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

March 1 – March 31, 2023

**Operational Summaries,
Data Summaries and Plots**

Prepared for

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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 March 1 through March 31, 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 March 1 through March 31, 2023, timeframe include the following:

- Quarterly maintenance was conducted at the C1 site on 3/15/2023.
- Quarterly maintenance was conducted at the A1 and B1 sites on 3/23/2023

Significant deviations from the established sampling schedule include:

- None

Sampling issues or corrective actions taken include:

- None

3.0 AIR TOXICS SAMPLING STATISTICS

Statistics for samples collected during the March 1 to March 31, 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
March 1 to March 31, 2023

Sampling Region	Site	Monthly		Quarterly	
		Collected	Required	Collected	Required
A	A1	2	1	6	3
B	B1	2	1	4	3
C	C1	2	1	6	3

Table 3-2
Benzene Duplicate Sample and Field Blank Collection
March 1 to March 31, 2023

Duplicate		Field Blank	
Collected	%	Collected	%
3	19%	3	19%

Table 3-3
14-day H₂S Sample Collection
March 1 to March 31, 2023

Sampling Region	Site	Monthly		Quarterly	
		Collected	Required	Collected	Required
A	A1	2	1	6	3
B	B1	2	1	4	3
C	C1	2	1	6	3

Table 3-4
H₂S Duplicate Sample and Field Blank Collection
March 1 to March 31, 2023

Duplicate		Field Blank	
Collected	%	Collected	%
16	100%	2	13%

Table 3-5
HCN Sample Collection
March 1 to March 31, 2023

Sampling Region	Site	Monthly		Quarterly	
		Collected	Required	Collected	Required
A	A1	11	10	32	30
B	B1	17	10	32	30
C	C1	11	10	32	30

Table 3-6
HCN Duplicate Sample and Field Blank Collection
March 1 to March 31, 2023

Duplicate		Field Blank	
Collected	%	Collected	%
12	13%	10	10%

4.0 AIR TOXIC DATA SUMMARIES

The tables below summarize the air toxics data collected during the period of March 1 to March 31, 2023.

Table 4-1
14-Day Benzene Data
March 1 to March 31, 2023

SITE	Sampling Start Day	Sampling End Day	Days	Concentration (ppb)	MDL (ppb)	Notes
A1	3/1/2023	3/15/2023	14	0.221	0.0601	
A1	3/1/2023	3/15/2023	14	0.216	0.0601	Duplicate
A1	3/1/2023	3/15/2023	14	ND	0.0601	Blank
A1	3/15/2023	3/29/2023	14	0.177	0.0604	
B1	3/1/2023	3/15/2023	14	0.277	0.0602	
B1	3/15/2023	3/29/2023	14	0.254	0.0605	
C1	3/1/2023	3/15/2023	14	0.145	0.0601	
C1	3/15/2023	3/29/2023	14	0.115	0.0610	
		Maximum		0.277		
		Minimum		0.115		
		Average		0.201		

Table 4-2
 14-Day H₂S Data
 March 1 to March 31, 2023

SITE	Sampling Start Day	Sampling End Day	Days	Concentration (ppb)	LOD (ppb)	Notes
A1	3/1/2023	3/15/2023	14	ND	0.14	
A1	3/1/2023	3/15/2023	14	ND	0.14	Duplicate
A1	3/15/2023	3/29/2023	14	ND	0.14	
A1	3/15/2023	3/29/2023	14	ND	0.14	Duplicate
B1	3/1/2023	3/15/2023	14	ND	0.14	
B1	3/1/2023	3/15/2023	14	ND	0.14	Duplicate
B1	3/15/2023	3/29/2023	14	ND	0.14	
B1	3/15/2023	3/29/2023	14	ND	0.14	Duplicate
C1	3/1/2023	3/15/2023	14	ND	0.14	
C1	3/1/2023	3/15/2023	14	ND	0.14	Duplicate
C1	3/1/2023	3/15/2023	14	ND	0.14	Blank
C1	3/15/2023	3/29/2023	14	ND	0.15	
C1	3/15/2023	3/29/2023	14	ND	0.15	Duplicate
		Maximum	ND			
		Minimum	ND			
		Average	ND			

Table 4-3
HCN Data
March 1 to March 31, 2023

SITE	Sampling Date	Duration (min)	Concentration (ppb)	MDL (ppb)	Notes
A1	03/01/2023 08:09	455	ND	0.8	
A1	03/03/2023 07:34	473	ND	0.8	
A1	03/08/2023 07:56	460	ND	0.8	
A1	03/09/2023 08:49	439	ND	0.9	
A1	03/13/2023 07:31	455	ND	0.9	
A1	03/15/2023 08:23	580	ND	0.6	
A1	03/17/2023 07:20	464	ND	0.8	
A1	03/21/2023 07:56	448	ND	0.9	
A1	03/22/2023 07:41	472	ND	0.8	
A1	03/22/2023 07:41	472	ND	0.8	Duplicate
A1	03/22/2023 07:41		ND		Blank
A1	03/28/2023 08:09	468	ND	0.9	
A1	03/29/2023 08:05	450	ND	0.8	
A1	03/31/2023 07:45	464	ND	0.8	
B1	03/01/2023 07:28	517	ND	0.8	
B1	03/02/2023 08:24	189	ND	2.1	
B1	03/03/2023 07:10	474	ND	0.8	
B1	03/06/2023 10:58	178	ND	2.1	
B1	03/07/2023 10:42	186	ND	2.0	
B1	03/08/2023 07:28	505	ND	0.8	
B1	03/09/2023 08:20	490	ND	0.8	
B1	03/13/2023 07:05	505	ND	0.8	
B1	03/14/2023 11:52	180	ND	2.2	
B1	03/15/2023 07:40	637	ND	0.6	
B1	03/17/2023 06:52	511	ND	0.8	
B1	03/17/2023 06:53	508	ND	0.8	Duplicate
B1	03/17/2023 06:53		ND		Blank
B1	03/21/2023 07:31	495	ND	0.8	
B1	03/22/2023 07:17	475	ND	0.8	
B1	03/23/2023 10:39	191	ND	2.0	
B1	03/28/2023 07:41	515	ND	0.8	
B1	03/29/2023 07:31	504	ND	0.8	
B1	03/30/2023 07:48	189	ND	2.1	
B1	03/31/2023 07:26	502	ND	0.8	

