
**GROUND-BASED SAMPLING FOR TOXINS
JUNE MONTHLY REPORT**

June 1 – June 30, 2023

**Operational Summaries,
Data Summaries and Plots**

Prepared for

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August 1, 2023

A decorative graphic at the bottom left of the page consisting of three stylized mountain peaks in shades of green and blue.

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1.0 INTRODUCTION

The Colorado Department of Public Health & Environment Air Pollution Control Division (APCD) is conducting twelve (12) months of community monitoring as a result of the Air Toxics Act (Colorado HB21-1189). The bill created a new program at APCD to regulate toxics air contaminants at four (4) covered facilities located in Commerce City, Henderson, and Pueblo. As a part of this program, APCD is establishing a community monitoring program that prioritizes disproportionately impacted communities to better protect public health. The objectives of the monitoring program consist of monitoring for benzene, hydrogen sulfide (H₂S), and hydrogen cyanide (HCN), with supporting meteorological measurements, to help characterize impacts on the surrounding disproportionately impacted communities.

The facilities covered by HB21-1189 are the Suncor Refinery (Commerce City), the Phillips 66 Pipeline Terminal (Commerce City), the Sinclair Pipeline Terminal (Henderson), and Goodrich Carbon Products (Pueblo). These facilities have been divided into three (3) sampling regions. Air Resource Specialists, Inc. (ARS) is the contractor responsible for this monitoring effort, which will consist of thirty (30) days of sampling of each compound at each sampling region per quarter.

This monthly data submittal report describes all work performed by Air Resource Specialists, Inc. (ARS) for the project site for the monitoring period June 1 through June 30, 2023.

Any questions regarding the content of this report or the accompanying digital data files should be addressed to:

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2.0 OPERATIONAL SUMMARIES

Operational activities for this project consist of site installations, routine sampling per an established schedule, quarterly maintenance visits, and emergency visits.

Significant events that occurred during the June 1 through June 30, 2023, timeframe include the following:

- None.

Significant deviations from the established sampling schedule include:

- The contract laboratory, Ormantine, failed to ship sorbent tubes on schedule. H₂S sampling at all locations for the sampling period of 06/21/2023 to 07/05/2023 was missed.

Sampling issues or corrective actions taken include:

- None.

3.0 AIR TOXICS SAMPLING STATISTICS

Statistics for samples collected during the June 1 to June 30, 2023, monitoring period are displayed in the table below. The table compares samples collected for each monitoring region against the requirements of the project. The statement of work requires 30 sampling days per quarter. Benzene and H₂S sampling frequency is twice the requirement in the statement of work. Collection statistics are slightly skewed since this report encompasses more than a month of data. Duplicate samples and field blanks are required to be collected at a 10% rate over the course of each quarter.

Table 3-1
14-day Benzene Sample Collection
June 1 to June 30, 2023

Sampling Region	Site	Monthly		Quarterly	
		Collected	Required	Collected	Required
A	A1	3	1	7	3
B	B1	3	1	7	3
C	C1	3	1	7	3

Table 3-2
Benzene Duplicate Sample and Field Blank Collection
June 1 to June 30, 2023

Duplicate		Field Blank	
Collected	%	Collected	%
1	11%	1	11%

Table 3-3
14-day H₂S Sample Collection
June 1 to June 30, 2023

Sampling Region	Site	Monthly		Quarterly	
		Collected	Required	Collected	Required
A	A1	2	1	5	3
B	B1	2	1	5	3
C	C1	2	1	5	3

Table 3-4
H₂S Duplicate Sample and Field Blank Collection
June 1 to June 30, 2023

Duplicate		Field Blank	
Collected	%	Collected	%
1	17%	1	17%

Table 3-5
HCN Sample Collection
June 1 to June 30, 2023

Sampling Region	Site	Monthly		Quarterly	
		Collected	Required	Collected	Required
A	A1	11	10	31	30
B	B1	11	10	31	30
C	C1	11	10	31	30

Table 3-6
HCN Duplicate Sample and Field Blank Collection
June 1 to June 30, 2023

Duplicate		Field Blank	
Collected	%	Collected	%
3	9%	3	9%

4.0 AIR TOXIC DATA SUMMARIES

The tables below summarize the air toxics data collected during the period of June 1 to June 30, 2023.

Table 4-1
14-Day Benzene Data
June 1 to June 30, 2023

SITE	Sampling Start Day	Sampling End Day	Days	Concentration (ppb)	MDL (ppb)	Notes
A1	5/24/2023	6/7/2023	14	0.234	0.0588	
A1	6/7/2023	6/21/2023	14	0.194	0.0578	
A1	6/21/2023	7/5/2023	14	0.180	0.0586	
B1	5/24/2023	6/7/2023	14	0.322	0.0589	
B1	6/7/2023	6/21/2023	14	0.200	0.0579	
B1	6/21/2023	7/5/2023	14	0.189	0.0589	
C1	5/24/2023	6/7/2023	14	0.0791	0.0587	
C1	5/24/2023	6/7/2023	14	0.0863	0.0587	Duplicate
C1	5/24/2023	6/7/2023	14	ND	0.0587	Blank
C1	6/7/2023	6/21/2023	14	0.0763	0.058	
C1	6/21/2023	7/5/2023	14	0.0788	0.585	
		Maximum		0.322		
		Minimum		0.0763		
		Average		0.164		

Table 4-2
 14-Day H₂S Data
 June 1 to June 30, 2023

SITE	Sampling Start Day	Sampling End Day	Days	Concentration (ppb)	LOD (ppb)	Notes
A1	5/24/2023	6/7/2023	14	ND	0.14	
A1	5/24/2023	6/7/2023	14	0.16	0.14	Duplicate
A1	5/24/2023	6/7/2023	14	ND	0.14	Blank
A1	6/7/2023	6/21/2023	14	ND	0.14	
B1	5/24/2023	6/7/2023	14	ND	0.14	
B1	6/7/2023	6/21/2023	14	ND	0.14	
C1	5/24/2023	6/7/2023	14	ND	0.14	
C1	6/7/2023	6/21/2023	14	ND	0.14	
		Maximum		0.16		
		Minimum		0.16		
		Average		0.16		

