In Support of Georgia Regional Haze State Implementation Plan

Additional Evaluation of the 12-km grid resolution Meteorological Modeling over Georgia

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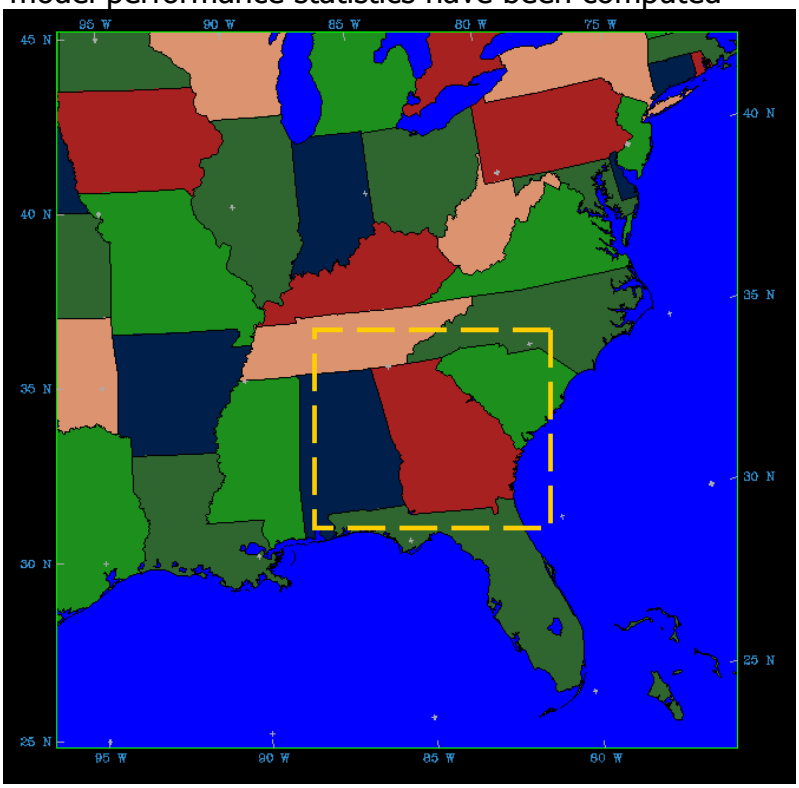
Background

Baron Advanced Meteorological System (BAMS) was awarded contract by Visibility Improvement State and Tribal Association of Southeast (VISTAS) to perform annual meteorological modeling simulations and associated technical analysis. This effort was intended to support activities focused on the development of emission control strategies aimed at ensuring better air quality/visibility in national parks and protected areas throughout the southeastern United States. These improvements are required to be made under provisions of the Regional Haze Rule. Details of this modeling effort, including model performance evaluation is available at http://www.baronams.com/projects/VISTAS/.

The Georgia Environmental Protection Division (EPD) conducted an internal review of above mentioned meteorological model simulation. The review had two main objectives: 1) Conduct a visual and qualitative inspection of the modeling simulations to better understand the simulated meteorology, and 2) perform statistical analysis using software tools currently operational at Georgia EPD, and verify the overall assessment of the VISTAS contractor. This report provides a brief summary of the meteorological modeling effort and presents results of the statistical analysis performed by Georgia EPD.

Figure 1 VISTAS 12-km resolution modeling grid. Dotted grid box represents the area for which model performance statistics have been computed



Brief Overview of VISTAS Meteorological Modeling

The annual modeling simulation conducted by BAMS utilizes version 3.6.1+ (Grell, 1994, MPP version) of the fifth-Generation Penn State/NCAR Mesoscale Model (MM5)

(Dudhia, 1989; Grell, 1994). Model configuration (Table 1) for this simulation was determined through sensitivity tests that were designed to gain a better understanding of the model response to the selection of PBL and land surface schemes. The results of these sensitivity tests are documented elsewhere (Olerud, 2005).

Table 1 Meteorological Model Physics Options and Related Modeling Parameters

Physics options	Grid resolution	
	36-km	12-km
Nesting Type	One-way	One-way
Numerical Time Step	90 sec	30 sec
Cumulus parameterization	Grell	Grell
PBL scheme	ACM	ACM
Microphysics	Reisner 1	Reisner 1
Radiation scheme	RRTM scheme	RRTM scheme
Land Surface scheme	Pleim-Xiu	Pleim-Xiu
Convection scheme	KF2	KF2
Observation nudging	None	None
3-D Grid analysis nudging	Yes	Yes
3-D Grid analysis nudging time interval	3-hour	3-hour
3-D Grid analysis nudging co-efficient	GU=2.5×10^{-4} GV=2.5×10^{-4} GT=2.5×10^{-4} GQ=1.0×10^{-5}	GU=1.0×10^{-4} GV=1.0×10^{-4} GT=1.0×10^{-4} GQ=1.0×10^{-5}
Surface Analysis nudging	Yes	Yes
Surface Analysis nudging time interval	3-hour	3-hour
Surface Analysis nudging co-efficient	GU=2.5×10^{-4} GV=2.5×10^{-4}	GU=1.0×10^{-4} GV=1.0×10^{-4}

BAMS conducted modeling simulations on a nested grid configuration, with two grids at 36 and 12-km grid resolution. These grids have a Lambert Conformal map projection with origin at 47N and 90W and true latitudes at 33 and 45N. The top of the modeling grid was fixed at 50mb. The modeling grids are shown in Figure 1. Grid configuration details have been provided in Tables 1 and 2.

BAMS conducted extensive model performance evaluation. They made the following conclusions.

1. Generally speaking, MM5 performed quite well at both 36-km and 12-km resolutions. Synoptic features were routinely accurately predicted, and the model showed considerable skill in replicating the state variables. Most of the time the model statistics fell within the "benchmarks" proposed by Emery et al. (2004)

2. The model shows evidence of being adversely affected by poor soil initialization at times. This is particularly evident for September and November. The model is noticeably cold biased in the winter months. This appears to be related to the manner in which soil temperatures are initialized.

3. The summertime diurnal cloud cycle appears to be out of phase with the observed cycle. The model maximizes cloud coverage at night and minimizes

cloud coverage in the afternoon, while the observations indicate that the exact opposite should occur.

4. The model noticeably overestimates the amount of summertime precipitation, but not the spatial coverage of measurable precipitation.

5. Results of this effort should produce credible inputs for subsequent air quality modeling.

Table 1 Modeling grid details: Number of grid cells and horizontal resolution

Model	NLAYS	36-km resolution		12-km resolution	
		NCOLS	NROWS	NCOLS	NROWS
MM5*	35	165	129	181	190
CMAQ	19	149	113	169	178

Table 2 Modeling grid details: Number of vertical layers and vertical resolution

CMAQ Layer Number	Sigma level of Layer Top	Pres(mb)	Height(m)	Depth(m)
Ground Surface	1.000	100.0	0	0
1	0.995	995.5	36	36
2	0.990	991.0	73	36
3	0.985	986.5	109	37
4	0.980	982.0	146	37
5	0.970	973.0	220	74
6	0.960	964.0	294	74
7	0.950	955.0	369	75
8	0.940	946.0	445	76
	0.930	973.0		
9	0.920	928.0	598	153
	0.910	919.0		
10	0.900	910.0	753	155
	0.880	892.0		
11	0.860	874.0	1071	318
	0.840	856.0		
12	0.820	838.0	1400	329
	0.800	820.0		
13	0.770	793.0	1828	428
	0.740	766.0		
14	0.700	730.0	2462	633
	0.650	685.0		
15	0.600	640.0	3448	986
	0.550	595.0		
	0.500	550.0		
16	0.450	505.0	5160	1712
	0.400	460.0		
	0.350	415.0		
	0.300	370.0		
17	0.250	325.0	8127	2966
	0.200	280.0		
	0.150	235.0		
	0.100	190.0		
	0.050	145.0		
18	0.000	100.0	14662	6536

Additional Model Performance Evaluation

Introduction

Meteorological fields produced by MM5 are an input to the emissions and air quality models. Their accuracy is thus of considerable importance. To quantify how accurately a modeling simulation captures the observed atmospheric dynamics, predictions of key atmospheric variables are compared against land and/or satellite based observations. While performance evaluation methodology and goals may vary from application to another, performance evaluation is considered an integral part of any meteorological modeling study.

Methodology

U.S. EPA guidance (EPA, 2007) recognizes the complexity and importance of evaluating meteorological modeling results for air quality applications. It suggests "that states and tribes devote appropriate effort to the process of evaluating the meteorological inputs to the air quality model". It recommends comparison of domain wide and/or regional summary statistics against previously generated meteorological model performance "benchmarks" Emery (2001) (Tables 5).

Scientist and engineers around the world have extensively used the MM5 modeling system for atmospheric research and operational weather forecasting. Since MM5 algorithms and modules have undergone significant peer review and testing, an "operational" evaluation of the modeling system is sufficient to serve as the basis of evaluating if the system is operating with sufficient reliability to be used in support of SIP development. Operational evaluation can be defined as process of evaluating how accurately a modeling simulation estimates observed quantities. In the case of a prognostic meteorological model, this amounts to a statistical analysis of model predictions and surface observations.

We are using software package METSTAT developed by ENVIRON corporation for calculating model performance statistics. METSTAT computes domain wide surface statistics for temperature, wind speed and direction, and humidity. The metrics include: Bias Error (B), Gross Error (E) and Root Mean Square Error (RMSE), Systematic Root Mean Square Error ($RMSE_s$), Unsystematic Root Mean Square Error ($RMSE_u$) and Index Of Agreement (IOA). Mathematical formulation of these variables is provided in Table 4. The surface meteorological data for this analysis was obtained from http://dss.ucar.edu/datasets/ds472.0.

While reviewing statistics, the reader is cautioned that summary statistics are useful in making only a general assessment about the adequacy of meteorological fields. For example, daily-mean performance statistics are likely to conceal important hour-to-hour variations. Also, summary statistics depend upon the number of observation-prediction pairs and generally improve with larger sampling sizes and longer averaging periods. This is because the probability of statistics being affected by extreme values is high in smaller sample sizes. These and other concerns have lead U.S. EPA to recommend that benchmarks proposed in Emery *et al.*, (2001) should not be used in a "pass/fail" model, but only as a means of assessing general confidence in meteorological model output.

Table 4 Mathematical Formulation of Statistical Metrics Used for Evaluating Mesoscale Meteorological Model Performance

Metrics	Formulation
Bias	$B = \frac{1}{IJ}\sum_{j=1}^{J}\sum_{i=1}^{I}\left(P_j^i - O_j^i\right)$
Gross Error	$E = \frac{1}{IJ}\sum_{j=1}^{J}\sum_{i=1}^{I}\left\|P_j^i - O_j^i\right\|$
Root Mean Square Error	$RMSE = \left[\frac{1}{IJ}\sum_{j=1}^{J}\sum_{i=1}^{I}\left(P_j^i - O_j^i\right)^2\right]^{1/2}$
Systematic Root Mean Square Error	$RMSE_S = \left[\frac{1}{IJ}\sum_{j=1}^{J}\sum_{i=1}^{I}\left(\hat{P}_j^i - O_j^i\right)^2\right]^{1/2}$
Unsystematic Root Mean Square Error	$RMSE_u = \left[\frac{1}{IJ}\sum_{j=1}^{J}\sum_{i=1}^{I}\left(P_j^i - \hat{P}_j^i\right)^2\right]^{1/2}$
Index of Agreement	$IOA = 1 - \left[\frac{IJ.RMSE^2}{\sum_{j=1}^{J}\sum_{i=1}^{I}\left\|P_j^i - M_o\right\| + \left\|O_j^i - M_o\right\|}\right]$

Table 5 Statistical Benchmarks for Mesoscale Meteorological Models

Statistical Measure	Benchmark
Wind Speed Bias (m/s)	<±0.5
Wind Speed Total RMSE (m/s)	2.0
Wind Speed Index of Agreement	0.6
Wind Direction Gross Error (degree)	30.0
Wind Direction Bias (degree)	<±10.0
Temperature Bias (Kelvin)	<±0.5
Temperature Gross Error (degree)	2.0
Temperature Index of Agreement	0.8
Humidity Bias (g/kg)	<±1.0
Humidity Gross Error (g/kg)	2.0
Humidity Index of Agreement	0.6

A graphical summary of the daily and hourly mean performance statistics for the 12-km grid resolution modeling simulation is provided in the remainder of this report. Monthly averaged statistics have also been provided in Table 6. Statistics have been computed at monitoring stations that are located within the box shown in Figure 1. These stations are identified in Table 8.

Discussion and conclusions

The results of the statistical analysis are consistent with findings of the contractor discussed earlier. Overall, the simulation is able to capture meteorological conditions observed during the study period with the adequate level of accuracy. Performance statistics for most days are within the benchmarks proposed by Emery (2004) and suggested by U.S. EPA (Table 1). Monthly average statistics reveal under prediction in humidity from May through November, and an over prediction in temperature during the summer months (May through September). The simulation tends to over

predict day-time and night-time temperature, and consistently over-predicts night-time wind speed. However, the magnitude of these under/over predictions remains small. Deficiencies in physical parameterization (planetary boundary layer, surface heat, and moisture budgets) at smaller scales, together with the issue of data scarcity and representatives might produce verification scores that do not adequately represent the quality of meteorological modeling simulation (Mass, 2002). It should also be pointed out that air quality model performance evaluation serves as an additional check on how accurately the meteorological model was able to capture the observed atmospheric dynamics during a particular time period. In an unlikely event of an unusually poor air quality model performance, it is reasonable to further investigate the performance of meteorological model.

Figure 2 Monthly averaged Bias statistics for 2-m temperature and humidity

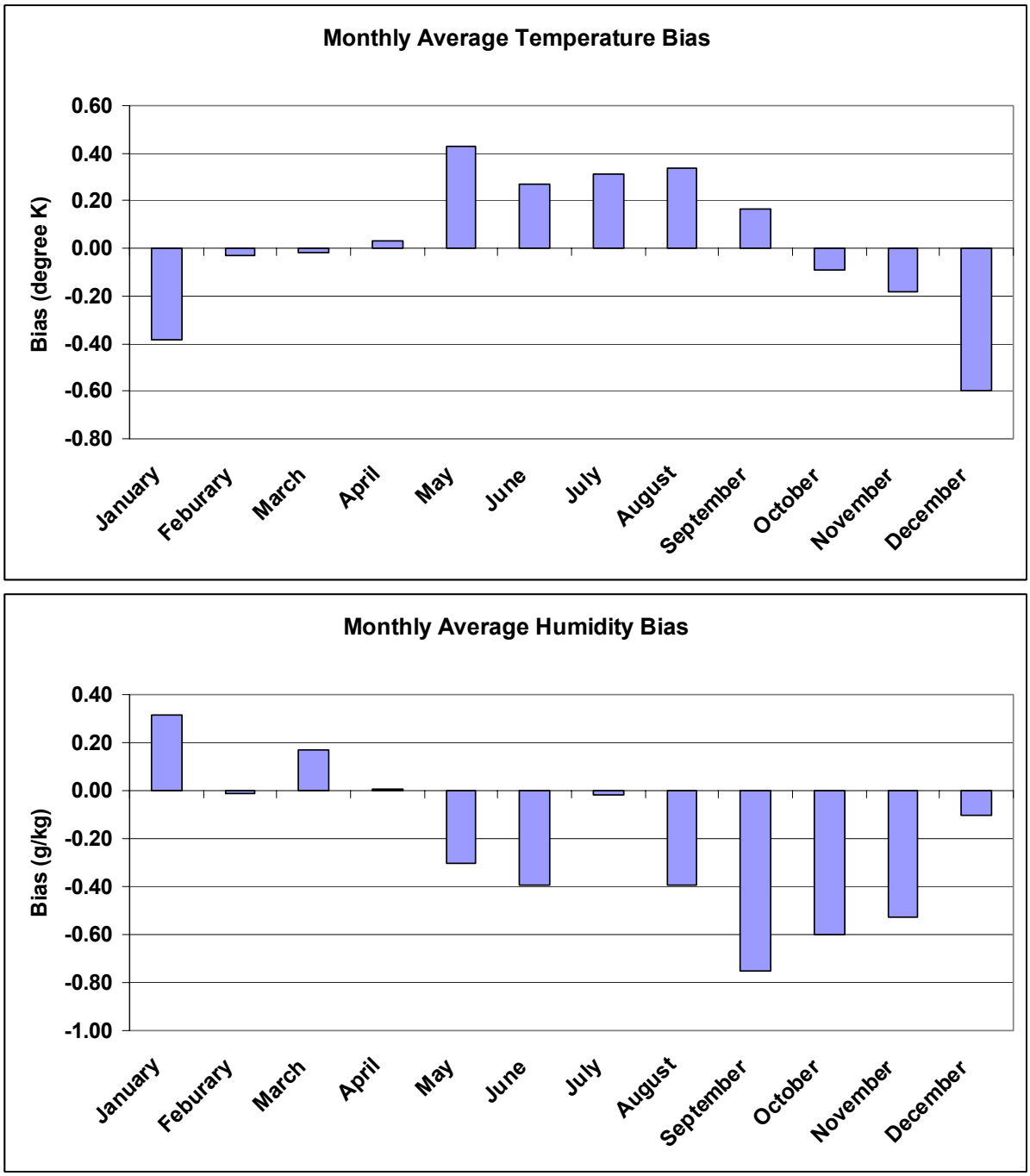


Table 6: Monthly averaged statistics for the region of the 12-km modeling domain shown in Figure 1

	Units	January	Feburary	March	April	May	June	July	August	September	October	November	December
Mean OBS	(m/s)	2.50	2.94	3.00	2.86	2.85	2.36	2.04	2.09	2.51	2.12	2.43	2.93
Mean PRD	(m/s)	3.07	3.46	3.47	3.41	3.42	2.92	2.56	2.62	3.16	2.75	3.21	3.50
Bias	(m/s)	0.56	0.52	0.46	0.56	0.56	0.57	0.52	0.54	0.65	0.63	0.78	0.57
Gross Error	(m/s)	1.35	1.33	1.34	1.30	1.36	1.36	1.32	1.35	1.33	1.29	1.45	1.40
RMSE	(m/s)	1.69	1.66	1.68	1.64	1.70	1.69	1.65	1.67	1.69	1.60	1.79	1.75
Sys RMSE	(m/s)	1.36	1.29	1.31	1.25	1.27	1.33	1.35	1.37	1.31	1.28	1.46	1.38
Unsys RMSE	(m/s)	0.98	1.02	1.04	1.04	1.12	1.04	0.94	0.94	1.05	0.95	1.02	1.04
IOA		0.66	0.72	0.70	0.70	0.71	0.64	0.61	0.62	0.66	0.64	0.63	0.66
Mean OBS	(deg)	210.79	217.36	193.44	183.67	132.25	159.26	210.72	145.09	106.11	155.27	255.71	209.07
Mean PRD	(deg)	217.93	202.41	189.61	178.68	134.97	169.83	184.38	146.70	119.42	160.35	237.67	214.91
Bias	(deg)	1.16	2.75	1.19	0.55	1.61	2.79	0.75	3.30	4.18	3.18	3.20	5.10
Gross Error	(deg)	26.37	23.56	25.11	25.46	28.99	35.02	39.13	37.12	30.20	31.23	28.99	24.68
Mean OBS	(K)	281.78	281.88	286.70	292.81	294.22	298.24	299.79	299.20	297.62	292.47	284.27	280.44
Mean PRD	(K)	281.40	281.85	286.68	292.85	294.65	298.51	300.11	299.54	297.79	292.38	284.08	279.85
Bias	(K)	-0.38	-0.03	-0.02	0.03	0.43	0.27	0.31	0.34	0.16	-0.09	-0.18	-0.60
Gross Error	(K)	2.03	1.82	1.94	1.63	1.61	1.49	1.55	1.57	1.42	1.40	1.78	1.79
RMSE	(K)	2.57	2.28	2.43	2.06	2.07	1.92	2.00	2.03	1.83	1.78	2.20	2.23
Sys RMSE	(K)	1.64	1.36	1.60	1.22	1.19	0.94	1.00	0.90	0.66	0.75	1.20	1.26
Unsys RMSE	(K)	1.90	1.78	1.78	1.63	1.65	1.64	1.72	1.78	1.68	1.58	1.80	1.80
IOA		0.92	0.94	0.94	0.94	0.95	0.93	0.92	0.93	0.93	0.94	0.94	0.93
Mean OBS	(g/kg)	5.62	4.58	7.23	10.05	11.33	14.48	16.49	15.46	15.30	12.38	6.76	4.93
Mean PRD	(g/kg)	5.94	4.56	7.40	10.05	11.03	14.09	16.47	15.06	14.55	11.78	6.23	4.82
Bias	(g/kg)	0.31	-0.01	0.17	0.01	-0.30	-0.40	-0.02	-0.39	-0.75	-0.60	-0.53	-0.10
Gross Error	(g/kg)	0.73	0.67	0.91	1.05	1.20	1.48	1.59	1.59	1.43	1.10	0.87	0.66
RMSE	(g/kg)	0.97	0.90	1.21	1.38	1.57	1.91	2.07	2.08	1.82	1.42	1.11	0.90
Sys RMSE	(g/kg)	0.50	0.40	0.61	0.48	0.71	0.91	0.98	1.05	0.97	0.77	0.65	0.42
Unsys RMSE	(g/kg)	0.82	0.79	1.00	1.27	1.38	1.65	1.77	1.75	1.51	1.16	0.86	0.78
IOA		0.88	0.88	0.87	0.84	0.78	0.70	0.62	0.69	0.80	0.85	0.84	0.89

Table 7: List of Peer-Reviewed Journal Articles Related to Mesoscale Meteorological Performance

	Emery et al., 2001	Rao et al., 2001		Zhong et al., 2003 (a) light winds; (b) strong winds						Castelli et. al., 2004		Hanna et. al., 2001 (c) 1995, OTAG; (d) 1991, Central California		
	Benchmark	**RAMS3b**	**MM5**	**RAMS (a)**	**MM5 (a)**	**Meso-Eta (a)**	**RAMS (b)**	**MM5 (b)**	**Meso-Eta (b)**	**RAMS**	**Eta**	**RAMS (c)**	**MM5 (c)**	**MM5 (d)**
Temperature Bias (degree C)	±0.5	1.38	-0.93	-0.74	-0.70	-1.77	-1.78	-0.74	-2.14	-	-	-	-	
Temperature Error (degree C)	2.0	2.29	2.22	-	-	-	-	-	-	-	-	-	-	-
Temperature RMSE (degree C)	-	3.03	2.89	2.50	2.17	2.57	2.62	1.97	2.99	3.40	3.37	-	-	-
Mixing Ratio Bias (g/kg)	±1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixing Ratio Error (g/kg)	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixing Ratio RMSE (g/kg)	-	-	-	-	-	-	-	-	-	1.70	1.76	-	-	-
Wind Speed Bias (m/s)	-	0.61	0.28	0.66	0.46	0.13	0.35	-0.26	1.64	-	-	-0.1	0.5	1.5
Wind Speed Error (m/s)	-	1.41	1.34	-	-	-	-	-	-	-	-	-	-	-
Wind Speed RMSE (m/s)	2.0	1.80	1.71	1.63	1.57	1.41	2.00	1.98	2.56	1.57*	2.21*	1.6	1.9	2.5
Wind Direction Bias (degree)	-	-	-	-0.43	9.91	0.85	-1.11	4.10	3.89	-	-	-12	14	-2
Wind Direction Error (degree)	20	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind Direction RMSE (degree)	-	-	-	68.37	66.66	69.49	64.58	72.98	61.02	-	-	76	51	66

Castelli, S. T., S. Morelli, D. Anfossi, J. Carvalho, and S. Z. Sajani, 2004: Inter-comparison of two models, ETA and RAMS, with TRACT field campaign data. *Environmental Fluid Mechanics*, **4,** 157-196

Emery, C. et al., 2001: Enhanced meteorological modeling and performance evaluation for two Texas ozone episodes. Prepared for the Texas Natural Resource Conservation Commission, Prepared by ENVIRON International Corporation, Novato, CA.

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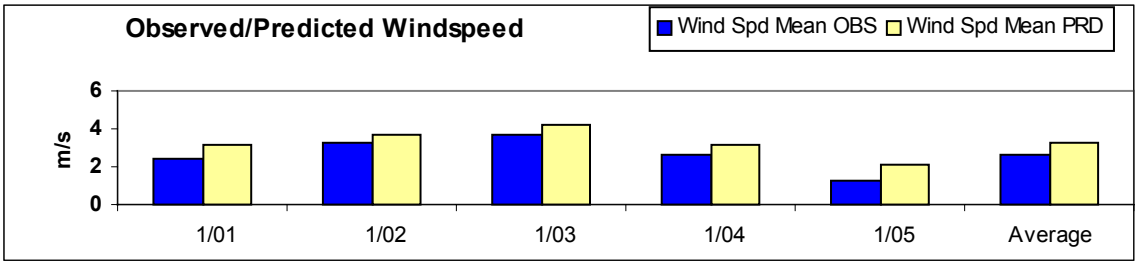
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Wind Spd Mean PRD
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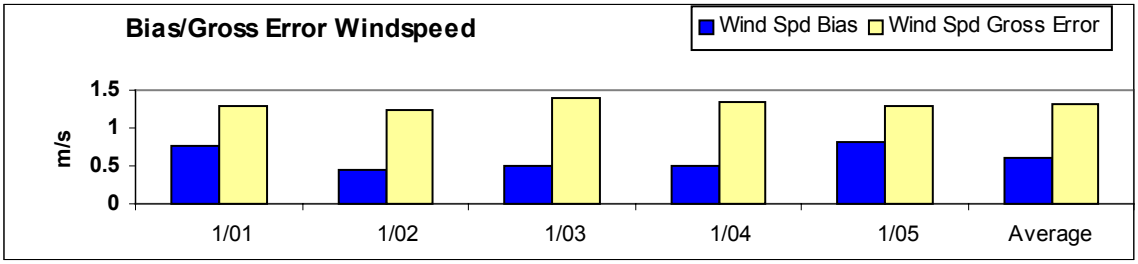
4
2
0
1/01
1/02
1/03
1/04
1/05
Average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Wind Spd Gross Error
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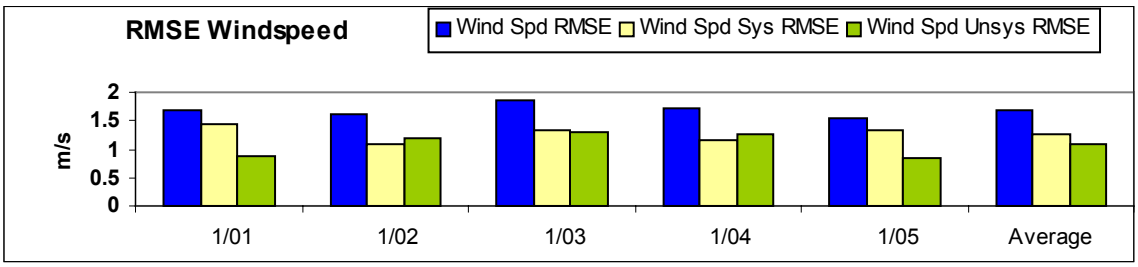
0
1/01
1/02
1/03
1/04
1/05
Average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Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
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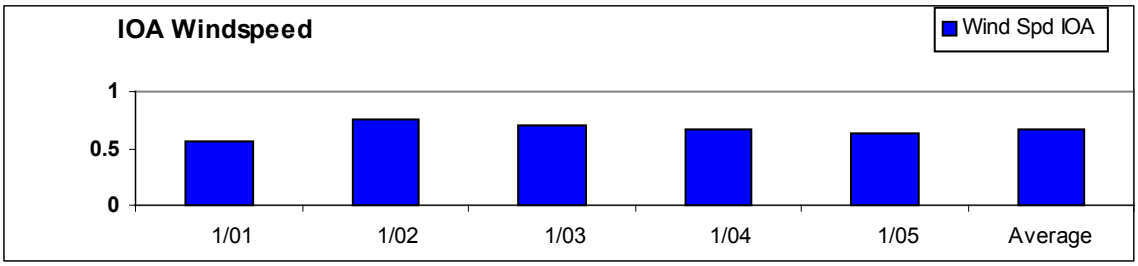
1/01
1/02
1/03
1/04
1/05
Average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Wind Spd IOA
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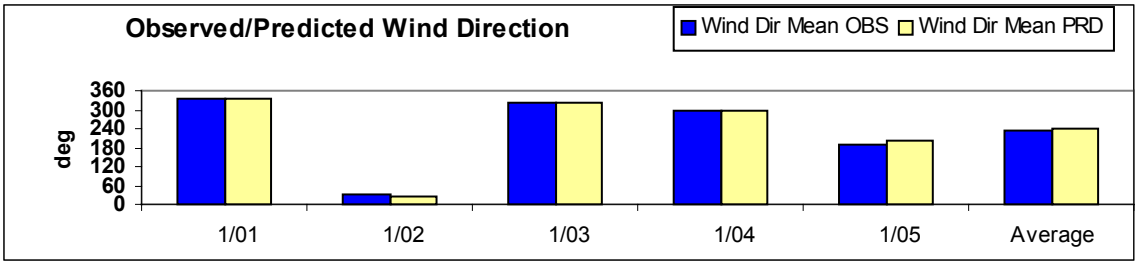
1/05
Average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Wind Dir Mean PRD
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180
120
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1/01
1/02
1/03
1/04
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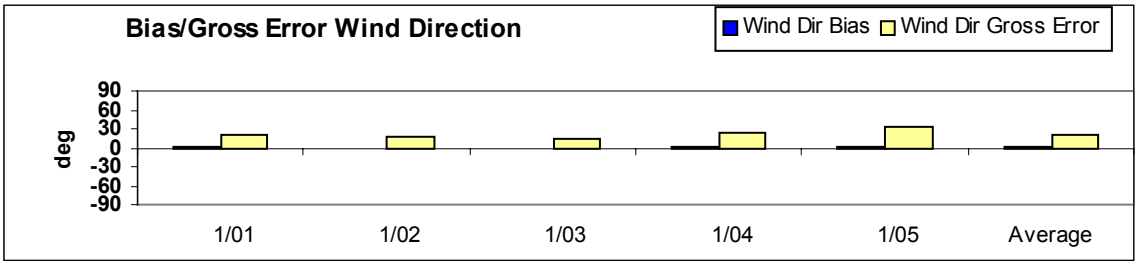
Average


Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
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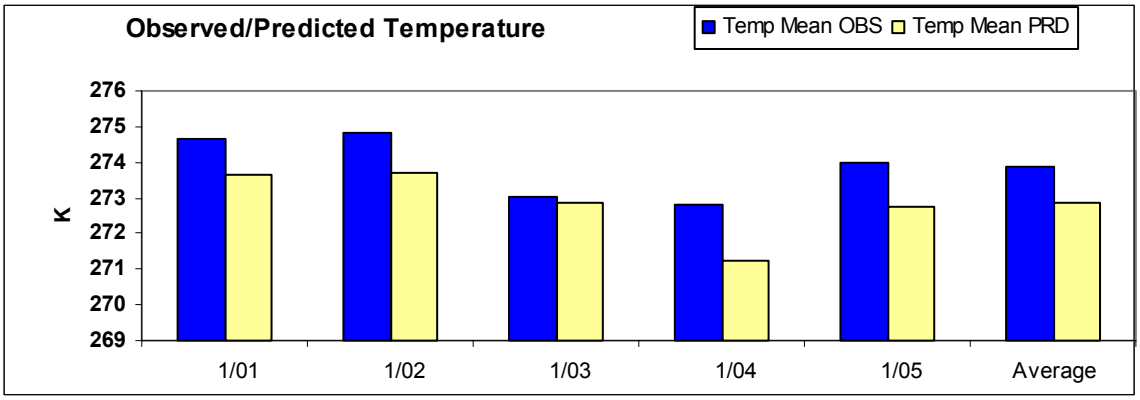
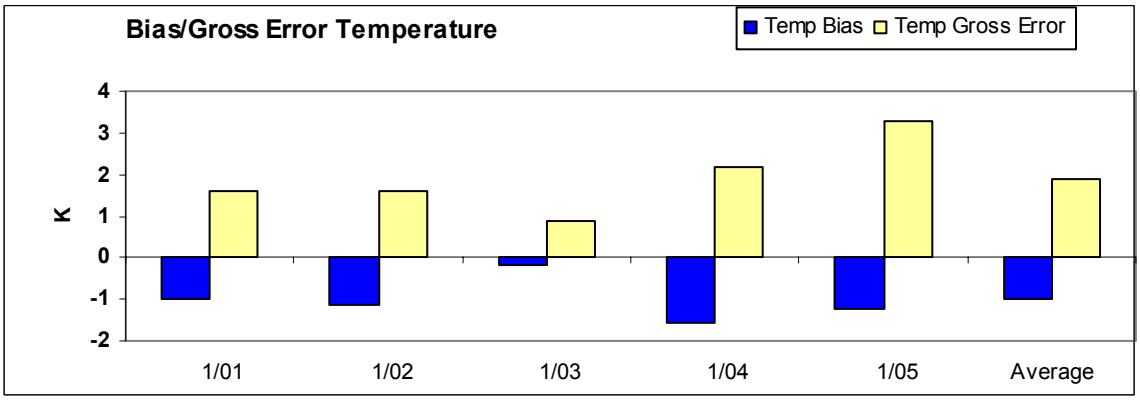
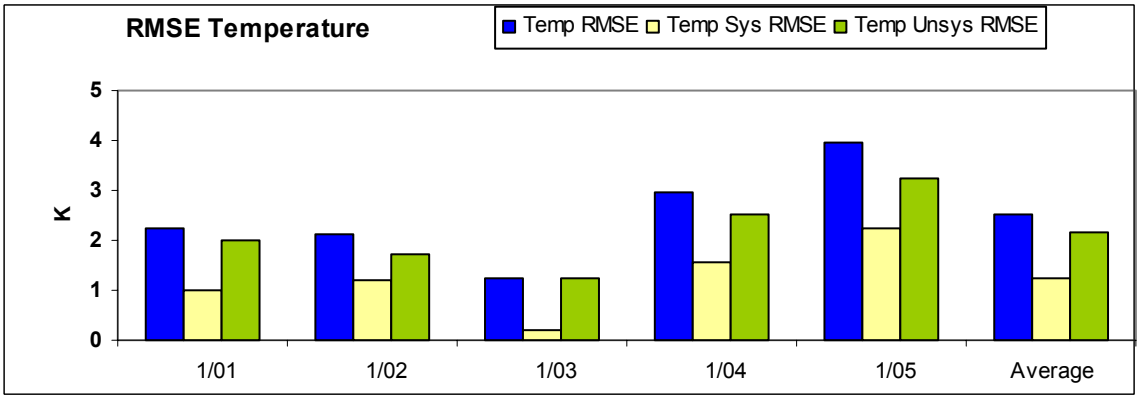
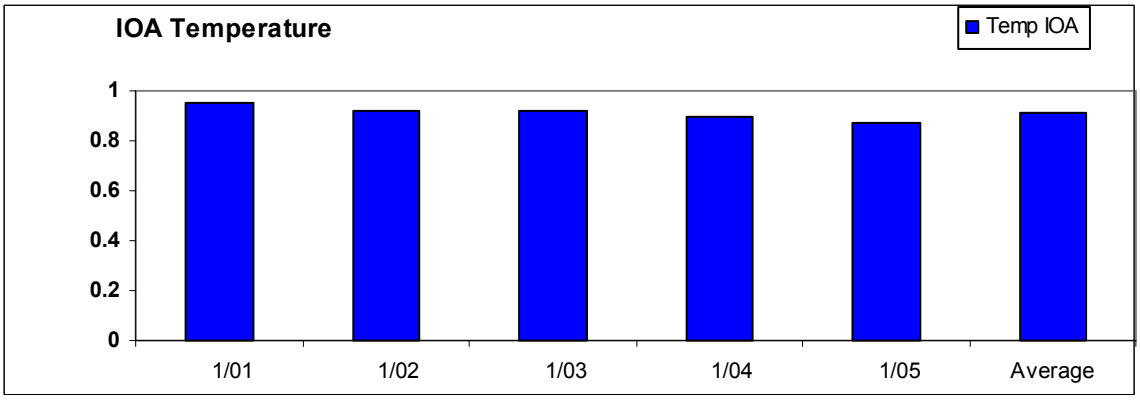
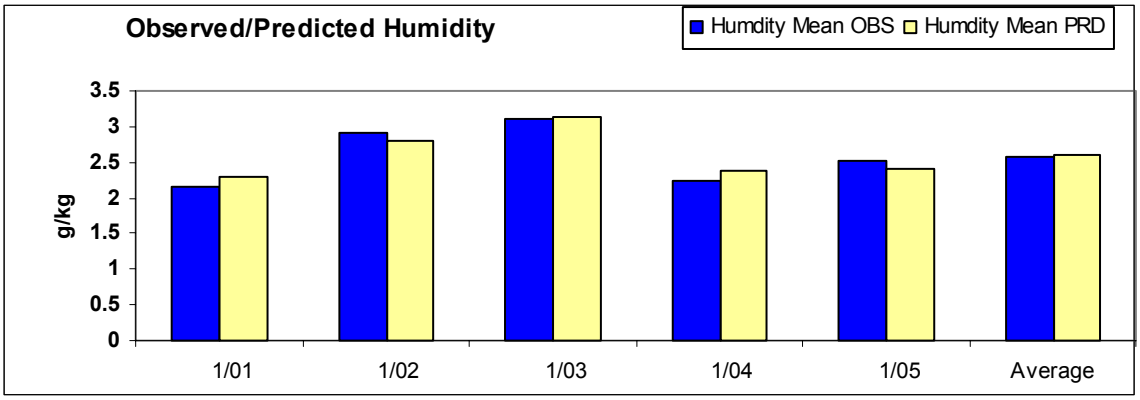
60
30
0
-30
-60
-90
1/01
1/02
1/03
1/04
1/05
Average

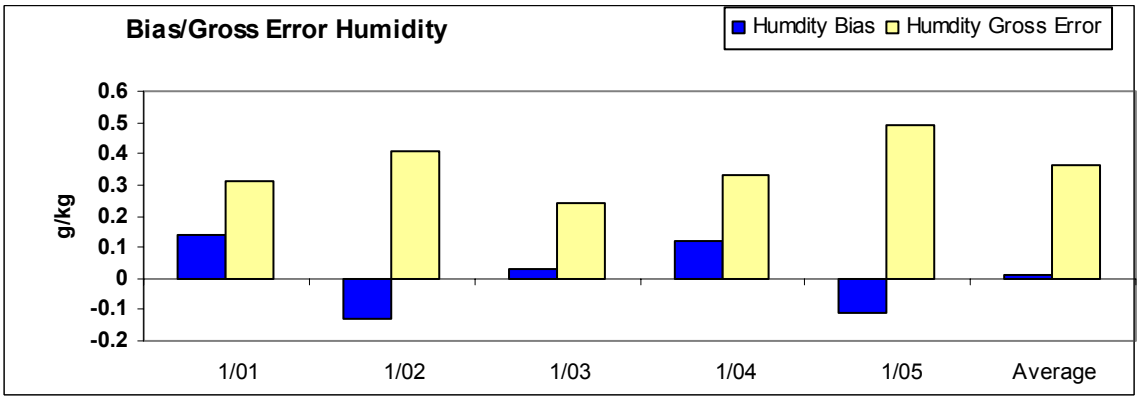

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
276
275
274
273
272
271
270
269
1/01
1/02
1/03
1/04
1/05
Average

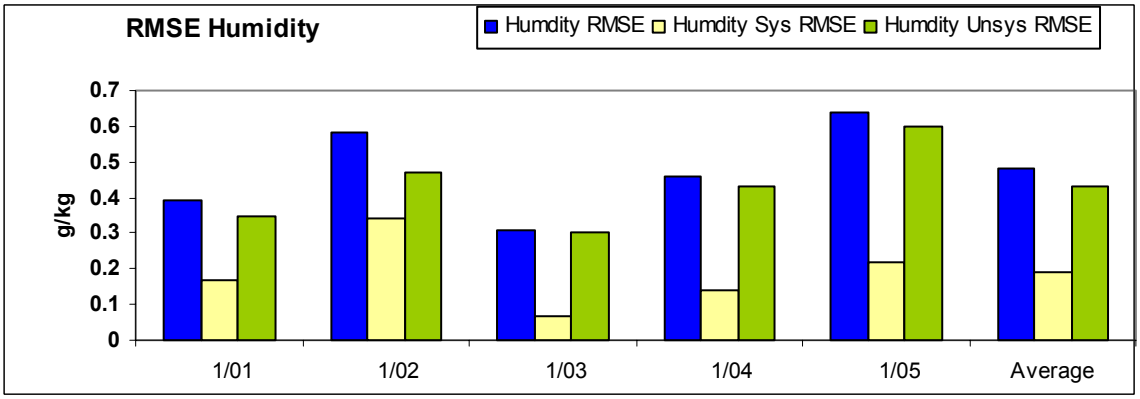

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
4
3
2
1
0
-1
-2
1/01
1/02
1/03
1/04
1/05
Average

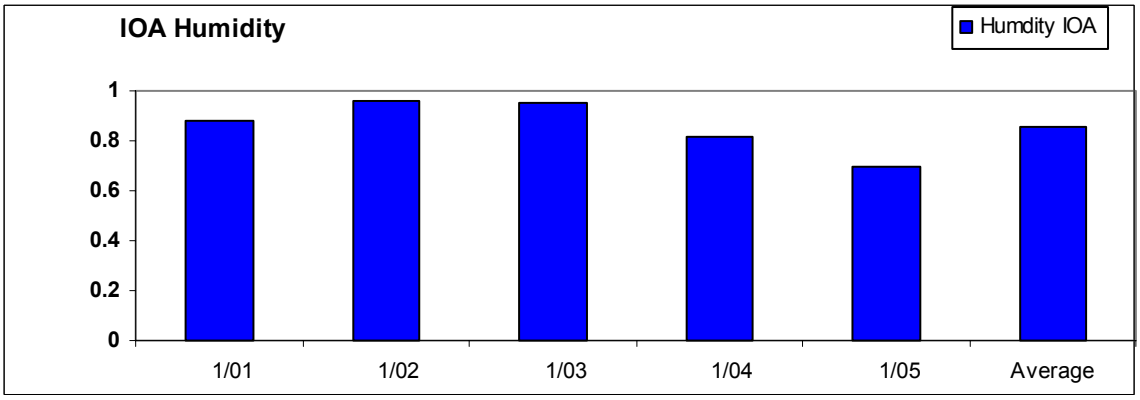

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
5
4
3
2
1
0
1/01
1/02
1/03
1/04
1/05
Average

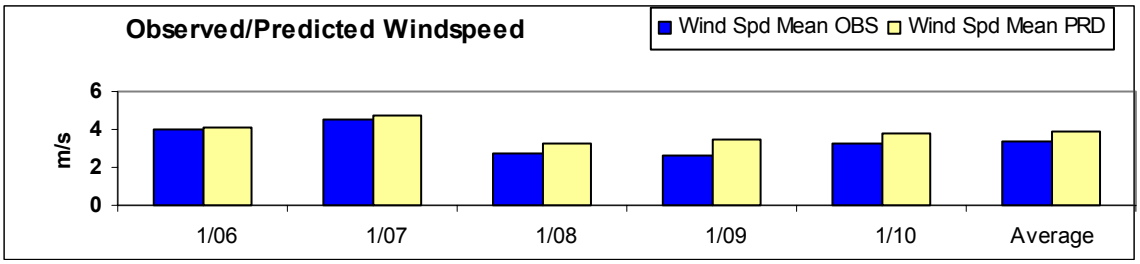

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
1/01
1/02
1/03
1/04
1/05
Average

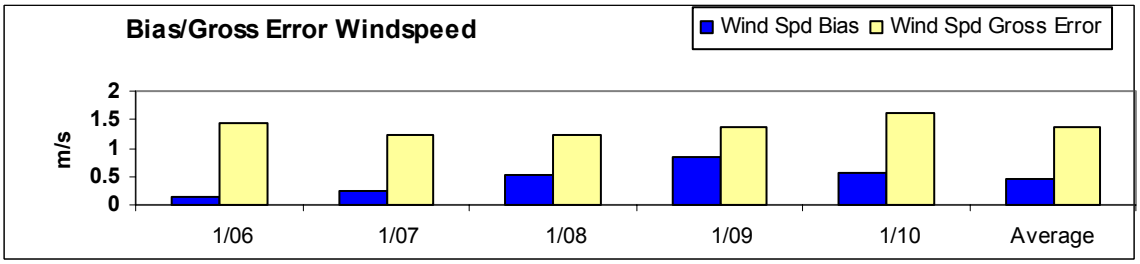

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
1/01
1/02
1/03
1/04
1/05
Average

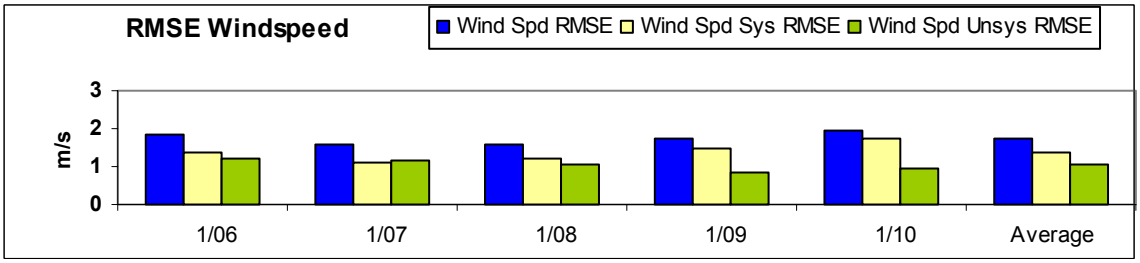

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
1/01
1/02
1/03
1/04
1/05
Average

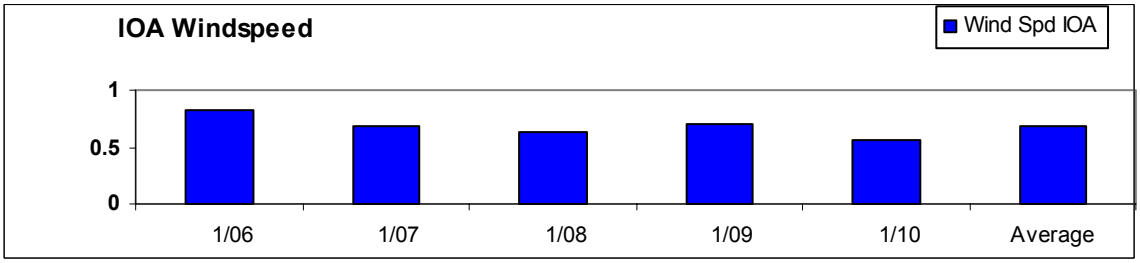

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1/01
1/02
1/03
1/04
1/05
Average

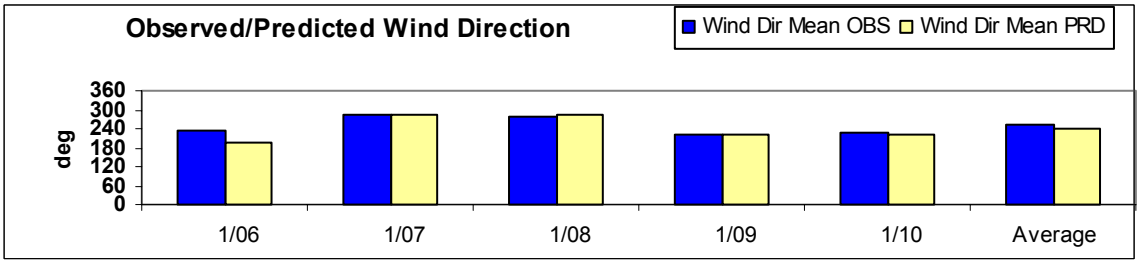

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
1/01
1/02
1/03
1/04
1/05
Average

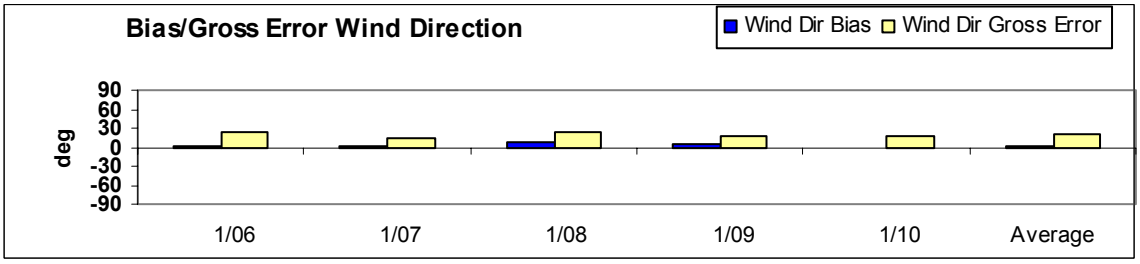

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
1/06
1/07
1/08
1/09
1/10
Average

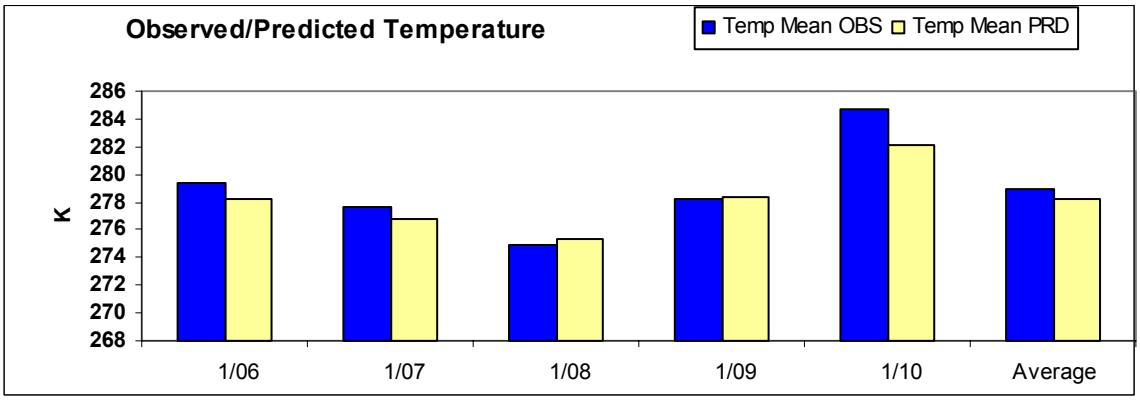

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
1/06
1/07
1/08
1/09
1/10
Average

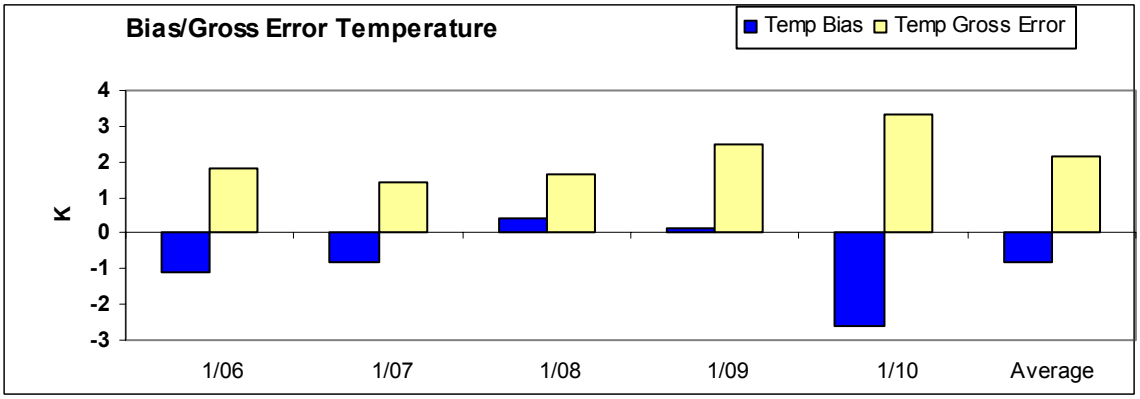

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
1/06
1/07
1/08
1/09
1/10
Average

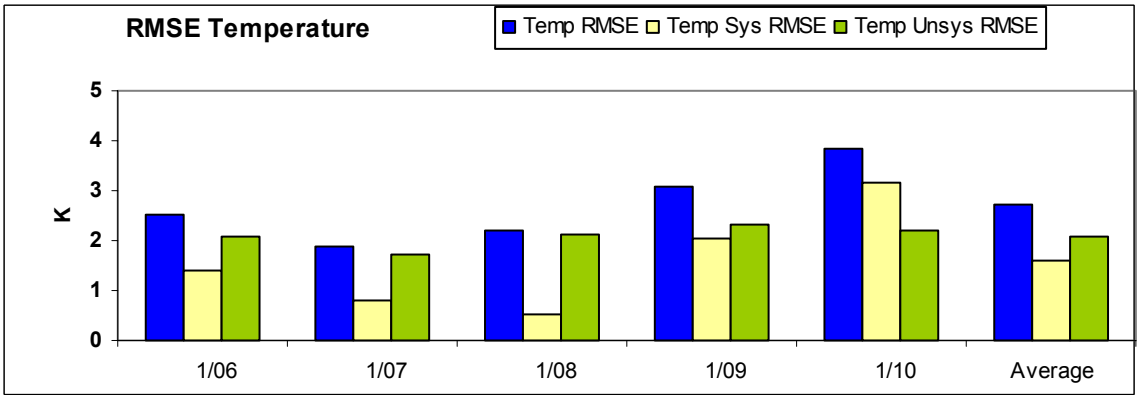

IOA Windspeed
Wind Spd IOA
1
0.5
0
1/06
1/07
1/08
1/09
1/10
Average

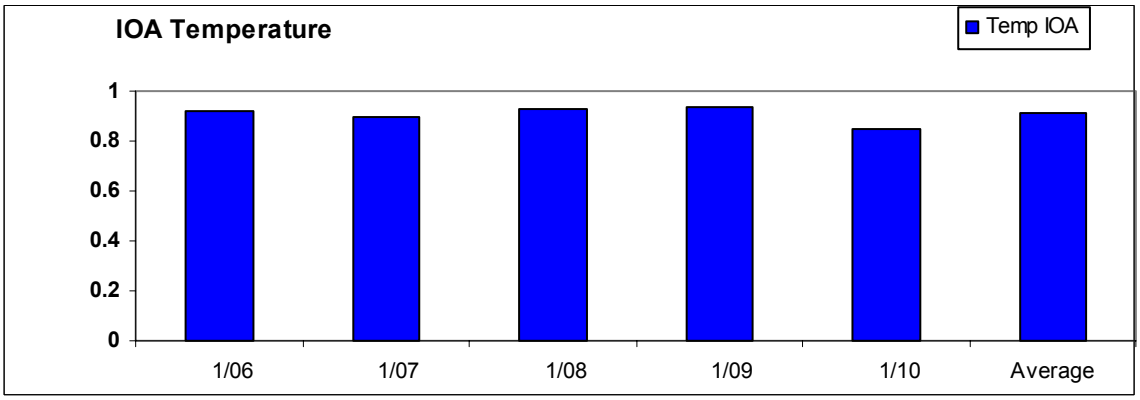

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
1/06
1/07
1/08
1/09
1/10
Average

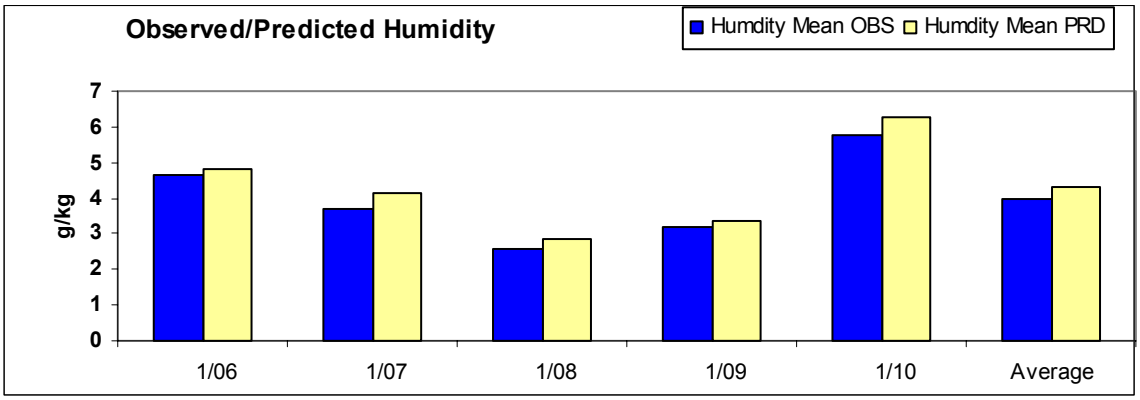

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
1/06
1/07
1/08
1/09
1/10
Average

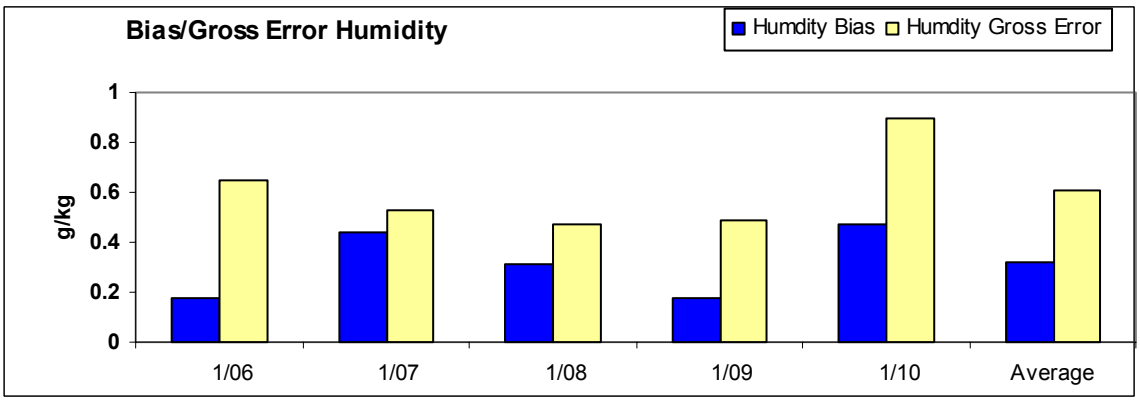

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
286
284
282
280
278
276
274
272
270
268
1/06
1/07
1/08
1/09
1/10
Average

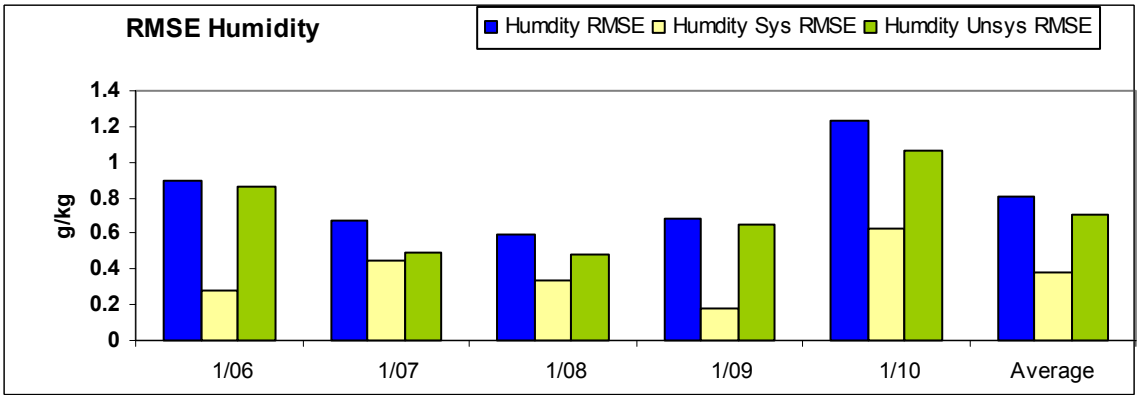

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
4
3
2
1
0
-1
-2
-3
1/06
1/07
1/08
1/09
1/10
Average

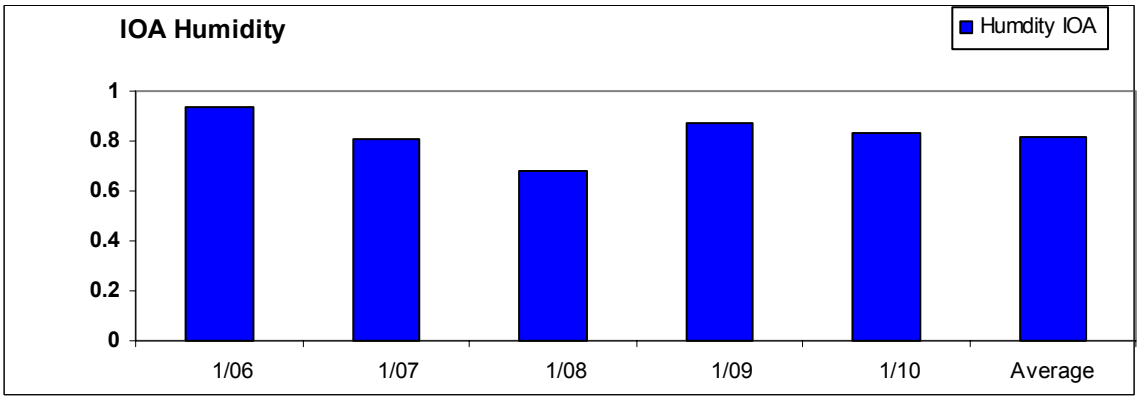

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
5
4
3
2
1
0
1/06
1/07
1/08
1/09
1/10
Average

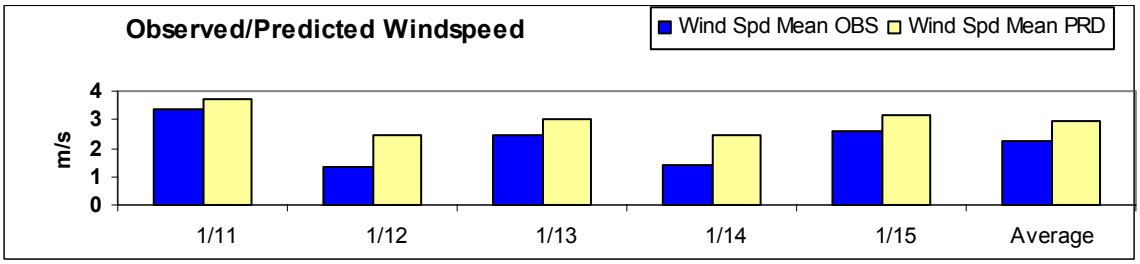

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
1/06
1/07
1/08
1/09
1/10
Average

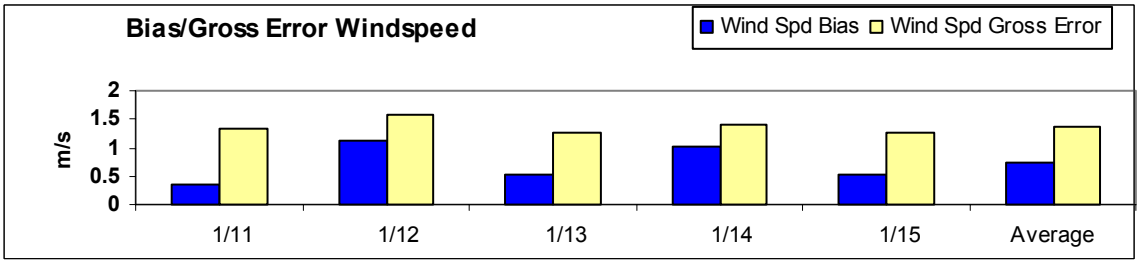

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
0
1
2
3
4
5
6
7
1/06
1/07
1/08
1/09
1/10
Average

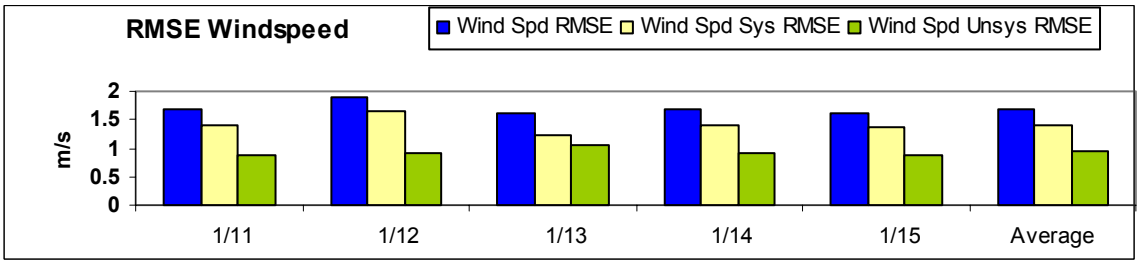

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
0
0.2
0.4
0.6
0.8
1
1/06
1/07
1/08
1/09
1/10
Average

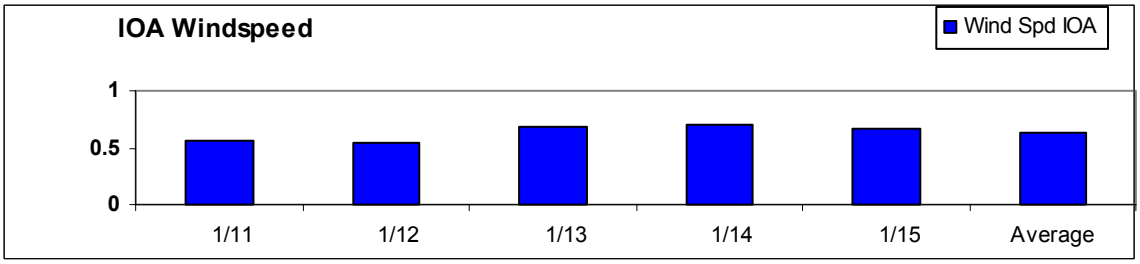

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1/06
1/07
1/08
1/09
1/10
Average

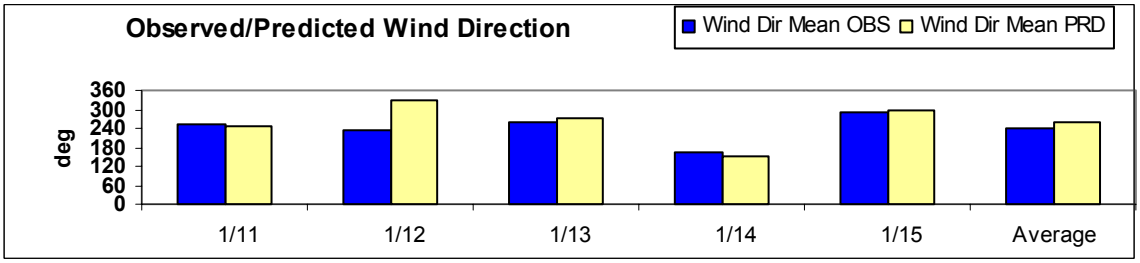

IOA Humidity
Humdity IOA
0
0.2
0.4
0.6
0.8
1
1/06
1/07
1/08
1/09
1/10
Average

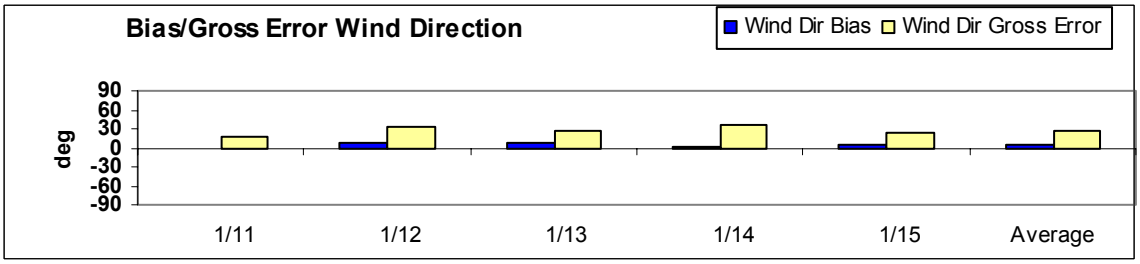

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
1/11
1/12
1/13
1/14
1/15
Average

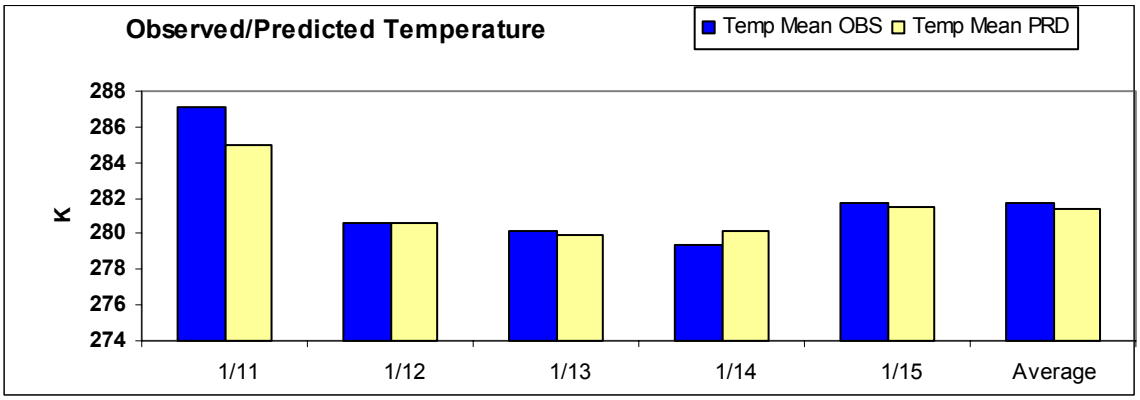

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
1/11
1/12
1/13
1/14
1/15
Average

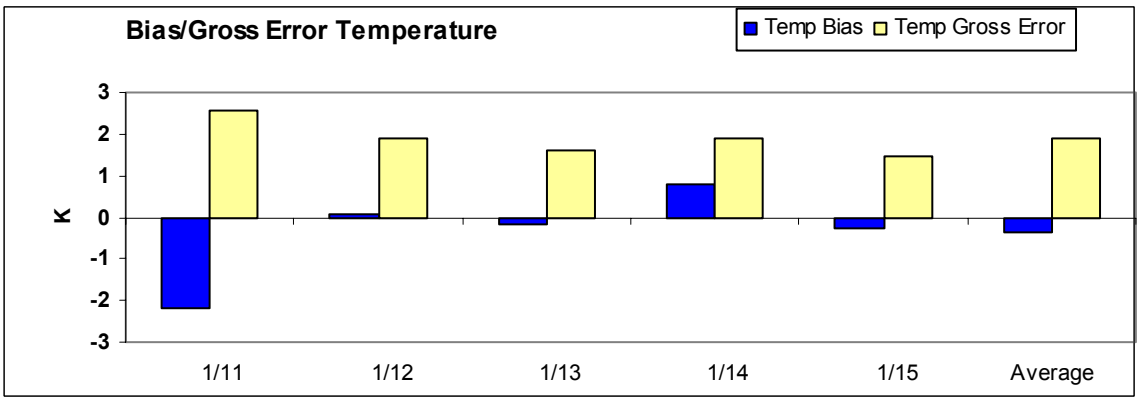

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
1/11
1/12
1/13
1/14
1/15
Average

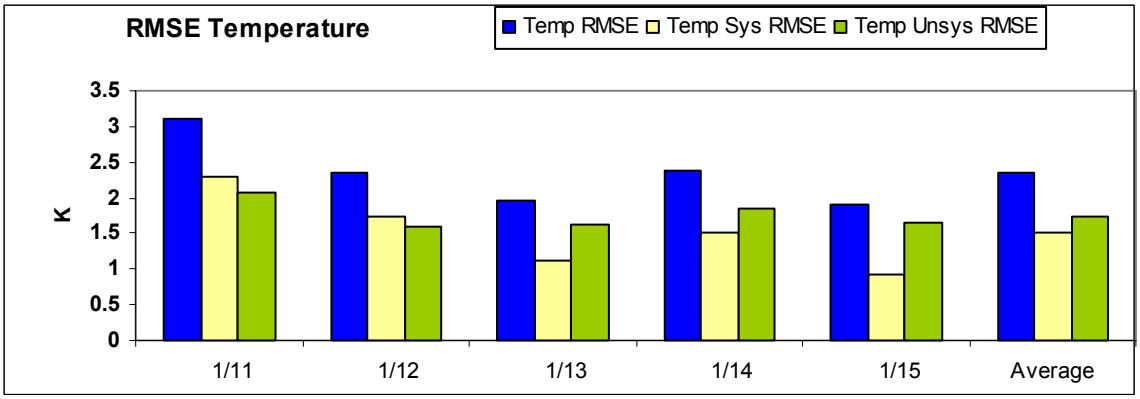

IOA Windspeed
Wind Spd IOA
1
0.5
0
1/11
1/12
1/13
1/14
1/15
Average

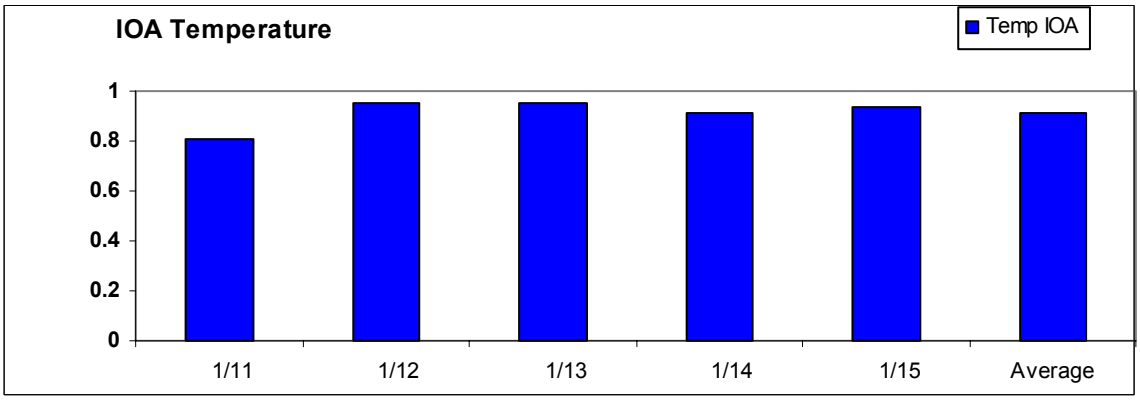

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
1/11
1/12
1/13
1/14
1/15
Average

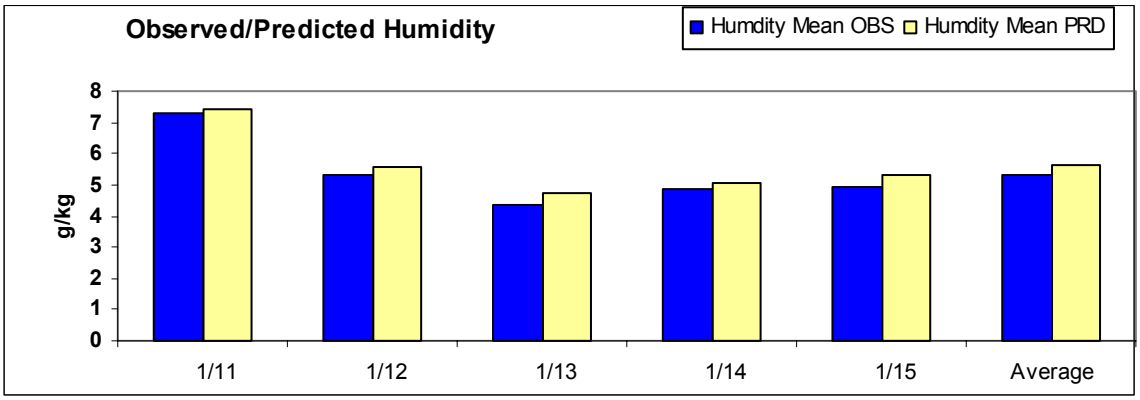

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
1/11
1/12
1/13
1/14
1/15
Average

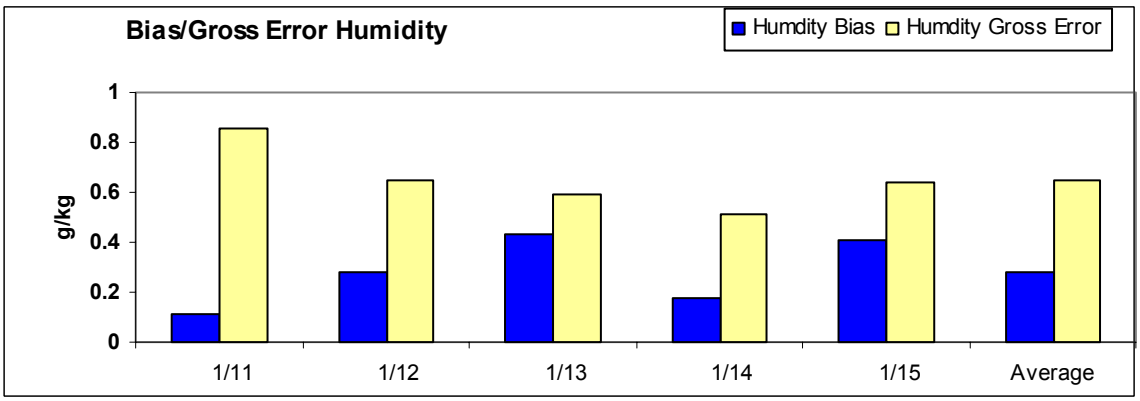

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
288
286
284
282
280
278
276
274
1/11
1/12
1/13
1/14
1/15
Average

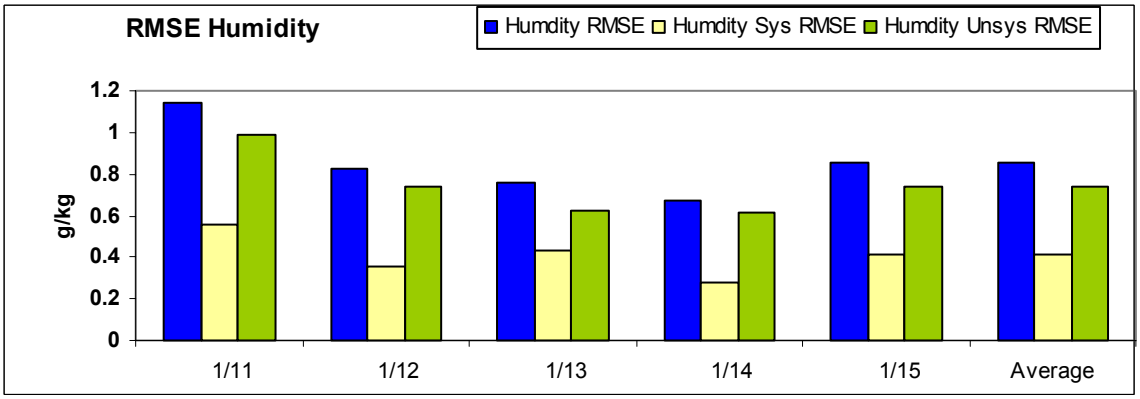

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
-3
1/11
1/12
1/13
1/14
1/15
Average

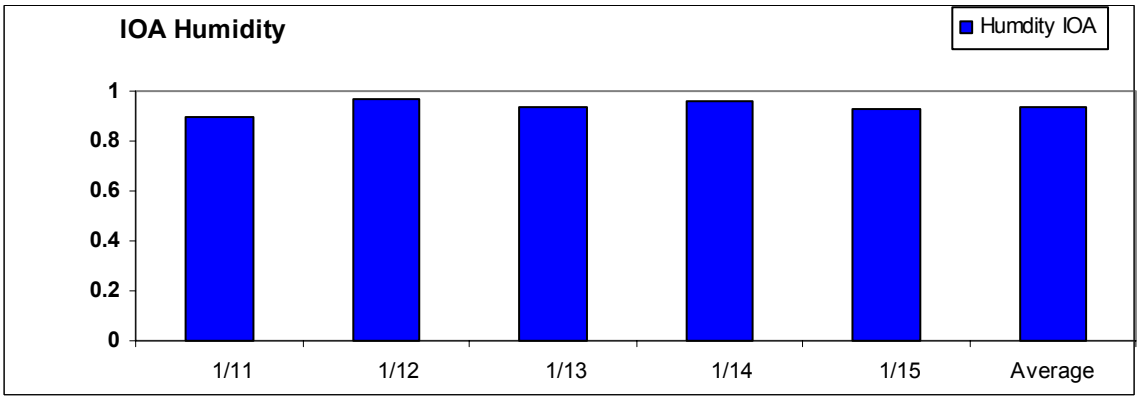

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
1/11
1/12
1/13
1/14
1/15
Average

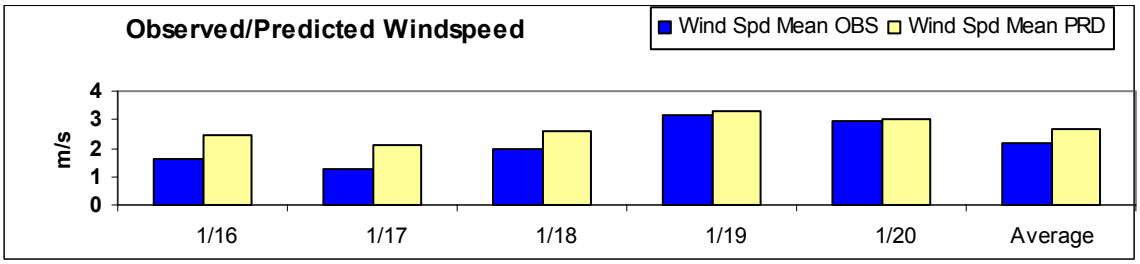

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
1/11
1/12
1/13
1/14
1/15
Average

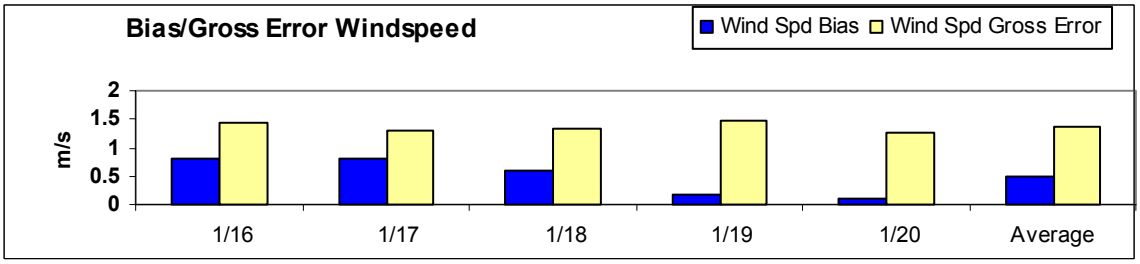

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
0
1
2
3
4
5
6
7
8
1/11
1/12
1/13
1/14
1/15
Average

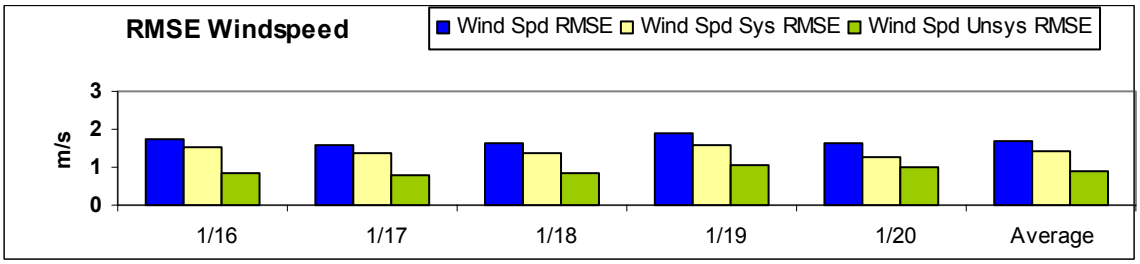

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
0
0.2
0.4
0.6
0.8
1
1/11
1/12
1/13
1/14
1/15
Average

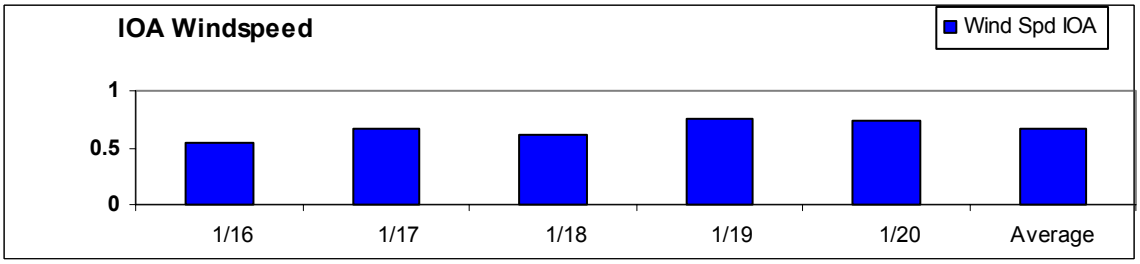

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
0
0.2
0.4
0.6
0.8
1
1.2
1/11
1/12
1/13
1/14
1/15
Average

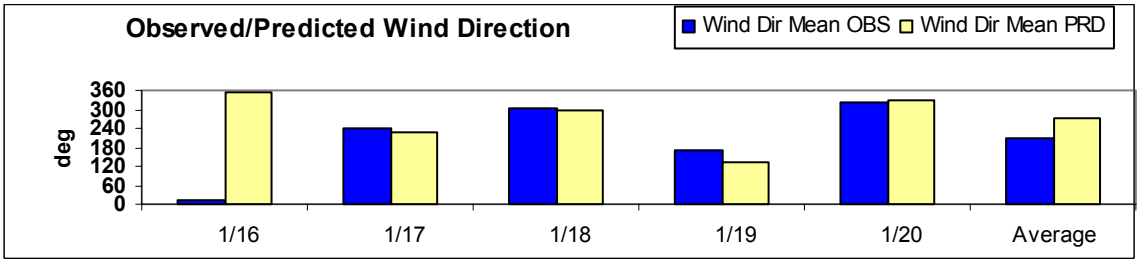

IOA Humidity
Humdity IOA
0
0.2
0.4
0.6
0.8
1
1/11
1/12
1/13
1/14
1/15
Average

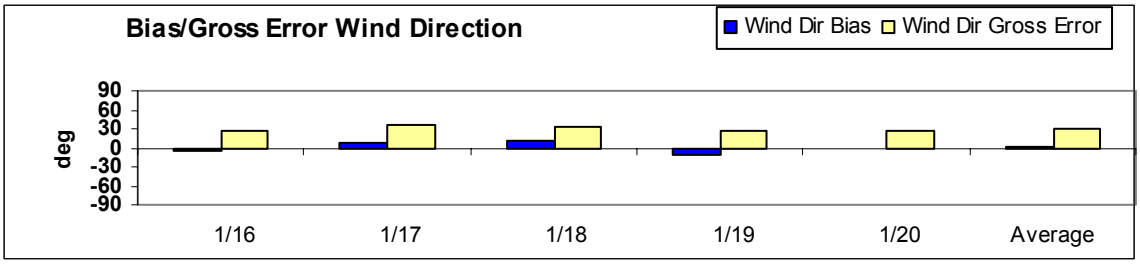

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
1/16
1/17
1/18
1/19
1/20
Average

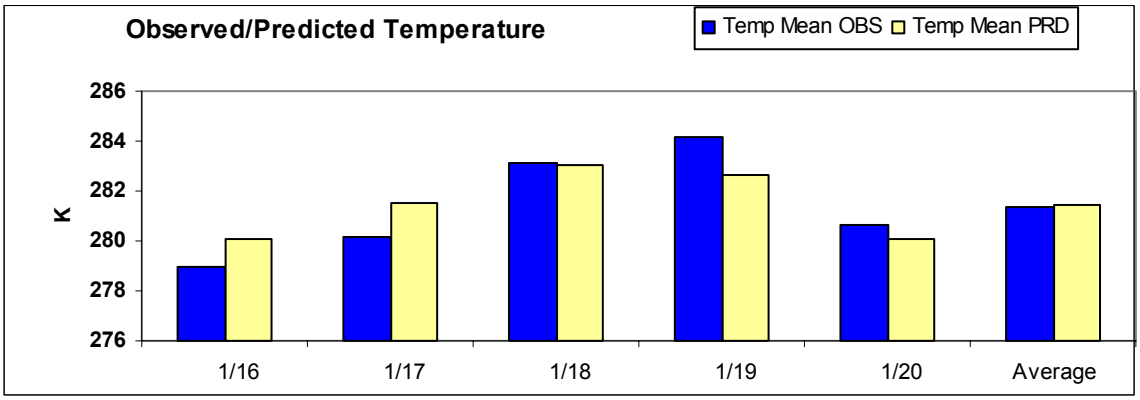

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
1/16
1/17
1/18
1/19
1/20
Average

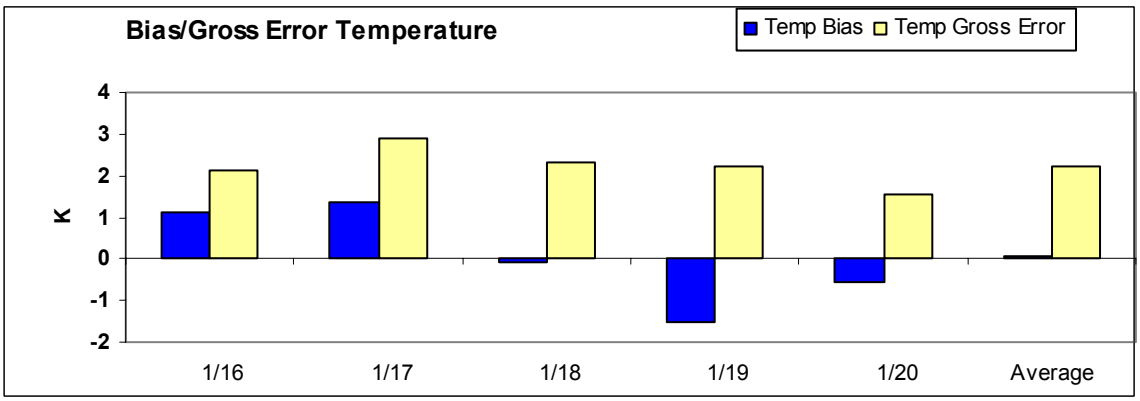

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
1/16
1/17
1/18
1/19
1/20
Average

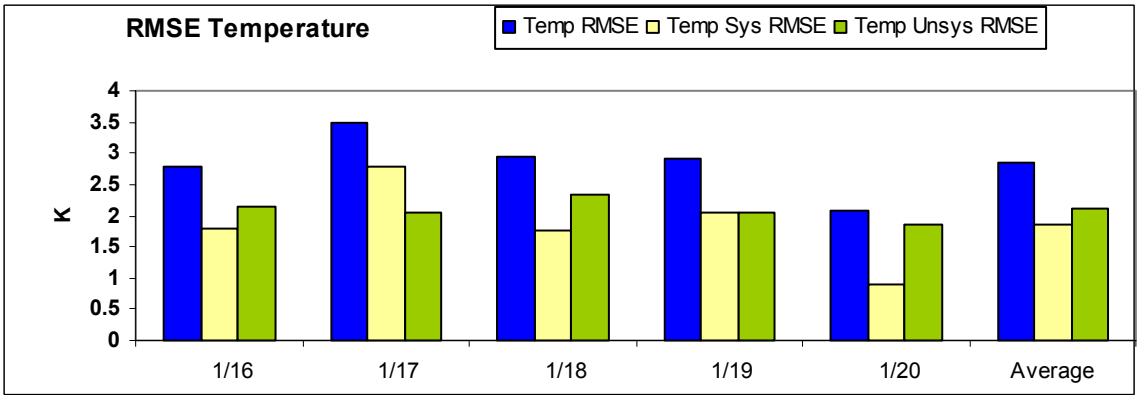

IOA Windspeed
Wind Spd IOA
1
0.5
0
1/16
1/17
1/18
1/19
1/20
Average

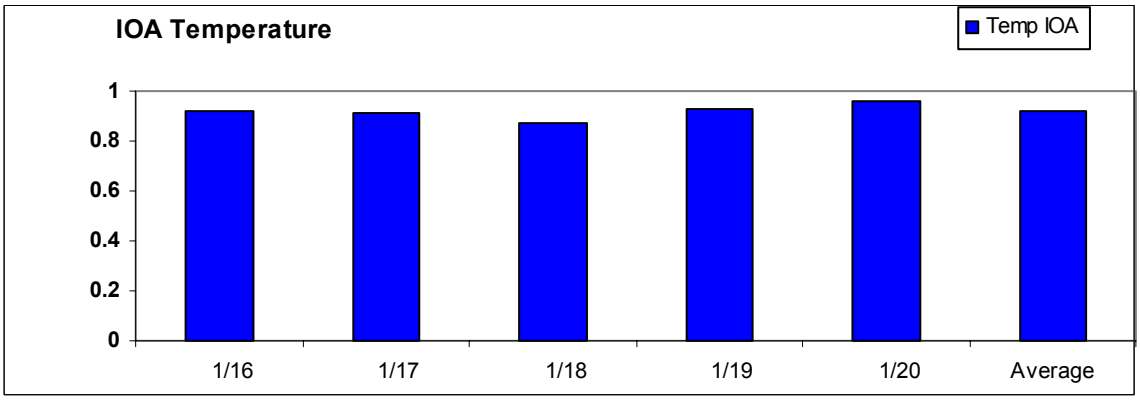

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
1/16
1/17
1/18
1/19
1/20
Average

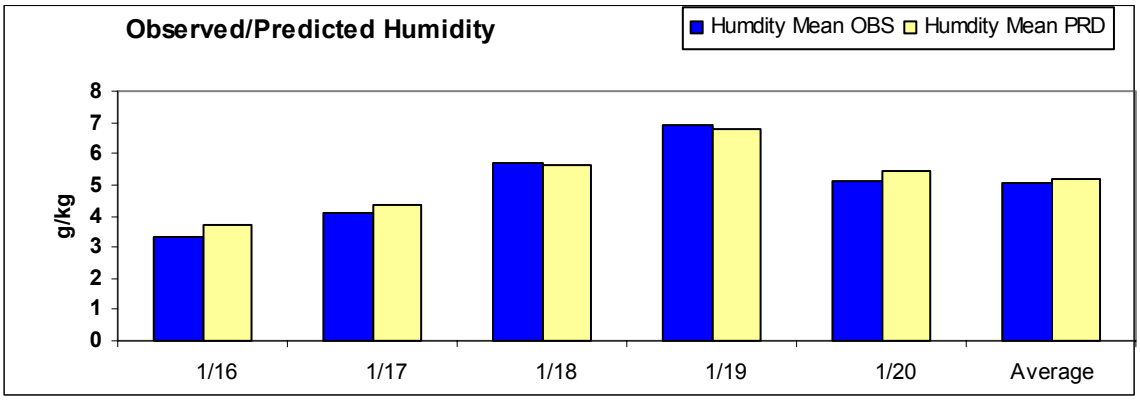

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
1/16
1/17
1/18
1/19
1/20
Average

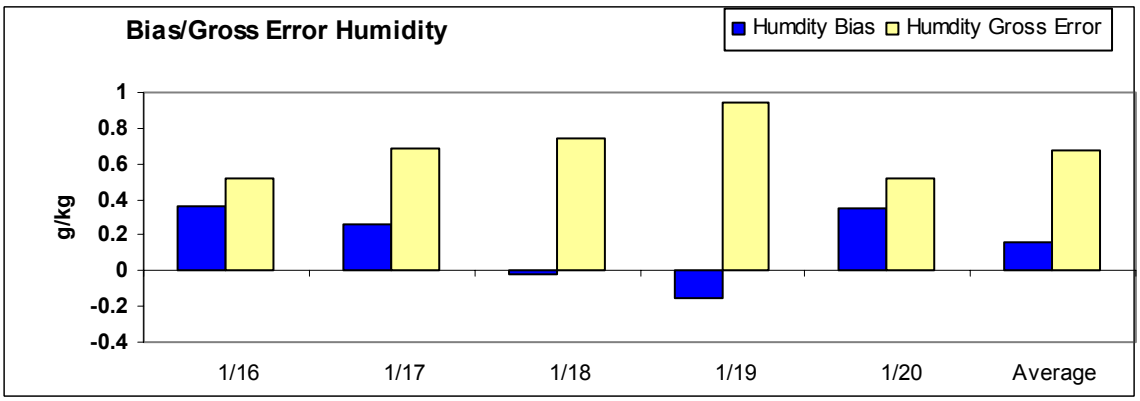

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
286
284
282
280
278
276
1/16
1/17
1/18
1/19
1/20
Average

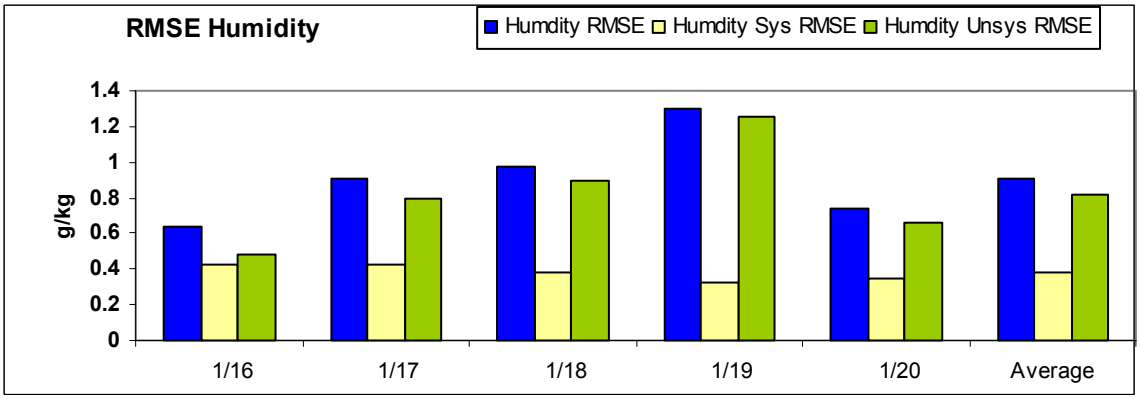

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
4
3
2
1
0
-1
-2
1/16
1/17
1/18
1/19
1/20
Average

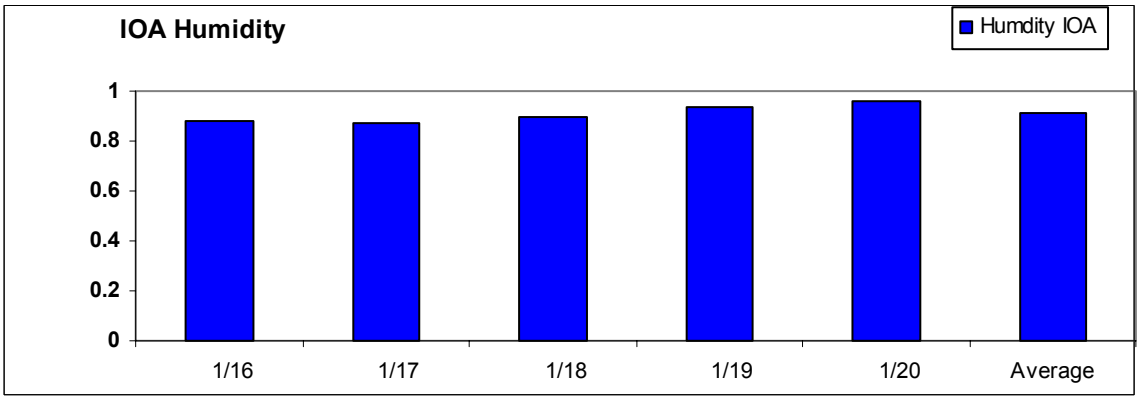

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
4
3.5
3
2.5
2
1.5
1
0.5
0
1/16
1/17
1/18
1/19
1/20
Average

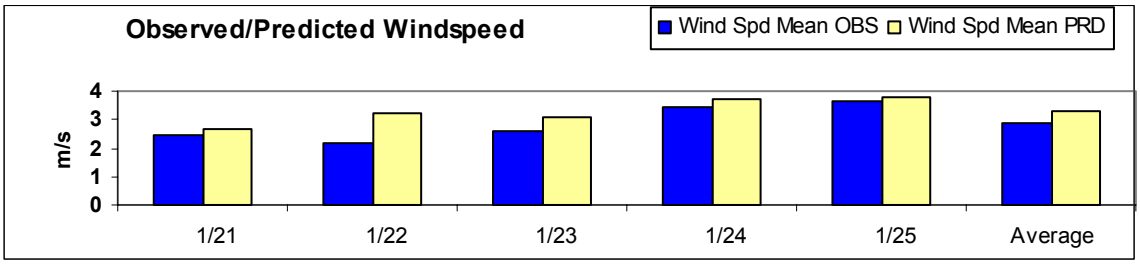

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
1/16
1/17
1/18
1/19
1/20
Average

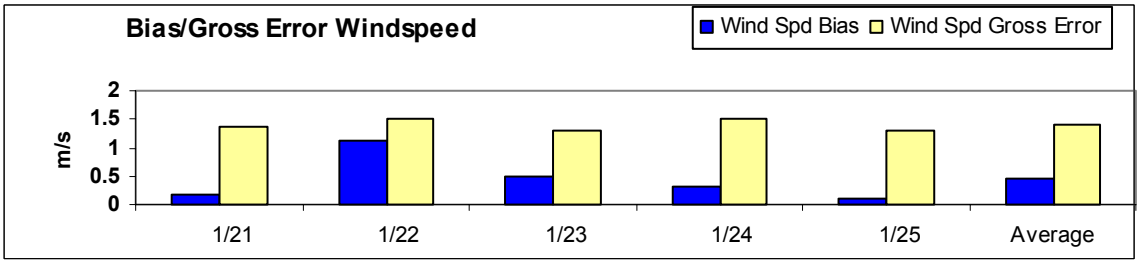

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
8
7
6
5
4
3
2
1
0
1/16
1/17
1/18
1/19
1/20
Average

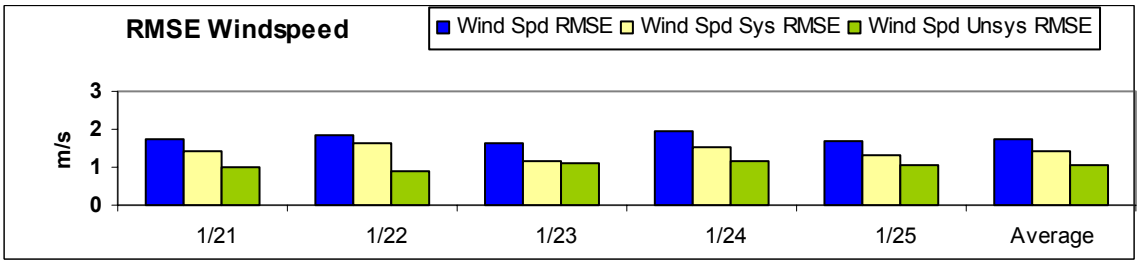

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
1/16
1/17
1/18
1/19
1/20
Average

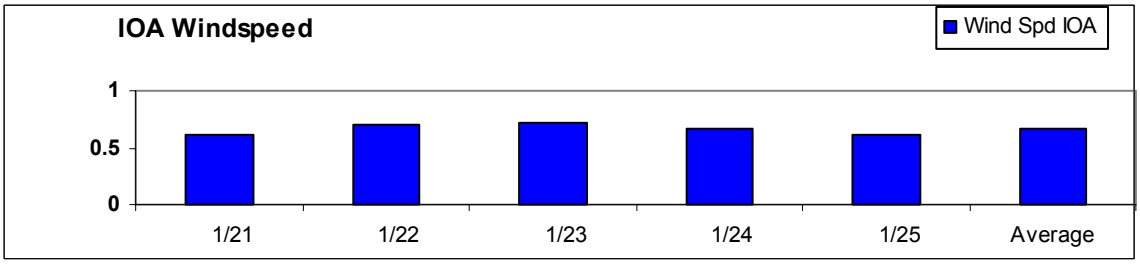

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1/16
1/17
1/18
1/19
1/20
Average

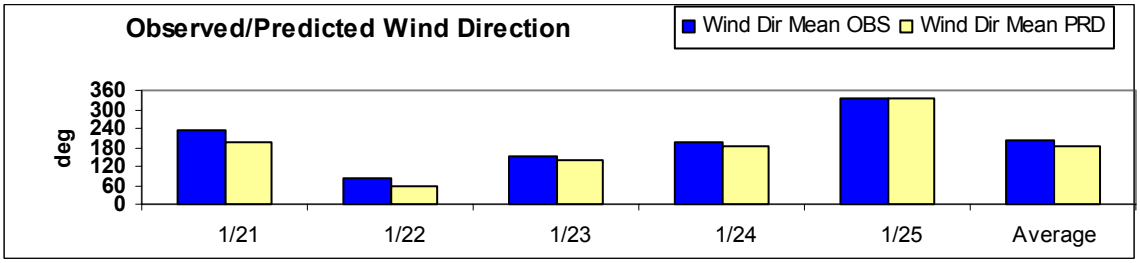

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
1/16
1/17
1/18
1/19
1/20
Average

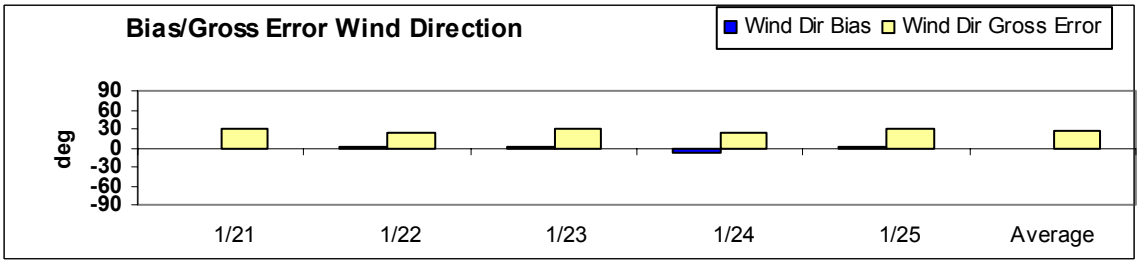

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
1/21
1/22
1/23
1/24
1/25
Average

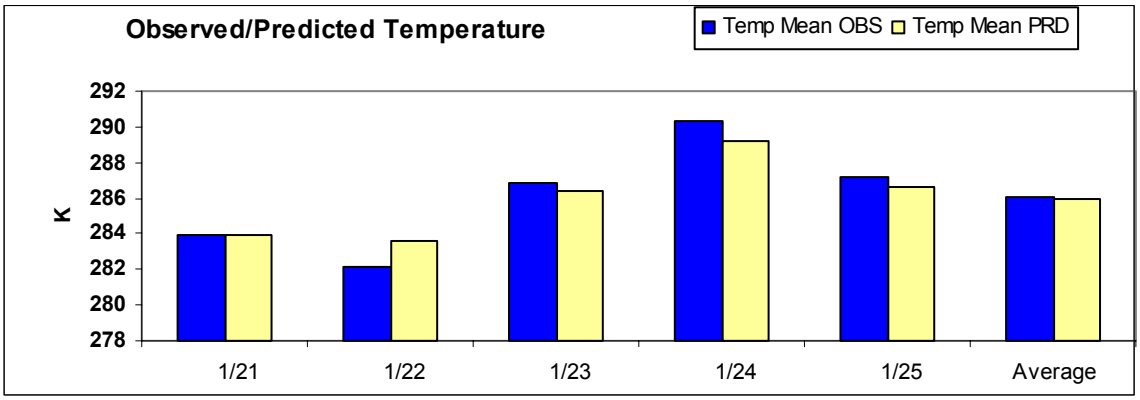

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
1/21
1/22
1/23
1/24
1/25
Average

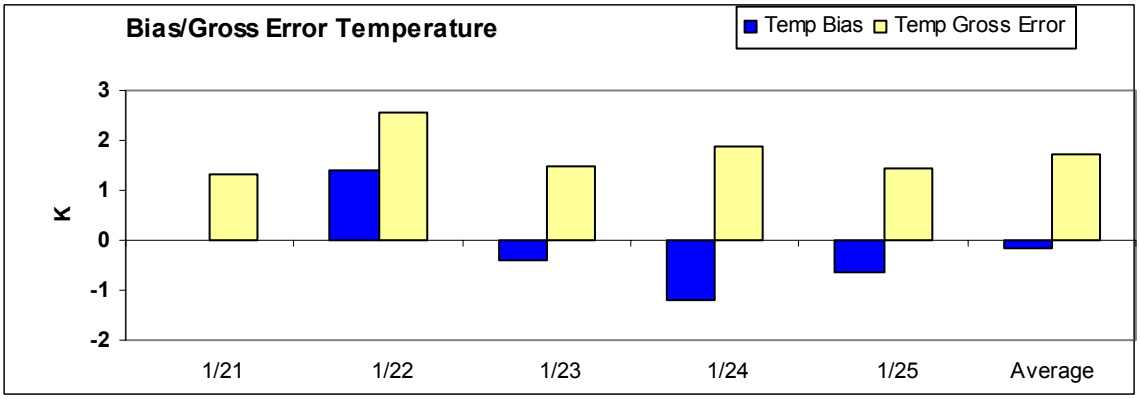

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
1/21
1/22
1/23
1/24
1/25
Average

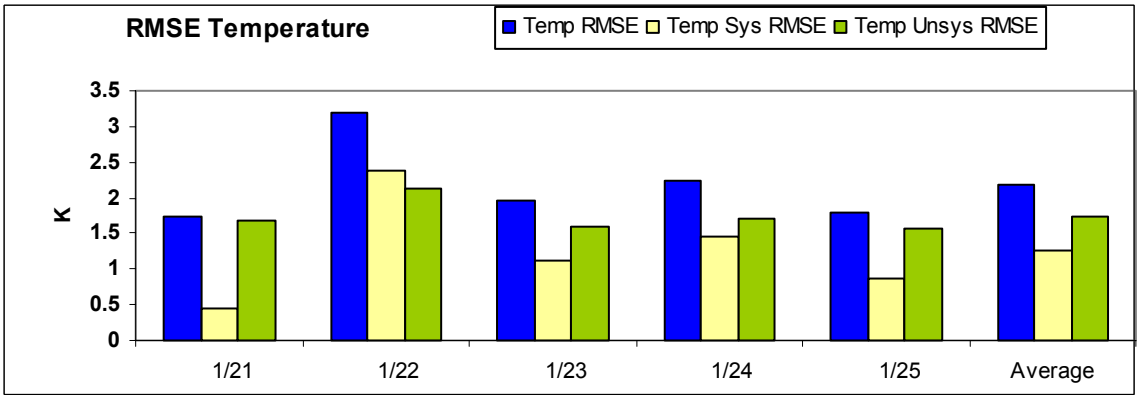

IOA Windspeed
Wind Spd IOA
1
0.5
0
1/21
1/22
1/23
1/24
1/25
Average

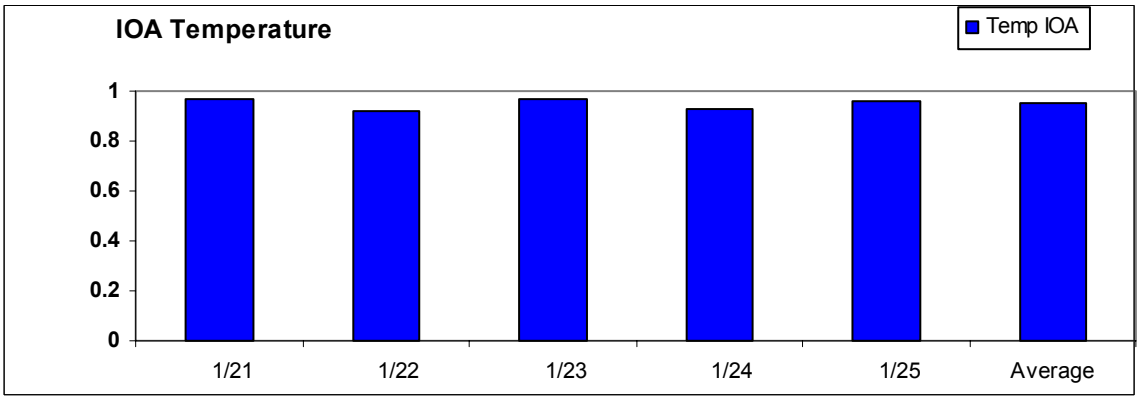

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
1/21
1/22
1/23
1/24
1/25
Average

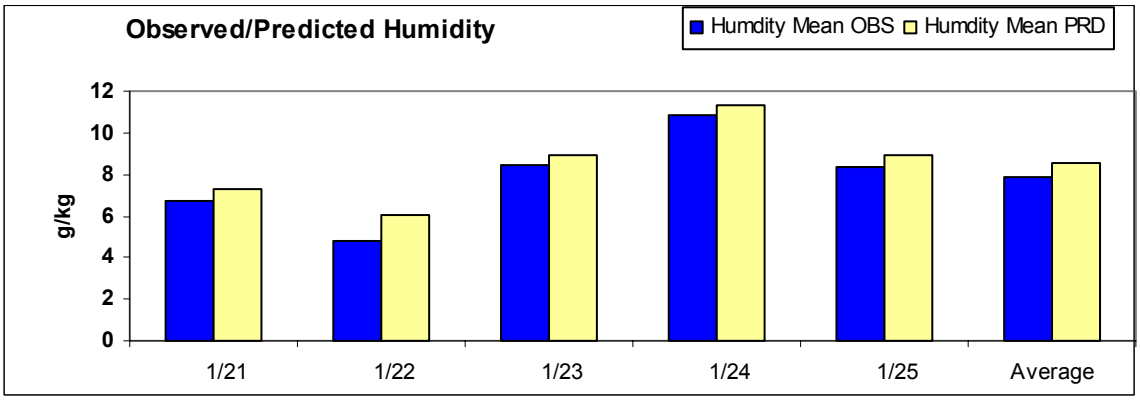

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
1/21
1/22
1/23
1/24
1/25
Average

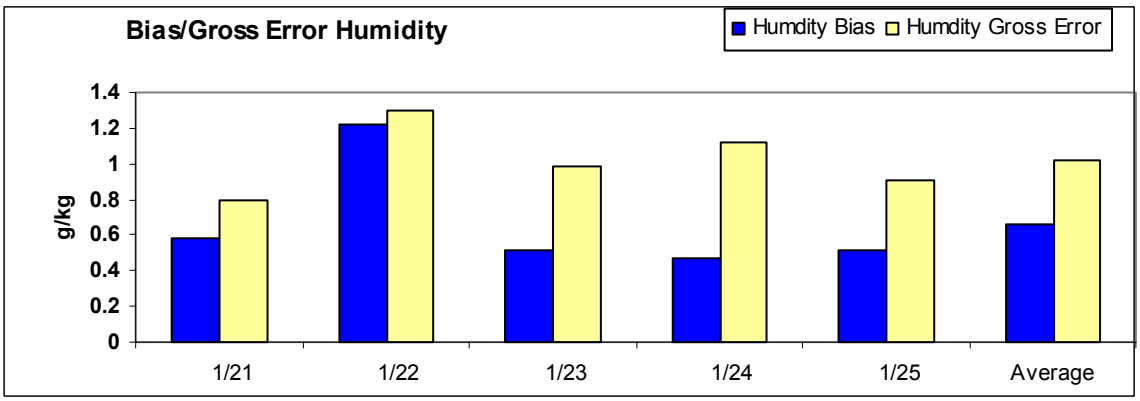

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
292
290
288
286
284
282
280
278
1/21
1/22
1/23
1/24
1/25
Average

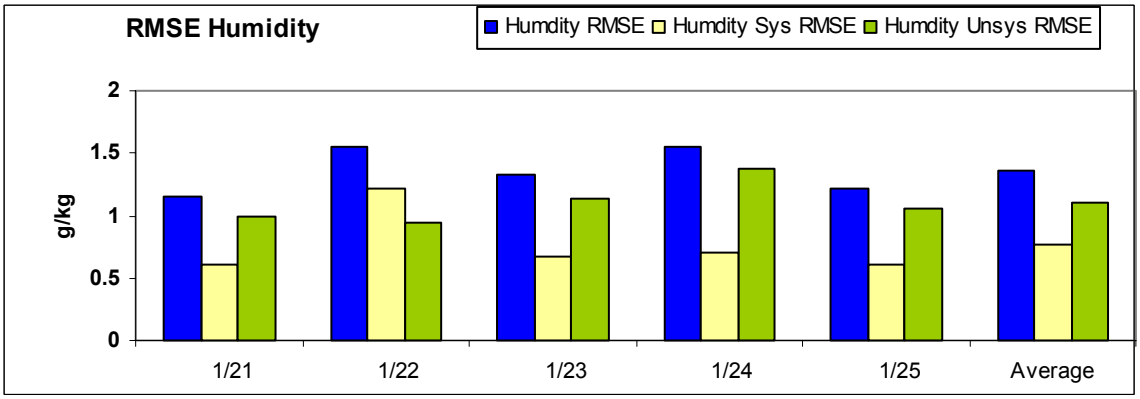

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
1/21
1/22
1/23
1/24
1/25
Average

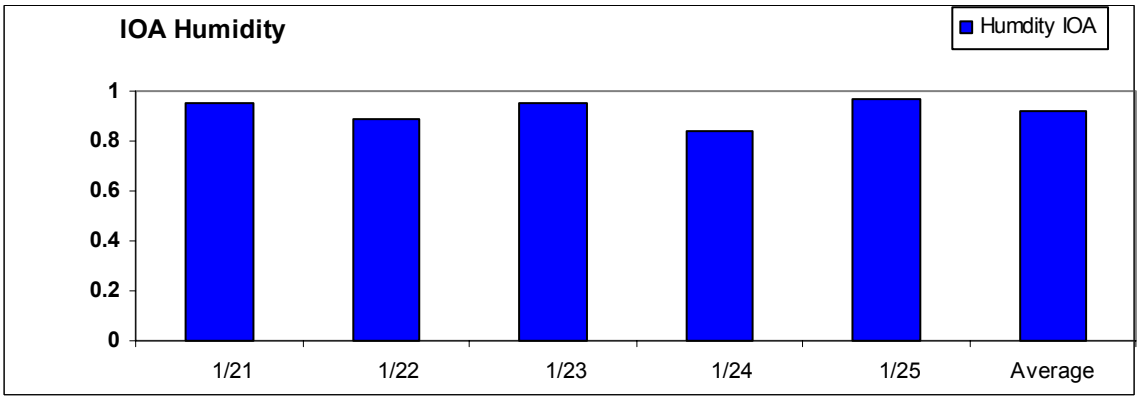

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
1/21
1/22
1/23
1/24
1/25
Average

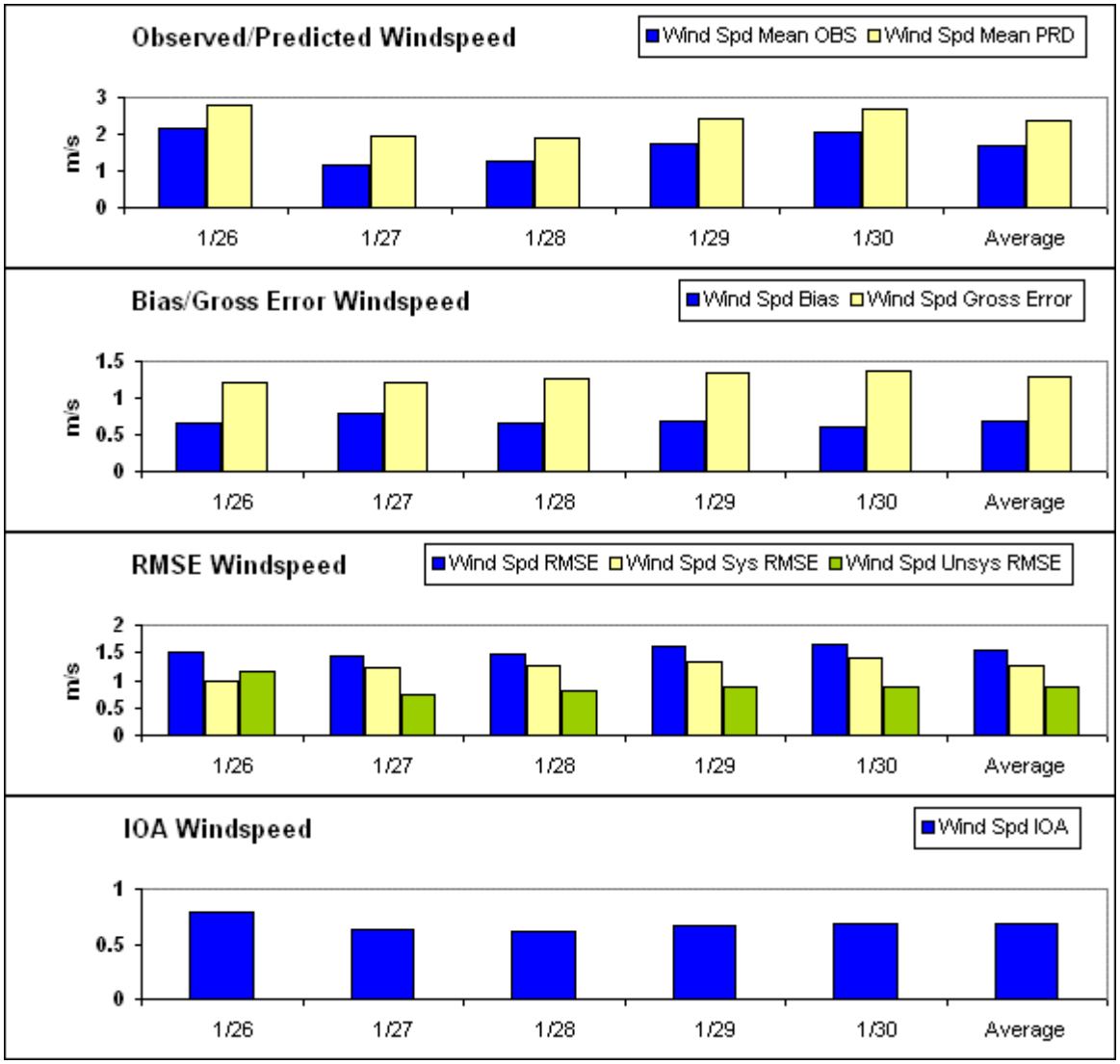

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
1/21
1/22
1/23
1/24
1/25
Average

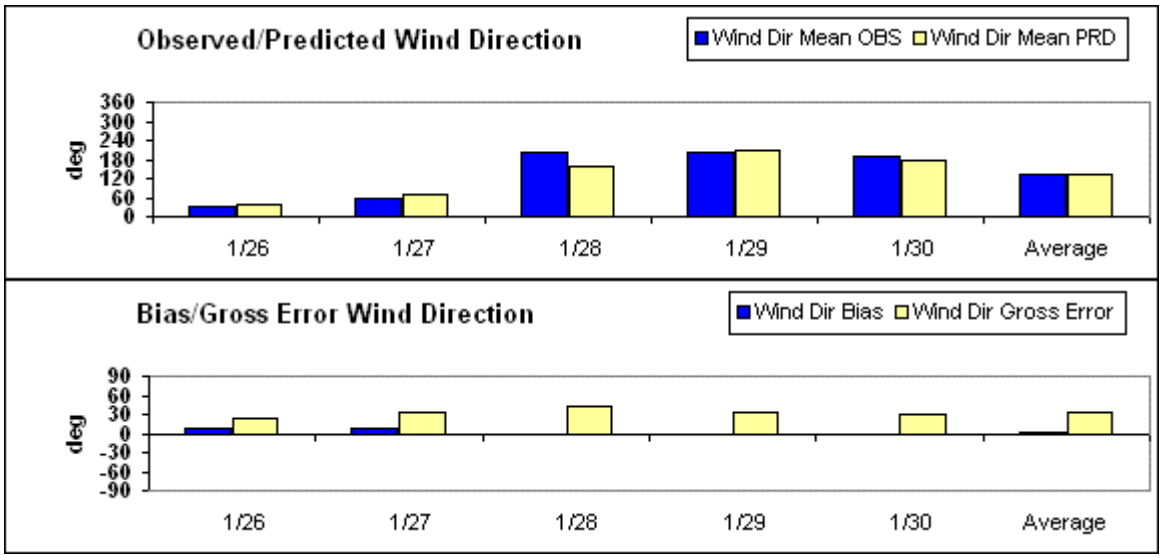

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
1/21
1/22
1/23
1/24
1/25
Average

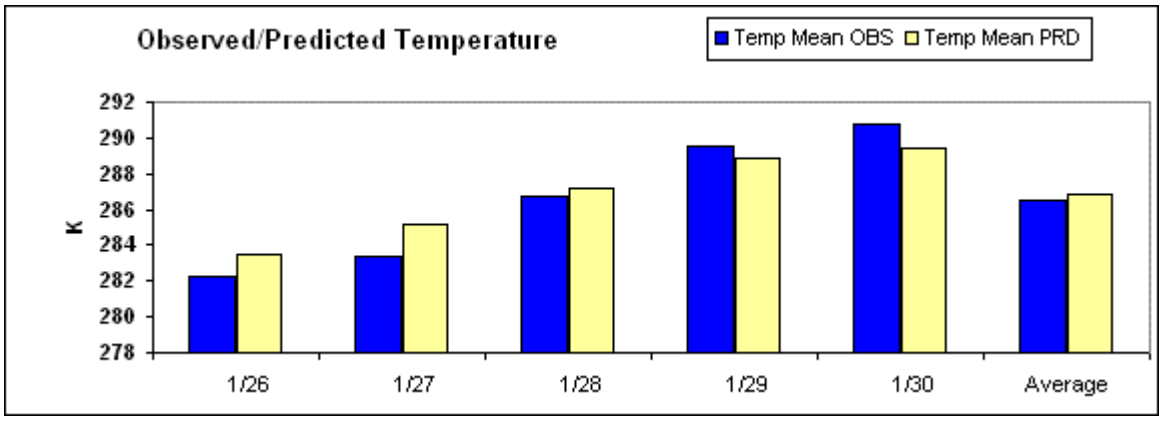

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1/21
1/22
1/23
1/24
1/25
Average

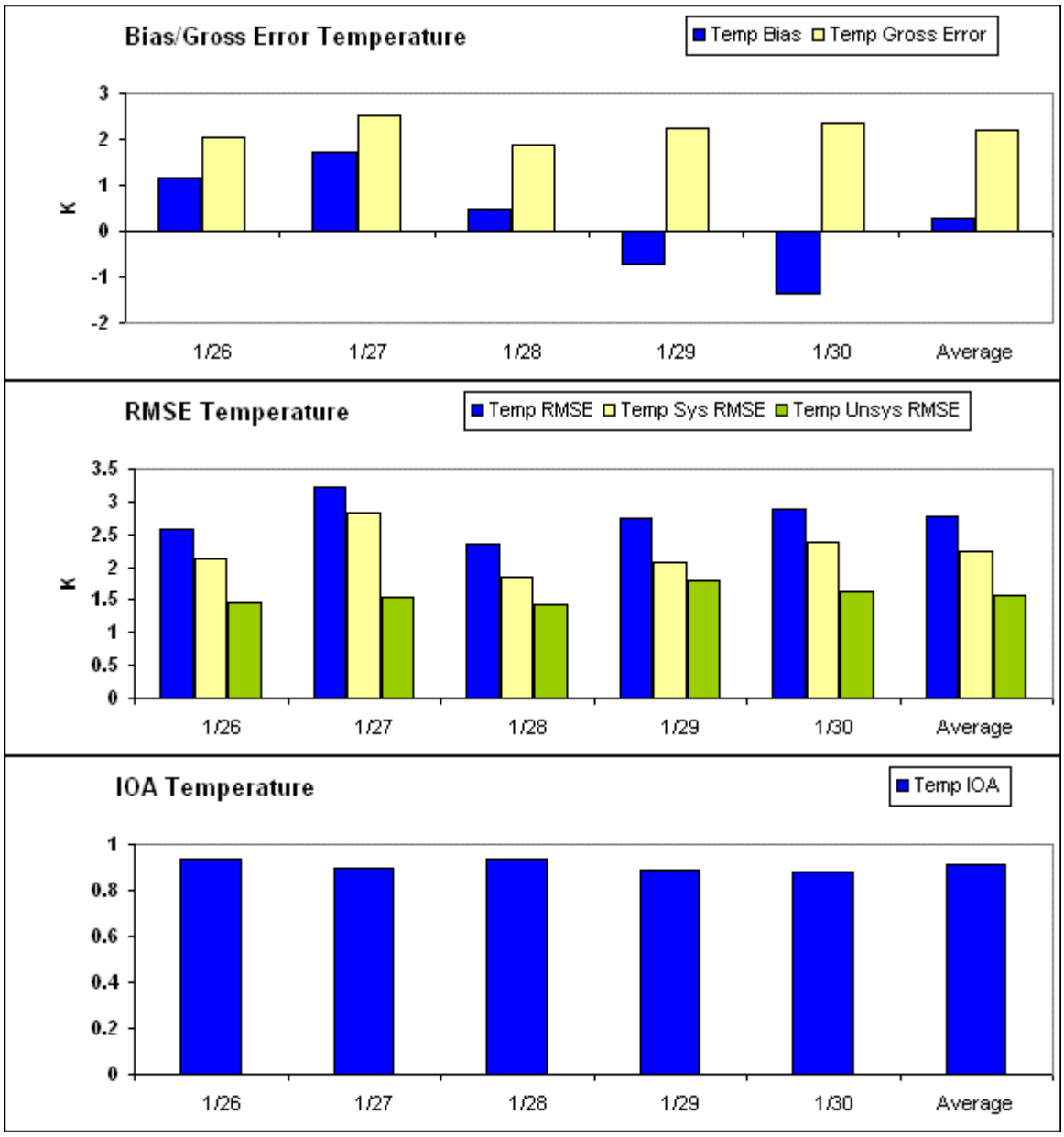

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
1/21
1/22
1/23
1/24
1/25
Average

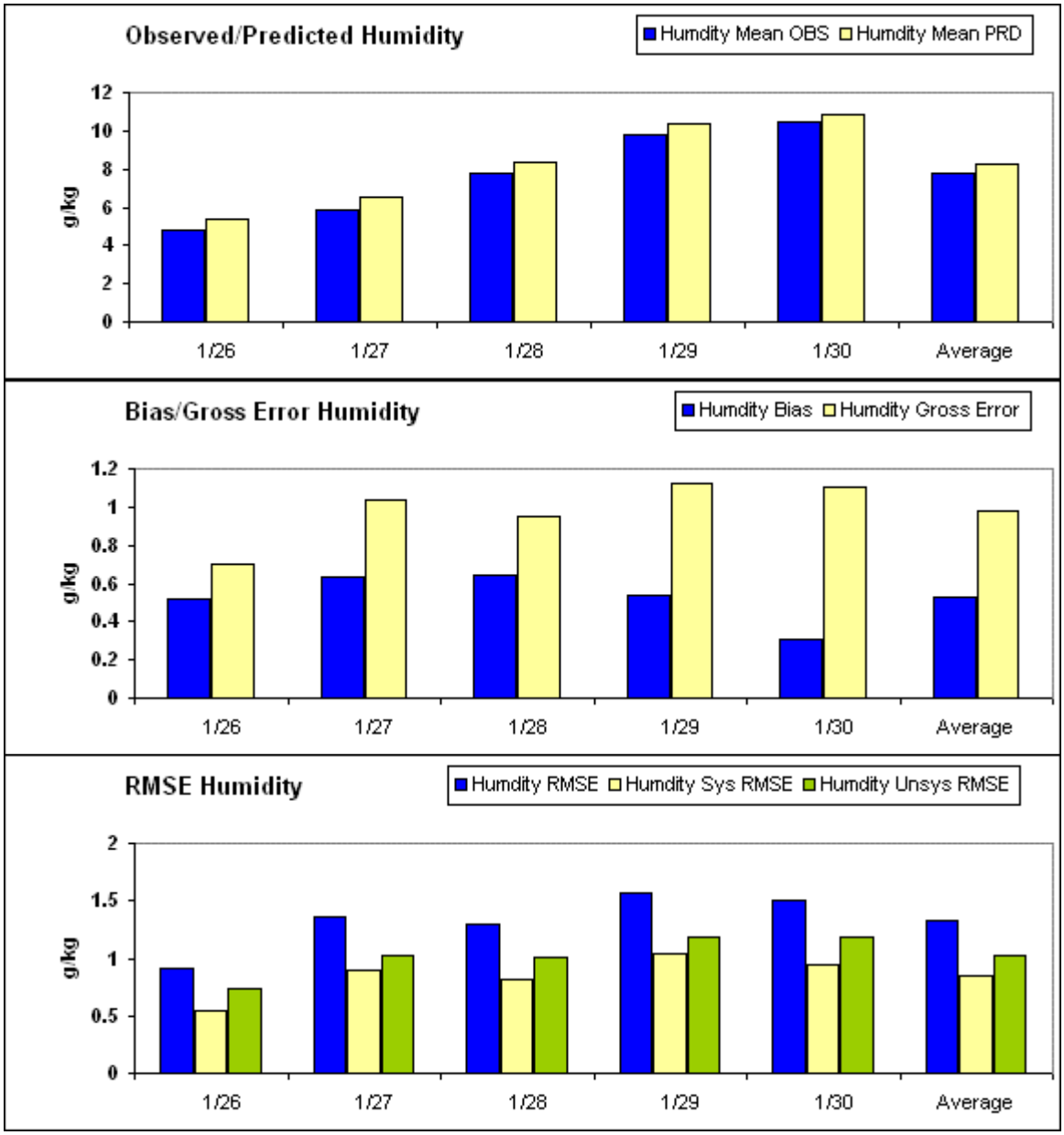

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
1/21
1/22
1/23
1/24
1/25
Average

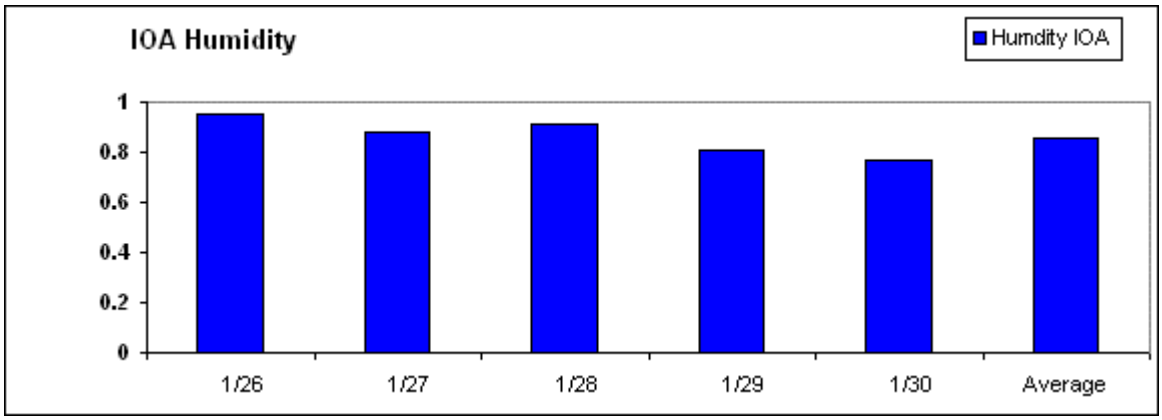

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
1/26
1/27
1/28
1/29
1/30
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
1/26
1/27
1/28
1/29
1/30
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
1/26
1/27
1/28
1/29
1/30
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
1/26
1/27
1/28
1/29
1/30
Average

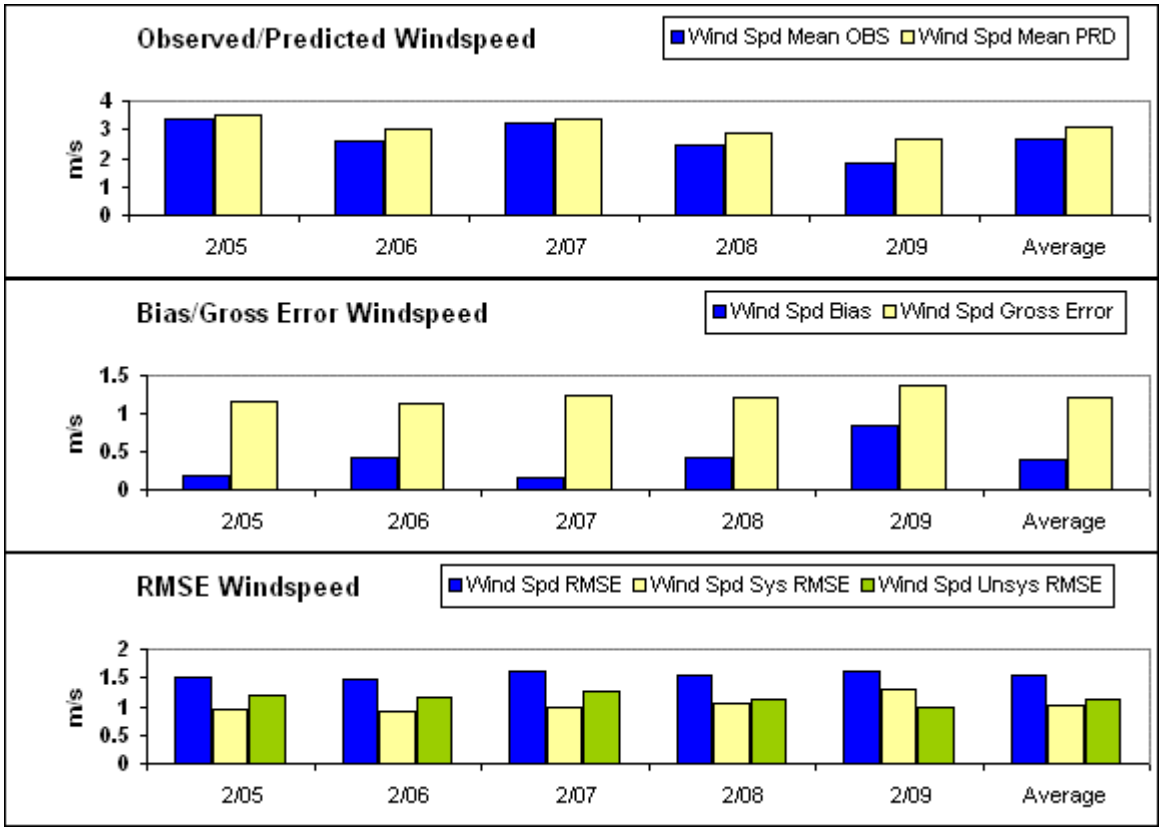

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
1/26
1/27
1/28
1/29
1/30
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
1/26
1/27
1/28
1/29
1/30
Average

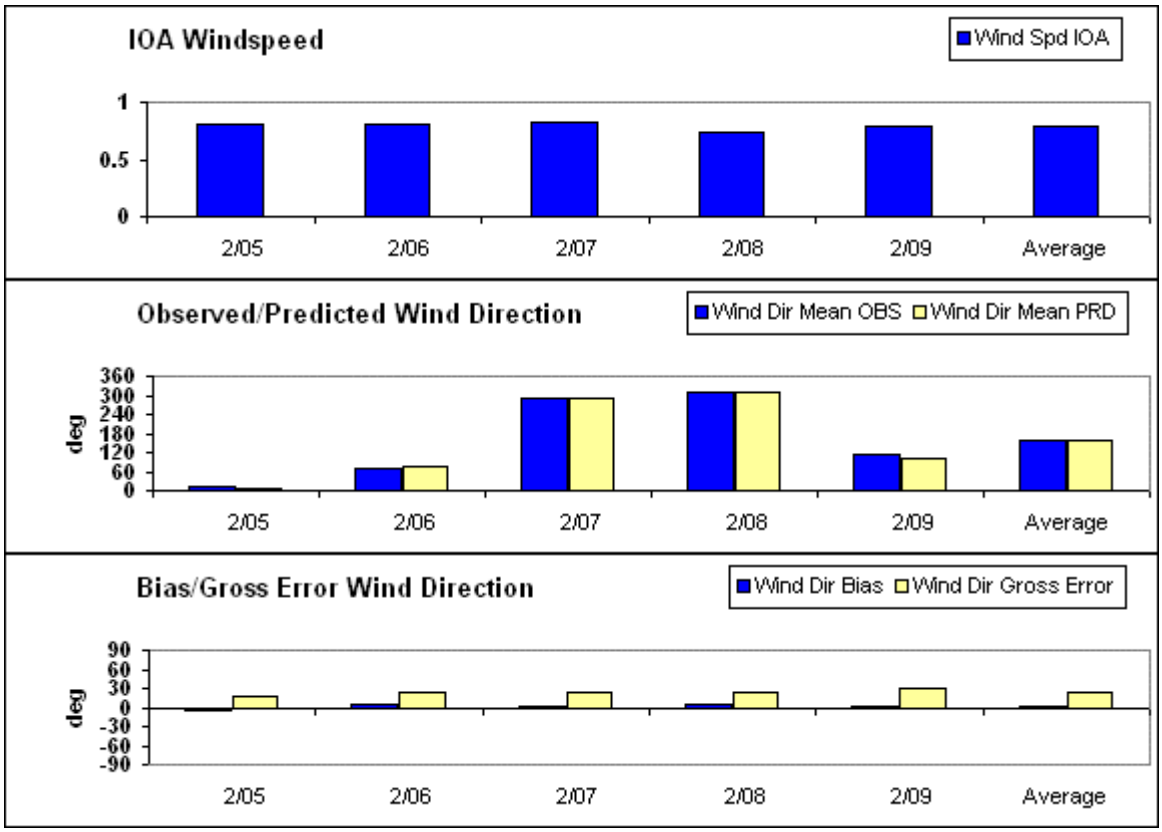

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
292
290
288
286
284
282
280
278
1/26
1/27
1/28
1/29
1/30
Average

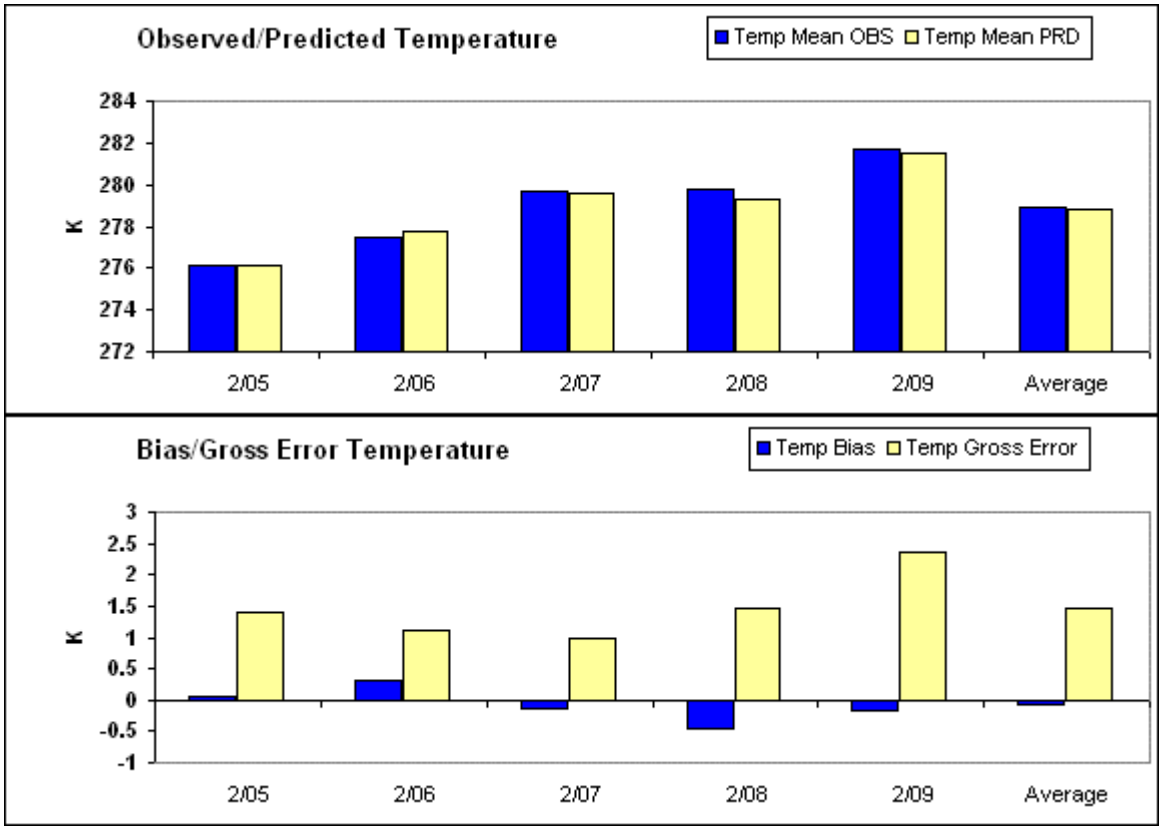

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
1/26
1/27
1/28
1/29
1/30
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
1/26
1/27
1/28
1/29
1/30
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
1/26
1/27
1/28
1/29
1/30
Average

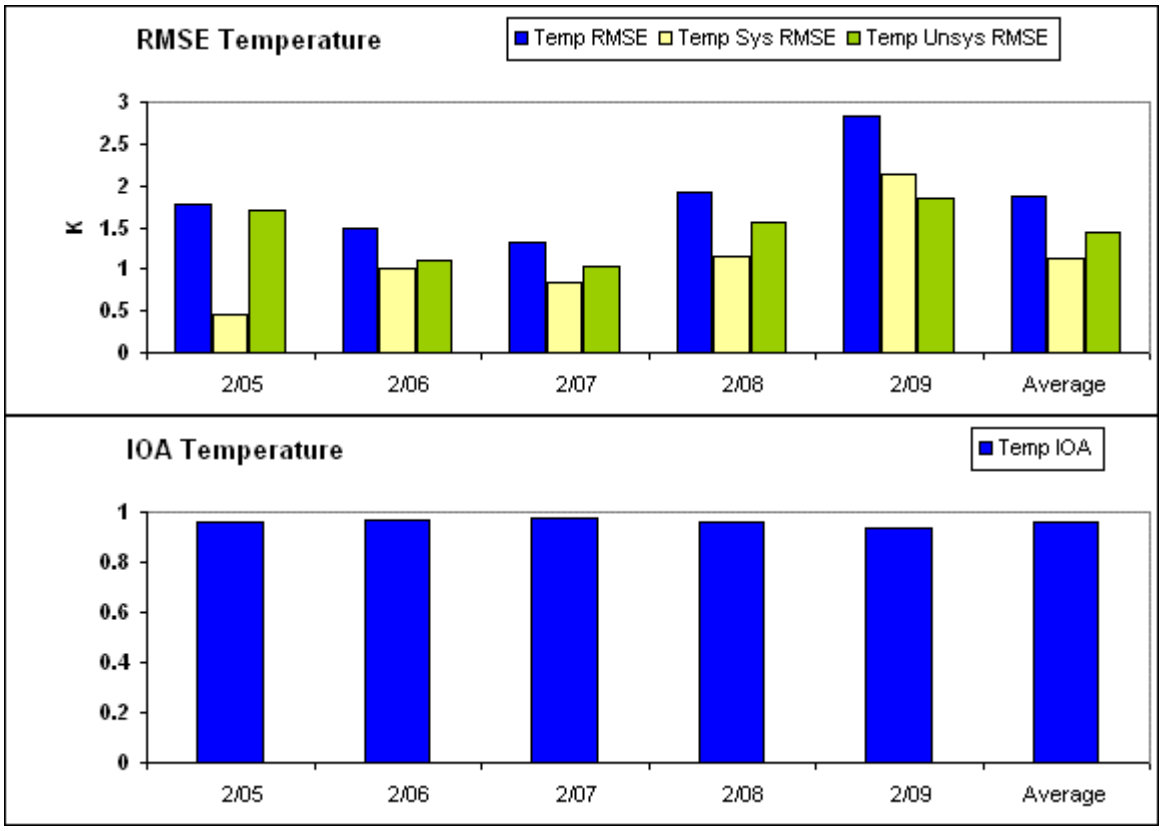

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
1/26
1/27
1/28
1/29
1/30
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
1/26
1/27
1/28
1/29
1/30
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
1/26
1/27
1/28
1/29
1/30
Average

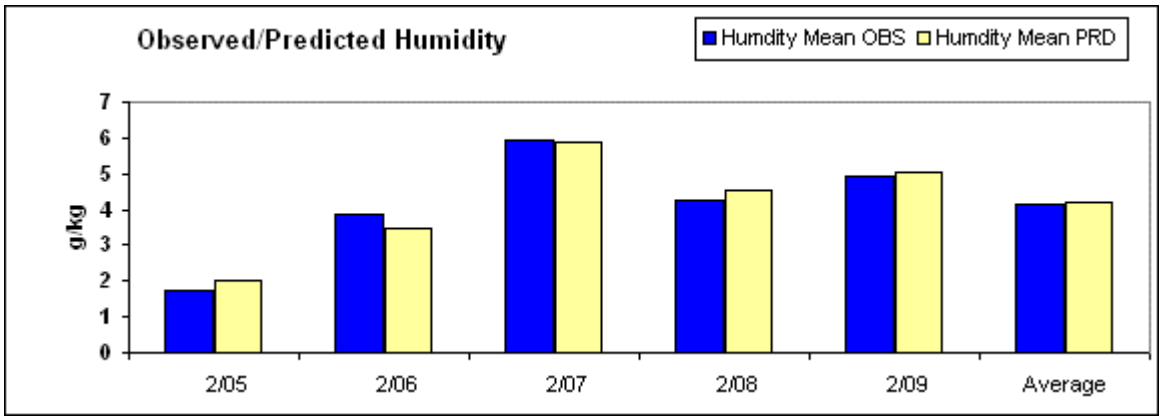

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
1/26
1/27
1/28
1/29
1/30
Average

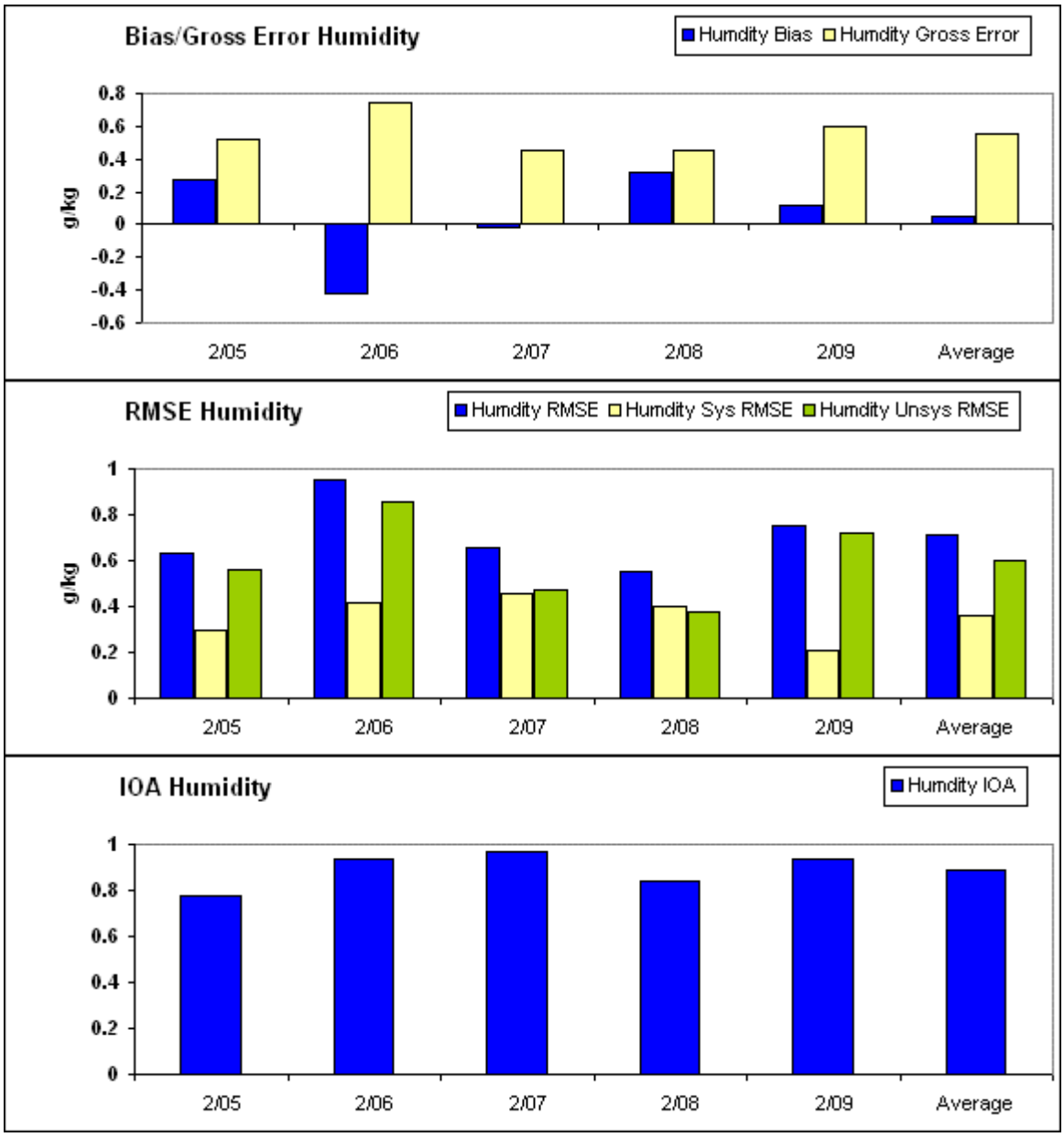

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
2/05
2/06
2/07
2/08
2/09
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
2/05
2/06
2/07
2/08
2/09
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
2/05
2/06
2/07
2/08
2/09
Average

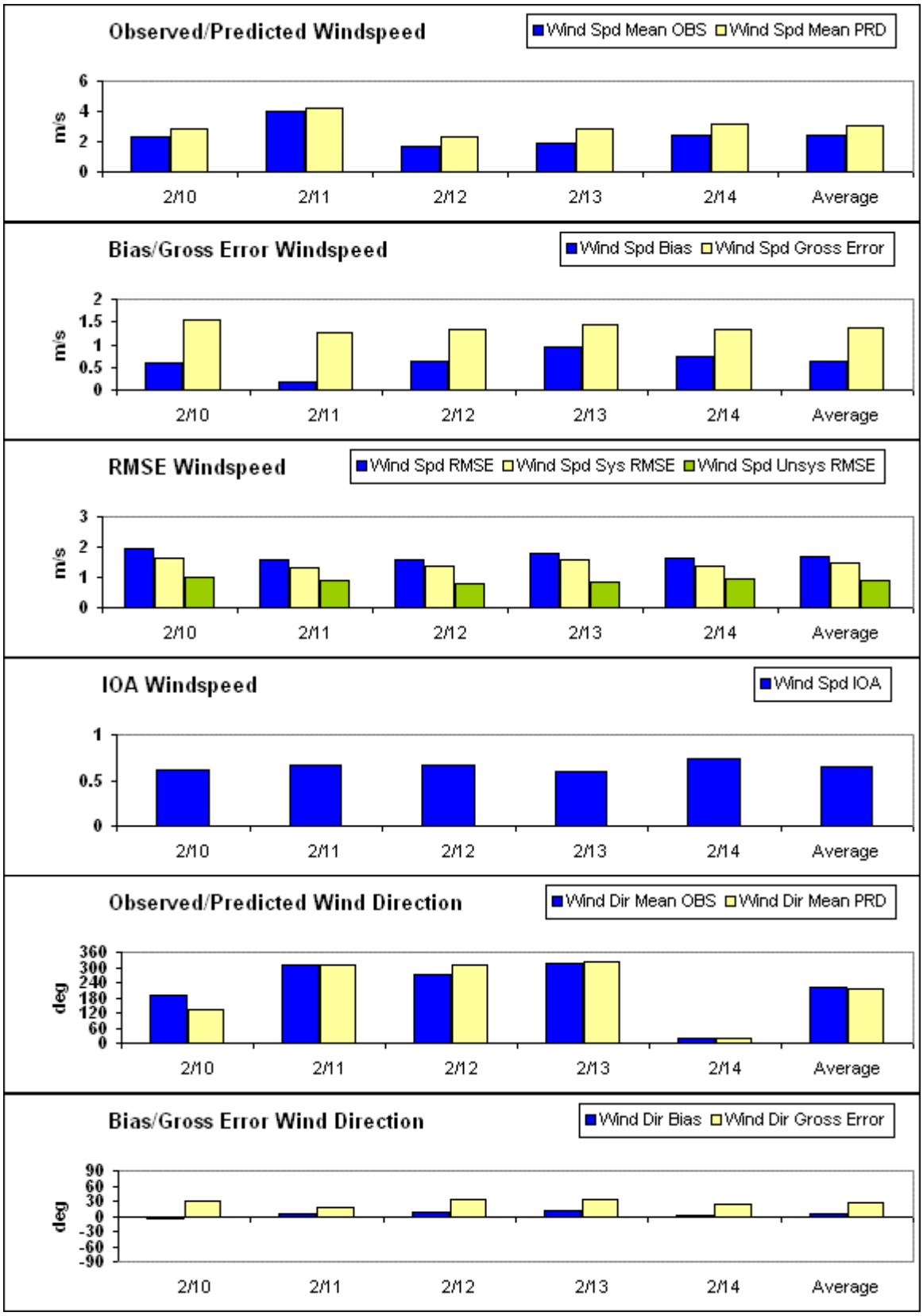

IOA Windspeed
Wind Spd IOA
1
0.5
0
2/05
2/06
2/07
2/08
2/09
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
2/05
2/06
2/07
2/08
2/09
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
2/05
2/06
2/07
2/08
2/09
Average

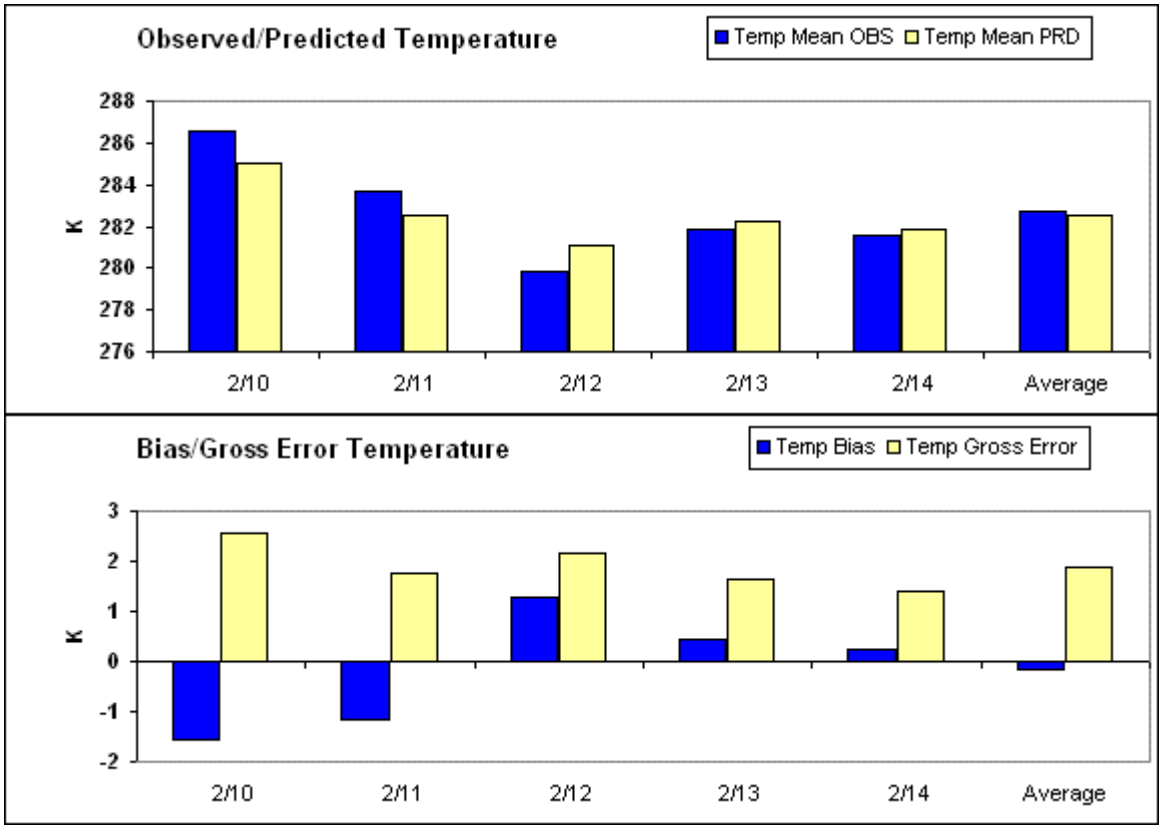

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
284
282
280
278
276
274
272
2/05
2/06
2/07
2/08
2/09
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2.5
2
1.5
1
0.5
0
-0.5
-1
2/05
2/06
2/07
2/08
2/09
Average

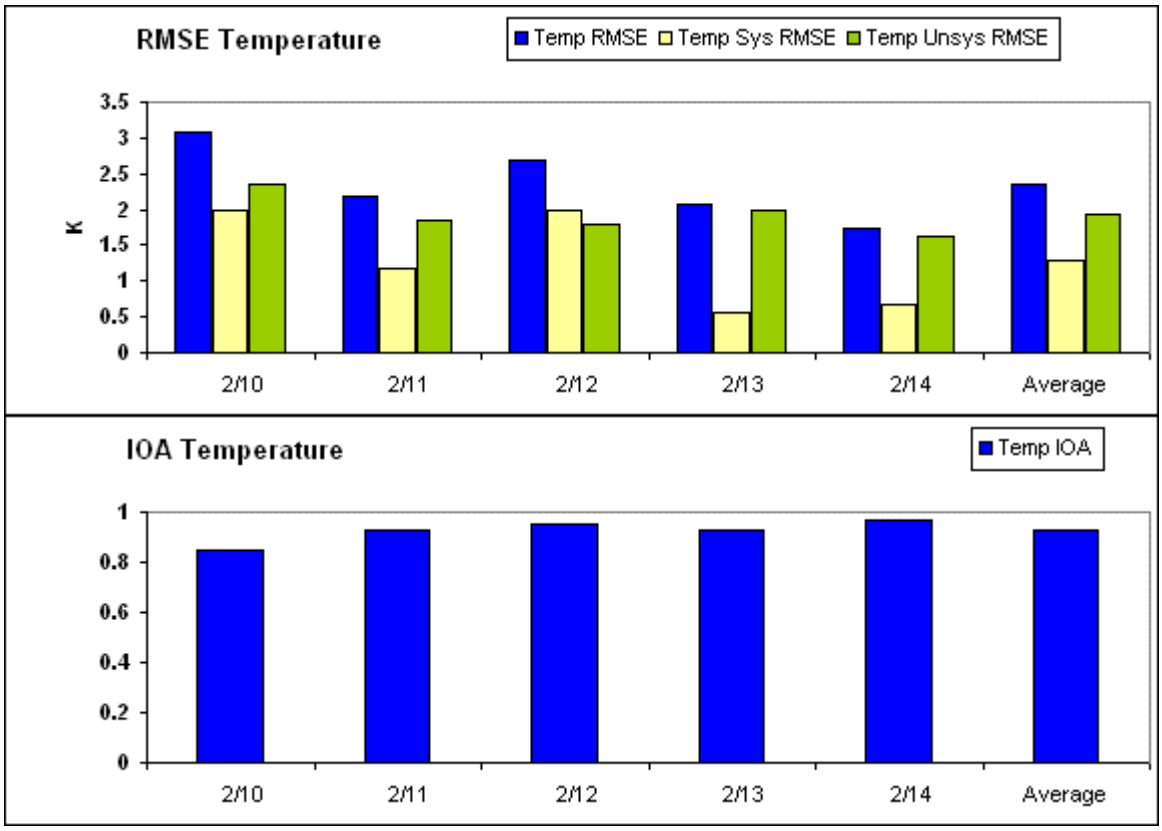

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
2/05
2/06
2/07
2/08
2/09
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
2/05
2/06
2/07
2/08
2/09
Average

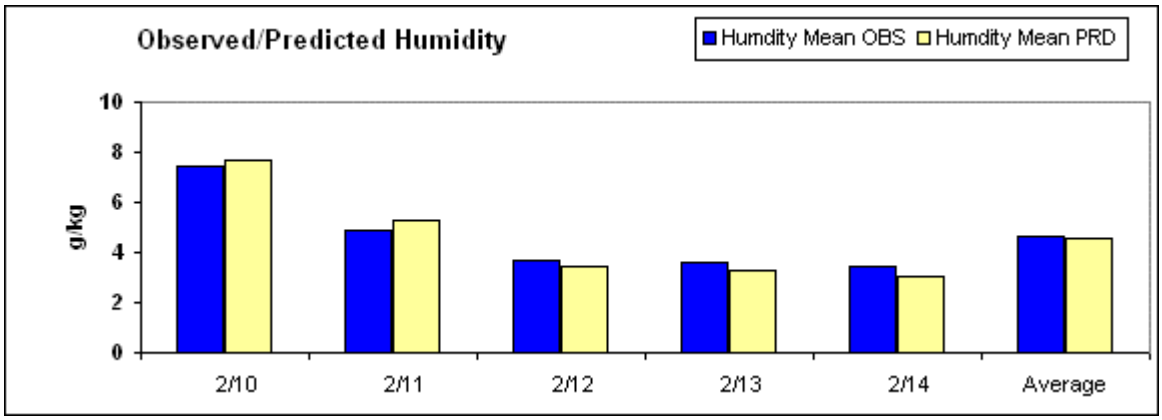

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
7
6
5
4
3
2
1
0
2/05
2/06
2/07
2/08
2/09
Average

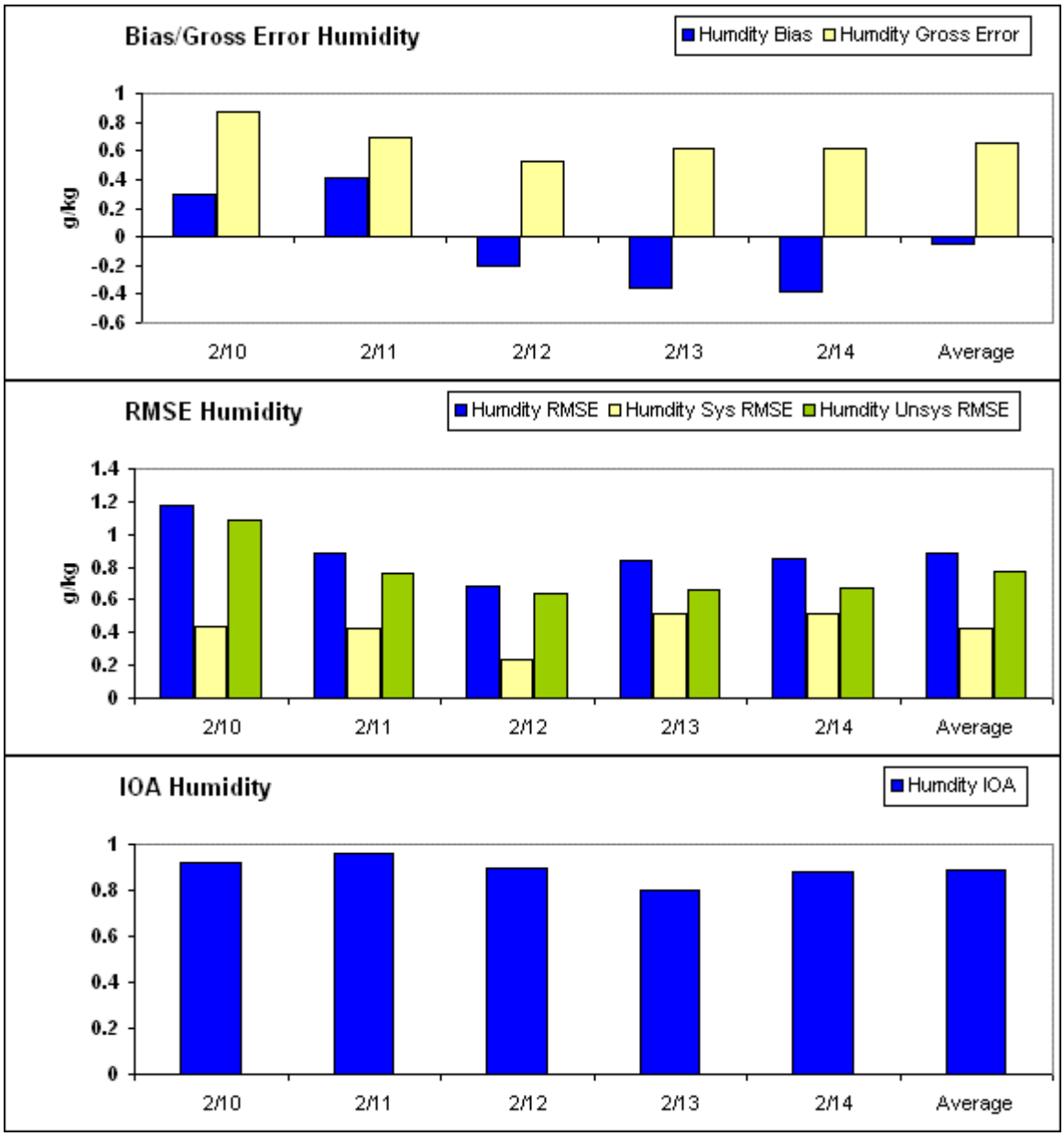

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
2/05
2/06
2/07
2/08
2/09
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1
0.8
0.6
0.4
0.2
0
2/05
2/06
2/07
2/08
2/09
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
2/05
2/06
2/07
2/08
2/09
Average

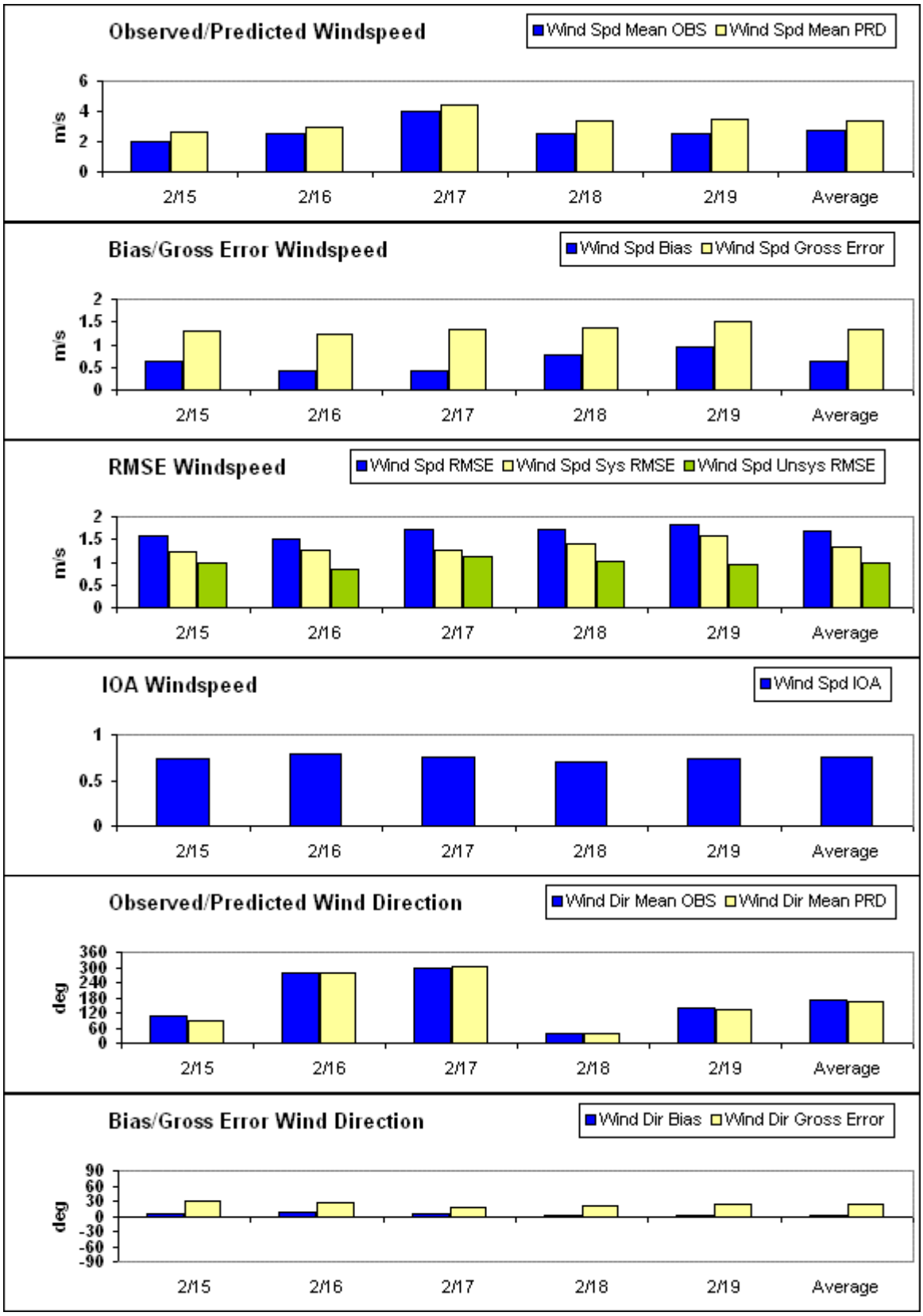

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
2/10
2/11
2/12
2/13
2/14
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
2/10
2/11
2/12
2/13
2/14
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
2/10
2/11
2/12
2/13
2/14
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
2/10
2/11
2/12
2/13
2/14
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
2/10
2/11
2/12
2/13
2/14
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
2/10
2/11
2/12
2/13
2/14
Average

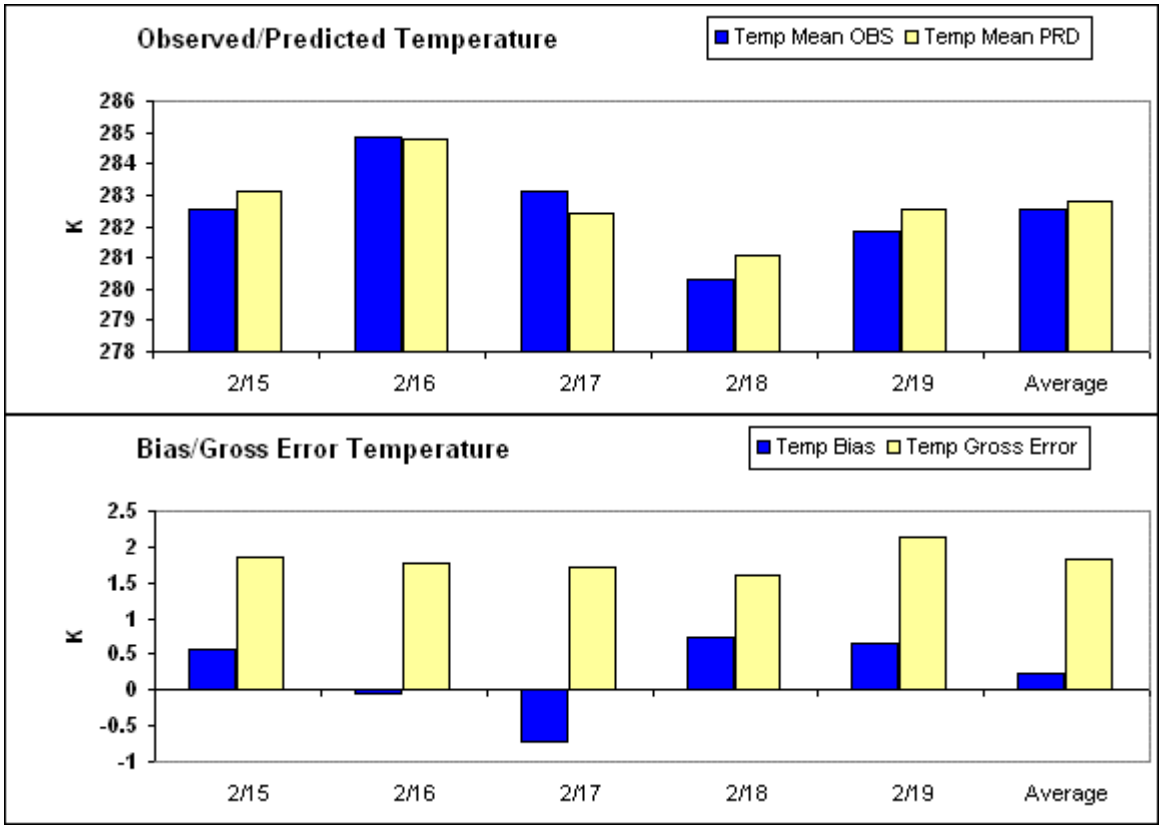

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
288
286
284
282
280
278
276
2/10
2/11
2/12
2/13
2/14
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
2/10
2/11
2/12
2/13
2/14
Average

