and the **intercept** is 0.4983. The **R-Squared** value for this regression is 0.0274.

Statistics (units in μg/l)

Mean observed 17.0263	Mean predicted 9.2975
Min. observed 2.8000	Min. predicted 5.2636
Max. observed 249.7000	Max. predicted 14.6490
Std. Dev. Observed 32.6572	Std. Dev. predicted 1.9681
Median observed 9.7000	Median predicted 9.3278
95th Percentile observed 37.4000	95th Percentile predicted 12.8670
10th Percentile observed 5.4000	10th Percentile predicted 6.6922

Differences (predicted – observed)

Mean difference -7.7288 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
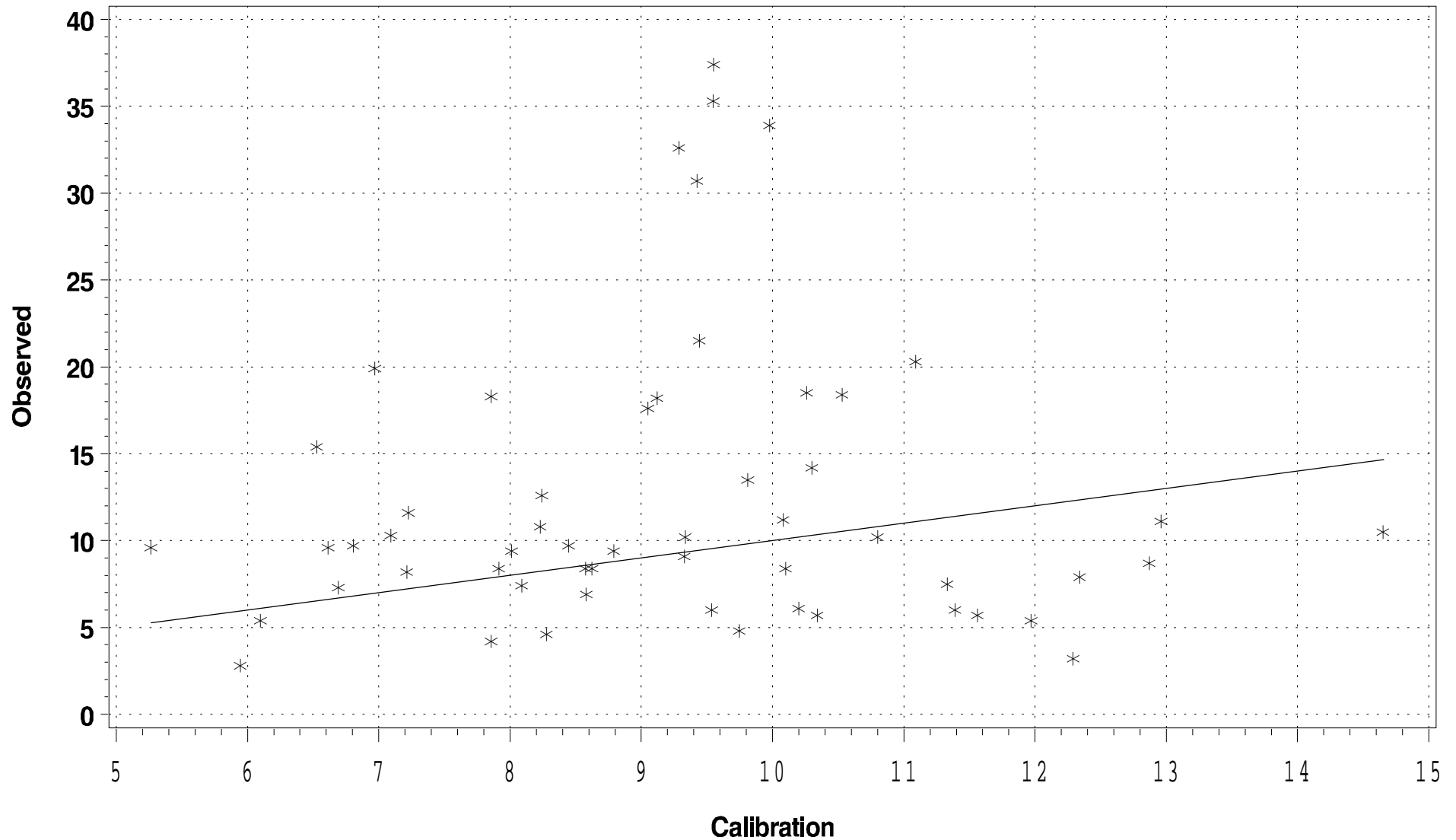## Segment EASMH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment EASMH   Season: July 1 — Sept 30
(Scatter Plot)

<div align="center">
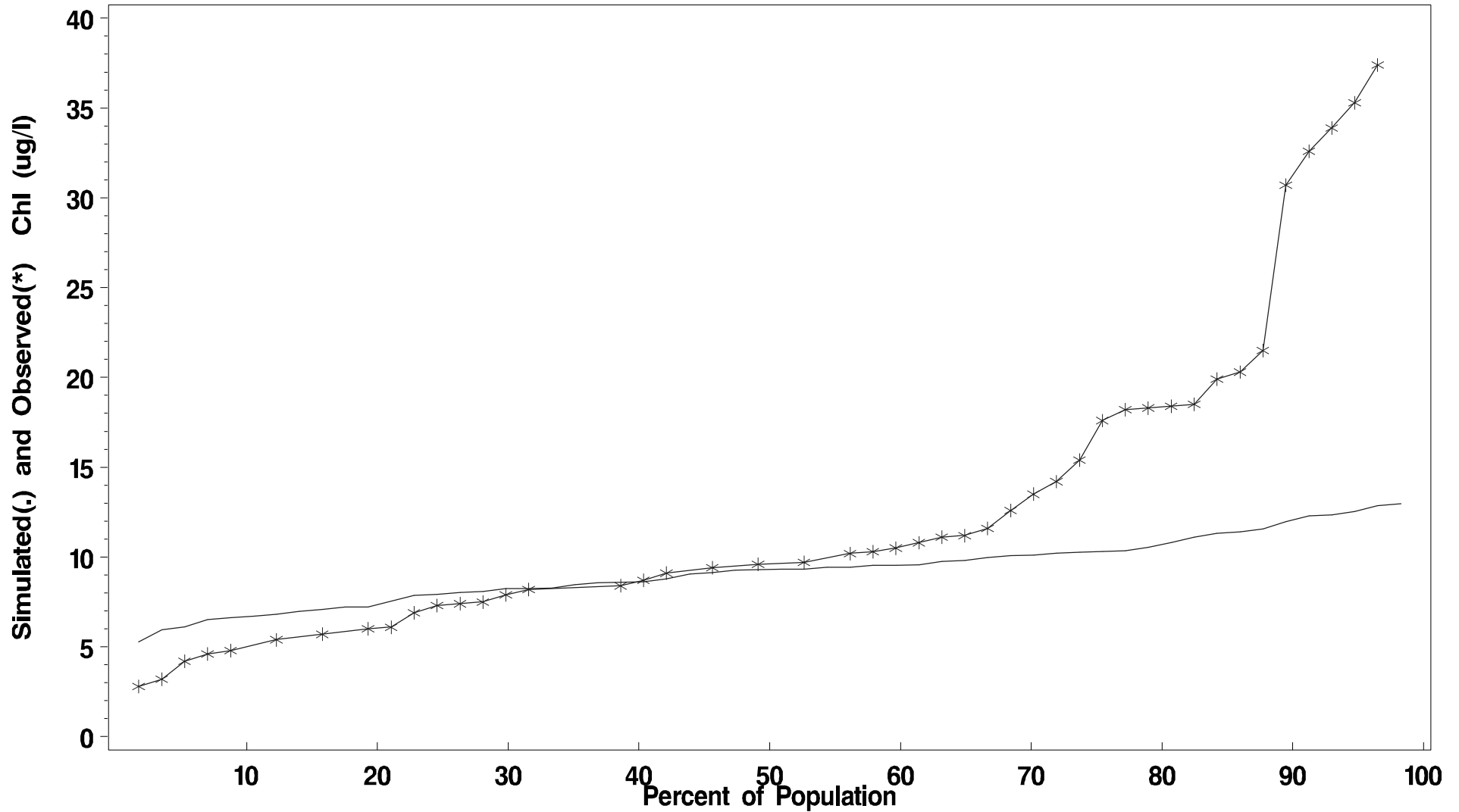
MESOHALINE **Chlorophyll**
Segment EASMH (Eastern Bay Mesohaline - Eastern Shore)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 52 pairs of predictions and observed data, the **slope** is 0.0108 and the **intercept** is 7.6616. The **R-Squared** value for this regression is 0.0001.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 52 pairs of predictions and observed data, the **slope** is 0.0953 and the **intercept** is 0.7612. The **R-Squared** value for this regression is 0.0020.

Statistics (units in μg/l)

Mean observed 7.7904   Mean predicted 11.9484
Min. observed 1.5000   Min. predicted 5.6670
Max. observed 30.4000   Max. predicted 32.6150
Std. Dev. Observed 5.8569   Std. Dev. predicted 4.4574
Median observed 5.9500   Median predicted 10.5625
95th Percentile observed 22.1000   95th Percentile predicted 20.4870
10th Percentile observed 2.4000   10th Percentile predicted 8.5738

Differences (predicted – observed)

Mean difference 4.1580 μg/l

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[1] observed is dependent, predicted is independent

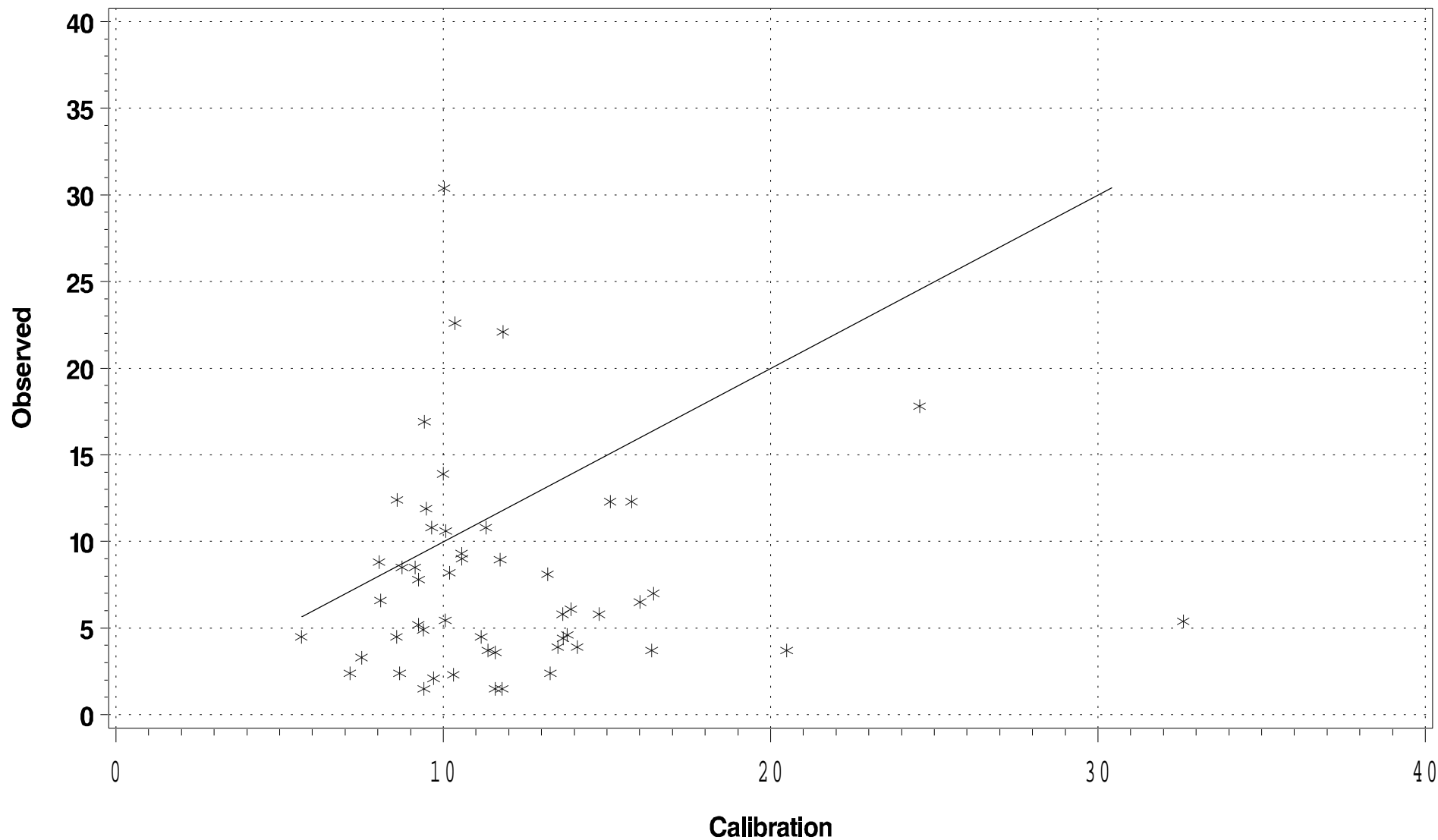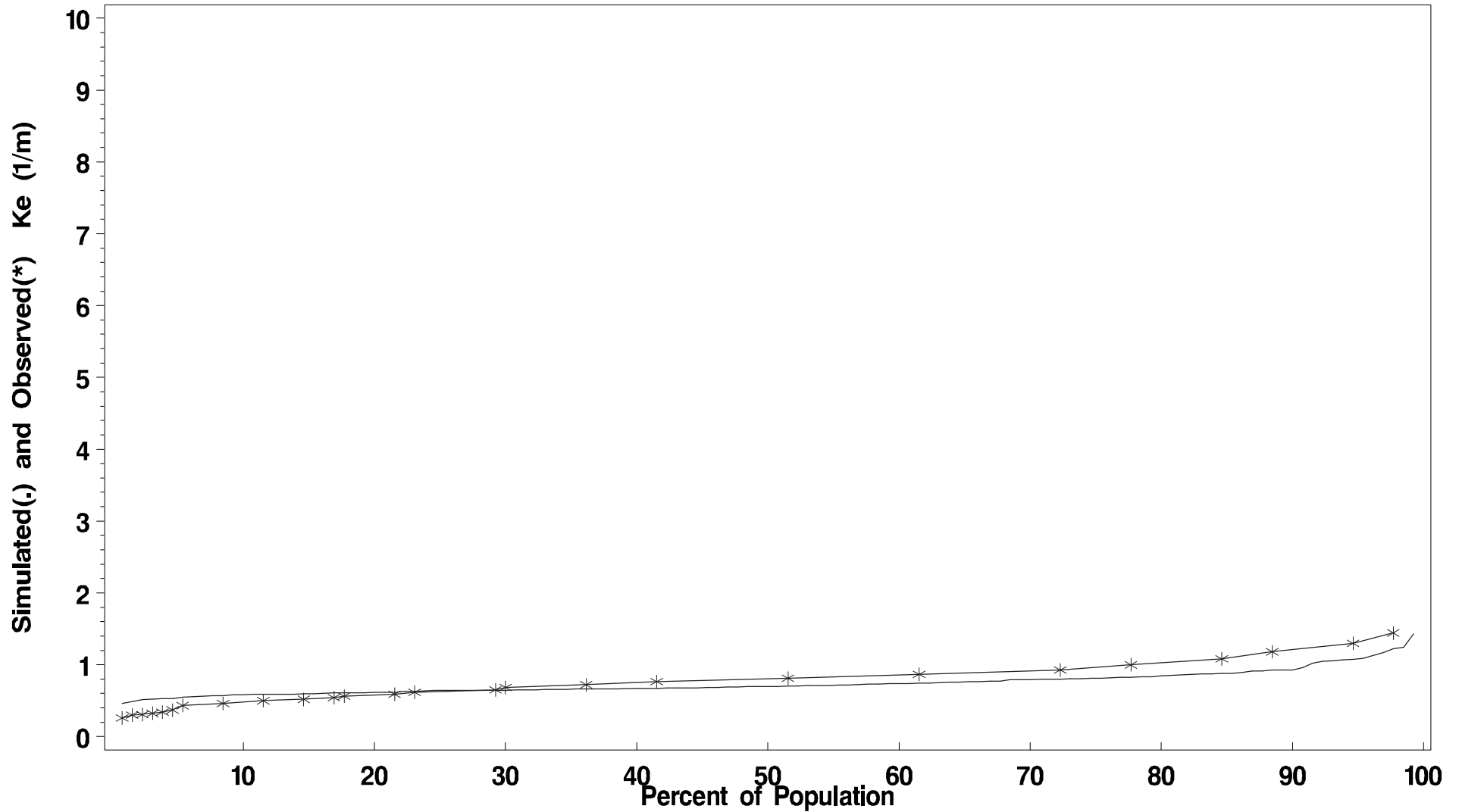Chlorophyll Concentration (ug/l)
Segment EASMH Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
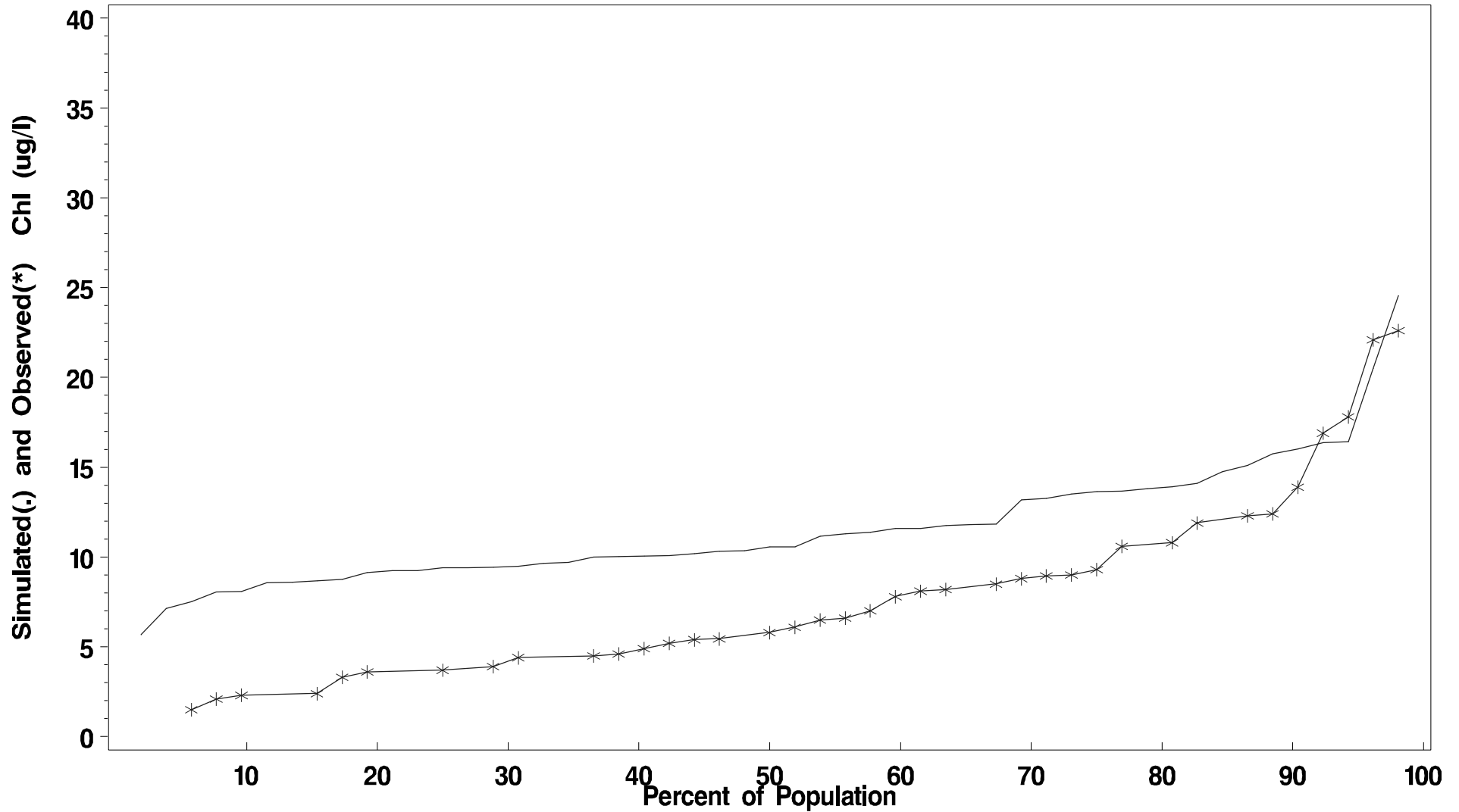
Chlorophyll Concentration (ug/l)
Segment EASMH   Season: March 1 – May 30
(Scatter Plot)

MESOHALINE **Light Attenuation**
Segment EASMH (Eastern Bay Mesohaline - Eastern Shore)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 130 pairs of predictions and observed data, the **slope** is 0.2991 and the **intercept** is 0.6239. The **R-Squared** value for this regression is 0.0364.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 130 pairs of predictions and observed data, the **slope** is 0.2831 and the **intercept** is 0.1933. The **R-Squared** value for this regression is 0.0316.

Statistics (units in 1/m)

Mean observed 0.8478   Mean predicted 0.7489
Min. observed 0.2600   Min. predicted 0.4617
Max. observed 1.6250   Max. predicted 1.7311
Std. Dev. Observed 0.2904   Std. Dev. predicted 0.1852
Median observed 0.8125   Median predicted 0.6988
90th Percentile observed 1.3000   90th Percentile predicted 0.9466
10th Percentile observed 0.5000   10th Percentile predicted 0.5860

Differences (predicted – observed)

Mean difference -0.0990 1/m

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[1] observed is dependent, predicted is independent
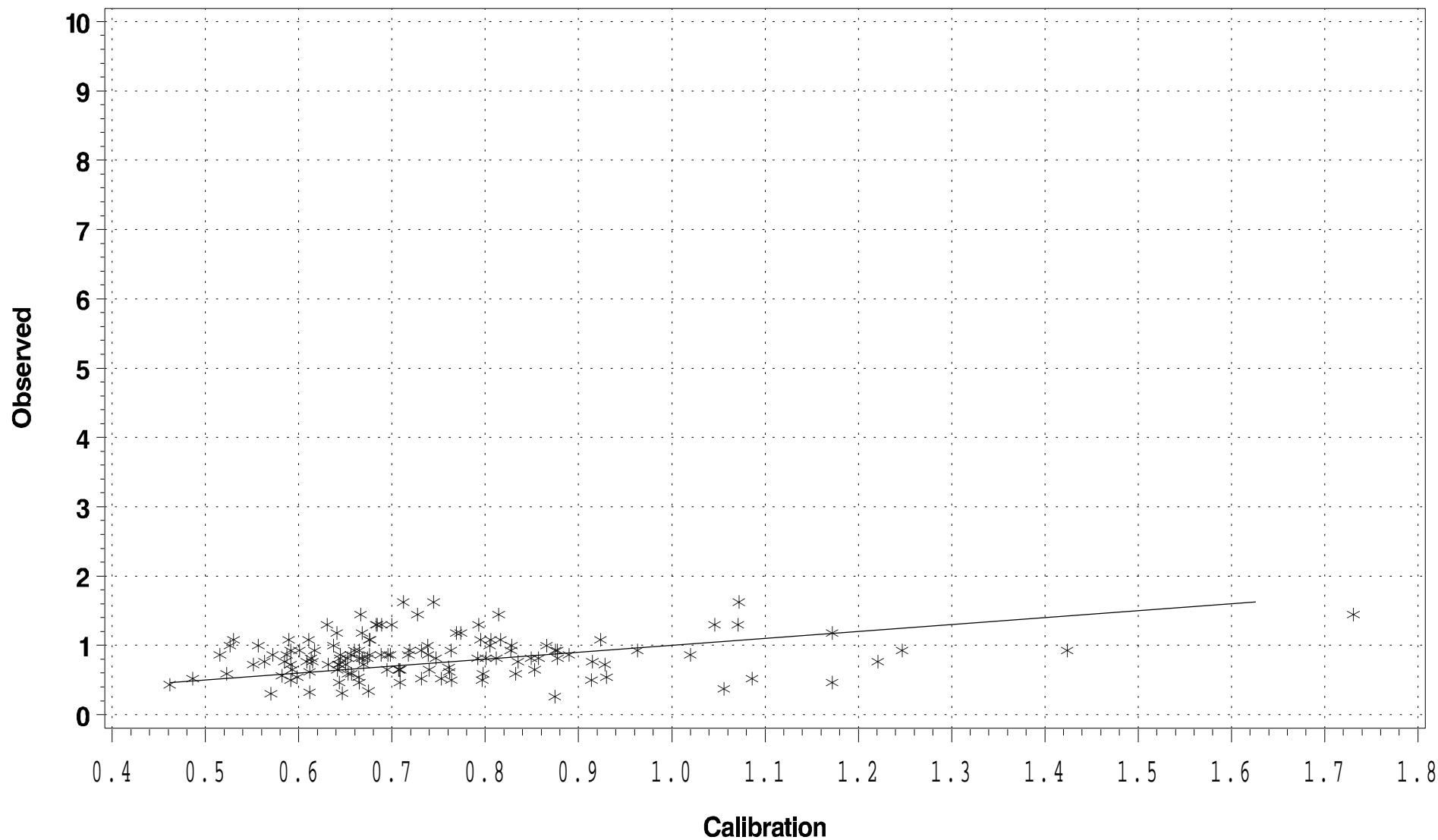
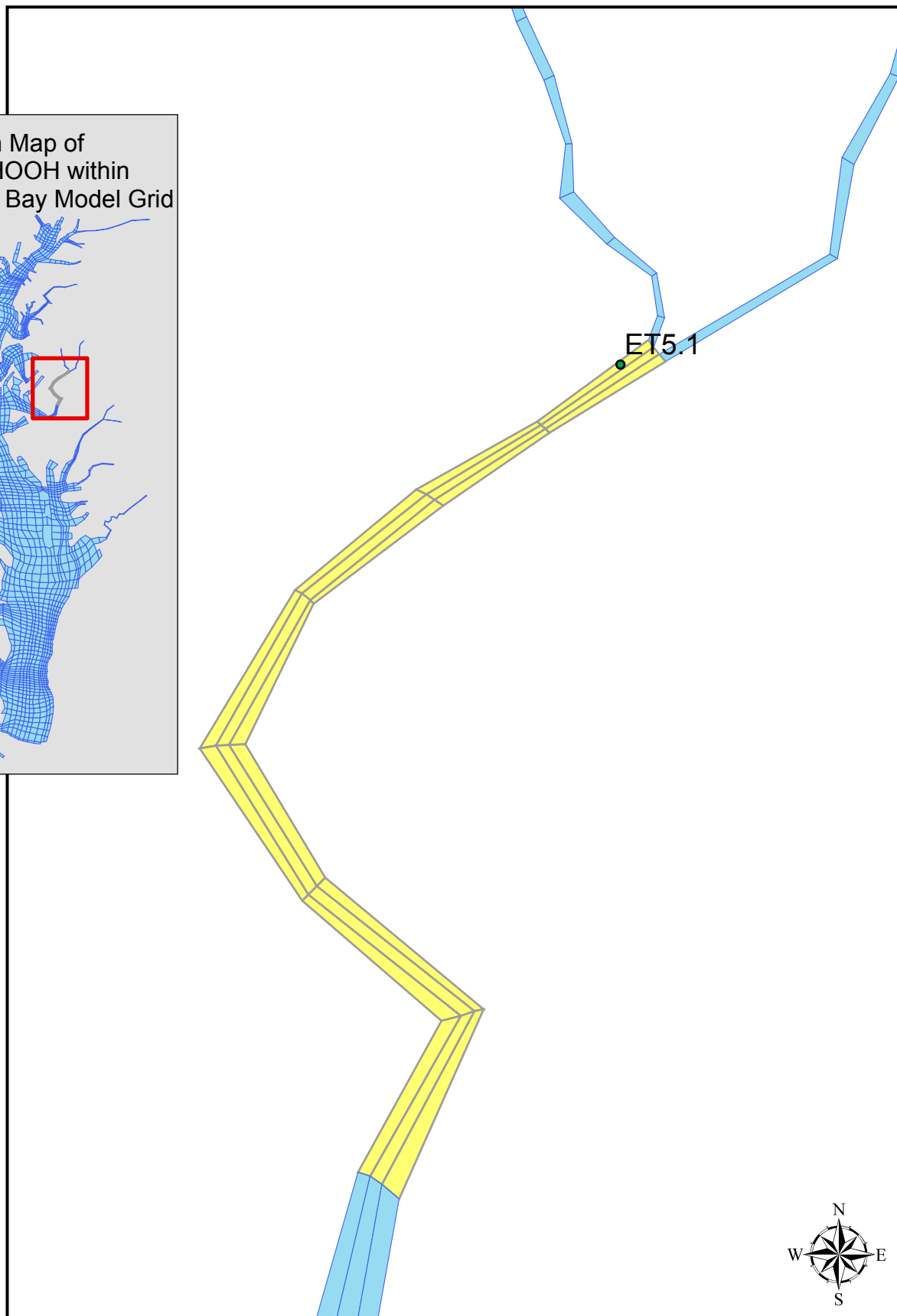# Ke (1/m)

Segment EASMH   Season: April 1 – Oct 30

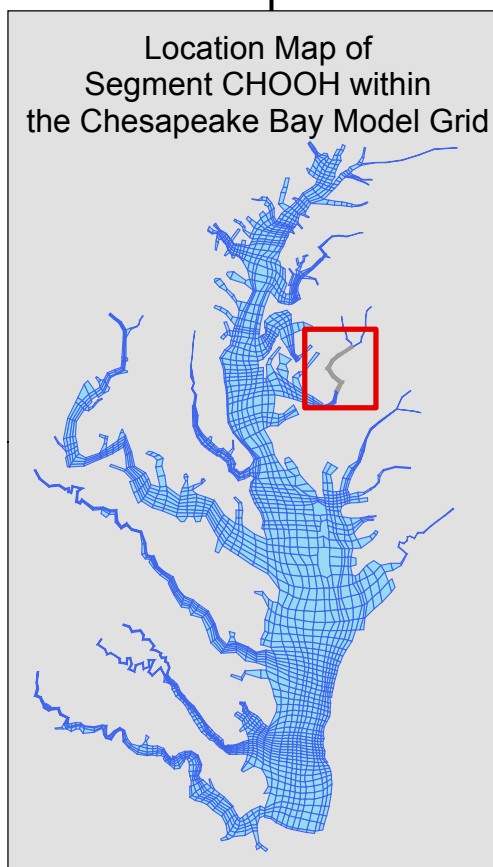**Cumulative Frequency Distribution – PAIRED Simulated and Observed Data**

Ke (1/m)

Segment EASMH   Season: April 1 — Oct 30

(Scatter Plot)

Chesapeake Bay Standard Segment CHOOH

Location Map of
Segment CHOOH within
the Chesapeake Bay Model Grid

ET5.1

0 0.5 1 2 3 4
Miles

Chesapeake Bay Program

N
W E
S

Regression of Calibration vs. Observations[1]

Using the 130 pairs of predictions and observed data, the **slope** is 0.5380 and the **intercept** is 5.1134. The **R-Squared** value for this regression is 0.4627.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 130 pairs of predictions and observed data, the **slope** is 0.3257 and the **intercept** is 0.7004. The **R-Squared** value for this regression is 0.4233.