Table 4-3
HCN Data
June 1 to June 30, 2023

SITE	Sampling Date	Duration (min)	Concentration (ppb)	MDL (ppb)	Notes
A1	06/01/2023 08:24	466	ND	0.8	
A1	06/01/2023 08:24	466	ND	0.9	Duplicate
A1	06/01/2023 08:24		ND	0.8	Blank
A1	06/05/2023 08:03	435	ND	0.9	
A1	06/07/2023 08:09	485	ND	0.8	
A1	06/09/2023 07:42	496	ND	0.8	
A1	06/12/2023 08:18	469	ND	0.8	
A1	06/14/2023 08:12	491	ND	0.8	
A1	06/20/2023 09:27	491	ND	0.8	
A1	06/21/2023 11:18	500	ND	0.7	
A1	06/25/2023 09:52	518	ND	0.7	
A1	06/27/2023 08:34	471	ND	0.9	
A1	06/29/2023 07:59	531	ND	0.7	
B1	06/01/2023 07:58	512	ND	0.8	
B1	06/05/2023 07:42	470	ND	0.8	
B1	06/07/2023 07:35	539	ND	0.7	
B1	06/09/2023 07:23	547	ND	0.7	
B1	06/09/2023 07:23	547	ND	0.7	Duplicate
B1	06/09/2023 07:23		ND	0.7	Blank
B1	06/12/2023 07:57	511	ND	0.7	
B1	06/14/2023 07:42	533	ND	0.7	
B1	06/20/2023 09:56	479	ND	0.8	
B1	06/21/2023 10:35	524	ND	0.7	
B1	06/25/2023 10:12	524	ND	0.8	
B1	06/27/2023 08:13	510	ND	0.8	
B1	06/29/2023 07:11	610	ND	0.6	
C1	6/1/2023 10:43	186	ND	2.1	
C1	6/5/2023 10:11	470	ND	2.1	
C1	6/7/2023 10:52	536	ND	2.1	
C1	6/9/2023 9:46	214	ND	1.8	
C1	6/12/2023 10:31	192	ND	1.9	
C1	6/14/2023 10:21	193	ND	2.0	
C1	6/20/2023 12:10	178	ND	2.2	

Table 4-3 (continued)

C1	6/20/2023 12:13	176	ND	2.2	Duplicate
C1	6/20/2023 12:10		ND	2.2	Blank
C1	6/21/2023 13:43	189	ND	2.1	
C1	6/25/2023 12:38	173	ND	2.3	
C1	6/27/2023 10:43	180	ND	2.1	
C1	6/29/2023 10:47	180	ND	2.2	

4.1 METEOROLOGICAL DATA COLLECTION STATISTICS AND SUMMARIES

The tables and graphs below summarize the meteorological data collected during the period of June 1 to June 30, 2023.

4.1.1 Site A1

- Data Collection Statistics for A1 - Hourly Data
- Wind Rose for A1
- Stackplots - Hourly Data

4.1.2 Site B1

- Data Collection Statistics for B1 - Hourly Data
- Wind Rose for B1
- Stackplots - Hourly Data

4.1.3 Site C1

- Data Collection Statistics for C1 - Hourly Data
- Wind Rose for C1
- Stackplots - Hourly Data