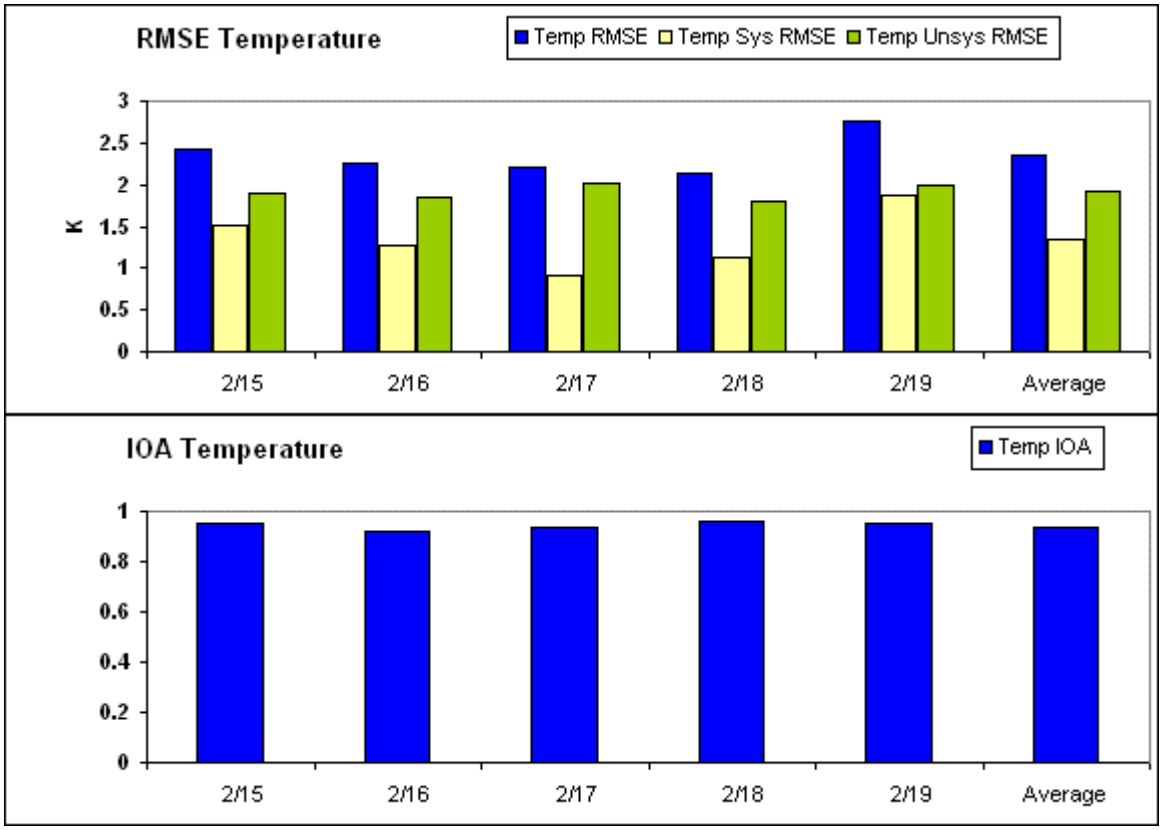

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
2/10
2/11
2/12
2/13
2/14
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
2/10
2/11
2/12
2/13
2/14
Average

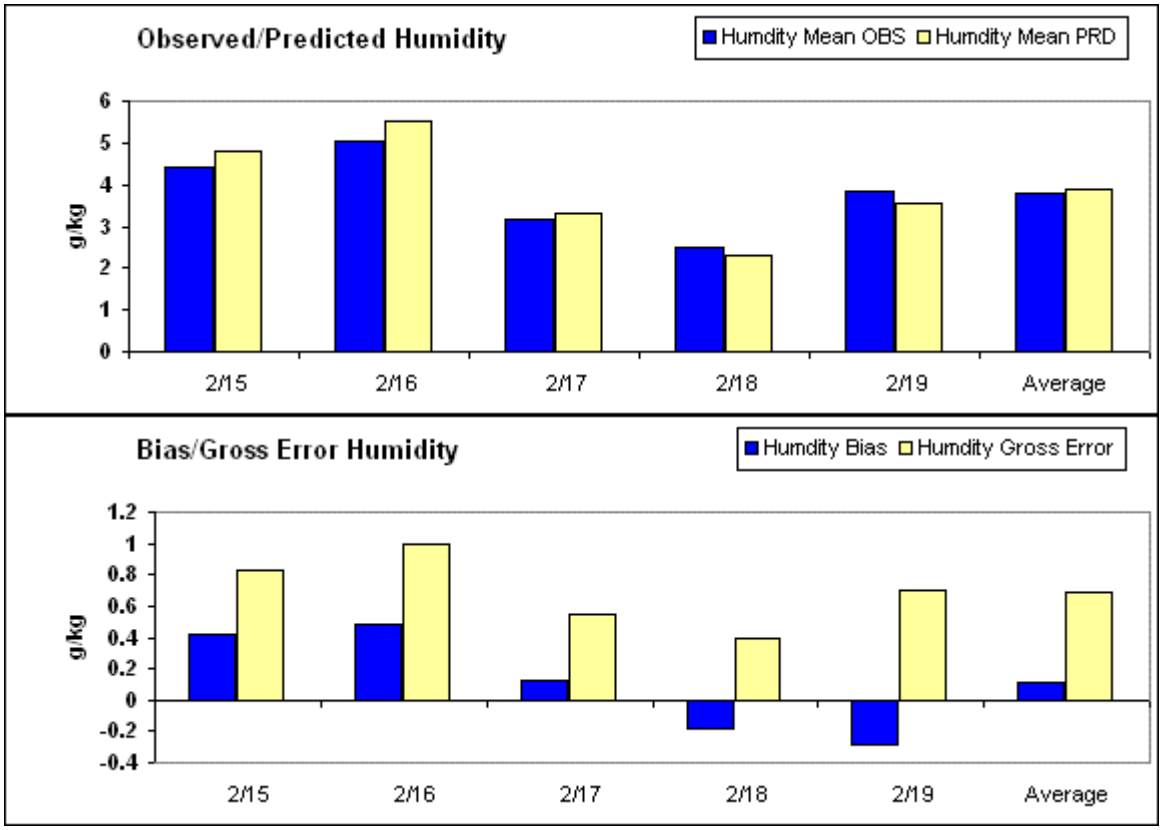

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
10
8
6
4
2
0
2/10
2/11
2/12
2/13
2/14
Average

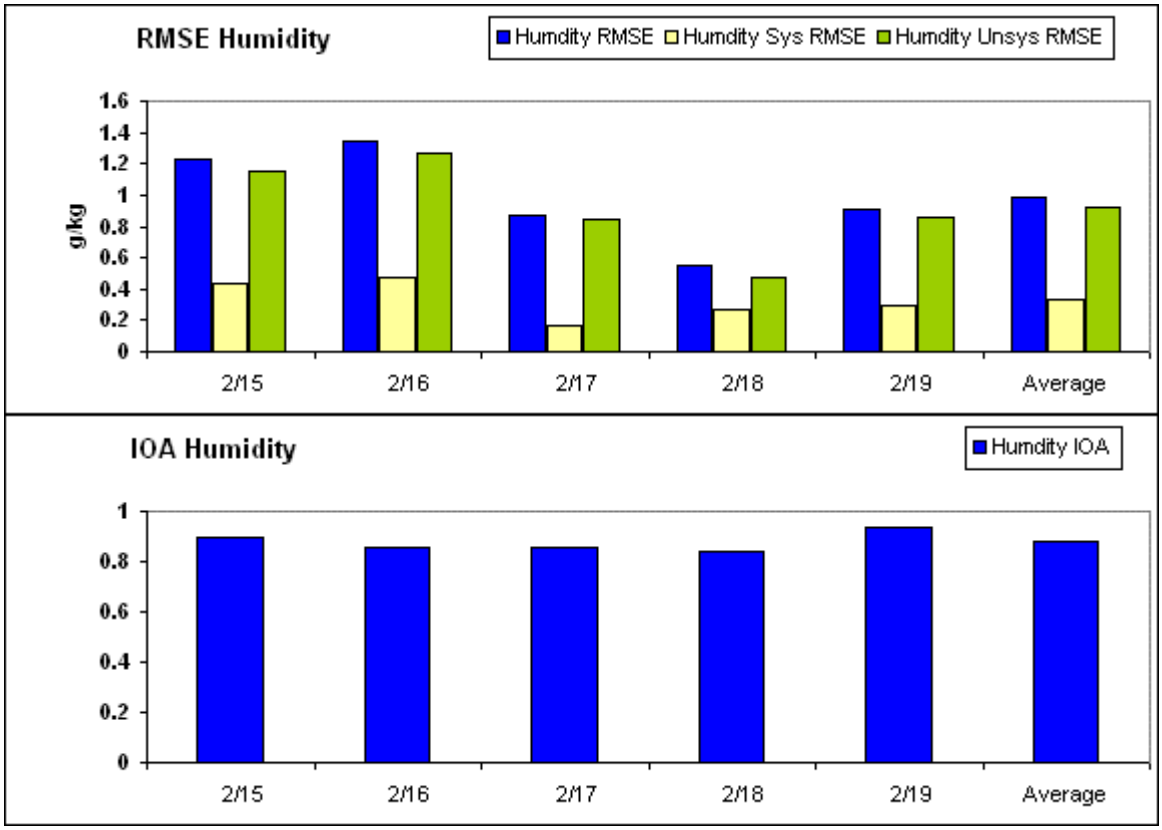

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
2/10
2/11
2/12
2/13
2/14
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2/10
2/11
2/12
2/13
2/14
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
2/10
2/11
2/12
2/13
2/14
Average

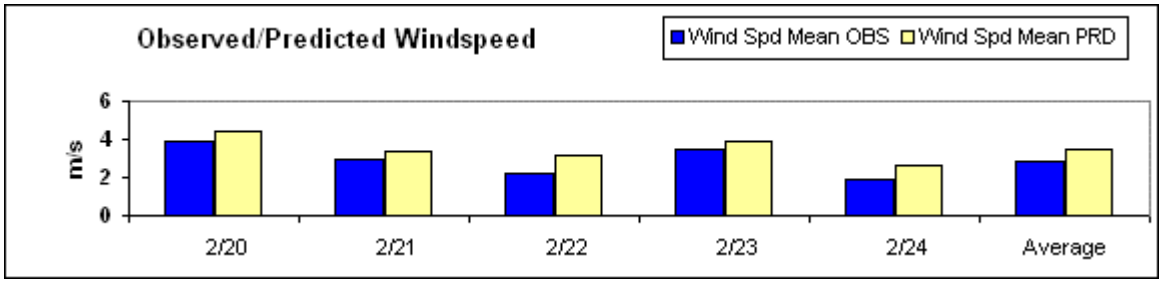

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
2/15
2/16
2/17
2/18
2/19
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
2/15
2/16
2/17
2/18
2/19
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
2/15
2/16
2/17
2/18
2/19
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
2/15
2/16
2/17
2/18
2/19
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
2/15
2/16
2/17
2/18
2/19
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
2/15
2/16
2/17
2/18
2/19
Average

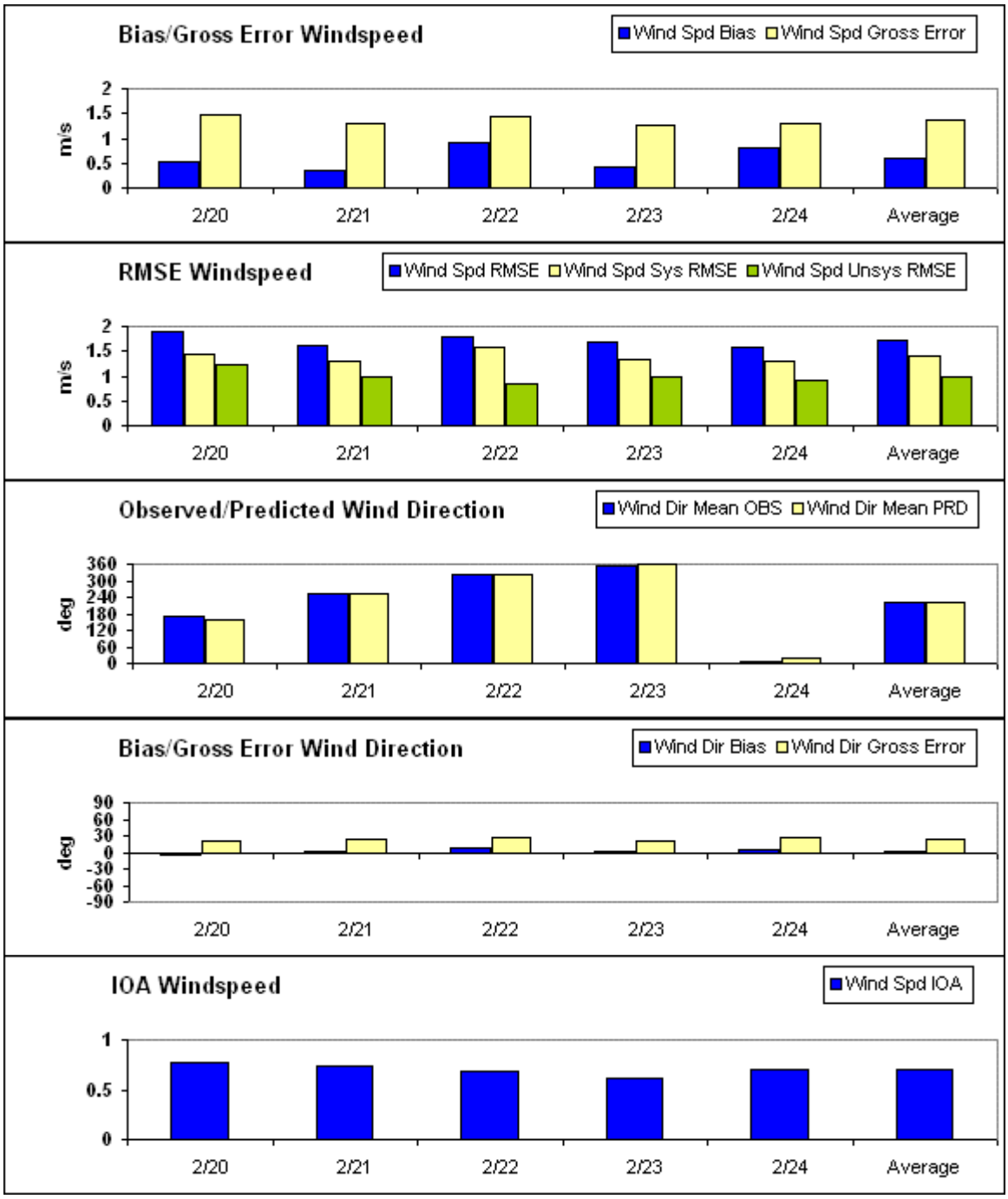

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
286
285
284
283
282
281
280
279
278
2/15
2/16
2/17
2/18
2/19
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
2/15
2/16
2/17
2/18
2/19
Average

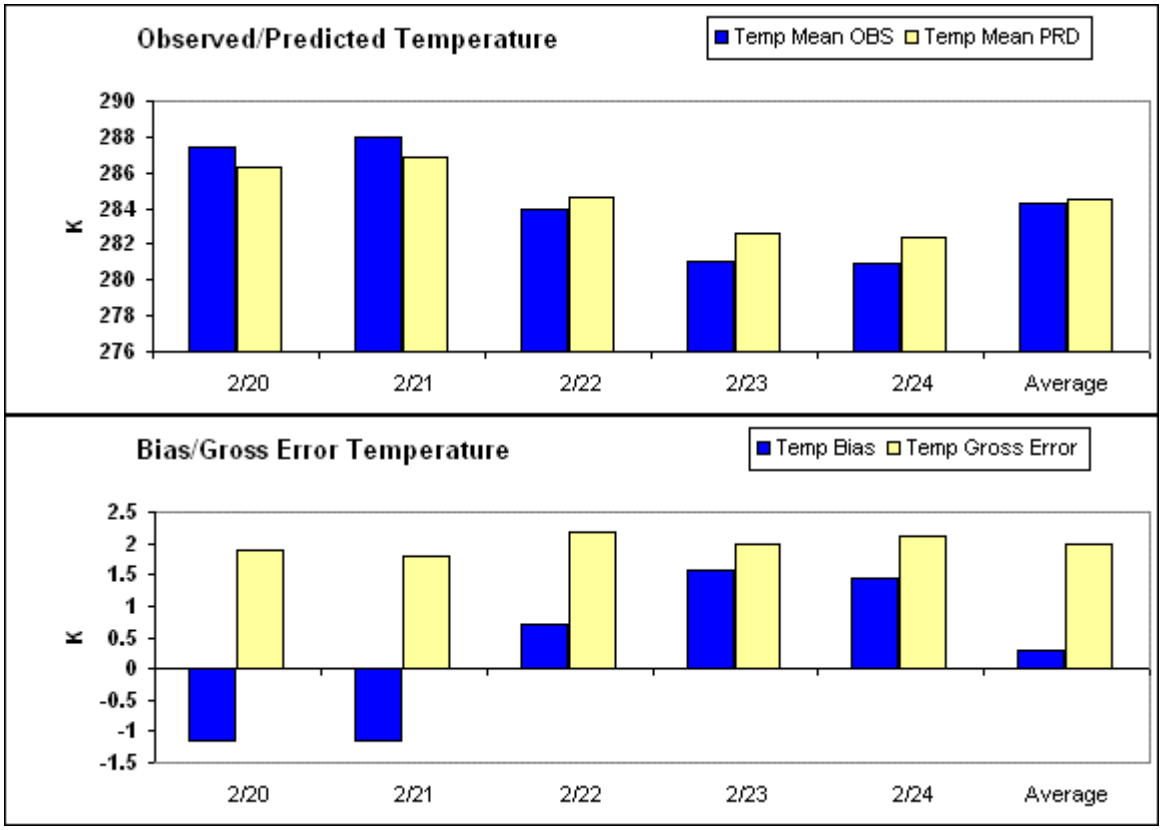

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
2/15
2/16
2/17
2/18
2/19
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
2/15
2/16
2/17
2/18
2/19
Average

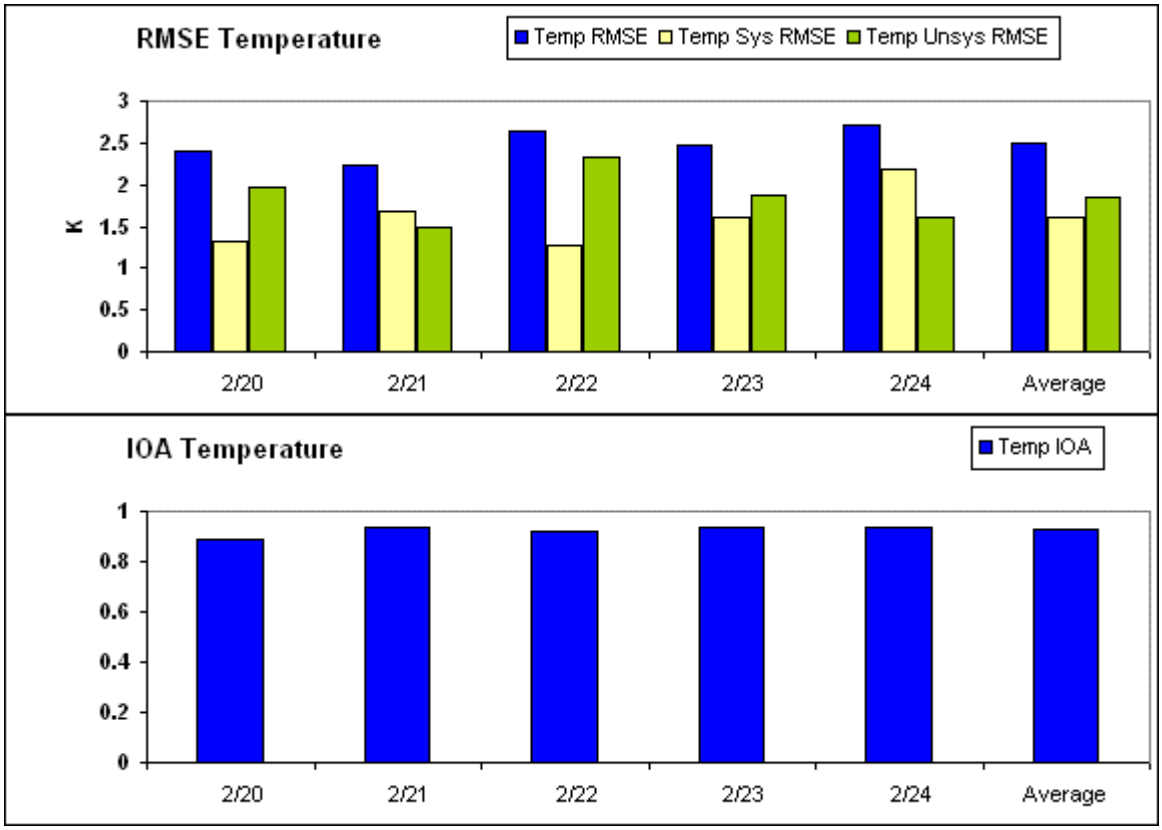

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
6
5
4
3
2
1
0
2/15
2/16
2/17
2/18
2/19
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
2/15
2/16
2/17
2/18
2/19
Average

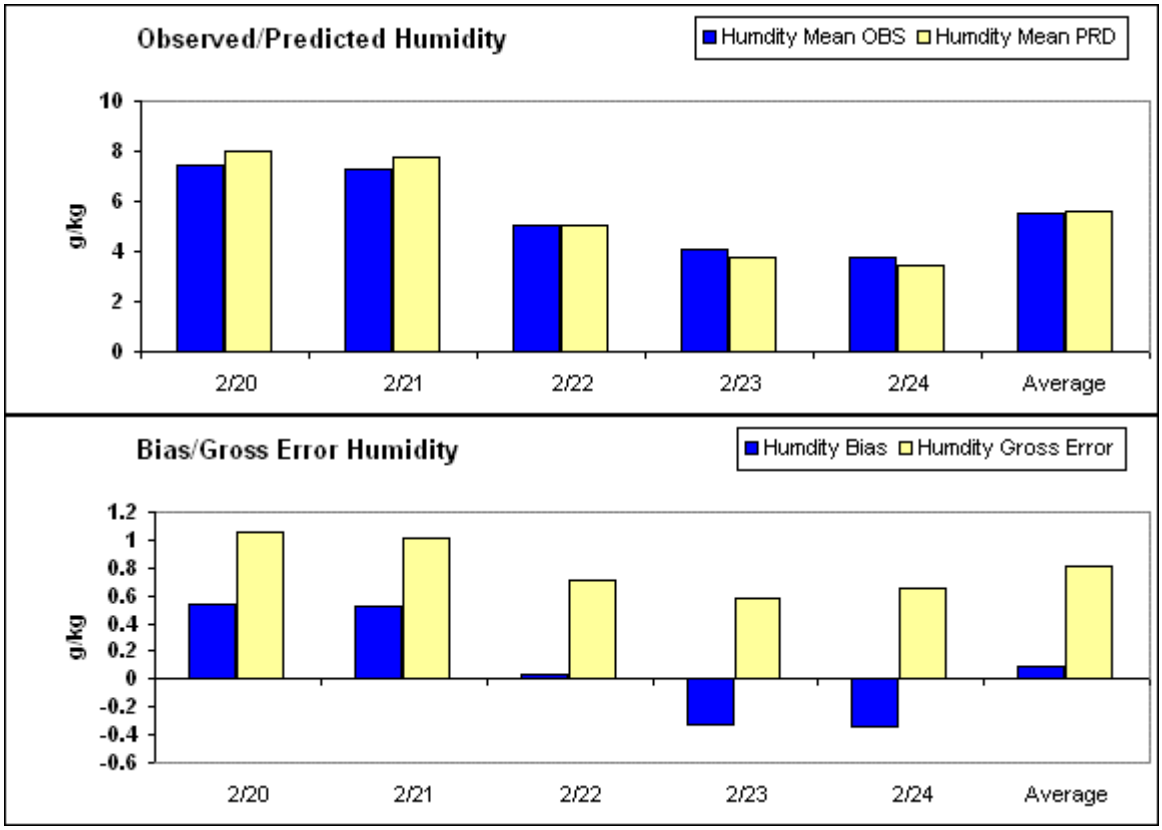

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2/15
2/16
2/17
2/18
2/19
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
2/15
2/16
2/17
2/18
2/19
Average

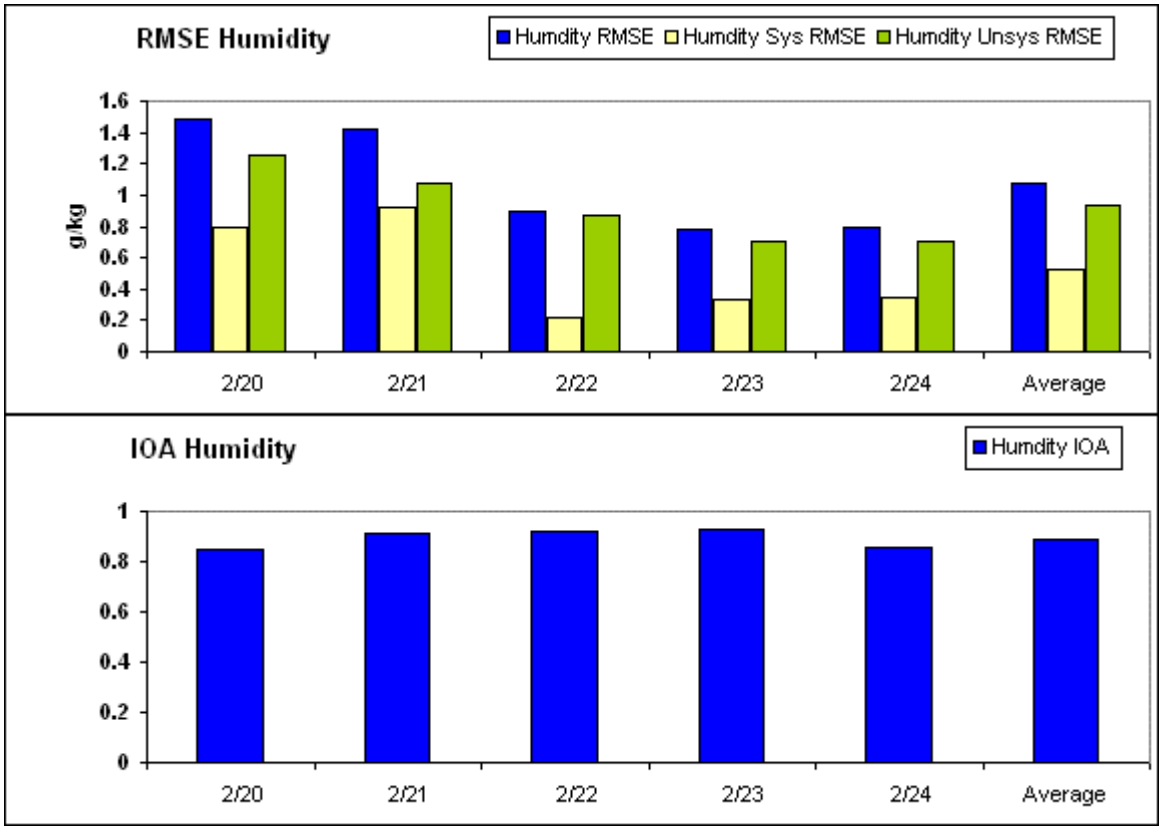

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
2/20
2/21
2/22
2/23
2/24
Average

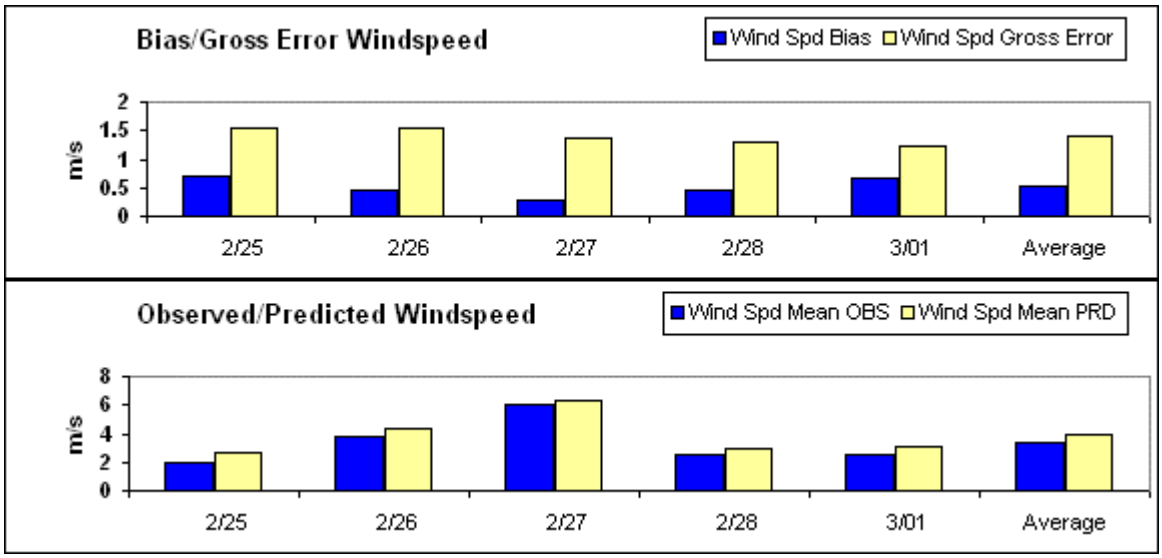

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
2/20
2/21
2/22
2/23
2/24
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
2/20
2/21
2/22
2/23
2/24
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
2/20
2/21
2/22
2/23
2/24
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
2/20
2/21
2/22
2/23
2/24
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
2/20
2/21
2/22
2/23
2/24
Average

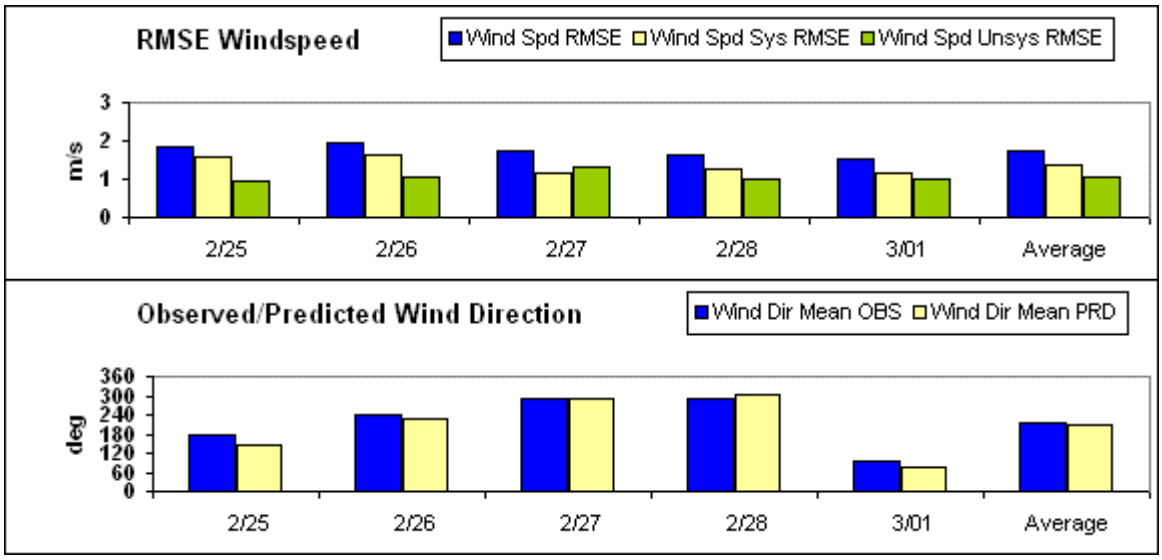

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
290
288
286
284
282
280
278
276
2/20
2/21
2/22
2/23
2/24
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
2/20
2/21
2/22
2/23
2/24
Average

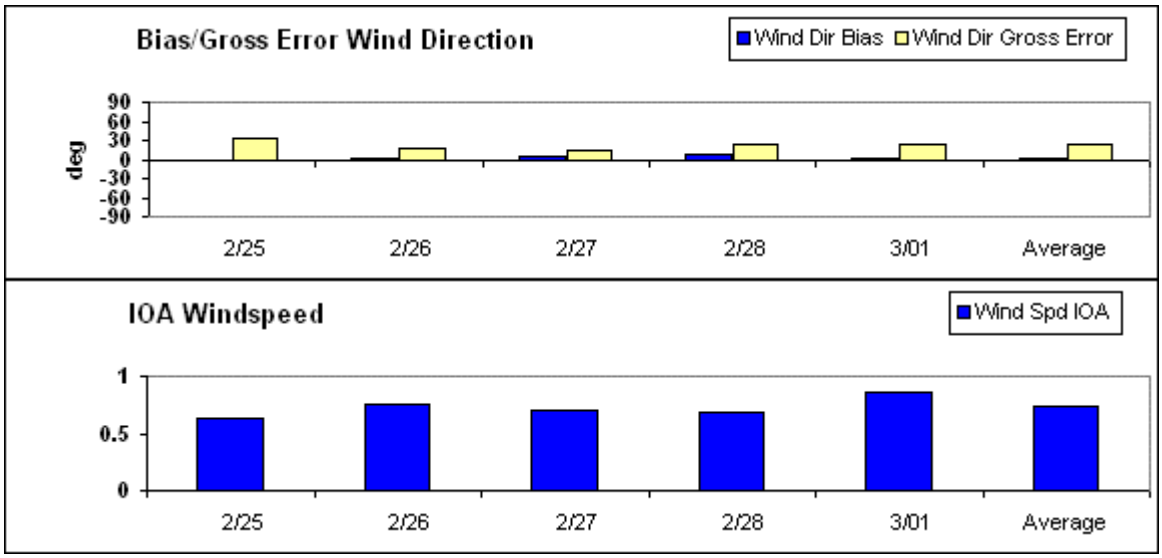

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
2/20
2/21
2/22
2/23
2/24
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
2/20
2/21
2/22
2/23
2/24
Average

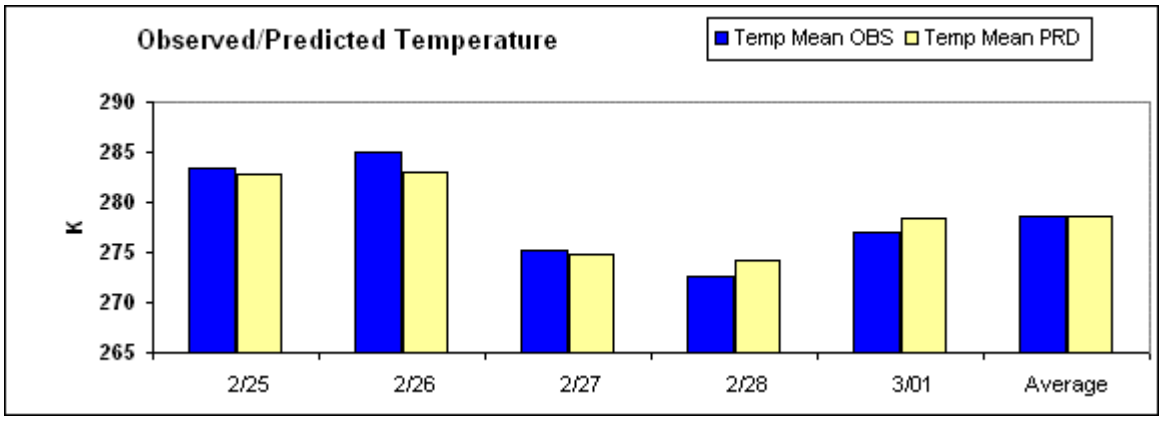

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
10
8
6
4
2
0
2/20
2/21
2/22
2/23
2/24
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
2/20
2/21
2/22
2/23
2/24
Average

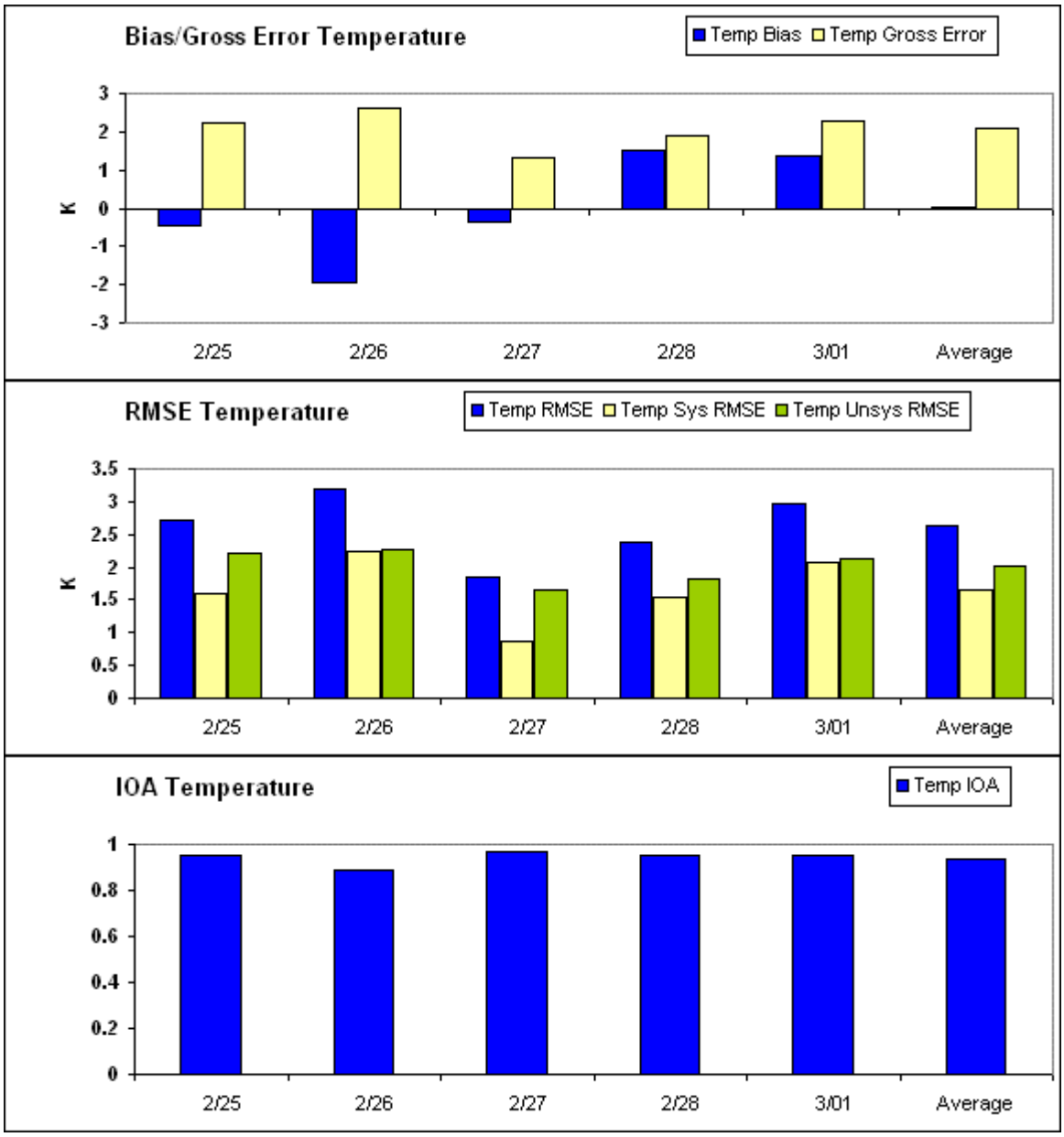

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
2/20
2/21
2/22
2/23
2/24
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
2/20
2/21
2/22
2/23
2/24
Average

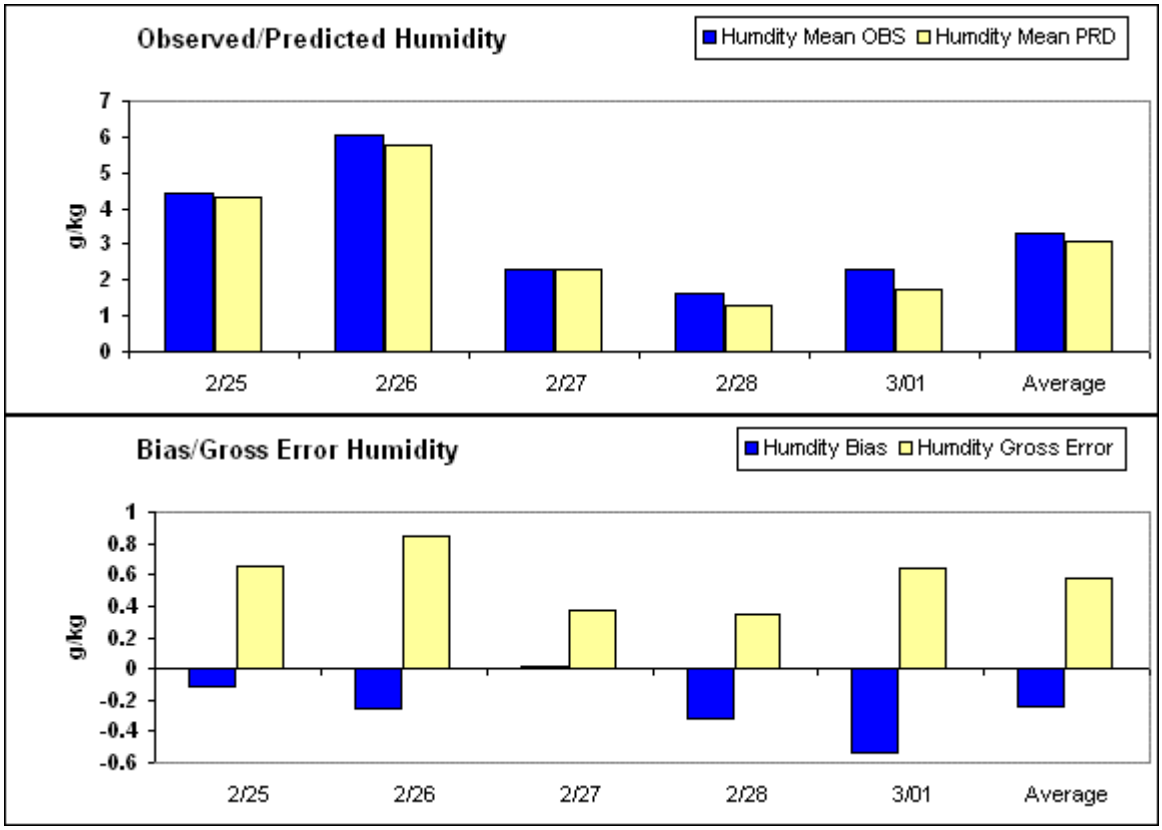

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
2/25
2/26
2/27
2/28
3/01
Average
Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
8
6
4
2
0
2/25
2/26
2/27
2/28
3/01
Average

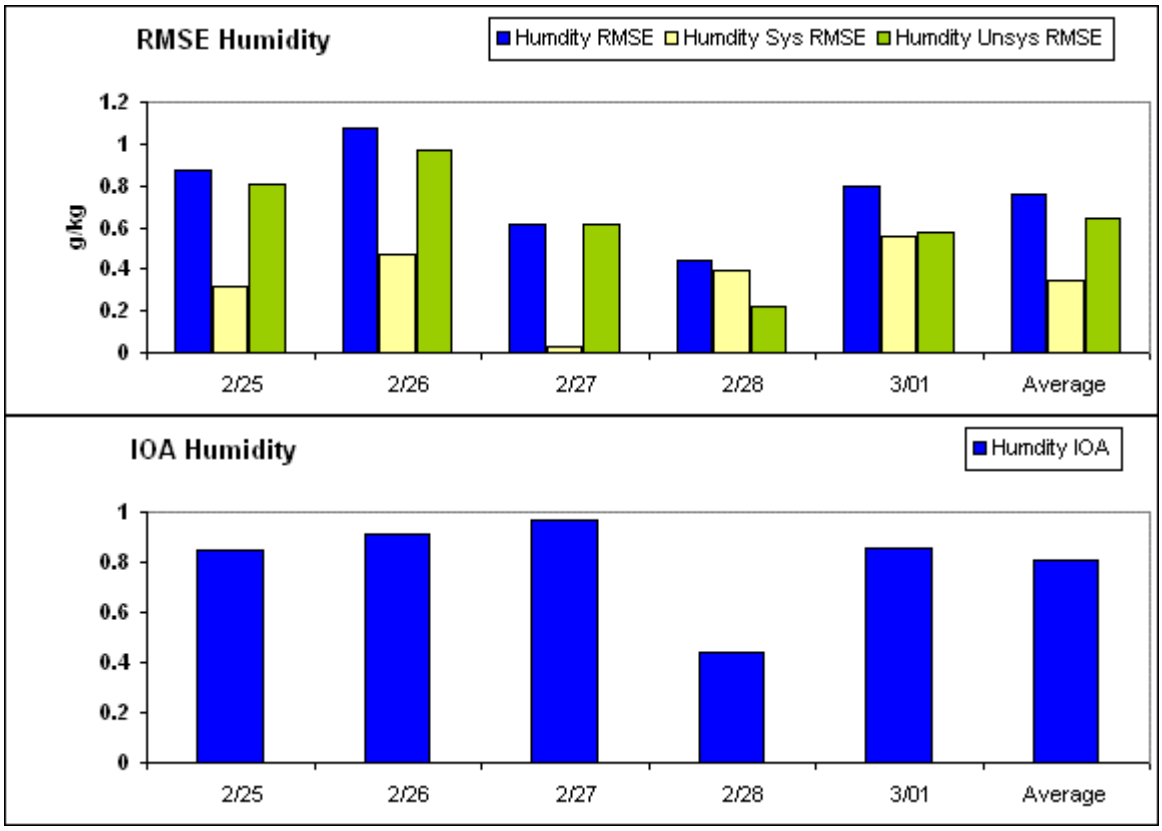

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
2/25
2/26
2/27
2/28
3/01
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
2/25
2/26
2/27
2/28
3/01
Average

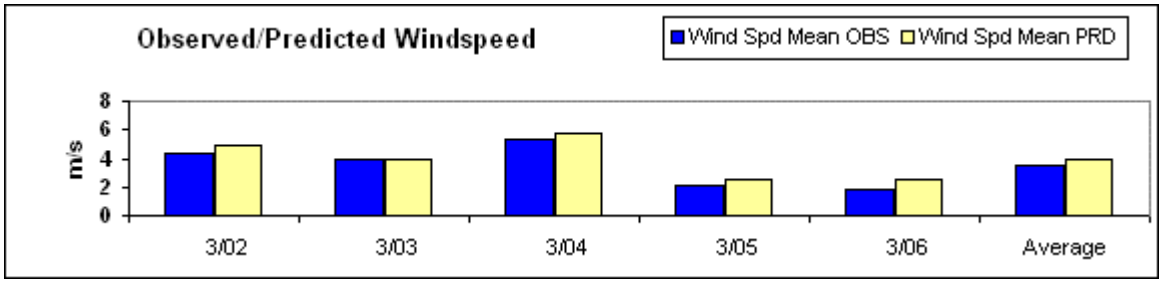

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
2/25
2/26
2/27
2/28
3/01
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
2/25
2/26
2/27
2/28
3/01
Average

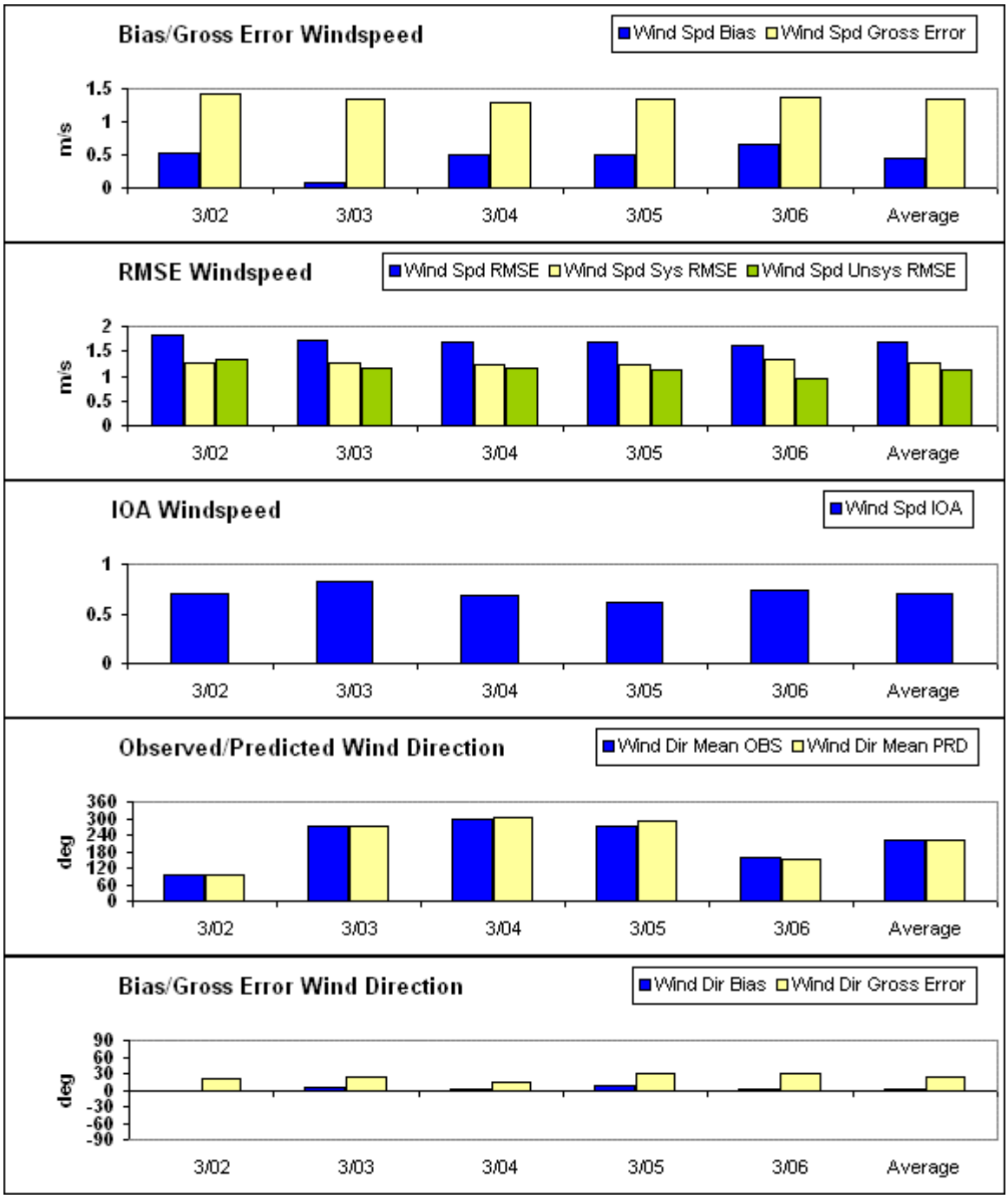

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
290
285
280
275
270
265
2/25
2/26
2/27
2/28
3/01
Average

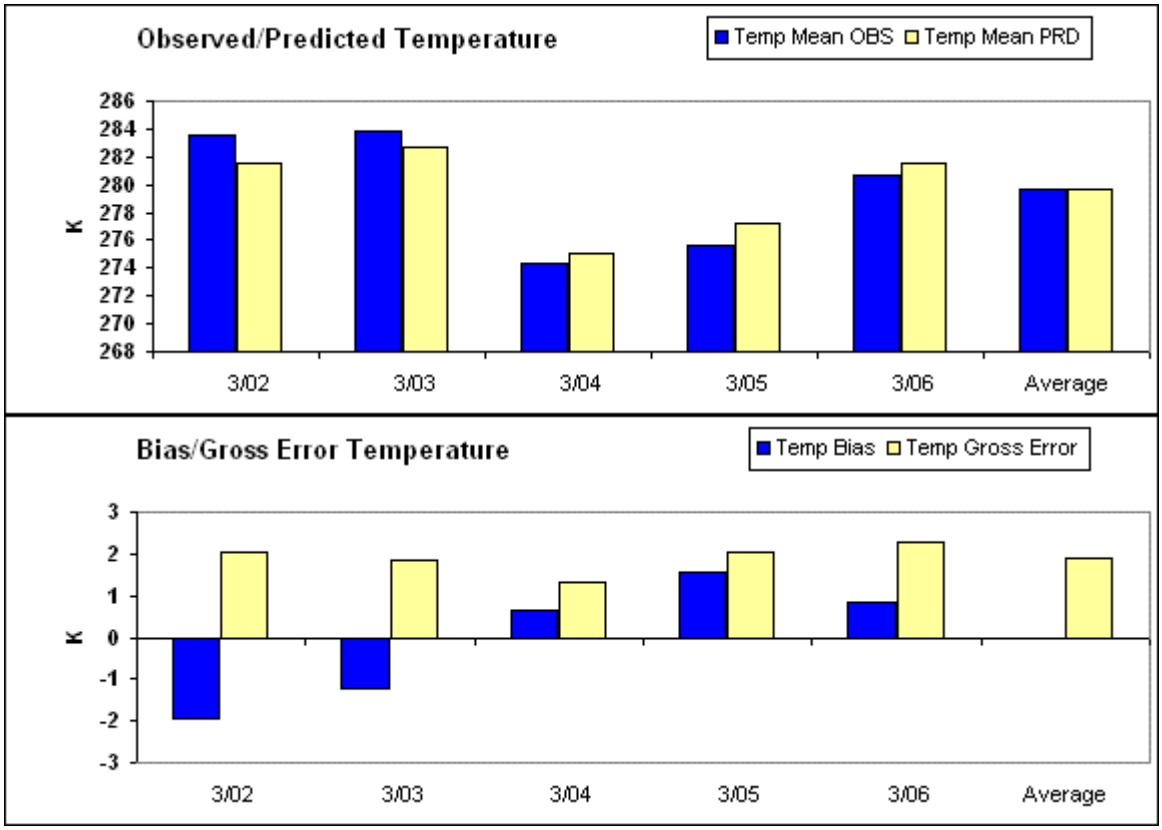

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
-3
2/25
2/26
2/27
2/28
3/01
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
2/25
2/26
2/27
2/28
3/01
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
2/25
2/26
2/27
2/28
3/01
Average

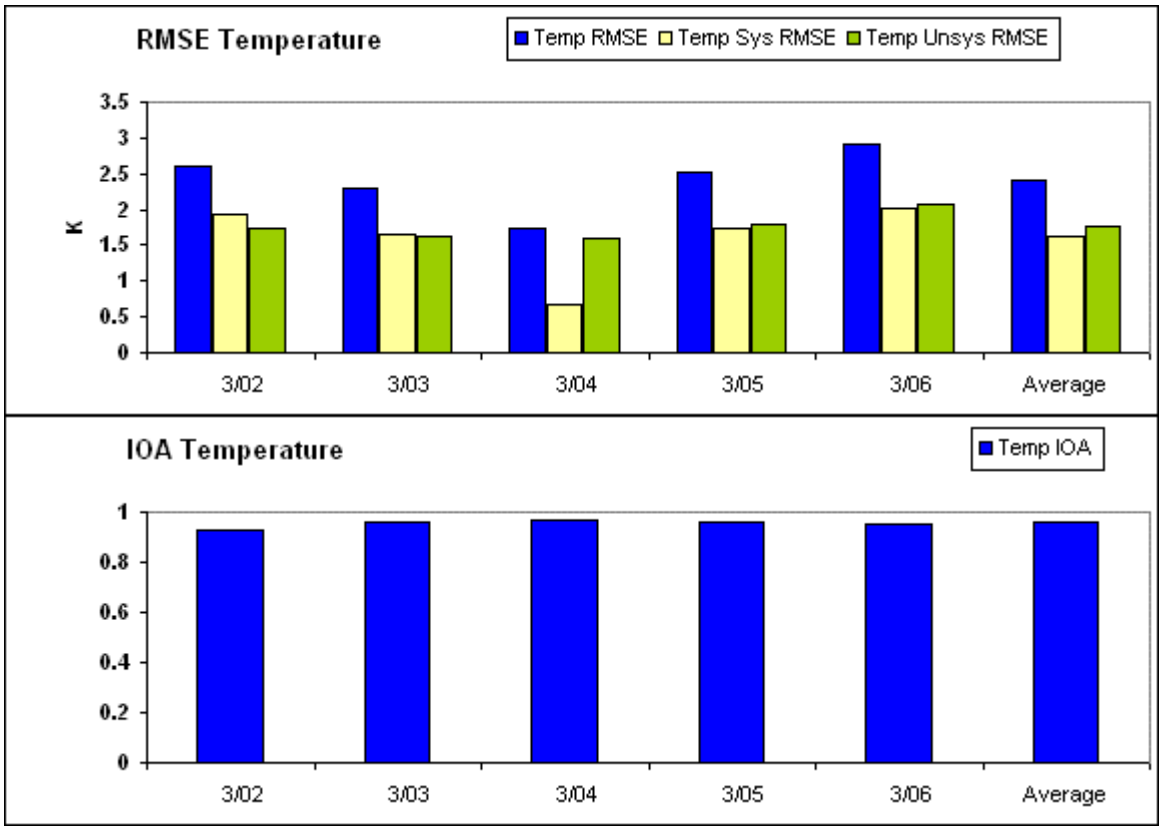

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
7
6
5
4
3
2
1
0
2/25
2/26
2/27
2/28
3/01
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
2/25
2/26
2/27
2/28
3/01
Average

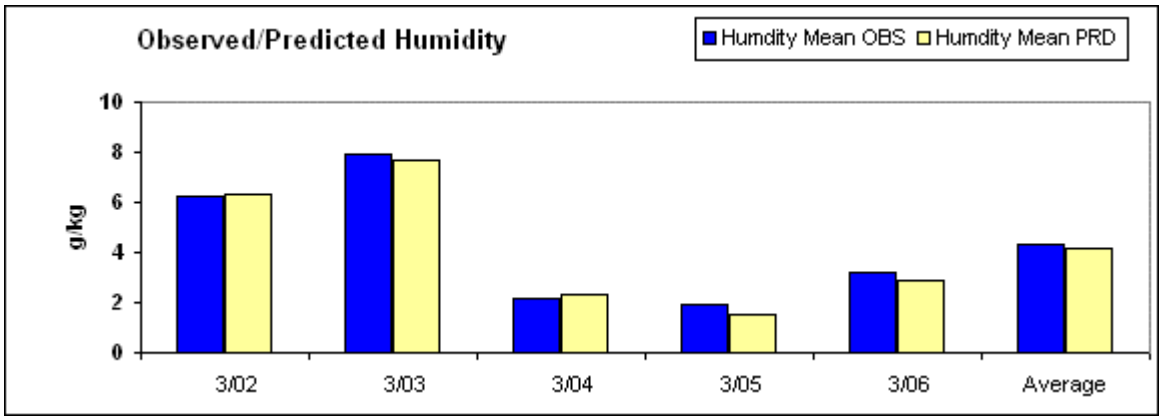

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
2/25
2/26
2/27
2/28
3/01
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
2/25
2/26
2/27
2/28
3/01
Average

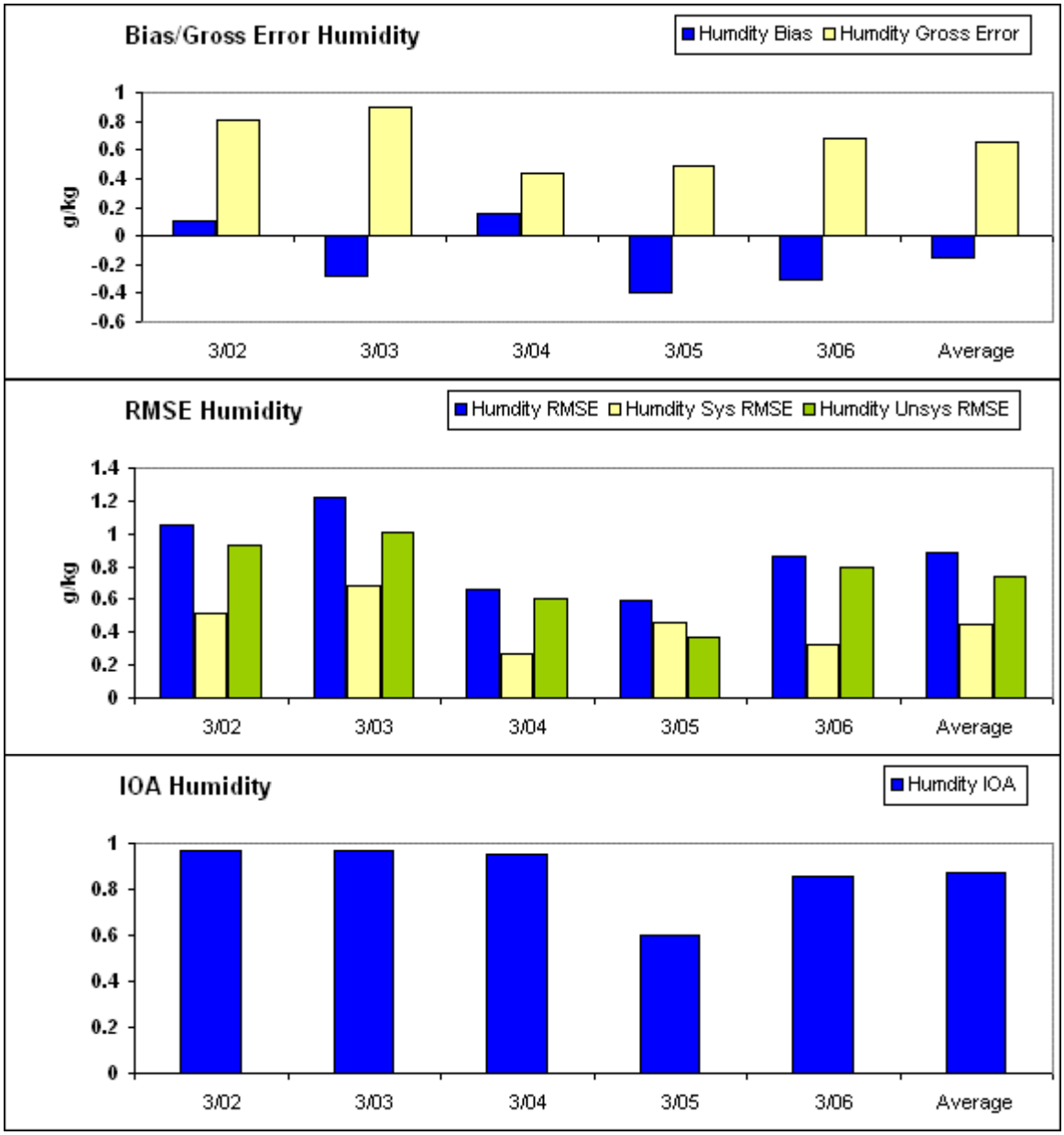

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
8
6
4
2
0
3/02
3/03
3/04
3/05
3/06
Average

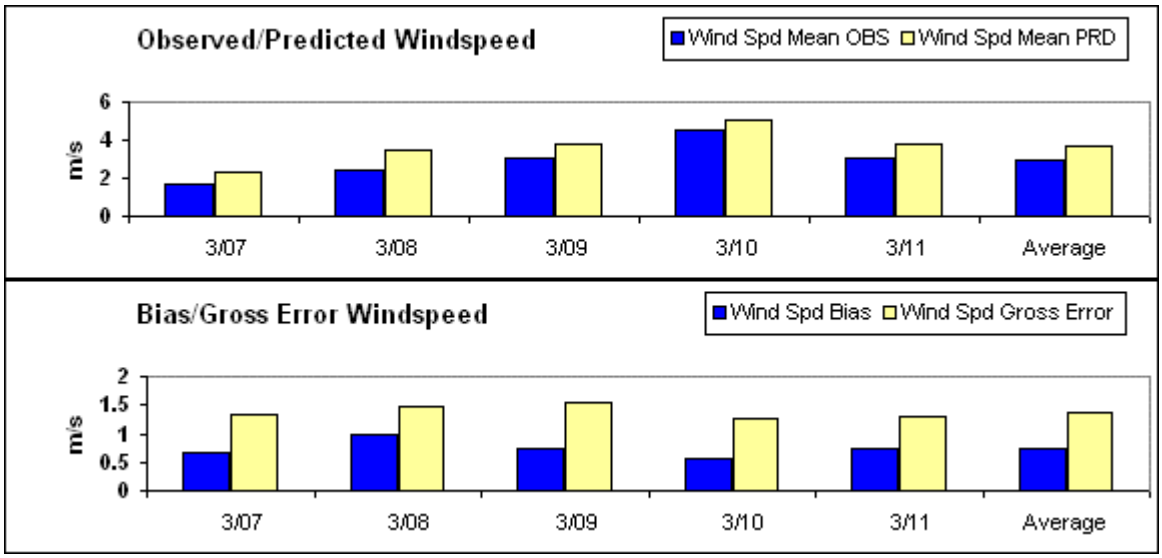

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
3/02
3/03
3/04
3/05
3/06
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
3/02
3/03
3/04
3/05
3/06
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
3/02
3/03
3/04
3/05
3/06
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
3/02
3/03
3/04
3/05
3/06
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
3/02
3/03
3/04
3/05
3/06
Average

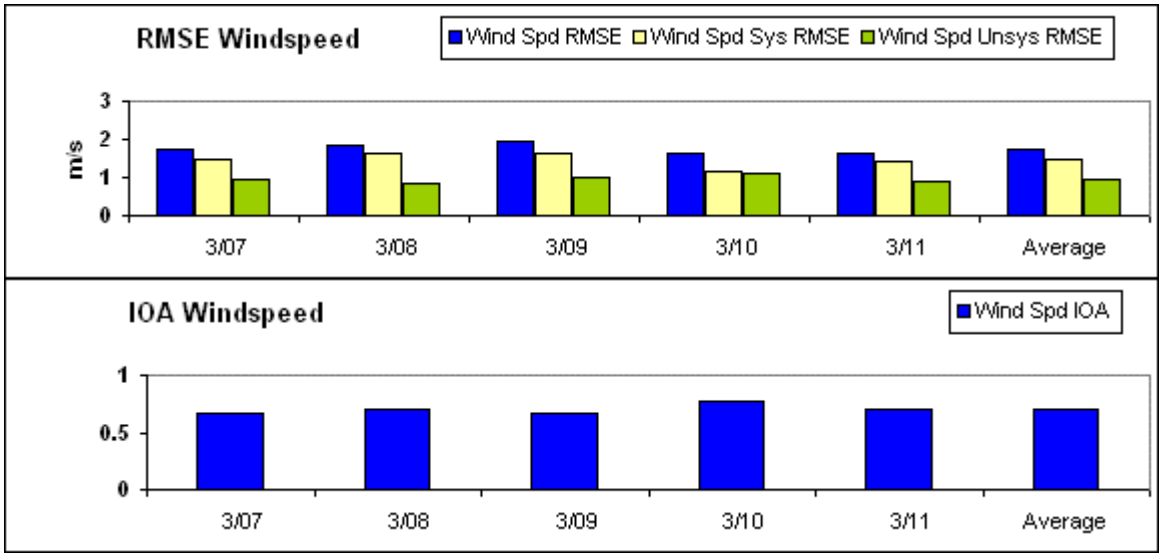

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
286
284
282
280
278
276
274
272
270
268
3/02
3/03
3/04
3/05
3/06
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
-3
3/02
3/03
3/04
3/05
3/06
Average

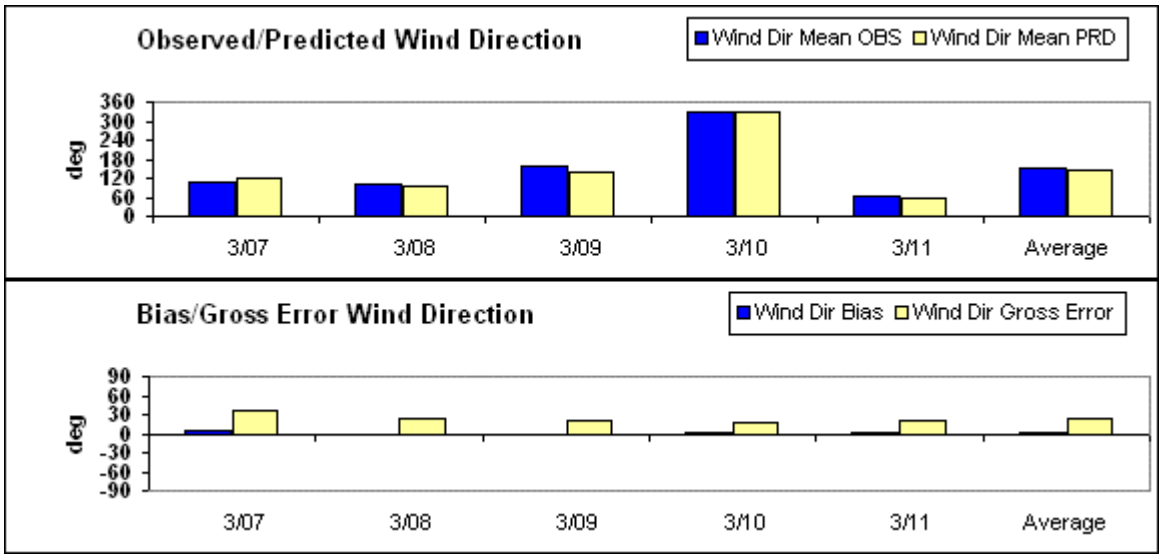

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
3/02
3/03
3/04
3/05
3/06
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
3/02
3/03
3/04
3/05
3/06
Average

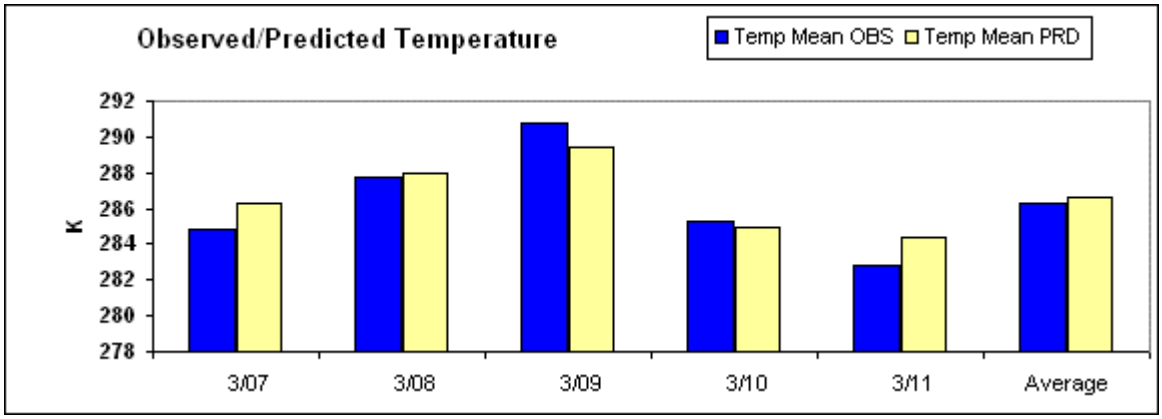

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
10
8
6
4
2
0
3/02
3/03
3/04
3/05
3/06
Average

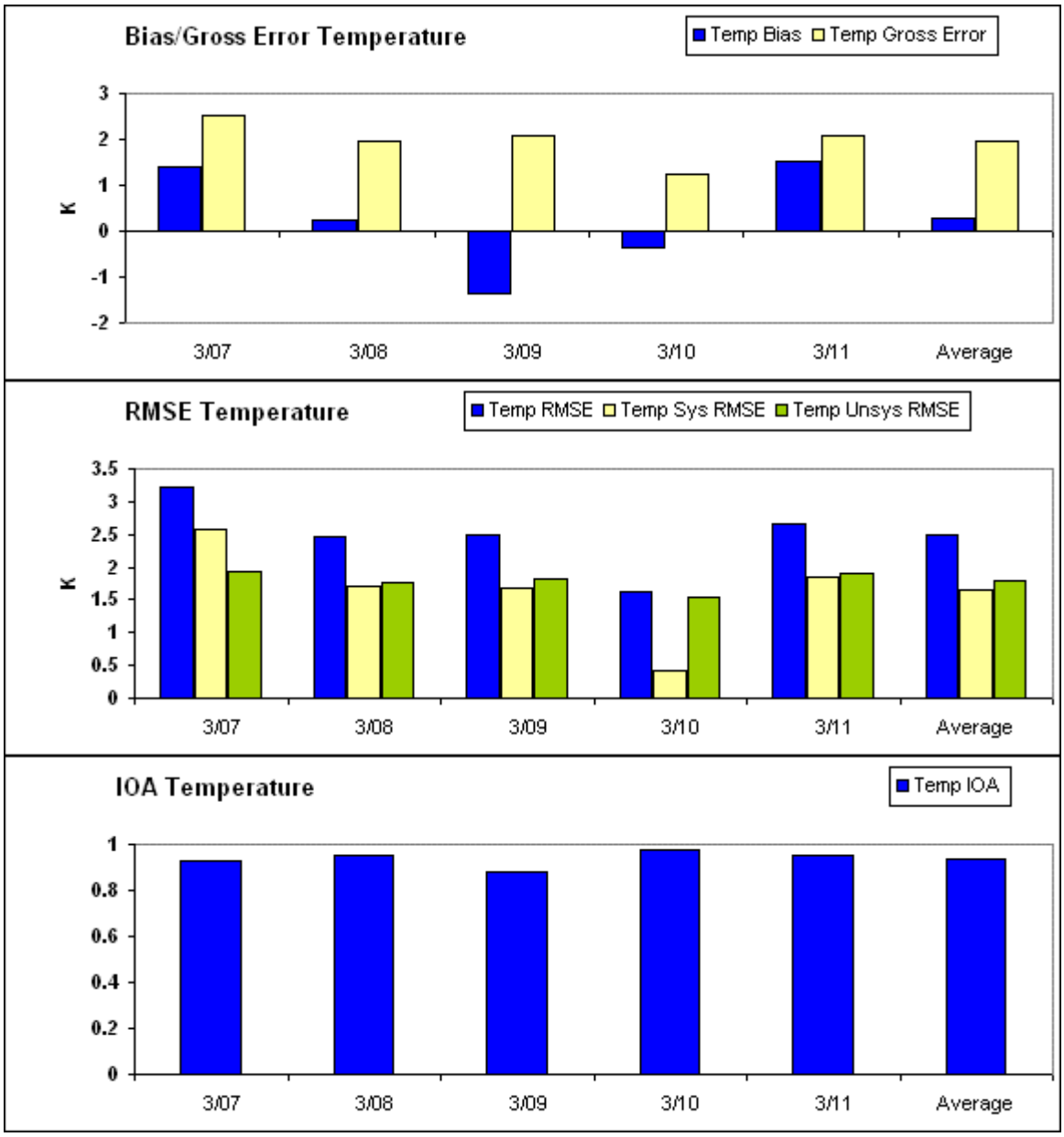

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
3/02
3/03
3/04
3/05
3/06
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
3/02
3/03
3/04
3/05
3/06
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
3/02
3/03
3/04
3/05
3/06
Average

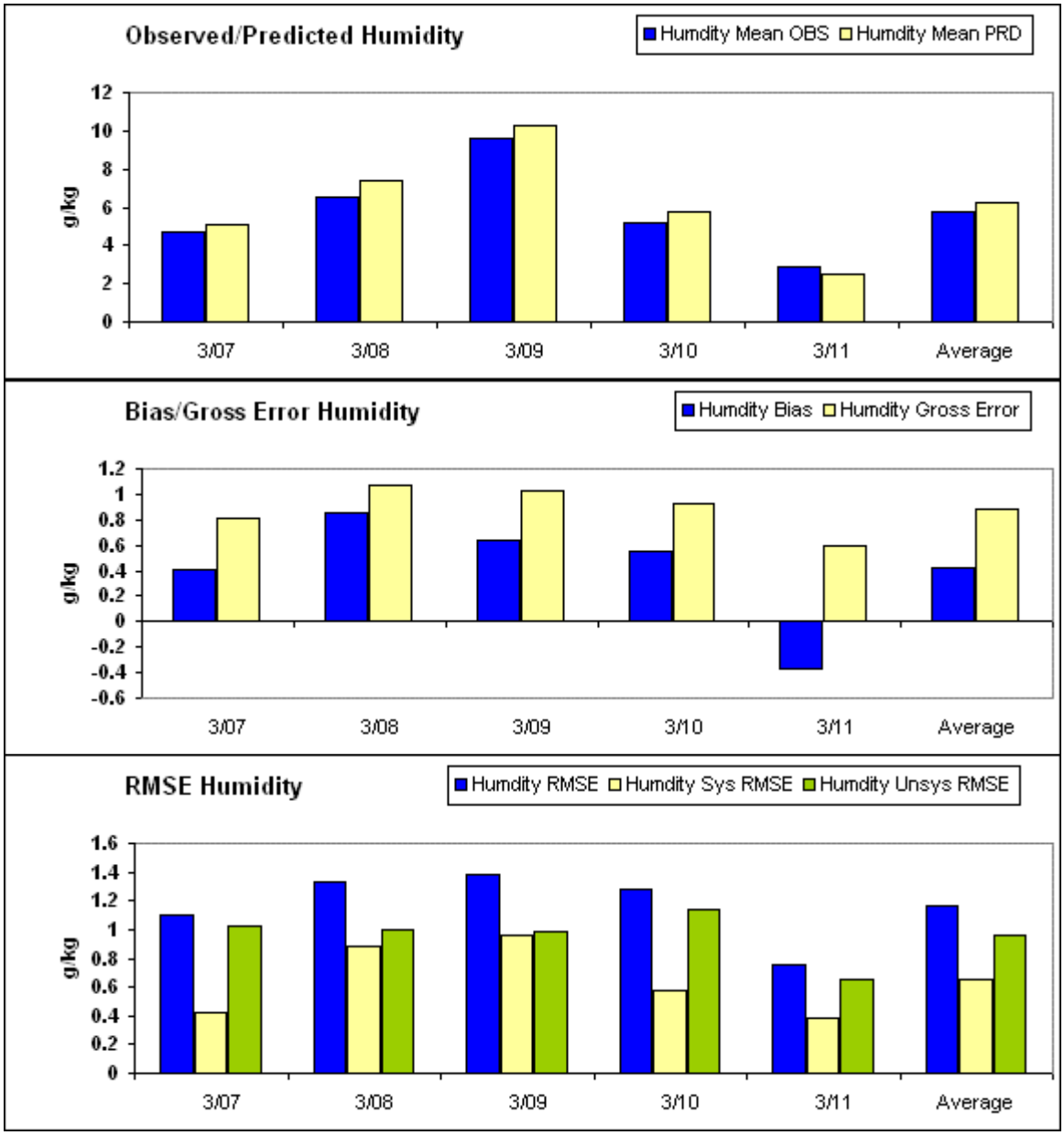

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
3/07
3/08
3/09
3/10
3/11
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
3/07
3/08
3/09
3/10
3/11
Average

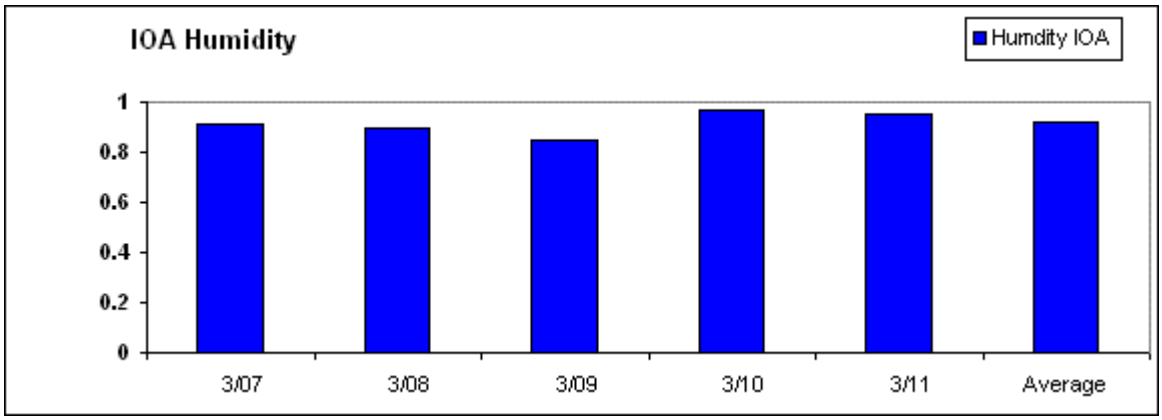

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
3/07
3/08
3/09
3/10
3/11
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
3/07
3/08
3/09
3/10
3/11
Average

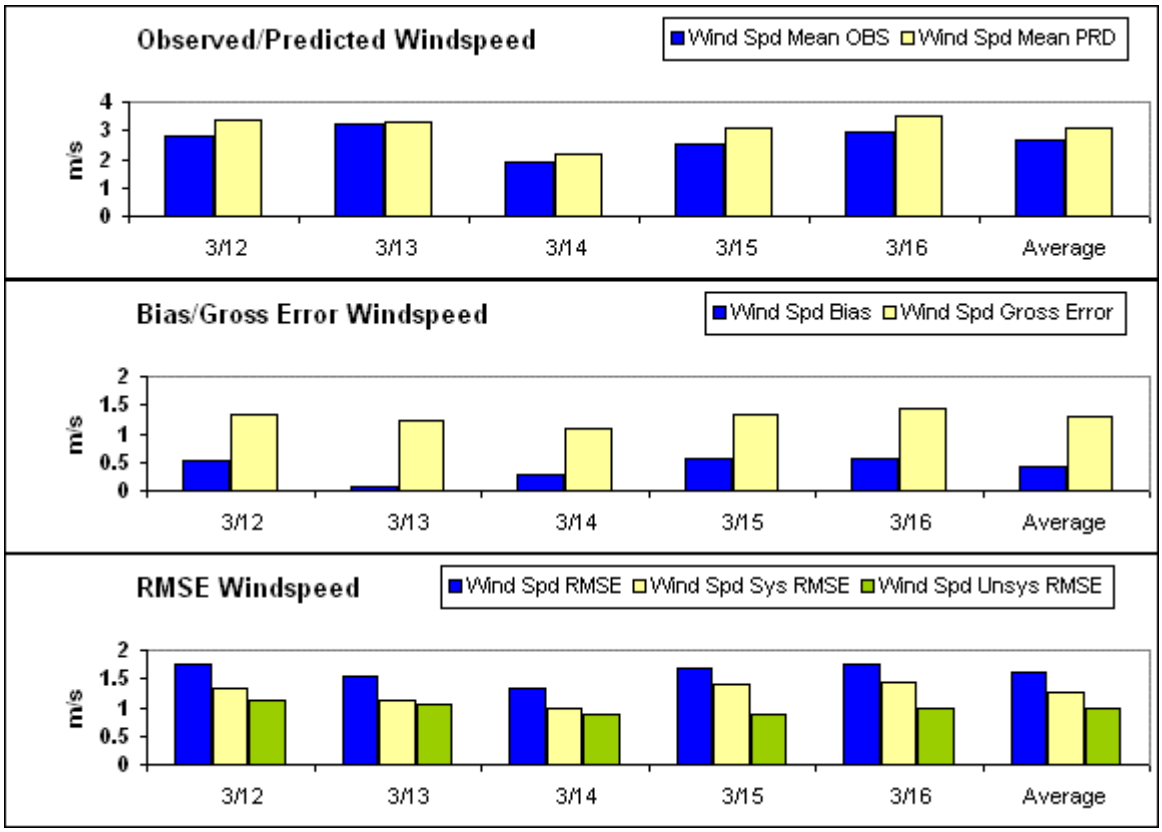

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
3/07
3/08
3/09
3/10
3/11
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
3/07
3/08
3/09
3/10
3/11
Average

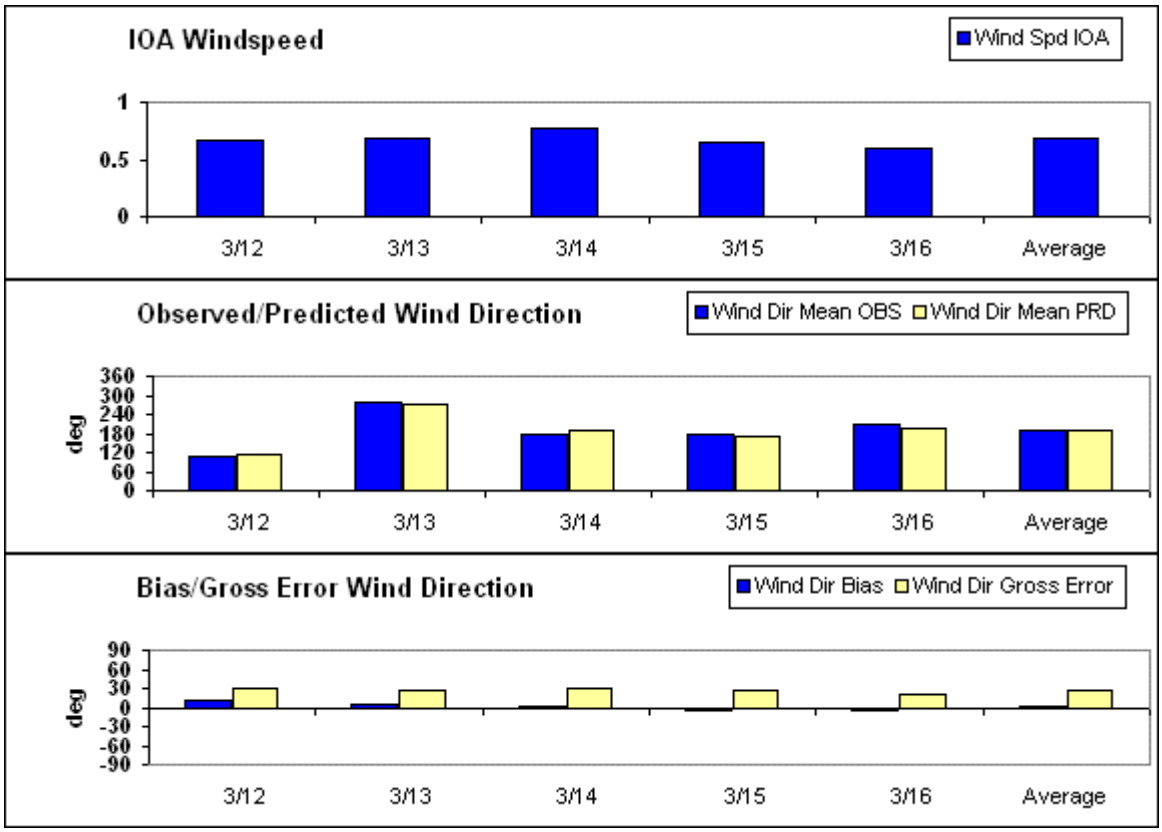

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
292
290
288
286
284
282
280
278
3/07
3/08
3/09
3/10
3/11
Average

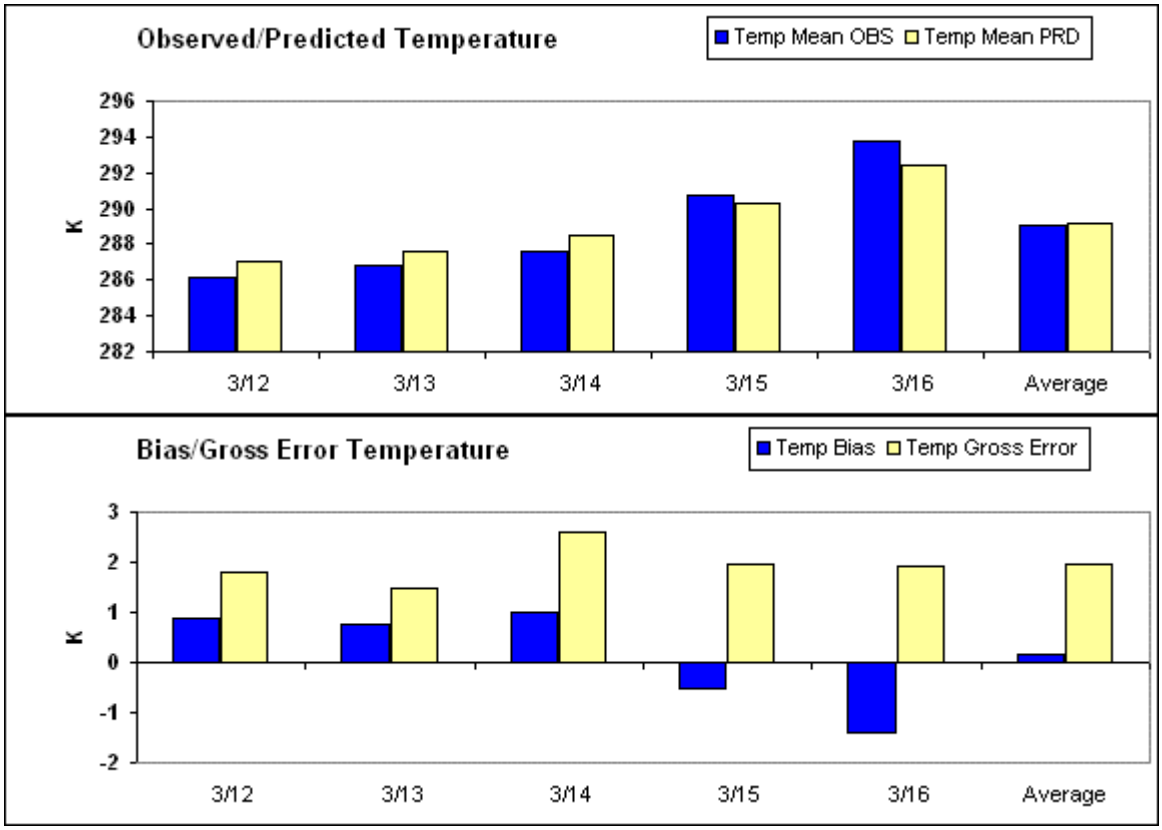

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
3/07
3/08
3/09
3/10
3/11
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
3/07
3/08
3/09
3/10
3/11
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
3/07
3/08
3/09
3/10
3/11
Average

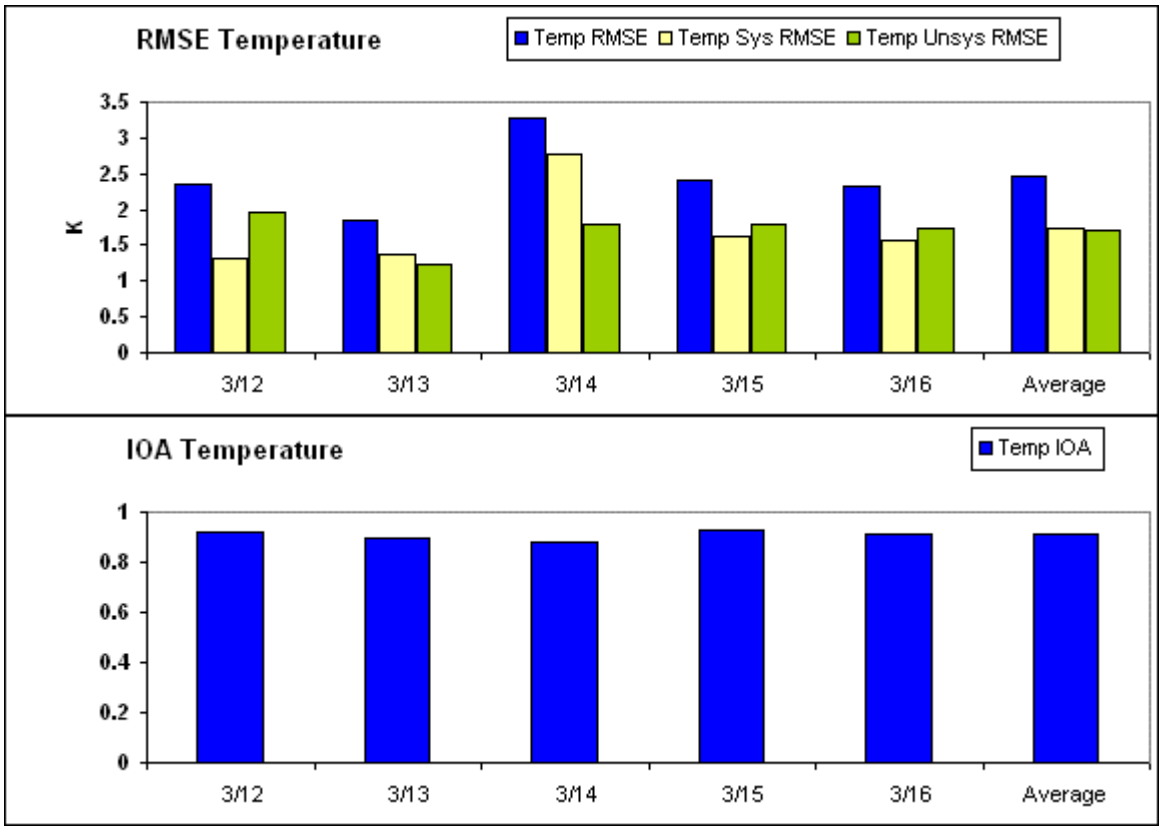

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
3/07
3/08
3/09
3/10
3/11
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
3/07
3/08
3/09
3/10
3/11
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
3/07
3/08
3/09
3/10
3/11
Average

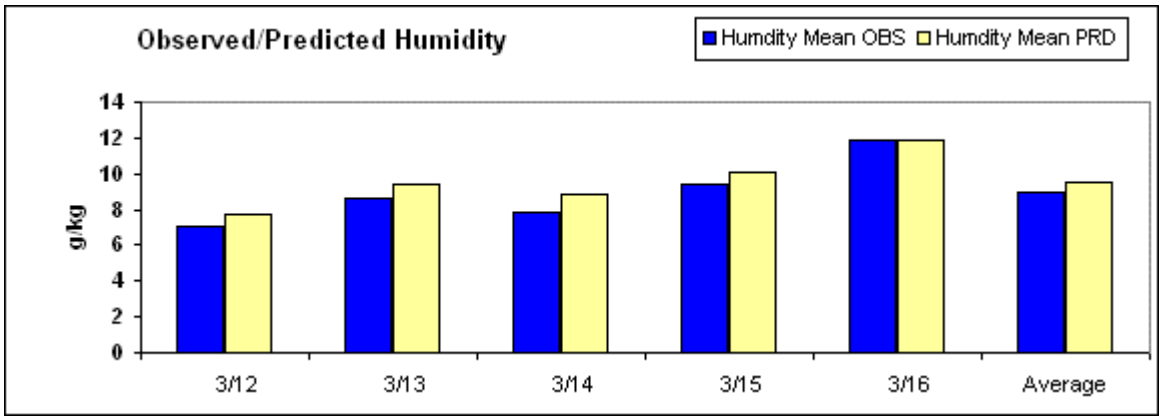

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
3/07
3/08
3/09
3/10
3/11
Average

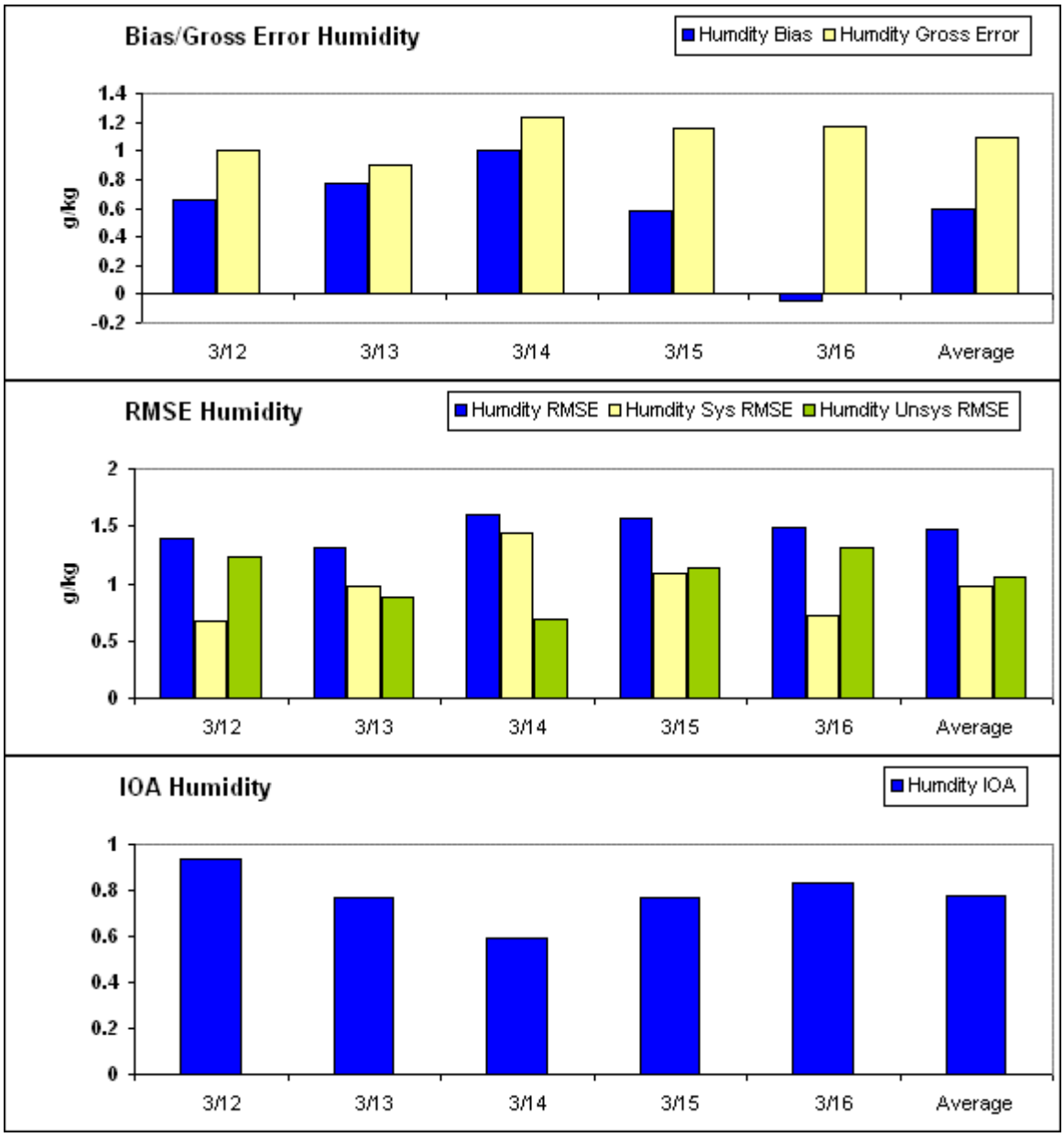

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
3/12
3/13
3/14
3/15
3/16
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
3/12
3/13
3/14
3/15
3/16
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
3/12
3/13
3/14
3/15
3/16
Average

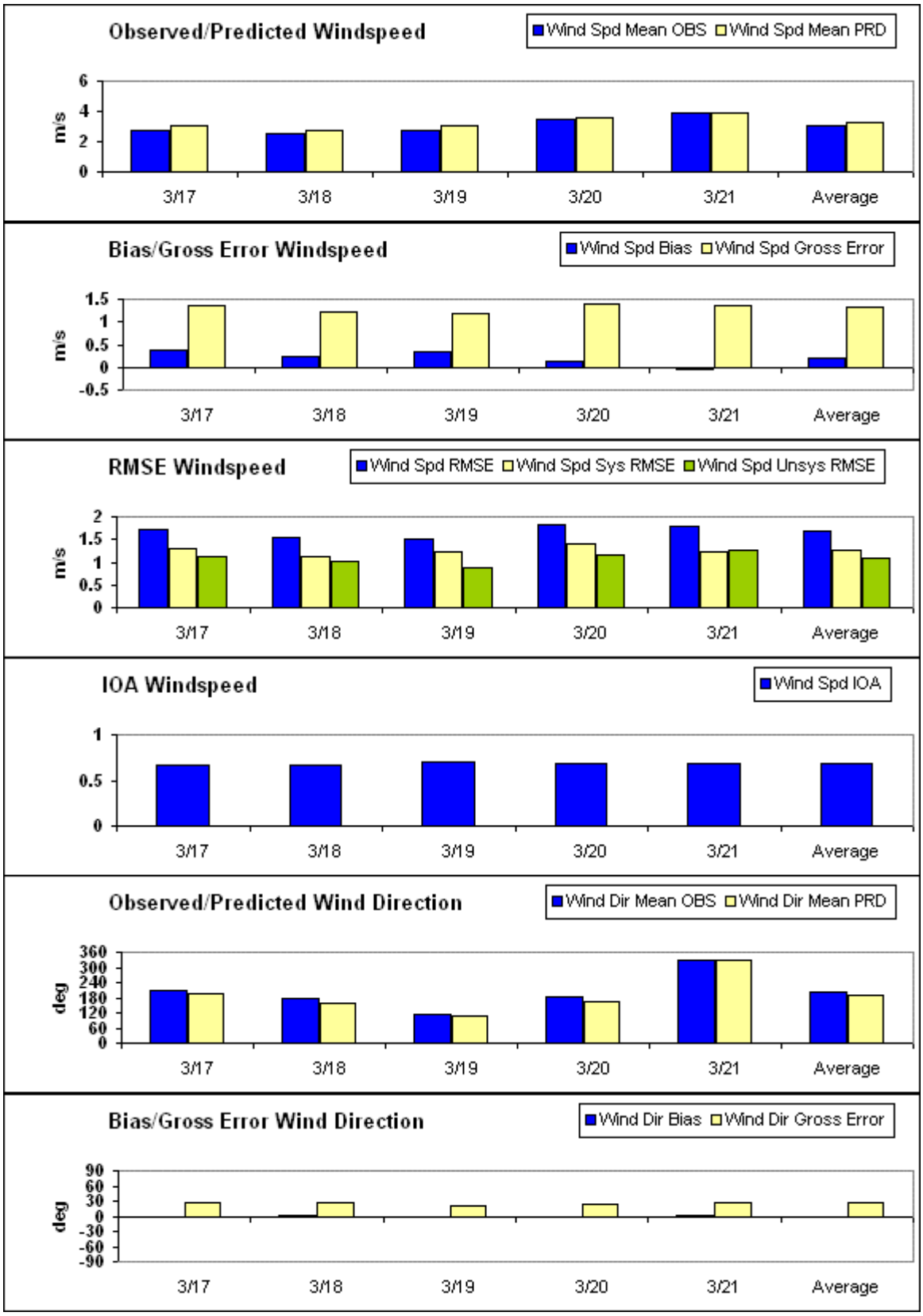

IOA Windspeed
Wind Spd IOA
1
0.5
0
3/12
3/13
3/14
3/15
3/16
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
3/12
3/13
3/14
3/15
3/16
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
3/12
3/13
3/14
3/15
3/16
Average

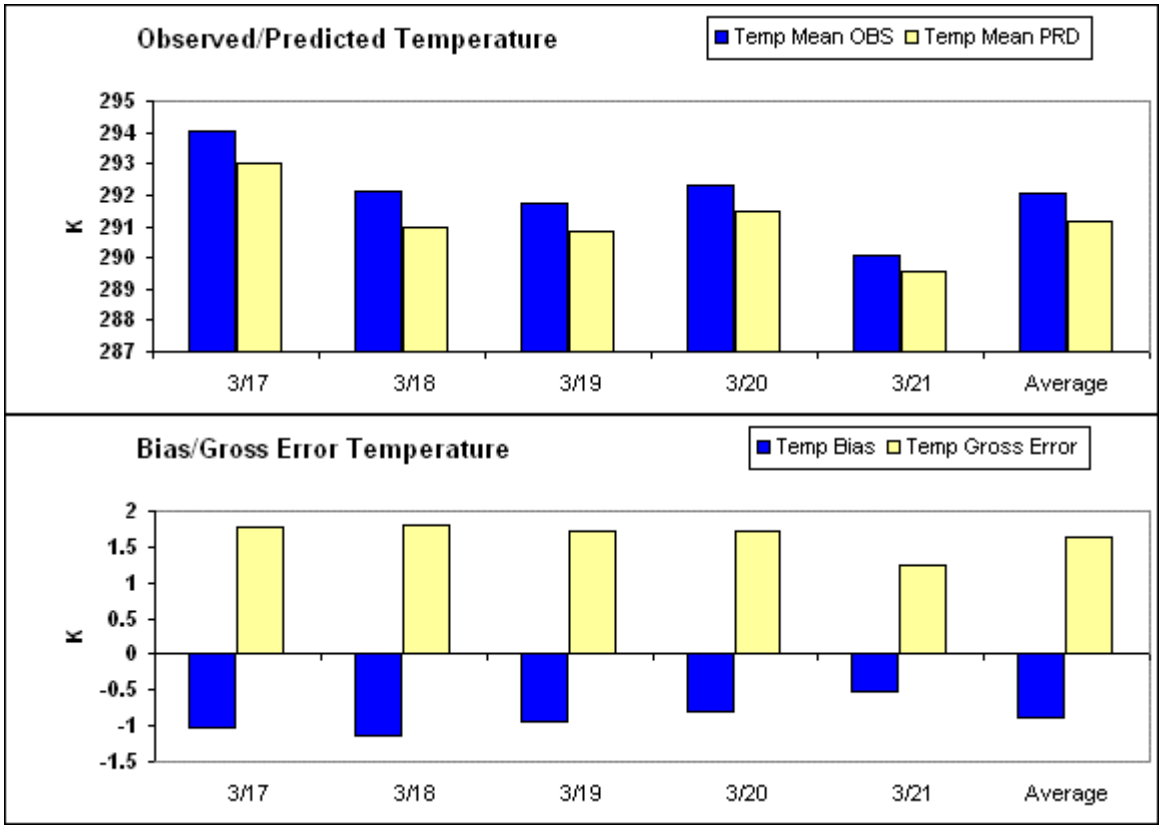

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
296
294
292
290
288
286
284
282
3/12
3/13
3/14
3/15
3/16
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
3/12
3/13
3/14
3/15
3/16
Average

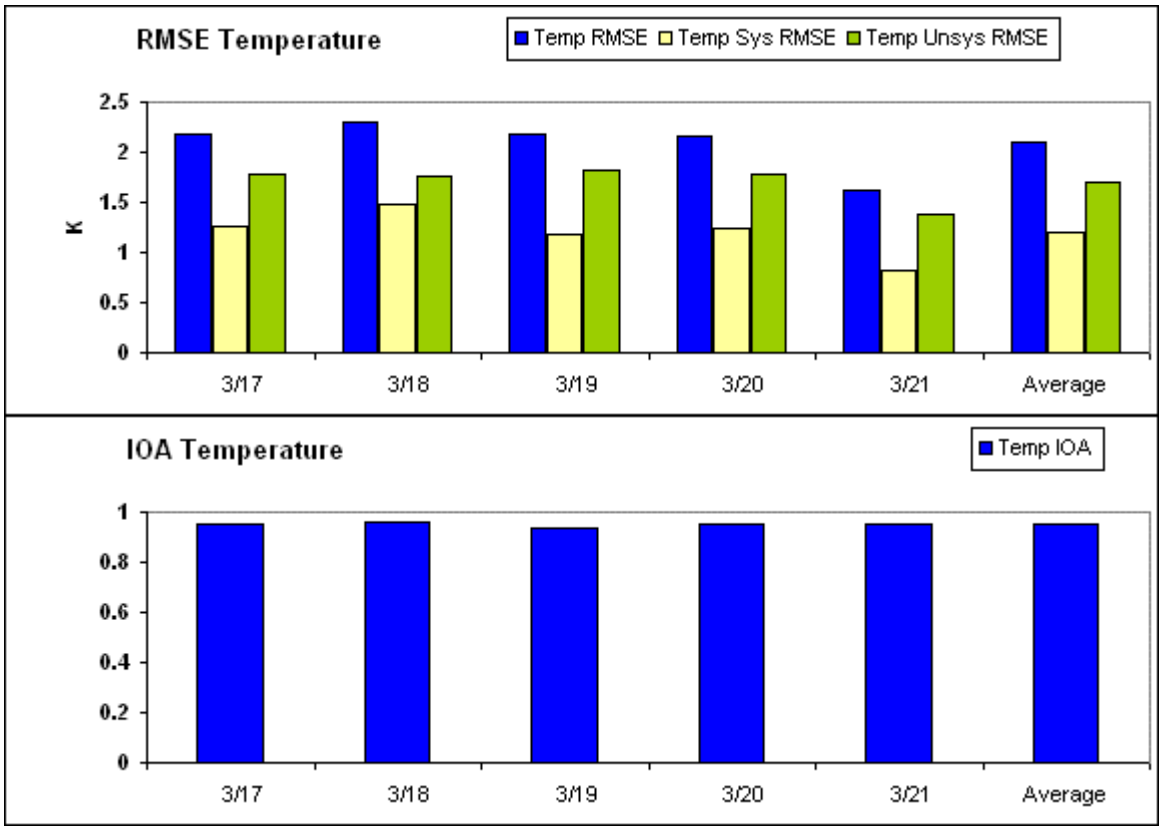

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
3/12
3/13
3/14
3/15
3/16
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
3/12
3/13
3/14
3/15
3/16
Average

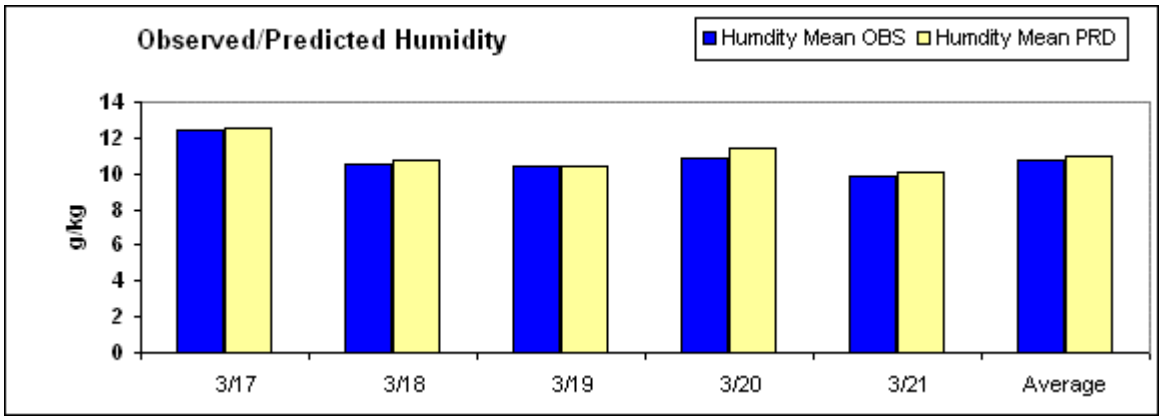

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
3/12
3/13
3/14
3/15
3/16
Average

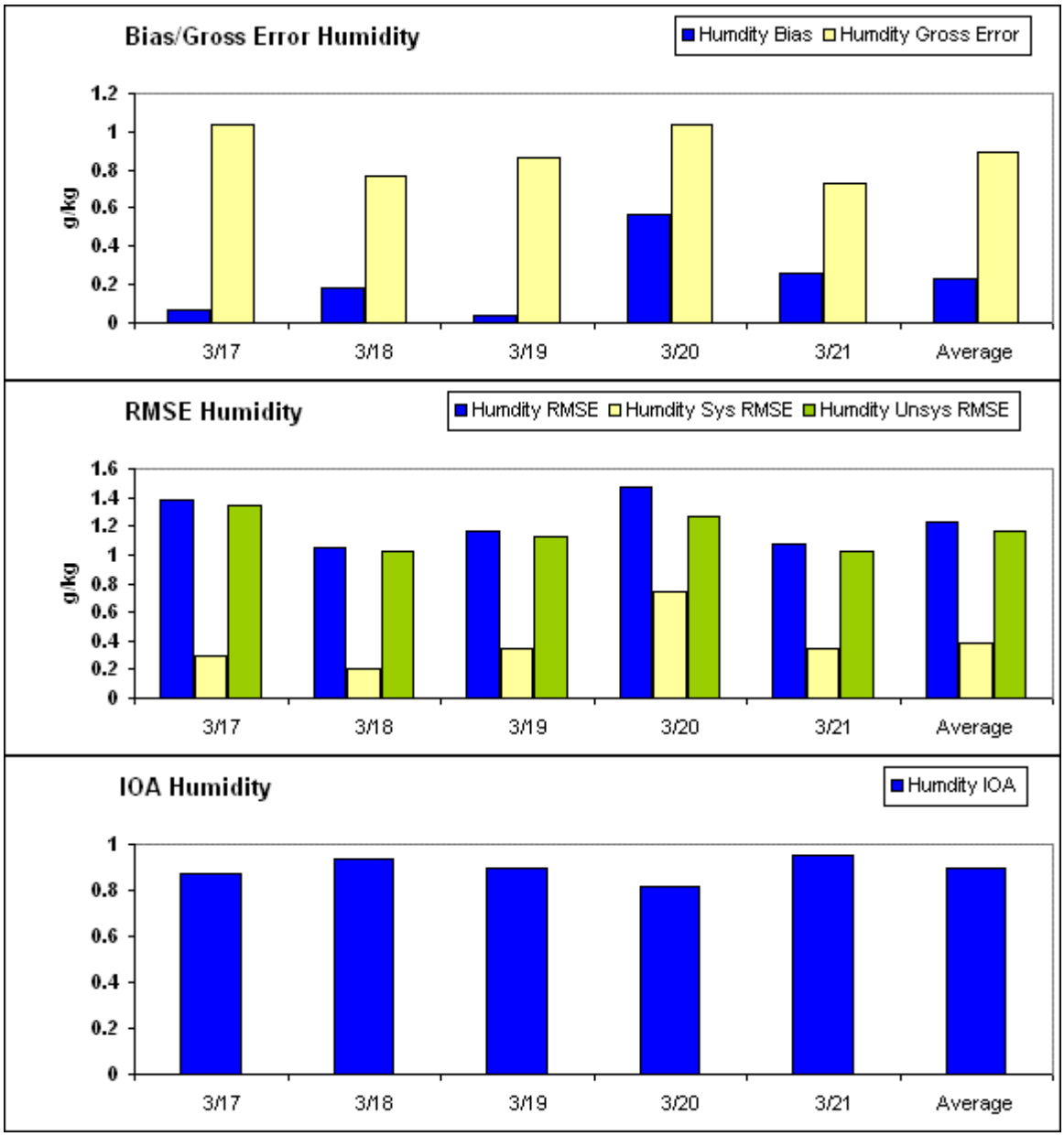

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
3/12
3/13
3/14
3/15
3/16
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
3/12
3/13
3/14
3/15
3/16
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
3/12
3/13
3/14
3/15
3/16
Average

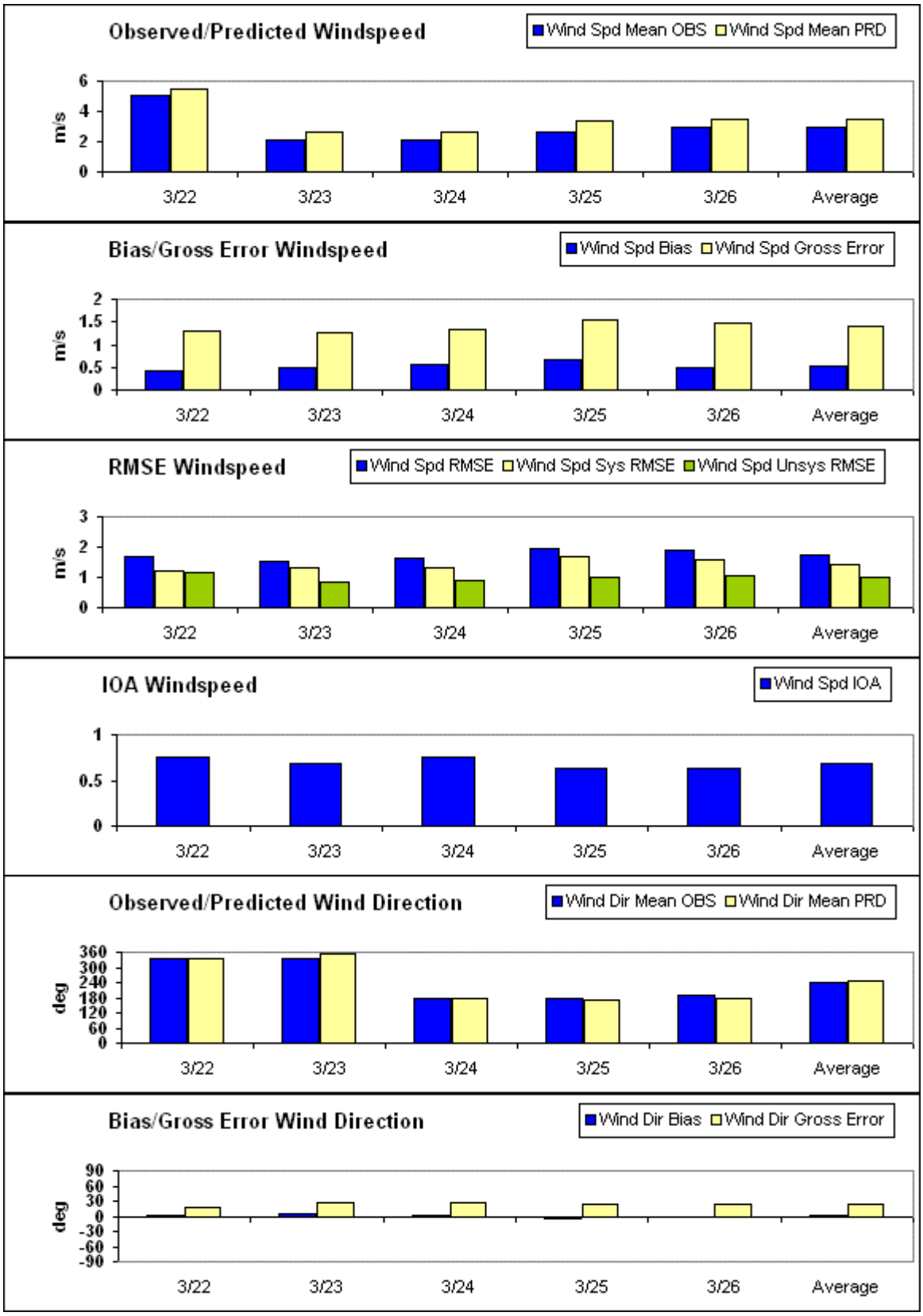

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
3/17
3/18
3/19
3/20
3/21
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
-0.5
3/17
3/18
3/19
3/20
3/21
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
3/17
3/18
3/19
3/20
3/21
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
3/17
3/18
3/19
3/20
3/21
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
3/17
3/18
3/19
3/20
3/21
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
3/17
3/18
3/19
3/20
3/21
Average

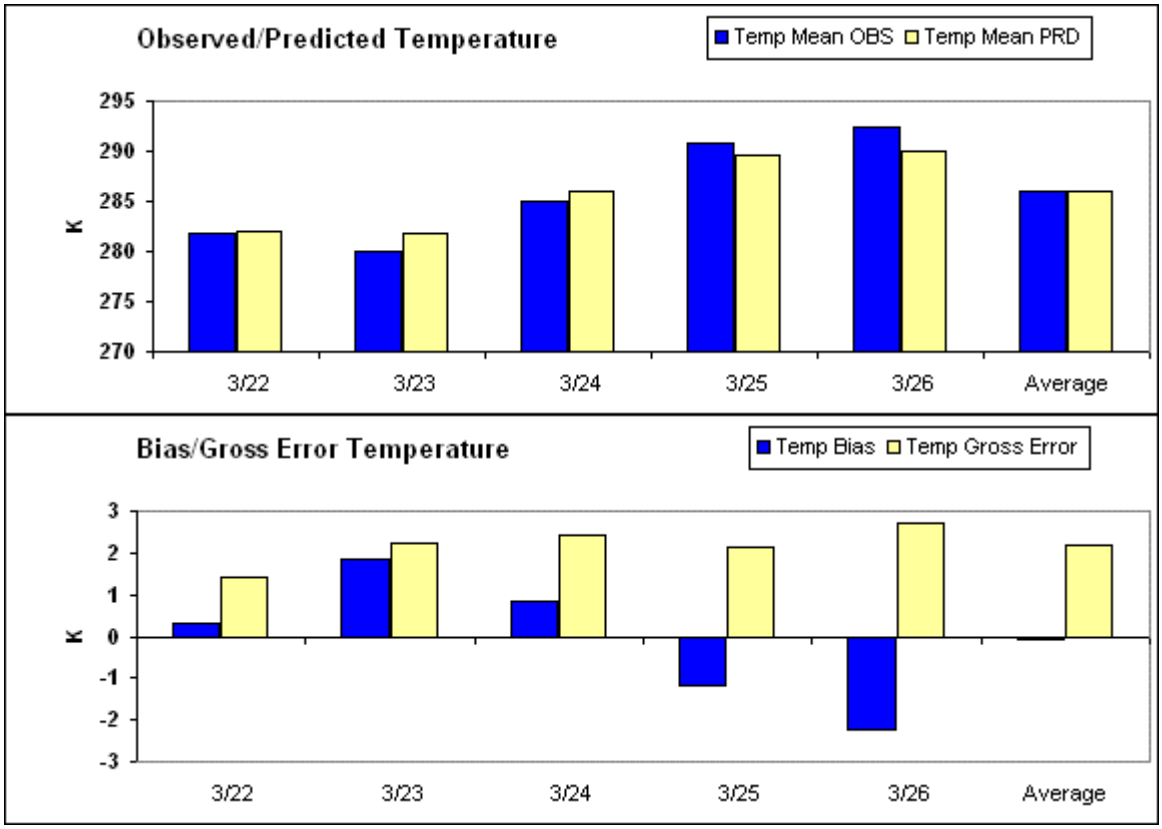

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
295
294
293
292
291
290
289
288
287
3/17
3/18
3/19
3/20
3/21
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
3/17
3/18
3/19
3/20
3/21
Average

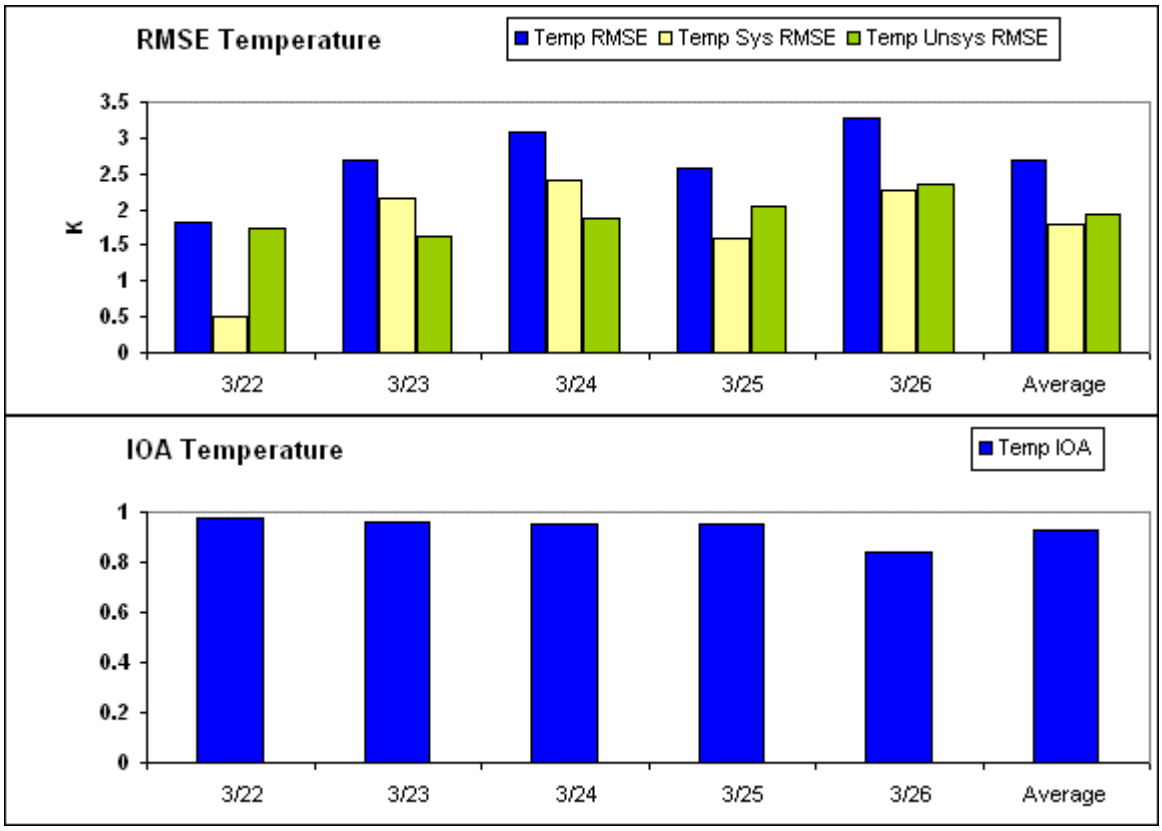

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
3/17
3/18
3/19
3/20
3/21
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
3/17
3/18
3/19
3/20
3/21
Average

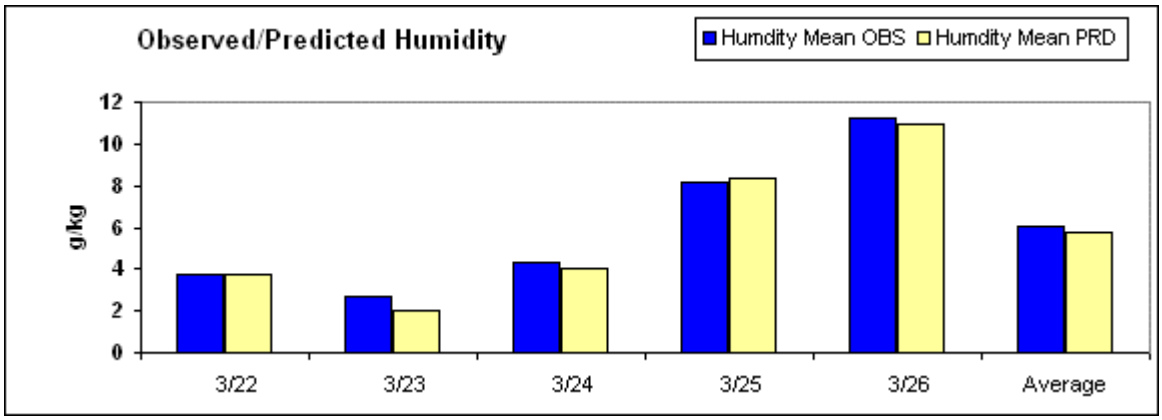

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
3/17
3/18
3/19
3/20
3/21
Average

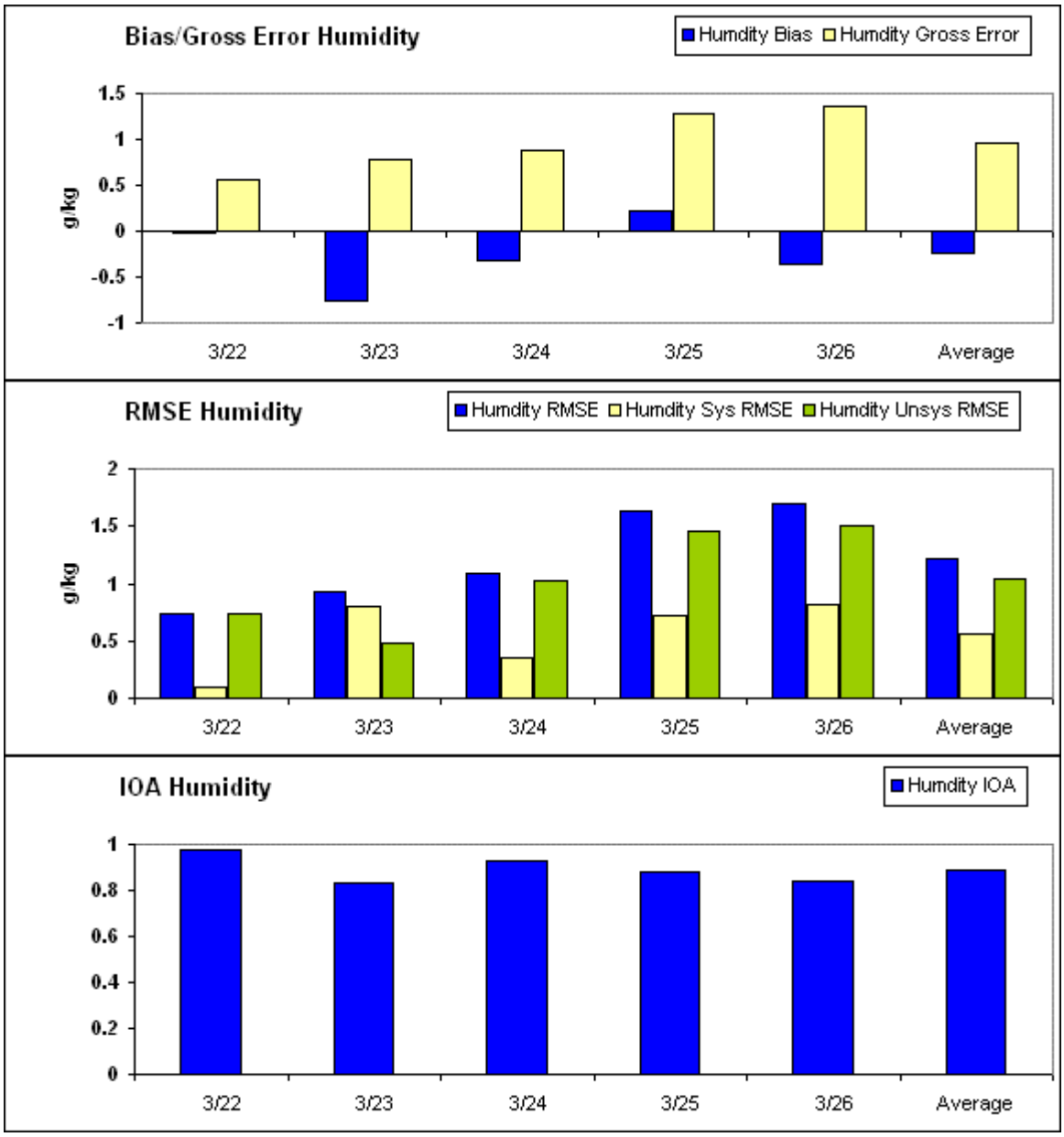

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
3/17
3/18
3/19
3/20
3/21
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
3/17
3/18
3/19
3/20
3/21
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
3/17
3/18
3/19
3/20
3/21
Average

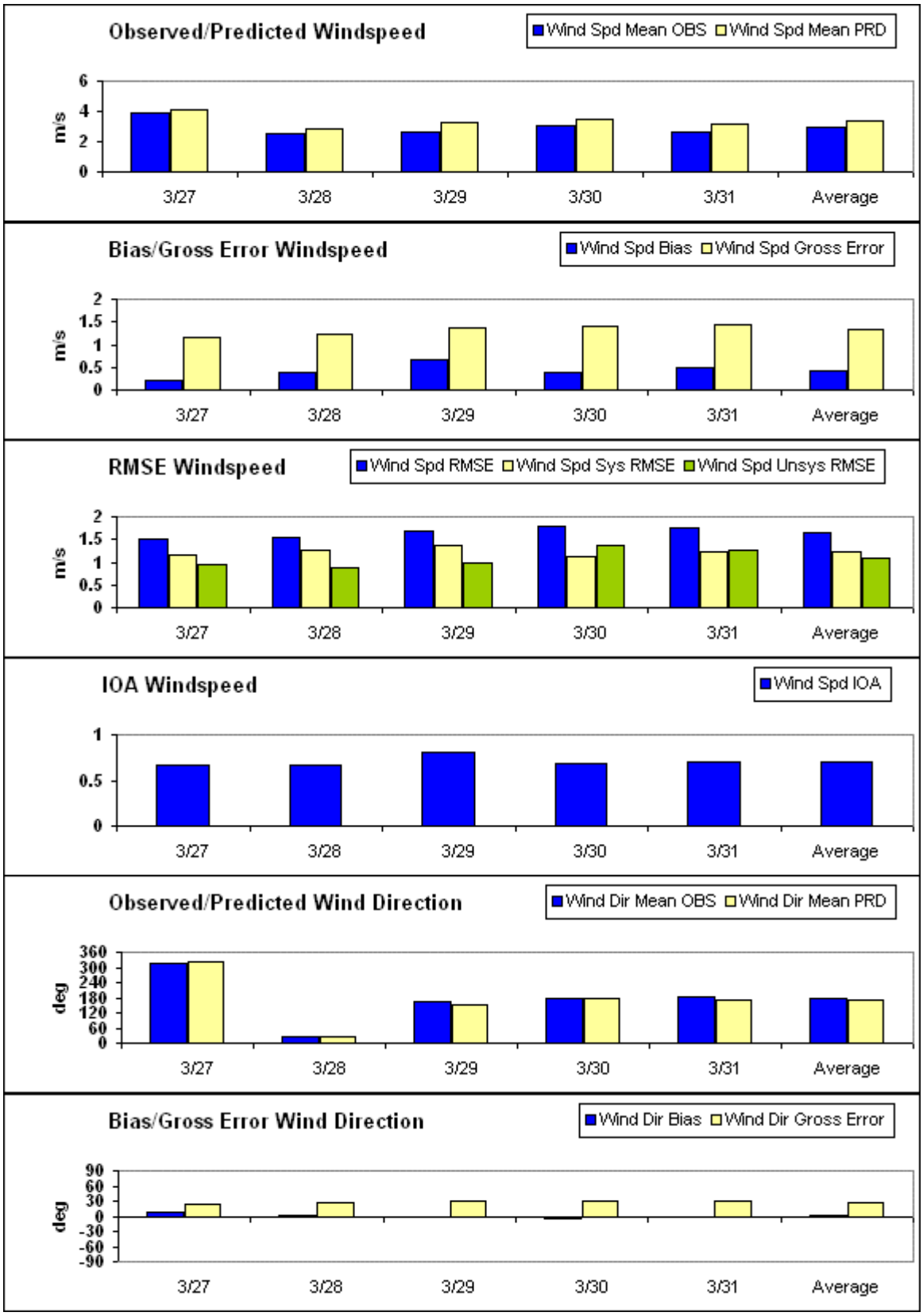

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
3/22
3/23
3/24
3/25
3/26
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
3/22
3/23
3/24
3/25
3/26
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
3/22
3/23
3/24
3/25
3/26
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
3/22
3/23
3/24
3/25
3/26
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
3/22
3/23
3/24
3/25
3/26
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
3/22
3/23
3/24
3/25
3/26
Average

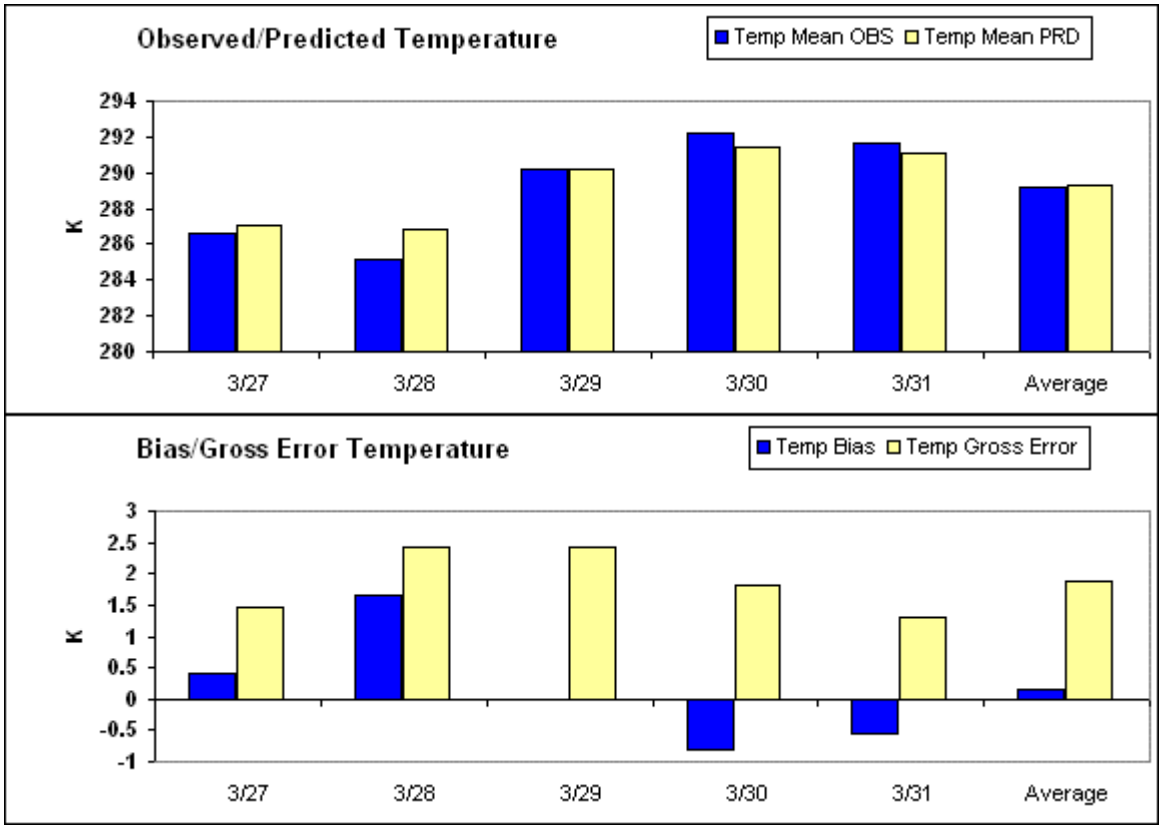

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
295
290
285
280
275
270
3/22
3/23
3/24
3/25
3/26
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
-3
3/22
3/23
3/24
3/25
3/26
Average

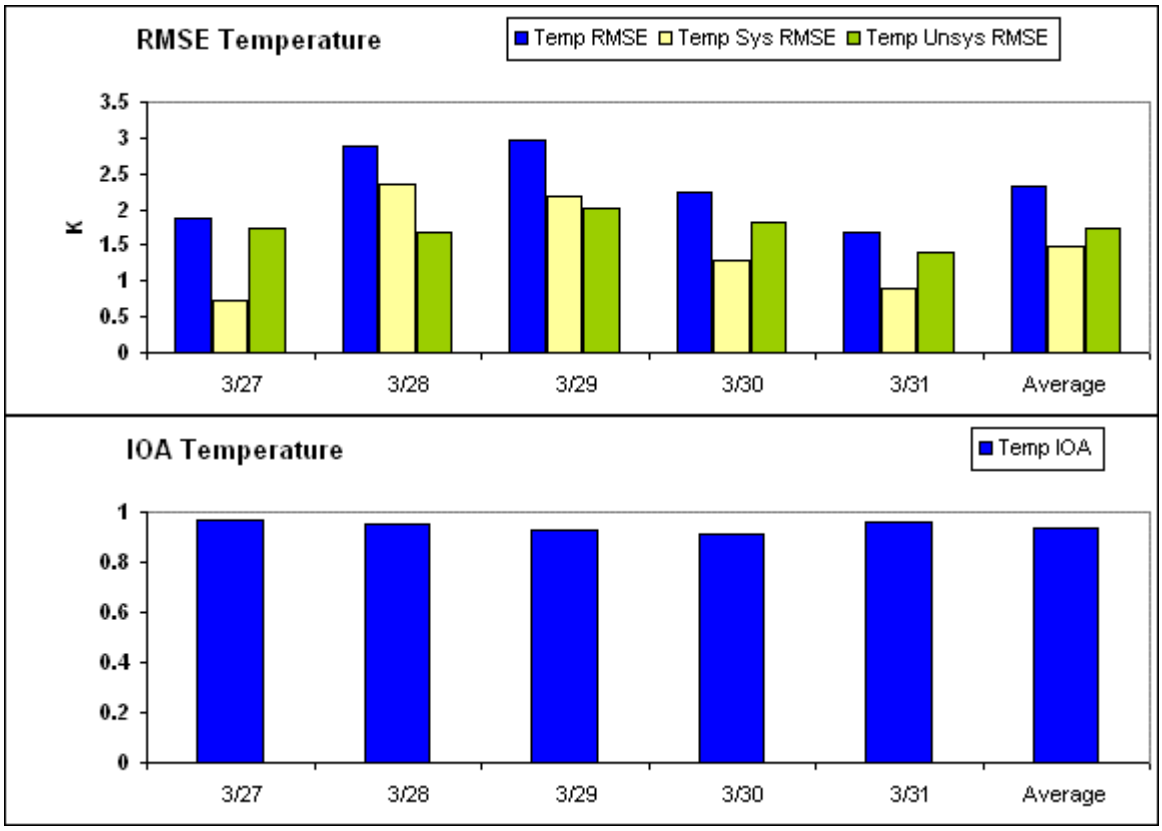

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
3/22
3/23
3/24
3/25
3/26
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
3/22
3/23
3/24
3/25
3/26
Average

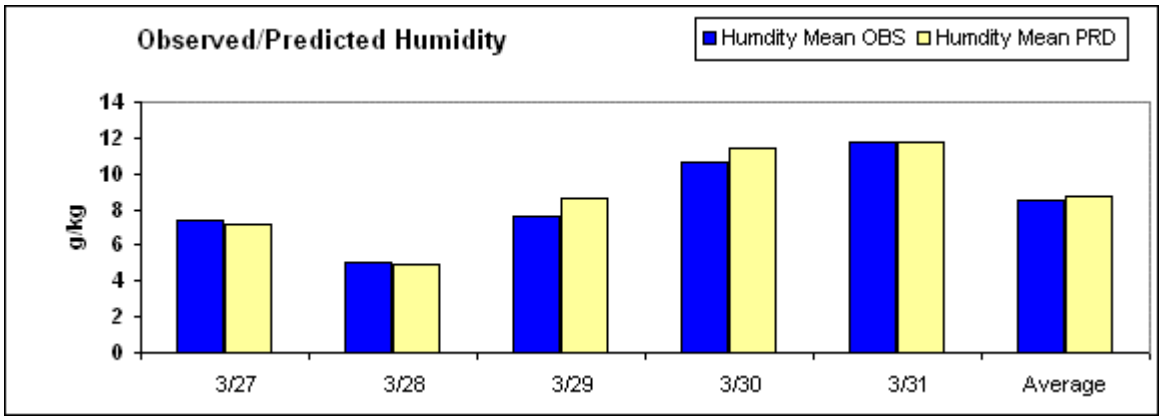

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
3/22
3/23
3/24
3/25
3/26
Average

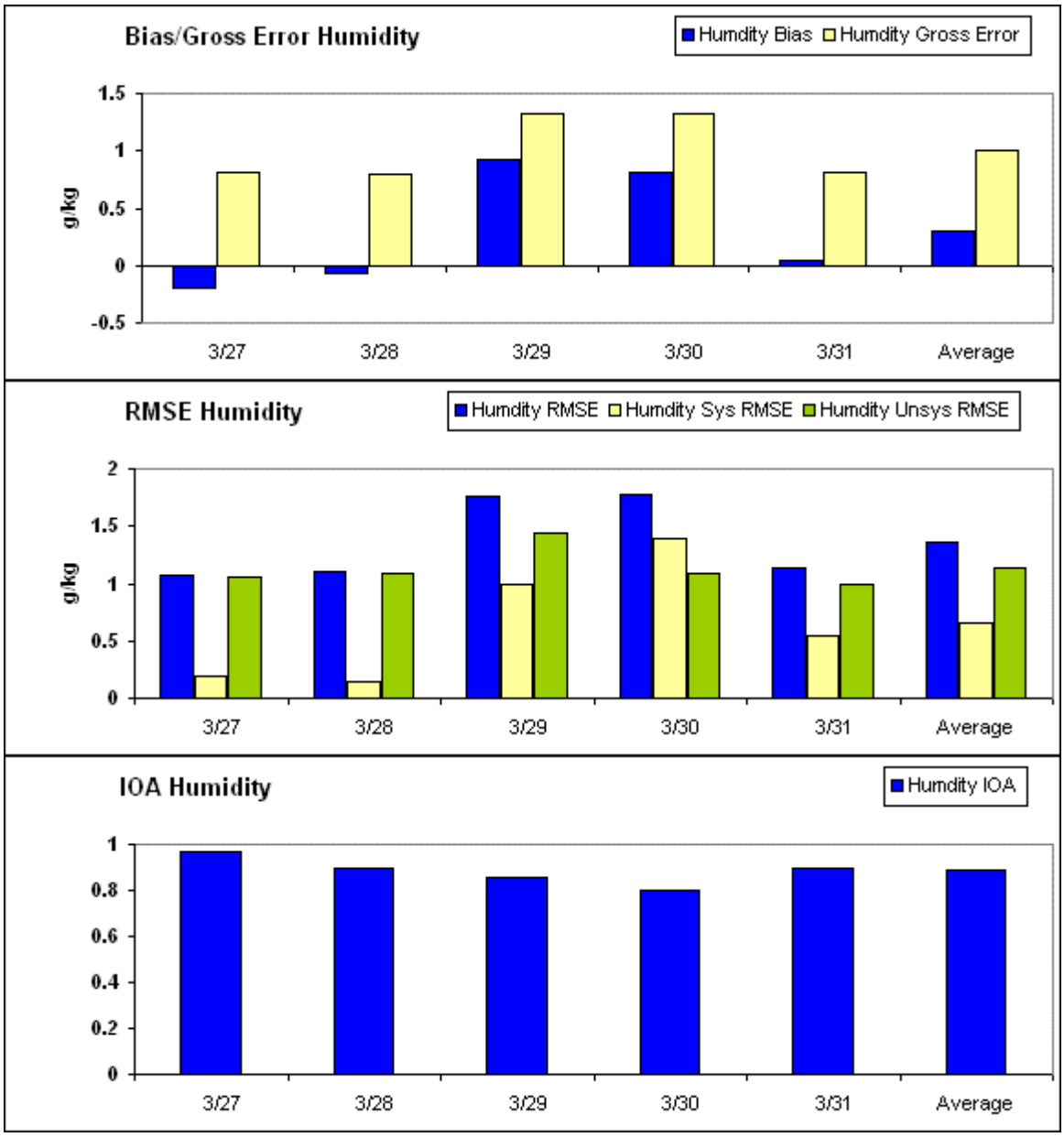

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
3/22
3/23
3/24
3/25
3/26
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
3/22
3/23
3/24
3/25
3/26
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
3/22
3/23
3/24
3/25
3/26
Average

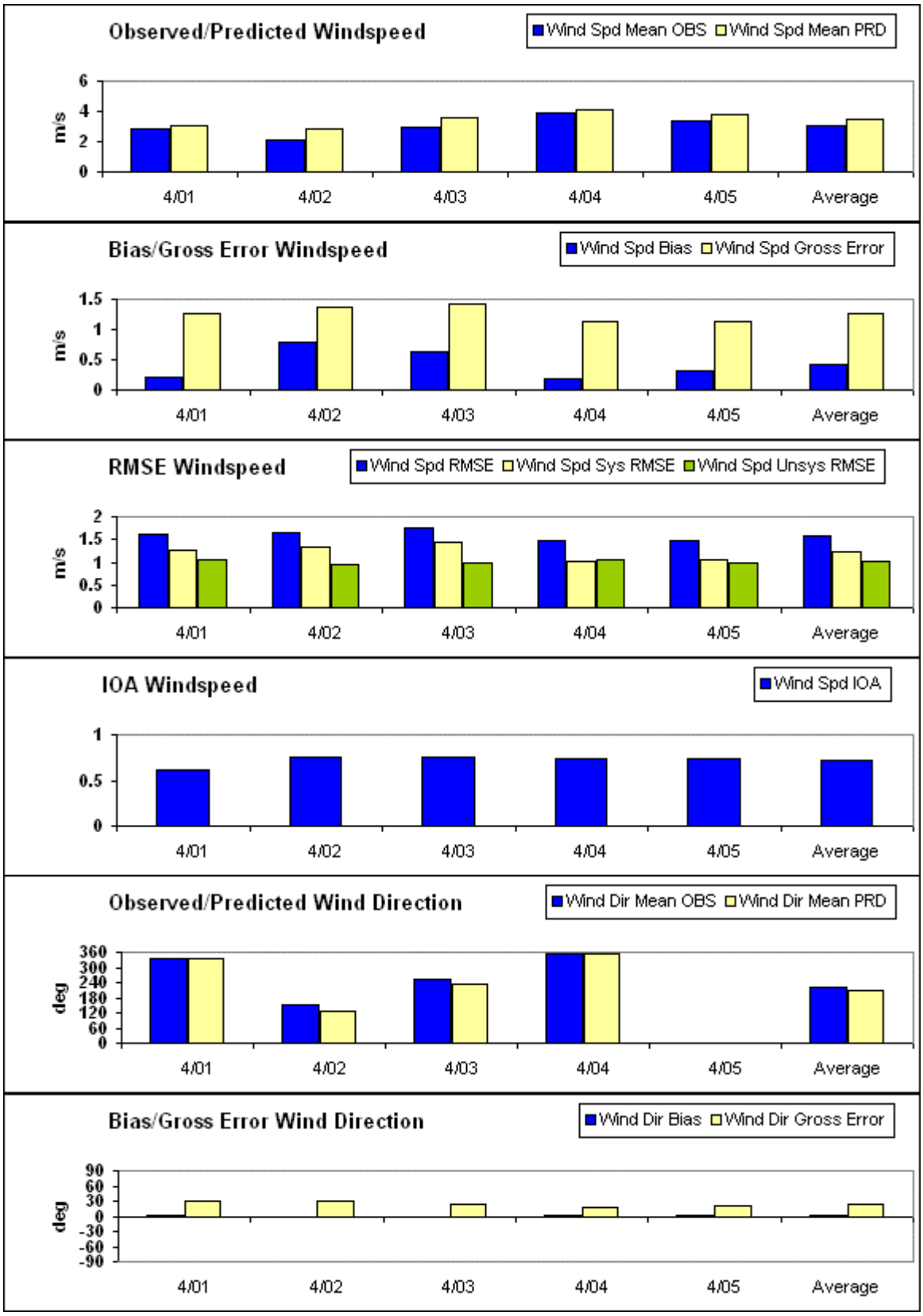

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
3/27
3/28
3/29
3/30
3/31
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
3/27
3/28
3/29
3/30
3/31
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
3/27
3/28
3/29
3/30
3/31
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
3/27
3/28
3/29
3/30
3/31
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
3/27
3/28
3/29
3/30
3/31
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
3/27
3/28
3/29
3/30
3/31
Average

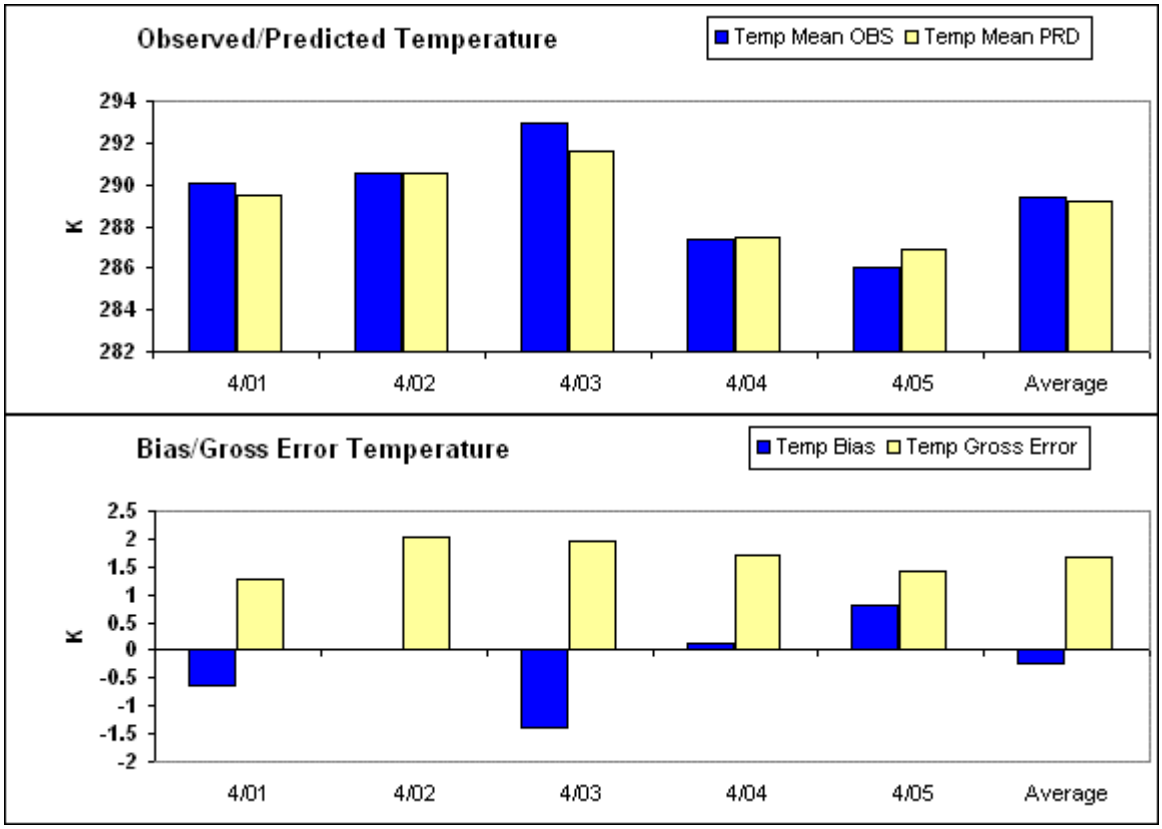

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
294
292
290
288
286
284
282
280
3/27
3/28
3/29
3/30
3/31
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2.5
2
1.5
1
0.5
0
-0.5
-1
3/27
3/28
3/29
3/30
3/31
Average

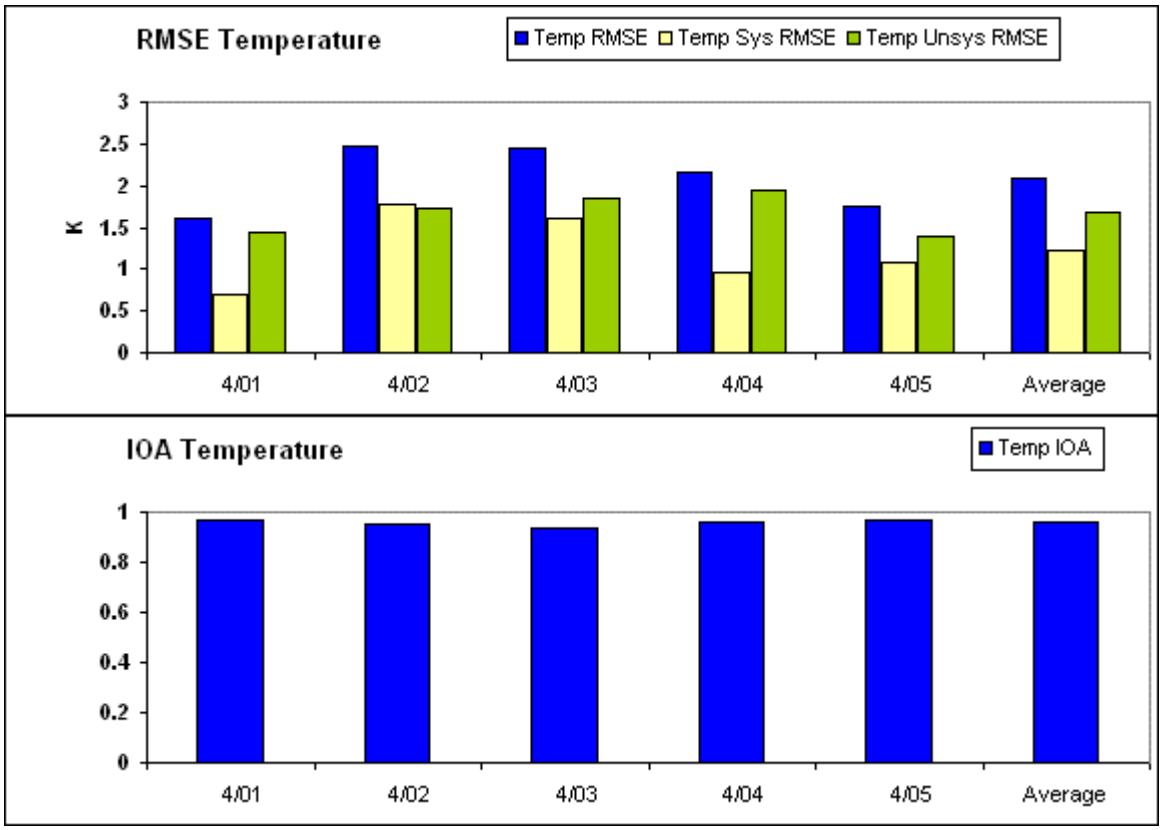

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
3/27
3/28
3/29
3/30
3/31
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
3/27
3/28
3/29
3/30
3/31
Average

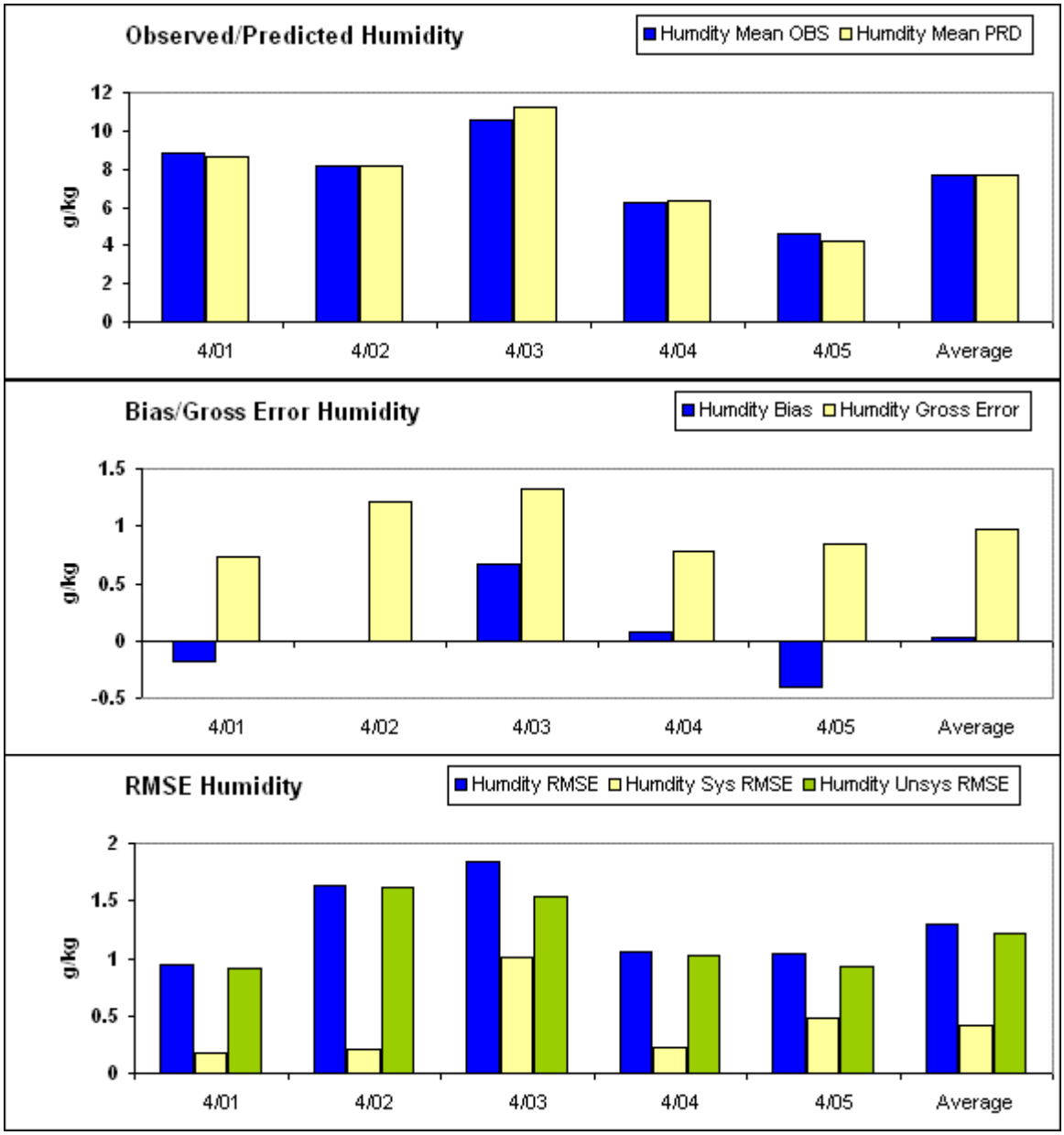

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
3/27
3/28
3/29
3/30
3/31
Average

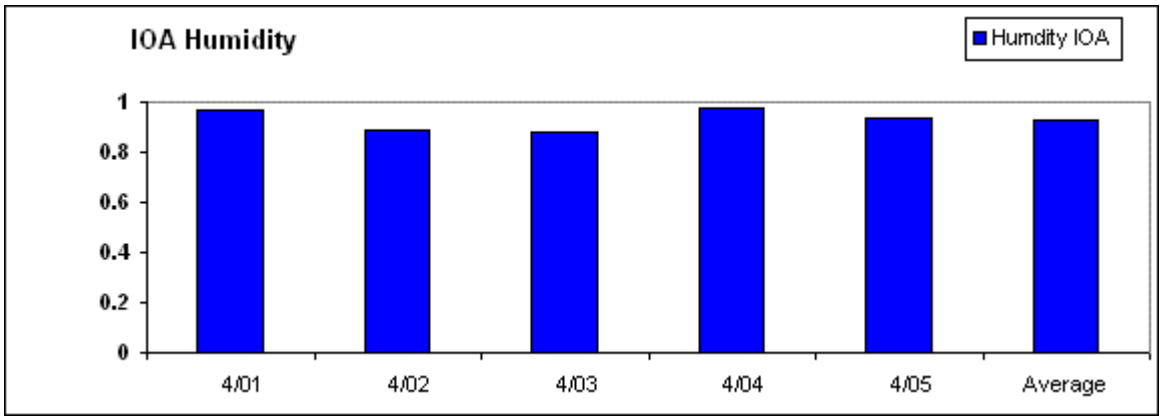

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
3/27
3/28
3/29
3/30
3/31
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
3/27
3/28
3/29
3/30
3/31
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
3/27
3/28
3/29
3/30
3/31
Average

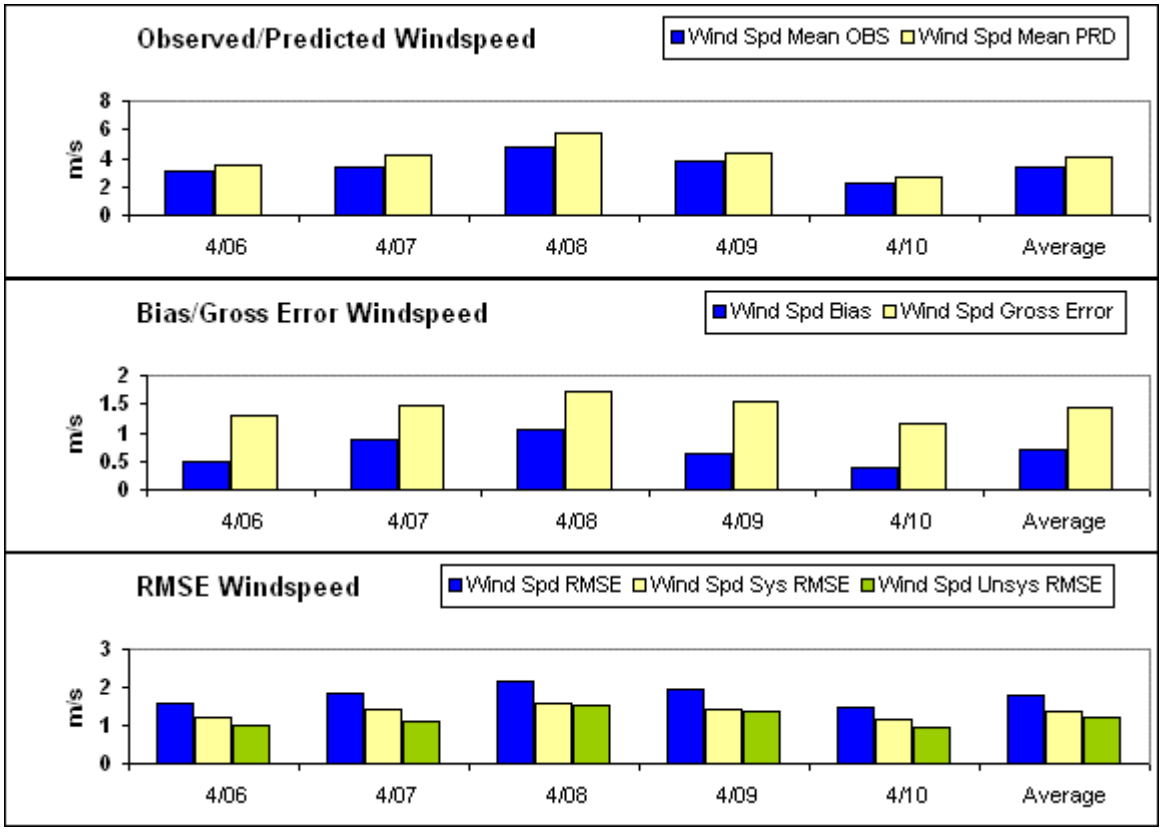

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
4/01
4/02
4/03
4/04
4/05
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
4/01
4/02
4/03
4/04
4/05
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
4/01
4/02
4/03
4/04
4/05
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
4/01
4/02
4/03
4/04
4/05
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
4/01
4/02
4/03
4/04
4/05
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
4/01
4/02
4/03
4/04
4/05
Average

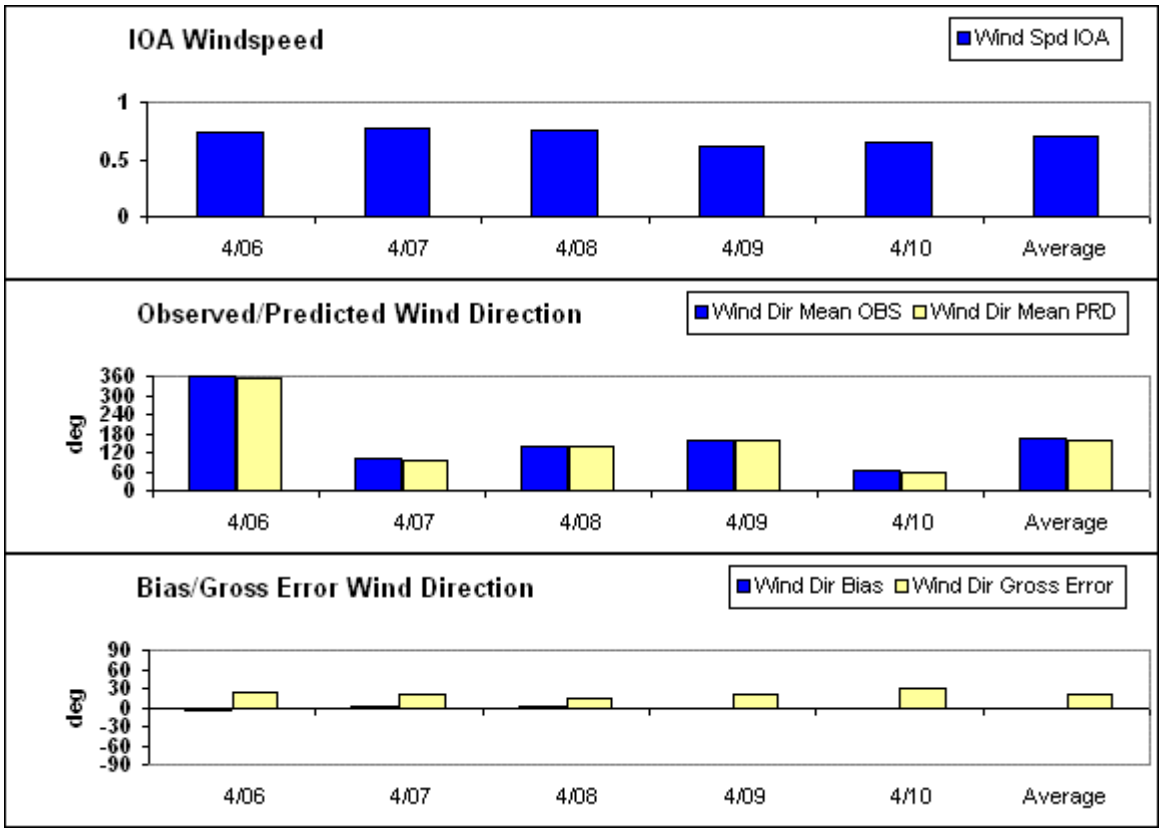

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
294
292
290
288
286
284
282
4/01
4/02
4/03
4/04
4/05
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
4/01
4/02
4/03
4/04
4/05
Average

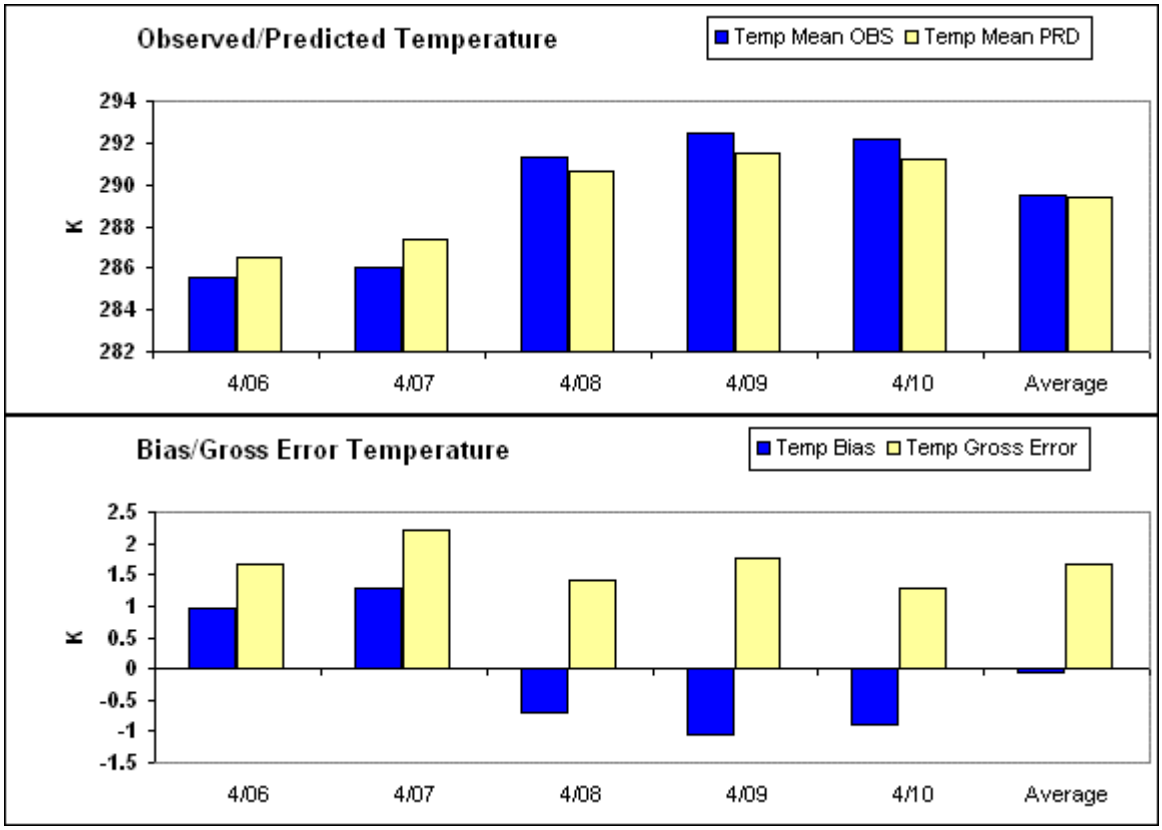

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
4/01
4/02
4/03
4/04
4/05
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
4/01
4/02
4/03
4/04
4/05
Average

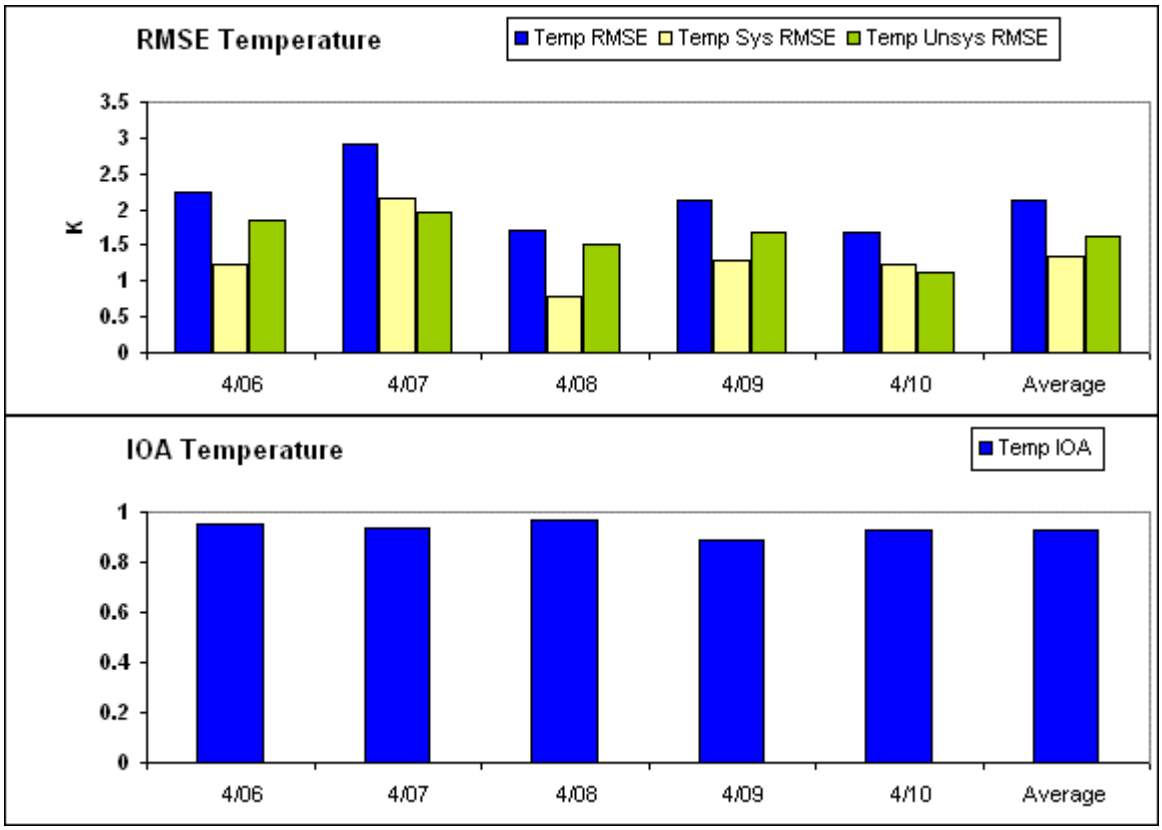

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
4/01
4/02
4/03
4/04
4/05
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
4/01
4/02
4/03
4/04
4/05
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
4/01
4/02
4/03
4/04
4/05
Average

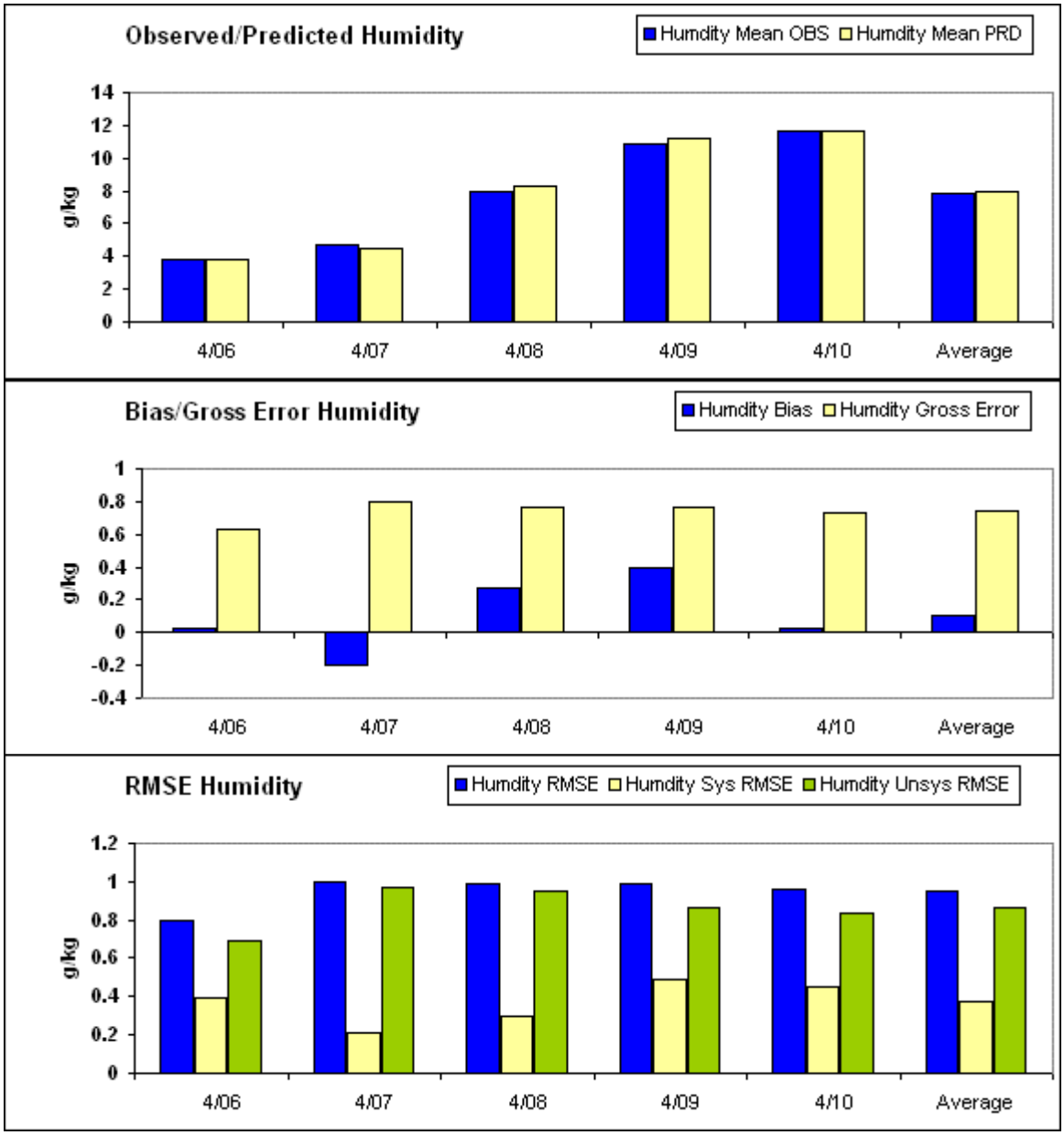

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
4/01
4/02
4/03
4/04
4/05
Average