Table 4-3 (continued)
 HCN Data
 March 1 to March 31, 2023

C1	3/1/2023 10:29	180	ND	2.1	
C1	3/1/2023 10:32	180	ND	2.1	Duplicate
C1	3/1/2023 10:29		ND		Blank
C1	3/3/2023 9:43	182	ND	2.1	
C1	3/8/2023 10:36	173	ND	2.2	
C1	3/9/2023 10:59	179	ND	2.2	
C1	3/13/2023 9:45	181	ND	2.1	
C1	3/15/2023 11:14	259	ND	1.5	
C1	3/17/2023 9:31	182	ND	2.2	
C1	3/21/2023 10:18	189	ND	2.0	
C1	3/22/2023 9:54	184	ND	2.1	
C1	3/28/2023 10:33	181	ND	2.1	
C1	3/28/2023 10:36	181	ND	2.2	Duplicate
C1	3/28/2023 10:36		ND		Blank
C1	3/29/2023 10:23	180	ND	2.1	
C1	3/31/2023 9:55	182	ND	2.1	

4.1 METEOROLOGICAL DATA COLLECTION STATISTICS AND SUMMARIES

The tables and graphs below summarize the meteorological data collected during the period of March 1 to March 31, 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

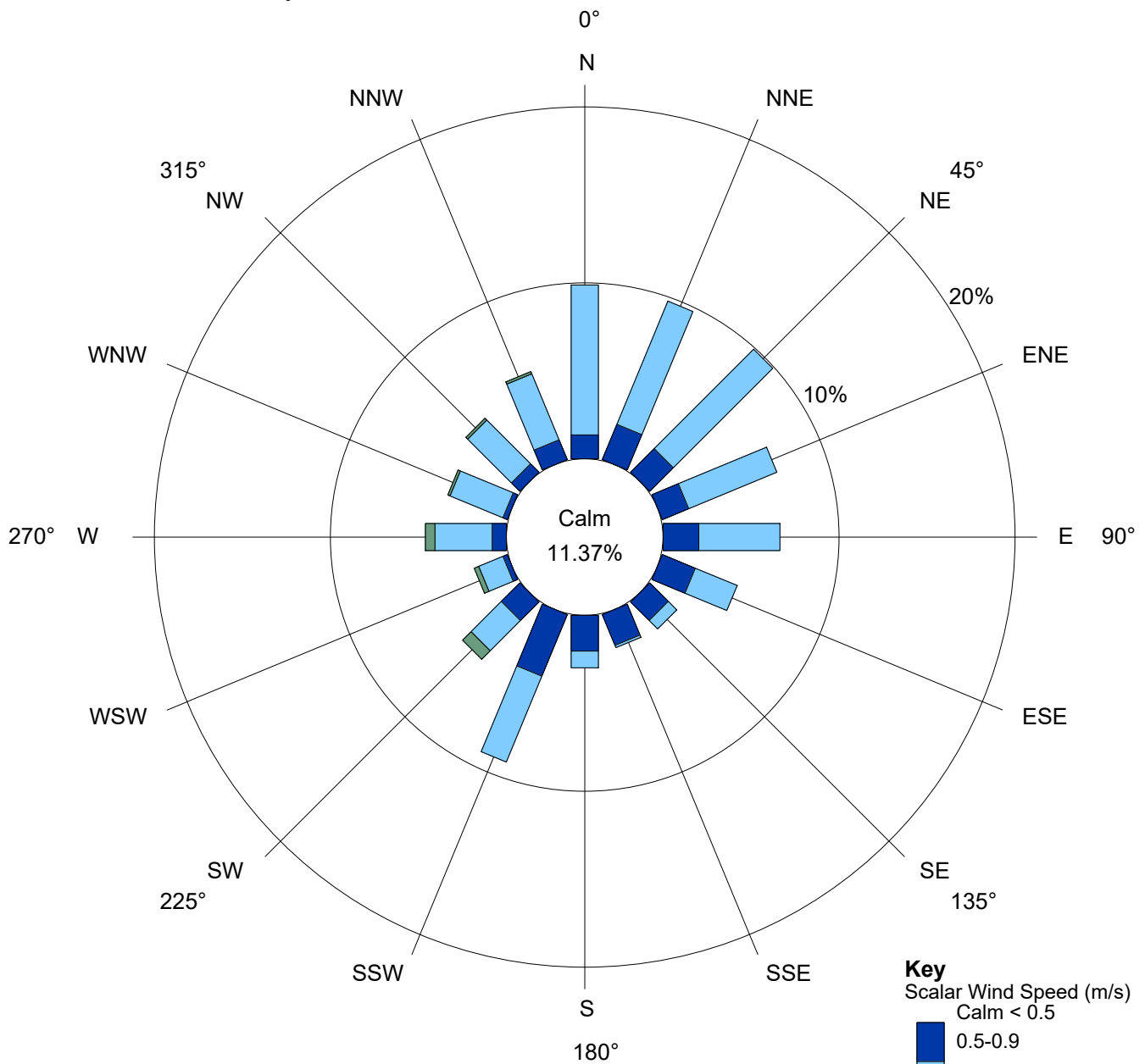
Table 4-4

Data Collection Statistics							
Colorado Air Toxics - A1 Commerce City							
03/01/2023 - 03/31/2023							
Parameter	Interval	Par Code	No. Possible	No. Collected	% Collected	No. Valid	% Valid
Relative Humidity	hourly	RH	744	744	100.0	744	100.0
Standard Deviation for Wind Direction	hourly	SDWD	744	739	99.3	739	99.3
Solar Radiation	hourly	SOL	744	744	100.0	744	100.0
Scalar Wind Direction	hourly	SWD	744	739	99.3	739	99.3
Scalar Wind Speed	hourly	SWS	744	739	99.3	739	99.3
Ambient Temperature	hourly	TMP	744	741	99.6	741	99.6
Vector Wind Direction	hourly	VWD	744	739	99.3	739	99.3
Vector Wind Speed	hourly	VWS	744	739	99.3	739	99.3

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

Automatic zeros and spans are performed daily on most ambient gas analyzers and ambient data can only be reported if the duration of these events is less than 25% of the hour. As a result, the maximum percent valid is generally less than 100%.