Table 4-4

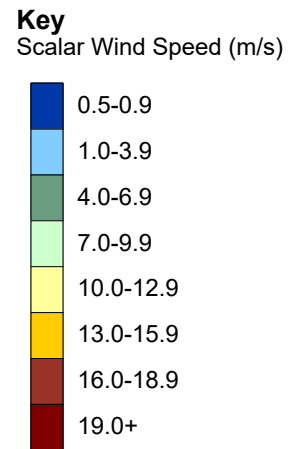
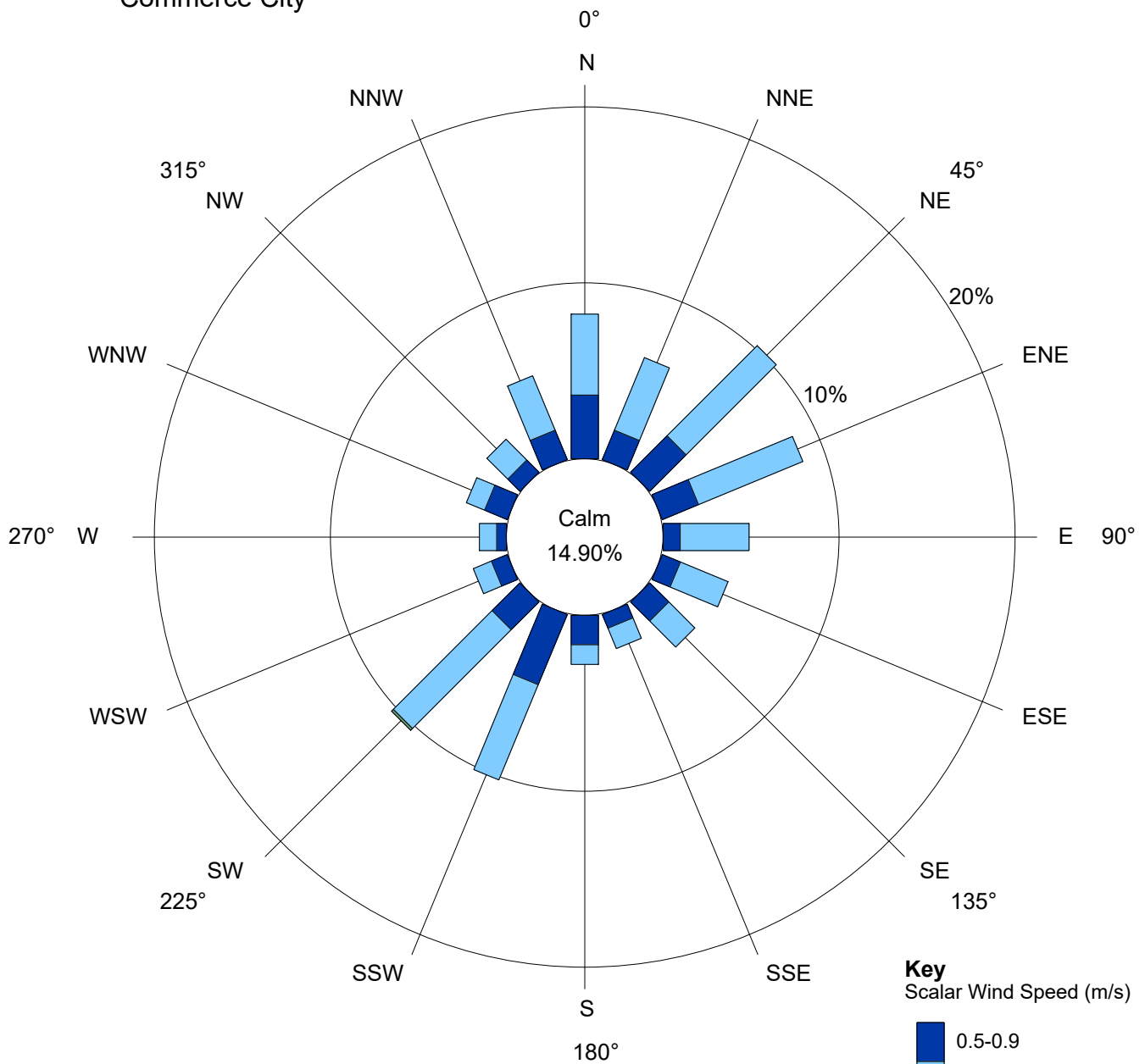
Data Collection Statistics							
Colorado Air Toxics - A1 Commerce City							
06/01/2023 - 06/30/2023							
Parameter	Interval	Par Code	No. Possible	No. Collected	% Collected	No. Valid	% Valid
Relative Humidity	hourly	RH	720	718	99.7	718	99.7
Standard Deviation for Wind Direction	hourly	SDWD	720	718	99.7	718	99.7
Solar Radiation	hourly	SOL	720	720	100.0	720	100.0
Scalar Wind Direction	hourly	SWD	720	718	99.7	718	99.7
Scalar Wind Speed	hourly	SWS	720	718	99.7	718	99.7
Ambient Temperature	hourly	TMP	720	718	99.7	718	99.7
Vector Wind Direction	hourly	VWD	720	718	99.7	718	99.7
Vector Wind Speed	hourly	VWS	720	718	99.7	718	99.7

Note: The percent valid is calculated against the number possible.

Colorado Air Toxics - A1
 Commerce City

Figure 4-1
 Wind Rose

06/01/2023 - 06/30/2023



99.7% Collected 99.7% Valid
 720 Possible /718 Collected /718 Valid
 Collection Statistics Include:
 Scalar Wind Speed, Wind Speed and Wind Direction
 (SWS-1; SWS-1; SWD-1)
 (includes WS and WD) (Calm<0.5m/s)

Figure 4-2
 Colorado Air Toxics - A1 (Commerce City) - Hourly Meteorological Data
 June 2023



Figure 4-3
 Colorado Air Toxics - A1 (Commerce City) - Hourly Meteorological Data
 June 2023



Figure 4-4
 Colorado Air Toxics - A1 (Commerce City) - Hourly Meteorological Data
 June 2023