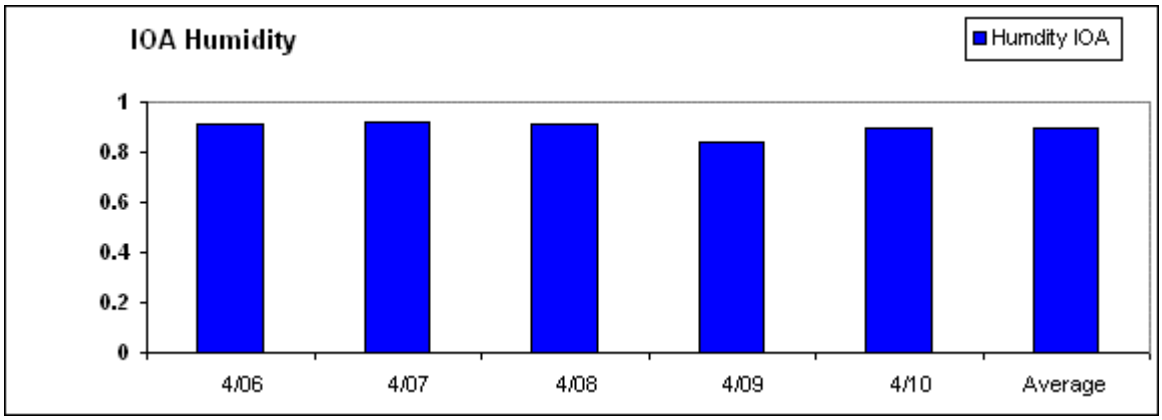

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
8
6
4
2
0
4/06
4/07
4/08
4/09
4/10
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
4/06
4/07
4/08
4/09
4/10
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
4/06
4/07
4/08
4/09
4/10
Average

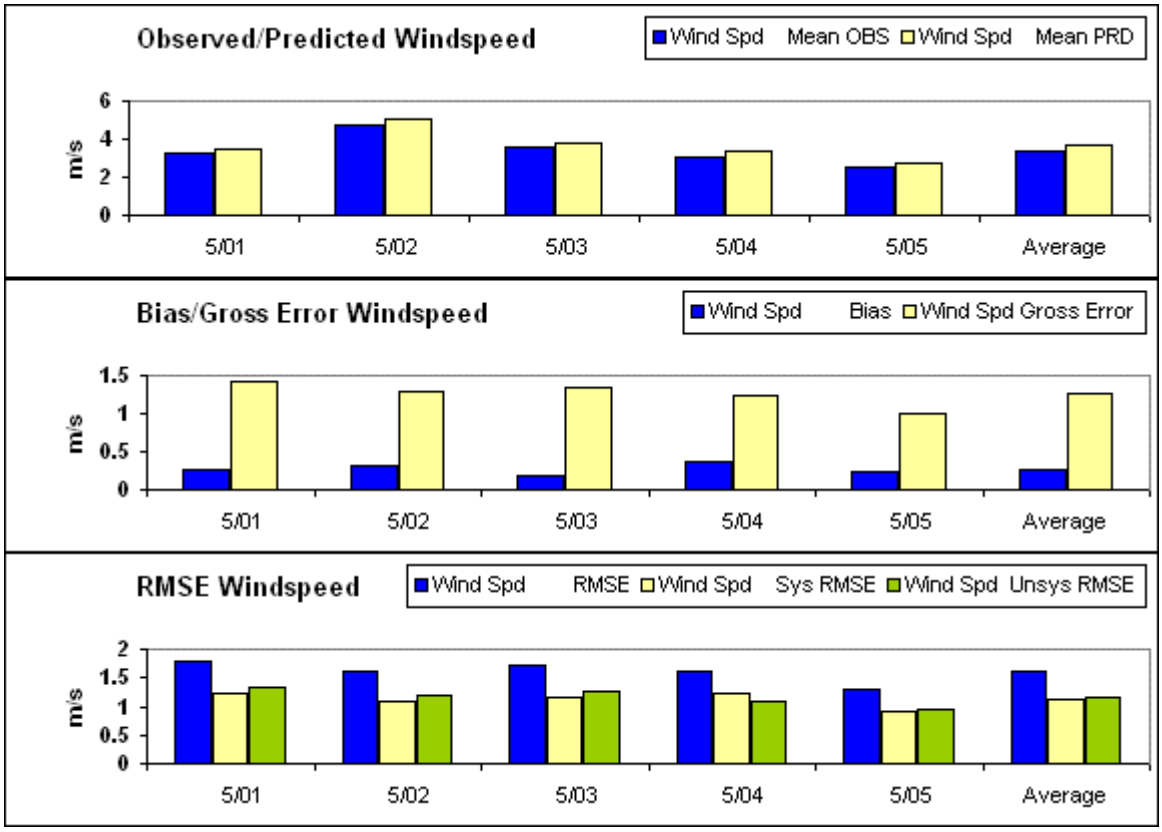

IOA Windspeed
Wind Spd IOA
1
0.5
0
4/06
4/07
4/08
4/09
4/10
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
4/06
4/07
4/08
4/09
4/10
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
4/06
4/07
4/08
4/09
4/10
Average

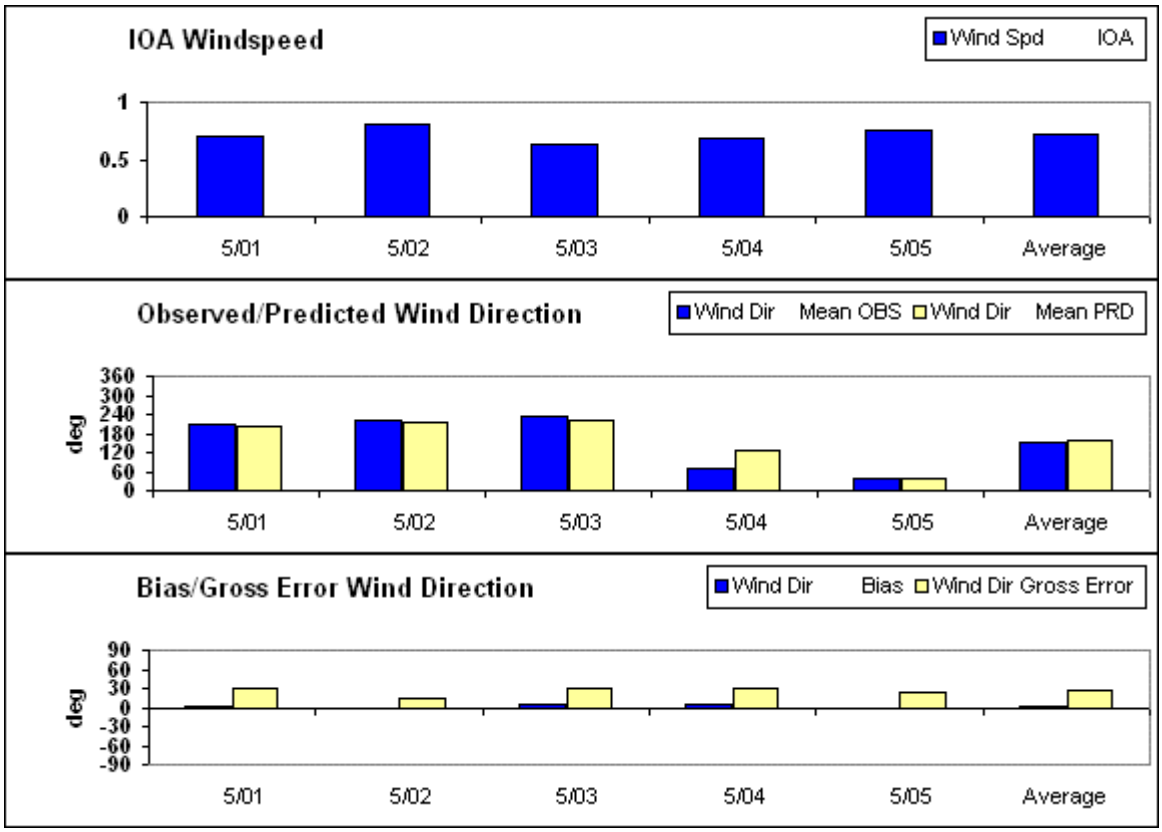

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
294
292
290
288
286
284
282
4/06
4/07
4/08
4/09
4/10
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
4/06
4/07
4/08
4/09
4/10
Average

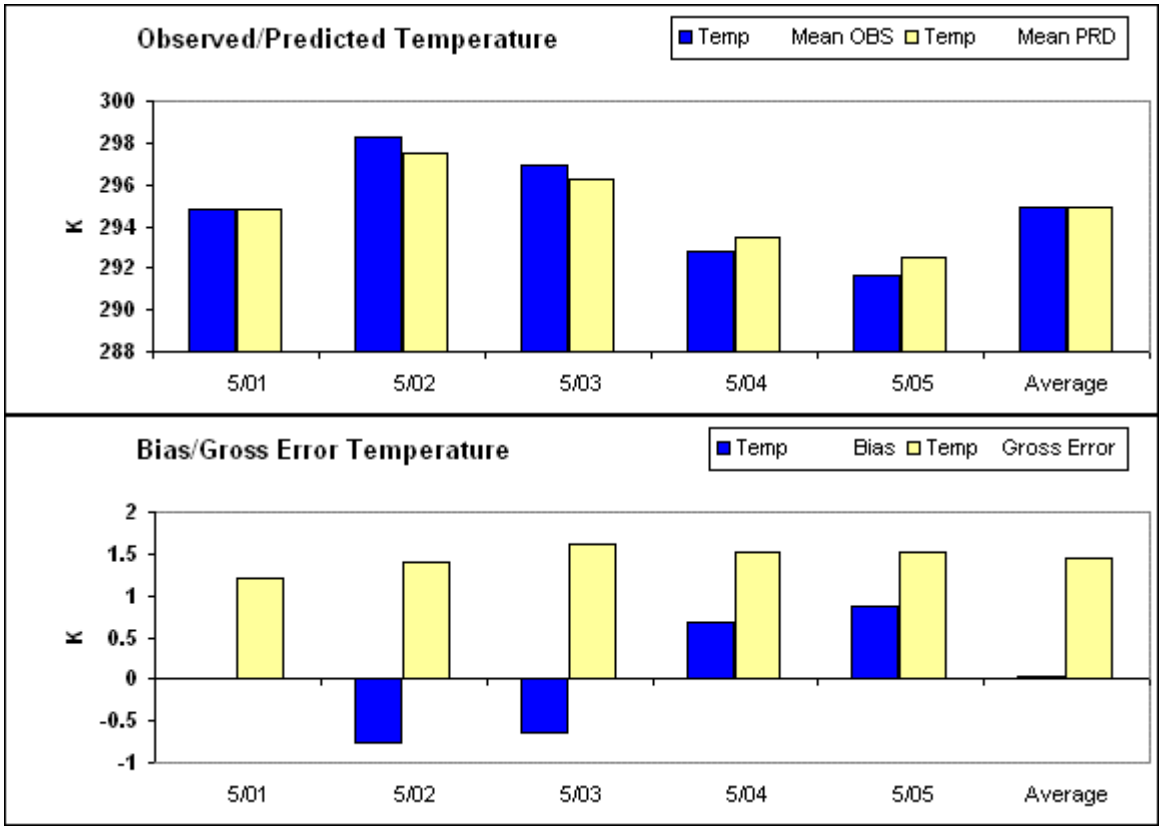

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
4/06
4/07
4/08
4/09
4/10
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
4/06
4/07
4/08
4/09
4/10
Average

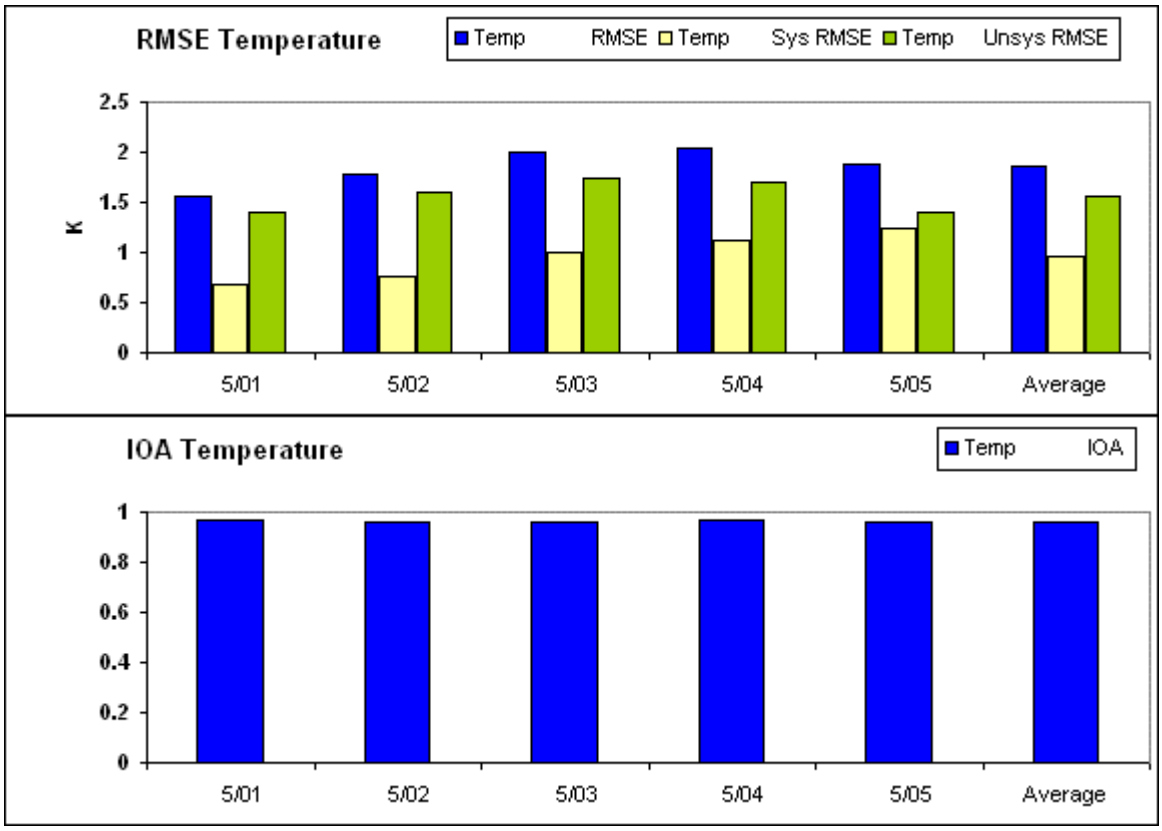

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
4/06
4/07
4/08
4/09
4/10
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
4/06
4/07
4/08
4/09
4/10
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
4/06
4/07
4/08
4/09
4/10
Average

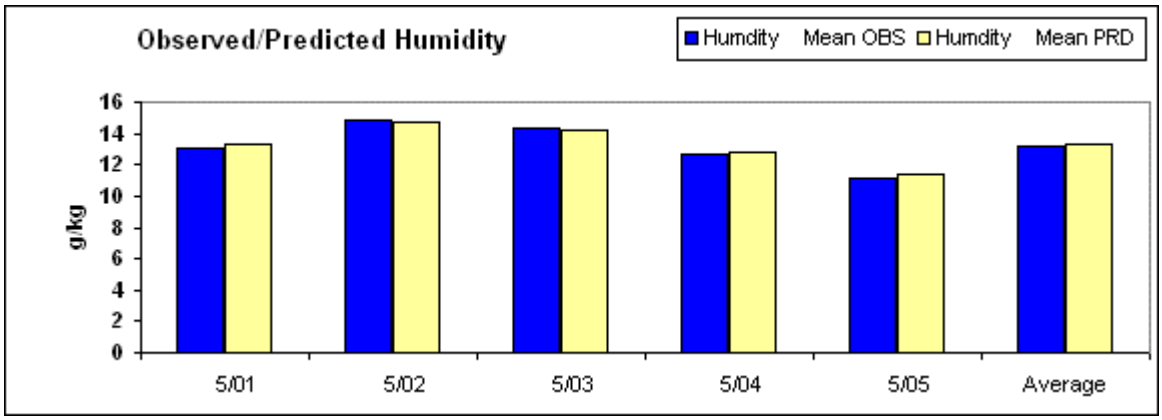

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
4/06
4/07
4/08
4/09
4/10
Average

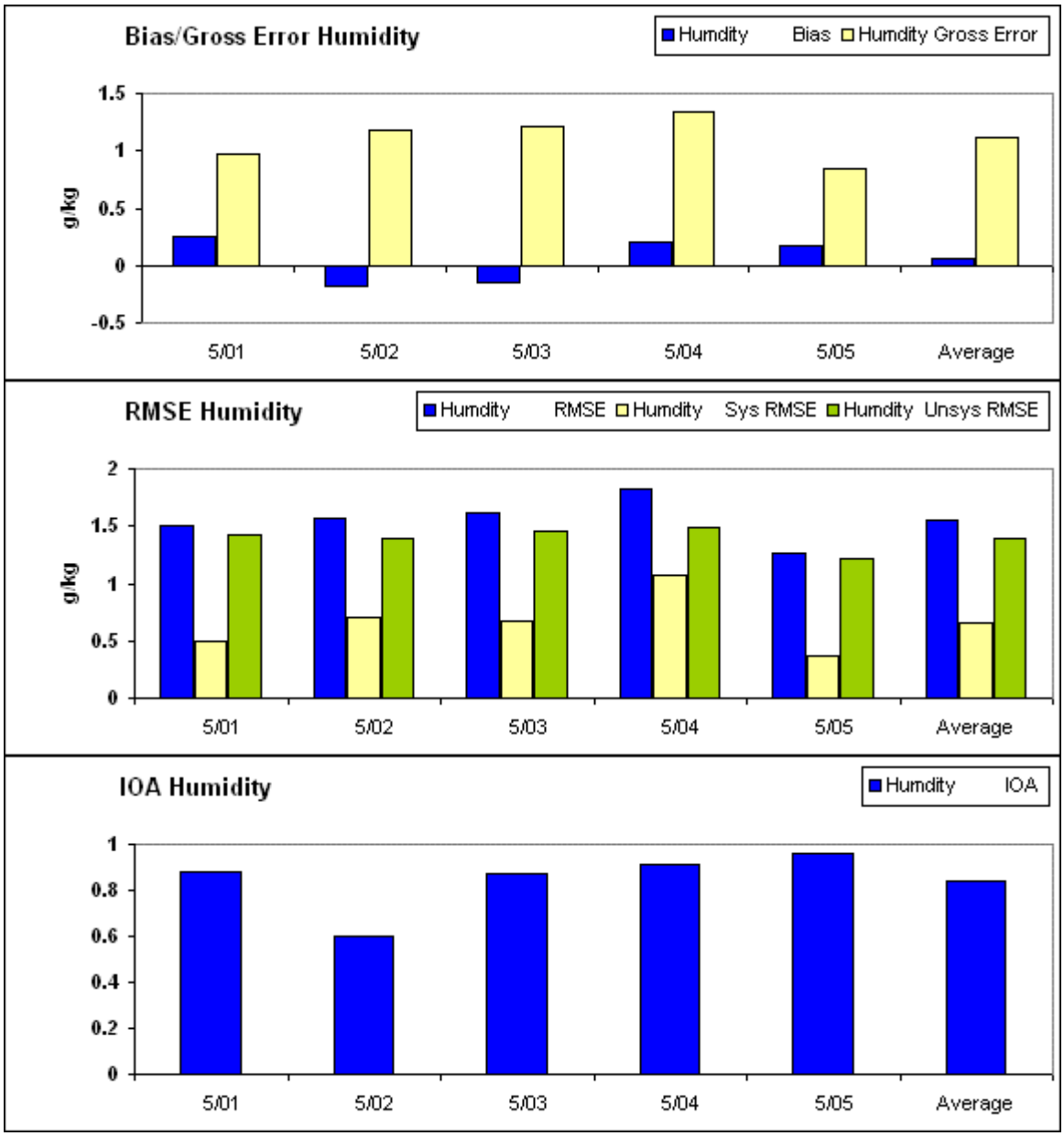

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
5/01
5/02
5/03
5/04
5/05
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
5/01
5/02
5/03
5/04
5/05
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
5/01
5/02
5/03
5/04
5/05
Average

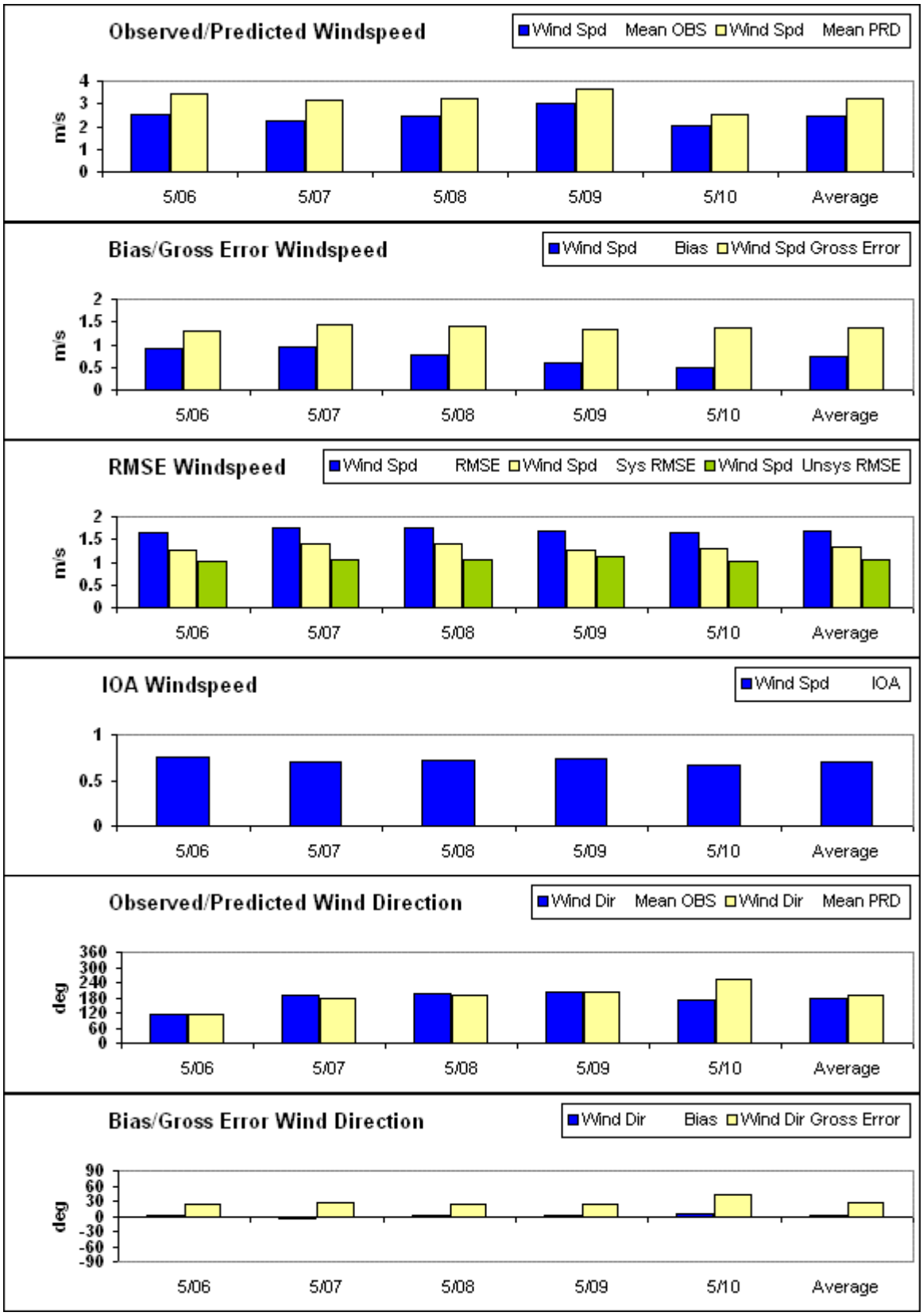

IOA Windspeed
Wind Spd
IOA
1
0.5
0
5/01
5/02
5/03
5/04
5/05
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/01
5/02
5/03
5/04
5/05
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/01
5/02
5/03
5/04
5/05
Average

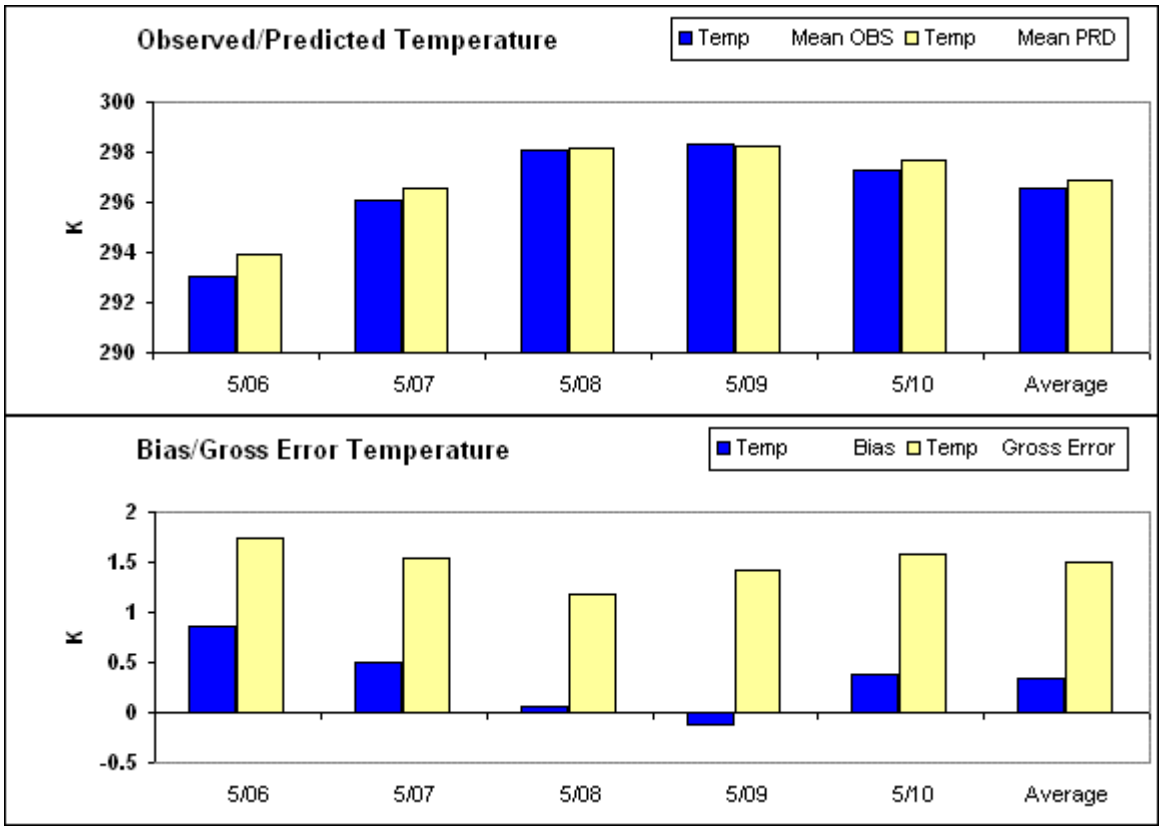

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
300
298
296
294
292
290
288
5/01
5/02
5/03
5/04
5/05
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
5/01
5/02
5/03
5/04
5/05
Average

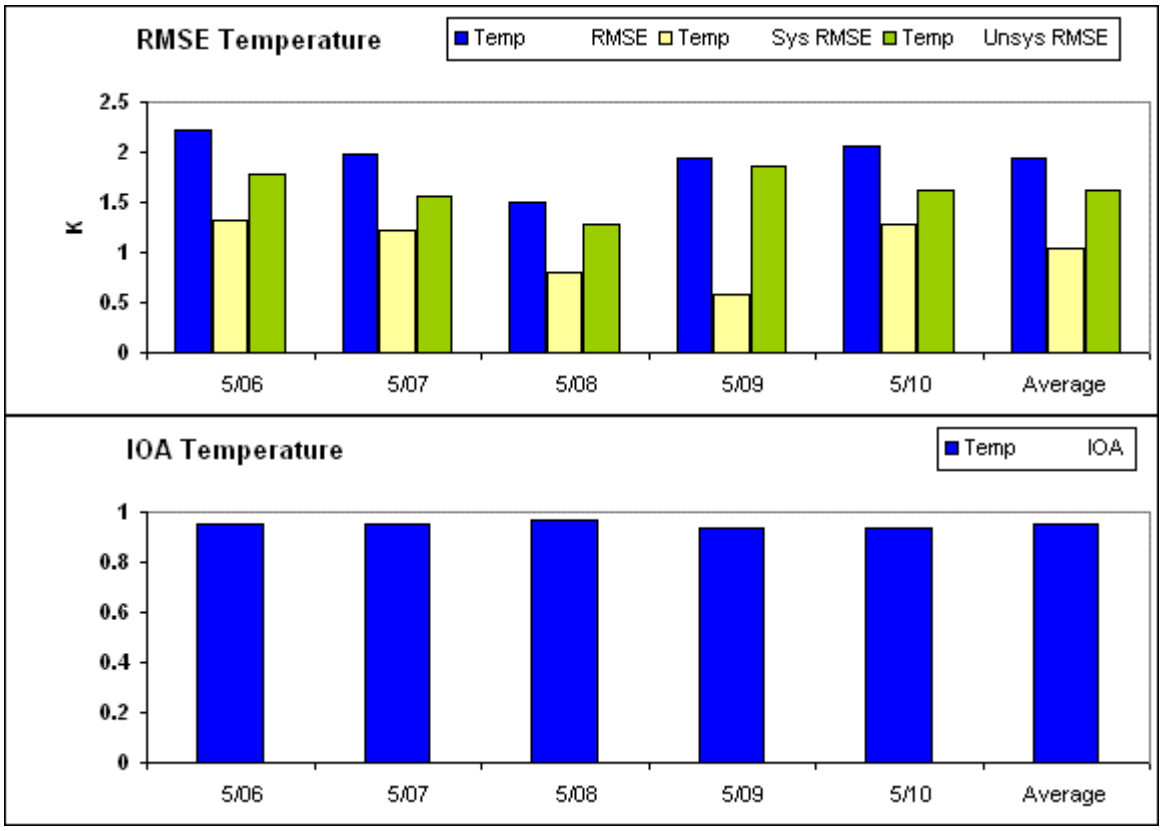

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
5/01
5/02
5/03
5/04
5/05
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/01
5/02
5/03
5/04
5/05
Average

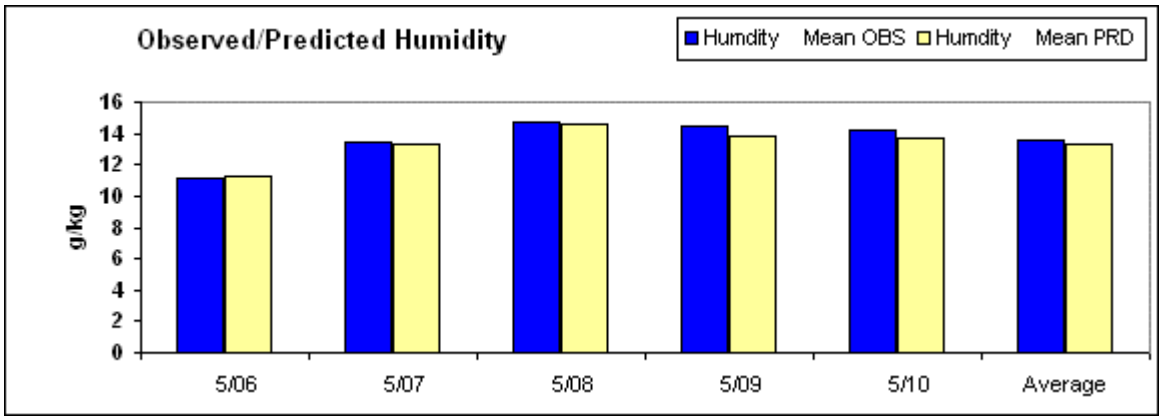

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
5/01
5/02
5/03
5/04
5/05
Average

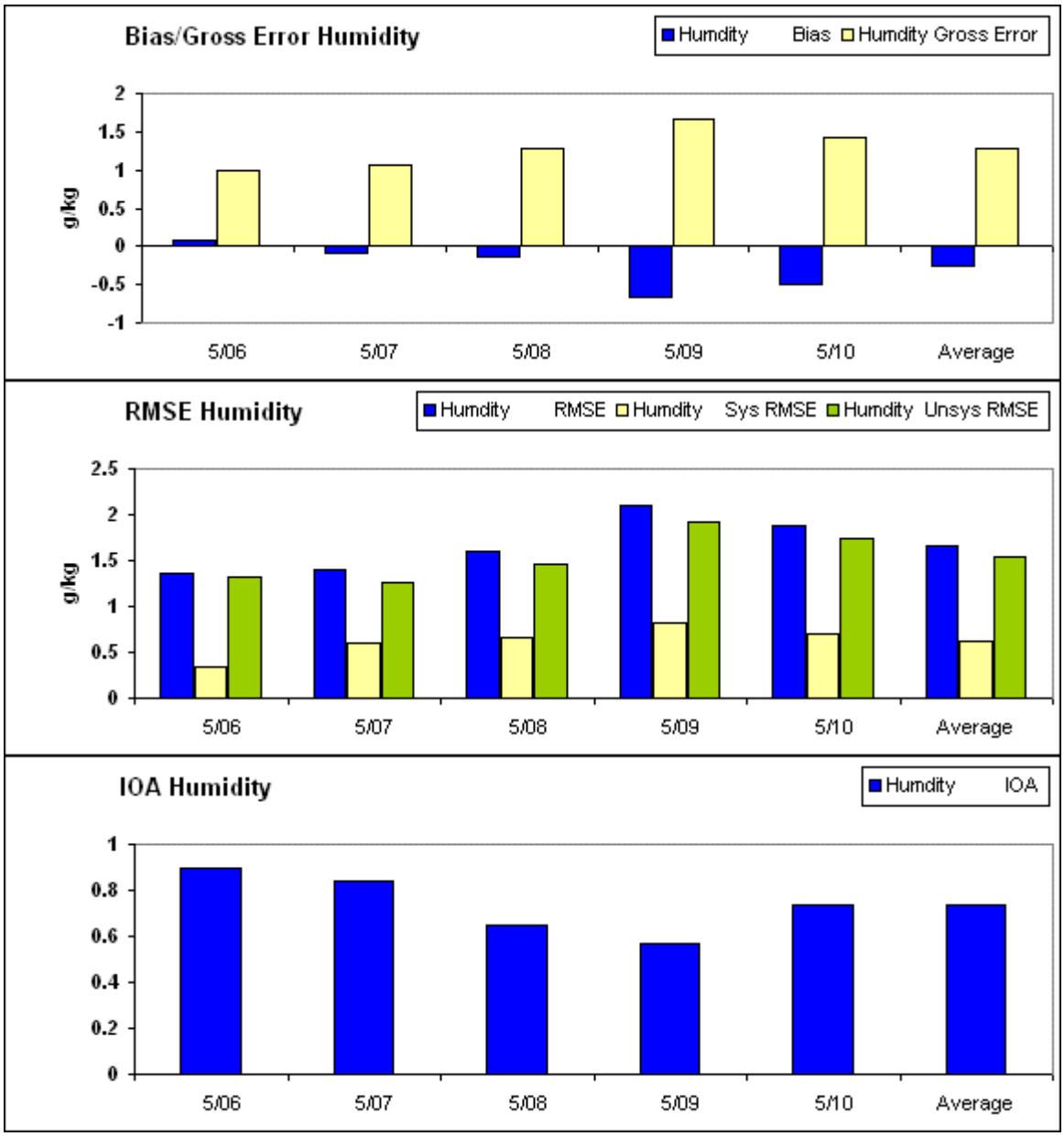

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
5/01
5/02
5/03
5/04
5/05
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
5/01
5/02
5/03
5/04
5/05
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/01
5/02
5/03
5/04
5/05
Average

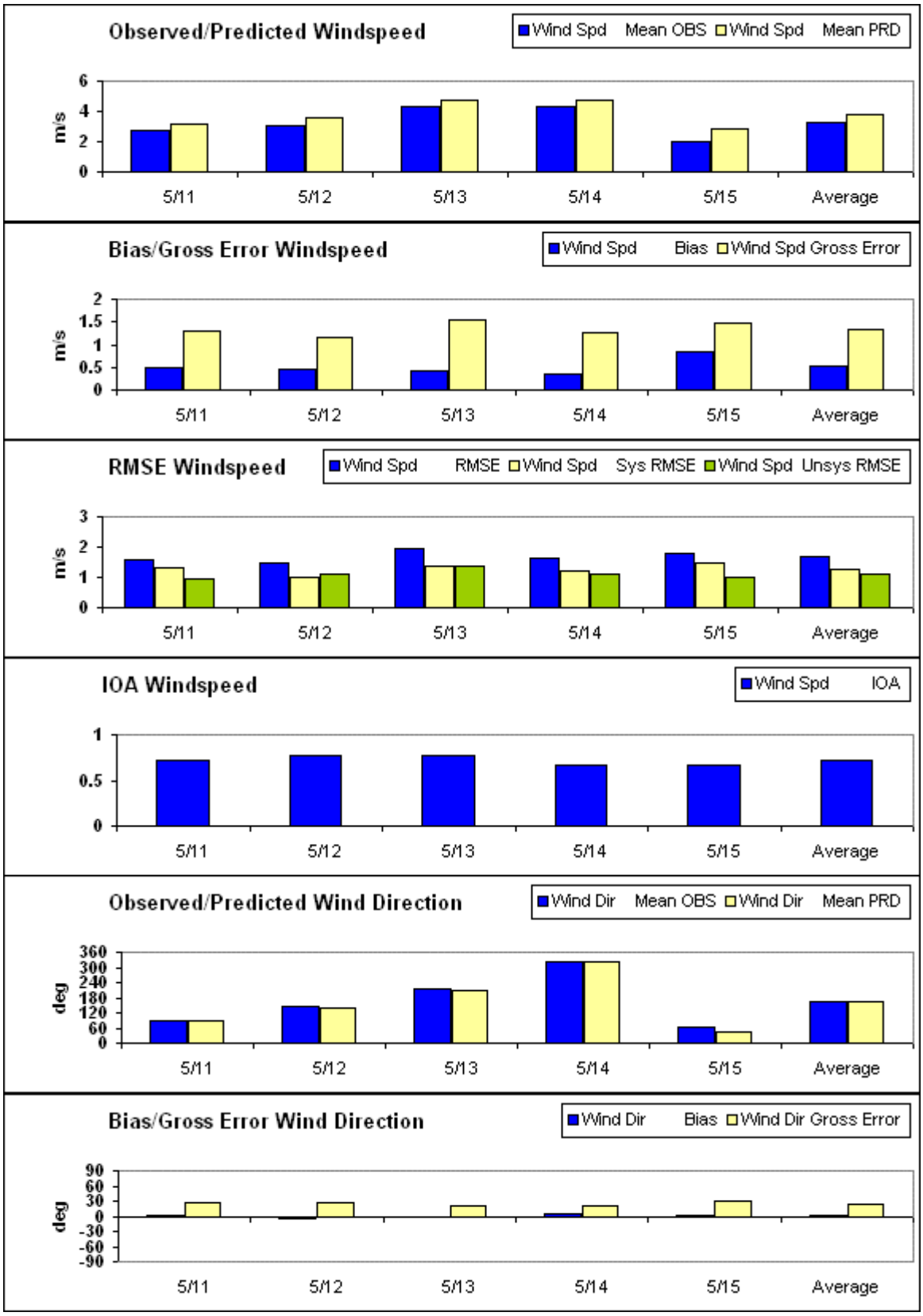

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
5/06
5/07
5/08
5/09
5/10
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
5/06
5/07
5/08
5/09
5/10
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
5/06
5/07
5/08
5/09
5/10
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
5/06
5/07
5/08
5/09
5/10
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/06
5/07
5/08
5/09
5/10
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/06
5/07
5/08
5/09
5/10
Average

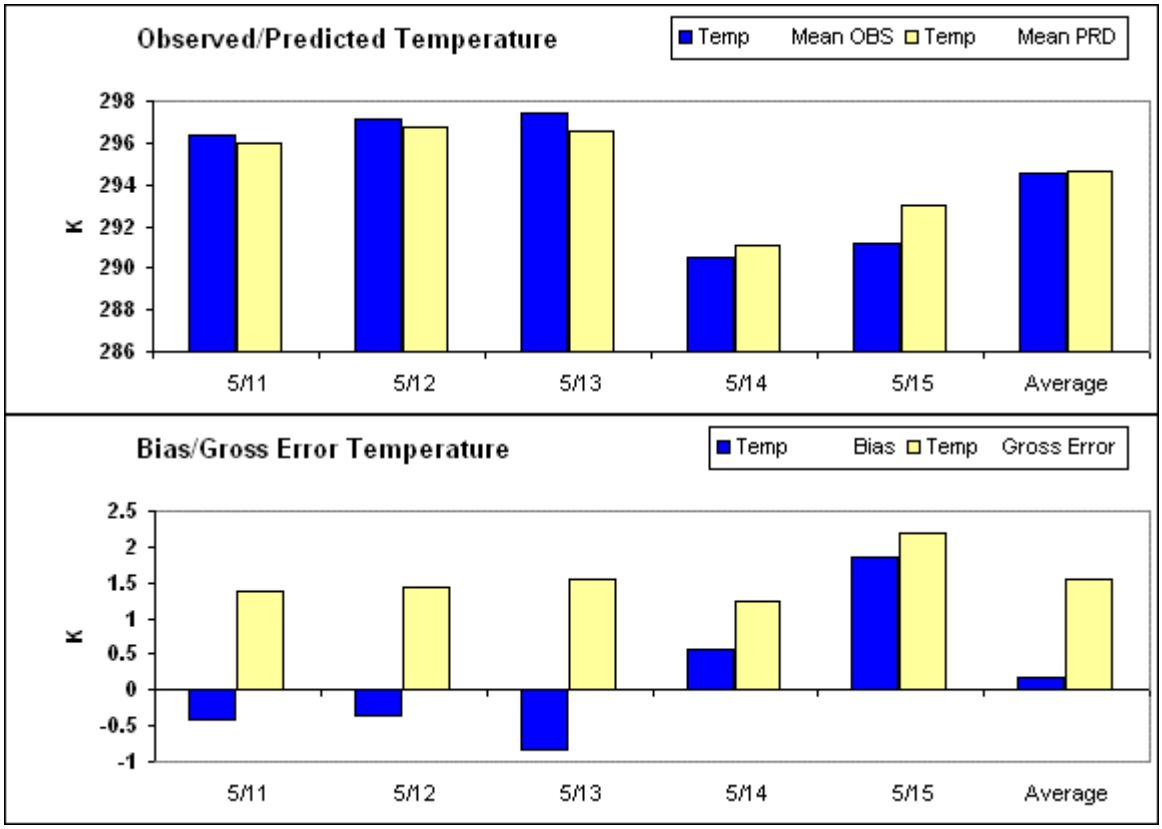

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
300
298
296
294
292
290
K
5/06
5/07
5/08
5/09
5/10
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
2
1.5
1
0.5
0
-0.5
K
5/06
5/07
5/08
5/09
5/10
Average

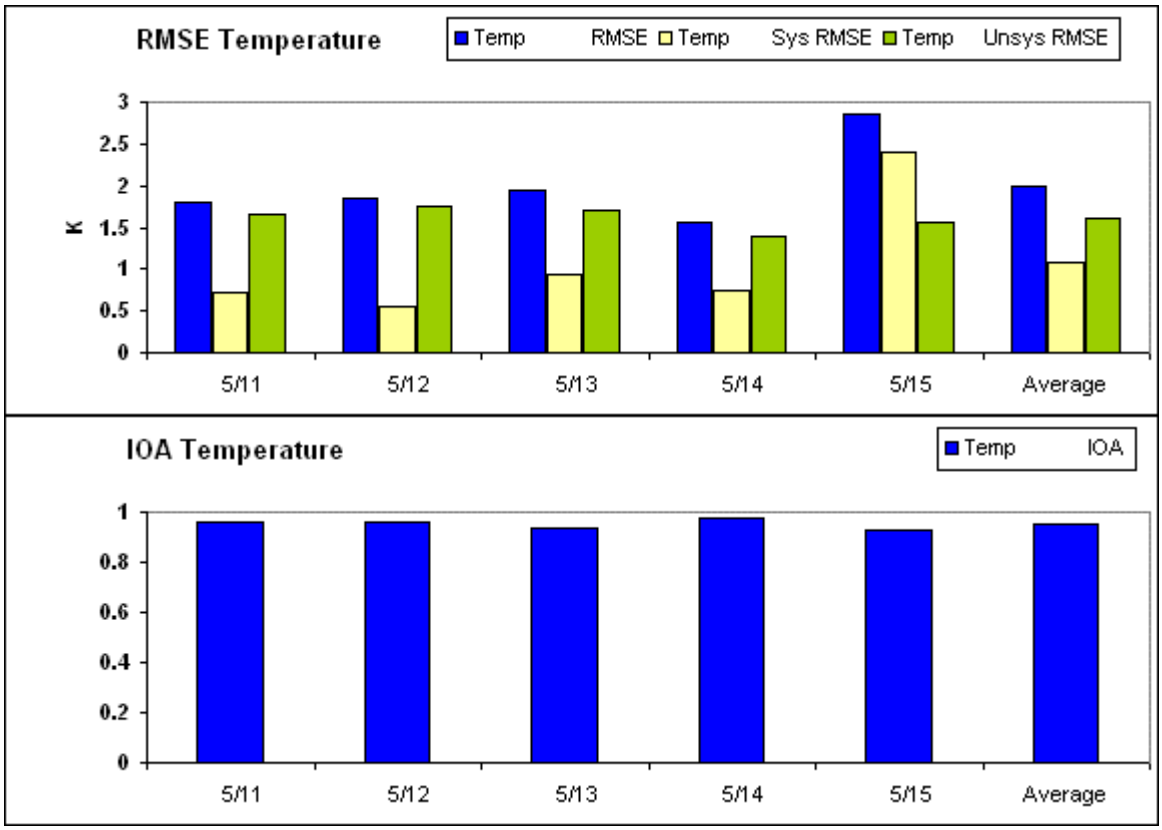

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
5/06
5/07
5/08
5/09
5/10
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/06
5/07
5/08
5/09
5/10
Average

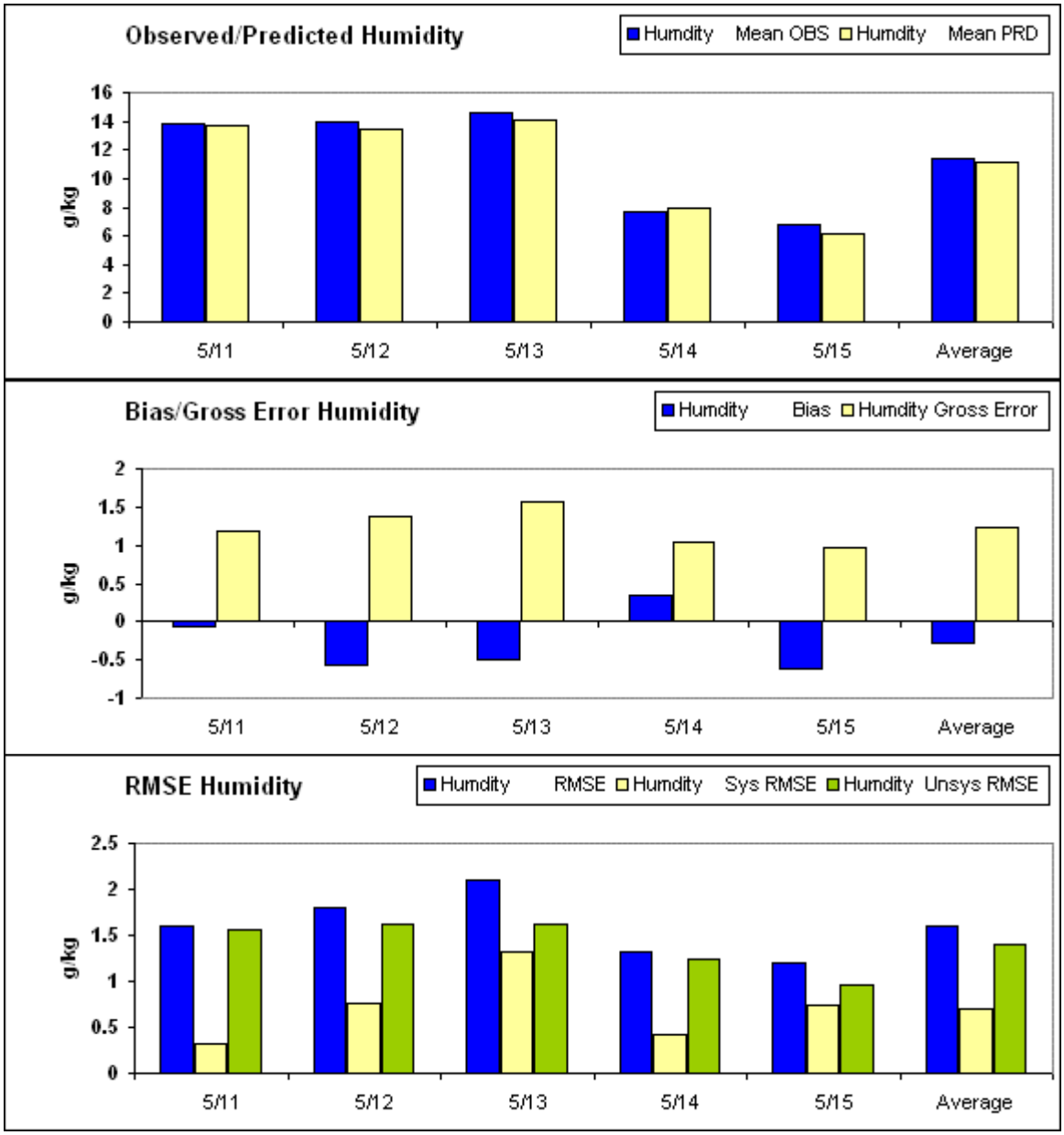

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
5/06
5/07
5/08
5/09
5/10
Average

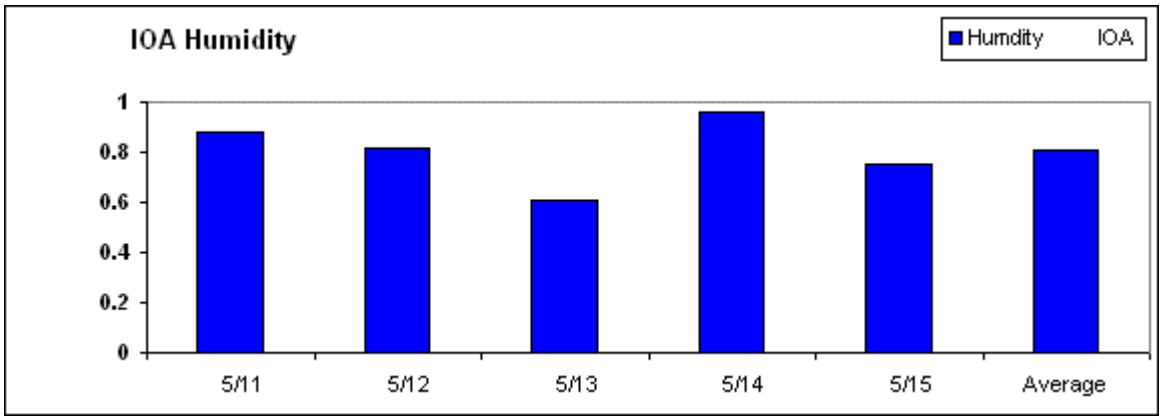

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
5/06
5/07
5/08
5/09
5/10
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
5/06
5/07
5/08
5/09
5/10
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/06
5/07
5/08
5/09
5/10
Average

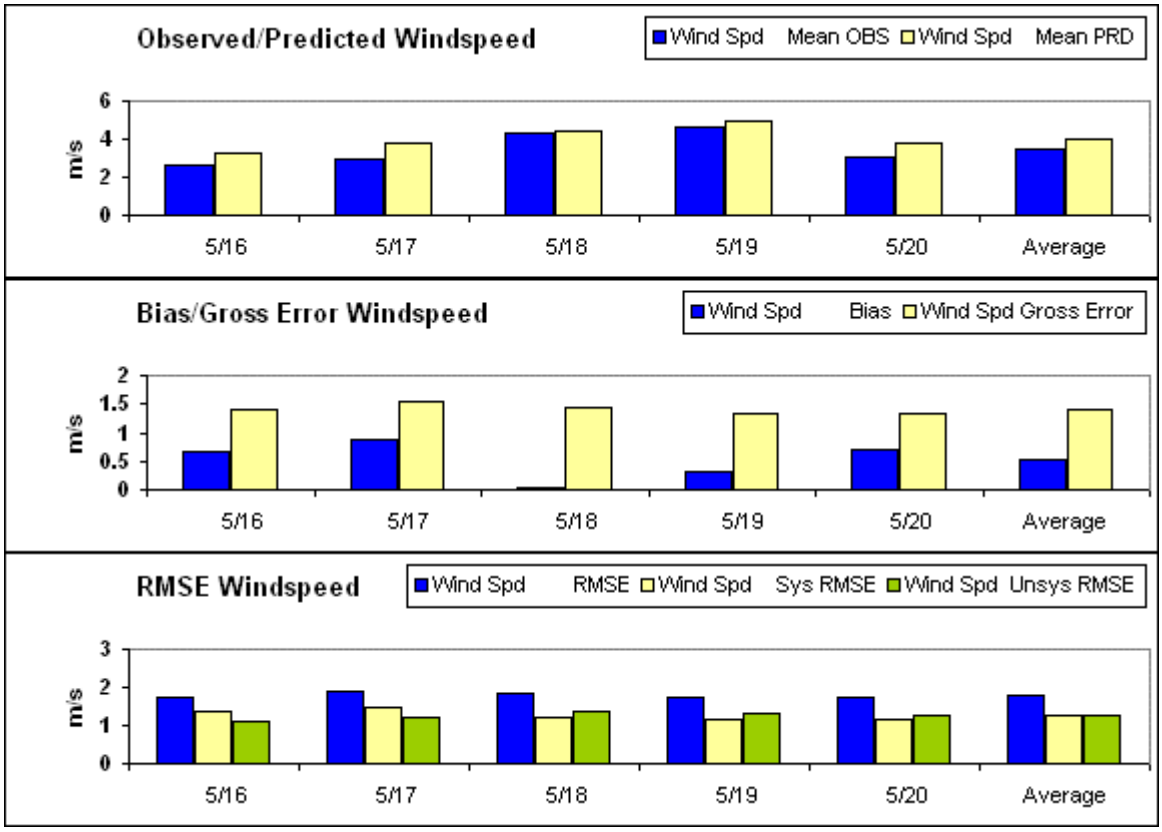

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
5/11
5/12
5/13
5/14
5/15
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
5/11
5/12
5/13
5/14
5/15
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
5/11
5/12
5/13
5/14
5/15
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
5/11
5/12
5/13
5/14
5/15
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/11
5/12
5/13
5/14
5/15
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/11
5/12
5/13
5/14
5/15
Average

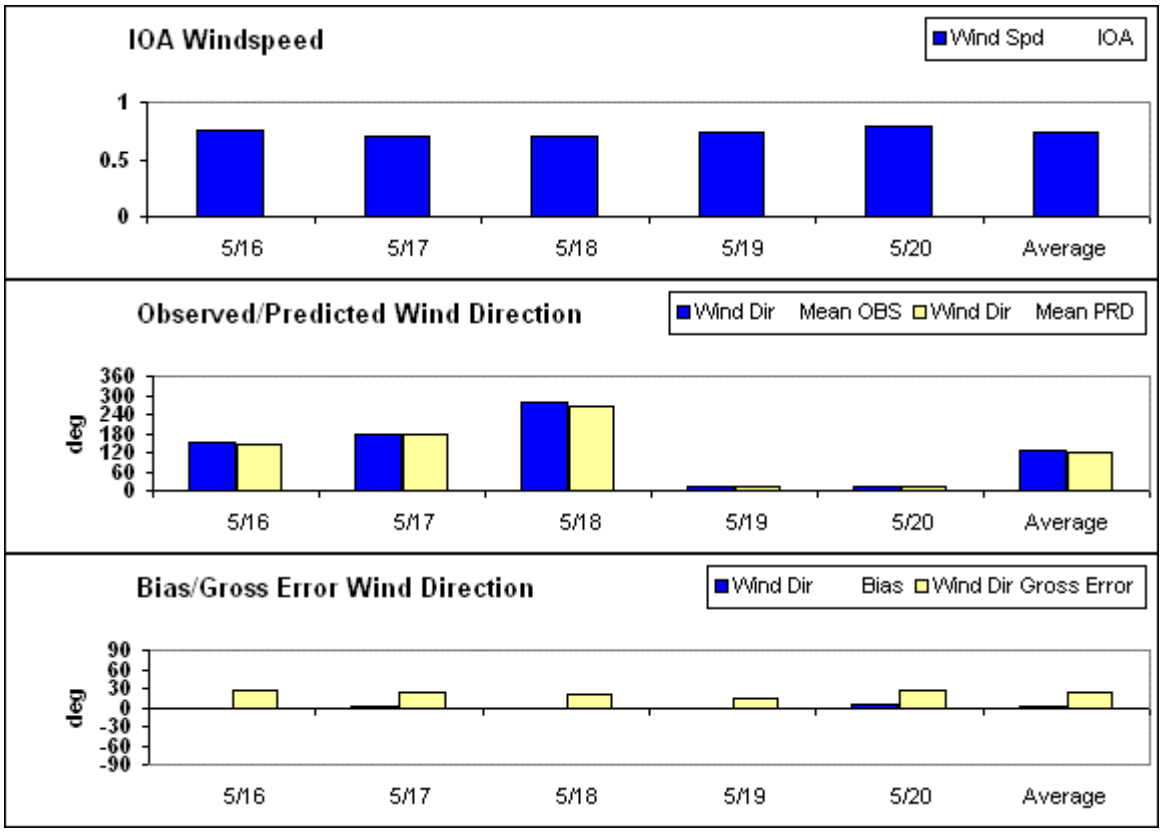

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298
296
294
292
290
288
286
5/11
5/12
5/13
5/14
5/15
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
5/11
5/12
5/13
5/14
5/15
Average

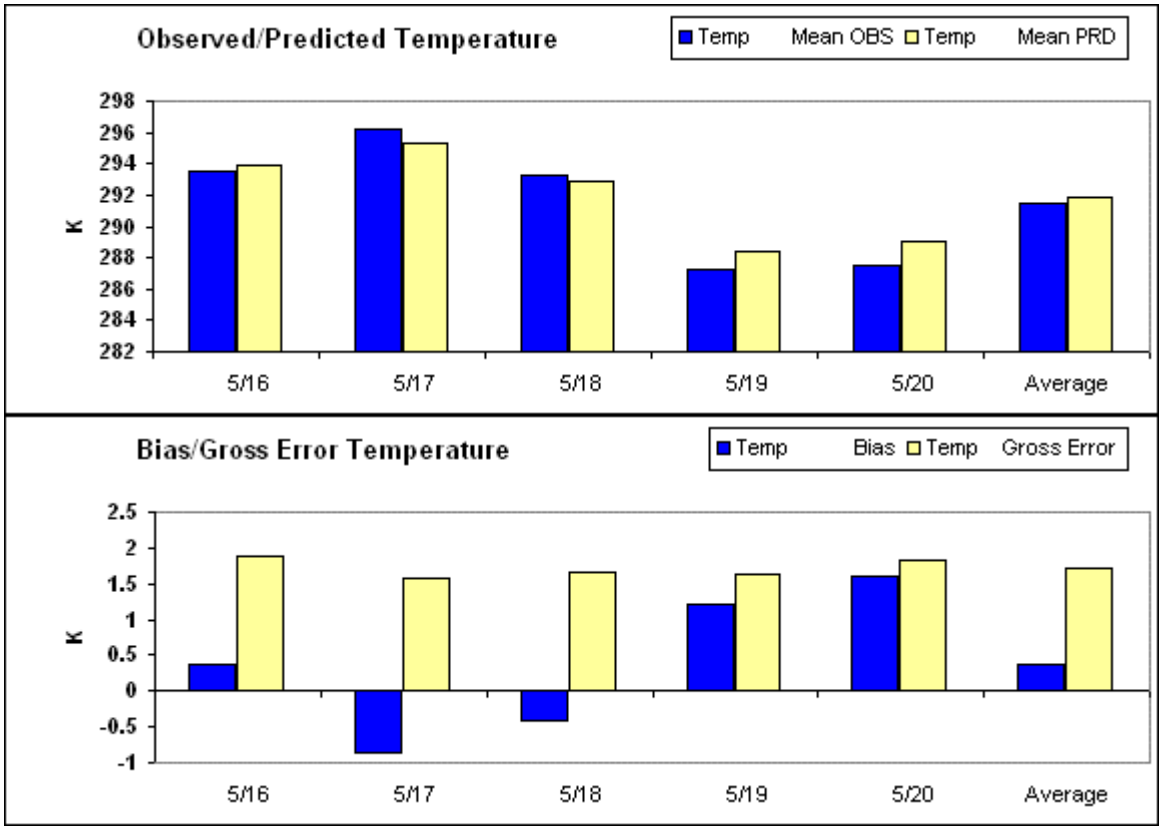

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
5/11
5/12
5/13
5/14
5/15
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/11
5/12
5/13
5/14
5/15
Average

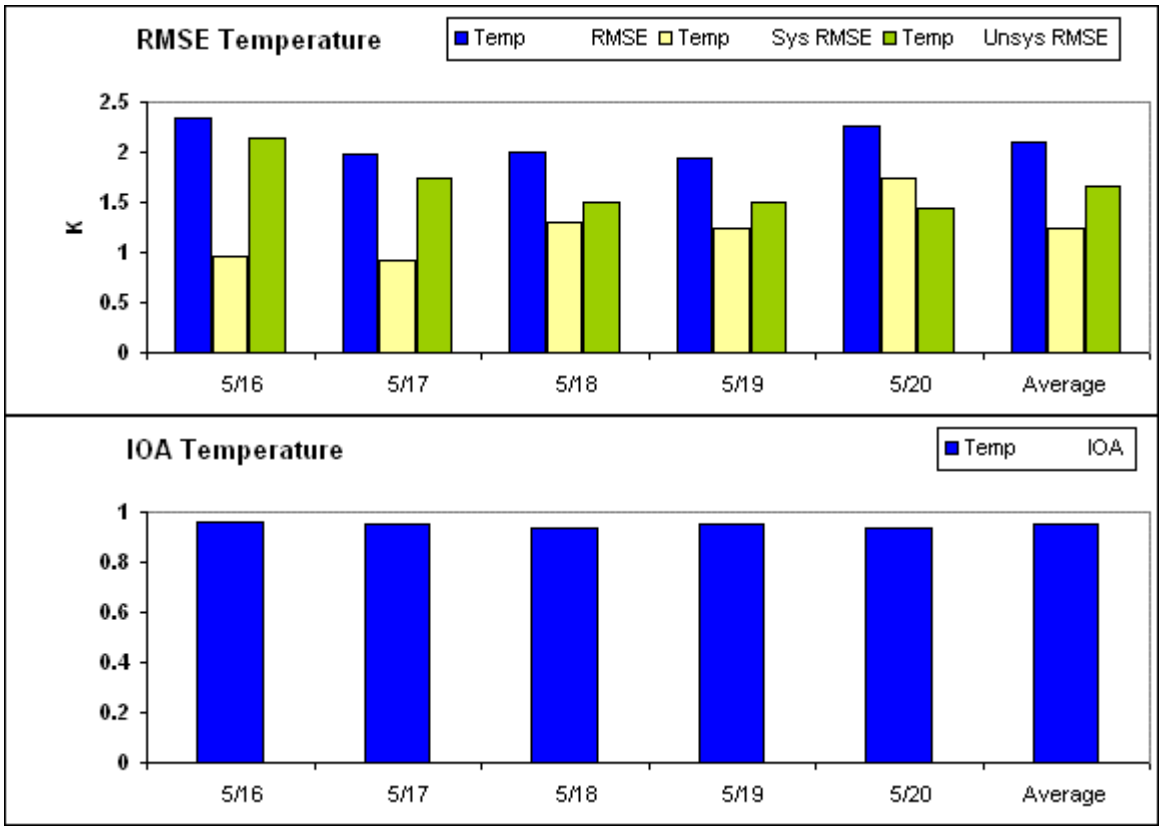

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
5/11
5/12
5/13
5/14
5/15
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
5/11
5/12
5/13
5/14
5/15
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
5/11
5/12
5/13
5/14
5/15
Average

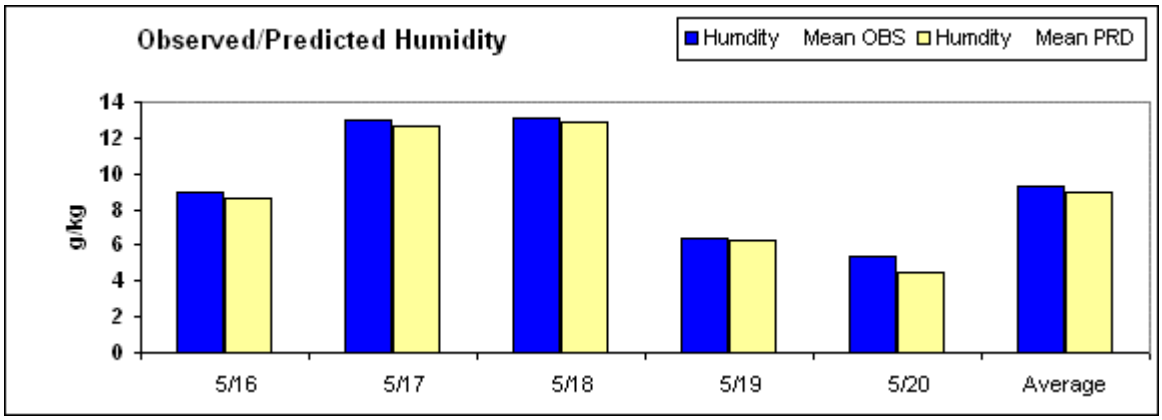

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/11
5/12
5/13
5/14
5/15
Average


Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
5/16
5/17
5/18
5/19
5/20
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
5/16
5/17
5/18
5/19
5/20
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
5/16
5/17
5/18
5/19
5/20
Average


IOA Windspeed
Wind Spd
IOA
1
0.5
0
5/16
5/17
5/18
5/19
5/20
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/16
5/17
5/18
5/19
5/20
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/16
5/17
5/18
5/19
5/20
Average


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298
296
294
292
290
288
286
284
282
5/16
5/17
5/18
5/19
5/20
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
5/16
5/17
5/18
5/19
5/20
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
5/16
5/17
5/18
5/19
5/20
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/16
5/17
5/18
5/19
5/20
Average


Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
5/16
5/17
5/18
5/19
5/20
Average

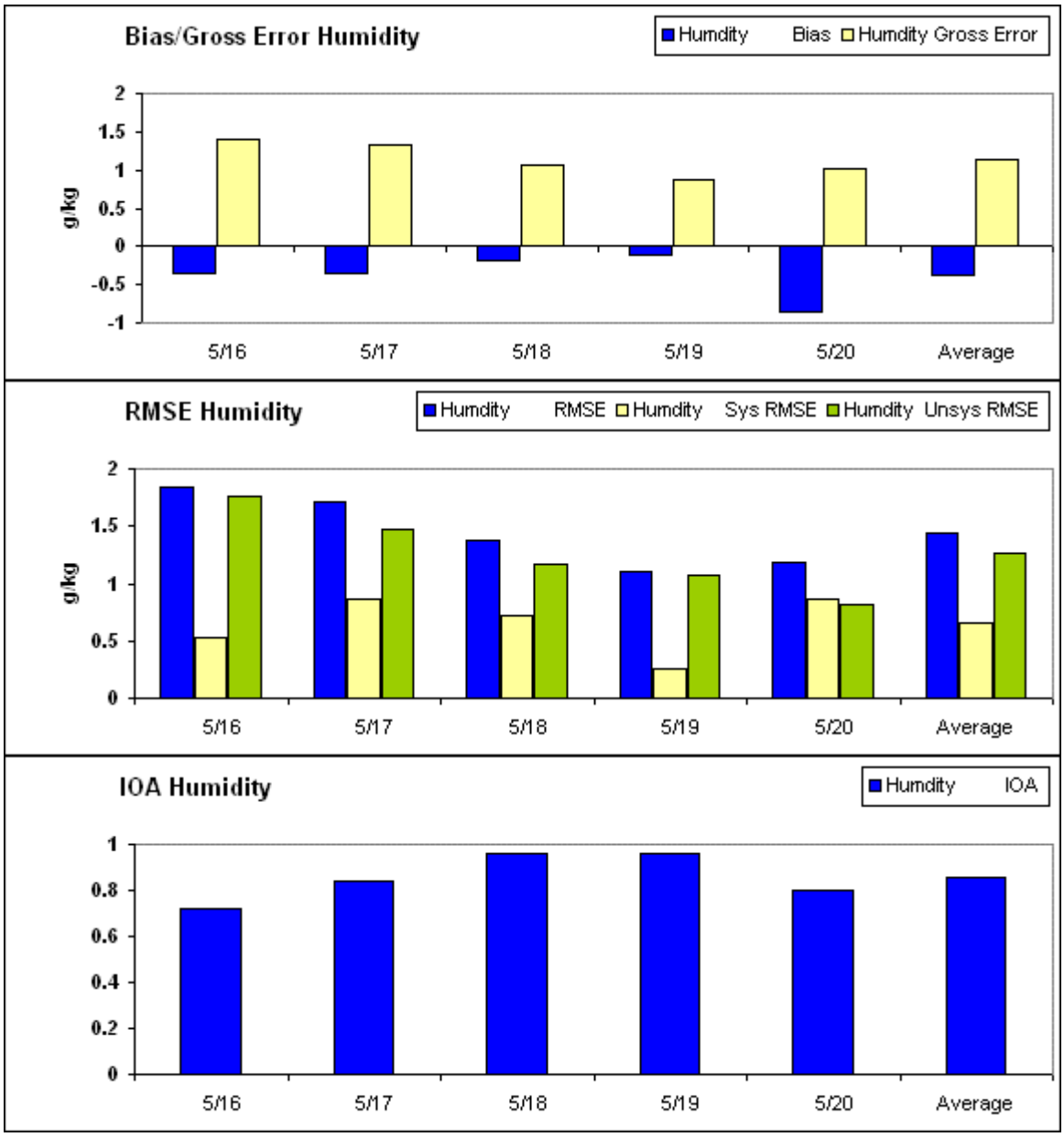
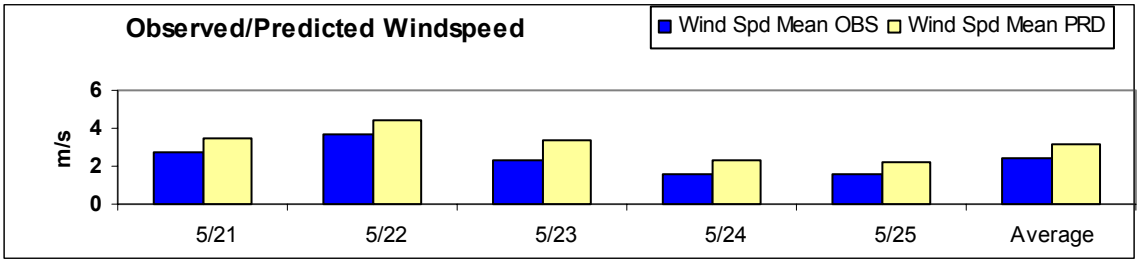
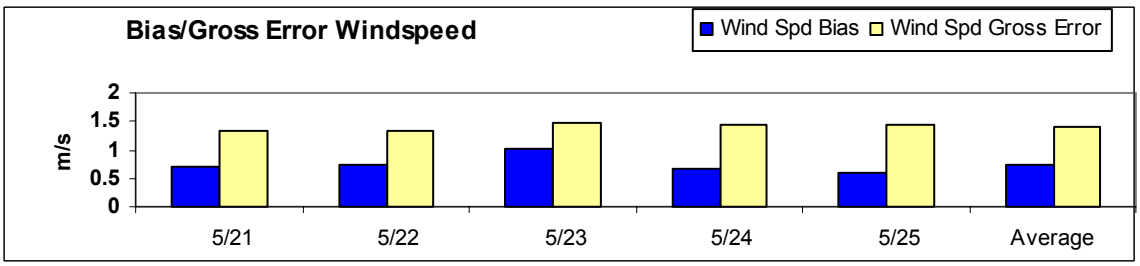
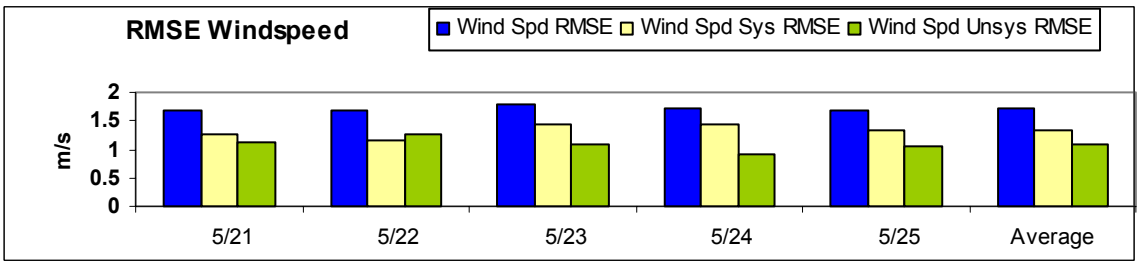
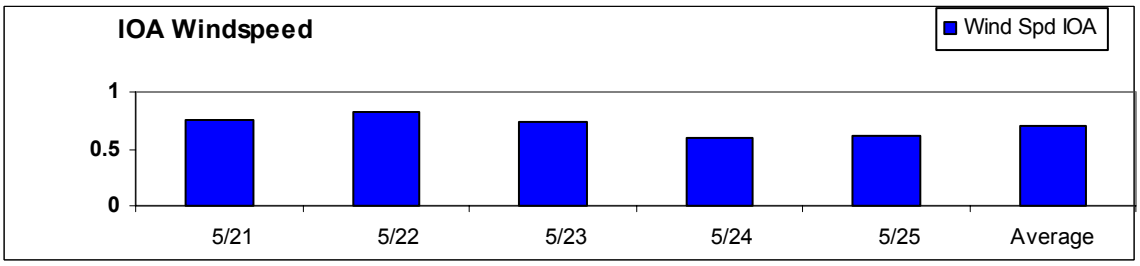

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
5/16
5/17
5/18
5/19
5/20
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
5/16
5/17
5/18
5/19
5/20
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/16
5/17
5/18
5/19
5/20
Average

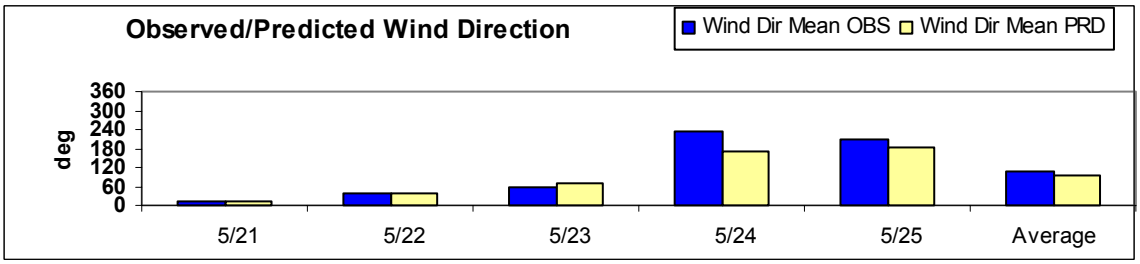
Figure 1


Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
5/21
5/22
5/23
5/24
5/25
Average


Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
Average


RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
Average


IOA Windspeed
Wind Spd IOA
1
0.5
0
5/21
5/22
5/23
5/24
5/25
Average


Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/21
5/22
5/23
5/24
5/25
Average

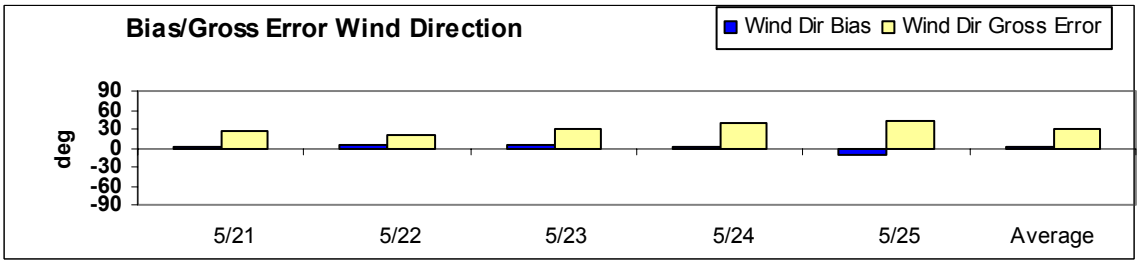

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/21
5/22
5/23
5/24
5/25
Average

Figure 2

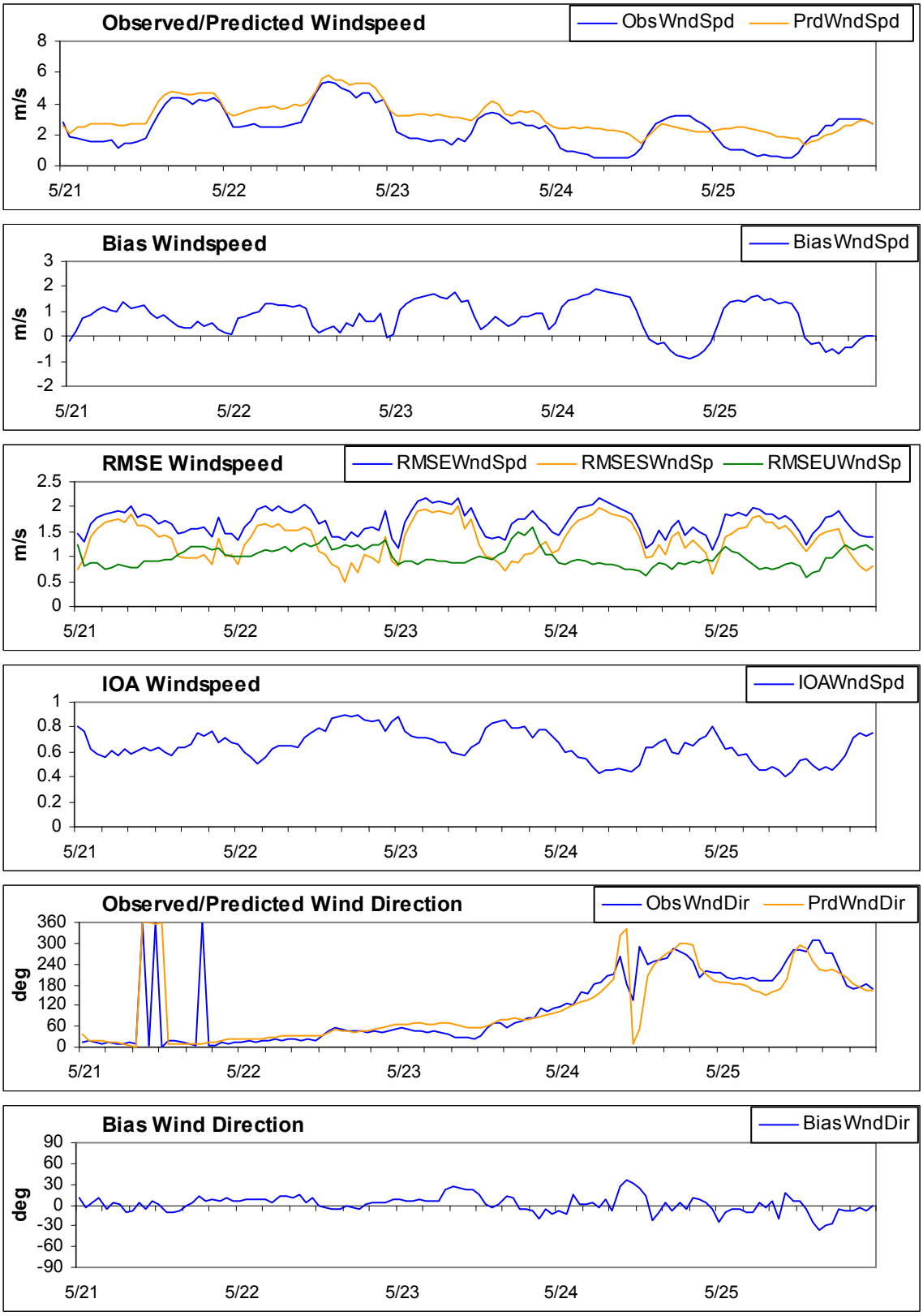
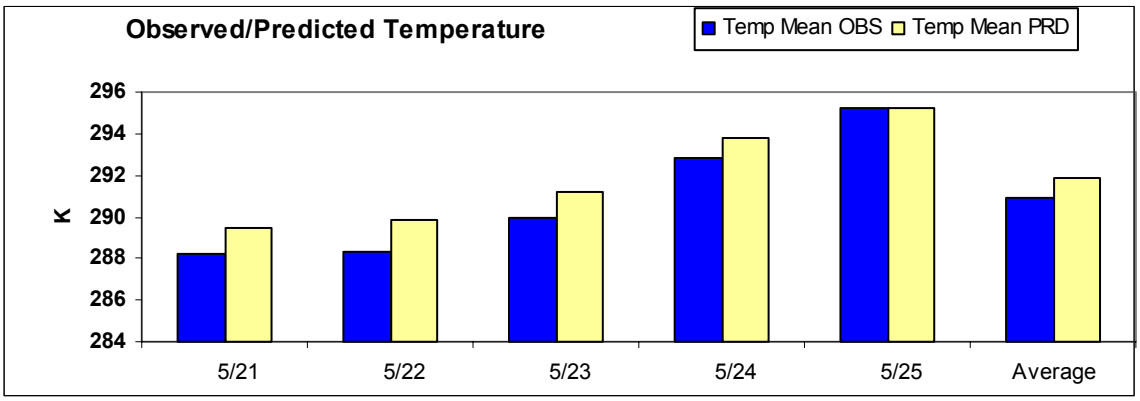
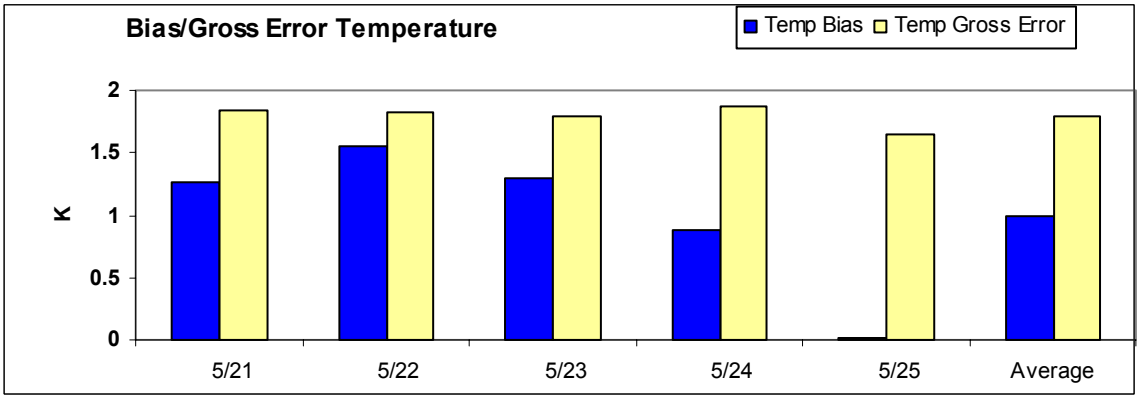
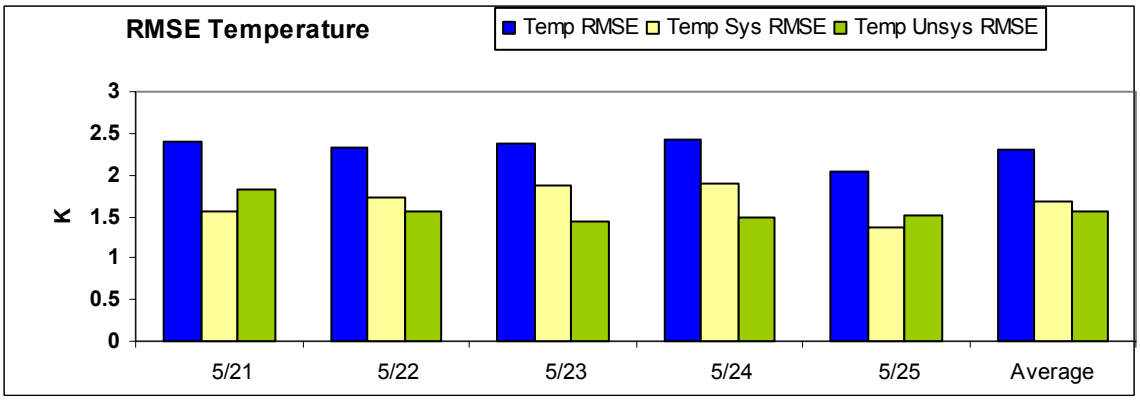

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
8
6
4
2
0
5/21
5/22
5/23
5/24
5/25
Bias Windspeed
BiasWndSpd
m/s
3
2
1
0
-1
-2
5/21
5/22
5/23
5/24
5/25
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
5/21
5/22
5/23
5/24
5/25
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
5/21
5/22
5/23
5/24
5/25
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
5/21
5/22
5/23
5/24
5/25

Figure 3


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
296
294
292
290
288
286
284
5/21
5/22
5/23
5/24
5/25
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
Average

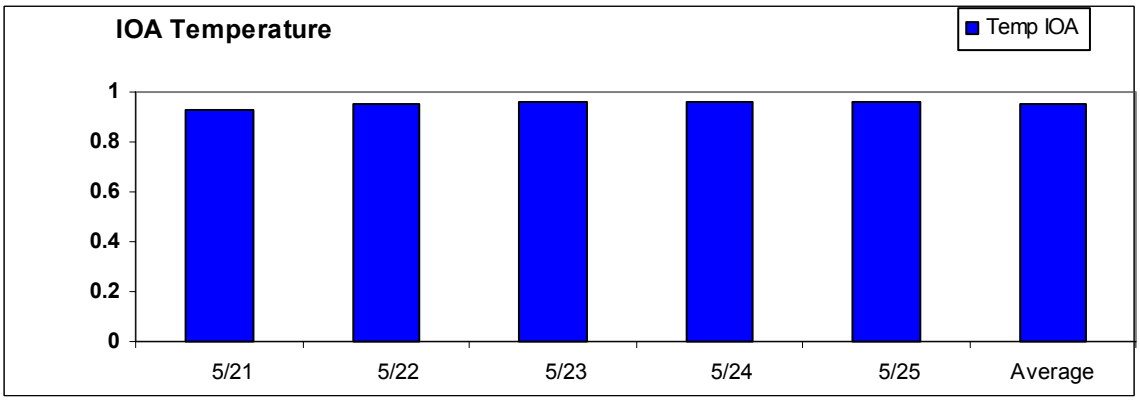

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/21
5/22
5/23
5/24
5/25
Average

Figure 4

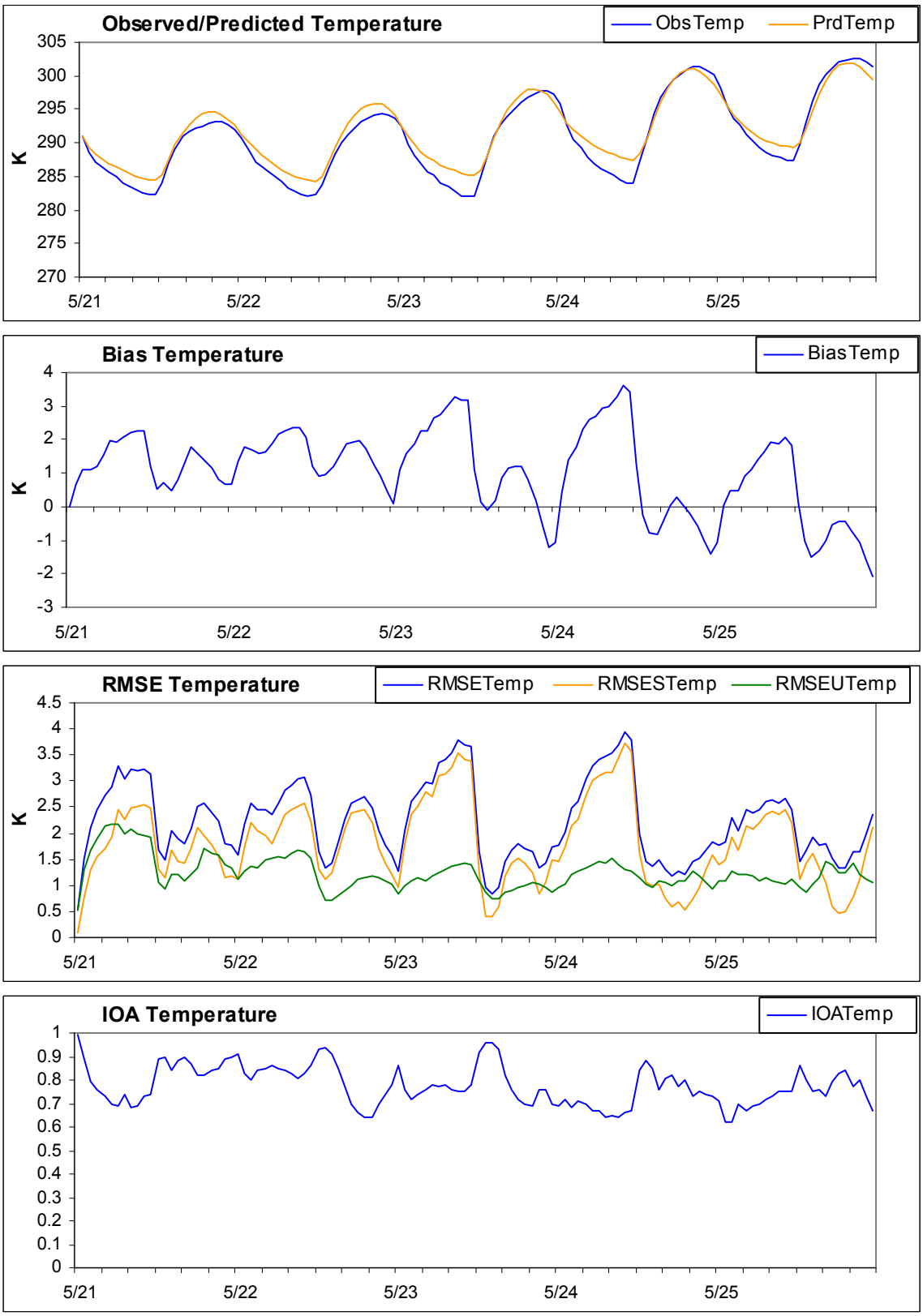

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
305
300
295
290
285
280
275
270
5/21
5/22
5/23
5/24
5/25
Bias Temperature
BiasTemp
K
4
3
2
1
0
-1
-2
-3
5/21
5/22
5/23
5/24
5/25
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/21
5/22
5/23
5/24
5/25

Figure 5

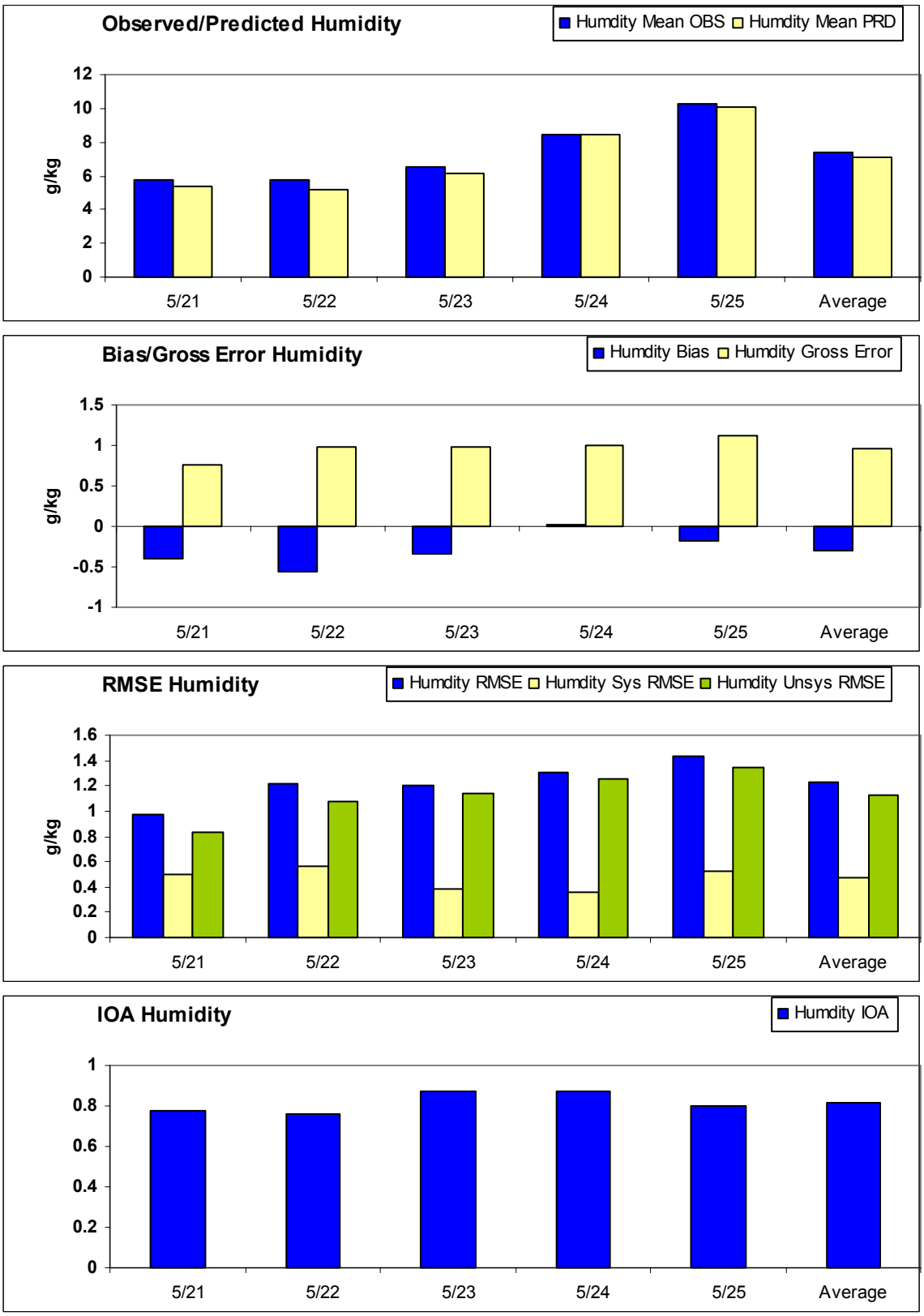

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
5/21
5/22
5/23
5/24
5/25
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
5/21
5/22
5/23
5/24
5/25
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
5/21
5/22
5/23
5/24
5/25
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/21
5/22
5/23
5/24
5/25
Average

Figure 6

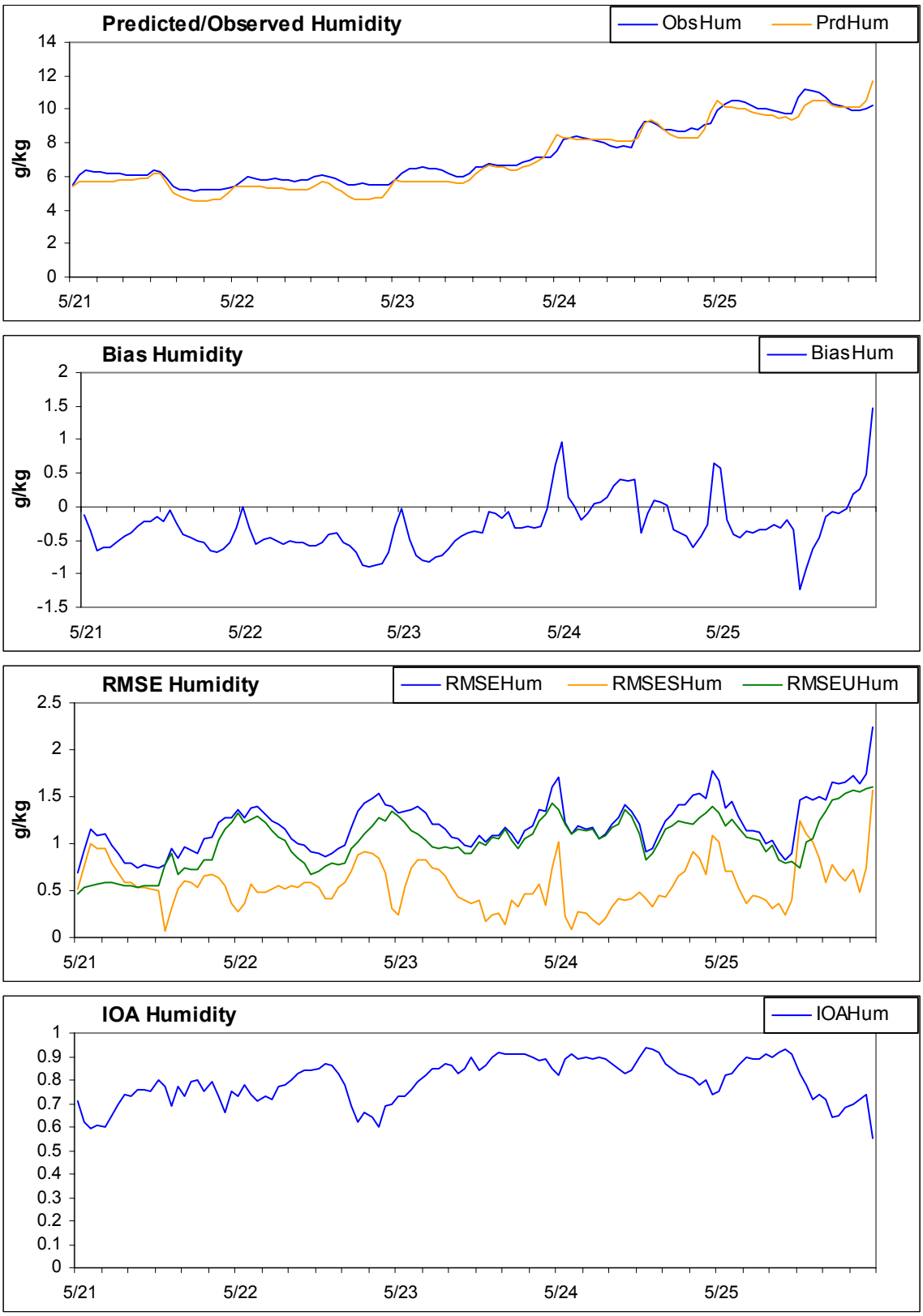

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
14
12
10
8
6
4
2
0
5/21
5/22
5/23
5/24
5/25
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
5/21
5/22
5/23
5/24
5/25
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
2.5
2
1.5
1
0.5
0
5/21
5/22
5/23
5/24
5/25
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/21
5/22
5/23
5/24
5/25

Figure 7

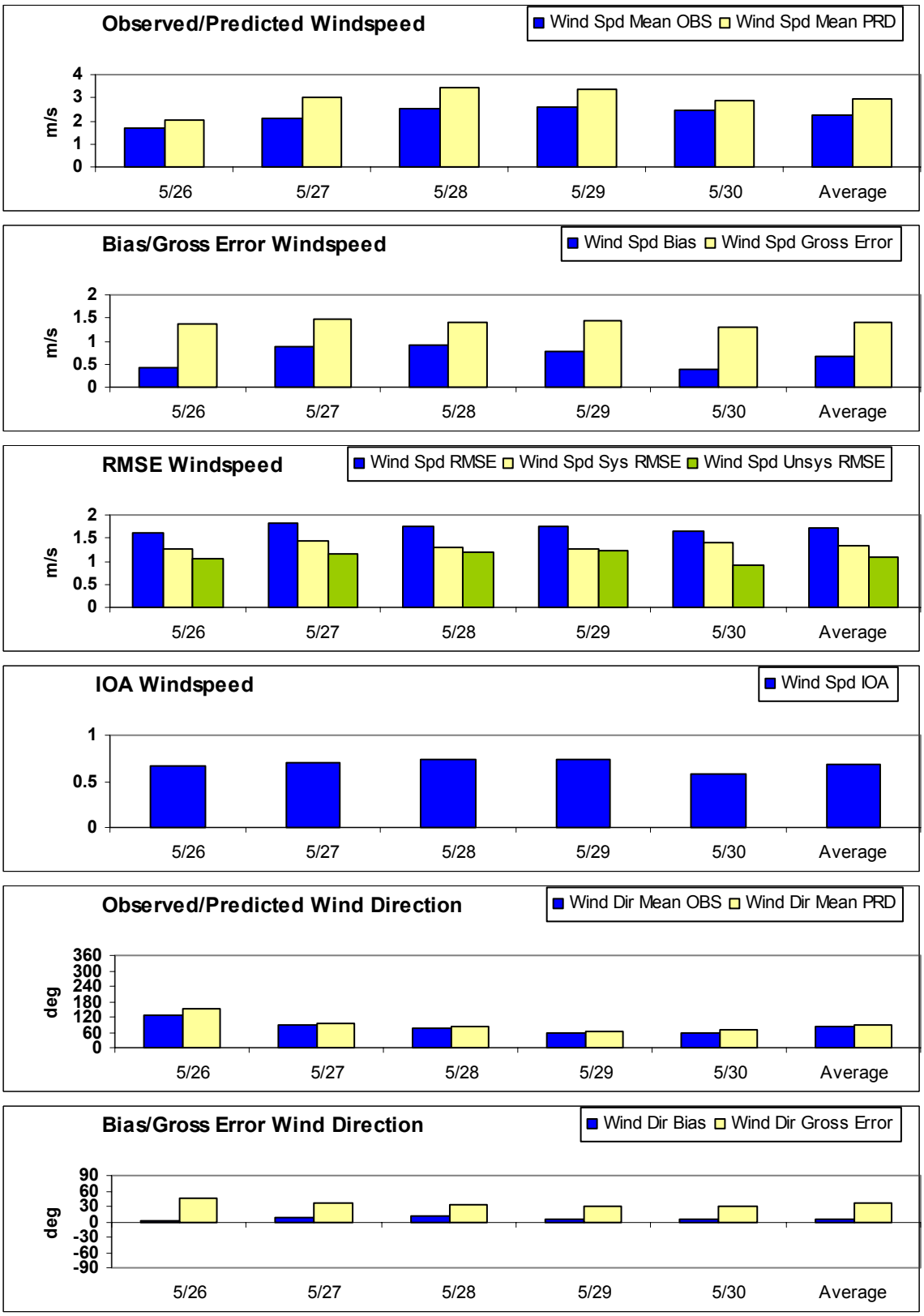

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
5/26
5/27
5/28
5/29
5/30
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
5/26
5/27
5/28
5/29
5/30
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/26
5/27
5/28
5/29
5/30
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/26
5/27
5/28
5/29
5/30
Average

Figure 8

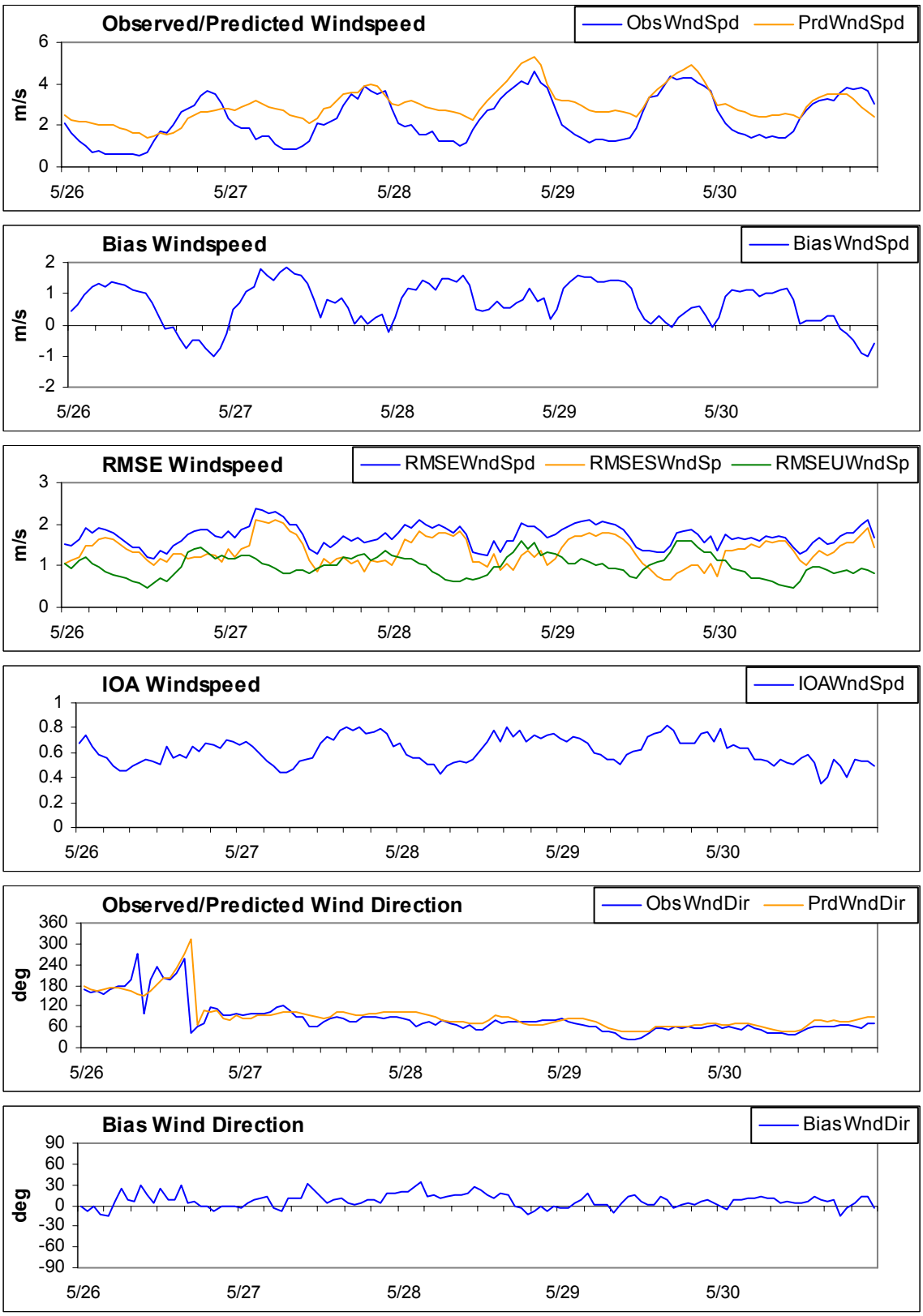

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
6
4
2
0
5/26
5/27
5/28
5/29
5/30
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
5/26
5/27
5/28
5/29
5/30
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
5/26
5/27
5/28
5/29
5/30
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
5/26
5/27
5/28
5/29
5/30
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
5/26
5/27
5/28
5/29
5/30
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
5/26
5/27
5/28
5/29
5/30

Figure 9

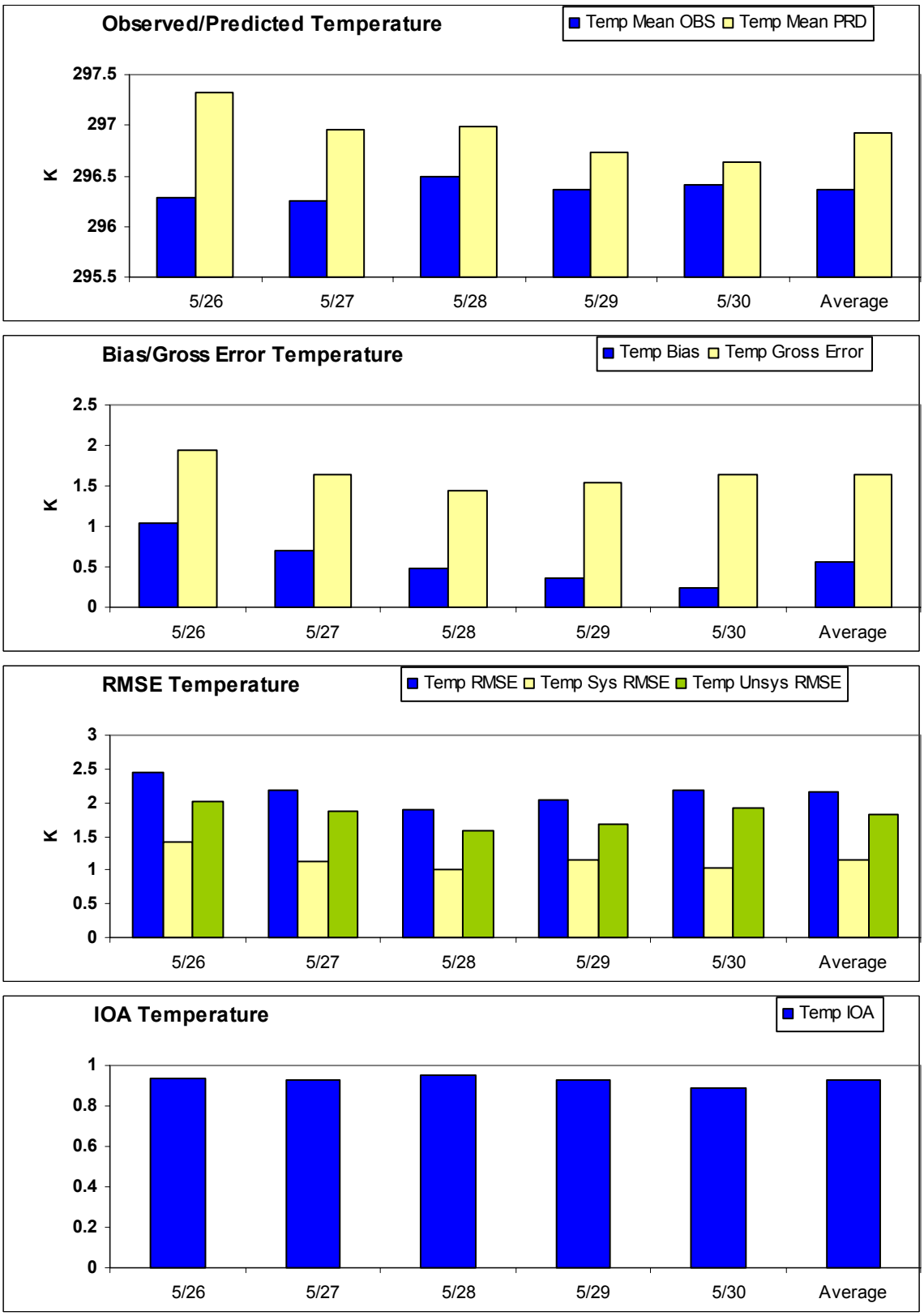

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
297.5
297
296.5
296
295.5
5/26
5/27
5/28
5/29
5/30
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/26
5/27
5/28
5/29
5/30
Average

Figure 10

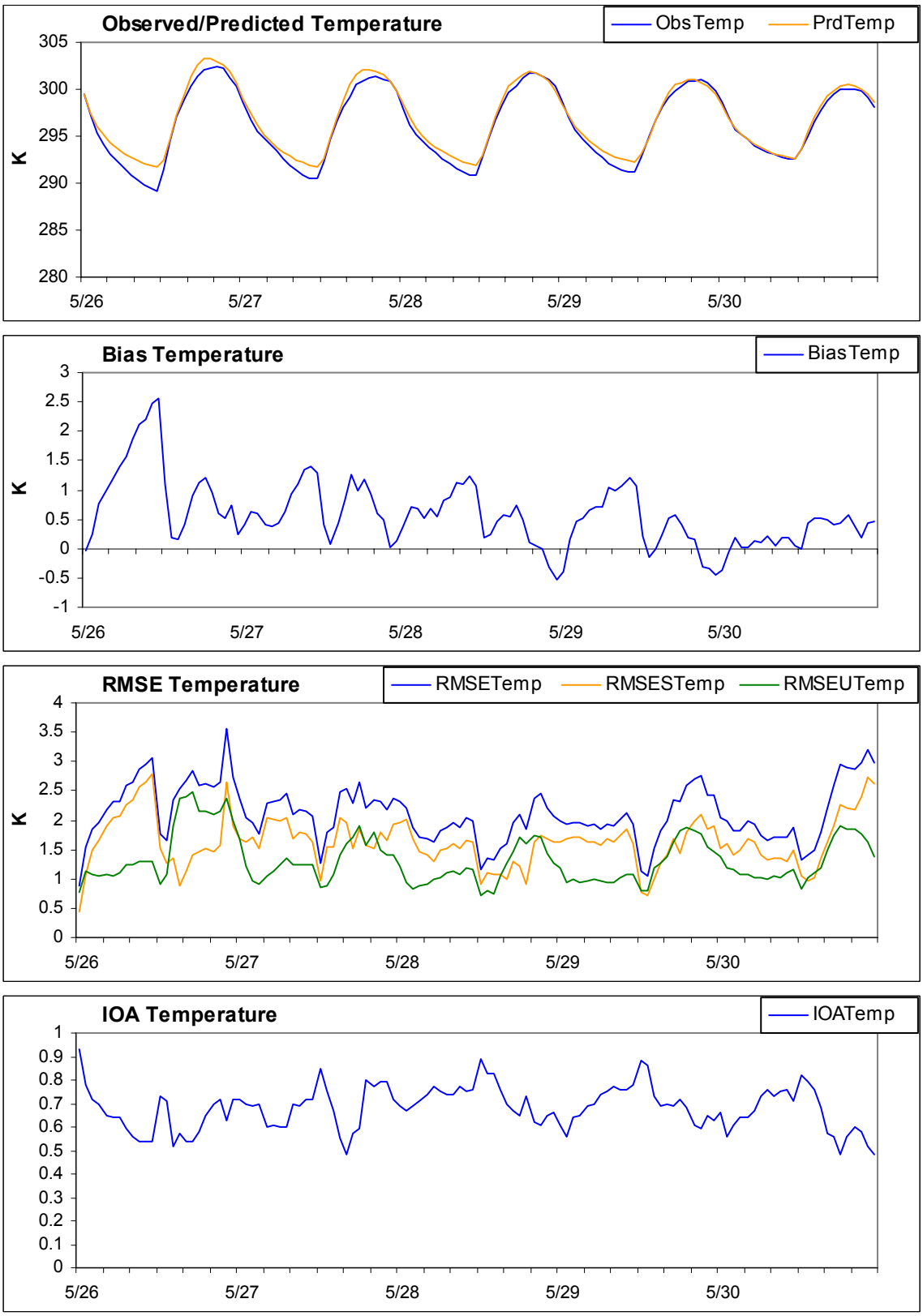
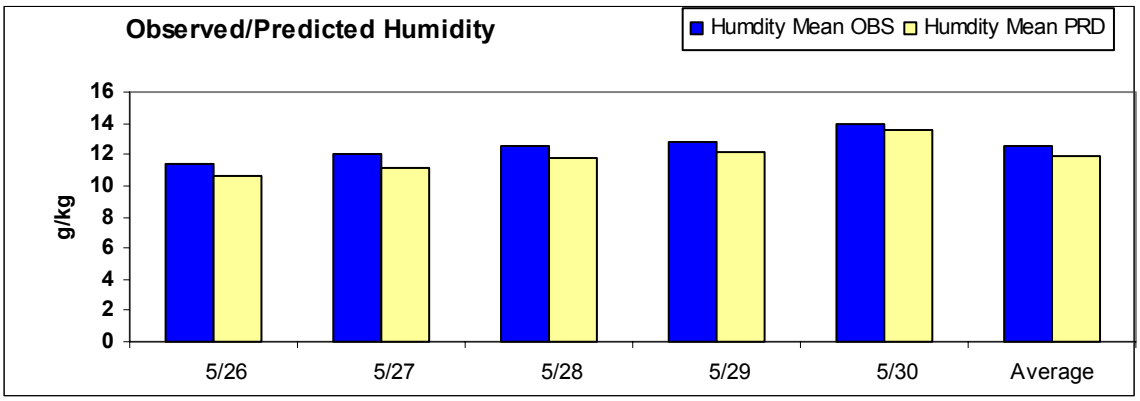
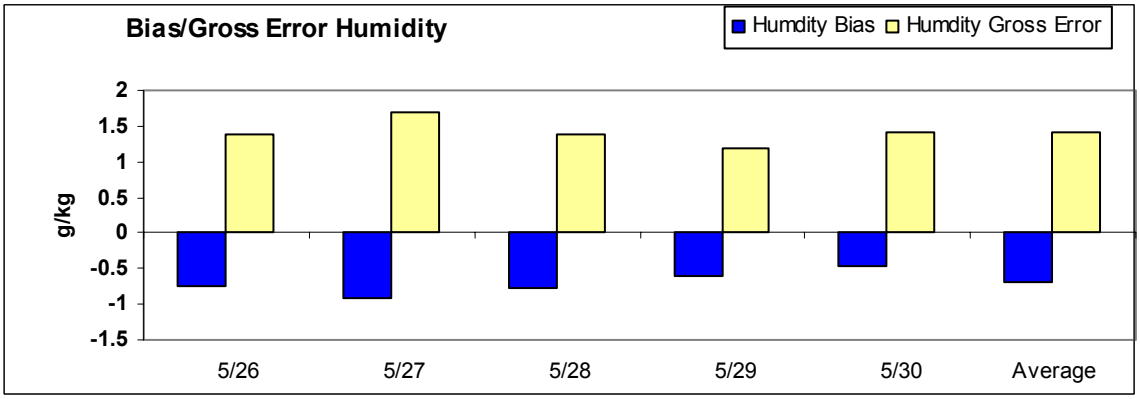
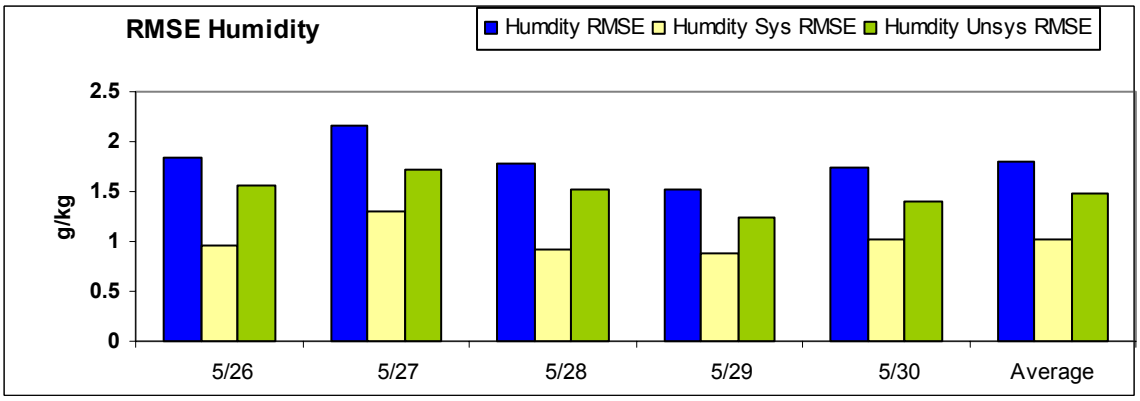

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
305
300
295
290
285
280
5/26
5/27
5/28
5/29
5/30
Bias Temperature
BiasTemp
K
3
2.5
2
1.5
1
0.5
0
-0.5
-1
5/26
5/27
5/28
5/29
5/30
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/26
5/27
5/28
5/29
5/30

Figure 11


Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
5/26
5/27
5/28
5/29
5/30
Average


Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
5/26
5/27
5/28
5/29
5/30
Average


RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
Average

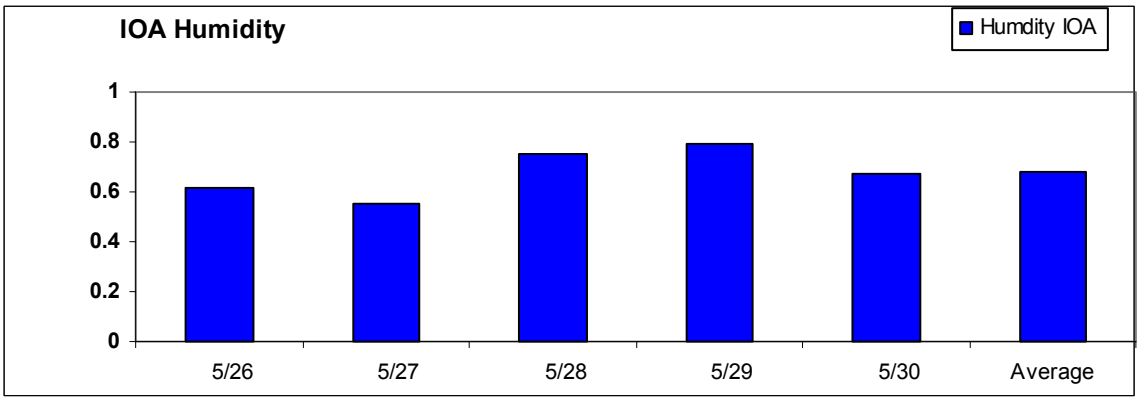

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/26
5/27
5/28
5/29
5/30
Average

Figure 12

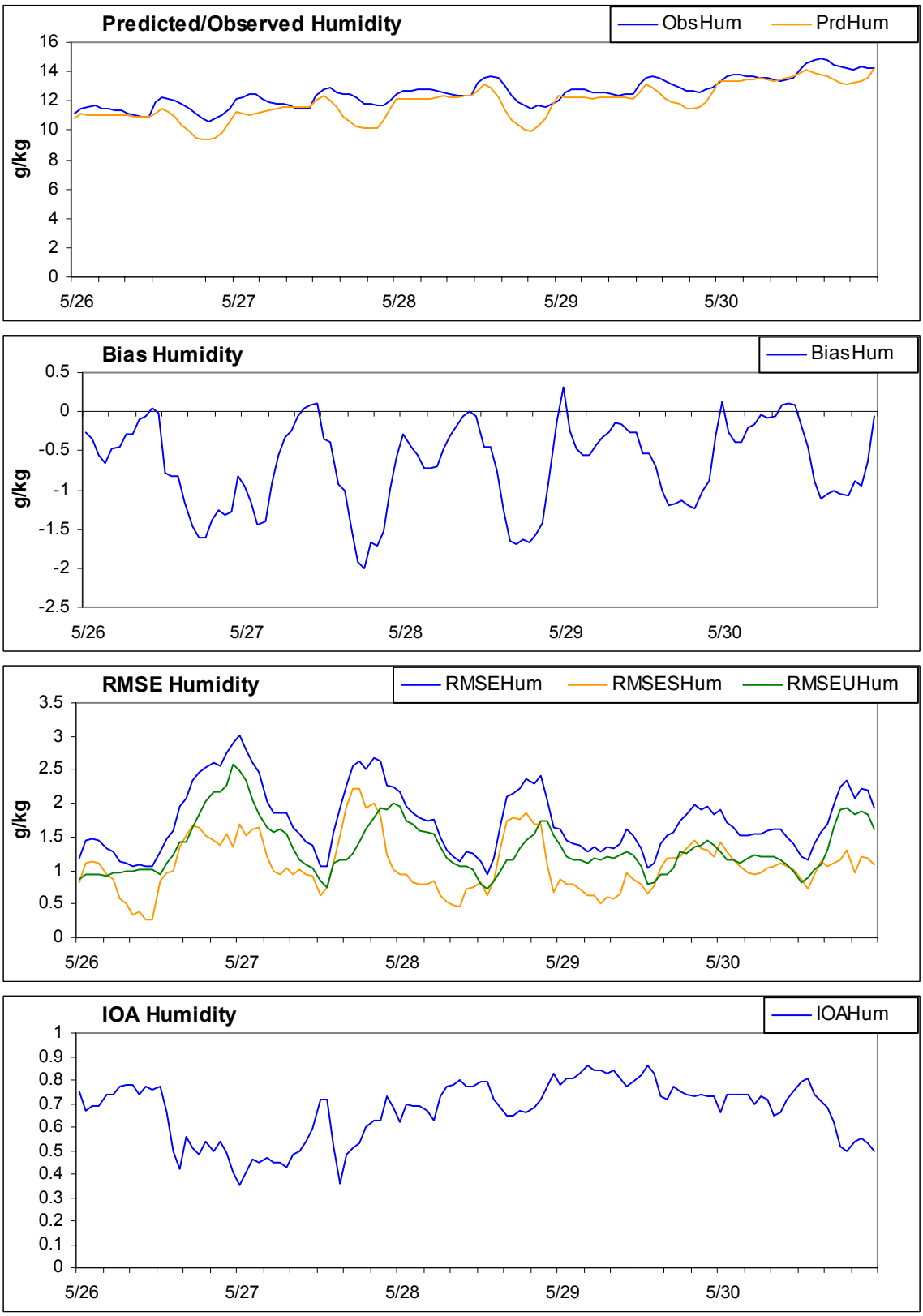

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
16
14
12
10
8
6
4
2
0
5/26
5/27
5/28
5/29
5/30
Bias Humidity
BiasHum
g/kg
0.5
0
-0.5
-1
-1.5
-2
-2.5
5/26
5/27
5/28
5/29
5/30
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
5/26
5/27
5/28
5/29
5/30
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/26
5/27
5/28
5/29
5/30

Figure 13

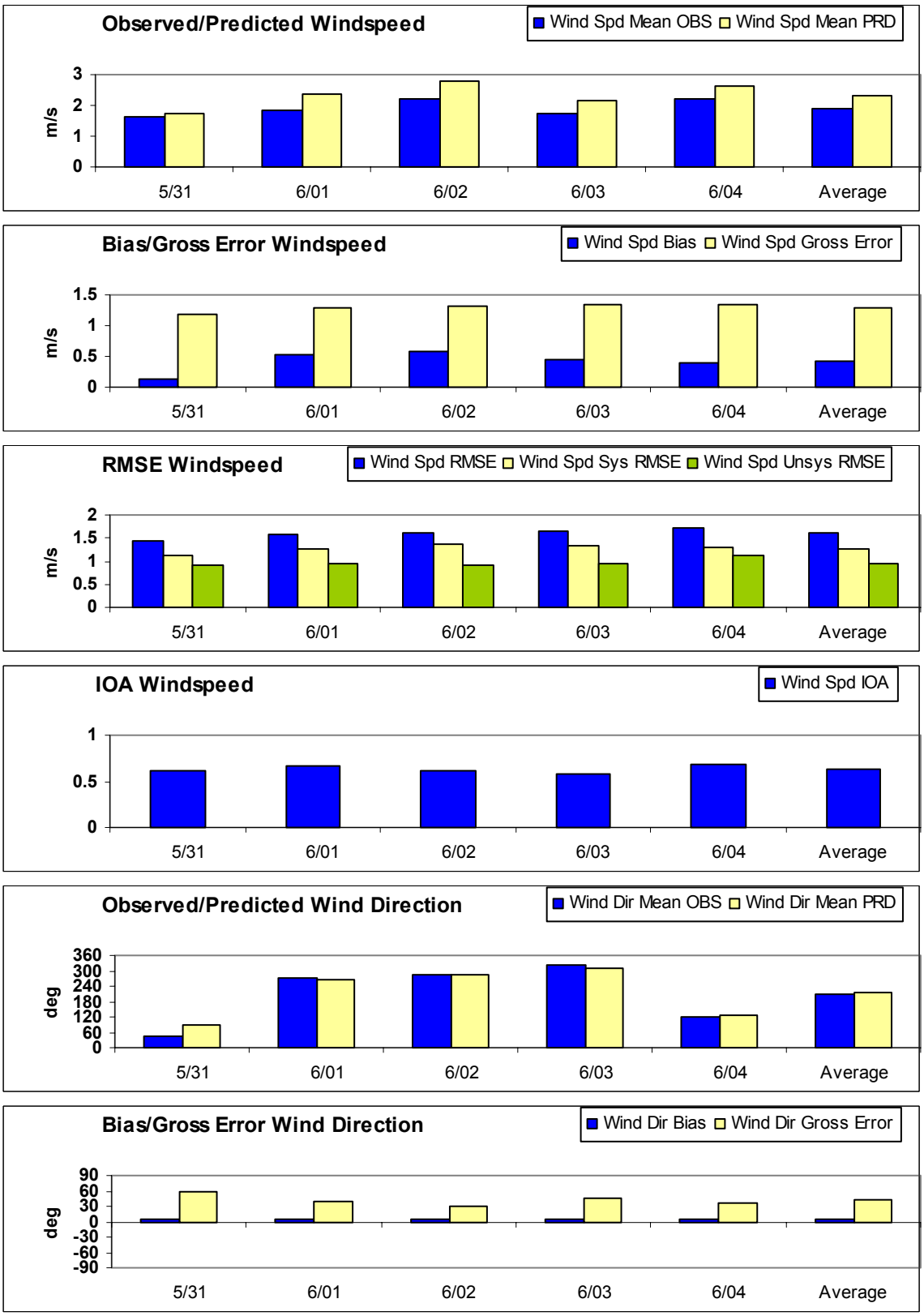

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
5/31
6/01
6/02
6/03
6/04
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
5/31
6/01
6/02
6/03
6/04
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
5/31
6/01
6/02
6/03
6/04
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
5/31
6/01
6/02
6/03
6/04
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
5/31
6/01
6/02
6/03
6/04
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
5/31
6/01
6/02
6/03
6/04
Average

Figure 14

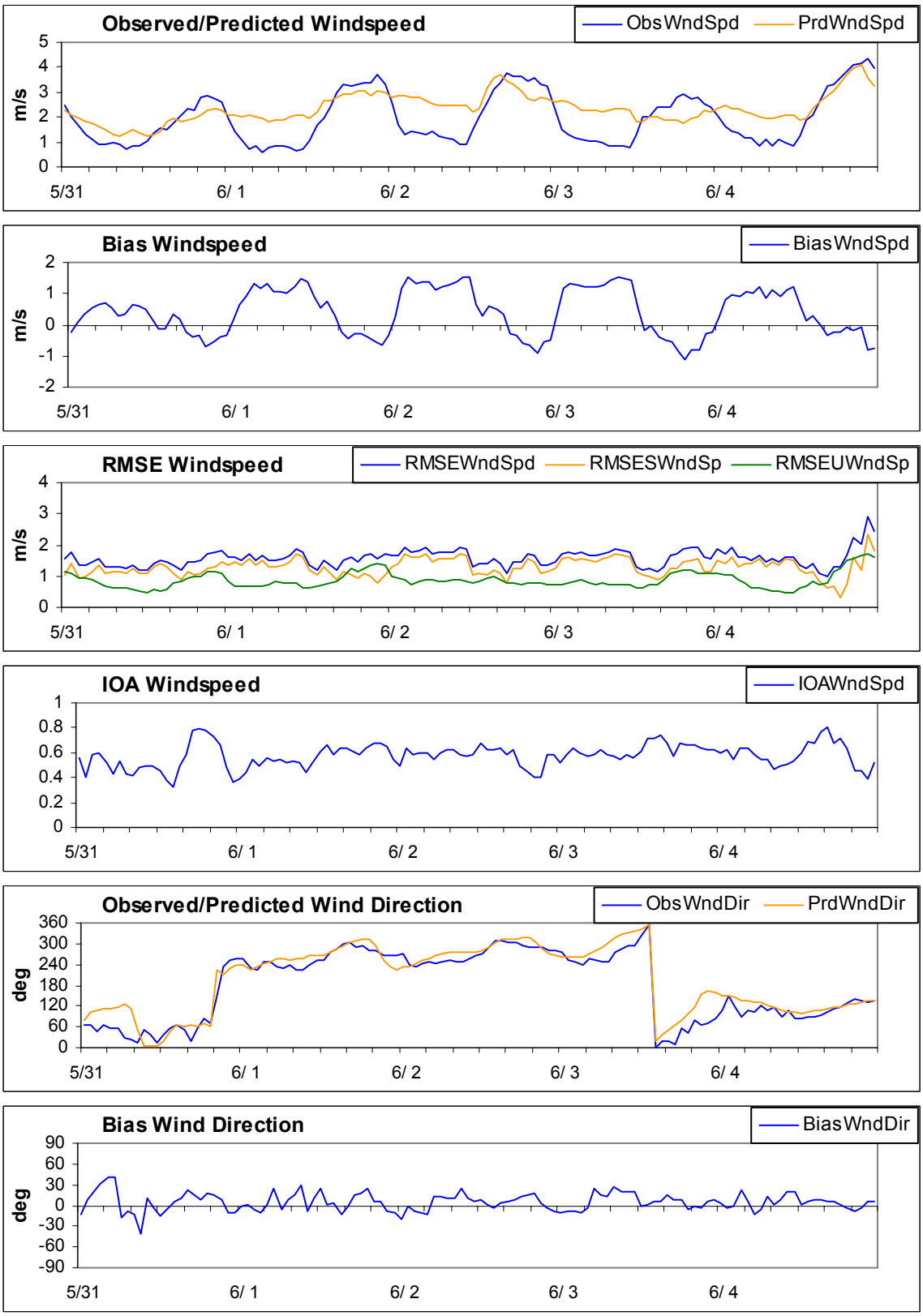
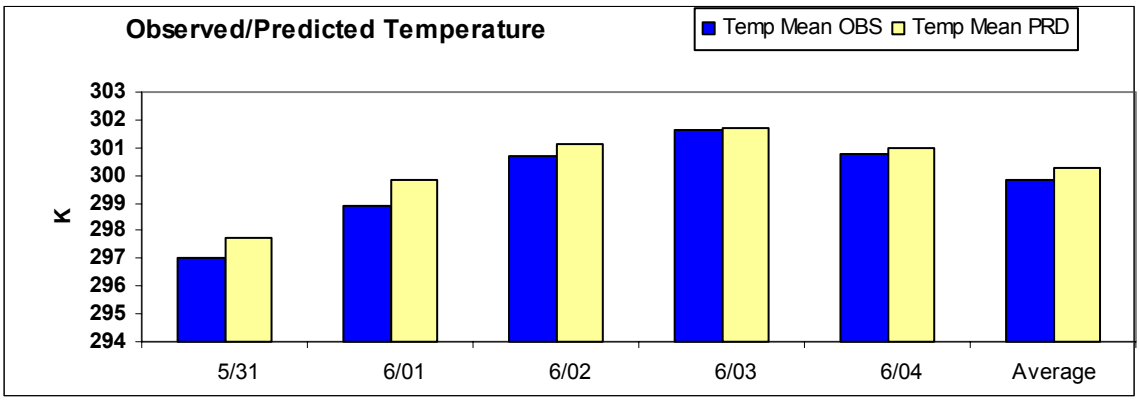
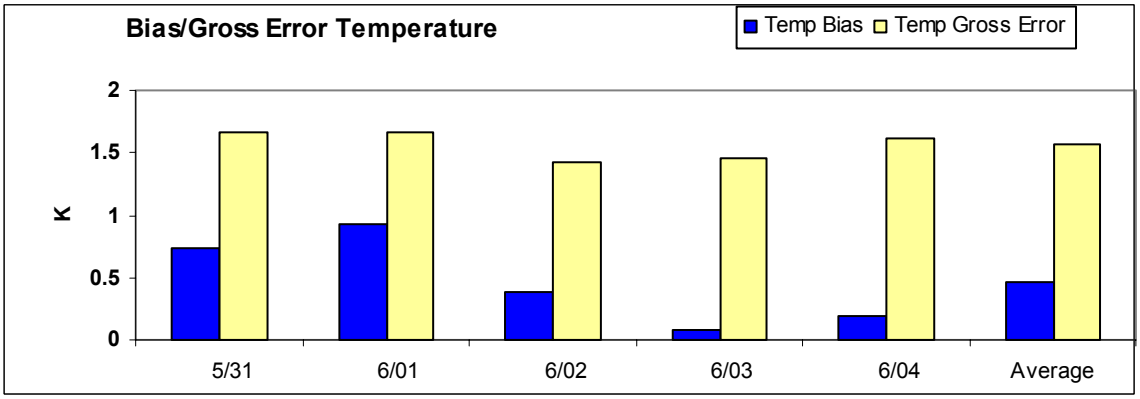
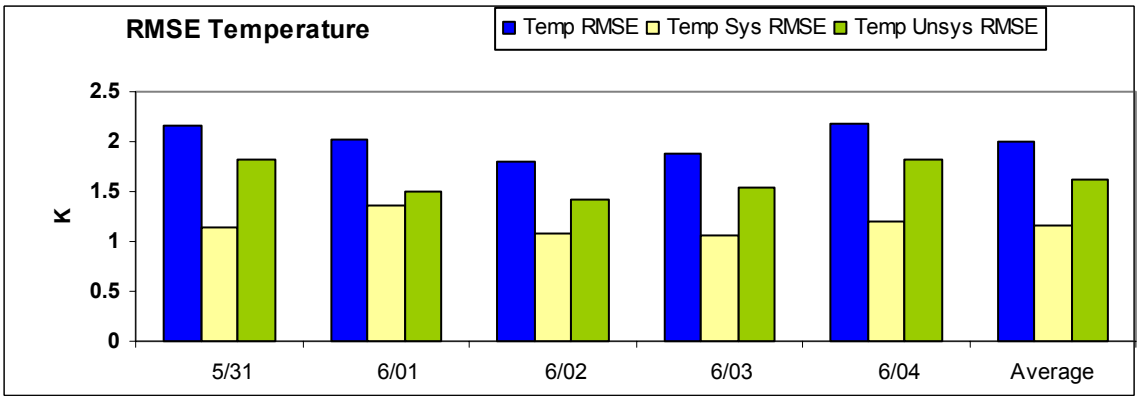

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
5/31
6/ 1
6/ 2
6/ 3
6/ 4
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
4
3
2
1
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
5/31
6/ 1
6/ 2
6/ 3
6/ 4

Figure 15


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
303
302
301
300
299
298
297
296
295
294
5/31
6/01
6/02
6/03
6/04
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
5/31
6/01
6/02
6/03
6/04
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
5/31
6/01
6/02
6/03
6/04
Average

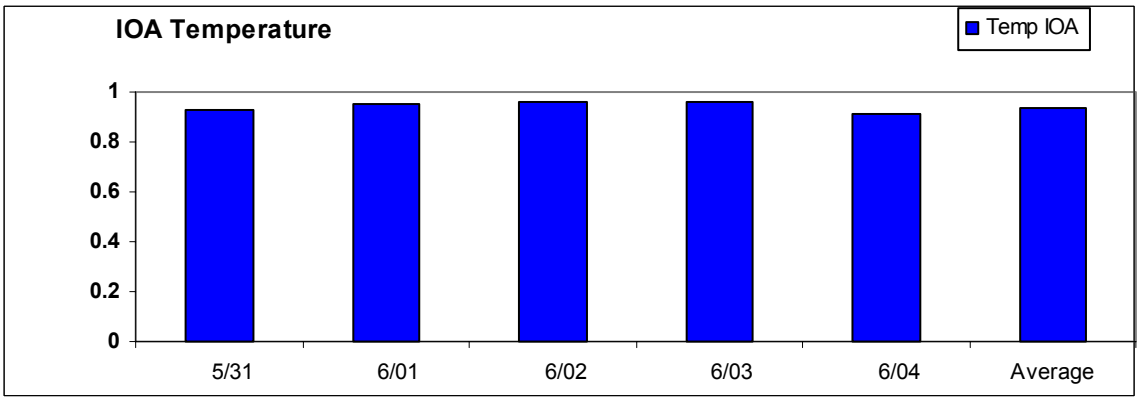

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
5/31
6/01
6/02
6/03
6/04
Average

Figure 16

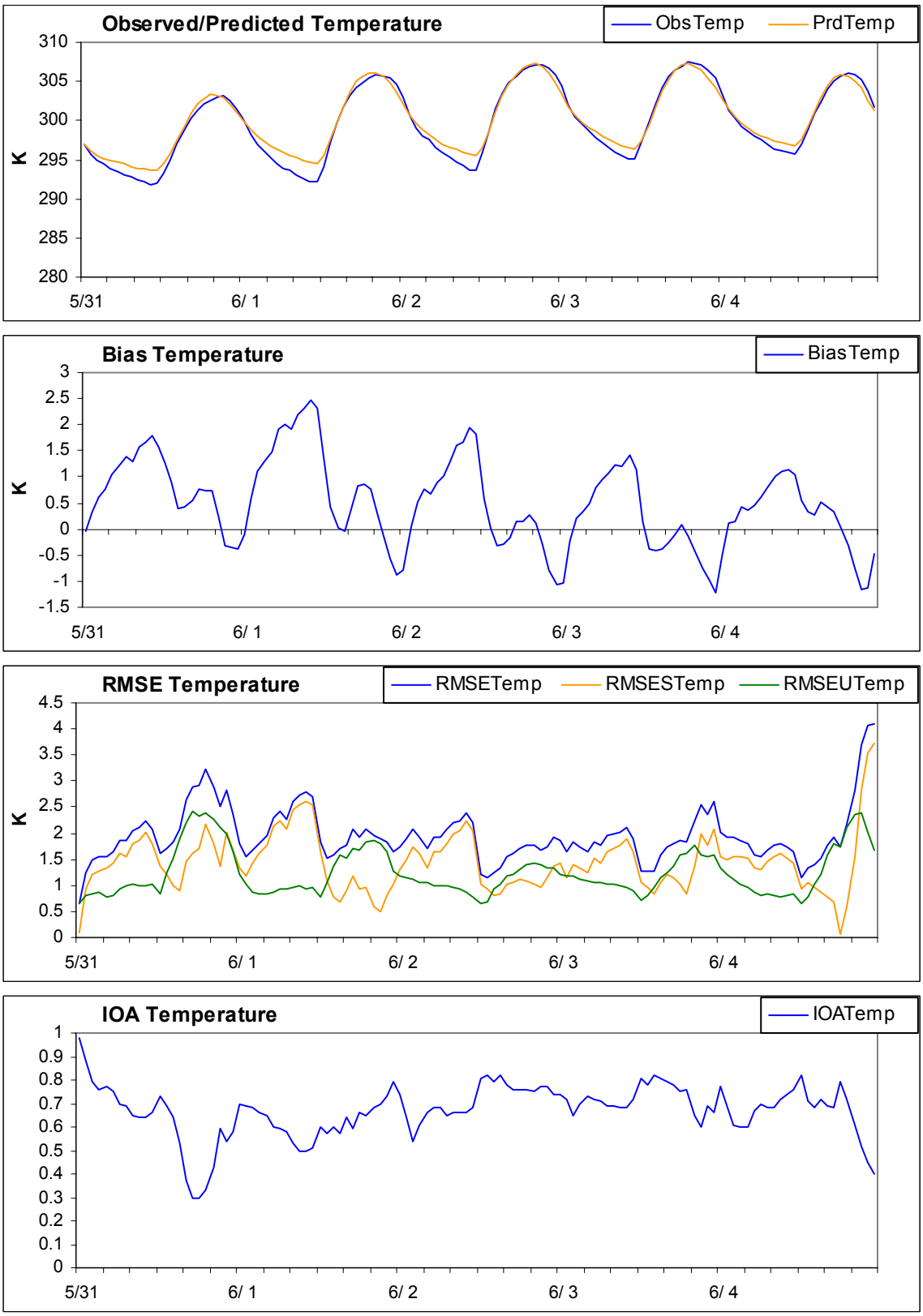

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
280
5/31
6/ 1
6/ 2
6/ 3
6/ 4
Bias Temperature
BiasTemp
K
3
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
5/31
6/ 1
6/ 2
6/ 3
6/ 4
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4

Figure 17

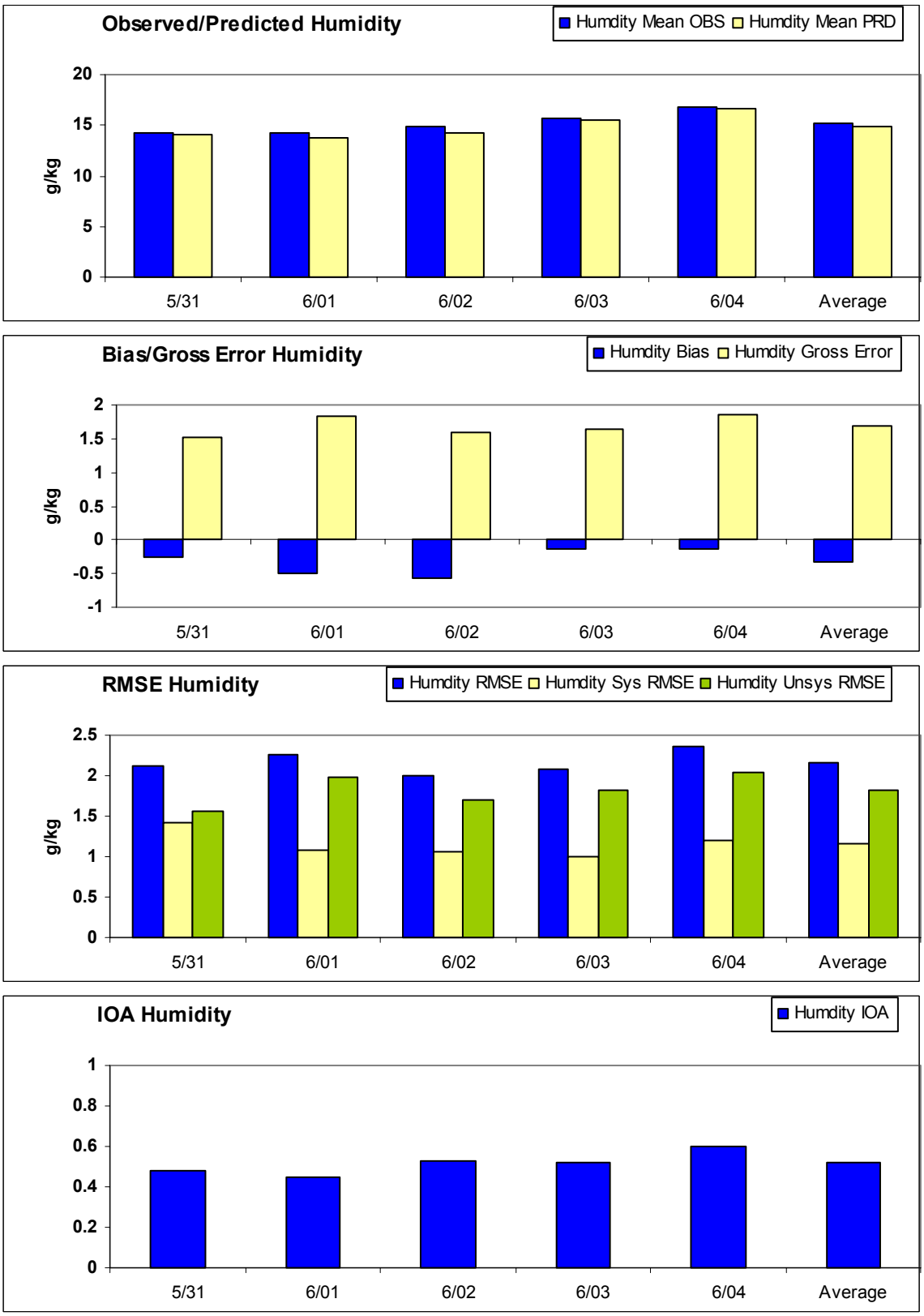

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
5/31
6/01
6/02
6/03
6/04
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
5/31
6/01
6/02
6/03
6/04
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
5/31
6/01
6/02
6/03
6/04
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
5/31
6/01
6/02
6/03
6/04
Average

Figure 18

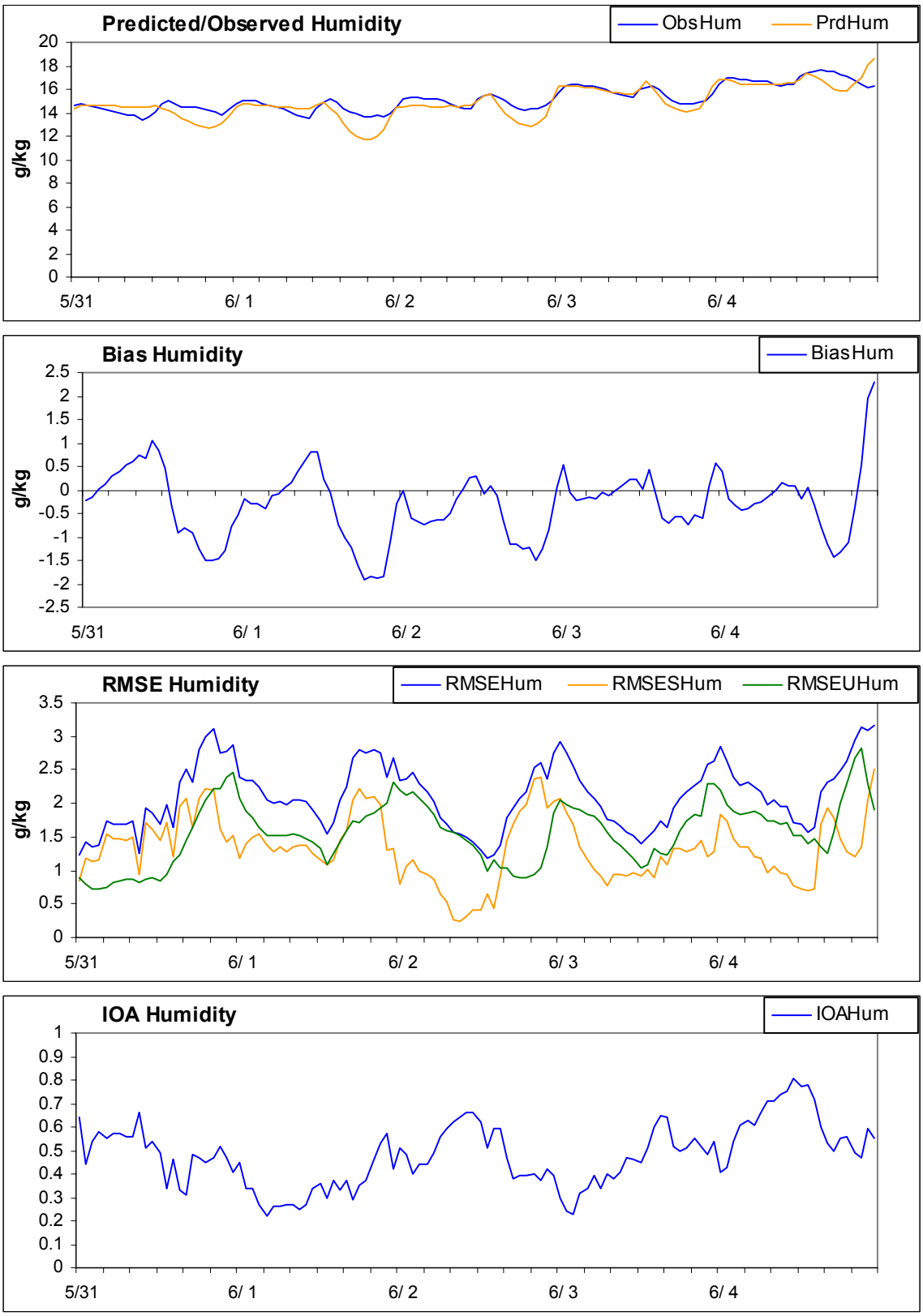

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
Bias Humidity
BiasHum
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
5/31
6/ 1
6/ 2
6/ 3
6/ 4
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/31
6/ 1
6/ 2
6/ 3
6/ 4

Figure 19

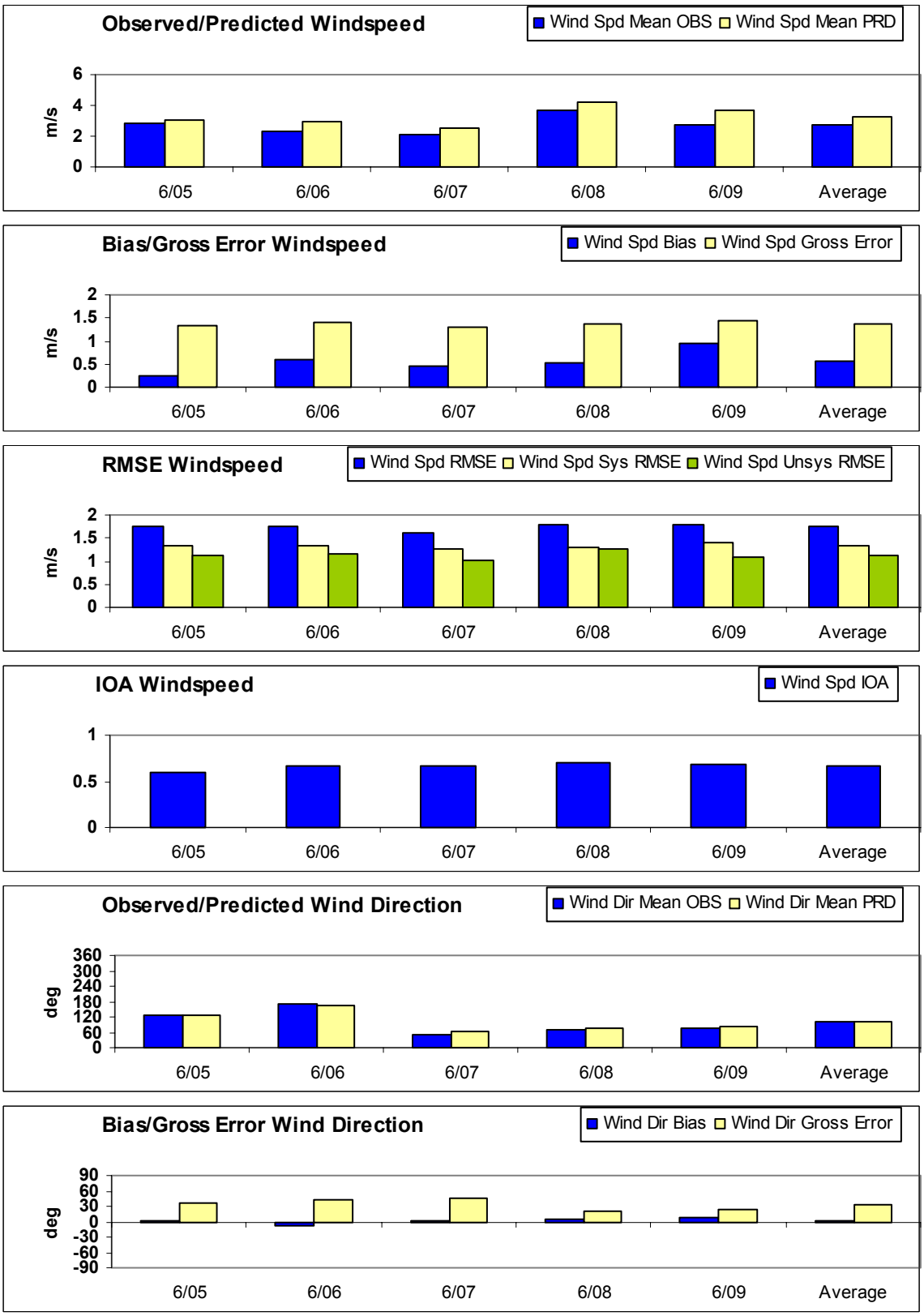

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
6/05
6/06
6/07
6/08
6/09
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
6/05
6/06
6/07
6/08
6/09
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
6/05
6/06
6/07
6/08
6/09
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
6/05
6/06
6/07
6/08
6/09
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
6/05
6/06
6/07
6/08
6/09
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
6/05
6/06
6/07
6/08
6/09
Average

Figure 20

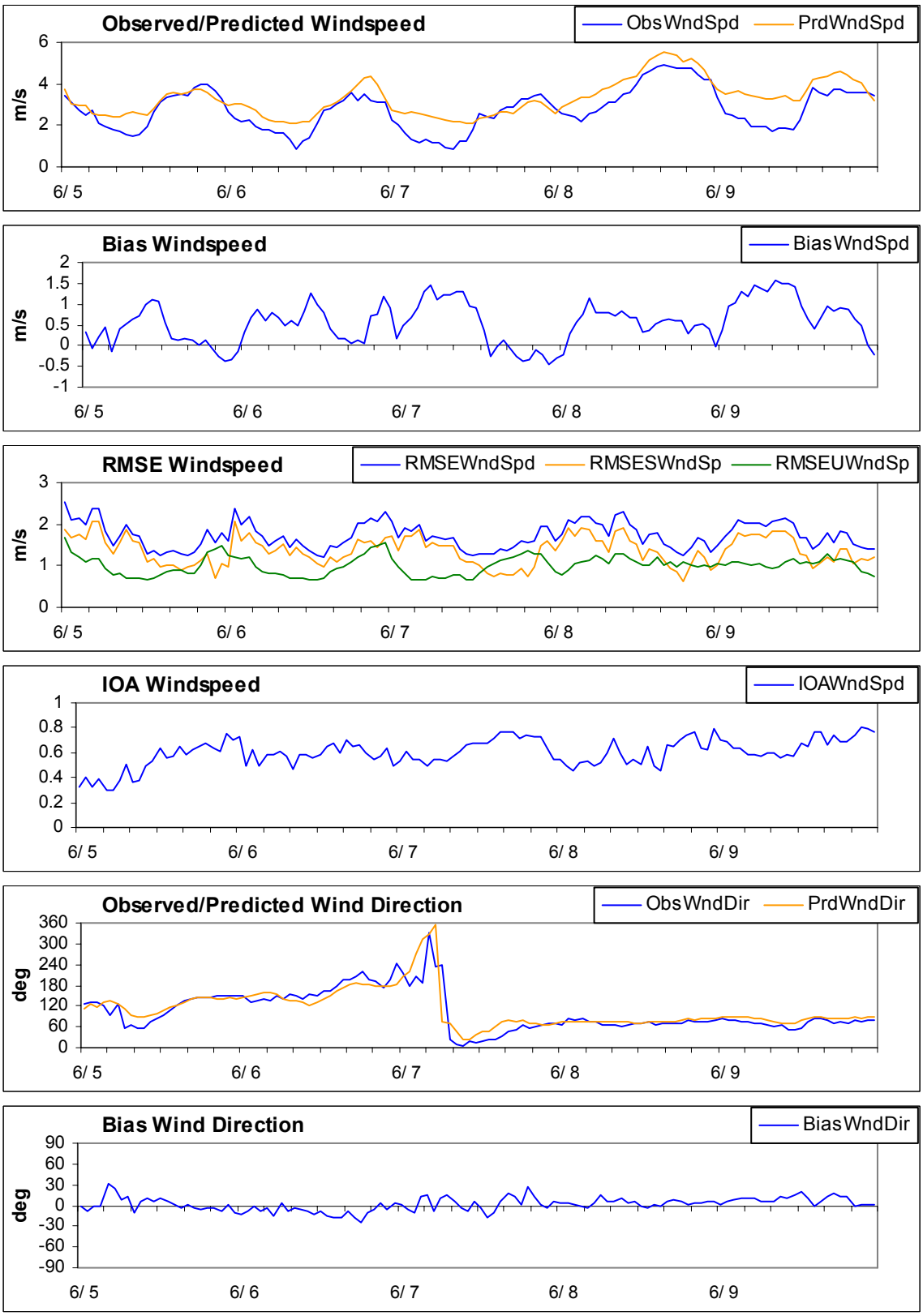
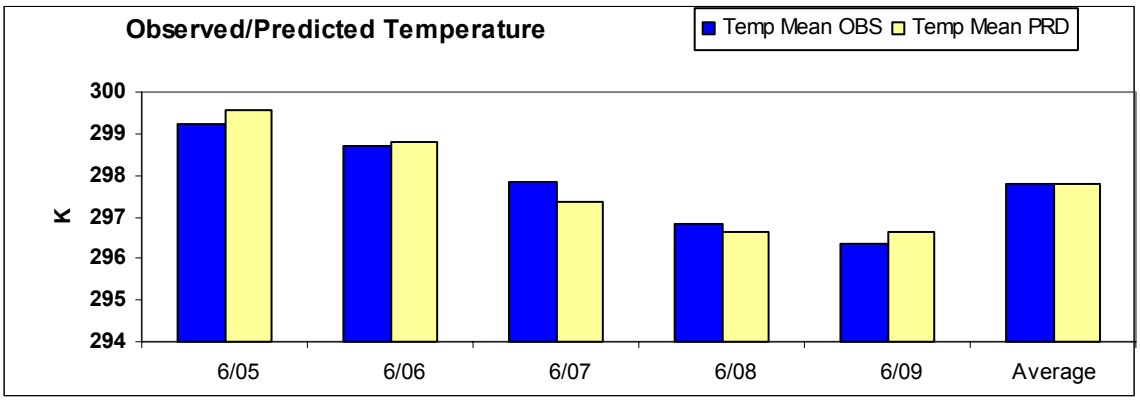
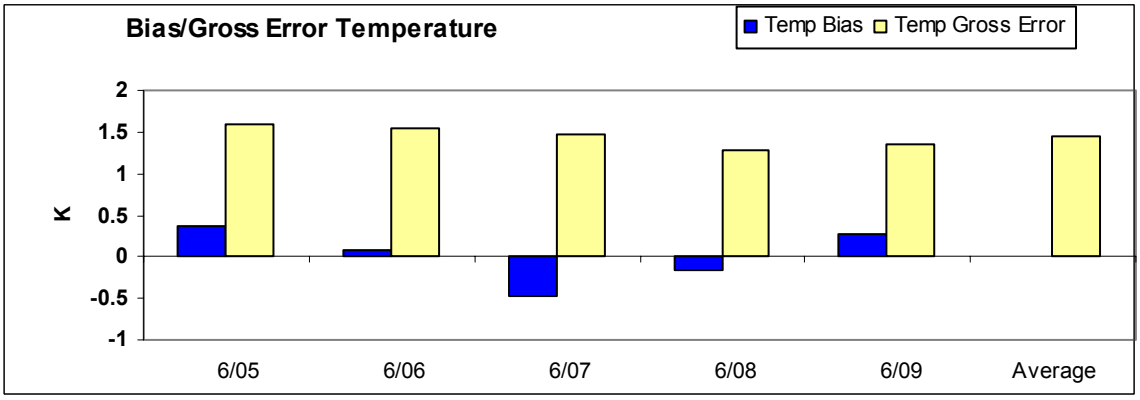
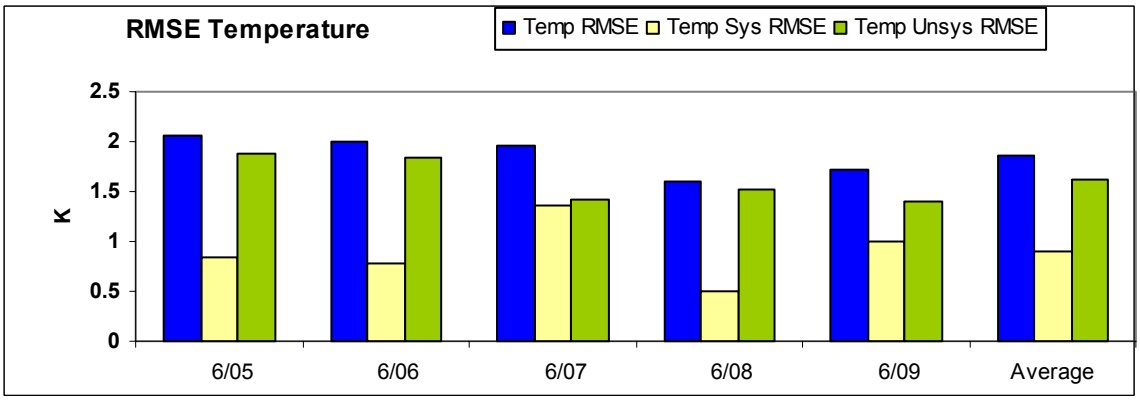

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
6
4
2
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
-1
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9

Figure 21


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
300
299
298
297
296
295
294
6/05
6/06
6/07
6/08
6/09
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
6/05
6/06
6/07
6/08
6/09
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
6/05
6/06
6/07
6/08
6/09
Average

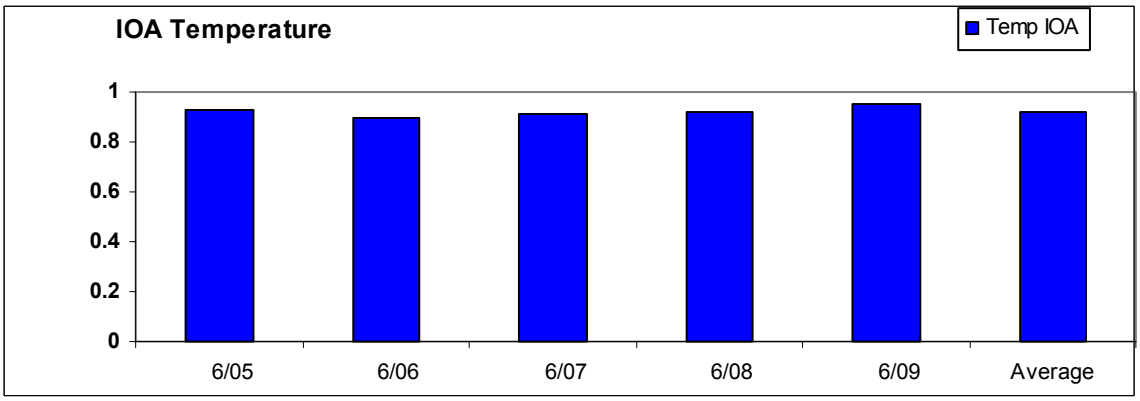

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
6/05
6/06
6/07
6/08
6/09
Average

Figure 22

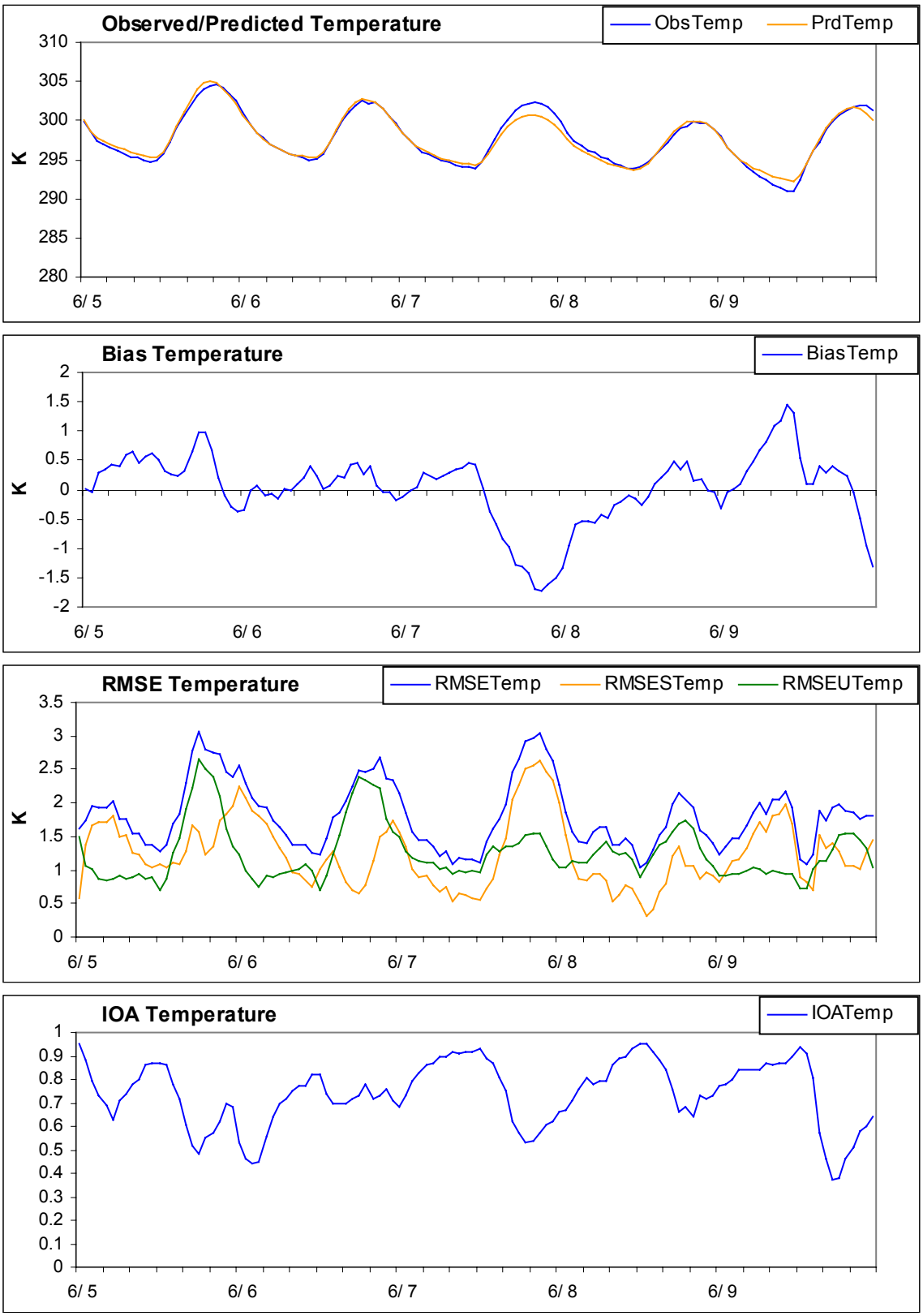
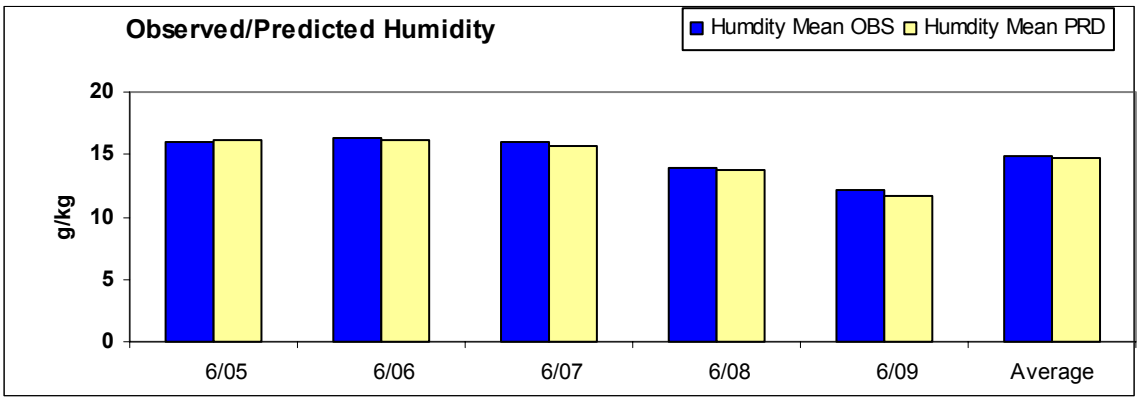
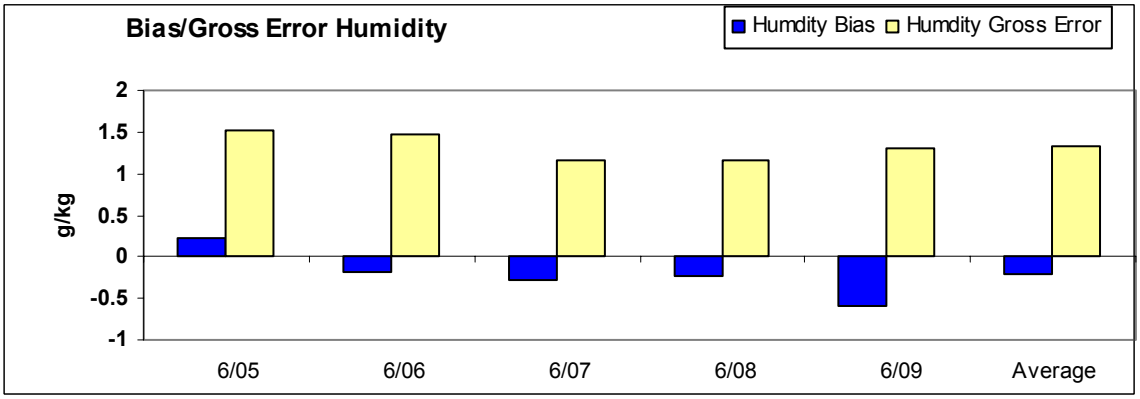
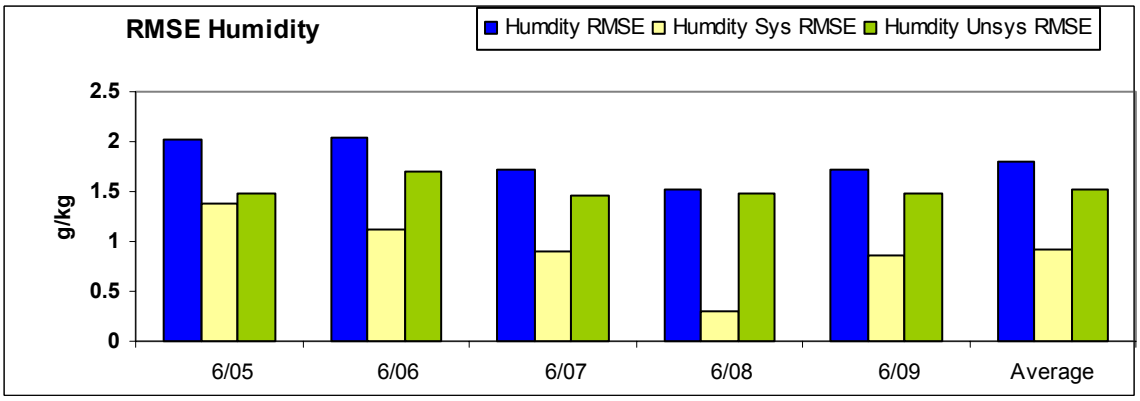

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
280
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9

Figure 23


Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
6/05
6/06
6/07
6/08
6/09
Average


Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
6/05
6/06
6/07
6/08
6/09
Average


RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
6/05
6/06
6/07
6/08
6/09
Average

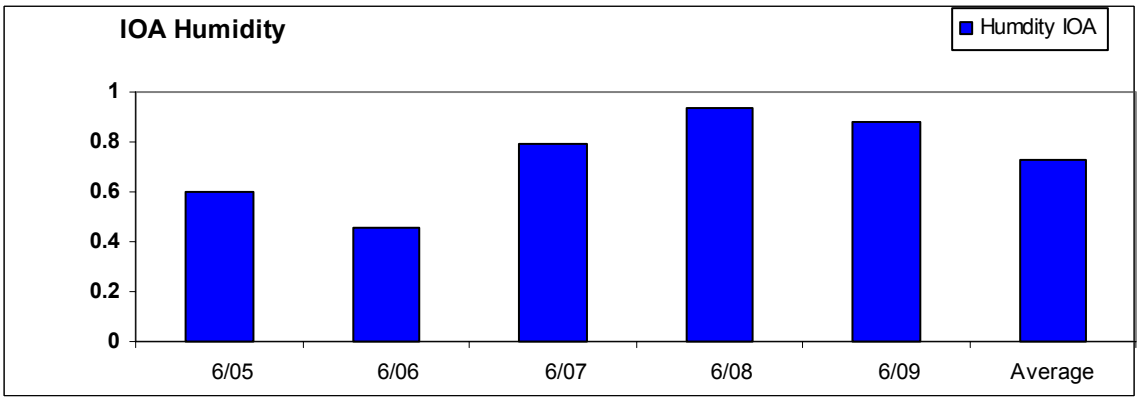

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
6/05
6/06
6/07
6/08
6/09
Average