Figure 4-1
Wind Rose



99.3% Collected 99.3% Valid
 744 Possible /739 Collected /739 Valid
 Collection Statistics Include:
 Wind Speed and Wind Direction
 (SWS-1; SWD-1)

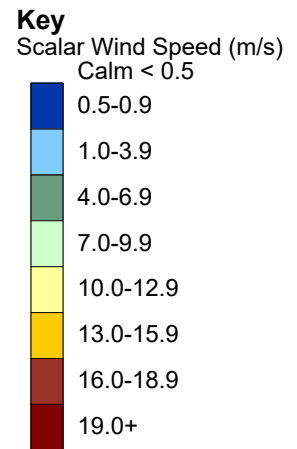


Figure 4-2
 Colorado Air Toxics - A1 (Commerce City) - Hourly Meteorological Data



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



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

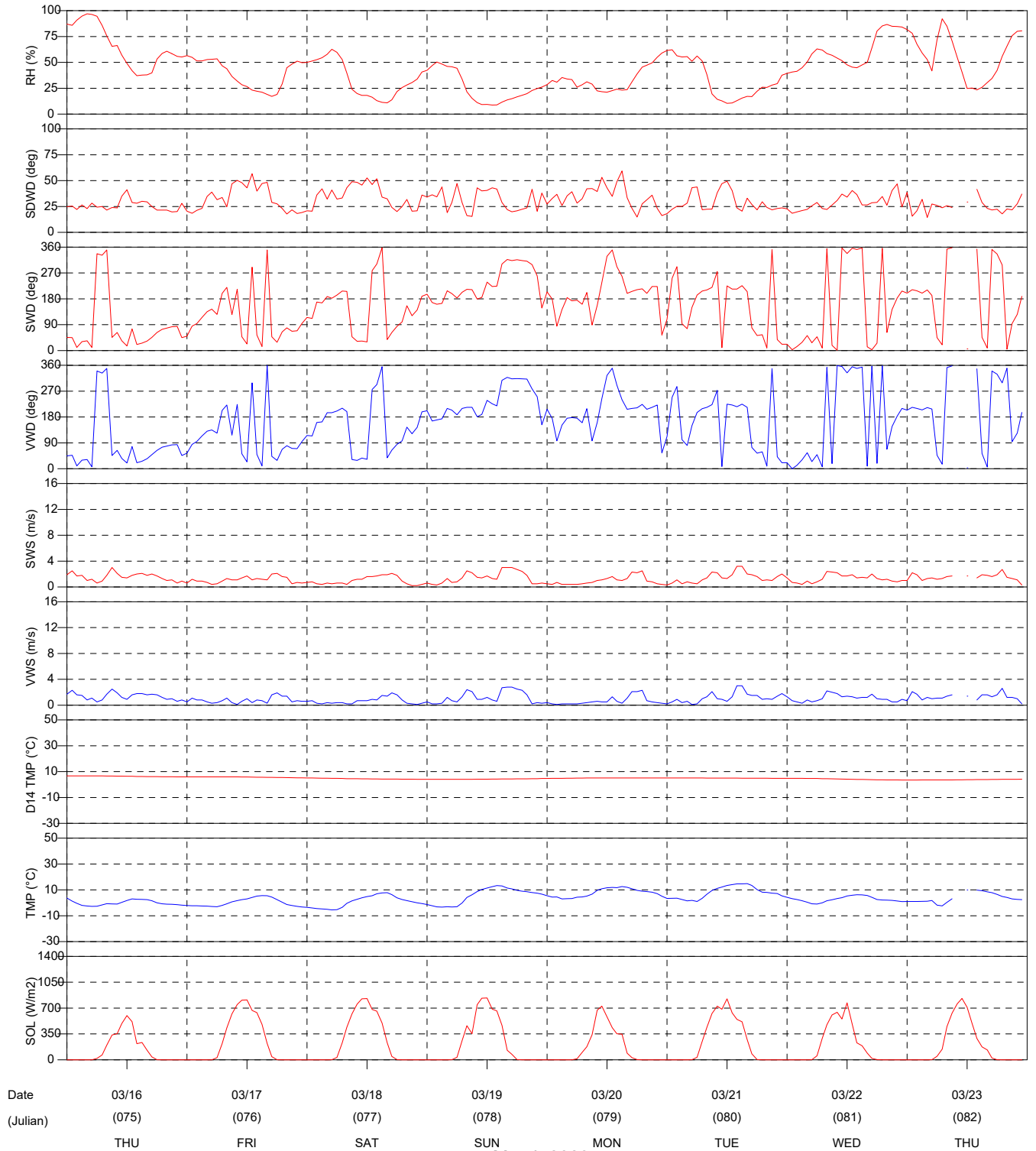


Figure 4-5
 Colorado Air Toxics - A1 (Commerce City) - Hourly Meteorological Data