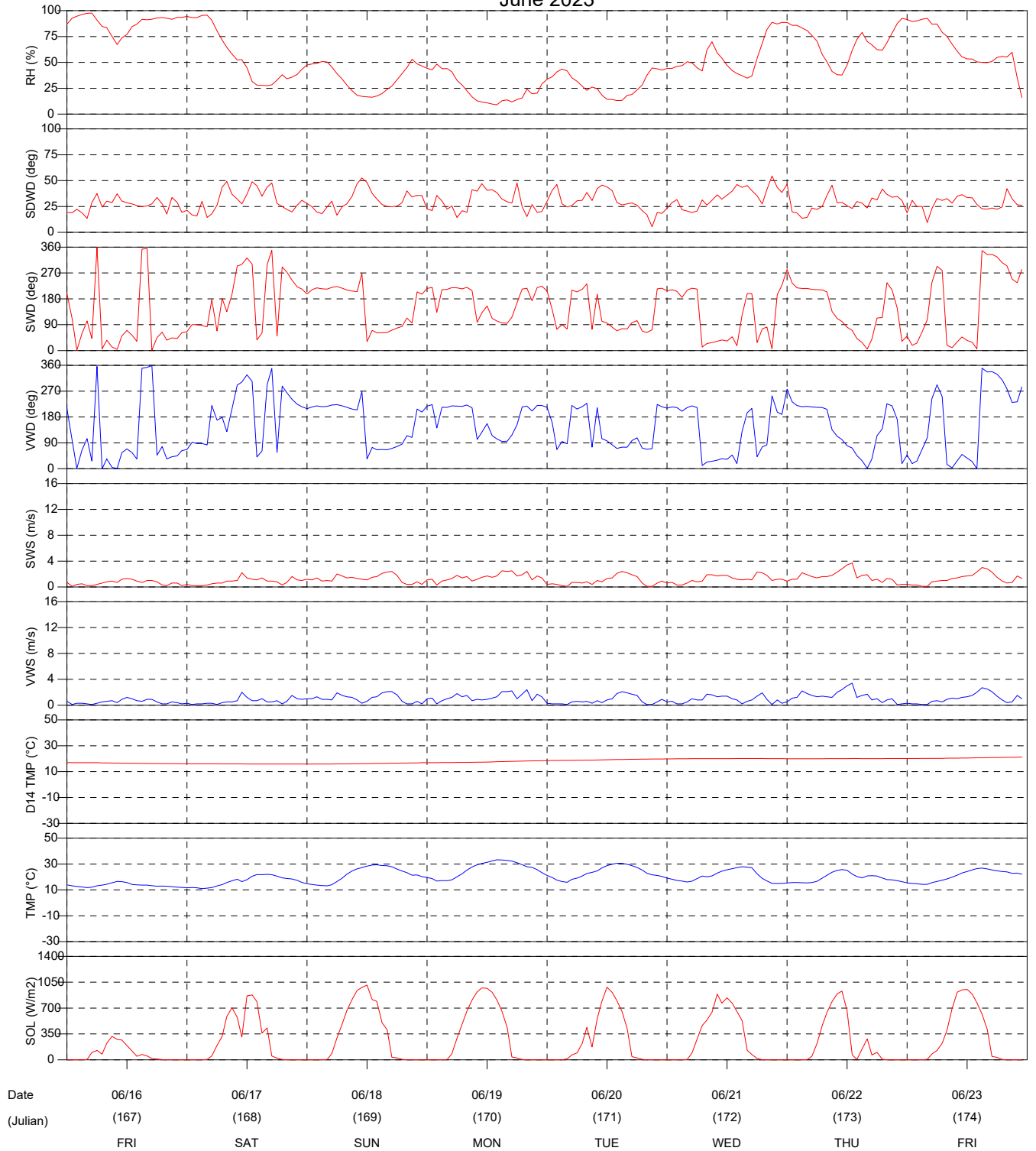


Figure 4-5
 Colorado Air Toxics - A1 (Commerce City) - Hourly Meteorological Data
 June 2023

