Prepared for:
Air Resources Division
Research & Monitoring Branch
303-969-2820

Joshua Tree National Park

June 1998

Preliminary Data

Gaseous Pollutants & Meteorology
NPS Ambient Air Quality Monitoring Network

Air Resource Specialists, Inc.

Environmental Consultants

1901 Sharp Point Drive, Suite E
Fort Collins, Colorado 80525
800-344-5423

INTRODUCTION

This preliminary data report provides National Park Service Air Resources Division (NPS ARD) personnel, individual station operators, and other project-related personnel the opportunity to review and comment on preliminary ambient ozone (O_3) and/or sulfur dioxide (SO_2) data and associated meteorological data collected at individual monitoring sites. All data were collected as part of the NPS National Ambient Air Quality Monitoring Program. This preliminary report was prepared under NPS Contract CX-1270-96-007 by Air Resource Specialists, Inc. (ARS).

The data presented in this report cover a one-month period, and have been:

- Automatically polled via telephone, extracted from RAMPACK, or manually entered from hard copy or strip chart.
- Screened for out-of-tolerance conditions.
- Invalidated where instrument malfunctions or other measurement interferences occurred.
- Plotted and reviewed by NPS and ARS project personnel.

The data are considered preliminary and for review purposes only. The data should not be cited or quoted. You, the station operator, are most familiar with the operation of the individual instruments at your monitoring station and with the atmospheric conditions typical for your region. Your review of the data is critical to the quality of the final product. You are requested to review the enclosed plots, tables, and statistics, and pay particular attention to:

- Site specifications and other site-specific details.
- Data periods that have been invalidated.
- Overall data values and trends - Are the data reasonable and consistent with the conditions you would expect for the month in review?
- Periods of high or low values, calms, and extremes.

Please forward your comments or corrections by FAX, cc-mail, or U.S. mail to the ARS Information Management Center (IMC) within two weeks of the date of this report. Immediately following your timely review, the data will undergo final validation and will be released. Thank you for your participation in the validation process.

Attn: Data Coordinator
NPS Information Management Center
Air Resource Specialists, Inc.
1901 Sharp Point Drive, Suite E
Ft. Collins, Colorado 80525
800/344-5423
Fax: 970/484-3423
cc-mail: WASO ARD Air Resource Spec.

DATA SUMMARIES AND STATISTICS

The table below lists the site specifications and parameters monitored at Joshua Tree National Park, during June 1-30, 1998.

Joshua Tree National Park
Site Specifications

Site Name:	Joshua Tree National Park
Site Abbreviation:	JOYV
Site Number:	59
AIRS ID Number:	06-071-9002
State:	California
County:	San Bernadino
Elevation:	1244 m MSL
Latitude:	34°04'17" N
Longitude:	116°23'26" W
UTM Zone:	11
UTM Easting:	00556394
UTM Northing:	3770028

Based on the site configurations during this reporting period, the following preliminary data summaries and statistics are provided:

- [✓] Data Collection Statistics
- [✓] Data Stack Plots - All parameters, one plot for each 7 or 8 days
- [✓] Ozone Values Versus National Ambient Air Quality Standards (NAAQS)
- [✓] Diurnal Ozone Plot
- [✓] Ozone Data Summary by Month
- [ ] Sulfur Dioxide Values Versus National Ambient Air Quality Standards (NAAQS)
- [ ] Diurnal Sulfur Dioxide Plot
- [ ] Sulfur Dioxide Data Summary by Month
- [✓] Meteorological Parameter Summary Table
- [✓] Wind Rose
- [✓] Ozone Pollutant Rose
- [ ] Sulfur Dioxide Pollutant Rose
- [✓] Ozone Hourly Average Table
- [ ] Sulfur Dioxide Hourly Average Table

Data Collection Statistics
Joshua Tree National Park

Preliminary Data

06/01/98 - 06/30/98

Parameter	Par Code	Data Recovery			Valid Data	
		No. Possible	No. Collected	% Collected	No. Valid	% Valid
Ozone Analyzer	O3	720	681	94.6	681	94.6
Scalar Wind Speed	SWS	720	720	100.0	720	100.0
Vector Wind Speed	VWS	720	720	100.0	720	100.0
Vector Wind Direction	VWD	720	720	100.0	720	100.0
Standard Deviation for Wind Direction	SDWD	720	720	100.0	720	100.0
Ambient Temperature (aspirated)	TMP	720	720	100.0	720	100.0
Delta Temperature	DTP	720	720	100.0	720	100.0
Relative Humidity	RH	720	720	100.0	720	100.0
Precipitation	RNF	720	715	99.3	715	99.3
Wetness Sensor	WET	720	720	100.0	720	100.0
Solar Radiation	SOL	720	720	100.0	720	100.0

Notes: All statistics are for hourly averages.

The number collected does not include normal maintenance or events beyond the control of the network.