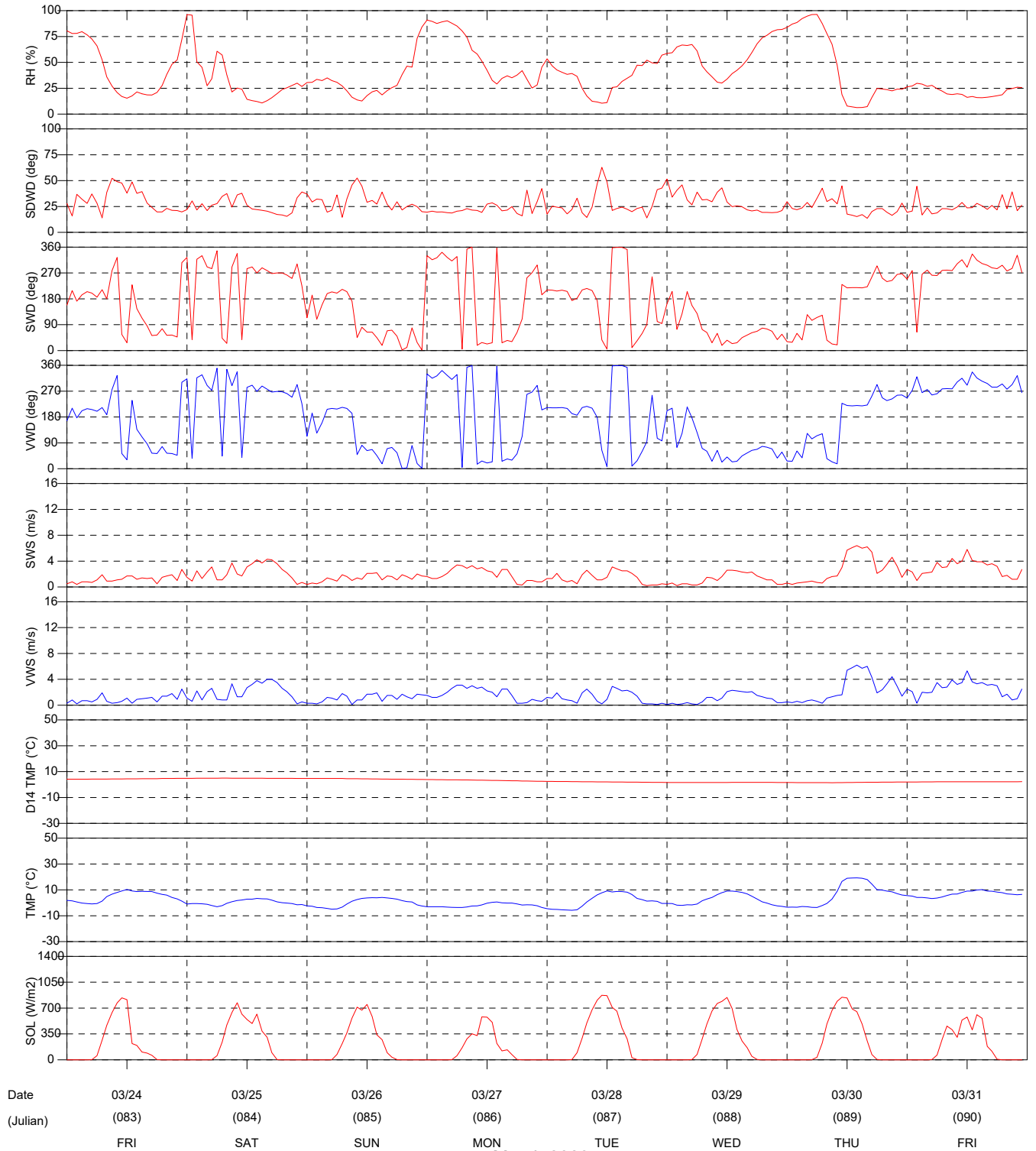


Table 4-5

Data Collection Statistics							
Colorado Air Toxics - B1 Dupont Elementary School							
03/01/2023 - 03/31/2023							
Parameter	Interval	Par Code	No. Possible	No. Collected	% Collected	No. Valid	% Valid
Relative Humidity	hourly	RH	744	744	100.0	744	100.0
Standard Deviation for Wind Direction	hourly	SDWD	744	742	99.7	742	99.7
Solar Radiation	hourly	SOL	744	744	100.0	744	100.0
Scalar Wind Direction	hourly	SWD	744	742	99.7	742	99.7
Scalar Wind Speed	hourly	SWS	744	742	99.7	742	99.7
Ambient Temperature	hourly	TMP	744	742	99.7	742	99.7
Vector Wind Direction	hourly	VWD	744	742	99.7	742	99.7
Vector Wind Speed	hourly	VWS	744	742	99.7	742	99.7

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

Automatic zeros and spans are performed daily on most ambient gas analyzers and ambient data can only be reported if the duration of these events is less than 25% of the hour. As a result, the maximum percent valid is generally less than 100%.