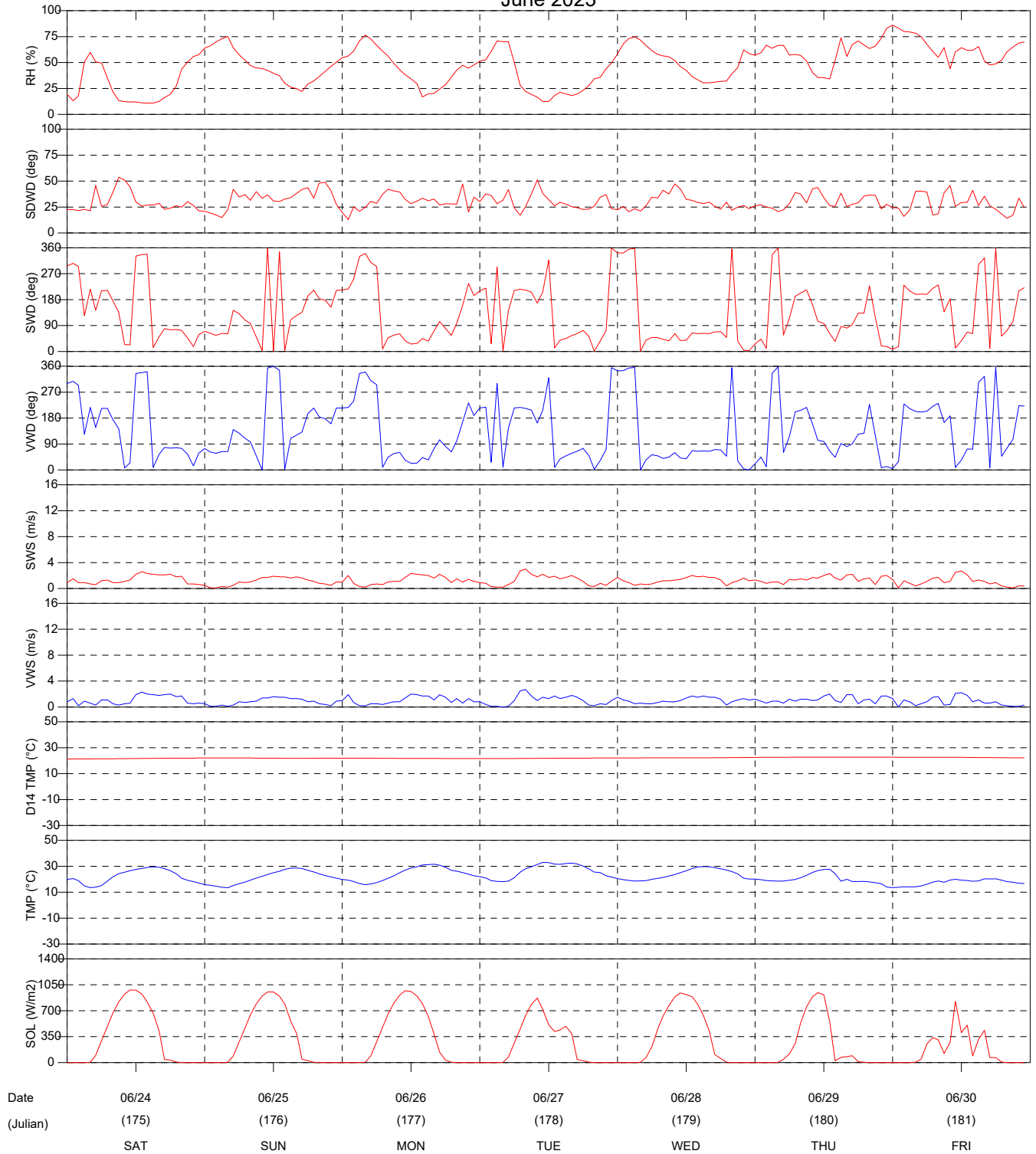


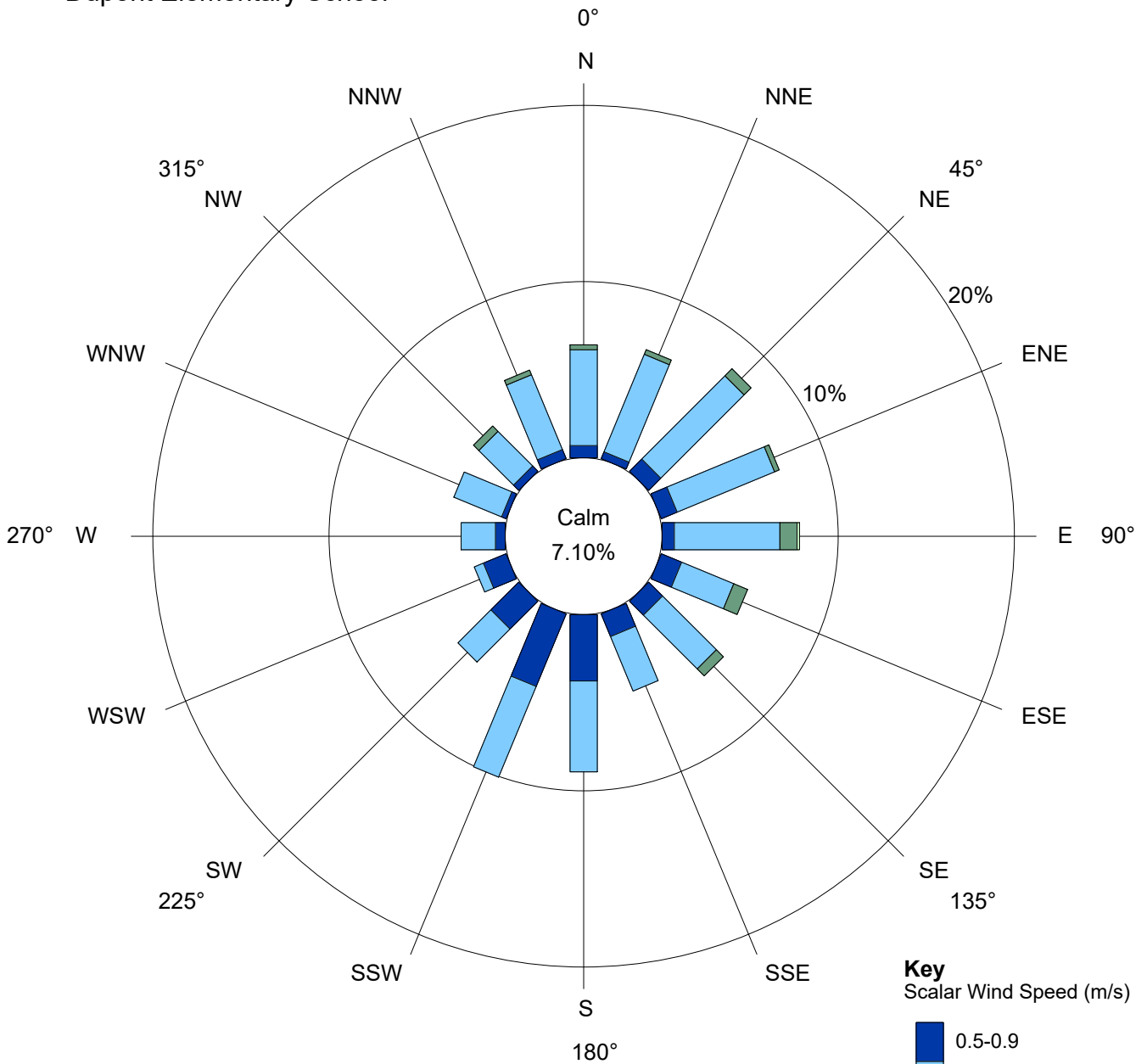
Table 4-5

Data Collection Statistics							
Colorado Air Toxics - B1 Dupont Elementary School							
06/01/2023 - 06/30/2023							
Parameter	Interval	Par Code	No. Possible	No. Collected	% Collected	No. Valid	% Valid
Relative Humidity	hourly	RH	720	718	99.7	718	99.7
Standard Deviation for Wind Direction	hourly	SDWD	720	718	99.7	718	99.7
Solar Radiation	hourly	SOL	720	720	100.0	720	100.0
Scalar Wind Direction	hourly	SWD	720	718	99.7	718	99.7
Scalar Wind Speed	hourly	SWS	720	718	99.7	718	99.7
Ambient Temperature	hourly	TMP	720	718	99.7	718	99.7
Vector Wind Direction	hourly	VWD	720	718	99.7	718	99.7
Vector Wind Speed	hourly	VWS	720	718	99.7	718	99.7

Note: The percent valid is calculated against the number possible.

Figure 4-6
Wind Rose

06/01/2023 - 06/30/2023



99.7% Collected 99.7% Valid
 720 Possible /718 Collected /718 Valid
 Collection Statistics Include:
 Scalar Wind Speed, Wind Speed and Wind Direction
 (SWS-1; SWS-1; SWD-1)
 (includes WS and WD) (Calm<0.5m/s)

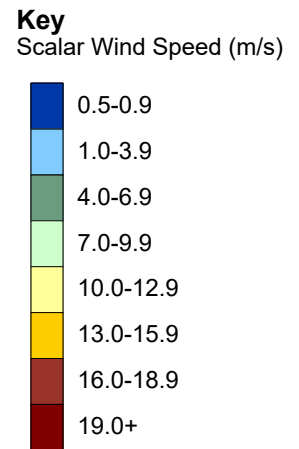


Figure 4-7
 Colorado Air Toxics - B1 (DuPont Elementary School) - Hourly Meteorological Data
 June 2023