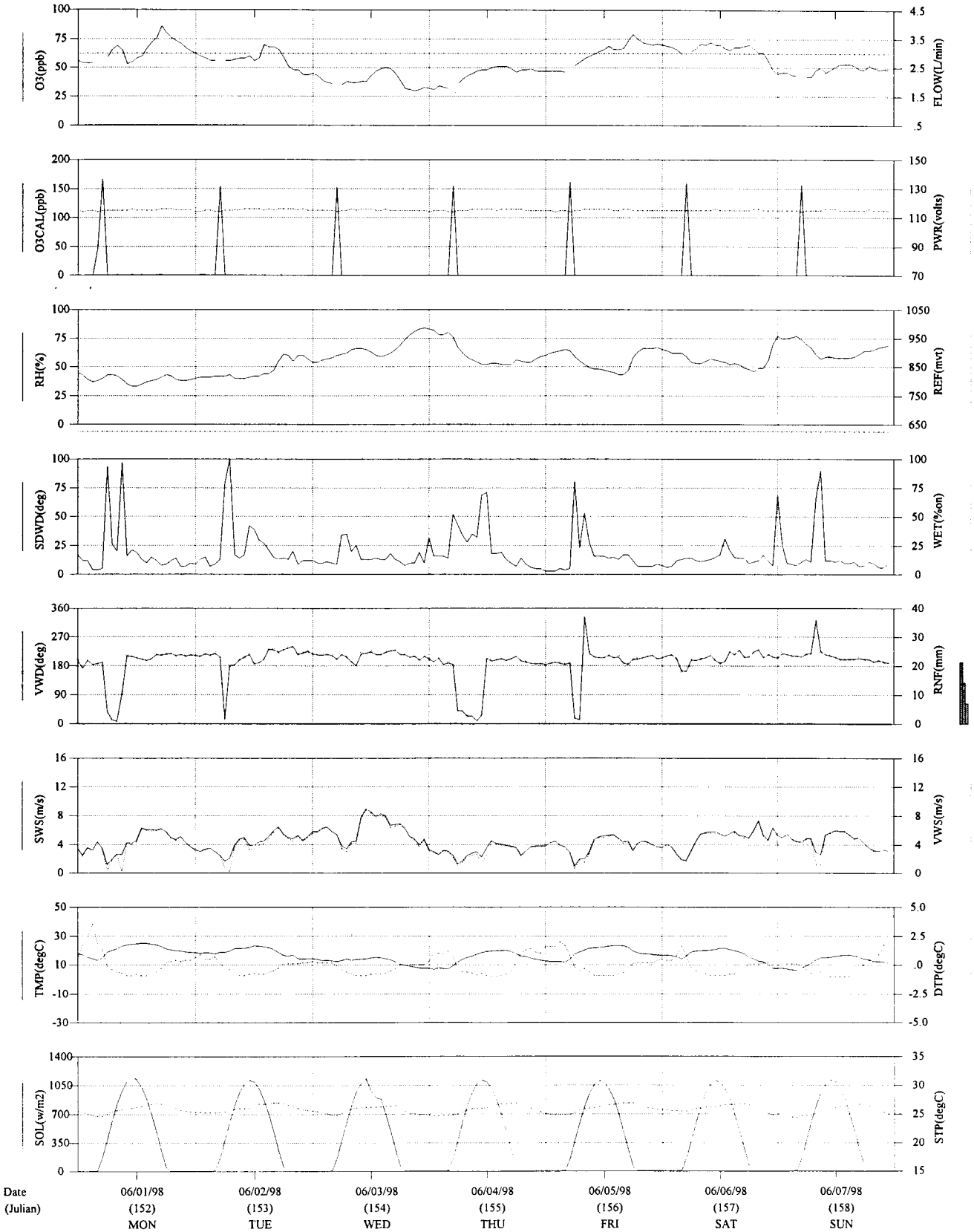
The percent valid is calculated against the number possible.

Automatic zeros and spans are performed daily on most ambient gas analyzers, therefore, no ambient data can be collected during this time. As a result, the maximum percent valid for ambient gas data typically can not be greater than 95.8.

NPS Performance Goals:

Quarterly Criteria:	Monthly Criteria:
100% of sites, >= 85% valid data capture	100% of sites, >= 60% valid data capture
90% of sites, >= 90% valid data capture	90% of sites, >= 75% valid data capture
80% of sites, >= 95% valid data capture	80% of sites, >= 85% valid data capture