Statistics (units in mg/l)

Mean observed 8.7977   Mean predicted 6.8477
Min. observed 5.4   Min. predicted 0.563
Max. observed 13.7   Max. predicted 10.2
Std. Dev. Observed 1.8307   Std. Dev. predicted 2.3145
Median observed 8.5167   Median predicted 7.2866
90th Percentile observed 11.4500   90th Percentile predicted 9.6208
10th Percentile observed 6.4167   10th Percentile predicted 3.9135

Differences (predicted – observed)

Mean difference -1.9500 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 130
Number of Predicted Violations 32
Number of Observed Violations 0

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[1] observed is dependent, predicted is independent

Migratory Dissolved Oxygen (mg/l)
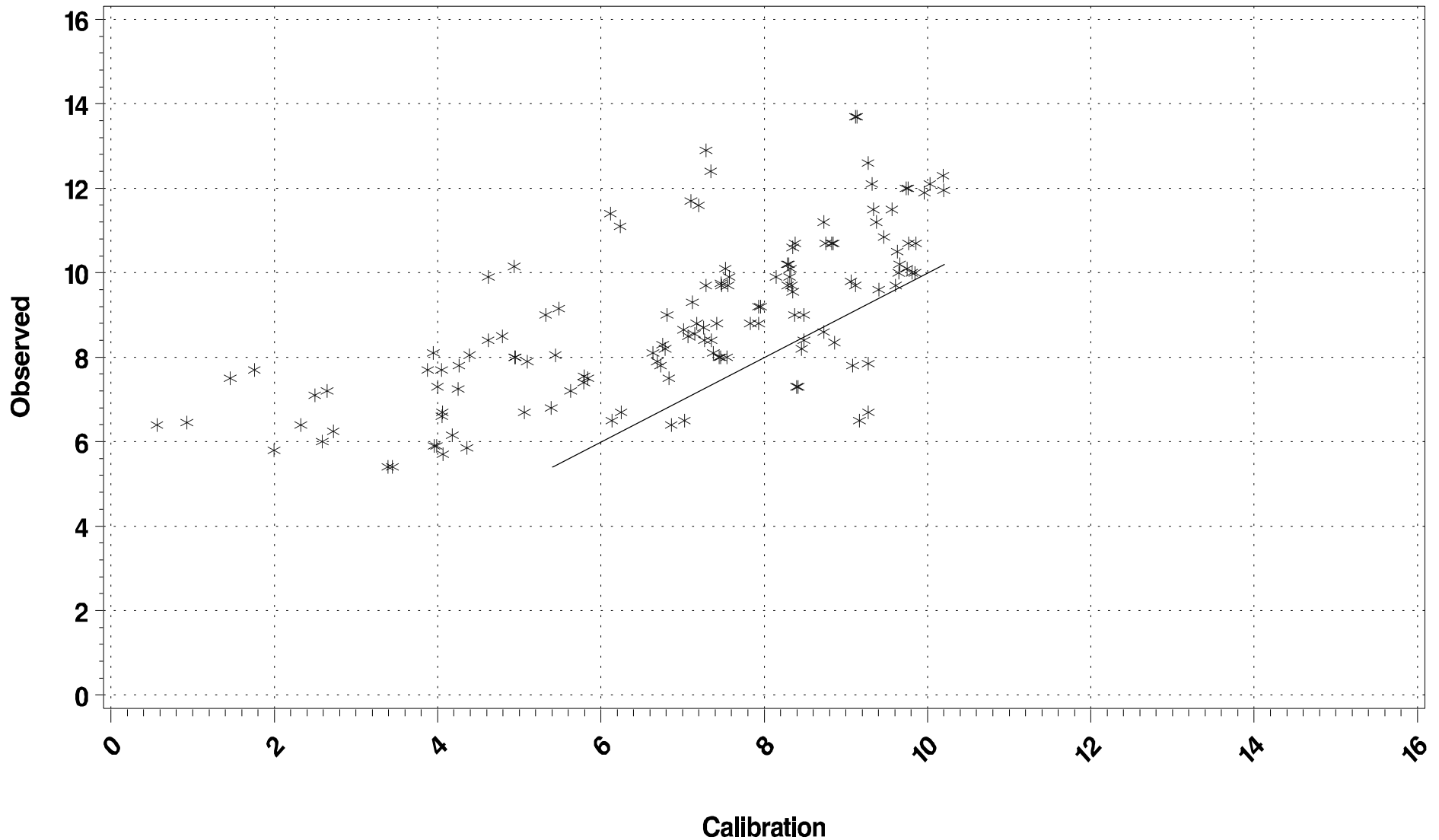## Segment CHOOH Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
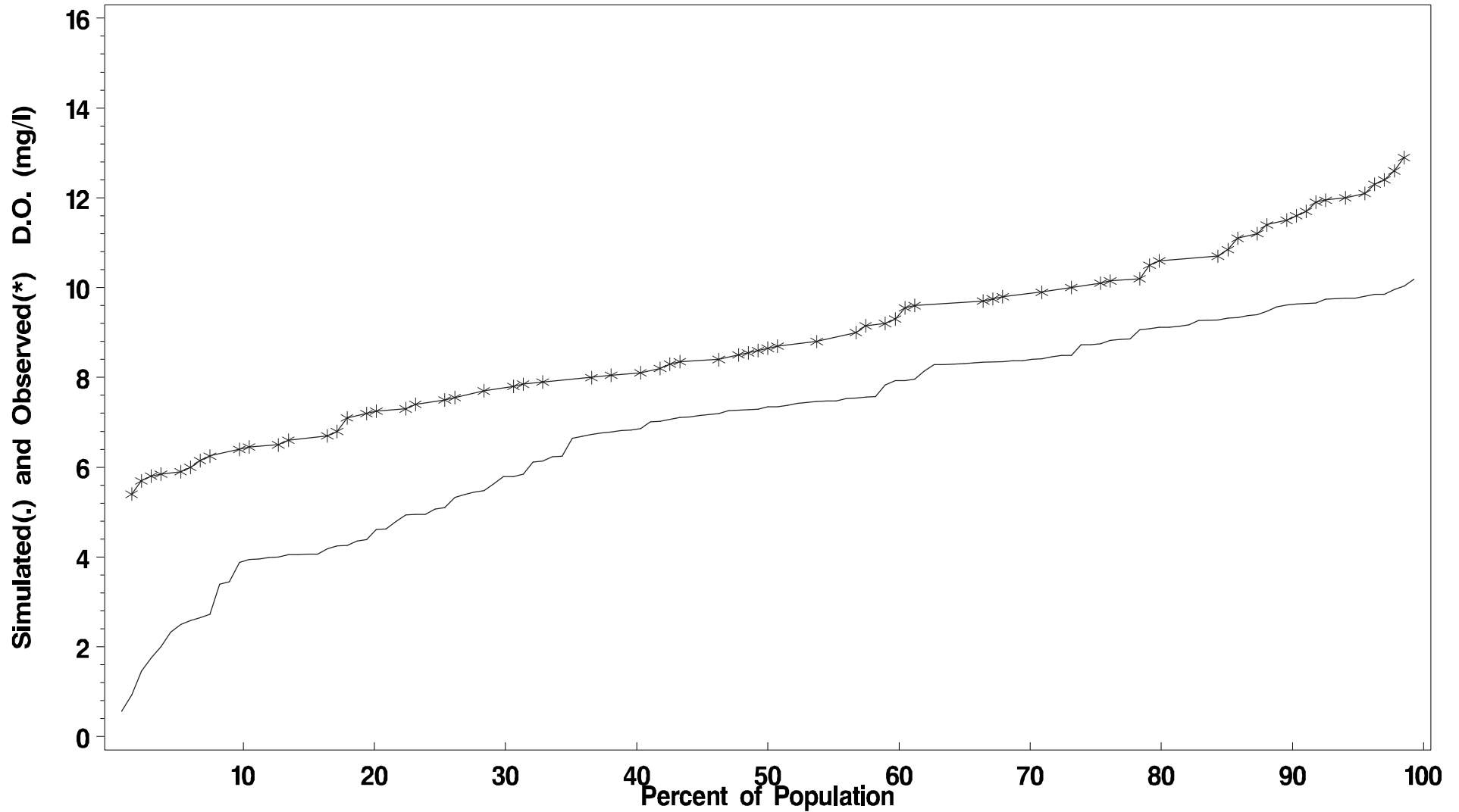
Migratory Dissolved Oxygen (mg/l)
Segment CHOOH Season: Feb 15 — June 10
(Scatter Plot)

MIGRATORY **Dissolved Oxygen**
Segment CHOOH (Choptank Oligohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 253 pairs of predictions and observed data, the **slope** is 0.7146 and the **intercept** is 4.0121. The **R-Squared** value for this regression is 0.3931.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 253 pairs of predictions and observed data, the **slope** is 0.3534 and the **intercept** is 0.6581. The **R-Squared** value for this regression is 0.3206.

Statistics (units in mg/l)

Mean observed 7.7894   Mean predicted 5.2859
Min. observed 2.6333   Min. predicted 0.0016
Max. observed 14.1667   Max. predicted 9.417
Std. Dev. Observed 2.3040   Std. Dev. predicted 2.0216
Median observed 7.1667   Median predicted 5.2609
90th Percentile observed 11.3000   90th Percentile predicted 7.8887
10th Percentile observed 5.5000   10th Percentile predicted 2.5912

Differences (predicted – observed)

Mean difference -2.5035 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 253
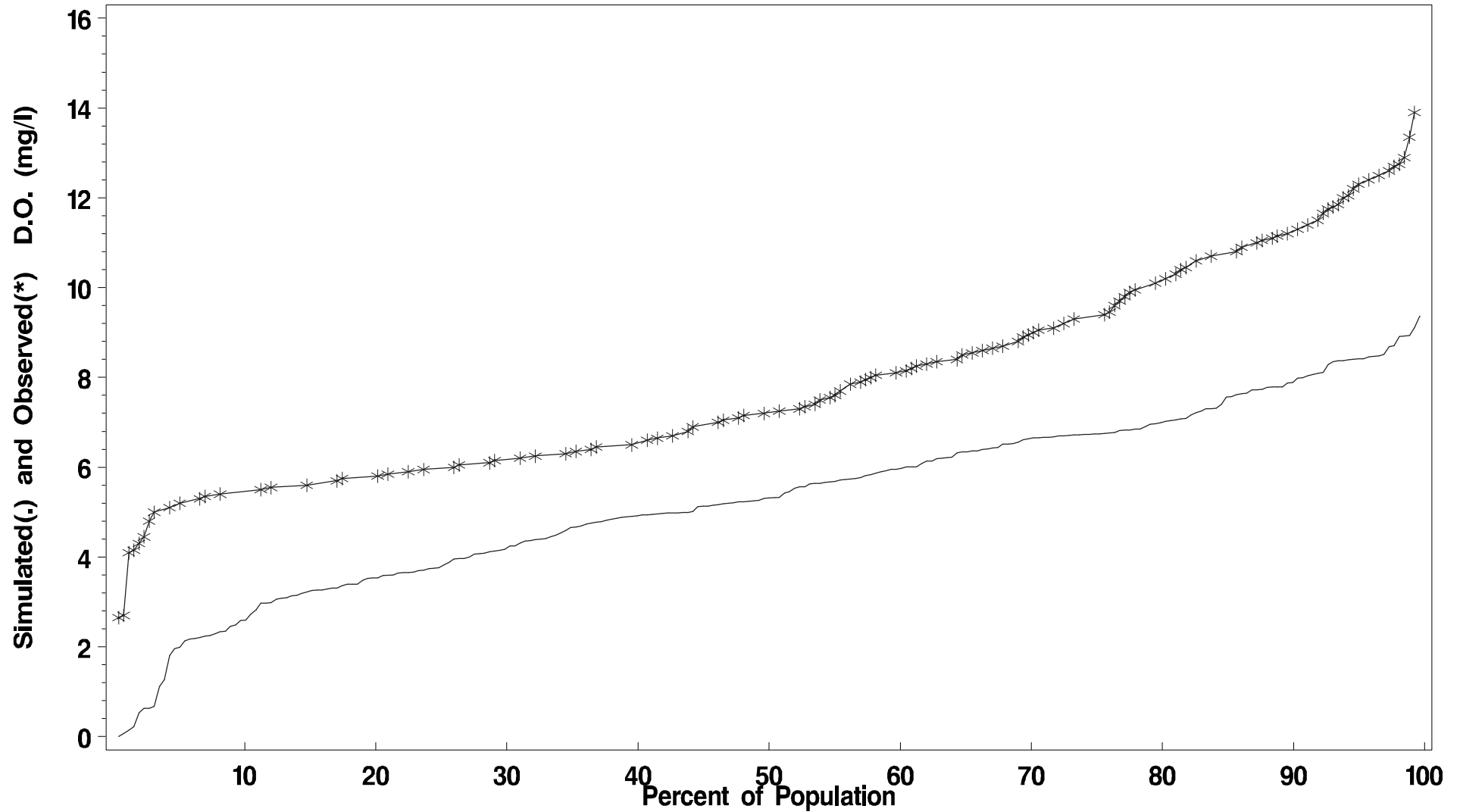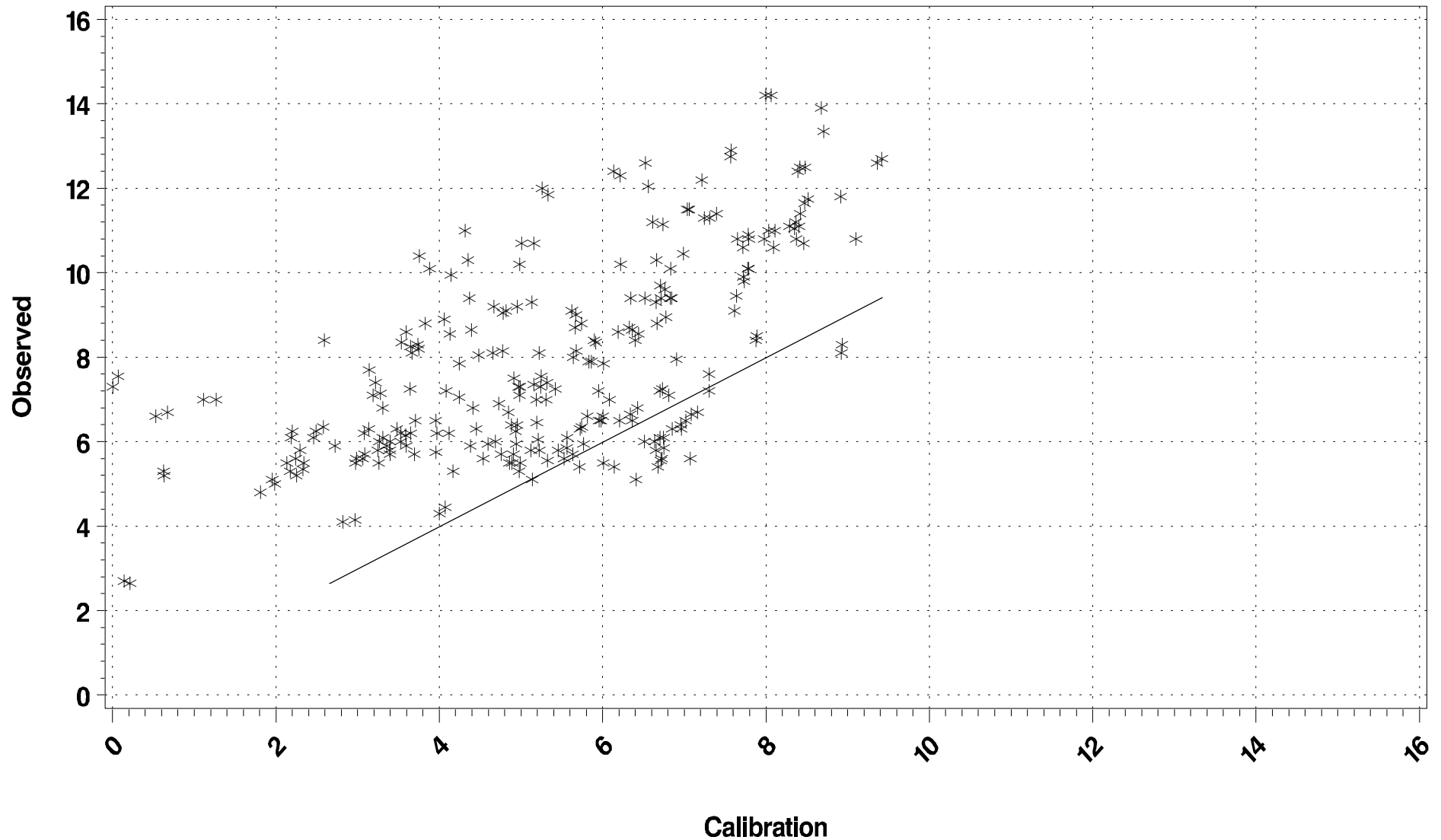Number of Predicted Violations 49
Number of Observed Violations 2

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
Segment CHOOH   Season: June 11 — Feb 14
Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Migratory   Dissolved Oxygen (mg/l)
Segment CHOOH   Season: June 11 – Feb 14
(Scatter Plot)

OLIGOHALINE **Chlorophyll**
Segment CHOOH (Choptank Oligohaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 58 pairs of predictions and observed data, the **slope** is -0.1406 and the
intercept is 30.8484. The **R-Squared** value for this regression is 0.0013.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 58 pairs of predictions and observed data, the **slope** is -0.0598 and the
intercept is 1.5176. The **R-Squared** value for this regression is 0.0014.

Statistics (units in μg/l)

Mean observed 29.2862   Mean predicted 11.1086
Min. observed 5.4000   Min. predicted 4.6542
Max. observed 54.6000   Max. predicted 16.6080
Std. Dev. Observed 10.3396   Std. Dev. predicted 2.6864
Median observed 28.4000   Median predicted 11.0750
95th Percentile observed 49.8000   95th Percentile predicted 15.9150
10th Percentile observed 17.7000   10th Percentile predicted 7.8416

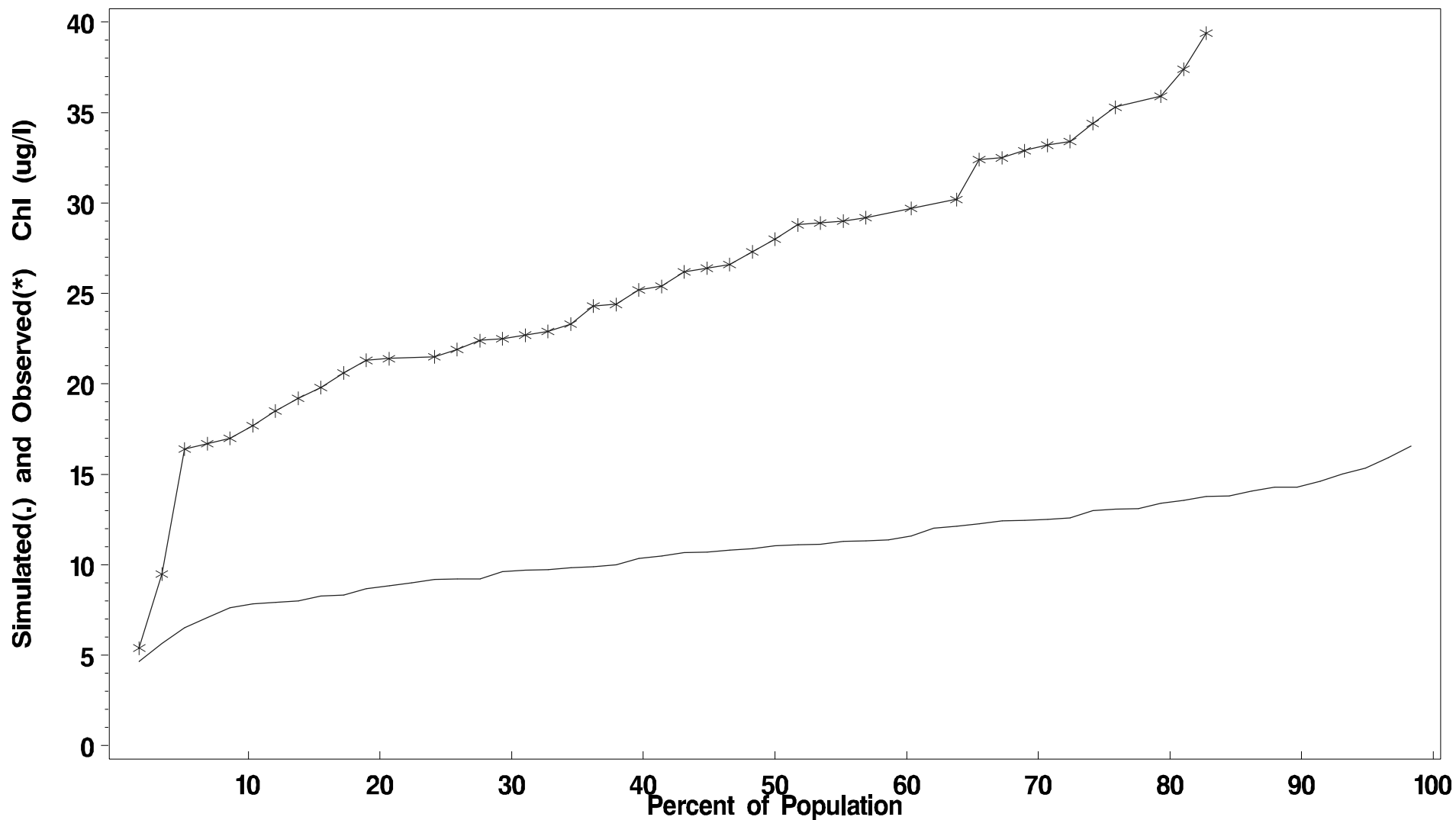**Differences** (predicted – observed)

Mean difference -18.1776 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
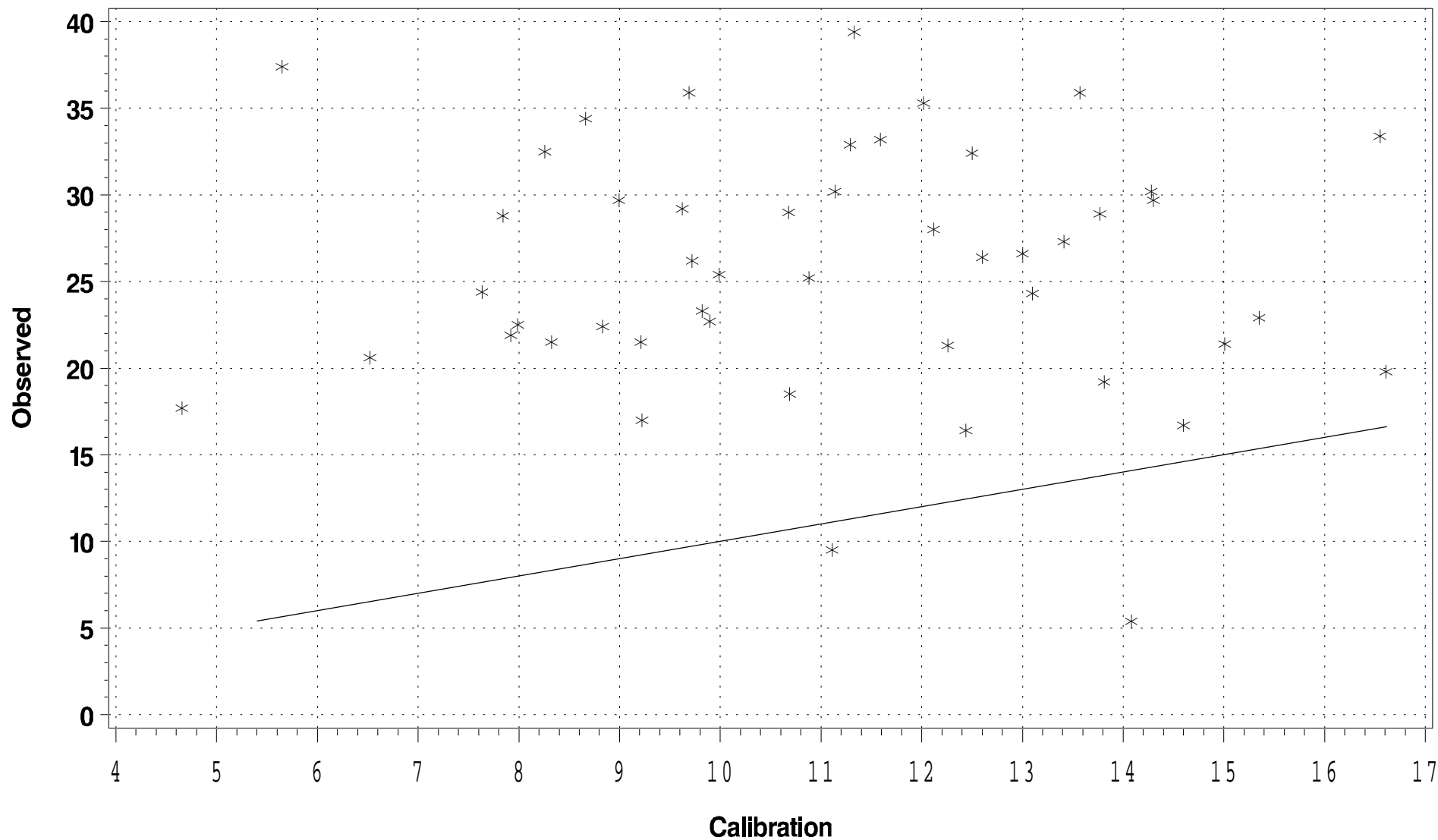**Segment CHOOH   Season: July 1 – Sept 30**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment CHOOH Season: July 1 – Sept 30
(Scatter Plot)

OLIGOHALINE **Chlorophyll**
Segment CHOOH (Choptank Oligohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 52 pairs of predictions and observed data, the **slope** is 0.6974 and the **intercept** is 4.4717. The **R-Squared** value for this regression is 0.0903.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 52 pairs of predictions and observed data, the **slope** is 0.7358 and the **intercept** is 0.2477. The **R-Squared** value for this regression is 0.1218.