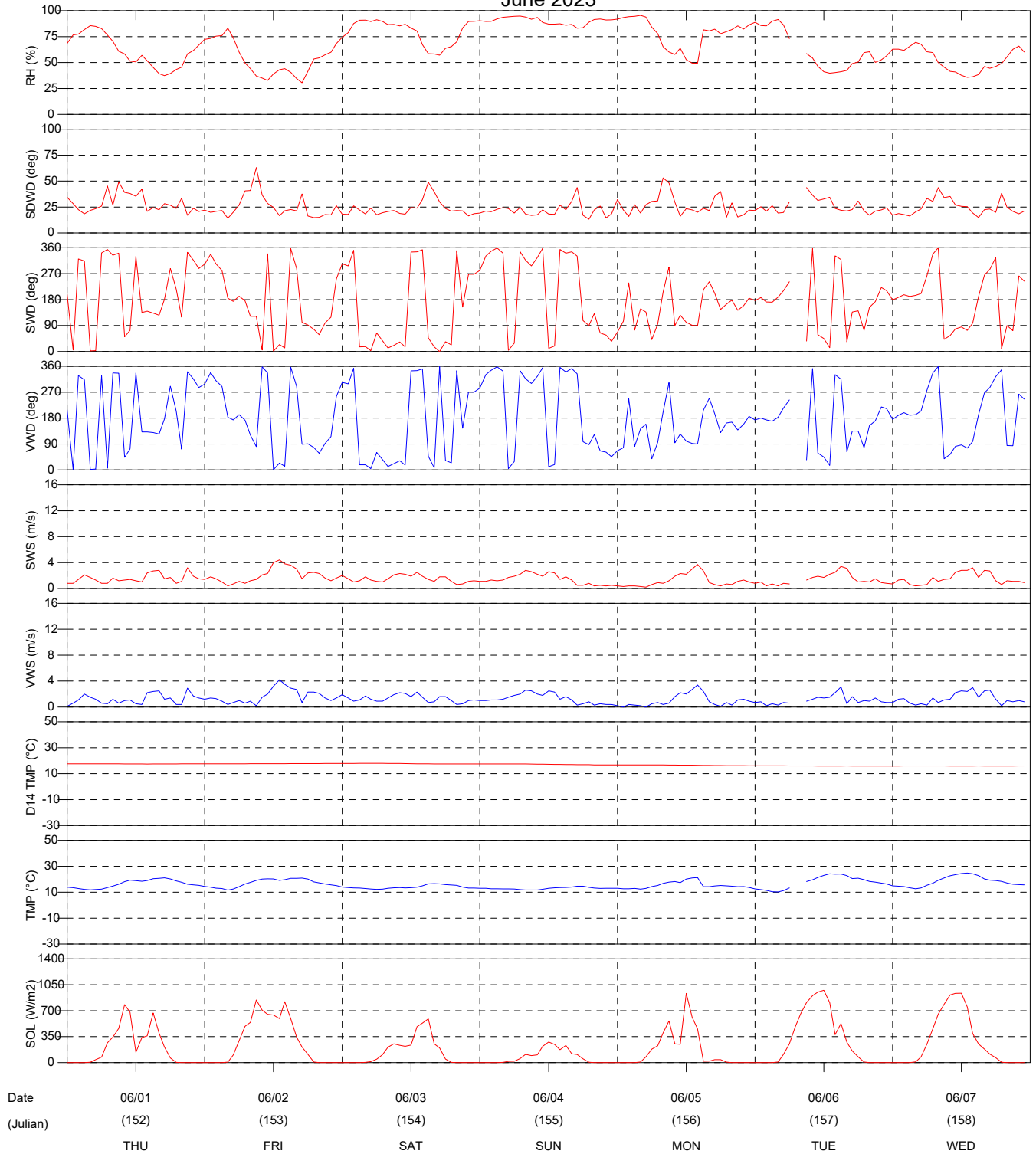


Figure 4-8
 Colorado Air Toxics - B1 (DuPont Elementary School) - Hourly Meteorological Data
 June 2023



Figure 4-9
 Colorado Air Toxics - B1 (DuPont Elementary School) - Hourly Meteorological Data
 June 2023