Joshua Tree National Park

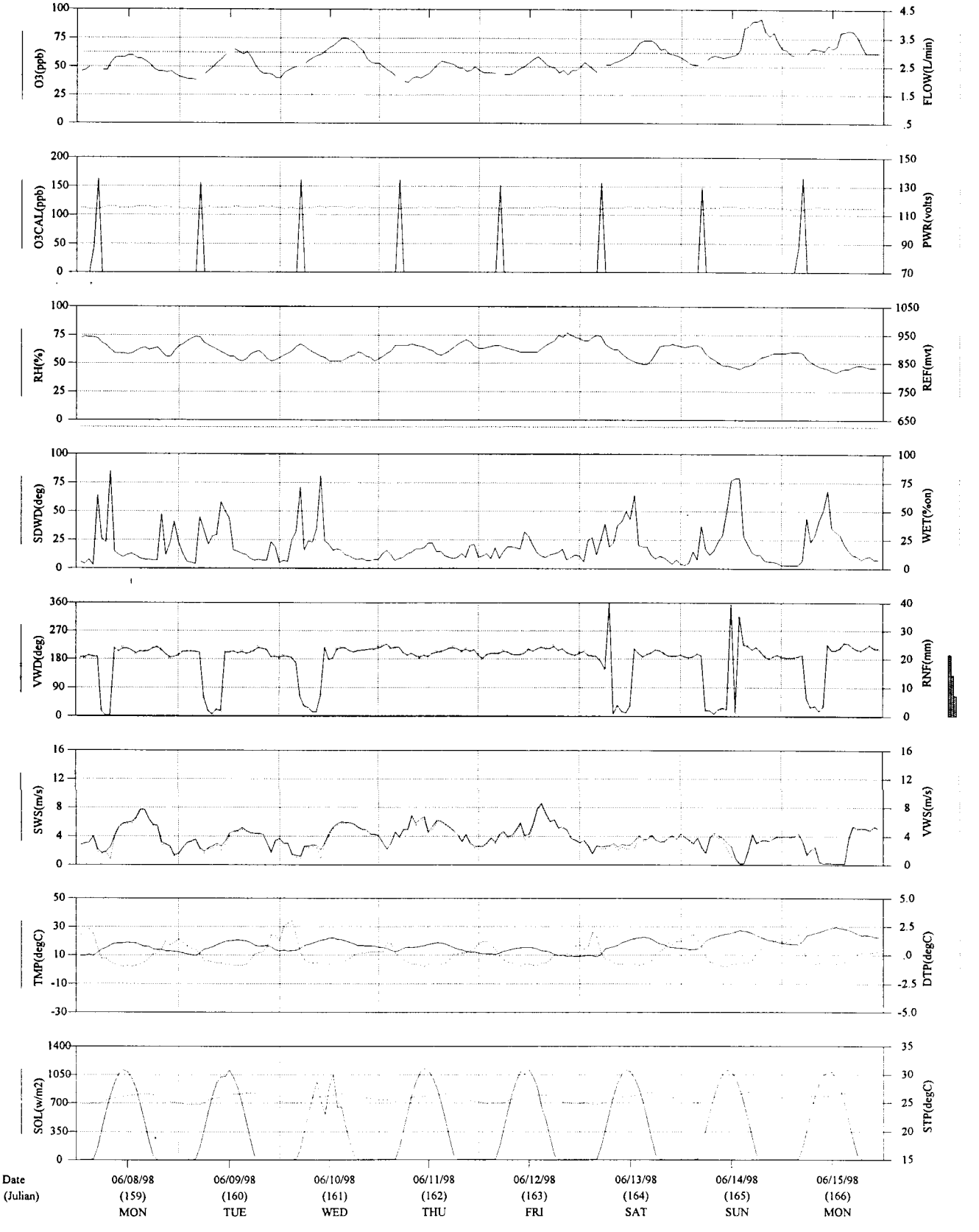


Preliminary Validation

JUNE 1998

joyv.stk - joyv.dat 08-25-1998

Joshua Tree National Park

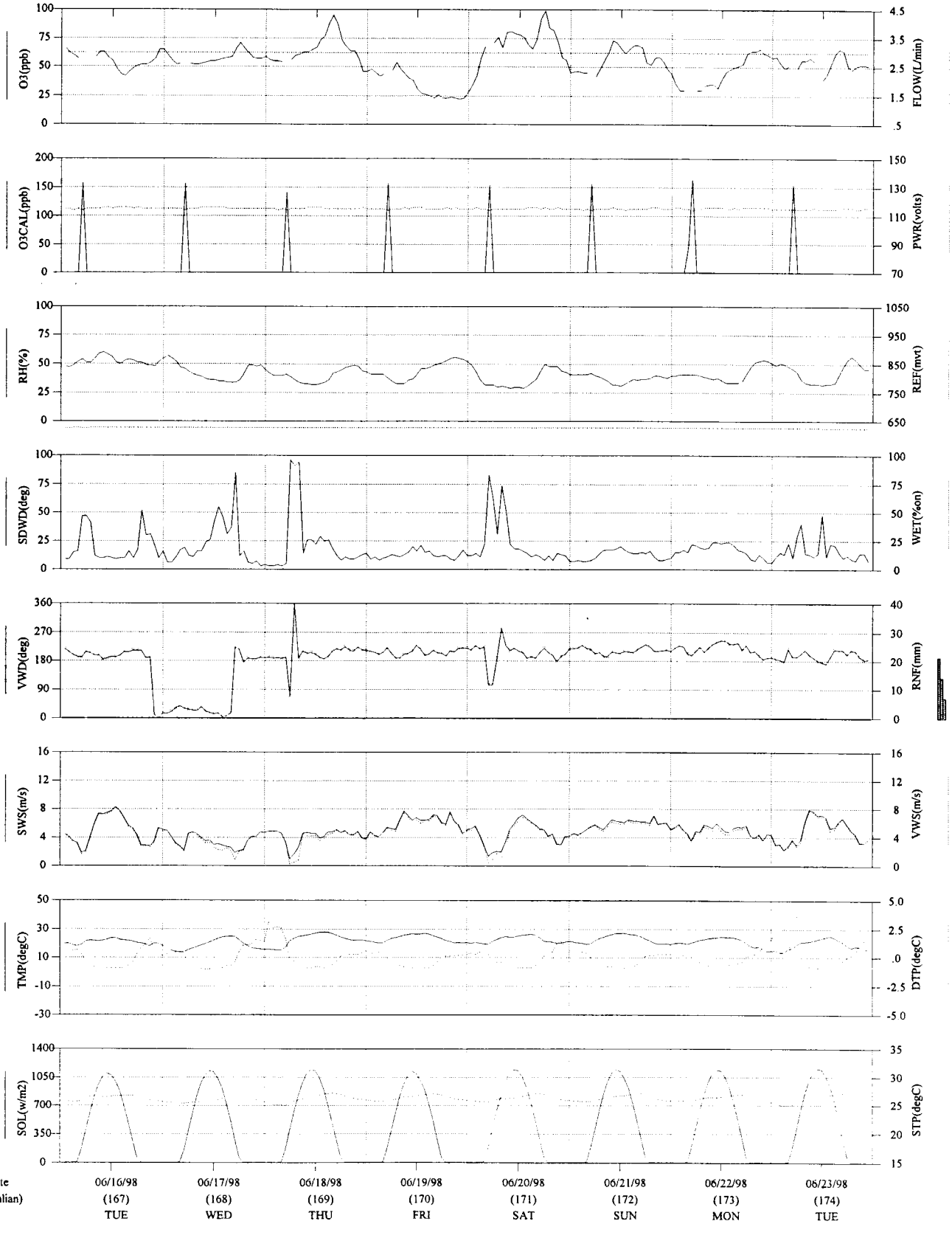


Preliminary Validation

JUNE 1998

joyv.stk - joyv.dat 08-25-1998

Joshua Tree National Park

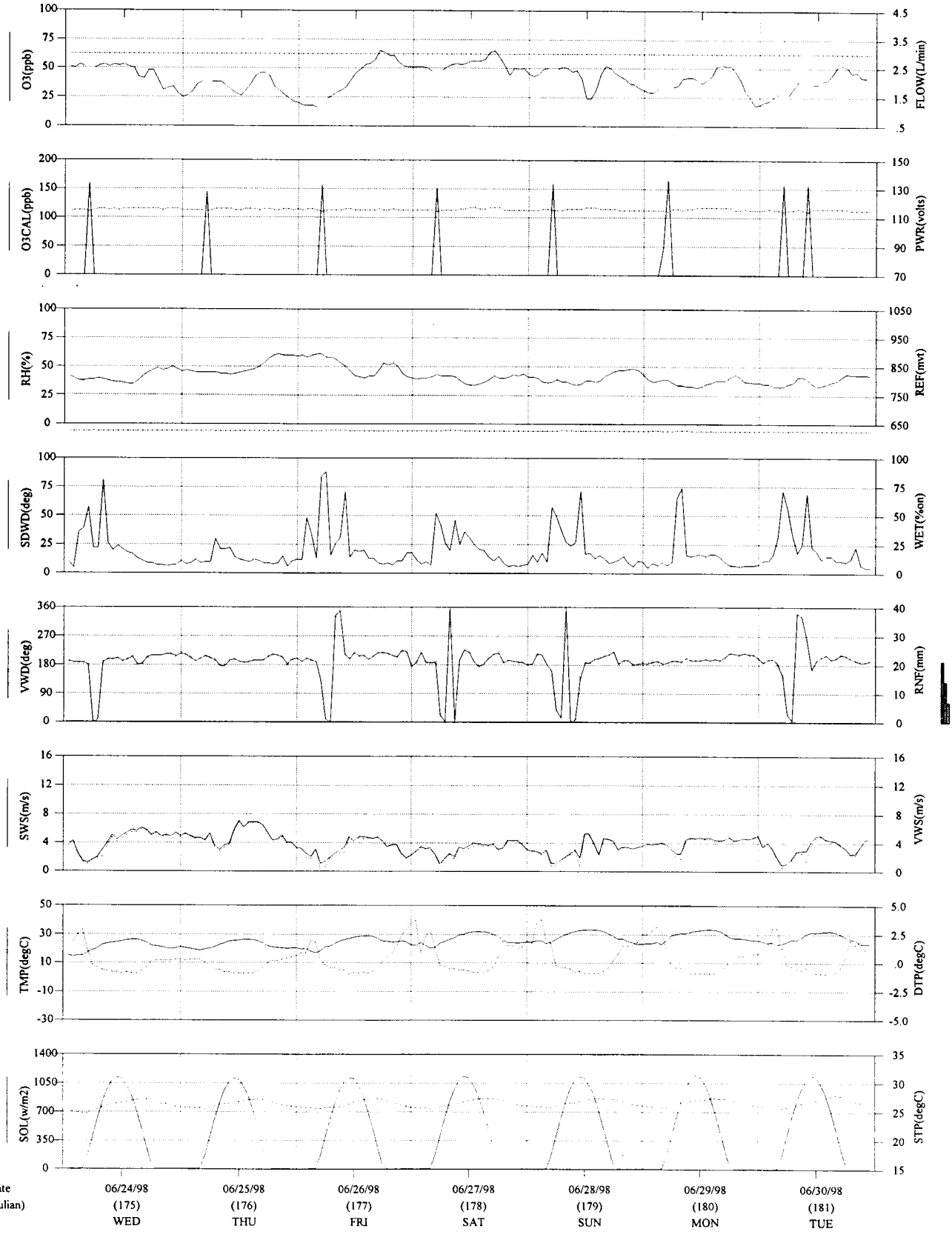


Preliminary Validation

JUNE 1998

joyv.stk - joyv.dat 08-25-1998

Joshua Tree National Park