Statistics (units in µg/l)

|	
Mean observed 13.7981	Mean predicted 13.3735
Min. observed 2.0000	Min. predicted 6.1253
Max. observed 44.9000	Max. predicted 23.0350
Std. Dev. Observed 9.7888	Std. Dev. predicted 4.2181
Median observed 12.0000	Median predicted 13.6870
95th Percentile observed 34.4000	95th Percentile predicted 21.1930
10th Percentile observed 4.5000	10th Percentile predicted 8.4796

Differences (predicted – observed)

Mean difference -0.4246 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CHOOH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
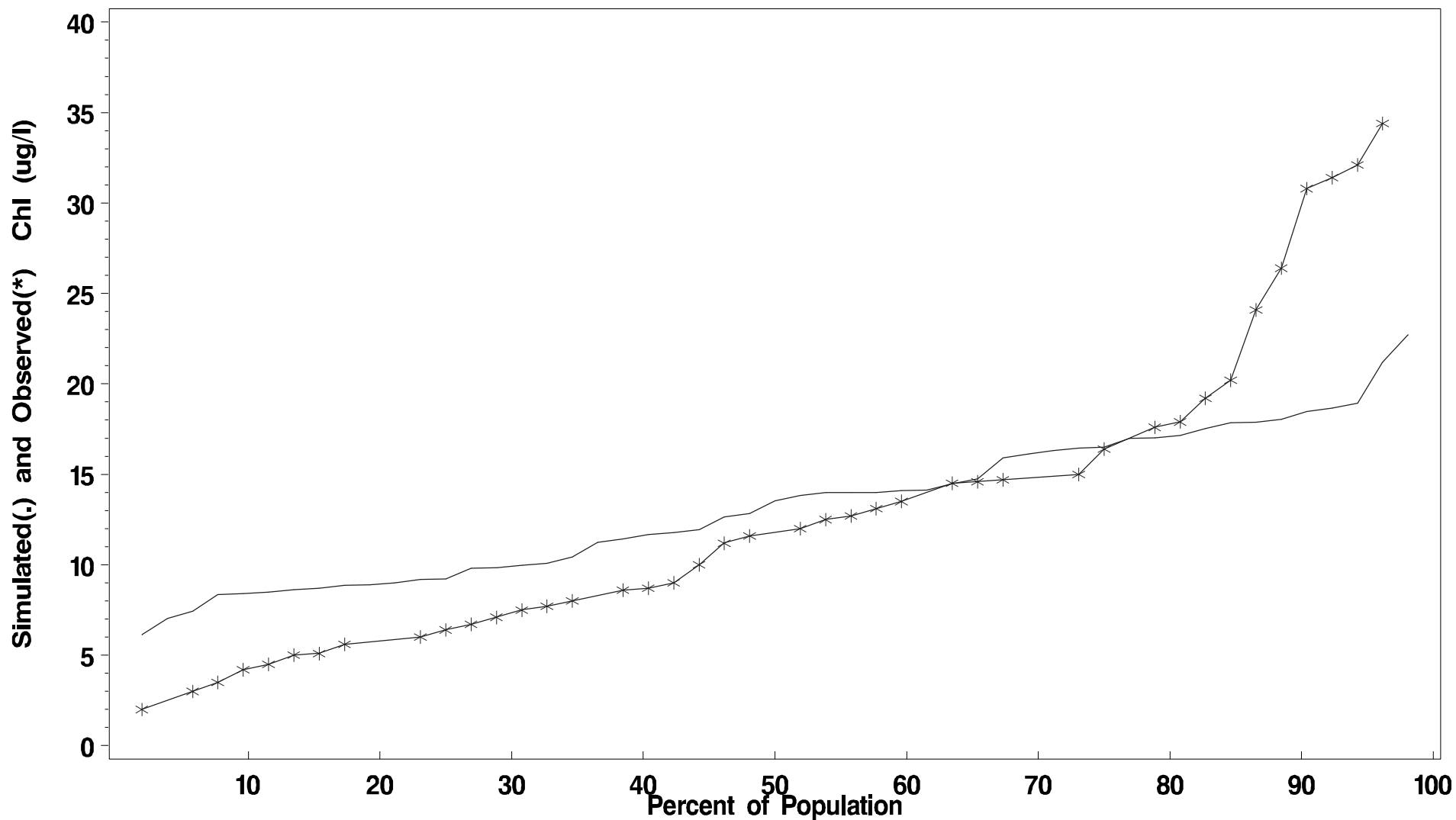
Chlorophyll Concentration (ug/l)
Segment CHOOH   Season: March 1 – May 30
(Scatter Plot)
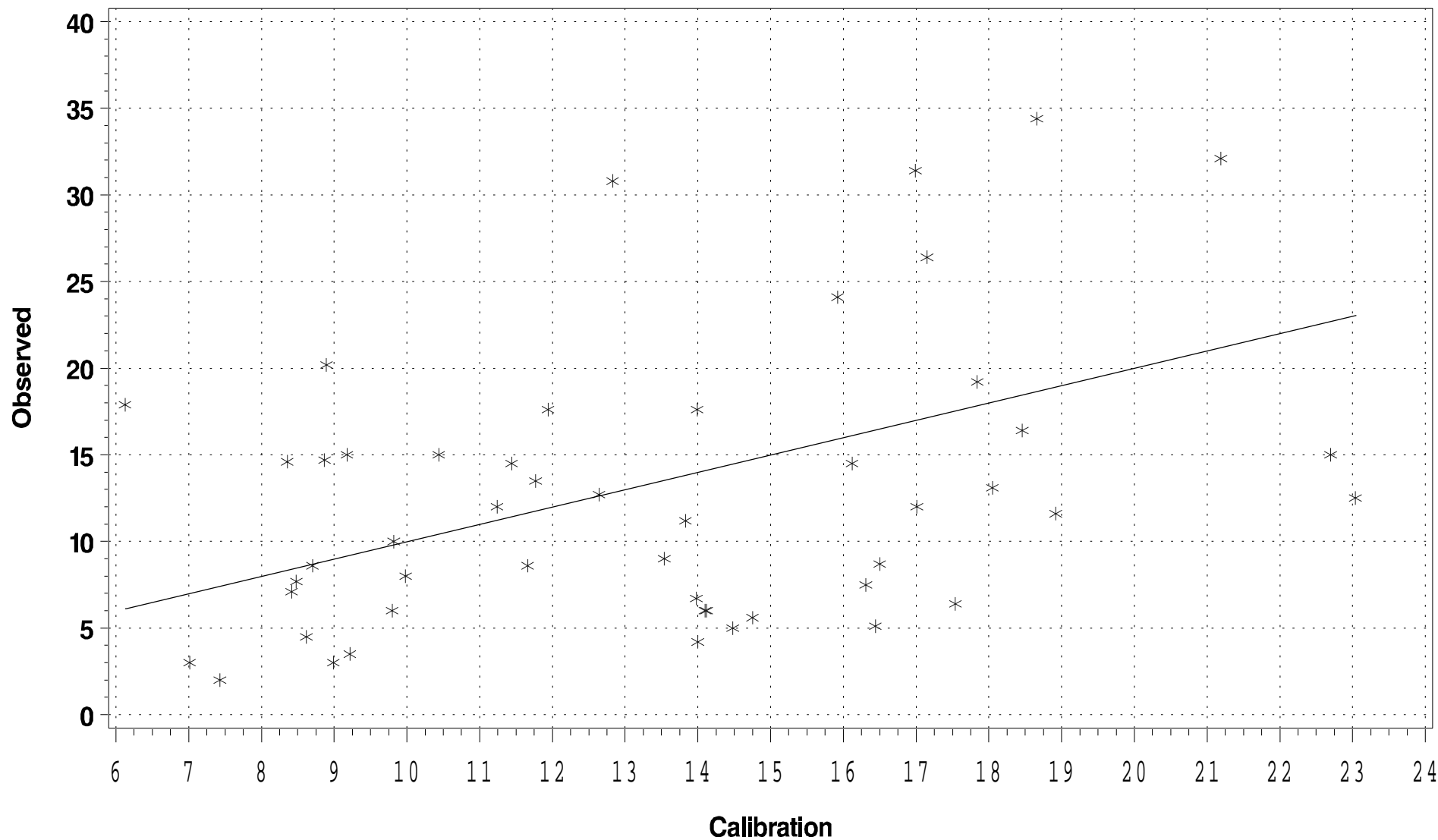
OLIGOHALINE **Light Attenuation**
Segment CHOOH (Choptank Oligohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 129 pairs of predictions and observed data, the **slope** is 0.3989 and the **intercept** is 2.3652. The **R-Squared** value for this regression is 0.0910.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 129 pairs of predictions and observed data, the **slope** is 0.4404 and the **intercept** is 0.3756. The **R-Squared** value for this regression is 0.0702.

Statistics (units in 1/m)

Mean observed 4.2194   Mean predicted 4.6484
Min. observed 2.1667   Min. predicted 3.3698
Max. observed 13.0000   Max. predicted 13.6090
Std. Dev. Observed 1.4220   Std. Dev. predicted 1.0752
Median observed 4.3333   Median predicted 4.4423
90th Percentile observed 6.5000 90th Percentile predicted 5.3349
10th Percentile observed 3.2500 10th Percentile predicted 3.8903
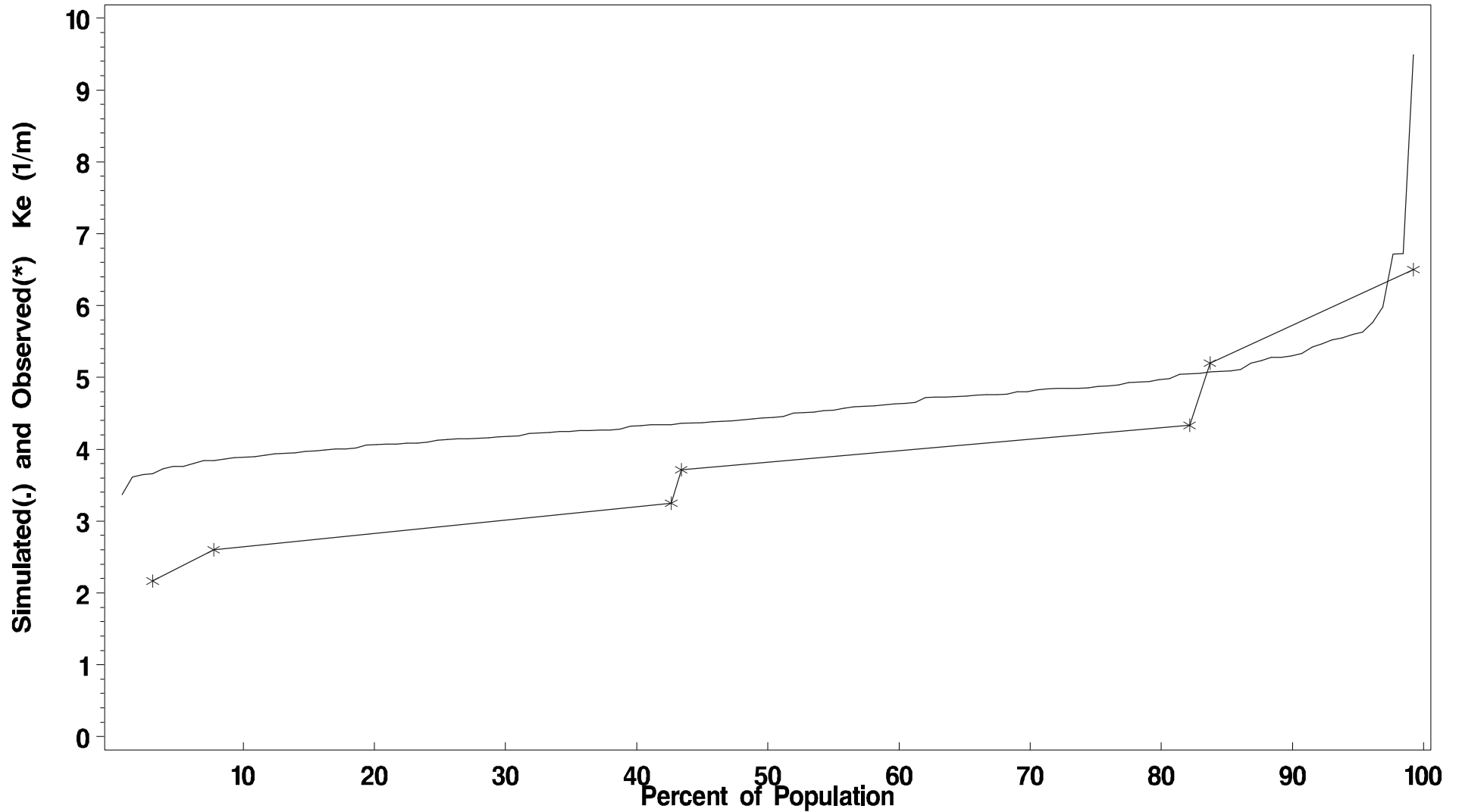
Differences (predicted – observed)

Mean difference 0.4290 1/m

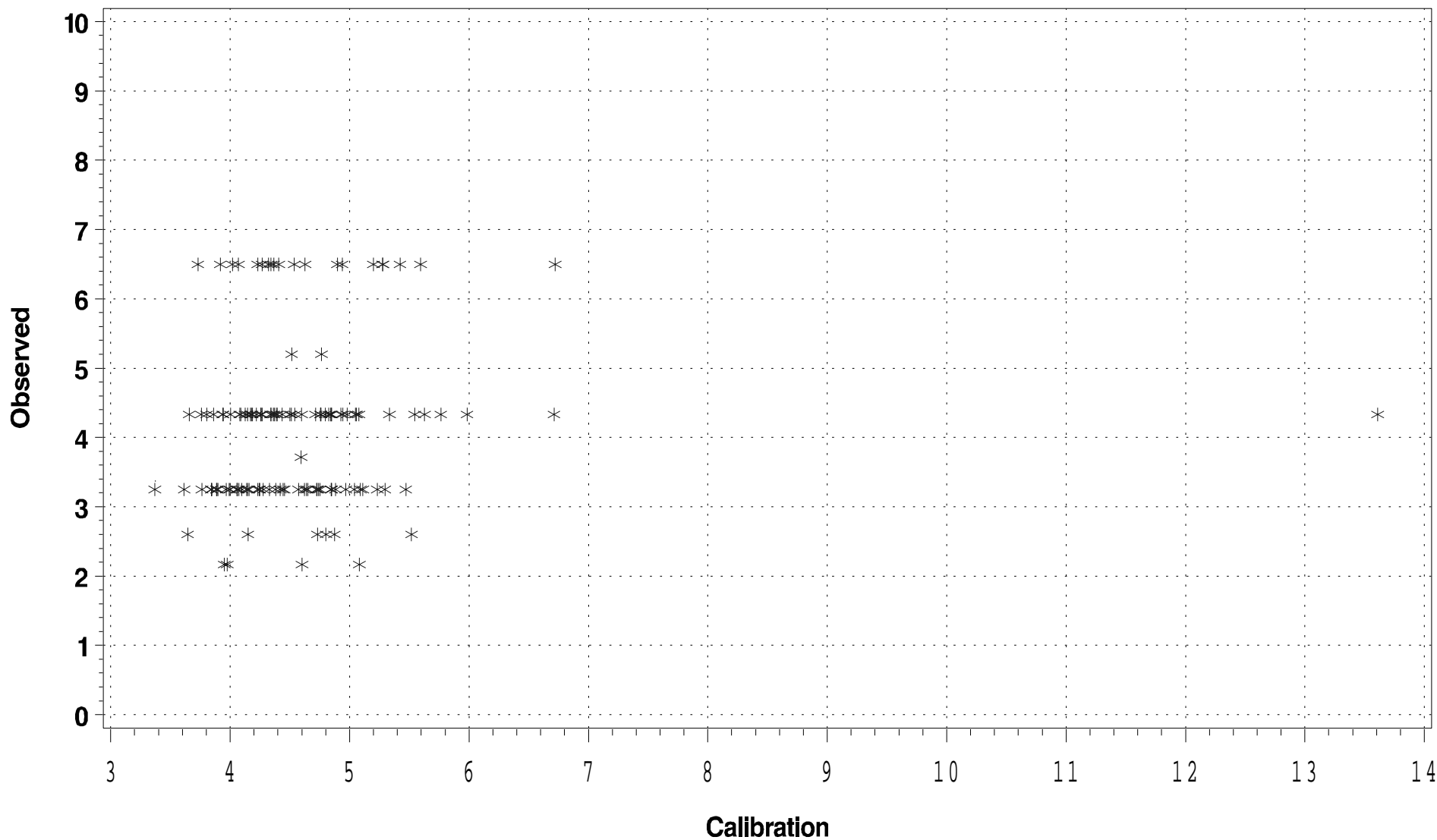[1] observed is dependent, predicted is independent

Ke (1/m)
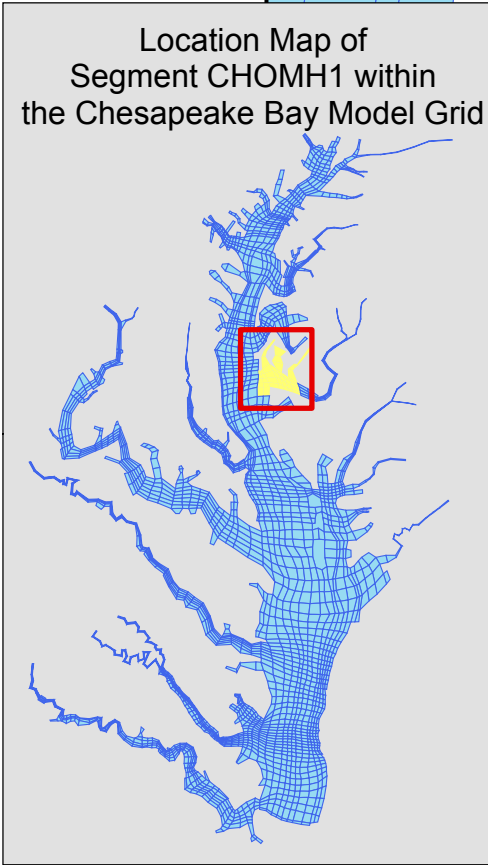## Segment CHOOH   Season: April 1 — Oct 30
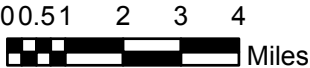### Cumulative Frequency Distribution — PAIRED Simulated and Observed Data

Ke (1/m)
Segment CHOOH   Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment CHOMH1

Location Map of
Segment CHOMH1 within
the Chesapeake Bay Model Grid

EE2.1

N
W   E
S

0 0.5 1   2   3   4
Miles

Chesapeake Bay Program

OPEN WATER **Dissolved Oxygen**
Segment CHOMH1 (Choptank Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 812 pairs of predictions and observed data, the **slope** is 0.7654 and the
intercept is 1.9423. The **R-Squared** value for this regression is 0.6189.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 812 pairs of predictions and observed data, the **slope** is 0.7712 and the
intercept is 0.2183. The **R-Squared** value for this regression is 0.5740.

Statistics (units in mg/l)

Mean observed 8.6621   Mean predicted 8.7788
Min. observed 1.4   Min. predicted 2.79
Max. observed 14.2   Max. predicted 15.24
Std. Dev. Observed 2.2604   Std. Dev. predicted 2.3232
Median observed 8.3000   Median predicted 8.4356
90th Percentile observed 11.9000   90th Percentile predicted 12.1910
10th Percentile observed 6.1000   10th Percentile predicted 5.8959

Differences (predicted – observed)

Mean difference 0.1168 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
standard of 3.5 mg/l.

Number of predicted and observed pairs 812
Number of Predicted Violations 3
Number of Observed Violations 10

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[1] observed is dependent, predicted is independent
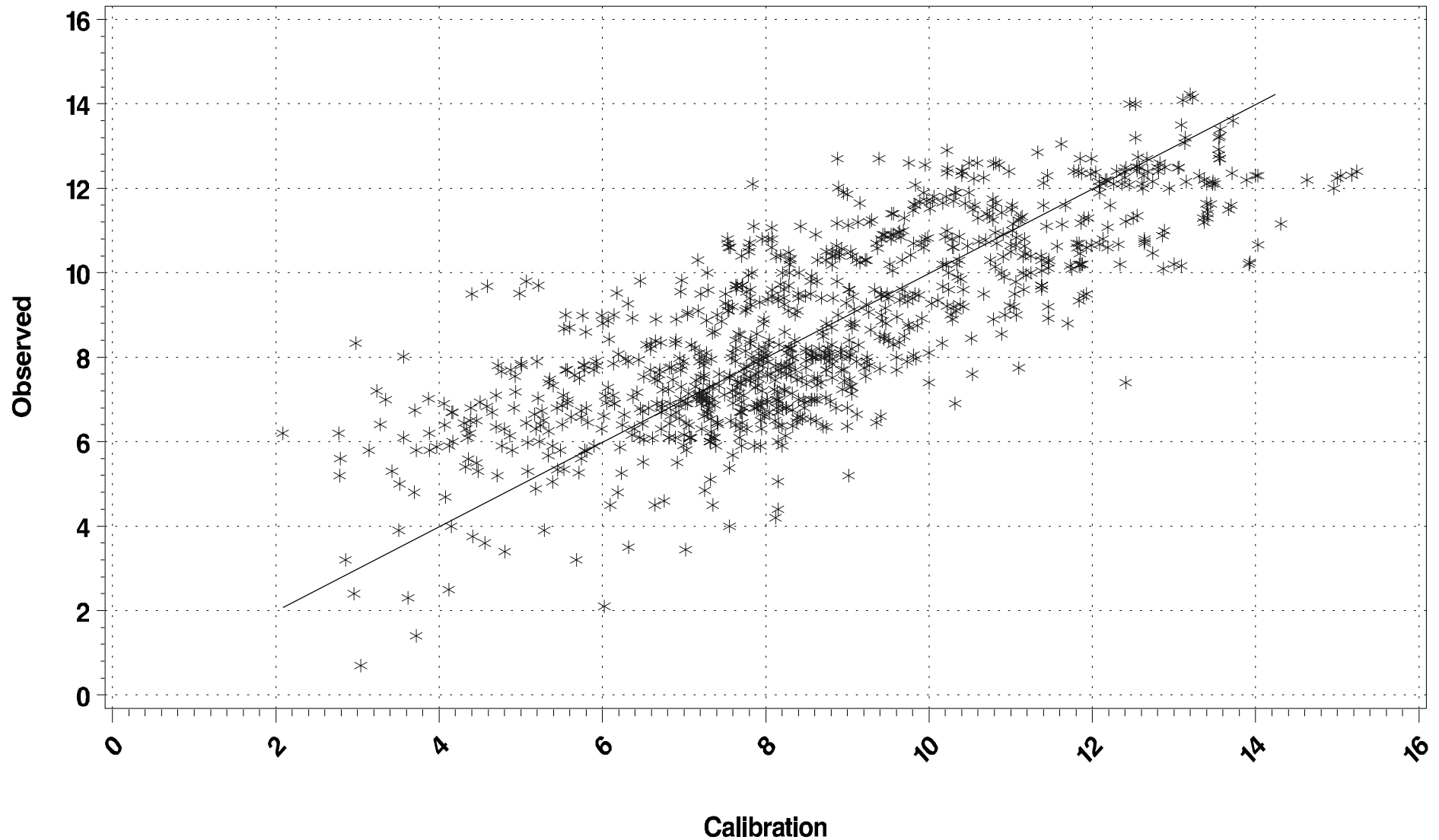
Open Water Dissolved Oxygen (mg/l)
Segment CHOMH1 Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment CHOMH1   Season: Jan 1 — Dec 31
(Scatter Plot)

<div align="center">
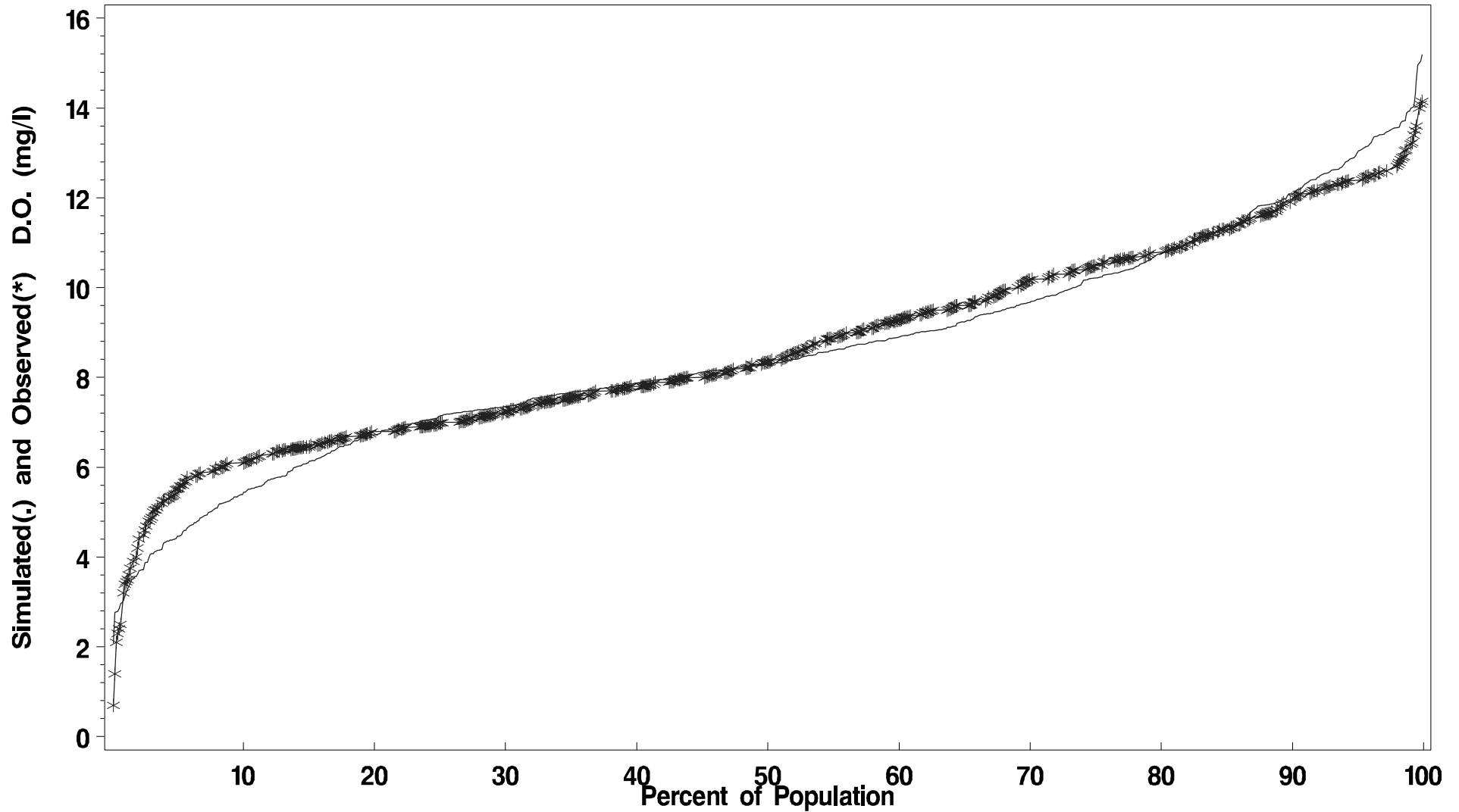
MESOHALINE **Chlorophyll**
Segment CHOMH1 (Choptank Mesohaline)
July 1 - Sept 30

</div>

Regression of Calibration vs. Observations[1]
Using the 57 pairs of predictions and observed data, the **slope** is 0.6048 and the **intercept** is 3.7066. The **R-Squared** value for this regression is 0.0863.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 57 pairs of predictions and observed data, the **slope** is 0.8558 and the **intercept** is 0.1039. The **R-Squared** value for this regression is 0.2027.