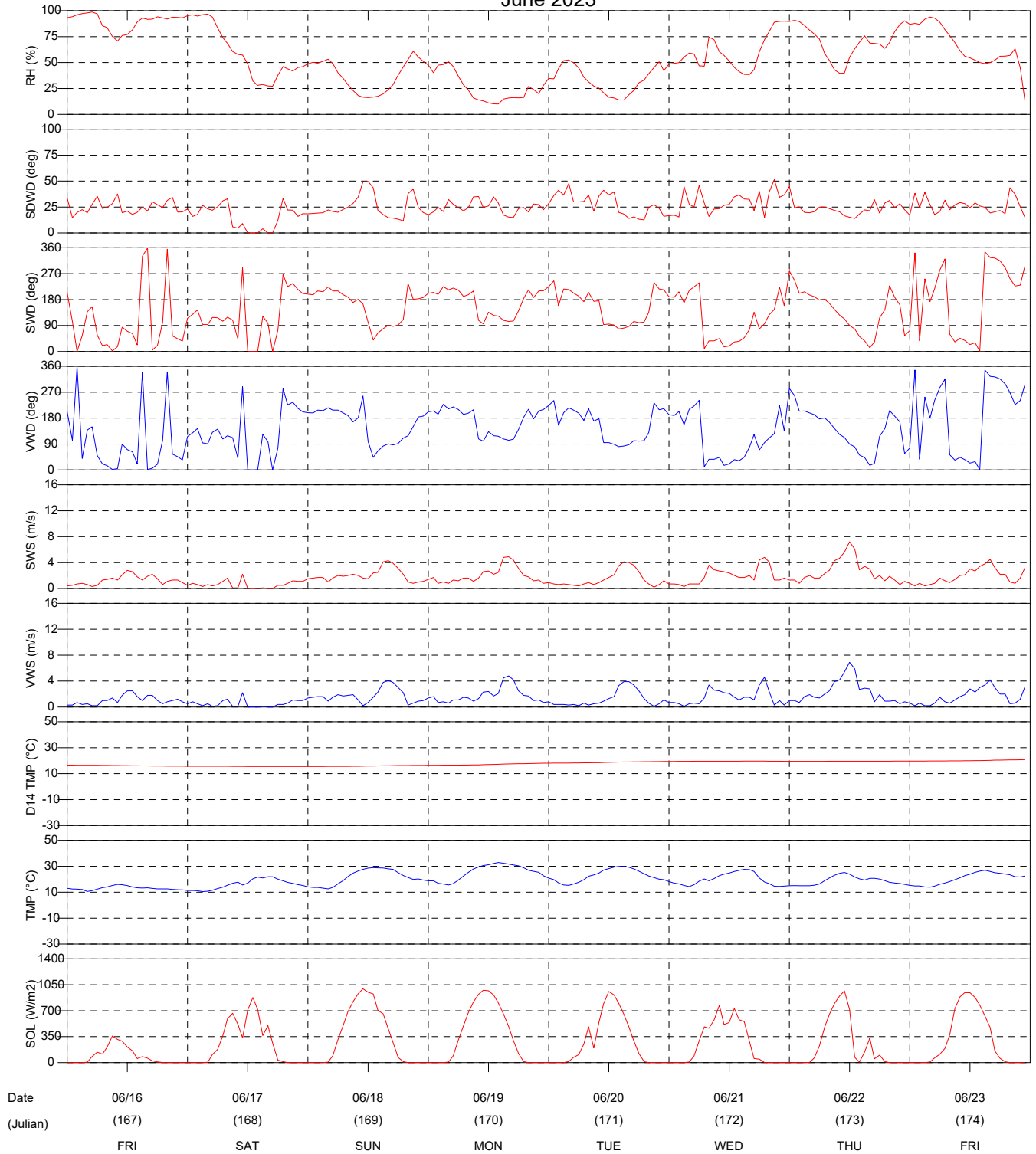


Figure 4-10
 Colorado Air Toxics - B1 (DuPont Elementary School) - Hourly Meteorological Data
 June 2023



Table 4-6

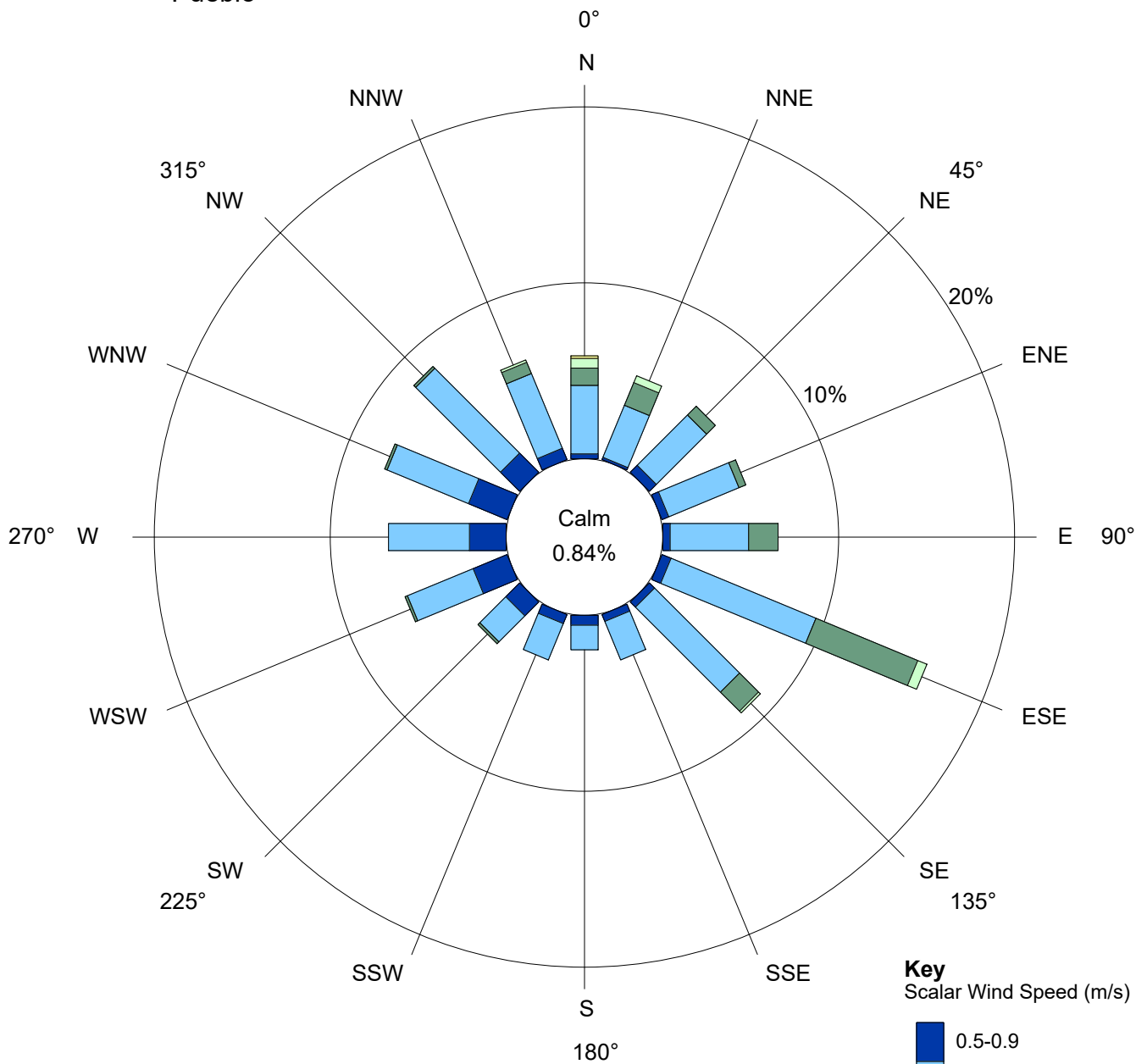
Data Collection Statistics							
Colorado Air Toxics - C1 Pueblo							
06/01/2023 - 06/30/2023							
Parameter	Interval	Par Code	No. Possible	No. Collected	% Collected	No. Valid	% Valid
Relative Humidity	hourly	RH	720	718	99.7	718	99.7
Standard Deviation for Wind Direction	hourly	SDWD	720	718	99.7	718	99.7
Solar Radiation	hourly	SOL	720	720	100.0	720	100.0
Scalar Wind Direction	hourly	SWD	720	718	99.7	718	99.7
Scalar Wind Speed	hourly	SWS	720	718	99.7	718	99.7
Ambient Temperature	hourly	TMP	720	720	100.0	720	100.0
Vector Wind Direction	hourly	VWD	720	718	99.7	718	99.7
Vector Wind Speed	hourly	VWS	720	718	99.7	718	99.7