Preliminary Validation

JUNE 1998

joyv.stk - joyv.dat 08-25-1998

Ozone
Ten Highest Daily 1-Hour Average Maximum Concentrations

Joshua Tree National Park

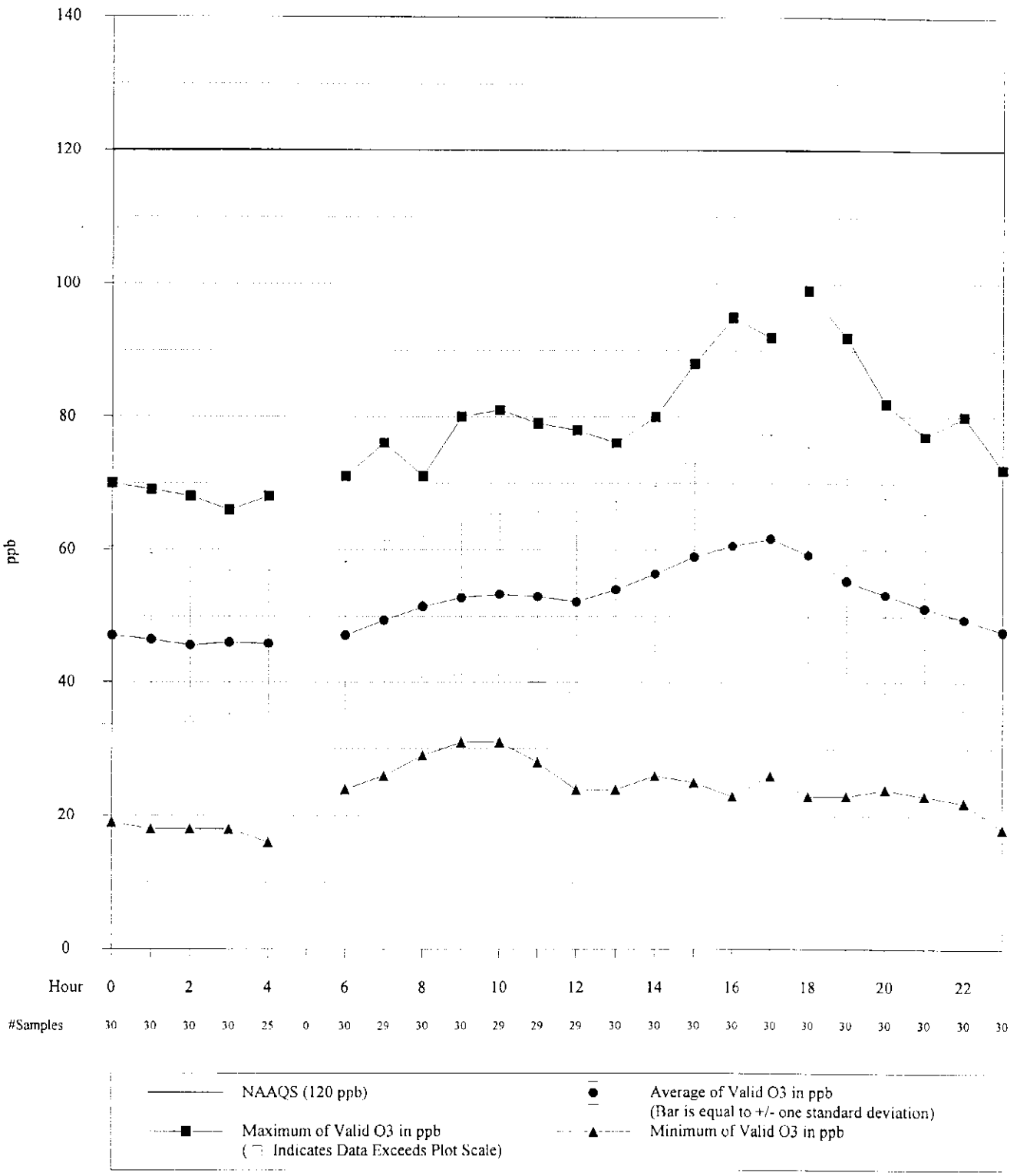
Preliminary Data
06/01/98 - 06/30/98

Rank	Date	Hour	Concentration (ppb)
1	06/20/98	18	99*
2	06/18/98	16	95*
3	06/14/98	19	92*
4	06/01/98	17	86*
5	06/15/98	16	82*
6	06/05/98	18	79*
7	06/10/98	15	75*
8	06/13/98	15	73*
9	06/21/98	10	73
10	06/06/98	10	72**

* Other high value(s) were also recorded during one or more hours in the day.
** This value was also recorded on one or more days later in the reporting period.

Note: The primary and secondary ambient air standard for ozone is 0.12 ppm averaged over a one hour period not to be exceeded more than once per year. (A value greater than .12 ppm, 124 ppb, or 235 $\mu g/m^3$ exceeds the standard.) (40 CFR 50.9 with reference to Appendix D and H.)