Statistics (units in μg/l)

Mean observed 9.8754   Mean predicted 10.1990
Min. observed 2.5000   Min. predicted 6.1339
Max. observed 38.6000   Max. predicted 19.2830
Std. Dev. Observed 5.6900   Std. Dev. predicted 2.7639
Median observed 8.8000   Median predicted 9.3168
95th Percentile observed 18.5000 95th Percentile predicted 14.9410
10th Percentile observed 4.3500   10th Percentile predicted 7.0799

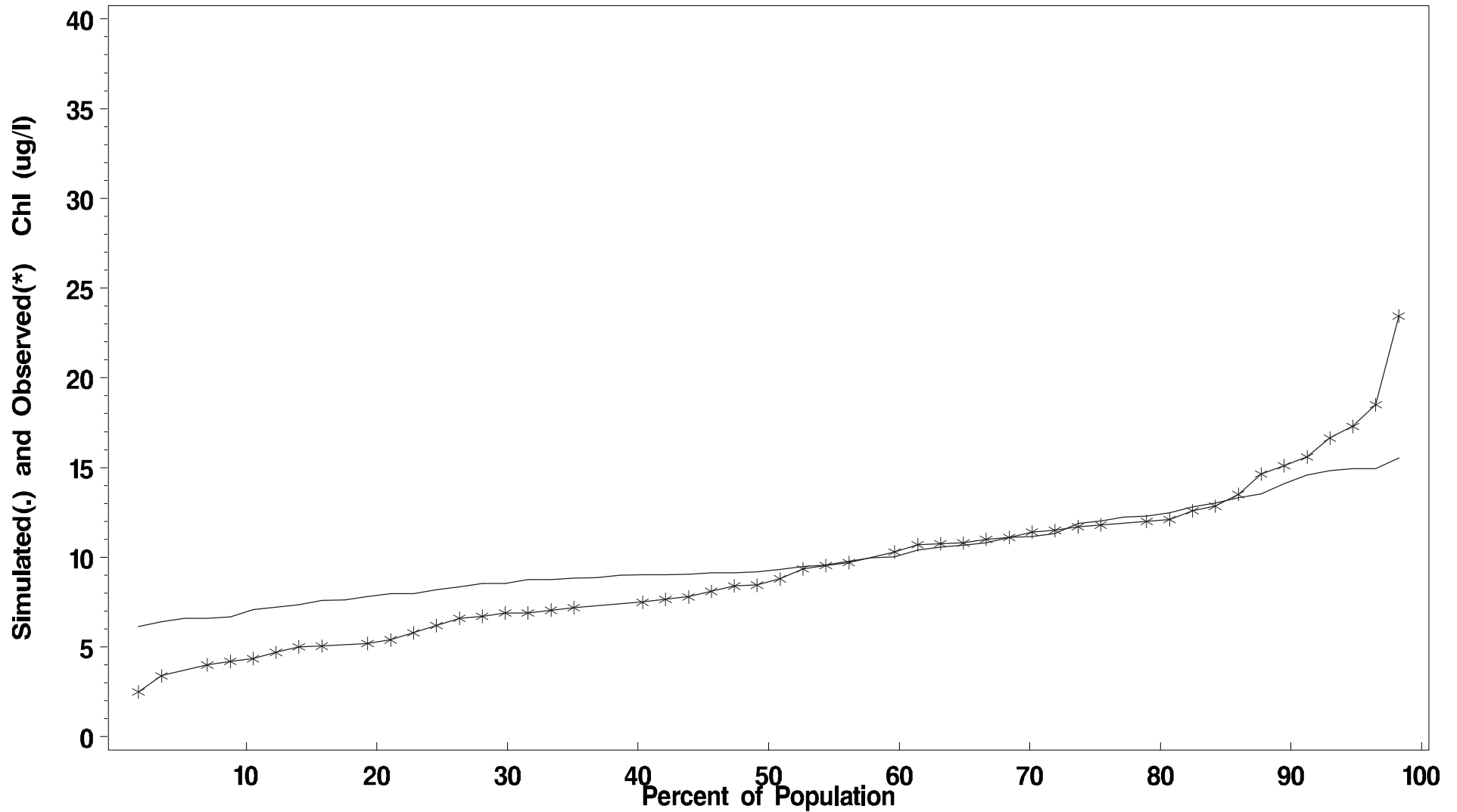**Differences** (predicted – observed)

Mean difference 0.3235 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
Segment CHOMH1   Season: July 1 – Sept 30
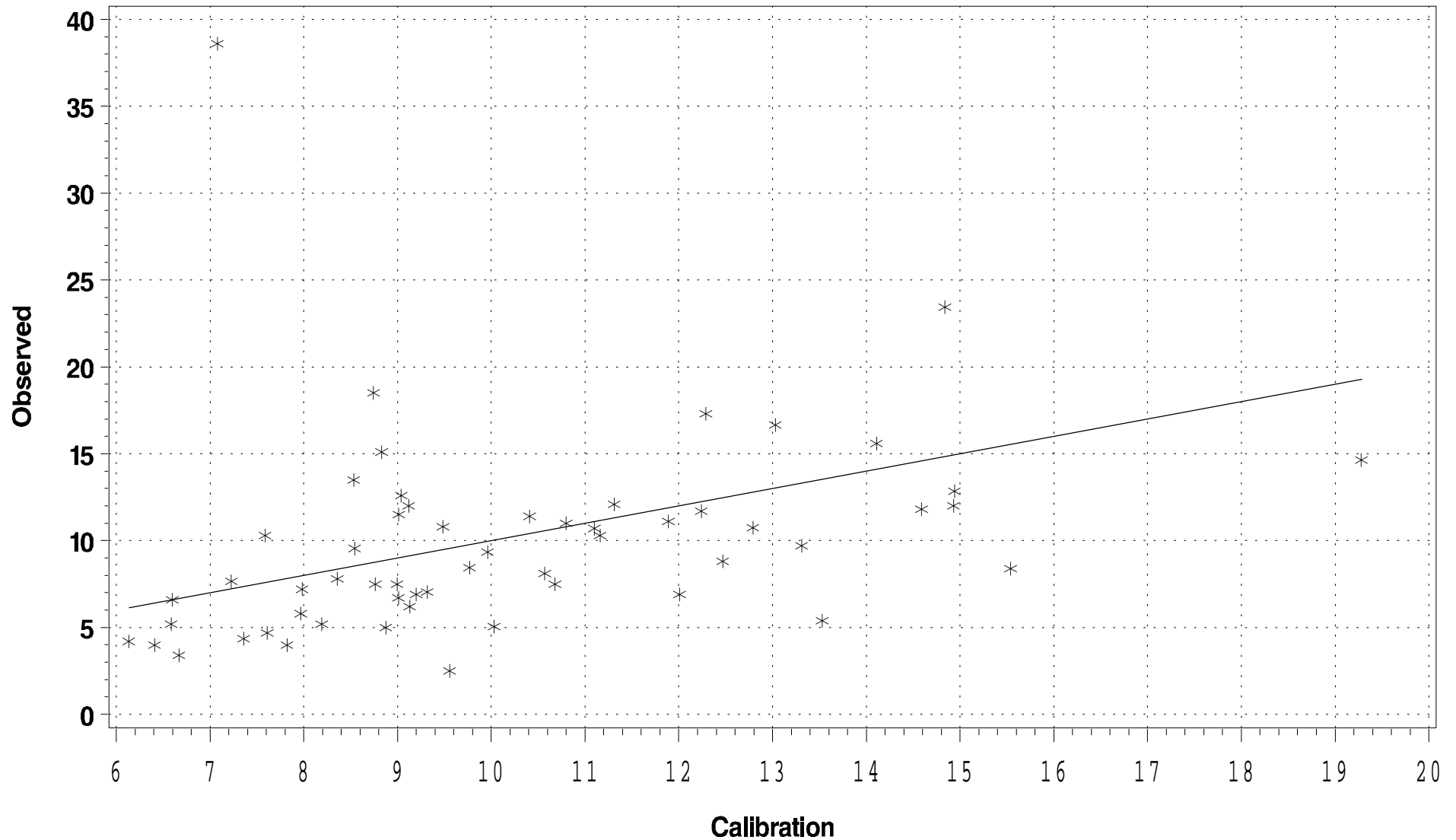### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment CHOMH1   Season: July 1 — Sept 30
(Scatter Plot)

Regression of Calibration vs. Observations[1]
Using the 51 pairs of predictions and observed data, the **slope** is 0.3612 and the **intercept** is 2.8110. The **R-Squared** value for this regression is 0.0529.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 51 pairs of predictions and observed data, the **slope** is 0.8325 and the **intercept** is -0.1057. The **R-Squared** value for this regression is 0.1019.

Statistics (units in µg/l)

Mean observed 8.1235   Mean predicted 14.7077
Min. observed 0.3000   Min. predicted 7.0530
Max. observed 31.1000   Max. predicted 25.7430
Std. Dev. Observed 6.0880   Std. Dev. predicted 3.8778
Median observed 7.0000   Median predicted 13.6640
95th Percentile observed 21.0500   95th Percentile predicted 23.0770
10th Percentile observed 2.8000   10th Percentile predicted 11.1350
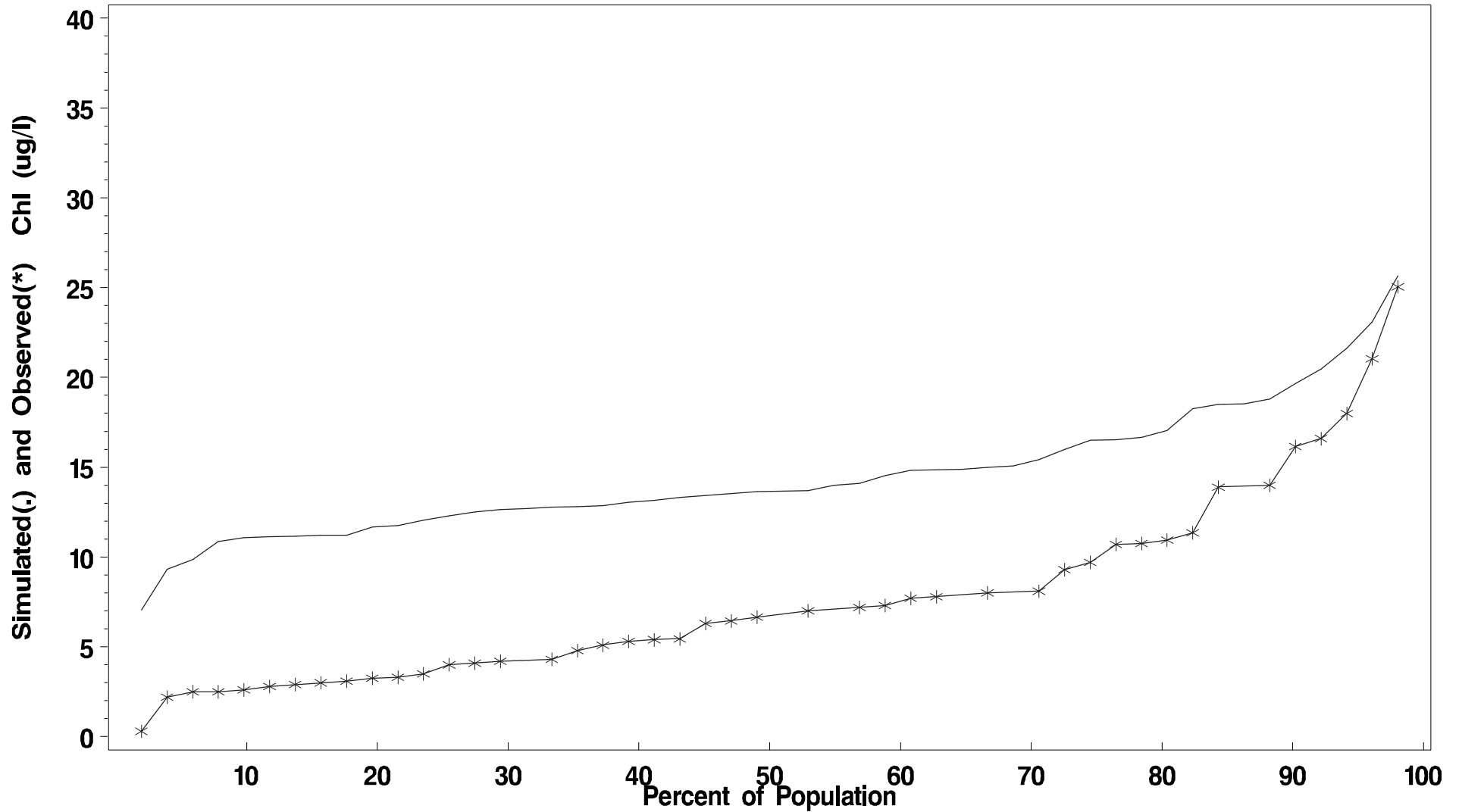
Differences (predicted – observed)

Mean difference 6.5841 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
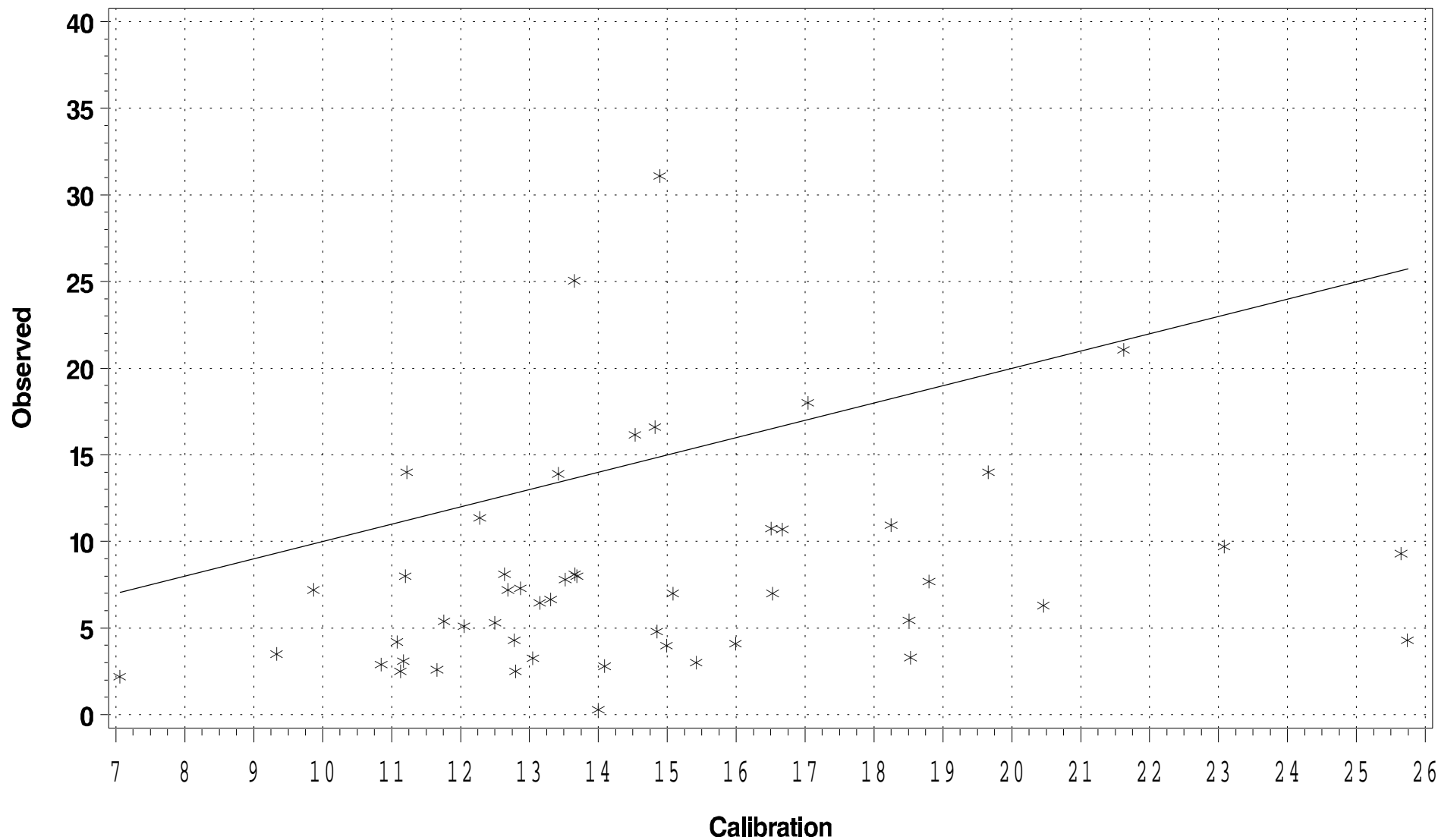Segment CHOMH1   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment CHOMH1   Season: March 1 — May 30
(Scatter Plot)

MESOHALINE **Light Attenuation**
Segment CHOMH1 (Choptank Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 129 pairs of predictions and observed data, the **slope** is 0.1667 and the **intercept** is 0.8089. The **R-Squared** value for this regression is 0.0097.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 129 pairs of predictions and observed data, the **slope** is 0.1090 and the **intercept** is 0.2550. The **R-Squared** value for this regression is 0.0045.

Statistics (units in 1/m)

Mean observed 0.9313   Mean predicted 0.7339
Min. observed 0.3095   Min. predicted 0.5056
Max. observed 1.6250   Max. predicted 1.4903
Std. Dev. Observed 0.2922   Std. Dev. predicted 0.1728
Median observed 0.9286   Median predicted 0.6986
90th Percentile observed 1.3000   90th Percentile predicted 0.9235
10th Percentile observed 0.5417   10th Percentile predicted 0.5599
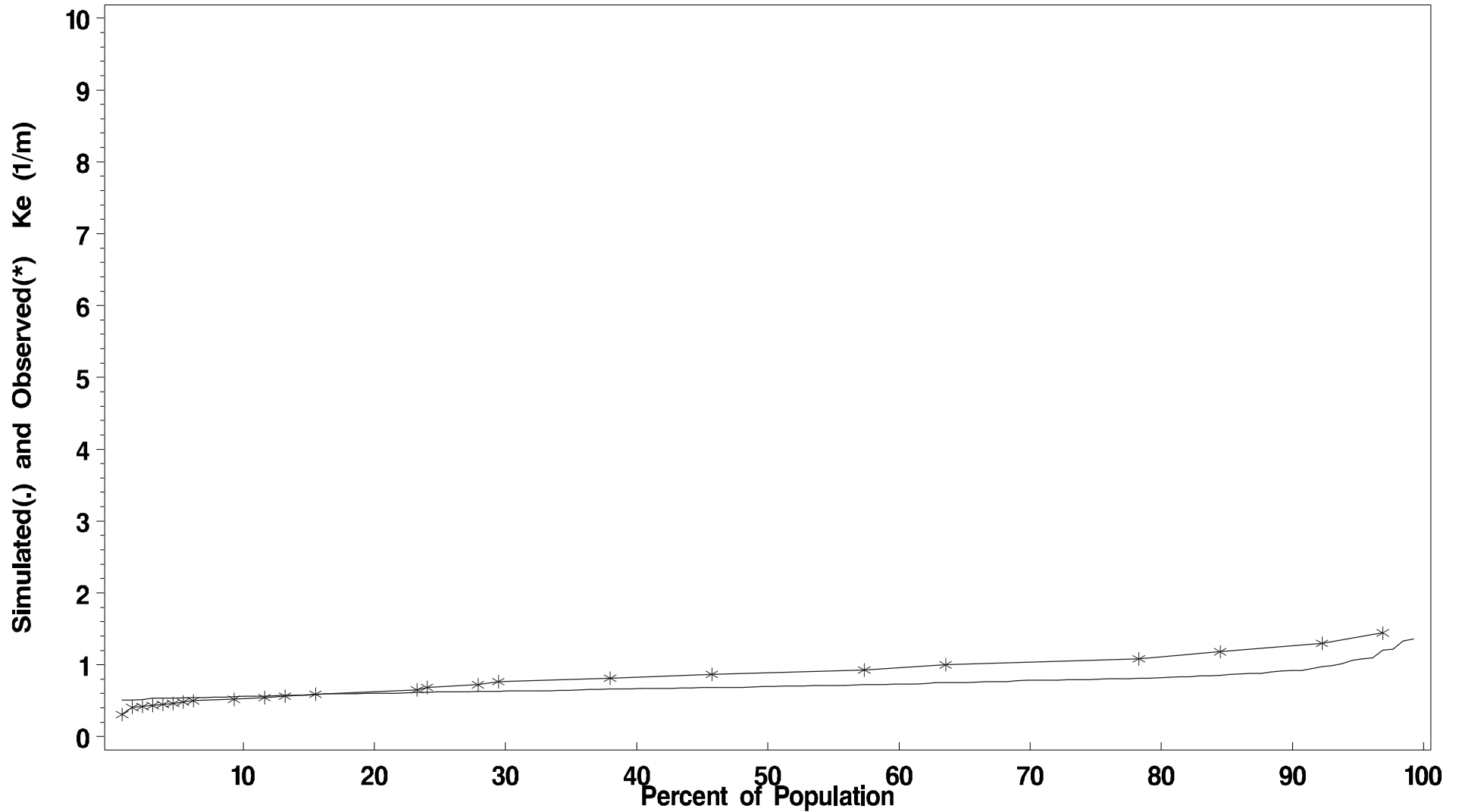

Differences (predicted – observed)

Mean difference -0.1974 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
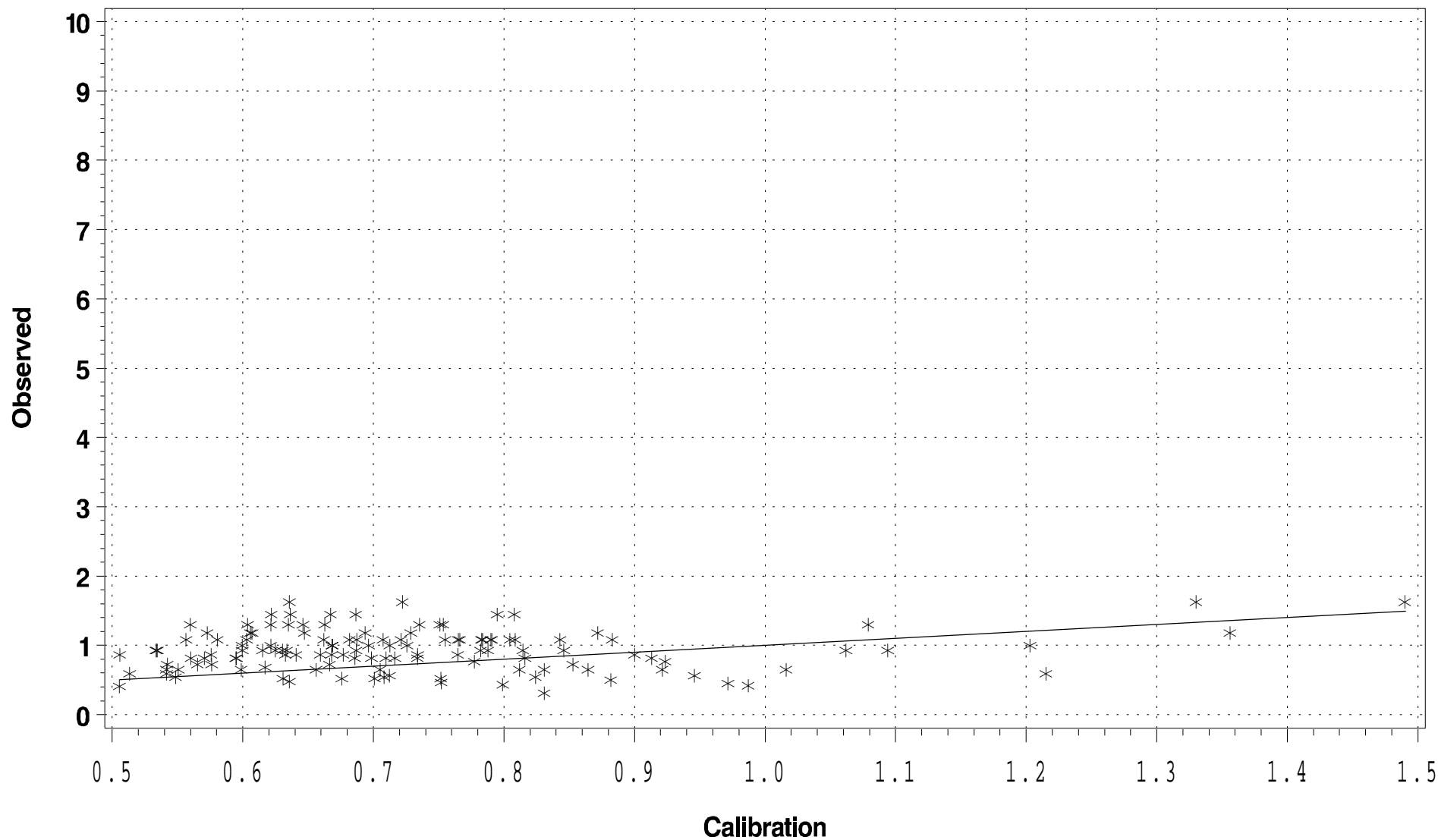
Segment CHOMH1   Season: April 1 – Oct 30

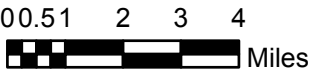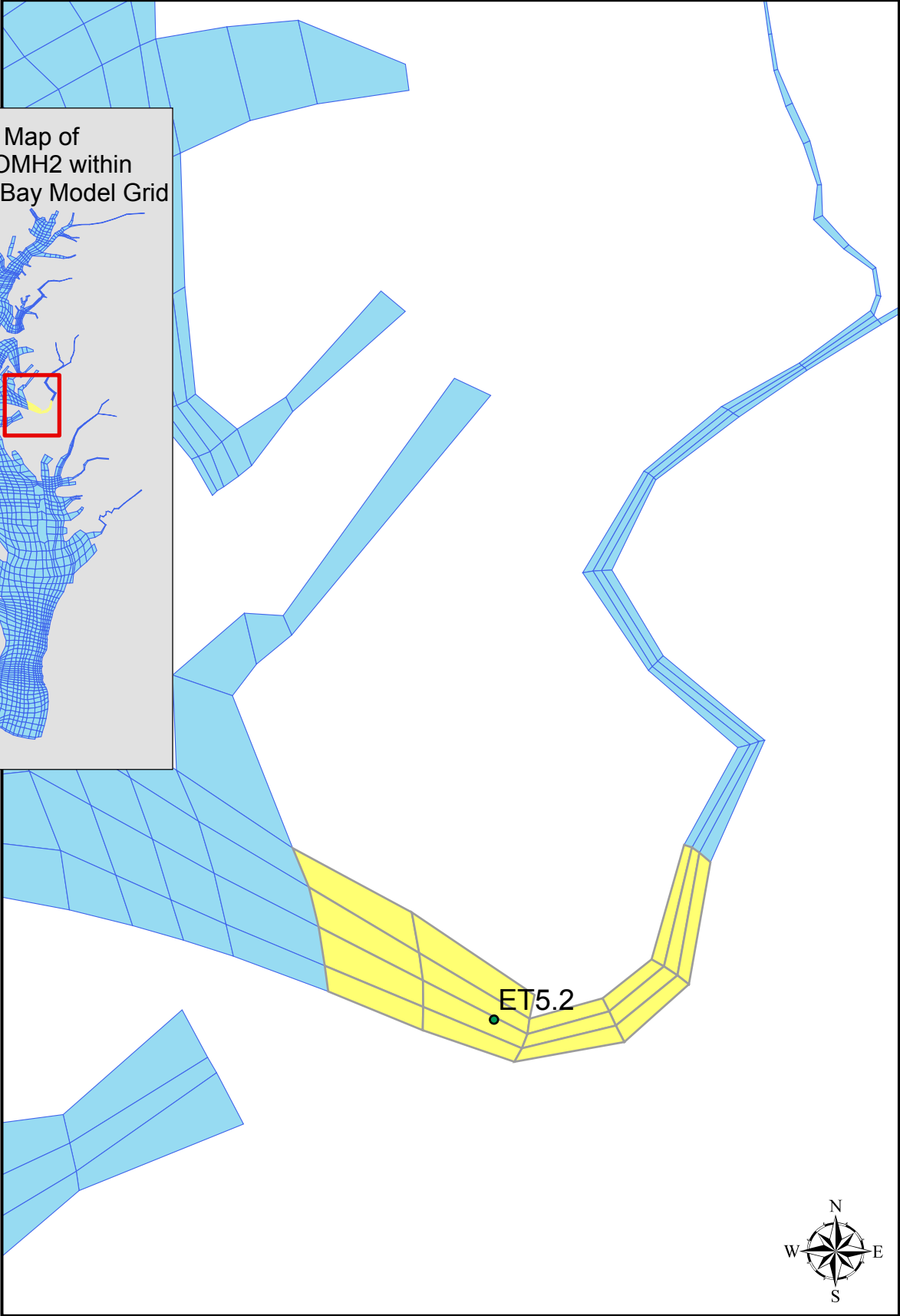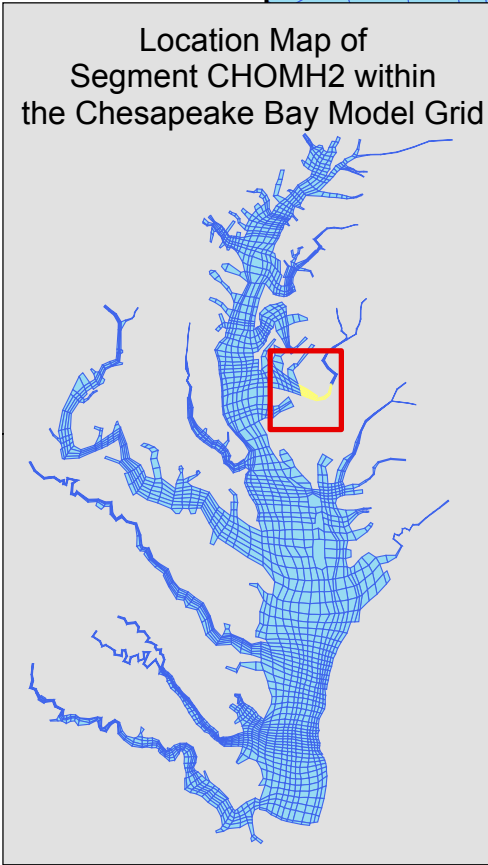### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment CHOMH1 Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment CHOMH2

Location Map of
Segment CHOMH2 within
the Chesapeake Bay Model Grid

ET5.2

N
W E
S

0 0.5 1   2   3   4
Miles

Chesapeake Bay Program

MIGRATORY **Dissolved Oxygen**
Segment CHOMH2 (Choptank Mesohaline)
Feb 15 - June 10

Regression of Calibration vs. Observations[1]

Using the 67 pairs of predictions and observed data, the **slope** is 0.8374 and the **intercept** is 0.7536. The **R-Squared** value for this regression is 0.4685.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 67 pairs of predictions and observed data, the **slope** is 0.9180 and the **intercept** is 0.0460. The **R-Squared** value for this regression is 0.5155.

Statistics (units in mg/l)

Mean observed 9.6175   Mean predicted 10.5848
Min. observed 4   Min. predicted 3.625
Max. observed 13.875   Max. predicted 14.16
Std. Dev. Observed 1.9611   Std. Dev. predicted 1.6029
Median observed 9.4000   Median predicted 10.7740
90th Percentile observed 12.2000   90th Percentile predicted 12.2900
10th Percentile observed 7.3000   10th Percentile predicted 8.0431

Differences (predicted – observed)

Mean difference 0.9673 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 5 mg/l.