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



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



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

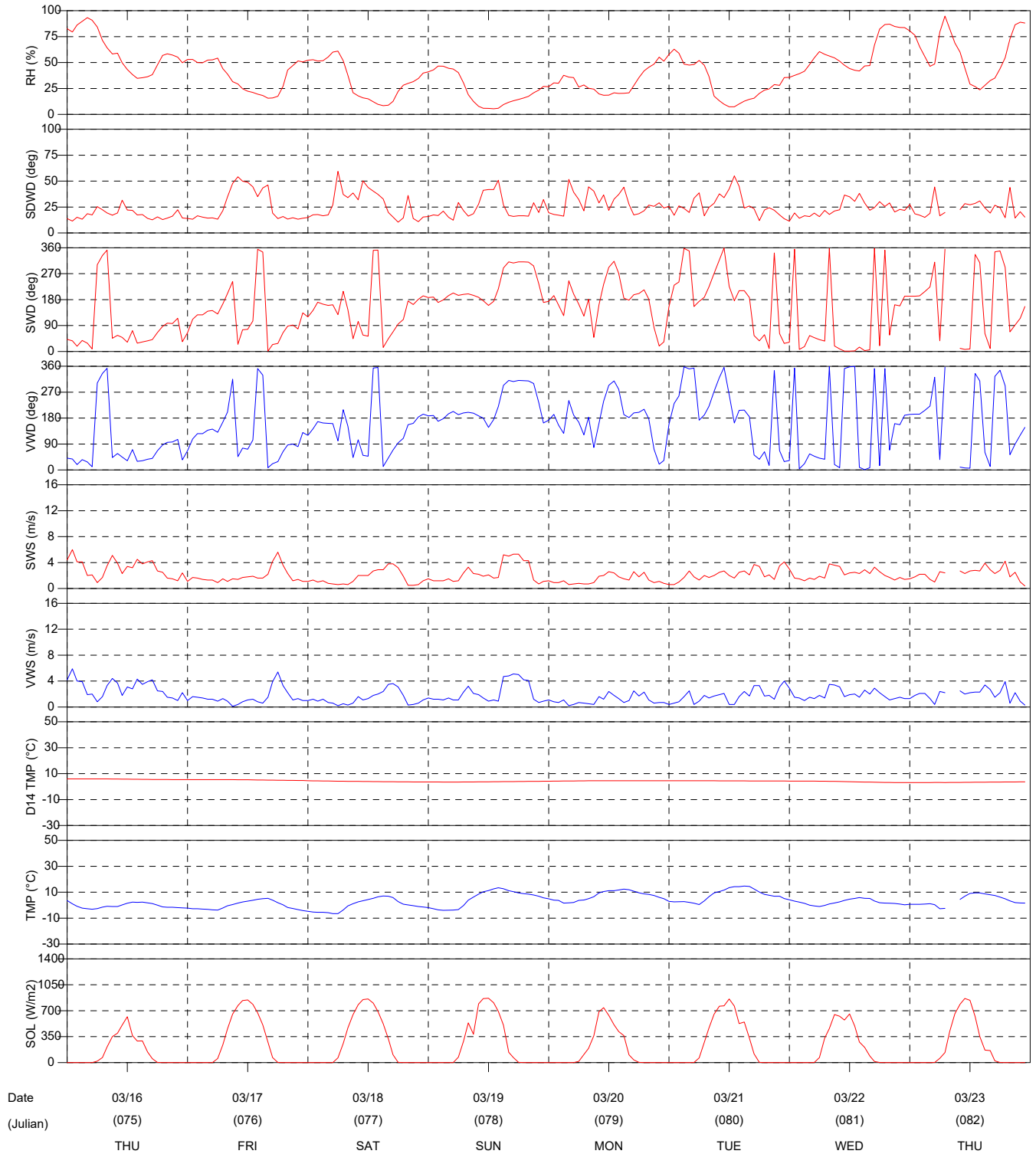


Figure 4-10
 Colorado Air Toxics - B1 (DuPont Elementary School) - Hourly Meteorological Data