Joshua Tree National Park Diurnal Ozone Plot 06/01/98 - 06/30/98

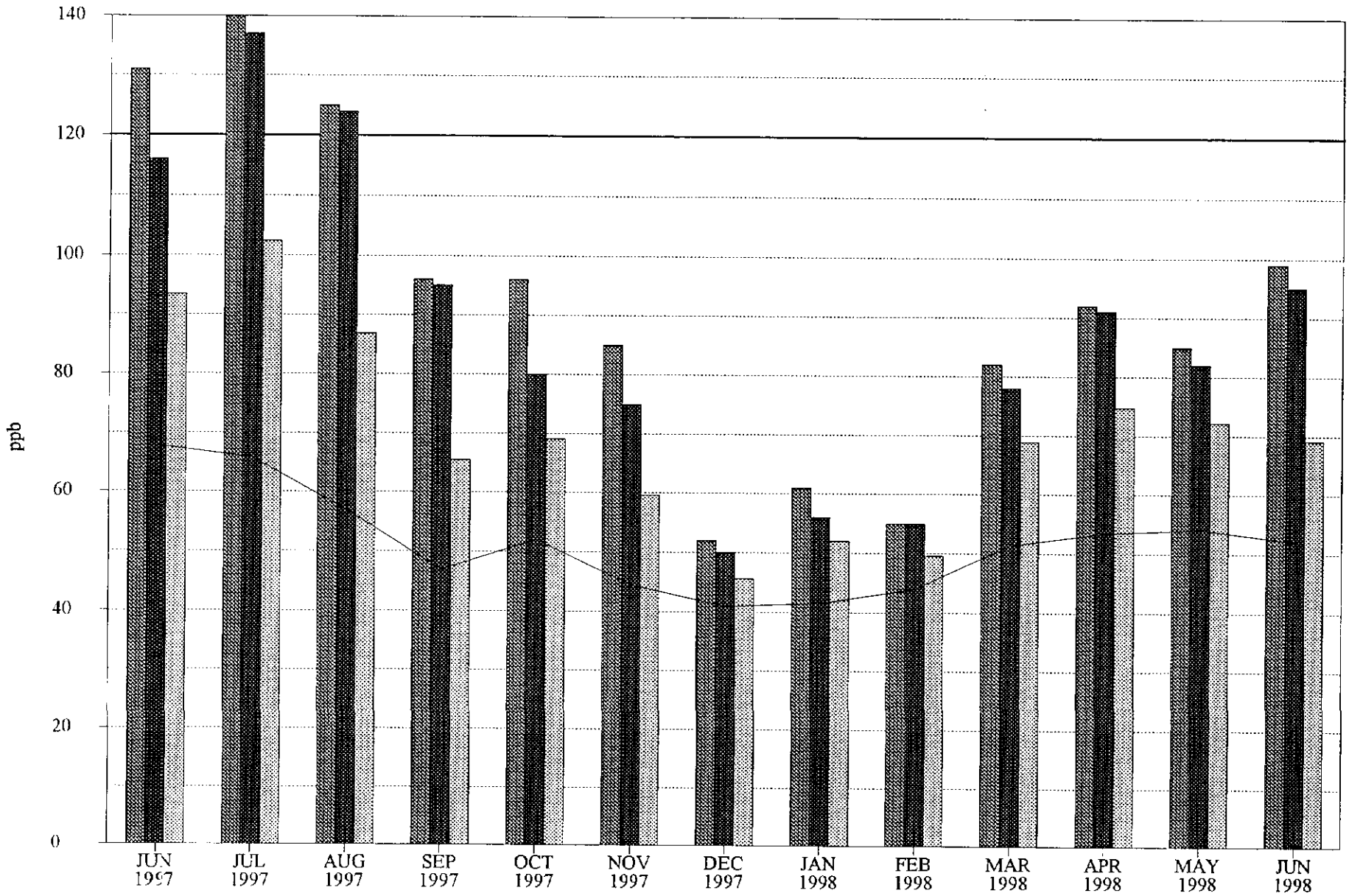


Preliminary Validation 08-25-1998

Joshua Tree National Park

Ozone Data Summary by Month
June 1997 to June 1998

06/01/97 - 06/30/98



* Less than 75% Data Recovery

Preliminary Validation

O3-1 O3-11 O3-3 08-25-1998

Summary of Selected Meteorological Data

Joshua Tree National Park

Preliminary Data

06/01/98 - 06/30/98

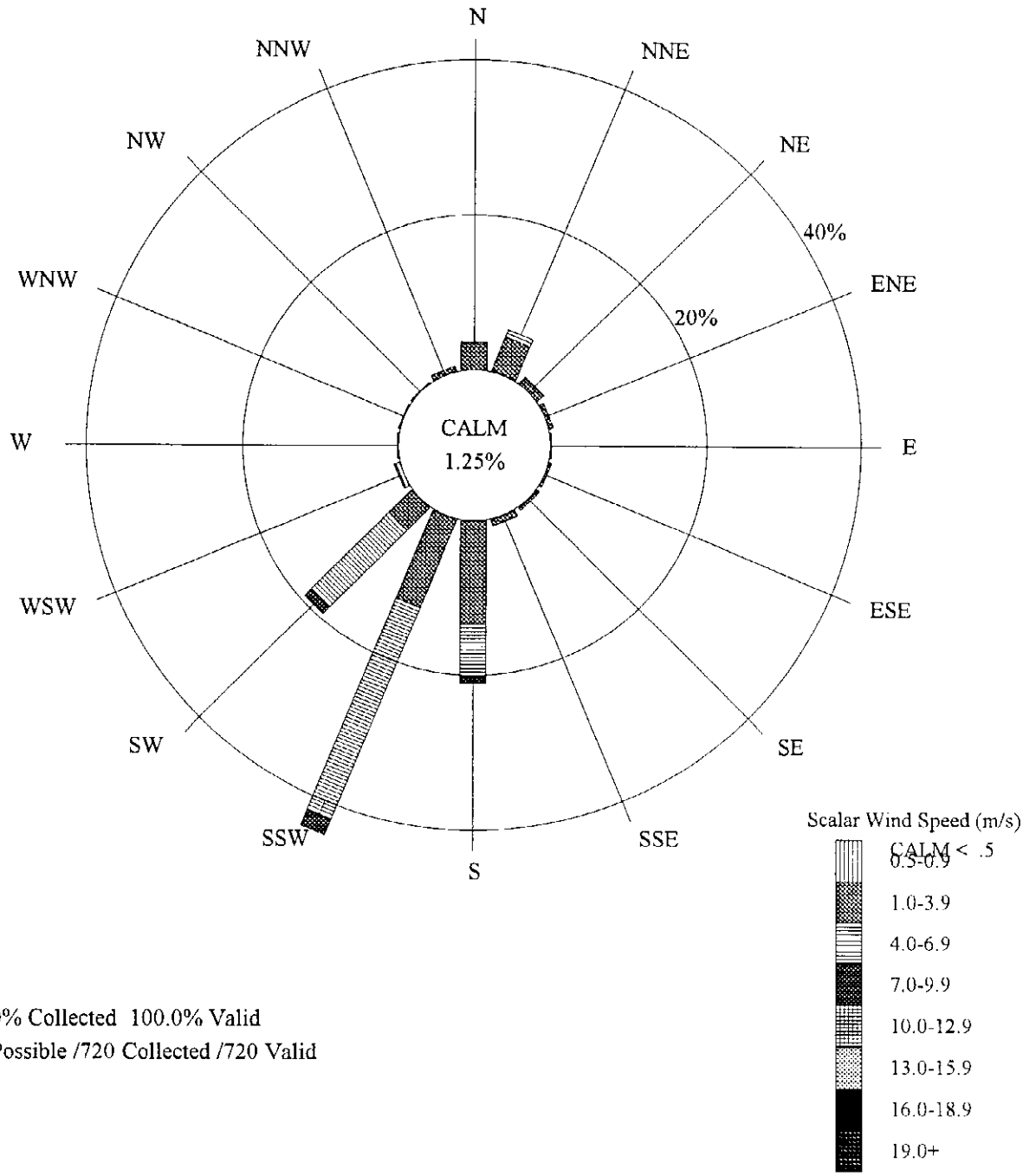
Parameter	Value	Units	Number	Std Dev
SCALAR WIND SPEED				
Average	4.2	m/s	720	1.6
Maximum	9.0	m/s		
Percent calm = 1.25				
AMBIENT TEMPERATURE				
Average	20.1	degC	720	5.7
Maximum	33.5	degC		
Minimum	6.4	degC		
RELATIVE HUMIDITY				
Average	50	percent	720	12
Maximum	84	percent		
Minimum	29	percent		
PRECIPITATION (Rainfall or Snow melt)				
Average non-zero rate				
Maximum non-zero rate				
Minimum non-zero rate				
Accumulated during period	0.0	mm	715	
SOLAR RADIATION				
Average Daily Total	30,949,653	joules/m2day	30	1,111,092
Maximum Daily Total	32,515,200	joules/m2day		
Minimum Daily Total	25,955,200	joules/m2day		

Note: Calms are included in the average scalar wind speed and are defined as winds less than 0.5 m/s (1.0 mph).