Figure 24

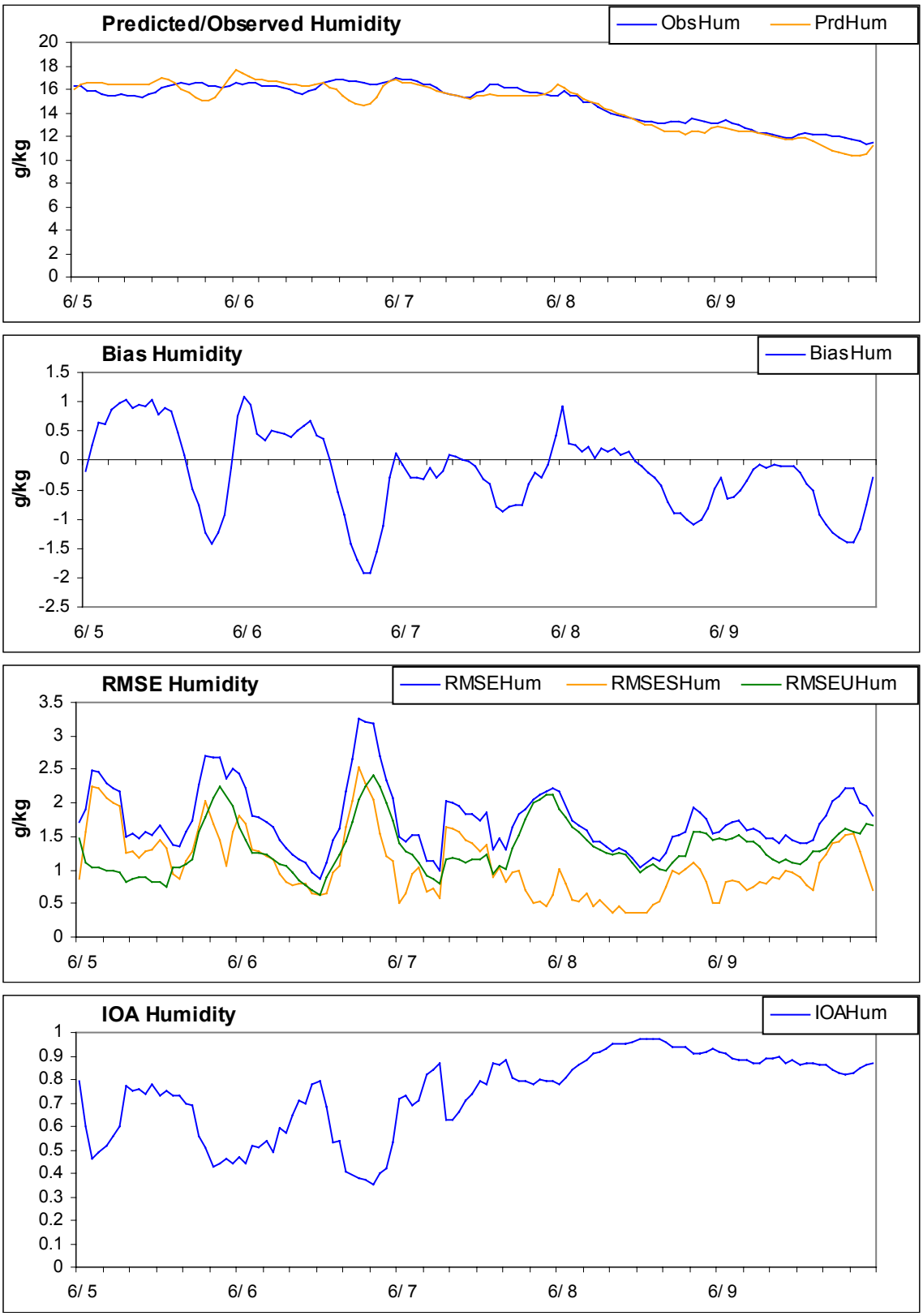

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/ 5
6/ 6
6/ 7
6/ 8
6/ 9

Figure 25

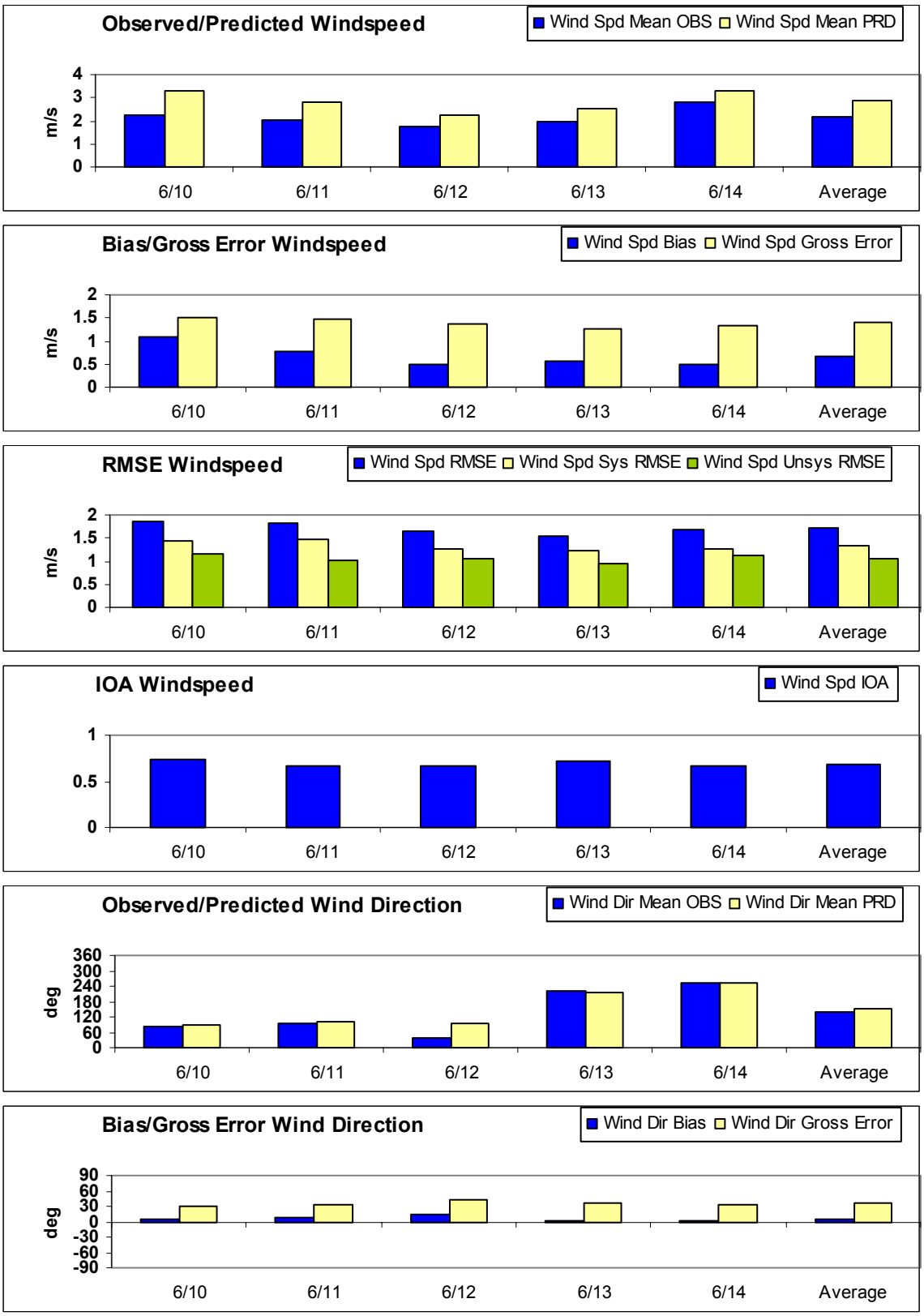

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
6/10
6/11
6/12
6/13
6/14
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
6/10
6/11
6/12
6/13
6/14
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
6/10
6/11
6/12
6/13
6/14
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
6/10
6/11
6/12
6/13
6/14
Average

Figure 26

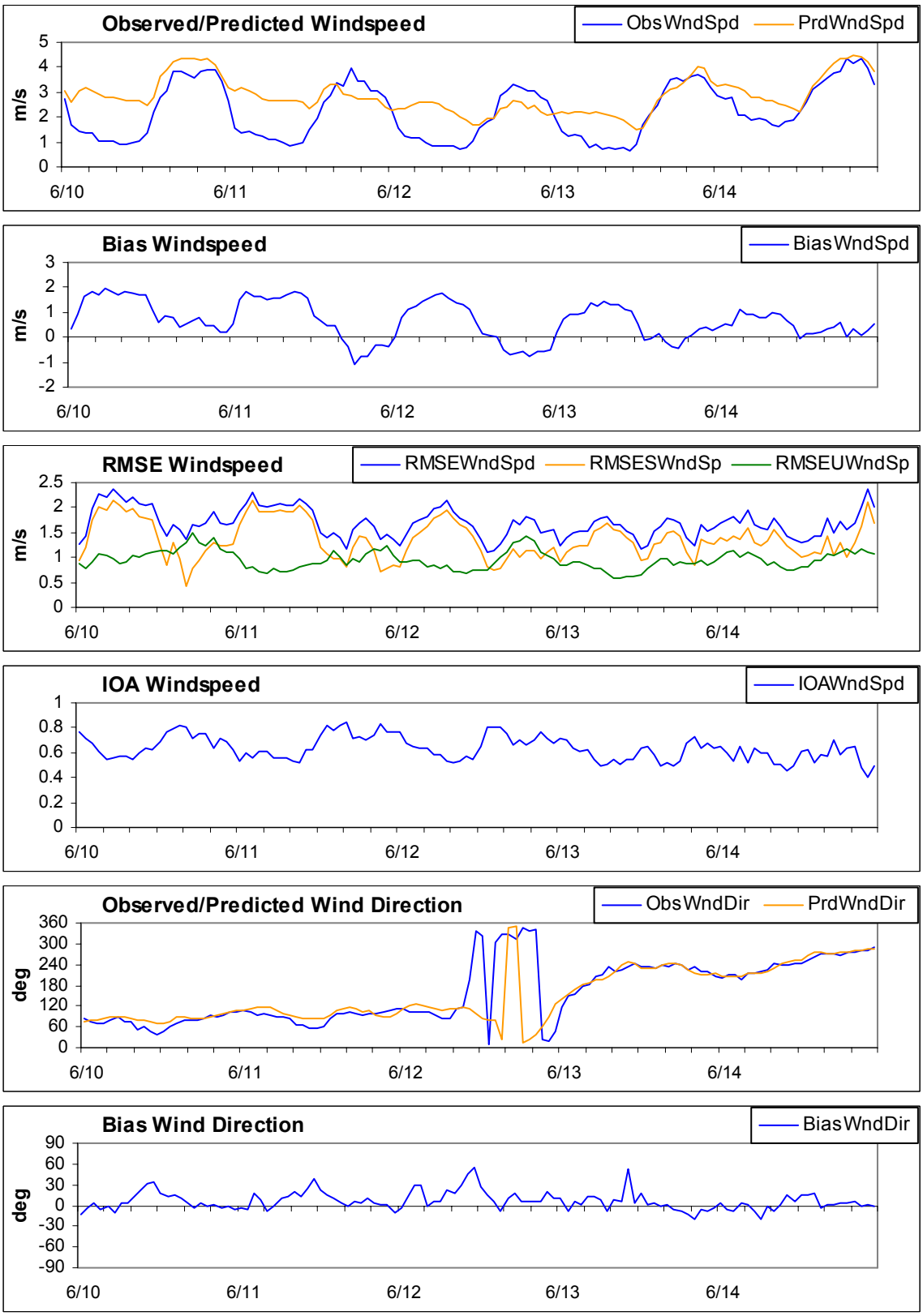
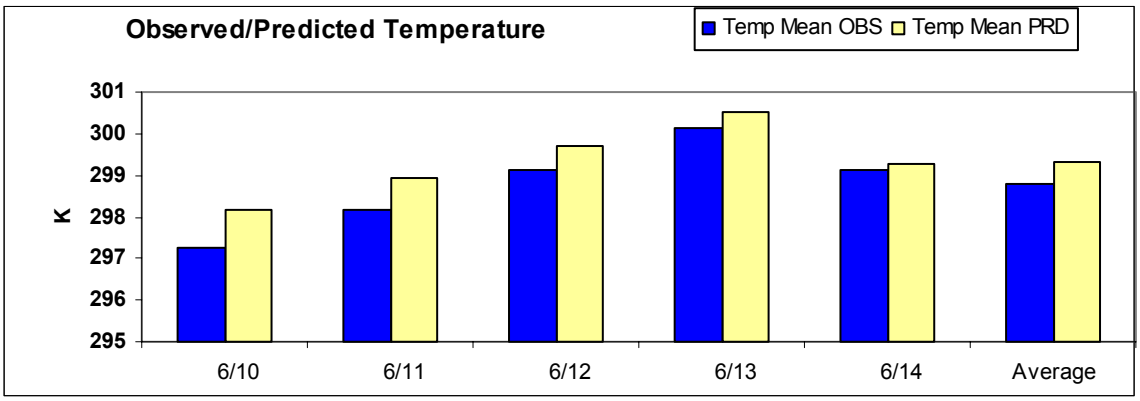
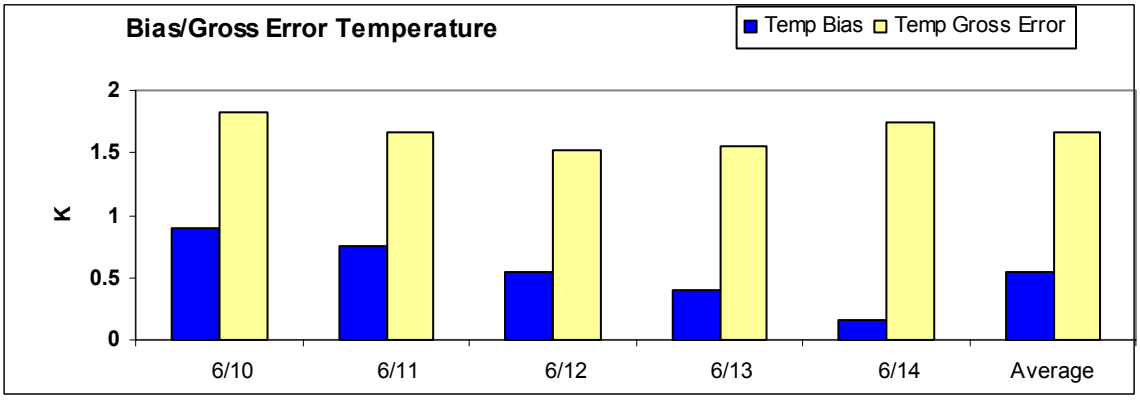
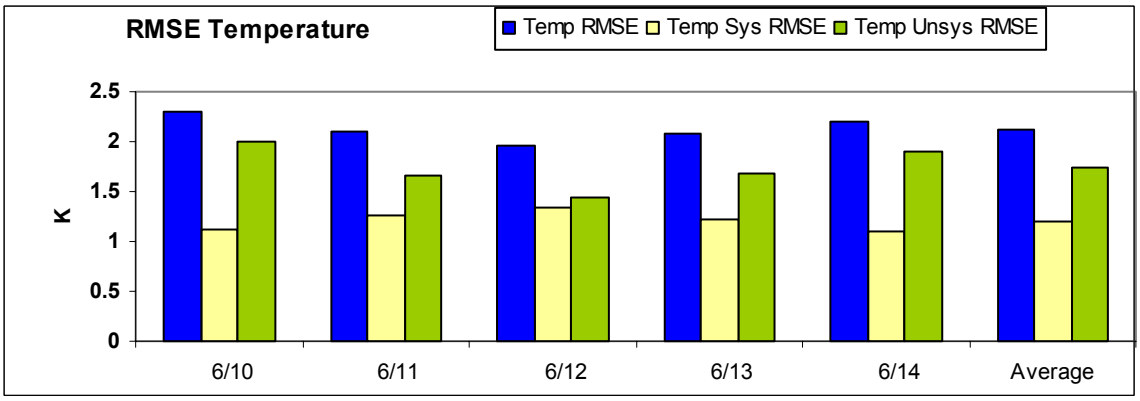

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
6/10
6/11
6/12
6/13
6/14
Bias Windspeed
BiasWndSpd
m/s
3
2
1
0
-1
-2
6/10
6/11
6/12
6/13
6/14
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
6/10
6/11
6/12
6/13
6/14
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
6/10
6/11
6/12
6/13
6/14
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
6/10
6/11
6/12
6/13
6/14

Figure 27


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
301
300
299
298
297
296
295
6/10
6/11
6/12
6/13
6/14
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
Average

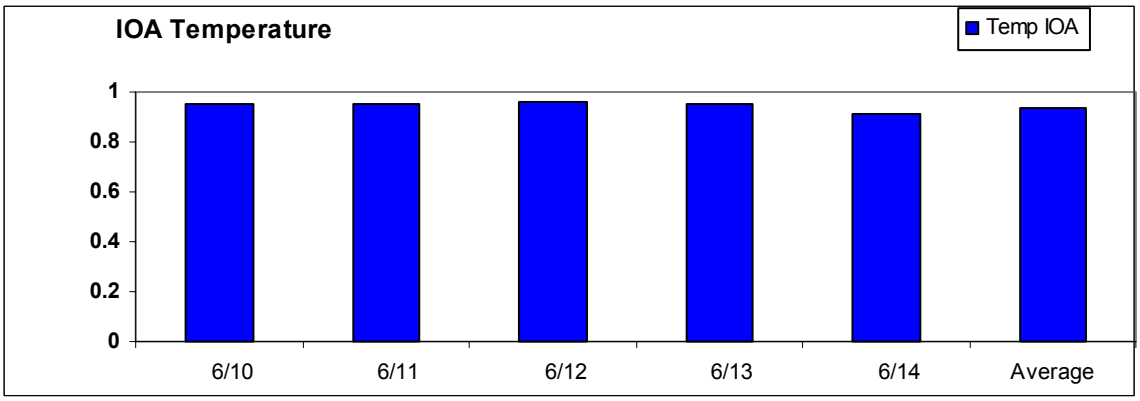

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
6/10
6/11
6/12
6/13
6/14
Average

Figure 28

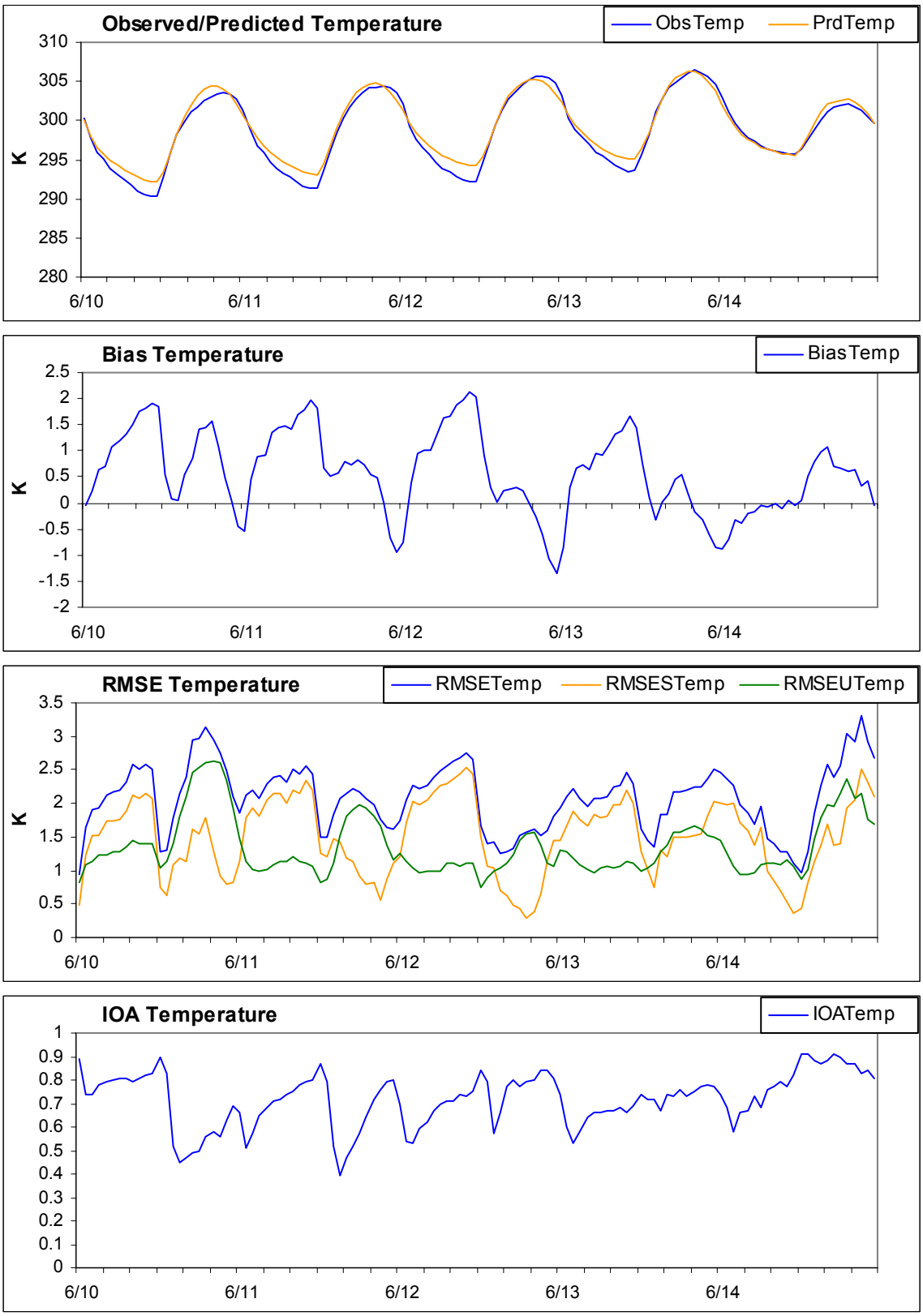

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
280
6/10
6/11
6/12
6/13
6/14
Bias Temperature
BiasTemp
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
6/10
6/11
6/12
6/13
6/14
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/10
6/11
6/12
6/13
6/14

Figure 29

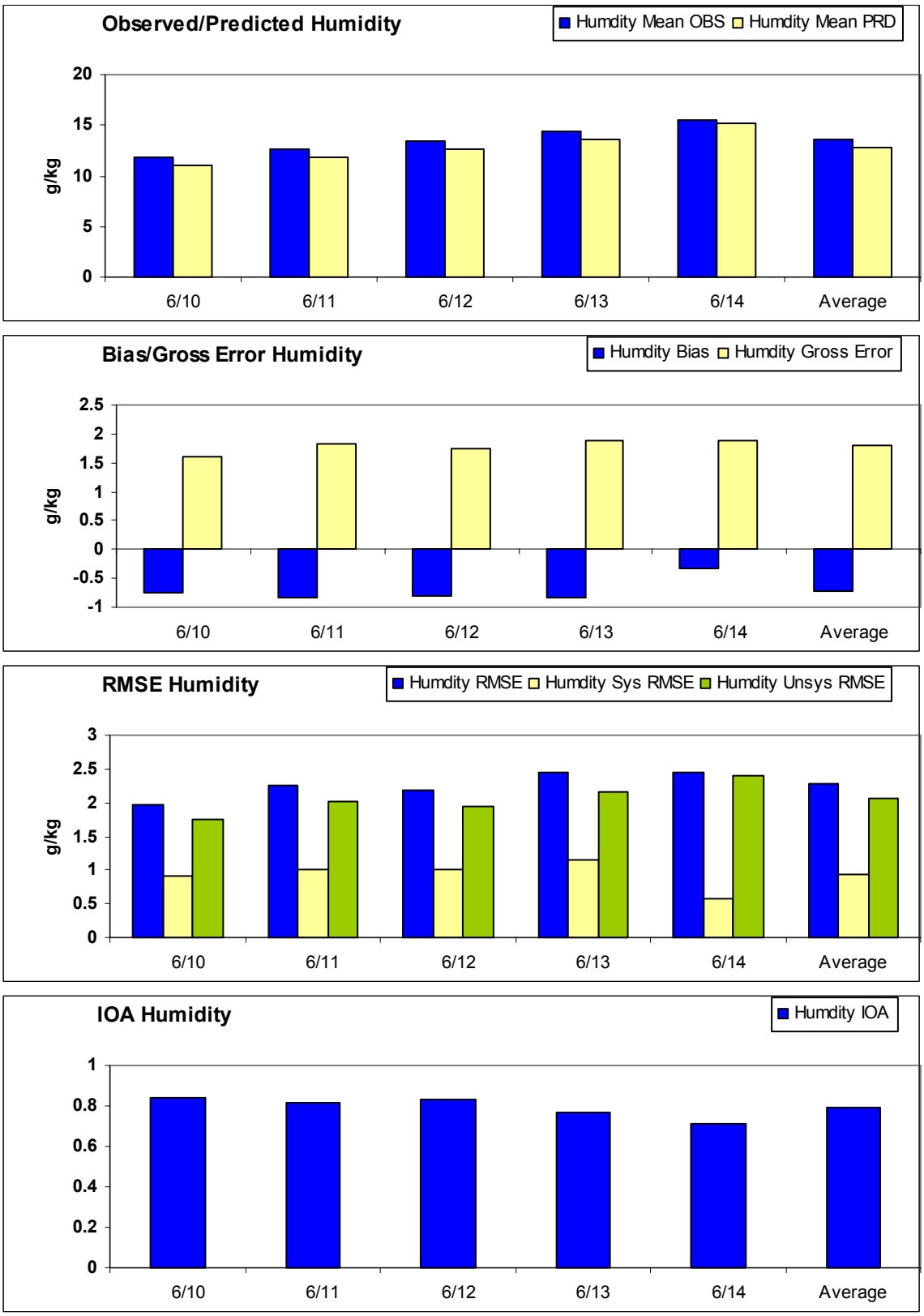

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
6/10
6/11
6/12
6/13
6/14
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
6/10
6/11
6/12
6/13
6/14
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
6/10
6/11
6/12
6/13
6/14
Average

Figure 30

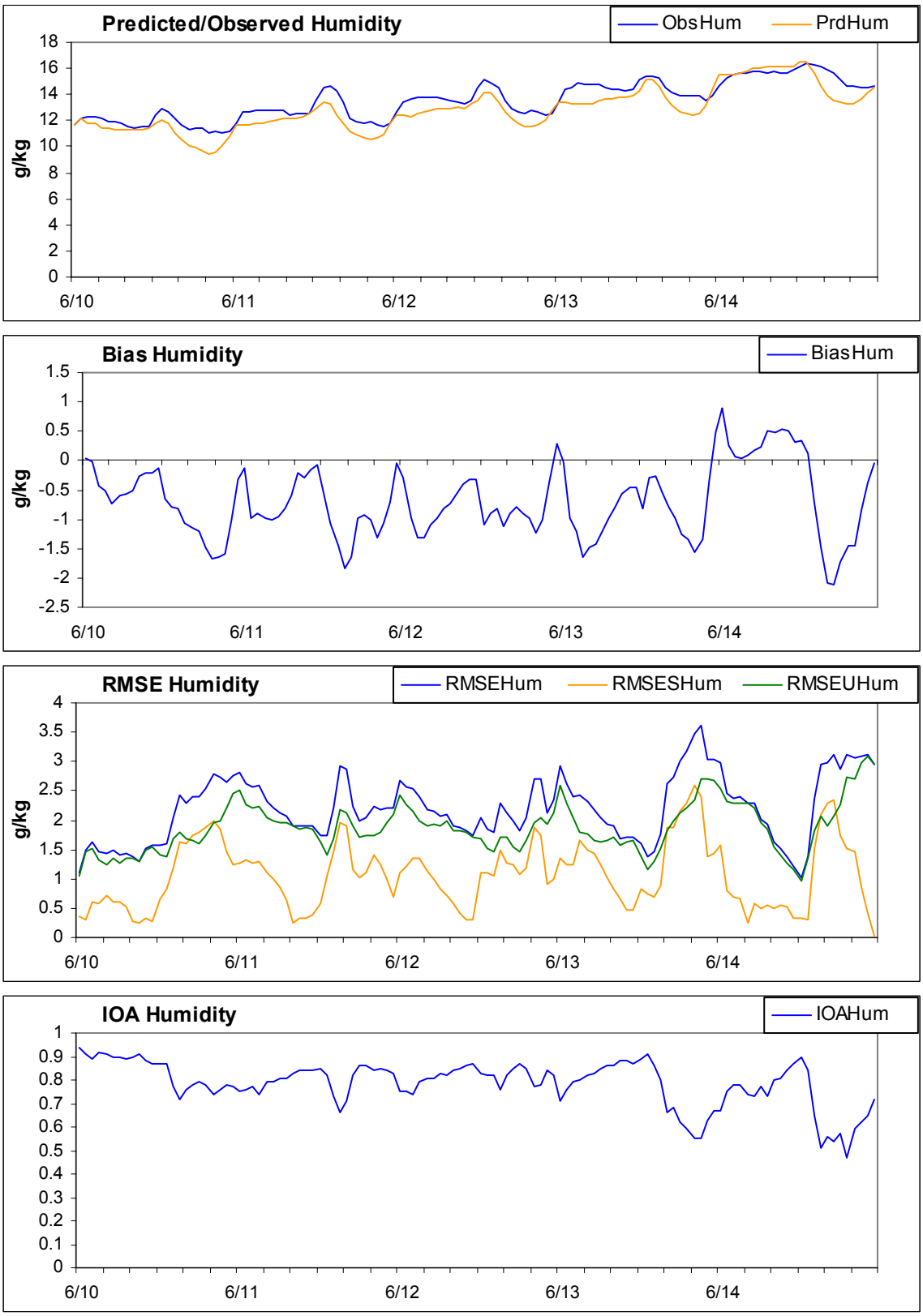

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
18
16
14
12
10
8
6
4
2
0
6/10
6/11
6/12
6/13
6/14
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
6/10
6/11
6/12
6/13
6/14
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
6/10
6/11
6/12
6/13
6/14
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/10
6/11
6/12
6/13
6/14

Figure 31

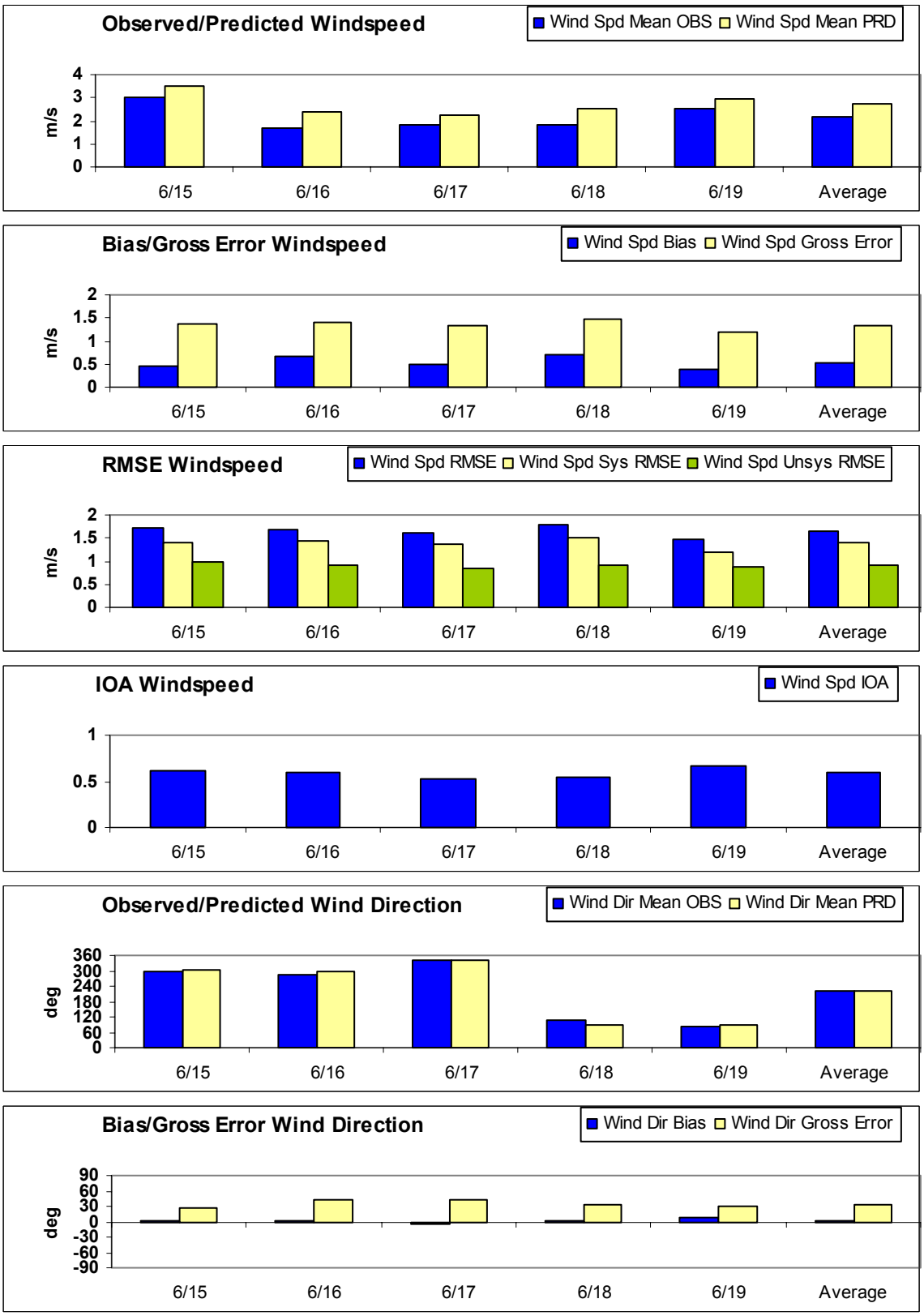

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
6/15
6/16
6/17
6/18
6/19
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
6/15
6/16
6/17
6/18
6/19
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
6/15
6/16
6/17
6/18
6/19
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
6/15
6/16
6/17
6/18
6/19
Average

Figure 32

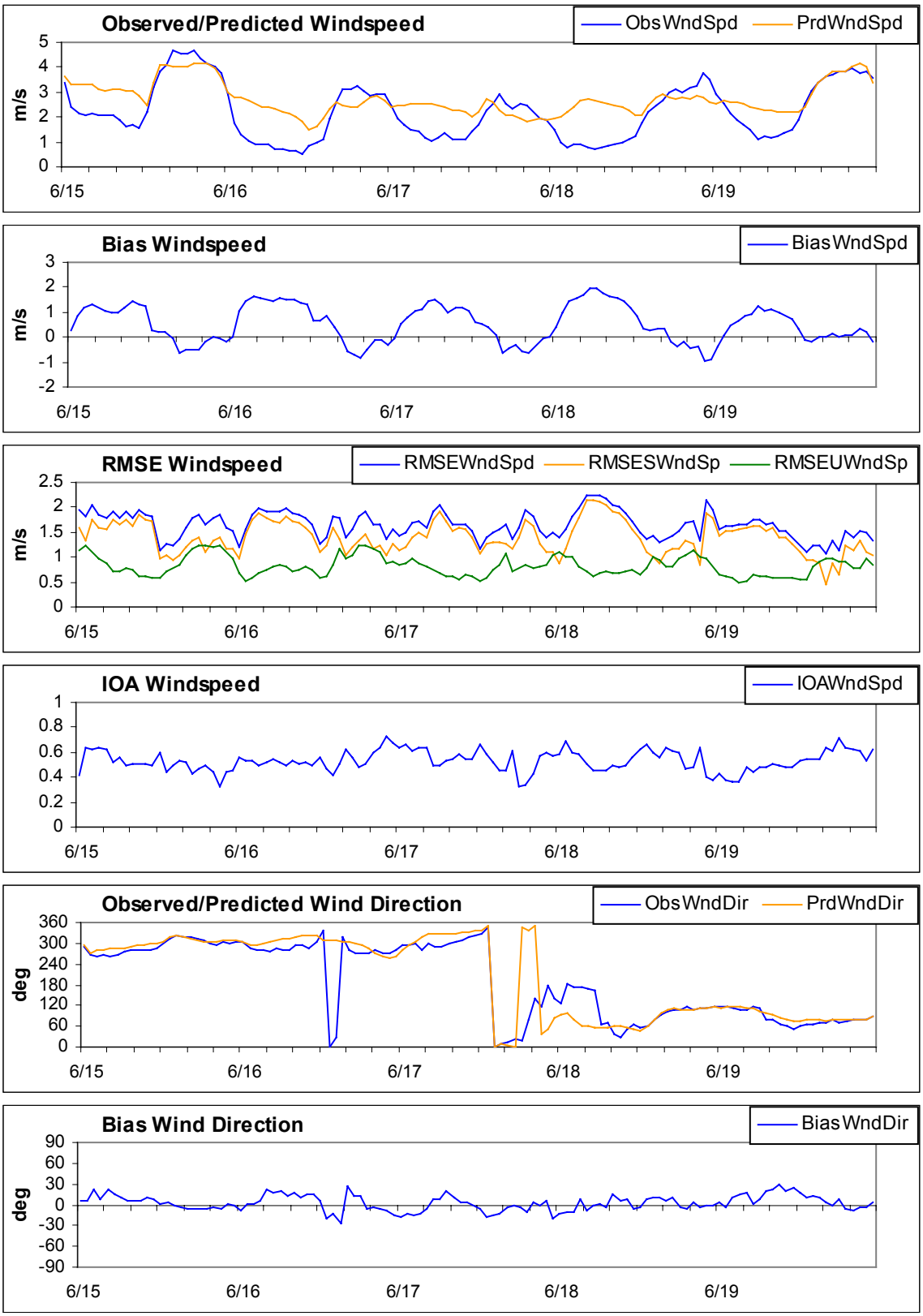

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
6/15
6/16
6/17
6/18
6/19
Bias Windspeed
BiasWndSpd
m/s
3
2
1
0
-1
-2
6/15
6/16
6/17
6/18
6/19
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
6/15
6/16
6/17
6/18
6/19
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
6/15
6/16
6/17
6/18
6/19
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
6/15
6/16
6/17
6/18
6/19

Figure 33

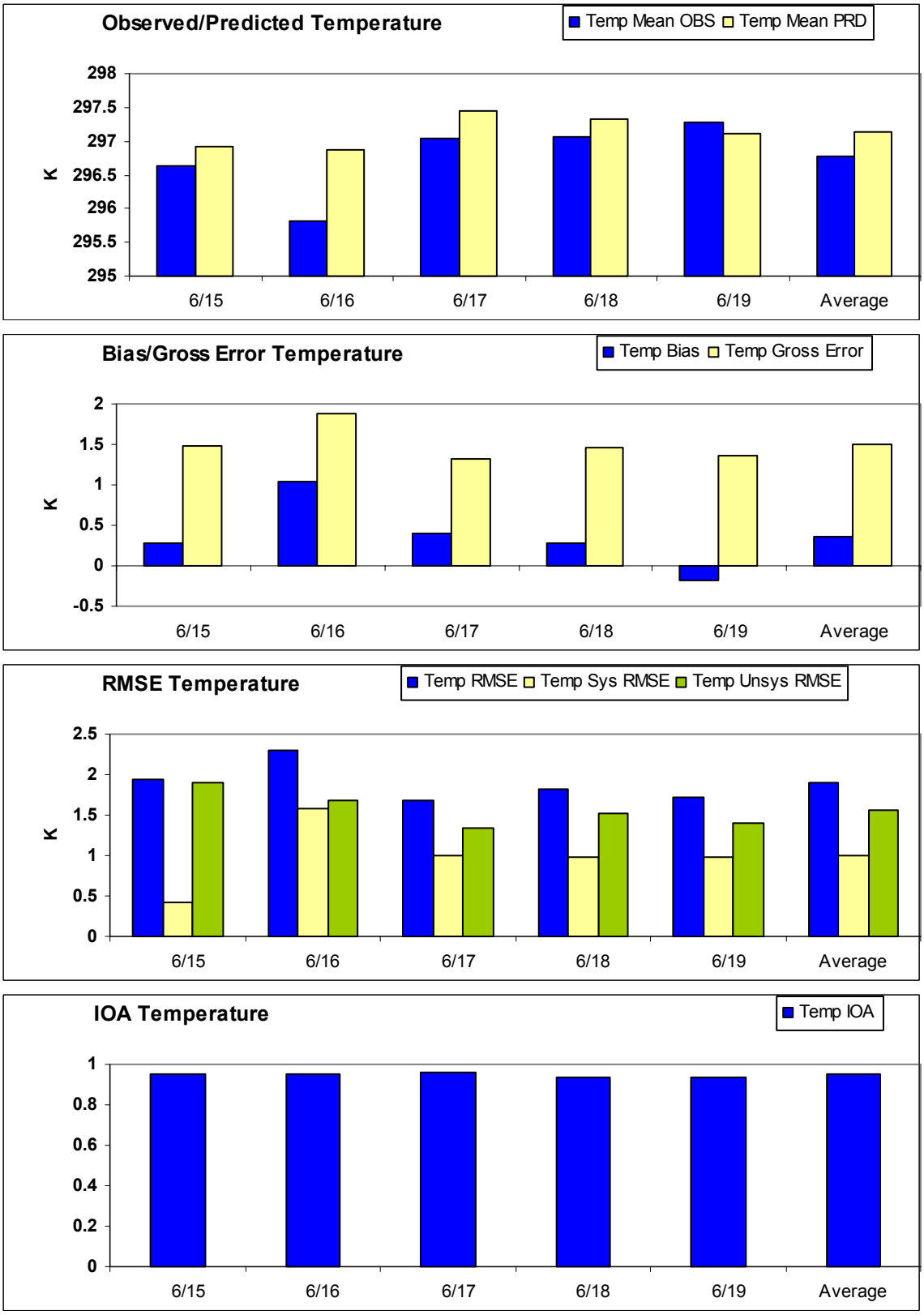

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298
297.5
297
296.5
296
295.5
295
6/15
6/16
6/17
6/18
6/19
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
6/15
6/16
6/17
6/18
6/19
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
6/15
6/16
6/17
6/18
6/19
Average

Figure 34

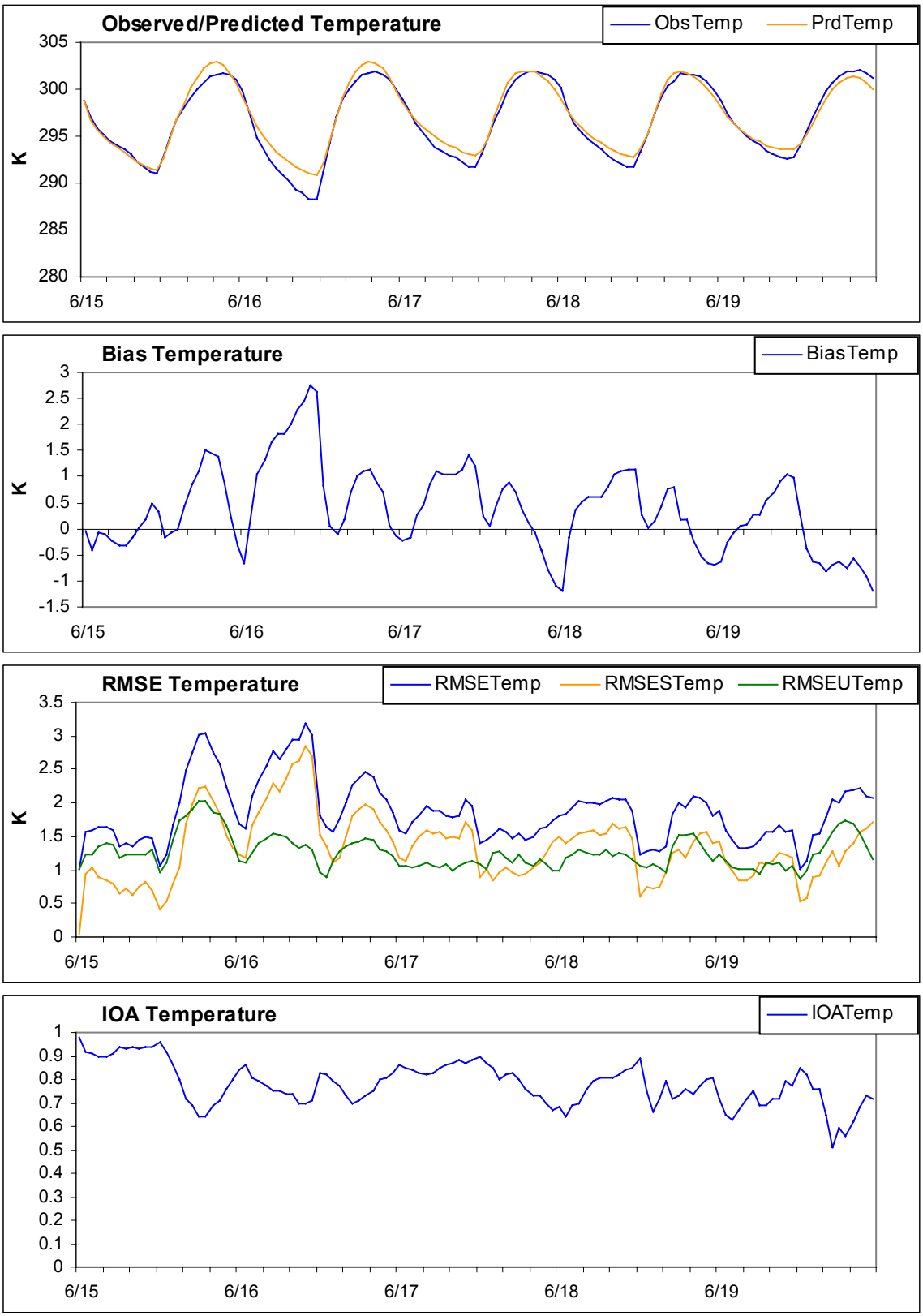

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
305
300
295
290
285
280
6/15
6/16
6/17
6/18
6/19
Bias Temperature
BiasTemp
K
3
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
6/15
6/16
6/17
6/18
6/19
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/15
6/16
6/17
6/18
6/19

Figure 35

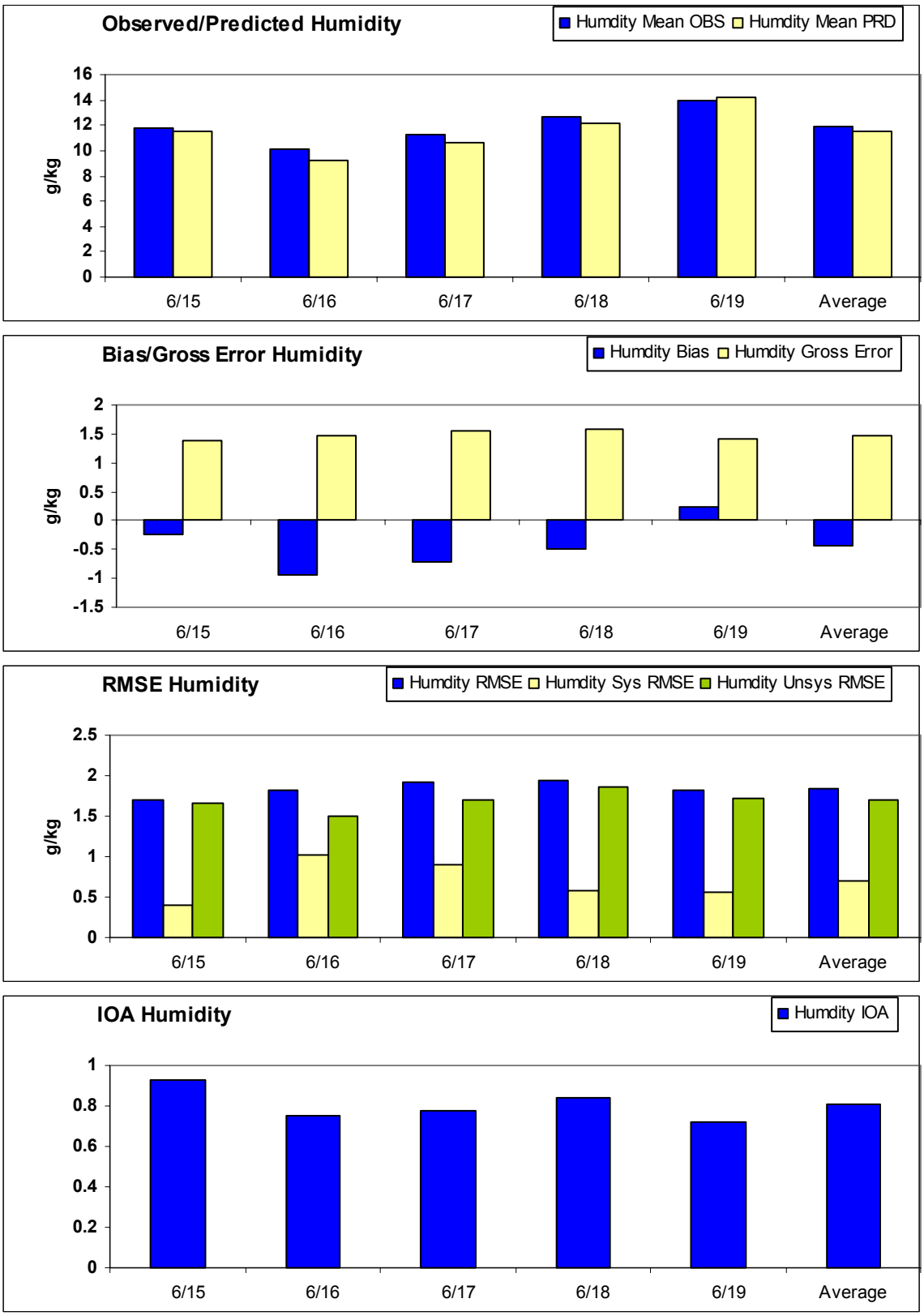

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
6/15
6/16
6/17
6/18
6/19
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
6/15
6/16
6/17
6/18
6/19
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
6/15
6/16
6/17
6/18
6/19
Average

Figure 36

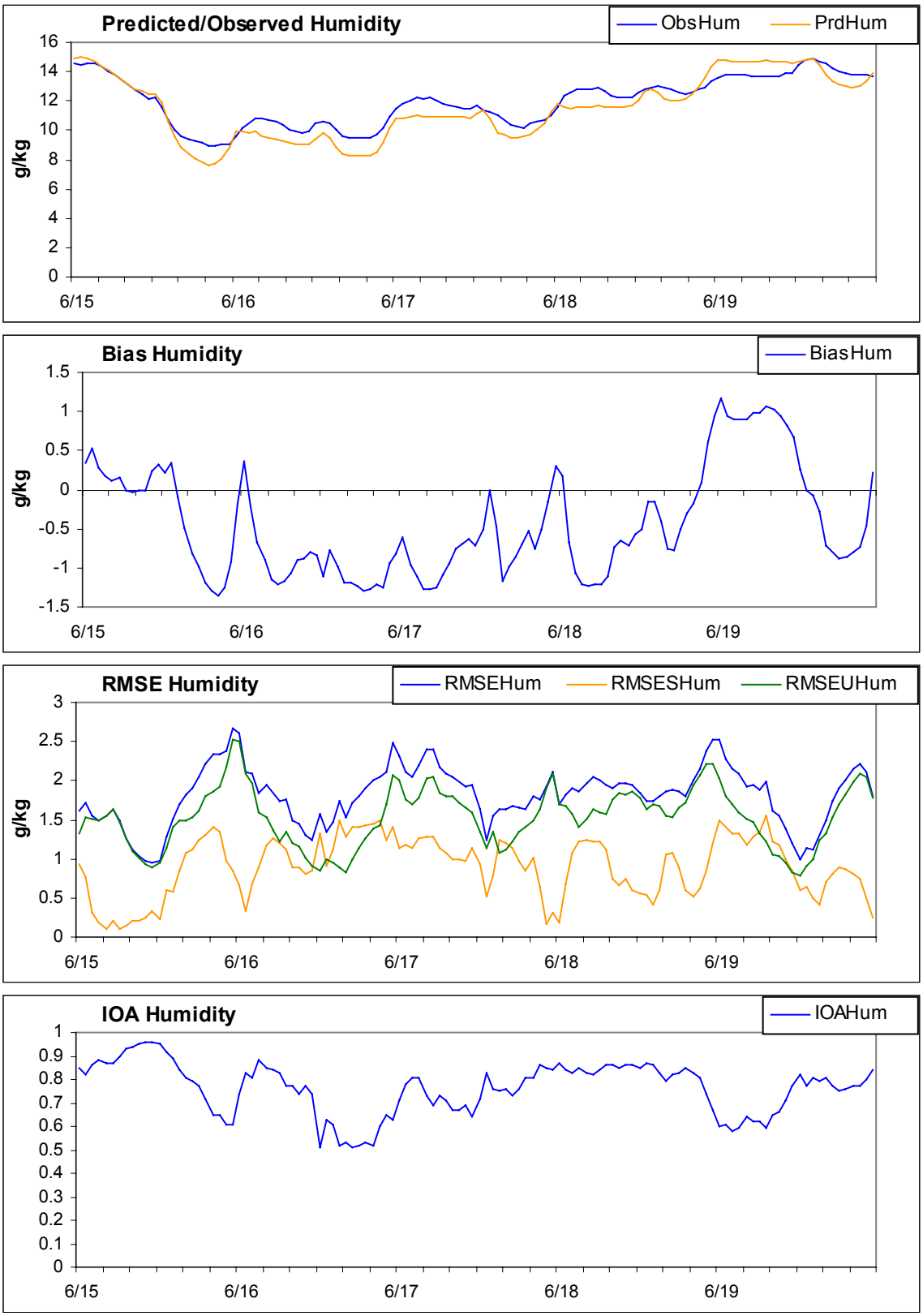

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
16
14
12
10
8
6
4
2
0
6/15
6/16
6/17
6/18
6/19
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
6/15
6/16
6/17
6/18
6/19
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3
2.5
2
1.5
1
0.5
0
6/15
6/16
6/17
6/18
6/19
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/15
6/16
6/17
6/18
6/19

Figure 37

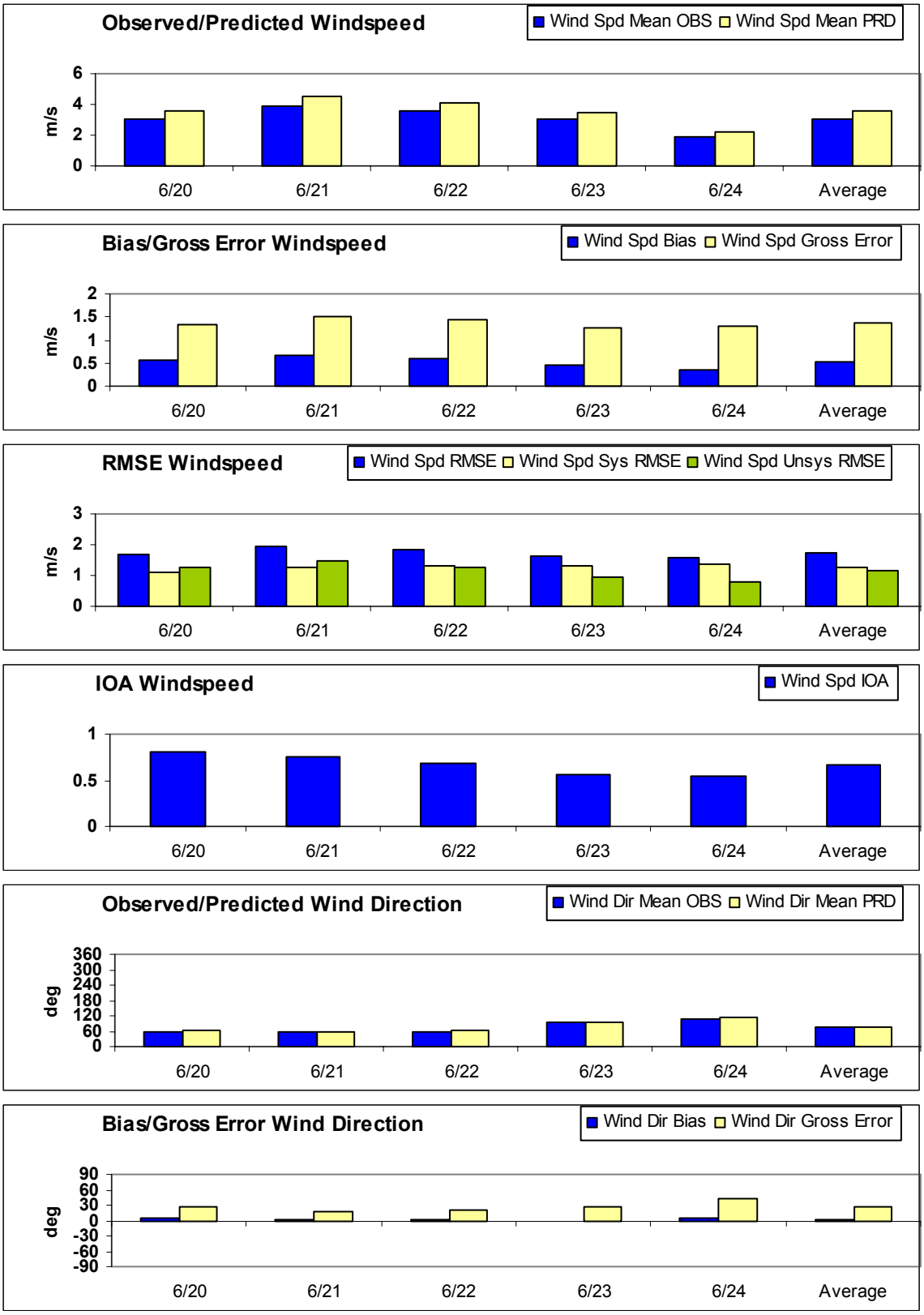

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
6/20
6/21
6/22
6/23
6/24
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
6/20
6/21
6/22
6/23
6/24
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
6/20
6/21
6/22
6/23
6/24
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
6/20
6/21
6/22
6/23
6/24
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
6/20
6/21
6/22
6/23
6/24
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
6/20
6/21
6/22
6/23
6/24
Average

Figure 38

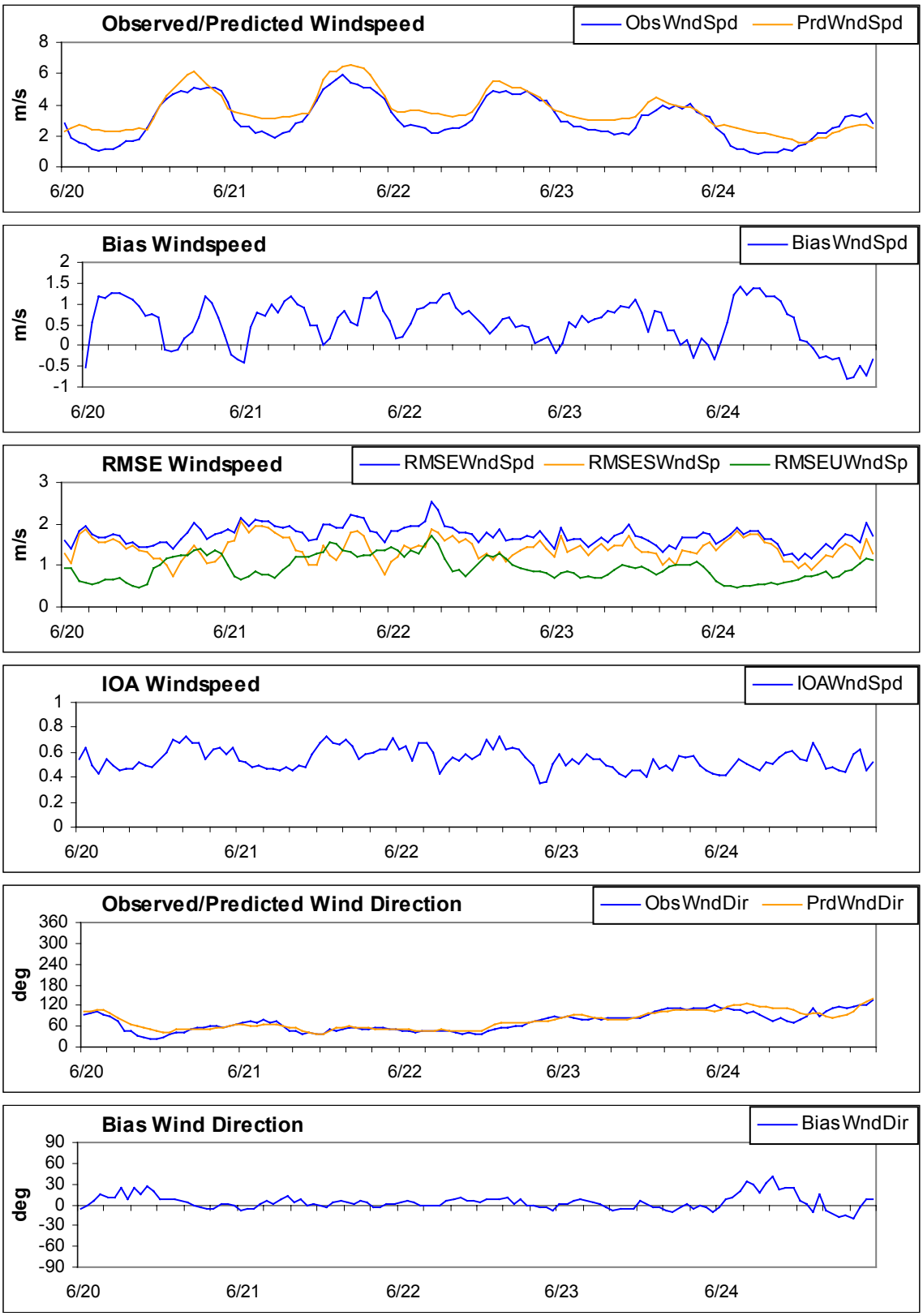
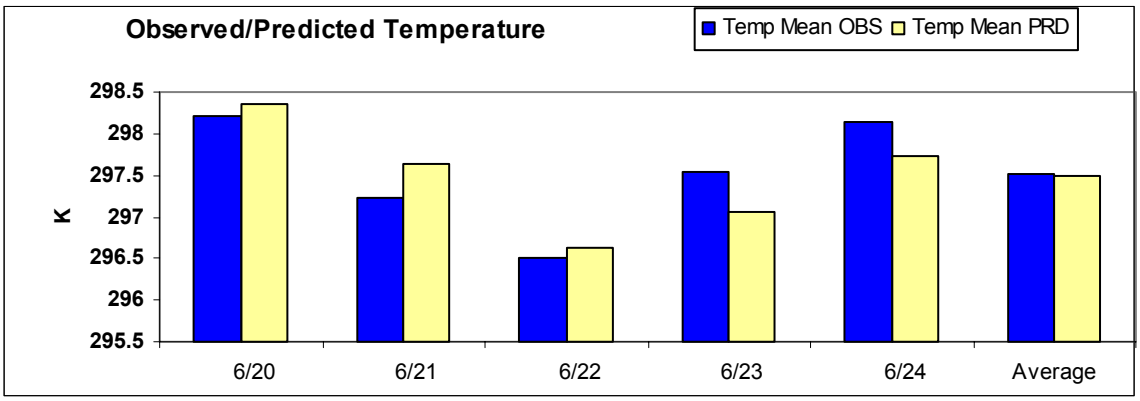
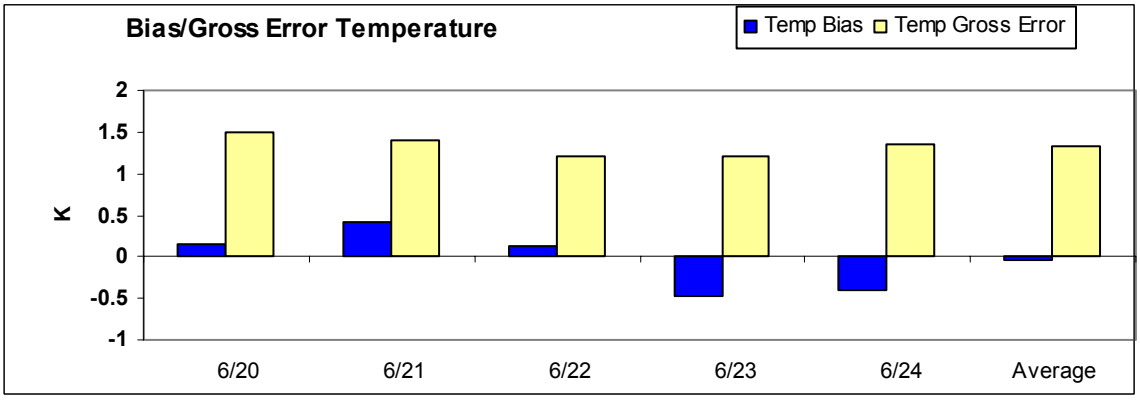
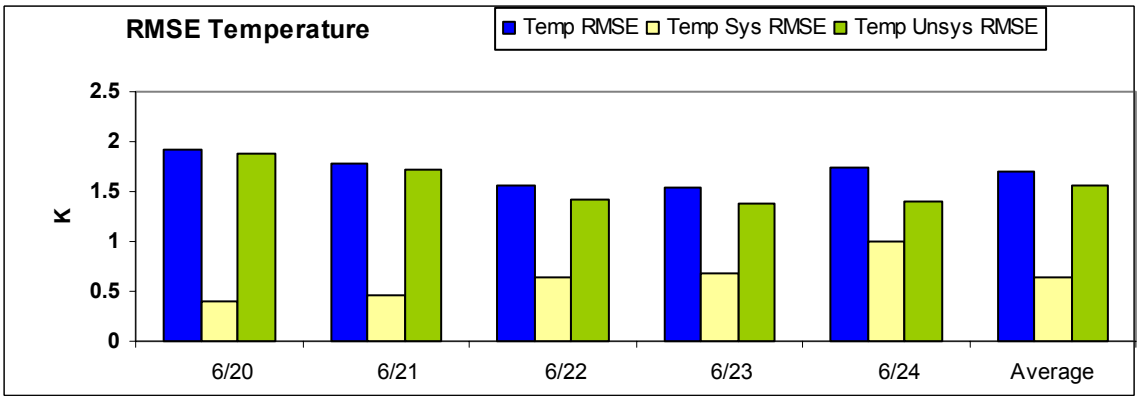

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
8
6
4
2
0
6/20
6/21
6/22
6/23
6/24
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
-1
6/20
6/21
6/22
6/23
6/24
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
6/20
6/21
6/22
6/23
6/24
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
6/20
6/21
6/22
6/23
6/24
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
6/20
6/21
6/22
6/23
6/24
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
6/20
6/21
6/22
6/23
6/24

Figure 39


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298.5
298
297.5
297
296.5
296
295.5
6/20
6/21
6/22
6/23
6/24
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
6/20
6/21
6/22
6/23
6/24
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
6/20
6/21
6/22
6/23
6/24
Average

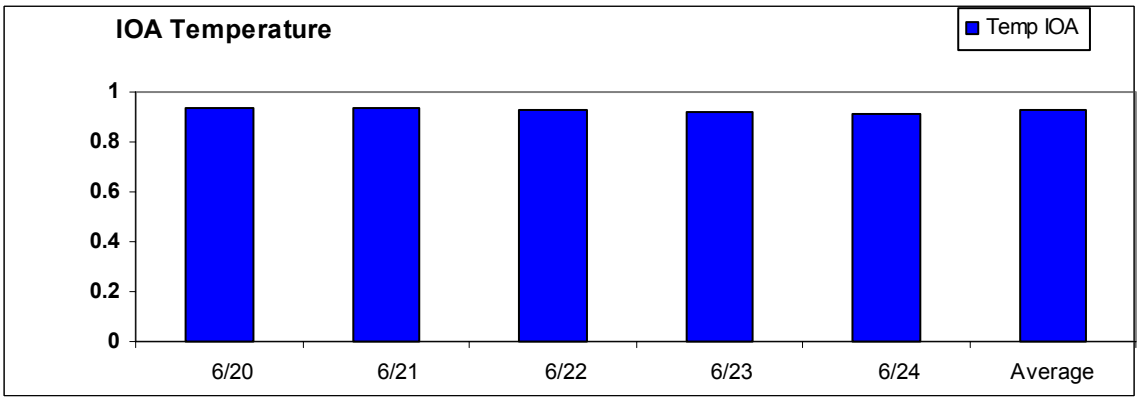

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
6/20
6/21
6/22
6/23
6/24
Average

Figure 40

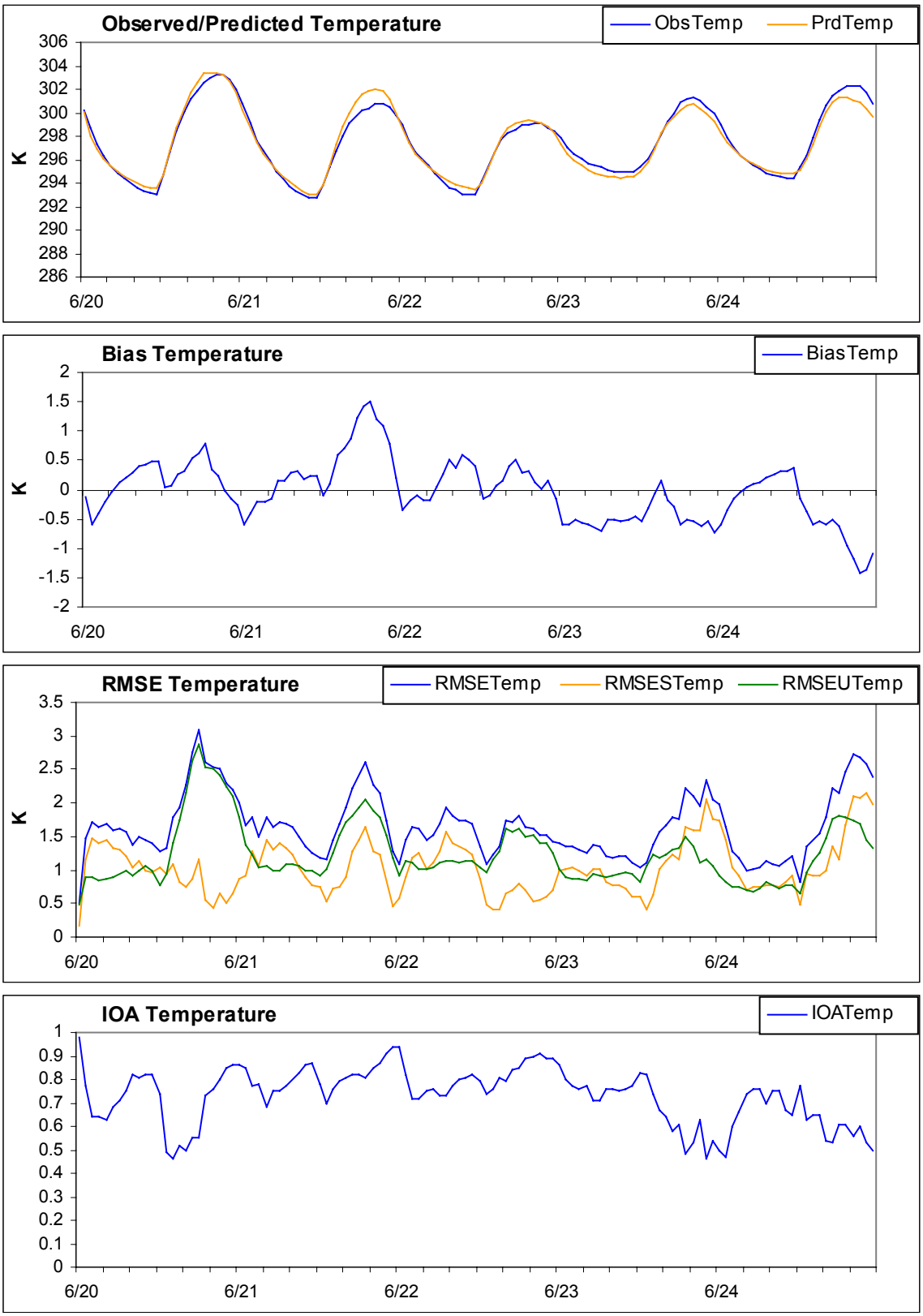
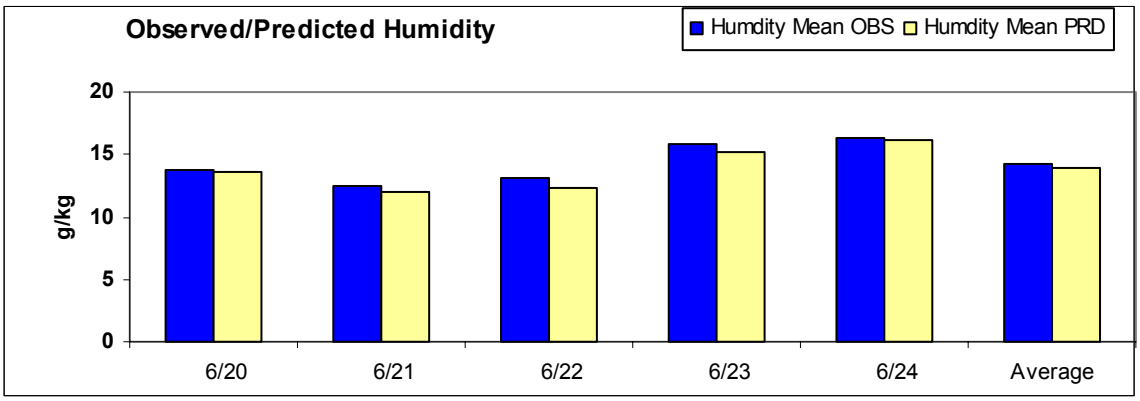
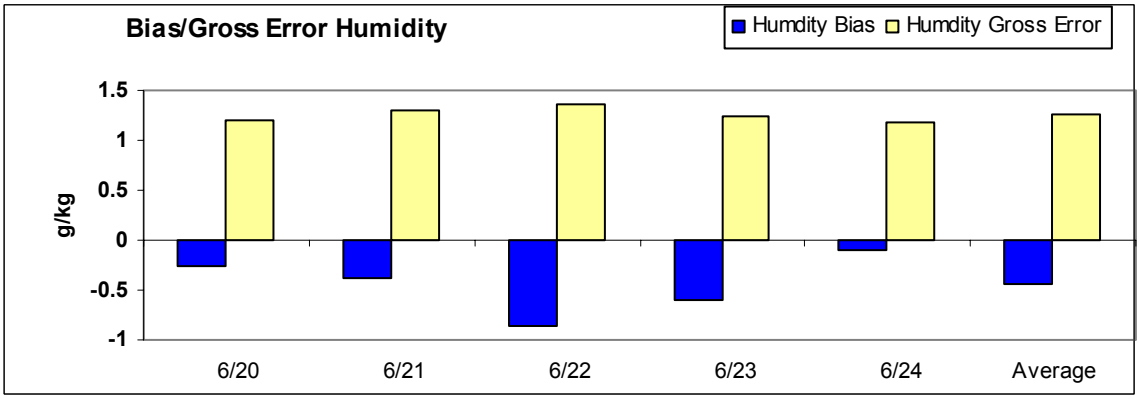
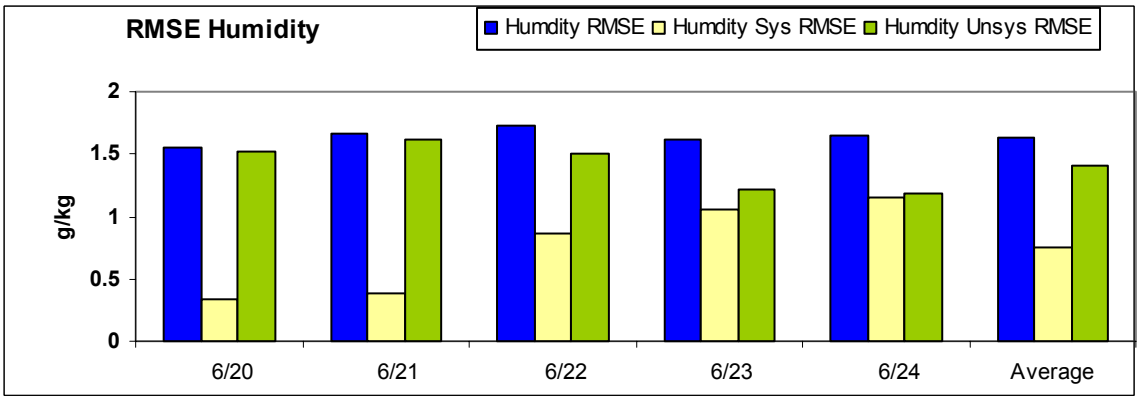

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
306
304
302
300
298
296
294
292
290
288
286
6/20
6/21
6/22
6/23
6/24
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
6/20
6/21
6/22
6/23
6/24
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
6/20
6/21
6/22
6/23
6/24
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/20
6/21
6/22
6/23
6/24

Figure 41


Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
6/20
6/21
6/22
6/23
6/24
Average


Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
6/20
6/21
6/22
6/23
6/24
Average


RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
6/20
6/21
6/22
6/23
6/24
Average

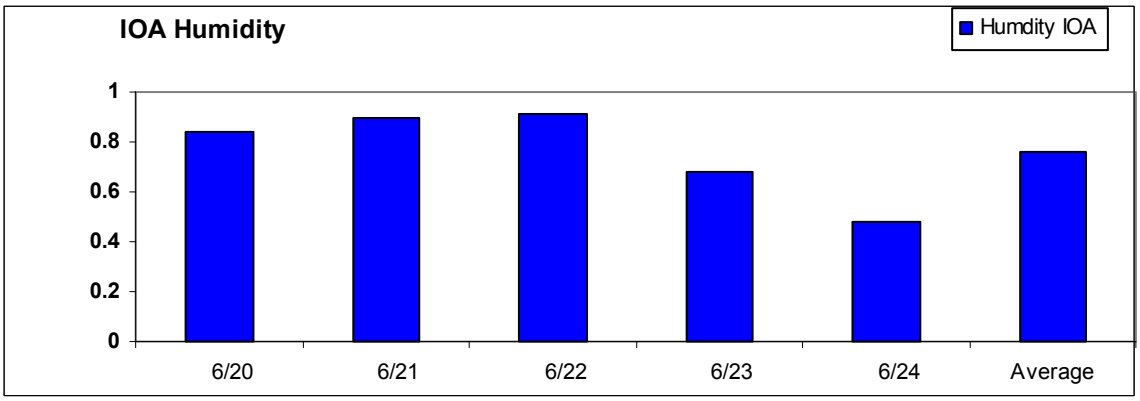

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
6/20
6/21
6/22
6/23
6/24
Average

Figure 42

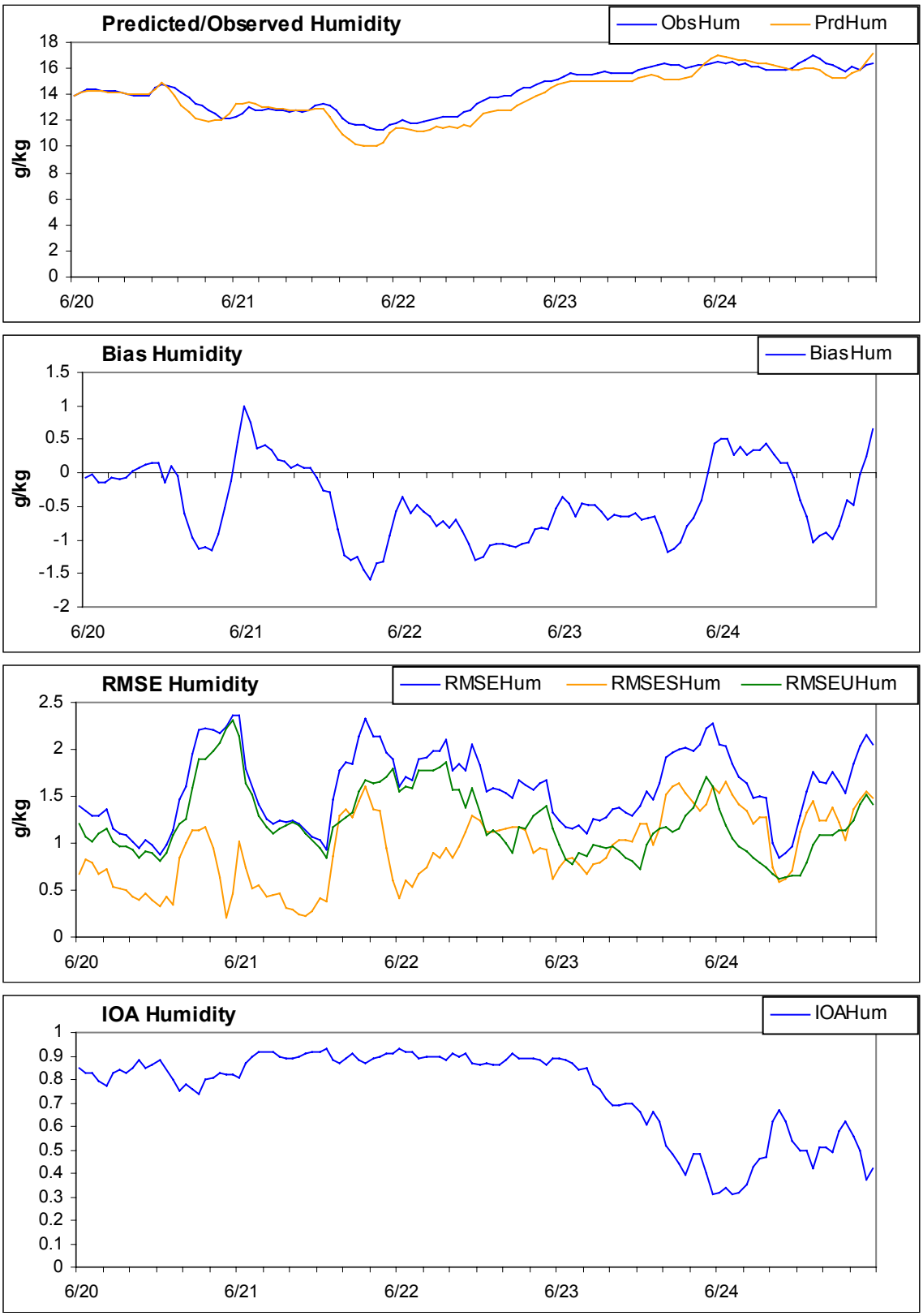

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
18
16
14
12
10
8
6
4
2
0
6/20
6/21
6/22
6/23
6/24
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
-2
6/20
6/21
6/22
6/23
6/24
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
2.5
2
1.5
1
0.5
0
6/20
6/21
6/22
6/23
6/24
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/20
6/21
6/22
6/23
6/24

Figure 43

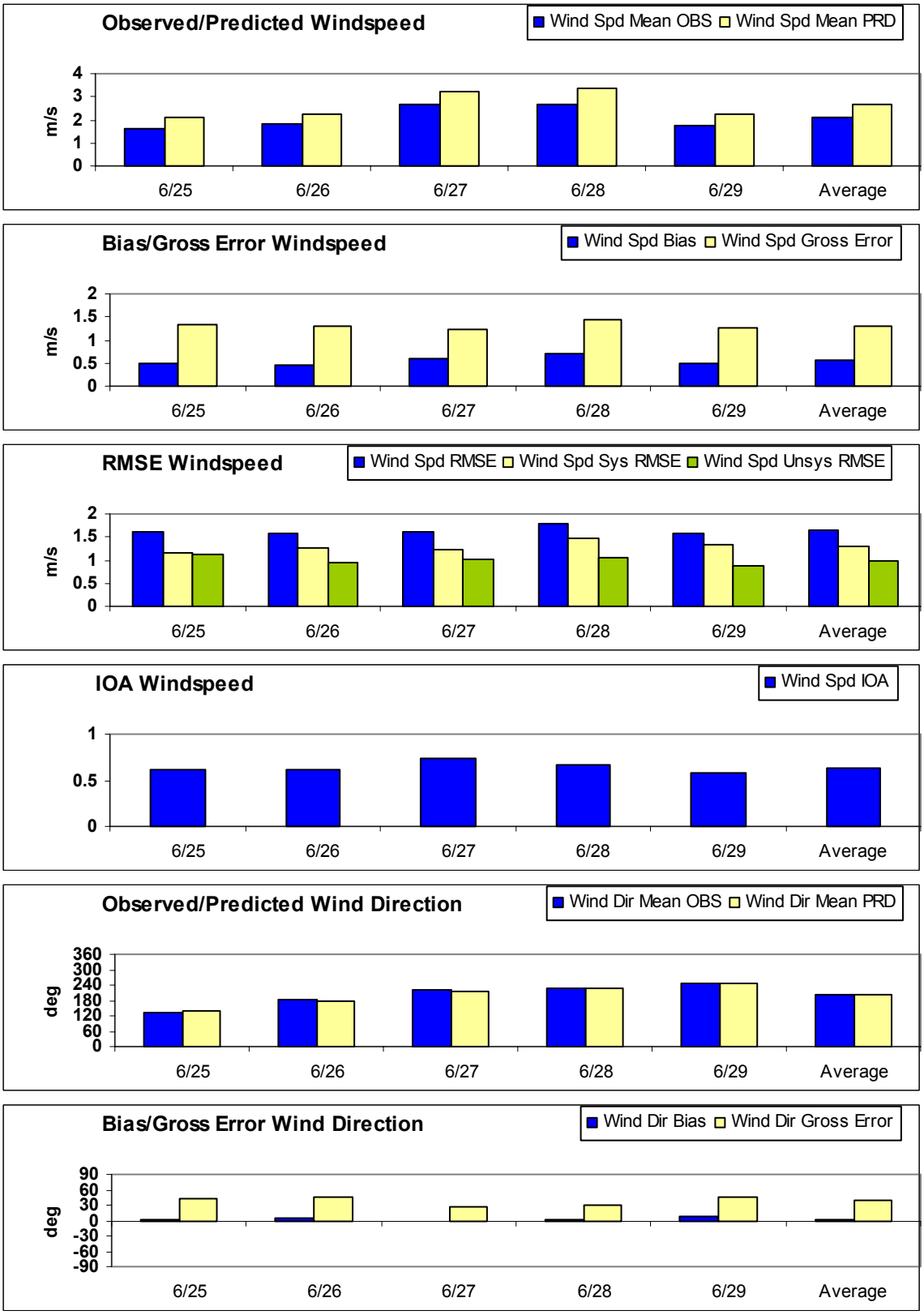

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
6/25
6/26
6/27
6/28
6/29
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
6/25
6/26
6/27
6/28
6/29
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
6/25
6/26
6/27
6/28
6/29
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
6/25
6/26
6/27
6/28
6/29
Average

Figure 44

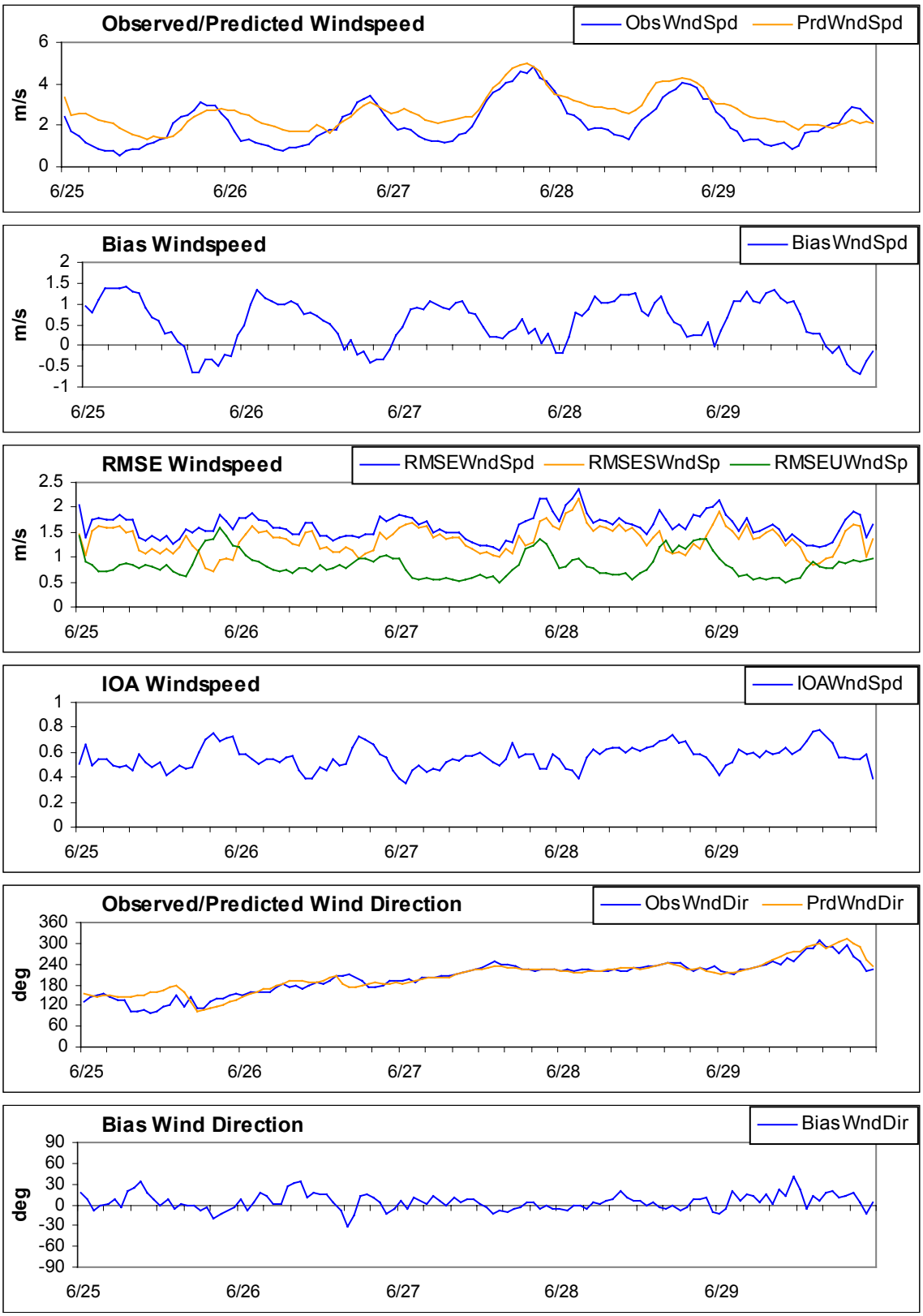
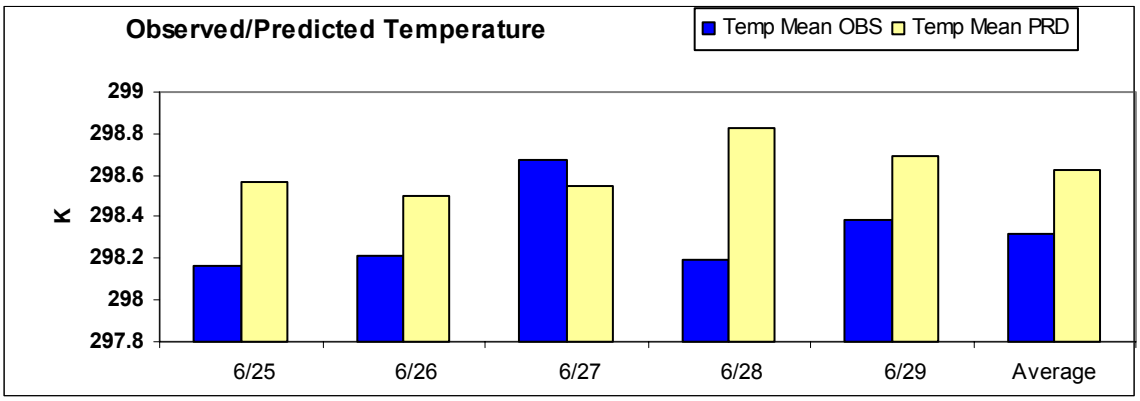
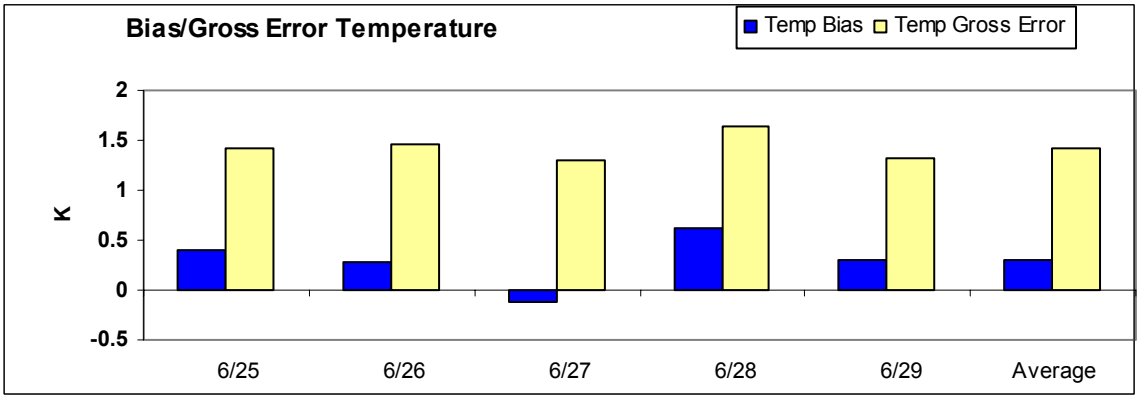
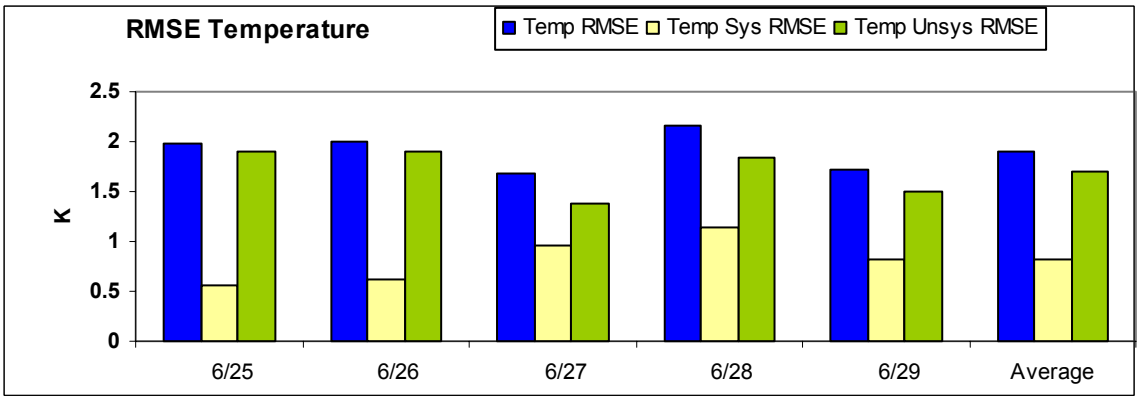

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
6
4
2
0
6/25
6/26
6/27
6/28
6/29
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
-1
6/25
6/26
6/27
6/28
6/29
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
6/25
6/26
6/27
6/28
6/29
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
6/25
6/26
6/27
6/28
6/29
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
6/25
6/26
6/27
6/28
6/29

Figure 45


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
299
298.8
298.6
298.4
298.2
298
297.8
6/25
6/26
6/27
6/28
6/29
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
6/25
6/26
6/27
6/28
6/29
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
Average

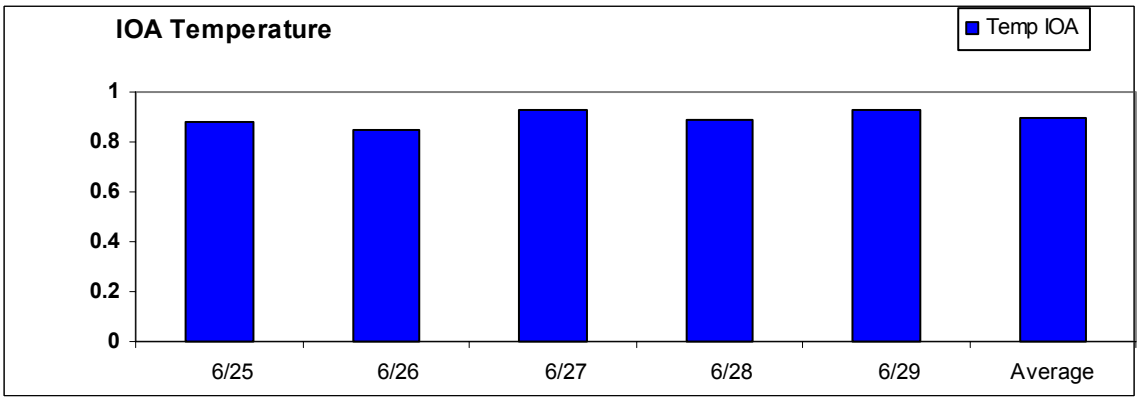

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
6/25
6/26
6/27
6/28
6/29
Average

Figure 46

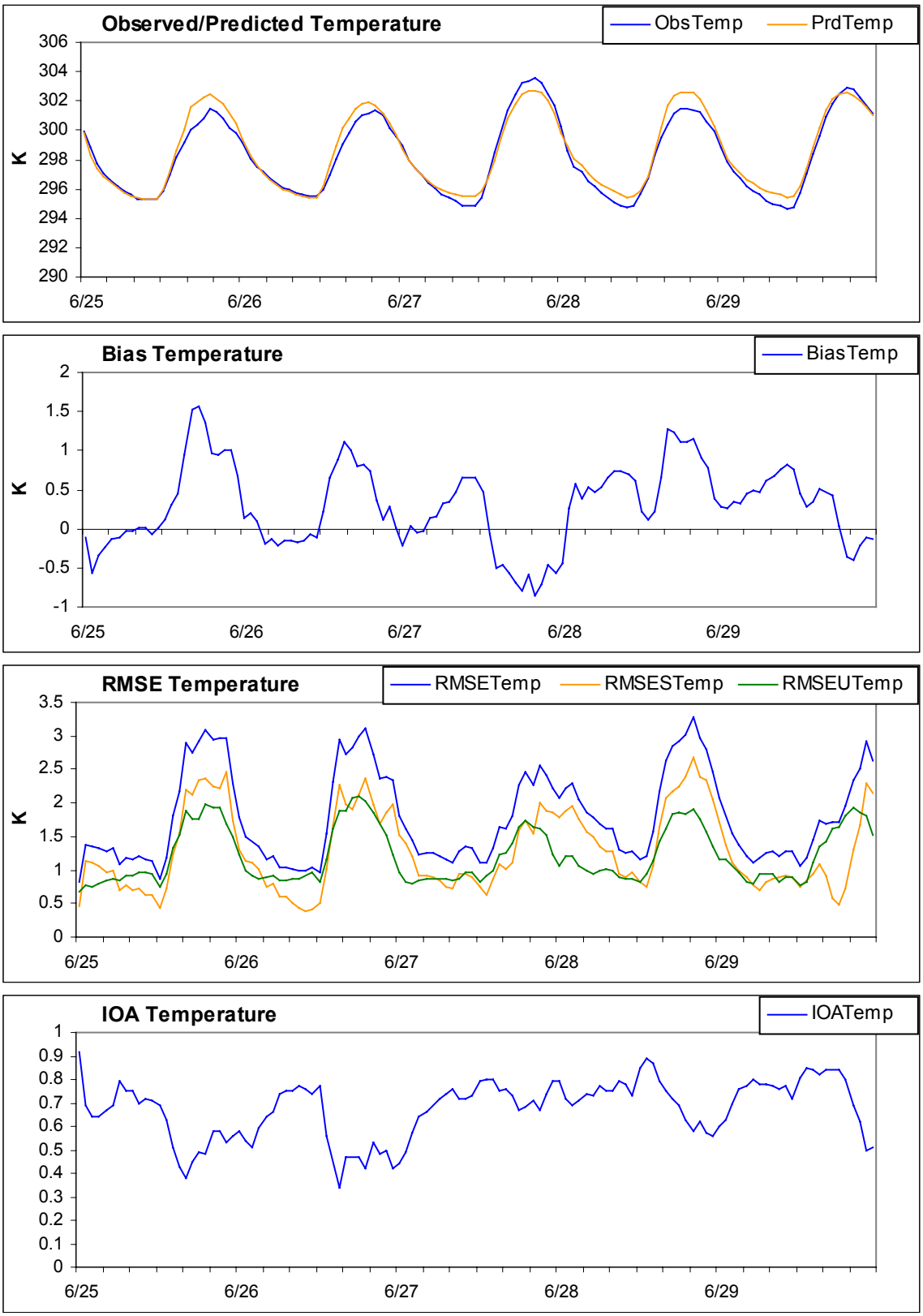

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
306
304
302
300
298
296
294
292
290
6/25
6/26
6/27
6/28
6/29
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
6/25
6/26
6/27
6/28
6/29
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/25
6/26
6/27
6/28
6/29

Figure 47

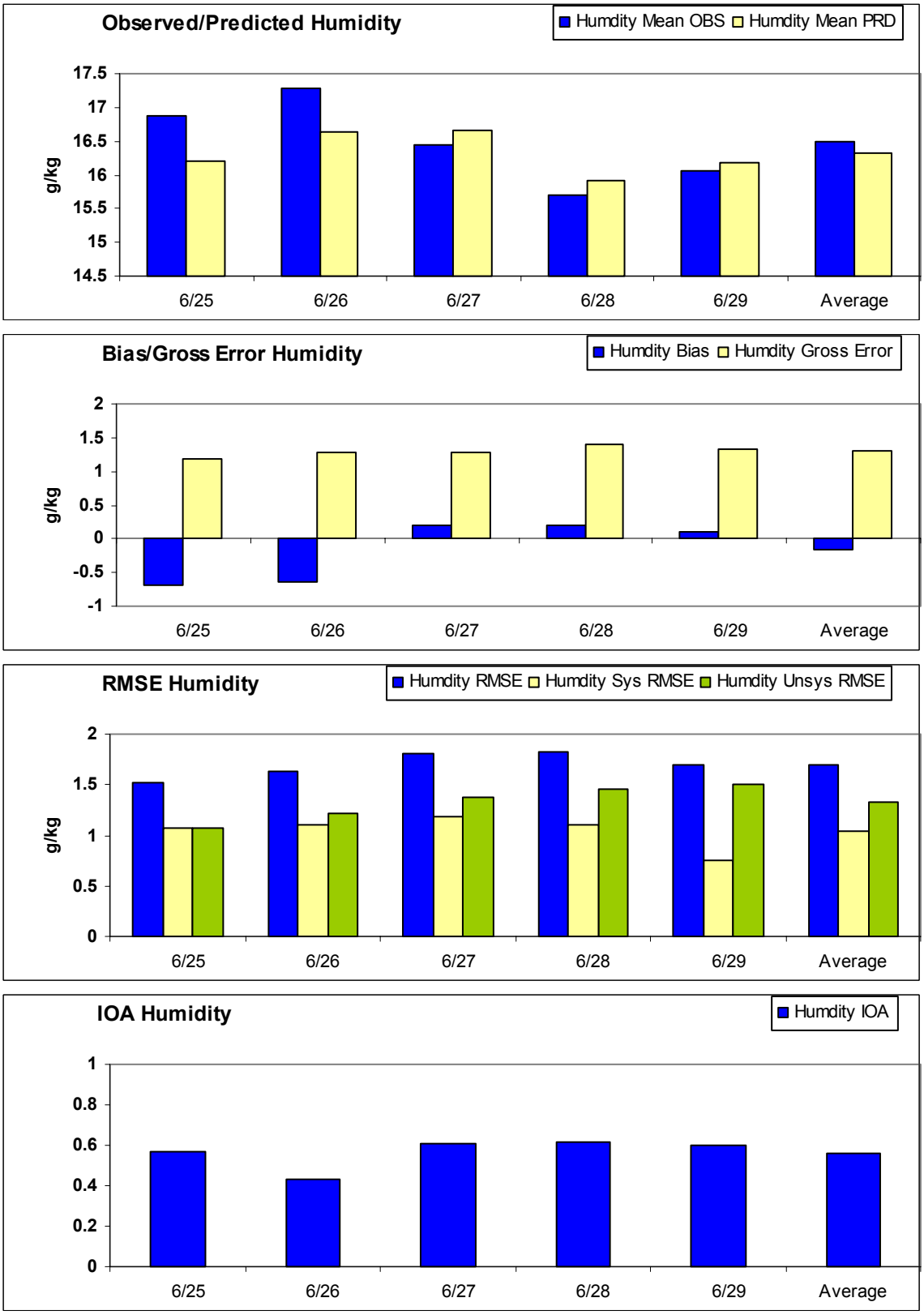

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17.5
17
16.5
16
15.5
15
14.5
6/25
6/26
6/27
6/28
6/29
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
6/25
6/26
6/27
6/28
6/29
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
6/25
6/26
6/27
6/28
6/29
Average

Figure 48

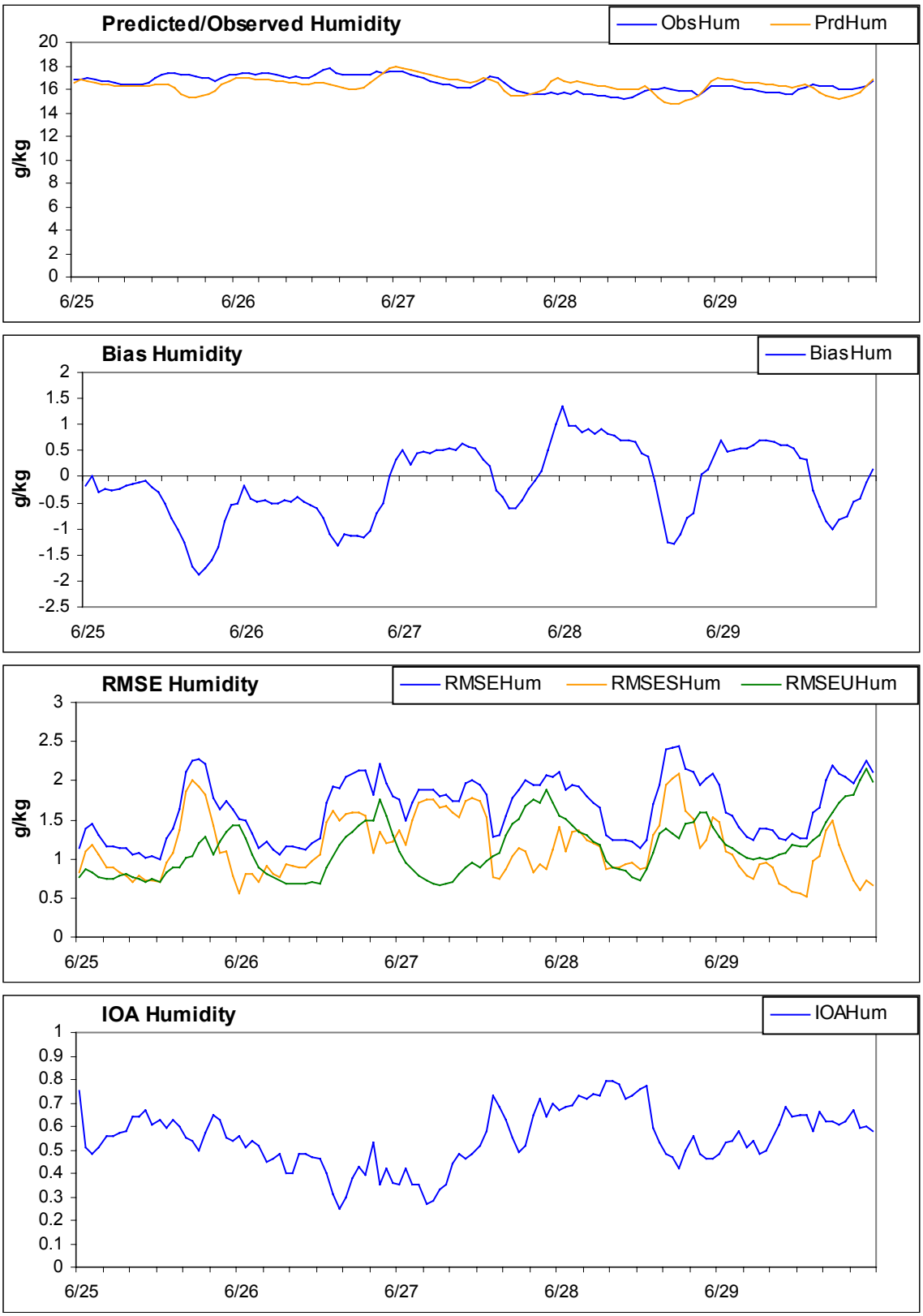

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
6/25
6/26
6/27
6/28
6/29
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
6/25
6/26
6/27
6/28
6/29
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3
2.5
2
1.5
1
0.5
0
6/25
6/26
6/27
6/28
6/29
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/25
6/26
6/27
6/28
6/29

Figure 49

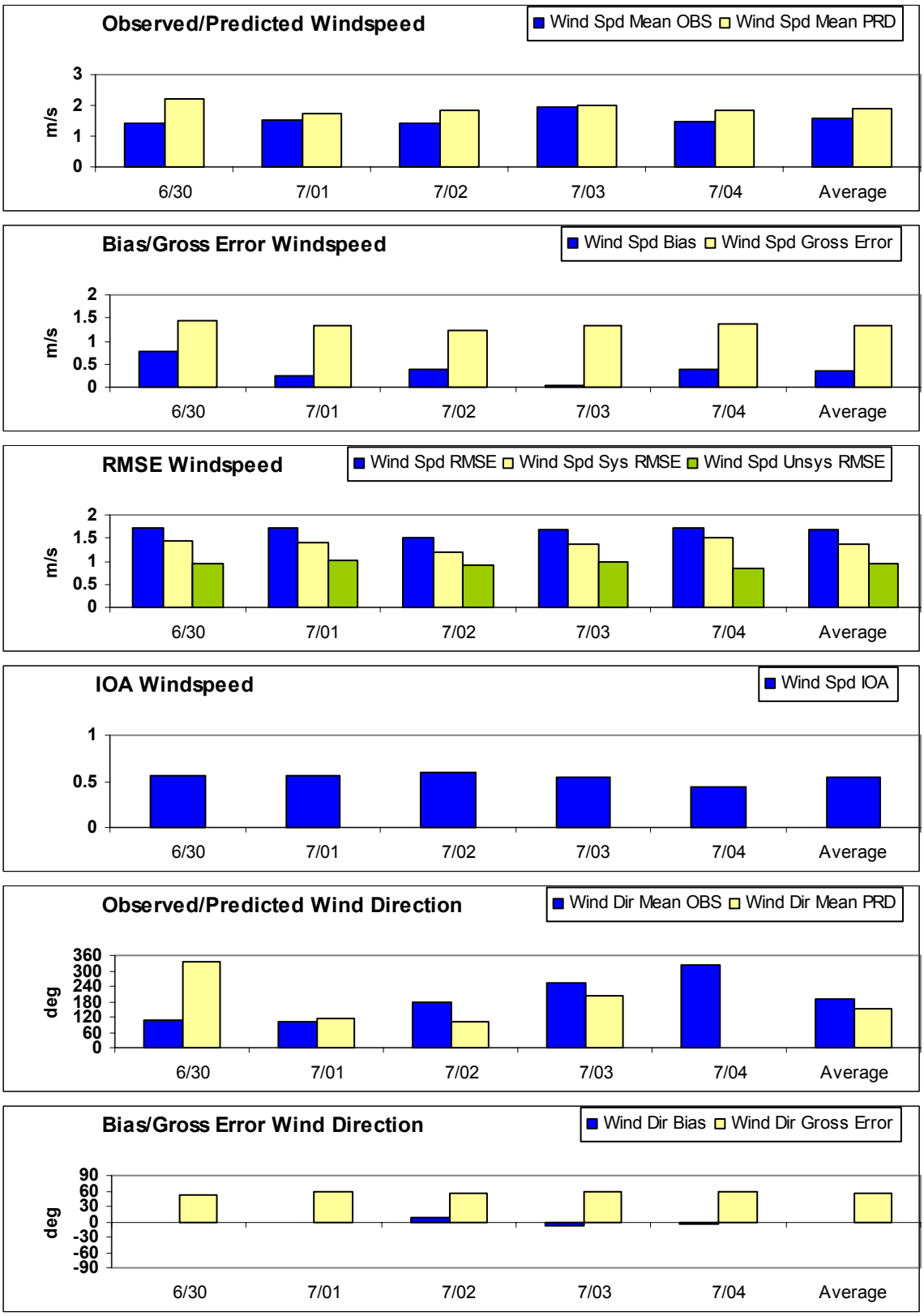

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
6/30
7/01
7/02
7/03
7/04
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
6/30
7/01
7/02
7/03
7/04
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
6/30
7/01
7/02
7/03
7/04
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
6/30
7/01
7/02
7/03
7/04
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
6/30
7/01
7/02
7/03
7/04
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
6/30
7/01
7/02
7/03
7/04
Average

Figure 50

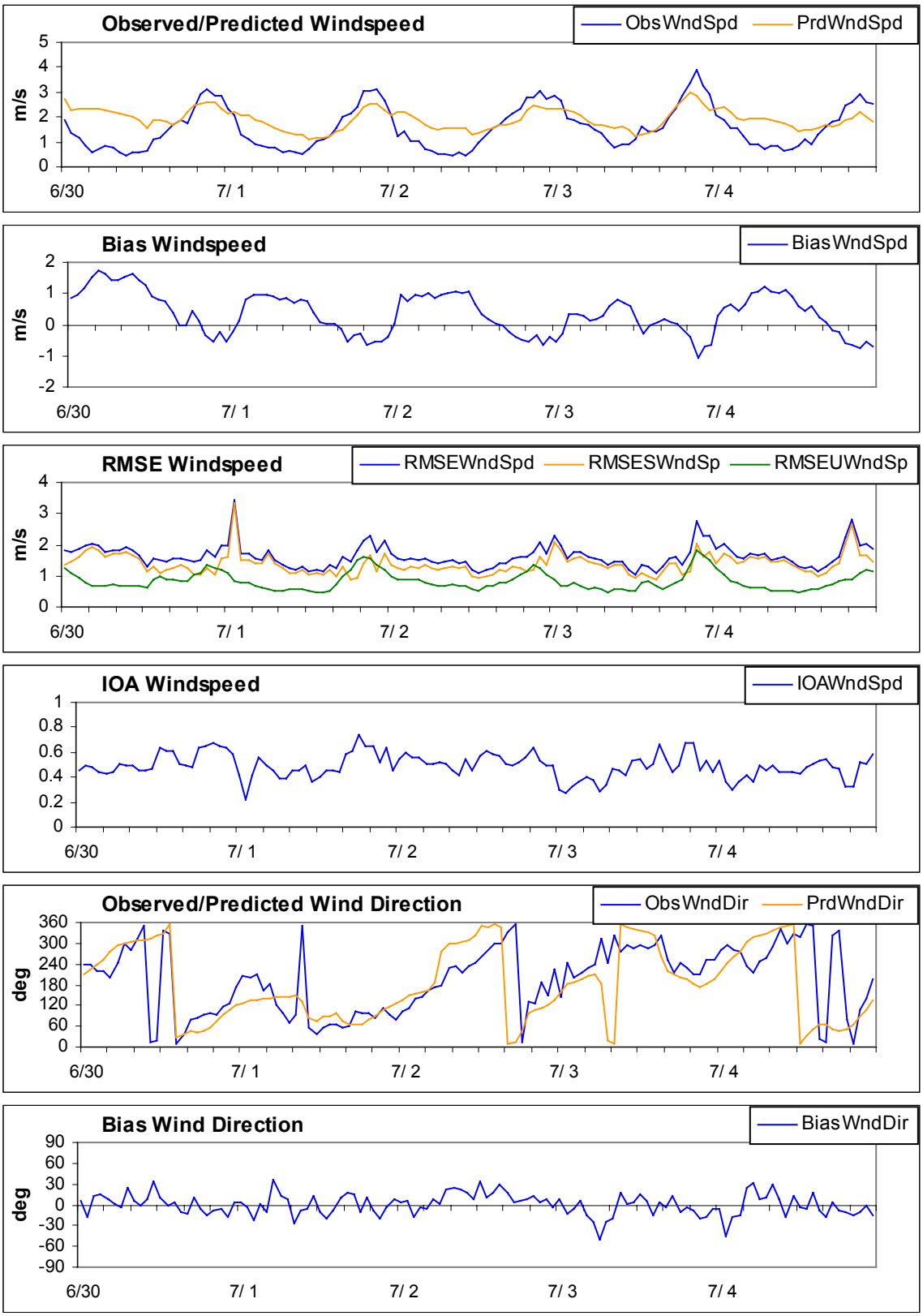
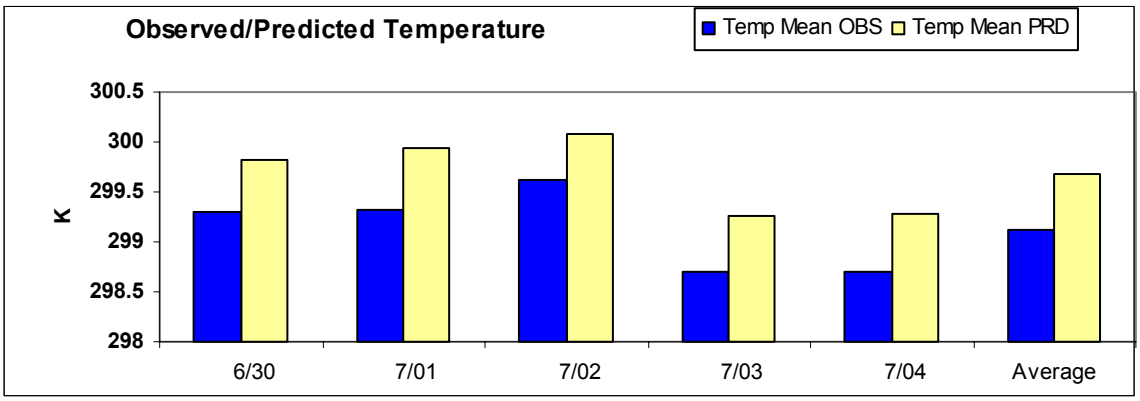
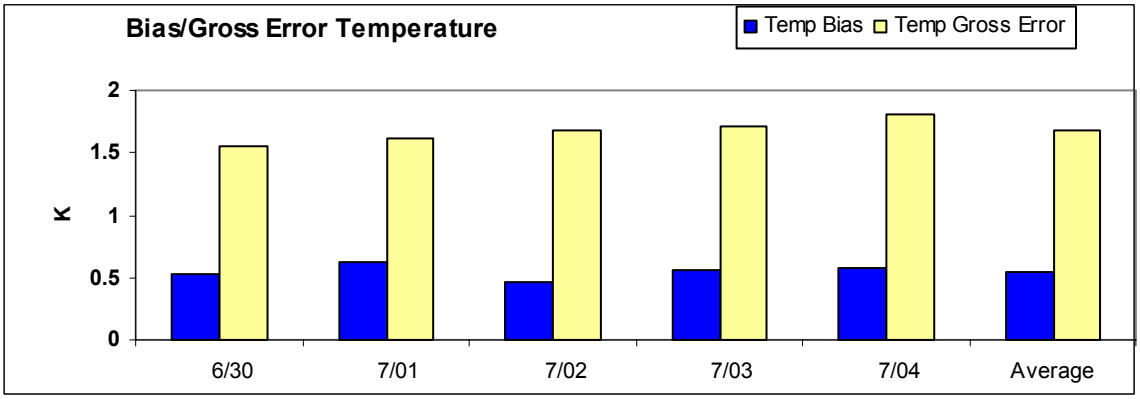
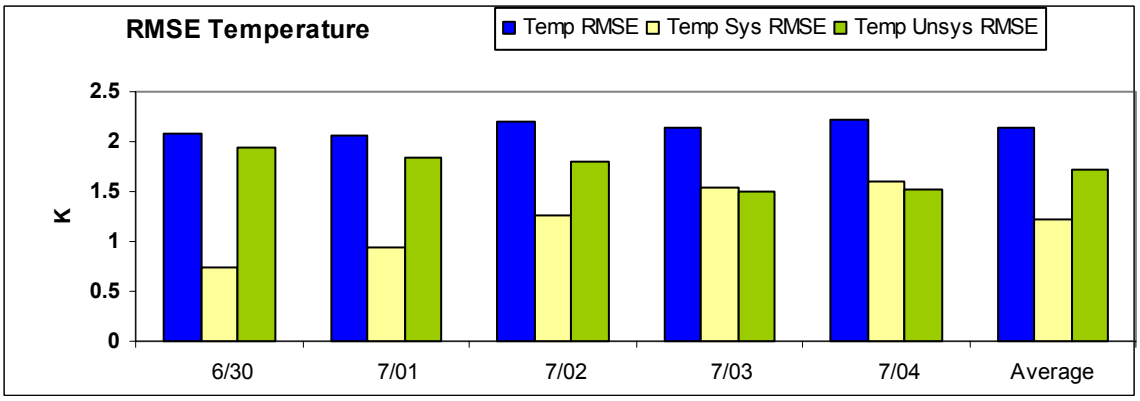

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
6/30
7/ 1
7/ 2
7/ 3
7/ 4
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
4
3
2
1
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
6/30
7/ 1
7/ 2
7/ 3
7/ 4

Figure 51


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
300.5
300
299.5
299
298.5
298
6/30
7/01
7/02
7/03
7/04
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
6/30
7/01
7/02
7/03
7/04
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
6/30
7/01
7/02
7/03
7/04
Average

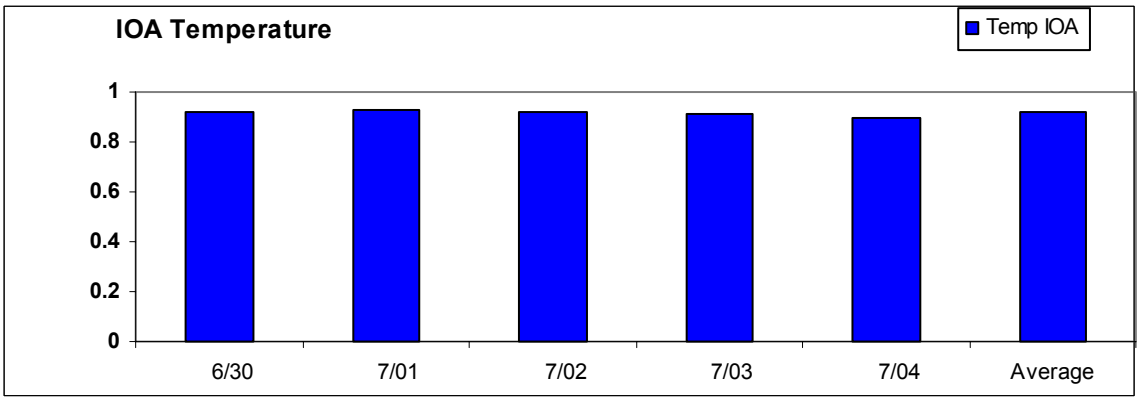

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
6/30
7/01
7/02
7/03
7/04
Average

Figure 52

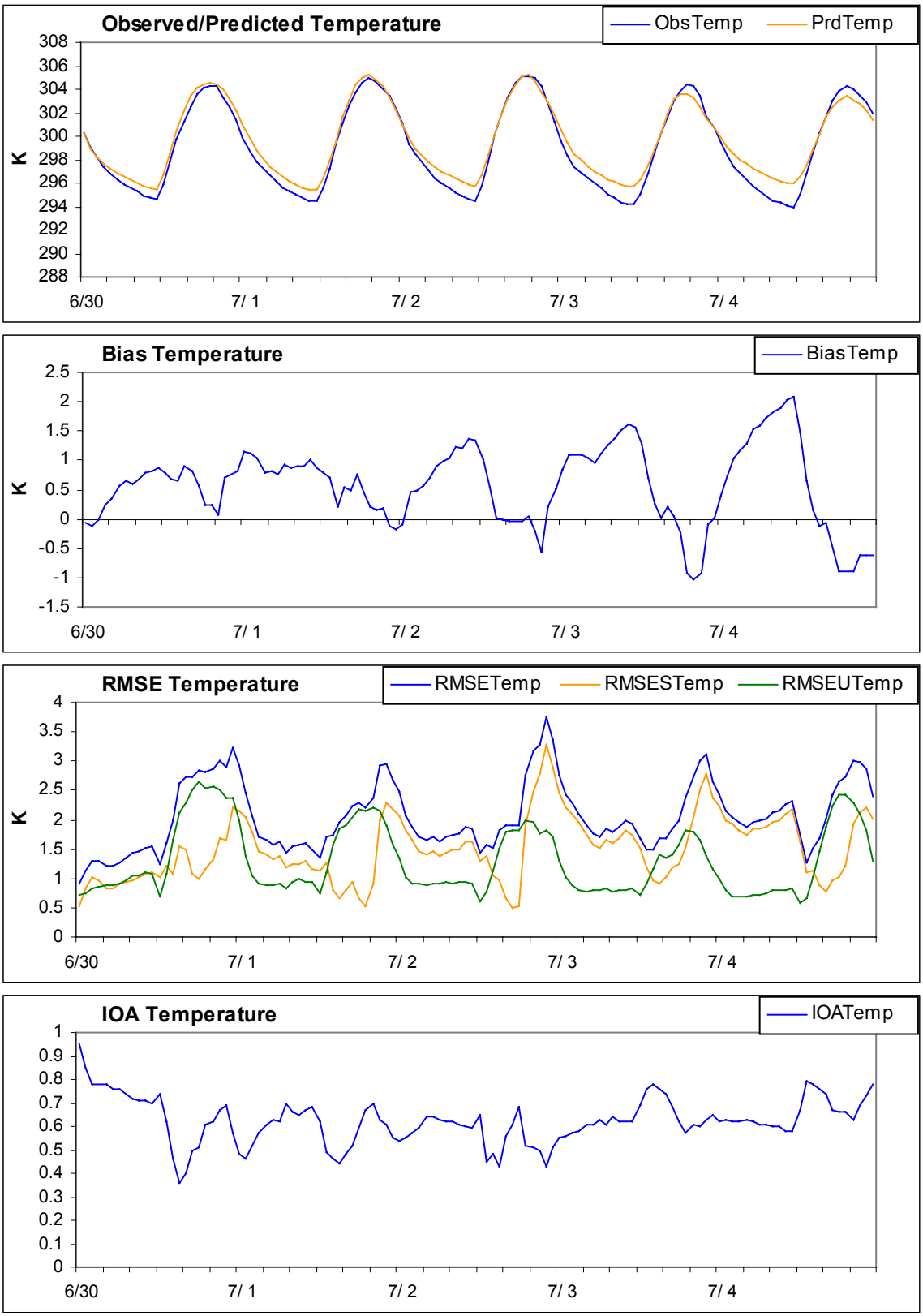

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
308
306
304
302
300
298
296
294
292
290
288
6/30
7/ 1
7/ 2
7/ 3
7/ 4
Bias Temperature
BiasTemp
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
6/30
7/ 1
7/ 2
7/ 3
7/ 4
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4

Figure 53

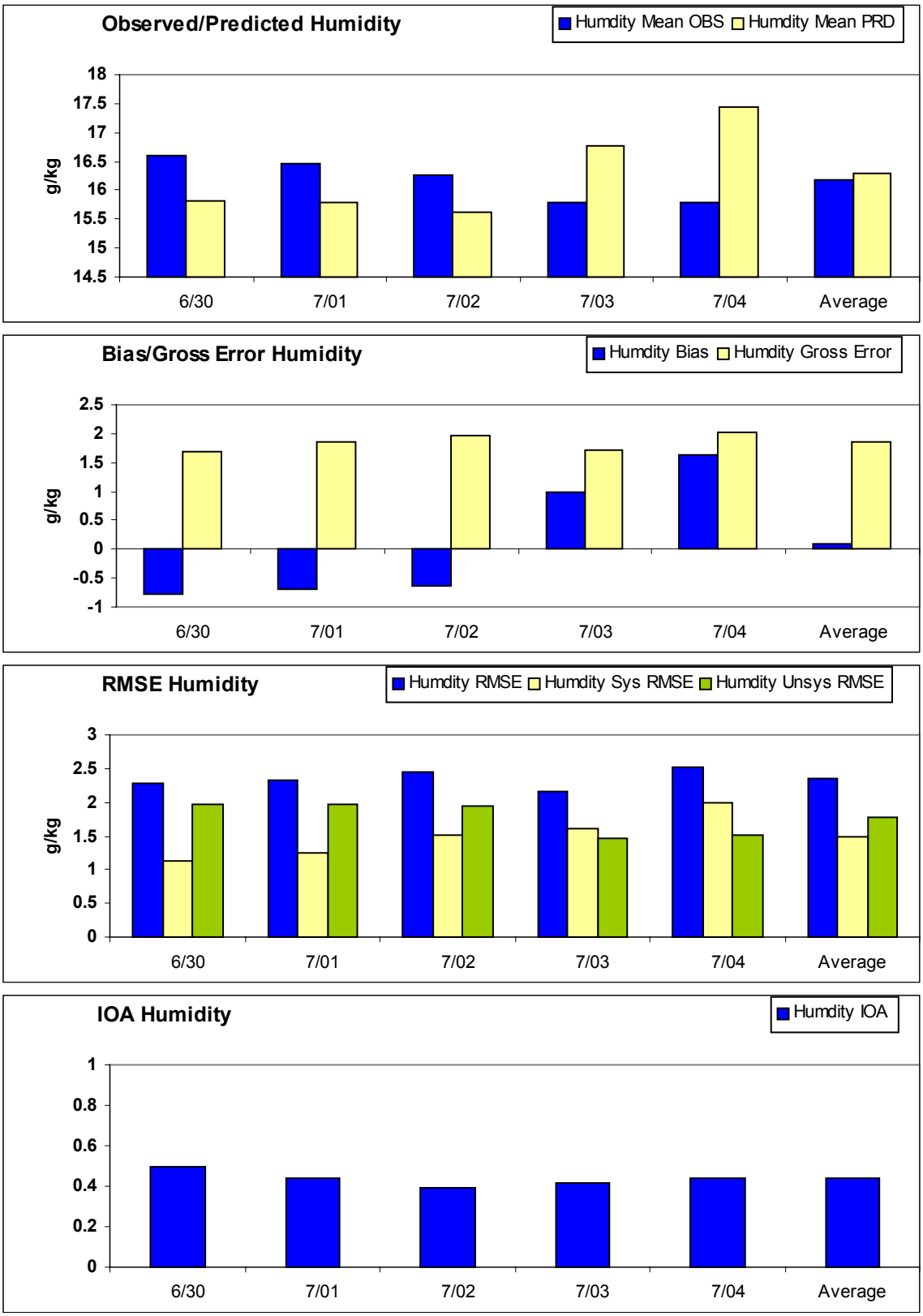

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
18
17.5
17
16.5
16
15.5
15
14.5
6/30
7/01
7/02
7/03
7/04
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
6/30
7/01
7/02
7/03
7/04
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
6/30
7/01
7/02
7/03
7/04
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
6/30
7/01
7/02
7/03
7/04
Average

Figure 54

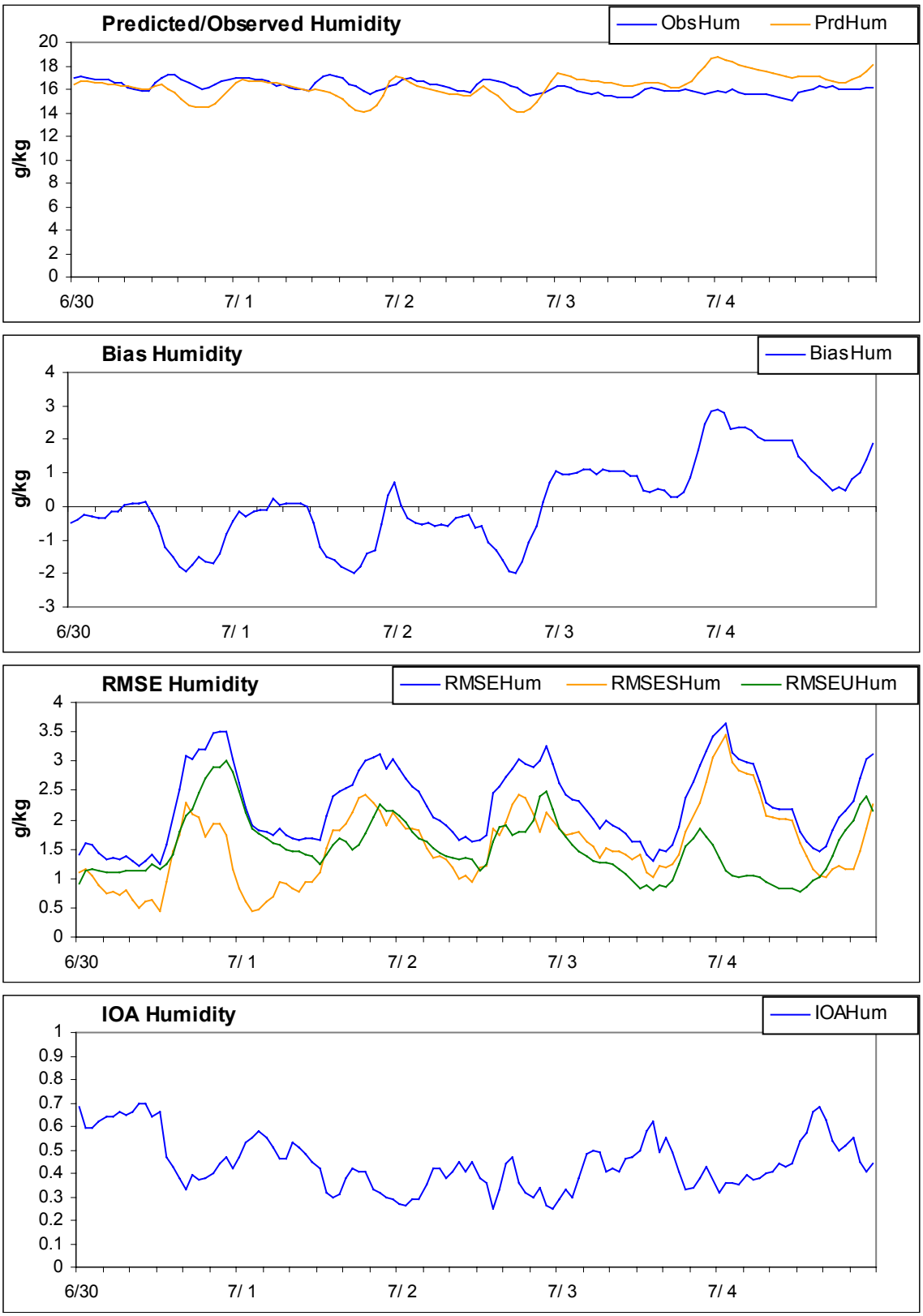

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
Bias Humidity
BiasHum
g/kg
4
3
2
1
0
-1
-2
-3
6/30
7/ 1
7/ 2
7/ 3
7/ 4
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/30
7/ 1
7/ 2
7/ 3
7/ 4

Figure 55

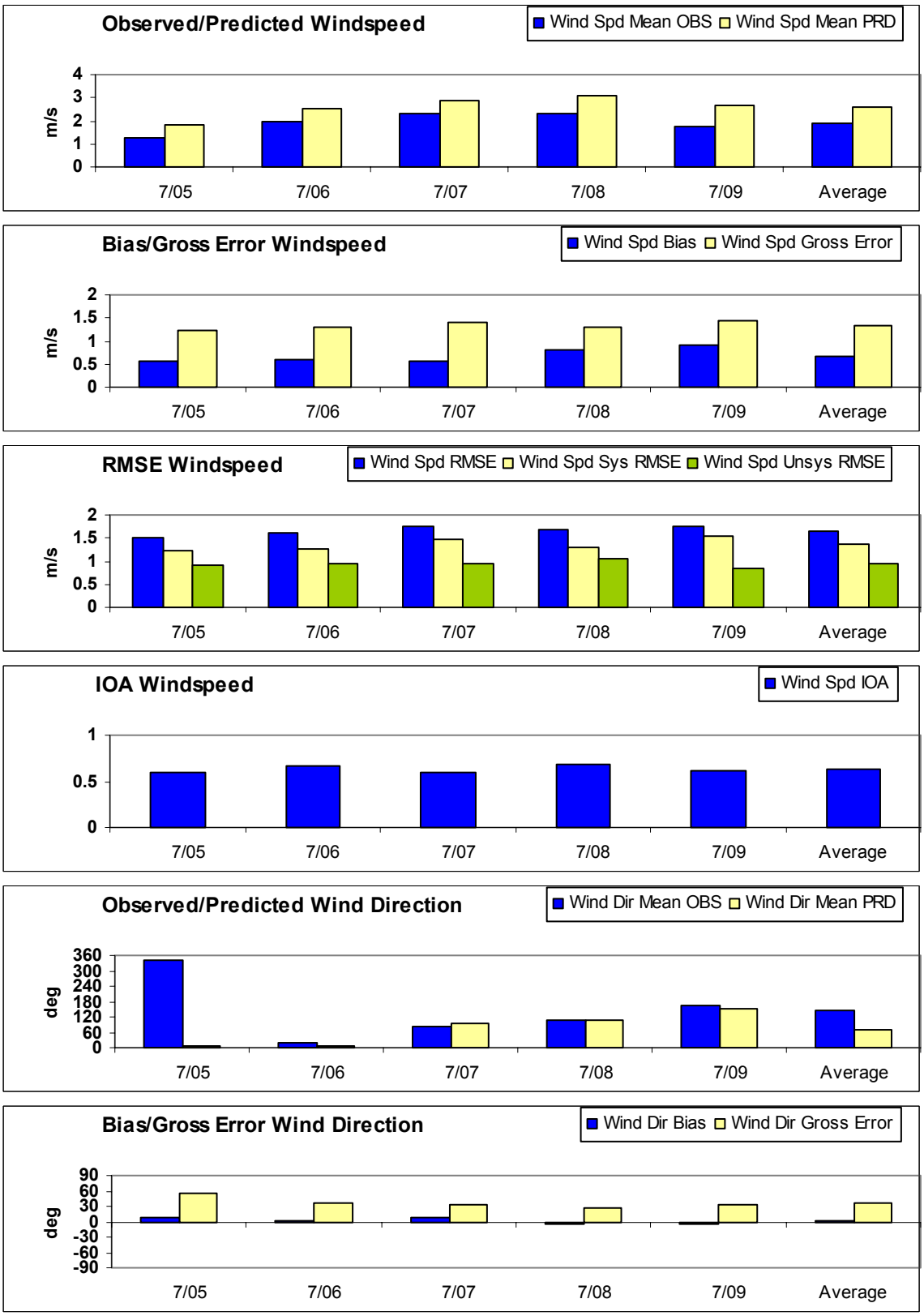

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
7/05
7/06
7/07
7/08
7/09
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
7/05
7/06
7/07
7/08
7/09
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
7/05
7/06
7/07
7/08
7/09
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
7/05
7/06
7/07
7/08
7/09
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
7/05
7/06
7/07
7/08
7/09
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
7/05
7/06
7/07
7/08
7/09
Average

Figure 56

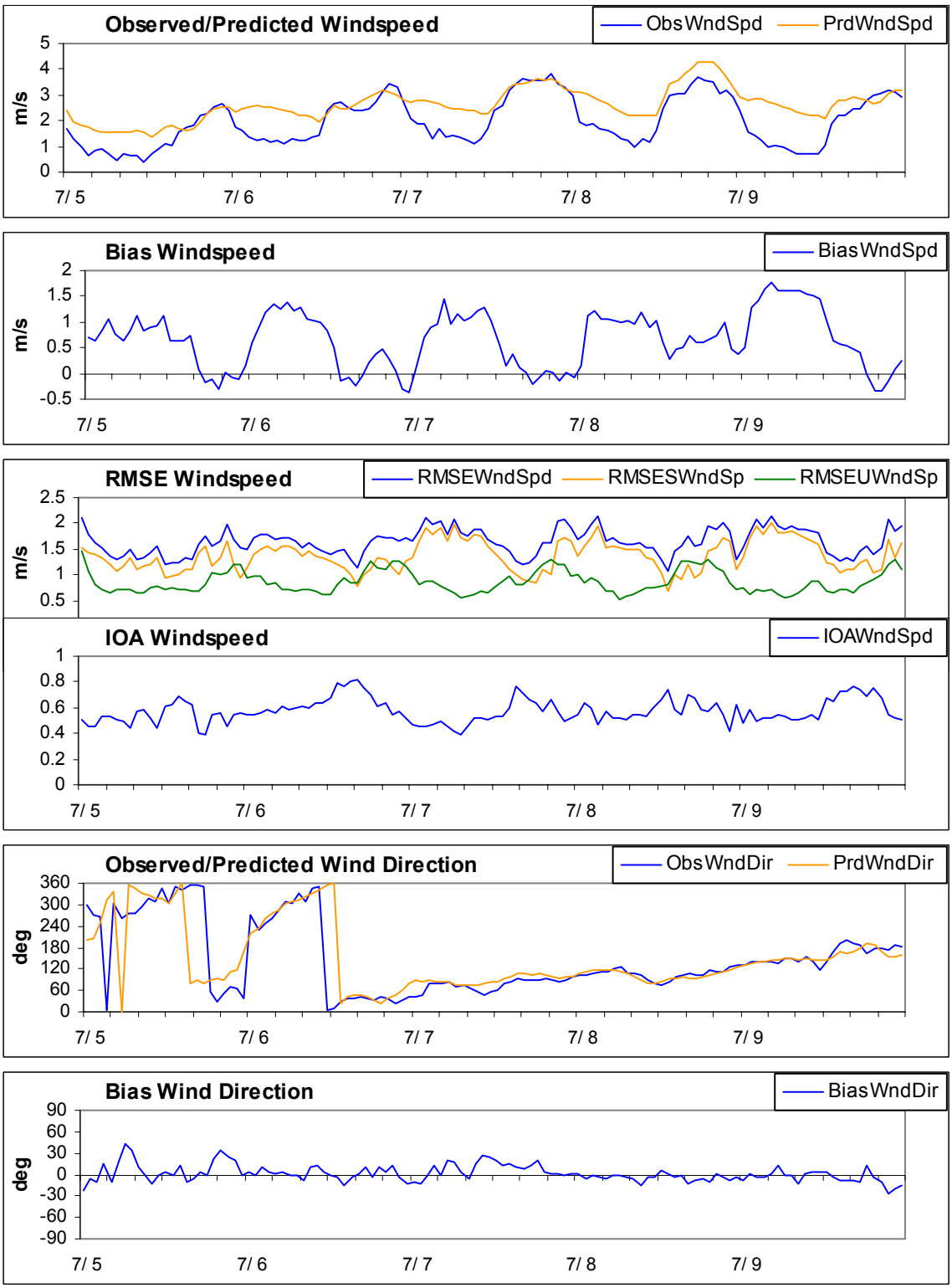
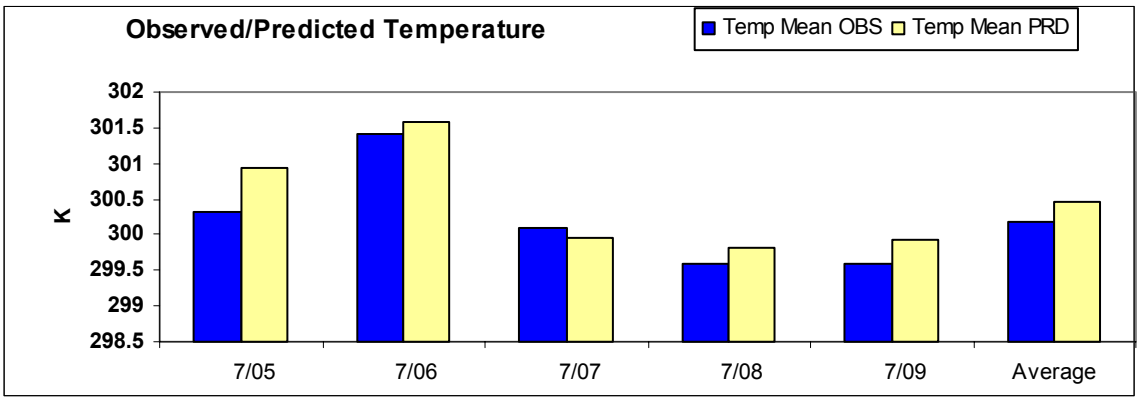
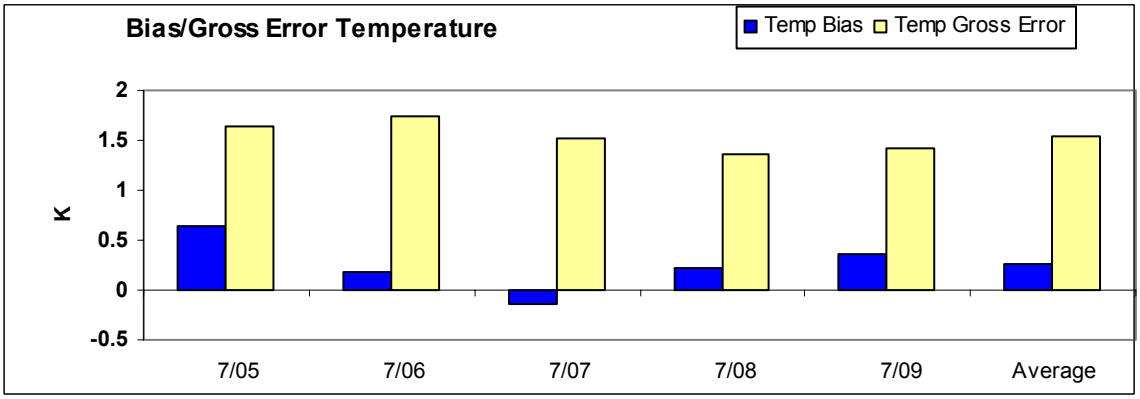
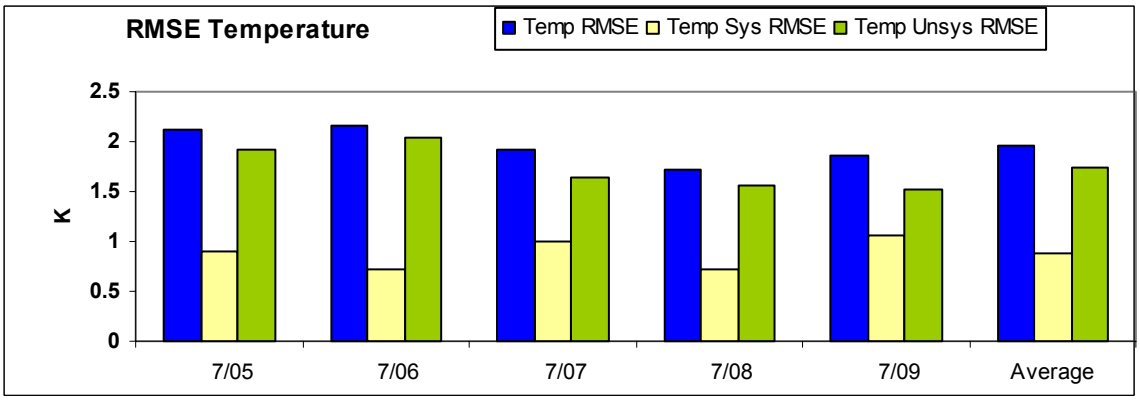

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9

Figure 57


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302
301.5
301
300.5
300
299.5
299
298.5
7/05
7/06
7/07
7/08
7/09
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
7/05
7/06
7/07
7/08
7/09
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
7/05
7/06
7/07
7/08
7/09
Average

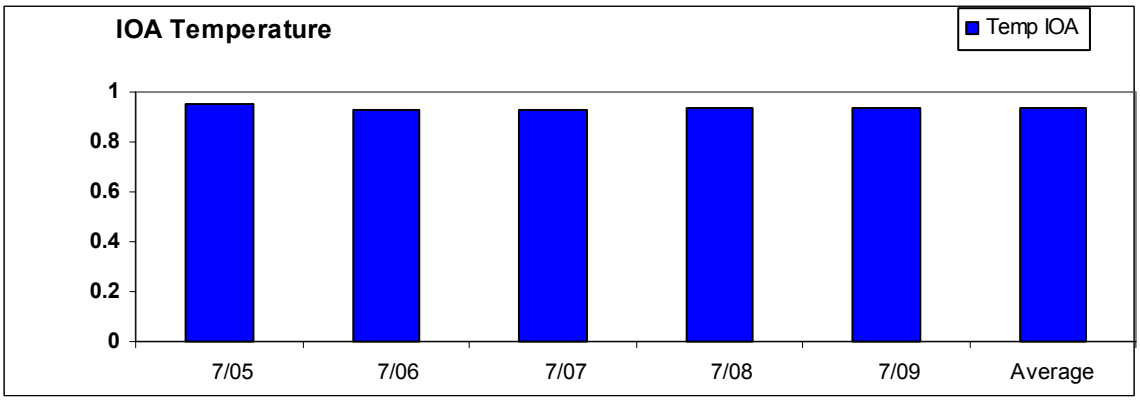

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
7/05
7/06
7/07
7/08
7/09
Average

Figure 58

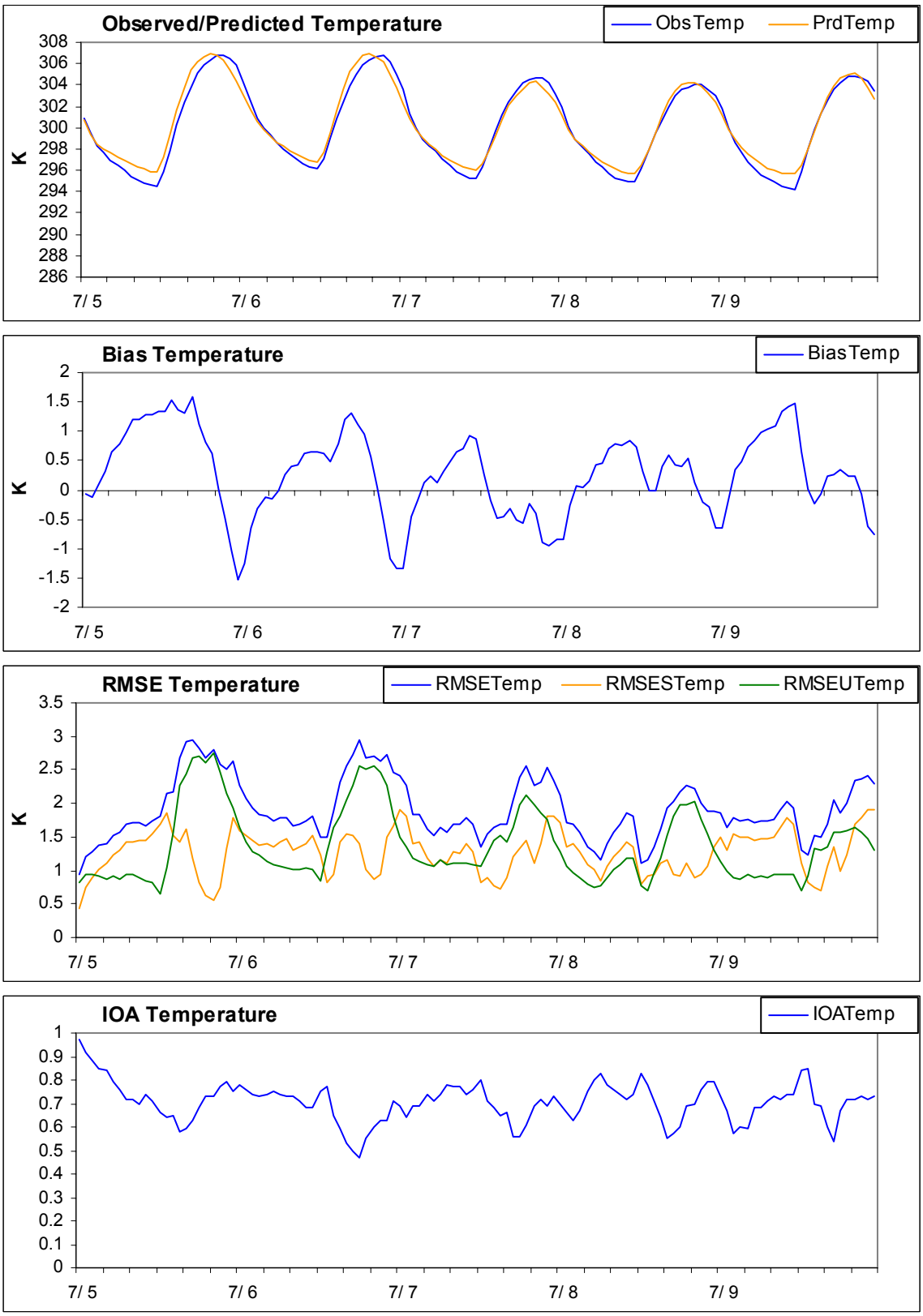

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
308
306
304
302
300
298
296
294
292
290
288
286
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9

Figure 59

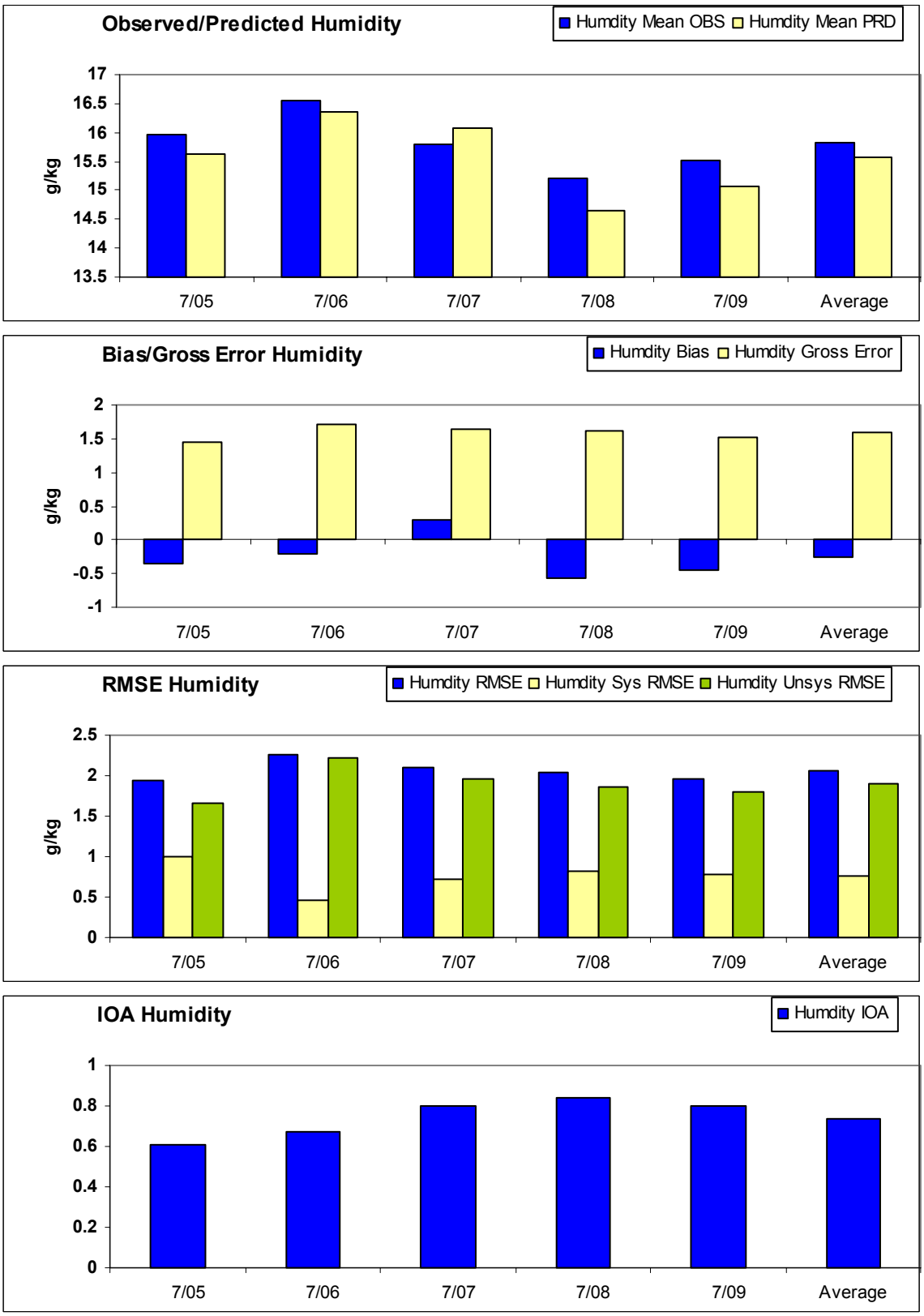

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17
16.5
16
15.5
15
14.5
14
13.5
7/05
7/06
7/07
7/08
7/09
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
7/05
7/06
7/07
7/08
7/09
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
7/05
7/06
7/07
7/08
7/09
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
7/05
7/06
7/07
7/08
7/09
Average

Figure 60

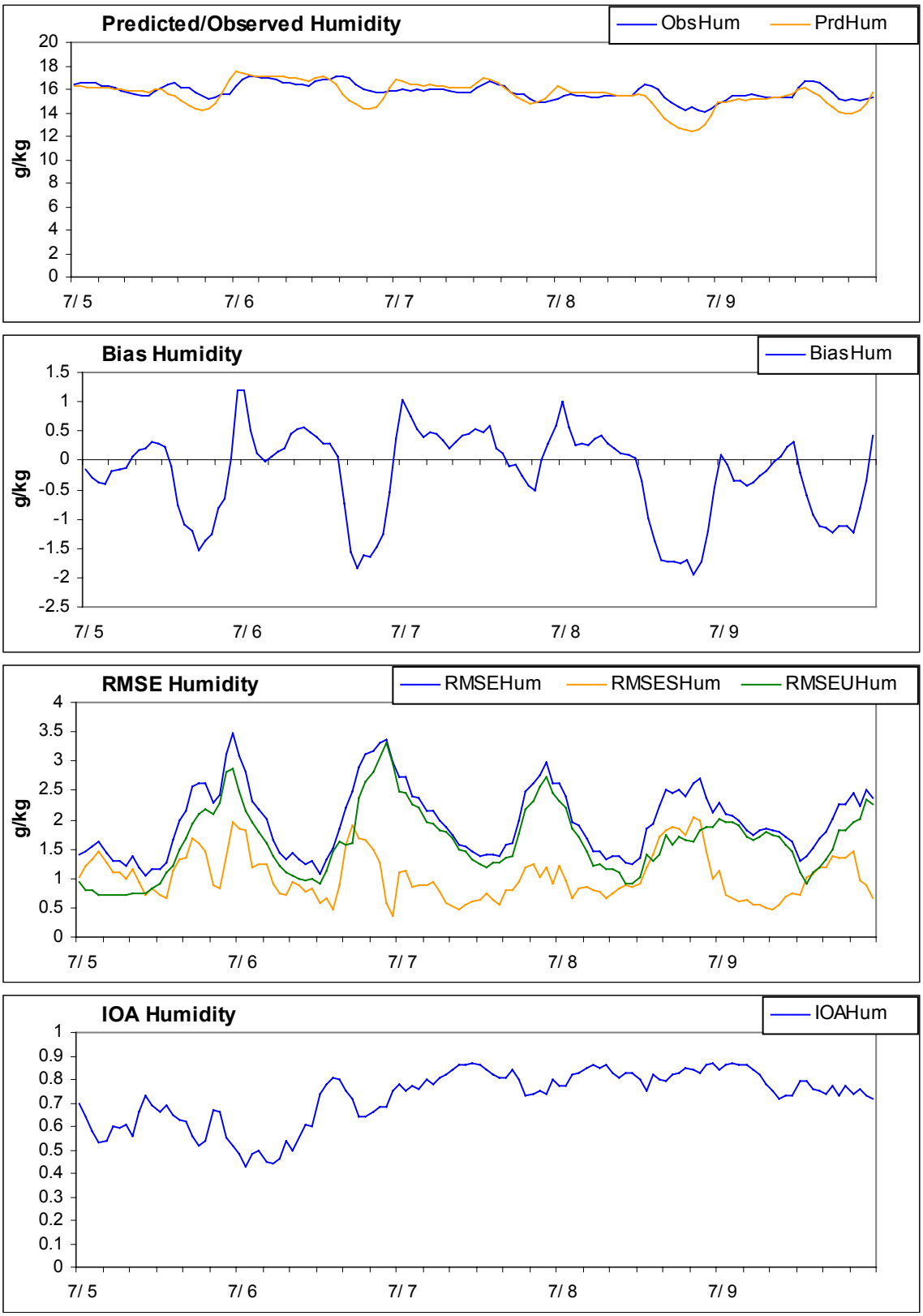

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/ 5
7/ 6
7/ 7
7/ 8
7/ 9

Figure 61

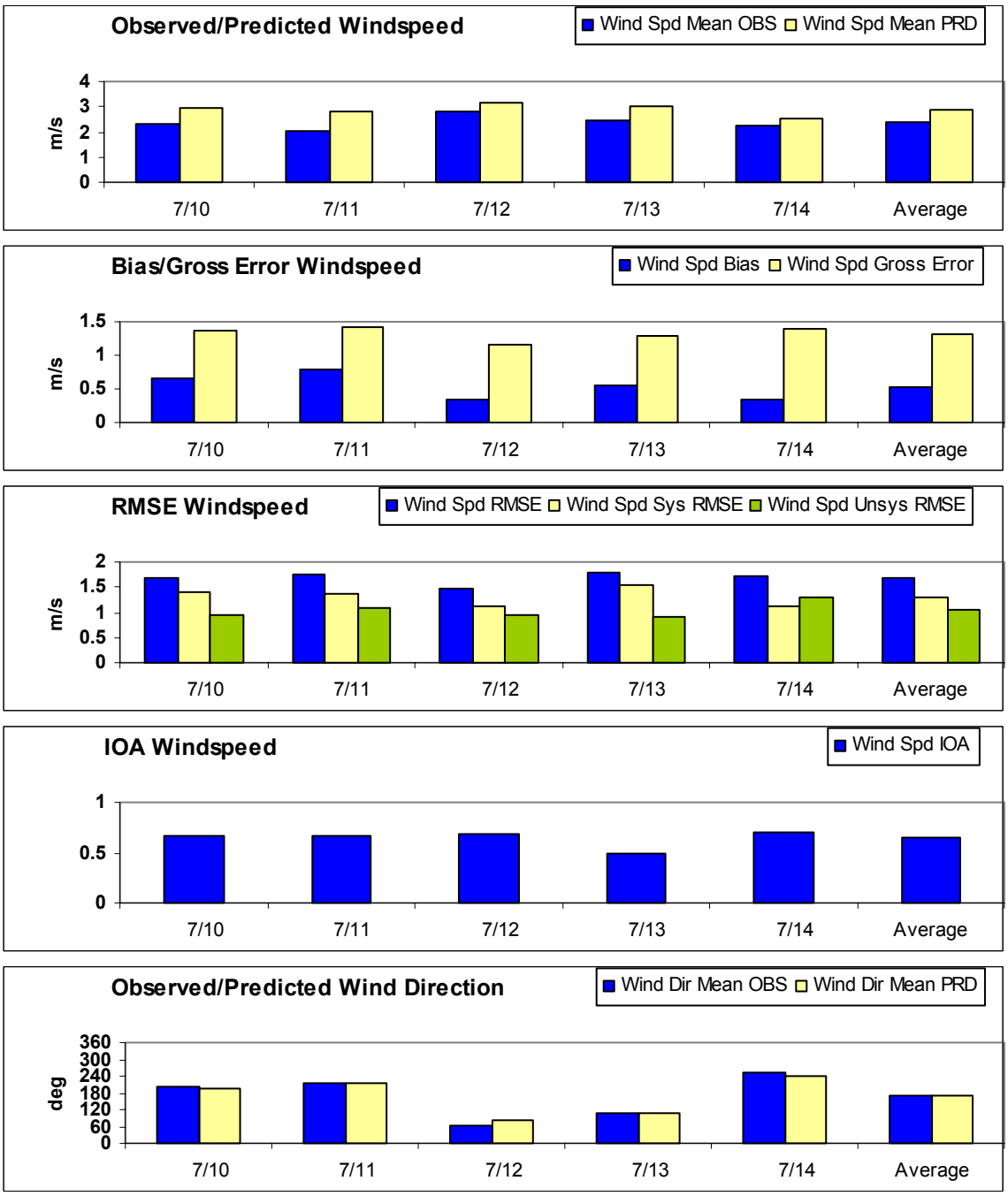

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
7/10
7/11
7/12
7/13
7/14
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
7/10
7/11
7/12
7/13
7/14
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
7/10
7/11
7/12
7/13
7/14
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
7/10
7/11
7/12
7/13
7/14
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
7/10
7/11
7/12
7/13
7/14
Average

Figure 62

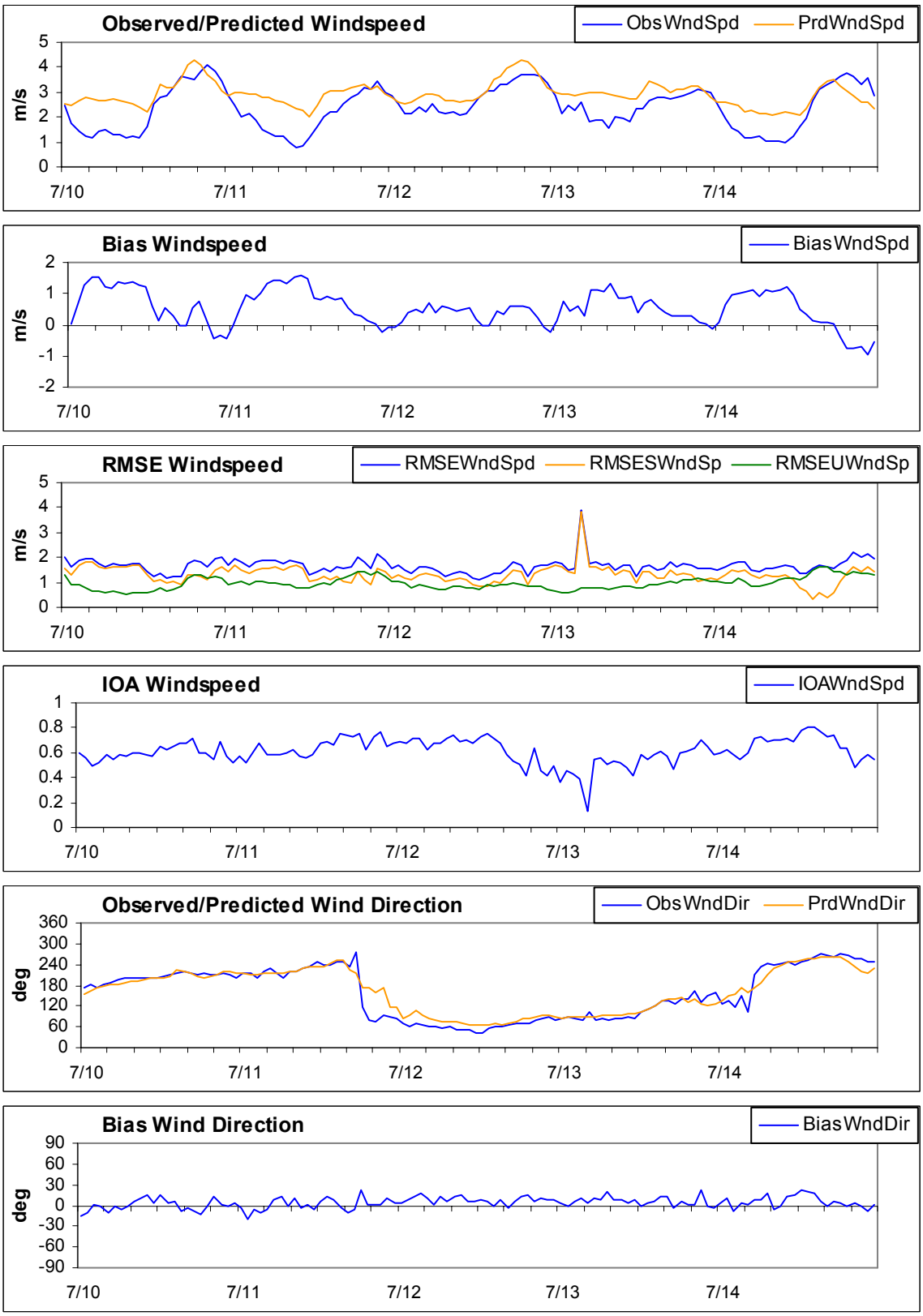
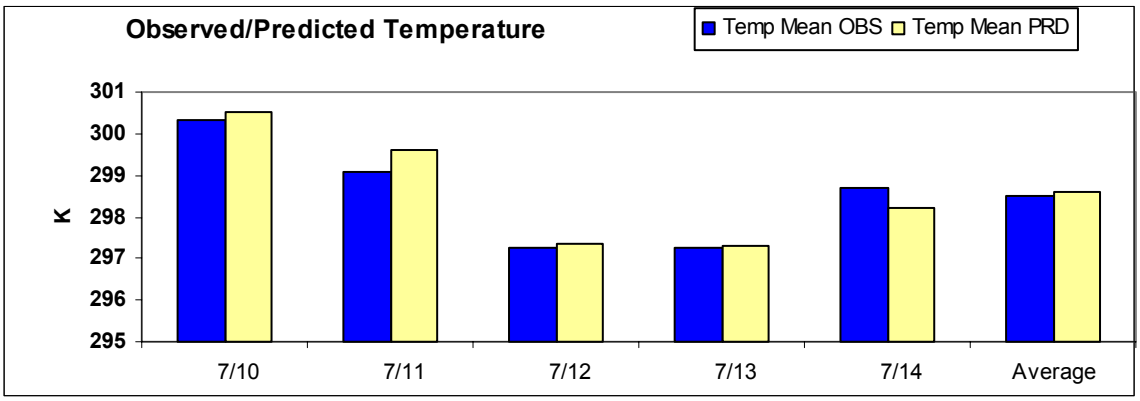
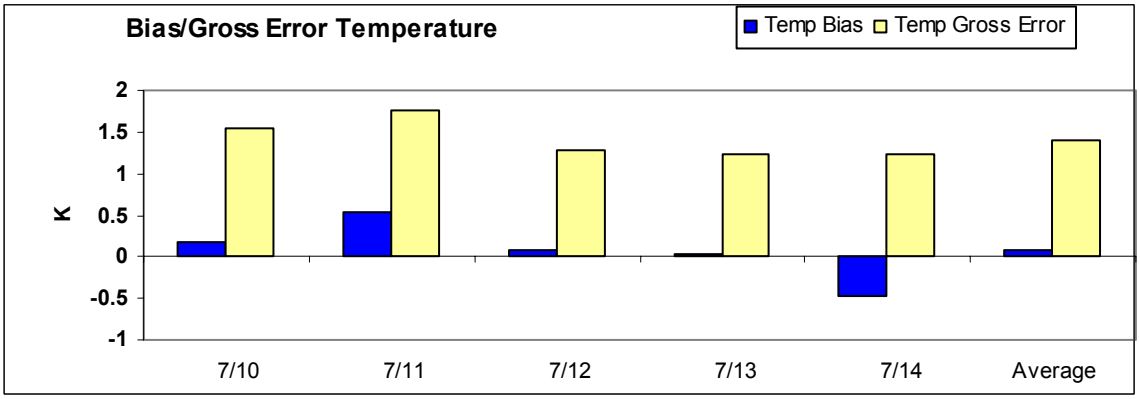
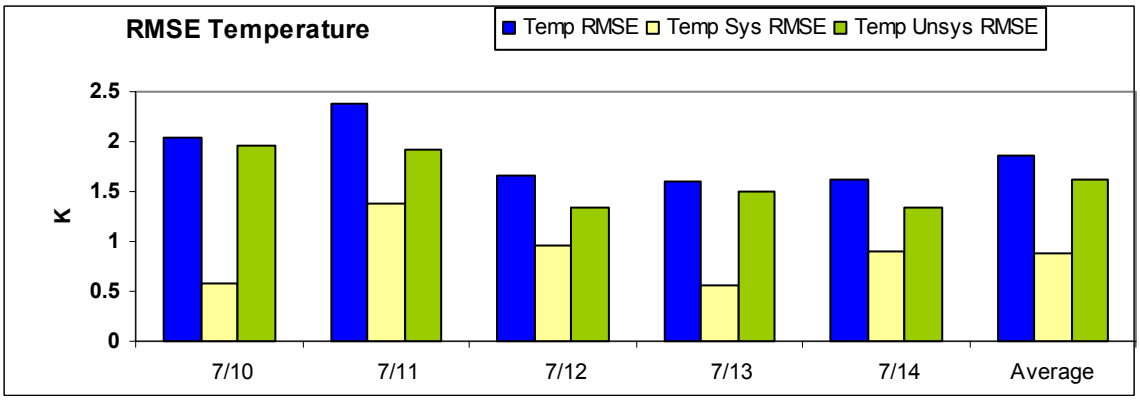

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
7/10
7/11
7/12
7/13
7/14
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
7/10
7/11
7/12
7/13
7/14
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
5
4
3
2
1
0
7/10
7/11
7/12
7/13
7/14
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
7/10
7/11
7/12
7/13
7/14
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
7/10
7/11
7/12
7/13
7/14
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
7/10
7/11
7/12
7/13
7/14

Figure 63


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
301
300
299
298
297
296
295
7/10
7/11
7/12
7/13
7/14
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
7/10
7/11
7/12
7/13
7/14
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
7/10
7/11
7/12
7/13
7/14
Average

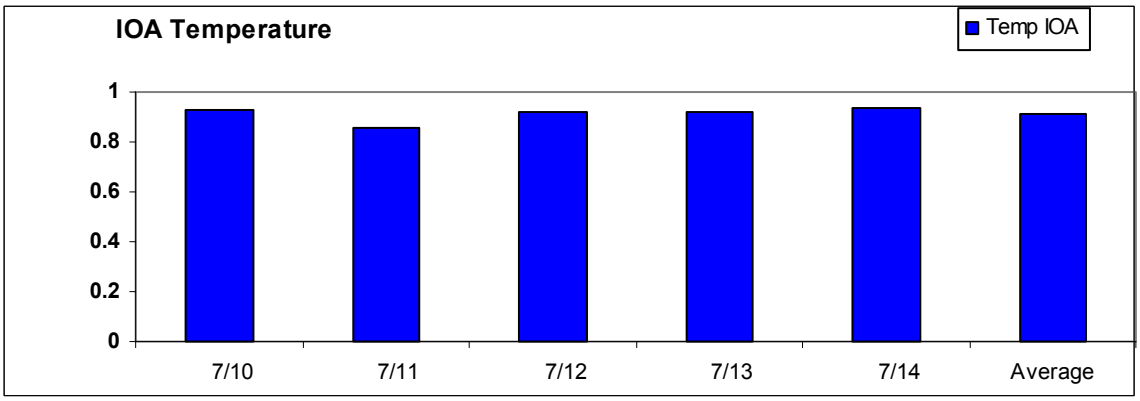

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
7/10
7/11
7/12
7/13
7/14
Average

Figure 64

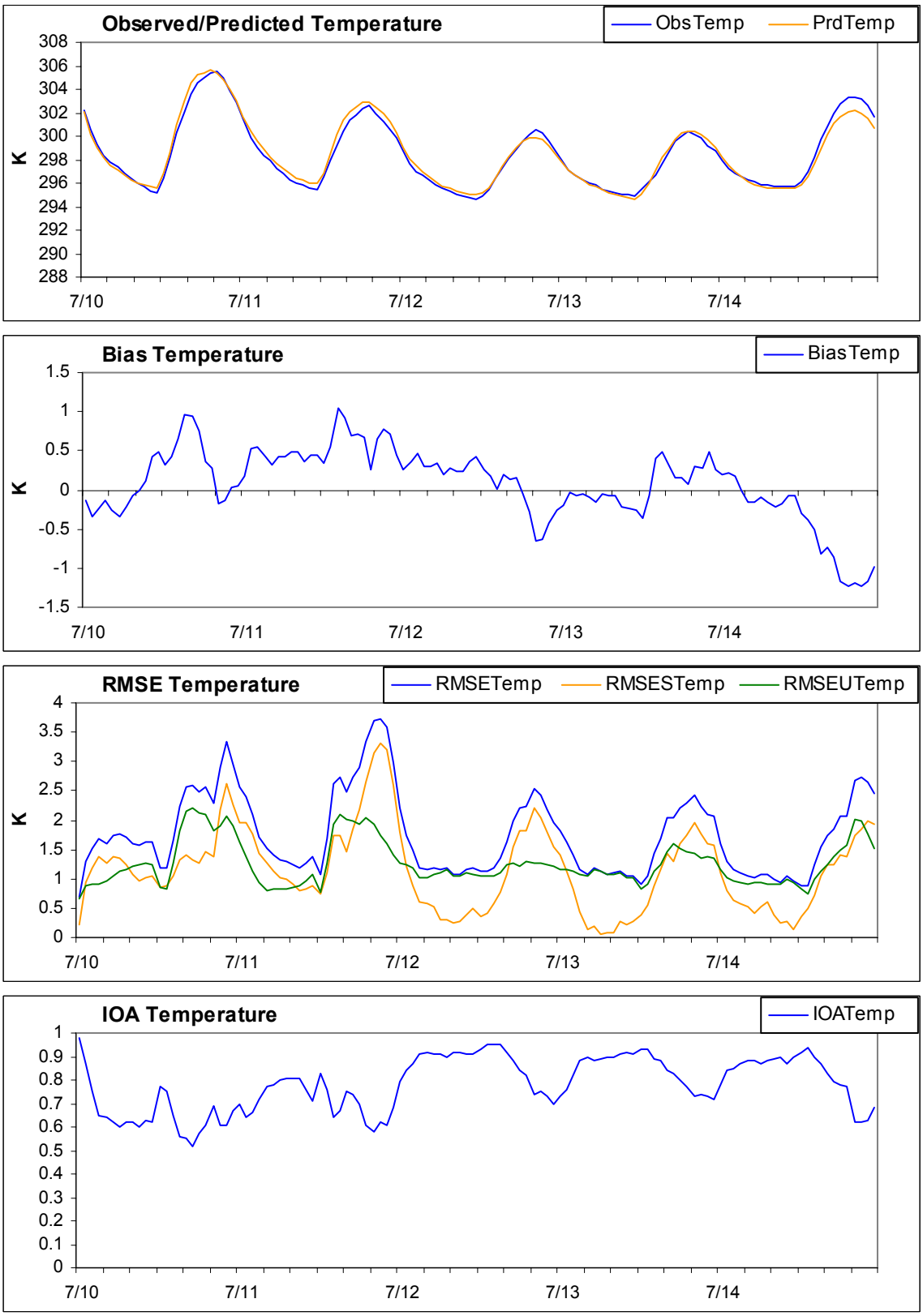

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
308
306
304
302
300
298
296
294
292
290
288
7/10
7/11
7/12
7/13
7/14
Bias Temperature
BiasTemp
K
1.5
1
0.5
0
-0.5
-1
-1.5
7/10
7/11
7/12
7/13
7/14
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
7/10
7/11
7/12
7/13
7/14
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/10
7/11
7/12
7/13
7/14