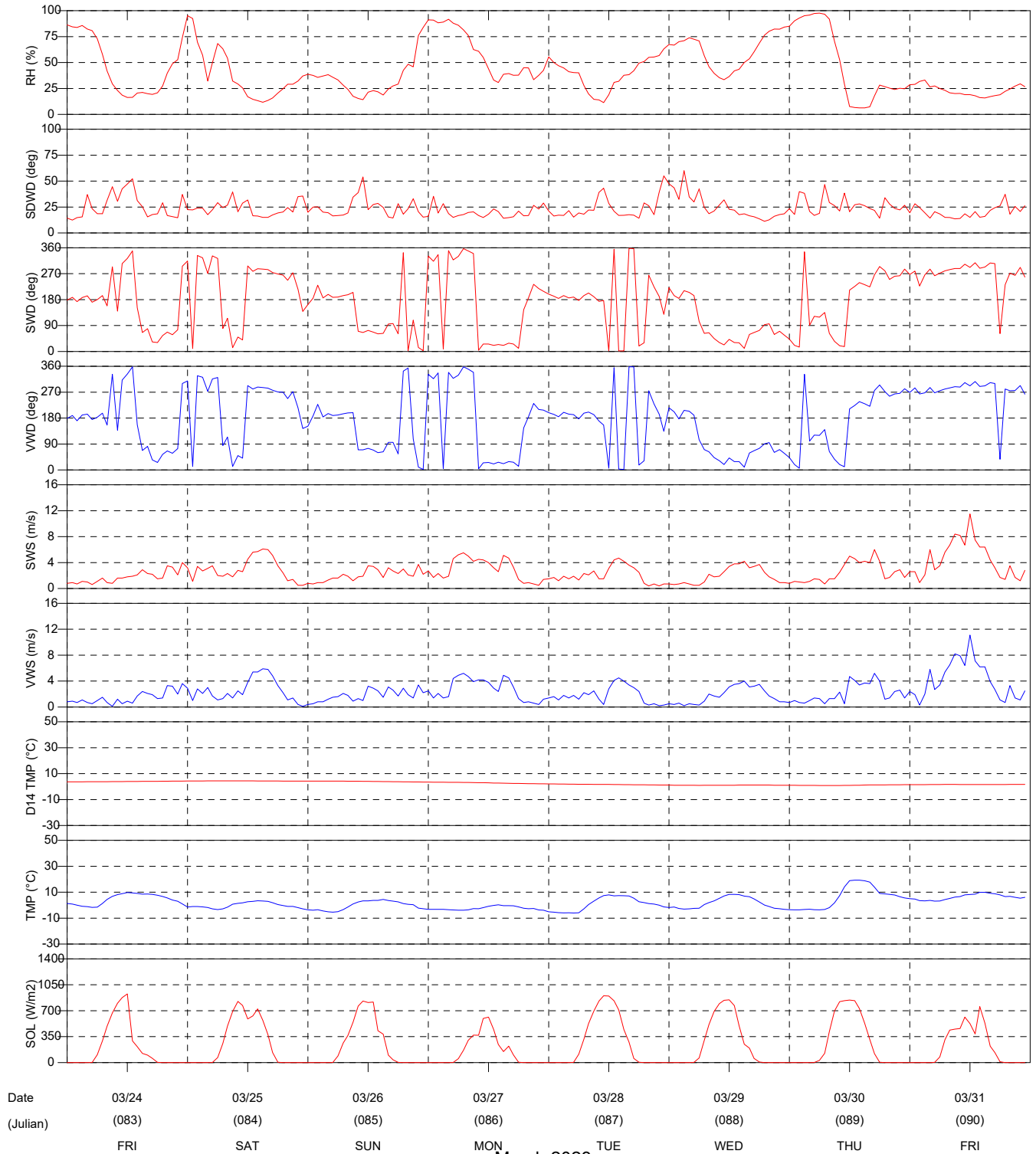


Table 4-6

Data Collection Statistics							
Colorado Air Toxics - C1 Pueblo							
03/01/2023 - 03/31/2023							
Parameter	Interval	Par Code	No. Possible	No. Collected	% Collected	No. Valid	% Valid
Relative Humidity	hourly	RH	744	739	99.3	739	99.3
Standard Deviation for Wind Direction	hourly	SDWD	744	739	99.3	739	99.3
Solar Radiation	hourly	SOL	744	744	100.0	744	100.0
Scalar Wind Direction	hourly	SWD	744	739	99.3	739	99.3
Scalar Wind Speed	hourly	SWS	744	739	99.3	739	99.3
Ambient Temperature	hourly	TMP	744	739	99.3	739	99.3
Vector Wind Direction	hourly	VWD	744	739	99.3	739	99.3
Vector Wind Speed	hourly	VWS	744	739	99.3	739	99.3

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

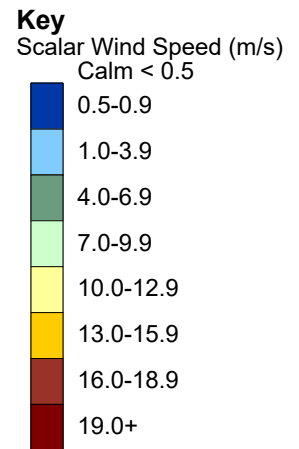
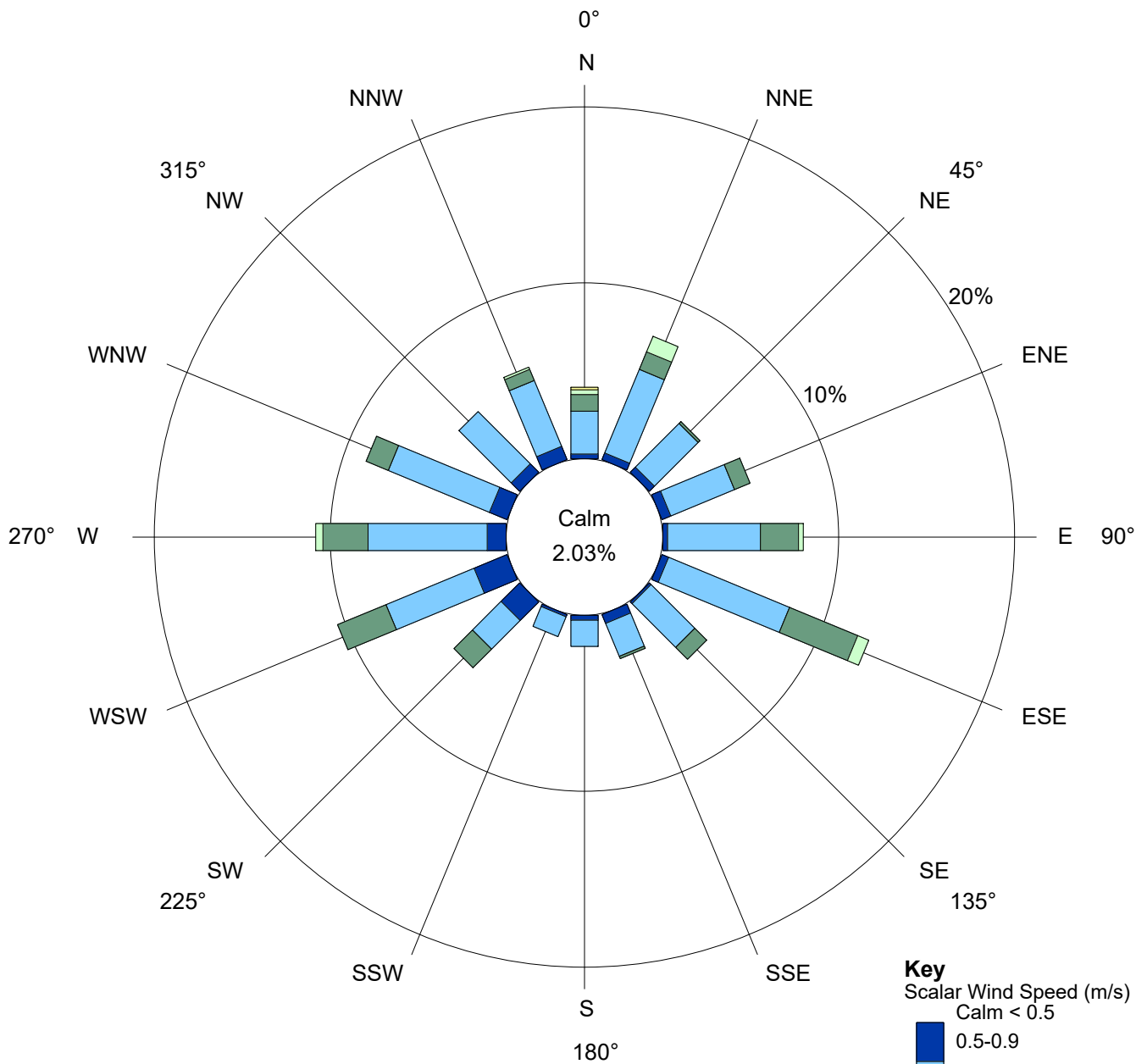
Automatic zeros and spans are performed daily on most ambient gas analyzers and ambient data can only be reported if the duration of these events is less than 25% of the hour. As a result, the maximum percent valid is generally less than 100%.