Number of predicted and observed pairs 67
Number of Predicted Violations 2
Number of Observed Violations 1

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
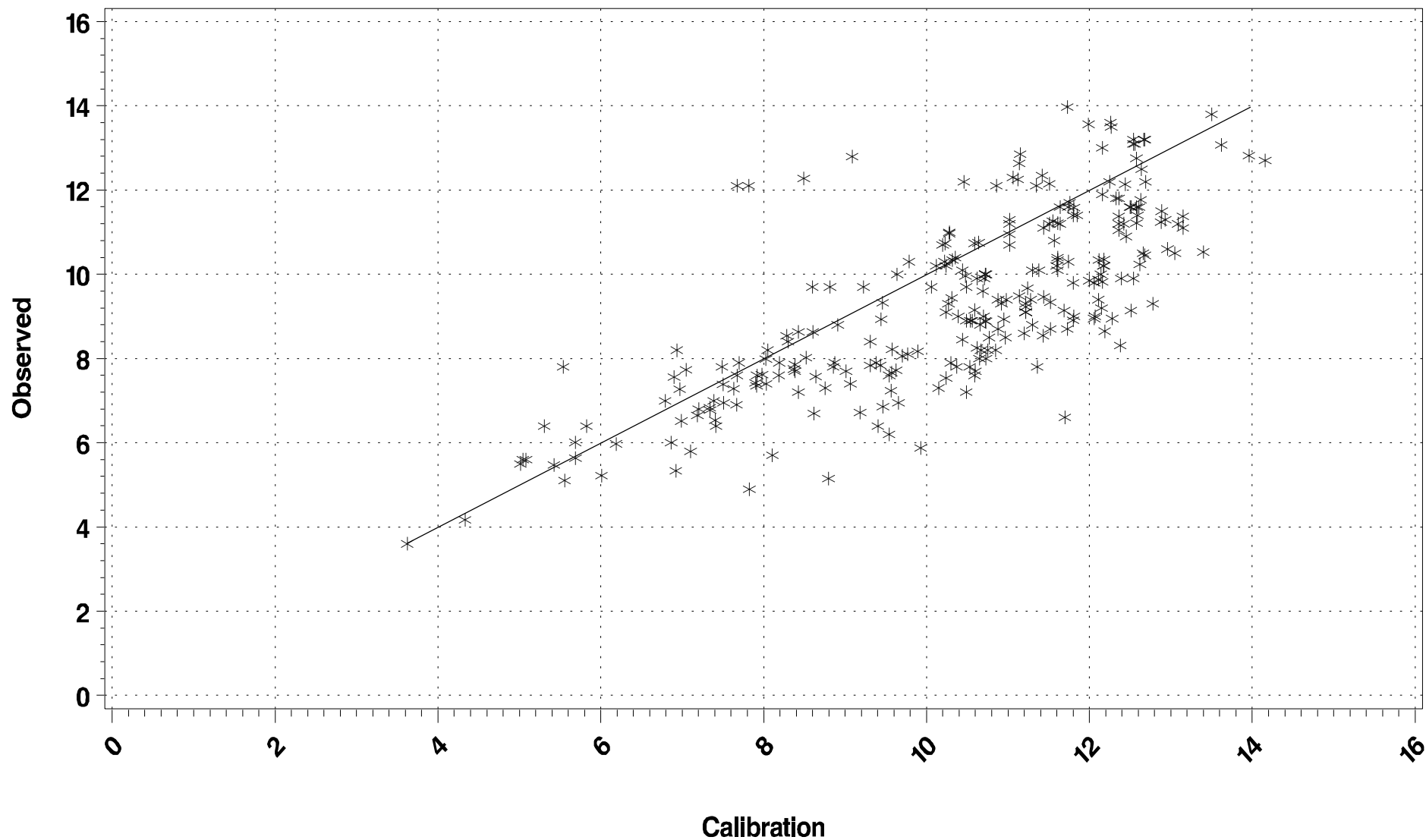# Segment CHOMH2   Season: Feb 15 – June 10
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Migratory   Dissolved Oxygen (mg/l)
Segment CHOMH2   Season: Feb 15 − June 10
(Scatter Plot)
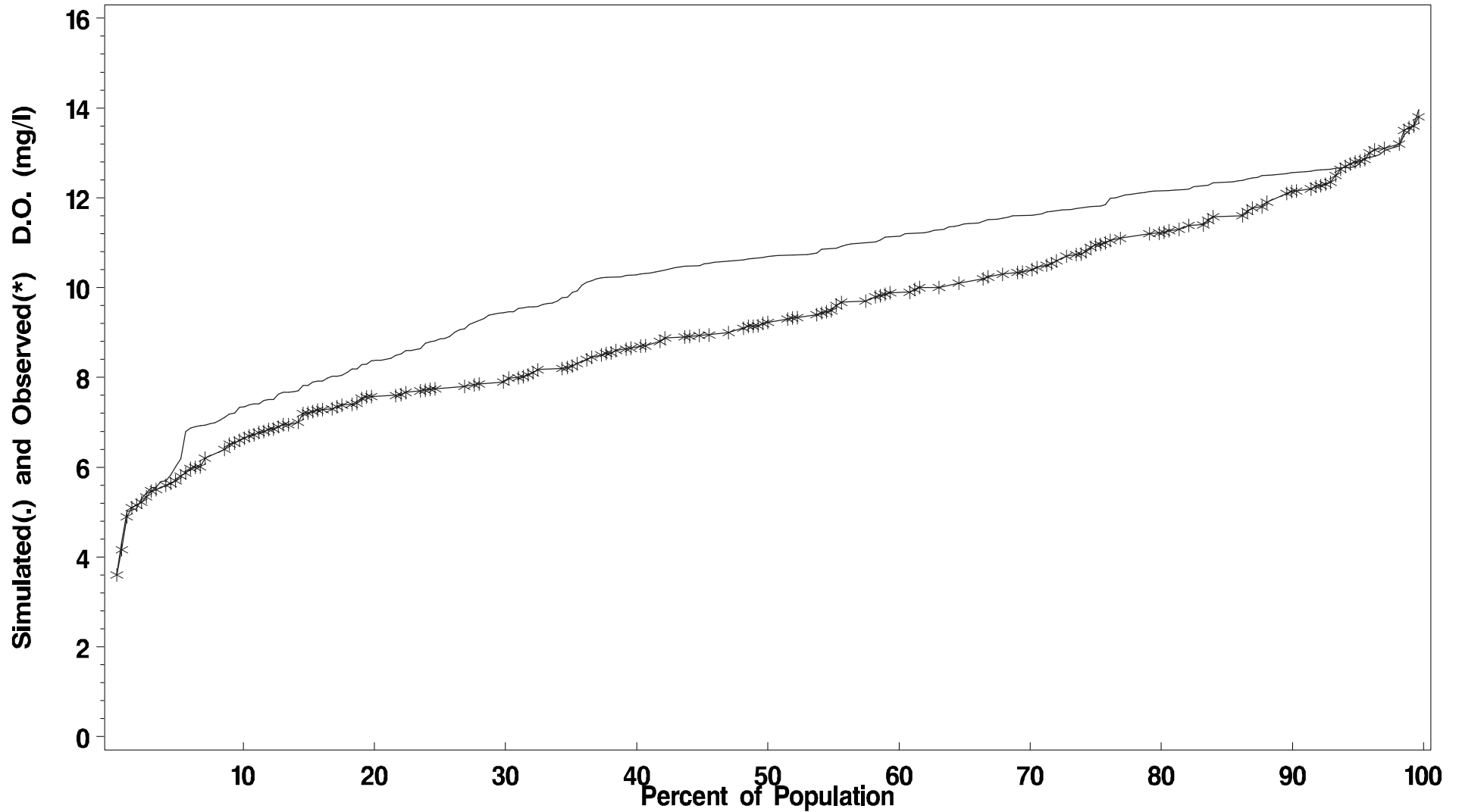
Observed

Calibration

MIGRATORY **Dissolved Oxygen**
Segment CHOMH2 (Choptank Mesohaline)
June 11 - Feb 14

Regression of Calibration vs. Observations[1]

Using the 128 pairs of predictions and observed data, the **slope** is 1.0081 and the **intercept** is -0.6182. The **R-Squared** value for this regression is 0.5199.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 128 pairs of predictions and observed data, the **slope** is 0.9229 and the **intercept** is 0.0428. The **R-Squared** value for this regression is 0.4633.

Statistics (units in mg/l)

Mean observed 7.9756   Mean predicted 8.5250
Min. observed 0.55   Min. predicted 2.352
Max. observed 14.6333   Max. predicted 13.07
Std. Dev. Observed 2.2833   Std. Dev. predicted 1.6332
Median observed 7.2833   Median predicted 8.3880
90th Percentile observed 11.6000   90th Percentile predicted 10.7560
10th Percentile observed 5.6667   10th Percentile predicted 6.5463

Differences (predicted – observed)

Mean difference 0.5494 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.

Number of predicted and observed pairs 128
Number of Predicted Violations 7
Number of Observed Violations 6

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[1] observed is dependent, predicted is independent

Migratory   Dissolved Oxygen (mg/l)
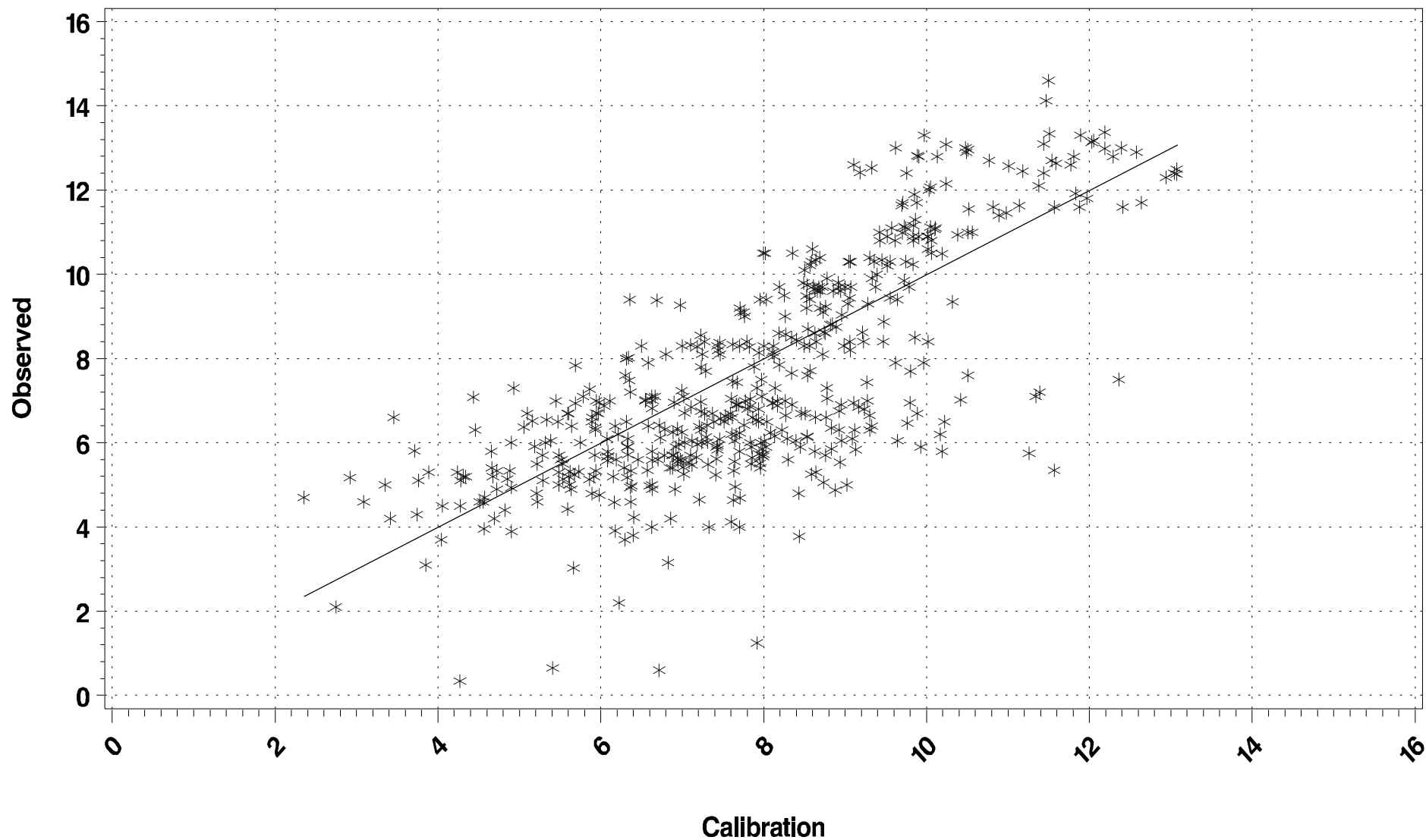**Segment CHOMH2   Season: June 11 – Feb 14**
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
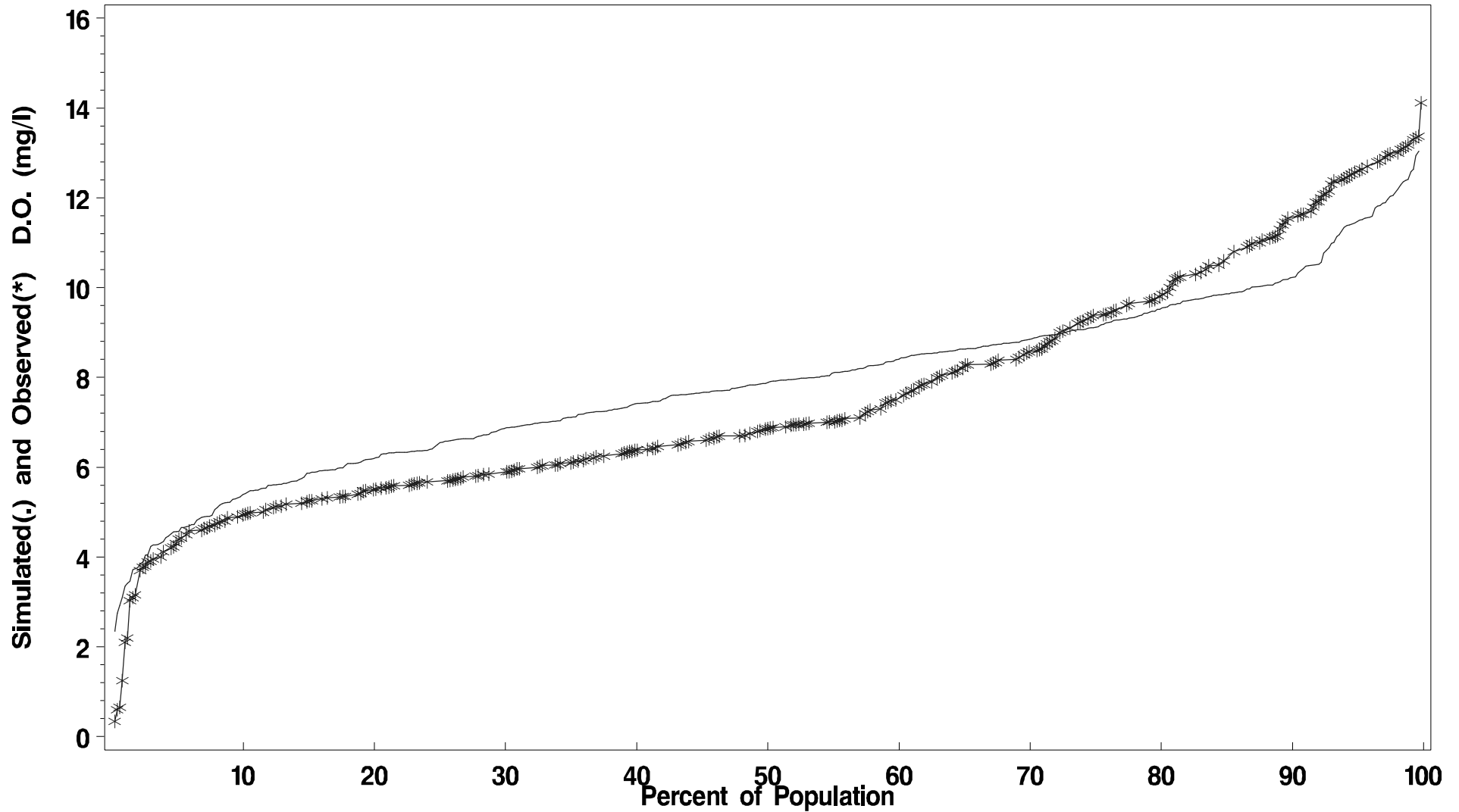
Migratory Dissolved Oxygen (mg/l)
Segment CHOMH2 Season: June 11 – Feb 14
(Scatter Plot)

Regression of Calibration vs. Observations[1]
Using the 59 pairs of predictions and observed data, the **slope** is -0.0004 and the **intercept** is 13.4595. The **R-Squared** value for this regression is 0.0000.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 59 pairs of predictions and observed data, the **slope** is -0.0054 and the **intercept** is 1.0824. The **R-Squared** value for this regression is 0.0000.

Statistics (units in μg/l)

|	
Mean observed 13.4551	Mean predicted 10.9574
Min. observed 1.8000	Min. predicted 6.5384
Max. observed 51.4000	Max. predicted 15.3010
Std. Dev. Observed 10.5251	Std. Dev. predicted 2.3117
Median observed 9.9500	Median predicted 11.0780
95th Percentile observed 42.7000	95th Percentile predicted 14.7680
10th Percentile observed 4.6000	10th Percentile predicted 7.9405

Differences (predicted – observed)

Mean difference -2.4977 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
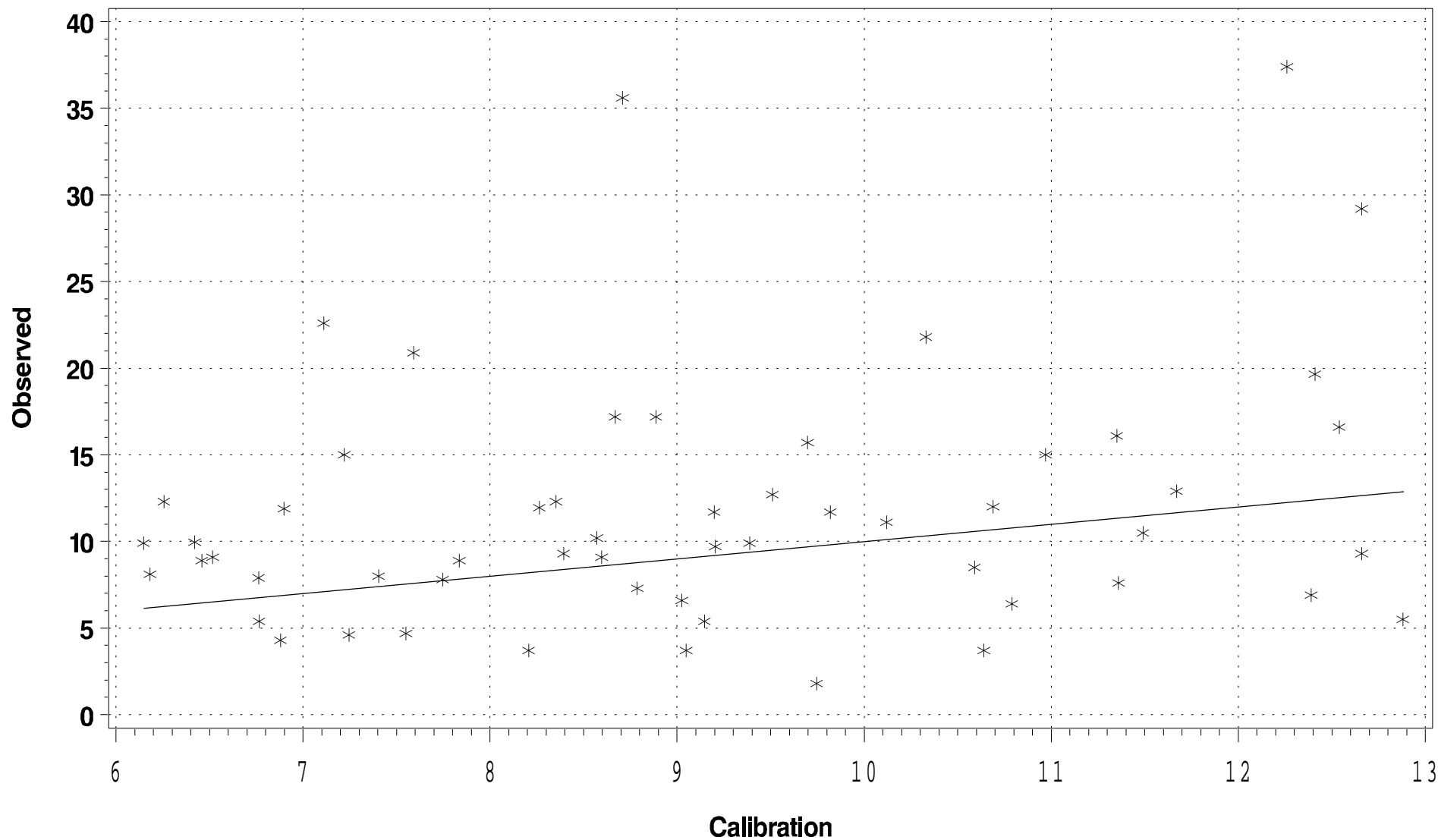## Segment CHOMH2   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment CHOMH2   Season: July 1 – Sept 30
(Scatter Plot)

<div align="center">
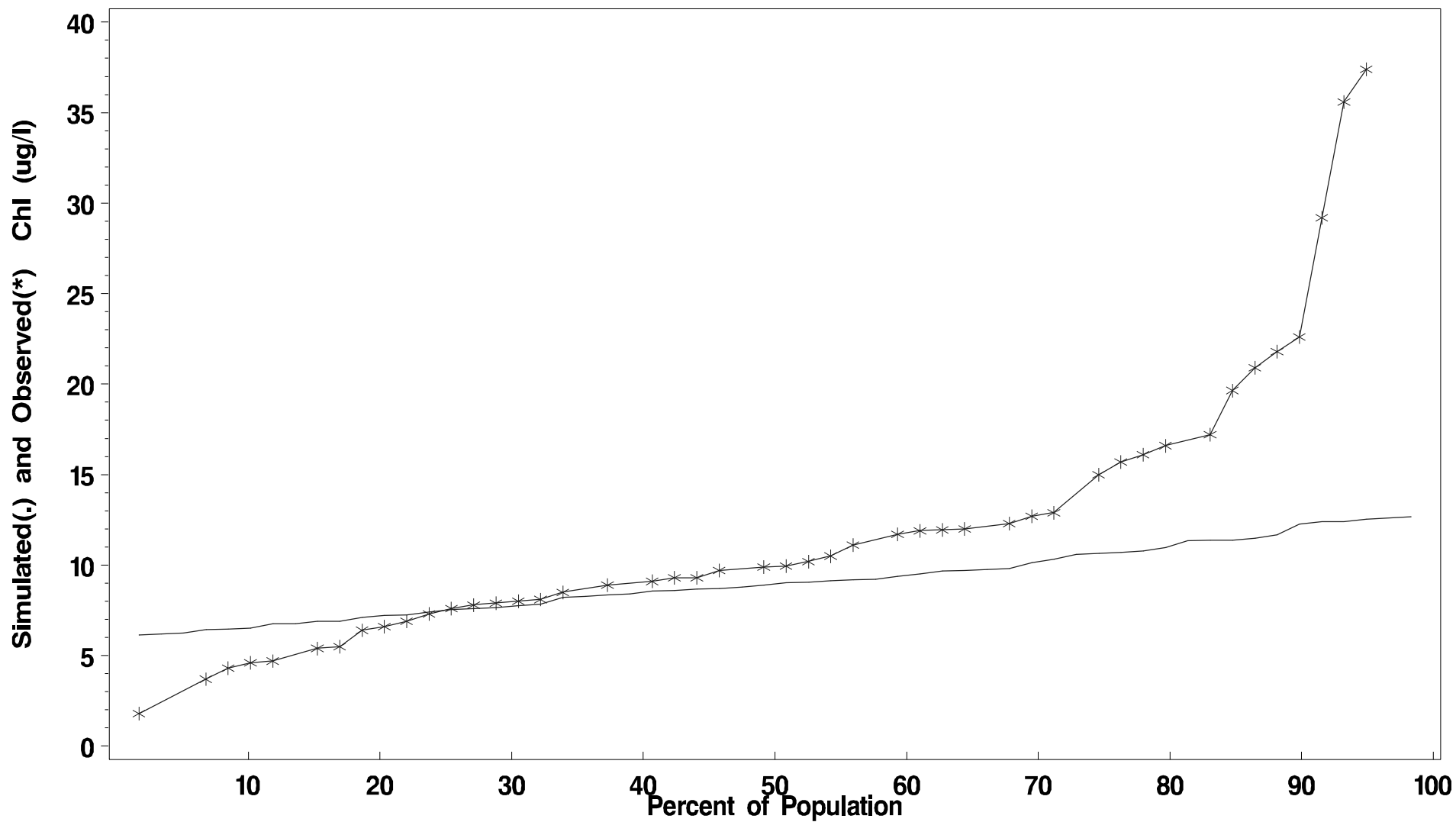
MESOHALINE **Chlorophyll**
Segment CHOMH2 (Choptank Mesohaline)
March 1 - May 30

</div>

Regression of Calibration vs. Observations[1]
Using the 54 pairs of predictions and observed data, the **slope** is 0.3242 and the **intercept** is 4.2315. The **R-Squared** value for this regression is 0.0155.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 54 pairs of predictions and observed data, the **slope** is 0.3605 and the **intercept** is 0.4278. The **R-Squared** value for this regression is 0.0138.