Figure 65

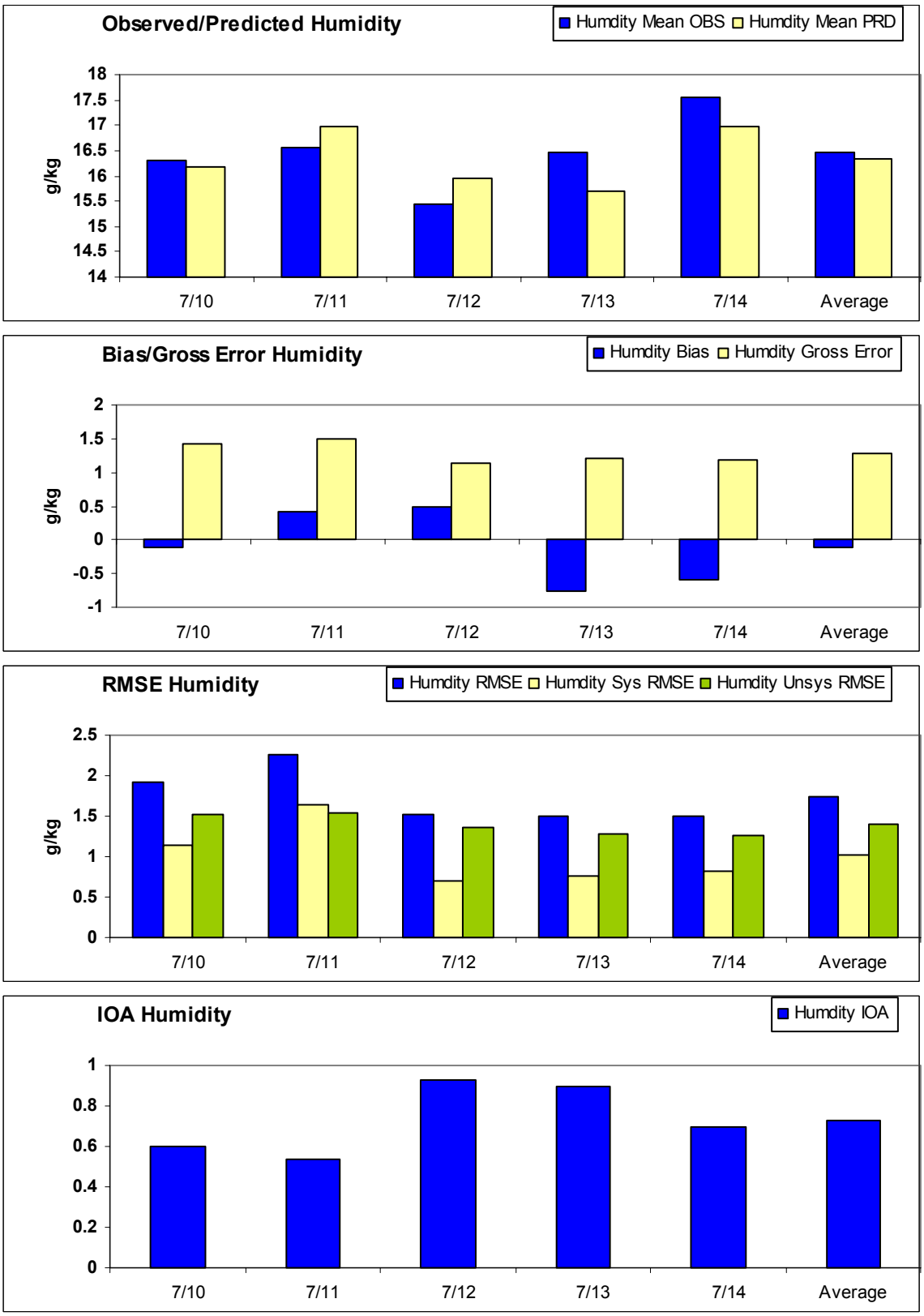

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
18
17.5
17
16.5
16
15.5
15
14.5
14
7/10
7/11
7/12
7/13
7/14
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
7/10
7/11
7/12
7/13
7/14
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
7/10
7/11
7/12
7/13
7/14
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
7/10
7/11
7/12
7/13
7/14
Average

Figure 66

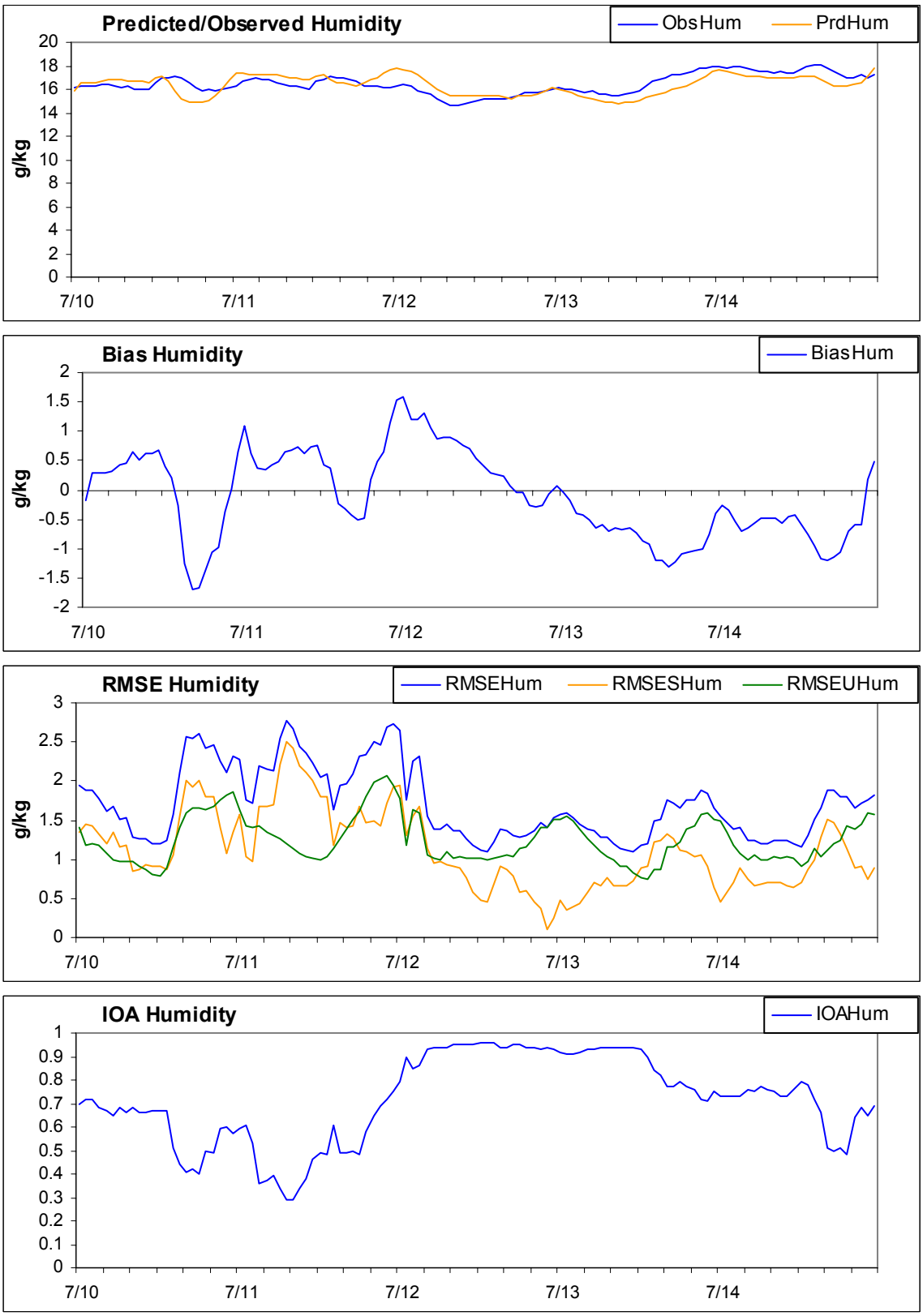

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
7/10
7/11
7/12
7/13
7/14
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
7/10
7/11
7/12
7/13
7/14
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3
2.5
2
1.5
1
0.5
0
7/10
7/11
7/12
7/13
7/14
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/10
7/11
7/12
7/13
7/14

Figure 67

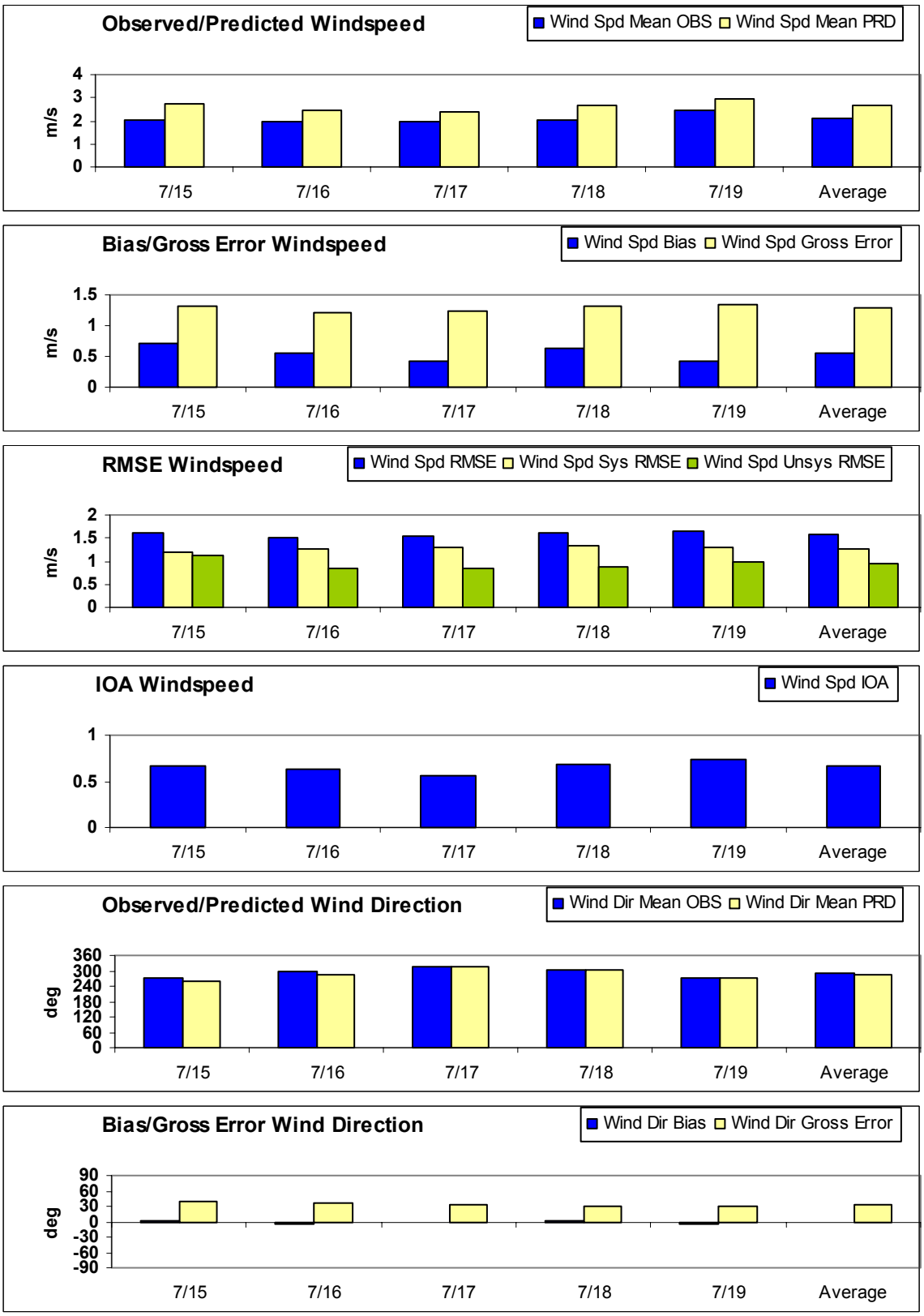

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
7/15
7/16
7/17
7/18
7/19
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
7/15
7/16
7/17
7/18
7/19
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
7/15
7/16
7/17
7/18
7/19
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
7/15
7/16
7/17
7/18
7/19
Average

Figure 68

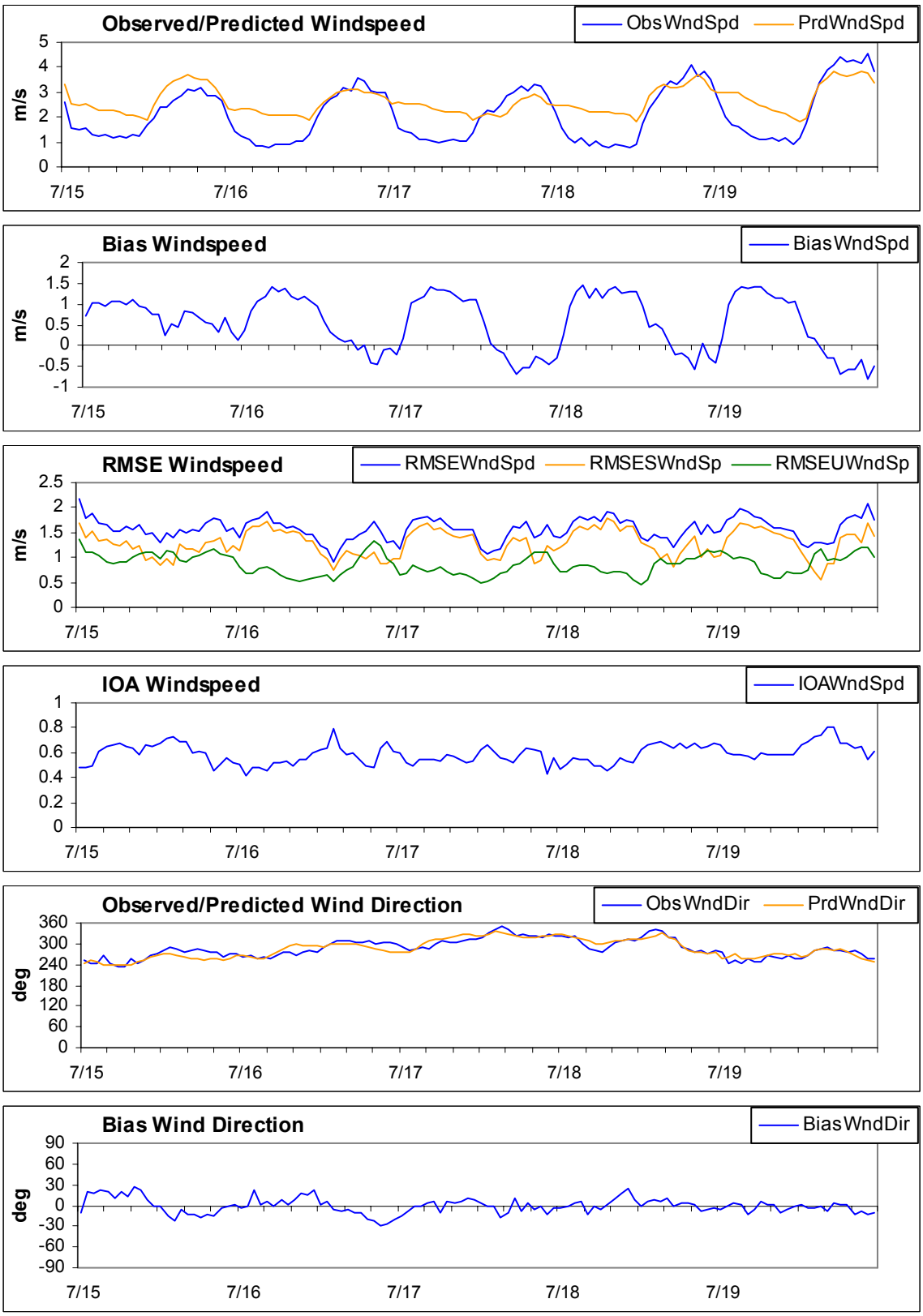
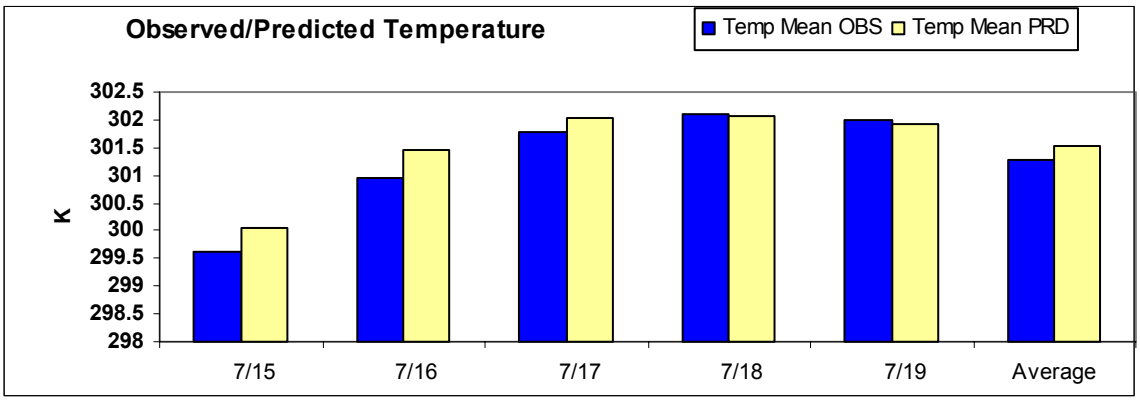
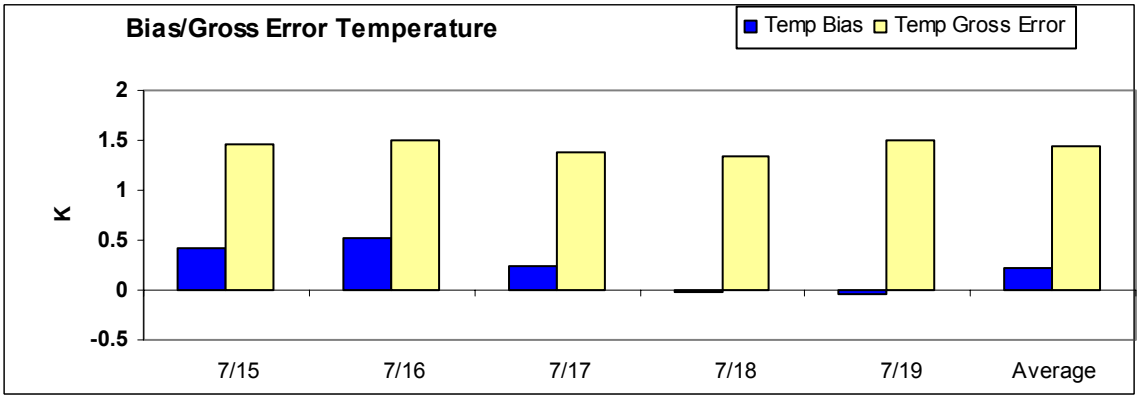
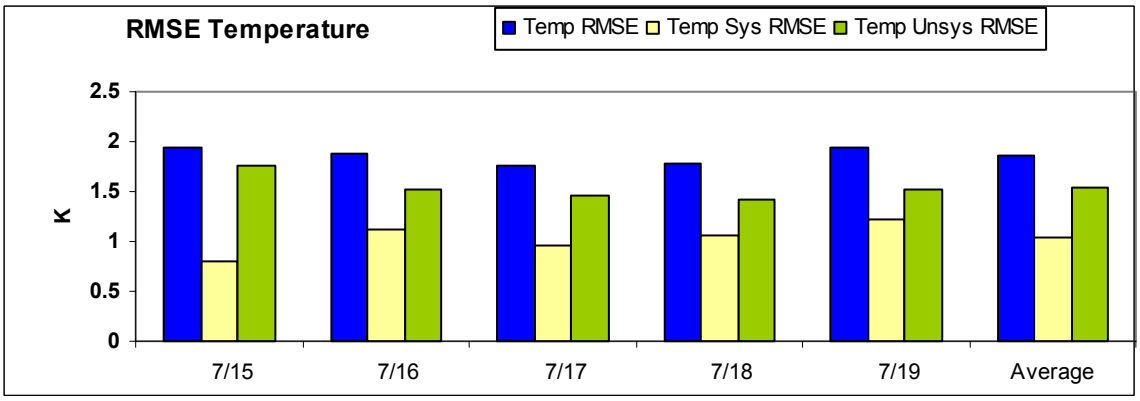

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
7/15
7/16
7/17
7/18
7/19
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
-1
7/15
7/16
7/17
7/18
7/19
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
7/15
7/16
7/17
7/18
7/19
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
7/15
7/16
7/17
7/18
7/19
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
7/15
7/16
7/17
7/18
7/19

Figure 69


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302.5
302
301.5
301
300.5
300
299.5
299
298.5
298
7/15
7/16
7/17
7/18
7/19
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
7/15
7/16
7/17
7/18
7/19
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
Average

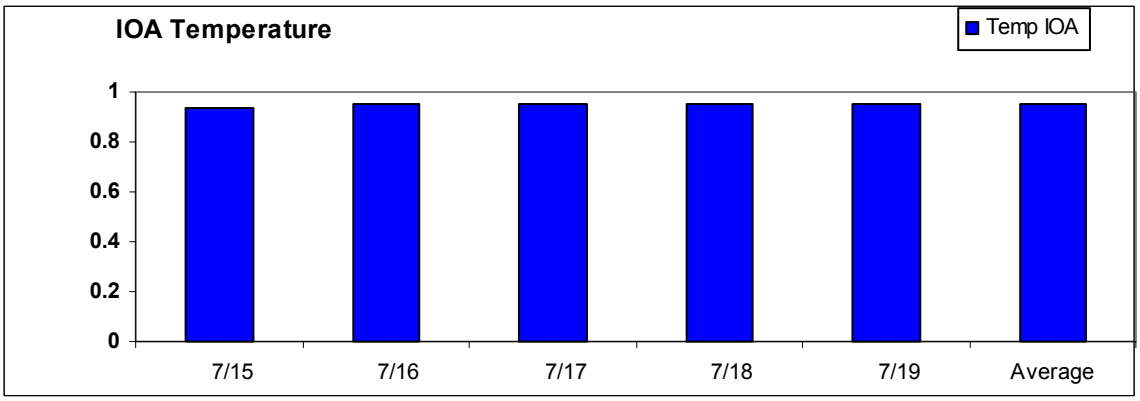

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
7/15
7/16
7/17
7/18
7/19
Average

Figure 70

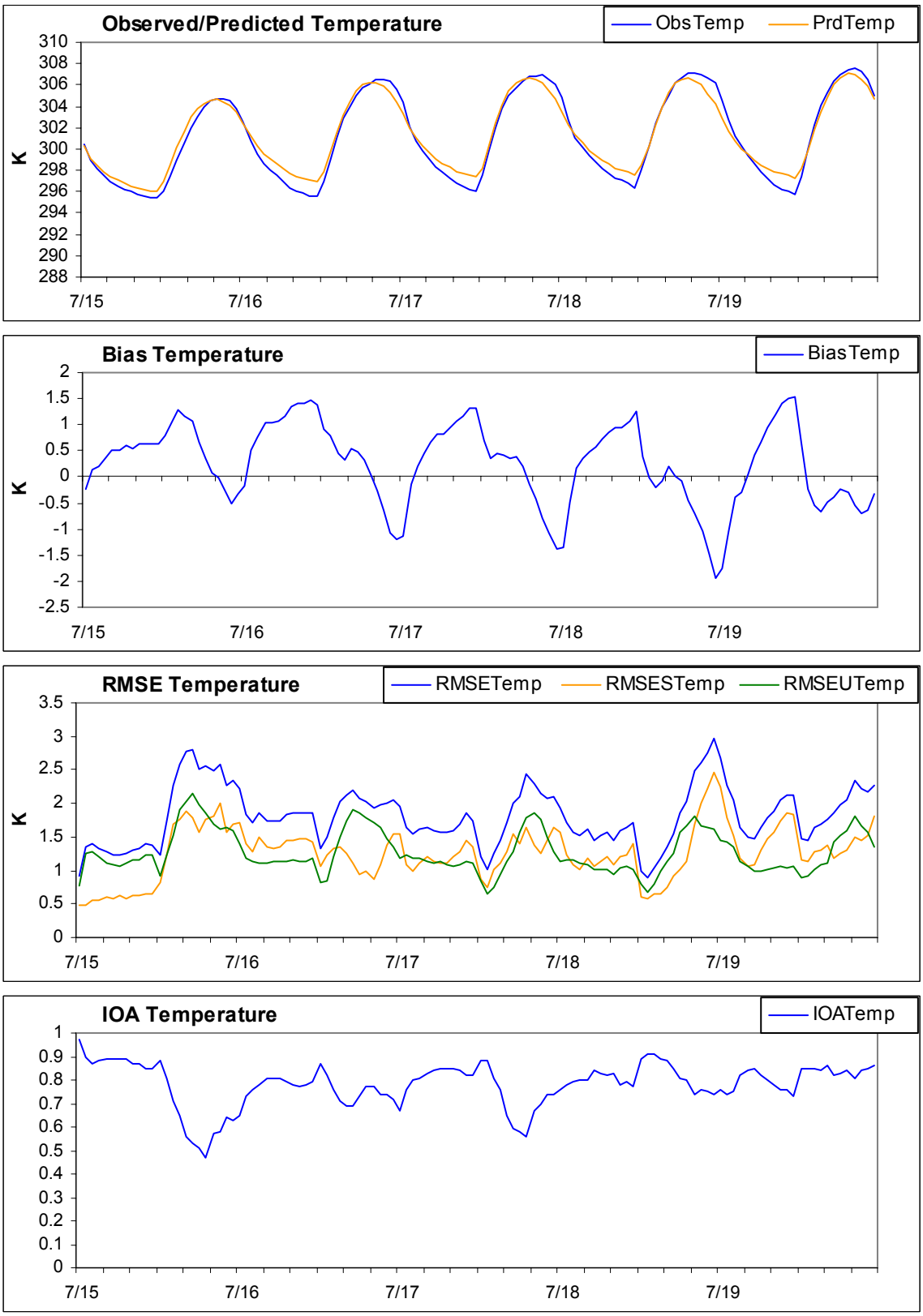

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
308
306
304
302
300
298
296
294
292
290
288
7/15
7/16
7/17
7/18
7/19
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
7/15
7/16
7/17
7/18
7/19
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/15
7/16
7/17
7/18
7/19

Figure 71

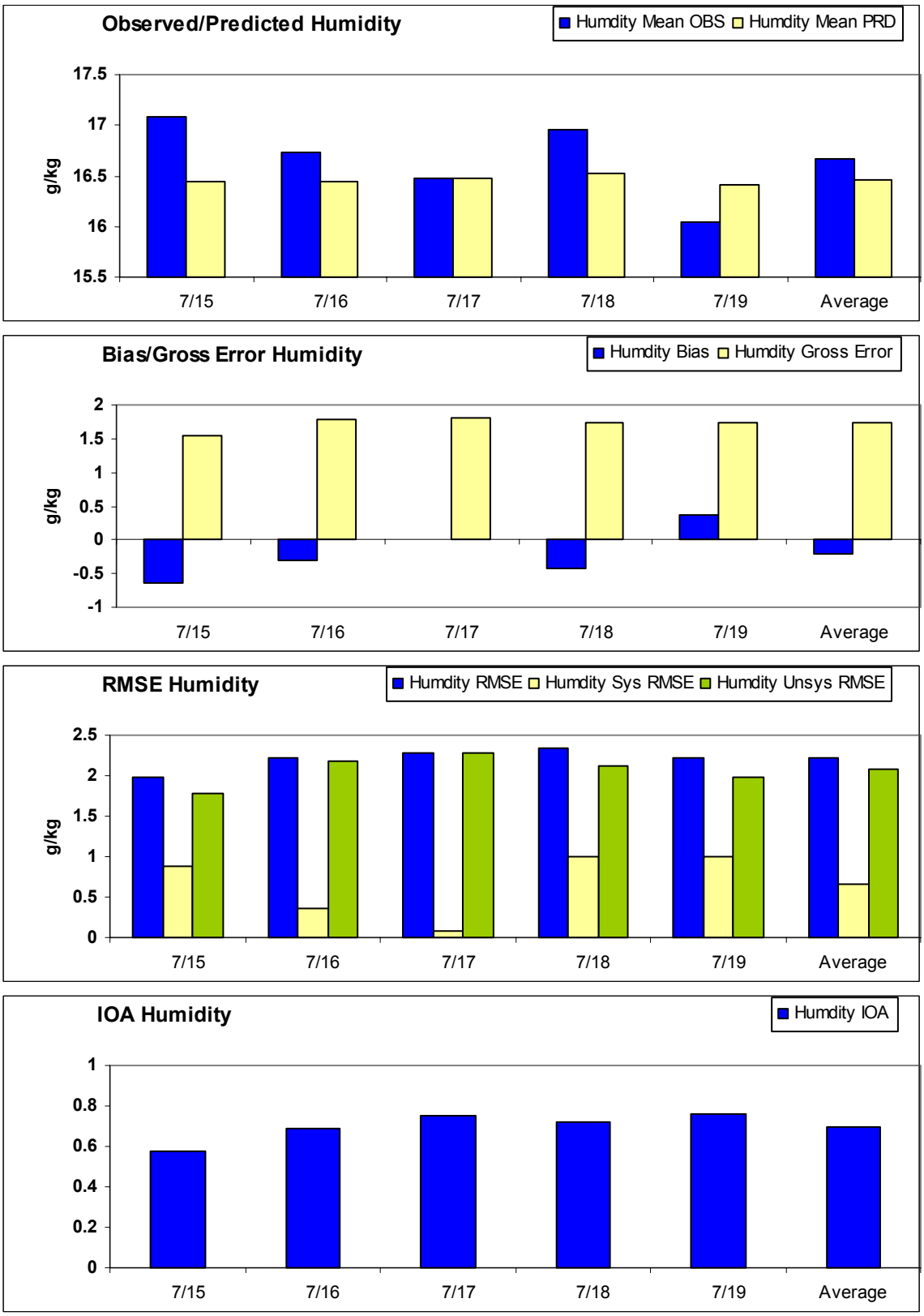

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17.5
17
16.5
16
15.5
7/15
7/16
7/17
7/18
7/19
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
7/15
7/16
7/17
7/18
7/19
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
7/15
7/16
7/17
7/18
7/19
Average

Figure 72

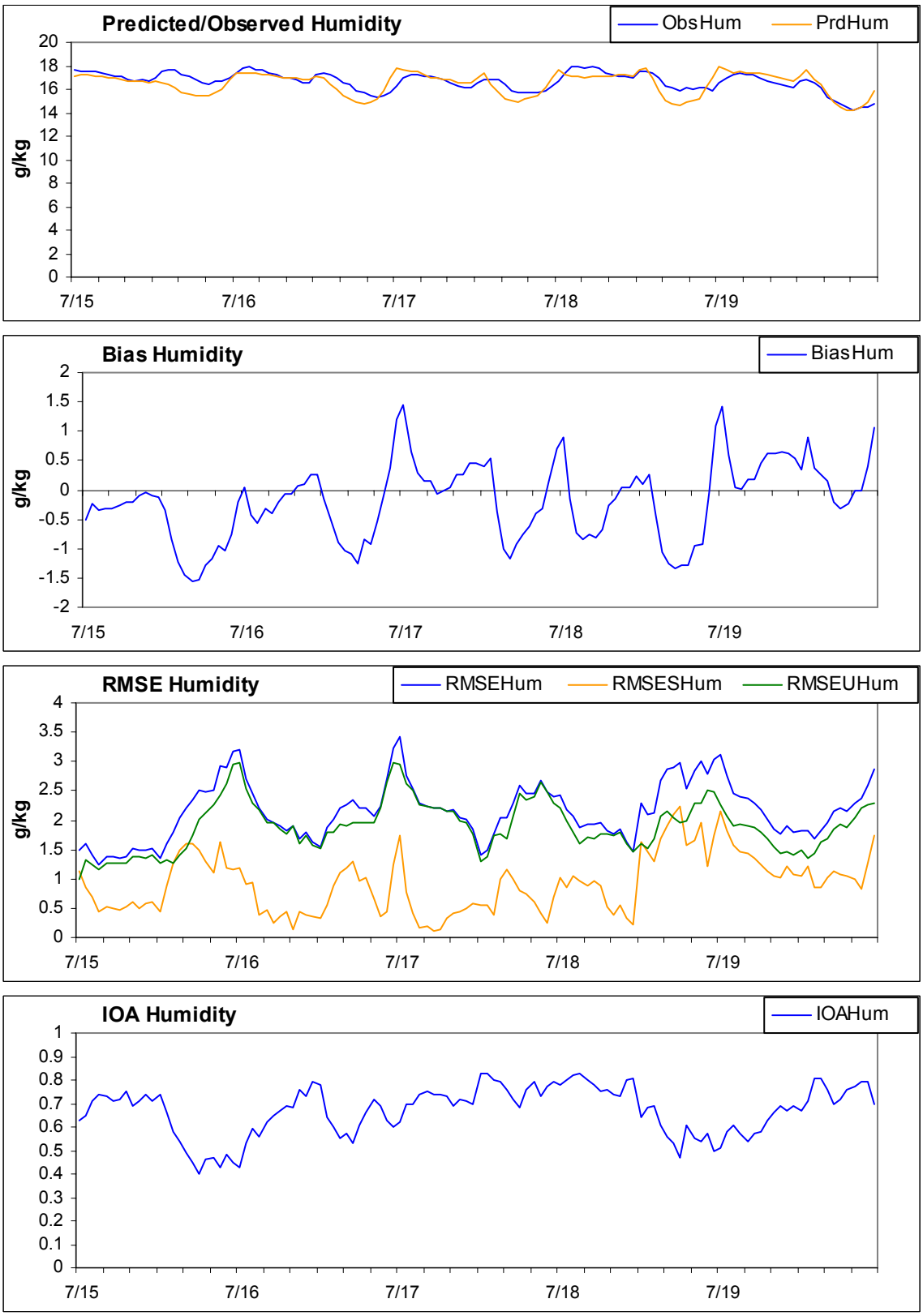

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
7/15
7/16
7/17
7/18
7/19
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
7/15
7/16
7/17
7/18
7/19
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
7/15
7/16
7/17
7/18
7/19
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/15
7/16
7/17
7/18
7/19

Figure 73

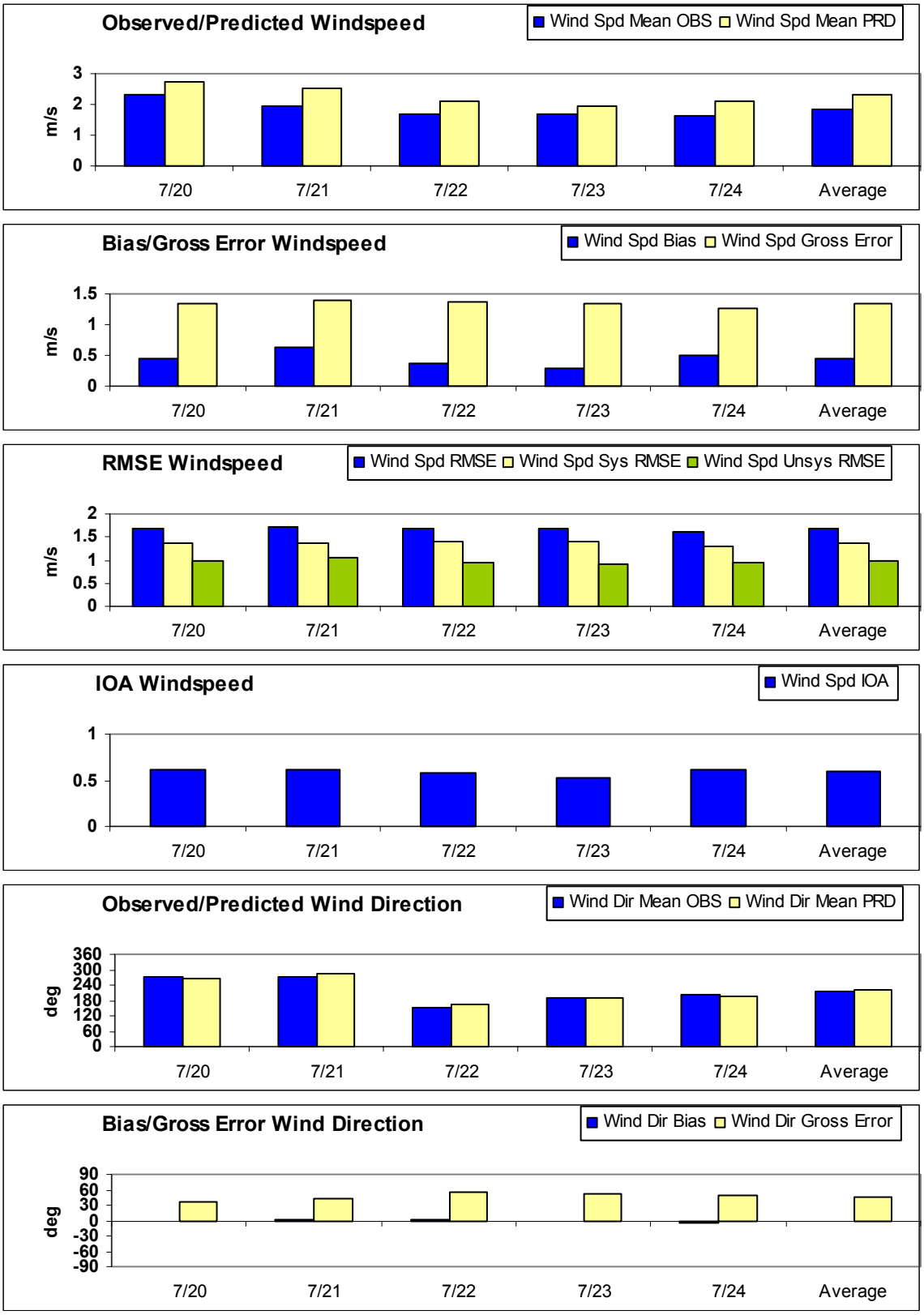

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
7/20
7/21
7/22
7/23
7/24
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
7/20
7/21
7/22
7/23
7/24
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
7/20
7/21
7/22
7/23
7/24
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
7/20
7/21
7/22
7/23
7/24
Average

Figure 74

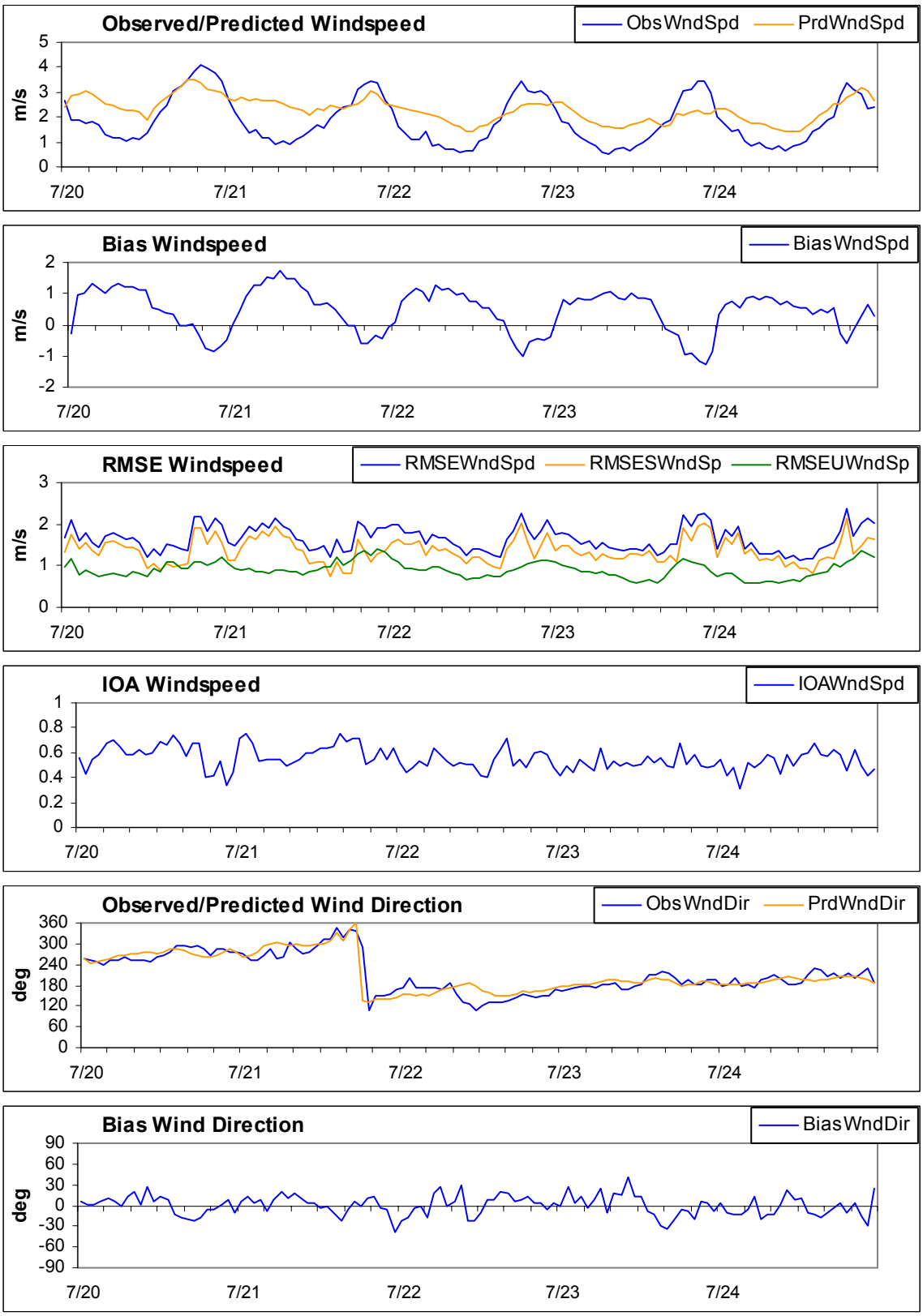
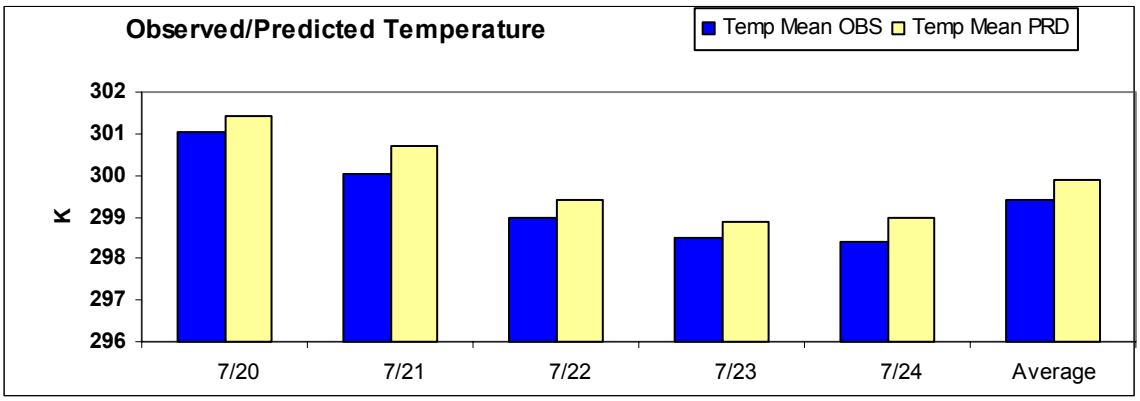
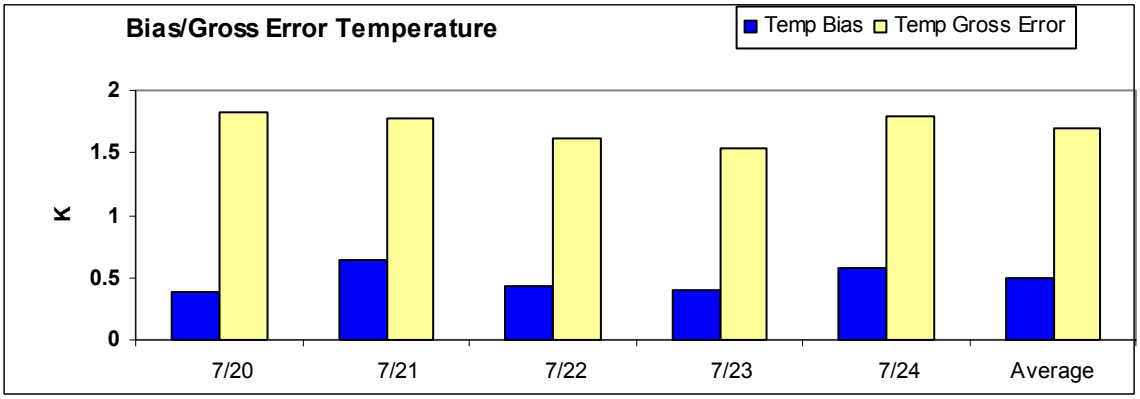
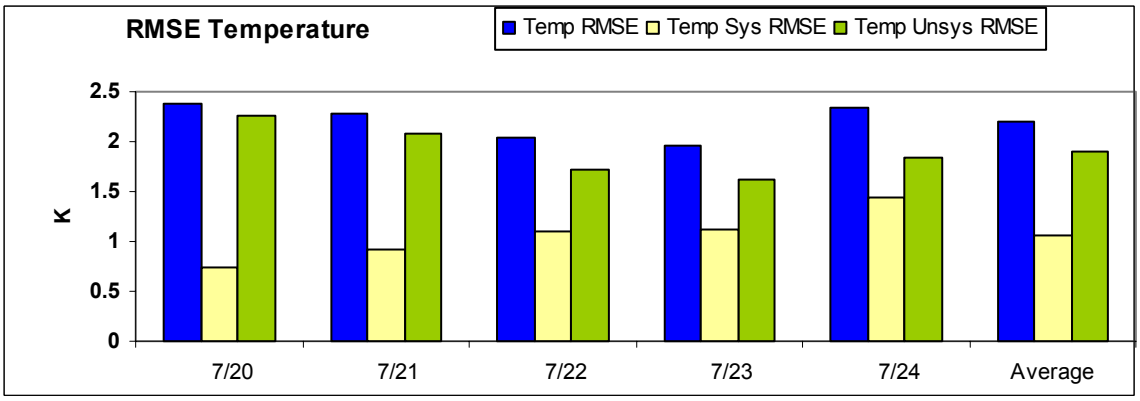

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
7/20
7/21
7/22
7/23
7/24
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
7/20
7/21
7/22
7/23
7/24
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
7/20
7/21
7/22
7/23
7/24
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
7/20
7/21
7/22
7/23
7/24
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
7/20
7/21
7/22
7/23
7/24
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
7/20
7/21
7/22
7/23
7/24

Figure 75


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302
301
300
299
298
297
296
7/20
7/21
7/22
7/23
7/24
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
Average

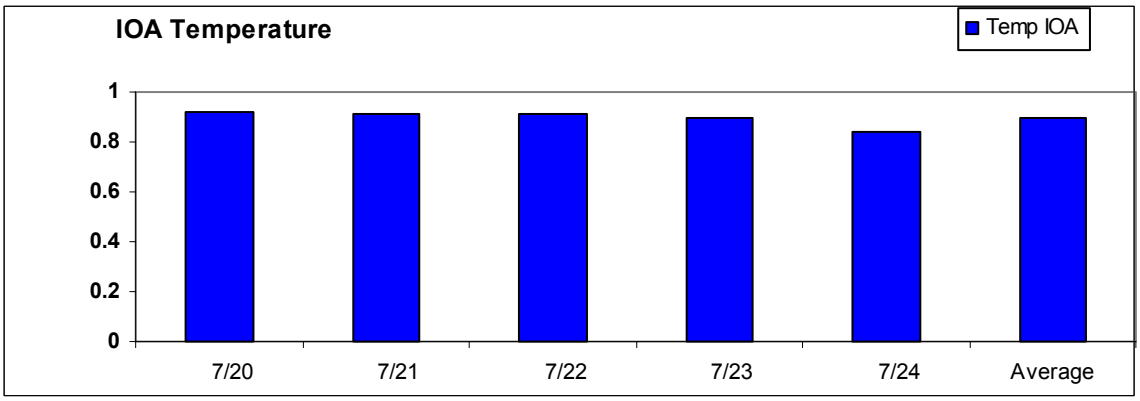

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
7/20
7/21
7/22
7/23
7/24
Average

Figure 76

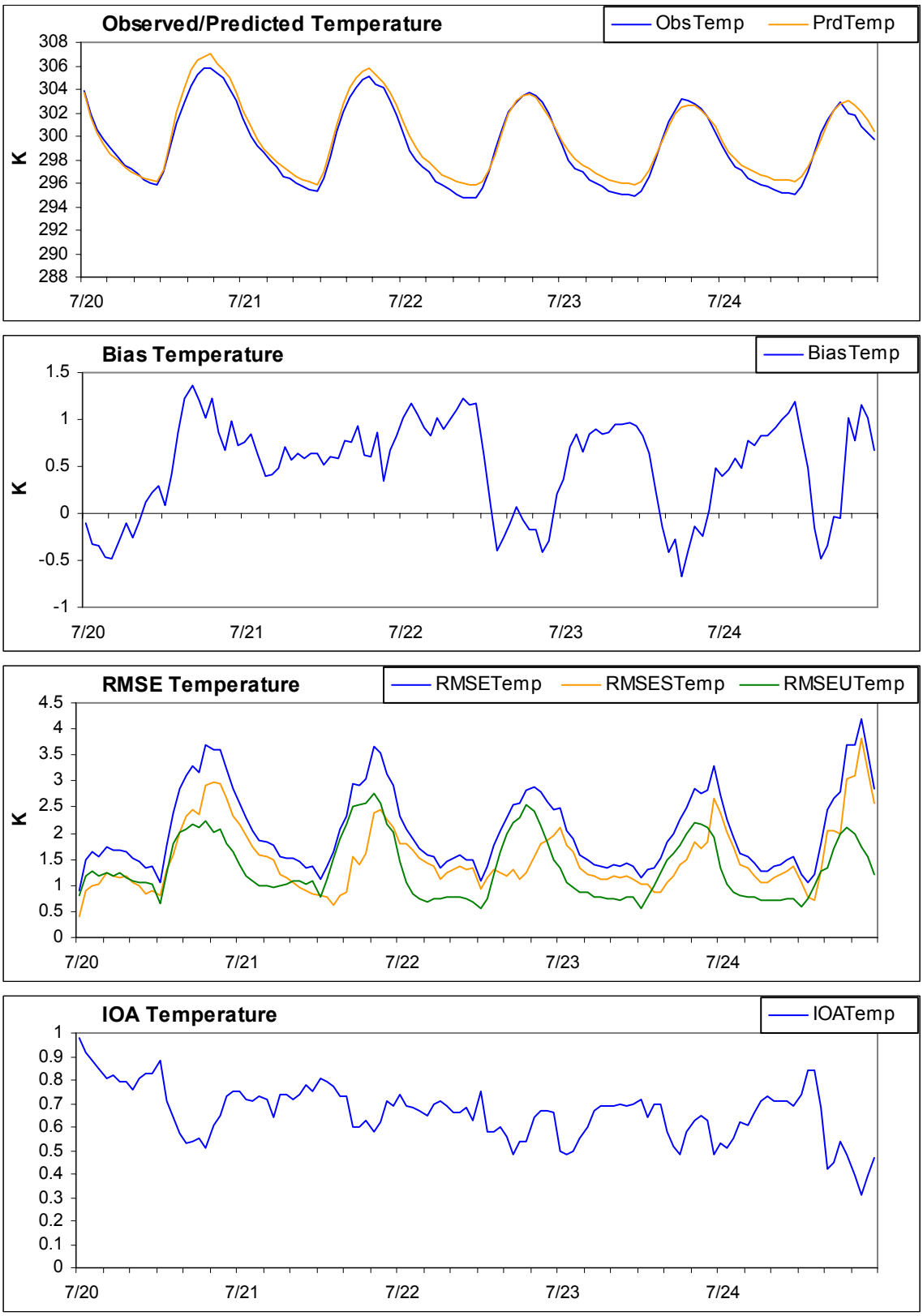

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
308
306
304
302
300
298
296
294
292
290
288
7/20
7/21
7/22
7/23
7/24
Bias Temperature
BiasTemp
K
1.5
1
0.5
0
-0.5
-1
7/20
7/21
7/22
7/23
7/24
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/20
7/21
7/22
7/23
7/24

Figure 77

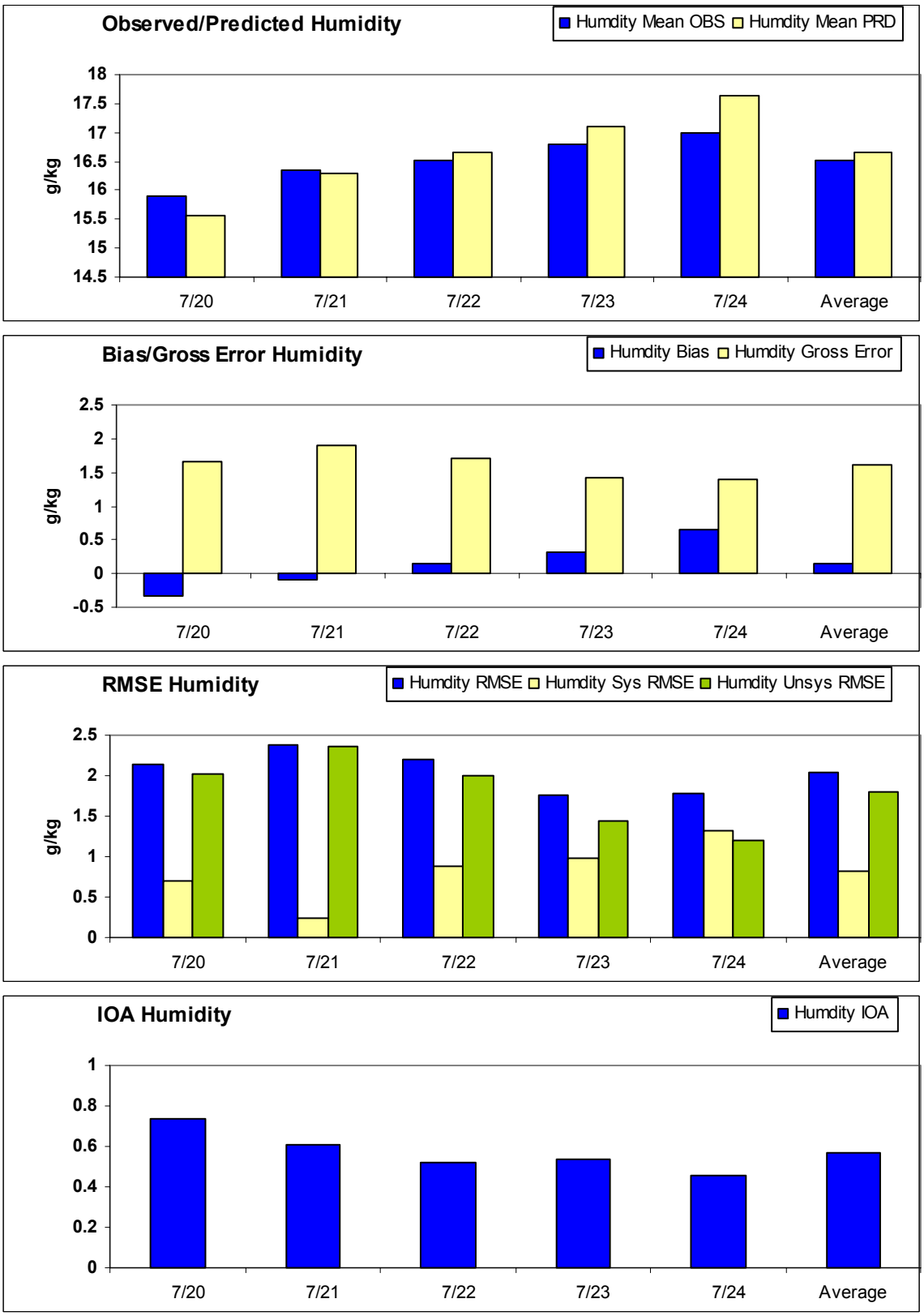

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
18
17.5
17
16.5
16
15.5
15
14.5
7/20
7/21
7/22
7/23
7/24
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
7/20
7/21
7/22
7/23
7/24
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
7/20
7/21
7/22
7/23
7/24
Average

Figure 78

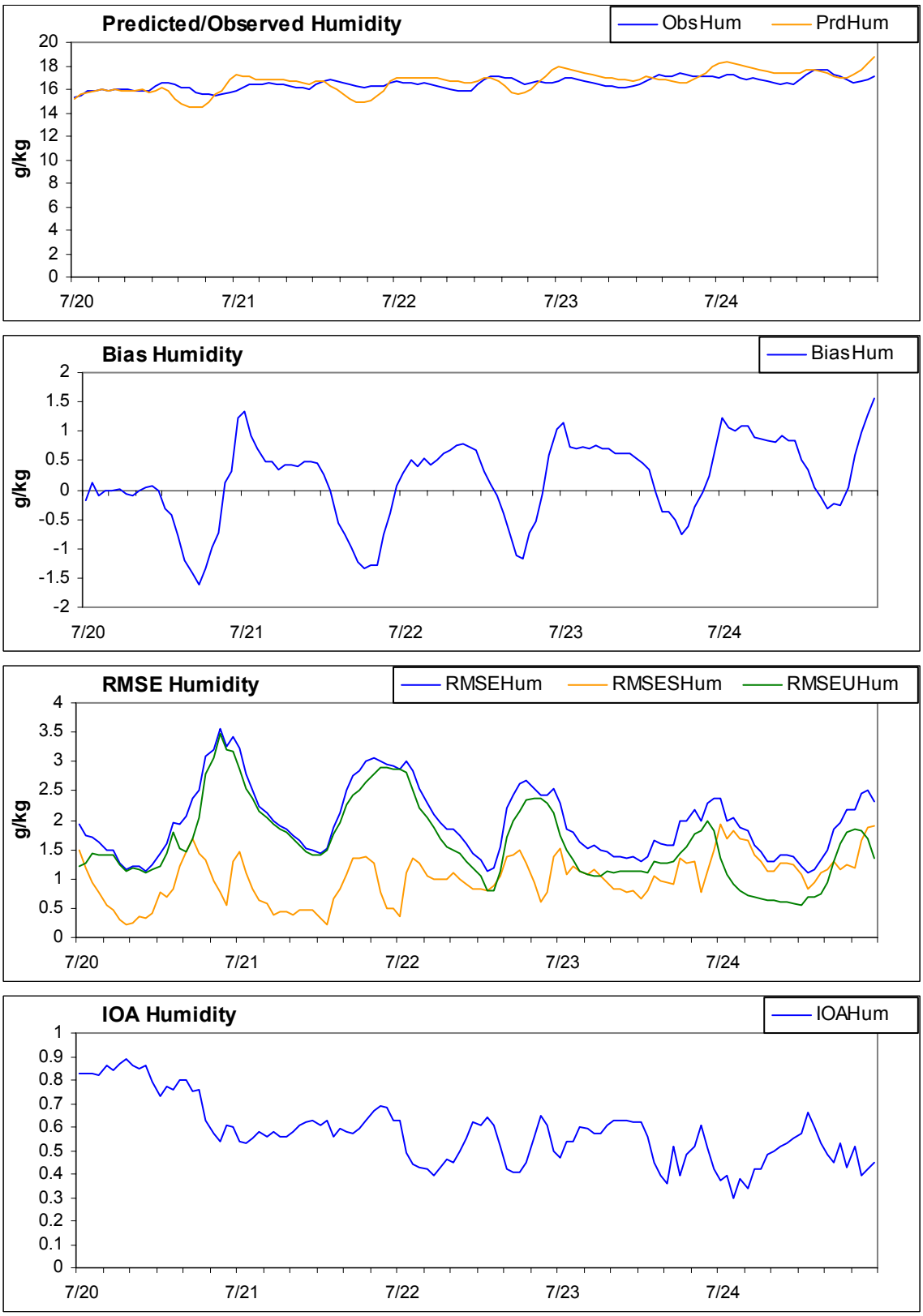

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
7/20
7/21
7/22
7/23
7/24
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
7/20
7/21
7/22
7/23
7/24
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
7/20
7/21
7/22
7/23
7/24
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/20
7/21
7/22
7/23
7/24

Figure 79

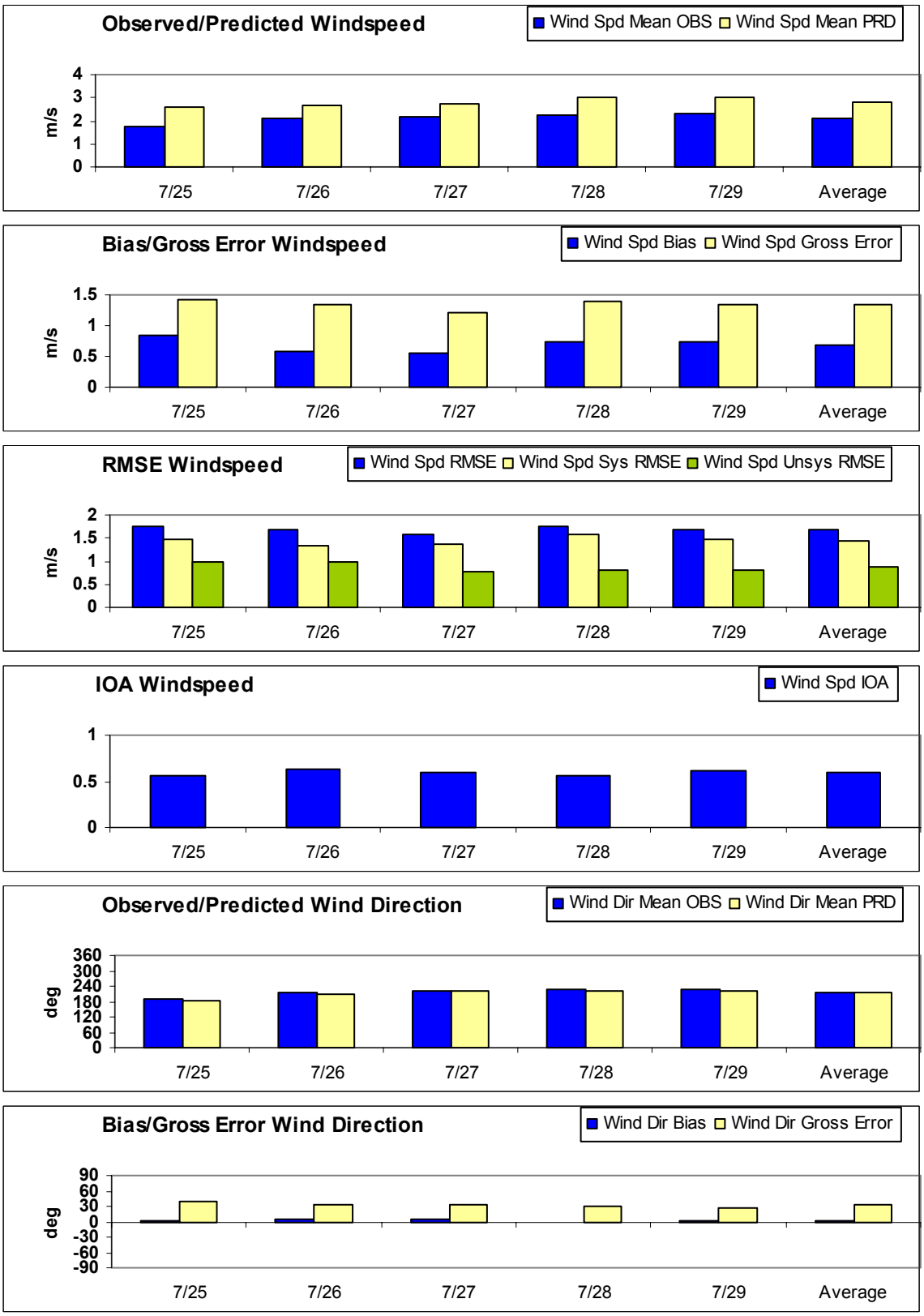

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
7/25
7/26
7/27
7/28
7/29
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
7/25
7/26
7/27
7/28
7/29
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
7/25
7/26
7/27
7/28
7/29
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
7/25
7/26
7/27
7/28
7/29
Average

Figure 80

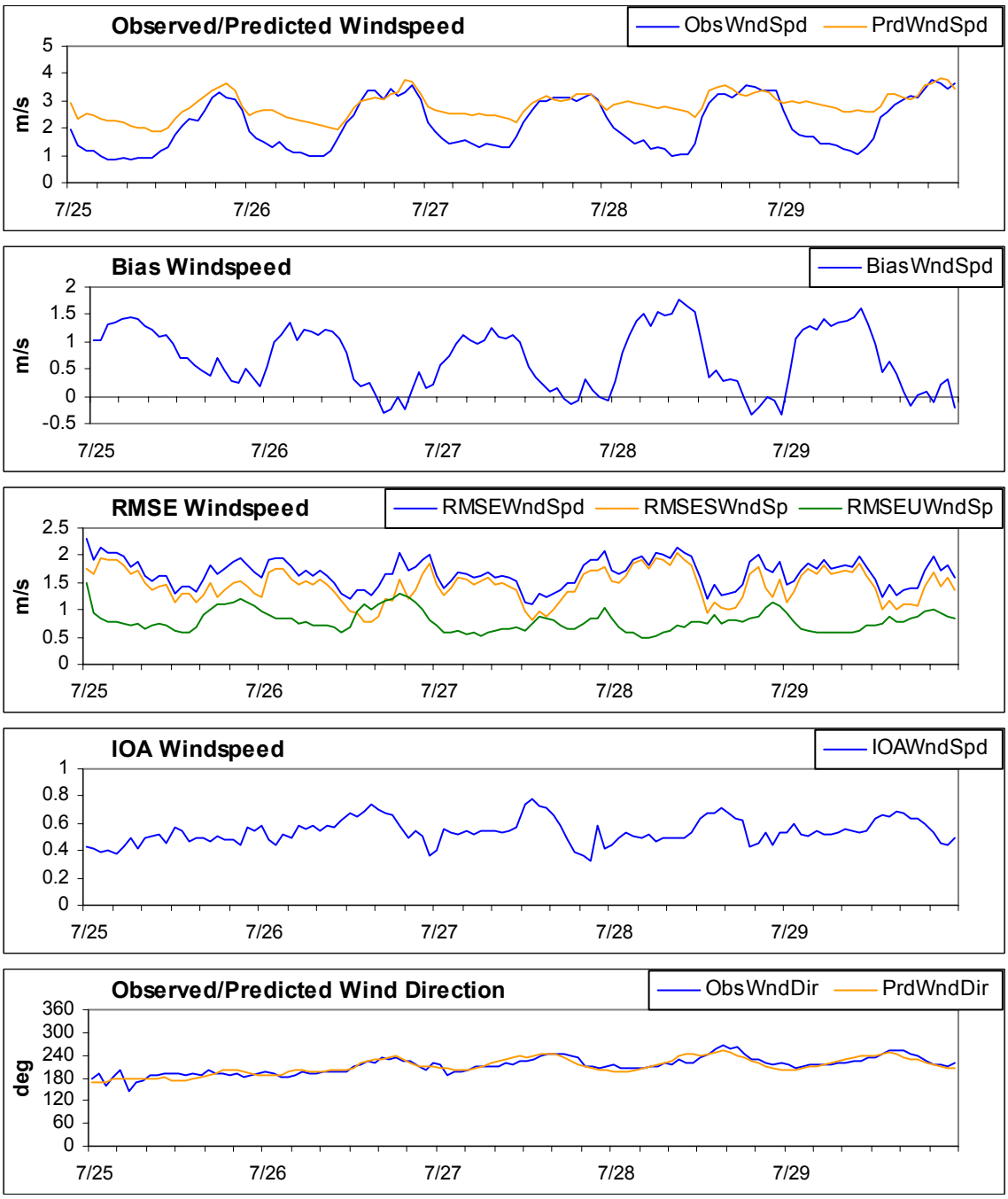

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
7/25
7/26
7/27
7/28
7/29
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
7/25
7/26
7/27
7/28
7/29
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
7/25
7/26
7/27
7/28
7/29
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
7/25
7/26
7/27
7/28
7/29

Figure 81

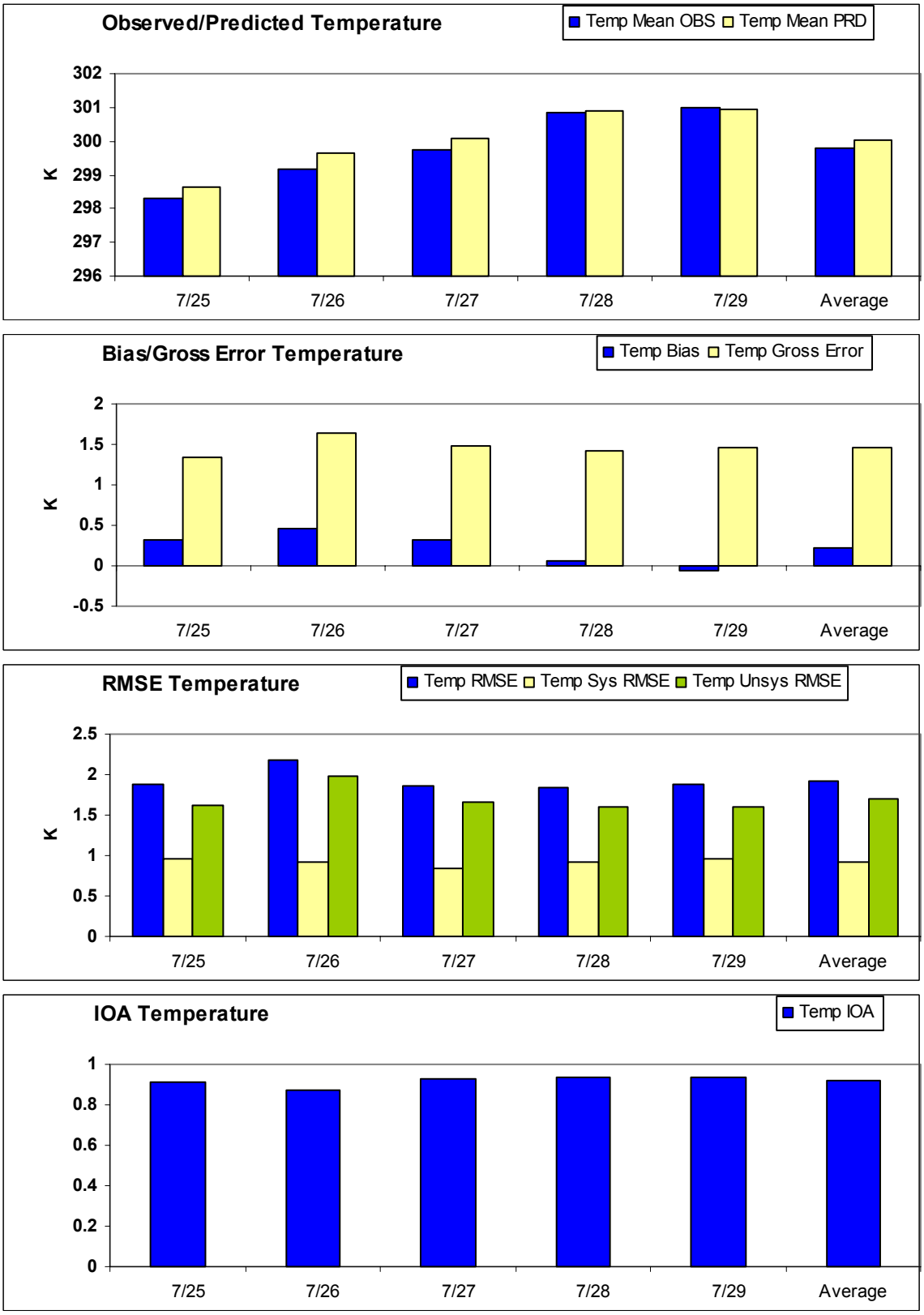

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302
301
300
299
298
297
296
7/25
7/26
7/27
7/28
7/29
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
7/25
7/26
7/27
7/28
7/29
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
7/25
7/26
7/27
7/28
7/29
Average

Figure 82

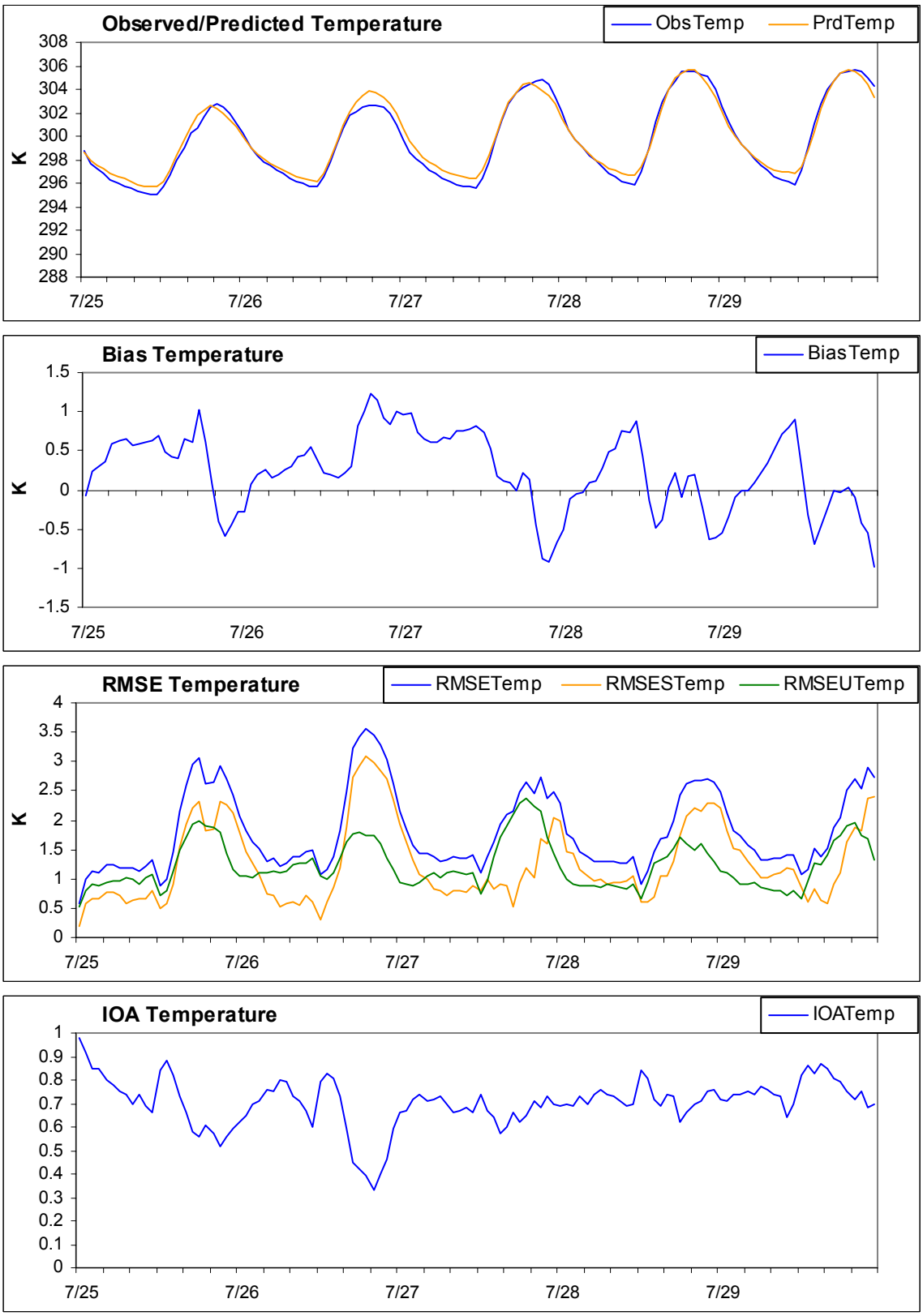

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
308
306
304
302
300
298
296
294
292
290
288
7/25
7/26
7/27
7/28
7/29
Bias Temperature
BiasTemp
K
1.5
1
0.5
0
-0.5
-1
-1.5
7/25
7/26
7/27
7/28
7/29
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/25
7/26
7/27
7/28
7/29

Figure 83

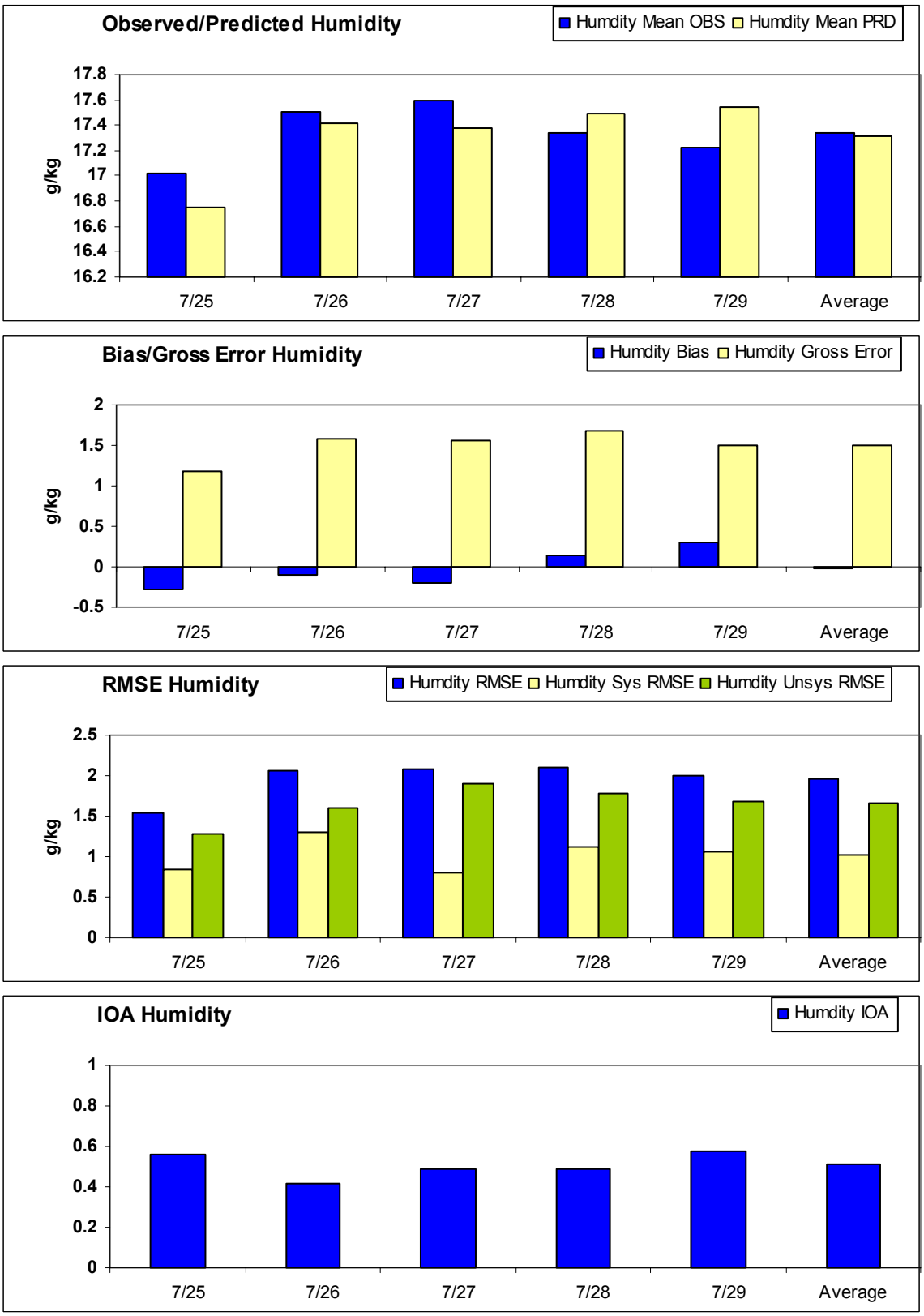

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17.8
17.6
17.4
17.2
17
16.8
16.6
16.4
16.2
7/25
7/26
7/27
7/28
7/29
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
7/25
7/26
7/27
7/28
7/29
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
7/25
7/26
7/27
7/28
7/29
Average

Figure 84

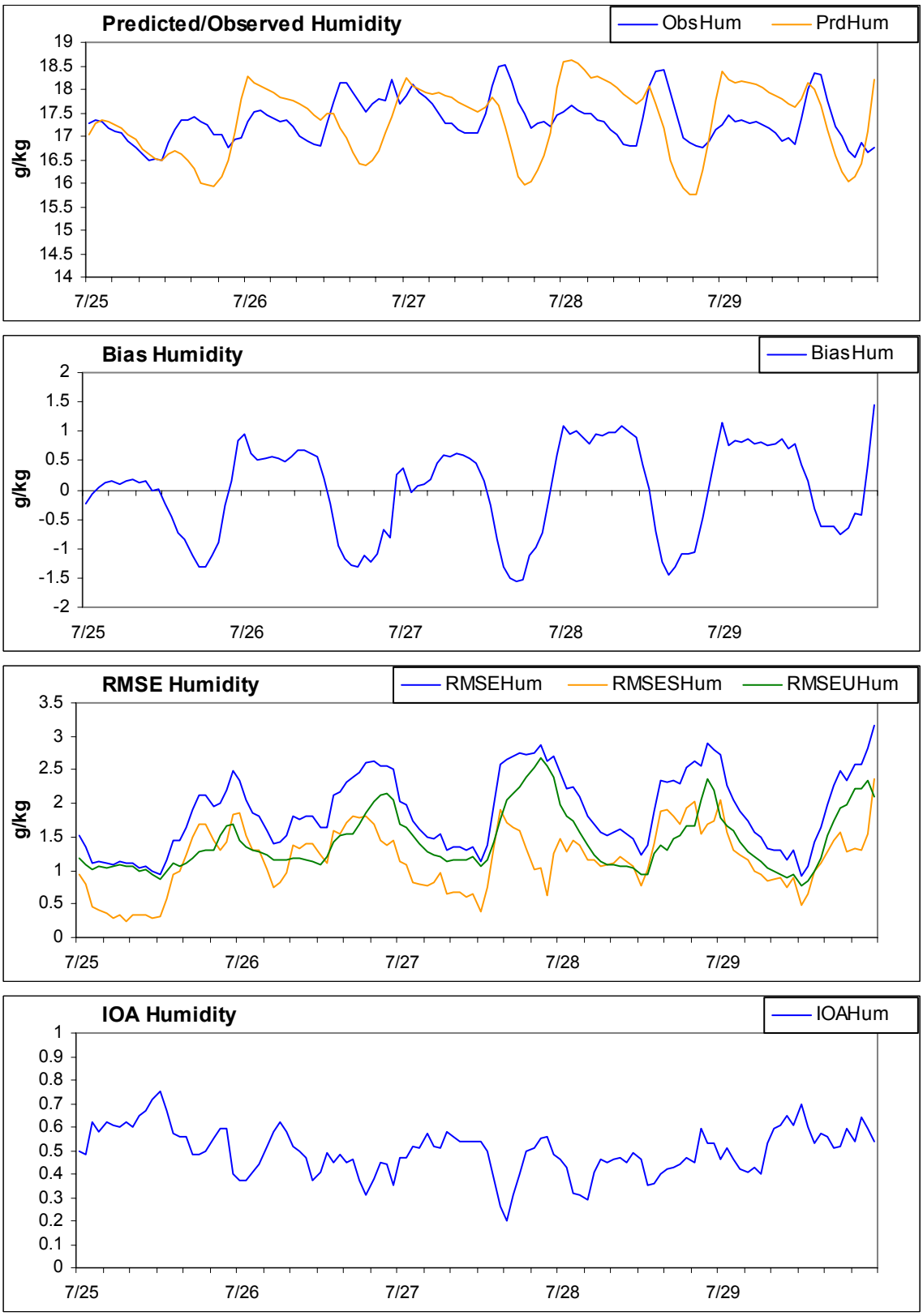

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
19
18.5
18
17.5
17
16.5
16
15.5
15
14.5
14
7/25
7/26
7/27
7/28
7/29
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
7/25
7/26
7/27
7/28
7/29
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
7/25
7/26
7/27
7/28
7/29
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/25
7/26
7/27
7/28
7/29

Figure 85

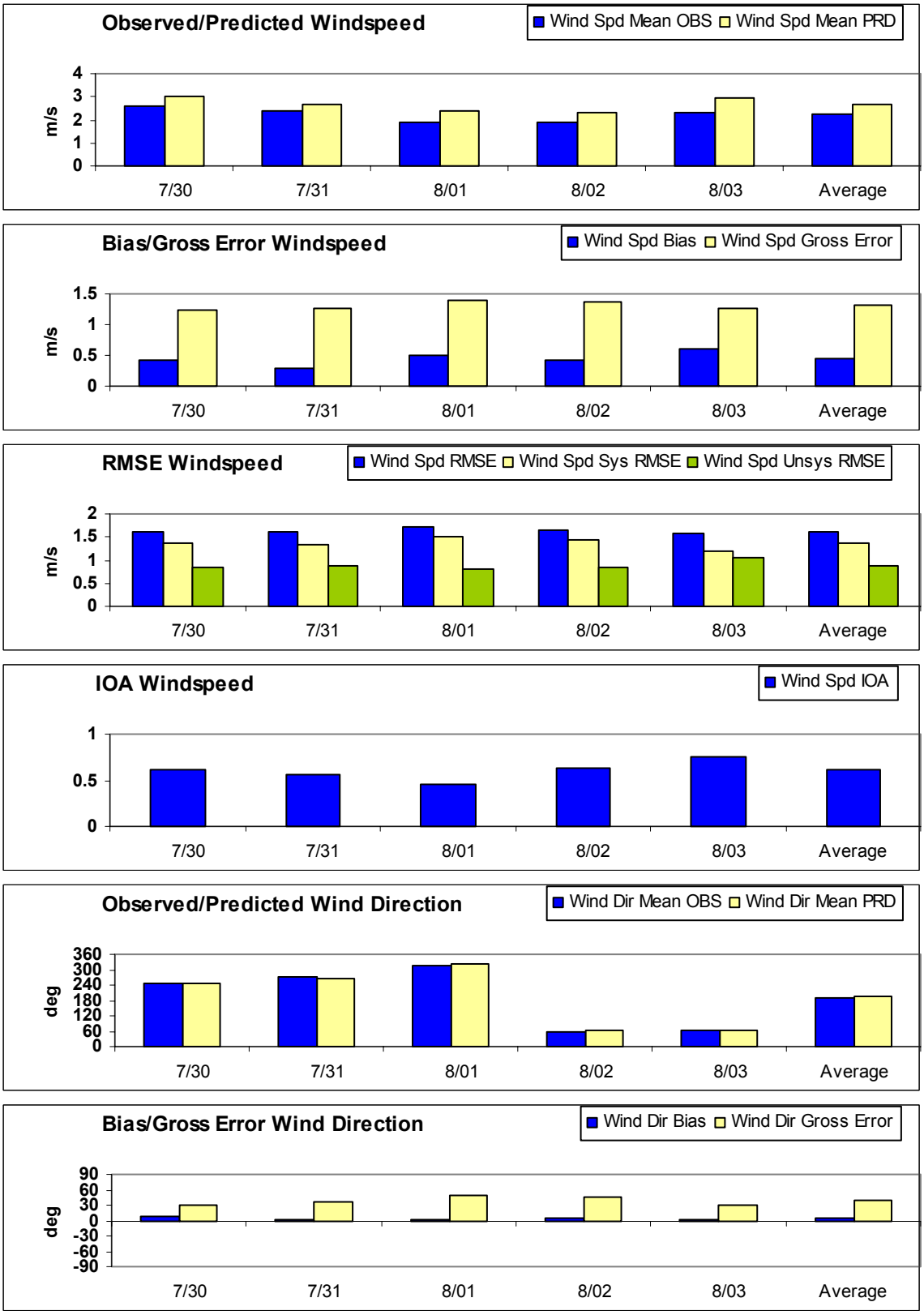

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
7/30
7/31
8/01
8/02
8/03
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
7/30
7/31
8/01
8/02
8/03
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
7/30
7/31
8/01
8/02
8/03
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
7/30
7/31
8/01
8/02
8/03
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
7/30
7/31
8/01
8/02
8/03
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
7/30
7/31
8/01
8/02
8/03
Average

Figure 86

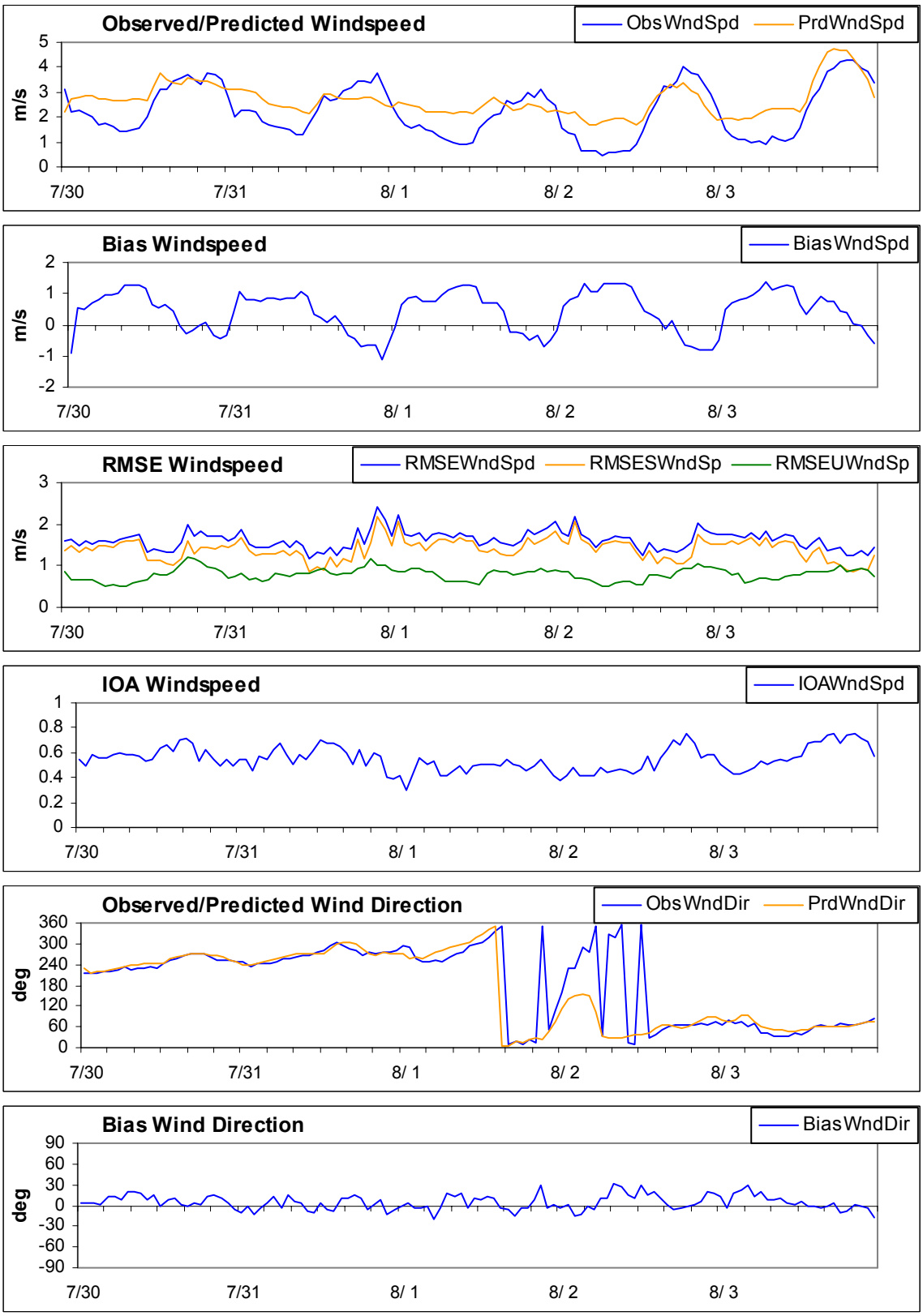
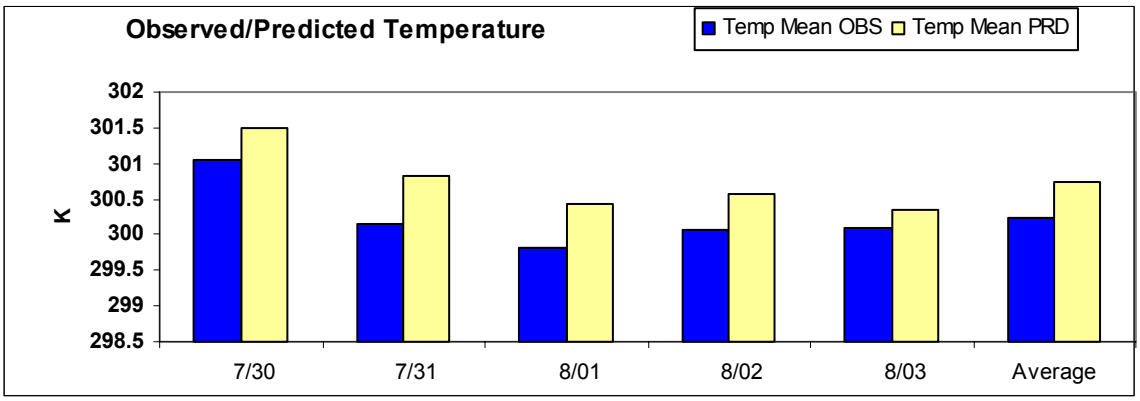
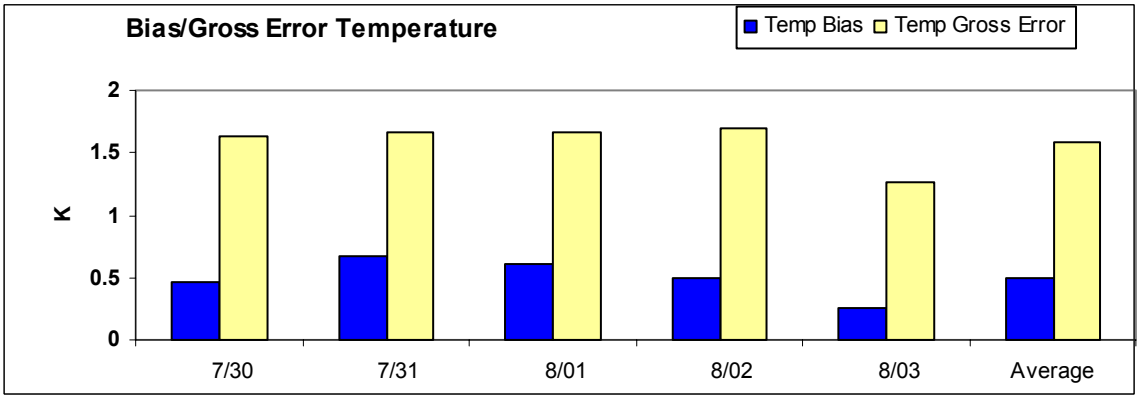
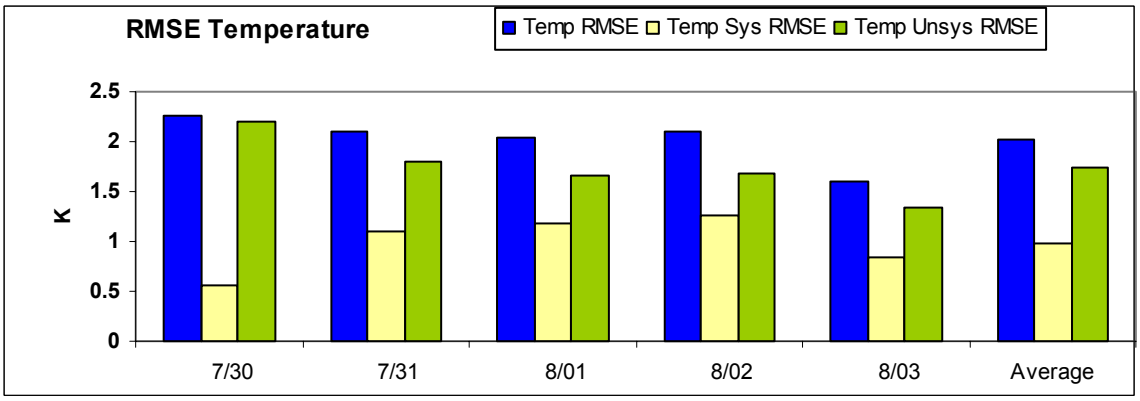

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
7/30
7/31
8/ 1
8/ 2
8/ 3
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
7/30
7/31
8/ 1
8/ 2
8/ 3
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
7/30
7/31
8/ 1
8/ 2
8/ 3
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
7/30
7/31
8/ 1
8/ 2
8/ 3
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
7/30
7/31
8/ 1
8/ 2
8/ 3
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
7/30
7/31
8/ 1
8/ 2
8/ 3

Figure 87


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302
301.5
301
300.5
300
299.5
299
298.5
7/30
7/31
8/01
8/02
8/03
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
7/30
7/31
8/01
8/02
8/03
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
7/30
7/31
8/01
8/02
8/03
Average

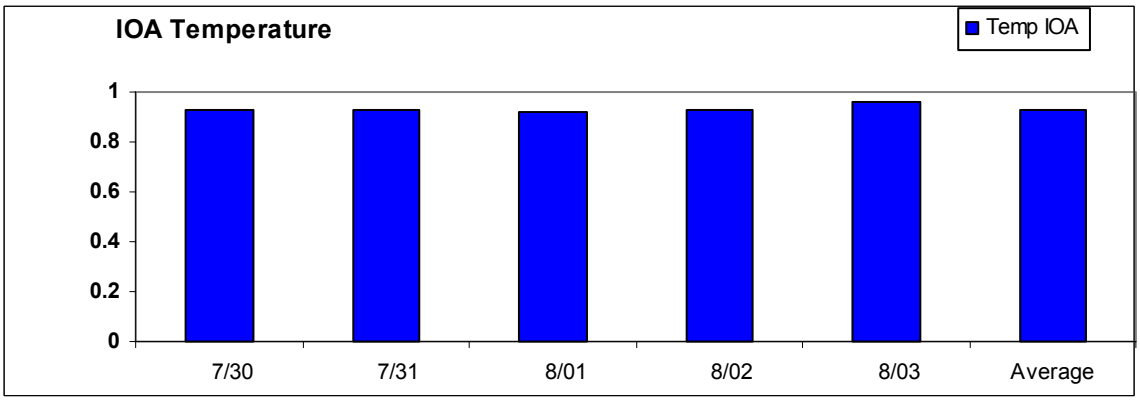

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
7/30
7/31
8/01
8/02
8/03
Average

Figure 88

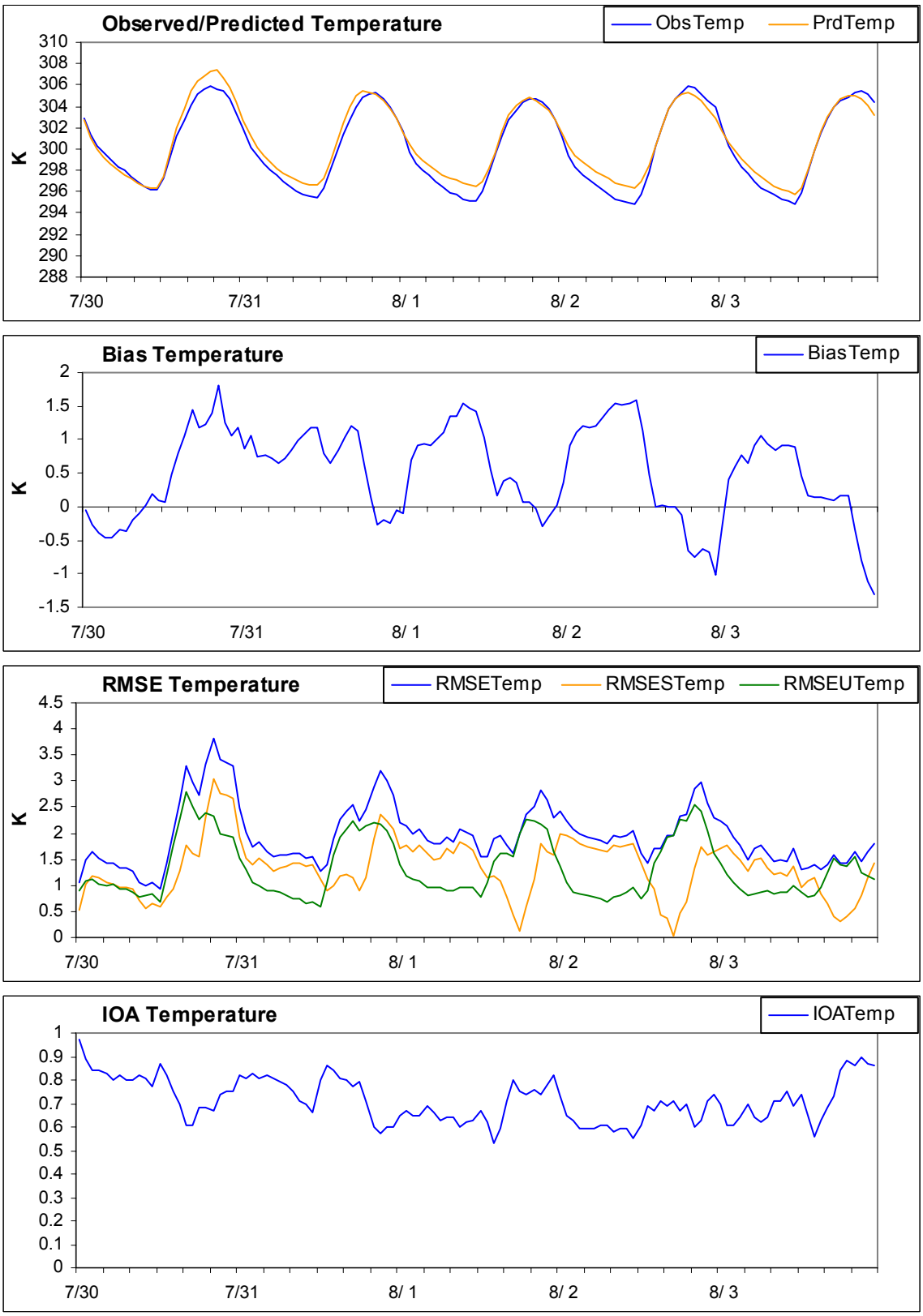

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
308
306
304
302
300
298
296
294
292
290
288
7/30
7/31
8/ 1
8/ 2
8/ 3
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
7/30
7/31
8/ 1
8/ 2
8/ 3
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
7/30
7/31
8/ 1
8/ 2
8/ 3
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/30
7/31
8/ 1
8/ 2
8/ 3

Figure 89

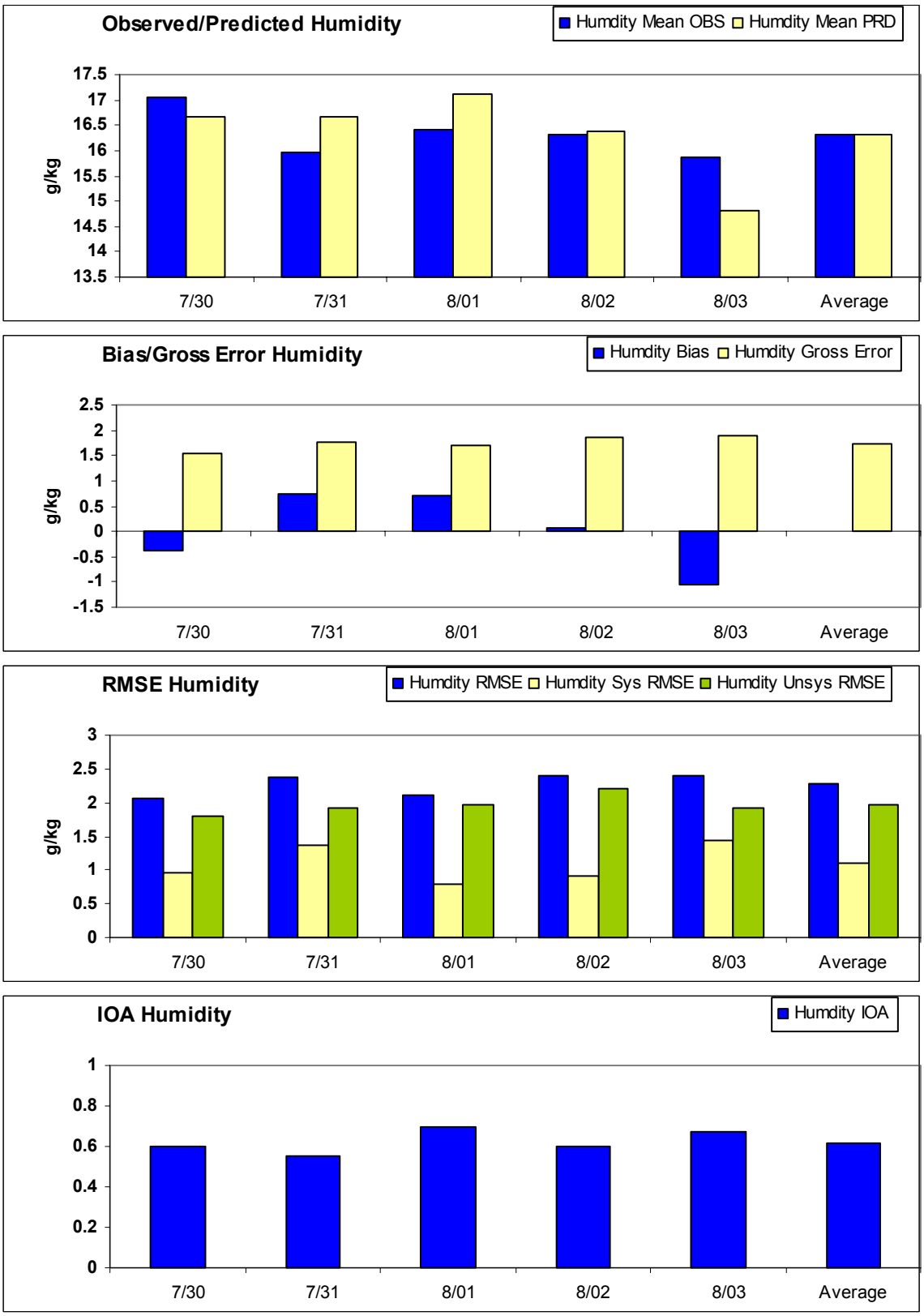

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17.5
17
16.5
16
15.5
15
14.5
14
13.5
7/30
7/31
8/01
8/02
8/03
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
7/30
7/31
8/01
8/02
8/03
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
7/30
7/31
8/01
8/02
8/03
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
7/30
7/31
8/01
8/02
8/03
Average

Figure 90

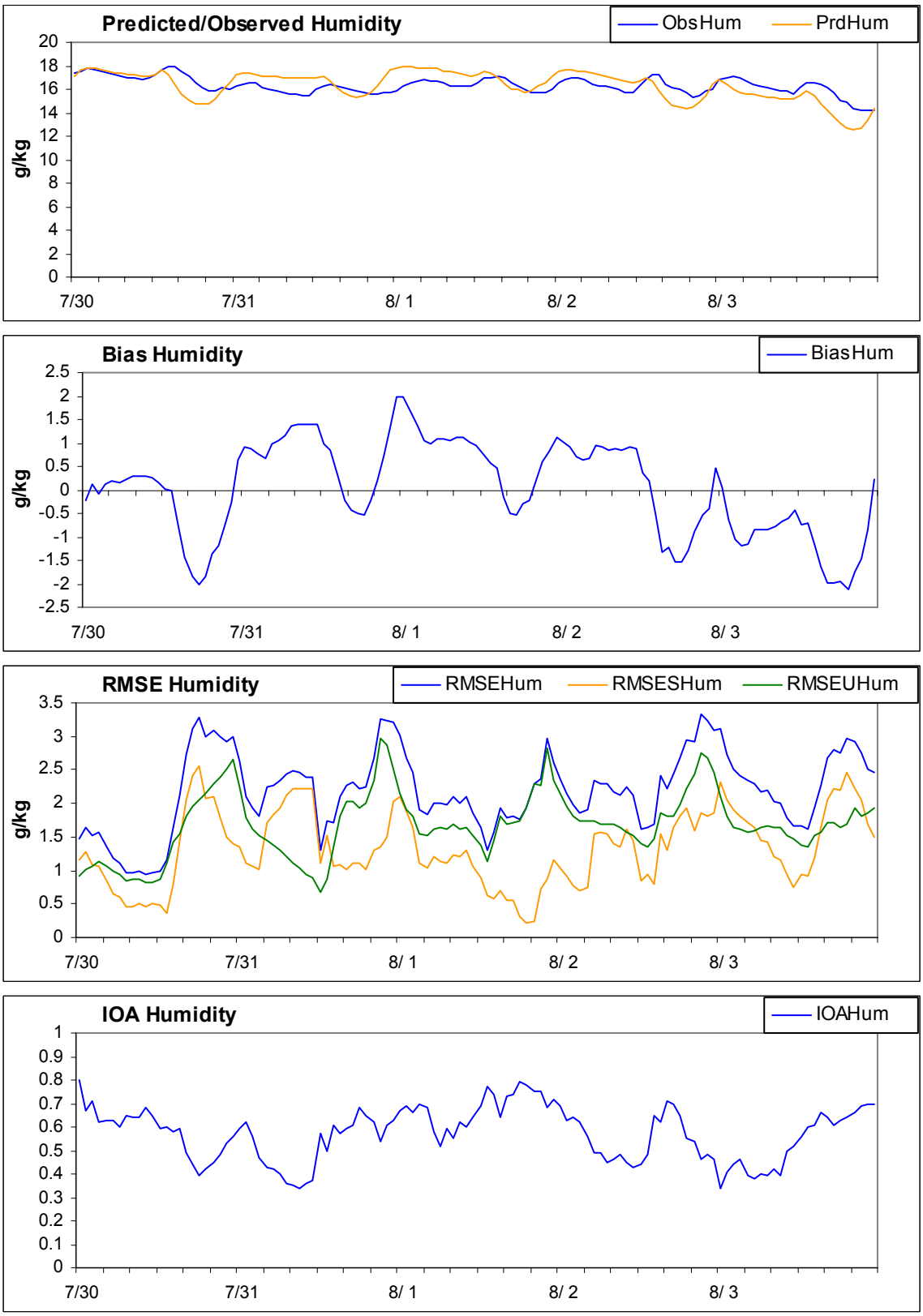

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
7/30
7/31
8/ 1
8/ 2
8/ 3
Bias Humidity
BiasHum
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
7/30
7/31
8/ 1
8/ 2
8/ 3
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
7/30
7/31
8/ 1
8/ 2
8/ 3
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
7/30
7/31
8/ 1
8/ 2
8/ 3

Figure 91

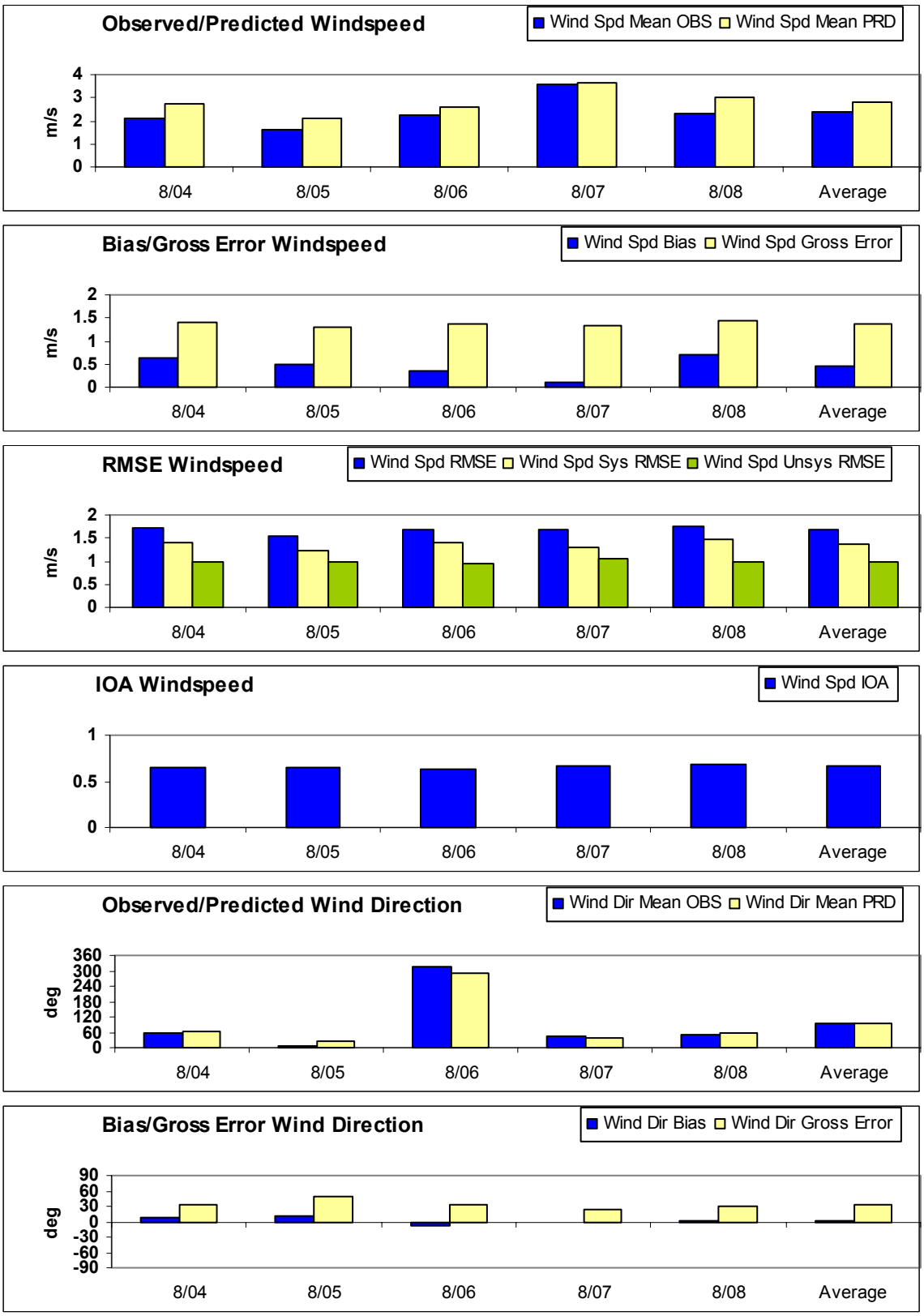

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
8/04
8/05
8/06
8/07
8/08
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
8/04
8/05
8/06
8/07
8/08
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
8/04
8/05
8/06
8/07
8/08
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
8/04
8/05
8/06
8/07
8/08
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
8/04
8/05
8/06
8/07
8/08
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
8/04
8/05
8/06
8/07
8/08
Average

Figure 92

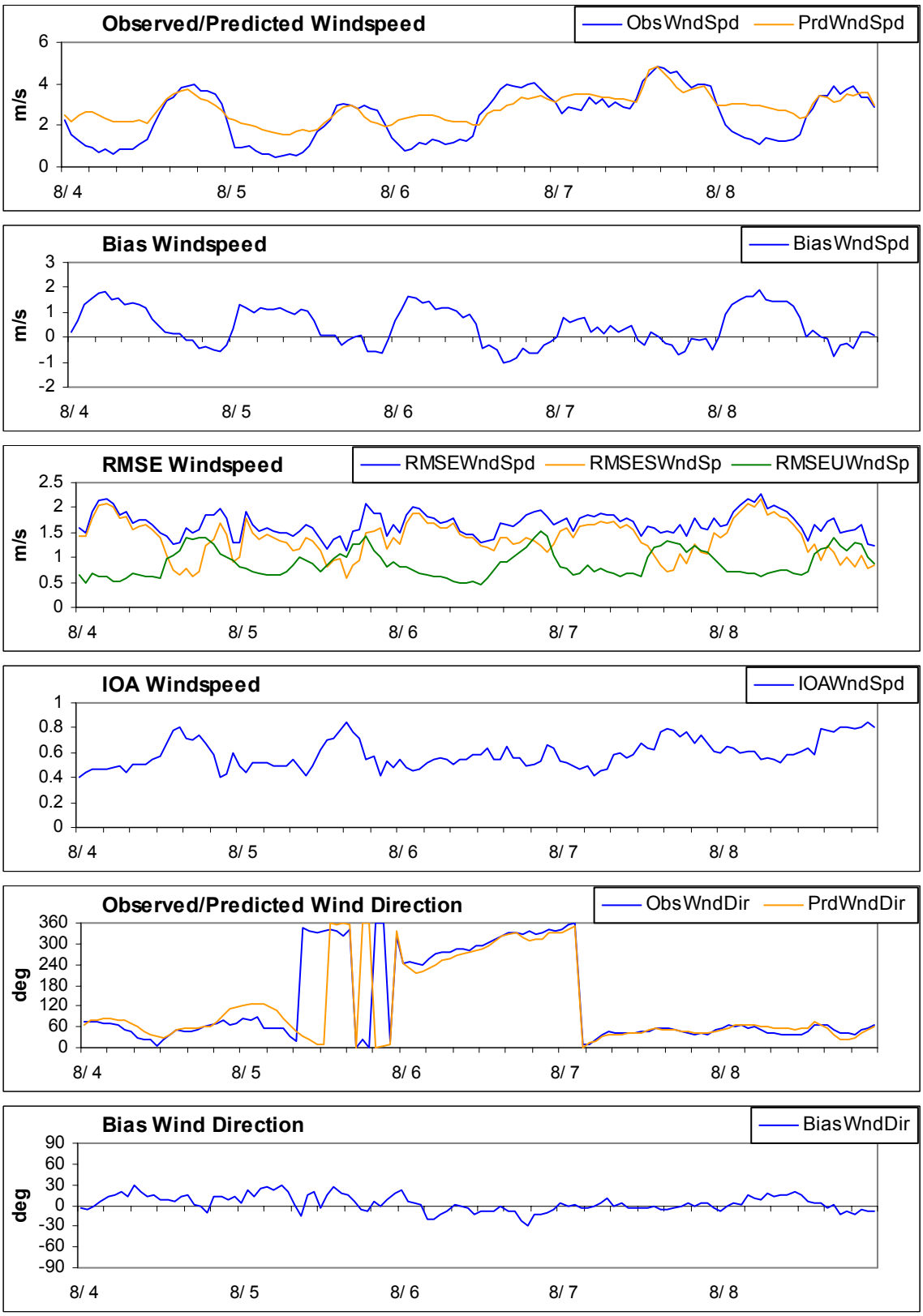

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
6
4
2
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
Bias Windspeed
BiasWndSpd
m/s
3
2
1
0
-1
-2
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8

Figure 93

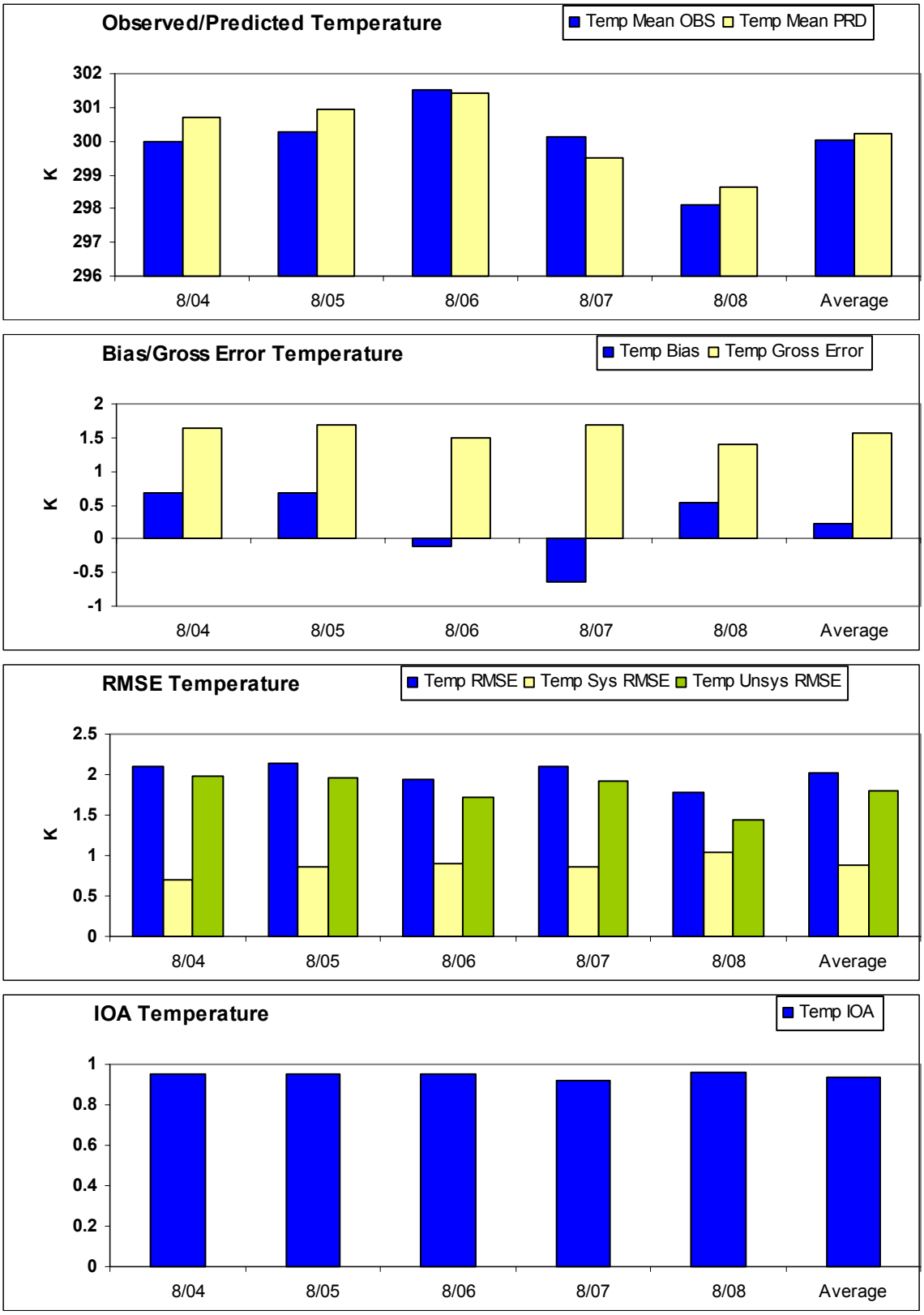

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302
301
300
299
298
297
296
8/04
8/05
8/06
8/07
8/08
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
8/04
8/05
8/06
8/07
8/08
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
8/04
8/05
8/06
8/07
8/08
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
8/04
8/05
8/06
8/07
8/08
Average

Figure 94

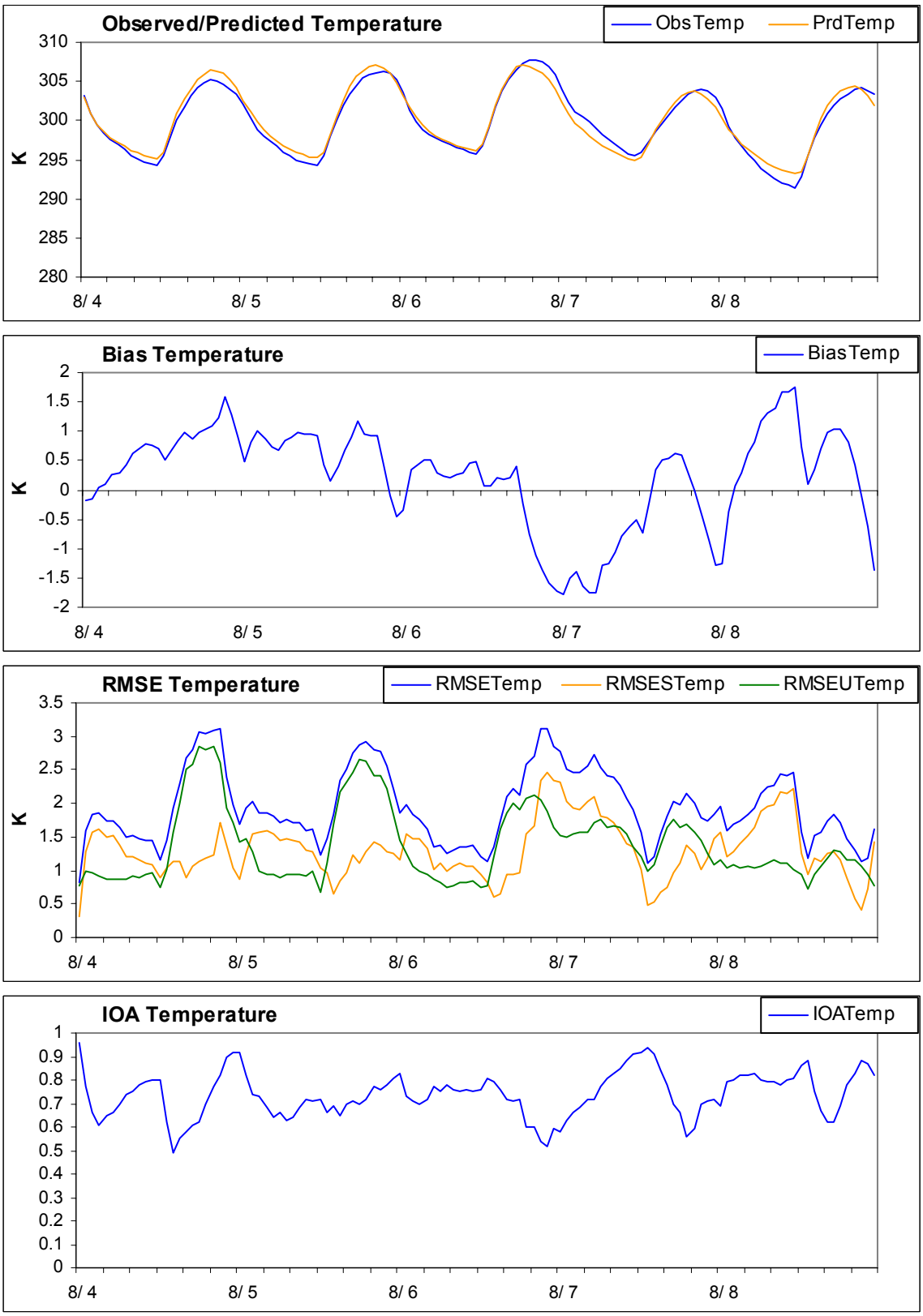

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
280
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8

Figure 95

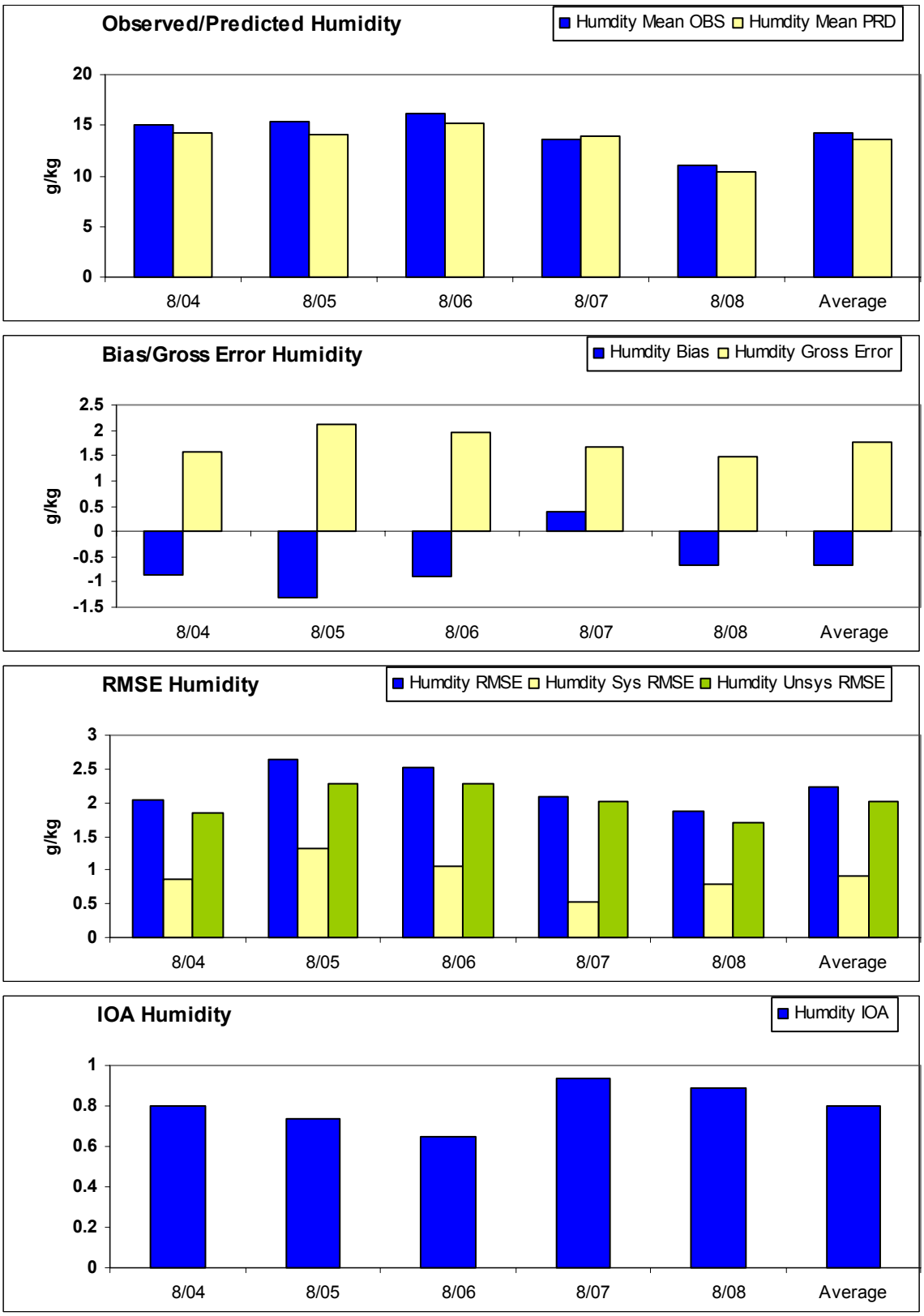

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
8/04
8/05
8/06
8/07
8/08
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
8/04
8/05
8/06
8/07
8/08
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
8/04
8/05
8/06
8/07
8/08
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
8/04
8/05
8/06
8/07
8/08
Average

Figure 96

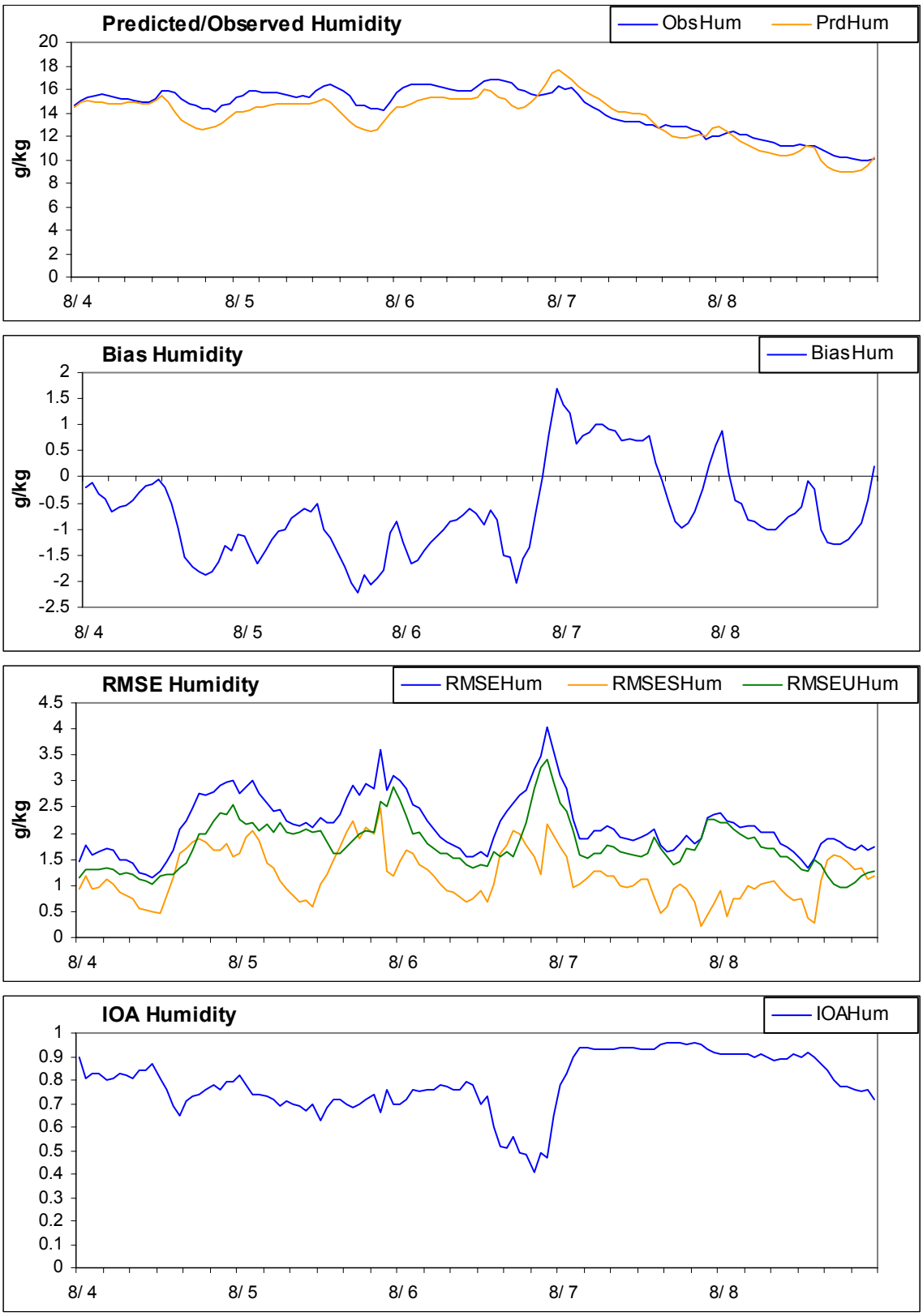

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/ 4
8/ 5
8/ 6
8/ 7
8/ 8

Figure 97

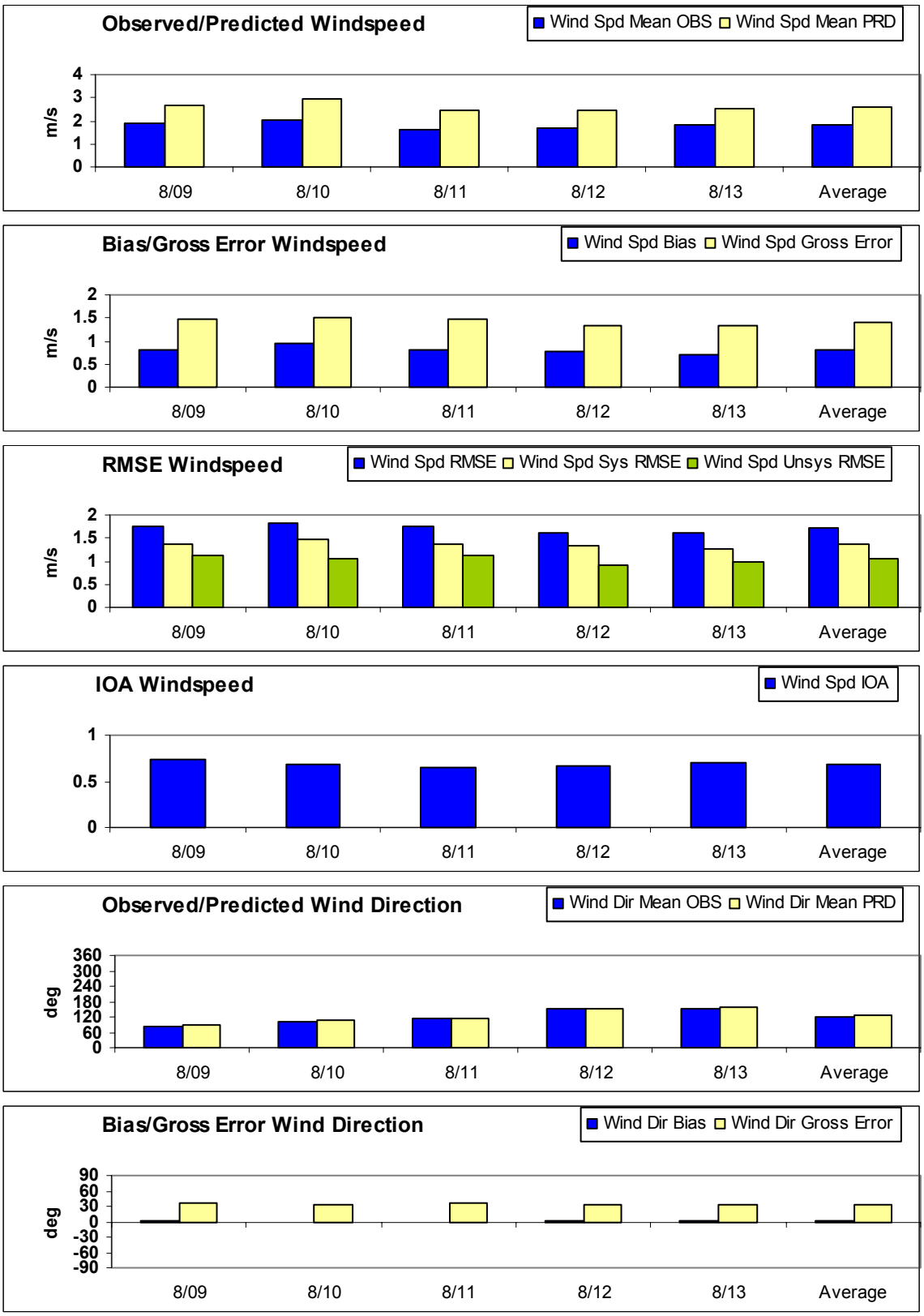

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
8/09
8/10
8/11
8/12
8/13
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
8/09
8/10
8/11
8/12
8/13
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
8/09
8/10
8/11
8/12
8/13
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
8/09
8/10
8/11
8/12
8/13
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
8/09
8/10
8/11
8/12
8/13
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
8/09
8/10
8/11
8/12
8/13
Average

Figure 98

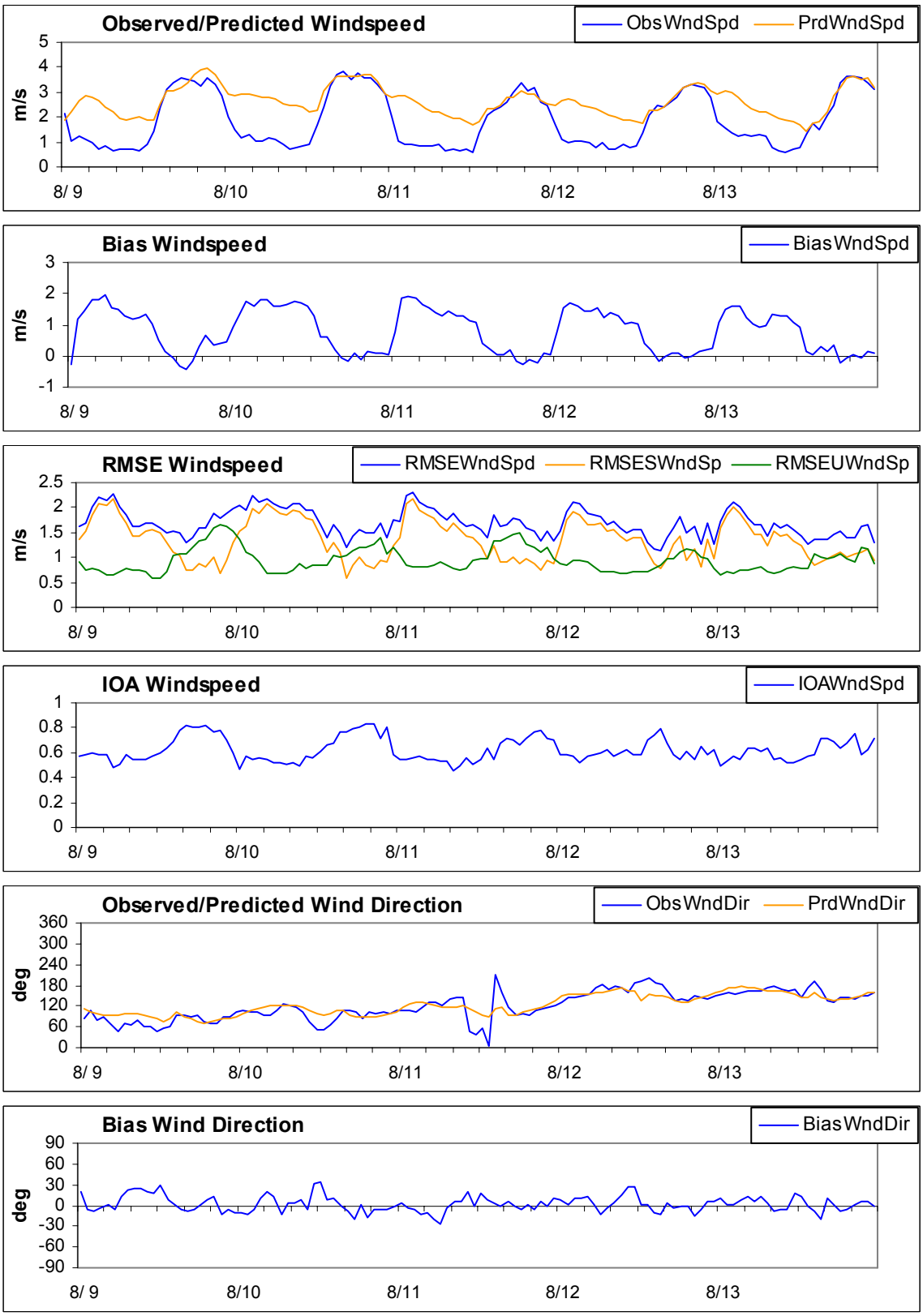
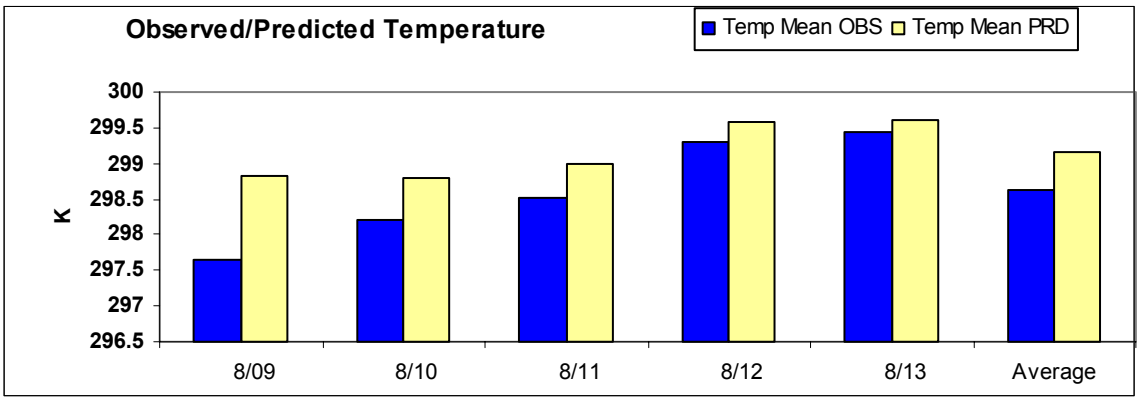
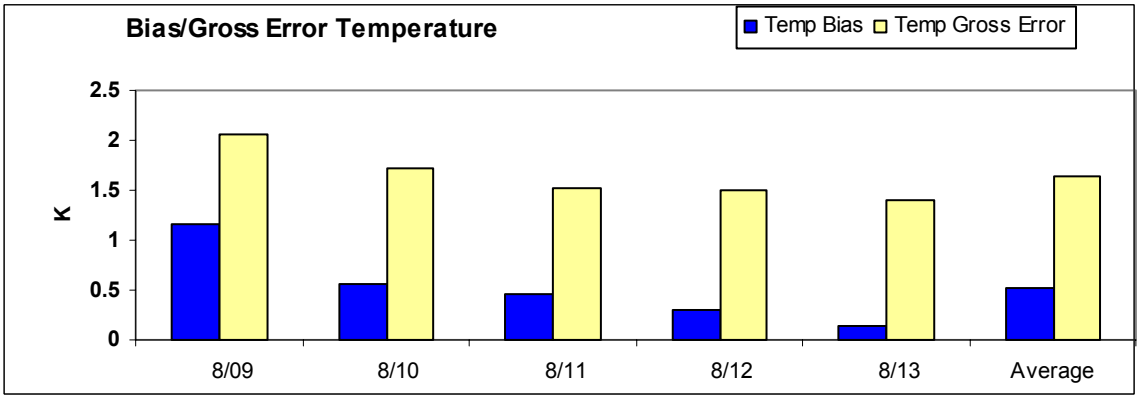
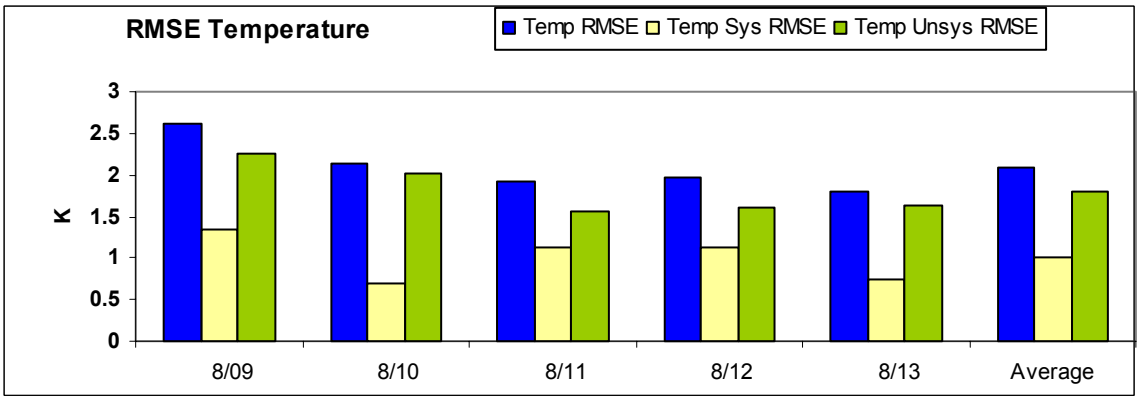

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
8/ 9
8/10
8/11
8/12
8/13
Bias Windspeed
BiasWndSpd
m/s
3
2
1
0
-1
8/ 9
8/10
8/11
8/12
8/13
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
8/ 9
8/10
8/11
8/12
8/13
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
8/ 9
8/10
8/11
8/12
8/13
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
8/ 9
8/10
8/11
8/12
8/13
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
8/ 9
8/10
8/11
8/12
8/13

Figure 99


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
300
299.5
299
298.5
298
297.5
297
296.5
8/09
8/10
8/11
8/12
8/13
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
8/09
8/10
8/11
8/12
8/13
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
8/09
8/10
8/11
8/12
8/13
Average

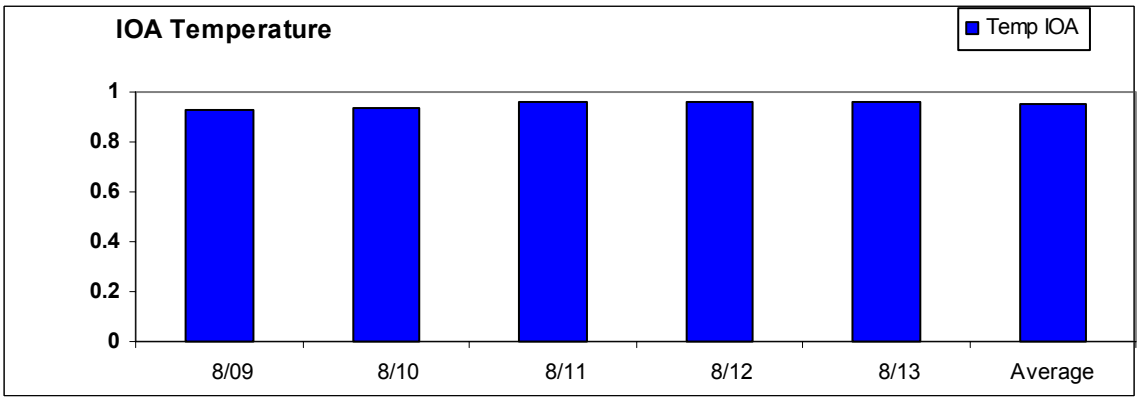

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
8/09
8/10
8/11
8/12
8/13
Average

Figure 100

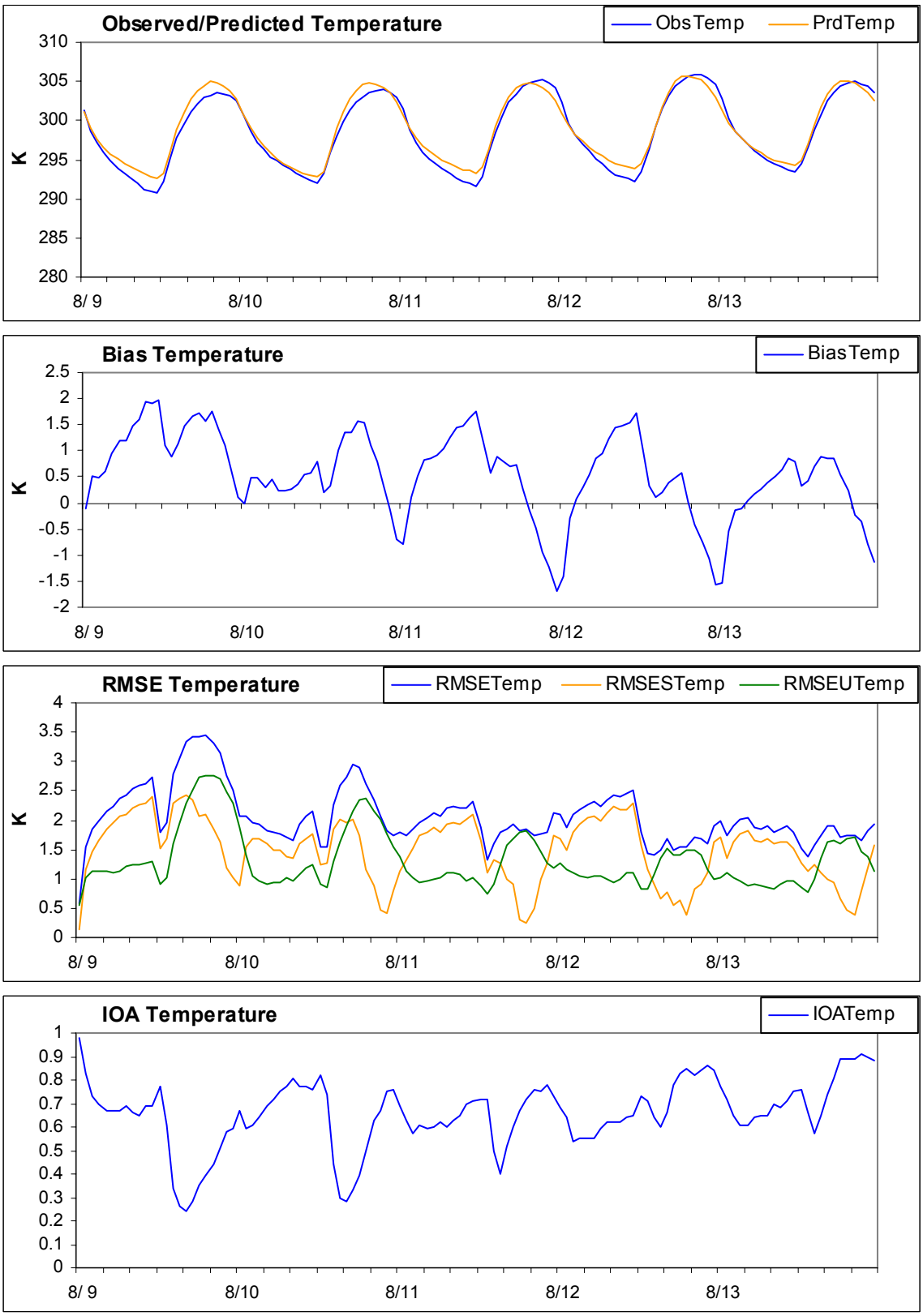

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
280
8/ 9
8/10
8/11
8/12
8/13
Bias Temperature
BiasTemp
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
8/ 9
8/10
8/11
8/12
8/13
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
8/ 9
8/10
8/11
8/12
8/13
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/ 9
8/10
8/11
8/12
8/13

Figure 101

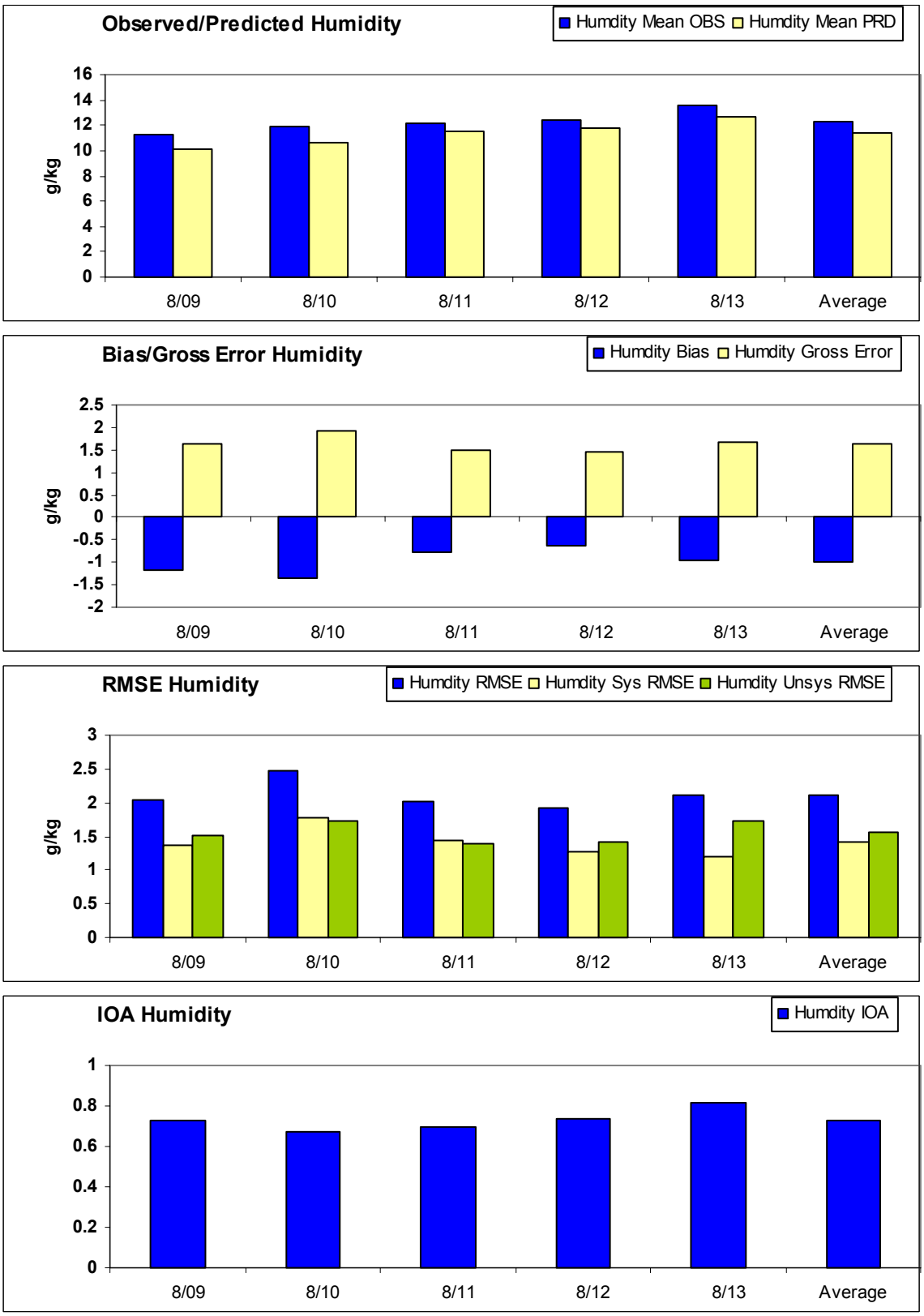

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
8/09
8/10
8/11
8/12
8/13
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
8/09
8/10
8/11
8/12
8/13
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
8/09
8/10
8/11
8/12
8/13
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
8/09
8/10
8/11
8/12
8/13
Average

Figure 102

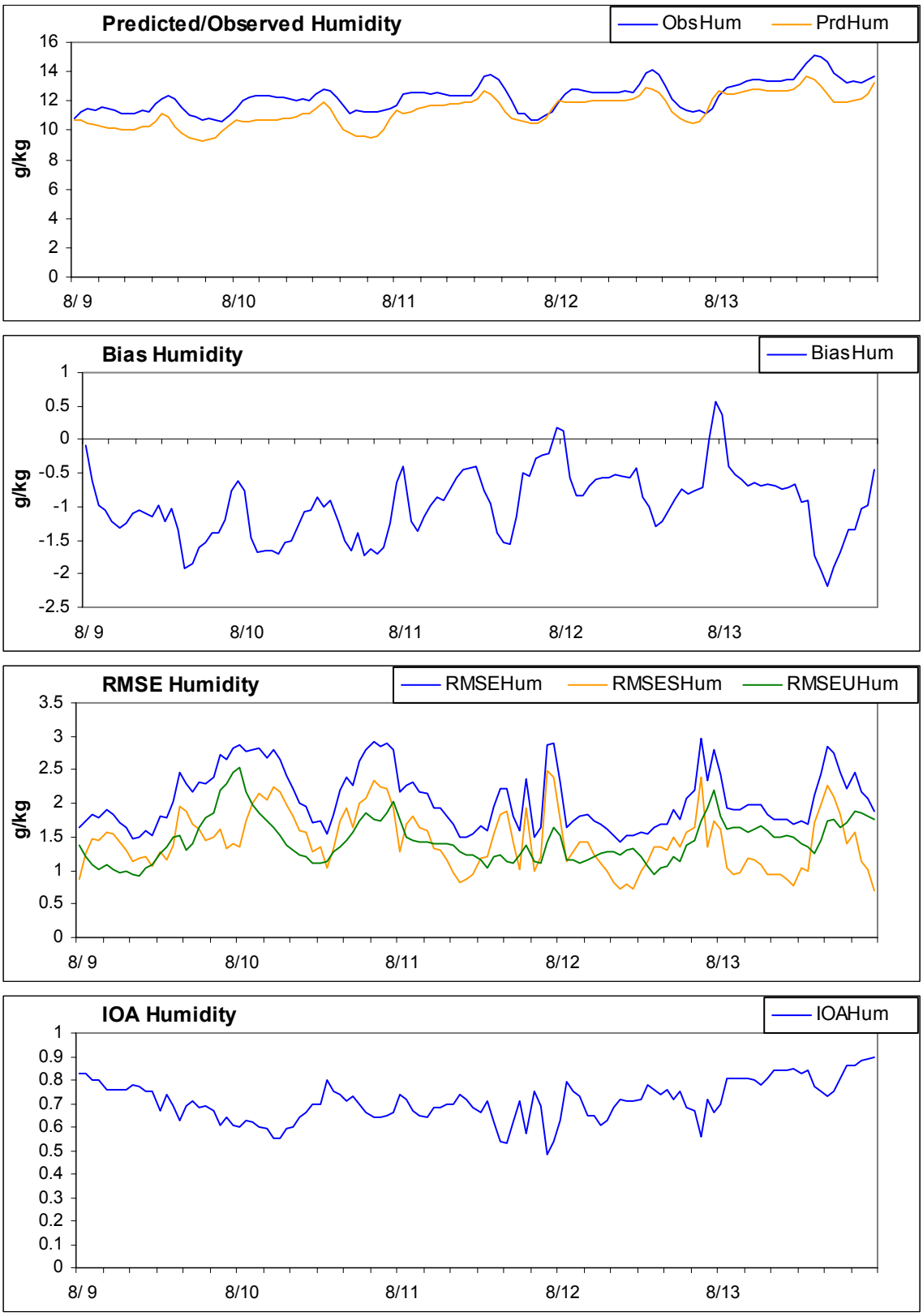

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
16
14
12
10
8
6
4
2
0
8/ 9
8/10
8/11
8/12
8/13
Bias Humidity
BiasHum
g/kg
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
8/ 9
8/10
8/11
8/12
8/13
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
8/ 9
8/10
8/11
8/12
8/13
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/ 9
8/10
8/11
8/12
8/13

Figure 103

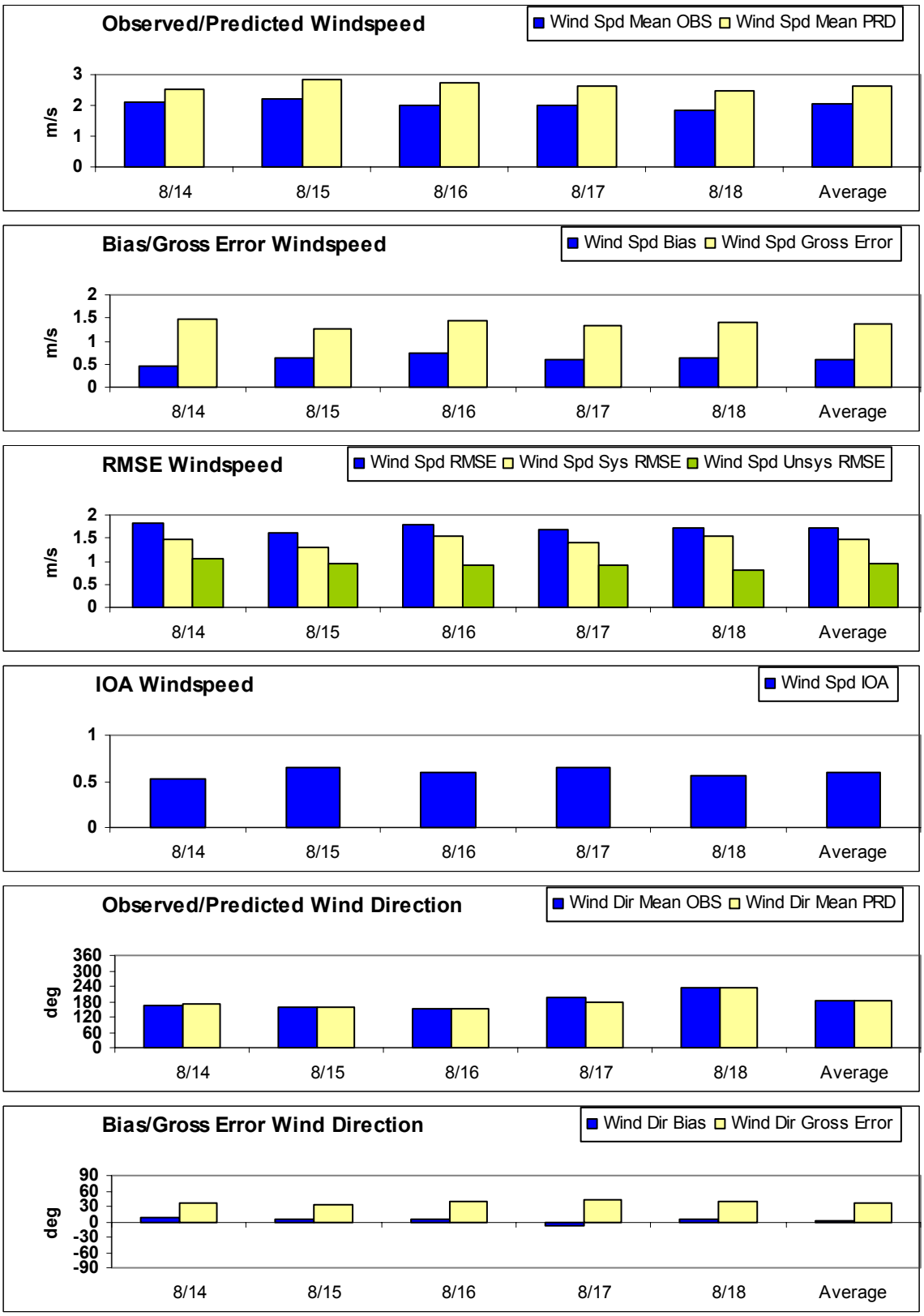

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
8/14
8/15
8/16
8/17
8/18
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
8/14
8/15
8/16
8/17
8/18
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
8/14
8/15
8/16
8/17
8/18
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
8/14
8/15
8/16
8/17
8/18
Average

Figure 104

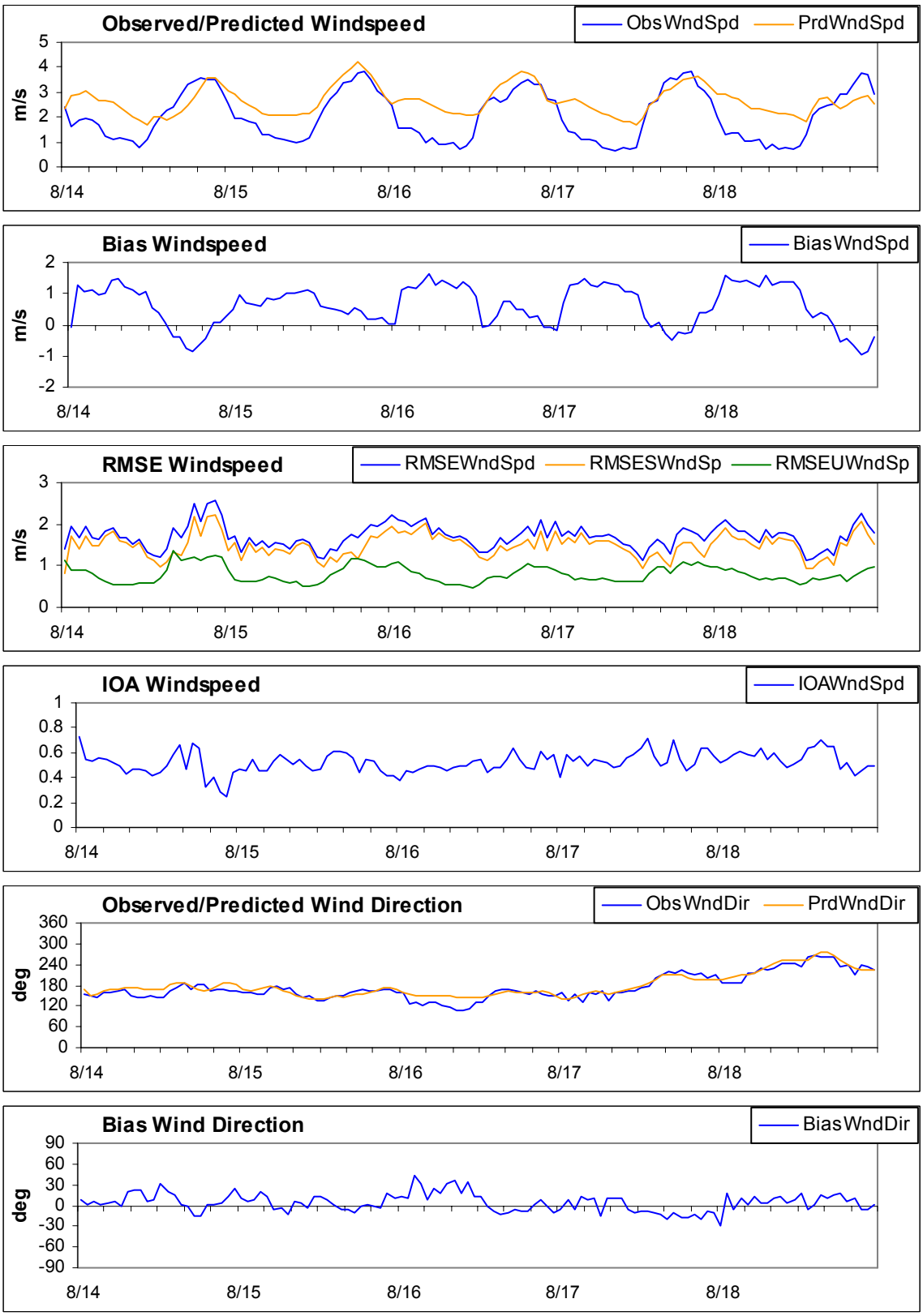
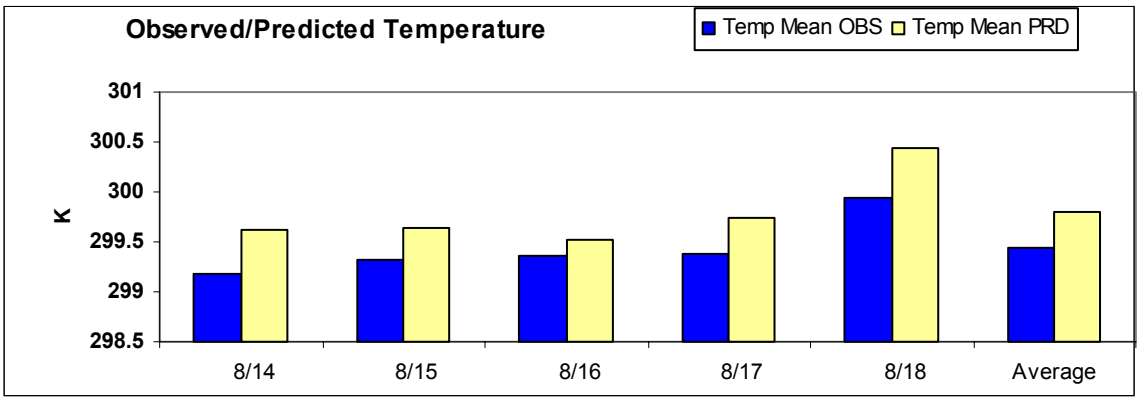
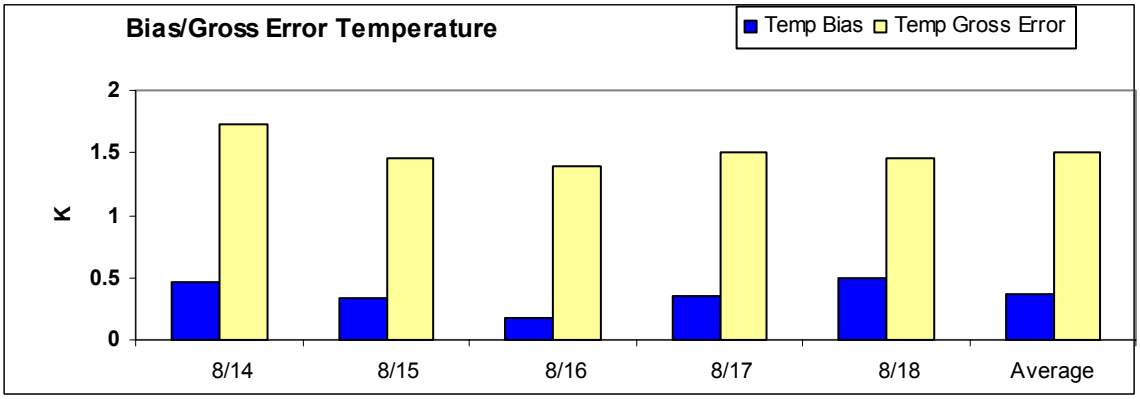
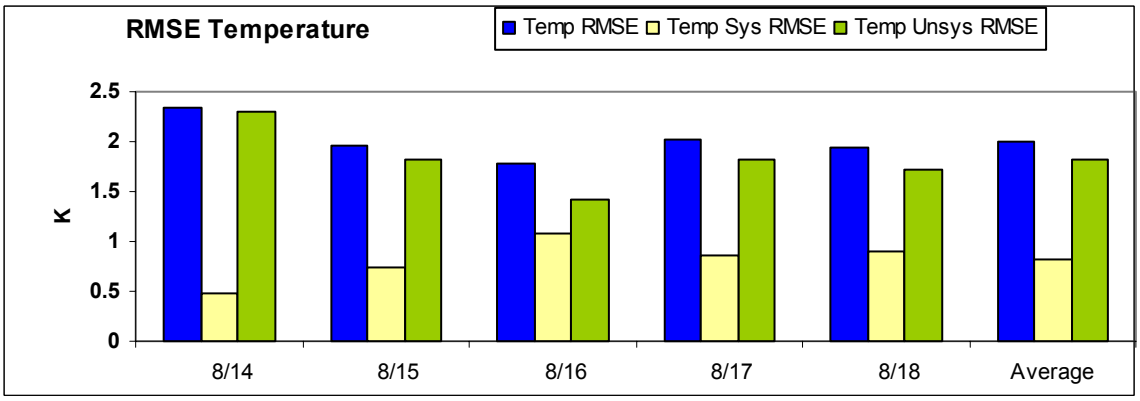

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
8/14
8/15
8/16
8/17
8/18
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
8/14
8/15
8/16
8/17
8/18
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
8/14
8/15
8/16
8/17
8/18
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
8/14
8/15
8/16
8/17
8/18
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
8/14
8/15
8/16
8/17
8/18
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
8/14
8/15
8/16
8/17
8/18

Figure 105


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
301
300.5
300
299.5
299
298.5
8/14
8/15
8/16
8/17
8/18
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
Average

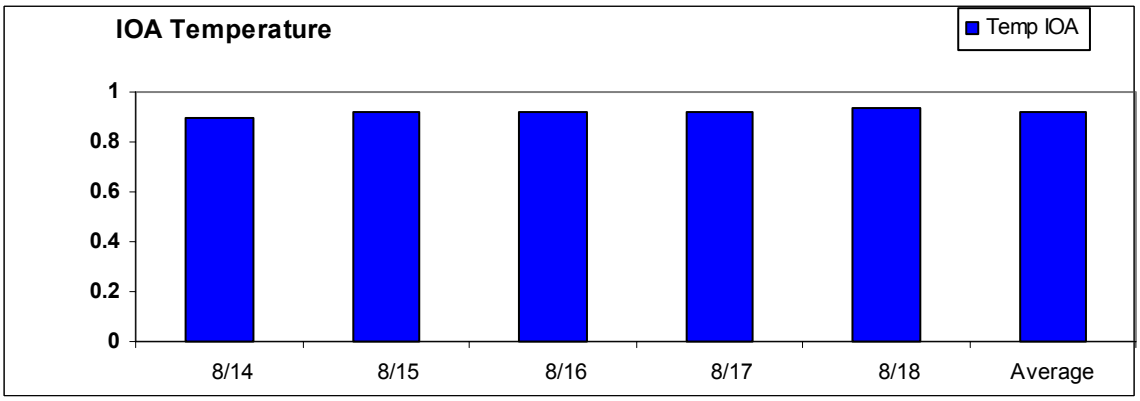

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
8/14
8/15
8/16
8/17
8/18
Average

Figure 106

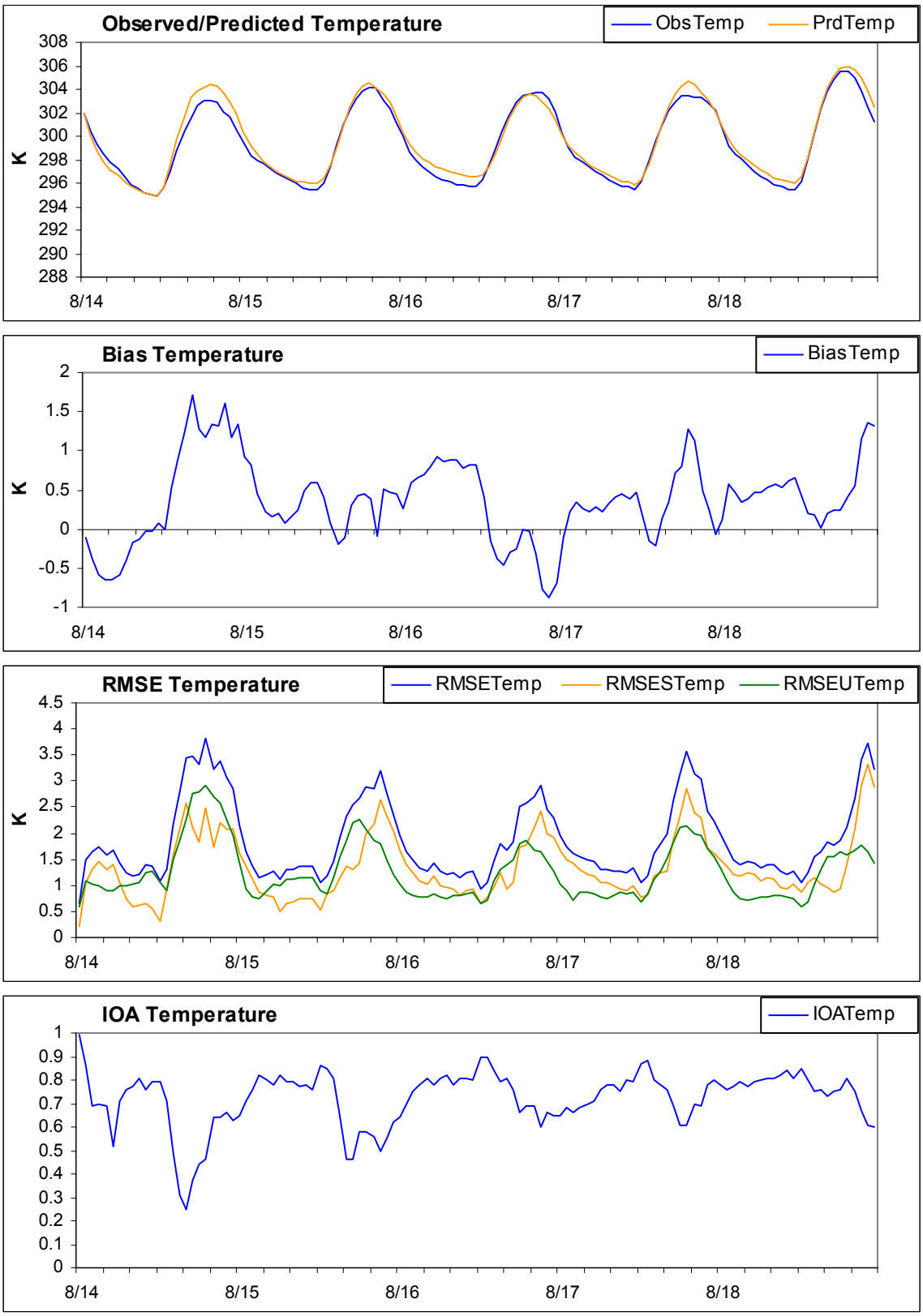

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
308
306
304
302
300
298
296
294
292
290
288
8/14
8/15
8/16
8/17
8/18
Bias Temperature
BiasTemp
K
2
1.5
1
0.5
0
-0.5
-1
8/14
8/15
8/16
8/17
8/18
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/14
8/15
8/16
8/17
8/18