Figure 4-11

Wind Rose

03/01/2023 - 03/31/2023

Colorado Air Toxics - C1
Pueblo



99.3% Collected 99.3% Valid
744 Possible /739 Collected /739 Valid
Collection Statistics Include:
Wind Speed and Wind Direction
(SWS-1; SWD-1)

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

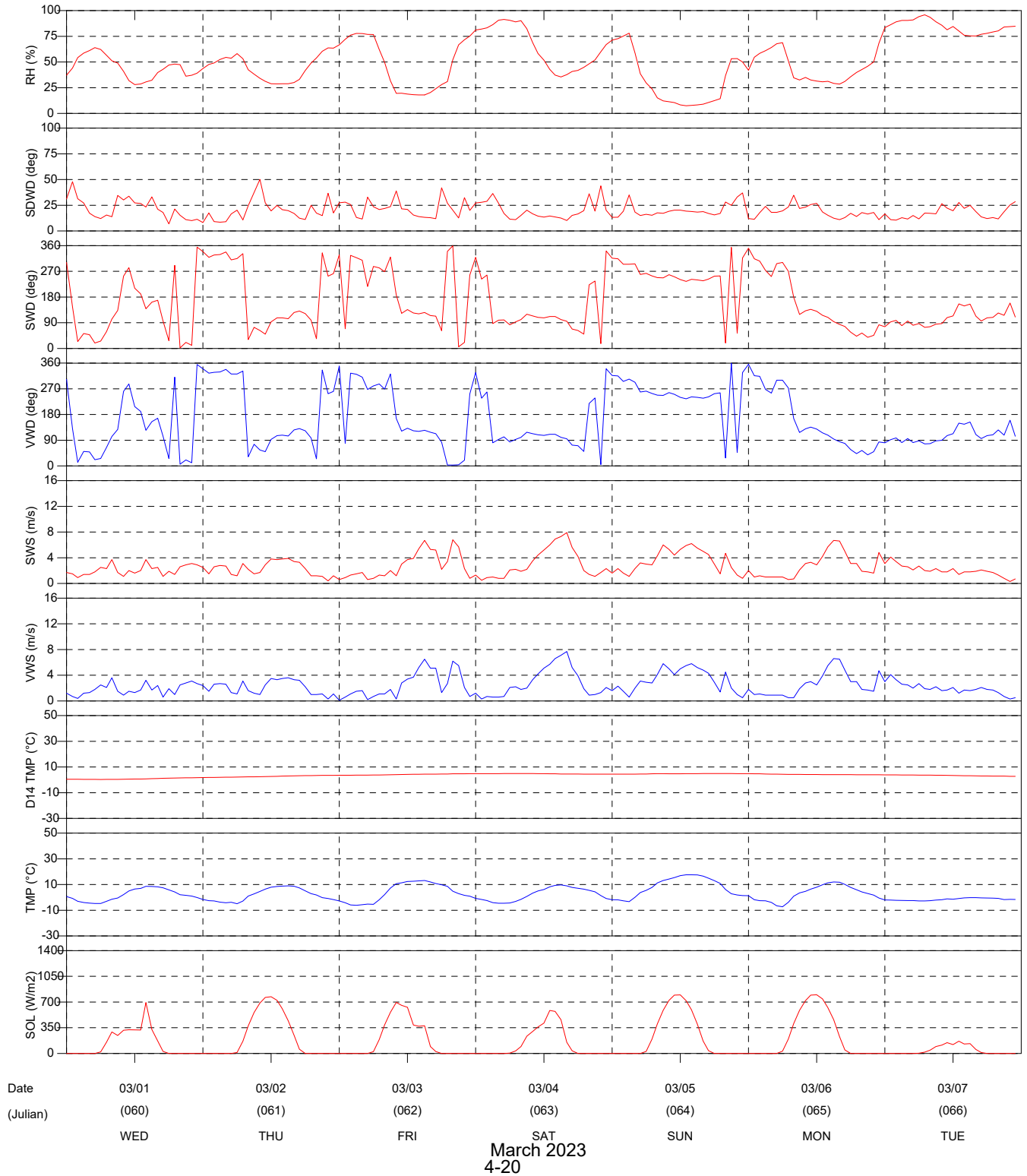