Solar radiation terms are based on the calculation of the total amount of solar energy incident on a unit area during each day. The maximum and minimum daily totals are selected from the list of daily totals. The totals for all days are then added and divided by the number of days to yield the average daily total. Only days with 24 valid values are included in these statistics.

NA indicates instrument not available.

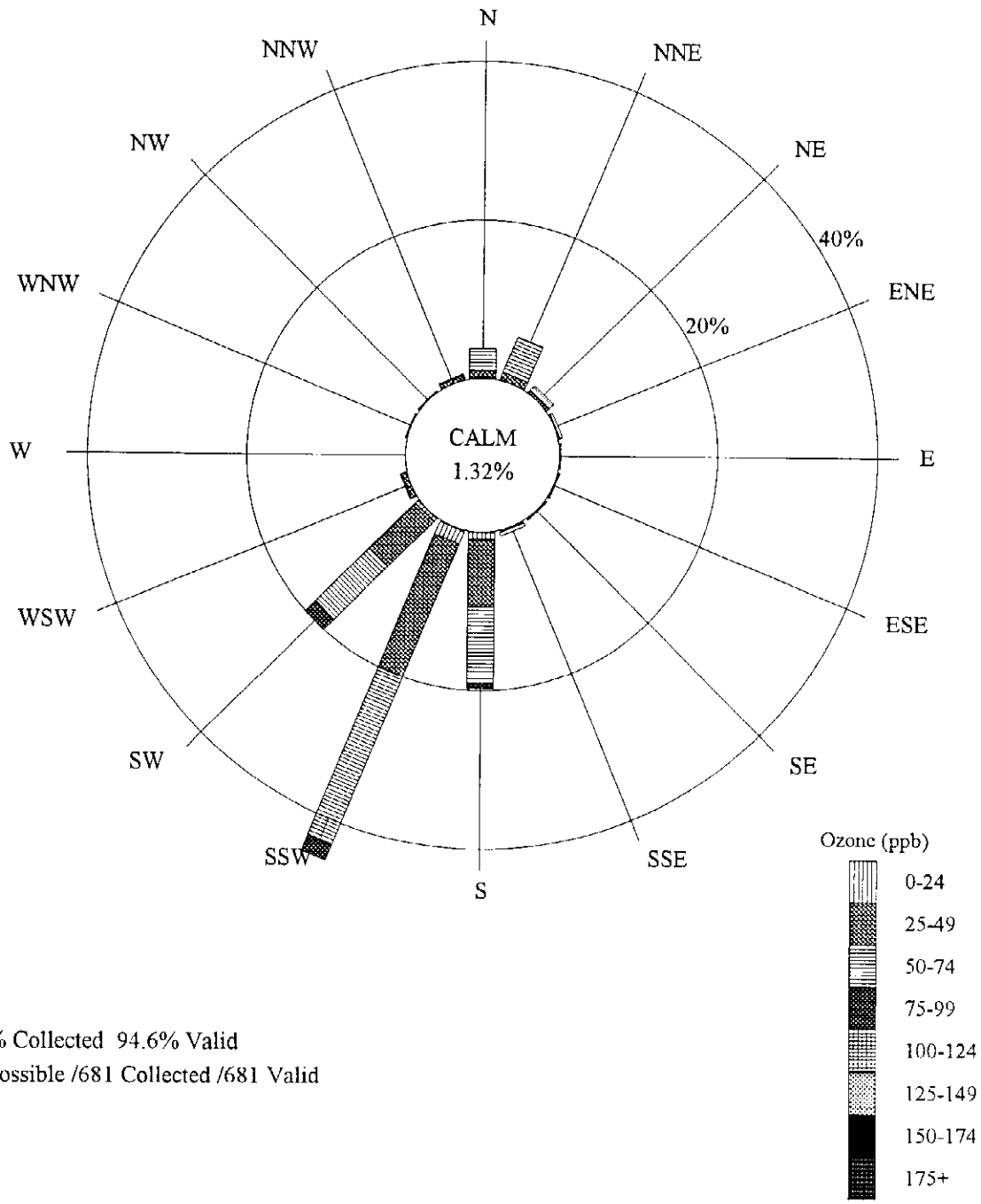
Joshua Tree National Park | Wind Rose | 06/01/98 - 06/30/98



100.0% Collected 100.0% Valid
720 Possible /720 Collected /720 Valid

Preliminary Validation | 09-01-1998

Joshua Tree National Park Ozone Pollutant Rose 06/01/98 - 06/30/98



94.6% Collected 94.6% Valid
720 Possible /681 Collected /681 Valid

Preliminary Validation 09-01-1998

DATA LISTINGS BY DATE AND TIME

All hourly average ozone and/or sulfur dioxide data collected at the site for the month are provided on the following page(s). The validation parameter code key provided below describes the validation codes used in the data tables to indicate why data are missing or invalid.