Note: The percent valid is calculated against the number possible.

Colorado Air Toxics - C1
 Pueblo

Figure 4-11
 Wind Rose

06/01/2023 - 06/30/2023



99.7% Collected 99.7% Valid
 720 Possible /718 Collected /718 Valid
 Collection Statistics Include:
 Scalar Wind Speed, Wind Speed and Wind Direction
 (SWS-1; SWS-1; SWD-1)
 (includes WS and WD) (Calm<0.5m/s)

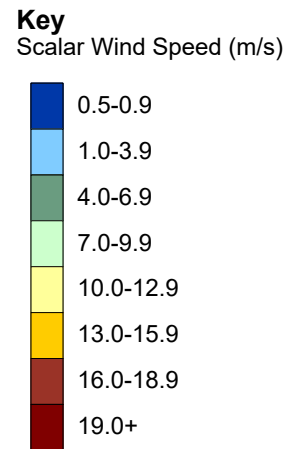


Figure 4-12
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data
 June 2023



Figure 4-13
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data
 June 2023

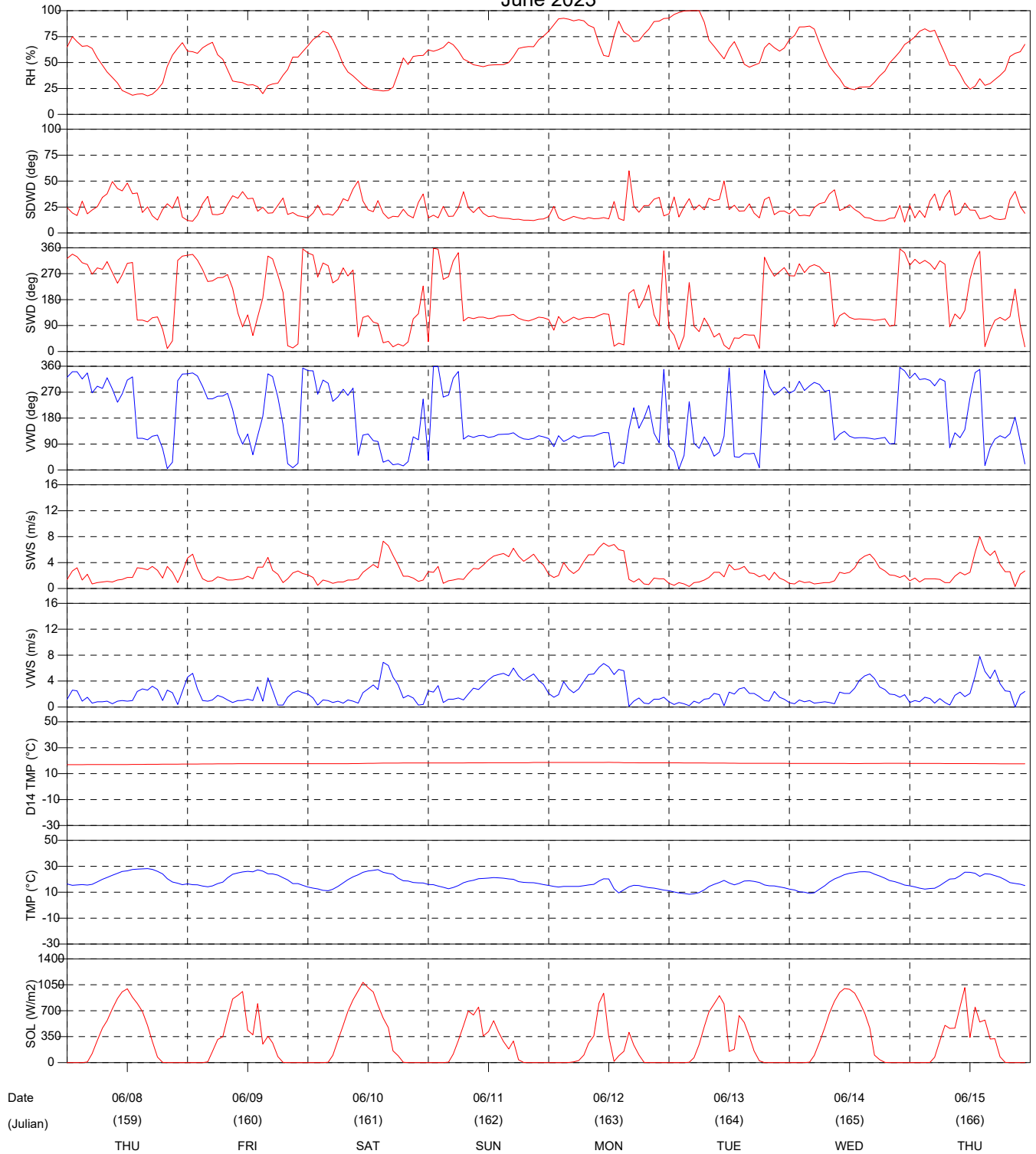


Figure 4-14
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data
 June 2023



Figure 4-15
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data
 June 2023