Figure 4-13
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data

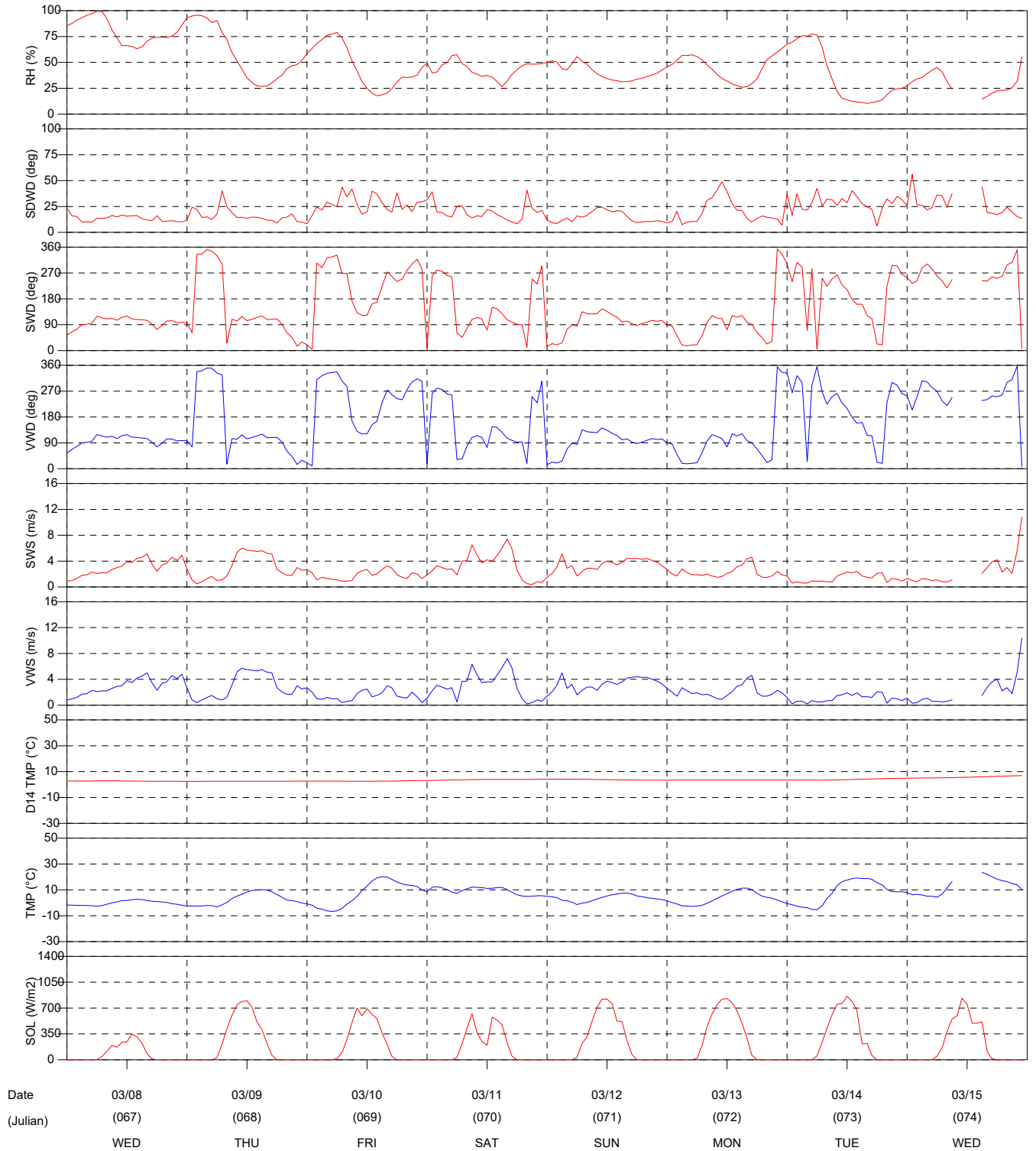


Figure 4-14
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data

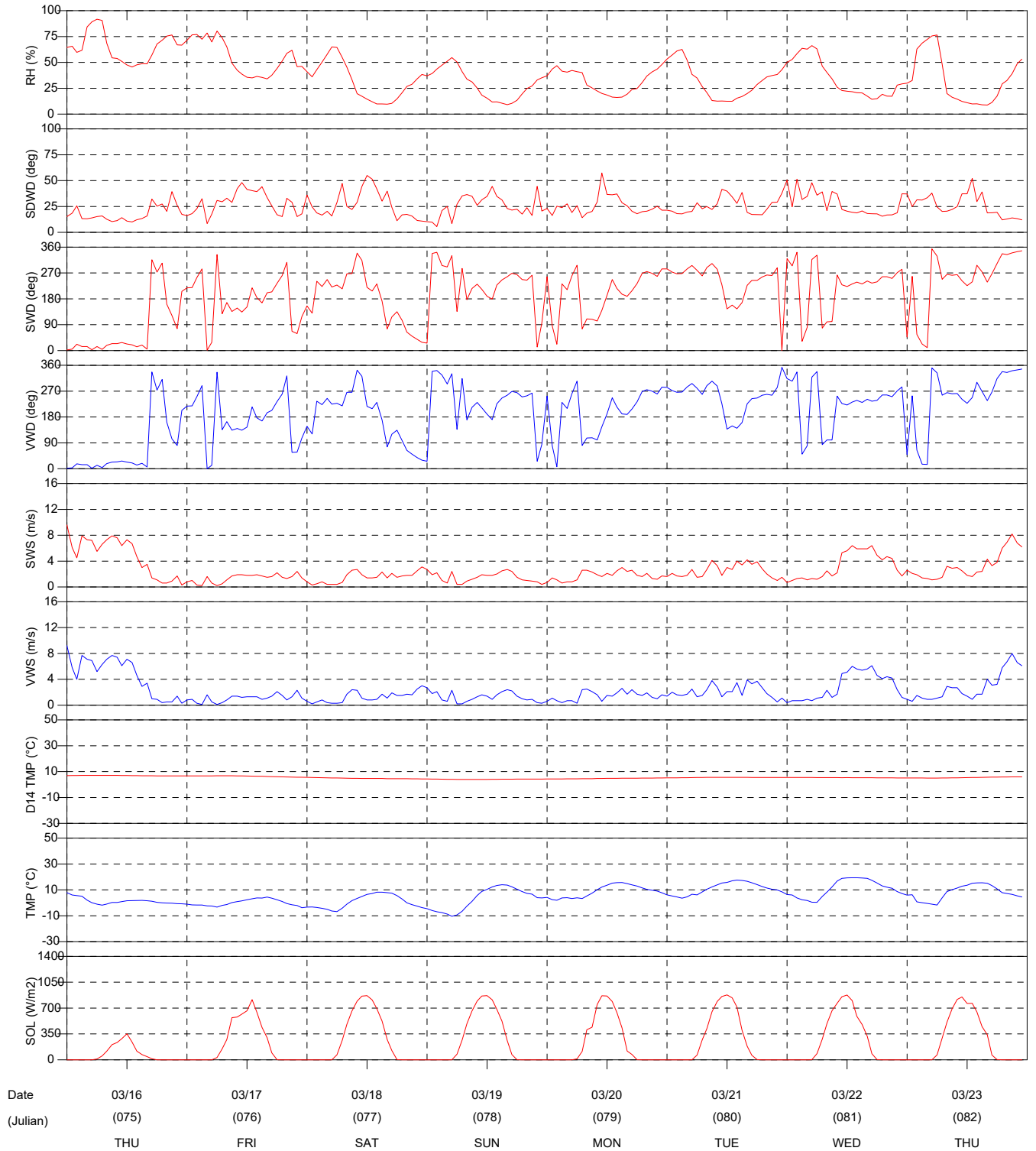


Figure 4-15
 Colorado Air Toxics - C1 (Pueblo) - Hourly Met Data