Validity Code Key

BM	Begin monitoring
CA	Calibration
EM	End monitoring
IM	Instrument malfunction (not discovered until after data had been collected)
IN	Interference (acts of nature)
IW	Instrument warmup
LI	Local interference
MT	Maintenance (preventive maintenance, changing chart paper, replacing instrument parts)
NA	No data
OE	Operator error
OR	Out for repair
OS	Off scale (at top of chart, data are presumed good)
PA	Performance audit
PC	Precision check
PF	Power failure (generator failure)
RF	Recording system failure (chart jams, chart runs out, or data acquisition system fails)
SA	System audit
SC	Station check (precision check and instrument zero/span check)
TH	Station temperature too high for ozone analyzer optimal performance
TL	Station temperature too low for ozone analyzer optimal performance
TO	Sample time out of limits
ZS	Instrument zero/span check

Joshua Tree National Park — Ozone Analyzer (ppb) — 06/01/98 - 06/30/98

Date	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	DAY MIN	DAY MAX	DAY AVG	DAY STD	n
	HOUR (LOCAL STANDARD TIME)																												
1	56	54	54	54	PC	ZS	59	66	69	65	53	55	58	60	67	72	76	86	80	76	73	71	67	64	53	86	65	9	22
2	62	60	58	56	56	ZS	56	56	57	58	58	60	56	58	70	68	68	66	59	51	48	48	44	44	44	70	57	7	23
3	45	43	39	37	36	ZS	35	38	37	37	38	38	43	47	49	50	49	45	39	32	31	30	31	33	30	50	39	6	23
4	32	31	34	33	32	ZS	36	40	43	45	47	48	48	50	51	51	51	49	46	48	48	49	47	47	31	51	44	7	23
5	47	47	47	47	46	ZS	52	55	58	60	62	64	66	69	66	66	67	74	79	75	72	71	70	71	46	79	62	10	23
6	70	69	68	66	62	ZS	64	67	71	70	72	70	70	67	65	68	68	69	70	67	63	63	56	48	48	72	66	5	23
7	45	46	46	44	43	ZS	42	42	48	50	46	48	51	53	53	53	52	49	48	52	50	48	49	48	42	53	48	3	23
8	49	46	47	50	PC	ZS	47	47	54	58	58	58	60	60	57	57	55	52	48	46	46	45	46	43	43	60	51	6	22
9	41	40	39	39	38	ZS	44	47	50	54	57	61	MT	65	63	61	63	58	51	46	44	44	43	40	38	65	49	9	22
10	40	45	47	49	50	ZS	53	56	58	60	61	64	67	69	72	75	75	73	71	67	64	57	54	53	40	75	60	10	23
11	53	50	47	45	41	ZS	37	36	40	41	40	42	44	48	52	55	54	53	52	49	49	46	47	50	36	55	47	6	23
12	47	45	45	45	44	ZS	43	43	44	47	49	51	54	57	59	56	52	50	49	45	47	43	47	47	43	59	48	5	23
13	50	54	51	48	45	ZS	52	52	54	55	57	59	61	66	71	73	73	73	70	65	66	62	61	60	45	73	60	9	23
14	58	56	53	52	52	ZS	56	59	60	59	58	59	60	61	65	84	86	90	90	92	81	77	80	72	52	92	68	14	23
15	66	65	61	60	PC	ZS	62	66	66	65	64	69	66	68	80	81	82	81	76	68	62	62	62	62	60	82	68	7	22
16	64	66	62	60	57	ZS	56	MT	58	63	63	58	55	48	43	42	46	49	51	52	52	54	57	65	42	66	56	7	22
17	65	60	55	52	53	ZS	53	52	52	53	54	55	55	56	57	58	59	66	71	66	62	58	57	57	52	71	58	5	23
18	59	56	55	55	54	ZS	56	60	61	63	63	65	67	74	77	88	95	87	73	68	64	64	57	46	46	95	66	12	23
19	46	48	45	42	44	ZS	47	54	48	44	40	38	31	27	26	25	23	26	23	23	24	23	22	23	22	54	34	11	23
20	28	34	42	58	68	ZS	71	76	67	80	81	79	78	76	70	66	74	92	99	84	82	72	58	56	28	99	69	17	23
21	45	46	46	45	45	ZS	42	49	56	63	73	71	66	62	66	69	69	67	54	52	58	59	55	48	42	73	57	10	23
22	44	35	30	30	PC	ZS	30	30	34	35	35	32	40	46	48	50	51	53	62	64	64	66	62	61	30	66	46	13	22
23	58	59	53	49	51	ZS	49	56	56	58	55	ZS	39	44	53	62	66	64	51	48	51	52	52	51	39	66	54	6	22
24	51	51	50	53	51	ZS	50	52	53	51	53	52	53	51	50	42	41	48	48	39	31	33	34	28	28	53	46	8	23
25	25	26	30	36	38	ZS	38	38	38	34	31	28	26	31	36	43	46	46	43	34	31	27	24	21	21	46	33	7	23
26	20	18	18	18	16	ZS	24	26	29	31	34	40	46	49	53	54	57	65	64	61	61	55	52	51	16	65	41	17	23
27	51	51	51	50	47	ZS	48	51	53	54	53	54	56	56	56	58	64	65	59	52	44	50	49	50	44	65	53	5	23
28	45	43	45	49	50	ZS	49	51	50	47	48	41	24	24	32	45	52	50	46	43	41	37	36	33	24	52	43	8	23
29	31	29	29	33	PC	ZS	34	35	41	42	42	40	37	40	43	51	53	52	52	47	40	30	24	18	18	53	38	9	22
30	19	21	22	26	28	ZS	27	33	39	41	ZS	36	36	39	40	45	51	53	51	46	47	42	42	40	19	53	37	10	22
HR MIN	19	18	18	18	16		24	26	29	31	31	28	24	24	26	25	23	26	23	23	24	23	22	18	16				
HR MAX	70	69	68	66	68		71	76	71	80	81	79	78	76	80	88	95	92	99	92	82	77	80	72		99			
HR AVG	47	46	46	46	46		47	49	51	53	53	53	52	54	56	59	61	62	59	55	53	51	50	48			52		
HR STD	13	13	12	11	11		11	12	11	12	12	13	14	13	13	14	15	16	16	16	15	14	14	14				14	
n	30	30	30	30	25	0	30	29	30	30	29	29	29	30	30	30	30	30	30	30	30	30	30	30				681	

Preliminary Validation

8/25/1998