Statistics (units in μg/l)

|	
Mean observed 9.1565	Mean predicted 15.1908
Min. observed 1.3000	Min. predicted 8.6131
Max. observed 65.2000	Max. predicted 32.0490
Std. Dev. Observed 11.0673	Std. Dev. predicted 4.2490
Median observed 5.3500	Median predicted 15.3045
95th Percentile observed 34.2000	95th Percentile predicted 22.2820
10th Percentile observed 1.8000	10th Percentile predicted 10.5030

Differences (predicted – observed)

Mean difference 6.0344 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
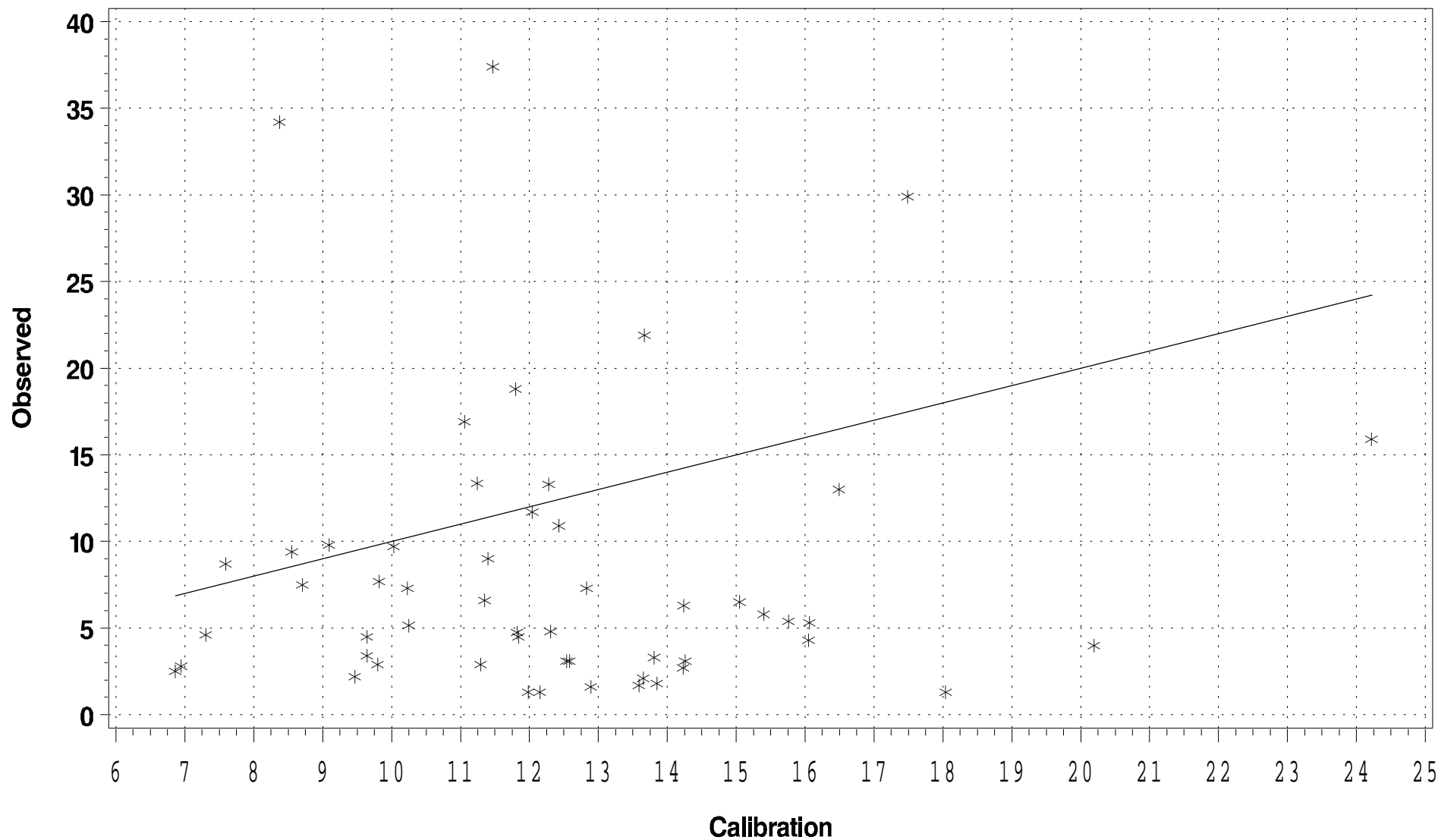## Segment CHOMH2 Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data
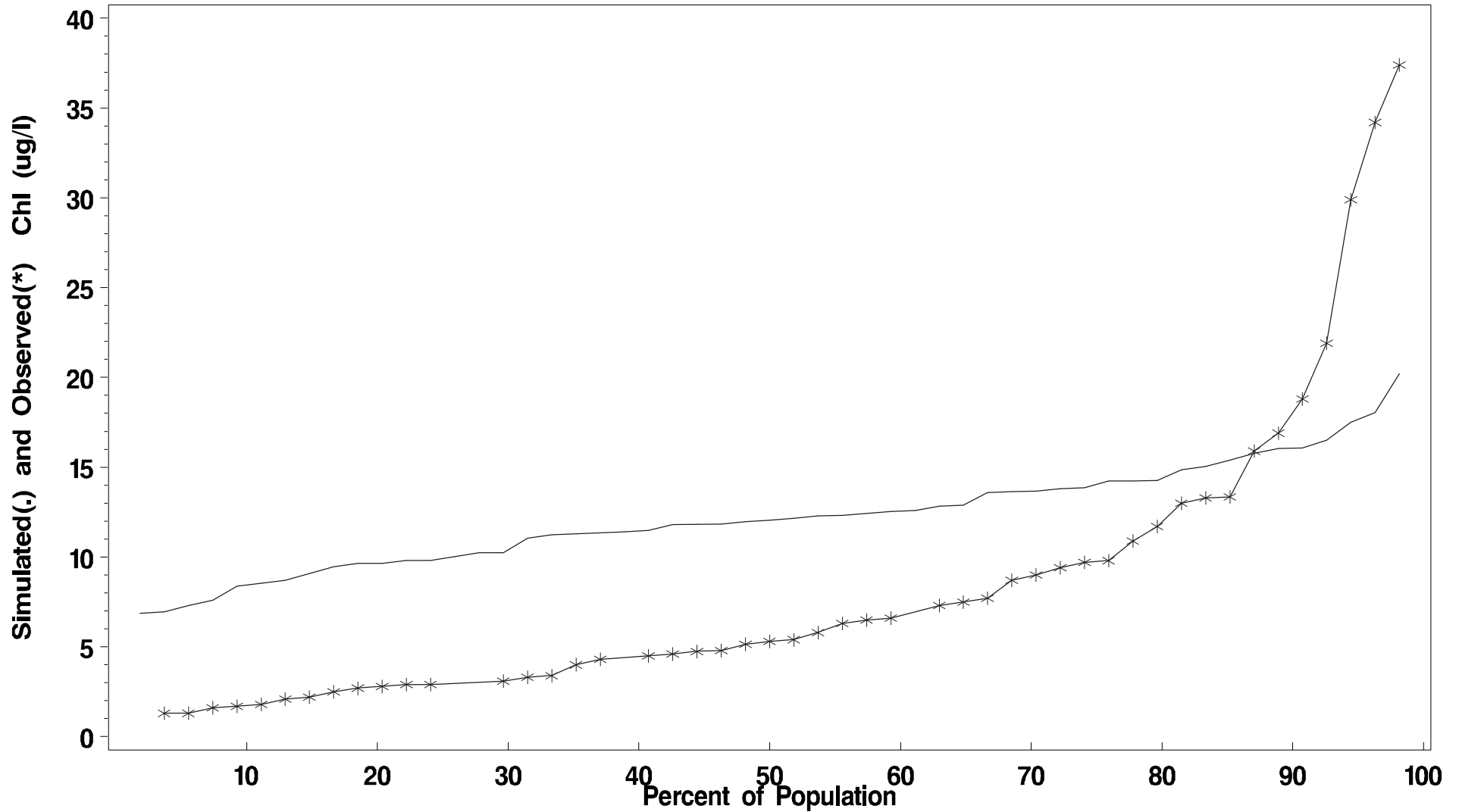
Chlorophyll Concentration (ug/l)
Segment CHOMH2 Season: March 1 – May 30
(Scatter Plot)

MESOHALINE **Light Attenuation**
Segment CHOMH2 (Choptank Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 132 pairs of predictions and observed data, the **slope** is 0.2330 and the
intercept is 1.1150. The **R-Squared** value for this regression is 0.0209.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 132 pairs of predictions and observed data, the **slope** is 0.2128 and the
intercept is 0.2990. The **R-Squared** value for this regression is 0.0143.

Statistics (units in 1/m)

Mean observed 1.3917   Mean predicted 1.1874
Min. observed 0.3714   Min. predicted 0.7541
Max. observed 2.6000   Max. predicted 3.4392
Std. Dev. Observed 0.4623   Std. Dev. predicted 0.2868
Median observed 1.3000   Median predicted 1.1322
90th Percentile observed 2.1667   90th Percentile predicted 1.4178
10th Percentile observed 0.8667   10th Percentile predicted 0.9662
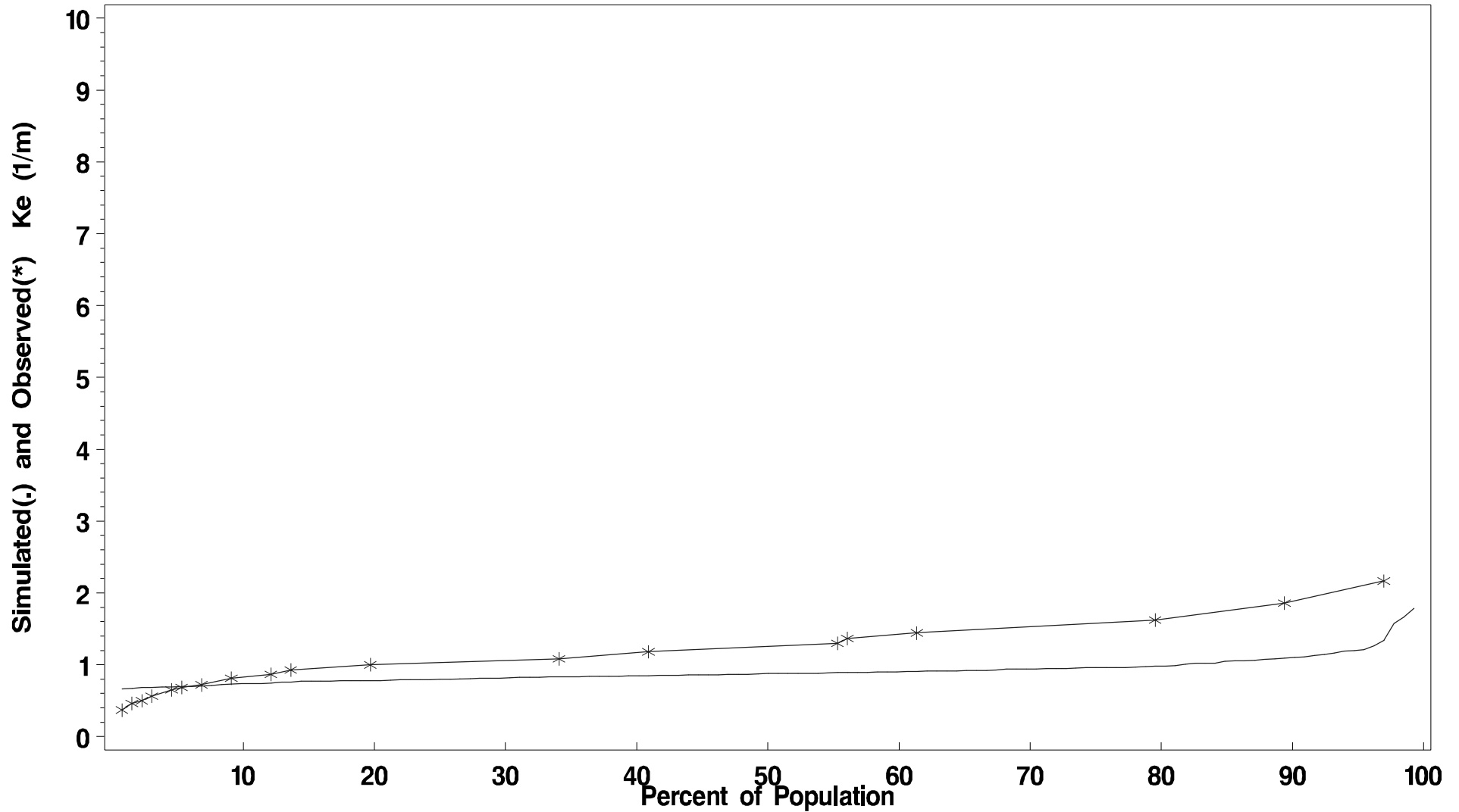

Differences (predicted – observed)

Mean difference -0.2042 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)

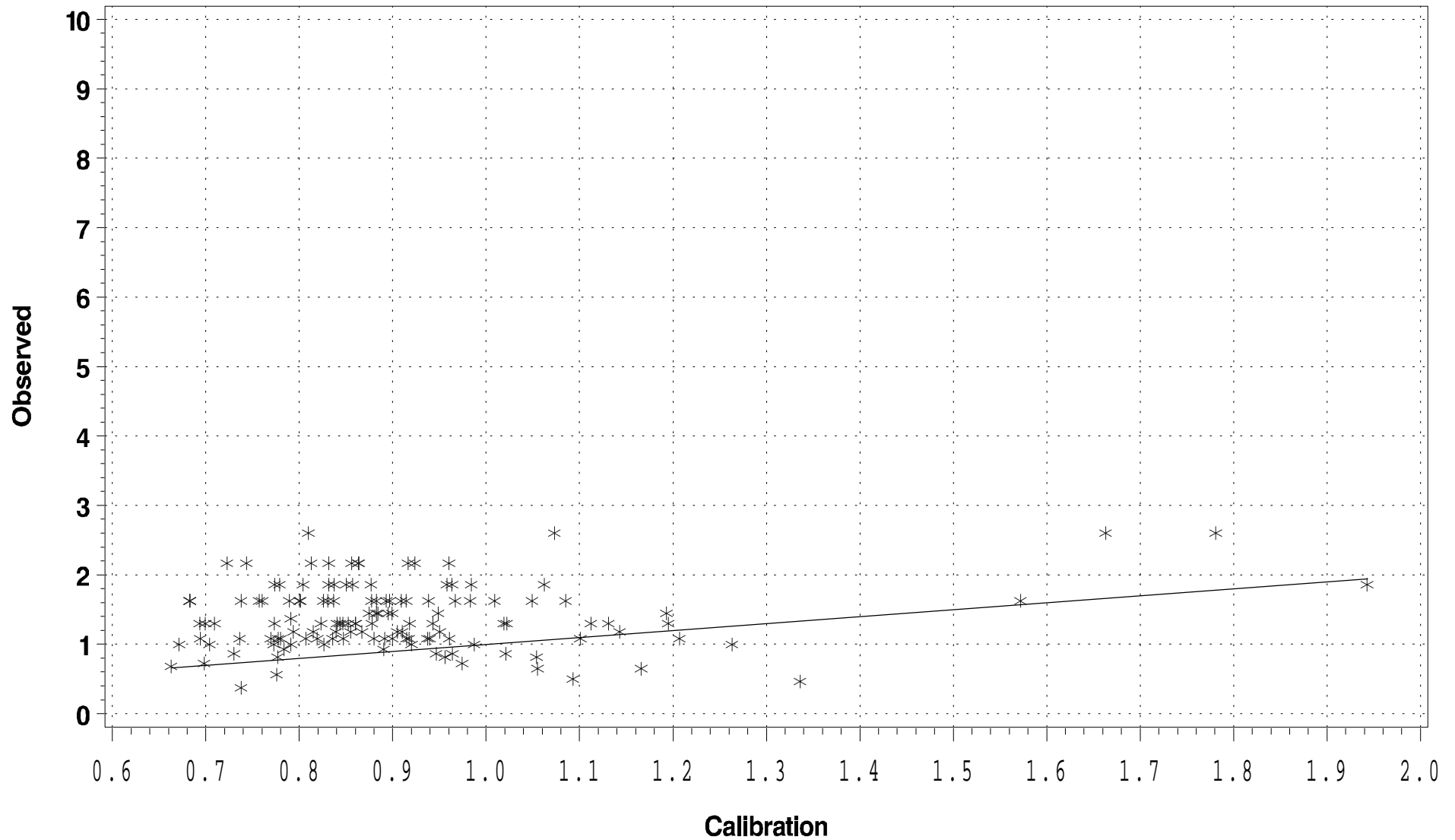## Segment CHOMH2   Season: April 1 – Oct 30

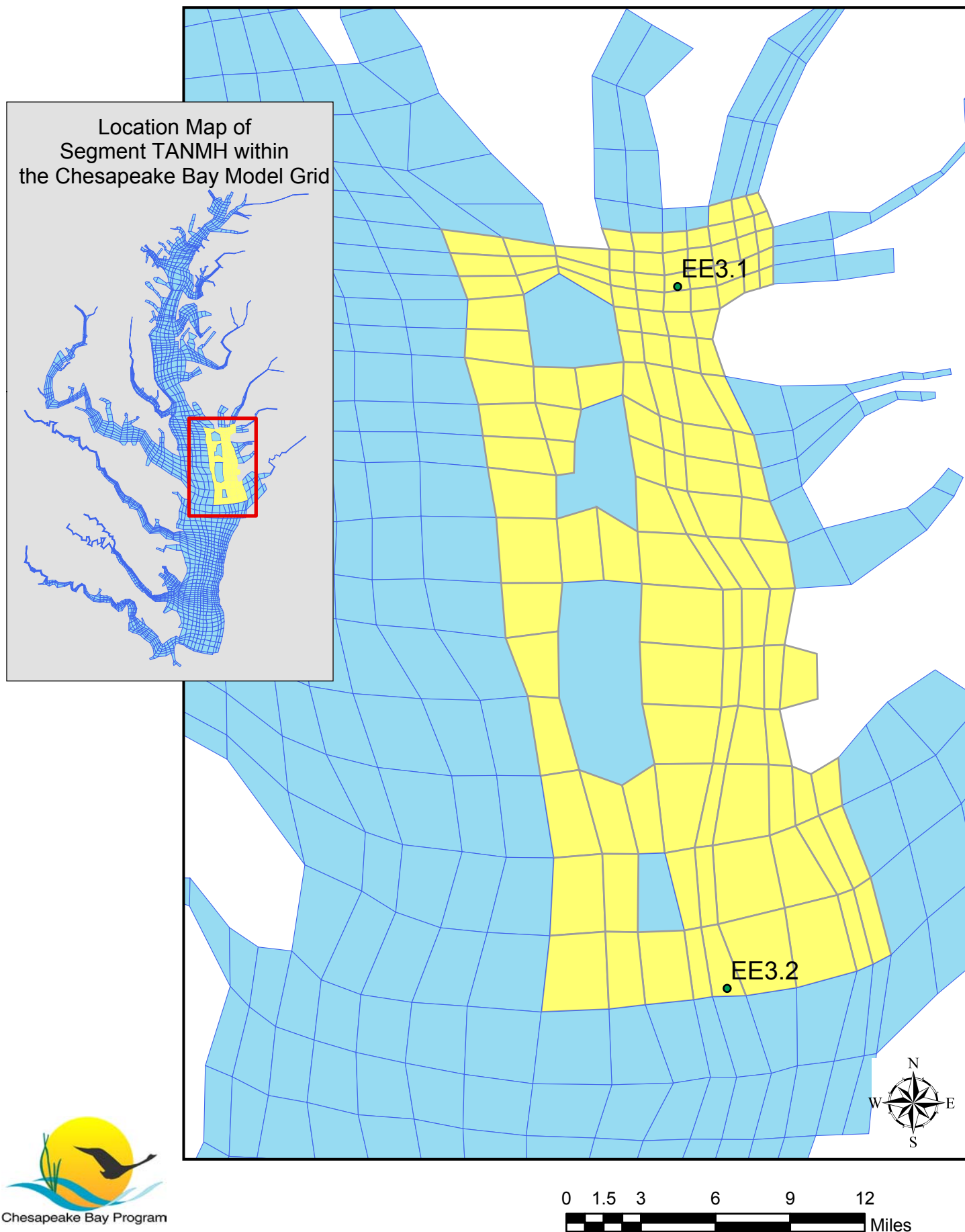### Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment CHOMH2   Season: April 1 — Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment TANMH

Location Map of
Segment TANMH within
the Chesapeake Bay Model Grid

EE3.1

EE3.2

Chesapeake Bay Program

0   1.5   3   6   9   12

Miles

N
W   E
S

OPEN WATER **Dissolved Oxygen**
Segment TANMH (Tangier Sound Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 2113 pairs of predictions and observed data, the **slope** is 0.6649 and the
intercept is 3.3832. The **R-Squared** value for this regression is 0.6061.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 2113 pairs of predictions and observed data, the **slope** is 0.4856 and the
intercept is 0.5172. The **R-Squared** value for this regression is 0.4698.

Statistics (units in mg/l)

Mean observed 8.1292   Mean predicted 7.1379
Min. observed 1.4   Min. predicted 1.264
Max. observed 13.4   Max. predicted 13.45
Std. Dev. Observed 2.1926   Std. Dev. predicted 2.5672
Median observed 7.8750   Median predicted 6.9713
90th Percentile observed 11.3000   90th Percentile predicted 10.7060
10th Percentile observed 5.7000   10th Percentile predicted 3.8412

Differences (predicted – observed)

Mean difference -0.9913 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO
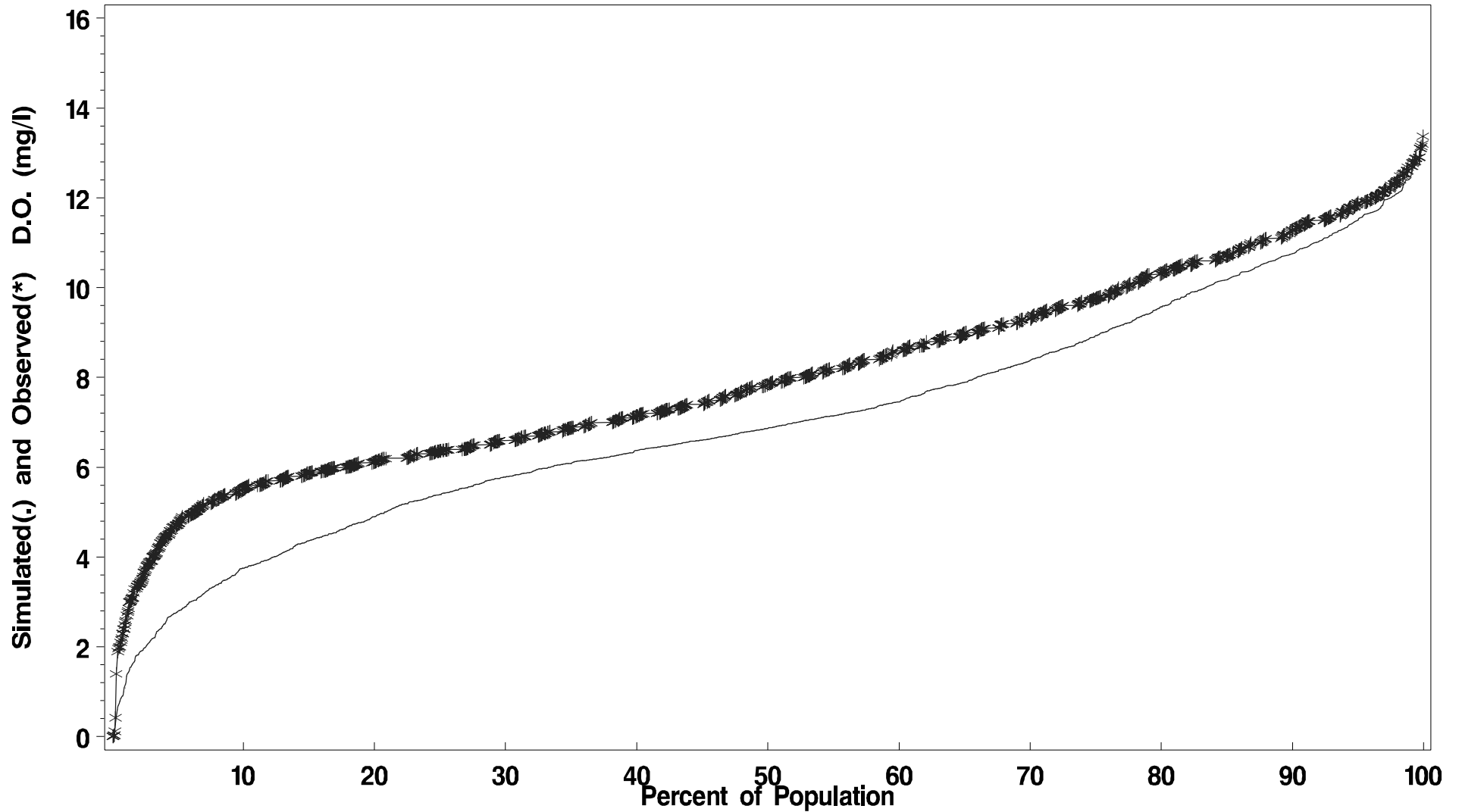standard of 3.5 mg/l.

Number of predicted and observed pairs 2113
Number of Predicted Violations 31
Number of Observed Violations 8

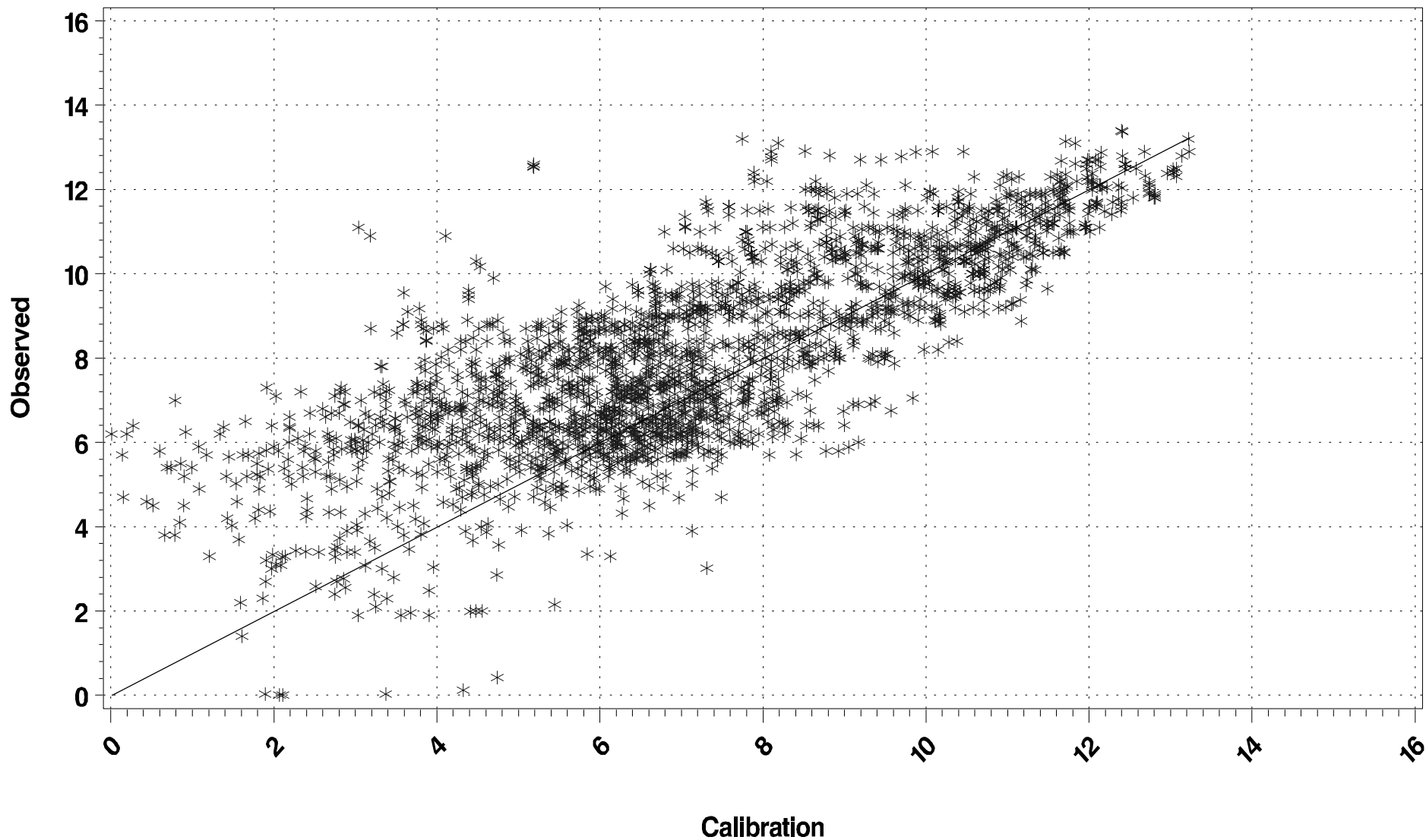[1] observed is dependent, predicted is independent

Open Water   Dissolved Oxygen (mg/l)
Segment TANMH   Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water Dissolved Oxygen (mg/l)
Segment TANMH Season: Jan 1 – Dec 31
(Scatter Plot)

MESOHALINE **Chlorophyll**
Segment TANMH (Tangier Sound Mesohaline)
July 1 - Sept 30

Regression of Calibration vs. Observations[1]
Using the 105 pairs of predictions and observed data, the **slope** is 0.1583 and the
intercept is 7.7422. The **R-Squared** value for this regression is 0.0102.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 105 pairs of predictions and observed data, the **slope** is 0.2568 and the
intercept is 0.6982. The **R-Squared** value for this regression is 0.0341.