Figure 107

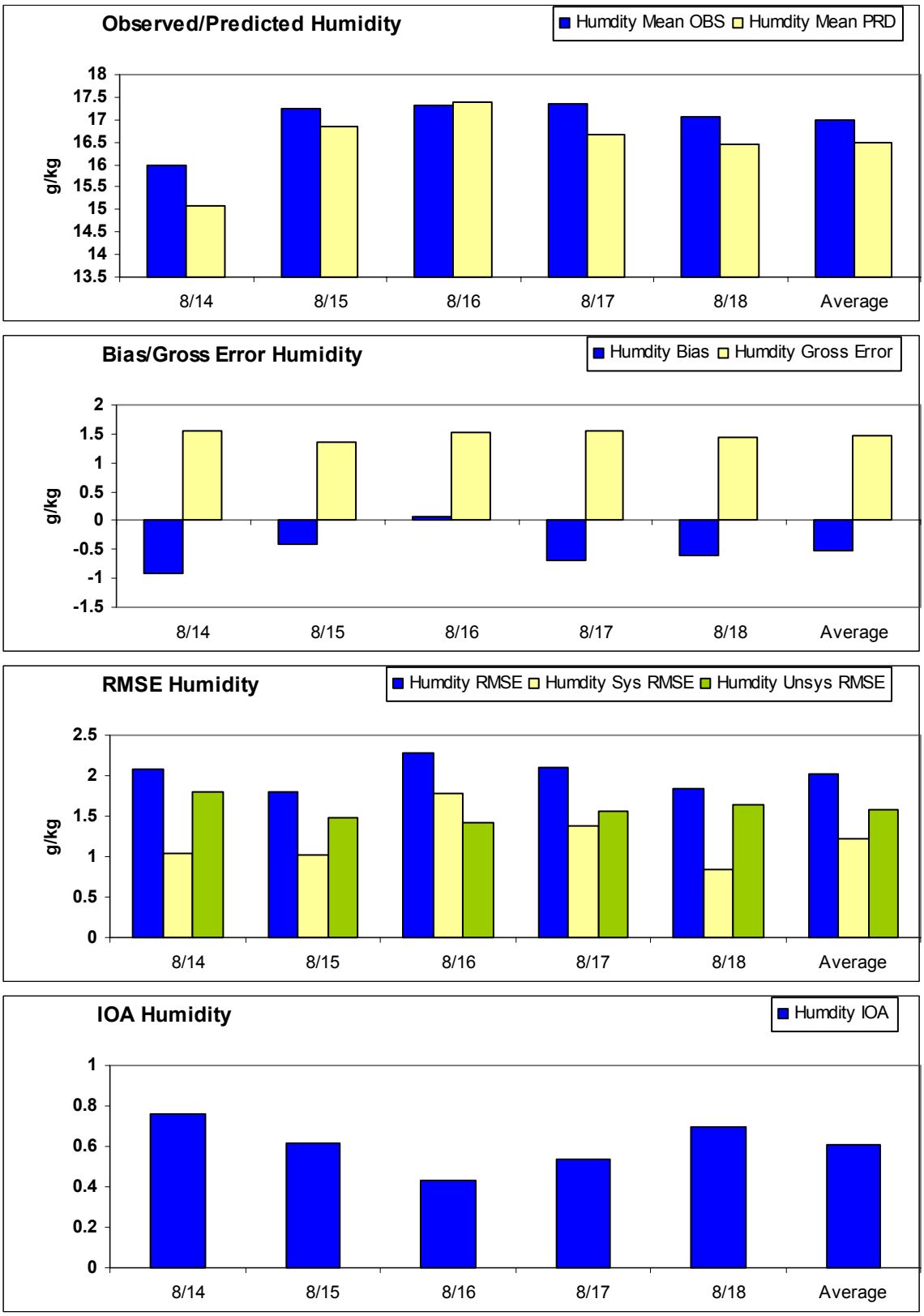

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
18
17.5
17
16.5
16
15.5
15
14.5
14
13.5
8/14
8/15
8/16
8/17
8/18
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
8/14
8/15
8/16
8/17
8/18
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
8/14
8/15
8/16
8/17
8/18
Average

Figure 108

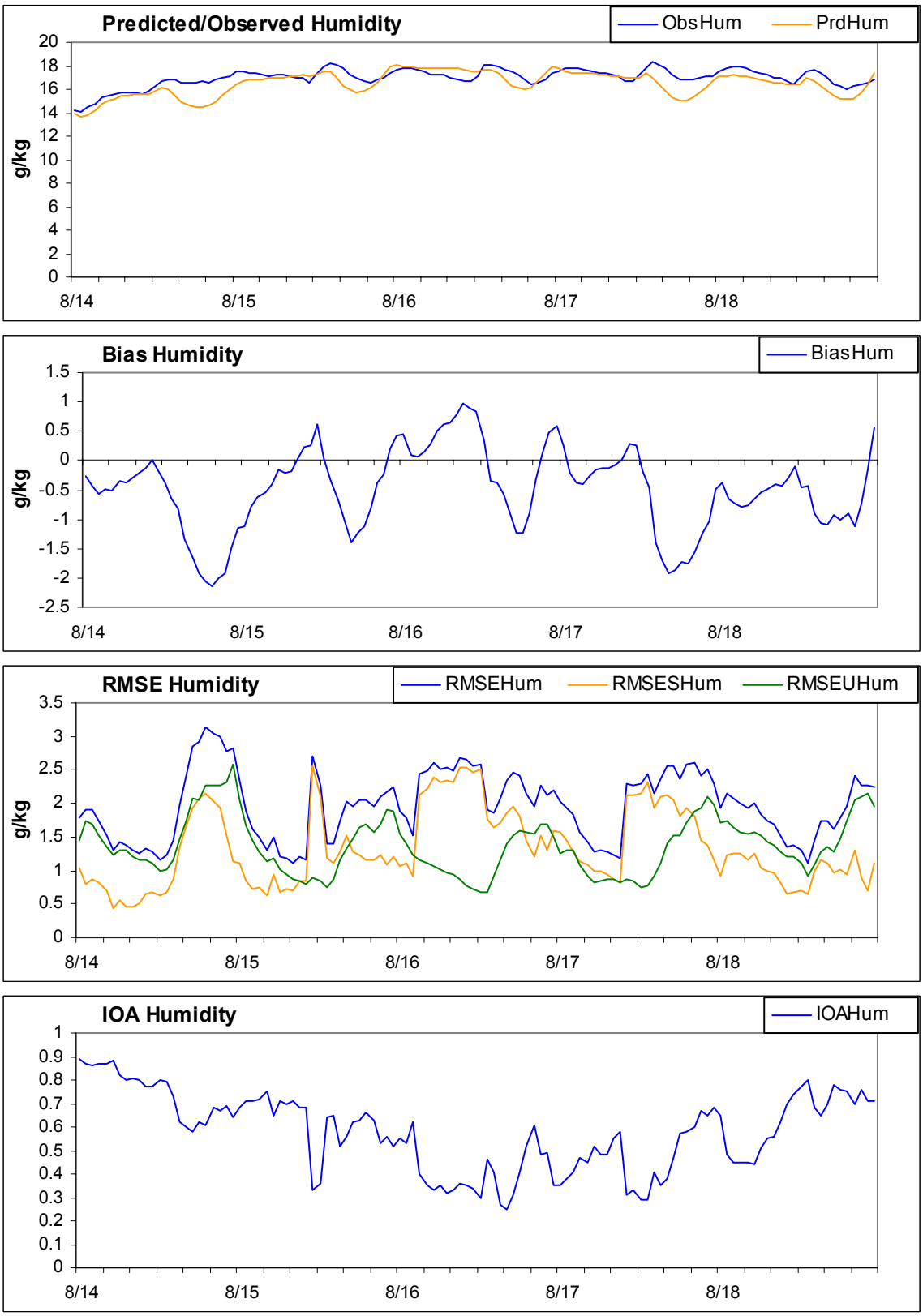

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
8/14
8/15
8/16
8/17
8/18
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
8/14
8/15
8/16
8/17
8/18
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3.5
3
2.5
2
1.5
1
0.5
0
8/14
8/15
8/16
8/17
8/18
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/14
8/15
8/16
8/17
8/18

Figure 109

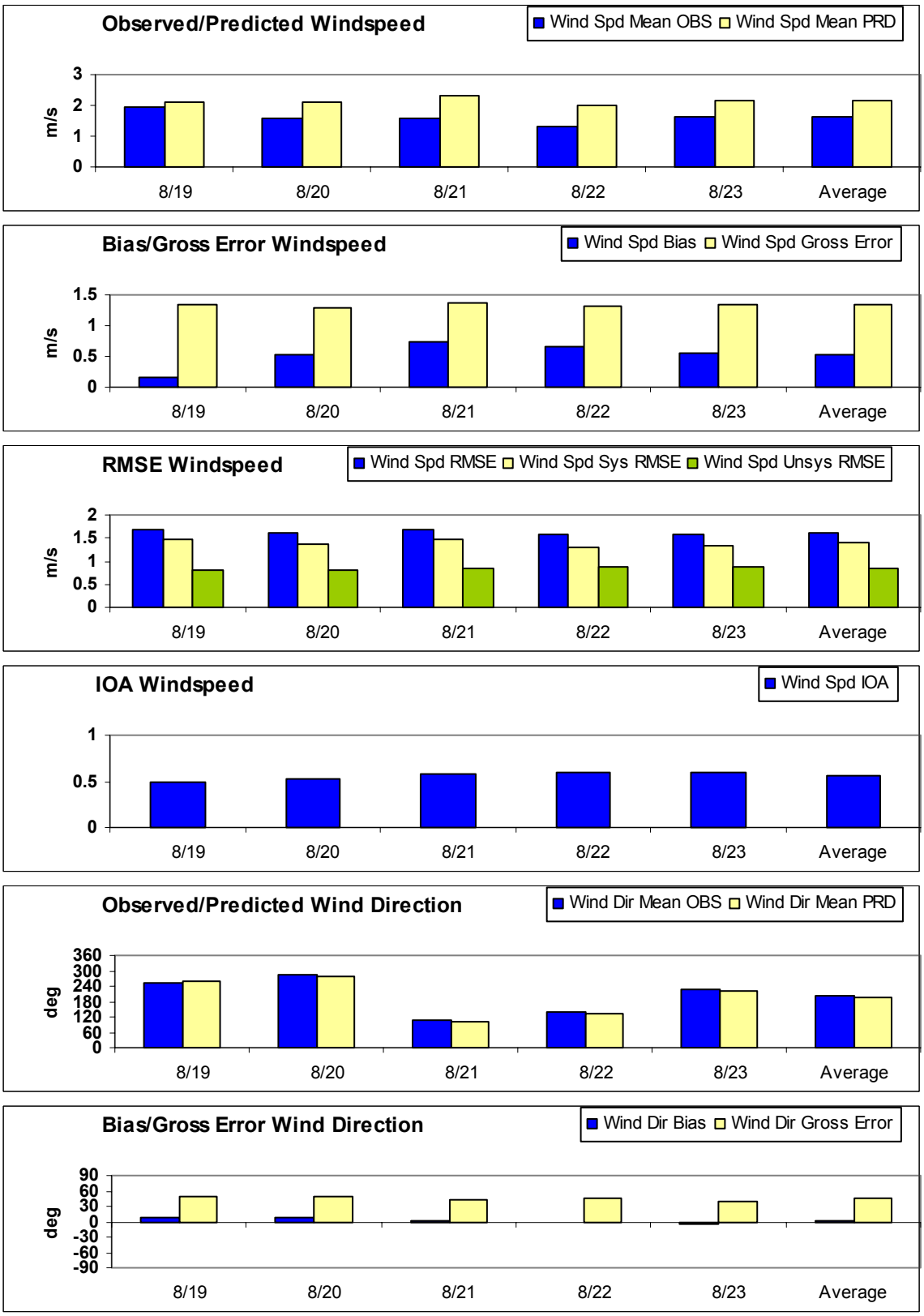

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
8/19
8/20
8/21
8/22
8/23
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
8/19
8/20
8/21
8/22
8/23
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
8/19
8/20
8/21
8/22
8/23
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
8/19
8/20
8/21
8/22
8/23
Average

Figure 110

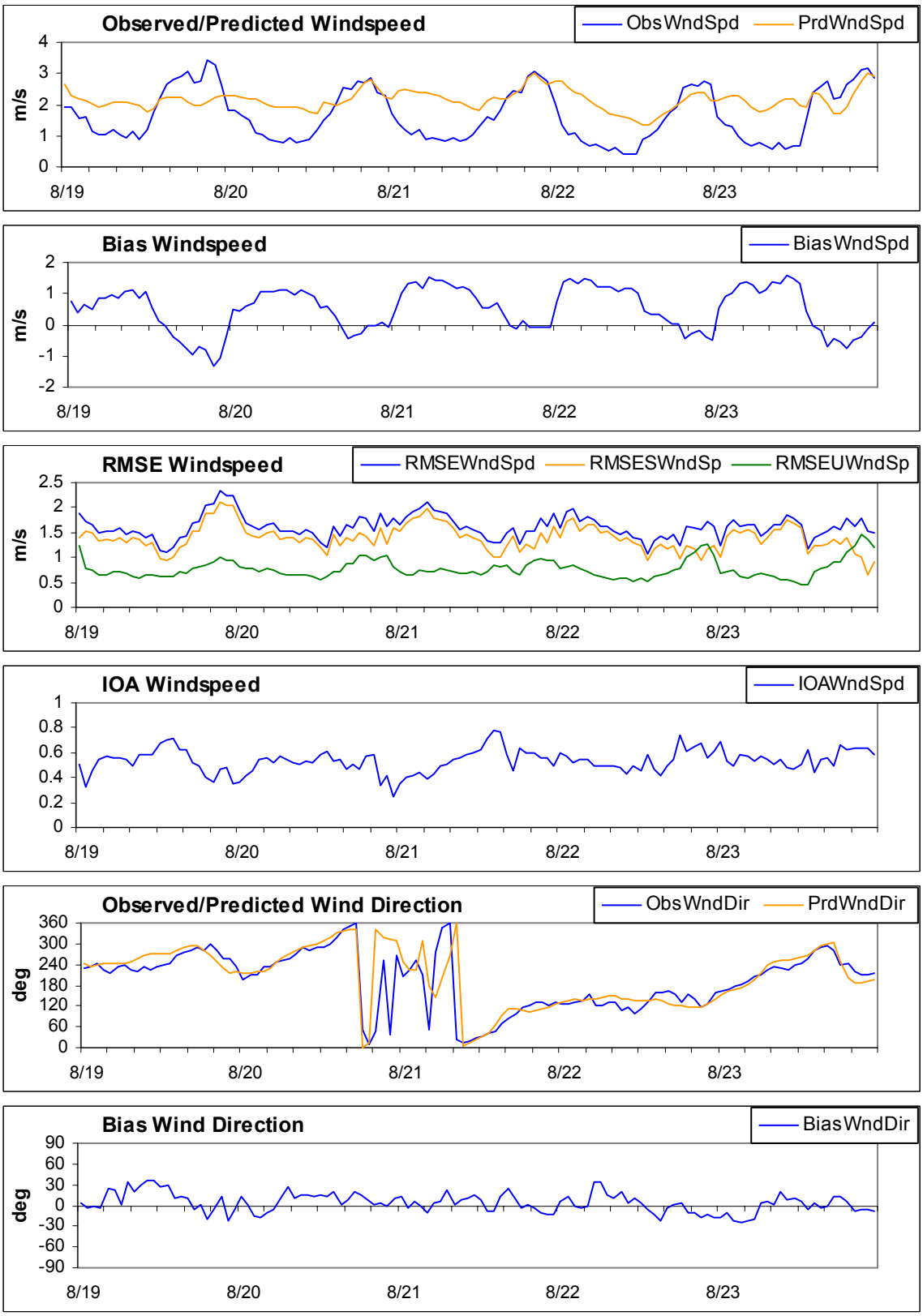
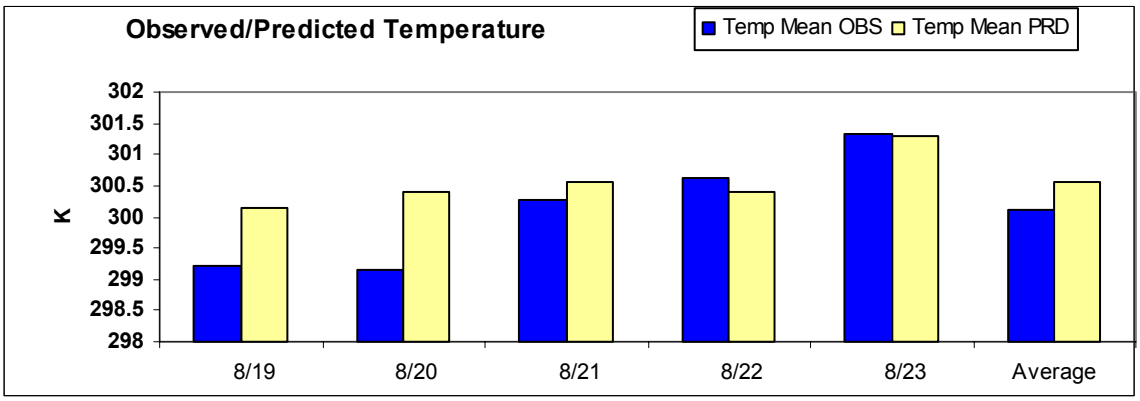
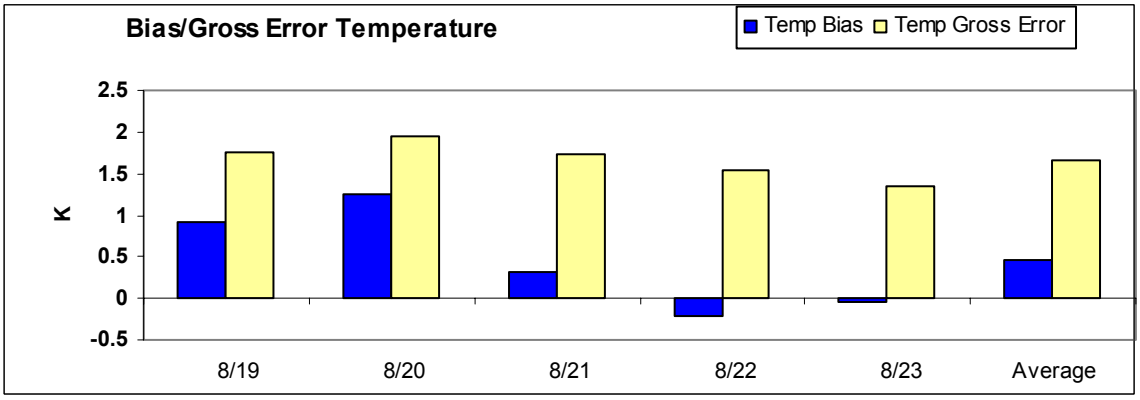
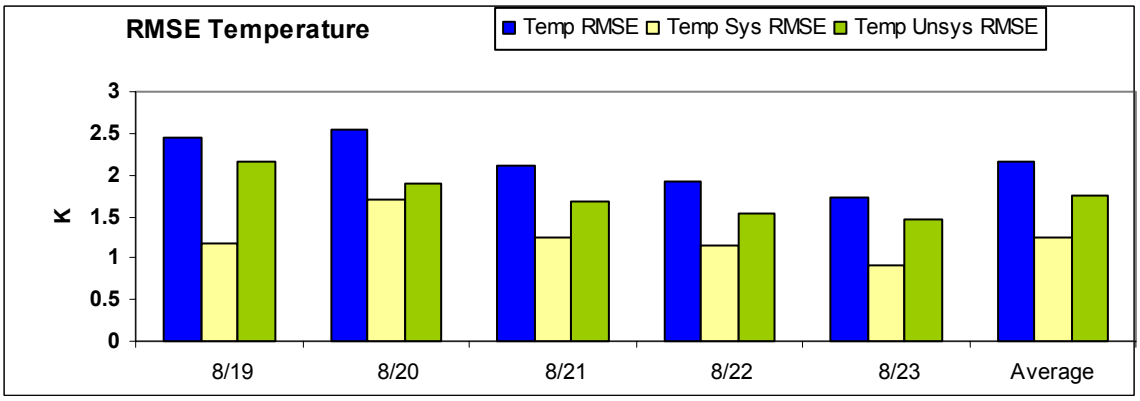

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
4
3
2
1
0
8/19
8/20
8/21
8/22
8/23
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
8/19
8/20
8/21
8/22
8/23
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
8/19
8/20
8/21
8/22
8/23
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
8/19
8/20
8/21
8/22
8/23
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
8/19
8/20
8/21
8/22
8/23

Figure 111


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
302
301.5
301
300.5
300
299.5
299
298.5
298
8/19
8/20
8/21
8/22
8/23
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
8/19
8/20
8/21
8/22
8/23
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
Average

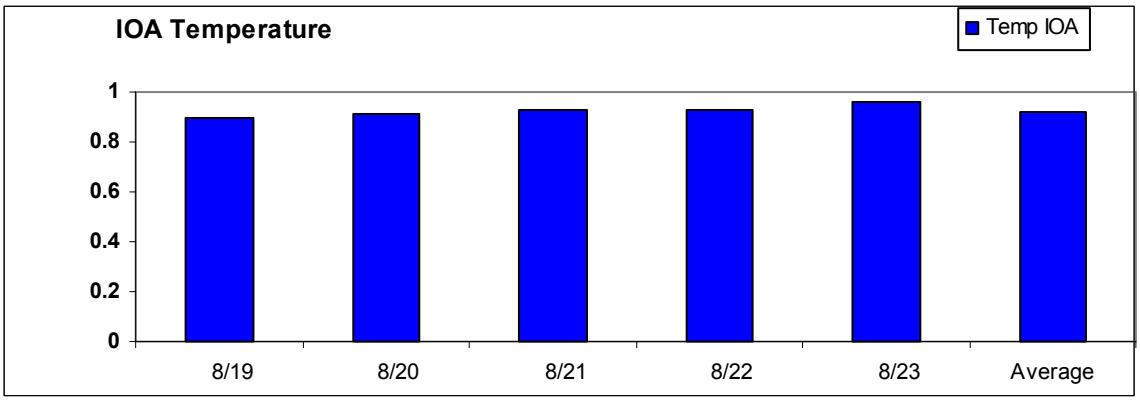

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
8/19
8/20
8/21
8/22
8/23
Average

Figure 112

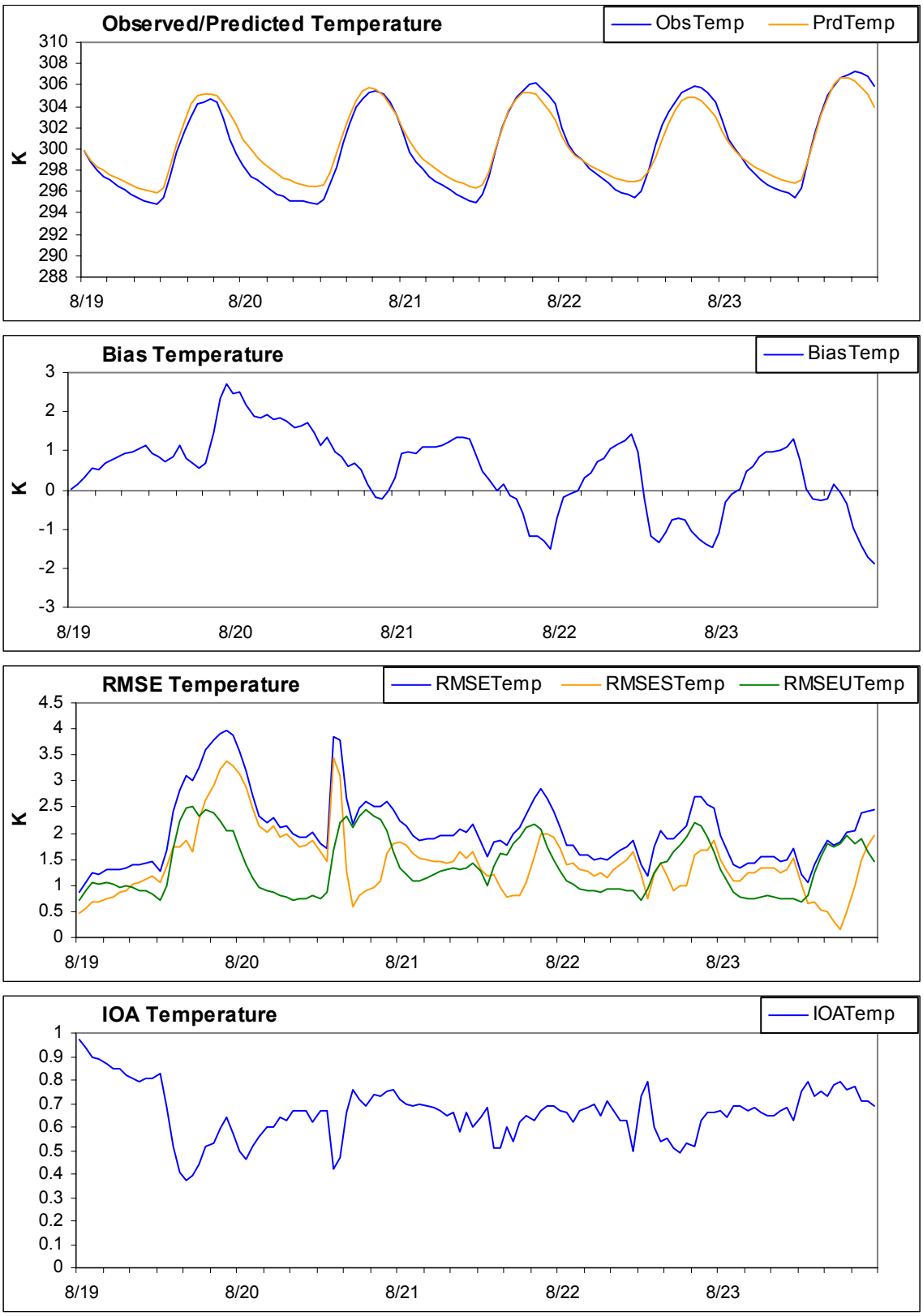

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
308
306
304
302
300
298
296
294
292
290
288
8/19
8/20
8/21
8/22
8/23
Bias Temperature
BiasTemp
K
3
2
1
0
-1
-2
-3
8/19
8/20
8/21
8/22
8/23
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/19
8/20
8/21
8/22
8/23

Figure 113

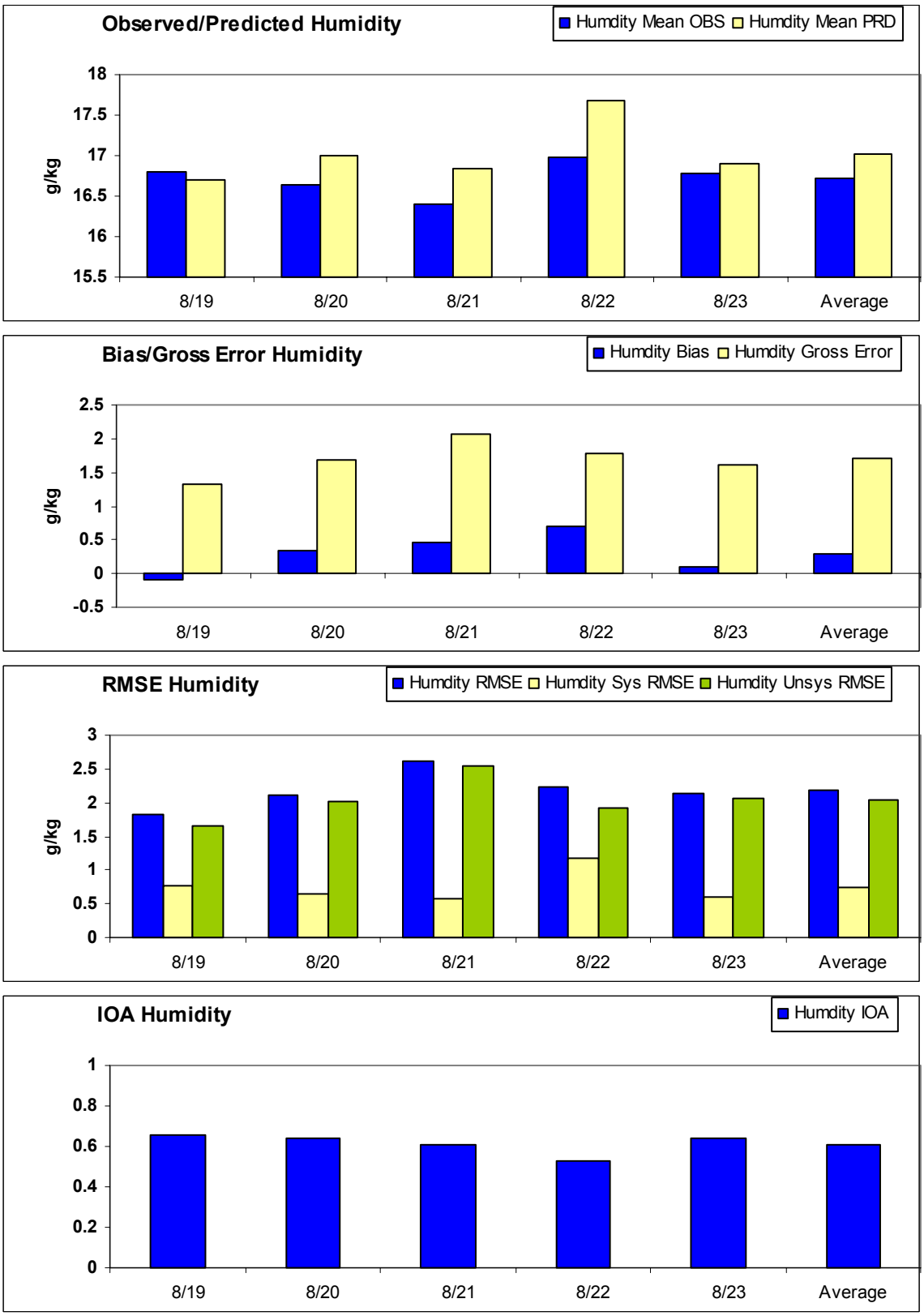

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
18
17.5
17
16.5
16
15.5
8/19
8/20
8/21
8/22
8/23
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
8/19
8/20
8/21
8/22
8/23
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
8/19
8/20
8/21
8/22
8/23
Average

Figure 114

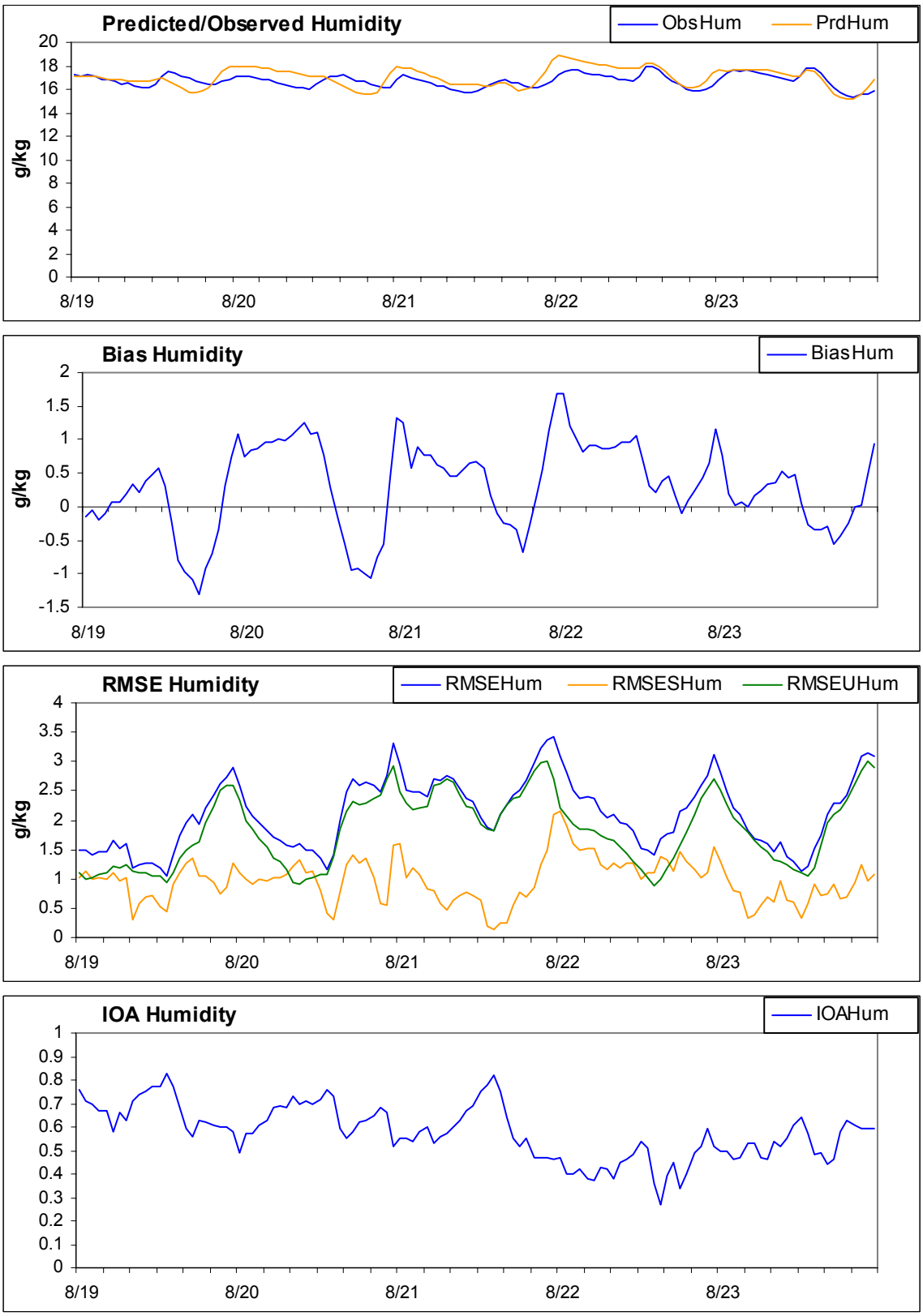

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
8/19
8/20
8/21
8/22
8/23
Bias Humidity
BiasHum
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
8/19
8/20
8/21
8/22
8/23
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
8/19
8/20
8/21
8/22
8/23
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/19
8/20
8/21
8/22
8/23

Figure 115

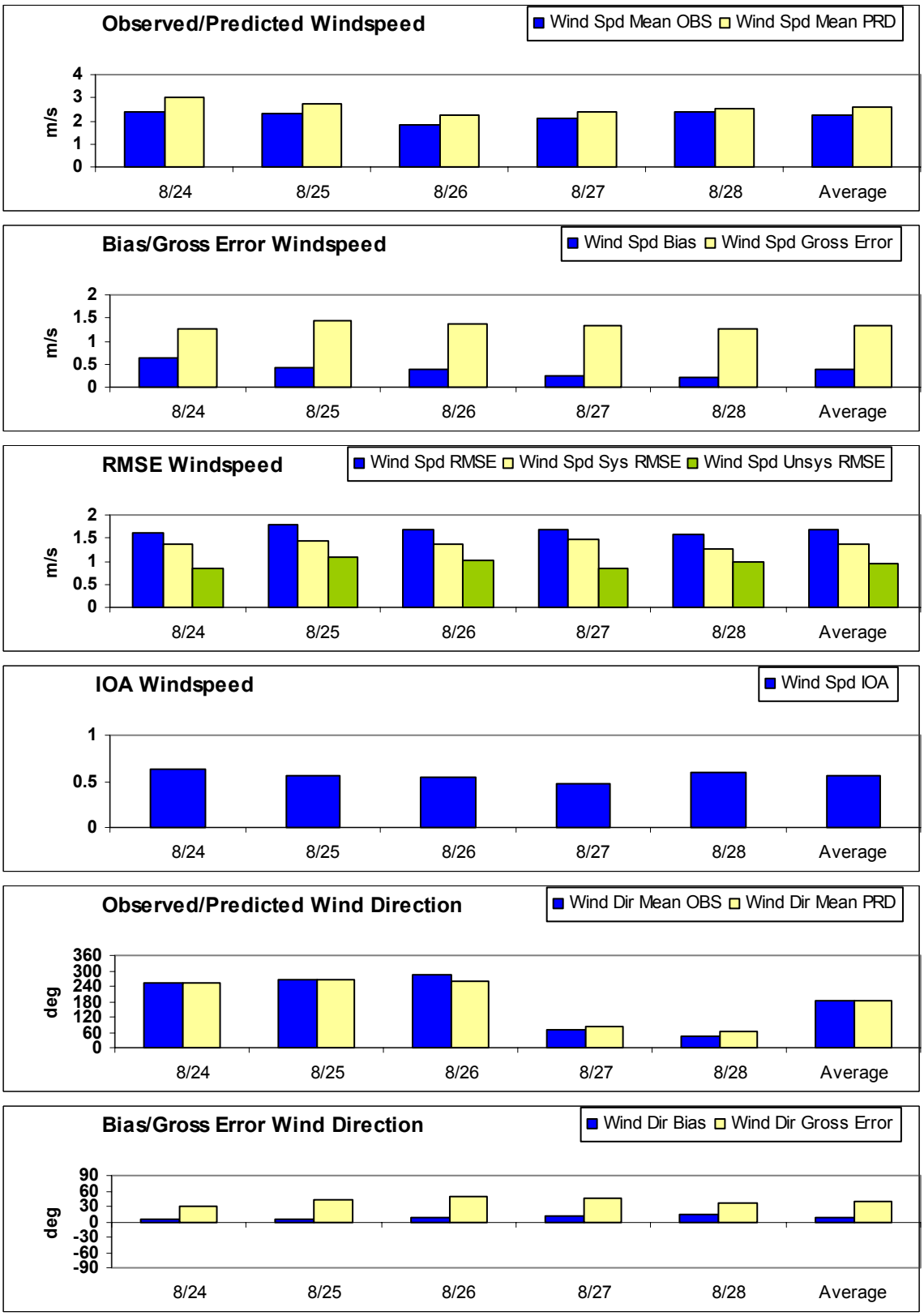
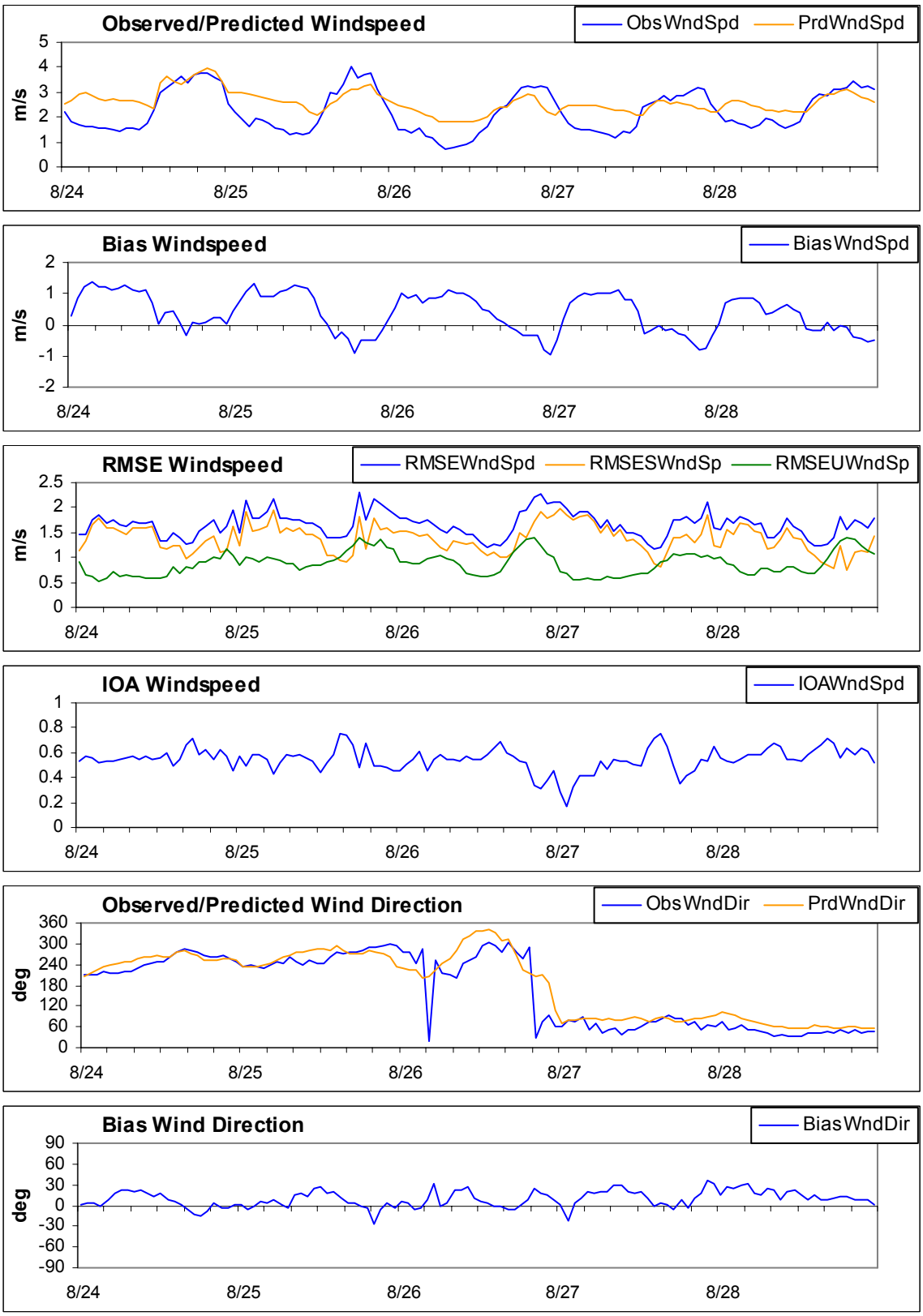
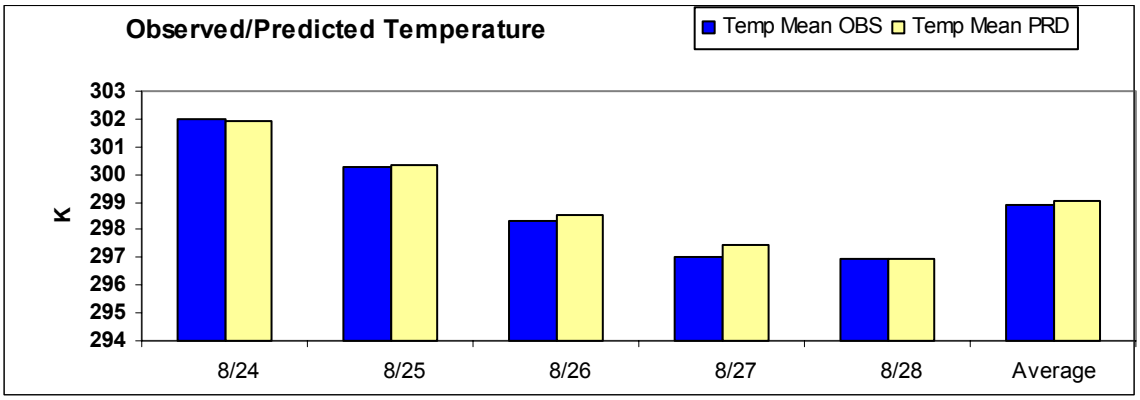
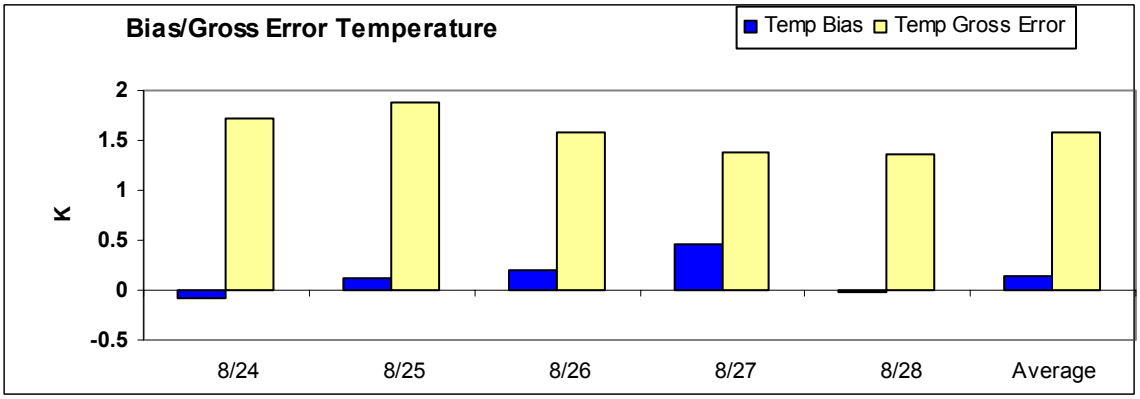
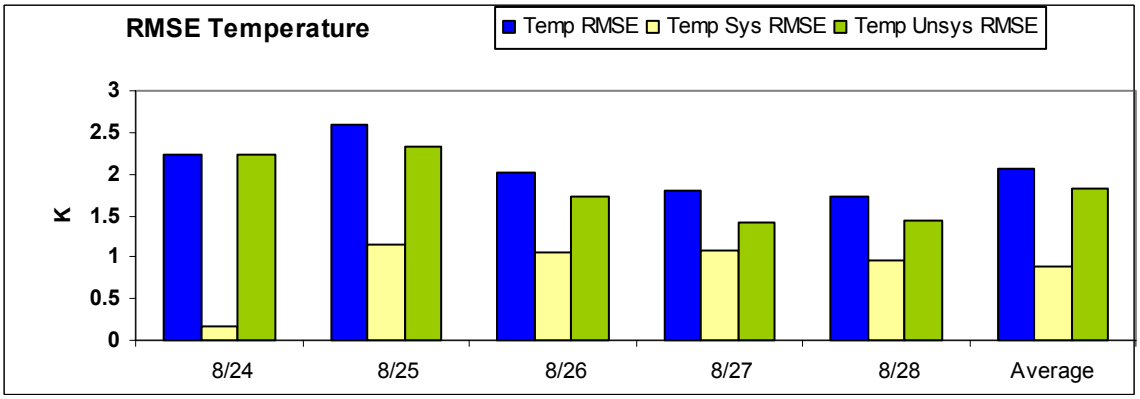

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
8/24
8/25
8/26
8/27
8/28
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
8/24
8/25
8/26
8/27
8/28
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
8/24
8/25
8/26
8/27
8/28
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
8/24
8/25
8/26
8/27
8/28
Average

Figure 116


Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
8/24
8/25
8/26
8/27
8/28
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
-2
8/24
8/25
8/26
8/27
8/28
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
8/24
8/25
8/26
8/27
8/28
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
8/24
8/25
8/26
8/27
8/28
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
8/24
8/25
8/26
8/27
8/28


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
303
302
301
300
299
298
297
296
295
294
8/24
8/25
8/26
8/27
8/28
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
8/24
8/25
8/26
8/27
8/28
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
Average

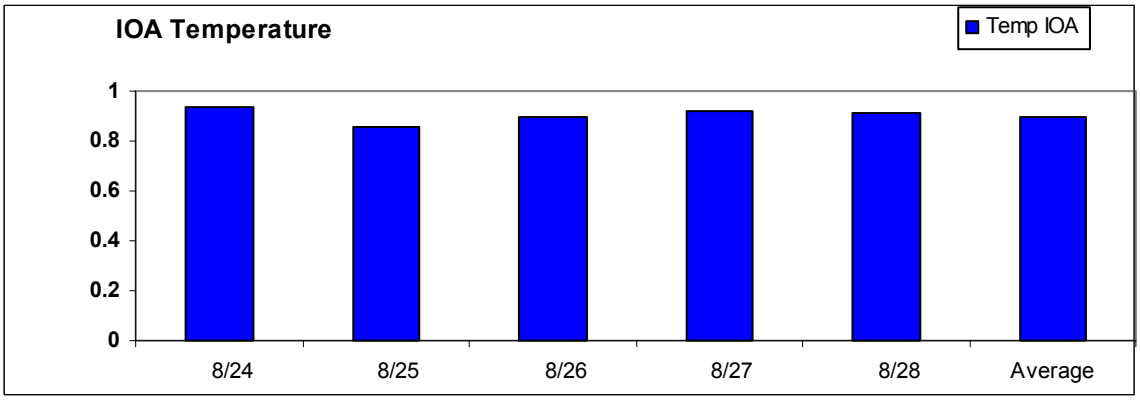

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
8/24
8/25
8/26
8/27
8/28
Average

Figure 117

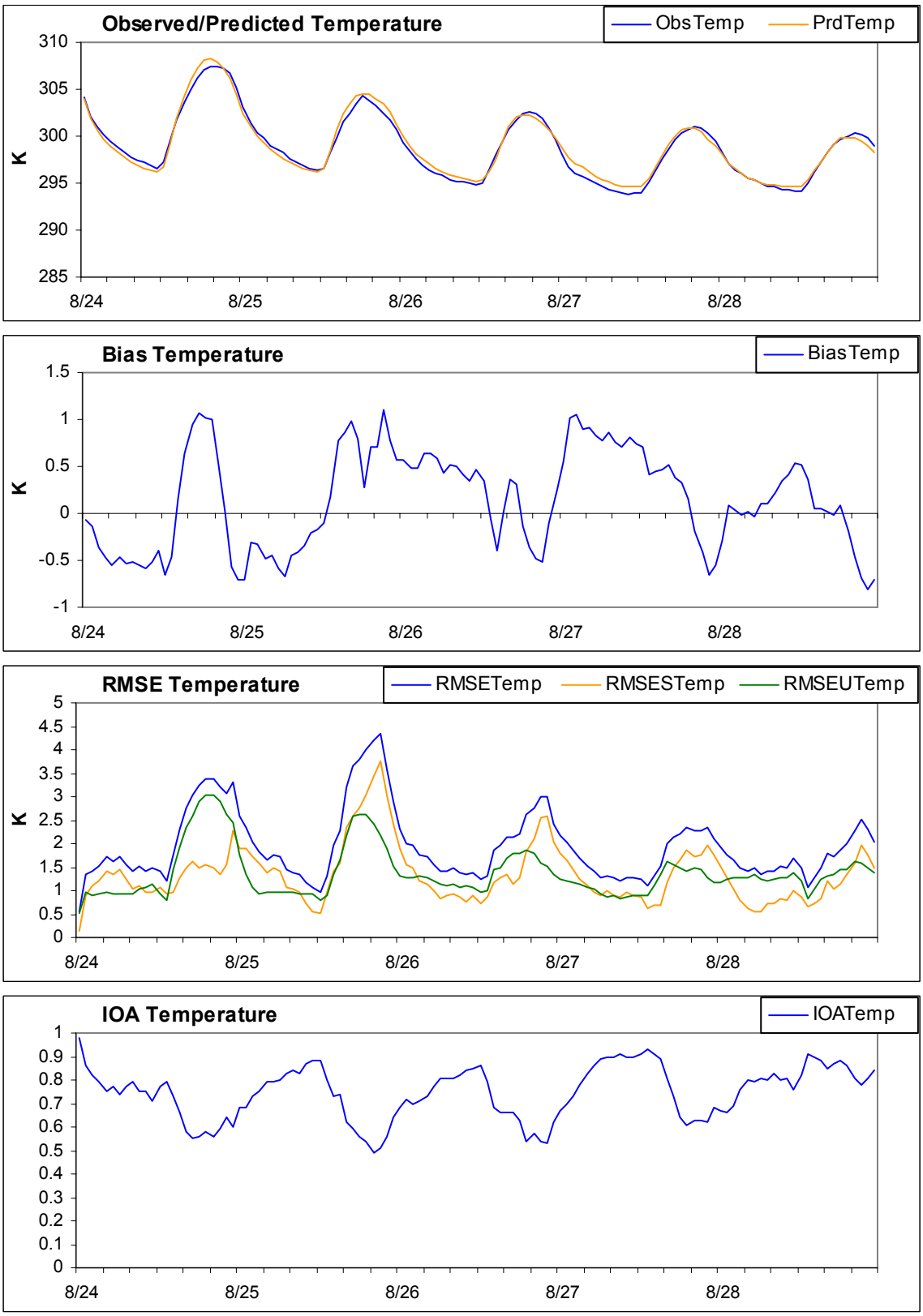

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
8/24
8/25
8/26
8/27
8/28
Bias Temperature
BiasTemp
K
1.5
1
0.5
0
-0.5
-1
8/24
8/25
8/26
8/27
8/28
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/24
8/25
8/26
8/27
8/28

Figure 118

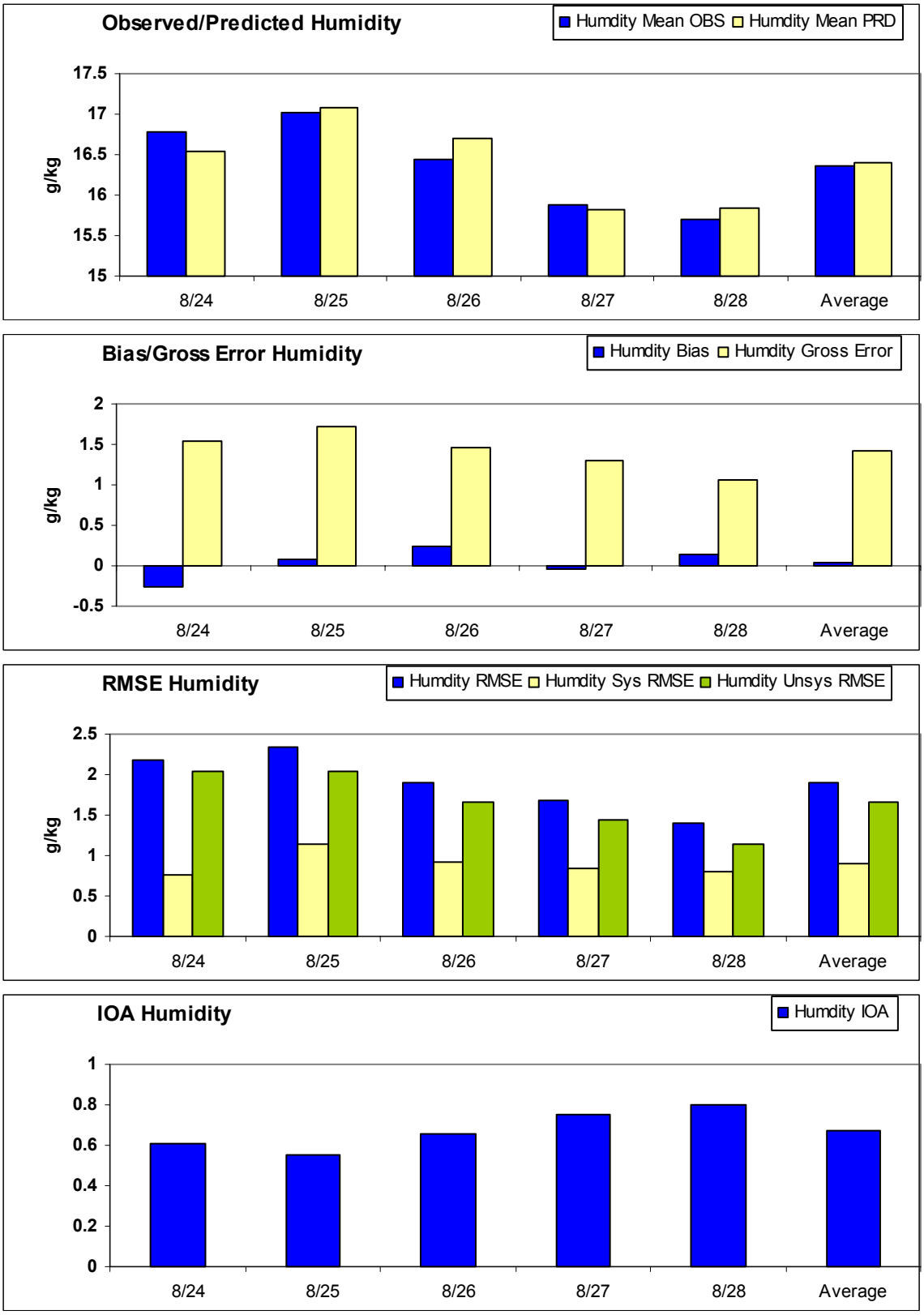

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17.5
17
16.5
16
15.5
15
8/24
8/25
8/26
8/27
8/28
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
8/24
8/25
8/26
8/27
8/28
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
8/24
8/25
8/26
8/27
8/28
Average

Figure 119

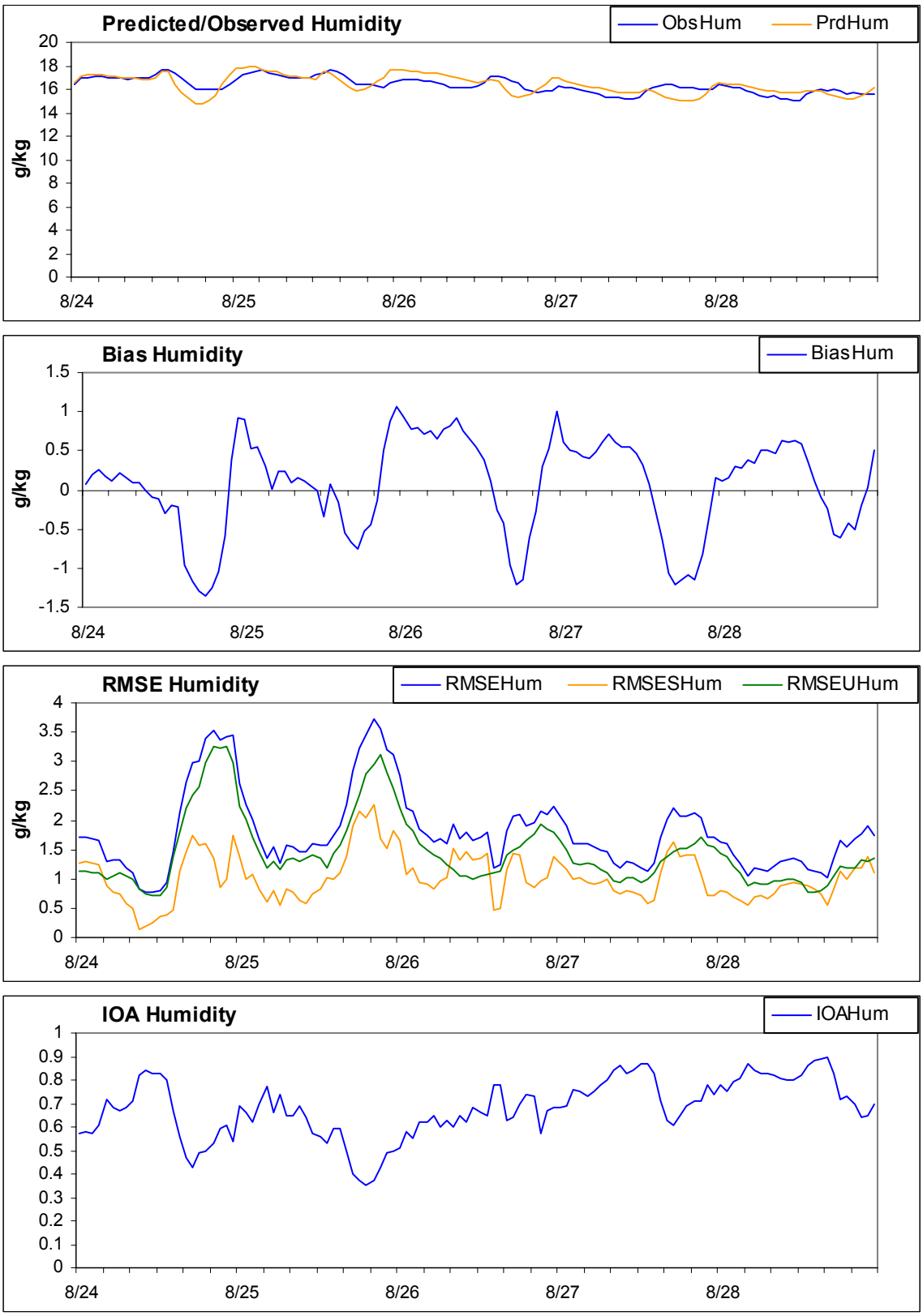

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
8/24
8/25
8/26
8/27
8/28
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
8/24
8/25
8/26
8/27
8/28
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
8/24
8/25
8/26
8/27
8/28
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/24
8/25
8/26
8/27
8/28

Figure 120

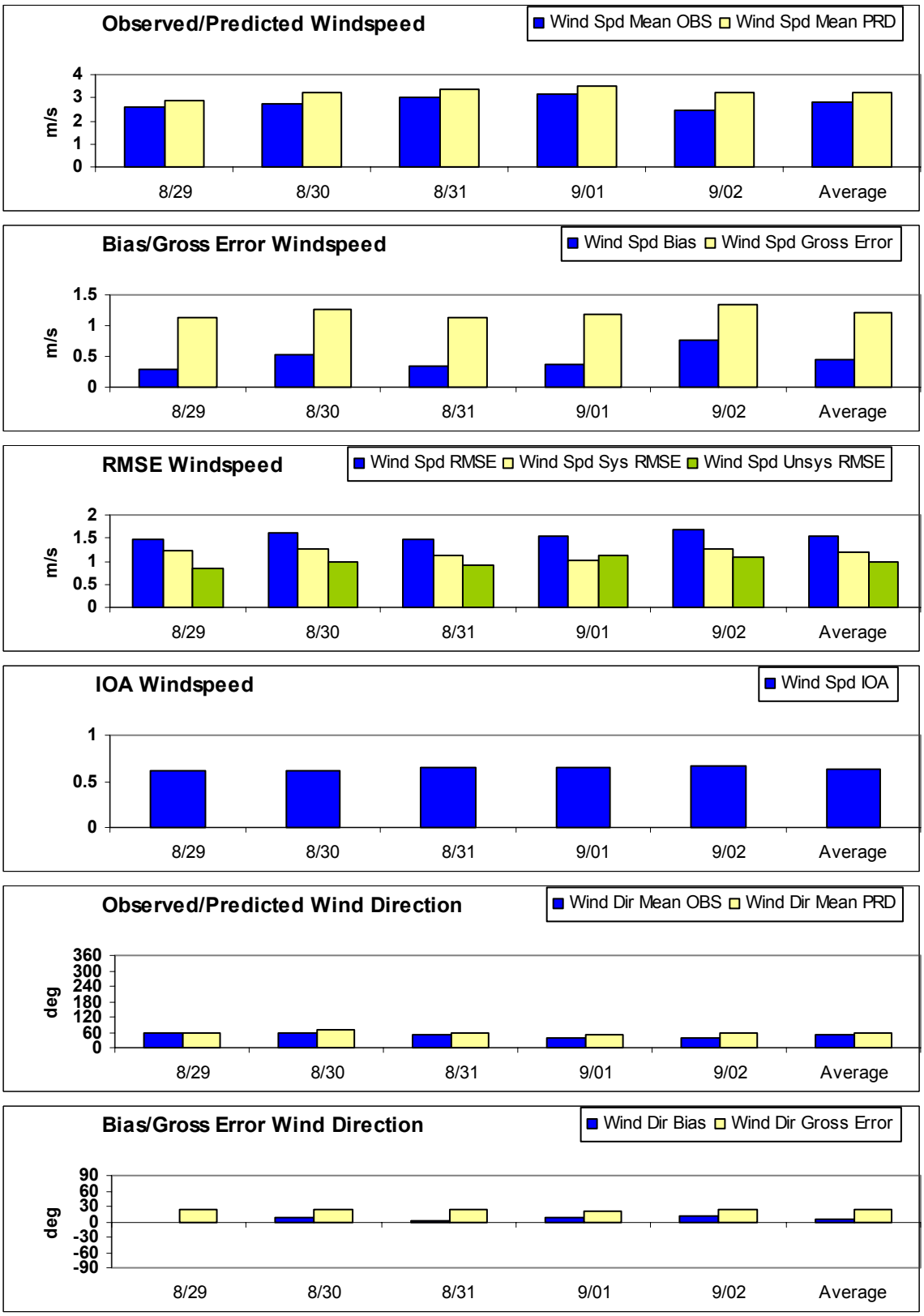

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
8/29
8/30
8/31
9/01
9/02
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
8/29
8/30
8/31
9/01
9/02
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
8/29
8/30
8/31
9/01
9/02
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
8/29
8/30
8/31
9/01
9/02
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
8/29
8/30
8/31
9/01
9/02
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
8/29
8/30
8/31
9/01
9/02
Average

Figure 121

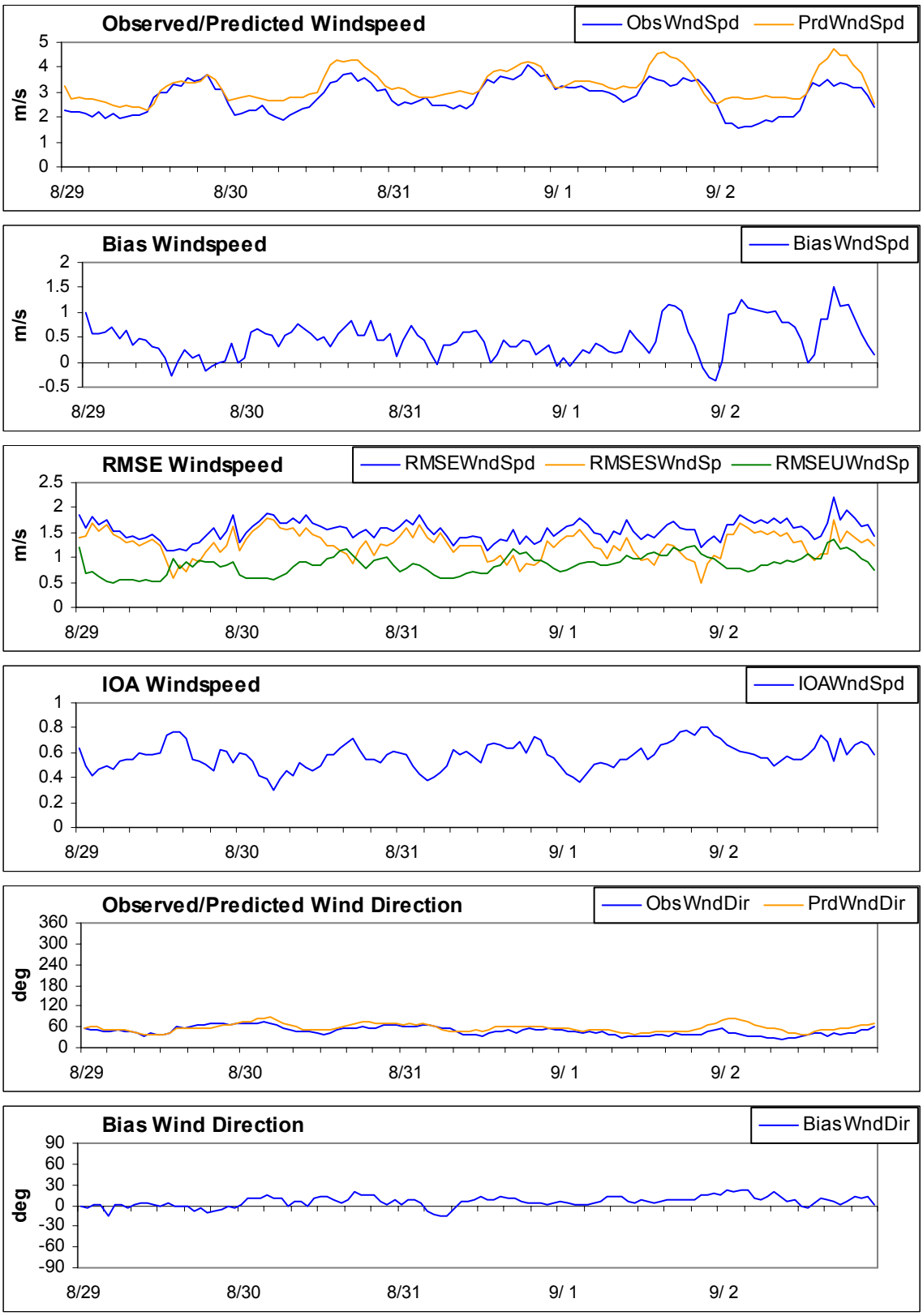
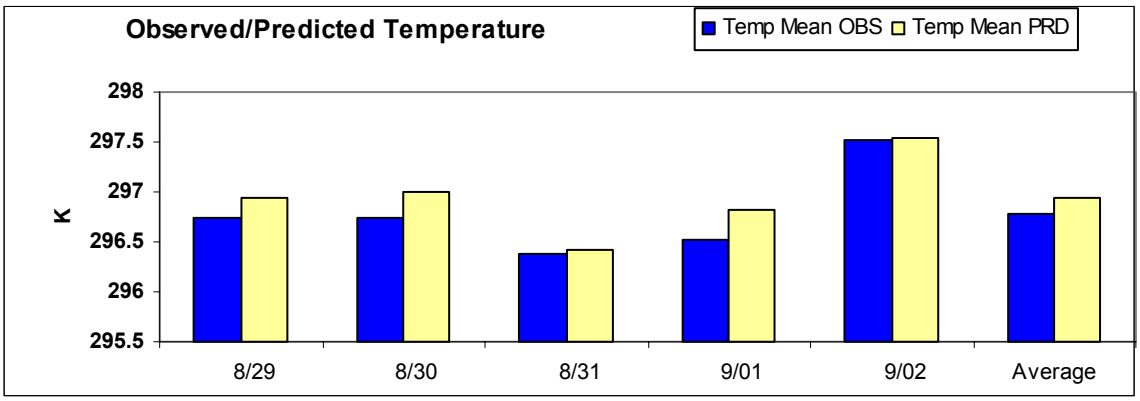
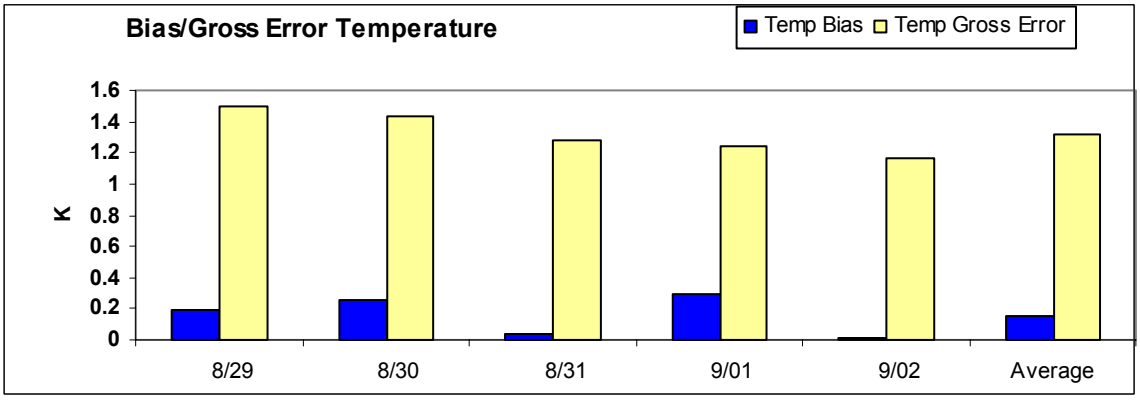
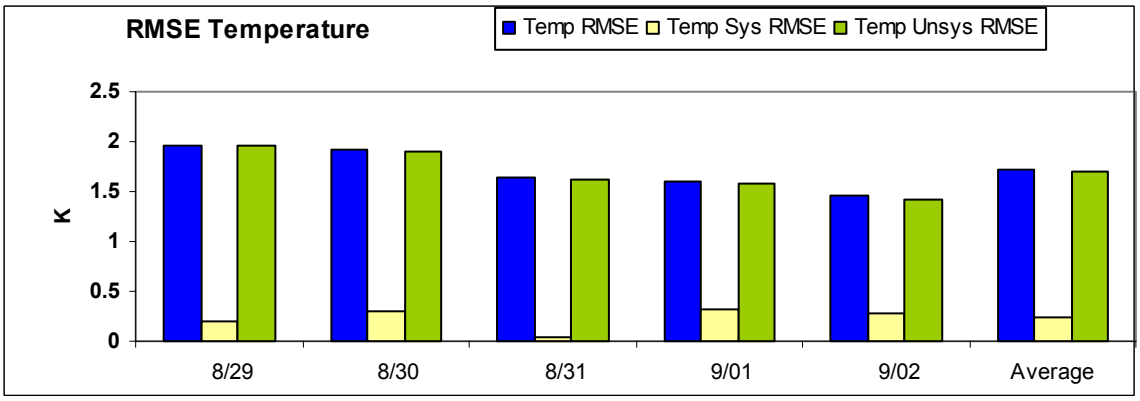

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
5
4
3
2
1
0
8/29
8/30
8/31
9/ 1
9/ 2
Bias Windspeed
BiasWndSpd
m/s
2
1.5
1
0.5
0
-0.5
8/29
8/30
8/31
9/ 1
9/ 2
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
8/29
8/30
8/31
9/ 1
9/ 2
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
8/29
8/30
8/31
9/ 1
9/ 2
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
8/29
8/30
8/31
9/ 1
9/ 2
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
8/29
8/30
8/31
9/ 1
9/ 2

Figure 122


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298
297.5
297
296.5
296
295.5
8/29
8/30
8/31
9/01
9/02
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
8/29
8/30
8/31
9/01
9/02
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
8/29
8/30
8/31
9/01
9/02
Average

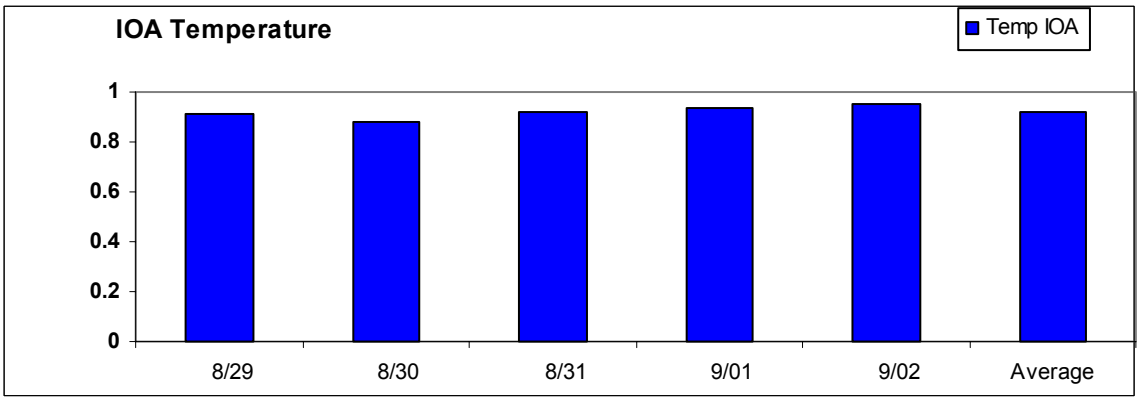

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
8/29
8/30
8/31
9/01
9/02
Average

Figure 123

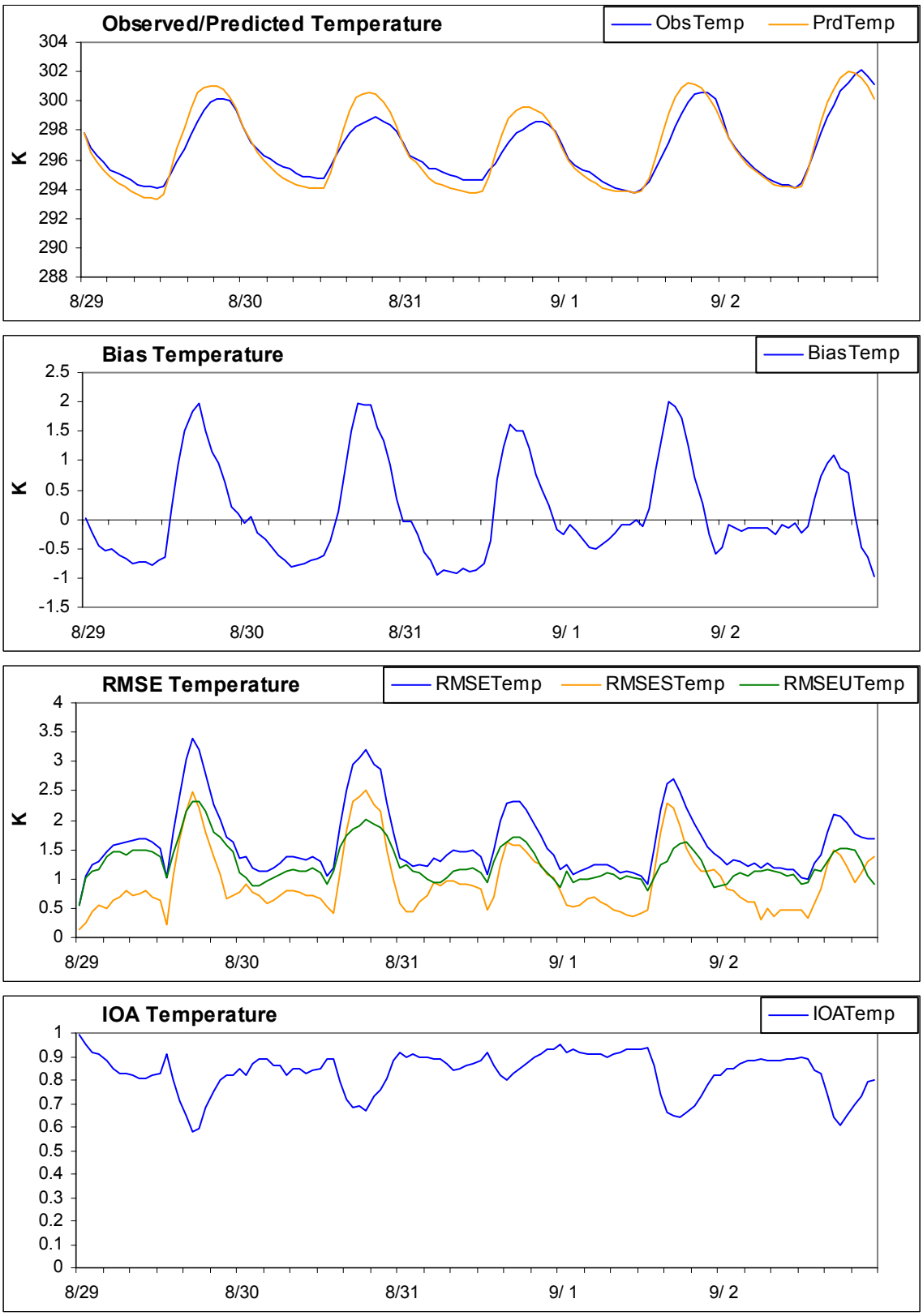
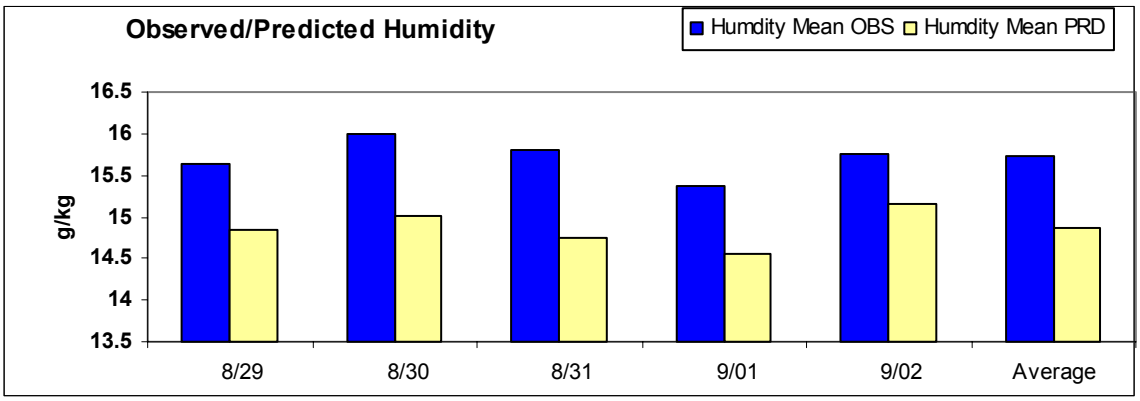
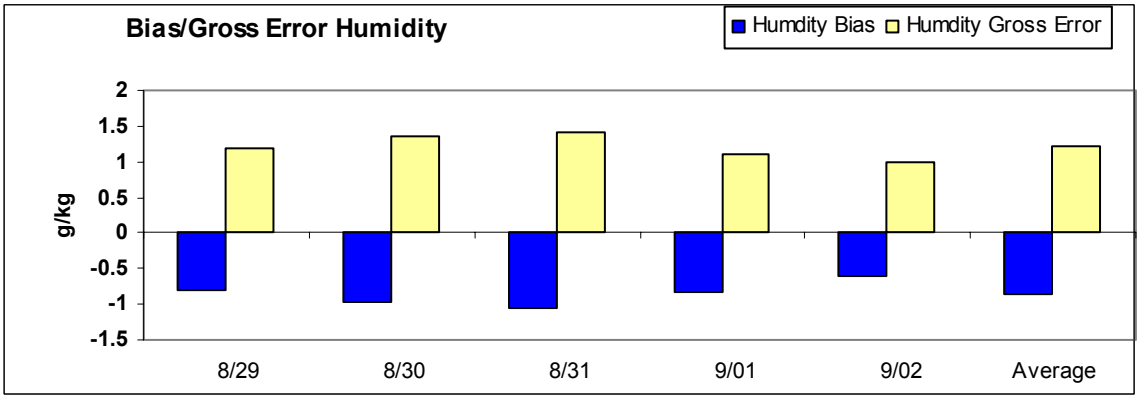
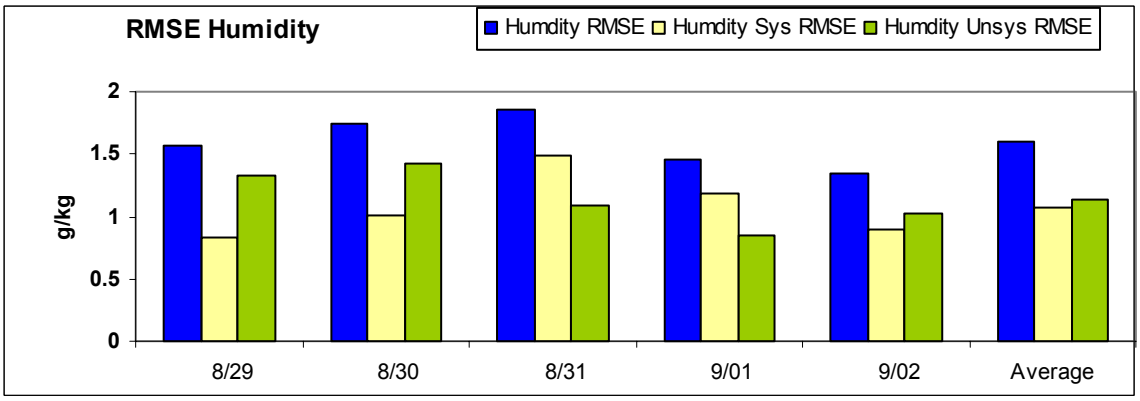

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
304
302
300
298
296
294
292
290
288
8/29
8/30
8/31
9/ 1
9/ 2
Bias Temperature
BiasTemp
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
8/29
8/30
8/31
9/ 1
9/ 2
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
8/29
8/30
8/31
9/ 1
9/ 2
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/29
8/30
8/31
9/ 1
9/ 2

Figure 124


Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16.5
16
15.5
15
14.5
14
13.5
8/29
8/30
8/31
9/01
9/02
Average


Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
8/29
8/30
8/31
9/01
9/02
Average


RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
8/29
8/30
8/31
9/01
9/02
Average

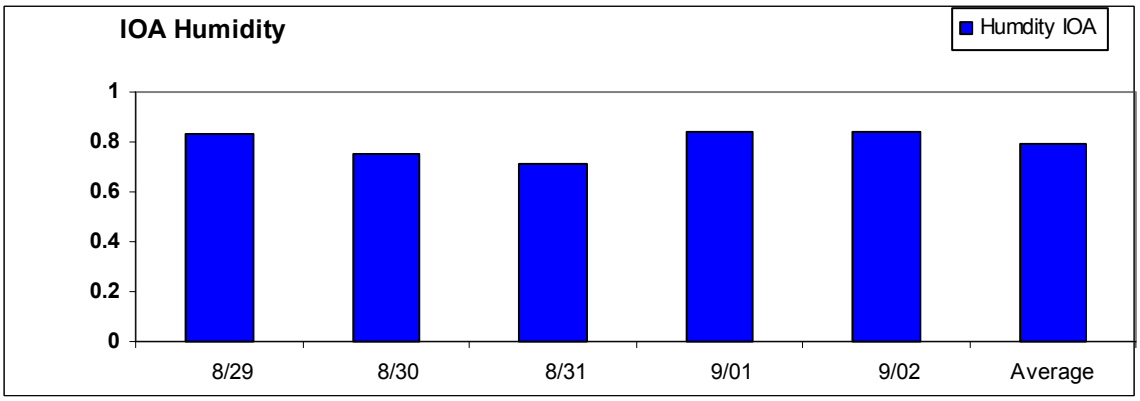

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
8/29
8/30
8/31
9/01
9/02
Average

Figure 125

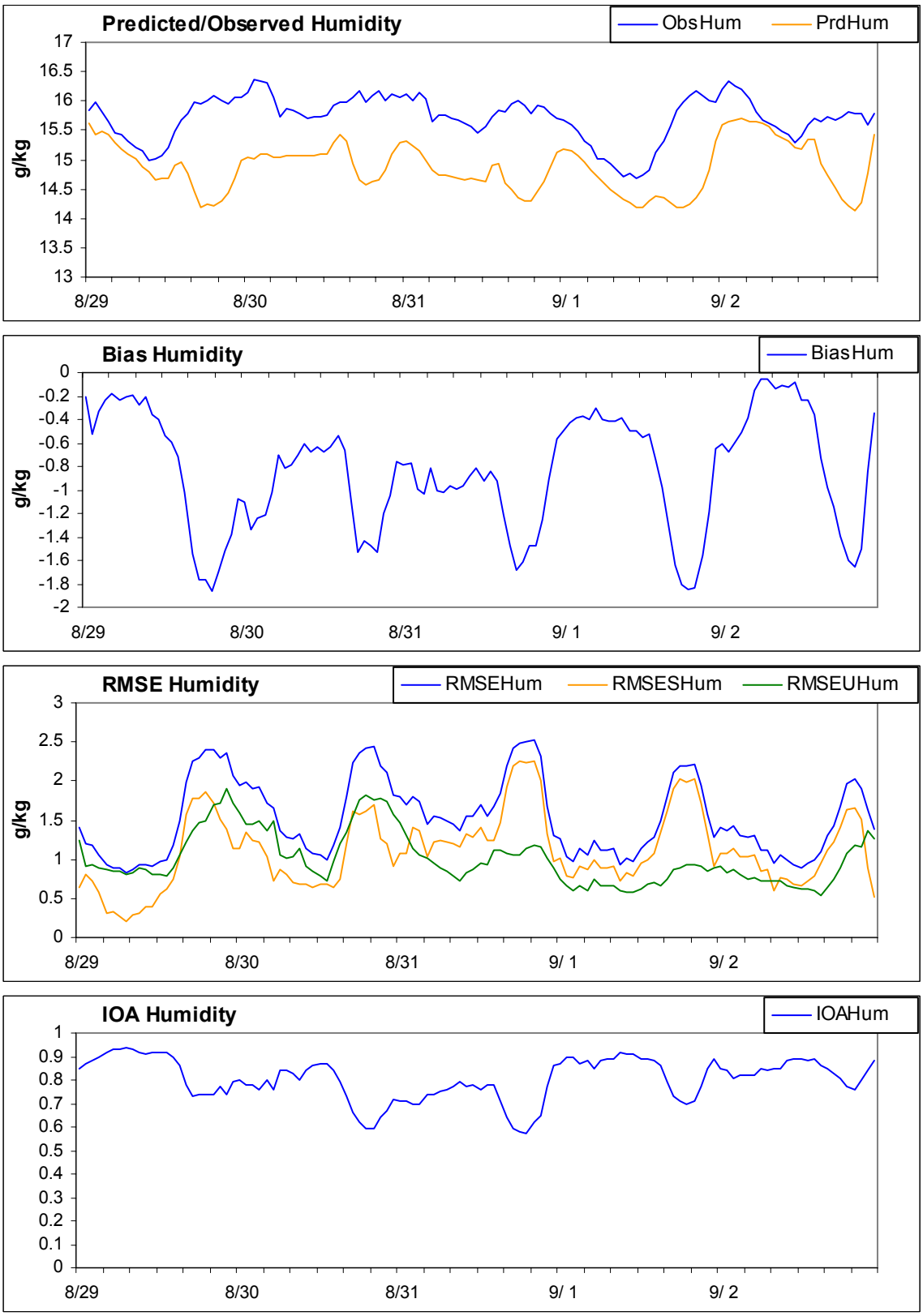

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
17
16.5
16
15.5
15
14.5
14
13.5
13
8/29
8/30
8/31
9/ 1
9/ 2
Bias Humidity
BiasHum
g/kg
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
-1.8
-2
8/29
8/30
8/31
9/ 1
9/ 2
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
3
2.5
2
1.5
1
0.5
0
8/29
8/30
8/31
9/ 1
9/ 2
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
8/29
8/30
8/31
9/ 1
9/ 2

Figure 126

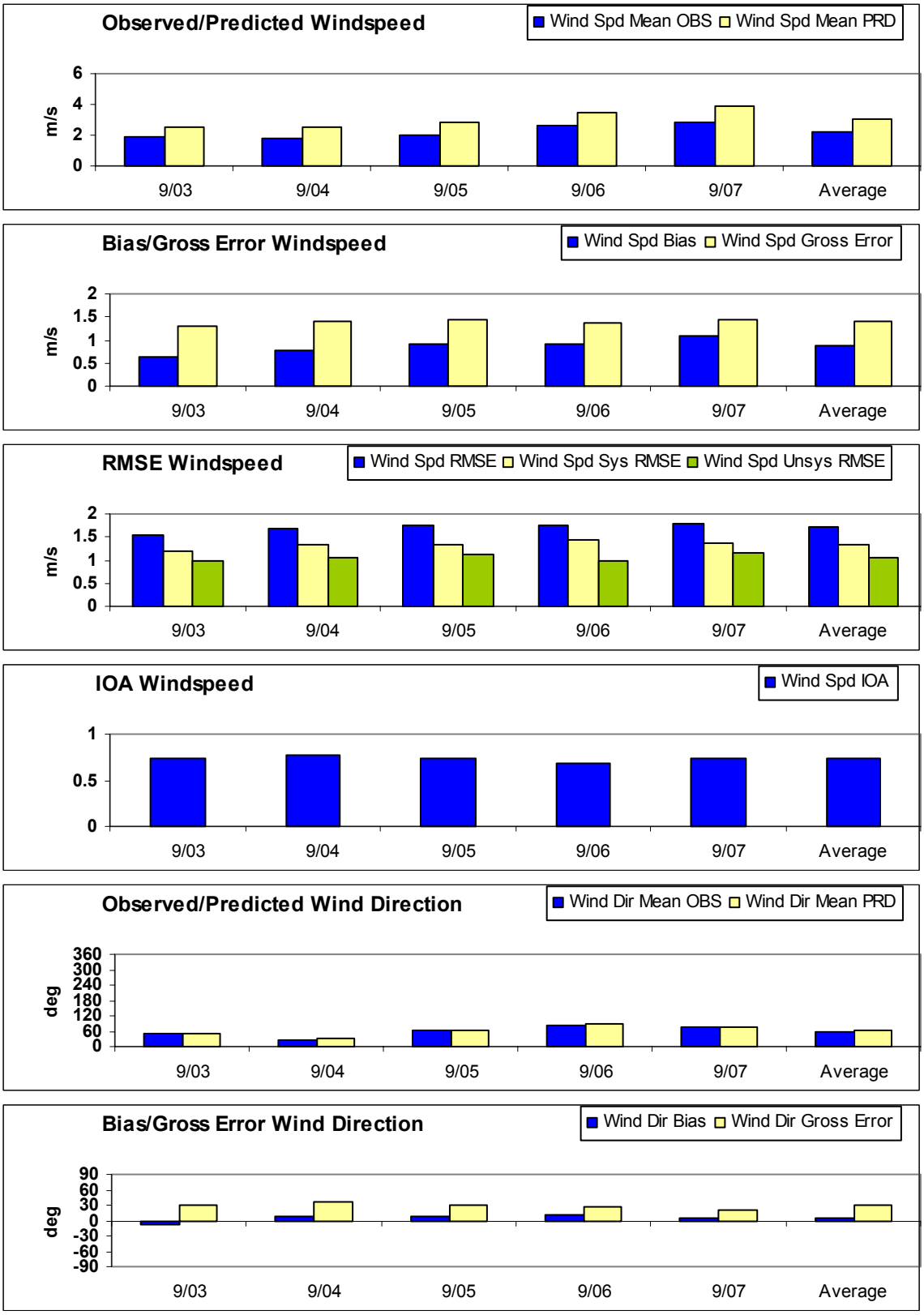

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
9/03
9/04
9/05
9/06
9/07
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
9/03
9/04
9/05
9/06
9/07
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
9/03
9/04
9/05
9/06
9/07
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
9/03
9/04
9/05
9/06
9/07
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
9/03
9/04
9/05
9/06
9/07
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
9/03
9/04
9/05
9/06
9/07
Average

Figure 127

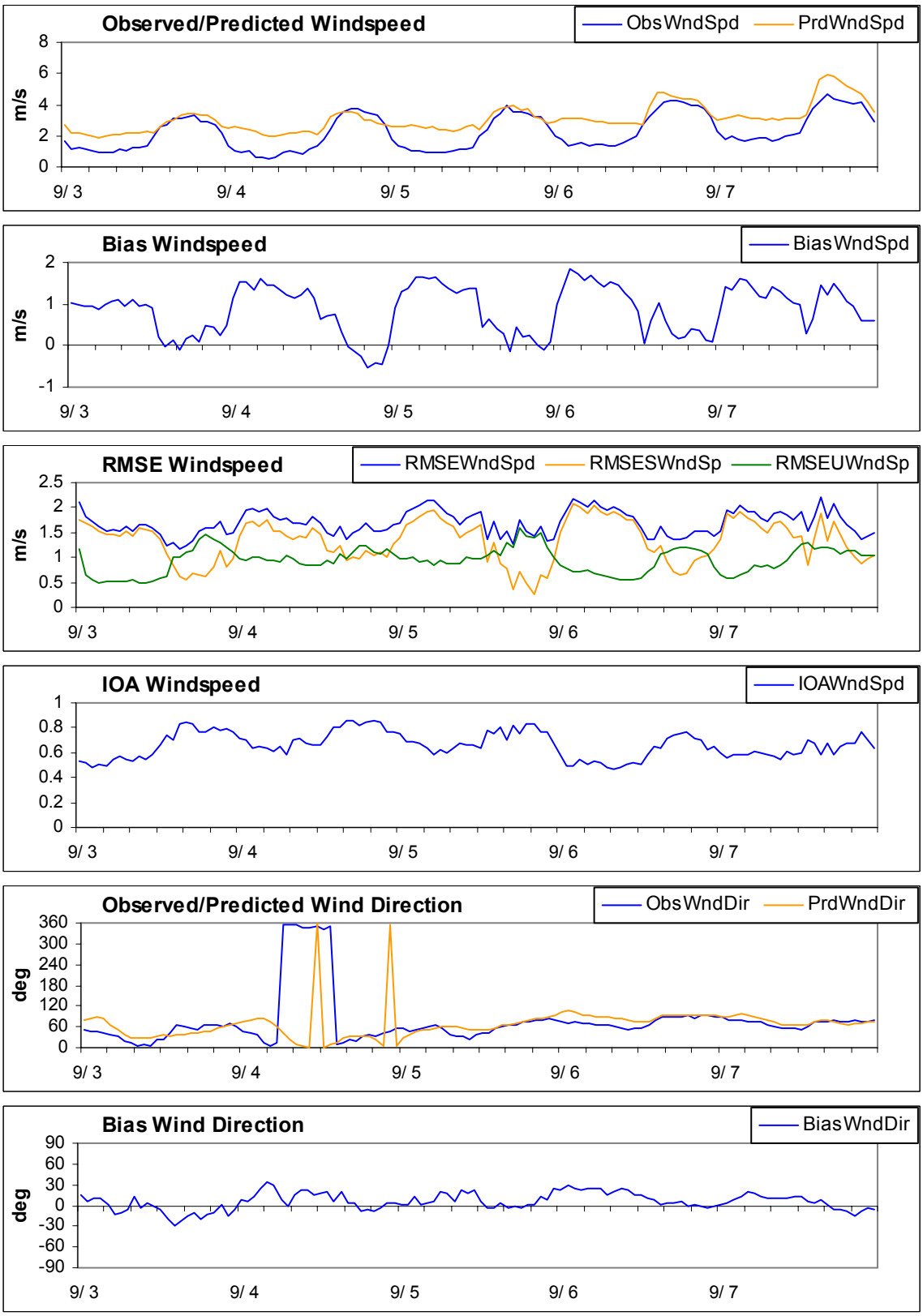

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
8
6
4
2
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
Bias Windspeed
BiasWndSpd
m/s
2
1
0
-1
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7

Figure 128

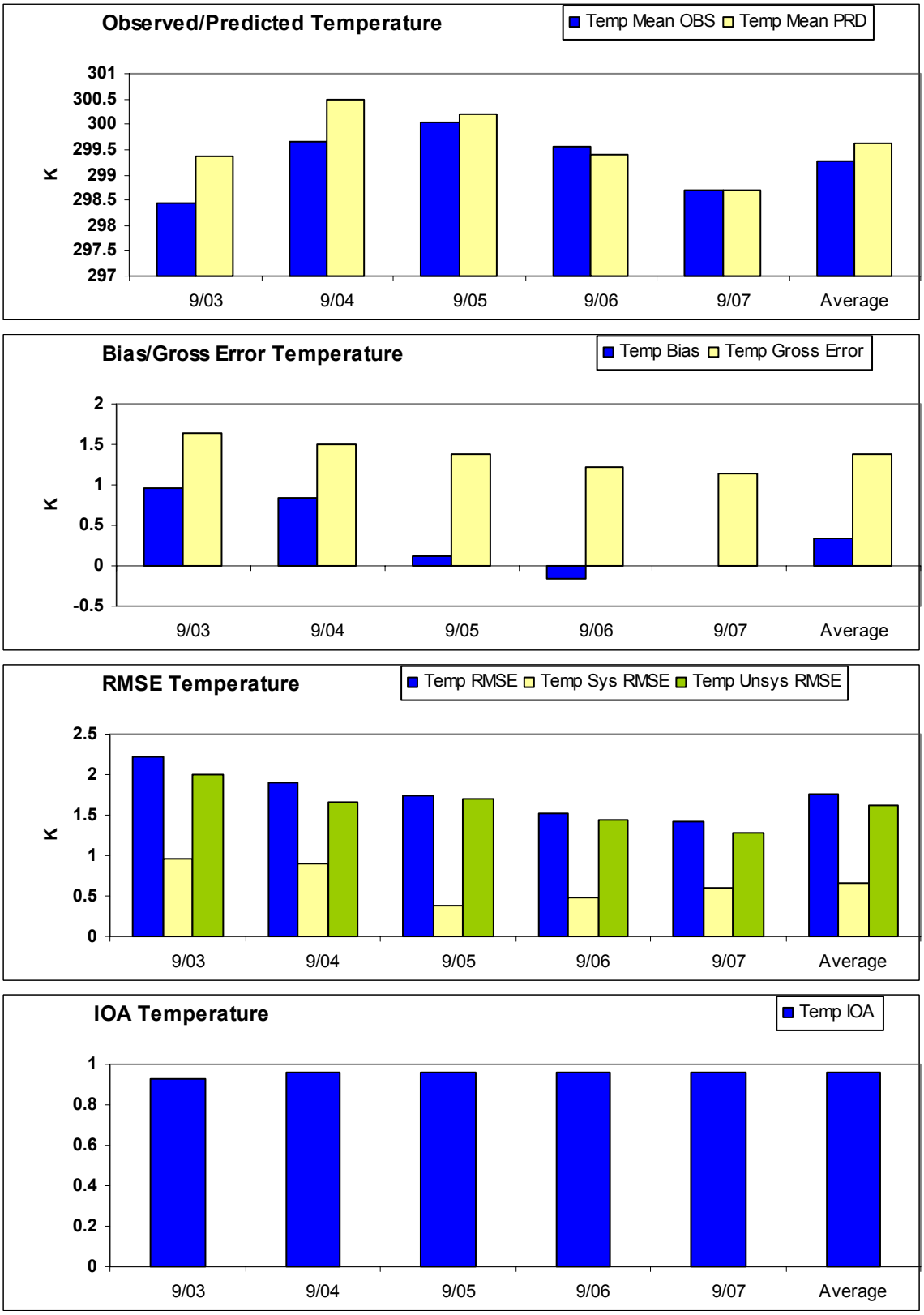

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
301
300.5
300
299.5
299
298.5
298
297.5
297
9/03
9/04
9/05
9/06
9/07
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
9/03
9/04
9/05
9/06
9/07
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
9/03
9/04
9/05
9/06
9/07
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
9/03
9/04
9/05
9/06
9/07
Average

Figure 129

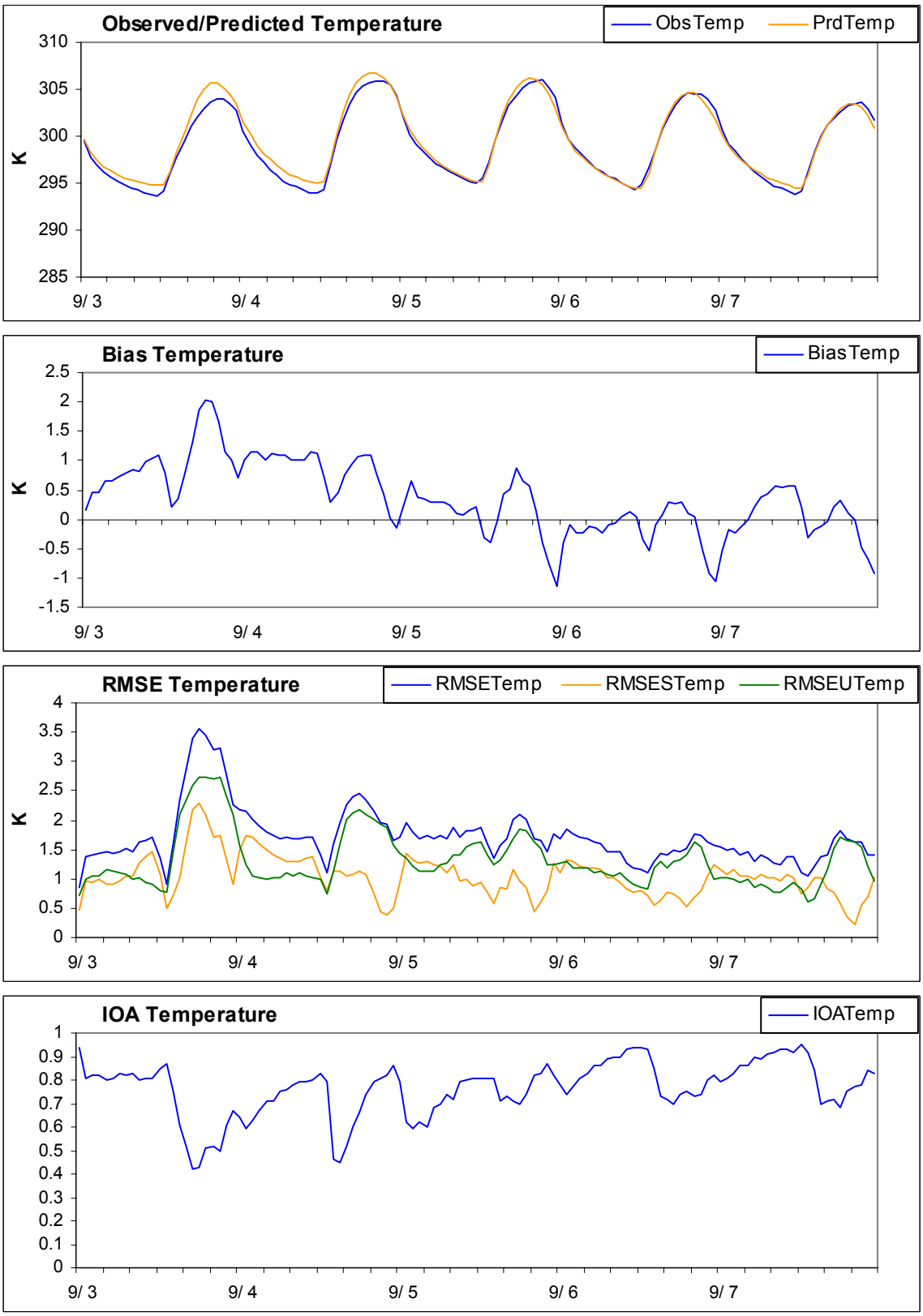

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
Bias Temperature
BiasTemp
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
4
3.5
3
2.5
2
1.5
1
0.5
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7

Figure 130

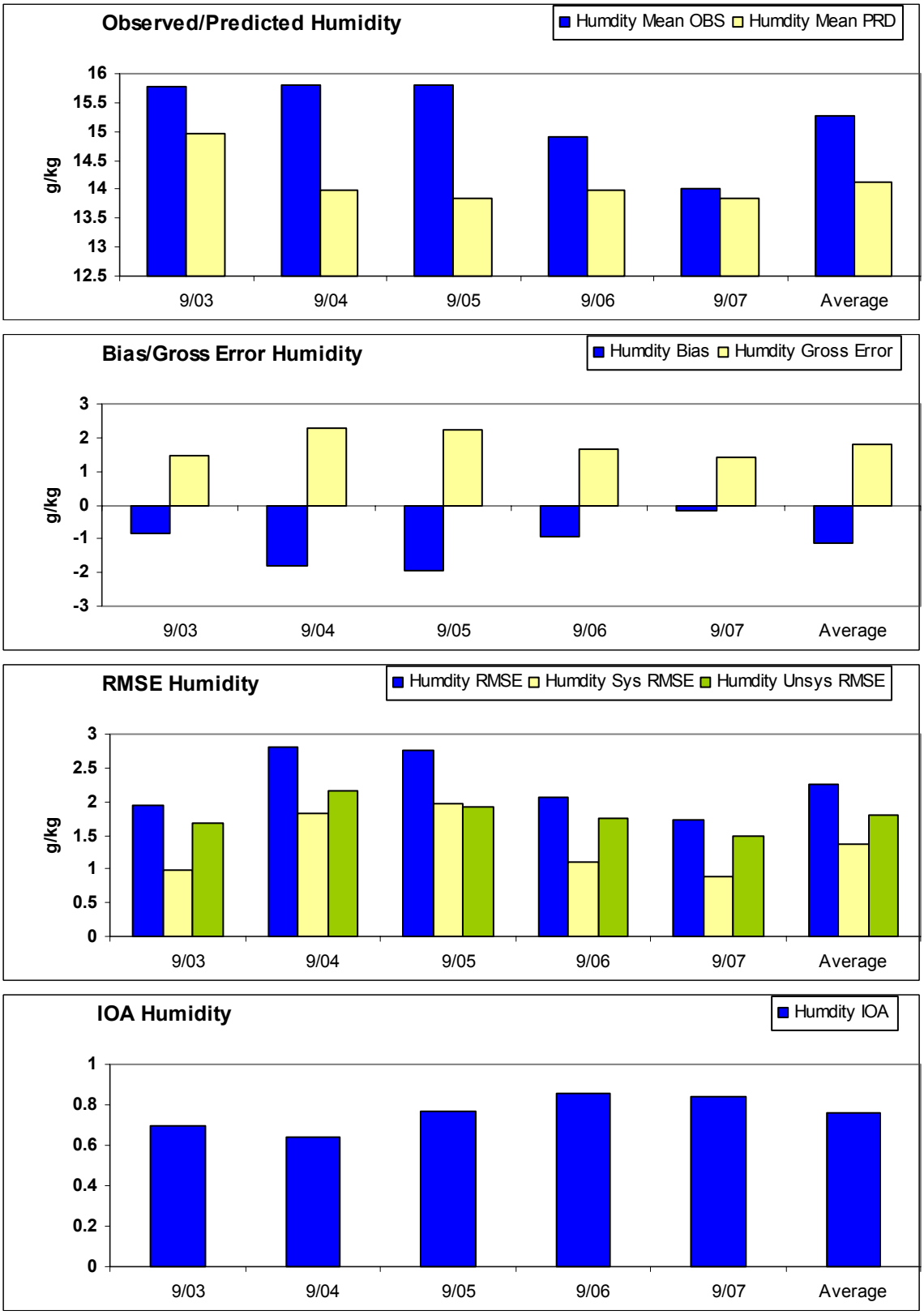

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
15.5
15
14.5
14
13.5
13
12.5
9/03
9/04
9/05
9/06
9/07
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
3
2
1
0
-1
-2
-3
9/03
9/04
9/05
9/06
9/07
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
3
2.5
2
1.5
1
0.5
0
9/03
9/04
9/05
9/06
9/07
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
9/03
9/04
9/05
9/06
9/07
Average

Figure 131

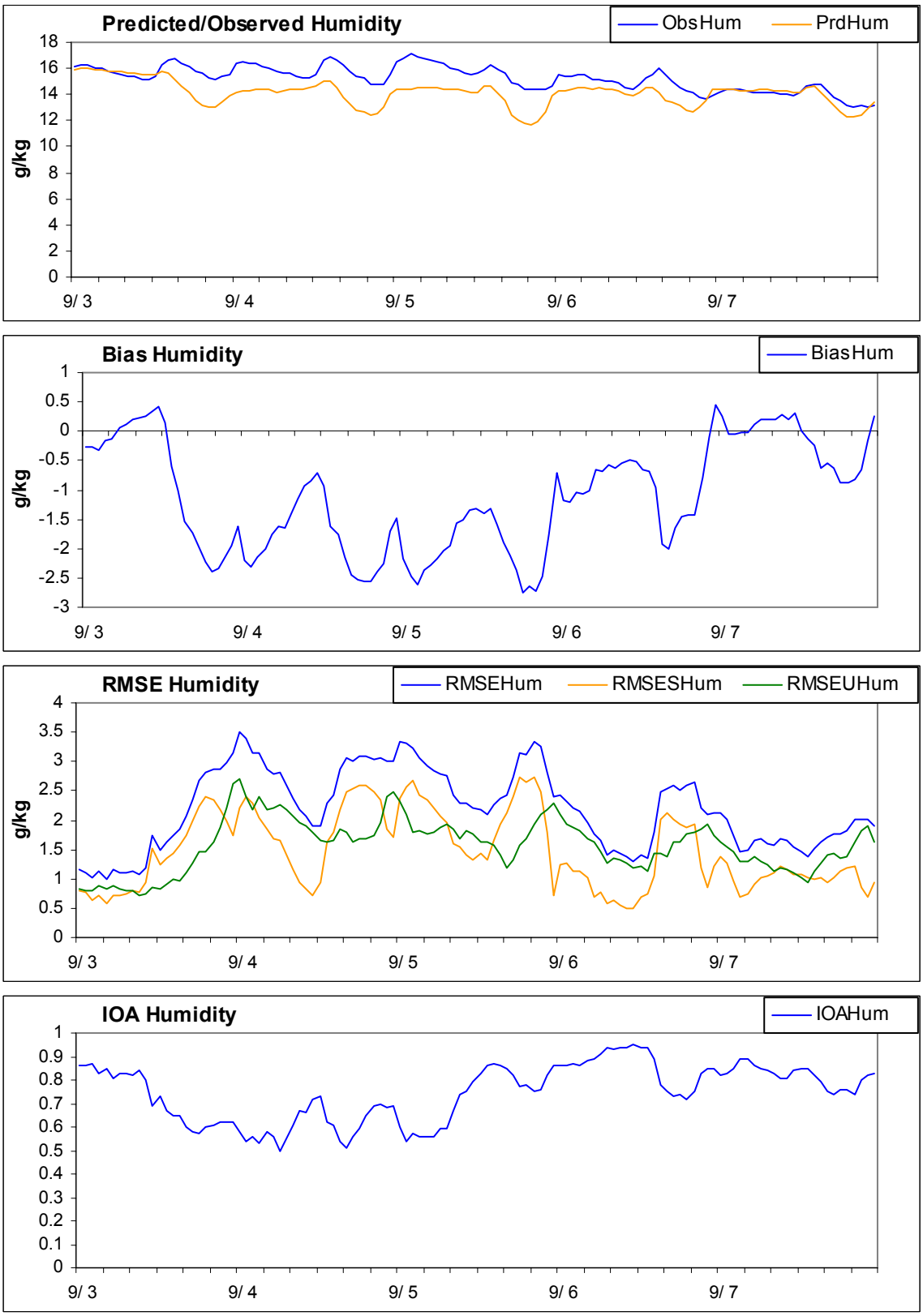

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
18
16
14
12
10
8
6
4
2
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
Bias Humidity
BiasHum
g/kg
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/ 3
9/ 4
9/ 5
9/ 6
9/ 7

Figure 132

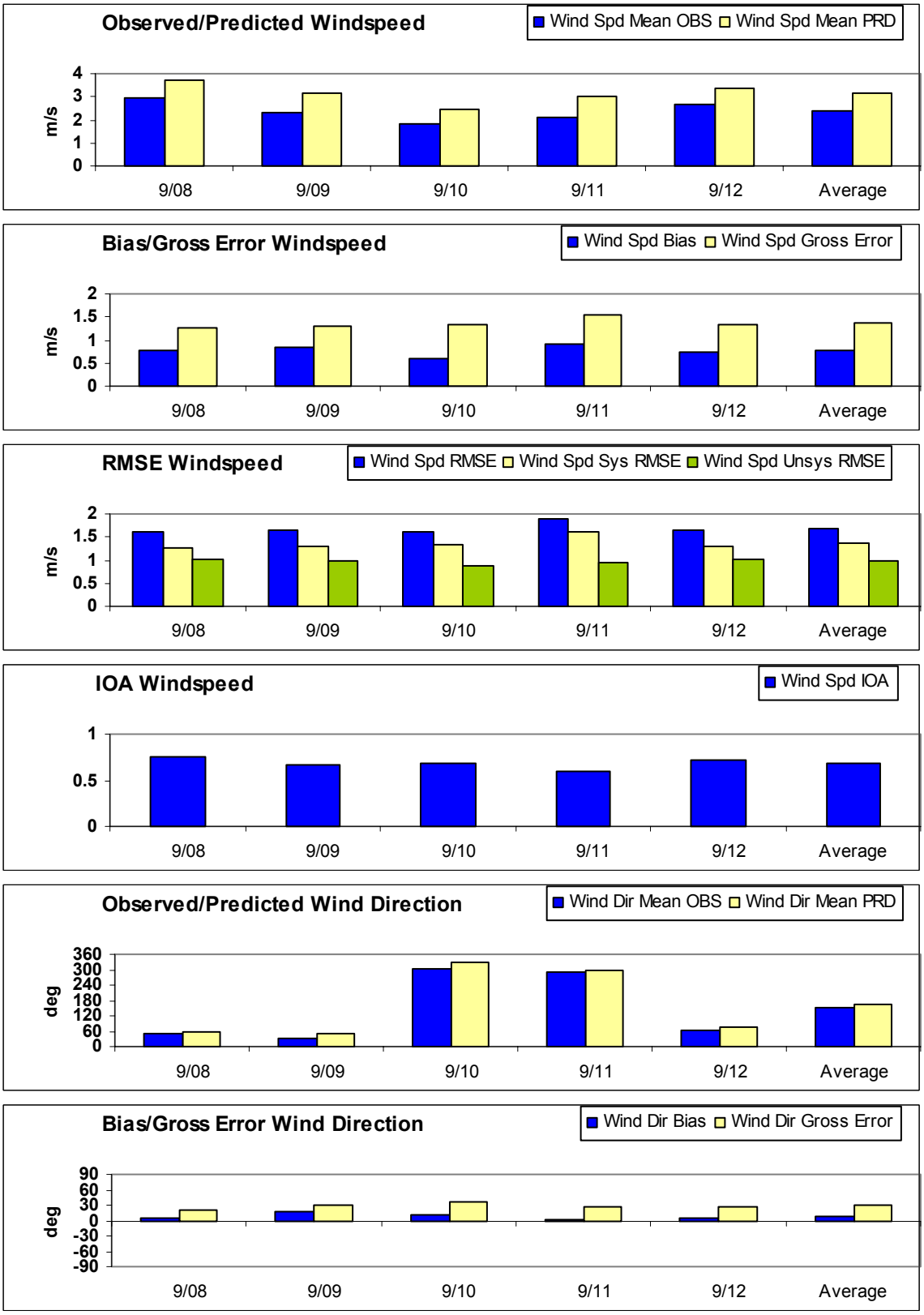

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
9/08
9/09
9/10
9/11
9/12
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
9/08
9/09
9/10
9/11
9/12
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
9/08
9/09
9/10
9/11
9/12
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
9/08
9/09
9/10
9/11
9/12
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
9/08
9/09
9/10
9/11
9/12
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
9/08
9/09
9/10
9/11
9/12
Average

Figure 133

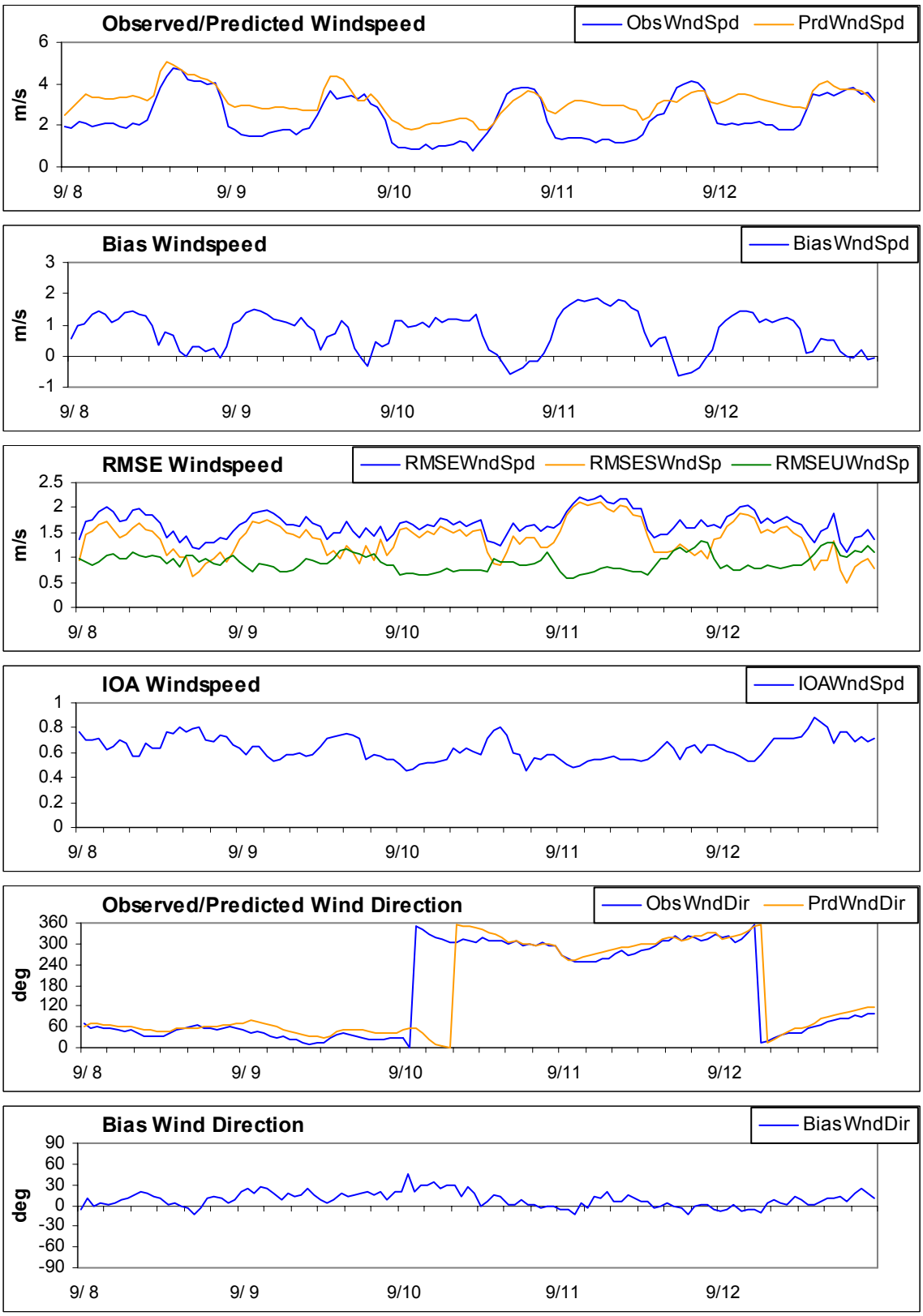
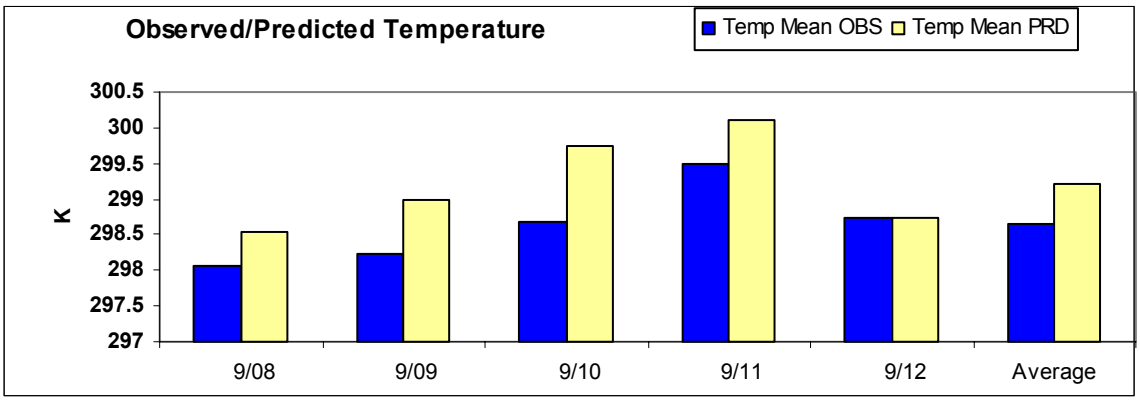
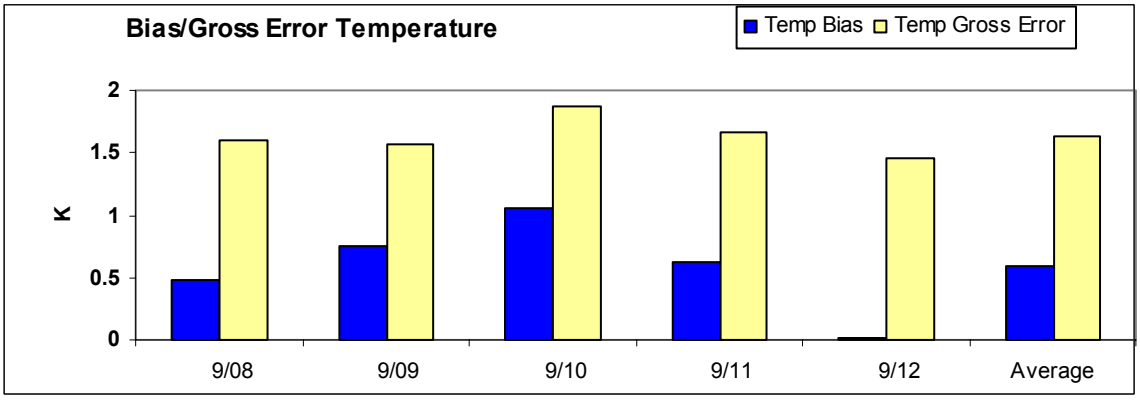
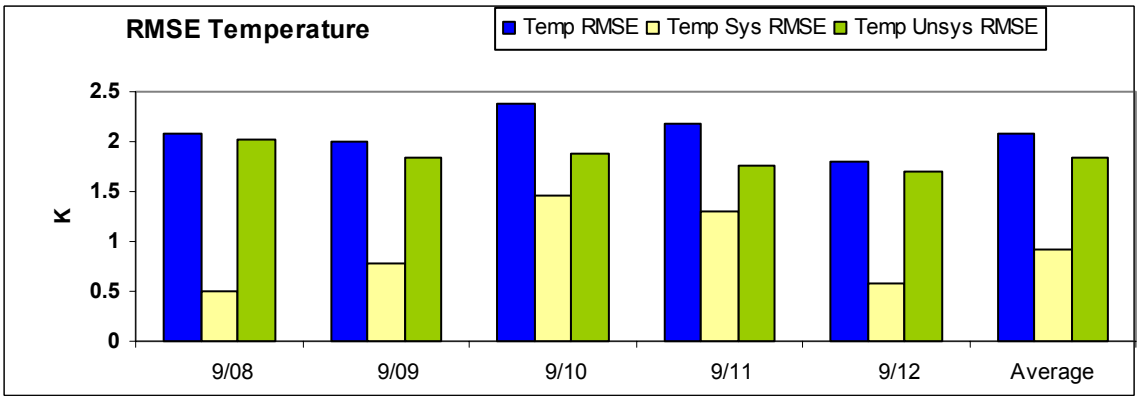

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
6
4
2
0
9/ 8
9/ 9
9/10
9/11
9/12
Bias Windspeed
BiasWndSpd
m/s
3
2
1
0
-1
9/ 8
9/ 9
9/10
9/11
9/12
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
2.5
2
1.5
1
0.5
0
9/ 8
9/ 9
9/10
9/11
9/12
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
9/ 8
9/ 9
9/10
9/11
9/12
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
9/ 8
9/ 9
9/10
9/11
9/12
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
9/ 8
9/ 9
9/10
9/11
9/12

Figure 134


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
300.5
300
299.5
299
298.5
298
297.5
297
9/08
9/09
9/10
9/11
9/12
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
9/08
9/09
9/10
9/11
9/12
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
9/08
9/09
9/10
9/11
9/12
Average

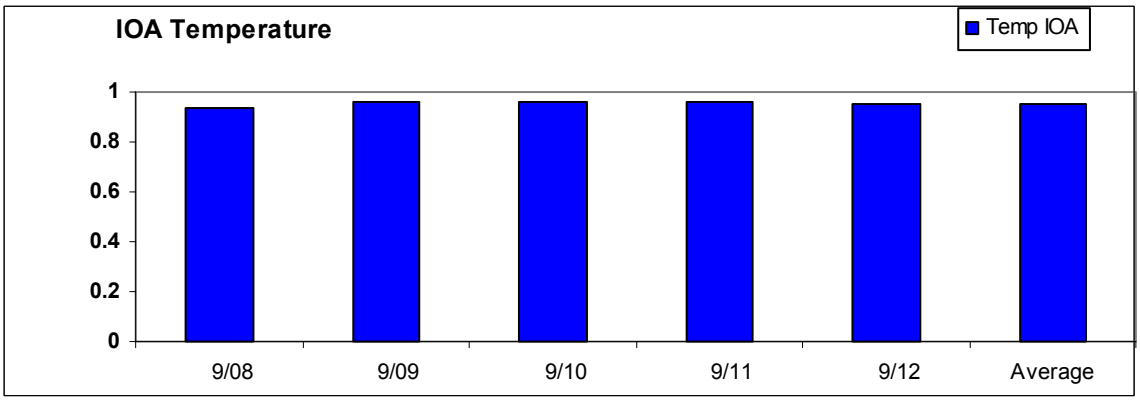

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
9/08
9/09
9/10
9/11
9/12
Average

Figure 135

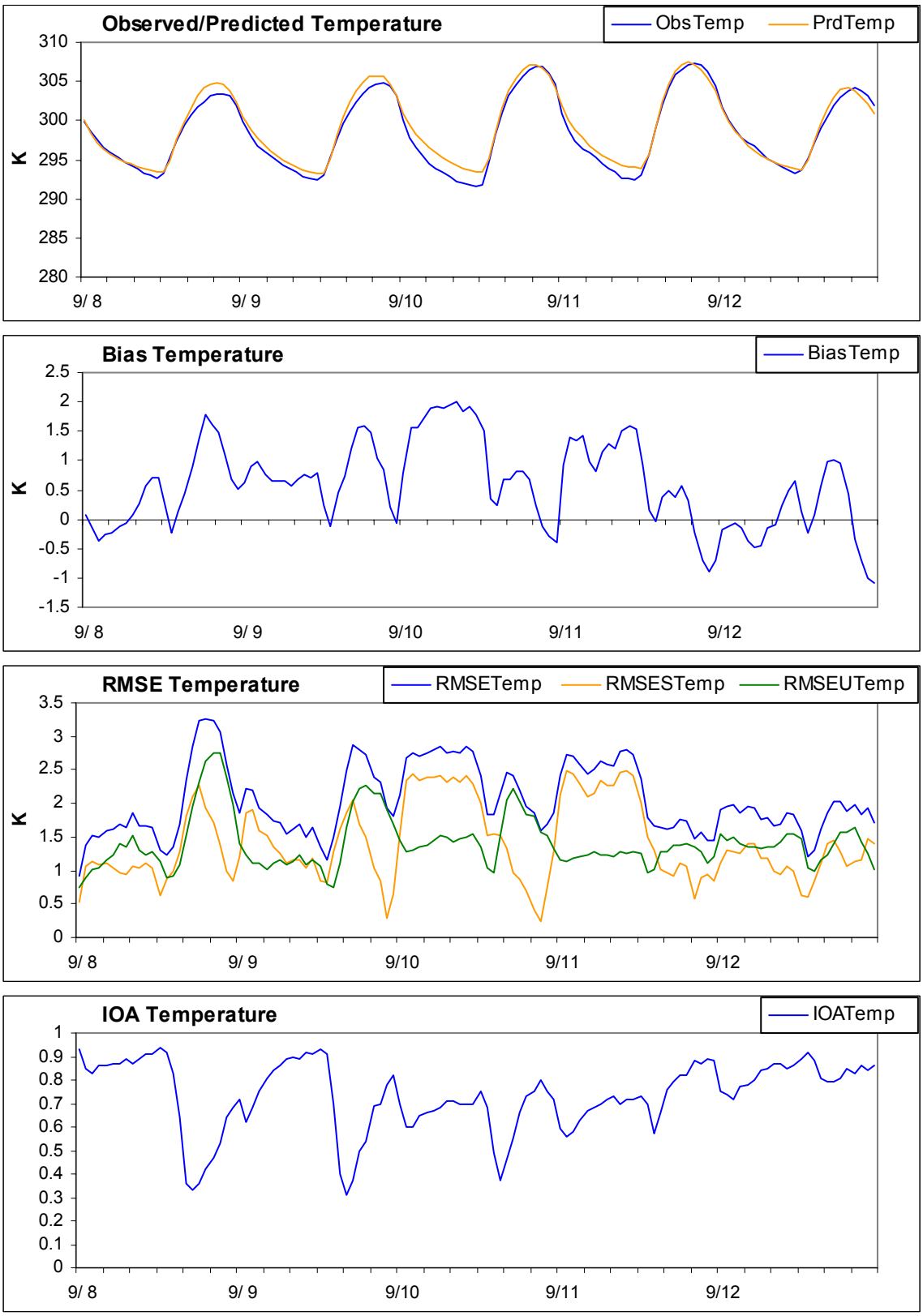

Observed/Predicted Temperature
ObsTemp
PrdTemp
K
310
305
300
295
290
285
280
9/ 8
9/ 9
9/10
9/11
9/12
Bias Temperature
BiasTemp
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
9/ 8
9/ 9
9/10
9/11
9/12
RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
3.5
3
2.5
2
1.5
1
0.5
0
9/ 8
9/ 9
9/10
9/11
9/12
IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/ 8
9/ 9
9/10
9/11
9/12

Figure 136

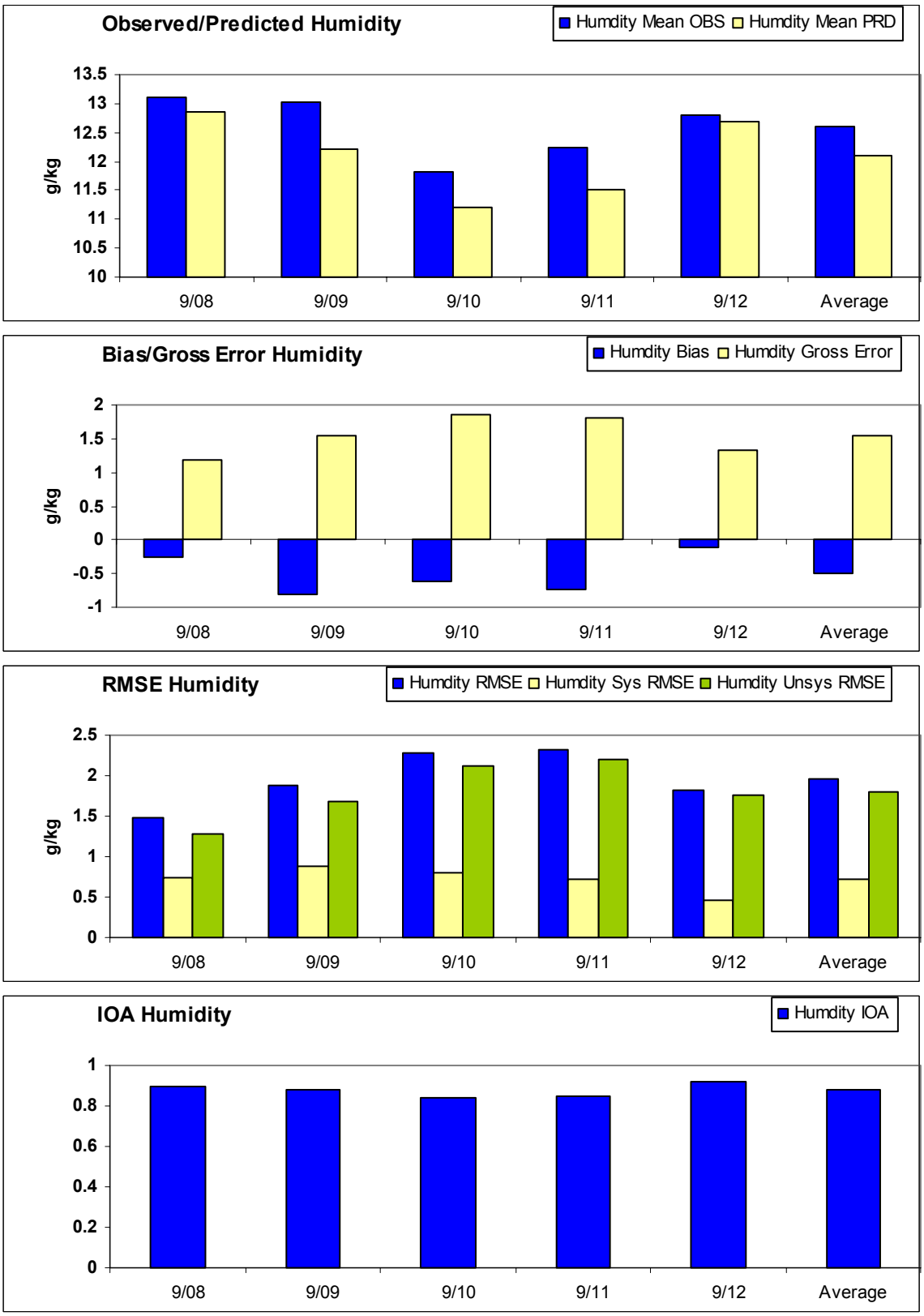

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
13.5
13
12.5
12
11.5
11
10.5
10
9/08
9/09
9/10
9/11
9/12
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
9/08
9/09
9/10
9/11
9/12
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
9/08
9/09
9/10
9/11
9/12
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
9/08
9/09
9/10
9/11
9/12
Average

Figure 137

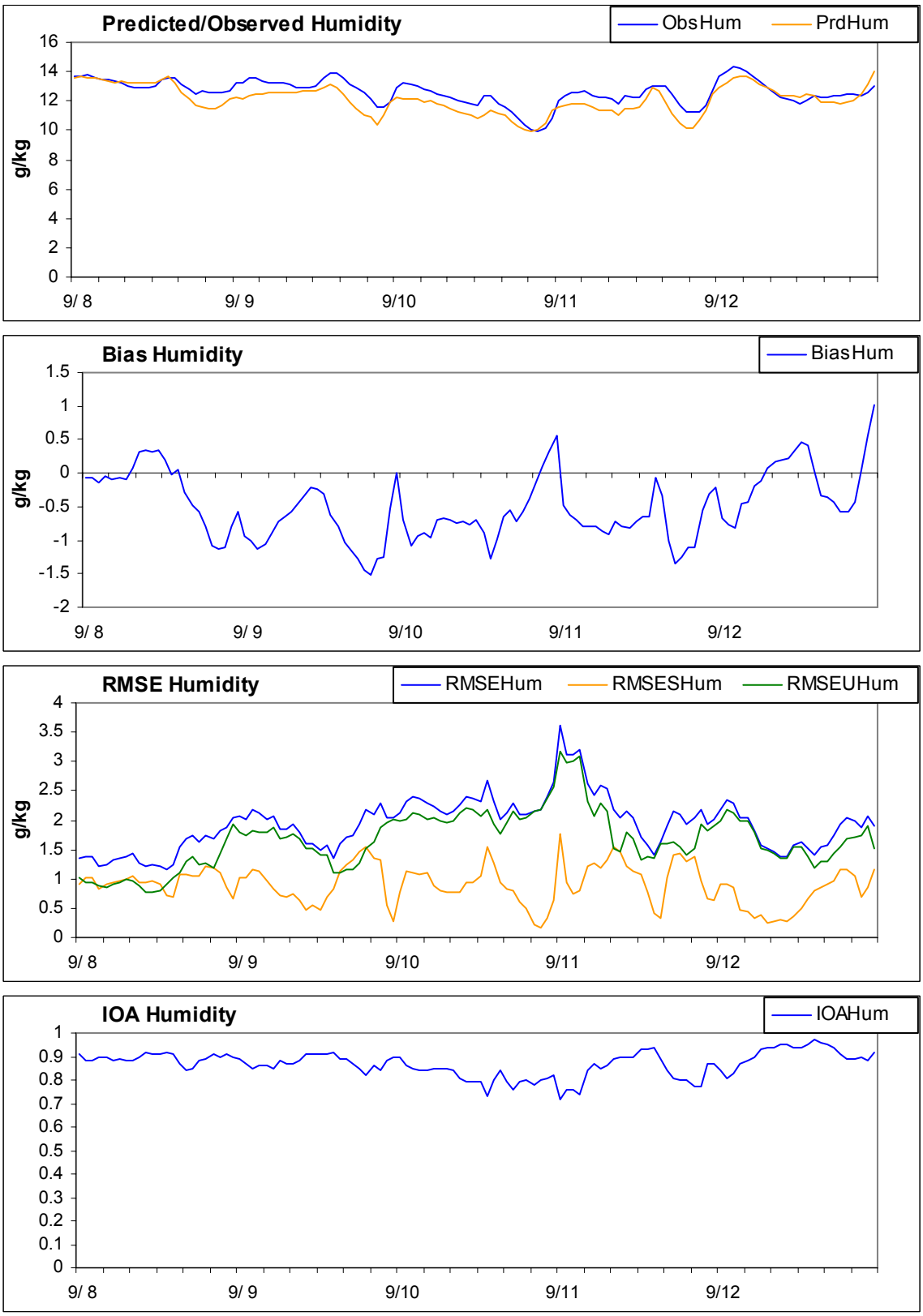

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
16
14
12
10
8
6
4
2
0
9/ 8
9/ 9
9/10
9/11
9/12
Bias Humidity
BiasHum
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
-2
9/ 8
9/ 9
9/10
9/11
9/12
RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
9/ 8
9/ 9
9/10
9/11
9/12
IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/ 8
9/ 9
9/10
9/11
9/12

Figure 138

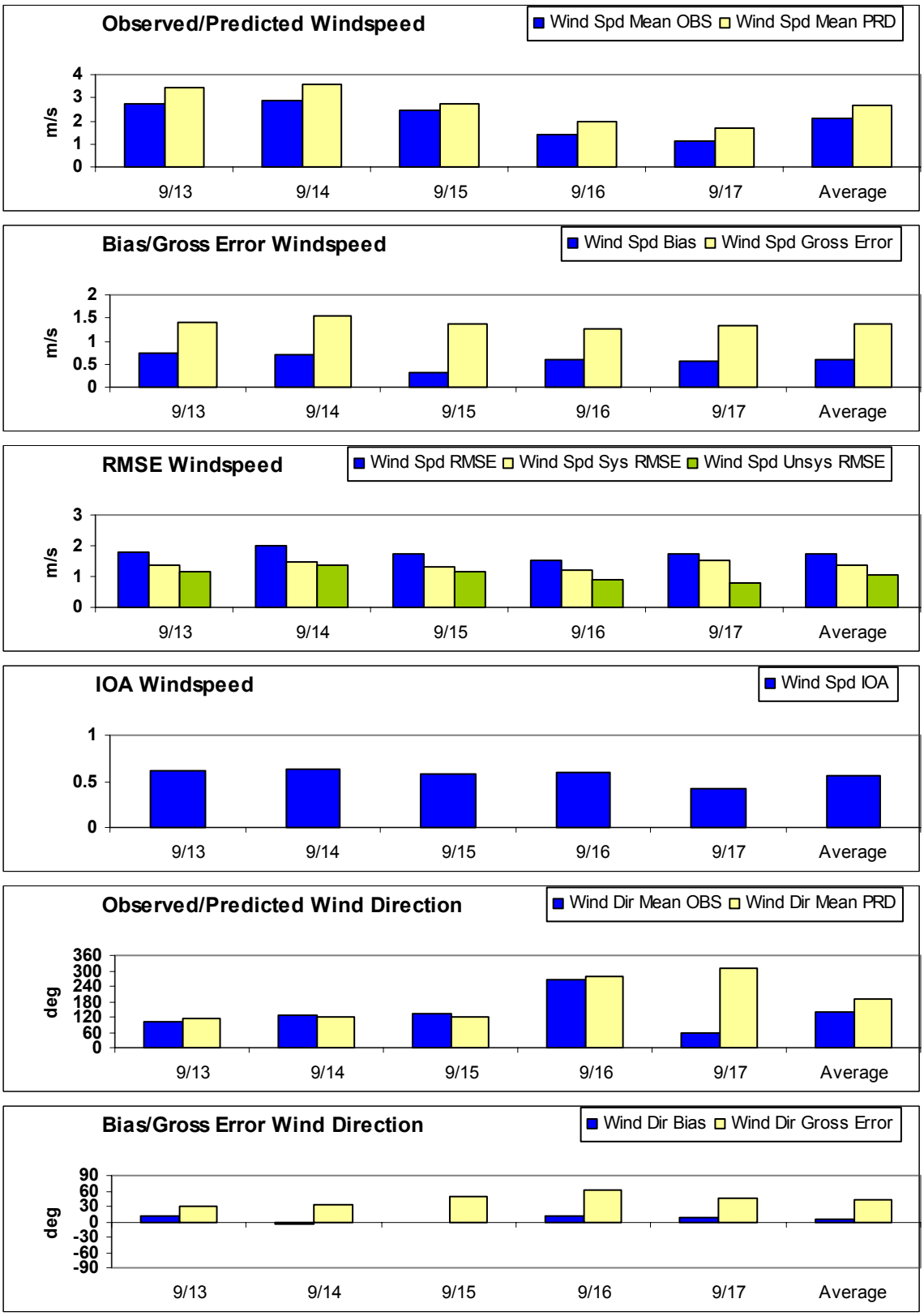

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
9/13
9/14
9/15
9/16
9/17
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
9/13
9/14
9/15
9/16
9/17
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
9/13
9/14
9/15
9/16
9/17
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
9/13
9/14
9/15
9/16
9/17
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
9/13
9/14
9/15
9/16
9/17
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
9/13
9/14
9/15
9/16
9/17
Average

Figure 139

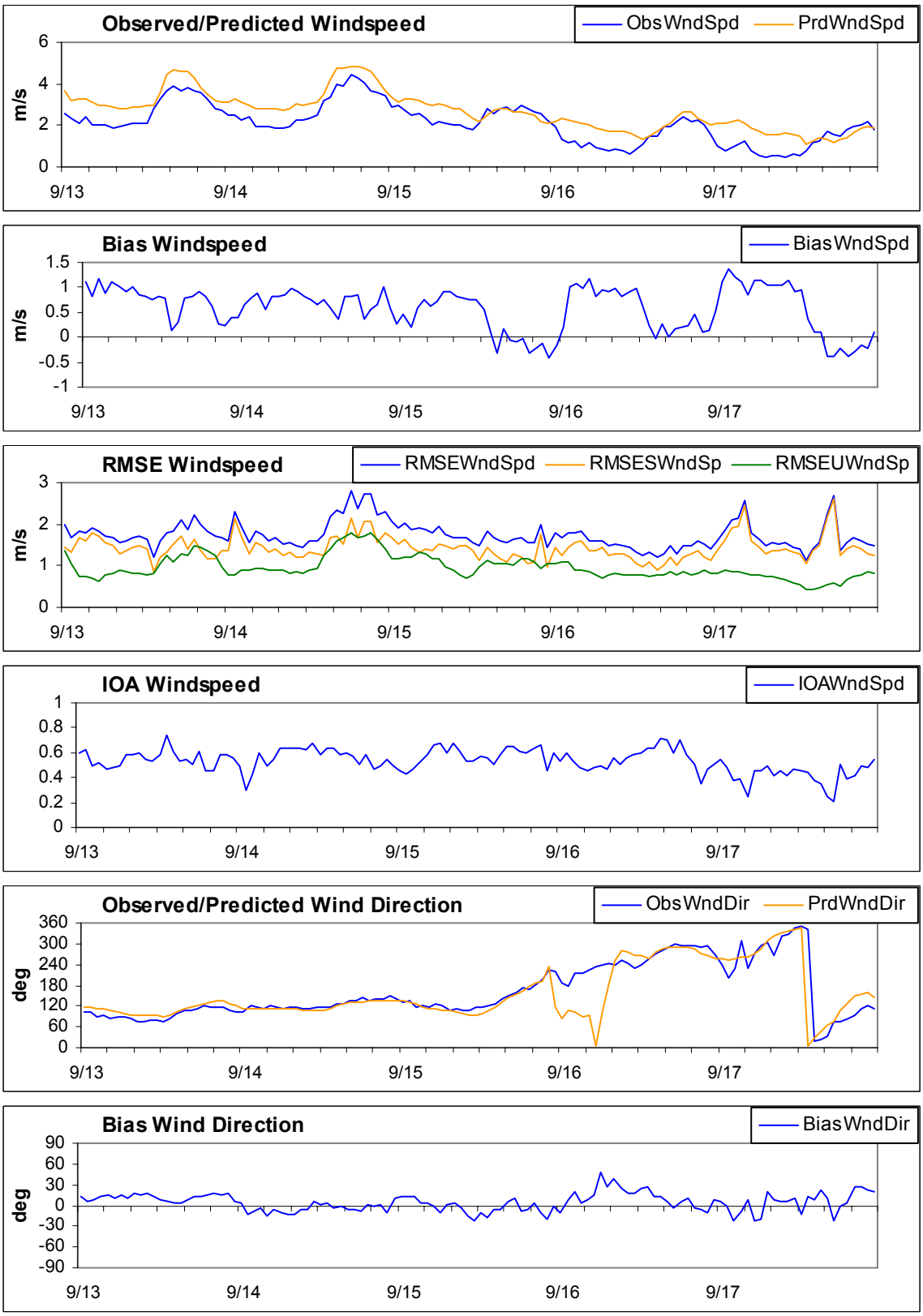
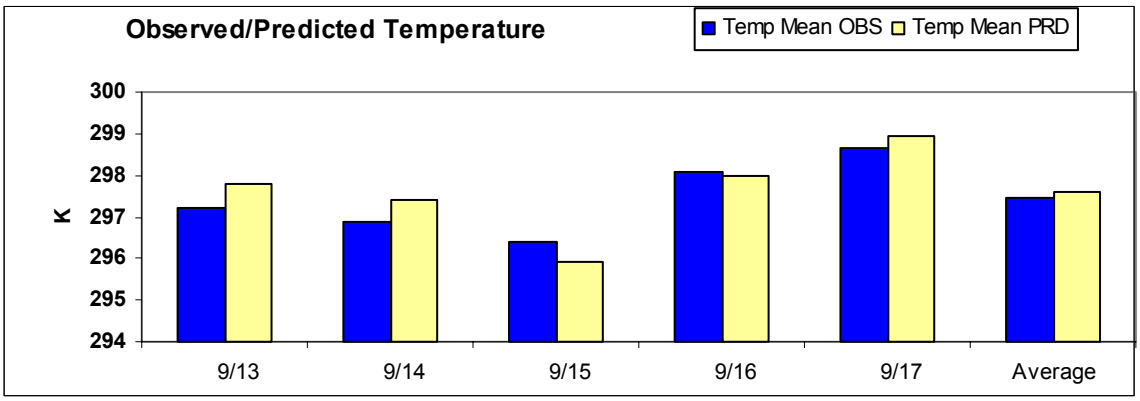
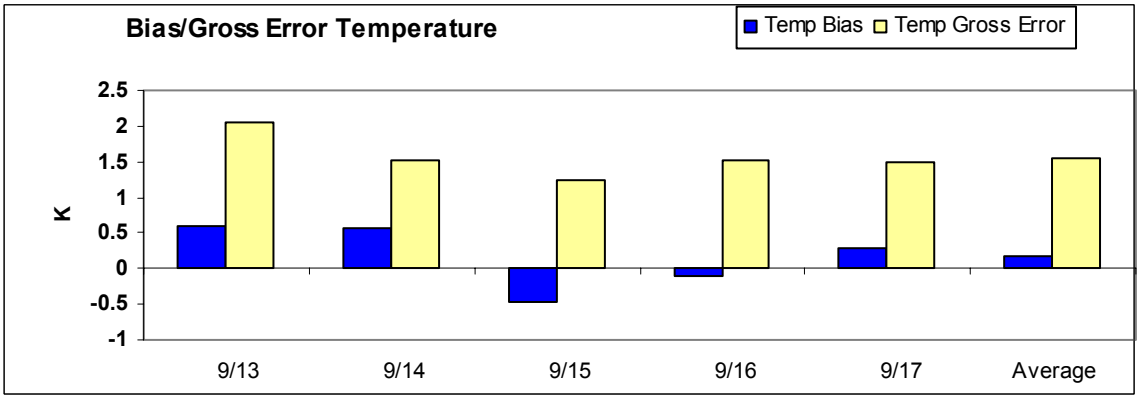
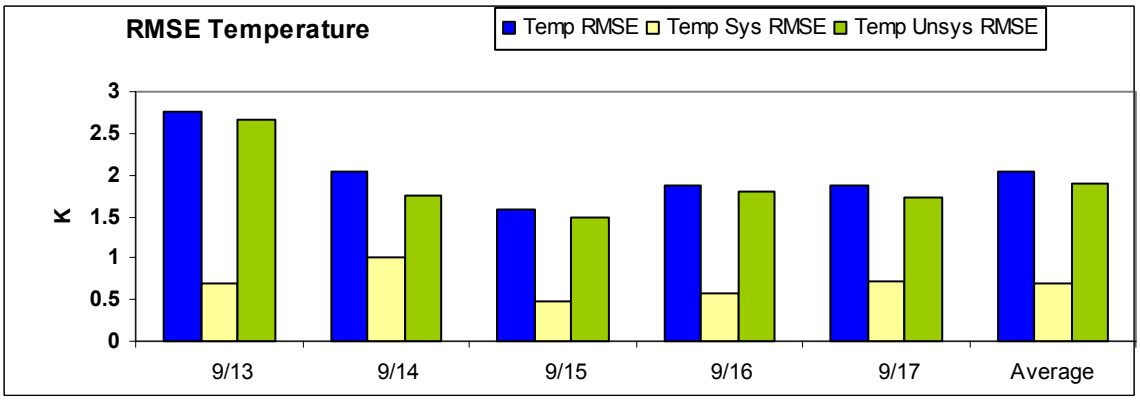

Observed/Predicted Windspeed
ObsWndSpd
PrdWndSpd
m/s
6
4
2
0
9/13
9/14
9/15
9/16
9/17
Bias Windspeed
BiasWndSpd
m/s
1.5
1
0.5
0
-0.5
-1
9/13
9/14
9/15
9/16
9/17
RMSE Windspeed
RMSEWndSpd
RMSESWndSp
RMSEUWndSp
m/s
3
2
1
0
9/13
9/14
9/15
9/16
9/17
IOA Windspeed
IOAWndSpd
1
0.8
0.6
0.4
0.2
0
9/13
9/14
9/15
9/16
9/17
Observed/Predicted Wind Direction
ObsWndDir
PrdWndDir
deg
360
300
240
180
120
60
0
9/13
9/14
9/15
9/16
9/17
Bias Wind Direction
BiasWndDir
deg
90
60
30
0
-30
-60
-90
9/13
9/14
9/15
9/16
9/17

Figure 140


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
300
299
298
297
296
295
294
9/13
9/14
9/15
9/16
9/17
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
9/13
9/14
9/15
9/16
9/17
Average


RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
9/13
9/14
9/15
9/16
9/17
Average

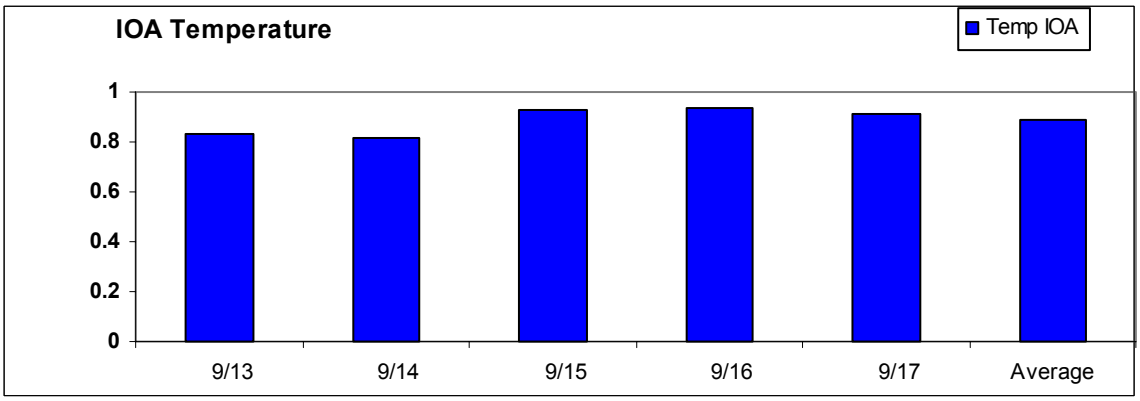
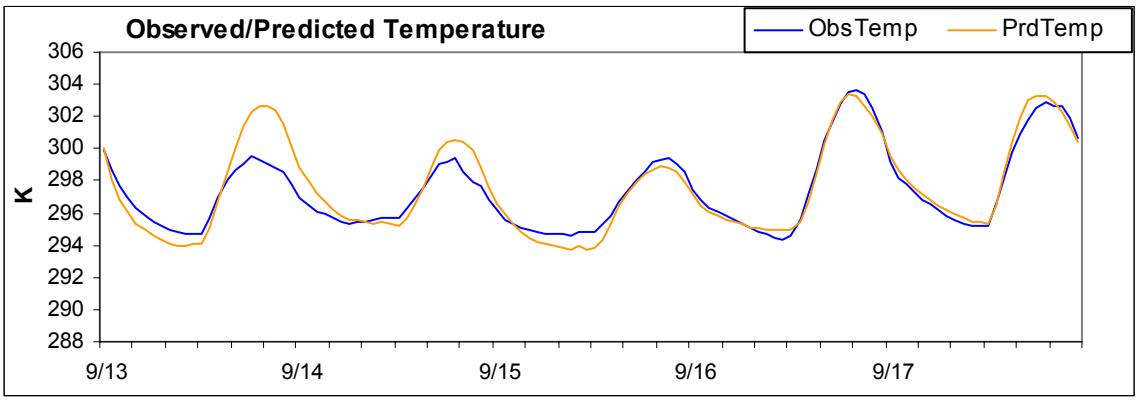
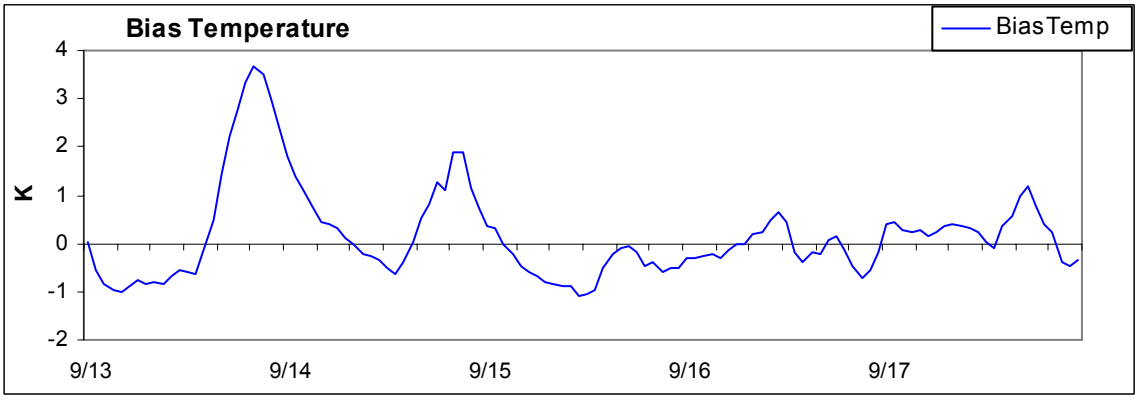
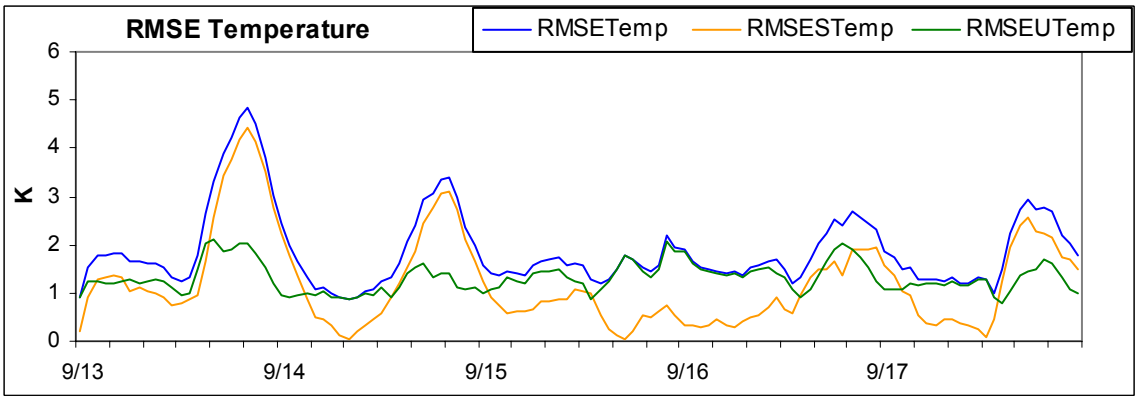

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
9/13
9/14
9/15
9/16
9/17
Average

Figure 141


Observed/Predicted Temperature
ObsTemp
PrdTemp
K
306
304
302
300
298
296
294
292
290
288
9/13
9/14
9/15
9/16
9/17


Bias Temperature
BiasTemp
K
4
3
2
1
0
-1
-2
9/13
9/14
9/15
9/16
9/17


RMSE Temperature
RMSETemp
RMSESTemp
RMSEUTemp
K
6
5
4
3
2
1
0
9/13
9/14
9/15
9/16
9/17

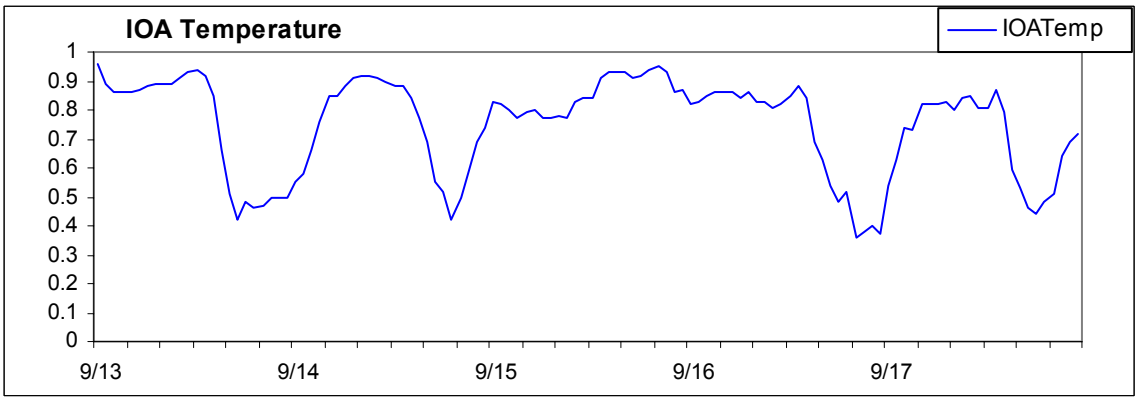

IOA Temperature
IOATemp
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/13
9/14
9/15
9/16
9/17

Figure 142

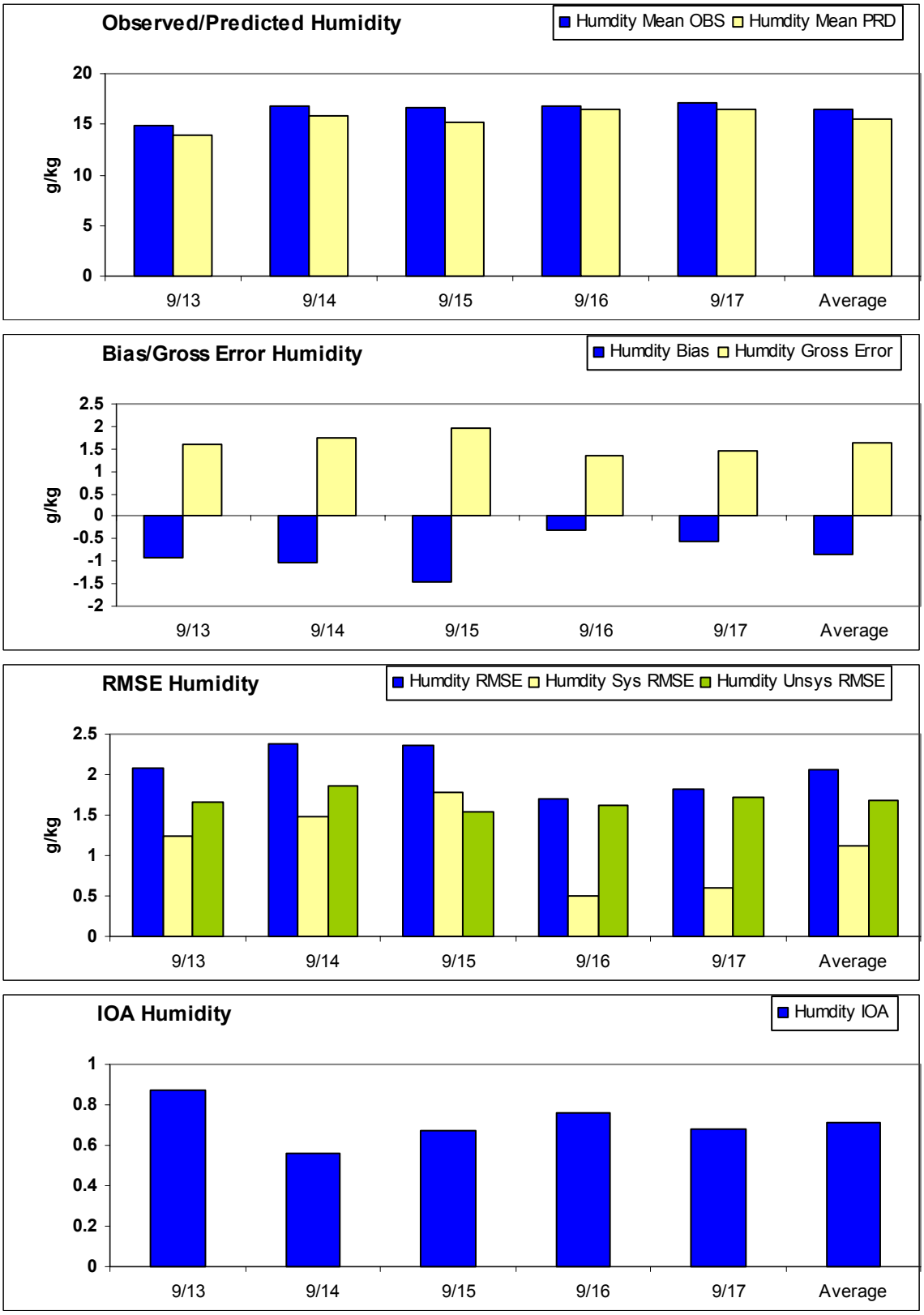
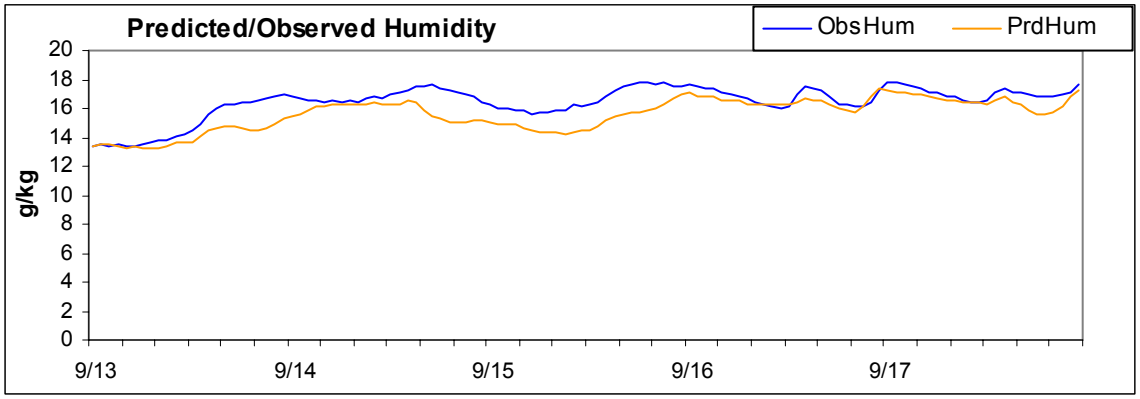
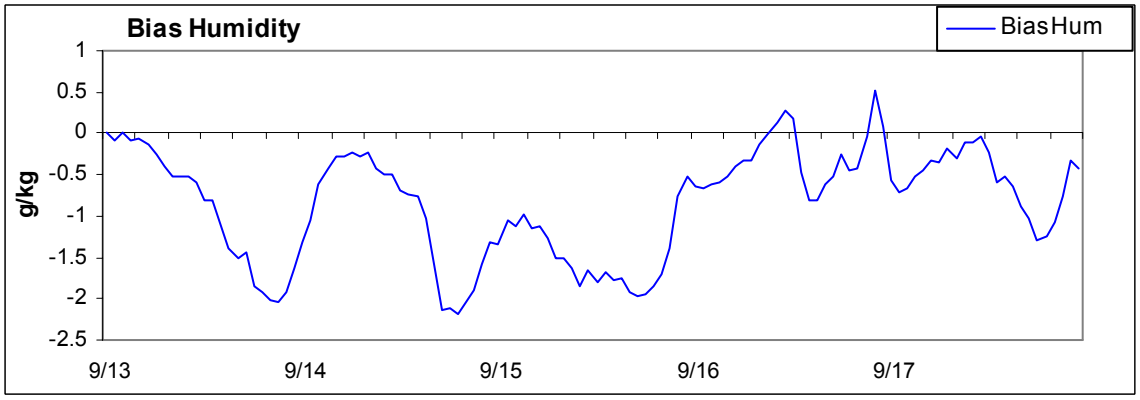
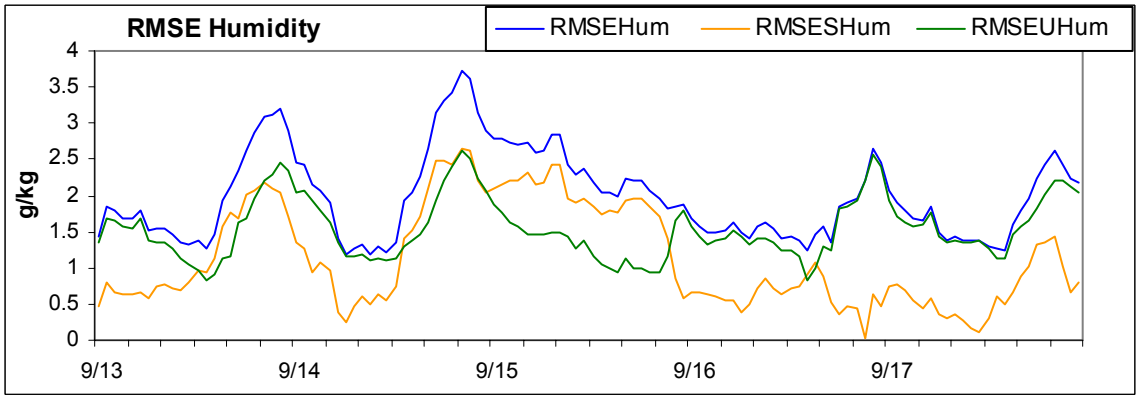
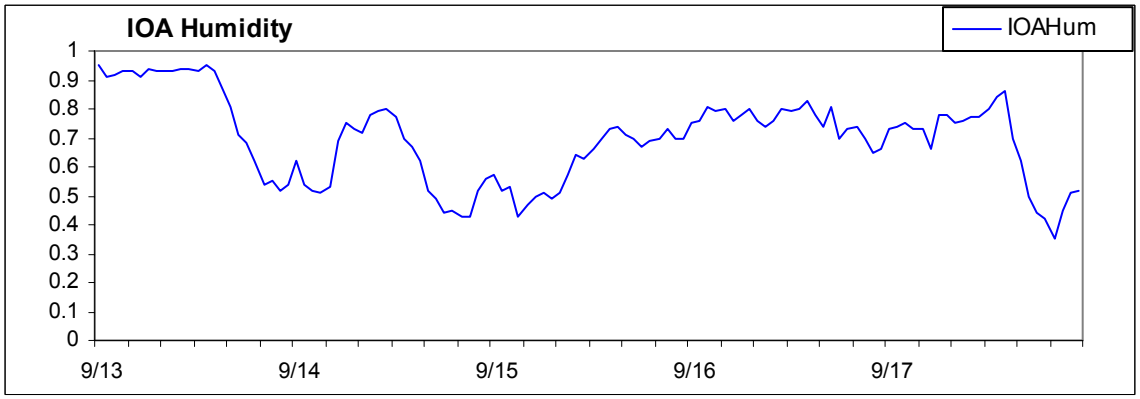

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
9/13
9/14
9/15
9/16
9/17
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
9/13
9/14
9/15
9/16
9/17
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
9/13
9/14
9/15
9/16
9/17
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
9/13
9/14
9/15
9/16
9/17
Average

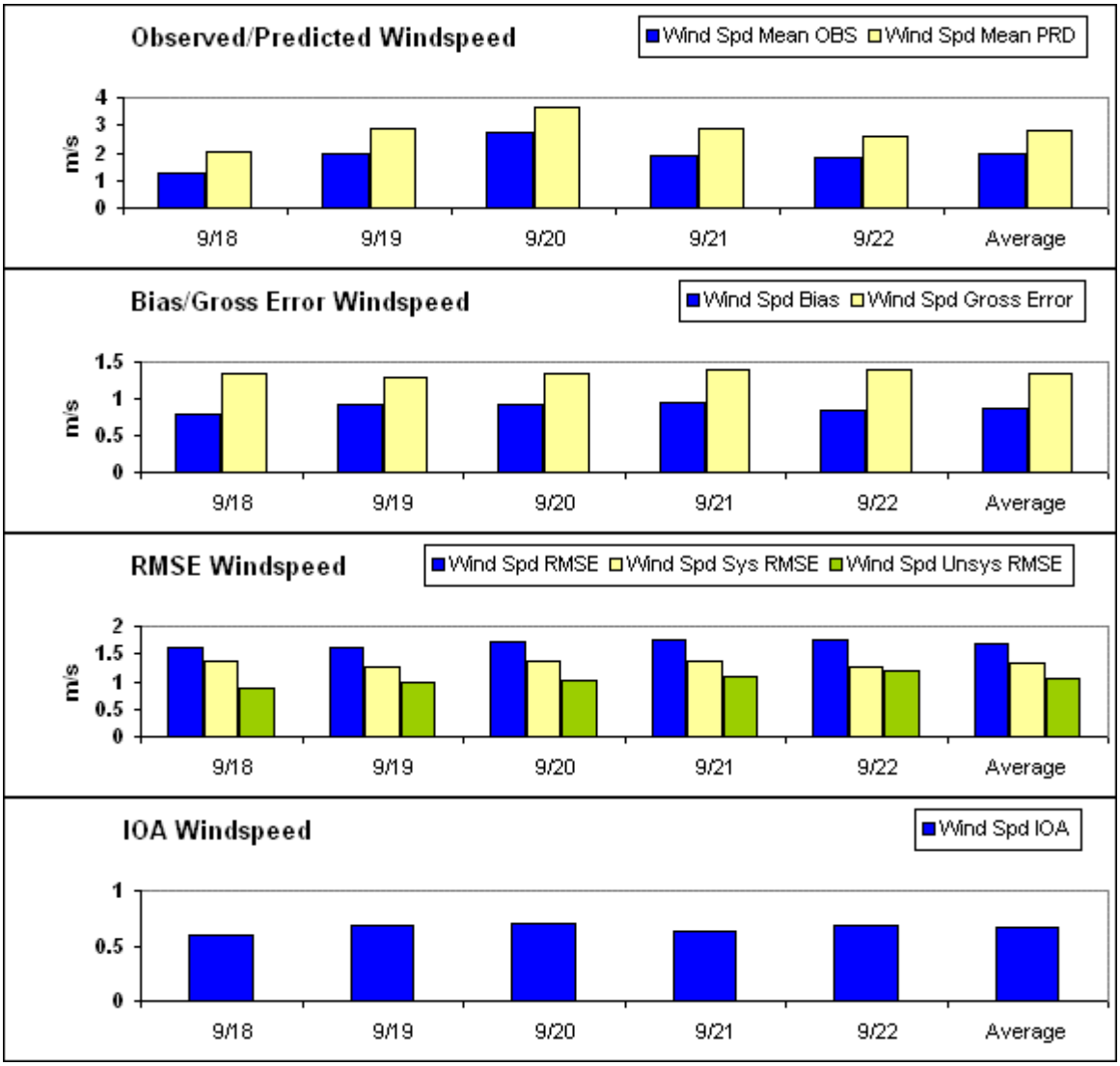
Figure 143

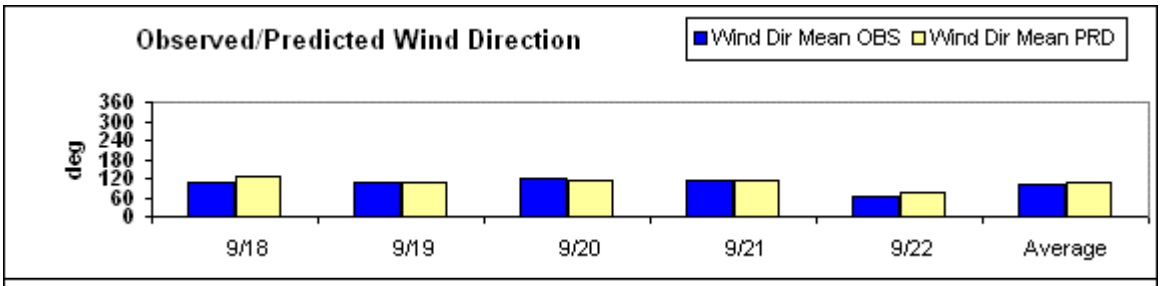

Predicted/Observed Humidity
ObsHum
PrdHum
g/kg
20
18
16
14
12
10
8
6
4
2
0
9/13
9/14
9/15
9/16
9/17