Statistics (units in µg/l)

Mean observed 9.6962   Mean predicted 12.3439
Min. observed 1.8000   Min. predicted 5.2004
Max. observed 62.1000   Max. predicted 23.3740
Std. Dev. Observed 6.7366   Std. Dev. predicted 4.3036
Median observed 8.2000   Median predicted 11.8400
95th Percentile observed 18.6000   95th Percentile predicted 19.8290
10th Percentile observed 5.3000   10th Percentile predicted 7.6097
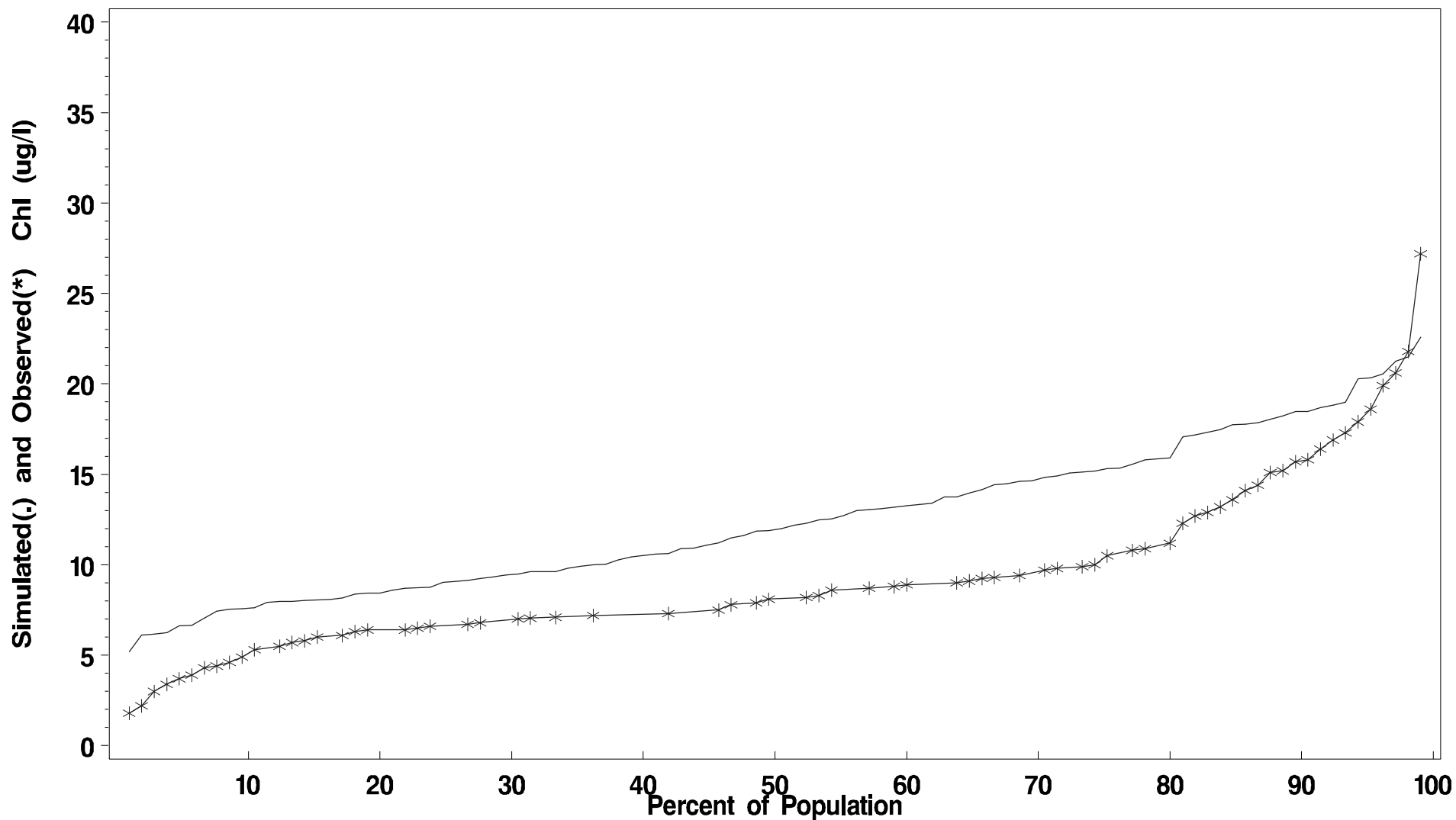

Differences (predicted – observed)

Mean difference 2.6477 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
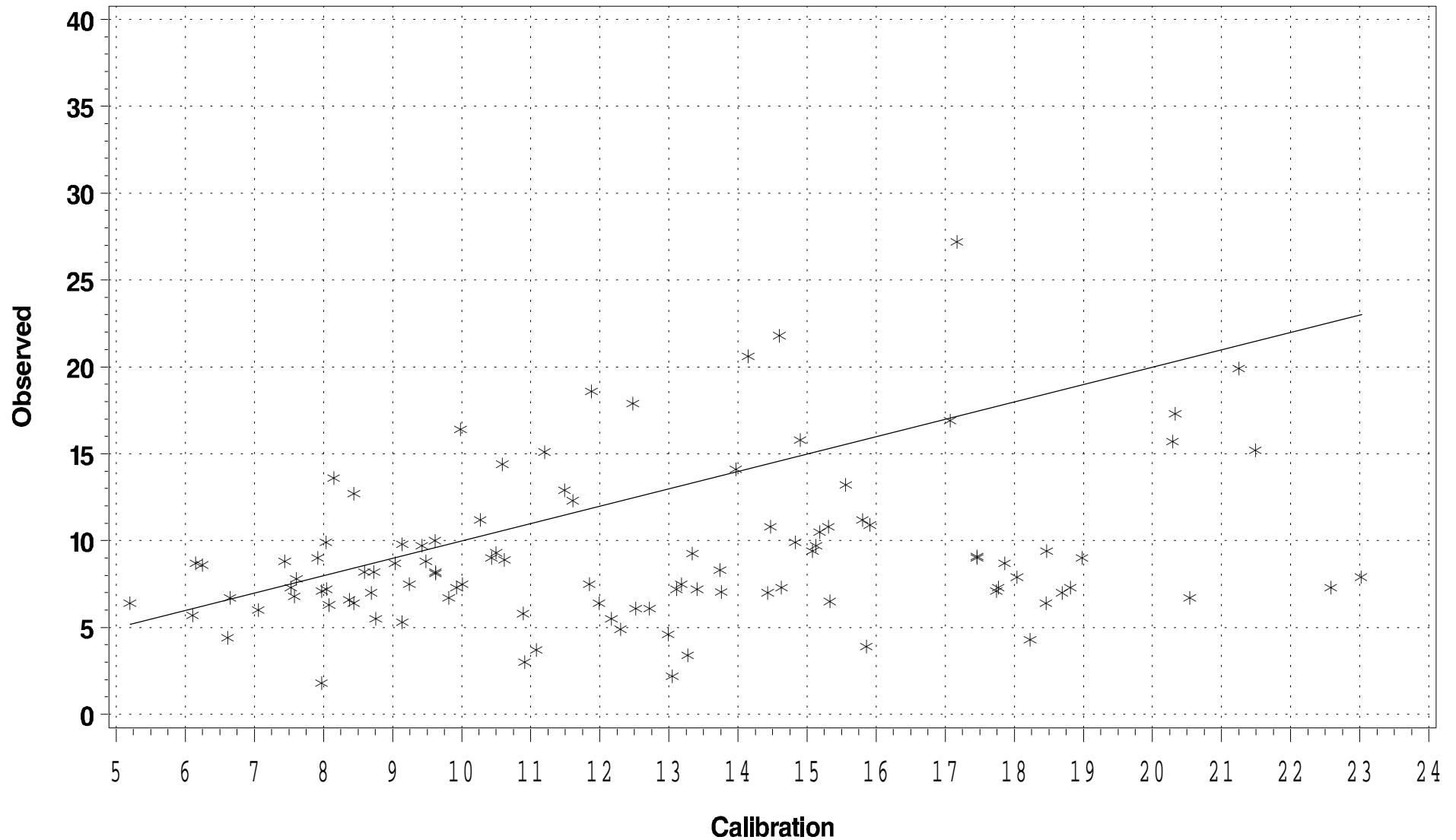# Segment TANMH   Season: July 1 − Sept 30
Cumulative Frequency Distribution − PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment TANMH   Season: July 1 — Sept 30
(Scatter Plot)

MESOHALINE **Chlorophyll**
Segment TANMH (Tangier Sound Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 101 pairs of predictions and observed data, the **slope** is 0.5857 and the **intercept** is 1.4597. The **R-Squared** value for this regression is 0.1117.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 101 pairs of predictions and observed data, the **slope** is 0.8859 and the **intercept** is -0.1268. The **R-Squared** value for this regression is 0.1411.

Statistics (units in µg/l)

Mean observed 11.1587   Mean predicted 16.5602
Min. observed 1.1000   Min. predicted 5.9206
Max. observed 44.0000   Max. predicted 31.8140
Std. Dev. Observed 9.7703   Std. Dev. predicted 5.5756
Median observed 8.2000   Median predicted 16.2590
95th Percentile observed 30.8500   95th Percentile predicted 26.5310
10th Percentile observed 2.5000   10th Percentile predicted 9.2321
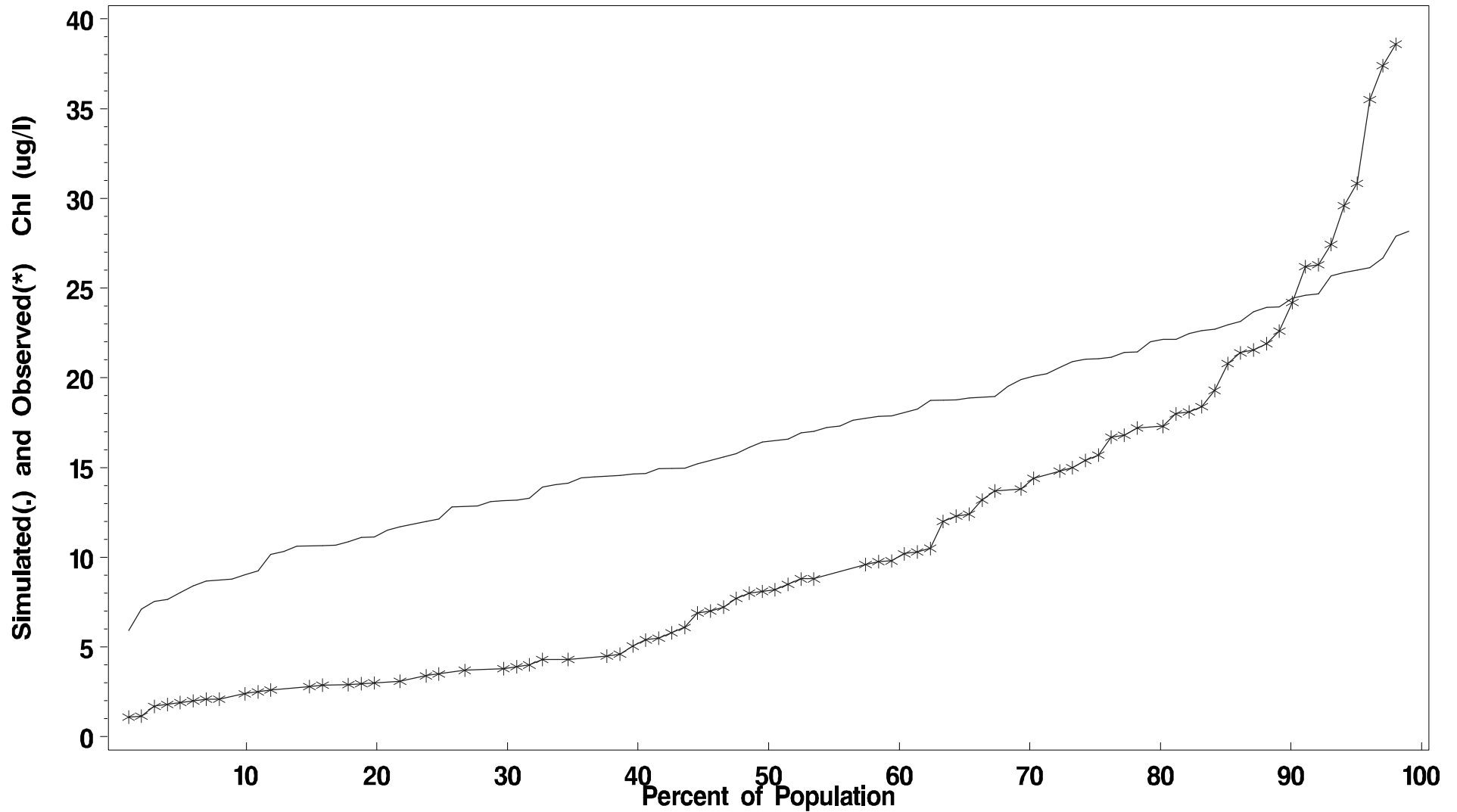
Differences (predicted – observed)

Mean difference 5.4015 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
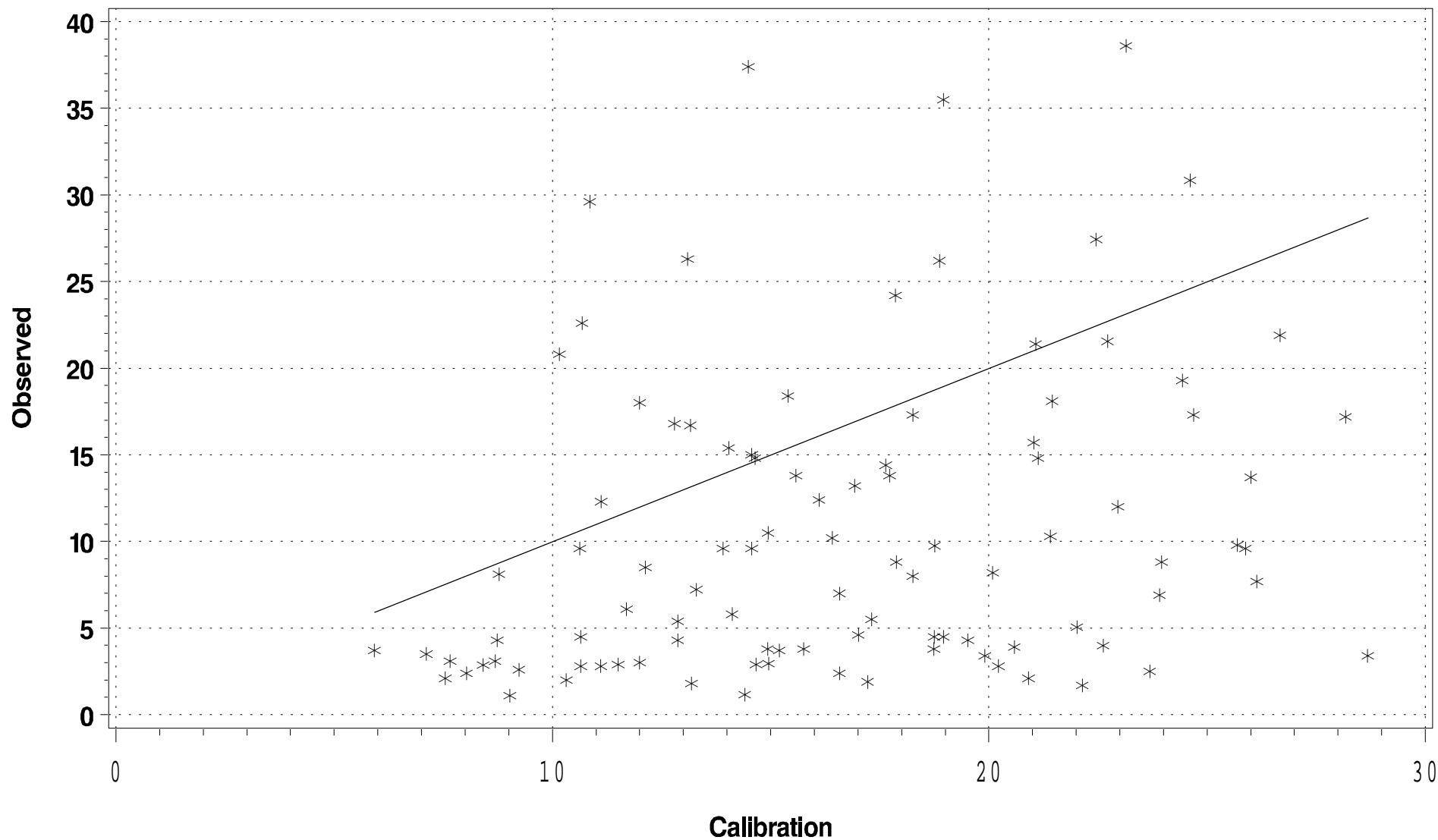# Segment TANMH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment TANMH   Season: March 1 – May 30
(Scatter Plot)

MESOHALINE **Light Attenuation**
Segment TANMH (Tangier Sound Mesohaline)
April 1 - Oct 30

Regression of Calibration vs. Observations[1]

Using the 248 pairs of predictions and observed data, the **slope** is 0.4209 and the
intercept is 0.5612. The **R-Squared** value for this regression is 0.2611.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 248 pairs of predictions and observed data, the **slope** is 0.4411 and the
intercept is 0.1610. The **R-Squared** value for this regression is 0.2472.

Statistics (units in 1/m)

Mean observed 1.1408   Mean predicted 1.3770
Min. observed 0.3023   Min. predicted 0.5421
Max. observed 3.2500   Max. predicted 3.2158
Std. Dev. Observed 0.4384   Std. Dev. predicted 0.5322
Median observed 1.0833   Median predicted 1.2857
90th Percentile observed 1.6250   90th Percentile predicted 1.9847
10th Percentile observed 0.6500   10th Percentile predicted 0.7560
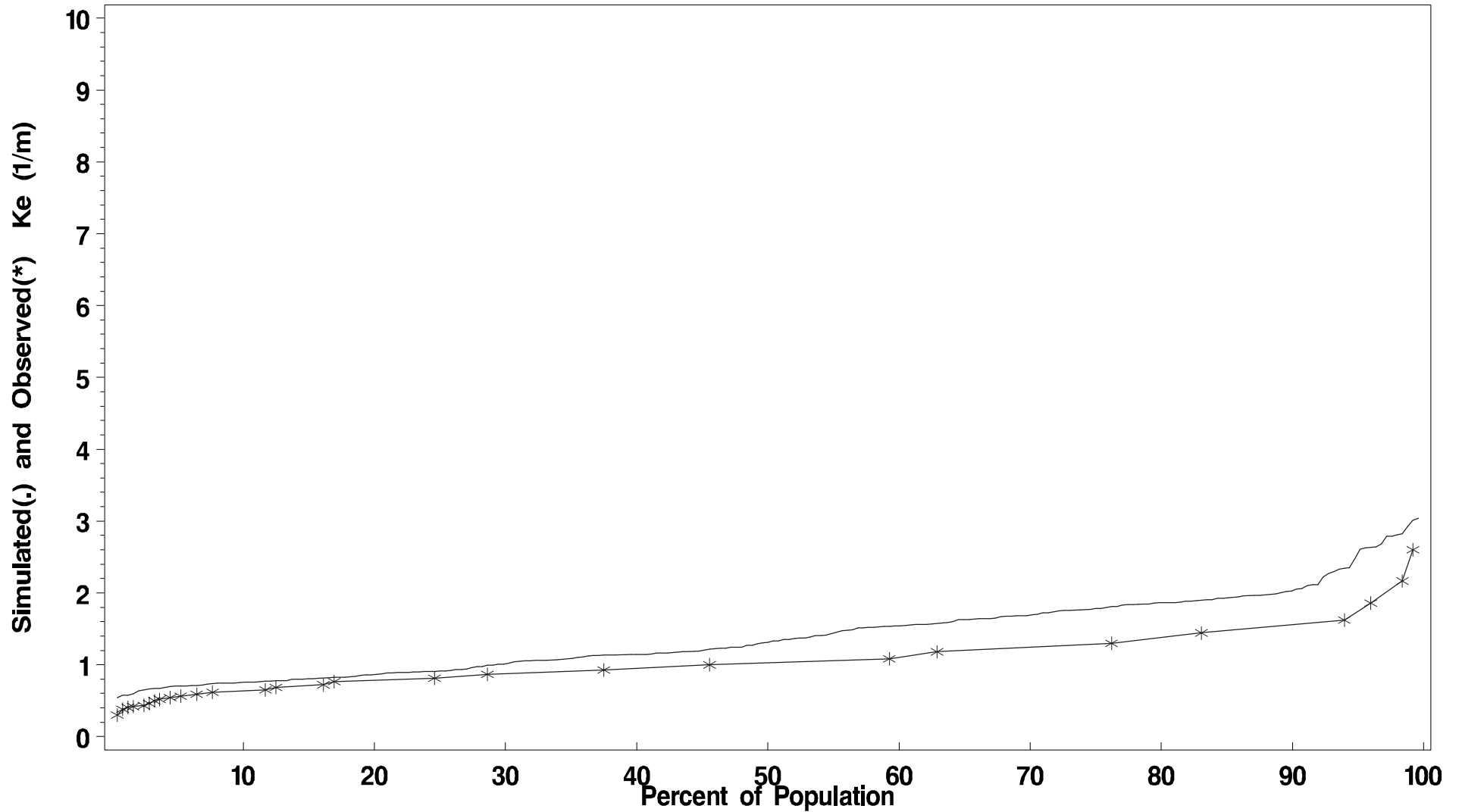

Differences (predicted – observed)

Mean difference 0.2362 1/m

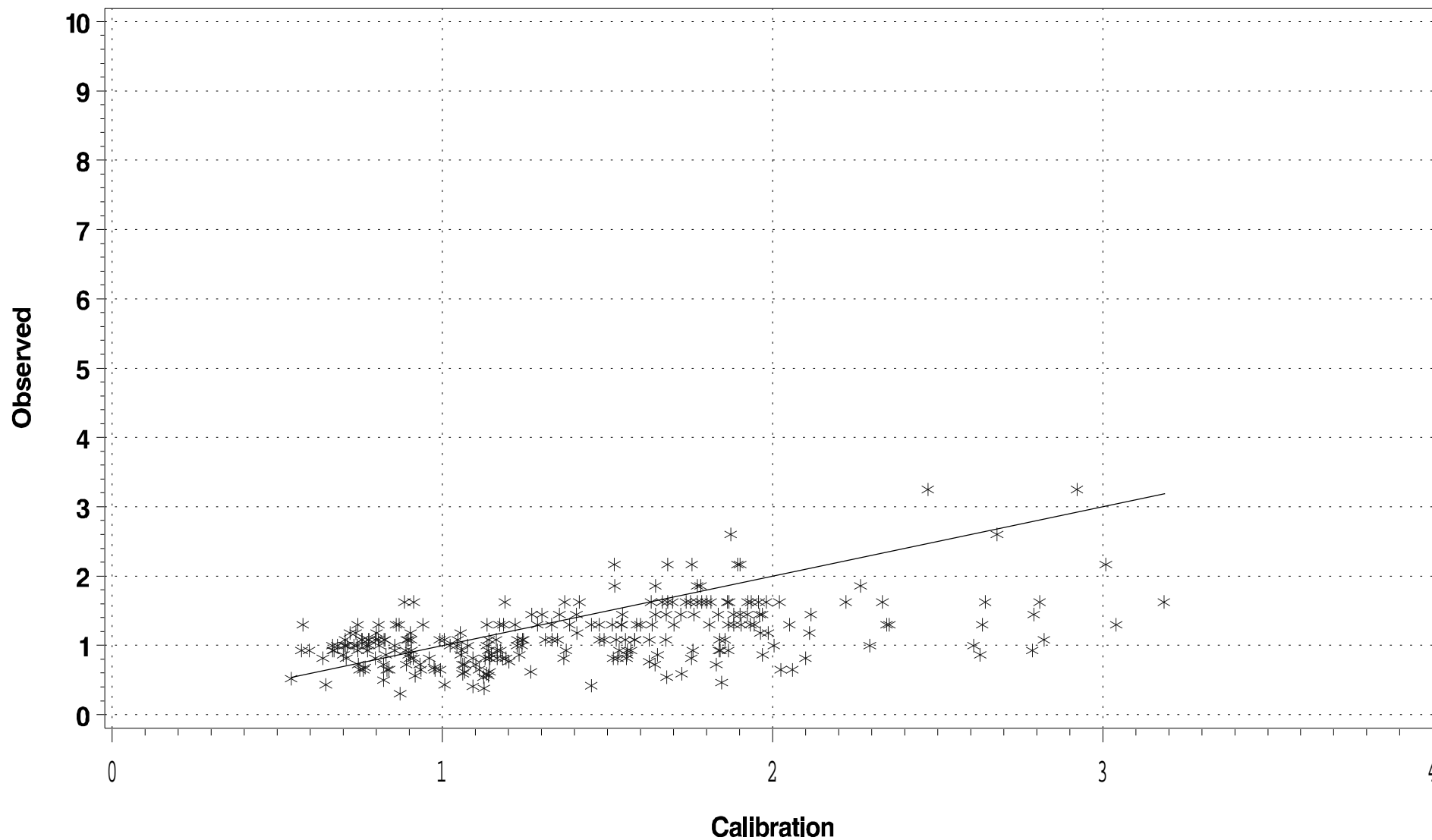[1] observed is dependent, predicted is independent

Ke (1/m)
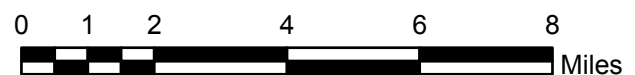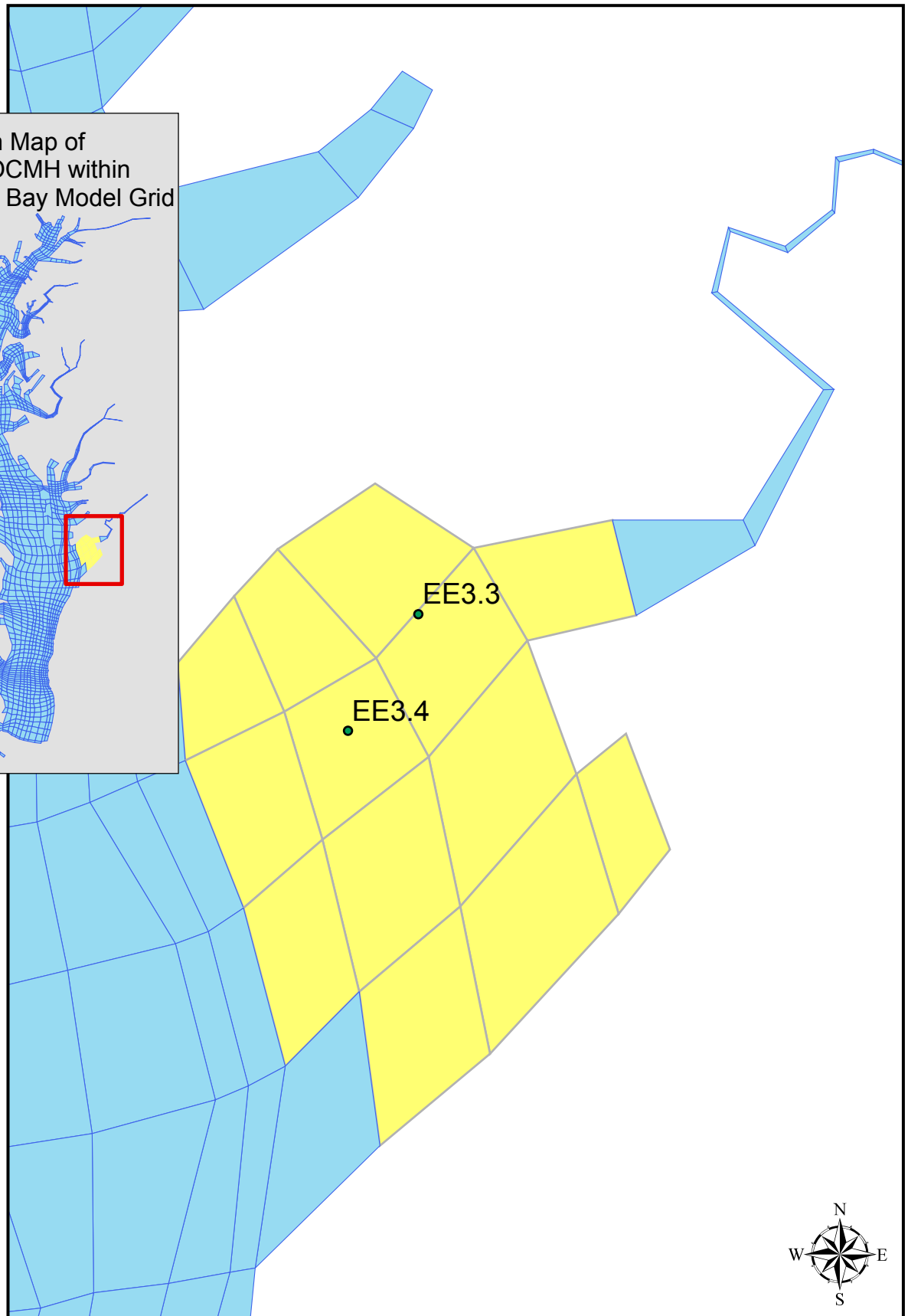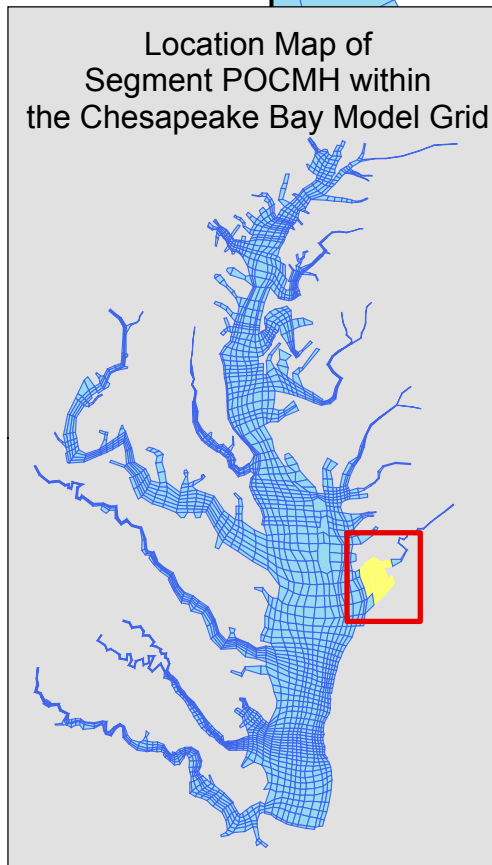## Segment TANMH   Season: April 1 – Oct 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Ke (1/m)
Segment TANMH   Season: April 1 – Oct 30
(Scatter Plot)

Chesapeake Bay Standard Segment POCMH

Location Map of
Segment POCMH within
the Chesapeake Bay Model Grid

EE3.3

EE3.4

Chesapeake Bay Program

N
W   E
S

0   1   2   4   6   8
Miles

OPEN WATER **Dissolved Oxygen**
Segment POCMH (Pocomoke Mesohaline)
Jan 1 - Dec 31

Regression of Calibration vs. Observations[1]

Using the 682 pairs of predictions and observed data, the **slope** is 0.8944 and the **intercept** is 1.3037. The **R-Squared** value for this regression is 0.6506.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 682 pairs of predictions and observed data, the **slope** is 0.7823 and the **intercept** is 0.2270. The **R-Squared** value for this regression is 0.5888.

Statistics (units in mg/l)

Mean observed 8.5019	Mean predicted 8.0482
Min. observed 3.36	Min. predicted 2.66
Max. observed 15.4	Max. predicted 13.41
Std. Dev. Observed 1.9787	Std. Dev. predicted 1.7844
Median observed 8.2633	Median predicted 7.7710
90th Percentile observed 11.3200	90th Percentile predicted 10.4070
10th Percentile observed 6.2667	10th Percentile predicted 6.0424

Differences (predicted – observed)

Mean difference -0.4537 mg/l

Violations of Standards
Water quality criteria violations estimated by assuming an instantaneous minimum DO standard of 3.5 mg/l.
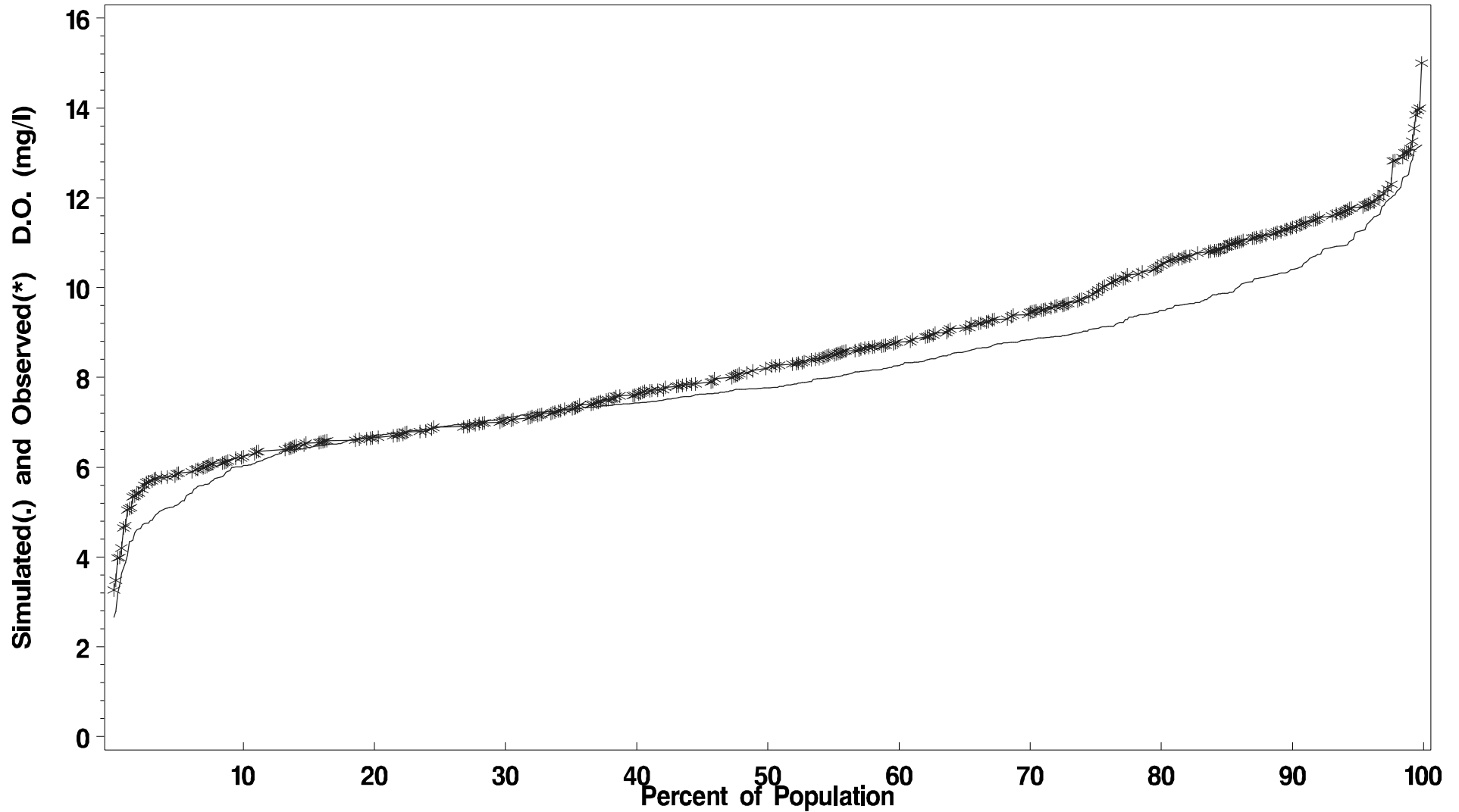
Number of predicted and observed pairs 682
Number of Predicted Violations 4
Number of Observed Violations 1

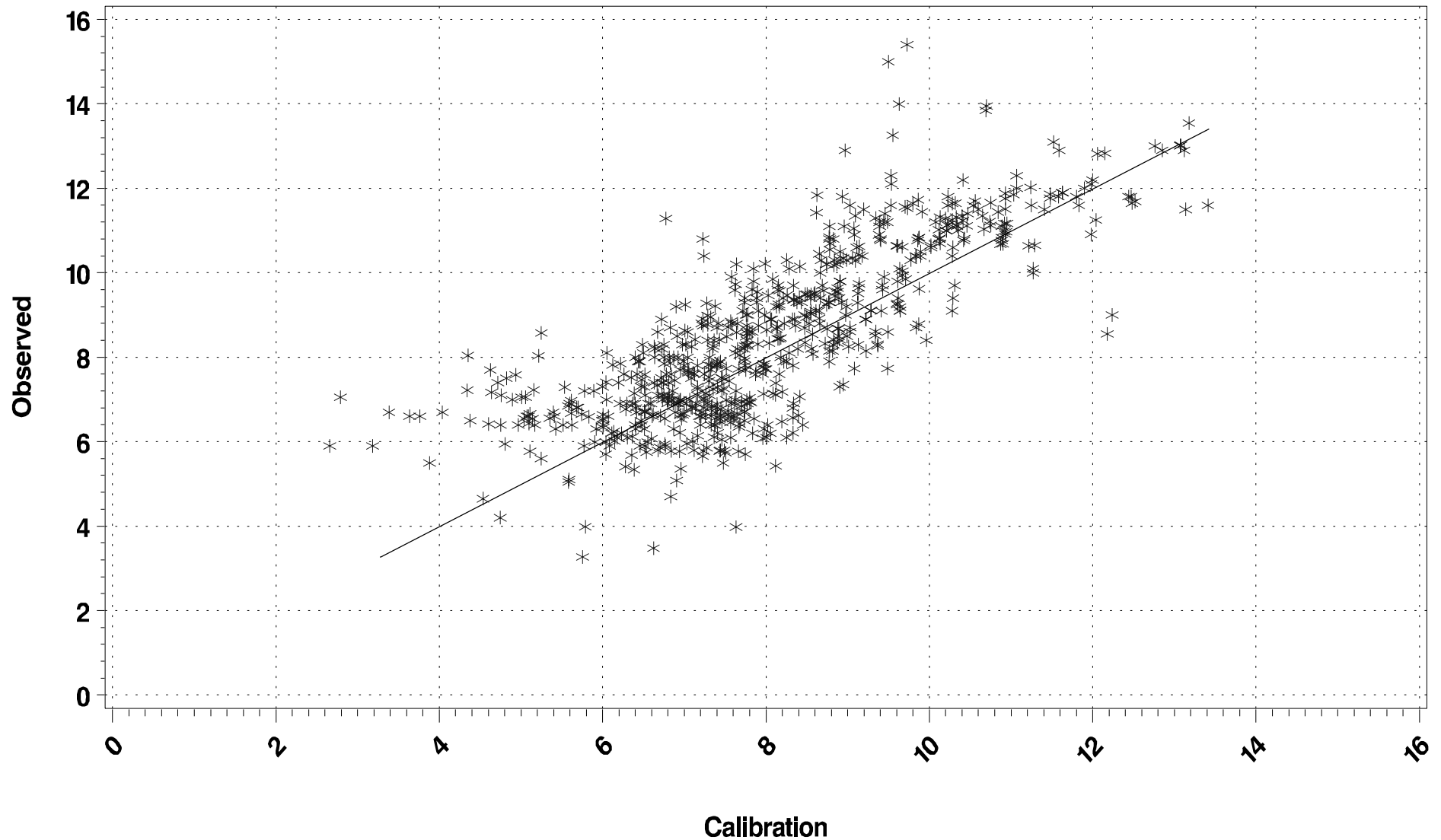[1] observed is dependent, predicted is independent

Open Water Dissolved Oxygen (mg/l)
Segment POCMH Season: Jan 1 – Dec 31
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Open Water   Dissolved Oxygen (mg/l)
Segment POCMH   Season: Jan 1 – Dec 31
(Scatter Plot)

Regression of Calibration vs. Observations[1]
Using the 109 pairs of predictions and observed data, the **slope** is -0.0244 and the **intercept** is 14.4724. The **R-Squared** value for this regression is 0.0002.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 109 pairs of predictions and observed data, the **slope** is -0.0129 and the **intercept** is 1.1407. The **R-Squared** value for this regression is 0.0002.

Statistics (units in μg/l)

Mean observed 14.1396	Mean predicted 13.6473
Min. observed 3.6250	Min. predicted 1.2882
Max. observed 90.6274	Max. predicted 30.7700
Std. Dev. Observed 10.3867	Std. Dev. predicted 6.1102
Median observed 12.2820	Median predicted 13.8110
95th Percentile observed 25.6000	95th Percentile predicted 23.0610
10th Percentile observed 7.3000	10th Percentile predicted 6.1427

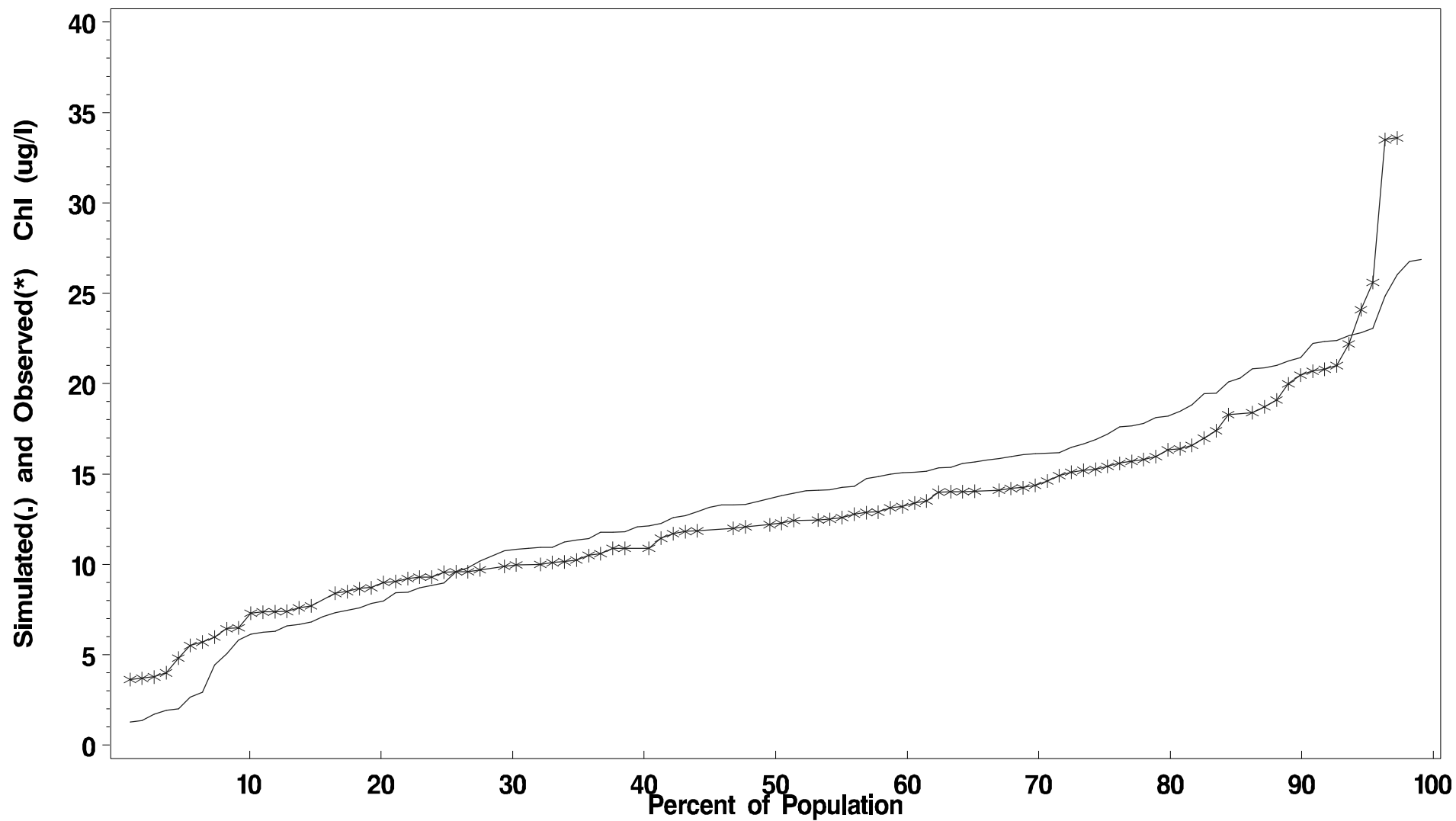**Differences** (predicted – observed)

Mean difference -0.4923 μg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
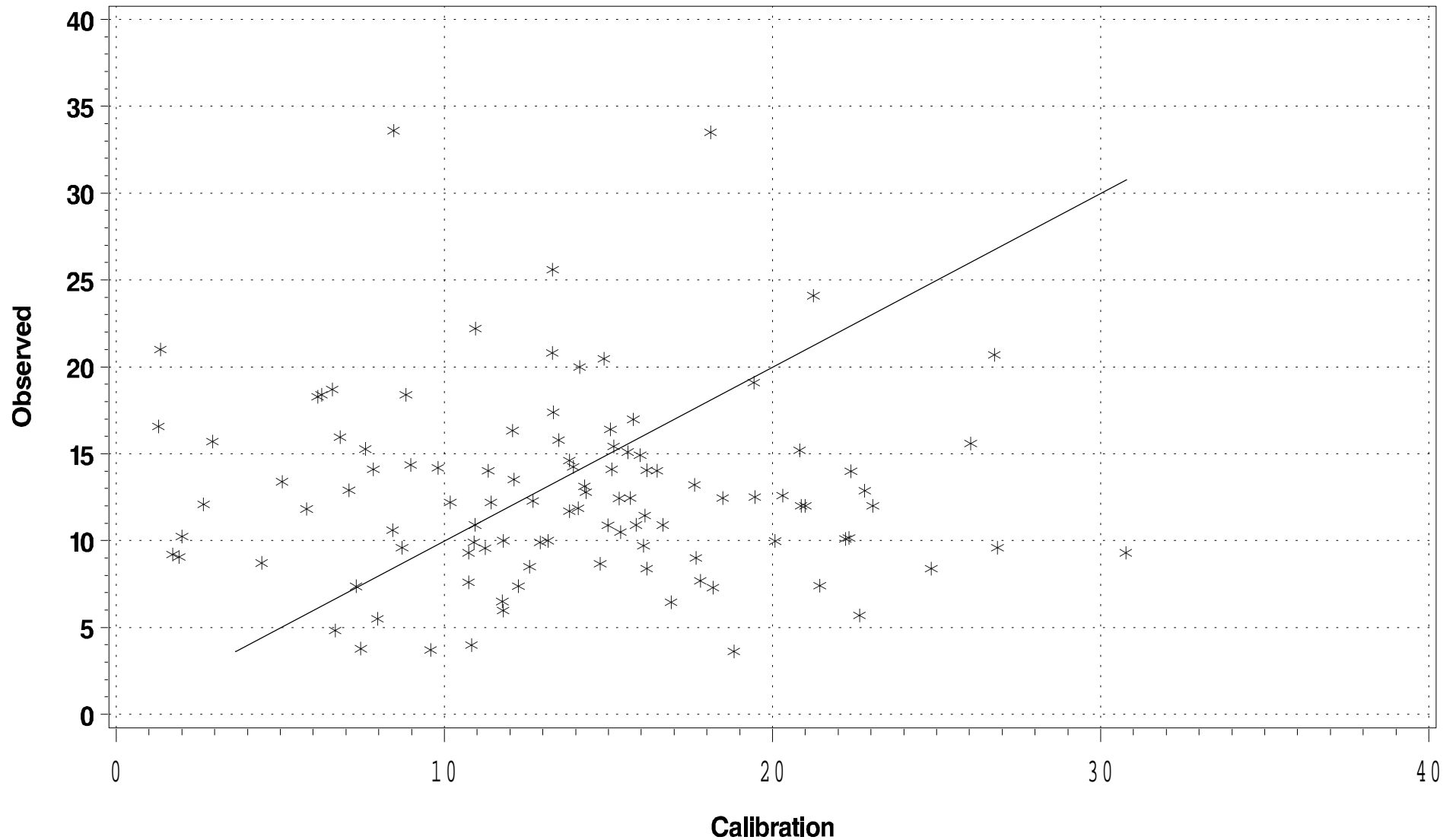## Segment POCMH   Season: July 1 – Sept 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment POCMH   Season: July 1 – Sept 30

(Scatter Plot)

MESOHALINE **Chlorophyll**
Segment POCMH (Pocomoke Mesohaline)
March 1 - May 30

Regression of Calibration vs. Observations[1]
Using the 100 pairs of predictions and observed data, the **slope** is 0.0982 and the
intercept is 9.8221. The **R-Squared** value for this regression is 0.0107.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 100 pairs of predictions and observed data, the **slope** is 0.2648 and the
intercept is 0.6693. The **R-Squared** value for this regression is 0.0255.

Statistics (units in µg/l)

|	
Mean observed 12.0453	Mean predicted 22.6510
Min. observed 1.4098	Min. predicted 9.0665
Max. observed 51.6000	Max. predicted 57.5750
Std. Dev. Observed 9.2718	Std. Dev. predicted 9.7726
Median observed 9.2836	Median predicted 21.3615
95th Percentile observed 26.4413	95th Percentile predicted 43.4465
10th Percentile observed 3.2250	10th Percentile predicted 12.2460

Differences (predicted – observed)

Mean difference 10.6057 µg/l

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[1] observed is dependent, predicted is independent

Chlorophyll Concentration (ug/l)
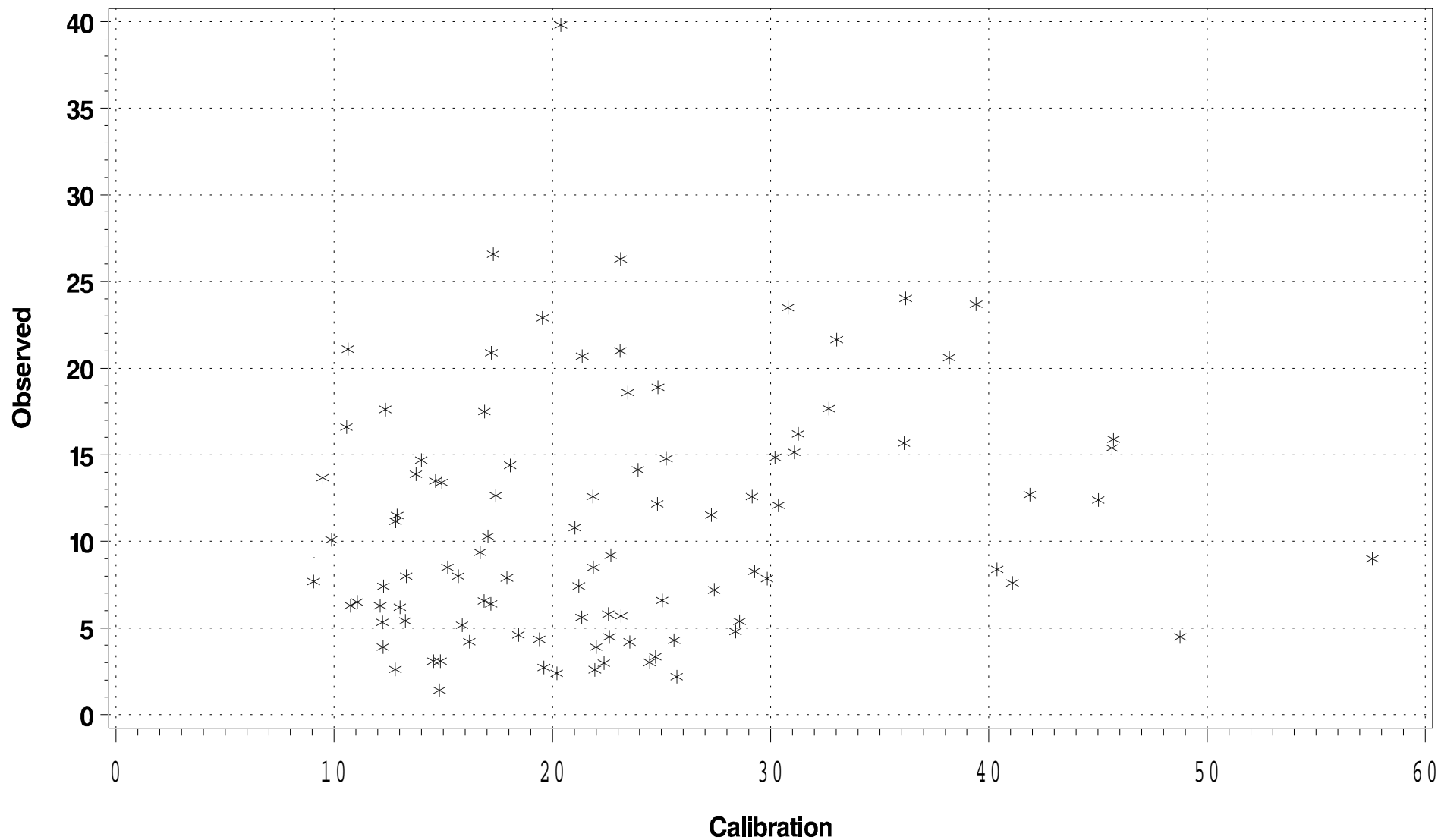## Segment POCMH   Season: March 1 – May 30
Cumulative Frequency Distribution – PAIRED Simulated and Observed Data

Chlorophyll Concentration (ug/l)
Segment POCMH   Season: March 1 — May 30
(Scatter Plot)

<div align="center">
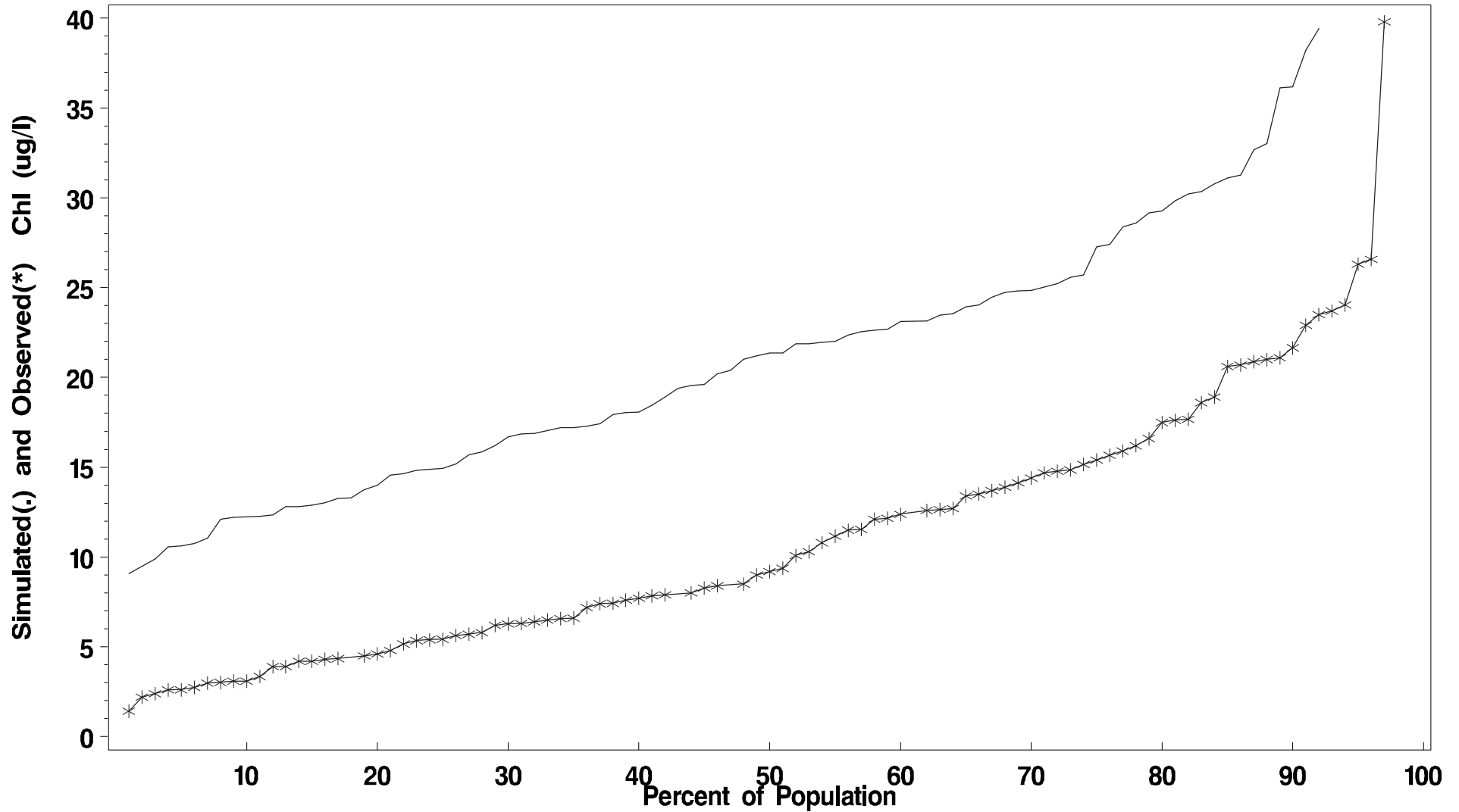
MESOHALINE **Light Attenuation**
Segment POCMH (Pocomoke Mesohaline)
April 1 - Oct 30

</div>

Regression of Calibration vs. Observations[1]

Using the 254 pairs of predictions and observed data, the **slope** is 0.5858 and the **intercept** is 0.6731. The **R-Squared** value for this regression is 0.0525.

LOG10 Regressions of Calibration vs. Observations[1]

Using the 254 pairs of predictions and observed data, the **slope** is 0.3712 and the **intercept** is 0.2470. The **R-Squared** value for this regression is 0.0441.

Statistics (units in 1/m)

Mean observed 1.7086   Mean predicted 1.7674
Min. observed 0.4194   Min. predicted 0.8797
Max. observed 13.0000   Max. predicted 3.9911
Std. Dev. Observed 1.2595   Std. Dev. predicted 0.4928
Median observed 1.6250   Median predicted 1.6965
90th Percentile observed 2.6000   90th Percentile predicted 2.3766
10th Percentile observed 0.8125   10th Percentile predicted 1.2345

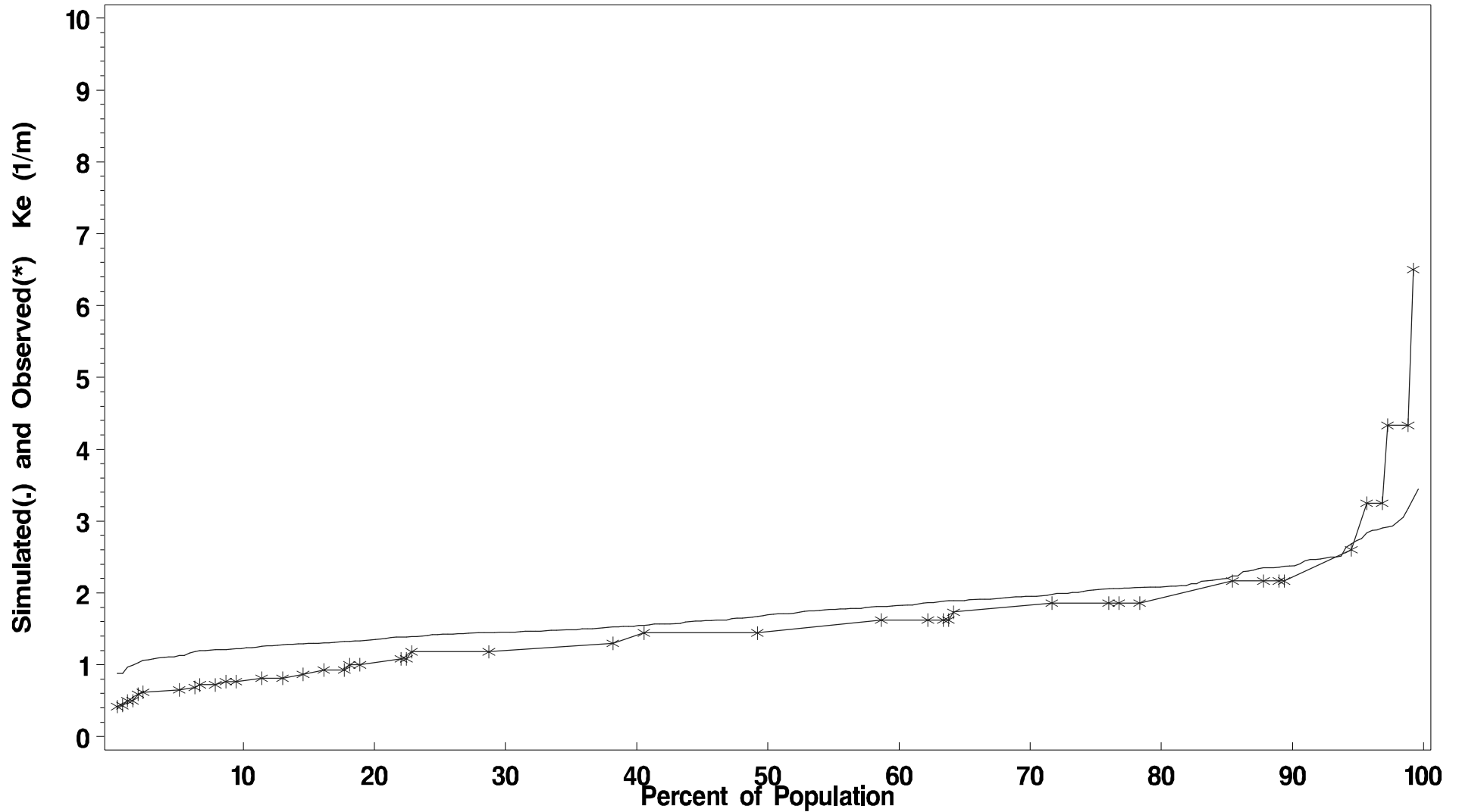**Differences** (predicted – observed)

Mean difference 0.0589 1/m

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[1] observed is dependent, predicted is independent

Ke (1/m)
Segment POCMH   Season: April 1 – Oct 30
(Scatter Plot)