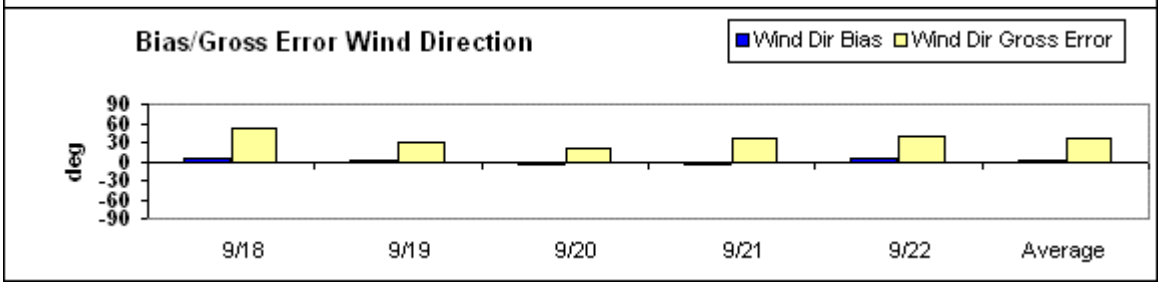

Bias Humidity
BiasHum
g/kg
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
9/13
9/14
9/15
9/16
9/17

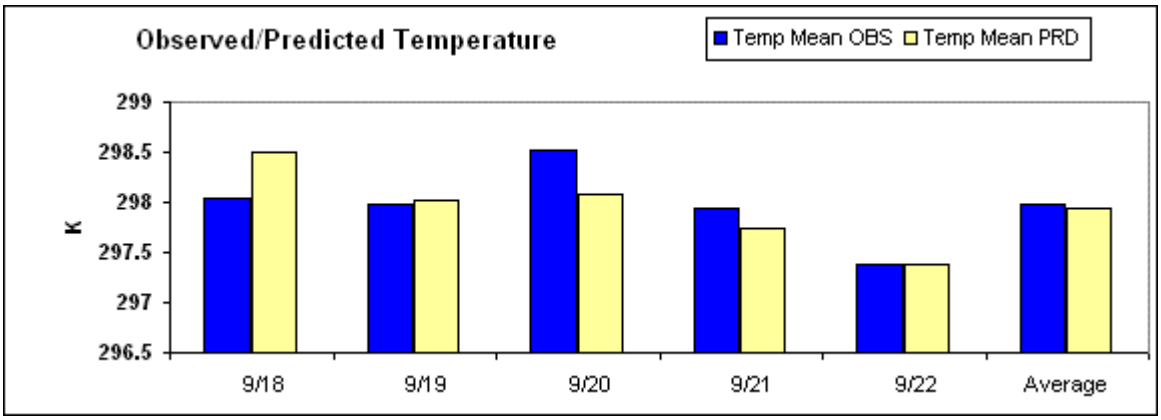

RMSE Humidity
RMSEHum
RMSESHum
RMSEUHum
g/kg
4
3.5
3
2.5
2
1.5
1
0.5
0
9/13
9/14
9/15
9/16
9/17

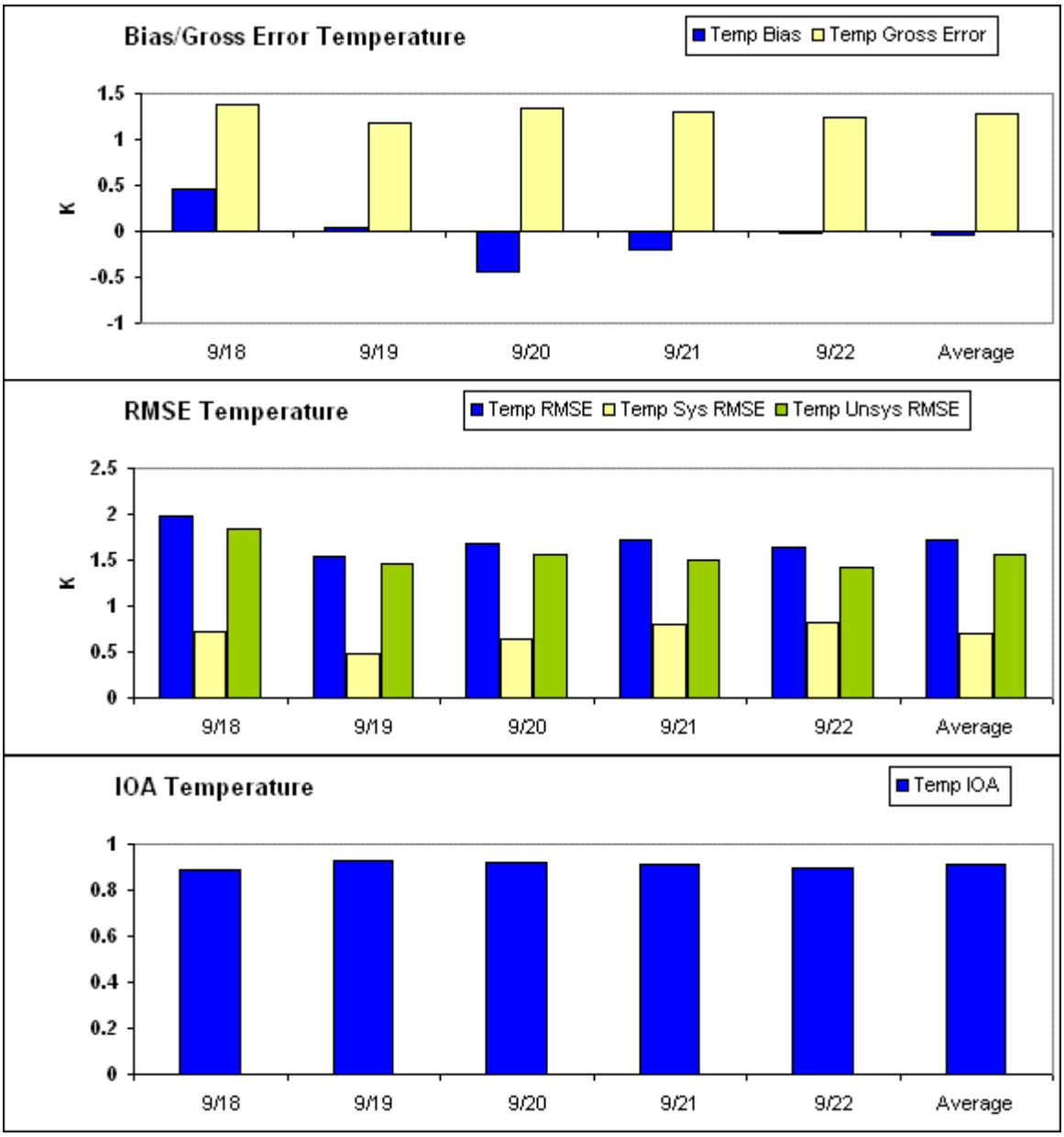

IOA Humidity
IOAHum
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/13
9/14
9/15
9/16
9/17

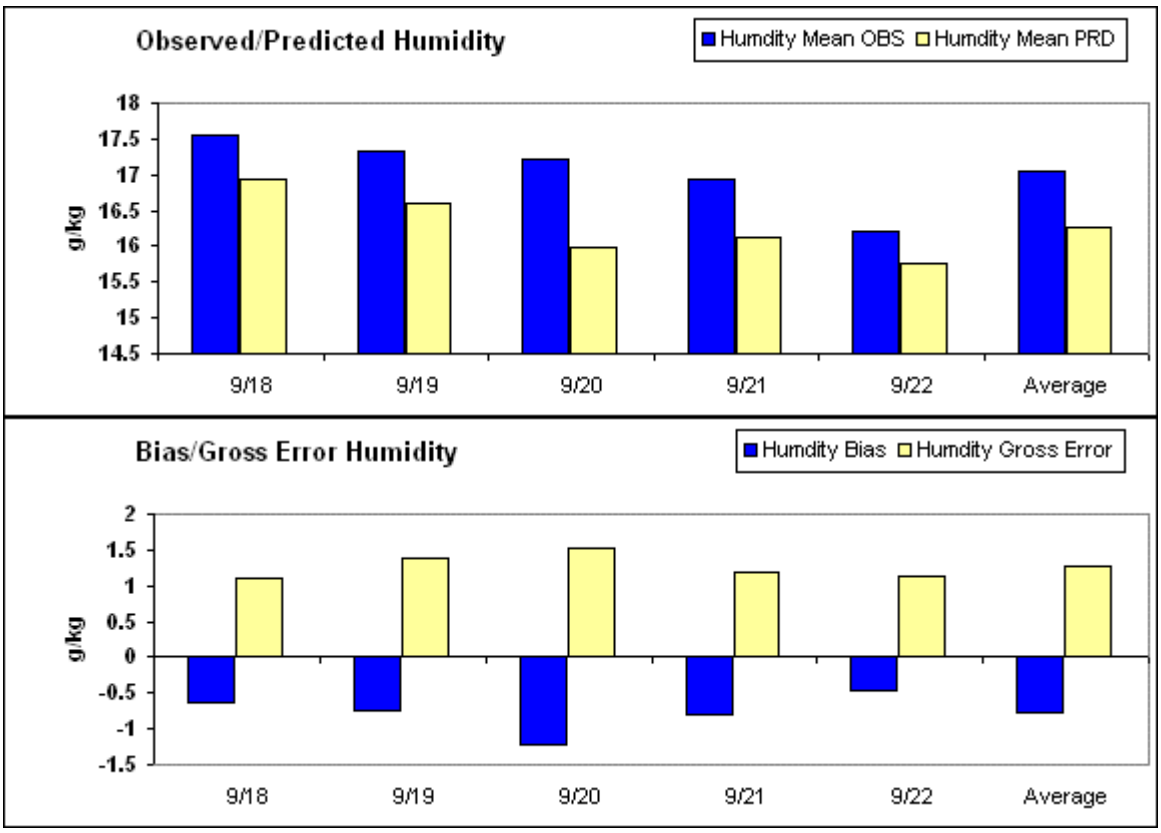

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
9/18
9/19
9/20
9/21
9/22
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
9/18
9/19
9/20
9/21
9/22
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
9/18
9/19
9/20
9/21
9/22
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
9/18
9/19
9/20
9/21
9/22
Average

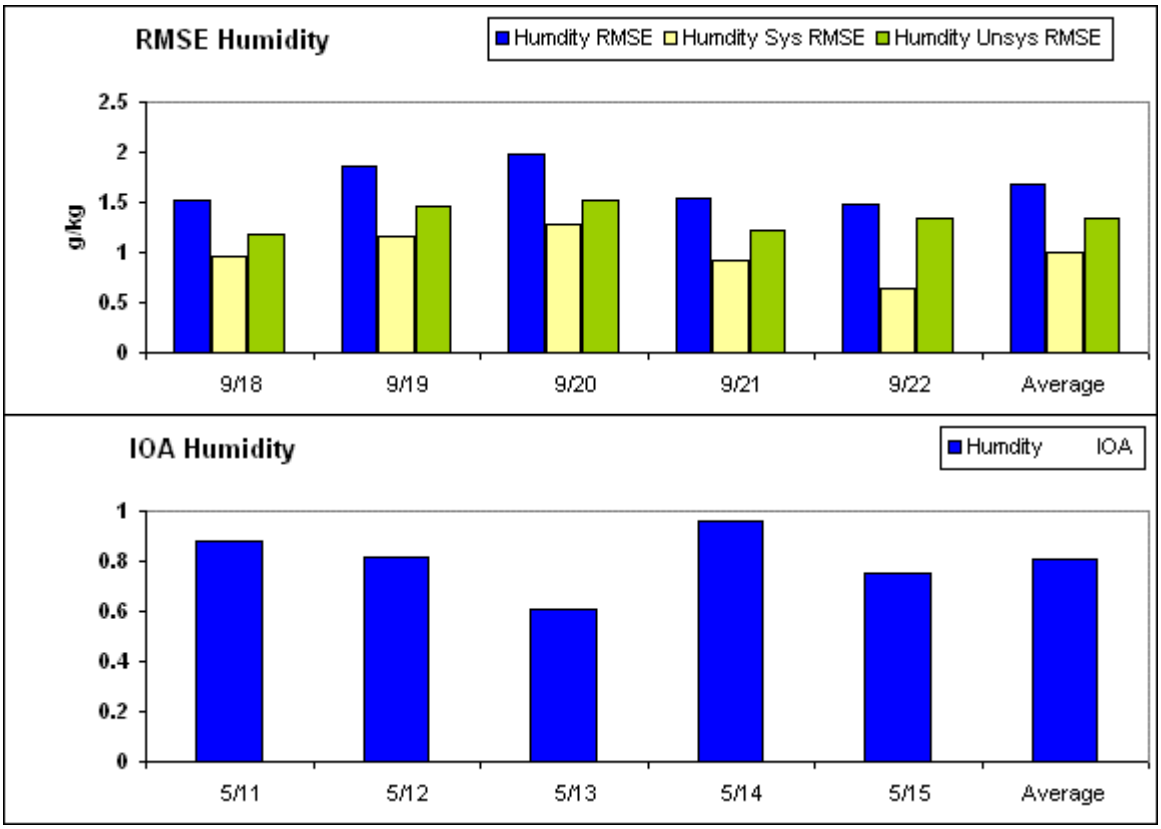

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
9/18
9/19
9/20
9/21
9/22
Average

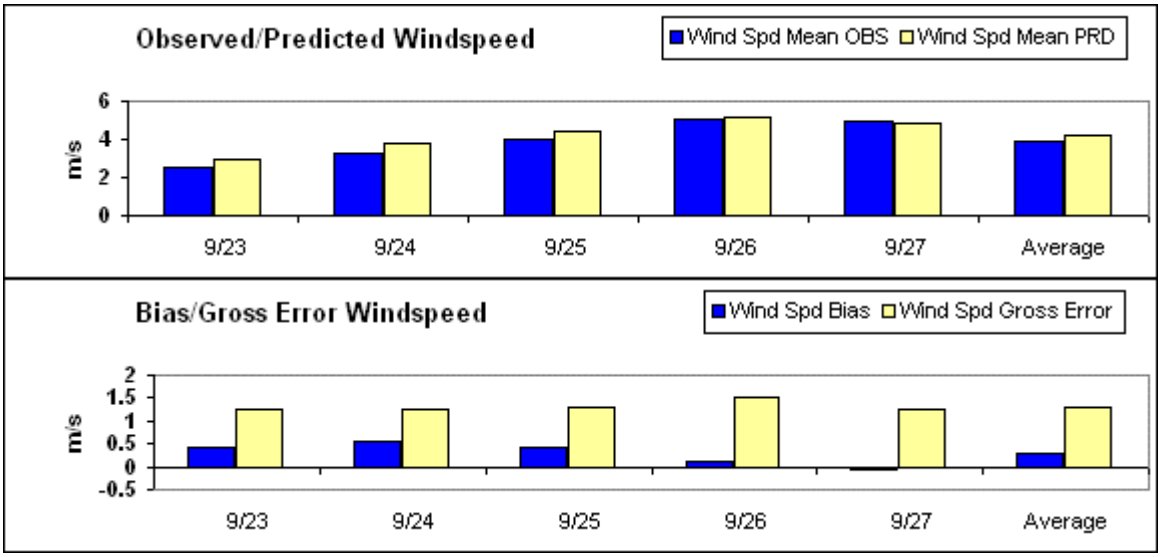

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
9/18
9/19
9/20
9/21
9/22
Average

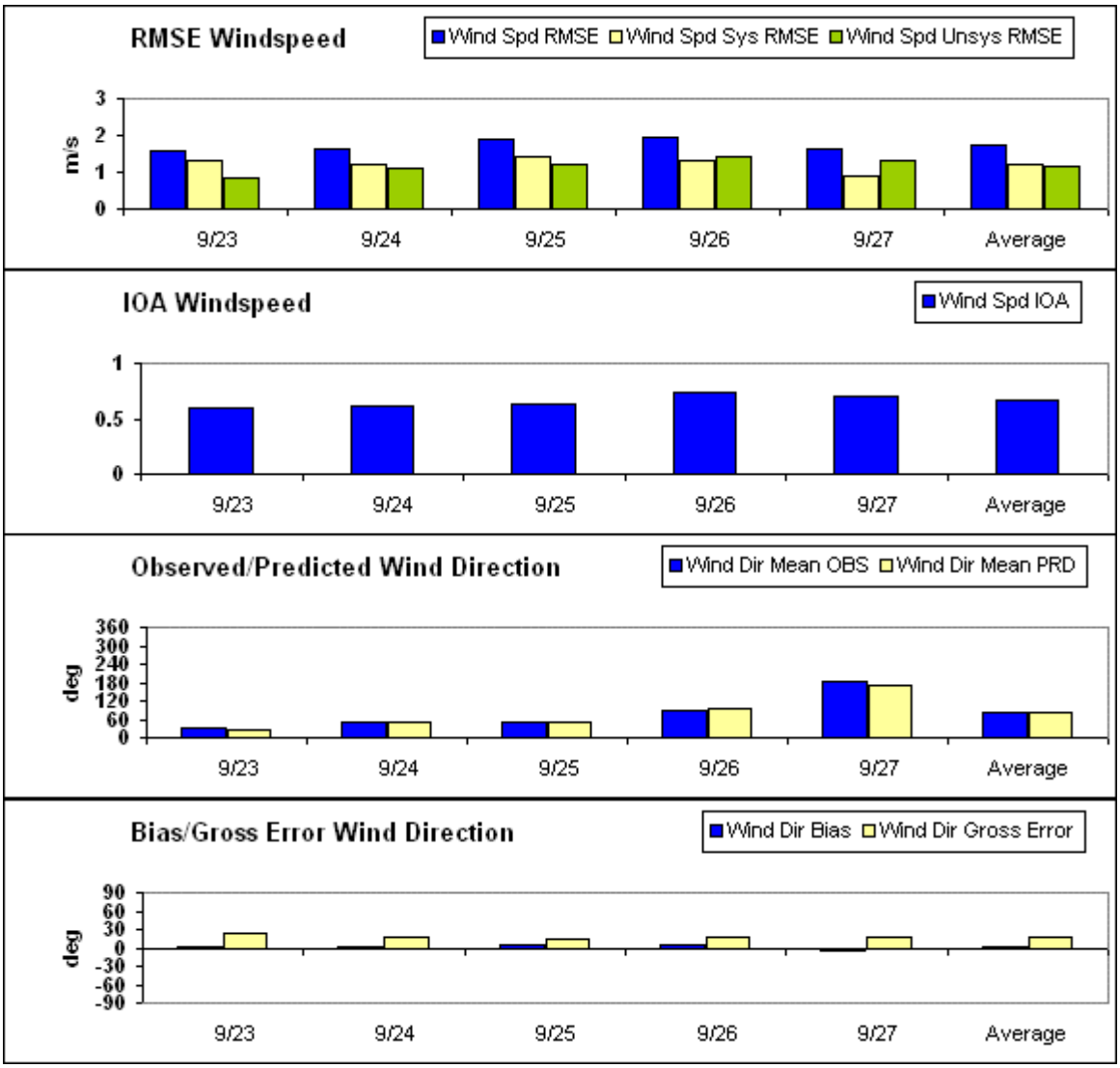

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
299
298.5
298
297.5
297
296.5
9/18
9/19
9/20
9/21
9/22
Average

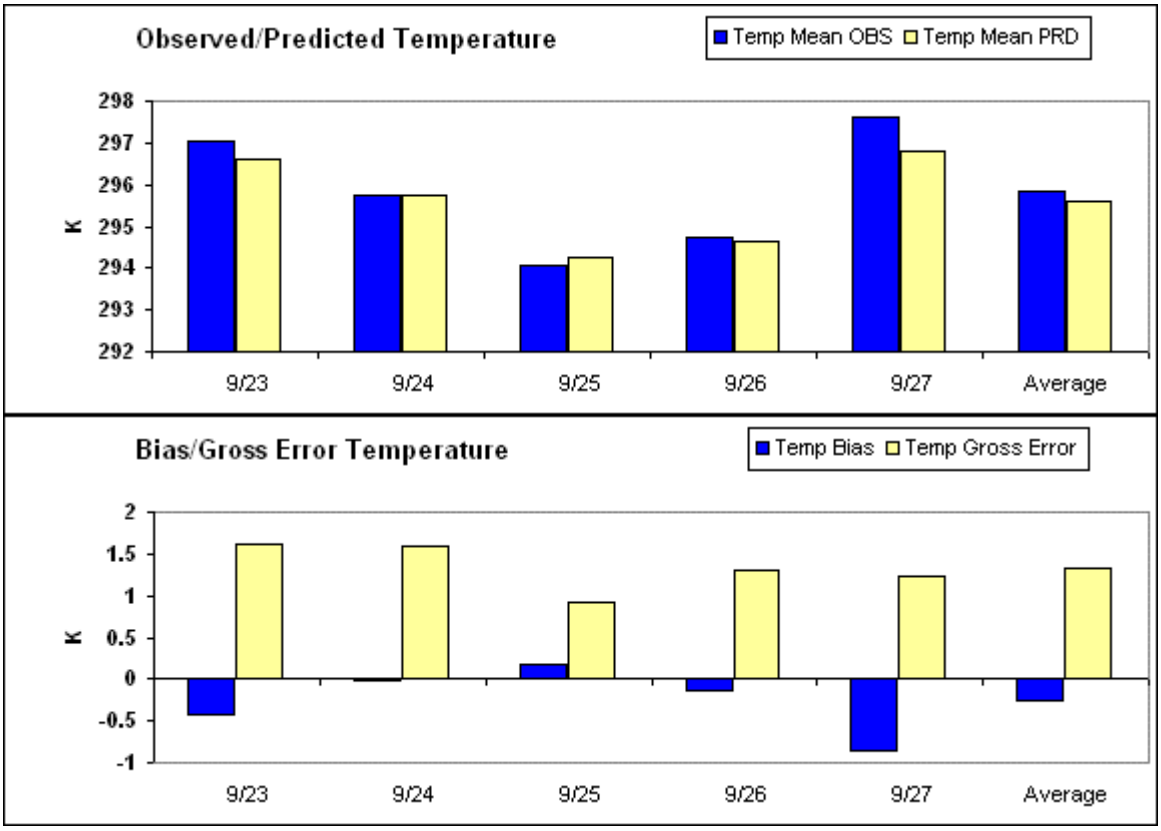

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
1.5
1
0.5
0
-0.5
-1
9/18
9/19
9/20
9/21
9/22
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
9/18
9/19
9/20
9/21
9/22
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
9/18
9/19
9/20
9/21
9/22
Average

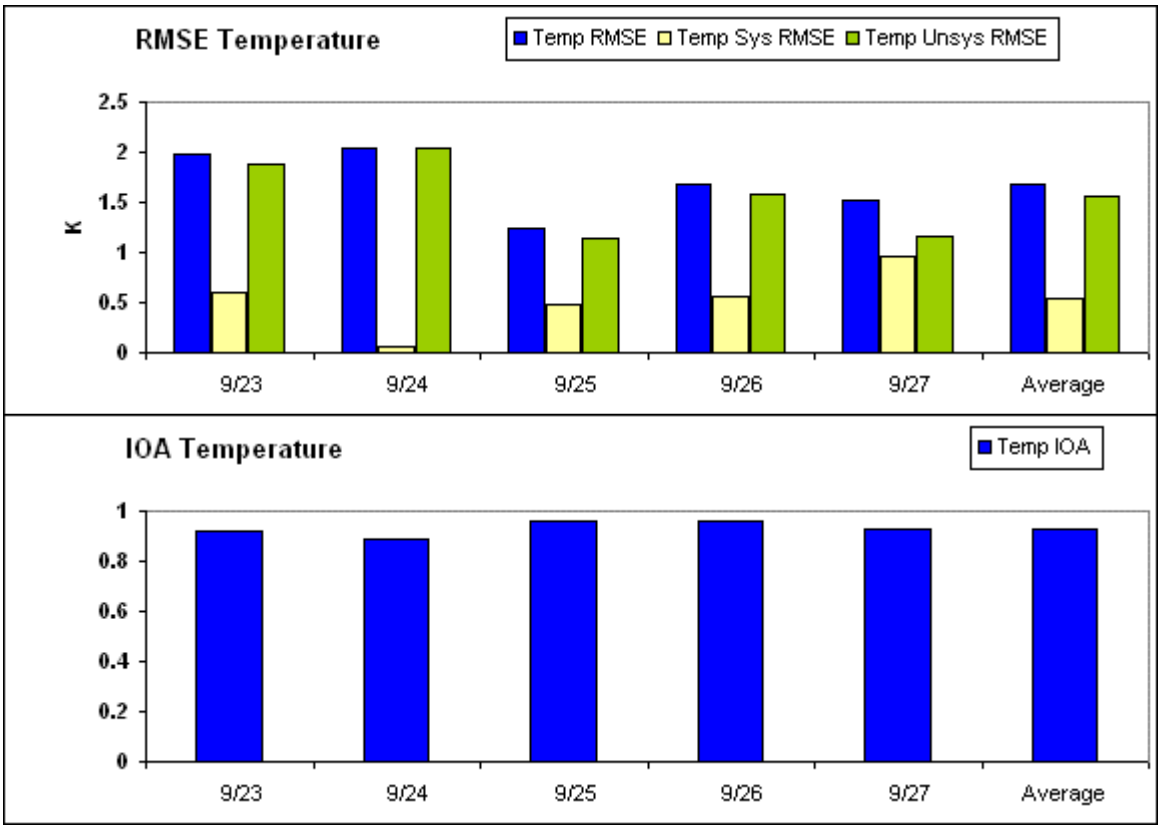

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
18
17.5
17
16.5
16
15.5
15
14.5
9/18
9/19
9/20
9/21
9/22
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
9/18
9/19
9/20
9/21
9/22
Average

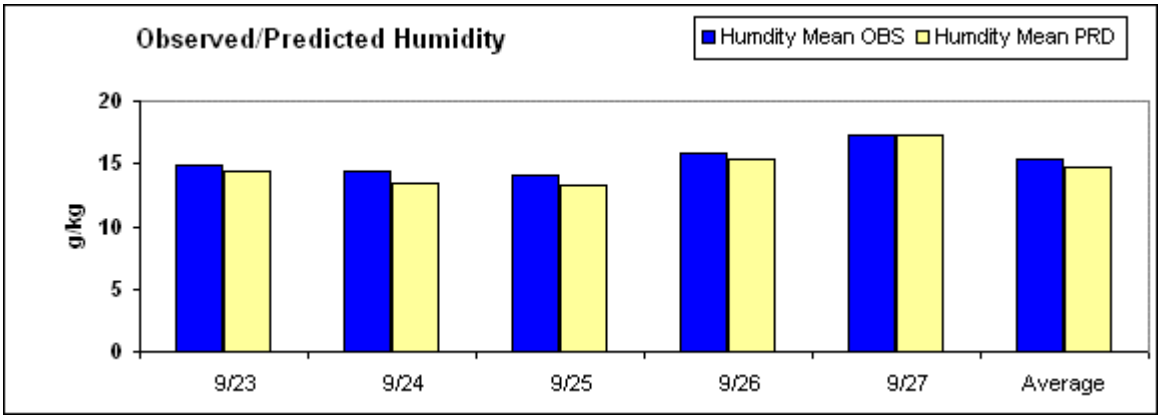

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
9/18
9/19
9/20
9/21
9/22
Average
IOA Humidity
Humdity
IOA
1
0.8
0.6
0.4
0.2
0
5/11
5/12
5/13
5/14
5/15
Average

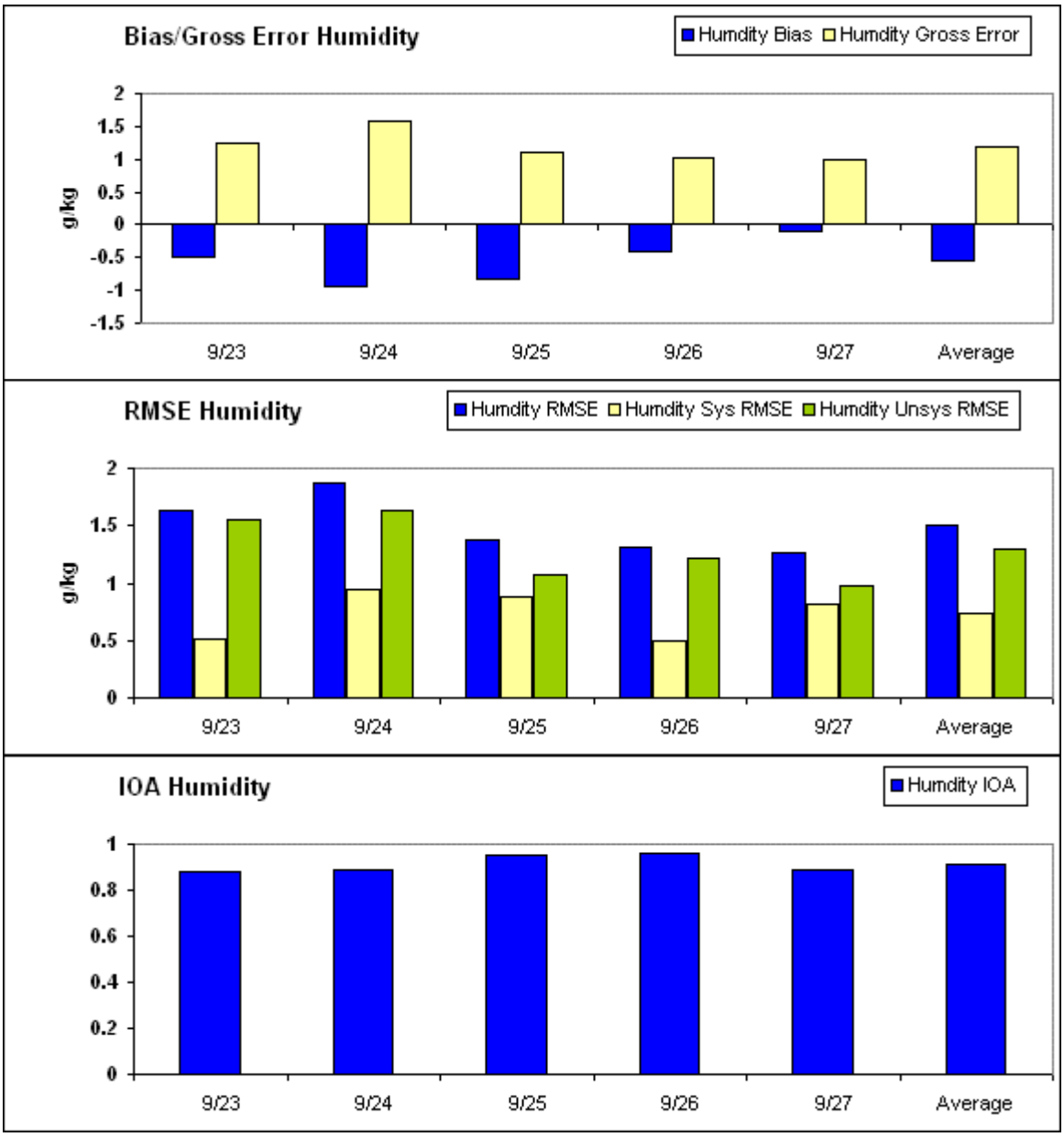

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
9/23
9/24
9/25
9/26
9/27
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
-0.5
9/23
9/24
9/25
9/26
9/27
Average

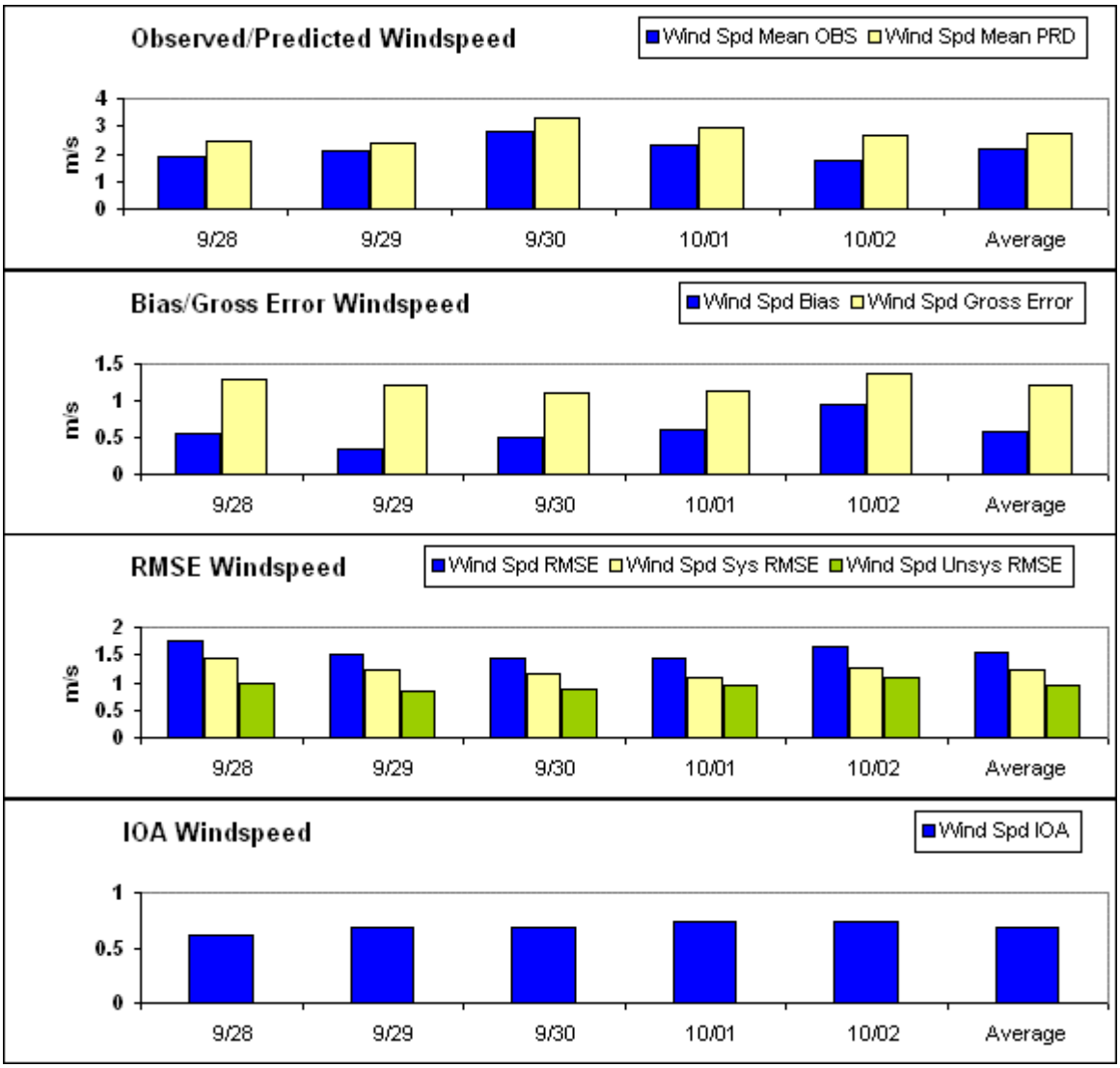

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
9/23
9/24
9/25
9/26
9/27
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
9/23
9/24
9/25
9/26
9/27
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
9/23
9/24
9/25
9/26
9/27
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
9/23
9/24
9/25
9/26
9/27
Average

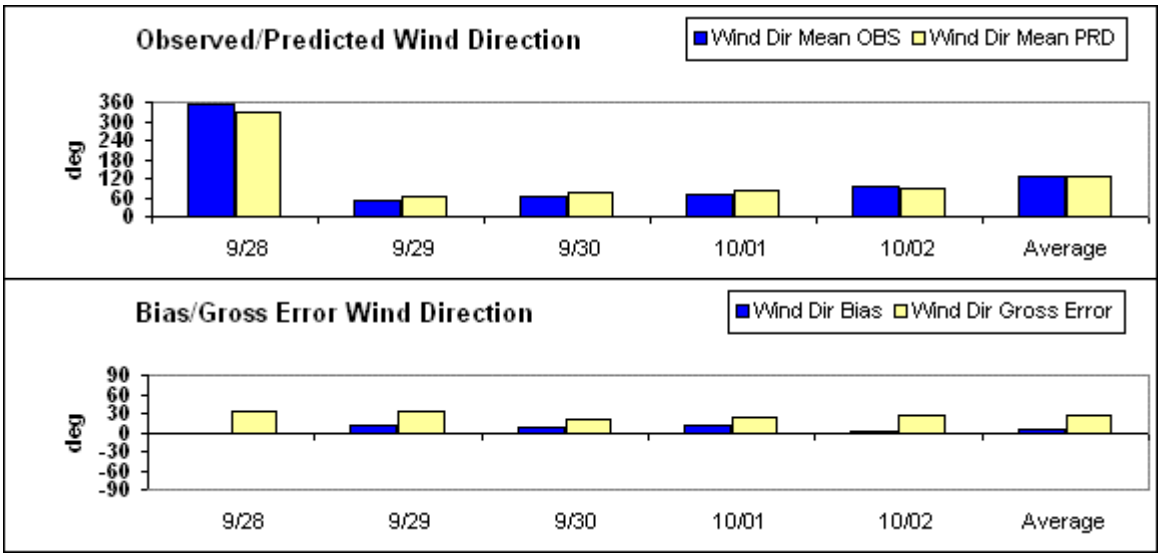

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298
297
296
295
294
293
292
9/23
9/24
9/25
9/26
9/27
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
9/23
9/24
9/25
9/26
9/27
Average

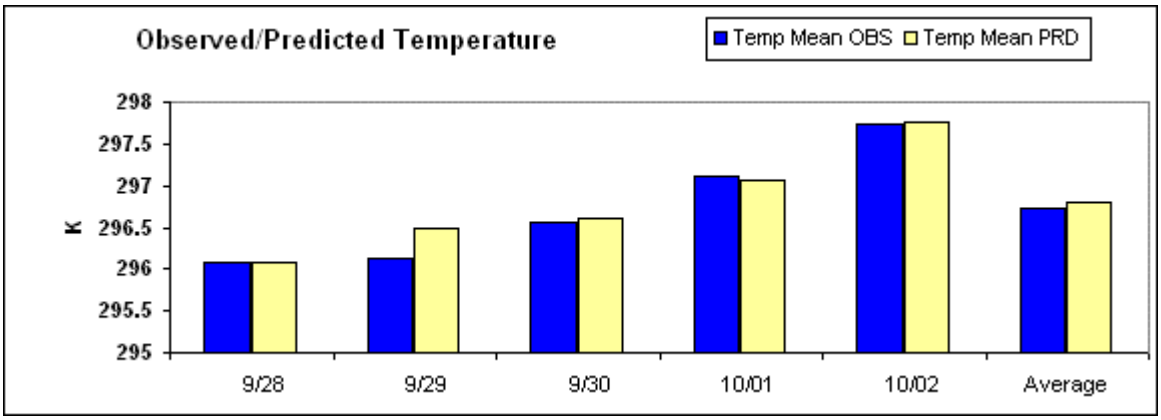

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
9/23
9/24
9/25
9/26
9/27
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
9/23
9/24
9/25
9/26
9/27
Average

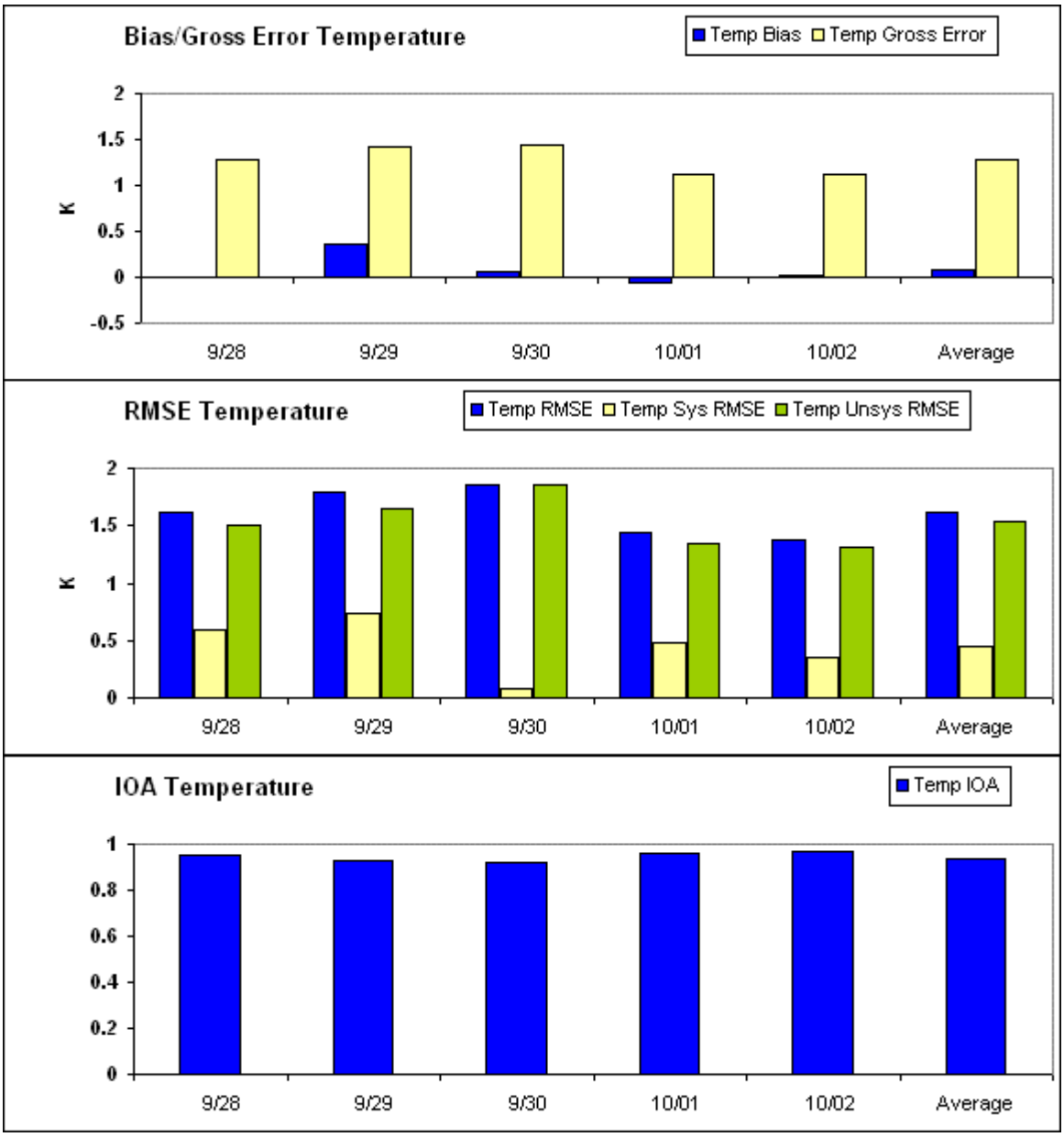

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
9/23
9/24
9/25
9/26
9/27
Average

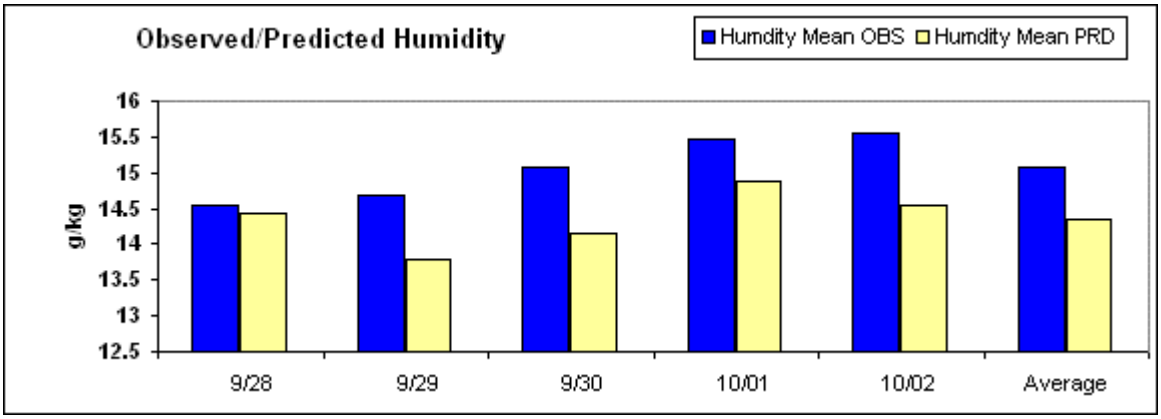

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
9/23
9/24
9/25
9/26
9/27
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
9/23
9/24
9/25
9/26
9/27
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
9/23
9/24
9/25
9/26
9/27
Average

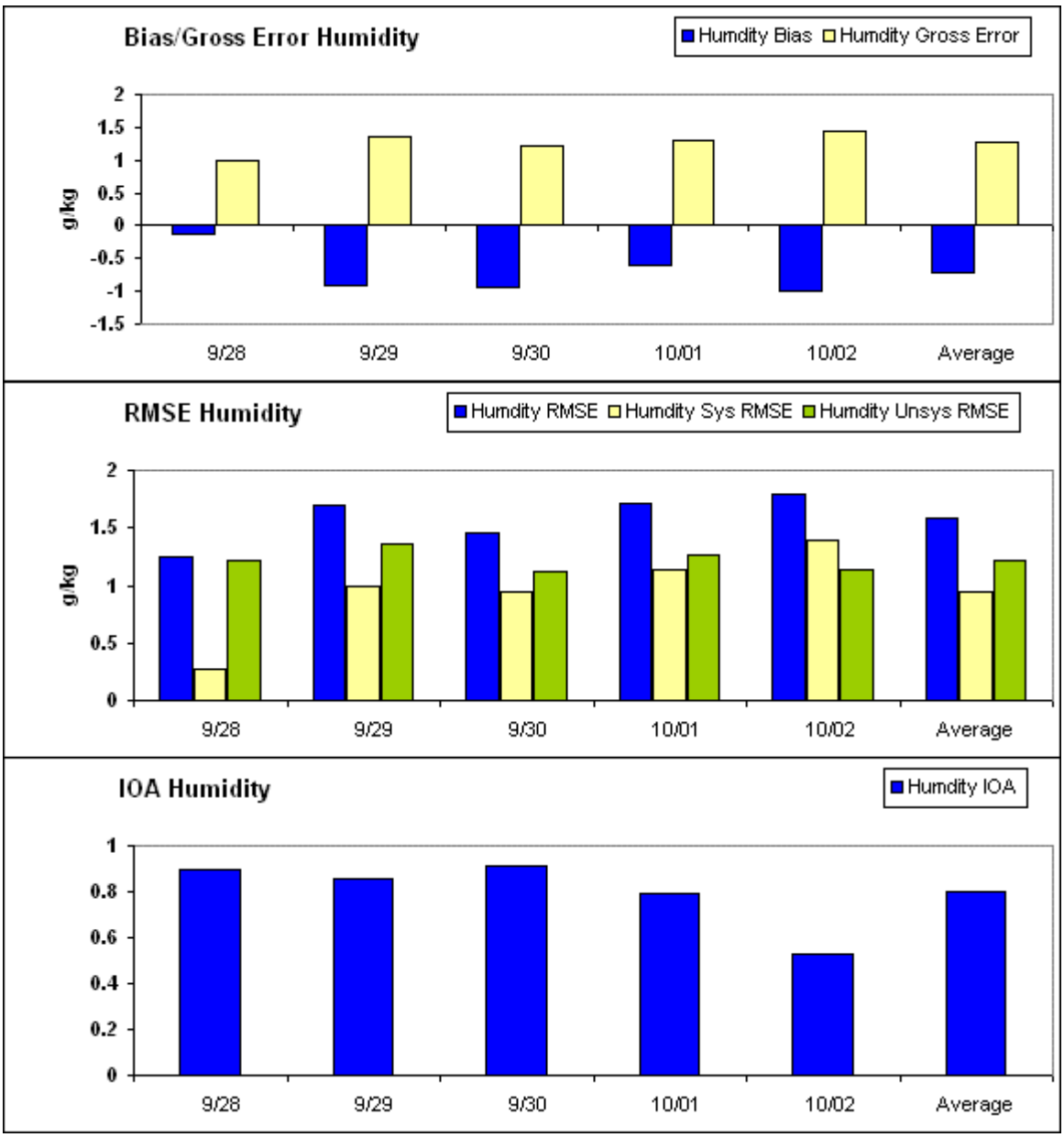

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
9/28
9/29
9/30
10/01
10/02
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
9/28
9/29
9/30
10/01
10/02
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
9/28
9/29
9/30
10/01
10/02
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
9/28
9/29
9/30
10/01
10/02
Average

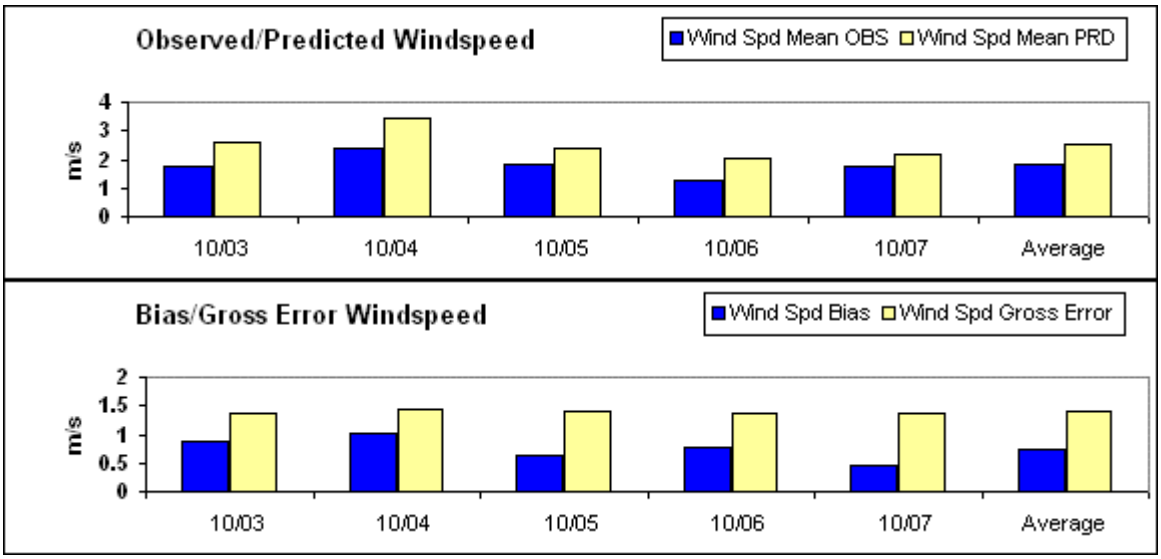

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
9/28
9/29
9/30
10/01
10/02
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
9/28
9/29
9/30
10/01
10/02
Average

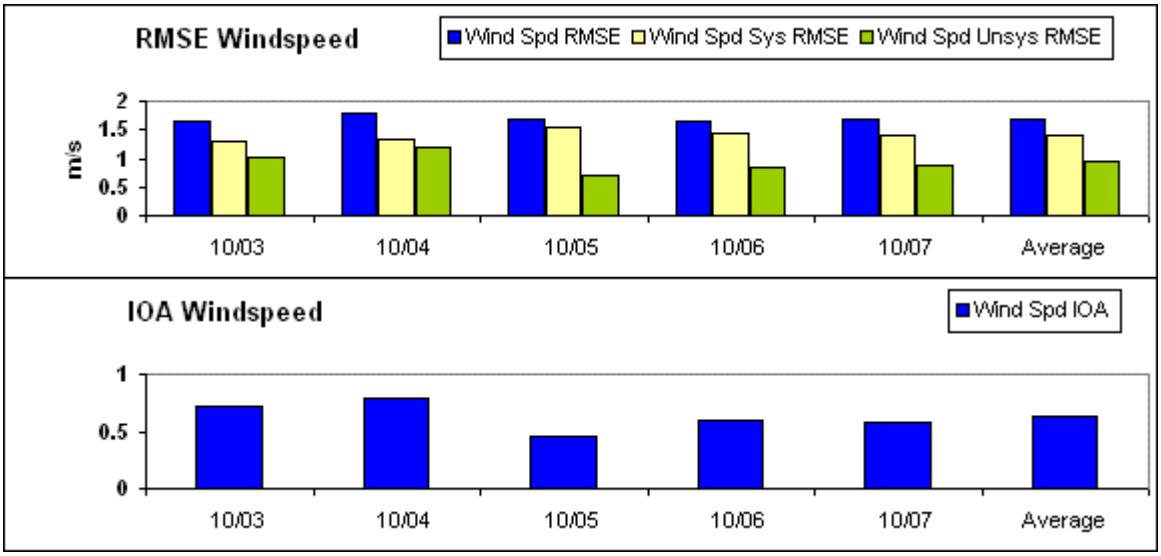

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298
297.5
297
296.5
296
295.5
295
9/28
9/29
9/30
10/01
10/02
Average

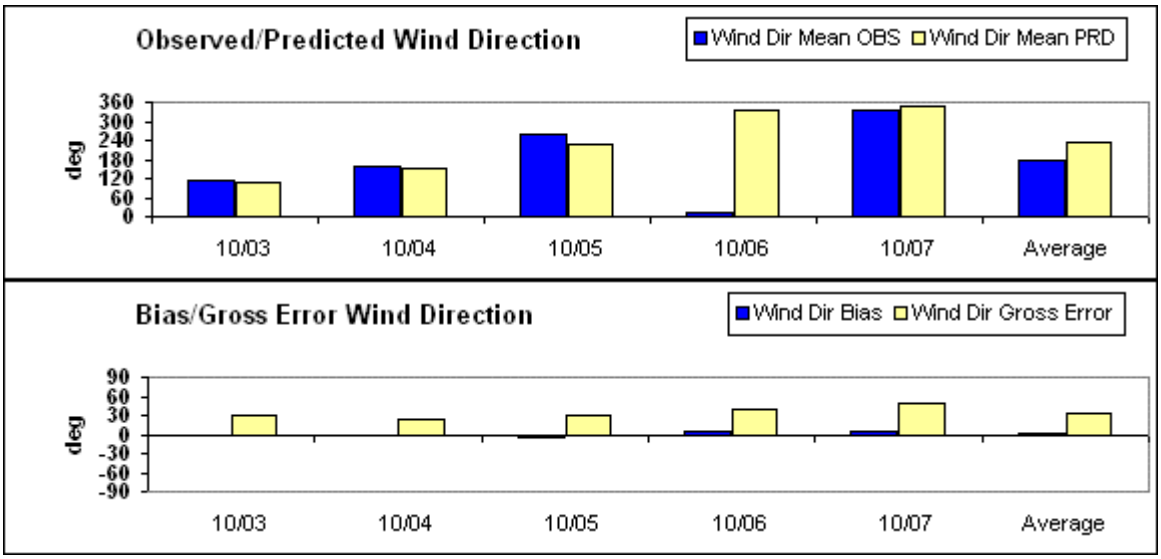

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
9/28
9/29
9/30
10/01
10/02
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2
1.5
1
0.5
0
9/28
9/29
9/30
10/01
10/02
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
9/28
9/29
9/30
10/01
10/02
Average

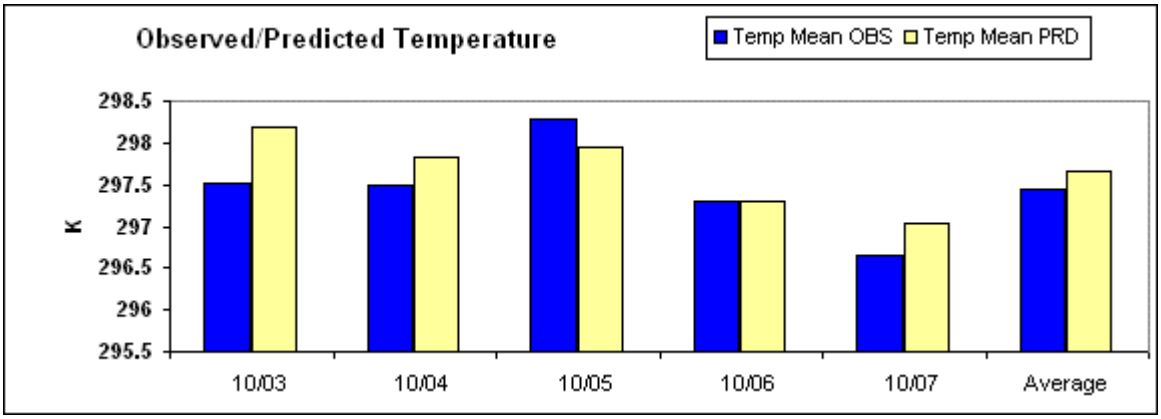

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
15.5
15
14.5
14
13.5
13
12.5
9/28
9/29
9/30
10/01
10/02
Average

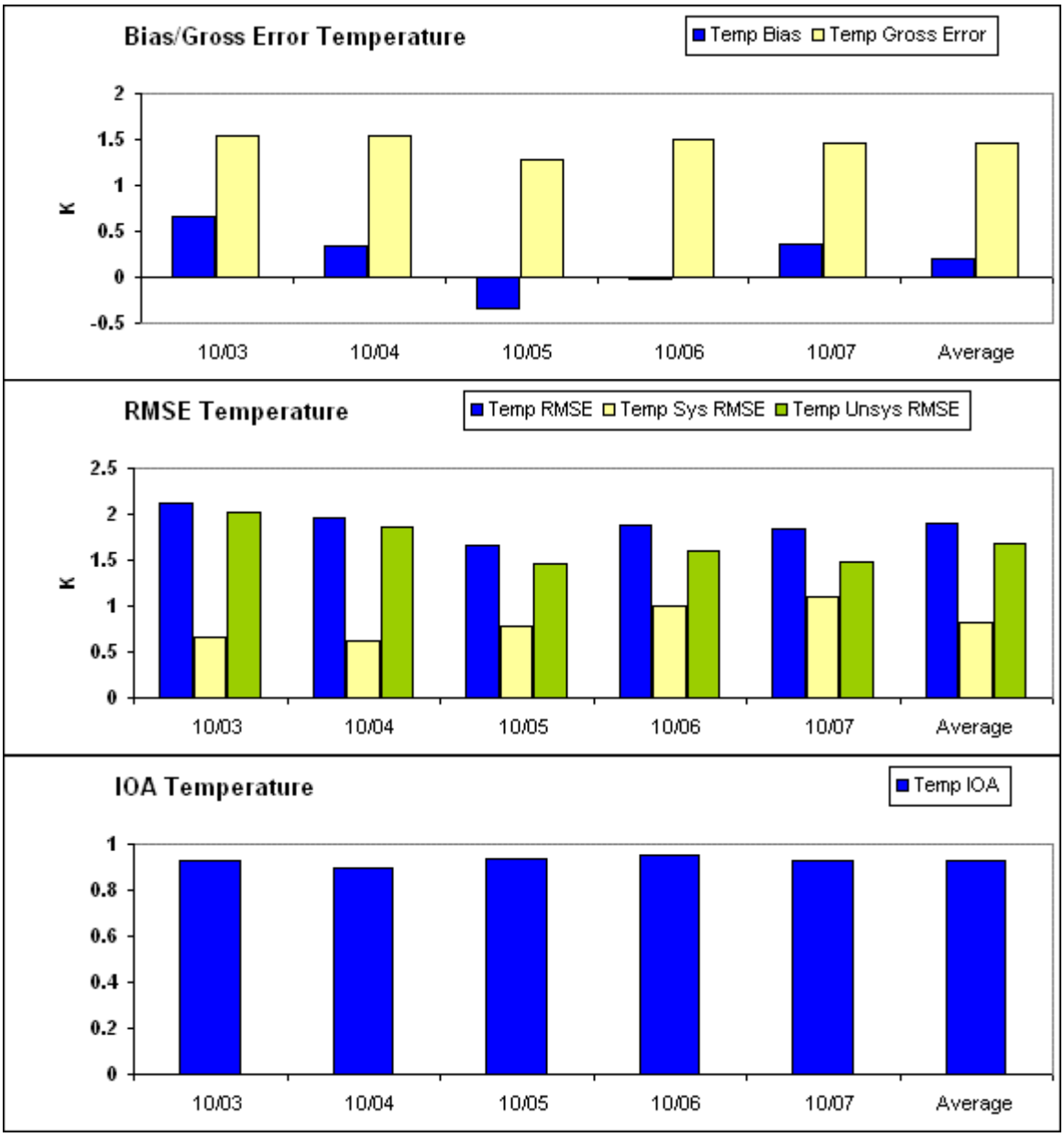

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
9/28
9/29
9/30
10/01
10/02
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
9/28
9/29
9/30
10/01
10/02
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
9/28
9/29
9/30
10/01
10/02
Average

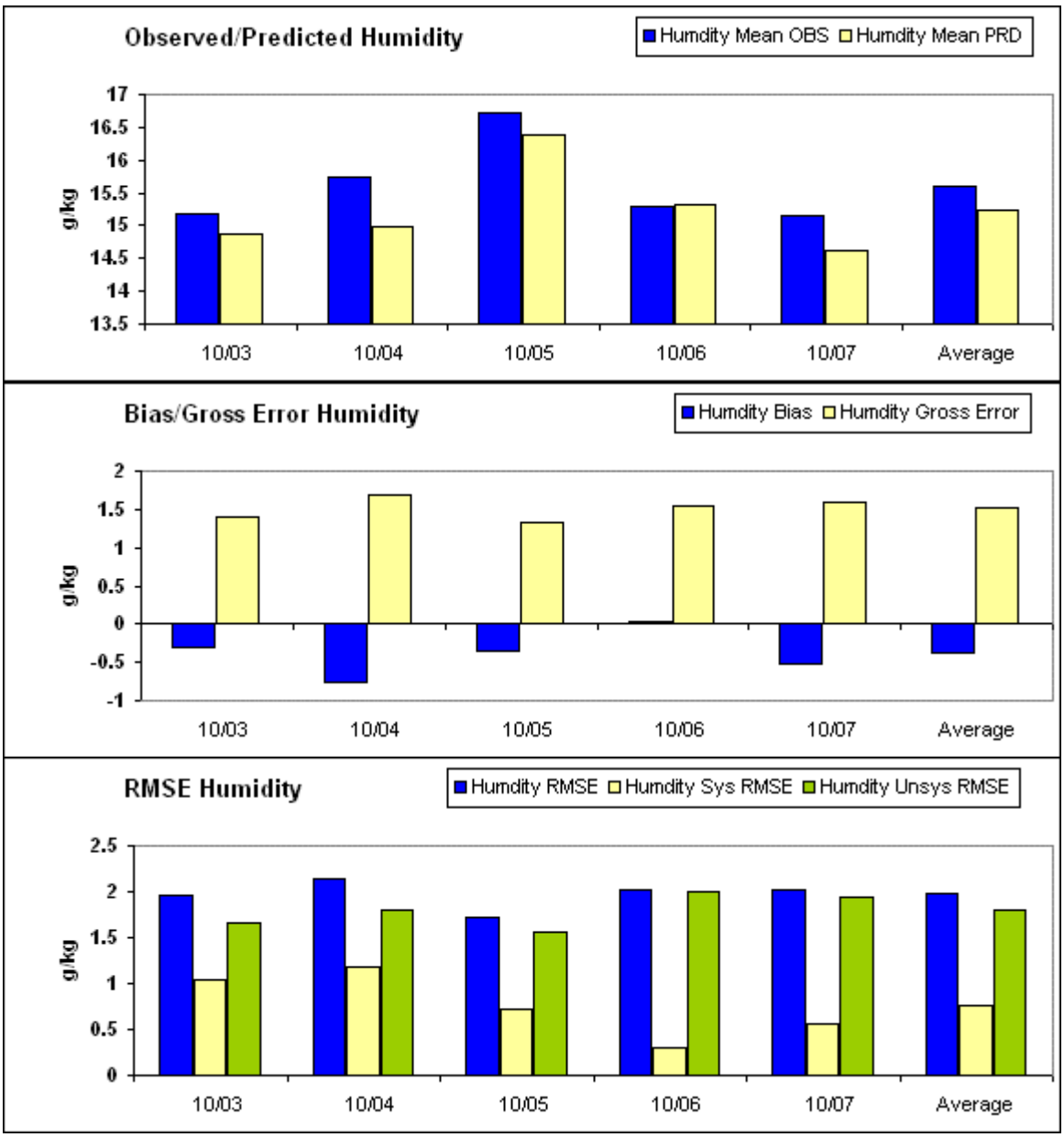

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
10/03
10/04
10/05
10/06
10/07
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
10/03
10/04
10/05
10/06
10/07
Average

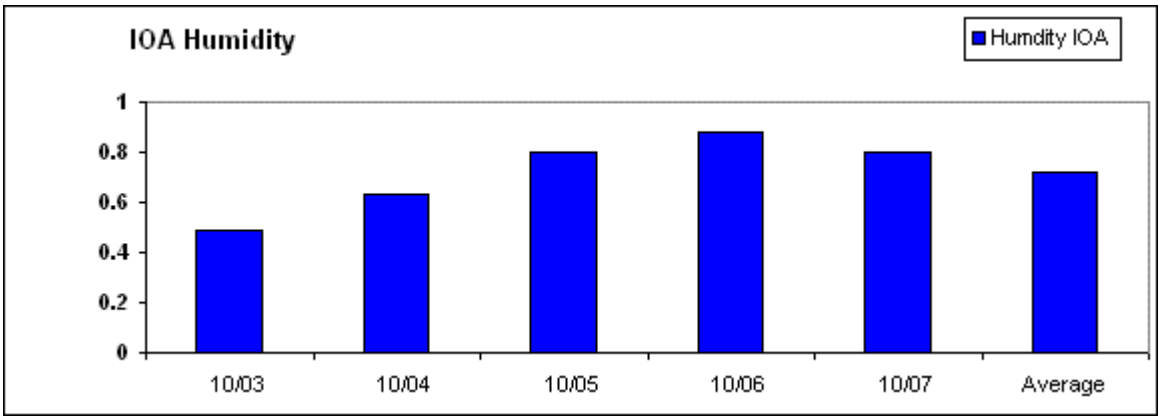

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
10/03
10/04
10/05
10/06
10/07
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
10/03
10/04
10/05
10/06
10/07
Average

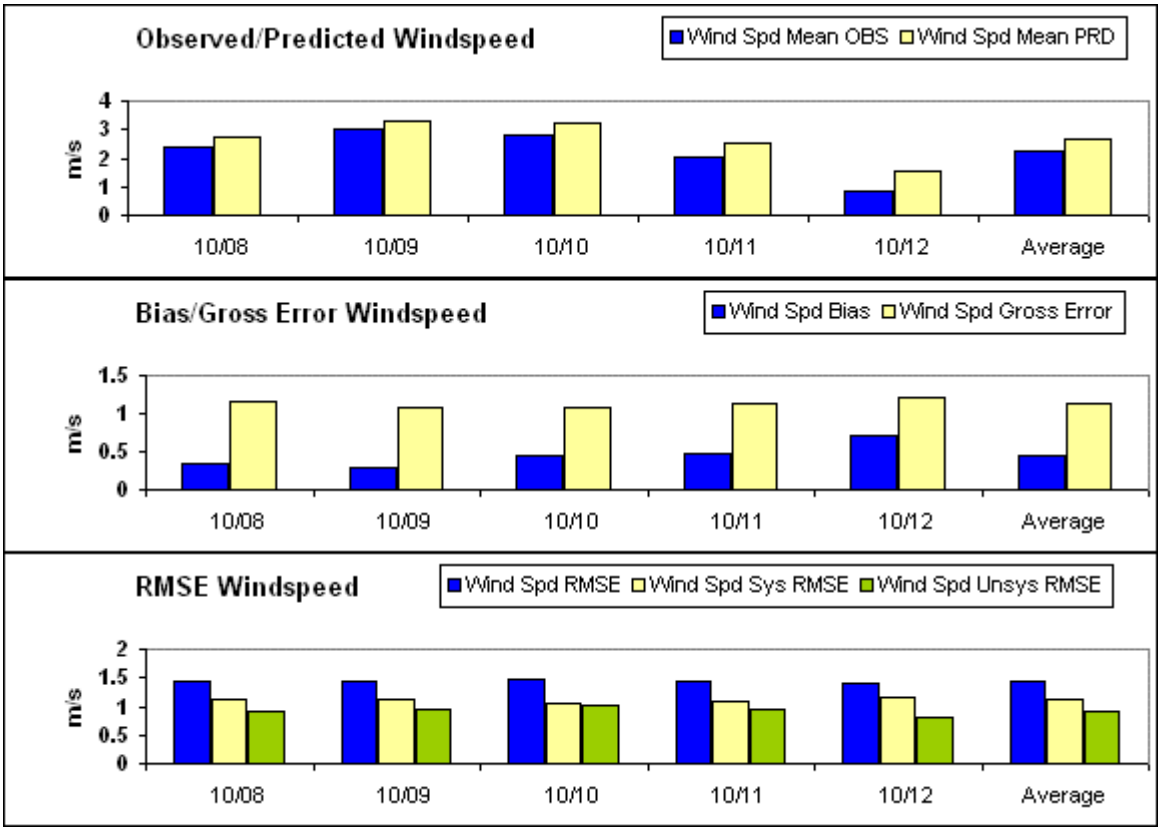

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
10/03
10/04
10/05
10/06
10/07
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
10/03
10/04
10/05
10/06
10/07
Average

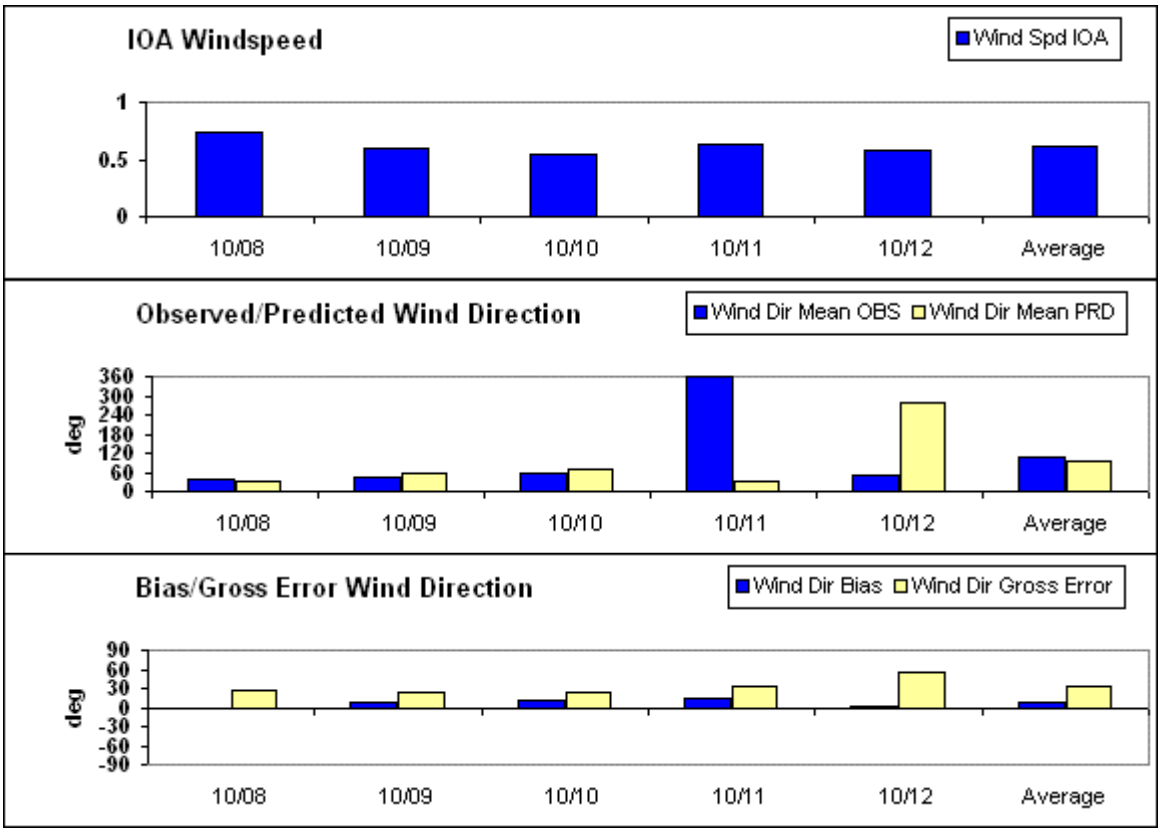

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
298.5
298
297.5
297
296.5
296
295.5
10/03
10/04
10/05
10/06
10/07
Average

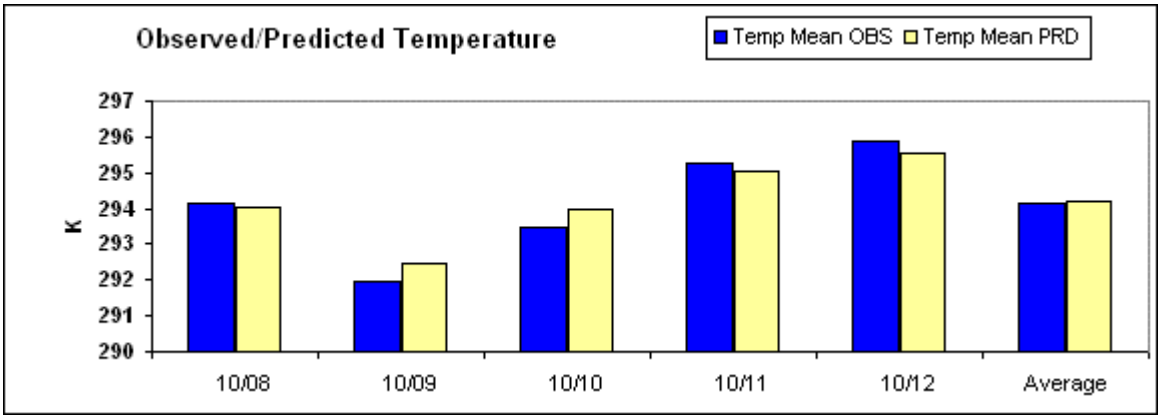

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
10/03
10/04
10/05
10/06
10/07
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
10/03
10/04
10/05
10/06
10/07
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
10/03
10/04
10/05
10/06
10/07
Average

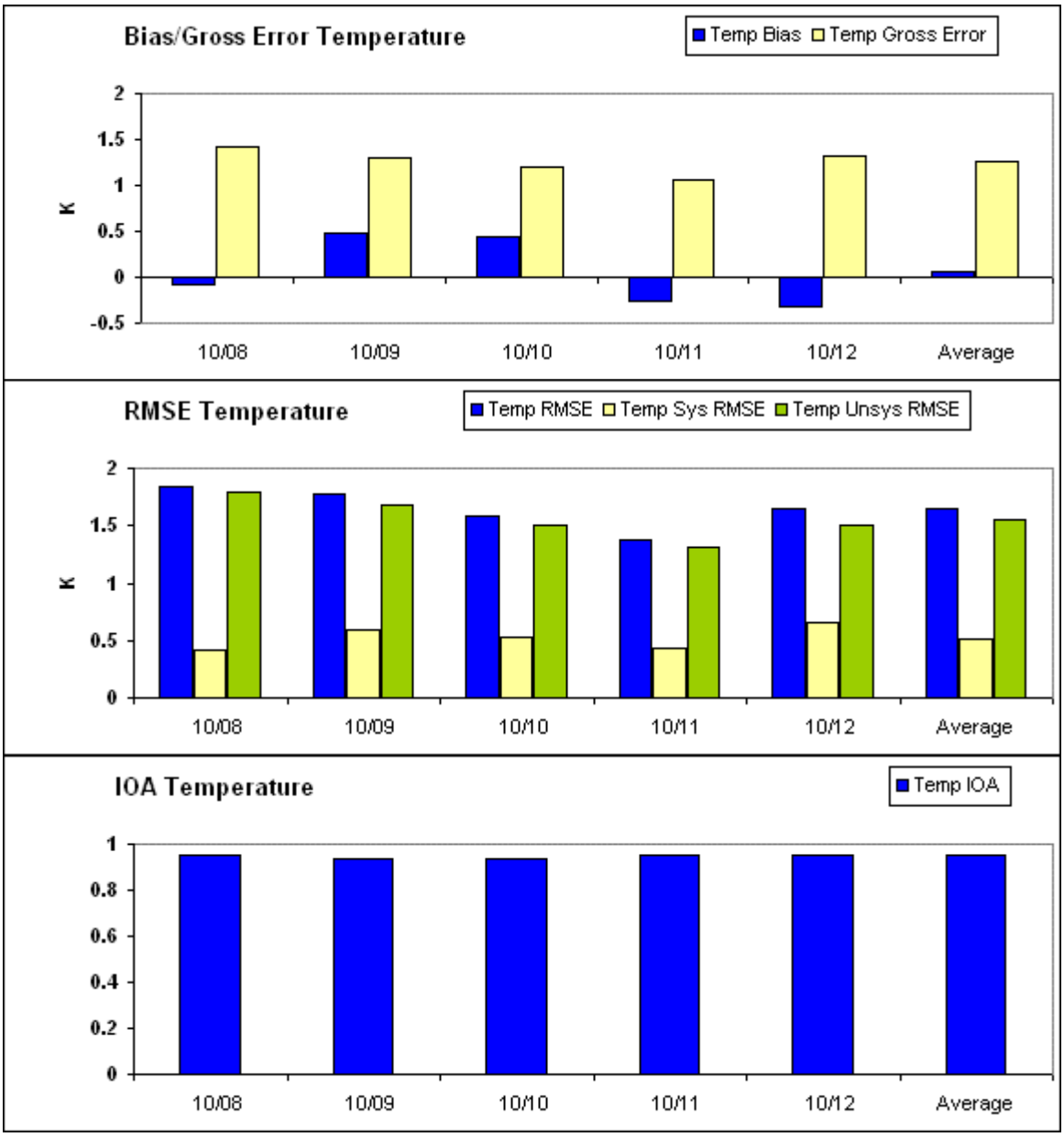

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
17
16.5
16
15.5
15
14.5
14
13.5
10/03
10/04
10/05
10/06
10/07
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
10/03
10/04
10/05
10/06
10/07
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
10/03
10/04
10/05
10/06
10/07
Average

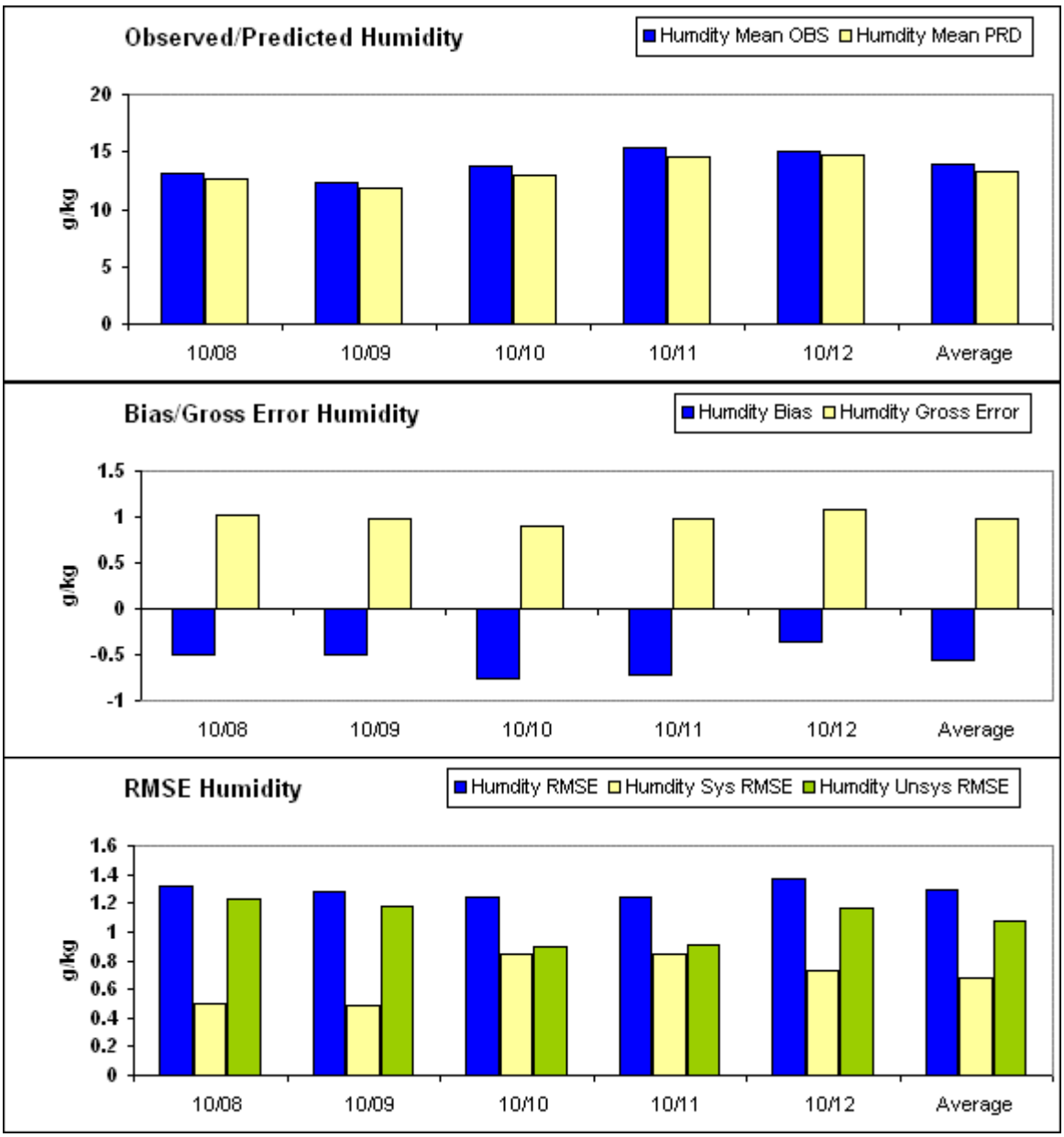

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
10/03
10/04
10/05
10/06
10/07
Average

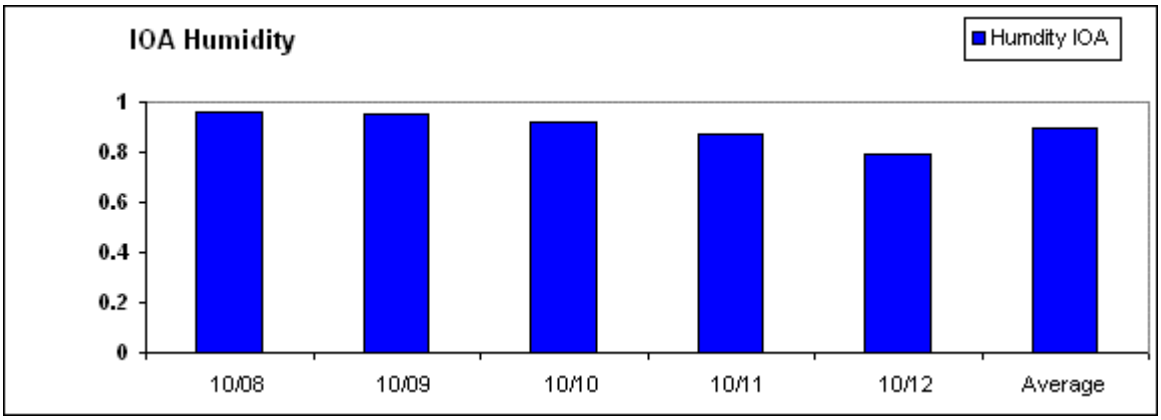

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
10/08
10/09
10/10
10/11
10/12
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
10/08
10/09
10/10
10/11
10/12
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
10/08
10/09
10/10
10/11
10/12
Average

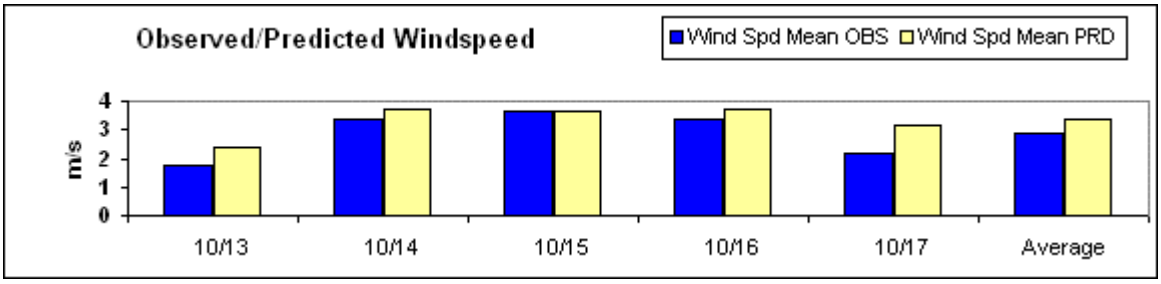

IOA Windspeed
Wind Spd IOA
1
0.5
0
10/08
10/09
10/10
10/11
10/12
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
10/08
10/09
10/10
10/11
10/12
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
10/08
10/09
10/10
10/11
10/12
Average

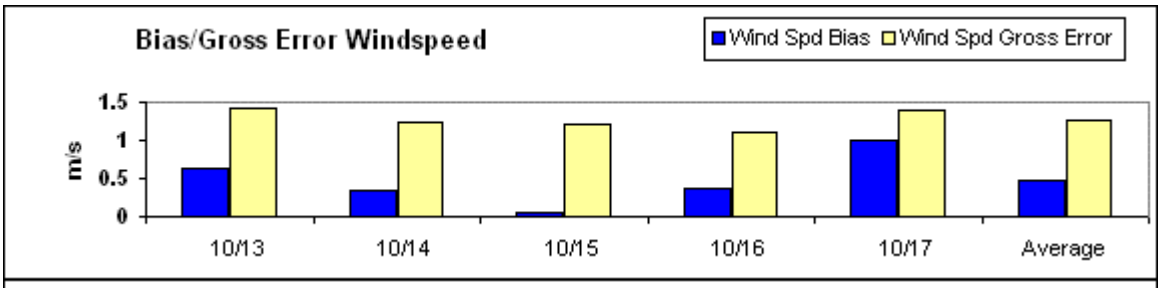

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
297
296
295
294
293
292
291
290
10/08
10/09
10/10
10/11
10/12
Average

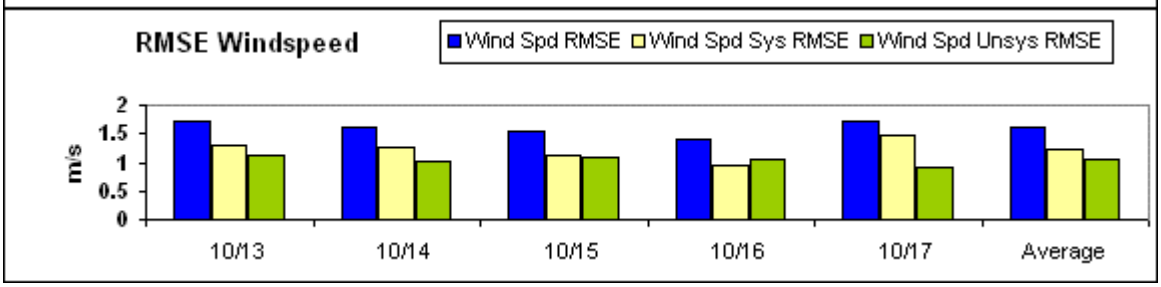

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
10/08
10/09
10/10
10/11
10/12
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2
1.5
1
0.5
0
10/08
10/09
10/10
10/11
10/12
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
10/08
10/09
10/10
10/11
10/12
Average

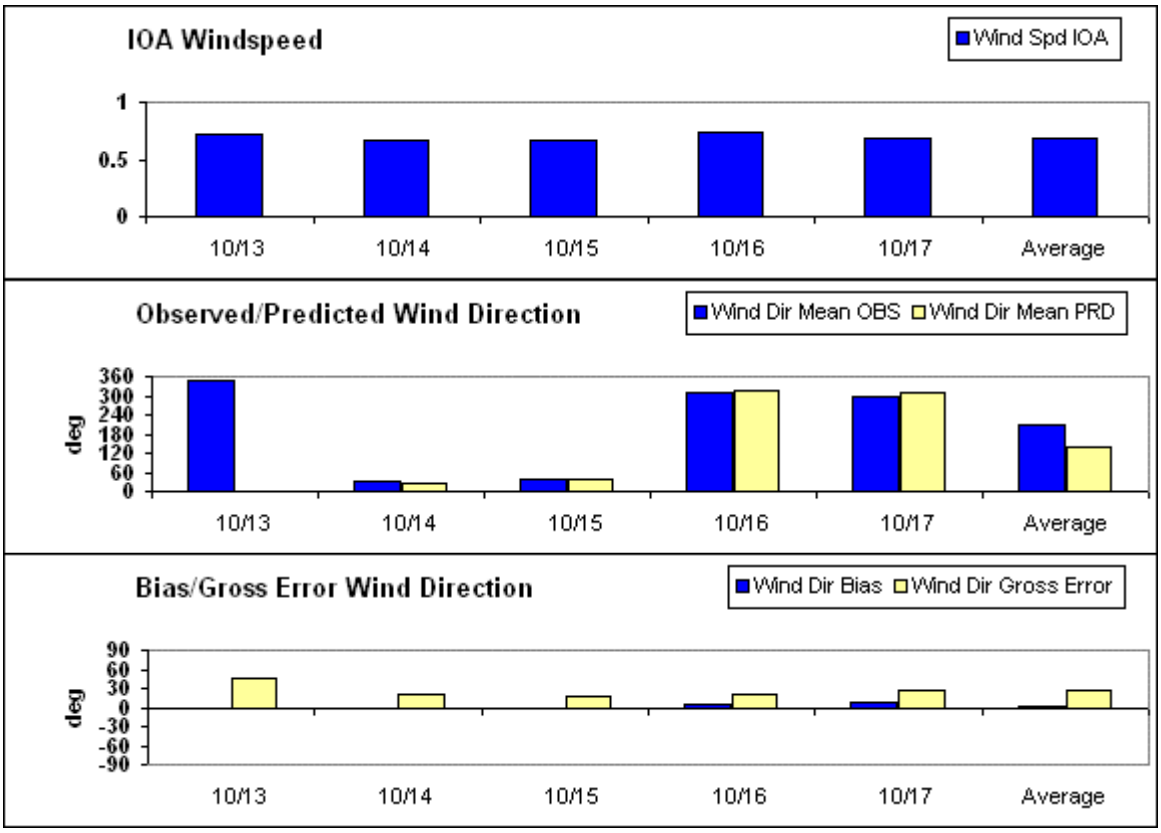

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
20
15
10
5
0
10/08
10/09
10/10
10/11
10/12
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
10/08
10/09
10/10
10/11
10/12
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/08
10/09
10/10
10/11
10/12
Average

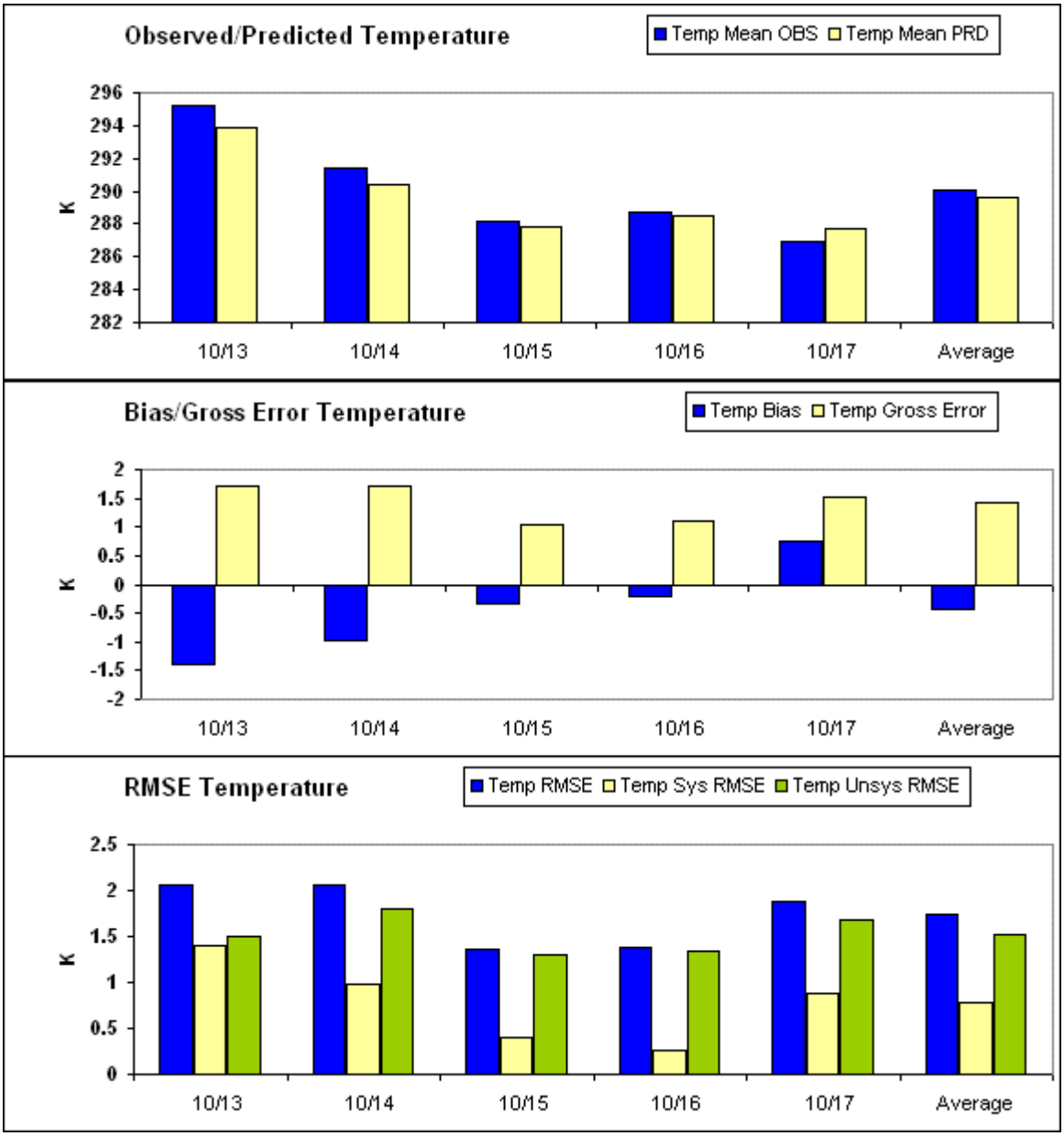

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
10/08
10/09
10/10
10/11
10/12
Average

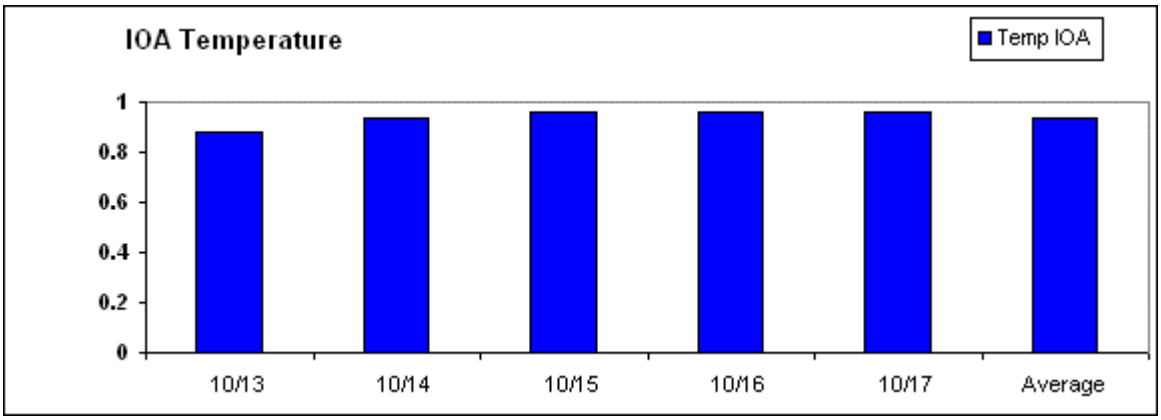

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
10/13
10/14
10/15
10/16
10/17
Average

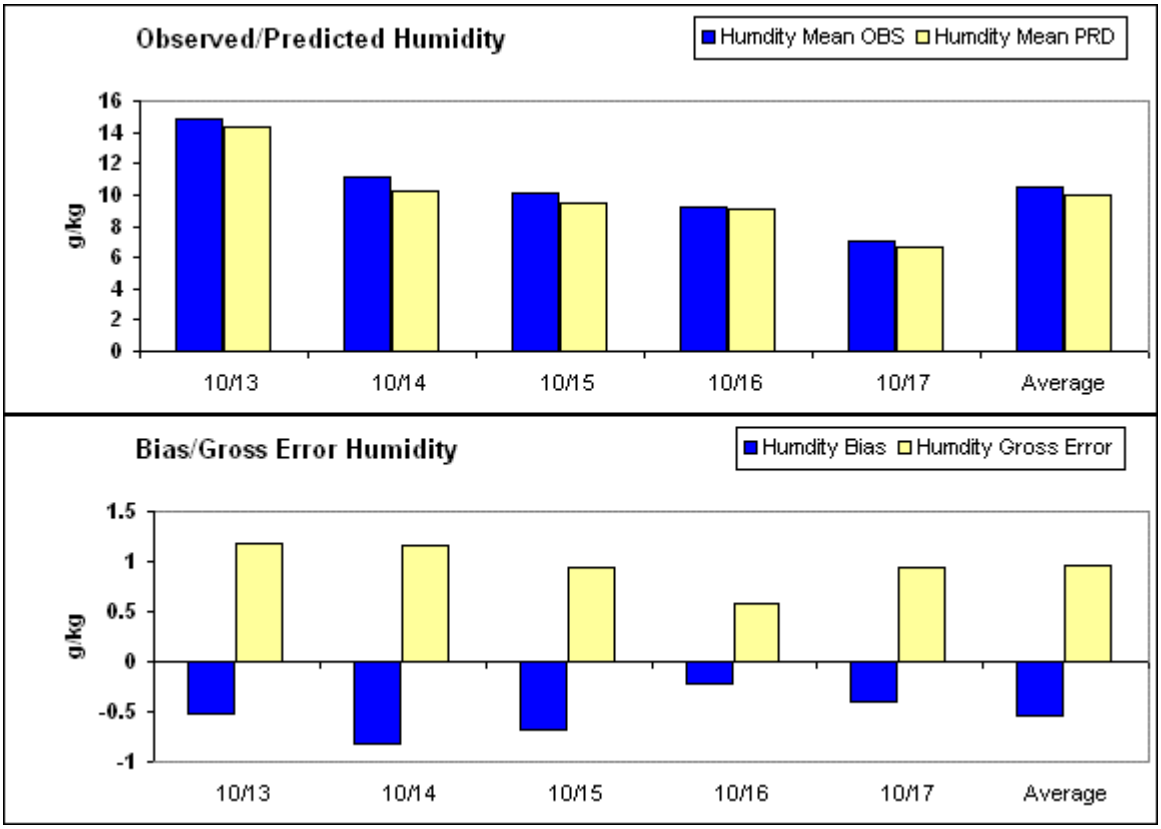

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
10/13
10/14
10/15
10/16
10/17
Average

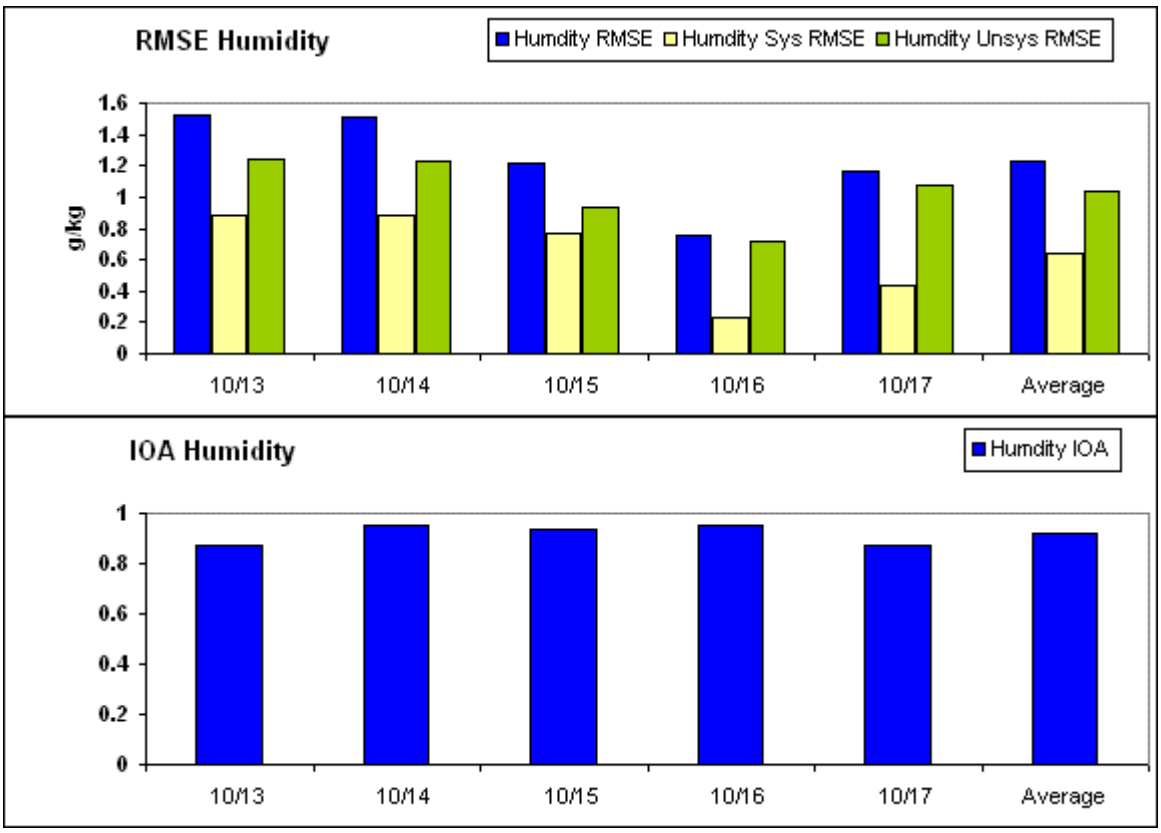

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
10/13
10/14
10/15
10/16
10/17
Average

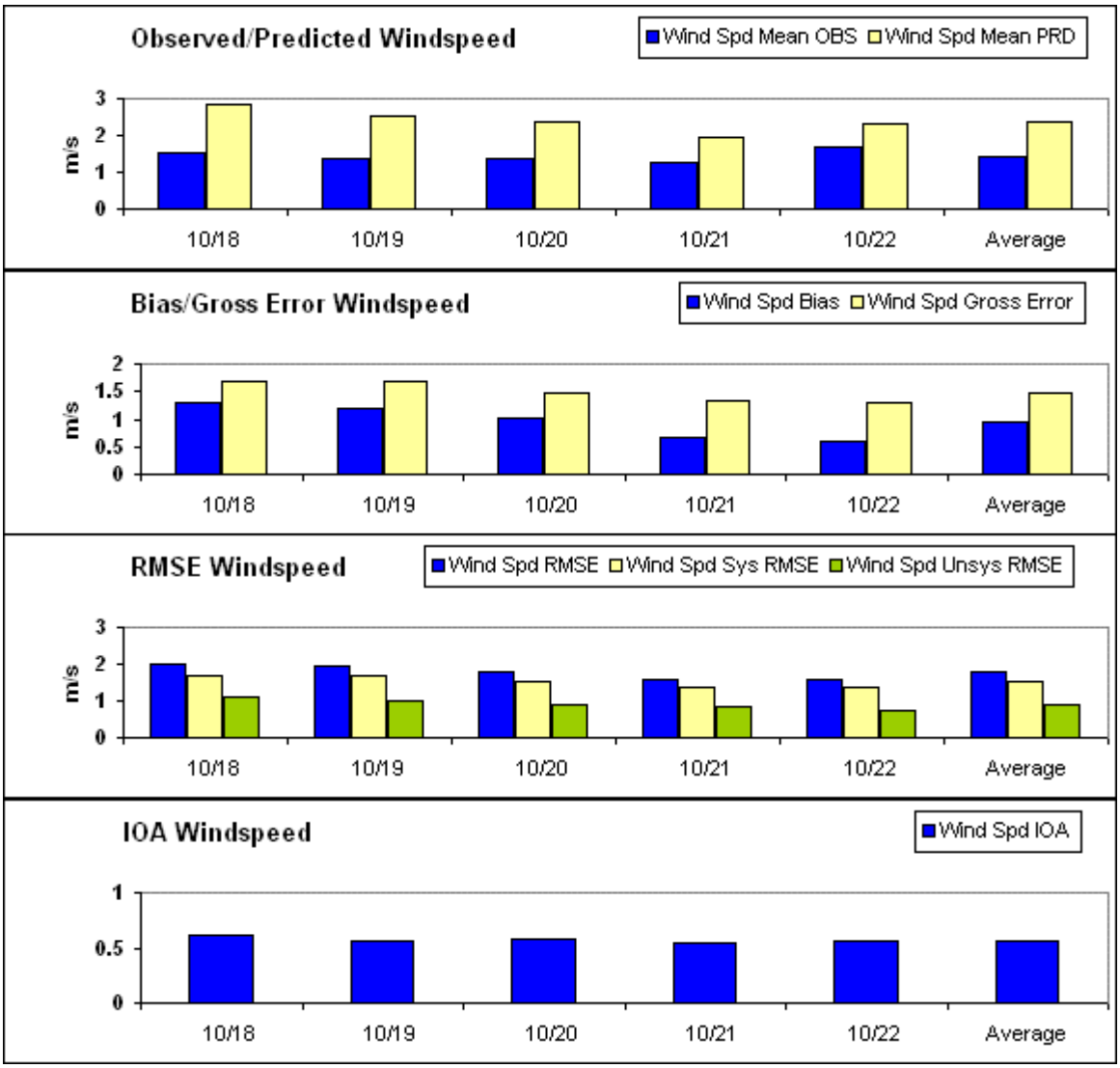

IOA Windspeed
Wind Spd IOA
1
0.5
0
10/13
10/14
10/15
10/16
10/17
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
10/13
10/14
10/15
10/16
10/17
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
10/13
10/14
10/15
10/16
10/17
Average

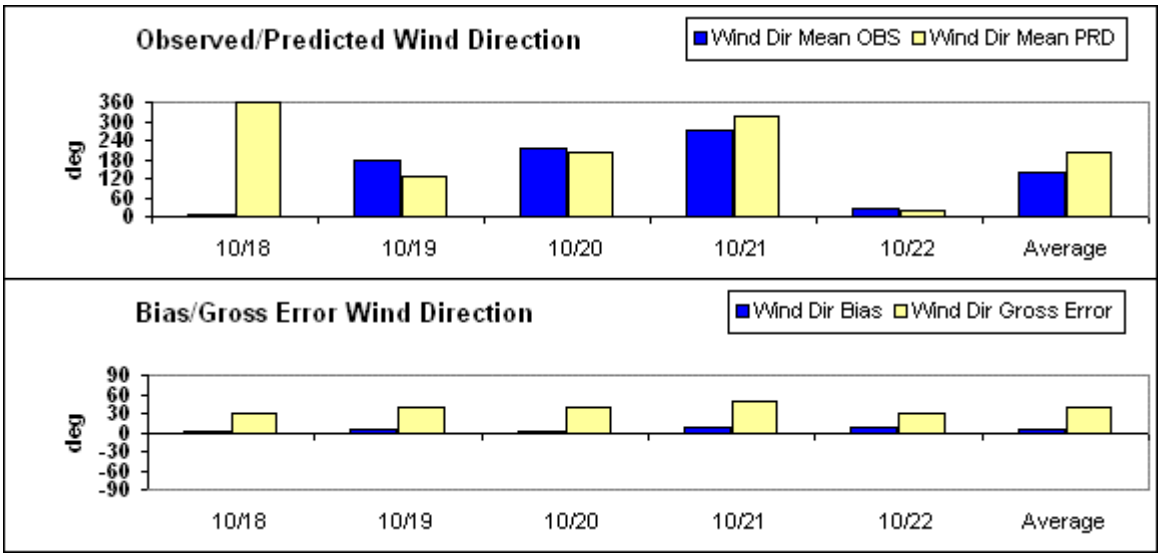

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
296
294
292
290
288
286
284
282
10/13
10/14
10/15
10/16
10/17
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
10/13
10/14
10/15
10/16
10/17
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
10/13
10/14
10/15
10/16
10/17
Average

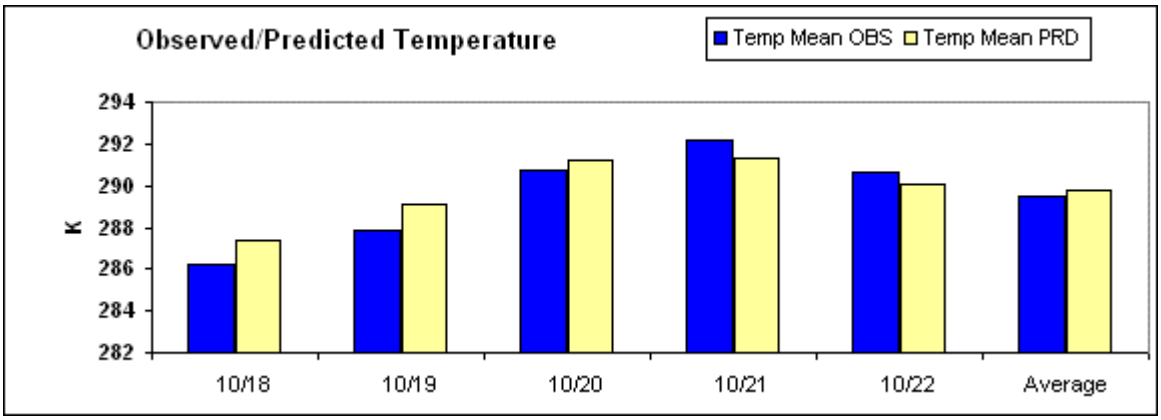

IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
10/13
10/14
10/15
10/16
10/17
Average

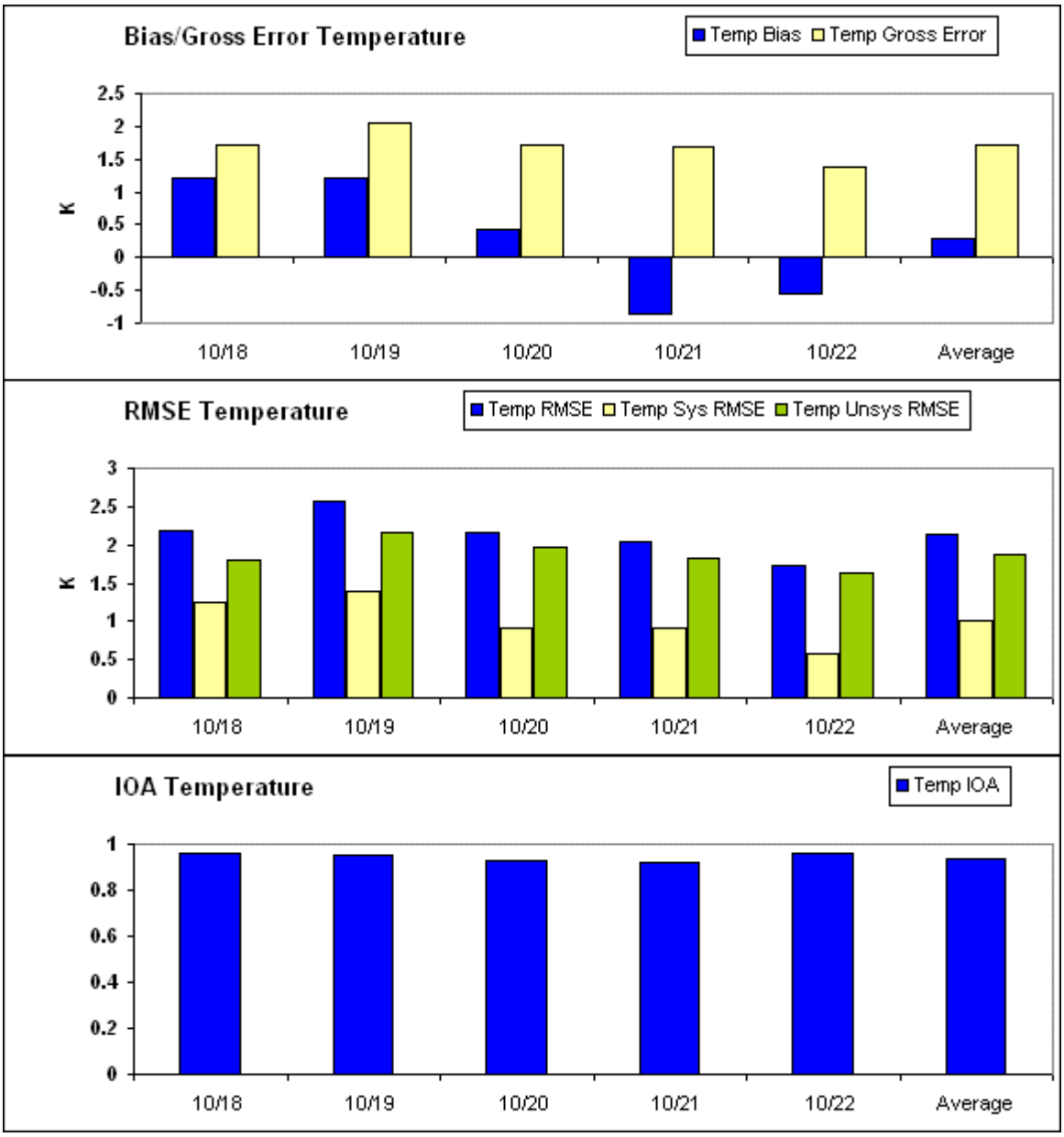

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
10/13
10/14
10/15
10/16
10/17
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
10/13
10/14
10/15
10/16
10/17
Average

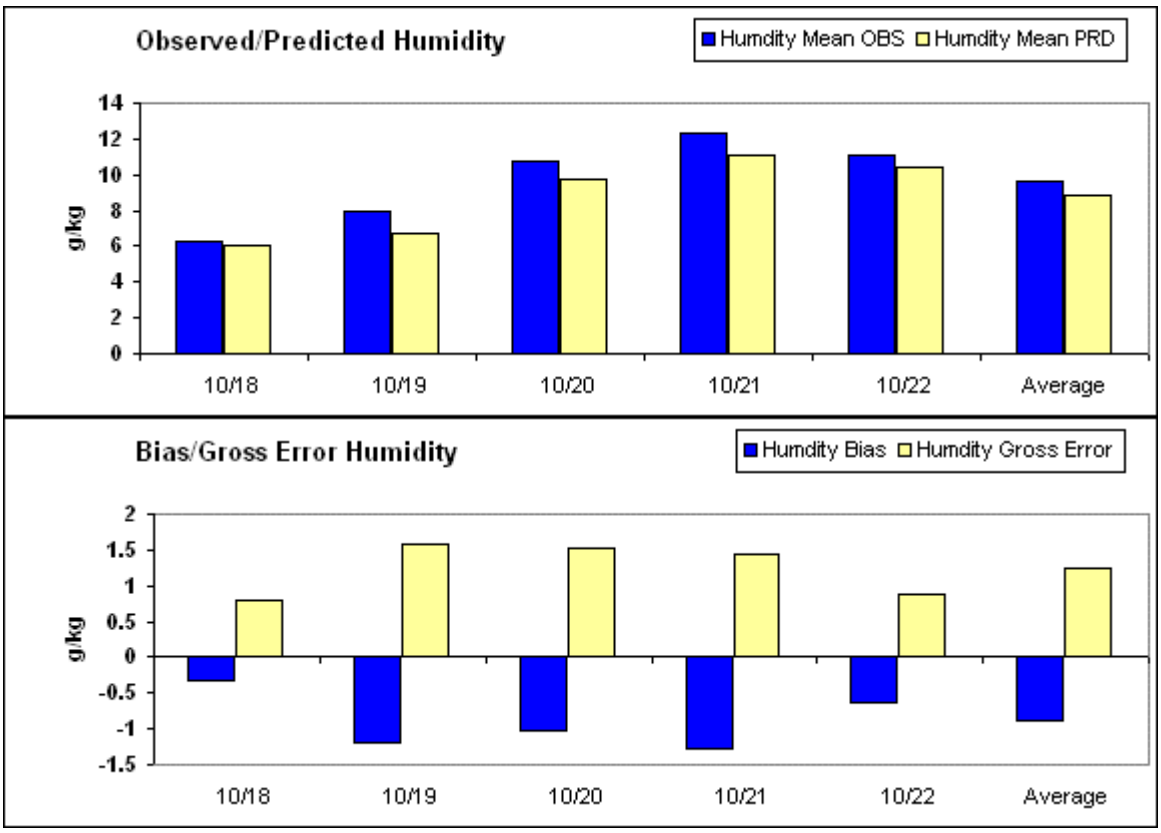

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/13
10/14
10/15
10/16
10/17
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
10/13
10/14
10/15
10/16
10/17
Average

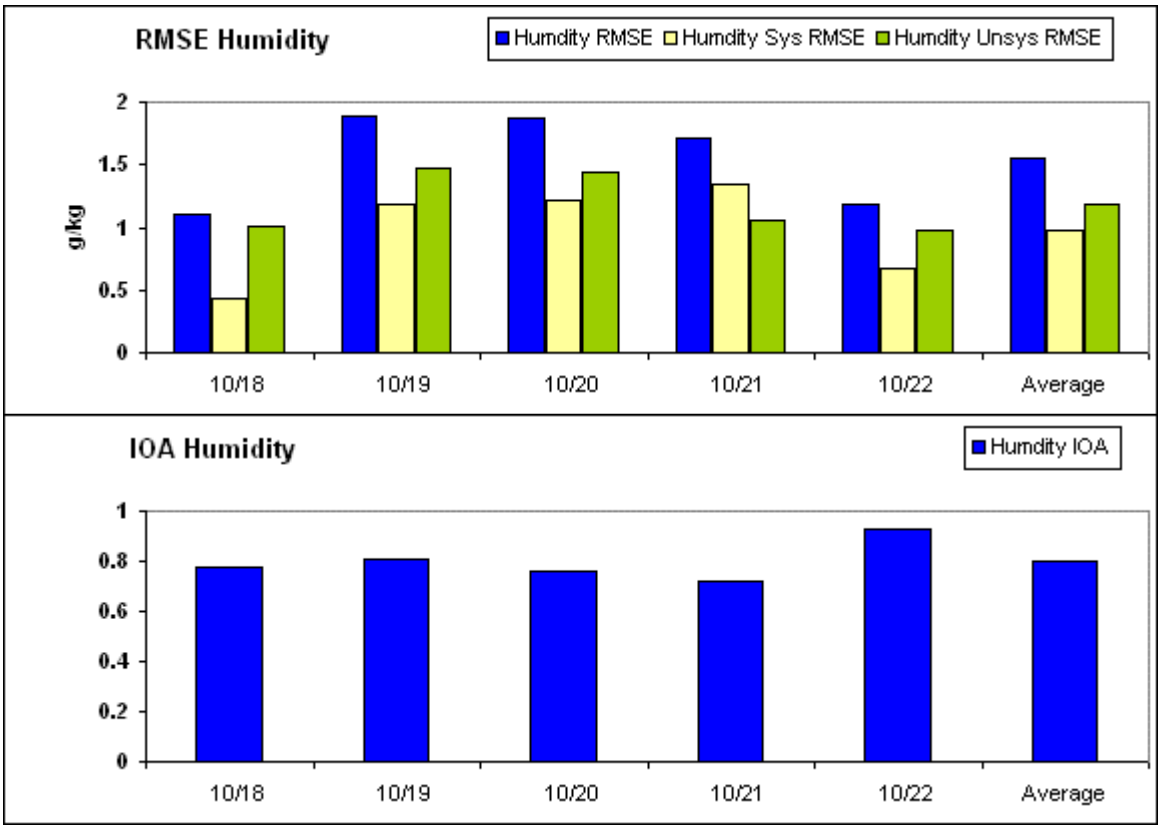

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
3
2
1
0
10/18
10/19
10/20
10/21
10/22
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
10/18
10/19
10/20
10/21
10/22
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
10/18
10/19
10/20
10/21
10/22
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
10/18
10/19
10/20
10/21
10/22
Average

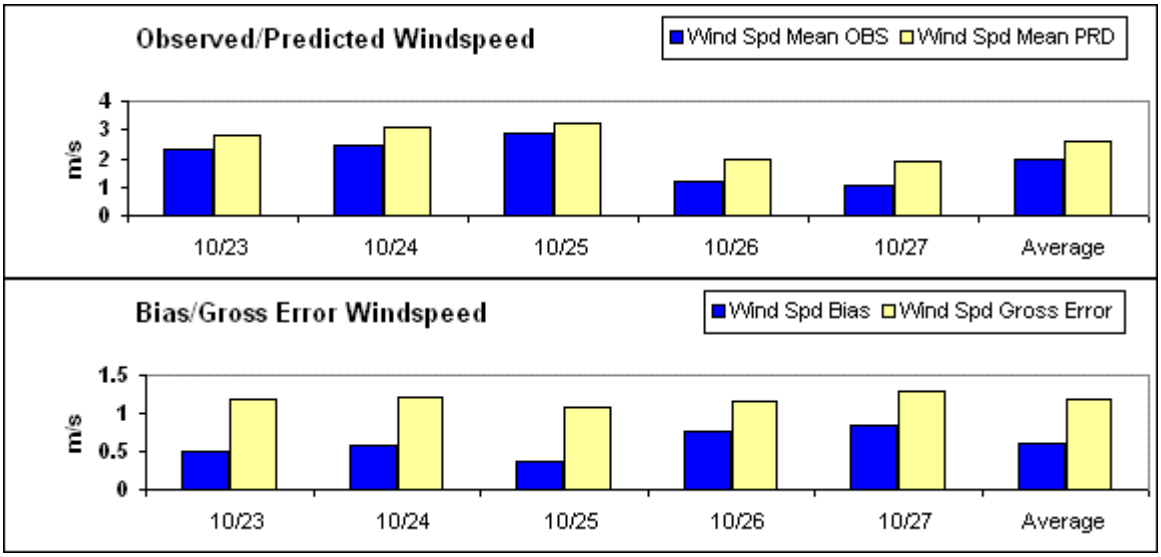

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
10/18
10/19
10/20
10/21
10/22
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
10/18
10/19
10/20
10/21
10/22
Average

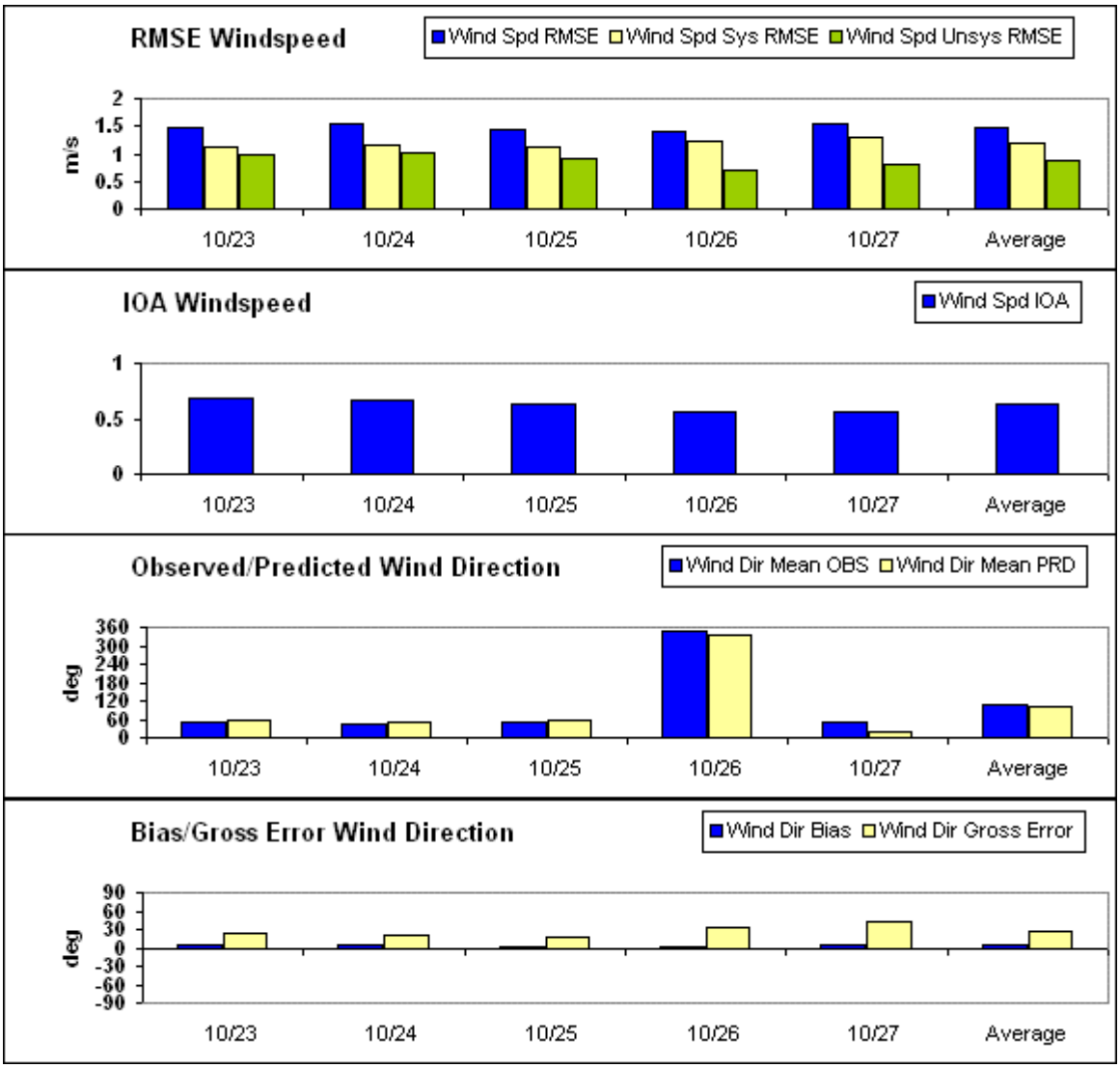

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
294
292
290
288
286
284
282
10/18
10/19
10/20
10/21
10/22
Average

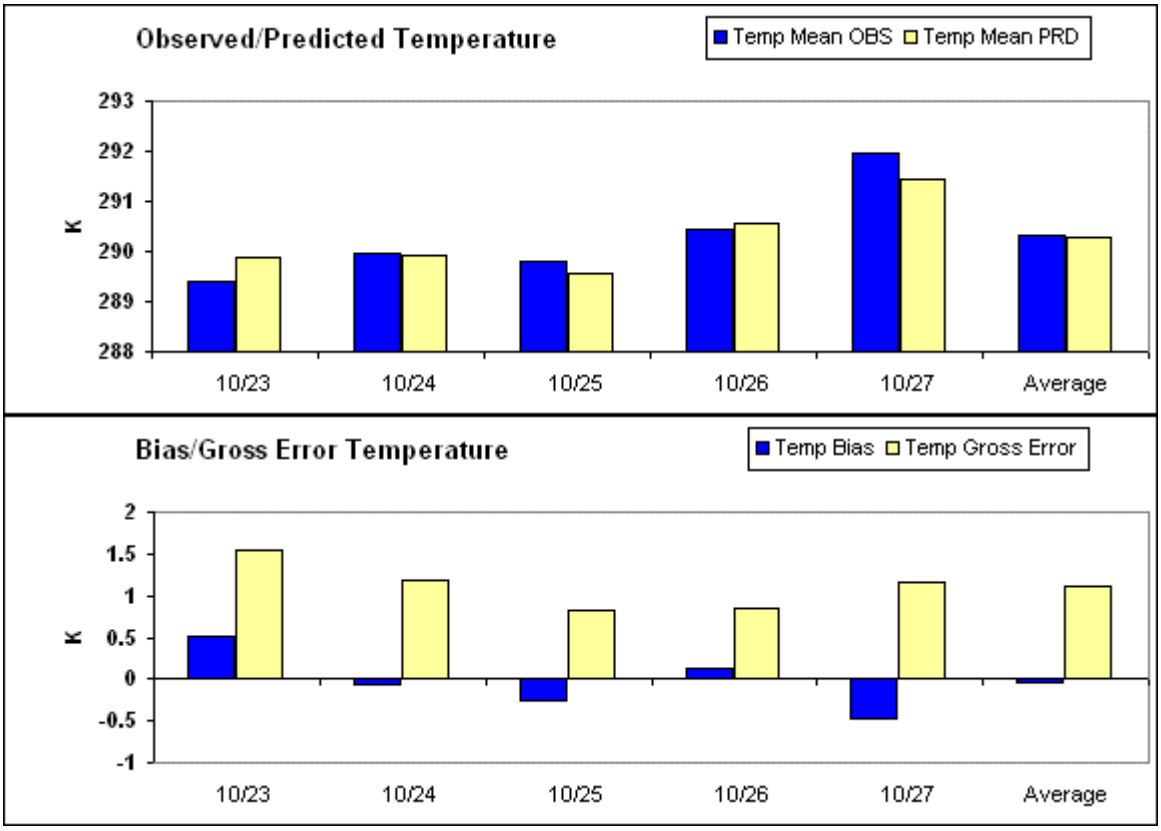

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
10/18
10/19
10/20
10/21
10/22
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
10/18
10/19
10/20
10/21
10/22
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
10/18
10/19
10/20
10/21
10/22
Average

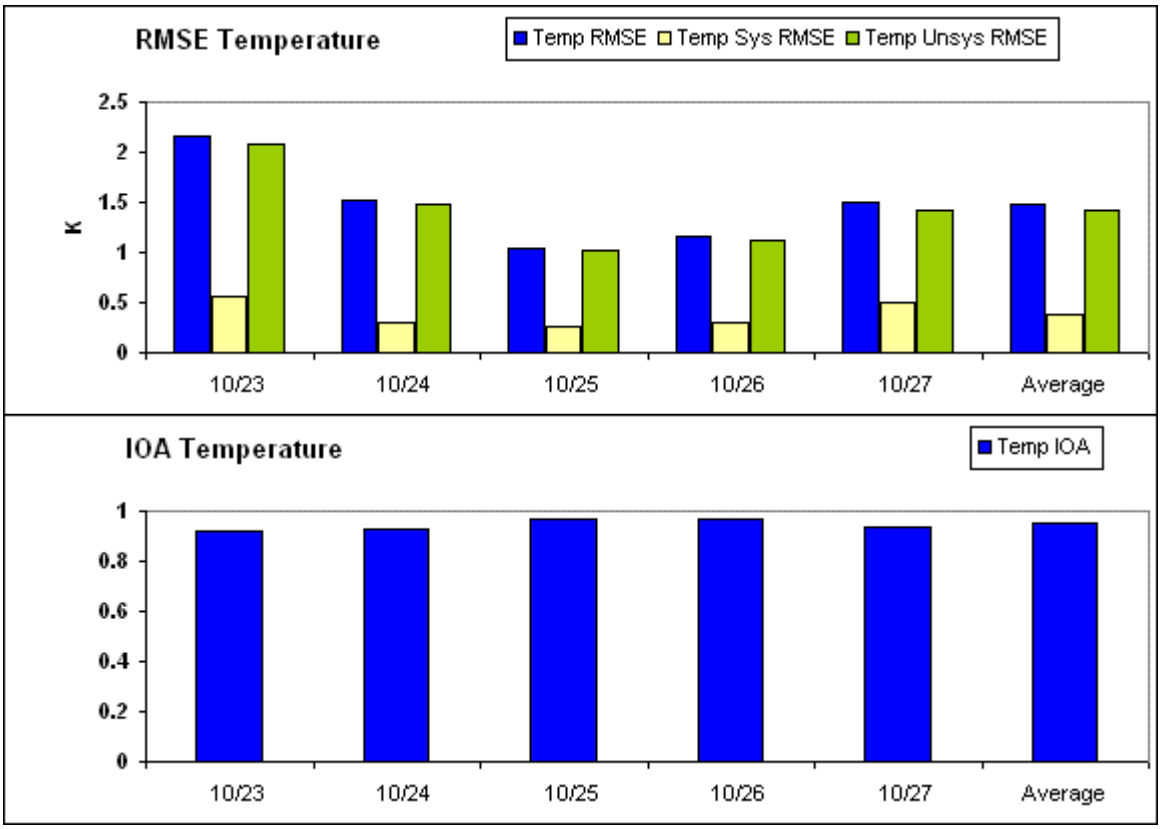

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
10/18
10/19
10/20
10/21
10/22
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
10/18
10/19
10/20
10/21
10/22
Average

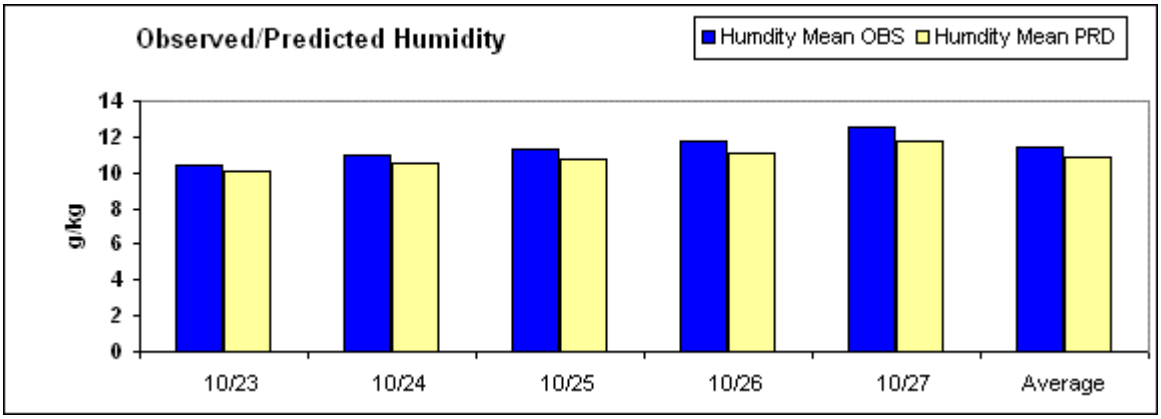

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
10/18
10/19
10/20
10/21
10/22
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
10/18
10/19
10/20
10/21
10/22
Average

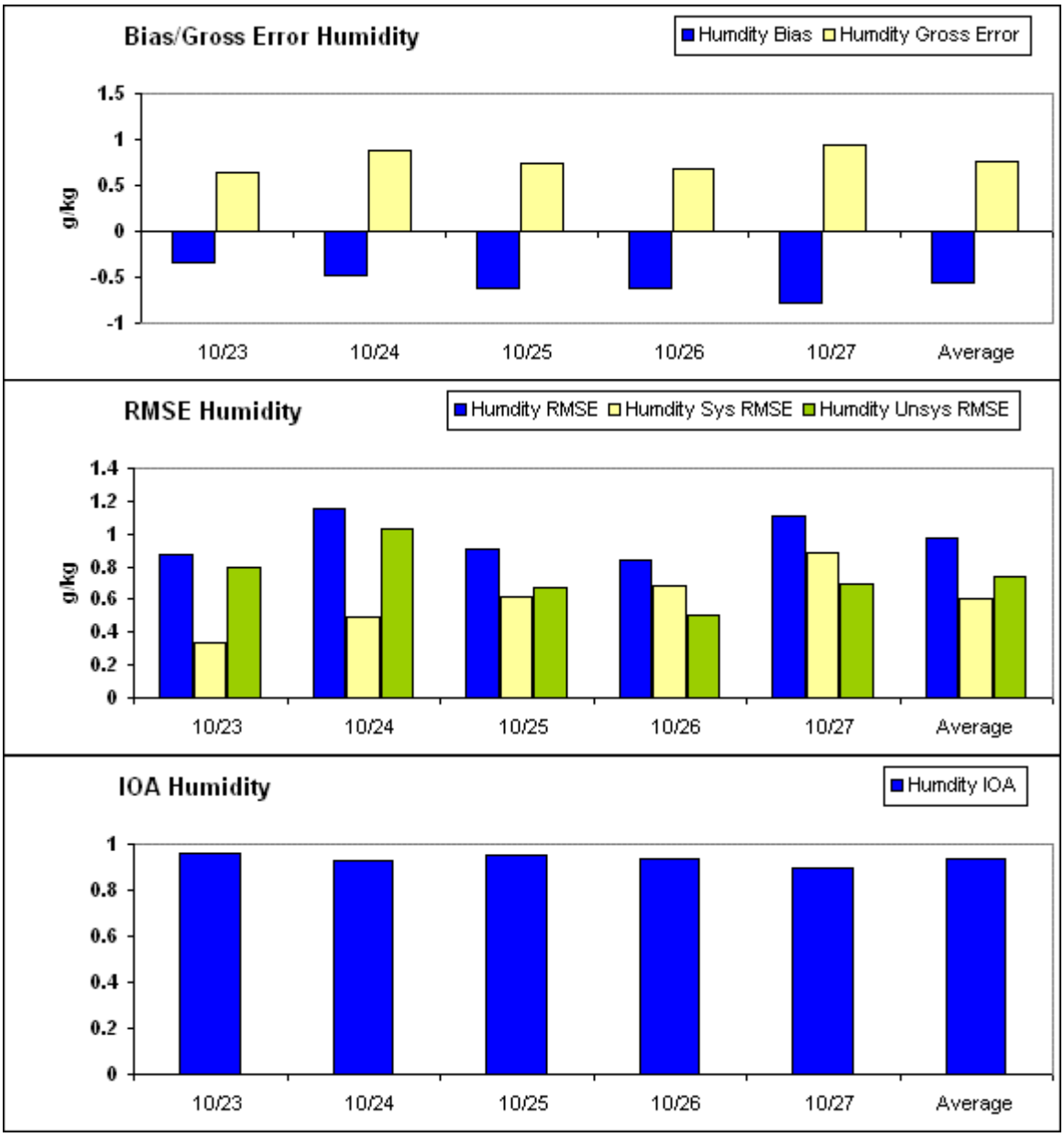

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
10/23
10/24
10/25
10/26
10/27
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
10/23
10/24
10/25
10/26
10/27
Average

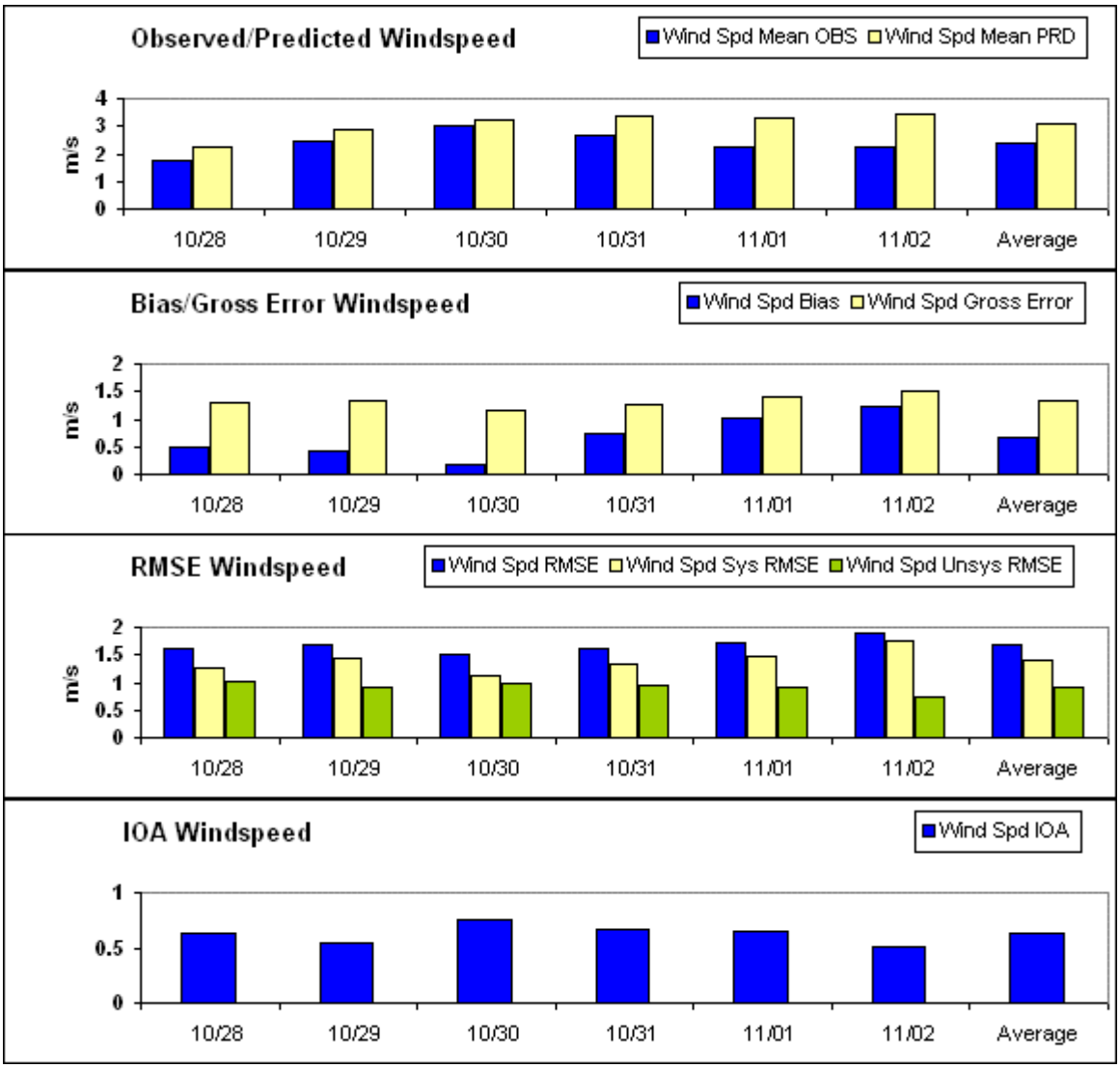

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
10/23
10/24
10/25
10/26
10/27
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
10/23
10/24
10/25
10/26
10/27
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
10/23
10/24
10/25
10/26
10/27
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
10/23
10/24
10/25
10/26
10/27
Average

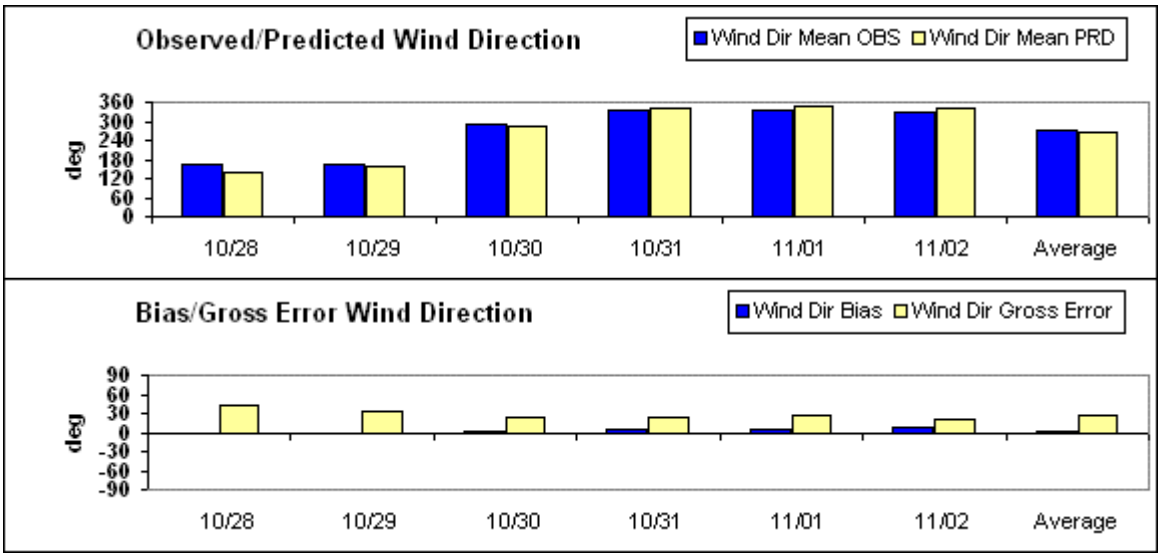

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
293
292
291
290
289
288
10/23
10/24
10/25
10/26
10/27
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
10/23
10/24
10/25
10/26
10/27
Average

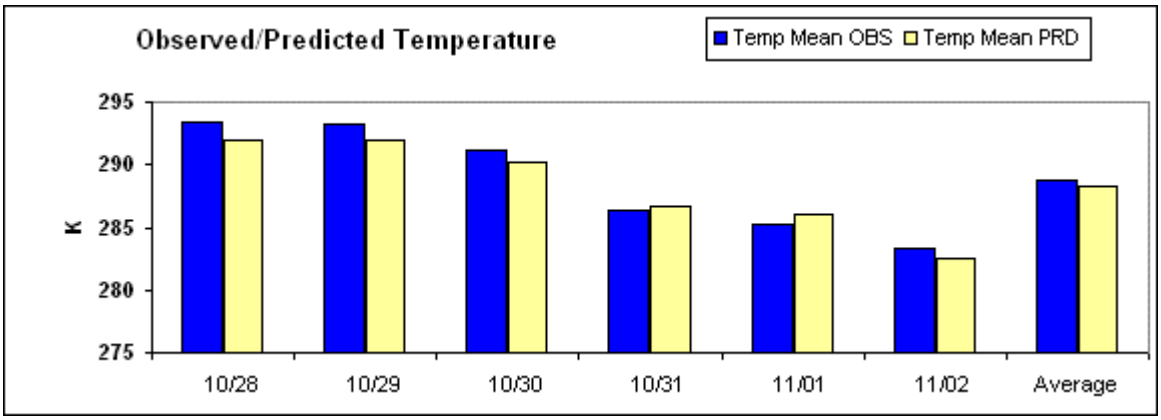

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
10/23
10/24
10/25
10/26
10/27
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
10/23
10/24
10/25
10/26
10/27
Average

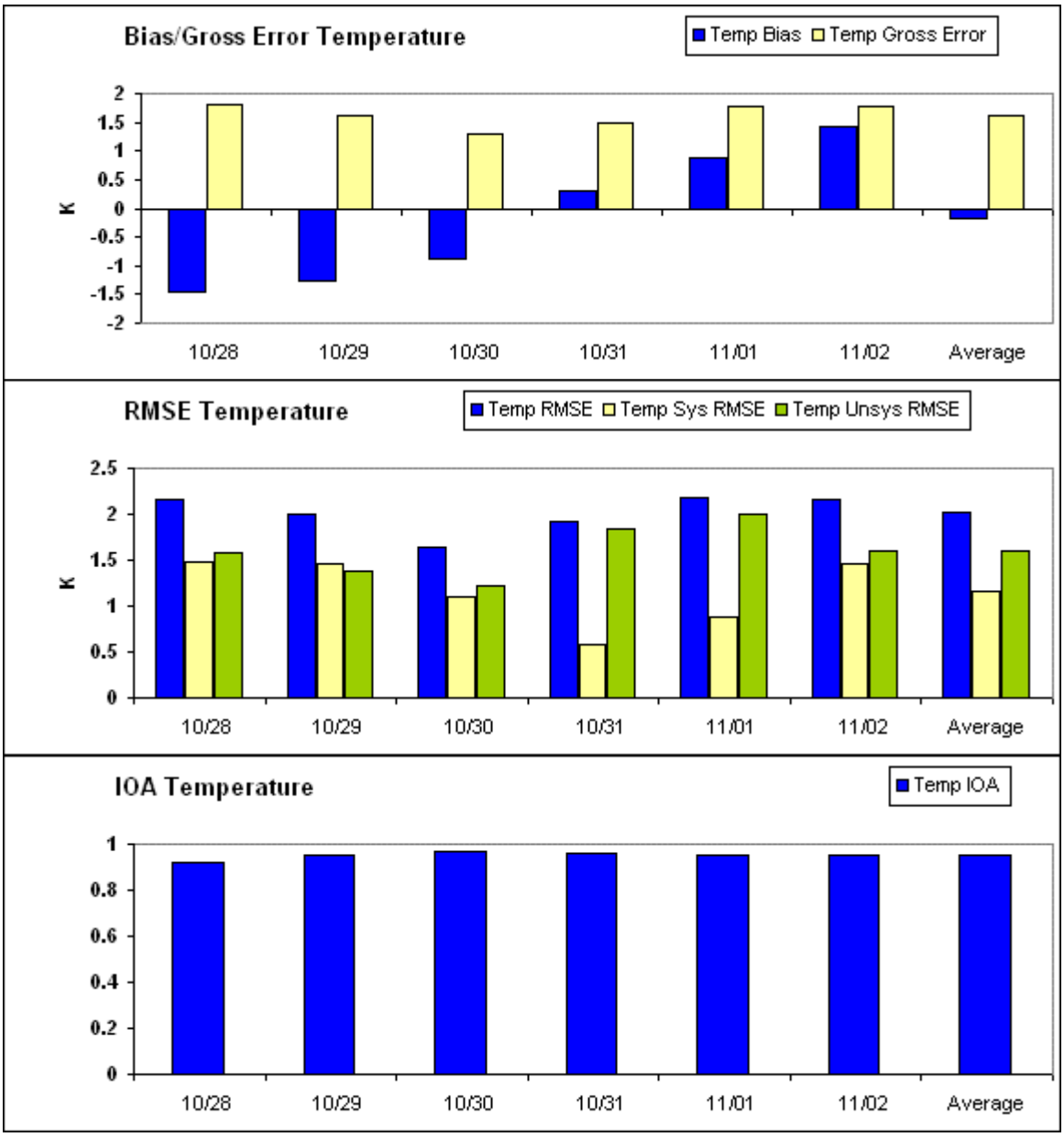

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
14
12
10
8
6
4
2
0
10/23
10/24
10/25
10/26
10/27
Average

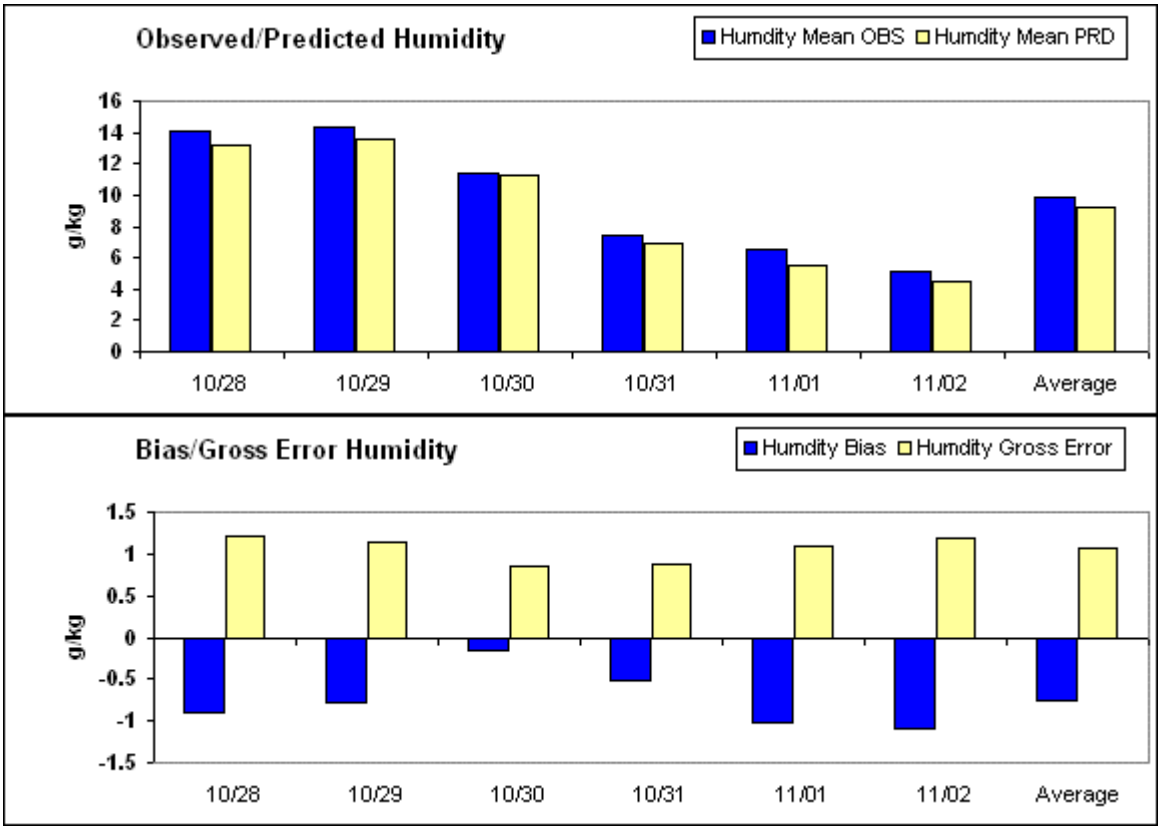

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
10/23
10/24
10/25
10/26
10/27
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
10/23
10/24
10/25
10/26
10/27
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
10/23
10/24
10/25
10/26
10/27
Average

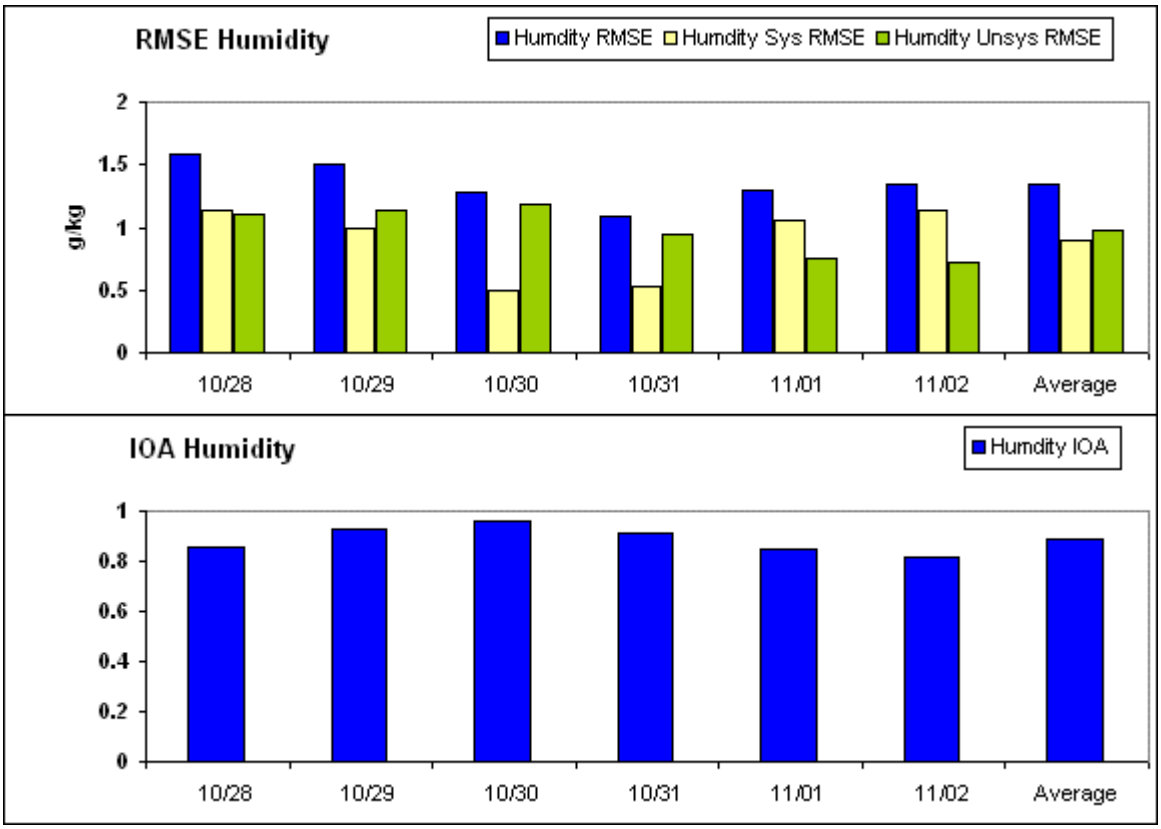

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
4
3
2
1
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
10/28
10/29
10/30
10/31
11/01
11/02
Average

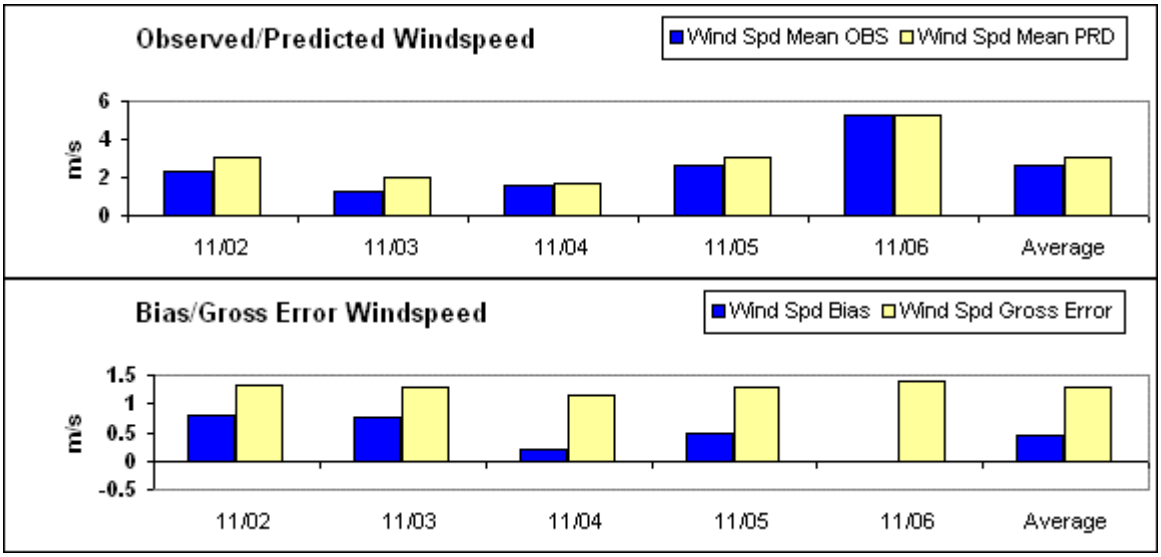

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
10/28
10/29
10/30
10/31
11/01
11/02
Average

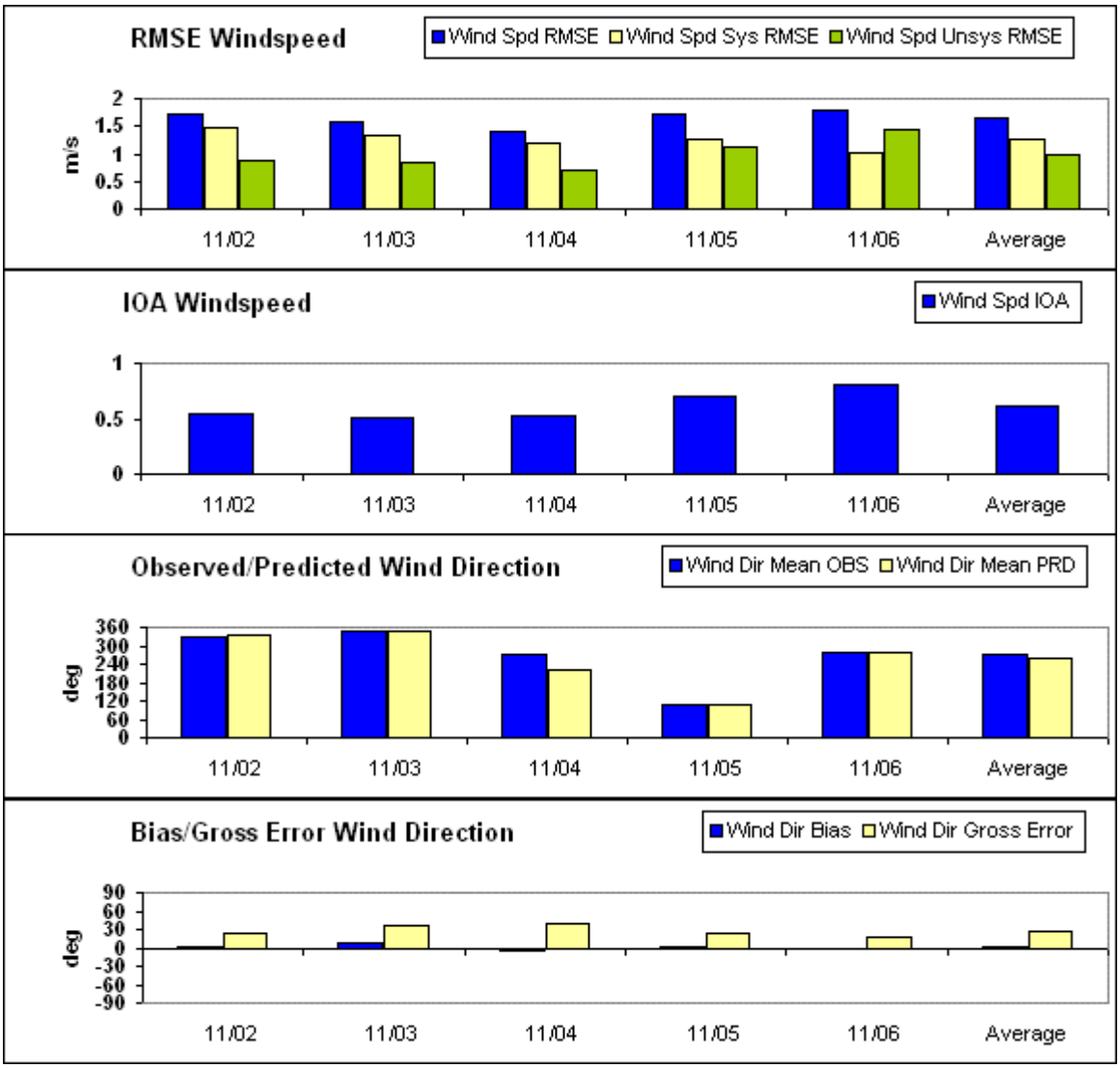

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
295
290
285
280
275
10/28
10/29
10/30
10/31
11/01
11/02
Average

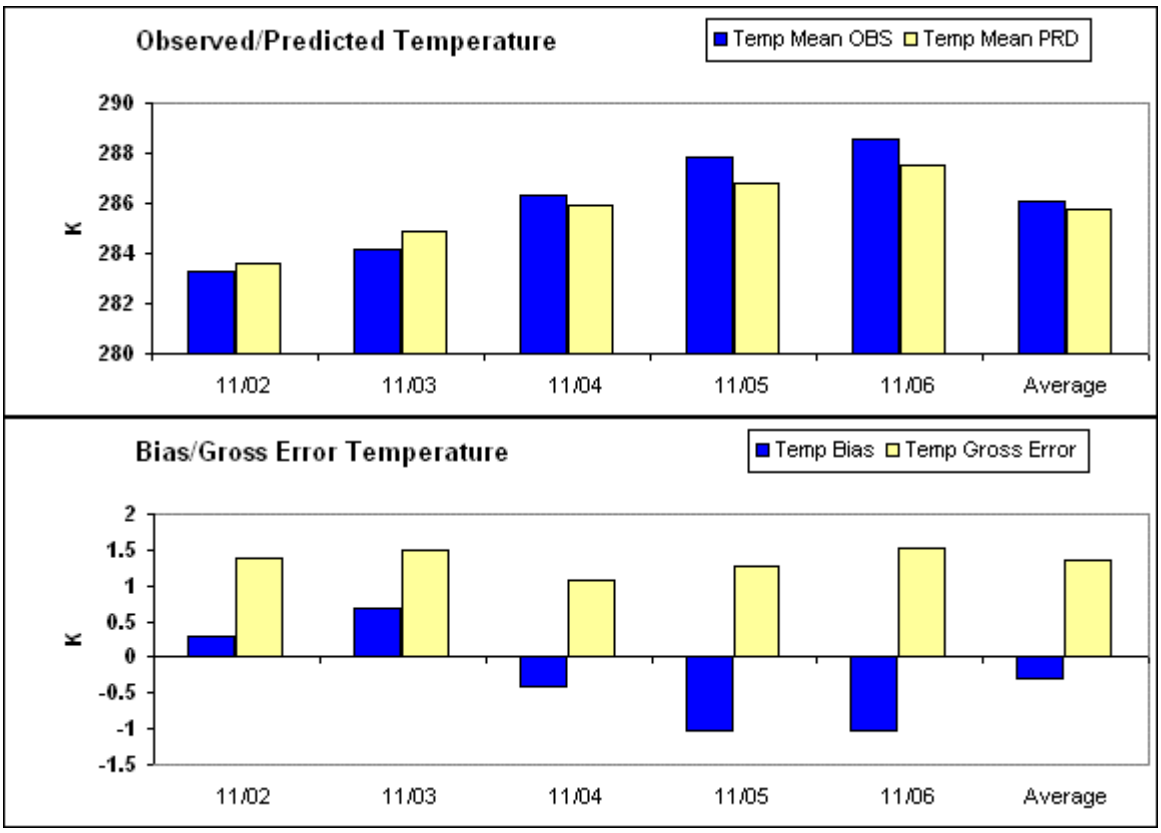

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
10/28
10/29
10/30
10/31
11/01
11/02
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
10/28
10/29
10/30
10/31
11/01
11/02
Average

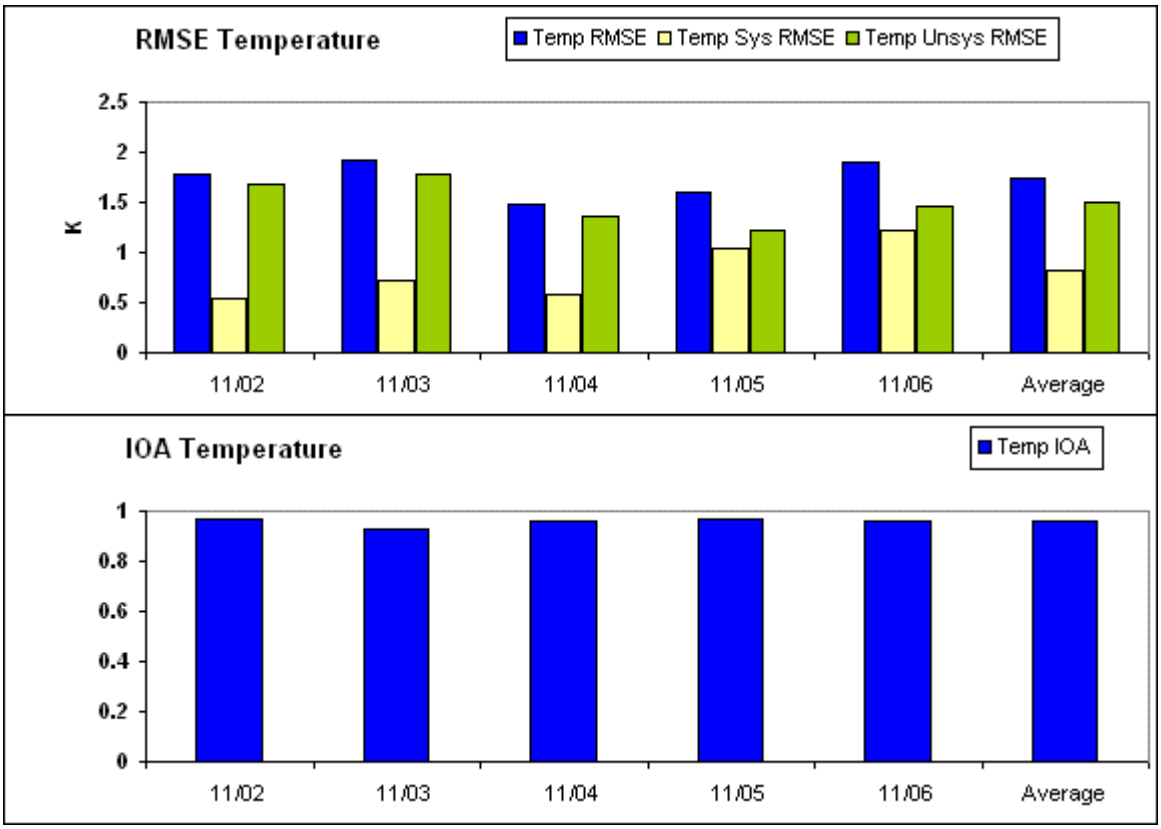

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
10/28
10/29
10/30
10/31
11/01
11/02
Average

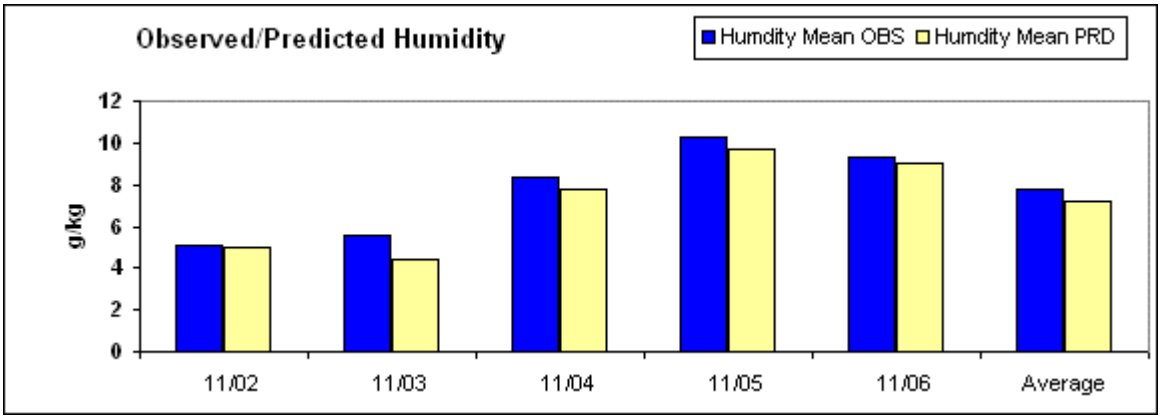

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
10/28
10/29
10/30
10/31
11/01
11/02
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
10/28
10/29
10/30
10/31
11/01
11/02
Average

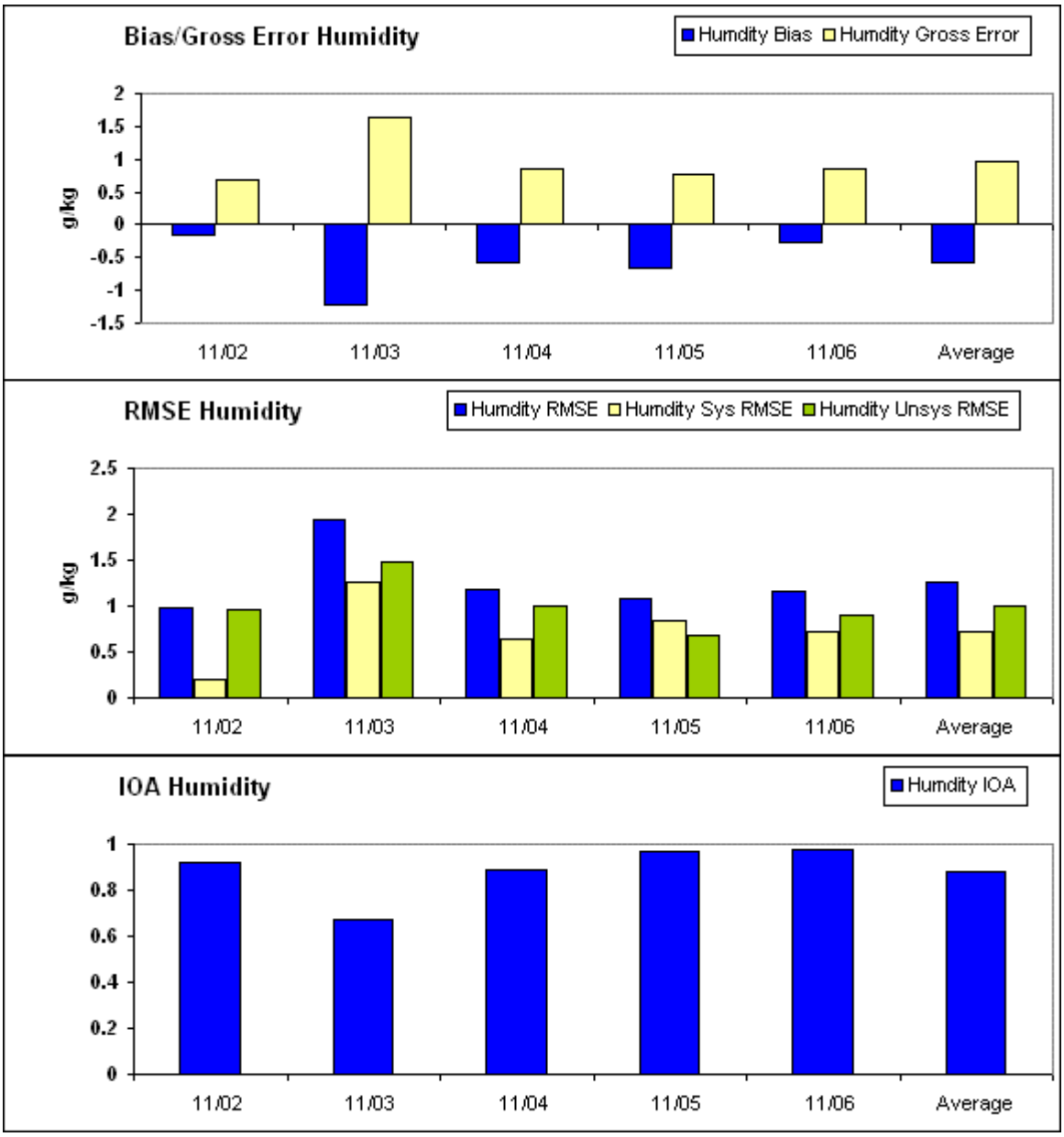

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
11/02
11/03
11/04
11/05
11/06
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
1.5
1
0.5
0
-0.5
11/02
11/03
11/04
11/05
11/06
Average

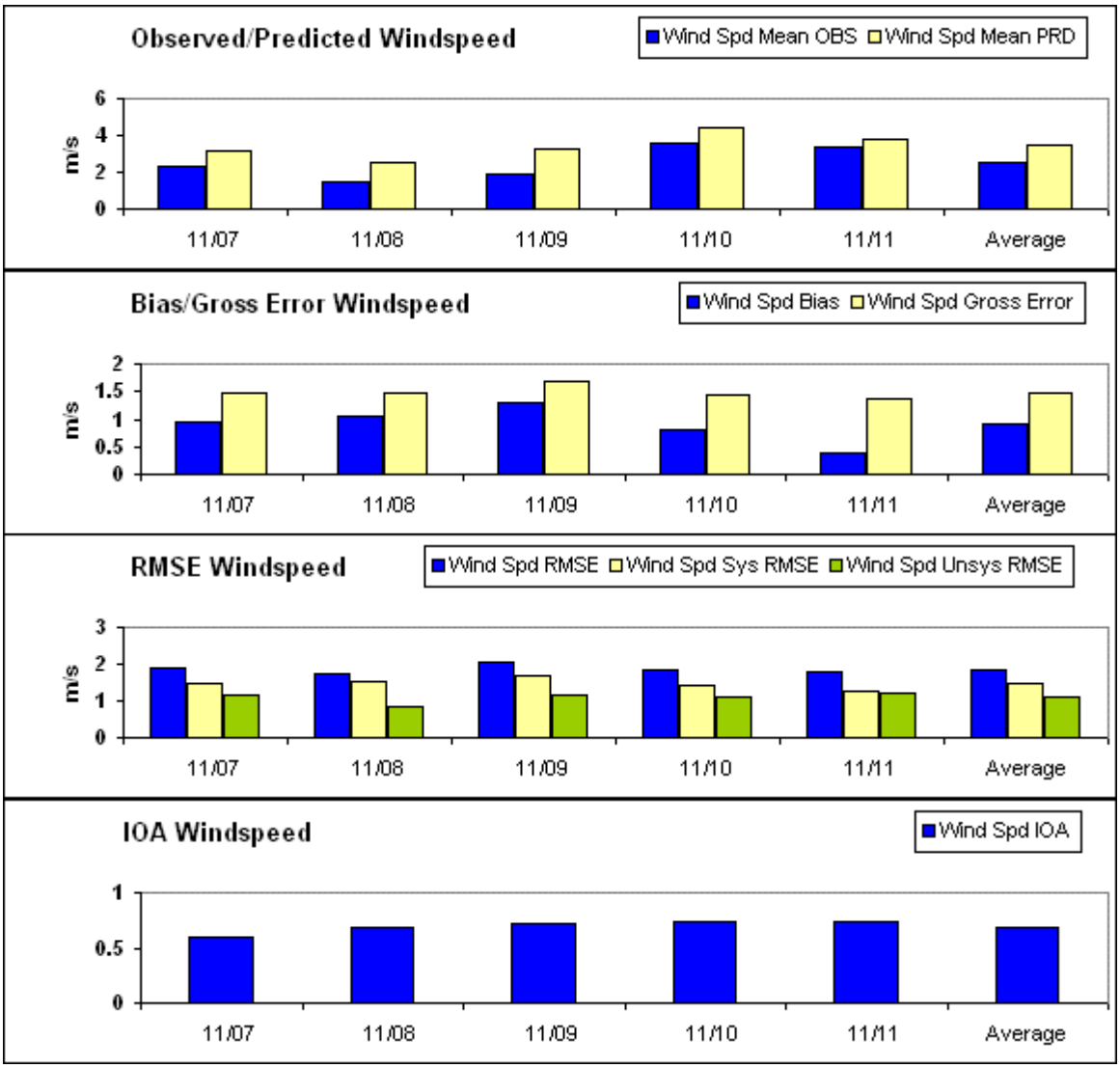

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
11/02
11/03
11/04
11/05
11/06
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
11/02
11/03
11/04
11/05
11/06
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
11/02
11/03
11/04
11/05
11/06
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
11/02
11/03
11/04
11/05
11/06
Average

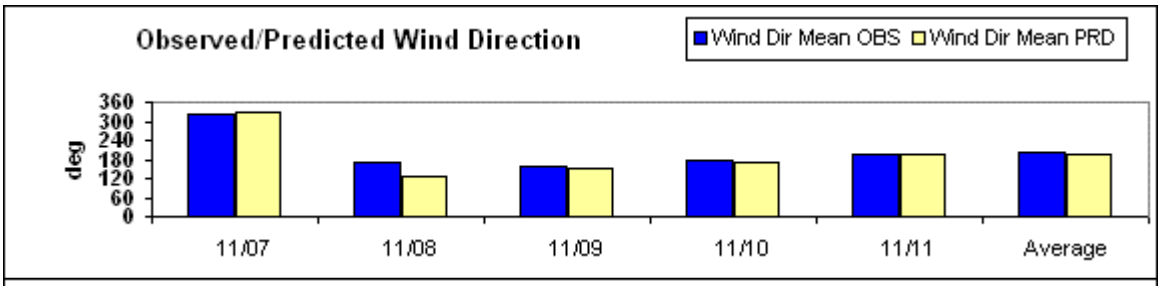

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
290
288
286
284
282
280
11/02
11/03
11/04
11/05
11/06
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2
1.5
1
0.5
0
-0.5
-1
-1.5
11/02
11/03
11/04
11/05
11/06
Average

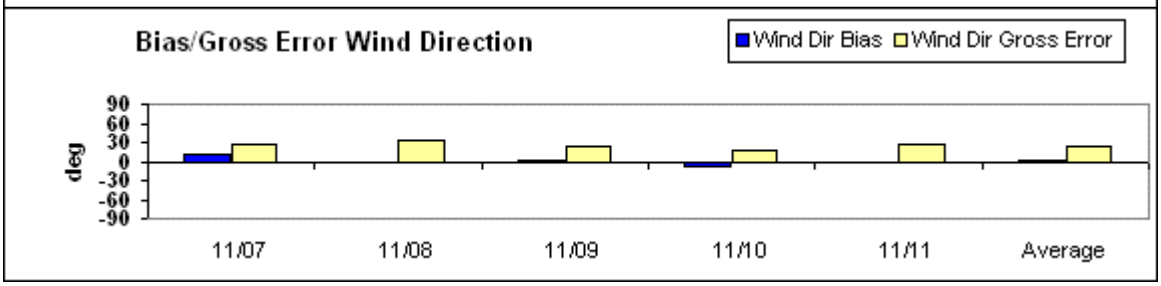

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
2.5
2
1.5
1
0.5
0
11/02
11/03
11/04
11/05
11/06
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
11/02
11/03
11/04
11/05
11/06
Average

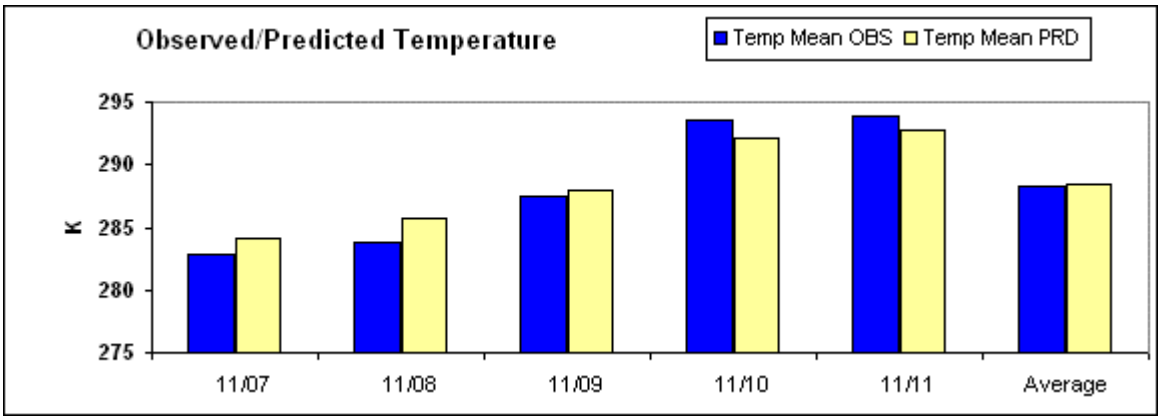

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
11/02
11/03
11/04
11/05
11/06
Average

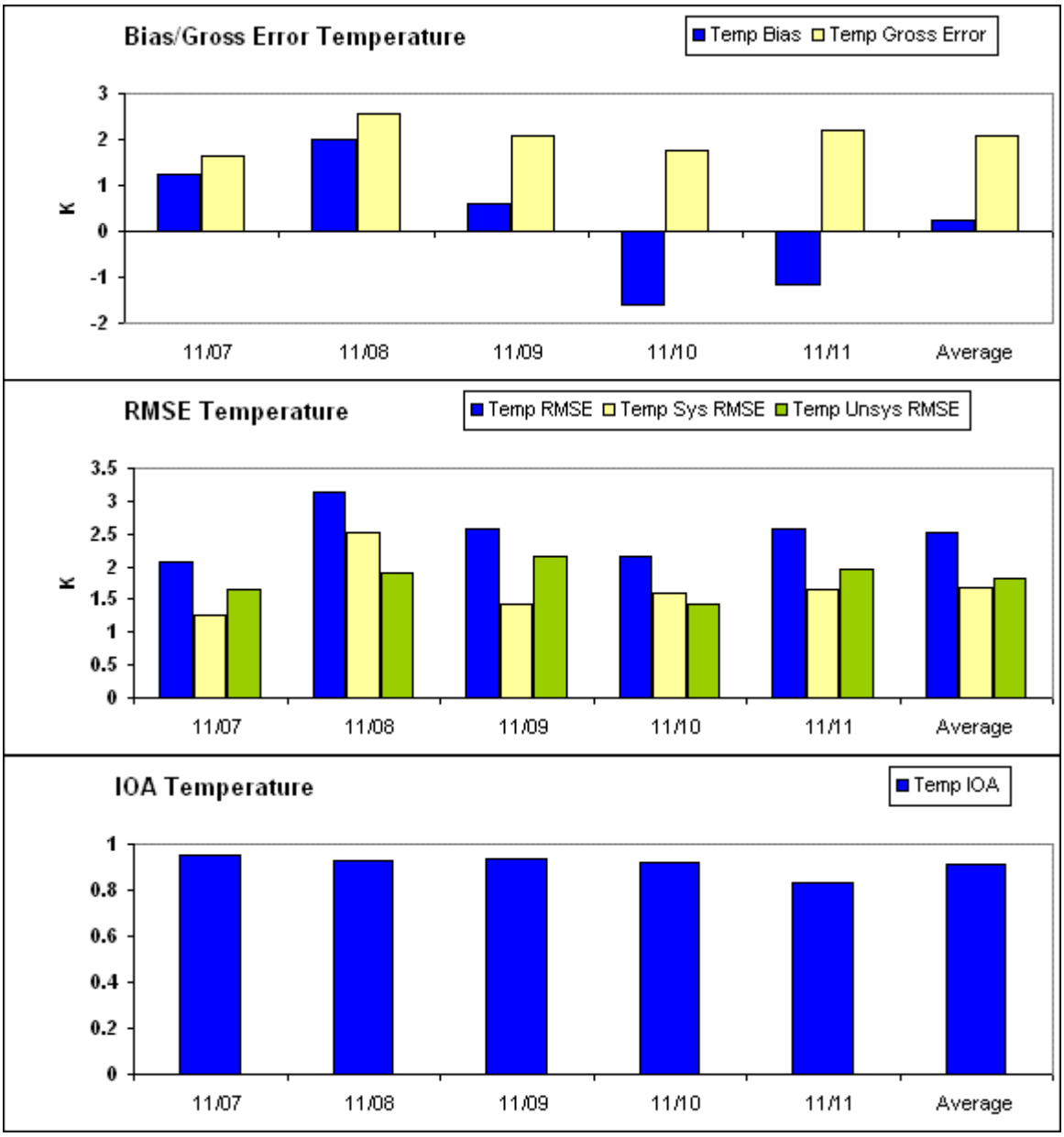

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
2
1.5
1
0.5
0
-0.5
-1
-1.5
11/02
11/03
11/04
11/05
11/06
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2.5
2
1.5
1
0.5
0
11/02
11/03
11/04
11/05
11/06
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
11/02
11/03
11/04
11/05
11/06
Average

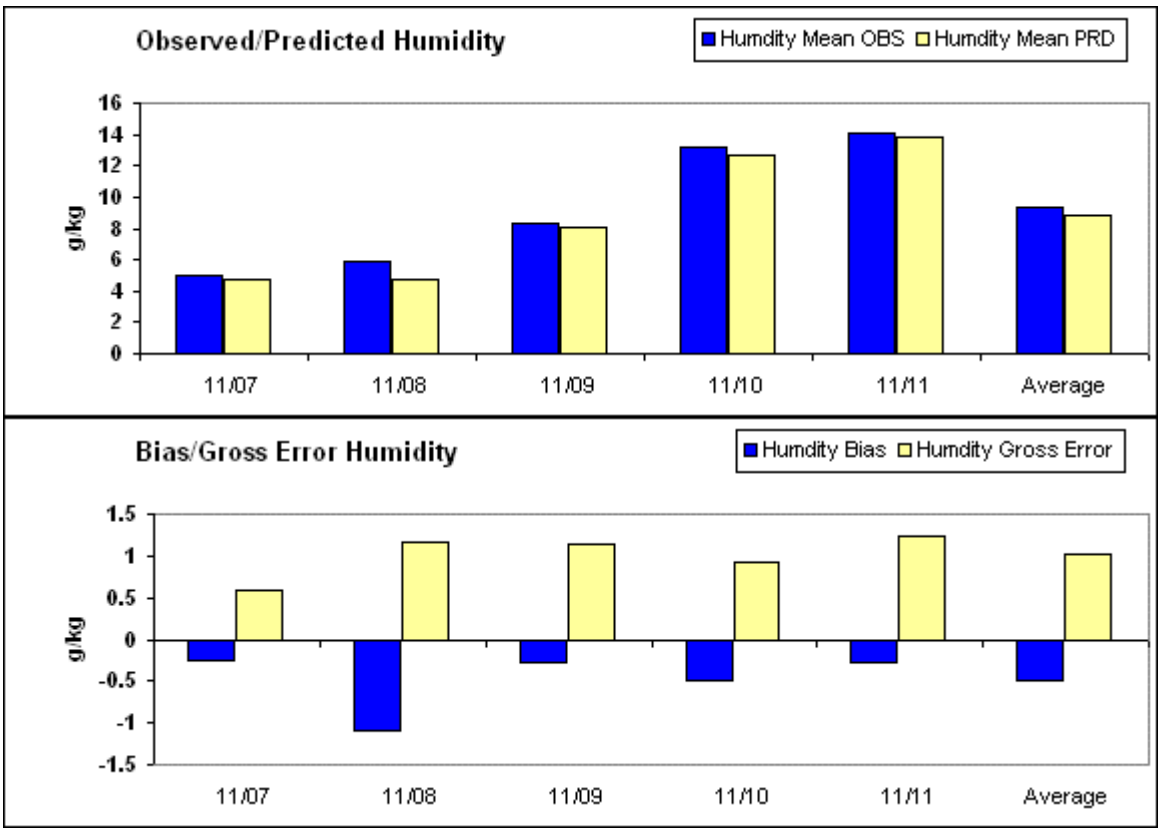

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
11/07
11/08
11/09
11/10
11/11
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
11/07
11/08
11/09
11/10
11/11
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
11/07
11/08
11/09
11/10
11/11
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
11/07
11/08
11/09
11/10
11/11
Average

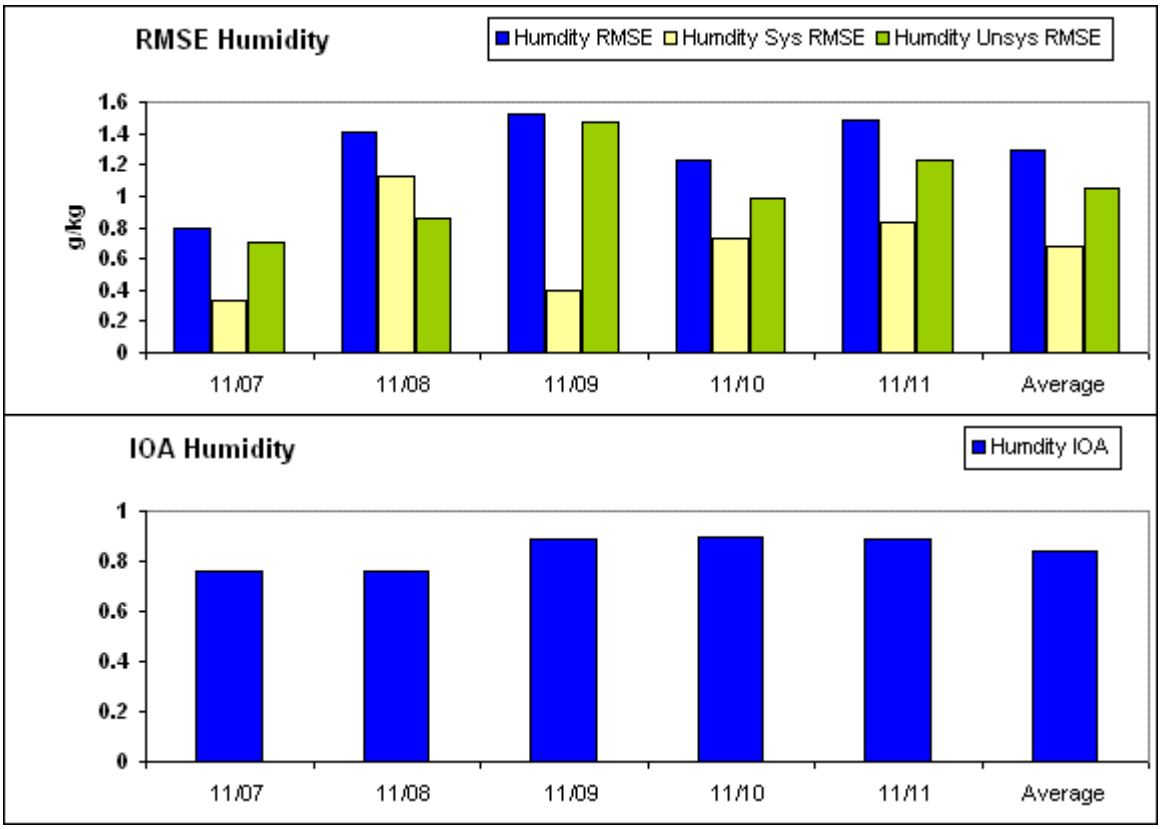

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
11/07
11/08
11/09
11/10
11/11
Average

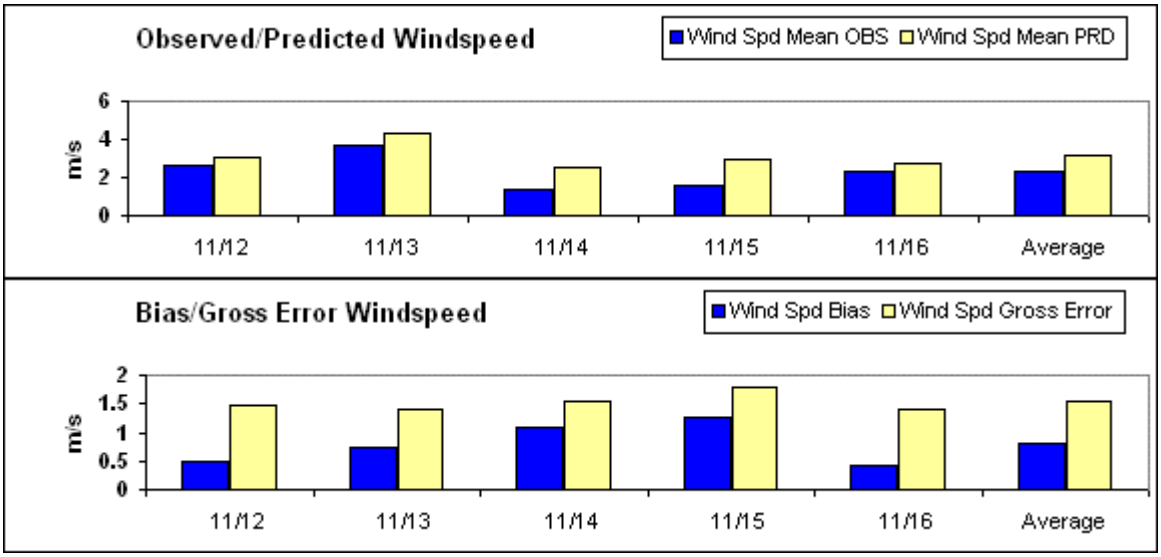

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
11/07
11/08
11/09
11/10
11/11
Average

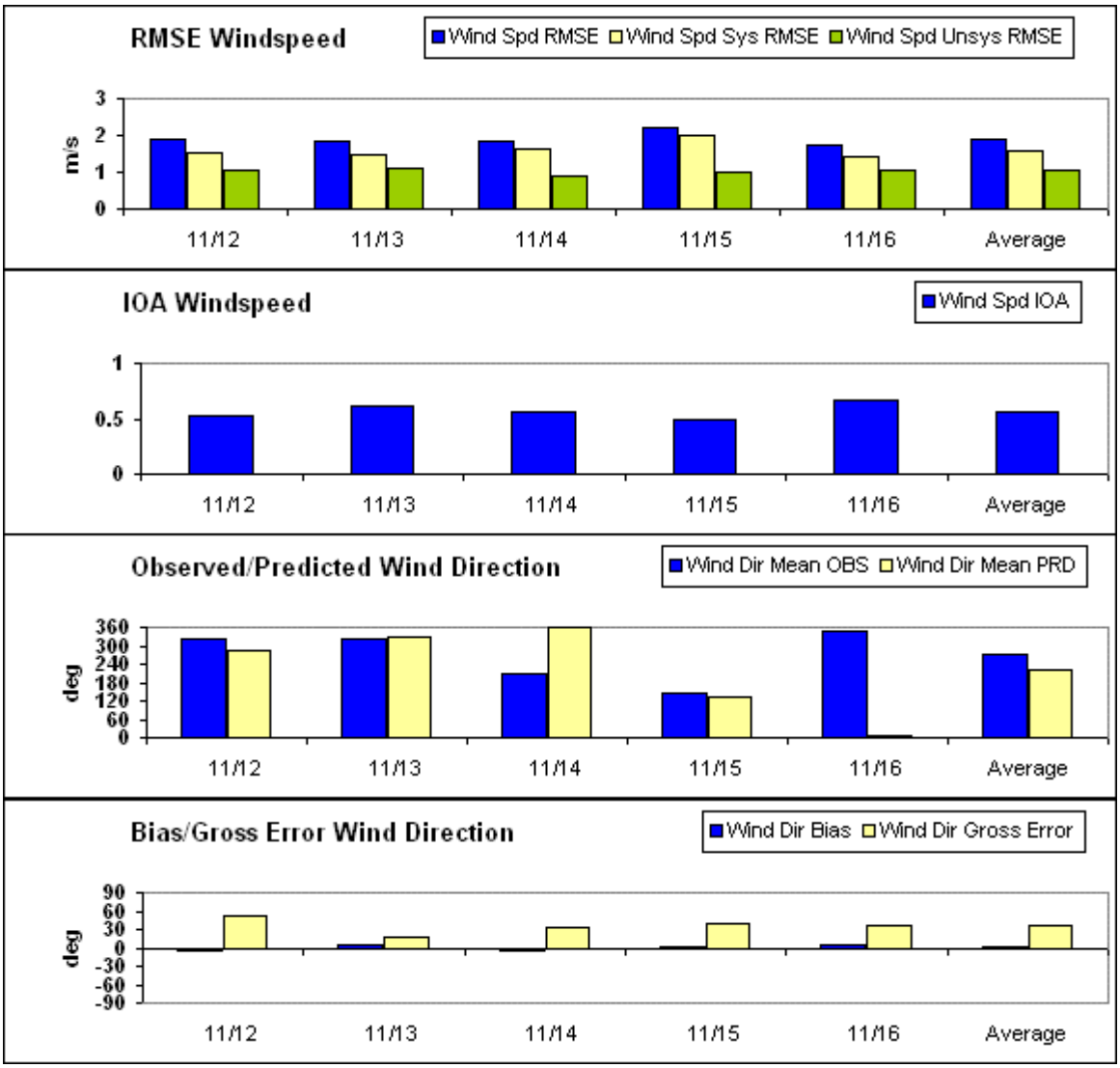

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
295
290
285
280
275
11/07
11/08
11/09
11/10
11/11
Average

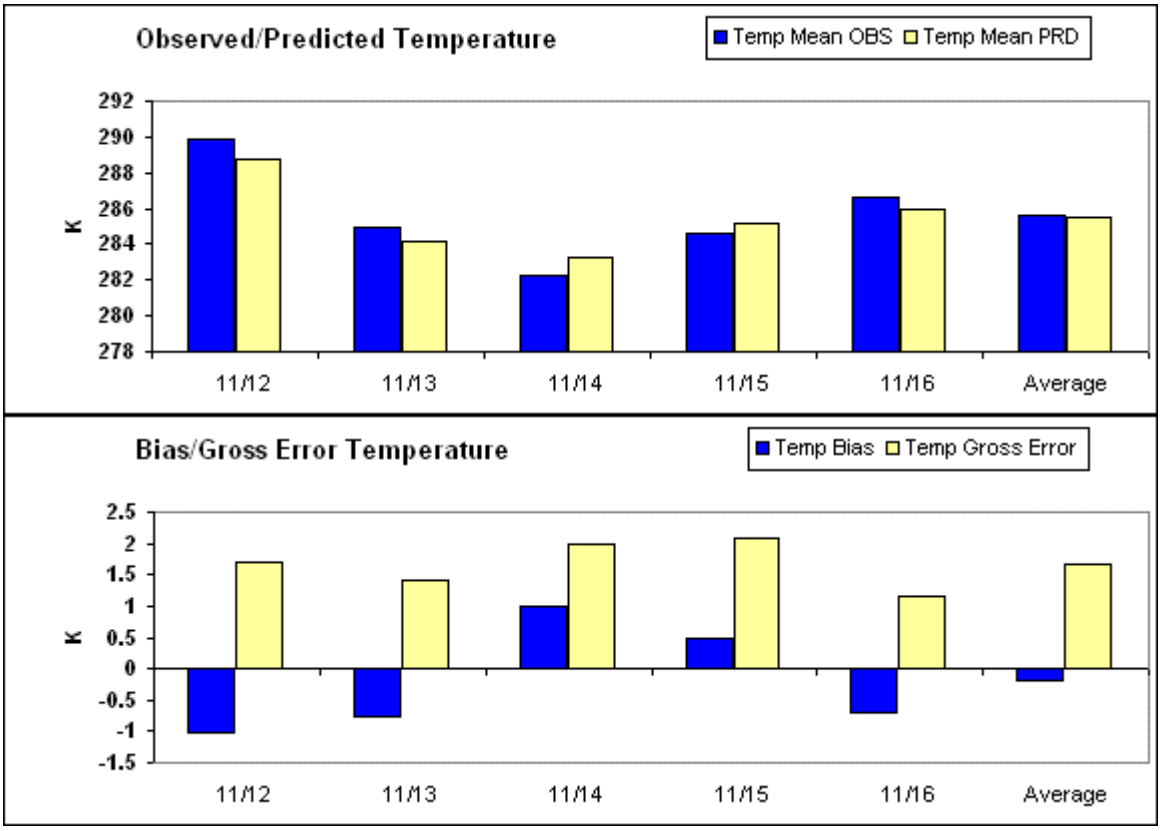

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
11/07
11/08
11/09
11/10
11/11
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
11/07
11/08
11/09
11/10
11/11
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
11/07
11/08
11/09
11/10
11/11
Average

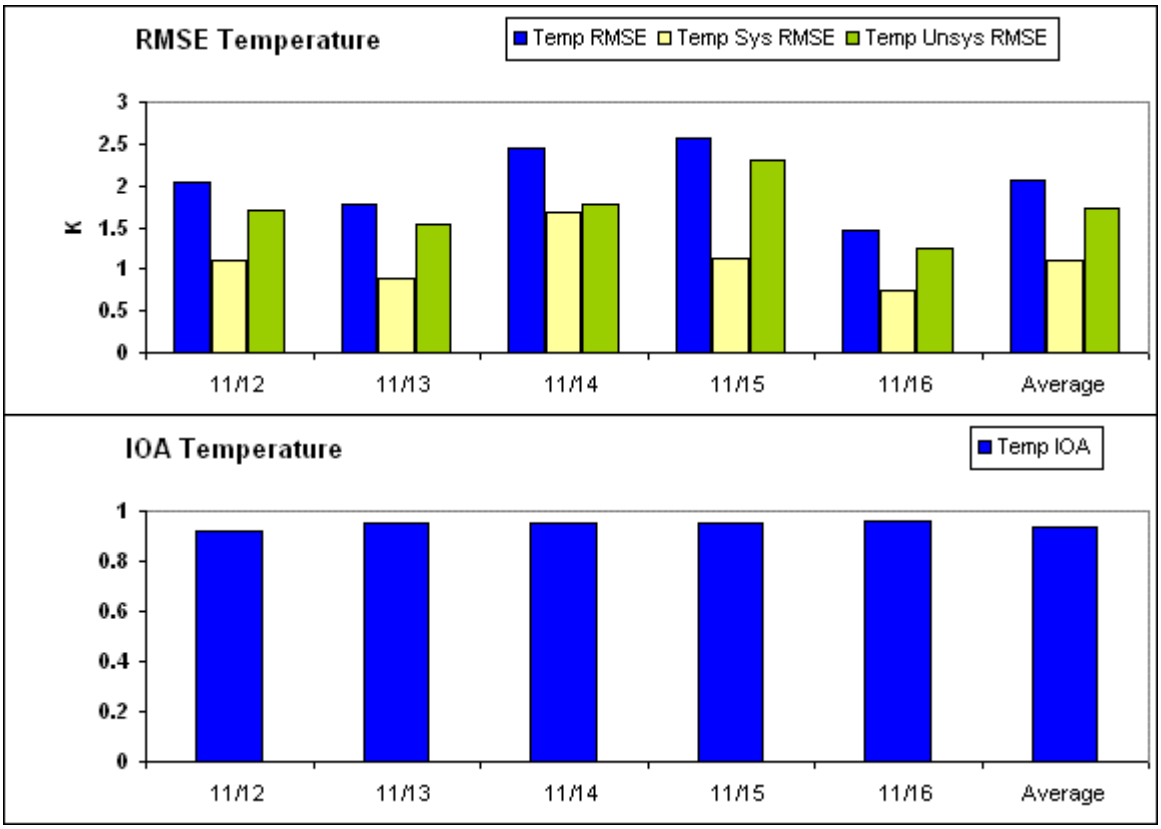

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
16
14
12
10
8
6
4
2
0
11/07
11/08
11/09
11/10
11/11
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
11/07
11/08
11/09
11/10
11/11
Average

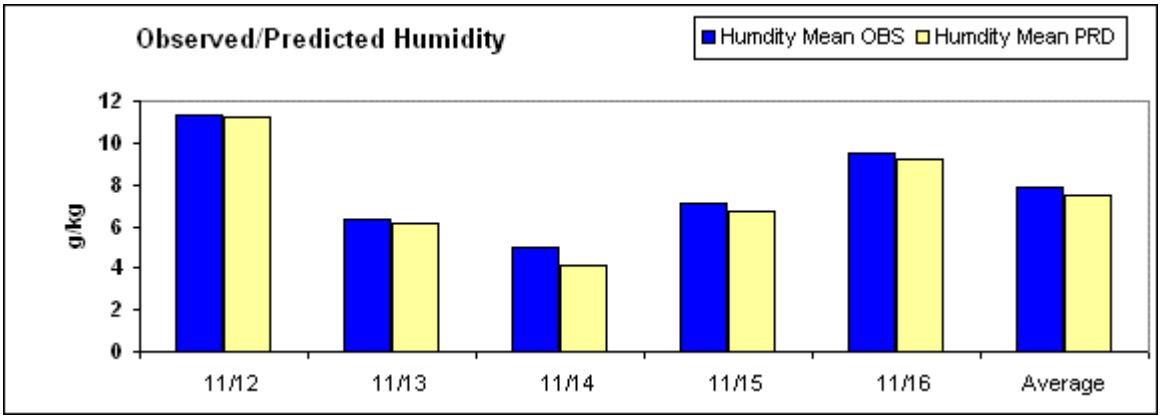

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
11/07
11/08
11/09
11/10
11/11
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
11/07
11/08
11/09
11/10
11/11
Average

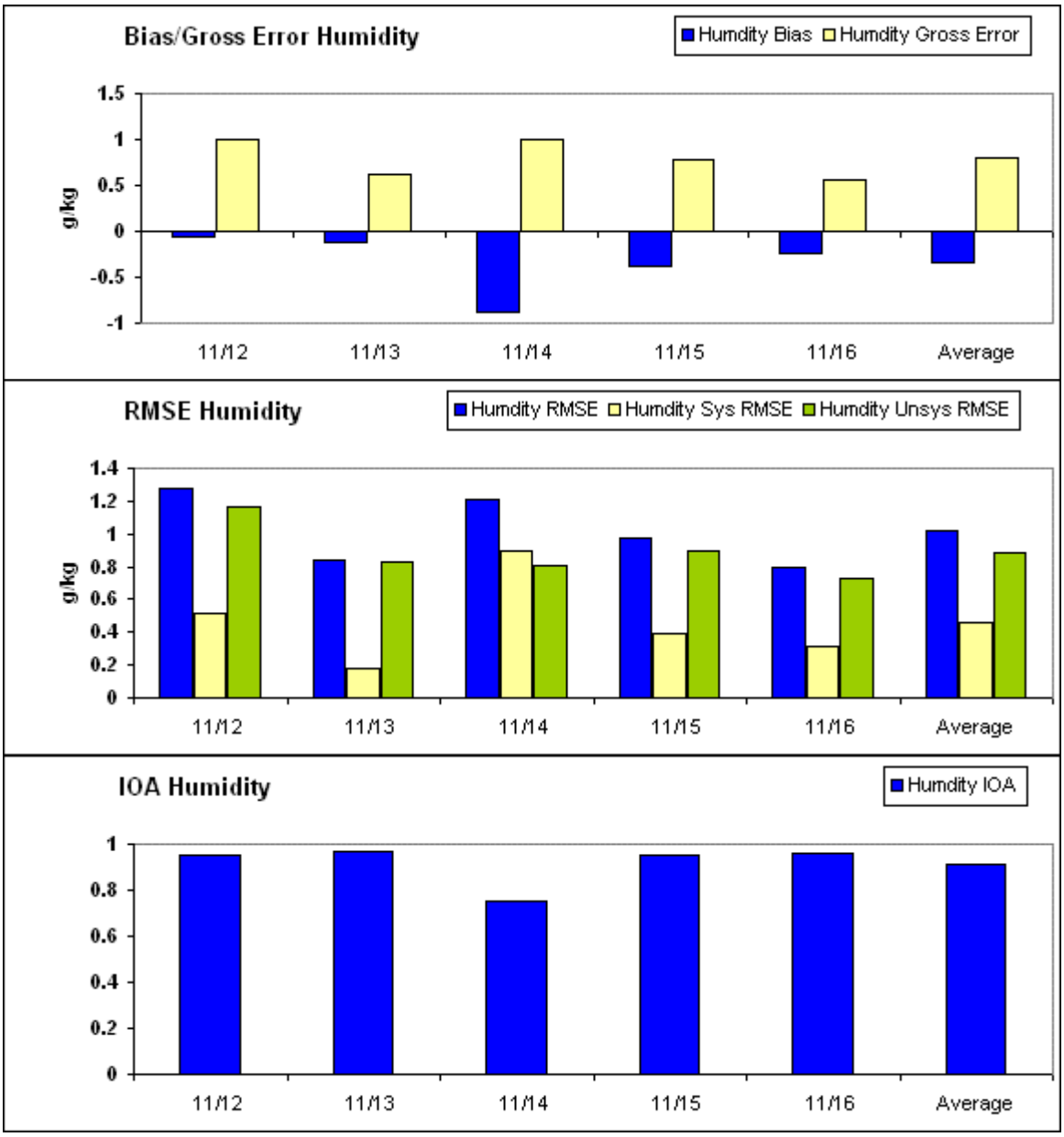

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
11/12
11/13
11/14
11/15
11/16
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
11/12
11/13
11/14
11/15
11/16
Average

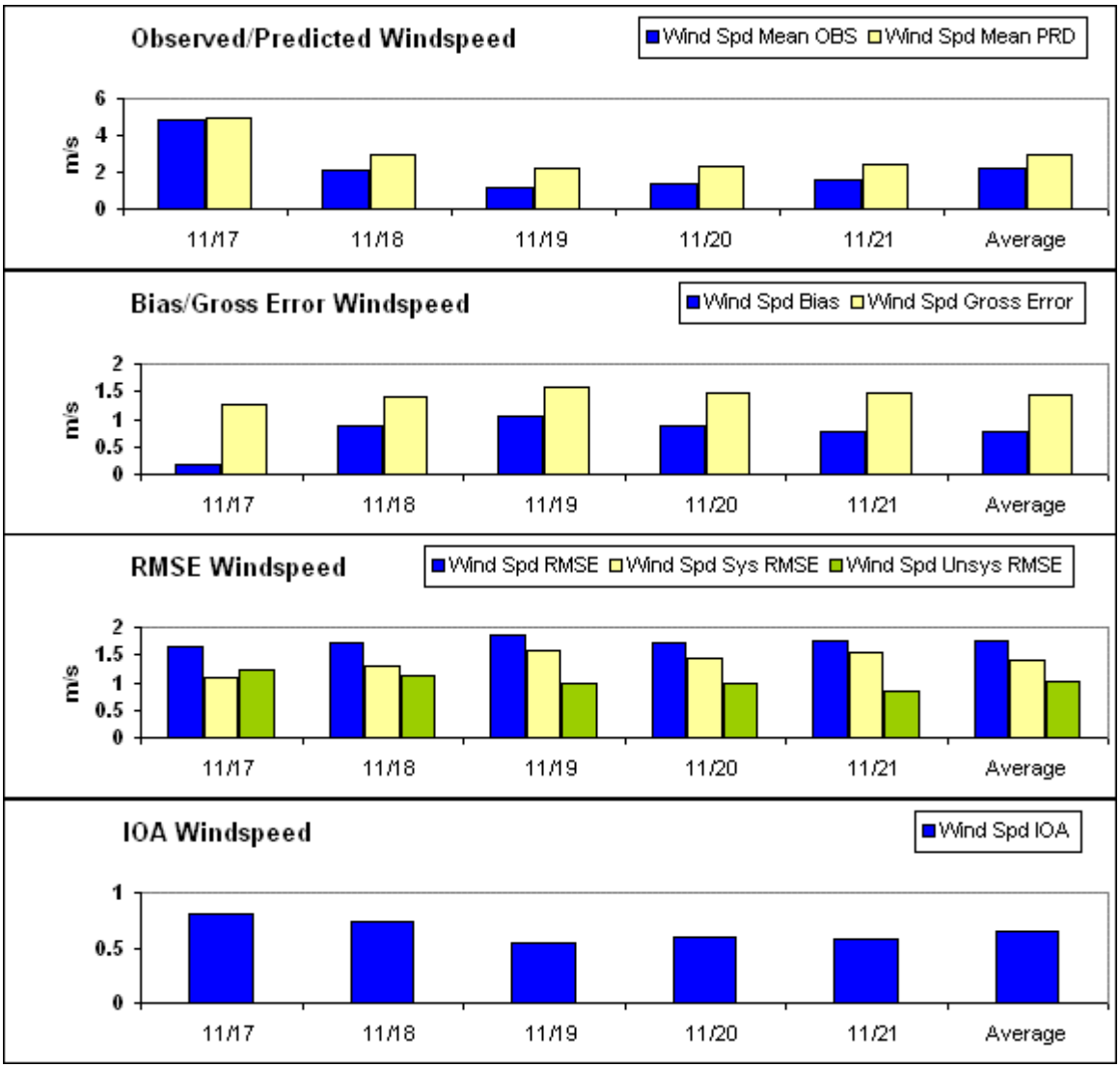

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
11/12
11/13
11/14
11/15
11/16
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
11/12
11/13
11/14
11/15
11/16
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
11/12
11/13
11/14
11/15
11/16
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
11/12
11/13
11/14
11/15
11/16
Average

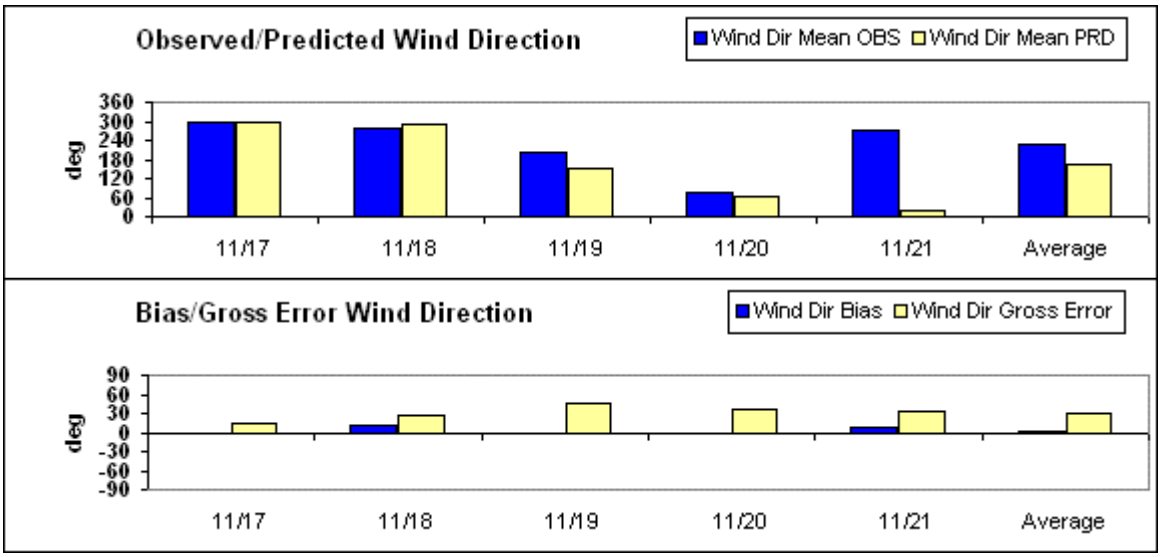

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
292
290
288
286
284
282
280
278
11/12
11/13
11/14
11/15
11/16
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
11/12
11/13
11/14
11/15
11/16
Average

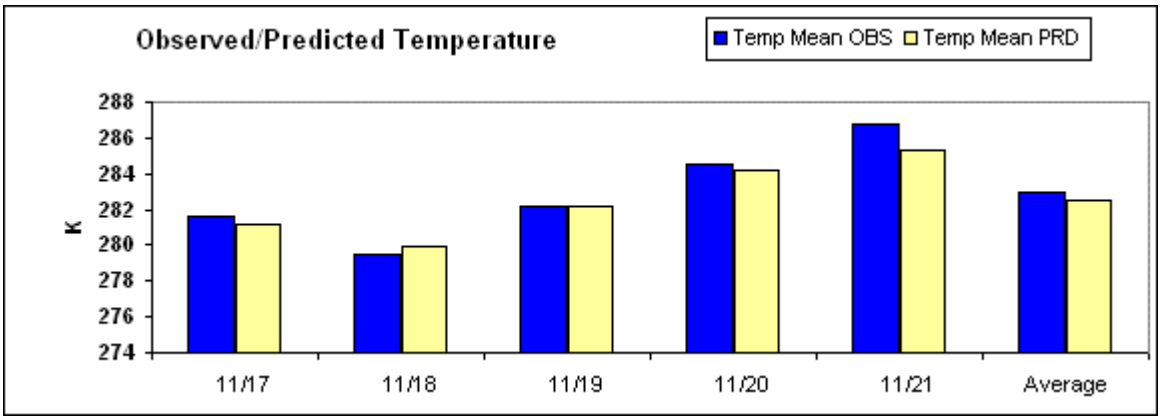

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
11/12
11/13
11/14
11/15
11/16
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
11/12
11/13
11/14
11/15
11/16
Average

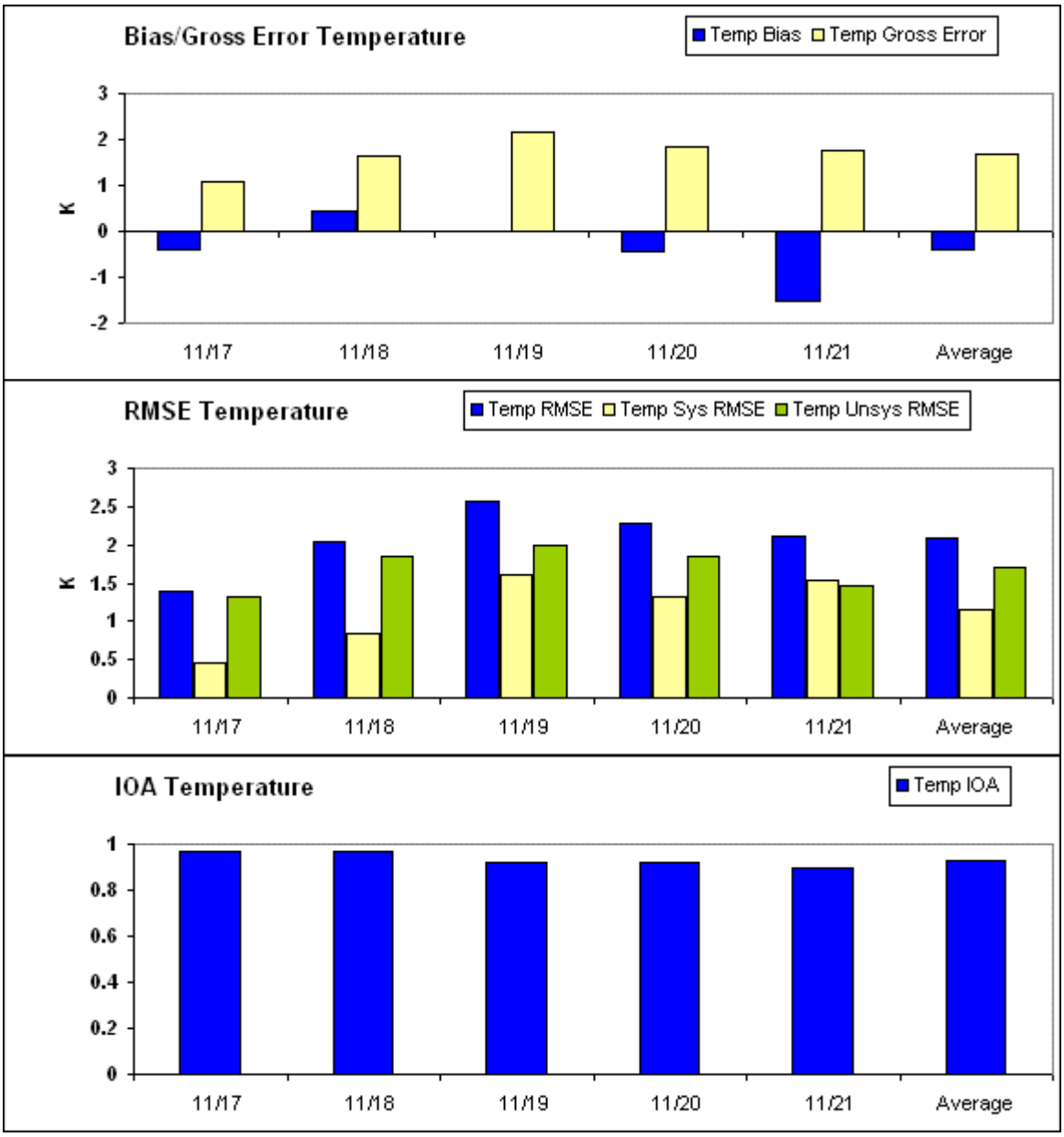

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
12
10
8
6
4
2
0
11/12
11/13
11/14
11/15
11/16
Average

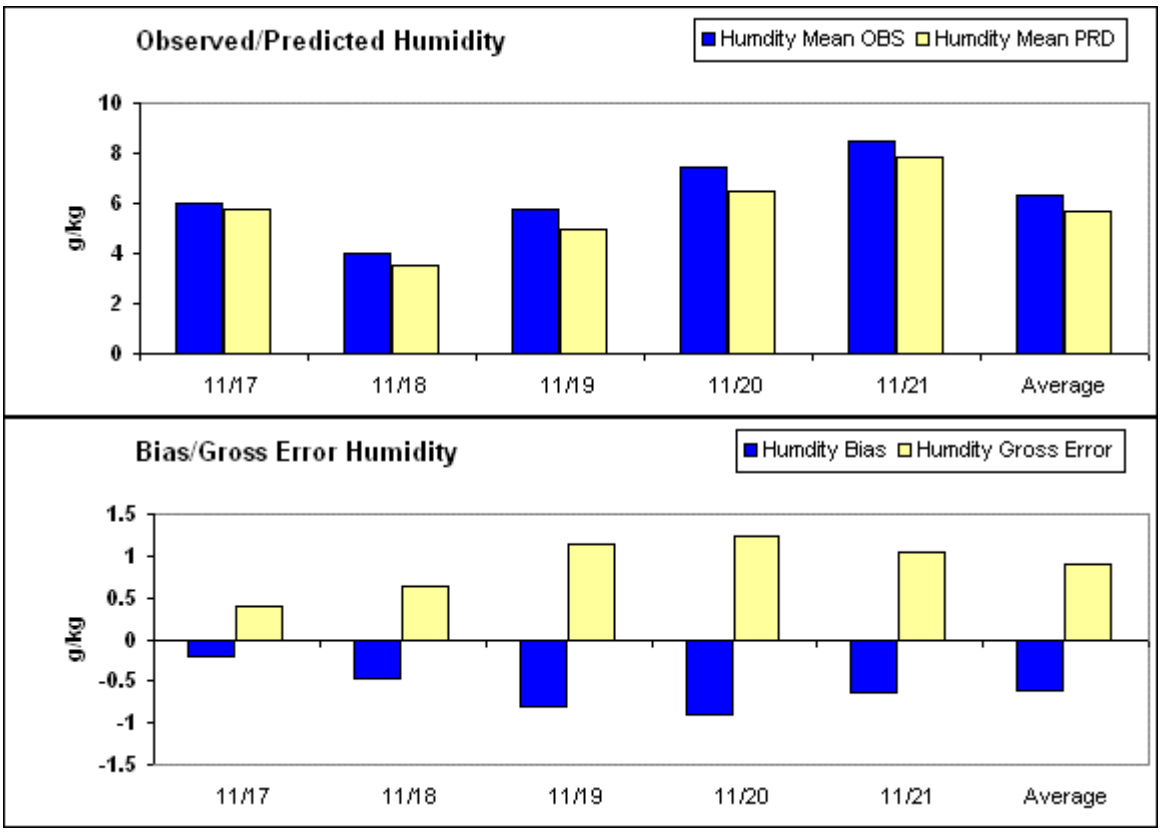

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
11/12
11/13
11/14
11/15
11/16
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
11/12
11/13
11/14
11/15
11/16
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
11/12
11/13
11/14
11/15
11/16
Average

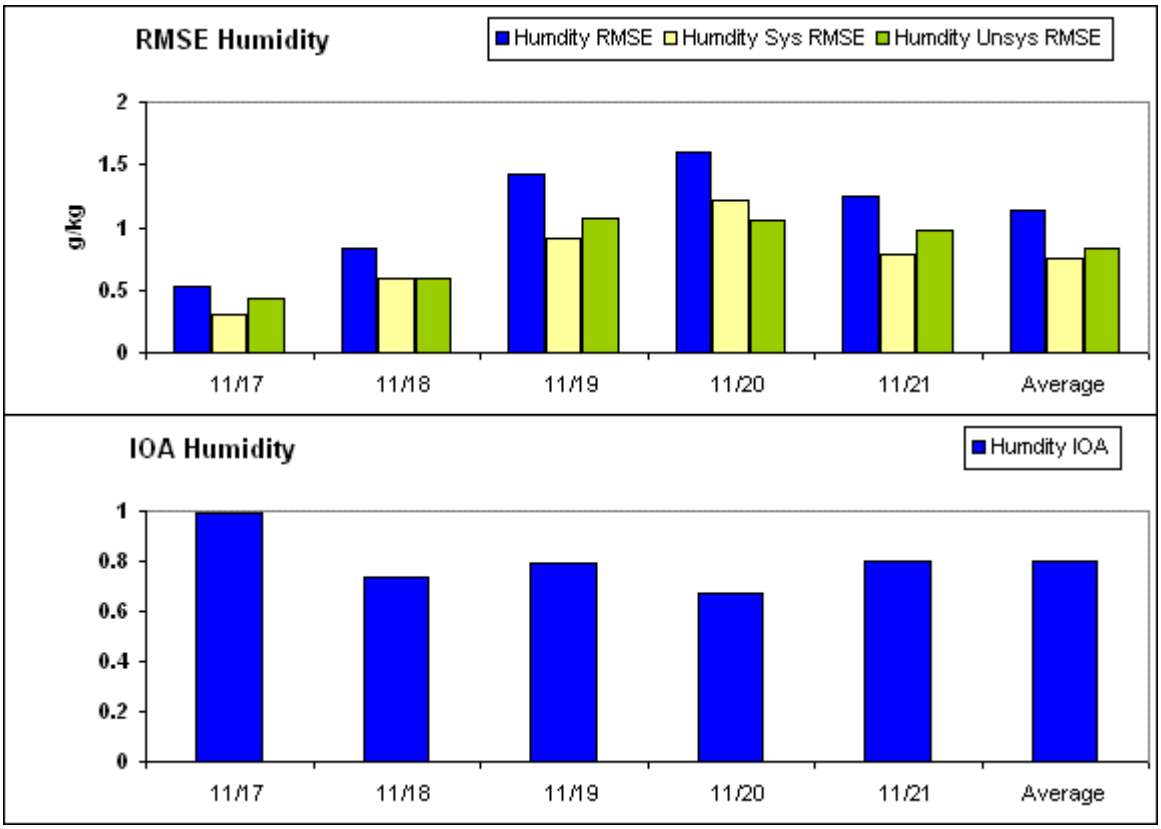

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
11/17
11/18
11/19
11/20
11/21
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
11/17
11/18
11/19
11/20
11/21
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
11/17
11/18
11/19
11/20
11/21
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
11/17
11/18
11/19
11/20
11/21
Average

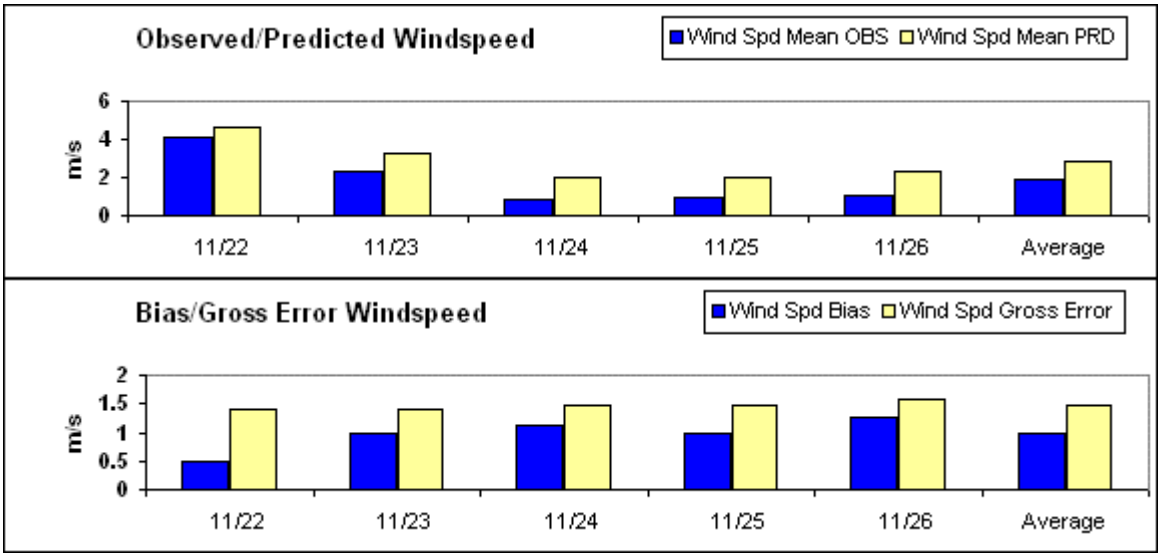

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
11/17
11/18
11/19
11/20
11/21
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
11/17
11/18
11/19
11/20
11/21
Average

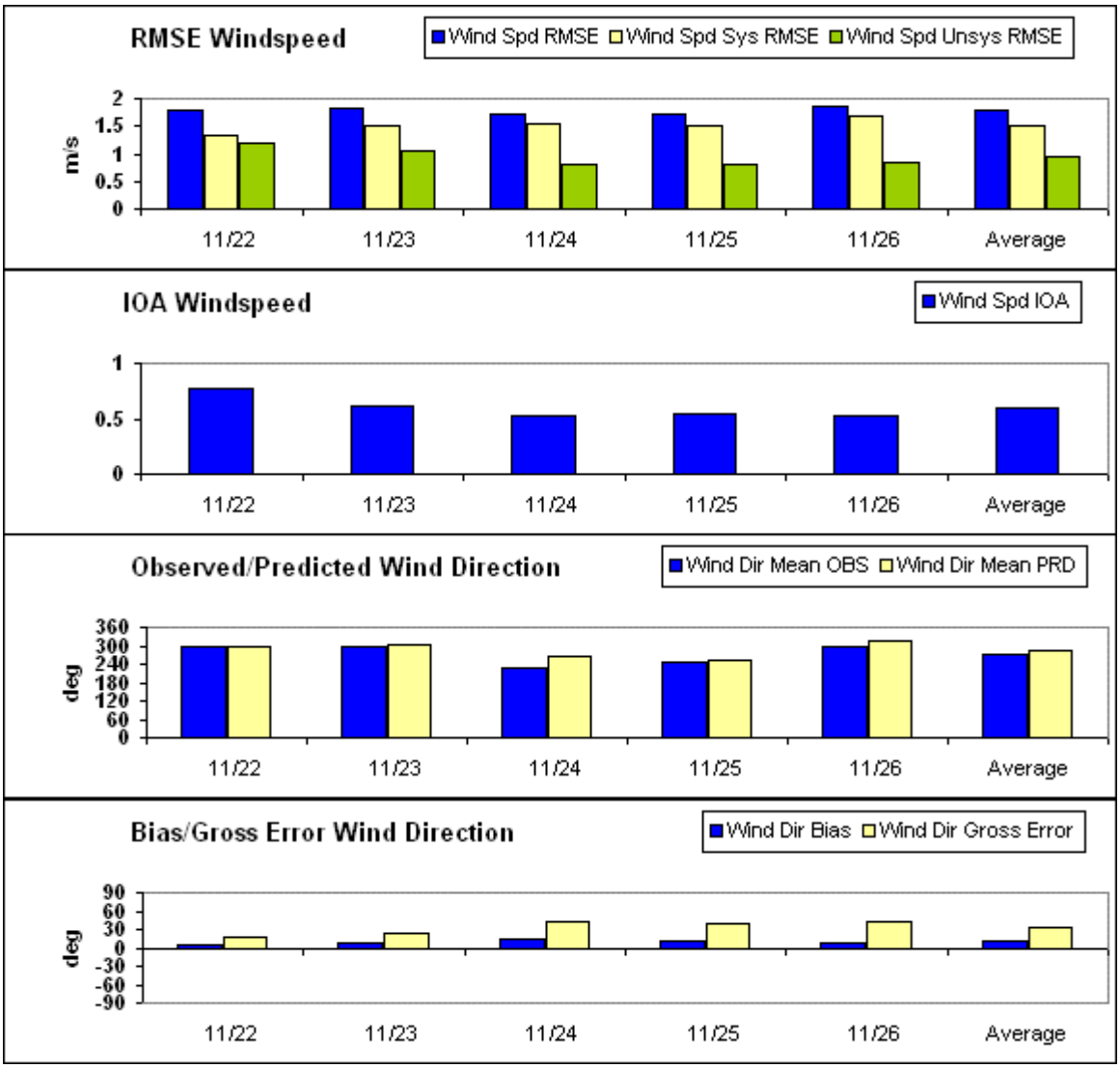

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
288
286
284
282
280
278
276
274
11/17
11/18
11/19
11/20
11/21
Average

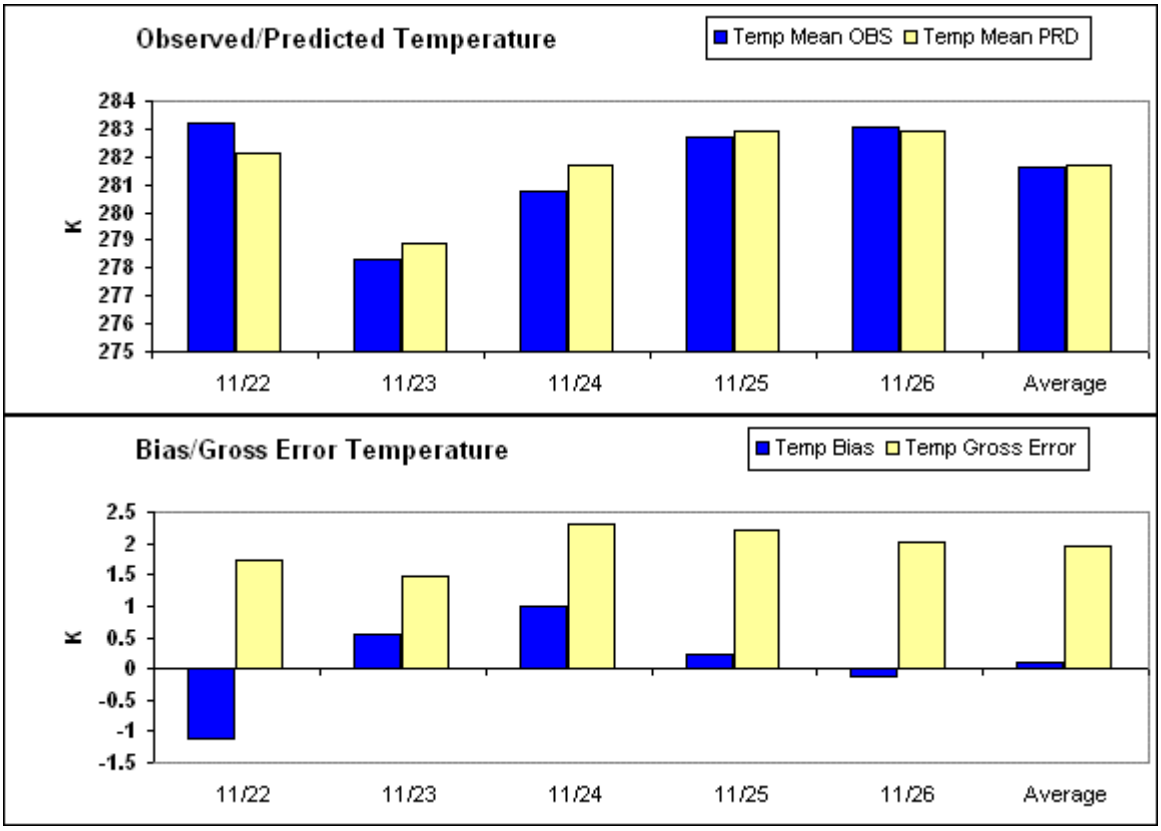

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
11/17
11/18
11/19
11/20
11/21
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
11/17
11/18
11/19
11/20
11/21
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
11/17
11/18
11/19
11/20
11/21
Average

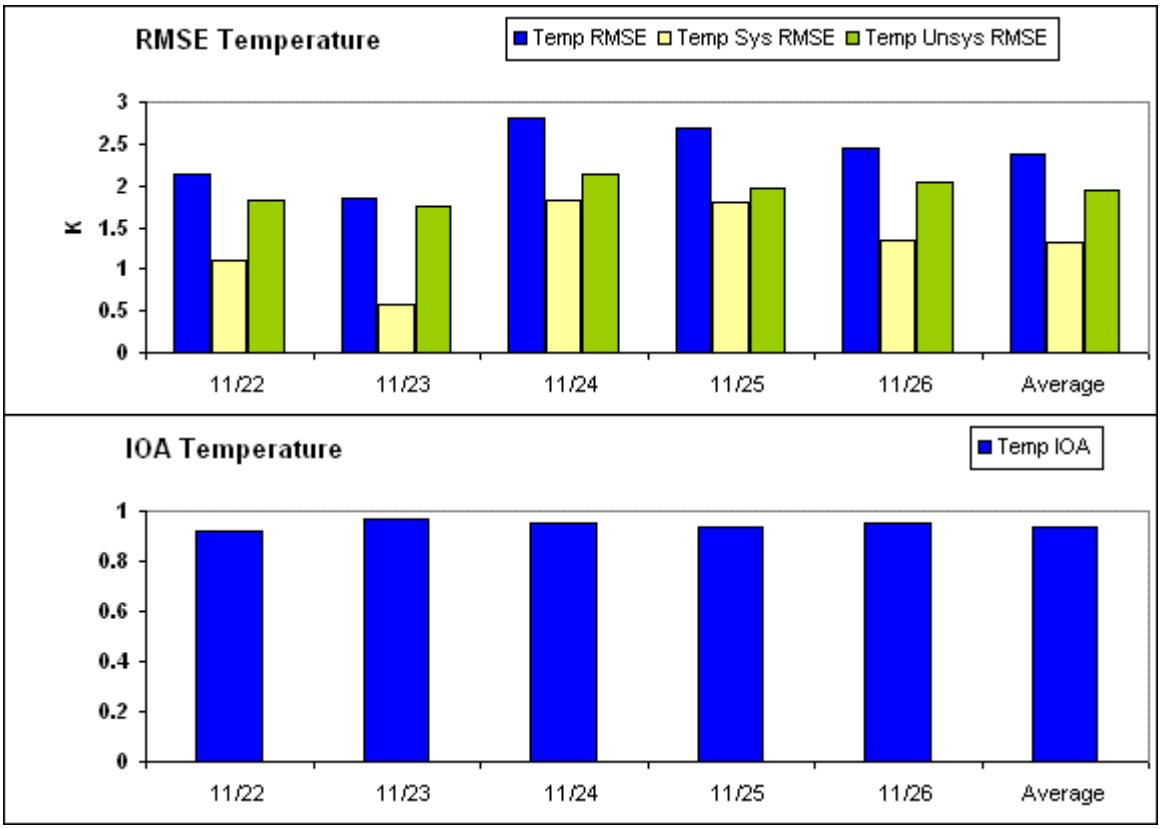

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
10
8
6
4
2
0
11/17
11/18
11/19
11/20
11/21
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
11/17
11/18
11/19
11/20
11/21
Average

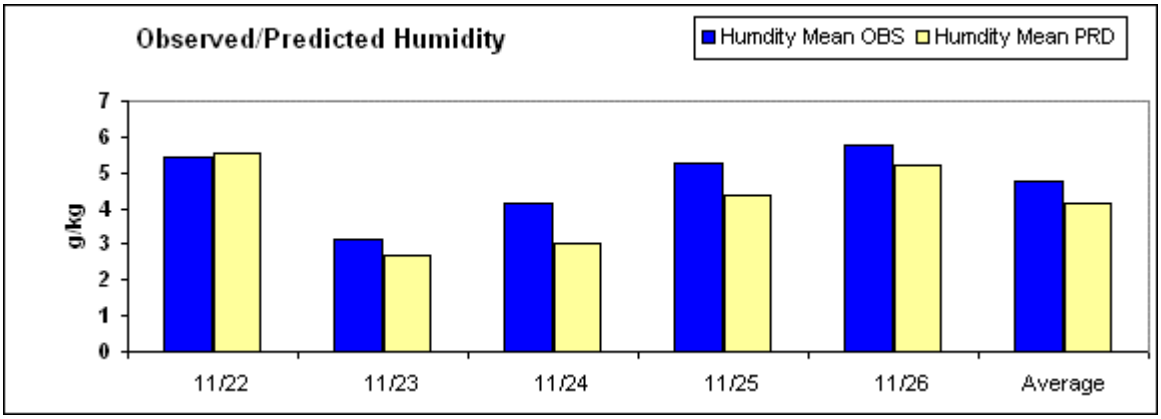

RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
11/17
11/18
11/19
11/20
11/21
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
11/17
11/18
11/19
11/20
11/21
Average

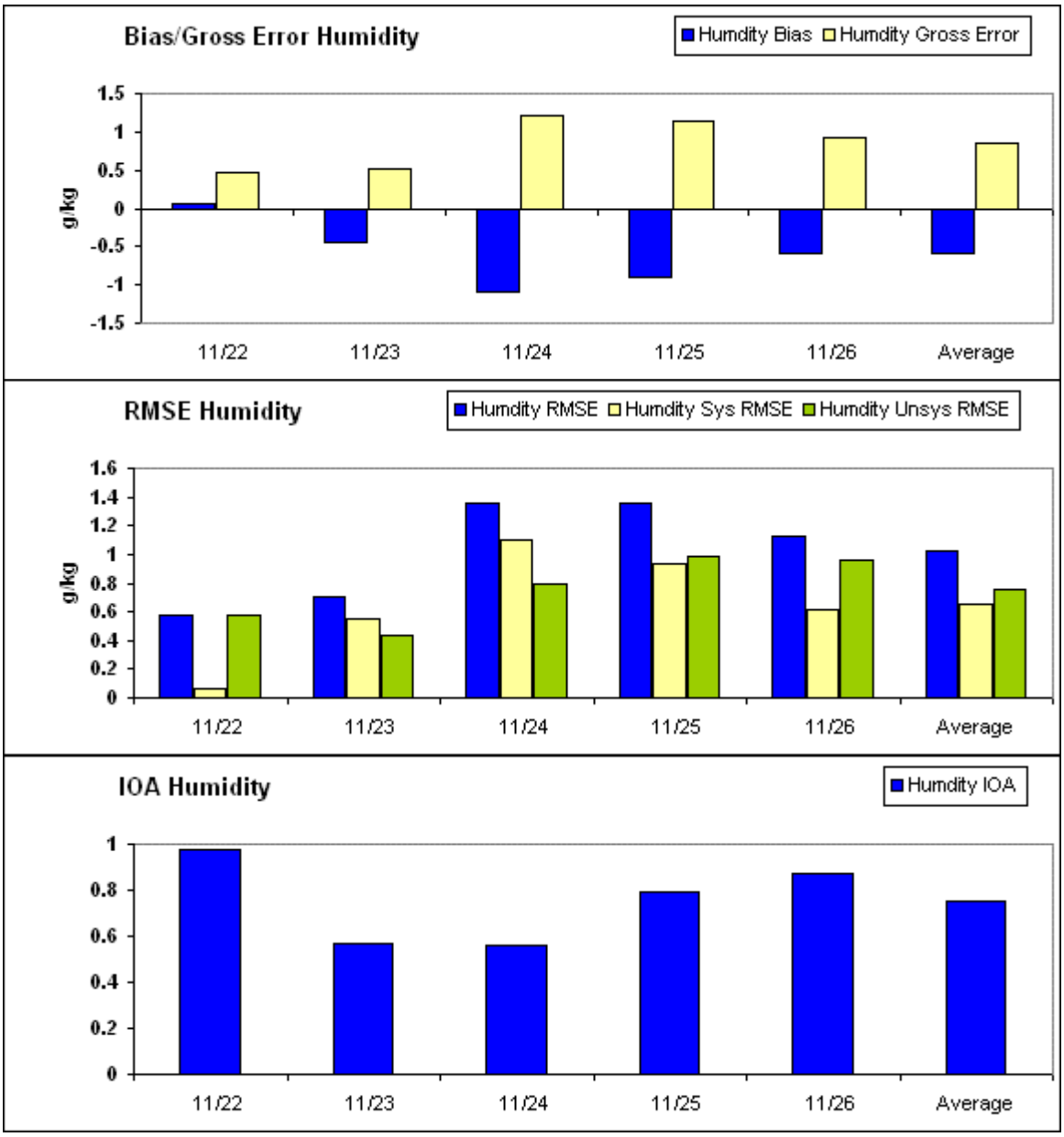

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
11/22
11/23
11/24
11/25
11/26
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
11/22
11/23
11/24
11/25
11/26
Average

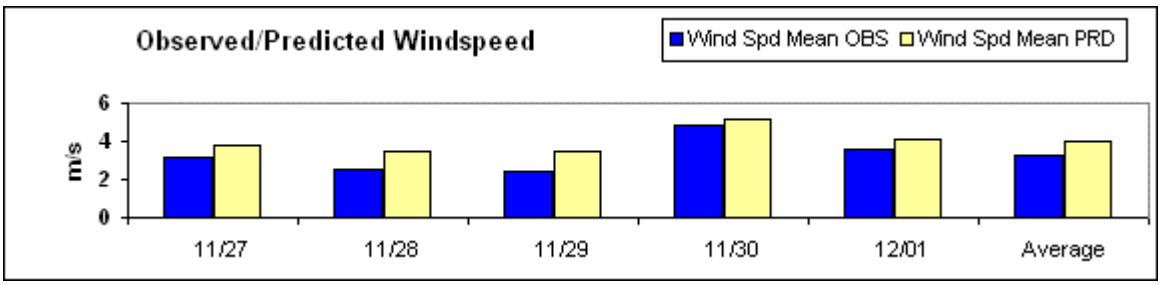

RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
11/22
11/23
11/24
11/25
11/26
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
11/22
11/23
11/24
11/25
11/26
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
11/22
11/23
11/24
11/25
11/26
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
11/22
11/23
11/24
11/25
11/26
Average

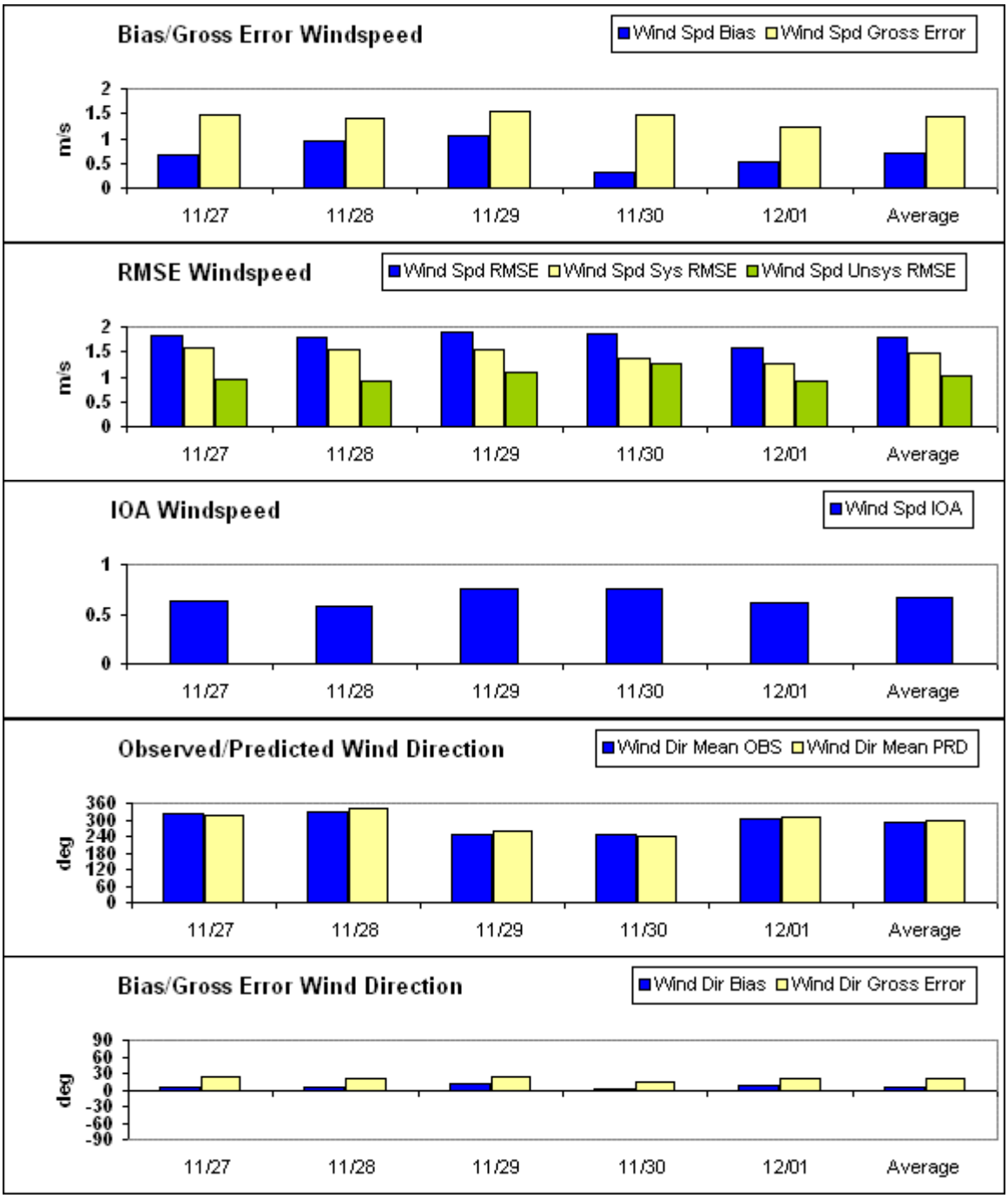

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
284
283
282
281
280
279
278
277
276
275
11/22
11/23
11/24
11/25
11/26
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
11/22
11/23
11/24
11/25
11/26
Average

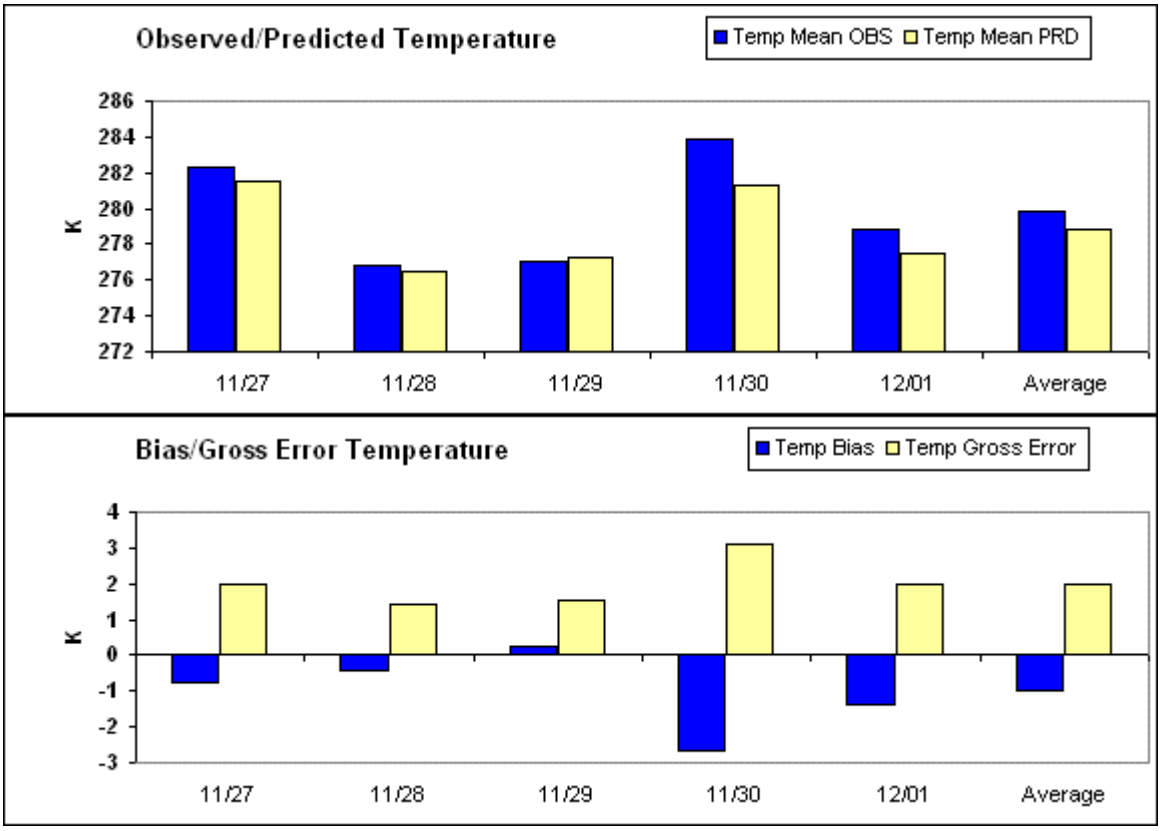

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
11/22
11/23
11/24
11/25
11/26
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
11/22
11/23
11/24
11/25
11/26
Average

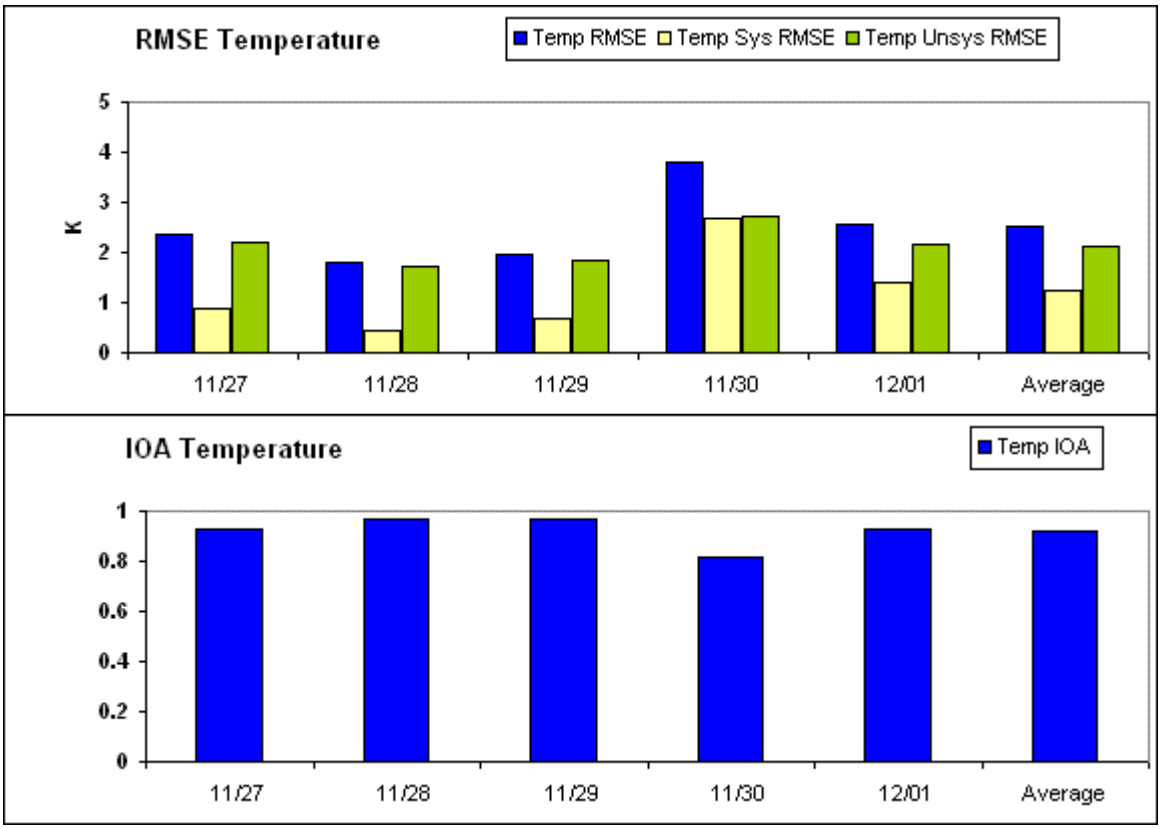

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
7
6
5
4
3
2
1
0
11/22
11/23
11/24
11/25
11/26
Average

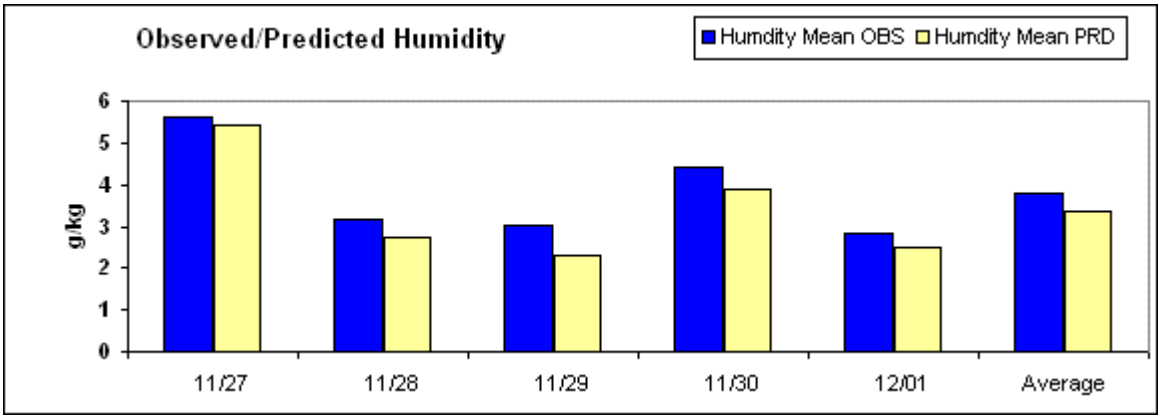

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
11/22
11/23
11/24
11/25
11/26
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
11/22
11/23
11/24
11/25
11/26
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
11/22
11/23
11/24
11/25
11/26
Average

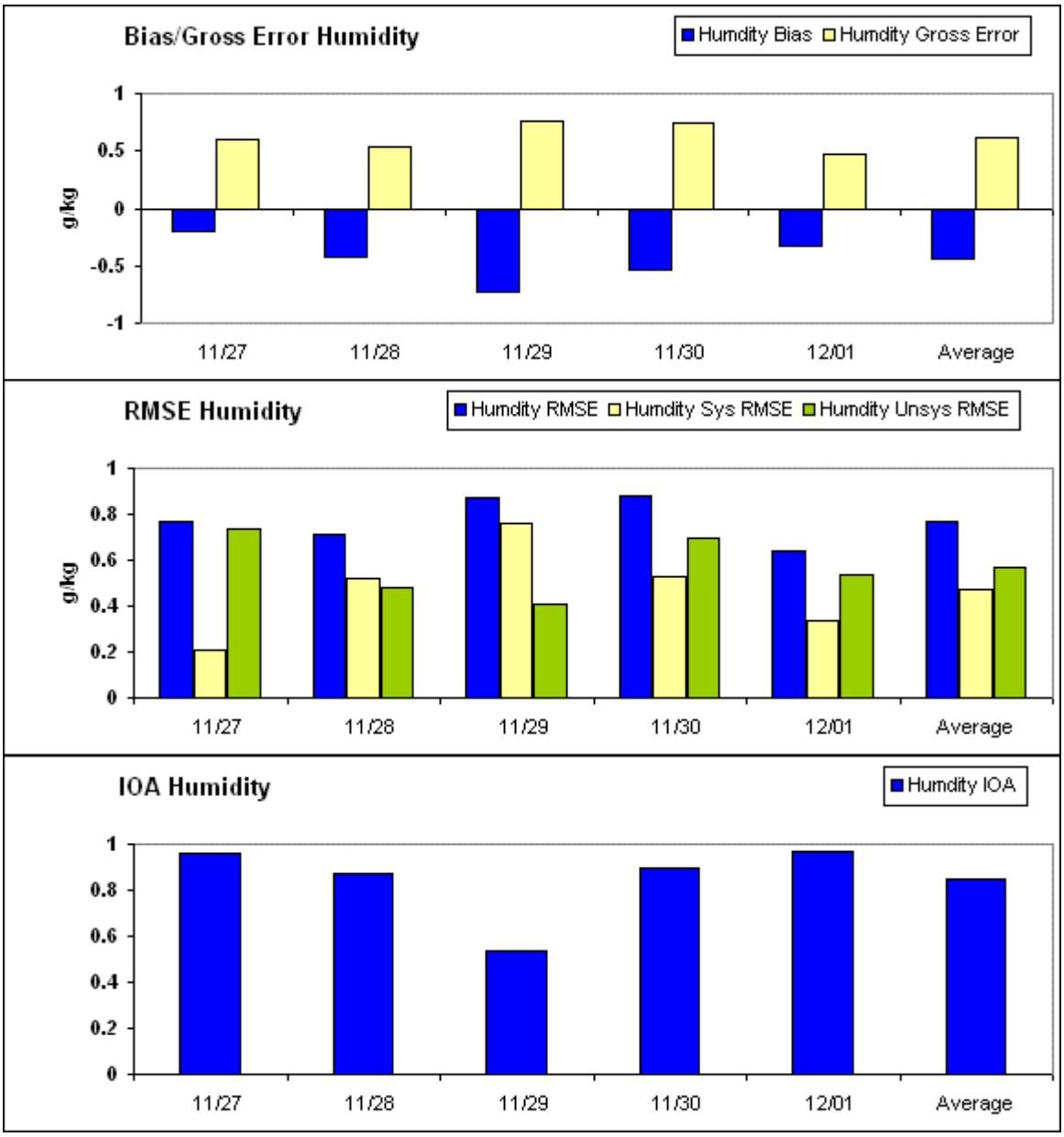

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
11/27
11/28
11/29
11/30
12/01
Average

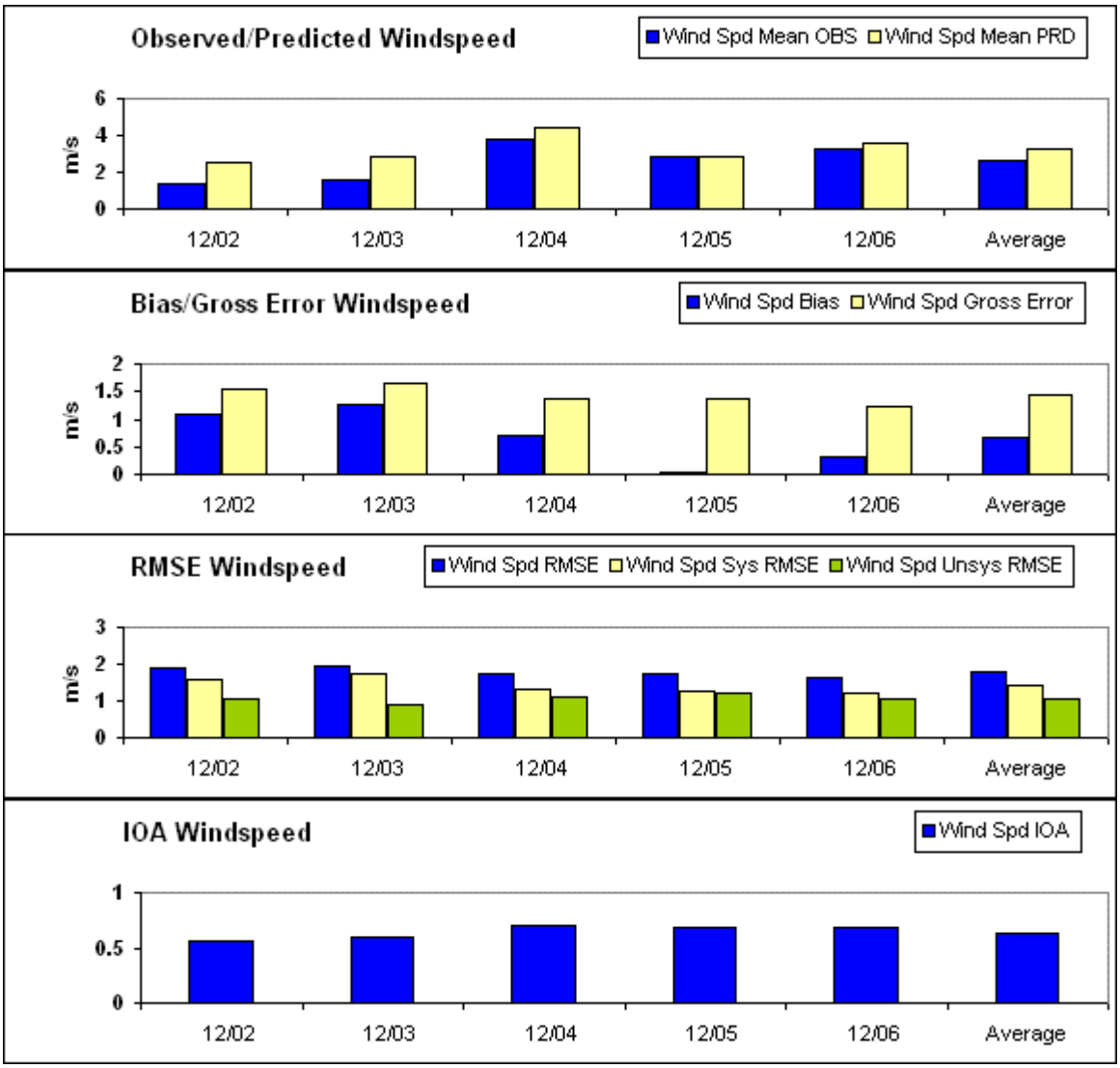

Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
11/27
11/28
11/29
11/30
12/01
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
11/27
11/28
11/29
11/30
12/01
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
11/27
11/28
11/29
11/30
12/01
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
11/27
11/28
11/29
11/30
12/01
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
11/27
11/28
11/29
11/30
12/01
Average

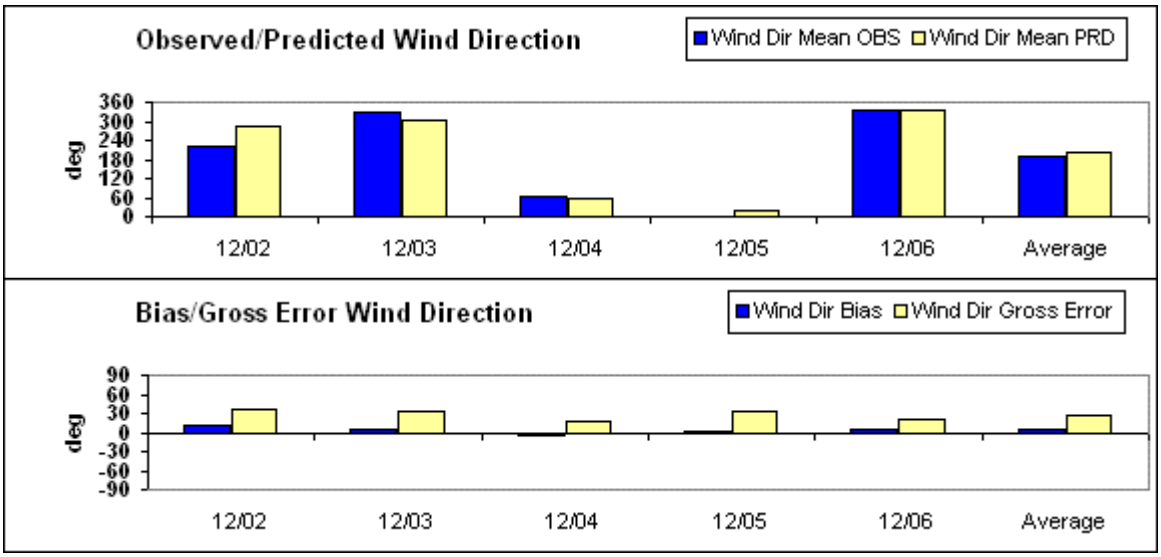

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
286
284
282
280
278
276
274
272
11/27
11/28
11/29
11/30
12/01
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
4
3
2
1
0
-1
-2
-3
11/27
11/28
11/29
11/30
12/01
Average

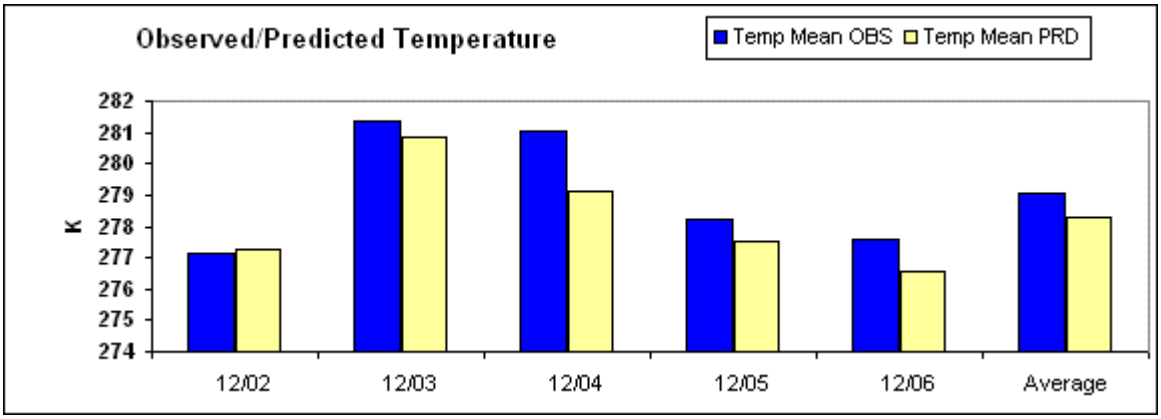

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
0
1
2
3
4
5
11/27
11/28
11/29
11/30
12/01
Average
IOA Temperature
Temp IOA
0
0.2
0.4
0.6
0.8
1
11/27
11/28
11/29
11/30
12/01
Average

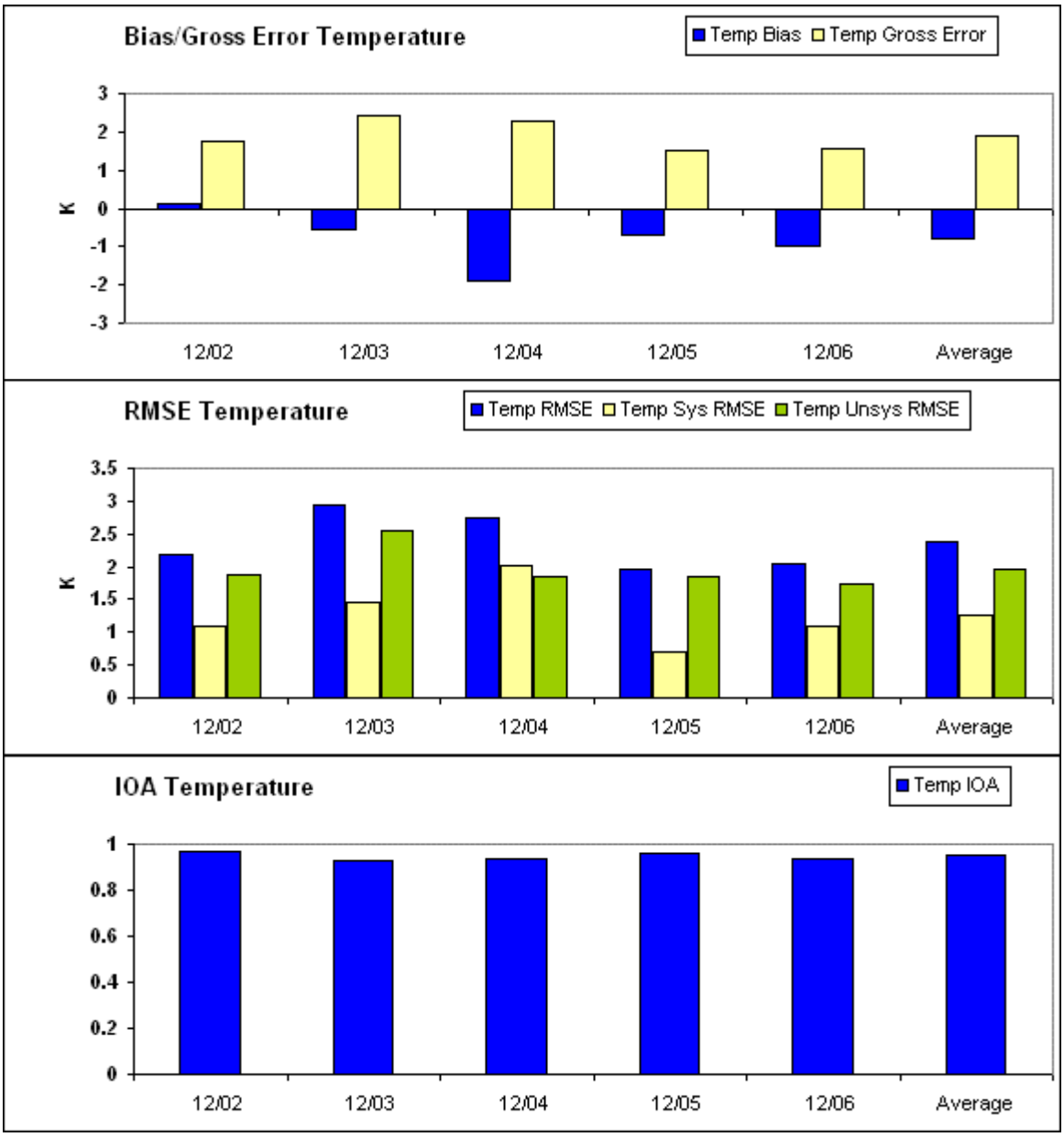

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
0
1
2
3
4
5
6
11/27
11/28
11/29
11/30
12/01
Average

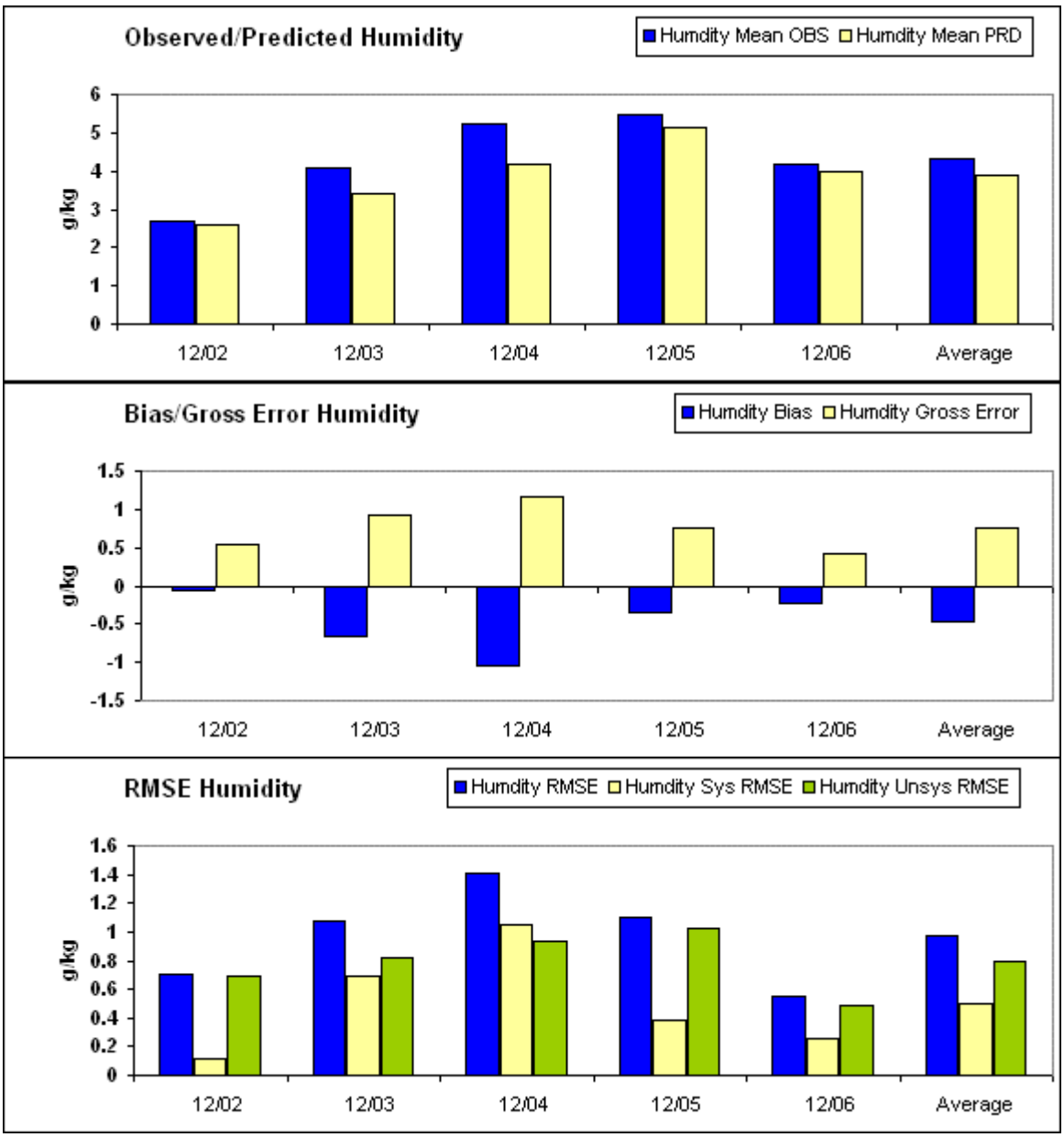

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.5
0
-0.5
-1
11/27
11/28
11/29
11/30
12/01
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1
0.8
0.6
0.4
0.2
0
11/27
11/28
11/29
11/30
12/01
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
11/27
11/28
11/29
11/30
12/01
Average

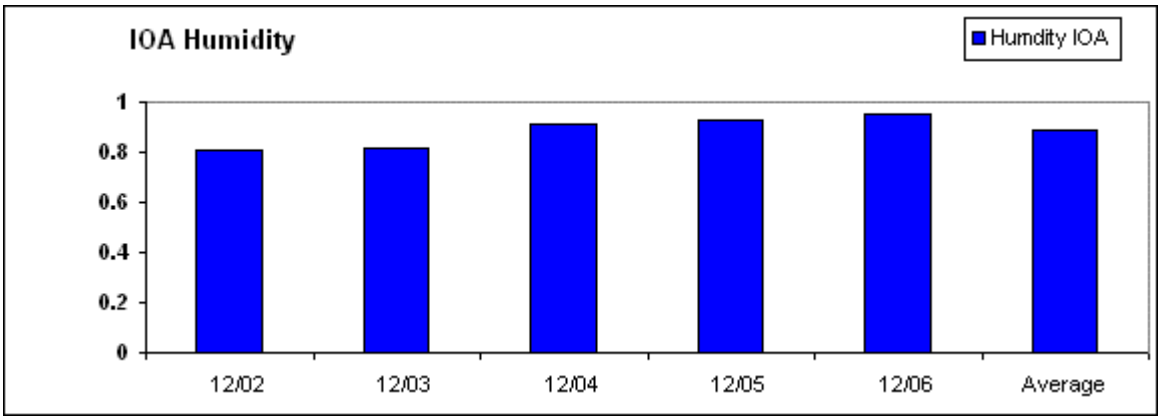

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
12/02
12/03
12/04
12/05
12/06
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
12/02
12/03
12/04
12/05
12/06
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
12/02
12/03
12/04
12/05
12/06
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
12/02
12/03
12/04
12/05
12/06
Average

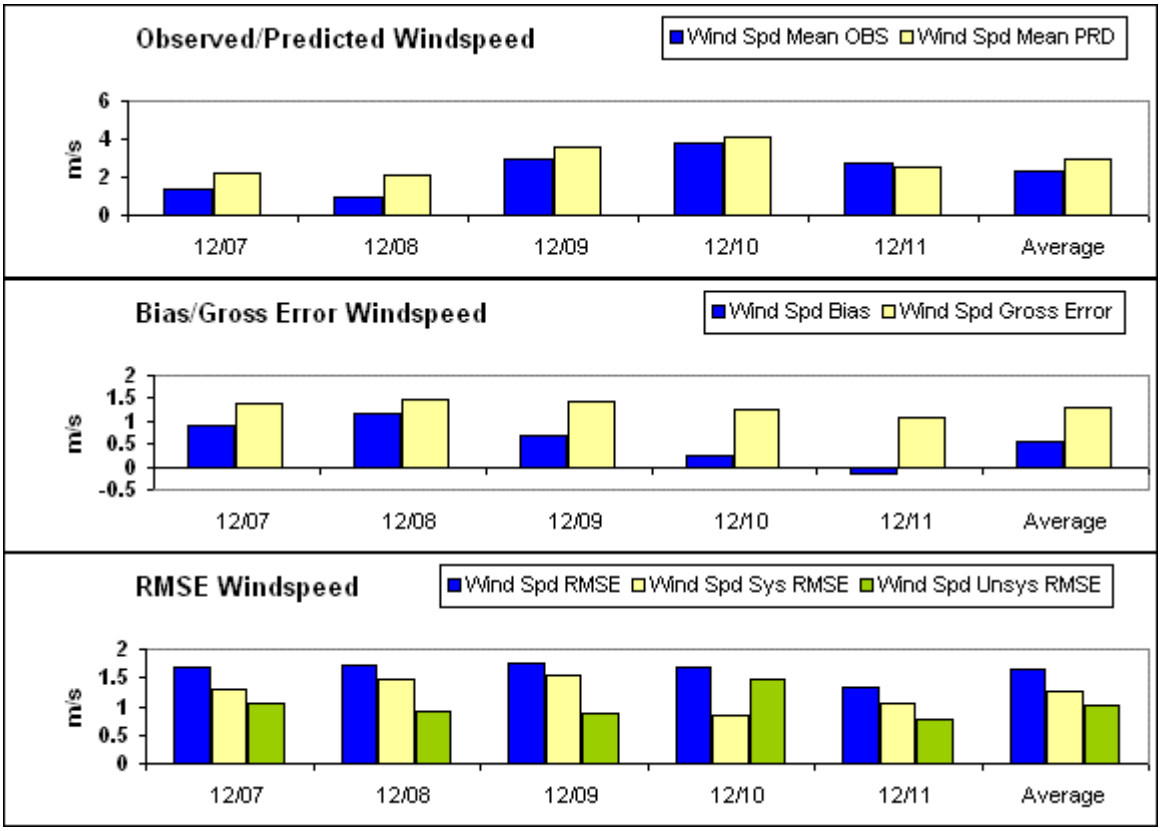

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
12/02
12/03
12/04
12/05
12/06
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
12/02
12/03
12/04
12/05
12/06
Average

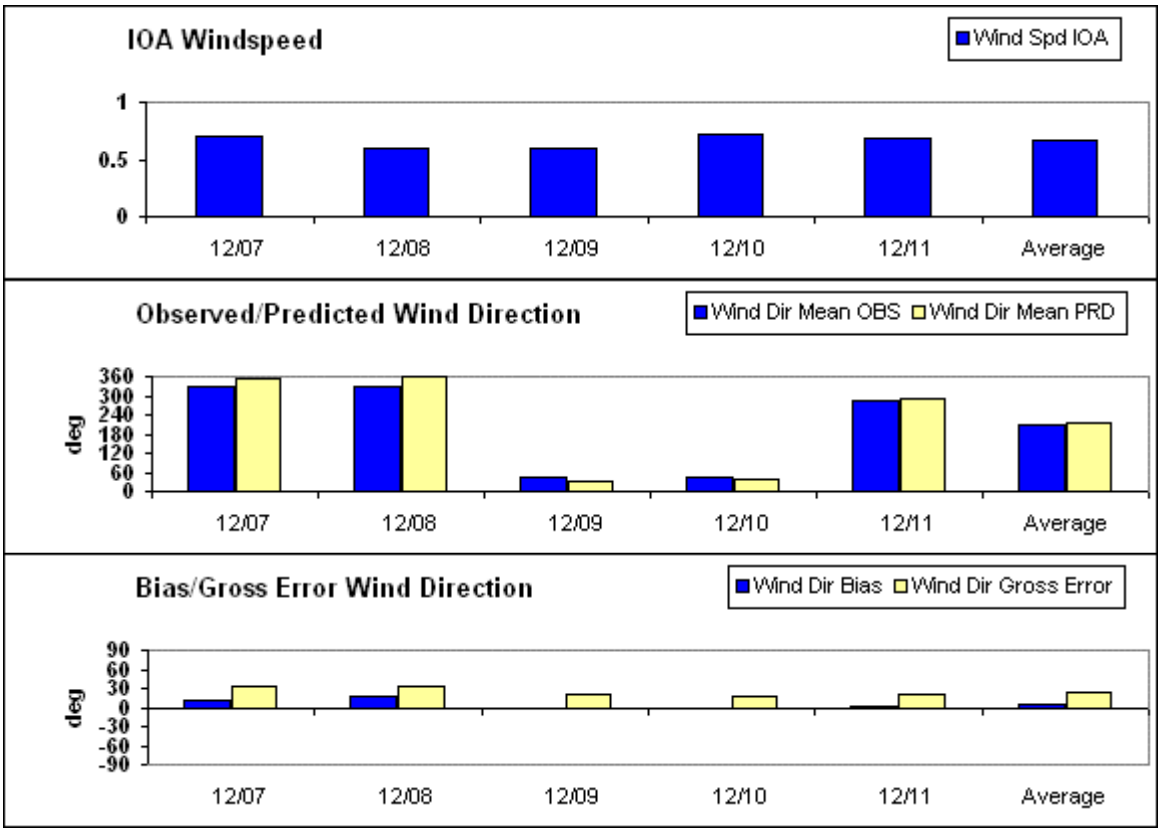

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
282
281
280
279
278
277
276
275
274
12/02
12/03
12/04
12/05
12/06
Average

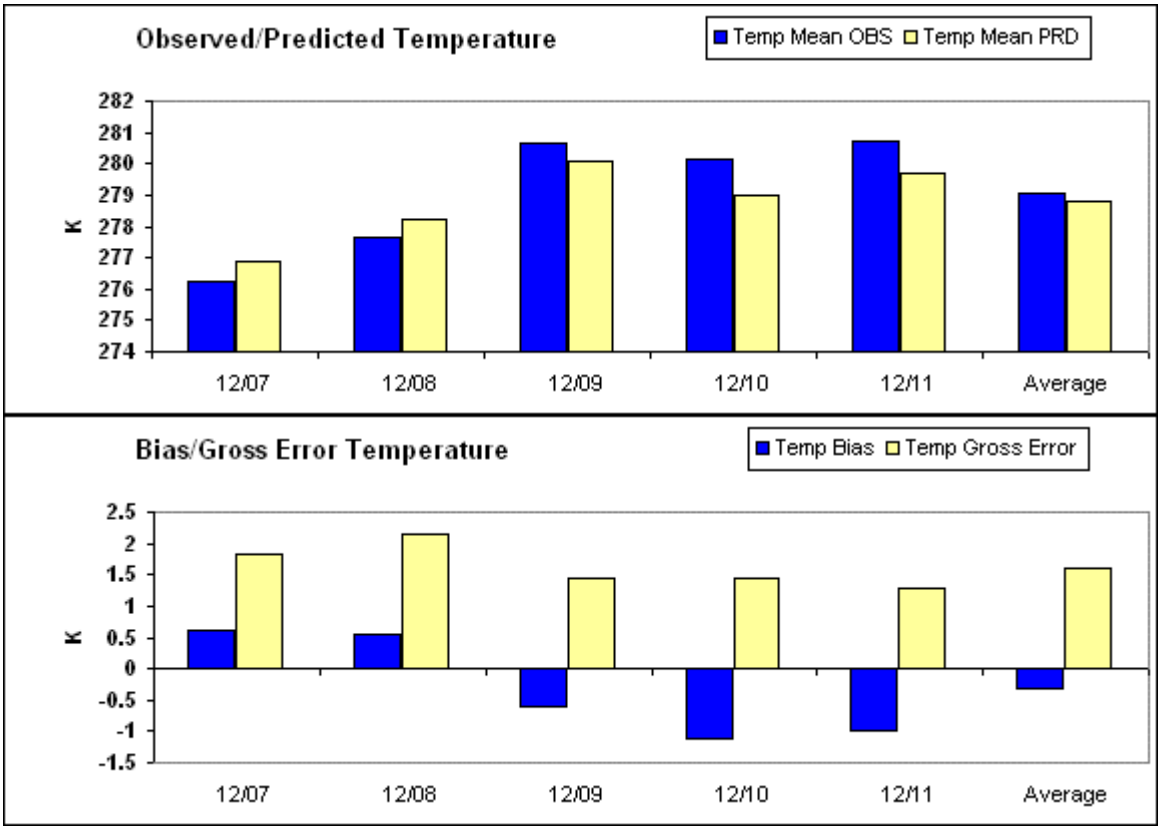

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
-3
12/02
12/03
12/04
12/05
12/06
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
12/02
12/03
12/04
12/05
12/06
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
12/02
12/03
12/04
12/05
12/06
Average

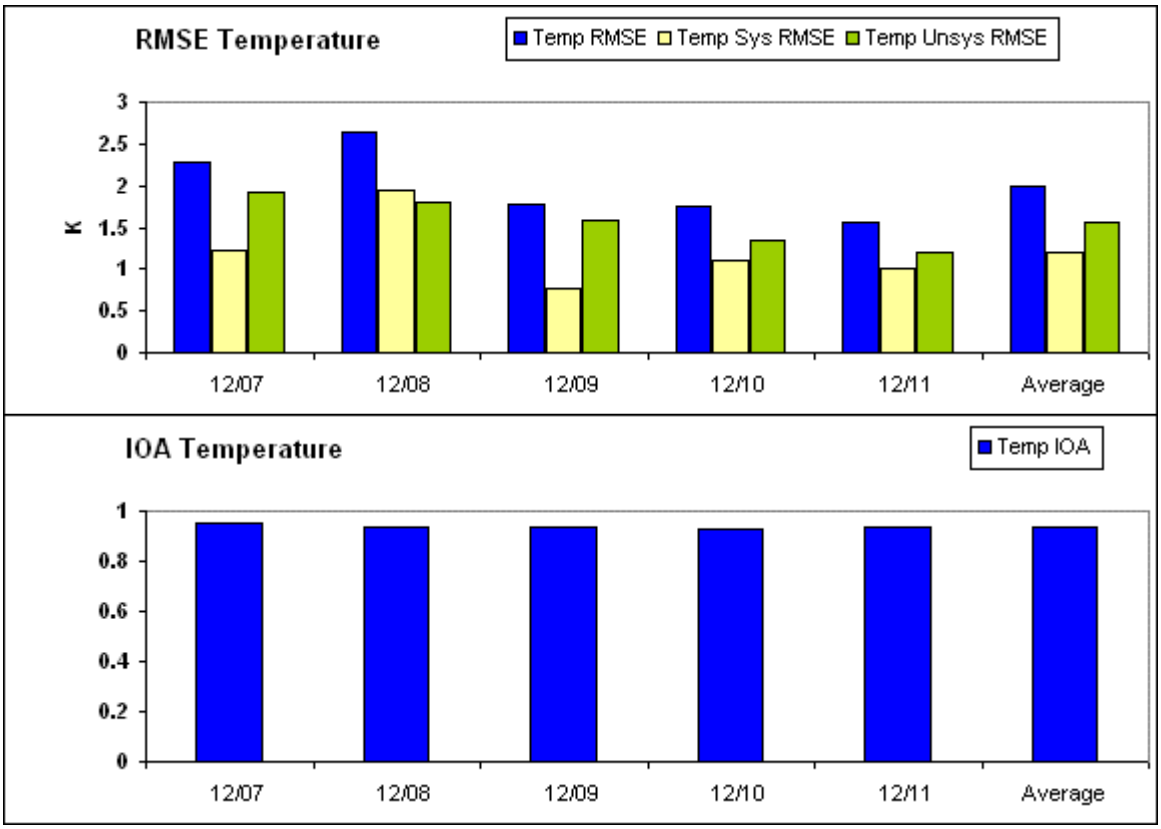

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
0
1
2
3
4
5
6
12/02
12/03
12/04
12/05
12/06
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
-1.5
12/02
12/03
12/04
12/05
12/06
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12/02
12/03
12/04
12/05
12/06
Average

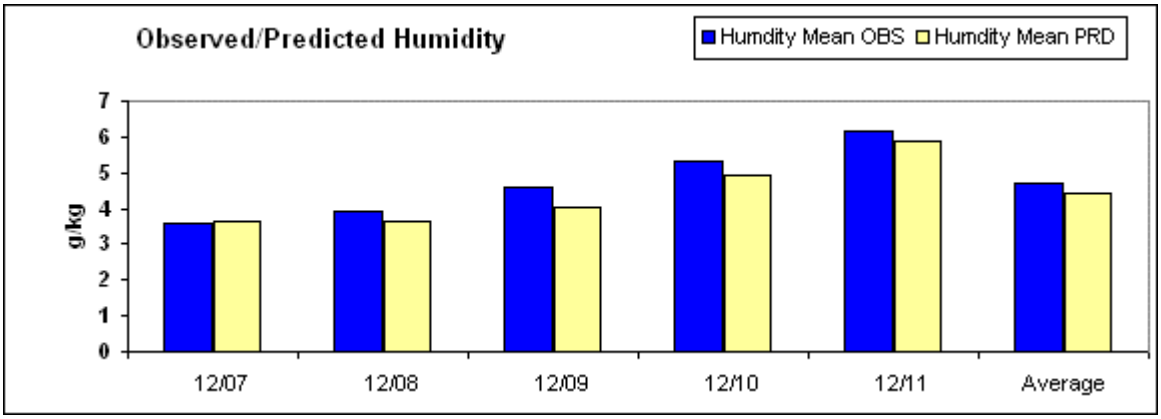

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
12/02
12/03
12/04
12/05
12/06
Average

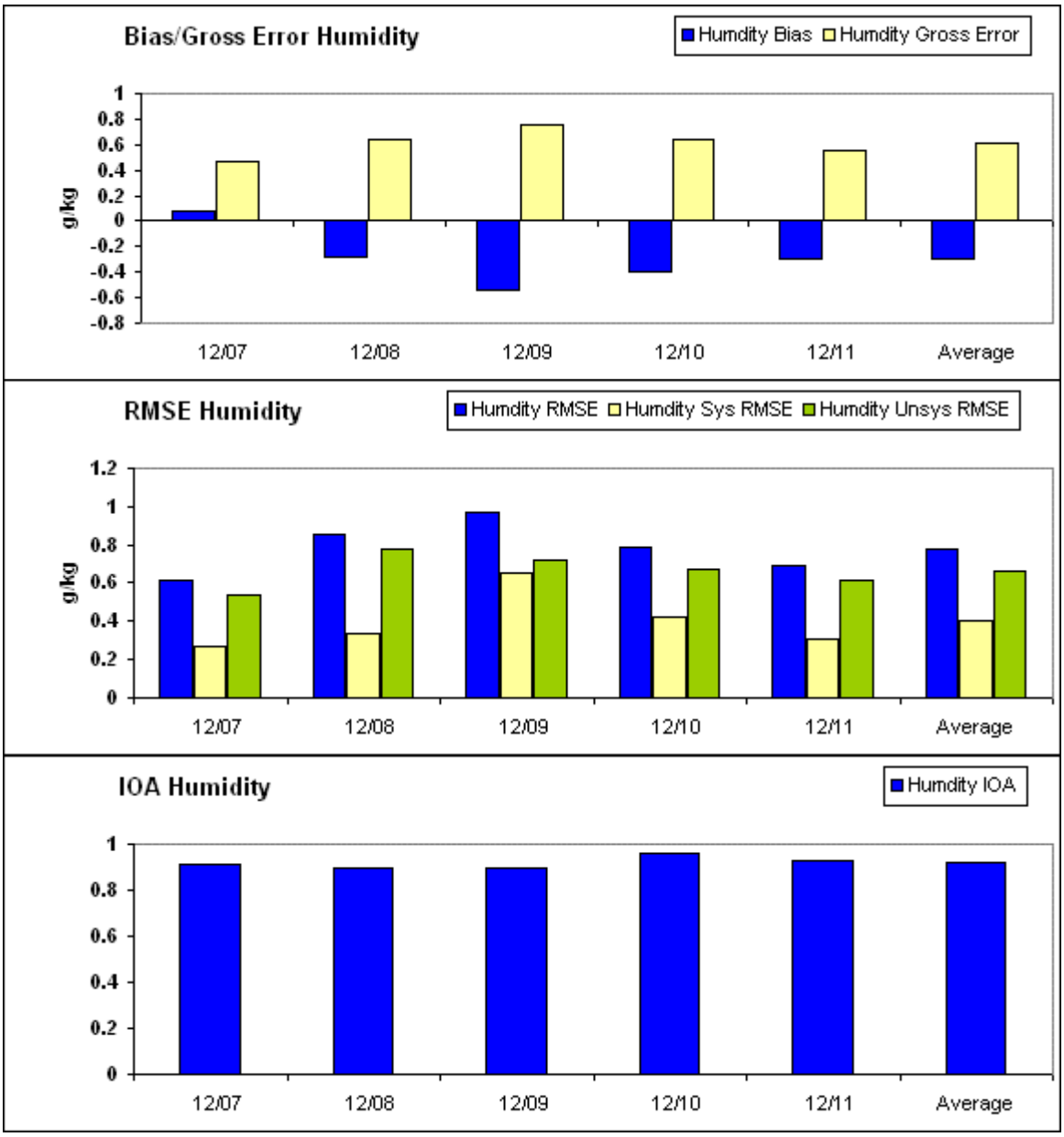

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
12/07
12/08
12/09
12/10
12/11
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
-0.5
12/07
12/08
12/09
12/10
12/11
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
12/07
12/08
12/09
12/10
12/11
Average

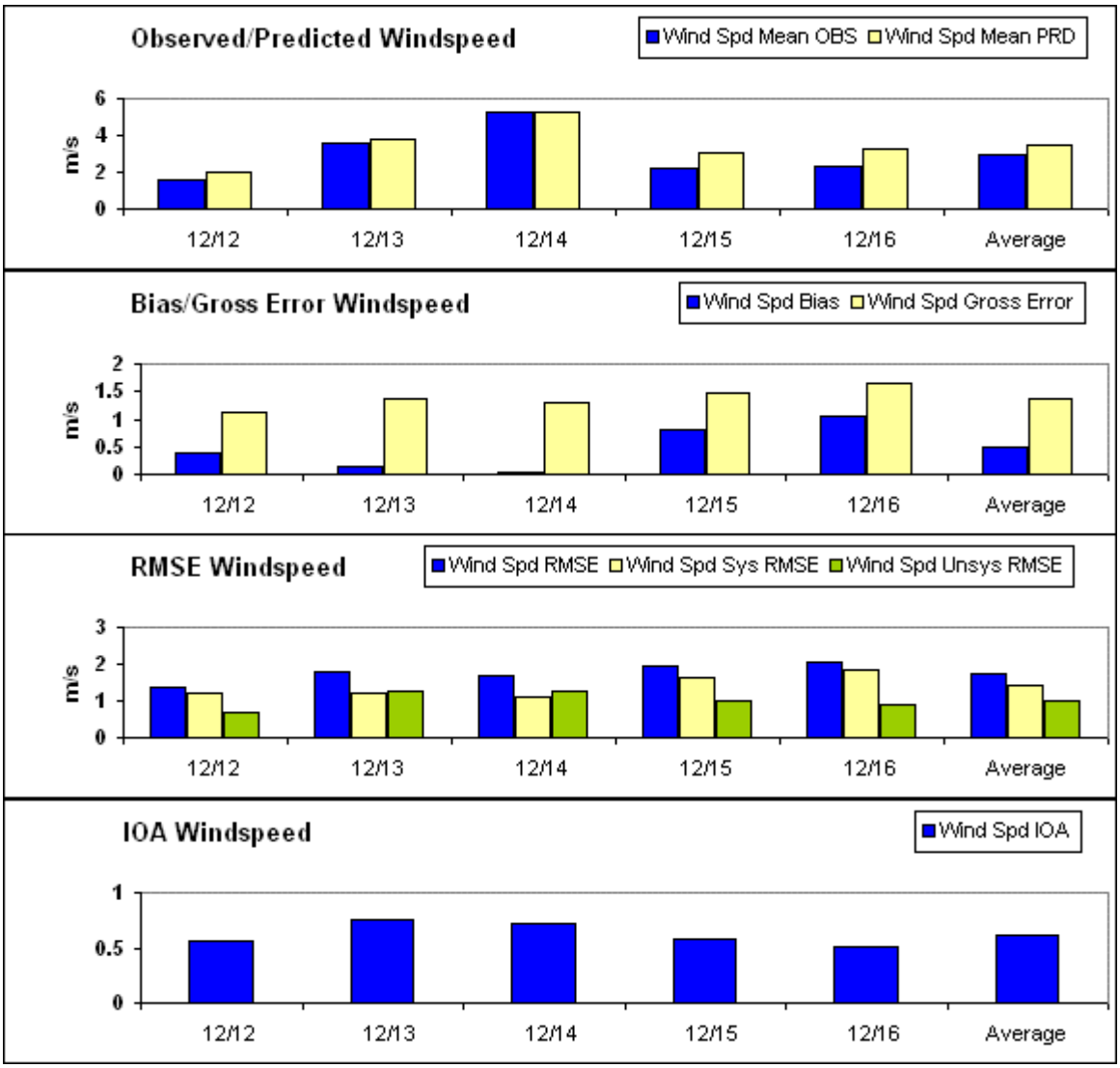

IOA Windspeed
Wind Spd IOA
1
0.5
0
12/07
12/08
12/09
12/10
12/11
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
12/07
12/08
12/09
12/10
12/11
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
12/07
12/08
12/09
12/10
12/11
Average

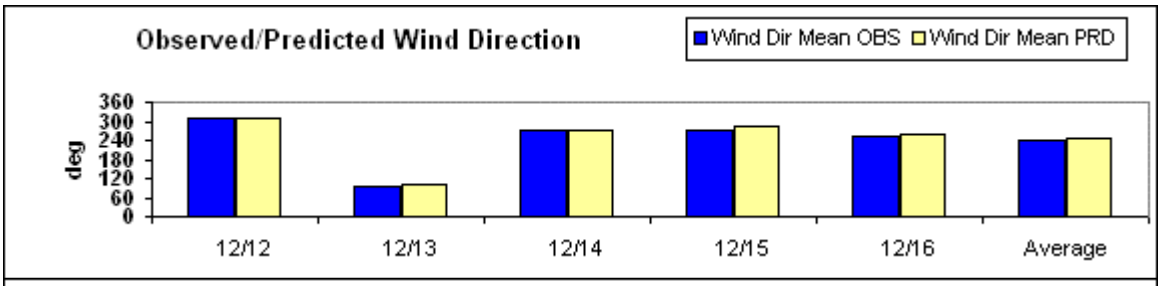

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
282
281
280
279
278
277
276
275
274
12/07
12/08
12/09
12/10
12/11
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
12/07
12/08
12/09
12/10
12/11
Average

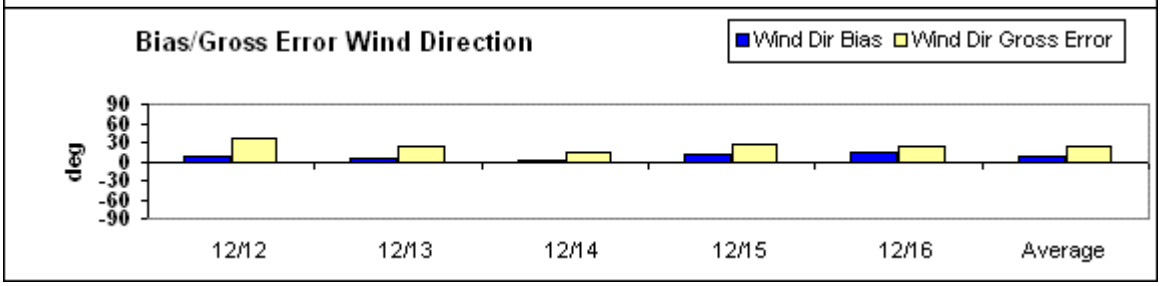

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
12/07
12/08
12/09
12/10
12/11
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
12/07
12/08
12/09
12/10
12/11
Average

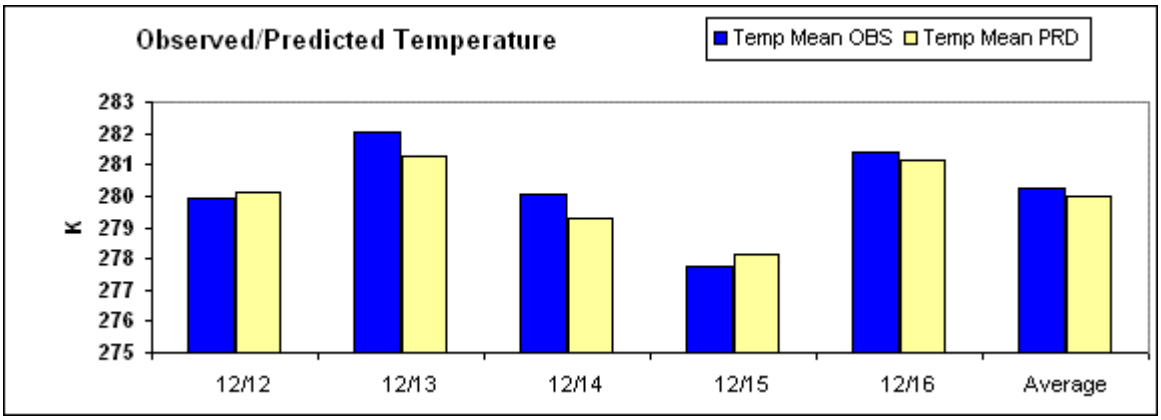

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
7
6
5
4
3
2
1
0
12/07
12/08
12/09
12/10
12/11
Average

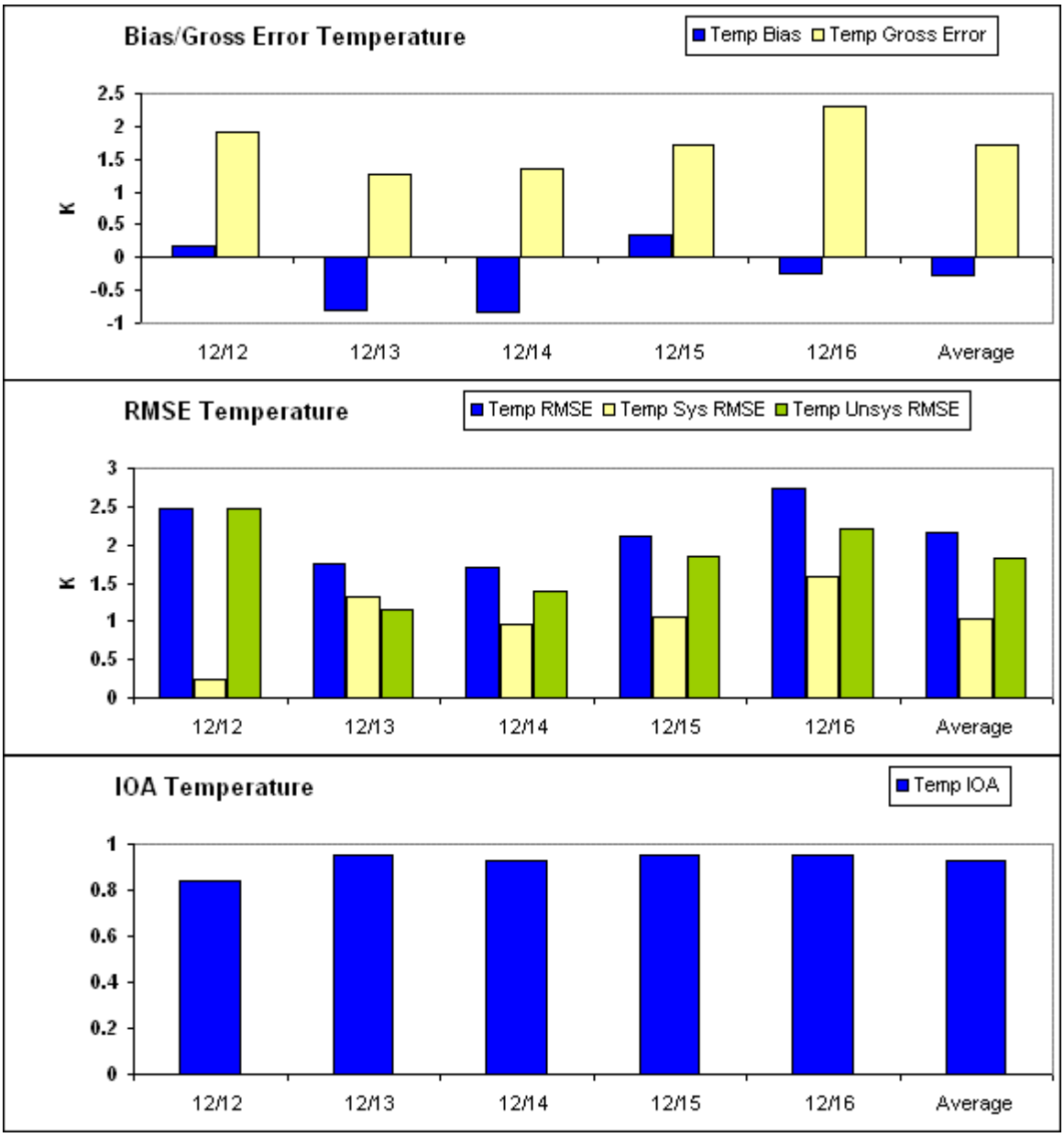

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
12/07
12/08
12/09
12/10
12/11
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
12/07
12/08
12/09
12/10
12/11
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
12/07
12/08
12/09
12/10
12/11
Average

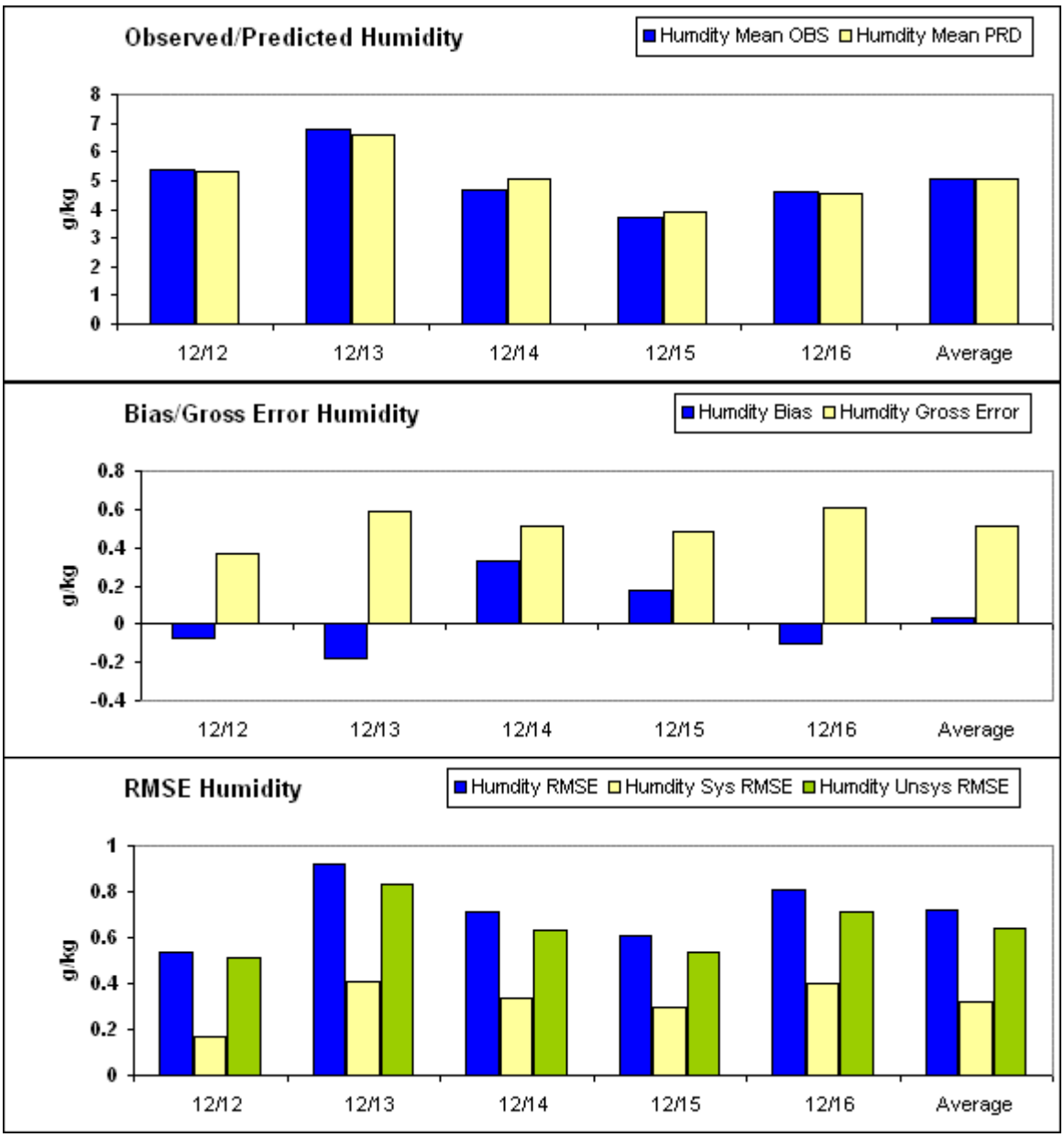

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
12/12
12/13
12/14
12/15
12/16
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
12/12
12/13
12/14
12/15
12/16
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
12/12
12/13
12/14
12/15
12/16
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
12/12
12/13
12/14
12/15
12/16
Average

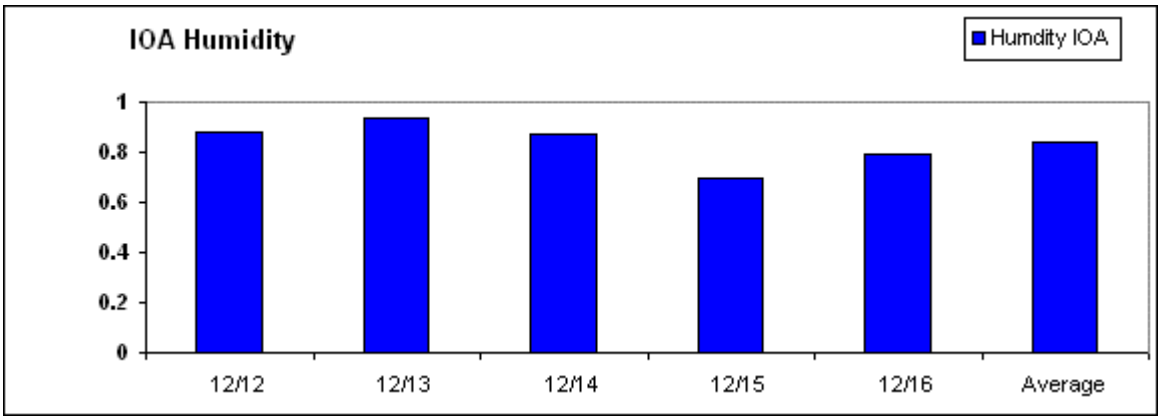

Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
12/12
12/13
12/14
12/15
12/16
Average

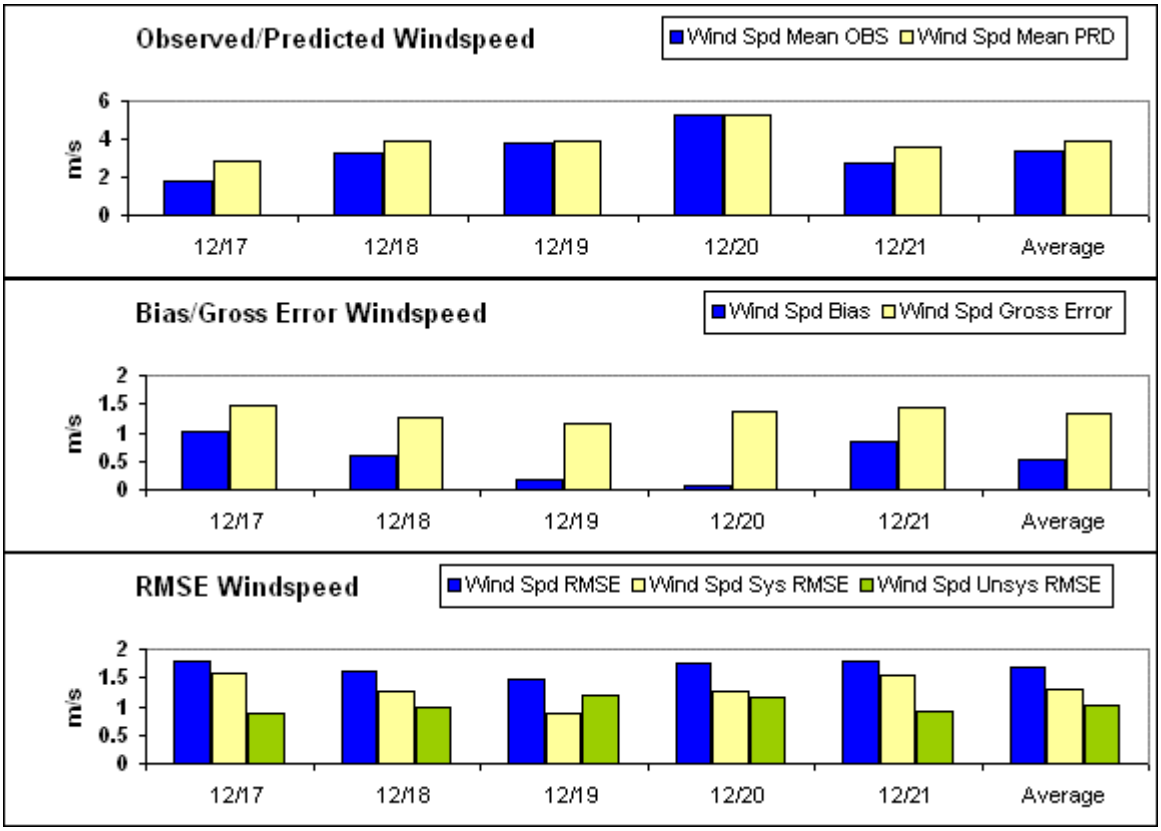

Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
12/12
12/13
12/14
12/15
12/16
Average

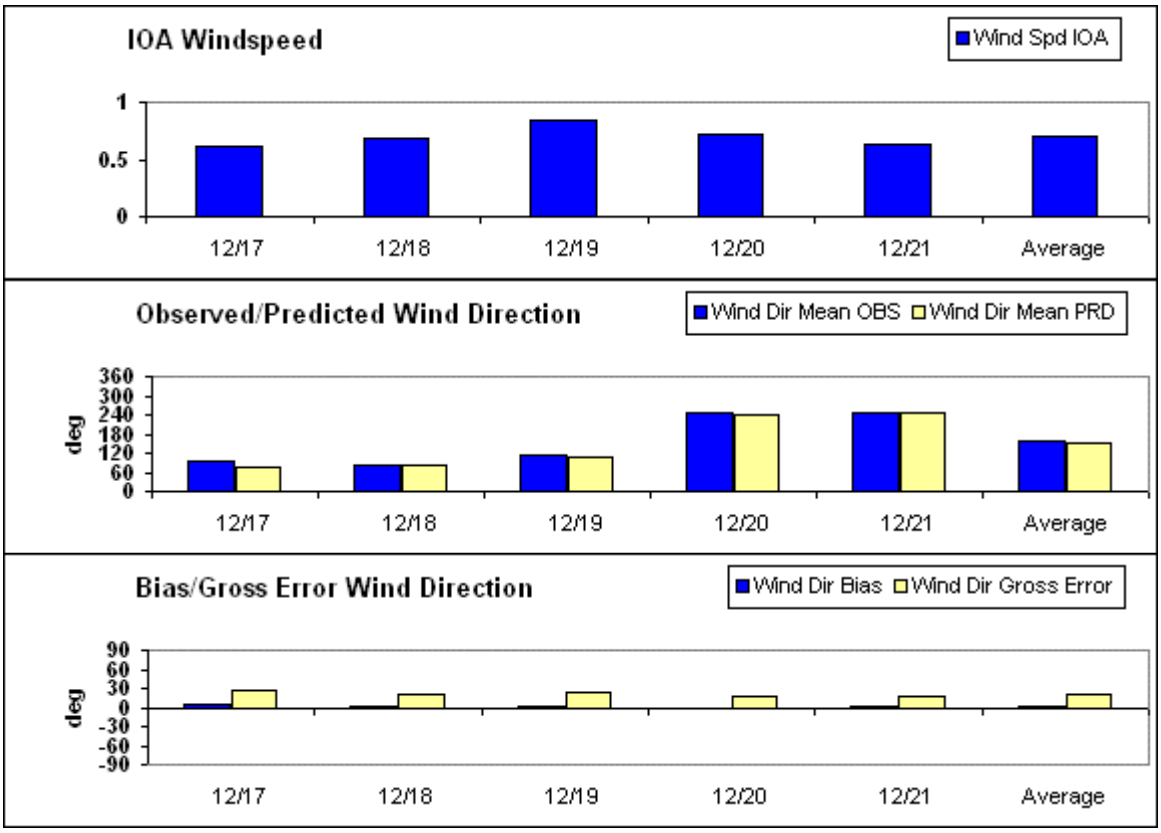

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
283
282
281
280
279
278
277
276
275
12/12
12/13
12/14
12/15
12/16
Average

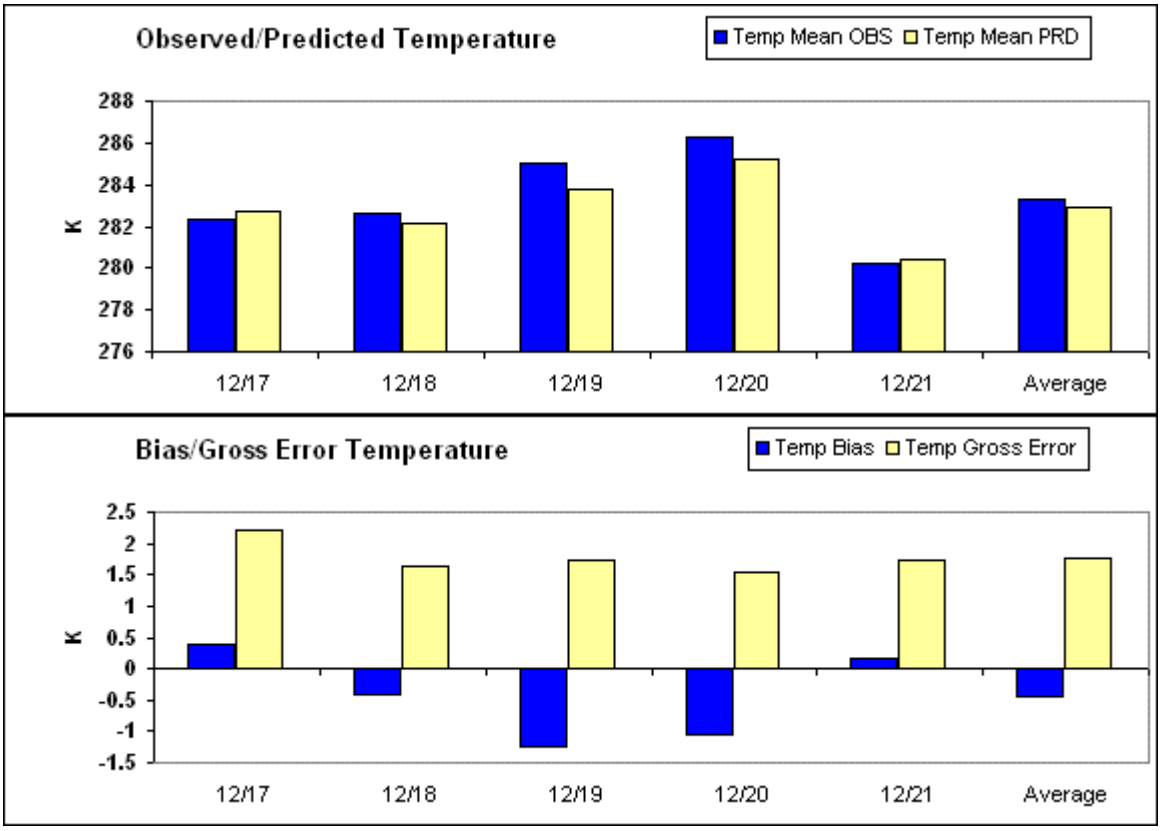

Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
12/12
12/13
12/14
12/15
12/16
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
12/12
12/13
12/14
12/15
12/16
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
12/12
12/13
12/14
12/15
12/16
Average

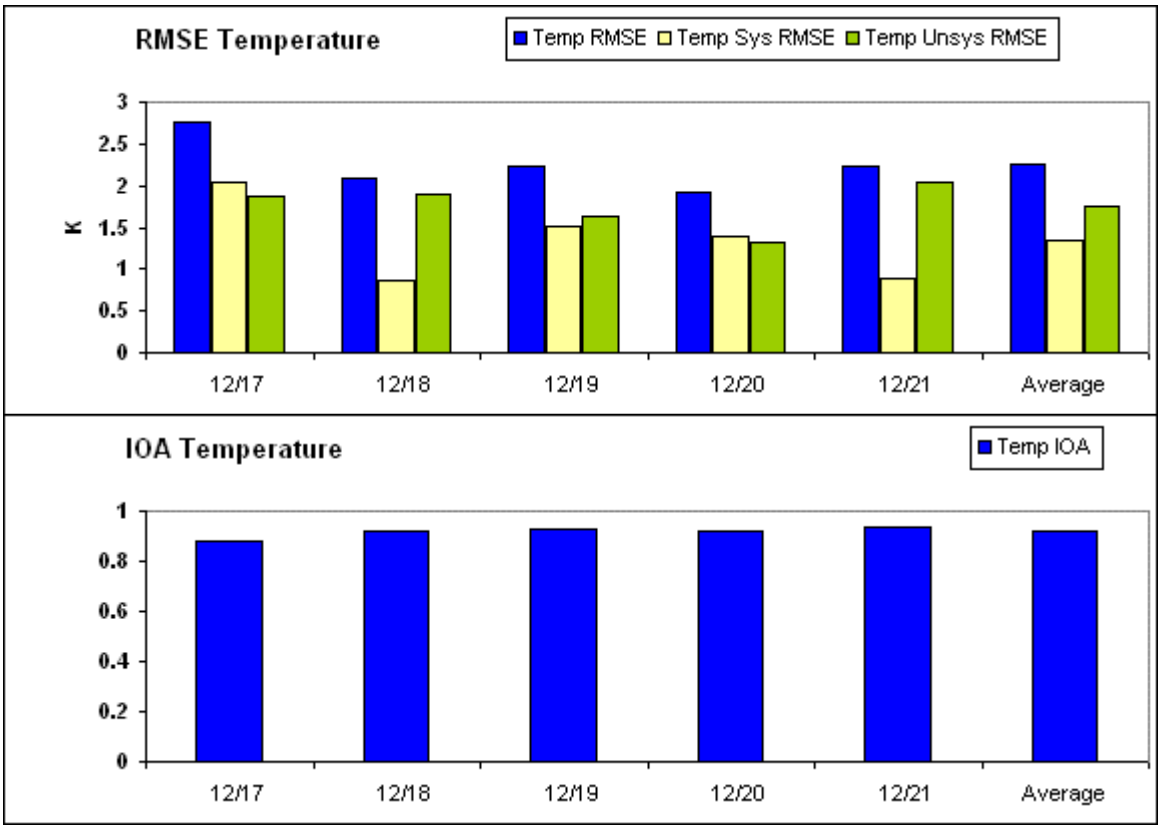

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
8
7
6
5
4
3
2
1
0
12/12
12/13
12/14
12/15
12/16
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
0.8
0.6
0.4
0.2
0
-0.2
-0.4
12/12
12/13
12/14
12/15
12/16
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1
0.8
0.6
0.4
0.2
0
12/12
12/13
12/14
12/15
12/16
Average

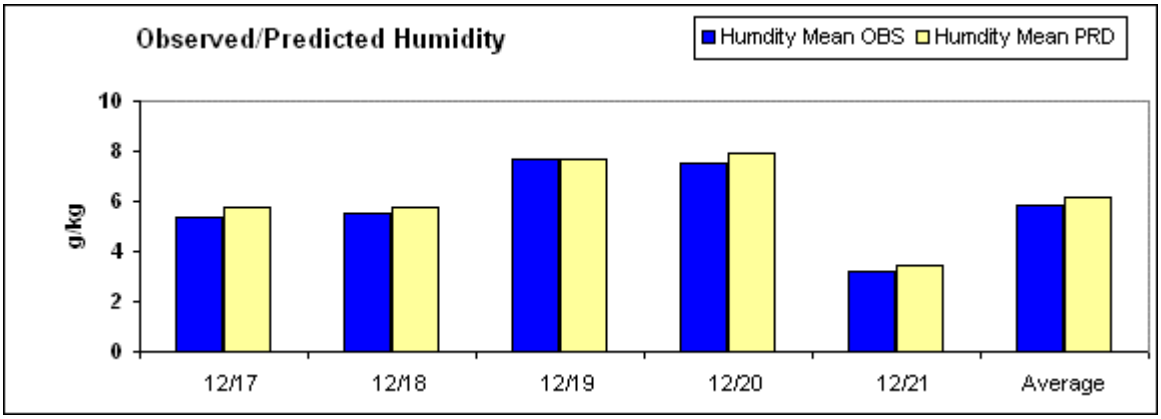

IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
12/12
12/13
12/14
12/15
12/16
Average

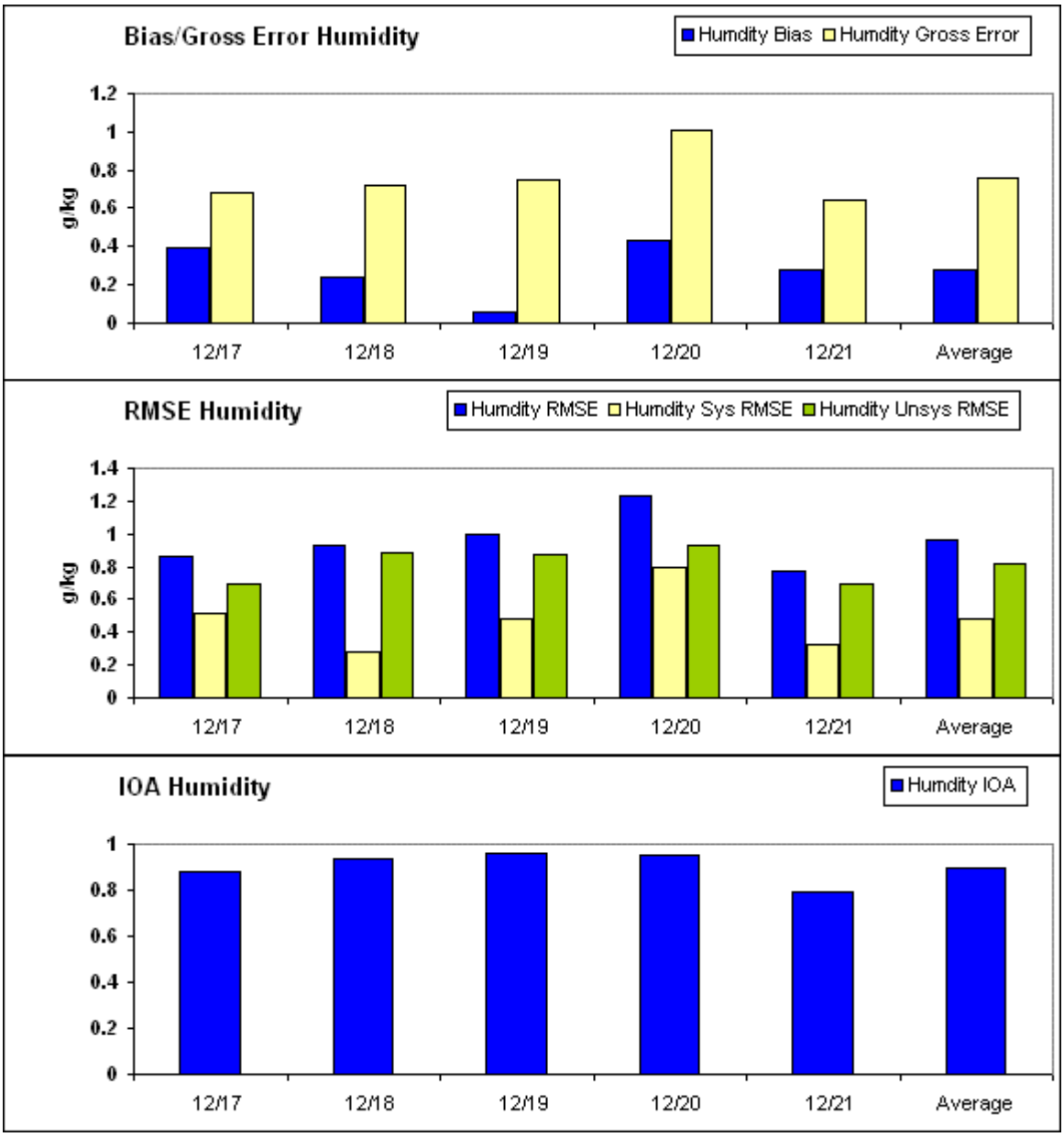

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
12/17
12/18
12/19
12/20
12/21
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1.5
1
0.5
0
12/17
12/18
12/19
12/20
12/21
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
2
1.5
1
0.5
0
12/17
12/18
12/19
12/20
12/21
Average

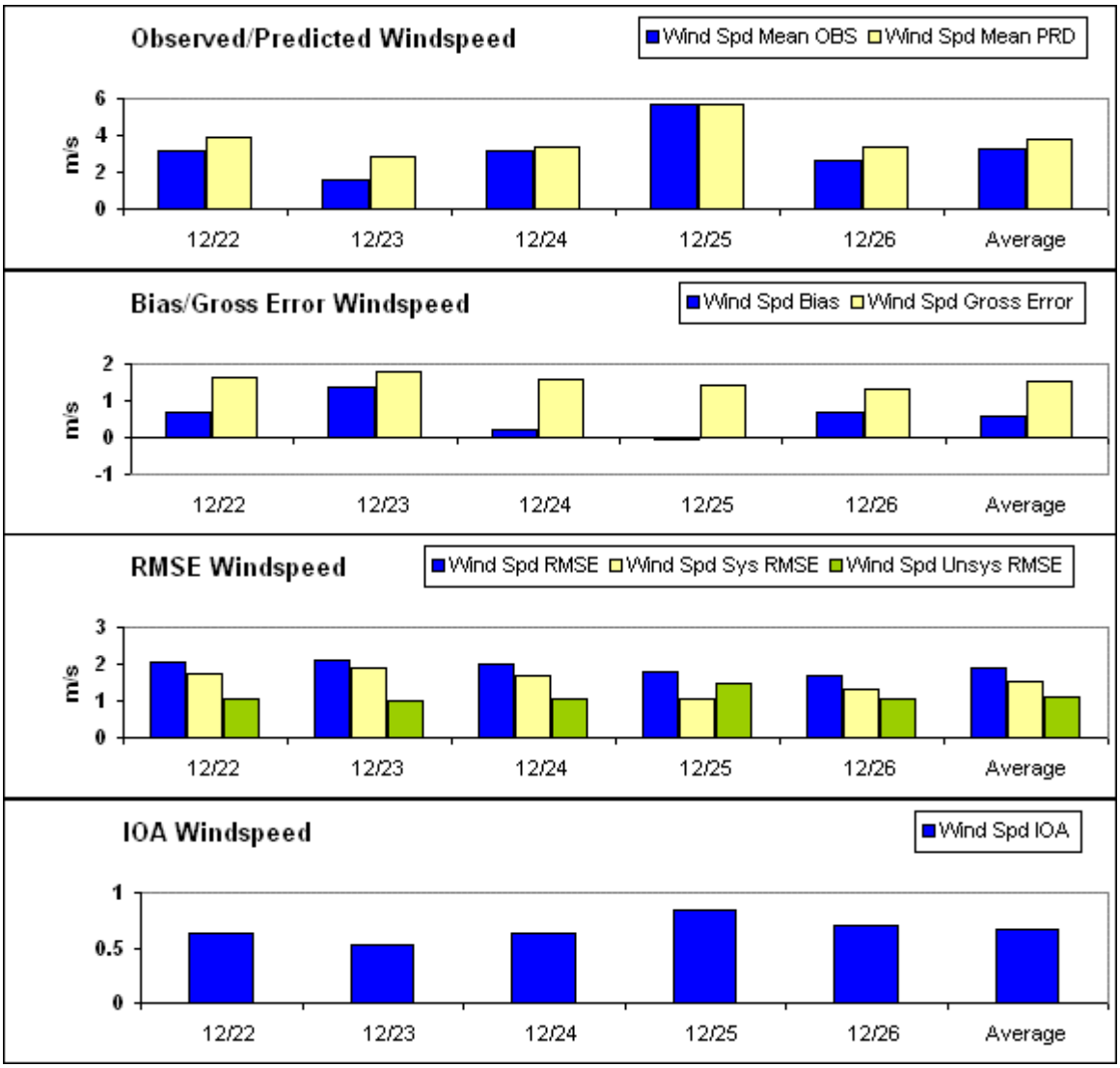

IOA Windspeed
Wind Spd IOA
1
0.5
0
12/17
12/18
12/19
12/20
12/21
Average
Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
12/17
12/18
12/19
12/20
12/21
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
12/17
12/18
12/19
12/20
12/21
Average

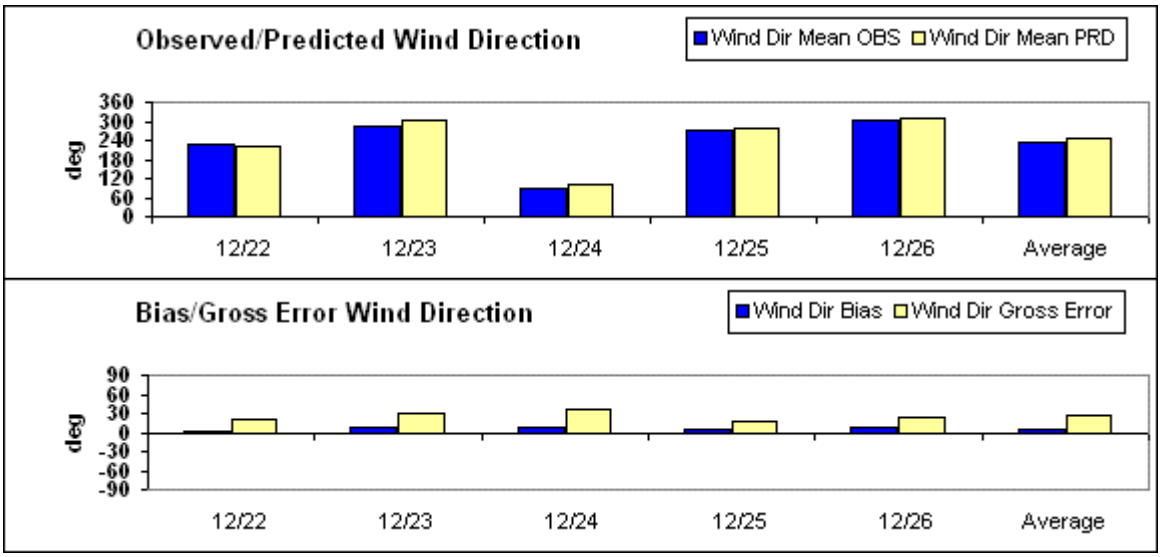

Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
288
286
284
282
280
278
276
12/17
12/18
12/19
12/20
12/21
Average
Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
12/17
12/18
12/19
12/20
12/21
Average

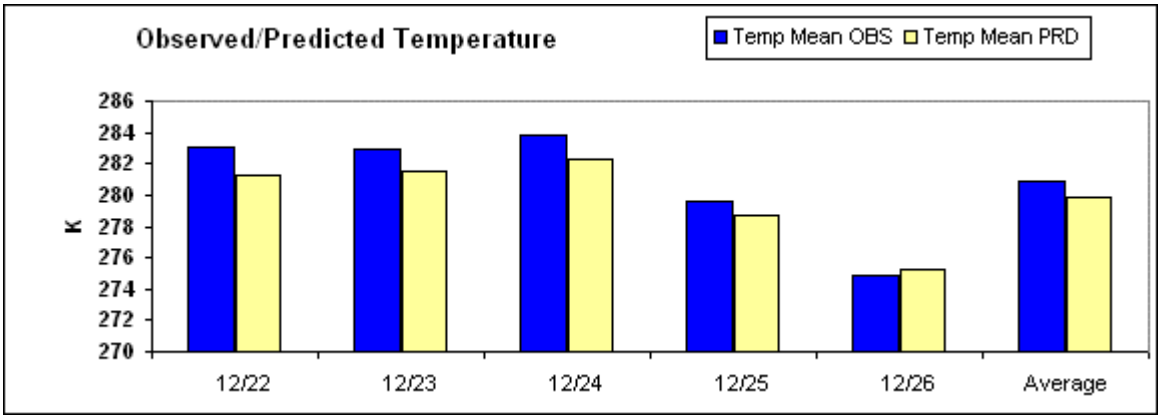

RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3
2.5
2
1.5
1
0.5
0
12/17
12/18
12/19
12/20
12/21
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
12/17
12/18
12/19
12/20
12/21
Average

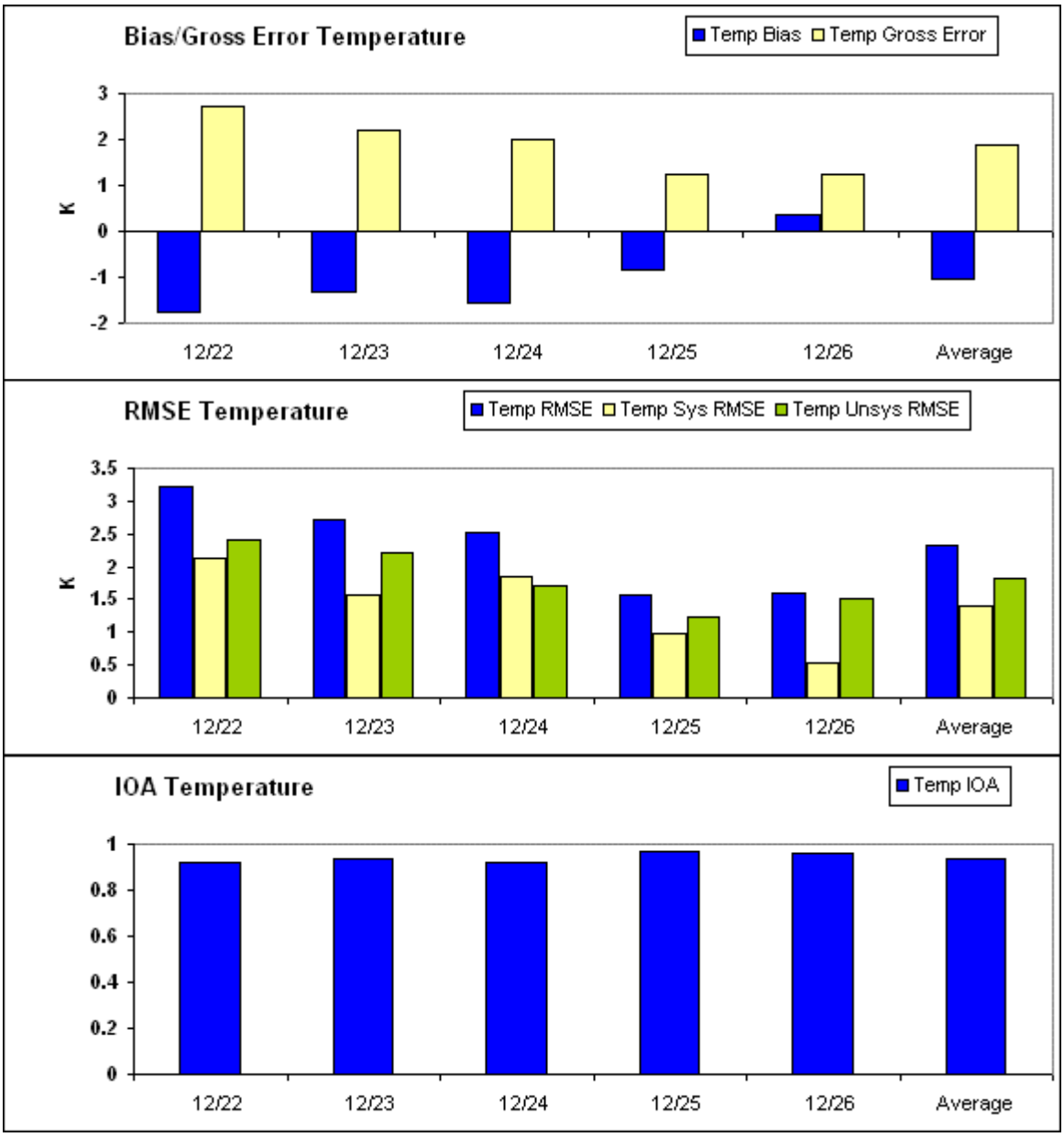

Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
10
8
6
4
2
0
12/17
12/18
12/19
12/20
12/21
Average

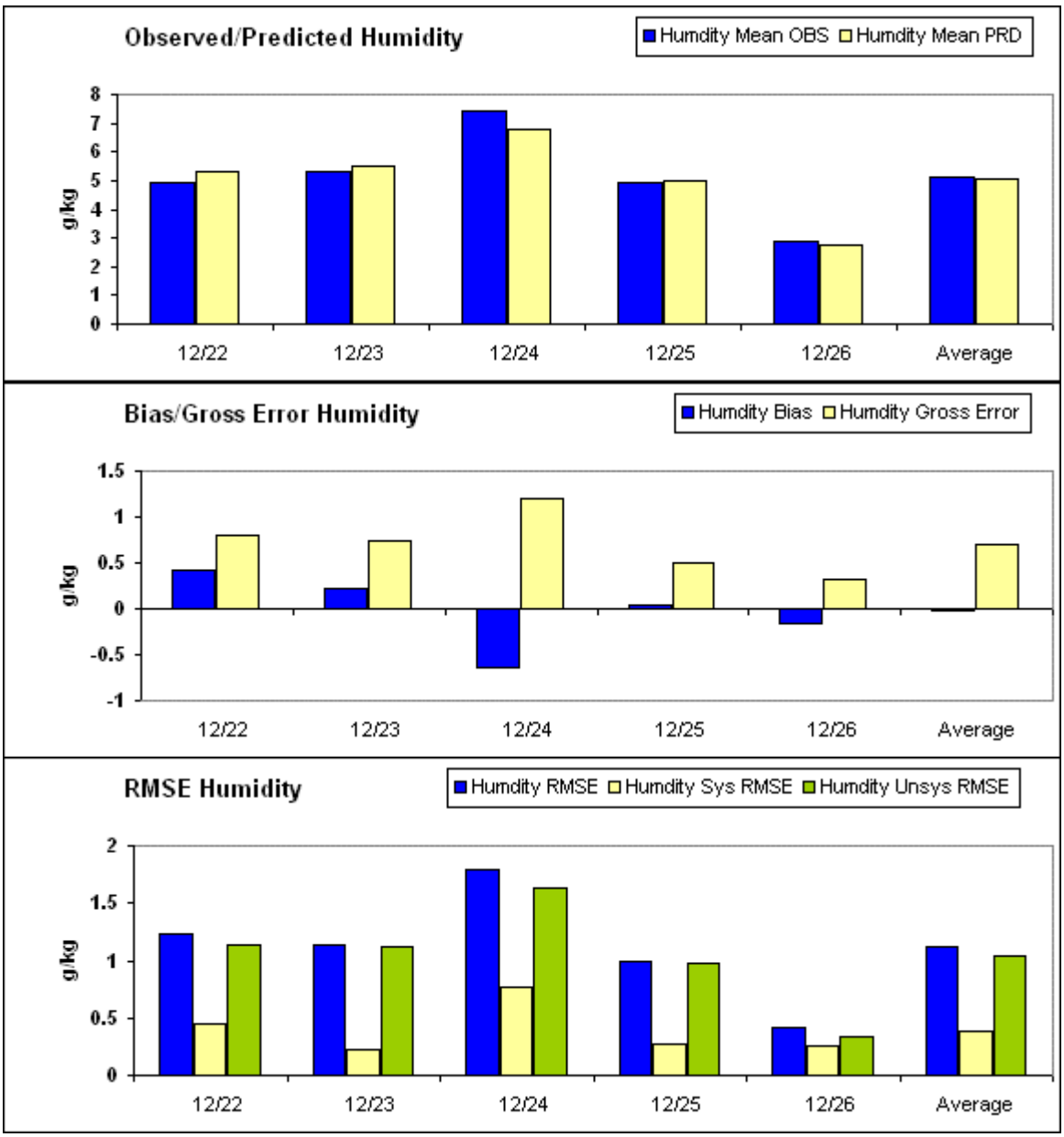

Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.2
1
0.8
0.6
0.4
0.2
0
12/17
12/18
12/19
12/20
12/21
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
1.4
1.2
1
0.8
0.6
0.4
0.2
0
12/17
12/18
12/19
12/20
12/21
Average
IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
12/17
12/18
12/19
12/20
12/21
Average

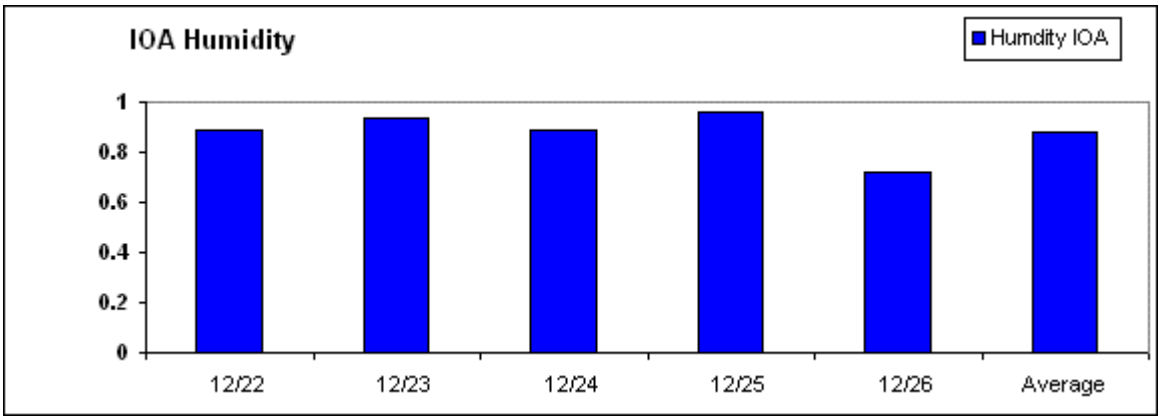

Observed/Predicted Windspeed
Wind Spd Mean OBS
Wind Spd Mean PRD
m/s
6
4
2
0
12/22
12/23
12/24
12/25
12/26
Average
Bias/Gross Error Windspeed
Wind Spd Bias
Wind Spd Gross Error
m/s
2
1
0
-1
12/22
12/23
12/24
12/25
12/26
Average
RMSE Windspeed
Wind Spd RMSE
Wind Spd Sys RMSE
Wind Spd Unsys RMSE
m/s
3
2
1
0
12/22
12/23
12/24
12/25
12/26
Average
IOA Windspeed
Wind Spd IOA
1
0.5
0
12/22
12/23
12/24
12/25
12/26
Average


Observed/Predicted Wind Direction
Wind Dir Mean OBS
Wind Dir Mean PRD
deg
360
300
240
180
120
60
0
12/22
12/23
12/24
12/25
12/26
Average
Bias/Gross Error Wind Direction
Wind Dir Bias
Wind Dir Gross Error
deg
90
60
30
0
-30
-60
-90
12/22
12/23
12/24
12/25
12/26
Average


Observed/Predicted Temperature
Temp Mean OBS
Temp Mean PRD
K
286
284
282
280
278
276
274
272
270
12/22
12/23
12/24
12/25
12/26
Average


Bias/Gross Error Temperature
Temp Bias
Temp Gross Error
K
3
2
1
0
-1
-2
12/22
12/23
12/24
12/25
12/26
Average
RMSE Temperature
Temp RMSE
Temp Sys RMSE
Temp Unsys RMSE
K
3.5
3
2.5
2
1.5
1
0.5
0
12/22
12/23
12/24
12/25
12/26
Average
IOA Temperature
Temp IOA
1
0.8
0.6
0.4
0.2
0
12/22
12/23
12/24
12/25
12/26
Average


Observed/Predicted Humidity
Humdity Mean OBS
Humdity Mean PRD
g/kg
8
7
6
5
4
3
2
1
0
12/22
12/23
12/24
12/25
12/26
Average
Bias/Gross Error Humidity
Humdity Bias
Humdity Gross Error
g/kg
1.5
1
0.5
0
-0.5
-1
12/22
12/23
12/24
12/25
12/26
Average
RMSE Humidity
Humdity RMSE
Humdity Sys RMSE
Humdity Unsys RMSE
g/kg
2
1.5
1
0.5
0
12/22
12/23
12/24
12/25
12/26
Average


IOA Humidity
Humdity IOA
1
0.8
0.6
0.4
0.2
0
12/22
12/23
12/24
12/25
12/26
Average